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METEOROLOGICAL OFFICE

THE

OBSERVATORIES'

YEAR BOOK

1963

Comprising the geophysical results obtained from
autographic records and eye observations at the
Lerwick, Eskdalemuir and Kew Observatories

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PREFACE

The *Observatories' Year Book* was published for the years 1922 to 1937 in continuation of Part III Section II and Part IV of the *British Meteorological and Magnetic Year Book* for the period 1908 to 1921. Further publication was resumed eventually after a long interruption because of the 1939-45 war but in an abridged form as outlined in the next paragraph.

The General Introduction to the Meteorological Tables and the parts of the Sectional Introductions which dealt with site, instruments, procedure and tabulations included in the volume for 1938 served as the standards of reference up to 1956; only important departures from these standards were mentioned explicitly in subsequent Year Books. The space devoted to the discussion of observations was reduced and the monthly tables of individual hourly values of meteorological elements were discontinued, but summaries of the daily mean values (or totals), monthly means (or totals) of the hourly values and some maximum and minimum values were given. The diary of cloud, weather and visibility, and, after 1939, the aerological and seismological tables were also discontinued, but no major changes were made in the tables of atmospheric electricity and geomagnetism.

Another major review of the contents of the *Observatories' Year Book* was then carried out and a number of important changes made, commencing with the volume for 1957. The meteorological data for Kew and Eskdalemuir were omitted; a punched card system of recording such data centrally, at the Meteorological Office, Bracknell, has been adopted. It was also decided to omit all mention of the seismological work at Kew. Full details of the seismological measurements are given in the *Kew Seismological Bulletin*, distribution of which was resumed in 1947 after a break of seven years, and are also communicated to the *International Seismological Summary*. There were also some changes in the geomagnetism and atmospheric electricity tables; full details of the new tables are given in the Introduction to this volume.

It may be of assistance to those who make use of the data in this volume to know the full range of the other work now carried out at the three observatories and this is detailed below. Requests for information about this other work should be addressed to the Director-General, Meteorological Office, London Road, Bracknell, Berkshire, England.

Lerwick Observatory

Full hourly synoptic observations of the weather. Continuous recording and hourly tabulations of pressure, wind, rainfall, sunshine, temperature, humidity, total and diffuse solar radiation on a horizontal surface, daylight illumination on a horizontal surface. Daily measurements of evaporation and atmospheric pollution.

Routine radiosonde and radar-wind upper air measurements (twice and four times daily respectively). Regular measurements normally several times a day, of the total amount of ozone. Chemical sampling of the air and rain-water. Sampling for radio-activity of particulate matter in the air near the surface and sampling for radio-activity of rain-water.

Eskdalemuir Observatory

Full hourly synoptic observations 06-21 G.M.T. to 31 May, thereafter for 24 hours daily. Continuous recording and hourly tabulations of pressure, wind, rainfall, sunshine, temperature,

humidity, total and diffuse solar radiation on a horizontal surface, daylight illumination on a horizontal surface. Daily measurements of evaporation, atmospheric pollution and soil temperatures (at depths of 30 and 122 cm). Regular measurements, several times a day, of the total amount of ozone up to 23 August when the spectrometer was withdrawn for use elsewhere. Chemical sampling of the air and rain-water. Sampling for radio-activity of particulate matter in the air near the surface, sampling for radio-activity of rain-water.

Kew Observatory

Three-hourly synoptic observations 06-21 G.M.T. Continuous recording and hourly tabulations of pressure, wind, rainfall, sunshine, temperature, humidity, total and diffuse radiation on a horizontal surface, solar radiation at normal incidence, daylight illumination on a horizontal surface, net flux of radiation. Daily measurements of evaporation, and soil temperatures (at depths of 10, 20, 30 and 122 cm). Daily and hourly tabulations of atmospheric smoke pollution. Records from a set of Galitzin seismographs (3 components) and a short period vertical seismograph.

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ERRATA IN PREVIOUS VOLUMES

Observatories' Year Book 1958

    Page 94, Table 26.   Under Vertical Force column read for

	a	q	d
October	327	319	345
Year	320	316	324

Observatories' Year Book 1960

    Page ix. Delete first erratum.

Observatories' Year Book 1961

    Page 14. 6th main para.   For "electrograph voltmeters" read "electrostatic instruments".

Observatories' Year Book 1962

    Page 11.   Last two lines for "electrograph voltmeters" read "electrostatic instruments".

    Page 13.   Eighth line from bottom, read "potential".

    Page 13.   Sixth line from bottom, read "negative".

    Page 86.   Footnote, for "for" read "the".

INTRODUCTION

DESCRIPTION OF OBSERVATORIES

Lerwick Observatory, Shetland (60°08′N, 1°11′W)

The Observatory is set on a ridge of high ground about 85 m above m.s.l. and about 2½ km to the south-west of the port of Lerwick (population about 6000). The surrounding country is desolate moorland.

General views of the Observatory, a site plan and a contour map of the surrounding country were published in the *Observatories' Year Book* for 1961. An account of the history of the Observatory is given by W.G. Harper (*Met. Mag.*, London, **79**, 1950, p.309).

Eskdalemuir Observatory, Dumfriesshire (55°19′N, 3°12′W)

The Observatory is situated on a rising shoulder of open moorland about 245 m above m.s.l. in the upper part of the valley of the River White Esk in the Southern Uplands of Scotland. It is surrounded by open moorland with hills rising within 8 km to the north-west to nearly 700 m above m.s.l.

General views of the Observatory, a site plan and a contour map of the surrounding country were published in the *Observatories' Year Book* for 1961. The history of the Observatory is described by M.J. Blackwell in a paper marking the fiftieth anniversary of the commencement of observations (*Met. Mag.*, London, **87**, 1958, p.129), and by J. Crichton (*Met. Mag.*, London, **79**, 1950, p.337).

Kew Observatory, Richmond, Surrey (51°28′N, 0°19′W)

Kew Observatory lies in the centre of an area of parkland about 16 km west of the centre of London. The ground level is about 5 m above m.s.l. Outside the parkland within 1 km, the area is extremely built-up, with a number of small factories within a few kilometres to the north and east.

General views of the Observatory, a site plan and a contour map of the surrounding country were published in the *Observatories' Year Book* for 1961.

For the early history of the Observatory reference may be made to papers by G. Rigaud[1] R.H. Scott[2], C. Chree[3], O.J.R. Howarth[4], R.S. Whipple[5], F.J.W. Whipple[6] and A.J. Drummond[7]

1. RIGAUD, G.; Dr. Demainbray and the King's Observatory at Kew. *Observatory*, London, **5**, 1882, p.279.

2. SCOTT, R.H.; The history of the Kew Observatory. *Proc. roy. Soc.*, London, **39**, 1885, p.37.

3. CHREE, C.; Description of the Kew Observatory, Old Deer Park, Richmond, Surrey. *Rec. roy. Soc.*, London, 1st. edn., 1897, p.137.

4. HOWARTH, O.J.R.; The British Association for the Advancement of Science: a retrospect 1831-1921. London, 1922.

5. WHIPPLE, R.S.; An old catalogue and what it tells us of the scientific instruments and curios collected by Queen Charlotte and King George III. *Proc. opt. Conv.*, London, Pt. II. 1926.

6. WHIPPLE, F.J.W.; Some aspects of the early history of Kew Observatory. *Quart, J.R. met. Soc.*, London, **63**, 1937, p.127.

7. DRUMMOND, A.J.; Kew Observatory. *Weather*, London, **2**, 1947, p.69.

GEOMAGNETISM

Regular recording of the earth's geomagnetic field commenced at Kew in 1857. By the beginning of the twentieth century, however, the extension of London's electric railway and tramway system had caused so much geomagnetic disturbance that it was decided to establish another geomagnetic observatory in an area considered unlikely to be similarly affected. This led to the building of Eskdalemuir Observatory which was opened in 1908, but geomagnetic observations were also continued at Kew up to 1924.

Comparisons of the geomagnetic results obtained at Kew and Eskdalemuir showed, however, that it would be very desirable to obtain geomagnetic records as far north as possible in the British Isles, and this resulted in the establishment of Lerwick Observatory in 1921. Recording of the geomagnetic field has been continuous at Lerwick since January 1923.

The principal magnetographs at Lerwick and Eskdalemuir are standard and quick-run La Cour instruments, each set consisting of H, D and Z variometers. Time marks are made at five-minute intervals except at the hour, and two-minute breaks are made three times daily at Lerwick and twice daily at Eskdalemuir. Scale values of the H and Z variometers are measured about once a week at Lerwick and once a month at Eskdalemuir, during magnetically quiet periods, by passing a current through Helmholtz-Gaugain coils placed over the variometers, the resulting deflection being recorded on the photographic paper. The current is measured by a milliameter which is periodically calibrated or by a potentiometer using a standard resistance, and a standard cell. It is thought that the scale values adopted, about $4\gamma/mm$ for H and $6\gamma/mm$ for Z (at both observatories) are accurate to about $\frac{1}{2}$ and 1 per cent respectively. The scale value for D is normally determined from the optics and geometry of the system, with small corrections for torsion and paper shrinkage, but is occasionally checked by a similar electrical method to that used with the H and Z variometers; the difference between the electrical and optical methods is small and the adopted scale values are accurate to about 1 per cent. Following a complete review, made in 1963-64, of the scale values, used at both observatories since the installation of the La Cour variometers, in comparison with the optical calculations, electrical determinations and analyses of absolute values, it was decided that the values hitherto adopted were in error by amounts varying up to 4 per cent, mainly because geometrical calculations had been used alone, without account being taken of the curvature of the prism face. Details of the correct scale values to be adopted, over various periods, are given in the *"Errata in Previous Volumes and in the Present Volume"* section on page vii of the 1962 *Year Book*. The monthly and yearly mean values of D are unaffected, but the other values of D published in the *Observatories' Year Books* for Lerwick from April 1934 to December 1961, and for Eskdalemuir from January 1936 to December 1962, are in error by the proportion of their deviation from the mean monthly or yearly values; the correction is positive if the westerly declination is greater than the mean value and negative if it is less than the mean value. Tables containing quantities which involve the value of D are correspondingly affected.

Complete sets (H, D and Z) of supplementary magnetographs with lower sensitivity are also operated to provide information during any breaks in the standard magnetograph records, and also to provide information when rapid geomagnetic disturbance renders the traces of the standard magnetograph indecipherable. Details of these instruments can be found in the 1938 volume of the *Observatories' Year Book*.

The magnetograph house ($K*$) at Lerwick, which contains the La Cour magnetographs, is above ground and is made of non-magnetic concrete: its internal dimensions are 4·9 m by 3 m with the semi-circular shaped roof about 3 m in the middle and 2 m at the sides, above the floor; the walls and roof are 76 cm thick. An electric heater, controlled by a thermostat, enables the temperature to be kept reasonably constant for periods of up to a few months at a time but power is insufficient to maintain the same temperature throughout the year. The thermostat is re-set by several degrees at a time, so as to reduce the number of changes to a minimum. The time for a cycle of temperature changes (that is, the time between successive operations of the thermostat contacts) is of the order of one hour and a small oscillation of the temperature of the magnetograph is evident from the records, but the amplitude is only about 1 degree Celsius. The supplementary magnetographs are housed in an unheated wooden hut (L).

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*The descriptive letters or numbers are those given in the Figures published in the 1961 *Observatories' Year Book*.

At Eskdalemuir the magnetographs are placed in an underground chamber (3) constructed throughout of non-magnetic material. Within the outer shell of stone and concrete and separated therefrom, and from each other, by corridors and vaultings are two similar rooms of approximate internal dimensions - length 7·6 m, width 6·1 m, height 3·0 m. The ceilings of the room are slightly below the undisturbed level of the surrounding ground. The roof portion of the outer containing shell is covered with a thick layer of earth which forms a mound. Electrical heating, thermostatically controlled, was introduced in 1936 but, although the diurnal range in temperature is normally negligible, there is an annual range of temperature of about 4°C.

The temperature recorded by a thermometer inserted in the quick-run Z variometer, taken to be representative of the magnetograph house, is read daily at 09 G.M.T. and the readings are given in Table 4 (for Lerwick) and Table 24 (for Eskdalemuir).

Baseline values of the magnetograms are computed from the absolute measurements, made twice weekly, and measured scale values using the ordinate of the variometer curve at the times of the absolute observations. The adopted values of the baselines are obtained by a graphical smoothing process. Normally one value is adopted for one day except when instrumental discontinuities have occurred, but for Lerwick the temperature compensation of the Z variometer is not perfect and a baseline change of up to 5γ may occur when the thermostat is altered. The adopted baseline on these occasions is changed in 1γ steps so that the total change is spread over the period of temperature changes.

TABULATIONS

Tables 1 and 21 give, for Lerwick and Eskdalemuir respectively, mean values of the horizontal component (H) of geomagnetic force for periods of 60 minutes ending at the exact hour G.M.T. together with hourly, daily and monthly sums and means. Tables 2 and 22 give similar information for declination (D) and Tables 3 and 23 for the vertical component (Z). Tables 4 and 24 contain the values of the daily extremes of each component, the range during the day and the geomagnetic character figures K and C, together with the 09h temperature in the magnetograph house.

Tables 1-4 are subdivided into monthly sections and the same monthly parts of each table are grouped together on facing pages. Tables 21-24 are treated similarly. The days selected by the International Association of Geomagnetism and Aeronomy (I.A.G.A.) as being typical "quiet" and "disturbed" days are marked by the letters "q" and "d" respectively.

In general the declination (D) is measured to the west, and is considered to increase with increasing westerly declination, in accordance with the convention adopted in previous volumes. There is, however, an important exception in Tables 16 and 38 entitled "Noteworthy Geomagnetic Disturbances" (see below). In these two tables a movement of D to the east (that is, decreasing westerly declination) is regarded as positive, in order that the data in the tables may agree in every respect with data already supplied to I.A.G.A.

The geomagnetic character figures C are determined merely by inspection of the magnetograms. The standard is related to the general level of activity during the year, and the following recommendations, made in 1910 by Chree, Van Everdingen and Schmidt are adopted as guiding principles "that no one of the characters, 0, 1 and 2 should be attributed to more than two thirds of the days of the year, and that in each quarter the number of days of character 2 should be on the average at least 6".

The geomagnetic character figures K have been derived generally in the conventional way (see for example, I.G.Y. Instruction Manual Part IV Geomagnetism - Part I section 1.7). The lower limit for K=9 is 1000γ for Lerwick·and 750γ for Eskdalemuir.

Tables 5 (for Lerwick) and 25 (for Eskdalemuir) give the mean monthly and annual values of the geomagnetic elements H, D and Z together with the values of the north component (X), west component $(-Y)$, inclination (I) and total force (F). The values for H, D and Z are also given for the international quiet and disturbed days.

Tables 6 and 7 (for Lerwick) and 26 and 27 (for Eskdalemuir) give monthly, seasonal and annual means and frequency distributions of the daily range for each component $(H, D$ and $Z)$. For this purpose "Winter" is defined as the four months November to February; "Equinox" as March, April, September and October, "Summer" as May to August.

The next set of tables (8-15 for Lerwick and 28-36 for Eskdalemuir) gives data on the diurnal inequalities of each geomagnetic element. As recommended by a resolution of the Commission for Terrestrial Magnetism and Atmospheric Electricity and approved by the Conference of Directors at Warsaw in 1935, the diurnal inequalities are all uncorrected for non-cyclic change, but the values of the non-cyclic change are also given separately in Tables 13 and 35. It was decided to rearrange the order of the geomagnetic elements in Lerwick Tables 14 and 15 and in Eskdalemuir Table 36, commencing with the 1960 *Observatories' Year Book*, to conform with the geomagnetic tables, that is, in the standard order of H, D and Z.

Some information is given for Eskdalemuir but not for Lerwick. This includes the diurnal inequalities of the north (X) and west $(-Y)$ components and the inclination (I), and values of the first four harmonic components of the diurnal inequalities of the north, west and vertical components.

The inequalities of X, $-Y$ and I have been computed from those of H, D and Z by means of the formulae:

$$\delta X = \cos D . \delta H - \frac{\pi}{180 \times 60} H \sin D . \delta D$$

$$-\delta Y = \sin D . \delta H + \frac{\pi}{180 \times 60} H \cos D . \delta D$$

$$\delta I = \frac{180 \times 60}{\pi} \cos I \left[\frac{\delta Z \cos I - \delta H \sin I}{H} \right]$$

in which δD and δI are expressed in minutes of arc, and H, D and I for any given month are the respective mean values for that month as published in Table 25.

The results of harmonic analysis of the mean diurnal inequalities of X, $-Y$ and Z for the months, seasons and year are to be found in Table 37, in which are given the values of a_n, b_n, c_n and α_n in the two equivalent series $\Sigma (a_n \cos 15nt° + b_n \sin 15nt°)$ and $\Sigma c_n \sin(15nt° + \alpha_n)$. In the former series t is reckoned in hours from midnight G.M.T., whilst the published values of α_n refer to local mean time. The harmonic coefficients have been computed from the inequalities as given in Tables 28-33, but for this purpose the non-cyclic change has been eliminated. A correction has been applied where necessary, because the hourly values are not instantaneous but are mean values; the factors by which the coefficients have to be multiplied

(see *Report of the British Association*, 1883, p.98) are 1·00286 for a_1, b_1, and c_1; 1·01152 for a_2, b_2 and c_2; 1·02617 for a_3, b_3 and c_3; and 1·04720 for a_4, b_4 and c_4. The values were obtained to two decimal places and finally were rounded off to 0·1γ.

Tables 16 and 38 are entitled "Noteworthy Geomagnetic Disturbances". These were revised in content in 1947 and now include all the disturbances which would have been included in the previous type of tables, with, however, additional disturbances with sudden commencement (ssc) and those which can be recognised as being solar flare effects (sfe). The tables are divided into three parts:

(a) Disturbances noteworthy for some reason (usually, but not always, range) and without a sudden commencement.

(b) Well marked sudden commencements whether followed by a large disturbance or not.

(c) Disturbances accompanying a solar flare or other known solar flare effect.

The time given of commencement and ending of disturbances in (a) must depend on an arbitrary judgement. The list of sudden commencements under (b) will usually be a little shorter than that given in the I.A.G.A. bulletins because a somewhat stricter meaning has been given to the words "well marked". The (c) table has been made as complete as possible by a careful scrutiny of the magnetograms at the time of any known solar flare or solar flare effect, but a small "crochet" can easily be masked by other disturbances. Doubtful cases are not included. The signs given to the movements of *H*, *D* and *Z* are positive for increasing *H*, *Z* and an increase of force towards the east (that is, a decreasing westerly declination). Particulars of the same disturbances are given in both the Lerwick and Eskdalemuir tables, even if the disturbance at one of the stations is relatively small.

NOTES ON THE RESULTS

Comparing mean values on all days of 1963 with those of 1962, at Lerwick *H* increased by 19γ, *D* (west) decreased by 4·8′ and *Z* increased by 23γ. The changes deduced in *X*, *Y*, *I* and *F* are +23γ, -17γ, -0·8′ and +28γ respectively. The ranges between the extreme values recorded during 1963 were *H* 2844γ, *D* 4°21·3′ and *Z* 1427γ. The range of 4°21·3′ in declination corresponded to a range of 1110γ in the component of force perpendicular to the magnetic meridian.

Similarly at Eskdalemuir *H* increased by 25γ, *D* (west) decreased by 5·5′ and *Z* increased by 17γ. The changes deduced in *X*, *Y*, *I* and *F* are +28γ, -22γ, -1·2′ and +24γ respectively. The ranges between the extreme values recorded during 1963 were *H* 2054γ, *D* 2°13·9′ and *Z* 1053γ. The range of 2°13·9′ in declination corresponded to a range of 656γ in the component of force perpendicular to the magnetic meridian.

At Eskdalemuir the extreme ranges occurred during a thirty hour period between 1805 on September and 0222 on 23 September, that of *D* being between 0155 and 0222 on the latter date.

ABSOLUTE STANDARDS OF GEOMAGNETIC FORCE AT LERWICK AND ESKDALEMUIR

Vertical Component

The older instruments in use before the introduction of proton precession magnetometers in 1960, and the results obtained by inter-observatory comparisons using BMZ's are described in the 1957, 1958 and 1959 *Observatories' Year Books*. (In 1963 errors were found on checking the 1957 and 1959 inter-observatory comparisons; the true values for 1957 and 1959 for entry in the third column of the first table on page 12 of the 1957 *Observatories' Year Book* and in the third column of the first table on page 11 of the 1958 *Observatories' Year Book* are -20 and -8 respectively).

During 1960 proton precession magnetometers were installed at Lerwick and at Eskdalemuir. The principle of these instruments has been described by Packard and Varian[1] and Waters and Francis[2].

They enable the free precession frequency (f) of the proton to be measured; this is related to the total magnetic field F at the proton sample by the relation

$$f = \frac{\gamma_p F}{2\pi}$$

where f is in cycles per seconds and γ_p is the gyromagnetic ratio of the proton. The value adopted for γ_p is 2·67513 x 10⁴ radians gauss⁻¹ sec⁻¹ [3]; this is the value recommended provisionally at the meeting of the International Association of Geomagnetism and Aeronomy in Helsinki in 1960[3].

The proton sample used at Lerwick and Eskdalemuir is distilled water contained in a polythene bottle, 11·5 cm long and 6 cm diameter placed on the axis of a solenoid. (At Lerwick the centre of the bottle is 42½ cm above the top of the west pier in the old Absolute hut (H); at Eskdalemuir it is 74 cm above a pier in the East hut (2)). This solenoid serves firstly to provide a strong polarising field and then as a pick-up coil to detect the small precession signal. After amplification the signal is passed to a counter unit to enable its periodicity to be determined. This is done by measuring the time, in units of 10 microseconds, for a given number of cycles of precession. Usually 2048 cycles are counted; this gives an accuracy of 1 part in 10⁵ (or 0·5γ) when measuring the total field or the vertical component in the British Isles, because the value of f for these fields is close to 2000 cycles per second and the counting time is therefore about 1 second. The timing of the cycles is by means of a 100 kc/s oscillator, the accuracy of which is checked by beating its first harmonic against the B.B.C. Light Programme carrier wave, the frequency of which is 200 kc/s. It has been proved by experiment that the magnetic fields of the amplifier and counter units at the pick-up coil are less than 0·1γ.

At Lerwick routine absolute measurements of the total field are made twice daily and in each week two or three of those made during quiet periods are selected for calculations of the vertical component assuming the Observatory H record is correct. At Eskdalemuir total field measurements are made twice weekly coinciding with the absolute observations for H and D during quiet periods. The equation used is

$$Z = \sqrt{F^2 - H^2}$$

1.   PACKARD, M. and VARIAN, R.; Free nuclear induction in the earth's magnetic field. *Phys. Rev., Lancaster, Pa.* **93**, 1954, p.941.

2.   WATERS, G.S. and FRANCIS, P.D.; A nuclear magnetometer. *J.sci. Instrum., London*, **35**, 1958, p.88.

3.   NELSON, J.H.; The gyromagnetic ratio of the proton. *J. atmos. terr. Phys., London*, **19**, 1960, p.292.

and it is easily shown that the error ΔZ in Z caused by an error ΔH in the H measurements is given by

$$\Delta Z = -\left(\frac{H}{Z}\right) \Delta H.$$

The ratio (H/Z) at Eskdalemuir and Lerwick is about $\frac{1}{3}$. Since it is believed that the systematic errors in H do not exceed 6γ (and may well be much less) the corresponding error in Z is small (2γ or less). The 1960 comparison over a period of two months (May-June, Eskdalemuir; June-July, Lerwick) of the proton magnetometer Z values (denoted here by Z_{pm}) with the Z values obtained by using the Schulze dip inductor (Eskdalemuir, denoted here Z_{DIP}) and B.M.Z.83 (Lerwick) yield the following mean results.

$$\text{Eskdalemuir} \qquad Z_{pm} - Z_{DIP} = 0\gamma.$$

$$\text{Lerwick} \qquad Z_{pm} - Z_{BMZ83} = -8\cdot5\gamma.$$

At Lerwick the proton magnetometer, using the Schuster-Smith value of H, has been accepted as the standard instrument for measuring Z since 1 August 1961. However, as there is still some uncertainty due to the uncertainty in H baseline values, which will be removed when the proton vector magnetometer is brought into use, it was considered preferable to make no discontinuity in the Z baseline until absolute determinations are made; accordingly the accepted Z baseline was derived from the relation

$$Z = Z_{pm} + 9\gamma.$$

This, in effect, continued the B.M.Z.83 baseline. After the proton magnetometer had been in use during the remainder of 1961 it was decided that it would be more accurate to use Z values derived directly from it. This, together with a movement of the proton bottle in the old Absolute hut (H), from a shelf to the west pier, caused a discontinuity, from January 1962, of -7γ with the previous Z baseline.

The experimental proton vector magnetometer continued in use at Eskdalemuir but several modifications of the system proved necessary (the instrument came into extensive use after 21 August 1964 and into routine use from 1 January 1965). In this instrument the horizontal and vertical components of the field at the water bottle of a proton magneto-meter are cancelled in turn by the field produced by a single rotatable (about both horizontal and vertical axes) Helmholtz-Gaugain coil system. These Eskdalemuir proton vector magnetometer measurements indicate that previous Z baseline values are about 1γ too low.

At Lerwick there was an experimental proton vector magnetometer, on the lines of that in use at Eskdalemuir. (This was succeeded in January 1965 by a permanent proton vector magnetometer; it differs from the one in use at Eskdalemuir in that there are two fixed coil systems for cancelling H and Z, as in the instrument described by Hurwitz and Nelson[1]). The Z baseline values determined by the proton magnetometer and the measurement of H (by the portable Smith coil) were about $\frac{1}{2}\gamma$ too low.

A complete account will be given in the 1964 *Observatories' Year Book* of the finally adopted Z baselines and of their relation to previous values.

Horizontal Component

The history of the determinations of the absolute values of the horizontal component, H, at Eskdalemuir and Lerwick is given on pages 8 to 10 of the 1961 *Observatories' Year Book*. The results with the proton vector magnetometer at Eskdalemuir indicated that the existing H baseline is about 3γ too high. The similar measurements at Lerwick indicate that the H baseline values there, determined by the portable Smith coil, were about 1γ too high. A complete review of the history and present value of the H baseline will be given in the 1964 *Observatories' Year Book*.

Declination

It was decided in 1963 to re-examine all the available manuscript data on the determination of the azimuth of the fixed mark at Lerwick, from the first measurement in 1922 to the most recent value in 1961. (Measurements were made in 1922, 1923, 1930, 1932, 1937, 1938, 1939, 1940, 1944, 1948 and 1961, the last two being by the Ordnance Survey.) The clear conclusion was reached that the apparent drift of the mark between 1923 and 1948 mentioned in the 1938 and subsequent *Observatories' Year Books* was not real and was due to errors of observation with the instruments available at Lerwick. The most accurate observation ($08°38\cdot8' \pm 4''$ east of south) is that made by the Ordnance Survey in 1961, and it is considered that this has always been the true value since declination observations began in 1922. This conclusion is consistent with the geology of the region, since both concrete pillars - that on which the declinometer stands and that, 117 m away, on which the azimuth mark is placed, are firmly cemented into solid bedrock. The change from the already published corrections for the years 1923 to 1946 are that (i) the original 1923 determination was in error by $4\cdot2'$ and not $3\cdot5'$, and (ii) that this figure of $4\cdot2'$ is the amount by which westerly declination is too large between 1923 and 1946, and not the range from $3\cdot5'$ in 1923 to $4\cdot4'$ in 1946, hitherto mentioned. In addition the published values of westerly declination from 1947 to 7 November 1961 are too small by $0\cdot2'$.

The observations of the azimuth of the fixed mark at Eskdalemuir in 1948 gave results negligibly different from previous observations and no changes were required in the tabulations. Further observations of the fixed mark at Eskdalemuir were made in July 1961, by the Observatory staff, using a Tavistock theodolite, with Polaris as a reference star. The value determined was only $7''$ (and the standard deviation of the observations was $6''$) from the value adopted after the Ordnance Survey determination in 1948. The 1961 value was brought into use on 1 September 1961, and, with the scatter in baseline values, the effect of the change on declination measurements was negligibly small.

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1. HURWITZ, L. and NELSON, J.R.; Proton vector magnetometer. *J. Geophys. Res.*, **65**, 1960, p.1759.

AURORA

An all-sky cine camera, a modified Alaskan type (compare IGY Instruction Manual Part II Aurora and Airglow), was installed at Lerwick during the summer of 1963 and operated during the second half of the year for photography of aurora. The camera was exposed at a film speed of four frames per minute whenever aurora was visible. The films were processed and the required data derived at the World Data Centre - C(b) at the Balfour Stewart Auroral Laboratory, University of Edinburgh, to which the camera belongs. In addition to the photography of aurora, a visual watch of aurora was kept and details were noted of the observing conditions of any aurora seen. During the period of upper air soundings, however, observation of aurora was made only at the time of the hourly meteorological observation. Copies of the hourly records of observing conditions, and of the detailed observations of aurora were sent to the World Data Centre, Edinburgh.

A brief account of the results obtained is given in Table 17. All dates, on which the sky remained completely overcast throughout the night and on which, therefore, no opportunity arose of determining whether or not aurora occurred, have been omitted. Those nights on which aurora was actually observed are indicated by the symbol $\mathbb{Q}$; other nights on which no aurora was observed, despite at least an occasional interval of more or less clear sky, are indicated by the symbol ··. In the latter case also, remarks on the weather are added to assist the reader in judging how far the fact of no observation of aurora may be taken as showing that, in fact, there was no aurora. Each night is described by a letter code which has the following significance:-

          a = Conditions favourable for seeing aurora
          b = Unfavourable for faint aurora (because of moonlight, mist, thin cloud
                etc.), but not such as to mask bright aurora
          c = Cloudy, but aurora not seen in clear intervals
     ca, cb = Cloudy, but with conditions a or b respectively, in the intervals.
                Changing conditions are indicated by a hyphen; for example, a-c.

Table 18 is a general auroral table giving a summary of the observations of aurorae in the British Isles. It is compiled from the detailed observations received at the World Data Centre, Edinburgh. A more detailed analysis of the data appears annually in *Observatory*, London, for example that for 1963 is in Volume 84, August 1964, pp.160-168.

ATMOSPHERIC ELECTRICITY

The programme at Lerwick and Eskdalemuir is to maintain a continuous record of atmospheric electric potential gradient as it exists just above a natural open level surface. This is also done at Kew Observatory but there, in addition, regular measurements are made on fine afternoons of the air-earth current. These latter are expressed as mean values covering the period of observation which is normally about 20 minutes centred on about 1430 G.M.T.

Continuous Potential Gradient measurements

The instruments used for the recording of the potential gradient are similar in principle at all three observatories. An insulated boom projects through the wall of the building and takes up the potential of the air because of the ionisation caused by a small radioactive collector fitted to its tip. The potential of the boom is recorded by an electrostatic voltmeter except at Lerwick; the use of valve voltmeters for these measurements is discussed below.

The collectors are of polonium deposited on a copper rod about 4 cm long by 0·5 cm

diameter; these are recoated periodically by arrangement with the Government Chemist and a fresh collector is brought into use each quarter. Tests at Kew Observatory in 1959 showed that the strength of a new collector is usually between 80 and 200 micro-curies. A note about the supply of the collectors and of the techniques used in plating them is given in *Nature*, 1955, 175, p.965.

The potential of the boom is of course affected by the presence of buildings, although it is assumed that this potential is always proportional to the potential gradient in the open. Standardising measurements have therefore to be made of the true potential gradient at a suitable open site. The ratio of the potential gradient in the open to the potential of the boom is called the exposure factor and is expressed in the units (metre^{-1}).

The methods of making the standardisation measurements of potential gradient are different at each observatory.

At Lerwick an insulated wire with a polonium collector fixed to its centre is stretched horizontally between two stout wooden posts 9 m apart. The centre of the wire is exactly 1 m above a levelled piece of ground. The potential of this wire is observed at one-minute intervals for a period of 10-20 minutes using a Wulf electrometer. From the mean value of the observed potential and the mean reading of the electrograph an exposure factor is calculated. Observations are made in fine weather and as many as possible are made. Smoothed monthly means of the factors so obtained are used in the reduction of the records.

At Eskdalemuir absolute observations of potential gradient are made with a Wulf electrometer using a small pit about 50 yards from the main building. The electrometer is placed inside the pit and from the electrometer a thin metal rod (0·4 cm in diameter) projects vertically upwards through a hole in the metal lid covering the pit. A polonium collector is fixed to the rod at exactly one metre above the ground level. It has been shown experimentally that the potential of the rod is the same (within experimental error) as that of a stretched wire at one metre exposed to the same potential gradient.

The observer shuts himself in the pit and takes readings of the electrometer every half minute until 15-30 readings have been obtained. As at Lerwick observations are made in fine weather and at least six per month are aimed at. From the mean potential of the Wulf electrometer over the period and the corresponding mean value of the record, the exposure factor of the electrograph is obtained.

For any given month a mean exposure factor is used and this is a smoothed running mean using observations made during the preceding and following months.

The absolute measurements at Kew are made with the Wilson apparatus in the underground laboratory; these are described below.

A plan, Fig.3, in the 1961 *Observatories' Year Book,* shows the site of the absolute potential gradient measurements at Lerwick and of the position of the electrograph from 14 July 1961 to 28 January 1963, when it was moved to a position 2 metres away to the east. The boom projects 58 cm from the north-east wall of the electrograph room at a height of 220 cm above the ground. The instrument is 160 m from the site of the absolute potential gradient measurements (it is to be noted that at both sites the insulators are made of polytetrafluoroethylene which is kept clean). The electrograph is of the valve voltmeter pattern as described by A.W. Brewer (*Journal of Scientific Instruments,* 30, 1953, p.91). A pen record is obtained on a chart 7·5 cm wide, which normally moves at a speed of 1·2 cm per hour. The scale value of the electrograph is 3 volts per mm on its sensitive scale, and about 15 volts per mm on its insensitive scale. The boom is automatically earthed at each hour, and then operates on the sensitive scale. When the voltage exceeds 90 volts, the electrograph automatically changes to its insensitive scale. Full scale deflection on the insensitive scale is obtained with about 540 volts, so with an exposure factor of around 2·5 the electrograph can record a range of +1350 to −1350 volts per metre in the open. Scale value measurements are made once weekly, using dry batteries and a calibrated voltmeter.

The insulation is tested daily and, even in wet weather, is good. In fine weather the rate of leak is so small, that the time taken for the instrument to lose half its potential has never been measured; only after 15 minutes has a movement of the pen been detectable.

Tests of the rate of rise of potential of the electrograph and boom with the polonium collector fitted are made at intervals. The time taken for the potential to rise to half its final value is 2-3 seconds. The rate of leak is thus so very much less than the rate of charging that the difference between the potential of the boom and that of the air surrounding it is negligible.

The electrograph at Eskdalemuir consists essentially of a quadrant electrometer with a small mirror on the vane which reflects a light spot on to a sheet of bromide paper wrapped around a drum rotated by clockwork. From 1936 until 1954 the electrograph boom projected through a pipe in the north wall a few feet to the west of its present position; it now projects through a wooden door, a distance of 66 cm so that the collector is flush with the outer wall of the building and 4·8 m above ground level.

The boom is supported on polythene insulators which are inspected regularly and cleaned as necessary of dust and spider webs. A leak test is carried out about three times per week; about 120 volts are applied to the boom and 5 per cent loss of potential over 2 minutes is accepted as satisfactory.

The scale value of the record was approximately 1·8 volts per millimetre during 1963 and this, combined with an exposure factor of about 8, means that one millimetre on the record corresponded approximately to 14 volts per metre in the potential gradient over an open level surface; a full scale deflection corresponds to ±1000 volts per metre.

The Kew electrograph, which is also a quadrant electrometer recording photographically, is situated in the main observatory building. Its boom is supported on sulphur insulators which are kept dry and warm with two small electric heaters. The radio-active collector is 90 cm from the window of the building through which the boom projects at 360 cm above ground level. The insulators and boom are inspected regularly and kept free from dust and spider webs; provided the electric heaters are also functioning, the insulator then remains satisfactory but a leak test is performed at about monthly intervals (the loss of potential should be negligible (less than 5 per cent in two minutes)). The scale value of the electrograph has been fixed at about 17 volts per metre per millimetre, and the full scale deflections correspond to about +1600 volts per metre and −1000 volts per metre.

The electrograph became unreliable in May 1953 and from then until the end of 1955 the continuous records of potential gradient have not been published. Reliable recording started again on 1 January 1956.

Valve voltmeters, as now in use at Lerwick, have also been recording continuously at Kew since May 1958, and at Eskdalemuir since April 1959, in addition to the electrostatic instruments.

Air-earth current and conductivity measurements at Kew

Measurements of the air-earth current and potential gradient are made in an underground laboratory using a modified Wilson apparatus. From these observations the conductivity can be calculated. The apparatus was devised by C.T.R. Wilson* and is described in detail by F.J. Scrase[†].

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*WILSON, C.T.R.; *Proc. Camb. phil. Soc.*, London, 13, 1906, pp.184 and 363.

[†]SCRASE, F.J.; *Geophys. Mem.*, London, 7, No.60, 1934.

Briefly, it consists of an insulated brass plate, mounted with its top surface flush with the ground level, and connected to a sensitive electrometer. The test plate can be covered when necessary with an earthed cylindrical cover, and can be maintained at any desired potential (usually zero) by a small charged variable capacitor (called the compensator). The method of using the instrument at Kew differs slightly from that adopted by Wilson, who used the readings of the position of the compensator to obtain the charge on the test plate. At Kew the compensator is used merely to keep the plate at zero potential, and the charge is measured by reading the deflection of the electrometer. The potential gradient is measured by the charge induced on the plate when it is exposed to the earth's field, and the air-earth current is measured by finding the charge collected by the plate during a known period (usually five minutes).

The potential gradient F is given in volts per centimetre by the formula

$$F = 4\pi \, (9 \times 10^{11}) \, Cv/A$$

where C is the capacity, in farads, of the system (when shielded), v is the potential acquired by the test plate after being exposed to the field, earthed and then shielded, and A is the area of the test plate*. The potential gradient found in this way is, to a close approximation, equal to that found by measuring the potential at a height of 1 m in the open part of the grounds with a stretched wire apparatus.

The air-earth current is given in amperes per square centimetre by the formula

$$i = C\delta v/At$$

where δv is the potential acquired by the plate in t seconds. The value of δv used is the mean result from four observations, each lasting five minutes. The observations of the current are sandwiched between measurements of the field strength, and from the mean values of i and F the conductivity λ is deduced. This conductivity is that due to positive ions only since measurements are made only with positive fields. No observations are made in precipitation and fog.

From 1 July 1949 to the end of 1955 trouble was experienced with the Wilson test plate apparatus and the observations of air-earth current and conductivity during the period have subsequently been found to be unreliable. These observations have not therefore been published. The observations of the potential gradient with this apparatus during this time were checked, however, on a number of occasions by simultaneous observations of the potential of a stretched wire at one metre above the ground level; the differences between the two methods of observations occasionally reached 15 per cent but the mean difference was only 4 per cent, the Wilson measurements being the greater. In view of the trouble with the apparatus it was decided that from July 1949 onwards until the end of 1955 the stretched wire observations should be the standard and that, before being used for electrograph standardisations, the Wilson observations should be corrected to allow for the differences between the two. Throughout this doubtful period the observations of potential gradient with the Wilson apparatus have

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*In practice, at present, half the potential gradient observations are made by a slightly different procedure, less desirable in principle, but giving negligibly different results; the plate is shielded, earthed and then exposed to the field and its potential measured.

been considered of sufficient value to publish, but the differences found between these observations and those made with the stretched wire apparatus must be borne in mind.

The instrument was overhauled late in 1955 and from 1 January 1956 the records and tabulations are considered reliable.

TABULATIONS

Tables 19 (for Lerwick), 39 (for Eskdalemuir) and 41 (for Kew) contain the mean values of the potential gradient for periods of 60 minutes ending at exact hours G.M.T. The entry for these hours, however, for which the mean is indeterminate because of large fluctuations, is made according to the following code:- Z+ means an indeterminate but positive value, Z- an indeterminate but negative value and Z± an hour when the gradient was indeterminate in both magnitude and sign. In addition the entry for hours when precipitation is observed or recorded is marked with an asterisk.

Mean values and sums are given for each hour and for the months and year, using only hours without precipitation and for which the entry is not Z. The number of hours used for each mean is given. Estimated values are entered in brackets and are included in the sums and means. Besides this the monthly and annual mean potential gradients are given, using only the entries for 0a days (or for "selected quiet days" at Kew Observatory). The definition of 0a days is given in the next paragraph; the definition of "selected quiet days" at Kew is as follows:- normally 10 quiet days are selected in each month, these being calendar days characterised by no negative potential gradient, no large irregular movements, no indication of inferior insulation and no large non-cyclic change. When there are not 10 quiet calendar days in a month the number can sometimes be made up by using other spells of 24 hours. The purpose of these entries is to enable comparison to be made with previous years for which corresponding information has been published.

In Tables 20, 40 and 42 (for Lerwick, Eskdalemuir and Kew respectively) the duration of negative potential is tabulated and an electrical character figure is assigned to each day.

At Kew the following scheme is used for the latter entries:-

0 denotes a day during which, midnight to midnight, no negative potential was recorded.

1 denotes the existence of negative potential at one or more times during the same period but with a total duration of less than three hours.

2 denotes negative potential extending in the aggregate to three hours or more during the same period.

Besides allocating each day a number as is done at Kew, Lerwick and Eskdalemuir observatories also allocate to each day a symbol, either "a", "b" or "c". The definition of these is as follows:-

a denotes that within the 24 periods of 60 minutes, for which an estimate of the mean potential gradient has to be made, there was in no case a range of potential gradient in the open exceeding 1000 volts per metre.

b denotes that a range of 1000 volts per metre or more was reached in one hour at least, but in fewer than six individual hours.

c denotes that a range of 1000 volts per metre or more was reached in at least six individual hours.

During periods of defective record the sign of the gradient is assumed positive when no precipitation was recorded. If precipitation was recorded for less than one hour during such defective periods, an approximate value for the duration of negative potential for that hour

has been assigned and the total for the day is given in brackets. If this cannot be done the entry for any day with a defective record is "-". When, because of oscillating gradients, there is uncertainty as to the times of change of sign, half the total duration of doubtful sign is accounted negative. When by reason of defective record there is some doubt as to the correctness of either the character number or letter or both, round brackets are put around the doubtful entry.

Table 43 contains the results of the measurements of the potential gradient, air-earth current and conductivity due to positive ions made with the Wilson apparatus at Kew. Each entry is the mean value for a period of twenty minutes centred about 1430 G.M.T. on the date in question. Monthly and annual means are also given.

It should be pointed out that the unit of potential gradient is volts per centimetre (not volts per metre as in the other tables); the unit of air-earth current is 10^{-18} ampere per square centimetre and the unit of conductivity is 10^{18} per ohm per centimetre.

NOTES ON THE RESULTS

While no detailed discussion of the results is attempted here it is perhaps of interest to point out that marked changes have occurred since around 1951; those occurring in the period 1951-59 were discussed by K.H. Stewart in the *Quarterly Journal of the Royal Meteorological Society,* 86, 1960, p.399 and attributed to the deposition on the ground of radio-active debris from nuclear explosions for test purposes. The results obtained since 1959 appear to confirm this hypothesis; the changes continue to be linked with the frequency of tests.

ATMOSPHERIC POLLUTION

On 1 January 1962 the use of the Owens atmospheric pollution recorder at Kew Observatory was discontinued and the new Warren Spring Laboratory (Department of Scientific and Industrial Research until 31.3.65, then Ministry of Technology) recorder became the standard instrument for measuring the diurnal variation of atmospheric pollution. This was foreshadowed when the new recorder was described in the Introduction to the 1961 *Observatories' Year Book.* This description is repeated below for convenience; for a description of the Owens instrument reference should be made to the Report on observations in the year 1917-18, *London Meteorological Office, Advisory Committee on Atmospheric Pollution.* The new recorder was installed during February 1961 in the building known as the Clinical House, with the level of the intake about two metres above that of the adjacent ground.

The new recorder was designed at the Warren Spring Laboratory and operates on a similar principle to their standard daily filters. Air is drawn by a small pump through a filter and thence through an air meter. The filter material is, however, a continuous roll of glass fibre "paper", and the clamp, which defines the area of the paper through which the air is drawn, can be released automatically by a time switch. When this happens the filter paper is also wound on a suitable distance, so that when the clamp is allowed to reposition itself the air is drawn through a fresh area of the paper and a new stain is produced.

The instrument is operated from an hourly time switch so that 24 stains are produced every day. The air meter is only read once a day but it has been found that by using a constant voltage transformer to supply the power for the electric pump the rate of air flow is extremely constant. During periods of light pollution a pump sucking 5·5 cu ft an hour is used but during times of heavy pollution a different pump sucking only 2·8 cu ft an hour is used.

The stains are much larger in diameter than those produced by the Owens recorder and the optical density is measured with a photoelectric reflectometer. This result is a much more

accurate and sensitive reading. It is estimated that the minimum concentration of smoke that can be reliably detected by this apparatus is about 0·005 milligrams per cubic metre whereas with the Owens instrument the limit is at least twenty times this value.

The relation between the reflectance of the glass fibre stain, the volume of air passed and the smoke concentration was not known at the beginning of this work. A reliable calibration has, however, been determined at Kew by comparing the results from daily and hourly measurements on the same day. Full details of this calibration are given in a paper by R.H..Collingbourne and H.E..Painter[1].

The new instrument was run side by side with the Owens recorder for 10 months in 1961 and considerable systematic differences were found between the results of the two instruments. These were only in part due to the greater sensitivity of the new instrument. In the table below is given the mean relation between the monthly mean hourly values of smoke concentration as found from the two instruments.

Relation between monthly mean hourly values of smoke concentration
as found by the two recording instruments in 1961
unit: milligrams per cubic metre

Owens	Warren Spring	Owens	Warren Spring
·075	·027	·16	·23
·10	·045	·20	·31
·12	·085	·30	·46
·14	·175		

It is seen that the Owens instrument reads too high at low concentrations and too low at high concentrations. It undoubtedly well underestimates the peak concentrations. A fuller discussion of the comparison between the Owens instrument and the new recorder is in preparation; meanwhile the discontinuity in the records should be noted. The average diurnal change in atmospheric pollution will also be much more accurately measured with the new instrument.

A summary of the results obtained at Kew is given in Table 44. In this table are hourly means of the concentration of suspended matter, in milligrams per cubic metre, for each month, the seasons and the year. Winter is taken as the months January, February, November and December, Spring as March and April, Summer as May to August and Autumn as September and October.

The data from this instrument are also published in a different form in the various Reports of the Warren Spring Laboratory (obtainable on request from the Director, Gunnels Wood Road, Stevenage, Hertfordshire, England). The results of the observations made with the daily smoke filters for Kew, Eskdalemuir and Lerwick are also published in these volumes.

During 1963 the highest estimate of pollution at Kew was 2·8 mg/m³, this value occurring from 22-23 hours G.M.T. on 23 January and from 00-01 hours G.M.T. on 24 January.

1·COLLINGBOURNE, R.H. and PAINTER, H.E.; A smoke filter curve for glass fibre paper type AGF/A. *Air Wat. Poll., London*, 8, 1964, p.159.

NOTE ON THE TABLES: Where figures are in italics they are maximum and/or minimum values. All times are in G.M.T.

There were six days on which the mean hourly concentration of pollution reached 1·0 mg/m^3.

The number of hours credited with 1·0 mg/m^3 was 30, of which 24 were in January, 2 in November and 4 in December.

Late in 1960 there was also installed at Kew Observatory, on behalf of Warren Spring Laboratory, apparatus for the measurement of the concentration of sulphur dioxide in the atmosphere. Air which has already been passed through the daily smoke filter is bubbled through a weak solution of hydrogen peroxide causing the sulphur dioxide to be converted to sulphuric acid and to remain in solution. The acidity of the hydrogen peroxide solution is then found by titration against a 1/250 normal solution of sodium borate, using B.D.H. 4·5 (a narrow range indicator); from this result, knowing the volume of air, the average sulphur dioxide concentration can be calculated. Measurements are made once daily and, since January 1961, the results have been passed at monthly intervals to Warren Spring Laboratory and published by them alongside the smoke pollution data (see above).

A full description of this method of measuring the sulphur dioxide concentration (together with other methods of measuring atmospheric pollution) is given in a booklet obtainable on request from the Warren Spring Laboratory and in British Standard 1747.

LERWICK

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H)   14,000γ (0·14 C.G.S. unit) +   JANUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ +
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	601	599	599	598	603	607	609	609	612	605	600	599	602	608	608	606	598	599	598	596	599	601	602	606	603	464
2 q	603	603	603	605	605	607	608	609	608	606	605	603	606	613	616	617	614	609	610	612	612	610	610	609	608	603
3	610	609	610	613	615	617	617	615	614	613	608	606	608	610	614	616	614	614	612	612	611	610	607		*612*	688
4	610	609	608	610	613	617	618	618	619	618	617	613	614	614	612	597	598	590	585	593	592	596	596	600	607	557
5	602	602	602	605	606	609	613	616	607	602	600	594	594	599	603	602	600	600	602	602	602	603	608	605	603	478
6 q	605	605	606	607	608	609	608	609	608	606	605	602	605	610	613	611	611	612	612	612	611	611	611	608	609	605
7	605	605	609	602	607	609	616	620	621	616	610	605	604	608	612	614	607	593	595	601	605	605	603	602	607	574
8	601	602	603	601	604	607	608	607	609	606	604	603	599	600	601	604	606	608	609	609	608	611	608	603	605	521
9 q	605	605	604	605	605	609	612	615	615	613	608	605	604	605	607	608	608	611	613	614	614	613	611	608	609	617
10	611	609	606	605	607	611	612	613	612	610	606	603	602	600	600	604	608	609	610	611	610	610	610	608	608	587
11	608	608	607	608	608	610	614	619	619	618	615	612	611	616	616	614	613	611	590	581	596	604	604	601	608	603
12	604	602	601	601	601	606	607	609	609	604	599	596	596	602	606	608	609	609	608	610	611	609	613	609	605	529
13 d	601	600	609	596	631	635	621	615	607	599	599	580	599	598	592	594	607	583	586	593	602	606	609	608	603	470
14 d	587	598	598	595	599	601	616	605	600	589	574	581	595	595	576	584	596	591	586	605	587	585	600	600	593	243
15 d	620	605	592	577	548	582	582	602	589	571	582	587	593	591	583	605	602	601	600	592	613	600	598	600	592	215
16	601	583	592	597	601	605	605	600	580	593	590	594	592	597	589	584	590	597	604	594	615	570	576	578	593	227
17	590	589	594	598	603	591	587	595	588	593	593	592	598	597	596	605	603	581	594	595	601	593	614	601	595	291
18	599	602	601	605	606	609	612	611	601	598	586	587	590	594	597	609	602	598	601	611	607	602	578	568	599	374
19	551	601	599	602	601	600	598	605	594	581	589	593	595	599	574	593	597	606	597	594	596	607	593	588	594	253
20	587	594	595	601	600	604	604	601	588	590	589	589	592	598	602	606	606	605	604	602	594	596	600	600	598	347
21	601	599	598	598	604	605	608	609	606	601	596	594	596	601	603	603	603	604	605	603	603	605	606	604	602	455
22	602	603	602	604	604	609	615	611	606	602	597	594	597	603	606	605	603	603	600	601	602	603	603	597	603	472
23	601	602	601	601	602	611	615	611	606	603	602	598	599	604	608	605	607	609	605	601	601	605	613	608	605	518
24	608	607	605	607	609	614	615	614	608	608	601	597	609	613	617	620	626	613	607	606	606	605	580	583	607	578
25	597	608	605	603	609	610	613	615	607	602	599	596	599	605	605	604	601	605	608	608	602	609	610	611	605	531
26	609	610	610	611	613	613	613	613	609	606	605	605	607	609	611	612	613	613	615	612	611	608	604	604	610	636
27 q	604	604	605	603	606	609	608	610	609	602	598	598	603	606	607	606	605	605	604	604	602	602	604	603	604	507
28 q	604	604	605	607	608	608	608	608	608	607	604	604	608	614	613	608	607	607	607	607	606	608	609	606	607	575
29	607	608	609	611	612	612	612	611	607	605	604	606	610	611	610	607	608	610	615	605	592	589	583	613	607	557
30 d	603	602	593	598	607	632	620	622	615	580	583	592	607	617	625	599	600	599	607	607	596	584	582	534	600	404
31 d	503	485	523	573	642	613	554	527	519	502	513	552	582	644	747	741	697	728	633	574	570	580	582	584	*590*	168
Mean	598	599	600	601	606	609	608	608	603	598	596	*596*	601	606	609	*609*	608	607	604	602	603	601	601	599	603	
Sum 18,000+	540	562	594	647	787	881	848	844	700	549	481	480	616	781	869	891	859	823	722	668	678	641	630	556		Grand Total 448,647

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D)   9° +   JANUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0′+
1	29·1	29·1	29·7	29·4	30·8	30·6	29·9	29·9	30·2	31·0	31·9	31·8	34·0	34·5	34·4	34·2	34·9	33·0	30·5	29·5	27·9	28·9	28·7	29·2	31·0	143·1
2 q	30·0	30·1	30·1	30·5	30·5	30·6	30·8	30·7	30·7	30·7	31·1	31·8	33·2	33·5	32·5	32·1	31·9	31·6	31·0	31·1	30·7	29·9	29·9	30·3	31·1	145·3
3	30·3	30·3	30·4	30·7	31·2	30·9	30·7	30·6	30·5	31·4	32·4	33·6	33·8	33·9	32·4	32·4	32·4	32·7	32·8	32·3	31·3	30·4	29·9	29·7	31·5	157·0
4	27·6	28·6	30·4	30·9	31·3	32·0	31·5	31·0	30·7	31·3	32·2	33·5	35·2	34·6	34·0	34·0	39·1	36·6	35·0	27·8	28·1	29·4	28·8	30·2	*31·8*	163·8
5	30·4	30·6	31·1	31·1	31·3	31·5	31·1	30·4	30·0	30·8	33·1	34·8	35·3	35·7	33·9	32·4	31·9	31·2	31·3	30·7	30·2	29·2	28·3	30·4	31·5	156·7
6 q	30·5	30·7	30·6	30·7	30·7	30·8	30·4	30·3	30·3	30·3	31·2	32·0	33·0	33·0	32·5	31·9	31·7	31·6	31·4	31·2	30·8	30·4	30·4	30·8	31·1	147·2
7	29·4	31·7	28·5	29·9	30·0	30·7	31·7	30·9	29·9	29·9	30·3	32·4	33·8	35·0	34·3	35·0	35·0	30·3	32·9	31·3	29·8	29·8	29·4	29·5	31·4	152·7
8	29·8	29·9	30·5	31·0	30·7	30·0	29·9	30·1	30·2	29·9	30·3	31·7	33·6	33·9	32·9	31·6	31·7	31·8	31·9	31·6	27·5	27·5	28·0	29·2	30·6	135·2
9 q	30·2	30·8	30·9	31·0	30·9	30·3	30·3	30·0	29·7	30·0	30·8	32·2	33·9	33·5	33·0	32·3	31·9	31·8	31·1	30·5	30·0	30·0	30·0	29·5	31·0	144·6
10	28·6	29·6	29·0	29·1	29·5	29·9	30·8	30·5	30·1	30·1	30·7	31·4	33·9	34·6	34·5	33·7	32·3	31·9	31·5	30·8	30·3	30·3	30·4		31·0	143·6
11	30·8	30·8	31·1	31·1	31·1	31·3	31·1	30·6	30·3	30·1	30·5	31·8	33·8	35·2	35·3	33·6	34·3	34·7	32·0	26·0	28·5	30·3	30·2	29·8	31·4	154·3
12	30·9	31·4	30·5	29·9	30·9	31·0	30·5	30·1	29·8	30·0	30·4	31·2	32·5	33·4	33·0	32·4	31·9	33·7	34·3	32·3	31·6	23·7	24·5	26·4	30·7	136·3
13 d	29·1	11·5	28·0	30·9	30·3	30·4	33·9	38·2	33·8	36·7	33·6	31·6	33·8	33·5	32·5	29·0	31·2	30·3	25·6	29·2	27·1	26·7	23·0	27·3	29·9	117·2
14 d	22·2	26·4	25·4	30·7	27·3	33·4	31·2	31·7	31·1	30·3	30·3	26·4	30·9	14·5	19·9	26·5	6·9	19·7	26·6	30·1	28·7				*27·2*	51·7
15 d	32·5	28·0	28·0	28·1	36·3	38·1	37·7	34·1	35·8	34·6	34·8	31·8	31·3	32·5	30·5	30·2	31·8	31·3	30·1	29·1	19·9	23·6	25·1	29·1	31·0	144·3
16	31·4	34·5	25·4	27·1	28·0	28·9	30·9	31·2	33·4	34·8	32·8	31·6	30·2	31·5	28·8	20·9	28·3	31·4	31·2	27·5	2·2	16·2	25·9	27·5	28·0	71·6
17	25·6	29·0	29·5	30·2	29·0	30·2	36·3	37·7	31·4	32·8	32·4	31·3	32·0	32·6	30·3	30·7	31·7	15·2	27·9	30·3	28·0	26·5	26·0	28·3	29·8	114·9
18	29·3	32·3	31·0	27·1	29·0	30·8	30·0	30·7	29·6	30·6	30·5	31·9	33·7	33·9	30·3	31·1	31·9	29·0	30·4	28·1	27·2	25·1	18·9	27·0	29·6	109·4
19	32·0	28·4	26·5	28·7	29·9	31·0	31·7	31·1	29·8	28·7	30·0	31·0	33·5	34·0	32·6	31·9	32·6	21·9	27·1	30·7	27·5	18·4	22·3	22·3	28·9	93·6
20	27·8	31·1	30·7	30·2	30·6	30·2	30·6	31·8	32·3	32·9	30·3	31·8	35·0	33·3	31·2	30·5	30·8	30·8	30·5	30·4	29·2	27·9	28·6	29·7	30·8	138·2
21	30·3	29·2	29·5	30·3	29·8	29·5	29·4	29·6	29·5	29·3	29·6	30·7	32·4	32·8	31·7	31·0	30·9	30·5	30·4	30·4	29·7	29·5	30·6	30·6	30·3	127·2
22	30·4	31·4	30·4	30·2	30·4	30·6	30·4	30·0	30·0	29·5	30·2	31·1	32·4	32·4	31·5	30·9	31·4	31·4	31·4	30·9	30·9	30·7	29·5	29·5	30·6	135·5
23	29·4	27·4	27·1	26·6	29·5	30·3	30·9	30·4	30·2	30·4	31·8	32·4	33·4	34·2	32·4	31·3	30·9	31·3	31·3	29·3	29·2	28·2	26·6	30·4	30·2	124·9
24	30·0	30·9	31·4	32·0	31·9	31·8	30·4	30·4	29·8	30·0	31·5	30·6	33·7	34·3	33·3	32·0	31·9	33·5	31·9	31·6	27·7	21·2	22·4	27·0	30·5	131·2
25	24·0	26·6	26·8	31·4	31·9	31·6	30·5	30·5	29·0	29·5	30·6	32·2	34·3	33·3	32·2	31·9	30·9	30·0	25·3	26·5	28·8	29·9	30·4	30·6	29·9	118·7
26	30·5	30·4	30·6	31·3	31·6	31·1	30·6	30·0	29·9	30·6	30·9	31·7	32·3	32·2	31·5	30·9	31·1	31·0	31·1	30·4	30·6	30·2	30·6	30·9	30·9	141·7
27 q	30·7	30·7	30·9	31·1	31·2	31·0	30·7	30·5	30·4	31·5	32·8	33·3	33·5	33·0	32·0	31·2	31·4	31·3	31·3	31·2	30·6	30·7	30·9	31·0	31·4	152·9
28 q	31·1	31·2	31·1	31·6	31·0	31·5	31·4	30·9	31·6	32·0	32·8	33·4	33·7	33·5	31·8	31·9	32·3	32·0	31·8	31·3	30·9	30·8	30·1	31·0	31·7	160·7
29	30·9	30·6	30·6	31·1	31·2	31·3	30·9	31·0	31·1	32·4	33·3	33·8	34·4	34·0	34·0	34·0	33·8	33·8	32·9	31·0	28·2	24·9	21·6	24·9	31·1	145·7
30 d	27·7	26·9	29·2	27·7	29·2	28·2	27·4	30·6	33·7	32·5	38·0	36·4	40·2	33·7	37·2	42·5	41·3	35·1	28·7	32·5	26·3	17·0	20·0	19·0	30·9	140·6
31 d	11·7	3·5	-5·5	-1·6	9·0	33·5	40·3	44·3	39·7	39·0	40·2	35·7	33·5	36·4	42·2	35·9	29·8	38·5	35·0	26·7	28·8	30·3	29·1	28·3	28·5	84·3
Mean	28·9	28·5	28·4	29·0	29·9	31·1	31·4	31·6	31·1	31·4	32·0	32·2	33·5	*33·7*	33·0	32·1	31·9	30·9	30·8	29·3	27·7	*27·2*	27·4	28·7	30·5	
Sum 800·0+	94·2	83·6	79·4	100·0	126·0	163·0	173·9	179·8	164·5	173·9	192·3	196·9	240·2	245·8	223·0	196·3	187·5	159·1	156·1	109·1	58·3	42·8	50·2	88·2		Grand Total 22684·1

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

19

3 LERWICK (Z)   47,000γ (0·47 C.G.S. unit) +   JANUARY 1963

Day	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	357	357	357	357	357	355	357	356	354	357	357	352	351	351	357	362	370	371	375	375	370	366	359	351	359	627
2 q	353	355	355	354	355	356	357	357	358	358	357	356	353	352	353	353	357	358	358	358	358	358	357	356	356	542
3	355	354	353	352	349	352	352	353	354	354	353	353	353	353	352	352	356	359	360	360	362	360	359	359	355	519
4	356	354	353	351	348	348	351	353	353	354	354	354	353	354	355	367	384	414	424	416	394	376	367	364	367	797
5	363	361	358	358	356	354	353	354	358	361	361	360	359	361	359	362	363	363	360	361	361	360	357	357	359	620
6 q	357	357	356	353	351	351	351	352	354	357	358	358	358	358	357	356	353	352	351	351	352	355	355	356	355	509
7	356	347	335	345	343	344	343	345	346	348	350	356	356	356	356	356	366	385	376	368	362	358	358	358	355	513
8	357	356	352	353	353	352	351	351	348	350	353	354	356	358	358	357	356	355	353	357	358	352	352	356	354	498
9 q	357	356	357	355	355	352	350	348	348	348	350	352	353	356	356	357	356	355	352	350	350	350	351	351	353	465
10	350	348	346	348	348	348	348	347	346	346	347	349	351	354	358	358	357	357	356	355	353	351	350	350	351	421
11	352	352	354	353	354	353	353	351	348	345	347	349	346	346	350	354	357	358	364	408	436	401	376	366	365	362	685
12	362	362	363	362	358	352	358	358	356	354	354	353	354	354	358	360	360	361	362	364	369	360	360	362	632
13 d	357	316	311	304	274	291	322	335	340	347	352	366	363	359	371	378	371	393	394	383	378	360	341	297	346	303
14 d	303	300	317	333	323	325	333	349	359	364	372	390	366	366	379	392	402	398	394	374	346	354	341	340	355	520
15 d	321	316	338	341	297	290	305	336	349	360	361	366	367	373	375	372	372	371	372	382	362	363	362	353	350	404
16	329	267	286	329	341	345	348	348	360	349	353	359	366	361	380	403	391	372	366	375	369	344	310	298	348	349
17	315	331	336	342	341	349	340	346	364	371	366	366	361	363	366	365	379	402	379	373	363	356	344	340	357	558
18	338	326	323	332	331	326	332	338	348	357	361	357	375	369	369	365	369	375	373	366	355	344	323	270	347	322
19	239	293	328	341	345	348	348	353	361	373	372	364	362	368	387	387	381	394	389	394	392	374	353	335	358	581
20	342	344	354	353	353	353	353	353	356	356	356	359	360	361	368	362	359	356	356	358	364	365	363	361	357	565
21	363	363	362	356	354	355	353	354	355	356	359	361	360	363	361	360	359	358	356	358	359	359	356	357	358	597
22	356	354	350	353	352	348	346	347	353	353	349	343	333	331	327	327	355	355	358	358	360	360	360	359	349	387
23	345	336	342	345	345	345	343	346	351	354	355	359	361	361	361	361	360	360	360	361	361	359	344	346	353	461
24	350	352	352	352	352	348	344	344	348	348	352	357	366	360	356	355	356	365	376	377	403	406	317	285	355	521
25	300	323	340	347	347	350	353	349	352	349	341	355	355	360	364	365	367	366	364	358	358	355	354	354	351	426
26	354	355	356	356	353	354	353	351	351	351	351	352	350	354	356	357	356	356	354	353	350	344	344	345	352	456
27 q	345	347	349	349	349	349	349	348	347	347	348	348	348	348	351	353	354	354	354	354	353	351	351	351	350	397
28 q	350	350	351	352	352	353	353	352	349	348	349	349	349	351	353	358	359	359	358	357	356	351	351	351	353	461
29	349	349	350	351	351	352	351	351	351	350	349	348	347	349	351	353	357	357	359	365	384	386	385	337	355	532
30 d	344	337	349	324	321	307	321	324	329	344	338	343	357	397	379	385	395	407	402	378	392	434	392	295	358	594
31 d	246	224	241	233	184	175	192	225	282	320	340	362	391	445	544	540	513	539	522	464	414	387	382	370	356	535
Mean	339	337	341	343	338	338	341	344	349	353	354	356	357	361	367	369	371	375	375	372	368	364	354	343	355	
Sum 10,000+	521	442	574	634	488	480	561	671	825	931	967	1047	1080	1196	1371	1435	1491	1631	1621	1539	1404	1288	973	627		Grand Total 263,797

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK   All Times G.M.T.   JANUARY 1963

| Day | | GEOMAGNETIC ELEMENTS | | | | | | | | | | | 3-hr range indices K | Sum of K indices | Geo-magnetic character of day, C (0-2) | Temperature in magneto-graph house 200°A+ |
| | Horizontal component | | | Declination | | | Vertical component | | | | | | | | |
	Maximum 14,000γ +	Minimum 14,000γ +	Range	Maximum '9° +	Minimum 9° +	Range	Maximum 47,000γ +	Minimum 47,000γ +	Range					
	h. m. γ	γ h. m.	γ	h. m. '	' h. m.	'	h. m. γ	γ h. m.	γ					°A.
1	08 26 615	591 16 23	24	16 05 36·8	26·8 20 22	10·0	18 22 376	348 23 40	28	0,1,1,0,1,2,2,1	8	0	76·3
2 q	14 35 618	600 11 59	18	12 52 33·9	28·3 21 58	5·6	19 08 364	347 04 38	8	0,0,0,0,1,1,0,0	2	0	76·0
3	05 45 621	604 11 32	17	13 01 34·8	29·0 23 51	5·8	19 08 364	347 04 38	17	0,0,0,1,1,0,0,0	2	0	76·0
4	00 52 626	580 18 31	46	17 10 43·9	24·6 00 49	19·3	18 10 429	347 04 57	82	2,1,0,0,1,3,3,0	10	1	78·6
5	07 42 618	591 12 07	27	13 10 36·5	25·1 21 55	11·4	00 15 366	352 06 36	14	0,0,1,0,1,0,0,2	4	0	82·0
6 q	17 45 616	601 11 15	15	13 08 33·5	30·0 08 04	3·5	11 17 359	350 05 36	9	0,0,0,0,0,0,0,0	0	0	82·0
7	07 49 623	584 17 30	39	15 59 36·7	24·4 17 34	12·3	17 20 394	331 02 02	63	2,1,1,0,1,3,1,0	9	0	82·1
8	21 44 616	597 12 21	19	13 03 34·3	23·7 21 42	10·6	20 21 362	346 08 28	16	0,0,0,1,1,0,2,2	6	0	81·8
9 q	07 47 617	602 13 12	15	12 22 34·6	28·7 23 58	5·9	02 52 358	346 09 08	12	0,0,0,0,0,0,0,1	1	0	81·7
10	07 16 616	597 14 02	19	14 16 35·2	28·0 00 05	7·2	15 42 360	344 01 59	16	1,1,1,0,0,0,0,0	3	0	82·0
11	14 43 624	572 19 25	52	18 06 37·2	23·8 19 37	13·4	19 04 447	344 11 33	103	0,0,0,0,2,2,3,1	8	1	81·6
12	23 04 624	594 12 08	30	18 26 35·4	18·8 21 44	16·6	21 43 379	350 05 26	29	0,1,0,0,0,1,2,3	7	0	82·4
13 d	04 45 661	556 11 08	105	07 51 42·1	-5·5 01 32	47·6	17 53 415	249 04 37	166	5,4,3,3,2,3,3,3	26	1	82·5
14 d	19 21 667	543 11 08	124	14 03 36·7	-17·3 19 15	54·0	19 13 419	292 01 19	127	3,3,3,3,3,4,5,3	27	2	84·3
15 d	00 44 639	534 04 09	105	06 03 48·7	9·7 20 12	39·0	20 00 392	274 04 36	118	3,4,4,2,2,2,4,3	24	1	84·4
16	20 29 644	548 23 25	96	01 08 37·1	-6·8 20 23	43·9	15 18 411	250 01 33	161	3,1,2,2,3,4,5,4	24	1	85·6
17	22 24 629	564 08 23	65	07 37 40·3	4·2 17 38	36·1	17 40 416	304 00 00	112	2,2,3,1,2,4,3,3	20	1	85·5
18	19 56 638	512 23 15	126	23 58 41·1	12·6 22 57	28·5	10 32 363	211 23 54	152	2,2,2,2,2,2,3,4	19	1	85·8
19	17 38 630	515 00 31	115	00 00 40·0	11·1 17 29	28·9	17 27 412	220 00 00	192	4,1,2,2,3,4,2,3	21	1	85·8
20	16 05 609	582 08 25	27	12 37 35·7	23·8 00 00	11·9	20 52 369	335 00 02	34	2,0,1,2,1,0,1,1	8	0	86·0
21	07 29 611	591 12 19	20	12 34 33·1	27·5 21 03	5·6	00 28 363	351 04 34	12	0,0,0,0,0,0,0,0	0	0	86·4
22	06 14 617	591 23 59	26	01 56 33·9	26·0 24 00	7·9	00 20 359	325 15 15	34	1,0,0,0,0,0,0,1	2	0	87·1
23	22 21 626	585 00 20	41	13 30 35·4	23·8 22 35	11·6	15 58 365	318 01 00	47	2,1,1,1,1,1,0,2	9	1	86·7
24	21 08 630	550 22 18	80	17 47 34·7	10·8 22 28	23·9	21 07 439	261 22 59	178	3,1,1,0,2,3,4	11	1	86·6
25	19 00 628	588 00 48	40	12 56 34·9	16·6 18 53	18·3	18 45 371	280 00 03	91	3,1,1,0,1,1,3,0	10	1	86·5
26	18 51 617	602 11 39	15	13 09 32·6	28·9 19 43	3·7	16 21 359	344 21 46	15	0,0,0,0,0,0,0,0	0	0	86·5
27 q	07 30 611	596 11 10	15	12 22 34·1	29·9 20 08	4·2	18 56 356	344 00 35	12	0,0,0,0,0,0,0,0	0	0	81·8
28 q	22 01 618	601 10 58	17	12 59 34·4	28·9 22 17	5·5	16 53 360	346 10 01	14	0,0,0,1,0,0,0,1	2	0	80·1
29	23 31 631	570 21 56	61	12 39 35·1	16·6 22 07	18·5	22 19 397	322 23 32	75	0,0,0,1,0,0,2,3	6	1	79·2
30 d	21 12 670	489 23 38	181	12 51 47·0	3·5 23 55	43·5	21 23 463	245 23 46	218	2,3,3,3,3,2,3,5	24	1	78·5
31 d	17 11 823	451 00 36	372	14 18 49·4	-9·5 02 13	58·9	15 14 581	168 05 50	413	5,5,3,4,5,5,4,2	33	2	77·4
Mean	- - 633	570 - -	63	- - 37·4	17·6 - -	19·8	- - 393	310 - -	83	-	-	0·55	82·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H)   14,000γ (0·14 C.G.S. unit) +   FEBRUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 13,000γ+
1	589	588	588	589	590	593	594	597	585	585	582	584	590	581	586	589	588	590	580	580	588	576	603	593	588	1108
2 q	597	598	597	602	602	602	602	601	602	603	603	604	607	609	610	606	605	605	606	603	597	602	602	602	603	1467
3	604	603	603	603	606	607	607	606	601	601	600	599	603	603	602	603	601	601	604	604	607	609	607		604	1491
4	608	608	608	610	612	615	613	612	608	604	601	601	603	607	613	612	617	613	603	606	605	603	603	606	608	1591
5	609	609	608	609	610	610	611	611	610	604	599	595	591	594	593	598	601	608	609	611	605	602	607	606	605	1510
6	608	609	603	604	608	615	613	616	615	610	607	603	599	598	599	601	604	607	609	610	609	609	609	609	607	1574
7	608	607	606	609	610	613	616	616	613	605	604	595	593	594	599	603	607	610	610	612	606	602	601	605	606	1544
8 q	608	607	607	607	608	611	613	612	611	611	613	613	613	611	610	609	609	610	611	612	611	611	610	611	610	1649
9	612	612	613	613	614	615	615	615	615	619	619	621	622	622	622	619	621	625	620	622	626	619	612	603	617	1816
10 d	534	539	473	564	585	603	602	573	581	589	586	587	606	615	617	600	588	594	586	587	589	594	589	575	582	963
11 d	581	598	591	591	591	572	590	607	601	585	587	596	584	601	608	600	600	599	601	597	601	591	597	602	595	1271
12 d	600	585	602	599	591	603	597	598	578	601	603	601	599	603	599	611	605	610	601	604	606	601	597	601	600	1395
13 d	609	596	591	581	587	597	579	593	597	594	597	592	583	594	605	620	608	609	603	632	581	591	615	609	598	1363
14 d	600	587	587	590	583	595	608	605	557	604	603	596	595	591	593	596	607	606	608	617	618	605	605	614	599	1370
15	605	601	598	602	604	606	605	609	604	602	598	596	598	591	595	605	604	605	602	604	603	605	605	606	602	1453
16	604	604	603	602	603	605	604	603	604	606	603	606	605	597	599	599	591	598	603	608	609	609	607	607	603	1479
17	606	606	605	606	606	610	612	612	613	609	606	601	597	600	604	604	606	608	612	613	614	612	609	613	608	1584
18	609	609	609	609	610	611	614	617	616	611	606	605	606	606	606	608	605	609	612	615	612	615	616	616	611	1652
19 q	613	612	612	612	613	616	617	619	619	615	611	608	607	612	611	610	612	612	616	618	620	620	619	618	614	1742
20	616	617	617	620	619	620	623	625	623	619	613	610	610	609	605	606	612	615	617	609	606	602	578	611	613	1702
21	605	606	607	610	610	612	611	607	604	602	604	607	606	607	607	615	600	601	596	606	608	605	602	606	606	1544
22	606	607	606	606	606	608	610	611	602	602	604	605	602	609	612	612	607	610	605	606	602	623	612	612	608	1595
23	612	612	612	613	617	618	619	616	616	614	612	609	600	609	609	613	594	601	604	611	612	613	612	612	611	1660
24 q	612	612	611	608	609	612	612	615	613	610	604	600	601	604	608	610	611	610	612	613	615	617	616	612	610	1647
25	610	615	609	608	608	611	612	613	614	610	606	606	610	608	611	614	607	609	609	613	615	615	615	614	611	1662
26	613	613	612	611	610	616	617	621	616	605	598	597	599	603	604	602	602	606	612	613	612	613	615	611	609	1621
27 q	610	611	611	612	613	615	613	613	613	606	604	602	605	608	612	613	613	612	612	612	613	613	612	616	611	1664
28	613	617	612	610	613	616	618	618	618	608	609	607	606	611	609	612	616	615	615	616	618	620	620	607	613	1724
Mean	604	603	600	604	605	608	609	610	605	605	603	601	601	603	605	607	605	607	606	609	608	607	607	607	605	
Sum 16,000+	901	888	801	900	938	1027	1047	1071	949	934	882	843	840	897	948	990	941	998	978	1054	1018	995	997	1004		Grand Total 406,841

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D)   9° +   FEBRUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0′+
1	28·1	27·2	28·2	28·7	29·2	29·4	29·6	29·9	33·5	37·5	36·4	38·3	35·4	37·1	35·6	33·3	31·9	29·7	28·3	28·7	26·6	19·7	29·6	28·5	30·9	140·4
2 q	29·7	29·8	29·2	29·6	30·1	30·4	30·6	30·6	31·6	32·5	33·0	33·0	32·9	31·9	31·0	30·6	30·8	31·1	30·9	30·9	28·1	30·4	30·3	29·6	30·8	138·6
3	29·6	30·1	30·4	30·2	29·6	30·0	29·2	29·5	30·1	31·9	33·5	34·9	35·4	34·6	33·1	31·7	31·1	30·1	30·0	28·7	28·7	30·1	30·1	30·6	31·0	143·2
4	31·1	31·1	30·9	30·6	30·4	30·1	30·0	29·6	29·6	30·4	31·8	32·9	33·9	34·4	34·3	32·8	32·7	33·2	34·0	32·5	25·8	27·2	29·4	30·4	31·2	149·1
5	30·4	30·2	30·4	30·3	30·2	29·8	29·2	29·2	29·0	29·7	30·8	32·3	33·8	34·7	35·0	36·9	34·0	31·9	30·9	30·6	29·0	27·3	27·8	29·3	30·9	142·7
6	29·6	30·5	31·4	31·3	31·0	30·1	30·0	29·5	29·3	28·9	30·2	31·9	33·5	34·5	35·1	34·7	35·1	32·8	31·8	30·4	30·1	29·0	28·9	29·6	31·2	149·2
7	30·0	30·4	31·0	31·5	31·1	31·0	30·5	30·2	29·5	29·1	29·9	30·6	32·7	33·0	33·1	32·2	32·0	31·9	31·6	31·5	27·7	29·3	26·7	28·7	30·6	135·2
8 q	29·6	29·8	30·3	30·0	30·3	30·3	30·6	30·5	30·5	30·4	31·6	31·9	32·0	32·3	32·3	31·6	31·5	31·1	30·8	30·6	30·6	30·5	30·4	30·3	30·8	139·8
9	30·5	30·5	30·6	30·8	30·9	30·9	31·0	31·2	32·0	32·0	32·0	32·1	32·4	32·4	32·3	31·1	32·1	32·9	33·2	33·0	33·1	29·7	25·7	14·0	30·5	135·0
10 d	16·0	12·4	17·7	18·9	23·3	21·1	30·3	33·5	35·4	34·0	34·1	34·7	37·9	32·3	33·2	33·8	27·4	27·7	25·7	13·8	19·1	30·6	23·8	35·6	27·2	52·3
11 d	36·7	36·5	31·8	30·2	29·8	32·3	30·2	29·4	30·4	32·0	30·8	33·0	33·3	32·4	34·1	31·9	21·0	27·9	30·7	20·9	16·0	22·8	28·4	33·2	29·8	115·7
12 d	32·5	39·3	35·9	25·7	28·9	32·1	34·0	33·9	32·2	33·6	33·9	34·5	33·6	32·5	30·7	30·7	30·5	29·3	26·6	22·3	22·5	23·8	25·7	27·7	30·5	132·4
13 d	30·4	32·0	32·6	33·0	31·3	32·3	30·3	35·2	34·3	34·1	33·5	33·6	31·4	34·3	32·4	26·2	19·5	20·8	27·7	10·9	18·6	28·6	24·3	28·7	29·0	96·0
14 d	24·1	26·9	28·7	28·8	29·2	31·5	30·9	31·4	35·2	32·6	33·5	34·1	33·0	33·2	30·6	28·7	24·8	29·6	28·8	26·6	25·7	29·2	29·0	27·1	29·7	113·2
15	28·8	29·6	29·5	29·7	29·8	29·9	30·1	30·2	31·2	31·5	32·6	33·1	33·7	32·8	31·1	31·1	30·4	29·0	27·8	31·1	30·4	29·6	29·7	29·7	30·5	132·4
16	29·5	29·6	29·3	29·3	29·7	29·7	29·7	29·8	30·6	31·6	31·6	32·1	32·3	31·6	31·4	31·4	25·5	29·7	31·2	30·7	30·6	30·4	30·1	30·0	30·3	127·4
17	29·8	29·8	29·7	30·0	30·1	30·2	30·4	30·8	31·5	31·6	31·6	31·7	32·3	32·6	32·8	31·9	31·4	30·7	31·0	30·8	30·8	30·5	29·7	29·5	30·9	141·2
18	29·6	29·7	29·5	29·6	29·6	29·8	30·3	30·5	30·8	31·6	32·5	33·3	33·5	33·6	32·8	31·9	30·4	30·3	31·3	31·9	31·1	30·6	30·8	30·4	31·1	145·4
19 q	29·9	30·0	30·3	30·4	30·5	30·4	30·4	30·4	30·4	30·4	30·8	31·9	32·3	33·0	32·7	32·4	32·1	32·2	31·9	31·8	31·8	31·6	30·9	30·7	31·2	149·2
20	30·6	29·1	29·2	27·1	27·7	28·7	29·6	31·4	31·8	31·9	31·9	32·7	33·1	34·9	34·7	33·3	33·2	33·6	33·3	31·8	30·0	28·5	21·9	20·6	30·4	130·6
21	29·1	29·5	28·7	28·7	29·1	29·2	29·8	31·0	32·1	32·5	33·0	33·1	33·3	33·0	32·8	33·8	31·4	31·3	31·4	30·9	30·6	29·6	29·7	29·7	30·9	141·3
22	30·2	30·3	30·2	30·3	30·9	29·6	29·3	30·4	30·4	31·6	31·5	33·1	33·6	33·7	33·3	31·8	31·3	30·8	29·7	27·8	30·5	27·5	29·5	29·7	30·7	137·0
23	29·6	29·8	30·2	30·2	30·4	30·5	30·6	32·9	31·7	31·5	31·7	33·5	33·2	32·7	31·7	31·6	30·6	30·2	29·7	29·7	29·8	29·9	29·6	29·8	30·9	141·1
24 q	30·0	30·0	30·3	30·0	30·3	29·8	29·8	29·5	28·7	28·7	30·0	31·8	33·0	32·9	32·4	31·5	30·9	31·2	31·5	30·9	30·6	30·4	29·2	25·9	30·4	129·7
25	26·1	31·4	29·4	27·6	27·2	29·0	29·7	29·6	29·2	29·5	30·6	32·3	33·7	33·7	32·7	32·1	30·9	31·1	30·6	30·5	30·5	30·2	29·8	29·6	30·3	127·0
26	29·4	29·5	29·9	29·7	29·6	29·5	30·6	30·1	30·6	32·0	33·6	33·6	34·5	34·6	33·5	33·4	31·1	30·6	30·9	30·6	30·0	28·8	28·7	29·6	31·0	144·4
27 q	29·7	29·4	29·6	29·6	29·5	29·6	29·7	29·9	29·8	30·0	31·1	32·5	33·7	34·0	33·3	31·7	30·7	31·1	31·3	31·4	30·6	29·8	29·7	28·7	30·7	136·4
28	30·4	29·6	29·4	30·2	30·8	28·7	28·7	29·1	29·2	29·8	31·6	33·5	33·9	34·1	34·2	31·9	31·6	31·7	31·0	30·8	30·2	30·4	30·3	25·6	30·7	136·7
Mean	29·3	29·8	29·8	29·3	29·7	29·9	30·2	30·7	31·1	31·5	32·1	33·1	33·5	33·5	32·9	32·0	30·2	30·5	30·5	28·7	28·2	28·8	28·5	28·7	30·5	
Sum 700·0+	121·0	134·0	134·3	121·8	130·4	135·9	145·0	159·0	169·8	182·9	199·1	226·0	237·3	236·8	222·2	196·0	145·9	153·5	153·6	102·1	89·1	106·0	98·1	102·8	30·8	Grand Total 20502·6

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21

3 LERWICK (Z)   47,000γ (0·47 C.G.S. unit) +   FEBRUARY 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
1	365	366	369	367	366	366	368	367	371	362	366	366	373	387	392	401	408	412	412	403	388	368	309	321	374	973
2 q	353	357	359	358	357	357	357	360	359	360	363	365	363	361	360	360	360	359	360	362	366	362	362	363	360	643
3	360	360	357	357	357	357	357	358	359	362	362	361	360	361	363	362	363	363	363	365	363	361	359	359	360	649
4	358	359	358	357	357	356	356	357	357	358	361	359	357	357	357	352	352	368	361	366	374	371	367	364	360	639
5	362	359	360	357	357	357	355	355	358	362	363	366	370	371	368	366	363	359	359	358	359	361	357	357	361	659
6	360	358	359	355	355	355	355	355	356	356	355	356	357	361	363	363	363	360	358	356	357	356	356	355	357	580
7	358	358	358	355	355	353	351	351	351	351	351	351	351	351	353	354	379	370	368	368	370	368	367	363	359	605
8 q	365	368	369	369	369	367	365	362	361	356	356	345	346	347	349	353	355	355	355	352	352	352	351	351	357	570
9	352	353	354	355	355	353	352	349	348	346	346	346	346	346	349	352	353	352	353	352	350	355	376	379	353	472
10 d	335	295	253	248	290	316	325	337	340	350	356	363	398	436	403	398	400	397	404	407	375	275	332	313	348	346
11 d	289	304	338	358	362	351	331	338	346	354	361	364	369	367	373	390	409	392	377	387	368	345	340	319	355	532
12 d	336	311	285	307	329	330	342	353	370	361	357	358	360	367	367	367	368	370	376	382	375	345	309	309	347	334
13 d	297	309	328	331	344	347	337	352	358	369	371	377	306	387	377	406	428	405	383	364	370	367	343	311	360	647
14 d	302	310	333	340	347	354	359	360	374	357	354	359	364	369	377	377	383	372	371	364	357	357	357	351	356	548
15	349	353	357	357	357	357	358	357	358	357	358	360	367	376	381	367	367	368	371	365	365	361	360	357	362	683
16	357	357	357	358	357	357	357	358	357	354	354	354	357	358	359	366	384	373	365	362	361	360	361	360	360	643
17	358	357	357	356	356	354	354	353	353	354	354	354	355	354	353	353	356	359	356	357	358	359	360	353	356	533
18	354	354	354	355	353	353	353	352	352	354	353	351	348	349	351	353	356	358	356	356	358	357	358	357	354	495
19 q	356	356	355	353	353	351	349	349	348	346	346	346	347	346	347	350	351	353	352	352	352	354	355	356	351	423
20	355	353	349	342	343	342	342	339	340	342	346	350	352	353	355	356	354	354	355	368	371	376	371	344	352	452
21	351	357	356	355	353	350	349	348	345	347	346	348	352	355	358	362	375	379	378	369	366	365	365	362	358	591
22	358	356	355	355	354	349	348	346	348	346	348	348	352	353	354	357	359	354	361	359	353	345	349	351	352	458
23	351	352	352	353	352	351	348	344	340	339	339	341	346	347	353	356	373	368	359	355	352	351	352	351	351	425
24 q	354	355	355	355	355	353	352	351	348	345	345	345	350	353	355	359	359	358	355	353	353	352	352	354	353	466
25	352	341	338	345	348	348	348	346	345	344	343	343	345	350	353	356	359	357	356	355	351	350	349	348	349	370
26	350	350	351	353	353	351	346	344	344	341	340	340	343	351	358	365	368	365	359	356	355	352	347	348	351	430
27 q	351	351	355	356	356	355	355	354	351	346	344	343	341	344	350	353	355	357	358	357	356	355	353	347	352	443
28	347	344	347	352	346	347	347	350	350	352	349	346	344	347	351	354	355	355	355	355	355	354	353	358	351	413
Mean	348	347	347	349	351	351	351	352	353	353	353	354	357	361	362	365	370	368	366	365	362	355	353	349	356	
Sum 9000+	735	703	718	759	836	837	816	845	887	871	887	905	999	1104	1129	1208	1355	1292	1236	1205	1130	934	870	761		Grand Total 239,022

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK   All Times G.M.T.   FEBRUARY 1963

	Horizontal component			Declination			Vertical component			3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+
	Maximum 14,000γ+ (h.m. / γ)	Minimum 14,000γ+ (γ / h.m.)	Range	Maximum 9°+ (h.m. / °)	Minimum 9°+ (° / h.m.)	Range	Maximum 47,000γ+ (h.m. / γ)	Minimum 47,000γ+ (γ / h.m.)	Range				°A.
1	22 25 — 642	564 — 22 11	78	13 19 — 39·3	14·0 — 21 13	25·3	17 26 — 416	274 — 22 37	142	0,0,1,2,2,2,2,4	13	1	77·8
2 q	14 27 — 613	591 — 20 14	22	10 26 — 33·2	23·9 — 20 17	9·3	20 29 — 372	346 — 00 00	26	0,0,0,0,0,0,2,0	2	0	77·9
3	22 18 — 614	596 — 11 33	18	12 42 — 35·9	27·7 — 20 45	8·2	14 32 — 366	354 — 05 52	12	0,0,0,0,0,0,1,0	1	0	78·0
4	16 50 — 620	597 — 20 51	23	13 28 — 34·8	18·0 — 20 38	16·8	20 51 — 380	361 — 23 49	19	0,0,0,0,0,0,3,2	5	0	77·6
5	06 37 — 612	587 — 12 34	25	15 27 — 37·9	26·2 — 21 36	11·7	00 00 — 364	356 — 24 00	8	0,0,0,0,0,1,0,1	2	0	82·0
6	05 40 — 617	597 — 13 32	20	14 22 — 35·6	27·8 — 21 47	7·8	14 42 — 365	354 — 05 25	11	1,1,0,0,0,0,0,0	2	0	82·1
7	06 39 — 619	591 — 13 09	28	14 05 — 33·5	23·8 — 20 38	9·7	16 16 — 386	349 — 07 43	37	0,0,0,0,0,0,2,2	4	0	82·6
8 q	10 18 — 616	606 — 00 23	10	14 17 — 32·9	29·0 — 00 00	3·9	04 12 — 370	343 — 12 26	27	0,0,0,0,0,0,0,0	0	0	83·2
9	23 50 — 703	536 — 23 30	167	17 57 — 34·0	6·3 — 23 29	27·7	23 07 — 395	345 — 23 41	50	0,0,0,0,0,1,1,5	6	1	83·9
10 d	21 02 — 658	431 — 02 28	227	21 24 — 47·3	2·5 — 01 54	44·8	13 11 — 460	186 — 02 40	274	5,4,3,3,4,3,4,5	31	2	85·1
11 d	14 51 — 623	559 — 05 49	64	00 41 — 39·5	9·4 — 20 43	30·1	16 27 — 429	283 — 00 48	146	3,2,3,2,3,4,4,3	24	1	86·5
12 d	23 59 — 620	556 — 08 18	64	01 44 — 47·9	14·8 — 21 44	33·1	19 11 — 389	266 — 02 13	123	3,3,3,2,1,2,3,3	20	1	86·3
13 d	19 27 — 690	567 — 12 18	123	13 13 — 40·3	-5·9 — 19 23	46·2	16 18 — 442	284 — 00 09	158	3,2,3,2,3,4,5,3	25	2	86·1
14 d	20 15 — 639	528 — 08 29	111	08 26 — 38·2	16·5 — 20 10	21·7	16 18 — 388	295 — 01 03	93	2,2,4,2,2,2,3,2	19	1	85·9
15	00 06 — 617	576 — 13 51	41	12 59 — 35·0	24·8 — 00 00	10·2	14 13 — 391	342 — 00 00	49	2,0,1,1,2,1,2,0	9	0	86·0
16	11 41 — 611	575 — 16 13	36	12 35 — 34·7	22·8 — 16 20	11·9	16 36 — 390	351 — 09 55	39	0,0,0,1,1,2,0,0	4	0	86·2
17	23 20 — 618	594 — 12 11	24	14 32 — 33·3	28·7 — 23 40	4·6	17 23 — 362	349 — 23 31	13	0,1,0,0,1,0,0,1	3	0	86·1
18	07 35 — 619	594 — 16 45	25	12 24 — 34·6	28·0 — 17 07	6·6	17 10 — 364	345 — 12 24	19	0,0,0,0,0,1,0,0	1	0	86·0
19 q	21 09 — 623	603 — 12 07	20	13 37 — 34·2	29·6 — 01 30	4·6	23 47 — 358	345 — 11 52	13	0,0,0,0,0,0,0,0	0	0	85·9
20	07 29 — 630	543 — 22 33	87	13 27 — 36·6	5·9 — 23 01	30·7	22 05 — 384	338 — 08 51	46	1,1,1,1,1,1,2,4	12	1	86·0
21	15 11 — 619	592 — 18 08	27	12 00 — 34·7	25·4 — 22 33	9·3	17 11 — 386	344 — 00 00	42	1,0,0,0,0,2,1,2	6	0	86·1
22	20 20 — 645	594 — 19 01	51	13 28 — 34·5	23·6 — 21 18	10·9	19 20 — 365	336 — 21 21	29	0,1,1,1,0,1,2,2	8	0	86·0
23	11 19 — 621	581 — 16 35	40	11 17 — 36·4	27·7 — 18 55	8·7	16 43 — 379	338 — 09 50	41	0,0,1,2,1,2,1,0	7	0	85·8
24 q	22 55 — 620	597 — 12 08	23	13 21 — 33·5	23·8 — 23 42	10·4	16 40 — 360	344 — 09 32	16	0,0,0,0,0,0,0,2	2	0	85·9
25	01 45 — 619	602 — 16 21	17	12 50 — 35·8	25·4 — 00 21	10·4	16 22 — 360	333 — 01 44	27	2,1,0,0,1,1,0,0	5	0	86·1
26	07 13 — 624	591 — 12 08	33	12 40 — 36·0	26·9 — 21 41	9·1	16 53 — 369	336 — 10 29	33	0,0,0,1,2,1,0,1	5	0	85·8
27 q	23 18 — 627	600 — 11 42	27	13 21 — 34·5	27·4 — 23 35	7·1	18 37 — 360	340 — 12 30	20	0,0,0,0,0,0,0,1	1	0	86·0
28	21 55 — 623	591 — 14 36	32	14 19 — 36·7	20·6 — 23 43	16·1	23 58 — 365	339 — 01 35	26	1,1,0,0,2,1,0,2	7	0	86·0
Mean	— — 629	576 — —	52	— — 36·5	20·5 — —	15·9	— — 383	328 — —	55	—	—	0·36	84·2

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) 14,000γ (0·14 C.G.S. unit) + MARCH 1963

Hour G.M.T. Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
1 d	599	605	599	613	611	614	629	610	602	599	596	591	591	597	602	615	599	602	607	610	608	608	609	618	606	534
2	613	606	607	608	611	614	611	615	614	612	609	611	605	612	613	613	609	614	615	614	615	616	617	618	612	692
3	614	613	610	612	611	615	613	616	607	603	604	600	602	612	613	613	614	619	620	618	617	617	616	618	612	697
4	617	613	614	613	615	614	612	611	605	600	601	602	607	609	614	614	613	609	612	613	616	616	613	614	611	667
5	612	611	612	613	614	617	617	618	613	603	596	597	604	609	612	614	613	614	620	620	619	620	614	612	612	694
6	611	612	609	610	613	613	617	616	615	607	603	600	600	602	609	611	613	619	607	607	602	607	610	610	609	623
7	610	608	607	609	610	607	608	612	612	606	598	597	599	602	607	613	616	619	624	628	620	617	621	583	610	633
8 d	595	593	587	603	614	622	621	589	612	609	607	571	567	596	617	601	602	616	618	610	618	608	605	626	604	507
9 d	608	609	603	597	579	604	621	616	609	603	600	603	606	608	611	615	614	606	614	612	609	628	614	601	608	590
10 d	599	583	597	600	588	607	595	616	597	576	567	581	594	600	664	677	608	664	621	617	611	630	566	545	604	503
11 d	565	578	567	563	576	599	609	604	599	591	593	599	603	607	611	613	612	614	606	607	628	603	597	595	597	339
12	599	591	578	608	608	608	608	609	603	595	584	588	601	606	609	610	605	604	605	609	606	607	608	608	602	457
13	606	605	604	603	606	605	606	609	604	598	593	592	592	595	584	595	597	607	613	611	613	611	611	612	603	472
14 q	609	608	606	608	609	610	611	611	609	604	599	595	593	596	603	609	610	610	613	613	613	613	613	613	607	578
15	612	611	608	603	610	611	608	607	603	599	595	588	590	596	605	610	608	608	609	613	613	613	613	613	606	546
16 q	613	613	612	612	613	613	613	613	610	603	597	597	599	602	608	611	614	612	613	614	616	616	618	617	610	649
17	614	613	613	613	614	614	614	614	612	603	597	597	598	602	608	615	613	610	611	615	615	603	606	605	609	619
18	612	612	610	610	613	612	612	606	599	602	595	595	595	606	614	603	607	599	609	617	617	606	606	611	607	568
19	611	610	604	611	610	610	617	608	603	599	591	588	594	605	613	616	617	614	615	608	608	607	618	607	608	584
20	610	608	608	609	610	611	615	614	612	607	600	596	601	608	611	617	619	619	622	621	621	611	593	613	611	656
21	614	611	608	605	612	614	614	604	602	598	592	591	595	597	605	610	612	613	612	613	613	614	612	612	607	573
22 q	612	611	611	611	611	612	613	613	608	601	596	592	595	600	609	612	616	620	622	624	624	621	617	621	611	672
23	619	616	614	617	620	622	624	620	614	610	587	580	594	606	601	600	600	614	620	619	616	617	610	613	611	653
24	610	609	609	610	611	609	609	608	604	596	588	587	589	598	607	608	610	618	610	614	617	616	616	625	607	578
25	614	613	613	614	613	613	611	608	598	591	585	588	598	607	606	613	616	613	618	616	618	619	618	620	609	623
26 q	617	616	614	613	614	615	617	617	613	602	592	588	591	603	609	618	616	614	617	614	607	613	614	614	610	648
27 q	613	612	611	613	613	613	613	609	606	596	587	581	586	595	605	606	609	610	617	616	614	616	616	615	607	572
28	616	615	615	617	618	622	623	619	612	602	595	592	593	600	607	613	615	621	622	623	621	627	624	623	614	735
29	621	616	614	617	621	622	624	624	613	600	588	580	583	598	609	616	618	618	621	619	617	618	618	614	612	689
30	616	613	613	613	612	613	616	617	613	603	595	590	591	598	607	614	613	617	620	618	621	619	617	616	611	665
31	615	615	615	614	613	614	617	617	613	606	600	595	595	596	600	606	614	617	619	622	620	628	629	629	613	709
Mean	609	608	606	609	609	613	614	612	608	601	595	592	595	602	609	613	611	615	615	615	615	615	612	611	608	
Sum 18,000+	896	849	789	862	893	989	1038	970	836	624	430	352	451	668	893	1001	942	1054	1072	1075	1073	1065	962	941		Grand Total 452,725

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) 9° + MARCH 1963

Hour G.M.T. Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0'+
1 d	25·0	24·0	25·4	23·0	21·6	27·5	26·4	31·1	35·2	29·2	32·3	34·5	34·8	36·2	35·0	34·7	31·8	27·9	30·6	29·9	29·7	24·7	26·9	27·2	29·4	104·6
2	30·2	29·2	29·4	29·7	30·1	28·7	29·1	29·1	28·8	29·2	30·7	34·7	35·1	33·8	34·5	32·2	31·2	31·0	31·0	30·4	30·1	29·9	29·8	29·7	30·7	137·6
3	29·7	29·3	29·4	29·4	30·6	29·4	28·8	30·3	32·0	31·3	33·5	33·7	34·7	35·0	34·0	32·7	31·9	32·8	32·3	32·2	31·6	26·2	27·5	26·9	31·1	145·2
4	27·9	29·5	29·0	28·7	29·7	29·8	28·7	29·5	31·7	33·3	33·9		34·2	35·3	33·6	32·9	32·0	32·9	32·6	30·5	30·7	30·5	29·1	29·1	30·9	142·2
5	28·8	28·7	28·7	28·7	29·6	28·7	28·8	28·6	28·3	28·3	30·7	34·1	36·2	35·9	35·5	33·6	33·2	32·6	32·8	32·9	30·1	25·1	26·7	27·7	30·6	134·3
6	29·5	28·5	27·2	27·1	26·7	29·0	28·3	28·6	28·7	28·8	29·9	32·3	34·5	34·7	34·6	33·4	32·1	31·8	27·9	26·6	23·2	27·0	28·7	29·5	29·5	108·6
7	30·4	29·4	29·0	30·0	27·5	28·7	29·7	28·7	28·6	28·6	29·7	32·4	34·3	34·3	33·6	32·7	32·1	32·6	32·9	32·6	33·5	32·6	18·5	12·1	29·8	114·5
8 d	24·0	30·5	28·5	20·9	23·0	26·6	28·7	38·7	38·0	31·9	34·7	38·3	42·2	38·3	40·7	39·6	34·6	32·3	16·8	25·3	21·2	21·1	30·8	23·7	30·4	130·4
9 d	28·7	30·4	28·5	28·9	30·0	34·3	31·6	31·5	30·9	29·5	32·2	33·6	36·6	35·5	34·4	33·5	32·5	29·5	29·8	30·8	28·7	22·6	28·4	26·7	30·8	139·1
10 d	27·4	32·1	29·9	25·9	26·5	27·8	34·9	35·2	32·4	29·5	32·7	34·3	34·6	35·6	32·3	28·5	34·3	16·5	20·6	24·0	21·0	21·4	19·3	20·4	28·2	77·1
11 d	30·1	18·7	23·2	28·7	32·7	31·5	29·1	28·7	28·0	28·7	28·7	30·7	32·7	33·4	33·9	31·9	31·2	30·4	31·1	20·2	18·4	25·7	26·7	30·4	28·5	84·8
12	26·5	26·9	32·3	27·9	27·3	27·9	29·0	29·6	28·0	27·9	28·8	31·6	34·2	33·3	31·8	26·2	29·9	30·7	29·6	26·3	27·1	28·8	29·5	29·4	29·2	100·5
13	29·7	29·6	29·1	28·8	29·0	28·3	28·6	27·9	28·2	28·7	30·3	32·7	34·4	35·5	33·5	31·6	32·5	31·6	30·8	30·6	27·6	28·4	29·0	30·1	30·3	126·5
14 q	29·6	30·8	29·6	29·4	29·4	29·3	29·0	28·1	26·8	27·0	28·7	30·5	32·5	33·5	33·1	32·0	30·9	30·7	30·3	29·6	29·7	29·4	29·6	29·7	30·0	119·2
15	29·6	30·2	30·8	30·2	29·3	28·6	29·0	28·0	26·9	27·5	29·2	32·0	29·8	36·1	30·1	33·0	30·8	30·5	29·6	29·7	29·9	29·8	29·7	29·7	30·0	120·0
16 q	29·7	29·6	29·6	29·6	29·5	29·1	28·7	27·7	26·5	27·5	29·6	31·8	34·2	35·0	34·0	32·5	31·4	30·6	30·8	31·3	30·8	30·2	30·0	29·6	30·4	129·3
17	29·1	28·7	29·6	28·7	28·8	28·9	28·7	28·1	27·0	27·9	29·8	32·7	34·7	35·9	35·9	35·4	35·0	34·2	33·3	32·0	25·2	26·4	28·5	26·3	30·4	130·7
18	29·0	29·3	27·4	26·4	25·5	25·9	25·4	25·9	27·9	29·5	30·6	32·8	36·5	40·2	40·0	37·4	35·4	32·6	31·6	31·6	32·5	28·1	31·4	29·0	30·9	141·9
19	27·7	29·6	27·9	24·8	22·9	23·7	25·0	26·9	26·7	28·7	31·3	33·5	35·5	36·6	35·1	34·1	32·2	31·8	31·9	25·6	30·3	28·7	28·5	28·5	29·5	107·5
20	28·7	30·3	28·6	26·7	27·4	27·7	26·9	26·6	26·2	28·0	30·6	33·6	35·4	35·5	34·2	32·8	31·8	31·8	32·2	32·6	32·0	23·3	26·4	26·5	29·8	115·8
21	29·1	30·8	29·9	30·8	29·3	28·6	27·8	26·9	26·2	27·9	29·7	32·7	35·1	35·1	33·2	31·2	29·6	29·3	28·8	29·3	29·9	29·6	29·8	29·9	30·0	120·5
22 q	29·9	29·9	29·8	29·6	29·4	28·8	28·6	27·5	26·0	26·5	28·2	30·7	33·2	35·1	35·2	33·6	32·6	32·6	32·5	31·8	31·7	30·7	29·7	29·7	30·6	133·3
23	29·8	29·6	28·8	29·5	29·4	29·4	28·6	27·7	27·0	29·2	32·2	35·2	37·5	39·3	40·8	36·3	33·2	32·7	32·2	31·5	29·6	29·5	27·0	29·6	31·5	155·6
24	29·8	29·4	28·8	29·2	28·8	28·5	28·3	27·7	26·9	27·7	29·9	32·2	34·5	34·5	34·5	33·4	32·3	31·7	29·5	29·8	30·5	28·7	25·6	30·9	30·1	123·1
25	29·0	30·6	29·9	29·0	29·4	28·9	28·4	26·9	25·9	27·0	30·4	33·4	35·8	37·3	35·4	34·1	31·9	28·8	29·6	31·2	30·7	30·5	29·7	31·4	30·6	135·2
26 q	30·5	29·6	29·6	28·7	28·7	28·7	28·7	27·6	26·7	27·4	28·9	31·6	33·8	35·6	34·7	33·3	31·7	30·8	29·1	27·8	27·7	29·6	30·2	30·4	30·1	121·4
27 q	30·3	29·8	29·8	29·5	29·0	28·9	28·6	27·6	26·5	26·6	29·1	32·7	35·3	35·5	34·5	32·3	30·8	30·5	30·1	30·4	30·4	30·4	30·5	30·4	30·4	129·5
28	30·3	30·0	30·1	29·7	29·6	29·1	28·8	28·7	28·8	28·3	29·7	33·0	36·1	37·4	36·6	34·5	33·0	32·2	31·1	30·6	30·1	29·5	29·4	28·3	31·0	144·9
29	30·4	30·3	29·2	29·2	29·1	27·6	26·7	26·9	26·7	28·1	30·6	33·3	37·2	37·3	36·2	34·0	32·2	31·3	31·4	31·1	30·8	28·7	28·8	30·4	30·7	137·5
30	28·2	27·1	27·3	27·3	27·1	27·9	27·5	27·7	27·2	27·5	29·6	32·8	34·6	35·1	34·5	33·2	31·6	30·6	30·6	30·4	29·2	29·0	30·0	30·2	29·8	116·2
31	29·7	29·6	29·4	28·8	28·7	28·3	28·2	28·1	26·6	27·5	28·7	33·0	35·2	35·2	34·2	32·2	31·3	30·6	30·6	30·6	30·5	31·4	29·1	21·7	30·0	119·2
Mean	29·0	29·1	28·9	28·2	28·3	28·5	28·6	28·7	28·4	28·5	30·5	33·0	35·0	35·7	34·8	33·2	32·2	30·8	30·1	29·7	28·9	28·0	28·2	27·9	30·2	
Sum 800·0+	98·3	102·0	95·7	74·8	75·6	82·8	85·7	91·3	79·1	83·1	144·3	224·3	285·9	307·0	279·6	228·8	197·0	155·9	134·0	119·2	94·4	67·5	74·8	65·1	30·3	Grand Total 22446·2

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + MARCH 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	357	337	329	317	316	321	317	331	326	333	339	343	346	350	352	359	386	386	372	370	366	361	357	339	346	310
2	324	340	346	350	352	350	352	348	349	347	343	343	343	343	348	350	353	353	353	354	355	355	353	352	348	356
3	352	350	351	350	350	347	350	349	348	348	347	346	347	349	350	353	355	354	354	358	359	359	345	336	350	407
4	335	342	343	344	343	344	346	346	347	345	343	346	348	349	352	354	357	356	354	356	356	355	358	355	349	374
5	355	354	353	351	348	346	346	347	350	354	350	348	348	348	348	353	357	354	353	354	358	356	352	352	351	435
6	352	353	354	352	350	346	343	343	344	347	350	351	354	355	356	359	358	359	372	369	371	363	359	359	355	519
7	358	359	358	354	350	351	351	352	353	352	351	347	343	346	350	353	351	346	346	355	367	326	292		349	364
8 d	321	312	300	281	320	334	335	336	314	328	335	355	357	364	383	408	425	442	421	392	346	326	334	321	350	390
9 d	331	316	338	343	329	334	337	343	346	346	349	350	351	357	365	365	371	375	366	362	364	347	304	326	346	315
10 d	338	310	302	297	298	312	321	314	331	355	366	365	386	403	449	475	431	447	378	367	307	274	285	204	346	315
11 d	172	248	290	306	329	340	345	350	353	352	348	347	350	354	365	373	380	379	373	379	340	351	353	314	337	91
12	299	301	293	311	335	345	350	349	353	355	354	351	353	367	376	398	388	372	368	366	364	357	356	355	351	416
13	355	354	357	358	359	359	357	355	354	353	353	352	354	364	378	386	368	366	364	364	360	356	352	347	359	625
14 q	345	342	345	353	354	354	354	353	352	348	346	345	345	345	349	353	357	357	357	359	357	355	353	351	351	429
15	352	350	350	350	349	351	354	353	352	350	350	347	346	350	354	361	363	364	361	361	361	360	358	356	354	503
16 q	353	353	354	353	353	353	353	353	352	347	344	341	342	344	350	355	356	358	356	356	356	355	353	350	352	440
17	350	352	352	353	353	353	355	356	355	353	349	346	345	346	349	354	364	371	371	372	372	363	313	334	353	481
18	344	346	348	347	348	352	352	353	351	349	350	349	346	350	363	382	391	394	372	364	363	375	371	356	359	616
19	352	356	356	339	323	322	325	336	342	342	344	349	345	350	353	367	373	370	370	384	385	378	346	316	351	419
20	338	342	345	350	351	351	351	352	350	350	353	351	347	346	348	353	354	354	353	354	358	364	357	344	351	416
21	348	349	352	351	347	348	348	353	354	353	353	351	351	352	355	359	359	360	359	358	357	358	357	356	354	488
22 q	358	358	357	355	354	352	352	354	354	355	353	351	352	352	352	358	358	353	351	350	352	353	358	355	354	497
23	355	355	354	353	352	346	345	345	344	341	346	346	344	351	372	382	378	366	358	355	358	358	359	357	355	520
24	359	360	359	358	356	355	354	352	352	352	352	353	353	354	358	360	360	363	368	364	360	358	353	344	357	557
25	345	354	355	358	358	356	355	353	351	344	340	340	343	352	356	359	359	361	357	357	355	353	353	352	353	466
26 q	352	354	357	358	358	356	352	351	349	348	349	345	344	345	352	357	363	364	362	363	363	356	351	352	354	501
27 q	352	356	356	356	356	356	356	356	354	351	345	346	344	345	352	360	364	363	359	359	356	353	352	349	354	496
28	350	352	352	354	354	352	351	349	347	344	342	337	333	335	341	350	354	355	356	354	353	346	348	341	348	350
29	340	343	344	343	344	345	345	345	344	343	340	338	338	340	344	352	356	357	356	356	356	354	350	348	347	321
30	343	345	346	347	351	351	351	351	352	351	350	345	343	341	345	351	357	359	357	357	357	356	355	353	351	414
31	353	352	352	352	353	352	351	350	351	349	345	340	339	340	345	351	352	354	354	353	354	350	350	334	349	376
Mean	340	342	343	343	345	346	347	348	347	348	348	347	348	351	358	366	368	368	363	362	357	354	347	339	351	
Sum 10,000+	538	595	648	644	693	734	754	778	774	785	779	760	780	887	1110	1350	1400	1417	1251	1213	1074	972	771	500		Grand Total 261,207

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. MARCH 1963

	GEOMAGNETIC ELEMENTS															3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph house 200°A+
	Horizontal component					Declination						Vertical component								
	Maximum 14,000γ +		Minimum 14,000γ +		Range	Maximum 9° +		Minimum 9° +		Range		Maximum 47,000γ +		Minimum 47,000γ +		Range				
	h. m.	γ	γ	h. m.	γ	h. m.	′	′	h. m.	′		h. m.	γ	γ	h. m.	γ				°A.
1 d	23 08	642	574	16 55	68	07 30	38·8	13·0	21 04	25·8		16 56	402	308	04 29	94	2,3,3,2,2,3,3,4	22	1	86·0
2	14 22	621	600	12 14	21	12 01	38·3	27·4	05 13	10·9		19 45	357	320	00 21	37	2,1,0,2,2,1,0,0	8	0	86·0
3	21 49	630	595	11 25	35	14 31	35·5	19·7	21 45	15·8		21 05	364	327	22 50	37	0,0,2,1,1,0,0,3	7	0	86·1
4	00 00	621	598	09 59	23	13 33	36·2	26·8	00 00	9·4		22 49	360	333	00 23	27	1,0,0,0,1,0,1,0	3	0	86·0
5	21 04	632	595	11 19	37	12 56	37·4	22·9	21 07	14·5		21 35	361	344	13 30	17	0,0,0,0,1,0,2,2	5	0	86·1
6	17 02	624	596	19 28	28	12 59	35·9	21·9	20 36	14·0		19 47	375	340	06 16	35	0,1,1,0,1,1,3,2	9	0	86·0
7	22 13	652	563	23 37	89	20 42	35·0	3·9	23 06	31·1		21 52	372	272	23 10	100	0,1,0,0,0,0,2,4	7	0	86·6
8 d	20 04	679	543	11 35	136	12 08	45·9	6·4	18 07	39·5		18 00	495	269	03 01	226	3,3,3,3,3,3,4,5	25	1	86·8
9 d	21 53	681	569	04 50	112	12 34	39·0	7·3	21 46	31·7		17 15	378	293	22 45	85	2,3,2,2,2,2,2,4	19	1	86·0
10 d	14 51	773	505	23 04	268	15 40	44·0	-25·8	17 53	69·8		14 55	518	168	24 00	350	3,2,3,2,5,6,5,5	31	2	85·7
11 d	20 06	664	531	00 18	133	00 20	37·7	7·3	20 04	30·4		19 33	384	159	00 34	225	4,3,1,2,2,3,4,2	21	1	85·6
12	14 59	627	556	02 23	71	12 42	35·6	22·7	19 56	12·9		15 35	405	283	02 23	122	3,2,1,2,2,2,2,0	14	1	86·3
13	18 07	624	562	14 43	62	14 22	37·6	26·0	20 50	11·6		15 04	393	343	23 38	50	0,0,0,1,3,2,1,2	9	0	86·0
14 q	22 00	623	592	12 31	31	13 39	34·1	26·4	08 32	7·7		19 35	361	339	01 55	22	1,0,0,0,0,0,0,1	2	0	85·5
15	05 18	614	588	11 48	26	13 12	36·3	26·6	08 49	9·7		17 22	364	344	12 05	20	1,1,0,0,0,0,0,0	2	0	85·4
16 q	22 53	625	596	10 35	29	12 54	36·2	24·8	08 45	11·4		17 51	360	339	11 30	21	0,0,0,0,0,0,0,1	1	0	87·0
17	20 51	633	586	22 52	47	13 30	36·3	20·9	20 45	15·4		20 14	383	292	23 32	91	0,0,0,0,0,1,3,3	7	0	87·0
18	14 44	622	591	12 31	31	14 08	41·2	24·3	21 31	16·9		17 22	399	342	00 30	57	0,0,1,1,2,2,1,2	9	0	86·7
19	22 50	641	587	11 23	54	13 33	37·3	22·0	04 45	15·3		20 02	391	295	23 02	96	1,2,2,0,1,1,2,3	12	0	86·8
20	20 14	629	584	22 23	45	13 05	36·1	19·1	21 39	17·0		22 02	375	333	00 00	42	1,1,1,0,0,0,1,3	7	0	87·1
21	06 15	620	588	12 14	32	12 55	36·2	25·3	08 42	10·9		16 22	361	345	06 17	16	1,1,0,0,0,0,0,0	2	0	86·7
22 q	23 35	627	590	12 03	37	13 48	35·9	25·7	08 51	10·2		15 36	361	348	14 56	13	0,0,0,0,1,1,0,1	3	0	87·0
23	15 19	622	566	10 43	56	14 23	45·0	24·0	22 11	21·0		16 12	386	338	10 02	48	1,1,1,3,3,2,1,2	14	1	87·2
24	23 45	639	579	11 11	60	14 20	36·2	24·2	22 39	12·0		18 22	370	324	23 51	46	0,0,0,1,1,2,2,3	9	0	86·9
25	00 00	626	583	11 28	43	13 19	37·7	25·4	08 14	12·3		17 25	364	326	00 00	38	1,0,0,0,1,1,0,1	4	0	87·2
26 q	19 02	624	585	12 07	39	13 28	36·1	25·4	19 49	10·7		19 42	366	340	13 01	26	0,0,0,0,1,1,1,0	3	0	87·5
27 q	18 58	620	580	11 06	40	12 51	35·7	25·9	08 40	9·8		16 42	365	343	12 05	22	0,0,0,0,0,0,0,0	0	0	87·1
28	23 00	641	589	12 47	52	13 13	37·9	26·8	23 20	11·1		18 33	358	332	11 56	26	0,0,0,1,1,1,1,2	6	0	87·2
29	06 54	628	575	11 57	53	13 06	38·1	25·9	08 02	12·2		17 16	359	327	11 51	32	1,1,0,1,1,0,0,2	6	0	87·0
30	20 39	625	588	11 21	37	13 23	35·4	26·7	08 58	8·7		17 29	360	339	13 10	21	0,0,0,0,0,0,1,1	2	0	86·8
31	22 59	649	590	12 00	59	13 00	36·4	20·4	23 24	16·0		18 05	357	331	23 30	26	0,0,0,0,0,0,0,3	3	0	87·2
Mean	- -	638	578	- -	60	- -	37·6	20·0	- -	17·6		- -	381	314	- -	66	-	-	0·26	86·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H)   14,000γ (0·14 C.G.S. unit) +   APRIL 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
1	607	601	591	605	618	625	637	624	610	600	596	593	592	588	600	600	609	617	621	620	617	617	617	617	609	622
2	615	615	611	614	617	617	617	613	605	594	586	586	591	600	604	609	612	625	613	614	614	613	613	616	609	614
3	614	613	613	616	614	614	612	610	600	595	596	592	593	596	602	613	617	616	622	624	623	621	621	620	611	657
4 d	620	619	617	617	617	618	624	614	610	603	604	599	614	599	617	595	607	631	628	637	621	623	628	595	615	757
5 d	606	551	573	595	552	581	607	610	594	586	576	583	590	610	614	621	622	628	646	628	617	618	620	601	601	429
6 d	597	599	593	596	607	610	605	599	571	592	591	572	588	596	593	613	617	607	619	615	620	638	626	609	603	473
7	599	603	611	611	608	612	610	595	591	570	582	578	574	587	610	613	610	617	617	617	617	617	617	624	604	490
8	610	608	610	610	609	609	611	606	599	588	583	582	591	596	607	611	613	620	618	624	614	616	614	619	607	568
9	615	614	613	611	596	610	615	605	599	591	587	586	593	597	610	616	623	616	617	616	617	619	613	614	608	593
10 q	613	611	611	611	611	612	611	605	596	586	581	577	581	584	598	608	616	618	621	615	617	616	618	618	606	535
11 q	618	617	615	615	617	617	617	613	603	590	571	572	577	588	602	609	614	620	625	624	619	618	620	619	608	600
12	632	621	615	617	621	625	621	612	600	588	569	564	580	607	605	606	628	626	633	628	610	606	608	613	610	635
13	613	613	605	609	614	617	619	617	606	582	574	575	581	592	613	615	632	646	636	620	633	611	599	597	609	619
14 d	615	604	609	613	616	613	607	599	591	581	574	576	585	596	628	629	620	615	618	621	611	640	609	569	606	539
15	590	585	551	617	615	604	596	576	582	577	576	569	582	593	596	612	619	619	628	625	620	617	618	617	599	384
16	607	607	611	615	616	620	617	612	603	590	580	577	589	599	610	626	633	621	623	627	630	621	620	618	611	672
17	614	608	596	609	615	610	613	611	605	599	592	587	593	600	609	619	636	632	634	624	624	625	621	621	612	697
18	613	611	614	614	616	616	616	613	605	595	592	596	596	604	615	639	640	636	635	627	622	619	601	600	614	735
19	612	611	610	610	614	608	613	613	617	603	593	589	590	601	611	622	622	621	632	631	621	621	620	624	613	709
20	623	614	614	614	617	621	619	610	606	602	597	599	608	604	611	619	617	624	627	625	618	617	614	613	614	733
21 q	613	613	613	613	610	609	608	604	596	589	588	592	594	598	599	612	615	632	621	620	620	619	623	620	609	621
22	614	613	605	611	614	613	610	604	601	595	588	592	589	596	606	610	613	621	630	631	617	610	616	618	609	617
23	615	613	598	599	603	617	613	602	583	593	593	592	596	600	601	606	614	619	624	620	618	617	615	614	607	565
24 q	614	613	613	612	611	611	608	601	593	585	586	586	597	607	609	612	617	627	632	630	626	625	622	622	611	659
25	626	618	622	617	617	616	614	611	601	590	582	585	595	605	613	623	625	634	633	628	627	627	616	621	614	746
26	625	619	617	614	613	617	617	614	607	598	589	585	591	603	620	629	624	630	634	634	631	632	643	625	630	807
27	632	626	628	625	627	621	617	611	599	584	577	588	584	591	611	630	627	646	656	665	619	620	619	617	617	820
28 q	618	618	617	618	617	616	615	609	601	593	588	585	590	601	612	620	622	632	637	633	627	625	625	624	614	743
29	624	624	624	622	616	619	614	607	602	595	592	592	596	607	615	619	625	634	635	632	631	625	627	625	617	802
30 d	625	622	621	621	620	618	614	611	608	602	600	604	613	608	612	640	699	696	692	714	740	624	627	615	635	1246
Mean	615	610	608	612	612	614	614	608	599	591	586	585	591	598	608	617	623	627	630	629	625	621	618	614	611	
Sum 17,000+	1439	1304	1241	1371	1358	1416	1417	1231	984	736	583	553	733	953	1253	1496	1688	1826	1907	1866	1742	1628	1532	1430		Grand Total 439,687

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D)   9° +   APRIL 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0'+
1	21·7	24·9	26·2	25·5	24·3	30·6	22·9	23·7	24·8	26·2	28·1	30·4	33·5	34·9	35·0	33·4	31·4	30·4	30·5	30·4	30·6	30·4	30·1	30·1	28·7	90·0
2	29·7	29·6	28·7	29·0	28·3	28·2	27·9	26·7	25·9	26·1	27·5	30·5	33·0	34·7	33·6	32·3	31·1	29·6	25·5	29·6	29·6	28·4	29·5	30·6	29·4	105·6
3	35·4	30·0	29·0	28·0	28·1	28·2	28·0	28·1	26·9	28·2	29·6	31·9	34·3	34·6	33·6	33·3	32·2	31·2	31·5	31·8	31·4	31·3	30·8	30·6	30·7	138·0
4 d	29·6	28·8	27·7	26·7	26·7	27·4	27·2	26·1	26·5	29·7	30·9	33·2	37·8	38·7	41·6	38·3	35·8	35·5	31·8	11·2	26·8	31·3	31·6	30·7	30·5	131·6
5 d	21·9	14·9	23·1	26·7	28·5	33·0	30·0	30·0	27·7	29·3	30·5	32·6	35·6	37·2	36·1	34·1	31·2	32·5	20·7	26·1	27·5	28·4	29·6	33·2	29·2	100·4
6 d	30·8	29·9	28·8	29·0	27·2	27·7	27·0	28·3	30·3	29·0	31·1	29·2	32·3	33·8	31·4	30·6	31·6	29·1	28·6	27·9	27·5	27·1	30·1	28·4	29·4	106·7
7	30·6	32·7	30·3	27·7	27·7	27·7	27·5	26·5	27·7	28·6	30·7	33·0	34·9	34·9	35·1	33·3	28·7	30·5	30·6	30·7	29·9	29·8	29·1	31·8	30·4	130·0
8	28·2	29·0	28·8	28·5	27·6	28·0	27·8	26·7	26·7	28·0	30·6	33·0	34·7	34·7	34·1	32·5	31·4	30·8	27·1	25·8	29·6	30·4	29·7	30·4	29·8	114·1
9	28·7	29·3	29·3	28·7	29·3	30·3	26·5	24·9	25·8	26·9	28·4	31·4	34·0	34·9	34·1	33·0	32·4	28·1	27·1	30·0	28·9	27·2	29·1	29·8	29·5	109·2
10 q	30·1	29·6	29·6	28·8	28·3	27·2	26·3	26·0	25·9	27·6	29·3	31·4	34·5	35·5	34·9	33·5	31·8	29·6	28·6	29·1	28·5	30·0	30·3	30·0	29·9	116·4
11 q	29·6	29·3	28·7	28·6	28·3	27·7	26·8	25·5	25·2	25·5	27·7	30·1	33·5	35·2	34·7	32·9	31·2	30·1	30·1	30·0	29·2	29·8	30·4	29·8	29·6	109·9
12	26·9	26·2	27·2	26·7	26·7	25·9	25·7	24·8	25·5	26·6	29·9	32·9	34·8	38·9	37·6	34·4	32·7	30·8	30·0	27·4	25·7	25·4	28·4	29·4	29·2	100·5
13	29·1	29·6	29·1	28·7	26·9	26·4	25·7	25·8	25·9	27·7	29·8	32·7	38·3	41·5	42·1	41·3	40·4	34·6	30·4	31·5	29·1	24·5	23·8	31·5	31·5	157·0
14 d	30·7	21·8	24·1	25·7	26·9	26·8	26·0	25·8	26·4	29·0	32·5	34·0	37·4	38·3	39·3	41·7	39·3	35·0	33·5	31·8	28·6	24·3	25·5	25·7	30·4	130·1
15	23·6	25·1	35·0	28·1	22·9	23·4	26·0	29·1	28·5	33·5	33·9	34·4	35·5	35·9	34·6	33·8	32·5	31·6	31·6	27·4	29·2	30·6	31·1	29·2	30·3	126·5
16	34·0	29·0	30·6	28·2	26·7	26·4	25·9	25·8	26·1	27·4	29·6	31·6	34·0	34·7	34·0	34·1	33·5	32·4	32·1	32·4	27·8	28·7	28·7	27·2	30·0	120·9
17	26·9	24·4	28·7	28·6	25·8	25·5	25·7	26·5	27·7	28·2	30·9	32·5	35·6	36·8	36·2	35·0	34·5	33·5	31·0	29·8	30·9	30·7	29·7	27·5	30·1	121·9
18	26·7	27·3	27·2	26·6	25·6	25·5	25·5	25·3	25·7	27·2	29·3	32·1	35·3	37·2	37·4	36·4	38·9	34·9	29·3	30·1	26·9	18·4	25·7	28·5	29·3	103·0
19	31·9	27·7	27·2	25·8	23·7	21·8	25·7	26·7	26·7	29·0	30·8	32·5	34·3	35·0	35·2	35·2	33·6	30·8	28·7	31·6	31·5	30·7	30·8	30·6	29·9	117·5
20	33·1	27·8	27·6	27·5	26·9	26·5	26·2	26·8	29·0	30·6	31·6	32·5	35·4	35·0	35·0	33·5	32·3	31·7	31·4	31·4	30·6	30·4	29·8	28·7	30·5	131·3
21 q	28·7	28·5	28·3	27·7	27·3	26·7	25·8	25·4	25·9	27·5	30·4	32·1	34·0	34·2	32·7	31·8	30·8	29·9	28·9	29·1	29·7	29·7	29·3	28·2	29·3	102·1
22	28·8	27·5	26·7	27·7	26·7	25·8	25·3	25·3	25·8	27·5	29·7	32·3	34·2	34·4	33·1	31·6	29·9	28·7	28·5	29·6	24·8	19·3	28·5	27·5	28·3	79·2
23	28·7	29·0	26·6	32·2	28·1	21·8	20·5	22·6	28·7	32·1	33·7	36·1	37·1	36·6	34·7	31·9	30·4	30·2	29·6	29·1	29·6	29·6	29·0	29·2	29·9	117·1
24 q	29·1	29·1	28·9	28·9	28·5	27·6	26·7	25·7	25·6	26·7	27·9	29·2	33·5	34·0	33·2	32·4	31·5	31·7	31·6	30·9	29·4	28·7	27·9	28·7	29·2	109·9
25	29·5	30·6	28·2	27·9	27·2	26·2	25·6	24·5	25·5	27·0	29·9	33·2	35·8	36·2	35·0	33·3	31·7	31·1	30·7	29·9	31·0	28·8	27·7	31·1	29·9	117·6
26	29·6	28·5	27·0	27·7	29·9	27·2	24·9	23·9	25·0	26·9	30·6	33·4	35·6	35·9	35·0	33·5	31·9	31·6	31·6	31·5	31·1	23·2	24·1	25·7	29·4	105·3
27	25·3	26·7	26·5	25·4	23·5	23·8	25·8	25·8	27·2	28·0	31·0	35·1	40·1	41·2	39·6	38·9	36·7	35·0	34·1	27·7	28·6	30·1	29·6	28·9	30·6	134·6
28 q	29·1	29·0	28·7	28·2	26·9	26·1	25·6	24·8	24·2	25·5	28·3	31·1	33·3	34·7	35·2	34·9	33·4	32·7	32·0	30·9	30·0	30·0	30·6	30·4	29·8	115·0
29	29·7	29·2	28·7	28·2	28·2	26·7	25·0	25·6	26·2	27·2	29·1	31·0	33·1	34·0	33·5	32·6	32·5	32·5	31·7	31·0	28·7	30·5	30·3	29·5	29·8	114·7
30 d	28·9	28·9	28·7	27·6	26·1	24·9	24·7	25·6	26·9	30·0	32·9	34·9	36·4	35·4	34·6	36·2	43·2	45·4	42·9	40·7	21·9	26·0	29·8	26·7	31·6	159·3
Mean	28·9	27·8	28·2	27·8	26·9	26·7	26·0	25·9	26·6	28·1	30·3	32·4	35·1	36·0	35·4	34·3	33·3	32·2	30·5	29·5	29·0	28·3	29·0	29·1	29·9	
Sum 700·0+	166·6	133·5	145·1	133·6	107·9	100·1	79·2	78·2	97·0	143·9	207·5	272·5	351·8	379·0	362·2	330·5	299·4	267·3	215·4	185·1	168·9	148·3	170·6	171·8		Grand Total 21515·4

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

25

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + APRIL 1963

Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 7000γ+
1	331	317	309	306	326	292	278	308	323	332	333	333	339	344	346	351	352	353	352	354	354	354	354	354	333	995
2	353	352	351	348	348	350	350	354	355	356	352	348	344	344	351	353	354	360	377	372	371	367	359	352	355	1521
3	336	337	350	350	351	349	350	350	354	354	351	352	350	350	350	352	356	359	357	354	354	355	356	357	351	1434
4 d	355	354	351	350	348	346	343	345	345	343	341	341	339	350	357	376	367	370	407	429	373	354	350	293	355	1527
5 d	244	200	286	324	302	280	301	317	333	344	350	352	358	370	388	397	408	392	390	358	355	348	312	290	333	999
6 d	304	325	335	343	344	345	348	352	352	351	352	364	358	358	372	370	376	382	370	369	358	329	316	320	350	1393
7	335	336	344	341	353	351	350	352	353	356	352	352	352	356	362	381	388	377	361	356	354	352	348	309	353	1471
8	318	342	349	352	352	352	351	351	352	356	352	350	349	350	350	352	358	360	370	358	355	352	353	348	351	1431
9	352	355	355	354	354	344	348	354	354	352	351	348	346	349	353	358	365	378	373	360	354	351	350	350	355	1508
10 q	351	353	356	357	357	355	352	349	348	346	346	344	345	350	350	352	358	359	360	361	355	352	350	350	352	1456
11 q	352	354	357	358	356	354	352	351	350	350	350	351	339	336	339	344	350	352	355	353	353	354	353	350	350	1411
12	332	322	338	344	346	349	349	348	350	349	349	342	334	336	347	352	353	361	361	365	369	365	358	351	349	1370
13	350	346	346	338	340	346	348	348	346	349	350	350	347	347	358	373	390	422	451	419	387	384	366	346	364	1747
14 d	310	314	339	352	358	360	359	358	356	352	352	348	355	370	385	418	434	400	374	372	376	338	342	291	359	1613
15	250	269	238	287	323	337	338	346	342	340	342	348	354	368	364	362	366	366	364	367	364	361	352	342	337	1090
16	319	313	319	325	341	345	347	347	348	351	350	344	341	343	345	349	360	371	369	363	351	349	349	343	345	1282
17	329	314	332	331	343	349	346	343	345	346	348	349	347	348	347	345	349	368	376	375	365	359	358	352	349	1364
18	351	353	353	353	352	351	349	349	350	355	351	350	349	346	349	352	371	388	410	391	378	345	341	340	357	1577
19	310	327	346	348	347	345	341	332	331	336	338	340	343	347	349	349	352	362	363	361	359	360	357	353	346	1296
20	323	342	352	355	354	354	354	354	349	349	349	349	351	362	371	387	399	389	375	367	365	361	359	359	360	1629
21 q	359	357	358	357	357	357	356	356	355	352	347	347	351	355	359	358	361	362	371	365	363	359	355	352	357	1569
22	349	323	312	335	349	355	354	352	348	347	346	345	347	347	348	358	354	367	370	371	369	349	355	355	350	1405
23	354	346	335	306	303	322	329	331	329	324	333	341	346	354	364	368	369	365	359	358	357	354	355	357	344	1259
24 q	359	361	363	363	363	363	361	359	359	357	352	349	349	353	355	357	359	358	357	356	354	353	351	351	357	1562
25	345	345	348	355	354	352	351	347	343	341	339	340	339	341	349	351	353	355	359	363	358	353	356	347	349	1384
26	332	340	349	355	348	345	351	349	343	340	340	340	345	347	349	355	363	360	362	363	358	332	337	337	347	1340
27	336	342	346	351	351	353	348	348	348	348	341	339	345	345	343	357	363	371	383	431	404	376	364	358	358	1591
28 q	356	357	357	359	358	362	360	359	356	349	344	341	341	343	343	345	351	356	359	363	364	361	357	355	354	1501
29	355	354	355	359	361	354	354	353	351	348	345	343	339	339	343	350	353	357	361	361	360	357	355	353	353	1460
30 d	353	354	355	356	357	357	356	352	347	347	339	336	334	341	345	339	331	362	393	407	343	397	380	347	355	1528
Mean	333	333	339	344	347	346	346	347	347	347	346	345	346	350	355	361	365	369	373	371	363	356	351	342	351	
Sum 10,000+	3	4	184	312	401	374	374	414	415	419	386	364	373	492	636	817	965	1085	1187	1142	881	680	545	260		Grand Total 252,713

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. APRIL 1963

	Horizontal component Maximum 14,000γ+ (h.m.)	(γ)	Minimum 14,000γ+ (γ)	(h.m.)	Range (γ)	Declination Maximum 9°+ (h.m.)	(')	Minimum 9°+ (')	(h.m.)	Range (')	Vertical component Maximum 47,000γ+ (h.m.)	(γ)	Minimum 47,000γ+ (γ)	(h.m.)	Range (γ)	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+
1	06 48	642	574	02 40	68	13 13	36·2	20·0	00 11	16·2	20 25	356	258	06 02	98	3,3,3,1,2,1,0,0	13	0	86·8
2	17 30	633	583	10 59	50	13 18	34·9	24·5	18 46	10·4	18 34	385	342	12 55	43	0,0,0,0,1,2,2,2	7	0	87·1
3	19 17	625	590	12 09	35	00 34	39·1	26·5	08 38	12·6	17 49	362	323	00 51	39	3,0,0,0,0,1,0,0	4	0	87·7
4 d	19 21	654	534	23 41	120	23 43	49·0	5·0	19 17	44·0	19 17	452	200	24 00	252	0,1,1,2,3,3,4,4	18	1	87·2
5 d	18 26	679	515	03 45	164	13 40	41·0	8·5	18 15	32·5	18 08	435	166	01 17	269	4,4,3,2,3,3,4,3	26	2	87·5
6 d	21 26	666	556	08 23	110	14 00	34·6	16·3	21 24	18·3	17 19	386	282	00 00	104	3,2,3,2,2,2,3,3	20	1	87·7
7	14 54	640	560	09 34	80	14 51	36·9	24·2	08 04	12·7	16 01	392	296	23 48	96	2,2,2,2,3,2,1,3	17	1	87·6
8	19 30	631	575	10 10	56	12 17	35·3	22·7	19 12	12·6	18 25	373	302	00 01	71	3,0,0,1,1,2,2,1	10	0	87·4
9	16 56	628	581	11 37	47	13 33	35·6	23·8	07 42	11·8	18 00	382	340	05 45	42	1,2,1,1,1,2,2,1	11	0	87·4
10 q	18 04	624	575	11 40	49	13 18	36·1	25·6	07 03	10·5	19 17	366	342	11 35	24	0,0,0,0,1,0,1,0	2	0	87·0
11 q	19 25	629	565	10 39	64	13 28	35·5	23·9	08 23	11·6	03 50	358	334	12 45	24	0,0,1,1,1,0,1,1	5	0	87·2
12	00 31	646	560	10 27	86	13 43	41·1	23·3	07 04	17·8	20 45	372	315	00 51	57	2,0,1,2,3,2,2,2	14	1	87·1
13	17 35	655	568	10 50	87	14 22	44·0	22·1	23 19	21·9	18 26	461	333	03 32	128	1,1,0,1,2,3,3,3	14	1	86·7
14 d	21 13	679	542	23 24	137	16 05	45·4	17·0	21 08	28·4	16 24	447	234	24 00	213	3,1,1,1,3,3,2,4	18	1	87·0
15	19 21	633	522	02 16	111	13 33	37·5	19·7	00 40	17·8	13 50	374	218	02 37	156	4,3,2,1,2,1,2,1	16	1	86·9
16	20 32	641	573	11 30	68	00 18	35·8	24·9	06 15	10·9	17 57	373	303	00 58	70	2,2,0,0,0,2,2,1	9	0	87·2
17	16 49	641	584	11 14	57	13 44	37·4	21·8	01 31	15·6	18 53	379	303	01 15	76	3,2,0,0,1,2,1,0	9	0	87·0
18	16 03	673	589	12 15	84	16 35	42·7	2·6	21 02	40·1	18 40	429	329	21 30	100	0,0,0,0,3,3,4,4	14	1	87·1
19	16 38	642	583	11 53	59	24 00	37·6	20·0	05 04	17·6	18 10	367	303	00 40	64	3,2,1,1,1,3,2,2	15	1	87·1
20	00 28	634	594	11 14	40	00 08	39·3	25·3	06 03	14·0	16 11	402	306	00 34	96	3,1,1,1,2,1,1,0	10	0	87·8
21 q	17 47	635	578	10 48	57	13 07	35·2	25·2	07 43	10·0	18 33	374	344	11 44	30	0,0,0,1,1,1,1,1	5	0	87·3
22	18 10	639	582	10 47	57	13 04	35·1	6·0	21 02	29·1	19 38	375	302	01 42	73	3,2,0,1,0,2,4,4	16	1	87·0
23	18 18	631	580	08 16	51	12 54	37·6	19·4	06 47	18·2	17 00	370	289	03 59	81	2,3,3,1,1,1,1,1	13	1	87·9
24 q	18 45	637	581	09 41	56	13 02	34·4	25·2	07 40	9·2	04 07	365	343	24 00	22	0,0,0,0,1,0,1,1	3	0	88·0
25	17 55	639	580	11 03	59	12 57	36·5	23·4	07 04	13·1	17 17	364	337	24 00	27	1,0,1,0,0,1,1,2	6	0	87·9
26	21 24	651	583	11 56	68	13 00	36·6	21·1	21 59	15·5	19 05	364	324	21 35	40	2,1,0,0,0,1,1,2	7	0	87·8
27	19 32	721	572	10 57	149	13 26	42·1	19·4	20 47	22·7	19 34	479	332	00 29	147	1,1,1,1,2,3,3,1	13	1	88·0
28 q	17 42	646	578	11 49	68	14 11	35·5	23·7	08 28	11·8	21 04	367	339	11 06	28	0,0,0,0,1,1,1,0	3	0	88·0
29	17 55	644	588	11 16	56	13 28	34·5	24·3	06 16	10·2	19 12	365	337	13 32	28	0,1,0,0,1,1,1,0	4	0	88·2
30 d	20 13	1095	595	10 28	500	17 20	52·3	0·0	20 21	52·3	20 11	495	271	20 30	224	0,0,0,1,1,4,6,3	15	2	88·3
Mean	- -	661	571	- -	90	- -	38·5	19·5	- -	19·0	- -	393	302	- -	91	-	-	0·53	87·4

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) · 14,000γ (0·14 C.G.S. unit) + · MAY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	621	627	484	538	606	610	596	592	563	551	551	576	583	590	627	624	638	639	626	624	624	626	640	609	599	365
2 d	595	565	580	609	609	588	581	602	598	564	537	572	599	601	606	640	649	687	639	628	624	623	635	627	607	558
3	638	609	606	623	627	623	618	610	611	595	590	587	596	601	611	634	631	641	629	629	623	616	583	599	614	730
4 d	581	557	607	611	609	591	576	570	557	553	579	602	603	609	609	618	640	652	649	635	627	616	613	613	603	477
5	605	600	609	599	591	613	606	593	587	580	582	588	585	596	606	631	638	646	638	631	631	620	619	619	609	613
6	617	611	599	596	572	604	602	600	591	583	581	579	587	603	613	621	618	628	632	638	630	621	618	617	607	561
7	619	617	615	612	613	613	612	605	597	586	576	584	592	610	613	627	632	632	636	637	631	622	623	628	614	732
8	617	617	617	616	620	617	608	603	581	577	575	583	586	595	620	620	628	631	638	641	635	646	625	621	613	717
9	624	623	620	614	624	619	582	588	595	581	578	594	596	598	616	627	624	636	641	649	629	623	621	622	613	724
10	614	608	608	617	613	610	590	587	590	578	576	586	592	603	614	624	636	660	649	651	639	626	617	594	612	682
11	571	591	569	591	594	606	605	595	586	575	575	585	584	609	644	624	633	631	638	635	638	631	627	615	606	552
12	606	623	621	615	615	608	595	580	576	580	580	580	584	606	607	618	618	656	653	648	648	624	620	626	612	687
13 d	632	605	611	624	607	591	620	606	588	561	569	561	581	595	610	636	620	628	643	653	635	612	603	619	609	610
14	613	606	595	577	596	627	599	589	577	566	560	559	581	591	607	615	623	623	637	632	626	631	635	615	603	480
15	616	615	615	612	609	598	598	600	594	587	580	583	591	599	611	611	625	628	638	637	629	624	616	612	609	628
16 q	606	600	610	612	611	611	607	603	599	593	591	589	591	598	605	613	616	623	629	631	629	628	620	620	610	635
17	616	616	616	617	618	616	615	613	608	598	594	584	592	616	620	614	620	628	644	631	630	627	623	622	616	778
18 q	620	621	620	619	617	615	610	604	599	598	595	594	602	606	613	614	624	630	642	638	631	624	621	621	616	778
19	620	620	620	623	624	621	615	612	608	606	606	606	611	610	627	624	631	649	645	646	639	622	609	593	620	887
20	596	594	592	609	631	633	626	612	600	586	581	583	594	600	611	623	636	638	642	636	633	630	630	629	614	745
21	628	626	624	621	616	617	612	604	598	596	598	602	613	622	623	621	624	647	652	655	635	627	628	627	621	916
22 q	626	623	623	623	621	620	615	607	595	580	577	580	596	611	619	624	629	631	630	631	631	631	630	630	616	783
23 q	627	627	627	627	623	620	612	602	587	573	576	585	602	620	617	623	630	636	636	635	635	629	627	627	617	803
24 q	627	627	627	623	622	614	603	598	594	587	582	581	595	602	615	626	635	642	640	638	638	638	637	638	618	829
25	638	642	636	639	639	632	622	612	604	599	598	615	603	645	620	626	648	647	648	648	636	632	632	632	629	1092
26	631	624	618	619	616	608	601	597	591	582	584	591	604	616	622	620	635	633	632	638	638	631	624	631	616	786
27	621	616	619	623	620	615	609	603	600	595	596	588	595	604	627	650	635	638	646	641	647	649	650	644	622	931
28	638	636	632	611	613	627	624	616	598	581	581	581	587	598	611	617	631	641	656	654	646	631	632	628	620	870
29 d	628	626	602	539	607	621	599	603	601	591	590	596	619	626	612	622	631	630	647	639	638	630	627	627	615	751
30	627	617	587	581	598	573	576	612	607	599	592	606	620	625	625	624	627	627	643	643	627	624	620	619	612	699
31	619	620	620	619	618	613	607	605	603	599	596	596	615	622	619	630	626	638	648	654	650	612	627	624	620	880
Mean	617	613	607	608	613	612	605	601	593	583	581	587	596	607	616	624	630	639	641	639	634	627	624	621	613	
Sum 18,000+	1137	1008	829	859	999	974	741	623	383	80	26	196	479	827	1100	1341	1531	1796	1866	1826	1652	1426	1332	1248		Grand Total 456,279

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) · 9° + · MAY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0′+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1 d	27·0	28·3	25·3	14·4	22·6	20·5	20·7	25·7	25·9	29·3	32·7	33·5	36·0	35·2	33·2	34·9	31·4	28·3	32·0	31·9	30·3	25·0	30·6	25·5	28·3	80·2
2 d	27·4	33·5	29·9	28·7	26·9	27·4	26·8	24·5	25·3	26·9	31·1	33·2	33·3	35·0	32·2	32·2	32·5	26·5	31·4	29·7	29·5	30·6	31·8	30·5	29·9	116·8
3	25·7	24·3	29·6	26·2	25·4	26·2	28·2	26·7	26·6	27·8	28·7	32·3	34·6	36·1	34·2	33·4	31·8	30·8	31·3	31·4	26·1	25·7	28·1	25·1	29·0	96·3
4 d	30·5	31·0	25·5	26·4	27·3	27·1	30·0	26·9	23·9	29·6	31·6	32·5	34·9	36·8	34·1	31·9	32·2	26·5	29·7	29·6	29·6	27·8	29·6	28·6	29·7	113·6
5	22·4	27·5	26·9	25·0	31·2	27·7	26·3	25·8	27·5	28·3	28·1	29·7	32·0	32·8	33·0	32·4	31·8	27·1	30·9	31·0	29·9	29·1	29·6	29·8	29·0	95·8
6	29·6	30·0	32·3	28·7	34·5	29·0	24·2	24·6	23·8	25·4	28·3	31·9	33·3	34·4	33·5	32·2	31·6	31·4	30·8	30·0	24·6	27·3	29·4	30·3	29·6	111·1
7	30·2	29·7	29·8	27·7	25·7	24·0	23·7	23·8	24·8	27·8	30·4	33·7	35·3	35·8	33·9	32·0	31·1	31·6	29·4	29·1	27·5	29·6	28·8	30·3	29·4	105·7
8	28·5	27·7	24·0	24·8	25·7	25·0	24·8	25·3	26·7	28·6	30·9	33·3	36·2	36·2	35·1	33·2	32·1	31·2	30·8	31·3	30·2	26·8	26·8	28·5	29·3	103·7
9	28·7	29·5	29·2	29·9	25·1	23·8	22·5	26·9	25·5	25·7	30·0	34·7	37·5	36·3	36·2	34·8	32·2	31·6	30·8	28·7	23·9	29·6	29·7	22·9	29·4	106·4
10	28·4	28·6	29·7	21·1	21·6	20·9	21·0	21·7	23·6	28·1	30·6	34·7	36·9	38·3	37·2	35·4	33·9	26·0	33·2	26·9	26·7	27·7	21·9	25·5	28·3	79·6
11	28·8	25·4	20·8	26·7	25·7	24·8	23·8	23·2	23·6	24·8	29·5	33·6	35·9	34·3	35·0	33·3	32·2	32·4	32·4	31·9	25·4	29·6	29·7	22·7	28·6	85·5
12	25·5	30·7	25·8	23·8	22·9	22·6	22·6	23·9	25·4	26·2	29·7	34·4	36·4	38·0	38·1	37·4	34·1	36·8	34·1	31·9	26·8	27·2	27·2	28·0	29·6	109·5
13 d	28·5	27·3	26·7	20·7	28·1	25·3	27·1	24·1	23·8	26·6	32·5	34·5	35·5	36·2	33·8	31·5	31·5	31·0	30·6	28·8	30·0	29·3	28·9	23·6	28·9	92·8
14	22·1	19·8	18·9	23·7	29·5	25·1	24·9	26·0	28·7	29·6	32·7	33·5	34·4	33·5	32·5	31·8	31·2	30·1	31·3	31·6	31·4	31·0	29·5	27·8	28·8	90·6
15	25·9	27·4	26·8	26·5	27·4	28·1	27·2	24·0	24·8	27·7	30·6	33·7	35·5	34·0	33·1	31·8	30·9	29·5	28·6	27·7	29·6	29·7	28·6	28·6	29·1	97·7
16 q	28·5	34·5	29·4	26·4	25·3	24·0	23·9	24·7	26·2	29·1	30·9	33·3	35·0	34·6	33·3	32·5	31·5	30·6	30·3	29·9	30·2	30·6	29·5	28·6	29·7	112·8
17	28·6	28·0	28·6	28·8	27·4	26·7	27·3	27·0	26·3	27·7	29·7	33·5	36·5	39·0	39·0	37·7	36·2	33·9	33·0	31·4	31·2	31·4	30·1	29·7	31·2	148·7
18 q	29·6	28·7	28·7	26·9	25·0	24·0	24·3	24·7	25·9	27·6	29·8	31·5	33·1	33·7	33·8	33·2	32·4	31·7	31·4	30·2	30·6	30·5	29·6	28·8	29·4	105·7
19	28·7	28·4	27·7	26·8	25·6	24·2	24·6	26·2	28·2	28·5	30·5	32·3	34·0	33·5	33·0	31·5	29·7	29·6	29·9	31·3	31·8	29·1	29·0	21·7	29·0	95·8
20	20·8	19·4	21·9	28·7	24·1	23·0	23·8	23·9	25·3	26·9	28·6	30·8	33·0	32·7	32·5	31·4	30·6	29·8	29·7	30·4	30·5	30·5	30·8	30·4	27·9	69·5
21	30·4	29·1	28·1	26·4	24·5	23·4	23·6	24·5	25·8	28·5	31·2	33·3	34·0	34·0	33·5	32·4	31·4	31·8	31·8	27·5	29·9	29·4	30·3	30·6	29·4	105·4
22 q	29·1	28·5	27·7	27·2	26·9	27·0	25·7	25·4	25·9	28·5	31·9	35·6	38·2	38·3	35·5	33·4	31·8	30·8	30·5	30·5	30·7	30·5	30·1	29·7	30·4	129·4
23 q	29·5	29·1	28·6	27·7	26·6	24·9	23·7	23·7	25·7	29·7	32·6	34·4	35·8	35·3	34·0	32·8	32·2	31·7	31·5	30·1	30·4	30·6	30·3	29·8	30·0	120·7
24 q	29·5	28·7	27·8	26·2	24·7	22·8	23·0	23·8	24·8	26·1	28·8	32·0	34·2	33·5	32·3	31·7	31·9	31·6	31·9	30·9	31·9	30·9	30·7	30·0	29·2	101·6
25	29·5	29·4	27·6	26·8	25·0	23·3	22·8	22·8	24·0	27·4	30·4	34·5	37·8	40·3	37·8	34·7	34·4	33·9	34·2	31·9	28·6	31·6	30·7	30·0	30·4	129·4
26	28·7	17·9	18·9	18·8	21·1	22·3	24·9	25·9	27·6	29·5	31·6	34·6	36·4	37·5	36·3	34·8	34·4	33·0	31·8	30·6	29·7	28·7	29·7	30·5	29·0	95·2
27	29·1	27·1	26·2	25·8	24·9	25·7	26·5	25·0	25·8	28·5	31·6	34·4	36·8	36·8	35·5	36·2	35·2	34·4	34·0	33·5	33·4	32·0	31·8	32·7	31·0	142·9
28	29·0	25·9	29·6	33·9	21·9	23·2	23·7	30·0	27·7	28·2	31·2	34·3	35·1	35·1	35·9	34·5	35·0	33·2	32·0	31·3	29·9	29·6	29·5	29·5	30·4	129·2
29 d	28·7	30·1	37·8	36·2	23·9	19·8	22·3	25·5	26·7	28·9	31·5	33·1	34·6	34·4	33·0	32·3	32·5	32·2	32·1	30·8	30·6	30·6	30·3	29·6	30·3	127·5
30	29·5	27·5	30·9	31·6	29·1	29·0	30·4	25·7	24·0	26·2	29·6	31·5	33·0	33·5	32·4	31·3	30·7	30·3	29·9	28·8	31·0	30·5	29·8	29·1	29·8	115·3
31	28·7	28·0	27·9	26·6	24·8	25·6	25·7	24·4	25·5	27·3	29·5	32·7	33·5	32·0	32·6	32·4	29·8	31·5	33·0	32·4	32·0	35·2	24·4	26·8	29·3	102·3
Mean	28·0	27·8	27·3	26·4	25·8	24·7	24·8	25·0	25·7	27·8	30·6	33·3	35·1	35·4	34·4	33·3	32·3	31·0	31·4	30·5	29·5	29·6	29·3	28·2	29·5	
Sum 700·0+	167·1	161·0	145·5	119·1	100·4	66·4	70·0	76·3	95·3	161·0	247·7	331·0	388·7	397·1	365·5	331·0	300·2	260·8	273·7	243·8	214·0	218·7	207·0	175·4	29·7	Grand Total 21916·7

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

27

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + **MAY 1963**

Day	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	351	357	214	204	304	346	354	347	354	363	364	361	369	371	370	377	406	411	386	370	372	363	316	324	348	354
2 d	329	296	256	319	334	332	332	345	352	362	367	367	368	368	373	368	374	373	372	375	366	356	318	295	346	297
3	320	325	329	340	348	350	349	337	335	340	344	349	350	359	360	362	370	375	369	359	364	356	306	289	345	285
4 d	304	258	268	318	329	336	338	340	356	365	358	359	355	356	366	370	373	382	375	375	364	350	312	308	342	215
5	308	316	328	339	328	326	348	351	350	348	350	352	354	354	353	353	360	372	369	362	354	353	354	352	347	334
6	351	352	339	328	301	305	325	333	340	342	342	343	343	348	356	366	366	362	360	360	364	356	354	354	345	289
7	355	356	357	358	358	356	354	351	347	345	350	347	348	353	355	356	359	364	364	365	364	354	348	343	354	507
8	315	304	328	342	350	354	356	352	353	346	340	341	344	348	355	364	362	360	357	354	358	347	336	340	346	306
9	341	348	352	351	352	355	365	341	340	348	343	340	348	350	356	367	370	368	364	366	373	362	346	321	353	467
10	335	334	302	304	335	348	351	340	334	336	333	332	336	347	359	374	390	395	374	370	350	353	335	302	345	269
11	284	235	245	298	330	348	358	361	362	358	356	353	360	362	364	380	378	371	365	366	365	353	342	321	342	215
12	326	297	309	334	345	348	354	350	344	337	337	338	345	350	364	368	371	361	371	374	358	342	336	339	346	298
13 d	320	287	283	305	297	307	314	336	344	352	349	357	367	373	373	381	370	366	363	357	350	334	275	302	336	62
14	284	287	304	310	290	309	335	344	344	350	350	345	338	346	351	356	359	366	365	364	367	356	331	328	337	79
15	336	348	353	354	353	352	345	350	351	348	343	343	347	352	357	365	363	365	366	372	369	363	361	352	355	508
16 q	348	329	326	344	351	355	357	357	350	345	339	340	343	345	349	354	354	354	356	361	362	362	361	355	350	397
17	354	355	355	352	352	354	354	352	348	343	343	345	343	342	347	356	365	368	370	369	364	359	358	358	354	506
18 q	357	353	353	355	355	355	355	353	348	342	347	351	351	350	348	352	353	355	356	360	360	357	356	356	353	478
19	356	355	355	354	354	352	351	345	338	335	339	339	340	343	343	351	356	364	371	367	365	363	341	296	349	373
20	285	324	333	323	319	329	335	343	347	347	347	342	339	343	351	355	353	355	355	353	351	351	353	355	341	188
21	355	355	357	359	359	355	355	353	346	339	335	336	338	338	345	348	348	348	357	365	370	367	360	359	352	447
22 q	358	359	360	359	359	356	355	355	351	346	338	335	332	336	345	354	357	357	355	352	351	350	351	353	351	424
23 q	355	356	357	359	360	357	355	353	346	338	335	333	329	334	345	349	352	353	355	353	352	351	351	350	349	378
24 q	354	356	358	365	365	364	360	353	346	345	345	339	336	343	347	354	353	353	353	349	347	346	347	347	351	425
25	349	349	353	356	358	354	349	346	341	332	327	324	336	341	357	357	358	362	361	360	364	353	352	347	349	386
26	315	304	313	318	334	344	347	347	345	338	336	335	334	340	345	355	358	365	365	364	359	355	353	331	342	200
27	325	340	345	351	355	356	358	356	353	347	345	346	345	342	338	348	365	368	365	361	353	348	349	335	350	394
28	307	330	338	295	286	308	330	335	345	355	355	355	353	355	355	358	359	361	367	374	376	372	362	356	345	287
29 d	349	350	323	197	253	311	332	340	347	348	347	340	343	352	355	350	355	355	354	363	363	363	359	355	338	104
30	340	335	329	293	299	305	311	331	346	348	347	346	347	349	350	354	358	363	363	366	363	363	362	361	343	229
31	359	357	356	357	359	357	355	355	355	349	347	346	347	363	363	367	373	363	355	359	356	313	335	348	354	494
Mean	333	329	325	327	335	341	346	347	347	346	345	345	346	350	355	360	364	366	364	363	361	354	343	337	347	
Sum 10,000+	325	207	78	141	372	584	737	752	758	737	698	679	728	853	995	1169	1288	1335	1278	1265	1193	971	620	432		Grand Total 258,195

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. **MAY 1963**

Day	GEOMAGNETIC ELEMENTS — Horizontal component Maximum 14,000γ+ h. m. / γ	Minimum 14,000γ+ γ / h. m.	Range γ	Declination Maximum 9°+ h. m. / '	Minimum 9°+ ' / h. m.	Range '	Vertical component Maximum 47,000γ+ h. m. / γ	Minimum 47,000γ+ γ / h. m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+ °A.
1 d	22 04 686	372 02 55	314	02 40 61·3	−0·5 03 03	61·8	16 39 422	62 02 48	360	6,6,3,3,3,3,2,3	29	2	88·0
2 d	17 22 736	528 10 10	208	01 38 41·0	14·7 17 07	26·3	16 59 392	236 02 23	156	4,3,3,3,3,4,2,3	25	1	87·3
3	17 08 676	565 22 42	111	13 32 37·4	19·9 01 10	17·5	17 38 380	260 23 03	120	3,2,2,2,2,3,3,4	21	1	87·9
4 d	18 00 685	531 09 05	154	13 21 37·4	22·8 08 30	14·6	17 21 390	230 01 52	160	3,2,3,3,2,3,3,3	22	1	87·7
5	17 49 660	576 10 13	84	04 32 34·5	20·0 00 41	14·5	17 25 377	302 00 39	75	3,3,1,1,1,3,2,1	15	1	87·8
6	19 38 642	557 04 24	85	04 21 37·2	20·1 20 50	17·1	16 08 372	280 04 40	92	2,3,2,1,2,2,3,2	17	1	87·6
7	19 09 648	567 10 16	81	13 44 36·7	22·1 07 16	14·6	20 12 368	329 24 00	39	0,0,1,2,2,2,2,2	11	0	88·0
8	21 49 682	571 10 14	111	13 26 37·0	19·4 21 40	17·6	15 07 365	294 01 07	71	2,2,2,1,2,2,1,3	15	1	87·7
9	19 14 664	565 06 40	99	12 33 38·3	19·3 06 07	19·0	20 02 382	310 23 23	72	2,3,3,2,2,2,3,3	20	1	88·1
10	17 29 685	569 10 38	116	13 08 39·3	17·3 22 51	22·0	17 13 408	277 23 54	131	2,3,2,2,2,3,3,3	20	1	88·0
11	14 31 667	544 02 21	123	12 28 37·9	13·0 02 13	24·9	15 18 384	219 02 11	165	3,4,2,2,3,3,3,3	22	1	88·2
12	17 41 671	566 07 58	105	13 36 39·6	21·8 05 57	17·8	19 52 378	286 01 35	92	3,2,2,1,2,3,2,2	17	1	88·0
13 d	19 18 656	546 11 31	110	13 00 37·5	18·8 03 08	18·7	15 37 384	316 22 11	68	3,3,3,2,3,3,3,4	24	1	87·6
14	21 58 647	551 04 02	96	12 33 35·2	17·5 01 33	17·7	17 51 369	268 00 57	101	3,4,2,1,1,0,1,2	14	1	88·1
15	18 56 648	576 10 31	72	12 36 36·0	22·3 08 15	13·7	19 42 373	327 00 00	46	2,1,1,0,1,1,1,1	8	0	88·2
16 q	19 52 633	588 11 14	45	01 29 35·5	23·7 05 37	11·8	20 46 363	316 01 57	47	3,2,0,0,0,0,0,1	6	0	88·1
17	18 12 664	580 11 51	84	13 20 40·1	25·8 08 05	14·3	18 36 375	337 13 23	38	1,1,1,1,2,2,3,1	12	1	88·3
18 q	18 58 646	591 12 40	55	12 47 34·4	23·7 05 43	10·7	19 37 363	341 09 35	22	1,0,0,1,2,2,1,0	7	0	88·0
19	17 17 656	578 23 45	78	13 02 35·1	19·0 23 40	16·1	18 12 373	293 23 35	80	0,0,0,0,1,2,1,3	7	0	88·0
20	18 04 644	577 11 13	67	13 00 33·5	15·6 00 59	17·9	23 57 357	270 00 22	87	3,3,0,0,1,0,0,0	7	0	87·8
21	19 08 666	594 09 43	72	12 52 34·4	22·5 19 28	11·9	20 08 373	333 10 47	40	0,0,0,0,1,2,3,1	7	0	88·0
22 q	17 16 638	575 10 06	63	13 29 38·8	25·0 07 41	13·8	01 40 361	331 12 55	30	0,0,0·1,2,1,1,0	5	0	87·9
23 q	18 05 641	570 10 06	71	12 43 36·7	23·2 05 02	13·5	04 39 362	326 12 02	36	0,0,0,0,1,1,1,1	4	0	88·1
24 q	17 54 647	580 11 09	67	12 46 35·0	22·4 05 53	12·6	04 52 367	334 12 05	33	0,1,0,0,1,1,1,0	4	0	88·2
25	14 04 665	583 12 19	82	14 04 41·3	21·4 06 52	19·9	19 51 368	318 11 12	50	1,1,1,2,3,2,2,1	13	1	88·0
26	20 52 644	577 09 50	67	13 07 38·1	16·2 02 12	21·9	18 04 369	293 00 54	76	3,2,1,0,1,1,1,2	11	1	88·1
27	20 39 661	584 11 37	77	12 14 37·4	24·5 07 29	12·9	17 10 372	317 24 00	55	2,1,1,1,2,2,2,2	13	1	88·5
28	19 15 663	561 09 56	102	03 21 41·3	18·9 04 41	22·4	20 17 380	269 03 58	111	3,4,3,2,2,2,2,1	19	1	88·9
29 d	18 32 667	464 03 23	203	03 03 50·1	16·8 05 53	33·3	19 15 365	161 03 22	204	4,5,2,1,3,1,2,1	19	1	88·8
30	19 30 654	557 06 07	97	13 31 34·2	22·9 08 41	11·3	19 06 373	287 03 25	86	3,3,3,2,2,2,2,0	17	1	88·0
31	19 49 661	586 10 53	75	21 14 42·2	19·6 22 11	22·6	16 12 379	295 21 31	84	0,1,1,2,2,2,2,4	14	1	87·7
Mean	— — 661	559 — —	102	— — 38·5	19·7 — —	18·9	— — 376	284 — —	91	—	—	0·71	88·0

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) | 14,000γ (0·14 C.G.S. unit) + | JUNE 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 13,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	626	626	622	621	612	625	629	618	601	575	560	574	606	633	630	621	636	622	629	636	637	635	625	612	617	1811
2	614	611	609	608	612	605	604	604	604	599	605	611	602	621	637	625	631	652	649	640	640	629	629	629	620	1870
3	623	617	614	618	618	616	610	610	611	605	600	599	614	629	621	621	626	628	640	636	632	631	625	619	619	1863
4 q	618	618	620	620	618	615	603	586	590	596	600	602	612	623	621	629	628	631	630	627	623	625	625	624	616	1784
5 q	621	619	621	621	619	614	607	600	592	585	589	600	610	618	625	624	624	626	628	629	628	629	626	626	616	1781
6	624	625	629	632	630	624	617	611	604	593	592	600	612	632	651	659	665	684	679	680	612	577	568	546	623	1946
7 d	447	451	265	411	506	573	561	549	565	571	571	578	596	636	673	676	662	669	671	625	622	625	625	611	572	739
8	612	606	606	611	612	607	592	586	578	561	566	585	593	613	618	610	614	632	647	651	646	636	613	604	608	1599
9	582	571	563	591	596	594	601	595	585	582	579	570	585	593	610	612	622	629	634	630	631	629	619	619	601	1422
10	615	609	610	618	619	617	615	607	596	584	578	581	590	610	618	633	641	639	644	650	642	634	629	628	617	1807
11	626	621	614	617	613	604	611	604	592	581	578	582	589	600	615	629	644	647	649	645	639	635	636	625	617	1796
12	629	622	618	610	611	617	614	608	603	595	585	583	597	610	618	625	641	647	653	648	638	633	626	624	619	1855
13	618	616	614	618	622	625	625	615	607	594	588	594	603	602	613	614	624	633	630	634	639	639	634	632	618	1833
14	626	611	620	622	625	626	619	611	600	592	592	595	612	624	629	636	638	641	641	638	637	634	631	626	622	1926
15	628	623	624	624	611	589	602	626	624	611	603	607	609	622	636	626	622	637	647	653	648	636	629	626	623	1963
16 q	626	625	624	623	625	625	622	615	601	596	594	600	607	610	615	626	637	625	629	630	633	632	629	627	620	1876
17	619	625	622	623	615	617	615	613	600	589	599	608	626	647	666	689	702	706	687	668	641	630	604	622	635	2233
18 d	625	628	621	601	617	624	614	611	614	611	599	608	629	620	649	676	691	698	695	647	588	582	571	539	623	1958
19	582	608	600	596	600	601	614	607	599	591	586	594	608	617	614	622	647	672	677	668	659	641	637	626	619	1866
20	589	582	593	614	629	625	610	585	585	585	580	578	600	619	622	621	626	649	641	644	639	630	624	616	612	1686
21	621	618	618	614	605	604	603	599	582	573	590	595	608	621	628	633	636	632	640	640	634	630	632	628	616	1784
22 q	626	618	618	623	622	620	607	606	602	593	590	589	597	609	623	626	636	641	644	640	633	629	628	625	619	1845
23 q	616	615	617	618	618	618	614	610	596	596	596	601	612	620	625	627	629	640	640	641	637	629	626	626	620	1889
24	623	620	621	622	622	615	613	611	600	589	592	600	608	612	643	650	629	624	634	637	640	636	638	641	622	1920
25 d	638	635	629	619	626	609	593	609	625	608	607	598	609	618	624	649	658	651	662	656	645	632	622	546	624	1968
26 d	571	420	595	609	544	611	610	576	555	590	609	611	610	611	622	618	629	644	654	653	647	630	625	628	603	1472
27 d	624	622	601	585	593	604	617	600	586	596	592	598	593	601	612	625	641	654	654	658	653	633	629	626	617	1797
28	615	622	622	622	622	615	610	605	588	607	606	597	597	611	654	625	636	666	671	641	644	640	629	624	624	1969
29	624	622	624	623	625	622	615	607	602	600	597	596	610	625	623	667	646	664	676	655	637	629	625	625	627	2039
30	625	614	614	619	614	613	590	593	601	604	596	598	610	612	633	654	659	658	681	666	636	626	625	611	623	1952
Mean	611	604	602	608	610	613	609	603	597	592	591	594	605	617	629	635	641	648	652	645	636	629	623	615	617	
Sum 17,000+	1333	1120	1068	1253	1301	1374	1261	1081	902	752	719	832	1154	1519	1868	2048	2220	2441	2556	2366	2080	1856	1684	1461		Grand Total 444,249

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) | 9° + | JUNE 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 500·0'+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	28·5	33·4	28·5	27·1	27·7	25·3	22·8	23·0	25·6	26·4	26·3	37·5	36·8	36·8	35·5	32·4	31·0	30·5	30·5	30·9	31·0	29·2	29·6	31·9	29·9	218·2
2	33·2	30·8	29·2	27·4	28·4	26·1	26·2	27·0	25·5	27·8	29·9	31·5	32·8	34·9	35·0	34·4	31·5	32·5	32·0	28·3	30·0	31·2	30·4	30·7	30·3	226·7
3	31·0	28·6	27·7	27·4	27·1	25·9	25·8	25·3	24·9	26·6	30·1	34·1	35·5	36·3	33·9	32·6	31·2	30·1	30·2	30·1	30·8	30·6	30·3	30·4	29·9	216·5
4 q	29·2	28·2	28·6	26·7	25·1	23·8	22·9	25·0	26·9	28·6	30·5	32·7	34·9	34·5	33·4	31·7	30·6	29·8	29·4	29·7	30·0	30·0	29·9	29·3	29·2	201·4
5 q	28·9	28·2	27·6	26·8	25·8	23·6	23·3	22·9	23·7	26·3	29·6	32·9	35·2	35·2	34·8	34·1	32·7	31·1	30·5	30·1	30·7	30·8	30·7	30·2	29·4	205·7
6	29·5	29·1	28·6	27·3	25·6	24·2	23·3	23·1	24·5	27·6	31·5	35·3	37·8	38·6	38·6	38·1	37·9	39·4	38·6	35·1	26·4	28·6	23·2	20·9	30·5	232·8
7 d	8·4	-6·7	3·6	13·0	22·1	18·8	11·7	15·0	21·5	23·1	29·4	32·1	36·0	38·8	34·3	38·7	34·4	33·9	28·6	31·5	32·1	28·6	31·5	29·6	24·6	90·0
8	28·7	27·4	26·3	25·2	24·2	23·2	22·5	22·7	24·0	26·6	28·6	32·4	33·2	32·0	32·6	32·8	32·4	31·7	31·6	29·5	29·5	30·3	28·6	21·3	28·2	177·3
9	20·3	23·7	23·7	26·2	24·2	23·9	23·7	24·2	24·2	25·9	30·4	32·4	33·4	34·5	35·2	34·2	32·7	30·7	30·4	29·3	29·8	30·2	30·0	30·3	28·5	183·5
10	31·0	30·5	29·3	26·7	24·7	23·6	22·6	21·7	21·3	23·8	28·3	32·7	34·0	34·5	34·5	35·2	34·4	31·4	31·5	31·3	29·8	28·0	29·3	28·5	29·1	198·6
11	28·0	29·6	29·4	27·9	28·8	25·1	24·4	23·6	24·5	26·5	30·2	32·7	35·1	35·2	35·4	36·3	36·2	32·3	30·2	30·3	30·4	30·4	30·2	29·2	30·1	221·9
12	29·4	28·0	26·6	24·7	27·7	21·1	19·7	20·0	20·9	23·6	28·0	32·6	35·9	37·3	36·0	34·5	33·4	31·5	30·5	30·5	30·6	30·7	30·7	29·5	28·9	193·4
13	27·8	28·6	28·3	22·2	20·8	21·4	21·6	21·4	22·4	23·1	27·1	32·4	36·3	36·2	36·7	35·8	33·9	31·9	30·4	29·9	30·4	30·9	30·6	30·6	28·8	190·7
14	32·0	33·3	26·4	25·1	25·0	25·1	24·9	25·5	26·3	28·2	30·1	33·1	35·5	36·1	36·1	33·9	33·4	32·9	32·0	31·7	31·7	30·4	30·4	29·8	30·4	228·9
15	30·2	31·1	28·4	25·3	21·6	22·5	28·5	27·2	25·0	24·7	25·7	29·2	30·9	33·3	34·0	33·4	32·5	32·1	32·0	31·0	27·7	27·3	29·6	29·0	28·8	192·2
16 q	28·9	28·5	27·6	27·2	25·3	24·1	24·0	24·0	24·3	25·8	28·6	31·5	33·1	34·5	34·9	33·9	31·5	29·9	30·8	31·3	31·1	31·1	31·2	32·1	29·4	205·2
17	30·9	26·2	25·5	25·2	23·1	21·6	20·4	20·9	21·6	28·6	31·6	35·3	37·1	35·3	37·1	38·0	38·2	40·0	35·0	31·4	31·3	28·9	30·5	27·6	30·1	221·3
18 d	27·9	28·4	28·5	31·7	28·2	23·3	25·6	27·7	27·4	26·8	28·4	31·4	34·7	34·5	35·1	38·3	36·9	38·4	38·5	33·4	29·7	28·7	22·9	13·6	30·0	220·0
19	20·6	22·1	23·9	27·6	22·3	21·0	22·1	24·5	25·4	26·2	28·4	31·4	31·7	31·8	31·7	32·5	33·5	35·4	38·0	32·1	34·3	32·3	27·5	28·3	28·5	184·6
20	24·8	16·9	6·5	15·3	18·8	20·5	21·1	23·4	26·7	27·5	27·8	30·5	32·5	35·3	35·9	34·6	32·8	30·5	32·2	30·7	29·8	30·9	30·6	28·3	26·8	143·9
21	31·4	28·6	24·7	24·4	24·8	26·4	25·6	24·5	24·9	26·7	29·0	31·8	33·7	34·3	34·3	33·7	33·5	33·5	33·4	31·9	30·6	28·8	28·6	28·6	29·5	207·7
22 q	28·6	28·6	27·8	23·7	22·7	21·8	22·5	22·8	24·7	25·6	28·1	29·4	31·3	32·7	33·4	32·4	30·7	30·5	29·8	30·7	30·7	29·8	27·8	27·7	28·1	173·8
23 q	27·5	27·2	27·4	24·8	24·3	23·8	22·9	23·9	25·4	27·4	28·6	30·9	32·3	34·2	32·7	32·1	32·3	32·3	31·5	31·3	29·3	28·6	29·6	29·3	28·7	189·6
24	28·4	27·6	26·5	25·0	24·9	26·5	26·6	27·0	27·6	28·2	30·2	33·5	35·8	35·8	36·6	36·7	37·3	35·8	34·6	33·2	32·8	31·9	31·5	30·8	31·0	244·8
25 d	26·9	27·9	24·8	22·4	21·8	25·5	27·4	31·8	26·8	28·0	28·7	32·1	33·4	34·9	34·7	34·8	34·2	32·6	32·8	32·6	32·8	15·3	24·6	15·9	28·4	182·7
26 d	18·5	18·8	22·0	27·0	32·0	22·9	23·6	24·8	26·8	29·6	27·8	30·2	31·5	32·4	32·3	32·5	32·2	31·5	31·9	30·6	29·6	30·5	26·1	26·6	28·0	171·7
27 d	26·4	25·3	27·3	30·5	31·4	28·8	25·9	27·5	24·7	25·4	28·7	30·5	33·3	35·1	35·4	34·3	32·4	32·5	32·2	26·5	29·5	29·5	29·1	32·0	29·8	214·2
28	27·2	28·6	24·1	24·6	22·8	22·4	22·6	21·7	24·7	25·3	27·4	30·5	33·2	33·7	35·0	34·4	34·0	32·4	29·5	31·2	31·3	30·8	28·7	29·4	28·6	185·5
29	30·5	29·5	27·6	24·6	23·3	22·5	23·7	23·6	23·7	25·4	27·8	30·9	32·6	34·2	34·1	34·2	32·3	33·0	29·0	30·7	30·6	29·6	29·5	31·8	28·9	194·7
30	29·5	28·7	27·0	22·0	23·7	21·0	23·6	24·9	25·6	25·6	27·4	30·0	32·9	32·4	32·5	30·7	33·3	34·7	32·6	26·6	30·2	29·4	30·3	30·1	28·5	184·7
Mean	27·5	26·6	25·5	25·2	24·9	23·5	23·4	24·0	24·7	26·4	28·8	32·1	34·1	34·8	34·7	34·4	33·4	32·8	32·0	30·8	30·5	29·4	29·1	28·1	29·0	
Sum 700·0+	124·1	96·7	63·4	55·0	48·2	5·7	1·5	20·6	41·5	90·9	164·2	263·5	322·4	345·3	341·7	331·2	303·3	284·8	260·2	223·4	214·5	183·3	173·5	143·3	29·0	Grand Total 20902·2

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

3 LERWICK (Z)   47,000γ (0·47 C.G.S. unit) +   JUNE 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	347	337	327	334	339	332	337	349	354	354	355	346	341	349	358	364	368	371	362	358	360	360	357	361	351	420
2	340	345	347	347	339	348	355	352	348	346	345	346	361	363	372	379	373	365	372	379	370	367	363	361	358	583
3	358	357	358	359	349	347	359	356	355	346	345	341	344	348	361	362	363	362	362	363	363	361	361	361	356	541
4 q	356	358	358	363	362	361	364	362	354	349	347	347	351	357	359	363	364	363	362	359	357	356	357	357	358	586
5 q	361	361	361	362	361	361	360	361	361	353	349	341	341	347	349	354	357	357	356	355	354	351	353	356	355	522
6	357	357	357	360	361	356	355	353	351	347	346	340	332	332	339	347	353	361	368	373	315	251	329	341	345	281
7 d	287	152	246	205	216	273	327	358	362	361	357	365	369	387	409	409	419	401	397	389	378	368	295	308	335	38
8	333	353	358	364	369	372	369	366	361	357	353	345	353	361	369	378	379	374	369	370	371	365	299	280	357	568
9	290	285	291	323	341	348	357	361	363	367	365	361	358	362	365	372	374	380	373	369	365	361	354	348	351	433
10	349	349	349	362	365	365	364	365	365	361	358	353	348	343	348	354	365	373	373	368	357	357	356	353	358	600
11	351	350	353	353	357	353	349	357	357	353	348	339	338	344	350	355	360	369	374	373	369	361	341	344	354	498
12	348	353	357	363	357	357	363	362	357	355	351	347	342	341	349	357	363	371	377	376	377	370	363	353	359	609
13	341	336	326	330	345	350	352	355	352	353	354	345	341	339	337	341	347	354	364	365	361	360	358	353	348	359
14	349	332	342	355	358	362	363	362	361	355	350	345	349	358	361	365	364	365	369	369	367	363	361	358	358	583
15	355	350	345	351	352	353	329	325	334	342	349	351	353	353	355	366	374	368	367	368	369	373	368	365	355	515
16 q	361	362	361	360	359	358	358	358	357	353	349	349	357	356	353	350	353	365	365	365	363	364	363	358	358	597
17	353	341	351	354	357	355	353	349	354	356	353	353	356	376	415	443	462	461	448	420	409	373	341	351	379	1084
18 d	357	361	358	330	273	306	333	341	345	353	361	359	365	389	384	388	421	437	437	401	316	314	301	256	354	486
19	308	315	329	317	329	347	354	355	356	349	348	349	349	357	364	363	358	373	388	403	392	378	355	349	354	485
20	277	261	217	283	330	345	345	356	353	357	364	372	362	371	373	377	380	384	373	364	362	353	357	347	344	263
21	331	333	347	355	356	364	361	356	359	356	346	346	347	351	361	363	365	365	362	364	365	363	357	353	355	511
22 q	356	357	357	363	365	364	361	356	353	357	355	353	353	354	357	361	364	365	365	365	362	359	356	353	359	611
23 q	354	355	356	358	362	357	357	357	355	356	353	349	352	353	350	359	367	368	368	362	361	360	355	354	357	578
24	355	355	355	357	357	355	355	356	354	343	339	338	336	337	347	362	378	383	374	365	359	358	355	350	355	523
25 d	351	342	324	323	318	332	345	324	325	344	351	350	352	364	371	363	361	362	359	373	362	315	334	236	341	181
26 d	261	83	208	283	268	310	345	359	376	364	361	360	359	366	375	380	378	375	375	389	389	368	348	357	335	37
27 d	362	362	343	297	313	310	336	347	355	349	354	355	364	366	368	366	367	371	378	382	366	374	368	341	354	494
28	318	328	345	354	358	358	359	362	362	355	352	349	353	360	369	383	374	378	385	385	378	375	367	360	361	667
29	351	351	350	358	362	367	365	365	362	362	360	358	359	362	362	372	397	399	392	386	385	378	368	355	368	826
30	343	318	324	338	351	351	359	355	352	350	357	356	359	363	368	382	379	374	370	363	372	378	366	337	357	565
Mean	339	327	333	339	343	347	353	355	355	353	353	350	351	357	363	369	374	377	376	374	366	358	350	342	354	
Sum 9000+	1160	799	1000	1161	1299	1408	1582	1641	1653	1603	1575	1508	1544	1709	1898	2078	2227	2294	2284	2221	1974	1734	1506	1256		Grand Total 255,044

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK   All Times G.M.T.   JUNE 1963

	Horizontal component					Declination					Vertical component					3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+
	Maximum 14,000γ+		Minimum 14,000γ+		Range	Maximum 9°+		Minimum 9°+		Range	Maximum 47,000γ+		Minimum 47,000γ+		Range				
	h. m.	γ	γ	h. m.	γ	h. m.	'	'	h. m.	'	h. m.	γ	γ	h. m.	γ				°A.
1	14 20	656	547	10 40	109	11 36	40·3	21·5	07 00	18·8	17 00	382	324	05 52	58	2,2,2,2,3,3,1,3	18	1	88·0
2	17 05	647	593	12 34	54	00 00	38·2	24·6	06 05	13·6	19 42	387	332	04 52	55	3,1,1,2,2,3,2,0	14	1	88·2
3	18 11	648	590	10 25	58	13 35	36·9	24·3	08 47	12·6	20 00	366	337	11 21	29	1,1,1,1,2,1,2,1	10	0	88·6
4 q	17 49	633	580	07 18	53	13 05	35·4	21·8	06 25	13·6	16 06	368	345	11 15	23	1,0,2,0,1,1,0,0	5	0	88·7
5 q	21 14	630	582	09 52	48	12 45	35·7	22·6	07 16	13·1	02 00	364	339	12 13	25	0,1,0,0,0,0,0,0	1	0	88·3
6	17 40	701	466	22 40	235	17 36	41·2	12·3	22 50	28·9	19 32	385	226	21 15	159	0,0,0,1,2,3,5,5	16	2	88·5
7 d	15 20	702	42	02 55	660	13 46	42·0	-35·5	02 40	77·5	02 45	437	113	02 00	324	8,5,3,2,4,3,4,3	32	2	88·3
8	18 52	658	553	09 28	105	22 32	37·7	15·9	23 41	21·6	16 07	385	249	23 01	136	2,2,2,3,2,3,2,4	20	1	88·1
9	18 32	640	551	02 44	89	14 49	36·2	18·8	00 06	17·4	17 22	385	273	01 31	112	3,3,2,2,3,2,1,1	17	1	88·5
10	19 46	654	575	10 39	79	15 28	35·8	20·0	07 08	15·8	18 07	377	341	14 12	36	1,0,1,0,2,2,1,1	8	0	88·5
11	18 01	658	574	10 41	84	15 49	37·6	22·3	04 51	15·3	19 07	377	334	12 31	43	2,2,1,1,1,2,2,1	12	0	88·3
12	18 18	655	577	11 04	78	13 27	37·7	18·9	06 22	18·8	20 00	379	337	13 20	42	1,2,2,1,0,1,1,0	8	0	88·9
13	21 37	646	585	10 24	61	12 36	37·1	20·0	04 34	17·1	19 17	365	322	03 00	43	2,1,1,1,1,2,1,1	10	0	88·1
14	15 15	654	583	09 55	71	01 19	37·4	23·3	07 22	14·1	18 31	370	323	01 42	47	3,1,1,2,2,2,0,1	12	0	88·3
15	20 20	659	543	06 06	116	14 08	34·5	20·6	04 25	13·9	16 24	376	318	06 46	58	2,3,3,1,2,2,2,2	17	1	88·5
16 q	15 56	644	590	10 20	54	14 30	35·1	23·5	05 56	11·6	17 51	371	341	15 57	30	0,0,0,0,0,2,1,2	5	0	88·6
17	16 50	720	585	09 21	135	17 15	45·6	18·7	08 06	26·9	18 23	482	333	22 14	149	2,1,2,1,3,3,3,3	18	1	88·6
18 d	17 46	723	521	23 54	202	19 44	44·1	9·2	23 37	34·9	18 02	457	248	23 33	209	1,4,2,3,2,3,5,4	24	1	88·5
19	19 41	701	538	00 00	163	18 44	40·4	17·7	00 00	22·7	19 16	411	292	00 00	119	3,2,1,1,2,3,3,3	18	1	88·5
20	17 38	654	565	11 20	89	14 51	36·6	2·4	02 35	34·2	17 02	393	208	02 30	185	4,4,2,2,3,2,2,2	21	1	88·3
21	15 59	648	561	09 27	87	15 57	34·7	22·9	06 57	11·8	16 33	371	325	01 00	46	2,1,1,2,0,2,1,1	10	0	88·5
22 q	16 56	647	581	11 01	66	14 17	33·7	21·2	05 09	12·5	17 10	369	349	11 48	20	1,1,1,1,1,1,1,1	8	0	88·3
23 q	19 38	647	590	10 07	57	13 21	34·5	22·6	06 01	11·9	17 42	371	347	12 15	24	1,0,0,0,0,1,1,0	4	0	88·9
24	15 24	665	585	09 55	80	16 56	38·0	24·5	05 19	13·5	17 17	387	333	13 15	54	0,1,0,0,3,3,1,1	9	0	88·7
25 d	18 46	680	517	23 35	163	14 07	36·2	-3·9	21 16	40·1	21 03	387	206	23 31	181	3,3,3,2,1,2,3,5	22	1	88·2
26 d	18 46	669	309	01 33	360	01 13	37·9	8·3	00 04	29·6	19 48	396	-20	01 31	416	7,4,4,3,2,2,2,3	27	2	88·6
27 d	20 03	703	561	03 01	142	03 07	38·1	21·8	08 47	16·3	19 29	392	272	03 24	120	3,3,2,2,2,3,3,3	21	1	88·3
28	18 02	694	578	08 49	116	17 28	36·9	19·9	07 40	17·0	17 55	396	300	00 06	96	3,1,2,2,3,3,3,2	19	1	88·3
29	18 20	695	588	08 03	107	17 35	35·4	21·5	05 51	13·9	18 09	403	347	02 35	56	1,1,2,0,2,3,3,2	14	1	88·6
30	18 43	708	584	11 07	124	17 23	35·3	19·7	05 31	15·6	15 47	389	309	01 36	80	2,2,2,2,2,3,3,3	18	1	88·9
Mean	- -	668	540	- -	128	- -	37·5	16·7	- -	20·8	- -	389	290	- -	99	-	-	0·67	88·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) 14,000γ (0·14 C.G.S. unit) + JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
1	616	612	601	602	619	612	609	607	604	581	580	579	602	612	623	619	621	626	631	638	634	627	623	620	612	698
2 q	617	617	617	619	619	619	619	616	606	594	589	591	590	598	608	620	631	636	643	639	636	630	627	626	617	807
3 q	623	622	616	623	623	620	615	608	600	588	581	591	603	605	609	615	621	627	629	634	634	635	634	631	616	787
4	629	628	630	626	620	620	620	627	623	616	616	616	636	619	635	631	623	654	662	680	639	604	601	620	628	1075
5	626	618	620	631	644	627	594	588	611	598	596	600	603	605	613	614	627	628	630	634	645	642	643	603	618	840
6	609	616	607	615	540	569	610	576	573	589	591	598	602	610	626	627	628	645	656	644	637	628	621	621	610	638
7	616	614	616	612	619	616	611	601	588	572	567	567	602	623	637	642	651	641	634	632	632	627	622	632	616	774
8	619	609	604	613	611	608	610	607	594	597	594	594	598	614	627	642	640	642	650	649	642	638	648	599	619	849
9	594	581	598	596	570	598	569	594	594	587	592	597	602	613	614	625	640	645	651	650	652	632	620	620	610	634
10	624	623	623	609	612	617	606	602	597	591	586	591	601	609	627	638	646	656	653	644	640	639	616	615	619	865
11	615	609	616	616	606	609	606	605	603	594	594	594	602	607	615	628	643	650	652	648	641	627	624	620	618	824
12	619	618	616	620	623	618	611	603	601	599	595	595	603	613	620	630	641	650	646	638	634	634	634	630	620	891
13	624	627	630	630	631	630	620	610	598	591	592	591	598	611	619	629	624	630	637	637	642	637	632	630	621	900
14 q	626	623	622	626	627	628	623	620	612	601	601	602	603	604	624	629	632	643	647	644	639	639	640	635	625	990
15 q	638	630	630	630	633	631	631	626	618	608	606	609	605	616	627	630	635	631	637	638	636	643	644	645	628	1077
16	645	640	638	626	631	631	624	617	608	596	600	607	619	627	644	645	645	652	652	656	651	644	638	632	632	1168
17	623	616	649	651	624	638	645	637	610	583	590	603	615	626	663	676	671	662	651	640	632	627	623	623	632	1178
18	606	611	620	623	623	620	612	609	606	594	587	587	594	607	637	653	640	646	638	641	642	631	623	602	619	852
19	598	601	609	619	620	613	606	598	589	583	583	588	600	609	612	627	635	646	645	649	634	627	626	623	614	740
20	623	621	621	623	623	619	612	610	608	601	604	614	620	627	633	634	642	645	650	652	643	635	632	631	626	1023
21 d	632	632	632	633	631	638	631	626	621	612	598	622	594	627	657	712	656	671	639	642	634	621	620	620	633	1201
22	619	615	616	616	618	612	583	580	579	591	601	600	584	604	603	655	671	667	656	634	626	622	621	623	617	796
23 d	617	619	620	626	629	617	601	599	602	598	592	601	607	623	621	611	645	641	658	660	648	634	606	577	619	852
24 d	622	561	583	513	578	586	581	602	592	580	587	595	588	610	652	679	680	689	662	634	626	624	621	623	611	668
25	623	619	616	602	604	586	604	600	606	602	591	591	586	609	624	634	646	650	651	638	636	634	617	624	616	793
26	609	620	620	623	626	625	615	602	600	599	591	580	600	599	602	618	627	642	646	657	645	631	629	631	618	837
27	620	602	617	612	564	605	603	587	591	597	591	587	595	620	627	621	638	636	633	637	634	630	638	612	612	697
28	594	594	609	616	616	614	605	605	599	587	590	594	601	612	614	619	623	629	632	631	630	625	624	622	612	685
29 q	621	624	623	624	623	620	616	614	608	602	598	598	602	605	613	626	632	632	638	645	649	639	634	618	621	904
30 d	616	631	634	611	618	642	638	609	597	609	606	595	577	574	586	631	651	645	663	671	673	617	622	605	622	921
31 d	604	608	617	615	600	600	604	598	598	584	581	591	578	598	613	628	643	653	646	646	636	638	630	616	614	725
Mean	618	615	618	616	614	616	611	606	601	594	593	596	600	611	623	635	640	645	646	645	639	631	627	620	619	
Sum 18,000+	1167	1061	1170	1101	1025	1088	934	783	636	424	370	468	610	936	1325	1688	1848	2010	2018	1982	1822	1561	1433	1229		Grand Total 460,689

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) 9° + JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0′+
1	28·8	25·8	28·2	26·4	24·5	22·6	23·5	23·6	24·9	25·6	26·6	28·4	31·1	32·2	31·3	30·6	31·1	31·1	31·2	30·5	30·2	29·3	28·8	28·4	28·1	74·7
2 q	27·8	27·9	27·1	26·0	24·9	22·9	21·7	21·3	21·9	23·5	26·6	29·8	33·7	35·6	35·6	34·4	32·7	31·5	30·8	30·2	30·1	29·8	29·6	29·1	28·5	84·5
3 q	28·3	27·5	27·5	26·1	24·0	22·7	22·4	22·7	23·8	26·4	29·6	32·6	34·8	34·1	33·2	32·6	31·9	31·3	31·4	31·3	30·8	30·9	30·5	29·8	29·0	96·2
4	28·7	27·8	27·3	27·4	26·3	23·9	23·0	21·4	21·7	25·5	27·8	30·6	34·9	36·1	37·8	38·3	36·1	36·1	34·0	30·9	23·5	21·9	11·9	22·8	28·2	75·7
5	24·1	22·5	19·0	20·9	17·2	20·6	21·0	25·7	25·9	25·1	28·1	31·7	34·9	35·1	34·7	33·3	33·3	33·2	31·6	31·6	31·7	29·5	24·7	21·4	27·4	56·8
6	24·2	27·4	28·0	18·8	18·2	27·4	21·6	23·0	23·7	23·5	25·3	28·4	32·2	33·7	33·7	32·0	31·3	30·5	29·3	27·7	29·7	30·0	29·1	28·4	27·4	57·1
7	27·7	28·0	28·2	23·0	19·6	21·2	22·2	22·3	22·5	25·7	29·2	33·0	33·0	35·0	36·1	33·2	33·2	32·2	33·1	33·2	32·3	30·9	27·9	26·6	28·7	88·3
8	25·4	27·2	30·7	26·9	25·4	27·7	27·8	24·5	22·6	24·5	27·3	29·1	31·4	34·3	36·1	34·8	33·1	33·2	33·1	32·6	30·6	27·4	19·8	18·9	28·5	84·4
9	23·7	28·8	28·4	25·3	26·4	23·8	20·6	20·9	22·0	25·0	27·8	30·3	30·8	32·2	33·2	33·3	33·1	31·9	32·4	32·5	30·7	27·1	29·3	30·9	28·3	80·4
10	28·2	26·6	27·1	27·1	27·7	26·1	24·6	23·7	23·9	25·4	27·3	29·5	33·0	34·9	35·6	34·1	31·5	32·2	32·1	30·5	30·9	29·2	26·6	25·4	28·5	89·1
11	28·4	29·2	27·2	26·3	25·2	24·3	25·9	24·4	23·4	24·5	26·9	29·6	32·2	33·5	33·3	32·8	32·6	31·4	30·9	30·7	28·1	28·8	27·3	27·4	28·5	84·3
12	26·4	25·4	25·3	26·4	24·5	23·4	23·5	24·6	24·7	26·4	27·4	27·9	30·0	31·7	32·2	32·8	33·4	32·8	32·5	31·5	31·2	30·3	29·7	28·6	28·4	82·6
13	27·3	28·6	26·4	23·9	22·1	20·7	21·3	22·6	24·1	26·1	27·9	29·9	31·5	33·0	33·2	32·3	31·2	29·6	29·9	30·3	30·3	30·1	29·3	29·4	28·0	71·0
14 q	28·2	27·5	27·4	26·2	25·4	24·0	23·4	22·8	23·8	26·0	28·3	31·6	34·2	35·0	35·0	33·5	32·4	32·9	32·2	31·7	31·3	30·9	30·6	30·2	28·8	104·5
15 q	29·6	28·5	27·4	26·7	24·4	23·3	23·2	23·6	24·1	26·8	30·2	32·0	33·2	32·5	31·7	31·3	31·1	31·6	31·5	30·9	30·1	30·4	29·5	28·6	28·8	91·2
16	29·7	29·6	30·0	22·8	21·4	18·9	20·2	22·7	23·8	32·3	27·6	30·8	33·3	34·2	33·2	33·9	33·2	33·6	32·2	32·4	32·7	31·3	29·4	26·9	29·0	96·1
17	24·0	30·8	28·4	28·7	31·3	31·1	28·8	28·2	27·4	27·0	32·4	31·9	35·1	35·1	36·7	38·9	32·7	31·1	31·5	32·3	31·6	30·9	28·7	23·5	30·8	138·1
18	23·1	24·5	25·4	24·8	24·5	23·2	23·0	22·5	21·8	24·7	27·3	29·6	32·1	33·6	34·8	33·2	31·7	33·1	33·9	33·9	32·4	31·1	23·6	23·7	28·0	71·5
19	28·1	25·5	25·5	23·7	23·0	22·5	22·5	22·7	23·5	25·5	27·4	29·5	31·4	31·1	30·8	30·4	30·1	30·1	29·7	26·4	28·4	29·3	29·3	27·9	27·3	54·3
20	27·3	26·3	25·9	25·4	23·5	21·3	21·4	21·7	24·1	27·9	28·3	28·2	29·8	31·8	33·7	34·7	35·1	33·9	34·0	32·2	30·3	29·3	28·4	27·9	28·4	82·4
21 d	28·5	27·9	28·0	28·4	29·0	26·5	27·4	30·0	31·9	30·3	29·4	33·1	34·5	37·0	38·0	41·0	32·1	34·2	31·6	27·4	28·3	29·2	30·5	29·8	31·0	144·0
22	28·4	27·6	25·6	24·5	24·3	22·5	24·7	30·4	30·5	29·3	27·7	30·4	31·5	31·2	28·5	30·4	32·0	28·5	30·3	31·2	30·2	29·7	28·6	28·8	28·8	90·6
23 d	31·0	28·8	27·4	24·0	22·6	23·7	27·6	29·2	25·2	25·6	28·4	31·9	35·0	35·7	35·7	35·3	35·8	35·0	31·7	31·7	29·1	28·4	27·9	30·3	29·9	117·0
24 d	24·6	28·8	23·5	32·2	27·9	28·8	23·9	22·8	24·9	26·4	26·7	29·4	32·1	31·2	33·9	36·1	33·4	31·1	31·0	31·4	31·3	26·7	27·1	28·2	28·9	93 4
25	28·2	26·6	28·4	33·0	29·1	27·3	28·4	25·9	24·3	23·3	23·9	27·4	30·6	33·4	33·3	32·2	31·8	28·4	29·1	30·3	30·2	25·2	24·9	26·6	28·4	81·8
26	22·8	25·3	26·6	27·3	27·5	23·1	19·9	22·5	25·0	25·7	27·4	28·4	31·4	32·3	31·3	32·3	31·3	30·5	30·1	28·2	29·1	25·4	28·4	28·6	27·5	60·4
27	33·5	28·3	19·8	24·1	28·8	25·1	21·8	25·1	24·8	27·4	30·2	33·0	35·1	36·0	35·4	32·9	31·0	31·3	31·2	31·1	30·2	27·9	29·4	26·6	29·2	100·0
28	27·9	27·9	24·5	24·5	22·6	21·7	22·2	23·3	25·3	26·2	27·2	28·8	31·3	31·9	32·0	31·2	30·2	29·1	29·5	29·5	29·6	29·1	28·7	28·3	27·6	62·5
29 q	27·9	27·7	27·3	26·5	25·5	25·0	24·5	23·4	23·7	26·2	29·1	31·6	34·2	34·1	34·0	33·7	33·6	32·5	31·6	30·3	29·3	27·5	28·5	28·9	28·9	93·1
30 d	22·4	24·3	25·7	31·3	26·6	19·8	23·2	25·1	23·8	23·8	26·2	30·1	33·2	37·6	37·5	35·7	36·1	35·4	33·1	33·5	29·8	14·4	21·8	26·4	27·8	67·4
31 d	31·5	26·4	20·3	21·2	25·4	24·6	25·6	20·6	20·6	22·6	26·3	32·0	36·1	34·6	34·8	33·9	33·1	33·3	30·5	30·4	29·1	27·4	27·2	32·2	28·3	79·7
Mean	27·3	27·3	26·4	25·8	24·8	23·9	23·6	24·0	24·3	25·9	27·8	30·3	32·8	33·9	34·1	33·8	32·6	31·9	31·5	30·8	29·5	28·5	27·4	27·4	28·6	
Sum 700·0+	145·7	145·0	117·5	99·8	68·8	39·7	30·8	43·2	53·6	104·2	161·8	240·5	317·6	349·7	356·3	348·1	310·5	289·3	277·4	254·6	215·8	183·7	150·7	148·8	28·9	Grand Total 21253·1

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

3 LERWICK (Z) $\qquad$ 47,000γ (0·47 C.G.S. unit) + JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	322	341	345	329	341	348	355	358	357	354	354	355	356	354	354	362	363	363	362	361	361	366	366	366	354	493
2 q	366	364	363	362	362	362	360	358	360	366	366	358	361	357	359	362	361	362	362	363	363	363	364	363	362	687
3 q	361	362	361	357	358	358	358	361	360	353	346	342	344	353	356	359	358	357	355	356	356	358	359	360	356	548
4	362	362	363	362	360	350	345	338	341	338	336	336	338	350	356	370	374	372	382	383	355	344	334	344	354	495
5	354	354	356	354	342	325	338	332	342	355	354	353	355	354	356	356	359	359	358	355	352	362	332	323	349	380
6	340	336	318	306	309	293	302	331	342	355	355	356	358	367	368	383	381	375	378	371	367	365	363	362	349	381
7	362	360	343	332	342	353	359	358	357	357	357	354	350	354	374	377	379	378	378	368	356	357	360	352	358	595
8	348	348	339	337	346	345	344	349	362	360	360	355	356	354	357	372	382	378	375	375	374	367	346	338	357	567
9	328	302	281	308	292	316	338	347	348	348	342	342	351	362	360	367	374	374	366	364	362	365	357	336	343	230
10	338	344	354	356	353	350	358	362	360	359	356	354	350	355	359	370	378	370	372	372	369	355	355	348	358	597
11	342	342	348	355	356	356	358	355	356	355	354	349	347	348	352	356	360	367	367	367	369	368	360	355	356	542
12	348	352	356	359	362	366	364	362	361	356	349	344	343	348	355	355	356	356	366	366	364	362	360	357	357	567
13	357	350	343	349	353	353	356	358	354	350	351	348	347	348	350	354	360	362	361	361	360	360	360	358	354	503
14 q	355	356	355	357	357	356	357	357	358	354	347	342	342	349	353	354	356	351	354	361	360	359	359	359	355	508
15 q	350	352	353	354	352	351	351	354	354	355	350	345	345	346	346	354	355	354	354	356	358	356	355	355	352	455
16	352	345	325	308	318	330	338	340	341	348	349	348	349	356	354	354	362	362	369	369	368	364	364	354	349	367
17	338	298	287	296	312	297	296	311	334	352	348	357	385	412	410	431	449	426	396	374	363	362	361	343	356	538
18	328	342	355	355	360	358	351	353	352	348	348	352	359	357	370	391	408	394	386	370	364	369	362	354	362	686
19	349	352	360	362	363	364	362	360	359	356	356	356	362	364	363	362	362	362	362	364	363	362	359	359	360	643
20	362	362	362	362	362	362	361	356	353	348	344	336	343	349	351	353	350	354	352	351	355	356	355	355	354	494
21 d	354	356	358	358	353	347	351	346	339	337	348	348	384	386	392	408	488	470	425	402	378	369	365	361	376	1023
22	362	365	368	370	368	368	368	357	355	354	356	354	356	363	396	388	416	428	398	386	372	366	357		374	987
23 d	345	342	354	361	362	360	350	349	349	347	348	350	354	354	375	378	380	411	409	402	378	348	321	209	356	536
24 d	265	272	204	192	217	267	307	340	356	362	361	361	369	374	375	378	401	401	411	400	384	364	342	354	336	57
25	356	358	350	331	316	327	324	345	357	356	355	359	360	354	360	369	378	390	386	378	373	366	360	327	356	535
26	325	312	326	332	334	338	349	356	356	361	360	360	357	368	375	368	364	362	368	375	375	356	346	344	353	467
27	302	222	255	302	296	308	345	349	356	361	360	356	348	356	375	387	385	372	370	365	370	369	340	324	341	173
28	312	278	308	332	350	356	360	364	366	365	362	357	355	361	366	369	372	375	372	368	364	364	364	364	354	504
29 q	362	362	362	362	363	362	363	364	362	361	359	353	350	358	358	360	367	368	368	368	374	380	361	312	361	659
30 d	293	292	322	316	258	291	318	325	341	355	358	365	377	385	382	368	369	383	374	392	366	344	348	345	344	267
31 d	261	259	316	334	350	341	337	348	357	362	358	356	364	368	363	366	367	366	379	379	374	371	361	302	347	339
Mean	339	334	335	337	338	341	346	350	353	355	353	352	355	360	365	370	378	377	375	372	367	362	355	343	355	
Sum 10,000+	499	342	390	450	467	558	723	843	945	988	947	901	1015	1164	1320	1481	1714	1702	1623	1522	1361	1223	1005	640		Grand Total 263,823

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. JULY 1963

	GEOMAGNETIC ELEMENTS												3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+
	Horizontal component			Declination			Vertical component								
	Maximum 14,000γ +	Minimum 14,000γ +	Range	Maximum 9° +	Minimum 9° +	Range	Maximum 47,000γ +	Minimum 47,000γ +	Range					
	h. m.	γ	γ	h. m.	γ	h. m.	′	′	h. m.	′	h. m.	γ	γ	h. m.	γ				°A.
1	19 45	639	583	03 02	56	00 01	33·3	20·6	05 48	12·7	21 50	367	312	00 20	55	2,2,1,0,1,0,1,0	7	0	88·6
2 q	18 08	646	584	10 25	62	13 54	36·1	20·5	06 55	15·6	19 20	367	355	11 35	12	0,0,0,1,1,1,0,0	3	0	88·5
3 q	21 55	638	578	10 12	60	12 27	40·0	22·2	06 25	17·8	02 33	365	338	11 21	27	1,0,0,1,0,0,0,0	2	0	88·9
4	19 54	698	580	22 08	118	15 30	39·9	4·9	22 32	35·0	19 42	398	314	22 36	84	0,1,1,2,3,3,4,4	18	1	88·8
5	22 24	663	561	07 17	102	12 21	36·5	16·3	04 07	20·2	03 11	366	316	23 12	50	3,3,2,2,2,3,3	20	1	88·7
6	18 17	667	474	04 42	193	13 33	34·4	12·1	04 25	22·3	16 09	386	278	05 47	108	3,5,3,2,2,2,2,0	19	1	89·2
7	16 31	656	553	11 14	103	14 11	37·1	18·7	04 17	18·4	14 58	393	330	03 30	63	2,2,2,2,3,3,1,1	16	1	88·7
8	22 19	666	584	11 02	82	14 40	37·2	17·5	23 58	19·7	17 03	385	325	02 44	60	2,2,3,1,2,3,1,3	17	1	88·8
9	19 01	664	543	04 26	121	16 22	34·5	17·5	00 00	17·0	17 02	380	277	02 40	103	3,3,2,2,2,2,2,3	19	1	88·5
10	17 25	670	582	11 19	88	14 16	36·1	21·6	07 06	14·5	16 17	384	332	00 00	52	1,2,2,1,2,3,2,3	16	1	88·4
11	18 13	653	590	11 08	63	13 40	34·1	22·2	08 34	11·9	20 50	371	339	01 00	32	2,1,2,1,0,2,1,1	10	0	88·3
12	18 08	655	590	11 25	65	16 14	34·0	22·4	06 10	11·6	19 21	370	339	11 55	31	1,1,1,1,0,1,2,0	7	0	88·2
13	20 09	649	583	10 57	66	14 28	33·3	20·4	06 03	12·9	17 20	364	340	02 26	24	1,1,0,1,1,2,1,0	7	0	87·9
14 q	18 00	648	594	13 23	54	13 18	35·4	22·4	07 35	13·0	20 00	362	340	12 02	22	1,0,1,0,2,2,1,0	7	0	88·3
15 q	21 22	648	598	12 35	50	12 15	33·3	22·5	05 01	10·8	21 00	362	343	11 20	19	1,0,0,0,2,0,0,1	4	0	88·3
16	17 29	662	594	09 40	68	17 26	35·1	18·0	05 33	17·1	19 24	372	303	02 57	69	3,2,1,0,2,2,1,2	13	0	88·4
17	15 20	688	580	09 52	108	15 55	43·0	20·0	00 40	23·0	16 10	463	270	01 57	193	2,3,2,3,3,3,2	21	1	88·7
18	15 38	665	581	23 51	84	14 32	35·4	15·9	22 44	19·5	16 07	430	332	00 17	98	2,0,1,1,3,3,2,3	15	1	88·3
19	17 42	656	579	09 51	77	12 23	31·8	21·6	06 51	10·2	13 46	368	345	01 00	23	2,1,0,0,1,2,2,0	8	0	88·6
20	19 14	677	597	09 58	80	16 27	37·5	20·5	07 10	17·0	06 12	365	333	11 15	32	0,1,1,1,1,2,3,1	10	0	88·4
21 d	15 49	751	571	12 56	180	15 49	46·6	17·5	20 50	29·1	16 17	515	332	08 50	183	0,2,2,4,4,4,3,2	21	2	88·2
22	16 56	695	569	08 48	126	15 56	36·1	21·9	05 42	14·2	17 22	436	350	11 42	86	1,2,2,2,3,3,3,1	17	1	88·4
23 d	23 30	685	550	18 25	135	17 00	40·2	20·6	22 01	19·6	17 53	422	133	23 40	289	3,2,3,2,4,3,3,5	25	2	88·7
24 d	17 29	720	416	03 26	304	03 35	46·0	18·2	02 30	27·8	18 21	421	135	03 49	286	5,5,3,3,3,3,3,3	28	2	88·6
25	18 00	663	574	05 16	89	03 12	35·1	20·6	24 00	14·5	17 29	392	308	04 14	84	2,3,2,2,3,2,2,3	19	1	88·4
26	19 40	667	571	11 08	96	24 00	33·4	17·6	06 51	15·8	20 03	381	302	01 23	79	3,3,2,2,2,2,2,3	19	1	88·4
27	16 40	649	541	04 48	108	00 51	37·6	16·7	02 25	20·9	15 32	394	195	01 28	199	4,3,2,1,3,2,1,3	19	1	88·2
28	18 21	635	583	09 41	52	00 53	34·3	21·0	05 13	13·3	17 09	378	271	01 28	107	3,2,1,1,1,1,0,0	9	0	88·8
29 q	20 11	654	594	10 42	60	12 35	34·7	18·3	03 03	16·4	21 07	385	296	23 45	89	0,0,0,0,1,1,1,4	7	0	88·7
30 d	20 03	714	539	12 58	175	14 05	39·0	9·0	20 22	30·0	20 02	428	247	04 24	181	3,4,3,1,3,3,4,3	24	1	89·0
31 d	17 46	678	557	12 40	121	23 53	45·0	18·3	03 00	26·7	18 37	384	213	23 59	171	4,3,2,2,3,3,2,4	23	1	89·1
Mean	- -	668	567	- -	101	- -	37·0	18·6	- -	18·3	- -	392	298	- -	94	-	-	0·68	88·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) 14,000γ (0·14 C.G.S. unit) + AUGUST 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 13,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	595	606	588	617	600	600	612	606	594	587	587	589	591	605	610	642	653	650	653	656	637	620	612	623	614	1733
2	615	599	607	618	610	583	547	588	585	584	577	592	593	601	611	617	631	643	664	663	656	624	617	618	610	1643
3	616	608	605	590	598	604	609	603	595	588	586	596	609	613	623	621	631	637	638	638	646	635	627	612	614	1728
4	613	613	616	612	619	613	599	583	583	582	588	589	602	604	640	644	640	638	642	639	628	617	617	621	614	1742
5	621	607	601	599	591	599	602	598	579	572	583	589	601	621	640	639	636	628	635	640	656	633	623	626	613	1719
6	617	613	606	607	599	595	606	608	604	602	596	599	609	609	616	616	634	653	653	635	636	651	628	621	617	1813
7	623	602	612	601	609	619	623	615	600	584	583	592	606	603	624	626	630	631	640	633	631	629	627	633	616	1776
8	628	617	625	613	619	617	617	611	597	589	588	588	595	606	613	616	620	627	629	632	631	635	635	632	616	1780
9	631	636	638	622	599	606	609	614	612	605	593	590	587	596	605	624	632	641	639	636	636	639	640	639	619	1864
10	634	633	633	633	630	624	612	606	598	591	596	598	607	617	640	629	617	619	621	629	632	634	632	633	621	1898
11 q	631	631	631	627	627	622	616	608	599	588	583	582	592	607	628	625	626	626	624	631	628	631	631	624	617	1818
12 q	625	627	625	628	628	619	611	601	599	595	593	591	591	608	626	629	633	633	635	639	641	628	624	624	619	1853
13 q	624	624	620	624	621	617	609	601	594	591	590	595	601	606	616	624	628	636	635	632	627	625	628	628	617	1804
14 q	621	622	628	626	628	621	612	608	607	606	609	610	613	619	625	636	632	628	636	640	638	639	639	637	624	1980
15	634	635	633	631	632	631	628	620	612	606	599	602	624	624	633	648	653	642	657	649	635	621	610	621	628	2080
16 q	628	624	617	624	621	618	615	606	600	596	599	601	609	614	626	625	647	639	638	632	634	629	625	623	620	1890
17	624	631	631	634	631	619	612	605	598	591	584	598	609	617	631	636	649	639	640	640	649	625	625	623	623	1941
18 d	623	623	613	622	635	632	617	619	596	591	587	588	631	629	623	634	628	623	624	634	628	624	631	619	620	1874
19 d	621	618	612	610	615	614	615	609	599	595	595	599	604	606	616	620	628	664	671	648	593	479	400	254	587	1085
20 d	334	159	239	467	537	463	476	540	589	578	581	582	631	627	606	629	661	646	632	621	624	621	617	606	544	66
21 d	569	577	580	581	581	595	595	542	557	558	585	598	602	609	592	614	631	620	628	632	628	613	611	611	597	1330
22	609	614	609	611	612	609	603	599	589	594	590	587	600	612	612	620	621	631	635	633	631	619	620	619	612	1679
23	599	585	586	532	505	545	514	591	587	573	553	562	580	591	607	637	638	624	625	623	620	618	620	625	589	1140
24	599	598	605	613	617	614	615	605	590	579	580	588	601	609	605	610	624	627	629	623	624	628	625	625	610	1633
25	623	618	612	605	607	613	619	613	602	592	598	596	603	607	614	623	631	632	633	643	631	634	623	621	616	1793
26	603	609	621	620	610	598	606	610	604	594	592	599	609	614	628	601	617	626	610	622	624	624	636	642	613	1719
27	640	634	638	638	640	642	636	624	606	591	596	606	614	623	636	640	641	659	657	631	641	610	619	612	628	2074
28 d	581	613	619	618	613	613	605	605	604	584	556	558	581	601	623	631	629	653	682	632	626	620	599	587	610	1633
29	610	606	609	620	615	614	614	606	611	560	558	587	605	632	620	613	620	628	638	627	637	633	622	624	613	1709
30	624	624	617	617	616	615	611	609	605	602	599	596	603	617	627	634	633	626	634	633	625	621	625	637	619	1850
31	620	605	602	613	617	614	600	593	591	586	590	598	613	616	624	635	690	652	620	623	625	625	619	628	617	1799
Mean	608	600	603	609	609	606	602	601	596	588	587	592	604	612	621	627	635	636	639	635	632	623	616	611	612	
Sum 18,000+	835	611	678	873	882	788	665	646	486	234	194	345	716	963	1240	1438	1684	1721	1802	1688	1602	1301	1106	948		Grand Total 455,446

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) 9° + AUGUST 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 600·0'+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	33·2	22·5	28·4	28·4	23·5	23·5	26·2	23·5	23·5	24·7	26·6	30·3	33·2	35·1	33·5	31·7	31·6	29·3	31·6	29·0	26·9	24·5	27·4	27·0	28·1	75·1
2	31·1	29·8	30·3	26·4	24·5	26·0	28·8	24·5	23·3	24·7	26·6	29·5	32·2	32·6	32·4	31·3	29·8	29·5	29·5	25·6	21·8	25·1	29·8	30·2	28·1	75·3
3	26·2	28·8	25·2	26·9	24·7	23·2	20·3	21·8	23·3	25·0	27·4	30·5	34·7	34·8	34·2	32·2	31·0	31·6	31·6	29·3	25·4	26·4	28·4	29·8	28·0	72·7
4	31·6	27·1	23·5	25·0	23·4	24·0	23·2	25·2	24·5	27·0	29·6	34·0	34·0	35·1	35·3	33·8	33·2	31·5	32·7	30·8	24·5	23·9	23·5	27·7	28·2	77·8
5	26·6	27·1	28·0	30·3	23·2	24·2	23·2	25·2	24·5	27·0	29·6	34·0	34·0	35·1	35·3	33·8	33·2	31·5	32·7	30·8	24·5	23·9	23·5	27·7	28·7	88·9
6	25·2	26·8	30·0	25·4	26·4	24·0	21·8	21·3	23·5	25·6	28·2	30·0	32·6	35·1	35·1	32·7	30·3	25·6	28·9	30·3	29·5	23·0	25·1	27·6	27·7	64·0
7	28·5	31·1	26·4	20·0	22·0	22·5	22·5	23·0	24·5	25·1	27·6	32·6	37·3	35·2	33·9	33·0	31·2	29·5	29·1	29·1	29·3	29·1	29·1	28·0	28·3	79·6
8	28·3	31·7	25·8	25·0	25·0	22·5	24·3	23·7	25·4	27·8	31·6	34·9	38·0	38·8	37·9	35·0	31·6	28·8	27·6	28·1	28·4	28·4	28·4	28·4	29·4	105·4
9	28·5	30·3	29·3	24·7	28·3	19·3	19·2	19·6	20·6	25·4	29·3	32·4	35·6	36·1	35·6	33·2	30·3	28·5	28·4	28·4	28·4	28·5	28·1	27·5	28·1	75·5
10	27·5	26·5	26·5	25·8	24·2	21·8	22·2	23·2	25·4	28·4	32·2	35·2	37·1	38·8	40·0	31·3	31·0	29·4	28·4	29·8	29·5	29·4	29·3	29·1	29·3	102·0
11 q	28·4	28·6	27·5	26·2	25·1	24·0	23·7	23·5	25·2	28·2	31·5	34·8	37·3	36·6	34·4	31·3	29·2	27·8	28·1	29·6	29·3	27·4	29·7	29·7	29·0	97·1
12 q	28·4	28·4	27·7	26·6	23·6	22·5	22·5	23·2	24·2	26·9	30·1	32·8	33·7	33·4	32·2	29·3	28·1	27·4	28·4	30·0	27·2	28·3	28·6	28·4	28·0	72·2
13 q	27·8	26·5	26·3	26·1	24·7	23·9	23·0	23·2	24·5	26·4	29·5	32·4	34·8	33·4	31·3	31·0	30·2	30·2	30·5	29·4	28·9	29·1	28·7	27·2	28·3	79·0
14 q	25·4	28·2	26·2	24·0	24·0	23·5	24·5	25·4	27·4	29·5	31·3	32·7	33·2	33·4	32·2	31·2	30·2	29·8	30·6	31·0	30·0	29·5	29·0	28·4	28·8	90·6
15	27·4	27·3	26·7	26·4	25·1	24·0	23·3	23·5	24·5	26·3	29·5	32·7	35·6	36·1	34·8	32·2	31·1	31·3	29·1	26·6	29·0	20·8	20·6	26·4	27·9	70·3
16 q	27·1	26·1	27·4	25·2	24·0	22·5	22·4	22·7	24·8	28·1	30·0	34·8	36·1	35·1	33·9	30·8	30·8	29·0	29·3	28·5	30·5	29·5	29·4	28·1	28·6	86·1
17	26·9	26·9	24·0	25·1	24·2	24·4	24·6	26·4	27·1	29·3	32·0	34·9	36·1	34·9	32·8	30·3	29·3	29·8	31·1	31·5	23·5	24·0	25·1	27·8	28·5	82·9
18 d	27·8	28·2	30·6	25·9	22·5	23·1	25·6	28·2	30·2	39·0	34·9	34·5	37·3	36·0	36·1	32·7	29·3	29·3	28·4	28·4	27·4	19·1	21·6	27·6	29·3	103·7
19 d	28·0	28·1	25·4	26·6	24·1	23·5	22·5	23·5	24·5	26·9	26·4	29·1	25·4	29·3	29·7	30·3	22·0	28·5	30·5	29·3	27·9	23·0	24·5	28·4	25·4	10·1
20 d	4·1	16·2	15·7	20·6	28·8	29·3	29·3	29·3	26·4	26·4	26·4	29·1	25·4	29·3	29·7	30·3	22·0	28·5	30·5	29·3	27·9	23·0	24·5	28·4	25·4	10·4
21 d	31·7	23·5	25·6	29·3	22·2	23·5	24·5	28·4	31·9	29·5	30·8	29·8	29·3	29·3	29·3	26·4	29·0	28·9	29·9	29·5	27·6	30·0	27·4	24·0	28·0	71·3
22	25·4	25·4	27·4	27·1	25·9	25·0	26·4	28·4	29·6	28·6	30·5	32·3	34·5	35·1	31·1	29·3	28·4	26·2	28·5	29·5	29·0	28·3	26·2	22·5	28·4	80·6
23	21·1	18·2	22·5	19·6	34·2	31·3	31·3	29·6	27·9	29·1	31·0	31·5	31·5	34·2	32·0	30·1	30·2	29·1	29·1	28·8	28·4	27·6	27·6	26·2	28·4	82·1
24	27·1	28·7	23·5	22·3	24·5	22·4	23·1	23·5	24·7	25·6	27·9	31·5	34·5	35·9	33·2	29·8	28·5	28·4	28·4	27·4	26·5	28·4	28·2	27·5	27·6	61·5
25	27·7	26·6	25·7	26·5	23·0	23·5	22·7	23·9	24·7	26·4	28·2	32·2	34·6	34·5	33·2	32·2	30·6	31·3	30·3	30·0	24·5	22·3	24·2	23·5	27·6	62·3
26	27·4	28·4	24·0	24·0	23·8	24·2	24·7	24·0	25·4	26·6	29·1	31·3	33·7	34·2	34·0	31·9	31·3	32·0	27·6	29·5	30·6	29·7	28·0	25·7	28·4	81·1
27	24·9	25·9	25·5	25·1	25·1	24·0	24·2	24·9	25·8	27·1	31·1	33·2	34·5	35·5	36·8	32·2	30·8	31·7	32·0	30·5	21·6	28·4	24·2	26·7	28·4	81·7
28 d	30·8	27·7	25·0	22·9	22·9	23·5	24·8	23·9	25·9	26·6	28·5	32·2	33·6	32·7	31·5	29·9	30·4	26·4	14·8	24·5	27·9	19·6	22·5	26·9	26·5	35·4
29	26·0	27·1	28·8	25·2	22·5	22·3	23·3	24·5	26·9	27·4	32·0	36·1	36·1	36·1	33·9	31·5	29·8	29·8	30·5	28·8	26·7	24·1	28·4	24·8	28·4	82·6
30	27·2	25·6	23·5	24·2	23·8	23·8	23·7	23·8	25·2	27·4	29·1	30·8	32·4	33·7	32·3	31·1	26·8	28·5	28·4	20·6	25·5	29·1	28·8	30·3	27·3	55·6
31	30·0	28·3	27·2	23·5	24·5	22·0	23·3	25·4	25·9	28·5	29·1	31·6	35·3	35·3	35·6	33·2	18·6	23·2	30·3	30·3	29·8	28·9	25·0	29·3	28·1	74·1
Mean	27·0	26·8	26·1	25·2	24·7	23·8	24·1	24·5	25·5	27·5	29·7	32·4	34·3	34·7	33·7	31·4	29·5	29·2	28·9	28·6	27·1	26·0	26·1	27·0	28·1	
Sum 700·0+	138·2	131·6	109·6	80·3	64·7	36·7	45·9	60·1	91·9	150·9	221·5	304·7	362·4	375·0	345·0	274·2	214·7	206·1	196·4	185·7	139·4	104·9	108·8	138·3		Grand Total 20887·0

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

33

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + AUGUST 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 7000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	246	314	324	326	325	329	341	354	360	358	354	349	350	360	375	392	400	402	382	370	350	342	313	332	348	1348
2	333	310	320	328	340	340	322	332	348	361	366	359	356	360	362	367	364	361	357	370	362	355	342	312	347	1327
3	303	303	308	325	332	342	354	360	360	357	354	347	345	351	359	366	362	362	359	360	360	355	355	344	347	1323
4	324	320	337	350	355	359	359	356	355	355	356	358	362	380	392	402	409	385	370	368	372	359	349	342	361	1674
5	295	299	325	304	321	338	345	345	348	348	344	345	355	356	360	368	368	374	362	364	359	349	345	332	344	1249
6	342	342	332	319	303	303	325	340	342	341	340	342	351	357	362	374	378	392	383	374	363	348	340	340	347	1332
7	316	297	280	318	330	342	350	354	357	358	355	345	340	349	356	365	368	368	366	365	361	358	355	349	346	1302
8	337	332	332	348	346	355	355	359	359	355	348	340	342	346	356	366	371	377	370	365	361	356	356	355	354	1487
9	356	351	338	348	351	340	348	350	348	350	348	349	345	350	360	362	368	370	372	365	365	358	355	355	354	1502
10	354	355	355	360	362	363	366	362	360	353	344	342	340	351	354	385	389	375	369	362	361	361	359	356	360	1638
11 q	359	357	360	362	365	367	366	366	364	355	351	346	348	352	362	368	374	381	378	372	372	364	360	361	363	1711
12 q	360	360	359	358	360	361	365	366	366	364	356	352	350	350	356	362	362	368	368	368	366	364	364	363	361	1668
13 q	360	360	360	356	359	360	362	362	362	360	355	348	344	348	354	359	360	356	357	362	364	366	366	357	358	1597
14 q	360	354	350	358	358	360	362	360	360	362	355	353	354	353	354	356	359	359	355	355	360	360	360	361	357	1578
15	361	360	359	359	357	357	359	360	355	354	350	345	343	354	355	355	361	364	369	378	379	364	356	357	359	1611
16 q	359	360	361	357	360	359	359	360	360	355	348	346	346	353	362	364	366	374	371	370	362	365	365	362	360	1644
17	357	343	351	355	356	357	357	357	355	348	349	348	354	360	362	364	367	368	365	362	362	358	336	350	356	1541
18 d	357	359	352	338	340	336	337	337	345	338	345	353	357	404	480	438	408	391	374	374	372	360	344	355	366	1794
19 d	360	359	364	365	364	364	365	364	360	355	354	351	351	360	364	378	381	384	415	385	370	246	114	145	342	1218
20 d	115	70	55	122	194	209	222	294	358	397	411	428	440	426	399	397	426	429	418	404	381	361	358	338	319	652
21 d	238	260	300	310	335	344	354	369	366	381	364	364	381	393	405	404	391	378	374	377	369	350	327	334	353	1468
22	352	360	366	371	374	369	371	371	374	366	361	356	357	367	378	381	381	381	381	375	377	374	353	317	367	1813
23	304	268	223	208	240	245	280	303	344	361	364	374	395	415	424	406	401	397	387	384	378	374	367	353	341	1195
24	349	267	284	334	358	367	367	372	372	377	375	367	374	381	389	389	381	383	381	387	383	374	373	367	365	1751
25	365	366	367	366	366	367	368	367	371	367	367	366	366	367	367	368	374	376	375	378	384	375	364	344	368	1841
26	346	327	354	364	364	354	362	364	367	366	364	361	361	361	362	361	361	361	369	364	361	357	349	340	358	1600
27	342	346	346	347	347	347	347	348	351	359	359	359	359	364	374	391	400	407	427	435	351	321	332	344	363	1703
28 d	339	351	374	366	367	369	371	374	374	374	382	385	389	391	387	397	394	395	393	381	334	330	302	293	367	1812
29	329	334	335	340	354	364	368	368	368	376	376	359	366	368	384	374	368	363	368	380	370	367	369	362	363	1710
30	356	351	361	360	359	362	362	361	359	356	359	360	360	367	377	379	399	396	386	389	374	368	367	344	367	1812
31	311	318	322	342	354	359	363	361	360	359	358	356	359	375	398	422	430	424	391	372	368	369	357	296	363	1724
Mean	329	324	327	334	342	345	349	355	359	360	359	357	359	367	375	379	381	381	377	375	366	355	344	337	356	
Sum 10,000+	185	53	154	364	596	688	832	996	1128	1166	1112	1053	1140	1369	1629	1760	1821	1801	1692	1615	1351	1008	652	460		Grand Total 264,625

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. AUGUST 1963

	GEOMAGNETIC ELEMENTS												3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph house 200°A+
	Horizontal component			Declination			Vertical component									
	Maximum 14,000γ +	Minimum 14,000γ +	Range	Maximum 9° +	Minimum 9° +	Range	Maximum 47,000γ +	Minimum 47,000γ +	Range							
	h. m. γ	γ h. m.	γ	h. m. ′	′ h. m.	′	h. m. γ	γ h. m.	γ						°A.
1	19 38 669	570 02 47	99	00 00 44·1	20·8 04 31	23·3	17 11 410	203 00 05	207	4,3,2,2,2,3,3,3	22	1	89·0
2	20 04 684	536 06 11	148	14 06 33·4	16·7 20 27	16·7	19 28 374	295 23 57	79	2,3,3,2,1,2,3,3	19	1	88·0
3	20 13 656	582 10 10	74	13 20 35·8	19·6 06 26	16·2	15 30 370	294 02 10	76	2,2,1,1,2,1,3,3	15	1	88·0
4	16 13 656	572 07 36	84	13 27 36·2	20·1 21 12	16·1	16 27 412	312 24 00	100	2,1,2,1,3,2,3,3	17	1	87·9
5	20 40 669	565 10 18	104	13 56 36·1	21·3 06 33	14·8	17 25 374	278 00 42	96	3,3,2,2,2,2,3,3	20	1	87·5
6	17 55 675	581 05 01	94	13 10 35·6	19·2 07 24	16·4	17 42 395	295 05 00	100	2,2,2,2,1,3,2,3	17	1	87·2
7	18 39 648	574 09 46	74	12 35 37·8	17·2 03 21	20·6	16 48 370	272 02 28	98	3,3,2,2,2,0,1,1	14	1	87·1
8	00 01 639	581 12 03	58	13 00 39·7	21·8 05 39	17·9	17 26 379	320 01 45	59	2,2,1,1,1,1,1,0	9	0	87·3
9	19 34 652	570 12 11	82	12 42 41·9	17·7 05 35	24·2	18 04 373	332 03 04	41	2,3,2,1,2,2,2,0	14	1	87·7
10	15 38 659	588 09 45	71	14 23 40·2	20·7 06 00	19·5	16 10 398	338 11 00	60	1,1,0,1,3,3,1,0	10	1	87·2
11 q	21 07 634	570 11 21	64	12 44 37·9	22·3 06 40	15·6	17 21 384	346 11 10	38	0,0,1,1,2,2,1,2	9	0	87·0
12 q	20 19 653	585 12 21	68	12 46 38·1	21·8 05 31	12·4	18 45 372	348 11 52	24	0,1,1,1,2,2,2,1	10	0	87·5
13 q	18 55 640	589 10 49	51	12 35 35·1	22·6 07 20	12·5	21 25 370	342 12 31	28	1,0,0,0,0,1,1,1	4	0	87·2
14 q	21 28 644	601 09 15	43	13 20 33·9	23·0 05 35	10·9	23 40 364	348 02 36	16	2,1,0,0,0,2,0,0	5	0	87·7
15	18 10 669	592 11 31	77	13 19 37·1	16·4 21 19	20·7	17 35 385	340 12 39	45	0,0,0,1,2,3,2,3	11	1	87·0
16 q	16 19 664	593 10 16	71	12 54 37·6	21·8 05 09	15·8	17 35 378	343 11 23	35	2,1,0,1,2,3,2,1	12	0	87·0
17	20 22 660	595 10 29	65	12 25 36·8	14·4 20 40	22·4	17 24 373	340 01 45	33	2,0,0,1,1,2,3,3	12	1	87·8
18 d	14 23 671	580 08 47	91	13 37 43·8	10·4 21 52	33·4	14 46 517	330 09 55	187	2,2,2,2,5,4,2,3	22	1	87·2
19 d	18 51 706	84 23 29	622	18 05 41·5	−7·3 23 02	48·8	18 33 437	57 22 58	380	2,2,1,0,2,4,5,7	23	2	87·2
20 d	16 50 703	−57 01 29	760	01 42 51·2	−55·8 00 38	107·0	12 33 468	−53 01 05	521	8,6,6,3,4,4,3,3	37	2	87·5
21 d	20 51 656	525 06 28	131	00 12 41·9	19·9 04 14	22·0	15 03 420	218 00 24	202	4,3,3,4,3,3,2,2	24	1	87·3
22	17 55 644	580 11 43	64	13 17 36·3	19·8 23 47	16·5	15 30 383	312 23 23	71	2,1,2,1,2,2,1,3	14	0	87·5
23	16 43 646	468 04 13	178	04 30 36·4	14·1 01 46	22·3	14 23 428	191 03 36	237	4,5,4,2,3,3,1,2	24	1	87·6
24	21 22 635	552 01 00	83	13 43 36·0	19·6 02 51	16·4	15 29 394	253 02 33	141	4,3,1,1,2,1,1,1	14	1	87·5
25	19 46 651	587 09 43	64	12 45 35·1	19·1 21 33	16·0	20 23 389	338 23 23	51	1,2,1,1,1,1,3,3	13	1	87·5
26	23 55 652	580 00 51	72	13 58 36·2	22·9 04 36	13·3	18 40 374	318 02 27	56	3,2,2,2,2,2,2,2	17	1	87·5
27	17 01 687	589 09 58	98	14 31 38·2	13·8 20 15	24·4	19 10 469	291 21 08	178	1,1,1,1,3,3,5,3	18	1	87·5
28 d	18 46 715	540 11 10	175	00 42 36·3	1·0 18 37	35·3	18 00 420	278 23 25	142	3,2,2,3,3,3,4,3	23	1	87·2
29	20 33 654	544 10 38	110	12 21 38·4	20·6 20 31	17·8	14 43 388	313 00 00	75	2,2,2,3,2,2,3,2	19	1	87·5
30	17 02 661	584 11 07	77	23 50 36·0	17·2 19 42	18·8	16 44 413	302 24 00	111	1,1,1,2,2,3,3,3	16	1	87·3
31	16 30 728	583 09 26	145	14 37 37·7	9·9 16 27	27·8	16 12 446	277 23 24	169	2,2,1,1,3,4,2,4	19	1	87·0
Mean	− − 664	535 − −	129	− − 38·0	14·9 − −	23·1	− − 401	283 − −	118	−	−	0·84	87·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H)   14,000γ (0·14 C.G.S. unit) +   SEPTEMBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 10,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	610	607	601	599	612	614	606	600	586	563	567	592	600	604	624	635	636	632	636	629	628	624	619	621	610	4645
2 q	617	617	615	616	615	612	605	602	595	591	594	599	609	620	620	624	616	620	631	629	644	646	629	620	616	4786
3	615	629	621	621	620	620	609	604	601	592	588	600	620	624	628	628	635	625	628	627	627	617	621	624	618	4824
4 q	620	622	620	617	616	613	610	609	603	598	595	595	599	605	613	618	623	627	635	631	633	630	624	609	615	4765
5	602	609	620	620	617	612	605	601	595	592	599	602	620	624	625	629	620	621	629	639	635	629	634	621	617	4800
6 q	629	620	616	619	620	620	613	610	603	596	586	586	595	605	615	617	617	624	632	631	631	635	632	632	616	4784
7 q	623	624	624	623	620	612	608	602	598	596	596	599	611	617	621	624	624	626	631	639	637	644	629	626	620	4878
8	626	624	620	612	623	609	617	621	617	602	596	591	581	567	617	624	629	619	622	623	623	623	624	625	614	4735
9	628	628	621	614	620	613	624	615	599	583	591	595	602	611	600	617	623	623	626	628	626	628	620	624	615	4759
10	624	627	624	623	623	620	620	613	601	597	595	595	599	605	612	626	631	624	632	633	634	635	643	626	619	4862
11	607	612	618	617	624	621	620	612	605	583	584	588	603	609	613	632	648	628	641	648	610	616	621	614	616	4774
12	623	596	616	615	621	605	605	612	599	595	592	601	613	613	617	628	628	623	629	631	628	637	620	622	615	4769
13 q	622	620	619	620	617	613	612	609	606	600	593	597	604	611	617	617	621	631	637	642	641	628	638	596	617	4811
14 d	598	613	613	612	605	634	599	515	517	557	574	610	596	720	732	828	878	697	642	606	596	524	537	608	625	5011
15	600	562	599	607	597	565	568	585	587	578	577	571	602	594	612	617	664	697	651	617	616	565	455	478	590	4164
16	615	609	602	577	577	608	601	583	573	588	577	567	564	604	624	649	626	616	635	639	607	609	558	518	597	4326
17	544	569	585	568	551	595	526	529	537	540	546	611	601	593	611	623	604	619	662	615	603	611	617	606	586	4066
18	597	591	572	597	607	609	604	599	587	584	589	582	589	605	627	627	686	633	612	606	608	609	614	621	606	4555
19	596	603	610	611	595	609	616	600	584	575	558	572	606	621	613	628	644	622	609	605	608	612	613	614	605	4524
20	611	612	609	612	612	603	607	608	596	578	577	577	588	611	631	628	629	605	616	623	613	595	588	566	604	4495
21	592	609	609	593	592	613	613	602	592	583	585	583	583	593	679	679	715	992	836	646	670	650	601	602	*642*	5412
22 d	600	595	573	556	408	177	355	460	529	577	596	571	595	573	578	600	635	628	657	675	711	640	266	−499	502	2056
23 d	−802	−268	−19	248	537	522	569	569	566	560	580	595	607	615	613	610	603	616	616	617	614	607	600	598	*457*	973
24	596	595	595	591	593	599	599	597	596	587	586	587	589	588	595	613	596	610	617	605	574	506	248	136	558	3398
25 d	213	97	341	446	592	590	583	571	565	556	586	591	591	605	607	616	631	658	624	633	628	612	602	609	548	3147
26	595	608	610	609	548	596	596	610	599	590	583	576	590	599	606	624	641	655	611	611	624	592	589	590	602	4452
27	585	593	571	582	609	614	615	613	609	601	599	596	599	599	606	616	620	618	631	624	603	587	485	511	595	4286
28 d	484	528	392	521	519	488	597	595	586	595	594	587	594	634	657	657	631	623	654	625.	580	594	553	598	579	3886
29	609	585	584	583	589	613	614	609	595	600	585	591	587	595	600	605	624	621	640	621	611	624	611	613	605	4509
30	604	594	600	609	615	622	613	608	612	603	594	599	599	608	602	604	617	620	623	622	621	619	619	622	610	4649
Mean	*543*	558	569	585	593	588	594	592	588	585	585	590	598	609	621	631	640	*642*	638	627	623	612	577	548	597	
Sum 16,000+	283	730	1081	1538	1794	1649	1833	1769	1642	1542	1562	1706	1936	2272	2615	2943	3195	3253	3145	2820	2684	2348	1310	451		Grand Total 430,101

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D)   9° +   SEPTEMBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 300·0′+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	26·4	22·3	23·0	25·0	23·0	21·7	21·9	22·8	24·9	27·9	29·8	33·6	36·1	33·5	30·6	29·6	29·7	26·6	27·4	27·4	27·9	26·6	27·4	29·0	27·3	354·1
2 q	27·3	27·6	24·9	25·7	25·0	24·8	24·1	24·1	25·0	27·7	30·5	32·4	32·0	31·3	29·3	28·4	27·7	28·4	24·2	25·6	22·9	24·5	26·4	27·0	27·0	348·2
3	26·4	22·2	23·3	23·5	23·8	23·0	24·4	25·1	26·2	28·3	30·8	34·5	35·4	34·6	31·3	28·2	29·3	28·4	28·8	28·8	24·8	28·2	26·7	27·6	27·7	363·6
4 q	27·0	26·9	26·4	27·0	25·7	25·1	24·9	25·1	25·9	27·3	29·3	31·3	32·2	31·3	30·2	29·1	28·2	28·4	29·0	28·8	28·2	26·1	23·1	24·2	27·5	360·7
5	26·6	28·8	24·2	24·5	24·8	25·0	25·1	25·0	26·1	28·6	30·9	32·5	34·2	34·2	32·9	32·8	32·0	31·3	30·3	29·7	27·7	23·5	25·0	30·8	28·6	386·5
6 q	22·0	21·0	23·6	24·2	24·2	23·5	23·9	24·9	25·9	27·7	30·3	31·5	33·5	33·7	32·9	31·3	28·5	27·7	28·8	28·7	27·6	25·1	25·6	25·1	27·1	351·4
7 q	26·0	26·6	27·2	26·6	26·4	25·1	24·8	24·9	25·8	27·8	30·5	32·3	33·4	33·0	31·7	30·5	30·3	29·6	29·8	29·8	26·4	22·7	22·7	24·5	27·9	368·4
8	26·4	26·9	28·9	29·3	21·4	18·5	21·1	21·6	22·5	25·0	29·7	35·1	40·4	38·2	36·1	32·8	30·3	27·7	27·8	28·2	28·0	28·0	27·4	27·4	28·3	378·7
9	27·6	26·7	30·1	31·0	27·8	23·1	24·5	23·3	24·9	26·0	30·5	34·2	36·4	37·7	32·0	31·1	29·9	29·2	29·5	29·6	28·2	24·5	26·7	25·4	28·9	391·4
10	27·3	27·1	25·9	28·2	25·4	24·4	24·5	24·7	27·4	28·2	30·3	31·9	34·0	33·8	31·9	31·6	30·9	30·3	30·5	30·3	30·0	27·5	18·6	21·2	28·2	375·9
11	27·8	30·6	24·5	26·1	22·9	24·5	25·1	25·0	25·1	26·7	32·3	34·0	33·0	34·0	33·0	30·8	33·0	25·9	27·1	16·7	23·0	25·9	23·1	25·9	27·3	356·0
12	25·9	29·5	24·3	23·0	22·6	23·5	25·2	26·7	25·8	29·0	31·3	32·2	34·5	33·2	31·3	31·3	31·0	28·0	29·3	29·0	27·2	23·0	26·2	26·4	27·9	369·4
13 q	27·7	28·0	26·7	26·2	25·8	25·1	24·8	24·3	24·7	25·9	28·1	31·8	33·7	33·5	32·0	30·6	30·2	30·3	30·3	30·8	29·3	24·7	23·7	26·9	28·1	375·1
14 d	26·6	22·2	21·1	18·6	23·3	28·8	40·0	29·8	23·5	32·7	36·8	40·6	37·8	37·1	39·0	45·8	24·5	29·8	22·5	14·8	25·0	30·8	25·0	25·4	*29·2*	401·5
15	25·8	28·8	27·0	24·5	25·0	26·9	26·0	27·6	24·3	26·6	30·3	30·8	31·6	33·4	34·4	34·4	32·2	24·5	22·5	12·8	21·1	22·5	18·6	30·3	26·7	341·9
16	22·8	24·7	20·6	21·6	26·5	27·9	24·7	26·1	25·5	27·3	28·5	29·5	32·8	33·4	32·8	20·2	23·5	27·0	22·5	13·8	23·7	22·7	20·6	27·4	25·3	306·1
17	14·8	28·3	28·6	24·3	23·5	26·6	34·8	39·2	32·2	23·2	24·2	30·3	31·3	32·8	31·5	26·4	26·4	27·0	7·0	20·6	27·4	27·1	26·7	28·3	26·8	342·6
18	24·1	23·7	26·4	24·8	23·2	24·1	24·1	24·1	24·7	27·1	30·3	31·7	33·8	34·0	32·8	32·0	22·1	25·6	27·9	27·8	27·6	28·0	27·4	29·9	27·4	357·2
19	26·4	24·7	25·6	24·7	29·1	30·3	33·6	30·3	26·4	27·4	32·5	33·8	34·8	37·4	34·5	30·6	27·9	21·1	21·1	26·1	18·8	25·4	26·7	27·9	28·2	377·1
20	30·3	33·2	27·7	24·5	24·8	27·1	29·5	27·7	28·3	29·2	30·3	32·6	33·0	34·6	34·4	31·0	30·3	30·7	28·8	27·4	23·8	22·6	21·4	19·2	28·4	382·4
21	16·7	19·6	17·7	21·2	26·6	24·3	24·7	24·5	25·1	26·9	29·3	30·8	31·7	32·6	40·5	40·7	41·2	41·9	29·8	34·7	28·4	28·1	29·3	28·0	27·9	394·3
22 d	24·8	23·2	17·5	14·8	13·8	75·6	33·2	23·5	32·7	21·2	25·0	28·0	30·9	29·3	27·6	26·9	28·9	28·8	27·7	25·6	31·3	38·0	13·8	−0·8	26·7	341·3
23 d	−56·0	−8·1	−39·7	−19·3	−51·9	24·5	22·9	23·9	24·5	28·4	30·5	32·1	31·6	28·8	26·6	26·1	23·5	26·6	28·5	29·1	28·4	27·6	26·4	25·9	*14·2*	40·9
24	25·1	24·8	24·8	24·5	23·8	23·5	23·7	22·2	22·6	24·5	24·6	28·7	30·7	30·0	30·1	31·3	28·2	28·0	28·0	17·1	18·7	12·3	2·9	−33·4	21·5	216·7
25 d	−13·2	−4·0	−36·6	−17·9	12·2	19·2	23·0	23·0	21·9	23·9	26·3	30·0	32·0	32·8	32·0	29·3	27·5	20·4	23·6	23·1	25·9	24·9	23·2	24·7	17·8	127·2
26	26·7	26·8	25·4	25·4	39·9	37·5	26·4	21·9	23·0	25·1	27·9	30·8	31·8	32·8	30·7	30·7	27·7	10·1	25·8	29·3	27·2	25·4	16·2	20·2	26·9	344·7
27	20·8	23·8	24·4	27·8	25·2	24·8	24·1	24·1	24·0	26·1	27·7	29·3	31·6	31·6	29·7	30·7	29·2	27·0	28·4	26·4	1·0	25·3	9·5	−10·1	23·4	262·4
28 d	3·1	11·8	17·1	25·1	13·2	29·3	30·6	29·9	28·2	26·8	28·3	29·1	31·3	32·9	26·4	18·3	25·4	26·1	20·3	22·9	28·8	19·3	32·7	28·4	24·0	275·3
29	25·0	26·6	26·4	25·8	26·2	26·8	26·4	25·1	23·5	26·3	25·4	28·3	27·9	29·8	31·6	26·8	28·9	27·9	19·4	20·3	23·6	28·4	22·9	24·1	26·0	323·4
30	21·6	26·9	27·5	21·9	24·0	24·5	24·0	24·6	25·0	26·6	27·4	28·8	29·6	29·4	29·6	29·0	28·7	28·5	28·4	28·2	28·1	27·4	26·3	26·7	26·8	342·7
Mean	*20·3*	23·4	20·5	21·7	21·6	27·0	26·2	25·5	25·5	26·9	29·3	31·7	*33·1*	32·8	32·0	30·3	28·9	27·4	26·3	25·4	25·4	25·5	23·0	22·1	26·3	
Sum 600·0′+	9·8	101·2	14·5	52·6	47·2	209·0	186·0	165·0	165·6	205·4	279·7	352·5	393·0	384·7	359·4	308·3	267·1	222·8	189·2	162·0	162·7	164·5	90·5	64·4	17·5	Grand Total 18957·1

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

35

3 LERWICK (Z)   47,000γ (0·47 C.G.S. unit) +   SEPTEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 7000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	288	329	336	349	353	366	369	365	363	375	374	362	365	372	369	372	388	389	384	384	372	363	363	356	363	1706
2 q	356	349	361	366	369	369	367	369	369	363	361	359	359	362	368	369	372	370	369	372	365	346	336	349	362	1695
3	349	325	339	353	362	361	360	361	359	360	359	352	353	362	382	382	380	380	380	375	370	366	362	361	362	1693
4 q	361	363	366	365	365	368	369	364	356	359	356	356	359	360	367	366	366	366	366	369	365	369	365	361	364	1733
5	351	330	348	361	369	372	374	371	366	359	352	353	352	353	356	362	369	370	369	365	369	362	347	312	358	1592
6 q	298	332	351	361	363	366	363	359	358	352	355	357	357	364	370	372	374	374	372	371	370	358	341	334	357	1572
7 q	353	357	363	366	370	370	369	368	364	360	355	350	350	354	360	364	364	364	364	365	365	357	357	357	361	1666
8	355	355	346	323	328	347	336	347	356	357	355	359	372	367	364	366	371	380	377	376	374	370	367	367	359	1615
9	364	362	357	324	304	332	350	360	362	364	364	363	367	385	397	377	371	369	367	370	375	372	370	367	362	1693
10	364	358	358	354	355	362	364	364	365	364	364	364	364	363	362	362	366	370	366	368	368	367	337	347	361	1676
11	352	324	337	347	349	357	360	362	366	370	366	363	367	368	377	378	393	432	410	385	355	360	334	334	364	1746
12	326	301	295	337	350	357	360	357	361	364	363	362	360	372	378	372	370	372	371	370	372	364	364	365	357	1563
13 q	365	363	364	362	364	367	367	364	363	365	362	360	358	357	357	359	360	359	359	360	364	378	358	309	360	1644
14 d	239	304	290	317	301	293	290	307	329	355	392	407	447	501	538	509	526	526	449	360	336	280	218	318	368	1832
15	349	334	340	364	363	357	357	366	375	380	380	382	397	426	418	409	409	415	417	384	360	295	203	153	360	1633
16	307	341	345	345	329	331	340	360	372	384	395	418	415	388	397	424	431	403	390	357	367	360	324	176	362	1699
17	210	267	315	313	300	337	324	313	336	399	424	449	426	412	418	430	427	403	406	387	380	376	372	354	366	1778
18	330	348	338	351	370	375	376	377	377	374	374	380	382	390	407	420	441	447	425	407	394	383	376	355	383	2197
19	307	322	358	360	354	355	341	347	364	364	376	394	421	405	424	449	472	464	426	407	387	372	367	367	383	2203
20	364	331	327	348	362	367	364	366	366	370	372	374	374	380	407	434	433	426	400	391	394	378	354	325	375	2007
21	317	338	340	340	327	345	363	370	370	370	370	370	370	374	374	434	485	523	584	486	467	476	383	368	398	2544
22 d	361	360	309	280	153	-52	56	241	317	341	362	381	385	404	391	393	387	413	421	395	383	261	104	752	325	798
23 d	628	88	328	-69	171	284	310	360	344	391	391	392	392	392	388	394	401	401	391	388	390	392	392	390	347	1329
24	388	388	388	390	388	387	385	383	380	381	377	376	374	376	380	389	400	392	397	415	392	281	134	23	357	1564
25 d	74	227	184	3	225	298	347	358	373	392	399	404	408	407	415	434	429	414	395	374	322	325	340	329	328	876
26	339	354	370	367	306	220	297	334	354	362	368	372	377	387	386	385	400	415	399	382	374	337	321	302	355	1508
27	316	344	350	337	350	362	370	373	374	378	378	381	384	390	392	391	388	392	385	389	349	318	247	181	355	1519
28 d	174	246	177	156	182	200	239	292	335	360	370	381	398	460	460	464	433	420	386	373	288	318	284	288	320	684
29	337	348	333	335	332	360	368	373	381	381	386	391	401	397	395	399	389	397	385	385	391	353	319	326	369	1862
30	332	302	259	326	352	357	361	368	368	370	377	378	384	389	384	381	374	375	374	374	374	378	378	374	362	1689
Mean	329	323	329	314	325	329	340	353	361	369	373	376	381	387	393	398	402	404	396	383	371	354	324	330	360	
Sum 9000+	854	690	872	431	766	870	1196	1599	1829	2064	2177	2290	2418	2617	2781	2940	3069	3121	2884	2484	2132	1615	717	900		Grand Total 259,316

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK   All Times G.M.T.   SEPTEMBER 1963

	GEOMAGNETIC ELEMENTS												3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph house 200°A+
	Horizontal component			Declination				Vertical component							
	Maximum 14,000γ +	Minimum 14,000γ +	Range	Maximum 9° +	Minimum 9° +	Range	Maximum 47,000γ+	Minimum 47,000γ+	Range				
	h. m. γ	γ h. m.	γ	h. m. ′	′ h. m.	′	h. m. γ	γ h. m.	γ				°A.
1	17 56 652	546 09 55	106	13 01 37·6	20·9 06 51	16·7	16 53 394	275 00 20	119	3,2,2,3,2,2,2,2	18	1	87·5
2 q	20 44 666	588 09 50	78	12 00 32·6	20·3 21 33	12·3	16 20 376	330 22 17	46	2,0,0,0,1,2,3,3	11	0	87·2
3	16 49 639	583 10 52	56	11 57 36·0	18·0 20 44	18·0	14 51 391	321 01 36	70	2,1,1,2,2,2,3,1	14	1	87·3
4 q	19 01 645	589 10 39	56	12 28 32·5	21·6 23 03	10·9	19 40 373	353 10 22	20	1,0,1,1,1,0,2,2	8	0	87·2
5	15 42 651	588 01 02	63	23 30 37·4	21·4 21 26	16·0	17 19 374	275 23 57	99	3,1,1,1,2,3,2,4	17	1	87·3
6 q	21 25 650	578 11 09	72	14 16 34·5	19·7 21 23	14·8	16 56 379	276 00 00	103	2,1,1,2,2,2,1,3	14	1	87·5
7 q	21 03 650	590 10 15	60	12 24 33·6	20·6 21 11	13·0	05 45 371	349 00 00	22	1,0,1,0,1,1,2,2	8	0	87·3
8	16 20 639	552 13 17	87	12 45 41·5	17·0 05 29	24·5	17 50 381	318 03 55	63	2,3,2,1,3,2,0,0	13	1	87·0
9	21 00 636	573 09 45	63	13 21 39·8	20·6 05 08	19·2	14 15 407	296 04 41	111	2,3,2,2,3,2,2,2	18	1	87·0
10	22 27 660	586 11 05	74	12 40 35·1	11·7 22 44	23·4	16 56 374	318 22 35	56	2,2,1,1,1,2,1,3	13	0	87·1
11	19 20 815	573 10 21	242	13 16 35·5	1·7 19 20	33·8	20 16 472	318 01 37	154	3,2,1,2,2,3,5,3	21	1	87·0
12	21 16 644	568 01 41	76	12 55 35·5	19·6 21 00	15·9	14 42 380	277 02 01	103	3,2,2,1,1,1,2,2	14	1	87·0
13 q	19 33 653	569 23 51	84	23 40 40·0	16·2 23 10	23·8	21 33 389	224 24 00	165	1,0,1,0,1,1,2,5	11	1	86·6
14 d	16 10 1104	421 22 07	683	15 24 55·7	-0·8 19 49	56·5	14 07 568	169 22 08	399	4,4,5,5,6,7,6,5	42	2	87·0
15	17 20 762	418 23 32	344	23 33 41·5	3·3 19 10	38·2	17 18 477	46 23 30	431	3,3,3,3,3,4,4,6	29	2	86·8
16	15 31 685	451 23 10	234	13 07 36·1	-0 3 19 02	36·4	15 59 441	153 23 42	288	4,3,2,3,4,3,4,5	28	1	87·1
17	18 48 680	475 06 52	205	07 26 41·3	0·3 18 42	41·0	11 21 466	191 00 00	275	4,4,4,5,3,3,4,3	30	1	87·0
18	16 37 708	556 02 09	152	14 53 35·8	13·8 16 33	22·0	16 34 457	314 24 00	143	3,2,1,2,3,4,3,3	21	1	87·1
19	16 20 672	549 10 43	123	13 57 38·0	10·4 20 23	27·6	16 16 495	293 01 01	202	3,3,3,3,3,3,4,2	24	1	86·7
20	14 50 649	538 23 37	111	14 16 37·0	15·7 23 00	21·3	15 33 437	306 24 00	131	3,2,1,1,2,3,2,3	17	1	86·6
21	18 00 1241	577 12 03	664	17 54 66·2	13·8 00 26	52·4	18 24 672	305 00 03	367	3,3,1,1,5,8,8,5	34	2	86·7
22 d	20 20 971	-1247 23 35	2218	05 24 99·2	-55·1 23 34	154·3	23 40 1123	-209 20 53	1332	4,8,7,3,3,4,9,9	47	2	87·1
23 d	16 57 649	-1603 00 11	2252	02 20 59·4	-162·1 02 47	221·5	00 20 1190	-175 03 42	1365	9,7,4,3,3,3,2,1	32	2	87·0
24	19 25 626	-70 23 53	696	15 35 33·1	-49·9 23 27	83·0	19 21 428	-94 23 51	522	0,1,1,2,1,2,3,8	18	2	86·9
25 d	17 42 767	-190 01 42	957	12 04 35·8	-58·7 02 27	94·5	17 30 505	-96 02 51	601	8,6,3,4,3,5,4,2	35	2	87·2
26	17 20 670	522 04 42	148	04 49 47·8	19·9 17 06	27·9	17 07 437	198 05 18	239	2,5,4,2,3,4,3,3	26	1	86·6
27	19 46 670	354 24 00	316	22 05 35·8	-39·9 23 52	75·7	19 44 403	70 23 59	333	3,3,2,2,2,2,5,6	25	1	86·3
28 d	18 38 706	312 02 15	394	22 53 35·4	-24·4 00 00	59·8	14 51 492	73 00 00	419	6,4,5,2,4,4,5,4	34	2	86·1
29	18 35 671	566 04 01	105	14 26 33·8	10·4 18 32	23·4	17 53 408	306 22 11	102	3,3,2,2,2,2,3,3	20	1	86·3
30	23 28 628	566 01 55	62	01 49 32·5	19·9 00 30	12·6	13 16 392	246 02 30	146	4,3,1,2,2,1,0,1	14	0	86·0
Mean	- - 715	356 - -	359	- - 41·2	-1·8 - -	43·0	- - 482	201 - -	281	-	-	1·13	86·9

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) 14,000γ (0·14 C.G.S. unit) + OCTOBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 12,000γ+
1 q	614	613	611	611	613	614	617	610	602	593	590	589	592	600	606	609	611	613	611	613	614	614	614	610	608	2584
2 q	610	610	611	612	613	614	614	610	602	599	589	588	594	599	606	611	613	618	620	621	621	619	621	620	610	2635
3 q	616	611	613	614	616	618	619	618	603	589	583	588	593	600	602	600	607	616	620	620	621	617	618	620	609	2622
4	617	615	610	618	625	618	616	613	605	596	588	588	598	600	608	604	606	614	620	620	621	618	616	617	610	2651
5	614	620	617	617	620	620	625	621	616	599	581	588	596	606	605	610	610	617	621	625	618	620	621	618	613	2705
6	616	617	618	617	613	621	615	614	610	602	594	590	597	606	614	619	624	613	613	618	621	618	620	617	613	2707
7	617	620	621	620	620	621	618	617	611	607	597	596	599	604	606	618	618	607	616	624	626	616	632	617	615	2748
8	617	609	596	549	608	625	613	609	604	598	585	586	584	591	607	616	621	618	614	618	621	625	618	617	606	2549
9	615	615	614	613	613	612	616	616	610	601	593	589	593	600	608	613	619	621	612	616	616	614	618	618	611	2655
10	606	616	618	618	620	624	629	632	622	607	602	598	592	590	604	611	620	621	614	614	620	608	617	616	613	2719
11	617	615	614	615	614	617	624	605	624	593	585	562	573	577	611	611	600	607	603	605	614	617	628	599	605	2530
12 d	596	545	558	578	605	620	603	605	598	587	577	570	596	613	608	653	671	621	596	598	661	612	595	597	603	2463
13	602	603	591	581	580	574	594	608	598	596	602	604	596	603	602	607	609	611	622	636	612	632	638	562	603	2463
14 d	485	544	601	603	599	595	578	579	588	574	584	580	589	611	637	639	632	593	604	625	607	610	611	616	595	2284
15	611	594	602	603	599	598	596	602	598	596	593	581	589	606	603	615	620	621	623	646	615	611	613	603	606	2538
16	591	611	597	596	621	620	600	588	584	573	577	582	585	594	596	600	610	638	606	602	618	613	614	613	601	2429
17	610	610	613	615	609	609	618	613	609	600	593	592	589	600	605	610	612	609	610	610	611	611	610	611	607	2579
18	609	606	609	611	618	620	620	621	614	603	596	592	595	605	609	606	609	616	607	599	603	609	608	609	608	2594
19	614	614	614	610	621	621	622	618	614	605	596	593	596	605	609	603	603	609	617	610	608	607	610	614	610	2633
20	609	607	612	614	615	621	625	618	610	602	591	591	599	600	603	606	613	603	608	605	600	571	578	596	604	2497
21	613	614	611	619	611	613	622	626	621	602	584	588	596	599	600	603	610	614	615	618	621	622	622	621	611	2665
22 q	620	621	621	621	626	626	626	625	618	609	600	596	601	606	610	619	623	625	629	629	629	630	628	626	619	2864
23	624	623	622	624	625	626	628	627	621	614	604	600	608	610	616	618	622	628	629	634	618	618	620	619	620	2878
24 d	563	421	454	513	464	552	548	519	486	490	528	611	599	612	603	614	610	618	606	642	629	580	613	581	561	1456
25	470	457	562	598	593	593	600	599	599	595	589	584	585	587	592	600	606	608	607	611	610	605	605	605	586	2060
26	606	592	582	598	608	613	612	608	603	595	588	585	592	596	602	606	613	606	611	612	613	615	615	617	604	2488
27 q	613	611	611	612	612	612	614	614	608	599	595	596	599	605	606	612	614	617	614	618	616	614	614	612	610	2638
28	611	612	613	613	614	615	616	613	607	602	598	592	603	607	609	613	621	600	611	591	603	600	598	602	607	2564
29 d	606	603	599	610	618	618	617	613	599	592	589	588	598	601	593	612	824	813	706	409	131	240	-335	32	520	476
30 d	-186	126	421	519	573	581	570	581	596	598	598	603	601	600	600	601	605	606	609	609	610	610	609	607	535	847
31	605	604	604	606	611	613	614	616	606	603	594	598	604	608	609	609	610	610	610	614	613	614	612	609	608	2596
Mean	575	580	595	601	606	611	610	608	603	595	589	590	595	601	606	612	622	620	616	610	601	600	584	591	601	
Sum 17,000+	831	979	1440	1648	1797	1944	1919	1858	1686	1429	1263	1288	1431	1641	1789	1968	2286	2231	2104	1912	1641	1610	1101	1321		Grand Total 447,117

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) 9° + OCTOBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 400·0′+
1 q	25·9	26·4	26·4	27·2	26·3	25·5	25·4	24·8	24·5	25·9	28·0	29·6	30·3	30·2	29·4	28·1	26·4	26·6	26·2	27·0	26·4	25·6	25·7	26·5	26·8	244·3
2 q	26·7	26·8	26·7	26·4	26·4	26·1	25·3	24·5	24·0	25·6	28·4	30·7	31·4	32·1	31·4	30·0	28·8	28·5	28·3	27·5	26·8	27·9	25·5	25·8	27·6	261·6
3 q	26·9	26·3	26·8	26·5	27·3	26·6	25·9	25·2	24·9	26·9	27·9	30·8	33·1	33·1	32·4	30·5	29·0	28·4	27·9	27·6	24·8	25·3	26·7	27·4	27·8	268·2
4	27·0	27·2	27·9	28·6	25·3	24·4	24·6	24·5	25·0	26·9	29·5	29·2	32·0	34·6	36·1	35·7	34·7	30·1	28·4	27·8	27·7	26·7	24·9	24·8	28·5	283·6
5	26·2	25·8	24·8	25·4	25·7	25·7	25·6	25·0	24·3	25·9	30·0	30·7	31·8	33·1	32·8	32·4	30·3	29·9	27·1	19·3	27·1	24·7	23·8	26·7	27·3	254·1
6	26·6	26·2	26·9	24·8	25·8	25·6	25·0	24·6	24·4	25·7	27·1	29·4	31·3	32·0	31·5	29·5	28·5	28·9	29·5	28·6	28·3	26·9	26·2	25·6	27·5	258·9
7	26·3	26·4	25·8	26·0	26·9	26·6	25·9	25·8	24·9	25·6	26·9	28·9	31·2	32·7	33·1	32·7	33·1	32·7	31·1	30·1	29·0	16·5	4·6	19·8	26·8	242·6
8	23·2	23·3	23·8	28·6	28·9	26·4	24·9	24·9	23·7	25·2	26·8	32·5	32·1	33·5	32·1	32·7	20·1	25·9	31·0	29·8	28·2	26·7	26·4	27·0	27·4	257·7
9	26·7	26·7	26·1	25·2	25·3	25·7	26·9	26·1	25·6	25·8	27·9	30·1	31·8	32·4	31·1	29·9	29·2	29·8	28·4	28·7	26·7	25·7	28·2	24·0	27·7	264·0
10	22·7	25·7	26·7	25·9	25·8	26·0	26·2	26·5	27·4	29·0	31·0		31·8	32·4	32·7	31·4	30·1	30·1	27·9	26·5	25·0	18·5	19·6	22·7	27·0	247·2
11	25·1	24·7	25·2	24·9	26·1	27·2	27·9	27·6	26·9	31·1	31·8	34·3	37·9	33·8	34·1	27·9	18·2	22·0	25·8	24·5	24·6	26·9	18·1	18·8	27·1	251·4
12 d	19·9	19·7	6·8	18·7	25·5	24·8	29·5	28·6	28·2	28·7	29·8	33·0	33·8	26·5	35·4	35·7	17·2	15·3	26·9	27·3	0·7	17·4	28·0	30·3	24·5	187·7
13	28·5	27·7	26·3	27·6	29·1	28·8	27·2	25·3	26·0	23·7	24·9	28·1	28·0	28·1	28·9	25·6	27·9	27·3	24·0	13·8	23·8	21·0	22·5	16·6	25·4	210·7
14 d	12·6	7·9	19·8	23·7	25·2	27·6	36·2	35·3	31·4	29·5	31·4	31·3	29·6	31·7	25·0	28·2	24·5	18·7	23·0	27·8	22·8	24·9	25·1	27·9	25·9	221·1
15	27·9	33·0	29·8	27·0	27·1	30·9	27·2	27·0	25·9	26·2	30·8	31·1	30·4	33·7	31·1	30·3	28·8	29·8	26·1	22·0	24·4	24·6	25·7	16·9	27·8	267·7
16	27·8	27·2	22·7	29·4	26·6	26·3	29·6	32·8	32·7	31·8	31·6	32·9	33·9	34·5	31·6	29·7	25·1	16·2	22·2	26·6	28·2	26·8	25·6	26·0	28·2	277·8
17	28·8	26·4	26·0	25·7	26·8	28·8	29·8	27·8	26·7	26·1	27·2	30·9	30·5	30·1	29·0	27·8	25·8	26·1	26·4	27·2	27·7	27·2	27·1	25·9	27·6	261·8
18	23·7	25·0	26·4	27·7	24·5	24·6	25·7	27·2	28·6	28·5	28·4	31·2	31·8	30·7	28·9	26·9	27·1	26·7	27·3	26·9	26·1	25·8	23·0	24·8	27·0	247·5
19	24·1	24·7	25·5	27·6	26·2	26·7	27·9	29·6	30·0	30·5	32·0	33·0	33·4	33·6	32·6	30·1	28·1	26·9	27·2	26·9	26·8	22·8	24·1	22·0	28·0	272·3
20	21·3	23·9	25·1	22·1	24·6	26·8	26·9	27·7	26·9	27·2	31·5	34·3	37·5	34·5	36·8	32·6	32·5	27·6	23·6	22·8	23·1	19·8	16·0	13·4	26·6	238·5
21	20·9	22·9	22·0	20·4	24·8	28·6	30·1	28·8	26·8	27·2	29·8	30·1	30·9	31·0	29·5	27·6	26·6	26·8	27·1	26·8	26·8	26·1	25·9	26·6	26·8	244·1
22 q	26·4	26·4	26·4	28·7	26·1	25·7	25·7	25·4	24·5	24·0	26·6	30·6	32·5	34·1	34·8	32·2	31·4	30·7	30·4	30·1	29·7	29·1	28·8	28·6	28·7	287·8
23	28·3	28·3	28·4	28·7	28·6	28·7	28·2	27·9	26·9	27·2	28·8	31·5	34·7	34·5	33·2	31·4	30·6	30·5	30·1	31·0	31·6	28·2	29·6	29·8	29·9	316·7
24 d	17·7	4·7	8·0	6·0	14·7	24·6	25·5	31·2	33·9	26·9	30·6	31·2	38·5	39·8	41·2	41·4	35·1	32·3	34·0	30·0	29·8	23·8	17·3	23·2	26·7	241·4
25	24·7	31·2	25·7	27·1	27·1	31·2	31·1	28·3	26·4	26·4	28·7	30·0	32·6	32·9	33·1	32·7	31·5	31·5	31·0	30·8	24·2	18·7	24·9	29·1	28·8	290·9
26	28·8	28·8	32·4	29·3	28·3	27·9	28·6	28·5	28·2	25·4	27·3	30·2	30·0	29·8	29·9	28·6	28·4	25·7	26·4	27·1	27·1	25·3	25·5	26·2	28·1	273·7
27 q	25·3	25·7	25·4	25·4	24·6	26·8	25·6	25·1	24·4	24·6	26·1	28·2	29·7	30·0	29·5	28·5	27·6	27·5	25·6	22·0	23·9	26·2	26·3	26·3	26·3	230·3
28	26·3	26·4	26·2	25·9	25·8	25·7	25·5	24·8	24·4	25·0	26·9	27·1	28·3	29·0	28·2	27·0	26·6	25·1	20·1	19·9	22·8	21·5	19·5	21·7	25·0	199·7
29 d	19·7	22·1	28·0	24·7	27·1	28·6	30·9	29·6	29·6	29·0	29·5	27·7	27·8	28·1	30·5	28·2	5·4	0·5	20·8	13·0	-21·9	-18·4	-30·2	-10·0	16·7	0·3
30 d	14·7	25·5	16·4	24·9	28·7	26·6	26·8	24·8	21·2	20·4	20·4	23·1	25·0	25·9	25·6	27·1	28·0	27·8	27·3	26·9	26·2	25·9	25·7	25·4	24·6	190·3
31	25·1	25·4	25·6	25·9	26·1	26·0	25·9	25·4	24·2	24·3	26·4	28·8	30·6	30·6	29·8	28·9	29·4	29·0	28·2	27·0	26·9	25·9	25·9	26·0	27·0	247·3
Mean	24·4	24·8	24·5	25·3	26·1	26·8	27·3	27·1	26·7	26·6	28·5	30·4	31·7	31·9	31·7	30·4	27·3	26·3	27·1	25·9	24·0	23·0	22·1	23·4	26·8	
Sum 600·0+	155·8	168·4	160·2	184·4	207·4	231·3	247·3	240·3	227·6	224·6	282·0	341·5	384·2	389·0	381·3	341·3	246·0	214·9	239·3	203·3	145·3	114·0	86·0	125·8	27·4	Grand Total 19941·2

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

37

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + OCTOBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
1 q	376	378	378	373	368	369	370	371	374	376	375	374	371	369	372	373	378	379	378	378	376	373	372	376	374	977
2 q	376	378	378	378	378	376	376	377	377	377	377	376	377	378	378	381	383	382	379	379	377	377	375	373	378	1063
3 q	375	378	378	377	375	372	372	372	374	372	368	366	366	368	378	381	375	370	367	364	364	363	361	360	371	896
4	365	366	365	351	347	357	357	356	356	355	366	367	370	373	384	395	395	389	383	381	376	377	381	378	370	890
5	381	376	380	382	380	379	375	373	370	369	369	362	365	370	374	381	386	384	385	381	374	368	367	368	375	999
6	372	371	369	364	366	363	370	370	370	369	368	368	369	371	372	378	381	387	385	381	379	377	373	372	373	945
7	371	371	371	373	375	375	375	372	371	369	371	370	367	365	367	373	391	392	386	382	381	385	339	309	371	901
8	343	351	335	286	297	328	352	365	373	374	374	372	372	370	373	387	410	399	388	385	381	375	373	373	364	737
9	375	374	373	372	372	375	375	378	379	379	377	376	371	369	369	373	376	379	387	384	385	383	351	331	373	963
10	350	358	362	368	369	369	368	366	367	370	370	369	374	375	377	378	379	379	392	396	374	352	355	363	370	880
11	362	363	369	370	369	366	361	370	371	363	370	380	382	392	394	406	425	405	398	400	396	388	350	337	379	1087
12 d	315	351	229	255	301	329	347	362	372	383	388	394	410	469	443	455	482	449	434	404	353	337	354	360	374	976
13	366	369	361	358	356	345	356	370	379	386	382	379	390	384	397	409	389	386	385	382	375	328	277	245	365	754
14 d	147	138	234	295	328	328	328	345	365	386	392	405	426	433	459	456	485	450	410	351	338	355	366	357	357	577
15	350	337	324	346	354	348	358	364	371	372	373	379	381	383	389	384	384	382	379	349	358	362	321	321	361	669
16	338	321	329	340	354	362	366	363	362	366	370	378	386	392	403	417	422	400	400	398	366	366	372	367	372	938
17	367	375	379	379	378	368	359	362	364	369	373	374	378	378	379	383	389	388	384	381	379	379	379	374	376	1018
18	371	370	372	370	365	367	365	365	365	370	372	377	376	376	385	396	392	389	391	398	396	386	382	376	378	1072
19	373	372	373	374	358	356	353	354	356	363	368	370	376	386	401	407	405	402	392	390	387	383	378	366	377	1043
20	363	360	353	355	364	364	365	370	373	374	372	372	374	405	399	391	394	407	423	414	397	360	313	307	374	969
21	337	343	348	350	363	366	358	362	369	374	375	370	366	370	377	384	385	383	382	379	376	373	371	371	368	832
22 q	374	374	374	373	373	374	374	377	378	378	378	377	370	370	370	370	371	371	371	371	371	371	370	370	373	950
23	371	370	370	370	370	370	370	370	370	363	368	362	359	362	363	370	370	370	370	370	387	388	387	387	371	914
24 d	369	285	200	229	262	313	320	265	299	345	425	381	368	390	406	440	459	448	436	457	455	395	324	329	358	600
25	313	239	300	356	362	360	367	377	387	388	388	390	388	388	385	384	388	390	392	392	398	394	388	388	371	902
26	384	379	355	352	370	374	380	384	387	388	387	384	383	388	387	387	387	393	388	386	386	385	384	378	381	1156
27 q	378	379	379	379	379	379	379	383	385	386	384	379	379	379	381	381	381	380	384	384	379	379	380	380	381	1136
28	380	379	379	379	379	379	379	379	381	379	378	377	370	372	374	376	379	389	395	391	386	385	379	370	380	1114
29 d	352	362	355	337	330	338	346	354	367	374	377	377	373	387	411	416	532	567	427	449	488	526	514	329	404	1688
30 d	10	32	183	291	352	369	390	391	392	385	385	383	384	385	386	387	386	386	386	385	386	387	390	392	342	203
31	393	393	392	388	385	384	379	378	383	379	378	378	379	384	385	385	385	385	383	382	382	383	385	390	384	1218
Mean	345	342	343	351	357	361	364	366	371	374	377	376	377	383	388	393	401	399	392	388	384	379	368	358	372	
Sum 10,000+	697	592	647	870	1079	1202	1290	1345	1487	1588	1698	1666	1700	1881	2018	2184	2444	2360	2141	2024	1906	1740	1411	1097	Grand Total	277,067

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times G.M.T. OCTOBER 1963

	Horizontal component Maximum 14,000γ+ (h. m.)	(γ)	Minimum 14,000γ+ (γ)	(h. m.)	Range (γ)	Declination Maximum 9°+ (h. m.)	(')	Minimum 9°+ (')	(h. m.)	Range (')	Vertical component Maximum 47,000γ+ (h. m.)	(γ)	Minimum 47,000γ+ (γ)	(h. m.)	Range (γ)	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+
1 q	21 47	621	587	11 05	34	12 24	30·8	23·8	08 19	7·0	17 22	384	366	04 12	18	0,1,0,0,0,0,1,1	3	0	86·0
2 q	22 34	628	585	10 30	43	13 05	32·9	23·5	08 19	9·4	02 07	381	368	23 48	13	0,0,0,1,1,1,0,1	4	0	85·9
3 q	20 47	626	579	10 46	47	13 45	34·3	23·2	20 44	13·1	15 08	383	358	23 31	25	0,1,0,0,0,0,2,1	4	0	86·0
4	04 37	631	581	10 39	50	14 56	37·5	23·2	04 47	14·3	15 32	398	343	04 12	55	1,2,1,1,1,1,0,0	7	0	85·9
5	22 13	632	569	10 49	63	13 35	34·3	14·5	19 25	19·8	18 12	389	360	11 35	29	1,1,0,1,1,1,3,2	10	1	86·0
6	16 12	628	588	11 11	40	13 58	32·6	23·7	04 01	8·9	18 06	389	358	05 08	31	1,1,0,0,0,2,1,1	6	0	86·2
7	22 08	665	592	11 23	73	17 03	35·3	-7·7	22 01	43·0	16 55	403	293	23 08	110	1,1,1,1,1,2,2,5	14	1	86·1
8	16 32	639	530	03 29	109	13 04	35·0	12·1	16 29	22·9	16 20	417	262	03 42	155	3,4,2,2,2,4,1,1	19	1	85·9
9	22 35	640	588	11 18	52	12 47	33·3	22·3	24 00	11·0	18 48	394	314	23 00	80	0,0,2,0,0,1,2,3	8	0	86·0
10	06 58	635	586	12 51	49	14 47	34·0	15·8	21 40	18·2	19 46	400	338	00 00	62	2,0,1,1,2,2,3,3	14	1	85·9
11	22 31	683	542	12 57	141	12 37	41·5	4·2	22 29	37·3	16 37	427	326	22 37	101	1,1,3,3,3,3,2,4	20	1	85·9
12 d	16 49	720	493	01 50	227	15 45	41·3	-13·6	20 40	54·9	15 55	544	225	02 16	319	4,4,3,2,4,5,5,4	31	2	86·3
13	21 11	671	481	23 59	190	05 38	31·7	6·7	23 59	25·0	15 11	417	220	24 00	197	2,2,2,2,2,2,4,5	21	1	86·1
14 d	14 09	664	438	00 40	226	06 21	37·7	0·9	01 07	36·8	16 26	528	89	00 40	439	5,3,3,3,4,3,4,2	27	1	86·0
15	19 16	662	570	11 40	92	01 28	36·4	14·8	23 40	21·6	14 05	395	311	01 47	84	3,3,2,2,2,1,3,3	19	1	85·9
16	17 30	670	566	10 00	104	13 25	35·6	9·1	17 26	26·5	16 47	433	310	01 07	123	3,3,2,2,2,4,3,2	21	0	86·0
17	06 22	621	585	12 15	36	11 36	32·7	21·9	24 00	10·8	16 54	394	357	06 41	37	2,2,2,1,1,1,0,2	11	1	86·1
18	07 37	623	589	11 35	34	12 15	33·2	21·4	22 15	11·8	19 43	401	361	04 00	40	2,2,0,0,1,1,2,2	10	1	86·0
19	06 45	626	591	11 14	35	13 57	34·0	18·2	23 49	15·8	15 20	409	349	06 50	60	1,2,1,1,2,1,1,2	11	1	86·0
20	06 05	629	559	21 33	70	14 20	39·3	6·2	22 53	33·1	18 16	428	277	22 43	151	2,2,1,2,3,2,3,3	18	1	86·5
21	03 56	633	581	10 17	52	12 00	31·6	18·2	00 06	13·4	15 50	388	326	00 00	62	2,3,2,2,1,1,0,0	11	1	86·7
22 q	21 46	632	594	11 31	38	13 53	36·3	23·5	09 14	12·8	08 31	379	365	13 33	14	0,1,0,1,1,1,0,0	4	0	86·0
23	23 37	644	585	23 55	59	23 51	38·5	23·4	23 23	15·1	23 55	403	356	13 08	47	0,0,0,0,1,0,2,3	6	1	86·2
24 d	19 55	679	264	01 55	415	16 02	45·4	-10·9	01 55	56·3	16 09	504	174	02 31	330	6,5,5,5,3,3,4,4	35	2	86·3
25	20 38	617	352	00 50	265	01 16	38·4	17·4	21 39	21·0	20 18	403	223	01 19	180	6,3,2,1,1,1,3,3	20	2	86·6
26	23 02	622	563	02 08	59	12 04	34·7	24·2	09 23	10·5	17 46	395	341	02 57	54	3,2,2,1,1,2,1,1	13	1	86·6
27 q	19 55	632	592	10 20	40	13 28	30·3	15·9	19 51	14·4	19 00	392	374	00 00	18	0,1,1,0,0,0,3,0	5	0	86·5
28	18 39	628	581	19 31	47	13 27	29·1	9·7	19 00	19·4	18 48	411	344	24 00	67	0,0,0,1,0,2,3,2	8	1	86·1
29 d	16 39	1071	-853	22 23	1924	22 10	76·3	-97·1	22 25	173·4	22 37	836	-80	23 29	916	3,2,2,1,3,7,9,9	36	2	86·1
30 d	11 41	616	-711	00 39	1327	00 47	80·2	-79·6	00 13	159·8	08 00	398	-237	00 56	635	9,5,3,2,1,1,3,0	24	2	86·3
31	20 18	618	589	10 40	29	12 00	32·8	21·6	08 58	11·2	01 30	395	375	11 56	20	1,0,1,2,2,1,1,0	8	0	86·1
Mean	– –	655	462	– –	193	– –	38·0	7·4	– –	30·6	– –	426	282	– –	144	–	–	0·84	86·1

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) 14,000γ (0·14 C.G.S. unit) + NOVEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	609	607	606	607	607	608	614	618	612	603	596	596	597	607	610	609	610	610	600	604	611	612	617	610	607	580
2	608	606	611	616	613	614	614	612	605	596	600	603	604	610	614	610	616	600	606	606	618	606	606	607	608	601
3	604	604	609	608	589	610	620	605	591	586	595	593	599	601	610	614	614	617	613	604	605	632	616	610	606	549
4	613	613	613	613	610	607	614	615	611	602	600	602	606	610	613	617	616	617	614	617	614	609	610	617	611	673
5 q	613	610	612	614	614	613	614	614	607	600	597	596	599	603	608	612	614	617	617	617	618	618	618	620	611	665
6	620	619	619	617	617	623	629	626	617	608	607	607	609	614	604	605	607	617	610	606	602	607	620	613	613	723
7 d	614	608	607	615	613	578	621	618	617	606	577	556	575	599	601	618	664	735	688	559	541	584	602	522	605	518
8 d	399	521	550	575	603	570	517	577	606	598	596	581	575	596	597	610	628	626	602	604	639	634	592	630	584	26
9 d	543	524	592	611	611	616	616	598	603	592	592	602	585	585	600	629	622	614	630	605	534	534	592	548	591	178
10 d	544	540	567	597	606	606	617	614	611	580	567	585	595	596	610	615	610	625	608	603	622	616	596	617	598	347
11	603	574	588	596	616	615	613	601	597	596	592	596	604	609	614	614	607	617	613	614	610	616	615	626	606	546
12	612	612	614	610	614	615	622	617	610	596	592	597	603	608	617	609	597	604	632	607	611	611	611	622	610	643
13	610	606	608	611	610	614	616	614	613	612	608	603	603	599	605	606	610	610	611	613	616	615	619	625	611	657
14	611	610	611	616	617	623	625	625	619	613	608	608	610	610	612	613	617	619	621	621	620	618	617	617	616	781
15	614	611	610	619	622	628	628	625	621	612	612	610	610	610	611	613	614	616	618	617	618	617	618	620	616	794
16 q	617	617	618	618	621	621	621	621	622	618	616	614	616	616	617	621	624	623	624	622	621	618	619	622	619	867
17	622	621	621	621	625	625	625	628	628	638	632	624	623	639	637	628	646	711	634	627	621	614	614	614	630	1118
18 q	611	611	613	614	614	613	613	611	609	608	608	610	613	617	619	619	619	619	621	615	619	618	618	617	615	749
19 q	616	617	616	617	617	617	617	616	614	612	611	612	613	618	618	617	618	621	622	622	622	621	621	616	617	811
20	613	613	621	622	620	620	621	619	615	613	612	614	620	621	617	618	621	622	625	625	621	622	621	621	619	857
21 q	620	618	618	618	621	622	624	621	620	616	614	618	621	621	615	616	617	618	619	621	621	621	621	621	619	862
22	618	617	618	619	622	624	625	625	623	618	610	611	618	625	628	633	629	615	599	607	614	619	618	618	619	653
23	616	623	621	618	618	621	624	625	617	616	617	615	617	618	622	622	622	625	625	621	615	618	619	619	620	874
24 d	619	619	616	619	633	637	636	627	623	615	605	601	603	608	608	623	628	598	608	572	573	495	533	561	603	460
25	583	595	612	609	612	606	619	617	609	591	591	601	594	595	608	615	619	617	616	617	616	616	616	616	608	590
26	617	618	618	620	621	622	624	625	617	617	617	616	615	615	617	619	619	621	621	621	621	618	618	618	619	858
27	618	619	621	621	624	625	628	622	621	614	614	612	612	614	618	621	625	628	626	626	621	616	613	617	620	876
28	620	620	618	618	624	628	628	626	624	617	614	613	612	617	624	621	623	624	625	624	622	621	621	620	621	904
29	619	618	616	618	621	626	629	629	626	624	618	613	615	621	622	614	619	628	629	628	625	617	614	611	621	900
30	614	617	614	617	618	620	629	628	626	622	617	606	566	597	622	617	614	617	610	614	616	618	620	616	615	755
Mean	601	604	609	613	616	616	618	617	615	608	605	604	604	610	614	617	620	624	620	612	611	609	611	610	612	
Sum 18,000+	40	108	278	394	473	467	543	519	434	239	135	115	132	299	418	498	589	731	587	359	327	284	335	311		Grand Total 440,615

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) 9° + NOVEMBER 1963

Hour G.M.T	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 500·0'+
1	25·9	25·1	24·3	24·9	24·0	25·0	26·5	26·6	23·7	23·3	25·5	28·4	29·2	30·9	31·4	32·4	28·1	27·6	29·2	28·0	26·5	24·6	21·7	23·2	26·5	136·0
2	23·8	24·4	26·4	26·6	24·5	25·7	26·1	25·4	24·6	25·6	29·3	31·3	32·9	33·0	32·9	32·4	13·9	24·4	28·4	24·9	17·0	21·2	25·5	27·0	26·1	127·2
3	30·8	30·3	24·6	23·2	27·5	28·1	30·4	28·9	25·6	26·1	27·5	29·4	31·3	26·1	29·7	29·3	28·0	27·9	27·5	25·5	24·1	20·8	23·7	24·7	27·1	151·0
4	25·6	26·1	26·6	26·5	26·4	28·4	26·1	24·6	25·0	25·7	27·6	29·3	30·3	29·4	28·2	28·2	28·1	28·3	26·2	21·2	20·2	23·8	26·0	25·1	26·4	132·9
5 q	25·0	26·1	26·5	26·9	27·0	26·7	26·5	25·6	24·8	25·2	27·1	29·1	29·8	29·3	28·4	27·4	27·0	27·0	26·9	27·0	26·5	26·3	25·9	25·9	26·8	143·7
6	26·6	27·0	27·2	26·8	26·8	26·1	25·9	26·5	27·2	30·3	32·4	33·5	33·0	33·5	33·1	30·8	32·4	27·6	25·6	23·7	12·9	21·2	22·4	24·6	27·4	157·1
7 d	26·6	26·5	30·5	27·6	26·9	37·6	29·9	27·1	26·1	28·0	29·0	30·5	35·7	34·8	32·9	21·2	17·0	18·9	21·4	5·9	7·7	18·8	24·7	23·8	25·4	109·1
8 d	13·0	22·8	33·4	27·2	25·3	31·9	40·2	49·1	28·8	26·9	27·4	29·9	27·1	27·5	30·7	28·9	16·2	13·6	26·2	22·8	7·4	17·9	20·6	21·9	25·7	116·7
9 d	26·9	26·3	30·2	24·1	26·1	27·2	29·4	27·9	27·0	27·6	26·9	28·8	27·6	27·1	31·4	27·4	24·7	22·5	21·6	11·6	1·7	19·3	18·5	16·4	24·1	78·2
10 d	21·7	12·5	21·0	25·6	22·2	25·3	27·5	25·9	26·6	26·8	29·0	29·1	29·9	28·4	30·0	22·3	15·0	20·2	19·3	23·4	24·0	25·6	19·0	26·7	24·0	77·0
11	23·7	26·4	30·3	30·9	28·3	27·1	27·8	27·2	27·5	26·2	27·8	27·0	28·5	29·6	29·0	28·1	25·5	26·4	29·0	10·0	19·3	23·2	24·6	24·5	26·2	127·9
12	24·1	24·1	25·6	28·4	29·4	27·4	27·4	27·5	25·9	27·4	28·6	27·4	28·1	29·0	29·2	27·0	24·6	25·1	21·2	24·4	26·3	24·4	23·8	25·3	26·3	131·6
13	25·4	26·3	25·6	28·4	29·4	27·4	26·1	25·4	25·7	26·4	27·4	28·2	28·4	28·4	27·5	25·3	27·6	28·7	27·6	26·6	26·3	25·6	23·6	22·8	26·4	134·4
14	25·6	26·0	26·7	25·9	27·1	27·3	26·1	26·6	26·1	25·8	27·2	28·5	29·6	29·1	28·5	28·0	27·5	27·2	27·1	26·7	26·3	24·8	22·8	23·8	26·7	140·3
15	23·8	24·4	28·5	27·4	27·1	26·4	26·4	26·6	26·6	26·6	27·6	29·0	29·4	30·0	28·5	28·3	28·5	27·7	26·8	26·5	26·1	25·2	26·1	26·0	27·1	149·5
16 q	26·4	26·8	27·9	27·4	27·1	27·3	27·0	26·9	26·8	27·1	27·9	29·2	29·6	29·3	28·3	27·5	27·3	27·3	27·1	26·6	26·5	25·6	24·9	25·6	27·2	153·4
17	26·6	26·9	27·1	27·4	27·7	27·2	27·3	27·1	27·2	28·5	29·6	30·3	30·3	33·8	42·1	45·5	39·7	44·0	37·4	31·3	28·0	26·8	25·8	25·4	31·0	243·0
18 q	25·4	25·4	25·6	25·7	25·6	25·6	25·7	25·8	26·0	26·6	27·4	28·1	28·2	28·1	28·3	28·4	27·9	27·5	28·0	26·0	27·1	26·7	26·4	26·5	26·7	142·0
19 q	25·9	25·9	26·0	26·4	26·4	26·0	26·3	26·1	26·2	26·6	27·1	28·2	29·0	28·7	28·4	28·0	27·6	27·4	27·2	27·1	27·1	26·5	26·3	25·9	26·9	146·3
20	25·4	25·1	24·9	22·7	23·8	25·7	25·7	26·1	26·2	26·8	28·0	29·5	29·9	30·0	28·6	28·0	27·7	27·6	27·3	27·4	26·8	26·6	26·5	26·6	26·8	142·9
21 q	26·4	26·3	26·3	26·5	26·5	26·3	26·0	26·3	26·1	27·1	27·9	29·0	29·5	29·5	28·7	28·7	29·4	29·3	28·7	27·5	27·0	26·5	25·8	25·6	27·4	156·9
22	26·5	26·5	26·7	26·7	26·8	26·6	26·5	26·4	26·6	27·1	28·3	28·6	29·3	29·5	29·5	30·0	29·4	30·3	27·6	29·8	27·1	26·5	26·5	25·9	27·7	164·7
23	23·8	25·4	22·8	22·3	25·2	25·5	25·6	25·7	28·3	28·9	28·4	29·5	31·3	30·3	29·3	30·3	29·4	28·0	27·7	28·0	23·7	25·7	25·8	26·3	27·0	147·2
24 d	26·4	26·1	26·5	28·4	28·5	28·3	31·3	31·9	30·3	30·3	31·5	32·3	33·5	37·2	35·4	36·3	32·6	27·7	30·7	26·3	13·2	12·5	3·3	8·1	26·9	144·8
25	22·9	27·4	24·4	25·5	27·8	33·8	29·0	28·5	30·6	29·8	29·4	29·0	29·3	29·7	28·7	27·5	27·5	27·8	26·3	26·8	25·9	25·7	25·7	25·7	27·7	164·7
26	25·8	26·0	26·4	26·6	26·4	26·3	26·1	26·3	26·7	28·9	29·0	29·1	29·8	29·5	28·8	27·7	26·8	26·5	26·4	26·1	26·1	26·0	26·0	26·2	27·1	149·5
27	26·3	26·3	26·6	26·6	26·8	27·4	27·0	27·1	27·5	27·1	28·2	28·8	28·8	28·7	28·2	27·7	27·2	27·1	27·2	27·0	26·2	23·2	23·9	25·3	26·9	146·2
28	26·6	26·8	26·1	26·5	27·8	28·0	23·8	26·3	26·7	26·0	25·9	27·2	29·3	29·6	29·5	28·3	27·4	27·2	27·1	26·7	26·5	26·4	26·4	26·1	26·9	151·5
29	25·7	25·6	26·1	26·5	25·4	25·5	25·8	26·6	26·6	26·5	28·1	30·3	31·6	27·5	29·3	35·0	29·5	28·2	28·1	28·0	27·4	24·3	17·1	17·8	26·8	142·5
30	24·7	22·4	25·7	26·0	25·9	26·5	26·7	26·4	26·1	26·6	28·0	29·8	30·0	28·7	30·3	29·8	28·0	27·3	23·0	23·3	26·1	25·0	26·0	25·1	26·6	137·4
Mean	25·1	25·4	26·5	26·3	26·4	27·2	27·4	27·5	26·7	27·1	28·2	29·3	30·0	29·9	30·2	29·2	26·7	26·9	26·8	24·5	22·6	23·9	23·5	24·1	26·7	
Sum 600·0+	153·3	163·2	197·9	190·6	192·7	216·6	221·6	224·2	200·0	211·7	246·3	280·3	300·2	296·2	304·8	275·7	201·5	206·3	203·8	135·9	77·0	116·7	105·3	123·8	1?·0	Grand Total 19245·6

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

39

3 LERWICK (Z)   47,000γ (0·47 C.G.S. unit) +   NOVEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	388	388	386	384	384	379	371	370	376	381	381	382	384	386	391	394	395	398	408	408	394	393	388	387	387	1296
2	387	389	390	385	379	381	379	379	379	379	378	378	379	382	390	396	441	442	426	408	402	386	386	373	391	1394
3	339	339	361	366	348	329	339	355	377	378	378	379	382	386	390	388	388	386	394	404	399	361	339	364	370	869
4	372	375	379	382	383	380	376	379	379	379	377	375	377	379	385	386	386	386	386	386	386	381	378	372	380	1124
5 q	372	377	378	379	381	383	383	384	384	378	374	372	374	377	379	384	385	385	385	384	382	379	378	377	380	1114
6	372	369	366	372	377	377	377	377	378	378	376	373	373	379	401	410	403	394	403	412	411	370	339	368	381	1155
7 d	371	371	350	342	340	346	325	347	364	374	386	401	408	418	434	441	520	580	512	377	251	316	368	331	386	1273
8 d	213	249	330	325	347	350	339	333	363	380	381	394	411	416	421	435	467	429	414	411	380	338	353	349	368	828
9 d	302	234	265	314	351	360	367	379	387	388	392	394	412	433	412	438	453	448	379	365	369	261	301	291	362	695
10 d	253	252	218	276	313	356	363	373	381	393	402	394	397	401	395	403	412	411	394	401	370	358	363	301	357	580
11	317	324	315	318	323	347	359	371	381	382	387	390	386	381	385	388	396	388	397	412	390	374	375	350	368	836
12	362	369	367	370	354	355	361	365	378	386	385	393	387	385	388	402	427	442	405	390	387	387	385	370	383	1200
13	379	381	381	381	380	379	379	379	379	375	379	385	387	388	389	395	389	388	387	387	386	386	381	375	383	1195
14	380	380	381	379	377	363	363	366	372	375	375	377	379	381	381	382	381	381	380	380	380	380	380	378	377	1051
15	373	372	372	371	373	373	372	372	373	377	378	379	380	385	387	387	385	383	380	379	378	380	378	377	378	1064
16 q	379	378	371	368	372	374	373	372	372	371	371	375	377	378	380	381	380	379	378	377	376	377	374	370	375	1003
17	367	372	373	373	372	372	372	370	370	362	361	365	371	370	382	444	476	562	515	428	398	389	385	384	397	1533
18 q	387	388	388	385	385	384	382	381	381	381	381	382	379	373	370	374	373	372	374	376	373	372	373	373	379	1087
19 q	374	375	376	377	377	376	375	374	373	372	373	374	377	375	376	380	380	380	381	381	376	377	377	381	377	1037
20	384	385	378	366	375	377	378	373	378	378	377	377	377	378	380	380	380	380	379	379	380	378	377	376	378	1075
21 q	377	378	378	378	378	378	378	378	378	377	377	377	369	369	373	375	378	379	381	383	382	379	378	375	377	1053
22	373	373	374	373	373	373	374	373	373	371	370	370	370	369	369	369	376	403	452	434	421	414	403	392	385	1242
23	385	360	343	352	376	377	375	375	382	376	377	376	376	374	377	381	382	382	380	383	393	383	381	380	376	1026
24 d	377	375	374	369	359	361	361	364	363	370	371	376	376	400	408	412	476	462	464	448	400	294	266	275	379	1101
25	309	265	317	335	351	342	341	362	375	383	385	386	393	395	393	392	396	395	393	389	385	383	383	383	368	'831
26	380	380	379	379	379	377	377	376	381	376	377	377	381	384	383	379	381	380	380	381	382	383	384	384	380	1120
27	384	383	380	379	377	377	374	376	376	377	378	377	377	378	379	378	376	375	375	375	380	390	389	384	379	1094
28	379	378	377	375	358	356	361	367	372	375	376	377	379	380	380	380	378	377	376	376	376	378	380	383	375	994
29	383	382	379	373	373	373	369	370	371	372	374	376	377	380	385	387	386	379	376	375	378	393	393	377	378	1081
30	359	358	371	375	375	374	367	367	367	367	367	375	404	389	377	379	384	383	394	385	377	376	367	356	375	993
Mean	359	357	360	363	366	368	367	370	375	377	378	380	383	386	388	394	404	408	402	393	381	371	370	365	378	
Sum 10,000+	777	699	797	901	990	1029	1010	1112	1263	1311	1344	1406	1499	1569	1640	1820	2130	2229	2048	1774	1442	1116	1102	936		Grand Total 271,944

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS   GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK   All Times G.M.T.   NOVEMBER 1963

		GEOMAGNETIC ELEMENTS											3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph house 200°A+
	Horizontal component			Declination					Vertical component						
	Maximum 14,000γ +	Minimum 14,000γ +	Range	Maximum 9° +	Minimum 9° +	Range			Maximum 47,000γ +	Minimum 47,000γ +	Range				
	h. m. γ	γ h. m.	γ	h. m. '	' h. m.	'			h. m. γ	γ h. m.	γ				°A.
1	22 11 628	590 11 49	38	18 03 34·2	17·2 22 05	17·0			19 14 413	370 06 50	43	1,2,2,1,2,2,2,2	14	0	86·2
2	20 35 631	584 17 21	47	12 01 35·3	-1·6 16 35	36·9			16 32 472	361 24 00	111	2,1,1,2,2,5,3,3	19	1	86·5
3	21 31 675	578 09 14	97	06 10 33·1	11·1 21 30	22·0			19 52 409	317 05 30	92	3,3,3,2,1,0,2,3	17	1	86·2
4	19 29 632	594 10 13	38	12 29 31·3	16·2 20 07	15·1			19 00 394	371 23 40	23	0,2,2,1,1,0,3,2	11	1	86·0
5 q	23 32 624	596 11 09	28	12 40 30·0	24·4 08 57	5·6			16 20 386	370 00 00	16	0,0,0,1,0,0,0,0	1	0	86·0
6	22 08 644	587 20 58	57	16 16 35·3	9·1 20 25	26·2			19 59 418	316 21 57	102	1,1,1,1,2,2,4,3	15	1	86·3
7 d	17 40 826	373 24 00	453	05 41 46·0	-16·6 19 10	62·6			17 35 605	166 20 20	439	3,4,3,3,3,6,6,5	33	2	86·0
8 d	20 41 679	293 00 12	386	07 10 51·3	-9·1 16 57	60·4			16 48 513	173 00 25	340	6,4,5,3,3,5,5,3	34	2	85·9
9 d	18 36 691	388 20 52	303	13 50 43·1	-2·6 20 24	45·7			17 10 481	213 21 05	268	4,3,2,2,3,4,6,6	30	1	86·0
10 d	17 52 703	509 00 29	194	10 41 32·8	-3·9 17 50	36·7			17 40 426	196 02 17	230	4,4,2,3,3,5,3,3	27	1	85·6
11	20 51 648	556 02 01	92	03 27 32·4	7·5 19 12	24·9			19 10 434	295 00 00	139	3,3,2,2,1,2,4,2	19	1	84·7
12	18 30 668	582 10 57	86	04 33 30·8	8·4 18 25	22·4			17 07 449	347 04 47	102	2,1,2,2,1,3,4,2	17	1	85·4
13	23 20 632	597 13 34	35	12 00 29·5	19·9 23 02	9·6			15 30 397	371 23 30	26	0,0,0,1,1,2,1,2	7	0	85·9
14	05 52 629	604 11 58	25	12 35 31·3	21·6 22 16	9·7			13 11 385	359 06 15	26	1,2,1,0,0,0,0,1	5	0	86·0
15	06 26 629	606 12 08	23	13 06 30·8	21·8 01 14	9·0			14 43 389	369 01 00	20	2,1,0,0,1,0,0,0	4	0	85·5
16 q	22 50 626	613 11 20	13	12 12 29·8	23·9 22 57	5·9			15 20 384	363 03 02	21	1,1,0,0,0,0,0,1	3	0	85·5
17	17 31 767	599 15 09	168	17 21 53·7	23·9 09 11	29·8			17 59 608	359 10 20	249	0,0,1,2,3,5,5,1	17	1	85·4
18 q	18 30 625	605 09 51	20	18 36 29·2	24·5 19 32	4·7			01 35 388	371 21 08	17	0,0,0,0,0,0,2,0	2	0	85·0
19 q	19 39 625	608 11 57	17	12 35 29·3	25·0 23 55	4·3			24 00 382	371 09 46	11	0,0,0,0,0,0,0,1	1	0	79·4
20	03 12 627	610 10 04	17	13 28 30·9	21·2 03 50	9·7			01 47 386	361 03 18	25	1,2,0,0,1,0,0,0	4	0	77·9
21 q	06 28 625	610 10 22	15	13 04 30·0	24·6 23 05	5·4			19 11 384	376 11 00	8	0,0,0,0,1,0,1,1	3	0	76·6
22	15 49 642	595 19 00	47	17 25 32·4	23·2 23 59	9·2			18 42 460	368 13 55	92	0,0,0,0,1,3,2,2	8	1	76·7
23	01 40 629	603 08 58	26	12 34 32·2	19·3 20 46	12·9			20 20 396	338 02 50	58	2,2,1,1,1,0,2,1	10	1	82·1
24 d	16 44 692	465 21 31	227	13 50 40·5	-11·3 22 16	51·8			16 39 538	207 22 06	331	1,2,1,2,2,4,5,5	22	1	83·0
25	16 05 624	557 00 58	67	05 33 37·8	10·3 00 00	27·5			16 48 403	239 01 25	164	4,3,3,2,2,2,1,0	17	1	83·0
26	07 02 628	609 08 43	19	12 35 30·3	25·4 00 05	4·9			13 40 385	375 09 35	10	0,0,1,1,0,0,0,0	2	0	84·3
27	06 13 630	609 12 25	21	12 36 29·4	19·5 21 46	9·9			21 47 401	371 06 16	30	0,0,1,1,0,0,1,2	5	0	85·7
28	06 49 632	608 12 14	24	04 04 31·2	22·2 05 14	9·0			23 50 384	349 04 51	35	1,2,1,1,1,1,0,0	7	0	85·8
29	06 32 632	603 22 22	29	15 21 37·5	11·4 22 05	26·1			22 25 402	368 06 34	34	1,1,1,1,2,2,1,3	12	1	87·0
30	06 55 632	523 12 43	109	12 40 35·3	14·4 18 51	20·9			12 48 427	349 01 05	78	2,1,1,2,4,2,3,2	17	1	86·1
Mean	- - 653	562 - -	91	- - 34·6	13·4 - -	21·2			- - 430	325 - -	105	-	-	0·63	84·4

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

1 LERWICK (H) · 14,000γ (0·14 C.G.S. unit) + · DECEMBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 14,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	617	617	617	618	621	624	623	621	618	618	618	618	621	621	621	611	621	624	621	622	625	623	621	619	620	880
2	621	621	622	620	621	629	629	626	624	617	614	617	618	618	613	607	615	615	607	610	618	624	623	623	619	852
3 d	625	610	617	626	614	627	625	588	580	614	603	589	586	591	607	621	606	604	607	626	608	629	598	604	609	605
4 d	600	602	598	584	610	621	608	616	616	611	606	605	592	600	605	606	595	590	610	628	638	607	532	571	602	451
5 d	560	600	599	604	610	618	621	618	620	606	602	610	618	610	588	599	607	627	604	617	614	607	595	595	606	549
6 d	580	613	614	615	609	609	625	625	613	608	608	612	596	616	618	626	621	637	639	612	621	618	598	614	614	747
7	613	614	607	614	615	619	614	611	606	604	607	610	588	607	611	604	606	613	615	617	621	618	614	614	611	662
8	621	614	617	621	614	606	625	618	607	602	604	607	599	607	612	612	610	611	625	612	612	615	615	618	613	704
9	616	617	617	618	621	625	630	621	613	608	599	602	606	604	600	609	618	621	625	623	622	621	621	620	616	777
10 q	619	619	618	620	622	624	625	628	626	622	620	614	615	618	621	622	623	624	623	623	624	623	623	622	622	918
11 q	622	621	623	625	628	629	628	627	625	622	618	614	613	615	619	621	622	624	621	622	625	625	623	622	622	934
12	621	625	623	625	628	631	632	630	629	627	625	623	622	621	621	622	621	620	622	623	620	626	626	630	625	993
13	615	618	625	623	626	629	630	629	629	627	627	627	625	624	622	622	625	628	628	626	622	627	622	623	625	998
14	621	623	623	629	629	630	632	635	629	631	632	633	630	623	619	617	615	625	627	639	635	624	627	625	627	1053
15	622	615	616	620	620	622	618	624	624	622	621	616	615	622	626	624	619	621	627	625	626	626	625	624	622	920
16	621	620	624	624	625	626	627	625	623	622	623	625	622	625	629	621	629	625	622	622	624	627	625	631	624	987
17	621	620	621	622	625	626	627	625	625	624	622	624	625	625	625	625	625	627	622	621	621	625	629	627	624	979
18 q	627	626	625	625	626	629	630	630	630	627	625	624	625	629	630	633	632	631	631	633	632	632	629	629	629	1090
19	628	626	626	628	629	632	633	632	632	629	627	625	627	633	637	636	634	631	629	632	635	633	621	600	629	1095
20 d	608	616	626	629	637	648	629	631	640	633	624	620	620	613	616	616	608	611	610	611	597	602	612	618	620	875
21	619	618	618	622	625	627	629	637	629	620	621	623	631	626	621	625	613	609	611	612	620	619	620	615	621	910
22	614	616	618	625	629	635	634	625	628	621	612	613	617	602	607	614	614	612	591	622	607	615	627	628	618	826
23	616	616	618	619	624	627	627	626	620	605	617	619	621	623	625	625	611	597	614	613	616	617	618	611	618	825
24	621	607	613	616	621	622	624	623	621	618	617	615	617	614	610	620	620	606	610	614	631	619	617	620	617	816
25 q	623	622	622	623	626	626	627	627	624	624	611	616	619	623	625	624	625	624	623	623	623	623	627	623	623	953
26	622	621	620	620	623	630	628	629	627	619	620	620	620	625	627	623	622	624	625	625	622	620	622	616	623	950
27	616	620	619	624	627	628	630	633	627	623	624	622	618	621	624	627	627	627	625	622	624	624	626	624	624	982
28	631	630	622	623	626	630	631	634	644	633	631	629	628	630	628	627	629	620	620	620	644	613	616	624	628	1063
29	620	614	615	623	627	628	631	627	631	629	627	612	596	601	608	608	605	606	615	621	613	617	626	619	617	819
30	616	610	612	615	616	616	616	616	616	613	612	610	614	620	620	617	623	620	616	616	615	617	619	622	616	787
31 q	617	617	617	618	620	621	622	622	623	616	616	616	619	620	625	626	625	623	622	622	620	620	619	623	620	889
Mean	616	617	618	620	622	625	626	625	623	619	617	617	615	617	618	619	618	619	619	621	622	621	617	618	619	
Sum 19,000+	93	128	152	218	294	391	409	360	299	197	133	110	63	127	160	190	166	177	187	254	275	236	116	154		Grand Total 460,889

619 at 0-1h. January 1, 1964.

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

2 LERWICK (D) · 9° + · DECEMBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 500·0′+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	25·1	25·3	26·6	26·4	26·5	27·1	27·1	26·5	26·1	26·3	27·6	29·0	30·0	29·6	28·1	27·1	28·0	28·0	26·8	26·5	26·3	25·8	24·6	23·0	26·8	143·4
2	26·6	27·5	27·1	26·3	26·6	25·5	25·4	26·1	25·8	26·1	27·2	29·2	30·0	30·4	30·4	28·5	32·4	33·8	33·4	28·7	25·4	26·4	26·1	22·8	27·8	167·7
3 d	19·8	22·7	30·4	23·2	25·6	29·6	32·3	35·2	38·2	30·7	30·4	29·5	29·0	31·4	30·4	28·2	26·6	14·9	15·6	14·9	18·3	30·4	20·7	22·2	26·3	130·2
4 d	23·2	25·9	26·5	30·0	28·0	27·1	26·1	26·1	26·1	25·6	25·6	26·4	28·6	27·2	27·2	16·7	18·8	19·7	18·3	20·7	18·3	13·5	18·8	23·8	23·8	71·7
5 d	20·3	18·9	23·2	26·9	27·2	29·0	30·0	28·6	28·0	26·3	26·1	26·6	29·3	30·9	23·5	28·5	27·1	16·6	16·1	11·5	19·8	13·5	20·3	25·6	23·9	73·8
6 d	28·5	27·1	24·5	24·9	24·6	28·5	28·8	29·3	27·1	26·1	26·9	28·7	28·0	23·9	26·1	23·7	24·6	15·4	18·8	22·2	21·7	22·7	26·1	24·1	25·1	102·3
7	25·6	30·6	30·0	28·7	26·5	27·1	27·2	29·8	28·2	26·1	26·1	27·3	25·8	23·9	28·3	25·9	27·3	27·1	25·1	23·8	21·0	22·2	21·8	25·1	26·3	130·5
8	28·5	26·6	26·6	26·1	27·6	30·9	32·9	31·3	30·1	30·4	28·8	29·0	28·6	28·5	27·2	21·2	24·9	25·1	22·2	23·7	25·9	23·9	24·7	26·8	144·2
9	25·4	26·7	26·7	26·5	26·7	28·2	28·2	28·2	31·2	28·3	27·2	29·2	30·1	30·9	28·5	24·4	27·2	27·1	26·4	26·3	26·1	26·0	26·0	26·0	27·4	157·5
10 q	26·4	26·7	26·7	26·9	27·1	27·1	27·1	26·8	26·3	26·1	26·6	27·7	28·6	28·7	28·0	27·3	27·1	27·0	26·8	26·6	26·2	26·1	26·2	26·4	26·9	146·5
11 q	26·6	27·0	27·3	27·9	27·3	27·1	27·0	26·6	26·3	26·3	26·4	27·1	28·3	28·9	28·0	27·2	27·1	26·9	26·4	26·3	26·3	26·2	26·1	26·3	27·0	146·9
12	26·3	27·9	26·4	26·7	26·7	27·2	27·1	26·8	27·1	27·8	28·0	27·6	29·4	29·0	28·6	27·8	27·7	27·7	27·1	26·5	24·1	25·9	25·4	17·8	26·7	141·7
13	16·3	22·7	24·5	25·7	22·5	22·7	25·4	26·4	26·4	26·8	27·3	29·0	29·4	29·3	29·2	28·7	27·5	27·1	27·3	26·5	23·7	22·8	25·7	25·4	25·8	118·3
14	26·1	26·2	26·1	26·1	24·9	26·7	26·6	26·8	26·8	26·8	28·0	28·5	31·2	32·8	34·0	38·7	34·8	29·6	28·5	26·5	16·7	22·5	25·6	24·7	27·7	165·2
15	27·6	26·4	25·5	26·4	26·9	25·7	26·2	26·1	26·1	26·9	26·7	28·0	28·5	28·6	28·8	29·6	27·5	26·5	25·5	25·9	25·5	25·6	25·1	24·8	26·7	140·4
16	24·3	26·7	23·0	26·1	25·8	26·8	26·7	26·1	26·1	26·1	26·3	27·5	28·4	28·8	28·2	28·5	27·7	26·1	29·0	27·1	25·9	26·4	26·1	25·3	21·2	26·4	134·1
17	23·7	25·3	25·9	26·2	26·4	26·5	26·0	26·1	25·9	25·9	26·5	27·2	28·0	28·4	27·9	27·5	28·0	27·9	27·3	24·5	23·2	25·4	25·8	25·8	26·3	131·3
18 q	26·3	26·1	26·3	26·6	26·6	26·6	26·5	26·2	26·4	27·3	27·1	27·4	28·3	28·2	28·2	27·9	27·5	28·6	28·3	28·1	27·0	26·4	25·5	25·6	27·0	149·0
19	25·7	26·1	26·6	26·9	26·9	26·3	26·7	26·1	26·3	25·8	25·9	26·6	27·7	29·8	28·0	28·5	28·9	27·9	27·1	26·6	25·5	19·3	14·8	26·4	26·4	132·6
20 d	19·3	24·1	26·1	26·8	27·1	26·4	28·0	39·7	34·2	31·7	31·2	32·7	34·1	36·3	35·1	33·1	28·4	28·2	26·8	12·5	2·8	19·1	17·8	20·7	26·8	142·2
21	25·3	25·5	26·5	27·5	27·3	27·0	26·9	27·1	27·4	28·2	29·0	29·7	31·8	30·4	29·3	29·2	29·8	23·5	27·6	24·6	26·1	23·3	15·4	14·1	26·4	132·5
22	25·1	26·3	26·2	26·5	27·3	29·6	29·2	27·9	28·8	29·5	30·4	30·3	30·3	32·3	29·6	28·9	26·7	26·3	18·7	15·5	22·7	23·7	19·3	24·9	26·5	136·0
23	26·3	26·4	26·0	26·1	26·7	27·1	27·1	27·6	28·5	29·9	28·6	27·4	28·0	28·3	27·1	26·5	26·6	22·2	18·5	25·1	22·3	23·0	26·8	26·3	26·3	130·0
24	22·9	23·8	25·1	24·5	25·1	25·4	25·7	25·7	25·7	25·9	27·0	27·7	29·4	28·9	28·5	26·9	27·2	22·5	25·6	26·2	17·0	18·0	21·9	25·5	25·1	102·1
25 q	26·6	26·5	26·4	26·8	27·0	27·0	26·9	26·4	26·7	27·2	27·3	28·3	28·6	28·7	27·8	27·1	26·7	26·5	26·5	25·8	25·7	25·7	25·7	26·1	26·8	144·0
26	26·2	26·1	26·2	26·4	26·6	26·1	25·6	25·9	26·6	27·3	28·7	28·5	28·3	28·3	28·2	28·1	28·2	27·1	26·6	26·0	24·8	23·3	20·3	21·8	26·3	131·2
27	23·8	25·4	26·4	26·0	26·3	26·6	28·3	27·5	26·1	25·9	27·5	28·0	29·0	30·0	30·0	28·5	27·9	27·7	27·5	26·1	26·6	26·3	25·9	25·8	27·0	149·1
28	26·1	24·4	25·9	26·1	26·5	26·3	26·3	27·0	27·1	27·1	27·4	28·4	29·3	30·2	30·3	30·3	31·1	31·9	29·8	26·9	6·7	16·9	22·8	25·7	26·3	130·5
29	25·2	25·1	28·9	23·9	25·2	26·2	25·8	26·5	25·6	25·9	28·3	28·1	30·8	32·0	33·2	30·9	25·9	31·1	27·7	18·4	24·1	25·1	22·2	21·0	26·5	137·1
30	24·0	22·4	26·0	25·6	26·5	26·4	26·1	25·9	25·7	26·3	26·9	27·8	29·0	29·7	29·2	26·8	27·1	28·3	26·2	26·6	26·4	25·4	23·4	22·7	26·3	130·4
31 q	25·2	25·4	25·9	26·4	26·3	26·3	26·4	26·2	26·2	26·9	26·9	27·2	28·9	29·1	27·9	27·1	27·1	27·1	26·5	26·4	26·2	25·9	24·9	23·2	26·5	135·6
Mean	24·8	25·6	26·3	26·4	26·4	27·0	27·3	27·7	27·5	27·2	27·6	28·3	29·2	29·4	28·9	27·7	27·5	26·3	25·7	23·6	22·7	23·8	23·1	23·3	26·4	
Sum 700·0+	68·3	93·8	115·5	117·1	118·3	137·3	145·5	158·7	152·8	142·2	156·0	177·2	205·7	212·0	196·2	158·6	151·3	113·7	95·4	31·8	2·9	38·7	15·6	23·4	26·8	Grand Total 19628·0

25·6 at 0-1h. January 1, 1964.

3 LERWICK (Z) 47,000γ (0·47 C.G.S. unit) + DECEMBER 1963

Day	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	360	369	376	376	376	374	372	370	369	369	369	372	374	377	381	387	384	379	380	377	375	375	376	378	375	995
2	378	379	380	380	380	376	375	373	375	376	374	374	379	384	394	410	413	419	464	440	417	396	389	385	392	1410
3 d	367	359	353	346	364	365	366	371	379	375	383	399	410	418	463	447	452	459	436	447	391	277	333	365	389	1325
4 d	370	374	377	376	376	382	385	399	388	384	383	385	390	398	402	418	423	432	408	393	356	342	302	247	379	1090
5 d	235	306	339	356	367	376	372	376	379	384	387	382	379	389	422	432	435	422	417	393	353	370	365	357	375	993
6 d	335	331	353	362	370	374	373	373	381	385	381	380	394	393	404	401	393	391	369	385	393	374	341	338	374	974
7	352	341	340	351	363	367	377	380	385	385	385	385	401	395	393	401	402	396	392	387	383	378	376	367	378	1082
8	348	349	360	360	359	359	349	356	364	370	376	381	392	392	391	404	395	387	376	385	379	359	359	367	372	917
9	368	368	368	368	368	367	361	367	368	374	383	382	382	384	396	395	385	378	376	376	376	376	377	378	376	1021
10 q	377	376	376	375	374	373	370	372	374	376	377	379	379	377	377	377	376	376	376	375	375	377	377	378	376	1019
11 q	378	377	376	374	373	372	373	374	374	375	375	376	377	377	377	377	376	376	376	375	376	376	376	375	375	1012
12	375	368	370	373	372	368	368	370	369	369	369	375	375	376	379	379	379	380	378	377	382	379	378	365	374	973
13	360	361	361	362	355	361	363	366	367	368	369	371	374	377	379	379	378	376	376	376	381	379	379	379	371	897
14	379	378	377	369	369	369	368	367	368	368	368	368	371	377	387	411	411	399	390	423	443	417	401	394	386	1272
15	390	388	385	382	379	378	377	376	376	374	376	377	379	380	382	385	387	388	385	383	382	380	379	379	381	1147
16	379	378	375	378	378	378	375	375	374	374	371	371	373	377	379	381	383	383	386	387	385	382	381	378	378	1081
17	378	378	379	379	378	377	374	374	373	371	370	370	373	376	379	379	382	380	382	386	385	379	373	373	377	1048
18 q	373	373	374	374	374	373	373	372	371	370	368	369	369	370	370	372	373	373	373	373	373	373	373	372	372	928
19	371	370	372	372	372	371	370	369	369	366	367	365	362	366	367	367	370	373	374	374	371	373	378	368	370	877
20 d	367	374	375	375	372	366	369	354	347	358	361	363	366	378	390	398	419	411	405	413	393	374	370	369	378	1067
21	369	370	371	371	371	373	375	371	372	375	371	369	367	371	377	379	387	395	392	390	383	380	370	354	375	1003
22	363	369	371	371	369	363	363	371	371	373	379	374	374	388	400	401	399	403	421	382	392	379	362	344	378	1082
23	360	368	371	371	372	371	371	372	376	381	378	376	375	376	378	382	392	414	408	393	390	384	384	369	380	1112
24	334	352	362	371	371	372	373	373	374	377	377	374	372	378	380	377	379	389	389	388	372	366	373	371	373	944
25 q	370	371	371	370	370	371	371	372	372	367	369	372	373	373	375	377	376	377	376	377	378	380	375	372	373	955
26	375	375	374	373	370	366	369	369	371	374	374	374	373	375	377	378	379	378	377	377	381	385	381	379	375	1004
27	375	371	369	364	364	365	364	364	368	373	372	374	378	378	377	375	373	373	373	377	375	377	377	376	372	932
28	367	362	363	365	365	365	365	365	363	369	370	372	374	375	376	377	377	386	393	400	406	382	377	372	374	987
29	373	377	369	364	370	371	369	369	368	371	371	380	390	403	417	425	468	426	417	415	397	389	383	374	390	1356
30	377	378	382	382	382	382	380	379	377	378	378	379	377	381	385	389	386	386	387	387	386	386	388	386	382	1178
31 q	382	382	382	382	382	382	378	375	373	377	376	374	377	379	381	382	382	381	381	379	378	379	379	378	379	1101
Mean	364	367	369	370	371	371	371	371	372	374	374	375	378	382	388	392	394	393	391	390	384	375	372	367	377	
Sum 11,000+	285	372	451	472	506	510	488	514	535	586	607	642	726	838	1035	1142	1214	1186	1133	1091	907	623	532	387		Grand Total 280,782

378 at 0-1h. January 1, 1964.

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH HOUSE

4 LERWICK All Times DECEMBER 1963

Day	Horizontal component Maximum 14,000γ + h. m. / γ	Horizontal component Minimum 14,000γ + γ / h. m.	Range γ	Declination Maximum 9° + h. m. / '	Declination Minimum 9° + ' / h. m.	Range '	Vertical component Maximum 47,000γ + h. m. / γ	Vertical component Minimum 47,000γ + γ / h. m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph house 200°A+ °A.
1	23 00 629	603 15 27	26	12 47 30·2	18·0 22 59	12·2	15 43 391	353 00 00	38	1,0,0,0,0,1,1,2	5	0	85·2
2	23 33 646	592 14 59	54	17 52 37·0	19·3 23 51	17·7	18 38 480	369 07 51	111	1,1,1,1,2,3,3,2	14	1	86·2
3 d	19 45 680	533 08 04	147	08 28 41·6	-0·9 19 47	42·5	14 53 503	257 21 24	246	3,3,4,3,4,4,5,4	30	1	87·0
4 d	19 57 662	501 22 26	161	23 58 34·1	9·1 23 15	25·0	17 28 439	203 24 00	236	2,3,2,2,3,3,4,4	23	1	87·0
5 d	17 26 659	504 00 12	155	15 27 33·9	-3·2 19 25	37·1	17 02 487	201 00 08	286	4,2,2,2,3,4,4,4	25	1	86·9
6 d	21 37 657	550 00 37	107	00 29 34·8	8·3 16 55	26·5	15 02 430	314 00 51	116	3,3,2,1,3,4,3,3	22	1	86·9
7	20 36 629	581 12 17	48	07 35 31·9	16·9 19 04	15·0	16 15 410	335 02 05	75	2,2,2,2,2,2,3,2	17	1	86·5
8	18 27 653	588 12 33	65	06 06 35·1	10·9 18 17	24·2	15 29 411	333 01 00	78	2,3,2,2,2,3,3,3	20	1	86·0
9	06 32 633	592 14 55	41	08 38 32·2	23·2 15 34	9·0	15 04 400	361 06 05	39	1,1,2,2,2,2,0,0	10	1	85·9
10 q	07 26 629	614 12 10	15	12 58 29·1	25·6 08 48	3·5	11 37 384	369 07 34	15	0,0,0,0,0,0,0,0	0	0	86·0
11 q	05 40 629	611 12 02	18	13 15 29·1	25·3 22 35	3·8	13 00 379	371 05 44	8	0,0,0,0,0,0,0,0	0	0	86·0
12	23 20 638	617 20 16	21	01 13 29·6	12·4 23 55	17·2	20 30 383	359 23 39	24	1,0,0,0,0,0,1,3	5	0	86·1
13	08 19 634	609 00 28	25	12 00 30·0	12·2 00 04	17·8	20 51 387	351 04 07	36	3,2,0,1,0,0,2,2	10	1	86·1
14	19 44 660	610 16 20	50	15 30 40·0	13·8 20 33	26·2	20 05 474	365 11 01	109	0,1,1,1,2,3,3,3	14	1	85·8
15	15 10 635	610 11 54	25	15 14 30·9	23·5 18 48	7·4	00 01 395	370 09 00	25	2,1,1,2,1,2,2,1	12	1	85·6
16	23 11 636	612 01 33	24	17 45 30·1	19·1 23 30	11·0	19 29 388	368 02 00	20	2,1,0,1,1,2,2,2	11	1	85·6
17	22 20 630	616 00 33	14	13 21 28·9	21·2 00 09	7·7	19 46 388	370 11 20	18	2,0,0,0,0,1,2,1	6	0	85·3
18 q	21 39 635	622 02 49	13	13 32 28·8	24·8 23 02	4·0	02 51 376	367 10 10	9	0,0,0,0,0,0,0,1	1	0	84·9
19	14 32 640	589 23 13	51	13 07 30·2	10·7 23 27	19·5	22 47 387	360 24 00	27	0,0,0,0,1,1,0,3	5	0	84·7
20 d	07 57 659	581 20 35	78	07 26 44·5	-10·4 19 53	54·9	19 44 429	332 07 51	97	3,2,3,2,2,2,5,3	22	1	83·2
21	23 00 648	595 23 44	53	12 53 33·0	4·2 22 43	28·8	17 47 398	339 23 06	59	1,1,1,0,2,3,2,4	14	1	83·0
22	19 07 665	584 18 52	81	13 33 33·9	7·7 19 40	26·2	19 00 433	335 23 18	98	1,1,1,2,2,1,4,3	15	1	82·1
23	19 06 646	579 19 29	67	23 40 33·0	7·2 19 01	25·8	17 11 418	336 24 00	82	1,1,2,2,0,2,4,3	15	1	81·2
24	20 23 649	596 17 36	53	12 22 30·0	9·3 20 41	20·7	17 49 398	325 00 12	73	2,1,1,0,1,3,3,3	14	1	82·0
25 q	08 42 629	607 10 28	22	13 19 29·3	25·0 20 57	4·3	20 20 380	365 09 58	15	0,0,0,1,1,0,0,0	2	0	83·6
26	05 32 633	608 23 06	25	11 47 29·5	18·3 22 12	11·2	21 40 388	362 05 27	26	0,1,0,0,1,0,1,2	5	0	86·1
27	06 44 635	612 00 22	23	14 20 31·1	22·1 00 00	9·0	00 01 380	359 06 41	21	1,1,2,0,1,0,1,0	6	0	86·2
28	20 48 668	600 21 30	68	17 13 33·8	0·5 20 33	33·3	20 16 430	358 01 15	72	2,1,2,1,1,2,4,3	16	1	86·4
29	22 50 640	586 12 31	54	14 21 36·7	14·1 19 10	22·6	16 28 515	355 03 06	160	2,2,1,2,2,4,3,3	19	1	87·0
30	23 20 629	607 01 51	22	13 40 30·0	17·2 23 06	12·8	22 56 395	373 00 40	22	2,1,0,1,1,2,1,3	11	0	87·0
31 q	23 13 629	613 02 41	16	13 10 29·9	19·0 23 05	10·9	00 00 385	372 08 20	13	1,0,0,0,0,0,0,2	3	0	86·8
Mean	- - 643	591 - -	52	- - 32·7	13·7 - -	19·0	- - 414	342 - -	73	-	-	0·61	85·4

q denotes an international quiet day and d an international disturbed day.

MEAN MONTHLY AND ANNUAL VALUES OF GEOMAGNETIC ELEMENTS

For all, **a**, quiet, **q**, and disturbed, **d**, days for H, D and Z and for all days for X, $-Y$, I and F

5 LERWICK   1963

	Horizontal (H) component			Declination (D) (west)			Vertical (Z) component			North component (X) all days	West component ($-Y$) all days	Inclination (I) (north) all days	Total force (F) all days
	a	q	d	a	q	d	a	q	d				
	14,000γ +			9° +			47,000γ +						
	γ	γ	γ	'	'	'	γ	γ	γ	γ	γ	° '	γ
January	603	608	596	30·5	31·3	29·5	355	353	353	14402	2412	72 51·7	49555
February	605	610	595	30·5	30·8	29·3	356	355	353	14405	2413	72 51·6	49557
March	609	609	604	30·2	30·3	29·5	351	353	345	14408	2412	72 51·3	49553
April	611	610	612	29·9	29·6	30·2	351	354	351	14410	2411	72 51·1	49554
May	613	615	606	29·5	29·7	29·4	347	351	342	14413	2410	72 50·9	49551
June	617	618	608	29·0	29·0	28·2	354	357	344	14417	2408	72 50·8	49559
July	619	621	620	28·6	28·9	29·2	355	357	352	14420	2407	72 50·6	49560
August	612	619	592	28·1	28·6	26·9	356	360	350	14413	2404	72 51·1	49559
September	597	617	542	26·3	27·5	22·4	360	361	338	14400	2394	72 52·2	49559
October	601	611	563	26·8	27·4	23·7	372	375	367	14403	2396	72 52·2	49571
November	612	616	596	26·7	27·0	25·2	378	377	371	14414	2398	72 51·6	49580
December	619	623	610	26·4	26·9	25·2	377	375	379	14422	2398	72 51·1	49582
Year	610	615	595	28·5	28·9	27·4	359	361	354	14411	2405	72 51·3	49562

DAILY RANGE AND MEAN MONTHLY VALUES

6 LERWICK   1963

	Mean daily range						Mean daily range expressed as percentage of yearly mean					
	1963			Mean 1932-53			1963			Mean 1932-53		
	H	D	Z	H	D	Z	H	D	Z	H	D	Z
	γ	γ	γ	γ	γ	γ	%	%	%	%	%	%
January	63	84	83	100	102	104	53	88	77	63	90	78
February	52	68	55	124	113	123	44	72	51	78	100	92
March	60	75	66	216	149	176	51	79	61	135	132	132
April	90	81	91	204	120	163	76	85	84	128	106	122
May	102	80	91	195	111	141	86	84	84	122	98	106
June	128	88	99	150	94	109	108	93	92	94	83	82
July	101	78	94	158	96	110	86	82	87	99	85	83
August	129	98	118	178	111	135	109	103	109	111	98	101
September	359	183	281	209	133	170	304	193	260	131	118	128
October	193	130	144	188	129	164	164	137	133	118	114	123
November	91	90	105	107	101	112	77	95	97	67	89	84
December	52	81	73	89	93	96	44	85	68	56	82	72
Winter	65	81	79	105	103	109	55	85	73	66	91	82
Equinox	175	117	145	204	134	168	148	123	134	128	119	126
Summer	115	86	101	170	103	123	97	91	94	106	91	92
Year	118	95	108	160	113	133	–	–	–	–	–	–

"Winter" comprises the four months January, February, November, December: "Equinox" the months March, April, September, October: and "Summer" May to August.

FREQUENCY DISTRIBUTION OF DAILY RANGE

7 LERWICK   1963

	Number of cases, 1963			Percentage distribution					
Range					H		D		Z
	H	D	Z	1963	1932-53	1963	1932-53	1963	1932-53
	γ			%	%	%	%	%	%
0 – 9	0	0	6	0·0	0·0	0·0	0·0	1·5	0·3
10 – 19	22	12	34	6·0	1·4	3·3	0·4	9·3	6·8
20 – 29	39	11	54	10·7	4·9	3·0	2·3	14·8	10·5
30 – 39	23	22	32	6·3	6·3	6·0	4·0	8·8	9·3
40 – 49	26	50	25	7·1	7·5	13·7	7·3	6·8	7·2
50 – 59	45	46	22	12·3	9·3	12·6	10·0	6·0	6·2
60 – 69	42	41	12	11·5	9·1	11·2	12·3	3·3	5·1
70 – 79	22	40	20	6·0	8·6	11·0	10·5	5·5	4·4
80 – 89	30	19	15	8·2	7·4	5·2	9·2	4·1	3·9
90 – 99	9	24	19	2·5	5·8	6·6	7·0	5·2	3·4
100 – 109	18	13	17	4·9	4·3	3·6	5·6	4·7	3·3
110 – 119	13	15	12	3·6	3·5	4·1	4·0	3·3	2·9
120 – 129	11	12	7	3·0	2·9	3·3	3·6	1·9	2·6
130 – 139	7	4	4	1·9	2·2	1·1	3·1	1·1	2·6
140 – 149	5	10	8	1·4	2·4	2·7	2·9	2·2	2·3
150 – 159	3	7	8	0·8	1·6	1·9	1·8	2·2	2·0
160 – 169	8	3	8	2·2	1·5	0·8	1·9	2·2	1·8
170 – 179	1	3	3	0·3	1·1	0·8	1·4	0·8	1·4
180 – 189	2	5	6	0·5	1·1	1·4	1·5	1·6	1·4
190 – 199	3	3	4	0·8	1·0	0·8	1·1	1·1	1·5
200 +	36	25	49	9·9	18·3	6·9	10·0	13·4	21·1
Days omitted	0	0	0	–	–	–	–	–	–

ALL DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

8 LERWICK   1963

HORIZONTAL COMPONENT

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
Jan.	-4.9	-4.3	-3.2	-1.5	+3.0	+6.0	+5.0	+4.9	+0.2	-4.7	-6.8	-6.9	-2.5	+2.7	+5.7	+6.4	+5.4	+4.1	+0.9	-0.8	-0.5	-1.8	-2.0	-4.4
Feb.	-1.8	-2.3	-5.5	-1.8	-0.5	+2.7	+3.4	+4.3	-0.2	-0.6	-2.5	-3.9	-4.0	-1.9	-0.2	+1.4	-0.4	+1.7	+1.0	+3.7	+2.3	+1.6	+1.6	+1.9
Mar.	+1.0	-0.5	-2.4	0.0	+1.0	+4.0	+5.6	+3.4	-0.9	-7.7	-14.0	-16.4	-13.3	-6.3	+1.0	+4.4	+2.5	+6.1	+6.7	+6.8	+6.8	+6.5	+3.2	+2.5
Apr.	+4.0	-0.6	-2.7	+1.8	+1.2	+3.2	+3.3	-3.0	-11.2	-19.4	-24.6	-25.5	-19.6	-12.2	-2.3	+5.8	+12.3	+16.8	+19.5	+18.3	+14.0	+10.2	+7.1	+3.6
May	+4.0	-0.1	-5.8	-4.9	-0.4	-1.1	-8.8	-12.6	-20.2	-30.1	-31.8	-26.2	-17.2	-6.0	+2.9	+10.6	+16.7	+25.4	+27.5	+26.2	+20.7	+13.3	+10.3	+7.6
June	-5.9	-13.0	-14.7	-8.6	-7.0	-4.6	-8.3	-14.3	-20.3	-25.3	-26.4	-22.6	-11.9	+0.3	+11.9	+17.9	+23.7	+31.0	+34.9	+28.5	+19.0	+11.5	+5.8	-1.6
July	-0.9	-4.3	-0.8	-3.0	-5.5	-3.6	-8.4	-13.3	-18.0	-24.9	-26.6	-23.5	-18.9	-8.4	+4.2	+15.9	+21.1	+26.2	+26.5	+25.4	+20.2	+11.8	+7.7	+1.1
Aug.	-4.5	-11.8	-9.6	-3.4	-3.1	-6.0	-10.1	-10.7	-15.8	-24.0	-25.2	-20.4	-8.4	-0.5	+8.5	+14.8	+22.8	+24.1	+26.6	+22.9	+20.2	+10.4	+4.2	-1.0
Sept.	-54.5	-39.7	-28.0	-12.7	-4.3	-9.1	-2.9	-5.1	-9.3	-12.6	-12.0	-7.2	+0.6	+11.7	+23.1	+34.1	+42.4	+44.4	+40.9	+29.9	+25.4	+14.3	-20.4	-49.0
Oct.	-25.8	-21.0	-6.1	+0.5	+5.4	+10.2	+9.3	+7.3	+1.9	-6.5	-11.9	-11.0	-6.5	+0.3	+5.4	+10.9	+21.1	+19.5	+15.3	+9.1	+0.4	-0.7	-17.1	-10.0
Nov.	-10.7	-8.3	-2.7	+1.1	+3.8	+3.7	+6.1	+5.3	+2.5	-3.9	-7.5	-8.2	-7.6	-1.9	+1.9	+4.6	+7.6	+12.5	+7.6	0.0	-1.1	-2.4	-0.8	-1.6
Dec.	-3.6	-2.5	-1.6	+0.4	+2.9	+6.1	+6.6	+5.0	+3.1	-0.2	-2.3	-2.9	-4.6	-2.5	-1.3	-0.5	-1.2	-0.8	-0.6	+1.6	+2.4	+1.0	-2.9	-1.6
Year	-8.6	-9.0	-6.9	-2.7	-0.3	+1.0	+0.1	-2.4	-7.3	-13.3	-16.0	-14.6	-9.5	-2.1	+5.1	+10.5	+14.5	+17.6	+17.2	+14.3	+10.8	+6.3	-0.3	-4.4
Winter	-5.3	-4.3	-3.3	-0.5	+2.3	+4.6	+5.3	+4.9	+1.4	-2.3	-4.8	-5.5	-4.7	-0.9	+1.5	+3.0	+2.9	+4.4	+2.2	+1.1	+0.8	-0.4	-1.0	-1.4
Equinox	-18.8	-15.5	-9.8	-2.6	+0.8	+2.1	+3.8	+0.7	-4.9	-11.5	-15.6	-15.0	-9.7	-1.6	+6.8	+13.8	+19.6	+21.7	+20.6	+16.0	+11.7	+7.6	-6.8	-13.2
Summer	-1.8	-7.3	-7.7	-5.0	-4.0	-3.8	-8.9	-12.7	-18.6	-26.1	-27.5	-23.2	-14.1	-3.7	+6.9	+14.8	+21.1	+26.7	+28.9	+25.7	+20.0	+11.7	+7.0	+1.5

DECLINATION

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
Jan.	-1.64	-1.99	-2.12	-1.46	-0.62	+0.57	+0.93	+1.12	+0.62	+0.93	+1.52	+1.67	+3.06	+3.25	+2.51	+1.65	+1.36	+0.45	+0.35	-1.16	-2.80	-3.30	-3.06	-1.84
Feb.	-1.19	-0.72	-0.71	-1.16	-0.85	-0.66	-0.33	+0.17	+0.55	+1.02	+1.60	+2.56	+2.96	+2.95	+2.43	+1.49	-0.30	-0.03	-0.02	-1.86	-2.33	-1.72	-2.01	-1.84
Mar.	-1.19	-1.07	-1.28	-1.95	-1.92	-1.69	-1.60	-1.42	-1.81	-1.68	+0.29	+2.86	+4.86	+5.54	+4.66	+3.02	+1.99	+0.67	-0.04	-0.52	-1.32	-2.19	-1.95	-2.26
Apr.	-0.99	-2.11	-1.71	-2.09	-2.95	-3.22	-3.91	-3.94	-3.31	-1.76	+0.37	+2.54	+5.18	+6.08	+5.53	+4.47	+3.43	+2.35	+0.63	-0.38	-0.92	-1.61	-0.86	-0.82
May	-1.49	-1.69	-2.18	-3.04	-3.64	-4.73	-4.62	-4.42	-3.80	-1.69	+1.11	+3.81	+5.66	+5.93	+4.92	+3.80	+2.80	+1.54	+1.95	+0.99	+0.03	+0.18	-0.20	-1.22
June	-1.56	-2.47	-3.58	-3.86	-4.09	-5.52	-5.65	-5.01	-4.31	-2.67	-0.22	+3.09	+5.05	+5.81	+5.69	+5.34	+4.41	+3.79	+2.98	+1.75	+1.45	+0.41	+0.09	-0.92
July	-1.29	-1.30	-2.20	-2.76	-3.77	-4.70	-5.00	-4.59	-4.26	-2.62	-0.77	+1.78	+4.26	+5.30	+5.50	+5.25	+4.03	+3.35	+2.96	+2.23	+0.97	-0.05	-1.13	-1.19
Aug.	-1.03	-1.25	-1.95	-2.91	-3.40	-4.32	-4.01	-3.56	-2.52	-0.63	+1.66	+4.33	+6.20	+6.60	+5.64	+3.35	+1.44	+1.15	+0.85	+0.49	-0.99	-2.12	-1.98	-1.04
Sept.	-6.00	-2.96	-5.85	-4.58	-4.76	+0.65	-0.13	-0.83	-0.81	+0.52	+2.99	+5.42	+6.77	+6.49	+5.65	+3.95	+2.57	+1.11	-0.02	-0.93	-0.91	-0.85	-3.31	-4.18
Oct.	-2.42	-2.02	-2.28	-1.50	-0.75	+0.02	+0.52	+0.31	-0.10	-0.20	+1.65	+3.56	+4.95	+5.10	+4.85	+3.56		+0.48	-0.51	+0.27	-0.89	-2.76	-4.67	-3.39
Nov.	-1.62	-1.29	-0.13	-0.38	-0.31	+0.49	+0.66	+0.74	-0.06	+0.33	+1.48	+2.60	+3.28	+3.14	+3.43	+2.46	-0.01	+0.15	+0.06	-2.20	-4.16	-2.84	-3.22	-2.60
Dec.	-1.60	-0.78	-0.07	-0.02	+0.02	+0.62	+0.89	+1.32	+1.13	+0.78	+1.23	+1.92	+2.84	+3.03	+2.53	+1.32	+1.08	-0.14	-0.72	-2.77	-3.71	-2.56	-3.30	-3.04
Year	-1.83	-1.64	-2.01	-2.14	-2.25	-1.87	-1.85	-1.68	-1.56	-0.64	+1.08	+3.01	+4.59	+4.93	+4.45	+3.31	+1.94	+1.16	+0.77	-0.44	-1.45	-1.70	-2.13	-2.03
Winter	-1.51	-1.19	-0.76	-0.75	-0.44	+0.25	+0.54	+0.84	+0.56	+0.77	+1.46	+2.19	+3.03	+3.09	+2.73	+1.73	+0.53	+0.11	-0.08	-2.00	-3.25	-2.61	-2.90	-2.33
Equinox	-2.65	-2.04	-2.78	-2.53	-2.59	-1.06	-1.28	-1.47	-1.51	-0.78	+1.33	+3.59	+5.44	+5.80	+5.17	+3.75	+2.12	+0.91	+0.21	-0.68	-1.48	-2.11	-2.70	-2.66
Summer	-1.34	-1.68	-2.48	-3.14	-3.73	-4.82	-4.82	-4.39	-3.72	-1.90	+0.45	+3.25	+5.29	+5.91	+5.44	+4.43	+3.17	+2.46	+2.19	+1.37	+0.37	-0.39	-0.81	-1.09

VERTICAL COMPONENT

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
Jan.	-15.2	-17.8	-13.4	-11.6	-16.3	-16.4	-13.9	-10.4	-5.3	-2.0	-0.8	+1.9	+2.8	+6.6	+12.3	+14.3	+16.1	+20.7	+20.3	+17.6	+13.4	+9.5	-0.6	-11.8
Feb.	-8.0	-9.2	-8.6	-7.1	-4.4	-4.4	-5.1	-4.1	-2.6	-3.2	-2.6	-1.9	+1.4	+5.2	+6.0	+8.9	+14.1	+11.9	+9.9	+8.9	+6.1	-0.9	-3.2	-7.1
Mar.	-11.2	-9.2	-7.6	-7.7	-6.2	-4.8	-4.1	-3.6	-3.2	-3.4	-3.9	-3.9	-3.4	+0.1	+7.3	+15.0	+16.7	+17.2	+11.8	+10.6	+6.1	+2.9	-3.6	-12.4
Apr.	-17.0	-17.5	-11.5	-7.3	-4.3	-5.2	-5.1	-3.9	-3.8	-3.7	-4.8	-5.5	-5.2	-1.3	+3.5	+9.6	+14.5	+18.6	+21.9	+20.4	+11.7	+5.0	+0.5	-9.0
May	-14.0	-17.7	-22.0	-19.9	-12.4	-5.7	-0.6	-0.2	-0.1	-0.6	-2.0	-2.5	-1.0	+3.1	+7.6	+13.3	+17.1	+18.5	+16.8	+16.4	+14.0	+6.9	-4.5	-10.5
June	-15.6	-27.8	-21.0	-15.6	-11.0	-7.5	-1.6	+0.4	+0.8	-1.0	-1.8	-4.0	-2.8	+2.6	+9.0	+15.0	+19.9	+22.1	+21.8	+19.7	+11.5	+3.4	-4.1	-12.4
July	-15.9	-21.0	-19.4	-17.5	-17.0	-14.0	-8.7	-4.8	-1.5	-0.1	-1.5	-3.1	+0.7	+5.5	+10.6	+15.8	+23.3	+22.9	+20.3	+17.1	+11.9	+7.4	+0.4	-11.4
Aug.	-27.2	-31.3	-28.2	-21.4	-13.9	-10.9	-6.2	-1.0	+3.3	+4.5	+2.8	+0.9	+3.7	+11.0	+19.4	+23.7	+25.7	+25.0	+21.5	+19.0	+10.5	-0.5	-12.1	-18.3
Sept.	-31.6	-37.2	-31.1	-45.7	-34.7	-31.2	-20.2	-6.9	+0.8	+8.7	+12.4	+16.2	+20.4	+27.1	+32.5	+37.8	+42.2	+43.8	+35.9	+22.7	+10.9	-6.4	-36.2	-30.2
Oct.	-27.3	-30.7	-28.9	-21.8	-15.0	-11.1	-8.2	-6.4	-1.9	+1.4	+5.0	+3.9	+5.0	+10.9	+15.3	+20.6	+29.0	+26.2	+19.2	+15.5	+11.7	+6.3	-4.3	-14.4
Nov.	-18.5	-21.1	-17.8	-14.2	-11.4	-10.1	-10.7	-7.3	-2.3	-0.7	+0.4	+2.6	+5.6	+7.9	+10.3	+16.3	+26.6	+29.9	+23.9	+14.9	+3.7	-7.2	-7.6	-13.2
Dec.	-13.4	-10.6	-8.0	-7.3	-6.2	-6.0	-6.8	-6.0	-5.3	-3.7	-3.0	-1.9	+0.9	+4.5	+10.8	+14.3	+16.6	+15.8	+14.0	+12.6	+6.7	-2.5	-5.4	-10.1
Year	-18.0	-20.9	-18.1	-16.4	-12.7	-10.6	-7.6	-4.5	-1.8	-0.3	+0.1	+0.2	+2.3	+6.9	+12.1	+17.1	+21.8	+22.7	+19.8	+16.3	+9.9	+2.0	-6.7	-13.4
Winter	-13.8	-14.7	-11.9	-10.1	-9.6	-9.2	-9.1	-6.9	-3.9	-2.4	-1.5	+0.2	+2.7	+6.1	+9.9	+13.5	+18.4	+19.6	+17.0	+13.5	+7.5	-0.3	-4.2	-10.5
Equinox	-21.9	-23.7	-19.8	-20.6	-15.1	-13.1	-9.4	-5.1	-2.1	+0.8	+2.3	+2.7	+4.2	+9.2	+14.7	+20.7	+25.6	+26.5	+22.2	+17.3	+10.1	+1.9	-10.9	-16.5
Summer	-18.2	-24.5	-22.7	-18.6	-13.6	-9.5	-4.3	-1.4	+0.6	+0.7	-0.6	-2.2	+0.1	+5.5	+11.7	+16.9	+21.5	+22.1	+20.1	+18.1	+12.0	+4.3	-5.1	-13.1

"Winter" comprises the four months, January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

DIURNAL INEQUALITIES OF THE GEOMAGNETIC ELEMENTS
INTERNATIONAL QUIET DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

9 LERWICK   1963

HORIZONTAL COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	−3·3	−3·4	−2·9	−2·2	−1·2	+0·9	+1·2	+2·6	+2·1	−0·8	−3·5	−5·2	−2·3	+2·0	+3·7	+2·4	+1·4	+1·3	+1·6	+2·2	+1·5	+1·2	+1·5	−0·8
Feb.	−1·8	−1·7	−2·2	−1·5	−0·7	+1·4	+1·7	+2·3	+1·8	−0·7	−2·8	−4·3	−3·2	−0·9	+0·4	−0·1	+0·3	0·0	+1·7	+1·9	+1·4	+2·9	+2·0	+2·1
Mar.	+3·5	+2·6	+1·5	+2·1	+2·7	+3·2	+4·1	+3·3	−0·1	−8·2	−15·1	−18·7	−16·5	−10·2	−2·5	+1·9	+3·7	+3·8	+7·1	+6·9	+5·5	+6·4	+6·3	+6·7
Apr.	+5·6	+4·7	+4·2	+4·1	+3·6	+3·3	+2·2	−3·3	−11·8	−21·1	−26·8	−27·3	−21·8	−14·1	−5·6	+2·5	+7·2	+16·1	+17·6	+14·7	+12·2	+10·9	+12·0	+10·9
May	+5·9	+4·4	+6·2	+5·5	+3·6	+0·8	−5·9	−12·4	−20·4	−29·1	−31·0	−29·4	−18·1	−7·8	−1·4	+4·7	+11·6	+17·2	+20·1	+19·4	+17·6	+14·7	+11·8	+12·0
June	+3·3	+0·8	+1·9	+2·9	+2·3	+0·2	−6·7	−13·9	−19·1	−25·0	−24·3	−19·7	−10·5	−2·2	+3·7	+8·3	+12·7	+14·4	+16·1	+15·3	+12·7	+10·6	+8·7	+7·5
July	+3·6	+1·9	+0·2	+3·0	+3·6	+2·3	−0·6	−4·6	−12·6	−22·7	−26·4	−23·2	−20·8	−15·7	−5·2	+2·6	+8·8	+12·5	+17·4	+18·6	+17·4	+15·9	+14·4	+9·6
Aug.	+6·2	+6·1	+4·6	+6·3	+5·5	−0·2	−6·9	−14·7	−19·8	−24·3	−24·8	−23·7	−18·4	−8·7	+4·6	+8·3	+13·7	+12·8	+14·3	+15·9	+15·0	+11·3	+9·2	+7·7
Sept.	+5·4	+3·7	+1·9	+2·2	+0·7	−1·3	−6·4	−9·3	−15·1	−20·2	−24·1	−21·7	−13·2	−5·3	+0·3	+3·2	+3·3	+8·7	+16·4	+17·5	+20·3	+19·8	+13·5	−0·3
Oct.	+3·4	+2·0	+2·2	+2·8	+4·8	+5·7	+6·8	+4·2	−4·6	−13·4	−19·8	−19·8	−15·4	−9·2	−5·2	−1·0	+2·4	+6·7	+7·6	+9·0	+9·0	+7·6	+7·8	+6·4
Nov.	−0·9	−1·7	−0·8	−0·1	+1·1	+0·9	+1·5	+0·3	−1·8	−5·5	−7·1	−6·3	−3·9	−1·3	−0·8	+0·7	+2·1	+3·3	+4·3	+3·1	+4·0	+2·9	+3·1	+2·9
Dec.	−1·6	−2·2	−2·2	−1·0	+1·2	+2·6	+3·2	+3·6	+2·4	−1·0	−5·2	−6·4	−5·0	−2·2	+0·8	+2·0	+2·2	+2·0	+0·8	+1·4	+1·6	+1·4	+1·0	+0·6
Year	+2·4	+1·4	+1·2	+2·0	+2·3	+1·7	−0·5	−3·5	−8·3	−14·3	−17·6	−17·1	−12·4	−6·3	−0·6	+3·0	+5·8	+8·2	+10·4	+10·5	+9·9	+8·8	+7·6	+5·4
Winter	−1·9	−2·3	−2·0	−1·2	+0·1	+1·5	+1·9	+2·2	+1·1	−2·0	−4·7	−5·5	−3·6	−0·6	+1·0	+1·3	+1·5	+1·7	+2·1	+2·1	+2·1	+2·1	+1·9	+1·2
Equinox	+4·5	+3·3	+2·5	+2·8	+2·9	+2·7	+1·7	−1·3	−7·9	−15·7	−21·5	−21·9	−16·7	−9·7	−3·3	+1·7	+4·1	+8·8	+12·2	+12·0	+11·7	+11·2	+9·9	+5·9
Summer	+4·7	+3·3	+3·2	+4·4	+3·7	+0·8	−5·0	−11·4	−18·0	−25·3	−26·6	−24·0	−16·9	−8·6	+0·4	+6·0	+11·7	+14·2	+17·0	+17·3	+15·7	+13·1	+11·0	+9·2

DECLINATION

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	−0·75	−0·56	−0·53	−0·28	−0·40	−0·41	−0·54	−0·78	−0·71	−0·36	+0·49	+1·28	+2·21	+2·04	+1·11	+0·62	+0·58	+0·41	+0·06	−0·20	−0·65	−0·90	−0·99	−0·74
Feb.	−1·00	−0·98	−0·84	−0·86	−0·64	−0·69	−0·56	−0·60	−0·58	−0·38	+0·52	+1·44	+2·00	+2·04	+1·56	+0·78	+0·42	+0·55	+0·50	+0·34	−0·44	−0·24	−0·60	−1·74
Mar.	−0·27	−0·34	−0·59	−0·91	−1·07	−1·32	−1·55	−2·57	−3·77	−3·28	−1·37	+1·19	+3·53	+4·66	+4·03	+2·47	+1·21	+0·76	+0·29	−0·09	−0·21	−0·22	−0·27	−0·31
Apr.	−0·29	−0·59	−0·83	−1·37	−1·93	−2·74	−3·57	−4·15	−4·03	−2·81	−0·63	+1·61	+4·15	+5·11	+4·53	+3·49	+2·13	+1·18	+0·53	+0·35	−0·07	+0·03	+0·09	−0·19
May	−0·51	+0·15	−1·32	−2·87	−4·05	−5·21	−5·63	−5·29	−4·06	−1·55	+1·05	+3·61	+5·51	+5·33	+4·02	+2·97	+2·21	+1·53	+1·29	+0·73	+1·02	+1·07	+0·33	−0·33
June	−0·35	−0·82	−1·17	−3·12	−4·32	−5·55	−5·84	−5·24	−3·97	−2·22	+0·11	+2·52	+4·39	+5·26	+4·87	+3·88	+2·60	+1·75	+1·44	+1·66	+1·39	+1·10	+0·87	+0·76
July	−0·55	−1·10	−1·57	−2·61	−4·07	−5·34	−5·87	−6·15	−5·45	−3·14	−0·15	+2·61	+5·11	+5·34	+4·99	+4·19	+3·43	+2·84	+2·59	+1·97	+1·41	+0·98	+0·83	−0·29
Aug.	−1·12	−0·98	−1·53	−2·92	−4·26	−5·26	−5·32	−4·94	−3·27	−0·72	+2·06	+4·84	+6·48	+5·84	+4·25	+2·18	+1·16	+0·30	+0·84	+1·16	+0·63	+0·22	+0·54	−0·18
Sept.	−1·53	−1·51	−1·78	−1·59	−2·11	−2·81	−3·03	−2·87	−2·08	−0·25	+2·21	+4·33	+5·43	+5·03	+3·68	+2·45	+1·45	+1·35	+1·73	+0·93	−0·12	−3·23	−3·57	−2·11
Oct.	−1·20	−1·11	−1·06	−0·85	−1·30	−1·29	−1·86	−2·43	−2·98	−2·03	−0·04	+2·55	+3·96	+4·47	+4·06	+2·43	+1·20	+0·91	+0·24	−0·59	−1·12	−0·61	−0·84	−0·51
Nov.	−1·20	−0·92	−0·56	−0·44	−0·50	−0·63	−0·72	−0·88	−1·04	−0·50	+0·46	+1·70	+2·20	+1·96	+1·40	+0·98	+0·82	+0·69	+0·56	−0·22	−0·18	−0·70	−1·16	−1·12
Dec.	−0·63	−0·51	−0·33	+0·07	+0·01	−0·03	−0·07	−0·41	−0·47	−0·09	+0·01	+0·69	+1·69	+1·87	+1·13	+0·47	+0·25	+0·37	+0·05	−0·21	−0·57	−0·79	−1·17	−1·33
Year	−0·78	−0·77	−1·01	−1·48	−2·05	−2·61	−2·88	−3·03	−2·70	−1·44	+0·39	+2·36	+3·89	+4·08	+3·30	+2·24	+1·45	+1·05	+0·84	+0·49	+0·09	−0·27	−0·49	−0·67
Winter	−0·89	−0·74	−0·57	−0·38	−0·38	−0·44	−0·47	−0·67	−0·70	−0·33	+0·37	+1·28	+2·03	+1·98	+1·30	+0·71	+0·52	+0·51	+0·29	−0·07	−0·46	−0·66	−0·98	−1·23
Equinox	−0·82	−0·89	−1·07	−1·18	−1·60	−2·04	−2·50	−3·01	−3·21	−2·09	+0·04	+2·42	+4·27	+4·82	+4·07	+2·71	+1·50	+1·05	+0·70	+0·15	−0·38	−1·01	−1·15	−0·78
Summer	−0·63	−0·69	−1·40	−2·88	−4·17	−5·34	−5·67	−5·41	−4·19	−1·91	+0·77	+3·39	+5·37	+5·44	+4·53	+3·31	+2·35	+1·61	+1·54	+1·38	+1·11	+0·84	+0·64	−0·01

VERTICAL COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	−0·7	−0·1	+0·5	−0·6	−0·7	−0·9	−1·1	−1·7	−2·0	−1·5	−0·7	−0·5	−0·9	−0·1	+0·8	+2·3	+2·7	+2·5	+1·5	+0·9	+0·6	−0·1	−0·1	−0·1
Feb.	+1·2	+2·9	+4·0	+3·7	+3·5	+2·0	+1·1	+0·7	−1·2	−3·9	−3·8	−5·7	−5·2	−4·3	−2·4	+0·5	+1·5	+1·8	+1·5	+0·7	+1·2	+0·5	0·0	−0·3
Mar.	−1·0	−0·5	+0·8	+2·0	+2·0	+1·1	+0·4	+0·4	−0·8	−3·3	−5·6	−7·4	−7·6	−6·9	−2·0	+3·6	+6·6	+5·9	+4·0	+4·4	+3·8	+1·3	+0·4	−1·6
Apr.	+1·3	+2·2	+4·1	+4·6	+5·0	+4·1	+2·0	+0·6	−0·5	−3·4	−6·1	−10·2	−9·7	−6·2	−3·9	−1·8	+2·0	+3·9	+5·8	+5·4	+3·9	+1·4	−1·5	−3·0
May	+3·6	−0·3	0·0	+5·5	+7·2	+6·5	+5·6	+3·3	−2·6	−7·7	−10·0	−11·3	−12·6	−9·3	−4·0	+1·7	+3·0	+3·5	+4·2	+4·1	+3·6	+2·3	+2·4	+1·3
June	+0·2	+1·1	+1·2	+3·7	+4·4	+2·7	+2·6	+1·3	−1·4	−3·9	−6·8	−9·7	−6·6	−4·1	−3·8	−0·1	+3·6	+6·1	+5·8	+3·7	+2·0	+0·5	−0·6	−1·9
July	+1·6	+2·1	+1·6	+1·3	+1·3	+0·6	+0·7	+1·7	+1·6	+0·7	−3·6	−9·1	−8·8	−4·5	−2·8	+0·7	+2·3	+1·2	+1·5	+3·7	+5·0	+6·1	+2·4	−7·3
Aug.	−0·4	−1·7	−2·0	−1·8	+0·4	+1·5	+2·8	+2·8	+2·4	−0·7	−7·0	−11·0	−11·6	−8·7	−2·4	+1·8	+4·2	+7·7	+5·8	+5·4	+4·8	+3·9	+3·0	+0·8
Sept.	−14·3	−8·1	0·0	+3·1	+5·3	+7·1	+6·1	+3·9	+2·2	−1·1	−3·1	−4·5	−4·3	−1·5	+3·4	+5·1	+6·3	+5·7	+5·1	+6·5	+4·8	+0·7	−9·5	−18·9
Oct.	+0·6	+2·2	+2·3	+0·8	−0·6	−1·2	−1·0	+0·8	+2·5	+2·6	+1·2	−0·8	−2·6	−2·4	+0·7	+2·0	+2·4	+1·2	+0·6	0·0	−1·7	−2·6	−3·6	−3·4
Nov.	+0·4	+1·7	+0·8	−0·1	+1·2	+1·5	+0·8	+0·3	+0·2	−1·7	−2·2	−1·5	−2·2	−3·1	−1·8	+1·3	+1·8	+1·5	+2·4	+2·7	+0·4	−0·7	−1·4	−2·3
Dec.	+0·9	+0·6	+0·7	−0·1	−0·5	−1·0	−2·1	−2·1	−2·3	−2·2	−2·1	−1·1	−0·1	0·0	+0·9	+1·9	+1·5	+1·4	+1·3	+0·9	+0·9	+1·8	+0·9	−0·1
Year	−0·5	+0·2	+1·2	+1·8	+2·4	+2·0	+1·5	+1·0	−0·2	−2·2	−4·1	−6·1	−6·0	−4·3	−1·4	+1·6	+3·2	+3·5	+3·3	+3·2	+2·4	+1·3	−0·6	−3·1
Winter	+0·5	+1·3	+1·5	+0·7	+0·9	+0·4	−0·3	−0·7	−1·3	−2·3	−2·2	−2·2	−2·1	−1·9	−0·6	+1·5	+1·9	+1·8	+1·7	+1·3	+0·8	+0·4	−0·1	−0·7
Equinox	−3·3	−1·0	+1·8	+2·6	+2·9	+2·8	+1·9	+1·4	+0·9	−1·3	−3·4	−5·7	−6·1	−4·3	−0·5	+2·2	+4·3	+4·2	+3·9	+4·1	+2·7	+0·2	−3·5	−6·7
Summer	+1·3	+0·3	+0·2	+2·2	+3·3	+2·8	+2·9	+2·3	0·0	−2·9	−6·9	−10·3	−9·9	−6·7	−3·3	+1·0	+3·3	+4·6	+4·3	+4·2	+3·9	+3·2	+1·8	−1·8

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

INTERNATIONAL DISTURBED DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

10 LERWICK   **1963**

HORIZONTAL COMPONENT (γ)

Month	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-13·1	-17·8	-12·8	-8·1	+9·6	+16·8	+2·7	-1·6	-9·8	-27·7	-25·6	-17·4	-0·7	+13·2	+28·8	+28·7	+24·6	+24·6	+6·5	-1·6	-2·2	-4·9	-1·6	-10·6
Feb.	-9·9	-13·7	-25·8	-9·7	-7·3	-0·7	+0·5	+0·5	-11·8	-0·1	+0·5	+1·1	-1·3	+6·1	+9·8	+10·7	+6·9	+8·9	+5·1	+12·7	+4·4	+1·7	+5·9	+5·5
Mar.	-10·8	-10·3	-13·4	-8·7	-10·3	+5·2	+11·1	+3·1	-0·2	-8·3	-11·4	-14·9	-11·8	-2·3	+17·0	+20·3	+3·1	+16·4	+9·3	+7·3	+10·8	+11·5	-5·8	-6·9
Apr.	+0·5	-13·0	-9·4	-3·7	-9·6	-4·0	-0·7	-5·4	-17·2	-19·3	-23·0	-25·2	-14·1	-10·2	+0·8	+7·5	+21·0	+23·4	+28·5	+31·0	+29·8	+16·5	+10·0	-14·2
May	+5·0	-10·3	-29·6	-22·1	+1·3	-6·2	-11·9	-11·7	-25·0	-42·3	-41·2	-24·9	-9·4	-2·1	+6·4	+21·7	+29·3	+40·8	+34·5	+29·5	+23·2	+15·1	+17·2	+12·7
June	-26·8	-56·6	-65·5	-42·8	-30·6	-3·6	-8·8	-18·8	-18·7	-12·6	-12·2	-9·2	-0·4	+9·4	+28·3	+41·0	+48·4	+55·4	+59·4	+40·0	+23·3	+12·6	+6·6	-17·8
July	-1·5	-9·6	-2·5	-20·1	-8·5	-3·2	-8·7	-12·9	-17·7	-23·2	-26·9	-18·9	-30·9	-13·4	+6·1	+32·5	+35·3	+40·0	+33·9	+30·9	+23·7	+7·0	+0·1	-11·5
Aug.	-45·9	-73·6	-59·0	-11·9	+4·6	-8·2	-9·9	-8·6	-2·6	-10·3	-10·8	-6·6	+18·3	+22·8	+20·4	+34·1	+43·8	+49·6	+56·7	+41·0	+29·0	+2·9	-19·6	-56·2
Sept.	-323·7	-229·2	-162·3	-65·7	-10·1	-60·0	-1·7	-0·3	+10·3	+26·8	+43·7	+48·5	+54·3	+87·2	+95·1	+119·9	+133·3	+102·2	+96·3	+88·9	+83·5	+53·2	-30·7	-159·5
Oct.	-149·9	-114·9	-36·2	+1·9	+9·1	+30·5	+20·5	+16·7	+10·6	+5·5	+12·5	+27·7	+33·9	+44·7	+45·4	+61·1	+105·7	+87·5	+61·5	+13·9	-35·2	-32·3	-144·1	-76·1
Nov	-52·3	-33·6	-9·7	+7·3	+17·1	+5·4	+5·3	+10·7	+15·9	+2·2	-8·7	-11·1	-9·5	+0·8	+7·1	+22·9	+34·3	+43·6	+31·1	-7·5	-14·3	-23·4	-13·1	-20·5
Dec.	-15·6	-2·1	+0·6	+1·4	+5·8	+14·3	+11·4	+5·4	+3·6	+4·1	-1·6	-3·0	-7·8	-4·3	-3·4	+3·4	-2·8	+3·5	+3·8	+8·6	+5·4	+2·3	-23·2	-9·8
Year	-53·7	-48·7	-35·5	-15·2	-2·4	-1·1	+0·8	-1·9	-5·2	-8·8	-8·7	-4·5	+1·7	+12·7	+21·8	+33·7	+40·2	+41·3	+35·5	+24·6	+15·1	+5·2	-16·5	-30·4
Winter	-22·7	-16·8	-11·9	-2·3	+6·3	+8·9	+5·0	+3·7	-0·5	-5·4	-8·9	-7·6	-4·8	+4·0	+10·6	+16·4	+15·7	+20·1	+11·6	+3·1	-1·7	-6·1	-8·0	-8·9
Equinox	-121·0	-91·9	-55·3	-19·1	-5·2	-7·1	+7·3	+3·5	+0·9	+1·2	+5·5	+9·0	+15·6	+29·9	+39·6	+52·2	+65·8	+57·4	+48·9	+35·3	+22·2	+12·2	-42·7	-64·2
Summer	-17·3	-37·5	-39·1	-24·2	-8·3	-5·3	-9·8	-13·0	-16·0	-22·1	-22·8	-14·9	-5·6	+4·2	+15·3	+32·3	+39·2	+46·5	+46·1	+35·3	+24·8	+9·4	+1·1	-18·2

DECLINATION (′)

Month	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-4·85	-10·22	-8·47	-6·32	-3·06	+3·23	+4·62	+6·30	+5·33	+5·14	+5·89	+2·90	+4·45	+4·52	+5·85	+4·62	+0·24	+1·53	-0·30	-4·60	-5·13	-4·64	-4·03	-3·00
Feb.	-1·30	+0·17	+0·09	-1·92	-0·75	+0·61	+1·90	+3·43	+4·25	+4·02	+3·91	+4·73	+4·60	+3·69	+2·95	+1·02	-4·61	-2·19	-1·34	-10·35	-8·87	-2·24	-3·01	+1·21
Mar.	-2·42	-2·33	-2·37	-3·98	-2·71	+0·07	+0·68	+3·57	+3·43	+0·30	+2·65	+4·81	+6·72	+6·33	+5·79	+4·18	+3·41	-2·15	-3·68	-3·64	-5·67	-6·36	-3·05	-3·79
Apr.	-1·86	-5·37	-3·76	-3·09	-3·15	-2·28	-3·25	-3·07	-2·67	-0·84	+1·35	+2·54	+5·67	+6·44	+6·37	+5·94	+5·99	+5·26	+1·27	-2·69	-3·78	-2·81	-0·92	-1·29
May	-1·01	+0·62	-1·01	-4·14	-3·66	-5·41	-4·04	-4·08	-4·31	-1·16	+2·45	+3·94	+5·43	+6·10	+3·83	+3·14	+2·60	-0·53	+1·74	+0·74	+0·57	-0·76	+0·81	-1·86
June	-6·54	-9·41	-6·92	-3·23	-1·06	-4·29	-5·32	-2·79	-2·72	-1·57	+0·44	+3·11	+5·62	+6·99	+6·20	+7·57	+5·86	+5·63	+4·64	+2·77	+2·58	-1·63	-1·32	-4·61
July	-1·58	-1·94	-4·20	-1·76	-2·88	-2·35	-3·64	-3·64	-3·90	-3·44	-1·78	+2·12	+5·00	+6·04	+6·80	+7·30	+4·78	+4·17	+2·48	+0·96	-2·74	-2·48	-1·36	+0·18
Aug.	-2·45	-2·18	-2·47	-1·86	-2·82	-2·35	-1·58	-0·26	+0·85	+2·76	+3·15	+4·50	+4·83	+5·42	+5·23	+2·96	+1·56	+2·53	-1·70	-0·26	-0·75	-6·20	-6·61	-2·30
Sept.	-25·33	-13·36	-26·51	-18·12	-20·27	+13·10	+7·55	+3·64	+3·77	+4·22	+6·99	+9·58	+10·33	+7·80	+7·93	+6·90	+3·57	+3·96	+2·13	+0·72	+5·49	+5·74	+1·83	-1·66
Oct.	-6·76	-7·69	-7·87	-4·08	+0·57	+2·77	+6·10	+6·23	+5·19	+3·22	+4·67	+5·59	+7·26	+6·73	+7·87	+8·44	-1·63	-4·75	+2·72	+1·53	-12·15	-8·96	-10·49	-4·31
Nov.	-2·30	-2·37	+3·10	+1·37	+0·58	+4·49	+5·84	+7·05	+2·86	+2·71	+3·54	+4·91	+5·54	+5·79	+6·86	+2·01	-4·12	-4·63	-1·38	-7·21	-14·42	-6·39	-8·00	-5·83
Dec.	-2·95	-1·43	+0·98	+1·19	+1·33	+2·95	+3·87	+6·61	+5·60	+2·91	+2·87	+3·61	+4·63	+4·77	+3·30	+0·87	-0·07	-6·21	-4·29	-9·29	-8·50	-4·37	-5·49	-2·89
Year	-4·95	-4·63	-4·95	-3·83	-3·16	+0·70	+1·06	+1·92	+1·47	+1·52	+3·01	+4·36	+5·84	+5·89	+5·75	+4·58	+1·47	+0·22	+0·19	-2·61	-4·45	-3·43	-3·47	-2·51
Winter	-2·85	-3·46	-1·07	-1·42	-0·47	+2·82	+4·06	+5·85	+4·51	+3·69	+4·05	+4·04	+4·81	+4·69	+4·74	+2·13	-2·14	-2·87	-1·83	-7·86	-9·23	-4·41	-5·13	-2·63
Equinox	-9·09	-7·19	-10·13	-7·32	-6·39	+3·41	+2·77	+2·59	+2·43	+1·73	+3·91	+5·63	+7·49	+6·83	+6·99	+6·37	+2·83	+0·58	+0·61	-1·02	-4·03	-3·10	-3·16	-2·76
Summer	-2·89	-3·23	-3·65	-2·75	-2·61	-4·13	-3·65	-2·69	-2·52	-0·85	+1·07	+3·42	+5·22	+6·14	+5·51	+5·24	+3·70	+2·95	+1·79	+1·05	-0·09	-2·77	-2·12	-2·15

VERTICAL COMPONENT (γ)

Month	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-38·7	-54·4	-41·8	-45·9	-73·2	-75·4	-58·3	-39·2	-21·2	-5·9	-0·4	+12·4	+15·9	+35·0	+56·6	+60·5	+57·6	+68·6	+63·9	+43·2	+25·4	+26·7	+10·6	-22·0
Feb.	-41·6	-47·6	-46·0	-36·6	-19·0	-13·7	-14·6	-5·4	+4·8	+6·4	+4·8	+6·8	+22·0	+31·8	+26·0	+34·2	+44·2	+33·9	+28·8	+27·4	+15·6	-15·4	-17·2	-32·8
Mar.	-41·4	-40·5	-33·4	-36·4	-26·8	-16·9	-14·2	-10·4	-11·2	-2·3	+2·2	+6·8	+12·8	+20·5	+37·6	+50·8	+53·4	+60·7	+36·8	+28·8	-0·6	-13·3	-18·6	-44·4
Apr.	-37·3	-41·1	-17·4	-5·5	-8·7	-12·9	-9·1	-5·7	-3·6	-3·1	-3·7	-2·3	-1·7	+7·3	+18·8	+29·5	+32·7	+30·7	+36·3	+36·5	+10·4	+2·7	-10·5	-42·3
May	-11·4	-32·3	-73·1	-73·4	-38·5	-15·5	-8·0	-0·3	+8·7	+16·0	+15·1	+14·9	+18·4	+22·1	+25·5	+27·2	+33·7	+35·5	+28·0	+26·1	+21·1	+11·2	-25·9	-25·1
June	-20·1	-83·6	-47·8	-56·1	-66·0	-37·4	-6·5	+2·2	+9·0	+10·5	+13·2	+14·2	+18·1	+30·8	+37·8	+37·5	+45·6	+45·6	+45·5	+43·2	+18·6	+4·1	-14·4	-44·0
July	-48·3	-47·6	-41·1	-39·6	-43·9	-30·6	-19·3	-10·2	-3·5	+0·8	+2·7	+4·2	+17·7	+21·6	+25·5	+27·8	+49·1	+54·4	+47·7	+43·2	+24·1	+7·4	-4·5	-37·6
Aug.	-67·8	-69·7	-60·5	-49·4	-29·5	-25·1	-19·8	-1·9	+11·1	+19·4	+21·7	+26·7	+34·0	+45·3	+57·5	+53·2	+50·5	+45·9	+45·2	+34·7	+15·7	-20·1	-60·6	-56·0
Sept.	-42·4	-92·7	-80·0	-200·3	-131·3	-133·0	-89·3	-26·1	+2·0	+30·1	+45·2	+55·3	+68·4	+95·1	+100·8	+101·1	+97·5	+97·2	+70·7	+40·3	+6·2	-22·5	-70·0	+77·7
Oct.	-128·5	-133·4	-126·8	-85·7	-52·4	-31·6	-20·9	-23·6	-8·0	+7·5	+26·4	+21·0	+25·1	+45·8	+54·0	+63·7	+101·8	+93·0	+51·5	+42·2	+37·0	+32·9	+22·6	-13·6
Nov.	-67·5	-74·4	-63·3	-45·4	-28·6	-16·1	-19·6	-11·4	+0·9	+10·4	+15·7	+21·2	+30·1	+43·0	+43·3	+55·2	+95·0	+95·3	+62·0	+29·8	-16·7	-57·2	-40·5	-61·2
Dec.	-44·0	-29·9	-19·4	-15·7	-8·9	-6·2	-5·7	-4·1	-4·0	-1·5	+0·2	+3·1	+9·0	+16·5	+37·4	+40·5	+45·7	+44·2	+28·3	+27·5	-1·6	-31·3	-36·6	-43·5
Year	-49·1	-62·3	-54·2	-57·5	-43·9	-34·5	-23·8	-11·3	-1·3	+7·2	+12·1	+15·7	+22·5	+34·6	+43·4	+48·4	+58·9	+58·7	+45·4	+35·2	+12·9	-6·3	-22·1	-28·8
Winter	-48·0	-51·6	-42·6	-35·9	-32·4	-27·9	-24·5	-15·0	-5·0	+1·9	+5·5	+11·9	+19·3	+31·6	+40·8	+47·6	+60·6	+60·5	+45·7	+32·0	+5·7	-19·3	-20·9	-39·9
Equinox	-62·4	-76·9	-64·4	-82·0	-54·8	-48·6	-33·4	-16·5	-5·2	+8·1	+17·5	+20·2	+26·1	+42·2	+52·8	+61·3	+71·3	+70·4	+48·8	+36·9	+13·3	-0·1	-19·1	-5·7
Summer	-36·9	-58·3	-55·6	-54·6	-44·5	-27·1	-13·4	-2·5	+6·3	+11·7	+13·2	+15·0	+22·1	+29·9	+36·6	+36·4	+44·7	+45·3	+41·6	+36·8	+19·9	+0·7	-26·3	-40·8

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

MONTHS SEASONS AND YEAR OF 1963

The ranges are derived from the diurnal inequalities
printed in Tables 8-10

Arithmetical average of diurnal inequalities in
Tables 8-10 taken regardless of sign

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	All days			Quiet days			Disturbed days		
	H	D	Z	H	D	Z	H	D	Z
	γ	´	γ	γ	´	γ	γ	´	γ
Jan.	13·3	6·55	38·5	8·9	3·20	4·7	56·5	16·52	144·0
Feb.	9·8	5·29	23·3	7·2	3·74	9·7	38·5	15·08	91·8
Mar.	23·2	7·80	29·6	25·8	8·43	14·2	35·2	13·08	105·1
Apr.	45·0	10·02	39·5	44·9	9·26	16·0	56·2	11·81	78·8
May	59·3	10·66	40·5	51·1	10·96	19·8	83·1	11·51	108·9
June	61·3	11·46	49·9	41·1	11·10	15·8	124·9	16·98	129·2
July	53·1	10·50	44·3	45·0	11·49	15·2	70·9	11·79	102·7
Aug.	51·8	10·92	57·0	40·7	11·80	19·3	130·3	12·03	127·2
Sept.	98·9	12·77	89·5	44·4	9·00	26·0	457·0	39·61	301·4
Oct.	46·9	9·77	59·7	28·8	7·45	6·2	255·6	20·59	235·2
Nov.	23·2	7·59	51·0	11·4	3·40	5·8	95·9	21·47	169·7
Dec.	11·2	6·74	30·0	10·0	3·20	4·2	37·5	15·90	89·7
Year	41·4	9·17	46·1	29·9	7·75	13·1	120·1	17·20	140·3
Winter	14·4	6·54	35·7	9·4	3·39	6·1	57·1	17·24	123·8
Equinox	53·5	10·09	54·6	36·0	8·53	15·6	201·0	21·27	180·1
Summer	56·4	10·89	47·9	44·5	11·34	17·5	102·3	13·08	117·0

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	All days			Quiet days			Disturbed days		
	H	D	Z	H	D	Z	H	D	Z
	γ	´	γ	γ	´	γ	γ	´	γ
Jan.	3·7	1·67	11·3	2·1	0·73	1·0	13·0	4·55	39·7
Feb.	2·1	1·31	6·0	1·7	0·85	2·2	6·7	3·05	24·2
Mar.	5·1	1·99	7·3	5·9	1·51	3·1	9·6	3·41	25·9
Apr.	10·1	2·55	8·8	11·0	1·93	3·9	14·1	3·40	17·1
May	13·8	2·73	9·5	13·0	2·57	4·8	19·7	2·66	25·3
June	15·4	3·32	10·5	10·1	2·72	3·2	27·0	4·28	31·3
July	13·3	2·97	11·3	11·0	3·02	3·0	17·5	3·32	27·2
Aug.	12·9	2·64	14·3	11·8	2·54	3·9	26·9	2·82	38·4
Sept.	22·2	3·01	25·9	9·7	2·38	5·4	86·9	8·77	74·0
Oct.	9·7	2·11	14·2	7·4	1·65	1·7	49·1	5·72	52·0
Nov.	4·7	1·57	11·8	2·5	0·90	1·4	17·0	4·72	41·8
Dec.	2·4	1·56	8·0	2·2	0·55	1·1	6·1	3·79	21·0
Year	9·6	2·29	11·6	7·4	1·78	2·9	24·5	4·21	34·8
Winter	3·2	1·53	9·3	2·1	0·76	1·4	10·7	4·03	31·7
Equinox	11·8	2·41	14·1	8·5	1·87	3·5	39·9	5·33	42·3
Summer	13·9	2·91	11·4	11·5	2·71	3·7	22·8	3·27	30·5

NON-CYCLIC CHANGE

13 LERWICK 1963

	All days			Quiet days			Disturbed days		
	H	D	Z	H	D	Z	H	D	Z
	γ	´	γ	γ	´	γ	γ	´	γ
Jan.	-0·5	-0·04	+0·3	+2·9	0·00	+0·3	-5·2	+0·88	+1·9
Feb.	+0·6	-0·10	-0·4	+3·7	-0·35	+1·8	+8·2	+2·59	-1·4
Mar.	+0·5	-0·12	-0·8	+1·9	-0·26	-0·7	+4·1	+2·06	-5·2
Apr.	0·0	+0·17	+0·5	+6·5	-0·16	-6·2	-9·9	-1·11	-18·0
May	+0·2	+0·03	0·0	+4·0	-0·17	-1·1	+3·9	-1·20	-14·3
June	-0·4	+0·06	-0·6	+0·2	+0·57	-1·9	+6·6	+0·92	-17·3
July	-0·3	+0·10	-1·8	+4·8	-0·54	-13·7	-4·1	+1·55	-3·5
Aug.	+0·4	-0·16	+1·7	+0·5	+0·07	+1·0	-2·2	-1·08	-8·2
Sept.	0·0	-0·05	+1·6	-8·4	-0·95	-10·4	+107·3	+15·43	+100·9
Oct.	-0·3	-0·01	+0·5	+0·3	+0·68	+2·5	+5·7	+5·62	+33·8
Nov.	+0·3	-0·03	-1·0	+1·9	+0·18	-2·5	-10·1	-2·25	-29·4
Dec.	+0·1	-0·02	+0·6	+1·2	+0·05	-1·4	+0·6	+1·90	-5·9
Year	+0·1	-0·01	+0·1	+1·6	-0·07	-2·7	+8·7	+2·11	+2·8
Winter	+0·1	-0·05	-0·1	+2·4	-0·03	-0·5	-1·6	+0·78	-8·7
Equinox	+0·1	0·00	+0·5	+0·1	-0·17	-3·7	+26·8	+5·50	+27·9
Summer	0·0	+0·01	-0·2	+2·4	-0·02	-3·9	+1·1	+0·05	-10·8

AVERAGE RANGE OF DIURNAL INEQUALITY 1932-53
WITH 1963 AS PERCENTAGE OF THIS

14 LERWICK 1963

		All days			International quiet days			International disturbed days		
		H	D	Z	H	D	Z	H	D	Z
		γ	´	γ	γ	´	γ	γ	´	γ
Year	1932-53	49·4	9·36	53·3	37·4	8·68	10·3	131·6	14·22	131·1
	1963(%)	84	98	86	80	89	127	91	121	107
Winter	1932-53	24·4	7·87	41·1	15·1	4·65	7·7	85·0	13·84	116·6
	1963(%)	59	83	87	62	73	79	67	125	106
Equinox	1932-53	59·2	10·94	68·8	42·3	9·54	12·9	193·4	18·89	168·9
	1963(%)	90	92	79	85	89	121	104	113	107
Summer	1932-53	72·6	12·72	53·0	57·5	12·77	17·0	156·9	15·61	134·0
	1963(%)	78	86	90	77	89	103	65	84	87

"Winter" comprises the four months January, February, November, December; "Equinox" the months
March, April, September, October; and "Summer" May to August.

RATIO OF RANGE OF INEQUALITITY AT LERWICK TO THAT AT ESKDALEMUIR 1963

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Type of day	Ele-ment	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
q	H	0·84	0·97	1·20	1·11	1·22	1·25	1·29	1·17	1·10	1·01	0·81	0·94
d	H	0·99	1·42	1·09	1·47	1·20	2·12	1·33	2·30	3·30	4·18	2·33	1·19
q	D	0·95	1·06	1·05	1·02	1·06	1·06	1·10	1·13	1·05	1·01	0·88	1·05
d	D	1·35	1·28	1·20	1·14	1·14	1·31	1·09	1·08	1·73	1·34	1·32	1·30
q	Z	1·27	1·20	0·80	0·81	0·84	0·85	0·81	0·76	1·70	0·60	1·32	0·67
d	Z	1·93	2·14	2·29	2·25	2·07	2·19	2·09	2·11	1·32	1·70	2·28	2·14

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1963

(a) Disturbances without sudden commencement

All times G.M.T.

Serial Number	From		To		Range (γ)			Notes
	Date	Hour	Date	Hour	H	D	Z	
1a	29 Jan.	12	1 Feb.	02	372	250	413	
2a	7 Mar.	17	12 Mar.	22	268	305	359	
3a	6 June	10	9 June	24	660	329	324	
4a	19 Aug.	09	21 Aug.	24	763	455	521	
5a	13 Sept.	13	See 2b		686	240	522	
6a	24 Sept.	05	See 4b		957	453	601	
7a	11 Oct.	06	17 Oct.	02	282	234	455	
8a	23 Oct.	10	27 Oct.	21	415	239	330	
9a	5 Nov.	23	13 Nov.	02	533	289	439	

(b) Disturbances with sudden commencement (ssc)

All times G.M.T.

Serial Number	Date	Time of sudden commencement	End of disturbance		With initial reversed stroke			Magnitude of main stroke (γ)			Range of following disturbance (γ)		
			Date	Hour	H	D	Z	H	D	Z	H	D	Z
		h. m.						γ	γ	γ			
1b	30 Apr.	15.24	7 May	01	No	Yes	Yes	+36	-16	-14	723	263	433
2b	19 Sept.	05.43	-	-	Yes	Yes	Yes	-11	-20	-8		small	
3b	21 Sept.	14.14	23 Sept.	23	No	Yes	No	+107	-49	-15	2844	1111	1399
4b	27 Sept.	19.42	30 Sept.	16	No	No	No	+49	-13	-15	394	322	422
5b	29 Oct.	13.59	31 Oct.	02	Yes	Yes	Yes	+38	-11	+10	1924	754	1073
6b	17 Nov.	09.03	-	-	No	No	No	+11	-4	+2		small	

In the case of an ssc*, that is, an ssc preceded, on at least one component, by one or more small oscillations, timing of the sudden commencement has been made from the main stroke.

(c) Disturbances due to solar flare (sfe)

All times G.M.T.

Serial Number	Date	Commencement	Max.	End	Movement (γ)			K	K'	Notes
					H	D	Z			
		h. m.	h. m.	h. m.						
1c	15 Apr.	11.23	11.25	11.40	-11	-4	+6	1	1	S.E.A.
2c	16 Sept.	13.04	13.05	13.15	?	-12	+5	4	4	H trace very disturbed S.E.A. and S.W.F.

S.E.A. = Sudden enhancement of atmospherics

S.W.F. = Short wave fade out.

JANUARY

Night commencing			Description
1	ca-a	..	Variable cloud
2	c	..	Mainly cloudy
4	cb-b	..	Variable cloud. Moonlight
5	cb-b	..	Variable cloud becoming clear. Moonlight
6	c-cb	..	Cloudy becoming partly cloudy
7	b-cb	..	Fine or partly cloudy becoming mainly cloudy. Moonlight
8	c-b	..	Cloudy becoming partly cloudy. Moonlight
9	cb	..	Variable cloud. Moonlight
10	b	..	Partly cloudy. Moonlight
11	b-ca	..	Variable cloud. Moonlight
12	b	..	Variable cloud. Moonlight
13	c-b	..	Cloudy becoming partly cloudy. Moonlight
14	ca	..	Variable cloud
15	ca	..	Partly cloudy
16	c	..	Mainly cloudy
17	a-ca	..	Little cloud becoming mainly cloudy
18	ca-c	..	Variable cloud becoming cloudy
19	ca-a	..	Variable cloud becoming fine
20	a-c	..	Variable cloud becoming cloudy
21	ca	..	Mainly cloudy
22	a-c	..	Partly cloudy becoming cloudy
23	ca-c	..	Variable cloud becoming mainly cloudy
25	c-ca	..	Cloudy becoming partly cloudy
27	ca	..	Mainly cloudy
29	ca	..	Variable cloud
30	ca	..	Variable cloud

FEBRUARY

Night commencing			Description
1	c-a	..	Cloudy becoming clear
2	ca-a	..	Mainly cloudy becoming partly cloudy
3	ca-cb-ca	..	Partly cloudy. Moonlight
4	cb	..	Variable cloud. Moonlight
5	b-cb	..	Clear becoming cloudy. Moonlight
6	cb-ca	..	Partly cloudy to cloudy. Moonlight
10	c	..	Mainly cloudy
11	a-cb	..	Variable cloud. Moonlight
12	ca-cb	..	Variable cloud. Moonlight
13	ca-b	☼	Little cloud. A glow was observed behind cloud to N, between 19h.30m. and 21h.45m. with ray at 19h.32m.
16	a-ca	..	Clear becoming partly cloudy
17	ca	..	Variable cloud
18	ca	..	Mainly cloudy
19	a-ca	..	Mainly clear becoming partly cloudy
20	ca-a	☼	Cloudy soon becoming mainly fine. A faint glow was observed behind cloud to N between 20h.14m. and 22h.20m. with faint rays at 22h.10m.
21	a-c-a	..	Partly cloudy to cloudy to clear sky
22	c-ca	..	Cloudy becoming partly cloudy
23	a	..	Variable cloud
24	a	..	Mainly clear
25	c-a	..	Mainly cloudy becoming partly so
26	a-c	..	Partly cloudy becoming cloudy
27	a	..	Partly cloudy or clear
28	a	☼	Mainly clear. Faint glow at 23h.50m.

MARCH

Night commencing			Description
1	a-b	..	Clear and moonlight
2	b	..	Mainly clear and moonlight
3	cb-a	..	Mainly clear but partly cloudy and moonlight early
4	a-c	..	Clear soon becoming mainly cloudy
5	c-a-c	..	Mainly cloudy with brief clear spell

MARCH (contd.)

Night commencing			Description
6	ca-b	..	Mainly clear but moonlight
7	ca	..	Partly cloudy
12	ca	..	Partly cloudy
13	ca-c	..	Partly cloudy becoming cloudy
21	c-ca	..	Cloudy becoming partly cloudy
22	c	..	Mainly cloudy
24	c-ca	..	Cloudy becoming partly cloudy
25	a	..	Mainly clear
26	a	..	Mainly clear
27	a	..	Mainly clear
28	ca	..	Variable cloud
29	c-ca	..	Cloudy becoming partly cloudy
30	b	..	Mainly clear and moonlight

APRIL

Night commencing			Description
1	c	..	Partly cloudy
2	ca-cb	..	Variable cloud. Moonlight
3	cb	..	Variable cloud. Moonlight
4	cb	..	Partly cloudy
5	cb-b	..	Partly cloudy becoming clear
6	cb	..	Partly cloudy
8	c-cb	..	Mainly cloudy becoming partly cloudy. Moonlight
11	a-c	..	Clear becoming cloudy
12	ca-cb	..	Partly cloudy
13	ca-b	☼	Variable cloud. Moonlight later. An arc or glow was observed between 21h.50m. and 02h.30m. with ray at 23h.15m.
14	cb	☼	Variable cloud. A glow was observed behind cloud to N. between 23h.15m. and 01h.55m.
15	a	☼	Clear. A glow to N between 21h.20m. and 22h.13m. was seen
16	ca	☼	Partly cloudy. A glow to N. was seen between 22h.40m. and 02h.55m.
19	a	☼	Clear. A glow to N was seen at 21h.50m.
23	ca	..	Partly cloudy
27	c-ca	..	Cloudy becoming partly cloudy
28	c	..	Mainly cloudy
29	ca	..	Mainly cloudy
30	c	..	Mainly cloudy

JULY

Night commencing			Description
30	a	☼	A glow or arc was seen between 00h. and 01h.

AUGUST

Night commencing			Description
23	a-ca	☼	A faint glow was seen to the north at 21h.50m.
24	ca	..	Variable cloud
25	c	..	Mainly cloudy
26	ca-c	..	Variable cloud
28	a-ca	☼	A faint glow was evident between 22h.25m. and 23h.45m.
29	a	..	Mainly fine
30	a	☼	A light rayed arc at 23h.30m. persisted until 00h.10m. when it gradually faded to a faint glow by 00h.50m. disappearing by about 02h.

SEPTEMBER

Night commencing			Description
1	a-ca	..	Mainly cloudy becoming partly so
2	c	..	Mainly cloudy or overcast
3	c	..	Mainly cloudy
4	c	..	Mainly cloudy
5	ca	..	Variable cloud

SEPTEMBER (contd.)

Night commencing			Description
6	ca-a	..	Variable cloud becoming fine
8	ca-b	..	Variable cloud becoming fine but moonlight
9	ca-cb	..	Very variable cloud with moonlight in early hours
10	b-cb	..	Little cloud but moonlight
11	a-b	☼	Little cloud but moonlight. A quiet homogeneous arc at 20h.45m. developed occasional rays at 21h.54m. with more activity around 22h.25m., fading to a faint glow by 23h.30m.
12	ca	..	Mainly cloudy
13	c-ca	..	Cloudy becoming variable
17	a	☼	Little cloud. A very faint glow was observed between 22h.45m. and 02h.05m.
18	a-ca	☼	A faint rayed arc at 23h.36m. faded to a glow by midnight and remained so, with occasional rays until 02h.30m.
19	a	☼	A faint arc or glow persisted between 21h.30m. and 01h.50m. with a single ray observed at 22h.50m.
20	c-ca-c	..	Cloudy becoming variable then cloudy again
21	c-ca	..	Cloudy becoming partly cloudy
23	ca-c	..	Variable cloud soon becoming cloudy
24	ca	☼	Variable cloud. A surface at 21h.10m. began pulsating at 21h.30m. and continued until 00h.50m., when it brightened and became flaming bands or rays. Flaming aurora of varying intensity continued until 04h., after which it was gradually obliterated by approaching dawn
25	ca-c	..	Variable cloud becoming cloudy
27	ca-cb	☼	Commencing with a glow and occasional rays at 19h.53m. the display became an arc or band by 20h.50m. and, with occasional rays was seen until obscured by cloud at 21h.30m. A glow was observed, in cloud breaks, at 21h.45m. and a homogeneous arc and fairly active rayed band was identified by 22h. At 22h.18m. the arc extended from NE to NW through the zenith, with rays extending down to the north. At 02h.20m. the display changed to flaming rays and was last observed at 04h.10m.
28	cb-c	☼	Moonlight but suspicion of a glow to north
29	cb	..	Variable cloud and moonlight
30	cb-c	..	Variable cloud and moonlight becoming cloudy

OCTOBER

Night commencing			Description
1	b-cb	..	Variable cloud and moonlight
2	cb-b	..	Variable cloud and moonlight
3	c	..	Mainly cloudy
4	c-ca	..	Cloudy becoming partly so
5	ca-b	..	Variable cloud and moonlight
6	cb-b	..	Variable cloud and moonlight
7	cb-c	..	Variable cloud becoming cloudy
8	cb	..	Very variable cloud
9	c-b-cb	..	Cloudy becoming fairly clear then cloudy
11	c-ca	..	Mainly cloudy becoming variable
12	ca or a	☼	Variable cloud. A quiet glow was evident between 21h.15m. and 02h.50m.
13	ca or a	☼	Variable cloud. Between 18h.50m. and 03h.50m. a quiet glow was seen with occasional faint rays at 21h.45m. and 01h.37m.

OCTOBER (contd.)

Night commencing			Description
14	ca-c	⚲	Partly cloudy becoming cloudy. A quiet glow was apparent between 19h.20m. and 21h.45m.
15	c-ca	⚲	Cloudy becoming partly so. A slight glow was present between 00h.20m. and 00h.30m.
16	ca-a	⚲	Variable cloud. A quiet glow was seen between 01h.30m. and 04h.10m.
17	ca	⚲	Variable cloud. A quiet glow persisted between 19h.30m. and 23h.30m.
18	ca-a	⚲	Variable cloud. A faint glow existed between 00h.50m. and 01h.53m.
19	c-a	⚲	Cloudy becoming mainly fine. As previous nights a quiet glow was present between 22h.50m. and 02h.30m.
20	ca-a-c	⚲	A glow or arc between 19h.10m. and 02h.50m. was relieved by a single bright ray at 20h.25m.
21	ca-a	⚲	Mainly fine. There was a faint trace of a glow at 20h.45m.-53m.
22	c-a	⚲	Cloudy soon becoming fine. A very faint glow was seen at midnight
23	ca-c	⚲	Variable cloud becoming mainly cloudy. A very faint glow was seen around midnight
24	c-a	⚲	Cloudy becoming mainly fine. A glow at 21h.25m. with a single ray at 21h.40m. was obscured by cloud at 22h. A quiet glow at 22h.30m. with rays at 22h.40m.-50m. became an arc at 00h.35m., and changed to flaming aurora at 00h.50m. being obscured by cloud at 01h.40m.
25	ca-c	..	Variable cloud was replaced by fog
26	a-c	..	Variable cloud becoming cloudy

NOVEMBER

Night commencing			Description
3	c-cb	..	Variable cloud

NOVEMBER (contd.)

Night commencing			Description
4	c	..	Mainly cloudy
8	a-ca	⚲	Variable cloud. A glow was present between 19h.20m. and 23h.30m.
9	a	⚲	The display opened with a rayed band at 18h.53., and continued with bands, arcs and rays until 21h.25m., when pulsations were observed. Between 22h.50m. and 03h.20m. a rayed arc was present with flaming
10	ca-c	..	Variable cloud becoming cloudy
16	c-ca	⚲	Cloudy becoming variable. A faint glow was seen at times between 27h.54m. and 00h.15m.
17	a-c	⚲	Mainly fine becoming mainly cloudy. At 17h.30m. a glow with single ray was evident, with maximum rays at 17h.41m. A band persisted between 17h.45m. and 18h.06m. when it reverted to a glow until 20h.45m.
18	ca-c	..	Variable cloud
19	a-c	⚲	Fine gradually clouding over. A faint glow was seen between 18h.50m. and 21h.21m.
20	a-ca	..	Variable cloud
21	c	..	Mainly cloudy
22	ca-a	⚲	Variable cloud. A faint glow was seen between 20h.03m. and 20h.45m.
23	a	..	Mainly fine
25	c-ca	..	Cloudy becoming partly cloudy
26	c-b-cb	..	Variable cloud and moonlight
27	cb-c	..	Variable cloud and moonlight becoming cloudy
28	c-b	..	Cloudy becoming fine and moonlight
29	b-ca	..	Fine and moonlight, becoming partly cloudy
30	c	..	Mainly cloudy

DECEMBER

Night commencing			Description
1	c	..	Mainly cloudy

DECEMBER (contd.)

Night commencing			Description
2	b-cb	⚲	Fine and moonlight. Faint glow in early morning
3	c-cb	..	Variable cloud
4	ca-cb	⚲	Mainly cloudy. A faint glow was seen at 23h.40m.
5	c-cb	..	Mainly cloudy
6	c	..	Mainly cloudy
7	ca-cb	⚲	Partly cloudy and moonlight. A faint glow was present between 19h.15m. and 21h.
8	ca-c	⚲	Variable cloud becoming cloudy. A faint glow was seen between 19h.05m. and 21h.50m.
9	a-ca	⚲	Mainly fine becoming partly cloudy. A faint glow was in evidence between 18h.45m. and 19h.10m.
10	a	..	Mainly fine
11	a-ca	..	Variable cloud
12	a-ca	⚲	Little cloud becoming partly cloudy. A faint glow again between 23h.05m. and 00h.30m.
13	a-ca	..	Variable cloud
14	c	..	Mainly cloudy
15	c	..	Mainly cloudy
16	c	..	Mainly cloudy
17	c	..	Mainly cloudy
18	a-ca	..	Very variable cloud
19	a-ca	..	Very variable cloud
20	ca-a	⚲	Mainly fine. A glow persisted between 21h.05m. and 01h.
21	a	⚲	Fine. A glow between 18h.35m. and 00h.15m. was broken by rays at 22h.45m.
22	c	..	Mainly cloudy
23	c	..	Mainly cloudy
24	c	..	Mainly cloudy
25	ca-a	..	Variable cloud
26	ca-a	..	Variable cloud
28	c	..	Mainly cloudy
29	c-ca	..	Cloudy becoming very variable
30	c	..	Mainly cloudy
31	ca	..	Variable cloud

In the interests of brevity there have been omitted from Table 17 all dates on which the sky throughout the evening remained completely overcast and on which, therefore, no opportunity arose of determining whether or not aurora occurred. The nights on which aurora was actually seen are indicated by the symbol ⚲. The nights on which aurora was not seen, despite at least an occasional interval of more or less clear sky, are indicated by the symbol ·· ; in the latter case also, remarks on the weather are added to assist the reader in judging how far the fact of no observation of aurora may be taken as indicating that there was not actual aurora.

The letters a,b,c, have the following significance:-

a = Condition favourable for seeing aurora
b = Unfavourable for faint aurora (because of moonlight, mist, thin cloud etc.), but not such as to mask bright aurora
c = Cloudy, but aurora not seen in clear intervals
ca,cb = Cloudy, but with conditions a or b respectively, in the intervals
Changing conditions are indicated by a hyphen; for example, a-c

DATE	Φ₁	FORMS	TIME	Φ₂	DATE	Φ₁	FORMS	TIME	Φ₂	DATE	Φ₁	FORMS	TIME	Φ₂
JANUARY					**MAY**					**OCTOBER (Contd.)**				
12-13	58	HB,RB	0050-0150		1-2	60	G	2145		12-13	62	RB	2210-0315	
13-14	60	RB	2050-2150		2-3	63	G	2245-0050		13-14	59	HA,R	1850-0500	65
14-15	60	HB	1950-2150	66	4-5	61	G	2250		14-15	62	G	1920-2145	
15-16	59	HB	2250-2300		5-6	63	G	2300-0150		15-16	61	RA	2130-0030	
			0250-0450	67						16-17	62	R	1930-1945	
16-17	61	HA,R	2305-0250										and	
17-18	62	G	2020										0130-0410	
18-19	60	RB	2150-2350	67	**JULY**					17-18	63	G	1930-0100	
19-20	61	G	2350	67						18-19	63	G	0050-0150	
24-25	58	RA	2050-2250		31-1	63	HA	2400-0100		19-20	63	G	2250-0245	
29-30	60	HA,R	2110-0400							20-21	59	HA,RA	1910-0250	
30-31	57	HA	1850-0600	63						21-22	63	G	2045-2050	
31-1	58	HB	1805-2300	67	**AUGUST**					22-23	63	G	2350	
					19-20	55	HB,RA	2250-0230	60	23-24	58	HA,HB,RB	2330-0500	64
					22-23	59	HA	2350-0050	64	24-25	57	HA,RA	2045-0155	64
FEBRUARY					23-24	61	HA	2150-0050	65	25-26	62	G	2020	
					25-26	61	G	2150		29-30	56	RB	1800-0450	
12-13	61	G	0105		27-28	60	HA	2150-2350	66					
13-14	59	G,R	1825-2340	67	28-29	61	G	2350-0200						
20-21	58	HA,R	2150-0030	65	30-31	63	RA,RB	2330-0200						
28-1	63	G	2350	67						**NOVEMBER**				
										7-8	56	HA	1845-2110	60
					SEPTEMBER					8-9	60	G	1920-2400	65
MARCH										9-10	58	HA,RA,RB	1850-0340	65
					10-11	59	R	2130-2205		16-17	63	G	2255-2345	
10-11	58	G	2145-2330		11-12	58	HA,RA	2050-0315	66				and 0345	
18-19	60	G	2250-2400		14-15	59	HA,RB	2200-0250		17-18	58	HB,R	1715-2150	62
			and 0350		15-16	61	RA,RB	2200-0300		19-20	63	G	1850-2120	
19-20	60	G	2140-2400		16-17	58	HA,R	2050-0400		22-23	61	G	2000-2110	
20-21	60	G	2150-2350	67	17-18	61	G	2220-0250		24-25	58	HA,RA	1910-2300	62
24-25	60	G	2155-2320		18-19	62	RA	2315-0150	66	29-30	62	RB	0020	
					19-20	62	HA,RA	2006-0200						
					21-22	59	HA,RA	2030-2400	64					
APRIL					22-23	53	HA,RA,F	2050-0350	59	**DECEMBER**				
					24-25	54	HA,RA,F	2050-0425	61					
4-5	58	G,R	1915-2340		26-27	62	G	2150-2250		2-3	63	HB	1745-1945	
7-8	61	G	2050		27-28	57	HA,RA	2020-0400	63	4-5	63	G	2340	
13-14	60	HA	2140-0230	67	28-29	62	R	2020-2150	65	5-6	62	G	2120	
14-15	58	HA,R	2100-0155	65	29-30	62	G	2020-2150		7-8	63	G	1915-2100	
15-16	60	G	2145-0200	67						8-9	62	G	1905-2150	
16-17	62	G	2240-0230							9-10	63	G	1845-1910	
18-19	60	G	2250-2350		**OCTOBER**					12-13	62	G	2305-0050	
19-20	62	G	2350-0200							14-15	59	G	1655-0100	
22-23	60	G	2145		9-10	62	G	2115-2225		19-20	59	HA	2245-2400	
27-28	60	G	2240-2250		11-12	62	G	2110		20-21	59	G	1950-0105	
30-1	57	R	2200-0245	63						21-22	61	G	1835-2400	

The above table was compiled in the Balfour Stewart Auroral Laboratory of the University of Edinburgh from all data available for the longitude of the British Isles, using mainly observations made at British Meteorological Office stations and by British voluntary observers, but including also some of the data from the Faroes, from Ireland and from France. Acknowledgements are made to the Directors of the Meteorological Services of Denmark (for the Faroes data). Ireland and France.

In the table. Φ_1 is the lowest geomagnetic latitude from which aurora was seen in the longitudes considered. On any night, if more than a horizon glow was seen from the British Isles, the other forms reported are listed and the period of time (G.M.T.) during which the display was observed from the British Isles is stated. The standard abbreviations are used for the forms and types of activity: G = horizon glow; HA = homogeneous arc; RA = rayed arc; HB = homogeneous band; RB = rayed band; R = rays; S = surface; P = pulsating; F = flaming. If the forms could not be determined because of cloud or twilight, but auroral light was positively indentified, the abbreviation L is used. Under Φ_2 is given the lowest geomagnetic latitude of overhead occurrence in the longitudes considered. In the absence of direct visual observations, Φ_2 is deduced from elevation measurements made in other latitudes, assuming a height of 100 Km. for the lower edges of arcs and bands.

Because of varying observing conditions, these data are in some cases incomplete; aurora may have been overhead in latitudes lower than those listed, and other forms may have occurred. Fuller details may be obtained from the Laboratory on request.

Factor 1·96 till 1200Z 28th
then 2·77 till 2400Z 31st

19 LERWICK   JANUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
																					volts per metre					
1	170	180	85	90	80	90	80	85	70	70	70	75	100	120	90*	65	155*	305	Z±*	180	25*	Z±*	180*	170*	113	(17)
2	100	·85	95	80	80	85	90	80	80	70	110	115*	110	85*	115*	125	Z±*	Z+*	125*	160	115	115	75	90	97	(18)
3	85*	65*	40*	75*	Z+*	Z±*	100*	105	105	100	100	110	110	115	115	105	100*	100*	105*	115*	100*	90*	85*	80*	107	(9)
4	70*	70*	70	70	60*	55*	80*	70*	60*	90*	90*	130	160	175	180	180	Z-*	260*	560*	160*	215*	200	105*	70*	146	(8)
5	85	80	75	80	80*	65*	80*	90	Z+*	105*	120*	105*	110	110	100*	110*	125	145	155	125	180	Z±*	270*	Z+*	107	(11)
6	105	100	105	80	70	85	90	105	90	80	85	85	85	85	95	95	75*	85*	110*	75*	65*	65*	55*	60*	90	(16)
7	70*	65	65	35	Z+*	75*	85	80	85	105	115	145	115	135	120	115	120	160	135	120	115	125	100	105	107	(21)
8	90	80	70	90	·80	80	95	95	100	105	115	125	105*	70*	80*	115*	105*	160*	240*	190*	180	140	125	115	105	(16)
9	105	105	90	80	105	115	90	115	125	120	115	155*	105*	115*	155*	120	170*	185	150	125*	125	125	110	105	116	(18)
10	90	95	90	100	85*	95*	105	110	100	110	115	110	125	300*	145*	130	115*	180*	155	155	120	95	100	115	112	(18)
11	100	95	110	125	170	145	165	(150)	(170)	310	-*	-*	-	Z+*	360*	290	Z±*	245*	430	335	-305	150	125	115	194	(17)
12	90	85	80	100	90	(90)	(90)	80*	100	110	115	115	140	135	135	125	115	125	115	135	100	105	90	55	105	(21)
13	(95)	90	90	115	80	110*	200*	Z±*	65*	90	80	80	70	80	75*	75*	85*	110*	170*	115*	Z+	80*	70	70	85	(11)
14	90*	80	75	90	80*	70*	65*	70	70	90	105	105	95*	95*	90*	90*	95	115	110	105	85	65	80	65	88	(16)
15	70	65	65	60*	65*	75	70	70	70	70	80	90	95	115	110	115	115	125	160*	160*	150	125	105	75	93	(20)
16	90	90	90	90	105	95	115*	Z±*	Z±*	Z+*	-*	-*	-*	-	-	-	-	-	-	-	-	-	-	-	93	(6)
17	-	-	-	-	70	80	85	90	90	90	100	110	115	135	135	130	125	130	125	125	115	105	90	80	106	(20)
18	70	45	60*	80*	75	80	70	70	90	105	115	115	110	105	110	125	125	135	120	115	120	105	90	85	99	(22)
19	70*	35*	70*	60*	75	70	45*	60*	75*	80*	100	80*	80	145	165	160*	165	140	140*	120*	125	115	85	85	113	(12)
20	90	80	90	75	75	75	80	75	75	90	110	130	150	155	170	175	180	190	190	190	170	165	160	155	129	(24)
21	145	135	125	115	135	155*	180*	135*	125*	95	110	115	115	115	100	105*	115*	115	130	125	115	115	95	100	117	(18)
22	75	75	65	65	65	65	65	65	65	65	70	85	80	90	75	80	85	95	95	105	115	110	85	105	81	(24)
23	95 .	85	80	75	75	55	25	60	85	80	115*	135*	65*	80*	Z±*	Z±*	170*	Z+*	115	145	155	155	115	80	93	(16)
24	75	75	95	100	115	120	125	125	115	130	115	135	135	140	120	125	105*	70*	40*	50*	0*	-90*	-45*	25*	115	(16)
25	-80*	35*	0*	Z-*	-225*	45*	225*	160*	Z+*	Z+*	Z±*	105	200*	Z±*	Z±*	145*	Z±*	Z±*	Z+*	80*	75*	65	80*	30*	85	(2)
26	60*	65	60	60	65	45	45	60	65	60	65	70	65	85	65*	105*	90	65*	85*	70	60*	70*	55*	45*	65	(15)
27	45*	45*	45*	60*	55	55	45	50	45	45	45	55	50	60	60	60	60	25*	45*	70*	70*	60*	60	55	53	(15)
28	45	55	0	45	55	45	-135*	45*	55*	85	100	95	110	115	120	60	80	70	-50*	-120*	20*	50*	70	65	71	(17)
29	40*	50*	60*	60	55	60	65	65	60	35*	60*	-180*	Z-*	Z-*	-205*	60*	95*	60*	110*	110*	80*	60*	60*	60*	61	(6)
30	50*	70	Z±*	Z±*	50*	Z±*	70*	145*	215*	40*	85*	70*	-25*	-85*	125*	155*	145*	155*	110*	100	60	65	70*	85*	74	(4)
31	40*	55*	60	55*	50*	50*	70*	40*	55*	55*	50*	65*	60*	65*	80	50*	55	55	55	55*	55*	50*	50*	50*	61	(5)
Mean	94	86	80	83	85	81	82	86	88	99	97	105	106	117	118	123	110	140	151	143	134	118	96	91	102	(459)
	(19)	(23)	(23)	(22)	(21)	(20)	(19)	(21)	(21)	(23)	(22)	(20)	(21)	(19)	(16)	(18)	(14)	(14)	(13)	(16)	(17)	(19)	(19)	(19)		

Mean for 0a days | 103 | (6)

19 LERWICK   Factor 2·77   FEBRUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
																					volts per metre					
1	55*	40	40	Z-*	85*	50*	Z+*	55*	55	Z±*	Z-*	360*	170*	80*	65	80	65*	60*	60*	70*	60*	80*	70*	65	57	(6)
2	60	50	50	55	50	50	55	55	60	60	65	65*	60*	65*	10*	-310*	70*	80*	85	70	70*	55*	65*	60*	59	(13)
3	50*	60*	40*	35	50*	60*	70	65	60*	70*	65*	70*	50*	60*	70*	Z±*	Z+*	Z±*	Z±*	230*	170*	155*	110*	140	77	(4)
4	110	110	70*	100	110*	480*	190*	205	350*	155	145	140	150	155	155	180	175	205	210	205	180	175	155	150	161	(19)
5	120	110	110	95	85	80	25	120	145	145	100	110	120	115	(120)	140	140	150	155	155	150	140	140	130	121	(24)
6	120	115	100	100	110	130	115	110	115	115	130	125	130	140	145	145	145	155	170	160	160	155	125	120*	131	(23)
7	Z+*	130	Z+*	120*	Z-*	120*	155*	145*	130*	110*	150*	145	155	130*	145*	130*	110*	110*	85*	100*	100*	125*	90*	80*	143	(3)
8	80*	60*	95*	80*	80*	85*	95*	100*	110*	145*	.130*	120*	125*	300*	230*	220*	275*	265*	250*	230*	240*	205*	190*	145*	-	(0)
9	80*	80*	95*	95*	155*	115*	35*	60*	50*	60*	70*	100*	80*	110*	120*	370*	Z±*	Z±*	265*	230*	215*	170*	170*	Z-*	-	(0)
10	480*	190*	130*	85*	50*	85	85	110	85*	325*	130*	110	120	130	140	115	120	120	85	100	130	85	85*	35*	110	(14)
11	40*	30*	30*	30*	35*	40*	40*	40*	40*	35*	30*	35*	40*	40	55	85	90	80	70	70	65	60	55	55	66	(11)
12	55	40	50	50	40	40	50	50	50	60	60	130	85	85	85	80	85	85	80	65	65	70*	50*	30*	66	(21)
13	25*	55*	50	35	40	55	60	40	50	60	70	80	70	80.	85	70	50	50	55	80	95	90	90	90	66	(22)
14	95	110	115	115	120	130	145	140	145	145	130	.140	145	150	170*	155*	155	170*	145	140	170	145*	130	110	134	(20)
15	110	110	100*	95*	85	80	90	85*	95*	110*	(110)*	110	95*	130	115	120	110	90	·70	65*	60*	60*	35*	40*	102	(12)
16	35	40	35	30	35	40	35	30	60	70	65	70	70	65	60	65	55	60	50	50	55	40	40	50	50	(24)
17	40	Z+*	20*	60*	55	60	575	325	Z±*	35*	Z±*	110*	95	115	115	60	80*	Z-*	110*	180*	130*	120	Z-*	115*	156	(10)
18	100*	40*	Z±*	Z-*	60	60	60	60	85	100	85	85	80	70	70	65	60	65	80	85	65	55*	10*	70*	71	(19)
19	65*	70*	Z±*	Z-*	100	65	70	70	70	70	90	85	80	110	55*	95	95*	110	95	95	95	85	70	80	85	(18)
20	70	55	55	50	50	50	50	50	50	50	60	55	65	65	80	80	85	95	90	70*	70*	80	65	60	64	(22)
21	55	60	55	95*	60	60	60	65	60	65	65	70	70	70	70	70	60	80	70	65	55	50	40	50	62	(23)
22	40	50	40	40	40	40	35	40	55	80	95	90	60*	115	95	95	95	85	110	100*	65*	40*	Z-*	70	69	(19)
23	85	70	60	60	80	80	85	85	120	100	90	100	100	110	115	115	100	125	120	120	140	115	100	100	99	(24)
24	95	100	120	130	130	140	155	145	140	155	130	140	145	145	110	130	145	115	125	110	90	70	70	65	120	(24)
25	70	60	65	80	70	95	90	145	130	125	140	110	(170)	145	110	100	70	60	110	145	80	80*	60*	60	101	(22)
26	210	290	265	275	300	410	310	205	275	290	240	310	335	360	325	325	300	250	240	240	210	190	170	120	269	(24)
27	100	90	110	95	70	90	90	170	190	185	180	190	240	250	245	265	240	245	260	250	275	290	265	275	194	(24)
28	300	325	350	310	325	325	350	325	290	290	325	310	310	300	335	370	385	410	410	385	360	350	300	290	335	(24)
Mean	98	103	96	95	95	103	121	119	113	122	119	128	137	134	128	130	133	132	131	136	136	131	121	109	120	(469)
	(18)	(19)	(18)	(18)	(20)	(21)	(22)	(22)	(19)	(19)	(19)	(21)	(20)	(22)	(21)	(22)	(20)	(20)	(22)	(19)	(18)	(16)	(15)	(18)		

Mean for 0a days [131   (11)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

53

19 LERWICK Factor 2·75 MARCH 1963

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	265	290	215	245	250	230	230	240	265	275	215	215	265	290	335	350	350	360	395	275	155	.205	240	300	269	(24)
2	300	300	310	240	215	180	215	230	250	230	265	300	290	300	325	350	395	420	410	420	445	325	420	385	313	(24)
3	360	230	170	190	120	275	230	290	360	360	360	420	420	420	480	515	575	635	480	395	430	300	445	395	369	(24)
4	205	300	350	335	335	310	310	350	370	370	360	395	470	470	420	395	325	420	480	470	395	325	250*	190*	371	(22)
5	300	300	180	190	290	395	420	470*	250*	-60*	60*	275*	205*	265*	350	325*	310*	360*	385*	360*	240*	230*	310	230	297	(10)
6	145	85	25*	25*	50*	35*	90	85	110	100	100	110	110	120	120	115	100	85	120	90	115*	110	100	95	105	(19)
7	80	85	80	70	65	55	55	50	95	180	120	95	110	90	95	80	80	70	85	85	80	65	60	50	83	(24)
8	50	35	30	30	30	30	30	50	145	85	95	95	120	100	120	180	115	125	100	-480*	Z-*	-240*	-780*	-480*	82	(19)
9	-240*	-85*	40*	170*	215	215	240	250*	275*	265	190	150	145	145	130	115*	120*	150	155*	145	120	110	95*	110*	171	(13)
10	95*	50*	0*	275*	120*	95*	130*	Z-*	335*	155*	-240*	-70*	110*	70*	120*	130*	50*	60*	85*	130*	155*	155*	130*	100*	-	(0)
11	130*	100*	115*	-35*	70*	100*	85*	100*	Z±*	Z±*	95*	110*	95*	110*	160*	85*	155*	155	140	140	95	70	60	85	106	(7)
12	50	60	35*	50*	5*	25*	35*	-35*	35*	50*	70*	70	70	85	95	95	110	115	110	120	120	110	95	85	93	(15)
13	80	65	60	60	60	40	70	95	85	90	110	95	100	110	120	110	110	110	100	120	160	185	180	155*	102	(23)
14	170*	170	125*	120*	95*	125*	145	170	120*	120*	170*	290*	215*	145*	85*	95*	60*	145*	145*	85*	95*	145*	120*	360*	162	(3)
15	325*	205*	170*	215*	265*	205*	250*	265*	215*	175*	175*	145*	145*	240	290	265	290	185	265	420*	Z-*	Z±*	-360*	Z±*	256	(6)
16	Z±*	240*	370	360	300	360	360	385	325	300	205	240	240	230	10*	-300*	0*	180*	155*	155*	155*	205	180*	290*	298	(13)
17	180*	145*	240*	140*	215*	360	410	420	395	420	410	370	395	350	385	360	395	530	590	660	625	470	420	370	439	(19)
18	360*	290*	275*	300*	205*	160*	240*	180*	190*	145*	-120*	-540*	70*	180*	95*	60*	60*	180*	190*	110*	60*	130*	95*	-10*	-	(0)
19	10*	110*	190*	140*	140*	115*	0*	155*	185*	170*	140*	130*	145*	115*	120*	0*	145*	60*	325*	-145*	Z-*	-120*	-155*	-420*	-	(0)
20	-540*	-240*	-600*	-180*	-10*	10*	120*	50*	130*	40*	10*	-10*	-10*	0*	25	20	60	120	145	100	70	130	155*	130*	84	(8)
21	130*	85*	-85*	-60*	-20*	30*	-5*	-5*	55*	110*	110*	65*	20*	65*	-50*	-230*	-10*	-95*	35*	115*	Z-*	Z-*	60*	-25*	-	(0)
22	Z-*	85*	95	100	70	-70*	85*	70	65	70	65	70	60	60	70	70	70	65	70	60	60	60	60	55	68	(20)
23	50	50	55	50	40	55	55	60	70	80	55	40	40	70	110	110	120	130	130	120	120	95	90	70	78	(24)
24	55	60	50	40	40	50*	85*	60*	30*	30*	-480*	-230*	-135*	-60*	0*	70*	70*	85*	-395*	-95*	-230*	-385*	-215*	35*	49	(5)
25	65	60	0*	145*	50*	60*	50*	85*	90*	85	85	95	120*	Z-*	-95*	65*	85	80*	35*	85	70*	70	70	60	76	(10)
26	55	120	120	60	Z+*	60	360*	Z±*	70	65	65	65	80*	95	90	85	90	85	70	85	90	95	115	155	87	(20)
27	145	160	265	385	455*	420	275	60*	Z-*	-180*	10*	-60*	-540*	-170*	95*	90*	95	100	85	80	70	60	60	Z-*	169	(13)
28	85	95	140	Z±*	Z-	60	70	95	95	110	120	110	155	170	155	155	180	145	130	130	110	115	115	130	121	(22)
29	145	140	170	175	205	275	265	265	265	250	170	180	170	175	205	190	215	205	230*	185	170	65	90	70	185	(23)
30	80	90	80	70	65	60*	40*	70	85	85	100	95	130	120	125	140	110	110	90	90	70	60	50	30	88	(22)
31	20	20	25	30	30	35	30	35	30	35*	70	85	100	140	145	145	155	155	150	130	95	95	95	80	82	(23)
Mean	133	136	154	155	146	199	194	174	181	190	166	165	188	189	200	196	192	203	207	190	183	151	162	156	176	(455)
	(19)	(20)	(18)	(17)	(16)	(17)	(18)	(17)	(17)	(18)	(19)	(20)	(18)	(20)	(21)	(19)	(21)	(22)	(20)	(21)	(19)	(22)	(19)	(17)		

Mean for 0a days [247 (9)]

19 LERWICK Factor 2·75 APRIL 1963

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	90*	-70*	-480*	Z-*	Z-*	445*	80*	95*	100*	145*	275*	185*	110*	Z±*	Z±*	110*	115	175	170	35*	85*	35*	80*	70	132	(4)
2	35	70*	70*	80	80	60	80	10	50*	65	60	80	70	80	80	80	85	80	80	70	Z±*	60*	85*	70*	69	(17)
3	55	55	Z±*	50	Z-*	25*	40*	25*	55	50*	60*	50*	40*	55	40	50*	60*	25*	120*	35*	10*	Z+*	70	55	54	(8)
4	65	40	Z-*	65*	70*	65	80	85*	70*	85*	85	100	100	110*	Z+*	120*	115*	120*	115	120	95*	85*	70*	110*	86	(9)
5	70*	90*	80	70	80	85	95	110	100	110	115	120	130	140	155	145	145	145	145	140	130	100	80	60	113	(22)
6	35	65	65	60	50	55	55	85	80	60	60	65	85	85	90	95	95	110	95	100	95	70	80	70	75	(24)
7	60	55	55	50	50	50	50	50	60	60	60	85	85	110	90	85	85	85*	85*	80	70	60	50		67	(22)
8	35	50	35	35	30	30	35	50	40	40	40	35	40	50	50	90	120*	-50*	-35*	-205*	360*	95*	85	60	46	(18)
9	50	50	50	40	50	35*	50*	60	70	85	60	60	60	70*	60*	95*	60*	Z+*	60	115	95	85	95	85	69	(17)
10	80	60	70	80	70	65	60	60	55	60	60	60	85*	Z±*	95*	50	100	145	155*	360*	205	215	300	215	106	(19)
11	275*	335*	420*	275*	25*	635*	1140*	600*	325*	40*	180*	35*	35	60	85	95	90	90	90	85	80	65	40	30	70	(12)
12	20	10	20	25*	25*	-30*	-195*	-215*	-120*	-60*	20*	-190*	-420*	-70*	80*	100*	420*	Z-*	110*	110	45	Z±*	Z±*	115	53	(6)
13	90	95*	95*	80*	85*	85	90	90	90*	90	90	95	110	100*	110*	85*	Z±*	Z±*	Z±*	Z±*	Z±*	80*	85	95	92	(10)
14	110	110	100	90*	95	85	60*	85*	85*	80	80	85*	Z±*	85*	Z-*	115*	Z±*	110	Z±*	60*	60*	60*	95*	25*	96	(8)
15	70*	55*	70*	60*	Z-*	100*	85	95*	110*	155*	70*	85	85	80	90	80	80	95	90*	Z-*	60	60	60	55	76	(12)
16	50	50	50	0*	-25*	35	50	60	65	65	65	85	85	65	90	110	115	110	125	145	155	150	150	145	92	(22)
17	120	130	130	125	130	140	130	95	90	100	115*	125*	120*	155*	170*	95*	110*	140*	65*	10*	100*	120*	140*	70	115	(11)
18	110*	120*	90*	65*	65*	95*	125	-60*	-60*	60*	-85*	0*	150*	130*	120*	170*	395*	290*	393	300	180	335	660	480*	333	(6)
19	335*	Z-*	Z-*	Z-*	360*	310*	255*	70*	140*	35	Z-*	Z±*	Z-	85*	Z±*	-145*	80	95	90	70	70	65	65	80	72	(9)
20	85	110	110	70	130	240	145	240	335	300	300	215	300	455	410	360	410	360	325	290	205	155	110	100	240	(24)
21	70*	0*	85*	-85*	-60*	80*	130*	-120*	180*	Z-*	120*	60*	85*	Z-*	-85*	-300*	-360*	0*	130*	110*	190*	205*	240*	240	240	(1)
22	205	170	180	190	180	240	240	215	240	275	210	180	205	180	170	170	230*	230*	90*	155*	10*	205*	150*	85	196	(17)
23	70	35*	-50*	Z-	70	110	145	155	230	170	145	130	190	125	120	240	420	170	180	190	155	120	115	150	162	(21)
24	240	175	130	275	565	445	395	360	360	325	190	145	115	120	155	180	215	190	130	120	130	145	170	130	225	(24)
25	110	120	110	95	90	90	50	60	60	40*	85*	25	25	10	0	10	30	60	35	35	50	35	-35*	155*	55	(20)
26	70	70	55	85*	95*	155*	85*	55	80	180	420	480	480	420	420	420	505	600	720	660	395*	Z±*	Z-*	Z-*	336	(17)
27	205	170	190	190*	215*	300*	130*	170*	265	240	80	145	110	90*	85*	480*	60*	180*	85*	230*	350	325	145*	120	200	(11)
28	90	85	80	65	70	85	80	85	65	60	70	65	50*	95*	40*	-35*	445*	395*	180*	25*	85*	110*	100	85	77	(14)
29	85	125	180	100	0*	25*	60*	70	50*	-120*	30*	50*	65	70	80	70	55*	50*	40*	25*	50	50	50*	50*	86	(11)
30	50*	40	35	35	35	50	-60*	50*	30*	50*	50	50	50	55	60	70	65*	65*	65*	55*	65*	100*	-50*	35*	48	(11)
Mean	89	87	91	89	111	112	109	106	132	126	118	115	121	127	129	138	171	164	183	170	126	128	137	98	122	(427)
	(22)	(20)	(19)	(16)	(16)	(18)	(19)	(18)	(17)	(19)	(19)	(20)	(20)	(17)	(17)	(17)	(15)	(16)	(15)	(15)	(17)	(16)	(17)	(22)		

Mean for 0a days [144 (5)]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

19 LERWICK — Factor 2·80 — MAY 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	70*	55*	65*	50*	65*	10*	-110*	35*	-35*	35*	25*	Z±	70*	65	70	70*	60*	Z±	85*	·65	25	-35*	-180*	-360*	56	(4)
2	Z±*	Z±*	60*	50*	Z+*	Z+*	35*	85*	0*	Z+	120	120	50	Z-	35	85	70	Z±*	70	60	50*	50*	50	55	71	(10)
3	40	40	40	40	40	50	50	50	50	50	25*	50*	55	60	50*	35*	55*	60	55	60*	25	60	60	60	49	(18)
4	70	85	110	130	110*	-95*	100*	180*	190*	275*	290*	325	325*	190*	180*	215*	230*	265*	230*	215*	-540*	-360*	Z-*	Z-*	144	(5)
5	Z-*	-420*	-10*	Z-*	Z±*	Z-*	Z-*	-395*	Z-*	Z-*	10*	40*	25*	85*	85	110	95*	95*	120*	60*	95	80	65	50	81	(6)
6	50	85	120	150	205	190	180	180*	200*	80*	80*	60*	0*	Z±	85	85	70	90	70*	90	80	85	70	70	107	(16)
7	70	70	70	60	70	120	145	155	230	165*	250*	205*	-575*	Z-*	Z-*	120*	250*	360	335	360	275	240*	260*	170*	178	(13)
8	170*	230*	205*	205*	335*	215*	50*	240*	95*	170*	275*	270	260	300	300	260	215	240	230	215	190	215	180	120	230	(13)
9	85	85	80	65	60	60	65	70	80	70	70	70	70	70	70	90	130	145	115	100	65	85	115	180	87	(24)
10	240	210	360	360	300	260	260	205	180	360	455	325	240	35	205	335	300	420	145	-35	155	-155	420	240	243	(24)
11	85	25	180	180	95	35	180	240	420	335	300	240	110	190	275	240	180	180	120	120	35	205	420	420*	191	(23)
12	0*	85	120	180	430	110	25	35	25	95*	-60*	-25*	145*	180*	420*	190*	360*	240*	0*	145*	240*	Z-*	120*	60	119	(9)
13	110*	110*	215	110	335	170	35	60	60*	145*	145*	155	215	265	275	300	335	335	310	240	130	115	115	90*	206	(18)
14	65*	50	60*	70	60	60	55	55	60	65	70	70	70	80	85	85	70	70	65	60	60	60	60	60	65	(22)
15	50	50	50	50	50	50	40	40	35	40	50	60	55	-420*	65	60	55	40	50	50	40	55	40	50	49	(23)
16	35	40	50	50	50*	65*	60*	60*	70*	95*	95*	80	70*	55*	70*	60	70	70	60	60	65	65	65	·60	59	(14)
17	55	55	55	55	60	60	65	60	35*	65*	60	70	65*	60*	35*	40*	40*	40*	Z+*	0*	70*	35	95	80	62	(13)
18	Z+*	60*	60*	50*	60	25*	60*	60*	30*	50*	35*	40*	60	85	60*	55	50*	50*	60*	65*	60*	70*	70*	-25*	64	(5)
19	35*	40*	55	50	55	Z+*	95*	60*	70*	70*	Z-*	60*	70*	35*	60*	60*	55*	35*	65*	65	95*	55*	60	Z±*	57	(5)
20	70	0*	Z±*	35	40	35	50	55	25*	65*	80	75*	130	165*	-120*	-10*	Z-*	Z-*	-480*	-60*	215*	265*	240*	300	88	(9)
21	95	55	60	40*	50*	50*	50*	65*	50*	20*	25*	40*	40*	65	85	80	80	65	50	40	30*	50*	35*	40	65	(11)
22	40	25*	35*	-35*	35*	35	25*	55*	50*	55	40*	0*	50	50	60	65	80	60	55	55	50*	50*	40	50	53	(13)
23	Z±*	25*	35	50	·50	55	60	80	70*	85	110	100	85	85	95	110	120	85	· 90	60	65	85	40	35	75	(21)
24	50	50	35	35	70	115	115	95	35	50	60	60	55	10	60*	Z-*	0	55*	60*	70*	35*	Z±*	120*	100*	60	(14)
25	130*	125*	190	180	205	230	220	170*	170	120*	205*	205*	155	230	400	290	360	360	215	155	205	180	175	220	230	(18)
26	395	610	540	565	630	530	385	445	360	360	395	385	215	205	85	50	85	50	85	50	30	35	40	55	274	(24)
27	50	50	50	50	25	25	35	35	20	10	20	35	40	40	50	60	50	50	50	60	65	70	70	65	45	(24)
28	120	115	110	65	70	80	60	50	30	50	55	50	60	80	70	65	60	55	50	40	40	50	40	35	63	(24)
29	35	35	35	35	40	50	55	55	55	55	60	60	60	60	70	70	70	55	50	35	35	35	35	25	49	(24)
30	25	20	25	20	25	30	30	35	35	40	25	50	55	80	85	80	70	70	70	70	70	60	55	55	49	(24)
31	60	35	50	50	55	35	35	35	35	80	40	70	35	65	60	60	60	60	85	60	70	85	120	130	61	(24)
Mean	86	93	114	110	132	108	102	98	114	114	123	137	101	106	124	122	127	139	110	90	87	75	106	91	108	(495)
	(20)	(20)	(23)	(24)	(23)	(22)	(21)	(19)	(16)	(15)	(16)	(19)	(21)	(20)	(21)	(22)	(20)	(21)	(22)	(23)	(21)	(20)	(23)	(23)		

Mean for 0a days [104 (5)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

19 LERWICK — Factor 2·75 — JUNE 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	145	115	100	115	85	110	155	120	115	110	90	85	90	120	125	155	145	95	90	85	85	70	50	70	105	(24)
2	60	50	55	50	85	95	100	85	90	90	90	80	70	110	100	95	70	80	80	60	55	110	140	85	83	(24)
3	60	50	50	35	35	30	35	50	55	60	55	60	60	60	60	60	70	60	70	35	35	50	50	80	53	(24)
4	70	70	60	60	50	60	80	85	95	95	110	100	95	100	90	85	85	90	90	95	80	60	50	30	79	(24)
5	25	30	30	30	40	60	50	50	115	0	-10	25	25	-5	20	20	25	55	35	35	30	30	35	35	33	(24)
6	35	55	60	95	140	170	180	95	20	25	10	20	20	25	0	10	25	25	10	25	35	50	60	40	51	(24)
7	50	50	50	35	35	25	50	50	35	35	25	25	20	35	5	20	25	30	25	35	20	25	50	70	34	(24)
8	40	-20	-10	-10	-5	20	25	25	60	170	420	170	190	120	10	-25	0	85	110	230	190	70	50	85	83	(24)
9	170	145	100	170*	180*	90*	180*	125	0	5	5*	5*	-5*	-10*	-25*	-10*	50*	85*	40*	5	25*	30*	25	30	67	(9)
10	30	25	25	40	40*	35*	35*	35*	35*	55	50	40	40	50	55	55	40	50	40	40	50	35	40	30	42	(19)
11	25	30	30	30	25	20	30	35	30*	30*	30	20	20	10	25	20	10	5	10	25	10	35	30	25	23	(22)
12	30	25	25	30	25	25	30	30	35	55	35	35	55	35	50	60	60	60	60	55	60	50	40	35	42	(24)
13	35	30	35	40	40	40	50	60	60	60	65	65	70	85	55	40	40	50	40	30	30	35	40	40	47	(24)
14	50	50	40	35	35	50	60	70	70	60	70	70	40	30	35	40	50	55	65	55	40	50	50	50	51	(24)
15	30	40	40	50	50	55	35	40*	40*	10*	35*	85	155	175	180	175	150	145	120	100	100*	80*	160*	75*	99	(16)
16	110*	85*	60*	205*	85*	110*	120*	110*	85	70	75	90	95	90	95	85	90	95	95	85	80	65	65	60	83	(16)
17	60	55	55*	55*	50*	60*	60*	60*	65	70	85	95	95	130	150	130	130	180	170	215	240	170	95	215*	125	(17)
18	430*	80*	-70*	-110*	-110*	-370*	-960*	-600*	25*	-240*	-240*	-70*	360*	180*	240	240	155	240	275	145	60	50	60	60	153	(10)
19	50	35	60	10*	35*	60	55*	60	60	60	60*	90*	60*	65*	70*	40*	35*	35*	65	80	55	55*	60*	55	58	(11)
20	60	70	50*	60*	85	80	85	65	70	95	110	140	130	180	190	185	185	175	220	240	400	400	215	170*	161	(21)
21	70*	540*	420*	455*	420*	215*	240*	290	430	360	115	90	65*	50*	-110*	65*	120	170	180	110	155	130	215	250	201	(13)
22	230	70	155	70	70	70	95	80	80	70*	65*	70*	70	60*	55*	70*	85	80	80	70	60	70	70	70	88	(18)
23	70	65	65	65	70	90	75	75	75	85	90	95	95	110	110	95	100	95	95	95	100	110	85	115	89	(24)
24	120	155	180	250	325	180*	130	150*	-50*	Z-*	Z-*	-565*	Z-*	-480*	60*	290*	350	290	145	140	180	175	265	180	206	(14)
25	145	150	110	120	110	145	175	210	380*	85*	120	115	100	125	155	180	155	205	120	100	125	190	170	120	143	(22)
26	110	155	85	130*	55*	155*	230*	290*	-10*	20*	180*	-10*	80*	-240*	-120*	0*	-130*	95*	100*	-180*	-95*	-20*	-35*	35*	117	(3)
27	35*	70	60*	50*	65*	70	85*	70	90	30	35	40	30*	70*	95	70	60	65	65	60	70	60	50	50	61	(17)
28	35	25	30	25	25	25	25	35	25	25	30	25	35	35	35	50	60	60	70	70	35	20*	0*	5*	37	(21)
29	5*	5*	5*	25	30	35	35	30	30	40	35	30	20	25	35	35	30	10	0	10	10	20	25	35	26	(21)
30	25	20	40	25*	10*	20*	25*	20	20	20	20	20*	0*	5*	0*	10*	20*	-5	0	5	25	25	20	30	19	(14)
Mean	70	62	62	59	68	64	75	79	77	73	76	70	72	78	83	82	89	94	87	81	86	85	79	69	76	(572)
	(25)	(26)	(23)	(20)	(20)	(21)	(20)	(23)	(23)	(23)	(23)	(23)	(22)	(21)	(23)	(23)	(26)	(27)	(28)	(29)	(27)	(25)	(26)	(25)		

Mean for 0a days [66 (7)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

55

19 LERWICK — Factor 2·63 — JULY 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean
1	30	30	30	20	25	30	30	25	35	30	50	55	30	30	40	30	25	25*	30*	40*	35*	55*	60*	60*	32 (17)
2	35*	35*	40	30	35	5	-5	0	5	-10	-25	-10	-25	0	5	-10	0	0	10	30	55*	85*	70*	70*	4 (18)
3	50	50	50	40	50	50	50	35	30	35	50	40	50	40	50	30	40	30	55	40*	55*	35*	35	40	43 (21)
4	30	35	35	35	40	40	35	50	50	50	60	40	25	30	25	10	10	-10	30	10	20*	20*	30*	30*	31 (20)
5	30	30	25	30	35*	25*	25*	30*	30*	35	25	25*	25*	10	35*	30	5*	10*	25	25	25	25	20	20	25 (14)
6	30*	20*	30*	25	25	25	20	20	25	30	25	25	25	20	25*	30*	20	25*	30*	40	35	40	40	50	29 (17)
7	50	50	40	40	50	50*	30*	20	35	20	10	20	35	50	25	50	65	25	50	50	30*	65	50	60	42 (21)
8	50	40	25*	30*	35	30	50	25	35	0*	-10*	50*	35*	85*	95*	70*	95*	95*	120	85*	95*	90*	100*	60*	48 (8)
9	70	65	50	30*	60	70	65	60*	70*	85*	70	50*	60*	65	60	35	25*	35*	25*	25	50	50	50	50	56 (15)
10	35	50	50	50	55	70	80	55*	-70*	70	85	85	70	70	85	80	85	90	85	85	70*	65	70	60	70 (21)
11	60	55	40*	50	60	10*	60	50*	70	25*	50*	-25*	50*	10	0*	70	80	60*	85*	80	85	50	70	65	62 (14)
12	40	60	60	55	70	70	50*	Z-*	0*	Z-*	100	120	120	120	110	100	85	90	85	80	65	60	60	60	80 (20)
13	50	65	50	40	50	55	70	90	95	100*	90	100	100	90	110	110	95	Z-*	40*	40	35	40	35	35	69 (21)
14	85	85	70	40	35	50	60	65	70	110	120	115	130	130	160*	120*	85	140	215	240	Z-*	310	Z±*	360	126 (20)
15	190	240	190	390	240	240	110*	55*	110	95	110	100	80	-60*	100	110	110	100	100	85	80	110	70	70	139 (21)
16	60	60	50	60	60	65	70	70	90	95	95	100	100	110	110	95	95	95	95	90	Z±*	360*	100	70	83 (22)
17	205	325	70	65	80	85*	85*	70	70	70	65*	60*	50*	25*	25*	35*	60*	50	50	40*	-120*	85	70	70	98 (13)
18	55	70	Z-*	35*	70*	90	90	95	95	95	90	95	95	95	90	80	80	85*	85*	50*	65	40*	-485*	Z-*	85 (15)
19	-360*	-240*	-420*	-480*	-35*	0*	145*	70*	155*	120*	155*	120	110	110	110	110	120	115	85*	95*	Z-*	Z±*	Z+*	Z-*	113 (7)
20	85*	95	85	80	80*	55*	65*	50	50	35	35	35	20	10	55	60	50	-5	20	35	60	55	55	55	47 (20)
21	70	65	65	60*	85*	95	90	145	250	335	370	455	480	275	140	130	215	275	110	240	65	35	60	-10	180 (22)
22	Z±*	Z±*	145	155*	95*	70	95	85	80	85	70	65	85	90	95	95	95	100	100	100	95	80	95	80	90 (20)
23	70	50	50	35	35	50	85	95	70	35*	90*	115*	100*	25*	85*	-420*	-360*	-95*	-120*	0*	35*	10*	-20*	-40*	60 (9)
24	20*	25*	30*	35	40	50*	-95*	-25*	50*	100*	55	65*	70*	95	85	70	55	65*	70*	60*	60*	50*	65*	35*	62 (7)
25	60*	70	60	60	50	60	55	70	85	65*	80	70	70*	90	90	90	85	80*	80*	50*	-25*	-10*	-70*	-10*	73 (14)
26	80*	70*	65	60	60	55	55	40	35	50	60	60	60·	60	70	85	80	70·	80·	70·	60	40	55	60	60 (17)
27	30	50	50	50	50	85	115	125	120	125	170	335	400	420	430	455	455	420	430	275	170	50	110	170	212 (24)
28	240	240	240	325	335	360	360	325	240	50	60	50	55	65	50	65	70	70	60	70	115	70	180	310	167 (24)
29	420	430	420	445	300	115	120	125	110	95	90	95	90	95	150	120	110	180	235	190	150	125	120	90	184 (24)
30	85	155	145	150	130	215	290	325	395	370	385	335	325	335	310	275	265	275	275	275	240	275	240	190	260 (24)
31	130	120	100	85	110	145	150	125	125	120	120	145	215	215	350	275	170	170	195	125	65	65	60	100	145 (24)
Mean	93 (23)	103 (25)	89 (25)	92 (25)	83 (25)	89 (24)	91 (23)	91 (23)	94 (25)	90 (22)	95 (26)	111 (24)	117 (23)	100 (27)	115 (24)	103 (26)	100 (26)	115 (20)	115 (21)	105 (21)	85 (18)	84 (20)	78 (21)	93 (22)	97 (559)

Mean for 0a days [130 (3)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

19 LERWICK — Factor 2·67 — AUGUST 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean
1	125	120	65	50	40	25	30	30	20	35	40	50	50	40	35	40	20	-10	-10	30	40	25	30	40	40 (24)
2	30	30	25	25	25	20	40	-25	-25	30	30	25	-5	25	25	25	25	30	10	35	35	20	35	10	21 (24)
3	35	30	25	10	10*	30	30	30	20	5	25	65	30	20	30	60	40	10	20	35	35	35	35	190	37 (23)
4	90	80	70	65	70	40	60	60	70	50	55	55*	70	60	50	35	40	40	40*	55*	55	70	80	60	60 (21)
5	60	-25*	80*	60*	95*	130	130*	95*	95*	0*	10*	155*	110*	150*	205*	275*	215	240	155	290	310	290	170	170	203 (10)
6	120	70	85	230	230	95	215	325	230	145	140*	115*	70*	50*	10	35*	25*	50	60	70	65*	60	65	65	125 (17)
7	70	85	85	65	160*	155*	145	230	250	130	155	170*	250	360	240	190*	180*	265*	505*	685*	300*	Z-*	25*	290	181 (13)
8	275*	170	95*	100*	90	85	115	120	90	110	170	115	110	100	130	175	215	120	110	95	125	95*	70*	35	120 (19)
9	35	30	25	40	50	80	85	60	35*	60	70	65	55*	60*	35*	35*	60*	95*	100*	95*	95*	95*	70*	85*	55 (11)
10	70*	60*	70*	85*	95*	85*	70*	125*	115*	130*	110*	85*	120*	55*	20*	10*	10*	85*	145*	145*	150*	145	145	70	120 (3)
11	50	50	70	70*	35*	55	85*	70	60	80	55	65	70	90	80	80	90	65	40*	60*	65	60	80	55*	69 (18)
12	60*	65*	30*	65*	60*	140*	145*	80	80	60	70	-	-	25*	10*	50*	10*	25*	85*	110*	90*	70*	70*	80*	73 (4)
13	60	70	40*	35*	55*	65	35*	40*	30*	35	50	35	20*	20*	30*	25*	30*	50*	50*	60*	50	55	55	60	53 (10)
14	55	50	40	35	35	55	55	55	55	60	80	35*	35*	65	40*	60*	65	60	50	50	50	50	55	50	54 (20)
15	50	40	35	35	35	40	50	55	55	85*	25*	Z-*	60*	-10*	205*	85*	35*	Z-*	110*	90*	100*	100	95	70	55 (12)
16	70	90	65	50	60	85*	-60*	120	110	100	95	80	120	110	95	85	85	85	80	70	80	60	55	50	83 (22)
17	35	30	35	50	60	65	100	90	80	65	50	80	65	40	55	55	70	85	80	65	60	60	60	55	62 (24)
18	50	50	40	50	50	50	50	55	60	60	70	65	70	65	70	60	50	55	55	55	60	50	55	50	57 (24)
19	50	40	30	35	30	25	35	35	35*	50	50*	40*	40*	35*	30*	50*	60*	35*	30*	25*	50*	50*	55*	60*	37 (9)
20	35*	5*	40*	50*	130*	95*	70*	155*	170	180	120	120	120	-300*	-180*	300*	205	130	120*	145*	120	120	100	110	136 (11)
21	120	140	80	70	95*	-25*	-110*	-10*	65*	120*	55*	95*	70*	85*	100	40	50	85*	140*	85*	85*	80*	85*	90*	86 (7)
22	90	70	55	50	65	70	60*	40*	50*	90	65		60	30	70	60	65	95	80	60	35	40	30	25	60 (21)
23	35	25	20*	35*	40	60	95	90	90	65*	55*	90	145	190	215	160	180	290	420	275	395	395	310	290	189 (20)
24	250	190	250	325	Z±*	Z±*	Z±*	180	185	110	110*	155*	140	120	85	80	65	65	40	70	110	85	70	50	130 (19)
25	50	70	95	120	90	40	90	50	70	60	85	60	60	85	120	95	110	115	130	125*	100*	100	100*	70*	85 (20)
26	Z-*	190*	70*	60	50	60	140	120	110	85	80	90	95	120	130	120	110	100	90	110	110	120	70	65*	99 (20)
27	70	55*	-50*	60	70	70*	90*	30*	70*	35*	-145*	-145*	-10*	40	65	65*	65	50	60*	60*	60*	40*	35*	25	56 (8)
28	10*	10*	20	10	25	20	20	25	30	35	25	40	55	80	80	80	80	70	65	70	70	55	60	55	49 (22)
29	55	50	50	50	50	40	50	65	60	60	60	60	65	55	80	70	65	60	50	35	70	85	70	60	59 (24)
30	50	55	60	60	65	80	85	95	100	110	120	130	140	150	160	155	160	170	150	120	125	120	115	95	111 (24)
31	85	70	65	70	60	60	70	85	75	90	90	80	90	90	110	95	80	65	40	55	60	60	65	60	74 (24)
Mean	72 (25)	71 (24)	63 (22)	70 (23)	61 (21)	56 (23)	78 (21)	88 (24)	89 (23)	75 (24)	77 (22)	73 (19)	90 (20)	92 (21)	93 (22)	83 (19)	94 (23)	89 (23)	88 (19)	88 (18)	98 (21)	95 (24)	84 (23)	85 (24)	81 (528)

Mean for 0a days [87 (7)]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

19 LERWICK   Factor 2·67   **SEPTEMBER 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	95	100	115	90	145	115	85	70	80	80	70	70	55	60	60	60	50	50	50	40	35	50	50	40	71	(24)
2	30	30	30	35	40	40	35	30	35	35	25	35	60	55	60	40	50	40	55	110	120	70	70	50	49	(24)
3	60	90	80	130	120	160	110	60	60	55	20*	70*	65	70	30	-215*	-660*	Z±*	0*	165	Z+*	35*	120*	100*	90	(14)
4	110	90	110	80	70	95	120	125	95	40*	50	25*	50*	80	110	-60*	65	40	35	65	-25*	80	85	Z-*	84	(18)
5	-205*	Z+*	25*	-60*	-180*	-600*	30*	80*	60*	25*	35*	70*	50*	40*	35*	40*	50*	70*	65	65	70	60	65	65	65	(6)
6	60	55	50	50	50	70	90*	70*	0*	50*	55	50	35*	50*	60*	50	55	50	40	50	40	35	50	50	51	(17)
7	40	50	55	60	60	95	145	175	180	215	180	140	120	125	110	110	110*	90*	85*	90*	80*	130*	95*	100*	116	(16)
8	-95*	-95*	-155*	95*	40*	60*	110*	95	80	70	70	80	80	90	100	120	140	110	110	115	115	Z±*	Z±*	Z+*	98	(14)
9	205	110	90	130	100	90	120	125	115	120*	Z+*	60	85*	Z+*	160	160	145	120	100	95	80	65	65	95	111	(20)
10	Z-*	65*	65*	60*	65	-25*	60	85*	80*	50*	-60*	50*	65*	70	70	70	60*	70	70	70	60	60	60	55	65	(12)
11	50*	25*	40*	50*	55	-25*	10*	10	50	55	50	60	55	60	65	65	60	-215*	65*	65	60	65	50*	60	56	(15)
12	60	50	35*	40	35*	40*	50	60	40*	65	65	60	60	70	90	85	90	115*	160*	210*	205*	190*	205	180	82	(15)
13	140	70	80	85	85	65*	10*	35*	50*	95	80	60*	70	65	60	60	70	70	50	50	60*	25*	25*	Z+*	75	(15)
14	25*	85	70	60	70	Z+*	130	70	Z+*	120	Z+*	95*	10*	120*	60*	70	85	95	100	100	110	85	35*	20*	89	(14)
15	10*	25*	35*	80*	85*	10*	-265*	-70*	80*	120	80	80	70	80	60*	50*	35*	60*	100	95	90	90	70	60	85	(11)
16	55	60*	60*	50	35	35	35	55	55	40*	60	55*	60*	35*	30*	70*	65*	70*	180*	95*	110*	180*	275*	240*	48	(8)
17	140*	110*	110	145*	120*	130*	215*	120*	95*	50*	-230*	-515*	-300*	10*	65	70	80	80*	70	70	80	70	65	65*	76	(9)
18	60	55	50	55	55	50	60	60	60	70	80	85	100	85	50	60	50	70	40	60	65	60	70	85	64	(24)
19	80	65	80	80	85	85	95	110	95	85	95	100	100	110	120	125	120	120	115	130	140	140	130	120	105	(24)
20	95	85	70	85	80	80	70	70	95	90	85	95	95	125	125	50*	130*	145	155	180	200	130	95	95	107	(22)
21	95	110	95	95	95	95	110	120	100	70	50	60	55	65	70	50	70	80	60	70	70	80	70	70	79	(24)
22	95	215	130	80	85	85	70	110	95	120	110	130	120	155	170	120	100	90	65	35*	50*	35*	30*	50*	113	(19)
23	35*	85*	80*	60*	60*	65*	70	85	80	85	85	100	130	130	130	120	115	130	180	530	530	395	360	370	201	(18)
24	310	230	205	155	180*	230*	230	335	325	230*	Z±*	Z±*	Z±*	Z±*	Z-*	-85*	65*	85*	85	85	80	70	65	60	172	(13)
25	60	70	65	50*	60*	80	85	90	90*	95	80	85	85	110	110*	145	205	Z±*	Z±*	Z±*	85	50*	70	70*	94	(15)
26	100	110	190	Z+*	-10*	-85*	-85*	-300*	-540*	-35*	Z-*	110*	65*	85*	-20*	-95*	-50*	-145*	-360*	215*	-70*	-120*	-120*	-360*	133	(3)
27	-215*	-230*	-420*	-445*	-60*	120	85	70	70	60	60	35*	60*	-35*	Z+*	85*	145*	110*	120*	85	205	275*	80*	Z+*	94	(8)
28	Z+*	Z+*	35*	25*	60*	Z-*	60*	60*	70*	70	60*	60	60	50*	70	65	60	60	65	65	60	60	50	50	61	(13)
29	40	35	35	25	-240*	-95*	-130*	-215*	5*	20*	35*	50*	10*	-95*	50*	70	65	60	60	-95*	0*	25*	50*	55	49	(9)
30	50	-50*	10*	20*	25*	40*	-40*	-10*	50	50	-10*	50*	70*	95*	Z-*	55*	-50*	35*	70	50*	55*	70*	25	40	47	(6)
Mean	92	90	90	77	76	86	93	96	96	85	75	79	81	89	90	86	88	82	79	107	115	93	90	89	89	(450)
	(20)	(19)	(19)	(18)	(17)	(15)	(19)	(20)	(18)	(20)	(19)	(17)	(17)	(18)	(19)	(20)	(19)	(17)	(22)	(22)	(20)	(18)	(19)	(18)		

Mean for 0a days [87 (5)]

19 LERWICK   Factor 2·65   **OCTOBER 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	40	35	25	10	20	30*	25*	20*	10*	25*	35*	35*	35*	55*	55*	-35*	-120*	-170*	65	80	80	70	25*	60*	47	(9)
2	60	50	50	0*	50	40*	55*	65*	65	50*	0*	35*	70	70	35	65	50	60	-	60	35	50	50	40	54	(16)
3	-	-	-	-	-	-	-	35	60	60	80	90	95	90	110	130	95*	-360*	-240*	-480*	180*	130*	110*	110*	83	(9)
4	70	60	70*	65*	50*	55*	70*	110*	65*	-130*	-360*	-180*	-30*	85*	70	80	65*	70*	80	85	60*	25*	65*	50	71	(7)
5	-685*	25	40	35	35	40	55	65	50	35*	-25*	-145*	-145*	-215*	Z-*	Z±*	Z-*	-120*	-60*	60*	65	65	40*	30*	47	(10)
6	40*	40	35	30	35	40	40*	10*	60	80	65	50*	60	60	35	0*	-120*	50	40*	40	60	50	40	40	48	(17)
7	35	35	30	30	35	35	35	50.	55	60	50	50	50	55	65	60	60	70	85	130	130	130	125	90	64	(24)
8	65*	70*	60*	110*	250*	-25*	120*	190*	130*	155*	-230*	-455*	55*	60*	90	95	95	100	95*	90*	130*	80	80	70	87	(7)
9	Z±*	Z±*	Z±*	Z±*	Z±*	70*	95*	300	160	95*	335*	80*	95	80*	-250*	-395*	-360*	-215*	-170*	-95*	110*	85*	70	80	141	(5)
10	80	70	70	70*	65*	80	85*	80	120*	85*	85	70*	85	70*	60*	-145*	-95*	115*	90*	-455*	-325*	-70*	110*	-310*	79	(7)
11	-10*	60*	50*	35*	-420*	-660*	-480*	-360*	5*	25*	70*	65*	115*	115*	130*	95*	90	85*	80	60*	50*	50*	50	40	65	(4)
12	35	35	35	30	25	25*	-95*	-360*	-180*	80*	125*	150*	25*	-50*	-600*	-960*	-840*	-60*	0*	80*	70*	85*	95	80	48	(7)
13	60*	60*	55	50*	55*	60*	60*	65*	60*	0*	-130*	-275*	35*	35*	35*	35*	90*	145*	130*	250*	100*	145	70	85*	90	(3)
14	35*	25*	40*	30*	40*	40*	50*	50	35	35	40	50*	35*	50	55	55	40	35	40	35	40	50	65	65	44	(15)
15	60	50	85	100	125*	120*	115	135	145	155	110	140	155*	175*	205*	220*	190	190	Z±*	Z+*	145*	35*	95*	70*	123	(12)
16	70	65	70*	80*	70*	70*	70*	65*	70*	65	95	Z-*	80	95	85	70	70	65	70	85	90	95	100	110	82	(16)
17	120	160	180	170	180	125	110	90	115	145	185	180	175	200	205	95	60*	85	70	60	55	55	55	50	125	(23)
18	50	50	50	55	85	70*	60*	70*	50*	-130*	65*	90*	110	85*	85	80	215	95*	85	80	80	70	85	85	84	(15)
19	100	85	85	95	120	215	230	175	160	160	275	245	275	325	335	335	230	115*	30*	-70*	-325*	-35*	90*	100'	197	(18)
20	85	80	80	80	70	65	65	70	80	85	85	90	95	100	110	130	140	155	250	310	240	155*	Z-*	335*	117	(21)
21	70	70	60	55	55	55	35*	-85*	-60*	30*	-50*	10*	90	90	90	90	85*	60*	40*	70*	70	95	65	80	74	(14)
22	Z+	300	50	50	50	50	55	55	55	50	50*	60*	35*	55*	40	25	25	20	35	40	55	55	55	65	59	(19)
23	65	60	60	50	55	95	155	180	180	215	275	245	180	290	300	290	170	190	240	360	240	95	70	95	173	(24)
24	85	65	55	50*	65*	70*	110*	140*	130*	130*	140*	95*	85*	85	70	85	90	90	55	70	75	70	65	60	73	(14)
25	55	55*	50*	50	40	40	50	50	50	60	85	80	80	85	85	60	85	85	110	90	155	180	490	505	117	(22)
26	360	350	335	490	480	505	420	470	470	410	250	230	170	155	200	230	125	110	120	90	70	65	65	85	261	(24)
27	90	50	50	60	90	110	145	145	130	110*	95*	115*	125*	145*	155	145	25	70*	115*	85*	70*	110*	115	120	102	(14)
28	145	.145	145	145	130	155	180	145	190	215	215	230	265	275	290	265	240	265	290	290	265	240	185	145	211	(24)
29	145	175	160	190	155	200	230	215	215	230	230	240	265	275	335	420	385	420	360	335*	300*	335*	360	370	265	(21)
30	395	360	300*	310*	310*	300*	215*	205*	215*	130	145	155	180	155	240	240	240	250	250	250	300	290	275	190	238	(17)
31	190	200	205	205	185	200	190	210	230	205	220	250	265	265	275	290	265	275	255*	205*	215	190	205	180	223	(22)
Mean	109	109	88	102	99	126	145	140	132	139	146	171	141	151	146	152	135	144	138	127	122	107	122	116	128	(460)
	(22)	(24)	(22)	(19)	(19)	(16)	(14)	(18)	(19)	(17)	(17)	(13)	(19)	(18)	(23)	(22)	(20)	(19)	(16)	(17)	(19)	(20)	(23)	(24)		

Mean for 0a days [188 (8)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

19 LERWICK Factor 2·70 NOVEMBER 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean
1	170	110*	140*	145	180	145*	155*	130*	140*	180*	120*	150*	155*	155	130	130	110	100	95	100	95	70*	65*	60*	128 (11)
2	65	55	55	60	65	60	70	85	70	70	60*	60*	35*	-60*	95*	-*	-*	-*	-*	-*	25*	30*	20*	-70*	65 (10)
3	55*	30*	35*	20*	10*	25*	35*	35*	30*	60	60	60	85	100	50*	60*	80	85	80	50	55	60	70	65	70 (13)
4	65	60	55	55	60	50	30	40	50	70	65	95*	85*	120*	140*	165	205	205	215	220	190	165	165	150	114 (20)
5	170	160	155	150	140	-120*	-*	-*	110*	150*	150*	90*	65*	55*	115*	70*	120*	90*	90*	80*	80*	145*	Z+*	25*	155 (5)
6	55	-35*	55*	0*	-780*	-60*	+480*	-780*	Z±*	-685*	-720*	-660*	-180*	-35*	60*	100*	110*	170*	200*	420	205	145	55*	Z-*	206 (4)
7	Z-*	Z-*	Z-*	-300*	-780*	-635*	-480*	-1140*	Z-*	-420*	-360*	-180*	-265*	-540*	-600*	-250*	-325*	-960*	-420*	-155*	-240*	-250*	-205*	-5*	- (0)
8	-145*	-250*	-275*	-250*	-385*	-155*	-85*	-145*	25*	10*	70*	100*	95*	120	110	85	95	95	95	95*	95*	85	70	Z+	94 (8)
9	Z±*	170*	80	65	65	65	70	80	70	70	80	80	90	90	85	90	90	95	90	90	95	85	80	80	81 (22)
10	80	70	70	70	70	70	70	60*	80*	115	155	115	125	130	125	115	125	140	150	120*	115*	115	100	100	105 (20)
11	60	60*	40*	10*	10*	-395*	-155*	-145*	-170*	-480*	-275*	10*	70*	100*	155*	240*	335*	275*	265	205	180	60*	55*	70*	177 (4)
12	60*	35*	-85*	25*	80*	-290*	-290*	Z±*	65*	90*	110*	95	90	70*	50*	50*	Z-*	Z+*	Z-*	Z±*	70*	-215*	Z-*	90*	93 (2)
13	145*	130	90*	55*	60	65	60	65	80	80	50	40*	55*	90	80	50*	60	65	5*	20*	10*	20*	40*	35*	74 (12)
14	Z-*	35*	40*	60*	70	Z-*	-65*	60*	35*	80*	55*	100*	155*	Z-*	360*	Z±*	-480*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	Z-*	70 (1)
15	-155*	-205*	-85*	-190*	Z±*	Z+*	-25*	-70*	-265*	70*	90*	100*	-60*	Z+*	Z+*	-85*	60*	95*	70*	70*	80*	115	90	90*	102 (2)
16	70*	85*	70*	80*	65	65	65	70	55*	80	70	70	70	70	70	60	240*	Z±*	145	Z+*	0*	110	60	190	80 (14)
17	Z±*	Z+*	85	80	110	115	Z+*	Z+*	125*	110	335	Z-*	100	120	120	110	110	100	95	95	95	90	90	70	113 (18)
18	65	60	65	65	65	70*	110*	70	110	-25*	110	110*	-85*	25	80*	110	95*	130*	110	95	80	70	65*	80*	76 (13)
19	60	60	65	Z+*	85	85	90	80*	265*	Z±*	Z±*	Z+*	180*	145*	95*	95	95	95	95	95	95	95	90	70	85 (15)
20	55	60*	60	60*	50*	55*	60*	55*	60*	55*	60	60	60	60	60	60	65*	65	70	65	70	65	60	60	62 (15)
21	55	65	85	80	80	85	110	35*	-395*	-50*	Z±*	95*	-155*	120*	110	Z+*	Z±*	120	110	Z±*	Z±*	145*	-60*	70	88 (11)
22	-85*	110*	125*	85*	Z±*	Z±*	170*	Z-*	95*	Z-*	Z±*	Z±*	80*	35*	95*	Z±*	Z±*	80*	50*	100*	85*	35*	70*	-50*	- (0)
23	60*	60*	60	60	60	55	55	60	60	85	110	155	85	115	Z+*	Z+*	90	90*	85	85	70	60	60		79 (19)
24	55	40	40	50	50	60	85	85	85	90	95	95	95	70*	-25*	25*	-85*	-430*	-480*	Z-*	Z-*	Z-*	-10*	120*	71 (13)
25	95*	65*	190	325	335	200	240	335	395	395	360	360	395	360	300	185	155	155	170	150	110*	0*	30*	90*	278 (18)
26	50*	55*	80*	70*	130	125	115	115	120	115	85	65*	95*	85*	90	65	90	120	85	90	70	70	55	110	97 (17)
27	70	85	70	80	90	120	125	130	145	180	205	215	265	275	290	300	300	310	310	300	300	220	205	220	200 (24)
28	205	200	190	180	100	95*	120*	250*	-360*	-540*	-480*	-360*	-780*	-65*	65*	65*	90	90	85	70	60	60	60	50	111 (13)
29	50	50	40	50	50	50	50	50	55	65	70	85	90	95	80	85	90	150	190	120	85	70	70	85	78 (24)
30	55	55	55	60	60	80*	100*	95	100	100	90	100	110	100	80*	170*	240*	265	290	275	230	215	175*	110*	133 (17)
Mean	83 (16)	84 (13)	84 (17)	98 (16)	95 (21)	85 (15)	88 (14)	98 (13)	112 (12)	112 (15)	125 (16)	124 (12)	128 (13)	127 (15)	127 (13)	119 (13)	119 (15)	133 (17)	141 (19)	148 (17)	124 (16)	106 (18)	88 (15)	99 (14)	110 (365)

Mean for 0a days [122 (4)]

19 LERWICK Factor 2·68 DECEMBER 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean
1	55*	70*	85*	70*	55*	70*	80*	85*	80*	60*	80*	95*	110*	120*	170*	230*	210*	310	310*	250	275	250	265	205	261 (5)
2	205	180	155	90	130	170	155	125	125	55*	80*	115*	120	115	100	85	85	70	155	150	150	170	80	50	127 (21)
3	10*	55*	80	65	55	60	60	55	50	60	60	60	70	85	140	145	130	145	130	155	125	85*	65*	55	89 (20)
4	40*	35*	50	50*	55	60*	65*	65	80	70	110	60	60*	50*	70	55	65	60	80	95	110	80*	80*	70*	73 (14)
5	40*	55*	55*	35*	60*	30	35	70	50	110	155	155	35	40	55	50	35*	40*	40	50*	50*	25	25	50	62 (15)
6	50	35	50	35	50	55	55	55*	60*	35*	-10*	65*	80	85	70	60	70	60	70	50	55	55	55	50	57 (19)
7	50	50	40	35	40	50	50	50	60*	85	100	110	90	115*	110*	95*	100*	100*	80	110	85	70	50*	40*	68 (16)
8	35*	35*	60*	50	55*	35*	60*	65	25*	60*	70	65*	95*	-215*	55*	-120*	65	25*	80*	65	60	50	50	30	57 (8)
9	35	30	35	35	40	55	40	50	60	60	60	55	65	80	70	85*	60*	110	90	110	100	65	Z-*	65	62 (21)
10	0*	50*	40	50	50	55	50	-25*	35*	50	50	90	80*	65*	80	90	65	80	80	70	65	85	70	80	67 (18)
11	70	65	80	65	70	80	85	80	115	115	100	110	90	85	70	65	60	115	115	100	85	70	65	55	84 (24)
12	55	50	55	55	65	65	65	70	60	60	65	70	60	50	90	155	155	90	85	90	110	110	95	70	79 (24)
13	55	40	35	35	35	40	20*	50*	50*	80*	-85*	60	50*	55*	55	60	60	55	50	50	50	0*	40*	35*	49 (14)
14	35	35*	35*	35	25*	25*	40	50	50	30	50	50*	55	50*	40*	50*	50	60	55	50	50	50	35	35	46 (16)
15	40	35*	30*	20*	35*	40	35*	35*	35*	35*	40*	10*	40*	40	40	30*	60*	60*	50*	50	35	30	30	35	38 (9)
16	30	35	35	25	30	40	50	55	60	60	60*	70*	Z±*	95*	-10*	50	60	65	50	50	55	30	35*	50*	46 (18)
17	35*	25*	30	50*	80*	85*	115*	Z+*	Z±*	Z+*	Z±*	145*	110	110	85*	50*	60	60	60	60	50	50	35*	70*	66 (9)
18	95*	60*	60*	70*	155*	180*	190*	Z+*	-25*	Z+*	Z+*	Z+*	Z+*	300	Z±*	Z±*	Z+*	Z+*	Z±*	Z±*	Z+*	Z±*	Z+*	Z+*	300 (1)
19	Z±*	Z+*	Z+*	180	275	Z±*	Z+	130	-240*	Z±*	Z+*	190*	215*	240*	95*	Z±*	145*	205*	120*	145	120	115	Z+*	110	137 (2)
20	360*	Z+*	Z±*	180	275	Z±*	95	130	-240*	Z±*	Z+*	190*	145*	145*	145	130*	120	Z+*	145*	125*	120	115	115	110	141 (10)
21	115	95	95	95*	110*	100	95	95	110	100	150	215	145	190	155	145	155	150	145	145	145	125	150*	100	132 (21)
22	95*	85	85	85	70	80	80	80	65	95	120	160	230	175	125	115	110	120	110	120	120	110	120	110	112 (23)
23	85	95	120	125	140	120	95	25*	95*	0*	Z±*	Z±*	70	55	60*	85*	70*	90*	70*	65*	110	110	110	130	105 (13)
24	110	110	100	110	110	110	100	120	115	145	150	145	155	160	180	190	180	180	175	170	145	125	130	125	141 (24)
25	120	120	140	145	110	95	80	35*	-35*	-*	120*	110	150	120*	Z±*	Z±*	85*	180	Z±*	Z±*	180	Z-	205	110	134 (13)
26	Z±*	Z+*	180*	170	130	Z±*	190*	Z±*	Z+	Z±*	Z+*	Z+*	360	130	130*	Z+	Z±*	Z+*	Z+*	Z+*	60*	Z+*	155*	110*	198 (4)
27	80*	60*	60	70	60	60	35	60	60	Z±*	0*	-10*	-35*	-110*	-180*	-300*	Z-*	-110*	-240*	-155*	-95*	-60*	-50*	70*	58 (7)
28	80*	70*	65	60	60	65	65	65	80	70	70	85	110	95	95	115	120	120	125	120	120	130	145	175	98 (22)
29	205	175	130	85	125	110	-145*	-85*	25*	145*	155	150	130	120	60*	-170*	Z-*	Z±*	70*	180	130	120	Z±*	Z+*	140 (13)
30	70	180	Z±*	240*	190	215	90	95	Z±*	Z+	130	Z±*	170	155	85	85	80	85	85	85	25*	60*	65*	-70*	120 (15)
31	25*	25*	25*	-5*	-35*	-360*	20*	35*	80*	85	65	80	90	95	85*	115	85	90	85	90	85	80	70*	70	86 (13)
Mean	83 (16)	90 (15)	74 (20)	78 (20)	90 (21)	80 (21)	72 (20)	76 (18)	79 (14)	80 (15)	97 (17)	107 (16)	119 (20)	114 (19)	96 (17)	99 (16)	93 (19)	112 (20)	93 (20)	98 (22)	106 (26)	92 (22)	100 (16)	86 (22)	93 (452)

Mean for 0a days [98 (7)]

| Annual Mean | 91 (245) | 92 (248) | 89 (249) | 91 (238) | 95 (240) | 97 (233) | 103 (230) | 103 (236) | 107 (224) | 107 (230) | 107 (235) | 113 (224) | 116 (234) | 118 (237) | 121 (237) | 119 (237) | 119 (238) | 128 (236) | 123 (237) | 120 (240) | 115 (239) | 104 (240) | 104 (236) | 97 (248) | 107 (5691) |

Annual mean for 0a days [120]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

20 LERWICK   **1963**

| | JANUARY | | FEBRUARY | | MARCH | | APRIL | | MAY | | JUNE | |
	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	1b	0·8	1b	0·4	0a	0·0	2c	7·1	2c	5·4	0a	0·0
2	1b	0·3	1b	1·0	0a	0·0	1b	0·8	1c	2·4	0a	0·0
3	1b	0·5	1c	1·3	0a	0·0	1c	2·7	1a	0·5	1a	0·6
4	1b	0·2	1b	0·1	0a	0·0	1b	0·6	2b	4·4	1a	0·1
5	1b	1·0	1a	0·2	1b	0·9	0a	0·0	2c	8·4	2a	3·4
6	0a	0·0	1b	0·1	1a	0·7	0a	0·0	1b	1·1	2a	3·2
7	1b	0·1	1b	0·5	0a	0·0	0a	0·0	1b	1·9	1a	1·5
8	0a	0·0	0a	0·0	2b	4·6	2b	3·5	1b	0·6	2a	5·9
9	1a	0·1	1b	1·2	1a	2·2	1b	0·1	0a	0·0	2a	5·3
10	1a	0·1	0a	0·0	2b	4·7	1b	1·2	1b	2·2	0a	0·0
11	1b	(0·1)	0a	0·0	1b	1·7	1a	1·6	1b	2·2	1a	1·2
12	0a	0·0	1a	0·1	1a	1·3	2c	7·9	2b	4·2	0a	0·0
13	1b	0·7	1a	0·4	0a	0·0	1c	2·1	1a	0·2	0a	0·0
14	1a	0·1	0a	0·0	1a	1·4	1c	2·4	1a	0·1	0a	0·0
15	1b	0·3	0a	0·0	1b	1·6	1b	0·9	1a	0·7	1a	0·1
16	(1b)	(0·7)	0a	0·0	1b	1·8	1a	0·9	1a	0·2	1a	0·1
17	(0a)	(0·0)	1c	1·7	0a	0·0	1a	0·6	1b	1·7	1a	0·1
18	1a	0·1	1a	0·2	1b	2·7	1b	2·1	1b	1·5	2b	7·8
19	1a	0·7	1b	0·7	2b	5·6	2c	6·5	1b	1·8	1a	0·6
20	0a	0·0	0a	0·0	2b	7·8	0a	0·0	2b	5·7	1a	0·1
21	1b	0·1	1a	0·1	2b	9·1	2c	7·8	1a	0·4	1a	1·2
22	0a	0·0	1b	0·7	1b	1·1	1a	0·3	1a	1·2	1a	0·1
23	1b	1·4	1a	0·1	1a	0·3	1b	1·1	1b	0·2	0a	0·0
24	1a	2·5	0a	0·0	2a	9·5	0a	0·0	1b	2·7	2b	5·9
25	2c	4·2	1a	0·1	1b	2·0	1a	2·7	1a	0·1	1a	0·3
26	1a	0·2	0a	0·0	1b	0·4	1b	1·7	0a	0·0	2b	7·7
27	1b	0·3	0a	0·0	2b	4·2	1b	1·4	1a	0·3	1b	0·3
28	1b	1·7	0a	0·0	1b	0·6	2b	3·7	0a	0·0	1a	1·7
29	2b	4·3			0a	0·0	1b	1·6	0a	0·0	2a	4·4
30	2c	3·3			0a	0·0	1b	1·0	0a	0·0	2a	6·3
31	1a	0·2			1a	0·1			1a	0·5		
Total	–	24·0	–	8·9	–	64·2	–	62·3	–	50·6	–	57·9
No. of days used	–	31	–	28	–	31	–	30	–	31	–	30
Mean	–	0·8	–	0·3	–	2·1	–	2·1	–	1·6	–	1·9

| | JULY | | AUGUST | | SEPTEMBER | | OCTOBER | | NOVEMBER | | DECEMBER | |
	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	1a	0·9	1a	1·9	0a	0·0	1b	2·2	1a	0·1	1a	0·2
2	2a	9·1	2a	3·7	1a	0·2	1b	1·2	(1)b	1·6	1a	0·1
3	1a	1·8	2a	3·3	1b	2·9	(1b)	2·8	1a	0·4	1a	0·1
4	1a	2·1	1a	0·3	1b	0·9	2b	3·8	0a	0·0	0a	0·0
5	1a	2·5	1b	1·5	2b	4·5	2c	6·1	1b	1·0	0a	0·0
6	1a	1·2	1a	0·4	1a	0·2	1a	1·4	2c	10·7	1a	0·6
7	1a	0·8	1b	1·1	0a	0·0	0a	0·0	2c	22·8	1a	0·1
8	1a	1·5	1a	0·1	2b	3·3	1b	2·8	2b	8·4	1b	2·3
9	1a	0·5	1a	0·2	1b	0·3	2c	6·1	1b	0·7	1b	0·5
10	1a	0·5	1a	0·7	1b	1·3	2b	5·7	1a	0·2	1a	0·6
11	1b	2·1	1a	0·1	1b	1·4	2b	5·1	2a	6·9	0a	0·0
12	1b	1·6	1a	0·5	1a	0·1	2b	7·1	2c	7·4	0a	0·0
13	1b	0·9	1a	0·1	1b	1·3	1b	3·0	1a	1·3	1a	1·3
14	1b	0·7	0a	0·0	1b	0·8	1a	0·7	2c	8·9	1a	0·8
15	1b	0·5	1b	3·0	1b	1·6	1b	1·3	2c	9·1	1a	1·5
16	1b	0·2	1a	0·5	1a	0·4	1b	0·5	1b	1·0	1b	0·6
17	1a	0·7	0a	0·0	1a	3·0	1a	0·1	1c	0·6	1b	0·6
18	1b	2·6	0a	0·0	0a	0·0	1b	1·2	1a	1·6	1c	2·1
19	2c	5·5	1a	0·6	0a	0·0	1a	2·2	1b	1·3	1c	1·6
20	1a	1·3	1b	2·2	1a	0·2	1b	1·1	1a	0·2	1c	1·5
21	1a	0·8	1a	2·1	0a	0·0	1a	2·1	2c	5·3	0a	0·0
22	1b	1·1	1a	0·1	1a	0·2	1b	0·4	2c	5·3	0a	0·0
23	2b	6·4	0a	0·0	1a	0·1	0a	0·0	1b	0·4	1b	1·7
24	1a	2·4	1b	1·4	2c	3·4	0a	0·0	2b	6·5	0a	0·0
25	1a	2·3	1a	0·2	1b	1·0	1a	0·1	1a	0·6	2c	3·1
26	0a	0·0	1b	0·6	2c	12·6	0a	0·0	0a	0·0	1c	2·2
27	1a	0·1	2a	3·4	2c	5·5	1a	0·3	0a	0·0	2b	10·7
28	1a	0·1	1a	0·6	1b	1·2	0a	0·0	2b	4·4	1a	0·1
29	0a	0·0	0a	0·0	2b	5·8	0a	0·0	0a	0·0	2c	4·3
30	1a	0·1	0a	0·0	1b	2·6	0a	0·0	1a	0·2	1b	1·2
31	0a	0·0	0a	0·0			0a	0·0			1b	2·6
Total	–	50·3	–	28·6	–	54·8	–	57·3	–	106·9	–	40·4
No. of days used	–	31	–	31	–	30	–	31	–	30	–	31
Mean	–	1·6	–	0·9	–	1·8	–	1·8	–	3·6	–	1·3

Annual values: Character   0   1   2   Duration: Total 606·2 hr.
No. of days used   77   226   62   No. of days 365
Mean 1·66 hr.

ESKDALEMUIR

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H)   16,000γ (0·16 C.G.S. unit) +   JANUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 19,000γ+
1	837	834	834	834	840	844	848	845	846	839	834	835	838	845	843	839	830	833	833	832	834	838	839	844	838	1118
2 q	839	838	839	841	842	843	845	846	844	839	838	838	843	850	853	852	848	845	848	849	850	848	849	846	845	1273
3	844	843	844	848	851	853	853	851	850	848	843	842	843	844	849	850	850	850	849	850	849	848	847	844	848	1343
4	845	845	845	848	851	855	856	856	857	853	853	851	856	852	845	827	826	813	814	819	831	834	835	838	842	1205
5	839	839	840	842	844	848	852	855	843	838	837	833	832	836	838	838	836	836	839	840	841	841	847	845	841	1179
6 q	844	844	845	847	847	848	848	849	847	843	841	839	842	848	851	850	850	851	850	850	850	850	850	847	847	1331
7	842	847	848	841	846	848	857	861	862	855	849	861	842	847	850	849	834	823	832	839	842	843	842	840	846	1300
8	839	840	842	840	843	847	846	846	850	843	838	838	837	835	838	843	845	847	847	846	847	849	849	842	843	1237
9 q	843	844	843	846	846	850	853	856	855	852	842	840	841	843	845	846	846	850	853	852	852	851	850	845	*848*	1344
10	849	848	848	846	850	850	853	853	853	850	846	842	838	838	837	841	845	846	848	848	849	847	847	847	846	1308
11	846	846	847	850	849	850	856	861	862	857	853	853	853	856	852	853	850	846	810	805	837	845	842	842	847	1321
12	843	842	842	840	842	849	850	850	850	843	838	835	835	841	843	847	848	850	850	850	852	847	849	846	845	1282
13 d	844	836	835	846	883	872	860	861	845	836	832	818	835	836	812	830	843	809	826	831	842	843	855	859	842	— 1209
14 d	833	840	836	837	844	850	851	845	836	826	804	811	834	827	802	812	830	824	816	839	824	830	842	839	831	932
15 d	866	841	831	823	823	842	830	840	829	801	820	823	827	820	834	838	836	838	838	829	852	838	836	838	833	993
16	854	855	838	838	839	843	846	841	823	836	830	828	825	834	811	809	829	836	846	831	842	814	832	835	834	1015
17	834	832	835	839	842	830	832	841	823	834	827	830	834	833	835	845	838	812	835	831	841	833	854	842	835	1032
18	839	850	843	843	849	850	851	851	838	835	822	827	828	831	835	846	834	838	839	853	852	842	831	852	841	1179
19	824	836	832	839	837	839	840	846	828	822	828	832	827	832	803	826	834	836	831	830	830	845	840	831	832	968
20	832	835	835	840	840	846	843	842	830	833	829	828	832	836	837	847	845	844	843	841	855	837	840	840	838	—1110
21	842	839	838	839	845	846	850	851	847	844	837	832	835	842	845	845	844	845	845	843	843	846	846	844	843	1233
22	842	844	843	844	846	851	855	851	845	838	834	832	836	843	846	843	842	842	839	840	838	842	840	837	842	1213
23	848	839	842	840	842	852	855	850	846	841	838	831	832	840	842	839	843	843	840	838	838	842	851	844	842	1216
24	844	844	844	846	848	854	855	852	848	848	838	833	840	845	851	855	855	839	838	832	820	815	830	831	842	1205
25	831	838	834	834	841	841	844	846	836	831	826	324	828	834	832	832	828	835	838	840	834	842	841	841	835	1051
26	842	843	842	845	847	846	846	846	841	836	835	835	838	842	842	843	844	845	844	844	844	844	843	843	843	1222
27 q	844	847	847	846	849	851	851	854	851	842	838	841	848	852	852	850	846	847	845	846	843	844	844	844	847	1322
28 q	844	845	848	850	851	851	851	850	850	845	843	844	851	855	852	846	844	846	846	846	846	847	847	845	848	1343
29	846	847	849	851	851	852	851	851	850	844	840	840	843	852	852	851	846	846	849	851	839	827	821	815	844	1261
30 d	843	839	838	848	855	875	859	862	853	810	831	831	824	827	832	820	821	825	839	846	809	792	807	810	833	996
31 d	793	797	810	846	892	881	820	804	796	760	764	784	796	812	791	811	800	793	767	779	803	819	817	820	*806*	355
Mean	841	841	840	842	847	*850*	849	849	843	836	*833*	833	836	840	837	839	839	837	837	837	839	838	841	841	840	
Sum 25,000+	1055	1057	1033	1114	1271	1357	1307	1312	1128	918	828	834	922	1028	949	1018	1010	936	941	958	1017	977	1057	1069		Grand Total 625,096

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D)   10° +   JANUARY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 200·0′+
1	11·0	11·1	11·9	11·5	12·4	12·4	12·0	12·0	12·0	12·5	13·4	13·6	15·6	16·3	15·7	14·9	15·5	14·2	12·4	11·9	10·7	11·2	11·0	11·1	12·8	106·3
2 q	11·9	12·0	12·0	12·4	12·5	12·7	12·8	12·4	12·1	12·3	12·7	13·7	15·3	15·2	14·3	13·7	13·1	13·2	12·9	12·8	12·4	11·7	11·8	11·9	12·8	107·8
3	11·8	11·9	12·0	12·2	12·6	12·5	12·4	12·2	12·1	12·7	13·5	14·3	15·5	15·6	13·9	13·7	13·7	13·8	13·9	13·5	12·7	12·1	11·7	11·6	13·0	111·9
4	10·1	10·7	12·1	13·2	13·4	13·6	13·2	12·5	11·9	12·3	13·7	14·7	17·0	16·1	15·4	15·0	19·3	17·1	16·7	11·3	11·5	12·1	11·5	12·2	*13·6*	126·1
5	12·6	12·9	13·2	13·2	13·4	13·6	13·2	12·5	11·9	12·3	14·1	15·7	16·8	17·2	15·4	14·1	13·6	13·1	13·2	12·8	12·3	11·8	11·3	12·4	13·4	122·8
6 q	12·4	12·8	12·8	12·8	12·9	12·8	12·6	12·2	12·1	12·2	12·9	13·8	15·2	15·4	14·7	13·9	13·4	13·3	13·1	13·0	12·9	12·5	12·3	12·9	13·1	114·9
7	12·1	13·8	11·1	12·8	12·4	12·9	13·8	13·0	12·0	12·1	13·0	13·8	15·5	16·9	15·9	15·9	15·8	13·7	14·7	13·1	12·0	12·0	11·8	11·8	13·4	121·9
8	12·0	12·0	12·3	13·0	12·1	12·1	9·4	12·1	12·0	11·2	12·0	13·2	15·7	16·4	15·2	13·9	13·8	13·8	13·7	13·1	10·9	10·1	10·7	11·8	13·0	103·3
9 q	12·2	12·9	13·0	13·0	13·1	12·6	12·5	12·1	12·0	12·1	12·8	13·9	16·0	15·8	14·9	14·0	13·5	13·4	12·9	12·3	12·1	12·0	11·8	11·3	13·0	112·2
10	10·9	11·4	11·1	11·8	12·1	12·1	12·8	12·2	11·9	11·3	12·0	12·7	14·9	16·1	16·0	15·0	13·9	13·4	13·1	12·6	12·1	12·1	12·1	12·1	12·7	105·7
11	12·8	12·8	13·0	13·1	13·0	13·1	13·0	12·3	12·0	11·9	12·1	13·4	15·2	17·1	16·9	15·4	15·1	15·6	13·7	11·0	11·9	12·2	11·9	12·1	13·4	120·6
12	12·7	13·0	12·7	12·1	13·2	13·1	12·6	12·1	11·3	11·9	11·9	12·7	14·7	15·5	14·8	14·1	13·9	15·3	15·5	13·9	13·1	7·2	8·1	9·6	12·7	104·3
13 d	11·3	1·6	10·3	12·7	12·4	12·6	14·9	19·1	14·7	16·7	14·7	13·3	15·4	15·1	14·8	12·0	13·2	11·0	9·8	12·2	10·2	9·4	6·2	8·2	12·2	91·8
14 d	7·0	8·7	9·3	13·3	11·0	14·7	12·2	13·1	12·4	12·1	12·3	10·0	13·8	16·3	16·0	15·1	5·4	6·8	10·2	-3·7	4·1	10·4	10·9	11·0	*10·5*	52·4
15 d	12·7	9·9	10·9	13·0	19·1	19·6	16·0	14·9	16·3	15·4	15·0	13·3	13·3	15·4	13·2	13·0	13·4	12·8	12·1	11·3	5·6	7·2	9·0	11·2	13·1	113·6
16	12·7	14·1	8·6	10·1	11·1	11·3	12·7	12·7	13·9	14·7	13·7	13·6	13·3	14·3	10·4	6·4	12·2	13·2	13·3	10·0	-6·8	3·1	8·6	10·3	10·7	57·5
17	8·2	12·2	11·8	12·0	11·5	13·0	17·2	18·5	13·2	14·1	13·4	13·6	14·5	14·7	12·6	12·8	12·8	4·1	11·7	12·4	10·7	9·6	9·4	10·4	12·3	94·4
18	11·3	13·1	11·9	10·4	11·3	12·2	12·0	12·4	11·9	11·8	13·2	13·9	16·0	16·0	12·9	13·0	13·3	11·8	12·7	10·2	9·4	7·6	3·4	10·6	11·7	81·1
19	11·8	10·9	10·0	11·3	12·2	13·0	13·8	12·9	11·8	11·1	12·4	13·0	15·1	16·1	15·0	14·0	14·0	6·7	11·2	13·0	10·3	2·9	6·7	6·5	11·5	75·7
20	11·0	13·0	12·9	12·4	12·7	12·3	12·6	13·2	13·3	13·9	12·2	13·4	16·7	15·6	13·6	13·0	12·8	12·7	12·4	12·3	11·3	10·8	11·0	12·0	12·8	107·1
21	12·2	11·7	11·9	12·2	11·8	11·5	11·3	11·4	11·2	11·0	11·1	12·6	14·6	15·3	14·2	13·3	12·8	12·7	12·5	12·4	12·1	12·3	12·6	12·8	12·4	97·5
22	12·7	13·4	12·5	12·4	12·0	12·8	12·6	12·2	12·1	11·4	12·1	12·8	14·7	15·1	14·0	13·3	13·4	13·4	13·4	13·1	12·4	12·0	12·1	12·0	12·9	108·8
23	11·4	10·6	10·5	10·3	12·3	12·4	13·1	12·4	11·9	11·8	13·2	13·9	15·4	16·3	14·4	13·5	13·3	13·2	13·1	11·6	12·4	9·9	12·1	12·0	12·5	99·3
24	12·1	12·9	13·3	13·7	13·6	13·4	12·3	12·2	11·5	12·2	13·0	13·1	15·8	16·4	15·2	13·6	13·4	14·4	13·6	13·3	9·5	5·2	6·6	8·9	12·5	99·2
25	7·5	9·7	10·2	13·4	13·9	13·4	12·3	11·8	10·7	11·3	12·3	13·9	16·3	15·7	14·4	13·9	13·1	12·3	8·5	10·4	11·4	12·0	12·3	12·4	12·2	93·1
26	12·4	12·3	12·5	13·1	13·3	13·1	12·4	12·0	11·5	12·2	12·7	13·9	14·8	14·8	13·6	13·3	13·3	13·2	13·1	12·4	12·5	12·2	12·4	12·5	12·9	109·4
27 q	12·5	12·7	13·2	13·1	13·2	13·3	12·5	12·2	11·9	13·0	14·3	15·1	15·7	15·1	13·4	12·5	13·1	13·1	12·7	12·4	12·4	12·4	12·6	13·1	13·3	115·0
28 q	12·8	13·2	13·1	13·3	13·0	13·4	13·0	12·4	12·9	13·4	14·1	14·7	15·2	15·1	13·3	13·3	14·0	13·6	13·4	13·1	12·5	12·4	12·2	12·7	13·3	120·1
29	12·6	12·6	12·5	13·1	13·2	12·5	13·5	14·4	16·0				16·5	16·0	15·3	15·1	15·1	15·1	14·3	13·3	11·0	8·0	6·1	7·6	13·0	111·9
30 d	9·7	9·4	12·3	9·9	11·1	8·5	9·7	12·3	14·4	14·1	18·7	17·3	20·6	15·6	17·7	20·9	19·9	16·0	11·7	13·9	8·5	4·1	5·3	-0·2	12·6	101·4
31 d	-3·7	-8·2	-11·9	-8·0	-5·2	11·4	19·2	22·8	19·6	22·9	21·0	18·7	16·1	17·6	20·9	15·6	11·2	14·6	12·2	9·4	11·8	12·6	11·5	10·6	10·9	62·7
Mean	11·0	11·0	11·1	11·7	12·2	12·9	13·1	13·1	12·6	13·0	13·5	13·9	15·5	*15·8*	14·8	13·9	13·7	12·9	12·8	11·8	10·5	*10·1*	10·1	10·8	12·6	
Sum 300·0+	40·7	41·1	43·0	62·3	77·8	98·4	105·3	105·8	90·3	102·2	116·8	131·3	181·2	190·1	158·0	131·2	124·3	100·6	97·7	64·5	25·0	12·4	14·6	35·0	13·1	Grand Total 9349·6

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

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23 ESKDALEMUIR (Z) 45,000γ (0·45 C.G.S. unit) + JANUARY 1963

Day	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	413	413	412	411	410	409	410	410	407	409	410	409	404	408	413	416	418	419	421	421	419	416	414	411	413	903
2 q	410	411	411	411	411	411	410	410	410	410	410	406	404	405	409	410	411	411	410	410	409	410	410	410	410	830
3	410	410	408	407	406	406	406	405	405	405	405	403	399	403	407	406	408	409	409	410	410	410	410	410	407	768
4	409	406	405	405	405	405	405	406	406	407	406	405	397	404	408	416	420	431	439	439	430	421	417	415	413	907
5	411	410	410	409	408	407	407	407	410	414	412	404	404	409	411	413	413	414	413	412	412	412	410	410	410	842
6 q	408	407	407	406	406	406	407	407	409	410	411	410	409	410	410	406	406	406	406	406	406	407	406	406	407	778
7	406	404	399	400	400	400	400	403	403	404	405	406	404	404	406	410	414	421	417	417	416	412	411	411	407	773
8	410	408	406	405	405	405	406	405	405	409	408	406	405	406	411	411	410	409	409	410	411	410	409	410	408	789
9 q	410	408	406	405	405	405	404	404	404	400	406	406	405	404	406	407	406	405	405	405	406	406	405	406	405	729
10	405	404	404	401	400	400	400	401	400	400	400	400	399	402	407	409	406	406	406	405	405	405	405	405	403	675
11	405	405	405	404	404	403	400	399	399	399	399	394	393	396	400	401	403	405	424	440	427	417	414	411	406	747
12	410	410	409	408	406	404	404	404	404	404	404	403	400	402	405	407	406	406	406	407	407	414	414	410	406	754
13 d	407	400	389	383	365	372	383	388	394	395	400	406	405	405	413	417	414	423	418	417	412	408	386		401	623
14 d	387	385	389	393	390	388	394	399	403	406	411	418	411	411	418	429	435	430	428	423	409	410	404	404	407	775
15 d	395	392	399	400	381	377	383	395	398	405	406	409	411	416	418	418	416	415	415	418	415	412	411	407	405	712
16	398	370	379	394	399	400	401	403	406	403	404	406	409	408	422	438	428	416	413	416	422	409	393	387	405	724
17	392	395	399	400	400	404	397	399	409	410	410	408	407	408	413	412	415	430	418	417	414	411	405	402	407	775
18	400	396	394	398	396	393	397	399	403	406	406	403	399	405	411	410	413	415	413	411	409	404	397	375	402	653
19	365	382	395	400	403	404	403	405	410	413	414	412	409	416	425	427	423	429	424	424	428	422	410	404	410	847
20	403	402	406	406	406	406	407	407	409	406	408	406	403	408	414	413	411	410	410	410	411	412	411	411	408	796
21	410	410	410	408	406	406	406	406	406	405	405	406	406	408	411	411	411	411	412	412	411	411	409	409	409	806
22	409	407	406	406	406	405	405	406	409	411	410	408	407	408	409	408	408	409	411	412	412	412	412	412	409	808
23	405	401	404	403	402	402	402	404	405	406	407	407	407	409	411	411	411	411	410	411	412	412	406	406	407	765
24	406	405	405	404	404	401	401	401	402	402	405	407	406	406	406	405	406	409	412	416	427	434	407	393	407	770
25	395	400	402	404	405	406	406	406	406	406	407	405	404	411	416	415	416	414	415	416	411	409	409	409	408	793
26	411	410	409	407	406	406	406	406	406	405	405	406	406	409	412	412	412	411	408	409	407	407	407	407	408	790
27 q	407	407	407	406	406	405	405	405	405	405	406	407	406	406	407	407	408	409	408	407	406	406	406	406	406	753
28 q	407	407	407	406	406	406	405	405	402	401	404	401	401	405	411	411	409	408	408	407	407	406	406	406	406	742
29	406	406	406	406	405	405	405	405	404	402	401	400	400	400	402	402	405	407	407	411	419	423	426	408	407	761
30 d	406	405	405	397	394	384	386	387	388	396	393	397	404	424	430	427	429	433	432	421	429	452	434	404	411	857
31 d	389	372	373	365	341	323	326	339	356	382	396	412	429	443	493	511	512	516	500	476	445	430	425	421	416	975
Mean	403	401	402	402	400	399	399	401	403	404	406	406	405	408	414	416	416	418	417	417	415	414	410	405	408	
Sum 12,000+	505	448	466	459	387	354	377	426	483	537	574	576	553	659	835	896	903	948	932	917	869	833	711	572		Grand Total 303,220

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR All Times G.M.T. JANUARY 1963

Day	GEOMAGNETIC ELEMENTS Horizontal component Maximum 16,000γ + h. m.	γ	Minimum 16,000γ + γ	h. m.	Range γ	Declination Maximum 10° + h. m.	′	Minimum 10° + ′	h. m.	Range ′	Vertical component Maximum 45,000γ + h. m.	γ	Minimum 45,000γ + γ	h. m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+ °A.
1	08 28	852	822	16 20	30	12 59	17·0	10·1	20 21	6·9	18 30	421	403	12 30	18	1,1,2,1,0,2,1,1	9	0	83·8
2 q	15 07	856	838	11 55	18	12 50	15·7	10·9	21 52	4·8	17 28	411	403	12 18	8	0,0,0,0,0,1,0,0	1	0	83·9
3	05 43	857	839	12 40	18	12 50	15·8	11·1	23 48	4·7	16 30	410	399	12 25	11	0,1,0,0,0,0,0,0	1	0	83·9
4	13 09	857	804	17 13	53	16 54	22·3	7·9	00 49	14·4	19 30	440	394	12 42	46	2,0,1,0,2,3,3,0	11	1	83·8
5	07 42	858	807	12 09	51	13 07	18·2	9·3	21 49	8·9	17 40	414	403	12 17	11	0,0,1,1,1,0,0,2	5	0	83·9
6 q	17 40	853	837	11 04	16	13 04	15·9	11·9	08 51	4·0	10 20	411	405	05 20	6	0,0,0,0,0,0,0,1	1	0	83·8
7	07 48	865	811	17 10	54	13 43	17·6	9·2	17 30	8·4	17 30	424	398	02 01	26	2,1,0,1,1,3,1,0	9	1	83·7
8	22 08	858	834	12 20	24	13 29	16·7	7·9	21 40	8·8	14 40	412	404	12 30	8	0,0,0,1,0,0,2,2	5	0	83·7
9 q	07 20	857	838	11 57	19	12 16	16·8	10·7	23 59	6·1	15 30	410	402	13 02	8	0,0,0,0,1,0,0,1	2	0	83·7
10	08 05	858	835	14 32	23	14 10	16·9	10·2	00 38	6·7	14 55	410	399	12 40	11	1,1,1,1,1,0,0,0	5	0	83·7
11	14 37	866	789	19 28	77	14 00	18·5	9·2	19 35	9·3	19 28	443	392	11 53	51	0,0,0,1,2,2,3,1	9	1	83·7
12	23 03	867	833	12 05	34	18 21	16·1	4·6	21 40	11·5	21 42	417	399	13 00	18	0,1,1,0,1,1,1,3	8	1	83·5
13 d	22 40	904	780	11 03	124	07 34	21·8	−11·2	01 26	33·0	17 52	429	358	04 38	71	5,4,3,4,3,4,3,4	30	2	83·6
14 d	19 19	912	758	11 08	154	14 00	18·5	−19·8	20 14	38·3	19 10	440	382	01 12	58	3,3,4,4,4,5,3	28	1	83·4
15 d	00 50	885	791	09 24	94	06 01	27·0	−1·0	20 04	28·0	20 00	423	374	06 17	49	4,4,4,3,3,2,4,3	27	1	83·5
16	20 30	882	790	14 30	92	09 01	17·5	−12·8	20 18	30·3	15 29	441	367	01 39	74	3,2,3,2,4,4,5,4	27	1	83·5
17	23 22	872	788	17 25	84	06 26	18·9	−5·2	17 32	24·1	17 39	435	389	06 40	46	2,3,4,2,2,4,3,3	23	1	83·5
18	23 31	901	792	23 12	109	13 20	17·3	0·8	22 52	16·5	16 52	417	357	23 59	60	2,1,2,2,3,3,5	20	1	83·3
19	17 40	871	784	14 11	87	15 03	17·1	0·7	17 24	16·4	17 24	434	358	00 01	76	3,1,2,3,4,4,2,3	22	1	83·2
20	06 06	850	822	10 14	28	12 33	17·3	8·3	00 13	9·0	14 42	417	400	01 10	17	2,1,2,2,2,0,1,1	11	1	83·4
21	07 29	855	839	19 43	16	13 30	15·5	10·7	21 00	4·8	21 10	412	405	05 50	7	0,1,1,1,1,1,1,1	7	0	83·2
22	06 03	859	829	11 29	30	13 27	16·0	9·6	23 52	6·4	20 45	415	404	06 05	11	1,0,1,1,1,1,2,1	8	1	82·9
23	22 21	863	826	12 00	37	13 27	18·0	7·6	22 17	10·4	21 12	414	400	00 58	14	3,2,2,2,2,1,1,3	16	1	82·9
24	22 32	866	792	22 04	74	13 28	17·1	0·1	22 26	17·0	21 20	441	391	23 07	50	1,1,1,2,1,2,3,4	15	1	82·9
25	18 58	858	815	18 37	43	12 52	17·3	3·6	18 51	13·7	18 42	418	392	00 01	26	2,1,1,1,1,2,3,1	12	1	83·1
26	04 21	851	829	11 10	22	13 29	24·6	11·3	19 40	13·3	15 05	412	405	09 29	7	0,0,0,1,0,0,1,0	2	0	83·0
27 q	07 30	855	835	10 29	20	12 19	16·7	11·4	08 54	5·3	17 01	410	403	07 42	7	0,0,0,0,1,0,0,0	1	0	83·1
28 q	13 51	858	839	10 57	19	12 46	16·1	11·2	22 16	4·9	14 50	412	400	12 10	12	0,0,0,0,0,0,0,1	1	0	83·0
29	23 30	863	799	22 14	64	12 36	17·6	3·1	22 01	14·5	22 21	431	399	12 45	32	0,0,0,0,1,1,3,4	9	1	83·0
30 d	05 13	882	750	21 30	132	12 49	24·5	−5·2	23 53	29·7	21 34	457	383	05 30	74	3,3,3,3,4,3,4,5	28	1	83·1
31 d	04 39	909	751	18 31	158	09 54	25·4	−14·4	02 18	39·8	17 18	526	318	05 52	208	4,5,3,3,5,4,3,1	28	1	83·1
Mean	− −	868	809	− −	58	− −	18·4	3·9	− −	14·5	− −	426	390	− −	36	−	−	0·65	83·4

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H)   16,000γ (0·16 C.G.S. unit) +   FEBRUARY 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 19,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	824	821	823	826	827	829	831	833	825	831	820	825	823	811	814	814	812	810	807	811	813	812	853	821	821	716
2 q	831	833	834	838	838	838	839	836	837	838	837	838	843	846	847	844	841	841	843	841	838	840	840	839	839	1140
3	839	839	839	840	843	843	844	842	835	833	832	832	836	840	836	839	836	836	840	841	844	846	846	845	839	1146
4	844	844	845	846	849	850	850	848	843	835	833	833	835	842	848	848	852	847	834	843	842	843	843	846	843	1243
5	844	844	844	846	847	846	848	847	844	835	829	821	817	824	827	835	840	846	846	847	842	840	844	844	839	1147
6	846	846	843	844	847	852	851	854	853	849	844	842	838	835	834	838	840	846	846	848	846	847	846	846	845	1281
7	846	844	847	849	850	853	855	855	852	844	843	836	836	835	838	843	843	847	849	850	844	841	839	843	845	1282
8 q	844	844	846	845	846	851	851	851	853	855	856	855	855	854	851	849	846	849	850	851	850	849	849	850	850	1400
9	851	851	853	853	854	855	855	855	855	857	858	863	867	868	866	860	859	863	858	862	869	858	851	809	856	1550
10 d	788	798	809	827	829	843	846	812	830	824	824	827	809	819	831	824	815	823	810	818	829	850	826	831	823	742
11 d	836	837	828	827	828	820	838	846	840	817	825	829	817	836	839	828	828	835	836	831	839	830	840	846	832	976
12 d	842	849	850	839	832	843	835	836	812	839	840	839	834	839	839	846	842	844	835	838	840	848	843	846	840	1150
13 d	849	839	831	827	827	843	816	829	831	829	827	821	811	827	839	834	825	834	839	865	815	828	856	860	833	1002
14 d	844	827	825	827	822	833	846	842	800	850	843	831	828	823	827	829	841	842	843	853	856	844	843	851	836	1070
15	840	839	836	841	844	846	844	848	844	840	838	835	832	822	834	843	840	840	844	843	843	844	844	846	840	1170
16	843	843	842	842	844	845	845	845	846	848	846	848	845	839	839	835	826	836	844	848	849	848	847	847	843	1240
17	846	846	846	846	846	852	852	854	853	851	849	843	838	840	844	843	843	847	852	852	853	851	849	851	848	1347
18	850	850	850	850	851	851	856	859	856	851	850	849	849	850	848	848	843	849	852	855	852	855	855	856	851	1435
19 q	853	851	851	853	854	858	859	861	863	861	858	855	853	856	855	853	851	852	856	858	861	861	858	857	856	1548
20	856	857	858	861	859	862	865	869	866	863	853	851	850	850	846	845	850	850	854	855	848	844	838	827	853	1477
21	843	845	847	850	850	852	850	848	847	844	849	850	847	847	846	850	831	835	836	845	848	846	841	847	846	1294
22	847	848	846	847	849	847	850	850	843	845	846	846	842	848	850	848	844	847	841	850	850	861	851	851	848	1347
23	851	852	854	855	858	859	861	861	861	859	858	851	844	855	851	847	826	839	843	850	851	852	851	851	852	1440
24 q	852	851	851	849	850	853	855	857	857	854	848	843	841	844	847	848	848	849	851	855	855	857	855	851	851	1421
25	852	859	854	848	848	851	853	855	857	854	851	849	851	849	853	852	846	849	850	854	855	855	854	853	852	1452
26	853	852	852	853	856	858	861	865	860	847	843	843	843	844	844	839	839	844	852	853	851	851	854	850	850	1407
27 q	850	851	851	852	855	856	855	856	857	851	849	848	851	852	853	851	851	851	851	853	854	852	851	855	852	1456
28	855	858	851	853	858	857	859	861	859	848	850	850	848	852	847	854	854	855	856	857	858	860	858	844	854	1502
Mean	843	843	843	844	845	848	849	849	846	845	843	841	839	841	843	842	840	843	843	847	846	847	847	846	844	
Sum 23,000+	619	618	606	634	661	746	770	775	679	652	599	553	483	547	593	587	512	610	619	720	691	707	714	686		Grand Total 567,381

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D)   10° +   FEBRUARY 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 2000·0′+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	10·2	9·8	10·7	11·1	11·4	11·5	11·5	11·5	15·3	16·9	17·0	18·8	17·1	18·3	16·8	14·4	13·4	11·6	10·9	11·4	8·9	5·9	9·6	11·2	12·7	105·2
2 q	11·8	11·9	11·6	11·9	12·2	12·4	12·3	12·4	13·5	14·3	14·7	14·9	15·2	14·5	13·3	12·4	12·6	13·1	12·6	12·8	10·7	12·4	12·3	11·7	12·8	107·5
3	11·7	12·2	12·4	12·1	11·6	11·8	11·4	11·0	11·7	13·6	15·2	16·3	17·2	17·0	15·2	13·5	13·0	12·3	12·1	11·5	11·5	12·3	12·2	12·4	13·0	111·2
4	12·9	13·0	12·6	12·6	12·3	12·0	11·7	11·4	11·3	12·3	13·4	14·4	16·0	16·9	16·3	14·4	14·3	14·5	14·9	13·9	8·9	10·3	11·7	12·2	13·1	114·2
5	12·2	12·2	12·3	12·3	12·1	11·9	11·3	11·0	10·6	11·2	12·0	14·0	15·5	16·8	16·9	17·8	15·2	13·5	12·7	12·3	11·4	10·4	10·7	11·5	12·8	107·8
6	11·6	12·2	13·2	13·1	12·8	12·1	12·1	11·6	10·9	10·7	12·0	13·7	15·7	16·2	17·1	16·2	16·2	14·3	13·3	12·3	12·0	11·2	11·1	11·6	13·1	113·2
7	12·0	12·2	13·1	13·2	12·9	12·5	12·3	11·8	11·2	10·6	11·4	12·2	14·1	14·9	15·1	14·1	13·8	13·4	13·2	13·1	10·5	10·8	9·6	10·9	12·5	98·9
8 q	11·6	11·9	12·2	12·1	12·4	12·4	12·3	12·2	12·3	12·2	13·0	13·3	13·7	14·0	14·0	13·0	12·9	12·8	12·5	12·3	12·2	12·2	12·1	12·1	12·6	101·7
9	12·3	12·4	12·5	12·5	12·5	12·6	12·4	12·4	12·8	13·4	13·4	13·7	13·6	13·5	13·3	12·2	13·4	14·3	14·3	14·3	14·1	11·4	7·8	-1·3	12·2	93·8
10 d	0·3	1·4	5·5	5·0	7·7	5·4	11·6	14·3	16·1	14·7	15·1	16·8	18·6	14·7	14·8	14·3	8·9	10·1	8·1	1·2	4·6	10·7	7·8	15·4	10·1	43·1
11 d	16·2	15·3	13·3	12·7	12·4	14·5	12·1	11·4	11·5	12·3	12·9	14·9	15·2	14·9	15·4	13·7	6·2	10·7	12·4	6·7	3·0	7·1	11·4	13·6	12·1	89·8
12 d	13·2	19·1	15·2	9·4	12·0	13·6	14·6	14·5	14·5	15·0	15·5	15·9	15·6	14·6	13·2	13·3	12·9	11·5	8·8	6·7	7·6	7·2	8·5	10·2	12·6	102·6
13 d	12·1	12·4	14·4	15·1	14·1	14·7	12·5	16·1	15·0	15·4	15·1	15·8	15·0	15·8	15·2	6·7	5·1	6·1	10·6	-3·9	5·2	11·5	7·4	9·8	11·5	77·2
14 d	7·6	9·8	11·5	11·4	13·5	13·9	12·8	12·7	16·2	13·3	14·1	15·2	14·8	15·2	13·3	11·0	8·9	11·7	10·8	9·7	8·9	11·5	11·3	9·6	12·0	88·7
15	11·2	11·3	11·7	12·0	11·9	12·0	12·0	12·0	12·7	12·8	14·1	14·7	15·8	14·8	13·4	12·8	12·4	11·5	10·7	12·6	12·3	11·8	11·7	11·5	12·5	99·7
16	11·5	11·5	11·4	11·5	11·7	11·7	11·6	11·7	12·1	13·1	13·1	13·6	14·2	13·5	13·4	13·3	9·7	12·4	13·3	12·5	12·4	12·3	11·9	11·8	12·3	95·2
17	11·7	11·7	11·7	11·8	11·9	11·8	12·1	12·4	13·3	12·9	12·7	13·5	14·3	14·5	14·4	13·6	13·3	12·8	12·7	12·6	12·3	12·0	11·4	12·7	104·0
18	11·6	11·7	11·6	11·7	11·6	12·0	12·2	12·4	12·4	12·7	13·5	14·4	15·2	15·3	14·6	13·6	12·1	12·6	13·0	13·4	12·7	12·5	12·4	12·2	12·8	107·4
19 q	11·9	11·8	12·2	12·2	12·3	12·3	12·1	12·1	12·0	11·6	12·1	13·3	14·0	14·5	14·3	13·7	13·6	13·5	13·4	13·4	13·4	12·8	12·5	12·4	12·8	107·4
20	12·3	11·2	11·0	9·4	10·0	10·8	11·4	12·6	12·9	13·0	13·1	13·6	14·6	15·9	15·9	14·6	14·5	14·8	14·5	13·4	12·2	11·3	7·2	7·0	12·4	97·2
21	11·3	11·7	11·1	11·3	11·4	11·3	11·7	12·6	13·4	13·4	14·0	14·3	14·7	14·4	14·1	14·6	12·4	13·2	13·4	12·4	12·3	11·6	10·3	11·5	12·6	102·4
22	12·1	12·2	12·2	12·1	12·5	11·5	11·2	11·9	12·2	12·4	12·6	14·3	15·3	15·8	15·0	13·4	12·6	12·5	11·6	11·1	11·9	9·8	11·5	11·7	12·5	99·4
23	11·6	11·7	12·2	12·2	12·1	12·2	12·4	14·0	12·7	12·0	12·8	14·7	14·6	14·3	13·4	13·1	11·9	12·4	11·5	11·9	11·7	11·7	11·6	11·6	12·5	100·3
24 q	11·9	11·9	12·1	12·2	12·2	11·8	11·8	11·6	10·9	12·7	11·7	12·8	15·2	15·2	14·7	13·4	12·8	13·3	12·8	11·6	12·1	12·0	11·4	8·9	12·4	97·0
25	9·3	11·8	10·7	10·1	10·0	11·2	11·6	11·6	10·9	11·4	11·9	13·8	15·3	14·5	14·2	13·3	12·2	12·7	12·3	12·1	11·9	11·7	11·6	11·5	12·0	87·6
26	11·5	11·3	11·7	11·8	11·6	11·5	12·0	11·7	11·7	13·1	13·9	14·5	15·8	15·9	15·1	14·8	12·7	12·6	12·6	12·2	11·6	10·9	10·2	11·3	12·6	102·0
27 q	11·6	11·4	11·6	11·6	11·6	11·6	11·6	11·8	11·5	11·4	12·1	13·5	14·6	15·2	15·0	13·8	12·5	13·0	13·0	12·9	12·4	11·8	11·5	10·7	12·4	97·7
28	11·7	10·8	11·4	12·1	11·9	10·7	10·7	11·0	10·6	11·7	12·7	14·5	15·0	15·7	15·0	13·3	13·1	13·2	12·6	12·3	12·0	12·0	11·7	8·1	12·2	93·8
Mean	11·3	11·7	11·9	11·7	11·9	11·9	12·0	12·3	12·6	12·9	13·4	14·5	15·2	15·2	14·7	13·5	12·2	12·5	12·3	11·0	10·7	11·1	10·7	10·8	12·4	
Sum 300·0+	16·9	27·8	33·1	26·5	32·6	33·7	35·3	43·7	52·2	60·1	75·1	105·4	125·9	126·8	112·4	78·3	42·6	50·4	44·6	8·7	1·0	9·4	1·0	2·5	12·6	Grand Total 8346·0

23 ESKDALEMUIR (Z) 45,000γ (0·45 C.G.S. unit) + **FEBRUARY 1963**

Hour G.M.T. Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	419	419	419	418	418	417	416	415	411	405	410	408	414	424	429	433	437	441	441	437	434	428	398	400	420	1091
2 q	408	411	412	412	412	412	412	413	412	415	416	418	417	416	418	416	414	412	414	413	416	413	412	413	414	927
3	412	412	411	411	411	411	412	412	413	414	414	411	408	409	415	414	413	414	416	416	413	412	412	411	412	897
4	409	409	408	407	407	408	408	411	412	412	413	412	412	411	412	412	411	412	416	416	418	418	414	412	412	880
5	411	411	410	408	407	407	408	409	412	413	415	416	417	417	416	415	413	412	412	412	414	414	412	411	412	892
6	410	407	407	405	405	405	406	406	409	407	407	407	405	408	413	412	412	411	412	412	412	412	411	411	409	812
7	409	408	407	406	406	405	405	405	405	405	401	400	397	398	404	405	406	406	406	407	411	409	411	408	405	730
8 q	408	407	407	407	406	405	404	402	400	398	398	400	400	400	402	405	406	406	405	406	406	406	406	406	404	696
9	406	406	405	405	405	404	403	402	400	400	400	402	398	395	397	401	401	401	402	401	401	405	416	404	404	699
10 d	435	425	376	372	383	393	393	397	396	402	407	411	426	446	439	434	437	434	436	437	424	389	401	394	412	887
11 d	383	389	401	411	411	405	398	400	404	405	411	412	416	415	418	426	437	428	421	425	420	411	405	398	410	850
12 d	402	391	382	389	396	396	399	405	412	408	408	410	412	416	415	417	418	418	419	423	421	411	396	394	407	758
13 d	388	390	396	397	402	401	401	402	405	409	411	416	415	422	421	440	453	441	428	425	418	416	409	394	413	900
14 d	390	391	399	402	404	406	407	407	408	407	406	406	409	412	419	422	424	419	418	416	411	409	411	409	409	812
15	408	409	412	411	411	411	411	408	408	406	405	407	411	417	422	417	416	417	418	412	412	412	411	409	412	881
16	408	407	408	409	408	407	407	406	405	403	403	404	405	406	408	413	423	418	414	412	411	411	410	409	409	815
17	409	408	408	407	407	407	406	404	404	403	401	400	400	400	403	405	408	410	409	408	408	407	410	407	406	739
18	406	406	405	406	406	406	405	405	404	404	400	397	397	398	401	404	407	409	408	408	409	409	408	407	405	715
19 q	407	406	406	405	405	405	404	402	400	397	394	394	394	396	396	399	401	404	405	405	405	405	406	406	402	647
20	405	405	403	400	400	400	397	396	396	400	404	403	402	401	403	409	407	409	409	415	417	421	421	413	406	736
21	410	410	410	410	409	406	405	404	402	403	402	403	403	404	405	411	420	423	422	420	417	417	419	416	410	851
22	413	411	410	410	409	408	406	405	405	403	403	401	403	405	409	412	412	410	414	413	410	410	410	410	408	802
23	409	409	409	407	405	404	403	402	399	395	393	394	399	402	404	409	416	414	412	410	410	410	410	410	406	735
24 q	410	409	409	409	409	407	405	404	404	403	400	398	399	401	404	408	409	409	408	409	408	409	410	412	406	753
25	410	404	402	403	404	404	404	404	404	402	402	400	400	401	404	410	410	410	410	409	408	409	409	409	405	732
26	409	409	409	409	406	405	403	403	401	396	394	395	398	404	409	414	415	414	411	410	410	409	406	406	406	745
27 q	407	408	409	409	409	408	406	404	403	399	395	394	398	400	402	407	410	409	409	409	408	409	409	407	405	728
28	406	405	406	406	404	404	403	403	403	403	399	398	399	401	403	407	410	409	409	409	406	405	406	412	405	716
Mean	407	407	405	405	406	406	405	405	405	404	404	404	405	408	410	413	416	415	414	414	413	411	409	409	408	
Sum 11,000+	407	382	346	351	365	357	337	336	337	317	312	317	354	425	491	577	646	620	604	595	558	496	459	437		Grand Total 274,426

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR All Times G.M.T. **FEBRUARY 1963**

	Horizontal component Maximum 16,000γ+ h. m.	γ	Minimum 16,000γ+ γ	h. m.	Range γ	Declination Maximum 10°+ h. m.	'	Minimum 10°+ '	h. m.	Range '	Vertical component Maximum 45,000γ+ h. m.	γ	Minimum 45,000γ+ γ	h. m.	Range γ	3-hr range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+ °A.
1	22 31	902	798	20 10	104	13 15	20·0	1·3	21 12	18·7	17 48	441	387	22 42	54	1,0,2,2,2,2,3,4	16	1	83·0
2 q	14 26	851	827	20 10	24	12 51	15·7	7·8	20 16	7·9	20 25	418	405	00 01	13	0,0,1,0,0,0,2,0	3	0	82·9
3	22 18	851	828	11 41	23	12 37	18·0	10·6	20 43	7·4	20 00	417	407	12 45	10	0,1,0,0,1,1,1,1	5	0	82·9
4	16 48	856	830	18 26	26	13 31	17·2	4·9	20 36	12·3	20 52	423	408	05 00	15	0,0,0,0,1,1,3,1	6	0	83·0
5	17 48	849	812	12 28	37	15 28	18·7	9·5	21 29	9·2	12 30	418	407	05 00	11	0,0,0,1,1,1,1,1	5	0	83·1
6	05 39	855	832	14 33	23	14 19	18·0	10·5	21 40	7·5	14 53	413	405	09 55	8	1,1,0,1,0,1,0,0	4	0	82·9
7	07 42	858	832	13 08	26	14 02	15·3	7·8	20 36	7·5	22 18	411	396	13 25	15	0,0,0,1,0,0,2,2	5	0	82·9
8 q	10 18	861	842	00 23	19	11 14	14·3	11·4	00 28	2·9	00 01	409	396	10 30	13	0,0,0,0,0,0,0,0	0	0	82·9
9	19 45	874	781	23 28	93	20 05	14·9	-5·9	23 30	20·8	23 49	467	394	13 45	73	0,0,0,0,1,1,2,4	8	1	82·8
10 d	21 05	961	748	00 14	213	12 04	22·8	-8·1	20 52	30·9	00 01	464	361	03 12	103	4,4,4,4,4,3,5,5	33	2	82·9
11 d	20 47	859	769	16 23	90	05 34	18·9	-2·5	20 42	21·4	16 35	442	382	00 50	60	3,3,2,3,3,4,4,3	25	1	82·8
12 d	21 52	871	785	08 18	86	01 48	24·0	1·3	21 43	22·7	19 12	424	374	02 10	50	3,3,3,3,2,2,3,3	22	1	82·9
13 d	19 28	932	793	12 17	139	13 10	21·2	-14·6	19 21	35·8	16 11	459	385	00 13	74	3,3,3,3,3,4,5,3	27	1	82·9
14 d	20 17	881	767	08 25	114	08 48	18·9	3·1	20 08	15·8	16 28	425	388	01 04	37	3,2,4,3,2,2,3,2	21	1	82·8
15	07 26	855	800	13 49	55	12 58	17·1	8·7	18 12	8·4	14 14	424	405	10 47	19	2,1,2,2,3,2,2,1	15	1	82·8
16	11 05	853	801	16 16	52	12 32	16·3	7·0	16 18	9·3	16 40	424	401	10 02	23	0,0,0,1,2,3,0,0	6	1	82·8
17	23 20	859	832	12 10	27	13 54	15·3	10·7	23 37	4·6	17 18	411	398	11 17	13	1,0,0,0,1,2,2,0	6	1	82·8
18	07 33	860	831	16 43	29	13 21	16·2	10·7	17 05	5·5	17 22	411	396	12 48	15	1,0,0,1,2,2,1,0	7	1	82·8
19 q	08 46	865	847	12 03	18	13 33	15·5	11·3	09 37	4·2	22 37	407	393	11 50	14	0,0,0,1,1,0,0,1	3	0	82·8
20	08 50	874	819	22 39	55	13 24	17·7	-2·6	23 01	20·3	22 05	426	396	08 52	30	1,1,2,2,2,2,3,4	17	1	82·8
21	15 10	858	823	16 33	35	13 33	16·1	8·7	22 30	7·4	17 13	426	403	08 58	23	2,0,1,1,1,3,2,2	12	1	82·8
22	21 21	879	835	18 58	44	13 22	16·3	6·8	21 28	9·5	19 18	416	400	11 12	16	0,1,1,2,2,2,2,3	13	1	82·8
23	11 16	870	812	16 28	58	11 14	17·2	10·5	18 52	6·7	16 35	419	391	11 18	28	0,0,0,1,2,2,3,1,0	9	1	82·8
24 q	21 38	860	839	12 14	21	13 12	16·1	7·7	23 41	8·4	23 59	412	397	11 30	15	0,0,0,1,1,0,0,1	3	0	82·8
25	21 53	860	841	16 17	19	12 47	17·0	8·7	00 42	8·3	16 07	412	399	13 00	13	2,1,1,1,1,2,1,1	10	1	82·8
26	07 09	868	835	16 42	33	13 09	17·2	9·6	22 27	7·6	16 52	416	392	10 39	24	1,0,1,1,2,1,0,2	8	1	82·8
27 q	23 17	867	846	11 23	21	13 33	15·3	9·7	23 28	5·6	16 50	410	392	11 10	18	1,0,0,1,0,0,1,2	5	0	82·8
28	07 56	866	824	14 33	42	14 18	17·3	5·3	23 40	12·0	23 59	416	398	11 05	18	1,1,1,1,3,1,0,3	11	1	82·8
Mean	– –	870	815	– –	55	– –	17·5	5·3	– –	12·1	– –	424	395	– –	29	–	–	0·68	82·9

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + **MARCH 1963**

Hour G.M.T. Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	836	844	841	857	850	861	872	858	854	844	839	828	829	835	843	847	827	838	845	846	846	848	846	859	846	293
2	855	844	845	847	850	853	851	858	855	853	854	854	846	853	850	850	846	853	854	851	854	855	855	856	852	442
3	853	851	849	850	851	857	852	859	854	848	849	843	844	851	851	851	851	857	858	856	855	855	864	858	853	467
4	854	851	851	854	853	854	852	851	847	843	846	843	849	850	852	847	847	846	851	853	856	855	851	853	850	409
5	850	849	850	852	855	855	857	859	851	840	836	838	847	847	851	850	848	853	858	858	858	857	854	853	851	426
6	851	851	849	851	852	855	858	859	859	851	846	840	842	843	847	849	852	850	845	843	839	848	850	851	849	381
7	851	850	848	851	851	849	851	855	854	851	846	846	847	848	850	853	855	860	867	867	858	857	867	826	852	458
8 d	842	846	854	859	852	862	861	846	867	857	855	808	813	837	837	820	823	819	852	838	854	853	846	861	844	262
9 d	847	854	839	841	828	852	862	855	850	847	843	844	846	846	849	852	848	843	851	848	851	862	863	839	848	360
10 d	839	839	854	846	842	846	852	854	838	813	805	814	812	823	833	852	831	843	840	851	859	874	820	839	*838*	119
11 d	856	831	813	816	824	839	848	843	838	836	834	839	841	843	843	839	840	846	843	847	867	839	836	853	840	154
12	846	837	840	850	854	856	858	860	862	836	827	832	838	839	839	836	840	843	843	850	846	847	846	847	845	272
13	847	846	845	844	847	848	849	854	847	839	835	836	831	831	814	830	838	846	849	849	852	850	851	853	843	231
14 q	850	851	844	847	849	851	853	855	855	850	844	836	836	839	841	846	847	847	851	851	851	850	854	851	848	349
15	851	851	851	846	851	851	850	851	849	843	838	835	835	840	846	848	847	847	850	853	853	854	853	853	848	346
16 q	855	854	854	855	855	855	857	858	856	851	846	843	844	847	850	851	855	851	855	858	858	856	862	858	853	484
17	855	854	855	855	855	858	858	858	858	851	843	842	841	846	851	855	851	850	851	855	854	843	864	846	852	449
18	854	854	851	855	854	852	854	844	846	848	835	835	839	846	846	832	838	834	855	858	859	844	847	854	847	334
19	851	850	847	863	856	858	862	855	851	847	837	834	838	846	851	848	851	851	854	840	846	844	866	852	850	398
20	851	854	850	850	851	854	856	858	856	848	839	842	848	851	853	857	859	859	865	863	860	850	846	854	853	474
21	855	854	850	850	855	856	859	847	843	836	836	835	838	840	846	850	851	851	852	855	855	855	854	854	849	377
22 q	854	854	854	854	854	855	856	858	855	845	842	839	842	847	854	854	858	863	865	867	866	863	859	863	855	521
23	861	859	857	862	863	867	870	866	863	859	831	830	833	847	829	843	843	856	863	860	855	856	851	854	853	478
24	852	851	851	852	855	853	854	855	851	844	836	835	835	844	851	854	854	854	851	855	858	856	858	869	851	428
25	854	855	855	856	855	855	853	854	847	842	836	841	848	850	851	856	858	855	859	858	858	858	859	862	853	475
26 q	859	858	858	858	858	859	862	862	855	847	835	832	838	850	854	859	858	854	857	851	848	854	857	855	853	478
27 q	855	855	854	855	855	855	856	855	851	844	839	832	836	843	849	847	851	852	858	856	858	857	858		851	427
28	858	858	858	861	863	867	868	866	858	847	839	841	844	850	854	856	857	863	863	865	865	870	864	860	*858*	595
29	866	861	858	861	866	867	868	870	859	846	835	828	829	843	854	856	858	859	862	862	858	859	860	859	856	544
30	858	855	855	855	855	857	862	862	858	848	837	836	836	845	850	858	855	858	861	860	863	862	859	859	854	504
31	858	858	858	858	856	858	862	862	859	851	847	844	846	844	844	850	855	858	861	863	862	870	871	870	857	565
Mean	852	851	850	852	852	855	*857*	856	853	845	839	*836*	838	844	846	848	848	850	855	854	855	855	855	854	850	
Sum 25,000+	1424	1379	1338	1411	1415	1515	1583	1547	1446	1205	1010	925	991	1164	1233	1296	1292	1359	1489	1487	1520	1502	1490	1479		Grand Total 632,500

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + **MARCH 1963**

Hour G.M.T. Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 200·0′+
1 d	8·0	6·9	7·8	5·6	5·4	9·7	8·4	12·7	14·6	10·4	13·0	15·1	16·0	17·2	16·0	15·7	12·7	11·4	12·5	12·1	11·2	8·9	9·5	10·1	11·3	70·9
2	11·0	10·9	11·2	11·5	11·9	10·7	11·4	10·8	10·4	10·6	11·8	15·7	15·3	15·1	15·4	13·4	12·5	12·4	12·7	11·8	11·9	12·0	11·7	11·6	12·2	93·7
3	11·5	11·1	11·4	11·5	12·4	11·0	11·0	11·8	13·2	12·0	14·4	14·9	16·0	16·0	15·2	14·0	13·4	14·1	13·5	13·4	12·5	8·8	9·9	9·4	12·6	102·4
4	10·1	11·4	11·0	10·7	10·6	10·5	10·7	10·7	10·9	12·8	14·0	15·0	16·3	16·3	15·5	14·4	13·4	14·0	14·0	11·9	12·4	12·2	11·4	11·3	12·6	101·5
5	10·8	10·7	10·6	10·6	11·2	10·6	10·7	10·6	9·6	9·7	12·1	15·3	17·7	17·2	17·0	15·1	14·3	13·6	13·9	13·7	11·4	8·0	9·3	10·2	12·2	93·9
6	11·4	10·5	9·6	9·4	9·0	10·7	9·9	10·6	10·5	10·5	11·4	13·4	16·1	16·3	16·2	14·6	13·4	12·9	10·5	9·0	6·9	10·0	10·7	11·7	11·5	75·2
7	12·0	11·4	11·5	11·5	9·7	11·0	11·6	11·1	10·7	10·4	11·5	14·2	15·5	15·8	15·2	14·3	13·5	14·0	14·2	13·6	14·3	13·2	2·0	-0·9	11·7	81·3
8 d	8·5	12·0	10·5	4·2	6·9	9·2	10·6	18·9	16·1	11·8	15·1	18·6	21·6	18·9	21·0	19·9	15·6	13·3	4·2	8·4	3·9	5·7	11·4	6·7	12·2	93·0
9 d	10·9	11·4	10·7	11·5	14·2	14·9	12·4	12·4	12·1	11·2	13·6	15·2	17·8	17·0	15·3	14·4	13·5	11·5	11·7	12·2	11·3	6·1	8·8	9·5	12·5	99·6
10 d	9·8	13·1	11·7	8·4	9·7	9·9	16·1	14·5	13·1	12·6	14·4	16·6	17·2	18·2	14·7	11·4	14·6	-3·9	3·9	6·5	3·3	3·6	3·3	4·1	*10·3*	46·8
11 d	10·6	3·9	8·7	12·6	15·3	13·3	11·4	10·6	9·7	10·0	10·4	12·2	14·4	15·0	15·4	13·5	12·5	12·3	13·1	3·7	4·2	8·8	11·4	11·9	11·0	64·9
12	9·4	9·7	13·9	9·3	9·8	10·1	11·2	11·1	9·4	9·5	10·5	13·4	16·2	15·3	14·0	10·4	13·0	12·6	11·6	9·5	10·2	11·2	11·4	11·3	11·4	74·0
13	11·5	11·4	11·4	11·3	11·3	10·7	11·0	10·4	9·8	10·0	11·6	14·1	15·8	17·0	15·3	14·2	14·2	13·4	12·3	11·8	10·2	10·5	10·7	10·9	12·1	90·8
14 q	11·2	12·2	11·2	11·3	11·3	11·1	11·0	10·2	(8·9)	8·7	10·0	11·7	14·0	15·2	14·7	14·0	12·6	12·5	12·2	11·5	11·5	11·3	11·4	11·6	11·7	81·2
15	11·5	11·8	12·1	12·1	11·4	10·6	11·1	10·4	8·8	8·9	11·0	13·9	16·7	17·7	16·6	15·0	13·1	12·4	12·0	11·9	11·7	11·6	11·5	11·5	12·3	95·3
16 q	11·5	11·5	11·5	11·6	11·5	11·2	10·7	9·6	8·1	9·5	11·3	13·7	16·0	16·3	15·3	13·2	13·4	12·4	12·6	12·5	12·4	12·0	11·8	11·3	12·2	92·8
17	10·9	10·8	11·4	10·9	11·0	10·8	11·0	10·5	9·4	9·4	11·2	14·2	16·1	17·1	17·1	16·3	15·7	15·1	14·2	13·4	9·1	9·7	9·3	9·3	12·2	93·9
18	10·7	11·2	9·4	8·8	8·4	8·7	8·0	8·1	9·2	10·3	11·6	14·4	17·8	20·6	20·9	18·2	16·2	14·2	13·2	12·9	13·4	10·6	12·6	10·5	12·5	99·9
19	9·9	11·2	9·9	10·0	5·9	6·5	7·6	8·8	8·6	5·6	12·2	14·7	16·9	18·0	16·2	15·2	13·3	13·2	13·4	12·6	12·1	11·4	10·1	9·8	11·4	73·1
20	10·7	11·5	10·4	9·4	9·7	9·9	9·6	9·2	8·5	9·4	11·8	15·1	16·2	16·5	15·4	14·3	13·3	13·0	13·4	13·7	12·9	7·7	9·8	9·4	11·7	80·8
21	11·2	12·2	11·8	12·8	11·4	10·7	9·7	9·2	8·6	9·7	11·7	14·9	16·7	16·4	15·3	13·6	11·7	11·3	11·1	11·4	11·6	11·6	11·7	11·7	12·0	88·0
22 q	11·7	11·7	11·6	11·4	11·2	10·8	10·6	9·5	8·0	8·3	10·0	12·3	15·1	16·4	16·3	14·8	14·3	13·9	13·4	13·3	13·1	12·2	11·8	11·7	12·2	93·4
23	11·7	11·1	11·0	11·4	11·2	11·1	10·3	9·8	8·9	10·7	13·2	16·2	18·5	19·9	20·5	17·3	14·7	14·1	13·5	13·3	13·2	13·3	13·2	13·2	*13·0*	111·5
24	11·7	11·4	11·3	11·3	11·0	10·5	10·4	9·4	8·5	8·7	11·1	13·5	15·5	16·0	16·1	14·9	13·5	13·1	11·5	11·7	11·8	10·8	8·7	11·5	11·8	83·9
25	11·3	12·1	11·8	11·3	11·2	10·7	10·3	8·5	6·7	7·8	10·7	13·8	16·8	18·1	16·3	14·9	13·1	11·1	11·5	12·5	12·1	12·0	11·6	12·3	12·0	88·5
26 q	11·8	11·5	11·5	11·1	10·9	10·7	10·7	9·5	8·5	8·6	10·4	13·4	15·9	17·4	16·4	15·1	13·3	12·4	10·7	9·7	9·8	11·5	11·7	11·9	11·9	84·4
27 q	11·8	11·6	11·7	11·3	11·0	10·8	10·5	9·4	8·0	8·0	10·3	13·5	16·2	16·3	16·0	14·0	13·0	12·4	11·8	11·9	11·7	11·6	11·7	11·9	11·9	86·2
28	11·7	11·6	11·8	11·6	11·5	11·0	10·9	10·4	10·0	9·3	10·6	13·6	16·8	18·1	17·9	16·1	14·5	13·9	12·5	12·4	12·0	11·1	11·3	10·3	12·5	100·9
29	11·3	11·8	11·3	10·7	10·7	9·9	9·7	9·1	8·0	9·0	11·4	14·5	17·9	18·6	17·8	15·9	14·1	12·6	12·6	12·7	12·3	10·8	10·7	11·8	12·3	95·2
30	10·0	9·3	9·5	9·6	9·5	10·2	10·0	9·7	8·9	8·8	11·3	14·1	16·0	16·3	16·2	15·2	13·4	12·3	12·2	11·9	10·9	10·7	11·7	11·6	11·6	79·3
31	11·5	11·4	11·3	10·9	10·6	10·5	10·6	9·9	8·5	8·8	10·4	13·5	16·2	16·3	15·7	13·9	13·2	12·4	12·2	12·0	11·8	12·5	10·7	5·0	11·7	79·8
Mean	10·9	11·0	11·0	10·5	10·5	10·6	10·6	10·6	9·8	*9·7*	11·7	14·3	16·5	*17·0*	16·4	14·8	13·6	12·4	12·0	11·6	10·8	10·3	10·3	10·1	12·0	
Sum 300·0+	37·6	40·3	40·5	25·6	26·8	28·0	29·1	27·4	4·1	1·0	64·0	144·7	211·2	226·5	207·6	158·5	122·9	84·1	72·1	58·4	35·1	18·9	19·5	12·2	*12·0*	Grand Total 8896·1

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

65

23 **ESKDALEMUIR (Z)**   45,000γ (0·45 C.G.S. unit) ✦   MARCH 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	414	407	403	399	396	392	391	391	389	392	392	394	399	403	406	417	427	427	419	417	416	416	411	407	405	725
2	399	403	406	407	408	407	405	404	404	403	398	395	398	403	406	409	409	409	407	409	409	409	409	409	405	725
3	406	405	405	405	405	404	404	403	401	403	399	399	399	399	404	409	410	409	409	410	410	412	405	402	405	717
4	401	403	403	404	404	404	404	404	402	399	399	398	399	399	405	410	413	411	410	410	410	410	410	410	405	722
5	410	409	409	407	405	405	405	406	409	408	399	394	395	399	403	406	409	409	409	409	411	412	410	410	406	748
6	407	407	409	407	406	404	402	403	403	403	402	400	403	404	408	409	410	414	417	418	421	414	412	410	408	793
7	409	409	409	405	403	405	404	405	407	405	400	394	392	393	398	404	407	405	403	403	407	413	409	399	404	688
8 d	401	394	388	380	391	395	395	391	383	390	388	393	394	403	416	429	438	447	444	432	420	409	406	405	405	732
9 d	403	397	403	403	396	395	398	401	403	405	403	402	403	410	412	416	420	420	416	415	416	412	392	398	406	739
10 d	403	391	389	387	385	388	387	388	398	405	407	404	411	426	453	481	455	468	434	422	403	382	387	364	409	818
11 d	345	368	382	387	394	399	403	406	409	404	403	403	405	408	416	422	426	423	420	423	411	410	414	398	403	679
12	392	392	387	393	400	403	404	405	408	409	402	398	403	410	420	432	428	421	420	417	416	415	413	413	408	801
13	412	412	412	413	412	413	410	410	409	405	406	404	404	412	423	428	421	421	419	416	416	414	411	410	413	913
14 q	409	407	409	410	410	410	409	409	408	404	404	402	398	400	407	412	415	413	412	413	411	410	410	409	408	801
15	409	409	407	407	407	409	409	408	409	403	402	395	394	398	408	414	416	413	412	411	410	410	410	410	407	780
16 q	410	410	410	410	409	409	408	410	408	402	395	393	394	399	405	410	412	414	410	410	410	410	409	409	407	766
17	410	410	410	410	410	410	409	410	410	403	399	398	398	398	399	407	415	416	416	417	421	417	396	403	408	792
18	405	405	408	407	407	409	409	409	405	404	405	402	398	399	410	420	426	428	420	416	415	420	420	415	411	862
19	411	410	410	404	398	396	394	398	398	399	398	396	398	403	407	417	421	420	419	423	426	423	412	398	407	779
20	403	404	405	408	409	409	409	410	407	405	405	403	402	403	405	410	411	410	409	409	410	417	413	409	408	785
21	408	407	407	405	404	405	405	409	409	405	402	399	400	404	409	414	415	415	410	411	410	410	410	410	408	783
22 q	410	409	409	409	409	409	409	410	410	407	410	402	400	406	405	409	409	407	405	408	409	410	410	410	408	791
23	409	409	409	407	405	404	403	403	403	398	396	396	393	399	412	417	417	416	411	410	414	414	415	413	407	773
24	413	413	410	410	409	404	407	407	406	403	399	399	403	403	406	409	410	414	416	414	414	414	412	405	409	805
25	405	407	409	409	408	407	407	407	403	393	391	389	391	399	405	409	410	410	409	409	409	409	409	408	405	712
26 q	409	409	409	409	409	407	405	407	406	404	403	399	392	395	403	410	413	414	413	414	415	412	409	409	407	775
27 q	409	410	410	409	409	409	409	409	407	403	397	388	388	397	404	410	412	410	410	410	409	409	408	408	406	745
28	409	409	409	409	407	405	404	404	403	401	398	389	387	388	395	404	407	409	409	407	407	405	405	404	403	674
29	403	403	403	403	401	403	403	403	400	397	395	392	391	394	399	406	410	411	410	409	409	409	407	406	403	667
30	405	405	405	405	405	405	405	405	404	403	398	391	389	393	400	407	411	413	410	410	409	409	406	405	404	698
31	407	406	406	406	407	405	405	405	404	403	397	388	387	391	399	406	410	410	410	409	409	406	406	404	404	686
Mean	405	405	405	404	404	404	404	405	404	402	400	397	397	401	408	415	417	417	414	413	412	411	408	405	407	
Sum 12,000+	546	539	550	534	528	534	521	540	525	468	392	299	308	438	648	863	913	927	838	811	783	742	657	570		Grand Total 302,474

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 **ESKDALEMUIR**   All Times G.M.T.   MARCH 1963

	GEOMAGNETIC ELEMENTS											3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+
	Horizontal component			Declination			Vertical component							
	Maximum 16,000γ +	Minimum 16,000γ +	Range	Maximum 10° +	Minimum 10° +	Range	Maximum 45,000γ +	Minimum 45,000γ +	Range					
	h. m. γ	γ h. m.	γ	h. m. '	' h. m.	'	h. m. γ	γ h. m.	γ				°A.
1 d	23 07 880	802 16 53	78	14 49 18·1	1·7 21 01	16·4	16 53 431	387 08 25	44	2,3,3,1,2,4,3,3	21	1	82·7
2	00 01 867	840 12 14	27	11 59 18·0	9·5 05 11	8·5	17 20 410	394 11 59	16	2,1,1,2,2,1,1,1	11	1	82·7
3	22 31 887	835 11 21	52	13 27 16·5	4·1 21 42	12·4	22 10 413	398 08 50	15	1,1,3,2,3,2,2,3	17	1	82·8
4	20 21 859	840 09 28	19	13 28 17·3	9·4 00 13	7·9	16 37 414	398 11 50	16	1,0,0,1,1,1,1,1	6	0	82·8
5	21 00 870	834 10 44	36	12 53 18·6	6·9 21 08	11·7	21 33 415	394 12 51	21	0,1,1,0,1,0,2,2	7	1	82·8
6	15 59 865	831 19 26	34	12 56 17·4	9·5 20 35	11·5	19 47 421	399 11 31	22	0,1,1,0,1,0,3,1	9	1	82·7
7	22 12 889	777 23 46	112	13 38 16·1	-8·6 23 08	24·7	21 55 416	392 12 30	24	1,1,1,0,0,0,3,5	11	1	82·7
8 d	20 15 889	784 11 33	105	12 00 24·5	-4·2 18 07	28·7	18 04 462	378 03 06	84	3,2,3,4,4,4,4,3	27	1	82·7
9 d	21 54 934	809 04 49	125	12 31 20·9	-4·3 21 44	25·2	17 03 420	389 22 36	23	3,3,2,2,3,3,2,5	23	1	82·7
10 d	17 58 1017	789 09 10	228	14 23 22·6	-28·3 17 50	50·9	15 02 491	350 23 59	141	3,3,3,3,4,6,6,4	32	2	82·7
11 d	20 09 912	803 03 00	109	04 34 17·4	-3·5 20 00	20·9	15 58 427	340 00 32	87	4,3,2,2,3,3,4,3	24	1	82·7
12	06 59 858	817 10 38	41	12 40 17·1	6·8 19 54	10·3	15 32 434	384 02 31	50	3,2,2,2,3,2,2,0	16	1	82·7
13	18 08 866	789 14 36	77	14 19 18·8	8·6 08 52	10·2	15 20 433	403 11 31	30	0,0,1,2,3,3,2,2	12	1	82·8
14 q	22 00 861	833 12 05	28	13 34 16·1	8·5 09 12	7·6	16 10 416	398 12 31	18	1,0,0,0,1,0,0,1	3	0	82·9
15	00 01 855	834 12 40	21	13 30 17·8	8·2 08 43	9·6	16 36 417	392 12 00	25	1,1,1,1,0,1,1,0	6	0	82·7
16 q	22 42 867	842 11 30	25	13 10 16·6	6·8 08 42	9·8	17 25 415	392 11 30	23	0,0,1,0,0,1,0,1	3	0	82·7
17	22 20 885	832 23 01	53	14 48 17·6	6·1 20 47	11·5	20 30 423	392 22 31	31	0,0,0,0,0,1,3,3	7	1	82·7
18	23 28 862	829 15 29	33	14 33 21·6	7·6 04 12	14·0	17 24 430	395 13 00	35	0,1,1,1,2,2,2,2	11	1	82·7
19	22 53 897	831 09 50	66	13 29 18·3	9·5 23 40	8·8	19 52 427	393 23 08	34	1,2,1,1,1,2,2,3	13	1	83·0
20	20 42 871	836 10 36	35	13 27 16·9	4·9 21 35	12·0	20 00 421	401 12 32	20	1,1,0,0,0,0,2,3	7	1	83·0
21	06 22 862	831 10 18	31	12 58 17·3	7·8 08 38	9·5	16 21 416	398 11 51	18	1,1,2,1,1,1,0,0	7	1	83·0
22 q	18 23 870	835 12 02	35	13 41 17·1	7·8 09 00	9·3	22 42 411	400 12 40	11	0,0,0,1,1,1,1,1	5	1	83·0
23	09 45 870	809 10 40	61	14 20 25·0	7·8 22 06	17·2	15 41 421	392 12 37	29	1,1,1,3,3,3,1,2	15	1	83·0
24	23 41 889	827 11 11	62	14 17 17·7	7·7 22 30	10·0	19 00 416	399 10 48	17	1,0,0,2,2,2,2,3	12	1	83·0
25	23 40 866	832 10 20	34	13 16 18·8	6·3 09 00	12·5	16 00 410	387 11 59	23	2,0,0,0,1,2,1,1	7	1	83·0
26 q	15 01 863	829 10 50	34	13 55 17·9	8·2 08 38	9·7	20 30 416	392 13 00	24	0,0,0,1,1,1,2,1	6	1	82·9
27 q	19 39 860	831 11 39	29	13 03 16·9	7·7 08 37	9·2	11 15 413	386 12 00	27	0,0,0,0,0,0,1,0	1	0	82·9
28	23 00 885	836 10 50	49	13 11 18·5	8·5 09 23	10·0	17 00 409	385 12 32	24	0,0,0,2,2,1,2,2	9	1	82·9
29	07 07 874	823 12 31	51	13 03 19·1	7·8 08 40	11·3	16 45 411	387 12 10	24	2,1,1,1,1,1,1,1	9	1	82·9
30	20 39 866	829 11 00	37	13 05 16·8	8·2 09 00	8·6	17 30 413	387 12 02	26	1,0,0,1,1,1,1,0	5	0	82·9
31	23 06 889	839 11 56	50	12 55 17·3	4·1 23 24	13·2	17 30 410	387 12 30	23	0,1,1,1,1,1,1,3	9	1	82·9
Mean	- - 880	823 - -	57	- - 18·4	4·4 - -	14·0	- - 422	389 - -	33	-	-	0·84	82·8

q denotes an international quiet day and *d* an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + APRIL 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	852	852	850	859	863	889	882	865	855	848	845	840	836	832	840	841	853	858	861	860	858	859	858	858	855	514
2	857	857	853	856	858	859	859	858	850	839	835	835	839	845	846	852	856	862	851	855	855	855	858	862	852	452
3	870	855	856	859	858	858	858	856	848	842	843	836	838	840	847	856	858	856	865	865	866	866	865	863	855	524
4 d	864	865	861	861	862	863	871	863	857	852	853	851	863	841	853	836	851	867	853	863	866	866	875	877	860	634
5 d	882	834	824	847	823	850	858	858	841	827	815	824	827	839	843	839	847	857	881	869	857	862	872	863	847	339
6 d	847	846	842	846	851	856	854	848	816	843	834	815	838	841	831	854	851	844	858	854	865	886	873	854	848	347
7	847	851	855	856	850	858	853	839	839	815	833	827	824	833	846	841	846	857	861	860	858	859	861	881	848	350
8	851	851	854	853	853	854	858	854	846	832	831	833	839	845	854	856	853	857	858	865	858	859	858	863	852	437
9	858	858	858	856	843	860	859	850	844	836	832	834	844	844	854	858	862	853	857	859	861	860	856	857	852	453
10 q	856	854	855	855	855	858	858	853	846	836	826	824	828	833	848	858	861	860	857	858	861	861	862	862	851	425
11 q	862	861	859	859	861	863	865	860	852	836	816	823	831	836	848	854	858	861	866	863	861	861	864	862	853	482
12	881	866	858	859	864	869	867	859	846	830	815	816	831	852	846	851	870	863	871	865	850	846	851	855	853	481
13	855	858	851	855	858	862	864	863	851	828	817	816	820	837	846	851	862	864	849	851	867	848	843	845	848	361
14 d	879	848	848	851	858	856	852	846	839	828	824	828	827	833	851	847	838	855	865	859	855	883	853	855	849	378
15	857	851	848	858	855	846	846	831	839	832	827	813	820	827	839	851	855	839	866	865	860	859	862	861	846	307
16	863	854	859	858	856	863	862	859	850	834	829	826	837	846	857	867	867	857	862	868	872	866	863	862	856	537
17	863	851	843	856	856	854	858	858	853	846	838	832	836	846	852	865	877	865	867	863	865	867	863	865	856	539
18	856	855	858	858	859	862	865	861	849	838	838	836	838	849	857	885	868	865	856	865	858	870	850	850	856	546
19	871	855	851	855	857	850	860	863	867	854	847	839	838	846	855	867	866	858	869	870	863	863	863	869	858	596
20	879	855	856	857	859	863	858	853	854	849	846	842	846	838	844	846	848	858	865	866	859	860	858	855	855	514
21 q	857	856	855	856	(853)	853	853	850	843	839	835	844	839	843	845	855	858	869	856	859	861	861	863	862	853	466
22	859	870	852	853	855	854	851	850	850	840	835	836	838	846	852	854	857	859	863	866	858	858	858	860	853	474
23	859	860	851	859	855	855	851	849	843	850	841	837	839	840	839	846	853	861	863	860	859	859	858	856	852	443
24 q	856	856	856	856	855	854	851	846	837	829	832	835	844	853	857	859	861	870	873	870	867	867	867	867	855	518
25	873	868	867	862	863	863	862	861	851	841	835	835	846	855	860	870	872	877	873	869	869	867	860	869	861	668
26	873	863	860	858	864	863	863	863	859	846	838	833	838	849	863	871	868	874	875	870	879	887	867	875	862	699
27	874	870	873	870	870	865	866	855	844	830	826	835	826	839	862	871	874	880	885	870	858	863	863	860	860	629
28 q	862	861	861	860	862	862	860	858	854	848	824	836	837	850	860	868	869	875	878	872	867	868	867	867	859	626
29	867	868	869	867	864	865	859	854	851	846	842	843	847	853	858	861	866	872	870	869	869	866	868	865	861	659
30 d	866	862	862	861	859	858	857	858	857	851	853	859	862	854	858	892	941	920	908	923	875	836	856	856	870	884
Mean	863	857	855	857	857	859	859	855	848	839	833	833	837	843	850	857	862	864	866	866	863	863	861	862	855	
Sum 24,000+	1896	1711	1645	1716	1700	1785	1780	1641	1431	1165	1005	983	1116	1285	1501	1722	1868	1913	1982	1971	1877	1888	1835	1856		Grand Total 615,282

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + APRIL 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 200·0'+
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1	5·3	6·9	9·5	7·6	4·8	9·5	4·6	6·1	6·9	8·6	10·0	11·6	14·5	16·1	16·5	15·0	13·1	12·0	12·0	11·7	11·9	11·9	11·7	11·7	10·4	49·5
2	11·4	11·2	10·4	10·6	10·2	10·4	14·8	9·0	7·8	7·8	9·2	11·9	14·9	16·6	15·7	14·2	13·0	11·5	8·4	11·4	11·4	10·7	11·3	12·0	11·5	75·8
3	14·7	11·3	10·9	9·8	10·1	10·3	9·9	9·4	9·4	10·0	11·5	13·4	15·9	16·4	15·6	14·7	13·9	12·7	12·8	12·7	12·4	12·4	12·3	12·1	12·2	93·8
4 d	11·0	10·5	9·5	8·8	9·0	9·4	9·3	8·0	8·0	10·5	11·6	14·0	18·7	18·9	21·5	18·4	16·1	16·2	13·5	-0·8	9·6	12·0	12·3	9·6	11·9	85·6
5 d	4·0	1·2	8·0	10·3	12·6	13·1	10·8	10·5	8·9	11·3	11·5	14·4	17·4	18·8	17·8	15·9	13·5	13·5	5·2	8·0	9·6	10·1	10·4	13·4	11·3	70·2
6 d	11·7	11·4	11·2	11·7	9·9	9·9	9·3	9·7	10·7	10·1	12·0	11·5	14·4	15·7	13·4	12·5	12·6	11·3	10·4	9·4	9·9	8·6	10·6	10·0	11·2	67·9
7	12·0	13·5	11·9	9·7	10·2	9·8	9·0	8·5	9·1	10·0	12·0	14·2	16·0	16·8	16·6	15·1	11·5	12·0	12·1	11·5	11·4	10·9	11·6		12·0	87·3
8	9·9	10·8	10·7	10·4	9·8	10·3	9·8	8·0	7·9	9·4	11·7	14·5	16·4	16·5	15·9	14·2	13·1	11·9	10·2	9·4	11·3	11·7	11·3	11·7	11·5	76·8
9	10·7	11·3	11·1	10·7	12·0	12·0	8·7	7·4	7·5	8·4	10·2	12·8	15·3	16·3	15·8	14·9	14·0	10·3	9·7	11·4	11·2	9·5	10·7	11·4	11·4	73·3
10 q	11·6	11·3	11·4	11·0	10·6	9·8	8·9	8·3	8·3	9·4	11·3	13·2	16·5	17·5	16·9	15·3	13·4	11·2	10·3	11·2	10·5	11·4	11·7	11·5	11·8	82·5
11 q	11·3	11·2	10·7	10·6	10·6	10·3	9·4	7·5	6·6	7·0	8·8	11·5	15·2	17·3	16·8	15·0	13·5	11·8	11·5	11·7	11·2	11·9	12·0	11·2	11·4	74·6
12	8·5	8·3	9·6	9·6	9·5	8·8	8·0	7·1	7·1	8·1	10·7	13·5	16·2	20·7	19·3	16·1	14·3	11·9	11·3	9·3	8·7	8·4	10·6	11·3	11·1	66·9
13	11·1	11·2	11·6	10·8	9·6	9·1	8·2	7·8	7·4	8·9	11·2	14·5	19·3	21·8	22·4	22·0	21·0	20·0	14·5	11·7	12·2	9·9	7·7	7·1	13·0	111·0
14 d	9·6	5·5	7·0	8·5	9·4	9·1	7·6	10·6	12·6	12·7	13·9	15·0	18·2	20·3	20·7	22·0	18·3	15·9	14·1	12·5	10·7	7·6	8·5	9·5	12·1	90·1
15	6·6	9·6	16·1	8·6	5·6	6·1	7·6	10·6	12·6	12·7	13·9	15·0	17·1	17·8	16·6	15·6	14·1	13·4	12·7	9·8	11·2	12·1	12·0	10·5	12·0	87·9
16	14·2	10·3	11·1	9·5	9·4	9·4	8·7	8·0	7·8	9·5	10·9	13·0	15·4	16·5	16·0	15·5	14·7	14·0	13·6	13·5	9·9	11·2	10·7	9·4	11·8	82·2
17	9·1	6·9	12·1	9·8	8·6	8·0	8·0	8·3	9·2	9·7	11·6	14·0	17·2	18·6	17·3	16·0	15·2	14·3	12·5	11·9	12·4	12·1	10·7	9·5	11·8	83·0
18	9·0	9·5	9·4	9·2	8·3	8·0	7·9	7·6	7·6	9·0	11·7	13·5	16·4	18·7	18·3	17·3	18·2	16·0	10·4	11·5	8·5	4·2	9·7	10·9	11·3	70·1
19	11·8	9·5	9·6	8·4	6·6	5·9	8·1	7·8	7·6	10·0	11·7	13·5	15·2	16·6	16·4	16·0	14·1	12·2	15·1	12·4	12·2	12·0	11·8	12·1	11·5	76·6
20	12·6	9·8	9·7	9·8	9·7	9·4	8·4	8·4	10·3	10·9	11·8	13·4	16·9	16·6	16·0	14·6	14·0	13·0	12·3	12·1	11·8	11·7	11·4	10·7	11·9	85·3
21 q	10·6	10·3	10·3	9·9	9·4	9·1	8·5	7·8	7·9	9·4	11·6	14·4	16·0	16·0	14·7	14·0	13·2	11·7	10·6	11·1	11·4	11·5	11·1	10·4	11·3	70·9
22	10·5	8·9	9·1	9·8	9·2	8·5	7·7	7·1	7·3	8·0	10·8	14·2	16·0	16·5	15·1	13·4	12·1	10·9	10·0	10·5	6·7	4·2	10·8	9·6	10·3	48·0
23	11·2	10·5	9·4	12·2	10·3	4·6	3·3	4·2	9·7	11·6	14·1	17·3	18·6	17·5	16·1	14·0	12·3	11·3	10·5	10·6	11·2	10·8	10·7	10·7	11·4	72·7
24 q	10·7	10·7	10·7	10·5	9·7	8·9	8·0	7·8	8·5	14·5	11·8	13·4	15·6	16·0	15·1	14·1	13·3	12·5	12·4	12·2	11·4	10·7	9·9	10·7	11·6	79·1
25	11·1	12·2	9·8	10·2	9·5	8·5	7·7	6·7	6·9	8·6	11·4	14·7	17·2	17·7	16·2	14·7	12·6	12·3	11·7	11·3	11·8	10·0	10·4	11·9	11·5	75·3
26	10·5	10·3	9·3	10·4	11·6	8·8	7·3	6·4	6·9	8·7	11·5	14·9	17·8	18·2	17·1	15·2	13·3	12·5	12·4	12·4	12·0	5·6	7·7	7·5	11·2	68·3
27	7·6	8·7	8·6	8·0	6·0	6·8	7·8	7·0	7·0	8·5	11·5	12·4	20·9	21·3	20·0	19·5	17·4	15·5	14·3	8·5	10·9	11·6	11·0	10·7	11·7	81·5
28 q	10·6	10·4	10·2	9·6	9·3	8·5	7·4	6·1	6·5	7·8	9·6	11·8	14·5	16·0	16·2	15·9	14·5	13·8	13·4	11·9	12·3	11·6	11·8	11·5	11·3	71·2
29	11·2	10·7	10·6	10·2	10·6	8·4	7·6	7·8	8·3	9·1	10·6	12·3	14·2	15·0	14·6	13·9	13·9	13·6	12·9	12·2	12·6	11·8	11·6	11·1	11·4	72·8
30 d	10·6	10·7	10·5	9·6	8·5	7·5	7·2	8·0	9·3	11·7	14·0	16·0	17·7	16·7	15·4	17·8	22·6	22·6	21·0	17·3	-1·1	7·7	11·7	9·1	12·6	102·1
Mean	10·4	9·8	10·3	9·9	9·3	8·9	8·3	7·8	8·2	9·7	11·4	13·7	16·5	17·5	16·9	15·8	14·6	13·4	12·1	11·0	10·5	10·2	10·8	10·7	11·6	
Sum 200·0+	110·7	94·6	110·0	95·8	80·6	68·2	50·2	34·9	46·0	90·8	142·7	209·9	295·6	325·2	306·0	272·8	236·8	201·8	161·6	130·9	115·3	106·5	125·0	120·4	11·5	Grand Total 8332·3

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

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23 ESKDALEMUIR (Z) 45,000γ (0·45 C.G.S. unit) + APRIL 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	404	398	393	391	394	380	374	382	392	392	389	388	389	395	400	405	409	410	410	410	409	409	409	408	397	540
2	407	407	409	406	405	406	409	410	409	405	399	392	390	394	402	408	409	414	421	417	416	416	413	409	407	773
3	398	399	404	405	405	404	406	408	407	405	401	397	392	397	403	406	410	412	411	410	410	410	409	409	405	718
4 d	410	408	405	404	404	404	403	404	403	399	396	392	388	395	405	410	411	416	433	446	424	412	410	395	407	777
5 d	374	358	380	393	387	372	382	391	396	399	401	400	399	410	423	429	438	432	437	417	416	414	399	387	401	634
6 d	388	398	399	403	404	405	408	408	409	407	404	408	400	403	416	418	422	423	421	421	416	404	397	398	407	780
7	402	400	404	404	407	406	406	409	405	406	404	400	399	405	414	424	428	422	417	413	413	412	410	395	409	805
8	397	404	406	409	409	409	408	408	406	405	400	395	397	399	403	406	410	414	417	413	410	410	410	410	406	755
9	410	410	409	409	407	403	406	408	405	404	403	399	398	402	407	409	416	424	421	414	410	410	410	410	409	804
10 q	410	411	411	410	410	410	411	409	404	399	399	398	398	398	399	405	410	413	415	413	409	409	409	409	407	769
11 q	410	410	410	410	409	407	407	406	404	402	400	394	388	392	400	405	408	411	410	410	410	410	410	409	405	732
12	403	397	401	405	404	404	404	404	403	398	398	390	386	392	402	408	410	415	416	417	419	419	414	410	405	719
13	410	409	407	403	404	405	405	406	403	398	398	400	394	397	405	412	423	439	456	446	432	428	424	419	413	923
14 d	400	401	408	413	411	411	410	410	410	403	401	398	398	405	419	437	442	434	423	422	422	409	409	394	412	890
15	379	380	363	381	394	398	399	402	397	394	392	391	394	406	409	413	417	417	419	419	417	415	411	407	401	614
16	398	394	396	398	403	405	407	409	409	407	400	394	392	395	403	407	416	420	420	416	413	410	410	410	405	732
17	405	398	400	400	405	406	404	403	403	402	399	398	395	395	399	403	409	420	427	422	416	412	412	410	406	743
18	410	410	409	409	409	407	405	405	407	406	403	402	399	399	405	409	417	425	437	428	429	418	410	407	411	865
19	392	397	405	405	405	406	403	398	395	391	388	389	388	392	399	403	404	410	416	413	412	412	410	409	402	642
20	396	402	405	408	409	412	414	414	410	405	403	402	400	409	419	428	432	429	424	420	417	416	414	414	413	902
21 q	412	411	410	410	410	410	412	412	409	400	398	394	397	405	409	409	411	414	420	417	414	414	412	410	409	820
22	409	398	392	400	406	409	410	409	405	402	398	398	395	397	402	408	410	416	420	421	421	414	410	410	407	760
23	410	407	402	388	388	396	400	399	394	389	392	393	396	406	416	417	416	416	415	415	412	410	410	411	404	698
24 q	411	412	412	412	412	411	410	410	408	405	403	401	399	403	407	409	410	411	410	410	410	410	409	409	409	804
25	405	403	405	407	406	406	404	402	399	394	392	391	394	399	403	408	410	411	411	412	410	410	410	407	404	699
26	402	404	408	409	403	403	404	403	398	393	390	389	391	399	405	410	410	410	411	412	410	403	403	403	403	673
27	403	404	405	405	406	406	404	403	398	391	386	384	388	394	399	410	412	421	429	446	432	421	416	413	407	776
28 q	410	410	411	411	412	411	410	407	401	392	388	385	384	387	394	398	402	407	410	412	410	410	409	408	403	679
29	409	409	409	410	410	408	406	403	397	393	391	385	384	389	398	404	409	410	411	410	409	407	406	407	403	674
30 d	406	406	406	409	411	410	405	403	400	393	387	379	380	392	398	395	393	407	423	434	462	439	423	414	407	775
Mean	403	402	403	404	405	404	405	405	403	399	397	394	393	398	405	410	414	417	420	419	417	413	410	407	406	
Sum 11,000+	1080	1055	1084	1127	1149	1130	1136	1145	1086	979	903	826	792	951	1163	1313	1424	1523	1611	1576	1510	1393	1308	1211		Grand Total 292,475

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR All Times G.M.T. APRIL 1963

	GEOMAGNETIC ELEMENTS									3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph chamber 200°A+
	Horizontal component			Declination			Vertical component						
	Maximum 16,000γ +	Minimum 16,000γ +	Range	Maximum 10° +	Minimum 10° +	Range	Maximum 45,000γ +	Minimum 45,000γ +	Range				
	h. m. γ	h. m. γ	γ	h. m. °	° h. m.	°	h. m. γ	γ h. m.	γ				°A.
1	05 47 905	817 13 20	88	13 23 17·7	3·8 06 16	13·9	17 30 412	368 05 56	44	3,3,3,1,2,2,1,0	15	1	83·0
2	17 28 871	832 11 28	39	13 42 17·0	7·4 08 45	9·6	18 40 424	389 12 25	35	1,1,0,0,1,2,2,2	9	1	83·0
3	00 30 881	835 12 06	46	13 28 17·3	7·9 08 28	9·4	17 52 414	392 12 30	22	2,0,1,1,0,2,1,1	8	0	83·0
4 d	23 50 909	812 15 25	97	14 31 22·6	-5·2 19 17	27·8	19 25 454	369 23 59	85	1,1,2,3,3,4,4,4	22	1	83·0
5 d	18 35 924	792 04 45	132	13 36 22·7	-2·5 18 14	25·2	18 10 449	349 01 21	100	5,4,3,3,4,4,5,3	31	2	83·5
6 d	21 34 920	797 08 21	123	13 57 16·2	1·3 21 21	14·9	17 33 424	382 00 01	42	2,2,3,3,3,3,3,4	23	1	83·5
7	23 17 902	801 09 32	101	14 50 17·8	6·7 08 45	11·1	16 42 429	391 23 50	38	2,0,1,2,2,3,3,1,3	20	1	83·5
8	19 18 874	819 10 09	55	12 27 17·1	6·9 19 11	10·2	18 23 421	392 00 01	29	2,0,1,2,2,2,3,2	14	1	83·6
9	15 48 867	827 11 15	40	13 29 17·1	6·0 07 40	11·1	17 30 426	398 12 31	28	0,2,1,2,2,2,2,1	12	1	83·5
10 q	18 00 866	820 11 00	46	13 17 18·0	7·9 07 30	10·1	19 00 416	398 14 10	18	0,0,0,1,1,1,1,1	5	0	83·6
11 q	19 25 873	812 10 21	61	13 34 17·8	5·9 08 20	11·9	17 40 411	387 12 40	24	0,0,1,2,1,1,1,1	7	1	83·6
12	00 30 895	806 10 23	89	13 50 21·9	6·2 08 49	15·7	20 55 421	385 12 30	36	3,0,1,2,3,3,3,2	17	1	83·7
13	20 42 881	808 10 50	73	14 20 24·4	5·7 23 21	18·7	18 30 457	393 12 33	64	2,1,0,2,2,2,3,3	15	1	83·7
14 d	21 15 920	808 12 59	112	16 03 23·7	3·0 21 08	20·7	16 23 445	375 23 59	70	4,1,1,1,3,3,3,4	20	1	83·7
15	19 21 871	804 11 23	67	13 29 19·0	4·0 00 50	15·0	19 50 420	387 02 39	33	4,3,2,2,1,2,1,2	18	1	83·7
16	20 31 885	823 11 28	62	13 36 17·0	7·6 10 00	9·4	18 23 421	391 12 22	30	2,1,0,1,1,2,2,1	10	1	83·7
17	16 41 879	828 13 03	51	13 41 18·9	4·9 01 28	14·0	18 20 426	392 13 10	34	3,2,1,1,2,2,1,1	13	1	83·7
18	16 00 908	825 12 15	83	16 32 22·1	-6·4 21 03	28·5	18 36 444	398 13 16	46	1,1,1,0,3,4,4,4	18	1	83·8
19	15 49 889	830 12 57	59	15 49 18·1	3·7 05 02	14·4	18 50 416	387 10 30	29	3,2,2,1,2,4,2,2	18	1	83·8
20	00 30 897	831 13 09	66	12 43 17·9	7·7 06 19	10·2	16 10 433	391 00 33	42	3,1,1,1,2,2,1,0	11	1	83·7
21 q	22 46 880	827 10 34	53	12 58 17·1	7·7 07 30	9·4	18 30 421	393 11 44	28	0,0,0,2,1,1,1,2	7	0	83·7
22	01 37 885	828 10 39	57	12 57 17·0	-5·1 21 00	22·1	21 00 422	391 02 18	31	3,0,0,1,1,2,4,3	15	1	83·8
23	18 16 871	834 14 25	37	12 50 18·8	2·8 06 30	16·0	16 41 417	382 03 57	35	2,3,2,1,1,1,2,0	12	1	83·8
24 q	18 46 879	823 09 39	56	12 56 16·1	7·6 07 37	8·5	16 45 413	399 12 42	14	0,0,0,1,1,1,1,2	6	0	83·8
25	17 42 880	831 10 55	49	12 56 18·0	-5·8 07 02	12·2	19 20 412	390 11 35	22	2,1,1,0,1,1,1,2	9	1	83·8
26	21 31 897	831 11 50	66	12 58 18·8	4·7 22 01	14·1	19 48 413	388 11 31	25	2,2,0,0,1,2,2,3	12	1	83·8
27	18 48 897	817 12 34	80	13 13 22·7	4·0 19 36	18·7	19 37 455	382 11 12	73	2,1,1,2,3,3,3,1	16	1	83·9
28 q	17 42 893	827 11 48	66	14 09 16·7	5·8 08 11	10·9	19 20 413	382 11 30	31	0,0,1,2,2,2,1,1	9	1	83·9
29	17 55 881	837 11 01	44	13 09 15·2	6·8 06 33	8·4	18 06 412	383 11 55	29	1,1,1,1,1,1,1,1	8	1	83·9
30 d	16 41 978	810 20 47	168	17 16 28·0	-11·8 20 22	39·8	20 18 502	375 12 00	127	0,0,1,2,2,4,5,4	18	2	83·9
Mean	- - 892	820 - -	72	- - 19·1	3·7 - -	15·4	- - 428	386 - -	42	-	-	0·93	83·6

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H)　　　　16,000γ (0·16 C.G.S. unit) +　　　　MAY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 d	858	863	858	837	843	835	835	827	808	789	796	816	820	828	854	854	851	855	861	862	859	858	878	854	842	199
2 d	846	845	850	850	851	836	832	848	841	801	782	808	834	836	839	870	875	897	868	856	861	862	897	875	848	360
3	877	858	857	862	864	863	865	859	856	842	832	827	835	837	847	866	869	866	863	867	858	859	857	857	856	543
4 d	847	846	855	848	851	834	825	815	796	796	821	839	842	843	843	852	866	877	875	863	861	858	862	861	845	276
5	854	845	852	841	853	855	842	834	833	829	827	832	830	843	854	871	871	880	873	866	869	859	859	861	851	433
6	860	856	854	844	845	852	847	840	834	832	831	826	831	844	850	859	856	865	869	869	864	861	859	859	850	407
7	861	859	858	853	854	854	851	849	842	830	815	822	829	850	856	865	869	868	869	872	866	865	864	873	854	494
8	873	863	857	856	860	858	847	845	826	825	823	826	830	839	859	862	866	870	877	878	871	890	866	864	855	531
9	865	866	865	866	865	858	822	835	837	823	826	835	831	839	856	859	858	869	877	871	859	862	864	866	853	474
10	858	858	865	859	850	850	835	833	835	828	824	834	842	842	846	860	861	887	881	885	875	863	862	858	854	491
11	853	867	839	844	840	845	843	833	827	815	815	823	820	854	871	856	866	869	876	873	874	870	874	860	850	407
12	854	879	863	856	855	850	835	824	827	832	825	823	825	841	837	848	859	888	886	877	883	864	859	867	852	457
13 d	879	867	861	866	856	846	862	843	824	798	807	793	815	827	837	855	854	863	881	888	874	869	861	862	849	388
14	868	848	841	836	867	868	832	831	821	812	808	810	828	835	846	855	861	859	873	869	862	871	881	859	848	341
15	855	854	855	854	854	846	843	840	840	834	827	828	831	836	845	847	863	866	873	868	866	863	858	854	850	400
16 q	852	857	854	851	852	852	851	849	848	842	839	837	835	839	842	853	857	863	867	869	866	866	861	860	853	462
17	857	855	857	859	861	858	858	854	853	841	832	826	836	858	858	854	858	864	875	868	868	868	863	862	856	543
18 q	863	863	862	858	858	856	851	847	849	829	839	836	846	847	854	851	865	867	879	873	870	866	864	863	857	556
19	863	862	862	865	866	865	859	858	862	863	855	854	854	854	870	863	867	878	875	880	873	859	859	852	863	718
20	843	842	840	870	873	872	862	849	839	830	827	832	845	849	857	866	874	874	875	873	872	870	870	870	857	574
21	869	866	864	860	858	859	850	847	844	845	852	855	861	869	866	866	868	886	884	883	869	866	869	871	864	727
22 q	868	863	865	863	861	856	856	848	838	831	833	834	851	863	864	866	866	867	870	871	873	872	871	871	859	621
23 q	870	869	869	868	866	863	854	843	832	826	828	837	853	866	862	866	870	875	875	874	874	870	868	869	860	647
24 q	869	869	869	864	864	859	850	843	839	835	828	829	842	844	858	868	877	883	881	880	879	880	878	879	861	667
25	881	885	878	881	882	878	867	857	853	851	856	866	849	878	858	871	886	887	888	883	874	874	873	874	872	930
26	885	866	862	862	858	851	846	844	838	834	835	843	853	857	864	862	873	869	870	874	877	870	865	879	860	637
27	863	856	858	862	862	859	851	848	846	845	841	830	835	847	874	889	871	875	885	881	892	892	890	893	864	745
28	886	878	877	877	867	872	865	860	844	824	825	823	828	839	849	854	869	874	888	885	878	869	875	871	862	677
29 d	871	871	875	854	861	858	838	843	842	839	838	842	856	855	850	864	869	869	883	873	873	866	867	867	859	624
30	871	861	845	850	858	835	834	854	850	844	840	851	862	863	867	862	862	863	878	875	865	862	859	858	857	569
31	860	861	861	859	859	858	852	852	851	851	846	847	855	851	862	859	862	878	888	892	886	871	866	863	862	690
Mean	864	861	859	857	859	855	847	844	838	829	828	832	839	847	855	861	866	873	876	874	871	868	868	865	856	
Sum 25,000+	1779	1698	1628	1575	1614	1501	1260	1152	975	716	673	784	1004	1273	1495	1693	1839	2051	2163	2098	1991	1895	1899	1832		Grand Total 636,588

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D)　　　　10° +　　　　MAY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 200·0'+
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1 d	9·2	10·0	11·3	2·7	5·4	3·4	4·9	7·7	8·3	12·4	14·4	15·2	17·8	16·2	14·9	15·4	12·5	11·1	12·5	12·4	11·5	7·6	9·9	8·0	10·6	54·7
2 d	10·1	15·3	11·2	10·7	8·9	9·7	8·7	6·7	6·8	9·5	12·6	15·1	15·3	16·4	14·6	13·9	13·3	8·3	11·2	10·7	10·7	11·6	12·1	10·7	11·4	74·1
3	7·8	8·3	11·4	8·5	7·9	8·1	8·9	7·8	7·1	8·6	10·2	13·6	16·0	17·3	16·0	14·7	13·3	12·2	12·4	11·7	8·7	8·3	10·8	7·8	10·7	57·4
4 d	11·7	13·0	7·5	8·8	9·0	8·9	10·5	8·9	7·8	11·9	13·3	13·5	16·1	17·3	15·3	13·6	13·3	9·0	10·7	10·5	10·6	9·1	10·2	9·8	11·3	70·3
5	6·5	9·5	9·2	9·5	13·0	9·1	8·0	7·0	8·4	8·1	9·2	11·5	13·5	14·4	13·7	13·3	12·5	9·5	11·5	11·6	10·7	10·6	10·9	11·3	10·5	52·5
6	10·7	11·5	13·3	10·5	15·1	9·3	5·9	5·4	5·2	7·3	9·9	12·6	14·5	15·6	15·1	13·8	13·1	12·4	12·0	10·7	6·9	9·4	10·8	11·5	10·9	62·5
7	11·5	11·4	11·4	9·7	8·5	6·9	6·7	6·0	6·7	9·4	11·8	15·0	17·1	17·3	16·0	14·2	12·6	11·8	10·7	10·5	9·3	10·7	9·9	9·7	11·0	64·8
8	10·5	8·9	7·0	7·9	8·0	7·7	7·0	7·2	7·9	9·8	11·4	15·2	17·3	17·9	16·3	14·7	13·3	12·3	11·6	11·9	11·3	7·9	8·3	10·2	10·9	61·5
9	9·9	10·8	11·2	12·0	7·9	5·9	8·0	6·7	7·9	12·0	16·0		18·3	18·0	17·9	16·1	14·1	12·5	11·6	8·7	7·2	10·7	10·8	11·1	11·1	65·4
10	9·9	10·7	9·8	4·1	5·5	3·9	3·7	3·9	4·7	8·7	11·5	15·9	18·0	19·1	18·6	17·1	15·3	10·3	13·3	7·8	8·4	9·3	4·6	8·0	10·1	42·1
11	11·4	6·9	7·0	9·4	9·3	7·2	6·6	5·7	6·1	7·4	12·8	16·1	17·5	16·6	16·8	15·3	14·2	13·8	13·2	12·2	7·9	10·4	10·5	5·0	10·8	59·3
12	8·0	10·5	6·9	6·6	5·9	5·4	5·1	5·6	6·7	8·1	11·0	15·0	17·8	20·0	19·1	18·2	15·6	16·9	14·7	12·4	8·5	8·8	8·9	9·7	11·1	65·4
13 d	9·5	8·7	6·0	4·8	8·6	8·8	7·4	6·0	6·0	9·3	13·1	15·4	17·4	17·9	16·2	13·8	13·3	12·3	11·5	9·9	10·2	10·5	9·6	6·1	10·5	52·3
14	5·2	3·0	4·0	9·4	10·7	6·2	6·3	7·8	9·7	10·7	14·3	14·4	14·6	14·4	13·8	13·1	12·2	11·5	12·4	12·4	12·3	11·8	9·4	9·4	10·4	49·4
15	8·5	9·6	9·3	9·3	9·7	9·9	8·7	6·7	7·1	8·8	11·9	15·1	16·7	15·5	14·5	13·3	12·6	11·4	9·8	9·4	11·1	10·8	9·9	9·8	10·8	59·4
16 q	10·4	14·7	10·6	8·6	7·8	6·7	6·3	6·7	7·5	9·6	11·1	13·7	16·2	16·0	14·7	14·2	12·7	12·1	12·0	11·5	11·5	11·7	10·8	10·3	11·1	67·4
17	10·1	9·8	10·7	10·6	9·7	8·8	9·4	8·6	7·5	9·0	11·4	15·1	17·3	20·0	19·9	18·3	17·0	14·9	14·3	12·4	12·3	11·5	11·3	12·6	12·6	101·4
18 q	10·8	9·9	10·3	9·4	7·6	6·7	6·3	6·9	7·8	9·6	11·7	13·3	14·9	15·0	14·9	13·9	13·5	12·8	12·4	11·4	11·5	11·6	11·3	10·7	11·0	64·2
19	10·6	10·2	9·6	9·4	8·0	6·7	6·6	7·7	9·0	9·4	12·1	14·2	15·5	14·5	14·0	12·3	11·4	11·1	10·9	11·8	11·8	9·6	9·8	5·1	10·5	51·3
20	2·8	4·0	6·6	11·7	6·6	5·2	5·0	5·2	6·6	8·3	10·4	12·7	15·0	14·9	14·3	13·2	12·0	11·2	10·9	11·5	11·6	11·5	12·0	11·7	9·8	34·9
21	11·5	10·5	9·8	8·8	7·6	6·0	5·8	6·1	7·0	10·2	12·8	16·0	15·7	15·5	14·7	13·6	12·1	12·5	12·5	9·5	11·0	11·4	12·0	11·0	11·0	63·7
22 q	11·1	10·7	10·3	9·8	9·6	8·4	7·8	7·4	8·0	10·5	12·8	16·3	18·2	18·2	16·2	14·8	13·5	12·1	11·5	11·5	11·5	11·5	11·3	10·8	11·8	83·8
23 q	10·7	10·6	10·4	9·8	8·7	6·7	5·6	5·4	6·4	10·2	13·8	15·9	17·2	16·9	14·9	13·4	12·7	12·7	12·2	11·2	11·4	11·5	11·4	11·4	11·3	71·1
24 q	11·1	10·7	9·9	9·1	7·6	5·5	4·9	5·2	5·8	7·5	11·0	14·0	16·0	15·2	14·2	13·5	12·8	11·8	11·7	12·4	13·0	12·5	11·9	11·4	10·8	58·5
25	10·7	10·7	9·6	9·4	7·4	5·2	4·7	4·4	5·8	8·9	11·3	15·3	17·7	20·8	17·9	15·4	15·2	14·8	14·7	13·0	10·6	12·2	11·6	11·3	11·6	78·6
26	8·4	1·5	4·1	3·1	5·0	5·1	6·8	7·5	8·7	11·5	13·3	16·1	17·7	18·4	17·6	16·0	15·2	13·7	13·0	11·5	10·7	10·0	10·7	10·6	10·7	56·2
27	9·8	9·4	8·7	8·4	7·4	8·0	7·8	7·2	8·0	9·6	13·1	15·5	17·7	17·3	16·9	17·2	16·0	15·3	14·4	14·3	14·1	12·4	12·1	12·6	12·2	93·2
28	8·8	8·6	11·6	13·2	6·0	5·7	5·4	9·8	8·9	9·8	12·2	14·4	15·4	16·0	16·3	15·5	16·0	14·3	12·4	11·7	10·7	10·6	10·7	10·5	11·4	74·5
29 d	9·9	11·2	17·9	14·0	6·1	1·9	5·2	7·8	8·0	10·6	13·2	14·1	15·3	15·6	14·0	13·3	13·3	12·8	12·3	11·7	11·5	11·5	11·0	10·8	11·4	73·0
30	9·8	8·8	12·2	12·4	10·1	11·1	12·4	7·5	6·1	8·4	11·0	12·9	14·0	14·0	14·0	12·8	12·2	11·7	11·2	9·8	11·4	11·3	11·2	10·7	11·1	67·0
31	10·6	10·0	9·8	9·0	7·5	7·7	7·1	6·2	6·9	8·5	10·3	13·3	14·9	14·7	14·4	13·3	11·5	12·5	13·3	12·3	11·2	13·1	6·8	8·7	10·6	53·6
Mean	9·6	9·7	9·6	9·1	8·3	7·0	6·8	6·8	7·2	9·3	12·0	14·6	16·3	16·7	15·7	14·5	13·5	12·3	12·2	11·3	10·7	10·7	10·4	9·8	11·0	
Sum 200·0+	97·5	99·2	98·6	80·6	56·1	15·8	11·3	10·0	23·2	89·5	170·9	251·4	306·6	316·9	287·7	251·2	218·3	181·6	177·9	150·3	131·2	132·2	122·5	103·0		Grand Total 8183·5

23 ESKDALEMUIR (Z)   45,000γ (0·45 C.G.S. unit) +   **MAY 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
1 d	411	411	361	350	389	406	409	405	403	397	395	395	398	406	416	423	437	443	432	426	423	421	400	400	407	757
2 d	403	388	377	396	403	403	399	404	407	404	405	406	410	413	418	421	427	432	431	425	420	414	395	387	408	788
3	395	399	397	402	409	408	404	400	395	392	394	396	400	407	410	417	420	427	423	420	421	415	397	391	406	739
4 d	392	376	376	394	398	400	401	404	407	401	399	403	403	407	416	420	425	431	428	428	424	416	399	395	406	743
5	395	394	398	404	395	399	406	409	403	398	398	397	398	400	404	410	413	423	421	416	414	411	411	411	405	728
6	410	409	403	399	388	387	396	402	401	398	394	392	396	401	407	414	415	416	415	417	420	415	410	410	405	715
7	410	410	410	410	411	413	414	410	408	403	399	394	396	405	409	411	413	415	416	417	412	415	411	409	409	821
8	399	390	399	400	408	409	410	409	407	398	391	388	391	398	409	411	415	415	415	413	414	410	405	405	405	709
9	405	406	406	405	409	410	414	402	400	402	396	392	396	401	408	416	419	420	419	421	424	415	410	402	408	·798
10	403	402	391	389	400	406	407	405	399	392	389	384	387	396	408	417	429	434	426	426	416	412	409	394	405	·721
11	388	370	368	382	395	404	410	410	409	406	405	402	403	411	420	423	423	421	419	419	420	414	410	402	406	734
12	402	390	392	400	405	406	408	404	399	391	388	387	392	403	412	416	416	415	422	425	420	411	406	407	405	717
13 d	400	386	380	388	382	386	389	402	400	397	396	394	403	412	418	426	423	422	422	420	417	409	387	394	402	653
14	388	387	391	392	381	389	398	399	394	392	387	377	382	389	398	406	412	417	419	417	416	412	403	400	398	546
15	402	407	409	411	411	408	406	409	405	398	392	392	396	404	408	414	417	420	421	422	420	415	414	410	409	811
16 q	409	398	399	407	411	412	412	410	405	395	394	391	391	399	404	408	409	410	412	414	414	413	413	411	406	741
17	410	410	410	410	410	412	409	410	405	398	394	394	394	401	403	407	414	421	426	421	417	414	414	413	409	817
18 q	414	410	410	413	414	414	414	408	402	399	400	400	400	402	403	407	410	413	415	417	416	413	412	411	409	817
19	411	410	410	410	412	413	409	403	398	392	391	389	392	401	405	408	413	420	423	421	421	421	414	400	408	787
20	394	403	404	398	398	400	403	406	404	400	396	391	392	400	406	410	413	416	416	412	412	412	410	410	404	706
21	410	410	410	411	414	412	410	407	401	394	391	389	393	398	402	403	404	408	412	421	421	419	415	414	407	769
22 q	414	414	413	413	412	411	410	409	407	395	384	380	382	391	398	407	413	414	412	410	409	409	410	410	405	727
23 q	410	410	410	410	410	412	409	405	399	387	382	382	381	389	402	405	404	406	408	409	409	406	406	408	402	659
24 q	409	409	410	413	414	414	409	406	406	405	400	393	392	398	400	406	406	406	406	405	404	403	404	405	405	723
25	405	405	408	409	409	408	403	400	396	389	384	383	391	399	406	409	414	415	414	414	416	410	409	408	404	705
26	398	393	393	394	400	403	400	399	397	389	388	387	391	398	404	410	414	414	413	414	412	411	409	402	401	633
27	398	403	403	406	409	409	406	408	405	400	394	393	392	393	400	403	412	419	417	413	407	404	405	400	404	699
28	391	399	402	387	380	385	393	396	399	401	400	396	396	399	404	407	410	417	425	427	423	419	413	410	403	679
29 d	409	407	394	352	366	392	399	403	403	400	395	394	395	405	409	407	413	415	415	420	417	415	413	410	402	648
30	406	404	399	387	387	387	390	399	405	403	398	393	396	402	404	408	414	419	421	421	417	416	415	414	404	705
31	414	412	412	414	416	415	413	410	409	403	394	389	394	410	414	419	423	419	417	417	418	403	408	410	411	853
Mean	403	401	398	399	401	404	405	405	403	397	394	392	394	401	407	412	416	419	419	418	417	413	408	405	405	
Sum 12,000+	506	422	345	356	446	533	560	553	478	319	213	143	223	438	625	769	890	983	981	968	914	793	637	553		Grand Total 301,648

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR   All Times G.M.T.   **MAY 1963**

	GEOMAGNETIC ELEMENTS											3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+
	Horizontal component			Declination			Vertical component							
	Maximum 16,000γ +	Minimum 16,000γ +	Range	Maximum 10° +	Minimum 10° +	Range	Maximum 45,000γ +	Minimum 45,000γ +	Range					
	h. m.	γ	γ	h. m.	γ	h. m.	′	′	h. m.	′	h. m.	γ	γ	h. m.	γ				
1 d	22 08	932	766	08 54	166	02 34	30·1	3·1	21 54	27·0	17 08	449	305	03 00	144	5,3,4,3,3,4,2,4	28	2	83·9
2 d	17 20	962	774	10 08	188	01 32	20·7	2·0	17 04	18·7	17 06	435	368	02 19	67	4,3,3,3,3,5,3,4	28	2	83·9
3	17 08	905	816	11 56	89	13 30	18·9	5·0	01 08	13·9	17 21	430	381	23 03	49	3,1,2,2,3,4,2,3	20	1	83·9
4 d	17 52	909	774	09 00	135	13 21	18·2	6·4	08 30	11·8	17 20	433	363	01 01	70	3,2,3,3,3,4,2,3	23	1	83·9
5	17 49	893	821	10 22	72	04 28	16·0	5·0	00 38	11·0	17 58	426	392	04 47	34	2,3,2,2,2,3,2,1	17	1	84·0
6	18 22	878	820	11 25	58	04 19	17·9	4·1	08 07	13·8	20 43	420	380	04 30	40	2,3,2,2,2,2,3,2	18	1	84·1
7	23 45	885	808	10 16	77	13 40	18·9	4·9	07 14	14·0	19 35	419	392	11 55	27	1,0,1,2,2,2,2,2	12	1	84·1
8	21 50	928	816	08 22	112	13 13	18·6	3·9	21 40	14·7	19 45	421	392	12 00	29	2,1,2,1,3,2,2,4	17	1	84·2
9	18 52	902	808	06 38	94	12 30	19·3	2·3	06 02	17·0	20 00	427	391	11 38	36	2,3,3,2,3,3,3,3	22	1	84·1
10	17 30	912	816	10 35	96	13 04	20·2	1·8	06 14	18·4	17 14	438	383	11 17	55	2,2,2,2,3,4,3,3	21	1	84·3
11	22 43	897	804	12 38	93	12 26	19·1	2·5	02 11	16·6	16 04	424	363	02 13	61	3,3,2,2,4,3,3,3	23	1	84·4
12	20 24	905	811	07 56	94	13 33	21·4	4·5	05 55	16·9	20 00	426	380	11 53	46	3,1,3,1,3,3,3,2	19	1	84·4
13 d	19 55	897	779	11 30	118	12 57	19·4	3·1	07 50	16·3	15 30	427	376	02 12	51	3,4,3,3,3,3,3,3	25	1	84·5
14	22 00	889	800	10 18	89	12 28	15·8	1·3	01 23	14·5	18 41	420	375	12 02	45	3,3,3,2,1,2,3	19	1	84·5
15	18 55	881	823	10 30	58	12 34	17·6	5·0	08 13	12·6	19 00	423	391	11 13	32	1,2,2,1,2,2,1,1	12	1	84·5
16 q	21 15	870	835	12 29	35	12 53	16·6	6·1	06 10	10·3	20 30	416	388	11 45	28	2,0,0,0,1,0,1,1	5	0	84·4
17	18 10	911	823	11 50	88	13 17	20·8	6·8	08 30	14·0	18 30	427	392	12 04	35	1,0,1,2,3,3,3,1	14	1	84·5
18 q	18 48	882	831	12 39	51	12 43	16·1	6·0	06 29	10·1	19 41	419	398	10 00	21	1,0,0,0,3,3,1,0	8	1	84·6
19	17 14	887	839	23 39	48	12 58	16·2	4·0	23 13	12·2	18 12	425	389	11 42	36	0,1,1,1,2,3,2,3	13	1	84·5
20	16 47	879	825	11 11	54	12 50	15·2	1·5	00 57	13·7	17 30	416	389	11 40	27	3,3,1,1,0,1,0,1	10	1	84·5
21	19 08	904	843	08 40	61	13 07	16·3	6·3	19 27	10·0	20 08	424	389	11 37	35	1,1,0,0,2,2,3,1	10	1	84·5
22 q	17 17	877	828	10 53	49	13 25	18·8	6·8	07 40	12·0	17 40	414	379	12 00	35	0,0,0,1,2,2,0,0	5	0	84·5
23 q	18 04	879	823	09 55	56	12 39	18·1	4·9	07 00	13·2	20 00	410	381	10 04	29	0,0,0,0,2,2,1,0	5	0	84·5
24 q	17 10	889	825	11 07	64	12 45	16·2	4·7	06 47	11·5	05 00	408	391	12 30	17	0,1,0,0,1,2,1,0	5	0	84·4
25	14 03	900	827	14 22	73	13 59	21·7	3·3	07 21	18·4	20 14	420	380	11 14	40	2,1,1,2,4,3,2,2	17	1	84·5
26	00 31	894	827	10 03	67	13 15	19·0	1·2	01 25	17·8	19 30	416	384	11 28	32	3,1,1,1,2,2,2,2	14	1	84·5
27	20 37	912	825	11 37	87	12 11	18·1	6·9	07 26	11·2	17 48	420	391	12 07	29	2,0,1,2,3,3,3,2	16	1	84·5
28	00 03	902	804	09 56	98	03 20	18·9	3·3	06 33	15·6	19 30	427	377	04 10	50	3,4,3,3,2,2,2,2	21	1	84·5
29 d	18 31	913	815	03 23	98	03 00	24·5	0·1	05 48	24·4	19 11	421	346	03 35	75	4,5,3,2,2,2,3,1	22	1	84·5
30	19 46	892	816	06 04	76	12 05	14·7	5·0	08 40	9·7	19 16	423	384	03 50	39	3,3,3,2,1,2,3,0	17	1	84·5
31	21 00	912	831	10 50	81	21 12	16·9	3·8	22 11	13·1	16 13	425	388	11 33	37	0,1,1,2,3,3,3,4	17	1	84·5
Mean	- -	899	815	- -	85	- -	18·7	4·1	- -	14·7	- -	424	380	- -	44	-	-	0·94	84·3

q denotes an international quiet day and *d* an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H)　　　　16,000γ (0·16 C.G.S. unit) +　　　　**JUNE 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
1	869	878	868	866	863	877	866	859	847	829	816	837	863	873	865	856	862	860	866	873	874	873	866	860	861	666
2	862	858	856	855	862	846	849	847	851	853	858	855	842	861	870	861	867	886	880	872	877	869	871	874	862	682
3	868	861	861	865	866	865	856	857	854	851	850	850	862	869	858	862	863	869	876	874	870	870	866	863	863	706
4 q	863	862	865	864	862	860	845	830	839	845	849	851	856	864	863	869	868	869	868	864	869	866	866		859	622
5 q	864	862	863	862	863	855	845	841	832	831	839	849	855	860	866	867	866	866	866	869	870	872	870	869	858	602
6	867	869	873	875	874	866	861	855	847	837	837	847	864	882	898	907	905	915	916	914	904	908	880	851	*877*	1052
7 d	831	830	775	807	834	836	798	791	797	797	799	798	817	840	876	867	870	883	885	853	856	868	886	852	*835*	46
8	849	845	846	849	850	845	829	827	818	807	810	829	833	849	847	840	852	872	887	879	871	871	879	858	848	342
9	841	840	836	843	845	840	842	834	825	811	809	811	825	830	846	847	860	861	869	866	868	865	861	860	843	235
10	859	854	853	857	859	857	857	845	830	821	814	821	833	853	858	874	875	870	879	887	879	873	867	869	856	544
11	867	864	857	861	856	856	857	846	837	825	822	830	837	843	857	879	886	883	879	876	875	876	879	867	859	615
12	871	861	860	851	859	859	854	849	845	838	826	826	845	853	856	860	876	877	882	880	871	869	867	867	858	602
13	861	864	862	861	862	868	865	856	851	835	831	841	848	848	859	861	868	869	867	871	876	878	875	872	860	649
14	871	862	857	859	864	863	860	851	840	835	838	839	849	857	865	872	876	876	875	873	872	871	871	868	861	664
15	872	869	865	864	853	837	864	872	869	855	843	842	842	852	864	858	855	873	883	887	881	869	868	867	863	704
16 q	867	864	864	865	866	865	861	855	849	847	844	845	844	848	855	869	871	860	867	871	873	872	870	870	861	662
17	866	869	862	864	856	860	857	855	844	836	843	850	858	867	868	878	886	891	883	877	865	869	856	863	863	723
18 d	865	868	866	868	884	869	854	854	853	849	835	849	860	843	883	895	891	891	893	883	855	838	836	826	863	708
19	845	855	850	856	861	855	849	846	840	840	840	843	849	852	852	862	889	895	903	887	886	879	878	872	862	684
20	872	855	854	853	866	862	847	827	828	825	814	815	840	844	846	850	856	879	873	879	875	871	867	863	853	461
21	872	861	855	857	848	850	844	840	819	817	841	845	852	862	866	871	871	873	878	874	872	869	872	869	857	578
22 q	867	862	861	862	861	858	852	848	845	836	827	823	836	848	865	866	873	876	879	876	871	867	867	867	858	593
23 q	859	859	861	860	861	863	859	856	851	839	840	849	852	863	869	866	867	879	879	879	874	867	867	867	862	686
24	865	863	863	862	867	864	856	852	840	839	842	846	855	858	878	878	864	864	876	879	880	878	881	884	864	734
25 d	879	884	879	868	873	853	837	870	870	870	840	836	844	844	862	893	887	885	898	885	887	872	861	841	867	818
26 d	840	844	863	859	826	849	849	824	802	838	844	847	845	842	849	852	858	876	888	877	876	872	867	865	852	452
27 d	863	865	857	859	857	859	861	844	828	842	833	831	826	835	851	868	878	884	880	894	883	870	870	882	859	620
28	861	866	858	862	863	857	852	844	829	848	852	843	841	848	876	860	881	896	892	873	876	873	869	867	862	687
29	869	863	867	862	865	861	861	851	846	846	842	841	849	857	863	891	868	892	899	883	868	870	868	871	865	753
30	871	871	859	855	859	852	840	842	850	855	841	843	849	852	867	884	892	898	904	884	861	863	869	864	864	725
Mean	863	861	857	858	859	857	851	846	839	837	*834*	838	846	853	863	869	873	879	*882*	878	874	871	869	865	859	
Sum 25,000+	876	828	716	751	785	707	527	368	176	97	19	132	371	597	898	1063	1178	1368	1470	1343	1210	1131	1070	934		Grand Total 618,615

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D)　　　　10° +　　　　**JUNE 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 100·0'+
1	10·3	12·6	9·4	9·3	9·7	7·6	4·9	5·1	6·9	12·0	13·4	18·2	17·2	17·3	16·3	13·3	12·3	11·8	11·6	11·6	11·7	10·4	10·7	12·9	11·5	176·5
2	12·1	16·5	11·3	9·7	9·9	8·0	7·7	7·6	7·9	10·0	12·0	13·7	15·4	16·2	16·1	15·5	12·4	12·4	11·6	9·5	10·7	11·6	11·5	11·5	11·7	180·8
3	11·4	9·7	9·7	9·8	9·1	7·7	7·8	7·0	6·8	8·4	11·2	14·4	17·7	17·9	15·3	14·2	12·4	11·3	10·7	11·2	11·5	11·4	11·4	11·7	11·2	169·7
4 q	10·5	10·2	10·1	9·1	7·4	5·6	4·2	6·5	8·8	10·4	12·7	14·8	16·3	16·0	14·7	13·0	12·7	11·2	10·6	10·8	11·0	11·3	11·4	11·0	10·8	160·3
5 q	10·6	10·1	9·8	9·4	8·0	6·0	5·7	5·4	6·0	8·1	11·1	14·1	16·8	17·0	16·2	15·3	13·7	12·4	11·7	11·5	11·6	11·7	11·6	11·5	11·1	165·3
6	10·6	10·6	10·4	9·7	8·0	6·0	5·2	5·0	6·8	9·5	12·7	16·9	18·8	19·0	18·9	18·7	17·7	17·9	18·7	14·1	5·1	7·8	5·0	4·9	11·6	178·0
7 d	-9·6	-14·8	1·2	2·3	5·6	1·4	-3·3	-1·2	4·0	6·3	13·2	14·7	17·4	18·9	17·4	18·7	14·3	9·6	11·7	11·8	9·5	10·7	10·6		7·7	86·0
8	9·8	9·6	9·3	8·3	7·3	6·4	5·0	4·9	5·9	7·5	10·7	13·3	14·2	13·4	13·9	14·0	14·2	12·9	12·3	10·4	9·8	10·2	8·7	5·0	9·9	137·0
9	4·2	7·7	8·5	9·3	7·9	7·8	5·8	5·4	5·7	8·0	11·7	13·5	15·0	16·2	17·2	16·6	16·1	15·1	12·6	11·2	10·5	10·6	10·4	10·7	10·5	152·0
10	11·6	11·5	10·7	9·3	7·6	6·7	4·4	3·4	3·6	6·1	11·0	14·5	16·0	15·6	15·9	16·1	15·1	12·6	12·1	11·7	10·0	9·2	10·4	9·6	10·6	155·1
11	9·9	10·7	11·1	9·6	6·9	7·8	5·8	5·3	6·0	7·0	10·7	14·0	16·0	16·1	16·8	17·2	16·3	13·3	10·7	11·2	11·1	10·7	9·7	10·5	11·0	164·4
12	10·3	9·6	8·5	8·6	7·7	4·6	2·7	2·3	2·7	5·7	9·5	13·3	16·4	18·0	17·7	16·4	15·0	12·5	11·4	11·2	11·5	11·4	11·6	10·5	10·4	149·1
13	9·1	9·8	9·6	5·1	4·6	5·0	4·2	3·9	4·1	5·0	8·3	12·5	16·1	16·6	17·2	16·4	15·2	13·3	11·7	11·3	11·3	11·5	11·4	11·4	10·2	144·6
14	12·9	12·3	8·5	8·0	8·0	7·8	6·8	6·8	7·4	9·2	11·2	14·4	15·8	17·1	17·1	15·1	14·4	13·6	13·3	12·9	12·4	11·4	11·2	10·9	11·6	178·5
15	11·1	12·2	10·3	6·9	4·3	7·0	10·6	7·8	6·1	6·1	7·8	10·6	12·2	14·3	15·0	14·5	14·2	13·4	12·6	10·6	8·4	8·9	10·7	10·5	10·3	146·1
16 q	10·5	10·0	9·6	9·2	7·7	6·8	6·4	6·3	6·5	7·9	10·8	13·3	15·4	15·6	15·8	14·7	12·6	11·3	11·9	12·4	11·7	11·8	12·0	12·5	10·9	162·7
17	11·6	8·1	8·5	7·9	6·6	5·0	3·4	3·8	5·3	10·4	13·0	16·0	17·0	17·2	18·0	17·9	17·3	16·9	13·7	10·7	10·9	10·0	10·7	9·3	11·2	169·2
18 d	8·9	9·9	10·1	12·4	5·9	5·0	7·6	8·7	8·3	8·0	9·7	13·4	16·7	15·9	16·3	18·4	16·7	16·7	16·0	11·4	9·1	8·0	4·5	0·4	10·7	158·0
19	6·4	5·4	6·9	8·7	5·0	3·9	4·0	5·1	6·0	7·0	9·3	12·6	13·4	13·4	13·5	13·6	14·3	14·9	16·1	12·0	13·4	12·0	9·4	10·3	9·9	136·6
20	6·3	2·7	-6·3	0·4	2·4	3·3	3·6	5·5	7·5	8·4	9·2	11·6	13·5	16·3	16·8	15·7	14·4	12·1	12·8	10·7	10·6	11·4	11·5	10·1	8·8	110·5
21	11·6	9·5	7·2	7·4	8·2	8·1	6·6	5·8	6·0	8·0	10·2	13·4	15·1	15·9	15·1	14·6	14·8	14·2	12·7	11·5	10·2	9·9	10·0	10·0	10·9	160·5
22 q	10·3	10·5	9·6	7·0	6·5	4·9	4·9	5·3	5·9	6·5	8·8	9·7	13·0	14·4	13·0	13·8	12·3	11·4	10·7	11·4	11·3	10·7	9·4	9·1	9·7	132·4
23 q	8·9	9·1	9·3	7·5	6·7	5·9	5·4	5·9	7·4	8·4	10·6	12·8	15·2	15·8	14·0	13·2	13·3	13·0	12·2	11·7	9·8	9·8	10·3	10·0	10·3	146·2
24	9·5	9·4	8·7	7·7	7·1	7·7	8·0	8·3	8·0	9·4	12·3	15·2	16·3	17·0	17·9	17·1	17·5	16·1	15·2	13·3	12·6	12·3	12·1	11·4	*12·1*	190·1
25 d	8·5	9·6	6·9	6·1	5·0	8·0	9·7	11·2	6·7	8·0	9·6	11·8	13·3	14·3	12·6	13·2	13·4	11·3	-0·3	6·8	0·3				9·6	130·9
26 d	5·4	4·8	4·9	10·4	13·3	5·5	5·7	6·3	9·4	10·4	9·4	11·9	13·2	14·2	14·2	14·4	13·7	12·8	12·4	11·4	10·7	10·4	8·7	8·5	10·1	142·0
27 d	8·4	7·7	11·1	11·7	12·6	9·5	7·8	8·1	5·9	6·8	9·1	11·7	14·7	16·1	16·5	15·0	13·4	13·4	12·4	8·0	9·4	10·6	10·3	11·5	10·9	161·7
28	8·9	8·8	7·2	7·4	5·7	5·1	5·0	4·1	6·4	7·8	8·5	11·0	13·9	15·8	16·8	15·5	15·3	12·0	9·8	11·5	11·6	11·1	9·9	10·5	10·0	139·6
29	11·2	10·5	8·8	7·0	6·0	5·2	5·7	6·0	6·2	7·6	10·2	12·5	14·7	15·9	15·6	15·3	13·9	13·5	9·7	10·5	11·2	10·7	10·6	12·4	10·5	150·9
30	10·4	8·8	8·4	5·5	6·1	3·5	6·0	7·0	5·9	6·1	8·9	11·6	13·4	13·1	13·4	13·2	13·5	13·8	12·3	7·9	10·0	10·3	10·9	11·3	9·6	131·3
Mean	9·1	8·8	8·3	8·0	7·2	6·1	*5·6*	5·7	6·3	8·0	10·6	13·4	15·3	*16·1*	16·0	15·4	14·4	13·4	12·4	11·3	10·8	10·2	10·1	9·7	10·5	
Sum 100·0'+	171·6	163·1	149·3	140·7	116·8	82·8	67·3	72·6	90·1	140·0	216·8	301·4	360·3	381·5	379·5	362·8	332·1	300·8	272·4	239·2	224·0	206·4	203·7	190·8	10·6	Grand Total 7566·0

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

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23 ESKDALEMUIR (Z) 45,000γ (0·45 C.G.S. unit) + JUNE 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
1	409	400	399	403	405	403	405	408	403	400	394	387	394	402	412	417	426	423	420	419	417	416	414	414	408	790
2	404	405	408	408	405	409	409	409	405	394	394	400	406	415	421	423	424	422	423	426	422	419	414	413	412	878
3	411	410	411	410	409	409	409	405	404	399	392	383	391	400	407	413	416	416	417	417	416	416	414	414	408	789
4 q	413	415	413	416	416	417	415	412	405	398	395	396	404	410	413	416	420	419	418	415	413	412	411	412	411	874
5 q	413	413	413	414	414	416	416	416	414	405	397	395	399	403	407	406	410	413	413	410	410	410	410	410	409	827
6	411	411	412	414	414	412	409	405	404	402	395	388	388	391	398	402	409	414	417	426	410	402	413	422	407	769
7 d	402	374	330	316	348	375	399	404	410	415	414	413	417	428	442	448	451	452	451	439	431	424	400	398	408	781
8	407	414	417	419	422	425	420	419	416	404	403	399	403	412	421	425	427	427	427	429	430	425	404	393	416	988
9	394	391	387	398	405	409	412	413	416	413	404	399	397	403	411	418	423	427	427	426	421	419	417	414	410	844
10	412	412	413	417	420	420	420	421	420	411	405	405	403	402	405	409	421	427	427	423	419	418	416	414	415	960
11	414	412	414	413	417	414	410	410	407	403	397	392	389	394	402	409	416	424	428	426	421	417	409	409	410	847
12	410	412	415	417	416	418	420	417	414	409	403	395	395	398	406	415	420	426	428	428	426	420	418	416	414	942
13	410	408	403	404	409	410	413	414	410	406	400	401	399	401	400	403	410	416	420	421	416	413	412	410	409	811
14	409	402	406	410	413	416	416	415	410	405	400	392	404	410	414	417	419	421	422	421	420	418	413	413	412	886
15	411	410	409	412	414	415	402	402	400	399	401	403	405	409	414	418	421	421	422	423	426	425	418	416	412	896
16 q	414	414	415	415	416	416	417	410	404	400	396	395	405	409	405	403	413	417	416	417	417	416	415	413	411	858
17	410	405	410	411	415	415	414	411	406	405	406	403	404	417	433	453	468	474	476	464	452	434	417	416	426	1219
18 d	416	416	416	400	384	390	398	404	407	408	404	400	404	421	426	429	445	456	459	453	429	423	414	398	417	1000
19	405	403	405	399	403	412	415	413	405	397	395	393	400	409	414	414	415	423	432	444	439	434	423	419	413	911
20	392	387	368	384	399	406	409	410	411	412	415	415	410	415	416	417	423	428	427	422	422	419	417	414	410	838
21	405	405	410	411	412	410	411	411	412	405	392	398	399	406	416	416	420	421	419	421	421	420	416	414	411	871
22 q	415	416	414	416	417	419	417	414	414	412	410	407	402	405	412	414	420	420	420	419	416	414	412	411	414	936
23 q	413	412	411	413	414	411	411	410	410	407	406	404	405	409	410	413	417	421	421	416	416	416	413	410	412	889
24	413	413	412	412	410	408	409	409	402	392	387	385	391	397	404	416	420	421	419	415	412	411	411	410	407	779
25 d	412	408	400	399	395	398	400	393	397	401	407	399	399	416	420	417	419	420	418	421	420	417	410	391	407	777
26 d	390	332	352	380	373	391	405	409	410	400	405	402	402	411	421	424	423	423	425	430	428	421	414	412	403	683
27 d	416	416	409	390	391	388	398	399	402	400	400	405	409	410	414	413	416	423	427	428	426	421	416	409	409	826
28	399	400	406	411	414	414	413	410	409	409	403	398	394	403	418	421	422	428	434	427	423	422	417	415	413	910
29	410	410	409	413	419	420	417	415	414	411	410	409	409	416	417	426	435	440	442	438	431	425	420	413	420	1069
30	410	399	399	409	410	412	412	412	410	403	403	405	399	403	416	426	426	426	429	432	427	422	412	403	413	905
Mean	408	404	403	405	407	409	411	410	408	404	401	399	401	407	414	418	423	426	427	427	423	419	414	411	412	
Sum 11,000+	1250	1125	1086	1134	1199	1278	1321	1300	1251	1125	1035	966	1026	1225	1415	1541	1695	1789	1824	1796	1677	1569	1410	1316		Grand Total 296,353

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR All Times G.M.T. JUNE 1963

	Horizontal component Max 16,000γ+ h.m.	γ	Min 16,000γ+ γ	h.m.	Range γ	Declination Max 10°+ h.m.	′	Min 10°+ ′	h.m.	Range ′	Vertical component Max 45,000γ+ h.m.	γ	Min 45,000γ+ γ	h.m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+
1	14 19	893	801	10 38	92	11 33	19·7	4·0	06 29	15·7	16 50	427	387	11 30	40	2,2,1,3,3,3,1,3	18	1	84·5
2	17 58	912	832	12 32	80	13 08	17·1	6·6	06 41	10·5	19 41	428	392	10 30	36	1,3,2,2,3,3,3,1	18	1	84·5
3 q	18 10	887	835	11 48	52	13 44	18·2	6·0	07 39	12·2	17 08	420	380	11 40	40	1,1,2,2,2,2,2,1	13	1	84·5
4 q	18 28	874	823	07 20	51	13 01	17·1	4·5	05 50	12·6	16 40	421	394	10 19	27	0,1,2,1,2,1,1,1	9	1	84·5
5 q	21 10	874	828	09 02	46	13 10	17·2	5·0	07 15	12·2	05 38	417	396	11 26	21	0,1,0,1,1,1,1,0	5	0	84·5
6	19 46	948	831	22 42	117	17 36	20·0	0·2	22 50	19·8	22 53	430	387	12 36	43	0,0,0,1,2,3,4,5	15	1	84·5
7 d	21 55	916	710	02 43	206	13 39	22·6	-24·6	00 54	47·2	18 18	456	225	02 55	231	6,5,3,3,3,4,4,3	31	2	84·5
8	22 20	911	798	09 10	113	15 26	15·1	1·9	23 40	13·2	20 02	431	387	23 05	44	2,2,2,3,2,3,2,4	20	1	84·5
9	18 23	879	794	11 22	85	14 28	18·2	3·3	07 58	14·9	18 48	428	384	02 09	44	3,2,2,2,3,2,2,2	18	1	84·5
10	19 55	895	809	10 37	86	12 42	16·5	2·4	07 06	14·1	17 35	428	402	13 43	26	1,1,1,1,2,2,2,1	11	1	84·7
11	15 33	900	817	09 48	83	15 33	18·9	4·5	07 24	14·4	18 55	429	388	12 30	41	1,2,1,2,2,3,2,2	15	1	84·7
12	19 08	888	818	10 55	70	13 35	18·4	2·0	08 04	16·4	18 28	428	392	11 40	36	1,1,0,2,1,2,2,1	10	1	84·8
13	21 38	889	829	10 23	60	14 55	17·2	3·3	07 44	13·9	18 20	421	399	15 00	22	2,1,1,1,2,2,2,2	13	1	84·7
14	15 15	893	825	09 50	68	14 46	18·0	5·0	07 20	13·0	18 10	424	402	11 01	22	2,0,1,2,2,3,1,1	12	1	84·6
15	18 40	895	829	05 38	66	14 28	18·4	4·4	04 20	10·8	21 15	427	398	06 42	29	1,3,3,2,1,2,2,2	16	1	84·6
16 q	15 51	885	821	11 01	64	14 30	16·2	6·1	07 56	10·1	19 20	420	392	10 59	28	0,0,0,1,1,3,2,1	8	0	84·6
17	16 49	910	833	09 28	77	15 42	20·6	1·9	08 03	18·7	18 23	481	399	12 00	82	2,1,2,2,2,3,2,3	17	1	84·6
18 d	18 40	917	799	13 43	118	16 00	19·7	-1·3	23 29	21·0	18 10	462	381	04 27	81	1,3,2,3,5,3,4,3	24	1	84·9
19	18 27	926	818	00 00	108	18 40	17·3	2·0	06 13	15·3	19 50	446	391	11 30	55	3,3,1,1,2,3,3,2	18	1	84·9
20	00 07	900	799	11 19	101	13 37	17·9	-9·9	02 34	27·8	17 25	430	364	02 30	66	4,2,2,2,3,3,2,1	19	1	84·9
21	15 57	891	806	09 24	85	13 10	16·1	4·9	06 53	11·2	20 18	421	393	10 37	28	2,2,3,3,1,2,2,2	17	1	85·0
22 q	16 57	883	814	11 00	69	14 12	15·5	4·2	06 09	11·3	19 01	422	399	12 30	23	1,0,1,1,1,2,1,1	8	0	85·0
23 q	19 38	888	833	10 05	55	14 46	16·0	4·6	05 58	11·4	18 10	422	403	12 20	19	1,1,1,1,1,2,2,0	9	1	84·9
24	15 22	895	835	09 22	60	14 51	18·4	6·7	04 25	11·7	16 58	424	384	12 00	40	0,1,2,1,3,3,2,2	14	1	84·9
25 d	21 19	930	823	06 30	107	15 40	16·0	-10·6	21 15	26·6	21 08	431	382	23 42	49	3,3,4,3,2,3,4,4	26	1	84·9
26 d	18 35	907	768	08 07	139	01 10	19·7	-6·2	00 03	25·9	19 46	432	300	01 41	132	5,4,4,3,3,2,3,3	27	1	84·9
27 d	19 58	938	810	11 40	128	03 04	18·0	4·2	08 45	13·8	19 25	432	382	05 08	50	3,3,3,3,2,3,4,3	24	1	85·0
28	18 06	917	818	08 40	99	14 48	18·1	3·2	07 30	14·9	17 53	435	394	12 30	41	2,2,3,2,3,4,3,1	20	1	85·0
29	18 18	922	834	11 28	88	13 38	16·6	4·0	05 49	12·6	18 06	446	405	12 00	41	2,1,2,1,3,4,4,2	19	1	85·0
30	18 17	943	830	12 49	113	15 00	15·2	2·3	05 30	12·9	18 05	431	398	01 40	33	2,3,2,2,3,3,4,2	21	1	85·0
Mean	- -	904	814	- -	90	- -	17·7	1·5	- -	16·2	- -	432	383	- -	49		-	0·93	84·8

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
1	864	856	852	856	863	856	852	852	852	849	842	841	849	858	864	860	864	867	876	878	873	868	865	863	859	620
2 q	861	861	861	861	861	866	866	864	849	837	831	836	833	841	853	864	875	876	881	878	876	871	871	871	860	644
3 q	867	865	864	867	867	865	858	857	849	843	838	842	849	846	852	857	863	867	874	876	876	877	874	874	861	667
4	872	872	875	873	871	869	870	875	873	867	864	864	875	863	871	861	867	891	898	910	881	856	852	861	872	931
5	871	868	864	878	886	874	838	843	849	843	837	835	837	844	850	856	864	872	871	876	888	876	891	855	861	666
6	860	872	876	868	804	853	859	822	820	829	832	834	835	841	856	854	867	876	888	879	874	868	862	864	854	493
7	861	863	869	861	860	855	852	848	835	817	812	821	851	862	865	880	881	877	878	876	875	869	864	874	859	606
8	867	859	863	866	859	861	863	852	834	837	836	837	841	856	870	875	869	879	887	885	881	879	888	855	862	699
9	859	860	866	855	845	854	833	843	841	836	842	841	838	852	852	864	873	883	891	890	889	867	864	869	859	607
10	868	864	866	856	863	864	848	848	839	837	830	836	842	847	869	871	883	893	891	881	880	879	859	861	861	675
11	861	861	866	861	855	859	852	852	848	837	836	841	845	852	860	869	887	887	887	887	873	867	867	864	861	674
12	864	860	858	864	864	860	854	848	845	844	846	848	853	857	860	872	883	891	884	878	876	876	876	872	864	733
13	868	876	875	871	873	872	863	853	847	841	837	836	840	848	857	867	863	868	876	879	883	878	873	871	863	715
14 q	868	867	866	867	871	873	872	868	861	859	856	852	849	846	867	867	881	888	891	887	883	883	883	881	870	886
15 q	884	876	874	875	878	883	878	872	863	857	874	853	855	863	873	871	876	877	879	878	876	887	890	890	874	982
16	891	887	892	875	878	873	868	863	854	844	844	852	853	861	878	883	883	888	887	891	890	886	879	879	874	979
17	873	882	897	897	881	899	912,	899	880	833	840	855	845	847	870	894	877	882	887	876	876	867	866	871	875	1006
18	853	856	862	866	867	865	856	851	850	845	837	830	829	852	866	870	872	875	874	881	880	872	867	852	859	628
19	850	850	854	862	862	855	848	838	828	823	825	827	838	846	854	871	876	883	881	884	873	869	869	867	856	533
20	867	866	866	867	867	862	858	857	853	851	856	864	866	866	876	879	887	889	894	893	882	875	873	875	870	889
21 d	876	876	876	878	880	880	876	875	877	860	843	855	843	862	878	913	858	876	866	873	868	863	862	864	870	878
22	861	859	859	858	862	853	831	833	828	838	846	845	832	841	835	877	880	886	874	866	867	866	865	867	855	529
23 d	869	864	867	869	874	859	845	848	849	850	841	844	847	865	847	850	880	862	886	885	893	874	871	879	863	718
24 d	867	851	870	848	855	844	830	840	831	814	823	828	820	848	881	898	895	906	876	864	865	868	864	863	856	549
25	867	864	867	865	857	845	857	841	840	842	835	829	830	852	860	871	879	876	878	877	873	873	862	877	859	617
26	860	865	867	867	876	871	856	847	842	838	827	825	841	832	840	859	866	882	885	888	884	870	872	879	860	639
27	883	874	864	856	840	849	844	833	833	840	838	834	848	853	853	856	880	876	875	878	873	870	886	863	858	∠ 599
28	854	861	857	859	857	859	848	849	843	833	839	848	852	852	854	857	861	867	872	873	872	868	867	866	857	568
29 q	865	867	867	868	868	868	863	859	853	847	844	845	850	845	857	868	868	872	878	884	887	881	882	879	865	765
30 d	876	879	878	877	887	886	884	852	845	852	852	832	807	815	832	872	881	872	893	891	902	859	864	860	865	748
31 d	898	872	860	854	846	855	857	842	836	830	828	836	821	839	857	863	878	890	876	884	875	881	873	871	859	622
Mean	868	866	868	866	864	864	858	852	847	841	840	841	842	850	860	870	875	880	882	881	879	872	871	869	863	
Sum 26,000+	905	853	898	845	777	787	591	424	247	73	31	66	114	352	657	969	1117	1274	1334	1326	1244	1043	1001	937		Grand Total 641,865

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 200·0'+
1	9·0	8·4	10·7	8·7	6·7	5·1	5·8	5·9	6·7	6·8	8·6	10·6	12·4	13·3	12·3	12·2	12·5	12·0	11·5	11·3	10·9	10·6	10·5	10·1	9·7	32·6
2 q	9·6	9·6	8·8	8·6	7·7	5·8	4·2	3·6	4·2	6·0	8·3	11·5	15·2	17·0	17·1	16·0	14·2	12·7	11·5	10·7	10·7	10·7	10·7	10·4	10·2	44·8
3 q	9·9	9·4	9·6	8·1	6·7	5·6	4·9	4·9	5·7	7·2	9·9	13·2	15·3	15·5	14·7	13·9	13·3	12·3	12·3	12·1	11·7	11·7	11·6	11·2	10·4	50·7
4	10·4	9·8	9·5	9·5	8·8	6·7	5·4	4·2	4·7	6·9	9·0	12·4	15·7	16·2	18·1	17·3	16·2	16·0	14·2	10·2	4·4	4·9	-1·3	6·3	9·8	35·5
5	6·7	5·5	3·3	4·0	0·4	1·8	4·4	7·1	7·6	7·2	9·1	12·5	15·9	16·9	16·0	14·8	14·7	13·8	12·2	12·1	12·0	10·1	5·2	4·0	9·1	17·3
6	7·2	9·5	10·6	3·1	6·1	9·8	3·1	5·1	5·5	4·9	6·8	10·6	13·4	14·7	14·8	13·6	12·9	12·1	10·3	9·0	10·3	10·6	10·0	9·6	9·3	23·6
7	9·4	9·4	9·4	5·8	3·3	4·4	4·8	4·4	5·1	7·6	11·2	14·1	14·1	16·6	18·0	13·8	14·0	13·3	13·4	13·1	12·6	11·8	9·7	8·8	10·3	48·1
8	7·6	9·5	11·7	9·2	8·1	9·5	9·0	5·9	5·6	5·9	7·9	11·2	14·1	16·0	17·3	16·0	14·6	14·8	13·7	12·5	11·4	8·8	2·6	3·2	10·3	46·1
9	7·9	11·4	8·9	9·2	9·9	6·1	4·0	4·0	4·1	6·6	9·3	10·5	12·1	13·4	14·2	14·2	13·5	12·6	12·5	12·3	10·1	8·5	10·1	11·0	9·9	36·4
10	9·4	8·2	9·1	9·5	9·6	7·9	6·1	6·0	6·1	7·7	9·4	12·1	14·3	16·0	16·7	14·5	13·3	12·5	12·2	10·9	10·0	7·9	7·1	8·7	10·2	45·2
11	10·7	10·7	8·7	8·8	8·0	6·7	7·9	6·0	5·7	6·7	8·7	10·7	13·4	15·1	15·2	14·4	14·0	12·4	11·3	10·9	9·4	10·0	8·7	8·8	10·1	42·9
12	7·9	7·7	7·8	8·7	7·2	6·6	6·1	6·8	7·2	8·8	9·4	9·8	11·5	12·9	13·6	13·7	13·4	13·2	13·3	12·3	11·6	11·4	10·7	9·7	10·1	41·7
13	8·8	9·7	7·9	6·7	5·2	3·4	4·0	5·1	6·3	7·0	9·6	11·4	13·2	14·5	14·3	13·7	12·6	11·5	10·7	10·7	10·7	10·6	10·5	10·6	9·5	28·7
14 q	9·2	9·0	9·4	8·6	8·1	6·7	6·0	5·5	6·6	7·7	9·9	12·0	15·3	16·0	16·1	14·2	13·4	12·6	12·0	12·2	12·0	11·6	11·2	10·7	10·7	56·0
15 q	9·8	9·8	9·3	8·8	6·8	5·9	5·8	6·0	6·7	8·9	11·5	13·5	13·5	13·5	13·3	12·6	12·3	11·7	12·4	12·0	11·4	11·6	10·7	10·4	10·3	48·2
16	11·1	10·2	10·9	5·1	4·0	1·4	2·8	4·9	5·6	6·3	9·1	12·1	14·3	13·5	13·7	13·9	13·5	13·5	12·5	12·6	12·6	12·1	10·7	9·0	9·9	36·4
17	6·3	10·7	8·4	8·0	10·5	11·4	9·3	7·4	8·1	7·0	10·8	11·9	14·5	17·4	18·0	17·3	17·1	13·3	12·0	12·2	11·6	11·4	9·3	5·3	11·2	69·2
18	5·8	6·7	7·8	6·9	6·7	5·4	5·5	4·9	3·5	5·6	8·6	11·1	13·8	15·7	16·3	14·4	13·4	13·5	14·3	14·2	12·6	11·5	6·7	6·1	9·6	31·0
19	9·5	8·6	8·7	6·7	5·9	4·8	4·8	5·2	5·6	7·7	9·2	9·8	13·2	12·8	12·5	12·1	11·4	10·4	8·0	9·9	10·5	10·4	9·5		9·2	20·3
20	9·3	8·5	8·3	7·6	6·3	3·9	4·1	4·8	6·6	8·7	9·6	9·8	12·0	14·1	15·4	15·6	15·2	14·3	14·0	12·5	11·1	10·4	9·6	9·4	10·0	41·1
21 d	9·7	9·5	9·7	9·9	10·4	7·6	8·7	10·1	10·6	9·8	11·2	14·3	16·2	18·0	18·0	19·3	14·7	13·8	12·2	8·6	9·3	10·2	11·2	10·6	11·8	83·6
22	9·6	9·7	8·2	7·7	7·0	5·1	7·6	12·0	11·2	10·0	9·5	11·6	13·1	13·4	12·0	15·2	13·4	10·1	11·5	11·3	11·1	10·5	10·0	10·2	10·5	51·0
23 d	11·3	9·9	8·9	6·7	6·4	6·1	8·9	9·3	6·0	7·3	9·0	11·6	15·2	16·5	16·2	16·8	16·7	15·0	12·0	11·7	13·3	13·2	12·5	13·4	11·4	73·7
24 d	7·0	12·3	5·4	14·2	9·5	10·5	6·6	5·1	6·1	7·1	9·0	11·6	13·6	14·2	16·1	16·8	14·5	12·1	11·7	12·0	11·9	8·3	8·8	9·7	10·6	54·1
25	9·3	8·7	10·1	12·4	10·0	10·5	9·3	8·0	6·2	4·7	5·4	4·3	12·2	15·0	15·4	13·9	12·3	9·4	9·9	10·7	10·7	7·4	7·1	7·2	9·6	30·1
26	6·7	6·3	8·8	8·9	9·1	4·9	2·7	4·9	6·8	7·9	9·5	10·7	13·6	14·3	13·4	14·1	12·6	11·8	10·7	8·8	9·4	7·0	9·5	9·7	9·3	22·1
27	13·3	8·6	3·7	6·9	11·7	6·0	4·6	6·7	6·7	8·7	12·1	14·2	16·1	17·0	16·9	13·7	12·3	11·7	11·5	11·4	10·7	9·0	9·5	8·4	10·5	51·4
28	9·6	8·8	6·5	6·5	5·8	4·7	5·1	5·8	7·0	7·9	9·5	11·0	13·4	14·0	13·5	12·5	11·5	10·7	11·0	10·6	10·4	10·1	9·9	9·6	9·4	25·4
29 q	9·4	9·4	8·8	8·7	7·9	6·9	6·5	5·3	5·4	7·2	10·2	13·1	14·6	15·3	15·0	15·0	14·5	13·6	13·0	11·3	10·0	9·1	9·3	7·4	10·3	46·9
30 d	5·0	5·5	7·6	13·4	8·0	2·8	5·1	3·9	6·1	5·4	6·9	11·3	14·7	18·5	18·0	16·7	16·0	13·6	13·4	9·7	-1·8	3·3	7·8	8·4	9·1	19·3
31 d	9·6	6·4	4·0	4·9	8·3	7·0	6·8	2·4	2·3	4·3	7·6	12·1	16·2	16·7	16·2	15·2	14·0	13·4	10·8	11·4	10·2	9·4	8·7	13·4	9·6	31·3
Mean	8·9	8·9	8·4	8·1	7·4	6·2	5·8	5·9	6·2	7·1	9·2	11·5	14·1	15·3	15·4	14·7	13·8	12·7	12·1	11·3	10·4	9·8	9·0	9·1	10·1	
Sum 000·0+	276·0	277·4	260·5	251·8	230·1	191·0	179·9	181·2	191·6	221·5	285·8	358·2	436·1	475·0	478·3	457·4	428·0	395·0	374·4	349·3	322·2	304·2	279·0	280·8	10·4	Grand Total 7484·7

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

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23 ESKDALEMUIR (Z)   45,000γ (0·45 C.G.S. unit) +   JULY 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
1	399	406	405	400	409	410	411	414	409	406	404	403	403	403	407	412	415	417	416	417	417	416	416	416	410	831
2 q	416	415	416	416	416	417	415	413	411	410	410	406	404	405	409	412	415	417	419	421	417	416	413	412	413	921
3 q	413	413	412	411	411	411	412	411	410	399	389	389	392	399	403	405	410	411	414	412	410	410	412	411	407	770
4	410	410	410	410	410	407	403	403	399	396	391	388	394	403	409	414	416	418	424	432	428	421	418	416	410	830
5	415	413	413	409	407	398	398	394	400	402	403	400	402	405	409	409	412	413	414	414	413	416	413	407	407	779
6	406	403	392	391	392	375	384	392	398	403	398	400	406	412	414	421	423	424	426	422	421	417	416	416	406	752
7	416	415	409	405	407	409	410	410	410	408	404	402	402	408	419	421	426	426	420	416	415	414	417	415	413	904
8	412	409	403	403	404	403	403	409	415	410	407	403	400	404	409	417	423	423	424	424	423	420	413	410	414	871
9	403	391	384	392	381	389	399	401	403	401	394	391	398	406	408	414	420	420	420	419	420	421	415	406	*404*	696
10	406	407	410	411	409	409	414	412	412	409	403	400	401	404	409	417	421	424	424	422	421	417	416	412	412	890
11	406	405	407	411	413	413	411	409	409	404	404	399	399	403	409	411	416	421	424	421	421	417	415	413	411	861
12	410	410	412	412	415	415	411	409	406	402	394	391	394	406	407	411	410	417	416	417	415	415	411	412	409	818
13	410	408	405	409	412	413	411	410	405	404	403	398	397	399	402	409	414	416	415	413	414	411	411	411	408	800
14 q	410	410	410	411	413	414	413	413	411	400	394	394	393	399	403	411	410	410	410	410	410	409	409	409	407	776
15 q	406	406	409	409	407	409	409	408	405	403	402	396	393	400	404	410	412	412	411	412	413	410	409	409	407	764
16	409	405	394	392	394	398	398	398	398	398	398	398	400	403	408	409	410	411	420	421	420	416	416	414	405	728
17	405	390	383	382	386	381	372	381	389	393	392	396	404	421	431	442	462	466	451	430	421	417	416	413	409	824
18	409	409	411	412	414	414	414	411	408	400	398	399	399	404	416	428	437	437	426	421	421	421	421	416	414	946
19	411	412	414	415	416	419	417	416	412	405	399	403	406	411	414	412	417	420	421	420	418	415	413	413	413	919
20	414	413	412	413	415	416	414	409	408	400	396	395	398	402	404	402	404	409	407	407	410	412	411	410	408	781
21 d	410	410	409	409	408	406	405	403	392	391	395	398	409	421	435	446	470	459	450	442	431	423	420	419	*419*	1061
22	416	417	417	418	417	419	415	409	407	409	402	396	398	405	420	428	444	450	449	437	427	421	419	414	419	1054
23 d	409	408	412	414	414	414	411	406	404	401	399	399	401	405	410	420	426	440	442	441	432	418	405	371	413	902
24 d	380	382	358	371	347	368	385	399	405	408	405	403	407	412	417	427	438	442	445	439	428	421	412	414	405	713
25	413	415	410	400	395	398	398	407	410	407	404	402	401	398	406	419	427	433	430	424	423	421	417	406	411	864
26	404	399	401	403	403	403	406	409	411	410	407	405	405	410	418	416	420	421	421	428	427	420	411	408	411	866
27	393	367	375	388	384	392	405	409	410	410	403	398	392	402	419	427	425	423	421	419	420	419	407	402	405	710
28	398	383	391	402	409	410	412	413	411	409	405	400	400	409	418	422	423	426	423	420	417	415	415	414	410	845
29 q	415	415	415	415	416	416	414	416	412	409	404	402	399	402	407	409	413	416	416	420	423	423	416	399	412	892
30 d	389	386	394	391	370	382	391	394	403	409	406	400	398	405	410	416	421	431	426	438	432	417	414	411	406	734
31 d	387	378	394	400	405	404	402	405	404	402	395	392	396	402	405	414	417	417	426	426	422	420	418	398	405	729
Mean	407	403	403	404	403	404	405	406	406	404	400	*398*	400	405	412	417	423	*425*	424	423	420	417	414	410	410	
Sum 12,000+	600	510	487	525	499	532	563	593	587	518	408	346	391	568	759	931	1097	1170	1151	1105	1030	929	835	697		Grand Total 304,831

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR   All Times G.M.T.   JULY 1963

	Horizontal component Maximum 16,000γ+ (h.m.)	(γ)	Minimum 16,000γ+ (γ)	(h.m.)	Range (γ)	Declination Maximum 10°+ (h.m.)	(')	Minimum 10°+ (')	(h.m.)	Range (')	Vertical component Maximum 45,000γ+ (h.m.)	(γ)	Minimum 45,000γ+ (γ)	(h.m.)	Range (γ)	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+ (°A.)
1	18 48	880	833	11 04	47	13 39	13·4	3·6	05 47	9·8	17 30	420	398	03 19	22	2,2,1,1,1,2,1,1	11	1	85·1
2 q	18 05	887	825	10 22	62	14 30	17·6	3·1	06 50	14·5	05 30	419	403	12 10	16	0,0,1,2,2,2,1,1	9	1	85·1
3 q	21 52	880	836	10 45	44	13 19	15·9	4·7	07 30	11·2	18 25	414	386	10 50	28	1,0,0,1,1,0,1,1	5	0	85·2
4	18 49	930	833	15 51	97	14 58	19·0	-5·3	22 31	24·3	19 39	437	387	11 29	50	1,1,2,3,3,3,4,4	21	1	85·1
5	22 23	915	818	07 09	97	14 19	18·1	-0·6	04 09	18·7	01 04	416	392	07 25	24	3,3,3,2,3,2,3,4	23	1	85·2
6	18 15	895	782	04 39	113	13 30	15·5	0·2	04 17	15·3	18 18	428	373	05 42	55	3,5,3,3,2,3,2,1	22	1	85·4
7	15 53	891	798	10 56	93	14 28	19·0	2·0	07 49	17·0	17 00	427	398	11 56	29	2,2,2,3,4,2,2,2	19	1	85·4
8	22 18	910	822	08 30	88	14 38	18·7	1·4	23 03	17·3	19 57	426	398	12 10	28	3,2,3,2,3,3,2,4	22	1	85·5
9	18 59	906	823	06 37	83	16 20	15·2	2·4	07 44	12·8	21 16	424	379	04 37	45	3,3,3,3,3,3,3,3	24	1	85·5
10	17 57	910	821	11 18	89	15 00	17·6	4·9	07 03	12·7	17 47	428	400	12 05	28	2,2,2,2,3,3,3,3	20	1	85·5
11	19 35	891	833	09 59	58	14 57	15·3	5·1	08 31	10·2	18 50	423	398	11 49	25	2,2,2,1,1,2,2,1	13	1	85·4
12	17 14	896	841	09 10	55	15 45	14·2	5·4	06 10	8·8	18 00	420	388	11 05	32	1,1,1,1,1,2,2,1	10	1	85·3
13	19 59	892	830	10 50	62	13 14	15·0	2·7	06 03	12·3	17 53	417	395	12 20	22	1,1,1,1,3,3,1,1	13	1	85·0
14 q	17 53	895	828	13 21	67	14 15	17·0	5·1	07 30	11·9	05 50	416	392	12 40	24	1,1,1,1,3,3,1,1	12	1	85·1
15 q	21 20	897	845	11 29	52	13 10	14·3	5·7	06 30	*8·6*	19 40	414	391	12 24	23	2,1,1,2,2,3,1,2	14	1	85·5
16	17 28	903	841	10 20	62	15 42	15·0	0·7	05 28	14·3	19 02	421	390	02 45	31	2,2,1,1,2,3,2,1	14	1	85·5
17	05 58	912	830	12 20	82	16 22	20·2	5·0	01 09	14·9	16 50	471	372	06 10	99	3,3,2,2,2,3,1,2	18	1	85·6
18	20 08	892	824	12 23	68	14 30	17·0	2·1	22 46	14·9	16 10	440	397	10 35	43	1,1,1,1,2,3,2,3	14	1	85·6
19	17 40	891	820	09 51	71	13 05	13·4	3·9	06 15	9·5	17 51	421	398	10 40	23	2,0,1,1,1,2,2,0	9	1	85·6
20	19 10	926	849	09 57	77	16 23	17·2	3·1	06 00	14·1	05 48	416	394	11 55	22	1,1,0,1,2,3,3,1	12	1	85·7
21 d	15 36	949	794	12 45	155	15 45	22·6	1·5	19 49	21·1	16 17	479	388	09 58	91	2,2,3,4,5,5,4,1	26	2	85·6
22	15 27	903	809	14 11	94	15 27	17·0	4·6	05 40	12·4	18 29	452	392	11 19	60	1,1,2,2,3,3,3,2	17	1	85·6
23 d	23 21	931	808	14 43	123	14 09	19·9	3·9	22 00	16·0	15 50	445	345	23 35	100	2,2,2,2,4,4,3,4	23	1	85·7
24 d	17 35	941	798	12 09	143	03 31	20·9	2·7	02 29	18·2	18 20	449	322	03 50	127	4,4,3,3,4,4,4,3	29	1	85·5
25	18 01	899	815	12 03	84	14 12	16·3	4·0	09 50	12·3	17 25	434	392	06 09	42	2,3,3,2,2,3,3,3	21	1	85·7
26	18 48	903	806	11 08	97	14 05	15·2	1·1	06 50	14·1	19 50	432	397	01 17	35	3,3,2,3,3,2,3,3	22	1	85·7
27	22 25	902	825	08 03	77	13 55	18·1	1·3	02 25	16·8	15 21	438	363	01 28	65	4,3,2,2,3,3,2,3	22	1	85·7
28	19 57	879	825	09 34	54	13 15	14·3	4·1	05 18	10·2	17 20	427	380	01 30	47	3,1,2,2,2,1,1,0	12	1	85·7
29 q	23 08	895	841	13 05	54	13 22	16·0	4·5	23 48	11·5	21 05	426	396	23 45	30	0,0,0,1,2,2,1,2	8	0	85·7
30 d	20 13	952	*773*	12 49	*179*	13 58	19·8	-6·6	20 22	26·4	20 04	441	367	04 48	74	3,4,4,3,4,3,4,4	29	2	85·8
31 d	23 48	*953*	790	12 38	163	23 48	19·7	1·3	07 52	18·4	18 55	428	370	01 00	58	4,3,2,2,3,3,2,4	23	1	85·8
Mean	- -	907	820	- -	87	- -	17·0	2·5	- -	14·5	- -	430	385	- -	45	-	-	1·00	85·6

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) · 16,000γ (0·16 C.G.S. unit) + · **AUGUST 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 19,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	867	854	852	867	861	855	861	849	840	837	837	842	845	845	846	861	879	880	888	895	879	873	867	871	860	1651
2	871	864	862	865	860	840	811	836	825	826	820	840	842	846	853	859	876	885	900	895	889	868	870	879	858	1582
3	869	869	855	847	849	852	852	845	837	832	834	844	859	860	866	873	875	879	880	880	884	877	871	865	861	1654
4	871	864	862	857	862	859	846	827	831	828	826	826	841	838	872	871	865	882	886	880	867	871	857	874	857	1563
5	881	858	860	865	844	849	849	841	828	824	834	840	846	864	873	873	872	867	878	879	892	878	870	875	860	1640
6	860	867	867	866	857	848	848	851	850	848	846	845	856	854	859	856	869	885	886	876	878	893	875	871	863	1711
7	876	869	872	846	856	864	861	856	834	820	824	841	857	849	866	867	871	872	880	874	873	872	872	877	860	1649
8	876	872	870	860	867	861	861	851	837	833	835	839	846	852	855	857	859	868	873	876	876	881	879	876	861	1660
9	873	885	886	863	853	850	850	855	853	843	833	832	832	834	843	862	869	877	876	875	874	881	883	881	861	1663
10	876	874	876	874	873	865	858	848	842	840	846	850	859	857	871	863	857	861	862	874	875	874	874	875	863	1724
11 q	873	873	872	868	867	864	860	853	844	838	831	830	842	852	863	862	862	863	865	873	872	875	875	868	860	1645
12 q	869	869	868	871	870	862	851	845	843	840	840	839	841	855	865	869	871	873	875	879	883	871	868	869	862	1686
13 q	866	867	864	867	864	860	853	847	841	839	846	850	852	852	857	867	867	877	878	878	875	870	869	873	862	1679
14 q	863	868	872	868	868	861	856	851	850	848	851	856	859	864	870	877	875	870	878	882	880	883	882	877	867	1809
15	876	876	876	875	876	875	869	862	857	852	849	851	870	860	875	887	888	887	887	880	871	867	856	864	*870*	1886
16 q	871	867	862	865	864	861	857	849	844	844	851	854	861	859	863	866	877	870	872	871	873	870	868	866	863	1705
17	872	877	873	876	873	862	853	847	841	838	832	845	854	860	868	876	885	878	878	880	885	871	868	864	865	1756
18 d	864	866	862	868	880	872	864	863	842	850	836	837	858	823	806	853	861	861	867	865	864	864	872	860	857	1558
19 d	863	863	854	858	857	858	854	847	840	837	839	848	852	852	856	860	862	892	881	864	837	820	811	801	850	1406
20 d	813	805	827	849	834	796	802	794	811	796	794	784	811	826	835	849	867	855	854	852	860	859	856	860	*829*	889
21 d	856	852	833	846	832	842	836	793	793	802	827	831	830	832	819	848	861	862	870	868	873	874	862	856	842	1198
22	849	852	851	852	854	853	844	831	828	835	836	837	847	849	848	858	861	873	874	873	869	858	870	870	853	1472
23	857	856	873	831	868	840	825	842	825	810	798	800	806	810	820	859	869	861	862	859	859	859	862	868	842	1219
24	855	868	857	849	854	854	853	845	827	818	826	831	835	839	835	847	865	864	868	859	865	873	868	869	851	1424
25	868	862	856	854	852	855	856	854	845	841	842	836	841	844	856	864	871	872	873	881	872	874	868	867	859	1604
26	855	863	861	861	856	848	851	853	845	841	840	845	852	854	860	858	867	880	858	870	872	869	877	876	859	1612
27	864	864	864	862	864	859	857	854	841	842	847	849	855	861	866	869	882	885	875	856	900	865	877	861	863	1719
28 d	849	857	860	862	854	853	846	846	845	826	795	803	820	838	853	857	864	877	902	862	873	863	852	845	850	1402
29	856	857	858	861	853	852	851	848	832	800	806	835	848	870	852	859	861	871	875	863	877	869	864	867	854	1485
30	870	863	859	858	856	856	854	854	856	850	845	843	852	854	858	870	865	868	867	868	869	865	869	888	861	1657
31	868	861	853	852	860	854	842	835	836	832	834	843	852	842	844	854	901	866	861	868	869	870	868	895	857	1560
Mean	864	863	862	860	859	854	849	844	837	833	*832*	837	846	848	854	863	870	873	*875*	873	874	870	867	868	857	
Sum 25,000+	1797	1762	1717	1663	1638	1480	1331	1172	963	810	800	946	1221	1295	1473	1751	1974	2061	2129	2055	2085	1957	1880	1908		Grand Total 637,868

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) · 10° + · **AUGUST 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 100·0'+
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1	11·4	6·0	10·7	9·9	6·5	6·0	6·8	4·9	5·4	6·3	8·8	11·7	13·9	15·3	14·8	13·4	12·5	10·7	11·7	8·8	7·7	6·7	8·7	8·4	9·5	127·0
2	11·3	10·4	10·8	7·2	6·5	7·7	10·6	6·7	5·7	7·1	8·9	11·8	14·0	14·5	14·3	12·5	11·5	10·7	9·7	6·7	3·9	6·9	10·4	10·0	9·6	129·8
3	7·5	9·9	7·2	9·6	7·2	5·8	2·9	3·7	4·9	6·8	9·8	11·8	15·1	16·0	15·3	13·2	11·9	12·5	12·2	10·6	8·0	7·3	9·4	10·7	9·6	129·3
4	11·8	8·3	6·1	7·1	6·5	5·3	5·6	6·2	6·6	8·7	11·7	15·2	16·3	16·2	14·5	13·8	10·2	10·6	10·5	10·4	5·9	8·7	8·3	8·9	9·7	133·4
5	7·8	8·0	9·8	10·5	6·5	5·4	4·8	5·1	5·3	8·0	10·5	15·0	14·7	15·9	16·2	14·7	14·2	12·7	12·6	11·0	6·3	5·7	6·0	8·0	9·8	134·7
6	8·1	7·8	10·5	7·9	8·4	6·2	4·4	4·0	4·9	7·0	9·5	11·4	14·4	16·1	16·3	14·4	12·7	8·6	9·8	11·0	10·4	5·1	6·8	8·9	9·4	124·6
7	9·5	11·6	6·5	4·8	5·9	5·6	4·9	4·9	5·8	6·3	9·5	14·3	17·7	16·2	15·2	13·6	12·0	10·5	10·3	10·2	10·4	10·2	9·7	8·7	9·8	134·3
8	9·5	11·4	7·2	8·3	7·0	5·0	6·1	5·4	6·1	8·6	12·3	15·8	18·8	19·1	18·6	16·2	13·1	10·3	8·7	9·2	9·6	9·6	9·6	9·5	*10·6*	155·0
9	9·7	10·6	9·1	7·5	10·5	3·5	2·8	1·9	1·4	6·4	10·5	13·5	16·0	17·2	16·4	14·6	11·8	10·1	9·2	9·7	10·0	10·1	9·4	8·9	9·6	130·8
10	8·9	8·3	8·5	7·7	6·2	4·1	4·5	5·0	6·4	8·9	12·3	15·2	17·7	18·3	19·8	13·6	12·7	10·7	9·6	10·8	10·7	10·7	10·5	10·4	10·5	151·5
11 q	9·7	9·8	9·0	8·2	7·3	6·1	5·9	5·4	6·7	9·7	12·7	15·6	18·4	17·9	15·8	12·7	11·0	9·4	9·1	10·3	10·3	8·7	10·4	10·7	10·5	150·8
12 q	9·7	9·6	8·9	8·3	6·2	4·7	4·6	4·9	5·8	8·1	11·5	13·7	14·6	14·8	13·8	11·1	9·4	8·7	9·5	10·7	9·0	9·4	10·0	9·6	9·4	126·6
13 q	9·2	8·0	8·2	7·9	7·1	5·6	5·0	5·0	5·8	7·6	9·9	12·6	14·5	14·2	12·8	12·3	11·4	11·4	11·5	10·7	10·3	10·4	9·7	8·7	9·6	129·8
14 q	7·8	9·4	7·7	6·7	6·7	5·6	6·2	7·1	8·8	11·0	12·6	13·9	14·3	14·3	13·4	12·5	11·3	10·7	11·6	11·6	11·2	10·7	10·3	9·6	10·2	145·0
15	8·8	8·7	8·5	8·0	7·2	6·1	5·7	5·8	6·6	7·8	10·7	13·8	17·1	16·9	15·3	13·2	11·6	11·6	9·4	8·2	9·5	3·6	4·0	8·5	9·4	126·6
16	8·8	7·9	9·3	6·9	6·1	4·8	4·3	4·9	6·6	9·3	11·6	15·3	16·5	16·0	14·7	12·5	11·4	10·0	9·7	10·7	10·3	9·8	9·6	9·6	9·9	137·4
17	9·4	8·0	6·3	7·0	6·0	5·9	6·0	7·0	8·0	10·0	12·5	16·2	17·3	16·2	14·1	11·4	10·0	10·4	11·8	11·9	5·7	6·7	6·7	9·0	9·7	133·5
18 d	9·2	9·7	11·7	7·9	5·5	4·3	6·4	7·6	9·7	16·3	14·6	14·3	18·3	20·8	18·4	13·5	10·6	10·2	9·4	9·4	8·4	2·4	4·7	9·1	10·5	152·4
19 d	9·2	9·0	7·4	8·8	6·8	5·7	4·6	5·3	6·7	8·4	11·5	13·0	14·1	15·1	15·0	11·7	12·6	13·5	1·7	1·4	1·9	-1·3	-1·7	-4·1	7·3	76·3
20 d	-7·2	13·7	18·0	7·1	12·0	13·3	12·6	11·7	8·3	8·4	9·8	12·1	10·3	12·0	11·8	11·3	6·1	9·6	11·0	10·3	8·9	5·4	6·7	9·0	9·7	132·2
21 d	12·0	6·7	9·8	9·5	7·0	6·6	6·2	9·9	12·3	11·4	11·5	11·6	12·0	12·0	11·2	9·4	9·8	9·8	10·2	10·3	8·0	9·1	7·2	5·7	9·5	129·2
22	7·7	7·4	8·9	8·6	7·8	6·6	7·9	9·2	10·2	9·8	11·6	13·9	16·0	15·9	13·0	10·8	9·7	8·4	9·5	9·8	9·6	8·9	6·7	4·3	9·7	132·2
23	3·8	1·5	5·4	6·2	15·8	11·3	13·3	9·0	7·9	9·7	12·1	13·8	14·4	15·7	14·3	12·5	11·5	9·9	9·6	9·6	9·2	8·8	8·9	6·8	10·0	141·0
24	9·8	8·6	4·1	4·9	6·3	5·2	5·0	5·2	5·7	6·9	9·2	12·0	15·0	16·5	14·4	12·0	10·3	9·6	9·1	8·6	8·0	10·1	9·0	8·8	8·9	114·3
25	8·9	8·0	7·6	7·9	5·8	6·0	5·2	5·2	5·6	7·6	9·8	12·8	15·0	15·9	14·3	13·4	11·7	11·6	10·8	10·4	7·3	5·2	6·4	6·1	9·1	118·5
26	9·3	9·4	6·2	6·1	6·3	6·1	6·1	5·8	5·9	8·0	10·0	13·0	14·9	15·1	14·1	12·3	11·7	12·2	8·7	11·2	11·4	10·6	9·0	6·8	9·6	130·2
27	6·7	7·8	7·6	7·2	6·9	6·4	6·9	7·2	8·8	12·0	14·4		15·6	16·1	17·0	13·6	11·7	12·2	11·7	11·3	3·9	8·6	6·8	8·7	9·8	135·5
28 d	14·3	9·7	7·3	5·4	5·8	5·9	6·9	5·9	7·2	8·5	11·4	15·9	16·0	14·7	13·1	11·2	11·1	7·3	-0·9	6·3	7·8	3·1	5·0	8·9	8·7	107·8
29	7·7	8·5	9·8	6·7	5·2	5·0	5·3	6·0	7·8	9·2	13·8	16·2	16·2	16·2	14·1	12·0	10·7	10·7	11·0	9·8	8·0	6·7	8·9	6·7	9·7	132·2
30	8·5	6·8	5·8	6·8	6·1	5·7	5·1	5·5	6·7	8·5	10·0	12·0	13·7	15·0	13·4	12·1	8·3	9·9	8·9	4·4	8·0	10·5	10·3	9·8	8·8	111·8
31	9·7	8·9	8·0	6·2	6·5	4·4	5·5	6·5	7·0	9·2	10·7	12·7	16·1	16·0	16·4	14·4	2·7	5·5	11·2	11·3	10·7	9·3	7·4	8·0	9·3	124·3
Mean	8·7	8·7	8·5	7·5	7·1	*6·0*	6·1	6·1	6·7	8·7	11·1	13·7	15·5	*15·9*	14·9	12·8	10·9	10·3	9·7	9·5	8·4	7·7	7·9	8·1	9·6	
Sum 000·0+	268·5	269·4	261·9	232·8	221·6	185·9	187·6	187·6	209·0	268·3	343·3	424·5	478·9	492·1	461·8	395·9	337·2	320·0	299·5	295·6	260·7	238·2	245·0	252·7	9·9	Grand Total 7138·0

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

75

23 ESKDALEMUIR (Z)   10° +   **AUGUST 1963**

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	374	393	395	396	395	397	400	405	405	400	400	395	394	402	416	432	437	438	432	431	420	414	402	405	407	778
2	405	394	395	398	404	404	395	399	406	409	409	405	403	405	412	417	417	417	417	426	425	416	409	398	408	785
3	393	389	391	396	399	405	410	412	412	407	402	393	393	401	411	416	415	416	415	416	416	416	415	410	406	749
4	400	399	405	409	411	415	410	410	407	407	407	403	403	414	423	430	437	429	424	421	427	420	415	411	414	937
5	393	392	398	388	397	402	403	401	400	399	397	393	402	405	411	419	421	420	416	416	420	415	413	407	405	728
6	409	407	403	398	388	391	399	403	399	397	393	394	402	405	413	419	426	433	430	422	416	412	410	409	407	778
7	399	390	381	394	399	403	406	409	411	410	406	396	388	398	409	415	416	419	417	413	411	410	412	409	405	721
8	405	401	402	406	405	409	410	411	409	403	400	390	386	391	402	412	418	422	417	414	411	410	410	412	407	756
9	410	408	403	407	407	406	407	408	409	409	403	400	398	402	407	410	417	423	420	415	413	411	410	410	409	813
10	410	410	410	412	414	415	414	413	409	400	394	394	394	400	409	426	427	423	419	412	412	413	413	413	411	856
11 q	412	413	414	415	417	418	416	415	411	404	397	391	392	399	414	421	424	428	424	419	417	415	411	412	412	899
12 q	411	412	412	413	413	416	416	415	412	407	403	398	396	402	409	416	420	420	416	416	416	412	411	410	411	872
13 q	411	411	410	410	414	414	412	411	407	399	392	387	391	400	410	410	414	414	410	412	414	414	414	410	408	791
14 q	410	409	407	410	413	414	411	412	410	407	403	398	399	402	404	409	413	410	409	409	410	410	410	410	408	799
15	410	410	410	409	410	411	412	414	409	403	393	386	391	403	405	410	416	415	420	423	426	424	416	413	410	839
16 q	411	411	410	410	412	413	413	413	410	403	398	393	388	398	408	410	417	421	421	420	416	416	415	415	410	842
17	410	405	406	407	409	409	409	409	404	395	388	388	395	402	409	417	421	417	412	412	416	417	406	407	407	770
18 d	410	411	406	402	403	400	400	400	399	391	394	401	405	426	451	446	439	430	421	421	421	420	411	412	413	920
19 d	414	413	415	414	416	416	416	414	408	405	402	399	397	400	409	417	420	428	456	450	436	400	354	330	410	829
20 d	321	280	249	285	334	335	335	371	402	417	423	432	444	444	439	441	452	452	441	436	428	421	419	414	392	415
21 d	382	381	391	392	402	406	412	414	410	414	410	411	419	426	433	434	436	428	426	426	421	414	407	408	413	903
22	414	417	417	419	421	420	420	420	420	411	403	398	402	412	424	428	427	427	425	422	421	421	412	403	417	1004
23	397	386	367	387	355	362	372	387	399	403	403	408	420	428	439	442	440	436	430	427	424	421	420	416	407	769
24	412	387	387	402	413	416	416	419	416	417	416	411	414	421	427	428	428	427	427	427	425	420	418	416	416	990
25	416	417	419	416	416	417	417	417	416	410	409	409	410	413	415	416	421	421	419	421	422	421	416	410	416	984
26	408	402	410	414	413	410	411	415	410	405	399	400	404	409	415	415	416	417	426	421	417	416	416	413	412	882
27	414	416	415	416	416	417	417	416	415	409	403	403	405	411	417	428	433	439	448	447	420	409	412	413	418	1039
28 d	406	410	420	417	419	417	419	421	416	410	410	408	415	420	429	435	432	437	439	435	409	409	398	391	418	1022
29	403	404	404	407	413	417	421	419	417	413	406	399	401	410	423	421	421	419	421	425	424	421	420	414	414	943
30	414	413	415	416	415	417	416	412	410	406	407	406	407	414	425	430	438	434	430	434	426	420	420	410	418	1035
31	398	398	398	407	413	415	417	416	413	409	407	405	404	416	432	444	459	454	428	422	421	421	420	396	417	1013
Mean	403	400	399	402	405	407	407	410	409	406	403	400	402	409	418	423	426	426	424	423	419	415	411	407	411	
Sum 12,000+	482	389	365	472	556	607	632	701	681	579	477	394	462	679	950	1114	1218	1214	1156	1111	1001	879	735	607		Grand Total 305,461

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR   All Times G.M.T.   **AUGUST 1963**

	Horizontal component Maximum 16,000γ+ h.m.	γ	Minimum 16,000γ+ γ	h.m.	Range γ	Declination Maximum 10°+ h.m.	'	Minimum 10°+ '	h.m.	Range '	Vertical component Maximum 45,000γ+ h.m.	γ	Minimum 45,000γ+ γ	h.m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+
	h. m.	γ	γ	h. m.	γ	h. m.	'	'	h. m.	'	h. m.	γ	γ	h. m.	γ				°A.
1	00 01	921	821	14 17	100	15 00	16·7	4·0	04 29	12·7	17 05	440	365	00 12	75	4,3,2,3,3,3,3,3	24	1	85·9
2	18 35	915	800	06 23	115	14 02	15·3	0·1	20 24	15·2	19 28	427	391	23 53	36	2,2,3,2,2,2,2,3	19	1	85·8
3	20 13	895	826	08 50	69	13 18	17·0	2·3	06 26	14·7	20 22	419	387	02 00	32	3,2,1,1,2,2,2,3	16	1	86·0
4	18 11	890	810	13 11	80	13 24	18·1	3·6	21 10	14·5	16 23	438	404	23 53	34	2,1,2,2,4,2,3,3	19	1	85·8
5	20 42	903	814	09 20	89	12 05	16·8	4·2	22 06	12·6	17 00	422	357	03 33	65	3,3,2,3,2,2,3,3	21	1	85·8
6	21 35	911	833	10 53	78	14 06	17·1	2·3	07 22	14·8	17 40	434	387	04 43	47	2,3,2,2,2,3,3,3	20	1	86·0
7	18 38	889	812	09 40	77	12 38	18·0	2·2	02 58	15·8	17 40	420	378	02 28	42	3,3,2,2,3,1,2,2	18	1	85·9
8	00 03	890	829	09 58	61	12 58	20·0	4·3	05 18	15·7	17 20	423	386	12 28	37	3,2,1,1,2,1,0,1	11	0	85·7
9	19 33	896	812	12 11	84	14 00	18·0	1·2	07 08	16·8	18 00	423	396	12 38	27	2,3,2,2,3,2,3,1	18	1	85·7
10	15 32	887	821	15 04	66	14 20	20·5	3·3	05 57	17·2	15 57	434	363	10 40	71	1,1,0,2,3,4,2,1	14	1	86·3
11 q	21 58	882	819	11 18	63	12 42	18·9	5·0	06 34	13·9	17 10	428	389	11 51	39	1,0,0,2,1,2,1,2	9	0	86·3
12 q	20 18	893	833	11 19	60	13 30	15·2	4·2	06 21	11·0	06 30	417	394	12 10	23	1,1,0,1,2,2,2,1	10	1	86·2
13 q	18 54	884	837	09 11	47	12 33	14·7	4·9	07 16	9·8	16 50	415	386	11 51	29	0,0,0,0,1,1,1,1	4	0	86·2
14 q	21 26	888	846	09 40	42	12 50	14·4	5·2	05 33	9·2	05 05	409	397	11 57	12	2,0,0,0,0,2,1,1	6	0	86·3
15	18 08	907	838	11 30	69	13 17	18·8	1·2	21 18	17·6	21 20	427	381	12 00	46	0,0,0,2,3,3,3,3	14	1	86·4
16 q	16 17	897	842	09 10	55	12 49	17·9	4·1	07 05	13·8	17 30	422	387	12 00	35	2,1,0,2,3,3,2,1	14	1	86·5
17	20 20	906	822	10 28	84	12 22	18·0	0·7	20 38	17·3	20 53	422	357	11 10	65	2,0,1,2,1,2,4,3	15	1	86·4
18 d	05 01	887	767	14 01	120	14 25	24·0	-3·4	21 51	27·4	14 46	457	386	09 46	71	2,2,3,3,5,3,2,3	23	1	86·4
19 d	18 52	928	769	23 35	159	18 00	15·4	-10·6	23 44	26·0	18 44	465	315	23 18	150	2,2,1,1,3,4,5,5	23	1	86·4
20 d	00 05	905	736	00 38	169	02 37	24·3	-17·5	00 40	41·8	16 51	455	213	02 27	242	6,5,4,3,4,4,3,3	32	2	86·4
21 d	00 06	900	762	08 57	138	00 11	18·4	4·1	06 03	14·3	16 34	436	374	00 25	62	4,3,5,3,3,4,3,3	28	2	86·4
22	23 02	890	816	08 21	74	13 09	18·1	3·0	23 49	15·1	15 15	429	396	11 23	33	1,1,2,2,3,2,2,3	16	1	86·4
23	02 31	884	787	11 17	97	13 19	16·3	-0·8	01 45	17·1	15 30	445	352	03 36	93	3,3,3,2,3,2,1,2	19	1	86·5
24	21 21	880	811	09 37	69	13 40	17·1	2·4	02 50	14·7	15 31	430	381	02 09	49	3,2,3,2,2,2,2,2	18	1	86·5
25	19 40	888	830	11 08	58	13 11	16·2	3·2	21 33	13·0	20 20	426	407	10 58	19	2,2,2,2,2,2,2,2	16	1	86·5
26	17 17	895	833	10 15	62	13 57	17·0	3·8	07 49	13·2	18 45	427	396	01 25	31	3,2,2,3,3,2,3,2	19	1	86·4
27	16 56	927	826	19 07	101	14 30	18·7	-1·4	20 19	20·1	19 10	459	400	11 03	59	2,1,1,2,3,4,4,3	20	1	86·5
28 d	18 47	955	784	10 31	171	12 29	18·9	-9·3	18 36	28·2	18 00	446	387	23 21	59	3,2,3,4,3,3,5,3	26	1	86·4
29	18 28	889	784	09 56	105	12 19	19·1	4·0	04 34	15·1	14 35	427	397	00 01	30	2,2,3,3,3,3,3,2	21	1	86·4
30	23 51	924	826	11 04	98	13 41	16·0	2·7	19 51	13·3	16 43	441	399	00 01	42	2,2,1,2,2,3,3,3	18	1	86·5
31	16 37	946	828	13 45	118	14 33	18·8	-2·5	16 24	21·3	17 10	462	387	23 57	75	4,2,2,2,3,5,2,3	23	1	86·4
Mean	- -	902	812	- -	90	- -	17·9	1·0	- -	16·9	- -	433	377	- -	56	-	-	0·94	86·2

q denotes an international quiet day and *d* an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H)   16,000γ (0·16 C.G.S. unit) +   SEPTEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 18,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	864	849	850	846	853	853	845	842	829	800	815	838	843	846	865	870	860	865	868	864	865	864	861	868	851	2423
2 q	882	864	857	858	855	853	846	842	838	836	840	849	859	864	862	863	856	863	870	868	887	890	874	864	860	2640
3	867	877	865	861	862	861	851	846	842	831	832	854	865	870	865	872	875	864	866	866	866	862	862	869	860	2651
4 q	862	865	863	864	860	856	853	851	846	841	841	844	850	853	858	864	868	870	876	872	876	870	868	855	859	2626
5	857	864	862	861	859	854	845	840	840	840	847	849	865	870	868	868	864	862	870	880	874	869	879	883	861	2670
6 q	876	861	859	861	863	864	856	853	846	841	831	830	840	849	855	859	858	866	873	870	873	880	882	876	859	2622
7 q	864	865	868	865	865	863	859	850	846	844	843	848	857	861	863	865	869	869	876	882	878	885	871	870	864	2726
8	872	867	875	873	870	856	868	868	862	849	842	829	813	823	859	866	868	858	864	863	865	866	870	868	859	2614
9	872	871	873	878	873	853	866	855	842	822	830	833	834	835	838	861	864	869	870	872	868	869	865	867	857	2580
10	866	871	868	870	865	863	864	856	847	843	840	839	844	849	859	870	869	868	875	877	877	878	886	868	863	2712
11	861	868	861	864	865	863	862	855	850	826	831	831	846	852	850	866	872	850	866	880	851	860	863	864	857	2557
12	873	860	864	854	862	846	847	853	840	840	837	845	857	851	857	866	868	864	870	870	867	876	862	863	858	2592
13 q	865	865	862	864	859	856	855	855	851	846	842	844	850	858	864	861	865	875	880	885	884	871	883	875	863	2715
14 d	874	862	864	861	853	888	861	781	774	798	792	814	797	831	818	868	856	831	842	854	834	847	823	845	836	2068
15	845	838	844	845	845	822	818	830	829	819	820	802	820	810	835	841	882	899	845	849	848	838	812	816	835	2052
16	849	852	844	831	837	861	844	822	820	818	807	787	811	845	847	857	849	857	869	878	844	852	847	840	840	2168
17	834	837	850	841	833	845	802	807	787	765	764	799	826	823	838	837	835	853	912	849	847	852	857	858	831	1951
18	849	841	839	845	847	850	846	841	826	827	829	818	831	837	850	842	870	838	842	846	849	852	856	869	843	2240
19	858	847	849	856	846	861	870	845	827	814	795	794	818	840	830	838	841	830	839	842	851	854	854	854	840	2153
20	858	868	855	853	853	847	851	849	837	824	822	821	831	845	847	846	849	841	859	861	855	845	842	830	845	2289
21	841	849	853	842	850	856	853	844	836	828	827	826	825	834	889	870	902	930	943	950	936	841	859	853	852	2437
22 d	856	853	865	848	863	793	747	729	770	810	814	795	809	793	813	833	871	849	870	886	886	931	615	403	804	1302
23 d	316	489	514	781	783	793	805	798	788	780	801	817	830	840	841	838	831	841	850	851	847	843	833	833	773	543
24	833	832	832	829	833	840	840	841	836	825	824	824	824	825	833	843	832	847	846	831	814	813	747	754	825	1798
25 d	765	698	814	824	834	829	820	807	791	783	801	803	805	817	826	826	848	883	853	871	876	856	844	853	822	1727
26	845	845	846	850	852	872	837	852	840	833	821	810	821	825	838	855	855	855	875	848	851	861	848	850	845	2274
27	833	836	825	840	849	852	854	854	852	841	837	834	836	829	840	849	856	855	867	863	866	853	845	852	847	2318
28 d	821	818	805	862	819	867	862	845	828	829	824	814	807	805	837	842	850	841	887	863	866	840	841	849	838	2122
29	848	834	845	835	840	851	855	850	836	840	821	824	817	829	831	841	857	851	874	851	848	872	862	858	845	2270
30	852	863	860	843	852	862	851	847	852	844	834	839	834	841	841	847	857	859	860	860	859	857	858	864	851	2436
Mean	835	837	841	850	850	851	844	837	830	825	823	825	832	838	847	854	860	861	864	863	861	861	846	839	845	
Sum 24,000+	1058	1109	1231	1505	1500	1530	1333	1108	908	737	704	754	965	1150	1417	1624	1797	1823	1930	1905	1818	1834	1371	1165		Grand Total 608,276

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D)   10° +   SEPTEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 000·0′+
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	7·2	5·7	5·4	7·4	5·4	4·0	4·1	4·2	5·8	9·4	12·3	15·3	17·3	15·1	12·0	11·4	10·1	8·4	8·8	8·9	8·7	7·8	8·6	9·5	8·9	212·8
2 q	8·9	8·6	7·0	7·1	7·0	6·5	6·1	6·1	6·7	8·9	11·7	13·6	13·5	12·5	10·6	9·8	9·0	9·6	9·6	6·5	6·7	4·9	5·9	8·0	8·5	204·8
3	7·7	4·6	5·8	5·7	6·1	5·6	6·7	6·7	7·4	10·1	12·8	16·0	16·4	15·4	12·3	9·5	10·0	9·6	10·1	10·2	7·0	9·6	8·4	8·8	9·3	222·5
4 q	8·7	8·4	8·0	8·3	7·2	6·8	6·5	6·4	7·0	8·6	10·6	12·4	13·5	13·0	11·5	10·4	9·8	9·5	9·8	9·7	9·4	7·9	5·5	6·1	9·0	215·0
5	8·9	9·1	6·2	6·5	6·7	6·7	6·7	·6·2	7·0	9·2	11·7	13·7	14·5	14·5	14·1	13·5	13·1	12·5	11·4	10·5	8·8	6·0	6·3	9·8	9·7	233·6
6 q	3·2	3·9	6·7	6·7	6·3	5·4	5·6	6·3	7·7	9·1	10·9	12·5	15·1	15·4	14·1	12·3	9·8	9·1	9·8	9·7	8·8	6·5	6·9	6·7	8·7	208·5
7 q	8·0	8·2	8·8	8·1	8·0	6·9	6·4	6·1	6·8	8·5	11·5	13·4	14·7	14·4	13·3	11·9	11·2	10·5	10·7	10·7	8·2	5·4	4·7	6·3	9·3	222·7
8	8·1	7·9	9·7	9·0	3·5	2·3	4·4	4·2	4·5	6·1	10·8	15·3	21·4	18·7	16·7	13·3	11·0	8·8	8·9	9·4	9·4	9·3	8·7	8·6	9·6	230·0
9	9·0	8·4	10·7	10·7	7·3	5·5	5·8	4·3	5·8	7·1	11·4	15·1	17·4	18·3	14·0	12·4	10·8	10·6	10·7	10·6	8·8	6·7	8·5	8·3	9·9	238·2
10	8·5	7·7	7·5	8·8	6·8	6·3	6·0	6·4	7·9	8·1	10·7	12·8	14·6	14·4	13·0	12·3	11·8	11·3	11·4	11·2	10·9	8·7	2·4	4·0	9·3	223·5
11	10·0	10·9	6·0	7·1	5·0	6·1	6·2	6·4	6·7	7·9	13·1	13·7	14·0	14·3	13·4	11·9	12·7	8·0	6·9	-2·1	5·0	7·0	5·3	7·8	8·5	203·3
12	7·3	10·0	5·8	5·2	5·2	5·7	7·0	7·3	7·2	9·7	12·1	13·6	15·2	14·6	13·3	12·4	11·3	9·6	10·3	9·9	8·3	6·0	7·9	8·0	9·3	222·9
13 q	9·0	9·0	8·2	7·6	7·2	6·7	6·2	5·7	6·0	7·2	9·6	13·0	14·7	14·4	13·4	11·4	10·7	10·9	11·2	11·4	10·4	7·5	5·7	8·9	9·4	226·0
14 d	6·0	5·8	4·1	3·0	6·1	9·3	17·0	11·1	6·7	13·1	16·7	20·8	20·3	22·8	20·5	21·0	7·2	10·5	2·5	0·1	6·8	11·4	6·9	7·2	10·7	256·9
15	8·0	10·5	8·4	6·4	6·7	9·0	7·6	8·0	5·6	7·7	11·6	13·1	15·0	16·2	16·0	15·0	12·1	4·2	2·0	-2·3	3·3	3·2	5·7	9·5	8·4	202·5
16	5·8	6·4	4·2	5·9	9·1	8·6	6·0	7·7	7·2	8·7	11·4	13·4	15·9	14·7	13·2	4·5	6·5	8·4	1·5	-2·9	6·0	5·2	3·5	7·2	7·4	178·1
17	3·0	10·4	10·2	7·4	8·6	9·1	15·4	17·8	11·7	7·5	9·6	14·2	13·9	14·1	12·3	8·4	8·7	8·6	-9·1	3·3	8·9	8·5	7·9	8·9	9·1	219·3
18	6·0	6·1	8·7	6·7	5·8	6·0	5·9	5·4	5·8	8·2	11·8	14·1	15·9	15·9	14·7	13·1	5·1	6·7	9·0	8·9	9·0	9·2	8·6	9·3	9·0	215·9
19	8·0	6·4	7·7	6·9	10·5	10·7	11·8	8·3	7·1	9·8	14·3	16·5	17·9	19·2	16·1	12·7	9·6	3·9	4·5	7·5	3·4	7·2	7·9	8·7	9·7	236·6
20	11·1	11·2	8·7	6·7	7·2	9·0	10·2	8·0	8·6	9·3	10·9	13·4	14·7	16·2	15·9	12·9	11·7	11·6	10·5	8·7	5·7	4·9	3·9	2·6	9·7	233·6
21	0·7	2·9	1·5	5·2	8·0	6·1	6·2	5·4	6·0	7·6	10·5	12·0	13·4	13·9	19·0	19·5	18·7	14·9	5·8	14·2	8·5	9·4	10·0	9·4	9·5	228·8
22 d	6·3	5·1	-0·1	-0·6	2·9	38·6	14·2	11·0	15·3	5·0	6·8	9·7	13·1	11·3	10·3	9·1	9·9	9·6	8·7	5·8	4·7	12·2	-2·5	-5·1	8·4	201·3
23 d	-27·7	-30·6	-29·9	-17·5	-0·8	-2·6	5·9	5·2	5·7	9·6	11·5	13·4	13·4	10·6	8·5	7·8	5·8	7·9	9·6	10·1	9·6	8·7	7·9	7·7	2·1	49·8
24	7·0	6·7	6·1	6·2	6·0	6·1	5·9	4·9	4·7	5·1	6·6	10·2	11·6	11·5	11·7	12·3	10·4	9·6	8·9	0·6	3·0	-3·9	-4·4	-18·5	5·3	128·3
25 d	-13·2	-5·2	-21·7	-16·9	-2·8	2·4	5·3	4·9	4·1	5·7	8·6	11·3	13·3	14·4	13·5	10·4	10·0	6·9	5·7	5·8	6·0	6·5	5·9	6·0	3·6	86·9
26	8·9	8·2	7·1	7·8	17·8	12·6	8·3	3·7	4·8	5·5	8·9	11·3	13·5	14·2	12·5	12·0	5·5	-2·3	7·6	10·4	8·1	6·9	1·2	3·3	8·2	197·8
27	3·9	6·2	7·7	10·0	7·6	7·0	6·4	6·3	9·8	8·9	9·0	10·6	12·4	12·9	11·6	11·8	10·5	8·7	9·2	8·3	-9·4	6·5	-2·9	-15·8	6·3	151·4
28 d	-6·2	-0·4	5·8	5·2	0·4	9·4	9·6	9·8	8·7	7·7	9·3	10·5	12·4	6·9	9·8	3·4	7·7	7·0	2·3	3·9	7·0	2·9	13·5	9·6	6·5	156·2
29	6·8	8·7	7·8	8·4	8·7	8·5	8·1	6·7	5·5	6·4	7·0	10·6	10·4	12·1	12·7	9·6	10·5	8·8	2·9	4·2	6·7	8·5	4·8	5·9	7·9	190·3
30	4·2	7·5	6·7	4·9	6·3	6·1	5·9	6·3	6·3	6·9	8·9	10·7	11·4	11·5	11·4	10·7	10·1	9·7	9·6	9·4	9·3	8·8	8·3	8·5	8·3	199·4
Mean	4·8	5·5	4·6	5·1	6·3	7·7	7·6	5·9	6·9	8·0	10·7	13·2	14·7	14·5	13·4	11·6	10·0	8·8	7·4	7·1	6·9	7·0	5·7	5·5	8·3	
Sum 000·0+	143·1	168·3	138·8	153·9	189·8	230·4	227·4	206·8	206·3	240·7	322·5	396·2	440·8	433·4	401·4	346·7	301·3	263·1	220·8	212·6	207·0	209·4	171·0	165·2	9·0	Grand Total 5996·9

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

77

23 ESKDALEMUIR (Z)   45,000γ (0·45 C.G.S. unit) +   SEPTEMBER 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 8000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	390	400	405	409	414	417	419	417	413	411	409	405	407	416	419	425	430	430	428	427	424	420	419	414	415	1968
2 q	414	411	414	416	417	418	419	417	416	413	409	407	408	412	416	419	419	416	419	422	417	411	407	409	414	1946
3	410	404	405	409	412	413	412	412	411	409	403	400	404	411	421	423	422	423	423	421	421	420	419	417	414	1925
4 q	417	416	416	416	415	416	416	412	410	409	404	400	402	405	411	412	413	412	413	416	415	418	420	420	413	1904
5	414	403	408	413	415	416	416	415	410	404	400	399	402	405	409	409	410	414	415	415	417	417	413	406	410	1845
6 q	392	403	408	412	414	414	414	412	411	407	402	402	403	407	415	417	420	420	418	416	416	414	408	404	410	1849
7 q	410	410	412	414	415	415	414	414	412	409	400	395	401	407	412	415	414	414	410	410	413	413	412	410	410	1851
8	410	411	405	396	398	403	400	403	405	400	399	403	412	409	417	421	426	426	420	420	417	417	416	416	410	1850
9	416	416	410	396	387	399	406	411	409	408	402	403	409	419	427	421	422	416	415	416	420	420	419	417	412	1884
10	416	415	414	410	411	414	415	416	411	409	405	405	407	409	410	413	417	415	414	415	414	416	412	410	412	1893
11	408	398	404	405	408	410	414	414	411	413	409	406	407	410	418	424	432	445	444	438	421	420	409	406	416	1974
12	402	393	387	403	409	410	412	412	413	409	404	405	406	413	417	420	419	419	419	419	421	420	417	417	411	1866
13 q	415	413	414	414	416	417	417	417	415	413	405	400	398	398	400	404	409	410	410	411	414	420	416	405	410	1851
14 d	373	388	386	393	386	377	374	382	392	397	419	420	438	468	502	534	589	519	492	449	423	409	377	403	429	2290
15	416	408	410	420	419	414	415	417	420	419	415	419	429	443	443	442	450	462	461	444	432	415	387	356	423	2156
16	402	411	415	412	404	405	410	417	424	425	427	432	428	427	437	458	456	438	437	430	426	424	413	367	422	2125
17	370	381	394	395	388	402	397	390	398	421	428	438	439	438	419	452	451	441	454	436	428	427	426	420	418	2033
18	410	414	406	412	418	420	421	421	422	421	417	415	414	422	437	449	467	465	450	441	435	431	428	424	427	2260
19	403	406	417	418	412	414	405	410	414	415	417	426	437	439	449	463	475	473	459	445	438	431	428	427	430	2321
20	423	410	410	412	417	418	416	416	415	411	412	415	420	429	446	456	456	448	438	435	438	434	427	420	426	2222
21	414	416	416	411	403	409	416	421	420	420	413	411	414	415	428	459	483	575	579	479	480	473	439	428	443	2622
22 d	427	426	410	395	318	242	345	370	403	419	428	432	439	438	440	445	452	456	458	463	438	357	0	384	1211
23 d	-211	-86	31	93	72	345	387	416	427	433	438	439	439	441	440	444	445	444	437	434	437	438	438	438	336	59
24	438	438	438	438	436	434	434	433	432	433	430	427	425	427	429	438	440	439	443	452	446	421	356	281	425	2208
25 d	314	255	265	247	352	387	405	416	427	430	431	437	439	445	450	462	465	465	447	434	416	414	420	416	402	1639
26	416	421	427	424	389	361	389	402	411	414	416	420	423	430	432	438	450	458	445	434	432	422	418	407	420	2079
27	411	417	417	411	417	422	427	428	428	427	427	425	426	429	432	435	436	438	436	437	430	416	394	379	423	2145
28 d	368	385	338	329	341	341	360	377	397	406	409	417	426	459	469	487	466	457	441	437	407	413	397	394	405	1721
29	411	416	409	409	407	418	423	426	428	427	428	428	434	434	435	438	438	439	438	437	437	424	410	409	425	2203
30	411	395	380	401	411	415	419	422	421	422	425	424	425	428	427	427	427	428	427	427	427	428	429	427	420	2073
Mean	384	387	389	391	391	399	404	410	413	415	414	415	419	425	430	438	443	443	440	432	427	423	411	392	414	
Sum 11,000+	510	594	671	733	721	954	1114	1311	1393	1438	1422	1451	1554	1734	1905	2145	2292	2301	2188	1955	1825	1684	1331	747		Grand Total 297,973

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR   All Times G.M.T.   SEPTEMBER 1963

	GEOMAGNETIC ELEMENTS											3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temperature in magnetograph chamber 200°A+
	Horizontal component			Declination			Vertical component							
	Maximum 16,000γ +	Minimum 16,000γ +	Range	Maximum 10° +	Minimum 10° +	Range	Maximum 45,000γ +	Minimum 45,000γ +	Range					
	h. m. γ	γ h. m.	γ	h. m. ′	′ h. m.	′	h. m. γ	γ h. m.	γ					°A.
1	00 00 896	782 09 51	114	13 25 18·8	2·7 06 48	16·1	16 57 432	385 00 06	47	4,2,2,4,3,3,2,2	22	1	86·5
2 q	20 42 911	834 10 00	77	11 56 14·3	2·8 21 33	11·5	19 48 426	405 10 55	21	2,1,1,1,2,3,3,3	16	1	86·5
3	01 30 887	823 10 06	64	13 27 17·3	2·8 20 42	14·5	15 00 426	400 11 30	26	2,2,1,2,3,2,3,2	17	1	86·5
4 q	19 00 887	835 10 33	52	12 52 14·2	4·0 23 00	10·2	23 00 421	398 11 30	23	1,1,1,1,1,1,2,2	10	1	86·5
5	23 29 911	836 08 40	75	13 35 16·2	4·7 21 23	11·5	20 13 420	398 11 30	22	3,0,0,2,3,3,2,3	16	1	86·4
6 q	22 03 893	822 10 57	71	14 12 16·0	2·2 00 39	13·8	18 00 421	387 00 01	34	2,1,1,2,2,2,2,3	15	1	86·5
7 q	21 13 890	839 10 07	51	12 46 15·3	4·1 21 16	11·2	06 18 416	393 11 30	23	1,0,0,1,1,1,2,2	8	0	86·5
8	02 31 882	793 12 53	89	12 38 22·4	1·1 04 40	21·3	17 28 427	393 03 56	34	2,3,1,2,4,3,1,0	16	1	86·5
9	04 18 892	811 09 38	81	13 18 20·5	2·5 04 59	18·0	14 34 427	384 04 42	43	2,3,2,3,3,2,2,1	18	1	86·5
10	22 18 911	830 11 01	81	12 37 16·1	-2·6 22 41	18·7	16 42 420	405 11 12	15	2,1,2,2,2,3,1,3	16	1	86·5
11	19 23 938	815 10 19	123	13 14 16·1	-12·6 19 20	28·7	19 20 461	395 01 31	66	3,2,2,3,3,4,5,3	25	2	86·5
12	21 37 885	830 10 23	55	12 57 16·2	4·0 04 41	12·2	21 07 422	382 02 01	40	3,2,3,2,2,2,2,2	18	1	86·5
13 q	19 31 903	839 10 10	64	23 33 17·7	0·5 23 02	17·2	21 32 426	372 23 56	54	1,1,1,1,2,2,3,4	15	1	86·5
14 d	06 00 927	725 12 32	202	15 23 27·7	-13·6 18 29	41·3	16 26 650	360 22 10	290	3,5,5,4,5,5,5,5	37	2	86·5
15	17 32 962	765 23 42	197	13 32 19·0	-9·1 19 09	28·1	17 21 480	334 23 28	146	3,3,3,4,4,5,4,5	31	2	86·5
16	19 10 923	753 11 22	170	13 03 17·8	-12·5 19 00	30·3	15 46 464	357 23 43	107	3,4,3,4,4,3,4,4	29	1	86·5
17	18 42 907	737 10 13	170	07 20 20·7	-12·5 18 21	33·2	18 21 462	367 00 04	95	4,3,4,4,3,3,4,2	27	1	86·5
18	23 41 900	811 11 05	89	13 17 17·8	1·0 16 40	16·8	16 42 473	405 02 30	68	2,1,1,2,3,4,1,3	17	1	86·5
19	00 01 893	774 12 00	119	13 35 20·4	-2·4 20 21	22·8	16 12 429	398 01 00	81	3,3,3,3,4,3,2,3	24	1	86·4
20	01 26 881	814 10 00	67	14 05 18·5	0·5 22 58	18·0	16 48 458	405 01 52	53	3,1,2,2,3,2,2,3	18	1	86·5
21	14 31 980	805 18 12	175	14 15 25·4	-13·6 18 19	39·0	18 05 710	400 04 40	310	2,2,1,2,5,5,5,3	25	1	86·5
22 d	20 25 1453	46 23 38	1407	05 30 40·8	-30·6 21 26	71·4	21 56 621	-257 24 00	878	3,7,6,4,4,5,5,9	43	2	86·5
23 d	03 06 910	-601 00 17	1511	02 22 62·3	-71·6 01 55	133·9	17 03 446	-343 00 12	789	9,7,3,3,3,4,3,2	34	2	86·5
24	18 34 857	695 23 57	162	15 33 14·0	-24·8 23 44	38·8	19 35 456	240 23 32	216	0,1,2,2,2,3,3,5	18	1	86·5
25 d	17 44 1003	550 01 50	453	13 46 16·2	-28·3 02 36	44·5	17 32 485	206 03 05	279	7,5,3,4,4,6,4,3	36	2	86·5
26	17 20 895	799 11 27	96	04 29 23·4	-8·0 17 04	31·4	17 18 461	354 05 07	107	2,4,3,3,3,4,3,3	25	1	86·5
27	19 45 945	778 23 59	167	12 56 14·2	-23·7 23 53	37·9	17 07 440	346 23 54	94	3,3,2,3,3,3,5,5	27	1	86·5
28 d	18 38 946	764 12 51	182	22 25 16·0	-21·6 00 01	37·6	15 36 491	322 02 38	169	5,4,3,3,4,5,5,4	33	2	86·5
29	18 36 910	802 12 50	108	14 23 15·1	-2·5 18 30	17·6	17 50 444	403 02 50	41	3,2,2,3,3,3,4,4	24	1	86·5
30	01 41 879	819 10 32	60	14 16 12·8	3·0 01 09	9·8	23 52 431	374 02 20	57	3,3,2,3,3,2,1,2	19	1	86·5
Mean	- - 929	718 - -	211	- - 20·1	-8·5 - -	28·6	- - 467	326 - -	141	-	-	1·20	86·5

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + OCTOBER 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 18,000γ+
1 q	857	856	856	858	858	857	859	852	844	837	834	834	843	850	853	857	854	852	853	855	856	857	857	852	852	2441
2 q	853	854	856	857	857	858	858	853	845	838	834	835	842	845	852	858	860	864	864	867	865	863	865	867	855	2510
3 q	862	857	860	860	863	863	863	862	847	836	832	838	844	848	848	845	855	861	864	863	864	863	864	865	855	2527
4	862	861	856	868	871	860	861	859	852	847	836	834	842	843	846	843	848	860	865	865	865	861	860	859	855	2524
5	859	867	863	863	866	869	874	872	864	848	829	840	848	852	852	855	854	859	866	871	866	863	864	862	859	2626
6	861	862	868	867	862	868	861	862	856	847	840	835	842	850	858	862	865	855	862	866	867	864	864	861	859	2605
7	863	866	870	867	868	866	868	868	861	852	842	836	840	848	851	859	850	853	864	870	871	859	879	863	860	2634
8	859	859	853	847	872	867	858	855	852	845	833	833	831	838	850	850	856	861	859	865	864	869	862	862	854	2500
9	860	861	859	859	858	857	863	862	856	848	836	835	842	849	857	859	864	864	857	862	859	861	878	867	857	2573
10	852	859	863	863	866	872	881	885	874	858	850	844	836	836	849	857	862	863	855	859	875	854	859	859	860	2631
11	863	861	859	860	859	866	873	854	849	849	830	805	816	829	849	839	832	852	843	848	857	862	874	858	849	2387
12 d	857	837	867	852	855	863	848	851	841	828	816	808	816	824	835	846	871	837	832	844	902	855	849	851	845	2285
13	854	853	846	840	835	836	844	852	843	840	847	843	829	844	831	848	852	859	859	881	858	893	903	844	851	2434
14 d	843	847	832	847	844	847	832	825	833	812	821	804	816	828	842	844	819	820	846	883	858	853	854	865	838	2115
15	862	859	859	851	847	851	840	847	841	840	835	827	839	844	851	859	860	862	865	890	855	859	874	852	853	2469
16	849	861	847	852	865	859	847	841	839	822	827	827	827	834	833	835	842	873	841	850	867	856	857	858	846	2309
17	858	855	857	861	857	861	868	860	855	841	838	835	835	844	850	853	852	852	855	855	856	856	856	856	853	2466
18	853	853	856	861	865	865	863	866	859	847	839	836	841	851	851	846	849	856	848	841	847	854	851	853	852	2451
19	860	859	859	859	870	867	871	866	860	849	842	841	845	847	844	839	842	850	858	853	852	851	854	858	854	2496
20	856	855	865	860	859	868	869	863	853	846	836	836	836	832	840	851	853	840	845	841	844	837	849	853	849	2387
21	858	862	860	863	855	861	871	873	863	842	827	830	842	843	843	843	851	857	860	862	866	866	866	865	855	2529
22 q	865	865	866	870	873	873	873	871	862	851	840	836	846	853	859	865	869	871	874	874	875	875	873	873	865	2752
23	869	868	868	870	872	874	876	873	867	857	848	845	855	856	862	862	867	873	875	879	858	859	864	866	865	2763
24 d	850	825	831	823	800	815	832	808	764	747	726	843	841	836	822	815	823	835	833	827	845	842	862	831	820	1676
25	803	826	827	841	842	843	851	841	842	835	824	821	821	823	837	842	847	848	849	853	850	849	848	848	838	2111
26	850	844	844	846	851	855	855	850	846	837	831	827	834	838	846	850	852	848	856	857	856	858	862	863	848	2356
27 q	856	855	855	856	857	858	860	858	851	843	839	841	846	851	852	858	859	861	857	863	862	860	859	857	855	2514
28	856	857	857	858	860	860	861	857	851	846	841	840	851	855	855	858	855	842	844	836	848	846	845	851	851	2430
29 d	851	850	856	861	868	865	865	859	846	837	834	834	846	837	826	846	822	814	755	694	575	518	494	671	789	924
30 d	722	727	777	817	827	825	812	825	842	846	842	846	843	842	843	847	847	846	850	849	850	851	850	849	828	1875
31	846	846	846	849	855	856	858	860	849	844	836	839	845	849	851	851	850	852	852	855	855	855	853	851	850	2403
Mean	851	851	853	855	857	858	859	856	849	839	832	833	838	843	846	850	851	853	852	854	851	847	850	851	849	
Sum 25,000+	1369	1367	1438	1506	1557	1607	1613	1530	1307	1015	785	828	980	1119	1238	1342	1382	1440	1406	1478	1388	1269	1349	1390		Grand Total 631,703

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + OCTOBER 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 000·0+
1 q	7·9	8·0	8·1	8·6	7·8	7·7	7·0	6·3	5·9	7·0	9·6	11·3	12·0	11·4	10·6	8·9	7·9	8·1	8·0	8·5	8·1	7·7	7·8	8·7	8·5	202·9
2 q	8·5	8·7	8·4	8·2	8·0	7·8	7·2	6·1	5·4	6·7	9·4	11·4	12·6	12·8	12·4	11·3	10·3	9·6	9·4	8·6	8·2	8·8	6·7	7·2	8·9	213·7
3 q	7·6	8·0	8·5	8·4	8·7	7·9	7·2	6·2	5·9	7·1	8·7	11·7	14·2	15·1	13·5	12·0	10·4	9·6	9·2	8·7	6·7	7·4	8·0	8·5	9·1	219·2
4	8·2	8·6	9·6	9·5	6·0	6·0	6·2	5·9	5·9	7·8	9·6	10·4	13·7	15·6	16·9	16·0	14·4	10·6	9·5	8·9	8·7	7·9	6·9	6·7	9·6	229·5
5	7·8	6·3	7·4	7·5	7·0	7·2	7·3	6·0	4·7	5·9	10·2	11·6	12·6	13·9	13·8	13·2	11·4	10·7	8·8	3·7	8·4	6·5	5·9	8·0	8·6	205·8
6	7·9	7·5	7·8	6·6	7·8	7·0	6·8	5·8	5·1	5·8	7·8	10·6	12·5	13·5	12·8	10·7	9·4	9·9	10·4	9·5	9·4	8·4	7·5	6·9	8·6	207·4
7	7·4	7·6	7·1	7·6	8·5	8·1	7·7	6·9	5·4	5·3	7·1	9·4	12·1	14·1	14·0	13·7	13·4	11·6	9·8	10·7	9·9	1·4	-7·0	2·1	8·1	193·9
8	5·4	5·1	5·5	10·7	9·4	6·8	6·7	6·3	5·2	6·3	8·3	8·2	13·5	14·3	13·3	13·4	4·0	8·9	11·6	10·7	9·4	7·8	8·0	8·6	8·6	207·4
9	7·9	7·6	7·2	6·7	7·0	7·6	8·5	7·3	6·4	6·6	8·8	11·2	13·0	13·4	12·5	11·4	10·3	10·7	9·4	9·6	8·4	7·6	8·5	5·8	8·9	213·4
10	4·9	6·9	7·4	7·2	7·6	7·8	7·6	7·4	6·8	7·6	9·4	11·4	12·6	13·4	13·9	12·2	10·8	10·7	8·3	7·9	5·5	2·1	2·9	5·0	8·2	197·3
11	6·5	6·6	6·9	6·8	7·8	8·3	8·1	8·6	12·2	9·9	11·9	15·4	18·3	14·3	13·5	8·7	2·2	5·6	7·0	7·0	6·9	8·4	1·4	2·8	8·5	205·1
12 d	2·3	2·9	-4·8	1·7	6·9	6·7	9·7	9·3	9·5	9·8	11·7	14·7	15·4	10·8	16·3	13·8	-2·0	-0·6	9·1	7·8	-11·8	2·3	9·6	10·7	6·7	161·8
13	8·9	8·7	8·2	9·7	10·7	10·2	8·9	6·9	6·9	5·1	6·7	9·3	9·5	9·8	9·3	8·0	9·4	8·7	4·4	-0·4	6·1	2·7	2·5	0·1	7·1	170·3
14 d	-0·7	-0·4	4·9	5·2	8·4	9·5	15·2	14·4	10·9	9·5	12·3	12·5	11·8	13·6	8·6	8·9	4·6	1·8	5·7	6·5	4·8	6·7	6·8	8·3	7·9	189·8
15	8·3	11·8	9·3	8·9	8·8	10·7	8·0	7·7	6·7	7·0	11·3	12·5	12·6	14·4	12·5	11·5	10·0	10·4	7·7	3·9	5·9	5·8	6·6	1·4	8·9	213·7
16	8·7	7·6	5·4	9·5	7·8	7·3	10·6	12·3	12·0	11·3	11·5	13·4	14·8	15·6	13·0	11·3	7·4	1·0	4·9	7·9	8·5	7·8	6·9	7·2	9·3	223·7
17	8·9	7·8	7·7	7·1	8·6	9·7	9·4	8·0	6·9	6·7	8·3	11·8	11·6	11·6	10·6	9·4	7·5	7·9	7·9	8·3	8·6	8·2	8·0	7·2	8·7	207·7
18	5·5	6·9	7·9	8·7	6·1	6·5	7·0	7·9	8·5	8·1	8·5	11·6	12·6	11·6	10·6	8·7	8·9	8·0	7·9	8·0	7·8	7·4	5·7	6·3	8·2	196·7
19	6·1	6·6	7·0	9·4	7·0	7·4	8·3	9·3	7·4	7·9	9·4	11·7	14·2	14·5	13·4	11·4	9·9	9·0	8·4	8·0	8·0	5·2	6·6	4·2	9·1	218·0
20	4·0	5·8	6·2	4·3	6·7	8·0	7·8	8·0	7·4	7·9	11·3	15·0	17·3	15·6	16·4	13·3	12·7	9·0	6·7	5·8	4·3	2·3	-2·3	-1·7	8·0	191·8
21	3·4	4·3	4·3	3·9	6·7	10·0	10·2	8·5	6·7	7·1	9·8	11·2	12·4	12·7	11·9	10·1	9·1	8·9	8·8	8·5	8·4	8·0	7·8	8·1	8·4	200·8
22 q	8·3	8·5	8·7	8·9	8·0	7·9	7·9	7·4	6·0	5·7	7·0	10·7	13·2	14·6	14·9	12·4	10·8	10·3	9·7	9·5	9·1	8·7	8·3	8·0	9·4	224·5
23	7·9	8·0	8·3	8·5	8·6	8·0	7·8	6·6	6·1	8·5	8·0	11·3	14·3	14·3	13·1	11·4	10·3	9·8	9·6	10·1	10·6	8·5	8·9	9·3	9·5	227·8
24 d	-0·4	-6·6	-6·0	-6·0	-5·3	6·1	9·4	10·5	12·6	10·2	13·2	10·2	14·7	16·8	17·0	17·3	12·3	10·3	11·3	7·4	8·4	2·8	0·0	2·8	7·0	169·0
25	8·5	10·4	5·0	6·1	6·7	9·4	9·3	6·7	5·1	5·2	6·3	8·3	11·2	12·1	11·7	11·0	10·2	9·6	9·1	8·9	4·6	0·6	4·9	7·7	7·9	188·6
26	6·9	8·2	9·8	8·0	6·8	6·7	7·1	6·8	5·9	6·3	8·5	11·5	12·0	11·9	11·5	10·3	10·2	8·0	8·9	8·6	8·0	7·4	7·6	7·8	8·5	204·7
27 q	7·1	7·7	7·3	7·2	7·4	7·8	7·6	6·7	5·9	6·0	7·9	9·7	11·4	12·1	11·6	10·3	9·5	9·2	7·1	5·2	6·7	7·9	8·0	8·0	8·1	195·3
28	8·0	8·3	7·9	7·8	7·8	7·7	7·2	6·7	6·0	6·6	8·6	9·3	10·4	11·1	10·6	9·2	8·7	7·4	2·6	4·3	5·8	5·4	3·4	4·9	7·3	175·7
29 d	2·6	5·6	9·5	7·2	8·7	9·8	11·2	10·3	10·7	10·1	10·6	11·1	12·3	12·1	14·2	11·6	-11·3	-15·3	-2·0	-10·7	-20·0	-14·9	-6·8	-3·4	3·1	73·2
30 d	10·7	16·0	11·7	12·2	13·4	11·1	12·0	9·7	6·4	5·2	5·6	8·1	9·5	10·4	10·2	10·0	9·3	8·8	8·6	7·9	7·8	7·6	7·1	6·9	9·4	226·2
31	6·9	7·1	7·2	7·6	7·8	7·8	7·5	6·8	5·7	5·4	7·7	10·7	12·3	11·8	10·6	10·0	10·2	9·8	9·1	8·0	7·8	7·5	7·1	7·0	8·3	199·4
Mean	6·5	7·0	6·7	7·2	7·5	8·1	8·5	7·9	7·2	7·3	9·3	11·3	12·9	13·2	12·7	11·3	8·5	7·7	8·0	7·0	6·1	5·5	5·3	5·8	8·3	
Sum 000·0+	201·9	216·1	209·4	223·7	233·1	251·1	262·8	244·5	224·2	224·7	287·3	349·4	400·6	409·2	395·2	351·4	262·2	238·0	246·9	217·3	189·0	171·9	163·3	181·1	8·8	Grand Total 6154·3

GEOMAGNETIC FORCE: VERTICAL COMPONENT

Mean values for periods of sixty minutes ending at exact hours, G.M.T.

79

23 ESKDALEMUIR (Z) 　　　45,000γ (0·45 C.G.S. unit) + 　　　OCTOBER 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 9000γ+
1 q	428	428	427	426	423	423	425	428	427	426	422	420	414	415	419	422	424	427	428	428	428	428	427	427	425	1190
2 q	427	427	427	427	426	425	426	427	427	422	414	411	414	416	420	423	426	426	425	426	424	427	426	424	423	1163
3 q	421	423	422	421	421	420	421	423	424	420	416	412	415	416	422	427	426	424	423	424	425	426	424	424	422	1120
4	424	424	422	416	415	416	417	420	416	413	410	410	411	415	422	430	431	428	428	427	426	428	428	427	421	1104
5	427	426	425	423	422	421	420	420	416	416	412	410	413	416	419	425	427	427	428	428	423	423	422	422	421	1111
6	425	424	422	417	416	416	417	418	421	418	412	411	416	420	423	428	432	429	427	427	426	426	426	427	422	1124
7	424	422	421	421	421	421	421	419	420	417	417	416	414	413	415	423	434	430	428	427	427	434	421	405	421	1111
8	412	414	409	388	388	398	407	413	416	416	415	410	411	414	416	432	444	438	432	428	427	424	422	422	417	996
9	424	423	423	422	422	422	421	422	423	421	414	410	410	410	415	420	423	426	428	428	428	428	414	406	420	1083
10	414	416	416	417	420	419	415	412	415	415	412	410	413	416	420	424	427	427	432	433	425	420	417	417	419	1052
11	417	418	420	421	421	419	416	420	416	414	412	415	417	425	432	444	454	444	438	439	439	433	423	416	426	1213
12 d	404	391	368	371	387	399	406	415	421	424	424	426	435	464	456	471	491	476	456	443	432	415	416	417	425	1208
13	420	422	418	416	416	412	418	426	429	432	428	426	428	427	434	439	434	434	432	427	410	389	379		422	1128
14 d	337	335	365	388	399	402	400	410	417	423	421	421	435	446	463	469	486	473	449	424	418	422	423	420	419	1046
15	416	410	403	410	411	410	416	419	421	420	416	420	420	424	427	430	431	428	428	417	419	421	404	405	418	1026
16	406	402	404	405	411	416	417	416	416	418	416	414	420	429	437	444	449	443	438	434	425	424	426	423	422	1133
17	421	425	427	426	424	419	413	416	416	419	419	416	421	423	426	430	434	432	430	428	428	428	428	427	424	1176
18	426	424	423	420	418	420	419	419	420	421	421	417	416	421	428	435	433	432	432	435	435	432	432	428	425	1207
19	426	423	423	421	415	412	411	414	417	420	417	417	421	430	438	444	440	438	432	432	430	431	428	424	425	1204
20	422	419	416	415	417	416	417	420	422	421	415	411	418	434	434	432	434	440	445	445	442	431	418	406	425	1190
21	411	411	412	412	417	417	414	415	419	417	415	411	412	415	422	427	429	427	427	427	425	426	423	423	419	1054
22 q	423	423	422	421	421	421	421	421	422	422	422	420	416	416	419	423	422	423	421	420	421	421	421	421	421	1103
23	421	421	421	420	418	418	417	420	421	421	415	409	409	413	416	421	422	421	421	421	427	431	430	432	420	1086
24 d	428	385	354	356	368	394	397	378	386	406	420	432	421	431	445	456	462	463	458	477	475	452	421	419	420	1084
25	399	356	392	420	421	417	420	427	430	433	432	432	427	428	429	433	434	434	435	434	439	439	434	433	424	1178
26	432	431	419	420	425	427	428	431	432	432	427	426	427	432	433	434	436	437	434	433	433	431	430	427	430	1317
27 q	427	428	428	428	428	428	428	431	432	431	426	424	421	424	428	431	431	430	432	432	430	428	428	428	428	1282
28	427	427	427	427	426	426	427	429	431	428	423	421	420	423	424	427	431	435	441	438	434	434	433	431	429	1290
29 d	421	421	416	410	405	407	410	416	421	427	423	421	421	428	440	447	522	533	526	465	302	233	67	235	401	617
30 d	113	181	305	364	407	423	434	437	438	435	432	429	428	429	434	436	435	434	434	434	435	435	437	438	400	607
31	438	437	434	433	432	432	429	430	434	431	426	422	423	428	432	433	432	431	432	432	432	433	434	434	431	1354
Mean	408	407	410	412	415	417	418	420	421	422	419	418	419	424	429	434	440	438	436	433	426	422	412	415	421	
Sum 12,000+	661	617	711	782	861	916	948	1012	1066	1079	994	950	987	1141	1288	1460	1636	1588	1522	1418	1207	1074	772	867		Grand Total 313,557

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR　　　All Times G.M.T.　　　OCTOBER 1963

Day	H Max h.m	H Max γ	H Min γ	H Min h.m	H Range γ	D Max h.m	D Max '	D Min '	D Min h.m	D Range '	V Max h.m	V Max γ	V Min γ	V Min h.m	V Range γ	3-hr. range indices K	Sum of K indices	C (0-2)	Temp 200°A+
1 q	06 04	864	829	11 02	35	12 21	12·4	4·9	08 15	7·5	07 58	430	411	12 54	19	0,1,1,0,1,1,1,1	6	0	86·5
2 q	23 32	875	830	11 28	45	13 03	13·4	5·2	08 38	8·2	08 10	428	410	11 35	18	0,0,0,1,2,2,1,1	7	0	86·5
3 q	21 11	872	828	10 42	44	13 15	15·4	4·8	20 40	10·6	21 07	427	411	11 20	16	1,0,1,1,2,2,1,1	9	1	86·5
4	04 20	874	832	10 35	42	14 53	17·4	5·2	04 43	12·2	16 00	432	410	10 20	22	1,2,1,1,1,2,1,1	10	1	86·5
5	19 40	878	820	10 45	58	13 10	14·7	0·3	19 24	14·4	19 10	430	409	11 10	21	1,1,1,3,2,1,3,2	14	1	86·5
6	04 58	874	833	11 08	41	13 21	14·3	4·8	08 37	9·5	16 30	432	410	10 55	22	1,2,0,1,1,2,2,1	10	1	86·5
7	22 14	897	833	11 43	64	17 01	15·1	-15·5	22 03	30·6	16 40	438	403	23 11	35	1,2,1,2,2,3,2,5	18	1	86·5
8	05 00	886	817	12 13	69	13 00	15 4	-0·6	16 27	16·0	16 40	446	375	03 50	71	3,3,2,2,2,4,2,2	20	1	86·4
9	22 33	903	832	11 03	71	12 45	14·2	4·0	23 50	10·2	18 44	431	403	23 05	28	1,0,2,1,1,1,2,3	11	1	86·4
10	20 30	898	828	12 42	70	14 43	15·3	0·3	21 40	15·0	19 42	437	409	00 01	28	2,0,1,1,2,1,4,2	13	1	86·4
11	22 32	935	789	11 41	146	12 31	21·1	-7·3	22 28	28·4	16 40	456	410	10 32	46	1,1,2,3,3,3,2,4	19	1	86·4
12 d	21 47	971	770	13 09	201	14 34	19·5	-21·9	20 40	41·4	16 08	497	364	03 00	133	4,3,3,3,4,5,5,4	31	2	86·4
13	21 11	928	809	12 19	119	04 56	13·2	-3·4	19 36	16·6	16 12	444	371	23 59	73	2,3,3,2,3 3,4,5	25	1	86·4
14 d	19 43	903	770	16 23	133	06 17	17·4	-9·2	01 08	26·6	16 28	438	293	00 44	145	4,3,3,3,4,4,4,3	28	2	86·4
15	22 11	913	820	14 00	93	13 36	16·2	-0·9	22 05	17·1	16 40	433	400	22 46	33	3,2,2,2,3,2,3,4	21	1	86·4
16	17 30	912	816	09 53	96	13 21	17·0	-4·0	17 23	21·0	16 53	454	399	01 04	55	3,2,2,2,2,4,3,2	20	1	86·4
17	06 21	871	829	12 06	42	11 33	13·2	5·0	23 50	8·2	16 45	435	414	06 40	21	1,1,1,1,0,1,1,1	7	0	86·3
18	03 45	870	832	11 32	38	12 12	13·7	4·7	22 13	9·0	15 40	437	416	12 40	21	1,2,1,2,2,1,2,1	12	0	86·3
19	06 28	874	834	15 37	40	13 35	14·9	2·3	23 47	12·6	15 30	444	409	06 35	35	2,2,1,0,0,1,2,2	10	0	86·3
20	22 38	893	812	12 53	81	13 02	19·1	-7·8	22 52	26·9	19 12	449	403	23 05	46	2,2,1,3,3,2,2,4	19	1	86·3
21	07 15	882	822	10 18	60	13 43	13·4	-0·5	03 51	13·9	15 49	431	408	00 00	23	2,3,2,2,2,2,0,0	13	1	86·3
22 q	18 05	879	835	11 31	44	13 49	16·3	5·0	09 10	11·3	15 50	424	416	12 20	8	0,1,0,1,1,2,0,0	5	0	86·3
23	19 35	883	837	23 55	46	12 54	15·6	5·7	08 48	9·9	23 58	435	406	12 00	29	0,0,0,0,1,1,3,3	8	1	86·3
24 d	22 19	890	666	10 15	224	14 38	19·9	-11·3	.03 27	31·2	19 54	491	339	02 07	152	4,4,5,6,3,3,3,4	32	2	86·3
25	06 42	861	783	00 30	78	01 11	16·1	0·0	21 37	16·1	21 07	439	346	01 21	93	4,2,2,2,2,2,3,3	20	1	86·3
26	22 56	870	821	11 02	49	11 28	13·2	4·0	08 10	9·2	17 35	438	415	02 56	23	3,1,2,2,1,2,0,1	12	1	86·2
27 q	19 52	876	836	10 18	40	13 38	12·4	1·3	19 49	11·1	19 03	434	421	12 10	13	1,1,1,0,1,0,3,0	7	0	86·1
28	23 49	871	825	19 29	46	13 40	11·3	-4·4	18 58	15·7	18 47	446	417	12 17	29	0,0,0,2,0,2,3,3	10	1	86·0
29 d	17 05	966	212	21 09	754	22 14	26·1	-39·8	22 42	65·9	16 58	566	-55	22 02	621	3,2,1,1,3,6,7,8	31	2	86·2
30 d	00 50	880	536	00 02	344	00 43	30·2	-34·8	00 10	65·0	07 52	439	60	00 21	379	7,3,3,3,2,2,2,1	23	2	86·3
31	07 36	863	827	09 39	36	11 57	15·1	3·0	08 55	12·1	00 15	438	421	11 58	17	1,1,2,3,2,2,2,1	12	1	86·2
Mean	- -	891	786	- -	105	- -	16·2	-3·3	- -	19·5	- -	445	372	- -	73	-	-	0·94	86·3

q denotes an international quiet day and d an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + NOVEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
1	851	849	848	851	850	855	858	865	854	842	836	839	841	850	849	850	853	850	842	847	854	854	858	853	850	399
2	851	850	855	862	858	858	859	857	848	842	841	847	846	857	854	850	840	827	850	846	861	848	851	854	851	412
3	865	856	854	855	846	867	870	847	831	832	838	836	841	842	855	858	858	861	852	844	847	885	858	852	852	450
4	855	856	856	857	855	855	859	858	853	843	841	846	850	853	854	860	860	860	860	859	856	855	855	861	855	517
5 q	856	855	857	859	859	858	859	858	852	846	842	842	843	848	851	856	860	862	862	863	865	864	864	865	856	546
6	867	867	865	863	865	871	875	872	862	854	851	850	854	854	837	843	853	861	849	848	843	873	864	854	858	595
7 d	858	857	866	869	859	846	874	864	859	848	815	795	812	831	830	843	815	812	807	836	847	825	844	827	839	139
8 d	806	834	821	846	851	824	826	842	848	839	839	812	800	832	823	831	826	857	845	841	882	874	840	847	837	86
9 d	839	846	858	854	851	858	858	841	846	836	833	836	810	812	833	834	843	841	877	828	802	847	852	827	840	162
10 d	840	834	853	858	846	849	858	854	850	838	805	822	827	837	849	846	845	857	846	844	871	861	847	884	847	321
11	853	842	850	855	863	855	853	836	837	836	831	836	848	853	853	851	846	861	847	849	857	859	865	876	851	412
12	857	858	858	858	865	859	868	859	853	839	835	844	848	853	858	836	827	837	871	850	857	858	856	870	853	474
13	855	854	856	858	857	861	862	863	861	858	855	849	848	844	849	850	853	855	857	859	862	861	863	871	857	565
14	858	858	861	862	867	872	871	872	864	858	855	854	855	854	857	858	861	864	866	866	865	863	859	862	862	677
15	861	858	862	867	868	873	874	871	864	858	855	851	852	855	854	857	858	861	864	864	863	862	864	865	862	681
16 q	863	863	867	867	867	867	866	867	868	863	861	860	860	861	861	865	868	869	868	868	866	863	866	869	865	763
17	867	867	868	870	872	872	873	875	874	889	881	869	869	888	871	842	861	843	859	870	866	860	859	860	868	825
18 q	856	857	859	861	860	859	859	857	852	849	848	849	856	861	864	864	865	864	867	862	866	865	865	865	860	630
19 q	863	864	864	865	865	865	867	865	861	860	857	857	859	865	866	864	867	869	870	870	871	870	870	865	865	759
20	862	861	873	873	869	867	870	869	864	859	857	858	863	866	863	866	869	871	873	873	870	870	869	868	867	803
21 q	867	866	867	868	870	871	872	871	868	860	859	862	868	865	861	862	865	866	867	868	869	869	868	867	867	796
22	863	865	866	867	872	873	874	873	870	866	858	859	868	874	877	881	876	850	835	856	859	867	866	866	866	781
23	861	874	873	861	865	868	871	872	860	862	864	862	865	866	867	866	866	869	869	864	860	866	865	866	866	782
24 d	865	865	863	868	885	884	883	879	873	861	850	863	844	838	843	845	828	824	830	814	825	826	820	831	850	407
25	842	862	857	853	857	859	862	857	849	833	830	840	833	838	849	854	854	858	857	862	861	861	861	861	852	450
26	862	862	863	864	866	867	870	871	861	862	862	860	858	859	862	862	862	866	866	867	866	865	865	863	864	731
27	864	864	866	868	871	874	873	869	866	858	855	855	856	859	862	865	871	872	872	872	864	856	859	863	865	754
28	866	867	866	867	876	873	874	873	870	863	860	857	855	865	872	868	871	870	872	870	869	869	869	867	868	829
29	867	865	866	869	871	873	877	877	875	871	866	859	863	868	868	860	870	876	878	876	868	860	862	857	868	842
30	868	860	860	864	865	868	878	875	874	869	860	848	800	849	868	858	856	856	853	858	862	863	871	864	860	647
Mean	857	858	860	862	863	863	866	864	859	853	848	847	846	853	855	855	855	856	858	857	859	861	859	860	857	
Sum 25,000+	708	734	795	859	891	901	993	908	769	597	440	417	392	597	660	645	647	689	731	694	774	819	775	800		Grand Total 617,235

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + NOVEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 100·0′+
1	7·4	6·9	6·0	6·7	6·1	6·8	7·7	7·5	5·1	4·9	6·7	9·7	10·7	12·1	12·2	12·4	9·1	9·3	9·2	8·8	7·8	6·5	5·2	5·4	7·9	90·2
2	6·1	6·3	7·6	7·6	6·3	7·8	7·5	6·7	5·6	6·6	9·8	12·6	13·7	14·2	13·5	12·6	-1·5	7·9	9·5	5·8	0·5	1·0	7·1	7·9	7·6	82·7
3	9·9	9·8	6·4	5·8	9·5	8·3	9·4	8·5	6·7	7·1	8·6	10·4	12·4	11·8	11·2	10·3	9·4	9·1	8·4	6·8	6·4	2·7	5·1	6·7	8·4	100·7
4	7·1	7·7	8·0	8·0	8·0	9·7	7·1	6·1	5·9	6·3	8·5	10·6	11·6	10·9	9·9	9·4	9·4	9·4	7·6	3·7	3·5	6·6	7·1	6·4	7·9	88·5
5 q	6·7	7·5	7·9	8·1	8·1	8·1	7·8	6·9	5·9	6·2	8·1	10·2	11·6	11·3	10·4	9·3	8·7	8·6	8·0	7·9	7·8	7·5	7·0	7·0	8·2	96·6
6	7·6	7·6	8·1	7·9	8·1	7·9	8·0	7·5	7·8	9·8	11·7	13·2	14·1	14·1	13·2	11·8	12·1	8·7	6·7	5·8	-0·8	3·3	3·3	6·6	8·5	104·1
7 d	7·8	8·4	10·5	8·9	8·0	12·5	9·5	7·5	6·3	7·9	9·7	12·4	16·1	15·4	13·1	4·8	0·1	2·6	-1·5	-5·7	-7·9	2·3	6·2	7·9	6·8	62·8
8 d	3·6	5·7	14·4	8·0	7·9	13·3	22·3	18·7	9·3	7·4	8·7	11·3	9·6	10·5	11·5	10·1	-1·4	0·1	8·7	4·8	-5·2	0·4	4·1	4·5	4·5	88·3
9 d	8·9	8·7	10·5	6·2	8·2	9·3	10·0	8·8	8·7	8·9	9·1	11·1	10·5	10·8	12·8	9·4	7·4	6·1	2·1	-4·1	-7·5	1·4	1·3	1·3	6·7	59·9
10 d	5·7	0·5	6·2	7·1	5·6	8·0	8·8	7·0	7·9	8·3	11·2	11·4	11·6	10·7	11·5	5·2	1·4	2·1	3·7	5·7	6·0	6·3	2·1	6·9	6·7	60·9
11	5·2	9·8	11·0	11·6	8·9	8·6	8·8	8·4	9·0	7·6	9·4	9·0	10·7	11·3	10·6	9·7	7·7	8·3	9·5	-3·3	4·0	5·8	6·7	5·9	8·1	94·4
12	6·0	6·3	7·6	9·8	10·5	8·7	8·5	7·7	7·0	8·2	9·2	8·6	9·9	10·5	10·6	8·3	7·7	7·1	3·9	6·1	7·7	6·5	6·1	6·1	7·9	88·6
13	7·5	7·8	8·0	8·0	8·0	7·8	7·5	6·9	7·0	7·5	8·6	9·5	9·4	9·8	9·1	7·6	9·3	9·8	8·8	8·2	7·5	7·2	5·8	4·9	8·0	91·5
14	7·1	7·6	8·0	7·6	8·5	8·1	7·4	7·5	6·8	6·7	7·9	9·7	10·9	10·6	9·4	8·9	8·6	8·3	7·9	7·6	6·7	5·2	5·9	8·0	8·0	92·7
15	5·4	6·7	9·5	8·7	8·4	7·8	7·7	7·8	7·5	7·5	8·0	9·8	10·9	11·3	10·3	9·7	9·6	8·8	8·0	7·7	7·2	6·7	7·6	7·5	8·3	100·1
16 q	7·7	7·8	8·9	8·6	8·5	8·6	8·3	8·0	7·8	7·8	8·7	10·3	11·2	10·7	9·5	9·0	8·4	8·2	8·0	7·9	7·6	6·9	6·7	6·8	8·4	101·9
17	7·7	8·0	8·2	8·7	8·8	8·3	8·2	8·0	7·7	9·0	9·6	10·7	10·9	14·7	19·7	21·8	18·8	21·0	16·2	11·3	8·8	7·6	7·0	6·7	11·1	167·4
18 q	6·8	6·9	7·3	7·5	7·1	6·9	7·0	6·9	7·0	7·5	8·7	9·5	9·7	9·6	9·4	9·4	9·2	8·8	9·1	7·6	8·1	7·6	7·5	7·5	8·0	92·6
19 q	7·2	7·5	7·6	7·8	7·9	7·7	7·7	7·5	7·2	7·4	8·0	9·4	10·5	10·2	9·5	9·0	8·9	8·6	8·3	8·1	7·9	7·5	7·1	7·1	8·1	95·6
20	7·6	7·1	6·7	4·8	5·8	7·0	7·1	7·0	7·0	7·7	9·3	10·6	11·4	11·2	9·6	9·0	8·7	8·7	8·5	8·4	8·0	7·8	7·8	7·8	8·1	94·6
21 q	7·7	7·6	7·8	8·0	7·9	7·8	7·3	7·5	7·1	8·0	9·3	10·5	11·3	10·7	9·9	9·8	10·3	10·0	9·6	8·7	8·0	7·6	7·2	6·9	8·6	106·5
22	7·4	7·7	7·9	8·0	8·2	8·0	7·8	7·4	7·2	7·8	8·9	9·9	10·7	10·7	10·5	10·7	10·5	10·4	9·7	10·6	8·6	8·0	7·6	7·0	8·8	111·9
23	5·4	5·4	4·4	4·9	6·9	7·1	7·2	6·9	8·8	9·5	9·4	10·6	11·8	10·7	9·8	10·7	10·2	9·0	8·8	8·8	6·4	7·4	7·4	7·7	8·1	95·2
24 d	7·7	7·4	7·7	9·4	8·5	8·0	8·8	11·4	11·2	10·4	12·1	13·4	14·6	16·4	15·3	14·4	11·2	9·8	10·7	7·3	-2·5	-2·3	-7·9	-5·4	8·2	97·6
25	5·6	6·9	6·0	7·5	9·4	12·3	8·5	8·7	10·4	10·4	10·4	10·1	10·7	11·5	9·8	8·9	8·8	8·7	7·5	8·1	7·6	7·1	7·0	7·0	8·7	108·9
26	7·2	7·3	7·6	7·9	7·8	7·6	7·6	7·3	8·2	9·4	9·8	10·1	11·0	10·5	9·6	8·8	8·0	7·7	7·6	7·7	7·6	7·6	7·5	7·7	8·3	99·1
27	7·7	7·8	7·9	8·0	8·2	8·5	7·3	8·3	8·2	7·8	8·9	9·7	10·0	10·1	9·5	8·8	8·1	7·9	7·9	7·8	6·9	5·4	5·9	6·7	8·1	93·3
28	7·7	7·9	7·9	8·8	8·1	5·4	7·3	7·6	7·0	6·7	7·7	9·7	10·0	10·7	10·5	8·9	8·4	8·0	7·9	7·7	7·7	7·7	7·7	7·7	8·1	94·7
29	7·4	6·9	7·5	7·4	6·9	7·2	7·2	7·6	6·9	7·0	8·9	10·8	12·0	12·6	14·1	13·4	9·8	9·0	8·8	8·7	8·1	5·7	1·4	5·0	8·3	100·3
30	5·8	4·9	7·2	7·5	7·2	7·9	7·8	7·2	7·0	7·1	8·9	10·7	11·7	11·2	11·6	10·2	8·7	8·0	4·8	5·8	7·0	6·7	7·8	7·5	7·9	90·2
Mean	6·9	7·1	8·0	7·8	7·9	8·4	8·4	8·0	7·5	7·8	9·1	10·5	11·4	11·6	11·3	10·1	8·2	8·3	7·8	6·3	5·0	5·6	5·6	6·1	8·1	
Sum 000·0+	208·6	214·4	240·3	234·8	237·3	251·0	253·1	240·8	225·2	234·6	274·5	315·5	341·2	346·8	338·0	302·8	245·9	250·3	234·3	190·6	150·4	169·2	167·6	184·6	9·3	Grand Total 5851·8

23 ESKDALEMUIR (Z) 45,000γ (0·45 C.G.S. unit) + NOVEMBER 1963

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 10,000γ+
1	434	434	432	431	430	427	425	426	431	432	429	428	431	432	436	437	438	438	441	442	439	438	438	435	433	404
2	436	436	434	431	428	428	427	428	430	428	423	423	426	428	435	437	465	459	449	446	445	439	437	432	435	450
3	417	416	423	423	415	406	409	416	426	427	424	426	427	432	434	434	434	432	435	439	439	427	417	424	425	202
4	427	428	428	429	429	427	427	428	428	427	425	423	425	431	435	433	432	432	432	433	432	431	429	428	429	299
5 q	428	428	428	428	428	428	428	429	428	426	423	422	422	426	432	434	434	433	432	429	428	427	427	426	428	274
6	426	424	425	426	426	425	423	423	424	423	421	421	425	432	443	446	439	438	440	444	447	432	417	424	430	314
7 d	423	424	416	413	414	409	405	415	421	421	427	434	436	443	450	462	491	522	520	463	411	421	429	421	437	491
8 d	365	380	403	405	415	413	404	408	423	427	426	431	440	445	448	458	473	457	445	445	441	416	420	419	425	207
9 d	399	370	380	399	414	419	421	426	429	428	429	430	439	450	443	460	468	462	441	437	438	403	409	403	425	197
10 d	385	384	368	384	399	415	420	427	429	431	433	432	435	435	437	446	450	448	440	439	430	425	427	409	422	128
11	406	405	401	400	402	413	420	424	428	428	428	429	427	427	433	434	432	434	438	446	438	430	428	419	424	170
12	421	422	421	421	416	416	419	421	427	431	428	428	427	426	432	441	455	456	446	438	434	434	433	428	430	321
13	427	428	428	428	428	428	428	428	427	426	426	428	430	431	433	438	436	434	435	434	434	434	433	431	431	333
14	430	429	428	427	425	426	421	426	427	426	424	424	427	427	428	430	431	429	428	428	430	429	432	431	428	263
15	429	427	424	424	424	425	426	426	427	427	426	428	428	432	434	433	432	430	430	430	429	430	428	428	428	277
16 q	430	427	424	423	424	426	426	424	426	427	424	424	426	427	430	430	428	428	427	427	427	427	427	427	427	236
17	426	426	426	426	424	424	424	424	424	420	417	421	422	425	433	456	462	490	479	454	443	438	435	434	436	453
18 q	432	432	432	431	431	430	430	430	432	435	438	436	434	434	434	433	432	432	430	432	429	430	430	430	432	369
19 q	428	428	428	428	428	427	427	427	427	427	427	427	427	428	430	430	430	428	428	427	427	427	427	428	428	266
20	430	428	427	421	423	424	424	426	427	426	426	426	427	429	432	430	428	428	427	427	427	426	426	426	427	241
21 q	427	427	426	425	424	424	424	423	423	422	421	424	427	427	428	428	428	428	431	430	429	428	427	427	426	228
22	427	427	427	426	424	424	424	424	422	419	420	422	422	422	423	424	426	434	452	444	441	440	433	430	428	277
23	428	419	412	415	420	421	421	421	423	421	421	420	419	421	424	427	427	427	427	428	432	428	427	427	423	156
24 d	427	427	426	422	417	417	417	417	417	420	421	423	427	439	445	449	466	468	467	465	458	420	406	403	432	364
25	407	389	405	413	417	413	412	421	424	428	430	433	435	438	438	438	439	438	438	435	432	432	431	431	426	217
26	428	428	428	427	427	427	427	426	427	424	424	425	427	429	430	431	431	430	429	428	428	427	427	428	428	262
27	427	427	426	426	426	425	426	426	427	428	428	428	427	427	428	430	428	428	427	427	430	434	432	432	428	270
28	427	427	426	425	417	417	419	420	423	425	426	424	427	427	427	427	427	427	427	427	427	427	427	428	425	201
29	427	427	426	422	421	421	422	422	424	423	417	421	423	427	430	428	428	427	426	427	428	435	437	430	426	219
30	422	420	422	424	423	422	421	421	422	421	421	426	435	430	428	432	432	433	438	435	432	432	427	423	427	242
Mean	421	420	420	421	421	422	422	423	426	426	425	426	428	431	434	437	441	442	440	437	433	429	427	425	428	
Sum 12,000+	646	594	600	623	639	647	647	703	773	774	753	787	850	927	1013	1116	1222	1250	1205	1106	1005	867	823	761		Grand Total 308,331

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR All Times G.M.T. NOVEMBER 1963

Day	Horiz. Max 16,000γ+ h.m.	γ	Horiz. Min 16,000γ+ γ	h.m.	Range γ	Decl. Max 10°+ h.m.	'	Decl. Min 10°+ '	h.m.	Range '	Vert. Max 45,000γ+ h.m.	γ	Vert. Min 45,000γ+ γ	h.m.	Range γ	3-hr. range indices K	Sum of K indices	Geomagnetic character of day, C (0-2)	Temp. in magnetograph chamber 200°A+
1	07 13	873	829	11 45	44	13 52	13·9	2·0	22 05	11·9	19 08	444	424	06 50	20	1,2,2,2,2,2,2,2	15	1	86·1
2	20 38	874	800	16 23	74	11 59	16·1	-10·6	16 32	26·7	16 40	471	427	23 58	44	2,2,2,2,2,5,3,3	21	1	86·0
3	21 32	925	815	08 20	110	13 12	13·4	-3·5	21 29	16·9	20 50	441	403	05 30	38	2,3,3,2,2,0,2,4	18	1	85·9
4	19 30	873	835	10 10	38	12 28	12·7	1·2	20 05	11·5	20 06	436	422	11 50	14	1,2,1,2,2,0,3,2	13	1	86·0
5 q	23 30	869	841	11 04	28	12 38	11·7	5·3	08 59	6·4	15 20	436	420	12 10	16	0,0,0,0,1,1,0,1	3	0	85·9
6	21 57	901	829	15 00	72	13 07	15·3	-3·6	20 23	18·9	20 48	450	412	22 14	38	1,1,2,1,3,3,3,4	18	1	85·9
7 d	20 40	880	771	17 24	109	05 38	22·6	-24·9	19 00	47·5	18 55	545	387	23 57	158	3,4,2,4,3,4,5,4	29	1	85·9
8 d	20 42	928	766	06 03	162	06 58	27·3	-16·1	17 00	43·4	16 51	484	357	00 30	127	4,2,4,3,4,5,4,4	32	1	85·9
9 d	18 35	947	758	20 41	189	15 20	16·9	-13·1	20 22	30·0	16 00	478	363	01 29	115	3,2,3,3,4,4,6,5	30	1	85·8
10 d	17 51	948	796	10 40	152	10 39	14·6	-11·9	17 48	26·5	17 40	451	359	02 32	92	4,3,2,3,3,5,4,4	28	1	85·8
11	20 51	895	819	19 01	76	03 23	13·0	-5·2	19 47	18·2	19 07	451	398	03 50	53	3,2,2,2,2,2,4,3	20	1	85·8
12	18 32	901	822	16 01	79	15 00	11·5	-3·7	18 26	15·2	17 32	460	413	04 45	47	2,2,3,2,2,3,4,3	21	1	85·7
13	23 16	879	838	15 13	41	13 50	10·4	3·5	22 56	6·9	15 30	439	424	09 30	15	1,1,1,1,1,2,1,2	10	0	85·7
14	05 50	877	848	11 03	29	12 31	12·1	5·9	07 40	6·2	22 50	433	417	05 50	16	1,2,1,1,1,0,0,1	7	0	85·7
15	05 30	876	847	12 01	29	13 03	12·3	4·6	01 12	7·7	14 10	434	423	02 55	11	2,1,1,0,1,0,0,0	5	0	85·6
16 q	22 47	872	858	11 28	14	13 00	11·3	5·9	22 55	5·4	15 00	431	421	03 00	10	1,0,0,0,1,0,0,1	3	0	85·6
17	13 58	909	809	15 33	100	15 33	27·3	5·9	09 09	21·4	17 37	499	414	10 40	85	0,0,1,3,4,4,4,1	17	1	85·6
18 q	18 27	873	843	10 09	30	12 32	10·4	6·7	19 29	3·7	10 20	439	428	20 55	11	1,1,0,0,1,0,2,0	5	0	85·6
19 q	22 18	874	854	10 28	20	12 47	10·8	6·7	23 50	4·1	14 52	432	426	08 00	6	0,0,0,0,0,0,0,2	2	0	85·6
20	02 47	880	854	10 00	26	12 57	12·1	3·9	03 50	8·2	14 32	433	418	03 30	15	2,2,0,0,1,0,1,0	6	0	85·5
21 q	06 27	874	854	10 30	20	12 55	11·6	6·6	23 22	5·0	19 18	431	421	09 54	10	0,0,0,1,1,0,0,0	2	0	85·5
22	15 48	895	828	18 08	67	19 12	13·0	5·2	23 53	7·8	18 41	455	416	10 00	39	0,0,0,1,1,3,3,2	10	1	85·5
23	01 32	888	849	08 58	39	12 32	13·1	2·7	03 05	10·4	20 30	433	410	02 50	23	3,2,2,2,1,0,2,1	13	1	85·5
24 d	05 00	888	780	22 11	108	13 29	18·9	-16·8	22 19	35·7	16 42	480	398	21 55	82	1,2,1,2,2,3,4,4	19	1	85·5
25	01 20	873	822	13 03	51	05 30	16·1	-1·8	00 01	17·9	16 45	444	384	01 20	60	4,3,3,2,2,2,2,0	18	1	85·5
26	07 00	873	854	08 42	19	12 33	11·5	7·0	08 00	4·5	15 30	432	422	10 55	10	0,0,2,0,1,0.0,0	3	0	85·5
27	19 40	877	849	21 27	28	12 35	10·7	4·0	21 39	6·7	21 47	438	423	06 10	15	0,0,1,0,1,0,1,2	5	0	85·4
28	04 33	884	850	12 12	34	13 27	10·9	4·3	05 11	6·6	15 00	428	415	04 44	13	0,3,1,1,1,0,1,0	7	0	85·4
29	06 31	881	845	23 40	36	15 18	16·0	-3·4	22 03	19·4	20 21	441	418	10 48	23	1,1,1,1,1,2,2,3	12	1	85·3
30	06 31	883	756	12 39	127	12 38	16·0	0·2	18 48	15·8	12 50	439	416	01 01	23	2,1,1,3,5,3,3,2	20	1	85·3
Mean	- -	889	824	- -	65	- -	14·5	1·1	- -	15·5	- -	450	409	- -	41	-	-	0·60	85·7

q denotes an international quiet day and *d* an international disturbed day.

GEOMAGNETIC FORCE: HORIZONTAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

21 ESKDALEMUIR (H) 16,000γ (0·16 C.G.S. unit) + DECEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 20,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	860	860	860	864	867	869	868	868	865	864	862	863	864	865	863	854	865	868	867	868	870	868	868	866	865	756
2	867	867	869	868	868	875	874	872	868	863	858	860	860	863	848	849	857	849	842	855	864	871	871	871	863	707
3 d	873	859	877	874	863	879	879	837	849	863	848	830	821	822	829	854	836	834	844	840	857	888	841	847	852	444
4 d	848	850	848	843	856	867	849	863	862	856	852	846	830	838	842	843	839	833	858	878	886	859	817	870	851	433
5 d	845	851	843	856	850	864	863	864	861	850	847	855	859	846	824	836	839	866	840	872	852	848	843	852	*851*	426
6 d	847	861	858	858	849	855	871	870	854	851	852	849	832	854	854	867	863	880	870	844	857	861	858	860	857	575
7	859	869	858	859	857	859	857	856	850	847	852	854	827	852	847	842	850	854	857	862	862	861	856	863	855	510
8	876	859	860	868	858	856	874	863	853	847	849	849	837	847	853	851	851	852	867	853	857	867	860	861	857	568
9	860	861	861	863	866	871	877	866	865	854	842	847	848	846	839	853	861	865	869	867	866	866	866	863	860	642
10	865	864	864	865	867	869	871	873	872	867	862	859	859	862	863	866	867	869	868	867	868	868	867	866	866	788
11 q	867	867	869	872	873	874	874	873	873	869	862	858	856	858	863	866	868	869	866	869	870	869	868	866	867	819
12	867	873	869	870	874	877	878	877	877	876	871	868	865	862	862	863	862	861	865	865	863	868	866	873	869	852
13	857	862	869	867	870	866	870	873	871	872	870	869	865	865	863	863	866	869	869	866	863	866	864	865	867	800
14	863	865	868	871	871	873	875	877	870	881	875	878	869	865	855	844	851	865	867	857	852	857	865	864	866	778
15	863	857	858	863	862	863	861	866	866	863	861	855	854	862	866	861	860	861	869	866	867	866	866	864	863	700
16	862	862	864	865	867	869	869	867	865	864	865	867	864	867	869	862	871	862	862	864	866	869	866	869	866	777
17	862	863	864	866	868	869	869	868	868	866	864	866	865	867	867	868	866	869	864	861	862	867	870	869	866	789
18 q	869	867	866	868	869	872	873	873	873	869	868	866	867	871	873	875	873	872	873	874	873	873	869	870	871	896
19	869	869	869	870	873	875	877	877	876	871	866	866	870	875	880	879	874	872	872	874	877	873	863	848	871	915
20 d	851	857	867	873	881	893	873	890	885	876	866	866	859	851	854	853	842	851	848	845	845	848	853	859	862	686
21	861	860	861	866	868	870	872	881	868	859	860	868	877	863	864	862	851	851	854	857	865	861	869	854	863	722
22	857	859	864	869	877	879	877	870	873	861	852	857	861	837	852	855	856	847	830	865	850	857	872	871	860	648
23	859	861	862	865	869	875	869	873	861	851	860	863	866	869	869	866	842	838	857	855	862	858	859	861	861	670
24	868	856	858	859	866	868	871	869	861	856	856	858	859	856	858	866	863	855	858	859	872	863	859	866	862	680
25 q	866	866	866	868	869	870	873	872	870	865	852	861	864	867	869	869	869	852	868	868	868	869	869	869	867	799
26	866	866	866	867	870	876	873	874	871	865	866	867	866	870	871	866	866	869	870	870	867	862	865	862	868	831
27	862	866	867	871	873	874	879	881	873	869	871	869	864	867	871	873	873	871	869	866	870	870	871	870	870	890
28	878	873	867	869	872	875	877	882	890	882	876	877	874	874	874	873	874	864	862	861	877	857	865	872	*873*	945
29	869	861	873	869	873	874	880	875	880	877	875	848	836	841	843	844	831	849	850	865	858	861	869	864	861	665
30	862	855	857	861	863	861	862	862	862	857	856	856	860	866	866	864	870	865	863	862	860	861	862	869	862	682
31 q	865	864	864	865	867	869	869	869	869	861	863	864	866	867	869	870	870	870	868	867	866	866	862	869	867	799
Mean	863	862	863	865	867	871	*871*	870	868	864	861	860	*857*	859	859	860	859	860	861	863	864	865	862	864	863	
Sum 26,000+	743	730	766	830	876	986	1004	981	901	772	679	659	565	615	620	657	626	652	686	742	792	798	719	793		Grand Total 642,192

864 at 0-1h. January 1, 1964.

GEOMAGNETIC DECLINATION (WEST)
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

22 ESKDALEMUIR (D) 10° + DECEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 100·0'+
	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'	'
1	6·7	7·0	8·3	8·0	7·9	8·1	7·9	7·5	7·0	7·4	8·2	10·0	10·7	10·5	9·5	8·6	8·8	8·7	7·8	7·6	7·3	6·8	6·0	4·8	8·0	91·1
2	7·5	8·5	8·0	7·6	8·0	7·1	6·8	7·2	6·8	7·0	8·7	10·1	11·4	11·6	11·0	10·2	12·0	13·6	13·1	9·5	6·8	7·0	6·7	4·3	*8·8*	110·5
3 d	1·7	5·5	10·5	4·4	8·4	9·8	12·2	14·3	16·8	10·7	10·0	10·4	10·4	12·3	10·7	8·8	7·0	-1·3	1·5	-1·5	-0·9	6·0	2·9	5·1	7·3	75·7
4 d	5·2	7·6	8·6	12·0	9·8	8·4	7·0	7·6	7·0	6·5	6·7	7·9	9·4	9·5	8·9	1·2	3·2	3·9	8·7	1·3	2·1	-0·8	-2·0	-0·4	*5·8*	39·3
5 d	2·9	2·2	5·8	8·7	8·9	10·4	10·2	9·4	8·7	7·3	7·8	8·1	10·2	11·6	5·4	10·7	7·7	0·3	1·0	-4·3	0·1	-1·9	2·2	7·0	5·9	40·4
6 d	8·7	7·6	6·4	7·1	7·2	10·3	9·5	9·2	7·6	7·3	7·1	6·3	9·5	6·5	8·7	7·5	5·8	0·5	2·1	4·1	4·2	4·8	6·9	4·9	6·7	59·8
7	6·9	9·6	10·3	9·4	8·0	8·3	8·7	10·0	9·5	7·6	7·8	9·4	7·9	6·7	9·8	7·9	8·5	8·1	6·5	5·7	4·0	4·5	4·1	6·0	7·7	85·2
8	8·1	7·1	7·7	7·6	8·8	11·8	11·5	10·7	10·2	9·5	9·6	9·9	9·8	9·4	8·8	4·0	6·9	6·2	5·2	4·2	5·5	6·9	5·5	6·1	8·0	91·0
9	6·8	7·7	7·7	7·8	7·8	8·7	8·5	8·6	11·5	9·1	8·4	10·3	10·7	11·7	10·6	6·7	8·7	8·0	7·8	7·6	7·5	7·3	7·3	7·3	8·5	104·1
10 q	7·7	7·7	7·7	7·8	8·0	8·0	8·0	7·9	7·4	6·9	7·8	8·5	9·4	10·1	9·3	8·2	8·1	8·0	7·9	7·7	7·4	7·3	7·4	7·6	8·0	91·8
11 q	7·9	8·0	8·3	8·9	8·5	8·1	7·9	7·5	7·0	6·9	7·2	8·0	9·6	10·1	9·3	8·5	8·0	7·9	7·6	7·8	7·7	7·6	7·3	7·3	8·0	92·9
12	7·4	8·0	7·6	7·8	8·0	8·3	7·8	7·7	7·8	8·0	8·4	8·6	9·6	10·1	9·6	8·8	8·7	8·6	8·0	7·5	6·4	7·0	6·7	1·0	7·8	87·4
13	1·1	5·7	6·7	7·6	5·1	5·6	6·8	7·4	7·2	7·7	8·1	9·6	10·6	10·5	9·8	9·5	8·7	8·3	8·1	7·7	5·8	5·4	7·0	6·7	7·4	76·7
14	7·2	7·5	7·2	7·1	6·5	7·8	7·7	7·8	7·8	7·9	8·8	9·7	11·4	12·7	14·2	16·9	13·5	10·1	9·2	7·7	0·5	5·1	6·7	6·4	8·6	107·4
15	8·8	7·5	7·0	8·0	8·0	7·3	7·9	7·4	7·1	7·9	8·0	8·6	9·6	9·9	9·9	9·6	8·6	7·6	7·0	7·1	6·9	6·8	6·7	6·5	7·9	89·7
16	6·3	7·6	5·0	7·6	7·5	8·0	7·5	7·0	6·9	7·3	8·0	9·4	10·0	9·4	9·4	8·0	7·5	9·8	7·9	7·4	7·5	7·0	6·7	3·4	7·6	82·1
17	5·9	6·8	7·5	7·8	7·8	7·7	7·3	7·1	6·8	7·0	7·8	8·7	9·5	9·9	9·3	8·8	8·5	8·8	8·1	6·5	5·6	6·8	6·8	6·9	7·7	83·7
18 q	7·4	7·2	7·8	8·0	8·0	7·9	7·8	7·3	7·2	7·9	8·0	8·4	9·2	9·6	9·1	9·3	8·8	9·4	9·3	8·9	7·9	7·3	6·7	6·8	8·1	95·2
19	6·9	7·4	7·6	8·0	8·2	8·1	8·5	7·4	7·4	8·1	7·4	8·7	10·5	10·0	9·9	9·0	9·2	9·4	8·9	8·3	7·8	6·7	1·5	-0·4	7·6	82·4
20 d	2·6	6·4	7·6	8·0	8·1	7·2	9·7	16·5	11·8	10·8	10·6	12·5	13·6	15·2	14·2	12·2	9·1	9·4	8·2	-3·9	-6·9	2·4	2·0	3·2	7·9	90·5
21	6·9	7·0	7·8	8·7	8·5	8·0	7·8	8·0	8·0	9·1	10·0	10·4	12·2	10·7	10·1	9·9	9·9	5·8	8·7	6·5	7·4	5·3	-0·4	-2·3	7·7	84·0
22	6·5	7·5	7·7	7·8	8·5	9·8	9·0	8·6	8·9	9·4	11·0	11·2	10·7	11·9	10·4	9·4	7·6	7·5	2·0	-1·8	5·4	5·5	2·4	5·7	7·6	82·6
23	7·4	7·7	7·6	7·5	7·9	8·0	7·9	8·0	8·6	9·6	9·5	8·7	9·2	9·6	8·6	8·0	7·2	7·8	4·3	2·2	7·0	4·3	2·4	8·0	7·4	77·6
24	4·4	6·5	6·6	6·4	6·8	6·9	7·0	6·9	7·0	7·7	8·3	8·9	10·7	10·4	9·7	8·2	8·0	4·9	7·5	7·6	0·5	1·5	5·1	6·9	6·9	64·4
25 q	7·7	7·7	7·6	7·8	7·9	8·0	7·8	7·3	7·4	8·1	8·8	9·2	9·6	9·7	8·6	7·9	7·7	7·6	7·6	7·0	7·1	7·0	6·9	7·1	7·9	89·1
26	7·2	7·0	7·3	7·9	7·9	6·8	6·8	7·0	7·2	7·9	9·2	9·2	9·1	9·4	9·1	8·7	9·0	8·0	7·7	7·3	6·5	5·8	3·4	9·2	7·7	84·6
27	6·1	6·9	7·7	7·3	7·6	7·8	8·9	8·0	6·8	6·7	8·0	8·4	9·4	10·7	†10·5	9·3	8·7	8·5	8·3	7·3	7·7	7·2	7·0	7·2	8·0	92·0
28	6·7	5·8	6·8	7·4	7·9	7·7	8·0	8·0	7·6	8·1	8·1	9·4	10·0	10·7	10·7	10·5	11·2	11·6	10·1	8·0	-6·4	1·0	5·1	6·9	7·5	80·9
29	6·2	6·1	9·4	5·6	6·7	7·5	7·0	7·7	6·8	6·6	9·3	8·8	11·5	12·3	13·3	11·4	8·8	11·3	7·1	1·8	5·6	6·5	3·9	3·0	7·7	84·2
30	5·3	4·7	7·5	6·7	7·7	7·5	7·0	6·9	6·6	6·7	7·6	8·6	10·0	10·6	9·9	7·6	8·3	8·8	7·0	7·5	7·0	6·6	5·5	5·1	7·4	76·7
31 q	6·8	6·9	7·5	7·8	7·6	7·6	7·7	7·1	6·8	7·6	7·7	8·0	9·7	10·0	8·8	8·3	8·1	8·2	7·4	7·2	7·1	6·8	5·9	5·6	7·6	82·2
Mean	6·3	7·0	7·7	7·7	7·9	8·2	8·2	8·3	8·1	7·9	8·5	9·1	10·2	*10·5*	9·9	8·8	8·5	7·6	7·1	5·4	*4·8*	5·4	4·9	5·3	7·6	
Sum 000·0+	194·9	216·4	237·1	240·3	243·5	253·1	253·4	258·9	250·5	244·9	261·9	283·3	315·1	324·2	307·1	273·6	261·8	235·3	221·6	167·5	148·1	167·5	152·3	162·9	7·9	Grand Total 5675·2

6·9 at 0-1h. January 1, 1964.

GEOMAGNETIC FORCE: VERTICAL COMPONENT
Mean values for periods of sixty minutes ending at exact hours, G.M.T.

83

23 ESKDALEMUIR (Z) — 45,000γ (0·45 C.G.S. unit) + — DECEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	Sum 10,000γ+
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	422	426	426	427	426	424	423	423	422	422	422	423	425	428	432	433	430	428	428	427	427	427	427	427	426	225
2	427	427	427	427	425	423	422	421	423	422	422	424	425	428	434	439	437	440	453	451	444	436	433	432	431	342
3 d	427	421	412	410	414	414	413	416	416	420	423	433	442	446	462	459	462	463	457	459	440	395	410	421	431	335
4 d	426	426	427	424	424	427	428	428	428	427	427	428	431	438	441	452	450	451	439	435	422	417	409	388	429	293
5 d	375	398	410	415	421	423	421	422	424	424	426	423	427	434	451	452	456	450	448	437	424	427	425	420	426	233
6 d	409	409	418	420	423	422	422	422	425	425	425	427	433	436	443	441	438	436	427	433	436	431	415	415	426	231
7	419	414	411	416	422	424	427	427	431	430	427	427	437	438	439	445	442	440	437	437	433	431	429	425	429	308
8	415	415	420	421	421	420	415	418	420	422	426	427	431	433	435	445	439	437	433	433	432	422	422	423	426	225
9	424	423	423	425	425	424	422	422	423	422	426	426	426	428	433	437	433	431	429	428	429	429	428	428	427	244
10 q	426	426	426	426	426	425	425	425	425	426	426	425	421	423	427	427	427	426	426	426	426	426	426	426	426	213
11 q	425	425	422	421	421	421	422	422	422	422	425	425	421	420	423	425	425	426	426	426	426	425	425	425	424	166
12	424	420	420	421	421	420	420	420	420	419	420	419	419	420	425	425	425	426	426	426	427	426	425	422	422	136
13	421	418	415	415	412	415	416	419	419	418	419	420	420	420	425	426	425	425	425	426	428	427	426	426	421	106
14	426	424	424	420	420	420	420	420	420	420	418	416	417	421	429	436	437	436	433	446	461	450	441	437	429	292
15	433	431	429	426	426	426	426	425	425	425	425	423	425	426	429	430	430	430	428	428	428	428	427	427	427	256
16	427	426	426	425	425	423	423	423	422	422	421	420	423	426	426	427	426	427	428	429	429	427	427	428	425	204
17	427	426	426	425	425	423	422	422	422	422	422	420	420	423	421	427	427	426	427	430	429	426	425	425	424	186
18 q	425	424	423	423	425	423	422	421	420	419	420	420	416	419	420	421	421	422	422	422	422	422	425	425	422	122
19	425	423	423	422	422	421	420	420	420	420	420	418	415	417	420	421	422	422	423	424	423	426	430	430	422	127
20 d	425	426	426	425	422	420	420	409	409	413	416	415	420	426	433	437	445	443	439	419	413	403	398	397	421	99
21	422	425	425	422	423	423	423	421	422	422	420	420	420	426	428	430	430	434	432	433	430	429	427	425	425	212
22	421	423	425	425	422	419	419	420	421	423	426	424	426	433	438	438	437	440	448	437	432	428	422	415	428	262
23	420	423	425	426	425	423	424	423	424	426	426	423	421	425	426	427	433	443	440	437	432	432	431	423	427	258
24	412	416	421	425	426	426	426	426	427	427	426	424	423	430	431	427	427	435	433	432	428	426	425	422	426	221
25 q	422	422	434	423	424	425	425	426	426	426	426	423	421	425	427	426	426	426	426	426	426	426	426	426	425	209
26	424	424	423	422	422	420	422	422	421	421	422	423	422	426	427	427	427	426	426	426	427	430	430	428	425	188
27	426	423	422	420	419	420	419	419	420	420	420	420	420	422	424	425	424	423	426	427	427	427	427	423	423	147
28	422	418	418	419	418	419	419	420	418	419	419	420	420	421	422	423	423	427	432	436	444	433	426	421	423	157
29	422	424	417	417	419	419	419	420	420	420	420	426	429	434	443	445	459	447	445	446	437	434	434	430	430	326
30	428	428	427	427	426	426	426	427	427	427	429	426	426	429	432	433	431	430	431	431	432	433	433	432	429	297
31 q	429	430	428	427	426	426	425	425	425	425	426	423	422	425	427	428	426	426	426	426	427	427	428	429	426	232
Mean	422	422	423	422	423	422	422	422	422	422	423	423	424	427	431	433	433	434	433	432	430	427	425	423	426	
Sum 13,000+	76	84	99	87	96	84	76	74	87	95	113	111	144	246	373	434	440	442	419	399	341	226	182	124		Grand Total 316,852

427 at 0-1h. January 1, 1964.

DAILY EXTREMES OF GEOMAGNETIC ELEMENTS, GEOMAGNETIC CHARACTER FIGURES (K AND C) AND TEMPERATURE IN MAGNETOGRAPH CHAMBER

24 ESKDALEMUIR — All Times G.M.T. — DECEMBER 1963

		GEOMAGNETIC ELEMENTS														
	Horizontal component			Declination			Vertical component			3-hr. range indices K	Sum of K indices	Geo-magnetic character of day, C (0-2)	Temperature in magneto-graph chamber 200°A+
	Maximum 16,000γ +	Minimum 16,000γ +	Range	Maximum 10° +	Minimum 10° +	Range	Maximum 45,000γ +	Minimum 45,000γ +	Range				
	h. m. γ	γ h. m.	γ	h. m. '	' h. m.	'	h. m. γ	γ h. m.	γ				°A.
1	22 29 875	844 15 24	31	12 41 11·6	2·2 22 56	9·4	15 48 434	421 00 00	13	1,0,1,1,0,2,1,2	8	0	85·3
2	23 31 897	829 14 55	68	17 51 15·2	2·3 23 49	12·9	18 39 458	421 05 40	37	1,2,2,1,3,3,3,3	18	1	85·2
3 d	21 08 960	785 08 58	175	08 18 20·7	−11·6 19 47	32·3	15 04 474	387 21 40	87	3,3,4,3,4,4,5,5	31	2	85·1
4 d	20 06 910	805 12 52	105	03 43 13·4	−7·1 23 20	20·5	15 51 456	369 23 53	87	3,3,3,2,3,3,4,4	25	2	85·1
5 d	19 43 916	792 14 12	124	15 26 13·4	−14·4 19 24	27·8	17 04 465	363 00 13	102	3,3,3,3,4,4,4,4	28	2	84·9
6 d	21 37 915	815 14 40	100	00 28 14·7	−4·2 15 55	18·9	15 00 451	404 00 50	47	3,2,3,2,4,4,4,4	26	1	84·9
7	01 20 877	811 12 12	66	07 25 12·3	1·4 19 02	10·9	15 55 446	410 02 02	36	3,2,2,3,3,3,3,2	21	1	84·9
8	18 26 900	820 12 31	80	05 52 14·3	−2·4 18 16	16·7	15 29 448	409 00 58	39	3,2,2,2,3,3,3,3	21	1	84·7
9	06 30 880	831 14 39	49	13 22 12·7	5·6 15 32	7·1	15 20 438	420 06 30	18	1,1,2,3,2,2,0,0	11	1	84·6
10 q	07 21 878	856 11 50	22	13 30 10·5	6·7 08 40	3·8	15 25 429	419 12 29	10	0,0,1,0,0,0,0,0	1	0	84·7
11 q	05 40 876	854 12 28	22	13 11 10·6	6·7 22 37	3·9	15 20 427	419 13 10	8	0,0,0,0,0,0,0,0	0	0	84·7
12	23 20 881	858 20 10	23	13 23 10·5	−2·5 23 52	13·0	20 31 428	416 11 46	12	1,0,0,0,0,0,1,3	5	0	84·7
13	09 13 880	853 00 27	27	12 59 11·3	−2·5 00 01	13·8	20 50 431	409 04 02	22	3,3,1,1,1,1,2,2	14	1	84·7
14	11 53 882	834 15 21	48	15 28 18·0	−1·3 20 34	19·3	20 11 466	415 11 00	51	1,1,1,1,2,3,3,3	15	1	84·6
15	08 47 875	847 11 53	28	15 13 11·2	5·3 23 47	5·9	00 01 436	421 11 18	15	2,1,2,2,2,2,2,0	13	1	84·6
16	17 01 875	854 15 39	21	12 43 10·7	2·4 23 28	8·3	20 29 430	418 11 30	12	2,1,1,1,1,2,1,1	10	1	84·6
17	22 19 873	857 20 22	16	13 20 10·4	4·6 20 24	5·8	19 37 430	420 10 20	10	2,0,1,0,0,1,1,1	6	0	84·7
18 q	21 37 877	863 11 21	14	13 30 9·9	6·6 22 54	3·3	23 00 426	416 10 00	10	0,0,0,1,0,0,0,1	2	0	84·6
19	22 51 883	842 23 19	41	13 03 11·5	−3·0 23 25	14·5	20 48 433	414 12 30	19	0,0,0,0,1,1,1,3	6	1	84·6
20 d	07 44 913	821 19 38	92	07 20 20·9	−17·5 19 50	38·4	19 46 452	397 23 57	55	3,3,4,2,3,2,5,3	25	1	84·8
21	22 59 895	839 23 40	56	12 50 13·5	−7·8 22 41	21·3	17 41 437	416 12 40	21	0,1,2,2,2,3,2,4	16	1	84·7
22	19 10 905	822 13 48	83	14 40 13·0	−5·2 19 06	18·2	18 55 452	409 23 18	43	0,2,2,2,3,2,4,3	18	1	84·8
23	19 05 897	820 16 51	77	09 31 11·5	−5·5 19 00	17·0	17 11 444	413 23 54	31	1,2,3,3,0,3,4,3	19	1	84·8
24	20 24 892	840 17 33	52	12 55 11·5	−4·2 20 40	15·7	17 50 438	409 00 10	29	3,1,1,1,1,3,3,2	15	1	84·7
25 q	06 02 874	846 10 16	28	13 08 10·5	6·7 20 55	3·8	14 46 428	420 12 20	8	0,0,1,2,0,0,0,0	3	0	84·6
26	05 31 878	855 23 07	23	11 38 9·9	2·2 22 10	7·7	21 41 431	420 05 30	11	0,2,1,1,0,0,0,2	7	0	84·6
27	06 40 885	860 00 01	25	14 17 11·8	4·8 00 01	7·0	00 01 428	416 06 38	12	1,0,2,1,1,0,1,0	6	0	84·6
28	20 47 908	839 20 09	69	17 10 12·6	−10·6 20 34	23·2	20 21 448	416 02 18	32	2,0,2,1,1,2,4,3	15	1	84·7
29	22 54 887	804 16 22	83	14 19 15·3	−0·7 19 10	16·0	16 30 468	413 02 50	55	3,1,1,3,3,3,3,3	20	1	84·6
30	23 23 877	847 15 01	30	13 39 11·1	1·3 23 03	9·8	23 00 436	423 12 30	13	2,1,0,1,2,2,1,2	11	1	84·6
31 q	23 15 874	858 10 18	16	13 05 10·6	2·7 23 03	7·9	23 02 431	421 12 50	10	0,0,0,1,1,0,0,2	4	0	84·6
Mean	− − 890	836 − −	55	− − 12·7	−1·3 − −	14·0	− − 442	411 − −	31	−	−	0·77	84·7

q denotes an international quiet day and d an international disturbed day.

MEAN MONTHLY AND ANNUAL VALUES OF GEOMAGNETIC ELEMENTS

For all, a, quiet, q, and disturbed, d, days for H, D and Z and for all days for X, -Y, I and F

25 ESKDALEMUIR   1963

	Horizontal (H) component			Declination (D) (west)			Vertical (Z) component			North component (X) all days	West component (-Y) all days	Inclination (I) (north) all days	Total force (F) all days
	a	q	d	a	q	d	a	q	d				
	16,000γ +			10° +			45,000γ +						
	γ	γ	γ	′	′	′	γ	γ	γ	γ	γ	° ′	γ
January	840	847	829	12·6	13·1	11·9	408	407	408	16574	2985	69 39·1	48430
February	844	850	833	12·4	12·6	11·7	408	406	410	16578	2985	69 38·9	48432
March	850	852	843	12·0	12·0	11·5	407	407	406	16584	2984	69 38·4	48432
April	855	854	855	11·6	11·5	11·8	406	407	407	16589	2983	69 38·1	48433
May	856	858	849	11·0	11·2	11·0	405	406	405	16590	2980	69 38·0	48433
June	859	860	855	10·5	10·6	9·8	412	411	409	16594	2978	69 37·9	48440
July	863	866	863	10·1	10·4	10·5	410	409	409	16598	2977	69 37·7	48440
August	857	863	845	9·6	9·9	9·1	411	410	409	16593	2974	69 38·0	48439
September	845	861	815	8·3	9·0	6·3	414	412	391	16582	2965	69 39·0	48437
October	849	856	824	8·3	8·8	6·8	421	424	413	16586	2966	69 38·9	48446
November	857	863	843	8·1	8·3	7·2	428	428	428	16594	2966	69 38·5	48455
December	863	868	855	7·6	7·9	6·7	426	425	427	16600	2965	69 38·0	48455
Year	853	858	842	10·2	10·4	9·5	413	413	410	16588	2976	69 38·4	48439

DAILY RANGE AND MEAN MONTHLY VALUES

26 ESKDALEMUIR   1963

	Mean daily range						Mean daily range expressed as percentage of yearly mean					
	1963			Mean 1932-53			1963			Mean 1932-53		
	H	D	Z	H	D	Z	H	D	Z	H	D	Z
	γ	γ	γ	γ	γ	γ	%	%	%	%	%	%
January	58	71	36	78	83	47	67	89	69	76	90	75
February	55	59	29	84	89	53	64	74	56	82	97	84
March	57	69	33	126	113	85	66	86	63	124	123	135
April	72	75	42	125	103	77	84	94	81	123	112	122
May	85	72	44	116	91	71	99	90	85	114	99	113
June	90	79	49	105	84	55	105	99	94	103	91	87
July	87	71	45	110	85	56	101	89	87	108	92	89
August	90	83	56	113	93	68	105	104	108	111	101	108
September	211	140	141	117	106	81	245	175	271	115	116	129
October	105	96	73	107	102	76	122	120	140	105	111	121
November	65	76	41	73	79	47	76	95	79	72	86	75
December	55	69	31	66	74	42	64	86	60	65	80	67
Winter	58	69	34	75	81	47	67	86	65	74	88	75
Equinox	111	95	72	119	106	80	129	119	138	117	115	127
Summer	88	76	49	111	88	63	102	95	94	109	96	100
Year	86	80	52	102	92	63	–	–	–	–	–	–

"Winter", comprises the four months January, February, November, December: "Equinox"
the months March, April, September, October: and "Summer" May to August.

FREQUENCY DISTRIBUTION OF DAILY RANGE

27 ESKDALEMUIR   1963

Range	Number of cases, 1963			Percentage distribution					
	H	D	Z	H 1963	H 1932-53	D 1963	D 1932-53	Z 1963	Z 1932-53
γ				%	%	%	%	%	%
0 – 9	0	0	12	0·0	0·0	0·0	0·0	3·3	2·3
10 – 19	15	6	69	4·1	0·8	1·6	0·4	18·9	14·1
20 – 29	35	16	83	9·6	3·9	4·4	2·5	22·7	19·8
30 – 39	29	24	56	7·9	6·0	6·6	5·0	15·3	16·0
40 – 49	33	52	42	9·0	7·8	14·2	7·4	11·5	10·2
50 – 59	39	46	24	10·7	10·4	12·6	12·1	6·6	7·5
60 – 69	43	52	14	11·8	11·7	14·2	12·9	3·8	5·6
70 – 79	28	44	17	7·7	10·6	12·1	12·3	4·7	3·6
80 – 89	35	33	10	9·6	9·0	9·0	10·7	2·7	3·0
90 – 99	24	17	7	6·6	7·3	4·7	8·3	1·9	2·4
100 – 109	17	13	6	4·7	5·8	3·6	5·9	1·6	2·1
110 – 119	16	5	1	4·4	5·1	1·4	4·0	0·3	1·7
120 – 129	9	7	3	2·5	3·3	1·9	3·5	0·8	1·7
130 – 139	7	14	2	1·9	2·9	3·8	2·6	0·6	1·2
140 – 149	2	7	4	0·5	2·3	1·9	2·2	1·1	0·8
150 – 159	5	5	3	1·4	1·9	1·4	1·7	0·8	0·9
160 – 169	7	2	1	1·9	1·5	0·6	1·6	0·3	0·7
170 – 179	6	2	0	1·6	1·5	0·6	1·2	0·0	0·4
180 – 189	3	4	0	0·8	0·9	1·1	1·0	0·0	0·6
190 – 199	1	4	0	0·3	0·9	1·1	0·8	0·0	0·5
200 +	11	12	11	3·0	6·3	3·3	4·0	3·0	4·8
Days omitted	0	0	0	–	–	–	–	–	–

DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF GEOMAGNETIC FORCE

ALL DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

28 ESKDALEMUIR   1963

NORTH COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	+1·7	+1·7	+0·9	+3·0	+7·5	+9·6	+7·8	+8·0	+2·5	-4·4	-7·7	-7·8	-6·5	-3·4	-5·0	-2·1	-2·2	-3·8	-3·6	-2·0	+0·9	0·0	+2·4	+2·2
Feb.	+0·2	-0·2	-0·7	+0·4	+1·2	+4·2	+4·9	+4·9	+1·2	0·0	-2·3	-4·9	-7·9	-5·7	-3·7	-2·8	-4·4	-1·2	-0·7	+3·9	+3·2	+3·5	+4·0	+3·0
Mar.	+3·1	+1·6	+0·4	+3·0	+3·2	+6·3	+8·3	+7·4	+4·8	-2·9	-10·7	-15·7	-15·6	-10·4	-7·7	-4·3	-3·4	-0·2	+4·2	+4·6	+6·3	+6·1	+5·8	+5·7
Apr.	+9·6	+3·9	+1·4	+4·1	+4·1	+7·1	+7·5	+3·3	-3·8	-13·9	-20·5	-23·3	-21·3	-16·8	-9·0	-0·9	+5·1	+7·5	+11·0	+11·4	+8·9	+9·3	+7·2	+8·1
May	+9·3	+6·6	+4·5	+3·4	+5·2	+2·7	-4·7	-8·1	-14·1	-24·3	-27·8	-26·6	-21·2	-13·0	-5·0	+2·3	+7·9	+15·5	+19·2	+17·9	+15·1	+11·9	+12·4	+10·8
June	+4·5	+3·2	-0·1	+1·5	+3·1	+1·6	-3·9	-9·2	-16·1	-20·1	-24·8	-23·6	-17·5	-10·7	-0·7	+5·2	+9·8	+16·9	+21·1	+18·0	+14·0	+11·9	+10·0	+5·9
July	+6·1	+4·3	+6·4	+4·9	+3·4	+4·7	-1·1	-6·5	-12·4	-18·8	-21·9	-22·9	-23·5	-17·1	-7·4	+3·1	+8·5	+14·4	+16·9	+17·5	+15·5	+9·7	+9·1	+7·0
Aug.	+7·8	+6·6	+5·4	+4·5	+4·1	0·0	-4·7	-9·8	-17·0	-23·6	-25·9	-23·6	-16·4	-14·5	-7·9	+2·7	+11·5	+14·6	+17·5	+15·1	+17·2	+13·7	+11·1	+11·8
Sept.	-6·3	-5·4	-0·6	+8·1	+6·8	+6·6	+0·3	-6·5	-13·0	-19·7	-23·0	-23·6	-17·9	-11·7	-2·0	+6·4	+13·4	+15·3	+20·0	+19·5	+16·8	+17·1	+3·1	-3·5
Oct.	+3·1	+2·5	+4·7	+6·7	+8·2	+9·2	+9·2	+6·9	+0·5	-8·9	-17·8	-18·2	-14·7	-10·7	-6·4	-2·1	+1·8	+4·3	+3·0	+6·0	+4·0	+0·7	+3·6	+4·3
Nov.	+0·7	+1·3	+2·6	+5·0	+5·8	+5·8	+8·8	+6·3	+2·2	-3·7	-10·0	-11·9	-13·5	-6·9	-4·7	-4·1	-2·3	-1·2	+0·7	+0·8	+4·5	+5·4	+4·1	+4·4
Dec.	+0·7	-0·3	+0·2	+2·3	+3·5	+6·7	+7·4	+6·5	+4·1	+0·3	-3·3	-4·5	-8·3	-7·1	-6·4	-4·2	-4·9	-3·4	-1·9	+1·4	+3·5	+3·3	+1·1	+3·1
Year	+3·4	+2·1	+2·1	+3·9	+4·7	+5·4	+3·3	+0·3	-5·1	-11·7	-16·3	-17·3	-15·4	-10·7	-5·5	-0·1	+3·4	+6·5	+9·0	+9·5	+9·2	+7·7	+6·1	+5·2
Winter	+0·8	+0·6	+0·8	+2·7	+4·5	+6·6	+7·2	+6·4	+2·6	-1·9	-5·8	-7·3	-9·1	-5·7	-4·9	-3·3	-3·5	-2·4	-1·3	+1·1	+3·0	+3·0	+2·9	+3·2
Equinox	+2·3	+0·7	+1·5	+5·5	+5·6	+7·3	+6·3	+2·8	-2·9	-11·3	-18·1	-20·2	-17·3	-12·5	-6·3	-0·2	+4·2	+6·7	+9·5	+10·4	+9·0	+8·3	+5·0	+3·6
Summer	+6·9	+5·1	+4·0	+3·5	+4·0	+2·2	-3·6	-8·5	-14·9	-21·7	-25·1	-24·2	-19·6	-13·8	-5·2	+3·3	+9·4	+15·4	+18·7	+17·1	+15·4	+11·8	+10·7	+8·8

WEST COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-7·5	-7·5	-7·3	-3·8	-0·5	+3·1	+3·9	+4·0	+0·6	+1·3	+3·0	+5·3	+13·5	+15·6	+10·1	+6·3	+5·2	+1·1	+0·7	-4·3	-10·2	-12·4	-11·6	-8·4
Feb.	-5·4	-3·6	-2·7	-3·7	-2·5	-1·7	-1·4	+0·1	+1·0	+2·2	+4·5	+9·4	+12·5	+13·0	+10·8	+4·9	-1·7	+0·2	-0·7	-6·3	-7·7	-6·2	-7·6	-7·5
Mar.	-4·7	-4·6	-4·8	-6·7	-6·5	-5·7	-5·1	-5·6	-9·8	-11·7	-3·0	+9·1	+19·8	+23·1	+20·6	+24·3	+15·8	+10·4	+4·4	-0·7	-1·2	-4·6	-7·2	-8·4
Apr.	-4·3	-8·1	-5·9	-7·8	-10·3	-11·8	-14·8	-18·0	-17·5	-11·9	-4·4	+6·2	+20·9	+26·6	+24·8	+20·7	+15·8	+10·4	+4·4	-0·7	-3·7	-5·1	-2·4	-3·0
May	-5·3	-5·5	-6·0	-9·1	-12·7	-19·7	-21·6	-22·5	-21·5	-12·7	-0·2	+13·0	+22·8	+25·9	+22·7	+18·1	+13·9	+9·3	+9·4	+4·7	+1·1	+0·8	-0·8	-4·2
June	-6·5	-8·1	-11·0	-12·1	-15·8	-21·7	-25·3	-25·4	-23·7	-16·1	-4·2	+10·1	+20·9	+25·7	+27·1	+25·5	+21·2	+17·3	+13·3	+7·2	+4·0	+0·7	-0·1	-3·0
July	-4·7	-4·8	-7·1	-8·8	-12·6	-18·6	-21·5	-22·1	-21·6	-17·9	-8·1	+3·4	+15·8	+23·2	+25·4	+23·9	+20·2	+15·9	+13·1	+9·2	+4·4	+0·5	-3·7	-3·7
Aug.	-3·3	-3·3	-4·7	-9·6	-11·4	-17·9	-18·5	-19·4	-17·3	-8·9	+2·7	+16·2	+26·2	+28·7	+25·1	+16·3	+8·5	+6·3	+3·4	+2·5	-2·8	-7·1	-6·4	-5·1
Sept.	-18·8	-14·5	-18·5	-14·5	-8·7	-2·1	-3·7	-8·3	-9·5	-5·1	+7·9	+20·1	+28·4	+28·3	+24·8	+17·2	+10·9	+4·9	-1·3	-2·7	-4·1	-3·7	-12·5	-14·7
Oct.	-8·2	-6·1	-6·7	-4·0	-2·3	+0·7	+2·7	-0·7	-5·1	-6·7	+1·8	+11·7	+20·5	+22·5	+21·1	+14·9	+11·3	-2·2	-1·0	+0·8	-5·2	-10·1	-13·5	-11·3
Nov.	-5·7	-4·6	-0·1	-0·6	-0·1	+2·2	+3·2	+0·6	-2·7	-2·2	+3·3	+9·8	+13·7	+15·9	+14·8	+9·0	0·0	+0·8	-1·5	-8·7	-14·7	-11·4	-11·9	-9·1
Dec.	-6·5	-3·3	+0·2	+0·9	+1·7	+3·8	+4·1	+4·7	+3·0	+1·4	+3·5	+6·8	+11·1	+12·9	+10·2	+5·2	+3·3	-0·8	-2·7	-10·8	-13·6	-10·5	-13·3	-11·3
Year	-6·8	-6·1	-6·2	-6·7	-6·8	-7·5	-8·2	-9·4	-10·3	-7·3	+0·5	+10·1	+18·9	+21·8	+19·8	+14·6	+8·8	+5·5	+3·2	-1·3	-5·2	-6·2	-7·7	-7·5
Winter	-6·3	-4·7	-2·5	-1·8	-0·3	+1·9	+2·4	+2·4	+0·5	+0·7	+3·6	+7·8	+12·7	+14·4	+11·5	+6·4	+1·7	+0·3	-1·0	-7·5	-11·6	-10·1	-11·1	-9·1
Equinox	-9·1	-8·3	-9·0	-8·3	-7·0	-4·7	-5·2	-8·2	-10·5	-8·9	+0·5	+11·8	+22·5	+25·2	+22·9	+16·6	+8·9	+3·8	+0·8	-2·4	-5·6	-7·3	-9·1	-9·4
Summer	-4·9	-5·4	-7·2	-9·9	-13·1	-19·5	-21·7	-22·4	-21·0	-13·9	-2·5	+10·7	+21·5	+25·9	+25·1	+20·9	+15·9	+12·2	+9·8	+5·9	+1·7	-1·3	-2·7	-4·0

VERTICAL COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-4·2	-6·0	-5·5	-5·6	-8·0	-9·0	-8·3	-6·7	-4·9	-3·1	-2·0	-1·8	-2·7	+0·9	+6·4	+8·5	+8·6	+10·2	+9·6	+9·2	+7·5	+6·5	+2·4	-2·0
Feb.	-1·0	-1·8	-3·2	-3·0	-2·8	-2·8	-3·4	-3·5	-3·5	-4·2	-4·4	-4·1	-2·9	-0·4	+2·0	+5·1	+7·6	+6·6	+6·0	+5·7	+4·4	+2·3	+0·9	+0·1
Mar.	-1·9	-2·0	-1·7	-2·3	-2·4	-2·2	-2·7	-2·0	-2·5	-4·4	-6·8	-9·9	-9·5	-5·4	+1·5	+8·4	+9·9	+10·5	+7·6	+6·7	+5·9	+4·5	+1·7	-1·0
Apr.	-3·5	-4·4	-3·4	-2·1	-1·2	-1·9	-1·7	-1·4	-3·3	-6·9	-9·4	-12·1	-13·1	-7·8	-0·8	+4·2	+7·9	+11·2	+14·2	+12·9	+10·8	+6·9	+4·1	+0·8
May	-2·1	-4·7	-7·2	-6·9	-3·9	-1·1	-0·3	-0·5	-2·9	-8·1	-11·4	-13·8	-11·1	-4·3	+1·9	+6·5	+10·3	+13·4	+13·3	+12·8	+11·2	+7·3	+2·1	-0·5
June	-3·3	-7·4	-8·7	-7·2	-5·0	-2·3	-0·9	-1·6	-3·2	-7·4	-10·4	-12·8	-10·7	-4·1	+2·2	+6·4	+11·6	+14·7	+15·9	+14·8	+11·0	+7·4	+2·1	-1·1
July	-3·2	-6·2	-7·0	-5·7	-6·5	-5·4	-4·4	-3·5	-3·8	-5·9	-9·4	-11·4	-10·0	-4·3	+1·8	+7·4	+12·8	+15·1	+14·5	+13·0	+10·5	+7·4	+4·3	-0·1
Aug.	-7·9	-11·0	-11·7	-8·2	-5·6	-3·9	-3·0	-0·9	-1·5	-4·7	-8·1	-10·8	-8·5	-1·6	+7·1	+12·5	+15·8	+15·7	+13·9	+12·3	+8·8	+5·0	+0·2	-3·9
Sept.	-30·1	-27·4	-24·9	-22·7	-23·2	-15·4	-10·0	-3·5	-0·8	+0·8	+0·2	+1·2	+4·6	+10·7	+16·3	+24·3	+29·5	+25·7	+18·0	+13·6	+8·9	+2·8		-22·3
Oct.	-13·1	-14·4	-11·4	-9·2	-6·5	-4·8	-3·8	-1·7	+0·1	+0·4	-2·2	-3·8	-2·5	+2·4	+7·2	+12·8	+18·4	+16·9	+14·8	+11·3	+4·6	+0·3	-9·5	-6·3
Nov.	-6·8	-8·4	-8·3	-7·4	-6·9	-6·7	-6·6	-4·8	-2·5	-2·4	-3·2	-2·0	0·0	+2·7	+5·5	+9·0	+12·5	+13·4	+12·0	+8·7	+5·2	+0·7	-0·9	-2·8
Dec.	-4·1	-3·7	-3·4	-3·7	-3·4	-3·8	-4·0	-4·2	-3·7	-3·5	-2·9	-2·9	-1·9	+1·4	+5·5	+7·5	+7·7	+7·7	+7·0	+6·3	+4·5	+0·8	-0·7	-2·5
Year	-6·8	-8·1	-8·0	-7·0	-6·3	-4·9	-4·1	-2·9	-2·7	-4·1	-5·8	-7·0	-5·7	-0·8	+4·7	+9·4	+12·7	+13·7	+12·9	+11·0	+8·2	+4·8	+0·3	-3·5
Winter	-4·0	-5·0	-5·1	-4·9	-5·2	-5·6	-5·6	-4·8	-3·7	-3·3	-3·1	-2·7	-1·9	+1·1	+4·9	+7·5	+9·1	+9·5	+8·7	+7·5	+5·4	+2·6	+0·4	-1·8
Equinox	-12·1	-12·1	-10·3	-9·1	-8·3	-6·1	-4·5	-2·1	-1·6	-2·5	-4·5	-6·1	-5·1	0·0	+6·1	+12·4	+16·4	+17·0	+15·6	+12·2	+8·7	+5·1	-1·6	-7·2
Summer	-4·1	-7·3	-8·7	-7·0	-5·3	-3·2	-2·1	-1·6	-2·9	-6·5	-9·8	-12·2	-10·1	-3·6	+3·3	+8·2	+12·6	+14·7	+14·4	+13·2	+10·4	+6·8	+2·2	-1·4

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

ALL DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

29 ESKDALEMUIR 1963

DECLINATION (measured positive towards the west)

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-1·57	-1·57	-1·51	-0·87	-0·38	+0·28	+0·51	+0·52	+0·02	+0·41	+0·88	+1·35	+2·95	+3·25	+2·20	+1·34	+1·13	+0·35	+0·26	-0·80	-2·09	-2·49	-2·41	-1·76
Feb.	-1·10	-0·71	-0·52	-0·76	-0·54	-0·50	-0·45	-0·15	+0·16	+0·44	+0·98	+2·07	+2·79	+2·82	+2·31	+1·09	-0·18	+0·09	-0·11	-1·40	-1·67	-1·37	-1·67	-1·62
Mar.	-1·06	-0·98	-0·98	-1·45	-1·42	-1·38	-1·33	-1·40	-2·15	-2·24	-0·22	+2·39	+4·54	+5·02	+4·41	+2·84	+1·68	+0·43	+0·05	-0·40	-1·15	-1·66	-1·65	-1·89
Apr.	-1·21	-1·76	-1·24	-1·71	-2·22	-2·63	-3·24	-3·74	-3·37	-1·88	-0·15	+2·08	+4·95	+5·94	+5·30	+4·19	+2·98	+1·82	+0·48	-0·54	-1·06	-1·36	-0·74	-0·89
May	-1·40	-1·34	-1·37	-1·95	-2·74	-4·04	-4·17	-4·23	-3·80	-1·66	+0·96	+3·57	+5·34	+5·67	+4·73	+3·55	+2·50	+1·31	+1·19	+0·30	-0·32	-0·27	-0·60	-1·23
June	-1·46	-1·73	-2·20	-2·49	-3·28	-4·41	-4·93	-4·76	-4·17	-2·50	+0·05	+2·87	+4·83	+5·55	+5·47	+4·92	+3·89	+2·86	+1·90	+0·80	+0·29	-0·29	-0·39	-0·82
July	-1·16	-1·11	-1·66	-1·94	-2·64	-3·90	-4·26	-4·21	-3·88	-2·91	-0·84	+1·50	+4·01	+5·26	+5·37	+4·69	+3·75	+2·68	+2·02	+1·21	+0·33	-0·25	-1·06	-1·00
Aug.	-0·94	-0·90	-1·14	-2·09	-2·44	-3·59	-3·55	-3·54	-2·85	-0·95	+1·48	+4·10	+5·85	+6·28	+5·31	+3·17	+1·29	+0·73	+0·06	-0·05	-1·18	-1·92	-1·69	-1·44
Sept.	-3·56	-2·72	-3·70	-3·20	-2·00	-0·65	-0·75	-1·44	-1·45	-0·31	+2·42	+4·89	+6·36	+6·12	+5·05	+3·23	+1·71	+0·44	-0·97	-1·24	-1·43	-1·35	-2·63	-2·82
Oct.	-1·76	-1·31	-1·52	-1·05	-0·75	-0·18	+0·21	-0·38	-1·04	-1·03	+1·00	+3·00	+4·65	+4·92	+4·48	+3·07	+0·19	-0·60	-0·31	-1·26	-2·17	-2·73	-3·00	-2·43
Nov.	-1·18	-0·97	-0·12	-0·30	-0·22	+0·24	+0·32	-0·10	-0·62	-0·31	+1·02	+2·40	+3·24	+3·43	+3·14	+1·96	+0·08	+0·21	-0·32	-1·78	-3·12	-2·48	-2·54	-1·98
Dec.	-1·33	-0·65	+0·02	+0·10	+0·22	+0·53	+0·55	+0·72	+0·45	+0·28	+0·82	+1·52	+2·53	+2·84	+2·28	+1·20	+0·83	-0·04	-0·48	-2·22	-2·85	-2·23	-2·71	-2·38
Year	-1·48	-1·31	-1·33	-1·48	-1·53	-1·69	-1·76	-1·89	-1·89	-1·05	+0·70	+2·65	+4·34	+4·76	+4·17	+2·94	+1·65	+0·86	+0·31	-0·61	-1·37	-1·53	-1·76	-1·69
Winter	-1·29	-0·97	-0·53	-0·46	-0·23	+0·14	+0·23	+0·25	0·00	+0·21	+0·93	+1·83	+2·88	+3·09	+2·48	+1·40	+0·47	+0·15	-0·16	-1·55	-2·43	-2·14	-2·33	-1·93
Equinox	-1·90	-1·69	-1·86	-1·85	-1·60	-1·21	-1·28	-1·74	-2·00	-1·37	+0·76	+3·09	+5·13	+5·50	+4·81	+3·33	+1·64	+0·52	-0·19	-0·86	-1·45	-1·77	-2·01	-2·01
Summer	-1·24	-1·27	-1·59	-2·12	-2·77	-3·99	-4·23	-4·19	-3·67	-2·01	+0·41	+3·01	+5·01	+5·69	+5·22	+4·08	+2·86	+1·89	+1·29	+0·57	-0·22	-0·68	-0·93	-1·12

INCLINATION

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-0·12	-0·17	-0·11	-0·29	-0·68	-0·89	-0·76	-0·74	-0·29	+0·20	+0·42	+0·40	+0·20	+0·06	+0·36	+0·27	+0·29	+0·49	+0·46	+0·41	+0·25	+0·31	+0·04	-0·10
Feb.	+0·03	+0·01	0·00	-0·05	-0·11	-0·32	-0·39	-0·41	-0·18	-0·13	-0·01	+0·11	+0·30	+0·21	+0·16	+0·25	+0·49	+0·24	+0·20	-0·04	-0·01	-0·10	-0·15	-0·10
Mar.	-0·19	-0·10	-0·01	-0·18	+0·19	-0·40	-0·55	-0·47	-0·26	+0·22	+0·57	+0·67	+0·55	+0·27	+0·30	+0·33	+0·38	+0·25	-0·10	-0·12	-0·21	-0·20	-0·25	-0·30
Apr.	-0·67	-0·27	-0·10	-0·23	-0·18	-0·37	-0·36	-0·04	+0·37	+0·88	+1·17	+1·15	+0·83	+0·59	+0·28	-0·08	-0·32	-0·33	-0·42	-0·42	-0·27	-0·38	-0·35	-0·47
May	-0·60	-0·48	-0·40	-0·28	-0·29	+0·03	+0·56	+0·79	+1·11	+1·54	+1·54	+1·25	+0·84	+0·44	+0·11	-0·21	-0·42	-0·79	-1·04	-0·94	-0·73	-0·61	-0·75	-0·67
June	-0·30	-0·30	-0·80	-0·13	-0·14	+0·10	+0·53	+0·86	+1·25	+1·32	+1·42	+1·11	+0·63	+0·30	-0·22	-0·48	-0·60	-0·95	-1·14	-0·90	-0·69	-0·60	-0·60	-0·38
July	-0·43	-0·38	-0·51	-0·36	-0·23	-0·22	+0·22	+0·60	+0·97	+1·30	+1·30	+1·17	+1·10	+0·74	+0·23	-0·30	-0·48	-0·76	-0·91	-0·93	-0·81	-0·45	-0·45	-0·41
Aug.	-0·67	-0·66	-0·59	-0·38	-0·27	+0·12	+0·45	+0·85	+1·28	+1·53	+1·46	+1·09	+0·55	+0·57	+0·39	-0·06	-0·46	-0·64	-0·84	-0·71	-0·87	-0·69	-0·65	-0·81
Sept.	-0·11	-0·15	-0·36	-0·92	-0·92	-0·79	-0·22	+0·44	+0·94	+1·37	+1·42	+1·34	+0·95	+0·70	+0·24	-0·02	-0·28	-0·33	-0·66	-0·80	-0·71	-0·86	-0·13	-0·15
Oct.	-0·43	-0·45	-0·51	-0·62	-0·67	-0·73	-0·73	-0·49	+0·03	+0·67	+1·09	+0·96	+0·66	+0·50	+0·35	+0·28	+0·32	+0·16	+0·18	-0·05	-0·03	+0·12	-0·30	-0·31
Nov.	-0·15	-0·24	-0·37	-0·50	-0·55	-0·57	-0·77	-0·54	-0·17	+0·21	+0·54	+0·62	+0·73	+0·33	+0·27	+0·39	+0·46	+0·40	+0·27	+0·26	+0·01	-0·20	-0·15	-0·25
Dec.	-0·07	-0·03	-0·10	-0·25	-0·34	-0·58	-0·63	-0·58	-0·40	-0·12	+0·10	+0·14	+0·37	+0·35	+0·43	+0·40	+0·48	+0·42	+0·33	+0·19	+0·04	-0·07	+0·07	-0·13
Year	-0·31	-0·27	-0·27	-0·35	-0·38	-0·39	-0·22	+0·02	+0·39	+0·75	+0·92	+0·84	+0·64	+0·43	+0·24	+0·07	-0·01	-0·15	-0·31	-0·33	-0·34	-0·31	-0·31	-0·34
Winter	-0·08	-0·11	-0·15	-0·27	-0·42	-0·59	-0·64	-0·57	-0·26	+0·04	+0·26	+0·32	+0·40	+0·23	+0·31	+0·33	+0·43	+0·39	+0·31	+0·21	+0·07	-0·02	-0·05	-0·14
Equinox	-0·35	-0·25	-0·25	-0·48	-0·49	-0·57	-0·46	-0·14	+0·27	+0·78	+1·07	+1·03	+0·75	+0·52	+0·29	+0·13	+0·03	-0·07	-0·25	-0·35	-0·31	-0·33	-0·26	-0·30
Summer	-0·49	-0·45	-0·39	-0·29	-0·24	+0·01	+0·44	+0·78	+1·15	+1·42	+1·43	+1·15	+0·78	+0·51	+0·13	-0·26	-0·49	-0·79	-0·98	-0·86	-0·77	-0·59	-0·61	-0·57

HORIZONTAL COMPONENT

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
Jan.	+0·3	+0·3	-0·4	+2·3	+7·3	+10·0	+8·4	+8·6	+2·6	-4·1	-7·0	-6·7	-4·0	-0·6	-3·1	-0·9	-1·2	-3·6	-3·4	-2·7	-0·9	-2·2	+0·3	+0·7
Feb.	-0·8	-0·8	-1·2	-0·3	+0·7	+3·8	+4·6	+4·8	+1·4	+0·4	-1·5	-3·2	-5·6	-3·3	-1·7	-1·9	-4·6	-1·1	-0·8	+2·7	+1·8	+2·4	+2·6	+1·6
Mar.	+2·2	+0·8	-0·5	+1·8	+2·0	+5·2	+7·3	+6·3	+3·0	-4·9	-11·1	-13·8	-11·8	-6·1	-3·9	-1·9	-2·0	+0·2	+4·3	+4·3	+5·4	+4·7	+4·4	+4·1
Apr.	+8·7	+2·4	+0·3	+2·6	+2·2	+4·9	+4·8	+0·1	-6·8	-15·8	-21·0	-21·8	-17·3	-11·8	-4·5	+2·8	+7·8	+9·2	+11·6	+11·1	+8·1	+8·3	+6·7	+7·4
May	+8·2	+5·5	+3·4	+1·7	+2·9	-0·8	-8·5	-12·0	-17·7	-26·2	-27·4	-23·9	-16·8	-8·2	-0·9	+5·5	+10·2	+16·9	+20·6	+18·5	+15·1	+11·9	+12·1	+9·9
June	+3·3	+1·7	-2·0	-0·7	+0·3	-2·3	-8·3	-13·6	-20·0	-22·6	-25·2	-21·4	-13·5	-6·0	+4·1	+9·6	+13·4	+19·7	+23·1	+19·0	+14·5	+11·8	+9·8	+5·3
July	+5·2	+3·4	+5·0	+3·3	+1·1	+1·3	-4·9	-10·3	-16·0	-21·7	-23·0	-21·9	-20·3	-12·7	-2·8	+7·3	+12·0	+17·0	+19·0	+18·8	+16·1	+9·6	+8·3	+6·2
Aug.	+7·1	+5·9	+4·5	+2·7	+2·0	-3·2	-7·9	-13·1	-19·8	-24·8	-25·0	-20·4	-11·5	-9·2	-3·3	+5·5	+12·8	+15·5	+17·8	+15·3	+16·4	+12·2	+9·8	+10·7
Sept.	-9·5	-7·9	-3·8	+5·4	+6·2	+6·1	-0·4	-7·9	-14·5	-20·3	-21·3	-19·7	-12·6	-6·6	+2·4	+9·3	+15·1	+15·9	+19·5	+18·7	+15·8	+16·2	+0·9	-6·0
Oct.	+1·6	+1·4	+3·5	+5·9	+7·7	+9·2	+9·5	+6·7	-0·4	-9·9	-17·2	-15·9	-10·9	-6·6	-2·6	+0·6	+2·0	+3·8	+2·8	+5·0	+2·2	-1·7	+1·0	+2·3
Nov.	-0·3	+0·5	+2·5	+4·8	+5·7	+6·1	+9·2	+6·3	+1·7	-4·0	-9·3	-10·0	-10·9	-4·0	-2·0	-2·5	-2·3	-1·0	+0·4	-0·7	+1·8	+3·3	+2·0	+2·7
Dec.	-0·4	-0·9	+0·2	+2·4	+3·8	+7·3	+8·0	+7·2	+4·6	+0·5	-2·6	-3·2	-6·2	-4·7	-4·5	-3·2	-4·3	-3·5	-2·3	-0·5	+1·1	+1·4	-1·3	+1·1
Year	+2·1	+1·0	+1·0	+2·7	+3·4	+4·0	+1·8	-1·4	-6·8	-12·8	-16·0	-15·2	-11·8	-6·7	-1·9	+2·5	+4·9	+7·4	+9·4	+9·1	+8·1	+6·5	+4·7	+3·8
Winter	-0·3	-0·2	+0·3	+2·3	+4·4	+6·8	+7·5	+6·7	+2·6	-1·8	-5·1	-5·8	-6·7	-3·1	-2·8	-2·1	-3·1	-2·3	-1·5	-0·3	+0·9	+1·2	+0·9	+1·5
Equinox	+0·7	-0·8	-0·1	+3·9	+4·3	+6·3	+5·3	+1·3	-4·7	-12·7	-17·7	-17·8	-13·1	-7·8	-2·1	+2·7	+5·7	+7·3	+9·5	+9·8	+7·9	+6·9	+3·3	+1·9
Summer	+5·9	+4·1	+2·7	+1·7	+1·6	-1·3	-7·4	-12·3	-18·4	-23·8	-25·1	-21·9	-15·5	-9·0	-0·7	+7·0	+12·1	+17·3	+20·1	+17·9	+15·5	+11·4	+10·0	+8·0

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF GEOMAGNETIC FORCE

INTERNATIONAL QUIET DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

30 ESKDALEMUIR — 1963

NORTH COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-3.3	-2.7	-2.1	-0.6	+0.3	+2.0	+3.1	+4.8	+3.3	-2.0	-6.5	-7.3	-3.9	+0.9	+2.8	+1.6	-0.3	+0.9	+1.7	+2.1	+1.9	+2.1	+2.0	-0.7
Feb.	-2.9	-2.9	-2.5	-1.7	-0.7	+1.8	+2.6	+3.0	+4.1	+2.2	-0.2	-2.7	-2.8	-1.1	-0.5	-1.3	-2.5	-1.9	+0.3	+1.9	+2.3	+2.4	+1.5	+1.9
Mar.	+2.8	+2.4	+1.1	+2.1	+2.7	+3.8	+5.7	+7.3	+5.5	-1.8	-9.4	-16.4	-15.7	-10.7	-5.9	-3.0	+0.4	+0.6	+4.8	+4.5	+3.9	+4.2	+5.9	+5.0
Apr.	+4.7	+3.9	+3.6	+3.9	+4.4	+5.4	+5.7	+2.6	-4.4	-14.8	-26.5	-22.7	-21.7	-15.5	-6.5	+1.5	+5.2	+11.8	+11.4	+9.8	+9.1	+9.2	+10.3	+9.9
May	+6.6	+6.1	+6.5	+4.5	+4.8	+3.1	-1.0	-7.5	-13.0	-23.4	-25.0	-25.9	-17.0	-10.4	-5.3	+0.5	+7.4	+11.8	+15.6	+14.9	+13.7	+12.2	+10.1	+10.6
June	+4.6	+2.6	+3.8	+4.7	+5.7	+4.5	-2.6	-9.4	-13.1	-17.8	-19.8	-18.1	-15.1	-7.6	-0.1	+4.6	+6.5	+8.9	+11.2	+11.8	+10.1	+9.1	+7.8	+7.7
July	+3.5	+1.8	+1.2	+3.0	+5.3	+8.4	+5.5	+2.5	-7.0	-14.7	-16.9	-22.2	-22.5	-22.1	-9.9	-4.2	+3.6	+7.7	+12.6	+13.1	+12.5	+12.9	+13.3	+12.9
Aug.	+6.4	+6.8	+5.9	+7.0	+6.7	+2.9	-3.1	-9.6	-15.3	-19.9	-20.1	-20.4	-16.5	-11.0	-2.8	+3.4	+6.7	+7.7	+10.3	+13.1	+13.3	+10.9	+9.4	+8.0
Sept.	+9.8	+4.1	+1.8	+2.5	+0.9	-0.4	-4.7	-8.3	-13.6	-18.7	-23.0	-21.3	-14.3	-8.2	-3.8	-0.6	+1.1	+6.7	+12.6	+13.5	+18.4	+20.1	+17.1	+8.3
Oct.	+3.1	+1.7	+2.9	+4.4	+6.0	+6.3	+7.5	+4.9	-3.7	-13.0	-19.8	-20.9	-15.2	-10.5	-6.6	-1.5	+2.3	+5.0	+6.2	+8.7	+9.0	+7.9	+8.2	+7.1
Nov.	-0.5	-0.8	+0.7	+1.7	+2.1	+1.9	+2.7	+1.9	-1.1	-6.0	-9.1	-9.8	-7.3	-4.4	-3.0	-1.2	+1.9	+3.0	+4.1	+3.9	+5.3	+4.4	+5.1	+4.7
Dec.	-0.7	-1.5	-1.5	0.0	+1.4	+3.2	+4.5	+4.9	+4.5	-0.9	-6.0	-6.2	-6.4	-4.1	-1.0	+1.2	+1.7	-1.4	+1.1	+1.7	+1.9	+2.1	+0.5	+1.4
Year	+2.8	+1.9	+1.8	+2.6	+3.3	+3.5	+2.2	-0.2	-4.5	-10.9	-15.2	-16.2	-13.2	-8.7	-3.6	0.0	+2.8	+5.0	+7.6	+8.2	+8.5	+8.1	+7.6	+6.4
Winter	-1.8	-1.9	-1.2	-0.2	+0.8	+2.2	+3.2	+3.7	+2.7	-1.6	-5.5	-6.5	-5.1	-2.1	-0.5	+0.1	+0.1	+0.1	+1.7	+2.3	+2.9	+2.7	+2.3	+1.9
Equinox	+5.1	+3.0	+2.4	+3.3	+3.6	+3.8	+3.5	+1.6	-4.0	-12.0	-19.7	-20.3	-16.7	-11.3	-5.7	-0.9	+2.2	+6.1	+8.7	+9.2	+10.1	+10.3	+10.4	+7.6
Summer	+5.3	+4.4	+4.4	+4.8	+5.7	+4.7	-0.1	-6.0	-12.1	-19.0	-20.5	-21.7	-17.8	-12.8	-4.5	+1.0	+6.1	+9.0	+12.4	+13.2	+12.4	+11.3	+10.1	+9.8

WEST COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-4.2	-2.3	-1.7	-1.0	-0.6	-0.2	-1.5	-3.2	-3.8	-2.8	+0.2	+4.5	+11.2	+11.3	+5.7	+2.2	+1.6	+1.3	-0.1	-1.2	-2.7	-4.1	-4.5	-4.1
Feb.	-4.7	-4.5	-3.7	-3.3	-2.4	-2.2	-2.4	-2.3	-2.1	-0.3	+0.6	+4.3	+9.2	+10.2	+8.2	+3.1	+1.0	+2.3	+1.4	+0.4	-1.8	-1.3	-2.9	-6.8
Mar.	-1.4	-1.0	-2.2	-2.9	-3.5	-4.6	-5.4	-10.3	-17.4	-17.1	-9.5	+1.7	+14.3	+19.7	+18.4	+11.9	+6.6	+3.8	+1.6	-0.2	-0.7	-0.5	-0.5	-0.8
Apr.	-1.7	-2.9	-3.5	-5.1	-7.0	-9.8	-14.2	-19.4	-20.3	-12.0	-9.1	+2.7	+16.4	+22.5	+21.1	+17.1	+11.3	+5.7	+2.8	+2.4	+1.0	+1.3	+0.9	-0.4
May	-0.7	+1.5	-3.3	-8.5	-13.8	-21.4	-25.3	-25.7	-22.8	-12.8	-0.1	+12.5	+23.3	+23.3	+17.9	+13.8	+10.5	+7.6	+6.5	+4.6	+5.3	+4.9	+2.5	+0.5
June	-1.2	-2.4	-3.7	-9.7	-15.4	-22.7	-26.6	-25.0	-20.5	-14.6	-2.4	+8.6	+21.1	+24.6	+22.8	+18.0	+12.9	+8.1	+6.3	+7.1	+4.4	+4.2	+3.3	+2.7
July	-3.4	-4.4	-5.8	-8.6	-13.7	-19.5	-23.5	-26.1	-24.5	-17.6	-5.2	+7.3	+17.8	+21.3	+22.4	+18.9	+16.3	+12.3	+11.5	+8.7	+6.1	+5.1	+3.9	+0.5
Aug.	-3.3	-3.6	-5.4	-10.3	-14.9	-22.2	-24.1	-23.9	-18.5	-7.5	+5.1	+17.9	+25.7	+25.6	+20.4	+12.1	+6.1	+2.0	+4.3	+5.8	+4.3	+1.9	+2.3	+0.1
Sept.	+8.4	+7.1	+6.1	+7.0	+8.8	+11.7	+12.3	+11.9	+7.6	-0.9	-12.9	-22.6	-27.4	-24.7	-17.5	-10.3	-5.0	-3.3	-3.5	-0.5	+4.6	+15.4	+18.2	+9.8
Oct.	+4.8	+3.2	+3.3	+3.3	+4.9	+5.7	+7.9	+11.5	+13.3	+8.4	-2.2	-13.8	-20.9	-22.5	-18.9	-10.5	-4.2	-1.7	+1.6	+4.8	+6.5	+4.6	+6.3	+4.6
Nov.	-5.3	-4.2	-1.8	-1.0	-1.5	-2.0	-2.7	-4.3	-6.6	-5.5	-0.2	+6.7	+11.6	+10.3	+6.7	+4.9	+4.4	+3.3	+2.4	-0.5	-1.1	-3.5	-5.0	-5.2
Dec.	-2.2	-2.4	-1.0	+0.7	+0.6	+0.5	+0.4	-1.7	-3.0	-2.4	-1.2	+1.3	+6.7	+9.1	+5.2	+2.8	+1.3	+1.2	+0.4	-0.7	-2.1	-3.2	-5.3	-5.0
Year	-3.1	-2.9	-3.4	-4.9	-7.0	-10.0	-12.1	-14.0	-14.0	-9.3	-1.8	+7.6	+16.5	+18.4	+15.3	+10.5	+6.9	+4.8	+3.8	+2.5	+0.9	-0.5	-1.8	-2.3
Winter	-4.1	-3.4	-2.0	-1.1	-1.0	-0.9	-1.6	-2.9	-3.9	-2.7	-0.2	+4.2	+9.7	+10.2	+6.5	+3.3	+2.1	+2.1	+1.0	-0.5	-1.9	-3.0	-4.4	-5.3
Equinox	-3.1	-3.1	-3.5	-4.1	-5.7	-7.7	-10.0	-14.0	-16.6	-12.2	-4.6	+6.9	+17.9	+21.4	+18.6	+12.6	+7.3	+4.8	+3.4	+1.5	-0.3	-2.6	-4.1	-2.7
Summer	-2.1	-2.3	-4.5	-9.3	-14.5	-21.3	-24.8	-25.2	-21.6	-13.1	-0.6	+11.5	+22.0	+23.7	+20.9	+15.7	+11.5	+7.5	+7.2	+6.6	+5.1	+4.0	+3.0	+0.9

VERTICAL COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	+1.4	+1.1	+0.7	0.0	-0.1	-0.3	-0.8	-0.7	-0.9	-1.8	+0.5	-0.9	-2.0	-0.9	+1.7	+1.2	+1.1	+0.9	+0.4	+0.1	-0.1	-0.2	-0.3	-0.1
Feb.	+1.8	+1.9	+2.4	+2.1	+1.9	+1.2	-0.1	-1.3	-2.4	-3.9	-5.6	-5.5	-4.6	-3.7	-1.8	+0.7	+1.7	+1.8	+1.9	+2.1	+2.4	+2.1	+2.4	+2.5
Mar.	+2.1	+1.7	+2.0	+2.1	+1.9	+1.5	+0.7	+1.7	+0.4	-3.3	-5.5	-10.5	-12.9	-7.9	-2.6	+0.9	+4.9	+4.3	+2.7	+3.7	+3.4	+2.9	+2.1	+1.7
Apr.	+3.9	+4.1	+4.1	+3.9	+3.9	+3.1	+3.3	+2.1	-1.5	-7.1	-9.1	-12.3	-13.5	-9.7	-4.9	-1.5	+1.5	+4.5	+6.3	+5.7	+3.4	+3.9	+3.1	+2.3
May	+5.7	+2.6	+2.9	+5.6	+6.6	+7.1	+5.2	+2.0	-1.7	-9.4	-13.5	-16.4	-16.3	-9.8	-4.1	+1.0	+2.8	+4.3	+5.0	+5.4	+4.9	+3.2	+3.5	+3.4
June	+2.0	+2.5	+1.7	+3.2	+3.9	+4.3	+3.6	+0.9	-2.1	-7.2	-10.7	-12.1	-8.6	-4.3	-2.1	-1.2	+4.5	+6.5	+6.0	+3.9	+2.9	+2.0	+0.7	-0.3
July	+2.7	+2.4	+3.1	+3.0	+3.2	+4.1	+3.2	+2.8	+0.5	-5.2	-9.5	-12.0	-13.1	-8.4	-4.1	0.0	+2.6	+3.9	+4.6	+6.6	+5.3	+4.2	+2.5	-1.4
Aug.	+1.0	+1.1	+0.6	+1.6	+3.8	+4.9	+3.6	+3.2	0.0	-6.1	-11.4	-16.6	-16.8	-9.9	-1.0	+3.2	+7.6	+8.5	+6.0	+5.2	+4.6	+3.3	+2.2	+1.4
Sept.	-2.1	-1.0	+1.1	+2.7	+3.7	+4.4	+4.3	+2.7	+1.1	-1.4	-7.7	-10.9	-9.3	-5.8	-0.9	+1.7	+3.3	+2.8	+2.3	+3.3	+3.3	+3.6	+0.9	-2.1
Oct.	+1.4	+2.0	+1.3	+0.8	0.0	-0.4	+0.4	+2.2	+2.5	+0.4	-3.8	-6.4	-7.8	-6.4	-2.3	-1.4	+2.0	+2.2	+2.0	+2.2	+1.7	+2.2	+1.4	+1.0
Nov.	+0.9	+0.3	-0.5	-1.1	-1.1	-1.2	-1.1	-1.5	-0.9	-0.7	-1.5	-1.5	-0.9	+0.3	+2.7	+2.9	+2.3	+1.6	+1.5	+0.9	-0.1	-0.3	-0.5	-0.5
Dec.	+0.9	+0.9	+2.0	-0.5	-0.1	-0.5	-0.7	-0.7	-1.0	-0.9	+0.1	-1.3	-4.3	-2.1	+0.2	+0.9	+0.5	+0.7	+0.7	+0.7	+0.8	+0.7	+1.5	+1.5
Year	+1.8	+1.6	+1.8	+1.9	+2.3	+2.3	+1.8	+1.1	-0.5	-3.9	-6.5	-8.9	-9.2	-5.7	-1.6	+1.1	+2.9	+3.5	+3.3	+3.2	+2.7	+2.3	+1.6	+0.8
Winter	+1.3	+1.1	+1.1	+0.1	+0.1	-0.2	-0.7	-1.1	-1.3	-1.8	-1.6	-2.3	-2.9	-1.6	+0.7	+1.4	+1.4	+1.3	+1.1	+0.9	+0.7	+0.6	+0.8	+0.9
Equinox	+1.3	+1.7	+2.1	+2.4	+2.4	+2.1	+2.2	+2.2	+0.6	-2.9	-6.5	-10.0	-10.9	-7.5	-2.7	+1.1	+2.9	+3.5	+3.3	+3.7	+3.1	+3.1	+1.9	+0.7
Summer	+2.9	+2.1	+2.1	+3.3	+4.4	+5.1	+3.9	+2.2	-0.8	-7.0	-11.3	-14.3	-13.7	-8.1	-2.8	+0.7	+4.4	+5.8	+5.4	+5.0	+4.4	+3.2	+2.2	+0.8

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

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DECLINATION (measured positive towards the west).

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-0·73	-0·36	-0·26	-0·17	-0·14	-0·12	-0·41	-0·82	-0·88	-0·49	+0·28	+1·16	+2·39	+2·24	+1·04	+0·39	+0·34	+0·24	-0·09	-0·32	-0·62	-0·89	-0·98	-0·80
Feb.	-0·84	-0·81	-0·66	-0·59	-0·45	-0·50	-0·57	-0·57	-0·56	-0·15	+0·12	+0·97	+1·94	+2·09	+1·66	+0·67	+0·29	+0·54	+0·27	+0·01	-0·44	-0·35	-0·64	-1·43
Mar.	-0·39	-0·28	-0·48	-0·65	-0·80	-1·06	-1·29	-2·34	-3·70	-3·37	-1·58	+0·94	+3·45	+4·34	+3·90	+2·49	+1·32	+0·74	+0·15	-0·20	-0·28	-0·25	-0·32	-0·34
Apr.	-0·52	-0·71	-0·82	-1·17	-1·57	-2·16	-3·05	-3·99	-3·92	-1·87	-0·86	+1·37	+4·08	+5·07	+4·46	+3·37	+2·09	+0·72	+0·15	+0·13	-0·12	-0·07	-0·18	-0·43
May	-0·39	+0·07	-0·90	-1·87	-2·95	-4·41	-5·03	-4·89	-4·10	-1·73	+0·87	+3·43	+5·29	+5·05	+3·78	+2·75	+1·83	+1·09	+0·75	+0·39	+0·58	+0·55	+0·13	-0·29
June	-0·40	-0·57	-0·88	-2·12	-3·30	-4·71	-5·24	-4·68	-3·64	-2·29	+0·24	+2·38	+4·78	+5·21	+4·58	+3·44	+2·36	+1·31	+0·86	+1·00	+0·52	+0·51	+0·38	+0·26
July	-0·81	-0·95	-1·20	-1·83	-2·95	-4·21	-4·91	-5·33	-4·66	-2·99	-0·43	+2·27	+4·39	+5·07	+4·86	+3·95	+3·15	+2·19	+1·85	+1·27	+0·78	+0·55	+0·31	-0·37
Aug.	-0·88	-0·97	-1·29	-2·32	-3·23	-4·55	-4·72	-4·45	-3·17	-0·78	+1·75	+4·31	+5·74	+5·53	+4·19	+2·30	+0·99	+0·13	+0·50	+0·69	+0·39	-0·02	+0·13	-0·27
Sept.	-1·42	-1·35	-1·24	-1·41	-1·84	-2·51	-2·82	-2·85	-2·14	-0·51	+1·88	+4·01	+5·32	+4·97	+3·60	+2·19	+1·12	+0·95	+1·24	+0·63	-0·28	-2·53	-3·24	-1·77
Oct.	-0·91	-0·62	-0·60	-0·53	-0·82	-0·98	-1·41	-2·26	-2·98	-2·29	-0·28	+2·16	+3·89	+4·40	+3·80	+2·19	+0·98	+0·56	-0·11	-0·70	-1·04	-0·69	-1·04	-0·72
Nov.	-1·05	-0·82	-0·38	-0·27	-0·38	-0·46	-0·65	-0·92	-1·28	-0·89	+0·28	+1·70	+2·59	+2·22	+1·46	+1·03	+0·82	+0·56	+0·33	-0·24	-0·40	-0·85	-1·18	-1·22
Dec.	-0·42	-0·43	-0·15	+0·14	+0·07	-0·01	-0·08	-0·51	-0·77	-0·44	-0·03	+0·49	+1·58	+1·97	+1·09	+0·52	+0·21	+0·29	+0·04	-0·21	-0·49	-0·72	-1·09	-1·05
Year	-0·73	-0·65	-0·74	-1·07	-1·53	-2·13	-2·51	-2·80	-2·65	-1·48	+0·19	+2·10	+3·79	+4·01	+3·20	+2·11	+1·29	+0·78	+0·49	+0·20	-0·12	-0·40	-0·64	-0·70
Winter	-0·76	-0·61	-0·36	-0·22	-0·23	-0·27	-0·43	-0·71	-0·87	-0·49	+0·16	+1·08	+2·13	+2·13	+1·31	+0·65	+0·41	+0·41	+0·14	-0·19	-0·49	-0·70	-0·97	-1·13
Equinox	-0·81	-0·74	-0·79	-0·94	-1·26	-1·68	-2·14	-2·86	-3·19	-2·01	-0·21	+2·12	+4·19	+4·69	+3·94	+2·56	+1·38	+0·74	+0·36	-0·03	-0·43	-0·89	-1·19	-0·81
Summer	-0·62	-0·61	-1·07	-2·03	-3·11	-4·45	-4·97	-4·84	-3·89	-1·95	+0·61	+3·10	+5·05	+5·21	+4·35	+3·11	+2·08	+1·18	+0·99	+0·84	+0·57	+0·40	+0·24	-0·17

INCLINATION

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	+0·30	+0·23	+0·18	+0·05	-0·01	-0·13	-0·21	-0·30	-0·19	+0·12	+0·44	+0·40	+0·07	-0·21	-0·21	-0·10	+0·03	-0·05	-0·10	-0·12	-0·09	-0·09	-0·09	+0·09
Feb.	+0·29	+0·29	+0·27	+0·21	+0·12	-0·06	-0·14	-0·20	-0·31	-0·24	-0·13	-0·01	-0·04	-0·14	-0·10	+0·06	+0·19	+0·14	+0·01	-0·07	-0·07	-0·09	0·00	+0·01
Mar	-0·11	-0·10	0·00	-0·05	-0·09	-0·16	-0·29	-0·32	-0·14	+0·24	+0·59	+0·79	+0·54	+0·27	+0·10	+0·13	+0·01	+0·02	-0·27	-0·20	-0·16	-0·19	-0·33	-0·28
Apr.	-0·19	-0·12	-0·09	-0·10	-0·11	-0·16	-0·12	+0·11	+0·49	+0·94	+1·62	+1·15	+0·90	+0·51	+0·06	-0·34	-0·43	-0·73	-0·62	-0·53	-0·51	-0·52	-0·61	-0·59
May	-0·36	-0·36	-0·31	-0·12	-0·07	+0·15	+0·45	+0·86	+1·13	+1·55	+1·40	+1·25	+0·51	+0·20	+0·03	-0·19	-0·54	-0·77	-0·98	-0·89	-0·83	-0·75	-0·63	-0·73
June	-0·03	-0·11	-0·04	-0·14	-0·19	-0·28	-0·43	-0·40	-0·27	-0·02	+0·22	+0·40	+0·30	+0·21	+0·24	+0·27	-0·08	-0·18	-0·10	+0·06	+0·07	+0·11	+0·16	+0·22
July	-0·12	-0·01	+0·06	-0·02	-0·11	-0·22	0·00	+0·21	+0·76	+1·04	+0·93	+1·07	+0·94	+0·99	+0·29	+0·05	-0·36	-0·56	-0·84	-0·82	-0·76	-0·80	-0·86	-0·89
Aug.	-0·35	-0·38	-0·31	-0·30	-0·17	+0·19	+0·57	+0·99	+1·22	+1·24	+0·97	+0·71	+0·36	+0·17	-0·09	-0·29	-0·32	-0·31	-0·58	-0·80	-0·81	-0·66	-0·59	-0·49
Sept.	-0·63	-0·22	-0·02	-0·02	+0·14	+0·28	+0·59	+0·79	+1·07	+1·25	+1·25	+0·93	+0·43	+0·12	+0·03	-0·04	-0·06	-0·44	-0·87	-0·87	-1·15	-1·12	-0·94	-0·51
Oct.	-0·13	-0·03	-0·13	-0·25	-0·36	-0·38	-0·42	-0·15	+0·49	+1·02	+1·26	+1·13	+0·61	+0·29	+0·17	+0·01	-0·16	-0·32	-0·36	-0·49	-0·50	-0·44	-0·46	-0·41
Nov.	+0·11	+0·11	-0·04	-0·13	-0·15	-0·13	-0·17	-0·11	+0·12	+0·44	+0·56	+0·53	+0·32	+0·17	+0·19	+0·09	-0·12	-0·19	-0·26	-0·22	-0·33	-0·25	-0·29	-0·26
Dec.	+0·09	+0·15	+0·16	-0·02	-0·10	-0·23	-0·32	-0·32	-0·28	+0·06	+0·41	+0·36	+0·23	+0·11	+0·01	-0·09	-0·11	+0·10	-0·06	-0·08	-0·08	-0·08	+0·07	0·00
Year	-0·10	-0·05	-0·04	-0·07	-0·08	-0·06	+0·04	+0·21	+0·45	+0·73	+0·86	+0·75	+0·45	+0·21	+0·01	-0·10	-0·19	-0·30	-0·46	-0·49	-0·50	-0·47	-0·43	-0·37
Winter	+0·20	+0·19	+0·13	+0·03	-0·04	-0·14	-0·21	-0·23	-0·17	+0·10	+0·32	+0·32	+0·15	-0·02	-0·03	-0·01	0·00	0·00	-0·10	-0·12	-0·15	-0·13	-0·08	-0·04
Equinox	-0·27	-0·12	-0·06	-0·11	-0·11	-0·11	-0·06	+0·11	+0·47	+0·86	+1·19	+1·00	+0·61	+0·30	+0·09	-0·06	-0·16	-0·37	-0·53	-0·53	-0·58	-0·57	-0·59	-0·45
Summer	-0·25	-0·21	-0·18	-0·12	-0·09	+0·07	+0·39	+0·75	+1·02	+1·22	+1·07	+0·93	+0·57	+0·36	-0·02	-0·24	-0·42	-0·53	-0·77	-0·82	-0·76	-0·71	-0·64	-0·63

HORIZONTAL COMPONENT (γ)

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-4·0	-3·1	-2·4	-0·8	+0·2	+1·9	+2·8	+4·2	+2·6	-2·5	-6·4	-6·4	-1·8	+2·9	+3·8	+2·0	0·0	+1·1	+1·6	+1·8	+1·4	+1·3	+1·2	-1·4
Feb.	-3·7	-3·7	-3·1	-2·3	-1·1	+1·4	+2·1	+2·5	+2·3	-4·8	-10·9	-15·8	-12·9	-7·0	-2·5	-0·8	+1·6	+1·3	+5·0	+4·4	+3·7	+4·0	+5·7	+4·8
Mar.	+2·5	+2·2	+0·7	+1·6	+2·0	+2·9	+4·6	+5·4	+2·3	-7·9	-16·7	-27·7	-21·9	-18·5	-11·3	-2·7	+4·5	+7·1	+12·6	+11·7	+10·1	+9·1	+9·3	+10·3
Apr.	+4·3	+3·3	+2·9	+2·9	+3·1	+3·6	+3·1	-0·9	-7·9	-16·8	-25·3	-23·3	-18·5	-11·3	-2·7	+4·5	+7·1	+12·6	+11·7	+10·1	+9·1	+9·3	+10·3	+9·7
May	+6·4	+6·3	+5·8	+2·9	+2·3	-0·8	-5·5	-11·9	-16·8	-25·3	-24·6	-23·3	-12·6	-6·1	-2·0	+2·9	+9·1	+13·0	+16·5	+15·5	+14·4	+12·9	+10·4	+10·5
June	+4·3	+2·1	+3·1	+2·9	+2·9	+0·4	-7·3	-13·7	-16·5	-20·1	-19·9	-16·3	-11·1	-3·1	+3·9	+7·7	+8·7	+10·2	+12·1	+12·9	+10·7	+9·7	+8·3	+8·1
July	+2·8	+1·0	+0·2	+1·4	+2·8	+4·8	+1·2	-2·2	-11·2	-17·6	-17·6	-20·6	-19·0	-18·0	-5·8	-0·8	+6·4	+9·8	+14·4	+14·4	+13·4	+13·6	+13·8	+12·8
Aug.	+5·7	+6·1	+4·9	+5·1	+3·9	-1·1	-7·3	-13·7	-18·3	-20·9	-18·9	-16·9	-11·7	-6·3	+0·9	+5·5	+7·7	+7·9	+10·9	+13·9	+13·9	+11·1	+9·7	+7·9
Sept.	+8·7	+3·0	+0·7	+1·3	-0·7	-2·6	-7·3	-10·9	-15·7	-19·4	-21·7	-18·1	-9·9	-4·0	-0·7	+1·3	+2·1	+7·6	+13·9	+14·3	+18·2	+14·5	+6·9	+6·6
Oct.	+2·4	+1·2	+2·4	+4·0	+5·4	+5·6	+6·4	+3·0	-6·4	-15·2	-20·4	-19·4	-12·0	-6·8	-3·4	+0·4	+3·2	+5·6	+6·2	+8·2	+8·2	+7·4	+7·4	+6·6
Nov.	-1·4	-1·5	+0·4	+1·5	+1·8	+1·5	+2·2	+1·1	-2·2	-6·9	-9·0	-8·5	-5·2	-2·5	-1·8	-0·3	+2·6	+3·5	+4·4	+3·7	+5·0	+3·7	+4·2	+3·7
Dec.	-1·1	-1·9	-1·7	+0·1	+1·5	+3·2	+4·5	+4·5	+3·9	-1·3	-6·1	-5·9	-5·1	-2·5	-0·1	+1·7	+1·9	-1·2	+1·1	+1·5	+1·5	+1·5	-0·5	+0·5
Year	+2·2	+1·3	+1·2	+1·7	+2·0	+1·7	0·0	-2·7	-6·9	-12·4	-15·3	-14·6	-10·1	-5·3	-0·8	+1·9	+4·0	+5·8	+8·2	+8·5	+8·5	+7·9	+7·2	+5·9
Winter	-2·5	-2·5	-1·5	-0·4	+0·6	+2·0	+2·9	+3·1	+2·0	-2·1	-5·4	-5·7	-3·3	-0·3	+0·7	+0·7	+0·5	+0·5	+1·9	+2·2	+2·5	+2·1	+1·5	+0·9
Equinox	+4·5	+2·4	+1·7	+2·5	+2·5	+2·4	+1·7	-0·9	-6·9	-14·0	-20·2	-18·8	-13·3	-7·3	-2·3	+1·3	+3·5	+6·8	+9·2	+9·3	+9·9	+9·7	+9·5	+7·0
Summer	+4·8	+3·9	+3·5	+3·1	+3·0	+0·8	-4·5	-10·4	-15·7	-21·0	-20·3	-19·3	-13·6	-8·4	-0·7	+3·8	+8·0	+10·2	+13·5	+14·2	+13·1	+11·8	+10·5	+9·8

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF GEOMAGNETIC FORCE

INTERNATIONAL DISTURBED DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

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NORTH COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	+10.5	+8.2	+9.7	+14.0	+31.8	+33.0	+12.5	+9.2	-0.5	-25.9	-22.5	-17.7	-9.3	-8.1	-18.7	-9.7	-3.6	-11.5	-11.0	-1.3	+0.3	-1.8	+5.1	+7.3
Feb.	+0.5	-2.7	-4.4	-2.6	-5.3	+2.9	+2.3	-1.6	-12.6	-3.2	-3.5	-6.9	-16.5	-6.9	-0.2	-0.8	+0.3	+4.2	+1.0	+14.7	+8.0	+8.8	+10.7	+13.7
Mar.	+2.3	+1.3	-1.6	+3.1	-2.9	+8.7	+15.2	+5.8	+4.7	-3.6	-9.5	-19.9	-20.0	-11.3	-6.5	-4.3	-11.3	-3.1	+3.2	+5.3	+16.1	+15.9	+1.3	+11.2
Apr.	+14.7	-0.4	-5.1	+0.1	-2.5	+3.4	+6.0	+2.3	-10.1	-13.6	-19.3	-21.3	-16.0	-18.5	-12.7	-6.1	+6.4	+9.9	+17.0	+20.6	+12.2	+13.8	+11.8	+7.3
May	+12.1	+8.9	+11.1	+4.7	+6.6	-3.0	-6.9	-10.1	-22.9	-43.2	-41.2	-31.8	-19.7	-15.7	-7.5	+7.6	+12.2	+23.3	+24.0	+19.4	+16.7	+14.4	+24.3	+16.6
June	+5.1	+8.3	-4.7	-2.0	+0.6	+1.3	-11.5	-15.7	-22.4	-14.2	-25.1	-24.3	-21.2	-19.8	+3.4	+13.7	+16.9	+24.3	+29.4	+21.5	+15.2	+10.5	+9.9	+0.9
July	+16.1	+7.2	+10.4	+3.2	+7.5	+5.3	-1.3	-7.2	-11.0	-17.9	-23.3	-24.6	-38.5	-22.1	-9.1	+10.7	+11.5	+15.5	+15.2	+16.4	+19.4	+7.6	+4.8	+4.2
Aug.	+4.9	+2.6	+0.2	+12.2	+7.4	+0.4	-3.4	-15.6	-18.7	-24.1	-29.1	-28.0	-15.4	-16.0	-15.6	+5.9	+16.5	+22.7	+31.4	+17.9	+17.5	+15.1	+9.1	+2.0
Sept	-75.5	-59.8	-28.9	+30.2	+19.8	+14.5	+0.7	-24.2	-25.6	-16.1	-11.9	-11.9	-12.1	-3.5	+6.8	+22.8	+34.3	+31.9	+45.4	+50.5	+46.0	+46.1	-23.2	-56.2
Oct.	+4.1	-3.8	+11.8	+18.1	+14.9	+17.2	+9.6	+6.0	-1.5	-11.7	-19.1	-0.9	+3.3	+4.2	+4.0	+10.6	+15.9	+11.4	-0.5	-1.9	-9.9	-34.5	-38.4	-8.9
Nov.	-0.5	+5.4	+7.2	+15.6	+15.2	+6.8	+12.9	+10.2	+11.2	+0.5	-16.5	-20.7	-28.1	-17.2	-11.7	-4.1	-8.0	-1.8	+0.6	-5.0	+11.9	+8.7	+3.3	+4.2
Dec.	+0.3	+1.6	+2.9	+4.9	+3.5	+14.5	+9.5	+5.9	+4.2	+2.9	-3.1	-7.4	-17.6	-16.0	-16.3	-5.2	-10.6	+1.7	-0.6	+7.6	+10.6	+10.0	-8.4	+5.2
Year	-0.5	-1.9	+0.7	+8.4	+8.0	+8.8	+3.8	-2.9	-8.8	-14.2	-18.7	-18.0	-17.7	-12.6	-7.1	+3.5	+6.7	+10.7	+13.1	+13.8	+13.7	+9.6	+0.9	+0.7
Winter	+2.7	+3.2	+3.8	+7.9	+11.3	+14.3	+9.3	+5.9	+0.5	-6.4	-11.4	-13.2	-17.9	-12.1	-11.8	-4.9	-5.5	-1.8	-2.5	+4.1	+7.8	+6.4	+2.7	+7.6
Equinox	-13.5	-15.7	-5.9	+12.9	+7.4	+10.9	+7.8	-2.5	-8.1	-11.2	-15.0	-13.5	-11.3	-7.3	-2.1	+5.7	+11.4	+12.6	+16.3	+18.6	+16.1	+10.3	-12.1	-11.6
Summer	+9.6	+6.7	+4.3	+4.6	+5.5	+1.0	-5.7	-12.2	-18.7	-24.9	-29.7	-27.5	-23.7	-18.4	-7.3	+9.5	+14.3	+21.4	+25.2	+18.8	+17.2	+12.0	+12.0	+5.9

WEST COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-20.3	-36.2	-26.5	-15.7	-5.1	+13.5	+14.9	+24.5	+18.0	+17.2	+18.3	+10.1	+18.2	+19.2	+19.9	+15.5	+3.2	-0.1	-5.2	-16.3	-18.9	-15.8	-15.3	-17.1
Feb.	-8.9	-0.9	+0.7	-5.3	+0.3	+4.2	+5.6	+10.3	+12.6	+11.7	+13.6	+18.9	+17.7	+15.5	+13.5	+0.5	-16.3	-7.5	-7.5	-35.2	-27.5	-8.8	-10.0	+2.7
Mar.	-9.0	-9.7	-8.1	-14.4	-6.3	+1.3	+4.3	+12.8	+9.1	-1.9	+7.5	+16.7	+26.0	+26.8	+23.8	+16.7	+9.5	-13.2	-1.3	-13.4	-20.4	-21.2	-12.6	-22.9
Apr.	-9.4	-19.7	-13.7	-10.1	-10.0	-9.3	-13.0	-14.3	-16.1	-7.5	0.0	+7.9	+24.5	+28.0	+27.4	+26.4	+25.2	+22.3	+8.2	-8.9	-18.1	-10.5	-3.4	-6.1
May	-2.5	+4.6	+0.7	-13.2	-15.9	-22.9	-19.6	-19.8	-22.3	-9.2	+3.9	+12.3	+23.1	+25.2	+18.4	+16.1	+12.7	+2.5	+7.3	+3.5	+2.3	-2.2	+2.0	-6.8
June	-26.5	-30.3	-15.7	-6.5	-6.6	-19.4	-23.6	-18.8	-18.8	-12.1	-2.6	+9.8	+22.5	+27.7	+30.7	+35.1	+26.7	+25.0	+19.9	+10.6	+5.9	-9.0	-6.3	-17.6
July	-7.0	-7.7	-15.1	-2.9	-8.6	-17.6	-16.6	-23.0	-23.4	-21.8	-13.1	+3.6	+16.4	+27.3	+30.2	+34.1	+25.3	+18.1	+10.3	+3.7	-6.2	-6.7	-2.7	+3.7
Aug.	-7.3	+3.5	+8.5	-4.8	-7.3	-9.8	-9.6	-8.1	-4.9	+2.9	+7.8	+16.0	+22.1	+25.8	+20.8	+12.3	+7.4	+8.7	-8.7	-4.8	-7.6	-24.2	-22.1	-16.7
Sept.	-79.2	-66.9	-77.9	-52.4	-21.8	+28.3	+20.7	+6.3	+4.6	+6.9	+19.4	+32.1	+38.8	+33.9	+32.3	+24.3	+15.4	+16.3	+5.6	+3.4	+11.0	+18.5	-3.7	-15.9
Oct.	-18.9	-17.3	-16.6	-10.6	+0.6	+12.1	+24.9	+21.0	+15.6	+8.5	+15.7	+22.2	+29.9	+30.1	+32.7	+29.2	-18.3	-27.0	-1.6	-15.5	-46.5	-35.7	-24.2	-10.4
Nov.	-2.6	-4.6	+14.3	+6.1	+4.7	+16.0	+25.3	+18.9	+9.2	+6.7	+11.6	+19.5	+21.0	+24.3	+25.8	+6.9	-18.9	-15.7	-12.4	-29.0	-50.9	-26.5	-29.7	-20.2
Dec.	-12.4	-3.9	+5.8	+7.5	+9.5	+15.1	+16.7	+24.4	+19.0	+9.5	+8.0	+10.3	+16.3	+18.6	+11.3	+5.9	-2.6	-20.4	-12.1	-36.4	-32.9	-21.2	-23.0	-12.8
Year	-17.0	-15.8	-12.0	-10.2	-5.5	+1.0	+2.5	+2.9	+0.2	+0.9	+7.5	+15.0	+23.0	+25.2	+23.9	+18.6	+5.7	+0.7	+0.2	-11.5	-17.5	-13.6	-12.6	-11.7
Winter	-11.0	-11.4	-1.4	-1.9	+2.3	+12.2	+15.7	+19.5	+14.7	+11.3	+12.9	+14.7	+18.3	+19.4	+17.6	+7.2	-8.6	-10.9	-9.3	-29.2	-32.5	-18.1	-19.5	-11.8
Equinox	-29.1	-28.4	-29.1	-21.8	-9.4	+8.1	+9.2	+6.5	+3.3	+1.5	+10.7	+19.7	+29.8	+29.7	+29.1	+24.1	+8.0	-0.4	+2.8	-8.6	-18.5	-12.2	-11.0	-13.8
Summer	-10.8	-7.5	-5.4	-6.9	-9.6	-17.4	-17.4	-17.5	-17.4	-10.1	-1.0	+10.5	+21.0	+26.5	+25.0	+24.4	+18.0	+13.6	+7.2	+3.3	-1.4	-10.6	-7.3	-9.3

VERTICAL COMPONENT

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-11.0	-17.1	-16.8	-20.3	-33.6	-39.1	-33.4	-26.3	-20.0	-11.1	-6.6	+0.5	+4.2	+11.9	+26.6	+32.5	+33.4	+35.5	+31.8	+23.3	+15.2	+15.3	+8.6	-3.5
Feb.	-10.4	-12.9	-15.9	-15.9	-10.9	-9.8	-10.5	-7.9	-5.0	-3.9	-1.4	+0.9	+5.6	+12.1	+12.4	+17.7	+23.7	+18.0	+14.3	+15.1	+8.8	-2.9	-5.6	-12.3
Mar.	-12.6	-14.3	-12.8	-14.6	-13.4	-11.9	-11.0	-10.4	-9.4	-6.5	-7.2	-6.6	-3.4	+4.3	+14.8	+27.2	+27.4	+31.3	+20.8	+16.0	+7.4	+0.1	-3.8	-11.4
Apr.	-11.6	-12.9	-7.5	-2.8	-3.7	-6.7	-5.6	-3.9	-3.5	-7.0	-9.3	-11.7	-14.2	-6.1	+5.1	+10.6	+14.1	+15.3	+20.2	+20.9	+18.4	+10.5	+0.5	-9.5
May	-1.9	-11.3	-27.3	-28.9	-17.3	-7.6	-5.5	-1.3	-0.9	-5.1	-6.9	-6.5	-3.1	+3.7	+10.5	+14.5	+20.1	+23.6	+20.7	+18.9	+15.3	+10.1	-6.1	-7.7
June	-1.7	-19.7	-27.5	-31.9	-30.7	-20.4	-8.9	-7.1	-3.7	-4.1	-2.9	-5.1	-2.7	+8.3	+15.7	+17.3	+21.9	+26.0	+27.1	+25.3	+17.9	+12.3	+1.9	-7.3
July	-14.5	-16.7	-16.1	-12.5	-20.7	-14.6	-10.7	-8.1	-7.9	-7.3	-9.5	-11.1	-7.3	-0.5	+5.9	+15.1	+24.9	+28.4	+28.3	+27.7	+19.5	+10.3	+4.3	-6.9
Aug.	-22.5	-30.0	-32.9	-27.1	-14.3	-14.2	-12.7	-5.1	-2.1	-1.6	-1.3	+1.1	+6.9	+14.2	+23.1	+25.5	+26.7	+26.0	+27.5	+24.5	+13.9	+3.8	-11.3	-18.1
Sept.	-136.8	-117.4	-105.0	-99.6	-97.2	-59.0	-37.4	-3.8	+11.6	+22.8	+32.2	+37.2	+43.8	+59.4	+68.8	+82.4	+91.0	+76.4	+63.6	+51.4	+38.2	+31.4	+6.8	-60.8
Oct.	-72.4	-70.4	-51.5	-35.2	-19.8	-8.0	-3.6	-1.8	+3.5	+10.0	+11.0	+12.8	+15.0	+26.6	+34.5	+42.8	+66.2	+62.8	+51.6	+35.6	-0.7	-21.6	-60.2	-27.2
Nov.	-28.4	-31.3	-29.6	-23.6	-16.4	-13.7	-14.8	-9.6	-4.4	-2.9	-1.0	+1.8	+7.2	+14.1	+16.4	+26.8	+41.4	+43.1	+34.4	+21.6	+7.4	-11.3	-10.0	-17.2
Dec.	-14.2	-10.6	-8.0	-7.8	-5.8	-5.3	-5.8	-7.2	-6.2	-4.8	-3.2	-1.4	+4.0	+9.4	+19.4	+21.6	+23.6	+22.1	+15.4	+10.0	+0.4	-12.0	-15.2	-18.4
Year	-28.2	-30.4	-29.5	-26.7	-23.7	-17.5	-13.3	-7.7	-4.0	-1.8	-0.5	+1.0	+4.7	+13.1	+21.1	+27.8	+34.5	+34.0	+29.6	+24.2	+13.7	+3.7	-7.5	-16.7
Winter	-16.0	-18.0	-18.4	-16.9	-16.7	-17.0	-16.1	-12.7	-8.9	-5.7	-3.1	+0.5	+5.3	+11.9	+18.7	+24.7	+30.5	+29.7	+24.0	+17.5	+7.9	-2.7	-5.5	-12.9
Equinox	-58.3	-53.7	-44.2	-38.1	-33.5	-21.4	-14.4	-5.0	+0.5	+4.8	+6.7	+7.9	+10.3	+21.1	+30.8	+40.7	+49.7	+46.5	+39.1	+31.0	+16.5	+4.6	-14.2	-27.2
Summer	-10.1	-19.4	-25.9	-25.1	-20.7	-14.2	-9.5	-5.4	-3.7	-4.5	-5.1	-5.4	-1.5	+6.4	+13.8	+18.1	+23.4	+26.0	+25.9	+24.1	+16.7	+9.1	-2.8	-10.0

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

INTERNATIONAL DISTURBED DAYS

Departures from the mean of the 24 hourly values (uncorrected for non-cyclic change)

33 ESKDALEMUIR   1963

DECLINATION (measured positive towards the west)

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-4·45	-7·57	-5·67	-3·67	-2·17	+1·52	+2·55	+4·59	+3·63	+4·39	+4·49	+2·67	+3·99	+4·15	+4·67	+3·47	+0·77	+0·40	-0·65	-3·23	-3·81	-3·11	-3·27	-3·69
Feb.	-1·80	-0·08	+0·31	-0·96	+0·26	+0·74	+1·04	+2·12	+2·99	+2·46	+2·86	+4·04	+4·16	+3·36	+2·71	+0·12	-3·28	-1·66	-1·54	-7·60	-5·81	-2·08	-2·40	+0·04
Mar.	-1·90	-2·00	-1·58	-3·00	-1·16	-0·06	+0·32	+2·36	+1·66	-0·26	+1·84	+4·08	+5·94	+5·80	+5·02	+3·52	+2·32	-2·54	-0·38	-2·88	-4·68	-4·84	-2·58	-5·00
Apr.	-2·42	-3·94	-2·56	-2·02	-1·92	-1·99	-2·82	-2·96	-2·86	-1·02	+0·70	+2·36	+5·48	+6·28	+5·96	+5·52	+4·82	+4·11	+1·04	-2·52	-4·06	-2·60	-1·10	-1·48
May	-0·95	+0·60	-0·26	-2·83	-3·44	-4·50	-3·69	-3·62	-3·66	-0·29	+2·28	+3·62	+5·35	+5·64	+3·96	+2·97	+2·10	-0·34	+0·61	0·00	-0·14	-0·97	-0·48	-1·96
June	-5·50	-6·38	-2·99	-1·24	-1·34	-3·94	-4·32	-3·20	-2·97	-1·92	+0·38	+2·88	+5·28	+6·26	+6·03	+6·56	+4·74	+4·14	+2·90	+1·36	+0·63	-2·18	-1·62	-3·56
July	-1·99	-1·80	-3·40	-0·69	-2·00	-3·72	-3·29	-4·36	-4·30	-3·73	-1·78	+1·62	+4·67	+6·26	+6·38	+6·45	+4·66	+3·06	+1·51	+0·16	-1·94	-1·63	-0·72	+0·58
Aug.	-1·65	+0·61	+1·69	-1·41	-1·73	-1·98	-1·81	-1·07	-0·31	+1·45	+2·61	+4·23	+4·99	+5·77	+4·75	+2·27	+0·89	+0·94	-2·87	-1·61	-2·15	-5·41	-4·77	-3·43
Sept.	-13·22	-11·32	-14·62	-11·62	-5·10	+5·17	+4·14	+2·14	+1·84	+1·96	+4·32	+6·88	+8·24	+6·94	+6·26	+4·08	+1·86	+2·13	-0·50	-1·12	+0·56	+2·08	+0·08	-1·18
Oct.	-3·94	-3·33	-3·77	-2·78	-0·41	+1·81	+4·66	+4·01	+3·19	+2·12	+3·85	+4·49	+5·90	+5·91	+6·43	+5·48	-4·25	-5·83	-0·30	-3·05	-8·99	-5·94	-3·49	-1·77
Nov.	-0·50	-1·11	+2·62	+0·67	+0·39	+2·98	+4·63	+3·43	+1·44	+1·33	+2·92	+4·67	+5·24	+5·51	+5·60	+1·53	-3·51	-3·10	-2·51	-5·65	-10·66	-5·63	-6·08	-4·21
Dec.	-2·50	-0·85	+1·06	+1·33	+1·77	+2·50	+3·01	+4·69	+3·66	+1·81	+1·72	+2·33	+3·90	+4·31	+2·86	+1·37	-0·15	-4·16	-2·41	-7·57	-7·00	-4·61	-4·32	-2·75
Year	-3·40	-3·10	-2·43	-2·35	-1·40	-0·12	+0·37	+0·68	+0·36	+0·69	+2·18	+3·66	+5·26	+5·52	+5·05	+3·61	+0·91	-0·24	-0·43	-2·81	-4·00	-3·08	-2·56	-2·37
Winter	-2·31	-2·40	-0·42	-0·66	+0·06	+1·93	+2·81	+3·71	+2·93	+2·50	+3·00	+3·43	+4·32	+4·33	+3·96	+1·62	-1·54	-2·13	-1·78	-6·01	-6·82	-3·86	-4·02	-2·65
Equinox	-5·37	-5·15	-5·63	-4·85	-2·15	+1·23	+1·57	+1·39	+0·96	+0·70	+2·68	+4·45	+6·39	+6·23	+5·92	+4·65	+1·19	-0·53	-0·03	-2·39	-4·29	-2·83	-1·77	-2·36
Summer	-2·52	-1·74	-1·24	-1·54	-2·13	-3·53	-3·28	-3·06	-2·81	-1·12	+0·87	+3·09	+5·07	+5·98	+5·28	+4·56	+3·10	+1·95	+0·54	-0·02	-0·90	-2·55	-1·90	-2·09

INCLINATION

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	-0·72	-0·53	-0·74	-1·23	-2·85	-3·29	-1·82	-1·54	-0·67	+1·22	+1·10	+1·05	+0·50	+0·60	+1·65	+1·26	+1·03	+1·63	+1·57	+0·86	+0·58	+0·68	+0·06	-0·37
Feb.	-0·18	-0·13	-0·19	-0·16	+0·08	-0·48	-0·48	-0·21	+0·55	-0·02	+0·03	+0·25	+1·01	+0·57	+0·16	+0·48	+0·76	+0·26	+0·37	-0·17	+0·02	-0·54	-0·72	-1·23
Mar.	-0·36	-0·33	-0·12	-0·39	-0·07	-0·88	-1·32	-0·79	-0·65	+0·10	+0·35	+0·94	+0·92	+0·53	+0·51	+0·76	+1·30	+1·13	+0·32	+0·21	-0·63	-0·79	-0·03	-0·75
Apr.	-1·14	-0·06	+0·31	+0·04	+0·19	-0·28	-0·38	-0·08	+0·77	+0·81	+1·03	+1·01	+0·41	+0·73	+0·63	+0·35	-0·37	-0·53	-0·71	-0·73	-0·07	-0·57	-0·72	-0·64
May	-0·81	-0·92	-1·41	-0·87	-0·67	+0·28	+0·55	+0·87	+1·74	+2·81	+2·48	+1·77	+0·94	+0·82	+0·53	-0·33	-0·45	-0·97	-1·15	-0·84	-0·75	-0·67	-1·77	-1·19
June	-0·06	-0·67	-0·19	-0·58	-0·72	-0·36	+0·81	+1·07	+1·60	+0·97	+1·60	+1·42	+1·06	+1·18	-0·20	-0·88	-0·88	-1·25	-1·56	-0·90	-0·62	-0·27	-0·53	-0·03
July	-1·33	-0·79	-0·90	-0·48	-0·90	-0·50	+0·01	+0·55	+0·80	+1·25	+1·44	+1·29	+2·15	+1·11	+0·39	-0·73	-0·44	-0·53	-0·42	-0·43	-0·71	-0·17	-0·17	-0·49
Aug.	-0·79	-0·95	-0·93	-1·41	-0·75	-0·27	+0·02	+0·99	+1·23	+1·50	+1·78	+1·68	+0·92	+1·10	+1·35	+0·10	-0·51	-0·95	-1·28	-0·51	-0·71	-0·61	-0·62	-0·38
Sept.	+2·51	+1·82	+0·22	-3·83	-3·45	-2·74	-1·21	+1·42	+1·91	+1·54	+1·35	+1·33	+1·42	+1·30	+0·87	+0·25	-0·19	-0·40	-1·48	-2·09	-2·20	-2·47	+1·73	+2·37
Oct.	-1·83	-1·29	-1·85	-1·93	-1·47	-1·47	-1·01	-0·68	0·00	+0·91	+1·34	+0·12	+1·77	+1·19	+0·87	+0·85	+1·77	+1·36	+0·96	+1·20	0·00	-0·54	-0·11	-0·47
Nov.	-0·63	-1·07	-1·37	-1·67	-1·46	-0·97	-1·51	-1·13	-0·95	-0·19	+0·92	+1·17												
Dec.	-0·22	-0·32	-0·46	-0·60	-0·48	-1·25	-0·96	-0·85	-0·65	-0·42	+0·03	+0·33	+1·06	+1·06	+1·42	+0·81	+1·31	+0·67	+0·56	+0·17	-0·30	-0·70	+0·44	-0·65
Year	-0·46	-0·44	-0·64	-1·09	-1·04	-1·02	-0·61	-0·03	+0·47	+0·87	+1·13	+1·03	+1·00	+0·85	+0·69	+0·24	+0·35	+0·13	-0·13	-0·17	-0·35	-0·37	-0·09	-0·32
Winter	-0·44	-0·52	-0·69	-0·92	-1·18	-1·50	-1·19	-0·93	-0·43	+0·15	+0·52	+0·70	+1·09	+0·86	+1·03	+0·85	+1·21	+0·98	+0·87	+0·51	+0·07	-0·27	-0·08	-0·68
Equinox	-0·21	+0·04	-0·36	-1·53	-1·20	-1·34	-0·97	-0·04	+0·51	+0·84	+1·02	+0·85	+0·64	+0·65	+0·55	+0·35	+0·39	+0·33	-0·13	-0·35	-0·43	-0·42	+0·57	+0·25
Summer	-0·75	-0·83	-0·86	-0·84	-0·76	-0·21	+0·34	+0·87	+1·34	+1·64	+1·83	+1·54	+1·27	+1·05	+0·52	-0·46	-0·57	-0·92	-1·10	-0·67	-0·70	-0·43	-0·77	-0·53

HORIZONTAL COMPONENT

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan.	+6·7	+1·6	+4·9	+11·0	+30·4	+34·9	+15·0	+13·4	+2·7	-22·4	-18·9	-15·6	-5·9	-4·6	-14·9	-6·8	-3·0	-11·3	-11·8	-4·2	-3·1	-4·6	+2·3	+4·2
Feb.	-1·1	-2·8	-4·2	-3·5	-5·2	+3·6	+3·3	+0·2	-10·2	-1·1	-1·0	-3·4	-13·1	-4·0	+2·2	-0·7	-2·6	+2·8	-0·3	+8·2	+3·0	+7·1	+8·8	+14·0
Mar.	+0·7	-0·4	-3·0	+0·5	-4·0	+8·8	+15·7	+8·0	+6·2	-3·9	-8·0	-16·6	-15·1	-6·4	-2·2	-1·3	-9·4	-5·4	+2·9	+2·8	+12·2	+11·9	-1·0	+7·0
Apr.	+12·8	-3·9	-7·4	-1·7	-4·2	+1·7	+3·6	-0·3	-12·8	-14·7	-19·0	-19·5	-11·4	-13·3	-7·6	-1·3	+10·8	+13·7	+18·2	+18·7	+8·8	+11·7	+11·0	+6·1
May	+11·5	+9·6	+11·1	+2·3	+3·7	-7·0	-10·3	-13·5	-26·5	-44·2	-39·9	-29·1	-15·3	-11·0	-4·1	+10·3	+14·3	+23·4	+24·9	+19·7	+16·9	+13·8	+24·3	+15·1
June	+0·3	+2·8	-7·4	-3·1	-0·6	-2·2	-15·5	-18·8	-25·4	-16·1	-25·2	-23·2	-16·9	-14·6	+8·8	+19·7	+21·4	+28·4	+33·5	+23·0	+16·0	+8·7	+8·6	-2·2
July	+14·6	+5·7	+7·6	+2·6	+5·8	+2·1	-4·2	-11·2	-15·0	-21·5	-25·2	-23·6	-35·0	-16·9	-3·6	+16·6	+15·8	+18·5	+16·8	+16·8	+18·0	+6·3	+4·2	+4·8
Aug.	+3·5	+3·2	+1·7	+11·2	+6·0	-1·3	-5·0	-16·8	-19·3	-23·2	-27·3	-24·8	-11·3	-11·2	-11·7	+8·0	+17·6	+23·9	+29·4	+16·8	+15·9	+10·6	+5·1	-1·0
Sept.	-88·3	-70·7	-42·2	+20·5	+15·7	+19·3	+4·3	-22·7	-24·4	-14·7	-8·3	-6·1	-5·1	+2·5	+12·4	+26·7	+36·5	+34·3	+45·7	+50·3	+47·2	+48·7	-23·5	-58·1
Oct.	+0·7	-6·8	+8·7	+16·0	+14·8	+19·1	+13·8	+9·6	+1·3	-10·0	-16·1	+3·0	+8·5	+9·4	+9·7	+15·6	+12·4	+6·5	-0·8	-4·6	-17·9	-40·2	-42·1	-10·6
Nov.	-1·0	+4·5	+9·6	+16·4	+15·8	+9·5	+17·2	+13·4	+12·6	+1·7	-14·2	-17·0	-24·0	-12·7	-7·0	-2·8	-11·2	-4·5	-1·6	-10·0	+2·8	+3·9	-2·0	+0·6
Dec.	-1·9	+0·9	+3·9	+6·1	+5·1	+16·9	+12·3	+10·1	+7·5	+4·5	-1·7	-5·5	-14·5	-12·5	-14·1	-4·1	-10·9	-1·9	-2·7	+1·1	+4·7	+6·1	-12·3	+2·9
Year	-3·5	-4·7	-1·4	+6·5	+6·9	+8·8	+4·2	-2·4	-8·6	-13·8	-17·1	-15·1	-13·3	-7·9	-2·7	+6·7	+7·6	+10·7	+12·9	+11·5	+10·4	+7·0	-1·4	-1·4
Winter	+0·7	+1·1	+3·5	+7·5	+11·5	+16·2	+11·9	+9·3	+3·1	-4·3	-8·9	-10·4	-14·4	-8·5	-8·5	-3·6	-6·9	-3·7	-4·1	-1·2	+1·9	+3·1	-0·8	+5·4
Equinox	-18·5	-20·5	-11·0	+8·8	+5·6	+12·2	+9·3	-1·3	-7·4	-10·8	-12·9	-9·8	-5·8	-1·9	+3·1	+9·9	+12·6	+12·3	+16·5	+16·8	+12·6	+8·0	-13·9	-13·9
Summer	+7·5	+5·3	+3·3	+3·3	+3·7	-2·1	-8·7	-15·1	-21·5	-26·3	-29·4	-25·2	-19·6	-13·4	-2·7	+13·7	+17·3	+23·5	+26·1	+19·1	+16·7	+9·9	+10·5	+4·2

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

RANGE OF MEAN DIURNAL INEQUALITIES FOR THE MONTHS, YEAR AND SEASONS 1963

The ranges are derived from the diurnal inequalities printed in Tables 28-33

34 ESKDALEMUIR   1963

	All days			Quiet days			Disturbed days			All days			Quiet days			Disturbed days		
	X	-Y	Z	X	-Y	Z	X	-Y	Z	D	I	H	D	I	H	D	I	H
	γ	γ	γ	γ	γ	γ	γ	γ	γ	′	′	γ	′	′	γ	′	′	γ
January	17·4	28·0	19·2	12·1	15·8	3·7	58·9	60·7	74·6	5·74	1·38	17·0	3·37	0·74	10·6	12·24	4·94	57·3
February	12·8	20·7	12·0	7·0	17·0	8·1	31·2	54·1	42·9	4·49	0·90	10·4	3·52	0·60	7·4	11·76	2·24	27·1
March	24·0	34·8	20·4	23·7	37·1	17·8	36·1	49·7	45·9	7·26	1·22	21·1	8·04	1·12	21·5	10·94	2·62	32·3
April	34·7	44·6	27·3	38·3	42·8	19·8	41·9	47·7	35·1	9·68	1·84	33·4	9·06	2·35	40·3	10·34	2·17	38·2
May	47·0	48·4	27·2	41·5	49·0	23·5	67·2	48·1	52·5	9·90	2·58	48·0	10·32	2·53	41·8	10·14	4·58	69·1
June	45·9	52·5	28·7	31·6	51·2	18·6	5·45	65·4	59·0	10·48	2·56	48·3	10·45	0·83	33·0	12·94	3·16	58·9
July	41·0	47·5	26·5	35·8	48·5	18·7	57·9	57·5	49·1	9·63	2·23	42·0	10·40	1·96	35·0	10·81	3·48	53·5
August	43·4	48·1	27·5	33·7	49·8	25·3	60·5	50·0	60·4	9·87	2·40	42·8	10·46	2·05	34·8	11·18	3·19	56·7
September	43·6	47·2	59·6	43·1	45·6	15·3	126·0	118·0	227·8	10·06	2·34	40·8	8·56	2·40	40·2	22·86	6·34	138·6
October	27·4	36·8	32·8	29·9	35·8	10·3	56·5	79·2	138·6	7·92	1·82	26·7	7·38	1·76	28·6	15·42	4·07	61·2
November	22·3	30·6	21·8	15·1	18·2	4·4	43·7	76·7	74·4	6·55	1·50	20·1	3·87	0·89	14·0	16·26	3·44	41·2
December	15·7	26·5	11·9	11·3	14·4	6·3	32·1	60·8	42·0	5·69	1·11	14·2	3·06	0·73	10·6	12·26	2·67	31·4
Year	26·8	32·1	21·8	24·7	32·4	12·7	32·5	42·7	64·9	6·65	1·31	25·4	6·81	1·36	23·8	9·52	2·22	30·0
Winter	16·3	26·0	15·1	10·2	15·5	4·3	32·2	52·0	48·9	5·52	1·07	14·2	3·26	0·55	8·8	11·15	2·71	30·6
Equinox	30·6	35·7	29·1	30·7	38·0	14·6	34·3	58·9	108·0	7·51	1·64	27·6	7·88	1·78	30·1	12·02	2·55	37·3
Summer	43·8	48·3	26·9	34·9	48·9	20·1	54·9	44·0	51·9	9·92	2·41	45·2	10·18	2·04	35·2	9·51	2·93	55·5

NON-CYCLIC CHANGE

35 ESKDALEMUIR   1963

	All days			Quiet days			Disturbed days		
	H	D	Z	H	D	Z	H	D	Z
	γ	′	γ	γ	′	γ	γ	′	γ
January	-0·5	-0·03	+0·2	+2·0	-0·06	-1·8	-4·5	+0·65	+1·4
February	+0·6	-0·08	-0·3	+5·4	-0·29	+1·2	+9·4	+2·18	-6·1
March	+0·7	-0·09	-0·3	+1·5	-0·05	-0·3	+6·5	+0·87	-3·0
April	-0·1	+0·13	+0·3	+7·9	-0·19	-2·9	-5·5	-0·51	-5·3
May	+0·3	+0·01	-0·1	+3·3	-0·17	-2·0	+2·9	-1·07	-6·4
June	-0·1	+0·02	-0·3	+0·8	+0·22	-1·9	-5·8	+1·42	-6·2
July	+0·2	+0·07	-0·5	+8·8	-0·30	-5·5	-5·1	+1·10	+0·3
August	+0·3	-0·15	+0·2	+0·8	0·00	-0·4	-3·2	-1·12	-2·0
September	-0·6	+0·02	+1·1	-3·4	-0·59	-4·1	+10·1	-8·43	+35·7
October	-0·3	-0·03	+0·2	+1·2	+0·09	-1·0	-5·9	+4·04	+11·9
November	+0·4	0·00	-0·4	+2·8	+0·08	-1·6	-3·1	-1·75	-7·6
December	+0·1	-0·03	+0·2	+0·8	-0·06	-0·4	-0·4	+1·37	-6·1
Year	+0·1	-0·01	0·0	+2·7	-0·11	-1·7	-0·4	-0·10	+0·5
Winter	+0·1	-0·03	-0·1	+2·7	-0·08	-0·7	+0·3	+0·61	-4·6
Equinox	-0·1	+0·01	+0·3	+1·8	-0·19	-2·1	+1·3	-1·01	+9·8
Summer	+0·2	-0·01	-0·2	+3·4	-0·06	-2·5	-2·8	+0·08	-3·6

AVERAGE RANGE OF DIURNAL INEQUALITY 1932-53
WITH 1963 AS PERCENTAGE OF THIS

36 ESKDALEMUIR   1963

		All days			International quiet days			International disturbed days		
		H	D	Z	H	D	Z	H	D	Z
		γ	′	γ	γ	′	γ	γ	′	γ
Year	1932-53	37·8	8·66	28·7	34·4	8·43	13·7	53·9	11·93	82·1
	1963(%)	67	77	76	69	81	93	56	80	79
Winter	1932-53	19·3	6·95	21·2	16·2	4·44	5·9	34·4	11·45	66·5
	1963(%)	74	79	69	54	73	73	89	97	74
Equinox	1932-53	43·1	10·18	37·1	39·7	9·69	14·8	75·4	15·11	108·9
	1963(%)	64	74	78	76	81	99	49	80	99
Summer	1932-53	59·7	11·84	33·9	50·4	11·76	21·9	83·7	13·11	82·4
	1963(%)	76	84	79	70	87	92	66	73	63

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

HARMONIC COMPONENTS OF THE DIURNAL INEQUALITY OF GEOMAGNETIC FORCE

Values of a_n, b_n in the series $\Sigma(a_n\cos 15nt + b_n\sin 15nt)$, t being reckoned in hours from midnight G.M.T.

Longitude of Eskdalemuir Observatory, 3°12′W.

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	North component								West component								Vertical component							
	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4	a_1	b_1	a_2	b_2	a_3	b_3	a_4	b_4
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
												ALL DAYS												
January	+3·5	+3·7	-3·0	0·0	+1·3	-2·8	+0·3	+0·4	-9·4	+0·1	-0·8	+3·5	-0·2	-1·7	+2·1	+1·5	-0·6	-8·7	-1·6	-0·6	+0·1	+0·5	-1·4	-0·6
February	+3·1	+1·7	-2·0	-2·4	+0·7	-1·1	-0·3	+0·2	-7·7	-0·3	+2·2	+2·6	-1·0	-0·8	+0·5	+1·3	+0·9	-5·0	-2·1	+0·4	+0·7	+0·1	-0·1	-0·2
March	+7·3	+2·1	-5·2	-2·9	+2·5	-1·4	-0·7	+1·1	-8·4	-6·7	+2·8	+7·0	-1·7	-3·6	+1·4	+2·9	+2·4	-5·7	-4·6	+0·2	+2·1	+0·5	-1·4	-0·8
April	+13·1	-2·5	-8·3	-0·8	+3·7	-1·3	+0·8	+0·8	-8·0	-12·7	+4·3	+9·2	-1·1	-3·0	+1·1	+0·4	+4·5	-6·7	-6·5	-1·6	+0·9	+0·2	-0·9	-0·2
May	+15·7	-9·1	-8·0	+2·3	+1·2	-1·1	+0·9	+0·9	-7·4	-15·7	+6·5	+7·3	-3·9	-1·3	+0·8	+0·5	+3·3	-8·0	-6·8	-1·4	+2·0	-0·9	-0·3	+0·8
June	+12·3	-10·5	-8·3	+2·1	+0·6	-1·2	+0·7	+0·4	-7·7	-20·3	+4·8	+8·3	-2·3	-1·5	+0·8	-0·2	+2·6	-9·2	-7·1	-1·9	+1·7	-0·6	-0·1	+0·5
July	+14·0	-7·3	-8·9	+1·1	+0·9	+0·3	0·0	-0·1	-5·5	-18·2	+2·6	+9·0	-1·9	-1·3	+0·1	+1·3	+2·7	-9·7	-5·8	-1·6	+1·9	+0·2	-0·7	-0·4
August	+15·3	-9·4	-6·9	+2·4	+0·5	-0·6	+0·9	-0·1	-9·8	-12·4	+7·8	+7·9	-3·6	-0·9	+1·2	+2·0	-0·9	-9·8	-7·2	-0·9	+2·4	-0·8	-1·2	-0·5
September	+10·0	-9·5	-12·3	+1·5	-2·1	-2·3	-1·7	-0·9	-16·3	-8·3	+2·7	+4·7	-3·8	-5·4	+2·0	+0·2	-12·9	-19·9	-8·9	-3·7	+0·5	-0·1	-2·4	-0·8
October	+8·2	+1·5	-7·3	+0·8	+2·3	-1·6	+0·1	+1·1	-11·5	-1·9	+1·6	+7·1	-1·9	-3·9	+1·7	+3·1	-5·5	-9·3	-6·9	-0·4	+1·2	+1·1	-0·6	-0·7
November	+6·0	+2·6	-4·3	-1·1	+1·5	-2·1	-1·0	+0·5	-9·0	+0·9	+1·2	+6·3	-0·9	-1·6	+1·6	+1·4	-2·7	-8·8	-3·3	-0·3	+0·7	+0·5	+0·1	-0·5
December	+3·3	+3·4	-2·6	-2·6	+0·6	-1·2	-0·3	+0·2	-8·6	+3·0	-0·2	+5·0	-0·1	-0·7	+0·6	+1·2	-0·9	-5·7	-2·3	+0·9	+0·2	+0·2	-0·7	-0·1
Year	+9·2	-2·8	-6·5	0·0	+1·1	-1·3	0·0	+0·3	-9·1	-7·7	+3·0	+6·5	-1·9	-2·1	+1·1	+1·3	-0·6	-8·9	-5·3	-0·9	+1·2	+0·1	-0·8	-0·3
Winter	+4·0	+2·9	-3·0	-1·5	+1·0	-1·8	-0·3	+0·3	-8·7	+1·0	+0·6	+4·4	-0·5	-1·2	+1·2	+1·3	-0·8	-7·1	-2·3	+0·1	+0·4	+0·4	-0·5	-0·3
Equinox	+9·4	-2·1	-8·3	-0·3	+1·5	-1·6	-0·4	+0·5	-11·1	-7·5	+2·9	+7·0	-2·1	-4·0	+1·5	+1·7	-2·9	-10·4	-6·7	-1·4	+1·2	+0·4	-1·3	-0·6
Summer	+14·3	-9·1	-8·0	+2·0	+0·8	-0·6	+0·6	+0·2	-7·6	-16·6	+5·4	+8·2	-2·9	-1·3	+0·7	+0·9	+1·9	-9·2	-6·7	-1·5	+2·0	-0·6	-0·6	+0·1
												QUIET DAYS												
Year	+8·5	-2·1	-5·1	+0·3	+1·3	-1·5	-0·3	+0·6	-4·7	-9·1	+4·2	+5·3	-2·9	-1·7	+0·8	+1·0	+3·8	-1·3	-3·4	+0·1	+1·4	-0·2	-0·6	-0·1
Winter	+1·8	+0·7	-2·5	-0·7	+1·1	-1·2	-0·7	+0·7	-4·0	-2·1	+0·6	+2·6	-1·9	-1·1	+0·7	+0·9	+1·2	-1·0	-0·5	+0·4	+0·5	+0·1	-0·2	-0·2
Equinox	+10·8	-2·4	-6·1	-0·4	+2·1	-1·9	-0·4	+0·9	-5·1	-9·3	+3·7	+7·2	-3·0	-3·0	+1·3	+1·6	+4·2	-1·1	-3·9	-0·5	+1·7	0·0	-1·1	-0·3
Summer	+12·9	-4·8	-6·7	+2·0	+0·6	-1·3	+0·3	+0·1	-4·9	-16·1	+8·3	+6·3	-3·9	-1·1	+0·3	+0·6	+6·0	-1·8	-5·7	+0·3	+1·9	-0·7	-0·5	+0·1
												DISTURBED DAYS												
Year	+9·5	-4·5	-9·9	+0·8	-1·0	-1·2	-0·4	-0·6	-16·8	-2·3	+1·3	+5·4	+0·1	-4·5	+1·8	+0·6	-13·9	-23·6	-9·4	-2·5	+1·1	+0·3	-0·8	-0·7
Winter	+9·1	+4·2	-5·7	-1·5	+0·4	-2·3	-0·4	-0·4	-10·8	+12·6	+1·7	+5·3	+2·6	-3·3	+1·6	+1·6	-9·5	-21·5	-5·9	+1·5	+0·8	+1·4	-0·1	-1·1
Equinox	+2·9	-4·9	-13·8	+1·1	-4·8	-1·7	-1·5	-0·4	-23·0	-2·8	-0·7	+2·9	+0·3	-8·6	+3·8	+0·2	-25·8	-28·3	-15·5	-4·1	+0·3	+0·2	-2·5	-2·1
Summer	+16·3	-12·7	-10·3	+3·0	+1·3	+0·4	+0·7	-0·9	-10·5	+14·0	+3·1	+9·5	-2·4	-0·5	0·0	+0·7	-6·3	-21·0	-7·3	-4·9	+2·1	-0·7	+0·2	+1·1

HARMONIC COMPONENTS OF THE DIURNAL INEQUALITY OF GEOMAGNETIC FORCE

Values of c_n, α_n in the series $\Sigma c_n\sin(15nt + \alpha_n)$, t being mean local time, reckoned in hours from midnight

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	North component								West component								Vertical component							
	c_1	α_1	c_2	α_2	c_3	α_3	c_4	α_4	c_1	α_1	c_2	α_2	c_3	α_3	c_4	α_4	c_1	α_1	c_2	α_2	c_3	α_3	c_4	α_4
	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°
												ALL DAYS												
January	5·1	47	3·0	276	3·1	165	0·5	47	9·4	274	3·6	354	1·7	195	2·6	66	8·8	187	1·7	255	0·5	19	1·5	260
February	3·5	65	3·1	226	1·3	158	0·3	320	7·7	271	3·4	47	1·3	242	1·4	35	5·1	174	2·1	287	0·7	94	0·3	217
March	7·5	77	5·9	247	2·8	129	1·3	338	10·7	235	7·6	29	3·9	215	3·3	39	6·2	160	4·5	279	2·1	87	1·6	253
April	13·3	104	8·4	271	3·9	118	1·1	57	15·0	216	10·2	31	3·2	209	1·2	82	8·0	149	6·7	262	0·9	87	0·9	270
May	18·1	123	8·3	292	1·6	140	1·2	58	17·3	209	9·8	48	4·1	262	0·9	71	8·6	161	6·9	265	2·2	125	0·9	352
June	16·2	134	8·6	291	1·3	163	0·8	75	21·7	204	9·6	36	2·8	247	0·8	118	9·5	167	7·4	261	1·8	119	0·5	3
July	15·8	121	9·0	284	1·0	79	0·2	176	19·0	200	9·3	22	2·3	244	1·3	16	10·0	168	6·0	261	1·9	93	0·8	257
August	17·9	125	7·3	295	0·7	150	0·9	112	15·8	221	11·1	51	3·7	265	2·4	44	9·8	188	7·3	269	2·6	119	1·3	260
September	13·8	137	12·3	283	3·1	231	1·9	256	18·3	246	5·4	36	6·6	225	2·0	96	23·7	216	9·6	254	0·5	116	2·6	264
October	8·3	83	7·3	282	2·8	135	1·1	17	11·7	264	7·3	19	4·3	215	3·6	42	10·8	214	6·9	273	1·6	57	0·9	232
November	6·5	70	4·4	261	2·6	153	1·1	308	9·0	279	6·4	17	1·8	218	2·1	61	9·2	200	3·3	272	0·8	60	0·5	199
December	4·7	47	3·7	231	1·4	163	0·3	317	9·1	292	5·0	4	0·7	198	1·3	39	5·7	192	2·5	298	0·3	62	0·7	277
Year	9·7	110	6·5	277	1·7	150	0·3	9	11·9	233	7·1	31	2·8	231	1·8	54	8·9	187	5·3	266	1·2	95	0·9	264
Winter	4·9	57	3·3	250	2·0	160	0·5	327	8·7	279	4·4	14	1·3	214	1·8	54	7·1	190	2·3	279	0·5	57	0·6	251
Equinox	9·7	105	8·3	274	2·2	147	0·7	334	13·3	239	7·6	29	4·5	218	2·3	55	10·8	199	6·9	265	1·2	81	1·5	257
Summer	16·9	126	8·3	291	1·0	138	0·7	86	18·2	208	9·8	40	3·2	256	1·2	51	9·4	171	6·9	264	2·1	115	0·6	295
												QUIET DAYS												
Year	8·8	107	5·1	280	2·0	149	0·7	345	10·2	211	6·8	45	3·4	249	1·3	51	4·0	112	3·4	277	1·4	108	0·7	273
Winter	1·9	71	2·6	261	1·6	147	1·0	330	4·5	246	2·7	20	2·2	249	1·2	52	1·6	133	0·7	316	0·5	90	0·3	243
Equinox	11·1	106	6·1	273	2·8	141	1·0	348	10·6	212	8·1	34	4·3	234	2·1	53	4·3	108	3·9	269	1·7	98	1·1	269
Summer	13·8	114	6·9	293	1·5	165	0·3	89	16·8	200	10·4	59	4·1	263	0·7	38	6·2	110	5·7	279	2·1	121	0·6	292
												DISTURBED DAYS												
Year	10·5	119	9·9	281	1·6	230	0·7	224	17·0	265	5·6	20	4·5	188	1·9	85	27·4	214	9·7	261	1·1	85	1·1	242
Winter	10·1	68	5·9	262	2·4	180	0·6	233	21·0	310	5·6	24	4·2	151	2·3	57	23·5	207	6·1	291	1·6	41	1·1	197
Equinox	5·7	152	13·8	281	5·1	260	1·6	268	23·2	266	3·0	352	8·6	188	3·8	100	38·3	226	16·1	262	0·4	63	3·3	242
Summer	20·7	131	10·7	293	1·4	83	1·1	154	17·5	220	10·0	24	2·5	268	0·7	11	21·9	200	8·8	243	2·3	117	1·2	23

"Winter" comprises the four months January, February, November, December; "Equinox" the months March, April, September, October; and "Summer" May to August.

(a) Disturbances without sudden commencement

All times G.M.T.

Serial Number	From		To		Range (γ)			Notes
	Date	Hour	Date	Hour	H	D	Z	
1a	29 Jan.	12	1 Feb.	02	159	195	208	
2a	7 Mar.	17	12 Mar.	22	240	259	151	
3a	6 June	10	9 June	24	238	231	231	
4a	19 Aug.	09	21 Aug.	24	192	205	252	
5a	13 Sept.	13	See 2b		237	202	316	
6a	24 Sept.	05	See 4b		453	253	279	
7a	11 Oct.	06	17 Oct.	02	201	211	204	
8a	23 Oct.	10	27 Oct.	21	224	153	152	
9a	5 Nov.	23	13 Nov.	02	190	256	188	

(b) Disturbances with sudden commencement (ssc)

All times G.M.T.

Serial Number	Date	Time of sudden commence-ment	End of disturbance		With initial reversed stroke			Magnitude of main stroke (γ)			Range of following disturbance (γ)		
			Date	Hour	H	D	Z	H	D	Z	H	D	Z
		h. m.						γ	γ	γ			
1b	30 Apr.	15.23	7 May	01	No	No	No	+55	−20	−6	212	205	197
2b	19 Sept.	05.43	−	−	No	Yes	No	+12	−20	−2		small	
3b	21 Sept.	14.14	23 Sept.	23	Yes	Yes	No	+131	−60	−6	2054	656	1053
4b	27 Sept.	19.43	30 Sept.	16	No	No	No	+82	−18	−8	182	195	169
5b	29 Oct.	14.00	31 Oct.	02	Yes	Yes	No	+30	−4	+1	754	343	621
6b	17 Nov.	09.04	−	−	No	No	No	+15	−9	−4		small	

In the case of an ssc*, that is, an ssc preceded, on at least one component, by one or more small oscillations, timing of the sudden commencement has been made from the main stroke.

(c) Disturbances due to solar flare (sfe)

All times G.M.T.

Serial Number	Date	Commence-ment	Max.	End	Movement (γ)			K	K'	Notes
					H	D	Z			
		h. m.	h. m.	h. m.						
1c	15 Apr.	11.23	11.25	11.30	−16	−4	0	2	2	S.E.A.
2c	16 Sept.	13.04	13.06	13.13	−19	−14	+1	4	4	S.E.A. and S.W.F.

S.E.A. = Sudden enhancement of atmospherics

S.W.F. = Short wave fade out.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

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	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre															
1	41*	93	-21	Z±	Z±*	Z±*	Z±*	Z±*	21*	34*	34*	18*	27*	43*	51*	48*	28*	13*	-16*	-15	0*	0*	0	-13	9	(5)
2	-20	-12	-23*	-51	-19	14*	14*	-21*	-19*	21*	-7*	-37*	-12*	27*	21*	17*	11*	49*	46*	49	49*	52*	36	33	2	(7)
3	23*	36	20	61	32	-21	0	1	18	32	0*	19*	86*	161*	186	159*	91*	192*	307*	323*	498*	360*	148*	254*	37	(10)
4	446*	429*	328*	198*	125*	109*	94*	87*	83*	94*	42*	95*	84*	76*	122*	108*	117*	117*	159*	167*	145*	170*	146*	129*	0	(0)
5	122*	121*	109	107	189	223*	350*	466*	412*	212*	118	116	265*	344*	182*	360*	242	140	212	176	127	161	107	106	147	(13)
6	72	67	55	32	42	58	42	38*	27	31	56	129	170	138	95	85	53	99	119	150	148	168	140	95	90	(23)
7	98	65	64	46	0*	32*	11	11*	35	21*	21*	83*	80*	112*	127	74*	150*	116*	118*	191	129	105	114	131	93	(12)
8	125	158	104	123	143	94*	27*	21	20	53*	41	64*	89*	197*	76	53*	40*	30*	22*	31*	55*	-10	35	51	74	(12)
9	10	40	13	-19	10	32	61	57	90	90	161	151	174	170	30	80	140	246*	Z+*	238	Z+	412	457	396	133	(21)
10	299	231	181	342	178	6	7	8	7	11	10*	157*	129*	252*	167*	205*	119*	228*	167*	128*	8	9	7	7	93	(14)
11	8	7	8	9	125	189	242	Z±*	184*	163*	195	208*	250*	264*	284*	260	242*	161*	180*	299	273	210	199	202	159	(14)
12	160	128	128	176	171	74	94	115	111	117	139	158	136	157	216	125	106	111	107	107	150	133	112	121	131	(24)
13	115	77	64	65	67	56	57	67	89	64	170	180	216	240	216	283	455	Z+	Z+	Z+	Z+	Z+	326	232	160	(19)
14	178	146	186	199	214	242	235	174	141	157	195	265	284	392	503	476	418	346	335	290	289	199	202	112	257	(24)
15	105	148	99	89	200	277	267	223	271	139	122	127	158	203	221	251	215	228	163	163	155	149	118	94	174	(24)
16	86	95	118	192	223	Z+*	165*	134*	403*	Z+	252	152	126	180	65	72	99	155	105*	119*	119	127	85	61	130	(17)
17	61	95	118	157	128	81	67	72	72*	47*	41*	74	99	125	135	182	138	115	146	231	154	172	162	157	127	(21)
18	93*	181	120	231	140*	93*	409*	Z+*	Z+*	Z+*	Z+*	Z+*	129*	99	125	110	117	201*	106*	249*	297*	113	63	66	123	(10)
19	18	49	95	-1	28	72	57	71	63	95	129	167	175	164	147	74*	73*	69*	104*	144*	161*	159	182	115	99	(18)
20	Z+	Z+	Z+*	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	0	(0)
21	Z+	Z+	Z+	508	425	181	146	137	227	339	326	250	261	263	257	305	301	238	190	122	106	104	113	102	233	(21)
22	102	94	86	74	78	105	-	75	61	88	83	146	120	157	128	185	253	189	141	260	307	340	392	477	171	(23)
23	318	412	313	215	371	298	253	426	283	284	263	139	69	196	85	-32	115	90	93	61	265	207	232	231	216	(24)
24	265	141	162	193	183	143	171	131	194	264	244	276	308	274	324	338	362	259	261	298	376	285	220	228	246	(24)
25	167	132	126	84	95	77	96	209	232	83	63	137	169	213	252	274	318	310	295	345	339	249	200	150	192	(24)
26	139	158	129	128	125	150	143	142	175	170	206	180	147	129	108	112	50	52	42	138	95	72	52	130	124	(24)
27	93	99	92	78	89	61	82	72	58	52	61	65	84	74	54	52	73	102	83	72	74	91	59	46	74	(24)
28	53	42	49	49	52	52	46	50	72	74	77	80	74	40	26	32	34	22	31	25	53	20	31	63	48	(24)
29	33	36	41	34	34	36	27	36	21	30	8	64	81	93	74	74	64	64*	37*	42*	403*	Z+*	Z+*	Z+*	46	(17)
30	Z+*	297*	191*	-138*	53	277	433	430	Z±*	Z+*	323*	277*	350*	456*	457*	Z±*	260*	217*	456*	Z+*	562*	355*	302	472	328	(6)
31	275*	Z±	48	Z+*	191*	159	210*	222*	364*	278*	195*	263*	202*	367*	308*	311*	583*	355	218*	278*	118*	108*	98*	66*	187	(3)
Mean	113	109	96	120	129	118	121	126	110	118	145	150	158	174	157	172	187	176	158	168	176	158	152	149	141	(502)
	(22)	(25)	(26)	(26)	(25)	(22)	(21)	(20)	(20)	(18)	(20)	(19)	(18)	(19)	(22)	(19)	(19)	(16)	(14)	(19)	(18)	(22)	(26)	(26)		

Mean for 0a days [144 (5)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR   Factor 5·86   FEBRUARY 1963

	Hour G.M.T. 0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre															
1	276*	Z±*	42*	159*	180*	154*	196*	213*	374*	272*	315*	329*	244*	143*	103*	373*	311*	293*	215	210*	183*	307	133*	106	209	(3)
2	85*	118	117	98	81	75*	245*	136	232*	233*	223*	212*	232	183	163*	152*	196*	198*	80*	292*	508	416	272	152	210	(11)
3	120	91	97	155	271	284	Z+	413*	231*	339*	579*	583*	Z+	583	456	465	334	413	456	286	247	228	181	143	283	(17)
4	134	123	66	75	83	80	73	69	80	90	94	106	139	177	146	127	100	128	269	284	313	292	254	243	148	(24)
5	Z+	339	410	297	130	160	297	392	180	192	Z+*	Z+*	Z+	Z+	Z+	Z+*	Z+*	Z+*	Z+*	Z+*	Z+	Z+	Z+	Z+	266	(9)
6	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z+	Z±*	Z±*	Z±*	Z±*	Z+*	Z±*	Z±*	Z±*	Z±*	Z+*	Z±*	Z+*	Z+*	Z+	0	(0)
7	Z+	Z+	Z+	433	-	-	-	-	530*	Z+*	-117*	159*	95*	95*	21*	33*	11*	-21*	-75*	-11*	65*	-25*	86*	72*	433	(1)
8	143*	107*	35*	30*	86*	164*	200*	141	209	117	160	206	97	80*	299*	270*	286	334	Z+	557	783	503	212	187	292	(13)
9	382*	121	181	204	224	214	328	379	562	552	476	344	252	364	500	724	559	390	357	333	145	94	113	-5	322	(23)
10	-48*	-53	45	49	0	23	67	74	0*	-16*	11*	91*	32*	32*	24*	58*	42*	72*	-21*	27	24	21	20	63	30	(12)
11	70	69	64	54	58	30	50	41	55	63	67	63	88	94	98	103	113	125	138	133	212	197	124	172	95	(24)
12	142	133	147	172	176	167	220	162*	261*	174*	215*	157*	192*	198*	117*	115*	108	180	294	199	249	206	177	203	185	(15)
13	145	115	103	93	87	106	119	118	159	157	182	250	335	456	384	288	284	278	233	157	162	197	266	420	212	(24)
14	598	476	467	426	447	329*	157*	250*	339*	224*	127*	530*	191*	-138*	-133*	Z-*	Z-*	124*	0*	86*	37*	61*	-52*	-136*	483	(5)
15	106*	93*	42*	108*	136*	116*	-28*	Z-*	-401*	-283*	143*	112*	134*	106*	55*	27*	-64*	-139	-51	87*	381*	227*	134	136	20	(4)
16	159	86	136	108	168	159	65	72*	-*	-*	-*	-	-	-*	-*	-*	-	-	-	-*	-*	-*	-*	-*	126	(7)
17	-*	-	-	-	-	-	-	-	125	128	198	418	244*	224*	318	499	538	572	780	615	468	488	357	305	415	(14)
18	229	229	240	200	219	221	155	203	194	200	242	268	356	263	447	585	287	465	514	343	268	200	396	428	298	(24)
19	445	542	620	550	587	465*	424*	338*	367*	231*	209*	258*	155*	161	330	364	567	451	392	401	447	394	456	349	441	(16)
20	246	181	172	171	127	146	180	209	423	318	337	651	796	Z+	858	719	721	619	583	619	673	759	688	609	450	(24)
21	530	553	433	387	454	325	273	383	413*	468*	451*	371*	438	394	275	318	277	241	211	454	423	495	330	260	373	(20)
22	387	278	296	192	159	123	127	146	181	177	229	243	250	280	400	290	233	249	294	318	368	309	175	260	248	(24)
23	234	237	391	208	326	299	316	292	238	261	225	410	398	391	442	430	393	298	262	211	203	200	187	177	293	(24)
24	133	178	135	38	102	98	89	126	146	135	90	111	135	188	231	277	264	210	318	370	323	246	189	130	178	(24)
25	64	99	150	103	96	184	248	278	265	321	320	330	339	438	450	365	-	259	295	265	292	264	252	159	254	(23)
26	171	191	214	274	268	303	302	267	235	337	299	281	272	236	248	263	250	262	228	246	284	272	307	287	262	(24)
27	253	233	236	269	277	258	308	291	261	322	384	467	362	328	329	367	316	268	312	347	314	330	271	295	308	(24)
28	269	229	212	165	238	180	177	238	269	250	299	318	289	296	329	325	281	269	266	292	324	328	265	292	267	(24)
Mean	241	208	224	205	208	177	189	210	211	226	240	298	299	302	267	383	328	294	318	323	335	307	256	234	264	(457)
	(18)	(22)	(22)	(23)	(22)	(19)	(18)	(18)	(17)	(16)	(15)	(15)	(16)	(16)	(17)	(17)	(18)	(20)	(20)	(20)	(21)	(22)	(22)	(23)		

Mean for 0a days [268 (12)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

97

39 ESKDALEMUIR Factor 5·86 MARCH 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	192	261	288	296	240	210	201	188	204	299	298	320	275	238	265	211	256	269	246	263	258	275	242	166	248	(24)
2	189	190	202	200	236	170	181	158	190	200	279	395	293	212	238	225	202	138	147	138	145	129	140	137	197	(24)
3	119	115	139	141	162	186	228	284	285	–	–	–	–	–	–	–	–	–	–	158	199	147	179	147	178	(14)
4	157	156	136	136	158	156	139	182	200	216	198	191	Z±*	Z±*	Z±*	129	140	257	299	310	222	114	Zx	Z–*	291	(19)
5	Z±*	–40*	43*	56*	63	47	33	101	127	98	79	122	84*	Z–*	Z±*	123*	233*	210*	330*	435*	415*	403*	332	88	109	(10)
6	72	104	40	–66*	–262*	Z±*	Z–*	Z–*	–48*	–19*	68*	98	116	175	23*	93*	19	70	143	291*	305*	191*	32*	61*	93	(9)
7	Z±*	Z±*	Z±*	–35*	85*	52*	–3*	–14*	–4*	–1*	24*	43*	59*	54*	54*	84	66	71	66	133	93	Z±*	Z±*	–4	73	(7)
8	33*	–59*	Z–*	Z–*	26*	58*	41	26	30	52	72	199	151	Z±*	Z–*	Z–*	–2*	71	109	130	108	77	75	83	87	(14)
9	Z±*	Z±*	Z–*	Z–*	Z±*	40*	75*	71*	68*	Z+*	64*	111*	Z±*	Z±*	Z±*	Z±*	Z–*	Z±*	–*	–*	–*	–	–	–	0	(0)
10	–*	–*	–	–	–	–*	–*	–*	–*	–*	–*	–*	–*	–*	–*	–*	–	–*	–*	–	–	–	–	–	0	(0)
11	–	–	–	–	–*	–*	–*	–*	–	–	–	–	–	–	–	–	–	–	–	128	146	73	96	117	112	(5)
12	81	30	19	3	8	30	7	10	55	86	38	50	39	47	55	31*	67	Z+*	Z+*	Z±	16	23	30	28	36	(20)
13	47	21	45	72	130	284	39	104	–	–	–	–	–	–	–	–*	–*	–*	–*	–*	–*	–*	–*	–*	93	(8)
14	–	–	–	–	–	–	–	–	–50*	106*	–30*	17*	–*	–*	–64*	–87*	–36*	Z±*	Z±*	–24*	Z±*	Z+*	Z+*	178*	0	(0)
15	–8	15	181	282*	292*	Z+*	Z+*	Z+*	46*	–	–	–*	–	–*	–	–	–	–	–	–	–	–	–	–	63	(3)
16	–	–	–	–*	–*	–*	–	–	–	–*	–*	–*	–*	–*	–*	–*	–*	–	–*	–*	–*	–*	–*	–	0	(0)
17	–	–	–	–	–	–	–	–	–	–	–	–	63	82	88	Z±*	36*	Z–*	Z–*	Z–*	Z±*	Z±*	–30*	31	78	(3)
18	–22	–29	–14	–38*	–51*	20*	33*	34*	76*	113*	59*	19*	–53*	–30*	54*	46	64	71	84	76	73	51	Z±*	72	43	(11)
19	Z±	43*	10*	Z±*	10*	33*	52*	55	38	76	93	86	74	82	74	74	72	52	40	18	18	21	20	19	54	(17)
20	10	19	8	7	21	7	20	14	19	72	44	42	31	–8	–7	–36*	–2*	–3	–12	–11	–6*	–22	0	–20	11	(21)
21	–2	–18	–21	–22	–61	–35*	35*	–31*	15	–8*	–8*	30	5	–4*	22*	–1	–4	8	22	24	–18	–10	6	55	0	(17)
22	30	21	20	21	15	21	16	28	46	43	53	45	39	33	41	31	40	23	10	32	20	52	39	33	31	(24)
23	21	24	19	21	23	24	19	43	36	–22	–48	73	62	54	52	55	35	33	41	24	12	37	41	103	33	(24)
24	24	48	54	72	33	72	75	55	–40	Z±*	Z–*	–77*	Z±*	Z±*	Z±*	Z+*	Z±*	Z±*	Z+*	Z+*	Z+*	Z+*	Z+*	Z+*	44	(9)
25	Z+*	Z±*	19*	–2*	53*	21*	16*	–31*	Z–*	–45*	Z±*	Z±*	–31*	–7*	76	56	62*	71	73	66	62	60*	52	40	62	(8)
26	34	29	33	39	38	Z±	Z±	38	80	51	60	50	59	73	82*	71	53	47	29	61	40	54	64	54	50	(21)
27	67	66	20	23	41	Z±*	Z–*	Z–*	Z–*	19*	37*	46*	Z±*	Z±*	66*	Z+*	Z±*	Z±*	73	49	73	47*	Z±*	60*	52	(8)
28	39	34*	43*	54*	55*	50*	66*	72*	41	49	166*	95*	Z+	–	–	77	75	75*	46*	73*	Z±*	Z±*	5*	13	49	(6)
29	Z±	27*	32*	31*	66	76*	33*	24*	Z±*	Z–*	–90*	–85*	–181*	–196*	8*	–*	14	–33*	16*	22*	19*	39	29	10	32	(5)
30	22	36	22	33*	0	10*	29*	35	12	13	29	32*	16*	18	10	49	43	29	21	–6*	27*	–12	10	23	21	(17)
31	21	12	8	11	11	10	7	14	21	22	27	34	29	27	23	33	28	31	27	19	14	8	20	11	20	(24)
Mean	58	61	67	73	70	101	77	83	80	90	94	124	95	86	83	81	73	77	83	95	87	62	81	59	80	(372)
	(19)	(18)	(18)	(14)	(17)	(12)	(13)	(16)	(17)	(14)	(13)	(14)	(13)	(12)	(11)	(14)	(16)	(16)	(17)	(17)	(17)	(17)	(17)	(20)		

Mean for 0a days [223 (2)]

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39 ESKDALEMUIR Factor 5·94 APRIL 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	10	15	18	21	11	–19*	4*	Z±*	52*	104*	107	146	128	95	52	Z–*	Z–*	23*	41*	27*	5*	45*	57	40	58	(12)
2	35	39	30	31	47*	55*	42	11*	–27*	Z–*	24*	51*	56	54	41	68	40	31	32*	19	48	45	45	22	40	(16)
3	26	25	30	30	32	22	22	32	43	41	28	43	30	15	Z±*	Z–*	Z±*	30*	24	24	32*	19	21	22	28	(19)
4	43	21	22	38	44	52	62*	57*	56*	35*	58	49	Z±*	Z±*	51*	63	50	53	56*	52	43	52	44*	50*	46	(14)
5	28	31	43*	40*	35*	30*	Z±*	3*	45*	–*	–*	–*	–*	–*	–*	–*	–*	–*	–*	–*	–*	24*	34*	31*	30	(2)
6	0*	3	2	12	11	15	21	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	(7)
7	–	–	–	–	–	–	–	–	–	–	–	–	–	54	54	54	50	41	23	19	16	30	17	23	35	(11)
8	42	56	37	30	30	19	51	32	22	21	21	22	21	35	58	43	34	31	19	17	–	–	–	–	32	(20)
9	–	–	–	–	–	–10	2	–11	–	–	–	–	–	–	–1	3,	12	–14*	–22*	–22*	0*	–2	–2*		–1	(7)
10	22	27	30	11	26	13	1	–11	45	–*	–*	–	–	–*	–52*	99*	–17*	–*	–56*	–17*	2*	–35*	9*	14*	18	(9)
11	30*	136*	22*	13*	–25*	3*	32*	24	34	43	43	45	34	40	27	36	21	21	22	12	16	10	11	22	27	(17)
12	53	45	53	58	Z±*	89*	75	77	66	67	69	59	52*	75*	Z–*	Z–*	Z±*	24	Z±*	Z±*	Z+*	75*	76	66	61	(13)
13	94*	68*	70	54	52*	29*	–56*	11*	9*	66*	75	52*	46	–11	Z±*	Z±*	Z±*	55	38	89*	77*	Z–*	Z–*	Z–*	55	(6)
14	Z–*	Z–*	Z–*	–11*	44	32	43	59	51	39	54	57	–130*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	–173*	52*	–	47	(8)
15	–*	–*	–*	–	–	–	–	–	59	64	77	97	96	84	77	77	56	44	43	14	2	12	–	–	57	(14)
16	–	–	–	–	–*	–*	–*	–*	1*	9*	–*	–*	–*	10*	2	3	32*	5*	24*	66	19*	–23	–3*	–27	4	(5)
17	0	12*	9*	–78*	14*	15*	14*	–35*	8*	–4*	2	–37*	–65*	24*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	1	(2)
18	Z–*	3*	–	–	22	21*	10	74	65*	25	75*	79*	76*	85	55	52	85	43	41	29	20	12	–	–	43	(13)
19	–	32	9	14	34	23	16	54	29	51*	49*	58	53	57	56	55	53	45	37	30	23	19	18	6	34	(21)
20	–	–	–	–	–	0	12	67	109	55	Z–*	Z–*	Z–*	Z–*	Z–*	Z–*	11*	2	23	34	32	31	3	–13	30	(12)
21	Z–	34	32	43	53	43	62	75	73	80	87	70	Z±*	79*	88	63	32*	–43*	–13*	–*	–*	–*	–57*	19*	62	(13)
22	–78*	Z–*	Z–*	26*	68*	–137*	Z–*	5	11	9*	35*	–32*	–150*	14*	23*	42	70	56	54	35	51	42	27	40	39	(11)
23	–	–	–	–	–	–	–	–	–	32	59	54	64	66	30	43	32	10	9	11	–1	0	–	–	31	(13)
24	–	–	–	–	–	–	–	–	12	26	38	63	41	19*	3*	–5*	–5*	9*	19*	–*	–*	–*	–*	–	36	(5)
25	–*	–*	–*	4*	12*	13	31	38	–	32	29		34	31	25	27	21	22	22	16	12	5	–	–	24	(15)
26	–	–	–	–	–	–	19	42	30	32	42	47	48	49	42	43	45	26	34	18	15	19	16	3	32	(18)
27	2	1	–	–	–	9*	–19	47*	57*	54	12	67	55*	76*	65*	–23*	32*	24*	55*	27	22	32*	54	21*	24	(9)
28	13	11	32	30	34	40	21	34	28	34	40	35	28	24	18	41	–11	25	–	–	–	–	–	–	27	(18)
29	–	–	–	–	–	–	–	21	34	22*	18*	–14*	31*	41*	29*	41	43	37	30	27	25	21	14	22	29	(11)
30	27	16	11	11	13	12	16	25	25	24	–	23	0	11*	21*	–108*	–45*	47*	92*	54*	–54*	–121*	–133*	–141*	17	(12)
Mean	27	25	29	29	30	21	25	36	42	42	50	57	49	48	45	44	39	32	30	26	23	20	27	19	35	(353)
	(11)	(14)	(13)	(13)	(12)	(13)	(17)	(18)	(16)	(15)	(17)	(17)	(14)	(14)	(14)	(17)	(15)	(18)	(14)	(17)	(14)	(15)	(13)	(12)		

Mean for 0a days nil.

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR   Factor 6·13   MAY 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	2*	4	4	6	7	10	13	24	35	29	33	53	48	43	-	65	44	29	45	35	21	16	12	10	27	(22)
2	10	7	11	7	9	3	10	18	16	22	20*	3	24	22	0*	-	-*	13*	12*	-197*	Z-*	Z-*	Z-*	25	13	(14)
3	20	17	24	21	13	22	29	44	39	33	62	44	41	40	36	15	19	16	17	17	10	22	22	26	27	(24)
4	12	11	13	15	10	20	34	19	25	43	37	36	34	34	54	31*	Z-*	Z-*	Z-*	Z±*	Z-*	9*	Z±*	27	26	(15)
5	36	35	47	55	78	83	7*	65*	70	36*	Z-*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	66	59	56	37	45	70	57	(13)
6	34	27	45	45	54	39*	34	55	Z±*	Z±*	Z-*	59*	44*	70	47	-*	46*	34	10*	35*	20	21	34	11	38	(14)
7	-4*	34	-272*	-144*	Z-*	-114*	-123*	Z-*	Z-*	68*	78*	114	117	109*	76*	37	38	12*	-11*	10*	2*	Z-	19	17	54	(7)
8	12	4	-46	Z±*	Z±*	Z-*	Z-*	68*	69	56	56	52	64	Z+	56*	34	113*	33	36*	39	55	30	36	30	35	(15)
9	21	41	38	46	21	35	43	35	43	45	Z-*	Z±*	46*	43*	54*	69	-	80	55	35	20	20	11	-2	36	(18)
10	Z-*	Z-*	Z-*	18*	22	37	27	24*	8*	4*	-7*	-11*	-8*	52*	37*	19*	-57*	25*	80*	-27*	Z+*	91*	83*	Z+*	29	(3)
11	Z+	Z+	Z±	Z±	4	40	25	26	30	17	1	10	33	44	44	40	44	45	-	-	-	19	4	-44	22	(17)
12	30*	35*	10*	41*	63	65	83	-150	-114	13	75	56	-184	Z-	Z-	Z-	Z-	80	Z-	Z-	-101	70	67	68	7	(14)
13	66	46	44	43	24	20	-13*	1*	19*	16*	25*	21*	Z±*	Z-*	46*	81*	Z-*	Z-*	99*	38*	20*	Z-*	-2*	21*	41	(6)
14	29*	27	35	30	26	35	22*	38	19*	67*	80*	55*	35*	30*	45	45	44	34	35	33	22	21	22	15	32	(16)
15	20	35	22	22	20	37	49	31	-	-	-	-	-	-	-	-*	-*	-	-	-	-	-	-	-	30	(8)
16	-	-	-	-	-	-*	-*	-*	-	34	49	81	-*	-*	-*	-*	-*	-*	-46*	109*	-27*	80*	57	54	55	(5)
17	24	27	21	25	27	40	50	41	37	30	31	21	43	36	22	20*	Z-*	-83*	24*	-231*	21*	55	55	55	36	(18)
18	44	43	13*	35	36	34	34	24*	20*	18*	Z-*	Z-*	Z±*	Z±*	54*	44*	43	41	36	34	44	45	45	47	40	(14)
19	45	34	35	21	24	34	46	47	45	43	Z-*	68*	Z±*	Z+*	35*	34*	33*	35	41	24	24	16	28	21	33	(17)
20	13	16	11*	-35*	Z-*	Z-*	34*	46*	39*	54*	-16*	78*	-137*	Z-*	Z-*	Z±*	Z±*	Z±*	Z±*	83*	Z±*	37*	29	34	23	(4)
21	29	29	31	33*	56	81	105	68	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-	-	-	-	57	(7)
22	-	-	-*	-*	-*	-	-	-	-	44	33	37	29	30	22	21	34	13	15	11	6	16	15	17	23	(15)
23	9	4	10	12	13	31	56	103	70	55	56	53	27	22	19	20	12	16	24	24	12	27	25	28	30	(24)
24	31	19	16	-2	9	-4	Z±*	Z±*	Z±*	1*	-27*	-35*	-25	-63	10*	36*	30	1	9	20	24	20	12	27	78	(16)
25	-*	-*	-*	-	-	-*	-*	-27*	40*	38*	45*	40*	80*	-	-*	-*	-*	-*	-*	-	-	-	-	-	0	(0)
26	-	-	-	-	-	-	-	-	66	92	67	76	80	61	82	71	54	49	44	24	9	15	24	20	52	(16)
27	35	30	19	18	18	27	45	45	43	44	45	49	45	45	38	34	21	21	3	10	13	11	12	13	29	(24)
28	18	13	11	8	12	15	24	33	31	33	29	28	34	34	39	34	36	28	26	19	10	12	16	21	24	(24)
29	22	20	11	19	18	22	31	35	47	57	49	45	46	55	63	-	52	47	36	34	34	31	22	10	35	(23)
30	31	31	25	10	11	24	25	36	31	36	34	24	22	30	33	36	25	1	1	-16	-18	-26	-33	-262	5	(24)
31	-506	-96	-55	-72	-15	-47	-40	-13	-7	1	10	11	12	15	9	13	11	10	11	-2	-10	-10	-11	-6	-33	(24)
Mean	1	19	17	18	23	29	36	28	32	38	42	44	27	32	40	38	34	32	29	24	13	22	24	12	26	(461)
	(21)	(24)	(21)	(20)	(24)	(23)	(20)	(19)	(18)	(19)	(16)	(18)	(18)	(16)	(14)	(14)	(15)	(19)	(16)	(17)	(19)	(21)	(24)	(25)		

Mean for 0a days [24 (1)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR   Factor 6·42   JUNE 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	0	-1	-8	-1	-5	13	12	9	37	22	46	30	35	46	37	48	53	35	35	48	46	31	24	15	25	(24)
2	7	35	6	14	12	22	26	39	37	22	23	34	35	42	37	45	46	55	34	46	34	36	48	57	33	(24)
3	0	Z-	Z+	-8	-30	-17	7	24	36	49	46	53	51	56	55	50	45	48	37	53	49	52	22	26	32	(22)
4	44	10	12	19	21	24	98	56	45	34	36	37	33	56	Z+	16*	22*	38	45	22	1	29	33	10*	35	(20)
5	-218*	-56*	16	7	2	30	56	30	46	55	28	23	19	20	13	2	1	-20	-9	-23	10	-37	-34	-59	8	(22)
6	-37	-77	-12	-12	19	-28	3	-10	0	23	-65	Z±	21	Z±*	-33*	28	2	-10	9	6	0	16	0	6	-6	(21)
7	10	1	1	3*	10*	7*	Z±*	Z±*	Z±*	Z±*	21*	-9*	37*	10*	2	8	2	6	8	22	14	Z±	Z±	Z±	7	(10)
8	0	38	23	29	3	58	76	57	92	59	56	35	31	35	34	22	Z±	Z±*	Z±*	Z±*	26	10	9	14	36	(20)
9	14	17	23	44	55	57	44	46	48	74	57	37	46	37	40	44	44	37	35	53	33	10	22	23	39	(24)
10	14	22	14	29	21	26	36	37	45	45	49	42	51	44	34	40	33	22	10	14	13	12	16	14	28	(24)
11	10	23	17	33	22	33	36	36	46	45	49	41	49	45	35	38	34	22	12	12	12	12	16	14	29	(24)
12	20	13	12	13	10	20	21	14	16	15	20	23	45	58	13	0	24*	23	28	10*	3*	1	0	1	17	(21)
13	13	21	12	22	78	45	37	36	-12	20	9	9	34	Z±*	Z±	Z±	Z±	Z±	Z±	Z±	Z±	Z±	Z±	Z±	25	(13)
14	Z±	Z±	Z±	Z±	Z±*	Z±*	Z±*	Z±	24	34*	46*	45*	42	Z±	43	26	19	16*	15*	10	-21	23	21	20	19	(11)
15	24	9	22	16	36	40	45	35	62	72	56	57	45	Z+	Z+	57	63	70	63	36	21*	31*	26*	45*	45	(18)
16	33*	49*	Z±*	95*	130*	175*	136*	69*	73*	115*	114	72	63	44	46	37	56	58	45	46	42	28	21	16	49	(14)
17	22	20	22	14	10	12*	13*	-2*	55*	28*	69	53	33*	24*	21	10*	24*	42*	30*	24*	23*	19*	7*	14*	29	(8)
18	22*	96*	85*	87*	23*	93*	70*	-23*	125*	23*	23*	203*	174*	-48*	-202*	41*	31*	57*	58	33	45	50	57	46	48	(6)
19	36*	35	45	31*	-116*	Z±*	41*	56*	52	64*	58*	29*	29*	23*	28	49	43	45	36	43	53	21	23	10*	38	(13)
20	22	27	40	21	29	22	21*	29*	36*	103*	118*	79*	151*	173*	122*	26*	77*	57	60	50	Z±*	58	84	105*	43	(11)
21	64*	134	106*	93	150	66	70*	52*	93*	80*	Z±*	35*	29*	84	56	23*	-46*	12*	41*	60	58	46	35	26	73	(11)
22	31	29	22	29	23	48	69	65	43*	65*	37*	48*	Z±*	Z-*	-59*	Z±*	-28*	107	59*	-12*	59*	79	82	84	56	(12)
23	71	35	41	82*	121*	93	65	66*	77*	72	59	72	79	55*	-200*	-41*	42*	81*	44*	29*	10*	-94*	-151*	-144*	65	(9)
24	-118*	-272*	-199*	143*	240*	102*	50*	87*	Z±*	Z±*	-17*	-7*	23*	134*	122*	116*	60*	65*	57*	Z±*	31*	50*	79*	35*	0	(0)
25	-67*	-60*	Z±*	95*	183*	76*	186*	114	96	70	49	-12*	-119*	87*	122	70	49	41	Z±*	Z±*	30	Z+*	105	58	73	(11)
26	94	46	41	67	48	71	72	80	84	44*	Z-*	Z±*	Z±*	Z±*	Z±	Z±*	-22*	Z±*	59*	Z±*	Z±*	80	105	92	73	(12)
27	59	57	-12*	20*	37*	56	37	22*	28*	60	57	Z±	49	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	45*	53*	16*	42*	56*	53	(7)
28	41*	43*	56*	58*	105*	105*	52*	37*	14*	19*	12*	26*	40*	10	13	58*	64*	60*	35*	36*	44*	31*	30*	28*	12	(2)
29	24*	19*	46*	9*	41*	57*	5*	17*	23*	84*	103*	20*	80*	39*	48*	19	12	14	35	17	14	14	-12	-2	12	(9)
30	-10*	23*	41*	49	Z±*	45*	Z±*	93*	135	93	60	106	53	34	42	41	45	45	27	22*	35*	35*	-34*	-142*	61	(12)
Mean	22	25	18	25	28	36	44	42	49	49	43	65	43	44	37	35	34	36	32	30	26	29	32	25	34	(434)
	(19)	(20)	(19)	(19)	(18)	(19)	(17)	(16)	(18)	(17)	(19)	(16)	(18)	(14)	(18)	(18)	(16)	(19)	(18)	(18)	(18)	(20)	(21)	(19)		

Mean for 0a days | nil.

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

99

39 ESKDALEMUIR Factor 6·39 JULY 1963

volts per metre

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	-14*	75*	92*	121*	138	115*	127	23	14	49	33	26*	23	45	23	18*	23*	12*	13	23	35	40	46	58	46	(15)
2	60	47	-26	29	56	18	-32	8*	40*	93*	92*	81*	45	13*	25*	15*	31	28	14	0	12	23	25	25	22	(16)
3	-12	15	1	-7	5*	Z±*	37	101	86	37	37	36	33	35	36	22	Z±*	9*	9	16	31	33	20	32	29	(20)
4	35	6	-5	5	8	31	13	15	26	-9*	-8*	23	9	-9	Z±	Z±*	Z±*	Z±*	33	23	9	-12	-5	3	12	(18)
5	9	12	22	18*	5*	14	100	40	32	30	39	33	Z±	Z±*	Z±*	Z±*	55	10	Z±	Z±*	Z±*	21	45	20	32	(15)
6	6	14	13	20	51	78*	15*	9*	7*	22*	36	45	25	22	35	33	26	24	21	8	23	13	23	22	24	(19)
7	8	8	12	12	7	14*	12	3*	18*	10	23	23	-7*	2*	10*	15*	22	32	18	12	12	9	15	14	15	(17)
8	29	23	23	18	33	36	46	55	55	29	40	26	45	41	25*	41	22*	47*	15*	24*	45*	25*	2	35	34	(17)
9	12*	33*	21*	47*	37*	46*	91*	81*	83*	104*	83*	78	64	45	47	44	46	47	47	49	48	33	43*	50	50	(12)
10	41*	61*	29	26	32	41	48	59	68	53	46	56	45	10	24	12*	Z±*	114*	44	46	36	32	44	24	40	(19)
11	24	33	24	22	-15*	45*	58*	117	82	84	67	79	70	61	47	52	47	54	28	-9*	9*	24	30	26	51	(19)
12	26	35	24	23*	40*	21*	3*	36*	-2*	9*	116*	39*	13*	46*	55*	-36*	-46*	-334*	-138*	82*	115	59	44	21	46	(7)
13	24	20	24	15	31	24	108	125	56	47	46	39	62	7*	58*	71	47	58	60	55	28	18	21	22	46	(22)
14	21	15	22	24	22	23	64	83*	58*	66*	47*	78*	-21*	122*	289*	499*	37*	145*	86*	121	Z±*	Z±	Z±*	Z±*	40	(8)
15	58	47	76	55	67	77	45	47*	93	100	94	64*	55*	91*	60*	31*	45*	-32*	39*	67*	-13*	22*	112	145	81	(12)
16	87	90	102*	84*	33*	67*	102	78	85	68*	Z±*	18*	70	72	74	72	59	67	53	37	37	26	47	33	64	(17)
17	30	37	24	25	26*	2*	59*	78*	60*	16*	52*	82*	87*	92*	77*	189*	71*	91*	160*	129	83	62*	47*	59	55	(7)
18	41	20	26	25	28	32	201	93	108	64	44	61	67	Z±	38	56	78	78	86	43	39	55	18	26	58	(23)
19	24	15*	31*	23	9	13*	71*	108*	132*	114*	124*	43*	-104*	91*	82*	58*	66	81	63	55	41	39	37	56	45	(11)
20	49	47	43	44	56	56	49	55	68	59	58	56	61	54	36	54	54	58	46	46	22	25	23	22	48	(24)
21	17	9	16	14	23	32	60	52	44	43	35	58	79	54	39	58	70	45	47	44	36	16	9	0	38	(24)
22	21	-9	32*	124*	79*	71*	140	110	77	62	56	64	55	51	63	47	59	58	48	30	16	32	33	25	52	(20)
23	24	14	8	14	21	22	36	36	67	44	47	60	87	58	26*	39*	47*	16*	85*	46*	45*	3*	-133*	-144*	38	(14)
24	-117*	54*	59*	90*	74*	78*	59*	79*	114*	112*	210*	140*	83*	82*	53	61	53	55	64	62	64	47	56	49	56	(10)
25	33	43	28	24	23	35	7*	26*	56	46*	78*	Z±*	55	58	48	67	56	45	59	61	56	58	56	69	49	(19)
26	56	68	45	28	38	29	52	53	68	68	58	44	60	55	46	54	44	53	37	59	31	29	17	15	46	(24)
27	51	63	39	26	36	32	53	54	67	68	59	43	59	56	48	56	41	47	38	59	33	30	21	15	46	(24)
28	14	10	10	7	7	23	56	44	36	46	24	28	25	39	47	41	32	24	24	8	14	14	18	22	26	(24)
29	-2	5	7	9	10	25	114	78	48	63	68	45	51	58	59	58	60	46	22	20	135	10	9	2	37	(24)
30	6	5	6	16	10	36	68	55	36	46	47	70	75	58	44	60	36	35	28	-2	13	9	12	9	33	(24)
31	5	9	8	7	10	18	32	35	25	18	25	29	20	26	26	28	8	9	-2	5	3	10	5	9	15	(24)
Mean	28	26	20	20	33	32	67	63	59	51	47	48	52	45	44	51	47	45	59	40	34	27	29	31	40	(549)
	(27)	(26)	(25)	(24)	(22)	(19)	(23)	(20)	(22)	(20)	(21)	(21)	(23)	(20)	(19)	(19)	(21)	(21)	(24)	(25)	(25)	(26)	(28)	(28)		

Mean for 0a days [48 (1)]

39 ESKDALEMUIR Factor 6·22 AUGUST 1963

volts per metre

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	4	10	7	16	18	20	37	5	65	55	45	46	47	52	56	46	53	54	55	40	35	25	20	16	34	(24)
2	20	18	19	13	24	15	20	15	21	32	34	34	36	44	36	43*	33*	47	Z±	Z±*	Z±	Z±	Z±*	Z±*	27	(16)
3	24*	19	15	11	21	17	22	15	22	32	32	34	36	43	37	54	28	28	Z-	Z±	Z±	Z±	Z±	Z±	27	(17)
4	25	0	15	16	9*	9*	11*	27	65	29	10	9	2	9	15	12*	31*	-12	-6*	20*	6*	24*	-6*	-29*	16	(13)
5	35*	24*	-34*	-90*	65*	175*	127*	-65*	Z±*	Z±*	36*	113*	66*	21*	47*	35*	20*	55*	40*	61*	75*	66*	44*	53*	0	(0)
6	41*	44*	31*	65	30	63	40	78	77	75	31	21	30	46	48	43	53	56	64	46	58	24	25*	43*	50	(19)
7	45	45	22*	-11*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-	-	-	-	-	-	-	-	45	(2)
8	34*	45*	57	39*	30*	27*	52*	38*	50*	31*	112*	77	66*	49*	86	81	71	73	67	67	67	65	78	94	74	(12)
9	-	59	40*	44*	45*	43	48*	48	58	57	40	36	41	56	53	46	59	68	73	58	44	58	33	36	51	(19)
10	25*	31*	27*	44*	-73*	45*	27*	48*	84*	184*	59*	20*	40*	52*	110*	62*	112*	108*	19*	27*	24*	20*	21*	43	43	(1)
11	35*	26*	41	44	44	56	87	67	69	80	37	34	37	63	86	54*	47*	31*	96*	55*	35*	37*	56*	36*	57	(13)
12	31	31	21*	23*	44	85	57	123	74	80	91	39	36	27*	29*	12*	7*	1*	18*	35	16	29	27	31	52	(16)
13	27	20	13	17	13	12	11	15	20*	34*	36	10	38*	11*	38	35	55	28*	11*	36*	16	26	22	22	23	(17)
14	27	24	36	34	34	41	79	82	57	65	64	68	66	51	55	49	50	40	32	21	30	46	50	47	48	(24)
15	27	56	10*	1*	-*	-*	-	-	-	-	-	-	-*	-	-*	-*	-	-	-*	-*	-	-	-	-	42	(2)
16	44*	46*	60*	13*	35	35	54*	90	57*	45*	-69*	-146*	-335*	Z-*	-522*	Z-*	-241*	Z-*	Z±*	Z+*	Z-*	Z±*	Z±*	Z±*	53	(3)
17	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	37*	Z±*	Z±*	Z±*	Z±*	Z±*	73*	59*	86*	55	65	20	15	55	55	57	65	48	(8)
18	74	66	24	43	37	24	34	33	29	26	58	49	47	43	44	44	53	46	32	25	34	21	30	34	40	(24)
19	26	20	36	27	19	31	49	41	43*	58	58	73	124*	728*	65	26*	58*	68	66	67	93	94	65	54	53	(19)
20	24	22	21	45	59*	62*	79	73	59	43*	-26*	-83*	Z±*	-96*	Z±*	-90*	-17*	35*	46*	41	27	54	54	30*	45	(11)
21	59*	44*	63*	60*	79	71	67	44	70	53	37	28	45	44	56	44	45	67	34	31	10	28	42	44	47	(20)
22	-	-	-	-	-	-	-*	-*	-*	-*	-*	-*	-*	-*	-	-*	-	-	51	68	15	43	8	48	39	(6)
23	60	72	124	97	92	100	107	60*	83*	59*	93*	Z-*	32*	9*	77*	Z±*	Z±*	12*	Z-*	Z-*	65*	68	64*	35*	90	(8)
24	59*	.59	129*	100*	92*	103*	108*	46*	87	71*	95*	Z-*	36*	-39	71	Z±	Z±*	Z-	-24	Z-	57	60	67	36	42	(9)
25	28	55	34	29	39	42*	44*	42*	73*	66*	95*	80*	68*	115*	80	61	60*	56*	-12*	68*	10*	71*	142	Z+	59	(8)
26	62*	80	57*	57*	80*	86	96	71	48*	78*	67*	44*	111	-34*	Z-*	81*	26	Z±*	Z±*	60	45*	46*	65*	37*	76	(7)
27	24	72	90	92	99	103	123	58	38	67	58	55	57	43	19	35	48	56	29	11	12	48	38	34	54	(24)
28	25	25	25	26	33	29	43	76	66	58	68	56	64	80	64	54	57	34	24	9	-15	11	-34	16	37	(24)
29	24	10	10	13	17	10	19	25	21	39	56	68	53	48	67	57	21	11	67	4	0	1	2	4	27	(24)
30	0	-13	-6	-6	2	-9	-22*	-50*	-74*	-168*	Z±*	Z±*	Z±*	174*	Z-*	Z-*	104*	81	43*	18	50*	33	33	31	15	(11)
31	28	24	31	21	47	52	54	50*	12*	-27*	26*	24	53	87	36	9	19	55	54	65	55	12*	Z±*	Z±*	42	(17)
Mean	29	35	33	34	38	44	57	52	55	54	47	42	48	45	53	47	46	49	43	38	34	42	41	39	43	(418)
	(18)	(22)	(18)	(18)	(19)	(20)	(18)	(19)	(16)	(15)	(16)	(18)	(16)	(15)	(19)	(14)	(15)	(17)	(15)	(18)	(18)	(19)	(18)	(17)		

Mean for 0a days [1 (1)]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR Factor 6·51 **SEPTEMBER** 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	Z±*	Z±*	21*	88	86	77	83*	37*	Z±*	-196*	93*	29*	5*	Z±*	Z±*	Z-*	Z±*	Z±*	Z-*	49	71	63	29	69	67	(8)
2	78	57	84	44	135	104*	Z±*	26*	70	124	46	69	-9*	-12*	Z-*	Z-*	50*	33*	14*	Z±*	23*	40	29*	37*	75	(10)
3	44*	35	50	9	22	33	47	60	51	30*	23*	47	46	71	-4*	46*	70	61	47*	63	33*	40	67	58	49	(17)
4	62	46	34	35	33	44	21	23*	15*	25*	23*	34*	9*	13	25*	42*	22*	46*	2*	Z-*	Z-*	-62*	27*	30	35	(9)
5	33	25	93	42	72	49	46	67	70	83	-	-	46	49	70	67	-106*	44	56	48	47	50	46	33	54	(21)
6	23	35	23	27	22	21	38	58	70	68	54	47	47	57	55	61	74	44	37	34	37	35*	42*	56	45	(22)
7	21*	56*	58	27	39*	49*	47*	41*	152*	158*	156*	138*	105*	75*	117*	145*	61*	61*	71*	7*	13*	-117*	-524*	-216*	43	(2)
8	-27*	91*	108	70	59	61	45	66	76	73	83	87	-23	83	85	103	Z-*	87*	93	71	91	Z-	Z-*	Z-*	72	(17)
9	50*	47*	73*	Z-*	7*	72	91*	1*	58*	Z-*	Z-*	28*	Z-*	51*	100	80	82	68	62	52	57	70	92	71	73	(11)
10	107	57	35	45	48	50	55	71	83	80	105	57	89	44	48	44	47	47	36	36	33	22	21	21	53	(24)
11	28	23	33	23	26	21	24	35	49	72	59	56	45	48	35	36	35	37	14	22	28	31	36	26	35	(24)
12	23	22	22	20	20	21	29	45	59	71	72	62	77	80	72	73	61	49	33	26	35	24	36	69	46	(24)
13	80	82	56	83	85	23	50	22*	79*	125*	112*	91*	63	63	71	70	63	41	69	44	103	80	69	56	66	(19)
14	47	33	21	10	22	21	20	10*	5*	8*	16	45	37	34	51	45	49	56	45	34	36	23	22	16	33	(21)
15	15	24	16	20	23	61	78	36	33	24	35	23	26	38	36	35	24	24	22	16	15	13	9	12	27	(24)
16	3	12	6	14	9	2	1	9	21*	20*	40*	92*	83*	41*	45	47	35	38	36	35	23	17	13	12	20	(18)
17	19	17	13	13	12	12	21	23	13	71	84	127	135	87	65	36	31*	21*	10*	7*	12*	12*	55*	47*	47	(16)
18	68*	66*	62*	70*	61	61	27*	58	82	85	83	91	80	73	51	45	20	35	36	27	33	-	-	-	58	(16)
19	-	-	-	-	-	-	-	-	-	-	23	34	15	25	38	28	-	-	-	-	-	-	-	-	27	(6)
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	(0)
22	-	-	-	-	-	-	-	-	-	12	35	23	8	61	20	23	35	47	44	24	35	33	26	27	30	(15)
23	34	17	22	14	22	14	22	20	22	27	26	29	48	44	25	13	22	25	36	-41	30	-23	-34	21	18	(24)
24	17	13*	2*	3*	Z+*	Z+*	26*	Z±*	Z±*	Z±*	Z±*	Z±*	103	84	79	92	80	56	35	33	3	28*	Z±*	15	54	(11)
25	16	23	22	22	14	12	22	25	15	30	45	-2*	Z±*	56	33*	33	Z±*	50*	61	Z-*	-23*	-268*	-301*	-503*	28	(14)
26	Z-*	Z-*	Z-*	Z-*	-70*	-1*	64*	45*	50*	27*	35*	-47*	Z±*	Z±*	Z±*	Z±*	Z±*	70	82*	93	Z±*	70*	Z+*	Z±*	82	(2)
27	Z±*	Z±*	48	Z±*	Z±*	36*	44*	44	59	71	70	72	105*	76*	79	69	69	70	59*	47	23*	-12*	34*	28*	63	(11)
28	44	50	42	43	47	45	35	48*	56*	45	50	69	34*	47*	26	16	17	33	22	20*	1*	-3*	33*	22*	39	(15)
29	29*	47*	Z-*	Z-*	Z-*	14*	56	25	15	13*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-	32	(3)
30	-	-	-*	-*	-	-	-	-	-*	-	-	-	-	-	-	-	-	-*	-*	-	-	-*	-	-	0	(0)
Mean	39	35	41	34	43	37	36	43	51	62	55	59	53	56	55	51	49	47	43	38	42	35	33	37	45	(404)
	(16)	(16)	(19)	(19)	(19)	(19)	(17)	(15)	(15)	(15)	(16)	(16)	(16)	(18)	(19)	(20)	(16)	(18)	(17)	(19)	(16)	(14)	(13)	(16)		

Mean for 0a days [53 (2)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR Factor 7·48 **OCTOBER** 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	28*	40	42	37	56	12*	-15*	-40*	Z-*	0*	Z-*	107*	29*	Z-*	91	Z-*	97	103	66	64	54	73	53	28	62	(13)
2	50	37*	45	38	50	53	49	40	69	85	78	64	52	50	77	56	40	41	53	41	27	50	34	46	52	(23)
3	24*	-52*	-26*	-85*	Z-*	Z-*	Z±*	91*	236*	171*	107	64	54	85	65	69	57	56	71	65	54	69*	65*	Z-*	68	(11)
4	52	37*	28*	53	42*	56	61	74*	71*	Z-*	-27*	48*	66	69*	65	Z+*	93*	34*	69*	Z+*	-13*	79	107	82	69	(9)
5	68*	40*	81*	Z-	Z±*	41*	Z±*	79*	69	79	82	Z-*	71	93*	81	65	78	68	77	50	61	57	42*	38*	70	(12)
6	25*	36	26	28	23	26	30	33	52	54	54	66	57	61*	-12*	-13*	19*	22*	50*	22*	40*	66*	68*	75	43	(13)
7	79	26	26	34	25	21	29	27	44	60	78	66	56	73	81*	13*	30*	0*	-13*	81*	91*	-66*	25*	144*	46	(14)
8	17*	Z-*	54*	90	131*	81*	119*	121*	136*	103	Z-*	Z-*	Z-*	Z-*	136	94	91	79	91	83	82	74	57*	52*	92	(10)
9	49*	52	64	56	46	48	60	66	50	38	64	70	94	148	143	91*	41*	-132*	Z-*	Z-*	Z-*	17*	24*	-21*	71	(14)
10	-3*	-1*	1*	-34*	68*	15*	13*	171*	111*	75*	62*	53	69	89	79	69	66	62	30*	5	-11	-26	3	41	42	(12)
11	65	71	57	15	50	50	54	56	79	94	106	122	95	105	121	122	94	78	58	53	29	36	15	24	69	(24)
12	53	118	81	75	105	53	81	65	78	62	64	26*	29*	41*	22*	48*	46*	52*	50*	154*	117*	146*	68*	-95*	76	(11)
13	-24*	94*	66	58	64	56	64	62	65	79	79	85	69	-*	75*	-26*	70	91	66	71	82	-	-	-	70	(16)
14	52	33	34	42	41	37	40	41	54	78	79	93	82	90	82	54	56	57*	52*	24*	1*	-3*	-13*	21*	58	(17)
15	28*	28*	34*	19*	28*	44*	21*	62*	77*	65*	91*	115*	128*	147*	162*	293*	334*	54	156	Z-*	185*	69	67*	56*	93	(3)
16	66	66	57	48	52	52	40*	78*	79*	91*	82	91	83	97	74	81	60	52	56	64	40*	Z-*	42	34*	70	(16)
17	26*	-20*	34*	26*	29	65	108*	66*	79	40*	64*	118*	33*	41*	53	27	40*	38*	50	48	90	103	79	82	64	(11)
18	56	52	57	32*	40*	30*	37	30	54	52	12*	52*	27*	83	93	106	90	37*	66*	69*	79*	97*	171*	-*	65	(11)
19	-*	-	-	-	-*	-*	-	-	-	-	89	50	16	-11*	-238*	-304*	-291*	-238*	-225*	-212*	98*	142	131	127	93	(6)
20	89	69	66	53	49	40	41	58	64	74	56	67	74	81	95	77	95	77	81	103	25*	-122*	-56*	29*	70	(20)
21	36*	52*	78*	64*	66*	64	54	16*	17*	22*	40*	41*	16*	19*	-*	Z-*	-49*	-41*	-56*	-32*	-26*	-5*	-121*	49	59	(2)
22	66*	90	54	50	40	34	30	34	66	66	64	65	71	66	66	52	50	53	53	56	17	5*	8*	26	53	(21)
23	34	40	1*	-21*	58*	Z-*	Z±*	94*	151*	Z-*	-82*	75*	134*	201*	158*	53*	49*	93*	159	89	66	71	61	98	77	(8)
24	74	79	65	79	57	52	70	79	73	79*	95*	85	69	83	86	85	60	50	44	94	104	61	28	184	76	(22)
25	220	127	62	66	61	19	33	118*	54*	74*	173*	66*	131	105	67	42	26	41	90	29	24	25	15	26	64	(19)
26	20	15	13	13	17	17	21	21	5	-16	-3	-4	-17*	-17*	-3	0	-	-	-	17	17	9	13	16	10	(19)
27	32	40	64	53	38	25	17	19	29	50	66	94	95	107	66	53	1	12	24	26	24	3	13	15	40	(24)
28	29	25	8	28	37	40	60	52	36	28	49	69	77	103	-	24	9	11	37	12	38	22	5	25*	36	(22)
29	41*	40	40	81	82	81	57	90	82*	36*	82*	20	95	90	77*	37*	56	86	91*	108	56	58	52	60	68	(17)
30	44	48	49	17*	41	29*	41	81	66	52	40	65	70	90	95	64	-25	16	67	41	75	58	53	Z-*	54	(21)
31	-19	-3	25	25	24	16	26	28	38	24	37	-16	-75	32*	-12*	-126*	-127*	-69*	115*	38*	49*	3*	44*	95*	10	(13)
Mean	59	53	48	49	47	43	45	49	56	59	67	63	67	91	82	63	56	57	72	59	49	54	44	62	58	(454)
	(17)	(20)	(21)	(21)	(21)	(21)	(21)	(18)	(19)	(18)	(19)	(20)	(22)	(17)	(20)	(18)	(19)	(18)	(18)	(19)	(18)	(18)	(16)	(15)		

Mean for 0a days nil.

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR   Factor 8·20   NOVEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	128*	174	115	131	58	80	57*	-9*	28*	35*	-74*	155*	171*	160*	113*	41*	30	26	45	35*	41*	70*	48*	23*	82	(8)
2	46*	13*	-6*	-110*	-131*	57*	71	90	99	67	68	51*	55*	58	42	20	-15	-78*	55*	25	26	44	39	81	51	(14)
3	99	48	-12	-62	23	30	142	163	186	115	60	49	48	39	28	35	41	29	57	57	57	41	44	39	57	(24)
4	55	51	12	20	26	39	29	30	52	16	17	32	19*	30*	71*	-62*	42*	45	103	109	73	58	116	115	53	(19)
5	105	102	61	74	121	113	96	100	102	94	87	89	71	97	Z±*	Z±	41*	23*	-7	-6	13	25	22	71	72	(20)
6	28	-3	-10*	Z±*	Z±*	Z±*	19	84	75	89	154	103	46	74	67	41	45	57	45	42	17	16*	51*	-29*	58	(17)
7	26*	17*	-15*	-35*	-16*	-42*	1*	16*	29*	73*	44*	-154*	-171*	254*	90	134	99	87	57	74	29	15	17	52*	67	(9)
8	67	71	88	65	41	23	-41*	55*	73*	100	99	62*	70	59	78	99	97	100	48	-218*	67*	48	-6*	Z-*	72	(16)
9	77*	-36*	16*	87*	Z-*	-26*	83	74	73*	206	105	145	141	113	123	99	74	45	42	71	46	55	45	42	89	(17)
10	44	49	58	-	-	-	-	-*	-*	-*	-*	-*	-*	-*	-*	-*	Z±*	-52*	Z±*	Z±*	-256*	86*	105*	83*	50	(3)
11	102*	112*	126	125	116	32*	42*	28*	-23*	97*	84*	97*	176*	112	99	55	Z-*	52*	49*	71*	105*	57*	Z-*	-383*	106	(6)
12	-435*	-229*	-223*	-293*	46*	20*	64*	151*	70*	-369*	Z-*	Z-*	Z-*	Z-*	Z-*	Z-*	Z-*	-81*	Z±*	-46*	-20*	46*	58*	73*	0	(0)
13	71	Z±*	Z±*	Z±*	17*	52*	70*	73	73	60	61*	75	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	118	119	113	272*	89*	58	88	(8)
14	102*	-	112	118	87*	-*	-*	Z±*	60	75	-	-	113	147	90	89	155	116	94	90	105	103	90	58	101	(16)
15	41	42	38	30	42	15	23	44*	49	71	67	57*	52*	44*	103*	Z+	Z±*	Z±	46*	60*	41	39	41	57	43	(14)
16	30	70	58	61	46	44	41	42	58	70	73	87	116	75	90	73	41	-22	94*	41	36	113	45	51	58	(23)
17	58	61	51	54	42	44	42	44	61	84	77	73	103	126	116	168*	232*	Z+*	Z±*	Z±*	-218*	12*	103	200	79	(17)
18	176	177	Z±*	Z±*	Z-*	Z-*	Z-*	15*	Z-*	Z-*	-46*	-244*	13*	100	119	51	51*	65*	49	89	48	42	22	-26	77	(11)
19	-269*	152*	Z-*	Z-*	173*	139	115	106	3*	48*	89	105*	Z-*	48*	89*	42*	Z-*	-30	44	-45*	12*	57	44*	30	69	(8)
20	4	32	71	70	86*	60	73	64	75	84	107	103	116	100	55	58	48	45	46	55	67	39	44	33	63	(23)
21	25	23	16	-33*	Z-*	Z-*	Z-*	Z-*	Z-*	-484*	Z-*	Z-*	Z-*	35*	-107*	129	Z-*	Z+*	89	78*	19*	60*	15*	58*	56	(5)
22	23*	54*	102*	68*	60*	1*	75*	86*	87	81*	109*	99*	77*	89	103*	113	119	62	44	57	60	58	70	3*	76	(10)
23	60*	35*	26*	Z-*	Z-*	-215*	Z-*	-336*	-668*	-421*	-19*	129*	192*	51*	-142*	-268*	-324*	-467*	-488*	-554*	-478*	-219*	-138*	19*	0	(0)
24	-16*	-160*	-58*	-17*	-161*	145*	129*	75*	246*	Z-*	16*	Z±*	Z-*	Z-*	Z-*	Z-*	61*	103*	77	70	84	102	70	49	75	(6)
25	38*	28*	-9*	Z-*	Z-*	52*	84	103	129	132	104	174	151	94	89	Z±*	Z-*	-29*	-145*	Z±*	Z-*	Z±*	12*	Z-*	118	(9)
26	-*	-*	-*	-*	-	-*	45*	55*	49	52	42*	74	71	58	-	-	-30	36	145	129	60	131	157	28	74	(13)
27	19	35	28	58	42	44	42	44	48	81	36	84	80	97	102	19	15	7	25	7	-12	38	86	23	44	(24)
28	-33	-17	-35*	-26*	-33*	23*	26*	-87*	-29*	44*	Z-*	-51*	Z±*	4*	41*	22*	25*	45*	89	107	67	46	42*	52*	43	(6)
29	64*	54	61	57	58	54	65	62	71	86	94	99	112	109	Z±	60	55	49	75	78	58	45	57	81	70	(22)
30	90	81	99	58*	29*	17*	33*	23*	17*	52	60	75	68	70	84	68	28	-32	-99	46	74	33	-6	42	46	(18)
Mean	55 (16)	62 (17)	61 (16)	62 (13)	57 (11)	56 (12)	66 (14)	77 (14)	80 (16)	85 (18)	81 (16)	90 (14)	93 (14)	90 (18)	85 (15)	71 (16)	53 (15)	39 (16)	53 (20)	66 (19)	53 (20)	59 (21)	59 (18)	57 (17)	67	(386)

Mean for 0a days | nil.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

39 ESKDALEMUIR   Factor 8·38   DECEMBER 1963

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	62*	49	30	43	52	53	27	13	55	27	41	59	28	33*	31*	30	27	33	-18	24	31	-13*	-53*	13*	34	(18)
2	56*	58	40	28	47	19	-9*	12*	61	80	76	56	73	105	68	73	108	131	92	56*	46*	53*	62	31	67	(18)
3	-3*	-37*	15*	28	41	30	30	46	18	44	56*	43*	39	18*	13*	36	74	86	74	92	87	91	76	74	57	(17)
4	50	61	59	46	74	58	47	46	49	1*	28*	47	47	61	55	39	46	46	41	44	29	46	39	36	48	(22)
5	55	27	28	30	31	46	46	45	39	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	(10)
6	15	15	18	22	27	-	31	31	39	41	30	44	59	58	56	58	28	15	44	47	21*	-27*	28*	36*	36	(19)
7	53*	50*	13*	62*	49	55	62	65	27	36	52	-9	-96	58	73	61	55	62	55	58	50	43	43	46	42	(20)
8	28	34	31	41	43	33	39	44	44	34	36	40	43	31	36	22	21	22	19	24	30	31	37	28	33	(24)
9	27	22	21	22	22	15	12	16	16	24	27	12	-16	9	13	-25	1	3	96	131	323	145	55	-46	39	(24)
10	61	125	56	184	12	52	18	95	50	131	58	28	44	31	13	25	13	12	21	24	43	28	31	39	50	(24)
11	30	30	43	44	55	31	58	71	62	53	95	79	88	68	56	9	47	77	64	24	-25	-9	15	41	46	(24)
12	22	21	16	30	30	24	13*	30	33	28*	46* o	Z-*	25*	40*	52	47	50	59	68	76	56	46	45*	30*	41	(16)
13	31	33	33	43	37	41	52	30	50	50*	56	55	55	70*	71	74	41	52	50	43	46	30	30	28	45	(22)
14	41	34	40	18	-	-	-	-*	-*	-*	-*	-*	-*	-	-	-	-	-	-	-	-	-	-	-	33	(4)
15	56	58	61*	58	61	46*	10*	47*	49*	46	43*	49*	61*	Z±*	47*	59	46	65	46	58	80	53*	70*	43	56	(12)
16	43	52	49	59	50	53	59	64	71	68	87	81	77	76	90	59	47	43	61	53	71	41	52	16	59	(24)
17	56	64	34	44	44	43	37	70	62	67	99	87*	86*	105	85	73	74	56*	Z-*	Z-*	86	93	73	63	67	(19)
18	59	53	58	58	56	44	59	56	59	56	65	74	80	101	87	43	41*	56*	59	58	59	80	79	92	65	(22)
19	89	87	85	89	89	89	92	80	74	87	107	123	133	133	125	118	62	56	58	55	105	62	31	68	87	(24)
20	90	58	46	47	71	61	74	62	61	59	67	71	86	87	41	13	18	80	62	61	41	71	92	87	63	(24)
21	58	61	47	-24	-9	31	49	47	13	40	76	62*	105*	142*	76	80	58	56	58	53	62	44	21	31	44	(21)
22	43	50	40	34	36	41	45	50	46	56	70	87	101	77	76	30	41	44	31	36	41	49	50	33	50	(24)
23	24*	30*	31*	56	87	76	30	41	71	89	104	79	101	120	108	85	27	41	18	-3	-61	-30	19	28	52	(21)
24	64	86	73	43	73	-3	-12	16	18	33	30	18	56	71	71	46	28	12	13	-25	-3	-7	-12	-19	28	(21)
25	-18	-15	-104	Z±	Z-	Z-	Z-	Z*	-24	166	132	246	181	133	126	107	105	111	117	163	162	142	173	165	109	(19)
26	132	111	98	92	86	102	108	107	96	105	132	150	147	151	132	126	135	117	133	132	120	101	58	7	112	(24)
27	12	-18	38	47	24	27	61	108	166	41	43*	31*	62*	153*	206	190	236	225*	356*	133*	271*	370*	297*	256	101	(14)
28	133	108	110	141	111	87	74	58	43	18	3*	12*	30*	82*	59*	50	71*	83*	87	99	107*	68*	36	38	80	(15)
29	61	53	44	44	46	104	Z±	Z±	-16*	95*	Z-*	Z-*	34*	-9	Z±*	Z±*	Z±*	13*	86*	Z±*	62*	56*	Z±*	61*	49	(7)
30	102	120	87	65	33	59	28*	-129*	-133*	-27*	Z±	Z-	Z±	-212*	-145*	Z±*	31	-36	129	92	150	101	53	76	76	(14)
31	73	68	47*	58*	64	74	89*	89	71	77	114	102*	-47*	116*	59*	49*	30*	76*	Z±*	41	-67*	53*	122*	47	72	(10)
Mean	54 (26)	54 (28)	44 (26)	51 (28)	50 (29)	50 (27)	48 (23)	45 (25)	51 (27)	60 (25)	74 (21)	71 (19)	66 (20)	77 (19)	78 (22)	59 (26)	57 (25)	52 (23)	59 (25)	58 (25)	69 (23)	57 (21)	51 (22)	52 (22)	57	(580)

Mean for 0a days | [66 (2)]

| Annual Mean | 60 (230) | 59 (252) | 58 (244) | 60 (238) | 63 (239) | 62 (226) | 68 (222) | 71 (218) | 73 (221) | 78 (210) | 82 (209) | 93 (207) | 87 (208) | 91 (198) | 85 (210) | 91 (212) | 84 (210) | 79 (221) | 82 (218) | 80 (233) | 78 (227) | 73 (236) | 69 (238) | 65 (243) | 74 | (5370) |

Annual mean for 0a days | [32]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for 0a days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

	JANUARY Character	Duration of negative potential gradient	FEBRUARY Character	Duration of negative potential gradient	MARCH Character	Duration of negative potential gradient	APRIL Character	Duration of negative potential gradient	MAY Character	Duration of negative potential gradient	JUNE Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	2b	5·7	1b	1·2	0a	...	1a	5·5	1a	0·4	1a	3·9
2	2a	10·3	1a	0·2	0a	...	1b	2·3	(2b)	-	1a	1·1
3	2a	3·3	0b	-	(0a)	-	1b	1·4	1a	0·3	1a	3·2
4	0a	...	0a	...	1b	2·5	1b	1·5	2b	5·3	1a	2·3
5	1a	0·1	0b	-	1a	4·2	(1a)	-	2c	4·5	2a	9·9
6	1a	0·7	1c	3·5	2a	7·6	(1a)	-	(1a)	-	2a	11·2
7	1a	4·0	2c	5·4	2a	7·2	(1a)	-	2b	8·0	1b	3·1
8	1a	3·8	1b	0·2	2b	6·3	(1a)	-	2c	5·0	1b	1·2
9	1a	3·0	1a	1·2	(2b)	-	(2a)	-	(1b)	-	1b	0·3
10	1a	0·4	1a	7·1	-	-	(2a)	-	2b	6·8	1a	0·5
11	0a	...	1a	0·2	1a	0·2	1a	2·7	(1b)	-	1a	0·3
12	0a	...	0a	...	1b	2·0	1b	2·6	2c	7·6	1a	3·1
13	1b	0·1	0a	...	(1b)	-	1b	5·7	2b	5·5	1a	1·7
14	0a	...	2a	6·9	(1b)	-	(2a)	-	1a	1·1	1a	0·9
15	0a	...	2b	11·2	(1b)	-	(1a)	-	(0a)	-	1a	2·3
16	1b	0·8	(1a)	-	-	-	(1a)	-	(1a)	-	1a	0·1
17	1a	0·2	(0a)	-	(2c)	-	2c	14·2	1a	2·3	1a	2·5
18	1b	0·7	0a	...	2b	7·2	(1a)	-	2b	3·4	1a	3·8
19	1a	1·7	0a	...	1a	2·3	1a	1·3	1a	0·8	1b	1·6
20	0c	-	0b	-	2a	10·4	(2b)	-	2b	8·2	1b	0·6
21	1b	0·3	0a	...	2a	13·7	(1b)	-	(1a)	-	1b	1·7
22	1a	0·3	0a	...	1a	0·7	2b	5·8	(1a)	-	1b	2·7
23	1a	1·0	0a	...	1a	2·0	(1a)	-	1a	0·6	2a	5·7
24	1a	0·1	0a	...	2c	5·2	(1a)	-	2a	8·9	2b	6·0
25	1a	0·1	(1a)	-	2a	7·5	(1a)	-	(1a)	-	1b	3·5
26	1a	0·4	0a	...	1a	0·8	(1a)	-	(1a)	-	1c	0·7
27	1a	0·1	0a	...	2a	6·7	(1a)	-	1a	0·2	1a	1·7
28	1a	0·9	0a	...	(1a)	-	(1a)	-	0a	...	1a	0·8
29	1b	1·7			(2a)	-	(1a)	-	(1a)	-	1a	3·6
30	1b	2·3			1a	4·9	(2a)	-	2a	5·4	1b	3·1
31	1b	1·3			1a	1·0			2a	13·6		
Total	-	43·3	-	37·1	-	92·4	-	43·0	-	87·9	-	83·1
No. of days used	-	25	-	10	-	19	-	10	-	19	-	30
Mean	-	1·7	-	3·7	-	4·9	-	4·3	-	4·6	-	2·8

	JULY Character	Duration of negative potential gradient	AUGUST Character	Duration of negative potential gradient	SEPTEMBER Character	Duration of negative potential gradient	OCTOBER Character	Duration of negative potential gradient	NOVEMBER Character	Duration of negative potential gradient	DECEMBER Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	1a	2·4	1a	0·2	2c	7·0	2b	4·9	1a	3·1	2a	3·7
2	1a	5·6	1b	3·0	1b	3·4	1a	0·2	1a	3·6	1a	1·8
3	1a	2·7	1a	1·0	1a	1·6	2b	6·1	1a	3·1	1a	3·5
4	2b	7·4	2a	6·0	1b	3·6	1b	2·7	1a	4·0	1a	1·2
5	1b	1·7	2b	6·2	1a	0·9	1b	2·3	1b	3·2	(0a)	-
6	1a	1·2	0a	...	1a	0·2	1b	1·7	1b	3·9	(1a)	-
7	1a	1·7	(1a)	-	2a	4·2	1a	2·9	2a	7·4	1a	2·1
8	1a	1·7	1a	0·8	1b	4·4	2b	4·3	1b	2·9	1a	0·2
9	1a	0·5	(1a)	-	1b	3·9	2b	4·2	1b	1·4	2a	5·5
10	1b	0·6	1a	2·4	0a	...	1a	6·0	(2b)	-	1a	3·4
11	1a	1·3	1a	0·8	1a	0·2	1a	0·8	1a	4·0	1a	2·3
12	2a	5·0	1a	0·9	1a	0·1	1a	2·2	2c	14·9	1b	1·5
13	1a	0·8	1a	1·2	1a	0·4	(1b)	-	1b	3·8	0a	...
14	1a	1·4	1a	0·2	1a	1·1	1a	2·0	(1a)	-	(0a)	-
15	1a	2·3	(1a)	-	1a	0·1	1b	2·8	1b	1·5	1b	1·7
16	1a	0·9	2c	9·8	1a	3·0	1b	0·4	1a	2·5	1a	0·2
17	1a	0·5	2c	5·8	1a	0·1	1a	1·5	1b	2·8	1b	0·5
18	1a	0·1	1a	0·5	(0a)	-	(1a)	-	2b	9·5	1a	0·3
19	1a	1·8	1a	0·8	(0a)	-	(2b)	-	2b	6·5	0a	...
20	0a	...	2a	4·7	-	-	1a	1·6	1a	0·5	1a	0·8
21	1a	1·8	1a	0·7	-	-	(2b)	-	2c	11·5	1a	2·3
22	1a	1·1	(1a)	-	(1a)	-	1a	0·7	1a	1·8	1a	0·5
23	1a	3·4	2b	5·0	2a	4·4	1b	4·5	2b	16·4	1a	3·3
24	1a	1·3	2a	4·8	1b	4·7	1a	1·0	2b	8·8	2a	5·9
25	1b	1·5	1a	0·9	2a	5·7	1a	0·7	2c	7·1	2b	7·3
26	1a	0·1	1b	3·0	2b	8·9	(2a)	-	(1a)	-	1a	0·5
27	1a	0·1	1a	1·0	1b	4·2	1a	1·7	1a	2·8	1a	2·1
28	1a	0·8	1a	1·9	1a	1·6	(1a)	-	2b	9·9	1a	1·6
29	1a	2·5	1a	2·6	(1a)	-	1a	1·0	1a	0·2	2c	7·5
30	1a	2·1	2b	8·0	-	-	1a	2·4	1a	3·7	2b	6·7
31	1a	1·8	1b	3·1	-	-	2a	8·6	-	-	1b	1·8
Total	-	56·1	-	65·3	-	63·7	-	67·2	-	140·8	-	68·2
No. of days used	-	30	-	26	-	22	-	25	-	27	-	26
Mean	-	1·7	-	3·7	-	4·9	-	4·3	-	4·6	-	2·8

Annual values: Character　　　　0　1　2　　　　　　　　　　　　Duration: Total 848·1 hr.
　　　　　　 No. of days used　38 241　81　　　　　　　　　　　　　　　No. of days 269
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Mean 3·15 hr.

KEW

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·50 JANUARY 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	200*	-275*	-90*	-80*	-45*	-45*	-35*	65*	100*	165*	250*	265*	425*	525	415*	280*	160*	225*	250*	225*	225*	200*	100*	205	365	(2)
2	150	125	90	205	85	75	125	190	265	290*	450*	380*	305*	355*	265	240	240	205	205	230*	240*	230*	205*	530*	176	(14)
3	605*	355*	135*	25*	75*	25*	0*	-35*	100*	225*	65*	500*	290*	720*	580*	590	730*	765*	615*	380*	375*	355*	355*	480*	590	(1)
4	480	225	415	175	240	185	565	540	0*	65*	115*	-25*	185*	115	380	455	625	765	940	695	845	880	820	745	531	(19)
5	695	655	630	720	555	315	300	430	280	-20	-35	465	475	550	415	375	280	250	390	325	350	315	400	215	389	(24)
6	60	350	425	505	375	250	190	150	190*	255	325	450*	240*	225	250*	400*	455	665	255	75	390	400	405	390	323	(19)
7	375	325	275	230	215	230	290	415	555	655	705*	765	755	740	625	630	655*	680	580	455	440*	380	355	350	470	(21)
8	280	255	240	305	230	225	325	405	755*	715*	730*	720*	795*	645*	625*	575*	680	670	830	830	840	665	440	415	477	(16)
9	265	340	325	340	355	415	455	645	830	965	855	830	815	770	715	740	790	740	705	640	500*	490	525	590	615	(23)
10	505	500	475	475	490	500	555	755	840	955	955	845	880	855*	645*	770	770	715	855	815	745	790	655	625	703	(22)
11	565	515	500	490	480	450	530	755	890	940	930*	890*	745*	720*	805*	805	840	1055	1020	1055	1005	715	640	615	730	(19)
12	325	430	425	565	670	400	500	600	405*	430	630*	795*	865	820	790	740	765	490	480	665	780	665	580	480	594	(21)
13	315	430	475	225	90	375	60	35	85	330	515	525	475*	350*	175*	90*	15	100	160	-70	-140	-135	-10	90	173	(20)
14	100	-10	85	40	160	165	65	165	430	645	505	555	565	600	490	500	475	555	680	400	215	265	280	165	337	(24)
15	100	150	290	215	290	240	300	250	140	240	380	680	830	830	745	745	740	430	450	670	680	745	615	565	472	(24)
16	415	340	380	300	315	255*	430*	515*	565*	630*	645*	265*	240*	-210*	-210*	505*	605	515	640	665	730	745	625	440	517	(13)
17	290	255	215	165	175	200	255	390	630	655	515	530	565*	515*	640	630	615	500	490	600*	645	615	500	490	448	(21)
18	390	305	290	290	290	250	280	430*	670*	865*	705*	780	730	755	715	740	705*	365*	-70*	135	100*	115*	140	115	414	(15)
19	215*	225	215	205	175	185	240	355	390	490	500	475	505	490	425	415*	Z±*	Z±*	-515*	Z±*	135*	390*	415*	350*	348	(14)
20	350*	300*	265	280*	330*	275	140	75	75*	-90*	-205*	-255*	-265*	-255*	-320*	-105*	215*	15*	-10*	15	85	275	365	305	200	(9)
21	255	330	185	60	160	100	35	190	265	365	230	440	580	605	630	720	780	765	745	615	225	35	115	185	359	(24)
22	205	140	75	185	365	490	430	600	820	820	830	840	790	745	680	655	590	530	645	590	540	515	690	765	564	(24)
23	670	330	340	215	255	265	225	330	565	350	880	795	665	730	880	915	895	930	765	830	880	915	1195	830	652	(24)
24	530	580	330	340	450	430	390	630	630	830*	880	830*	845*	955*	1170	1060	1160	1095	890	880	715	670	670*	630*	713	(18)
25	690*	655	790	745	930	1330	880	765	1310*	1430	1245	995	1030	1160	1055	890	880	705	315	50	-300	-460	-380	-400	650	(22)
26	-365	-230	160	35	215	100	135	85	–	–	–	135	480	475	330	280	315	290	250	265	175*	365*	300	200	182	(19)
27	50	15	-70	100	35	140	200	275	305	330	605	730	645	640	505	525	540	640	720	605	730	625	805	280	416	(24)
28	300	150	190*	-195*	60*	185*	205	Z±*	230*	325*	330	340	325*	200*	255*	110*	0*	350	575	525	330	325*	215*	100	321	(10)
29	-20	-90*	-210	-175*	-250*	-70	-115	35	600	365	315	465	350	290	85	225*	160*	175*	85*	Z±*	230*	450*	35*	100	168	(13)
30	140	165	115	15*	50	40*	240	530*	895*	830*	715*	505*	530*	500*	205*	390*	415	555	580	695*	645	615	600	300	368	(12)
31	125	85	-45*	110*	255	215	340	515	655	450	590	450	490	400*	525*	440*	480*	350*	Z±*	0*	15*	Z+*	Z±*	135*	379	(11)
Mean	277	283	286	297	304	297	291	383	510	561	579	613	674	615	607	650	612	591	590	510	521	487	463	352	456	(542)
	(26)	(27)	(27)	(24)	(26)	(26)	(28)	(25)	(18)	(19)	(18)	(19)	(17)	(18)	(19)	(20)	(22)	(24)	(24)	(23)	(21)	(22)	(23)	(26)		

Mean for selected quiet days [553 (10)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·60 FEBRUARY 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	170	345	290	380*	275*	0*	570*	595	465	655	635	720*	Z±*	Z±*	Z±*	600	755	600	630	740	730	870	845	Z±	595	(15)
2	Z±*	Z±*	Z±*	430	155	-70*	-10*	-180*	-200*	-55*	265*	225*	155*	285*	430*	575	655	695	775	775	360*	325*	205	155	491	(9)
3	50	140	130	165	120	140	170	230	70*	170*	290*	440	620	540	515*	335	190	140*	110*	75	70	70	260	15	209	(18)
4	155*	105	155	190	190	145	230	360*	535*	635*	585	720	720	655	515	715	575	540*	515*	380*	720	775	655	540	482	(17)
5	345	320	335	300	275	265	310	395	570	525	515	505	535	550	575	690	740	715	690	680	755	600	465	455	505	(24)
6	395	380	370	325	325	380	395	600	775	630	600*	335*	225*	120*	225*	380	395	430	610	525	475	395	190	Z-*	443	(18)
7	Z±*	465*	-255*	-90	475	320	445	630	740	835	670	775	570	455	275*	310*	275*	260*	95*	-45*	85*	260	430	570	506	(14)
8	205	370	285	355	85*	360	300*	430*	345	345	325	455	385	550	635	655	575	550	-180	515	360	445	430	345	396	(21)
9	205	225*	205*	190*	170*	225*	345*	265*	445*	325*	525*	480	600	660	370	325	465	310	740	720	575	310	370	320	461	(14)
10	300	205	145*	50*	85*	85	165	120*	10*	-215*	-190*	-355*	-20*	15*	-55*	-110*	-155*	-235	105*	70*	15	-20	25	15*	67	(8)
11	240	250*	205*	170*	200*	275*	250*	335	480	550	585	490	475	475	225*	35	130	240	230	300	430	275	405	345	354	(17)
12	345	180	170	140	180	230	225	335*	445*	540*	405*	405*	445*	140*	395*	290*	445*	445*	170*	290*	320*	335*	170*	190*	210	(7)
13	200	145*	50*	15*	120*	70*	230*	395	570*	575*	550	575	465	430	370	290	325	415	430	515	720	430	395	395	431	(16)
14	310	180	140	170	260	205	285	310	430	415	405	405	415	420	380	345*	290*	45*	130*	225*	105*	205*	155*	130*	315	(15)
15	130	165	180	230	120*	120*	215*	310*	275*	515*	730*	660	630*	-165	130	445	395	360	360	645	500	285	250	200	298	(16)
16	180	120	85	50*	60*	50*	85*	180*	260*	290*	370	445*	345*	440*	240*	345	310	310	415	395	370	335	325*	335*	294	(11)
17	275*	215*	180*	205*	155*	140*	130	130*	140*	130*	225*	240*	345	275	260	250	230	285	320	325	405	515	370*	285*	304	(11)
18	240	200	170*	155*	300	275	260	430	490*	690	490	540	540	445	480*	500*	600	715*	660	620*	490	420	415	465	439	(17)
19	355	300	230	205	190	190	230	380*	415*	680*	800*	720*	670*	670*	620*	620*	690*	645*	570	570*	445*	415	385		307	(10)
20	420*	300*	85*	45	0*	-10*	10*	60*	260*	275*	200*	120*	275	355	430	455*	600*	505*	345	225*	Z±*	Z-*	15	10*	244	(6)
21	25*	50*	145*	215	145*	285*	200	645	680	800	860	775	535	395	355	310	420	430	420	285	120*	290*	285*	145	467	(16)
22	105	200	145*	140*	105*	180*	230*	240	415	585	535	525	505	720*	570*	Z+	Z±*	415*	0*	215*	190*	190*	215*	25*	389	(8)
23	225*	230*	25*	60	95	95	60	45	105	205	225*	190*	290	355	335	285	275	230	240	285	345	355	415	380	234	(19)
24	230	355	230	230	145	205	200	205	230	250	215	155	300	405	405	505	575	440	395	600	420	355	265	455	324	(24)
25	260	275	540	355	155	355	170	120	-110	325	515	930	715	705	610	630	825	870	870	585	430	420	560	420	480	(24)
26	260	380	420	420	380	455	550	575	885	930	875	755	515	480	655	560	610	620	550	265	455	465	570	660	554	(24)
27	130	180	240	130	105	205	420	360	345	515	765	790	885	585	765	810	670	655	445	440	345	440	440	370	460	(24)
28	320	285	345	355	370	370	430	610	775	790	850	765	550	535	500	575	790	1185	810	585	585	445	500	395	572	(24)
Mean	237	247	259	223	233	252	271	395	475	565	573	597	512	455	456	466	500	479	488	491	460	402	387	369	409	(447)
	(21)	(19)	(16)	(19)	(16)	(17)	(18)	(17)	(15)	(16)	(17)	(18)	(20)	(20)	(16)	(20)	(21)	(10)	(20)	(20)	(20)	(21)	(22)	(19)		

Mean for selected quiet days [422 (10)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction): and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·37 **MARCH 1963**

Hour G.M.T. — *volts per metre*

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	375	365	305	280	330	320	330	410	800	1025	870	820	885	730	625	790	680	775	765	670	635	585	540	505	601	(24)
2	565	400	480	450	435	350	505	680	885	1010	825	835	400	425	530	540	420	715	695	695	775	590	635	575	601	(24)
3	425	350	315	470	330	340	425	470	550	670	600	400	235	245	295	410	340	375	540	505	620	680	635	575	450	(24)
4	420	295	200	210	175	225	185	260	320	365	235	245	200	245	305	280	280	365	340	315	460	540	555	625	319	(24)
5	260	450	140	35	155	140	315	260	365	365	340	235	320	250	350	185*	260	245*	200*	165*	105*	200	155	150	251	(19)
6	150*	95*	105*	150*	120*	120	140	210	260	315	315	315	410	385	315	305	330	355	330	320	315	305	155	200	284	(19)
7	155	130	130	105*	85*	35*	45*	85	175	350	355	365	375	365	305	270	280	355	375	285	330	330	280	260	278	(20)
8	215	130	130	130	130	155	155	235	260	85	Z±*	Z±*	280	285*	320	305	305	350	340	Z±*	Z±*	Z±*	60*	80*	220	(16)
9	35*	95	120	105	155	165	185*	105*	95*	80*	Z±*	Z±*	Z-*	Z-*	Z-*	Z-*	Z-*	Z±*	Z±*	-20*	0*	-145*	Z-*	Z±*	128	(5)
10	155	130*	115*	120	155*	15*	35*	200	320	285	280	250	-110*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	390	400	420	260	250	277	(11)
11	200	95	105	95	105	120	140*	Z±*	Z±*	Z±*	Z±*	105	250*	155*	-275*	-620*	470	365	155	260	120	130	175	105	174	(15)
12	45	140*	155*	-10*	-155*	95*	60*	200	270	390	320	340	295	285	305*	295*	Z±	340	350	245	235	190	130	190	255	(15)
13	140	115	175	225	295	330	285	540	515	695	435	320	270	225	175*	-190*	-290*	-310*	-80*	70*	15*	105*	45*	50*	326	(14)
14	15*	25*	0*	50*	60	95	95	175	250	225	190	210	175	250	245	140	175	225	140	185	190	150*	-255*	105*	178	(17)
15	185	150	140	120	155	-125*	10*	95*	215*	210	235	250	280	250	280	250	320	330	320	355	410	350	305	Z±*	258	(19)
16	Z±*	Z±*	Z±*	Z±*	Z±*	105*	130	165	225	225	215	245	210	210	225	250	295*	Z±*	Z±*	Z±	320	305	320	280	237	(14)
17	185	165	155	115	105	140	140	140	155	150	85	165	215	175*	175*	85*	Z±*	Z±*	-255*	-110*	110*	0	25	85	127	(16)
18	85*	45*	-20*	70*	80*	105*	85	120*	150*	150*	80*	85*	45*	155*	280*	-55*	15*	190	315	350	355	280	225	155	244	(8)
19	165	155	120	155	155	150	140	245	250	330	260	270	250	210	225	210	305	410*	280*	190*	200*	0*	15*	155*	211	(17)
20	140*	35*	60	15	35	70*	140*	150*	285*	350*	385*	670*	645*	645*	590*	385	320*	400	365	190	245	260	155	95	200	(11)
21	80	175	95	95	95	95	15	260	270	315	330	280	295	225	225	355	355*	410*	410	350	365	285	320	210	234	(22)
22	130	80	50	-25	-65	25	70	190*	235*	320*	320*	400*	365*	260*	385*	435	485	280	280	260	320	295	215	225	191	(16)
23	225	270	165	115	130	130*	70	260	385	330	350	330	225*	270	235	270	245	250	305	250	225	215	225	70	236	(22)
24	-125	0	120	130	150	150	150	185	210	200	140	210	225	250	270	225	245	200	175	215	270	95	165	115	165	(24)
25	105	60	60*	0*	Z±*	Z±*	-65	0*	95*	175*	250	245	250	245	245	225	225	250	250	260	250	270	280	235	211	(17)
26	150*	85*	-510*	-420*	-330*	-280*	-455*	Z±*	Z-*	140*	435*	140*	80	390	375	320*	280	250	235	225	225	225	185	235	246	(11)
27	200	150	140	210	165	210	340	355	385	350	270	245	250	225	260	190*	200*	Z±*	190*	515	365	375	460	320	289	(20)
28	305	315	215	200	215	175	140*	390	410	350	235	270	245	210	215	200	235	210	270	350	375	Z±*	Z±*	Z±*	275	(21)
29	85*	50*	Z±*	Z±*	-65*	50*	0*	-275*	Z±*	Z-*	Z-*	0*	215*	295*	Z±*	Z±	Z±*	365*	235*	280	330	320	295	225	290	(5)
30	305	95	70	95	105*	140*	-90*	590*	Z±*	-335*	-545*	-365*	95*	130	150*	Z±*	Z±*	Z±*	Z±*	-20*	175*	45	Z±*	Z±*	123	(6)
31	Z±*	Z±*	-120*	-80	-65	-35*	-20*	-65*	-20*	-10*	85*	85	115	175	120	150	155	140	150	130	85	210	285	120	107	(16)
Mean	214	192	163	148	155	184	185	270	363	398	340	306	285	282	298	316	318	336	338	330	343	303	291	252	276	(512)
	(22)	(21)	(21)	(22)	(21)	(18)	(19)	(21)	(20)	(20)	(21)	(23)	(22)	(22)	(20)	(19)	(19)	(20)	(21)	(23)	(24)	(26)	(24)	(23)		

Mean for selected quiet days [298 (10)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·71 **APRIL 1963**

Hour G.M.T. — *volts per metre*

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	150	140	125	95	70	150	170	335	365	275*	250	300	265	240	240	220	170	195	265	310	300	320	325	255	228	(23)
2	210	265	250	125	195	210	285	585*	-*	-*	150	320	255	210*	220	205	240	220	185	185	170	150	125	20	199	(20)
3	70	140	95	90	95	90	220	320	300	240	255	275	265*	255	240	Z±*	Z+*	320*	95*	Z±*	Z±	170	150	35	179	(17)
4	0	25	35	10	10	125	300	370	365	300	335*	310	285	240	275	175	265	255	205*	175*	290	370	390	230	220	(21)
5	250	175*	105*	Z±*	160	160	210	610	630*	595*	Z±*	Z±*	Z±*	635	610	635	595	585*	390*	285*	265*	95*	70*	95*	429	(9)
6	170*	205*	135*	60*	70	105	250	370	530	585	530	520	445	390	365	380	370	370	275	195	170	150	170	160	320	(20)
7	140	140	95	95	105	125	150	205	195	220	230	255	250	285	275	265	230	205	240	320	285	275	275	210	211	(24)
8	210	160	140	90	175	170	300	405	540	665	595	630	515	380	185	275	335	400	335	255	275	300	255	275	324	(24)
9	220	275	140	-10	175	170	240	240	285	415	445	550	595	460	450	515	450	195*	185*	125*	Z±*	Z±*	Z±*	-55*	330	(17)
10	-35*	35	Z±*	Z±*	70	70	90*	175*	140*	90*	105	95*	105*	185*	90*	175*	160	90*	125*	220	170	240	255	195	152	(10)
11	160	-75*	125*	-125	125	125	205	210	175*	170*	70*	135*	Z±*	Z±*	Z±*	205*	320*	265	195*	0*	0*	-20*	140	195	144	(9)
12	170	175	135	160	185	230	300	300	250	230	170	160	150	140	140	135	115	150	140	185	285	415	335	335	208	(24)
13	335	170	320	265	240	250	365	380	345	205	205	170*	Z±	205*	220	175*	195	210	210*	210*	220*	240*	310	290	269	(16)
14	210	205	185	195	150	125	60*	95*	195	150	160*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	80*	255*	220*	240	175*	70*	35*	184	(9)
15	90*	45*	70	60	45	35*	80*	80	135	210	220	195	175	275	250	160	125	95	170	230	265*	150*	-110*	-200*	156	(16)
16	105*	35*	90*	35*	-10*	-65*	-100*	-275*	210*	265	300	255	250	220	250	275	240	325	390	365	345	325	285	205	286	(15)
17	230*	175	170*	150*	150*	95*	55*	Z±*	195*	Z-*	Z±*	Z-*	Z-*	-220*	135*	185	255	240	255	250	325*	105*	205	175	217	(8)
18	160	105	70	125*	105	170	150*	320*	265*	380	335*	300	Z±*	Z+*	240*	230*	320*	335	335	230	185	140	Z±	210	210	(13)
19	275	265	495	460	240	320	370	495	485	530	505	355	210	160	140	Z±*	Z±*	170	255	255	380	355	265	195	326	(22)
20	205	170	95	150	105	160	230	210	150*	205*	170*	-110*	Z±*	Z±*	90*	90*	Z±*	80*	Z±*	135*	210	220	170	160	174	(12)
21	115	95	105	95	90	90	115	140	160	170	170	105*	160*	205	205	210	205	240	105*	Z±*	70	95	125	135	142	(20)
22	115	115	115	105	135	170	310	365	345	285	220	210	195	220	175	160	160	150	170	230	195	135	355	290	205	(24)
23	150	135	150	175	170	105	175	460	435	530	445	390	380	400	380	380	345	325	320	380	285	220	240	135	296	(24)
24	70	70	70	70	70	60	195	335	355	335	335	445	485	365	380	405	370	185	150	150	160	205	195	150	234	(24)
25	95	55	80	105	150	265	415	460	600	600	610	665	620	540	470	445	390	365	390	345	250	220	275	175	358	(24)
26	20	20	25	105	170	185	285	320	400	415	540	515	540	415	355	320	310	365	230	60	35	-90	125	185	244	(24)
27	55	95	205	90	160	195	195	275	265	265	265	250	175	140	135	150	115	220	135	160	115	95	125	135	167	(24)
28	105	95	115	95	90	115	95	115	160	125	105	105	170	95	140	125	55	60	140	160	150	95	95	60	111	(24)
29	70	80	60	45*	90*	70*	135*	210*	170*	115*	90*	255*	205*	140*	-155*	105*	175*	150	185	150	160	185	230	255	153	(10)
30	210	195	210	220	185	210	310	335	275	230	220	175	160	170	160	150	125	115	150	175	220	220	185	175	199	(24)
Mean	151	136	141	118	129	159	247	319	333	334	312	342	322	297	272	275	253	234	236	229	215	209	224	186	232	(551)
	(25)	(25)	(24)	(23)	(27)	(26)	(23)	(23)	(21)	(22)	(22)	(21)	(19)	(21)	(23)	(21)	(23)	(24)	(20)	(21)	(23)	(23)	(25)	(26)		

Mean for selected quiet days [247 (10)]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for selected quiet days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY   Factor 4·50   **MAY 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	165	130*	35*	-35*	60*	-35*	-195*	-70*	140*	Z±*	-90*	105*	Z±*	Z±*	Z±*	Z±*	125	195	185	140	175	130	130	140	154	(9)
2	165	165	235	195	195	200	315	305	295	255	245	225	175	235	245	245	200*	195*	225	195	225	245	125	125	220	(22)
3	70	45	45	25	10*	35*	125*	265	295	280	225	210*	Z±*	Z±*	155*	220	185	150	150*	150*	175	95	130	155	157	(15)
4	80	115	95	115	150	195	395	280	335	235	165	130	115	90	95	95	105	130	150	220	185	165	150	195	167	(24)
5	150	165	140	95	125	140*	85*	200*	175	155	150	115*	165	140*	125*	130	130	55*	Z±*	165	225	270	200	185	164	(16)
6	165	150	150	140	140	220	335	375	280	195	175	165	165	155	150	150	140	125	130	155	185	195	200	140	183	(24)
7	140	150	150	140	130	155	235	225	220	200	185	150	140	140	150	155	140	150	150	130	130	155	155	105	157	(24)
8	115	60	70	80	55	105	220	280	255	220	195	185	155	150	140	125	125	70*	115*	95*	35*	150*	60*	-20*	149	(17)
9	-285*	60*	150*	175	235	290	375	405	340	290	235	220	175	155	140	130	150	155	175	185	165	195	210	185	218	(21)
10	55*	-90*	85*	-70*	105	95	165	Z±*	255*	210*	175*	Z±*	Z±*	140*	Z±*	Z±*	Z±*	Z±*	140*	85*	-60*	-105*	-90*	45	103	(4)
11	55	35	55	60	85*	95	130	195	210	200	210	165	175	165	165	150	130	140	125	140	225	375	295	220	162	(23)
12	175	105	95	130	115*	125*	105*	85*	80*	70*	45*	45*	65	-10	60	60	35	150	125	25*	80*				87	(13)
13	-45*	-70*	Z±*	105*	155	210	235	280	245	220	200	225*	210*	Z±*	Z±*	Z±*	175*	210	235	210	220	235	210	165	216	(14)
14	155	130	150	140	155	200	270	295	245	200	200	Z±*	Z±*	-90*	Z±*	Z±*	Z-*	Z-*	235*	255*	365*	175*	210*	210*	195	(11)
15	265	150	130	175	210	290	405	340	340	290	245	220	175	165	155*	165	210	155*	85*	165	155	130	95	70	209	(21)
16	55	45	60	25	45	135	340	550	445	270	210	165	155	130	105	85	85	95	105	140	175	200	155	140	164	(24)
17	115	85	85	80*	125*	130	255	365	315	280	235	255	245	235	220	220	200	130	130	125	125	115	150	155	190	(22)
18	125	105	105	165	185	270	290	315	295	200	155	155	140	130	115	105	60	60	130	220	185	175	155	130	165	(24)
19	150	150	140	125	130	140	155	140	140	95*	155*	125*	130	115*	110	0*	95*	125*	95*	210	235	175	165	115	152	(16)
20	95	95	95	130	140*	155*	175*	210*	95*	85*	95*	125*	80*	140*	165*	195	140*	255	295	245	225	165	130*	70*	179	(10)
21	70*	60*	85*	115	150	210	235	255	295	220	165	175	155	175	155	140	175	175	165	195	195	125	185	175	183	(21)
22	105	125	155	105	175	185	210	335	335	265	255	225	210	210	200	195	165	140	125	105	55	10	35	15	164	(24)
23	-10	10	70	70	45	80	105	200	210	245	225	200	155*	235*	70*	Z±*	Z±*	Z±*	455*	265*	140*	-10*	140*	-70*	121	(12)
24	55*	60*	60*	70	80	155	225	220	165	140	130	125	125*	115*	105	130	125	140	130	95	85	85	95	85	126	(19)
25	140	60	55	80	155	130	165	175	165	155	125	115	85	80	85	70	70	95	70	80	55	35	35	85	99	(24)
26	115	150	45	45	95	125	95	220	265	245	195	185	185	165	150	140	130	155	130	115	115	55	85	140	139	(24)
27	175	140	175	210	175	245	465	545	435	365	280	265	220	210	210	210	225	200	155	140	165	115	165	140	235	(24)
28	185	165	105	115	150*	70*	Z±*	Z±*	70*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	210	220	210	155	155	165	155	167	(11)
29	105	85*	70*	15*	10*	35	140	125	195	195	175	210	235	225	155	55	0	-35	-45	-20	-45	-90	-55	-10	77	(20)
30	25	-20	Z±	Z±	-10	Z±	Z±*	Z±	265	280	405	350	420	405	350	395	280	235	245	165	70	45	105	130	218	(19)
31	115	55	55	55	85	155	280	420	475	490	595	525	340	365	335	315	315	235	140	140	165	155	150	105	253	(24)
Mean	123 (26)	101 (24)	107 (23)	111 (25)	129 (23)	170 (24)	252 (24)	296 (24)	278 (26)	244 (25)	223 (25)	210 (21)	189 (21)	185 (20)	165 (21)	161 (24)	142 (23)	148 (23)	149 (23)	150 (26)	155 (27)	142 (27)	140 (25)	127 (26)	170	(576)

Mean for selected quiet days [185   (10)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY   Factor 4·54   **JUNE 1963**

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
												volts per metre														
1	85	80	60	80	80	120	185	340	355	425	295	225	280	190	225	210	260	210	185	190	165	140	175	165	197	(24)
2	150	155	140	140	155	150	185	175	175	175	190	210	215	225	190	185	155	175	210	185	175	155	150	115	172	(24)
3	95	70	70	80	85	95	115	140	175	210	235	235	165	175	105	150	150	200	245	175	190	165	155	150	151	(24)
4	150	120	120	130	175	225	340	450	435	390	435	375	330	340	330	305	315	270	235	155	115	85	130	80	251	(24)
5	85	95*	70*	Z±*	Z±*	130*	175*	280*	420*	420*	320	320	450	425	435	555	350*	140*	225	185	165	85	85	35	259	(13)
6	115	85	85	80*	165	200	280	215	210	175	150	155	140	130	105	105	60	50	50	80	70	105	50	45	121	(24)
7	45	80	85	70	60	105	295	420	485	625	425	295	200	120*	Z±	Z±*	Z±	Z±	105	105	80	120			212	(17)
8	140	155	70	140	120	105	260	375	260	250	245	215	175	95*	120	130	130	120	130	130	140	155	155	155	167	(23)
9	120	130	130	130	120	130	165	165	190	165	140	155	140	Z±*	Z±	Z±	Z±	Z+	25	85	150	165	150		136	(18)
10	155	120	150	150	130	200	355	485	460	400	350	295	280	245	260	270	250	260	215	200	215	225	140	130	247	(24)
11	165	120	155	210	150	245	210	355	435	390	385	400	425	340	260	210	185	175	150	70	45	85	80	60	221	(24)
12	50	50	50	60	105	190	210	215	210	225	165	155	115	Z±	Z±*	Z+	130	140	95	95	105	80	70	Z±	126	(20)
13	Z±	Z±*	Z±	Z±	Z±	Z±*	Z±*	Z±*	80	140	185	Z±*	Z±*	Z±*	Z±*	Z±*	185*	165	185*	95	95*	140	150	35	124	(8)
14	-10	-35	-20	-45	0	-20	45*	95*	155*	150*	105	155	175	190	190	175	215	185	175	200	155	190	280	225	124	(20)
15	155	140	115	190	350	425	330	210	260	225	185	115	95	85	80	85	60	85	95	95	85	115	120	140	160	(24)
16	130	95	105	130	95*	115*	155*	155*	60*	115*	115*	95*	85*	95	60*	50	105	85*	150*	105	80	150	115	25	99	(12)
17	10	45	35	95	95*	140*	130*	210*	210	150	175	165	165	140	155	150	150	85	120*	Z±*	Z±*	Z±*	85*	35*	124	(14)
18	60	45	45*	60*	50	50*	120*	140*	185*	190	165*	Z±*	Z±*	Z±*	Z±*	175	215	185	130	115	Z±*	115	130	95	125	(12)
19	95	85	85	95	130	185	200	215	215	215	200	165	155*	140*	120*	155*	155*	155*	115*	115*	45*	80*	50*	70*	157	(12)
20	25*	45	10	-10	50	130	165*	190*	175	140*	140*	140*	120*	155*	150	150	190	140	105*	105*	165	140	60	50	103	(14)
21	35*	25	35	80	95	130	175	190	190	200	165	165	130	155	150	155	155	150	150	150	120	120	120	120	136	(23)
22	155	150	95	95	115	130	155	165	175	175	165	155	165	120	115	95*	95	120	120	130	140	165	155	140	139	(23)
23	130	115	105	115	105	105	150	185	165	140	130	120	105	95	95	95	115	130	150	140	150	155	185	175	131	(24)
24	155	115	95	80	70	95	150	215	185	165	155	130	115	140*	85*	175*	120*	150*	115*	85*	120	140	155	120*	134	(16)
25	85	70	15*	50	60	95	150	85*	130*	50*	105*	50*	140*	245	190*	150	Z±	Z±*	190	270	200*	210	190	155	148	(13)
26	120	115	105	115	115	140	175	250	235	210	185*	Z±*	50*	175	155	165*	175*	155*	140	150	155	150	185	215	161	(18)
27	190	185	120	105	130	155	175	245	260	260	165	140	130	140	175	165	150	105	95	115	150	80	85	80	150	(24)
28	80	95	85	35	70*	115*	Z±*	Z±*	Z±*	150	165	140	105	Z±*	Z±*	Z±*	-180*	120	120	70	105	105*	70*	60*	106	(12)
29	60	35	25	45	80	80	105	85*	140*	35*	Z±*	Z±*	105	85	Z±*	80*	85	120	60*	150*	115*	140*	70*	80*	75	(11)
30	80*	60*	-10*	-10*	15*	80*	70*	35*	0*	10*	115*	35*	130	130	130	120	120	140	155	140	115	105	70	80	120	(12)
Mean	107 (26)	92 (27)	84 (25)	94 (26)	112 (24)	148 (23)	208 (21)	264 (19)	252 (22)	246 (23)	223 (23)	204 (22)	188 (23)	186 (20)	180 (19)	179 (20)	157 (21)	151 (22)	155 (21)	136 (24)	129 (24)	134 (26)	132 (26)	114 (24)	158	(551)

Mean for selected quiet days [161   (10)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction): and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours
107

41 KEW OBSERVATORY Factor 4·64 JULY 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	90	55	35*	0*	35*	65*	100	80	70*	70*	70	90	70	90	65	55	65	70	65	90	100	90	90	70	78	(18)
2	35	35	65	45	100	65	180	270	205	155	125	Z±	Z±*	Z±*	125	125	80*	110	70*	80	145	125	70	70	112	(19)
3	45	45	45	45	55	125	335	200	235*	90*	65*	155*	160	170	145	125	145	125	160	135	160	115	125	125	129	(20)
4	90	70	90	90	100	170	145	270	115	Z±*	Z±*	180	160	Z±*	Z+	135	125	135	125	115	125	125	145	125	132	(20)
5	110	65	65	70	90	80	125	115	180*	170	145	145*	125*	135*	115	160	160	135	125	145	170	160	155	115	124	(20)
6	90	70	65	55	25	80	80	115	115	80*	-175*	-155*	Z-*	Z++	Z±*	Z±*	Z±*	Z±*	20*	35*	100*	110*	155*	155*	77	(9)
7	110	70	80	65	65	55	80	100	100	100	70	70	90	100	90	80	90	90	100	160	180	180	90	35	94	(24)
8	90	125	90	90	100	145	205	350	360	245	205	180	160	180	145	145	155	145	145	110	115	145	155	115	163	(24)
9	115	160	135	135	155	155	215	270	250	190	180	180	170	180	170	170	155	125	145	180	215	170	125	115	169	(24)
10	135	110	125	110	125	170	170	200	205	190	135*	205	125	160*	125*	-35*	110*	145	125	110	115	170*	135	145	147	(18)
11	170	135	160	125	100	160	270	335	280	260	180	160	155	180	180	155	70*	-120*	180	250	200	205	135	135	187	(22)
12	100	90	110	125	135	270	340	385	360	250	190	245	180	215	245	180	70*	100*	160	145	180	180	190	190	203	(22)
13	110	110	110	145	155	325	315	190	180	180	55*	Z±*	Z-*	115	110	125	135	145	55*	100	70	110	160	190	154	(20)
14	200	170	145	70	125	125	180	170	135	145	125	115	110	90*	65*	110	145*	170	125	170*	200	170	155	135*	146	(18)
15	100	110	100	65	45*	70*	70*	160*	250*	205*	160*	135*	70*	160*	115*	125*	160	100*	110*	115*	215*	125	90*	90	107	(7)
16	110	110	100	90	135	170	235	250	280	215	200	205	200	235	190	200	190	160	125	115*	145	170	145	160	175	(23)
17	100	65	70	90	155	215	110	250	235	205	200	205	170	170	160	200*	110*	125*	135*	145*	170*	160	215	110	160	(18)
18	35	45	65	55*	25	55*	90*	170*	125*	125	145*	180	110*	70	90	125	110	100	100*	180	55	90	145	90	96	(16)
19	100	110	155	90	110	155	235	260	235	205	245	180	200	160	155	125	180	200	190	205	205	90	80	70	164	(24)
20	90	90	100	110	110	100	145	135	145	125	135	145	100	100	90	110	100	80	20	65	35	80	110	-35	95	(24)
21	-10	45	10	35	110	160	155	250	145	245	170	160	115	205	200	215	225	215	190	145	80	25	90	20	133	(24)
22	25	80	65	55	65	90	270	405	415	295	270	235	190	205	205	190	170	145	90	45	65	55	80	65	157	(24)
23	10	35	25	20	25	25	35	100	80	55	55	80	70	90	80	135	135	115	110	110	190	110	55	70	76	(24)
24	55*	100	100	55	35	55*	55*	80*	70*	115	125	145	125*	90	100	125	135	110*	55*	155	80*	35*	65*	55*	107	(12)
25	65	55	65	80	80	100	325	305	315	215	200	190*	145*	235	205	215	215	135	125	135	135	90	115	125	161	(22)
26	135	70	35	90	115	235	325	380	315	290	235	205	180	180	160	200	190	160	125	145	35	45	0	35	162	(24)
27	80	90	100	110	70	65	65	235	360	215	200	200	200	200	215	205	205	260	205	215	235	180	250	180	181	(24)
28	110	100	110	100	70	90	155	200	245	215	205	245	170	205	200	215	215	205	215	305	200	190	135	100	175	(24)
29	80	90	70	55	65	70	200	270	450	575	450	295	215	205	190	235	215	215	180	370	200	55	80	65	204	(24)
30	55	70	65	35	90	80	155	405	450	470	350	270	250	245	235	245	260	200	180	205	200	235	115	180	210	(24)
31	90	90	90	155	170	180	245	460	560	485	430	385	340	340	325	290	270	225	235	200	270	235	205	90	265	(24)
Mean	89	86	87	83	95	136	193	248	261	228	198	190	164	174	161	163	167	152	144	158	149	133	127	102	151	(640)
	(30)	(31)	(30)	(29)	(29)	(27)	(28)	(28)	(25)	(26)	(24)	(24)	(23)	(24)	(26)	(27)	(24)	(25)	(23)	(26)	(27)	(28)	(28)	(28)		

Mean for selected quiet days [153 (10)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·53 AUGUST 1963

volts per metre

Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	25	130	70	45	60	85	260	450	450	520	420	410	355	190	185	190	155	155	155	140	185	120	85	80	205	(24)
2	50	120*	155*	70	85	85*	200*	330*	285	485	505*	450	515	515	330	295	285	280	210	140	85	105	70	70	240	(18)
3	60	80	70	85	120*	130*	95*	0*	Z±*	Z±*	Z±*	Z±*	0*	-20*	-25	-70*	-105*	-90*	-90*	0*	-60*	-35*	0	10*	45	(6)
4	15*	10*	95*	15	25	45	50	35*	130*	95*	60	45	10	15*	45*	70*	35*	-55*	Z-*	Z±*	0*	Z±*	Z±*	45*	36	(7)
5	10*	-20*	-10*	-20	-20	0	25	70	70	70	80	70	70	35*	70*	50	50	70	70	15	85	50	50	70	49	(19)
6	70	35	60	85	80	120	165	235	200	225	250	215	165	85	120	155	130	150	140	130	155	185	130	85	140	(24)
7	155	95	85	165	200	260	245	280	260	225	210	200	210	215	185	210	200	185	175	130*	200*	105*	155	190	195	(21)
8	130	45	45*	60	70	130	215	270*	225	190	215	210	185	175	165	185	190	200	165	155	155	155	150	130	159	(22)
9	115	95	85	85	95	150	235	270	245	225	200	190	140	130	130	115	105	115	105	95	150	155	155	140	147	(24)
10	130	95*	105*	10*	25*	105	140*	105*	140	140	155*	70*	85	95*	140	120	120	95*	140	105	140	120	190	185	133	(14)
11	150	115	70	80	80	115	120	150*	140	105*	115	120	70	95	105	115	105	85	95	105	105	155	200	155	113	(22)
12	105	80	70	70	105	130	245	225	190	200	165	155	140*	85*	130*	Z±*	120*	155	105	140	120	95	120	105	136	(19)
13	95	70	70	95	85	105	150	250	165	175	185	130	120	95	85*	10*	35*	60*	Z±*	Z±*	120	130	115	85	124	(18)
14	105	70	70	70	70	105	225	190	175	150	115*	85*	105*	45*	95*	190	120*	150	115	95	95	175	95	95	124	(18)
15	105	80	80	80	85	175	200	245	250	225	190	Z±*	120*	190	140	155	165	185	200	200	175	150	85	155	160	(22)
16	155	165	150	130	120*	120*	155*	60*	80*	-20*	70*	120*	Z±*	70*	50*	Z±*	215	200	155*	200*	235	190	185	140	177	(10)
17	95	85	60	60	95	140	235	330	280	Z±*	Z±*	450	Z±*	Z±	Z±*	Z±	Z±*	Z±*	200	210	105*	Z±*	Z±*	Z±*	187	(12)
18	Z±*	Z±*	15*	-35*	-70*	-70	50	140	175	165	165	155	140	115	95	115	105	130	155	155	175	165	210	150	131	(19)
19	140	120	95	115	120	130	245	295	340	210*	215	175*	105*	150	165	155	155	140	165	120	150	155	175	120	165	(21)
20	95	85	70	105	140	245	435	420	435	390	280*	Z±*	Z±*	Z±*	Z±*	Z±*	305*	270	270	235	235	235	190	115	234	(17)
21	115	80	80	60	60	80	95	115*	175*	190*	225*	155*	155	190	130	130	155	115	115	190	190	190	225	190	134	(19)
22	115	80*	35*	60*	15*	-60*	-115*	-80	-20	95	95	95	80	190	175	225	225	190	190	190	225	225	190	115	140	(18)
23	80	60	60	80	80	95	190	285	305	285	175*	190*	225	165	120*	130*	85	80*	85*	120	140	165	210	175	156	(18)
24	155	105	80	70*	60*	45*	-105*	85*	95*	155	165	155*	175	140	130	130	150	140	125*	150*	165	165	130	145	145	(17)
25	120	115	95	80	80	80	120	115	120	85*	50*	50*	120*	70*	45	70	10	25*	50*	0*	-25*	70*	70*	50*	87	(12)
26	25*	70*	70	70	115	155	270	315	280	245	210	225	210	210	175	175	155	165	95*	155*	190	175	175	155	187	(20)
27	120	105	105	95	105	155	245	260	225	190	155	130*	Z±*	Z±*	Z±*	Z±*	Z±	Z±*	Z±*	190*	165	235	190	140	166	(15)
28	95	105	105	70	60	85	190	410	315	250	225	210	200	185	130	115	120	50	15	15	35	70	50	60	132	(24)
29	60	25	25	15	25	45	120	140	210	190	175	120	115	95	70	85	80	60	70	70	50	35	35	50	82	(24)
30	80	140	85	105	85	105	60	115	115	70	70	140*	95*	70*	Z±*	115*	95*	155*	235	175*	Z±*	165*	Z±*	235	115	(13)
31	105*	95*	140	105	95	105	175	210	200	190	165	Z±*	Z±*	60	105	130	105	95	95	35	140	190	95*	Z±*	130	(18)
Mean	105	91	81	77	83	111	183	235	222	220	178	203	170	168	135	148	139	149	145	129	146	152	138	128	145	(555)
	(26)	(23)	(24)	(27)	(25)	(26)	(25)	(22)	(26)	(23)	(21)	(17)	(19)	(19)	(20)	(21)	(22)	(22)	(23)	(22)	(25)	(25)	(26)	(26)		

Mean for selected quiet days [159 (10)]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for selected quiet days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY   **Factor 4·54**   **SEPTEMBER 1963**

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	Z±*	70*	170*	Z±*	Z±*	Z±*	100	180*	90*	-20*	Z±*	Z±*	Z±*	Z±*	Z-*	Z±	Z±*	100	155	Z±*	110*	90*	110	145	122	(5)
2	Z±*	Z±*	70*	80*	80	Z±*	160*	205	205	160	90	55	25	80*	Z±	Z±*	Z±*	80	115	115	80*	55*	35	45	101	(12)
3	-55	65	65*	Z±*	70	110	160	235	260	235	235	Z±*	Z±	Z±*	170	205	160	145	135	145	145	180	190	155	155	(19)
4	90*	65*	125*	110*	110	160	250	270	245*	135*	155*	Z±*	Z±*	160*	235*	235*	170	160	145*	205	180	205*	190*	125	181	(9)
5	25*	90*	180*	90*	0*	55*	235	470	430	360	280	235	190	180	180	170	160	160	155	180	170	170	135*	-25*	233	(16)
6	Z-*	Z-*	Z-*	Z±*	Z±*	Z±*	245*	260*	180*	305*	305	270	225	235	205	215	180	190	200	145	125	110	115	90	186	(14)
7	45	70	90	90	145	200	295	380	290	215	235*	145	170	70	170*	145*	125*	160*	215*	205	235	225	200	145	179	(18)
8	145	110	100	100	100	110	110	115	145*	80*	100	100*	100*	Z+*	260*	170	100	100	90	125	250	245	145	280	139	(18)
9	190	170	145	115	155	205	315	315	295	245	190	160	160*	205	160	190	215	160	35*	-10*	160	135	145	125	190	(21)
10	80	70	90	65	70	70	125	180	295	200	160	125	55*	-20	20	20	80	110	155	70*	110*	65*	65*	20*	105	(18)
11	10*	35*	145*	100	110	135	235	250*	340*	245*	70	155	205	225*	90*	160*	35*	45*	55*	0	65	90	100	145	117	(12)
12	80	90	70	45	45	70	160	270	470	360	250	270	225	235	205	180	160	135	80	55	215	260	170	65	174	(24)
13	70	180	145	100	190	115	160	215	370	360	290	305	290	250	200	190	170	110	70	45	55	215	145	110	181	(24)
14	55	90	90	70	110	180	160	225	225	370	315	235	215	160	190	125	115	125	160	110	180	45	70	90	155	(24)
15	70	70	80	65	55	80	100	110	125	190	155	215	215	205	200	135	100	55	35	100	45	115	90	35	110	(24)
16	15	145	90	180	50	275	665	805	405	415	390	545	635	545	430	365	300	235	275	155	130	80	80	105	305	(24)
17	90	115	65	80	130	105	300	610	585	430	390	415	285	115	130	195	235	195	195	155	170	180	155	170	229	(24)
18	105	80	80	130	40	80	145	130	245	195*	235	285	210*	275	285	275	235	245	285	130	130	170	210	195	181	(22)
19	155	105	105	130	155	155	340	520	570	470	405	455	310	300	390	415	455	390	350	300	440	495	385	290	337	(24)
20	280	245	170	180	110	155	380	550	485	340	405	360	270	250	245	215	215	245	170	160	160	125	160	80	248	(24)
21	65	90	55	25	25*	25*	35*	70*	70*	65*	55*	65*	65*	70	70	100	100	70*	80*	70*	70*	55	35	25	63	(11)
22	20	-10	0	0	0*	0*	10*	20*	20*	45*	100	160	180	190*	205	205	180	145	100	65	55	35	20	25	87	(17)
23	35	25	20	-10	45	65	70	55	45	80	115	205	280	280	235	180	170	115	55	45*	70*	20*	10*	-20*	109	(19)
24	35*	20*	55*	55*	55	100	170	200*	290*	315	305	270	160*	-25*	Z-*	Z±*	Z±*	Z±*	170	260	215	180	180	160	198	(12)
25	170	145	55	135	170	215	335	425	475	350	295	245	180	160	180	170	215	245	160	295	245	215	225*	225*	231	(22)
26	115*	-100*	65*	45*	45*	0*	-20*	45	65	65	55	70	70*	90*	80*	125*	205	215	235	205	180	155	125	110	133	(13)
27	115	115	110	100	125	145	205	280	270	245	235	200	145	180	180	190	155	100	200	245	235	280	200	170	184	(24)
28	100	80	70	35	25	25	35	135	260	225	205	190	155	135	125	145	145	160	215	160	100	45	20	10	117	(24)
29	10	20*	20*	10*	10*	10*	20*	25	55	125	115	90*	55	35*	45*	100*	100	90	45	100	65	25	20	10	60	(14)
30	20	10	20	20	20	20	35	65	135	205	235	245	215	235	215	225	250	205	225	215	205	200	160	135	146	(24)
Mean	85	98	83	84	94	126	212	276	298	271	228	242	223	203	201	195	183	162	161	155	166	161	131	117	173	(556)
	(22)	(21)	(20)	(21)	(23)	(22)	(24)	(24)	(22)	(22)	(26)	(24)	(20)	(20)	(21)	(22)	(25)	(26)	(25)	(25)	(25)	(25)	(25)	(26)		

Mean for selected quiet days [190 (10)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY   **Factor 4·52**   **OCTOBER 1963**

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	135	125	125	120	135	145	210	145*	165*	190	70*	155	55*	145*	Z±*	Z±*	Z±*	Z±*	Z±*	210	270	300	270	245	188	(14)
2	280	245	260	245	200	255	380	590	590	425	290	215*	300*	300	215*	300*	235	310	255	225	145	120	165	200	286	(20)
3	210	180	215	255	255*	200*	255	345*	255*	190*	190	190*	100*	110*	55*	100*	65*	90*	135*	10*	55*	65*	110	90	188	(8)
4	65	55	45	35	55	65	80*	120*	235	300	300	245	225	245	245	235	210	155	145	215	270	215	190	145	177	(22)
5	100	70	65	65	65	55	90	180	260	255	210	170	170	Z±*	-30*	-10*	Z±*	Z±*	80*	55*	20*	25*	80	155	133	(15)
6	65	70	70	45	55	70	100	145	255	215	100	235	245	155	155	100	65*	70*	45*	65*	65*	20*	0*	0*	130	(16)
7	10*	10*	20	35*	80*	65	190*	260	345	355	280	255	280	215	190	145	125	190	165	180*	90*	125*	145	120	197	(16)
8	90	55	65	55	45	70	120	80*	90*	165*	135	200	180*	190*	190*	215	190	155*	135	90*	45*	45*	215	165	125	(14)
9	70	55	25	20	35	25	70	165	290	400	300	260	200	215	170	200	210	255	270	260	200	180	245	170	179	(24)
10	100	90	45	25	45	35	100	270	215	215	235	225	255	255	245	255	200	190	215	200	215	70	145	135	166	(24)
11	10	70	200	100	55	35	155	255	260	170	145	180	165	215	200	235	245	225	225	200	210	200	135	120	167	(24)
12	120	145	165	125	145	215	180	235	280	280	310	290	245	215	200	215	235	270	215	120	90	145	200	235	203	(24)
13	180	70	90	90	90	135	125	145	135	90*	145*	120	125	145	165	145	155	180	235	270	290	270	215	165	161	(22)
14	135	125	125	135	145	170	245	435	335	370	315	260	165	155	170	165	125	170*	180	210*	215*	135*	165	200*	206	(19)
15	180*	100*	80*	145*	110*	80*	100*	190*	245*	215*	225*	225	170*	135*	125	170*	145*	70*	145	180	215	190	135	100	164	(8)
16	80	65	65	90	80*	165*	155*	165*	255*	165*	210*	260*	170*	200*	210*	200*	155*	165*	65*	70*	155	155	100	100	101	(8)
17	90	10	80	110	170	165	210	400	455	390	245	180*	155*	180*	310	235	190	225	200	290	300	280	300	270	235	(21)
18	210	165	165	165	145	215	270	335	460	300	290	300	245	215	190	210	225	245	270	255	210	190	270	165	238	(24)
19	165	165	155	120	135	125	145	200	315	315	205	125	215	230	255	265	215	150	125	290	290	255	115	150	193	(24)
20	115*	75	40	50	65*	100*	125*	50*	115*	75*	65*	65*	25*	125*	240	370	345	330	405	485	455	395	280	180	281	(13)
21	190	140	100	65	75	90	180	305	355	255	230	255	265	290	230	115	115	205	190*	125*	140*	125*	75	65	180	(20)
22	115	150	150	125	90	230	445	710	650	510	495	405	470	430	265	215	190	230	355	355	345	380	205	125	318	(24)
23	125	115	100	90	65	75	90*	240	140	150	265	255	230	255	180	290	290	405	445	430	305	230	345	140	225	(23)
24	70	135	155	125	120	135	225	245	255	310	255	245	235	255	290	200	90	145	215	170	255	165	235	215	202	(24)
25	215	120	170	145	90	135	200	355	360	545	570	545	570	570	490	515	425	390	315	315*	135*	225*	155	125	334	(21)
26	90	80	100	125	110	210	190	165	80	270	260	245	145	170	235	210	180	145	145	155	145	125	65	110	156	(24)
27	180	145	120	80	55	45	35	80	90	90	145	125	145	120	90	165	135	120	170	215	290	300	270	255	144	(24)
28	210	215	180	210	165	170	215	235	280	215	260	280	270	290	225	210	180	210	215	225	245	225	170	125	218	(24)
29	120	65	65	65	80	70	145	135	125	165	210	200	200	165	210	215	255	245	245	235	180	200	180	210	166	(24)
30	110	100	120	90	90	100	165	225	310	335	345	405	445	460	550	545	545	405	280*	55	35*	90*	125*	155*	284	(19)
31	145	120*	65*	145*	215*	110	35*	65*	20*	20*	10*	10*	-35*	Z±*	Z±*	270*	390	325	345	525	535	355	345	455	353	(10)
Mean	131	111	113	106	98	119	186	274	295	289	263	248	250	253	234	236	228	241	235	253	255	225	194	169	204	(597)
	(28)	(28)	(29)	(28)	(25)	(27)	(24)	(23)	(24)	(24)	(25)	(25)	(22)	(22)	(24)	(24)	(25)	(23)	(24)	(22)	(22)	(22)	(29)	(28)		

Mean for selected quiet days [207 (10)]

The potential gradient is reckoned as positive when the potential increases upwards. The symbol Z indicates either that the trace fluctuates rapidly so that estimation of a mean value is impracticable, or that the trace is limited by the range of the instrument (see Introduction); and the suffix +, - or ± indicates that the mean value is plainly positive, plainly negative, or indeterminate in sign. The occurrence of precipitation of any sort is indicated by an asterisk. Round brackets round any hourly mean indicates that the record during that hour is somehow imperfect.

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·70 NOVEMBER 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	435	295	200*	215	225	285	405*	475	625	565*	380	320	190	Z±*	340	415	320	Z±*	Z±*	Z±*	Z±*	Z±*	30*	10*	348	(13)
2	45	40	30	30	30	10	20	20*	95*	490	295*	265	285	Z±*	Z±*	295	Z±*	370	285*	Z±*	Z±	40	20	20	133	(15)
3	20	20	20	10	10	10	10	20*	65*	45	75	85	65	130	140	225	130	55	30	20	10	10	10	10	518	(22)
4	10*	20	10	0*	-40*	20	10	10	20	75	265	210*	295	310	320	350	380	385	455	500	380	425	405	300	247	(20)
5	255	170	200	190	235	255	225	330*	95*	275*	320	395	330	300	170*	40*	130*	65*	170*	Z±*	Z±*	0*	190	385	265	(13)
6	405	340	445	565	540	720	710	625	530	520	550	395*	170*	Z±*	Z±*	Z±*	415*	235*	425*	455	435*	455	320	150*	513	(14)
7	140*	85*	-295*	-150*	140*	130	65	0*	285*	215	170	210	170*	65*	245	295	320	415	510	550	500	530	475	380	334	(15)
8	190*	105*	170	140	140	160	180	215	300	300	300	330	320	255	Z±*	395	465	625	755	710	635	670	670	670	400	(21)
9	510	285	265	300	385	320	285	455	330	435	615	530*	455*	215	235	215	320	190	285	265	265	265	360	295*	324	(21)
10	295*	190*	190*	170*	115*	45*	0*	Z±*	Z±*	75*	150	200	225	300	295	300	330	340	330	350	295	255	225	200	271	(14)
11	130	115	Z±*	55*	Z-*	45*	Z±*	Z±	Z±*	300	285*	300	360	300*	265*	225	180*	130*	130*	40*	-10*	-10*	0	10	180	(8)
12	10	20	10	20	30	45	55	160	210	265	235	210*	275	300	295	340	370	415	405	380	295	265	245	225	212	(23)
13	190	190	215	215	180	215	235	300	170	395	340	300	330	295*	340	425	380	465	550	405	490	445	530	445	337	(23)
14	320	415	385	415	465	490	520	650	680	635	605	490	380*	585	455	480	595	560	560	405*	385*	225	350	340	487	(21)
15	310	170	150	Z±*	Z±*	Z±*	Z-*	Z±*	435*	210*	75*	330	490	510	455	465	635	755	785	755	720	700	735	720	543	(16)
16	560	475	Z±*	Z±*	255	225	285	415	605	435	635	795	465	405	395	455	455	540	520	475	275	360	285	330	438	(22)
17	300	275	275	275	170	130	210	170*	210*	265*	385	395	295*	Z±*	Z±*	-195*	-315*	-395*	Z-*	Z±*	180	255	265	Z±	260	(12)
18	255	150	190	Z±*	Z±*	95	115*	10*	0*	-10*	0*	40*	130*	55*	115*	Z±*	-*	-*	-*	-*	-*	-*	-*	-*	173	(4)
19	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-*	-	-*	-	-	275	255	170*	255*	360	340	265	299	(5)
20	130	190	130	95*	170*	190	265	380	435	455	445	435	445	340*	395*	455	520	540	575	500	510	330	475	285	385	(20)
21	265	380	595	130	225	225	150	215	265*	170*	-325*	-375*	-210*	65*	20*	130	160	190	190	180*	95	75*	95*	140	221	(14)
22	125	130	130	150	125	150*	180	275	380	370	385	360	370	320	380	385	415	445	395	-	-	-	475	455	313	(20)
23	340	190	210*	150*	180	200	255	295	370	380	380	320	285	300	275	340	380	425	395	340	310	210	200	170	297	(22)
24	140	105	95	75	75	95	65	20*	Z±*	Z±*	10*	85*	85*	150*	295	320	350	380	350	310	125*	200	150	160	198	(16)
25	125	115*	85	Z±*	Z±*	-435*	-160*	150*	Z±*	Z±*	Z±*	Z±*	Z±*	435	415	350*	200*	360*	385*	255*	310	310	285	245	276	(8)
26	215	170	180	140	130	140	210	340*	475*	565*	405*	370	425	370	415	385	320*	395*	475	300	200	130	115	40*	257	(17)
27	Z±*	40*	55*	Z±*	Z±*	160	285	380	560	615	530	455	560	565	385	245	210	225	360	380	415	510	Z+	Z+	402	(17)
28	Z+	Z+	Z+	Z+	Z+	220*	405	435	575	530	465	295	275	210	170	225	265*	160*	-110*	-120*	-40*	10*	20*	-160*	359	(10)
29	-150*	-60*	-30*	-10*	-40*	225*	55*	30*	30*	75*	-355*	-295*	Z-*	265*	475*	645	565	475	540	635	225	510	465	435	499	(9)
30	445	550	575	475	350	190	285	275	300	395	530	670	680	755	830	745	585	475	510	490	425	300	295	255	474	(24)
Mean	251	213	208	209	208	196	223	347	406	381	388	366	351	369	352	365	394	407	440	434	344	337	315	293	323	(479)
	(22)	(22)	(20)	(16)	(18)	(22)	(22)	(16)	(15)	(18)	(20)	(20)	(19)	(17)	(19)	(24)	(20)	(21)	(21)	(18)	(19)	(23)	(25)	(22)		

Mean for selected quiet days [339 (9)]

POTENTIAL GRADIENT (close to the ground, over an open level surface).
Mean value for periods of sixty minutes between exact hours

41 KEW OBSERVATORY Factor 4·58 DECEMBER 1963

volts per metre

Hour G.M.T.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	Mean	
1	200	165	130	145	155	200	210	190	275	295	350	320	350	310	300	430	550	640	530	510	365	300	245	175	306	(24)
2	220	245	230	220	245	200	145	255	255	395	440	540	630	520	440	455	670	365	175*	0*	110*	200*	210	220	345	(20)
3	265	240	190	230	185	200	255	420	540	530	530	465	615	620	420	695	620	510	430	230*	255*	65*	100*	75*	419	(19)
4	135*	210*	245*	175*	110*	55*	130*	185*	385*	455*	465	780	595	575	560	530	565	650	640	495	465	475	385	365	539	(14)
5	350	275	275	275	330	275	450	620	740	750	750	620	565	575	605	595	530	540	405	420	350	245	220	175	456	(24)
6	100	135	110	165	185	220	275	405	630	670	660	730	650	615	565	585	575	605	530	465	420	405	355	340	433	(24)
7	200	155	185	200	210	230	245	340	540	560	560	650	475	575	465	365	350	405	505	615	465	300	440	510	398	(24)
8	405	295	130	110	145	220	210	210	130*	75*	-305*	-115*	220*	200*	550	550	530	560	615	550	510	550	110	275	363	(18)
9	Z+	Z+	Z+	Z+	Z+	795	605	1050	970	1155	760	715	685	760	660	740	670	630	540	485	455	385	405	350	674	(19)
10	220	210	275	355	265	275	395	715	1025	915	970	1025	650	440	440	395	300	295	295	265	405	240	165	165	446	(24)
11	275	285	190	65	80	120	255	340	565	565*	505*	530*	495*	440*	365	420	450	320	120*	220	285	55	20	0	239	(18)
12	75	0	-40	55	145	145	210	295	295*	550	530	630	595	535	530	620	670	605	605	595	650	675	440	365	414	(23)
13	300	110	145	245	240	340	510	475*	615*	560*	670*	715*	595*	Z±*	650	565	310	165	80	35	110	110	155	145	248	(17)
14	130	165	145	145	135	80	135	145	255	310	220	65*	110*	130*	185*	90*	0*	-270*	-190*	245*	375*	350	365	385	212	(14)
15	300	110	35	55	65	145	155	300	245	255	375	575	450	405	375	440	455	420	240	530*	670*	Z±*	-60*	35*	284	(19)
16	75*	20*	-85	-75	-50	0	75	130	145	190	295	375	465*	510	585	560	385	410	340	300	365	385	245	165	250	(21)
17	100	165	175	210	165	310	420	455	550	455	510	660	530*	455*	455*	430*	550	220	285	330	110	165*	175	130	314	(19)
18	35	35	165	145	130	210	210	330	540	705	640	640	630	630	640	640	615	375	420	350	330	190	350	330	387	(24)
19	255	145	155	220	240	255	330	350	550	420	455	620	695	660	615	615	585	330	420	350	485	365	405	320	410	(24)
20	410	310	295	330	265	295	385	405	550	550	560	740	835	835	880	850	650	630	560	530	440	275	275	330	508	(24)
21	65	90	-10	100	275	275	375	355	495	495	455	675	770	785	850	450	530	330	295	210	405	475	230	245	384	(24)
22	-75	-75	55	75	130	-10	185*	185	230	355	440	530	375	540	405	485	510	440	110	295	465	595	605	440	309	(23)
23	-115	-10	110	295	130	320	620	660	440	465	300	300	365	355	365	640	585	560	620	640	640	550	405	220	394	(24)
24	355	265	265	240	230	185	185	210	320	350	385	510	310	295	90	80	245	185	165	155	110	-40	-95	75	211	(24)
25	75	65	0	-95*	10*	25	45	-20*	-105*	-95*	-105*	-230*	-20*	0*	0*	-95*	135*	185	510	405	585	660	620	540	310	(12)
26	530	365	505	540	585	295*	130*	Z±*	Z±*	Z±*	Z±*	Z±*	Z±*	825	615	275	340	475	770	885	940	1135	1160	970	682	(16)
27	1105	935	840	935	730	970	880	880	495	495	730	340	285	240	350	145	210	120	120	145	405	300	350	405	517	(24)
28	330	330	200	245	110	175	175	265	295	285	300	245	340	275	240	475	155	-20	-20	65	190	295	220	145	221	(24)
29	185	230	90	90	80	45	135	135	145	155	75	155	245	200	130	-125*	145	210	340	365	405	455	405	350	207	(23)
30	255	240	265	300	265	310	405	450	510	520	475	375	295	275	295	300	230	145*	135*	80*	45*	185*	155	120	318	(19)
31	120	120	135	55	65	75	100	135	240*	200*	100*	165	565	560*	450	450	510	550	675	530	475	455	495	430	328	(20)
Mean	238	200	178	213	205	237	300	379	471	493	489	535	520	516	480	494	465	404	408	393	417	392	328	299	372	(646)
	(28)	(28)	(29)	(28)	(28)	(29)	(28)	(27)	(24)	(24)	(25)	(25)	(23)	(24)	(28)	(27)	(29)	(29)	(27)	(26)	(26)	(26)	(29)	(29)		

Mean for selected quiet days [404 (10)]

Annual Mean	165	152	146	143	151	177	230	306	336	341	322	333	314	306	292	301	296	286	290	274	266	250	235	204	252	(6652)
	(302)	(296)	(288)	(288)	(285)	(287)	(284)	(269)	(258)	(262)	(267)	(259)	(248)	(247)	(256)	(269)	(274)	(278)	(272)	(276)	(283)	(294)	(307)	(303)		

Annual mean for selected quiet days [277]

Daily, monthly and annual means are computed excluding hours with precipitation and, of course, all indeterminate entries. The number of hours or days used in computing each mean is shown in round brackets. Entries in square brackets are means for selected quiet days (see Introduction) and the figure in round brackets is the number of days used in computing this mean.

| | JANUARY | | FEBRUARY | | MARCH | | APRIL | | MAY | | JUNE | |
	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	2	5·5	1	1·8	0	0·0	0	0·0	2	6·1	0	0·0
2	0	0·0	2	4·8	0	0·0	1	0·3	0	0·0	0	0·0
3	1	2·4	1	1·3	0	0·0	1	1·8	1	0·8	0	0·0
4	1	2·1	0	0·0	1	0·1	1	1·7	1	0·1	1	0·1
5	1	1·0	0	0·0	1	0·4	1	1·0	1	0·6	1	1·7
6	1	0·6	1	1·5	0	0·0	1	0·2	0	0·0	1	0·3
7	0	0·0	1	2·5	1	0·2	0	0·0	0	0·0	1	1·0
8	0	0·0	1	0·8	1	2·1	0	0·0	1	1·0	0	0·0
9	0	0·0	1	0·2	2	10·9	2	3·0	1	1·1	1	2·4
10	0	0·0	2	12·1	2	3·0	1	1·3	2	6·6	0	0·0
11	0	0·0	1	0·3	2	4·4	2	5·0	0	0·0	1	0·1
12	0	0·0	1	0·1	1	2·4	0	0·0	1	1·7	1	0·4
13	2	4·2	1	0·6	2	4·1	1	0·2	2	3·0	2	7·0
14	1	1·2	1	0·3	1	1·3	2	3·7	2	4·7	2	4·0
15	1	0·2	1	0·9	1	1·0	1	1·5	1	0·2	0	0·0
16	1	1·7	0	0·0	2	4·5	2	3·2	1	0·2	1	0·5
17	0	0·0	0	0·0	2	4·4	2	6·0	1	0·2	1	1·0
18	1	1·4	1	0·1	1	2·0	1	1·3	1	0·2	1	1·8
19	1	2·7	0	0·0	1	1·1	1	1·0	1	0·6	1	0·2
20	2	8·5	2	3·9	1	0·5	2	4·1	1	0·1	1	1·5
21	1	0·5	1	0·4	1	0·5	1	1·5	1	0·3	1	0·2
22	1	0·1	1	0·8	1	1·6	1	0·1	1	0·7	0	0·0
23	0	0·0	1	0·2	1	0·8	0	0·0	2	5·3	0	0·0
24	0	0·0	0	0·0	1	1·3	1	0·2	1	0·3	0	0·0
25	2	4·2	1	1·2	1	2·9	1	0·1	1	0·4	1	1·5
26	-	-	0	0·0	2	7·3	1	1·4	1	0·2	1	1·0
27	1	1·8	1	0·1	1	0·5	1	0·2	0	0·0	0	0·0
28	1	2·4	0.	0·0	1	0·5	1	0·3	2	4·0	2	4·7
29	2	7·9			2	8·2	1	0·9	2	6·8	1	1·6
30	1	1·0			2	9·8	0	0·0	2	4·0	1	2·5
31	2	3·6			2	7·9			1	0·2		
Total	-	53·0	-	33·9	-	83·7	-	40·0	-	49·4	-	33·5
No. of days used	-	30	-	28	-	31	-	30	-	31	-	30
Mean	-	1·8	-	1·2	-	2·7	-	1·3	-	1·6	-	1·1

| | JULY | | AUGUST | | SEPTEMBER | | OCTOBER | | NOVEMBER | | DECEMBER | |
	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient	Character	Duration of negative potential gradient
		hr.		hr.		hr.		hr.		hr.		hr.
1	1	0·9	1	0·5	2	7·0	1	2·2	2	4·3	0	0·0
2	1	1·2	1	0·6	?2	3·4	1	0·2	1	2·1	1	0·5
3	1	0·3	2	9·5	1	2·1	1	0·6	1	0·3	1	0·2
4	1	1·4	2	5·9	1	1·2	0	0·0	1	0·5	1	0·2
5	0	0·0	2	3·3	1	1·2	2	3·0	1	2·6	0	0·0
6	2	6·3	1	0·2	2	4·5	1	0·2	1	1·9	0	0·0
7	1	0·3	1	0·1	0	0·0	1	0·2	1	2·5	0	0·0
8	0	0·0	0	0·0	1	0·1	1	0·6	1	0·3	1	1·7
9	1	0·1	0	0·0	1	0·7	1	0·1	0	0·0	0	0·0
10	1	0·6	1	0·8	1	1·9	0	0·0	1	2·4	0	0·0
11	1	1·2	0	0·0	1	1·6	1	0·6	2	4·7	1	1·3
12	1	0·2	1	0·5	1	0·2	1	0·1	1	0·1	1	1·4
13	1	1·9	1	0·9	1	0·3	0	0·0	1	0·1	1	1·2
14	0	0·0	1	0·4	1	0·3	0	0·0	0	0·0	1	2·7
15	0	0·0	1	0·9	1	0·3	1	0·3	2	4·2	1	1·3
16	0	0·0	1	2·3	1	0·5	0	0·0	1	0·7	1	0·4
17	0	0·0	2	4·2	1	0·1	1	0·2	2	5·9	1	0·2
18	1	0·2	2	3·5	1	0·1	0	0·0	-	-	1	1·0
19	1	0·1	1	0·2	0	0·0	1	0·4	-	-	0	0·0
20	1	0·7	1	1·9	1	0·1	1	1·3	1	0·1	0	0·0
21	1	1·4	0	0·0	1	0·1	1	0·5	1	2·9	1	0·8
22	1	0·5	2	4·2	1	2·1	0	0·0	0	0·0	2	3·4
23	1	1·3	1	0·1	1	2·6	1	0·2	0	0·0	1	1·3
24	1	0·9	1	1·0	2	3·7	1	0·2	1	1·6	1	2·1
25	1	0·2	1	2·4	1	0·1	1	0·1	2	4·0	2	8·3
26	1	0·9	1	0·3	1	1·7	1	0·4	1	0·2	2	5·6
27	1	0·4	1	1·8	1	0·2	1	0·2	1	1·4	1	0·7
28	0	0·0	1	0·8	0	0·0	0	0·0	2	3·5	1	1·3
29	0	0·0	1	0·9	0	0·0	0	0·0	2	7·2	1	0·8
30	1	0·2	1	1·2	0	0·0	0	0·0	0	0·0	1	0·1
31	1	0·1	1	1·7			1	2·6			1	0·2
Total	-	21·3	-	50·1	-	36·1	-	14·2	-	53·5	-	36·7
No. of days used	-	31	-	31	-	30	-	31	-	28	-	31
Mean	-	0·7	-	1·6	-	1·2	-	0·5	-	1·9	-	1·2

Annual values: Character   0 1 2   Duration: Total 505·4 hr.
No. of days used 83 221 58   No. of days 362
Mean 1·40 hr.

ELECTRICAL OBSERVATIONS, UNDERGROUND LABORATORY, WILSON METHOD

Mean value for periods of twenty minutes about 14h. 30m. G.M.T.

F = Potential gradient, unit 1 v.cm.$^{-1}$. i = Air-earth current, unit 10^{-18} amp. cm.$^{-2}$
$\lambda+$ = Conductivity due to positive ions, unit 10^{-18} ohm.$^{-1}$ cm.$^{-1}$

43 KEW OBSERVATORY   **1963**

	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+
1	...	...	...	...	...	...	...	...	...	2·50	289	116	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	1·81	306	169	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	2·51	272	108	...	...	...	...	...	...
4	...	...	...	7·20	613	85	...	...	...	2·02	240	119	...	...	...	3·03	363	120
5	...	...	...	6·38	367	58	...	...	...	...	...	...	...	...	...	5·20	414	80
6	...	...	...	...	...	...	...	...	...	...	...	...	1·36	211	155	1·01	219	217
7	6·27	575	92	...	...	...	...	...	...	...	...	...	1·44	274	190	...	...	...
8	...	...	...	7·46	392	53	...	...	...	1·57	145	92	1·37	244	178	...	...	...
9	...	...	...	...	...	...	...	...	...	5·46	281	51	1·27	227	179	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·68	292	109
11	7·38	268	36	...	...	...	...	...	...	...	...	...	...	...	...	2·32	301	130
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	3·45	284	82	...	...	...	...	...	...	...	...	...	...	...	...
14	5·32	443	83	...	...	...	...	...	...	...	...	...	...	...	...	1·65	243	147
15	6·90	354	51	...	...	...	...	...	...	...	...	...	0·91	155	170	...	...	...
16	...	...	...	...	...	...	...	...	...	2·36	344	146	1·12	177	158	...	...	...
17	6·02	460	76	...	...	...	...	...	...	...	...	...	2·04	258	126	...	...	...
18	...	...	...	4·90	303	62	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	2·17	299	138	1·39	252	181	...	...	...	...	...	...
20	...	...	...	3·86	347	90	4·50	291	65	...	...	...	...	...	...	1·47	198	135
21	7·26	247	34	3·48	362	104	3·25	253	78	...	...	...	1·62	296	183	...	...	...
22	...	...	...	...	...	...	4·27	310	73	1·59	278	175	2·04	311	152	...	...	...
23	...	...	...	...	...	...	...	...	...	3·78	340	90	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	9·52	190	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·27	239	188
27	...	...	...	...	...	...	...	...	...	...	...	...	2·00	312	156	1·77	317	179
28	2·13	165	77	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...				...	...	...	...	...	...	1·39	189	136	...	...	...
30	...	...	...				...	...	...	1·37	235	172	3·73	403	108	...	...	...
31	...	...	...				...	...	...				...	...	...			
Mean	6·35	338	59	5·25	381	76	3·55	288	89	2·40	271	129	1·69	255	158	2·27	287	145
No. of days used	8	8	8	7	7	7	4	4	4	11	11	11	12	12	12	9	9	9

	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+	F	i	λ+
1	0·69	104	151	1·73	269	155	...	...	...	...	...	...	3·64	300	82	...	...	...
2	...	...	...	2·16	279	129	...	...	...	2·26	126	56	...	...	...	3·83	128	33
3	1·23	294	239	...	...	...	1·88	308	164	...	...	...	3·35	330	99	5·86	327	56
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	1·79	224	125	...	...	...	...	...	...	5·76	321	56
6	...	...	...	1·50	190	127	2·07	277	134	...	...	...	...	...	...	5·20	274	53
7	...	...	...	1·67	244	146	...	...	...	...	...	...	...	...	...	...	...	...
8	1·37	127	93	1·38	259	188	...	...	...	...	...	...	...	...	...	...	...	...
9	1·45	244	168	1·30	283	218	1·42	242	170	1·47	225	153	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	2·45	280	114	...	...	...	...	...	...
11	1·63	287	176	...	...	...	...	...	...	2·35	298	127	...	...	...	3·93	183	47
12	...	...	...	...	...	...	2·02	338	167	...	...	...	3·13	299	96	5·11	271	53
13	...	...	...	...	...	...	2·17	346	159	...	...	...	4·37	349	80	6·31	289	46
14	...	...	...	1·42	256	180	...	...	...	1·72	284	165	4·84	305	63	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	1·67	239	143	...	...	...	3·97	386	97	...	...	...	...	...	...	8·09	428	53
17	1·39	223	161	...	...	...	1·51	282	187	...	...	...	...	...	...	...	...	...
18	1·75	220	126	...	...	...	2·73	303	111	1·80	259	144	...	...	...	6·09	335	55
19	1·90	286	151	1·69	269	159	...	...	...	...	...	...	...	...	...	6·17	240	39
20	...	...	...	...	...	...	...	...	...	...	...	...	3·57	165	46	8·33	403	48
21	...	...	...	1·12	201	179	...	...	...	2·07	217	105	...	...	...	...	...	...
22	2·13	200	94	1·87	273	146	...	...	...	2·33	224	96	3·75	285	76	...	...	...
23	0·71	57	80	1·14	245	215	2·32	184	79	2·10	242	115	...	...	...	4·21	159	38
24	1·16	147	126	...	...	...	...	...	...	3·01	311	103	...	...	...	...	...	...
25	1·89	264	140	...	...	...	1·57	206	131	...	...	...	3·87	375	97	...	...	...
26	...	...	...	1·80	253	141	...	...	...	...	...	...	4·10	294	72	...	...	...
27	...	...	...	...	...	...	1·69	248	147	...	...	...	3·21	249	78	...	...	...
28	...	...	...	1·20	278	232	...	...	...	...	...	...	...	...	...	...	...	...
29	1·84	264	143	...	...	...	...	...	...	2·19	249	114	...	...	...	...	...	...
30	2·18	255	117	...	...	...	1·96	212	108	5·58	351	63	...	...	...	2·98	185	62
31	...	...	...	...	...	...				...	...	...				...	...	...
Mean	1·53	214	141	1·54	254	170	2·08	274	137	2·44	255	113	3·78	295	79	5·53	273	49
No. of days used	15	15	15	13	13	13	13	13	13	12	12	12	10	10	10	13	13	13

Year:	Mean	2·98	274	117
	No. of days used	127	127	127

44 KEW OBSERVATORY   Complete days only   1963

milligrams per cubic metre

	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21	21 to 22	22 to 23	23 to 24	Mean	No. of days used
January	0·25	0·23	0·21	0·19	0·17	0·16	0·16	0·18	0·21	0·25	0·26	0·21	0·20	0·19	0·19	0·21	0·25	0·29	0·33	0·33	0·33	0·35	0·34	0·30	0·24	29
February	0·11	0·10	0·10	0·09	0·09	0·09	0·09	0·11	0·15	0·18	0·19	0·15	0·15	0·14	0·15	0·15	0·16	0·19	0·23	0·23	0·22	0·20	0·18	0·14	0·15	27
March	0·09	0·07	0·07	0·06	0·05	0·05	0·05	0·07	0·07	0·07	0·06	0·06	0·05	0·04	0·05	0·05	0·06	0·08	0·11	0·14	0·13	0·12	0·11	0·10	0·08	31
April	0·05	0·05	0·04	0·04	0·04	0·04	0·05	0·07	0·07	0·07	0·06	0·06	0·05	0·05	0·04	0·05	0·06	0·07	0·08	0·09	0·09	0·08	0·06	0·05	0·06	30
May	0·03	0·02	0·02	0·02	0·03	0·03	0·03	0·03	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·03	0·03	0·04	0·04	0·04	0·04	0·03	0·03	31
June	0·02	0·02	0·02	0·02	0·02	0·03	0·03	0·03	0·03	0·03	0·03	0·02	0·02	0·02	0·02	0·02	0·02	0·01	0·01	0·02	0·02	0·02	0·02	0·02	0·02	30
July	0·02	0·02	0·02	0·02	0·02	0·03	0·04	0·04	0·04	0·03	0·02	0·01	0·01	0·01	0·01	0·01	0·01	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·02	31
August	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·03	0·03	0·02	0·02	0·02	0·02	0·02	0·02	0·02	0·01	0·01	0·02	0·02	0·02	0·02	0·02	0·02	0·02	31
September	0·06	0·05	0·05	0·04	0·04	0·04	0·06	0·07	0·07	0·07	0·06	0·04	0·04	0·04	0·03	0·04	0·04	0·05	0·06	0·07	0·06	0·06	0·07	0·06	0·05	30
October	0·04	0·03	0·03	0·03	0·03	0·03	0·04	0·05	0·06	0·05	0·05	0·04	0·04	0·04	0·04	0·05	0·06	0·08	0·10	0·11	0·10	0·08	0·06	0·05	0·05	31
November	0·09	0·07	0·07	0·05	0·04	0·04	0·03	0·05	0·06	0·07	0·07	0·06	0·07	0·07	0·07	0·08	0·10	0·15	0·17	0·17	0·15	0·14	0·13	0·10	0·09	30
December	0·17	0·14	0·13	0·11	0·10	0·10	0·10	0·12	0·14	0·16	0·18	0·19	0·19	0·15	0·16	0·17	0·19	0·23	0·23	0·25	0·25	0·23	0·21	0·19	0·17	29
Year	0·08	0·07	0·07	0·06	0·05	0·05	0·06	0·07	0·08	0·09	0·09	0·07	0·07	0·07	0·07	0·07	0·08	0·10	0·12	0·12	0·12	0·11	0·11	0·09	0·08	360
Winter	0·15	0·13	0·13	0·11	0·10	0·10	0·09	0·11	0·14	0·17	0·17	0·15	0·15	0·14	0·14	0·15	0·17	0·21	0·24	0·25	0·24	0·23	0·21	0·18	0·16	115
Spring	0·07	0·06	0·05	0·05	0·05	0·05	0·05	0·07	0·07	0·07	0·06	0·06	0·05	0·05	0·05	0·05	0·06	0·07	0·09	0·11	0·11	0·10	0·09	0·07	0·07	61
Autumn	0·05	0·04	0·04	0·03	0·03	0·03	0·05	0·06	0·07	0·06	0·05	0·04	0·04	0·04	0·03	0·05	0·05	0·07	0·08	0·09	0·08	0·07	0·07	0·05	0·05	61
Summer	0·02	0·02	0·02	0·02	0·02	0·03	0·03	0·03	0·03	0·03	0·02	0·02	0·02	0·02	0·02	0·02	0·01	0·02	0·02	0·03	0·03	0·03	0·03	0·02	0·02	123