

I. EARTH CURRENTS

In the present report of the Observatory, six kinds of tables are published in the section Earth Currents.

The coordinates of the Observatory are:

$$\begin{aligned} \varphi &= 47^{\circ} 38' & \lambda &= 16^{\circ} 43' \\ \Phi &= 47,2^{\circ} & A &= 98,3^{\circ} \end{aligned}$$

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

The tables published 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 K₁—K₅.

The T-scale is linear; its scale corresponds to 1.8 mV/km. The monthly mean T-values are separately given for the North-South and East-West components. The scales for K₁—K₅ are 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 these 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^{−1} V/km).

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

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

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

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

VI. Micropulsation indices for the year 1980. The indices have been determined from the occurrence frequency of different period micropulsations, striving at a possibly uniform distribution of days in each of the five possible indices (1—5).

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 lowest fifth of occurrence frequencies (0 to 20 per cent), index 2 to days with occurrence frequencies in the second lowest fifth (20 to 40 per cent) etc., index 5 to days with highest occurrence frequencies (80 to 100 per cent). It must be reminded that mainly in the lowest and highest period bands the uniform distribution could not be achieved due to insufficient occurrence of these bands on the records.

The bands are the following:

P1	0	to	5 sec
P2	5	to	10 sec
P3	10	to	15 sec

P4	15	to	20 sec
P5	20	to	25 sec
P6	25	to	30 sec
P7	30	to	40 sec
P8	40	to	60 sec
P9	60	to	90 sec
P10	90	to	120 sec
P11	2	to	5 min
P12	5	to	10 min

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

L. HOLLÓ, M. TÁTRALLYAY and J. VERÖ: Experimental results with the characterization of geomagnetic micropulsations (*Acta Geodaetica, Geophysica et Montanistica Hungarica*, 7(1972)15).

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 1 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. VERÖ 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. VERÖ, 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 K₁—K₅

January

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	51122565	27	3	0	5	3	6
2.	63123100	16	3	0	4	3	2
3.	13235245	25	5	1	5	3	3
4.	23242642	25	6	3	6	4	5
5.	22353222	21	6	2	5	3	1
6.	22241111	14	4	0	4	1	1
7.	00111112	7	4	2	4	1	0
8.	32132006	11	2	0	4	1	1
9.	11010000	3	0	0	4	0	0
10.	00001000	1	2	0	4	1	0
11.	00122222	14	2	0	4	2	1
12.	00122110	7	2	0	4	2	0
13.	00554463	27	3	2	5	2	4
14.	43123201	16	4	1	4	2	2
15.	10012021	7	2	0	4	0	0
16.	22111000	7	2	0	4	1	1
17.	11333311	16	3	1	4	2	2
18.	11010001	4	4	0	4	0	1
19.	10011011	5	4	1	4	1	1
20.	11011120	7	4	0	4	2	1
21.	10011101	5	2	0	4	0	1
22.	10121021	8	2	0	4	1	1
23.	10011100	4	2	0	4	1	1
24.	00011020	4	1	0	4	1	0
25.	00015111	9	3	0	4	3	1
26.	22111002	9	2	0	4	1	1
27.	21112558	25	4	2	5	3	7
28.	22213774	28	4	2	6	3	4
29.	44332364	29	3	0	4	3	4
30.	23132101	13	2	1	5	1	3
31.	10021012	7	1	0	4	0	1

Monthly averages: T (N) 1.560
T (E) 1.073
K₁ 2.93
K₂ 0.58
K₃ 4.32
K₄ 1.64
K₅ 1.81

February

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	10131133	13	3	0	4	2	2
2.	21132100	10	5	2	4	1	0
3.	00110001	3	2	0	4	0	0
4.	00121000	4	2	0	3	0	0
5.	00111000	3	2	0	3	1	0
6.	09355994	44	3	2	5	3	6
7.	11035223	31	4	0	5	3	2
8.	24245312	23	3	1	4	2	3
9.	21232262	20	5	1	4	3	3
10.	11010000	3	4	1	4	0	0
11.	01012100	5	4	1	4	2	0
12.	00001000	1	3	0	4	1	0
13.	00000101	2	1	0	4	1	0
14.	06239322	27	3	2	5	4	4
15.	11124389	29	4	2	5	4	3
16.	96446223	36	5	2	5	3	6
17.	11112110	8	2	0	4	1	0
18.	31121112	12	3	0	4	1	0
19.	25131000	12	2	0	3	2	1
20.	21121011	9	4	2	5	0	0
21.	10112111	8	3	0	5	2	0
22.	11112101	8	2	0	4	1	0
23.	10234331	17	2	0	4	2	2
24.	30113200	10	3	1	4	1	2
25.	00125434	19	4	1	4	1	3
26.	32137321	20	4	1	5	4	2
27.	11356213	22	4	1	4	2	4
28.	22223014	16	4	1	4	1	2
29.	11113111	10	2	0	4	0	1

Monthly averages: T (N) 1.776
T (E) 1.051
K₁ 3.17
K₂ 0.72
K₃ 4.17
K₄ 1.66
K₅ 1.58

March							
Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	01100100	3	3	0	4	0	1
2.	00010000	1	3	0	3	0	0
3.	00001111	4	2	0	4	1	0
4.	00122001	6	2	0	4	1	1
5.	02111000	5	3	0	4	1	1
6.	12222101	11	4	1	5	3	1
7.	21131111	11	4	1	4	2	1
8.	00131101	7	3	0	4	1	0
9.	11122111	10	3	0	4	1	1
10.	10123100	8	2	0	4	0	1
11.	20123000	8	2	0	4	1	1
12.	00000010	1	3	0	1	0	0
13.	01411012	10	3	0	6	2	1
14.	11111100	6	4	1	3	0	0
15.	00100000	1	4	2	3	0	0
16.	21111001	7	3	0	4	1	1
17.	00131100	6	4	1	4	1	1
18.	00011100	3	2	1	3	1	0
19.	00943511	23	3	1	4	3	2
20.	01121110	7	0	0	4	1	0
21.	21223427	23	2	0	4	2	3
22.	41148422	26	3	1	6	2	2
23.	11111110	7	4	0	4	0	1
24.	00121101	6	3	0	3	0	0
25.	00001112	5	4	0	3	0	0
26.	29464223	32	5	2	5	2	4
27.	30021101	8	4	1	4	1	1
28.	11222101	10	4	0	4	1	0
29.	20111201	3	4	1	4	0	0
30.	31121009	8	3	0	4	1	2
31.	73337234	32	3	0	4	3	3

Monthly averages: T (N) 1.198
T (E) 0.649
K₁ 3.10
K₂ 0.42
K₃ 3.90
K₄ 1.03
K₅ 0.94

April

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	10011100	4	3	0	4	0	0
2.	00000101	2	2	0	5	1	0
3.	11122110	9	5	1	5	3	2
4.	00222121	10	3	0	5	3	2
5.	01213220	11	6	3	4	1	0
6.	01219738	31	6	4	7	3	5
7.	62424266	32	6	2	5	2	2
8.	55555411	31	5	3	2	3	2
9.	51763321	28	5	3	6	5	2
10.	23442231	21	6	3	4	2	3
11.	43622379	36	5	3	5	5	6
12.	55335426	33	6	4	5	4	3
13.	62432121	21	5	2	5	2	3
14.	01100123	8	2	0	4	1	1
15.	65322354	30	7	3	5	3	2
16.	21121121	11	5	2	4	3	1
17.	42212112	15	4	2	4	2	2
18.	01110002	5	4	3	4	0	0
19.	00111111	6	5	3	4	1	1
20.	11011021	7	4	1	4	0	0
21.	12211011	9	7	3	4	1	0
22.	42102111	12	4	0	4	1	1
23.	21111200	8	5	0	4	1	0
24.	11000100	3	2	0	4	0	0
25.	31123110	12	3	1	4	1	1
26.	02102101	7	4	0	4	0	0
27.	01111102	7	4	0	4	1	0
28.	21012100	7	5	3	4	0	1
29.	11111101	7	3	0	4	1	0
30.	12123111	12	5	2	4	1	1

Monthly averages: T (N) 1.754
T (E) 1.246
K₁ 4.53
K₂ 1.70
K₃ 4.37
K₄ 1.70
K₅ 1.37

May							
Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	22111120	10	5	3	4	1	2
2.	11112111	9	3	0	4	1	0
3.	00111000	3	3	0	4	0	0
4.	01111000	4	3	0	5	0	1
5.	00122123	11	3	2	5	2	2
6.	22323113	17	4	2	5	1	3
7.	01023231	11	5	1	4	2	1
8.	11101110	6	5	3	4	0	0
9.	23324156	26	6	3	4	3	3
10.	41123133	18	4	2	5	3	1
11.	47445499	46	7	5	6	3	6
12.	46833213	30	7	4	6	4	3
13.	23422123	19	8	5	5	2	3
14.	74323232	26	7	4	5	3	3
15.	12111001	7	5	2	4	1	1
16.	00110000	2	4	1	4	0	0
17.	00000011	2	4	1	4	0	0
18.	00001110	3	2	0	4	0	0
19.	01012211	8	2	0	4	1	1
20.	11111111	8	4	0	4	2	0
21.	01111111	7	2	0	4	2	0
22.	21322111	13	3	0	4	2	1
23.	11207211	15	3	0	4	2	3
24.	20011244	14	4	1	4	1	2
25.	44379511	34	7	5	5	4	6
26.	11222011	10	7	3	5	2	0
27.	01011000	3	6	2	4	0	0
28.	11112110	8	4	1	4	0	1
29.	01011144	12	3	1	4	2	1
30.	22513341	21	3	0	5	2	3
31.	33411318	24	4	1	4	2	2

Monthly averages: T (N) 1.625
T (E) 1.242
K₁ 4.42
K₂ 1.68
K₃ 4.42
K₄ 1.55
K₅ 1.58

June

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	32223224	20	6	1	4	2	4
2.	31011011	8	6	2	4	0	0
3.	21012121	10	6	2	5	2	1
4.	01321201	10	5	1	4	2	1
5.	00010010	2	2	0	4	0	0
6.	10013948	26	4	1	4	2	4
7.	75435464	38	8	4	6	3	6
8.	74524221	27	8	4	5	2	3
9.	22233215	20	7	3	5	2	2
10.	65533954	40	8	4	5	4	6
11.	43477569	45	8	4	6	6	6
12.	83233144	28	6	1	4	4	5
13.	55532224	26	4	2	5	2	3
14.	91113212	20	4	0	5	3	3
15.	13101010	7	5	0	4	0	0
16.	11112212	11	5	2	4	1	1
17.	00060001	1	5	1	3	0	0
18.	01001001	3	6	2	3	0	0
19.	01211133	12	4	1	4	1	2
20.	21111110	8	4	0	4	1	0
21.	11112210	9	4	1	3	1	1
22.	21210111	9	5	2	4	0	0
23.	11111112	9	5	1	4	0	0
24.	09423311	22	7	3	5	2	3
25.	31211124	15	3	0	4	2	4
26.	53212332	21	4	1	5	2	4
27.	11110000	4	5	1	4	1	0
28.	11011100	5	2	0	4	0	0
29.	01111011	6	4	2	4	0	0
30.	31112111	11	3	1	4	1	1

Monthly averages: T (N) 1.875
T (E) 1.400
K₁ 5.10
K₂ 1.57
K₃ 4.30
K₄ 1.53
K₅ 2.00

July

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	12011111	8	4	2	4	0	0
2.	10110021	6	3	0	4	1	0
3.	01011100	4	2	0	4	1	0
4.	00221212	10	3	1	5	1	1
5.	14223341	20	5	2	5	2	3
6.	21129322	22	5	3	5	3	1
7.	21243222	18	5	1	4	2	2
8.	43111123	16	6	2	4	1	2
9.	22211111	11	4	1	4	1	0
10.	01102111	7	3	1	4	1	1
11.	12106312	16	4	4	5	2	2
12.	21100221	9	4	3	4	0	1
13.	12101310	9	4	2	4	0	0
14.	12132112	13	5	2	4	2	1
15.	22112132	14	7	3	4	1	1
16.	21111111	9	3	0	4	0	2
17.	12111142	13	3	1	4	1	1
18.	22111189	25	4	2	5	1	6
19.	94211110	19	4	2	4	1	2
20.	11002221	20	4	2	4	1	1
21.	22104412	16	2	0	5	1	2
22.	11100102	6	1	0	4	1	0
23.	10010001	3	3	0	4	0	0
24.	01111122	9	4	2	4	1	1
25.	01117478	29	5	3	5	3	4
26.	65337622	34	6	3	6	6	4
27.	27664123	31	8	5	6	3	2
28.	64213211	20	5	1	5	3	3
29.	12112111	10	6	3	4	1	0
30.	21111213	12	4	1	4	1	2
31.	12111011	8	2	0	4	0	1

Monthly averages: T (N) 1.637
T (E) 1.242
K₁ 4.13
K₂ 1.68
K₃ 2.39
K₄ 1.35
K₅ 1.48

August

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	11101001	5	3	0	4	0	0
2.	00001213	7	3	1	5	1	1
3.	41225230	19	5	3	5	3	4
4.	11213100	9	4	2	5	3	2
5.	10112111	8	4	3	4	1	1
6.	73249696	46	6	5	6	6	6
7.	11112023	11	5	3	4	1	2
8.	10011102	6	5	2	4	0	0
9.	11112412	13	4	2	4	2	2
10.	12212111	11	5	1	4	2	2
11.	01100123	8	4	1	4	2	2
12.	72211110	15	6	2	4	1	3
13.	20102112	9	2	0	4	1	1
14.	20112111	9	4	0	4	1	1
15.	22113210	12	4	1	1	1	1
16.	11119953	30	4	2	5	3	6
17.	21224337	24	2	1	5	3	2
18.	53462112	24	4	2	5	3	3
19.	34367966	44	5	2	5	3	4
20.	42256432	28	8	2	5	2	2
21.	42221110	13	6	0	4	1	0
22.	12233124	18	6	2	4	2	1
23.	31123100	11	4	0	4	1	0
24.	22111111	10	4	2	4	1	0
25.	00111211	7	3	1	4	0	0
26.	76313334	30	4	2	4	3	3
27.	43335342	27	4	2	5	2	4
28.	23111100	9	4	1	4	1	0
29.	01000112	5	3	0	4	0	1
30.	32212111	13	3	0	4	2	2
31.	21212112	12	5	1	4	2	0

Monthly averages: T (N) 1.932
T (E) 1.416
K₁ 4.29
K₂ 1.48
K₃ 4.35
K₄ 1.74
K₅ 1.81

September							
Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	54121101	15	3	2	5	3	2
2.	12101002	7	4	0	4	0	1
3.	00014342	14	4	2	4	2	5
4.	44112122	17	6	2	5	1	3
5.	11122121	11	4	1	4	2	2
6.	11234412	18	3	0	5	3	2
7.	42133113	18	3	1	4	1	2
8.	32223211	16	7	3	4	2	1
9.	12323421	18	6	1	5	1	3
10.	21311113	13	7	0	4	0	1
11.	11122212	12	3	0	5	0	2
12.	11422317	21	3	1	5	1	3
13.	32124320	17	3	0	4	2	1
14.	11031103	10	5	2	3	0	2
15.	22212112	13	6	2	4	1	1
16.	00221114	11	4	1	4	1	2
17.	22324213	19	4	2	4	2	1
18.	00111030	6	4	1	4	0	0
19.	10112102	8	4	2	4	1	0
20.	42122110	13	4	1	5	1	1
21.	00111100	4	3	0	4	0	0
22.	01124411	14	4	1	4	1	2
23.	10121012	8	4	0	4	1	0
24.	00011011	4	2	0	4	0	0
25.	12221010	9	5	2	4	0	2
26.	00112110	6	2	0	4	1	0
27.	01122121	10	4	0	4	1	1
28.	21111111	9	4	1	4	1	1
29.	10231242	15	4	2	4	2	2
30.	11110011	8	5	2	4	1	0

Monthly averages: T (N) 1.425
 T (E) 0.983
 K₁ 4.13
 K₂ 1.07
 K₃ 4.20
 K₄ 1.07
 K₅ 1.43

October

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	00012111	6	5	2	4	0	0
2.	11135100	12	3	1	4	1	2
3.	00111113	8	5	1	4	0	0
4.	14324537	29	3	1	5	3	5
5.	54434322	27	4	0	5	3	5
6.	13224221	17	5	2	4	2	2
7.	32234221	19	5	3	5	3	2
8.	11534323	22	4	2	5	3	2
9.	43377331	31	6	4	5	3	2
10.	22424339	29	5	2	5	3	2
11.	75759412	40	4	3	5	4	3
12.	21328222	22	4	1	4	2	2
13.	10223111	11	4	1	5	1	1
14.	11133184	22	4	2	5	2	0
15.	22634112	19	3	0	4	2	2
16.	20100000	3	4	0	3	1	0
17.	00122101	7	5	2	3	1	2
18.	64465241	32	6	2	5	4	3
19.	01133156	20	4	2	4	1	3
20.	10111001	5	4	0	4	1	0
21.	00122201	8	2	0	4	1	2
22.	11245156	25	5	2	5	2	5
23.	72887971	49	5	3	6	4	5
24.	32255322	24	5	2	4	2	3
25.	52486566	42	7	4	4	3	6
26.	52422111	18	4	2	4	1	1
27.	01121111	8	4	0	4	1	0
28.	00100000	1	4	0	4	0	0
29.	00011011	4	3	0	4	0	1
30.	10111514	14	2	1	4	1	0
31.	33347763	36	6	3	5	4	6

Monthly averages: T (N) 2.367
T (E) 1.520
K₁ 4.31
K₂ 1.55
K₃ 4.39
K₄ 1.90
K₅ 2.16

November							
Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	22346511	24	5	3	5	4	2
2.	12134431	19	6	2	4	2	2
3.	00112100	5	3	1	4	1	1
4.	01234230	15	3	2	4	2	2
5.	11123001	9	4	1	4	2	0
6.	01122101	8	4	0	4	1	1
7.	21101	8	2	1	4	2	1
8.	21125110	13	5	1	4	1	0
9.	12116221	16	3	0	5	3	2
10.	23175201	21	2	0	4	2	6
11.	33227273	29	4	2	4	3	4
12.	43343113	22	5	2	4	2	2
13.	11311022	11	3	0	4	1	1
14.	11127211	16	3	0	4	2	2
15.	12544353	27	3	1	5	2	4
16.	14244211	19	3	0	4	2	3
17.	41323143	21	4	0	4	2	3
18.	32247423	21	3	0	4	3	2
19.	23232344	23	4	0	4	2	2
20.	22223549	29	4	1	5	3	5
21.	22653114	24	6	3	6	3	1
22.	22221111	12	6	1	4	2	1
23.	11111241	12	6	0	5	2	2
24.	22211112	12	4	0	4	2	2
25.	53523363	30	7	3	6	3	4
26.	45466230	30	5	3	6	3	4
27.	42323332	22	4	1	4	2	3
28.	43265225	29	4	2	5	3	4
29.	22533124	22	6	1	5	2	3
30.	36334284	33	5	3	6	4	6

Monthly averages: T (N) 2.400
 T (E) 1.541
 K₁ 4.20
 K₂ 1.13
 K₃ 4.50
 K₄ 2.27
 K₅ 2.50

December

Day	T	Sum	K ₁	K ₂	K ₃	K ₄	K ₅
1.	78521101	25	4	2	5	3	4
2.	11133122	14	5	0	5	2	0
3.	23354162	26	6	2	5	2	3
4.	23223002	14	5	1	4	2	1
5.	01010001	3	5	0	4	0	0
6.	00111100	4	2	0	4	1	0
7.	10112001	6	2	0	4	1	1
8.	11111111	8	4	0	4	1	1
9.	22122112	13	4	1	4	1	2
10.	22133101	13	4	1	5	1	3
11.	01075399	34	6	2	5	3	2
12.	52342145	26	4	1	5	4	1
13.	00032011	7	6	0	4	1	3
14.	10014231	12	4	0	3	1	0
15.	12222121	13	3	0	3	0	1
16.	12234851	26	2	0	3	1	4
17.	00010120	4	2	0	3	0	0
18.	00332271	18	2	0	3	0	1
19.	47749999	58	8	7	6	9	8
20.	43533647	35	7	1	5	4	4
21.	55992496	51	4	1	4	0	5
22.	24142111	16	5	2	4	3	2
23.	01112010	6	4	0	4	0	0
24.	00001000	1	3	0	3	0	0
25.	00312002	8	3	0	4	0	1
26.	10112110	7	3	0	4	1	0
27.	01333000	10	1	0	5	1	1
28.	00012101	5	2	0	3	0	0
29.	01013222	11	3	0	4	0	2
30.	31434002	17	4	1	4	1	1
31.	52311233	20	3	0	4	1	5

Monthly averages: T (N) 1.782
T (E) 1.578
K₁ 3.86
K₂ 0.71
K₃ 4.10
K₄ 1.42
K₅ 1.80

II. Average amplitudes for different periods

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
January North												
1.	5	3	3	3	5	8	6	9	15	10	9	12
2.	4	3	5	2	1	6	5	9	10	10	5	8
3.	34	35	38	35	34	39	35	37	36	37	38	37
4.	40	45	45	35	41	37	46	37	44	50	56	57
5.	63	41	37	52	44	44	33	25	15	34	37	62
6.	+2	-5	-3	-15	-22	-3	+4	+19	+67	+46	-11	-64
January East												
1.	8	2	3	2	6	10	8	10	10	13	12	15
2.	6	3	4	1	2	8	5	8	7	12	10	12
3.	32	34	34	35	33	35	34	37	35	37	37	38
4.	35	34	34	38	34	33	35	44	30	42	37	37
5.	55	38	35	35	44	27	20	19	21	19	23	38
6.	+2	+7	+1	0	-12	-12	-18	-22	+2	+44	+44	+18
February North												
1.	4	4	3	6	6	11	10	17	17	15	10	9
2.	6	4	3	7	6	8	8	14	14	15	6	6
3.	35	35	35	35	35	35	33	35	38	37	37	37
4.	37	43	39	28	40	40	40	40	51	54	55	51
5.	52	33	34	42	51	42	30	14	39	39	48	65
6.	-8	+7	-4	-20	-19	-7	-10	+22	+60	+39	-30	-74
February East												
1.	4	4	2	4	6	11	13	14	17	16	13	17
2.	5	4	2	1	4	9	9	12	9	13	12	10
3.	33	35	33	32	33	36	32	34	35	37	37	34
4.	35	32	33	35	43	33	30	33	29	40	44	42
5.	60	25	24	35	22	30	28	25	38	29	19	32
6.	-3	+6	+13	-1	-12	-17	-29	-30	+7	+38	+60	+37

and hourly means of earth current elements

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
12	11	11	7	3	5	5	5	4	5	2	5	6.8
15	9	7	7	2	4	6	5	3	3	3	6	5.8
44	37	34	37	35	35	37	35	37	35	35	37	36.4
55	57	49	35	41	42	42	38	33	46	41	49	41.2
63	44	44	42	44	60	71	85	111	73	67	75	52.8
-102	-63	-31	+16	+16	+12	+3	+36	+33	+47	+19	+3	

Component												
17	16	18	10	10	6	6	8	7	4	5	8	8.9
16	12	9	5	6	6	5	5	7	4	5	6	7.3
40	36	34	36	34	38	35	38	36	31	35	32	35.3
40	43	37	34	29	43	36	37	46	37	41	41	37.4
42	27	28	36	59	53	63	78	59	87	64	86	44.0
+21	+19	-3	-6	-1	+9	+2	-5	-16	-22	-18	-34	

Component												
9	9	15	10	5	3	7	3	4	4	4	7	8.0
9	9	14	8	5	1	3	1	4	3	3	7	6.8
41	37	39	36	35	35	33	29	31	33	33	33	35.1
70	60	49	54	42	30	33	34	31	47	47	53	44.5
96	86	69	58	42	37	32	70	79	80	43	30	50.5
-88	-75	-14	+31	+37	+22	+12	+28	+53	+26	+13	-2	

Component												
19	21	21	14	7	3	3	4	4	5	4	9	9.8
13	13	15	11	7	2	3	3	4	4	4	7	7.3
35	38	39	35	33	33	33	32	30	31	31	33	33.9
40	41	37	33	32	32	27	37	45	36	42	38	36.2
55	54	32	62	31	47	44	60	76	76	50	34	41.2
+19	+8	+1	-5	+2	-9	-14	-7	-5	-12	-15	-31	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
March North												
1.	6	5	5	5	10	9	9	16	11	8	9	7
2.	6	5	2	3	5	6	8	12	6	6	6	5
3.	33	33	31	32	33	28	31	34	48	35	31	33
4.	26	36	43	37	30	35	28	46	47	38	38	45
5.	40	31	22	32	39	21	31	17	22	30	49	53
6.	-8	-3	-1	-4	-4	-4	+22	+63	+73	+16	-101	-146
March East												
1.	8	5	3	5	10	8	12	18	15	15	13	16
2.	8	6	4	5	5	6	7	6	7	6	10	9
3.	33	32	34	32	31	31	31	33	31	34	35	34
4.	23	28	29	33	24	25	30	26	30	30	31	35
5.	42	26	26	33	37	18	16	23	30	21	42	36
6.	-3	+9	-3	-4	-5	-16	-16	-16	+20	+46	+39	+32
April North												
1.	7	7	7	10	14	13	17	20	18	16	14	10
2.	8	7	5	5	5	8	14	17	14	10	13	3
3.	35	36	34	35	36	37	41	52	38	39	36	37
4.	44	43	38	42	40	41	53	57	48	39	46	46
5.	56	46	28	26	43	32	26	23	23	34	35	63
6.	+7	+22	-2	-3	-10	-3	+70	+113	+79	-22	-124	-210
April East												
1.	10	8	6	4	9	13	28	32	30	31	31	28
2.	10	7	6	5	9	10	19	25	21	22	19	16
3.	31	28	32	35	32	29	28	32	28	31	28	31
4.	41	42	35	35	36	33	35	32	29	38	40	44
5.	65	35	26	22	25	25	31	25	25	25	47	29
6.	+7	+15	+8	+1	-9	-14	+4	+17	+32	+32	+31	+23

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
10	9	8	7	7	4	3	2	1	2	4	6	6.8
5	6	3	4	2	3	1	1	1	2	4	6	4.5
36	34	34	32	32	31	33	34	31	29	32	31	33.0
39	46	41	40	36	32	33	34	37	37	39	33	37.5
49	37	55	39	30	24	17	17	30	38	28	31	32.6
-143	-78	-8	+52	+82	+50	+15	+23	+24	+23	+29	+28	

Component												
20	16	16	13	13	9	5	4	2	4	6	8	10.2
10	9	8	8	9	6	3	3	1	5	7	11	6.6
33	35	35	35	31	33	35	30	33	35	33	32	33.0
38	33	41	34	37	33	29	33	28	32	39	37	31.6
33	21	26	20	16	17	21	23	28	34	27	41	27.4
+13	+2	-10	-8	+3	+2	-20	-20	-17	-18	-3	-9	

Component												
13	12	7	8	6	4	6	3	4	4	5	7	9.7
11	7	9	4	2	1	1	2	2	6	5	7	6.9
35	37	34	35	35	36	35	35	34	53	37	37	37.5
53	47	45	46	43	42	44	38	40	41	50	61	45.3
62	57	54	52	37	56	44	41	46	70	53	46	43.9
-208	-112	-9	+49	+106	+114	+68	+22	+23	+14	+10	+6	

Component												
29	32	26	25	21	15	9	4	6	4	7	9	17.4
17	17	16	13	16	10	8	4	7	5	6	14	12.6
34	31	34	28	33	29	33	31	29	61	33	33	32.3
38	35	49	41	41	40	52	36	35	43	38	46	38.9
37	53	25	48	35	32	27	32	53	63	48	50	36.8
+10	-2	-18	-38	-28	-23	-12	-11	-13	0	-6	-6	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
May North												
1.	5	7	8	6	14	12	11	13	12	13	9	10
2.	3	6	10	12	12	10	15	12	10	8	6	7
3.	35	36	36	38	36	38	43	41	35	38	37	38
4.	40	43	35	42	33	47	43	44	44	46	37	46
5.	41	43	41	34	39	51	53	31	41	31	52	56
6.	+11	+10	+2	+18	+37	+35	+104	+72	+10	-80	-168	-218
May East												
1.	7	9	13	10	15	13	22	26	30	30	30	31
2.	8	9	8	8	8	12	16	21	18	19	21	21
3.	33	27	32	35	27	28	30	26	28	34	27	28
4.	38	50	41	31	33	30	31	32	33	41	31	39
5.	37	28	22	26	26	20	28	26	32	38	46	51
6.	+21	+5	-5	-8	-24	-17	+42	+39	+36	+27	+7	-5
June North												
1.	10	7	8	9	11	13	15	35	17	16	15	14
2.	11	7	9	7	9	7	7	10	7	7	5	8
3.	38	32	36	35	35	38	35	35	40	39	34	42
4.	53	43	29	36	40	39	44	43	50	37	43	41
5.	90	85	62	46	50	31	35	20	13	31	38	44
6.	+31	+33	+15	+27	+55	+78	+77	+62	+29	-71	-133	-202
June East												
1.	17	11	12	14	11	20	24	34	33	35	41	40
2.	15	7	8	7	8	11	16	12	22	20	17	21
3.	37	34	32	29	23	27	22	23	21	23	28	20
4.	59	54	36	34	34	23	28	40	41	38	40	43
5.	43	31	28	23	28	34	32	32	31	29	43	46
6.	+17	+28	+2	-20	-23	-3	+43	+55	+69	+43	+33	-4

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
10	9	8	6	3	3	1	3	5	7	8	6	7.9
9	10	7	5	3	1	1	2	3	6	11	6	7.3
38	38	36	37	34	35	36	36	34	37	38	34	36.8
42	40	49	34	39	35	37	40	46	44	45	57	42.0
59	88	32	51	37	44	47	47	73	62	62	57	48.8
-177	-110	-5	+64	+115	+109	+52	+10	0	+12	+14	+36	

Component												
30	31	25	21	17	13	11	6	7	8	13	9	18.0
18	21	14	13	9	7	7	6	8	10	14	9	12.7
31	26	30	29	24	27	27	34	28	29	31	34	29.4
42	41	41	34	48	35	35	42	28	48	38	38	37.5
69	75	44	52	46	33	44	46	89	40	74	46	43.3
-9	-8	+2	-3	-22	-17	-19	-18	-15	-1	-14	+5	

Component.												
13	9	7	7	5	1	0	1	5	8	8	10	10.2
11	5	2	4	2	2	1	1	3	5	10	8	6.2
36	39	36	34	35	33	36	36	33	37	37	36	36.2
44	47	40	41	49	41	38	41	37	41	42	37	41.5
53	47	50	54	30	56	60	71	74	97	102	133	57.2
-183	-107	-54	+17	+83	+81	+71	+42	+29	+4	+8	+6	

Component												
31	31	29	23	22	16	11	8	11	12	13	16	21.5
20	20	13	13	9	11	7	4	8	11	8	11	12.5
19	29	20	26	23	26	34	31	29	26	35	31	27.0
38	48	44	42	34	35	26	40	40	50	40	37	39.3
71	52	43	52	64	74	86	72	50	64	74	94	49.8
+4	+2	-29	-18	-32	-39	-35	-39	-35	-7	-2	-3	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
July North												
1.	10	9	12	11	15	19	13	13	16	13	12	12
2.	11	10	9	9	10	13	6	11	8	5	8	4
3.	36	37	36	35	37	39	37	37	36	37	37	35
4.	42	40	47	38	38	48	42	45	39	32	34	48
5.	66	53	49	43	37	33	26	15	21	29	26	27
6.	+12	+15	+6	+17	+45	+102	+107	+56	-1	-95	-176	-201
July East												
1.	13	9	10	8	14	17	17	21	31	29	27	26
2.	12	10	12	9	8	11	12	12	17	19	18	18
3.	33	33	33	33	29	29	27	28	23	26	29	23
4.	51	44	40	34	34	34	31	33	40	39	32	40
5.	40	43	28	28	24	30	21	15	17	25	38	29
6.	+15	+12	-2	-16	-26	-12	+42	+73	+78	+54	+6	-24
August North												
1.	2	6	9	8	9	11	17	21	16	14	10	9
2.	3	7	6	6	9	13	13	17	9	9	5	6
3.	35	38	36	34	37	36	39	38	37	35	36	37
4.	58	51	32	30	37	36	44	48	44	33	44	63
5.	38	78	100	62	27	41	37	31	22	27	37	34
6.	+42	+32	+18	+17	+39	+96	+88	+87	-2	-118	-221	-237
August East												
1.	5	5	9	8	12	17	26	33	34	32	29	26
2.	8	10	9	6	9	9	16	19	16	17	17	17
3.	29	31	24	30	28	26	21	19	18	28	24	23
4.	47	55	34	34	37	34	27	31	34	35	41	43
5.	41	51	72	39	22	21	26	28	34	22	41	45
6.	+1	+2	+5	+2	+1	+12	+54	+94	+93	+77	+5	-44

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
11	8	6	3	3	5	2	5	8	8	6	10	9.7
10	3	5	6	2	3	2	5	8	9	6	11	7.3
41	38	38	39	36	33	36	35	38	37	38	35	36.8
48	35	40	48	41	45	33	44	41	37	38	41	41.0
34	62	46	44	49	44	35	26	70	51	81	73	43.3
-177	-121	-46	+34	+104	+113	+89	+34	+6	+19	+24	+33	

Component												
24	20	19	18	13	11	12	6	7	7	7	9	15.6
16	17	15	15	13	13	8	6	11	8	13	16	12.9
30	26	30	29	31	25	34	33	34	32	31	31	29.7
54	45	45	44	49	35	36	33	38	35	45	45	39.8
34	57	37	60	45	77	44	47	65	64	62	51	40.9
-40	-41	-25	-21	-24	-24	-22	-17	-20	+13	+12	+9	

Component												
8	10	9	8	5	4	3	5	5	6	8	2	8.5
4	6	9	6	2	3	3	6	4	4	8	2	6.6
33	39	38	36	37	35	34	36	36	36	35	35	36.2
43	62	58	43	35	44	45	34	44	43	49	52	44.7
65	38	62	57	66	51	41	50	55	52	60	60	49.6
-188	-100	0	+90	+116	+114	+45	+15	+17	+14	+18	+20	

Component												
29	24	24	20	13	10	10	6	5	9	8	2	16.5
16	19	17	15	9	9	6	4	7	10	12	5	11.8
27	24	24	29	32	31	28	29	28	30	34	36	27.2
49	46	45	53	39	44	40	39	42	59	47	56	42.1
37	57	66	51	64	48	59	61	69	25	49	34	44.3
-56	-49	-36	-22	-26	-19	-23	-37	-21	-9	-9	+6	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
September North												
1.	4	4	4	10	8	12	13	16	12	12	10	8
2.	5	2	4	8	5	4	13	8	7	4	2	5
3.	37	36	38	36	35	36	37	37	35	35	34	37
4.	37	36	38	41	35	36	41	36	39	39	46	47
5.	33	37	41	38	26	22	30	38	23	29	57	52
6.	+27	+24	+14	-5	+5	+32	+58	+74	+48	-25	-113	-166
September East												
1.	5	5	7	9	8	17	23	26	29	28	28	28
2.	4	2	4	4	7	8	13	14	13	16	13	16
3.	32	34	28	29	28	27	26	26	21	24	28	22
4.	38	31	35	32	32	25	31	29	36	27	41	36
5.	53	33	41	32	27	26	28	29	26	35	43	38
6.	+1	+17	+10	-12	-14	-1	+20	+55	+78	+66	+33	-10
October North												
1.	4	8	5	7	12	14	14	18	16	12	12	11
2.	4	5	5	6	8	4	12	17	15	8	5	9
3.	33	33	35	36	38	36	38	45	41	38	36	37
4.	41	41	49	38	39	47	45	55	66	52	44	55
5.	36	65	41	53	45	25	37	56	40	48	86	94
6.	+10	-1	-7	-14	-15	-18	+33	+108	+134	+69	-58	-148
October East												
1.	6	6	8	10	15	19	23	24	25	26	27	28
2.	5	4	3	8	12	15	17	17	19	17	18	19
3.	28	29	29	25	26	29	25	25	24	28	21	27
4.	37	38	35	40	48	41	41	39	45	31	42	52
5.	64	49	44	34	17	29	40	51	41	42	51	41
6.	+20	+6	-8	+1	-2	-23	-4	+26	+71	+80	+59	+26

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
8	7	5	5	7	7	2	5	4	3	4	5	7.3
6	5	4	2	3	4	3	5	4	4	5	5	4.9
34	38	35	35	37	37	33	35	33	35	37	37	35.8
43	38	53	41	38	31	32	41	28	27	34	44	38.4
46	53	47	44	38	43	43	28	54	60	58	43	41.0
-144	-77	-15	+36	+52	+29	+12	+29	+24	+27	+25	+30	

Component												
24	23	19	19	16	15	5	5	5	7	7	10	15.3
15	10	10	11	8	8	4	8	7	8	8	9	9.2
23	26	26	28	25	28	31	28	32	30	31	32	27.7
33	30	46	32	35	37	25	36	31	31	32	31	33.1
41	40	43	42	41	32	44	30	37	48	76	41	38.6
-16	-43	-48	-25	-15	-17	-19	-26	-10	-10	-4	-13	

Component												
12	12	9	10	8	3	4	6	6	5	5	7	9.2
12	9	9	5	6	1	3	4	5	5	8	5	7.0
43	40	39	36	37	37	36	35	35	35	38	35	37.3
58	67	63	50	41	45	48	47	35	38	39	44	47.8
79	74	91	60	63	64	48	52	62	66	52	70	58.6
-160	-129	-61	+11	+8	+35	+86	+39	+30	+22	+3	+20	

Component												
26	23	20	21	18	12	8	6	5	8	10	9	16.0
18	15	16	15	11	8	6	7	5	5	10	9	11.6
29	25	26	28	31	33	32	31	29	28	30	35	28.0
51	43	40	40	42	43	38	37	37	36	40	41	40.7
48	62	52	53	45	42	46	53	55	78	71	74	49.3
-1	-27	-20	-17	-26	-22	-24	-23	-14	-27	-34	-17	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
November North												
1.	6	4	8	12	12	14	15	20	22	19	17	14
2.	9	1	3	7	6	6	10	15	21	13	14	10
3.	42	35	35	36	35	41	37	48	39	40	38	39
4.	43	48	53	43	44	51	49	48	50	58	53	69
5.	59	47	61	65	63	27	38	37	40	88	50	82
6.	-16	-1	-11	-25	-16	-2	-2	+38	+62	+58	-27	-95
November East												
1.	9	4	6	11	14	24	23	28	25	26	23	25
2.	10	6	3	9	5	8	10	15	15	15	10	14
3.	36	36	35	32	35	38	36	41	35	40	35	37
4.	38	42	44	43	47	37	39	35	40	42	39	47
5.	64	30	43	43	28	26	29	33	41	35	40	45
6.	-4	+4	-7	-4	-18	-20	-31	-10	+24	+64	+72	+53
December North												
1.	3	3	6	6	10	10	11	13	18	18	16	14
2.	6	3	3	3	6	4	7	7	15	11	9	9
3.	33	37	34	34	36	36	33	34	37	37	39	36
4.	21	38	41	35	39	39	42	33	44	46	51	45
5.	73	41	66	39	71	46	28	32	27	29	36	64
6.	+5	0	-12	-14	-24	-3	+6	+13	+58	+43	-24	-63
December East												
1.	3	3	7	9	13	14	14	14	18	18	17	19
2.	3	6	7	5	6	6	5	4	14	12	6	3
3.	36	36	35	32	34	40	32	32	39	36	38	42
4.	25	39	33	23	24	32	25	35	32	32	36	42
5.	59	38	26	33	61	18	34	23	23	28	22	28
6.	+19	+16	+20	+17	-23	+1	-6	+1	+6	+64	+59	+24

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
15	15	15	12	7	7	4	7	6	6	7	7	11.3
18	11	5	7	4	4	4	6	5	5	8	4	8.2
40	38	37	35	36	35	34	35	35	36	34	35	37.3
66	64	55	47	43	44	40	42	35	56	49	49	50.0
94	90	65	56	41	101	83	94	91	53	70	71	65.3
-102	-65	-15	+16	+13	+27	+5	+46	+34	+29	+28	+21	

Component												
24	25	28	20	14	10	5	8	7	6	11	8	16.0
21	17	10	5	8	7	7	7	4	2	10	7	9.4
38	35	38	36	33	37	35	37	35	35	34	35	36.0
44	39	38	33	38	43	46	38	47	43	49	41	41.3
42	43	35	39	29	61	52	57	86	44	76	55	44.8
+15	+5	-6	-6	-20	-18	-14	-12	-23	-23	-17	-5	

Component												
16	20	15	12	6	5	6	6	6	10	6	6	10.1
11	9	7	6	3	3	3	3	6	7	6	6	6.4
38	39	39	36	33	33	33	36	31	33	34	34	35.2
69	51	46	39	40	31	37	37	38	33	43	45	41.1
43	74	38	37	14	30	28	48	34	39	30	37	41.8
-77	-50	-17	-10	+12	+8	+23	+13	+30	+27	+31	+24	

Component												
23	25	23	16	10	9	4	5	7	4	13	6	12.3
12	10	9	6	3	5	7	3	6	9	10	9	7.1
37	37	38	33	33	34	33	35	33	33	35	33	35.3
44	43	33	33	33	32	27	39	30	9	23	23	31.1
47	21	26	34	22	26	39	35	39	35	50	69	34.8
+22	+6	-23	-30	-20	-27	-20	-20	-17	-25	-23	-26	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
Year 1980 North												
1.	6	6	6	8	10	12	12	16	16	14	12	11
2.	6	5	5	6	7	8	10	12	11	9	7	7
3.	35	35	35	35	35	37	37	39	38	37	36	37
4.	40	42	41	37	38	43	43	44	47	44	46	51
5.	54	51	34	44	45	35	33	43	42	37	46	58
6.	+10	+11	+1	-2	+6	+29	+46	+61	+51	-12	-99	-152
Year 1980 East												
1.	8	6	7	8	11	16	19	23	25	25	24	25
2.	8	6	6	6	7	9	12	14	15	16	14	15
3.	33	33	32	32	30	31	29	30	29	32	30	30
4.	39	41	36	34	35	32	32	34	35	36	38	42
5.	52	36	35	32	30	25	28	27	30	29	38	36
6.	+8	+10	+3	-4	-14	-10	+8	+23	+43	+53	+37	+11

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
11	11	10	8	6	4	4	4	5	6	6	7	8.8
10	8	7	5	3	2	3	4	4	5	6	6	6.5
38	38	37	36	35	35	35	35	34	37	36	35	36.1
53	51	49	43	41	39	38	39	37	41	43	32	42.6
62	62	54	50	41	51	46	52	65	62	59	60	49.4
-146	-91	-23	+34	+62	+62	+40	+28	+25	+22	+19	+19	

Component												
25	24	22	18	15	11	8	6	6	6	9	8	14.8
16	15	13	11	9	8	6	5	6	7	9	10	10.1
31	31	31	31	30	31	32	33	32	33	33	33	31.3
43	41	41	38	38	38	35	37	37	36	39	40	37.5
46	47	38	46	42	45	48	50	59	55	60	56	41.5
-2	-11	-18	-17	-17	-17	-18	-19	-17	-12	-11	-10	

Hour Parameter	0	1	2	3	4	5	6	7	8	9	10	11
Quiet days North												
1.	4	4	5	5	10	10	9	14	13	11	8	9
2.	5	5	3	4	4	6	8	9	7	6	5	3
3.	33	34	33	33	32	34	34	33	35	35	33	35
4.	29	33	33	27	30	33	33	37	34	20	33	38
5.	26	18	22	21	22	23	20	16	21	20	29	30
6.	+10	+24	+9	+3	+10	-13	+55	+74	+62	-2	-93	-148
Quiet days East												
1.	4	3	4	6	10	12	14	17	19	20	18	19
2.	5	4	3	4	5	8	10	9	11	11	10	11
3.	31	30	28	28	27	28	25	27	24	28	29	29
4.	26	29	28	28	25	26	28	27	28	27	31	33
5.	27	21	21	18	20	18	17	21	21	25	25	23
6.	+6	+5	+5	-3	-11	-15	-1	+9	+25	+40	+32	+10
Disturbed days North												
1.	18	12	12	12	18	18	24	34	24	34	24	34
2.	24	12	12	12	12	24	18	34	34	24	24	60
3.	48	42	48	60	36	42	42	54	48	48	48	102
4.	84	66	60	120	54	36	48	78	102	66	90	60
5.	114	84	60	156	144	150	96	0	24	65	18	126
6.	+42	+138	+78	+84	+150	+132	+72	+96	+60	-72	-132	-216
Disturbed days East												
1.	24	12	12	18	18	36	54	84	78	54	78	90
2.	36	12	12	12	18	24	36	24	48	36	36	42
3.	78	42	30	42	24	24	29	42	42	54	48	54
4.	150	126	30	60	48	30	48	66	60	66	120	120
5.	66	—	108	96	24	72	29	18	66	90	—	66
6.	+6	+114	+48	+30	+24	+24	+60	+78	+78	+66	+96	+42

12	13	14	15	16	17	18	19	20	21	22	23	Averages
Component												
9	8	7	9	4	2	2	2	3	3	4	4	6.6
6	5	3	4	1	2	2	1	3	3	5	5	4.4
34	35	33	33	33	31	33	34	31	33	34	32	33.3
35	39	33	32	33	28	30	30	32	35	35	35	32.4
38	27	27	24	19	20	21	21	23	21	23	24	23.2
-147	-93	-22	+39	+66	+64	+26	+8	+12	+15	+12	+26	

Component												
21	18	17	15	9	6	5	3	3	4	4	4	10.6
11	10	8	8	6	4	3	2	3	5	7	8	6.9
28	27	30	28	26	30	32	34	31	31	33	30	28.9
28	30	30	29	27	29	27	30	25	31	35	32	28.7
28	21	22	23	23	19	21	21	29	23	23	26	22.3
-8	-14	-16	-13	-8	-3	-13	-12	-10	-4	0	-4	

Component												
30	18	30	18	12	6	6	12	18	18	18	34	19.9
30	30	12	12	12	0	0	12	24	24	24	24	20.6
48	60	48	42	42	36	36	42	48	42	48	48	48.3
42	114	108	60	126	78	54	60	42	90	18	18	69.8
204	180	84	192	18	60	204	156	324	258	384	654	156.5
-180	-132	+12	+36	+54	-6	-6	+42	-18	-102	-90	-36	

Component												
60	60	66	36	36	42	36	30	42	30	42	48	45.3
36	42	36	24	18	30	30	12	24	18	12	30	27.0
24	102	30	48	36	24	12	36	42	42	36	36	40.7
84	162	120	90	78	30	54	36	18	54	36	30	71.0
186	138	72	72	114	180	252	204	300	186	324	414	128.0
-30	-20	-30	+12	-60	-120	-96	-90	-126	+36	-84	-48	

III.

Results of harmonical analysis of the daily variations

	A ₁	φ_1	A ₂	φ_2	A ₃	φ_3	A ₄	φ_4	A ₅	φ_5	A ₆	φ_6
North Component												
January	19	105	35	234	24	92	23	289	6	83	3	16
February	20	125	32	247	27	91	23	295	7	67	7	70
March	34	114	50	274	50	113	26	297	7	204	6	99
April	47	113	83	281	68	106	23	322	9	251	4	327
May	58	106	91	297	60	129	4	246	4	272	4	342
June	62	98	86	289	38	114	6	334	2	194	6	24
July	68	106	95	293	47	127	10	136	6	272	6	336
August	69	110	101	303	64	135	9	341	9	300	5	36
September	45	96	53	280	46	126	20	325	1	254	1	18
October	33	85	71	248	53	88	26	322	15	176	3	178
November	22	110	37	239	30	100	21	298	11	130	4	16
December	18	106	29	229	22	99	14	293	7	159	5	353
Year	41	106	58	278	42	113	14	306	3	197	3	23
Q	37	100	53	279	50	107	18	306	6	252	1	114
D	75	56	100	313	35	100	32	343	23	86	12	110
East Component												
January	16	263	8	101	16	2	2	244	3	112	8	352
February	16	286	15	110	18	354	8	258	6	47	4	354
March	15	304	13	122	13	26	7	221	1	105	5	28
April	17	348	16	153	9	9	4	9	3	264	2	326
May	16	342	10	187	13	116	9	5	3	325	4	246
June	32	347	18	167	16	107	9	10	6	298	5	329
July	25	10	26	203	24	104	11	333	5	272	4	267
August	39	8	28	227	28	100	12	319	5	216	1	342
September	28	357	23	200	21	66	8	313	5	303	4	36
October	31	330	19	171	21	38	10	292	5	115	5	99
November	23	302	22	130	18	14	7	235	7	106	2	258
December	24	332	16	125	18	0	3	303	3	36	7	331
Year	21	337	14	168	13	52	5	310	0	358	3	345
Q	11	338	11	166	11	45	5	263	1	310	2	319
D	78	355	19	100	19	69	20	306	26	11	11	301

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.	13.	06.15	8	15	+	+	+	—	01.14.04.00
	25.	12.00	8	30	(—)+	(—)+	(—)+	(+)—	25.15.00
	28.	16.45	14	28	+	+	+	—	29.08.00
02.	06.	04.15	18	42	+	+	+	—	02.05.23.00
	14.	04.15	11	30	+	+	+	—	14.21.00
	15.	13.30	7	25	+	+	+	—(?)	16.17.00
03.	19.	07.15	7	30	+	+	+	—	03.19.19.00
	31.	00.45	17	45	+	+	+	—	31.23.00
		18.45	7	20	+	+	+	—	in storm
04.	02.	02.15	3,5	15	+	+	+	—(?)	no storm
	06.	12.00	14,5	60	+	+	+	—	04.07.04.00
	07.	13.15	7	25	+	+	+	—	08.02.00
	09.	06.15	16	20	+	+	+	—	09.18.00
	22.	01.30	9	30	+	+	+	—	22.09.00
05.	29.	19.30	11	20	+	+	+	—	05.29.24.00
	31.	22.30	11	35	+	+	+	—	06.01.01.00
06.	06.	23.30	20	60	+	+	+	—	08.03.00
	10.	17.30	16	40	+	+	+	—	12.03.00
	24.	03.45	9	42	+	+	+	—	24.16.00
07.	18.	20.30	18	65	—	+	+	+	07.19.02.00
	25.	12.15	6,5	42	+	+	+	—	26.02.00
08.	06.	01.15	12,5	30	+	+	+	—	08.06.24.00
		14.30	20	50	+	+	+	—	in storm
	16.	13.45	16	60	+	+	+	—	16.22.00
	19.	11.30	9	35	+	+	+	—	20.02.00
09.	20.	02.45	8	22	+	+	+	—	no storm
	24.	20.00	2	12	—	—	—	+(?)	no storm

SSC-s									
Month	Day	CET (GMT+1h)	Amplitude in E(mV km) H(gamma)		Ex	Ey	Hx	Hy	End of storm
10.	14.	20.45	5,5	40	+	+	+	—	10.15.03.00
	18.	02.15	14,5	30	+	+	+	—	18.22.00
	23.	07.15	5,5	35	+	—	—	—	23.20.00
	30.	16.15	6,5	30	+	+	+	—	11.01.03.00
11.	08.	14.30	9	25	+	—	+	—	no storm
	09.	12.30	4,5	25	+	+	+	—	09.15.00
	14.	12.15	5,5	22	+	+	+	—(?)	14.15.00
		12.45	9	32	+	+	+	—	in storm(?)
	20.	17.15	5,5	20	+	+	+	—(?)	20.22.00
	25.	00.00	6,5	22	+	+	+	—	26.15.00
	26.	05.30	>18	35	+	+	+	—	in storm
	26.	05.30	>18	35	+	+	+	—	in storm
12.	11.	11.15	7	18	+	+	+	—	12.13.03.00
	19.	05.45	no rec.	50	no record		+	—	21.23.00
	25.	06.45	6,5	18	+	+	+	—	no storm

<i>Bays</i>				<i>Pt-s</i>						
Month	Day	CET (GMT+1h)	Amplitude in E(mV km) H(gamma)	Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
01.	01.	17.00	11 35	—	+	+	+	tr		
		20.15	>15 85	—	+	+	+	tr		
	02.	00.45	9 50	+	+	+	—	tr		
	03.	04.15	7 45	+	+	+	—	tr		
		19.45	8 55	—	+	+	+			
	04.	16.00	11 75	—	+	+	+	tr		
	12.	14.00	4 15	+	+	+	—			
	13.	23.45	7 45	—	+	+	+	2	+	+
	15.	12.00	5,5 18	+	+	+	—			
		18.30	3,5 25	—	—	—	+	tr		
	20.	02.30	4,5 22	—	+	+	+			
	27.	17.30	14 85	—	+	+	+	tr		
		21.15	17 100	+	+	+	+	tr		
		22.45	12 85	—	+	+	+	tr		
		19.30	18 85	—	—	—	+	tr		
		23.00						pg (7 mV/km, 8 min)		
	29.	18.30	14 72	—	+	+	+			
	30.							pg (7mV/km, 10min)		
	31.	23.30	3,5 30	—	+	+	+	2	—	+
02.	01.	20.30	6 40	—	+	+	+	tr		
	06.	16.45	17 85	—	—	—	+			
		19.30	19 140	—	—	—	+	tr		
	07.	08.30						pg (10mV/km, 12min)		
		13.30	7 30	+	+	+	—			
	08.	23.30	4,5 25	+	+	+	—	2	+	+
	09.	19.15	11 55	—	+	+	+	tr		
		23.15	4,5 18	—	+	+	+	tr		
	14.	23.30	20 100	+	+	+	—	tr		
	15.	02.45	12 70	—	+	+	+	tr		
	18.	00.45	4,5 30	+	+	+	+	2,5	+	+
	20.	23.45	2 12	+	+	+	—	2,5	+	+

<i>Days</i>					<i>Pt-s</i>						
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
			E(mV/km)	H(gamma)							
02.	28.	22.00	8	35	—	+	+	+	tr		
03.	11.	01.15	3,5	18	+	+	+	—	tr		
	16.	00.45	4,5	22	+	+	+	—	2,5	+	+
	21.	21.15	13	75	—	+	+	+	tr		
	22.	00.15	6	45	+	+	+	—	tr		
		13.45	12	40	+	+	+	—			
		22.45	5,5	25	+	+	+	—	2,5	+	+
	26.	03.15	12,5	85	+	+	+	—	tr		
		23.45	4,5	35	+	+	+	—	tr		
	31.	22.45	8	25	—	—	—	+			
04.	07.	20.30	8	55	—	+	+	+	tr		
	11.	01.00	6,5	25	—	+	+	+	2,5	+	+
		20.30	16	100	+	+	+	—	tr		
	12.	23.15	11	32	+	+	+	—	3,5	+	+
	15.	02.30	7	55	+	+	+	—	tr		
		23.00	8	35	—	+	+	+			
	18.	22.45	2,5	15	+	+	+	—	2	+	+
	25.	00.45	5,5	25	+	+	+	—	4,5	+	+
		14.00	7	28	—	—	—	+			
	27.	23.45	5,5	22	+	+	+	—	2,5	+	+
05.	06.	22.15	6,5	30	+	+	+	—			
	09.	08.00	6,5	12	—	+	+	+			
		20.30	12,5	50	+	+	+	—			
		23.15	8	35	+	+	+	—	tr		
	11.	03.15	12	35	—	—	—	+			
		20.00	14,5	72	—	+	+	+	tr		
	19.	15.45	4,5	22	—	—	—	+			
	23.	13.00	13,5	35	+	+	+	—			
	24.	20.30	7	35	+	+	+	—	tr		
	25.	14.15	17	50	—	—	—	+	tr		
	26.	11.30	2,5	12	—	—	—	+			

Days					Pt-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy	E(mV/km)	Ex	Ey
05.	28.	01.30	3,5	12	+	+	+	—			
06.	01.	21.30	6,5	30	+	+	+	—	tr		
	02.	01.00	5,5	35	+	0	+	—	tr		
	03.	01.15	3,5	20	+	—	+	—	2,5	+	+
		12.45	5,5	18	+	+	+	—			
		23.15							2,5	+	+
	06.	16.45	22	72	—	—	—	+			
	09.	01.15	4,5	18	+	+	+	—			
	10.	00.15	9	40	+	+	+	—	tr		
	11.	18.15	12,5	65	+	+	+	+	tr		
		23.30	19	70	+	+	+	—	tr		
	12.	23.30	11	50	+	+	+	—	tr		
	18.	20.15							2	+	+
	19.	22.30	7	30	—	—	—	+			
	30.	00.15	3,5	15	+	+	0	—	2,5	+	+
	07.	01.	23.15							3,5	+
02.		20.45							3,5	+	+
05.		13.30	6,5	40	+	+	+	—	tr		
		18.45	7	35	—	—	—	+	3,5	+	+
06.		23.45	6,5	22	—	—	—	+	tr		
07.		13.00	4,5	22	+	+	+	—			
08.		22.30	5,5	25	—	—	+	—	tr		
11.		01.30							2	+	+
		14.45	12,5	32	—	—	—	+			
14.		11.00	4	18	+	+	+	—			
15.		20.15							4,5	—	+
		23.15	5,5	22	—	—	—	+			
17.		20.30	9	30	+	+	+	—			
18.		22.15	>18	85	—	—	—	+	tr		
19.		00.30	>14	75	—	—	—	+	tr		
21.	01.15	3,5	18	+	+	+	—				

<i>Bays</i>					<i>Pt-s</i>						
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
			E(mV/km)	H(gamma)							
07.	22.	16.15	2,5	10	+	+	+	—			
	23.	23.15							2,5	+	+
	24.	20.30							3,5	+	+
	26.	00.00	>20	75	—	+	+	+	tr		
		12.30	12,5	50	—	—	—	+			
	31.	22.30							2	+	+
08.	03.	00.15	4.5	18	+	+	+	—	tr		
		12.15	10	35	—	—	—	+	tr		
		19.00	4,5	30	+	+	+	—			
	07.	19.00	4.5	30	—	+	+	+	tr		
		22.15	4	25	+	+	+	0	tr		
	08.	22.00	3,5	22	+	+	+	—			
	11.	18.00	3,5	12	+	+	+	—			
	12.	01.00	12,5	40	+	+	+	—	tr		
	17.	22.30	8	18	—	—	—	+	tr		
		23.00	12,5	35	+	+	+	—			
	19.	03.00	6,5	42	+	+	+	—			
		21.45	7	45	—	+	+	+	tr		
	20.	19.45	3,5	30	—	+	+	+	tr		
	26.	02.30	7	40	+	+	+	—	tr		
	29.	21.45	4,5	25	—	+	+	+	2,5	+	+
09.	01.	01.30	7	22	—	—	—	+			
	03.	14.30	11	30	+	+	+	—			
		22.00	9	35	—	+	+	—	tr		
	04.	00.15	11	25	+	—	+	+	tr		
	06.	10.15	6,5	22	—	—	—	+			
	07.	22.15	7	42	+	+	+	—	2	+	+
	09.	17.30	7	22	—	+	—	+	tr		
	12.	12.30	12	70	+	+	+	+	tr		
	14.	23.00	5,5	35	+	+	+	+	3,5	+	+
	16.	21.15	7	35	—	—	—	+	tr		

<i>Days</i>			<i>Pt-s</i>								
Month	Day	CET (GMT+1h)	Amplitude in		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
			E(mV km)	H(gamma)							
09.	17.	23.00	4,5	30	0	+	+	0	tr		
	18.	20.00	4,5	18	—	+	+	+	2	+	+
	19.	22.45	4,5	28	—	+	+	+	tr		
	23.	21.30							3,5	+	+
	29.	20.00	5,5	55	—	+	+	+	2,5	+	+
10.	02.	10.15	6,5	22	+	+	+	—	tr		
	03.	22.30	6,5	30	—	+	+	+	2,5	+	+
	06.	23.45	2,5	15	—	+	+	+	tr		
	09.	01.30	9	45	+	+	+	—	tr		
	10.	22.45	22,5	85	+	+	+	—	tr		
	11.	22.30	3,5	12	—	—	—	+			
	12.	14.30	6,5	25	—	—	—	+			
	13.	07.00							pg (2 mV/km, 6 min)		
	18.	10.45	7	22	—	—	—	+			
		19.30	5,5	65	—	+	—	+			
	19.	19.15	8	35	—	+	+	+	tr		
		21.45	7,5	50	—	+	+	+	tr		
	22.	11.15	8	30	+	+	+	—			
		23.30	10	50	+	+	+	—	tr		
	23.	18.45	12,5	55	—	—	—	+			
	25.	00.30	6,5	45	+	+	+	—	tr		
		10.30	10	35	+	—	—	—			
	27.	20.45							2	+	+
11.	01.	16.45	7	45	—	+	+	+	tr		
	02.	17.30	8	55	—	+	+	+	tr		
	04.	19.15	4,5	20	—	+	0	+	tr		
	11.	12.30	13,5	32	+	—	+	—			
		19.00	14,5	82	—	+	+	+	tr		
		23.45	5,5	45	—	+	+	+			
	15.	17.45	10	55	—	+	+	+	tr		
	16.	03.15	8	40	+	+	+	—	tr		

Days					Pt-s						
Month	Day	CET (GMT+1h)	Amplitude in E(mV km) H(gamma)		Ex	Ey	Hx	Hy	E(mV km)	Ex	Ey
11.	17.	00.30	7	32	+	+	+	—	tr		
		20.15	4,5	35	—	+	+	+	tr		
	19.	20.15	7	30	—	+	—	+	tr		
	20.	21.30	15	55	—	—	—	+			
	21.	23.30	6,5	32	+	+	+	—	2	+	+
	23.	19.30	7	40	—	+	+	+	tr		
	24.	21.00	4,5	18	—	+	+	+	2,5	+	+
	25.	19.45	12	75	—	+	+	+	tr		
	26.	01.15	6,5	30	—	+	+	+	tr		
		20.15	4,5	18	+	+	+	—			
	27.	02.30	7	45	+	+	+	—	tr		
		17.45	10	35	+	—	—	—	tr		
	28.	22.30	7	25	+	+	+	—	tr		
	30.	02.45							pg	(5mV/km, 12miu)	
		18.30	14,5	100	—	+	+	+	tr		
12.	01.	00.30	14,5	60	+	+	+	—	tr		
		03.45	12	75	+	+	+	—	tr		
	02.	22.45	3,5	25	—	+	+	+	tr		
	03.	18.00	8	75	—	+	—	+	tr		
		23.30	3,5	10	+	+	+	0	2,5	+	+
	05.	22.15							2,5	+	+
	08.	23.45	no rec.	18	0	no rec.	—	0	tr		
	16.	17.00	no rec.	55	no record		+	+			
	18.	18.00	no rec.	55	no record		+	+	tr		
	21.	21.15	no rec.	65	no record		+	—	tr		
	25.	22.45	6,5	45	—	+	+	+	tr		
	30.	21.15	3,5	12	—	+	+	+	2,5	+	+
	31.	02.15	3,5	35	+	+	+	—	2,5	+	+

Further pt-traces

Month	Day	CET	Month	Day	CET	Month	Day	CET
01.	02.	00.30	03.	30.	01.00		23.	20.45
	03.	15.00	04.	04.	20.30			22.15
	04.	18.00		07.	01.00		26.	00.30
	13.	19.45		13.	21.15		27.	23.30
	14.	23.15		14.	07.45		28.	00.30
	15.	00.30		15.	02.30		30.	22.45
	16.	01.30			16.45			23.30
	19.	01.15		19.	22.45	07.	04.	22.45
	20.	17.15		21.	21.00		07.	21.45
		20.00			21.30		08.	23.00
	25.	23.45			22.15		10.	05.45
	26.	23.30		22.	22.30		12.	00.15
02.	03.	23.30			22.45			17.15
	08.	00.30		23.	00.45			17.45
	09.	21.45		24.	00.15			23.45
	10.	00.00		26.	23.00		14.	22.30
		20.30	05.	02.	21.15		15.	21.30
	18.	22.45		06.	21.15			22.00
	20.	00.45		08.	01.00		16.	01.30
	21.	21.45		13.	21.45			22.45
	24.	00.30		14.	18.45		19.	23.30
	26.	23.45		17.	21.30		20.	00.15
	27.	21.45		23.	22.00		24.	22.30
	29.	22.30			23.00		27.	23.15
		23.30		24.	01.00		29.	17.30
03.	03.	22.00		26.	22.30			23.15
	04.	22.00	06.	04.	22.30		30.	00.30
	06.	01.00		07.	20.30			01.30
	07.	02.00		09.	07.45			23.45
		02.45			22.15	08.	01.	18.00
	08.	21.15			22.30			22.15
	09.	23.00			22.45		02.	21.00
	10.	00.15		16.	23.15		06.	21.45
	13.	21.15	06.	17.	22.45			22.00
	16.	23.15		18.	21.15			22.15
03.	30.	00.15		22.	01.30		07.	18.45
		00.45			22.00		09.	15.30

SI-s

Month	Day	CET (GMT+1h)	Amplitude in E(mV km) H(gamma)		Ex	Ey	Hx	Hy	
01.	02.	08.45	3,5	10	—	—	—	+	
	04.	10.00	11	25	—	—	—	+	
	08.	03.00	3,5	12	—	—	—	+	
	11.	09.00	7	22	+	+	+	—	
	17.	06.15	5,5	13	+	+	+	—	(SSC?)
	26	05.30	2,5	7	+	+	+	—	
02.	13.	15.45	2	7	+	+	+	—	
	19.	09.30	6,5	12	+	+	+	—	
	26.	01.45	3,5	12	—	—	—	+	
04	05.	14.30	5,5	14	+	+	+	—	
	07.	08.45	8	18	—	—	—	+	
		21.30	9	25	—	—	—	+	
	09.	00.30	9	22	+	+	+	—	
	10.	18.45	5,5	14	+	+	+	—	
	11.	04.30	5,5	14	—	—	—	+	
05.	05.	12.45	3,5	10	—	—	—	+	
	09.	03.00	5,5	12	—	+	+	+	
	10.	12.15	7	17	—	—	—	+	
	22.	00.45	3,5	10	—	—	—	+	
	23.	06.00	2,5	6	—	—	—	+	
	30.	08.00	16	32	+	+	+	—	
06.	04.	03.15	2,5	10	+	+	+	—	
	06.	01.00	2,5	7	+	+	+	—	
	09.	17.45	2,5	10	—	—	—	+	
	12.	02.30	6,5	30	+	+	+	—	
	14.	01.30	12,5	42	—	—	—	+	
		14.15	7	14	—	—	—	+	
	16.	08.15	2	7	—	—	—	+	
	25	22.30	5,5	22	—	—	—	+	
	26.	02.30	10	25	+	+	+	—	
		11.45	2	7	—	+	+	+	
07.	14.	09.30	5,5	18	—	—	—	+	
	27.	02.45	4,5	14	+	+	+	—	
	28	02.45	12	35	—	—	—	+	
	29.	14.00	3	12	+	+	+	—	

SI-s

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km) H(gamma)		Ex	Ey	Hx	Hy
08.	02.	16.45	2,5	13	+	+	+	—
	06.	16.30	12,5	25	+	+	+	—
		19.45	14,5	35	—	—	—	+
	15.	12.15	7	14	+	+	+	—
	18.	01.30	8	18	+	+	+	—
	20.	11.00	9	14	—	—	—	+
	23.	11.00	2,5	7	—	—	—	+
09.	17.	12.00	8	18	+	+	+	—
	28.	02.30	4,5	15	—	—	—	+
	30.	19.45	2,5	7	+	+	+	—
10.	02.	14.15	6,5	14	—	—	—	+
	04.	05.30	6,5	14	—	—	—	+
	14.	09.00	3,5	12	—	—	—	+
	22.	22.00	9	22	—	—	—	+
	30.	23.45	7	20	—	—	—	+
11.	19.	22.15	4,5	14	+	+	+	—
	26.	00.15	2,5	12	—	—	—	+
		17.30	3,5	14	+	+	+	—
	29.	06.15	8	22	+	—	—	—
12.	01.	07.00	12	22	+	+	+	—
	04.	01.45	3,5	10	+	+	+	—
	11.	20.45	14,5	42	—	—	—	+
		23.15	12	35	—	—	—	+
	12.	22.00	8	18	—	—	—	+
	20.	21.30	no rec.	35	no record		+	—
	30.	12.15	6	18	—	—	—	+

Needles

Month	Day	CET (GMT+1h)	Amplitude in E(mV/km)	Ex	Ey
01.	04.	09.45	5,5	+	+
	06.	04.30	3	—	+
	13.	09.15	7	+	+
03.	22.	10.15	5,5	+	+
04.	07.	08.45	6	—	—
	15.	18.45	2,5	+	+
05.	02.	13.00	2	—	—
06.	04.	07.45	3,5	—	—
07.	06.	12.45	7	+	+
		14.30	4,5	—	—
	15.	02.45	3,5	+	+
	21.	18.00	2,5	—	—
08.	05.	22.30	2	+	+
10.	04.	05.15	6,5	—	—
	24.	20.30	3,5	+	+
11.	28.	21.00	3,5	+	+
12.	01.	08.00	3,5	+	+
	27.	08.30	4,5	+	+
	30.	08.30	7	+	+

1930

Pc 1-events

Month	Day	Duration		Quality
		hour min	hour min	
1.	3.	419—	455	C
2.	2.	438—	445	C
		512—	559	C
		607—	619	C
6.	14.	424—	515	B
12.	19.	1730—	1831	C
		1858—	2113	C
	26.	514—	520	C
		551—	706	B

V.

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

January												
CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0— 3	2	5	17	17	24	26	30	37	53	118	59	234
3— 6	1	3	8	27	58	48	65	48	31	51	66	257
6— 9	0	1	8	46	58	77	96	54	22	23	171	298
9—12	0	1	11	39	57	87	106	57	12	38	164	304
12—15	0	0	5	25	52	108	144	106	60	38	184	202
15—18	0	0	10	26	36	69	111	72	25	52	104	175
18—21	1	1	15	42	27	34	38	83	34	132	145	106
21—24	1	5	19	26	24	14	40	45	168	120	126	212
Average	1	2	12	31	35	58	79	63	51	72	127	224

February												
0— 3	1	5	5	4	7	23	55	70	75	58	77	79
3— 6	0	4	8	15	41	50	76	69	29	60	101	128
6— 9	0	1	7	23	56	92	103	105	28	49	108	104
9—12	0	0	5	23	36	89	149	82	22	52	114	89
12—15	0	1	3	19	40	125	159	91	26	55	128	133
15—18	0	1	9	25	56	105	87	61	21	40	155	58
18—21	0	2	9	27	37	43	60	72	26	55	93	161
21—24	1	3	6	19	19	39	56	36	66	150	98	160
Average	0	2	7	20	37	71	93	73	37	65	109	114

March

CET	Periods											
	1—5	5—10	10—15	15—20	20—25	25—30	30—40	40—60	60—90	90—120	120—300	300—600 sec
0— 3	1	5	10	13	19	21	69	54	65	156	112	120
3— 6	1	1	7	25	38	50	83	74	42	76	79	55
6— 9	0	0	6	31	75	109	119	55	12	18	128	86
9—12	0	1	5	19	56	106	149	74	20	53	73	72
12—15	0	0	8	21	44	97	177	56	23	69	104	99
15—18	0	1	7	23	52	84	122	64	24	79	15	133
18—21	1	1	10	36	50	32	37	38	25	54	56	151
21—24	1	5	16	24	27	16	13	27	45	235	101	33
Average	1	2	7	24	45	64	96	55	32	93	84	94

April

0— 3	1	6	48	25	23	19	26	20	92	183	179	162
3— 6	1	4	28	45	36	45	36	58	61	111	111	111
6— 9	0	1	9	39	92	177	163	57	36	56	122	0
9—12	0	0	1	15	74	245	183	118	20	34	89	102
12—15	0	0	3	22	57	152	247	142	31	71	131	117
15—18	0	0	4	25	75	136	206	39	34	93	116	161
18—21	0	0	19	56	71	40	27	38	51	67	161	120
21—24	0	1	25	54	29	22	9	16	66	148	71	277
Average	0	2	17	35	57	105	112	61	49	96	123	131

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	0	5	39	45	18	15	21	27	70	106	72	170
3— 6	0	3	26	69	47	40	38	38	48	40	65	202
6— 9	0	1	22	101	80	138	111	43	24	21	94	191
9—12	0	0	3	46	114	209	154	70	11	38	128	212
12—15	0	0	7	56	109	116	157	85	25	58	218	238
15—18	0	1	15	71	97	93	44	31	46	33	131	202
18—21	0	1	25	76	60	41	19	12	14	34	149	180
21—24	1	4	45	46	22	14	8	14	53	180	186	76
Average	0	2	23	64	68	83	69	40	36	70	130	184

June												
0— 3	0	19	43	23	15	16	27	34	96	171	72	223
3— 6	2	9	26	34	38	28	39	48	35	34	95	273
6— 9	0	2	32	101	127	47	93	29	21	32	116	127
9—12	0	1	14	62	146	82	108	32	32	95	104	153
12—15	0	3	6	62	122	84	71	76	59	97	187	109
15—18	0	3	18	29	79	55	41	41	50	36	143	142
18—21	0	10	24	43	33	29	28	42	26	56	174	91
21—24	4	18	41	27	6	29	19	14	77	159	128	71
Average	1	8	26	48	71	46	53	40	50	85	127	149

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	2	22	19	10	15	34	26	32	54	89	47
3— 6	1	11	21	57	24	49	48	29	15	27	52
6— 9	0	0	23	87	105	96	45	26	12	2	18
9—12	0	0	4	39	169	133	73	19	8	11	28
12—15	0	1	7	40	107	94	60	31	16	19	118
15—18	0	2	11	54	52	68	35	29	39	38	107
18—21	0	10	22	34	25	25	23	23	28	68	47
21—24	0	23	23	14	19	15	13	25	48	135	51
Average	0	9	16	42	65	64	40	27	28	19	59

August

0— 3	0	27	15	18	13	19	26	50	92	89	44	101
3— 6	0	17	31	69	38	32	44	33	30	13	62	32
6— 9	0	3	22	192	139	69	32	24	9	26	61	4
9—12	0	3	14	107	149	108	38	20	10	15	64	49
12—15	0	1	31	73	99	76	52	59	36	19	129	262
15—18	0	4	11	77	81	51	20	25	32	31	219	119
18—21	0	25	19	33	22	18	18	22	39	62	101	22
21—24	1	31	18	11	14	11	15	43	105	191	82	77
Average	0	14	20	73	69	48	31	35	44	56	95	83

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	0	4	6	16	23	26	55	81	91	58	14	43
3— 6	0	1	8	36	53	69	79	77	42	37	20	27
6— 9	0	0	3	10	141	249	177	82	9	6	28	22
9—12	0	0	3	13	88	204	180	104	23	22	40	61
12—15	0	0	3	19	71	183	168	54	9	57	51	49
15—18	0	0	3	21	51	103	107	61	32	78	63	48
18—21	0	2	11	31	27	22	24	62	70	116	102	24
21—24	0	2	12	25	23	39	30	52	84	206	201	18
Average	0	1	6	21	60	112	103	72	46	73	65	37

October												
0— 3	1	21	13	17	32	35	34	47	66	55	76	79
3— 6	0	8	23	51	81	70	42	35	22	16	116	162
6— 9	0	17	40	61	73	121	73	12	37	9	225	79
9—12	0	3	59	40	61	148	127	32	33	33	49	113
12—15	0	5	49	61	69	176	65	42	31	9	128	121
15—18	0	4	15	45	88	114	44	10	25	15	119	212
18—21	0	18	21	47	37	23	14	36	53	68	110	156
21—24	0	31	13	23	13	29	12	67	150	52	119	160
Average	0	13	29	43	57	90	51	35	52	32	118	135

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	0	20	14	39	27	41	32	40	97	48	67	0
3— 6	0	8	22	91	78	97	41	15	18	12	190	87
6— 9	0	18	20	57	91	152	84	50	27	35	269	135
9—12	0	35	34	69	64	130	94	33	40	28	141	39
12—15	0	28	69	55	64	218	103	19	31	27	83	89
15—18	0	5	11	70	101	148	40	11	33	2	30	53
18—21	0	6	17	48	66	35	15	32	34	51	22	56
21—24	1	18	20	36	28	22	14	39	152	69	147	69
Average	0	15	26	58	57	105	53	30	54	34	118	64

December

0— 3	0	7	15	43	25	30	35	28	22	57	48	82
3— 6	0	5	10	43	70	85	65	10	12	28	73	73
6— 9	0	7	45	75	80	50	45	22	10	83	222	138
9—12	0	19	35	107	73	58	58	32	11	71	76	99
12—15	0	2	17	56	95	159	119	36	5	26	107	48
15—18	0	5	17	77	53	105	15	0	32	25	47	35
18—21	0	2	25	70	40	22	23	20	35	37	87	5
21—24	0	3	12	67	15	27	27	60	125	205	28	12
Average	0	6	22	66	56	67	48	26	32	67	86	62

CET	Yearly average											
	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	20	21	20	25	37	44	74	102	78	113
3— 6	0	6	19	46	49	53	55	47	33	43	83	123
6— 9	0	4	19	70	94	117	97	47	21	27	125	95
9—12	0	4	15	45	92	137	121	57	21	40	88	110
12—15	0	3	16	42	77	129	127	68	30	47	139	136
15—18	0	2	11	44	69	93	75	39	33	45	117	125
18—21	0	7	18	44	41	30	27	40	36	72	119	99
21—24	1	12	21	29	20	23	21	35	91	155	126	104
Average	0	6	17	43	58	76	70	47	42	66	109	113

VI.

Micropulsation indices for the year
1980

*Activity indices for the micropulsations**(P1 to P12)**1980. January—December*

	January	February	March	April
1.	255454114543	121334543354	111212554311	115334321442
2.	135443321445	112234552435	115411343521	113433421312
3.	125533222555	112224554322	125532414521	114345514232
4.	113234544455	212124551132	134345212331	111223222423
5.	224223554335	114323443241	125544314421	115214552541
6.	114122555145	115422333555	113433522545	114223544555
7.	111111455123	235323544445	145244524521	335211553545
8.	124432123144	155322445532	224135524521	115424445555
9.	115522222125	113334533524	123344525522	155432335555
10.	115421222153	111224551122	111255312412	125423521554
11.	125411433544	111224555224	122135451532	115524415544
12.	113333541225	123212554431	111223554322	1252245445543
13.	155222445555	113434331324	144343523544	1352225445524
14.	155213554543	125224534553	111123555111	125434335443
15.	135244424522	114344523555	112224555521	135335415544
16.	155431113423	155321325554	221453442523	135334434523
17.		121345222123	211235541542	145333425512
18.		145432335531	114334421151	122222333211
19.		354432235221	112235534555	115333222531
20.		111224541432	215433344255	135445324551
21.		111355223421	155321325553	125224555511
22.	113334542144	112443232221	255333225554	115443424534
23.	115434424322	115334344542	123224543422	115443524522
24.	114433412351	121223545211	113334542321	115444235332
25.	111334533544	145323534541	115233543523	115553114525
26.	111444523244	135325542555	115433433554	115445322421
27.	115224535554	132225544455	144124554321	113455212521
28.	135434434555	142113553521	125423542514	113345422341
29.	555433434545	112124555311	115224533531	113454411443
30.	115435421145		115344514531	115534412245
31.	114235453212		115532225555	

	May	June	July	August
1.	125345522542	145532225552	112234354241	153123555441
2.	115555211154	135433445522	125123545251	123113555523
3.	111235532322	115442224522	325122533524	155542135543
4.	115432443522	115543221543	135442423442	125521124543
5.	135422245555	115533421122	155342144553	115444541452
6.	145543115544	125421233545	155443212455	255521123554
7.	125542223524	145532215555	155453112555	111435225111
8.	135435413521	355432345545	155433535541	112122455532
9.	145522125542	145533424454	145432445155	145522444522
10.	125532125555	125333435555	124224555453	145542233242
11.	115531133555	155423235555	545443221554	153335533423
12.	245433534455	155333445543	134444521524	153335534323
13.	145545414545	155322445545	145335325542	133543311155
14.	155515525545	155542214334	155345435253	155433212141
15.	133333555122	133444224321	133124555543	145434222533
16.	115322555321	125444425433	135454112552	155223444555
17.	113222554411	114434535221	155234514252	155521111554
18.	115543433415	1452111455411	155345314355	155532325534
19.	115543112355	115552213453	115345225341	155332124555
20.	135543113521	114254521343	125434453443	155552124155
21.	115554213145	125432331553	155332135553	153552134324
22.	115543212255	123154534542	125434213412	155445234324
23.	115553213244	114113552541	114125541141	111553232321
24.	145532314544	353153234544	135335554533	152455235521
25.	115533125555	155111125525	155422324554	152534414533
26.	125454333423	153132245552	154532233455	155541135453
27.	115554422222	125433534231	155534432552	155512245552
28.	114455211243	353242123341	134454434341	112144354112
29.	115412321145	121221354541	123455324522	133555413411
30.	125542123245	355122143551	133345335552	121551323322
31.	125532135544		121245424521	155442254421

	September	October	November	December
1.	114334434512	121255555521	124454311347	155511122555
2.	111254533321	113445434242	111125523412	115531112355
3.	115343524552	152345515222	111255542111	155523333553
4.	115245535211	155411455455	115545225522	113445331525
5.	113135544514	155332355122	112345513231	112335522411
6.	134333445522	155533235322	111455111131	111453113111
7.	115344322534	145434332234	111344133351	
8.	124235545421	155533212251	121355411511	
9.	121225552323	255335124345	155544115533	
10.	131111554321	155533234245	211343454454	
11.	111135455511	155411335555	155522215455	
12.	115423325544	132544245445	154434455225	
13.	155432345542	111455125323	123545412212	
14.	113235531221	155324524443	145435312342	
15.	113235544521	155225335253	155521134554	
16.	112345431424	111135534311	155425134242	
17.	114213555525	111345533221	133524125113	
18.	121123553221	155232125554		
19.	131222555531	155234444122		
20.	132245535322	111455213221		
21.	112224554511	114453425311		
22.	112224543544	145522114334		115423525541
23.	122345442431	155332325455		125355421122
24.	113445442432	122445223145	114445115114	113534531111
25.	111345444421	155533235453	155522115455	155534214542
26.	123223555421	155522215555	155542213352	122553111221
27.	112213555522	111134551231	155424235321	155522323554
28.	125335532532	111133553312	155514224452	115531114332
29.	135444212434	114445225321	135554313343	114532235541
30.	112455422213	111552124223	155423113553	142444324542
31.		155422134555		135242445525

Pc 1 indices 1980

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