GEOPHYSICAL OBSERVATORY REPORTS

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

YEAR
1983

OBSERVATORY OF NAGYCENK

SOPRON
1984

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OBSERVATORY OF NAGYCENK

REPORT ON

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

EDITED BY THE DIRECTOR
SOPRON

1984

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GEODETIC AND GEOPHYSICAL RESEARCH INSTITUTE OF THE

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PREFACE

The present Report of the Nagycenk Observatory is the 27. 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 Pc 1-type pulsations has also been operating with some interruptions.

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

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

J. Somogyi
Direktor

I. EARTH CURRENTS

The coordinates of the Observatory are:

$\varphi = 47°38'$ $\lambda = 16°43'$

$\Phi = 47.2°$ $I = 98.3°$

All times are given in CET (i. e. GMT + 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-scale is linear; its steps correspond to 1.8 mV/km. The monthly mean T-values are separately given for the North-South and East-West components. The scales for K_1—K_5 are as follows:

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

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

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

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

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

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

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

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

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

The determination of these indices can be shortly explained as follows: The days are arranged according to the occurrence frequency of each band. Index 1 is attributed to the days with the lowest fifth of occurrence frequencies (0 to 20 per cent) index 2 to days 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 bads are the following:

P1	0	to	5 sec
P2	2	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. TÁTRALLAY and J. VERŐ: Experimental results with the characterization of geomanetic micropulsations (Acta Geod., Geoph. Mont. Hung. 7/1972/15), and A. ÁDÁM, J. VERŐ, J. CZ. MILETITS, L. HOLLÓ and Á. WALLNER: The geophysical observatory near Nagycenk. I. Electromagnetic measurement and processing of data (Acta Geod., Geoph. Mont. Hung. 16/1981/333).

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

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

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

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

I. Activity indices T and K_1—K_5

Jaunary

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	13312233	18	3	1	5	1	3
2.	22122112	13	4	1	5	1	2
3.	11224422	18	4	2	5	2	3
4.	11113112	11	5	1	5	2	1
5.	00113311	10	2	0	4	1	1
6	00010001	2	2	0	4	0	0
7.	11011000	4	3	0	4	1	0
8.	11111000	5	3	1	4	1	2
9.	23122966	31	5	2	5	3	6
10.	99973233	45	7	6	7	7	9
11.	12423312	18	3	1	4	2	2
12.	94444431	33	7	5	6	4	4
13.	31210222	13	5	2	4	2	2
14.	11112113	11	3	0	4	1	2
15.	62223544	28	6	2	5	3	5
16	22545592	34	6	2	6	4	4
17.	44447465	40	7	3	5	3	6
18.	63576629	44	7	4	6	3	6
19.	13436323	25	6	3	5	3	2
20.	22241132	17	7	5	5	2	2
21.	11223152	17	7	2	5	1	3
22.	11143112	14	5	2	4	2	0
23.	11011114	10	4	1	4	2	2
24.	12253447	28	6	2	5	2	6
25.	73343252	29	6	3	5	3	3
26.	21222230	14	3	1	4	2	2
27.	12112151	14	4	1	4	1	2
28.	00103223	11	3	2	4	1	1
29.	31223644	25	7	2	5	3	3
30.	23547233	29	8	6	5	3	3
31.	32334261	24	7	2	4	2	3

Monthly averages: T (N) 2.427

T (E) 1.984

K_1 5.06

K_2 2.06

K_3 4.74

K_4 2.19

K_5 2.91

February

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	02223241	16	6	2	4	1	2
2.	00011112	6	6	1	4	1	0
3.	23112123	15	3	0	5	1	2
4.	11122999	34	7	7	8	8	6
5.	99999999	72	9	8	8	9	9
6.	97638840	45	6	3	6	5	6
7.	43449922	37	6	4	5	4	7
8.	73232112	20	7	3	5	3	2
9.	12122669	31	7	3	4	3	4
10.	47322232	25	6	2	4	3	4
11.	11195359	34	6	3	5	1	6
12.	54379443	39	7	4	5	5	6
13.	53357336	35	7	4	6	5	4
14.	42574429	37	7	5	6	3	5
15.	34358982	42	7	4	6	3	4
16.	38667977	53	8	5	7	4	6
17.	33244583	32	7	4	5	2	6
18.	32333233	22	7	3	6	2	2
19.	12213211	13	6	2	4	1	1
20.	53457699	48	7	4	6	4	8
21.	74576759	50	5	3	5	4	7
22.	74443364	35	7	3	5	4	4
23.	24233256	27	6	3	5	2	4
24.	61123451	23	5	1	4	1	5
25.	11011111	7	3	1	4	0	1
26.	11111112	9	5	1	4	0	1
27.	10122123	12	5	1	4	1	2
28.	10231134	15	6	2	5	1	2

Monthly averages: T (N) 3.590
T (E) 2.888
K_1 6.21
K_2 3.07
K_3 5.11
K_4 2.89
K_5 4.14

March

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	55338354	36	5	3	5	5	3
2.	99368796	62	6	4	6	8	8
3.	93457664	44	5	2	5	3	8
4.	53344489	40	6	3	5	2	8
5.	24234733	28	5	1	4	2	3
6.	63111141	18	5	0	5	1	3
7.	23133002	14	5	1	4	1	1
8.	12011111	8	4	0	4	1	0
9.	31111231	13	4	0	4	0	2
10.	10121134	13	5	1	4	1	1
11.	32434458	33	7	3	6	3	3
12.	92323899	45	5	1	6	6	7
13.	94333142	29	7	4	6	4	4
14.	27757356	42	9	5	5	5	6
15.	43357634	35	8	5	5	5	5
16.	13224111	15	6	3	4	1	1
17.	33261112	19	7	3	5	1	3
18.	31133399	32	7	5	5	1	6
19.	86866442	44	8	6	7	5	6
20.	47534684	41	7	4	6	4	7
21.	45243253	28	8	5	5	2	3
22.	12111121	10	6	3	5	1	2
23.	21212122	13	6	4	5	0	2
24.	41122154	20	5	2	4	1	4
25.	46569447	45	5	5	6	5	6
26.	86313122	26	6	4	6	3	1
27.	00012102	6	5	1	4	1	0
28.	12758695	43	7	4	6	3	6
29.	65435754	39	6	4	5	3	6
30.	54443753	35	7	5	5	4	4
31.	55357353	36	7	4	5	4	4

Monthly averages: T (N) 3.572
T (E) 2.681
K_1 6.10
K_2 3.06
K_3 5.06
K_4 2.81
K_5 4.00

April

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	23323743	27	6	3	5	2	3
2.	41234544	27	6	2	4	3	3
3.	22223103	15	6	2	4	1	1
4.	11213285	23	5	2	5	3	3
5.	95345321	32	7	5	5	3	3
6.	34657695	45	8	5	6	3	6
7.	64456666	43	9	6	5	3	5
8.	67736423	33	8	6	6	2	2
9.	32444654	32	9	5	5	3	2
10.	45646534	37	9	7	5	3	2
11.	32423223	21	9	6	5	2	2
12.	22265222	23	7	4	4	2	2
13.	75399833	47	6	5	5	5	5
14.	35457899	50	7	4	6	4	7
15.	95966893	55	8	6	6	6	8
16.	47466585	45	7	5	6	3	4
17.	32243496	33	9	4	5	2	5
18.	22223431	19	6	2	4	1	1
19.	01121232	12	6	2	3	0	2
20.	42133141	19	5	2	4	0	3
21.	32121124	16	5	3	5	1	3
22.	32442211	19	5	2	4	1	3
23.	22211319	21	6	3	4	1	5
24.	58657669	52	8	4	6	4	7
25.	95546567	47	7	5	6	6	6
26.	84646423	37	7	4	5	2	6
27.	42332312	20	5	3	5	2	2
28.	24333112	19	7	3	4	1	3
29.	62234969	41	6	4	5	3	6
30.	53324474	32	7	4	5	2	5

Monthly averages: T (N) 3.737
T (E) 3.121
K_1 6.87
K_2 3.93
K_3 4.90
K_4 2.47
K_5 3.83

May

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	31234269	32	6	3	5	2	6
2.	44222555	29	7	5	5	4	3
3.	23349223	28	4	2	5	3	3
4.	33644424	30	6	4	5	4	4
5.	52256323	28	7	4	5	3	3
6.	24542322	24	7	4	4	3	2
7.	12134211	15	7	4	4	2	1
8.	41311121	14	5	2	5	1	2
9.	32111111	11	5	2	4	1	2
10.	02111161	16	2	1	4	1	1
11.	63499997	56	7	4	6	5	6
12.	77976849	57	8	8	8	5	6
13.	64956878	51	7	5	7	5	6
14.	33543342	27	6	4	6	2	3
15.	32453325	27	6	3	5	3	3
16.	23222212	16	6	3	4	1	1
17.	93759599	56	7	4	7	7	7
18.	62563411	30	6	2	5	3	2
19.	01121001	6	5	1	4	0	0
20.	11001136	13	4	1	4	1	2
21.	49569942	48	7	5	6	8	6
22.	65726689	49	8	5	5	5	5
23.	75445484	41	7	4	6	5	7
24.	34639799	50	8	6	7	8	5
25.	75111010	16	3	2	5	3	2
26.	00113232	12	3	2	4	2	2
27.	23222122	16	6	1	4	1	2
28.	02011110	6	5	1	4	1	1
29.	11122210	10	4	3	5	2	2
30.	12122221	13	4	2	4	1	2
31.	32312412	18	7	4	5	2	3

Monthly averages: T (N) 3.089
T (E) 2.899
K_1 5.90
K_2 3.26
K_3 5.06
K_4 3.03
K_5 3.23

June

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	14332221	18	5	3	5	3	2
2.	02322311	14	5	2	4	2	3
3.	22222211	14	7	4	5	2	1
4.	11111101	7	6	3	4	1	0
5.	11123211	12	3	1	4	2	2
6.	22233421	19	5	2	5	2	3
7.	24111120	12	6	4	4	3	2
8.	12245333	23	7	4	5	2	2
9.	21233394	27	3	2	5	3	4
10.	45546932	38	6	4	6	5	6
11.	32212132	16	7	3	4	2	2
12.	33356567	38	5	3	7	6	5
13.	99966484	55	6	7	8	6	6
14.	33522213	21	5	3	6	4	3
15.	42222242	20	4	2	4	2	3
16.	21112211	11	5	2	4	1	2
17.	21233553	24	6	4	5	3	3
18.	37956686	50	7	5	6	5	7
19.	36645422	32	7	3	5	4	3
20.	43233412	22	5	2	4	2	2
21.	33433342	25	6	3	4	2	3
22.	32313672	27	4	3	5	2	3
23.	31223222	17	4	2	4	2	2
24.	32111211	12	5	1	4	1	2
25.	01011121	7	5	3	4	1	1
26.	13214522	20	3	2	5	2	3
27.	22212222	15	4	2	4	1	1
28.	31133522	20	6	2	4	2	4
29.	43343221	22	5	2	5	2	4
30.	12122111	11	4	2	4	3	1

Monthly averages: T (N) 2.329
T (E) 2.233
K_1 5.20
K_2 2.83
K_3 4.77
K_4 2.60
K_5 2.83

July

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	22111111	10	5	2	4	1	1
2.	11111232	12	4	3	4	1	2
3.	22221212	14	6	3	4	2	2
4.	23111222	14	3	2	4	1	1
5.	11111210	8	5	2	4	1	2
6.	12294213	24	5	5	4	2	5
7.	12124316	20	5	4	5	2	3
8.	15331523	21	6	3	6	2	2
9.	24233223	21	7	4	4	2	2
10.	11322112	13	6	3	4	2	1
11.	21121112	11	4	2	4	1	1
12.	12113365	22	4	2	4	4	3
13.	88434111	30	5	3	5	2	6
14.	21211111	10	5	2	4	1	2
15.	11001112	7	3	2	3	2	2
16.	23228446	31	5	3	4	3	6
17.	64646436	39	7	5	5	4	5
18.	25334413	25	6	4	5	3	3
19.	12332222	17	6	2	4	2	2
20.	13421221	16	6	4	4	2	1
21.	21121211	11	5	3	5	3	1
22.	31111126	16	7	3	6	1	2
23.	25777573	43	5	4	5	4	4
24.	55436533	34	6	2	4	3	4
25.	44632222	25	7	3	5	3	3
26.	22222112	14	5	3	4	2	2
27.	12223221	15	5	3	4	3	2
28.	31212342	18	6	4	4	2	2
29.	34222233	21	4	4	5	3	2
30.	44642124	27	5	4	5	2	3
31.	41111112	12	4	2	4	2	1

Monthly averages: T (N) 2.164
T (E) 1.910
K_1 5.23
K_2 3.06
K_3 4.39
K_4 2.19
K_5 3.39

August

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	01112112	9	3	2	4	1	1
2.	75546654	42	6	3	5	4	6
3.	47124553	31	7	2	6	3	3
4.	32211111	12	5	1	5	1	1
5.	11111001	6	5	2	4	0	0
6.	11415132	18	3	1	5	2	2
7.	12142129	22	3	1	4	2	3
8.	99633222	36	4	2	5	5	4
9.	53444210	23	5	2	6	3	3
10.	12111101	8	3	1	4	0	1
11.	11122111	10	5	2	4	2	2
12.	25224259	31	5	3	5	3	4
13.	52656235	34	7	4	6	6	4
14.	21233233	19	6	4	5	3	2
15.	33223423	22	4	2	5	2	3
16.	11111121	9	6	3	4	1	0
17.	11211213	12	5	2	4	1	1
18.	10101000	3	5	2	4	0	0
19.	11115432	18	5	1	5	2	2
20.	22112233	16	6	3	5	3	3
21.	44334445	31	6	3	5	3	5
22.	11222247	21	7	3	4	3	2
23.	35433354	30	6	4	6	4	6
24.	44344325	29	8	4	5	4	4
25.	93455393	41	8	3	6	5	6
26.	34434494	35	7	5	7	5	4
27.	21112311	12	6	2	4	1	1
28.	31112222	14	4	3	5	2	1
29.	21142347	24	6	3	5	3	3
30.	83434335	33	8	4	7	4	3
31.	46444544	35	7	3	6	5	5

Monthly averages: T (N) 2.420

T (E) 2.278

K_1 5.52

K_2 2.58

K_3 5.00

K_4 2.68

K_5 2.74

September

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	64433213	26	6	4	7	4	3
2.	01122112	10	5	2	5	2	1
3.	12312210	12	5	3	4	2	0
4.	10011021	6	4	2	3	0	0
5.	10101103	7	3	3	4	1	0
6.	01112121	9	5	2	4	0	1
7.	11135573	26	3	3	5	2	6
8.	21228323	23	5	3	5	3	1
9.	33224444	26	7	4	6	3	2
10.	23233332	21	6	3	5	2	3
11.	21224323	19	7	3	5	2	2
12.	21223302	15	4	2	5	1	2
13.	22122213	15	4	4	5	1	2
14.	21112211	11	4	2	5	1	1
15.	75543557	41	6	4	5	4	6
16.	33535574	35	5	2	5	4	4
17.	44442353	29	6	2	5	4	4
18.	41111233	16	5	2	4	2	3
19.	44225899	43	6	4	4	4	9
20.	73334543	32	7	4	6	4	3
21.	22222410	15	5	2	4	1	2
22.	21333112	16	4	2	4	1	2
23.	11011101	6	3	1	4	1	1
24.	21223212	15	4	2	5	1	2
25.	37676693	47	7	5	6	5	6
26.	54765223	34	8	6	6	4	6
27.	36323125	25	9	4	6	3	3
28.	54113211	18	6	2	5	2	4
29.	32321111	14	6	3	4	2	2
30.	11121111	9	7	2	4	1	1

Monthly averages: T (N) 2.458
T (E) 1.971
K_1 5.40
K_2 2.90
K_3 4.83
K_4 2.23
K_5 2.65

October

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	21122325	18	5	3	5	2	2
2.	33343414	25	6	3	5	3	4
3.	21442412	20	6	3	5	3	2
4.	41456933	35	5	4	6	4	6
5.	22454111	20	8	3	5	3	1
6.	52236694	37	7	3	5	2	4
7.	33342222	21	7	3	4	3	2
8.	32245833	30	7	3	5	3	4
9.	22211112	12	7	4	5	1	1
10.	11222143	16	6	3	5	2	2
11.	11122110	9	5	2	4	1	1
12.	01112011	7	5	3	4	1	1
13.	65333734	34	5	4	6	4	4
14.	33222295	28	5	3	5	3	6
15.	52353162	27	6	3	5	2	4
16.	21222214	16	4	2	4	2	1
17.	11245799	38	5	4	6	3	7
18.	93389999	59	6	4	6	5	8
19.	21121320	12	5	1	4	2	2
20.	01111113	9	4	1	4	0	1
21.	10133343	18	5	3	6	3	2
22.	63343122	24	7	5	6	6	5
23.	22133649	30	6	4	6	2	5
24.	43333583	32	7	4	5	3	4
25.	22112204	14	6	2	4	1	2
26.	10221000	6	5	2	4	1	0
27.	00010020	3	2	0	4	0	0
28.	10000335	12	4	2	4	3	1
29.	43455565	37	6	4	6	4	6
30.	72322874	35	5	2	5	3	6
31.	12121113	12	5	1	4	2	2

Monthly averages: T (N) 2.702
T (E) 1.935
K_1 5.55
K_2 2.84
K_3 4.90
K_4 2.48
K_5 3.10

November

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	15222117	21	5	2	4	3	4
2.	39768343	43	7	5	7	5	5
3.	42234668	35	7	4	6	3	6
4.	12123401	14	5	2	4	3	2
5.	11011001	5	4	2	4	1	0
6.	00011110	4	4	1	4	0	1
7.	00015234	15	4	2	5	2	3
8.	71144253	25	3	1	5	3	6
9.	24224699	38	5	3	5	3	6
10.	63423694	37	4	3	6	3	6
11.	73737489	48	6	4	6	6	5
12.	54742969	46	6	4	5	1	8
13.	21224348	26	4	2	5	1	5
14.	11436771	30	4	1	5	3	5
15.	35345637	36	5	2	5	5	4
16.	64433598	41	6	3	5	3	6
17.	84465766	46	7	5	6	3	6
18.	54453463	34	6	4	5	4	6
19.	43222437	27	6	3	5	3	6
20.	25556793	42	7	5	6	5	6
21.	21211152	15	6	3	5	2	4
22.	21121111	10	5	2	4	0	2
23.	01001011	4	4	1	4	0	0
24.	01122261	15	4	2	5	2	2
25.	32333114	20	5	4	5	3	2
26.	46233172	28	5	2	5	3	4
27.	00112221	9	4	1	4	1	2
28.	01114585	25	5	3	5	2	6
29.	54245435	32	7	4	5	4	4
30.	53236356	33	7	5	6	3	4

Monthly averages: T (N) 3.250
T (E) 2.521
K_1 5.23
K_2 2.74
K_3 5.03
K_4 2.67
K_5 4.20

December

Day	T	Sum	K_1	K_2	K_3	K_4	K_5
1.	43223323	22	6	3	5	2	2
2.	21222311	14	6	3	4	1	2
3.	11101122	9	5	1	4	0	1
4.	00111111	6	4	2	4	1	1
5.	14222434	22	6	3	5	2	5
6.	22545963	36	5	4	6	3	6
7.	44344994	41	6	4	5	3	7
8.	33123213	18	5	2	5	1	2
9.	22211100	9	7	2	4	1	1
10.	03235445	26	5	2	5	3	5
11.	13257955	37	6	4	6	5	4
12.	33245564	32	6	3	5	3	5
13.	33444556	34	7	6	6	3	5
14.	74454799	49	7	4	5	3	7
15.	54323227	28	6	4	5	3	6
16.	32121010	10	4	3	4	1	0
17.	21111122	11	4	2	4	1	0
18.	11001131	8	5	1	4	2	2
19.	62220131	17	3	2	4	3	2
20.	12010002	6	4	2	4	0	1
21.	01000011	3	4	2	4	0	0
22.	13133522	20	5	1	5	3	4
23.	12121332	15	4	0	5	3	3
24.	10123435	19	3	2	4	1	4
25.	32012231	14	4	1	4	2	2
26.	12122229	21	7	2	4	3	5
27.	52133263	25	6	2	5	2	4
28.	32234212	19	7	4	5	2	2
29.	31124101	13	6	2	4	1	1
30.	26444763	36	6	4	6	3	5
31.	32326988	41	5	3	5	3	6

Monthly averages: T (N) 2.585

T (E) 1.695

K_1 5.29

K_2 2.58

K_3 4.68

K_4 2.10

K_5 3.28

II. Average amplitudes for different periods

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											January	North
1.	10	8	11	8	10	17	15	22	28	25	17	16
2.	10	10	9	6	12	11	15	25	27	25	17	17
3.	35	38	39	34	38	42	40	42	42	42	40	42
4.	44	45	44	46	55	62	59	61	56	66	58	59
5	94	55	87	110	93	50	80	52	56	75	41	73
6.	—23	—9	—39	—12	—8	+5	—23	+35	+51	+44	—19	—59
											January	East
1.	11	9	13	11	14	19	23	28	34	33	30	28
2.	11	9	10	8	7	13	19	21	24	19	20	20
3.	37	35	37	36	38	38	44	38	47	40	39	37
4.	45	46	50	39	48	46	38	42	55	42	42	45
5.	89	86	60	70	63	55	86	50	60	32	32	47
6.	—15	—9	—15	+16	—3	—34	—33	—30	+9	+57	+74	+49
											February	North
1.	10	12	10	15	17	19	23	28	31	26	25	26
2.	7	10	10	12	14	15	17	27	28	21	19	21
3.	40	52	39	37	40	38	39	48	48	50	41	45
4.	68	59	61	55	62	62	53	45	57	57	68	71
5.	91	110	95	154	108	75	95	64	78	89	70	102
6.	—29	—40	—20	—22	—8	—38	—10	+12	+49	+17	0	—40
											February	East
1.	9	16	10	17	19	20	30	38	34	38	37	46
2.	12	10	12	12	15	14	21	26	24	23	26	23
3.	41	54	47	40	42	38	31	44	40	51	46	42
4.	62	65	48	47	55	39	34	42	51	52	69	57
5.	96	59	73	115	102	56	68	66	59	27	26	62
6	+13	—3	+18	—6	—21	+2	—35	—16	+58	+61	+66	+62

and hourly means of earth current elements

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
20	20	19	15	12	11	10	14	7	9	9	12	14.2
17	17	16	14	8	13	12	13	6	9	7	8	13.5
41	41	39	39	36	35	37	37	36	37	37	35	38.5
62	50	48	38	39	39	38	39	46	41	40	44	49.1
80	78	66	79	67	84	82	119	88	106	102	80	79.0
−94	−52	+1	−8	+37	+22	+16	+65	−8	+27	+36	+10	
Component												
32	31	28	28	20	19	14	17	10	13	10	18	20.5
22	20	21	19	10	12	12	14	7	9	14	10	14.8
36	37	36	37	34	35	36	35	37	37	37	36	37.3
45	44	47	33	37	41	37	31	40	44	34	48	42.3
41	54	46	59	71	78	67	115	78	113	67	91	67.1
+12	+1	−2	−38	+10	−3	+4	−9	−17	−9	+4	−19	
Component												
26	24	23	22	16	22	15	15	15	15	15	15	19.3
31	23	24	19	21	26	17	17	10	15	12	15	17.8
51	46	44	62	39	48	50	47	35	42	39	38	43.9
68	64	74	73	71	84	59	102	59	74	48	49	64.1
104	140	84	92	161	112	201	120	155	168	221	181	118.6
−77	−66	−16	+20	+56	+22	+53	+27	+90	+20	+10	−11	
Component												
41	42	46	44	39	32	25	17	20	19	20	23	28.3
30	31	27	28	24	23	21	17	19	15	16	16	20.0
39	46	42	39	43	51	44	46	45	41	42	41	44.8
46	53	51	46	46	69	53	75	41	57	52	48	52.4
70	90	108	88	200	71	182	140	203	150	104	185	99.7
+51	+14	−45	−26	−43	−12	+21	−33	−10	−16	−33	−42	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											March	North
1.	8	13	13	14	16	17	23	27	23	27	22	22
2.	6	9	10	13	9	11	21	20	19	21	15	21
3.	37	39	41	41	41	40	47	44	48	45	42	43
4.	46	60	51	52	63	40	59	64	74	75	56	64
5.	128	110	165	111	77	92	53	59	68	60	96	77
6.	+33	−25	−42	+2	−41	−30	+46	+54	+55	+23	−54	−131
											March	East
1.	11	12	19	17	19	25	27	34	39	45	45	48
2.	7	9	11	13	13	20	21	28	28	30	28	33
3.	30	32	31	30	31	32	38	39	32	39	38	31
4.	41	61	45	45	42	42	59	35	43	56	41	50
5.	130	88	114	92	58	58	63	56	89	38	75	84
6.	−9	+23	−16	−10	−4	−22	−22	+20	+65	+66	+66	+30
											April	North
1.	11	15	15	17	18	20	24	24	24	22	22	22
2.	13	13	14	15	19	19	21	31	23	24	20	22
3.	39	40	39	35	39	41	43	41	43	44	38	40
4.	47	49	54	47	61	68	63	64	57	55	52	71
5.	100	190	113	86	66	51	49	62	55	60	45	71
6.	−7	−13	+3	+32	+26	+34	+47	+92	+62	−20	−115	−179
											April	East
1.	14	17	20	20	27	35	46	53	51	54	55	53
2.	14	16	19	15	22	25	30	35	32	35	30	33
3.	28	28	24	24	28	27	32	34	35	33	33	34
4.	43	46	47	37	46	51	41	49	50	43	48	49
5.	84	127	87	80	65	48	58	44	53	61	51	58
6.	+12	+3	+13	+19	+2	+17	+38	+35	+44	+20	+37	+14

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
22	24	16	18	14	15	15	13	10	10	11	13	16.9
20	21	16	16	12	12	9	14	11	9	9	8	13.8
45	42	42	39	41	38	39	39	37	35	38	41	41.0
71	82	65	56	46	61	42	43	55	47	75	113	60.8
86	73	75	44	63	96	189	166	183	163	167	123	105.2
—116	—104	—16	+48	+77	+62	+32	+109	+28	+29	—10	—26	
Component												
47	49	43	41	39	32	20	19	12	57	15	13	28.7
28	37	27	24	23	20	19	13	13	12	14	13	20.2
38	42	34	30	31	28	32	30	32	27	35	32	33.1
63	42	49	45	35	63	46	45	37	52	48	51	47.3
89	85	84	76	86	84	167	116	170	100	167	127	95.6
—12	—44	—22	—22	+9	0	—49	—3	+1	—3	—23	—20	
Component												
21	19	17	12	14	11	11	12	11	12	11	13	16.6
23	16	18	15	14	9	6	12	14	14	12	16	16.8
46	40	45	42	39	37	37	33	35	41	42	41	40.0
74	65	61	42	65	47	41	44	45	54	48	44	54.9
95	97	55	108	74	82	114	186	181	200	122	130	99.7
—182	—74	+2	+32	+98	+99	+35	+26	+16	—11	—4	0	
Component												
52	60	58	47	42	33	28	17	20	15	18	20	35.6
38	36	33	33	30	26	21	18	15	13	19	17	25.2
38	35	30	32	25	29	20	31	31	32	27	34	30.2
55	55	53	56	45	51	40	38	49	50	66	40	47.8
80	70	73	77	104	86	110	188	128	197	84	164	90.7
—11	+20	+28	—30	—15	—49	—26	—25	—24	—30	—43	+3	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											May	North
1.	7	10	12	16	17	20	17	16	19	19	18	12
2.	14	16	15	17	24	23	21	27	25	25	17	21
3	36	42	38	39	40	42	49	52	45	39	41	41
4.	55	68	49	49	48	67	101	79	62	52	55	46
5.	114	79	75	38	46	71	33	49	31	46	40	67
6.	+1	+19	+21	+29	+61	+85	+48	+33	—14	—85	—156	—168
											May	East
1.	10	12	12	17	21	32	35	38	40	42	43	38
2.	13	13	13	16	20	21	23	28	27	41	29	23
3.	34	34	32	30	30	29	31	32	34	38	45	39
4.	60	51	50	35	39	45	39	49	40	49	54	55
5.	96	59	70	59	48	41	44	47	46	49	49	67
6.	+2	+30	+2	+19	—2	+19	+45	+54	+35	+4	—30	—44
											June	North
1.	9	9	13	18	20	20	20	20	20	18	14	13
2.	11	15	14	19	31	29	22	22	19	16	15	15
3.	38	32	41	44	52	50	54	40	38	37	38	36
4.	45	47	53	44	62	96	74	46	55	53	53	50
5.	99	82	49	99	37	51	119	65	33	29	35	62
6.	+7	+17	+22	+41	+87	+102	+75	+34	—8	—106	—170	—201
											June	East
1.	12	11	15	14	35	24	32	39	38	37	34	34
2.	14	16	13	14	17	31	23	30	29	24	25	24
3.	34	31	32	37	51	40	42	42	37	33	32	32
4.	49	50	42	40	58	55	54	51	38	50	51	41
5.	46	56	48	95	14	42	46	55	55	57	66	80
6.	—4	—4	—10	—31	—29	+14	+57	+62	+72	+34	—9	—33

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
16	13	14	8	10	7	9	6	9	10	8	8	12.5
20	17	17	10	12	12	13	14	14	13	12	10	17.6
41	41	43	49	42	57	41	38	40	39	42	37	42.2
58	82	61	60	53	57	77	67	42	50	82	75	62.3
78	56	43	92	84	102	48	105	174	146	121	82	75.8
—134	—79	+6	+42	+64	+92	+55	+7	+25	+10	+21	+15	
Component												
38	39	40	33	27	21	16	12	15	11	10	12	25.6
28	30	32	24	23	18	16	12	12	15	14	9	21.0
41	39	31	50	30	27	43	33	39	28	34	30	34.7
42	63	66	55	42	50	64	62	60	53	91	52	52.8
104	58	65	108	120	140	98	91	127	157	103	117	81.8
—38	—5	+31	+14	—28	—40	—17	+3	—17	—20	—23	+8	
Component												
11	9	7	8	5	4	2	4	6	2	3	6	10.9
11	11	13	7	6	7	3	8	12	8	9	13	14.0
37	39	39	38	38	37	35	37	33	35	38	37	39.3
55	71	64	57	64	56	59	44	46	55	47	54	56.3
83	58	84	82	69	63	103	56	92	54	76	58	68.3
—150	—85	—24	+52	+69	+84	+61	+34	+18	—6	+32	+14	
Component												
32	29	28	24	20	19	12	8	8	5	5	9	21.8
23	26	23	22	20	15	15	11	11	6	10	17	19.1
36	34	35	46	40	35	35	31	34	35	32	37	36.4
55	51	56	57	59	51	73	46	58	46	50	50	51.3
90	74	79	89	128	67	119	82	65	47	44	48	66.3
—28	—8	+14	+2	—26	—10	—45	—15	—21	+2	+9	+5	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											July	Nort
1.	7	8	10	14	17	19	17	14	14	17	15	12
2.	19	15	14	17	25	20	19	19	20	19	13	16
3.	32	37	37	39	37	39	39	41	39	41	37	39
4.	37	51	44	31	48	60	62	60	50	54	46	50
5.	70	53	76	79	74	71	57	33	33	30	57	84
6.	+17	+24	+1	+31	+39	+81	+63	+49	—13	—99	—159	—185
											July	East
1.	10	12	16	15	17	19	30	31	32	38	37	34
2.	24	16	16	17	18	17	23	24	27	28	27	23
3.	32	32	31	23	25	28	32	28	31	31	30	31
4.	40	44	44	41	38	41	43	44	38	39	43	56
5.	54	44	33	65	62	41	34	30	44	57	64	82
6.	—9	—1	0	—27	—12	+10	+47	+72	+78	+74	+32	—12
											August	North
1.	5	13	9	10	13	16	18	16	19	18	17	12
2.	13	23	16	15	21	23	26	21	19	15	19	14
3.	39	32	33	35	38	40	52	44	39	41	39	40
4.	50	66	40	55	63	71	84	67	61	46	57	67
5.	67	82	150	70	56	93	17	36	19	38	51	44
6.	+26	+7	+22	+41	+49	+65	+103	+46	—16	—125	—166	—175
											August	East
1.	9	15	14	13	21	28	33	35	39	41	44	37
2.	10	15	13	9	12	12	16	21	26	22	24	17
3.	39	39	38	36	38	34	39	37	36	48	46	37
4	50	56	59	51	48	38	39	39	47	44	46	59
5.	65	88	46	53	41	74	37	26	33	48	46	40
6.	0	—16	+12	+28	—3	+5	+31	+77	+89	+49	—14	—28

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
14	9	6	5	3	2	2	3	8	7	8	7	9.9
14	10	7	7	7	8	6	9	16	16	16	14	14.4
39	37	38	33	36	32	32	31	37	36	35	43	36.9
54	50	52	45	43	48	36	41	49	40	49	48	47.8
97	70	60	59	48	35	56	47	46	74	64	66	60.0
—179	—85	—11	+35	+89	+93	+51	+26	+37	+31	+43	+25	
Component												
35	27	26	21	19	17	11	10	10	13	13	8	20.9
21	21	21	16	17	17	12	10	15	16	16	12	18.9
37	31	37	32	28	29	26	36	34	31	37	34	31.1
43	51	60	49	44	43	56	47	46	38	49	38	44.8
95	82	50	56	59	75	59	63	60	86	71	76	60.3
—37	—19	—21	—34	—19	—33	—30	—26	—36	—7	+1	+12	
Component												
13	13	10	7	5	4	5	9	8	8	6	5	10.8
16	15	17	10	11	9	10	17	17	12	12	12	16.0
39	43	45	39	38	34	39	36	37	38	41	38	39.1
55	51	59	51	52	37	39	48	41	59	50	61	55.4
86	75	63	47	36	67	55	69	111	77	81	72	65.1
—149	—93	—7	+34	+82	+91	+21	+23	+30	+12	+21	+57	
Component												
39	40	30	27	25	19	15	14	13	10	9	11	24.2
22	23	21	17	13	13	12	15	17	12	12	13	16.1
34	44	49	37	36	39	39	33	34	34	37	35	38.3
48	58	60	49	44	42	42	59	43	55	51	51	49.1
81	55	55	64	75	85	68	80	97	91	101	104	64.7
—50	—39	—11	—3	+7	—11	—17	—42	—48	—19	—9	+12	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											September	North
1.	2	7	8	9	10	15	16	16	19	15	14	12
2.	12	13	12	14	18	19	20	22	20	18	19	17
3.	36	38	34	35	35	42	43	45	46	40	41	39
4.	46	46	39	49	58	55	55	61	61	59	58	69
5.	97	65	110	83	53	53	43	41	45	35	58	46
6.	+8	+28	+40	+33	+8	+49	+59	+58	+30	−60	−138	−159
											September	East
1.	13	16	11	15	16	23	27	35	38	35	38	40
2.	14	14	11	14	15	13	14	19	23	20	20	23
3.	34	30	38	31	37	35	38	35	42	35	37	39
4.	44	35	44	59	60	44	46	41	37	43	47	56
5.	64	62	64	38	31	35	38	55	43	48	42	50
6.	+5	+16	+21	+22	+37	+15	+54	+56	+84	+53	0	−19
											October	North
1.	6	9	9	8	11	13	22	24	18	17	18	17
2.	11	13	13	12	15	15	20	30	25	19	21	23
3.	38	37	38	37	35	38	41	42	42	42	42	44
4.	46	53	49	46	47	47	46	46	55	66	56	77
5.	120	80	84	56	63	64	63	45	41	44	69	62
6.	−19	−30	+2	−5	−32	−23	+33	+56	+87	+31	−52	−147
											October	East
1.	15	15	12	16	19	24	34	33	32	37	34	30
2.	13	11	9	10	13	19	24	28	24	22	25	27
3.	35	37	37	39	34	37	34	35	38	40	41	42
4.	41	47	41	44	31	42	42	44	43	52	48	57
5.	72	41	54	29	48	43	48	36	31	31	57	52
6.	+11	+8	−2	+7	−2	−17	−8	+39	+64	+71	+74	+29

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
11	11	14	8	6	7	7	5	6	6	7	5	9.8
22	19	19	13	14	14	13	14	12	14	13	13	16.0
44	45	40	35	36	36	34	37	37	36	36	37	38.6
52	56	61	45	36	37	38	43	43	41	55	49	50.5
91	58	68	73	64	109	98	89	92	98	122	82	73.8
−129	−56	−8	+61	+69	+48	+35	+22	−8	+24	−14	+10	
Component												
35	39	39	31	24	23	14	8	10	10	11	10	23.4
25	28	26	23	16	19	15	13	14	15	17	16	17.8
37	34	31	33	32	38	30	32	36	34	30	35	34.7
65	51	41	41	39	46	40	40	47	51	55	46	46.6
63	38	55	70	61	81	118	67	82	77	128	61	61.3
−41	−55	−36	−10	+8	−13	−59	−27	−25	−28	−48	−16	
Component												
17	15	15	13	13	12	9	9	11	7	6	9	12.8
19	19	17	13	20	15	12	13	17	9	12	13	16.5
38	41	41	37	39	38	37	38	37	37	35	39	38.9
51	58	63	61	42	66	42	35	75	39	56	46	52.8
84	56	64	71	107	87	74	156	111	154	81	141	82.4
−131	−81	−19	−34	+53	+66	+31	+49	+48	+13	+14	+24	
Component												
35	35	30	27	28	21	16	17	19	15	13	15	23.8
24	26	21	18	22	21	15	13	21	13	10	17	18.6
39	41	40	36	34	33	38	37	38	39	39	34	37.5
39	51	37	44	34	37	46	42	44	53	48	39	43.6
78	37	59	55	89	114	53	88	116	82	74	150	64.0
−23	−10	−15	−6	+3	−38	−27	−53	−49	−12	−3	−35	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											November	North
1.	6	8	10	8	11	16	17	23	25	22	20	21
2.	6	8	13	13	13	16	17	21	22	23	21	21
3.	37	38	38	34	38	44	47	39	43	45	42	46
4.	54	49	65	50	59	68	57	52	61	63	72	63
5	105	133	101	118	67	64	57	53	64	53	80	71
6.	—19	—40	—44	—24	—25	—4	+1	+27	+51	+27	—34	—61
											November	East
1.	11	10	10	16	16	22	21	25	30	29	32	35
2.	6	13	13	12	8	15	18	22	25	24	21	26
3.	35	38	34	40	36	45	39	40	38	42	41	40
4.	40	35	48	46	36	50	53	52	44	55	40	41
5.	99	77	112	48	53	51	47	35	26	34	60	49
6.	+9	+3	+5	+8	—10	—5	—1	—4	+13	+48	+35	+20
											December	North
1.	7	8	11	8	10	13	16	21	24	23	19	21
2.	6	12	12	10	12	14	14	14	19	19	21	17
3.	35	34	36	38	35	35	37	38	38	39	40	43
4.	50	37	39	53	59	60	52	38	52	54	57	54
5.	111	98	84	75	67	45	45	36	41	47	46	80
6.	—47	—17	—24	—7	—15	+5	—7	+3	+36	+19	—26	—52
											December	East
1.	11	12	14	15	15	20	24	22	23	28	26	31
2.	10	7	10	9	9	12	16	17	19	24	24	24
3.	37	35	36	36	37	37	44	38	37	39	44	33
4.	42	39	33	42	44	37	44	34	38	35	52	45
5.	65	45	52	39	52	36	22	35	31	39	19	43
6.	—4	+11	—16	—8	—16	—6	—18	—4	+20	+30	+35	+4

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
19	19	19	18	16	12	13	13	8	13	10	5	14.7
24	24	26	22	19	16	14	20	11	13	8	5	16.5
43	44	46	44	38	40	40	38	37	38	49	39	40.8
61	77	56	49	45	32	47	57	49	67	57	47	56.7
107	67	85	122	98	131	211	173	136	234	169	163	110.7
−95	−37	+17	+29	+28	+44	+72	+37	+20	+38	+6	−14	
Component												
35	29	30	28	24	20	19	18	11	16	12	11	21.3
32	29	23	26	17	14	17	20	17	14	13	11	18.2
48	40	44	35	42	35	44	38	38	37	37	39	39.4
55	45	50	47	44	48	62	61	49	37	51	61	47.9
54	91	40	86	89	100	105	146	134	167	121	89	79.7
+1	−1	−5	+7	−15	−30	−21	−24	+18	−56	+12	−9	
Component												
20	25	19	16	16	11	13	13	12	10	10	4	14.6
23	26	22	15	17	13	15	13	12	10	12	6	14.8
45	49	41	38	39	38	35	37	35	35	41	35	38.2
48	45	42	87	45	43	45	27	46	41	55	50	49.1
80	63	55	110	82	113	109	157	106	190	109	121	86.3
−50	−23	−19	+38	−8	−19	+17	+37	+47	+19	+24	−5	
Component												
34	39	35	31	25	20	17	16	16	15	13	8	21.5
28	28	25	20	17	15	15	15	12	11	16	9	16.3
41	37	34	37	35	37	40	38	38	37	38	37	37.8
41	40	28	32	31	45	50	38	45	45	45	47	40.5
33	44	50	94	69	115	54	99	86	147	114	66	60.4
−2	−3	+4	+12	−8	−22	−10	−13	−11	−10	+2	+34	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
										Year	1983	North
1.	7	10	11	12	14	17	19	21	22	21	18	17
2.	11	13	13	14	18	18	20	23	22	21	18	19
3.	42	38	38	37	39	41	44	43	43	42	40	41
4.	49	53	49	48	57	63	64	57	58	59	57	62
5.	100	94	99	89	67	65	59	50	47	50	57	70
6.	—4	—6	—5	+12	+12	+28	+36	+42	+31	—29	—90	—130
										Year	1983.	East
1.	12	12	14	16	18	24	30	34	36	38	38	38
2.	12	12	12	12	15	17	21	25	26	26	25	25
3.	35	35	35	33	36	35	37	37	37	39	39	37
4.	46	48	46	44	45	44	44	43	44	47	48	51
5.	80	69	68	65	53	48	49	44	47	44	49	59
6.	+1	+5	+1	—3	+5	0	+11	+30	+53	+47	+30	+6

12	13	14	15	16	17	18	19	20	21	22	23	Average
Component												
17	17	15	12	11	10	9	10	9	10	9	8	13.6
20	18	18	13	14	13	11	13	13	12	11	11	15.7
42	42	42	41	39	39	38	37	36	37	38	37	40.0
59	63	59	55	50	50	47	49	50	50	55	57	55.0
89	74	67	81	79	90	113	120	123	138	118	108	85.3
−124	−69	−5	+35	+60	+62	+40	+39	+28	+17	+15	+8	
Component												
38	38	37	32	28	23	17	14	14	13	12	13	24.5
27	28	25	23	20	18	16	14	14	13	14	13	18.9
39	38	37	37	34	35	36	35	36	34	35	35	36.1
50	50	50	46	42	49	55	48	47	49	53	48	47.4
73	65	63	77	95	92	99	106	112	118	98	106	74.1
−15	−13	−11	−11	−10	−22	−22	−22	−20	−17	−13	−6	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
											Quite days	North
1.	3	6	7	10	9	12	13	13	17	14	15	12
2.	6	8	10	12	15	13	10	16	13	11	15	11
3.	34	34	34	33	34	34	33	36	35	34	34	33
4.	29	32	34	34	35	37	33	34	37	34	37	34
5.	28	33	23	34	26	17	26	11	19	22	24	37
6.	+15	+15	+21	+23	+23	+50	+53	+51	+35	−31	−93	−134
											Quite days	East
1.	5	10	9	13	14	17	21	23	27	31	35	29
2.	8	8	8	10	9	9	11	14	16	17	19	19
3.	34	31	31	32	28	26	28	29	25	30	31	31
4.	28	26	27	33	29	24	28	28	30	28	20	37
5.	28	32	30	24	27	26	23	20	28	26	29	22
6.	+5	+3	+5	+1	−9	−6	+3	+25	+52	+53	+27	−6
											Disturbed days	
1.	12	16	16	21	22	24	26	29	31	30	26	27
2.	14	15	20	22	28	30	31	37	32	24	29	33
3.	40	48	42	43	50	51	65	58	52	53	49	53
4.	59	89	71	79	84	107	103	91	83	93	74	108
5.	194	238	201	204	138	105	144	94	93	86	108	78
6.	−19	+5	+8	+26	0	+23	+13	+35	+36	−24	−74	−121
											Disturbed days	East
1.	16	19	21	23	23	31	41	51	52	53	50	51
2.	16	20	22	20	26	30	33	42	40	44	33	34
3.	36	47	44	37	51	44	49	53	52	64	57	52
4.	62	87	63	51	67	73	57	78	66	68	82	70
5.	150	138	101	188	120	75	93	67	90	53	84	106
6.	−11	−8	+22	−10	0	+35	+38	+59	+68	+57	+45	+35

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
13	11	10	8	6	3	5	5	5	3	4	5	8.5
15	11	12	7	8	7	8	10	12	7	7	9	10.6
35	35	36	34	35	32	33	32	32	35	35	36	34.2
39	32	32	35	33	29	28	33	25	34	39	39	33.6
26	25	28	20	19	26	31	28	39	35	38	35	27.0
—121	—71	—10	+31	+37	+39	+25	+10	+13	+15	+10	+3	
Component												
30	28	28	22	21	13	10	8	8	8	4	8	17.6
19	17	17	16	11	10	9	8	14	8	9	14	12.4
32	29	32	30	29	33	35	32	32	37	31	35	30.8
28	32	32	29	30	27	30	30	31	38	35	32	29.8
24	26	28	26	27	30	33	39	43	27	40	38	29.0
—30	—24	—16	—12	—5	—6	—8	—24	—13	—4	—6	—2	
Component												
26	26	22	20	18	15	14	14	12	14	15	13	20.3
30	29	30	25	25	19	14	16	15	17	19	17	24.1
53	50	50	62	47	41	44	38	39	40	42	40	48.1
90	83	82	78	72	71	71	66	84	63	93	74	82.3
147	160	117	152	183	223	240	294	315	341	237	225	180.0
—120	—67	—18	+58	+83	+71	+39	+34	+18	+21	—15	—13	
Component												
47	51	48	41	38	31	23	19	22	16	19	19	33.7
36	38	35	33	29	24	20	22	18	15	20	17	279.
50	46	43	49	45	36	38	39	36	35	36	38	45.0
71	67	58	73	55	64	79	53	67	64	78	55	67.0
150	114	119	125	198	227	203	250	244	259	198	222	149.0
—7	+2	—14	—34	—17	—64	—26	—55	—31	—37	—35	—13	

III.

Results of harmonical analysis of the daily variations

North Component

	A_1	φ_1	A_2	φ_2	A_3	φ_3	A_4	φ_4	A_5	φ_5	A_6	φ_6
January	15	132	34	242	22	97	16	275	13	157	2	289
February	23	168	39	243	15	68	21	279	4	44	8	138
March	31	141	59	263	40	94	20	321	9	73	11	142
April	36	104	77	289	49	111	19	305	11	202	4	75
May	56	108	74	304	34	139	3	275	5	210	7	5
June	65	102	87	303	36	143	1	191	7	179	3	40
July	68	110	77	297	43	136	4	272	2	277	5	2
August	67	104	75	303	45	142	4	104	6	297	6	158
September	44	101	63	303	40	125	18	342	6	284	0	90
October	28	124	55	260	42	100	26	306	9	191	3	185
November	21	176	41	255	21	106	14	299	11	155	6	300
December	15	168	25	250	9	151	19	301	8	140	3	281
Year	36	117	54	284	31	119	12	302	4	176	1	104
Q	39	91	51	291	32	124	13	319	1	182	3	2
D	30	125	55	290	30	99	18	292	3	303	4	77

East Component

January	18	284	18	138	22	354	14	222	5	176	4	313
February	23	168	39	243	15	68	21	279	4	44	8	138
March	21	325	21	177	22	38	14	266	9	24	10	78
April	33	351	5	153	5	56	7	39	3	76	3	154
May	21	19	11	304	13	141	20	1	8	110	7	220
June	21	349	17	215	28	136	12	352	1	257	5	306
July	34	352	25	199	22	105	6	323	3	191	6	301
August	30	1	16	253	29	101	11	294	12	225	6	178
September	40	4	18	267	21	79	11	299	4	359	11	98
October	34	331	15	150	21	61	15	263	1	16	2	335
November	16	330	12	122	8	32	6	275	8	87	3	193
December	7	309	13	132	9	87	6	244	8	118	3	216
Year	23	343	10	184	12	73	6	292	3	125	2	72
Q	16	353	13	196	17	69	9	280	2	175	3	352
D	46	340	12	178	8	83	4	354	3	24	2	276

IV.

Special phenomena

(magnetic and earth current data)

SSC-s

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy		End of storm
01.	09.	16.45	14.5	52	+	+	+	—		01.10.11.00
	12.	00.00	27	45	+	+	+	—		01.12.16.00
02.	04.	17.15	>18	125	—	+	+	—		02.06.19.00
	19.	05.45	5.5	10	+	+	+	—		no storm
	28.	22.45	7	25	+	+	+	—		03.01.09.00
03.	01.	12.45(?)	10	35	—	—	—	+		03.04.04.00
	25.	06.45	8	12	+	+	+	—		03.26.04.00
04.	12.	11.45	11.5	30	+	+	+	—		04.13.06.00
	13.	11.00	?	65	+	+	+	—		see next item
		12.00	>16	95	+	+	+	—		04.17.02.00
05.	02.	16.00	7	22	+	+	+	—		05.03.04.00
	10.	19.45	8	32	+	+	+	—	(unusual)	05.11.02.00
	11.	08.30	9	8	—	+	+	—		05.13.02.00
	17.	01.15	25	65	+	+	+	—		05.18.01.00
		12.45	18	50	+	+	+	—		in strom
	21.	13.30	13.5	35	+	+	+	—		05.21.21.00
	24.	13.30	19	60	+	+	+	—		05.25.05.00
		18.00	21	145	+	+	+	—		in storm
06.	08.	11.30	5.5	22	+	+	+	—		06.09.01.00
	12.	10.45	9	25	+	+	+	—		06.13.22.00
	13.	02.15	16	80	+	+	+	—		in storm
08.	07.	09.30	2	18	+	+	+	—		08.08.17.00
		21.00	11	18	+	+	+	—		in storm
	19.	12.00	7	30	+	+	+	—		08.20.01.00
10.	04.	07.15	9	10	+	+	+	—		10.04.22.00
	28.	17.00	2.5	12	+	+	+	—		10.30.06.00
11.	02.	04.15	20	35	+	+	+	—		11.02.19.00(b?)
	07.	12.30	9	30	+	+	+	—		11.08.03.00
	11.	12.15	11	32	+	+	+	—		11.12.23.00
		19.00	>11	40	+	+	+	—		in storm
12.	10.	04.15	5.5	22	+	+	+	—		12.10.22.00
	30.	04.45	10	28	+	+	+	—		12.30.22.00
	31.	14.30	9	30	—	—	—	+		(si?)

SSC-s

Month	Day	CET (GMT+1h)	Bays Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	Pi-s E(mV/km)	Ex	Ey
01.	05.	14.30	5.5	40	—	—	—	+			
	08.	02.15							2.5	+	+
	10.	23.30	8	55	—	+	+	+	tr		
	14.	23.00	5.5	35	—	+	+	+	tr		
	15.	01.00	12.5	65	+	+	+	—	tr		
		21.30	6.5	30	+	+	+	—	tr		
	16.	19.15	12	85	+	+	+	+	tr		
	17.	00.45	9	45	+	+	+	—	tr		
		19.15	14.5	80	—	+	+	+	tr		
	18.	00.15	6.5	60	+	+	+	—	2.5	+	+
		11.30	9	55	—	—	—	+			
		21.30	20	70	+	+	+	—	tr		
	19.	08.00						pg	4.5		
	20.	20.30	6.5	35	—	+	+	+	tr		
	21.	20.15	8	40	—	+	+	+	tr		
	23.	22.30	9	35	—	+	—	+	2.5	+	+
	24.	21.00	12.5	42	—	+	+	+	tr		
		23.30	13.5	95	—	+	+	+	tr		
	25.	22.30							2.5	+	+
	27.	19.45	12	35	—	+	+	+	3.5	+	+
	28.	23.30	5.5	24	+	+	+	+	tr		
	30.	23.15	5.5	30	+	+	+	0	2.5	+	+
	31.	18.45	9	48	—	+	+	+			
02.	01.	18.45	7	35	—	—	—	+	tr		
	03.	00.30	?	22	+	+	+	—	tr		
		20.15							2	+	+
		23.30	6.5	35	—	+	+	+	tr		
	05.	20.00	>25	155	+	+	—	+	tr		
	06.	16.45							4.5	+	+
		17.30	14.5	65	—	—	+	+	tr		
	07.	01.15	7	6	+	+	+	—	tr		
		16.15	25	125	—	+	+	+	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
02.	08.	00.30	12.5	65	+	+	+	—	tr		
		02.00	8	30	+	+	+	—			
		23.00	4.5	25	+	+	+	—	tr		
	09.	14.45	8	60	—	+	—	+	tr		
		20.45	18	70	+	+	+	—	tr		
		22.00	11	35	+	+	+	—			
	11.	11.30	12.5	35	—	—	—	+			
		21.00	25	85	+	+	+	+	tr		
	12.	19.30	10	45	—	+	+	+	25	+	+
	13.	21.30	12.5	65	—	+	+	+	tr		
	14.	22.00	22	90	—	—	—	+	tr		
	15.	15.30	18	95	—	—	—	+	tr		
		19.15	12	75	—	+	+	+	tr		
	16.	03.45	5.5	60	—	—	+	—	tr		
		17.30	18	45	+	—	+	+	tr		
		23.15	12	35	+	+	+	—	2.5	+	+
	17.	18.45	14.5	75	—	+	+	+	tr		
	18.	20.00	3.5	25	—	+	+	+	3.5	+	+
	20.	00.45	8	45	—	+	+	+	4.5	+	+
		01.45	8	40	+	—	+	—	tr		
		13.15	12.5	42	—	—	—	+	tr		
		18.15	18	85	—	—	—	+	tr		
		20.30	13.5	40	+	+	+	—	tr		
	21.	22.30	18	95	—	+	+	+	tr		
	22.	20.30	12.5	55	—	+	+	+	tr		
		22.45	5.5	10	+	+	—	0	2.5	+	+
	23.	18.30	9	40	—	+	+	+	tr		
		23.30	11	55	—	+	+	+	tr		
	24.	17.30	4.5	55	—	+	+	+	2	+	+
		19.15	8	55	—	+	+	+	tr		
	26.	21.30							4.5	+	+

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
03.	01.	00.15	9	30	+	+	+	—	tr		
	02.	02.15	18	105	+	—	—	—	tr		
		05.45	15.5	65	+	—	—	—	tr		
	04.	20.30	18	80	+	+	+	—	tr		
		22.00	27	105	+	+	+	+	tr		
	06.	18.30	7	32	—	+	+	+	2	+	+
	07.	02.45							4.5	+	—
		23.30							2.5	+	+
	08.	02.30	5.5	20	+	+	+	—	tr		
	09.	01.45	4.5	15	+	+	+	—	2	+	+
	11.	17.30							(pg)3.5		
		20.30	8	32	+	+	+	—	tr		
		22.00	13.5	40	+	+	+	—	tr		
	12.	02.00	11	70	+	+	+	—	tr		
		18.00	>25	85	—	—	—	+	tr		
		20.00	16	80	+	+	+	—	tr		
	13.	04.15							(pg)2.5		
		06.00							(pg)2		
		18.00	7	25	—	—	—	+	tr		
	14.	04.30	11	45	—	+	+	+	tr		
		20.45	12.5	80	+	+	+	+	tr		
	15.	13.15							(pg)9		
	17.	00.00	4	25	+	+	+	—	tr		
		20.15							2	+	+
	18.	00.00	5.5	35	+	+	+	—	2	—	—
		18.00	15.5	90	—	+	+	+	3.5	+	+
		23.15	18	80	+	+	+	—	3.5	+	+
	20.	17.00	15.5	55	+	+	+	+	tr		
		19.45	14.5	80	+	+	+	+	tr		
	21.	19.45	10	55	—	+	+	+	tr		
		20.45	4.5	12	—	—	—	+			

			Bays						Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
03.	23.	02.00	4.5	10	+	+	+	—	2	+	+
		22.00							3.5	+	+
	24.	02.00	7	25	+	+	+	—	tr		
		19.30	10	55	—	+	+	+	2	+	+
		21.15	6.5	30	—	+	+	+	tr		
	25.	23.30	14.5	52	+	+	+	—			
	26.	01.00	>20	55	+	+	+	—			
		14.15	4	12	+	+	+	—			
		21.30	3.5	22	—	+	+	+	4.5	+	+
	29.	17.00	>16	65	—	+	—	+	tr		
		23.30	8	50	+	+	+	—	2.5	+	+
	31.	00.00	7	42	+	+	+	—			
		19.00	6.5	65	—	+	+	+	2	—	—
04.	01.	17.15	12	55	—	+	+	+	?		
		23.15	3.5	20	+	+	+	—	2.5	+	+
	02.	20.00	8	45	+	+	+	+	2	+	+
		23.15	5.5	40	+	+	+	—	3.5	+	+
	03.	22.00	2.5	35	—	+	+	+	2	+	+
	05.	02.00	16	65	+	+	+	—	tr		
		17.45	4.5	18	—	—	—	+			
	06.	19.15	18	65	+	+	+	—	tr		
	09.	17.30	9	52	—	+	+	+	tr		
	10.	23.00	5.5	30	+	+	+	—	2	+	+
	13.	01.00	6	35	+	+	+	—	tr		
	14.	17.45	18	95	+	+	+	+	tr		
		20.45	20	115	—	+	+	+	tr		
	15.	01.15	25	110	—	+	—	+	tr		
		18.45	25	85	—	+	+	+	tr		
		19.15	25	95	—	+	+	+	tr		
	16.	17.45	17	55	+	+	+	+	tr		
		22.30	8	40	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
04.	17.	19.30	16	55	+	+	+	+	tr		
	19.	19.45	4.5	30	—	+	+	+	2.5	+	+
	20.	02.00	7	35	+	+	+	—	2.5	+	+
	21.	01.15	5.5	15	+	+	+	—	2.5	+	+
		21.00	6.5	30	+	+	+	—	3.5	+	+
		23.30	4.5	25	+	+	+	—	2.5	+	+
	23.	16.15	4.5	18	—	—	—	+			
		22.45	21.5	65	+	+	+	—	2.5	+	+
	24.	21.15	18	115	—	+	+	+	tr		
	25.	00.30	11.5	60	+	+	+	—	tr		
	26.	00.45	9	60	+	+	+	—	tr		
	29.	01.30	11	45	+	+	+	—	tr		
		15.45	20	130	—	+	+	+	tr		
		21.30	13	65	+	+	+	—	tr		
	30.	01.00	9	45	+	+	+	—	tr		
		18.30	12	60	—	—	+	+	tr		
05.	01.	21.15	25	90	+	+	+	—	tr		
	03.	03.45	6.5	16	—	—	—	+			
		13.00	>13	30	—	+	—	+	(ssc, si?)		
	04.	21.30	7	35	+	+	+	—	3.5	+	+
	0.5	00.00	9	20	0	+	+	0	2.5	+	+
	08.	01.15	7	30	+	+	+	—	tr		
	09.	00.30	3.5	30	+	+	+	—	tr		
	11.	12.15	9	80	+	+	+	—	tr		
		18.30	>9	125	—	—	—	+	tr		
	12.	16.45	12	80	—	+	+	+	tr		
	13.	00.15	16	80	+	+	+	—	tr		
		17.15	16	80	+	+	+	+	tr		
		20.15	12.5	35	—	+	—	+	tr		
		23.00	11	45	—	—	+	—	tr		
	15.	22.00	6.5	55	—	+	+	+	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
05.	16.	21.30							2	+	+
	17.	21.00	25	120	+	+	+	+	tr		
		22.15	>25	150	+	+	+	+			
	18.	14.45	5.5	20	—	—	—	+			
	20.	22.15	12.5	55	—	—	+	+	tr		
	21.	00.00	9	22	+	+	+	—			
	22.	21.00	>20	85	+	+	+	—	tr		
	23.	20.15	18	65	+	+	+	—	tr		
	26.	13.00							(pg)2.5		
	27.	13.15	4.5	18	+	+	+	—			
	28.	20.00							2.5	+	+
	29.								2.5	+	+
		02.15							2	+	+
	30.	01.15							2	+	+
	31.	16.00	6.5	35	+	+	+	—			
06.	03.	03.00							2	+	+
	04.	22.30							2.5	+	+
	06.	22.30							2.5	+	+
	07.	19.30							2.5	+	+
	08.	20.15							2	+	+
	09.	18.30	14.5	45	+	+	+	—	tr		
		20.15	12.5	75	—	+	+	+	2	+	+
	10.	00.45	9	55	+	+	+	—	2.5	+	+
		03.15	6.5	30	+	+	+	—	tr		
		11.30	9	42	+	+	+	—	tr		
		15.45	24	80	+	+	+	—			
	11.	20.00	5.5	25	—	+	+	+	2.5	+	+
	12.	23.30	14.5	42	—	—	—	+			
	14.	22.30							2.5	+	+
	15.	01.45	7	35	+	+	+	—	tr		
	16.	02.15	3.5	15	+	+	+	—	2.5	+	+
	17.	18.15	5.5	40	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
06.	18.	18.00	13.5	60	+	+	+	—	tr		
		22.00	8	50	—	—	—	+	tr		
	21.	23.45	7	45	+	+	+	—	2.5	+	+
	22.	18.00	14.5	50	—	+	+	+	tr		
	26.	15.00	11	42	+	+	+	—	tr		
		16.00	8	42	+	+	+	—	tr		
	28.	01.15	4.5	22	+	+	+	—	2	+	+
		15.15	7	35	+	+	+	—	tr		
	29.	00.00	6.5	30	+	+	+	—	2.5	+	+
		10.45	7	32	+	+	+	—	tr		
		22.30	2.5	12	+	+	+	—			
	30.	01.15							2.5	+	+
		21.45							3.5	+	+
07.	02.	17.45	5	20	+	+	+	0			
		21.45							2.5	+	+
	03.	23.00	4.5	18	+	+	+	—	3.5	+	+
	05.	01.15							2	+	+
		01.45							2.5	+	+
		02.15							2	+	+
		17.00	3.5	18	—	—	—	+			
	06.	11.00	12.5	55	+	+	+	—			
		21.30	6.5	18	—	+	+	+	4.5	+	+
	07.	22.30	11	45	+	—	+	+	3.5	+	+
		23.30	7	35	—	+	+	+	4.5	+	+
	08.	17.30	7	24	+	+	+	—			
	09.	00.15							2.5	+	+
		22.15	4.5	30	+	+	+	—	3.5	+	+
	10.	21.15							2.5	+	+
	11.	19.30							2.5	+	+
	12.	18.15	8	32	+	+	+	—			
	13.	02.30	12.5	70	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
07.	15.	13.15	3.5	10	+	+	+	−			
	16.	15.45	8	22	−	−	−	+			
		21.0)	8	42	+	+	+	−	tr		
	17.	11.45	12·5	40	−	−	−	+	tr		
		21.45	>12.5	65	−	+	+	+	tr		
	22.	23.00	11	65	0	+	+	+			
		23.00							(pg)4.5		
	23.	20.00	10	55	−	+	+	+			
	25.	20.30							2.5	+	+
	26.	10.30	4	18	+	+	+	−			
		23·15							2.5	+	+
	28.	00.15							3.5	+	+
		19.30	9	30	−	+	+	+	2.5	+	+
	30.	21.45	8	32	+	−	−	−	2.5	+	+
	31	00.45	6.5	32	+	+	+	−	2	+	+
08.	01.	20·15							2.5	+	+
	02.	23.30	9	35	+	+	+	−	tr		
	03.	19.45	9	50	−	+	+	+	tr		
		23.30	5.5	22	−	−	−	+	tr		
	05.	20.45							3.5	+	+
	09.	01.15	9	50	+	+	+	−	2.5	+	+
	11.	19.45							2	−	−
	12.	01.30	3.5	18	+	+	+	−	2	+	+
		05.15	9	40	+	+	+	−	tr		
		21.30	22.5	60	−	−	−	+	(si?)		
	13.	11.45	11	55	−	−	−	+			
		22.15	7	50	+	+	+	−	2	+	+
	14.	20.45	4.5	25	−	+	+	+	2	+	+
	15.	02.00	3.5	30	+	+	+	−	tr		
		17.45	8	45	−	−	−	+			
		22.15	5.5	32	+	+	+	−	2	+	+

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
08.	17.	23.15	4.5	20	—	+	+	+	3.5	—	—
	18.	00.30	2.5	20	+	+	+	—	2	+	+
	20.	20.00	4.5	32	+	+	+	—	tr		
	21.	00.00	6.5	22	—	+	+	+	2.5	—	+
		16.15	9	35	—	—	—	—			
		23.00	7	45	—	+	+	+	2.5	+	+
	22.	21.0(	12	72	—	+	+	+	tr		
	23.	20.15	10	65	—	+	+	+	tr		
	24.	22.45	7	35	—	+	+	+	tr		
	25.	02.00	16	105	+	+	+	—	tr		
		19.00	16	100	—	+	+	+	tr		
	26.	16.00	5.5	65	—	—	—	+			
		20.30	18	95	—	+	+	+	tr		
	27.	01.45	2	18	+	+	+	—	tr		
	28.	01.15	3.5	30	+	+	+	—			
		20.00	3.5	25	+	+	+	+	2.5	+	+
	29.	01.15	3.5	14	+	+	+	—	2	+	+
	30.	21.45							11	+	+
	31.	17.00	10	70	—	—	—	+			
09.	01.	21.30	6.5	45	—	+	+	+	tr		
	04.	01.15							2.5	+	+
		20.45							2.5	—	+
	05.	00.00							2	+	+
		21.15							2.5	+	+
	26.	03.30							2.5	—	+
		23.30							2	+	+
	07.	00.00							2	+	+
		14.30	11	50	+	+	+	—			
		18.30	9	72	—	+	+	+	tr		
		21.30	5.5	28	—	+	+	+	2	+	+
	08.	00.30	5.5	22	+	+	+	—	2.5	+	+

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
09.	08.	14.45	11	35	—	+	—	+			
	09.	19.30	5.5	40	—	—	—	+	tr		
	11.	21.00	5.5	35	—	+	+	+	tr		
	13.	03.00							2	+	+
		22.30	5.5	32	+	+	+	—	2	+	+
	15.	01.15							(pg)18	(several sis?)	
		22.00	9	42	+	+	+	—	tr		
		23.15	12	55	—	+	+	+	tr		
	16.	17.00	11	80	—	—	—	+	tr		
		20.00	9	28	—	—	—	+			
	17.	18.00	8	55	—	+	—	+	tr		
		21.15	4.5	35	—	+	+	+	tr		
	18.	00.45	8	32	+	+	+	—	tr		
	19.	20.15	25	120	+	+	+	+	tr		
		22.15	23	110	+	+	+	—	tr		
		23.45	15	75	+	—	—	—	tr		
	20.	17.30	12	70	—	+	+	+	tr		
		21.30	4.5	30	+	+	+	—	tr		
	21.	15.30	6.5	40	—	—	—	+	tr		
	22.	00.15	2.5	32	+	+	+	—	tr		
	25.	18.15	20	85	—	+	+	+	tr		
	27.	22.30	8	50	+	+	+	—			
	28.	01.45	8	45	+	+	+	—	tr		
	29.	00.30	3.5	22	+	+	+	—	2	+	+
		22.15	3.5	14	—	+	+	+	tr		
	30.	23.45							2	+	+
10.	01.	00.30							2.5	+	+
		17.15	6	40	—	—	—	+	tr		
		22.45	11	60	+	+	+	+	tr		
	02.	16.30	6.5	45	—	—	—	+	tr		
		21.00	7	45	—	+	+	+	tr		

		Days								Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
10.	04.	00.00	9	50	+	+	+	—	tr		
		16.30	>20	100	—	+	+	+	tr		
	06.	00.45	9	35	+	+	+	—	2.5	+	+
		18.30	15	85	—	+	—	+	tr		
		23.15	6.5	35	+	+	+	—	3.5	+	+
	08.	00.15	4.5	30	+	+	+	—	2.5	+	+
		17.00	12	72	—	+	—	+	tr		
	09.	22.00							2	+	+
	10.	20.30	9	55	—	+	+	+	tr		
	13.	01.45	11	50	+	+	+	—	tr		
		16.15	11	60	+	+	—	+	tr		
	14.	19.30	13.5	110	—	+	+	+			
		23.15	9	95	—	+	+	+	tr		
	15.	20.00	10	45	—	+	+	+	tr		
	16.	21.15	3.5	30	—	+	+	+	tr		
	17.	23.15	27	105	—	+	+	+	tr		
	18.	01.15	20	105	+	+	+	—	tr		
		19.30	18	80	—	+	+	+			
		20.45	23.5	130	+	+	+	—	tr		
	20.	20.15							2	+	+
		20.30	5.5	35	—	+	+	+	2.5	+	+
	22.	00.30	12.5	70	+	+	+	—	tr		
		23.00							2.5	+	+
	23.	21.00	14.5	110	—	+	+	+	tr		
	24.	16.30	10	42	—	—	—	+			
		19.15	16	80	—	+	+	+	tr		
	25.	23.15	4.5	22	+	+	+	—	2.5	+	+
	27.	20.30	3.5	12	—	+	+	+	2	+	+
	29.	19.45	16	80	+	+	+	+	tr		
		23.00	10	70	—	+	+	+	tr		
	30.	01.30	10	42	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Fy	Hx	Hy	E(mV/km)	Ex	Ey
10.	30.	16.15	14.5	60	—	+	+	+	tr		
		20.30	10	45	+	+	+	+	tr		
	31.	22.15							2	+	+
		23.15	4.5	30	+	—	+	—	tr		
11.	01.	03.00	6.5	45	+	+	+	—	tr		
		22.15	14.5	70	—	+	+	—	tr		
	03.	17.15	14.5	95	—	—	—	+	tr		
		21.15	14.5	70	±	+	+	—	tr		
	08.	01.30	14.5	80	+	+	+	—	tr		
	09.	20.00	>25	290	—	—	—	+	tr		
	10.	15.30	11	50	—	+	—	+	tr		
		18.30	14.5	150	+	—	—	+	tr		
	11.	20.45	>18	150	—	+	+	+	tr		
	12.	15.15	17	110	—	+	—	+	tr		
		23.15	29	150	+	+	+	—	tr		
	13.	20.30	>27	90	—	+	+	+	tr		
	14.	17.45	16	70	+	+	+	—	tr		
	15.	20.45	18	85	+	+	+	—	tr		
	16.	18.30	18	115	+	—	+	+	tr		
	18.	18.00	12.5	72	+	+	+	+	tr		
	19.	21.45	14.5	35	+	+	+	—	tr		
	20.	16.45	12.5	60	—	+	+	+	tr		
		19.30	12.5	85	—	+	+	+	tr		
	21.	18.30	12	60	—	+	+	+	tr		
	24.	19.45	9	50	—	+	—	+	tr		
		20.15							2.5	+	+
	25.	21.45	7	42	—	+	+	+	2.5	+	+
		23.45	6.5	42	+	+	+	—	tr		
	26.	19.00	14.5	85	—	+	+	+	tr		
	27.	20.30	2.5	10	—	—	—	+			
	29.	02.00	9	45	+	+	+	—	tr		

		Bays							Pi-s		
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
11.	30.	21.00	12	55	+	+	+	—	tr		
12.	01.	21.15	5.5	40	—	+	+	+	tr		
	03.	22.45	4.5	22	+	+	+	—	tr		
	06.	00.00							(pg) 2.5		
		15.00	14.5	90	—	+	—	+	tr		
		19.45	12.5	65	+	+	+	+	2.5	+	+
	07.	17.15	23.5	100	—	+	+	+	tr		
		19.00	12.5	65	+	+	+	+	tr		
	10.	20.45	9	50	+	+	+	+	tr		
	11.	14.30	>18	120	—	—	—	+	tr		
	12.	20.45	9	60	—	+	+	+	tr		
	14.	00.00	14.5	70	+	+	+	—	tr		
		19.00	17	85	—	+	+	+	tr		
		21.30	21.5	65	+	+	+	—	tr		
	15.	22.45	12	45	+	+	+	+	tr		
	19.	00.45	12.5	42	+	+	+	—	tr		
	20.	22.00	3.5	12	+	+	+	+	2	+	+
	21.	18.30							3.5	+	+
	23.	15.00	5.5	35	—	+	—	+	tr		
		20.15	7	42	—	+	+	+	tr		
	24.	22.15	9	60	—	+	+	+	tr		
	25.	19.45	6.5	30	—	+	—	+			
	26.	21.30	23.5	110	+	+	+	+	tr		
	27.	19.15	9	55	—	+	+	+	tr		
	31.	16.45	>18	120	—	—	—	+	tr		
		20.30	18	85	+	+	+	+	tr		

Further Pi-traces

Month	Day	CET
01.	03.	21.45
	04.	00.45
		19.30
	06.	21.45
	07.	00.45
		01.30
	08.	01.00
		09.45
		23.45
	13.	00.15
		00.45
	15.	22.30
		22.45
		23.00
	17.	23.30
	19.	19.30
	20.	00.00
	21.	20.45
	22.	21.15
		21.45
		22.45
	23.	05.15
	24.	11.30
	28.	22.45
	29.	21.30
		23.45
	30.	00.15
		18.30
	31.	00.15
02.	01.	22.45
		23.15
	02.	23.30
	03.	23.15
	09.	20.30
	10.	03.15
		22.15
	11.	00.00
02.	11.	03.00
	12.	01.30
	13.	01.15
	16.	18.30
		22.30
		22.45
	17.	15.00
		20.15
		22.00
	18.	20.45
		23.45
	19.	23.15
	20.	00.30
	21.	00.30
	22.	17.45
		23.30
	23.	16.30
	25.	15.45
		20.45
		21.30
		21.45
	26.	18.15
		23.45
	27.	00.30
		21.15
		21.45
	28.	16.45
		17.45
		20.15
03.	01.	18.30
	03.	22.45
		23.15
	04.	02.30
		08.30
	05.	17.15
	06.	22.15
	07.	23.15
03.	10.	20.45
	11.	01.15
	13	21.45
	15.	21.15
		22.00
	16.	04.30
		05.15
	17.	20.00
	18.	22.45
	21.	23.15
	22.	18.45
	23.	01.30
		21.30
		22.30
	24.	13.45
	28.	04.30
	29.	00.45
	30.	23.45
04.	01.	00.30
	04.	18.15
	06.	02.15
		03.15
	09.	23.15
	11.	01.15
		21.45
		23.15
		23.30
	12.	02.45
		03.15
	17.	21.15
	20.	20.00
	21.	04.30
		04.45
		20.45
	23.	00.30
	25.	23.00
05.	01.	01.00

Month	Day	CET
05.		01.15
		01.30
	05.	02.30
	09.	05.00
	10.	03.30
		04.30
	13.	22.30
	15.	21.45
	18.	20.30
		23.30
	22.	23.45
	23.	19.45
	27.	23.15
06.	01.	20.00
		20.45
		21.15
	03.	02.15
	07.	20.15
	08.	00.30
	09.	19.45
	11.	01.45
	12.	02.15
		02.30
	14.	23.15
	15.	18.30
	16.	23.30
	17.	01.30
	20.	23.45
	21.	00.15
		23.15
	23.	22.15
		22.45
		23.15
	25.	20.15
		23.15
		23.45
	26.	21.30

Month	Day	CET
06.	26.	22.00
	27.	00.45
	28.	00.00
		00.30
	30.	22.30
07.	03.	20.45
	04.	16.45
		20.15
		20.45
	05.	18.30
	06.	02.15
		22.30
	08.	03.00
		23.15
	11.	01.00
		02.00
		02.30
	15.	21.00
		21.15
	16.	02.15
		02.30
		02.45
	17.	00.45
	19.	18.30
	20.	02.30
		22.15
		22.30
	22.	01.15
		02.15
	25.	19.45
	27.	23.45
	28.	23.30
		23.45
	29.	22.45
	31.	20.30
08.	01.	20.45
	02.	01.30

Month	Day	CET
08.	04.	21.30
		22.00
		22.15
	05.	01.15
		23.15
	06.	20.30
		21.00
	07.	03.30
	10.	05.45
		21.30
	12.	23.30
	14.	02.45
		20.15
	15.	01.30
		16.30
		23.30
	16.	02.00
		22.15
		23.00
	17.	00.45
	19.	00.00
	21.	01.00
		18.15
	22.	17.30
		20.30
	25.	01.00
	26.	00.15
	27.	16.30
		16.45
	29.	21.30
	30.	21.30
	31.	03.30
09.	02.	20.15
		21.15
		21.45
	04.	20.15
	05.	01.30

Month	Day	CET
09.	05	20.45
		21.45
		22.15
		22.30
		22.45
		23.30
	06.	19.45
	08.	01.15
	09.	22.30
	10.	19.45
		20.15
		21.30
	11.	01.15
		02.00
		03.15
		23.30
	12.	03.30
	13.	00.30
		20.30
	14.	16.30
		23.00
	18.	18.15
		21.15
	22.	22.15
		22.30
		23.00

Month	Day	CET
09.	22.	23.45
	24.	23.30
	25.	00.00
	29.	00.15
		22.45
	30.	19.30
10.	05.	23.00
	07.	23.15
		23.30
	09.	23.00
	10.	19.30
	11.	20.30
	12.	23.45
	13.	20.30
	16.	21.45
		23.30
	19.	17.15
	17.	01.00
		20.45
	20.	20.0
	23.	01.30
	25.	21.00
	31.	21.45
11.	05.	10.30
		21.45

Month	Day	CET
11.		22.45
		23.15
	07.	00.15
	22.	20.30
		21.15
	23.	10.45
	24.	03.45
		05.15
	25.	02.00
12.	03.	18.45
		19.15
		19.45
	05.	02.45
	08.	20.45
	17.	00.45
		01.00
		22.45
		23.15
	20.	21.00
	21.	03.00
		17.45
	22.	00.30
		22.30
	28.	00.30
	29.	02.00

SI-s

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy
01.	10.	19.30	4.5	15	—	—	—	+
	12.	15.45	4.5	15	—	+	+	+
	13.	02.30	5.5	15	—	—	—	+
		06.00	4.5	8	+	+	+	—
	16.	16.45	7	10	—	—	—	+
	18.	05.30	5.5	12	—	—	—	+
	19.	07.30	6.5	8	—	—	—	+
	20.	11.00	6.5	18	—	—	—	+
	22.	10.15	7	13	+	—	+	—
	28.	13.15	3.5	6	—	—	—	+
	29.	06.30	3.5	10	+	+	+	—
02.	10.	06.30	5.5	12	+	+	+	—
	12.	05.45	6.5	16	—	—	—	+
	19.	13.15	5.5	10	—	—	—	+
	22.	06.00	4.5	7	+	—	+	—
		07.15	5.5	12	—	—	—	+
03.	01.	03.15	8	22	+	+	+	—
		04.15	5.5	10	—	—	—	+
		06.30	5.5	10	—	—	—	—
		13.15	>14	25	—	—	—	+
	17.	10.15	6	15	—	—	—	+
		11.00	11	20	+	+	+	—
	26.	19.30	3.5	6	+	0	0	+
04.	08.	11.45	7	12	—	—	—	+
	13.	16.45	11.5	30	—	—	—	+
05.	02.	04.00	4.5	9	—	—	—	+
	14.	08.30	6.5	12	—	—	—	+
	17.	08.15	14.5	35	+	—	—	—
	18.	01.00	9	25	—	—	—	+
		11.45	14.5	30	—	—	—	+
	20.	20.15	5.5	12	—	—	—	—
	21.	05.30	16	18	—	—	—	+
	22.	02.00	6.5	18	+	+	+	—
	24.	07.30	6.5	15	+	+	+	—
06.	01.	08.15	5.5	6	—	—	—	+

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy	
06.	10.	05.45	9	18	+	+	+	−	(ssc?)
		13.30	9	18	+	+	+	−	
	12.	13.30	4.5	22	+	+	+	−	
		19.15	11	30	+	+	+	−	
	14.	07.30	9	15	+	+	+	−	
		15.00	5.5	7	−	−	−	+	
	18.	02.15	6.5	12	−	−	−	+	
	20.	04.45	2.5	7	−	−	−	+	
	28.	11.00	4.5	7	+	+	+	−	
07.	12.	22.45	10	30	−	−	−	+	
	13.	01.45	12.5	12	+	+	+	−	
	23.	05.15	6.5	7	+	−	−	+	
	24.	00.30	9	22	−	−	−	+	
08.	03.	05.00	20	30	+	+	+	−	
	06.	12.30	4.5	7	−	−	−	+	
		14.30	14.5	12	+	+	+	−	
	09.	14.00	10	22	−	−	−	+	
	11.	11.30	4.5	8	+	+	+	−	
	12.	10.45	3.5	5	−	−	−	+	
	14.	10.30	4.5	10	+	+	+	−	
	15.	05.00	8	20	−	−	−	+	
	19.	13.30	5.5	14	−	−	−	+	
	29.	21.30	9	30	−	−	−	+	
	30.	08.30	12	35	−	−	−	+	
09.	02.	12.15	3.5	10	+	+	+	−	
	15.	07.30	10	?	+	−	−	−	
		11.30	4.5	14	−	−	−	−	
	27.	04.30	5.5	18	−	−	+	−	
10.	02.	01.00	2.5	8	−	−	−	+	
	09.	18.45	3.5	8	+	+	+	−	
	24.	04.30	6.5	10	−	−	−	+	
11.	02.	22.30	3.5	8	+	+	+	−	
	04.	23.30	8	22	+	+	+	−	
	11.	18.30	9	18	−	−	−	+	
		19.30	12.5	35	−	−	−	+	

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	H(gamma)	Ex	Ey	Hx	Hy
11.	13.	01.15	11	30	+	+	+	−
	15.	05.30	10	32	+	−	−	+
	17.	06.30	9	18	+	−	−	−
		07.30	10	18	−	−	−	+
		08.45	10	18	−	−	−	+
	20.	04.45	8	18	+	+	+	−
		05.30	8	12	+	+	+	−
12.	09.	04.30	2.5	7	+	+	+	−
	13.	07.15	7	12	+	−	−	−
	22.	13.15	8	14	+	+	+	−
		16.00	?	45	−	−	−	+
	24.	16.30	7	12	+	−	−	−
	31.	14.45	10	18	−	−	−	+

Needles

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	Ex	Ey
01.	09.	12.30	2	—	—
	11.	14.00	3	—	—
	13.	07.30	3.5	—	—
	15.	12.15	2.5	—	—
	17.	16.15	6.5	—	+
	25.	07.30	5.5	+	+
	30.	05.45	6.5	—	+
02.	15.	05.45	4.5	—	—
	17.	05.30	5.5	—	—
		13.00	5.5	—	—
03.	21.	04.45	3.5	—	—
	28.	07.15	6.5	+	—
04.	09.	08.15	4.5	+	+
	15.	06.45	7	—	—
	22.	10.30	3.5	—	—
05.	06.	05.15	6.5	—	—
	24.	04.45	5.5	—	+
06.	02.	11.45	2.5	—	—
	06.	11.00	5.5	+	+
	13.	14.00	9	—	—
	17.	11.45	4.5	+	+
		17.30	5.5	+	+
	20.	01.15	2.5	—	—
07.	19.	08.30	8	+	+
08.	01.	13.30	2	+	—
09.	09.	17.15	3.5	—	—
10.	08.	17.45	3.5	+	—
11.	24.	13.00	2.5	—	+
	28.	13.30	3.5	—	—
12.	09.	05.00	2	—	—
	31.	13.30	2.5	—	—

1983

Pc 1-events

Month	Day	Duration		Quality
		hour min	hour min	
1.	2.	043—	053	C
		235—	253	C
		519—	545	C
	9.	650—	656	C
		708—	716	C
	13.	730—	912	C
	14.	108—	112	C
	15.	335—	340	C
		408—	825	C
	20.	2053—	2127	C
	21.	150—	154	C
		335—	424	B
		603—	940	B
	22.	344—	353	C
		513—	527	C
		600—	648	B
		656—	718	C
	23.	521—	553	C
		610—	757	C
		833—	943	C
		1823—	1859	B
		1946—	2042	B
	24.	619—	629	C
		653—	803	C
		2337—	2355	C
	25.	625—	716	C
	27.	613—	656	C
	30.	456—	617	B
2.	3.	1857—	1937	C
	4.	803—	837	C
		1803—	1816	B
	7.	058—	126	C
	8.	1813—	2250	C
	11.	250—	356	A
		423—	628	B

Month	Day	Duration	Quality
		hour min hour min	
2.	11.	640— 850	B
		816— 844	C
	15.	145— 215	C
	16.	131— 203	C
	17.	000— 028	C
		322— 334	C
		353— 558	B
	20.	529— 619	B
	22.	2344—23 033	C
	24.	1822— 1830	C
	25.	427— 437	B
	26.	151— 202	C
		342— 420	B
		657— 744	C
3.	7.	628— 654	C
	8.	724— 734	C
	9.	422— 541	B
		710— 800	C
	14.	2129— 2236	C
	15.	057— 151	C
	16.	547— 632	C
	17.	531— 548	C
	18.	122— 170	B
	24.	049— 126	C
4.	19.	331— 334	C
	30.	1900— 2022	C
		2109— 2124	C
5.	11.	1831— 1915	C
	28.	136— 146	C
6.	15.	2201— 2235	C
	16.	053— 150	C
7.	28.	318— 342	C
		407— 508	C
	29.	109— 203	C
8.	13.	307— 419	C

Month	Day	Duration		Quality
		hour min	hour min	
8.	29.	406—	520	C
9.	5.	137—	444	C
		2342—	0046	C
	6.	114—	220	C
	20.	1040—	1054	C
		1734—	1753	C
		1914—	1942	C
	21.	2329—	22 015	C
	22.	048—	158	C
		251—	300	C
		400—	537	B
		550—	625	C
		706—	726	C
	25.	1927—	1944	C
10.	1.	132—	139	C
		308—	319	C
		400—	541	C
	20.	1634—	1703	C
		2224—	2234	C
	21.	233—	242	C
		532—	551	C
	22.	034—	136	C
		700—	731	C
11.	1.	050—	305	A
		2128—	2212	C
	22.	333—	444	C
		513—	713	C
		735—	835	C
	23.	435—	452	C
		606—	710	A
12.	4.	641—	741	C
	5.	532—	604	C
		611—	648	C
	7.	1717—	1728	C
	14.	1914—	1922	C

Month	Day	Duration		Quality
		hour min	hour min	
12.	17.	706—	751	C
		810—	839	C
	18.	046—	102	C
		235—	238	C
		338—	515	B
	19.	548—	640	C
	22.	515—	531	C
		552—	559	C
		642—	647	C
		710—	743	C
	24.	543—	619	A
		742—	920	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	1	12	22	27	20	28	73	122	97	55	144	127
3— 6	3	3	31	82	56	54	64	27	20	2	217	169
6— 9	1	12	46	94	137	102	95	47	17	36	191	206
9—12	0	15	17	102	221	86	59	76	54	10	178	80
12—15	0	3	23	183	263	159	47	55	34	0	167	46
15—18	1	5	12	119	161	79	78	73	35	51	133	45
18—21	2	4	20	38	47	69	85	120	48	20	79	62
21—24	6	16	24	20	19	38	52	157	141	22	72	69
Average	2	9	24	83	116	77	69	85	56	28	148	101

February

0— 3	4	27	35	42	20	28	53	110	55	59	133	110
3— 6	3	19	46	116	19	24	54	49	21	14	189	200
6— 9	0	11	40	236	128	74	36	37	69	6	396	209
9—12	0	6	51	322	165	115	25	71	42	64	138	121
12—15	0	4	38	357	307	127	74	92	8	25	344	62
15—18	1	2	20	248	234	116	84	74	46	37	150	84
18—21	4	18	27	70	64	62	97	191	31	48	220	73
21—24	4	29	24	23	40	108	101	174	134	70	102	126
Average	2	15	31	177	122	82	66	75	51	40	209	123

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	10	28	49	40	10	23	23	178	41	17	94	134
3— 6	5	25	85	131	35	48	45	30	18	7	146	314
6— 9	0	16	85	314	139	119	36	42	10	16	302	213
9—12	0	15	20	297	368	142	57	29	37	93	180	98
12—15	0	4	30	290	420	133	53	25	48	31	167	94
15—18	2	8	28	137	262	207	51	53	47	10	131	152
18—21	12	25	34	31	49	51	87	164	27	31	87	91
21—24	16	30	24	22	19	20	47	261	104	80	83	80
Average	6	19	44	125	163	93	50	85	42	36	224	147

April

0— 3	18	47	34	58	13	22	106	211	76	22	233	118
3— 6	3	21	156	179	39	66	51	55	22	12	317	343
6— 9	0	8	103	492	369	134	15	52	7	6	301	126
9—12	0	12	48	507	415	146	81	54	8	15	297	222
12—15	0	3	22	631	541	202	57	18	34	28	282	234
15—18	1	13	20	306	307	213	97	52	55	44	354	291
18—21	12	47	41	45	31	92	93	187	117	21	122	75
21—24	17	44	50	22	15	21	132	320	116	51	152	132
Average	6	24	57	280	216	112	79	119	54	25	257	193

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	13	47	29	16	9	31	87	133	65	111	221	277
3— 6	3	32	72	159	23	32	26	49	76	27	283	297
6— 9	0	21	95	391	168	98	52	34	17	10	30	99
9—12	0	9	26	34	991	141	77	53	32	4	372	314
12—15	0	10	32	344	194	147	71	29	43	55	314	292
15—18	0	30	44	136	124	81	43	59	42	113	327	325
18—21	9	65	38	13	29	24	72	118	78	79	324	217
21—24	20	67	17	19	12	12	51	103	100	68	292	321
Average	6	35	44	139	194	71	60	72	57	58	270	268

June

0— 3	12	56	29	31	23	16	29	130	194	47	91	187
3— 6	2	21	55	165	36	42	49	52	7	45	248	208
6— 9	0	10	39	495	227	71	23	38	10	11	274	191
9—12	0	9	22	463	213	59	45	26	46	60	372	105
12—15	1	17	27	339	132	117	52	78	63	27	257	289
15—18	0	27	42	103	49	63	62	107	58	91	308	334
18—21	9	49	33	27	10	32	67	90	115	56	168	162
21—24	19	63	27	16	4	9	19	133	175	83	116	142
Average	5	32	34	205	84	49	43	79	84	42	229	202

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	12	34	8	47	20	12	52	186	162	80	44	137
3— 6	1	22	40	91	63	38	44	86	57	34	94	96
6— 9	0	15	31	350	219	57	21	36	17	9	173	125
9—12	0	3	37	402	323	114	28	47	34	57	204	134
12—15	0	13	28	202	251	121	74	54	78	13	306	228
15—18	0	27	26	79	83	61	53	96	91	83	177	175
18—21	2	29	35	38	16	29	55	112	123	72	106	137
21—24	11	54	13	29	13	18	34	175	204	159	110	191
Average	3	25	27	155	124	56	45	99	96	63	152	153

August

0— 3	5	30	32	49	13	23	73	217	96	69	132	199
3— 6	2	23	47	120	34	62	62	80	72	31	114	182
6— 9	0	10	38	372	188	130	77	53	17	42	139	97
9—12	0	3	10	390	240	143	71	66	32	11	232	163
12—15	0	6	19	334	232	196	77	57	45	35	275	294
15—18	5	30	32	49	13	23	73	217	96	69	132	199
18—21	5	38	32	30	23	36	68	218	131	64	109	237
21—24	9	37	21	25	15	20	84	262	91	91	95	260
Average	3	22	29	171	95	19	73	146	73	52	154	204

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	11	21	37	83	20	35	74	189	72	34	97	383
3— 6	7	17	81	175	56	69	41	52	29	22	89	296
6— 9	0	6	32	337	328	181	57	25	19	0	87	80
9—12	0	3	23	313	380	199	128	32	33	22	107	94
12—15	2	2	25	400	267	242	51	47	32	7	122	204
15—18	2	7	27	95	187	211	122	112	77	5	102	108
18—21	4	34	29	31	16	77	88	170	129	33	127	138
21—24	3	30	25	27	17	33	117	214	331	53	60	152
Average	4	15	35	183	159	131	85	105	90	22	99	182

October

0— 3	2	19	27	50	40	49	77	175	37	44	39	91
3— 6	8	11	37	190	74	58	39	51	15	4	62	251
6— 9	0	6	41	270	244	148	58	61	7	23	127	218
9—12	0	9	40	417	222	163	66	67	4	12	174	178
12—15	0	10	19	392	279	194	86	65	4	14	196	98
15—18	0	13	19	148	147	134	153	114	52	12	179	132
18—21	2	19	22	53	61	85	117	235	98	75	24	132
21—24	6	22	30	35	19	52	122	178	180	45	114	102
Average	2	14	29	194	133	110	90	118	50	29	114	150

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	7	22	37	31	11	27	62	92	58	69	76	217
3— 6	0	11	60	118	45	72	71	54	31	14	219	319
6— 9	1	6	55	215	203	183	58	40	4	40	272	351
9—12	0	3	25	269	405	263	154	40	39	15	125	178
12—15	1	5	75	290	339	298	150	57	56	69	241	191
15—18	2	9	40	243	168	199	138	55	55	8	116	193
18—21	0	18	43	60	60	46	102	136	91	115	205	234
21—24	6	34	21	27	11	30	123	157	129	35	111	318
Average	2	14	45	157	155	140	107	79	58	46	171	250

December

0— 3	2	13	31	35	15	52	54	127	53	29	92	51
3— 6	1	10	38	96	60	94	23	49	23	15	137	215
6— 9	4	4	30	215	125	124	109	44	18	23	229	183
9—12	0	7	50	240	103	242	82	57	53	46	235	130
12—15	0	3	17	468	240	294	81	35	14	16	199	126
15—18	2	8	18	185	157	181	115	32	54	77	77	43
18—21	1	17	30	59	39	75	109	171	50	24	124	63
21—24	2	43	21	16	6	50	85	190	135	99	42	21
Average	2	13	29	159	93	139	82	88	50	41	142	104

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	8	30	31	42	18	29	64	156	72	53	116	169
3— 6	3	18	54	135	45	55	47	53	33	19	176	241
6— 9	1	10	53	315	206	118	53	42	18	19	210	175
9—12	0	8	31	313	337	151	73	52	35	34	218	151
12—15	0	7	30	361	289	186	73	51	38	27	239	180
15—18	1	15	27	154	158	131	89	87	59	50	182	173
18—21	5	30	32	41	37	57	87	159	87	53	141	135
21—24	10	39	23	23	16	34	81	194	153	71	112	160
Average	4	20	35	173	138	95	71	99	62	41	174	173

VI.

Micropulsation indices for the year 1983

Activity indices for the micropulsations
(P1 to P12)
1983. January—December

	January	February	March	April
1.	114443234353	133455222321	355322245354	345522232221
2.	125342543144	144453224312	355222355553	355532244121
3.	125511134554	255522223544	125542232522	225523452221
4.	131135515123	155522224551	155442222221	455423442244
5.	115334231143	455222254554	125243222111	255521222145
6.	112345332412	155324342554	212333333111	255442221455
7.	115244415321	155422325354	113454444121	325543223354
8.	145534114242	155532233143	145432344511	255542122152
9.	325431435244	115542311122	225522253211	355542133154
10.	555212355355	325322454235	235542221312	235553224155
11.	155412225355	145423434344	455543241544	323552252122
12.	135243554243	145522225554	555421445254	455452345241
13.	145452255142	155432233455	155552222255	455422344355
14.	114443342221	145552232245	225552321244	155423243154
15.	335421535452	155532135154	215532222144	455522234255
16.	155432244145	152533345145	135424432424	355552333154
17.	155522243154	135533333341	225335434211	253444431244
18.	245532432244	145525543124	535454251121	355533234121
19.	125532224153	145553423122	245552232145	245443253121
20.	112255343232	355532441142	255543234545	555532245221
21	115444342141	255522224345	555432431243	355522244122
22.	125324444224	154444233144	145454422121	155522232324
23.	125532234433	125442321132	355453242111	355422225242
24.	235532224255	455332341221	425422334212	155322224455
25.	125533242325	245422432111	255222354555	454542234454
26.	121543324321	315542332211	235542221245	355543234245
27.	214543522121	345422234222	325434324222	455422455253
28.	335423334333	145522432224	455422224455	555532444122
29.	245533233122		455512242152	455542244542
30.	135453334145		355532221243	555532344344
31.	134442521111		555322245235	

	May	June	July	August
1.	555522331355	155522225454	245533243523	255322434423
2.	355551124345	135522421345	155532223523	355322223255
3.	155522212545	354542234521	155522223553	355532234155
4.	155321234555	255324425511	155522125544	345225425234
5.	254552233144	255422321254	121212132311	121313552531
6.	545254444341	555522324554	255422225543	453322355541
7.	145544235141	254422355511	155521344253	455521223553
8.	544443235342	555522235344	155532223351	455322245355
9.	344534324221	455311324355	155432345543	435532234535
10.	155322333334	155522244345	153523244421	255422342521
11.	455522234555	355523234122	135223455421	155522444243
12.	455532223355	555512242455	155423112355	355521245353
13.	455523254453	455221243455	155522343145	255541244144
14.	554253444355	355522234245	113322344311	143532343244
15.	433212122215	555422452321	255422245222	154535531122
16.	155322325321	155534234123	355421244245	152544454111
17.	355312344355	255522224142	155552224323	125542441214
18.	355422434355	255522233255	155554224544	121534433111
19.	335532223323	355543341254	354542244214	135522234555
20.	155522224242	255532234353	245422223121	155532345324
21.	355421122355	155554243245	222422424334	155522444355
22.	255532224354	555222234534	454455225114	335531245332
23.	255323244352	455322454455	455322234455	155433244352
24.	155322231354	244543233221	455222223354	155542232114
25.	155422242353	155232355421	145422242233	125522221155
26.	355222454553	155522222451	154532324221	245555333245
27.	355434243322	245422244142	345532334244	123225552224
28.	155334254321	255532214543	254522225524	153323355221
29.	255532223524	155522243315	355522244245	255323455145
30.	155522322543	15353222414 2	255522225235	125542332255
31.	455522224552		244322454221	155553232155

	September	October	November	December
1.	155545322244	354442444421	554524441241	135535234141
2.	243424554123	455454232423	155433322255	112434532121
3.	111444421121	135542222543	353533333343	133324554211
4.	132225325212	155522334154	114323544222	113215454531
5.	545423435211	114542234114	123225454421	355325333352
6.	443422224221	255532234145	114411553223	145424332135
7.	255522245353	135542324144	155511434541	235335144132
8.	255532243225	115554233235	155422334345	155424332121
9.	344542232425	121335534112	155331215444	125524411221
10.	252455432222	452125542212	215323433345	255422223253
11.	152355434124	145125555222	155522133255	155215324553
12.	145534223244	255233344341	455235225553	255521422343
13.	155522355231	455222443545		125532321254
14.	225522424122	355522244123		355533134155
15.	355532343345	155543232133		145445124245
16.	145522233345	155423242211	111453511215	115214554411
17.	125522222325	155522222355	155552114445	154225344211
18.	345523341321	154522321235	155531423255	125524135531
19.	255412233353	115433533122	115531221144	235212354242
20.	355542322345	115532422211	135542531334	132125544311
21.	125525223122	135522324245		155414441231
22.	135422244332	125532233245	155224422111	155531224322
23.	515422225522	354443352133	245313552111	133134435521
24.	135322245543	115532232124	155221334552	555411344413
25.	155422334145	115543433213	155454122414	154532234321
26.	125554221125	125434352112	235344313321	155522231234
27.	112455221323	145522323211	135435222212	255522123142
28.	235434331242	555422223534	255523132242	155523241345
29.	125533343123	455422444145	255512223153	153523234544
30.	113225544211	155434421122	135345132344	155422314455
31.		125532252322		155413444243

Pc 1 indices 1983

	January	February	March	April	May	June	July	August	September	October	November	December
1.	1	1	1	1	1	1	1	1	1	4	5	1
2.	3	1	1	1	1	1	1	1	1	1	1	1
3.	1	2	1	1	1	1	1	1	1	1	1	1
4.	1	3	1	1	1	1	1	1	1	1	1	3
5.	1	1	1	1	1	1	1	1	5	1	1	3
6.	1	1	1	1	1	1	1	1	3	1	1	1
7.	1	2	2	1	1	1	1	1	0	1	0	2
8.	1	5	2	1	1	1	1	1	1	1	1	1
9.	2	1	4	1	1	1	1	1	1	1	1	1
10.	1	1	1	1	1	1	1	1	1	-	1	1
11.	1	5	1	1	3	1	1	1	1	1	1	1
12.	1	1	1	1	1	1	1	1	1	1	1	1
13.	4	1	1	1	1	1	1	3	1	1	1	1
14.	2	1	3	1	1	1	1	1	1	1	1	2
15.	5	2	3	0	1	2	1	1	1	1	1	1
16.	1	2	3	0	1	3	1	1	1	1	1	1
17.	1	5	2	0	1	1	1	1	1	1	1	3
18.	1	1	5	1	1	1	1	1	1	1	1	4
19.	1	1	1	2	1	1	1	1	1	1	1	3
20.	2	3	1	1	1	1	1	1	3	2	1	1
21.	5	1	1	1	1	1	1	1	2	2	1	1
22.	3	2	1	1	1	1	1	1	5	3	5	3
23.	5	2	1	1	1	1	1	1	1	1	3	1
24.	2	2	2	1	1	1	1	1	1	1	1	4
25.	3	2	1	1	1	1	1	1	2	1	1	1
26.	1	3	1	1	1	1	1	1	1	1	1	1
27.	3	1	1	0	1	1	1	1	1	1	1	1
28.	1	1	1	0	2	1	3	1	1	1	1	1
29.	1		1	1	1	1	3	3	1	1	1	1
30.	3		1	3	1	1	1	1	1	1	1	1
31.	1		1		1		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; Jahren 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 M	Sum	February M	Sum	March M	Sum
1.	14222034	18	01223250	15	44434374	33
2.	11125112	14	00001122	6	99988999	70
3.	11114411	14	22102024	13	94358796	51
4.	01033204	13	10111999	31	85322399	41
5.	00023320	10	99999999	72	44334975	39
6.	00010011	3	99739960	52	93011152	22
7.	10001000	2	45569943	45	32022001	10
8.	11123232	15	94222214	26	21012221	11
9.	42121969	34	21123699	33	42120140	14
10.	99983225	47	49212131	23	10020134	11
11.	11432112	15	10077369	33	21244299	33
12.	94364422	34	73299683	47	92225899	46
13.	22101343	16	93469659	51	93323233	28
14.	21112126	16	73874429	44	17955369	45
15.	93233957	41	33337991	38	22235436	27
16.	22665991	40	49344996	48	11217110	14
17.	62239498	43	43133594	32	44131101	15
18.	92496538	46	42223133	20	50222799	36
19.	02357423	26	02212111	10	98454742	43
20.	33240155	23	73439999	53	69333895	46
21.	22311277	25	75674999	56	33221282	23
22.	10122112	10	96223286	38	12121233	15
23.	11011119	15	44221289	32	21210322	13
24.	21132559	28	92112571	28	33122175	24
25.	93222252	87	00021221	8	57988689	60
26.	12233240	17	01120012	7	84112122	21
27.	13111152	15	00121133	11	00012101	5
28.	00213344	17	20112168	21	13988878	52
29.	21212984	29			67334997	48
30.	22246336	28			86433963	42
31.	62225392	31			88395394	49
	$M_H = 2.51$		$M_H = 3.44$		$M_H = 3.44$	
	$M_D = 2.14$		$M_D = 3.33$		$M_D = 3.32$	
	$M_Z = 0.23$		$M_Z = 0.45$		$M_Z = 0.39$	

	April M	Sum	May M	Sum	June M	Sum
1.	13323884	32	32244199	34	24322432	22
2.	52222776	33	42221674	28	01122321	12
3.	42224205	21	23337223	25	11122401	12
4.	11313267	24	33444934	34	01100000	2
5.	75225220	25	42369535	37	02123211	12
6.	33458999	50	12232312	16	21122521	16
7.	43457799	48	21114221	14	13121220	12
8.	54429414	33	31111141	13	01146443	23
9.	32322984	33	51111100	10	20244498	33
10.	33464545	34	02112163	16	94469962	49
11.	21311011	10	51999999	60	23113122	15
12.	12053222	17	96536969	53	22345958	38
13.	94279876	52	93456997	52	99977585	59
14.	64544999	50	34432242	24	32222323	19
15.	95736993	51	22353339	30	51423571	28
16.	57445777	46	21213213	15	20111310	9
17.	42242499	37	93539699	53	21223574	26
18.	21223344	21	51353522	26	35985798	54
19.	00152142	15	00121000	4	24544422	27
20.	41133151	19	12001029	15	43125511	22
21.	22123136	20	47369952	45	32623263	27
22.	33242110	16	54845889	51	31133471	23
23.	13211219	20	93555595	46	41234232	21
24.	68587979	59	33539999	50	42111201	12
25.	83324989	46	84122110	19	00011141	8
26.	93924725	41	00113242	13	13223732	23
27.	42223303	19	13223142	18	21321232	16
28.	23124022	16	12111110	8	31125732	24
29.	62225989	43	00123210	8	32445421	25
30.	63432583	34	10122431	14	11033121	12
31.			22412723	23		
	$M_H = 3.68$		$M_H = 3.22$		$M_H = 2.67$	
	$M_D = 3.05$		$M_D = 2.39$		$M_D = 1.74$	
	$M_Z = 0.41$		$M_Z = 0.42$		$M_Z = 0.36$	

	July M	Sum	August M	Sum	September M	Sum
1.	12121110	9	01200112	7	64242315	27
2.	01111232	11	67837966	52	01111113	9
3.	22122212	14	44013483	27	01102010	5
4.	11012232	12	31111111	10	00111011	5
5.	10132320	12	10011001	4	10111102	7
6.	01196222	23	11102132	11	01011101	5
7.	11125318	22	01123239	21	11125993	31
8.	32211122	14	99933322	40	31235224	22
9.	24223224	21	63233220	21	32222464	25
10.	11121101	8	11122000	7	24223453	25
11.	00122112	9	11221121	11	32113325	20
12.	01103575	22	24324479	35	22233502	19
13.	89344112	32	73378125	36	22112304	15
14.	02221211	11	21222332	17	40101312	12
15.	12112112	11	32122454	23	63232699	40
16.	13129557	33	10102221	9	62326996	43
17.	54477459	45	21112102	10	55772363	38
18.	27244623	30	20001000	3	31222246	22
19.	11132242	16	00103842	18	55424999	47
20.	11121111	9	11212343	17	93236765	41
21.	11231221	13	46234757	32	51112510	14
22.	21111029	17	10223179	25	61335202	22
23.	34285493	38	27444698	44	00011101	4
24.	69439664	47	35367424	34	22123322	17
25.	52341221	20	94445392	40	48343795	43
26.	21021211	10	45334799	44	87454123	34
27.	11133221	14	20112210	9	33124128	24
28.	21121542	18	31122344	20	84001$\overline{3}$12	19
29.	25123242	21	31121569	28	32101011	9
30.	75334126	31	96532324	34	00011000	2
31.	42122211	15	59442978	48		
	$M_H = 2.17$		$M_H = 2.73$		$M_H = 2.41$	
	$M_D = 1.52$		$M_D = 2.01$		$M_D = 1.93$	
	$M_Z = 0.31$		$M_Z = 0.30$		$M_Z = 0.21$	

	October M	Sum	November M	Sum	December M	Sum
1.	20121649	25	37133129	29	34111327	22
2.	45333615	30	49757333	41	11111310	9
3.	21442622	23	32113999	37	00001002	3
4.	72346954	40	21012302	11	00111121	7
5.	11123101	10	10010001	3	13122456	24
6.	41133996	36	00111110	5	33644996	44
7.	24231212	17	00004356	18	45155999	47
8.	22132962	27	92256456	39	42123113	17
9.	21111111	9	46246999	49	10010000	2
10.	00111175	16	93223694	38	03197495	38
11.	01222100	8	82219699	46	15289986	48
12.	00111002	5	54874969	52	42124795	34
13.	66433936	40	22126479	33	73333598	41
14.	23212199	29	11358972	36	94333699	46
15.	93264183	36	43123979	38	94223227	31
16.	22423315	22	94322899	46	42010000	7
17.	12459999	48	93397999	58	20000122	7
18.	95379999	60	74333594	38	10000242	9
19.	22121310	12	53122276	28	52120132	16
20.	01112014	10	33257896	43	13010002	7
21.	00043543	19	21111181	16	01110010	4
22.	93344131	28	31111010	8	02133622	19
23.	51133649	32	00000000	0	12121445	20
24.	62334592	34	01021351	13	00125749	28
25.	21011203	10	32232116	20	63002141	17
26.	30210000	6	87322292	35	13020259	22
27.	00011011	4	00112320	9	52111185	24
28.	10011228	15	01014598	28	42234323	23
29.	53397999	54	63155227	31	31124111	14
30.	92132995	40	53134395	33	24356988	45
31.	23222213	17			45324999	45
	$M_H = 2.65$		$M_H = 3.25$		$M_H = 2.54$	
	$M_D = 2.49$		$M_D = 3.09$		$M_D = 2.28$	
	$M_Z = 0.27$		$M_Z = 0.32$		$M_Z = 0.15$	

II.

Disturbed and quiet days for 1983

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

III.

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

	0	1	2	3	4	5	6	7	8	9	10	11
												January
H	+ 6.1	+ 4.9	+ 6.6	+ 3.8	+ 4.6	+ 6.9	+10.8	+13.1	+12.6	+ 4.2	— 5.0	— 9.3
D	+ 9.4	+ 8.0	+ 4.8	+ 2.4	— 1.6	— 1.1	— 5.9	+ 0.2	+ 4.8	+ 7.5	+ 3.2	— 5.1
Z	+ 0.7	— 0.3	— 1.1	— 1.6	— 1.7	— 2.2	— 2.4	— 3.0	— 3.3	— 3.8	— 4.5	— 5.4
												February
H	+ 6.6	+ 6.2	+ 5.8	+ 5.9	+10.5	+10.5	+16.3	+16.5	+10.8	+ 2.9	— 5.9	—10.9
D	+12.3	+ 7.0	+ 4.5	+ 4.9	+ 0.3	+ 0.5	— 1.4	+ 1.1	+ 3.8	+ 7.0	— 1.6	—12.2
Z	+ 0.9	— 0.6	— 2.0	— 2.5	— 3.5	— 3.7	— 4.1	— 3.5	+ 3.4	— 4.3	— 5.7	— 6.9
												March
H	+ 8.4	+ 4.8	+ 6.9	+ 3.7	+ 9.9	+10.4	+12.9	+ 8.7	+ 0.6	— 7.5	—13.2	—14.9
D	+15.7	+13.3	+ 8.2	+ 8.2	+ 3.4	— 0.3	+ 4.5	+12.1	+15.8	+13.6	+ 3.6	—14.0
Z	+ 7.5	— 1.1	— 1.9	— 3.0	— 2.8	—11.0	— 1.5	+ 0.5	+ 0.4	— 2.2	— 6.5	— 9.2
												April
H	+10.9	+11.0	+11.6	+10.0	+ 8.3	+ 6.5	+ 4.1	— 1.6	—10.2	—16.5	—19.3	—15.8
D	+ 6.4	+ 3.6	+ 4.7	+ 8.0	+12.0	+14.2	+16.6	+24.2	+26.3	+19.7	+ 3.3	—17.1
Z	+ 1.4	+ 0.5	— 1.2	— 1.6	— 1.0	+ 0.8	— 2.8	+ 3.2	+ 0.8	— 4.2	—11.9	—18.8
												May
H	+ 5.6	+ 3.5	+ 3.6	+ 2.8	+ 2.3	+ 0.4	— 5.5	—12.5	—14.8	—14.8	— 7.9	+ 0.7
D	+ 4.6	+ 5.9	+ 8.2	+10.5	+16.2	+23.3	+27.2	+28.4	+22.3	+11.4	— 5.2	—21.5
Z	+ 3.3	+ 1.8	+ 2.6	+ 2.7	+ 4.0	+ 5.3	+ 4.6	+ 2.0	— 1.2	— 6.7	—13.2	—18.5

12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
— 9.1	— 8.3	— 8.8	— 6.2	— 6.8	— 9.2	— 8.4	— 4.6	— 0.7	+ 0.6	+ 0.5	+ 1.7	21 072 nT
—14.1	—18.4	—15.6	—10.9	— 7.2	— 3.9	— 3.0	+ 7.6	+ 6.1	+ 8.7	+12.3	+11.7	1°00.8'
— 6.6	— 4.0	+ 0.5	+ 3.3	+ 4.2	+ 4.7	+ 5.5	+ 5.7	+ 5.3	+ 4.2	+ 3.4	+ 2.4	42 586 nT
—15.5	—17.1	—12.0	— 8.0	— 8.1	— 4.4	— 8.3	— 3.6	— 4.5	— 0.6	+ 0.4	+ 6.5	21 061 nT
—18.8	—24.9	—21.3	—15.4	— 3.2	— 4.9	— 1.9	+ 8.9	+14.0	+14.3	+16.4	+10.6	1°02.0'
— 6.7	— 3.4	+ 0.9	+ 4.3	+ 5.9	+ 5.4	+ 6.1	+ 6.7	+ 7.6	+ 6.0	+ 4.4	+ 2.1	42 584 nT
— 9.7	— 4.7	— 4.3	— 4.2	— 6.9	— 9.0	— 2.9	— 2.9	— 0.2	— 1.0	+ 3.7	+ 6.4	21 067 nT
—26.6	—33.2	—32.1	—24.3	—14.3	— 7.6	— 2.7	+ 3.3	+11.6	+14.3	+14.2	+13.3	1°02.0'
— 9.7	— 7.6	— 3.0	+ 2.1	+ 5.5	+ 7.3	+ 7.4	+ 7.4	+ 7.7	+ 6.5	+ 4.9	+ 2.3	42 584 nT
—10.2	—12.6	—10.9	— 6.0	— 5.5	— 3.6	+ 0.2	+ 3.6	+ 8.5	+12.0	+13.0	+14.2	21 079 nT
—36.7	—42.8	—36.7	—27.7	—15.0	— 0.6	+ 2.5	+ 5.6	+ 9.0	+ 8.0	+ 7.1	+ 5.1	1°01.3'
—19.8	—14.2	— 6.0	+ 2.7	+ 7.6	+10.9	+11.6	+10.7	+ 9.0	+ 8.1	+ 5.4	+ 3.2	42 577 nT
+ 5.6	+ 4.7	— 0.6	— 5.7	— 0.9	+ 1.3	+ 4.5	+ 2.9	+ 5.7	+ 6.4	+ 8.7	+ 4.0	21 087 nT
—33.0	—37.7	—33.7	—25.3	—17.3	— 6.6	+ 0.1	+ 2.8	+ 1.6	+ 5.3	+ 6.5	+ 6.0	1°01.6'
—20.4	—18.2	—10.6	— 2.4	+ 5.3	+10.2	+12.0	+11.0	+ 9.3	+ 7.3	+ 5.5	+ 4.3	42 581 nT

	0	1	2	3	4	5	6	7	8	9	10	11
							June					
H	+ 7.8	+ 7.1	+ 7.3	+ 8.9	+11.3	+ 6.8	— 2.1	—12.1	—19.7	—20.4	—14.9	— 7.1
D	+ 2.9	+ 4.4	+ 5.3	+10.2	+20.7	+32.0	+35.2	+33.3	+28.9	+16.5	— 1.0	—19.1
Z	+ 3.6	+ 2.8	+ 2.4	+ 2.9	+ 3.4	+ 3.5	+ 1.2	+ 0.3	— 1.6	— 6.9	—13.1	—17.8
							July					
H	+ 9.0	+ 8.2	+ 7.3	+ 9.2	+ 9.7	+ 8.5	+ 2.2	— 7.6	—15.8	—20.3	—21.4	—16.5
D	+ 4.8	+ 7.7	+ 7.3	+11.4	+16.8	+25.4	+31.5	+34.3	+31.8	+18.9	+ 1.8	—17.9
Z	+ 2.6	+ 1.9	+ 1.7	+ 1.4	+ 2.6	+ 3.5	+ 2.7	+ 1.9	— 0.3	— 2.5	— 8.0	—13.1
							August					
H	+ 9.8	+ 9.8	+11.4	+ 7.8	+ 5.6	+ 6.1	— 1.9	—11.7	—21.3	—24.5	—17.5	— 9.9
D	+ 8.2	+ 7.6	+ 8.3	+10.5	+15.5	+19.8	+30.6	+32.1	+26.0	+11.1	— 6.1	—21.7
Z	+ 2.8	+ 2.5	+ 0.8	+ 0.2	+ 2.0	+ 2.7	+ 2.1	+ 1.6	— 0.9	— 4.9	— 9.8	—13.4
							September					
H	+ 9.3	+ 9.9	+ 8.8	+ 7.2	+ 5.2	+ 5.0	— 0.7	— 7.3	—15.8	—19.5	—16.0	—10.4
D	+ 6.0	+ 7.1	+ 9.5	+10.3	+10.2	+12.2	+16.5	+20.6	+20.4	+10.9	— 5.9	—21.4
Z	+ 1.4	+ 0.6	— 0.4	— 0.7	— 0.2	+ 0.5	+ 2.1	+ 2.7	+ 1.7	— 1.3	— 6.7	—10.4
							October					
H	+ 9.4	+ 8.4	+ 9.0	+ 8.2	+ 9.4	+11.8	+13.8	+ 9.5	+ 1.4	— 8.0	—14.7	—16.5
D	+ 9.6	+ 5.6	+ 2.3	+ 4.4	+ 0.7	— 1.3	+ 1.8	+ 9.6	+17.3	+18.7	+ 8.1	—11.7
Z	+ 0.5	— 0.5	— 1.6	— 1.6	— 1.1	— 1.1	+ 0.1	+ 2.4	+ 1.9	— 1.5	— 7.3	—10.1

12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
— 1.2	+ 1.0	— 1.1	— 7.1	— 1.5	— 2.5	+ 4.0	+ 5.5	+ 8.1	+ 8.7	+ 6.0	+ 7.2	21 092 nT
—31.5	—37.2	—37.7	—30.2	—20.3	—12.3	— 3.0	— 0.2	+ 1.0	— 1.4	+ 0.9	+ 2.6	1°01.4'
—18.4	—15.5	— 8.6	— 0.2	+ 6.4	+ 9.8	+10.8	+ 9.7	+ 8.0	+ 6.5	+ 5.9	+ 4.9	42 577 nT
— 9.6	— 5.9	— 7.0	— 3.9	— 2.6	— 0.3	+ 4.1	+ 7.3	+12.6	+12.4	+10.9	+ 9.5	21 091 nT
—30.8	—37.1	—35.2	—29.5	—20.4	—11.1	— 6.1	— 5.8	— 2.8	— 1.8	+ 2.6	+ 4.2	1°02.4'
—16.6	—14.6	— 9.6	— 2.1	+ 6.4	+ 7.1	+ 7.8	+ 6.8	+ 6.2	+ 5.3	+ 4.9	+ 4.0	42 573 nT
— 4.0	— 0.1	— 1.4	— 1.7	— 3.9	— 2.5	— 0.9	+ 5.4	+ 9.2	+12.4	+12.1	+11.7	21 086 nT
—31.5	—36.9	—33.8	—26.0	—16.7	— 5.3	— 2.7	— 1.7	+ 1.7	+ 1.6	+ 3.1	+ 6.8	1°03.3'
—14.7	—11.3	— 6.8	— 1.2	+ 5.0	+ 7.9	+ 8.1	+ 7.4	+ 6.7	+ 5.4	+ 4.5	+ 3.3	42 568 nT
— 4.1	+ 0.9	+ 4.2	+ 1.4	— 3.5	— 5.3	— 0.9	+ 2.2	+ 4.1	+ 4.9	+10.0	+10.6	21 084 nT
—31.9	—30.1	—25.9	—16.4	— 7.9	— 4.7	+ 0.6	+ 1.1	+ 3.6	+ 4.3	+ 5.5	+ 0.4	1°03.6'
— 9.7	— 7.3	— 3.9	— 0.1	+ 2.9	+ 4.4	+ 5.2	+ 5.3	+ 4.7	+ 4.4	+ 3.1	+ 1.7	42 575 nT
—12.6	— 8.8	— 9.1	— 8.0	—12.0	—10.4	— 6.0	— 1.9	+ 4.6	+ 6.7	+ 5.7	+10.1	21 075 nT
—23.6	—30.1	—27.3	—21.7	—12.4	— 2.6	— 0.4	+ 5.5	+11.7	+11.7	+11.8	+12.3	1°04.2'
—10.2	— 7.9	— 3.0	+ 1.5	+ 6.0	+ 6.8	+ 7.1	+ 6.5	+ 5.3	+ 3.7	+ 2.8	+ 1.3	42 578 nT

	0	1	2	3	4	5	6	7	8	9	10	11
												November
H	+5.2	+4.6	+6.4	+3.3	+6.6	+9.9	+10.6	+10.7	+8.4	+1.2	−3.3	−7.8
D	+12.2	+6.6	+1.1	−2.2	−4.4	−4.0	−3.1	+0.3	+4.5	+4.9	−0.8	−10.6
Z	+0.1	+1.5	−2.0	−2.3	−2.5	−2.0	−1.8	−1.3	−1.9	−4.5	−6.8	−7.4
												December
H	+0.1	−0.6	+1.9	+4.1	+6.1	+8.4	+10.2	+12.8	+11.7	+5.7	−0.2	−1.6
D	+7.8	+1.2	−0.7	−1.8	−3.1	−2.9	−3.5	−2.7	+0.7	+0.5	−5.3	−10.7
Z	−0.1	−0.7	−1.6	−2.0	−2.1	−2.4	−2.4	−3.1	−3.2	−4.7	−4.3	−3.9
												1983 Yearly means
H	+7.3	+6.5	+7.2	+6.7	+7.5	+7.6	+5.9	+1.5	−4.3	−10.0	−11.6	−10.0
D	+8.3	+6.5	+5.3	+6.4	+7.1	+9.8	+12.5	+16.1	+16.9	+11.7	−0.5	−15.3
Z	+2.1	+0.7	−0.4	−0.7	−0.2	−0.5	+0.3	+0.3	−0.9	−4.0	−8.1	−11.3
												1983 Quiet days
H	+0.7	+0.8	+0.9	+1.0	+2.3	+3.5	+2.7	−0.9	−6.8	−10.5	−12.0	−8.5
D	+5.3	+3.9	+4.4	+5.8	+7.6	+12.0	+16.7	+20.7	+21.9	+16.1	+3.1	−11.5
Z	+3.4	+3.2	+2.9	+7.8	+3.5	+4.1	+3.6	+3.3	+1.6	−2.2	−6.7	−10.9
												1983 Discturbed days
H	+18.8	+19.3	+18.4	+19.2	+18.4	+13.8	+10.4	+2.0	−7.3	−14.8	−17.3	−18.9
D	+8.0	+9.2	+8.9	+11.4	+9.3	+10.4	+9.2	+12.9	+11.0	+6.0	−5.1	−20.1
Z	−1.3	−2.2	−5.5	−6.9	−7.4	−7.0	−6.4	−5.7	−5.8	−7.7	−10.7	−12.9

12	13	14	15	16	17	18	19	20	21	22	23	Monthly averages
— 7.4	— 7.8	— 9.0	—10.9	—10.5	— 7.5	— 5.8	— 0.2	— 6.1	+ 3.6	+ 2.8	+ 3.0	21 070 nT
—20.9	—22.6	—17.6	—12.7	— 9.2	— 3.2	+ 4.3	+11.2	+13.7	+18.3	+17.1	+17.1	1°04.8'
— 6.0	— 2.7	+ 1.1	+ 4.0	+ 5.5	+ 5.5	+ 5.7	+ 5.4	+ 5.6	+ 3.8	+ 2.1	+ 0.9	42 596 nT
— 0.2	— 1.3	— 5.1	—11.1	—11.2	—11.2	— 9.2	— 6.7	— 3.5	— 0.2	+ 0.4	+ 0.6	21 074 nT
—15.0	—15.1	—11.6	— 4.2	— 4.2	+ 0.1	+ 3.2	+ 9.0	+12.2	+16.6	+15.1	+14.4	1°05.1'
— 3.3	— 1.1	+ 1.9	+ 4.2	+ 4.9	+ 4.9	+ 5.1	+ 5.2	+ 4.2	+ 3.0	+ 1.4	+ 0.1	42 597 nT
— 6.5	— 5.0	— 5.4	— 6.0	— 6.1	— 5.4	— 2.5	— 0.6	+ 3.2	+ 5.5	+ 6.2	+ 7.1	21 078 nT
—25.4	—30.5	—27.4	—20.4	—12.3	— 5.3	— 0.8	+ 3.8	+ 7.0	+ 8.2	+ 9.3	+ 9.0	1°02.7'
—11.8	— 9.0	— 3.9	+ 1.3	+ 5.5	+ 7.1	+ 7.7	+ 7.3	+ 6.6	+ 5.3	+ 4.0	+ 2.5	42 581 nT
— 3.0	+ 0.6	+ 1.3	+ 0.3	— 0.4	— 0.5	+ 0.1	+ 3.4	+ 5.8	+ 5.9	+ 6.3	+ 7.0	21 088 nT
—21.9	—25.6	—23.4	—17.5	—10.8	— 6.9	— 4.2	— 2.1	— 0.5	+ 1.1	+ 2.5	+ 3.3	1°02.6'
—12.0	— 9.8	— 5.9	— 2.1	+ 1.1	+ 2.7	+ 3.3	+ 3.2	+ 3.1	+ 2.9	+ 2.6	+ 2.3	42 578 nT
—16.2	—17.3	—16.5	—14.7	—12.9	—10.8	— 5.1	— 1.6	+ 3.5	+ 7.2	+10.2	+12.2	21 068 nT
—32.2	—37.4	—35.4	—26.3	—12.2	— 0.3	+ 3.9	+10.4	+14.3	+15.5	+16.0	+12.6	1°03.1'
—11.9	— 6.5	+ 1.9	+ 9.3	+14.2	+17.1	+16.5	+14.4	+11.6	+ 7.4	+ 4.3	+ 1.2	42 585 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	8.9	34	2.9	234	3.2	126	2.3	346	0.5	318	0.9	87
February	11.7	40	4.9	255	4.1	116	0.3	37	0.3	17	0.8	159
March	9.4	58	3.4	313	4.0	174	2.0	35	0.9	161	0.7	186
April	14.5	94	2.1	326	3.0	209	0.9	84	1.4	30	0.8	160
May	6.7	135	3.6	56	4.5	267	2.5	118	1.1	266	0.8	4
June	10.1	112	4.7	14	5.8	257	2.1	109	0.3	93	0.6	46
July	13.6	107	4.0	328	4.6	232	1.1	85	0.3	352	0.7	57
August	12.7	113	5.0	28	5.5	236	1.4	91	1.2	349	0.5	266
September	9.6	108	5.5	27	4.4	214	1.4	55	0.6	82	1.1	233
October	12.5	64	2.6	273	4.3	181	2.3	21	0.1	31	0.2	139
November	9.1	39	2.9	229	1.7	150	1.3	40	0.6	216	0.7	317
December	8.7	9	2.8	197	2.3	194	1.3	9	1.3	223	0.5	61
Year	8.6	78	1.5	329	2.8	208	1.1	55	0.2	284	0.1	118
Q	5.3	119	1.7	324	3.9	203	0.8	51	0.4	245	0.2	196
D	19.4	71	3.0	339	1.7	221	1.1	67	0.5	3	0.4	101
					Declination							
January	9.0	83	6.6	180	3.7	42	2.2	250	1.0	97	0.4	163
February	12.7	87	8.2	200	3.1	48	3.0	252	1.0	39	1.1	85
March	17.1	66	11.9	200	6.3	51	2.7	271	0.3	346	0.8	81
April	18.5	50	17.6	229	7.1	53	2.6	246	0.8	141	0.5	50
May	21.1	46	15.5	240	4.3	85	0.3	213	0.4	191	0.7	275
June	24.0	34	17.3	240	3.6	86	1.0	113	1.1	102	0.5	20
July	24.0	32	15.3	235	5.8	82	0.1	214	0.5	191	0.5	335
August	21.7	42	14.9	240	5.8	89	0.9	49	0.7	264	0.4	124
September	16.3	52	11.6	242	5.9	79	2.5	292	0.6	198	0.0	45
October	12.5	65	12.9	202	6.4	48	3.3	257	1.2	148	0.7	63
November	12.3	99	9.8	192	3.2	66	1.8	259	1.4	100	0.5	239
December	10.1	113	6.4	197	1.8	112	2.1	249	0.7	122	0.3	162
Year	15.2	56	11.5	222	4.4	67	1.4	258	0.4	126	0.3	76
Q	14.3	34	10.4	227	5.1	75	1.3	270	0.3	124	0.3	53
D	19.3	73	13.3	227	4.2	40	2.2	237	0.8	258	0.2	16

	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	4.8	151	1.9	274	0.8	106	0.6	263	0.5	80	0.3	225
February	6.1	157	2.0	266	1.0	117	1.0	288	0.4	61	0.1	124
March	6.4	145	3.3	240	3.0	85	1.1	324	0.3	235	1.0	132
April	8.4	127	8.0	266	3.7	101	1.1	295	0.3	97	0.3	313
May	9.9	110	8.5	270	2.4	83	0.5	212	0.2	88	0.1	315
June	9.5	115	7.0	276	2.6	86	0.8	238	0.3	161	0.2	82
July	7.2	108	6.1	265	2.7	79	1.2	217	0.3	25	0.2	38
August	7.1	115	5.6	270	2.2	93	0.2	220	0.1	65	0.4	24
September	4.2	117	4.1	260	2.0	105	0.7	324	0.2	184	0.3	27
October	4.5	136	4.6	264	2.4	94	0.7	304	0.3	203	0.4	97
November	4.8	155	2.5	284	1.4	118	0.8	338	0.3	36	0.3	47
December	4.3	168	1.7	297	0.4	126	0.3	318	0.3	43	0.1	169
Year	6.1	130	4.5	268	2.0	94	0.5	283	0.1	91	0.1	83
Q	5.5	88	4.0	272	1.8	96	0.5	296	0.2	98	0.2	21
D	11.6	167	5.8	277	2.6	85	0.7	292	0.3	76	0.2	338

III. ATMOSPHERIC ELECTRICITY

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

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

All data are presented in universal time (GMT).

Tables were compiled by F. 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". Observatoriumsberiche des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967. Further informations are given by P. BENCZE and F. MÄRCZ: „The Geophysical Observatory near Nagycenk. II. Atmospheric electric and ionospheric measurements" Acta Geod. Geoph. Mont. Hung. 16/1981/353-357.

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.	110	100	80	100	110	120	110	140	110	[110]	100	120	150
2.	160	120	100	80	80	70	70	80	100	90	[100]	170	100
3.	50	50	60	80	90	100	110	—	—	—	—	—	30
4.	—80	—100	—100	0	30	50	60	30	40	20	30	[110]	90
5.	50	60	50	60	50	60	60	50	40	60	[—60]	20	—70
6.	20	40	50	50	40	20	50	70	70	70	[70]	60	50
7.	50	90	70	60	50	70	70	90	70	120	[80]	+S	120
8.	80	70	70	80	80	110	50	60	70	70	[60]	70	130
9.	20	40	50	70	70	60	70	70	70	90	[120]	80	90
10.	60	60	50	30	30	50	60	—	—	50	50	60	50
11.	50	40	20	20	50	30	50	70	140	110	[90]	[90]	90
12.	70	80	80	100	100	130	140	110	110	150	[130]	150	180
13.	+S	+S	+S	+S	+S	+S	200	170	180	+S	[110]	100	130
14.	50	100	100	70	50	30	80	60	40	50	[60]	50	70
15.	—50	—50	—30	—20	—20	—40	—20	20	40	40	50	[40]	50
16.	+S	—20	±S	+S	+S	±S	+S	40	20	40	[+S]	50	80
17.	40	+S	+S	70	30	50	50	60	—	80	90	80	70
18.	70	80	60	80	90	80	70	90	120	150	[180]	170	200
19.	40	40	50	30	20	60	±S	50	60	80	[80]	80	90
20.	50	+S	±S	60	90	90	60	90	100	110	[100]	100	100
21.	90	90	80	70	50	50	80	70	0	80	[80]	70	70
22.	60	70	70	70	80	60	60	60	50	[70]	60	60	60
23.	60	60	70	80	70	70	80	100	100	90	[90]	100	100
24.	70	60	80	80	70	70	80	100	—	110	110	110	110
25.	50	50	40	60	70	90	110	150	+S	150	[100]	100	140
26.	150	140	150	120	+S	+S	+S	150	30	40	[—30]	20	80
27.	10	+S	50	+S	40	30	30	60	50	[50]	30	60	50
28.	30	30	30	30	10	10	30	40	50	50	[30]	±S	40
29.	40	30	40	40	40	60	70	100	0	0	[80]	[80]	80
30.	60	60	30	—10	—90	0	120	120	100	100	[80]	80	70
31.	30	40	40	50	50	60	70	—	—	70	70	80	80
Means	51	53	53	58	50	59	74	82	70	79	74	84	86
Number of days	29	27	27	28	28	28	28	28	25	29	29	28	31

13	14	15	16	17	18	19	20	21	22	23	Daily means
110	150	160	160	160	120	110	120	160	180	170	128
100	80	100	100	30	40	50	40	50	30	30	82
50	70	—40	0	—20	—S	—S	—S	—S	—30	—30	—
40	70	110	100	+S	110	120	150	70	±S	30	—
0	60	70	—S	—S	20	±S	—60	10	40	30	—
50	50	40	60	70	80	100	20	20	60	70	53
110	120	+S	30	20	40	50	70	60	70	80	72
170	+S	180	200	+S	+S	150	160	90	60	40	—
70	60	70	70	70	70	80	110	100	70	70	73
90	60	50	50	50	50	50	50	60	50	70	—
110	120	120	100	120	90	100	110	90	80	80	81
150	160	150	150	160	150	150	+S	+S	+S	+S	—
150	120	70	70	80	60	80	80	50	100	50	—
80	80	80	50	50	10	0	—20	—30	—10	—20	45
50	20	50	50	50	50	50	50	+S	±S	0	—
60	±S	50	50	50	50	±S	—20	—S	50	30	—
70	+S	90	110	100	110	—S	90	90	80	90	—
100	90	90	90	80	70	90	110	120	90	50	101
90	70	90	90	90	90	70	60	40	40	40	63
80	70	70	80	90	100	100	100	90	90	90	—
80	90	100	100	80	90	90	80	80	70	70	75
70	60	60	70	60	50	50	40	40	30	50	59
120	100	100	100	110	110	100	80	60	60	50	86
120	110	80	70	50	30	30	90	80	80	70	81
140	130	100	120	70	+S	110	+S	+S	150	170	—
110	70	30	30	10	—S	±S	—60	±S	—S	0	—
30	50	60	10	20	30	10	30	30	30	30	—
50	0	30	40	70	80	70	60	50	30	40	39
70	70	70	80	80	60	80	110	110	70	70	63
100	110	110	70	±S	±S	±S	±S	±S	70	±S	—
100	100	100	110	100	100	100	100	90	80	70	—
88	84	81	80	70	72	80	65	67	64	55	
31	28	30	30	27	26	25	27	24	27	29	

February

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	70	80	60	30	20	10	50	10	—90	30	100	120	[110]
2.	30	10	—S	0	50	40	30	50	70	80	[70]	—S	±S
3.	40	40	50	60	50	80	70	70	70	60	[50]	60	60
4.	±S	—S	—30	30	50	50	40	—	—	—	[80]	80	80
5.	40	60	60	70	90	80	70	80	80	90	90	[100]	[100]
6.	40	60	50	30	10	—10	—20	—50	—40	[—60]	—60	—50	±S
7.	100	50	10	20	10	30	50	[20]	—	110	140	150	160
8.	130	120	150	120	110	110	0	+S	—30	60	[60]	100	110
9.	0	0	50	70	60	±S	±S	±S	—S	±S	[+S]	+S	120
10.	—20	—110	±S	±S	±S	—50	—40	30	40	80	[70]	80	—
11.	—150	—80	—10	—30	10	30	0	0	30	50	[20]	—S	±S
12.	—	—	—	10	30	20	30	30	20	70	110	[130]	140
13.	50	60	40	40	30	0	10	20	40	80	[70]	80	90
14.	40	50	60	40	70	70	40	[20]	—	+S	+S	50	0
15.	—10	—50	—50	—10	—20	—10	—10	—20	—80	[—120]	—100	—100	—50
16.	20	30	30	50	70	70	90	110	130	140	[90]	80	110
17.	—40	—60	—50	—100	—80	—60	—50	30	50	[—20]	—30	20	0
18.	30	30	30	10	20	30	20	50	70	50	[50]	50	30
19.	60	30	40	40	40	—10	—110	—40	40	70	[80]	80	80
20.	30	30	10	0	20	50	20	+S	+S	30	[50]	[80]	100
21.	30	20	30	30	30	40	20	—	—	—S	60	90	100
22.	70	60	50	—50	10	40	80	100	110	140	[130]	120	120
23.	120	120	120	120	130	160	160	160	190	[180]	180	180	160
24.	90	90	50	70	80	70	80	100	140	[120]	150	130	160
25.	30	30	30	30	—10	—30	—30	10	100	[80]	150	150	140
26.	10	—10	30	0	—10	30	20	30	30	[30]	100	100	80
27.	90	40	60	90	110	70	60	40	—190	—50	[—40]	90	0
28.	60	100	90	70	100	100	110	+S	—	[190]	220	200	180
Means	37	31	38	31	40	37	29	39	37	62	73	87	91
Number of days	26	26	25	27	27	27	27	22	21	24	26	25	24

13	14	15	16	17	18	19	20	21	22	23	Daily means
110	100	90	60	30	30	50	80	90	100	120	61
50	±S	60	70	80	60	50	40	50	60	50	—
70	60	70	—S	—S	30	50	50	40	40	30	—
70	70	60	80	+S	—70	30	60	60	50	40	—
100	90	90	90	100	100	70	70	60	60	40	78
±S	±S	±S	±S	±S	50	+S	140	+S	150	60	—
130	120	140	140	120	50	140	200	180	230	140	106
130	170	130	100	80	80	—10	20	40	30	—10	78
10	—30	—70	—40	—90	—70	—20	—140	—150	—S	—S	—
160	180	150	110	±S	±S	±S	±S	±S	+S	—70	—
±S	—40	—80	±S	±S	±S	±S	±S	—60	—	—	—
120	110	110	100	120	160	90	50	120	90	70	—
110	130	130	130	120	90	80	110	120	80	100	75
30	160	110	80	30	90	20	—30	—80	—130	—60	—
0	40	60	30	30	50	40	—10	—50	—30	20	—19
130	150	110	150	130	60	30	—20	—40	—20	—90	67
—10	20	20	40	40	70	40	20	30	40	20	—2
40	60	50	30	40	50	40	60	80	80	70	45
100	100	100	120	100	60	20	0	10	20	20	44
100	90	70	30	30	50	90	70	30	20	20	—
100	80	90	60	70	90	50	50	60	40	60	—
90	90	100	100	120	120	150	150	110	130	120	94
170	150	160	160	180	200	190	130	100	110	90	151
200	200	170	160	70	110	90	70	0	10	20	101
160	160	130	110	100	70	10	10	—20	10	20	60
100	100	80	30	20	40	60	30	100	100	70	49
—30	—S	—S	+S	—S	—S	—S	—S	—S	—S	—50	—
210	160	30	—110	—120	100	170	200	160	170	120	—
94	101	83	76	64	67	64	56	42	60	40	
26	25	26	24	22	25	24	25	25	24	26	

March

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	120	200	100	100	100	170	150	150	140	180	160	[180]	160
2.	—80	—10	40	20	10	—70	—20	—60	—50	[—90]	—110	—70	50
3.	—10	10	—20	0	40	70	70	70	70	70	[70]	80	90
4.	90	100	100	100	100	100	100	100	100	110	[110]	120	110
5.	70	60	60	30	50	50	60	60	90	[90]	100	110	110
6.	80	70	60	70	60	80	80	60	90	80	[100]	100	100
7.	70	80	110	90	80	90	80	—	—	50	100	110	80
8.	50	40	30	30	60	50	30	40	70	[80]	80	70	70
9.	60	70	80	60	70	80	100	130	130	130	[130]	130	120
10.	50	50	40	50	50	70	60	70	60	50	[50]	60	70
11.	50	50	40	40	40	50	70	60	70	50	[70]	80	70
12.	60	50	50	40	40	20	80	+S	—20	100	[90]	100	90
13.	50	40	40	50	50	50	50	50	70	[80]	70	80	100
14.	50	50	50	50	50	50	60	70	—	80	80	90	80
15.	50	60	60	60	50	50	50	50	50	50	[60]	[50]	50
16.	50	50	50	50	50	50	50	50	50	50	[60]	60	70
17.	70	60	60	50	60	70	80	120	110	[120]	150	120	130
18.	20	20	40	10	40	50	70	60	80	100	[70]	40	40
19.	40	30	40	50	50	40	70	90	110	70	[60]	60	60
20.	—	—	—	10	40	50	40	70	70	[60]	60	50	50
21.	20	20	20	20	30	30	60	80	—	[80]	100	90	80
22.	30	20	50	50	40	30	0	0	10	20	+S	±S	±S
23.	30	30	30	20	30	40	40	50	50	[60]	+S	60	60
24.	30	—10	—10	—20	—10	—30	—10	30	50	70	[80]	100	70
25.	—40	—20	—20	—10	10	—10	—70	—120	10	[30]	[30]	40	10
26.	40	30	30	—30	20	—S	±S	±S	±S	70	[70]	30	—30
27.	30	20	30	30	10	10	30	60	[50]	50	60	70	60
28.	30	30	30	30	30	40	—	—	140	130	170	140	90
29.	30	40	40	10	30	10	60	60	30	—	—	—	—
30.	60	70	80	80	70	70	80	80	[90]	120	100	90	90
31.	50	50	60	60	70	60	100	120	100	[70]	80	—	—
Means	42	42	46	39	46	47	56	59	67	74	80	80	76
Number of days	30	30	30	31	31	30	29	27	27	30	28	28	28

13	14	15	16	17	18	19	20	21	22	23	Daily means
150	160	170	130	150	130	130	60	40	—20	—100	117
20	10	20	20	20	—10	—30	—70	—30	—10	—20	—22
90	70	70	90	100	90	90	90	100	80	90	65
120	140	170	140	140	110	80	70	80	90	70	106
120	130	100	100	110	110	100	90	80	90	80	85
100	70	90	100	90	50	60	70	70	70	70	78
80	70	70	70	70	60	50	70	60	50	50	—
80	90	100	110	100	110	100	100	90	80	70	72
90	50	80	80	70	90	90	80	70	60	60	88
60	70	90	100	120	100	100	70	70	40	50	67
50	40	10	—10	—20	0	10	60	80	70	60	45
100	100	110	100	100	140	170	120	70	70	70	80
80	70	50	50	50	50	50	50	50	50	50	58
70	60	70	60	70	70	70	70	70	60	60	65
50	40	50	50	50	60	50	50	60	50	50	52
60	70	50	50	60	80	70	90	110	110	70	63
120	100	90	90	80	90	80	70	70	40	30	86
40	50	50	60	20	70	70	50	30	60	50	50
50	50	60	50	40	60	—10	—	—	—	—	—
40	30	20	20	20	30	40	40	40	40	20	—
60	40	30	30	20	30	30	30	50	60	30	45
±S	±S	30	—120	—50	30	50	50	50	30	30	—
60	70	50	50	50	40	40	30	30	40	30	43
50	40	40	50	40	40	30	30	30	30	—10	30
30	60	30	—S	30	±S	70	10	50	50	40	—
±S	30	20	30	30	40	50	40	30	30	30	—
60	50	50	50	50	60	70	70	100	50	40	48
100	110	80	50	60	50	10	10	10	—10	10	—
—	—	—	—	±S	—30	50	30	10	10	30	—
60	50	50	40	60	90	70	80	80	80	70	75
90	70	70	70	80	80	80	70	60	60	80	74
74	69	66	59	60	64	62	56	57	50	42	
28	29	30	29	30	30	31	30	30	30	30	

April

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	60	40	40	40	40	—40	—20	—10	[20]	[±S]	120	0	—20
2.	40	20	0	0	—20	—10	—20	—20	20	[30]	60	70	70
3.	70	60	50	40	40	60	50	60	30	±S	—S	—S	—S
4.	60	60	60	90	+S	+S	160	100	[120]	120	30	30	100
5.	40	40	40	50	50	60	—	—	20	130	60	70	90
6.	70	50	40	40	60	70	80	90	[100]	100	90	70	80
7.	±S	60	40	40	50	40	50	120	±S	±S	±S	±S	±S
8.	90	80	60	60	60	80	100	100	80	[90]	80	70	70
9.	70	80	60	50	60	90	60	90	90	[80]	60	80	90
10.	120	130	100	130	120	90	90	100	[30]	20	60	70	70
11.	30	40	50	30	30	70	[70]	—	40	30	40	50	50
12.	50	40	40	40	30	+S	+S	—40	±S	±S	±S	±S	10
13.	40	40	40	40	50	50	60	60	70	[70]	70	60	40
14.	30	40	40	50	50	60	60	50	[+S]	60	80	±S	±S
15.	20	20	20	10	40	60	—70	50	—10	[—30]	0	30	40
16.	40	±S	—S	40	50	60	40	70	40	[80]	50	+S	40
17.	30	30	30	30	40	60	[50]	60	70	70	60	60	60
18.	30	20	30	40	40	50	—	—	50	50	50	50	50
19.	40	40	40	50	60	80	80	[90]	90	100	90	90	70
20.	40	40	40	40	50	70	100	[70]	70	70	70	60	50
21.	20	30	30	10	10	10	30	50	60	[30]	20	30	30
22.	20	10	40	30	30	30	—50	[—50]	—20	—	—	—	—50
23.	—10	—10	20	20	20	30	70	30	[—50]	—100	—120	—90	—20
24.	40	50	30	20	30	30	50	50	50	60	[70]	80	70
25.	40	50	60	50	50	50	—	—	70	70	70	50	60
26.	40	40	40	40	40	50	70	50	[70]	70	80	80	60
27.	40	40	30	40	40	50	60	50	40	40	40	[40]	30
28.	20	20	10	10	10	20	40	50	50	[60]	60	60	50
29.	0	10	30	50	50	50	60	60	60	[50]	50	50	50
30.	—20	—20	—20	0	10	30	40	70	70	[80]	90	80	70
Means	40	40	38	39	41	48	50	54	49	57	55	52	49
Number of days	29	29	29	30	29	28	26	26	27	25	26	24	27

13	14	15	16	17	18	19	20	21	22	23	Daily means
—10	—40	—10	—10	—20	—10	—10	30	0	30	20	10
80	60	80	50	50	60	70	70	70	60	60	40
0	40	50	40	40	40	40	40	40	40	50	—
80	70	60	70	60	50	60	50	40	40	50	—
100	100	90	100	120	100	110	100	90	80	90	—
90	90	80	60	30	40	50	40	30	20	±S	64
100	120	90	90	80	60	50	50	60	60	80	—
70	60	50	60	60	40	30	40	40	30	70	65
80	80	70	100	120	100	90	80	80	90	100	81
80	80	±S	—10	20	30	30	50	50	30	20	66
60	60	50	50	60	60	80	70	80	80	60	54
60	60	50	50	40	40	60	60	70	60	40	—
40	60	60	50	70	70	70	70	40	20	40	53
±S	±S	±S	—S	60	40	30	20	0	30	20	—
60	70	60	50	60	60	—S	50	40	50	50	32
40	60	±S	30	40	70	70	90	70	50	40	—
60	60	50	50	50	50	50	50	30	10	20	47
50	50	40	40	50	50	50	50	50	40	40	—
80	80	70	40	40	50	50	50	50	40	40	65
40	30	40	40	40	40	50	40	50	40	40	51
30	30	40	40	40	50	50	40	40	40	40	33
0	10	30	20	20	30	10	—10	—10	—20	—10	—
20	30	40	40	40	40	40	50	50	40	40	9
50	50	40	50	50	50	50	40	40	50	40	48
60	50	50	50	40	40	30	40	30	40	40	—
50	30	20	20	30	30	40	50	40	30	30	46
30	30	30	30	20	30	30	20	20	20	20	34
30	30	30	30	20	20	30	30	40	40	40	33
50	40	40	30	40	30	±S	±S	—20	—30	—20	—
50	50	50	50	30	0	10	40	40	40	50	37
53	53	50	45	47	45	47	48	42	38	41	
29	29	27	29	30	30	28	29	30	30	29	

May

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	50	50	50	30	30	40	60	30	30	[50]	40	40	30
2.	—S	±S	±S	±S	±S	30	60	—	—	—50	—30	—20	10
3.	40	40	50	40	50	50	50	50	60	[60]	±S	+S	+S
4.	10	20	30	40	—10	10	50	40	10	[—10]	0	0	30
5.	30	20	20	30	30	50	50	30	[20]	10	30	30	30
6.	20	20	20	10	20	30	40	50	[50]	50	50	40	40
7.	30	20	10	30	40	50	50	50	[70]	50	50	40	40
8.	10	10	10	20	30	10	10	10	—10	[—20]	10	40	30
9.	—20	—20	—50	—50	—	—	—	—	—	—	—	20	40
10.	20	20	20	10	10	40	50	40	40	[50]	50	40	30
11.	10	0	10	10	—20	40	50	40	50	[40]	50	50	40
12.	30	20	10	10	20	40	50	50	[50]	40	50	40	40
13.	30	40	40	40	50	50	50	70	[60]	60	50	40	30
14.	30	30	30	30	30	30	[40]	50	50	50	50	40	40
15.	40	50	50	50	50	50	[50]	50	50	50	30	30	40
16.	30	40	40	30	40	50	—	—	30	30	30	20	20
17.	20	20	20	20	30	40	50	[50]	50	50	30	30	30
18.	40	40	40	50	70	60	60	[70]	70	80	90	80	70
19.	20	20	30	30	40	70	60	70	[50]	[50]	50	50	40
20.	30	40	40	40	50	50	60	70	[110]	120	100	60	40
21.	10	—30	—20	0	10	30	[50]	[60]	70	60	60	50	50
22.	40	30	40	50	70	80	[70]	60	50	50	60	70	60
23.	—S	±S	±S	—	—	—	—	—	±S	—	0	—20	±S
24.	—110	—70	—40	0	10	20	20	30	[30]	30	30	30	—S
25.	60	70	40	30	20	20	—10	0	—10	[—10]	40	30	30
26.	30	30	20	10	30	50	70	70	[30]	30	40	50	40
27.	0	—20	10	10	10	10	10	0	—20	0	[—10]	[10]	10
28.	0	10	20	20	30	50	50	60	[60]	30	30	30	30
29.	40	50	50	40	60	80	50	[40]	40	30	30	30	20
30.	50	30	30	30	30	50	90	—	—	100	100	80	60
31.	20	30	30	30	30	50	40	50	[50]	40	40	40	50
Means	21	21	22	24	31	42	48	46	42	39	40	36	36
Number of days	29	29	29	29	28	29	28	26	27	29	29	30	28

13	14	15	16	17	18	19	20	21	22	23	Daily means
20	30	30	40	60	50	50	40	—S	±S	0	—
30	40	40	50	50	50	60	60	50	50	50	—
±S	30	20	20	30	30	40	40	20	10	10	—
40	30	30	±S	±S	±S	±S	30	40	30	20	—
30	20	30	20	+S	50	30	30	30	20	10	28
40	50	50	50	40	40	40	60	60	40	40	40
40	40	40	30	30	30	30	30	20	0	10	35
10	10	20	0	—40	20	40	20	—20	—40	—50	5
60	40	20	20	10	10	20	30	30	30	20	—
40	40	40	40	30	30	30	20	30	10	10	31
40	40	40	40	40	30	20	0	—120	—100	20	18
40	30	40	40	30	40	40	40	30	20	30	35
30	30	20	30	30	30	30	30	30	30	30	39
40	30	30	30	30	30	30	40	50	40	50	38
30	30	30	30	40	30	30	30	40	40	30	40
30	30	30	40	40	40	30	40	30	20	30	—
30	40	50	50	50	50	50	50	50	50	40	40
50	50	50	60	60	50	40	40	30	40	30	55
40	30	30	30	0	10	20	20	30	40	40	36
40	40	50	50	40	30	30	30	10	30	40	50
40	40	40	50	50	30	10	30	40	50	40	34
50	50	40	40	40	50	40	30	10	—S	20	48
—S	0	—40	10	30	+S	±S	±S	+S	—10	—40	—
±S	—S	±S	±S	—S	30	20	30	10	40	40	—
30	30	—S	±S	10	30	30	20	20	30	30	—
40	40	60	60	50	30	20	20	10	10	0	35
30	40	40	30	30	20	10	20	20	20	20	13
30	30	30	40	40	40	40	30	40	40	40	34
—10	—S	±S	—	—	—	20	30	50	30	60	—
70	60	60	50	50	40	40	30	50	30	20	—
+S	±S	30	40	40	50	40	30	30	30	30	—
36	35	34	36	34	35	32	32	25	22	23	
27	28	28	27	27	28	29	30	29	29	31	

June

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	20	20	30	30	40	50	30	40	[40]	30	30	30	30
2.	10	20	20	10	30	30	30	30	[40]	40	40	30	30
3.	—	—	—	—	40	70	100	120	[110]	110	80	70	70
4.	20	40	30	30	40	50	60	60	70	[70]	80	70	60
5.	20	20	10	20	30	50	50	40	40	[40]	40	30	40
6.	10	20	30	30	40	50	[70]	—	±S	10	+S	20	30
7.	50	40	30	30	40	60	[70]	60	80	80	70	60	70
8.	40	30	30	30	40	50	40	[40]	40	50	50	50	50
9.	40	40	40	30	50	50	60	50	70	[60]	50	40	40
10.	30	40	40	40	30	50	50	[50]	50	50	30	±S	60
11.	40	±S	±S	0	40	50	30	50	50	[70]	70	70	70
12.	10	20	20	10	10	30	[40]	50	70	70	60	60	60
13.	30	20	30	30	30	30	40	—	—	—	[60]	60	60
14.	—50	—40	—30	±S	±S	±S	±S	[—S]	110	100	70	100	—S
15.	20	10	10	0	10	20	20	30	40	[40]	40	40	20
16.	—10	—10	—20	—40	—50	—60	—S	—S	—S	—S	—S	—S	—30
17.	—20	—20	—10	0	0	20	40	[50]	70	60	50	50	20
18.	10	0	0	20	30	40	30	30	[10]	30	30	30	30
19.	40	30	30	30	40	20	40	40	40	[60]	50	50	—30
20.	+S	—50	—40	—50	—60	—30	10	—	[—30]	30	40	20	20
21.	40	40	30	40	40	30	50	70	[90]	140	110	50	40
22.	20	40	40	30	70	—	±S	[70]	90	+S	70	±S	+S
23.	30	40	50	80	90	70	70	80	[100]	110	90	110	100
24.	—10	0	10	10	30	20	10	20	[30]	40	50	50	40
25.	20	20	20	30	30	[40]	40	50	50	50	50	50	50
26.	40	30	20	20	30	30	40	[40]	40	60	+S	±S	—S
27.	40	30	30	40	40	50	50	—	—	50	50	50	50
28.	±S	+S	20	30	—10	30	+S	50	60	110	+S	80	±S
29.	50	70	70	80	60	70	90	100	[80]	80	60	50	50
30.	40	30	40	40	50	50	70	[60]	80	80	70	70	70
Means	21	20	21	23	30	36	47	53	58	64	57	53	42
Number of days	27	27	28	28	29	28	26	24	26	27	26	26	26

13	14	15	16	17	18	19	20	21	22	23	Daily means
30	40	40	40	40	40	40	30	30	30	20	33
40	40	70	±S	±S	±S	30	50	—	—	—	—
80	70	50	60	70	50	50	40	40	50	30	—
60	70	50	50	40	40	30	30	30	30	20	47
30	30	30	30	40	40	40	—S	±S	—S	20	—
50	50	50	50	60	70	50	50	60	60	40	—
80	80	80	80	70	50	40	40	50	50	40	58
40	50	40	40	50	50	40	40	40	40	40	42
40	50	—S	±S	±S	40	50	40	30	20	30	—
50	+S	130	70	30	40	40	50	50	40	30	48
70	60	70	80	70	50	30	0	10	20	0	—
50	60	60	70	80	70	60	50	50	30	20	46
80	70	50	—10	±S	+S	±S	±S	—50	40	10	—
±S	±S	40	30	40	40	30	20	0	10	10	—
0	20	20	10	10	10	40	30	30	—10	—10	19
20	40	30	20	—20	—30	—S	—S	—S	—S	—40	—
20	40	40	40	30	50	50	50	40	40	30	31
50	20	0	10	20	40	40	50	50	50	50	28
20	10	10	—10	±S	—70	—80	+S	±S	±S	—60	—
60	30	30	40	30	30	30	20	30	40	40	—
20	30	20	30	40	50	30	30	30	20	20	45
70	80	50	50	50	30	40	50	30	40	20	—
90	80	70	70	70	50	50	40	40	30	0	67
50	50	50	50	50	50	50	40	40	40	30	33
50	40	80	±S	±S	±S	40	30	30	40	40	—
50	30	—S	—S	40	50	40	40	40	30	30	—
40	40	+S	+S	40	40	40	30	40	30	40	—
±S	±S	+S	—40	—20	10	10	0	—10	0	30	—
50	50	60	60	70	70	90	70	50	50	40	65
70	70	50	40	50	40	40	30	30	30	30	51
49	**48**	**49**	**38**	**42**	**37**	**37**	**37**	**31**	**33**	**21**	
28	**27**	**26**	**25**	**25**	**27**	**28**	**26**	**26**	**26**	**29**	

July

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	20	20	20	20	20	40	40	[50]	[40]	40	40	40	40
2.	10	10	10	10	10	10	[20]	30	40	40	50	50	40
3.	—30	0	—10	—30	10	30	[40]	50	70	70	70	60	50
4.	40	30	30	30	40	40	—	—	70	80	70	70	70
5.	50	40	40	40	40	70	70	[80]	100	100	90	80	60
6.	30	20	20	30	40	60	[50]	40	30	30	40	30	30
7.	30	30	30	30	30	40	[40]	40	30	20	30	30	30
8.	10	20	±S	±S	—S	60	[70]	60	50	40	40	50	70
9.	—10	—30	10	40	40	50	50	[60]	60	50	50	50	50
10.	40	40	40	40	40	60	50	[70]	70	70	50	60	60
11.	30	40	40	30	40	40	—	—	60	70	90	+S	±S
12.	10	10	0	20	30	[50]	[70]	70	70	+S	—30	+S	±S
13.	40	50	30	30	40	[40]	[50]	50	60	60	50	40	30
14.	—	—	—	—	—	—	[50]	50	50	50	40	30	30
15.	40	30	30	30	40	[40]	60	70	80	80	80	80	60
16.	10	10	10	20	20	20	[30]	[30]	40	40	50	50	50
17.	40	40	40	40	50	50	—	—	60	50	50	60	70
18.	10	20	10	10	20	30	—	—	10	10	20	20	—10
19.	20	20	20	20	40	[30]	40	40	40	60	70	70	120
20.	40	40	40	40	40	[60]	[90]	90	100	90	70	—	—
21.	—	—	—	—	—	—	—	80	100	100	90	90	80
22.	60	50	50	50	50	60	[80]	80	80	70	70	60	60
23.	40	40	30	30	30	[40]	40	70	80	80	60	60	50
24.	40	40	40	30	30	40	50	[40]	30	30	40	40	—S
25.	—	—	—	—	—	—	—	—	70	+S	50	50	60
26.	40	40	40	40	50	50	[50]	60	50	50	60	70	80
27.	30	30	30	30	40	[40]	[50]	60	70	70	60	50	40
28.	30	40	30	40	50	40	[40]	[50]	50	60	50	10	10
29.	20	20	10	30	10	±S	—	—	—	+S	±S	±S	0
30.	30	40	30	30	30	20	20	[50]	50	50	40	40	30
31.	30	30	20	10	20	—	—	—	—	70	60	60	60
Means	27	28	26	27	33	43	50	57	59	58	53	52	49
Number of days	28	28	27	27	27	26	23	24	29	28	30	27	27

13	14	15	16	17	18	19	20	21	22	23	Daily means
50	50	40	40	0	10	10	10	20	10	10	28
40	40	40	30	30	30	20	10	10	—40	—30	21
50	50	50	50	50	50	40	50	50	40	40	38
70	70	80	70	70	80	70	50	50	40	40	—
50	40	40	40	30	20	30	40	30	30	20	51
30	40	30	40	40	40	30	30	40	40	30	35
30	30	±S	±S	+S	—20	±S	0	30	20	10	—
60	50	10	±S	+S	30	20	10	0	10	0	—
50	50	50	60	60	50	50	50	40	40	40	42
50	40	50	50	50	60	50	50	40	40	30	50
+S	±S	—S	±S	±S	—S	30	20	0	10	20	—
+S	40	20	40	40	40	40	40	40	50	50	—
+S	30	40	30	30	30	30	20	10	10	—	—
40	50	40	50	40	50	40	40	40	40	40	—
50	50	60	60	50	60	40	40	40	40	20	51
50	50	50	50	50	50	50	40	40	50	50	38
70	60	60	50	50	50	40	30	20	20	10	—
—40	—20	—50	—30	20	20	20	20	20	20	20	—
±S	±S	±S	0	10	10	20	20	30	20	40	—
—	—	—	—	—	—	—	—	—	—	—	—
70	60	60	60	60	60	60	50	80	80	70	—
60	40	40	40	40	40	40	40	40	30	30	53
40	40	40	40	40	40	40	60	40	40	40	46
—S	±S	—	—	—	—	—	—	—	—	—	—
50	50	60	60	60	50	30	30	40	50	40	—
80	70	60	60	50	30	30	30	30	30	40	50
40	40	30	30	30	40	50	40	30	40	40	42
30	40	40	±S	+S	+S	10	10	20	30	30	—
70	30	10	0	10	20	30	50	80	70	40	—
20	30	20	10	20	30	40	40	40	40	30	33
50	30	30	20	20	30	30	30	20	30	30	—
46	43	38	38	38	37	35	33	33	32	30	
25	27	26	25	25	27	28	29	29	29	28	

August

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	20	20	20	20	30	40	—	—	40	20	10	0	0
2.	10	20	30	—S	±S	±S	[—S]	80	60	50	50	60	70
3.	0	±S	±S	±S	±S	[40]	[130]	90	80	60	+S	+S	40
4.	0	+S	±S	80	60	50	50	—	[80]	80	60	40	30
5.	10	20	20	0	40	10	[30]	[40]	10	20	40	70	60
6.	30	30	30	30	40	40	[40]	[40]	20	40	30	—S	40
7.	30	30	20	20	20	30	[20]	[30]	40	40	50	40	90
8.	20	30	30	20	10	10	10	—	30	30	40	30	40
9.	30	40	30	30	40	40	50	[60]	70	80	80	70	40
10.	30	30	40	30	30	40	60	[70]	80	90	90	90	70
11.	40	40	30	30	50	60	70	60	[60]	70	60	70	60
12.	10	0	10	0	20	30	20	30	[40]	60	70	70	60
13.	20	20	20	10	0	±S	±S	—S	0	—30	20	—10	30
14.	40	30	30	30	30	30	[40]	50	80	90	100	90	80
15.	40	40	40	40	50	50	70	—	60	50	50	40	40
16.	30	30	10	10	30	40	40	40	[40]	40	40	50	60
17.	40	30	40	40	40	40	60	60	(80)	70	[80]	70	50
18.	20	20	20	20	20	30	40	[30]	60	60	70	60	70
19.	30	30	30	30	30	40	60	[50]	50	60	50	50	50
20.	10	10	10	10	10	30	[40]	[30]	30	30	40	40	30
21.	30	30	20	30	30	30	[60]	[60]	40	50	50	40	20
22.	30	20	20	30	30	40	—	—	90	90	100	100	80
23.	40	40	40	40	40	50	[70]	[70]	10	20	50	60	40
24.	40	30	30	30	40	30	40	50	50	[40]	40	40	40
25.	100	+S	+S	±S	±S	—S	100	130	100	[120]	120	130	80
26.	60	40	40	50	50	60	90	100	100	[100]	100	100	90
27.	40	30	20	20	20	30	40	[60]	60	90	90	80	80
28.	50	40	40	40	50	50	[50]	70	70	70	80	80	70
29.	30	40	40	60	60	80	—	—	80	90	70	70	60
30.	50	50	50	40	40	30	40	[50]	60	70	70	50	60
31.	20	30	30	30	40	40	[40]	50	70	50	40	40	40
Means	31	28	28	29	34	39	52	58	55	58	61	59	54
Number of days	31	29	28	28	28	28	26	24	30	31	30	29	31

13	14	15	16	17	18	19	20	21	22	23	Daily means
20	20	20	20	30	30	30	30	30	30	40	—
60	60	50	±S	±S	±S	±S	±S	±S	30	30	—
50	40	40	50	40	40	50	—S	±S	—S	—10	—
30	40	40	40	—20	+S	60	50	60	40	10	—
40	50	±S	+S	90	80	20	30	40	30	30	—
40	70	60	40	40	40	50	60	60	50	40	42
80	30	—50	—10	30	0	30	30	40	40	40	30
40	30	30	30	30	40	40	50	40	30	40	30
50	30	20	20	30	20	30	40	50	30	10	41
80	70	60	50	40	10	10	10	30	30	30	49
50	60	60	30	30	40	50	30	40	20	20	47
60	60	40	30	30	40	30	30	40	30	30	35
30	40	40	20	40	50	60	60	60	60	50	—
70	70	70	60	60	70	60	40	50	50	40	57
50	40	30	30	40	40	40	40	30	40	40	43
60	60	60	60	60	40	40	—	—	40	30	—
60	60	60	50	60	40	40	30	20	20	20	47
—S	±S	+S	50	50	40	30	30	40	40	30	—
40	40	50	40	30	20	20	20	20	10	10	36
30	30	20	20	20	20	20	30	30	20	30	25
30	40	30	20	30	30	30	40	30	30	20	34
70	60	60	50	60	50	40	40	40	40	40	—
40	40	30	30	30	40	40	40	40	40	40	41
40	40	40	30	40	50	140	80	±S	±S	60	—
30	20	50	40	40	50	40	50	60	60	70	—
90	90	90	90	70	60	40	30	30	20	30	68
80	80	80	70	60	60	40	50	50	40	40	55
80	90	80	70	60	60	70	60	60	60	40	62
30	20	50	50	50	40	50	70	50	50	50	—
70	50	60	50	50	50	50	50	30	40	20	49
30	30	40	40	40	40	50	40	50	40	30	40
51	49	45	40	42	41	43	41	41	37	32	
30	30	29	29	30	29	30	28	27	29	31	

September

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	30	30	30	30	40	40	40	50	50	[50]	40	30	20
2.	30	30	30	30	20	30	40	40	[50]	50	50	50	50
3.	+S	30	30	40	40	+S	[30]	30	+S	120	110	60	—S
4.	—	—	—	—	—	70	[100]	90	70	50	50	70	70
5.	50	50	50	50	50	70	—	—	80	70	50	40	40
6.	30	30	30	40	40	60	100	110	[120]	[110]	100	90	60
7.	20	0	—20	10	30	40	40	—S	60	60	80	60	[60]
8.	30	30	20	20	40	40	50	[60]	80	80	70	60	50
9.	20	0	0	—10	10	30	50	80	[110]	100	100	90	80
10.	50	50	50	50	60	60	[80]	60	70	30	10	0	20
11.	40	40	50	40	40	40	[40]	50	60	40	±S	60	80
12.	50	±S	—S	20	30	60	—	—	70	70	60	60	50
13.	50	50	40	40	50	50	—	—	[70]	50	60	±S	±S
14.	40	50	50	50	50	60	100	[110]	100	90	100	100	80
15.	50	70	70	70	80	100	80	70	70	[100]	110	80	80
16.	40	30	30	50	60	50	70	90	70	[50]	50	60	60
17.	±S	±S	—S	±S	±S	30	50	[100]	120	120	110	+S	+S
18.	40	40	50	50	50	50	[50]	60	50	70	70	50	50
19.	30	30	30	30	30	40	50	—	[110]	120	110	100	110
20.	50	50	50	70	70	70	80	100	[110]	110	100	80	110
21.	20	30	40	50	50	50	80	110	[130]	120	70	60	50
22.	40	30	30	40	30	40	±S	[+S]	60	80	70	70	30
23.	50	40	40	60	50	60	80	130	[150]	130	120	110	90
24.	40	50	50	50	50	50	[80]	(70)	(70)	60	50	50	50
25.	60	50	10	—S	30	30	±S	±S	+S	110	80	80	80
26.	50	50	50	50	50	70	80	80	—	—	100	100	100
27.	40	40	30	40	40	40	40	60	60	(70)	[70]	60	50
28.	60	50	60	70	70	60	50	120	130	80	[50]	50	70
29.	70	40	40	30	20	30	50	80	90	80	[60]	50	50
30.	0	10	20	10	—10	0	—10	0	30	[40]	50	50	70
Means	40	37	36	40	42	49	60	76	83	80	74	65	63
Number of days	27	27	27	27	28	29	25	22	26	28	29	28	27

13	14	15	16	17	18	19	20	21	22	23	Daily means
30	40	40	30	30	40	40	40	40	30	30	36
50	50	50	50	50	50	50	50	50	50	50	44
—S	50	—	—	—	—	—	—	—	—	—	—
60	60	60	60	70	70	70	60	60	50	50	—
60	60	60	60	60	40	40	40	40	40	40	—
50	40	30	30	50	60	60	40	50	30	30	58
60	70	80	70	70	70	60	50	40	40	40	47
30	30	40	40	40	40	40	40	40	40	40	44
60	60	60	50	50	50	50	50	40	40	40	50
—10	—40	20	10	—S	20	40	40	40	40	40	34
±S	(±S)	±S	±S	—S	±S	—S	70	60	40	30	—
40	30	30	50	50	50	50	60	50	50	50	—
+S	±S	±S	40	40	50	+S	±S	60	50	50	—
80	80	80	80	80	70	50	70	50	50	60	72
70	70	60	70	70	50	30	50	60	50	40	69
80	70	50	50	60	60	50	50	—10	±S	±S	—
120	130	—	—	80	80	110	100	90	60	50	—
50	40	40	50	50	50	50	50	50	50	50	50
100	100	120	100	100	70	50	50	50	50	50	71
60	50	40	50	60	70	70	50	40	30	30	67
60	50	50	40	40	50	70	60	60	50	60	60
30	30	40	50	60	50	50	70	80	70	60	—
90	90	100	100	90	70	70	70	60	50	40	81
60	70	70	50	40	40	50	50	50	30	50	—
70	60	50	60	60	70	80	80	70	70	60	—
100	90	90	70	70	50	40	40	40	40	30	—
50	50	50	(50)	60	50	60	(70)	60	60	50	—
60	70	50	50	60	70	70	80	70	70	70	68
40	40	40	40	40	30	30	20	30	20	10	43
60	50	50	60	70	50	50	30	20	20	0	30
60	57	56	54	59	54	55	54	50	45	43	
27	28	26	26	27	28	27	27	29	28	28	

October

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	0	10	0	10	0	0	10	20	40	40	40	[50]	60
2.	20	20	10	20	20	30	20	30	40	40	50	50	50
3.	40	50	±S	±S	40	±S	±S	±S	—	—	60	40	70
4.	40	30	30	30	30	40	50	50	70	70	70	60	[160]
5.	40	40	30	30	50	50	80	110	80	70	[60]	50	50
6.	30	40	40	30	50	40	70	90	70	60	[60]	50	50
7.	40	30	30	40	40	40	50	70	70	70	[60]	50	40
8.	50	60	50	40	40	40	50	50	60	[60]	60	60	50
9.	40	30	30	30	20	20	20	+S	10	60	100	—S	±S
10.	20	—10	20	10	20	40	40	[20]	—	60	60	70	80
11.	60	80	70	80	70	—100	—80	+S	—60	30	[50]	30	0
12.	30	30	30	40	40	50	60	70	70	—	—	[60]	60
13.	40	30	30	40	40	70	80	80	80	[90]	100	120	110
14.	60	50	40	40	50	40	60	60	70	60	[60]	70	80
15.	30	20	30	40	40	70	80	[80]	80	70	70	70	80
16.	70	50	70	80	60	50	60	70	70	60	60	60	50
17.	60	40	±S	—10	0	0	0	—	—	—	—	—	—10
18.	60	40	40	40	50	60	70	80	80	70	—	60	70
19.	50	50	50	50	60	70	110	130	120	120	[100]	70	60
20.	40	60	50	50	50	60	50	50	90	60	[70]	60	70
21.	50	50	40	40	50	30	30	50	50	[50]	60	60	70
22.	20	30	—30	0	20	30	30	0	70	50	70	[30]	20
23.	20	10	20	30	30	20	30	60	60	50	70	[70]	60
24.	30	30	30	20	20	10	20	—	—	40	90	90	(80)
25.	60	40	30	30	40	10	—20	—20	10	10	—10	[20]	40
26.	50	40	40	40	40	30	40	40	70	50	[60]	70	60
27.	40	40	60	40	40	40	70	80	90	70	[60]	70	80
28.	40	30	50	50	40	40	60	70	60	60	[60]	50	50
29.	30	30	50	60	50	60	40	50	100	40	30	[30]	40
30.	—10	0	—30	—20	—10	—30	0	10	20	30	0	30	[20]
31..	—30	—10	—20	—20	—30	0	10	—	—	70	80	70	60
Means	36	34	31	32	34	30	40	56	60	58	61	58	54
Number of days	31	31	29	30	31	30	30	25	26	28	28	29	29

13	14	15	16	17	18	19	20	21	22	23	Daily means
60	70	80	90	90	90	100	50	50	40	40	43
[50]	50	40	40	40	40	40	40	40	50	50	37
60	60	50	50	30	70	40	50	50	40	40	—
50	50	40	50	50	40	50	50	50	40	40	48
50	50	50	40	40	40	40	40	40	50	40	51
±S	±S	(±S)	—	(30)	50	50	60	50	50	50	—
40	40	40	40	30	30	40	50	50	40	40	45
30	40	50	50	50	50	50	50	50	60	70	51
30	40	50	50	50	70	80	60	60	50	40	—
80	90	60	80	70	80	70	70	60	40	50	51
±S	±S	±S	±S	±S	±S	±S	±S	±S	±S	20	—
70	80	80	80	90	100	80	90	80	60	40	—
110	120	110	120	100	90	80	30	60	60	50	77
80	80	70	50	70	80	80	70	80	50	30	62
90	60	50	40	40	50	80	60	50	60	80	59
[50]	60	70	70	70	70	50	50	80	30	70	64
20	60	90	40	10	—20	0	10	30	40	50	—
60	60	70	90	90	100	130	110	80	70	60	71
60	60	60	60	70	70	70	80	70	50	30	72
100	120	90	100	90	100	80	90	70	80	70	73
50	60	50	50	60	70	80	50	30	0	20	48
30	30	40	50	30	—20	—20	0	10	10	20	22
60	50	60	50	60	40	40	50	50	50	40	45
(90)	100	90	80	40	50	40	40	40	40	30	—
60	60	70	40	30	0	20	10	30	30	30	26
40	60	70	60	80	70	60	50	60	50	60	54
80	80	50	0	10	30	20	20	40	60	40	50
60	50	40	30	30	30	70	80	60	30	40	49
60	40	0	—10	—10	—10	0	0	—20	—30	—40	25
0	10	20	10	20	—10	20	—20	—40	—10	—20	0
60	90	90	70	60	60	40	40	60	40	30	—
57	63	60	52	52	50	53	48	47	43	39	
28	29	29	30	29	30	30	30	30	30	31	

November

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	30	20	30	40	40	30	30	30	40	40	[50]	70	60
2.	0	0	0	0	10	10	20	60	60	50	—	—	—
3.	20	20	10	10	10	0	0	10	—10	—20	—10	0	[—10]
4.	—10	—10	—10	—10	—10	—10	—10	0	—30	—10	[—10]	0	40
5.	20	20	40	30	30	20	30	40	50	70	60	[50]	60
6.	0	0	0	0	—10	—10	10	30	40	40	60	[60]	80
7.	20	10	20	0	0	30	0	20	10	—10	—	—	50
8.	0	0	0	0	0	0	0	—	—	—10	—	(40)	50
9.	—10	0	—10	—10	—20	—10	0	0	0	40	[40]	20	20
10.	70	40	30	40	30	40	10	20	30	10	[20]	30	40
11.	40	20	40	50	20	20	30	40	40	50	[50]	60	50
12.	80	80	90	80	90	60	90	130	150	+S	[160]	130	130
13.	40	40	50	50	40	40	50	70	[90]	110	110	110	100
14.	70	50	50	50	50	60	60	60	—	—	100	90	70
15.	40	40	40	40	50	50	50	60	60	70	[60]	70	70
16.	40	50	50	60	70	70	70	60	60	[90]	100	120	120
17.	50	50	60	60	50	50	60	70	80	80	[80]	90	100
18.	40	50	50	50	50	70	80	70	90	100	[110]	80	80
19.	60	20	10	—10	—20	20	60	70	100	90	110	[110]	110
20.	50	60	40	50	30	20	—10	—20	—30	—30	[—50]	—10	—10
21.	80	70	30	10	20	10	0	[30]	—	70	—	60	70
22.	60	60	70	60	50	50	50	70	70	70	[70]	70	70
23.	40	30	20	30	70	80	110	130	130	130	[90]	100	80
24.	70	80	60	60	80	60	70	80	110	90	[90]	100	110
25.	—30	20	20	10	—10	10	0	—10	—20	0	[—10]	—10	—10
26.	30	70	60	40	20	20	30	90	50	—20	[—20]	0	30
27.	160	170	150	170	120	40	0	10	0	0	(0)	0	10
28.	50	—70	—60	40	50	50	50	50	—	—	130	110	80
29.	60	40	30	40	40	50	70	70	50	0	[0]	10	30
30.	70	50	40	±S	±S	±S	70	80	90	90	[90]	80	±S
Means	41	36	34	36	33	32	36	49	50	44	59	60	60
Number of days	30	30	30	29	29	29	30	29	26	27	25	27	28

13	14	15	16	17	18	19	20	21	22	23	Daily means
70	80	80	60	60	50	60	40	30	10	0	44
60	50	30	60	50	50	50	60	50	30	20	—
—30	—40	—10	—20	—20	—10	—10	0	0	—10	—10	—5
40	30	10	10	20	30	20	30	20	10	—10	7
70	60	70	70	70	70	60	80	80	40	30	51
90	70	40	30	20	30	20	0	10	20	20	27
50	40	20	10	10	10	10	10	0	—10	0	—
40	20	—10	0	0	—20	—20	—20	—20	—10	—10	—
10	20	—10	30	30	20	10	0	50	50	50	13
20	10	30	30	50	10	0	0	10	0	10	24
10	—10	—10	0	0	30	60	70	70	80	80	37
120	120	120	110	110	70	70	60	50	50	30	95
100	110	120	90	90	120	110	100	90	80	60	82
90	70	80	80	80	70	120	100	60	50	40	—
80	80	70	80	90	70	60	60	50	40	50	60
80	90	110	110	100	110	80	60	50	70	60	78
100	90	70	80	80	110	120	80	70	50	40	74
60	70	60	60	70	60	100	70	60	50	70	69
110	100	110	80	60	20	20	30	30	30	30	56
10	0	—20	—10	0	0	10	10	—10	—10	70	6
60	60	70	80	110	120	100	70	50	50	60	—
80	80	80	130	140	90	80	90	60	50	50	73
60	60	110	90	110	130	110	130	120	110	80	90
110	110	120	110	—	—	—	70	110	50	20	—
—10	—10	10	10	0	30	40	60	70	70	40	11
110	60	60	140	150	150	150	170	200	120	160	78
—10	—20	0	0	±S	±S	±S	±S	20	40	30	—
80	120	90	80	40	30	60	60	50	60	70	—
40	20	—10	—	10	50	70	80	70	50	50	40
±S	±S	+S	+S	±S	90	80	±S	±S	+S	30	—
59	53	51	57	57	57	59	56	52	42	41	
29	29	29	28	27	28	28	28	29	29	30	

December

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11	12
1.	30	+S	—10	0	40	40	30	40	50	70	[40]	30	70
2.	30	0	60	60	—10	—30	40	70	120	120	[110]	130	130
3.	10	—10	—50	—60	—40	—10	40	40	40	90	[120]	130	150
4.	110	100	90	70	80	70	70	70	70	40	[40]	20	90
5.	100	80	80	100	70	120	110	—	—	200	150	180	110
6.	—80	—140	—140	—80	30	70	90	120	110	160	[160]	140	130
7.	0	20	0	—20	—20	10	40	40	30	30	[30]	30	60
8.	—20	—20	—10	—10	—20	—10	0	—40	—40	—20	[0]	—10	10
9.	80	50	50	40	40	40	40	10	30	60	[70]	90	90
10.	—70	—60	—70	—60	—40	—50	—50	—40	—40	—30	[—20]	0	0
11.	50	10	0	20	50	50	60	100	130	140	[140]	160	180
12.	70	60	50	50	50	50	60	—	—	170	180	170	170
13.	10	—50	—20	0	—20	—50	—90	—120	—110	—50	[—70]	—50	0
14.	—20	—40	—20	0	20	30	20	40	50	[70]	30	30	20
15.	—50	—50	—40	—30	—40	—40	—40	—30	—50	—50	[—40]	—40	—50
16.	—30	—30	—20	—10	—40	—20	0	—20	—50	—90	[—110]	—130	—130
17.	—80	—90	—80	—90	—80	—50	20	30	60	0	[0]	30	30
18.	—30	0	20	60	70	60	—20	10	—10	50	60	20	—50
19.	—20	—20	—10	20	40	60	30	—	—	—40	20	60	50
20.	50	40	40	50	60	—S	—S	±S	—S	—S	[—S]	90	110
21.	—50	—40	—60	—30	—40	—10	10	30	—10	—10	—	—20	—50
22.	40	40	70	100	90	60	—20	—60	—130	30	[—30]	—80	—70
23.	140	110	140	120	100	110	100	100	130	150	[180]	140	150
24.	0	+S	—S	—10	10	10	40	70	90	90	[110]	120	130
25.	60	60	50	50	50	80	160	80	70	70	[+S]	160	160
26.	160	160	150	120	110	80	80	40	40	60	—	70	70
27.	60	40	40	50	40	40	30	40	70	100	[90]	80	80
28.	50	40	50	50	70	80	80	(80)	120	120	[170]	150	160
29.	110	120	110	80	90	80	70	80	90	120	90	[90]	90
30.	60	40	40	80	120	210	+S	+S	+S	180	[200]	180	130
31.	50	30	0	0	0	—20	—20	0	10	80	[90]	90	90
Means	26	16	17	23	28	35	34	28	33	64	67	66	68
Number of days	31	29	30	31	31	30	29	25	26	30	27	31	31

13	14	15	16	17	18	19	20	21	22	23	Daily means
90	110	120	130	140	140	80	90	90	80	40	67
140	170	190	200	200	230	240	210	140	70	—10	109
170	150	160	160	150	+S	±S	90	110	100	130	—
90	70	60	100	120	90	170	170	170	140	100	92
60	30	20	80	90	70	40	20	20	30	10	—
110	90	120	150	170	180	160	170	30	—40	—30	70
50	30	30	40	40	30	40	40	20	—30	—70	20
20	40	50	40	60	80	120	130	110	120	110	29
90	90	—20	—20	—10	—50	—70	—70	—70	—70	—50	18
20	50	90	80	80	130	180	170	140	120	80	25
140	90	110	80	70	70	80	70	100	100	80	87
180	+S	150	+S	170	160	130	90	30	—20	20	—
10	—10	—20	—10	—40	—60	—80	—110	—110	—40	—30	—47
40	30	50	70	30	40	—30	—40	30	—40	—60	15
—40	0	—10	0	10	60	70	—20	—20	0	0	—21
—150	—110	—120	—120	—130	—110	—90	—90	—70	—80	—90	—77
70	80	50	40	60	40	70	50	0	20	—40	6
[—20]	—S	20	—10	80	40	—60	—130	—50	—30	—30	2
50	—40	—40	0	(30)	10	30	70	80	60	60	—
120	110	160	+S	60	60	70	80	70	70	—30	—
0	30	—20	10	20	10	10	30	0	10	30	—7
40	110	60	50	80	100	100	70	50	100	110	38
110	80	60	70	70	—10	—120	10	10	+S	—20	84
70	10	10	±S	60	0	—10	30	60	70	60	—
+S	+S	130	160	200	+S	+S	+S	+S	+S	+S	—
80	70	10	—S	±S	±S	40	70	60	50	60	—
90	100	100	120	120	130	120	120	100	80	60	79
90	90	110	140	140	140	150	150	150	120	120	110
90	100	90	100	130	160	150	150	130	80	50	102
130	100	130	190	170	150	80	40	80	90	30	—
80	80	80	70	90	90	130	90	20	30	30	50
67	63	62	71	84	71	62	58	50	41	24	
30	28	31	27	29	28	29	30	30	29	30	

Hourly means of the quantities of positive and negative

Hour GMT / Day		0	1	2	3	4	5	6	7	8	9	10	11
January	+	0	0	9	1	5	8	6	0	0	0	0	0
	—	0	0	0	0	26	2	5	0	0	0	0	0
February	+	0	0	2	1	0	0	0	0	0	0	0	0
	—	1	0	1	4	0	0	0	0	0	0	0	1
March	+	0	0	0	0	0	0	0	4	1	0	0	0
	—	0	0	0	0	0	0	0	0	0	0	0	0
April	+	3	7	0	0	0	1	0	0	6	36	9	13
	—	9	1	0	0	0	0	0	0	12	51	11	2
May	+	0	1	5	18	5	0	0	10	0	0	32	47
	—	0	1	19	20	7	0	0	10	0	0	0	0
June	+	0	0	1	1	4	7	2	0	2	0	0	4
	—	0	0	0	0	0	26	4	0	7	0	0	24
July	+	0	0	0	32	0	0	0	0	0	18	0	21
	—	0	0	0	2	0	0	0	0	0	0	11	1
August	+	0	2	33	29	14	9	0	0	0	0	5	18
	—	0	11	23	14	20	14	8	0	0	0	0	0
September	+	8	58	0	0	6	0	4	4	0	0	10	1
	—	9	59	2	0	6	0	13	2	0	0	11	0
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	+	0	0	0	21	14	0	0	0	0	0	0	1
	—	0	0	0	66	13	0	0	0	0	0	0	3
December	+	0	1	0	0	0	0	0	0	0	0	0	0
	—	0	0	0	0	0	0	1	0	0	0	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	2	0	0	0	2	5	2	5	2	0	2.0
0	0	0	0	0	0	1	8	0	2	0	0	1.8
4	0	0	0	0	1	0	0	0	0	0	0	0.3
6	0	4	0	0	0	1	0	0	0	0	0	0.8
0	0	0	0	0	0	5	0	0	0	0	0	0.4
0	0	0	0	1	0	3	0	0	0	0	0	0.2
5	2	1	4	0	0	0	59	7	0	0	2	6.5
11	1	0	6	0	0	0	6	17	0	0	6	5.5
6	10	1	1	3	0	28	4	3	0	2	0	7.3
3	5	11	6	8	0	2	15	1	1	10	0	5.0
0	17	6	0	13	70	2	6	2	15	0	0	6.3
18	34	1	4	51	21	13	29	1	5	0	0	9.9
1	16	15	0	7	6	0	11	0	0	0	0	5.3
2	35	109	30	13	14	0	0	0	0	0	0	9.0
0	0	0	3	1	7	14	4	9	17	0	0	6.9
0	0	1	3	0	15	10	32	3	5	1	0	6.7
32	11	4	11	5	0	10	0	15	0	1	1	7.5
91	10	4	7	4	0	13	0	8	0	0	0	10.0
6	11	12	2	6	17	11	41	7	3	1	0	4.9
1	2	75	0	4	18	14	18	4	19	0	0	6.5
16	7	1	1	15	14	24	1	19	1	2	0	5.7
9	13	3	4	18	11	3	31	4	16	0	0	8.1
0	0	0	0	0	4	3	0	0	0	0	0	0.3
0	0	0	0	0	3	3	0	0	0	0	0	0.3

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. In the present issue, the gap of data (for August and September) originates from maintenance work on the transmitter.

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

Mean Ionospheric Absorption L'(dB) at Oblique Incidence (A3)
f = 272 kHz
January

Date of the night	SS	Night	SR
1/2	37.7	25.0	22.2
2/3	37.7	27.2	31.7
3/4	29.2	23.2	23.2
4/5	35.2	21.4	33.2
5/6	28.2	21.0	29.2
6/7	33.2	20.2	47.2
7/8	37.7	24.4	41.2
8/9	35.2	21.8	31.7
9/10	41.2	27.2	41.2
10/11	35.2	29.2	37.7
11/12	37.7	23.2	37.7
12/13	35.2	18.9	35.2
13/14	47.2	24.4	29.2
14/15	41.2	23.2	37.7
15/16	41.2	27.2	25.0
16/17	37.7	23.2	33.2
17/18	35.2	25.0	33.2
18/19	33.2	24.4	27.2
19/20	35.2	25.0	25.7
20/21	29.2	21.8	27.2
21/22	35.2	20.2	23.2
22/23	29.2	21.4	22.7
23/24	33.2	21.8	28.2
24/25	26.4	18.9	25.0
25/26	29.2	20.2	41.2
26/27	31.7	19.9	33.2
27/28	33.2	22.7	23.8
28/29	37.7	19.9	30.3
29/30	25.7	23.2	33.2
30/31	27.2	20.2	29.2
31/1	37.7	22.7	31.7
Median values:	35.2	22.7	31.7

February

Date of the night	SS	Night	SR
1/2	35.2	18.3	28.2
2/3	31.7	19.9	41.2
3/4	24.4	19.5	37.7
4/5	37.7	24.4	31.7
5/6	47.2	27.2	28.2
6/7	41.2	24.4	33.2
7/8	41.2	21.8	33.2
8/9	30.3	17.6	35.2
9/10	27.2	24.4	28.2
10/11	37.7	29.2	28.2
11/12	28.2	31.7	24.4
12/13	33.2	21.8	37.7
13/14	30.3	18.6	35.2
14/15	33.2	19.2	28.2
15/16	25.7	17.3	29.2
16/17	30.3	24.4	33.2
17/18	28.2	23.2	28.2
18/19	23.2	19.5	25.0
19/20	26.2	18.3	33.2
20/21	33.2	24.4	29.2
21/22	30.3	20.2	21.4
22/23	30.3	21.0	X
23/24	29.2	19.5	24.4
24/25	20.6	20.2	23.8
25/26	24.4	20.2	23.8
26/27	33.2	19.2	23.2
27/28	24.4	19.5	25.7
28/1	23.8	19.9	24.4
Median values:	30.3	20.2	28.2

March

Date of the night	SS	Night	SR
1/2	21.0	21.4	25.0
2/3	29.2	20.6	28.2
3/4	26.4	21.4	24.4
4/5	33.2	20.6	28.2
5/6	33.2	20.2	28.2
6/7	27.2	18.6	22.2
7/8	21.8	17.8	26.4
8/9	28.2	17.6	31.7
9/10	19.2	19.9	33.2
10/11	20.2	19.9	33.2
11/12	28.2	17.6	24.4
12/13	33.2	24.4	26.4
13/14	28.2	20.2	35.2
14/15	28.2	23.2	26.4
15/16	31.7	22.2	27.2
16/17	28.2	18.3	22.2
17/18	25.7	17.8	24.4
18/19	26.4	20.6	26.4
19/20	31.7	16.3	29.2
20/21	18.9	21.0	27.2
21/22	20.6	17.1	24.4
22/23	35.2	15.4	31.7
23/24	25.7	20.2	15.9
24/25	28.2	19.2	26.4
25/26	24.4	21.4	35.2
26/27	23.2	17.1	25.7
27/28	24.4	16.7	33.2
28/29	27.2	20.2	22.2
29/30	31.7	16.9	28.2
30/31	28.2	18.3	23.2
31/1	25.0	18.6	18.1
Median values:	27.2	19.9	26.4

April

Date of the night	SS	Night	SR
1/2	23.8	18.3	22.7
2/3	24.4	18.3	17.8
3/4	25.7	16.5	20.2
4/5	21.4	19.2	22.2
5/6	19.2	13.6	19.9
6/7	25.0	16.7	19.2
7/8	25.7	19.5	22.7
8/9	26.4	17.1	19.5
9/10	25.7	15.7	18.1
10/11	21.4	19.5	23.2
11/12	21.0	17.3	20.6
12/13	22.7	17.1	21.4
13/14	15.1	14.4	22.2
14/15	25.7	20.6	21.4
15/16	25.7	18.3	25.7
16/17	29.2	20.6	22.2
17/18	20.2	20.6	19.5
18/19	25.7	17.6	21.8
19/20	16.1	20.6	22.7
20/21	19.9	18.1	20.2
21/22	27.2	22.2	19.2
22/23	16.7	19.5	23.8
23/24	29.2	21.8	20.2
24/25	23.8	21.8	21.8
25/26	25.7	21.4	25.0
26/27	19.9	18.1	41.2
27/28	29.2	16.9	25.7
28/29	26.4	19.2	28.2
29/30	30.3	23.8	19.2
30/1	27.2	17.1	23.2
Median values:	25.4	18.3	21.8

May

Date of the night	SS	Night	SR
1/2	29.2	25.0	24.4
2/3	23.8	18.6	31.7
3/4	16.7	17.6	21.8
4/5	22.7	22.2	19.2
5/6	26.4	21.8	24.4
6/7	22.7	18.1	22.7
7/8	25.0	20.6	37.7
8/9	23.2	16.3	20.6
9/10	31.7	21.0	X
10/11	25.0	18.3	25.0
11/12	22.2	19.5	27.2
12/13	27.2	23.2	22.7
13/14	28.2	28.2	31.7
14/15	33.2	22.7	26.4
15/16	27.2	18.9	30.3
16/17	35.2	23.2	35.2
17/18	37.7	27.2	19.5
18/19	26.4	18.1	22.7
19/20	26.4	19.5	24.4
20/21	21.0	23.8	23.8
21/22	X	X	X
22/23	31.7	24.4	X
23/24	28.2	21.8	30.3
24/25	22.2	22.7	X
25/26	25.7	17.6	30.3
26/27	27.2	18.6	20.6
27/28	22.2	20.2	26.4
28/29	24.4	18.3	25.7
29/30	29.2	18.1	23.8
30/31	27.2	21.4	23.2
31/1	X	X	X
Median values:	26.4	20.6	24.4

June

Date of the night	SS	Night	SR
1/2	26.4	27.2	29.2
2/3	X	X	X
3/4	25.7	22.7	17.6
4/5	30.3	18.3	26.4
5/6	21.4	21.8	22.2
6/7	25.0	22.2	20.6
7/8	20.6	22.2	27.2
8/9	23.8	24.4	22.7
9/10	22.7	20.2	27.2
10/11	23.8	19.9	21.8
11/12	23.8	18.6	35.2
12/13	19.9	18.9	19.2
13/14	25.7	21.8	X
14/15	22.2	18.1	25.7
15/16	37.7	15.9	24.4
16/17	23.8	24.4	21.4
17/18	23.8	21.4	23.8
18/19	24.4	22.7	30.3
19/20	28.2	22.7	24.4
20/21	21.8	19.5	24.4
21/22	25.7	18.6	25.7
22/23	23.8	26.4	27.2
23/24	28.2	21.8	23.2
24/25	30.3	19.5	24.4
25/26	24.4	19.5	27.2
26/27	23.2	15.7	23.8
27/28	22.2	17.6	26.4
28/29	24.4	19.5	X
29/30	22.2	19.5	22.2
30/1	23.2	22.7	X
Median values:	23.8	20.2	24.4

July

Date of the night	SS	Night	SR
1/2	21.4	22.7	26.4
2/3	24.4	22.7	28.2
3/4	22.2	22.7	23.8
4/5	28.2	20.2	18.3
5/6	25.7	18.9	22.2
6/7	23.2	20.6	23.2
7/8	21.0	18.9	28.2
8/9	23.8	21.4	30.3
9/10	23.8	17.6	28.2
10/11	22.7	17.1	23.8
11/12	30.3	19.2	25.7
12/13	19.5	19.9	22.7
13/14	25.0	25.0	X
14/15	X	22.2	26.4
15/16	23.8	20.6	17.8
16/17	25.7	18.3	21.4
17/18	25.7	21.0	22.7
18/19	19.9	16.9	23.2
19/20	25.0	17.3	21.4
20/21	X	X	X
21/22	25.0	18.1	20.2
22/23	24.4	18.1	25.7
23/24	25.0	26.4	23.2
24/25	X	X	X
25/26	21.4	17.6	23.2
26/27	28.2	20.6	X
27/28	30.3	20.2	23.8
28/29	25.0	19.5	28.2
29/30	17.3	21.0	21.4
30/31	24.4	18.9	23.8
31/1	28.2	19.5	X
Median values:	24.4	19.9	23.5

September

Date of the night	SS	Night	SR
1/2			
2/3			
3/4			
4/5			
5/6			
6/7			
7/8			
8/9			
9/10			
10/11			
11/12			
12/13			
13/14			
14/15			
15/16			
16/17			
17/18			
18/19			
19/20			
20/21			
21/22			
22/23			
23/24			
24/25			
25/26			
26/27			
27/28	30.3	17.3	18.9
28/29	18.9	17.6	19.9
29/30	21.8	17.8	18.9
30/1	18.9	15.9	17.6
Median values:	20.2	17.5	18.9

	October		
Date of the night	SS	Night	SR
1/2	24.4	14.5	21.4
2/3	20.2	17.8	22.2
3/4	27.2	17.6	18.3
4/5	19.2	16.7	17.6
5/6	22.2	17.6	20.2
6/7	X	16.3	19.2
7/8	25.0	16.5	23.2
8/9	18.1	17.1	22.2
9/10	28.2	16.7	17.1
10/11	X	X	X
11/12	20.6	16.1	23.8
12/13	23.2	15.2	17.1
13/14	18.9	15.4	18.1
14/15	18.1	15.7	26.4
15/16	21.0	16.3	19.9
16/17	19.2	16.7	21.0
17/18	22.2	15.9	27.2
18/19	19.2	16.9	23.8
19/20	23.2	17.6	17.8
20/21	19.2	16.3	20.6
21/22	22.7	17.6	19.5
22/23	25.0	13.3	19.5
23/24	18.3	17.1	28.2
24/25	19.2	17.1	27.2
25/26	23.2	18.3	X
26/27	18.9	16.9	22.2
27/28	22.7	17.6	22.7
28/29	23.2	16.1	23.2
29/30	21.4	15.1	21.8
30/31	19.2	15.9	25.7
31/1	22.2	17.6	28.2
Median values:	21.4	16.7	21.8

November

Date of the night	SS	Night	SR
1/2	20.6	16.1	24.4
2/3	20.6	15.5	22.2
3/4	23.8	17.6	25.7
4/5	23.2	15.5	22.7
5/6	19.5	17.1	20.2
6/7	29.2	14.9	25.0
7/8	19.9	16.9	22.2
8/9	22.7	17.6	29.2
9/10	21.0	15.2	23.8
10/11	19.5	21.0	21.8
11/12	21.0	18.9	22.7
12/13	23.2	18.3	21.8
13/14	25.7	20.2	33.2
14/15	23.2	25.7	29.2
15/16	30.3	22.2	28.2
16/17	26.4	23.8	22.2
17/18	24.4	19.9	27.2
18/19	30.3	19.2	27.2
19/20	19.2	19.9	24.4
20/21	24.4	18.9	28.2
21/22	29.2	24.4	27.2
22/23	28.2	20.2	X
23/24	28.2	21.8	26.4
24/25	35.2	22.7	35.2
25/26	41.2	25.0	33.2
26/27	37.7	26.4	30.3
27/28	31.7	20.2	27.2
28/29	30.3	25.0	24.4
29/30	30.3	21.0	30.3
30/1	31.7	20.2	33.2
Median values:	25.0	20.1	26.4

December

Date of the night	SS	Night	SR
1/2	31.7	18.3	33.2
2/3	35.2	20.6	30.3
3/4	31.7	21.0	30.3
4/5	35.2	19.5	33.2
5/6	41.2	18.6	24.4
6/7	28.2	20.6	21.0
7/8	41.2	20.6	26.4
8/9	24.4	19.9	22.7
9/10	41.2	21.0	30.3
10/11	37.7	19.5	30.3
11/12	20.2	21.8	28.2
12/13	31.7	27.2	22.7
13/14	33.2	23.8	28.2
14/15	28.2	18.6	19.5
15/16	27.2	X	X
16/17	33.2	25.7	35.2
17/18	35.2	19.2	33.2
18/19	30.3	21.8	26.4
19/20	33.2	19.5	31.7
20/21	30.3	18.9	33.2
21/22	37.7	18.1	29.2
22/23	30.3	17.3	23.2
23/24	24.4	19.2	31.7
24/25	41.2	21.0	31.7
25/26	47.2	19.5	24.4
26/27	35.2	19.2	30.3
27/28	31.7	18.3	47.2
28/29	29.2	20.2	25.0
29/30	26.4	21.0	30.3
30/31	41.2	21.0	30.3
31/1	41.2	17.8	21.0
Median values:	33.2	19.7	30.3