GEOPHYSICAL OBSERVATORY REPORT

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

YEAR

1985

OBSERVATORY OF NAGYCENK

SOPRON

1986

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OBSERVATORY OF NAGYCENK

REPORT ON

I. EARTH CURRENTS
II. GEOMAGNETISM
III. ATMOSPHERIC ELECTRICITY
IV. IONOSPHERE
V. AN UNEXPLAINED CHANGE IN THE GEOELECTRIC ACTIVITY OF THE OBSERVATORY NAGYCENK

EDITED BY THE DIRECTOR
SOPRON
1986

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PREFACE

The present Report of the Nagycenk Observatory is the 29. 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
Director

I. EARTH CURRENTS

The coordinates of the Observatory are:

$\varphi = 47^{0}38'$ $\lambda = 16^{0}43'$

$\Phi = 47.2^{0}$ $J = 98.3^{0}$

All times are given in CET (i.e. UT+1h), nearly (—7 min) 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-sca'e is linear; its steps correspond to 1.8 mV/km. The monthly mean T-valures 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 mni.	29	43	67	88	110	131	191	234	339

See also Part V. o this Report (p 137) on an unexplained change in the apparent scale value of the component E_y.

All values in the table are given 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 occurence 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 μV/km) are published for each month and for the years. As the bands where amplitudes are determined have different bandwidths, amplitudes are comparable in different bands only after a correction for bandwidth. Data for the same band are, however, directly comparable. Basic data are estimated amplitudes in halfhour intervals.

VI. Micropulsation indices for the year 1985. 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. A. 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.

I. Activity indices T and K_1—K_5

January

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	23343669	36	7	4	5	3	7
2.	33333217	25	7	3	4	3	2
3.	52133114	20	6	2	4	2	3
4.	41231214	18	6	3	4	2	3
5.	11111113	10	6	2	3	2	1
6.	21001212	9	5	2	4	1	1
7.	11100111	6	4	1	4	1	0
8.	11010379	22	5	2	5	2	6
9.	67789794	57	7	6	6	4	6
10.	45246493	37	8	4	5	4	6
11.	31332354	24	6	2	5	3	5
12.	23534555	32	7	2	5	3	5
13.	33323452	25	7	3	5	3	3
14.	22122721	19	6	2	4	1	3
15.	21112129	19	6	1	4	2	2
16.	54465999	51	7	3	4	3	2
17.	33466596	42	6	2	4	2	2
18.	23344432	25	5	3	4	2	2
19.	21112122	12	3	1	4	1	2
20.	10002242	11	3	1	4	2	2
21.	13322211	15	3	1	4	2	1
22.	01121235	15	4	2	5	1	3
23.	36586527	42	7	4	5	3	6
24.	10111222	10	6	3	4	1	2
25.	23132111	14	6	2	5	2	2
26.	01124332	16	6	3	4	1	2
27.	21111144	15	4	3	4	2	3
28.	66336999	51	5	3	6	9	7
29.	72131169	30	5	2	5	3	4
30.	93112544	29	6	3	4	3	4
31.	53333232	24	6	3	5	2	3

Monthly averages:

T (N)	2.609
T (E)	2.145
K_1	5.64
K_2	2.52
K_3	4.45
K_4	2.42
K_5	3.23

February

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	42223423	22	7	4	4	2	2
2.	12223231	16	7	4	5	1	2
3.	21112231	13	6	2	4	1	2
4.	10111001	5	5	3	4	1	0
5.	15324653	29	6	3	6	3	2
6.	64767493	46	7	5	7	5	6
7.	52335425	29	8	4	4	3	4
8.	32144865	33	6	4	5	1	6
9.	23434433	26	7	3	5	3	4
10.	45534492	36	7	4	5	3	5
11.	12333544	25	7	4	5	2	3
12.	11322521	17	7	4	5	2	3
13.	00113394	21	8	4	5	1	3
14.	32445345	30	9	4	4	3	4
15.	32221113	15	7	5	4	2	2
16.	01233332	17	7	3	6	1	2
17.	23323321	19	7	3	4	2	2
18.	02111111	8	6	2	4	1	1
19.	01111122	9	6	2	4	1	2
20.	31111010	8	4	0	4	1	2
21.	01111123	10	4	1	4	2	1
22.	21012113	11	5	3	4	1	2
23.	13012123	13	4	1	4	1	3
24.	34322226	24	6	3	5	2	4
25.	22122341	17	6	3	4	2	2
26.	42110031	12	5	2	4	0	2
27.	12112129	19	7	2	5	1	3
28.	77577472	46	8	5	6	4	8

Monthly averages: T (N) 2.446
T (E) 1.982
K_1 6.39
K_2 3.11
K_3 4.64
K_4 1.86
K_5 2.93

March

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	13542215	23	8	4	6	3	4
2.	22326594	33	9	5	5	3	6
3.	23321225	20	7	3	4	2	3
4.	22111234	36	7	3	5	1	1
5.	52563799	46	8	5	6	6	8
6.	92455425	36	9	4	6	4	6
7.	32543795	38	8	5	5	3	6
8.	54575444	38	8	5	5	4	4
9.	21111102	9	7	3	4	1	0
10.	31163225	23	6	3	5	3	2
11.	20011311	9	4	1	4	3	0
12.	01111234	13	7	2	5	1	2
13.	10121100	6	7	2	4	0	0
14.	00112343	14	7	3	5	2	2
15.	23323111	16	6	3	5	2	1
16.	32123313	18	7	4	5	1	2
17.	32111124	15	7	4	4	2	2
18.	32111124	15	6	1	4	2	4
19.	11122342	16	6	3	4	3	3
20.	10122210	9	4	1	4	1	1
21.	12011111	8	4	2	4	2	1
22.	31012104	12	3	1	4	1	1
23.	11111111	8	4	2	4	1	1
24.	10111114	10	4	1	4	1	2
25.	10012131	9	4	1	4	1	1
26.	41111111	11	5	2	4	0	3
27.	10013233	13	4	1	5	1	3
28.	63211223	20	7	2	5	2	4
29.	11112233	14	7	3	4	1	2
30.	51113212	16	6	3	4	2	3
31.	21224121	15	5	3	5	2	1

Monthly averages: T (N) 2.085
T (E) 1.764
K_1 6.16
K_2 2.74
K_3 4.58
K_4 1.97
K_5 2.55

April

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	12556834	34	7	4	5	4	5
2.	12443462	26	9	5	6	3	3
3.	94233393	36	8	4	6	3	6
4.	23323444	25	6	3	5	3	3
5.	12222011	11	6	2	5	1	2
6.	11123122	13	6	3	5	1	1
7.	11221220	11	5	2	4	2	0
8.	00112134	12	6	3	4	2	2
9.	62239922	35	4	3	5	3	4
10.	02133223	16	6	2	5	2	1
11.	24112221	15	7	3	4	2	1
12.	11222121	12	6	3	4	0	1
13.	11121223	13	6	2	4	1	2
14.	22112013	12	4	1	4	1	2
15.	11011101	6	6	2	4	1	1
16.	12142112	14	5	4	5	2	2
17.	20122011	9	5	3	4	1	1
18.	40101100	7	4	2	4	1	2
19.	21232367	26	5	2	5	2	5
20.	47871128	38	5	2	5	3	5
21.	99994893	60	7	4	6	4	9
22.	42232211	17	6	1	4	2	1
23.	32353311	21	7	4	6	2	2
24.	44574211	28	8	3	5	3	3
25.	34334122	22	6	2	5	2	3
26.	79746658	52	7	5	6	4	8
27.	45336514	31	6	2	5	3	4
28.	98484421	40	5	3	5	5	6
29.	37612210	22	7	3	5	3	3
30.	11199967	43	7	5	7	6	5

Monthly averages: T(N) 2.729
T (E) 2.413
K_1 6.07
K_2 2.90
K_3 4.90
K_4 2.40
K_5 3.10

May

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	42247612	28	5	3	5	3	3
2.	46562111	26	6	2	5	3	4
3.	12232222	16	7	4	5	2	2
4.	12122311	13	5	1	5	2	2
5.	11111132	11	5	2	5	1	2
6.	33222221	17	7	3	5	2	3
7.	32201112	12	6	2	5	2	1
8.	22221121	13	6	0	4	2	1
9.	41121110	11	5	1	4	0	2
10.	00111113	8	5	3	5	1	1
11.	32211111	12	4	1	5	2	2
12.	11212122	12	4	2	4	1	2
13.	31111215	15	6	2	5	2	2
14.	22110131	11	5	2	4	1	2
15.	32122223	17	7	3	4	1	3
16.	12212343	18	5	2	4	2	2
17.	122212	10	6	2	4	2	2
18.	12112222	13	4	1	4	0	1
19.	12112231	13	4	1	4	1	2
20.	11000231	8	2	0	3	1	1
21.	21111122	11	6	2	4	0	2
22.	12210111	9	6	1	4	0	2
23.	42100011	9	4	1	4	1	1
24.	12011232	12	4	1	4	1	2
25.	01011324	12	5	1	4	0	2
26.	52213331	20	6	3	4	2	2
27.	11225211	15	6	3	4	0	1
28.	16111112	14	6	2	4	0	1
29.	13110211	10	4	1	4	1	0
30.	01111100	5	4	1	4	1	0
31.	32111115	15	4	2	4	1	1

Monthly averages: T (N) 1.459
T (E) 1.354
K_1 5.06
K_2 1.78
K_3 4.10
K_4 1.23
K_5 1.74

June

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	34532232	24	5	2	5	3	3
2.	21102122	11	5	1	4	0	2
3.	01001241	9	3	0	4	0	1
4.	11111211	9	5	1	4	0	1
5.	11111111	8	5	3	4	1	0
6.	31514926	31	6	3	5	2	5
7.	43344454	31	6	2	5	3	4
8.	43343322	24	7	4	5	2	1
9.	22322159	26	6	3	4	3	6
10.	65554231	31	7	4	5	3	6
11.	21122233	16	6	2	5	3	2
12.	42111211	13	5	2	4	0	2
13.	11111112	9	5	2	4	1	1
14.	21111102	9	3	0	4	1	1
15.	12101020	7	4	1	4	0	1
16.	00100001	2	4	1	4	0	0
17.	12113241	15	5	1	5	2	2
18.	11201221	10	4	2	5	1	1
19.	11111110	7	4	1	4	0	1
20.	03215613	21	3	0	5	3	3
21.	32122111	10	4	2	4	2	2
22.	14521111	16	4	1	5	2	2
23.	23213111	14	3	2	4	1	1
24.	11111211	9	4	2	4	0	1
25.	53621144	26	4	2	4	2	4
26.	42225554	29	6	3	5	4	5
27.	32322334	22	6	2	5	3	3
28.	25445232	27	7	3	6	4	4
29.	32243324	23	6	3	5	2	2
30.	21111224	14	7	2	4	1	2

Monthly averages: T (N) 1.862
T (E) 1.700
K_1 4.97
K_2 1.90
K_3 4.50
K_4 1.63
K_5 2.30

July

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	32122212	15	5	1	4	2	2
2.	11111111	8	7	3	4	0	0
3.	12201122	11	6	2	4	0	2
4.	43337577	39	7	4	5	5	7
5.	42333424	25	6	3	5	4	3
6.	44434456	34	7	4	5	4	5
7.	44333313	24	7	4	5	3	3
8.	22333344	24	7	3	4	2	5
9.	22111111	10	6	2	4	1	1
10.	11121334	16	7	2	4	1	2
11.	24632352	27	7	3	4	3	4
12.	87454697	50	7	4	5	4	7
13.	31234586	32	5	2	4	2	4
14.	33223111	15	5	2	4	2	2
15.	14111100	9	7	2	4	1	1
16.	12001111	7	5	0	4	0	1
17.	32135421	21	6	3	4	2	2
18.	32222225	20	7	3	4	2	4
19.	11222311	13	5	2	4	1	1
20.	03112212	12	6	1	4	0	2
21.	11111101	7	5	2	4	0	1
22.	11112122	11	4	2	4	0	1
23.	29833142	32	6	3	5	2	4
24.	52223226	24	6	2	4	2	3
25.	43333242	24	7	3	5	3	3
26.	23532255	27	7	4	4	3	4
27.	63345232	28	7	4	5	2	4
28.	43234322	23	8	4	5	3	3
29.	32302121	14	6	2	4	1	2
30.	12245312	20	6	1	5	2	2
31.	22256846	35	6	3	5	2	5

Monthly averages T (N) 2.386
T (E) 2.081
K_1 6.23
K_2 2.78
K_3 4.35
K_4 1.90
K_5 2.90

August

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	54234423	27	6	4	5	3	3
2.	22221233	17	6	2	4	2	3
3.	22111221	12	4	1	4	1	2
4.	22112211	12	5	2	4	1	1
5.	11101011	6	3	2	4	1	1
6.	11000021	5	3	2	4	0	0
7.	11100001	4	3	2	4	0	1
8.	11111111	8	5	2	4	1	2
9.	21001124	11	5	3	4	1	3
10.	22212222	15	6	2	5	2	2
11.	62111010	12	6	2	4	1	0
12.	11112488	26	4	2	5	4	4
13.	94646439	45	8	4	6	4	6
14.	32521212	18	7	3	5	2	3
15.	22223213	17	7	3	4	2	3
16.	11221233	15	7	2	4	1	2
17.	41122223	17	6	2	5	1	1
18.	22123235	20	7	3	5	3	4
19.	44212114	19	6	3	4	3	3
20.	33413312	20	7	3	5	2	2
21.	21223111	13	7	2	4	2	2
22.	42234466	31	7	3	4	3	5
23.	33254225	31	8	3	5	3	4
24.	31322012	14	7	3	5	0	1
25.	22332212	17	5	2	4	1	2
26.	32322224	20	7	2	4	1	3
27.	44243231	23	8	4	5	2	4
28.	31424444	26	8	4	4	2	3
29.	33445333	28	8	4	5	2	5
30.	23111132	14	7	2	4	1	2
31.	32233543	25	6	2	4	3	5

Monthly averages: T (N) 2.036
T (E) 1.859
K_1 6.00
K_2 2.78
K_3 4.42
K_4 1.78
K_5 2.64

September

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	11111122	10	5	2	4	1	1
2.	01111101	6	6	2	4	0	1
3.	11121101	8	5	2	4	1	0
4.	01100110	4	2	1	4	1	1
5.	00001022	5	3	1	3	1	1
6.	11112132	12	4	1	5	1	3
7.	32101114	13	6	2	4	0	3
8.	11113323	15	5	2	4	1	3
9.	11233323	18	6	2	5	2	3
10.	11222123	14	7	3	5	2	3
11.	21111132	12	5	1	4	0	2
12.	11111131	10	5	2	4	0	3
13.	00011110	4	3	0	4	0	1
14.	31479524	35	6	4	4	3	5
15.	11122195	22	7	3	4	1	4
16.	54437435	35	7	4	5	2	5
17.	32243333	23	7	4	5	3	4
18.	21133210	13	8	4	5	2	2
19.	21346549	34	6	3	5	3	6
20.	33445437	33	7	3	5	2	2
21.	33355444	31	8	$\bar{5}$	5	3	4
22.	22223321	17	8	5	5	2	3
23.	11225110	13	7	5	5	2	2
24.	01233454	22	7	6	5	3	3
25.	33233344	25	8	6	5	2	5
26.	31551135	24	7	6	5	2	2
27.	32333138	26	8	6	5	3	3
28.	31123221	$1\bar{5}$	7	4	5	3	1
29.	01132111	10	7	3	4	1	1
30.	21111124	13	7	6	5	1	1

Nonthly averages T (N) 1.983
T (E) 1.785
K_1 6.13
K_2 3.27
K_3 4.53
K_4 1.60
K_5 2.60

October

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	11001002	5	5	3	4	0	1
2.	20111022	9	4	3	4	1	2
3.	11122221	12	4	4	4	1	2
4.	21111214	13	3	2	4	2	2
5.	34747599	48	8	6	6	5	6
6.	64557855	45	7	5	6	4	6
7.	38333295	36	6	4	4	2	5
8.	62223414	24	7	4	4	2	4
9.	11211130	10	7	4	5	1	2
10.	11111012	8	7	4	4	2	2
11.	11122433	17	7	5	6	3	4
12.	42123343	22	8	6	4	3	3
13.	53323434	27	7	6	5	2	4
14.	23333343	24	7	5	5	2	1
15.	12454131	21	6	3	5	3	2
16.	22442321	20	7	5	5	1	4
17.	34242231	21	5	3	4	0	2
18.	32234325	24	7	4	4	2	3
19.	52434210	21	7	6	4	1	1
20.	01234120	13	8	3	4	1	2
21.	33436733	32	8	3	5	2	6
22.	32322242	20	8	5	4	2	3
23.	12334233	21	9	6	5	2	3
24.	22211151	15	7	4	4	1	2
25.	11122122	12	7	4	4	1	2
26.	11122001	8	7	3	4	1	1
27.	11111011	7	4	3	4	1	1
28.	21121000	7	5	3	4	0	1
29.	32132110	13	3	2	4	1	2
30.	00011122	7	5	2	4	1	1
31.	11113221	12	3	2	4	1	1

Monthly averages T (N) 2.000
T (E) 1.851
K_1 6.23
K_2 3.94
K_3 4.42
K_4 1.64
K_5 2.61

November

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	21232562	23	6	4	5	3	3
2.	01216969	34	6	4	5	1	6
3.	63343732	31	7	4	5	2	4
4.	32221442	20	7	4	5	3	4
5.	10111118	14	3	2	4	0	3
6.	12223331	17	7	3	4	2	2
7.	12111021	9	5	2	4	0	1
8.	20100132	9	5	3	4	0	1
9.	13134441	21	7	4	5	2	2
10.	33235436	29	9	6	5	3	4
11.	71132221	19	7	4	4	2	2
12.	01122112	10	6	3	4	1	0
13.	41235359	32	7	4	5	3	4
14.	67223232	27	7	4	4	1	3
15.	53137332	27	8	4	4	1	4
16.	13233323	20	9	4	5	3	2
17.	00133391	10	7	3	4	2	3
18.	22323244	22	$\bar{7}$	3	5	1	2
19.	23221121	14	7	3	4	1	1
20.	11121101	8	4	2	4	$\bar{0}$	0
21.	11011012	7	6	2	4	0	2
22.	21111122	11	5	$\bar{2}$	4	0	2
23.	01111122	9	7	3	4	0	1
24.	01111001	5	5	2	3	1	0
25.	11112100	7	4	1	4	1	1
26.	10110001	4	2	2	3	1	1
27.	04533611	23	7	4	5	3	4
28.	22221121	$1\bar{3}$	7	4	5	2	2
29.	00124399	28	5	3	5	3	7
30.	96549435	45	7	5	5	5	8

Monthly averages: T (N) 2.162
T (E) 1.888
K_1 6.20
K_2 3.27
K_3 4.37
K_4 1.57
K_5 2.63

December

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	11133227	20	7	3	4	2	2
2.	33223232	20	7	4	4	2	2
3.	22123421	17	9	4	4	2	2
4.	11224162	19	7	5	6	2	4
5.	12122221	13	7	3	4	2	2
6.	11122221	12	7	5	4	2	2
7.	01121121	9	6	4	4	1	1
8.	00111110	5	6	2	4	0	0
9.	12000013	7	5	2	4	1	1
10.	23246411	23	5	4	5	3	3
11.	42121111	13	7	4	4	2	2
12.	12011225	14	7	3	4	1	2
13.	44256524	32	5	4	6	3	4
14.	42111125	17	6	3	4	1	2
15.	43111013	14	5	2	5	1	3
16.	30111002	8	7	3	4	1	1
17.	32011111	10	6	3	4	1	2
18.	00323442	18	4	2	5	2	2
19.	33447885	42	6	3	4	3	6
20.	42111000	9	5	2	4	2	2
21.	11121010	7	6	3	4	1	1
22.	12121111	10	6	2	5	1	1
23.	00010011	3	3	1	4	1	1
24.	32121100	10	5	1	3	3	2
25.	10011123	9	7	4	4	0	2
26.	32111120	11	7	3	4	1	2
27.	11112146	17	7	3	4	1	2
28.	45656873	44	8	4	4	2	6
29.	12221001	9	7	2	4	0	1
30.	56584796	50	8	5	5	6	7
31.	32246591	32	9	7	5	3	5

Monthly averages T (N) 1.887
T (E) 1.710
K_1 6.35
K_2 3.23
K_3 4.29
K_4 1.71
K_5 2.42

II. Average amplitudes for different periods

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											January	North
1.	5	9	8	8	11	13	14	23	29	27	21	23
2.	8	10	5	9	11	13	16	26	22	23	20	22
3.	35	35	37	36	37	35	39	43	36	40	40	35
4.	37	57	52	53	66	56	57	48	52	53	60	53
5.	125	88	81	63	58	82	43	24	39	46	45	63
6.	—13	—28	—12	—10	—32	—9	—6	—21	—5	—34	—24	—31
											January	East
1.	10	10	9	8	16	19	21	31	35	37	34	39
2.	8	12	10	8	12	13	16	25	20	21	24	22
3.	35	35	34	37	37	37	35	42	35	38	39	33
4.	42	53	41	38	39	39	41	35	37	44	47	44
5.	84	76	38	66	51	38	44	34	28	38	37	42
6.	—1	—1	+10	—11	—5	—8	—18	+19	+31	+22	+23	+6
											February	North
1.	8	6	12	7	13	15	17	31	32	30	28	23
2.	11	12	12	8	10	16	14	23	26	25	24	20
3.	38	34	35	35	35	39	37	37	41	43	40	38
4.	46	45	49	40	51	61	54	41	48	59	44	57
5.	78	75	96	67	77	58	46	79	51	53	44	46
6.	—29	+2	—37	+5	—5	—15	—17	—11	+9	0	—30	—39
											February	East
1.	14	10	12	14	17	21	24	38	53	46	48	43
2.	14	11	13	9	16	17	19	25	28	30	30	28
3.	33	35	37	36	38	39	37	38	40	34	46	44
4.	36	38	48	41	48	47	44	50	43	47	41	48
5.	68	50	33	50	42	36	36	34	49	33	30	30
6.	+5	+5	+10	—6	+2	—13	—7	+1	+42	+37	+26	+19

and hourly means of earth current elements

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
21	19	19	19	18	16	14	10	9	11	11	10	15.3
23	23	20	19	17	17	14	13	9	10	12	16	15.8
42	40	40	41	37	36	38	35	33	35	33	38	37.3
50	57	59	42	45	63	48	62	64	53	67	84	55.8
42	38	87	81	75	109	117	136	155	133	178	89	83.2
−21	+10	+44	+15	+33	+22	+40	+17	+18	+42	−1	+4	
Component												
47	51	44	40	33	24	19	15	9	13	17	14	24.8
25	27	25	19	19	15	15	11	10	13	17	18	16.9
33	37	38	35	31	35	37	39	34	34	35	35	35.8
37	49	42	22	38	42	45	41	48	64	34	82	43.5
48	30	71	69	64	81	107	75	102	87	162	85	64.9
−11	−12	+3	−8	+12	−1	−5	−23	−5	−3	−11	−2	
Component												
24	24	21	22	17	17	16	17	16	13	12	15	18.2
20	19	19	18	18	19	16	17	15	13	12	16	16.8
40	39	39	41	36	35	37	38	38	38	37	41	38.0
50	53	48	46	48	39	37	46	39	41	44	46	47.2
73	60	62	53	64	98	114	114	179	88	111	114	79.2
−50	−3	+13	+33	+30	+18	+63	+17	+10	+11	+17	+10	
Component												
50	52	47	43	39	26	25	22	21	19	15	23	30.1
30	29	27	27	23	20	18	20	10	15	14	19	20.8
36	35	39	38	37	36	39	33	36	39	37	41	37.6
39	39	39	32	37	41	33	44	47	46	44	39	42.1
49	48	54	54	62	55	94	76	113	74	78	104	56.3
−11	−12	−25	+5	−3	−8	−17	−13	−8	−5	−6	−16	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											March	North
1.	13	13	11	12	13	16	25	27	30	22	26	26
2.	12	15	13	13	12	13	19	22	19	16	18	20
3.	39	38	37	36	36	37	38	43	36	41	39	44
4.	48	45	43	45	55	46	41	52	41	53	50	42
5.	105	120	84	58	53	39	56	29	27	42	43	42
6.	—22	—20	—12	+7	—12	—6	+12	+38	+39	—7	—64	—115
											March	East
1.	18	20	15	13	17	24	31	32	39	35	40	47
2.	17	13	9	12	15	15	19	22	22	21	26	24
3.	35	36	36	36	32	37	37	34	30	41	34	33
4.	44	35	35	38	41	30	27	38	35	34	39	33
5.	75	68	47	31	31	45	48	34	38	42	35	40
6.	+2	+5	+12	+4	+1	—7	—7	+15	+32	+33	+24	—15
											April	North
1.	9	9	12	18	20	24	31	22	25	25	24	23
2.	13	8	14	19	17	22	25	22	20	19	19	20
3.	35	38	40	39	38	38	42	42	42	38	38	41
4.	52	55	52	45	68	45	57	58	53	52	56	55
5.	134	101	195	157	82	58	52	40	54	80	78	65
6.	—16	+13	—4	—12	0	+38	+50	+83	+54	—33	—116	—166
											April	East
1.	16	13	19	23	28	28	32	31	37	42	44	41
2.	17	11	15	13	16	16	20	19	24	24	25	22
3.	38	38	39	35	37	35	37	40	38	36	40	39
4.	49	55	49	43	41	36	45	38	43	39	55	50
5.	78	62	76	110	79	68	58	40	45	79	55	61
6.	—16	+1	+29	+2	+21	+26	+41	+50	+73	+54	+19	—15

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
21	20	20	19	15	16	17	18	17	16	12	10	18.1
15	13	10	12	9	14	13	17	15	15	9	13	14.5
42	39	35	38	39	37	35	37	35	37	38	35	38.0
52	53	47	56	43	41	37	44	44	49	45	43	46.5
30	42	36	53	69	98	81	107	97	183	77	91	69.3
—103	—55	+8	+73	+66	+16	+20	+39	+50	+36	+6	+5	
Component												
43	50	54	53	39	30	24	21	20	20	14	16	29.8
23	31	24	26	22	17	14	17	13	13	14	15	18.5
35	33	35	37	34	40	35	36	37	35	39	33	35.4
40	48	43	52	41	47	36	85	46	39	42	47	41.5
26	34	30	34	44	35	71	69	64	121	92	68	50.9
—24	—20	—15	0	—6	—2	0	—17	—14	—20	+15	+5	
Component												
22	22	19	17	11	13	11	11	12	11	10	11	17.1
23	17	17	16	13	8	12	13	10	12	11	11	15.9
43	51	39	41	38	38	38	38	37	35	37	38	39.3
58	77	57	56	62	43	44	50	40	47	43	51	53.2
40	51	76	51	74	81	115	76	112	105	123	77	86.5
—143	—53	+5	+60	+70	+59	+21	+22	+15	+30	+22	0	
Component												
43	43	41	35	33	22	18	13	13	13	16	16	27.5
27	30	26	20	22	20	13	11	8	12	14	14	18.3
46	55	47	34	37	37	37	37	37	36	38	38	38.8
54	65	56	58	47	57	52	46	44	45	41	45	48.0
38	33	58	92	95	79	86	68	93	82	92	55	70.5
—42	—17	—21	—2	—19	—4	—61	—47	—35	—13	—14	—9	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											May	North
1.	5	7	14	17	18	17	19	19	15	17	12	10
2.	7	9	19	16	17	15	15	16	12	10	8	5
3.	35	34	40	37	37	38	36	38	34	37	33	35
4.	38	40	38	36	47	50	41	39	49	37	40	42
5.	79	57	64	77	31	44	63	34	23	33	37	35
6.	+18	+34	+25	+19	+33	+66	+39	+27	—23	—93	—137	—155
											May	East
1.	10	9	11	19	21	20	23	31	29	30	31	27
2.	7	5	12	11	9	10	12	19	16	18	18	16
3.	38	36	36	35	36	35	31	28	34	34	34	35
4.	31	38	37	43	27	24	33	24	35	35	34	39
5.	52	52	47	37	37	35	23	35	33	27	41	23
6.	+17	+14	+17	+9	+4	+21	+31	+54	+64	+21	—7	—44
											June	North
1.	9	14	12	15	17	20	21	20	16	18	14	13
2.	17	15	9	14	12	19	19	20	13	7	13	10
3.	38	37	37	35	37	37	41	37	38	38	37	37
4.	41	46	42	48	44	46	49	44	42	46	39	43
5.	65	74	84	64	56	60	62	37	38	36	39	38
6.	+25	+14	+13	+27	+46	+56	+36	+20	—9	—47	—118	—147
											June	East
1.	18	19	13	16	17	21	23	29	29	26	28	27
2.	15	18	8	12	10	14	18	11	17	16	13	18
3.	35	38	32	35	36	35	33	34	35	35	35	36
4.	44	33	52	45	32	32	43	26	25	32	46	45
5.	74	57	53	26	37	44	29	36	52	31	22	32
6.	+27	+14	+35	+28	+30	+30	+38	+48	+65	+61	0	—39

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
10	12	10	12	6	4	7	12	8	8	12	6	11.5
8	4	10	2	6	5	7	11	9	11	11	9	10.1
37	37	36	33	34	35	30	34	37	36	37	35	35.6
30	35	31	44	34	31	36	38	39	39	39	35	38.7
36	36	38	55	43	39	49	44	59	44	69	63	48.0
—116	—50	+17	+41	+41	+36	+32	+11	+27	+35	+38	+35	
Component												
31	27	29	26	22	15	17	15	9	9	17	9	20.3
13	16	16	16	11	11	10	12	9	9	14	13	12.6
31	39	36	35	32	31	34	35	33	34	36	34	34.3
35	41	33	36	33	35	35	36	39	32	41	35	34.6
29	27	34	46	54	51	46	59	42	52	61	60	42.0
—30	+3	+18	—6	—17	—15	—44	—55	—37	—22	+4	+2	
Component												
7	10	9	8	10	8	7	8	11	7	12	12	12.4
5	7	7	6	7	5	8	12	11	5	11	10	10.9
38	37	35	37	36	35	36	34	34	33	37	38	36.6
49	41	43	37	43	35	37	47	32	39	39	35	42.0
48	70	64	58	43	79	55	50	98	84	81	116	62.5
—126	—89	—40	0	+32	+72	+39	+42	+51	+38	+38	+28	
Component												
26	25	23	24	23	20	15	10	11	8	14	14	20.0
11	15	19	13	13	14	15	10	11	7	13	10	13.4
39	36	35	41	37	36	35	38	37	34	38	37	35.9
55	56	39	38	50	36	37	43	53	38	59	41	41.7
40	38	58	53	48	79	60	82	60	81	61	96	52.0
—13	—3	—22	—36	—50	—33	—64	—82	—41	+3	+13	—7	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											July	North
1.	17	20	20	21	23	26	27	29	28	27	23	18
2.	9	15	12	15	16	22	19	20	20	19	14	15
3.	35	39	37	36	34	39	34	38	39	40	39	41
4.	50	45	52	41	48	53	44	61	48	52	51	50
5.	81	101	70	62	46	57	77	42	30	34	66	64
6.	0	—12	+14	—15	+41	+48	+70	+16	+25	—8	—107	—130
											July	East
1.	16	18	17	17	19	23	33	34	45	46	43	42
2.	12	13	9	10	10	15	17	23	23	20	20	22
3.	38	37	37	37	34	37	37	37	33	35	34	32
4.	41	46	46	39	34	32	37	31	39	35	37	44
5.	63	48	46	37	53	43	37	31	16	39	64	63
6.	—6	+8	+15	+8	+14	+16	+38	—7	+38	+35	+32	+29
											August	Nort
1.	11	13	16	16	25	26	29	27	21	19	17	15
2.	7	8	14	14	15	17	19	20	16	12	13	10
3.	35	39	37	38	37	37	42	36	39	34	36	44
4.	50	59	51	41	52	50	53	51	35	35	37	42
5.	71	63	84	57	45	56	38	31	44	44	68	53
6.	+20	+8	—4	+12	+18	+55	+56	+7	—4	—75	—138	—139
											August	East
1.	15	18	17	20	25	27	41	49	41	39	44	35
2.	9	10	12	12	17	15	23	20	21	25	21	20
3.	36	37	35	36	37	36	33	34	35	33	32	37
4.	40	51	57	44	37	39	36	34	30	27	42	40
5.	68	52	38	39	57	35	33	35	42	48	52	53
6.	+19	+22	+1	+9	—1	+23	+56	+69	+82	+64	—4	—35

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
20	17	17	17	15	13	13	14	14	13	14	15	19.2
16	17	12	12	8	9	8	10	12	12	9	13	13.9
38	38	34	38	36	37	38	36	33	35	33	33	36.7
55	54	49	44	41	38	40	38	39	36	42	44	46.9
93	60	93	61	85	69	82	103	142	109	114	84	76.0
—107	—84	+30	+18	+22	+39	+10	+5	+29	+52	+53	—11	
Component												
42	37	31	32	24	26	21	18	13	19	17	17	27.1
24	26	21	19	35	20	16	11	14	11	13	15	17.5
37	38	44	37	38	35	36	37	34	34	34	38	36.3
62	38	51	43	52	47	53	52	38	63	52	43	44.0
63	64	63	80	76	84	96	101	147	57	71	56	62.4
+4	—1	+4	0	—19	—17	—23	—52	—60	—26	—20	—12	
Component												
15	16	15	12	8	8	10	16	15	9	13	13	16.0
10	9	10	8	8	5	6	15	13	10	14	12	11.9
37	39	36	35	37	35	32	33	37	33	37	35	36.7
51	45	42	42	47	33	31	35	34	35	38	55	43.5
55	45	59	42	35	61	79	77	85	155	109	125	65.9
—103	—49	+10	+40	+55	+64	+23	+38	+34	+36	+25	+12	
Component												
35	41	36	33	24	28	19	19	16	13	20	21	28.2
21	20	19	20	16	16	13	15	15	16	16	16	17.0
31	39	33	37	38	34	34	38	39	36	37	34	35.5
45	45	45	38	38	39	37	44	42	46	44	47	41.1
51	41	50	49	39	60	84	71	91	106	153	99	60.3
—33	—32	—23	—15	—29	—21	—44	—55	—38	—9	—22	+22	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											September	North
1.	7	10	13	14	19	23	29	24	25	22	22	19
2.	9	11	12	14	15	19	22	23	18	16	14	19
3.	35	33	34	35	37	35	39	38	38	36	37	41
4.	37	50	39	42	38	36	43	50	43	32	47	50
5.	64	54	64	58	32	43	41	38	35	65	64	69
6.	+15	—4	+14	—8	+5	+5	+28	+35	+15	—45	—95	—119
											September	East
1.	11	11	12	17	22	29	32	35	40	40	42	43
2.	13	13	13	15	16	22	25	25	28	27	29	29
3.	31	32	29	34	31	35	27	32	30	29	32	37
4.	36	37	41	35	25	32	44	32	32	31	37	49
5.	59	50	40	40	41	38	37	52	43	49	49	39
6.	+24	+12	+16	+10	+12	+7	+34	+74	+73	+48	+32	+1
											October	North
1.	5	12	8	10	12	17	26	30	24	26	22	20
2.	13	12	8	13	12	15	21	25	24	16	15	16
3.	33	35	36	37	37	35	39	38	42	39	39	36
4.	32	48	37	47	40	43	47	51	50	42	52	49
5.	59	74	83	54	71	41	48	42	27	35	63	70
6.	—6	—10	—5	+9	—22	—3	+9	+31	+37	+9	—54	—108
											October	East
1.	7	12	9	16	21	28	33	39	45	44	44	52
2.	16	19	13	18	21	26	30	34	30	36	34	34
3.	27	33	27	28	29	27	32	30	29	24	28	30
4.	37	39	38	36	39	42	34	39	44	33	40	44
5.	52	55	44	39	48	35	48	46	46	52	53	52
6.	+14	+19	+21	+2	—7	+1	+9	+34	+47	+38	+45	+20

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
17	21	19	14	11	11	13	13	13	11	10	13	16.4
19	16	14	11	7	8	13	11	11	12	16	11	14.2
44	41	38	37	34	35	37	33	35	33	35	37	36.5
49	52	43	44	37	36	41	31	38	38	37	52	41.9
74	76	78	47	46	54	77	83	92	122	115	91	65.9
—97	—53	+4	+46	+52	+55	+38	+47	+56	+9	—13	+13	
Component												
44	45	40	37	28	28	17	17	16	14	17	13	27.1
33	32	28	23	22	18	19	16	13	14	16	19	21.2
37	37	37	31	34	33	35	29	34	35	34	35	32.9
47	42	36	37	43	32	35	46	38	49	46	42	38.5
64	56	80	46	50	62	64	61	118	103	110	83	59.8
—20	—50	—29	—35	—20	—26	—44	—41	—32	—21	—23	0	
Component												
21	21	18	15	12	13	12	13	8	9	8	9	15.5
17	16	12	10	15	16	16	17	14	11	11	14	15.0
39	40	34	35	37	37	38	37	37	38	36	38	37.3
49	42	39	33	41	44	40	31	36	53	41	44	43.0
40	38	39	60	42	92	140	107	66	74	66	82	63.0
—102	—44	+9	+48	+32	+49	+33	+33	+26	+16	+23	—9	
Component												
49	52	51	44	37	31	21	21	17	13	10	12	29.5
31	37	34	28	24	20	21	17	16	15	14	15	24.3
32	32	31	28	27	24	31	32	31	31	32	31	29.4
40	45	34	40	42	38	48	45	34	42	42	42	39.9
46	51	56	67	55	94	113	113	77	98	54	57	60.5
—8	—30	—15	—1	—10	—20	—44	—44	—38	—46	+4	+6	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											November	North
1.	7	8	8	9	10	14	17	25	23	17	18	20
2.	13	14	11	14	11	19	16	20	25	19	20	24
3.	37	37	36	35	43	38	39	37	34	38	38	40
4.	55	38	37	44	38	53	49	44	53	53	49	47
5.	75	70	65	76	59	45	53	38	28	20	43	56
6.	—27	—30	—18	—48	—18	—3	+1	+21	+24	+6	—33	—57
											November	East
1.	12	13	13	22	25	30	34	40	40	37	43	50
2.	13	14	10	19	21	28	26	25	24	23	29	28
3.	32	29	30	26	28	25	28	27	35	29	28	32
4.	44	30	34	37	33	40	49	35	41	46	38	37
5.	43	54	54	38	59	53	43	49	44	45	48	52
6.	—7	+10	—12	—22	—13	—10	—15	—16	+40	+40	+41	+29
											December	North
1.	1	8	6	6	7	9	9	19	25	19	20	19
2.	6	12	12	13	12	8	15	16	25	23	20	23
3.	35	33	33	33	33	36	37	37	39	40	38	39
4.	35	32	39	43	38	46	39	34	45	42	45	40
5.	67	117	84	63	66	63	41	49	34	45	57	52
6.	—16	—31	—23	—13	—10	—31	—5	—13	+1	+6	—11	—23
											December	East
1.	15	12	10	17	20	24	26	34	46	39	44	52
2.	11	14	13	15	14	15	21	26	28	25	26	28
3.	28	27	28	28	32	30	27	26	32	33	31	29
4.	33	52	38	42	40	39	33	34	47	47	46	41
5.	58	56	41	42	54	48	46	41	39	51	52	57
6.	+19	—2	+5	+1	0	—14	—21	—13	+17	+36	+24	+6

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
21	18	16	17	13	11	13	13	11	13	12	10	14.3
23	22	20	17	17	16	15	20	12	10	17	12	17.0
40	40	35	37	36	34	34	31	37	35	34	34	36.6
44	43	46	38	35	37	41	32	44	37	38	40	43.1
59	61	45	60	74	77	90	109	92	71	125	91	66.0
—69	—10	+2	+39	+33	+17	+31	+50	+65	+60	—16	—15	
Component												
30	47	47	48	32	25	25	22	14	14	16	9	29.1
28	26	25	28	20	18	16	17	17	16	19	14	21.0
30	32	28	31	27	28	25	28	27	23	29	31	28.7
45	31	47	48	43	37	34	35	47	35	41	32	39.1
43	83	61	50	61	104	86	104	92	116	98	61	64.2
—5	+4	—19	—2	—5	—22	—35	—20	—4	0	—16	+8	
Component												
19	20	15	17	17	12	12	10	10	5	5	5	12.3
23	22	22	17	17	14	16	13	13	8	10	9	15.4
39	43	38	37	38	14	33	34	37	34	36	37	35.5
44	39	49	53	39	40	76	39	35	44	41	46	42.6
44	37	31	44	53	48	82	99	73	59	89	53	60.4
—24	+12	+11	+16	+30	+15	+29	+15	+38	+24	—1	+7	
Component												
55	62	59	43	37	33	27	17	15	12	9	11	30.0
35	38	30	30	25	23	20	13	14	12	12	14	20.9
28	28	30	24	25	18	31	31	26	32	30	33	28.6
36	42	27	38	38	33	39	41	44	28	38	42	39.1
57	48	60	66	53	64	123	96	82	80	59	83	60.7
+17	—3	—1	+2	—12	—13	—20	—12	—12	—2	—2	+1	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
										Year	1985	North
1.	8	11	12	13	15	18	22	25	24	22	21	19
2.	10	12	12	14	13	17	18	21	20	17	16	17
3.	36	36	37	36	37	28	39	39	38	39	38	39
4.	43	47	44	44	49	**45**	**48**	**48**	**47**	46	48	48
5.	84	83	88	71	56	54	52	40	36	44	54	55
6.	—4	—5	—4	—2	+4	+17	+23	+20	+14	—27	—77	—102
										Year	1985	East
1.	14	14	13	17	21	24	30	35	40	38	41	41
2.	12	13	11	13	15	17	21	23	23	24	24	24
3.	34	35	34	34	35	34	33	33	34	33	35	35
4.	40	42	43	40	36	36	39	35	37	37	42	43
5.	64	57	46	46	49	43	40	39	39	45	45	46
6.	+7	+9	+13	+7	+5	+7	+15	+28	+51	+41	+21	—3

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
18	18	16	16	13	12	12	13	12	11	11	11	15.5
17	15	14	12	12	11	12	14	12	11	12	15	14.3
40	40	37	37	37	36	35	35	36	35	36	37	36.8
48	49	46	44	43	40	42	41	40	44	43	48	45.2
53	51	59	55	59	75	90	92	104	102	105	89	68.8
−88	−36	+9	+36	+41	+38	+31	+28	+34	+32	+16	+7	
Component												
43	44	42	38	31	26	21	18	15	14	15	15	27.1
25	27	24	22	19	18	16	14	13	13	15	15	18.4
35	37	34	34	33	32	34	35	34	34	35	35	34.2
44	40	41	40	42	40	40	47	43	44	44	45	40.8
46	46	56	59	59	71	86	81	90	69	91	75	58.7
−14	−14	−12	−8	−13	−15	−33	−38	−27	−14	−6	−4	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
										Quiet	days	North
1.	5	8	9	9	2	4	18	17	19	15	15	14
2.	8	8	10	11	9	12	14	15	16	12	12	14
3.	34	35	34	32	40	40	36	36	36	37	34	35
4.	36	37	38	40	42	39	37	39	31	36	34	35
5.	28	29	40	31	29	41	33	23	26	26	37	42
6.	+4	0	−1	−3	+10	+29	+25	+22	+14	−32	−77	−104
										Quiet	days	East
1.	10	10	14	17	18	19	24	27	29	30	31	34
2.	10	10	10	11	12	16	17	33	19	19	19	20
3.	32	33	30	30	32	30	29	31	30	29	31	29
4.	30	32	32	28	30	31	31	28	29	28	34	32
5.	31	27	28	24	33	28	26	24	28	32	30	39
6.	+9	+2	−2	−8	−9	+1	+2	+10	+40	+34	+23	−4
										Disturbed	days	North
1.	9	14	16	14	23	23	28	42	41	36	29	26
2.	14	15	14	18	23	27	32	45	34	36	32	27
3.	39	42	39	44	43	46	56	51	46	53	26	44
4.	72	75	88	54	79	97	205	70	101	98	88	57
5.	333	318	317	298	174	160	100	138	84	98	116	101
6.	−17	+3	−54	−56	−46	−19	+16	+30	+84	+44	+6	−4
										Disturbed	days	East
1.	24	21	21	21	28	34	36	55	71	55	55	57
2.	21	19	17	25	27	27	30	45	45	34	32	35
3.	39	45	37	41	37	44	41	59	61	46	50	53
4.	79	70	125	57	41	95	60	60	62	88	69	64
5.	117	118	67	292	187	98	118	69	98	108	95	86
6.	+3	+34	+35	−7	+45	+97	+98	0	+79	+37	+19	−4

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
12	13	11	10	7	5	8	9	9	4	6	8	10.8
12	12	10	9	8	6	8	14	14	8	8	11	10.8
35	34	15	34	34	32	33	32	34	32	34	36	34.8
40	32	14	30	35	30	27	27	34	34	37	34	34.8
22	29	9	24	27	32	31	36	44	15	38	43	32.5
—90	—43	—11	+43	+36	+28	+22	+23	+34	+23	+27	+19	
Component												
30	31	26	27	22	15	8	14	10	7	10	9	20.2
16	19	16	18	13	13	12	12	12	9	11	10	16.3
32	37	30	30	28	29	30	15	33	32	31	32	30.8
31	31	29	27	28	28	27	29	41	30	35	35	30.8
28	27	31	32	32	31	33	38	37	50	47	41	32.5
—15	—22	—20	—15	—10	—11	—11	—18	—15	+8	+16	+17	
Component												
25	25	21	23	15	26	15	17	20	17	15	11	22.0
26	21	27	21	23	25	20	17	16	12	16	12	23.2
46	45	42	45	41	39	37	45	37	38	42	41	43.2
74	60	88	74	64	81	136	71	86	59	111	48	82.8
86	143	156	109	145	187	227	299	310	276	238	108	187.4
—71	+64	—9	—8	+56	+87	+52	—16	—12	—44	—39	—47	
Component												
56	55	59	48	39	34	28	26	23	20	25	19	37.9
32	32	35	36	27	26	17	23	23	18	21	17	30.7
39	39	43	30	42	30	36	38	30	36	39	30	41.4
60	75	36	50	71	46	93	69	43	47	39	74	13.0
70	163	187	137	73	243	240	274	240	200	232	69	152.1
—1	+40	—12	—43	—34	—32	—90	—98	—45	+7	—62	—7	

III.

Results of harmonical analysis of the daily variations

	A_1	φ_1	A_2	φ_2	A_3	φ_3	A_4	φ_4	A_5	φ_5	A_6	φ_6
					North Component							
January	27	181	11	292	9	176	6	322	2	209	6	295
February	22	171	17	280	9	107	8	277	11	168	7	267
March	28	139	41	276	29	125	28	300	4	72	8	150
April	34	112	60	285	50	129	21	321	4	261	6	2
May	58	108	51	309	36	153	9	339	1	151	5	326
June	62	105	54	285	21	131	4	265	4	174	7	35
July	38	99	47	281	34	150	17	287	2	125	14	338
August	49	119	53	299	33	151	7	347	1	59	7	35
September	38	128	46	289	26	118	15	344	4	70	7	127
October	25	135	37	275	28	109	21	306	7	167	4	285
November	24	173	34	252	12	144	19	318	8	53	5	39
December	21	189	11	246	4	152	8	288	4	163	2	72
YEAR	31	128	37	285	23	136	13	312	2	150	3	5
Q	33	116	35	285	26	137	10	301	3	108	2	78
D	31	258	26	259	33	76	11	50	9	206	20	5
					East Component							
January	9	318	5	171	11	64	6	275	2	278	2	50
February	12	335	9	164	12	42	8	270	2	11	4	73
March	11	10	6	192	14	67	7	261	5	179	3	265
April	37	356	10	243	17	104	13	279	3	285	6	351
May	29	5	3	334	25	126	11	332	7	207	5	344
June	47	12	7	141	16	130	11	297	10	226	13	6
July	31	336	8	63	7	68	6	200	1	97	7	303
August	40	7	13	216	28	109	7	335	3	200	5	35
September	41	2	14	197	20	80	4	316	3	313	5	127
October	29	350	11	124	20	75	5	233	3	355	5	202
November	15	327	15	133	9	27	12	260	3	75	5	93
December	8	324	13	116	7	34	6	263	5	138	4	69
Year	25	354	6	166	13	87	7	281	2	231	3	19
Q	12	13	15	174	11	86	6	234	3	185	3	345
D	53	356	10	57	10	172	4	283	5	54	30	19

IV.

Special phenomena

(magnetic and earth current data)

SSC-s

Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	End of storm	
01.	08.	15.15	6.5	16	+	+	+	—	01.09	20.00
02.	05.	04.45	11	25	+	+	+	—	02.07	01.00
03.	04.	19.30	5.5	14	—	—	—	+ (?)	no storm	
04.	30.	10.30	20	40	+	+	+	—	03.30	23.00
		12.30	23.5	28	+	+	+	—	in storm	
06.	06.	12.15	6.5	14	—	—	—	+	06.07	22.00
	09.	18.15	8	22	+	+	+	—	06.10	13.00
	11.	20.30	4.5	10	+	+	+	—	no storm	
	20.	13.00	2.5	12	+	+	+	—	06.20	18.00
07.	22.	20.45	3.5	16	+	+	+	—	07.23	06.00
08.	12.	15.45	7	30	+	+	+	—	08.14	00.00
09.	14.	07.00	6.5	20	+	+	+	—	09.14	17.00
10.	31.	12.00	4.5	15	+	+	+	—	no storm	
11.	27.	08.45	8	18	—	—	—	+		
		06.00	7	25	+	+	+	—	11.27	19.00
	29.	09.00	2.5	18	+	+	+	—	11.30	15.00
12.	12.	22.15	8	25	+	+	+	— (b?)	12.13	17.00
	18.	07.45	6.5	22	+	+	+	—	12.18	19.00

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
01.	01.	21.15	22.5	190	+	+	+	—	tr		
	02.	22.45	14.5	75	+	+	+	—	tr		
	03.	00.45	8	40	+	+	+	—	tr		
	04.	00.15	6.5	32	+	+	+	—	tr		
		22.00	5.5	35	—	+	+	+	2.5	+	+
	05.	23.30	4.5	15	—	+	+	+	2	+	+
	06.	21.30	4.5	28	—	+	+	+	2	+	+
	07.	19.30							2.5	+	+
	08.	21.00	12	75	—	+	+	+	tr		
	09.	17.30	16	90	—	+	—	+	tr		
		22.15	6.5	38	—	+	+	+	2	+	+
	10.	18.15							4.5 (pg)		
		18.30	17	90	—	+	+	+	3.5	—	—
	11.	19.15	7	50	—	—	—	+	tr		
	12.	21.15	9	48	—	—	+	—			
	13.	20.15	8	38	+	+	+	+	2	+	+
	14.	17.15	8	50	—	+	+	+	tr		
	17.	18.30	10	45	+	+	+	—	tr		
	18.	20.15	3.5	13	—	0	0	+	3.5	+	+
		21.15	5.5	22	—	+	+	+	2.7	+	+
	20.	01.30	3.5	12	+	+	+	—	2	+	+
		18.15	5.5	45	—	—	—	+			
	21.	05.30	4.5	35	+	—	—	—			
	22.	17.45	10	22	+	+	—	+	tr		
		23.00	11	80	—	+	+	+	2.5	+	+
	23.	04.45	11	60	+	—	+	—	tr		
		11.00	12.5	28	—	—	—	+			
		14.15	12.5	72	—	—	—	+			
		17.30	10	42	+	+	+	+	3.5	+	+
		21.45	8.5	45	+	+	+	—			
	26.	23.15							2.5	+	+
	28.	01.15	12.5	52	—	—	—	—			
		03.00	14.5	80	—	+	+	+	tr		
		17.15	22	62	+	—	—	—	tr		
		19.45	14.5	70	+	+	+	—			

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
01.	28.	23.00	21.15	85	+	+	+	−			
	29.	00.45	7	115	+	+	+	−			
		20.30	10	65	−	−	−	+			
		23.30	18	110	+	+	+	−	tr		
	30.	17.30	6.5	60	−	+	+	+	tr		
	31.	02.15	6.5	25	+	+	+	−	2.5	+	+
		23.15							3.5	+	+
		23.45	4.5	30	−	+	+	+	tr		
02.	01.	17.30	8	55	−	+	+	+	tr		
		21.00	4.5	45	−	+	+	+	tr		
	03.	21.00	4.5	28	+	+	+	−	2.5	+	+
	05.	20.15	10	55	−	+	+	+	tr		
	06.	17.45	14.5	125	−	−	−	+	tr		
	07.	21.30			−				2.5	+	+
		22.15	8	25	−	0	0	+	3.5	+	+
		23.00	4.5	32	0	+	+	−	tr		
	08.	20.15	12.5	70	+	+	+	−	tr		
	10.	19.30	14.5	100	+	+	+	+	tr		
	11.	23.15	3.5	42	+	+	+	+	2.5	+	+
	12.	15.30	9	52	−	−	−	+	tr		
	13.	20.00	12.5	70	−	+	+	+	tr		
		23.45	5.5	25	+	+	+	−	3.5	+	+
	14.	22.45	12	55	+	+	+	−	tr		
	15.	22.30	5.5	28	−	+	+	+	tr		
	16.	19.30	8	35	+	+	+	+	tr		
	19.	20.45	10	22	−	+	+	+	tr		
	22.	23.30							3.5	+	+
	23.	03.45	5.5	15	−	−	−	+			
		15.15							2.5	+	+
	24.	01.30							2.5	+	+
		03.30	7	28	+	+	+	−			
		21.30	7	35	+	+	+	−	3.5	+	+
	26.	00.45	6.5	18	+	+	+	−	7	+	+
	27.	00.30		18					2	+	+
		23.00	16	160	−	+	+	−	3.5	+	+

Bays									Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
02.	28.	18.15	12.5	55	+	+	+	—	tr		
03.	01.	23.15	8	52	+	+	+	—	5.5	+	+
	02.	18.00	18	85	+	+	+	+			
	05.	19.30	25	92	+	+	+	—	?		
		21.00	21	85	+	+	+	—	tr		
	06.	00.15	21.5	90	+	+	+	—	tr		
		21.00	5.5	40	—	+	+	+	2.5	+	+
	08.	22.45	8	30	+	+	+	—	3.5	+	+
	09.	23.45	4	30	+	+	+	+	6.5	+	+
	12.	21.00	9	28	+	+	+	—	tr		
	14.	20.45	10	35	—	+	+	+	tr		
	16.	21.30	4.5	25	—	+	+	+	2.5	+	+
	17.	01.30							2.5	+	+
		21.30	8	35	—	+	+	+	tr		
	18.	21.00	8	32	—	+	+	+	3.5	+	+
		21.45	6	50	+	+	+	—	tr		
	19.	19.15	8	22	—	—	—	+	tr		
		20.30	5.5	30	—	+	+	+	tr		
	22.	01.00							2	+	+
		02.00	5.5	25	+	+	+	—	2.5	+	+
	23.	00.00							2	+	+
		03.00							2	+	+
		20.00							2.5	+	+
	24.	22.15	6	30	+	+	+	—	3.5	+	+
	26.	01.15	5.5	25	+	+	+	—	3.5	+	+
	27.	20.15							3.5	+	+
		21.00	4.5	15	+	+	+	—	2	+	+
	30.	00.45	11	42	+	+	+	—	$2.\bar{5}$	+	+
		23.30							3.5	+	+
04.	02.	19.30	11	60	+	+	+	+	tr		
	03.	02.15	11	60	+	+	+	—	tr		
		19.30	16	70	—	—	—	+	tr		
	04.	17.15	7	35	—	—	—	+			
	05.	23.15							2	+	+
	06.	20.15							2.5	+	+

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
04.	09.	00.00	14.5	70	—	+	+	+	tr		
		15.30	16	72	—	—	—	—	tr		
	10.	23.45							2.5	+	+
	14.	02.30							2	+	+
		22.30	4.5	12	+	+	+	—	3.5	+	+
	15.	23.15							3.5	+	+
	16.	00.15							2.5	+	+
		01.30							2	+	+
	17.	00.30	3.5	12	+	+	+	—	2.5	+	+
	18.	00.45	8	35	+	+	+	—	tr		
	19.	18.15	8	22	—	—	—	—			
		20.00	7	40	+	+	+	—			
		22.45	12	75	+	+	+	—	tr		
	20.	21.00	12	30	+	+	+	—	(ssc?)		
	21.	02.45	30	170	—	+	+	+	tr		
		08.45	?	135	?	?	—	—			
		18.00	20	60	+	+	+	—	tr		
	24.	02.15	8	45	+	+	+	—	2.5	+	+
		10.15	12.5	30	—	—	—	+	(+ SI) tr		
	25.	02.15							4.5	+	+
	26.	00.30	10	55	+	0	+	—	tr		
		03.00	18	60	+	+	+	—			
		22.30	15.5	65	—	+	+	+	2	+	+
	28.	00.45	25	90	+	+	+	—	(ssc?) tr		
		14.30	9	42	+	—	—	—	tr		
	30.	19.45	125	42	—	—	+	—			
05.	03.	23.30							2.5	+	+
	05.	18.15	3.5	14	+	+	+	—			
	07.	00.30	6.5	25	+	+	+	—	3.5	—	—
		22.45							2.5	+	+
	09.	00.30	6.5	45	+	+	+	—	2.5	+	+
	12.	02.30							2	+	+
	13.	22.15	8	35	+	+	+	—	2	+	+
	15.	23.00	5.5	35	+	+	+	—	tr		
	17.	22.15	4.5	22	+	+	+	+	2.5	+	+

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
05.	21.	02.30							2.5	+	+
		22.45	3.5	22	—	+	+	+	2	+	+
	23.	00.45							7	+	+
		02.30							2.5	+	+
	24.	17.15							3.5	—	+
		20.30	6.5	15	+	+	—	+			
	28.	23.30							2.5	—	+
	29.	17.30							3.5	0	+
	31.	21.30							2.5	+	+
06.	01.	03.15	4.5	28	+	+	+	—	4.5	+	+
	02.	00.15	5.5	25	+	+	+	—	2.5	+	+
	03.	18.30							8	+	+
	05.	00.15							2.5	+	+
	06.	00.15							2.5	+	+
		00.45							3.5	+	+
		01.00							3.5	+	+
		03.30							2.5	+	+
		17.00	20	82	—	+	+	+	tr		
		12.45	14.5	55	+	+	+	+	tr		
	07.	20.30	8	55	+	+	+	+	tr		
	08.	01.00	6.5	35	+	+	+	—	tr		
	09.	23.00	25	100	+	+	+	+	tr		
	12.	21.30	4.5	22	—	+	+	+	tr		
	14.	22.00							2	+	+
	17.	03.15							2.5	+	+
		18.15	6.5	18	+	+	+	0			
	18.	00.15							2	+	+
		18.30							2.5	+	+
	19.	19.45							2.5	+	+
	20.	16.45	21.5	85	—	—	—	+			
		21.30	4.5	18	+	+	+	—			
		20.00	6.5	32	+	+	+	—			
	21.	00.15							4.5	+	+
		22.45							3.5	+	+
		23.15							2	+	+

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
06.	23.	02.45	2.5	28	+	0	+	−	tr		
	25.	20.30							3.5	+	+
		21.00	7	40	+	−	−	−			
	26.	01.00	5.5	35	+	+	+	−	(+SI) 2.5	+	+
		13.30	9	35	−	−	−	+			
		20.00	12.5	50	−	−	−	+	tr		
	27.	17.15	6.5	25	+	+	+	−			
		22.15	6.5	35	−	+	+	+	2.5	+	+
	29.	00.00	4.5	22	−	+	+	+			
		21.00	7	38	−	+	+	+	tr		
07.	01.	02.00	9	62	+	+	+	−	tr		
	03.	20.45	6.5	22	−	−	−	+			
	04.	01.00	6.5	32	+	+	+	−	2.5	+	+
		20.00	14.5	85	+	+	+	+	tr		
	06.	21.30	11	50	−	+	+	+	tr		
	08.	19.00	8	38	−	−	−	+	2.5	+	+
		23.00	?	45	?	+	+	+	tr		
	09.	21.15							2	+	+
	11.	20.30	9	21	+	+	+	−			
	12.	02.30	12	45	−	−	−	+			
		19.15	16	60	+	+	+	+	tr		
		20.00	21.5	125	+	+	+	+	tr		
	13.	18.30	14.5	72	−	+	+	+	tr		
	17.	02.15	5	25	−	−	−	+			
	18.	21.30	6.5	42	−	+	+	+	2	+	+
	23.	19.30	3.5	35	−	+	+	+	tr		
		23.45	5.5	38	+	+	+	−	tr		
	24.	21.15	12	32	−	+	+	+	tr		
	28.	00.30	9	35	+	+	+	−	tr		
	31.	22.30	12	52	+	+	+	−	tr		
08..	06.	20.45	45	18	−	+	+	+	3.5	+	+
	07.	01.45							3.5	+	+
		14.30							(pg) 2		
	09.	01.30	4.5	15	+	+	+	−	2.5	+	+
		20.30							5.5	−	+

Bays									Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
08.	10.	21.30							3.5	+	+
	11.	01.30	9	35	+	+	+	—	tr		
	12.	00.00	15	55	+	+	+	—	tr		
		04.30							(pg) 3.5		
	13.	21.00	21.5	70	—	+	+	+	tr		
		22.00	13.5	65	—	+	+	+	tr		
	16.	19.30	6.5	35	—	+	+	+	3.5	+	+
		23.15	5.5	32	—	+	+	+	tr		
	17.	23.45	4.5	32	+	+	+	—	tr		
	19.	23.30	7	15	+	+	+	—			
	22.	00.00	6.5	35	+	+	+	—	2.5	+	+
		09.00	5.5	60	—	—	—	—			
		17.15	8	60	+	+	+	+			
		20.30	12.5	70	+	+	+	+			
	23.	01.00	5.5	12	+	+	+	—	tr		
		22.00	8	42	+	+	+	—	2.5	+	+
	26.	23.15	6.5	42	+	—	—	—	2.5	+	+
	28.	02.00							5.5	+	+
	30.	20.30	7	30	—	+	+	+	2.5	+	+
	31.	17.15	12	65	—	+	—	+			
		23.30	5	35	+	+	+	—	tr		
09.	01.	21.30	2.5	22	—	+	+	+	2.5	+	+
	03.	23.30							3.5	+	+
	05.	20.45							3.5	+	+
		22.45	3.5	12	—	—	—	+			
	06.	18.15	7	35	+	+	—	+	3.5	+	+
	07.	00.45	6.5	35	+	+	+	—	2.5	+	+
		23.00	6.5	28	+	+	+	—	2.5	+	+
	08.	22.45	4.5	35	+	+	+	—	3.5	+	+
	09.	22.30	6.5	25	+	+	+	+	2.5	+	+
	10.	20.15	5.5	30	—	+	+	+	tr		
		23.00	6.5	42	+	+	+	—	3.5	+	+
	11.	19.45	4.5	45	—	+	+	+			
	12.	18.30	5.5	30	—	+	+	+	2.5	+	+
	14.	00.30	6.5	30	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
09.	14.	13.45	15	65	+	+	+	— (SI?)			
		21.30	6.5	18	—	+	+	+	2.5	+	+
		22.30	6.5	28	+	+	+	—	3	+	+
	15.	20.15	14.5	115	—	+	+	+	tr		
	16.	12.30	8	75	—	—	—	+			
		22.45	7	45	+	+	+	—	tr		
	17.	20.45	5.5	40	—	+	+	+	tr		
	19.	16.30	9	90	—	—	—	+			
		21.00	16	110	+	+	+	+	tr		
	25.	22.00	8	50	+	+	+	—	tr		
	26.	10.15	5.5	55	—	—	—	—			
		20.00	4.5	40	—	+	+	+	2.5	+	+
		23.00	6.5	30	—	+	+	+	3.5	+	+
	27.	20.00	5.5	40	—	+	+	+	2.5	+	+
		22.15	12.5	80	+	+	+	—	3.5	+	+
	30.	00.30							4.5	+	+
		23.00	6	35	+	+	+	—	2.5	+	+
10.	01.	23.30							4.5	+	+
	02.	01.30	4.5	25	+	+	+	—	3.5	+	+
		23.30							2.5	+	+
	04.	01.30	4.5	18	+	+	+	+	2	+	+
	05.	19.30	12.5	80	—	+	+	+	tr		
		20.45	23.5	160	—	+	+	+	tr		
		23.30	9	85	+	+	+	—	tr		
	06.	15.00	12	95	—	+	+	+			
	07.	18.00	20	95	—	+	+	+	tr		
		21.45	8	35	+	+	+	—			
		23.45	12	52	+	+	+	—	tr		
	08.	17.00	7	40	—	+	+	+	2	+	+
		21.15	10	52	+	+	+	+			
	09.	19.15	4.5	25	+	+	+	—	tr		
	12.	01.30	7	42	+	+	+	—	tr		
	13.	18.00	9	52	—	+	+	+	tr		
		21.45	8	40	+	+	+	—	2.5	+	+
	18.	01.45							2.5	+	+

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
10.	20.	20.15	4.5	18	—	+	+	+	2	+	+
	21.	17.15	14.5	72	—	+	+	+	2	+	+
		22.00							2.5	+	+
		23.45	7	30	+	+	+	—			
	22.	20.15	5.5	45	—	+	+	+	tr		
	23.	20.00	6.5	35	+	+	+	—	tr		
	24.	19.30	8	22	+	+	+	—	tr		
	26.	23.30							2.5	+	+
	27.	00.00							2.5	+	+
		21.15							2.5	+	+
	28.	00.15	3.5	35	+	+	+	—	tr		
	29.	01.30	4.5	22	+	+	+	—	3.5	+	+
	30.	20.00	4.5	15	—	+	+	+	3.5	+	+
11.	01.	01.30							2.5	+	+
		19.30	12.5	80	—	+	+	+	2.5	+	+
	02.	16.15	14.5	85	—	+	—	+	tr		
		20.30	17	145	—	+	+	+	tr		
	03.	17.30	17	65	+	+	+	+	tr		
		20.45	5.5	30	+	+	+	+	tr		
		22.15							2.5	+	+
	04.	16.45	7	42	—	+	+	+	4.5	+	+
		18.30	9	50	—	+	+	+	tr		
	05.	21.45	12	65	+	+	+	—	tr		
	06.	08.00	7	12	—	+	+	+	tr		
	07.	20.15							3.5	—	+
	08.	00.30	2.5	25	+	+	+	—	tr		
		20.30	6.5	45	—	+	—	+	2.5	+	+
	09.	16.00	6	70	—	—	—	+			
	10.	22.00	13.5	55	—	+	+	+	4.5	+	+
	13.	20.45	15.5	130	—	+	+	+	tr		
	15.	00.15	8	55	+	+	+	—	2.5	+	+
		13.45	9	55	—	—	—	+			
		19.45	7	30	—	+	+	+			
	16.	22.00	3.5	35	+	+	+	—	tr		
	17.	18.00	16	100	—	+	+	+	tr		

		Bays							Pi-s		
Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
11.	18.	20.15	6	40	+	+	+	+	2	+	+
	19.	03.30	7	45	+	−	−	−	2	+	+
	22.	19.30	4,5	22	−	+	+	+	2	+	+
	23.	22.00							2,5	+	+
	24.	13.45							(pg) 1.5		
		22.00							2.5	+	+
		23.45	3.5	18	+	+	+	−	2.5	+	+
	25.	00.30							2.5	+	+
	26.	00.30							2.5	+	+
	28.	19.45	3.5	18	−	+	+	+	tr		
	29.	19.30	20	180	−	+	+	+	tr		
	30.	00.30	27	100	+	+	+	+	tr		
		01.30	25	135	+	+	+	−	tr		
		13.00	23	130	−	−	−	+			
		21.00	10	62	+	+	+	−	2.5	+	+
12.	01.	21.00	12.5	75	−	+	+	+	2	+	+
	02.	22.15	7	42	−	+	+	+	tr		
	03.	16.30	4.5	42	−	+	−	+			
	04.	19.15	11	45	−	+	+	+	tr		
	05.	19.00	4.5	22	−	+	+	+	tr		
	06.	97.00	3.5	8	−	−	−	+	(sfe)		
	07.	20.15	4.5	25	−	+	+	+	2.5	−	+
	13.	15.30	9	35	+	−	−	−			
		23.45	9	40	+	+	+	−	2.5	+	+
	14.	23.30	6.5	42	+	+	+	−	2.5	+	+
	15.	22.00	5.5	35	+	0	+	−	4.5	+	+
	16.	00.45	5.5	35	+	+	+	−	tr		
	19.	00.00	5.5	30	+	+	+	−	tr (ssc: end of storm 12.14 21.00)		
		17.30	16	120	−	+	+	+	tr		
		19.30	10	45	−	−	−	+	tr		
	24.	01.15	7	25	+	+	+	−			
	25.	23.30	6.5	30	+	+	+	+	4.5	+	+
	27.	20.00	8	55	−	−	−	+			
	28.	16.00	9	72	−	−	−	+			

Bays									Pi-s		
Monik	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
12.	28.	20.00	12.5	50	—	+	+	+	tr		
	30.	18.15	25	100	+	+	+	+	tr		
		22.00	8	55	+	+	+	—	tr		
	31.	18.30	16	95	—	+	+	+	tr		

Further pi-traces

Month	Day	CET
01.	01.	01.15
		01.45
	03.	00.15
	05.	22.45
	07.	01.30
	08.	01.30
		02.45
	12.	00.15
	13.	20.45
		23.00
	14.	00.00
		00.30
	15.	01.00
		22.30
		23.30
	18.	03.15
		04.15
		23.15
		23.45
	24.	20.00
02.	01.	00.45
		21.30
		22.30
		23.15
	02.	22.30
	04.	22.15
	05.	00.30
		02.15
	07.	01.45
	08.	02.15
	09.	00.30
02.	09.	19.00
		19.15
		22.00
	17.	21.45
	18.	20.00
		20.30
	19.	02.30
		14.45
	20.	20.00
	22.	05.15
		21.30
		22.30
		22.45
	23.	23.45
	24.	21.00
		22.15
	26.	18.45
		19.00
		19.15
	27.	02.45
	28.	02.45
03.	03.	16.00
		19.00
		21.15
		22.15
		22.30
		22.45
	04.	02.15
		22.45
	07.	18.30
		18.45
03.	08.	21.30
		22.15
	09.	02.15
	10.	00.15
		00.45
	14.	11.15
	15.	00.45
		02.45
	16.	00.45
		01.00
		20.30
	17.	00.30
		02.30
		19.15
		19.30
		20.45
	18.	20.45
	19.	19.00
	21.	02.45
		03.30
	22.	01.15
		23.30
		15.30
		20.30
	24.	10.30
		21.30
	25.	23.30
	26.	03.30
	27.	18.45
		19.00
	28.	23.15

Further pi-traces

Month	Day	CET
03.	28.	23.30
	29.	00.15
		00.45
		17.15
		18.30
	30.	00.30
		18.30
	31.	00.00
		01.30
		02.00
04.	02.	15.15
		22.30
		22.45
		23.15
	03.	16.30
		22.45
		23.15
		23.45
	05.	22.45
	06.	00.15
		05.15
	08.	20.30
	09.	21.45
	10.	22.30
		22.45
		23.15
	11.	00.15
		02.00
		03.00
		23.45
	12.	15.45

Month	Day	CET
04.	12.	19.30
		21.30
	14.	21.30
	15.	21.45
	16.	02.00
		03.30
		04.45
		22.30
		23.15
	17.	18.45
		22.30
	20.	03.15
	23.	00.45
		20.30
		21.00
	24.	00.45
	29.	17.15
	30.	23.15
05.	03.	20.15
		20.30
		21.30
	04.	19.15
	05.	01.00
	06.	17.45
		18.00
		18.45
	07.	02.30
		02.45
	08.	03.30
	09.	04.30
	10.	22.15

Month	Day	CET
05.	10.	22.30
		22.45
	12.	20.15
		20.30
		20.45
	13.	00.30
		22.45
	14.	19.30
		20.00
		20.15
		20.30
	15.	01.45
		02.30
		04.45
		19.30
		20.15
		22.15
	17.	21.30
		21.45
	18.	18.15
		21.45
		22.30
	19.	18.00
		20.30
		20.45
	20.	22.45
	21.	03.45
		18.15
	22.	21.45
	23.	03.30
		07.30

Further pi-traces

Month	Day	CET
05.	24.	20.00
		21.30
		22.15
	25.	22.15
	27.	02.45
		20.00
	29.	22.45
	31.	16.30
		21.00
		23.45
06.	01.	00.15
		22.30
	02.	01.45
	03.	23.45
	04.	16.30
		16.45
	05.	20.30
		23.30
	06.	22.00
	07.	02.15
	08.	23.45
	09.	00.15
		01.45
		02.45
		20.30
	11.	00.30
		00.45
		01.45
		02.45
	13.	22.30
	14.	00.45

Month	Day	CET
06.	14.	01.15
		02.30
		03.00
	15.	17.45
		19.30
		19.45
		20.15
	16.	22.30
		23.30
	17.	00.00
		01.00
		19.00
	18.	17.35
		18.15
	19.	03.15
		18.30
		19.15
	26.	19.30
	27.	18.45
	28.	01.15
	28.	01.45
		18.45
		19.45
	29.	01.15
	30.	00.45
07.	01.	22.00
		22.30
	02.	22.30
		23.15
	03.	19.25
	07.	00.45

Month	Day	CET
07.	07.	23.45
	11.	00.45
		01.30
		02.45
	14.	18.30
	15.	23.30
	16.	03.15
	17.	01.30
	18.	00.45
	19.	03.30
		23.15
	20.	03.45
	21.	01.30
	25.	01.00
		19.45
	28.	21.00
	29.	19.45
08.	01.	22.00
	02.	00.45
		01.15
		20.15
		20.45
	03.	23.30
	04.	20.45
		23.45
	05.	02.00
		02.45
		20.15
		21.30
	06.	19.45
	07.	16.30

Further pi-traces

Month	Day	CET
08.	07.	23.00
		23.30
	08.	20.15
	09.	21.15
		21.45
	10.	20.00
		21.15
	11.	19.15
	12.	10.45
	15.	07.15
		21.30
	16.	23.45
	17.	04.00
		19.45
		20.00
		20.15
	18.	18.00
		18.45
		22.15
	19.	20.45
	20.	16.30
		22.45
		23.30
	23.	00.30
		20.30
	24.	01.00
		22.00
		22.30
	25.	16.45
	27.	23.30
	28.	18.45
08.	29.	19.45
09.	03.	00.00
		23.00
		23.45
	04.	17.30
	05.	13.45
		18.45
		19.45
		22.15
	06.	03.30
	07.	02.30
	10.	20.00
		21.45
	12.	02.00
		03.00
	14.	04.45
		23.30
		23.45
	18.	01.15
		03.15
	19.	00.15
		01.30
		02.15
		04.00
	21.	22.00
		22.30
		22.45
	22.	00.45
	23.	21.00
		22.30
	24.	01.30
09.	24.	17.45
		18.15
		22.00
	25.	18.45
	26.	22.30
	28.	18.45
		22.15
		22.30
		22.45
		23.30
	29.	18.45
		20.00
		21.00
	30.	00.45
		19.00
		20.15
10.	02.	00.15
		18.45
		19.30
		22.45
		23.45
	03.	19.15
		22.15
	06.	22.00
	09.	15.00
		18.30
		19.30
		19.45
		22.30
	10.	21.15
	11.	01.00

Further pi-traces

Month	Day	CET
10.	11.	21.30
		21.45
	12.	17.30
		21.30
		22.30
		23.15
	13.	01.30
	14.	19.30
		21.30
		21.45
		22.30
	15.	22.30
	17.	01.45
		02.15
	18.	01.15
		02.00
		21.30
	20.	18.00
	21.	20.30
	24.	18.00
		18.45
		19.00
	25.	23.15
		23.30
	26.	21.15
		22.30
	27.	21.30
		22.15
	29.	02.30
	30.	18.15
		19.30
10.	30.	21.15
		23.30
	31.	02.45
		17.45
		22.45
11.	01.	22.30
		22.45
		23.45
	04.	16.15
		18.45
		22.30
		23.45
	06.	23.45
	07.	00.30
		02.00
		03.00
		03.15
	08.	14.15
	09.	23.00
		23.15
	10.	01.00
		21.30
	11.	22.30
	12.	22.15
	13.	01.30
	14.	17.15
	16.	21.15
	18.	19.30
		22.45
	10.	17.45
		20.46
11.	20.	23.30
	21.	00.45
	22.	01.45
	23.	22.45
	24.	22.45
	26.	00.45
		01.45
	28.	18.45
		20.45
12.	01.	22.15
	02.	01.30
	03.	21.30
	05.	20.45
	06.	15.15
		22.45
	07.	02.00
		18.30
	09.	02.30
		03.00
	10.	02.00
	13.	23.00
		23.30
	14.	03.00
		23.00
	18.	03.00
		03.15
		20.45
	17.	02.00
	19.	08.45
		22.00
		22.15

Further pi-traces

Month	Day	CET
12.	21.	01.30
		19.45
	23.	19.45
	25.	18.15
		18.30
		22.30
	26.	19.00
	27.	01.00
		02.00
	28.	21.45
	30.	01.15
		21.45
		22.45
	31.	22.45

SI-s

Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy	
01.	01.	03.30	7	9	+	+	+	—	
		18.15	4.5	10	—	—	—	+	
	04.	10.30	5.5	18	+	+	+	—	
	12.	06.30	9	18	+	—	—	—	
	17.	12.15	5.5	10	—	—	—	+	
	21.	04.30	6.5	18	—	—	+	—	
	26.	12.45	8	16	+	+	+	—	
	30.	04.15	6.5	12	+	+	+	—	
	31.	06.30	5.5	12	—	—	—	+	
02.	07.	01.00	4.5	10	—	—	—	+	
	15.	01.30	3.5	8	—	—	—	+	
	27.	22.30	8	18	—	—	—	+	
03.	02.	13.00	9	18	—	—	—	+	
	03.	07.30	6.5	10	—	—	—	+	
	07.	16.45	10	22	—	—	—	+	
	10.	10.30	10	25	+	+	+	—	
		19.00	5.5	10	—	—	—	+	
	15.	06.15	4.5	10	—	—	—	+	
	16.	03.30	4.5	10	+	—	+	—	
	28.	15.30	4.5	7	—	—	—	+	
04.	01.	23.15	4	10	+	+	+	—	
	02.	07.30	8	12	—	—	—	+	
	09.	11.30	7	14	—	—	—	—	
	16.	10.45	4.5	7	—	—	—	+	
		11.30	3.5	12	—	—	—	+	
		11.45	7	15	+	+	+	—	
	20.	06.15	7	18	+	+	+	—	(SSC ? storm till 11 h 00)
	26.	17.30	6.5	8	—	—	—	+	
05.	01.	01.45	9	14	+	+	+	—	
		13.45	12.5	12	+	+	+	—	
		15.00	9	22	+	+	+	—	

SI-s

Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy
05.	01.	16.00	9	18	—	—	—	+
	11.	00.00	7	14	—	—	—	+
	20.	16.00	3.5	8	—	—	—	+
	23.	02.30	2.5	7	+	+	+	—
	26.	12.45	6.5	12	+	+	+	—
	27.	12.00	6.5	14	+	+	+	—
	28.	05.30	14.5	22	+	0	+	—
06.	06.	06.45	7	13	—	—	—	+
	08.	22.15	3.5	8	+	+	+	—
	09.	06.00	4.5	8	—	—	—	+
	11.	17.30	2.5	5	—	—	—	+
	17.	14.00	6.5	14	+	+	+	—
	26.	13.30	6.5	12	+	+	+	—
	30.	22.45	6.5	15	+	+	+	—
07.	06.	04.30	7	12	+	+	+	—
	10.	18.30	4.5	12	+	+	+	—
	12.	21.45	9	28	—	—	—	+
		22.30	8	18	+	+	+	—
	18.	03.00	5	12	+	+	+	—
	23.	04.45	6	20	—	—	—	+
	25.	12.30	4.5	12	+	+	+	—
	26.	19.30	10	28	+	+	+	—
	28.	10.00	4.5	12	+	+	+	—
08.	01.	02.30	4.5	10	+	+	+	—
	03.	17.30	4.5	12	—	—	—	+
	10.	23.00	3.5	8	+	+	+	—
	12.	12.45	4	12	—	—	—	+
	13.	14.45	7	30	—	+	—	+
		18.30	5.5	15	+	+	+	—
	14.	01.30	5.5	12	+	+	+	—
	18.	00.30	2	7	+	+	+	—

SI-s

Month	Day	CET (UT+1h)	Amplitude in E(mV/km)	H(nT)	Ex	Ey	Hx	Hy
08.	18.	04.15	4.5	12	+	+	+	—
	25.	06.15	4	10	—	—	—	+
09.	29.	11.45	5.5	14	+	+	+	—
10.	05.	03.30	3.5	10	—	—	—	+
	06.	19.00	6.5	18	—	—	—	+
	09.	06.45	6.5	8	—	—	—	+
	10.	19.30	2.5	8	+	+	+	—
	15.	09.30	12.5	22	—	+	—	—
		19.00	4.5	12	—	—	—	+
	17.	20.30	5.5	12	—	—	—	+
	18.	00.15	2.5	8	+	+	+	—
	20.	05.15	3.5	7	+	—	—	—
	23.	09.45	6.5	15	—	+	+	+
11.	06.	13.00	4.5	12	+	+	+	—
	08.	19.15	4.5	10	—	—	—	+
	09.	05.00	6.5	13	—	—	—	+
	16.	05.30	4.5	10	+	—	—	—
12.	01.	14.30	5.5	12	—	—	—	+
	04.	12.45	6.5	16	+	+	+	—
	09.	21.30	5.5	12	—	—	—	+
	10.	04.45	5.5	12	—	—	—	+
	12.	05.15.	2.5	10	+	—	—	—
	18.	15.00	5.5	12	—	—	—	+
		17.15	6.5	13	—	—	—	+
	19.	01.45	3.5	12	—	—	—	+
	28.	05.45	4.5	8	+	—	—	—
	30.	06.30	8	14	+	—	+	—
		13.30	10	22	—	—	—	+

Needles

Month	Day	CET UT+1h)	Amplitude in E (mV km)	Ex	Ey
01.	01.	18.15	5.5	+	+
	06.	15.45	2.5	+	+
	18.	12.45	2	—	—
	19.	14.30	2.5	—	—
02.	05.	11.45	6.5	—	+
	08.	18.30	7	+	+
	09.	18.45	3.5	+	+
	11.	16.00	5.5	—	—
	18.	19.45	3.5	+	+
03.	07.	14.15	4.5	—	—
	13.	02.30	3.5	+	+
	19.	15.15	4.5	—	—
	27.	16.30	3.5	—	—
05.	03.	15.45	7	+	+
	25.	18.00	2	—	—
	26.	19.45	3.5	+	+
06.	09.	15.00	3.5	—	+
	13.	16.30	2.5	—	—
	17.	11.15	2	—	+
	19.	15.30	3.5	—	—
	20.	05.45	4.5	—	—
07.	03.	07.15	3.5	+	+
	04.	18.45	6.5	—	—
	19.	12.45	4.5	—	—
		13.45	2.5	—	—
	25.	17.45	2.5	+	+
08.	04.	14.30	2	—	—
	23.	21.15	4.5	+	+
	28.	17.45	6.5	+	—
09.	04.	19.15	3.5	+	—
	15.	06.45	3.5	+	+

Month	Day	CET UT+1h)	Amplitude in E (mV/km)	Ex	Ey
09.	19.	14.45	4	—	—
		15.00	4.5	—	—
	21.	18.30	8	+	+
	28.	19.15	5.5	—	—
10.	05.	05.45	3.5	—	—
	06.	11.15	4.5	+	—
	11.	13.45	6.5	—	—
	19.	06.30	6.5	+	+
		13.45	2.5	—	—
		16.00	2.5	—	—
		16.30	4.5	—	—
	20.	19.30	4.5	—	+
	21.	12.15	7	+	+
	23.	07.00	5.5	+	+
	26.	07.15	2.5	—	—
11.	01.	03.15	2	+	—
	06.	10.15	3.5	—	—
	08.	08.45	2	+	—
	13.	10.45	3.5	0	+
	15.	12.30	2.5	+	+
	23.	18.15	5.5	+	+
12.	01.	18.30	3.5	—	+
	10.	14.15	14.5	—	+
		17.00	8	+	+
	13.	08.00	4.5	—	+
	18.	12.30	4.5	—	—
	20.	03.45	2.5	—	+
	28.	14.00	3.5	—	0
	31.	09.30	4.5	—	—

1985

Pc 1-events

Month	Day	Duration hour min	hour min	Quality
1.	6.	411—	421	B
		455—	505	C
		531—	645	B
		739—	803	C
		2055—	2136	C
	17.	1935—	1953	C
	18.	301—	353	C
2.	1.	348—	538	C
		649—	801	C
	7.	001—	017	C
	8.	050—	224	C
	13.	2351—	14. 007	C
	16.	614—	643	C
3.	3.	257—	507	A
	5.	450—	806	B
	10.	408—	419	C
	11.	422—	449	C
	13.	309—	322	C
4.	6.	2155—	7. 238	B
	8.	1950—	9. 100	C
	14.	000—	038	C
	16.	625—	632	C
	17.	442—	528	C
	18.	043—	100	C
		313—	443	B
9.	2.	324—	534	B
	19.	242—	515	B
	29.	525—	714	C
10.	6.	1741—	2006	C
	9.	400—	507	B
	10.	318—	432	B
	21.	214—	610	C
		1724—	1804	C
	22.	036—	100	C

Month	Day	Duration hour min	hour min	Quality
11.	1.	2342—	2. 041	C
	2.	1634—	1713	C
	8.	254—	305	C
		2252—	9. 049	C
	9.	159—	234	C
		309—	510	C
	22.	445—	543	C
	24.	426—	629	C
	27.	406—	552	C
	29.	1928—	2024	C
	30.	1431—	1439	C
		1543—	1703	C
12.	1.	131—	629	C
		2333—	2. 100	B
	2.	119—	349	B
		455—	522	C
		624—	713	C
	3.	210—	414	B
		508—	835	C
	4.	440—	616	B
		1930—	1949	C
		2149—	5. 309	C
	7.	109—	147	C
		333—	447	C
		643—	830	C
	8.	116—	145	C
	10.	449—	507	C
		700—	817	C
	16.	550—	613	B
		717—	903	B
	17.	307—	745	A
		820—	856	C
	18.	749—	800	C
	21.	633—	819	C
	30.	1819—	1848	C

V.

Average amplitudes in 12 pulsation bands
(monthly averages for 3 hour intervals in μV/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	8	22	42	16	36	79	176	119	49	109	89
3— 6	3	4	40	143	83	95	44	72	40	16	109	234
6— 9	0	6	97	219	177	247	137	82	37	8	44	196
9—12	0	3	29	394	248	163	140	51	57	21	172	84
12—15	0	0	36	603	504	283	143	89	35	13	108	86
15—18	0	2	15	278	240	245	285	98	36	40	148	91
18—21	1	13	27	81	91	108	112	145	125	52	124	207
21—24	2	23	38	37	21	70	108	303	241	81	53	37
Average	1	7	38	210	173	156	131	127	86	35	108	128

February

0— 3	1	12	17	26	14	66	70	283	119	72	27	48
3— 6	5	4	34	121	77	151	89	55	3	13	77	306
6— 9	0	15	37	300	184	202	175	73	52	0	222	180
9—12	0	1	7	596	205	218	165	93	80	6	91	103
12—15	0	1	12	685	318	318	146	82	44	15	155	15
15—18	0	1	15	418	227	210	103	59	11	43	75	57
18—21	1	10	18	82	46	141	130	146	138	28	19	116
21—24	0	17	29	33	9	27	89	0	377	71	32	61
Average	1	8	21	283	135	167	121	99	103	31	87	111

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	1	12	19	33	22	75	84	196	187	53	23	112
3— 6	2	6	64	100	56	63	34	41	61	35	44	65
6— 9	2	3	66	432	131	122	37	19	23	24	65	20
9—12	0	2	37	465	149	181	132	67	37	8	31	25
12—15	0	3	40	585	169	178	126	99	55	8	9	148
15—18	0	3	15	250	208	187	177	165	83	53	35	60
18—21	2	17	21	80	21	75	117	149	90	51	78	148
21—24	0	27	29	30	10	34	83	300	297	56	36	40
Average	1	9	36	247	96	114	99	130	104	36	40	77

April

0— 3	3	18	33	47	18	39	38	258	98	51	83	151
3— 6	2	14	54	126	61	87	82	38	101	23	61	191
6— 9	0	10	30	425	131	181	91	28	30	15	182	46
9—12	0	11	35	506	258	201	49	52	51	9	240	81
12—15	0	7	35	353	303	69	86	138	141	35	436	350
15—18	1	8	24	234	99	133	103	168	98	73	183	208
18—21	3	16	21	23	29	48	103	104	106	115	60	163
21—24	5	32	22	23	23	52	53	158	195	83	86	205
Average	2	15	32	217	59	101	76	117	103	51	166	174

May

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	7	24	27	10	34	43	111	173	52	26	109
3— 6	0	9	25	78	45	74	65	91	82	15	8	96
6— 9	0	4	23	214	103	84	115	77	54	24	41	13
9—12	0	7	21	243	93	126	96	77	30	12	116	102
12—15	0	5	11	197	116	106	98	85	81	53	65	70
15—18	0	11	23	72	38	89	103	171	75	42	112	75
18—21	1	34	23	29	7	25	38	182	281	39	57	33
21—24	3	36	12	10	14	6	79	130	324	130	90	94
Average	2	14	20	109	53	68	80	116	138	46	64	74

June

0— 3	0	18	18	22	8	41	99	148	238	148	62	86
3— 6	0	8	34	57	44	105	67	53	54	30	81	59
6— 9	0	11	43	207	78	84	68	95	42	10	152	80
9—12	0	13	32	170	71	162	55	43	59	44	231	75
12—15	0	10	32	173	115	117	50	34	98	20	202	49
15—18	0	26	20	54	25	106	59	136	97	85	231	336
18—21	0	31	16	17	4	34	57	179	256	75	134	103
21—24	2	29	20	19	5	15	58	101	177	52	110	93
Average	0	18	24	90	44	83	64	99	128	58	135	110

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	0	17	31	37	14	25	41	166	147	59	119	218
3— 6	0	13	35	110	36	75	55	85	51	30	117	147
6— 9	0	9	82	384	86	145	71	29	32	4	112	39
9—12	0	3	33	345	171	293	145	43	30	9	183	197
12—15	0	4	40	289	157	152	185	42	128	69	253	185
15—18	0	10	14	71	31	88	171	141	68	63	159	319
18—21	0	19	20	27	10	48	135	116	102	45	110	260
21—24	2	25	27	33	23	23	56	240	172	61	106	321
Average	0	13	35	162	48	106	107	108	91	43	145	211

August

0— 3	0	14	36	40	23	36	68	176	106	54	91	194
3— 6	3	10	70	137	47	57	42	102	58	26	161	228
6— 9	2	5	43	372	137	289	127	51	36	13	31	22
9—12	0	3	18	281	227	235	110	66	59	10	79	113
12—15	0	6	26	231	195	202	167	92	40	78	111	270
15—18	0	6	17	96	98	219	148	68	65	65	139	272
18—21	0	26	26	26	17	48	74	173	141	94	195	212
21—24	1	29	24	15	3	8	91	277	185	95	160	164
Average	1	12	33	150	93	130	103	126	86	54	121	184

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	1	13	23	38	14	19	41	79	148	67	85	68
3— 6	3	12	66	90	25	49	41	78	41	20	108	71
6— 9	0	11	50	331	106	98	23	57	38	6	100	85
9—12	0	11	48	403	173	148	49	57	70	13	225	136
12—15	0	12	33	307	118	103	134	106	198	38	240	113
15—18	1	13	18	139	63	159	77	144	35	71	168	88
18—21	0	21	19	33	41	76	73	153	71	92	111	57
21—24	0	33	28	18	5	18	124	304	125	91	90	29
Average	1	16	36	170	68	84	70	122	91	50	141	85

October

0— 3	0	16	29	46	11	24	75	106	74	69	105	44
3— 6	6	7	34	142	36	119	46	25	49	17	82	115
6— 9	1	7	29	319	42	142	89	60	36	24	125	109
9—12	0	3	33	465	160	287	103	40	43	20	233	45
12—15	0	5	9	497	216	260	107	96	84	27	66	58
15—18	0	8	12	125	96	248	158	148	67	15	114	85
18—21	3	16	19	62	19	120	105	138	106	115	77	94
21—24	0	31	34	21	29	19	58	222	201	110	54	85
Average	1	12	25	210	76	152	93	104	83	50	107	79

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	1	15	18	25	8	37	85	170	188	107	27	47
3— 6	2	7	33	119	79	170	157	58	31	13	11	166
6— 9	2	5	32	202	127	196	132	82	57	16	53	208
9— 12	0	8	32	528	117	94	88	114	79	73	184	86
12—15	0	7	27	561	224	107	202	82	74	44	101	54
15—18	0	8	15	167	172	218	163	155	75	17	76	0
18—21	1	14	24	48	83	76	119	127	133	52	34	85
21—24	0	36	22	24	8	15	46	330	213	108	25	66
Average	1	13	25	197	102	114	124	140	106	54	64	89

December

0— 3	5	22	22	16	9	15	82	78	177	34	69	107
3— 6	9	9	40	84	42	91	77	55	65	8	79	168
6— 9	3	10	46	196	131	126	117	34	122	10	173	189
9—12	0	8	47	399	64	98	113	117	73	28	363	178
12—15	0	4	27	503	188	163	229	193	122	6	196	141
15—18	0	4	13	109	145	346	159	98	92	8	61	153
18—21	0	9	33	31	18	121	178	84	200	26	39	214
21—24	0	34	34	19	13	25	137	146	149	41	45	261
Average	2	13	33	170	76	123	137	101	125	20	128	176

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	2	14	23	33	14	37	67	162	148	68	68	106
3— 6	3	9	44	109	53	95	67	63	53	21	78	154
6—9	1	8	48	300	119	160	99	57	47	13	108	99
9—12	0	6	31	400	161	184	104	68	56	21	179	102
12—15	0	5	27	415	219	176	139	95	92	34	162	128
15—18	0	8	17	168	120	187	142	137	67	48	125	145
18—21	1	19	22	45	32	77	103	141	146	65	87	141
21—24	1	29	27	24	14	26	82	208	221	82	74	124
Average	1	12	30	187	92	118	100	116	104	44	110	125

VI.

Micropulsation indices for the year 1985

Activity indices for the micropulsations
(P1 to P12)
1984. January—December

	January	February	March	April
1.	115544233244	415522344321	125354341112	255521334455
2.	115533324244	211434111112	115521321222	111551144141
3.	125413354243	111235445222	135525222121	155512331132
4.	115434534323	125315224212	115543231114	133514334144
5.	124354433311	155511125554	515522132122	125523235332
6.	115315445221	155511223155	155511223155	135224335414
7.	115213544522	114534242124	135512423134	515521434133
8.	353222345431	115533251114	115524433221	545423444444
9.	145522222145	155524125544	122113554111	155211242455
10.	125454234145	154531322345	245511235425	135422534222
11.	115453333134	115433444122	155512135241	115541153123
12.	123453133135	113425331212	155532133413	122424345311
13.	134434245342	132425515211	154532121111	134421445422
14.	124433345332	115521145125	145422345313	155422324443
15.	133532324212	113115543223	135524235225	155412245522
16.	113532354521	111534354222	144445344424	155511115542
17.	233453254122	114543234124	154313345321	155322125511
18.	455213455222	125534422221	155531135222	145422441213
19.	135422425143	154532342521	135323434311	155512324455
20.	145223435512	145521133422	155314323422	255214334454
21.	155421325553	000000000000	115314345511	245313424454
22.	115433121114	000000000000	155412125313	325424322221
23.	145522344221	155421335322	155513235512	145513213241
24.	135324542121	155522334225	145321145541	133555131114
25.	145521121224	135522144341	155212234452	155422244245
26.	115532114125	145324434221	135411135541	135531223322
27.	153522245524	144532353123	315411445231	145434334124
28.	255312335254	445541423323	135532143343	355311143255
29.	155423412414		135532243212	145522112144
30.	135213532445		255523134424	145421323345
31.	112522124121		142522234345	

	May	June	July	August
1.	155411414345	155511135355	131323555113	155423231255
2.	245532314325	145321455333	122324435511	155513244223
3.	324214545322	155312255232	155222335542	135424234441
4.	344512425443	135312245522	155421133354	155323441524
5.	522425155312	145322335531	145522213255	125322344542
6.	345522354134	155512115244	115512342155	153213424522
7.	145433254313	135422434135	125522332145	555323213551
8.	154214333532	000000000000	132532244143	255222354521
9.	245421244531	000000000000	153225525111	135114325522
10.	155411445521	155314331315	133433553114	245411245543
11.	155212445433	155314341144	155412354124	115224325511
12.	155311335425	155423234121	155412222354	155212345235
13.	155521444111	154321444511	355311424255	155325314255
14.	155522223111	155311125243	155312335353	145245333151
15.	125542145222	154412245531	125525214322	115115455422
16.	114521342142	145314335521	145332145511	152434145222
17.	152512335522	155212325432	145511234445	155411345511
18.	155212245421	154414214521	155521352343	133521434123
19.	155522155331	155214324552	125413334222	335423434225
20.	245513225112	155311224553	125513244222	145433232145
21.	135532225521	355311125554	134411345231	115542214322
22.	123323325521	145323232254	155312225515	155532434424
23.	155312425521	155412235521	155311234555	133423454243
24.	155212444541	125412114555	155411233345	135213554322
25.	115511111124	155411134552	145522425114	155411144535
26.	135523123343	153411435544	155432245125	155522224344
27.	115322554121	155512424314	143414535115	155522412354
28.	155421112541	155435233144	131315531314	152535325143
29.	155313325251	114333454121	132314544223	155422243424
30.	151214345521	131224455121	155522425135	155424332245
31.	155411134552		155322244545	155411334544

	September	October	November	December
1.	145422453421	155113445511	155422235524	545422434214
2.	323323453221	155411324541	255422334322	425214534215
3.	155213435521	155511124532	135532343324	534531345212
4.	155111433522	155312445344	133325555113	512523534124
5.	155111155541	155523224255	153314334541	115424435113
6.	155521124552	555521242155	115523222322	133115545111
7.	155213155131	155514323343	155213443321	525522125422
8.	155521234331	234522441122	155211355211	155114534333
9.	145411444144	345513424212	145521133425	155221425423
10.	144413245241	314224535312	155431535314	155422115455
11.	155213435323	245522244213	145513434225	111525135131
12.	155212345421	135524142134	135223445111	125423432125
13.	155212345541	125551243121	155512125544	155111255355
14.	155312235342	134524243131	113523152113	155522322124
15.	155521134334	155423225352	121434452121	115523442212
16.	145413232255	145244434224	141445223513	000000000000
17.	115523441333	125512143523	125532315131	155314331521
18.	134325435121	133522335221	135323535241	155421144355
19.	255212234555	114524333244	125532344111	155312335453
20.	245523233155	234224555341	125423324121	135511122223
21.	155521122253	545513233352	154512225331	000000000000
22.	125532221123	125544222245	154423125321	155511314113
23.	125523222345	123535235232	144222555211	155311215331
24.	155543123554	142534422222	154212544522	135411135431
25.	155522335125	122535424221	155411233544	125325335511
26.	155521245133	125411435512	155213124521	125322355221
27.	145543344134	135214235521	525413424355	152523435222
28.	154534524211	155411235522	145124545222	155511345145
29.	414524214522	155211335544	255312325555	133215523223
30.	155211255511	155511324521	155512344115	145522224244
31.		255311325531		135433521141

Pc 1 indices 1984

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

0 = no registration

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 Jahre 1966" Sopron, 1967). The following four kinds of tables are published:

1. 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 main extrapolated ones (in the case of incomplete observations).

II. The list of disturbed (D) and quite (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 ot 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.

I.

Three-hour magnetic activity indices (M)

	January		February		March	
	M	Sum	M	Sum	M	Sum
1.	34333699	40	41112843	24	04631016	21
2.	43221129	24	03111131	11	51113799	36
3.	62011116	18	20004233	14	13411224	18
4.	51110114	14	10010000	2	11111333	14
5.	20101113	9	03424996	37	53542999	46
6.	11110113	9	95739594	51	93443637	39
7.	10100021	5	51319516	31	41221897	34
8.	10011299	23	42043876	34	66444554	38
9.	69559998	60	22334334	24	10000101	3
10.	46236292	34	33334593	33	40032128	20
11.	31353275	29	11111567	23	30011201	8
12.	33323577	33	61312620	21	00101226	12
13.	33223541	23	00002394	18	00020000	2
14.	20121731	17	41211669	30	00011245	13
15.	10111782	21	54200013	15	13322011	13
16.	11111200	7	00011352	12	22012404	15
17.	00021451	13	22211733	21	31011117	15
18.	10011123	9	01010110	4	53111026	19
19.	10021240	10	00110113	7	11111373	18
20.	10001153	11	12211010	8	10012200	6
21.	13612111	16	00111234	12	01011101	5
22.	01111139	17	21111211	10	31011101	8
23.	68798928	57	12111123	12	11011011	6
24.	10100111	5	35312327	26	10011115	10
25.	23122111	13	11132451	18	10111141	10
26.	10011231	9	32010031	10	31122121	13
27.	21100049	17	11011119	15	11112323	14
28.	99439999	61	98978475	57	74210243	23
29.	94111299	36			10021143	12
30.	92222764	34			81102111	15
31.	41126243	23			21143021	14
	$M_H = 2.46$		$M_H = 2.24$		$M_H = 1.72$	
	$M_D = 2.23$		$M_D = 1.91$		$M_D = 1.62$	
	$M_Z = 0.43$		$M_Z = 0.29$		$M_Z = 0.23$	

	April		May		June	
	M	Sum	M	Sum	M	Sum
1.	01239925	31	21124412	17	56213342	26
2.	11231393	23	37782111	30	30102131	11
3.	83122293	30	11131112	11	00111221	8
4.	21212565	24	21131320	13	10011110	5
5.	12112000	7	00111131	8	10111111	7
6.	00122012	8	43311121	16	22215938	32
7.	00132121	10	52001012	11	44389578	48
8.	00111265	16	21121121	11	54323221	22
9.	91247991	42	41131020	12	01111069	19
10.	01132223	14	00001013	5	95374251	36
11.	15113220	15	41220110	11	22221322	16
12.	10111111	7	00223212	12	22211212	13
13.	00012123	9	41112315	18	10011112	7
14.	23202113	14	41110110	9	10101101	5
15.	01001101	4	33122225	20	12110010	6
16.	11022111	9	21112343	17	00011001	3
17.	20011001	5	1012314	[13]	12112431	15
18.	40001100	6	23112333	18	11111110	7
19.	21132379	28	22113231	15	00011101	4
20.	96771139	43	21101231	11	01116934	25
21.	99998784	63	10101122	8	12122020	10
22.	31151311	16	11110010	5	11211101	8
23.	41132211	15	11110000	4	12114110	11
24.	55532110	22	01101123	9	00011111	5
25.	26345012	23	00000316	10	41222244	21
26.	77443569	45	51012231	15	41225574	30
27.	37236616	34	01023101	8	21111455	20
28.	99977221	46	02001011	5	24224232	21
29.	37722010	22	12001110	6	42242216	23
30.	10159976	38	00001001	2	21011236	16
31.			41101111	10		
	$M_{II} = 2.55$		$M_{II} = 1.28$		$M_{II} = 1.84$	
	$M_{D} = 2.04$		$M_{D} = 0.92$		$M_{D} = 1.15$	
	$M_{Z} = 0.39$		$M_{Z} = 0.16$		$M_{Z} = 0.32$	

	July		August		September	
	M	Sum	M	Sum	M	Sum
1.	76201212	21	43213834	28	30101033	11
2.	11011111	7	22221332	17	01101100	4
3.	01011223	10	31111131	12	00111101	5
4.	41239799	44	11211211	10	00100000	1
5.	42133314	21	10001111	5	00011012	5
6.	42332348	29	10000111	4	11011243	13
7.	55333422	27	11101001	5	41101025	14
8.	11223557	28	11101111	7	10104225	15
9.	43211102	14	21000112	7	21033334	19
10.	11111326	16	10211111	8	11321176	22
11.	12221351	17	52111000	10	61101064	19
12.	76386997	55	00012499	25	10001241	9
13.	21125695	31	99455349	48	00010100	2
14.	34322221	19	22531112	17	41469913	37
15.	03211101	9	21222202	13	11011196	20
16.	01100211	6	11132243	17	56339335	37
17.	54156622	31	13121313	15	32112144	18
18.	31113326	20	22132239	24	10012100	5
19.	11122310	11	34311114	18	21199959	45
20.	03012321	12	22313212	16	68235427	37
21.	01020001	4	11222111	11	21433473	27
22.	00111022	7	43193698	43	22313231	17
23.	15533153	26	64136216	29	11132010	9
24.	51013223	17	31211013	12	01133369	26
25.	43221221	17	13432212	18	32232766	31
26.	31321339	25	32232246	24	21292067	29
27.	52446111	24	53143231	22	41332159	28
28.	41122323	18	11103464	20	31122211	13
29.	11101211	8	42225363	27	01011111	6
30.	12118502	20	12000132	9	10011114	9
31.	11286968	41	42233933	29		
	$M_H = 2.38$		$M_H = 2.05$		$M_H = 1.93$	
	$M_D = 1.55$		$M_D = 1.45$		$M_D = 1.57$	
	$M_Z = 0.34$		$M_Z = 0.28$		$M_Z = 0.23$	

	October		November		December	
	M	Sum	M	Sum	M	Sum
1.	11001010	4	20121793	25	11131249	22
2.	20110012	7	11216999	38	43212374	26
3.	11112332	14	99263923	43	11111411	11
4.	21111226	16	45211553	26	12012273	18
5.	48659999	59	10112118	15	22111231	13
6.	93976964	53	13312251	18	00122201	8
7.	75413295	36	11212021	10	00120132	9
8.	52222518	27	30000153	12	00010010	2
9.	01111140	9	11022971	23	11000002	4
10.	01211014	10	33113119	22	22129913	29
11.	11112656	23	21011112	9	52110112	13
12.	82001233	19	01000012	4	11000025	9
13.	23223666	30	31127399	35	65469824	44
14.	12132211	13	66112234	25	73012137	24
15.	13432223	20	62027154	27	43200014	14
16.	45232402	22	21122224	16	40100012	8
17.	42123162	21	00112692	21	62111110	13
18.	51127447	31	23212558	28	00425331	18
19.	52243310	20	16011122	14	34789995	54
20.	01111020	6	00000000	0	42112000	10
21.	01332955	28	00010012	4	11000010	3
22.	32222164	22	22011032	11	02111110	7
23.	21132136	19	00011001	3	00010011	3
24.	21111141	12	00111002	5	31221110	11
25.	11121121	10	10111101	6	00100015	7
26.	10111001	5	10111001	5	52100010	9
27.	00011001	3	03324932	26	01111198	22
28.	40011000	6	21121011	9	57387993	51
29.	22121110	10	00024399	27	11100011	5
30.	00011021	5	99559557	54	76884999	60
31.	01011130	7			32137592	32
	$M_H = 2.06$		$M_H = 2.02$		$M_H = 1.97$	
	$M_D = 1.69$		$M_D = 1.89$		$M_D = 1.66$	
	$M_Z = 0.26$		$M_Z = 0.22$		$M_Z = 0.32$	

II.

Disturbed and quiet days for 1985

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

III.

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

	0	1	2	3	4	5	6	7	8	9	10	11
						January						
H	— 1.8	— 0.5	— 0.8	+ 1.6	+ 3.8	+ 4.8	+ 8.1	+ 8.0	+ 5.6	+ 4.6	+ 2.6	+ 0.7
D	+ 7.8	+ 5.1	+ 4.1	+ 2.4	— 0.3	— 2.8	— 1.8	— 1.3	— 1.2	— 4.9	— 8.1	—11.5
Z	+ 1.8	+ 0.8	+ 0.2	— 0.5	— 1.0	— 1.3	— 1.5	— 1.9	— 2.6	— 4.4	— 4.3	— 5.6
						February						
H	+ 3.7	+ 2.2	+ 1.6	+ 3.3	+ 2.9	+ 5.6	+ 6.1	+ 7.9	+ 5.8	+ 1.5	— 2.5	— 4.9
D	+ 6.4	+ 5.6	+ 4.5	+ 1.9	+ 1.2	— 0.5	— 1.4	— 2.8	+ 0.5	— 1.0	— 5.0	—10.6
Z	+ 0.2	— 0.5	— 0.8	— 1.4	— 1.5	— 1.6	— 1.6	— 1.6	— 1.5	— 1.6	— 2.2	— 2.5
						March						
H	+ 0.2	+ 1.0	+ 1.5	+ 0.1	+ 1.0	+ 2.9	+ 4.6	+ 4.9	+ 1.6	— 3.4	— 6.3	— 2.9
D	+ 7.1	+ 4.0	+ 1.6	+ 2.8	+ 2.3	+ 1.7	+ 4.2	+10.4	+15.6	+13.2	+ 4.1	— 9.5
Z	+ 2.5	+ 1.9	+ 1.2	+ 1.0	+ 1.0	+ 0.9	+ 2.1	+ 3.0	+ 1.9	— 2.3	— 7.7	—10.4
						April						
H	+10.3	+11.6	+ 9.6	+11.5	+ 8.6	+ 7.1	+ 4.5	— 0.5	—10.2	—17.9	—15.7	—10.4
D	+ 7.9	+ 7.0	+ 5.7	+ 3.2	+ 2.3	+ 6.6	+13.3	+21.8	+24.3	+14.5	+ 0.6	—17.2
Z	+ 2.2	+ 0.4	— 0.7	— 1.7	— 1.9	— 0.8	+ 0.8	+ 1.0	— 2.0	— 7.4	—12.5	—15.2
						May						
H	+ 3.2	+ 2.9	+ 1.8	+ 2.2	+ 2.5	+ 2.0	— 2.9	— 7.9	—12.2	—12.9	—11.0	— 3.1
D	+ 7.5	+ 9.2	+10.6	+11.7	+14.0	+20.0	+23.2	+23.6	+20.0	+ 8.4	— 6.5	—20.1
Z	+ 5.3	+ 4.8	+ 4.4	+ 4.4	+ 5.1	+ 4.2	+ 3.1	+ 1.4	— 1.5	— 6.5	—11.0	—14.6

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
+ 1.7	+ 1.8	— 1.8	— 2.4	— 6.9	— 7.9	— 9.1	— 4.2	— 2.5	— 4.6	+ 0.8	— 1.6	21 067 nT
—12.8	—11.2	— 7.5	— 2.9	— 1.6	+ 0.8	+ 5.1	+ 6.2	+ 7.4	+ 9.3	+ 9.3	+10.4	1°11.3'
— 4.8	— 2.9	— 1.1	— 0.5	+ 2.6	+ 3.7	+ 4.7	+ 4.7	+ 4.5	+ 4.2	+ 2.9	+ 2.3	42 598 nT
— 2.6	— 3.9	— 2.6	— 4.7	— 7.9	— 6.6	— 6.1	— 3.7	— 0.6	— 0.3	+ 1.2	— 4.6	21 069 nT
—14.5	—13.7	—10.8	— 6.7	+ 0.1	+ 0.1	+ 6.9	+ 7.8	+ 7.2	+ 7.8	+ 6.8	+10.2	1°11.6'
— 2.1	— 0.9	+ 0.7	+ 1.2	+ 1.8	+ 2.3	+ 3.1	+ 3.0	+ 2.8	+ 2.4	+ 1.6	+ 0.7	42 616 nT
+ 0.5	+ 1.6	+ 0.4	— 2.5	— 3.2	— 3.4	— 3.1	— 1.4	+ 0.3	+ 3.1	+ 2.3	+ 0.2	21 078 nT
—22.0	—26.2	—22.7	—13.7	— 5.2	— 2.4	— 2.0	+ 2.1	+ 5.5	+10.3	+10.2	+ 8.6	1°11.3'
—10.1	— 7.2	— 4.6	— 0.2	+ 2.3	+ 2.6	+ 3.4	+ 4.1	+ 4.3	+ 3.9	+ 3.5	+ 3.5	42 618 nT
— 4.8	— 3.0	— 5.1	— 8.3	— 8.7	— 8.8	— 1.6	+ 3.2	+ 6.2	+ 6.5	+ 6.7	+ 9.2	21 071 nT
—30.2	—33.6	—28.6	—19.2	— 8.7	— 2.7	+ 1.9	+ 3.8	+ 5.4	+ 5.0	+ 7.9	+ 9.0	1°11.4'
—13.5	— 9.0	— 2.0	+ 3.7	+ 7.8	+ 9.4	+ 8.7	+ 8.3	+ 7.4	+ 6.7	+ 5.9	+ 4.4	42 630 nT
+ 2.8	+ 1.7	— 3.0	— 5.0	— 3.4	— 1.1	+ 2.0	+ 7.1	+ 8.7	+ 8.8	+ 8.6	+ 8.2	21 084 nT
—28.7	—31.1	—26.7	—19.1	—12.1	— 7.9	— 3.5	— 1.7	— 1.6	+ 0.1	+ 3.4	+ 7.3	1°11.3'
—14.7	—11.9	— 7.5	— 2.2	+ 1.9	+ 4.4	+ 5.2	+ 5.7	+ 5.4	+ 5.0	+ 5.1	+ 4.5	42 616 nT

	0	1	2	3	4	5	6	7	8	9	10	11
						June						
H	+ 7.3	+ 6.9	+ 4.4	+ 4.8	+ 5.6	+ 3.7	+ 0.3	— 6.0	—12.1	—15.2	—15.0	—11.0
D	+ 7.8	+ 6.4	+ 8.1	+ 9.8	+15.1	+20.4	+23.3	+23.9	+21.9	+14.3	+ 1.3	—12.5
Z	+ 2.6	+ 2.0	+ 1.6	+ 2.1	+ 2.7	+ 3.2	+ 2.0	+ 1.6	+ 0.4	— 3.9	— 8.7	—11.7
						July						
H	+10.7	+10.0	+ 8.7	+ 8.2	+ 7.6	+ 5.6	+ 3.6	— 4.4	—12.2	—14.9	—14.6	—14.4
D	+ 3.6	+ 4.6	+ 6.0	+ 7.0	+10.6	+17.3	+21.1	+23.8	+22.2	+15.3	+ 2.3	—12.3
Z	+ 1.4	+ 0.5	+ 0.1	+ 0.5	+ 1.7	+ 2.4	+ 1.0	+ 0.1	— 1.7	— 5.3	— 8.6	—10.3
						August						
H	+ 9.2	+ 6.0	+ 7.3	+ 5.4	+ 6.4	+ 4.6	— 2.3	— 9.8	—17.7	—21.5	—18.5	— 8.6
D	+ 7.8	+ 7.2	+ 6.5	+ 7.6	+10.2	+17.0	+22.5	+24.1	+21.9	+10.4	— 4.6	—18.4
Z	+ 1.0	+ 0.5	— 0.1	+ 0.1	+ 1.1	+ 2.0	+ 2.0	+ 2.2	+ 0,9	— 2.0	— 5.3	— 7.7
						September						
H	+ 7.4	+ 5.8	+ 4.8	+ 4.8	+ 5.6	+ 5.4	+ 3.6	— 3.6	—11.5	—14.5	—14.6	—11.8
D	+ 6.1	+ 4.4	+ 6.4	+ 6.5	+ 8.9	+ 8.3	+12.3	+17.2	+17.1	+10.3	— 2.6	—16.0
Z	+ 0.7	+ 0.7	+ 0.7	+ 0.7	+ 0.6	+ 1.1	+ 1.9	+ 2.8	+ 1.8	— 1.0	— 5.0	— 8.2
						October						
H	+ 5.8	+ 4.1	+ 3.5	+ 3.7	+ 5.9	+ 6.9	+ 6.3	+ 2.5	— 2.1	— 4.8	— 8.4	— 8.3
D	+ 5.8	+ 4.9	+ 3.1	+ 3.3	+ 1.9	+ 0.8	+ 2.0	+ 5.5	+11.9	+13.4	+ 3.9	—10.9
Z	+ 1.3	+ 0.8	+ 0.3	— 0.1	— 0.1	+ 0.3	+ 1.0	+ 2.5	+ 2.1	— 1.3	— 7.1	—10.7

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
− 7.3	− 6.9	− 6.7	− 4.2	− 0.8	− 0.6	+ 3.0	+ 9.3	+11.7	+11.7	+ 8.5	+ 8.6	21 082 nT
−22.6	−28.9	−29.8	−26.4	−20.7	−11.2	− 6.8	− 5.8	− 1.5	+ 2.1	+ 4.3	+ 7.5	1°11.9'
−12.2	−10.7	− 7.3	− 1.7	+ 2.4	+ 4.7	+ 6.1	+ 5.8	+ 5.6	+ 5.0	+ 4.6	+ 3.8	42 606 nT
−10.8	− 7.4	− 8.5	− 8.5	− 4.6	− 3.3	+ 0.5	+ 5.7	+10.0	+10.9	+12.0	+10.1	21 077 nT
−21.4	−27.1	−26.3	−21.9	−15.4	− 8.2	− 6.1	− 3.1	− 0.5	+ 0.5	+ 3.5	+ 4.5	1°12.9'
−10.6	− 9.1	− 4.9	+ 0.8	+ 5.5	+ 7.5	+ 7.5	+ 6.3	+ 5.0	+ 3.9	+ 3.5	+ 2.8	42 623 nT
− 2.6	− 0.4	+ 0.4	− 1.4	− 1.3	− 1.8	+ 2.7	+ 6.3	+ 9.2	+ 9.2	+10.5	+ 8.7	21 080 nT
−27.9	−28.9	−25.2	−18.7	−11.9	− 5.5	− 3.7	− 2.0	− 0.8	+ 2.1	+ 5.1	+ 5.2	1°13.0'
− 8.2	− 6.8	− 3.8	− 0.5	+ 2.5	+ 3.7	+ 3.4	+ 3.6	+ 3.3	+ 3.1	+ 2.8	+ 2.2	42 628 nT
− 8.7	− 3.0	− 0.1	− 0.3	− 1.1	− 3.4	+ 0.4	+ 3.0	+ 4.4	+ 5.5	+10.6	+11.3	21 074 nT
−24.0	−26.3	−21.9	−13.7	− 9.0	− 3.5	− 1.9	+ 1.2	+ 6.6	+ 7.0	+ 3.6	+ 3.9	1°13.5'
− 7.6	− 5.0	− 3.0	− 0.8	+ 1.0	+ 2.4	+ 2.9	+ 3.6	+ 3.5	+ 3.4	+ 2.2	+ 0.6	42 637 nT
− 5.9	− 1.2	− 1.5	− 3.9	− 7.7	− 7.8	− 3.7	− 1.8	+ 0.4	+ 6.7	+ 6.0	+ 5.3	21 071 nT
−21.9	−22.2	−18.1	−10.3	− 6.7	− 1.7	+ 2.3	+ 4.3	+ 5.9	+ 7.6	+ 7.7	+ 7.5	1°14.4'
− 8.7	− 5.4	− 2.0	+ 0.8	+ 2.2	+ 3.7	+ 4.7	+ 4.6	+ 4.4	+ 3.1	+ 1.9	+ 1.7	42 638 nT

	0	1	2	3	4	5	6	7	8	9	10	11
							November					
H	+ 2.4	+ 2.7	+ 5.6	+ 3.6	+ 5.0	+ 6.8	+ 9.2	+11.1	+ 6.8	+ 2.9	— 2.9	— 6.7
D	+ 7.6	+ 2.7	+ 0.9	— 3.8	— 5.0	— 4.2	— 3.6	— 0.4	+ 5.4	+ 5.9	— 0.9	— 9.4
Z	+ 0.3	— 1.1	— 2.4	— 2.4	— 2.3	— 1.6	— 1.3	— 0.9	— 1.0	— 3.9	— 6.8	— 5.1
							December					
H	— 1.3	— 0.9	— 0.1	+ 1.0	+ 2.0	+ 4.4	+ 7.9	+10.3	+ 9.4	+ 4.9	+ 0.9	— 0.2
D	+ 6.6	+ 3.3	+ 0.1	— 1.9	— 2.1	— 5.8	— 5.3	— 3.8	— 1.3	+ 0.1	— 2.7	— 6.7
Z	+ 0.4	— 0.1	— 0.8	— 1.6	— 1.8	— 1.4	— 1.8	— 2.3	— 2.7	— 3.5	— 3.5	— 3.9
							1985 Yearly means					
H	+ 4.7	+ 4.2	+ 4.0	+ 4.1	+ 4.7	+ 4.9	+ 4.1	+ 1.0	— 4.1	— 7.6	— 8.9	— 6.9
D	+ 6.8	+ 5.4	+ 4.8	+ 4.2	+ 4.9	+ 6.6	+ 9.1	+11.8	+13.2	+ 8.3	— 1.5	—12.9
Z	+ 1.6	+ 0.9	+ 0.3	+ 0.1	+ 0.3	+ 0.6	+ 0.6	+ 0.7	— 0.5	— 3.6	— 6.9	— 8.3
							1985 Quiet days					
H	— 0.3	— 1.2	— 1.3	— 0.3	+ 1.4	+ 1.8	+ 0.9	— 0.4	— 3.9	— 6.5	— 7.5	— 6.0
D	+ 5.7	+ 5.2	+ 4.8	+ 4.3	+ 6.1	+ 9.4	+12.1	+15.4	+16.5	+11.6	+ 1.0	—11.1
Z	+ 2.8	+ 2.5	+ 2.1	+ 2.3	+ 2.7	+ 3.3	+ 3.0	+ 2.8	+ 1.0	— 2.4	— 6.2	— 8.6
							1985 Disturbed days					
H	+15.5	+17.2	+21.2	+25.8	+24.8	+15.2	+10.8	+ 3.5	— 5.8	—15.3	—13.5	—15.5
D	+18.7	+15.6	+ 8.6	+ 1.3	— 3.9	—12.6	— 9.4	— 7.6	— 4.0	— 3.1	— 5.5	—10.4
Z	— 4.2	— 7.2	—10.0	—11.3	—11.7	— 9.8	— 8.9	— 7.2	— 6.2	— 4.7	— 4.6	— 4.4

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
-- 5.5	— 7.8	— 5.7	— 6.5	— 7.0	— 3.9	— 2.3	— 2.0	— 2.1	— 2.1	— 1.9	+ 0.1	21 066 nT
—15.5	—15.7	—11.9	— 7.9	— 3.3	— 0.8	+ 2.5	+ 5.3	+12.6	+16.6	+12.4	+10.5	1°15.1'
— 3.4	+ 0.2	+ 3.5	+ 4.7	+ 3.4	+ 4.0	+ 3.6	+ 3.6	+ 3.3	+ 2.7	+ 2.2	+ 0.7	42 638 nT
— 1.3	— 3.0	— 5.0	— 6.5	— 6.4	— 5.0	— 2.9	— 2.6	— 1.6	— 2.1	— 2.2	+ 0.3	21 062 nT
—11.2	— 9.2	— 5.9	— 3.7	— 0.1	+ 1.0	+ 4.4	+ 5.7	+ 8.9	+10.8	+ 8.9	+ 9.9	1°15.2'
— 3.4	— 0.5	+ 2.0	+ 3.0	+ 3.4	+ 3.3	+ 3.1	+ 3.1	+ 2.9	+ 2.8	+ 2.3	+ 1.0	42 656 nT
— 3.8	— 2.7	— 3.3	— 4.5	— 4.9	— 4.2	— 1.7	+ 1.5	+ 3.6	+ 4.4	+ 5.2	+ 5.2	21 073 nT
—21.1	—22.8	—19.6	—13.7	— 7.9	— 3.5	— 0.1	+ 2.0	+ 4.6	+ 6.6	+ 6.9	+ 7.9	1°12.7'
— 8.3	— 5.8	— 2.5	+ 0.7	+ 3.1	+ 4.3	+ 4.7	+ 4.7	+ 4.4	+ 3.8	+ 3.2	+ 2.4	42 625 nT
— 2.5	— 1.1	+ 0.5	+ 0.3	+ 0.5	+ 0.9	+ 2.0	+ 4.2	+ 5.1	+ 5.1	+ 4.6	+ 3.7	21 079 nT
—20.0	—21.7	—18.4	—12.5	— 7.5	— 4.2	— 3.0	— 1.7	— 0.4	+ 1.3	+ 2.7	+ 4.4	1°12.7'
— 8.7	— 6.7	— 3.7	— 1.2	+ 0.8	+ 1.6	+ 1.9	+ 2.1	+ 2.3	+ 2.2	+ 2.1	+ 2.0	42 626 nT
—12.9	—21.7	—22.3	—15.6	—20.2	—16.4	—10.1	— 3.3	+ 8.6	+ 8.9	+ 8.9	+12.1	21 051 nT
—21.6	—17.4	—14.0	—13.4	— 4.8	+ 5.7	+18.4	+16.9	+16.0	+12.0	+ 9.1	+ 5.4	1°14.3
-- 2.2	+ 0.9	+ 5.5	+ 8.8	+12.5	+15.0	+14.9	+12.6	+ 9.2	+ 6.4	+ 4.4	+ 2.2	42 633 nT

IV.

Results of harmonical analysis of the daily variations

	A_1	φ_1	A_2	φ_2	A_3	φ_3	A_4	φ_4	A_5	φ_5	A_6	φ_6
						Horizontal Intensity						
January	5.8	351	1.1	176	2.0	195	0.7	359	0.1	111	0.3	179
February	5.5	32	1.3	198	2.1	161	1.1	13	0.6	164	0.4	138
March	2.1	47	0.4	271	2.5	195	1.5	24	1.1	277	0.3	16
April	11.1	86	2.8	14	4.1	234	2.7	51	0.4	310	0.8	162
May	7.3	125	1.4	72	4.5	250	1.8	98	0.6	255	0.5	91
June	11.0	112	1.8	307	3.0	239	0.8	82	0.9	11	0.8	101
July	12.8	97	1.5	325	2.9	229	0.9	73	0.5	359	0.4	347
August	10.9	118	4.1	16	5.0	234	1.6	87	0.4	352	0.5	145
September	9.1	104	2.8	355	4.0	195	0.8	101	0.6	104	1.0	229
October	6.4	68	0.3	344	3.6	196	0.9	14	0.5	137	0.7	318
November	6.7	30	2.9	257	1.3	107	1.5	23	0.3	228	0.2	247
December	5.3	2	3.0	218	0.8	138	1.1	37	0.6	230	0.4	151
Year	6.0	83	0.8	324	2.5	214	1.1	52	0.2	282	0.1	150
Q	3.8	131	1.6	280	2.4	206	0.3	52	0.3	212	0.2	156
D	21.4	65	1.9	332	4.0	262	0.5	287	1.2	343	2.0	142
						Declination						
January	9.0	109	2.5	223	1.8	94	0.8	298	0.5	177	0.6	194
February	8.7	103	3.7	226	2.4	50	0.8	249	0.9	123	0.1	184
March	10.4	61	9.9	210	5.4	67	3.4	245	0.1	14	0.7	91
April	14.6	54	13.3	225	7.9	72	1.6	291	0.3	219	0.4	178
May	19.2	45	10.9	247	5.2	90	0.4	316	0.2	144	0.3	205
June	20.2	36	11.0	226	3.3	80	0.7	164	0.6	177	0.6	357
July	17.0	33	11.2	228	4.0	80	0.5	246	0.2	206	0.4	342
August	17.2	43	11.3	239	5.7	94	0.5	321	0.2	221	0.4	344
September	13.0	52	10.0	233	4.3	76	2.4	291	0.2	13	0.7	83
October	9.0	68	8.3	213	5.1	55	3.1	260	1.4	120	0.4	310
November	8.4	106	7.6	194	2.8	79	2.6	269	0.4	66	0.9	13
December	7.3	122	3.6	188	1.7	72	1.4	256	0.7	116	0.1	62
Year	11.4	59	8.3	224	4.0	76	1.3	267	0.4	133	0.1	35
Q	11.5	41	7.8	230	4.8	78	1.2	266	0.5	98	0.3	23
D	14.3	117	4.8	203	6.9	20	2.3	13	1.3	95	0.9	320

	A_1	φ_1	A_2	φ_2	A_3	φ_3	A_4	φ_4	A_5	φ_5	A_6	φ_6
					Vertical Intensity							
January	4.1	138	1.5	269	0.3	98	0.2	19	0.1	212	0.1	346
February	2.4	161	0.8	260	0.2	118	0.3	318	0.1	125	0.1	302
March	4.8	105	3.5	265	2.1	110	0.8	318	0.2	212	0.4	114
April	7.8	135	5.3	277	3.1	119	0.6	318	0.3	260	0.1	189
May	8.3	99	4.8	281	1.7	102	0.3	287	0.1	130	0.2	70
June	6.4	105	4.7	267	1.5	96	0.4	248	0.2	196	0.3	83
July	5.7	124	4.7	278	1.5	96	0.6	186	0.1	233	0.2	96
August	3.5	109	3.3	265	1.5	109	0.3	249	0.0	221	0.1	69
September	3.1	105	3.1	262	1.2	111	0.9	325	0.2	210	0.2	6
October	3.8	119	3.5	268	1.9	109	1.2	335	0.6	169	0.3	45
November	3.6	168	1.7	296	1.7	152	0.8	348	0.3	168	0.1	105
December	3.2	156	0.9	290	0.5	149	0.2	353	0.2	173	0.4	325
Year	4.4	123	3.1	273	1.4	113	0.4	314	0.1	183	0.1	72
Q	4.2	88	2.9	278	1.4	114	0.4	324	0.1	116	0.2	57
D	11.7	189	2.9	250	1.3	96	0.5	160	0.5	176	0.3	269

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 accout 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. MÄRCZ. 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. MÄRCZ: „Atmosphärisch-elektrische und ionosphärische Messungen im Observatorium bei Nagycenk". Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967. Further information is 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.

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	—10	50	50	40	50	30	40	20	[20]	40	60	40
2.	0	—10	40	50	70	40	10	—20	[60]	70	60	40	40
3.	50	10	0	0	0	10	40	40	30	30	[—10]	10	40
4.	+S	±S	—50	40	40	60	30	0	40	80	40	[30]	40
5.	60	70	60	20	0	—10	0	0	—10	[—10]	10	0	30
6.	—40	10	30	60	50	30	20	40	70	100	120	[120]	130
7.	—10	40	—30	40	60	80	50	—	—	60	70	140	180
8	80	70	80	120	80	70	90	130	110	140	[110]	120	150
9.	120	—10	—20	—160	20	40	30	40	50	30	[50]	50	70
10.	50	40	30	20	10	—20	—20	30	30	40	[50]	70	110
11.	30	40	40	30	50	40	20	—10	0	20	20	[30]	30
12.	40	30	30	50	30	40	50	80	110	110	[110]	50	70
13.	70	80	100	70	80	80	120	110	120	120	110	[110]	160
14.	90	80	10	30	20	50	90	50	—	60	50	80	90
15.	20	0	20	10	20	+S	+S	—20	±S	—S	[110]	30	30
16.	60	50	50	50	60	60	120	110	120	130	[130]	130	160
17.	150	120	90	80	80	70	120	+S	+S	+S	[120]	150	180
18.	110	90	80	90	80	80	90	130	150	[170]	200	190	160
19.	50	100	110	80	60	70	70	60	70	80	110	120	130
20.	90	60	60	100	120	70	90	80	100	[100]	120	110	100
21.	—70	—90	—100	—60	—90	—80	—80	—	—	—60	—30	50	20
22.	—100	—180	—160	0	—20	10	30	110	100	70	80	[110]	—70
23.	110	80	80	40	—40	0	—180	—60	+S	160	170	170	[130]
24.	40	60	80	110	110	—S	±S	±S	—S	±S	±S	±S	0
25.	40	40	40	40	50	50	60	100	110	[110]	100	100	120
26.	70	30	60	10	—40	—20	—40	—20	60	100	[100]	110	110
27.	30	40	40	40	30	80	110	120	70	+S	[190]	160	140
28.	70	70	70	50	60	70	90	[140]	—	140	120	110	90
29.	20	60	20	0	0	20	30	40	70	70	[100]	120	110
30.	40	20	—50	—10	70	70	30	70	120	110	[100]	80	100
31.	60	50	40	30	40	70	60	70	90	120	[150]	140	120
Means	44	35	29	35	37	41	40	54	73	80	90	93	91
Number of days	30	30	31	31	31	29	29	27	23	27	30	30	31

13	14	15	16	17	18	19	20	21	22	23	Daily means
10	20	10	0	—50	—10	10	20	30	20	40	20
40	40	70	110	170	130	80	70	70	—10	0	51
40	40	60	110	120	110	120	80	80	70	50	47
50	110	90	100	100	60	60	60	110	140	80	—
40	20	—20	—20	—20	—30	—50	—10	—10	—20	—10	4
150	170	170	160	150	130	140	80	80	70	10	85
190	200	140	120	70	20	60	90	120	80	60	—
170	160	140	120	120	110	110	120	100	160	120	116
80	50	70	80	70	80	70	60	50	50	50	43
90	100	120	160	170	200	140	120	120	90	50	75
30	50	40	30	10	10	30	—10	—50	50	30	23
70	30	—20	80	110	130	30	—10	0	50	80	56
170	170	160	190	170	170	160	120	130	130	110	125
90	80	70	10	0	0	—20	—10	0	10	20	42
50	60	40	50	60	50	30	30	60	10	50	—
160	160	160	140	90	90	110	130	90	50	100	105
210	190	190	170	190	170	150	150	130	110	110	—
120	150	110	50	—40	—10	0	10	10	30	20	86
[130]	130	150	190	120	130	130	150	130	190	160	113
90	70	70	30	10	30	20	—20	—30	—80	—90	54
60	40	—20	—10	—30	—20	—10	—20	—20	—50	—80	—
10	20	—60	—60	—10	0	20	130	+S	140	110	12
120	120	120	70	70	60	90	+S	+S	±S	60	—
90	110	110	90	80	80	70	90	70	40	40	—
100	60	40	50	30	40	60	100	100	100	70	71
120	80	90	70	80	100	60	60	20	50	40	54
150	180	90	90	90	70	100	110	90	80	90	98
80	90	100	80	80	70	30	20	—10	20	10	72
100	130	170	150	120	120	120	80	100	50	40	77
—S	—S	—S	—50	10	—40	20	60	70	70	50	—
110	130	140	120	120	70	100	—40	±S	30	10	80
97	98	87	80	73	68	66	61	59	56	48	
30	30	30	31	31	31	31	30	28	30	31	

February

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	30	60	40	70	70	70	70	70	90	110	80	0	±S
2.	30	30	30	20	20	±S	±S	±S	50	50	60	[70]	—S
3.	70	60	50	50	+S	±S	±S	50	[80]	[70]	(60)	+S	90
4.	60	60	60	60	60	70	80	—	—	120	120	120	130
5.	40	30	40	50	50	80	120	180	150	150	[140]	130	130
6.	70	60	50	50	60	50	50	90	90	90	90	[70]	110
7.	70	—20	50	±S	±S	—S	+S	+S	±S	±S	[+S]	80	80
8.	80	90	90	90	80	60	80	130	120	70	[80]	50	50
9.	0	10	—10	—10	—10	10	0	20	20	40	[20]	[10]	—30
10.	—10	50	70	40	—20	—30	—50	—30	0	—30	[—40]	—10	—10
11.	40	20	30	30	40	30	30	30	—	100	120	120	120
12.	80	90	90	60	40	50	40	50	80	—	100	[120]	140
13.	110	80	60	50	0	10	30	40	90	[110]	120	150	160
14.	70	50	50	60	20	—10	40	40	70	70	[90]	80	80
15.	—50	—50	—10	30	30	+S	+S	110	90	40	50	[70]	70
16.	50	40	10	70	50	50	80	90	60	80	[80]	90	100
17.	50	50	50	60	80	80	80	90	110	90	[100]	110	110
18.	80	70	70	80	70	50	70	80	—	70	70	60	10
19.	30	20	10	30	50	50	40	50	—	40	30	30	30
20.	60	70	60	50	50	50	50	60	50	60	[70]	[80]	80
21.	90	80	80	70	80	70	70	70	80	70	[60]	[50]	50
22.	60	20	10	—30	—40	—30	—10	40	60	70	30	10	10
23.	40	50	50	50	50	50	50	80	70	100	110	[100]	110
24.	30	70	100	80	+S	40	—50	30	110	—10	[—S]	—S	—50
25.	20	20	40	20	30	30	50	—	—	80	120	160	170
26.	—	—	—	—	—	—	—	—	—	—	—	—	—
27.	—	—	—	—	—	—	—	—	—	—	—	—	—
28.	—	—	—	—	—	—	—	—	—	—	—	—	—
Means	48	44	47	47	39	40	44	65	77	71	77	76	76
Number of days	25	25	25	24	22	21	21	21	19	23	22	23	23

13	14	15	16	17	18	19	20	21	22	23	Daily means
±S	—S	—S	—S	—S	70	70	60	60	40	30	—
—S	120	70	60	—S	±S	±S	60	70	70	70	—
110	90	70	60	40	60	60	50	50	40	50	—
130	140	150	160	170	140	160	200	180	120	70	—
120	170	120	170	170	160	140	160	140	100	90	118
80	80	80	70	90	60	60	90	120	100	70	76
90	100	110	130	+S	120	110	120	120	110	90	—
50	0	50	50	60	50	110	10	120	10	—10	65
—170	—70	—100	—110	—70	40	—20	—50	—30	—20	—110	—27
—20	0	80	70	—10	30	50	—10	—60	—60	—10	0
120	120	140	140	140	140	130	120	170	150	110	95
150	140	150	170	170	150	140	150	120	120	120	110
150	150	160	160	120	120	120	120	130	120	110	103
120	120	120	110	100	90	30	—20	—70	—70	—80	48
80	70	70	70	110	120	140	130	120	110	70	—
90	90	100	100	140	130	120	90	100	80	60	81
110	50	30	30	80	80	110	90	90	90	80	79
0	50	50	30	60	60	70	70	40	30	0	54
30	10	40	60	70	70	60	60	50	40	40	41
90	90	100	110	120	120	120	100	100	100	90	80
40	50	50	40	70	110	70	30	60	70	60	65
10	20	30	30	30	30	10	—10	30	30	40	19
130	130	110	70	60	60	20	30	30	20	30	67
0	—S	—S	—120	20	140	170	170	150	80	30	—
160	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
73	78	81	72	83	93	89	76	79	62	46	
23	22	22	23	21	23	23	24	24	24	24	

March

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	—	—	—	—	—	130	70	50
2.	—120	—120	—130	—140	—150	—150	—70	[—20]	—60	—60	—110	—100	—100
3.	—270	—100	—S	±S	±S	30	[30]	50	60	90	80	70	120
4.	70	90	90	190	110	50	50	20	—	—	20	—30	—80
5.	—40	—20	20	30	50	70	80	80	50	70	10	[—10]	0
6.	—40	20	50	50	50	60	60	70	70	[100]	60	50	70
7.	50	40	20	40	30	40	50	60	50	30	[30]	20	60
8.	0	20	30	30	20	40	30	40	50	[40]	20	50	40
9.	—50	—20	—10	—40	—10	—40	[—30]	—10	20	50	50	20	10
10.	10	20	50	50	50	40	[40]	40	30	20	30	40	50
11.	20	40	30	50	+S	+S	50	—	—	130	150	140	190
12.	—20	30	—10	—10	—40	—60	—80	—40	0	60	[70]	90	100
13.	—20	—40	—30	—30	—40	—20	—10	10	60	50	60	60	80
14.	50	80	70	50	60	50	50	80	90	80	[90]	60	80
15.	50	50	50	50	50	70	60	90	70	70	[50]	60	80
16.	50	60	60	70	60	60	60	[70]	90	80	80	80	80
17.	—30	—30	—40	10	30	30	[—10]	10	30	30	50	60	60
18.	—	—	—	—	—	—	70	50	50	—	70	60	60
19.	+S	±S	±S	+S	+S	+S	—60	+S	±S	—	—	—	—
20.	—S	—70	—100	—70	20	20	10	20	50	—	—	60	50
21.	40	10	—50	—60	—40	—50	—80	30	100	[110]	60	50	80
22.	0	70	70	+S	±S	40	50	[50]	40	20	50	40	50
23.	10	10	20	0	0	20	[30]	—10	—10	20	—10	30	50
24.	40	50	40	10	—10	10	[30]	50	50	10	20	10	20
25.	50	60	40	40	20	40	60	[70]	—	70	60	60	50
26.	20	20	30	20	20	30	40	50	70	60	70	60	[60]
27.	50	50	50	50	50	60	80	70	70	80	[90]	90	70
28	+S	+S	±S	±S	20	30	60	50	40	40	[40]	40	50
29.	50	50	50	40	40	40	40	50	40	50	50	[50]	40
30.	50	50	50	50	50	50	60	100	100	90	80	[70]	60
31.	60	50	60	50	50	[50]	50	80	80	80	70	80	80
Means	3	17	20	21	20	23	28	43	50	57	52	48	54
Number of days	26	27	26	25	25	27	30	28	26	26	29	30	30

13	14	15	16	17	18	19	20	21	22	23	Daily means
20	10	50	60	40	—40	—80	—50	—70	—80	—100	—
—50	—50	—30	50	—70	—250	—190	—150	—80	—110	—230	—104
100	120	120	110	110	80	80	70	70	30	90	—
—90	—10	—20	—10	—40	—40	—50	—50	10	10	—30	—
10	30	50	20	100	100	110	70	50	10	20	40
80	80	60	20	—10	—10	40	60	50	40	50	47
80	120	80	50	80	150	130	70	40	40	20	58
40	20	20	40	—20	0	30	30	40	—20	—60	22
20	50	50	50	40	30	10	0	0	10	10	9
50	60	60	70	50	40	30	50	50	30	—10	40
+S	150	160	—30	+S	±S	—S	+S	—S	—10	—70	—
110	110	120	90	120	110	80	50	60	30	30	42
90	90	90	70	60	50	50	50	70	60	40	35
80	60	60	50	60	50	60	70	40	50	50	63
40	50	50	50	60	60	50	60	50	50	50	57
70	70	70	50	50	40	30	0	0	—10	0	53
60	±S	±S	±S	±S	±S	—S	—	—	—	—	—
50	50	70	80	60	80	80	40	±S	±S	70	—
+S	40	—10	—40	40	+S	±S	±S	—S	—S	—S	—
70	120	100	100	80	90	80	110	0	50	30	—
80	20	—10	10	—50	0	50	50	+S	—S	—110	—
70	70	70	60	50	60	60	50	30	30	20	—
30	0	40	30	50	50	80	50	30	20	20	23
30	10	10	30	30	40	20	40	30	30	40	27
50	50	40	50	30	30	40	0	—10	0	0	39
50	50	50	40	50	70	50	50	50	50	40	46
60	50	50	50	40	30	40	—10	20	+S	±S	—
50	60	60	40	50	60	60	60	60	60	50	—
50	50	50	60	50	50	50	50	50	50	60	48
50	50	50	50	60	70	90	70	60	50	60	63
70	80	60	60	60	—S	±S	±S	±S	±S	40	—
49	55	53	45	42	37	40	33	28	19	6	
29	30	30	30	29	27	27	27	25	25	28	

April

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	40	40	30	40	40	40	—	—	60	50	50	60	70
2.	50	50	80	90	70	30	90	90	60	[30]	30	40	30
3.	30	30	(30)	30	30	30	40	30	40	[40]	30	30	30
4.	20	20	20	30	30	30	30	30	30	50	[60]	50	60
5.	110	30	30	40	50	[50]	[70]	80	80	80	80	60	—
6.	40	50	30	40	30	[40]	[30]	50	50	40	30	50	60
7.	30	10	20	30	50	[50]	60	50	50	30	(30)	(40)	(30)
8.	30	30	30	30	50	60	70	70	80	[80]	70	80	70
9.	40	90	90	80	100	90	[90]	—	60	70	30	30	30
10.	40	50	40	30	20	30	20	[20]	30	30	0	50	20
11.	20	20	20	40	50	60	60	60	[60]	—S	±S	±S	—S
12.	20	20	10	10	20	30	60	30	30	30	[30]	30	40
13.	30	30	30	30	30	30	[30]	[40]	50	50	50	50	30
14.	10	20	±S	30	30	[30]	50	70	70	—S	±S	±S	±S
15.	30	30	30	50	70	70	60	—	70	60	50	50	60
16.	60	50	60	70	60	60	70	80	80	[80]	80	70	70
17.	30	70	20	0	—10	0	—10	[—20]	±S	±S	20	40	20
18.	—20	20	—10	0	0	0	0	30	20	—10	[—10]	—20	0
19.	30	40	40	40	40	40	60	70	70	90	[90]	90	110
20.	30	30	30	40	30	[30]	40	40	40	40	50	50	50
21.	—10	20	30	10	—10	—30	[—20]	—40	—10	40	60	60	60
22.	20	10	10	10	0	10	40	—	70	50	50	50	50
23.	40	40	50	50	40	40	50	50	40	40	—	50	40
24.	—10	—20	+S	0	—40	—50	30	0	10	[—60]	±S	—10	30
25.	40	40	20	10	30	40	50	60	[60]	60	50	40	40
26.	40	60	100	60	70	60	50	60	60	[50]	70	80	80
27.	0	10	—10	20	40	[20]	40	40	50	50	20	30	40
28.	20	10	30	—60	—60	60	[20]	±S	±S	±S	±S	±S	±S
29.	50	40	40	50	50	50	—	—	—S	±S	10	30	30
30.	20	20	20	20	30	20	10	40	40	[30]	30	20	30
Means	27	32	33	31	31	34	43	43	50	44	43	45	49
Number of days	30	30	27	30	30	30	28	24	27	25	24	26	25

13	14	15	16	17	18	19	20	21	22	23	Daily means
60	50	(60)	40	30	60	40	30	40	30	40	—
20	50	—S	±S	20	30	—S	30	±S	0	30	—
40	50	50	50	50	70	60	50	30	30	10	38
60	50	60	50	40	50	50	40	50	40	40	41
50	40	50	40	40	40	50	50	50	40	40	51
50	50	50	50	30	30	50	40	—50	30	40	38
40	50	50	50	30	30	30	10	10	30	30	—
80	30	—10	—10	0	0	—10	60	40	10	—10	39
40	60	60	50	40	30	50	30	30	30	20	54
90	+S	±S	—10	—30	10	—20	±S	±S	0	10	—
—S	—S	40	40	40	40	30	30	40	30	30	—
30	20	30	40	40	40	40	40	40	30	30	31
10	20	50	50	30	50	50	60	20	10	30	36
30	40	60	40	40	40	40	30	20	30	30	—
60	±S	60	60	60	60	60	60	70	70	60	57
70	90	80	90	90	80	60	40	30	—20	—40	61
90	80	70	70	70	80	70	40	20	0	—80	—
0	30	30	30	0	0	0	—30	—40	—10	10	1
100	100	110	120	100	80	60	60	50	30	40	69
50	60	60	60	50	40	20	10	—10	—20	0	34
60	50	40	40	50	40	40	30	30	20	20	24
50	40	40	40	30	40	40	40	40	40	50	36
40	40	+S	±S	±S	0	10	—10	0	—20	—10	—
—60	0	10	40	70	50	40	50	40	20	30	—
50	40	50	40	30	40	50	50	50	50	50	43
60	50	40	10	50	50	40	40	30	10	0	51
40	30	40	20	30	10	10	—10	—30	+S	—20	21
±S	10	40	40	50	50	60	50	50	50	50	—
30	30	40	40	50	40	40	40	30	±S	—60	—
40	40	40	40	40	40	30	40	30	30	20	30
46	45	48	44	40	41	38	34	25	21	16	
28	27	26	28	29	30	29	29	28	28	30	

May

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	20	30	30	20	30	30	30	30	40	[30]	20	20	+S
2.	30	+S	+S	+S	+S	—S	80	70	—10	70	70	—20	+S
3.	±S	—S	10	10	10	20	30	50	90	[30]	30	30	30
4.	20	20	20	20	20	[20]	30	30	30	30	30	20	20
5.	20	20	20	10	10	20	[20]	20	20	0	±S	—80	—10
6.	30	30	20	30	30	50	—	—	40	20	50	40	30
7.	40	50	40	50	20	30	40	70	[50]	70	30	±S	±S
8	50	50	50	40	40	50	50	50	40	20	30	[30]	±S
9.	50	50	50	50	50	50	60	50	50	[50]	50	40	40
10.	30	30	40	30	30	40	50	50	50	[50]	50	50	(50)
11.	50	40	30	20	30	[50]	60	60	90	80	60	60	60
12.	30	50	50	40	40	40	[40]	40	50	50	50	50	50
13.	(40)	50	50	50	60	60	—	60	50	50	50	50	50
14.	50	50	30	50	70	70	50	(40)	30	[30]	(40)	40	30
15.	10	(10)	30	30	30	50	70	60	[50]	50	±S	+S	±S
16.	(20)	(0)	—20	—20	10	30	(30)	20	10	30	(30)	[30]	30
17.	—	—	—	—	10	30	(40)	20	40	100	80	[10]	+S
18.	—20	20	30	30	30	70	[70]	60	80	40	30	40	40
19.	30	30	30	30	30	30	40	[90]	30	30	10	10	—10
20.	50	30	40	30	30	20	[50]	—	50	40	30	30	30
21.	50	50	40	50	50	40	50	80	50	±S	±S	+S	±S
22.	—S	—S	—60	—10	10	20	30	30	80	[90]	30	+S	±S
23.	0	30	30	50	60	40	50	50	50	[40]	40	30	20
24.	+S	10	20	40	30	40	80	120	70	[50]	40	20	30
25.	20	30	30	30	30	[20]	30	30	30	30	20	20	20
26.	10	30	30	30	20	[20]	20	40	40	50	40	40	20
27.	10	20	20	20	20	30	10	—	—	20	20	30	20
28.	10	10	10	20	20	(20)	30	[20]	30	30	20	30	—
29.	40	10	10	30	40	50	30	30	20	[30]	40	50	+S
30.	—20	—20	—40	—30	—20	—10	—10	20	20	0	10	—	—
31.	10	—10	20	20	30	20	20	10	[20]	10	10	10	30
Means	25	28	23	27	29	36	41	47	43	41	37	26	28
Number of days	25	25	29	29	30	29	27	27	30	30	26	26	19

13	14	15	16	17	18	19	20	21	22	23	Daily means
±S	+S	20	20	—S	—S	—10	20	10	0	10	—
+S	—50	—100	+S	—S	±S	±S	±S	±S	±S	±S	—
30	40	20	30	—50	40	50	50	30	30	20	—
30	30	20	20	20	20	20	20	20	20	20	23
20	30	20	30	20	20	20	10	20	20	30	14
20	50	40	30	30	60	—50	50	40	—10	40	—
±S	±S	±S	+S	50	70	50	50	50	50	50	—
—	—	—	40	50	50	50	50	50	50	50	—
40	40	40	50	50	40	40	50	40	40	40	46
50	40	(40)	50	40	30	50	60	50	40	40	—
70	60	50	50	50	40	30	50	50	40	30	50
50	50	50	50	50	50	50	30	30	30	40	44
50	(60)	80	(90)	80	60	50	40	40	30	(40)	—
(30)	(30)	30	—	30	20	30	20	20	(20)	(10)	—
30	50	30	30	30	20	(10)	(—20)	+S	+S	—S	—
30	30	30	10	(10)	10	10	10	50	—	—	—
±S	—10	30	20	10	0	10	0	(10)	—10	—10	—
40	30	30	70	—	—	±S	±S	±S	+S	10	—
0	10	20	30	30	30	20	30	30	40	30	27
40	40	30	30	30	10	+S	±S	10	30	30	—
—S	30	30	30	+S	±S	—10	30	10	10	0	—
+S	±S	+S	10	40	10	+S	—S	20	±S	+S	—
20	20	30	40	40	40	±S	±S	+S	+S	±S	—
30	20	20	30	30	30	30	30	30	20	30	37
20	30	30	20	20	20	30	20	0	0	10	23
30	30	20	20	30	40	40	30	30	20	10	29
30	20	30	40	30	20	20	10	10	10	10	—
—	40	40	40	50	50	40	40	40	30	40	—
±S	±S	±S	±S	±S	10	+S	+S	—S	+S	—10	—
—	10	20	—10	±S	±S	+S	+S	20	10	10	—
10	—10	—20	±S	±S	20	20	+S	+S	—10	—10	—
32	26	25	31	33	31	26	32	29	21	22	
20	24	26	25	23	26	23	22	21	23	24	

June

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—10	—10	—20	±S	30	60	70	[50]	60	50	50	50	50
2.	20	40	40	40	50	50	50	[50]	50	10	30	60	10
3.	20	10	—10	0	10	0	—	—	30	20	30	20	(10)
4.	20	10	10	30	50	60	80	[60]	70	—	—	—	—
5.	0	20	30	30	40	10	—10	[—20]	—10	10	10	10	20
6.	10	10	—	—	—	—	—	—	—	10	0	10	40
7.	—	—	—	—	—	—	—	—	—	—	—	—	—
8.	—	—	—	—	80	50	70	50	+S	+S	+S	50	40
9.	—60	10	10	0	20	20	20	[30]	50	40	60	40	30
10.	30	20	30	30	40	40	40	—	—	—	—	—	—
11.	40	30	20	40	40	40	50	(70)	(70)	(40)	[40]	—	—
12.	10	10	10	10	20	30	40	40	[30]	30	40	30	30
13.	10	30	30	40	40	30	10	20	10	[30]	—	—	—
14.	—	—	—	—	30	50	50	60	(40)	[30]	20	20	10
15.	60	60	50	±S	+S	—S	20	[40]	80	—10	80	+S	40
16.	40	40	30	30	30	[40]	[40]	40	40	—	—	—	—
17.	10	—10	—30	—20	—50	—10	70	—	—	30	20	30	70
18.	40	70	40	40	60	70	60	70	50	40	[30]	30	40
19.	10	10	10	10	10	30	40	50	60	[60]	50	20	10
20.	0	0	0	0	—20	0	0	—20	0	—110	—260	—100	0
21.	—	—	—	—	—	40	150	100	40	[30]	10	20	10
22.	20	30	20	20	20	30	[30]	40	50	40	40	40	40
23.	—	—	—	—	—	—	—	—	—	—	—	—	—
24.	—	—	—	—	—	—	—	—	50	50	40	40	(40)
25.	—	—	40	40	(50)	80	50	[40]	40	30	40	20	10
26.	—10	0	10	10	40	30	(40)	—	—	—	—	—	—
27.	±S	±S	±S	±S	40	30	70	+S	—	—	—	50	[40]
28.	40	50	30	30	30	50	50	40	40	[50]	50	±S	+S
29.	10	10	10	10	20	30	30	[40]	30	50	50	40	50
30.	10	20	20	20	30	50	60	[50]	80	70	30	—	—
Means	15	21	17	21	29	36	48	42	43	27	22	25	30
Number of days	22	22	22	20	23	25	24	20	20	21	21	19	18

13	14	15	16	17	18	19	20	21	22	23	Daily means
50	40	40	50	60	60	60	40	30	50	50	42
10	10	20	—30	—10	—40	0	±S	—10	—10	10	20
30	30	30	30	40	50	50	30	20	30	20	—
50	40	40	40	50	50	40	20	10	20	10	—
20	20	20	30	30	20	20	20	10	0	10	14
30	10	0	—10	±S	±S	—20	—10	—20	—40	—20	—
—	—	—	—	—	—	—	—	—	—	—	—
100	60	50	40	40	50	50	20	30	—180	—60	—
20	20	20	30	40	40	50	40	30	20	20	25
30	40	40	40	40	—S	±S	±S	±S	±S	30	—
40	50	40	30	30	30	40	40	40	20	20	—
(30)	30	30	40	40	50	40	30	20	30	30	29
—	—	—	—	—	30	50	40	10	10	(10)	—
30	30	30	30	40	40	40	30	30	40	40	—
40	40	40	40	50	60	60	60	40	40	40	—
—	—	—	—	—	—	—	—	20	10	10	—
90	100	70	50	30	40	70	40	40	40	40	—
(30)	—	—	±S	±S	50	30	30	20	20	10	—
10	0	0	—10	—10	0	0	0	—10	—10	0	14
30	40	(70)	—	—	—	—	—	—	—	—	—
0	10	0	0	10	10	10	20	10	10	10	—
30	30	30	30	30	20	30	20	10	(0)	—	—
—	—	—	—	—	—	—	—	—	—	—	—
(40)	10	10	60	30	20	30	20	—	—	—	—
—10	—10	—10	—10	0	0	0	10	20	—10	—10	—
—	20	0	0	0	0	0	0	0	50	60	—
40	40	20	(0)	(20)	30	40	40	40	40	30	—
20	40	40	60	30	40	40	20	10	0	0	35
40	20	0	20	—	0	—10	10	20	20	30	23
—	—	—	—	—	—	—	—	—	—	—	—
33	30	24	25	29	28	30	25	18	9	17	
21	24	23	22	20	23	24	23	24	23	23	

July

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—	—	—	—	—	—	—	—	—	+S	±S	±S	±S
2.	20	30	20	10	20	30	30	[0]	±S	—S	±S	—	—
3.	—	—	—	—	—	—	—	—	—	—	80	50	40
4.	30	20	40	40	40	70	60	[70]	[80]	90	80	60	60
5.	20	20	30	30	30	70	—	—	—	—	30	30	30
6.	30	10	20	10	20	40	50	[60]	80	70	60	60	50
7.	40	40	60	50	60	80	40	[40]	30	30	30	40	20
8.	—	—	—	—	—	—	—	—	—	—	50	40	30
9.	—	—	—	—	—	—	—	—	—	60	60	50	60
10.	10	10	0	10	30	30	[30]	[60]	0	50	50	50	70
11.	20	20	30	20	30	40	[40]	[50]	70	70	60	60	50
12.	40	30	30	20	30	10	—10	[40]	—	—	30	20	—10
13.	20	30	30	30	20	30	[40]	[40]	40	40	50	40	40
14.	10	20	30	20	20	40	[40]	[40]	40	30	30	30	10
15.	10	0	0	20	20	20	—	—	30	30	30	30	0
16.	40	40	30	30	20	80	[80]	60	50	50	30	30	20
17.	—	—	—	—	—	—	90	+S	±S	+S	130	80	60
18.	30	20	20	30	30	50	70	[80]	80	90	80	80	80
19.	30	30	40	30	40	30	[40]	50	40	50	50	50	50
20.	30	20	20	30	40	40	[50]	40	40	40	40	30	20
21.	140	—S	30	±S	±S	±S	±S	±S	60	80	80	110	70
22.	40	30	30	30	40	60	—	—	60	50	50	40	30
23.	30	20	30	20	30	40	40	40	40	[40]	30	30	30
24.	60	60	40	40	50	50	50	70	80	[70]	70	60	50
25.	40	30	30	20	30	40	50	30	40	[40]	40	50	50
26.	10	10	20	30	30	40	30	30	40	50	[50]	50	50
27.	—	—	—	—	—	—	—	—	—	—	—	—	—
28.	—	—	—	—	—	—	—	—	—	—	—	—	—
29.	—	—	—	—	—	—	—	—	80	60	50	40	40
30.	10	10	20	10	20	30	30	20	10	10	—10	—10	20
31.	0	—10	40	30	—S	±S	±S	±S	±S	±S	140	120	80
Means	31	22	28	25	31	44	45	46	50	52	54	49	41
Number of days	23	22	23	22	21	21	19	18	20	21	27	27	27

13	14	15	16	17	18	19	20	21	22	23	Daily means
±S	30	20	20	20	40	30	40	30	30	30	—
—	—	—	—	—	—	—	—	—	—	—	—
40	40	40	40	50	60	70	40	30	30	30	—
40	30	40	40	40	40	30	30	30	30	20	46
30	30	30	30	20	30	10	0	0	10	30	—
40	30	40	40	50	40	(40)	—	—	40	40	—
—10	30	—	—	—	—	—	—	—	—	—	—
40	30	40	40	20	0	+S	—	—	—	—	—
60	70	60	50	30	40	40	20	20	20	10	—
60	50	40	50	50	40	40	30	30	10	20	34
60	50	60	50	50	40	50	40	40	50	50	46
0	—10	20	0	0	0	10	—10	20	30	30	—
40	40	40	30	40	40	30	30	20	30	20	34
0	0	—10	—10	—10	—10	—10	0	0	—10	0	13
20	10	20	30	+S	±S	+S	±S	—S	—S	—S	—
20	10	10	—10	—10	0	0	10	0	—10	10	25
—S	—10	40	50	60	50	50	50	40	40	40	—
70	70	70	50	50	50	50	50	40	40	40	55
50	50	50	50	40	50	60	40	50	50	40	44
10	10	10	20	30	30	±S	±S	—	±S	50	—
60	70	50	50	50	50	60	60	60	50	40	—
30	30	40	40	40	40	40	40	40	40	30	—
30	40	40	30	20	30	(40)	40	40	40	50	34
50	50	50	40	50	50	60	50	60	50	40	54
50	50	40	40	30	30	40	30	20	20	20	36
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
20	10	0	—10	0	10	10	10	30	30	10	—
10	10	0	20	10	20	20	40	20	10	0	14
60	50	50	50	50	50	50	50	50	50	50	—
35	32	34	32	31	33	35	31	30	30	29	
25	27	26	26	25	25	21	22	22	23	24	

August

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	50	50	40	40	50	70	60	60	[60]	60	50	50	50
2.	0	0	—10	±S	—S	—S	—S	20	[70]	60	+S	90	—S
3.	30	30	30	40	50	80	[40]	70	60	70	60	50	20
4.	40	40	40	30	0	0	+S	±S	±S	[±S]	60	70	40
5.	20	30	0	0	—	—	—	—	20	20	50	30	0
6.	30	40	30	40	40	50	40	50	40	[50]	50	50	10
7.	±S	±S	±S	±S	—20	40	50	50	—70	[±S]	±S	± S	0
8.	0	20	30	30	20	40	40	60	50	[40]	40	30	10
9.	—20	—20	—60	—30	—10	20	40	50	70	[80]	70	70	60
10.	50	30	20	30	40	90	90	[90]	70	40	40	40	40
11.	50	40	50	40	40	50	[40]	[50]	60	70	80	90	80
12.	50	40	40	40	50	120	90	40	50	—	50	40	30
13.	10	30	30	30	40	80	70	80	70	60	[50]	40	40
14.	40	40	50	40	40	80	110	60	60	[60]	50	40	0
15.	30	30	40	40	40	40	60	40	30	[30]	20	30	30
16.	30	30	30	30	30	50	70	60	50	[40]	30	40	30
17.	20	20	30	30	30	40	40	(40)	([40])	[40]	50	40	40
18.	—30	—50	—	—	—	—	0	±S	±S	+S	+S	+S	120
19.	40	30	30	40	40	70	80	[60]	70	70	40	50	40
20.	±S	—S	±S	30	50	70	50	[30]	130	30	50	30	20
21.	50	50	40	40	40	60	—	—	60	50	50	50	50
22.	60	50	50	50	50	60	70	50	[60]	[70]	60	50	40
23.	40	40	50	50	60	50	50	—S	+S	±S	±S	[60]	70
24.	20	20	30	30	30	40	[40]	[30]	30	30	30	20	—20
25.	50	40	30	10	20	[40]	[40]	50	50	40	50	50	50
26.	50	40	30	50	40	50	—	—	40	40	50	60	+S
27.	50	40	40	50	50	50	50	50	[50]	[50]	40	30	30
28.	—50	—60	—50	20	20	40	40	40	10	30	0	(10)	60
29.	30	20	30	30	30	30	30	[30]	10	(30)	(40)	30	20
30.	40	40	40	40	40	40	40	50	50	50	80	(10)	70
31.	50	70	70	60	70	80	70	50	30	50	50	50	40
Means	29	27	28	33	35	55	53	51	47	49	48	47	37
Number of days	29	29	28	28	28	28	26	24	27	25	26	27	29

13	14	15	16	17	18	19	20	21	22	23	Daily means
50	40	40	40	40	40	30	20	10	30	10	43
30	40	50	50	40	50	40	50	50	40	30	—
30	40	40	50	50	50	50	50	40	40	40	48
30	30	40	40	40	30	30	50	40	40	0	—
—20	30	30	30	20	30	40	40	30	40	30	—
40	70	—	—	—	—	—	—	±S	±S	±S	—
60	70	60	50	50	40	50	50	50	40	30	—
30	40	30	40	20	30	10	10	20	10	—20	26
50	50	30	40	10	0	0	10	20	40	40	25
30	40	50	40	40	40	40	+S	±S	20	40	—
60	50	40	40	30	40	20	30	40	50	40	49
30	30	20	20	30	40	30	10	20	20	20	40
40	40	40	40	40	40	50	30	50	50	40	45
10	30	30	40	40	30	30	40	50	30	30	43
20	30	30	40	40	40	30	30	40	40	40	35
30	30	30	40	30	30	30	30	40	30	30	36
40	30	30	10	—50	10	±S	0	10	0	—10	—
60	50	50	70	70	60	50	60	50	40	40	—
40	30	0	20	10	30	30	40	40	20	0	38
70	80	30	40	50	50	60	60	60	50	50	—
50	50	50	40	40	40	40	50	50	60	60	—
40	50	50	50	60	50	50	50	40	40	40	52
60	70	70	60	50	50	40	50	30	30	20	—
—10	10	20	40	40	40	40	30	40	30	40	27
50	50	50	40	40	40	30	30	40	40	50	41
60	100	±S	60	30	—20	0	30	60	50	50	—
40	30	30	50	60	50	50	50	10	30	—20	40
50	50	50	50	60	50	50	50	50	40	40	28
20	30	30	30	30	40	50	50	40	40	40	—
60	70	70	80	80	80	70	80	60	60	50	58
20	—	—	—	—	—	—	—	—20	—30	—40	—
38	45	39	43	38	38	37	39	37	34	27	
31	30	28	29	29	29	28	28	29	30	30	

September

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	—30	—30	—10	—10	—20	—10	30	30	50	40	50	50	50
2.	—	—	—50	—50	—50	—50	40	50	60	(50)	—10	0	0
3.	0	—10	—10	—10	—10	0	0	0	—10	—10	—20	—40	—50
4.	±S	±S	±S	±S	±S	—	—	±S	—10	—50	—50	—	—
5.	—	—	(30)	10	10	40	50	60	70	60	[50]	(40)	(20)
6.	—	—	—	—	—	—	—	—	—	—	—	[70]	60
7.	0	±S	10	0	0	10	10	—20	[50]	[50]	50	50	50
8.	40	40	30	20	0	10	60	50	50	40	40	[—50]	[0]
9.	10	—40	—160	—20	0	0	—20	—	20	—10	—50	±S	±S
10.	70	60	50	60	50	60	90	90	110	110	100	[90]	80
11.	30	30	40	20	20	40	70	—	—	—	—	(50)	50
12.	20	30	20	0	20	30	40	50	50	60	50	[60]	60
13.	30	20	20	20	20	20	30	30	30	[40]	60	40	40
14.	20	30	30	50	40	30	60	60	50	[40]	40	50	50
15.	30	40	30	20	40	40	40	[50]	60	60	60	60	60
16.	20	30	30	30	20	30	—	—	50	40	50	50	40
17.	50	50	40	40	40	40	50	50	[40]	40	40	40	30
18.	20	30	30	40	30	40	[60]	70	60	60	60	80	70
19.	50	50	50	40	50	60	40	40	(50)	50	50	[30]	30
20.	30	30	30	40	50	70	70	80	100	130	120	[100]	100
21.	50	50	40	40	50	60	60	[90]	70	60	50	50	50
22.	20	30	30	30	40	30	40	50	50	50	[40]	30	40
23.	30	30	40	40	30	30	—	—	50	60	60	50	50
24.	30	30	30	10	30	30	50	60	30	[40]	40	50	40
25.	30	30	40	30	40	+S	±S	50	50	120	[80]	70	60
26.	30	40	50	50	30	20	30	50	60	70	60	[70]	70
27.	50	50	50	70	60	50	40	50	60	60	[50]	50	50
28.	60	50	40	50	50	60	40	50	60	70	80	[90]	100
29.	40	40	50	40	50	50	50	70	80	90	100	[100]	90
30.	50	70	70	50	50	50	50	—	—	130	110	80	100
Means	30	31	25	25	26	31	43	50	52	56	49	51	51
Number of days	26	25	27	28	28	27	25	23	26	27	28	26	27

13	14	15	16	17	18	19	20	21	22	23	Daily means
50	50	50	±S	±S	30	50	50	40	±S	±S	—
—10	—10	—10	0	0	10	10	10	0	10	10	—
—50	—30	—20	—30	—30	—40	—	(—30)	—40	—60	—S	—
—	—	—	—	—	—	—	—	—	—	—	—
10	10	—	—	—	—	—	—	—	—	—	—
60	50	50	40	50	40	40	40	40	30	20	—
50	40	40	50	(50)	60	60	50	50	50	40	34
—20	—10	—50	0	60	50	—30	—60	—50	—50	10	8
±S	±S	70	40	10	40	50	60	50	60	60	—
60	70	80	80	60	70	60	40	40	30	40	69
50	50	30	40	50	50	60	60	40	40	30	—
60	60	60	60	60	80	60	50	50	40	20	45
50	40	30	30	30	30	30	30	30	30	30	32
50	50	40	40	30	30	30	20	30	30	30	39
60	60	50	40	40	30	30	30	30	30	20	42
50	50	50	40	50	50	50	60	50	40	40	—
30	30	50	50	60	60	50	50	40	30	30	43
60	70	60	50	50	50	40	50	50	50	50	51
40	40	40	40	40	30	40	40	40	30	40	42
110	100	90	100	80	70	70	60	60	50	60	75
60	50	50	20	10	10	10	10	30	20	10	42
40	50	40	50	50	60	50	50	40	30	30	40
50	50	50	50	50	50	50	60	50	50	40	—
40	70	60	50	50	30	40	50	50	30	10	40
60	70	80	50	50	50	50	40	40	40	30	—
80	80	80	60	50	60	50	40	40	50	50	53
60	70	50	30	60	70	50	40	40	60	70	54
110	100	70	80	70	50	30	40	30	40	40	61
70	60	70	60	70	50	70	60	50	40	40	62
100	90	50	50	60	50	50	40	50	40	40	—
49	50	47	43	45	44	43	40	35	31	34	
28	28	28	27	26	28	27	27	28	27	26	

October

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	50	40	40	30	40	40	40	40	50	50	[30]	40	(30)
2.	—10	20	20	50	50	60	70	80	80	[70]	60	60	60
3.	60	50	70	70	90	120	140	130	160	120	60	50	[50]
4.	40	70	100	120	120	150	170	210	130	50	50	50	[40]
5.	20	0	30	50	50	100	170	[160]	90	50	50	50	40
6.	50	40	30	30	40	50	50	[60]	50	50	50	40	50
7.	20	30	30	20	20	30	30	—	—	70	80	70	(80)
8.	40	50	50	50	60	100	160	150	40	40	80	90	70
9.	40	30	20	40	40	40	50	60	80	70	[80]	90	80
10.	20	40	40	40	40	40	30	50	60	[60]	30	20	20
11.	10	20	20	20	30	20	30	40	40	40	40	[40]	40
12.	30	30	40	40	40	40	30	10	0	40	—10	10	[30]
13.	40	30	40	40	30	50	80	70	80	70	70	[60]	60
14.	10	—10	—20	10	50	60	60	—	—	40	30	40	10
15.	—50	—60	—50	—30	—40	10	0	—20	30	70	70	100	[110]
16.	50	50	40	50	40	50	70	70	80	80	70	50	[50]
17.	30	30	20	30	30	30	30	30	50	70	[80]	80	70
18.	30	30	30	30	40	40	30	60	60	60	70	50	60
19.	30	10	0	—10	10	20	10	10	40	10	10	10	—10
20.	10	10	10	30	30	40	50	70	80	[80]	80	80	80
21.	30	30	30	30	50	50	60	—	—	100	80	60	50
22.	20	20	0	10	30	40	40	50	40	40	30	[30]	30
23.	—30	0	10	—10	0	—10	—20	10	30	60	60	70	[70]
24.	—100	—50	30	10	—50	—70	—70	—40	10	60	[80]	120	110
25.	50	50	40	50	60	70	70	70	60	50	[60]	60	70
26.	60	50	40	50	60	50	80	80	130	80	60	[40]	60
27.	50	80	50	50	70	60	90	80	100	80	80	90	[120]
28.	—10	—30	—50	—10	—10	80	120	[90]	—	90	120	130	140
29.	110	90	10	40	80	80	110	100	90	70	[70]	70	80
30.	0	60	40	30	20	0	—30	—30	—20	—10	20	[—10]	—20
31.	—70	—50	—40	—50	—50	—30	—30	—20	—10	20	70	0	[20]
Means	20	25	23	29	35	45	55	60	60	59	58	56	57
Number of days	31	31	31	31	31	31	31	28	27	31	31	31	29

13	14	15	16	17	18	19	20	21	22	23	Daily means
30	40	40	50	50	40	40	40	30	20	10	38
50	—	50	70	80	70	70	70	50	60	70	57
50	50	40	50	60	50	50	50	50	40	50	71
30	40	40	40	50	50	50	50	50	40	30	74
40	40	40	50	50	50	50	50	50	40	40	57
50	50	50	50	50	40	40	50	30	30	20	44
—	—	—	80	100	80	50	50	50	50	30	—
[70]	—	—	60	50	40	60	60	50	40	30	—
100	110	90	80	70	70	60	40	10	—10	10	56
30	10	—10	20	40	30	20	40	30	10	10	30
50	60	60	40	(40)	50	50	60	50	40	40	39
30	40	20	20	30	40	50	70	100	70	50	35
60	60	60	30	—50	—50	30	30	30	30	20	40
—40	—20	30	20	10	—10	10	—10	—10	—20	—40	—
160	110	90	90	100	80	80	60	30	30	50	43
50	60	70	70	60	80	90	70	60	40	30	60
80	80	90	70	60	60	40	30	30	30	30	49
[80]	70	50	60	70	80	80	60	30	30	30	51
0	—10	—10	10	0	—10	0	30	40	30	30	10
80	80	80	80	90	70	60	50	40	30	30	56
50	40	30	40	40	50	40	30	10	10	10	—
30	50	50	50	60	40	—10	—30	—10	—20	—10	24
70	70	70	60	80	50	—10	—40	—50	—50	—80	17
100	100	100	120	150	140	150	120	100	90	70	53
90	100	50	60	90	100	70	80	60	50	40	65
70	80	70	80	80	70	70	40	30	40	50	63
130	160	120	120	110	70	30	30	70	80	40	82
90	90	60	110	80	130	140	80	140	130	90	78
80	60	40	70	60	70	30	20	20	0	10	61
—40	—40	—50	—30	—40	—40	—50	—20	—40	—50	—50	—17
40	80	90	100	130	150	150	170	—S	—S	80	—
57	59	52	59	60	56	51	46	38	30	26	
30	28	29	31	30	31	31	31	30	30	31	

November

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	100	110	130	150	170	200	+S	+S	+S	+S	[200]	160	140
2.	—	—	—	20	30	60	70	110	100	80	90	[80]	80
3.	60	40	40	40	40	60	60	60	70	80	[90]	90	100
4.	—	—	—	—	—	—	—	—	—	80	70	60	50
5.	10	40	50	60	50	20	0	10	—20	—10	—10	[—10]	0
6.	—S	+S	—S	±S	±S	—10	30	50	60	50	50	[50]	50
7.	50	50	40	50	50	60	40	50	60	60	60	70	70
8.	40	40	30	20	10	40	60	120	110	80	[80]	80	100
9.	50	70	70	50	60	70	40	+S	70	70	[70]	60	40
10.	60	60	70	90	70	20	80	70	80	50	[40]	[50]	40
11.	0	±S	±S	±S	20	40	+S	—	—	70	80	70	60
12.	10	10	10	10	30	—10	—10	20	—10	40	60	[40]	[30]
13.	—S	±S	±S	±S	+S	+S	±S	—20	20	30	[60]	20	40
14.	30	±S	±S	—50	0	—50	—50	—20	20	50	60	[70]	[80]
15.	30	40	50	50	60	60	40	70	80	80	[80]	60	60
16.	70	50	60	50	50	40	70	90	110	120	80	[90]	100
17.	50	60	80	80	90	80	100	70	120	[100]	80	90	100
18.	60	60	80	30	10	—10	—60	—	—	30	—50	—20	30
19.	+S	+S	+S	±S	±S	±S	—	—	±S	±S	±S	[60]	[30]
20.	—10	—10	20	40	0	30	10	10	—10	—20	80	90	[60]
21.	60	50	70	—S	+S	60	40	20	50	30	10	[30]	40
22.	80	40	40	70	80	30	10	70	110	70	50	[60]	60
23.	70	50	90	70	30	40	80	10	30	40	30	50	[30]
24.	—S	—S	+S	80	20	—40	±S	±S	±S	±S	[10]	0	20
25.	60	60	20	—20	50	90	70	—	—	70	80	90	70
26.	50	50	50	40	50	50	10	50	[70]	80	100	[110]	110
27.	70	90	70	80	80	90	60	60	110	140	[140]	130	130
28.	40	70	110	70	110	140	+S	170	160	110	110	[140]	110
29.	50	50	50	60	60	70	70	80	70	80	130	[150]	180
30.	120	90	60	40	50	70	[110]	[80]	20	+S	+S	+S	120
Means	50	53	59	49	51	48	40	56	64	64	69	70	71
Number of days	24	22	22	24	25	27	23	22	22	26	28	29	30

13	14	15	16	17	18	19	20	21	22	23	Daily means
140	170	150	140	130	140	130	120	100	90	—	—
60	40	70	80	80	70	70	60	40	40	40	—
80	80	—	—	—	—	—	—	—	—	—	—
70	70	70	90	60	60	30	0	10	0	10	—
30	30	0	50	40	30	30	—10	—40	—50	—20	12
(50)	60	70	60	60	70	70	70	60	50	50	—
70	60	60	70	100	100	80	80	70	60	60	63
120	80	90	130	120	90	110	70	90	70	60	77
30	10	10	30	50	20	—30	—20	—20	10	50	37
70	50	30	20	10	+S	—60	—100	20	±S	—20	—
50	60	60	60	60	60	60	30	30	40	20	—
40	60	30	0	±S	±S	30	100	+S	+S	+S	—
90	80	80	70	80	90	80	0	20	40	10	—
80	70	80	70	60	60	50	30	40	30	20	—
80	80	90	80	60	60	70	60	70	70	60	64
80	90	80	70	80	90	70	50	50	40	40	72
110	100	90	110	120	60	50	0	—10	—20	40	73
80	70	70	80	+S	+S	+S	+S	+S	80	+S	—
20	30	0	0	0	0	0	60	70	10	—10	—
20	+S	130	80	±S	±S	40	130	±S	+S	40	—
70	+S	±S	±S	±S	±S	—60	50	±S	±S	±S	—
60	50	100	90	80	60	80	30	—10	0	80	58
60	10	50	80	80	—10	—20	—50	±S	±S	—20	—
50	20	60	40	80	130	70	120	80	70	50	—
60	80	70	70	70	60	70	70	60	50	50	—
110	90	70	70	100	80	110	120	110	110	90	79
110	130	120	130	170	120	90	70	60	50	50	98
50	50	30	60	120	60	60	50	70	40	60	87
130	160	190	170	140	110	70	120	170	160	130	110
120	130	200	210	+S	—30	110	100	+S	+S	140	—
74	72	77	79	81	66	52	50	50	45	43	
29	28	28	28	24	24	28	28	23	23	25	

December

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	110	—S	—S	—S	—10	30	30	30	—50	—40	—60	[0]	130
2.	30	30	—100	10	—70	50	120	—	—	+S	160	+S	+S
3.	130	90	110	130	110	50	90	180	160	140	170	[170]	170
4.	+S	180	130	130	170	170	160	170	190	230	[200]	+S	160
5.	+S	140	120	130	100	220	+S	+S	+S	+S	+S	[+S]	+S
6.	130	80	50	50	80	80	40	—60	[230]	160	130	150	160
7.	80	90	60	40	50	50	60	60	50	110	[90]	90	90
8.	+S	+S	+S	+S	90	50	+S	180	[180]	80	80	150	190
9.	160	80	—60	70	80	90	80	—	—	150	60	50	90
10.	80	70	50	30	30	—10	—10	90	70	50	[70]	40	70
11.	40	30	30	20	10	30	60	50	70	50	60	[60]	50
12.	0	0	0	0	10	10	0	0	—20	0	0	10	—10
13.	0	10	30	40	30	40	50	70	[80]	90	110	90	80
14.	40	70	70	80	110	90	70	80	80	110	40	80	120
15.	30	50	30	40	30	40	30	10	20	40	[70]	90	80
16.	40	40	40	50	40	50	50	—	—	50	50	50	50
17.	50	40	40	60	50	50	50	50	50	50	[60]	60	70
18.	0	—30	—70	—10	—80	—120	10	30	—40	0	[10]	10	10
19.	60	110	60	20	60	70	50	50	80	60	[80]	70	50
20.	40	50	40	40	50	50	[50]	[60]	70	60	70	60	70
21.	20	30	40	30	10	40	50	70	100	80	[80]	120	120
22.	100	80	100	110	+S	+S	+S	+S	+S	+S	[+S]	+S	+S
23.	—10	—10	—60	—60	—50	0	—10	—40	—20	—30	—20	—	—10
24.	70	60	80	50	50	60	50	60	50	[30]	30	10	20
25.	40	—10	30	30	0	0	—30	20	0	10	30	[50]	30
26.	60	30	10	30	30	20	50	50	40	50	[70]	80	40
27.	+S	80	30	50	60	50	50	50	70	80	[70]	80	80
28.	50	10	10	50	+S	+S	+S	+S	+S	+S	[+S]	140	70
29.	70	60	30	60	60	40	40	40	30	50	40	50	[30]
30.	±S	+S	0	30	40	110	110	110	—	80	110	120	130
31.	130	100	±S	±S	±S	+S	140	200	200	180	170	120	[130]
Means	60	56	32	47	41	50	53	64	70	71	73	77	81
Number of days	26	28	28	28	28	28	27	25	24	27	28	26	28

13	14	15	16	17	18	19	20	21	22	23	Daily means
170	210	+S	+S	+S	—40	90	150	70	60	20	—
+S	170	+S	0	40	+S	+S	+S	+S	170	130	—
190	180	120	120	130	140	130	150	180	+S	+S	—
170	180	180	160	150	180	170	180	150	110	140	—
+S	+S	+S	+S	+S	+S	+S	+S	90	90	120	—
180	190	230	200	100	80	80	110	80	80	80	114
90	100	70	80	110	160	130	170	190	180	+S	96
+S	+S	+S	+S	+S	+S	+S	+S	+S	+S	220	—
180	190	230	180	130	80	70	60	80	120	80	—
30	30	50	40	70	40	40	50	70	60	40	48
20	0	0	—20	—20	0	0	0	0	0	0	23
—20	0	0	—10	—10	0	—10	—20	—20	—10	0	—4
110	130	90	90	110	70	40	30	10	10	30	60
140	130	130	120	120	80	30	10	10	0	10	76
50	30	70	90	70	80	60	60	40	40	40	50
60	50	60	60	50	60	60	50	50	50	40	—
70	70	60	70	30	10	10	30	0	—10	—10	42
40	50	40	20	—40	—80	—30	—20	0	0	10	—12
60	60	70	70	110	70	50	50	±S	20	40	62
80	70	—20	—110	—130	30	50	60	60	50	30	37
100	110	110	130	120	120	150	160	190	150	140	95
+S	+S	+S	+S	+S	+S	210	120	60	40	40	—
—10	40	40	20	80	50	50	60	60	100	40	9
—20	—30	—20	—20	—30	0	50	50	30	—10	40	28
30	60	60	50	50	100	60	60	70	70	60	36
±S	—80	—10	—10	0	70	120	110	70	140	+S	—
90	110	140	100	120	120	120	80	80	70	60	80
50	50	50	60	70	60	50	50	50	60	70	—
—80	—100	±S	±S	±S	±S	±S	±S	±S	±S	±S	—
80	120	100	100	100	80	80	80	60	40	100	—
200	170	130	—40	10	30	0	—20	30	50	70	—
79	82	79	60	59	61	69	69	65	62	61	
26	28	25	26	26	26	27	27	27	28	27	

II. Hourly means of the quantities of positive and negative

Hour GMT / Month		0	1	2	3	4	5	6	7	8	9	10	11
January	+	0	0	0	0	0	0	9	9	0	1	1	0
	—	0	0	0	0	0	0	1	32	1	7	2	0
February	+	0	0	0	1	9	29	14	0	0	0	0	0
	—	0	0	0	0	2	18	9	2	0	0	0	0
March	+	0	0	0	0	1	1	1	0	1	0	0	0
	—	0	0	1	0	0	0	1	12	14	0	0	0
April	+	0	0	1	0	0	0	1	0	4	21	9	37
	—	0	0	0	0	0	0	0	2	30	17	37	34
May	+	1	0	0	0	3	0	0	0	0	0	0	2
	—	0	0	0	0	0	0	0	0	0	0	5	0
June	+	0	15	7	6	0	0	0	0	0	0	0	0
	—	29	25	11	7	0	0	0	0	0	1	1	1
July	+	0	4	0	2	2	9	5	1	9	6	9	33
	—	0	0	0	2	14	5	26	9	18	39	4	0
August	+	91	154	80	3	0	0	21	10	6	0	90	21
	—	116	73	64	48	4	0	28	91	10	21	55	62
September	+	0	1	0	0	0	1	1	0	0	0	0	0
	—	0	0	0	0	0	0	1	1	0	0	0	1
October	+	0	0	0	0	0	0	0	0	0	0	0	0
	—	0	0	0	0	0	0	0	0	0	0	0	0
November	+	2	27	75	7	1	3	0	5	4	1	0	0
	—	1	91	32	17	1	14	1	3	1	5	0	0
December	+	27	0	0	0	0	0	0	0	0	0	0	1
	—	5	0	0	0	0	0	0	0	1	1	0	0

charges transported by point-discharge for each month

12	13	14	15	16	17	18	19	20	21	22	23	Means
0	0	0	0	0	0	0	0	0	0	0	0	0.8
0	0	0	0	0	0	0	0	0	0	0	0	1.8
0	0	0	0	0	1	10	18	0	0	0	0	3.4
3	0	0	0	0	7	30	1	0	0	0	0	3.0
0	0	0	1	15	7	3	0	1	1	3	2	1.5
0	0	0	10	24	81	1	11	2	4	2	2	6.9
0	0	1	2	1	0	0	0	0	1	5	0	3.5
11	1	1	2	1	1	0	0	0	0	3	0	5.8
26	6	6	8	27	10	6	22	27	16	13	1	7.3
3	5	18	38	8	17	2	32	59	20	19	1	9.5
0	0	0	0	19	10	7	18	15	1	7	0	4.4
0	0	0	0	5	1	40	98	21	15	6	0	10.9
12	43	2	13	4	19	27	5	10	1	1	0	9.0
1	3	15	14	12	23	3	4	2	0	1	0	8.1
0	0	0	0	0	0	0	0	7	1	37	88	25.4
4	0	0	0	0	0	0	0	0	147	26	79	34.5
8	17	1	0	0	0	0	0	0	0	0	0	1.2
8	25	1	0	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	1	0	0
0	0	0	0	6	1	0	0	0	1	5	1	5.8
0	0	0	0	9	6	0	0	0	3	4	0	7.8
0	2	0	25	9	4	11	16	23	31	30	11	7.9
0	0	3	14	11	20	22	5	13	33	15	27	7.1

IV. IONOSPHERE

The following tables give the values of mean ionospheric absorption at oblique incidence (A3) for certain zenith distances of the Sun (χ) 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 $\chi = 90°$. Night values have been determined by taking the periods ranging from $\chi = 100°$ to 23 00 GMT.

The sky wave of the transmitter Československo (f = 272 kHz) has been recorded since January 1967. The geographical coordinates of the reflection point are 48.4°N, 17.1°E. Because of reconstruction works on the transmitter Československo, 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 information is 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 kHz
January

Date of the night	SS	Night	SR
1 2	28.2	26.4	28.2
2 3	30.3	22.7	33.2
3 4	25.7	30.3	33.2
4 5	41.2	X	X
5 6	31.7	21.4	21.8
6 7	25.7	20.6	20.2
7 8	29.2	X	X
8 9	33.2	23.8	X
9 10	28.2	22.2	29.2
10 11	31.7	23.8	25.7
11 12	21.4	21.8	28.2
12 13	47.2	23.8	26.4
13 14	33.2	22.2	28.2
14 15	33.2	22.2	28.2
15 16	33.2	22.2	29.2
16 17	47.2	18.9	X
17 18	47.2	28.2	26.4
18 19	37.7	22.2	22.2
19 20	37.7	18.9	26.4
20 21	22.2	20.2	23.2
21 22	33.2	21.8	20.6
22 23	21.8	19.9	25.7
23 24	28.2	25.0	25.0
24 25	30.3	20.6	26.4
25 26	24.4	19.2	25.0
26 27	33.2	18.3	27.2
27 28	30.3	16.7	35.2
28 29	37.7	22.7	29.2
29 30	33.2	20.2	X
30 31	33.2	18.3	29.2
31 1	19.9	17.6	25.0
Median values:	31.7	21.8	26.4

February

Date of the night	SS	Night	SR
1/2	17.6	19.5	23.8
2/3	21.8	18.1	19.5
3/4	16.5	17.6	23.8
4/5	18.9	18.1	26.4
5/6	25.0	18.9	25.7
6/7	15.5	17.6	22.2
7/8	18.6	17.1	X
8/9	19.2	16.7	26.4
9/10	20.2	17.8	24.4
10/11	25.0	19.9	28.2
11/12	30.3	16.5	23.2
12/13	31.7	17.1	27.2
13/14	28.2	19.5	33.2
14/15	30.3	25.7	33.2
15/16	35.2	22.2	22.7
16/17	21.0	21.4	24.4
17/18	28.2	18.6	30.3
18/19	31.7	19.2	X
19/20	23.8	16.9	X
20/21	25.7	20.6	28.2
21/22	31.7	18.3	30.3
22/23	33.2	19.5	28.2
23/24	25.0	21.4	28.2
24/25	X	X	X
25/26	X	X	X
26/27	X	X	X
27/28	37.7	19.9	X
28/1	22.2	20.2	24.4
Median values:	25.0	18.9	26.4

March

Date of the night	SS	Night	SR
1/2	28.2	20.6	22.7
2/3	30.3	18.9	18.3
3/4	35.2	20.2	29.2
4/5	33.2	19.2	21.0
5/6	33.2	19.5	21.8
6/7	26.4	19.5	29.2
7/8	21.8	16.5	21.8
8/9	25.0	20.6	24.4
9/10	23.8	18.9	24.4
10/11	21.0	X	30.3
11/12	27.2	18.9	22.2
12/13	18.6	17.6	24.4
13/14	26.4	21.0	25.0
14/15	23.8	X	23.2
15/16	27.2	16.7	25.7
16/17	30.3	19.2	21.8
17/18	26.4	17.1	25.7
18/19	18.6	16.9	16.3
19/20	17.3	17.6	15.9
20/21	22.2	17.1	18.3
21/22	25.0	16.5	25.7
22/23	25.7	16.1	23.2
23/24	22.7	18.3	23.8
24/25	27.2	15.9	23.2
25/26	21.4	15.1	16.9
26/27	19.2	16.5	30.3
27/28	25.0	17.8	23.8
28/29	19.9	18.6	19.5
29/30	X	X	X
30/31	24.4	13.3	28.2
31/1	X	17.3	30.3
Median values:	25.0	17.7	23.5

April

Date of the night	SS	Night	SR
1/2	28.2	17.1	23.2
2/3	19.9	18.1	18.3
3/4	26.4	16.5	25.7
4/5	21.0	18.3	21.4
5/6	18.3	15.4	19.5
6/7	17.8	19.9	19.2
7/8	20.2	18.1	20.6
8/9	19.5	17.3	21.4
9/10	X	X	X
10/11	18.6	14.9	16.5
11/12	21.8	16.9	19.2
12/13	23.8	19.2	15.7
13/14	19.9	15.7	21.0
14/15	24.4	14.4	19.2
15/16	19.5	15.9	16.1
16/17	25.0	15.9	16.7
17/18	23.8	15.4	17.8
18/19	23.2	21.8	19.5
19/20	25.0	20.6	20.2
20/21	21.0	21.0	19.2
21/22	18.9	20.2	17.6
22/23	20.6	18.3	16.3
23/24	18.9	18.9	33.2
24/25	28.2	19.2	20.2
25/26	21.0	17.1	24.4
26/27	26.4	19.9	19.9
27/28	21.0	19.5	25.0
28/29	17.1	18.1	20.2
29/30	22.2	20.6	21.0
30/1	23.8	20.6	21.8
Median values:	21.0	18.1	19.9

May

Date of the night	SS	Night	SR
1/2	X	X	X
2/3	21.0	17.8	25.0
3/4	27.2	18.3	26.4
4/5	25.7	19.9	37.7
5/6	28.2	27.2	26.4
6/7	22.7	18.9	24.4
7/8	24.4	17.6	29.2
8/9	26.4	21.0	28.2
9/10	25.7	18.1	28.2
10/11	23.8	22.2	16.7
11/12	19.2	19.2	20.2
12/13	X	X	X
13/14	X	X	X
14/15	41.2	25.0	19.9
15/16	37.7	17.3	20.2
16/17	23.2	X	X
17/18	28.2	20.2	24.4
18/19	X	X	X
19/20	25.7	15.7	23.8
20/21	24.4	17.6	22.7
21/22	X	X	X
22/23	18.3	19.5	26.4
23/24	29.2	17.6	23.2
24/25	24.4	20.6	26.4
25/26	25.0	21.0	25.0
26/27	41.2	23.2	23.8
27/28	35.2	21.8	25.8
28/29	22.2	19.9	25.8
29/30	24.4	17.8	18.3
30/31	28.2	21.0	23.2
31/1	20.6	16.7	21.8
Median values:	25.4	19.5	24.4

June

Date of the night	SS	Night	SR
1/2	21.8	19.2	26.4
2/3	22.2	16.3	21.4
3/4	X	X	X
4/5	X	X	X
6/6	X	X	X
6/7	X	X	X
7/8	X	X	X
8/9	20.6	19.9	26.4
9/10	25.0	21.4	25.7
10/11	26.4	21.8	21.8
11/12	21.4	21.0	21.4
12/13	24.4	16.3	24.4
13/14	22.7	20.6	X
14/15	25.7	21.8	24.4
15/16	28.2	20.2	29.2
16/17	X	X	X
17/18	20.6	18.9	24.4
18/19	22.7	20.2	19.9
19/20	19.5	18.6	19.5
20/21	X	X	X
21/22	22.7	19.5	28.2
22/23	24.4	X	X
23/24	X	X	X
24/25	25.0	X	23.2
25/26	19.9	19.5	47.2
26/27	21.4	23.2	19.9
27/28	28.2	21.4	19.9
28/29	21.0	18.9	23.2
29/30	18.6	19.2	25.7
30/1	X	X	X
Median values:	22.7	19.9	24.4

November

Date of the night	SS	Night	SR
1/2	21.8	19.5	21.0
2/3	17.6	19.2	29.2
3/4	22.2	15.7	23.8
4/5	25.0	19.2	29.2
5/6	25.7	17.1	21.8
6/7	21.4	X	X
7/8	X	X	X
8/9	X	X	X
9/10	X	X	X
10/11	30.3	X	X
11/12	X	X	X
12/13	28.2	X	X
13/14	21.8	X	X
14/15	19.9	18.1	26.4
15/16	18.6	18.9	27.2
16/17	33.2	17.8	25.0
17/18	24.4	19.2	24.4
18/19	28.2	X	X
19/20	23.2	18.1	22.2
20/21	26.4	18.9	20.6
21/22	33.2	21.8	24.4
22/23	25.7	16.1	19.9
23/24	22.7	17.8	23.8
24/25	23.2	22.2	25.7
25/26	22.7	17.3	22.7
26/27	21.4	21.0	X
27/28	25.7	22.2	23.8
28/29	19.9	22.7	X
29/30	21.0	20.2	30.3
30/1	21.4	23.8	33.2
Median values:	23.0	19.2	24.4

December

Date of the night	SS	Night	SR
1/2	26.4	25.7	30.3
2/3	31.7	27.2	33.2
3/4	18.6	22.2	25.7
4/5	25.0	18.6	25.7
5/6	31.7	19.9	21.0
6/7	35.2	19.9	20.6
7/8	303	19.9	21.8
8/9	30.3	18.9	19.9
9/10	29.2	18.9	X
10/11	41.2	X	X
11/12	37.7	X	X
12/13	33.2	22.7	21.0
13/14	41.2	22.7	21.8
14/15	27.2	20.2	25.7
15/16	41.2	23.2	X
16/17	33.2	24.4	27.2
17/18	31.7	X	X
18/19	35.2	22.2	20.6
19/20	25.0	18.9	19.9
20/21	23.2	18.6	20.2
21/22	23.2	17.1	19.5
22/23	20.6	16.5	25.0
23/24	15.4	16.7	21.8
24/25	29.2	19.9	17.6
25/26	22.2	23.2	26.4
26/27	30.3	22.7	22.7
27/28	30.3	22.2	25.0
28/29	31.7	22.7	22.2
29/30	33.2	20.2	25.0
30/31	33.2	25.0	23.8
31/1	33.2	23.8	26.4
Median values:	30.3	21.2	22.5

September

Date of the night	SS	Night	SR
1/2	24.4	18.3	27.2
2/3	21.0	19.9	27.2
3/4	29.2	19.5	22.7
4/5	29.2	19.9	29.2
5/6	19.5	17.3	27.2
6/7	19.9	19.5	27.2
7/8	20.6	17.6	21.8
8/9	21.0	16.7	20.2
9/10	19.9	17.1	23.2
10/11	22.2	18.3	24.4
11/12	22.7	17.8	27.2
12/13	27.2	17.6	29.2
13/14	23.2	17.8	37.7
14/15	31.7	17.8	21.4
15/16	29.2	17.8	30.3
16/17	27.2	18.1	29.2
17/18	21.0	17.3	24.4
18/19	20.6	15.1	28.2
19/20	24.4	16.7	23.8
20/21	29.2	17.8	29.2
21/22	24.4	19.2	25.0
22/23	29.2	18.1	30.3
23/24	33.2	18.6	23.8
24/25	31.7	17.1	33.2
25/26	30.3	16.7	30.3
26/27	26.4	17.3	23.8
27/28	21.8	15.5	23.8
28/29	28.2	16.9	24.4
29/30	22.7	15.9	28.2
30/1	18.3	14.2	23.8
Median values:	24.4	17.7	27.2

October

Date of the night	SS	Night	SR
1/2	28.2	17.3	22.2
2/3	22.2	17.6	29.2
3/4	17.8	19.9	23.2
4/5	20.6	13.4	21.0
5/6	28.2	18.6	28.2
6/7	22.2	15.7	23.2
7/8	15.9	17.3	23.2
8/9	16.5	16.3	18.1
9/10	28.2	16.1	21.4
10/11	21.4	14.6	21.4
11/12	22.7	21.8	21.4
12/13	24.4	17.8	19.5
13/14	18.1	18.3	16.1
14/15	19.9	19.2	24.4
15/16	18.1	17.3	23.8
16/17	17.3	16.9	20.6
17/18	21.0	16.7	19.2
18/19	18.1	15.7	18.9
19/20	23.2	15.7	18.9
20/21	21.8	14.5	21.8
21/22	24.4	16.9	20.2
22/23	19.2	16.5	21.4
23/24	20.2	18.6	21.8
24/25	30.3	18.1	19.2
25/26	21.0	17.8	21.4
26/27	18.9	14.5	21.4
27/28	21.8	17.6	17.6
28/29	19.9	17.8	22.7
29/30	25.0	18.6	X
30/31	21.8	17.6	21.4
31/1	22.7	18.6	21.8
Median values:	21.4	17.3	21.4

July

Date of the night	SS	Night	SR
1/2	23.8	18.9	22.7
2/3	X	X	X
3/4	25.7	21.4	19.9
4/5	29.2	20.6	27.2
5/6	28.2	21.8	30.3
6/7	27.2	22.7	33.2
7/8	29.2	19.9	25.7
8/9	30.3	X	X
9/10	26.4	19.2	22.7
10/11	22.2	20.6	22.2
11/12	26.4	21.4	18.1
12/13	30.3	23.8	22.2
13/14	19.5	22.7	28.2
14/15	22.2	19.9	19.9
15/16	27.2	19.9	21.4
16/17	29.2	20.2	X
17/18	17.3	18.1	24.4
18/19	30.3	23.8	27.2
19/20	33.2	15.9	21.8
20/21	29.2	20.6	25.7
21/22	33.2	20.2	25.0
22/23	25.7	X	X
23/24	X	X	X
24/25	20.2	17.8	21.8
25/26	19.5	22.2	23.2
26/27	21.8	18.1	25.0
27/28	26.4	17.6	25.7
28/29	21.4	16.9	26.4
29/30	23.8	17.1	25.7
30/31	23.2	17.6	33.2
31/1	26.4	20.6	23.8
Median values:	26.4	20.2	24.7

August

Date of the night	SS	Night	SR
1/2	22.2	20.2	20.2
2/3	26.4	20.6	26.4
3/4	29.2	21.4	31.7
4/5	29.2	19.2	29.2
5/6	23.8	20.6	18.3
6/7	23.2	18.3	19.2
7/8	26.4	16.5	26.4
8/9	20.2	15.2	21.8
9/10	31.7	19.9	21.0
10/11	23.8	16.9	25.0
11/12	22.7	19.2	21.0
12/13	22.7	21.0	23.8
13/14	20.6	20.2	25.7
14/15	15.7	15.5	19.5
15/16	19.9	16.1	21.4
16/17	24.4	16.7	25.7
17/18	24.4	21.4	X
18/19	27.2	19.2	22.2
19/20	22.2	18.9	20.6
20/21	19.2	18.1	23.2
21/22	21.4	16.1	26.4
22/23	21.4	19.9	29.2
23/24	28.2	19.9	25.7
24/25	24.4	17.3	24.4
25/26	22.2	15.1	23.8
26/27	30.3	17.8	26.4
27/28	21.4	18.9	X
28/29	20.6	19.9	30.3
29/30	28.2	18.9	25.7
30/31	24.4	21.8	24.4
31/1	23.2	22.7	26.4
Median values:	23.2	19.2	24.4

V.

AN UNEXPLAINED CHANGE IN THE GEOELECTRIC ACTIVITY AT THE OBSERVATORY NAGYCENK

J. Verő, Á. Wallner, V. Wesztergom

Since the end of the year 1984, we have experienced a certain change in the activity of the geolelectric componentes E_x and E_y at the observatory Nagycenk, in the sense that the activity of the component E_y has increased with respect to the component E_x (at least the phenomenon could be described in that way). As we could not find any explanation for this change, it has been decided to summarize the observations here, as they may influence several parameters and indices published in these reports.

The events in connection with the change of the scale value of the electric recording were the following:

1980, December: Cables get damaged; new cables are laid; at the junction of the cross-like layout, only provisional cable heads are mounted

1984, October: The activity in the component E_y begins to increase with respect to the component E_x

1985, Spring: Detection of the change, measurements on the cables, resistances between the single conductors in the cable core were acceptable

1986, March: Magnetotelluric measurements with the Phoenix digital MT-system of the GKV (Geophysical Research Company)

1986.May: Mounting of permanent cable heads at the junction

1986. December: Parallel recording on an independent E_x-system (with other types of electrodes, special cables)

1987, January: Conclusion drawn from all the previous experiments: there is an unexplicable change in both components with respect to the activity of the magnetic components

In the following, we summarize the different points in connection with this change.

1. Control of the scale value of the instrument: The instrument has fluid--immersion type galvanometers as sensors, and lead plates as electrodes. The resistivity of the full circuit, including cables and electrodes is supplemented to 2000 ohms in a Wheatstone-bridge. In addition, there is a resitance in the circuit which enables the adjusting of the scale value (e.g. in case of an exchange of the

Figures 1 and 2 show the yearly average activities in the four components in function of the perpendicular pair. It is evident that the values 1981—84 did not deviate significantly from a linear trend, but the values for the years 1985 and 1986 lie outside of this linear trend, in case of E_x hinting at a scatter, and in that of E_y, at an increase of the ratio by 20—40 percents. Fig. 3 shows the

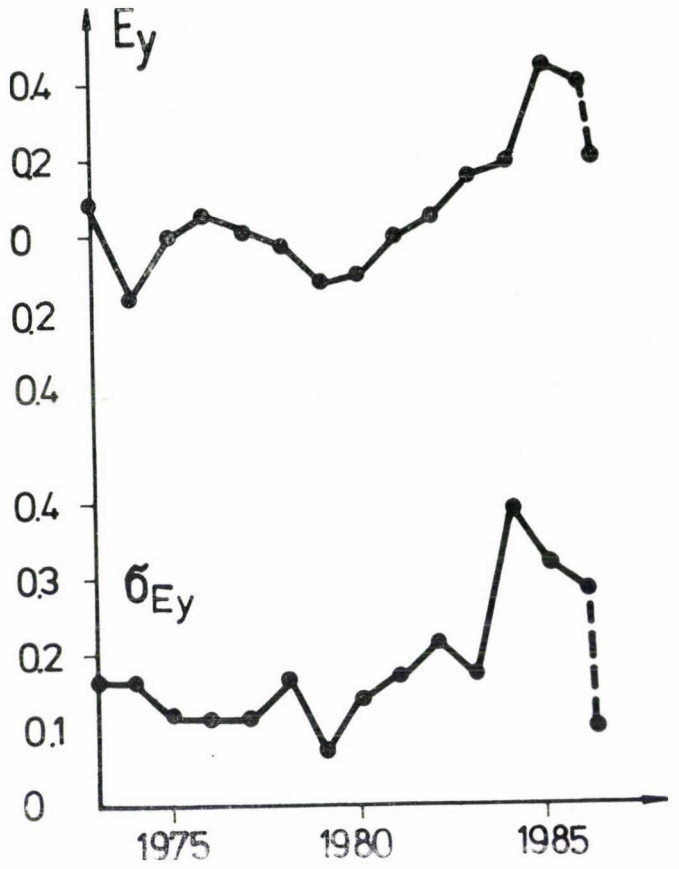

Fig. 4. a. Yearly averages taken from the deviations in Fig. 3. and the scatter δ around this average for each year for the components E_x and E_y.

same on the basis of the more accurate two-variable equations (e.g. $E_y = a.H_x + b.H_y$) determined for each month of the years (basis: 1973—1983). The deviations started to inorease in the E_y component in October, 1984, and simultaneously the scatter of the points increaserd, too. It is interesting to note that in the

component E_x a curious yearly wave appeared meaning that in summer the ratios increased significantly while in winter they were nearly normal. These effects are presented also in form of yearly averages (Fig. 4). It should be also noted that since September 1986 there is again a drop in the E_y/H_x ratio: we do not know if this is a seasonal effect or it will remain at this relatively low level.

Let us summarize these facts: the ratio of the activity levels hints at an increase of the E_y-activity with respect both to E_x and H_x; in the component

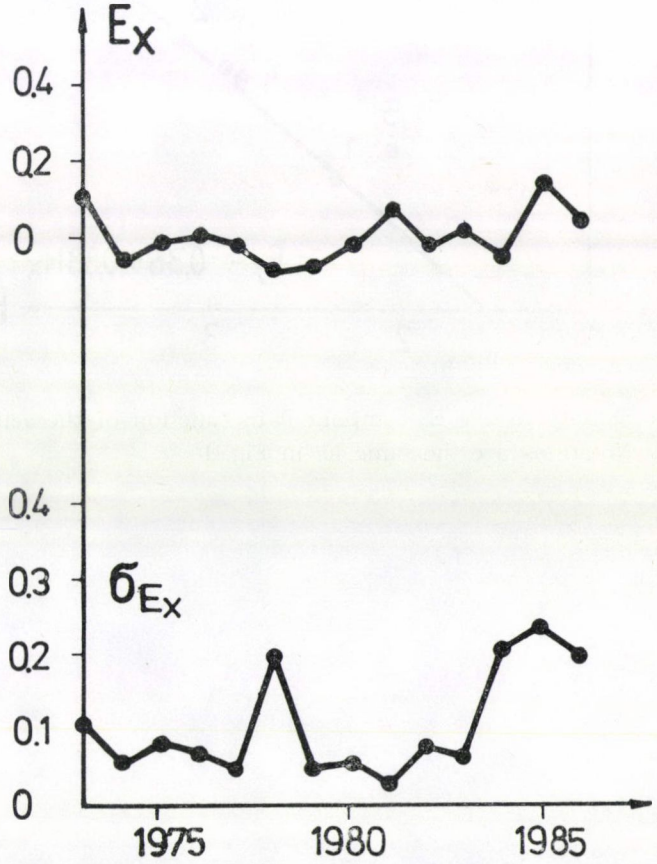

Fig. 4 b. (continued)

E_x, there is also some change but it cannot be described as simply as in the component E_y.

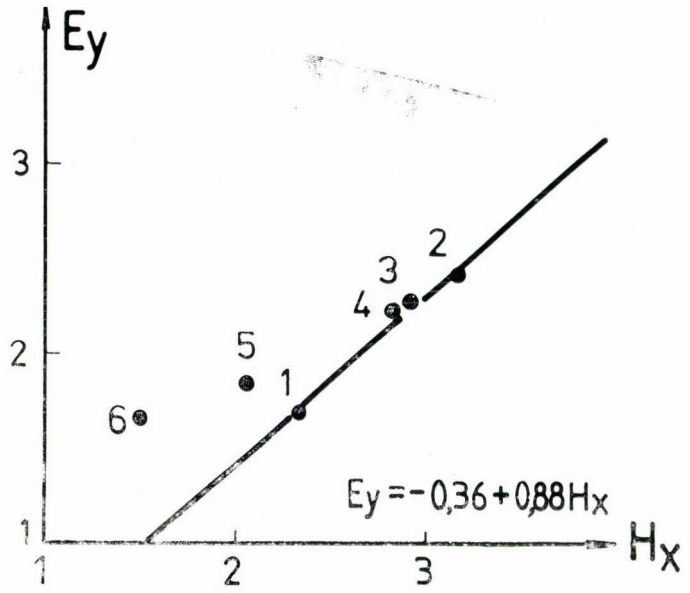

Fig. 2. The activity in the E_y component in function of the activity in the H_x component. Notations are the same as in Fig. 1.

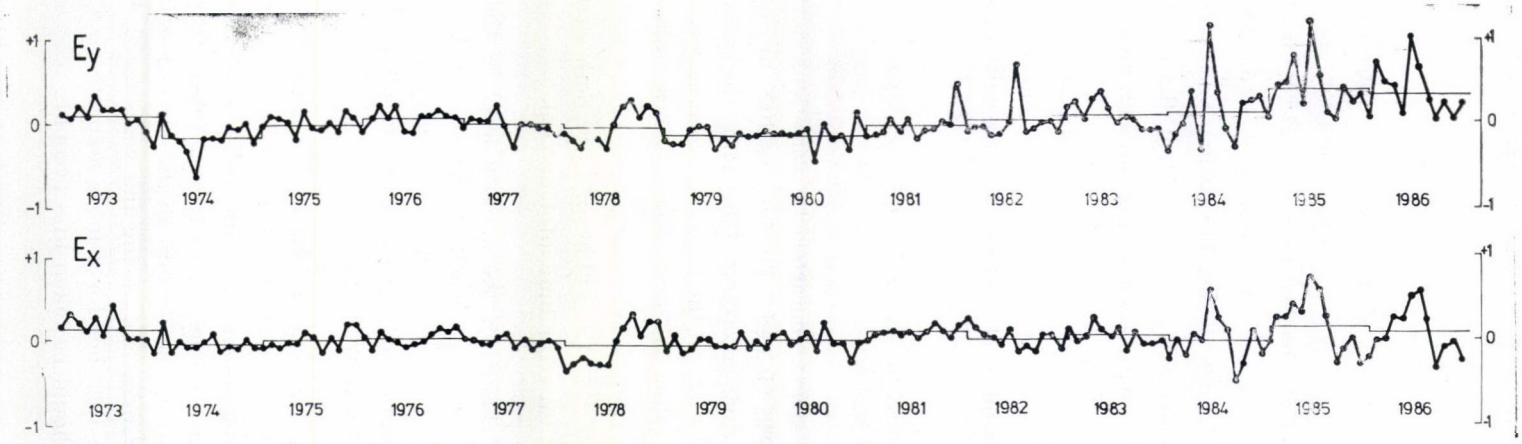

Fig. 3. The deviations from the regression equation computed for each month of the year between E_x and E_y on the one hand, and H_x and H_y on the other for individual months of the interval 1973—1986 (i.e. the activity in the component E_x is expressed as $E_x = a.H_x + b.H_y$, where the factors a and b are determined from the time interval uninfluenced by the present scale valne anomaly). Thin lines denote the yearly averages of the deviations.

galvanometers). The scale value of the system is controlled regularly each day by giving a voltage of 2 mV on both components for one hour. The deviation of the signal is in case of the normal recording 22 ± 1 mm (the error is mostly due to the fact that the scale value is determined with electrodes in the circuit, i.e. the natural variations may distort the scaling voltage). This value did not change during the years discussed here. Similarly, the devitation on the quick--run recording is 35 mm, with a somewhat smaller mean square error (± 0.7 mm); this value is also the same as previously.

2. The voltage of 2 mV used for the scale value determination has been also measured; it was found to be 2.02 mV for the normal, and 1.99 mV for the quick-run recording.

3. The resistance between the cable cores (electrodes switched off) are in all cases higher than 10 Mohms.

4. A comparison of sharp, characteristic variations during the parallel recording in December 1986 yielded following results: sum of the amplitudes of 11 variations on the normal recording, 238.5 mm; the same on the continuous quick-run recording, 377 mm; on the parallel recording with independent circuit and of the same scale value, 377 mm. These values expressed in mV are the following:

$238.5/11 = 21.68$ mV; $377/17.5 = 21.54$ mV (for both channels), i.e. the amplitudes are equal within an error limit of 1 percent.

As mentioned, the change of the activity level in the E_y component has been observed first in relation to the activity level of the E_x component. As there are parallel recording with normal and quick-run systems, in a very first step both systems could be compared, too, with the result that the amplitudes are the same (see also point 4 previously).

A comparison of the activities of the different components is by no means the determination of a single linear proportionality factor between two activity levels. In the electric components e.g. the ratio of the activities E_x/E_y is in winter about 1.3—1.4, in summer 1.1—1.15 (till 1984).. (Here and in the following, E_x, E_y, H_x, H_y denote the activity in the corresponding component). The ratio E_x/H_y or E_y/H_x changes less during the year, for E_x/H_y the winter value is 1.12, the summer one 1.22, but for a more accurate study not only the perpendicular component should be taken into account.

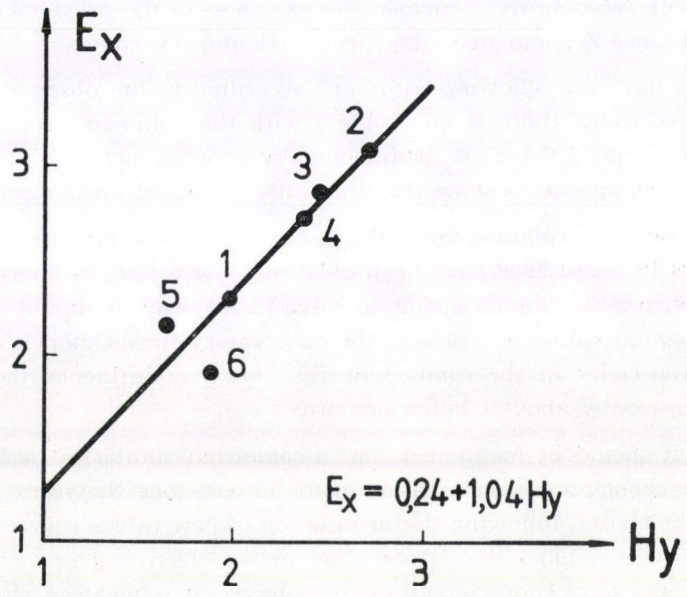

Fig. 1. The activity in the E_x component (here and in the following Figs 1—4 each component stands for the activity of the corresponding component. These values are not published in the observatory report. only the monthly averages of them) in function of the activity in the component H_y for the years 1981—1986 (each year denoted by the last digit). The regression equation is given in the figure.

In March 1986, the Geophysical Research Company carried out MT digital measurements with the Phoenix equipment in and near to the observatory. The results have unambiguously corfirmed the exactness of the previous MT-results, i.e. the impedance Z_{yx} and thus, the ratio E_y/H_x did not change.

Thus we have the following situation: according to the observatory instruments and recording, there is no problem with the obtained data; they show, however, a change of the E_y/H_x component by about a factor of 1.3; the independent MT measurements show that this ratio remained unchanged.

Due to these unexplained facts, the publication of the Observatory Reports for the years 1985 and 1986 have been delayed; now we are enforced to describe this problem as we see no means to solve it. Anyway, it should be borne in mind that possibly all telluric data of the observatory since October, 1984 can be erroneous, especially in the component E_y. This may influence the pulsation daily indices, too, by about 1 index upwards.

Finally it should be mentioned that a somewhat similar, at least similarly unexplicable change did already occur in the observatory Nagycenk. At the beginning of the sixties, following the installation of new cables (those which have been substituted in 1980) the S_q variation in the electric component changed. The change was most characteristic in the phases, as it meant a change of the vector diagram of the S_q-variation. At that time, this change occurred simultaneously with the change of the cables, but else no explanation could be given. Later S_q remined unchanged and even now we did not experience a change. That is why we suspected at first the recent change of the cables, but there is no temporal coincidence between the cable change and the change in the E_y activity.

Note added in proof:

As recently data on the solar wind velocity became available in Solar-Geophysical Data for the time till the end of 1986, we could compare monthly pulsation indices, K_1 with monthly averages of the solar wind velocity. This comparison based on running one-year averages with a shift of a half year shows the following (Fig. 5):

Finally we should like to thank several colleagues in Hungary and abroad with whom we could discuss this problem. Especially should be mentioned Dr. A. Best (GDR), Dr. P. Morat (France), Z. Nagy and Dr. L. Szarka (Hungary), who gave valuable advices for future experiments. We should like to carry out in the next year a more comprehensive magnetotelluric survey and comparison with previous surveys.

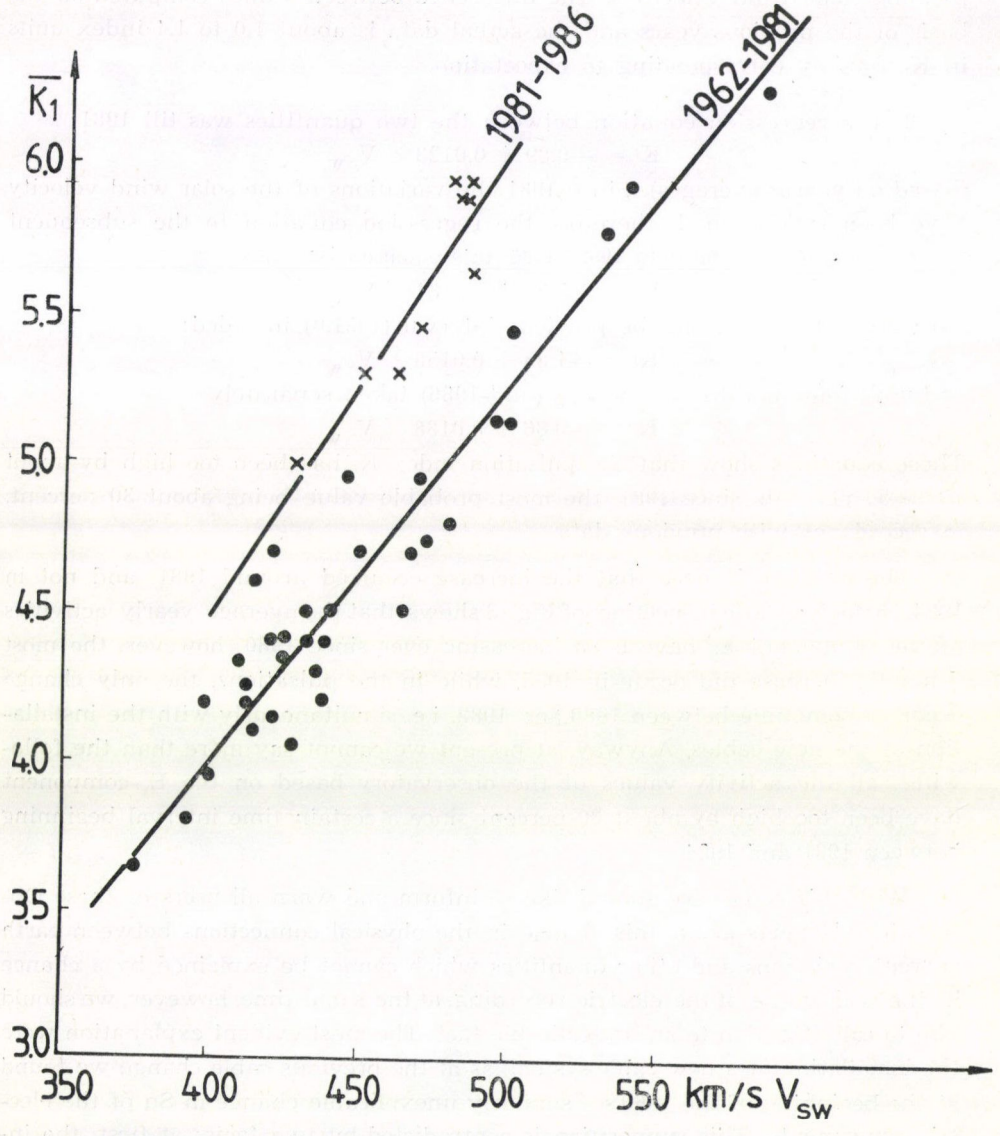

Fig. 5. Running yearly averages of the pulsation activity (K_1) in half year intervals vs. the corresponding solar wind velocities. Dots represent values prior to 1981.5, crosses values from 1981.5 to 1986.

1. The pulsation indices K^I are too high recetly with respect of the corresponding solar wind velocities. The difference between values computed on the basis of the previous years and the actual data is about 1.0 to 1.4 index units in K_I, roughly corresponding to expectation.

2. The regression equation between the two quantities was till 1981:

$$K^I = -0.89 + 0.0123 \times V_{SW}$$

(based on yearly averages). Since 1981 the variations of the solar wind velocity have been rather small, therefore the regression equation fo the subsequent years is unsure. For the data 1982—1986, this equation is:

$$K^I = -2.96 + 0.0181 \times V_{SW}$$

with the last value from the previous interval (1981.0) included:

$$K^I = -1.85 + 0.0158 \times V_{SW}$$

and with four months of low V_{SW} (mid-1986) taken separately:

$$K^I = -0.86 + 0.0138 \times V_{SW}$$

These equations show that the pulsation index K^I has been too high by about 10 to 50 percents since 1981, the most probable value being about 30 percent, in accordance with previous data.

The problem is here that the increase occurred around 1981, and not in 1984. In fact, a close inspection of Fig. 3 shows that the average yearly activities of the component E_y have been increasing ever since 1980; however, the most dramatic increase did occur in 1985, while in the pulsations, the only change occurred sometime between 1980 and 1982, i.e. simultaneously with the installation of the new cables. Anyway, at present we cannot say more than the following: all the activity values of the observatory based on the E_y-component have been too high by about 30 percent since a certain time interval beginning between 1981 and 1984.

With this report we should like to inform and warn all users of these Observatory Reports about this change in the physical connections between earth current variations and other quantities which cannot be explained by a change in the scale value of the electric recording, at the same time, however, we should like to call attention to an unexplicable fact. The most evident explanation were the installation of a new cable system, as at the previous cable change we found at the beginning of the 1960's a similarly unexplicable change in Sq of the electric components. This supposition is contradicted by two facts: at first, the independent magnetotelluric measurement gave unchanged impedances, at second, the parallel measurement with independent and different cables and electrodes could not detect any change in the scale value, i.e. the scale value used in the Reports seemed to be correct.