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# **GEOPHYSICAL OBSERVATORY REPORTS**

**OF THE GEODETIC AND GEOPHYSICAL  
RESEARCH INSTITUTE OF THE HUNGARIAN  
ACADEMY OF SCIENCES**

**YEAR  
1982**

**OBSERVATORY OF NAGYCENK**

**SOPRON  
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9



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**OBSERVATORY OF NAGYCENK**

**REPORT ON**

- I. EARTH CURRENTS**
- II. GEOMAGNETISM**
- III. ATMOSPHERIC ELECTRICITY**
- IV. IONOSPHERE**

**EDITED BY THE DIRECTOR  
SCPRON**

**1983**

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GEODETTIC AND GEOPHYSICAL RESEARCH INTSTITUTE OF THE  
HUNGARIAN ACADEMY OF SCIENCES

H—9401 Sopron, Pf. 5. (Hungary)

Director:

J. SOMOGYI

Engedély szám: 44 882

Felelős kiadó: Dr. Somogyi József  
Széchenyi Nyomda Soproni üzeme, 84.689  
Felelős vezető: Nagy Iván igazgató

- MAGYAR  
TUDOMÁNYOS AKADÉMIA  
KÖNYVTÁRA

## PREFACE

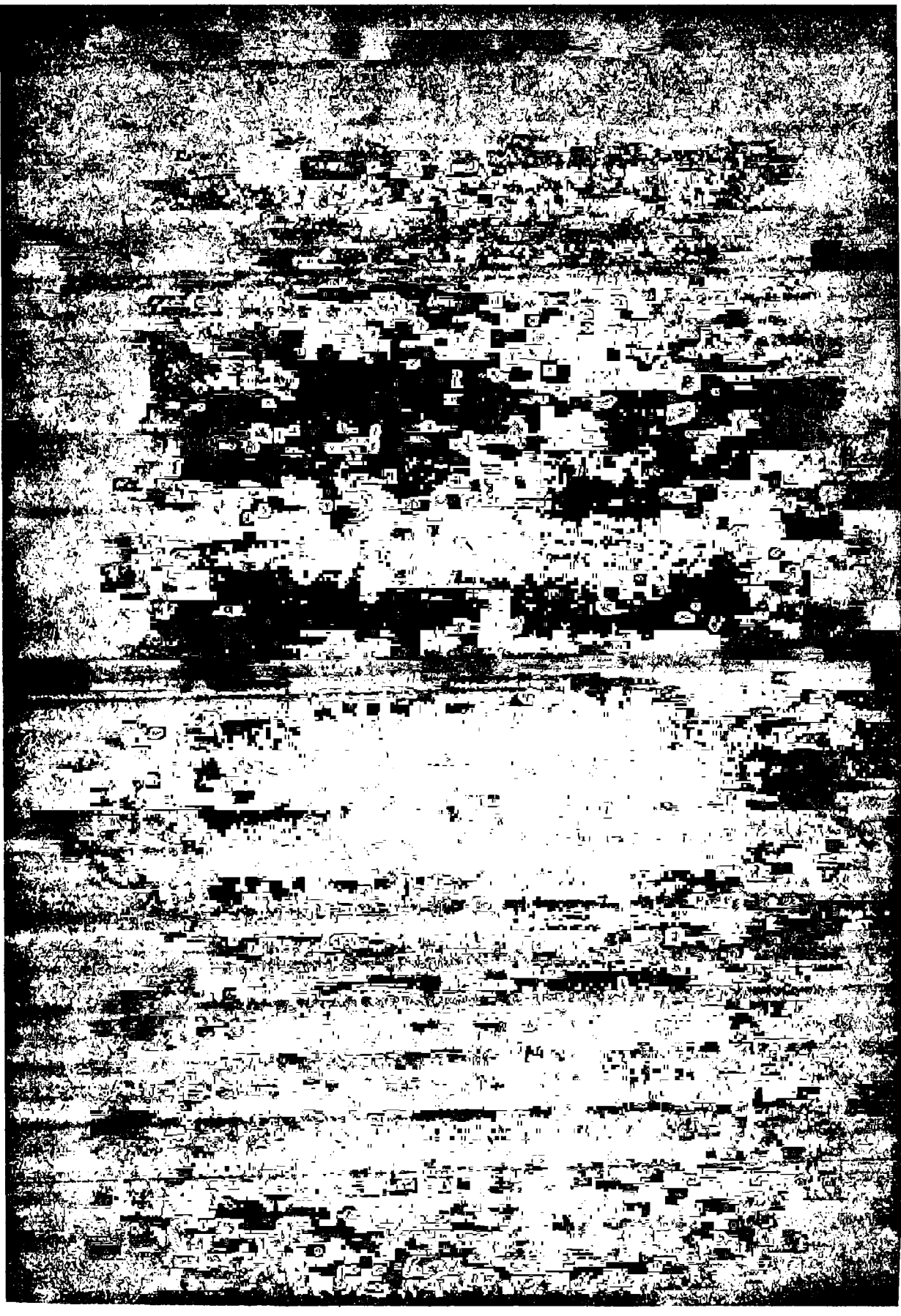
The present Report of the Nagyecenk Observatory is the 26. in the series. The first four were published in the periodical Acta Technica, the other in form of separate booklets.

The reports have contained from the beginning data of the earth current recordings, with emphasis on the characterization of different period variations. This concerns also the geomagnetic recording which has been running since 1961. Since 1976, the recording of Pc1-type pulsations has also been operating with some interruptions.

The observation network was supplemented in 1962 by records of the atmospheric potential gradient and of the point discharge. Ionospheric absorption measurements have been operated since 1967.

Exchange copies of these Reports can be obtained from the Geodetic and Geophysical Research Institute of the Hungarian Academy of Sciences (H—9401 Sopron, Pf. 5, Hungary).

*J. Somogyi*  
Direktor



## I. EARTH CURRENTS

The coordinates of the Observatory are:

$$\begin{aligned} \varphi &= 47^{\circ}38' & \lambda &= 16^{\circ}43' \\ \Phi &= 47.2^{\circ} & A &= 98.3^{\circ} \end{aligned}$$

All times are given in CET (i.e. GMT + 1h), nearly (-7min) corresponding to LT.

The tables published in this part are the following:

I. The activity indices T of the general activity for each three hour interval of the local day, as well as the character figures of single frequency bands for whole days  $K_1$ — $K_5$ .

The T-scale is linear; its steps correspond to 1.8 mV/km. The monthly mean T-values are separately given for the North-South and East-West components. The scales for  $K_1$ — $K_5$  are as follows:

Frequency band	limits between K-values								
	0—1	1—2	2—3	3—4	4—5	5—6	6—7	7—8	8—9
1. Period 0— 2 min	2	4	7	13	18	23	29	41	54
2. Period 2— 6 min	9	13	18	23	29	34	41	56	90
3. Period 6—12 min	16	22	25	32	38	45	56	83	120
4. Period 12—24 min	34	43	54	70	85	101	124	151	202
5. Period 24—60 min	29	43	67	88	110	131	191	234	339

All values are given in the table in units of  $10^{-5}$  V km.

Values in brackets mean extrapolated ones from incomplete material, where the lacking hours have been substituted by the average of recorded hours.

II. Monthly and yearly means, and means for disturbed and quiet days of the amplitudes of the former frequency bands and of the earth current field intensity. D and Q days are the same as in section Geomagnetism. The rows 1—5 contain the average amplitudes of the five bands in  $10^{-5}$  V/km. Row 6 contains the hourly means of the earth current scalar intensity corrected for long period variation (equally in  $10^{-5}$  V km).

III. Results of harmonical analyses from monthly means of the earth current scalar intensity.

IV. Time of special events (common table from magnetic and earth current records).

The catalogue of Pc 1 events contains occurrence times, amplitudes and quality. Typical cases for the A, B and C events can be seen in the 1976 Observatory Report.

V. Average amplitudes in 12 pulsation bands. Here numerical data are presented on the average amplitudes of pulsations for (nearly complete) months. Averages are derived from manually processed earth current records (6 mm min) for three-hour intervals of the day. Such averages (expressed in  $\mu\text{V}/\text{km}$ ) are published for each month and for the years. As the bands where amplitudes are determined have different bandwidth, amplitudes are comparable in different bands only after a correction for band width. Data for the same band are, however, directly comparable. Basic data are estimated amplitudes in halfhour intervals.

VI. Micropulsation indices for the year 1981. The indices have been determined from occurrence frequency of different period micropulsations, striving at a possibly uniform distribution of days in each of the five possible indices (1—5) in a basic interval.

The determination of these indices can be shortly explained as follows: The days are arranged according to the occurrence frequency of each band. Index 1 is attributed to the days with the lowest fifth of occurrence frequencies (0 to 20 per cent) index 2 to days with occurrence frequencies in the second lowest fifth (20 to 40 per cent) etc., index 5 to days with highest occurrence frequencies (80 to 100 per cent). It must be reminded that mainly in the lowest and highest period bands the uniform distribution could not be achieved due to insufficient occurrence of these bands on the records.

The bands are the following:

P1	0	to	5 sec
P2	5	to	10 sec
P3	10	to	15 sec
P4	15	to	20 sec
P5	20	to	25 sec
P6	25	to	30 sec



P7	30	to	40 sec
P8	40	to	60 sec
P9	60	to	90 sec
P10	90	to	120 sec
P11	2	to	5 min
P12	5	to	10 min

For a detailed description of the method of determination of these indices, see:

L. HOLLÓ, M. TÁTRALLYAY and J. VERŐ: Experimental results with the characterization of geomagnetic micropulsations (*Acta Geod., Geoph. Mont. Hung.* 7:1972/15), and A. ADAM, J. VERŐ, J. CZ. MILETITS, L. HOLLÓ and Á. WALLNER: The geophysical observatory near Nagycenk. I. Electromagnetic measurement and processing of data (*Acta Geod., Geoph. Mont. Hung.* 16:1981/333).

Daily Pc 1 indices are determined on the basis of the duration of the events. The scale of the indices is the following:

- 0 no record
- 1 no Pc activity
- 2 Pc 1 activity during 1—40 minutes
- 3 Pc 1 activity during 41—100 minutes
- 4 Pc 1 activity during 101—160 minutes
- 5 Pc 1 activity during more than 160 minutes

Mrs. J. CZUCZOR, L. HOLLÓ and J. VERŐ took part in the processing and compilation of the data.

Records were taken in the Observatory with three instruments of the types GMG T9 1956 and GMG T14 1962, with small modifications in order to meet the demands of the use in the observatory. A general description of the processing and compilation is found in the report of the Observatory from 1966 in German by A. ADAM, J. VERŐ, A. WALLNER: Tellurische und erdmagnetische Messungen im Observatorium bei Nagycenk. Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967.

I. Activity indices T and  $K_1-K_5$ 

January

Day	T	Sum	$K_1$	$K_2$	$K_3$	$K_4$	$K_5$
1.	11122511	14	4	0	4	1	1
2.	10112442	15	3	0	4	2	4
3.	22141765	28	3	0	4	3	4
4.	52032212	17	4	1	4	2	2
5.	11121900	6	5	1	4	1	0
6.	22111132	13	2	0	4	1	2
7.	12224332	19	3	1	4	2	3
8.	22231142	17	4	0	4	2	3
9.	11010010	4	2	0	4	1	0
10.	10000001	2	2	0	4	0	0
11.	01000000	1	1	0	4	1	0
12.	10000001	2	4	0	4	0	0
13.	02110110	6	3	0	3	1	0
14.	00112012	7	4	1	3	1	0
15.	13123223	17	4	1	4	3	3
16.	01123393	22	5	1	4	2	4
17.	32012211	12	5	1	5	1	2
18.	11211186	21	6	2	4	1	3
19.	10001000	2	2	0	4	0	0
20.	21111121	10	4	1	4	1	0
21.	01286394	38	3	1	5	3	3
22.	35385299	44	6	3	5	5	6
23.	33235244	26	6	3	5	4	5
24.	53444354	32	6	3	5	4	3
25.	31532211	16	6	2	5	2	1
26.	10122123	12	6	3	5	2	2
27.	31214217	21	4	2	4	3	3
28.	34384311	27	4	1	5	4	3
29.	00212293	19	5	2	4	2	1
30.	47885311	37	5	3	5	5	3
31.	44559952	43	6	4	6	4	4

Monthly averages: T (N) 2.109

T (E) 1.424

 $K_1$  4.09 $K_2$  1.19 $K_3$  4.29 $K_4$  2.06 $K_5$  2.09

## February

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	02119599	36	5	2	5	5	5
2.	58999924	55	8	8	8	6	4
3.	48669936	51	5	3	6	4	2
4.	57569758	52	5	4	6	6	7
5.	99243965	47	7	4	6	4	7
6.	33657495	42	4	3	6	5	4
7.	93162225	30	3	1	5	6	3
8.	51143158	28	4	1	5	3	4
9.	21223112	14	3	1	4	3	2
10.	12378853	37	6	3	6	7	5
11.	67548949	52	7	4	6	6	7
12.	95169999	57	4	2	6	5	7
13.	97445899	55	5	3	6	9	6
14.	23445396	36	4	2	5	5	6
15.	43343400	21	4	0	5	4	4
16.	12114110	11	5	2	4	3	2
17.	01398667	40	7	4	6	5	7
18.	45799475	50	8	6	8	7	6
19.	67779573	51	8	7	7	6	7
20.	32664436	34	7	3	6	4	5
21.	31343134	22	6	3	5	4	2
22.	23176999	46	5	4	6	6	7
23.	94223884	40	3	1	4	3	4
24.	73323426	30	6	2	5	3	4
25.	54695492	44	5	3	5	4	5
26.	39996229	49	7	3	6	4	8
27.	42366122	26	7	3	4	5	3
28.	11223234	18	8	4	5	3	3

Monthly averages: T (N) 4.728

T (E) 3.344

K<sub>1</sub> 5.57

K<sub>2</sub> 3.07

K<sub>3</sub> 5.57

K<sub>4</sub> 4.82

K<sub>5</sub> 4.85

## March

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	12339969	42	8	8	8	6	4
2.	99999897	69	8	8	8	9	7
3.	61155322	25	5	1	6	3	2
4.	31654321	25	6	3	5	3	2
5.	32573100	21	6	2	5	3	2
6.	00100100	2	6	3	4	0	0
7.	00000000	0	2	0	4	0	0
8.	20122124	14	4	2	4	2	2
9.	51136424	26	6	3	3	5	2
10.	34232112	18	6	2	4	3	2
11.	11311122	12	3	1	4	1	2
12.	00111232	10	4	0	4	2	2
13.	26322111	18	7	2	5	1	4
14.	11222251	16	5	2	5	2	3
15.	13110001	7	3	0	4	1	2
16.	11101111	7	3	0	4	1	1
17.	10317767	32	4	2	6	6	5
18.	53585422	34	8	4	7	5	3
19.	43421002	16	6	3	5	3	2
20.	11443312	19	6	2	5	3	1
21.	22434373	26	7	3	5	3	3
22.	77563622	38	8	3	6	3	4
23.	13324100	14	3	0	5	3	2
24.	11253443	23	6	3	5	3	4
25.	45655233	33	9	5	5	3	3
26.	22232222	17	9	4	4	2	2
27.	23222100	12	7	2	5	2	2
28.	11211001	7	6	2	4	2	1
29.	01312133	14	3	0	4	3	2
30.	2223211	15	5	2	5	3	3
31.	3224223	20	4	3	4	2	4

Monthly averages: T (N) 2.496

T (E) 1.706

K<sub>1</sub> 5.54

K<sub>2</sub> 2.41

K<sub>3</sub> 4.90

K<sub>4</sub> 2.83

K<sub>5</sub> 2.51

## April

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	21226417	25	7	3	5	3	3
2.	85444997	50	7	3	6	3	6
3.	55433365	34	6	3	5	4	6
4.	42333223	22	5	2	5	3	5
5.	32222135	20	7	4	5	2	2
6.	21343232	20	6	4	6	3	2
7.	21111101	8	7	3	4	2	1
8.	01223215	16	7	2	4	2	2
9.	12012111	9	4	0	4	1	2
10.	22237869	39	5	2	5	5	6
11.	93433227	33	7	3	5	3	6
12.	11325112	16	7	2	4	2	3
13.	32321002	13	7	2	5	2	2
14.	30112111	10	6	1	4	2	1
15.	11222111	11	7	2	4	1	2
16.	22211184	21	8	4	4	3	2
17.	46642321	28	5	2	5	4	2
18.	11313333	18	5	2	5	2	3
19.	11211213	12	6	2	4	2	2
20.	44335112	23	6	3	5	3	4
21.	34336485	36	8	4	6	4	6
22.	75832211	29	8	4	6	6	4
23.	12244222	19	7	3	5	3	2
24.	21121209	13	5	1	4	3	2
25.	69999731	53	7	4	6	5	5
26.	21111113	11	5	2	4	2	2
27.	01213485	24	7	3	5	4	2
28.	54233122	22	7	5	6	3	4
29.	53525257	34	7	4	5	3	6
30.	45453533	32	7	3	5	4	4

Monthly averages: T (N) 2.842

T (E) 2.071

K<sub>1</sub> 6.43

K<sub>2</sub> 2.73

K<sub>3</sub> 4.86

K<sub>4</sub> 2.96

K<sub>5</sub> 3.30

## May

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	33332532	24	7	4	4	3	5
2.	14535244	28	6	3	5	2	6
3.	33455652	33	7	4	6	5	6
4.	63464412	30	7	4	4	3	6
5.	22534243	25	8	4	5	3	3
6.	11222101	10	7	2	5	2	1
7.	10011000	3	5	2	4	0	1
8.	11000100	3	3	1	4	1	1
9.	32112101	11	6	3	4	3	1
10.	22101111	9	6	2	4	2	1
11.	22221112	13	5	3	4	2	2
12.	11121111	9	4	2	4	2	0
13.	12111112	10	4	2	4	1	1
14.	11013111	9	3	0	4	1	2
15.	23224331	20	5	3	4	3	4
16.	22233321	18	7	4	5	3	2
17.	22122223	16	6	4	4	2	4
18.	33355234	28	6	4	5	4	3
19.	25133221	22	7	3	5	3	1
20.	23213111	14	6	3	5	2	2
21.	12233111	14	6	4	5	3	2
22.	21211110	9	6	4	4	1	1
23.	11100010	4	6	2	3	0	0
24.	11111101	7	3	1	4	1	1
25.	11111222	11	4	0	4	1	2
26.	51124954	31	8	4	5	4	5
27.	45566987	50	9	6	7	5	6
28.	57757549	49	9	6	6	6	8
29.	96754446	45	9	7	6	5	6
30.	33434465	32	9	6	7	3	6
31.	54646544	38	9	7	7	6	4

Monthly averages: T (N) 2.368

T (E) 1.928

K<sub>1</sub> 6.22

K<sub>2</sub> 3.35

K<sub>3</sub> 4.74

K<sub>4</sub> 2.64

K<sub>5</sub> 3.00

## June

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	44633333	29	9	6	6	3	3
2.	58433222	29	8	4	5	4	2
3.	21222112	13	8	4	6	3	1
4.	31127612	(23)	7	3	5	3	2
5.	21212211	12	7	3	4	1	1
6.	18522211	22	8	4	5	3	3
7.	25242211	19	6	2	5	2	4
8.	22122333	18	7	2	5	3	1
9.	98533211	32	8	4	5	3	2
10.	37747522	37	8	4	5	6	6
11.	45434246	32	9	5	5	5	6
12.	95322979	46	9	5	7	6	7
13.	79777779	60	9	6	7	7	6
14.	65844343	37	9	5	6	4	4
15.	24554472	33	8	5	6	4	4
16.	41222211	15	8	4	4	2	2
17.	11112100	7	7	3	4	2	2
18.	12221131	13	7	5	4	2	1
19.	12133336	24	7	4	5	3	6
20.	44222323	22	7	3	4	3	4
21.	22233201	15	6	1	5	2	3
22.	01115444	20	5	2	4	3	3
23.	34322214	21	7	3	5	2	3
24.	41221129	22	6	3	4	2	3
25.	43232110	16	4	2	5	3	1
26.	02111324	14	5	1	4	1	2
27.	65323134	27	6	2	5	2	5
28.	33432334	25	7	4	5	3	4
29.	43223242	22	7	5	6	4	4
30.	45843122	29	8	5	5	4	3

Monthly averages: T(N) 2.858

T (E) 2.347

K<sub>1</sub> 7.23

K<sub>2</sub> 3.63

K<sub>3</sub> 5.03

K<sub>4</sub> 3.16

K<sub>5</sub> 3.28

## July

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	62435324	29	7	5	5	4	3
2.	21322222	16	8	5	5	3	3
3.	22112111	11	8	4	5	2	2
4.	11011001	5	4	2	4	1	0
5.	01002111	6	4	2	4	1	0
6.	41132454	24	5	3	4	3	4
7.	56545452	36	8	5	5	4	5
8.	23323434	24	7	4	5	4	3
9.	43521111	18	8	6	5	3	2
10.	42222221	17	6	3	4	3	3
11.	12298954	40	7	5	5	4	6
12.	23237743	31	7	4	5	4	5
13.	34754999	50	9	8	9	8	5
14.	99979996	67	9	9	9	9	7
15.	64343326	31	7	4	6	6	5
16.	42452939	38	7	5	8	7	6
17.	96599102	41	9	7	7	6	6
18.	52245342	27	7	3	5	3	3
19.	34367922	36	7	4	5	4	6
20.	56432011	22	6	2	5	4	4
21.	12311236	19	7	3	5	3	3
22.	32124521	20	7	4	5	3	4
23.	43222321	19	7	3	4	4	3
24.	23 47993	(37)	7	3	5	4	8
25.	954	(18)	7	3	6	6	8
26.	323	(8)	6	2	4	4	4
27.	44653523	32	7	4	7	5	2
28.	42264372	30	7	4	6	4	3
29.	42535422	27	7	4	6	3	3
30.	32333654	29	7	4	5	4	3
31.	34932322	28	7	5	6	3	3

Monthly averages: T (N) 3.273

T (E) 3.962

K<sub>1</sub>: 6.97

K<sub>2</sub>: 4.16

K<sub>3</sub>: 5.45

K<sub>4</sub>: 4.06

K<sub>5</sub>: 3.94



## August

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	22112123	14	7	3	4	2	3
2.	93266769	48	7	5	5	3	7
3.	46745452	37	7	5	6	5	5
4.	33333434	25	8	5	4	2	3
5.	33434442	27	7	4	4	3	3
6.	23223397	31	7	4	4	4	6
7.	96999952	58	7	7	7	6	6
8.	01122321	12	6	3	3	2	1
9.	22341643	25	7	4	5	3	4
10.	44653643	35	7	4	5	3	4
11.	32243692	31	8	3	5	3	6
12.	23253423	24	5	2	4	2	4
13.	33222112	16	4	1	3	1	1
14.	21211121	11	5	2	4	1	1
15.	11011121	8	5	1	2	0	0
16.	11101124	11	7	3	2	0	2
17.	22212114	15	4	2	4	1	2
18.	43324325	26	6	3	5	3	5
19.	22323133	19	7	3	3	1	2
20.	32224223	20	8	4	4	1	2
21.	34233222	21	7	4	5	1	3
22.	23136447	30	6	4	5	2	4
23.	34544323	28	8	5	6	3	4
24.	54535332	30	7	5	6	3	3
25.	33433226	26	7	4	6	4	4
26.	33435334	28	8	4	5	4	4
27.	42454322	26	9	5	6	3	2
28.	21122156	20	6	3	5	2	3
29.	33666655	40	8	4	6	5	6
30.	45643345	34	7	4	6	4	6
31.	33334323	24	7	4	5	3	2

Monthly averages: T (N) 3.044

T (E) 2.580

K<sub>1</sub> 6.74

K<sub>2</sub> 3.68

K<sub>3</sub> 4.65

K<sub>4</sub> 2.58

K<sub>5</sub> 3.48

September							
Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	31235211	18	8	4	5	2	1
2.	32222223	13	7	3	3	1	2
3.	44244322	25	7	4	5	1	6
4.	23444436	30	7	4	5	2	6
5.	53637329	38	7	3	5	4	6
6.	99999999	72	9	9	9	9	9
7.	99689593	58	6	5	7	7	8
8.	43343434	28	7	4	6	3	3
9.	99999999	72	9	9	9	8	4
10.	33222221	17	7	4	6	3	2
11.	22233243	21	7	4	5	2	3
12.	32232122	17	6	3	5	1	3
13.	62133313	22	6	3	4	1	4
14.	22122256	22	5	3	5	2	3
15.	01223223	15	6	4	4	3	3
16.	31255233	24	7	4	5	2	4
17.	22333211	17	4	2	5	2	3
18.	43245446	32	6	2	4	3	6
19.	64466555	41	7	5	6	6	6
20.	24777435	39	9	6	6	4	6
21.	69999989	68	9	8	9	8	4
22.	99999998	71	8	8	8	8	8
23.	54546544	37	6	3	4	3	5
24.	35663514	33	6	3	5	2	5
25.	21133277	26	7	4	4	3	4
26.	44399999	56	6	4	6	6	7
27.	95643993	48	7	5	6	4	6
28.	32332115	20	6	3	6	2	2
29.	12232121	14	4	2	4	2	2
30.	00138324	21	4	3	4	2	5

Monthly averages: T (N) 4.082

T (E) 3.456

K<sub>1</sub> 6.06

K<sub>2</sub> 4.27

K<sub>3</sub> 5.50

K<sub>4</sub> 3.53

K<sub>5</sub> 4.53

## October

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	12322369	23	5	2	5	2	6
2.	62355133	28	4	1	5	3	5
3.	41122113	15	4	2	4	1	1
4.	11121120	9	4	1	4	1	2
5.	12231011	11	6	1	4	2	1
6.	32233365	27	4	2	4	3	4
7.	74544432	33	5	2	5	3	3
8.	43231457	29	7	3	5	3	5
9.	11211102	9	6	3	4	1	1
10.	52176326	32	6	3	5	2	5
11.	32226335	26	7	4	6	3	4
12.	32362235	26	7	4	4	3	5
13.	14123799	36	4	2	5	5	7
14.	67343424	33	6	3	5	3	3
15.	11234121	15	4	1	4	2	2
16.	11344634	26	7	4	5	3	3
17.	24468335	35	7	3	5	3	4
18.	44557652	38	7	4	5	3	5
19.	33252345	27	7	4	5	2	3
20.	53476311	30	8	5	5	3	3
21.	33342134	23	8	3	5	2	3
22.	14121311	14	9	5	5	1	0
23.	00113212	10	8	3	4	1	1
24.	01111210	7	3	0	4	0	1
25.	11213331	15	3	1	4	2	2
26.	95589352	46	6	3	6	5	6
27.	11274525	27	6	3	5	3	5
28.	21123134	21	7	3	5	2	2
29.	39967637	50	7	4	6	8	6
30.	73466585	44	6	3	5	5	6
31.	24227596	37	7	4	5	3	3

Monthly averages: T (N) 3.123

T (E) 2.262

K<sub>1</sub> 5.97

K<sub>2</sub> 2.77

K<sub>3</sub> 4.77

K<sub>4</sub> 2.68

K<sub>5</sub> 3.45

## November

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	96746987	56	5	3	6	4	6
2.	63446999	50	4	3	5	6	6
3.	63464100	24	4	2	5	3	4
4.	00221242	13	4	2	4	1	0
5.	20133251	17	7	3	4	2	2
6.	12244210	13	4	1	4	1	2
7.	11111001	6	3	2	4	1	0
8.	01022654	20	3	2	6	3	2
9.	32423212	19	2	1	4	1	1
10.	32124233	20	4	2	5	2	1
11.	23345432	26	6	3	5	3	2
12.	53366242	31	7	3	7	4	5
13.	53253244	28	6	3	5	5	3
14.	32368223	29	6	4	5	4	2
15.	12142323	18	5	1	5	3	2
16.	11231103	12	5	2	4	1	1
17.	10111213	10	5	2	5	1	2
18.	32223323	20	4	2	4	2	2
19.	31112135	17	4	1	5	2	3
20.	01031021	8	2	0	4	1	1
21.	54338455	37	4	3	5	3	6
22.	58321010	20	5	2	5	2	4
23.	00195999	42	6	4	6	5	5
24.	94399999	61	7	7	8	9	7
25.	95699995	61	7	7	8	8	4
26.	24344916	33	5	3	6	3	6
27.	11246782	31	7	4	5	2	5
28.	95484473	44	8	5	7	6	6
29.	41236999	43	6	3	5	4	6
30.	53226310	22	5	3	6	3	3

Monthly averages: T (N) 3.321

T (E) 2.525

K<sub>1</sub> 5.00

K<sub>2</sub> 2.77

K<sub>3</sub> 5.23

K<sub>4</sub> 3.17

K<sub>5</sub> 3.30

## December

Day	T	Sum	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
1.	10010000	2	2	0	4	1	1
2.	00002111	5	4	2	4	1	0
3.	11122312	13	4	2	4	1	1
4.	33111116	17	4	0	4	2	1
5.	32111111	11	3	1	4	2	2
6.	01111000	4	2	0	4	1	0
7.	04635485	35	5	3	5	3	4
8.	44355663	36	5	3	5	3	6
9.	12249622	28	5	3	5	3	4
10.	22999993	52	6	4	6	5	6
11.	53132377	31	4	2	5	2	6
12.	22123341	18	3	1	4	2	2
13.	11121113	11	3	0	4	1	2
14.	11111005	10	3	0	4	1	2
15.	32252110	17	4	2	4	1	2
16.	01223338	22	4	2	4	3	4
17.	44399577	49	5	4	6	5	8
18.	56798873	53	7	5	6	3	6
19.	29899435	49	7	6	8	6	4
20.	95666799	57	7	6	7	8	6
21.	34456499	44	4	3	6	5	7
22.	99322912	37	6	4	6	6	6
23.	22126563	27	5	2	5	3	3
24.	44245344	30	5	2	6	3	5
25.	21244621	22	5	2	5	3	3
26.	13123210	13	4	2	5	2	2
27.	11754226	28	6	3	5	3	3
28.	24333348	30	6	3	4	2	5
29.	55232333	26	5	2	5	3	4
30.	33442241	23	5	1	4	3	2
31.	21111012	9	3	0	4	1	1

Monthly averages: T (N) 3.169

T (E) 2.339

K<sub>1</sub> 4.55

K<sub>2</sub> 3.23

K<sub>3</sub> 4.90

K<sub>4</sub> 2.84

K<sub>5</sub> 3.48

## II. Average amplitudes for different periods

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	January North											
1.	5	5	7	6	8	10	12	15	21	19	12	19
2.	4	7	5	6	5	11	11	10	19	15	10	14
3.	35	36	24	34	35	39	37	37	39	41	37	38
4.	42	44	35	49	48	48	51	60	50	56	57	71
5.	44	45	61	52	45	44	32	31	43	19	45	56
6.	-5	-17	-16	-13	-33	-26	+12	+20	+45	+13	-19	-57
	January East											
1.	6	6	7	8	7	12	15	19	24	20	19	27
2.	9	3	6	5	3	13	10	11	12	12	12	13
3.	34	33	34	35	35	38	35	35	38	38	38	38
4.	42	40	37	39	29	38	39	39	41	30	40	50
5.	35	33	28	31	34	34	27	26	16	28	23	48
6.	-4	-3	-11	-1	-6	-5	-14	-15	+7	+57	+59	+24
	February North											
1.	11	10	12	7	12	16	19	26	30	24	21	23
2.	13	10	9	9	15	15	17	34	32	33	26	26
3.	39	39	39	38	41	40	41	48	62	73	53	50
4.	114	64	91	83	60	69	63	77	84	93	119	115
5.	174	131	117	177	123	118	68	44	68	86	98	100
6.	-21	-2	-7	-39	-38	-39	-13	+22	+42	+20	-35	-80
	February East											
1.	15	11	14	12	10	17	24	32	41	41	39	37
2.	16	11	10	14	12	15	17	30	28	33	33	30
3.	38	37	34	35	42	40	39	50	49	66	45	44
4.	76	68	73	68	60	49	55	45	50	74	86	80
5.	215	62	80	61	64	86	44	37	59	56	80	67
6.	-19	+3	+2	-15	+1	-29	+1	-1	-1	+42	+36	+44

*and hourly means of earth current elements*

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
19	20	16	16	12	8	7	5	9	6	8	6	11.3
16	13	12	9	6	4	3	7	6	5	6	7	8.8
38	37	37	34	33	35	34	31	37	30	35	35	35.8
62	51	40	44	43	44	67	38	45	39	48	48	49.1
56	56	66	51	68	76	70	70	110	79	80	81	57.6
-64	-28	-3	+33	+10	+2	-2	-41	+44	+47	+20	-7	
Component												
28	28	27	21	15	10	6	8	10	8	10	10	14.6
15	18	17	17	8	8	5	5	7	7	6	10	10.1
36	38	30	35	53	37	34	35	35	34	35	34	34.0
49	34	46	49	39	32	36	41	56	37	39	46	40.5
28	39	37	45	47	76	64	71	73	66	75	69	43.9
+4	+9	+2	-1	+17	-28	-33	-8	-12	-10	-11	-16	
Component												
24	23	17	22	15	15	12	11	11	14	12	12	16.6
32	26	23	21	19	10	11	7	11	12	12	10	18.0
58	51	51	49	57	44	40	38	39	44	41	42	46.4
74	113	108	116	95	71	77	96	69	88	93	83	88.2
159	161	144	105	86	117	121	161	256	198	188	153	131.4
-63	-63	-30	+27	+32	+23	+27	+76	+60	+55	+33	+12	
Component												
46	48	38	39	29	21	19	15	14	15	15	14	25.2
34	24	23	28	19	15	14	13	13	15	17	15	20.0
47	45	43	51	36	41	41	39	43	43	42	40	43.0
64	77	84	100	95	71	73	76	86	98	111	79	74.9
84	82	93	62	86	120	80	152	159	125	98	126	90.7
+54	+23	+10	-16	-29	-41	-10	-9	-26	-27	-6	+8	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	March North											
1.	10	8	10	14	12	16	20	22	16	17	20	17
2.	8	8	12	10	10	10	13	20	19	16	17	17
3.	37	39	39	37	42	39	41	46	46	49	52	43
4.	34	67	42	44	56	53	51	62	64	65	64	86
5.	124	70	75	110	44	52	70	27	37	32	49	66
6.	-1	-11	0	-15	+9	-15	+17	+71	+85	+39	-47	-154
	March East											
1.	11	15	12	16	21	29	30	37	38	37	51	53
2.	8	10	8	15	12	18	18	23	23	23	30	28
3.	36	30	33	33	29	34	29	28	25	31	38	36
4.	38	60	34	37	49	49	43	49	41	57	53	56
5.	80	79	56	75	54	45	52	28	56	37	50	48
6.	-5	-11	-1	-10	+5	-8	-31	-14	+20	+43	+52	+30
	April North											
1.	14	9	15	13	17	22	24	27	26	23	22	20
2.	12	9	11	13	10	19	19	22	23	22	15	15
3.	37	41	40	40	40	44	46	50	49	42	39	40
4.	52	50	51	58	47	72	81	72	64	62	53	67
5.	124	89	112	74	84	67	50	55	55	59	76	77
6.	+15	+10	-2	+32	+1	+32	+60	+121	+54	-45	-154	-214
	April East											
1.	14	7	13	11	19	33	47	46	49	50	46	51
2.	14	10	10	12	13	20	26	32	27	29	24	28
3.	33	37	35	32	35	33	36	34	33	37	35	35
4.	54	60	46	47	52	42	49	42	44	51	70	59
5.	89	77	86	56	59	53	42	52	47	54	38	49
6.	-23	-5	+1	+4	-9	+3	+3	+57	+60	+74	+59	-6



12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
22	20	17	12	13	8	9	6	8	8	6	8	13.3
13	20	20	8	15	6	5	2	3	3	4	6	11.3
39	45	57	39	52	46	35	41	34	37	48	38	42.7
92	63	85	60	58	64	48	66	43	52	65	46	59.8
67	57	52	95	43	57	82	35	83	62	56	70	63.2
-156	-107	-33	+52	+101	+67	+27	+15	+28	+10	+16	+1	
Component												
51	51	39	32	29	24	19	9	11	11	7	12	26.8
31	28	28	17	27	13	13	8	7	11	12	7	17.8
38	43	40	28	46	38	33	40	33	38	29	30	34.2
64	60	57	44	49	62	47	59	37	52	49	45	49.7
49	42	59	46	35	83	65	52	63	68	68	82	57.1
+17	+9	-3	+2	+10	+5	-36	-23	-20	-23	-5	-2	
Component												
20	21	19	15	14	10	10	10	9	7	13	12	16.2
19	16	15	11	7	6	10	8	6	6	10	11	13.1
48	41	38	36	31	33	36	37	35	36	38	40	40.0
61	51	71	62	47	50	48	68	46	62	59	101	60.7
100	76	128	97	59	97	105	65	92	98	91	94	84.4
-169	-97	0	+82	+89	+94	+55	+23	+10	-7	+21	-8	
Component												
47	46	43	35	32	26	19	14	13	11	18	17	29.5
28	28	26	21	16	17	13	9	9	7	15	15	18.7
39	35	34	35	28	28	32	31	32	33	30	31	33.5
54	46	69	58	44	37	50	39	51	66	48	76	52.4
86	65	69	60	53	88	79	75	68	77	92	96	67.1
-8	-21	-9	-14	-32	-39	-45	-8	+7	-7	-31	-11	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	May North											
1.	11	13	15	20	23	25	25	24	25	27	25	22
2.	13	15	17	17	18	23	25	25	23	20	21	24
3.	41	37	41	40	43	43	46	47	42	46	41	48
4.	53	66	59	41	48	78	68	69	56	55	67	57
5.	99	54	89	102	91	49	100	70	56	48	54	78
6.	+5	0	+8	-6	+57	+84	+105	+94	-7	-91	-166	-162
	May East											
1.	16	17	20	24	24	37	47	48	50	54	47	53
2.	16	16	18	18	22	24	31	28	34	38	35	42
3.	32	36	36	28	30	30	32	39	31	36	42	37
4.	54	52	53	43	43	48	52	49	54	55	56	45
5.	81	53	45	64	41	41	28	38	39	61	46	79
6.	-5	+	+4	-13	-17	-3	+47	+63	+63	+47	-1	-6
	June North											
1.	15	12	16	22	22	24	24	26	26	24	24	20
2.	15	11	13	17	21	22	26	25	27	23	20	18
3.	41	41	44	38	44	59	57	50	46	44	43	42
4.	77	70	64	73	62	87	67	85	59	71	53	65
5.	104	87	73	131	101	80	79	56	85	50	69	47
6.	-6	+35	+10	+12	+58	+90	+116	+75	+10	-83	-199	-202
	June East											
1.	23	14	22	28	33	45	56	66	69	59	64	60
2.	17	15	19	19	22	25	32	37	35	32	35	34
3.	35	25	31	29	32	41	35	37	37	40	37	33
4.	51	67	67	49	49	53	49	47	60	55	51	58
5.	82	51	58	81	65	47	55	65	53	64	65	53
6.	-7	-5	-12	-10	-7	+41	+88	+76	+94	+47	+1	-31

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
19	14	13	14	10	10	7	7	7	7	7	9	15.8
21	13	13	12	10	9	6	7	12	9	5	10	15.1
43	40	49	41	37	39	33	38	37	38	36	38	40.9
56	53	50	57	54	66	46	54	61	53	55	70	58.0
99	111	109	108	101	68	106	72	79	78	89	79	82.8
-140	-78	+11	+56	+63	+100	+28	+16	+7	-6	+8	+14	
Component												
50	43	42	33	32	27	20	14	12	13	16	14	31.5
34	28	27	21	23	21	17	10	12	10	14	15	23.2
44	28	31	32	32	34	32	37	31	35	35	32	33.8
57	50	63	58	45	70	37	49	43	53	55	57	51.3
79	97	71	133	111	74	103	63	74	53	49	57	65.9
-19	-29	-5	-28	-20	-20	-29	-5	-8	+9	-7	-22	
Component												
18	17	19	12	14	12	9	8	8	11	11	15	17.1
17	13	10	8	6	6	5	5	4	13	14	11	14.6
40	39	37	37	37	36	36	38	36	37	40	39	41.6
60	54	67	53	73	57	31	44	56	53	61	62	62.6
71	75	77	82	56	58	89	71	74	122	106	100	81.0
-159	-107	-33	+40	+64	+92	+63	+30	+35	+5	+16	+40	
Component												
51	56	49	46	40	39	25	19	13	17	18	22	38.9
31	28	25	25	22	26	17	13	17	15	19	15	23.9
34	34	31	31	34	25	29	23	33	33	41	37	34.0
48	50	55	60	58	59	39	47	51	44	58	44	52.7
81	74	76	58	90	82	148	80	64	67	91	114	73.4
-288	-39	-15	-27	-63	-48	-56	-26	-14	+3	+15	+21	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	July North											
1.	19	22	23	23	28	30	28	28	33	27	24	22
2.	23	24	24	19	22	29	33	28	34	24	27	25
3.	49	57	54	45	56	74	63	68	53	50	55	44
4.	70	94	77	77	74	87	103	78	73	72	76	97
5.	110	122	100	72	74	67	62	83	63	50	66	112
6.	+34	+20	+40	+33	+45	+107	+118	+81	-17	-72	-142	-187
	July East											
1.	25	28	29	33	30	42	47	52	60	60	61	59
2.	28	29	29	27	29	32	37	33	46	39	35	35
3.	52	52	56	46	47	42	44	50	58	37	43	40
4.	71	75	94	58	55	79	66	66	51	58	82	78
5.	92	149	58	83	55	60	44	61	55	77	45	118
6.	+10	+5	+25	-27	-8	+21	+42	+67	+62	+54	+14	-44
	August North											
1.	11	15	19	16	22	27	27	26	25	24	24	23
2.	15	21	16	15	15	25	24	31	23	27	21	23
3.	32	37	35	37	38	45	44	41	48	40	34	35
4.	51	61	43	41	49	65	60	64	60	44	55	65
5.	106	86	138	93	54	60	74	52	59	59	64	93
6.	+33	+29	+7	+17	+41	+85	+101	+61	-25	-109	-177	-192
	August East											
1.	16	21	23	20	24	36	49	51	54	52	49	49
2.	16	18	19	19	16	23	31	35	30	31	31	33
3.	35	38	40	34	32	42	33	48	39	34	38	38
4.	55	49	51	43	49	41	52	48	45	59	54	49
5.	68	50	46	60	42	42	47	21	50	42	59	81
6.	+3	+8	-7	-9	-8	+2	+35	+79	+73	+44	+5	-35

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
20	19	19	17	14	18	15	16	11	13	15	16	20.7
24	19	17	17	12	17	17	19	10	11	13	17	21.1
45	46	47	42	40	63	56	49	49	50	55	49	52.6
73	77	72	75	73	63	59	63	71	51	76	100	76.3
94	74	111	103	104	84	167	100	64	97	131	85	92.3
-155	-83	-66	+32	+90	+60	+72	+12	-49	+1	+8	+21	
Component												
51	49	49	42	35	34	33	25	19	18	25	24	38.9
35	30	33	31	26	29	29	27	16	16	24	26	30.1
39	41	46	37	49	55	48	50	60	46	40	53	47.3
82	64	62	68	73	64	59	74	72	47	72	67	68.2
97	99	114	128	143	133	181	65	72	108	80	87	92.7
-39	-29	-48	-22	-37	-43	-17	+6	+13	+8	+3	-17	
Component												
21	21	19	17	16	14	11	11	12	13	10	13	18.2
24	21	16	18	16	13	10	14	14	13	13	14	18.5
43	42	35	32	39	32	30	32	31	32	35	32	36.7
66	86	62	55	71	50	38	55	48	45	42	50	56.0
68	65	91	130	53	70	99	105	100	121	128	104	86.2
-148	-85	-10	+59	+111	+83	+27	+7	-7	+27	+21	+43	
Component												
52	48	42	40	39	30	25	21	20	20	20	20	34.0
37	31	29	28	25	22	18	13	15	20	17	18	23.9
45	34	34	32	36	39	27	34	27	39	32	30	35.8
55	59	46	42	57	37	44	36	55	55	50	52	49.1
52	92	73	115	70	81	81	136	94	73	95	138	71.1
-38	-44	-30	-23	-9	+2	-6	0	-23	0	-1	-20	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	September North											
1.	14	11	15	17	18	26	26	28	33	33	31	32
2.	24	17	28	33	42	34	37	47	39	41	40	56
3.	42	46	46	56	56	58	58	69	66	83	67	76
4.	73	65	112	78	113	76	97	89	67	93	83	76
5.	149	135	112	122	90	94	53	102	65	67	161	124
6.	+45	+23	-36	-35	-12	+35	+68	+108	+37	-36	-135	-184
	September East											
1.	22	13	21	18	23	37	39	41	50	51	54	52
2.	22	17	29	35	31	32	38	54	44	46	41	51
3.	44	41	50	78	58	59	59	65	55	75	64	80
4.	55	64	49	76	70	76	67	83	59	66	95	96
5.	166	65	96	53	84	64	83	65	78	62	148	107
6.	-8	+51	+34	+1	+11	-9	+16	+86	+95	+67	+37	-14
	October North											
1.	5	7	9	9	6	13	16	21	17	17	19	14
2.	6	10	9	11	11	10	16	20	20	17	16	17
3.	37	39	42	37	41	40	39	43	45	41	40	43
4.	46	39	43	64	61	63	71	78	70	64	81	75
5.	78	102	91	75	43	46	45	31	48	48	57	46
6.	-20	-24	+12	-44	-6	-13	+60	+96	+123	+16	-108	-181
	October East											
1.	13	17	16	17	15	25	27	32	35	38	44	41
2.	10	11	10	12	34	20	21	25	23	24	24	26
3.	32	31	30	37	34	23	30	31	31	30	32	34
4.	34	48	49	55	43	44	40	35	39	44	49	54
5.	66	72	78	48	47	64	60	59	47	43	59	82
6.	+3	-16	-19	+14	-1	-12	+9	+33	-69	+92	+67	+24

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
30	27	24	22	19	14	15	13	10	8	17	14	20.7
62	44	32	29	20	23	13	17	14	14	21	15	31.1
78	84	74	55	41	41	41	40	41	38	45	38	55.8
90	98	69	78	56	77	85	76	47	58	72	55	78.5
104	105	179	115	127	91	125	135	177	170	173	137	121.5
-166	-126	-31	+107	+68	+72	+52	+42	+39	+7	+23	+33	

Component												
52	49	49	46	35	30	23	18	15	17	19	20	33.1
64	46	42	49	35	26	22	15	19	17	28	22	34.4
69	74	63	62	54	51	43	53	37	36	43	34	56.2
83	96	86	73	73	71	85	62	44	50	52	57	69.7
85	75	102	119	85	75	115	125	155	184	136	108	101.3
-33	-52	-49	-13	-31	-16	-60	-16	-6	-31	-46	-13	

Component												
17	15	17	16	13	6	7	8	7	9	11	6	11.9
18	17	13	13	14	7	7	10	7	8	13	9	12.4
43	41	40	38	39	36	34	34	37	37	39	33	39.1
51	85	56	60	49	40	62	42	47	45	59	76	59.4
145	63	88	40	66	36	143	76	85	114	142	155	77.6
-152	-108	-31	+54	+44	+38	+44	+63	+35	+15	+44	+42	

Component												
38	41	40	39	35	27	25	20	17	21	20	15	27.5
25	24	24	21	21	15	12	16	11	16	15	16	18.9
28	31	28	32	31	28	27	20	32	30	33	27	30.4
54	43	43	45	53	40	35	53	42	41	42	43	44.5
62	66	87	84	60	76	117	56	77	139	113	146	75.8
-12	-16	-23	-11	-28	-36	-37	+5	-38	-37	-15	-15	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	November North											
1.	5	10	5	10	9	10	12	21	21	15	18	20
2.	12	13	8	14	12	17	11	22	25	19	20	31
3.	38	37	38	46	40	44	40	47	48	42	62	63
4.	57	62	43	56	54	58	54	60	59	73	87	82
5.	103	65	140	62	52	55	53	33	38	56	63	71
6.	-5	-24	-14	-33	-33	-25	+4	+30	+77	+33	-52	-94
	November East											
1.	12	14	11	12	15	20	25	26	28	24	30	34
2.	10	13	11	13	14	16	18	21	28	20	24	22
3.	38	38	37	45	41	40	36	41	41	39	51	60
4.	48	54	47	41	41	51	48	47	49	48	79	65
5.	106	55	104	63	47	37	28	18	28	43	26	43
6.	+3	-2	-18	-12	-8	-21	-18	-9	+27	+71	+78	+51
	December North											
1.	6	9	9	9	7	10	12	17	24	25	19	21
2.	10	9	6	8	9	11	13	14	22	23	19	22
3.	47	37	37	37	39	39	42	41	39	50	48	45
4.	57	51	48	48	61	55	50	57	59	66	57	82
5.	82	99	76	109	74	59	68	48	47	39	94	113
6.	+6	+24	-2	-19	-17	-1	+8	+12	+34	+46	-16	-41
	December East											
1.	10	9	12	10	14	16	20	21	24	29	28	26
2.	12	7	13	9	10	10	16	17	18	27	24	23
3.	43	39	37	35	39	38	44	42	39	44	43	42
4.	49	53	44	52	61	49	48	42	55	64	65	61
5.	64	52	66	81	51	43	47	57	39	43	51	49
6.	-21	0	-8	-7	-14	-13	-21	-33	-24	+73	+35	+15



12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
18	20	17	13	10	10	6	9	7	10	6	8	12.1
26	17	20	14	13	12	9	14	12	11	6	11	15.5
50	49	53	41	40	38	38	41	38	40	38	40	43.7
96	78	66	82	76	47	96	64	46	55	51	69	65.5
91	73	44	47	113	109	130	156	123	137	156	68	84.1
-122	-60	+3	+28	+34	+47	+19	+75	+47	+35	+32	-2	
Component												
32	31	31	25	19	18	13	14	14	14	10	14	20.2
27	24	26	20	14	20	15	13	14	13	11	13	17.5
42	49	48	47	40	38	38	45	39	44	39	40	42.3
49	48	56	65	62	60	112	89	70	64	53	54	58.7
53	51	32	74	95	109	106	122	98	50	41	75	62.6
-8	+8	+3	-10	-12	+3	-21	-25	-1	-21	-21	-32	
Component												
19	18	16	14	10	7	10	9	6	9	10	7	12.6
26	20	19	14	13	11	11	9	7	9	9	9	13.5
43	46	39	38	34	37	39	38	35	37	38	39	40.0
73	62	50	57	56	48	67	73	53	49	60	84	59.2
113	85	111	78	75	138	67	140	116	176	176	99	93.8
-43	-37	+5	+1	-16	+8	+6	+5	+39	-3	+3	-2	
Component												
28	24	25	20	17	13	10	12	12	12	12	12	17.3
26	23	21	20	13	15	13	13	10	12	12	12	15.5
42	42	41	39	43	38	39	42	39	39	39	38	40.7
50	44	51	59	43	68	73	58	50	50	68	48	54.4
85	45	67	65	94	109	61	116	104	105	99	80	69.8
+45	+34	+35	+7	+3	-8	-42	+1	-19	-32	-8	0	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	Year 1982 North											
1.	10	11	13	14	15	19	21	23	25	23	22	21
2.	13	13	13	14	16	19	20	25	25	23	21	24
3.	40	41	41	40	43	47	46	49	48	50	48	48
4.	60	61	54	59	61	68	68	71	63	69	71	78
5.	107	90	98	98	72	66	63	52	55	51	75	82
6.	+7	+6	+1	-9	+7	+25	+55	+67	+40	-21	-102	-138
	Year 1982 East											
1.	14	14	17	17	39	43	35	39	43	43	44	45
2.	15	13	15	24	29	29	24	29	29	29	29	31
3.	37	37	38	38	41	38	38	41	39	42	43	43
4.	52	57	50	51	51	51	50	49	49	54	65	62
5.	94	66	66	63	53	53	46	44	47	51	57	69
6.	-6	+2	-2	-8	-5	-4	+13	+31	+45	+54	+37	-5

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
21	20	18	16	14	11	10	9	9	9	11	10	15.5
25	20	17	14	13	10	9	10	9	10	11	11	16.0
47	43	46	40	40	40	38	38	37	38	41	38	42.7
71	73	66	66	62	56	60	61	53	54	61	70	64.1
97	83	100	87	79	83	108	98	114	120	121	102	87.7
-127	-31	-17	+34	+59	+58	+35	+33	+24	+15	+19	+10	

Component												
44	43	39	35	30	25	20	16	14	15	16	16	29.3
32	28	27	25	21	19	16	13	12	13	16	15	22.1
42	41	39	38	38	38	35	39	36	38	37	35	38.9
59	56	60	60	57	56	57	57	55	54	57	55	55.3
70	69	73	76	89	92	103	94	91	93	86	62	72.4
-5	-10	-11	-12	-18	-21	-32	-8	-12	-1	-11	9	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
	Quite days North											
1.	6	10	11	11	9	13	14	16	16	13	13	13
2.	7	11	11	9	8	12	8	14	15	10	10	11
3.	35	34	32	32	33	33	33	37	37	32	33	35
4.	34	37	35	32	25	40	37	38	36	44	37	35
5.	20	26	36	37	39	26	24	15	16	21	23	31
6.	+11	+14	+5	+1	+19	+35	+52	+68	+48	-21	-91	-133
	Quiet days East											
1.	8	12	13	11	11	20	23	22	26	23	26	32
2.	6	10	10	11	9	11	13	16	16	17	14	17
3.	28	28	29	26	25	30	26	24	26	24	26	29
4.	27	34	28	28	25	27	31	28	29	32	35	30
5.	29	21	26	29	28	26	22	23	20	31	22	31
6.	0	-7	-3	-2	-18	-9	-3	-1	+22	+34	+24	+5
	Disturbed days North											
1.	21	26	23	21	24	32	32	36	44	34	34	34
2.	30	23	33	36	42	39	44	60	51	50	50	61
3.	59	55	62	63	55	70	73	79	78	96	87	93
4.	129	102	78	99	107	115	116	136	93	105	118	114
5.	202	181	259	201	156	107	117	100	98	90	72	152
6.	+23	-11	-47	-34	-23	+36	+58	+54	+41	-4	-86	-108
	Disturbed days East											
1.	25	24	32	31	34	43	48	53	60	59	57	57
2.	32	27	35	39	38	39	44	60	54	53	51	59
3.	58	55	65	80	66	65	67	78	75	88	84	95
4.	96	105	101	93	93	99	95	103	80	88	117	101
5.	209	84	140	102	104	105	86	57	70	80	97	131
6.	-14	+34	-11	-17	+38	+16	+24	+49	+56	+68	+55	-7

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
14	13	12	8	6	5	6	5	6	5	4	6	9.8
11	5	5	6	3	2	5	3	6	5	4	10	8.0
35	35	37	32	28	33	31	33	35	32	33	33	33.5
43	37	34	35	37	35	36	35	32	37	38	35	36.4
20	19	34	22	19	19	15	24	25	20	30	29	24.6
-127	-61	-1	+33	+44	+35	+19	+5	+9	+14	+10	+11	
Component												
33	29	24	17	13	11	8	5	7	5	5	8	16.3
17	17	15	11	7	10	7	4	8	8	8	9	11.3
31	29	27	32	28	23	29	29	31	32	32	32	28.4
31	29	35	35	34	31	25	28	31	39	33	29	30.6
24	24	24	26	22	26	31	26	26	15	29	30	25.5
-10	-1	-6	-1	-11	-11	-10	-5	+3	+12	-1	0	
Component												
31	30	27	26	21	23	19	20	15	12	14	16	25.4
54	47	35	32	28	30	28	25	18	15	18	17	36.1
77	78	79	58	48	63	53	53	52	55	47	45	65.8
144	101	98	123	103	97	123	131	87	76	129	104	109.5
140	156	191	176	154	202	237	223	201	255	227	172	169.5
-115	-83	-17	+105	+41	+80	+61	+49	+2	-47	-2	+33	
Component												
55	51	51	46	41	35	33	28	30	24	24	24	40.2
62	44	44	45	34	37	35	30	24	20	28	25	40.0
72	66	66	66	62	67	58	78	59	48	53	45	67.3
111	108	112	120	113	96	148	113	82	77	96	85	101.3
83	109	125	192	111	152	151	199	177	211	160	122	127.4
+14	-7	-13	-32	-36	-46	-59	+13	-23	-41	-54	-5	

## III.

*Results of harmonical analysis of the daily variations*  
North Component

	$A_1$	$\varphi_1$	$A_2$	$\varphi_2$	$A_3$	$\varphi_3$	$A_4$	$\varphi_4$	$A_5$	$\varphi_5$	$A_6$	$\varphi_6$
January	16	145	26	232	17	125	21	311	4	50	2	159
February	34	144	35	231	21	94	19	315	2	25	5	112
March	27	112	58	269	54	96	29	280	3	184	7	82
April	45	109	83	291	61	118	22	327	11	238	4	174
May	45	101	81	299	49	142	8	61	5	304	1	258
June	67	99	88	293	48	135	10	48	4	258	4	43
July	57	86	84	299	43	126	10	119	8	279	10	289
August	60	106	81	304	55	140	3	147	10	313	3	5
September	48	116	74	278	62	120	12	335	8	37	8	165
Octóber	40	106	67	259	58	114	27	324	12	187	9	168
November	28	143	44	247	32	103	26	310	8	139	1	80
December	8	85	17	230	14	87	14	329	8	93	7	355
Year	37	108	56	279	39	118	12	325	2	263	1	67
Q	32	91	49	285	39	125	15	319	2	188	3	358
D	23	141	57	280	48	110	5	72	13	106	11	191

## East Component

January	18	301	13	125	8	16	12	247	10	72	3	26
February	20	308	23	112	7	326	6	75	4	145	4	224
March	19	297	14	110	10	31	12	221	3	129	5	60
April	30	341	21	184	10	60	16	311	7	83	4	113
May	23	355	20	211	13	107	14	350	6	320	2	336
June	42	9	28	207	26	147	9	353	2	132	3	264
July	28	13	29	216	12	102	16	343	4	35	5	332
August	22	6	27	232	21	90	9	346	5	258	2	357
September	41	2	17	208	28	61	19	329	7	359	9	101
Octóber	36	331	21	178	17	45	10	275	11	131	6	174
November	26	298	17	146	17	17	10	247	9	80	6	356
December	21	275	21	90	5	356	5	251	11	113	6	360
Year	21	340	15	181	9	77	8	307	3	88	3	20
Q	6	316	12	167	5	56	7	283	2	98	2	326
D	40	345	13	178	8	43	10	9	15	96	9	78

## IV.

*Special phenomena*  
(magnetic and earth current data)

## SSC-s

Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	End of storm
			E(mV/km)	H(gamma)					
02.	01.	12.00	7	42	+	+	+	-	02.02.18.00
	03.	02.30	7	18	+	+	+	-	02.03.17.00
	05.	17.15	9	30	+	+	+	- (?)	in storm
	11.	14.15	30	30	+	+	+	-	02.12.03.00
	22.	10.30	9	35	+	+	+	-	02.23.03.00
03.	01.	12.30	>16	80	+	+	+	-	03.03.02.00
04.	01.	14.00	12,5	32	+	+	+	-	04.01.16.00
	16.	18.00	12	45	+	+	+	-	04.17.04.00
	24.	21.15.	18	70	+	+	+	-	04.25.20.00
06.	06.	03.45	18	60	+	+	+	-	06.06.09.00
	09.	01.45	20	80	+	+	+	-	06.09.08.00
	10.	03.00	5,5	14	+	+	+	-	06.10.19.00
	12.	15.45	>18	70	+	+	+	-	06.14.01.00
07.	11.	10.45	12,5	22	+	+	+	-	07.11.20.00
	13.	17.15	>12,5	150	+	+	+	-	07.15.02.00
	16.	16.15	14,5	95	+	+	+	-	07.17.12.00
		22.00	>18	90	+	+	+	-	in storm
	30.	15.30	7	18	+	+	+	-	07.30.20.00
08.	06.	19.30	16	55	+	+	+	-	08.07.18.00
09.	05.	23.45	23,5	11	+	+	+	-	09.07.21.00
	06.	12.45	>18	130	+	+	+	-	in storm
	09.	02.00	20	115	+	+	+	-	09.09.23.00
	21.	04.30	?	70	+	+	+	-	09.23.01.00
	23.	10.45	11	28	+	+	+	-	09.23.17.00
	25.	18.00	3,5	28	+	+	+	-	09.27.22.00
		21.30	10	28	+	+	+	-	in storm
	26.	11.30	>16	100	+	+	+	-	in storm

## SSC-s

Month	Day	CET (GMT+1h)	Amplitude in E (nV km)	H H(gamma)	Ex	Ey	Hx	Hy	End of storm
10.	13.	16.00	9	30	+	+	+	--(?)	10.14.17.00
	26.	01.30	>18	70	+	+	+	—	10.26.14.00
	31.	14.30	12	45	+	+	+	—	11.01.22.00
11.	20.	19.45	3.5	12	+	+	+	—	11.22.07.00
	23.	10.15	9	30	—	+	+	+	11.24.04.00
	24.	09.45	10	30	+	+	+	—(b?)	see next item
		10.30	18	50	+	+	+	—	11.26.20.00
	30.	13.15	16	22	+	+	+	—	11.30.17.00
12.	07.	04.30	6.5	18	+	+	+	—	12.08.04.00
	10.	08.15	11	30	—	—	—	+	12.10.23.00
		15.15	18	52	+	+	+	—	in storm
	17.	09.00	8	42	—	—	—	+	12.18.21.00
	19.	03.45	12	40	+	+	+	—	12.19.15.30
	27.	08.15	11	22	+	+	+	—	12.27.19.00



		Bays			Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
01.	01.	16.30	9	60	-	+	-	+	tr		
	02.	19.00	9	35	+	+	+	-			
	03.	17.00	11	42	+	+	+	-	tr		
		20.30	11	80	-	+	+	+			
	04.	00.15	8	30	-	-	+	-	tr		
	06.	02.15	3.5	20	+	0	0	-	3.5	+	+
		20.45	8	35	+	+	+	-			
	08.	20.30	8	32	+	+	+	-	tr		
	14.	21.45							3.5	+	+
	15.	04.00	6	32	+	+	+	-	tr		
		22.30	4.5	20	-	+	+	+	tr		
	16.	19.30	17	105	+	+	+	+	tr		
	18.	19.30	12	75	-	-	-	+			
		22.00	7	65	+	+	+	+	tr		
	20.	02.00	35	14	+	+	+	-	2.5	+	+
		19.30									
		20.15	3.5	18	-	+	+	+	tr		
	21.	11.15	13.5	45	+	+	+	-(si?)			
		18.30	14.5	40	-	-	-	+(si?)			
	22.	18.00	12.5	70	-	+	+	+	tr		
		22.30	16	70	+	+	+	+	tr		
	23.	21.00	9	50	-	+	+	+	tr		
	24.	20.30	6.5	32	-	+	+	+	tr		
		23.30	8	45	+	+	+	+	tr		
	25.	21.00	3.5	15	-	+	+	+	2	+	+
	26.	21.30	5.5	35	-	+	+	+			
	27.	23.30	12.5	70	-	+	+	+	tr		
28.	04.00	6.5	40	+	-	-	-				
31.	14.30	18	72	+	+	+	-	tr			
	19.15	11	35	-	-	-	-				
02.	02.	23.00	4.5	22	-	+	+	+	tr		

		Bays				Pi-s					
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
			E(mV km)	H(gamma)							
02.	05.	02.00	10	55	-	+	+	+	tr		
	06.	18.45	10	80	-	+	+	+	tr		
	07.	00.15	20	90	+	+	+	-	tr		
		02.00	11	50	+	+	+	-	tr		
	07.	10.30	7	35	-	-	-	+			
		21.30	9	30	-	+	+	+	tr		
	08.	00.45	6.5	35	+	+	+	-	tr		
		19.15	7	22	0	-	-	+			
		20.45	9	50	-	-	-	+	tr		
	10.	10.00						pg	6		
		20.30	8	30	+	-	-	-			
	11.	04.30	11	60	+	+	+	-	tr		
		22.00	15	95	-	+	+	+	tr		
	12.	00.15	18	100	+	+	+	-			
		20.00	12.5	72	-	+	+	+	tr		
		23.00	11	60	+	+	+	-	tr		
	13.	02.45	12.5	52	-	+	+	+	tr		
		18.30	27	170	-	+	-	+	tr		
		22.15	34	120	+	+	+	-	tr		
	14.	20.30	16	85	-	+	+	+			
	17.	21.30	80	70	-	+	+	+	tr		
	18.	03.30						pg	5.5		
		19.45	14.5	80	-	+	+	+			
		23.45	9	60	+	+	+	-	tr		
	19.	06.30						pg	9		
		19.45	12.5	90	+	+	+	-	tr		
	23.	17.15	12.5	72	+	+	+	+	tr		
		19.00	11	60	-	+	+	+	tr		
	24.	00.15	6	32	+	+	+	-	2.5	+	+
		23.30	6	45	+	+	+	-	tr		
	25.	05.00	10	70	+	+	+	-	tr		

		Bays			Pi-s							
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey	
02.	25.	19.15	13.5	80	-	-	-	+	tr			
	26.	21.30	10	105	-	+	+	+	tr			
		23.15	13.5	45	+	+	+	-	tr			
	28.	20.30	7	55	-	+	+	+	tr			
03.	01.	23.30	30	270	+	+	+	-	tr			
	02.	18.30	12.5	45	-	+	+	+	tr			
		20.45	13.5	65	-	+	+	+	tr			
	05.	09.15	13.5	35	+	+	+	-				
	08.	01.00							2.5	+	+	
	09.	00.45	13.5	55	+	+	+	-	tr			
	11.	18.00	3.5	25	-	+	+	+	tr			
	13.	03.00	10	45	+	+	+	-	tr			
	14.	19.30	9	42	-	+	+	+	tr			
	17.	00.15								2.5	+	+
		14.30	13.5	30	-	-	-	+				
	19.	00.45	6.5	25	+	+	+	-	2	+	+	
		06.00							pg 4.5			
	20.	23.30	4.5	18	+	+	+	-	tr			
	21.	20.15	11	75	-	+	+	+	tr			
	22.	01.00	10	60	+	+	+	-				
		05.15							pg 3.5			
17.00		9	22	-	+	-	+					
23.	03.00	4.5	22	+	+	+	-					
	04.30							pg 4.5				
25.	18.30	4.5	25	-	+	+	+					
26.	22.45	4.5	22	+	+	+	-	2.5	+	+		
28.	22.15	2.5	10	+	+	+	-					
04.	01.	21.45	12.5	75	-	+	+	+	tr			
	02.	00.15	14.5	80	-	+	+	+	tr			
		17.15	12.5	80	-	+	+	+	tr			
		22.45	8	42	+	+	+	-	3.5	+	+	

		Bays				Pi-s					
Month	Day	CET (GMT+1h)	Amplitude in E(mV.km) H(gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
04.	03.	00.00	11	40	-	+	+	+	tr		
		18.00	12.5	60	+	+	+	-	tr		
	04.	21.45	6.5	42	-	+	+	+	tr		
	05.	22.45	11	55	-	+	+	+	tr		
	08.	21.45	9	55	+	+	+	-	tr		
	10.	14.45	11	50	-	+	+	+	tr		
		23.00	20	80	+	+	+	-	tr		
	11.	01.30	14.5	105	-	+	+	+	tr		
		21.30	13.5	55	+	+	+	-	tr		
	14.	00.00	4.5	18	-	+	+	+	3.5	±	+
	20.	12.00	8	32	+	+	+	-			
	21.	00.15	4.5	42	-	+	+	+	2.5	+	+
		20.00	16	60	-	+	+	+	tr		
	23.	14.00	7	18	+	+	+	-			
	25.	15.45	11	32	-	-	-	+			
	26.	22.30	3.5	8	+	+	+	-	2.5	+	+
		23.00	6.5	25	+	+	+	-	tr		
	27.	18.45	15	68	+	+	+	-	tr		
	29.	02.00	4.5	30	+	+	+	-	tr		
	30.	22.15	4.5	32	+	+	+	-	2.5	+	+
05.	01.	17.15	10	55	-	+	-	+	tr		
		22.00							2.5	+	+
	02.	03.00	7	42	+	-	-	-			
	03.	13.45	9	35	-	-	-	+			
	04.	00.00	10	11	+	+	+	+	tr		
		11.15	12	35	-	-	-	+			
	05.	20.30	8	30	+	+	+	-	tr		
	06.	02.15							2.5	+	+
	08.	01.15	2.5	20	+	+	+	-	tr		
	09.	02.15	4.5	30	+	+	+	-	2.5	+	+
10.	02.30							2.5	+	+	

		Bays				Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey	
05.	11.	01.15							2.5	+	+	
	13.	03.15							2	+	+	
		17.15							2.5	+	+	
		20.45	3.5	18	+	+	+	-	2	+	+	
	15.	17.15	4.5	30	+	+	+	0				
		19.45	5.5	35	+	+	-	+	3.5	+	+	
	18.	10.45	7.5	65	-	-	-	+				
		22.45	6	38	+	+	+	-	2	+	+	
	21.	04.00	6	14	-	-	-	+				
	22.	06.30	3.5	12	-	-	+	-				
	23.	01.30							3	+	+	
		02.00							2.5	+	+	
		19.15							2	+	+	
	24.	01.00							2	+	+	
		22.15							2.5	-	-	
	25.	15.30	3.5	15	+	+	+	-				
	26.	00.15	6	35	+	+	+	-	5.5	+	+	
	26.	16.15	14.4	55	-	-	-	+				
	27.	15.15	18	80	+	+	+	+	tr			
		17.45	11	42	-	+	+	+	2.5	+	+	
	28.	20.45	12.5	60	-	+	-	+	tr			
	29.	22.15	8	35	-	-	-	+				
	30.	18.15	9	40	+	+	+	+	tr			
		23.00	11	50	+	+	+	-	tr			
	06.	01.	16.15						pg	4.5		
		02.	03.15	6	45	+	+	+	-	tr		
			13.30							pg	3.5	
03.		21.45	3.5	16	-	+	+	0	2.5	+	+	
04.		01.45	7	22	+	+	+	-	tr			
		14.30	11	45	+	+	+	-sfe				
		15.30	11	35	+	+	+	-sfe				

		Bays				Pi-s					
Month	Day	CET (GMT+1h)	Amplitude E(mV/km)	in H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
06.	04.	23.15	4.5	18	+	+	+	-	3.5	+	+
	06.	11.30	4.5	18	+	+	+	-			
	09.	04.00	14	45	+	+	+	-			
	10.	04.00	9	50	+	+	+	-			
		12.30	14.5	65	-	-	-	+			
		17.15	10	60	-	+	+	+	tr		
	11.	06.00	9	30	-	-	-	+			
		19.15	5.5	30	+	+	+	-	tr		
		21.15	10	35	-	-	-	+	tr		
	12.	00.45	21.5	85	+	+	+	-	tr		
	13.	03.00	18	80	+	+	+	-	tr		
		15.00	12.5	65	-	-	-	-			
		16.45	9	30	-	-	-	+			
		21.15	16	60	+	+	+	-			
	15.	05.00						pg	5		
		18.00	12.5	70	+	+	+	+	tr		
	16.	00.30	5.5	45	+	+	+	-	tr		
		14.15	5.5	10	-	-	-	+			
	18.	15.00	2.5	12	-	-	-	+			
		20.30	4	18	-	+	+	+	5.5	+	+
	19.	23.15	18	85	-	+	+	+	tr		
	20.	02.45	5.5	40	+	+	+	-	tr		
		16.30	6	30	-	-	-	0			
		21.00	7	30	-	+	-	+	3.5	+	+
	22.	14.30	12.5	35	+	+	+	-(ssc?)			
		19.15	5.5	25	-	-	-	+			
	23.	21.45	5.5	30	+	+	+	-	2.5	+	+
	24.	22.00	12.5	100	-	+	+	+	2.5	+	+
	26.	22.30	6.5	50	-	+	+	+	tr		
	29.	00.15	9	50	-	+	+	+	tr		
07.	01.	00.45	7	40	+	+	+	-	tr		

		Bays			Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H (gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
07.	01.	20.00	4.5	25	+	+	+	-	2.5	+	+
	03.	23.30							2	+	+
	04.	22.00							2.5	+	+
	06.	18.00	11	75	-	-	-	+	tr		
	07.	18.15	6	55	-	-	-	+	tr		
	08.	16.15	7	25	+	+	+	-	tr		
		17.45	6	28	+	+	+	+	tr		
	10.	01.30	6.5	28	+	+	+	-	2.5	+	+
	11.	01.30							2	+	+
	12.	22.15	5.5	35	-	+	+	+	2.5	+	+
	15.	21.15	7	45	+	+	+	+	tr		
		23.45	12	55	-	-	-	+	tr		
	17.	01.00	24	110	+	-	-	+	tr		
	18.	01.30	6	50	+	+	+	-	tr		
	19.	16.00	11	60	-	-	-	+	tr		
	20.	00.15	10	45	+	+	+	-	tr		
	21.	21.15	7	28	-	+	+	+	2.5	+	+
	22.	14.30	11	35	+	+	+	-	tr		
	25.	00.45	12.5	45	+	+	+	-	tr		
	27.	16.30	7	35	-	-	-	+	tr		
	29.	01.00	5.5	32	+	+	+	-	tr		
16.00		6.5	50	-	+	+	+				
08.	01.	22.30	4.5	10	+	+	+	-	2.5	+	+
	02.	01.15	13.5	90	+	+	+	-	tr		
		17.00	12	65	+	+	+	-			
	02.	21.45	20	75	+	+	+	-	tr		
	03.	15.00	8	30	-	-	-	+	tr		
	05.	17.45	6.5	45	-	-	-	+			
	06.	03.00	6.5	30	+	+	+	-	2.5	+	+
	07.	01.45	25	95	+	+	+	-			
20.00		7	28	+	+	+	-				

		Bays				Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey	
			E(mV/km)	H (gamma)								
08.	07.	20.45	6	25	-	-	-	+				
	11.	19.00	14.5	60	-	-	-	+	tr			
	12.	15.00	11	40	+	+	+	-	tr			
	13.	22.00	3.5	20	+	+	+	+	2	+	+	
	14.	01.15							2	-	-	
	15.	23.20							2	+	+	
	16.	22.15	6.5	22	-	+	-	+	tr			
	17.	23.30	9	45	-	+	+	+	tr			
	18.	22.00	12	55	-	+	+	+	tr			
	20.	01.30	5.5	35	+	+	+	-	2	+	+	
	21.	20.45	4.5	25	-	-	-	+	tr			
	22.	21.45	10	60	-	+	+	+	tr			
	23.	00.30	6.5	18	+	+	+	-				
	24.	01.30	6.5	45	+	+	+	-	tr			
		20.30	6.5	35	-	+	+	+	tr			
	25.	23.30	12	70	+	+	+	-	tr			
	26.	23.45	9	32	+	+	+	-	3.5	+	+	
	28.	22.45	12.5	50	-	+	+	-	tr			
	30.	23.30	13.5	45	+	+	+	-	tr			
	09.	01.	12.30	9	15	+	+	+	-(si?)			
			23.45							2.5	+	+
		02.	00.30							4.5	+	+
			16.30	2.5	10	-	-	-	+			
		03.	00.00	7	30	+	+	+	-	2	+	+
			10.15	8	25	+	+	+	-			
			20.15	5.5	22	+	+	+	-			
		04.	01.45	5.5	10	-	-	-	+			
			21.15	9	35	+	+	+	-	tr		
			22.00	11	42	+	+	+	-	tr		
			23.20	14.5	65	+	+	+	-	tr		
05.		22.15	11	50	+	+	+	-	tr			



		Bays			Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
09.	06.	20 30	25	85	+	+	+	-	tr		
	07.	13.15	17	60	-	-	+	-	tr		
		19.30	25	130	+	+	+	-	tr		
		23.45	11	45	+	+	+	-	tr		
	08.	04.15							pg (9 min)		
		10.30	7	32	+	+	+	-			
	09.	18.45	12.5	60	+	+	+	+	tr		
		21.00	27	110	-	+	+	+	tr		
	11.	18.00	6.5	35	-	-	-	+	tr		
		23.45	6.5	35	+	+	+	-	2.5	+	+
	12.	20.45	7	45	-	-	-	+	2	+	+
	13.	16.00	4.5	35	-	-	-	+	tr		
		22.00	5.5	25	-	+	+	+	4.5	+	+
	14.	00.15	4.5	28	+	+	+	-	2	+	+
		19.30	7	55	-	+	+	+	3.5	+	+
		21.30	12	58	+	+	+	-	tr		
	15.	22.45	7	18	+	+	+	-	tr		
	18.	02.00	7	35	+	+	+	-	5.5	+	+
		22.00	11	50	+	+	+	-	tr		
	20.	22.15	12	50	-	+	+	+	tr		
	22.	18.15	24	75	+	-	-	-	tr		
		22.30	12.5	45	+	+	+	-	tr		
	23.	17.45	9	50	-	-	-	+			
		20.15	6.5	42	-	+	+	+	tr		
	24.	23.30		30	+	+	+	-	3.5	+	+
	27.	02.00	16	95	+	+	+	-	tr		
		17.15	7.5	130	-	+	+	+	tr		
	28.	07.30							pg (7 min)		
		21.30							pg (12 min)		
	30.	13.00	12.5	35	-	-	-	+			
10.	01.	23.00	17	115	+	+	+	-	tr		

		Bays			Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
			E(mV/km)	H ( $\gamma$ )							
10.	02.	01.30	12.5	75	+	+	+	-	tr		
		18.00	7	40	+	+	+	-			
	03.	01.45	6	35	+	+	+	-	tr		
		22.30	5.5	35	-	+	+	+	tr		
	05.	10.00	6	25	+	+	+	-			
		13.45	2.5	8	-	-	-	+			
06.	01.15	7	35	+	+	+	-	tr			
		19.30	6.5	55	-	-	-	+	tr		
		23.30	8	40	-	+	+	+	tr		
07.	02.00	11	50	+	+	+	-	tr			
		16.30	6.5	15	-	+	-	-			
		17.00	5.5	22	-	+	-	-			
08.	01.15	7	35	-	+	+	+	2	+	+	
		04.45	6.5	35	+	-	-	-			
		21.45	12.5	70	-	+	+	+	2.5	+	+
09.	23.45							4.5	+	+	
10.	00.30	6.5	35	-	+	+	+	3.5	+	+	
		11.30	13.5	50	-	-	-	+			
		21.45	5.5	45	-	+	+	+	tr		
11.	02.15								pg (6 min)		
		12.30	8	35	+	+	+	-			
		15.30	7	22	-	-	-	+			
		20.30	11	50	-	+	+	+	3.5	-	-
12.	11.15	12.5	30	-	-	-	+	tr			
		20.15	7	50	-	+	+	+	4.5	+	+
13.	18.15	25	100	-	+	+	+	tr			
		22.45	16	115	+	+	+	-	tr		
14.	22.30	5.5	35	-	+	+	+	3.5	+	+	
18.	17.15	12.5	45	+	+	+	+	tr			
19.	22.30	11	50	+	+	+	+	tr			
20.	01.15	9	30	+	+	+	-	tr			

Bays					Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H (gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
10.	21.	21.30	8	22	+	+	+	-			
	22.	03.00	6.5	32	+	+	+	-	2.5	+	+
		21.15							3.5	+	+
	24.	16.00	4.5	12	+	+	+	-			
	26.	00.30	7	30	-	-	-	+			
		17.45	7	35	+	+	+	-			
	27.	23.15	6.5	35	+	+	+	-	tr		
	28.	19.45	6.5	30	+	+	+	-	tr		
		21.00	5.5	25	+	+	+	-			
	29.	22.45	11	40	+	+	+	+	tr		
	30.	00.30	10	30	-	-	-	+	tr		
		18.00	14.5	70	-	+	+	+	tr		
	31.	03.30	8	35	+	+	+	-			
		09.45	5.5	12	+	+	+	-			
11.	01.	01.45	12.5	70	+	+	+	-	tr		
		16.00	20	70	+	+	+	-	tr		
		19.15	13.5	60	-	-	+	-	tr		
		20.45	11	75			+	-	tr		
	02.	17.45	14.5	65	+	+	+	-	tr		
		21.15	12	55	-	+	+	+	tr		
		23.00	10	75	+	+	+	-	tr		
	03.	11.30	12	50	+	+	+	-			
	04.	20.00	7	45	-	+	+	+	tr		
	05.	01.00	4.5	18	+	+	+	-	3.5	+	+
		19.00	6	50	-	+	+	+	tr		
	06.	01.15	3.5	15	+	+	+	-	tr		
		12.45	12	22	+	+	+	-			
	08.	17.00	6	35	+	+	+	- (ssc?)			
		19.00	11	30	+	+	+	-			
	12.	02.00	7	40	+	+	+	-	tr		
		13.30	7	22	-	-	-	-	tr		

		Bays				Pi-s					
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
			E(nV/km)	H (gamma)							
11.	12.	20.00	11	30	+	+	+	-	tr		
	13.	01.45	11	50	+	+	+	-	3.5	+	+
	14.	13.00	11	42	+	+	+	-	tr		
		23.15	8	32	+	+	+	+	tr		
	15.	21.00	6.5	38	-	+	+	+	tr		
	16.	23.00	5.5	17	+	+	+	-	3.5	+	+
	17.	21.30	6.5	22	-	-	-	+	tr		
	18.	22.45	5.5	30	-	+	+	+	3.5	+	+
	19.	00.00	3.5	16	+	+	+	-	2.5	+	+
		21.45	11	52	+	+	+	+	2	+	+
	20.	03.00	3.5	8	-	-	-	+			
		10.45	4.5	12	-	-	-	+			
	21.	00.30	11	45	+	+	+	-	tr		
		12.15	12	30	+	+	+	-	tr		
		13.30	11	25	-	-	-	+			
	21.	18.00	7	22	+	-	-	-			
		20.45	8	22	+	-	-	-			
	22.	03.30	16	85	+	+	+	-	tr		
	23.	17.30	20	180	-	-	-	+	tr		
		23.45	18	70	-	+	+	+	tr		
	25.	15.00	25	95	-	+	-	+	tr		
		18.15	15	65	-	+	+	+	tr		
		19.30	9	38	-	-	-	+			
		22.45	8	32	-	+	+	+	tr		
	26.	15.30	14.5	120	-	-	-	+	tr		
		22.15	12.5	70	-	+	+	+	tr		
	27.	19.15	18	72	-	+	+	+	tr		
	28.	01.45	18	125	+	+	±	-	tr		
	29.	21.15	30	140	+	+	+	-	tr		
12.	03.	23.45	2.5	28	-	+	+	+	2.5	+	±
	04.	02.15							2.5	+	+

		Bays			Pi-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H (gamma)		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
12.	04.	21.00	4.5	16	+	+	+	-			
		23.15	9	42	-	+	+	+	tr		
08.	14.45	20.15	12.5	65	-	+	+	+	tr		
		20.15	12.5	45	+	+	+	-	tr		
09.	12.30	14.00	10	30	+	+	+	-	tr		
		14.00	9	90	-	-	-	+			
11.	19.15	21.30	16	50	-	-	-	-	tr		
		21.30	15.5	50	-	+	+	+	tr		
12.	17.30	7	40	-	+	+	+	2	+	+	
13.	22.15	5.5	22	-	+	+	+	2	+	+	
14.	21.30	8	45	-	+	+	+	3.5	+	+	
16.	23.15	12.5	70	-	+	+	+	tr			
18.	00.15	02.00	6.5	45	+	+	+	-	2.5	+	+
		02.00	6.5	45	+	+	+	-	5.5	+	+
21.	18.30	22.15	22.5	110	-	+	+	+	tr		
		22.15	18	55	-	+	-	-	tr		
22.	00.45	15.45	16	85	+	+	+	-(ssc?)			
		15.45	12.5	52	-	+	-	+	tr		
24.	00.15	19.45	5.5	35	-	+	+	+	tr		
		19.45	6.5	30	-	+	+	+	tr		
		20.30	5.5	35	+	+	+	-	tr		
25.	17.15	11	60	-	+	+	+	tr			
26.	03.00	5.5	22	+	+	+	-	tr			
27.	22.15	6.5	50	-	+	+	+	tr			
28.	21.15	6.5	18	+	+	+	-	2.5	+	+	
29.	00.15	4.5	35			+	-	2	+	+	

*Further Pi-traces*

Month	Day	CET	Month	Day	CET	Month	Day	CET
01.	04.	21.15	04.	04.	20.15	05.	09.	01.15
		23.15		06.	23.15			17.00
	06.	14.00		07.	16.00		10.	03.15
	07.	08.30		08.	21.15			23.45
		11.45		09.	20.30		12.	22.30
		21.30		11.	00.30			23.45
	10.	02.45		12.	20.15		13.	01.30
	11.	02.15		13.	01.30		16.	16.00
		03.30			02.15			23.15
		21.30			03.30		17.	21.30
	12.	00.45			23.15		18.	21.30
		23.45		15.	00.30		21.	22.30
	16.	22.00			16.30			23.00
		23.30		18.	20.30			23.15
	20.	22.30		20.	15.30		22.	00.15
		23.00		21.	23.15		23.	00.45
	25.	21.00		22.	20.45			03.30
	27.	00.00		23.	13.30			18.15
		01.00			16.15		26.	22.45
02.	06.	19.15		24.	02.45			23.45
	08.	00.30			06.30		27.	00.15
	09.	22.15			11.15		31.	21.15
	11.	07.45			12.00			23.45
	16.	02.30			14.30	06.	01.	09.45
		18.45		05.	01.			14.15
	21.	07.00			22.00		02.	02.45
	28.	00.00		02.	16.15			23.30
03.	07.	23.30		03.	18.15		03.	15.00
	10.	22.00			19.30		05.	00.00
	12.	21.00		05.	05.30			16.15
	16.	23.45		06.	02.30		08.	19.15
	17.	00.45			16.45			19.30
	26.	17.30		07.	01.00			22.30
	27.	15.15			01.30		15.	23.15
	29.	23.30			23.30		16.	19.45
	30.	21.00		08.	00.15		19.	22.00
	31.	21.45			03.45		20.	17.45

Month	Day	CET	Month	Day	CET	Month	Day	CET
06	21.	21.00	08.	05.	23.00	10.	04.	20.30
	22.	21.45		06.	02.30		05.	22.45
	23.	21.00		09.	20.30			23.30
		21.15		16.	01.30		06.	00.00
		21.45			02.00		07.	21.15
	24.	21.30			04.15		19.	01.30
	26.	21.30		17.	23.00			13.15
07.	01.	22.15		18.	21.30		20.	22.15
		22.30		19.	20.30			22.30
		22.45		20.	21.00			23.00
	02.	23.30		22.	01.45		23.	20.45
	03.	00.15		23.	01.30			21.00
		03.30			02.15			21.30
		08.15		24.	11.30		27.	21.15
		20.00		25.	17.30			21.30
	04.	00.30		26.	21.30			22.15
		22.30			22.15		28.	23.00
		23.45		28.	09.00			23.30
	05.	00.15			21.00		29.	00.15
		05.30		30.	19.45			00.45
	07.	21.30			20.30	11.	04	23.15
	09.	20.45		31.	22.45			23.45
	10.	18.00	09.	01.	08.15		05.	18.30
	22.	04.15			09.30			18.45
	24.	01.15		02.	02.00		06.	08.45
	26.	22.45			21.15		07.	02.45
	28.	19.00		11.	00.30			21.30
	29.	21.15		13.	23.45		08.	05.15
	31.	02.00		14.	18.15		09.	16.30
		02.30		15.	16.30		10.	01.00
		14.30		18.	01.45		13.	16.45
		21.15			21.15		14.	17.15
		21.45			21.30		15.	03.45
		23.30		19.	16.15		16.	13.30
08.	01.	00.30		29.	20.45		17.	17.15
		19.15	10.	02.	21.30		18.	21.45
	02.	12.30		04.	19.45		19.	20.45

Month	Day	CET
11.	20.	21.30
	22.	05.30
		23.00
	27.	05.30
	28.	21.15
	29.	00.45
12.	01.	07.15
	02.	02.30
		02.45
		13.45
		22.45
	03.	02.15
		22.30
	04.	01.45
		22.45
	09.	21.45
	11.	18.45
		21.45
	12.	22.45
	13.	21.45
	23.	01.00
	24.	23.45
	26.	01.30
		02.45
	27.	23.15
	28.	22.00
	31.	22.45



## SI-s

Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy
			E(mV, kΩ)	H(gamma)				
01.	03.	11.30	2.5	12	+	+	+	-
	13.	05.15	4.5	12	+	+	+	-
	21.	21.15	5.5	12	-	-	+	-
	22.	00.30	5.5	14	+	+	+	-
		11.30	13.5	40	+	+	+	-
	24.	03.15	8	14	+	+	-	+
	25.	20.30	3.5	7	+	+	+	-
	28.	11.00	14.5	35	-	-	-	+
		17.45	6.5	14	-	-	-	+
	29.	18.45	18	35	-	-	-	+(ssc?)
21.30		4.5	8	0	-	-	+	
02.	02.	21.35	5.5	18	-	-	-	+
	03.	13.30	11	30	+	+	+	-
	06.	07.45	6	18	-	-	-	+
	10.	14.30	15	45	-	-	-	+
	12.	03.30	7	14	-	-	-	+
		04.15	5.5	12	-	-	-	+
		14.30	18	45	+	+	+	-
	23.	12.00	3.5	12	+	+	+	-
	25.	10.15	9	18	+	-	-	+
	27.	13.30	9	18	+	+	+	-
03.	04.	00.45	4.5	12	+	+	+	-
	09.	09.15	4.5	10	-	+	+	+
		13.45	7	12	-	-	-	+
	17.	17.00	11	22	-	-	-	+
		19.30	8	22	-	-	-	+
	18.	01.15	9	25	-	-	-	+
		15.30	6.5	14	+	+	+	-
	22.	16.00	11	25	-	-	-	+
		16.45	4.5	13	-	-	-	+
	25.	21.00	7	14	+	+	+	-
26.	01.45	2.5	8	-	-	-	+	
27.	05.45	5.5	12	-	-	-	+	
04.	02.	10.00	4.5	10	-	-	-	+
	12.	06.45	3.5	8	-	-	-	+

## SI-s

Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy
			E(mV km)	H(gamma)				
04.	17.	03.30	6	18	—	—	—	+
	20.	21.30	3.5	8	—	+	+	+
	23.	01.30	3.5	8	+	+	—	+
	28.	02.15	9	25	—	—	—	+
	30.	04.15	6.5	18	—	—	—	+
05.	02.	06.30	4.5	16	—	—	—	+
	03.	14.45	10	24	—	—	—	+
	05.	02.30	3.5	5	+	+	+	—
	09.	13.30	5.5	12	+	+	+	—
	15.	04.00	4.5	12	+	+	+	—
	16.	17.15	5.5	13	+	+	+	—
	18.	02.45	5.5	10	+	+	+	—
	25.	11.30	2.5	8	+	+	+	—
	27.	05.30	8	22	+	—	+	—
	30.	21.00	9	14	+	+	+	—
06.	02.	21.15	5.5	12	—	—	—	+
	05.	06.00	3.5	7	+	—	—	—
	06.	17.30	4.5	10	+	+	—	—
	07.	05.00	10	22	—	—	—	+
	08.	10.15	5.5	14	+	+	—	+
	11.	03.15	5.5	12	+	—	—	—
	14.	02.15	4.5	8	—	—	—	+
		05.15	9	22	—	—	—	+
	15.	19.30	4.5	10	+	+	+	—
		23.45	5.5	8	+	+	+	0
	16.	17.45	2.5	7	—	—	—	+
	18.	03.00	2	6	+	—	—	—
	28.	06.30	8	18	—	—	—	+
07.	02.	08.45	5.5	18	—	—	—	—
	06.	01.45	10	25	—	—	—	+
	07.	05.15	10	16	—	—	—	+
	09.	04.00	6.5	12	+	—	—	—
		08.00	4.5	10	—	—	—	+
	13.	10.45	7	18	+	+	+	—
	17.	12.00	25	50	—	—	—	+(at end of storm)

## SI-s

Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy
			E(mV km)	H(gamma)				
07.	19.	03.00	7	15	-	-	-	+
	20.	13.45	2.5	8	+	-	+	-
	21.	23.15	8	22	+	+	+	-
	23.	01.15	9	18	+	+	+	-
	30.	01.00	6	14	+	+	+	+
08.	01.	08.00	2.5	6	-	-	-	+
	04.	01.00	3.5	6	+	+	+	-
		04.45	4.5	10	+	+	+	-
	08.	15.15	4.5	10	-	-	-	+
	09.	00.45	3.5	12	-	-	-	+
		16.15	8	20	+	+	+	-
	22.	05.15	5.5	12	-	-	-	+
		23.15	6.5	12	+	+	+	-
	25.	09.15	3.5	10	-	-	-	+
	27.	07.15	9	12	+	+	+	-
	31.	01.30	6	15	+	+	+	-
09.	02.	11.30	3.5	8	+	+	+	-
	04.	08.45	7	18	+	-	-	-
	08.	16.45	6.5	12	+	+	+	-
	13.	10.45	4.5	?	-	-	?	?
	19.	02.30	8	20	+	+	+	-
	23.	07.45	9	16	+	+	+	-
	28.	22.30	9	30	+	+	+	-
10.	17.	04.30	7	12	+	-	-	-
		18.30	6.5	12	-	-	-	+
	20.	02.30	4.5	10	+	+	+	-
	24.	11.30	3.5	7	-	-	-	+
	26.	11.45	11	22	-	-	-	+
	27.	05.45	4.5	7	-	-	-	+
	29.	03.30	12.5	55	-	-	-	+
11.	09.	01.30	5.5	17	+	+	+	-
	11.	06.30	4.5	12	-	-	-	+
		07.00	4.5	12	-	-	-	+

## SI-s

Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy
			E(mV/km)	H(gamma)				
11.	13.	05.45	4.5	7	-	-	-	+
		11.30	11	20	-	-	-	+
	21.	06.30	4.5	10	-	-	-	+
	24.	03.30	10	24	+	+	+	-
	28.	10.15	14.5	24	-	-	-	+
	30.	01.30	11	30	+	+	+	-
		12.30	3	3	-	-	-	+
12.	07.	09.15	5.5	12	-	-	-	+
	10.	05.15	4.5	10	+	+	+	-
	15.	02.15	5.5	10	+	+	+	-
	16.	03.15	3.5	7	-	-	-	+
	18.	05.45	7	22	+	+	+	-
	19.	23.15	11	42	+	+	+	-
	20.	20.00	12	38	+	+	+	-
	26.	11.45	3.5	10	-	-	-	+

## Needles

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	Ex	Ey
01.	19.	14.30	2	—	—
02.	21.	08.30	3.5	+	+
03.	02.	14.15	9	—	—
	24.	04.45	2.5	+	+
04.	02.	07.15	8	+	+
	21.	16.45	4.5	—	—
	22.	03.45	5.5	+	—
05.	02.	10.45	3.5	+	+
	16.	13.45	3.5	—	—
	18.	08.15	6	—	—
	21.	10.45	3.5	0	+
	26.	11.45	3.5	—	—(ssc?)
	28.	20.45	6	—	—
	29.	07.30	12.5	+	—
	31.	17.15	4.5	—	—
06.	05.	13.15	2.5	+	—
	09.	11.30	3.5	0	+
		12.30	2.5	0	+
	19.	08.45	2.5	—	—
		09.45	3.5	+	+
	20.	16 00	2.5	—	—
	25.	18.15	2	—	—
07.	08.	02.45	2.5	—	—
	10.	09.30	3.5	+	+
	11.	08.15	4.5	+	+
		10.30	4.5	—	—
	16.	09.45	9	+	+(ssc?)
	21.	08.15	2	—	—
	30.	04.45	2.5	+	+
08.	06.	17.30	6.5	+	+
	10.	09.45	3.5	—	+
	16.	15.45	2	—	—

Month	Day	CET (GMT+1h)	Amplitude in E(mV km)	Ex	Ey
08.	24.	05.30	6.5	—	—
	27.	11.15	10.	+	+
	28.	18.45	3.5	—	—
	30.	05.15	6.5	—	—
09.	11.	09.30	2.5	—	+
10.	10.	12.30	8	+	+(ssc?)
	11.	14.45	4.8	—	—
	12.	15.45	3.5	—	—
	23.	14.15	4.5	—	—
11.	03.	17.45	4.5	—	—
	09.	07.30	10	+	+
	13.	09.30	6.5	—	—
	30.	00.45	5.5	—	—
12.		02.30	5.5	—	+
	07.	07.00	11	+	+
	08.	04.15	5.5	+	—
	15.	10.45	2.5	+	+
		11.45	2.5	—	+
	18.	03.00	8	+	+
	20.	14.15	10	—	—
	30.	16.30	3.5	—	—

1982

Pc 1-events

Month	Day	Duration		Quality
		hour min	hour min	
3.	13.	1829—	1847	C
4.	11.	2029—	2050	C
	13.	1952—	2001	C
	17.	614—	650	C
5.	9.	640—	711	C
	16.	219—	251	C
6.	6.	400—	429	C
7.	13.	1716—	2000	C
	14.	000—	300	B
	21.	2325—	2337	C
	22.	151—	213	B
		255—	304	C
		323—	335	C
		611—	642	C
	23.	2108—	2132	C
		2305—	2322	C
	24.	102—	218	C
		152—	215	C
		402—	411	B
		422—	454	C
	26.	2110—	2129	C
	27.	158—	203	C
		243—	300	C
		408—	449	C
		517—	530	C
		553—	606	C
8.	3.	120—	142	B
	9.	329—	422	C
9.	8.	428—	454	C
		2200—	2240	C
	12.	414—	425	C
	14.	355—	414	C
		2312—	2331	C
	25.	214—	224	C
		316—	343	C

Month	Day	Duration		Quality
		hour min	hour min	
9.		1636—	1653	C
		2312—	2331	C
	29.	512—	539	C
10.	1.	225—	721	C
	9.	2007—	2100	C
	12.	257—	724	B
11.	24.	1900—	2056	B
	27.	150—	232	C
		440—	702	C
		2217—	2224	C
	29.	445—	748	B
12.	3.	331—	338	C
		400—	409	C
		510—	515	C
		530—	634	B
		717—	822	C
	4.	403—	408	C
	7.	737—	743	C
		803—	809	C
		2013—	2146	B
	15.	600—	753	B
	16.	1944—	1947	C
	26.	518—	648	C



## V.

Average amplitudes in 12 pulsation bands  
(monthly averages for 3 hour intervals in  $\mu\text{V.km}$ )

January												
CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0— 3	0	16	35	23	16	7	30	44	75	35	95	140
3— 6	0	12	41	40	33	18	34	14	30	33	262	185
6— 9	0	14	28	59	51	54	69	55	24	47	205	190
9—12	0	27	70	56	60	90	38	36	43	15	305	54
12—15	0	8	24	53	99	102	76	121	19	7	183	73
15—18	0	20	43	42	60	92	43	39	25	15	213	155
18—21	0	22	20	35	19	22	28	63	77	31	129	195
21—24	0	23	31	29	12	24	21	152	135	50	111	101
Average	0	18	38	42	44	61	53	66	54	29	188	138

February												
0— 3	20	65	17	14	8	11	66	158	77	50	282	296
3— 6	14	48	47	37	22	21	30	46	40	66	452	467
6— 9	5	37	52	98	103	87	46	46	33	41	667	174
9—12	1	33	63	102	77	127	49	62	66	37	630	557
12—15	0	37	62	141	94	238	20	24	54	71	569	309
15—18	1	39	42	61	116	117	60	45	45	43	704	275
18—21	9	61	37	41	21	14	36	85	46	70	341	365
21—24	28	57	20	20	13	20	23	120	166	62	299	518
Average	10	47	43	64	57	87	41	73	66	55	493	370

## March

CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0—3	8	30	13	18	15	27	35	121	77	35	157	152
3—6	4	17	27	57	47	67	76	42	27	17	297	174
6—9	0	9	49	65	207	214	46	33	21	25	281	142
9—12	0	24	19	52	90	331	133	49	41	21	278	194
12—15	0	8	31	23	98	320	47	27	49	21	366	144
15—18	2	17	33	43	87	71	39	41	23	27	346	180
18—21	4	27	30	37	21	13	27	47	67	37	100	335
21—24	10	32	16	10	10	15	33	143	121	58	113	206
Average	4	21	27	39	72	132	58	65	53	30	242	191

## April

0—3	17	46	25	23	15	12	28	124	74	79	144	276
3—6	3	27	59	163	46	9	2	27	14	17	178	245
6—9	0	6	30	222	333	145	8	16	26	26	220	78
9—12	0	3	16	252	364	238	29	17	27	7	116	184
12—15	2	3	30	223	290	189	37	33	27	50	91	210
15—18	0	16	42	76	139	75	50	89	12	61	173	136
18—21	0	41	43	24	20	19	26	69	57	83	160	192
21—24	8	60	32	6	8	20	32	195	150	63	273	191
Average	4	25	35	136	152	88	27	71	48	48	169	188

May												
CE1'	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0— 3	6	38	32	21	15	22	34	59	116	113	186	191
3— 6	2	19	65	172	29	48	33	30	37	20	251	205
6— 9	0	6	33	415	119	114	38	52	34	15	245	151
9—12	0	5	15	355	354	175	82	50	14	25	169	85
12—15	0	3	34	331	185	114	76	70	39	28	277	112
15—18	2	18	38	106	94	75	56	102	105	35	266	115
18—21	1	41	33	24	18	27	38	93	71	85	173	175
21—24	6	40	20	10	5	17	42	150	92	102	157	147
Average	2	21	34	179	102	74	50	76	64	53	216	148

June												
0— 3	8	48	47	26	17	18	30	128	99	44	111	412
3— 6	3	28	153	106	26	13	36	82	32	32	254	338
6— 9	0	15	109	495	237	63	58	43	64	58	331	144
9—12	0	3	43	551	269	67	47	35	30	41	246	234
12—15	0	2	26	326	243	161	56	56	40	37	288	191
15—18	0	12	64	161	78	59	68	71	58	48	121	239
18—21	3	40	35	29	19	30	35	71	55	106	219	121
21—24	7	52	30	18	12	11	32	235	127	85	127	181
Average	3	25	63	214	113	53	45	90	63	56	212	233

## July

CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0—3	21	61	23	20	8	9	57	121	135	137	209	302
3—6	3	53	90	133	30	17	55	75	52	64	342	170
6—9	0	16	126	445	181	15	37	50	88	42	384	182
9—12	0	25	20	399	390	193	46	56	66	36	286	478
12—15	0	6	69	309	298	83	21	45	81	37	453	200
15—18	1	30	48	177	64	38	69	118	137	86	628	221
18—21	7	47	46	37	10	20	108	111	82	60	212	209
21—24	22	64	24	16	12	9	35	181	212	70	177	270
Average	7	38	56	192	124	48	54	95	107	67	337	254

## August

0—3	6	25	61	32	3	13	52	93	117	2	84	389
3—6	0	21	167	149	38	4	40	15	31	9	264	218
6—9	0	5	145	594	254	34	41	7	7	0	205	63
9—12	0	17	56	614	250	79	30	22	20	18	240	237
12—15	0	12	21	484	317	49	50	58	90	12	130	148
15—18	0	12	43	191	133	31	104	89	75	12	152	185
18—21	5	37	57	21	12	18	63	102	145	43	185	122
21—24	12	37	19	9	6	19	137	136	140	49	51	121
Average	3	21	69	262	127	31	65	65	78	18	164	185

## September

CET	Periods											
	1-5	5-10	10-15	15-20	20-25	25-30	30-40	40-60	60-90	90-120	120-300	300-600 sec
0-3	8	34	35	72	12	13	26	95	117	110	330	283
3-6	2	29	145	184	38	26	11	70	34	75	407	217
6-9	2	74	57	381	218	105	56	78	24	31	416	367
9-12	0	31	59	294	326	232	138	73	38	104	326	242
12-15	0	115	51	244	368	103	104	51	54	55	417	154
15-18	0	20	65	180	165	125	75	85	44	34	346	246
18-21	3	27	58	33	23	40	120	146	163	47	235	321
21-24	8	29	22	19	20	13	78	248	129	103	159	381
Average	3	45	62	176	146	82	76	106	75	70	331	276

## October

0-3	12	15	25	38	11	28	53	138	67	58	81	60
3-6	4	16	36	103	81	16	4	39	40	19	177	144
6-9	0	16	23	84	134	238	29	65	21	14	200	108
9-12	0	23	32	62	227	194	82	114	23	35	118	119
12-15	0	13	34	78	303	123	87	48	28	13	198	48
15-18	1	19	45	55	127	108	108	37	63	37	165	175
18-21	3	19	24	43	31	47	37	149	110	26	133	144
21-24	26	19	20	6	17	37	78	70	137	78	89	87
Average	6	18	30	59	116	99	60	83	61	35	145	111

## November

CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0—3	15	19	20	27	19	23	37	83	110	44	272	170
3—6	2	17	27	84	64	34	32	31	64	33	122	202
6—9	0	9	31	77	132	105	66	48	50	11	209	142
9—12	0	12	32	61	168	168	33	49	28	61	257	341
12—15	0	29	41	71	167	178	28	79	31	45	352	150
15—18	0	28	24	81	105	64	46	75	35	31	160	171
18—21	11	17	37	32	33	60	52	72	61	35	109	173
21—24	5	21	22	22	28	38	67	110	132	9	97	210
Average	4	19	29	57	89	84	45	68	64	34	197	195

## December

0—3	13	16	16	17	8	24	40	153	69	39	117	111
3—6	2	12	27	43	67	57	19	26	15	33	146	293
6—9	3	17	30	51	68	63	36	62	29	13	321	136
9—12	2	56	40	43	74	76	18	62	79	134	634	198
12—15	0	19	46	45	156	109	25	43	71	7	446	163
15—18	0	12	25	57	75	54	38	56	56	38	300	96
18—21	4	19	17	34	19	49	24	60	78	34	91	87
21—24	5	22	20	17	8	18	27	112	174	62	175	120
Average	4	22	28	39	59	56	29	72	71	45	279	151

Yearly average												
CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0—3	10	35	29	26	13	17	41	110	94	62	172	232
3—6	3	25	72	106	43	28	31	41	35	35	263	238
6—9	1	19	59	257	170	103	44	46	35	27	307	156
9—12	0	22	39	237	222	164	60	57	40	45	300	252
12—15	0	20	39	194	218	154	53	55	49	32	314	159
15—18	0	19	42	121	111	84	65	68	51	38	299	174
18—21	4	33	36	33	21	30	50	89	84	55	174	203
21—24	12	38	23	15	13	20	50	154	143	66	152	211
Average	4	26	42	124	101	75	49	78	66	62	248	203



V.

Micropulsation indices for the year

1982

*Activity indices for the micropulsations  
(P1 or P12)*

*1982. January—December*

	January	February	March	April
1.	124334235331	355211444355	455333124155	555343114532
2.	115443112152	355311223555	155311135555	555124144553
3.	155325224245	555412235555	222533445144	455321444551
4.	155533242233	555222145555	235434215255	555235333244
5.	115435423131	554322244355	245432523155	151245241112
6.	135221233352	555211145555	133322455321	234552233224
7.	155512135551	555421244152	145334111441	135253121121
8.	134434215224	555511134155	455423154531	154453243142
9.	112325521111	555521333254	255412135452	255431254424
10.	125411345111	455411154245	554433245211	455321245554
11.	125411421111	455114344354	132442145142	255511145354
12.	145444224321	555311245555	155433244321	135542123134
13.	115511425312	555211445553	155442332351	355541123122
14.	115422534142	455412114455	233255325532	215541123231
15.	155511334254	33532212245	133433425421	255552124444
16.	145411251345	113543323221	211431245222	155451114424
17.	125443322232	255211112255	355421125455	255322124555
18.	135324525421	455423234355	255224324555	155531144444
19.	115432432122	555542123555	145435422144	155541111442
20.	125223525421	545433442155	155334244324	155521114154
21.	155421114355	255441322255	555333344455	155511243255
22.	155443235155	355322225155	355424132355	355245222354
23.	155412143355	555322235253	155421124355	245452133134
24.	155431215355	355525223455	115422212355	155544143243
25.	145323435244	355211135554	152115533124	155211145555
26.	114535225125	155511133255	352235344132	155442341324
27.	155322254521	235535133225	221435431132	155452133424
28.	155311235555	143235244142	113135533421	255255222345
29.	155223334355		255431223144	455521131354
30.	155412433255		445325114251	132455211145
31.	155211135554		353135445344	

	May	June	July	August
1.	155552342344	255532113355	545531244425	355531543123
2.	355511133355	155421354135	143211212133	155411243255
3.	255442122255	142111223311	225441135212	145443323144
4.	145522144235	155433144521	144213444311	355521234245
5.	132534434232	135522325551	255421224554	145511214123
6.	134334542222	145521131244	555411135555	555521215255
7.	235343323311	155431233454	255331244155	155111125255
8.	225421245521	255521225454	255511334155	124411111134
9.	455421145521	255411134555	544533245245	115531111133
10.	255521124214	155313334455	345511244123	145522112142
11.	355511244521	155552124255	555311145552	254551435312
12.	145522124112	155522224355	355311245354	255511245244
13.	355411255241	155511143555	53252125455	122432345344
14.	145511121553	155532114345	355122255355	144531144421
15.	355431125555	325433333125	255431242253	145531334211
16.	155531124333	155541334211	355411134255	155531135321
17.	255541133455	123541132223	355454215442	155411115351
18.	355521245155	155552222442	155521225452	225511112121
19.	155521123354	255532333554	355421242355	125531213123
20.	151343245521	155511144441	155322254455	254551545112
21.	255423224551	445512334441	355521214555	145511224212
22.	123413455411	455511145554	455531324554	355511125154
23.	142314534521	55532255251	252521134333	145521124153
24.	155212434551	255511124542	355321345444	135522224135
25.	155311234253	155431445344	155211112144	135431334142
26.	355411325544	144311355351	151511133242	255531334155
27.	255412155355	255221344552	155511232455	113531344124
28.	155531121555	155541132355	355532225334	245311435422
29.	155443252355	155511144155	355511145154	255421222555
30.	155521134155	155412335555	155311224541	555521234255
31.	255423354355		255531254152	135553334124

	September	October	November	December
1.	21554244225	545442523231	154233435551	115524142321
2.	155343255213	355323354323	355434124342	135432444431
3.	145531433324	315433134311	555423222542	154333335442
4.	135333244455	255432433221	135323254241	155331135444
5.	255551225254	315333345412	223554122312	425542414241
6.	455311135554	435422335343	125452345122	145424132221
7.	555112154555	455222454534	113445343211	555111245254
8.	155511111355	355441244224	155432311235	455211145551
9.	155431123355	215455122222	125421424455	125423245254
10.	125551122242	355421124555	125442144255	355311234555
11.	135552344322	255553124355	355231244254	355422345154
12.	115551124124	355434344444	325433134145	124434234231
13.	155422241543	552421543342	235321335243	125344412123
14.	155532153524	535223255542	145542245143	143552232121
15.	135521244112	135532124422	114442245131	155431134255
16.	245521332124	255321124355	122143354111	255223225555
17.	155521123541	155441243155	112553125422	555223143453
18.	355523315542	245353234354	245421145355	255222254355
19.	255511243155	124445143144	125425323111	455322244455
20.	115533332145	315453233244	135532332211	155112124355
21.	455312112355	125354334122	155311455354	255233245355
22.	255121553555	155112555521	555321335142	545432144554
23.	125542233253	135425345221	155123145555	134321221142
24.	155432124455	115433323111	455212235555	145543124255
25.	343333424434	145321355222	355322235355	115211111111
26.	355211224455	355121333555	134533332144	112225253524
27.	555343415145	255223354544	135452321125	155323133453
28.	255513223245	322343434112	355225233145	135232135331
29.	125431242412	355411333255	555331124355	125531234453
30.	115521422531	555233343254	255334244154	145333253351
31.		255235222455		125433224224

## Pc 1 indices 1982

	January	February	March	April	May	June	July	August	September	October	November	December
1.	1	1	1	1	1	1	1	1	1	5	1	1
2.	1	1	1	1	1	1	1	1	1	1	1	1
3.	1	1	1	1	1	1	1	2	1	1	1	4
4.	1	1	1	1	1	1	1	1	1	1	1	2
5.	1		1	1	1	1	1	1	1	1	1	1
6.	1	1	1	1	1	2	1	1	1	1	1	1
7.	1	1	1	1	1	1	1	1	1	1	1	4
8.	1	1	1	1	1	1	1	1	3	1	1	1
9.	1	1	1	1	2	1	1	3	1	3	1	1
10.	1	1	1	1	1	1	1	1	1	1	1	1
11.	1	1	1	2	0	1	1	1	1	1	1	1
12.	1	1	1	1	1	1	1	1	2	5	1	1
13.	1	1	2	2	1	1	5	1	1	1	1	1
14.	1	1	1	1	1	1	5	1	2	1	1	1
15.	1	1	1	1	1	1	1	1	2	1	1	4
16.	1	1	1	1	2	1	1	1	1	1	1	2
17.	1	1	1	2	1	1	1	1	1	1	1	1
18.	1	1	1	1	1	1	1	1	1	1	1	1
19.	1	1	1	1	1	1	1	1	1	1	1	1
20.	1	1	1	1	1	1	1	1	1	1	1	1
21.	1	1	1	1	1	1	2	1	1	1	1	1
22.	1	1	1	1	1	1	3	1	1	1	1	1
23.	1	1	1	1	1	0	3	1	1	1	1	1
24.	1	1	1	1	1	1	4	1	1	1	4	1
25.	1	1	1	1	1	1	1	1	3	1	1	1
26.	1	1	1	1	1	1	2	1	1	1	1	3
27.	1	1	1	1	1	1	3	1	1	1	5	1
28.	1	1	1	1	1	1	1	1	1	1	1	1
29.	1		1	1	1	1	1	1	2	1	5	1
30.	1		1	1	1	1	1	1	1	1	1	1
31.	1		1		1		1	1		1		1

0 = no record



## II. GEOMAGNETISM

Processing of the geomagnetic records of the Observatory near Nagycenk is similar to that of the earth currents. (For details see Á Wallner: „Über die erdmagnetischen Arbeiten im Observatorium bei Nagycenk und über deren Auswertung“ Acta Techn Hung. T. 47. 431-444; and „Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom; Jahren 1966“ Sopron, 1967). The following four kinds of tables are published:

I. The activity indices  $M$  of the general activity for each three-hour interval. The  $M$ -scale is linear, corresponding to 7 nT.

Values in brackets mean extrapolated ones (in the case of incomplete observations).

II. The list of disturbed (D) and quiet (Q) days selected by the following rule: A day is taken as disturbed on the basis of all magnetic and earth current activity indices, if the greatest of the simultaneous character figures decreases only in one of the three hour intervals to 3, in the other intervals they are greater. A day is taken as quiet, if the greatest of all activity indices has not reached 3. Five activity indices (two of the earth currents and three of the magnetism,) are always taken into account.

III. Differences of hourly means from monthly averages in nT for all three magnetic elements. The monthly averages are given as absolute values (therefore as minutes of arc in D).

IV. Results of harmonical analysis from the monthly, yearly, Q and D day means of the daily variations.

Time are given throughout in this part in CET. Recording of magnetic variations in the observatory is made with two sets of LaCour-variometers.

The data of the tables were collected by Á. WALLNER.

*Three-hour magnetic activity indices (M)*

	January M	Sum	February M	Sum	March M	Sum
1.	01111821	15	01219699	37	11239979	41
2.	10111553	17	49999924	55	99999998	71
3.	23121789	33	34549959	43	41024222	17
4.	62022223	19	86569879	58	30344211	18
5.	30022000	7	99232958	47	32752100	20
6.	12212143	16	33324597	36	00011100	3
7.	11123333	17	95261234	32	00011100	3
8.	41211152	17	71232279	33	20122237	19
9.	11001010	4	32113122	15	81224776	37
10.	10011012	6	21149997	42	45332211	21
11.	01000010	2	68327949	48	11322143	17
12.	00000000	0	92249799	51	00121252	13
13.	01121110	7	98435799	54	35213212	19
14.	00001011	3	34844399	44	11122271	17
15.	15112235	20	52343510	23	13011101	8
16.	01334594	29	01113120	9	12111110	8
17.	42011110	10	01399999	49	00124689	30
18.	11000199	21	56365397	44	85443524	35
19.	00011000	2	97448497	52	52242102	18
20.	21110121	9	32254329	30	00364233	21
21.	01163592	27	41137238	29	42344599	40
22.	55453299	42	37355999	50	99552543	42
23.	54235447	34	94123996	43	12224200	13
24.	73333359	36	73233426	30	11132344	19
25.	61211302	16	99685691	53	44346235	31
26.	00011034	9	29699129	47	31032234	18
27.	21214219	22	32134011	15	33212100	12
28.	75464411	32	20022289	25	02122001	8
29.	00111293	17			01322123	14
30.	77553410	32			23125412	20
31.	44449984	46			43334445	30
	$M_{II} = 2.00$		$M_{II} = 4.48$		$M_{II} = 2.31$	
	$M_{D} = 1.71$		$M_{D} = 4.11$		$M_{D} = 2.29$	
	$M_{Z} = 0.18$		$M_{Z} = 0.54$		$M_{Z} = 0.30$	



	April M	Sum	May M	Sum	June M	Sum
1.	21215319	24	44434942	34	44422244	26
2.	97445999	56	17566485	42	59422242	30
3.	69354599	50	44469993	48	11223214	16
4.	83343336	33	91383511	31	31115412	18
5.	63331168	30	11232334	19	11322311	14
6.	22322343	21	11111100	6	19422221	23
7.	10122100	7	21011000	5	23244321	21
8.	00223219	19	30101101	7	11122522	16
9.	12112121	11	42212211	15	95424311	29
10.	22137999	42	11102111	8	37949932	46
11.	94564548	45	22112212	13	35524355	32
12.	11226323	20	11131110	9	93412999	46
13.	23222002	13	01111222	10	99659979	63
14.	30203111	11	12114201	12	83556373	40
15.	01133112	12	24338862	36	22435792	34
16.	21212084	20	11152331	17	51222421	19
17.	24551411	23	23213623	22	11213100	9
18.	00323244	18	24299346	39	02211121	10
19.	11112233	14	13223121	15	01235749	31
20.	34424112	21	21223211	14	54335733	33
21.	92246493	39	11124201	12	21134301	15
22.	87522211	28	20121100	7	01127679	33
23.	01123222	13	11101000	4	54432313	25
24.	10111419	18	01202111	8	21342139	25
25.	89999831	56	01221431	14	44472110	23
26.	20242123	16	61224976	37	03112425	18
27.	10313599	31	53669999	56	87333156	36
28.	93333333	30	73989869	64	72474453	36
29.	52435597	40	95585476	49	85147372	37
30.	64242636	33	22396589	44	56655113	32
31.			94745665	46		

$M_H = 2.95$   
 $M_D = 2.54$   
 $M_Z = 0.37$

$M_H = 2.62$   
 $M_D = 2.02$   
 $M_Z = 0.28$

$M_H = 3.14$   
 $M_D = 2.39$   
 $M_Z = 0.52$

	July M	Sum	August M	Sum	September M	Sum
1.	62324445	30	32133232	19	41124211	16
2.	21513224	21	93469999	58	31222333	19
3.	21112210	10	42476774	41	54366432	33
4.	10011100	4	22124552	23	22344639	33
5.	01133110	10	43543653	33	94744429	43
6.	40262793	33	23224499	35	99999999	72
7.	65346472	37	99999971	62	99699895	64
8.	12234544	55	01123221	12	72232324	25
9.	52312222	19	21362664	32	99597799	64
10.	42313120	16	45455434	34	33111212	14
11.	22199976	45	43168992	42	22223253	21
12.	21259986	42	13463724	33	42222125	20
13.	59662999	55	33122212	16	93143713	31
14.	99999999	72	21122231	14	33321288	30
15.	86497628	50	11101011	6	01221334	16
16.	43492949	44	01201223	11	41225243	23
17.	93299203	37	33332124	21	31233221	17
18.	82356942	39	54324236	29	55234499	41
19.	34369924	40	22122253	17	44355496	40
20.	89742001	31	31235323	22	22456339	34
21.	13221434	20	33222322	19	89899989	69
22.	51144930	27	34037559	36	99999999	72
23.	41224222	19	42433434	27	85434667	43
24.	27458991	45	63424445	32	53944714	37
25.	65343345	33	23432349	30	31133195	26
26.	64244555	35	94327325	35	33399999	54
27.	53833631	32	51342312	21	95563995	51
28.	11246582	29	11111059	19	42222115	19
29.	51537821	32	54467986	49	11332131	15
30.	31343895	36	56534446	37	00135326	20
31.	43824422	29	42424323	24		

$$M_H = 3.74$$

$$M_D = 2.58$$

$$M_Z = 0.59$$

$$M_H = 3.27$$

$$M_D = 2.53$$

$$M_Z = 0.45$$

$$M_H = 4.00$$

$$M_D = 3.70$$

$$M_Z = 0.82$$

	October M	Sum	November M	Sum	December M	Sum
1.	13133689	34	97447999	58	00010000	1
2.	92255144	32	32225799	39	00001211	5
3.	41122114	16	95364100	28	00124521	15
4.	01232121	12	00121262	14	33101019	18
5.	13222111	13	30133370	20	44111111	14
6.	42234689	38	20334310	16	01111000	4
7.	88833641	41	00121001	5	02418896	38
8.	65241788	41	10012694	23	75244795	43
9.	11111101	7	32222112	15	11139923	29
10.	51165228	30	21123363	21	21799997	53
11.	61224334	25	35245524	30	55122789	39
12.	21242199	30	64244343	30	32125550	23
13.	16122999	39	83173289	41	01111114	10
14.	57233648	38	31146425	26	01101008	11
15.	11123132	14	12143545	25	32233010	14
16.	11334456	27	11121003	9	01112439	21
17.	35255247	33	10111214	11	69599999	65
18.	64435863	39	43115584	31	94398875	53
19.	22322249	26	32111247	21	36998427	48
20.	43254102	21	01011031	7	96449999	59
21.	22131144	18	62334493	34	63344699	44
22.	15121101	12	89422010	26	99611943	42
23.	00112123	10	00153999	36	31229876	38
24.	00112320	9	92199999	57	65133354	30
25.	11323243	19	94589997	60	31134731	23
26.	94499562	48	25443929	38	13013210	11
27.	10257254	26	12327791	32	11765219	32
28.	20023143	15	98343494	44	36237389	41
29.	36944738	44	31128999	42	54232646	32
30.	76349896	52	43125400	19	54331352	26
31.	15227799	42			31012001	8

$M_{11} = 2.96$

$M_{1D} = 2.76$

$M_Z = 0.39$

$M_{11} = 3.18$

$M_{1D} = 2.96$

$M_Z = 0.40$

$M_{11} = 3.20$

$M_{1D} = 2.94$

$M_Z = 0.28$

## II.

*Disturbed and quiet days for 1982*

Disturbed days		Quiet days
January	31	9, 10, 11, 12, 13, 14, 19, 20
February	3, 4, 11, 13, 18, 19	—
March	2	6, 7, 16, 28
April	2, 3, 11	7, 9
May	3, 27, 28, 29, 31	6, 7, 10, 11, 13, 22, 23, 24
June	13, 28	—
July	13, 14	3, 4
August	2, 3, 10, 24, 29, 30	15
September	6, 7, 9, 19, 21, 22, 23, 26, 27	—
October	18, 30	9
Noovember	1, 24, 25, 28	7
December	8, 17, 18, 20, 21	1, 2, 6

III.

*Hourly averages of magnetic elements*  
(H, D, Z)

	0	1	2	3	4	5	6	7	8	9	10	11
January												
H	+ 2.7	+ 1.9	+ 3.7	+ 4.7	+ 5.0	+ 7.5	+10.0	+12.2	+12.4	+ 3.7	- 3.6	- 4.3
D	+ 7.8	+ 5.9	+ 3.6	+ 3.4	- 0.2	- 0.9	- 0.2	+ 3.3	+ 8.7	+ 8.7	+ 2.7	- 4.6
Z	+ 1.4	+ 0.6	+ 0.1	- 0.5	- 0.7	- 0.7	- 1.0	- 1.6	- 3.8	- 5.1	- 4.5	- 5.4
February												
H	+ 2.8	+ 4.0	+ 4.9	+ 6.9	+ 8.4	+13.7	+14.7	+14.9	+10.7	+ 3.7	- 1.3	- 4.3
D	+15.5	+12.9	+14.0	+ 7.7	+ 3.6	+ 0.4	+ 0.7	+ 3.5	+ 9.2	+11.5	+ 3.7	- 9.0
Z	+ 0.7	- 1.2	- 1.7	- 2.7	- 3.1	- 3.8	- 4.3	- 2.9	- 2.8	- 5.4	- 7.5	- 8.6
March												
H	+ 3.7	+ 5.1	+ 2.5	+ 5.6	+5.2	+ 6.0	+ 9.4	+10.5	+ 7.4	+ 1.3	- 5.7	- 7.5
D	+ 9.8	+9.7	+10.6	+ 6.7	+ 5.1	+ 4.7	+ 5.5	+14.0	+26.0	+27.5	+17.8	- 3.7
Z	+ 3.7	+ 2.3	+ 1.3	- 0.6	+ 0.1	+ 0.3	+ 1.6	+ 4.9	+4.1	- 1.4	- 9.3	-15.6
April												
H	+12.0	+11.2	+11.1	+ 8.4	+ 8.9	+ 7.8	+ 6.7	+ 1.6	- 9.3	-16.5	-18.2	-12.5
D	+ 7.1	+ 8.8	+ 7.6	+10.2	+10.2	+11.8	+20.2	+31.2	+35.1	+24.4	+ 4.7	-21.5
Z	+ 2.3	+ 1.6	+ 0.6	- 0.1	+ 0.2	+ 1.7	+ 3.5	+ 4.5	+ 0.6	- 6.0	-14.7	-21.5
May												
H	+ 9.5	+ 7.4	+ 6.3	+ 7.3	+ 8.9	+ 8.6	+ 0.1	- 8.6	-15.0	-19.3	-15.2	-10.0
D	+ 2.2	+ 4.1	+ 5.7	+ 4.4	+11.5	+22.0	+32.8	+36.1	+32.5	+19.2	- 1.7	-20.4
Z	+ 4.1	+ 3.3	+ 3.2	+ 3.7	+ 3.7	+ 4.7	+ 4.5	+ 2.1	- 2.1	- 9.1	-14.8	-19.7

12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
- 4.1	- 5.1	- 7.1	- 8.8	- 9.9	- 7.7	- 3.5	- 3.5	- 2.7	- 2.0	- 1.7	+0.2	21 082 nT
-11.7	-15.1	-13.4	-10.8	- 8.9	- 5.9	- 6.9	- 2.5	+ 5.7	+10.1	+11.8	+ 9.4	0°54,5'
- 6.6	- 5.9	- 0.4	+ 1.9	+ 2.8	+ 3.7	+ 4.3	+ 4.6	+ 4.6	+ 4.2	+ 3.6	+ 2.4	42 518 nT
-11.3	-13.9	-16.1	-16.1	-12.9	- 6.5	- 5.6	- 5.4	- 3.1	+ 2.4	+ 6.0	+ 3.4	21 057 nT
-19.3	-27.1	-28.5	-21.9	-16.6	-13.6	-10.3	+ 0.2	+ 8.9	+15.6	+21.6	+17.3	0°57,5'
- 8.3	- 5.9	- 1.9	+ 3.6	+ 6.4	+ 7.2	+ 8.0	+ 9.2	+ 4.7	+ 7.7	+ 4.9	+ 2.7	42 537 nT
- 6.5	- 5.0	- 4.4	- 7.0	- 9.5	-11.6	- 7.6	- 2.7	+ 0.2	+ 4.3	+ 4.2	+ 2.1	21 087 nT
-23.9	-35.8	-34.9	-29.2	-14.6	- 7.0	- 6.6	- 3.0	+ 1.2	+ 4.9	+ 5.5	+ 9.7	0°56,0'
-17.8	-15.5	- 9.7	- 2.6	+ 4.4	+ 6.5	+ 7.5	+ 7.8	+ 7.5	+ 7.1	+ 6.5	+ 5.7	42 523 nT
- 8.0	- 6.1	- 8.2	- 9.0	- 7.4	- 5.2	+ 1.4	+ 3.5	+ 3.1	+ 3.9	+10.4	+10.4	21 084 nT
-38.7	-46.3	-41.0	-29.1	-15.9	- 4.9	+ 0.5	+ 4.6	+ 4.3	+ 3.1	+ 6.8	+ 6.8	0°56,7'
-22.1	-15.8	- 7.2	+ 1.4	+ 8.3	+11.4	+11.0	+10.6	+ 9.7	+ 8.8	+ 6.8	+ 4.4	42 539 nT
- 5.1	- 3.0	- 4.3	- 1.8	- 1.5	+ 2.1	+ 2.1	+ 5.0	+ 6.3	+ 5.4	+ 6.0	+ 8.8	21 097 nT
-32.8	-37.5	-33.5	-26.0	-15.0	- 3.7	+ 0.5	+ 0.5	+ 0.4	- 1.0	- 0.9	+ 0.6	0°56,2'
-21.1	-17.2	-10.0	- 1.3	+ 5.3	+ 9.6	+10.7	+10.7	+ 9.1	+ 8.1	+ 7.1	+ 6.1	42 534 nT

	0	1	2	3	4	5	6	7	8	9	10	11
June												
H	+ 8.3	+ 8.8	+ 9.7	+12.1	+13.6	+ 8.6	-3.5	-12.9	-25.0	-27.9	-23.7	-14.5
D	+ 4.2	+ 6.4	+ 8.2	+ 7.5	+15.4	+23.1	+31.9	+35.2	+32.3	+20.1	+ 2.6	-16.3
Z	+ 1.9	+ 0.1	- 0.2	+ 0.3	+ 0.7	+ 1.6	+ 0.8	+ 1.0	- 1.1	- 5.1	-10.5	-14.9
July												
H	+11.2	+15.1	+ 3.1	+ 6.2	+ 8.1	+ 5.0	- 4.0	-16.6	-23.6	-28.0	-23.2	-17.0
D	+ 5.2	+12.7	+11.0	+13.6	+14.2	+23.9	+33.6	+35.1	+29.8	+17.7	+ 1.7	-16.6
Z	+ 2.5	- 2.6	- 1.3	- 1.6	+1.1	+ 1.5	+ 0.5	- 1.7	- 4.9	- 9.4	-13.2	-17.0
August												
H	+13.6	+10.3	+11.5	+11.3	+10.6	+ 9.8	- 0.1	-14.3	-23.3	-26.1	-24.2	-16.2
D	+ 3.8	+ 6.7	+ 5.5	+ 8.0	+13.7	+24.0	+32.8	+33.5	+28.0	+13.3	- 5.9	-22.2
Z	+ 1.1	+ 0.3	- 0.6	- 0.1	+ 1.9	+ 3.5	+ 3.5	+ 1.8	- 1.8	- 6.4	-11.3	-15.8
September												
H	+20.8	+17.2	+15.6	+16.2	+13.2	+17.1	+10.5	- 5.3	-20.7	-28.8	-29.5	-24.4
D	+10.5	+13.3	+ 6.3	+11.5	+ 9.5	+ 6.3	+19.0	+26.5	+30.1	+20.6	+ 1.0	-18.6
Z	- 1.3	- 3.3	- 3.8	- 6.1	- 5.2	- 6.2	- 3.2	- 0.6	- 0.6	- 4.7	- 9.8	-13.1
October												
H	+ 9.8	+11.9	+15.5	+13.2	+13.9	+13.8	+13.6	+ 8.7	- 2.0	-13.4	-20.3	-20.5
D	+ 9.1	+ 6.6	+ 7.2	+ 2.8	+ 1.4	+ 1.0	+ 6.8	+17.6	+27.2	+26.1	+ 8.4	-13.2
Z	+ 1.7	+ 0.7	- 1.2	- 1.4	- 2.2	- 0.7	+ 2.4	+ 5.8	+ 3.9	- 3.4	-10.5	-13.8



12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
- 7.7 -	3.4 -	4.2 -	6.9 +	1.3 +	3.6 +	8.4 +	10.8 +	12.0 +	11.9 +	12.0 +	8.4	21 092 nT
-30.6 -	37.5 -	40.9 -	32.7 -	23.0 -	12.2 -	4.2 -	1.7 +	0.5 +	2.0 +	3.0 +	6.7	0°56,6'
-16.7 -	14.7 -	3.8 -	0.6 +	7.1 +	11.2 +	11.9 +	10.7 +	8.4 +	7.1 +	5.7 +	4.1	42 542 nT
- 8.7 -	6.5 -	1.5 -	1.2 +	1.4 +	7.6 +	13.3 +	14.9 +	12.3 +	10.6 +	11.1 +	13.4	21 079 nT
-28.4 -	36.1 -	38.4 -	33.1 -	23.0 -	14.1 -	7.1 -	0.1 -	1.3 -	1.4 -	1.4 +	2.5	0°57,7'
-17.0 -	14.2 -	7.9 -	0.1 +	8.3 +	11.7 +	14.7 +	13.9 +	11.7 +	9.8 +	8.5 +	6.9	42 550 nT
-11.2 -	4.9 -	3.2 -	1.6 -	0.1 +	0.1 +	2.4 +	5.4 +	12.3 +	12.2 +	12.6 +	13.4	21 083 nT
-35.5 -	39.6 -	33.3 -	25.9 -	11.8 -	2.5 -	0.1 +	0.9 -	0.6 +	2.1 +	1.1 +	4.0	0°57,8'
-16.6 -	13.3 -	6.4 +	1.2 +	8.6 +	10.8 +	9.8 +	8.8 +	7.5 +	6.2 +	4.6 +	2.7	42 550 nT
-18.4 -	9.1 -	6.4 -	5.6 -	3.7 -	7.7 +	1.5 +	5.2 +	5.2 +	10.5 +	15.2 +	16.4	21 069 nT
-32.7 -	42.3 -	37.1 -	29.4 -	17.9 -	10.4 -	0.5 +	1.4 +	6.1 +	6.1 +	8.4 +	10.1	0°58,9'
-12.3 -	7.0 -	0.4 +	7.3 +	11.6 +	13.2 +	12.3 +	10.6 +	9.2 +	6.7 +	3.9 +	2.1	42 570 nT
-16.0 -	12.2 -	10.4 -	11.1 -	9.7 -	6.7 -	2.1 -	2.2 +	0.7 +	6.1 +	7.2 +	12.2	21 072 nT
-27.2 -	34.9 -	33.1 -	24.3 -	15.9 -	12.2 -	4.4 +	1.3 +	10.3 +	10.9 +	15.7 +	12.8	0°58,4'
-14.0 -	11.0 -	5.0 +	1.6 +	4.9 +	6.3 +	6.9 +	7.7 +	7.7 +	6.8 +	4.7 +	2.1	42 558 nT

	0	1	2	3	4	5	6	7	8	9	10	11
November												
H	+ 5.1	+ 3.9	+ 7.5	+ 6.5	+10.2	+12.4	+14.5	+13.4	+ 8.9	+ 0.2	- 7.8	-12.4
D	+14.0	+10.6	+ 5.1	+ 3.4	- 1.0	- 2.7	- 2.3	+ 3.7	+12.2	+13.6	+ 2.4	-10.3
Z	+ 0.5	- 0.4	- 1.5	- 2.0	- 2.2	- 1.9	- 2.3	- 0.7	- 1.5	- 5.8	-9.6	-11.5
December												
H	+ 4.7	+ 4.6	+ 6.2	+ 7.8	+ 9.7	+11.3	+14.0	+14.4	+17.0	+ 8.0	+ 3.1	- 0.3
D	+11.8	+ 9.2	+ 7.7	+ 2.5	- 0.7	- 3.4	- 2.8	- 0.7	+ 2.9	+ 4.6	- 0.9	- 6.1
Z	+ 1.4	- 0.2	- 1.6	- 3.1	- 3.4	- 3.1	- 3.0	- 3.8	- 5.7	- 7.8	- 8.7	- 7.8
1982 Yearly means												
H	+ 8.7	+ 8.5	+ 8.1	+ 8.9	+ 9.6	+10.2	+ 7.2	+ 1.5	- 5.2	-11.9	-14.4	-12.0
D	+ 8.4	+ 8.9	+ 7.9	+ 6.8	+ 6.9	+ 9.2	+14.8	+19.9	+22.8	+17.3	+ 3.0	-13.5
Z	+ 1.7	+ 0.1	- 0.6	- 1.0	- 0.8	- 0.3	+ 0.3	+ 0.7	- 1.3	- 5.8	-10.4	-13.7
1982 Quiet days												
H	- 1.6	- 1.4	- 1.4	- 1.3	+ 0.7	+ 2.0	+ 1.7	- 0.1	- 1.7	- 6.0	- 8.4	- 5.9
D	+ 4.0	+ 4.6	+ 5.4	+ 5.9	+ 7.5	+11.0	+15.5	+21.2	+24.2	+19.5	+ 6.0	- 9.2
Z	+ 5.2	+ 4.6	+ 4.2	+ 4.4	+ 4.7	+ 5.4	+ 5.1	+ 3.9	+ 1.3	- 3.6	- 8.1	-13.2
1982 Disturbed days												
H	+20.2	+20.7	+18.7	+23.4	+18.9	+19.0	+11.1	+ 0.6	-10.2	-19.1	-23.9	-18.5
D	+16.8	+18.8	+10.1	+ 9.3	+ 4.2	+ 1.4	+10.9	+13.0	+18.1	+13.2	- 1.2	-17.6
Z	- 5.8	-10.7	-10.0	-13.3	-12.1	-11.7	- 9.2	- 7.0	- 7.8	-10.8	-12.8	-13.4

12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
- 9.5	- 8.6	- 9.6	- 8.0	- 9.3	-11.5	- 8.1	- 5.0	- 4.2	+ 1.0	+ 3.7	+ 6.7	21 065 nT
-21.2	-24.8	-20.7	-17.6	-11.3	- 8.5	- 3.5	- 6.0	+ 9.9	+13.8	+13.9	+15.3	0°59,8'
- 9.6	- 5.6	- 0.6	- 3.6	+ 6.4	+ 8.9	+ 9.5	+ 9.0	+ 7.5	+ 5.6	+ 2.7	+ 1.5	42 569 nT
- 4.7	-10.5	-16.1	-17.3	-15.3	-16.4	- 9.4	- 7.7	- 6.2	- 1.1	+ 1.1	+ 3.1	21 066 nT
-11.7	-15.2	-14.6	-12.5	-12.5	- 8.6	- 2.9	+ 1.0	+11.4	+11.9	+14.3	+15.1	1°00,2'
- 6.4	- 3.0	+ 0.7	+ 4.4	+ 6.3	+ 7.3	+ 7.9	+ 8.2	+ 7.9	+ 6.4	+ 4.5	+ 2.6	42 581 nT
- 9.3	- 7.4	- 7.6	- 7.9	- 6.6	- 5.0	- 0.6	+ 1.5	+ 3.0	+ 5.4	+ 7.3	+ 8.2	21 078 nT
-26.2	-32.7	-30.6	-24.3	-15.5	- 8.6	- 3.8	+ 0.7	+ 4.7	+ 6.5	+ 8.3	+ 9.2	0°57,5'
-14.0	-10.6	- 4.8	+ 1.7	+ 6.7	+ 9.0	+ 9.5	+ 9.3	+ 8.4	+ 7.0	+ 5.3	+ 3.6	42 549 nT
- 1.7	- 0.7	- 1.2	- 0.8	- 0.2	+ 1.5	+ 2.8	+ 5.0	+ 5.8	+ 4.0	+ 5.1	+ 4.2	21 094 nT
-18.9	-27.5	-23.6	-17.4	-11.3	- 7.0	- 5.1	- 4.1	- 2.0	- 0.9	+ 0.4	+ 1.5	0°56,0'
-15.0	-12.5	- 7.0	- 2.2	+ 0.7	+ 2.6	+ 2.8	+ 3.0	+ 3.4	+ 3.6	+ 3.5	+ 3.2	42 533 nT
-18.1	-16.6	-17.9	-18.1	-15.9	-11.0	- 1.8	- 0.2	+ 0.8	+ 8.8	+15.6	+13.5	21 053 nT
-27.5	-35.7	-32.9	-27.6	-17.9	- 9.1	0.0	+ 9.5	+11.3	+11.0	+ 9.5	+12.8	0°59,3'
-11.1	- 5.1	+ 3.6	+14.8	+20.2	+22.4	+22.1	+20.2	+16.5	+14.7	+ 6.1	+ 3.2	42 562nT

## IV.

*Results of harmonical analysis of the daily variations*

	$A_1$	$\varphi_1$	$A_2$	$\varphi_2$	$A_3$	$\varphi_3$	$A_4$	$\varphi_4$	$A_5$	$\varphi_5$	$A_6$	$\varphi_6$
Horizontal Intensity												
January	7.8	20	3.1	236	1.1	147	2.0	18	1.3	222	0.3	127
February	11.8	34	5.6	227	1.1	149	0.9	149	1.5	270	1.0	290
March	7.5	38	2.4	220	2.9	182	2.4	338	0.5	253	0.2	241
April	11.1	85	3.0	326	3.4	226	2.2	65	1.8	262	1.5	245
May	9.3	109	4.0	346	4.1	245	1.6	128	0.4	312	0.1	290
June	14.8	117	6.5	340	6.8	256	1.6	128	1.3	263	0.5	317
July	16.2	127	6.2	337	4.5	249	2.4	101	0.4	145	0.6	303
August	14.9	112	6.2	349	6.1	236	0.9	186	1.0	326	0.9	287
September	18.1	92	7.2	336	6.8	218	1.4	58	0.7	294	3.0	265
October	14.7	69	5.2	303	3.6	191	1.5	18	2.1	254	1.4	267
November	10.8	38	3.3	259	3.6	166	1.1	346	1.0	230	0.5	227
December	13.5	19	4.7	200	0.2	159	0.4	23	1.2	245	0.4	159
Year	10.0	78	3.0	307	3.1	221	0.8	62	0.9	259	0.7	267
Q	3.7	129	1.9	261	2.2	204	0.9	65	0.7	215	0.4	113
D	20.1	72	4.6	320	4.5	243	0.6	103	2.4	258	2.2	272
Declination												
January	7.7	63	6.5	183	1.8	70	3.4	261	0.9	275	0.5	319
February	15.8	65	10.2	182	2.7	27	4.9	258	1.7	285	1.3	277
March	16.2	36	13.4	201	9.2	36	4.6	242	0.6	266	0.9	337
April	20.9	43	18.9	228	9.4	59	3.1	278	1.2	214	0.5	216
May	20.0	33	18.2	240	7.0	81	1.2	21	0.4	278	0.8	321
June	23.7	33	17.5	229	5.0	73	0.3	47	0.8	253	0.6	293
July	24.7	32	15.4	234	4.7	61	2.0	21	1.0	318	0.7	279
August	20.6	40	17.6	245	6.5	88	0.3	81	0.8	298	0.7	312
September	20.5	46	15.9	222	7.5	58	3.1	295	1.5	243	0.7	208
October	15.5	50	15.9	203	6.7	59	5.2	273	1.0	218	0.5	273
November	11.6	73	10.2	192	4.0	48	4.2	274	0.6	168	0.5	283
December	9.8	32	6.8	174	1.0	13	2.7	277	0.7	267	1.0	266
Year	16.7	45	12.9	218	5.2	60	2.4	274	0.7	260	0.6	285
Q	14.4	26	10.4	225	5.6	64	2.0	269	0.3	272	0.2	24
D	17.9	62	12.8	214	5.9	37	3.1	315	0.6	279	0.7	273

Vertical Intensity

	A <sub>1</sub>	$\varphi_1$	A <sub>2</sub>	$\varphi_2$	A <sub>3</sub>	$\varphi_3$	A <sub>4</sub>	$\varphi_4$	A <sub>5</sub>	$\varphi_5$	A <sub>6</sub>	$\varphi_6$
January	4.3	139	1.9	280	0.6	142	0.4	260	0.3	25	0.5	246
February	7.1	151	3.4	259	0.9	100	1.0	288	0.2	340	0.4	122
March	7.5	108	6.7	253	3.4	88	1.4	282	0.7	243	0.1	165
April	9.5	121	8.7	269	3.9	106	1.4	294	0.4	267	0.3	306
May	10.5	111	8.2	274	2.3	102	0.8	250	0.4	278	0.5	256
June	8.3	125	7.3	266	2.4	78	0.9	219	0.4	239	0.1	231
July	10.6	132	7.7	266	1.5	111	1.1	191	0.4	190	0.4	209
August	7.6	124	7.4	275	2.5	104	0.8	219	0.3	347	0.2	360
September	8.6	162	5.6	269	3.4	98	1.1	299	0.2	217	0.4	117
October	5.9	123	6.1	259	3.1	110	1.6	325	0.6	288	0.4	138
November	6.6	149	4.5	276	1.6	103	0.9	335	0.3	188	0.2	69
December	7.1	155	2.7	283	0.9	148	0.4	343	0.3	347	0.1	231
Year	7.4	132	5.8	268	2.1	102	0.7	281	0.2	268	0.1	194
Q	6.7	85	5.0	276	1.8	104	1.0	279	0.2	339	0.5	280
D	16.5	175	6.9	267	3.1	105	0.3	241	0.2	91	0.9	146



### III. ATMOSPHERIC ELECTRICITY

Atmospheric electricity data have been published since 1962. Table I contains the hourly average values of the potential gradient expressed in V/m. Hourly averages have been taken only from hours having a recording period of 30 minutes or more. If values were available only for part of an hour the average is entered in square brackets [ ]. These data have been used in the determination of the monthly and daily means. Values uncertain for some reason are entered in round brackets ( ) and have not been used in calculating of monthly and daily means. Daily means of each day with 24 hours of recording are entered. However, loss of a maximum of one hour's data out of twelve (for example, on account of instrument maintenance or calibration) has not precluded entering this mean value. In hours marked by S the value of the potential gradient exceeded permanently or several times the measuring limits of the equipment making the determination of an hourly average impossible. The directions of the deviations are marked by signs.

Table II gives the hourly means of the quantities of positive and negative charges transported by point-discharge for each month. The values are expressed in  $10^{-6}$  Asec/hour.

All data are presented in universal time (GMT).

Tables were compiled by F. MÁRCZ. Both the equipments and the methods of measurement of potential gradient and point-discharge have been described in the paper by P. BENCZE and F. MÁRCZ: „Atmosphärisch-elektrische und ionosphärische Messungen im Observatorium bei Nagycenk”. Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967. Further informations are given by P. BENCZE and F. MÁRCZ: „The Geophysical Observatory near Nagycenk. II. Atmospheric electric and ionospheric measurements” Acta Geod. Geoph. Moont. Hung. 16, 1961, 353-357.





I.

*Hourly means of the potential gradient*

January

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	0	30	90	30	60	60	60	100	[140]	150	170	+S	30
2.	30	-50	0	30	-20	30	10	20	10	30	[40]	60	90
3.	90	80	70	70	80	40	60	60	40	70	140	140	[190]
4.	140	110	20	70	20	20	80	[110]	—	130	190	160	160
5.	50	80	50	60	110	140	120	140	170	150	[140]	150	140
6.	-90	10	50	90	90	90	110	110	130	140	[120]	120	140
7.	70	60	50	40	40	60	80	110	90	70	70	[60]	80
8.	130	130	140	160	140	110	130	150	180	150	180	150	[190]
9.	90	30	-40	-30	50	-40	0	30	30	10	[-30]	80	30
10.	+S	20	80	60	40	20	50	30	-10	90	[160]	180	270
11.	-70	-80	-80	-60	-30	-40	-60	—	—	-60	-40	-50	-40
12.	-10	-20	-90	-40	-60	-60	-50	0	-10	-20	-20	-20	[20]
13.	10	-10	-140	-160	-10	90	-50	-160	-70	120	110	190	[190]
14.	-80	-110	-10	-90	-110	-160	-140	-190	-130	-120	30	[-20]	-70
15.	-40	-40	-50	-40	-60	-100	-70	-90	-70	-50	[-20]	-40	0
16.	-70	-50	-50	-40	-80	-30	-70	-50	-50	-60	[-50]	-60	30
17.	100	80	100	80	120	80	90	0	20	-30	[0]	+S	-70
18.	20	-110	-80	-50	0	-30	-20	—	—	20	-10	-20	-10
19.	40	70	170	150	120	90	80	60	60	60	[60]	40	100
20.	10	40	50	50	60	50	60	70	70	100	[70]	20	10
21.	-50	-60	-40	-20	-10	20	30	30	10	20	[0]	30	10
22.	70	60	60	70	60	60	80	80	70	90	70	[110]	130
23.	40	50	50	60	70	50	70	40	80	50	[70]	100	130
24.	90	70	80	80	80	110	130	140	120	[100]	40	60	150
25.	120	150	110	140	130	140	130	70	—	[60]	80	100	160
26.	-30	-40	-40	-20	0	-10	-60	-50	-50	-70	[-60]	-60	-60
27.	0	30	20	0	20	30	50	60	50	70	[60]	70	90
28.	100	70	30	90	100	70	30	60	60	80	30	[40]	70
29.	30	30	10	20	30	-20	+S	+S	-50	+S	50	30	-50
30.	50	30	10	+S	+S	120	40	-80	-80	-90	30	100	-100
31.	40	40	30	20	20	50	50	70	80	[+S]	—	30	40
Means	29	23	21	27	35	33	34	33	33	43	56	60	66
Number of days	30	31	31	30	30	31	30	28	27	29	30	29	31

13	14	15	16	17	18	19	20	21	22	23	Daily means
-160	30	-10	20	30	-10	60	+S	-50	+S	-120	—
110	100	90	90	100	110	110	120	100	100	90	58
[+S]	180	230	240	170	140	180	190	150	140	130	125
150	150	120	170	110	110	160	140	150	130	70	116
170	180	150	190	180	170	130	120	80	30	-30	120
140	120	50	40	60	110	120	140	140	110	90	93
80	90	130	110	120	110	90	90	90	0	110	79
240	240	200	240	+S	+S	200	190	200	150	110	—
-30	-40	-70	-10	70	40	70	80	0	110	±S	19
280	+S	+S	+S	+S	130	80	-20	-70	-90	-70	—
-20	-10	40	40	30	30	40	20	-30	-10	20	—
0	-10	50	60	60	0	0	30	30	40	-60	-8
200	210	180	120	170	+S	+S	90	20	-60	20	—
-50	-60	-40	0	20	-30	-80	-20	-60	-80	-80	-70
-30	-30	-60	-60	-30	-10	-50	-50	60	10	-50	-38
70	+S	60	-90	40	-60	-50	-30	-30	40	40	-29
-10	-60	80	70	-80	-110	-100	-70	-50	0	20	11
50	80	110	80	110	60	50	60	110	50	170	—
70	80	80	110	50	50	60	70	60	10	-10	72
20	30	90	-60	0	50	-50	-50	-50	0	-10	26
20	0	0	10	10	40	30	30	80	80	100	15
140	100	90	90	50	60	30	50	40	40	50	73
160	150	150	130	120	90	120	150	130	130	90	95
80	70	70	90	70	40	50	30	40	40	50	78
130	160	110	90	60	10	30	0	-50	-20	-40	81
-20	0	-40	-90	-60	-20	-10	-20	-10	0	0	-34
100	120	130	100	110	120	160	130	170	110	90	79
120	90	80	70	90	80	70	60	40	50	40	68
10	—	±S	70	100	100	100	100	90	80	50	—
100	0	40	30	20	30	60	50	50	40	40	—
80	90	90	100	100	100	70	70	60	60	60	—
67	74	76	68	65	53	58	58	48	43	32	
30	28	29	30	29	29	30	30	31	30	30	

February

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	60	50	50	50	50	60	60	[70]	—	80	80	90	90
2.	60	50	40	30	40	40	50	50	70	50	[60]	50	60
3.	60	70	60	50	80	90	100	120	130	120	[110]	120	130
4.	80	70	60	60	50	50	10	40	60	90	[80]	90	70
5.	—50	—20	10	40	70	30	20	30	[40]	30	40	70	100
6.	130	90	—10	160	120	160	+S	+S	170	200	[170]	+S	+S
7.	0	—90	40	0	30	80	140	160	170	[120]	110	110	80
8.	100	70	100	110	100	+S	+S	—	—	200	180	160	+S
9.	±S	±S	30	30	30	30	80	90	100	90	[80]	90	110
10.	150	140	140	140	120	130	130	180	170	170	130	[160]	130
11.	10	0	—50	—90	—30	—50	—60	—50	—40	—40	—20	[—10]	—20
12.	—20	—40	—70	—40	—50	30	0	10	30	60	[40]	130	70
13.	120	60	60	80	90	100	90	70	30	[30]	—20	—20	20
14.	40	10	—10	—30	—40	10	10	20	—20	[10]	—20	10	—60
15.	—50	0	—10	—20	—10	40	20	[—70]	—	[—60]	—50	—70	—50
16.	—30	—60	—50	—30	—20	—30	20	20	[10]	30	30	40	60
17.	40	30	40	20	—20	0	40	40	—	—	—	30	[80]
18.	50	50	50	70	80	80	40	90	70	40	70	[70]	90
19.	—40	40	10	30	50	40	40	30	60	70	[90]	100	130
20.	40	50	40	50	40	50	80	90	160	150	[130]	130	130
21.	50	60	80	30	60	40	40	60	100	150	180	[180]	170
22.	110	80	80	130	140	60	50	+S	—	+S	+S	+S	+S
23.	10	—110	—130	—50	30	10	—60	30	30	70	[20]	—10	10
24.	10	—70	30	70	50	60	70	120	110	90	100	80	80
25.	140	80	100	—10	30	—40	—30	70	70	50	[30]	10	100
26.	30	30	30	10	—20	0	—20	—10	50	50	50	40	80
27.	20	20	20	40	50	40	50	60	80	[90]	120	120	130
28.	80	60	70	60	80	90	120	130	+S	[+S]	+S	200	200
Means	44	27	29	35	43	44	42	58	75	78	72	76	80
Number of days	27	27	26	28	28	27	26	25	22	25	25	26	25

13	14	15	16	17	18	19	20	21	22	23	Daily means
100	80	80	80	110	120	110	100	80	70	50	77
70	60	60	70	80	90	80	70	60	60	50	58
120	120	120	110	100	110	120	120	150	80	70	103
70	60	50	60	70	50	40	40	30	0	-50	51
90	80	90	90	60	30	40	20	30	120	110	49
130	170	160	160	+S	+S	210	+S	+S	110	-30	—
120	110	110	70	80	60	120	90	70	110	100	83
120	90	90	100	100	80	40	180	90	20	40	—
130	130	140	170	170	140	180	180	200	140	140	—
140	130	130	120	120	120	70	30	10	-10	10	115
10	40	30	10	30	40	0	0	-10	-10	-10	-13
40	20	-30	20	50	70	30	110	130	110	90	33
150	70	-50	20	-20	-10	50	20	-70	30	-50	35
-20	-60	-50	-40	-30	10	40	-10	10	-30	-30	-12
40	-20	-30	-60	-50	-50	-50	-40	-70	-70	-10	-32
80	70	110	110	120	50	80	80	70	80	60	37
60	80	90	60	20	-20	50	100	90	80	50	—
130	110	150	120	80	110	80	30	60	20	-10	71
170	160	140	140	130	120	110	80	80	100	20	79
180	170	160	110	130	170	130	80	60	40	30	100
170	170	150	170	240	180	130	130	110	100	100	119
+S	+S	+S	+S	+S	+S	+S	140	70	10	-40	—
70	120	80	110	130	30	30	120	30	30	50	27
[120]	120	120	130	130	130	80	100	100	80	80	83
170	130	-10	-20	0	60	10	60	30	10	20	44
40	30	20	30	40	50	40	40	20	-30	-10	25
110	140	140	160	160	140	140	130	90	70	70	91
200	160	140	140	140	100	—	—	—	—	—	—
104	94	80	83	84	76	75	77	58	49	33	
27	27	27	27	26	26	26	26	26	27	27	

March

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	—	—	—	—	130	140	120	130
2.	20	—	—	—	—	—	—30	30	0	—20	+S	+S	30
3.	50	40	40	50	50	70	100	90	100	110	[80]	90	100
4.	70	70	60	60	70	100	90	80	90	80	[70]	70	80
5.	20	10	10	20	30	30	30	40	50	50	[50]	70	70
6.	10	10	30	20	30	30	50	80	30	100	[80]	90	110
7.	—10	—30	—30	—40	—30	10	30	50	0	50	[80]	70	80
8.	50	50	40	50	50	50	40	—	—	50	50	40	40
9.	—20	—10	—10	—20	—40	—30	0	20	40	50	60	[70]	60
10.	30	30	40	50	50	50	50	70	80	60	[50]	50	50
11.	50	50	50	+S	—S	40	40	30	+S	—S	[50]	—10	10
12.	60	—	—	50	50	60	80	80	60	70	[70]	80	80
13.	—20	10	20	20	50	70	80	60	50	[30]	60	60	70
14.	40	50	40	50	50	50	60	60	40	+S	—S	[+S]	70
15.	50	50	50	50	50	50	50	—	—	80	80	100	110
16.	0	0	20	—10	10	20	20	20	40	60	70	90	[100]
17.	—30	—40	—20	10	40	—10	—10	10	20	50	60	[60]	70
18.	50	40	40	30	20	10	—10	10	40	40	[30]	60	90
19.	+S	+S	+S	+S	+S	+S	90	130	110	80	[50]	30	40
20.	50	50	50	50	50	50	50	50	[50]	50	50	50	50
21.	40	40	50	60	50	40	40	40	40	[50]	60	70	70
22.	30	30	40	50	50	70	70	—	—	80	60	50	20
23.	40	30	30	30	40	60	60	90	80	70	[80]	80	90
24.	40	40	30	20	30	40	60	[60]	70	80	90	90	100
25.	60	50	50	50	50	60	60	70	[80]	80	90	70	80
29.	30	30	—20	+S	+S	+S	[30]	—	50	50	—S	+S	+S
27.	40	40	40	30	20	0	20	60	[90]	100	100	110	120
28.	—10	—40	20	20	20	—10	10	40	60	[60]	70	70	80
29.	30	30	—20	+S	+S	+S	[30]	—	50	50	—S	+S	+S
30.	40	60	40	60	50	30	70	100	100	[90]	80	70	50
31.	100	50	10	—	30	30	+S	+S	+S	30	30	10	10
Means	32	27	28	31	35	37	43	57	59	64	68	67	72
Number of days	29	27	27	25	26	27	29	25	25	29	28	28	30

MAGYAR  
TUDOMÁNYOS AKADÉMIA  
KÖNYVTÁRA

13	14	15	16	17	18	19	20	21	22	23	Daily means
130	160	130	130	130	120	100	90	70	70	20	—
40	50	50	60	70	70	60	50	50	40	40	—
100	90	80	90	90	90	90	90	90	80	70	80
60	70	80	60	50	50	50	50	40	30	30	65
80	110	110	120	120	100	100	70	90	80	—30	60
120	120	110	100	80	60	—10	—30	—40	—30	—20	49
80	80	70	60	50	50	50	50	50	40	40	35
50	70	50	50	50	50	50	10	10	30	10	—
80	70	70	60	50	40	30	50	50	40	30	31
60	50	60	50	50	40	—10	0	40	50	50	46
50	50	50	70	70	90	70	70	90	90	70	—
90	100	60	50	50	50	30	0	50	50	50	—
80	100	100	90	80	110	100	100	50	40	40	60
90	110	110	110	80	90	80	70	70	50	40	—
100	80	70	50	50	60	60	40	30	20	10	—
90	80	70	70	50	20	—10	—40	—10	0	0	32
50	50	50	50	50	40	0	10	30	30	50	26
60	60	60	—60	+S	+S	+S	30	—30	20	—60	—
50	50	50	50	60	70	50	60	50	40	50	—
50	50	60	50	50	50	40	40	60	50	40	50
80	70	70	60	60	50	50	40	30	—10	20	49
+S	+S	+S	60	40	30	50	60	60	60	50	—
90	100	90	90	80	100	90	90	90	60	40	71
100	110	110	100	120	100	100	80	100	80	60	75
90	100	100	100	90	60	60	50	40	40	50	68
100	100	90	90	80	80	80	60	60	60	50	61
100	60	40	30	30	50	30	20	—10	—50	—20	44
60	50	30	40	40	50	40	40	40	40	30	35
+S	50	40	60	70	70	40	40	30	30	40	—
60	60	80	70	60	110	70	90	70	70	90	70
20	10	10	10	30	30	—10	—40	—40	—50	—60	—
78	77	72	65	66	66	51	43	42	37	28	
29	30	30	31	30	30	30	31	31	31	31	

April

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	-70	-30	30	40	20	30	-10	-10	-30	-10	-20	-10	30
2.	20	20	20	30	30	30	70	70	70	[50]	80	70	70
3.	50	60	30	40	60	70	50	[60]	70	80	80	90	80
4.	20	10	20	30	30	30	40	50	60	[30]	70	60	60
5.	40	40	30	40	40	50	—	—	80	80	60	50	70
6.	40	20	-10	-30	-50	-10	60	60	70	[70]	80	80	80
7.	40	40	0	-30	-10	10	10	±S	-S	-S	40	0	30
8.	40	40	40	20	20	30	40	40	[80]	80	80	70	80
9.	±S	70	±S	70	50	+S	70	20	90	[80]	70	70	80
10.	0	-20	30	40	50	70	70	100	70	[70]	60	30	50
11.	±S	±S	+S	40	50	60	70	60	[50]	40	30	50	-20
12.	60	50	50	50	60	80	80	[80]	80	90	80	90	90
13.	20	10	20	30	30	40	—	—	60	40	30	30	40
14.	50	50	50	40	60	40	40	40	70	[90]	90	110	150
15.	90	90	100	100	100	100	100	100	90	[100]	100	100	110
16.	70	60	70	100	90	80	80	90	100	[100]	120	160	150
17.	90	90	90	80	70	90	90	90	110	[100]	100	90	70
18.	10	40	50	10	-10	-10	20	70	80	[70]	±S	±S	±S
19.	0	50	30	-40	-40	0	[0]	—	120	90	±S	±S	±S
20.	60	60	50	50	60	70	[60]	70	80	50	60	70	+S
21.	80	80	60	60	60	70	80	100	80	[80]	60	60	40
22.	±S	±S	±S	0	0	60	80	90	80	[70]	30	90	90
23.	70	+S	40	50	30	70	70	60	70	[70]	60	70	70
24.	30	20	20	20	20	40	50	50	[70]	60	60	50	60
25.	-20	-60	-10	-20	-50	0	20	40	50	[50]	40	40	40
26.	40	40	40	40	30	40	—	—	50	50	60	60	40
27.	60	50	40	70	±S	±S	±S	80	90	[90]	±S	40	30
28.	60	60	60	70	80	90	90	80	70	[70]	80	(70)	70
29.	-30	-30	-10	-20	-10	30	70	70	[100]	90	60	80	70
30.	60	30	30	-40	10	50	80	90	70	[50]	40	30	30
Means	36	35	36	31	30	47	57	66	73	69	66	64	65
Number of days	27	27	27	30	29	28	26	25	29	29	27	27	27



13	14	15	16	17	18	19	20	21	22	23	Daily means
33	40	40	40	40	50	50	30	30	30	30	15
50	60	50	60	70	40	40	50	30	30	40	48
70	70	60	50	50	40	40	40	40	30	10	55
60	70	90	100	100	90	80	60	50	40	30	55
70	50	60	60	40	60	60	30	20	40	40	—
70	60	60	70	60	70	50	50	60	50	40	46
30	+S	+S	90	40	30	50	40	60	50	50	—
100	80	60	80	120	110	70	40	±S	+S	±S	—
90	90	90	120	90	150	90	60	50	40	30	—
40	40	50	80	—S	50	60	40	40	60	50	49
+S	+S	50	80	60	10	30	±S	±S	10	30	—
60	50	90	60	60	40	—S	±S	±S	—S	—10	—
40	40	30	10	40	60	30	30	40	50	70	—
160	160	160	130	130	120	160	130	110	100	90	97
110	100	100	100	60	60	70	80	70	60	50	89
150	160	160	120	80	80	80	70	60	80	80	100
60	60	60	±S	—S	±S	—30	10	10	—10	—10	—
10	10	—S	30	30	110	80	40	30	30	0	—
±S	+S	80	100	60	30	80	90	70	70	50	—
130	40	60	70	90	80	100	120	110	100	70	74
40	80	90	110	120	120	80	60	60	50	40	73
90	120	110	100	90	110	0	—20	—50	—90	40	—
60	60	60	70	60	40	50	40	20	50	50	56
60	60	70	60	70	70	60	70	60	60	50	52
50	50	40	40	40	30	30	40	50	60	50	25
40	10	20	40	20	0	±S	30	40	±S	+S	—
20	0	—40	20	30	60	50	70	80	80	70	—
80	60	70	60	50	50	50	50	40	30	0	62
70	70	50	60	80	60	70	80	70	50	50	50
40	40	40	50	40	50	50	50	50	50	40	43
67	64	66	72	65	64	58	53	48	44	40	
28	27	28	29	28	29	28	28	27	27	28	

May

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	40	40	40	40	40	40	+S	+S	+S	80	+S	±S	±S
2.	40	50	50	40	40	80	40	60	80	[80]	70	80	80
3.	20	20	20	30	40	50	60	—	70	70	60	70	70
4.	50	50	40	60	60	80	70	70	[70]	60	50	40	30
5.	30	30	40	40	50	50	40	40	40	[10]	—10	—20	10
6.	60	80	70	70	70	50	50	40	[50]	50	40	30	30
7.	40	30	40	50	40	60	50	50	[50]	50	—S	±S	±S
8.	40	40	40	40	30	30	40	40	[—20]	—30	10	10	30
9.	40	30	30	30	0	—10	30	30	30	[10]	10	30	—
10.	50	50	50	50	50	60	[30]	—	50	50	50	80	60
11.	+S	+S	±S	+S	+S	±S	±S	—S	—S	[—S]	10	20	70
12.	50	60	50	60	80	70	100	100	100	90	100	90	80
13.	0	—20	10	30	20	20	70	80	[100]	90	70	70	80
14.	30	20	10	—10	0	20	40	60	70	[70]	70	70	60
15.	20	20	20	30	40	60	70	80	80	[90]	70	70	80
16.	30	20	20	20	30	30	40	30	30	30	[30]	30	30
17.	30	20	20	20	30	30	40	—	—	50	40	40	40
18.	40	30	30	40	40	40	60	60	50	50	[50]	50	40
19.	30	40	40	50	50	50	60	60	60	[40]	50	60	80
20.	40	40	40	40	40	50	40	60	60	80	[90]	100	110
21.	40	40	40	30	30	20	+S	±S	[±S]	50	30	10	50
22.	20	30	20	30	30	50	50	[50]	50	50	40	40	40
23.	—	—	—	—	—	—	—	—	—	—	30	0	20
24.	70	70	40	30	50	70	30	—	±S	—S	20	50	30
25.	20	20	20	20	40	50	60	60	40	40	[40]	40	40
26.	20	20	10	10	10	30	30	50	[70]	100	99	80	50
27.	30	30	30	30	30	40	40	40	[40]	40	30	30	30
28.	20	20	20	20	30	40	30	30	40	[30]	30	30	40
29.	±S	—	—	—	—	±S	50	70	50	30	—10	10	10
30.	30	40	20	10	10	20	40	40	30	[40]	20	60	50
31.	40	50	40	40	30	50	50	—	[50]	50	40	40	40
Means	35	35	32	34	36	44	49	55	54	52	42	45	49
Number of days	28	28	26	28	28	28	27	22	25	28	29	29	28

13	14	15	16	17	18	19	20	21	22	23	Daily means
+S	+S	90	80	-140	-80	120	100	90	100	40	—
90	100	100	110	100	90	80	70	40	30	30	68
60	60	50	50	40	50	50	50	50	50	60	50
10	20	20	30	30	40	40	30	40	40	40	45
10	20	30	40	40	60	70	70	70	60	50	36
20	20	30	40	40	40	30	30	40	40	50	45
±S	+S	10	±S	40	40	40	40	50	50	50	—
+S	+S	90	100	100	130	40	100	70	40	20	—
(40)	30	40	50	40	50	50	30	-30	40	50	—
70	70	30	—	80	70	70	70	50	30	70	56
90	70	50	40	40	40	50	40	60	50	30	—
70	70	70	80	80	100	60	60	50	30	20	72
80	80	80	70	70	80	50	20	20	40	30	52
60	70	70	70	60	40	70	50	30	20	10	44
90	90	80	70	60	80	60	30	30	20	30	58
30	30	30	30	30	30	40	30	30	30	30	30
40	50	50	50	50	40	40	40	40	40	40	—
-S	-S	40	40	40	40	40	40	40	40	40	—
80	70	40	+S	70	50	60	60	50	50	40	54
120	120	90	60	60	50	40	30	40	50	30	62
60	50	50	40	—	—	40	40	20	10	20	—
40	50	±S	±S	-10	—	—	—	—	—	—	—
30	30	10	20	30	30	40	40	50	70	70	—
40	50	60	50	50	40	40	40	40	30	20	—
50	70	60	60	70	70	60	70	60	40	30	47
50	40	50	40	40	40	40	30	20	20	30	40
30	30	40	40	30	30	20	20	30	20	20	31
40	30	40	50	50	30	0	0	-50	0	40	25
0	40	60	70	60	60	40	30	20	10	30	—
50	70	70	70	50	40	40	40	50	40	40	40
50	50	50	40	40	40	50	40	20	30	10	41
52	55	53	55	45	49	49	45	37	37	36	
26	27	30	27	30	29	30	30	30	30	30	

June

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	20	20	20	10	20	30	40	40	30	[40]	30	40	40
2.	10	20	20	20	20	—	—	—	—	—	—	—	—
3.	20	10	20	30	40	—	—	—	—	—	—	—	—
4.	10	10	10	20	20	40	40	40	30	20	—	30	30
5.	10	10	0	10	10	10	10	[20]	20	20	20	20	20
6.	10	10	10	10	20	30	30	30	30	[30]	30	40	30
7.	30	20	20	20	20	20	30	—	[20]	20	30	30	30
8.	30	30	20	10	10	20	30	[50]	60	70	70	50	50
9.	0	0	20	20	20	20	30	30	[30]	[30]	50	60	50
10.	30	40	40	30	30	60	70	90	[70]	[60]	50	50	50
11.	30	30	30	30	30	30	[30]	[30]	40	30	40	40	30
12.	10	20	30	+S	+S	50	30	30	[30]	30	30	30	[±S]
13.	—	—	—	—	—	—	—	—	—	—	—	—	—
14.	—	—	—	—	—	—	—	—	—	—	—	—	—
15.	—	—	—	—	—	—	—	—	—	—	—	—	—
16.	—	—	—	—	—	—	—	—	—	—	—	—	—
17.	—	—	—	—	—	—	—	—	—	—	—	—	—
18.	—	—	—	—	—	—	—	—	—	—	—	—	—
19.	—	—	—	—	—	+S	-S	30	[100]	+S	100	+S	10
20.	30	30	20	20	30	60	[70]	30	40	50	10	-10	40
21.	10	10	20	20	30	30	40	—	60	50	50	50	50
22.	50	40	30	30	30	50	50	[50]	50	50	40	+S	-20
23.	20	20	10	20	40	50	50	50	—	50	40	60	+S
24.	+S	100	80	80	+S	+S	60	90	70	[50]	40	30	40
25.	40	30	40	30	30	50	60	[60]	60	40	20	20	20
26.	20	20	20	30	30	30	0	20	[10]	20	20	30	(50)
27.	—	—	—	—	—	—	—	—	—	—	—	—	—
28.	—	—	—	—	—	—	—	—	—	—	—	—	—
29.	—	—	—	—	—	—	—	—	—	—	—	—	—
30.	—	—	—	—	—	—	—	—	—	—	—	—	—
Means	21	25	24	24	25	36	39	43	44	39	39	36	31
Number of days	18	19	19	18	17	16	17	16	17	17	17	16	15

13	14	15	16	17	18	19	20	21	22	23	Daily means
40	50	50	50	40	30	20	10	10	10	10	29
—	30	30	30	30	30	20	20	10	10	10	—
—	20	20	20	20	10	10	10	0	10	10	—
30	40	40	40	30	30	20	20	20	10	10	26
20	20	20	30	30	30	30	30	30	20	10	19
30	40	40	30	40	40	30	30	30	30	20	28
30	30	+S	±S	+S	10	10	10	-10	30	30	—
50	40	50	50	40	30	20	0	0	0	0	33
40	40	40	50	40	30	+S	±S	+S	10	0	—
60	60	70	60	70	60	40	50	30	30	30	51
30	30	30	30	30	30	20	20	20	20	10	29
[±S]	10	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
20	20	+S	+S	40	30	30	20	20	10	20	—
20	-S	30	30	30	20	20	10	20	10	10	27
+S	30	-S	-S	±S	40	30	20	40	50	50	—
40	-S	50	50	50	50	40	30	20	20	30	38
—	—	+S	+S	+S	+S	+S	+S	+S	+S	+S	—
30	30	40	40	40	40	40	30	30	30	30	—
20	20	30	30	30	30	30	20	30	30	30	33
50	50	50	±S	±S	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
34	33	39	39	37	32	26	21	19	19	18	
15	17	15	14	15	17	16	16	16	17	17	

July

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	—	—	—	—	—	—	—	—
2.	—	—	—	—	—	—	—	—	—	—	—	—	—
3.	—	—	—	—	—	—	—	—	—	—	—	—	—
4.	—	—	—	—	—	—	—	—	—	—	—	—	—
5.	—	—	—	—	—	—	—	—	—	—	—	—	—
6.	—	—	—	—	—	—	—	—	—	—	—	—	—
7.	—	—	—	—	—	—	—	—	—	—	—	—	—
8.	—	—	—	—	—	—	—	—	—	—	—	—	—
9.	—	—	—	—	—	—	—	—	—	—	—	—	—
10.	—	—	—	—	—	—	—	—	—	—	—	—	—
11.	—	—	—	—	—	—	—	—	—	—	—	—	—
12.	—	—	—	—	—	—	—	—	—	—	+S	+S	+S
13.	—	20	10	60	60	70	70	60	—	—	100	80	60
14.	60	30	50	70	100	90	90	70	[70]	70	40	40	50
15.	40	40	20	30	60	70	60	40	50	[50]	40	40	40
16.	30	60	60	70	110	90	60	110	[110]	80	70	60	50
17.	20	20	20	30	30	50	60	[50]	60	70	70	70	60
18.	30	20	30	30	30	30	40	[40]	50	40	30	30	60
19.	50	50	10	20	30	40	—	—	50	60	70	80	80
20.	—20	—50	—50	0	20	40	70	80	[80]	70	50	40	40
21.	30	30	30	30	40	50	60	[70]	50	50	50	40	40
22.	20	30	20	20	20	40	50	50	50	[60]	60	50	50
23.	50	40	30	40	30	[40]	70	60	—	—	—	—	—
24.	—	—	—	—	—	—	—	—	—	—	—	—	—
25.	—	—	—	—	—	—	—	—	—	—	—	—	—
26.	—	—	—	—	—	—	—	—	—	—	—	—	—
27.	—	—	—	—	—	—	—	—	—	50	40	30	30
28.	50	50	50	40	50	40	50	60	40	40	70	80	80
29.	50	40	50	50	60	60	[60]	—	—	100	100	80	60
30.	50	50	50	60	—	—	—	—	—	—	—	—	—
31.	50	40	40	30	40	40	[40]	[40]	40	40	40	20	30
Means	36	31	28	39	49	54	60	61	59	60	59	53	52
Number of days	14	15	15	15	14	14	13	12	11	13	14	14	14

13	14	15	16	17	18	19	20	21	22	23	Daily means
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
60	60	60	80	—S	±S	+S	—	—	—	—	—
60	80	70	70	70	80	90	60	70	60	60	—
40	30	30	20	30	40	40	60	40	60	50	53
40	30	30	30	40	40	40	40	30	30	30	40
30	20	30	30	±S	—S	40	40	30	30	20	—
70	±S	+S	+S	+S	40	30	30	30	30	20	—
60	50	20	20	20	20	±S	—S	10	60	100	—
70	80	90	80	80	60	40	10	0	—30	—40	—
50	40	40	50	50	40	50	40	40	30	30	35
0	10	80	40	50	40	40	50	50	30	20	41
70	+S	±S	±S	+S	120	70	60	80	100	60	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
30	50	60	60	50	50	50	50	50	50	50	—
80	60	60	50	50	40	30	40	40	50	40	52
60	60	70	60	70	80	80	70	60	70	50	—
—	—	60	50	50	50	50	50	50	50	50	—
30	30	30	30	20	±S	±S	±S	—	—	—	—
50	46	52	48	48	54	50	46	41	44	39	—
15	13	14	14	12	13	13	13	14	14	14	—

August

Hour GMT	August												
Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	130	110	[100]	[70]	80	80	80	50
2.	30	30	40	40	40	70	[80]	—	[100]	80	80	70	80
3.	40	30	30	20	30	30	40	[30]	30	10	40	40	50
4.	30	30	40	$\pm S$	$\pm S$	$\pm S$	$\pm S$	$\pm S$	$\pm S$	$\pm S$	$\pm S$	80	60
5.	—	—	—	—	—	—	—	—	150	150	70	70	60
6.	30	30	30	30	30	40	50	[50]	[40]	50	80	70	60
7.	50	50	40	40	$\pm S$	$\pm S$	$\pm S$	[80]	[70]	100	80	70	$\pm S$
8.	—	—	—	—	—	—	—	—	—	150	130	110	100
9.	40	40	40	40	40	80	140	—	[70]	60	40	40	50
10.	40	30	30	20	30	[40]	$\pm S$	$\pm S$	$\pm S$	50	80	80	90
11.	30	20	20	20	40	40	50	[50]	70	70	80	80	80
12.	30	40	30	30	40	50	[70]	[40]	40	50	50	40	40
13.	50	50	50	60	80	100	[110]	[50]	50	50	40	40	40
14.	40	40	30	30	40	50	[60]	[60]	70	70	50	50	30
15.	50	30	20	20	20	30	40	[40]	[40]	40	40	40	40
16.	40	$\pm S$	$\pm S$	10	10	40	70	—	[60]	50	50	50	60
17.	40	30	30	40	50	40	50	[50]	60	80	$\pm S$	$\pm S$	$\pm S$
18.	70	60	50	60	50	70	130	[120]	80	70	60	50	50
19.	40	40	40	40	50	70	80	[80]	90	80	70	60	50
20.	40	40	30	30	40	40	[40]	[40]	40	50	40	40	40
21.	—	—	—	—	—	—	—	—	[70]	60	50	50	50
22.	40	30	30	30	30	30	40	[50]	70	90	90	60	50
23.	50	40	30	40	40	50	70	—	60	70	60	60	70
24.	30	30	20	30	40	40	50	[50]	50	40	40	50	$\pm S$
25.	30	30	30	40	30	[40]	[50]	60	60	50	50	40	50
26.	40	30	30	20	30	40	40	40	[50]	[50]	(40)	50	60
27.	30	20	30	40	40	30	40	[50]	50	50	50	50	40
28.	30	30	20	20	30	30	[20]	[40]	40	60	$\pm S$	$\pm S$	—S
29.	30	60	30	40	40	50	40	70	[70]	70	40	50	50
30.	40	0	90	30	30	50	80	120	90	—	70	70	60
31.	40	40	30	30	50	50	70	60	60	[50]	50	50	50
Means	39	35	34	33	38	51	65	60	64	67	61	58	56
Number of days	27	26	26	26	25	26	25	22	28	29	27	29	27



13	14	15	16	17	18	19	20	21	22	23	Daily means
50	40	40	40	50	50	50	50	50	40	40	—
80	80	50	50	30	40	40	10	30	40	40	54
50	40	30	40	40	40	40	30	40	40	30	35
50	40	40	50	40	—S	±S	—	—	—	—	—
80	110	100	70	40	40	40	40	40	30	20	—
50	50	50	50	50	40	50	50	50	70	60	48
—	—	—	—	—	—	—	—	—	—	—	—
90	100	±S	±S	±S	±S	50	50	50	50	40	—
+S	±S	±S	±S	50	40	40	30	50	50	40	—
60	50	40	50	80	70	60	50	50	50	40	—
70	60	70	80	60	50	50	40	30	30	20	50
50	40	40	30	20	10	10	40	40	40	50	38
40	+S	+S	±S	±S	—S	±S	±S	±S	±S	20	—
40	70	50	60	70	70	50	50	40	50	50	51
40	40	40	40	50	40	50	50	40	50	40	39
60	50	40	30	50	50	50	50	40	40	40	—
±S	±S	+S	+S	+S	+S	150	130	110	100	80	—
30	20	30	30	40	40	50	50	50	50	40	56
±S	—40	70	±S	±S	±S	±S	—S	30	40	30	—
30	20	30	20	20	20	10	—70	±S	—	—	—
50	50	50	50	50	40	40	40	50	50	40	—
50	50	50	40	40	50	50	50	50	40	40	48
80	80	70	50	40	50	50	50	50	50	40	54
±S	70	30	50	70	60	50	50	30	40	40	—
50	60	70	50	50	50	50	50	50	40	40	47
60	50	50	50	50	40	40	30	40	30	30	41
50	50	50	50	50	40	40	50	40	40	30	42
±S	110	70	0	—20	—10	30	20	+S	+S	30	—
40	40	+S	±S	—S	40	60	50	40	50	90	—
70	60	40	40	50	40	40	40	40	30	30	53
50	50	40	40	40	40	40	40	50	50	40	46
55	53	50	44	44	42	47	41	45	46	40	
25	27	25	24	25	25	27	27	26	26	28	

September

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	30	20	30	40	40	30	40	40	50	40	30	[20]	30
2.	30	20	30	30	40	30	60	[70]	50	60	60	60	40
3.	60	40	50	40	50	40	[40]	60	70	80	70	80	80
4.	40	40	50	50	50	40	[90]	50	50	50	50	50	50
5.	50	60	60	50	70	80	70	60	[70]	80	80	80	70
6.	40	50	60	60	60	50	50	—	[40]	30	30	40	30
7.	30	30	20	30	40	40	60	[50]	50	50	60	70	60
8.	±S	90	±S	±S	±S	30	80	80	[70]	60	50	60	60
9.	10	20	30	30	±S	(±S)	±S	±S	±S	±S	±S	—40	30
10.	50	50	60	50	50	50	70	[80]	80	90	90	—	—
11.	50	40	40	50	50	50	[80]	90	80	60	70	70	70
12.	60	50	60	60	50	50	70	80	[60]	70	80	100	120
13.	30	20	30	40	60	60	80	—	—	—	—	—	—
14.	40	30	30	30	40	40	60	[70]	—	—	—	—	—
15.	30	50	50	50	60	60	200	+S	—	—	—	—	—
16.	30	40	50	40	60	120	150	80	80	[80]	70	70	70
17.	50	60	70	110	70	110	—	—	—	—	70	70	50
18.	50	40	40	40	50	50	70	90	[60]	50	40	50	40
19.	30	40	40	30	40	40	60	70	[60]	50	50	50	50
20.	40	40	40	40	40	50	—	—	—	—	—	—	—
21.	—	—	—	—	—	—	—	—	—	—	—	—	—
22.	—	—	—	—	—	—	—	—	[80]	80	70	60	±S
23.	40	40	40	40	40	50	80	130	110	[50]	100	80	50
24.	20	—80	—110	—10	80	90	130	130	+S	[120]	120	110	110
25.	30	30	30	50	40	40	50	60	[50]	40	60	50	50
26.	10	—10	—20	20	—40	—40	10	[20]	30	40	40	40	40
27.	50	50	50	40	50	50	80	60	—	[60]	60	60	80
28.	40	40	50	60	70	80	80	80	80	70	[90]	100	80
29.	30	40	40	50	50	50	30	100	[70]	70	80	100	110
30.	50	50	70	50	50	50	70	90	60	30	20	[40]	40
Means	38	35	37	43	48	51	74	75	64	61	64	61	61
Number of days	27	28	27	27	26	27	25	22	21	23	24	24	23

13	14	15	16	17	18	19	20	21	22	23	Daily means
50	40	40	40	40	50	50	50	40	30	20	37
50	70	70	60	70	50	50	50	50	50	50	50
80	80	80	60	50	50	40	40	40	50	60	58
50	50	50	50	50	40	50	50	50	50	50	50
80	70	60	60	70	60	50	60	50	50	50	64
30	20	20	40	40	50	60	50	40	40	40	43
70	70	70	30	30	40	30	30	30	-S	(±S)	—
70	60	60	40	40	±S	—	±S	-50	20	20	—
50	50	90	110	120	140	110	90	70	90	70	—
100	100	90	80	70	70	70	70	70	60	50	71
70	60	70	70	50	60	70	80	80	50	50	63
110	100	100	90	70	50	50	40	40	50	40	69
70	50	50	60	50	50	70	60	50	50	50	—
80	70	70	60	70	60	50	40	40	40	40	—
50	50	60	50	50	10	10	30	50	30	30	—
60	60	70	70	50	60	60	60	70	60	60	68
50	50	60	70	80	80	70	60	50	50	50	—
50	50	50	50	50	50	50	50	40	20	20	48
50	50	50	50	50	50	40	40	40	40	40	46
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	20	20	20	20	30	10	30	—
70	90	100	110	80	80	50	30	+S	-S	±S	—
110	90	60	60	60	40	40	40	30	30	30	57
50	50	50	40	20	0	30	50	0	10	10	37
50	40	50	30	30	40	50	60	70	80	70	30
90	90	90	70	50	40	50	50	40	40	30	58
90	100	90	80	90	80	70	50	40	50	30	70
110	100	120	110	110	80	60	70	70	50	50	73
40	50	40	40	50	50	50	60	50	60	50	50
68	65	67	62	58	54	52	51	44	45	42	
27	27	27	27	28	27	27	27	27	26	26	

October

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	50	70	60	60	70	50	50	70	100	—	—	—	—
2.	120	0	10	50	60	110	130	+S	+S	150	[130]	80	70
3.	50	50	50	60	60	60	60	180	100	[70]	80	80	80
4.	20	40	50	60	70	80	120	90	—	[60]	20	10	40
5.	40	50	10	-10	0	20	0	20	30	10	50	—	—
6.	110	90	90	90	100	180	140	70	60	[70]	—	—	—
7.	80	20	-20	-20	0	20	50	80	90	[70]	—	—	60
8.	60	50	20	-40	10	30	60	50	70	60	10	+S	0
9.	70	60	80	80	150	110	70	+S	150	60	—	—	—
10.	—	—	—	—	—	—	—	—	—	—	150	120	100
11.	100	110	90	90	100	90	130	180	—	[80]	+S	70	60
12.	220	160	140	150	140	220	190	210	130	—	—	180	90
13.	90	90	90	80	70	80	100	60	40	[70]	[40]	30	20
14.	10	0	0	—	+S	+S	+S	+S	+S	+S	+S	+S	180
15.	60	80	90	50	+S	+S	+S	60	80	80	70	[50]	60
16.	40	40	50	40	40	40	70	60	60	80	80	80	90
17.	20	10	20	40	40	50	80	70	30	40	40	60	70
18.	40	20	20	30	+S	+S	+S	+S	—	+S	+S	70	30
19.	100	70	-30	20	40	30	30	20	40	40	40	[90]	[100]
20.	10	40	100	120	80	100	90	100	130	140	120	[100]	110
21.	60	30	20	0	-10	0	0	30	10	-10	[-10]	30	-20
22.	-40	-50	-50	-40	-30	-20	-40	-20	-50	-90	-40	-70	[-20]
23.	-20	-40	-30	-90	-50	-60	-100	40	40	10	[-30]	-20	0
24.	20	40	40	60	80	80	80	30	70	80	[100]	90	90
25.	40	30	30	30	20	30	30	40	—	—	[10]	30	40
26.	60	50	+S	+S	230	140	100	120	90	80	90	[90]	90
27.	30	30	60	60	70	80	80	80	130	90	[80]	—	—
28.	—	—	—	—	—	—	—	—	—	—	—	—	—
29.	—	—	—	—	—	—	—	—	—	—	—	—	—
30.	—	—	—	—	—	—	—	—	—	—	—	—	—
31.	—	—	—	—	—	—	—	—	—	—	—	—	—
Means	55	44	39	40	58	66	66	75	70	59	54	62	61
Number of days	26	26	25	24	23	23	23	22	20	21	19	19	22

13	14	15	16	17	18	19	20	21	22	23	Daily means
—	—	—	—	—	—	—	—	—	—	—	—
80	90	60	40	40	50	10	-10	-10	-10	50	—
70	60	60	50	50	40	30	40	40	30	-20	60
10	20	0	30	60	-20	60	90	40	70	20	45
—	—	—	—	—	—	—	—	—	—	130	—
—	—	—	—	—	—	—	—	180	80	70	—
70	60	60	50	50	60	60	50	60	40	70	—
90	80	90	110	100	80	70	60	70	50	70	54
—	—	—	—	—	—	—	—	—	—	—	—
90	100	120	120	110	90	90	90	110	140	110	—
±S	±S	±S	±S	40	60	30	30	40	30	—	—
70	100	140	110	110	80	80	100	90	80	80	—
0	10	-10	0	20	40	70	50	40	10	30	47
120	100	80	90	100	90	70	70	40	±S	80	—
80	60	50	50	50	60	80	90	70	50	50	—
[90]	90	80	80	90	120	90	70	50	40	30	66
70	70	70	80	100	100	80	70	70	50	40	57
40	60	70	60	40	70	90	110	90	80	70	—
100	70	80	160	160	110	90	90	90	10	-10	64
110	110	90	60	60	70	80	70	40	30	40	83
-20	-10	10	-10	-10	-50	0	10	-10	0	10	2
10	0	10	0	0	10	0	10	-10	-50	10	-24
10	30	40	40	80	60	100	90	100	80	40	13
100	80	60	80	60	80	90	90	80	60	60	71
60	70	90	100	80	40	40	20	20	60	60	—
90	100	90	70	80	90	60	30	20	30	10	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
64	64	64	65	67	60	62	60	57	44	48	
21	21	21	21	22	22	22	22	23	22	23	

November

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	—	—	—	—	—	—	—	—
2.	—	—	—	—	—	—	—	—	—	—	—	—	—
3.	—	—	—	—	—	—	—	—	—	—	—	—	—
4.	—	—	—	—	—	—	—	—	—	—	—	—	—
5.	—	—	—	—	—	—	—	—	—	—	—	—	—
6.	—	—	—	—	—	—	—	—	—	—	—	—	—
7.	—	—	—	—	—	—	—	—	—	—	—	—	—
8.	—	—	—	—	—	—	—	—	—	—	—	—	—
9.	—	—	—	—	—	—	—	—	—	—	—	—	—
10.	—	—	—	—	—	—	—	—	—	—	—	—	—
11.	—	—	—	—	—	—	—	—	—	—	—	—	130
12.	+S	50	70	80	50	60	50	20	0	0	30	60	—
13.	—60	—70	—40	—30	—60	10	20	70	—	—	—	—	—
14.	±S	±S	±S	±S	—S	—S	—20	0	—50	—10	10	—60	—S
15.	60	50	50	50	50	50	60	70	—	[80]	80	70	—
16.	30	50	30	30	60	60	100	80	100	100	70	50	—
17.	—	—	—	—	—	—	—	—	—	—	—	—	—
18.	—	—	—	—	—	—	—	—	—	—	—	80	70
19.	50	30	30	30	40	30	70	200	160	120	160	130	—
20.	80	60	60	60	50	90	110	—	+S	110	[50]	50	60
21.	50	50	60	90	80	60	60	90	80	80	[90]	90	60
22.	—40	—40	—30	—40	—50	—60	—60	—	—	—30	—30	—10	40
23.	100	110	130	130	150	160	110	80	70	10	40	30	30
24.	20	—30	—40	—80	10	0	—10	100	140	110	[110]	120	130
25.	60	50	50	40	30	60	50	100	120	70	[80]	20	—20
26.	210	130	160	160	+S	210	+S	+S	80	70	[80]	30	60
27.	50	30	10	—20	40	—20	—20	—50	—10	—10	[10]	—10	0
28.	70	70	50	30	60	70	20	0	60	60	[40]	30	100
29.	40	40	60	70	60	40	60	60	—	—	60	50	50
30.	10	—10	—70	—160	—160	—110	10	—30	—20	+S	[30]	—10	—40
Means	49	36	36	28	27	46	38	56	61	54	57	42	52
Number of days	15	16	16	16	15	16	16	14	12	14	16	17	13

13	14	15	16	17	18	19	20	21	22	23	Daily means
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
110	120	130	110	120	110	100	120	200	+S	+S	—
—	—	—	10	40	70	30	20	-10	-30	0	—
—	—	-50	-70	-70	0	10	0	0	40	10	—
40	70	70	60	80	60	60	90	100	80	80	—
—	—	110	140	160	160	100	70	40	60	20	—
—	—	70	90	130	130	140	120	130	120	—	—
—	—	—	—	—	—	—	—	—	—	—	—
70	60	70	110	100	60	60	70	50	80	70	—
—	—	—	120	100	90	70	30	30	50	90	—
50	50	50	50	70	70	60	80	50	40	50	—
20	10	10	0	-30	-30	-10	-20	-30	-30	-30	33
70	90	110	100	130	140	130	130	70	10	80	—
[20]	40	70	40	30	40	30	50	150	80	30	70
120	70	-20	-90	40	90	80	80	60	60	80	48
30	80	90	130	210	190	110	60	170	210	230	93
40	30	0	10	100	50	-10	-30	0	-20	50	—
30	90	100	30	20	60	110	120	110	80	70	34
120	130	120	100	20	30	20	20	70	60	10	56
60	-60	-80	-100	-90	-100	-140	-100	-90	-50	50	—
-20	-20	-30	30	40	60	-40	10	-110	+S	-10	-30
54	54	48	46	63	67	48	48	52	49	52	—
14	14	17	19	19	19	19	19	19	17	17	—

December

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	-170	-50	-10	-40	0	50	70	130	120	150	[140]	120	120
2.	40	50	40	60	70	80	70	90	120	120	[120]	100	90
3.	40	50	50	150	160	110	140	170	+S	+S	+S	+S	+S
4.	+S	200	200	140	120	110	100	60	[30]	30	10	30	30
5.	-40	-90	-40	30	30	90	80	120	40	[-10]	-20	50	50
6.	20	20	-20	50	-50	-40	10	-10	—	—	-30	-60	-50
7.	60	40	50	40	50	30	50	50	70	60	[30]	40	40
8.	-50	-30	-10	30	30	30	50	50	60	60	[70]	—	—
9.	-40	-10	-20	20	80	—	—	30	70	-50	[0]	50	-50
10.	60	10	40	50	30	50	10	40	50	60	[60]	70	70
11.	+S	+S	+S	+S	+S	-10	40	80	110	90	[80]	90	70
12.	50	30	30	50	50	40	70	110	100	150	120	[120]	100
13.	30	30	-10	-10	0	40	60	70	—	—	90	90	80
14.	90	120	110	70	10	-10	10	40	0	60	[30]	40	80
15.	60	50	40	40	60	40	10	40	—	-50	0	20	0
16.	40	50	60	80	120	150	+S	+S	+S	[140]	220	150	160
17.	70	70	70	30	60	80	130	[160]	80	70	70	50	90
18.	30	50	40	30	40	30	50	80	60	40	+S	+S	+S
19.	-10	50	+S	+S	-30	10	+S	-70	70	[160]	120	80	+S
20.	100	100	100	70	80	50	50	—	—	80	130	150	130
21.	90	120	90	80	80	0	40	100	90	0	30	-S	-S
22.	130	90	70	50	50	+S	+S	+S	+S	200	[120]	+S	+S
23.	40	+S	10	30	60	110	50	110	80	[110]	150	110	140
24.	-50	-170	-170	-160	10	-20	+S	-S	60	20	50	50	50
25.	30	20	30	30	50	50	70	80	90	90	[110]	80	80
26.	-40	-30	-20	-20	-20	-20	0	-10	10	40	[50]	60	110
27.	50	50	60	80	80	70	70	[80]	—	100	100	80	110
28.	+S	50	+S	50	30	10	10	50	70	+S	+S	+S	40
29.	50	60	50	40	40	50	40	60	70	90	80	30	40
30.	0	20	30	20	30	30	-20	-S	-S	100	[100]	100	100
31.	60	70	60	80	100	70	70	100	60	[80]	[110]	90	100
Means	27	35	33	40	47	44	51	72	69	74	78	72	71
Number of days	28	29	28	29	30	29	26	26	22	27	28	25	25



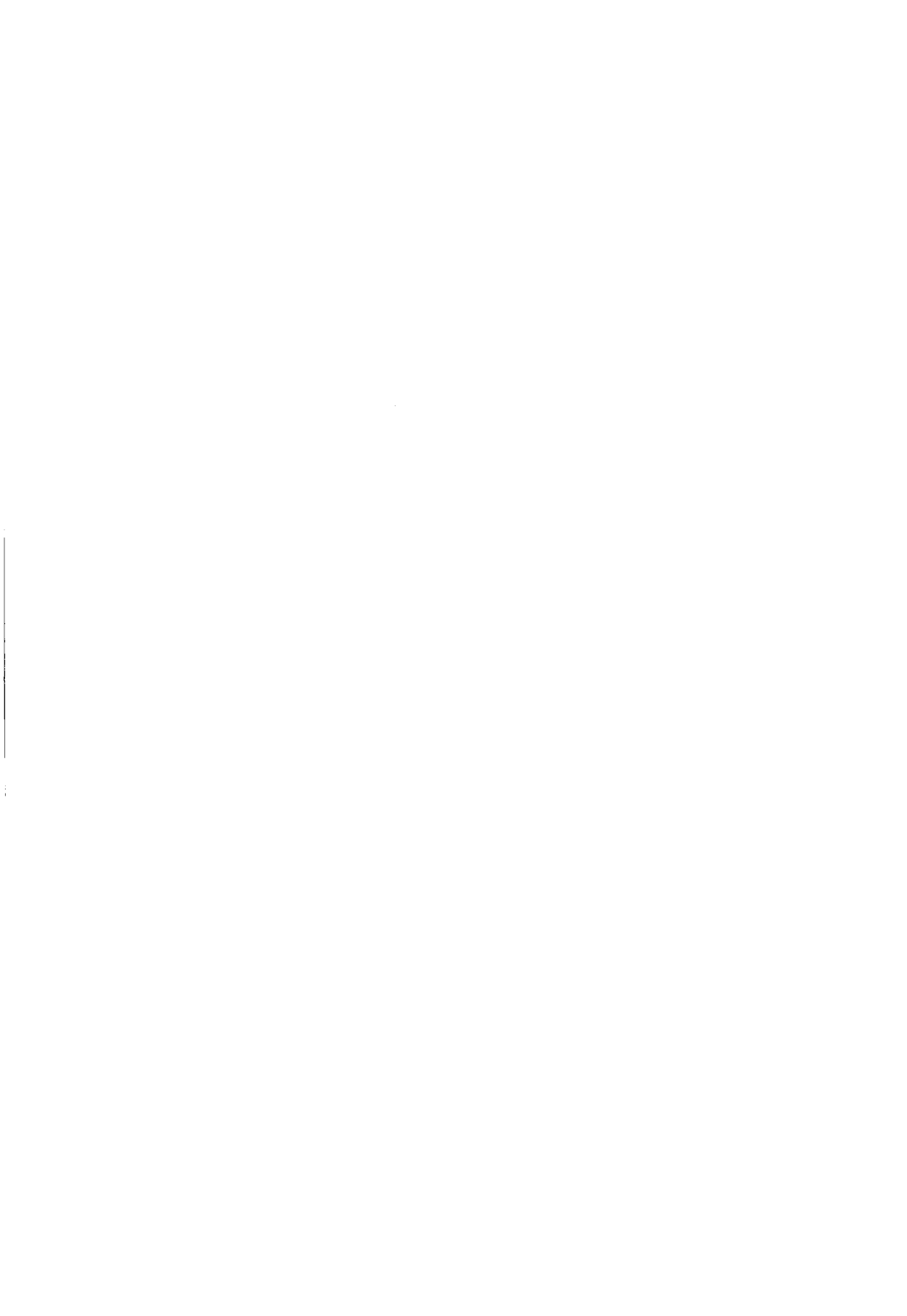
13	14	15	16	17	18	19	20	21	22	23	Daily means
170	120	70	20	40	50	30	-50	-10	-10	0	44
110	100	100	110	130	130	110	90	80	80	50	89
+S	+S	+S	+S	+S	+S	+S	+S	210	+S	+S	—
0	10	20	20	10	10	-10	30	-10	0	-10	47
40	80	70	60	10	40	10	30	-10	-30	-20	24
-60	-40	-50	-50	0	-40	10	40	50	40	20	—
10	40	30	20	10	10	10	-10	-50	-30	-50	27
220	200	+S	160	220	+S	120	90	30	-40	-10	—
-20	50	+S	170	30	+S	+S	+S	+S	+S	50	—
70	70	80	80	80	70	80	30	+S	+S	+S	—
70	70	70	110	100	110	80	100	80	70	50	—
0	-20	-40	-50	-50	-10	-20	-20	20	0	10	35
50	40	30	0	80	120	70	120	50	90	90	—
120	130	130	140	140	140	120	90	50	40	40	75
-10	-10	-60	-30	-20	-50	30	-60	10	20	10	6
150	150	130	130	120	120	+S	+S	120	110	80	—
110	80	70	100	100	90	60	20	-50	-40	10	66
+S	+S	+S	+S	+S	120	150	130	100	50	-10	—
120	40	10	0	0	10	40	60	90	110	110	—
60	40	60	40	40	-30	-10	20	10	40	30	—
-S	-S	90	170	+S	60	50	50	60	100	130	—
+S	0	100	+S	+S	+S	-S	-S	-170	-70	120	—
150	120	130	120	130	140	110	70	50	50	-10	90
-S	30	0	-20	-20	-20	-50	-S	-20	10	20	—
60	60	50	50	0	-20	-20	-40	-10	-30	-40	36
110	80	60	80	100	80	90	90	70	70	90	43
110	120	130	140	120	+S	120	100	70	90	30	89
50	70	80	80		—	—	80	90	70	60	—
[50]	50	40	50	50	50	40	40	40	30	20	48
100	100	100	120	140	150	140	140	100	80	90	—
100	90	100	100	110	110	+S	+S	+S	150	110	—
75	67	59	69	64	58	54	50	38	38	37	
26	28	27	28	26	25	25	25	28	28	29	

*Hourly means of the quantities of positive and negative*

Hour GMT Day		0	1	2	3	4	5	6	7	8	9	10	11
January	+	0	0	0	0	0	0	0	0	0	5	0	5
	-	0	0	0	0	3	0	0	1	5	4	0	1
February	+	0	1	0	0	0	0	0	0	0	0	0	0
	-	0	1	0	0	0	0	0	0	0	0	0	0
March	+	1	0	6	11	9	0	0	0	2	0	0	29
	-	0	1	1	1	16	0	0	0	3	0	5	11
April	+	12	20	0	0	3	12	1	12	11	0	1	5
	-	52	12	2	0	10	14	6	1	3	5	23	8
May	+	15	10	6	0	0	16	0	0	4	0	0	0
	-	6	9	11	0	0	18	0	0	14	20	0	1
June	+	0	5	0	0	1	4	0	0	13	33	0	1
	-	0	0	0	0	0	5	0	0	23	60	0	0
July	+	0	0	2	0	0	9	6	0	31	11	52	12
	-	1	0	4	0	6	13	14	0	10	21	43	0
August	+	0	0	6	0	3	3	20	28	6	0	2	6
	-	0	1	1	0	2	10	20	32	5	0	10	14
September	+	12	0	7	30	9	0	20	20	27	1	0	0
	-	22	0	11	6	13	0	21	30	5	0	0	0
October	+	0	0	0	0	0	23	0	2	1	11	15	22
	-	0	0	0	0	0	5	0	44	0	15	17	10
November	+	0	13	12	1	0	0	0	1	0	0	0	0
	-	2	2	17	0	0	0	0	0	0	0	0	0
December	+	22	13	13	24	0	0	0	0	0	3	5	39
	-	11	29	36	1	0	0	2	0	0	16	10	13

*charges transported by point-discharge for each month*

12	13	14	15	16	17	18	19	20	21	22	23	Means
0	0	0	2	0	0	0	0	0	0	0	0	0.5
1	1	4	4	0	0	0	0	0	0	0	0	1.5
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	1	0	0	1	0	0	0	0	0	0	2.7
0	0	0	0	0	0	0	0	0	0	0	0	1.6
2	5	0	0	0	0	0	0	0	36	47	0	7.0
19	0	0	0	0	0	1	0	0	13	28	39	9.8
0	1	18	7	5	0	0	0	0	0	0	0	3.4
1	70	5	10	2	0	0	0	0	0	0	0	7.0
5	10	11	80	15	45	25	55	104	5	11	17	18.3
13	12	11	151	23	15	96	45	20	12	34	1	21.7
13	0	16	40	25	12	19	23	17	0	2	0	12.1
2	0	0	16	19	6	39	26	3	0	2	0	9.4
5	17	2	52	21	27	4	18	0	30	25	0	11.5
22	0	14	5	55	48	11	48	12	7	0	0	13.2
0	0	0	0	0	0	0	0	0	0	0	2	5.3
0	0	0	0	0	0	0	0	0	0	0	44	6.3
1	48	8	1	2	2	19	11	0	0	0	0	6.9
0	28	13	1	6	2	18	17	0	0	0	0	7.3
0	0	0	0	0	0	0	0	0	0	0	0	1.3
0	0	0	0	0	0	0	0	0	0	0	0	0.9
31	8	21	24	6	3	2	5	6	15	28	8	11.7
11	83	66	14	15	1	1	7	1	27	24	38	17.0



#### IV. IONOSPHERE

The following tables give the values of mean ionospheric absorption at oblique incidence (A3) for certain zenith distances of the Sun ( $\alpha$ ) expressed in decibels (dB). Values for ground sunset (SS) and ground sunrise (SR) are given for periods of 20 minutes centered on the times of  $\alpha = 90^\circ$ . Night values have been determined by taking the periods ranging from  $\alpha = 100^\circ$  to 23 00 GMT.

The sky wave of the transmitter Ceskoslovensko ( $f = 272$  kHz) has been recorded since January 1967. The geographical coordinates of the reflection point are  $48.4^\circ\text{N}$ ,  $17.1^\circ\text{E}$ . Because of reconstruction works on the transmitter Ceskoslovensko the absorption measurement at 272 kHz and the publication of data were suspended from April 1975 till September 1978.

The tables were compiled by F. MÄRCZ. The equipment and the method have been described in the papers by P. BENCZE and F. MÄRCZ: „Atmosphärisch-elektrische und ionosphärische Messungen im Observatorium bei Nagycenk”. Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967, as well as by P. BENCZE, J. HORVÁTH and F. MÄRCZ: „A new equipment for the measurement of ionospheric absorption” Geophysical Observatory Report of the Geodetic and Geophysical Research Institute of the Hungarian Academy of Sciences, Year 1975. Observatory of Nagycenk, Sopron, 1976. Further informations are given by P. BENCZE and F. MÄRCZ: „The Geophysical Observatory near Nagycenk. II. Atmospheric electric and ionospheric measurements”. Acta Geod. Geoph. Mont. Hung. 16 1981 353-357.

*Mean ionospheric Absorption L'(dB) at Oblique Incidence (A3)**f = 272*

January

Date of the night	SS	Night	SR
1/2	X	X	X
2,3	47,2	25.0	33.2
3/4	35.2	25.7	35.2
4 5	37.7	18.1	28.2
5/6	27.2	21.4	31.7
6,7	37.7	27.2	23.8
7,8	30.3	25.7	30.3
8,9	47.3	25.7	30.3
9 10	30.3	22.7	33.2
10,11	33.2	21.4	33.2
11/12	41.2	24.4	41.2
12,13	37.7	24.4	37.7
13,14	21.0	27.2	28.2
14,15	31.7	23.8	31.7
15,16	35.2	24.4	30.3
16,17	47.2	25.7	29.2
17,18	47.2	28.2	35.2
18,19	47.2	31.7	X
19,20	47.2	25.7	35.2
20/21	35.2	23.2	37.7
21,22	41.2	25.0	29.2
22 23	41.2	21.8	35.2
23 24	41.2	23.8	25.0
24 25	37.7	20.6	22.2
25/26	25.0	19.2	19.9
26 27	23.2	21.4	X
27/28	25.7	21.4	26.4
28/29	33.2	23.2	33.2
29 30	21.0	18.3	25.0
30/31	33.2	21.4	29.2
31/1	24.4	23.2	27.2
Median values	35.2	23.8	30.3

## February

Date of the night	SS	Night	SR
1/2	24.4	22.7	24.4
2/3	33.2	22.2	30.3
3/4	33.2	25.7	35.2
4/5	31.7	25.7	30.3
5/6	27.2	20.6	28.2
6/7	29.2	26.4	37.7
7/8	33.2	18.6	X
8/9	35.2	18.6	26.4
9/10	31.7	22.2	29.2
10/11	33.2	26.4	33.2
11/12	30.3	24.4	41.2
12/13	25.0	23.8	25.7
13/14	31.7	27.2	33.2
14/15	33.2	29.2	31.7
15/16	27.2	29.2	30.3
16/17	28.2	23.8	23.8
17/18	24.4	21.4	31.7
18/19	29.2	30.3	41.2
19/20	37.7	X	X
20/21	35.2	X	X
21/22	35.2	22.2	27.2
22/23	47.2	27.2	27.2
23/24	30.3	20.6	X
24/25	41.2	21.4	26.4
25/26	29.2	21.0	28.2
26/27	30.3	23.2	25.7
27/28	28.2	20.2	27.2
28/1	X	X	X
Median values	31.7	23.2	29.2

March			
Date of the night	SS	Night	SR
1 2	33.2	21.8	X
2 3	35.2	21.4	28.2
3 4	31.7	16.3	27.2
4 5	30.3	17.8	23.2
5 6	27.2	22.7	29.2
6 7	19.2	23.2	23.2
7 8	31.7	21.4	28.2
8 9	31.7	21.4	21.8
9 10	27.2	15.9	18.1
10 11	17.8	14.5	25.7
11 12	22.7	17.6	18.6
12 13	27.2	19.5	25.0
13 14	22.7	16.9	22.7
14/15	26.4	18.1	23.2
15 16	23.2	18.6	20.6
16 17	31.7	18.9	24.4
17 18	X	X	X
18 19	25.7	19.9	33.2
19 20	23.8	19.5	19.2
20 21	X	14.6	X
21 22	25.0	21.0	25.0
22 23	27.2	16.9	X
23 24	31.7	18.3	X
24 25	25.7	16.9	19.5
25 26	30.3	18.1	19.2
26 27	27.2	X	X
27 28	23.8	17.8	18.1
28 29	22.7	16.7	19.2
29/30	18.1	17.8	23.2
30/31	31.7	16.9	15.2
31/1	31.7	19.9	23.8
Median values	27.2	18.1	23.2



## April

Date of the night	SS	Night	SR
1/2	19.2	17.8	23.2
2 3	24.4	23.8	26.4
3/4	25.7	23.8	28.2
4 5	21.4	16.9	24.4
5/6	19.2	16.7	22.7
6 7	21.4	20.2	19.5
7 8	21.4	21.8	23.8
8 9	19.5	18.6	30.3
9 10	35.2	16.5	23.2
10 11	28.2	22.2	22.7
11 12	23.8	17.3	22.7
12 13	21.4	18.6	22.2
13 14	25.7	19.2	23.2
14 15	X	X	X
15 16	20.6	17.3	19.9
16 17	27.2	20.2	21.8
17 18	47.2	21.8	23.2
18 19	18.9	18.1	20.2
19 20	19.9	16.7	26.4
20 21	27.2	16.1	19.5
21 22	17.3	24.4	21.4
22/23	27.2	22.2	17.6
23/24	X	21.4	29.2
24 25	27.2	22.2	25.0
25 26	35.2	21.4	25.0
26 27	25.7	21.0	19.9
27 28	25.7	22.2	X
28/29	29.2	21.4	24.4
29 30	29.2	16.9	21.8
30/1	18.6	19.9	23.8
Median values	25.0	20.2	23.2

May			
Date of the night	SS	Night	SR
1 2	37.7	22.7	30.3
2/3	28.2	22.7	28.2
3/4	22.7	20.9	26.4
4 5	29.2	17.6	25.7
5 6	27.2	15.2	21.0
6/7	25.7	15.5	25.7
7 8	29.2	19.2	28.2
8 9	25.0	17.3	22.2
9 10	26.4	19.9	27.2
10 11	25.7	16.7	20.6
11 12	17.8	18.9	27.2
12 13	19.9	20.2	24.4
13 14	25.0	17.6	27.2
14 15	26.4	15.9	24.4
15 16	24.4	21.0	X
16 17	16.3	15.7	23.8
17 18	23.8	21.0	25.0
18 19	23.8	17.8	25.0
19 20	31.7	20.2	23.8
20/21	27.2	18.1	21.8
21/22	21.0	16.9	26.4
22 23	X	X	X
23 24	35.2	17.8	20.2
24/25	30.3	20.2	22.2
25/26	35.2	22.2	X
26/27	29.2	21.0	25.7
27 28	29.2	24.4	29.2
28 29	31.7	21.4	24.4
29/30	27.2	22.2	26.4
30/31	29.2	19.2	22.2
31/1	33.2	18.9	27.2
Median values	27.2	19.2	25.4

June			
Date of the night	SS	Night	SR
1 2	28.2	19.9	25.7
2 3	30.3	21.8	22.2
3,4	30.3	21.0	23.8
4/5	29.2	21.0	20.2
5,6	23.8	21.0	23.2
6/7	35.2	23.2	29.2
7/8	25.7	21.4	35.2
8 9	27.2	21.0	21.8
9/10	25.7	16.1	30.3
10 11	29.2	23.8	30.3
11/12	27.2	21.4	23.8
12/13	35.2	27.2	31.7
13/14	28.2	19.5	30.3
14/15	31.7	21.0	37.7
15/16	30.3	22.7	21.8
16/17	35.2	22.2	27.2
17,18	33.2	18.6	21.8
18/19	33.2	21.4	24.4
19 20	24.4	21.0	27.2
20 21	18.6	19.5	24.4
21/22	31.7	23.2	29.2
22 23	27.2	23.8	X
23/24	29.2	20.2	26.4
24/25	21.8	20.2	26.4
25/26	25.7	17.8	22.7
26 27	27.2	25.0	29.2
27 28	20.2	18.3	35.2
28/29	23.8	19.2	24.4
29 30	23.8	22.7	28.2
30/1	23.8	17.8	28.2
Median values	27.7	21.0	26.4

July			
Date of the night	SS	Night	SR
1/2	24.4	23.2	28.2
2/3	24.4	20.2	28.2
3/4	X	21.0	25.7
4/5	26.4	18.3	20.6
5/6	23.2	23.2	31.7
6/7	29.2	24.4	23.2
7/8	31.7	22.7	28.2
8/9	26.4	23.8	24.4
9/10	30.3	24.4	33.2
10/11	27.2	21.8	X
11/12	26.4	33.2	31.7
12/13	33.2	23.8	28.2
13/14	23.8	25.7	28.2
14/15	25.7	22.7	29.2
15/16	26.4	19.2	31.7
16/17	37.7	20.2	28.2
17/18	33.2	21.4	29.2
18/19	28.2	21.8	28.2
19/20	31.7	23.8	30.3
20/21	30.3	23.2	25.7
21/22	31.7	X	X
22/23	X	X	X
23/24	X	X	X
24/25	X	X	X
25/26	X	X	X
26/27	X	X	X
27/28	25.7	21.8	41.2
28/29	27.2	23.8	25.0
29/30	26.4	17.6	26.4
30/31	27.2	21.4	37.7
31/1	28.2	23.8	27.2
Median values	27.2	22.7	28.2

August			
Date of the night	SS	Night	SR
1/2	27.2	17.6	23.8
2/3	X	X	X
3/4	33.2	23.8	29.2
4/5	29.2	X	X
5/6	27.2	23.7	25.0
6/7	26.4	23.8	30.3
7/8	X	X	X
8/9	23.8	23.2	27.2
9/10	33.2	23.8	31.7
10/11	28.2	23.2	24.4
11/12	30.3	21.4	X
12/13	29.2	23.8	25.7
13/14	25.0	20.2	35.2
14/15	29.2	21.8	23.2
15/16	28.2	18.3	23.8
16/17	25.0	20.6	X
17/18	30.3	18.3	26.4
18/19	24.4	17.3	24.4
19/20	31.7	16.1	28.2
20/21	29.2	21.0	X
21/22	27.2	17.8	25.0
22/23	25.0	20.6	25.7
23/24	25.7	22.2	28.2
24/25	27.2	19.9	41.2
25/25	33.2	18.9	26.4
26/27	21.8	18.1	20.6
27/28	25.7	17.3	25.7
28/29	25.7	18.1	28.2
29/30	30.3	16.7	21.4
30/31	28.2	18.1	28.2
31/1	27.2	18.9	27.2
Median values	27.2	20.1	26.4

## September

Date of the night	SS	Night	SR
1/2	25.7	17.6	28.2
2 3	24.4	18.9	30.3
3/4	31.7	19.5	30.3
4 5	22.7	15.9	27.2
5/6	28.2	18.1	28.2
6/7	26.4	X	X
7 8	27.2	23.8	30.3
8 9	33.2	18.9	41.2
9 10	35.2	23.8	33.2
10/11	33.2	20.6	33.2
11/12	31.7	20.6	33.2
12/13	41.2	18.3	28.2
13/14	27.2	18.3	33.2
14/15	33.2	19.2	37.7
15/16	25.7	18.1	30.3
16/17	37.7	16.1	27.2
17/18	24.4	16.1	23.2
18 19	22.2	17.6	27.2
19/20	22.7	18.3	29.2
20/21	25.0	18.6	25.7
21 22	31.7	22.7	37.7
22/23	X	19.2	27.2
23 24	25.7	16.5	25.7
24/25	29.2	18.6	24.4
25/26	24.4	23.2	28.2
26 27	23.2	27.2	23.2
27/28	24.4	17.8	22.7
28 29	22.7	15.4	X
29/30	23.2	17.1	23.8
30 1	29.2	16.1	25.0
Median values	26.4	18.3	28.2

October			
Date of the night	SS	Night	SR
1/2	25.7	17.8	26.4
2/3	23.8	17.8	24.4
3/4	25.0	X	25.7
4/5	31.7	18.1	25.7
5/6	27.2	18.3	23.2
6/7	19.2	15.7	25.0
7/8	X	X	X
8/9	25.7	15.9	21.4
9/10	19.9	17.3	21.4
10/11	23.2	16.9	19.2
11/12	22.2	16.9	22.7
12/13	18.1	15.1	23.2
13/14	18.9	15.9	22.7
14/15	26.4	17.1	25.0
15/16	28.2	X	28.2
16/17	25.7	18.3	24.4
17/18	23.8	18.9	27.2
18/19	25.7	19.5	31.7
19/20	21.4	17.3	27.2
20/21	23.8	19.5	24.4
21/22	21.4	15.9	29.2
22/23	22.7	15.7	17.6
23/24	20.6	15.7	19.9
24/25	25.0	16.1	25.0
25/26	21.8	18.3	28.2
26/27	29.2	19.5	41.2
27/28	31.7	17.3	25.0
28/29	22.2	19.9	27.2
29/30	23.8	19.2	25.0
30/31	21.8	17.3	23.8
31/1	23.8	16.9	27.2
Median values	23.8	17.3	25.0

November			
Date of the night	SS	Night	SR
1 2	25.0	19.5	30.3
2/3	24.4	22.2	23.8
3 4	30.3	18.1	22.2
4 5	16.1	17.6	19.9
5 6	22.2	18.6	23.8
6/7	31.7	19.9	29.2
7 8	22.2	23.2	28.2
8 9	28.2	23.8	29.2
9 10	37.7	17.8	25.0
10 11	27.2	18.1	22.2
11 12	23.8	23.2	29.2
12 13	17.3	18.1	33.2
13 14	41.2	23.8	30.3
14 15	35.2	21.0	22.2
15 16	30.3	18.3	18.1
16 17	X	19.5	23.8
17 18	25.7	19.5	23.2
18 19	23.8	18.1	24.4
19,20	X	21.0	28.2
20 21	26.4	16.1	28.2
21 22	33.2	16.7	33.2
22 23	33.2	16.1	25.0
23/24	31.7	25.7	37.7
24/25	41.2	23.8	28.2
25 26	35.2	18.6	23.8
26 27	26.4	18.1	27.2
27 28	29.2	19.5	33.2
28/29	35.2	23.8	25.0
29 30	X	X	X
30 1	41.2	21.8	47.2
Median values	29.2	19.5	27.2

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December			
Date of the night	SS	Night	SR
1/2	35.2	25.0	35.2
2/3	27.2	19.5	25.7
3/4	29.2	18.1	26.4
4/5	27.2	21.4	19.9
5/6	25.0	18.6	23.2
6/7	29.2	21.0	33.2
7/8	31.7	24.4	27.2
8/9	41.2	24.4	30.3
9/10	28.2	19.2	26.4
10/11	47.2	23.8	41.2
11/12	27.2	23.8	30.3
12/13	33.2	X	28.2
13/14	25.7	X	37.7
14/15	X	X	X
15/16	X	X	X
16/17	41.2	24.4	33.2
17/18	25.7	23.8	27.2
18/19	41.2	22.7	37.7
19/20	28.2	18.1	33.2
20/21	29.2	27.2	47.2
21/22	37.7	26.4	37.7
22/23	37.7	21.0	30.3
23/24	23.8	22.2	37.7
24/25	27.2	23.2	35.2
25/26	33.2	27.2	35.2
26/27	31.7	25.0	29.2
27/28	31.7	25.7	30.3
28/29	37.7	23.2	X
29/30	37.7	25.7	30.3
30/31	37.7	23.8	29.2
31/1	31.7	21.4	31.7
Median values	31.7	23.8	30.3





