GEOPHYSICAL OBSERVATORY REPORT

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

YEAR
1986, 1987

OBSERVATORY OF NAGYCENK
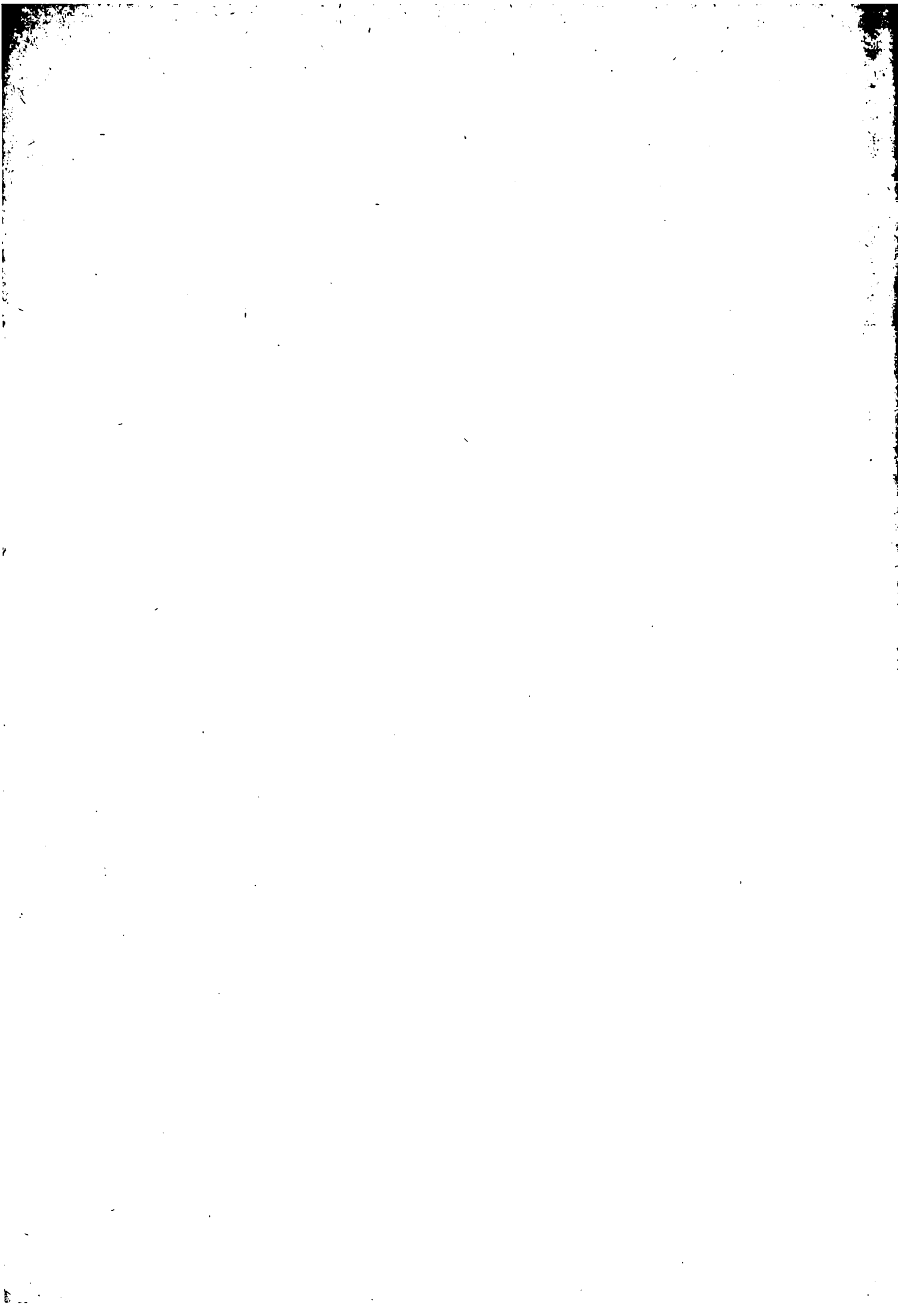
SOPRON

1991.

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PREFACE

The Reports of the Nagycenk Geophysical Observatory have been started in 1957 with earth current data. Later, from 1961 on, geomagnetic, from 1962 on, atmospheric electricity and from 1967 on, ionospheric data have been included, too. The present report for the years 1986-1987 has been compressed with respect to the earlier ones. Data series which proved to be of great value for any type of study have been preserved, others were dropped or reduced. In order to minimize delay in publication, the present volume contains data for two consecutive years.

This report has been completed with a list of yearly averages of the geomagnetic elements from the beginning of the observations.

As the railway line Sopron-Győr near to the Observatory has been electrified in the year 1987, the recording of Pc1 pulsations had to be stopped due to severe noise in this frequency range. The noise level in other frequency ranges did not disturb strongly the other types of recordings, thus the series of reports will be continued.

The compilation of atmospheric electric and ionospheric data remained unchanged.

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).

Sopron, November 1990

J. Somogyi
Director

A. ELECTROMAGNETIC FIELD OF THE EARTH

The coordinates of the Geophysical Observatory Nagycenk are the following:

$$\varphi = 47^O38' \qquad \lambda = 16^O43'$$
$$\Phi = 47.2^O \qquad \Lambda = 98.3^O$$
$$L = 1.9^O$$

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

Tables published in this part are the following:

1. 3-hour geoelectromagnetic activity indices T-M, corresponding to the greatest of five indices:

The electric activity indices T for the E_x and E_y components have a linear scale with a step of 1.8 mV/km. The range of values is 0 to 9.

The magnetic activity indices M for the components D, H and Z have also a linear scale with a step of 7 nT in the same range. The electric and magnetic scales are determined so that the averages are the same in a basic interval.

The indices K_1 and K_5 refer to complete days and express the activities in the period ranges 0-2 min (pulsations) and 24-60 min (substorms). The scales of K_1 and K_5 are as follows:

	Limits between K-values								
Period range	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
K_1	2	4	7	13	18	23	29	41	54
K_5	29	43	67	88	110	131	191	234	339

These values are given in units of 10^{-5} V/km.
Values in brackets mean extrapolated ones from incomplete data, where the lacking intervals were substituted by the average of recorded intervals.

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

3. Daily variation of the three geomagnetic elements as monthly averages. Values are differences in nT between the actual hourly average and the corresponding monthly mean. The monthly averages are given in absolute values (in the case of D the monthly mean is given in minutes of arc).

4. Yearly means of the geomagnetic elements 1961 to 1987 in nT and minutes of arc. These values are the results of a re-evaluation of previously published data, including corrections eliminating disturbances caused by construction works in the observatory. Corrected values are noted by asterisk.

5. List of special events, common table from magnetic nd earth current records. Tables are given for SSC-s, SI-s and bays (substorms) and Pi2 pulsations, further till June 1987, for Pc1.

6. Pulsation indices. The indices have been determined from occurrence frequency of different period pulsations, striving at a possibly uniform distribution of days in each of the five possible indices (1-5) in a basic interval.

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

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

The bands are the following:

P1	1	to	5	sec
P2	5	to	15	sec
P3	10	to	15	sec
P4	15	to	20	sec
P5	20	to	25	sec
P6	25	to	30	sec
P7	30	to	40	sec
P8	40	to	60	sec
P9	60	to	90	sec
P10	90	to	120	sec
P11	2	to	5	min
P12	5	to	10	min

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

L. HOLLÓ, M. TÁTRALLYAY and J. VERŐ: Experimental results with the characterization of geomagnetic micropulsations (Acta Geod., Geoph. Mont. Hung. 7/1972/15.

A detailed description of the processing and compilation is found in the Report of the Observatory for 1966 in German and in ÁDÁM, A., VERŐ, J., Cz. MILETITS, J., HOLLÓ, L. and WALLNER, Á.: The geophysical observatory near Nagycenk. I. Electromagnetic measurements and processing of data (Acta Geod. Geoph. Mont. Hung., 16 (1981), 333).

1.

Three-hour electromagnetic activity indices (T-M)
1986.

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		January					February		
1.	42375969	45	9	6		10112211	9	7	1
2.	45368732	38	7	4		12122131	13	7	1
3.	01232311	13	7	1		11121213	12	7	1
4.	21111101	8	7	1		32311130	14	5	1
5.	10112101	7	7	1		00121215	12	5	1
6.	10111399	25	4	2		20114747	26	5	2
7.	99544252	40	7	6		43599999	57	4	9
8.	61122212	17	7	2		96999999	69	7	9
9.	21012299	26	7	5		99985994	62	8	7
10.	64222110	18	7	2		52221104	17	6	1
11.	00111110	5	6	0		23116996	37	7	5
12.	12122112	12	7	2		32222493	27	8	3
13.	00111111	6	6	0		44212149	27	6	3
14.	10011010	4	5	1		94021559	35	5	2
15.	00112211	8	3	0		22112210	11	8	1
16.	00111001	4	7	0		01122234	15	9	2
17.	00111132	9	6	1		21133316	20	9	2
18.	21130111	10	6	1		61211316	21	6	2
19.	10111011	6	3	0		81122112	18	5	2
20.	32134125	21	2	2		22234877	35	7	4
21.	91012999	40	5	6		43274327	32	9	5
22.	61112226	21	7	2		92445997	49	9	7
23.	21123496	28	8	4		86535969	51	8	6
24.	32332135	22	7	2		32444439	33	9	4
25.	13333599	36	7	5		73335337	34	9	5
26.	72422311	22	7	2		13355962	34	8	5
27.	18549999	54	8	6		65347344	36	8	4
28.	97447989	57	9	6		33244497	36	9	5
29.	42333989	41	8	6					
30.	34223354	26	8	3					
31.	22222211	14	8	2					

$T(N)=2.036$ $M_H=2.10$ $K_1=6.52$ $T(N)=2.893$ $M_H=3.02$ $K_1=7.14$
$T(E)=1.810$ $M_D=1.85$ $K_5=2.61$ $T(E)=2.754$ $M_D=2.56$ $K_5=3.61$
$M_Z=0.27$ $M_Z=0.63$

1986

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		March					April		
1.	32343973	34	9	4		11232154	19	4	1
2.	22324413	21	8	3		21122111	11	7	1
3.	21112239	21	8	4		44312232	21	5	2
4.	91122231	21	6	3		01122112	10	7	1
5.	10111233	12	5	2		11122154	17	6	2
6.	44165946	39	6	4		11121013	10	4	1
7.	93222989	44	5	7		11132201	11	5	2
8.	95234795	44	7	6		11022111	9	3	1
9.	13522110	15	9	2		31223244	21	3	2
10.	10111110	6	8	0		82322930	29	4	2
11.	00111121	7	6	0		01111123	10	6	1
12.	00124213	13	4	1		41132121	15	3	2
13.	36215835	33	3	3		20011004	8	4	2
14.	73111111	16	7	2		00102111	6	1	1
15.	21211116	15	7	2		12121222	13	5	2
16.	11222111	11	7	2		41142212	17	6	3
17.	22221113	14	7	1		00112121	8	5	2
18.	41123311	16	5	3		33111003	12	4	2
19.	23232212	17	7	2		33133422	21	5	4
20.	10111110	6	4	1		01113012	9	5	2
21.	12448743	33	7	3		41122001	11	6	2
22.	86434314	33	8	4		22252133	20	6	3
23.	31123334	20	7	3		33112264	22	8	3
24.	22236986	38	7	4		43434221	23	7	3
25.	43533799	43	8	6		12332111	14	8	1
26.	62323644	30	8	5		32322101	14	7	1
27.	53443342	28	7	3		11311011	9	3	1
28.	23434386	33	8	3		43322110	16	6	3
29.	22213331	17	6	1		23335111	19	7	1
30.	00122213	11	7	1		12111111	9	6	0
31.	10123331	14	6	2					

$T(N)=2.153 \quad M_H=2.06 \quad K_1=6.55$
$T(E)=1.968 \quad M_D=1.83 \quad K_5=2.81$
$\quad\quad\quad\quad\quad M_Z=0.29$

$T(N)=1.342 \quad M_H=1.23 \quad K_1=5.20$
$T(E)=1.213 \quad M_D=0.94 \quad K_5=1.80$
$\quad\quad\quad\quad\quad M_Z=0.18$

1986

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		May					June		
1.	11213112	12	3	1		66123335	29	7	4
2.	13239799	43	4	7		41212333	19	5	1
3.	99421121	29	5	5		44521215	24	5	1
4.	11459428	34	4	3		21122012	11	3	2
5.	41212328	23	5	4		11121211	10	5	1
6.	75948699	57	5	8		21123221	14	6	1
7.	82212261	24	5	2		13224424	22	5	3
8.	21024242	17	6	2		12422112	15	6	2
9.	21112211	11	7	1		32111121	12	3	1
10.	32133111	15	7	2		23243222	20	4	2
11.	12322101	12	7	2		32222311	16	4	2
12.	12112101	9	7	2		11112212	11	3	1
13.	01111011	6	6	0		21211242	15	5	2
14.	11111203	10	4	1		11211223	13	5	2
15.	01010012	5	3	0		11111313	12	4	2
16.	00121115	11	3	2		11111322	12	–	2
17.	63123323	23	5	2		11256222	21	5	2
18.	11111101	7	2	1		12214311	15	3	2
19.	12111242	14	5	2		11111223	12	4	0
20.	22012211	11	5	1		31121321	14	5	1
21.	01133211	12	5	2		31112110	10	4	2
22.	10101121	7	3	1		22112322	15	3	1
23.	22433114	20	5	2		31111111	10	4	2
24.	22212312	15	6	2		11124320	14	4	3
25.	23533312	22	5	2		10111131	9	3	1
26.	21323321	17	4	3		11111111	8	3	1
27.	12211223	14	4	2		13135989	39	3	5
28.	41111000	8	5	1		68312112	24	6	2
29.	11112111	9	3	1		21222554	23	8	3
30.	21121255	19	2	2		61132222	19	7	2
31.	22323253	22	6	2					

$T(N)=1.681$	$M_H=1.65$	$K_1=4.81$	
$T(E)=1.548$	$M_D=1.17$	$K_5=2.19$	
	$M_Z=0.30$		

$T(N)=1.446$	$M_H=1.59$	$K_1=4.55$	
$T(E)=1.396$	$M_D=0.95$	$K_5=1.87$	
	$M_Z=0.23$		

1986

Day	T-M	Sum	K_1	K_5	T-M	Sum	K_1	K_5
		July				August		
1.	42112111	13	7	2	21211121	11	8	1
2.	12243354	24	7	3	11122101	9	7	1
3.	22322111	14	7	2	12433398	33	7	4
4.	31221131	14	7	2	93233363	32	7	3
5.	21122111	11	7	1	21133226	20	8	1
6.	32111221	13	5	2	12211220	11	7	1
7.	01110212	8	4	1	11011222	10	5	1
8.	13111223	14	4	2	421233	15	7	1
9.	22212221	14	4	1	122484	21	7	2
10.	42121113	15	4	1	31122122	14	7	2
11.	11122110	9	6	1	122110	7	5	1
12.	12002212	10	3	1	01233342	18	5	2
13.	34312211	17	3	1	14232321	18	7	2
14.	11111001	6	3	1	11221423	16	7	2
15.	13111221	12	3	1	21112211	11	6	1
16.	11112201	9	3	1	21211111	10	7	1
17.	24222011	14	4	2	11111220	9	6	1
18.	22111221	12	3	1	10122111	9	5	0
19.	32111113	13	2	0	10112112	9	4	2
20.	11111221	10	2	1	22114569	30	4	5
21.	31123222	16	4	2	52388964	45	7	5
22.	33212110	13	4	2	53399269	46	7	4
23.	11111101	7	4	1	23548964	41	8	3
24.	01100259	18	3	2	53534596	40	8	6
25.	93322226	29	4	3	54433232	26	7	3
26.	94647332	38	8	6	32336711	26	8	1
27.	42285125	29	7	3	23565323	29	9	2
28.	22335111	18	7	2	21136371	24	7	2
29.	32348437	34	8	2	34646655	39	9	3
30.	52233233	23	7	2	42435449	35	8	5
31.	13365232	25	9	2	95333315	32	7	4

$T(N)=1.573$ $M_H=1.43$ $K_1=4.84$
$T(E)=1.480$ $M_D=0.81$ $K_5=1.74$
$M_Z=0.21$

$T(N)=2.208$ $M_H=2.24$ $K_1=6.81$
$T(E)=2.196$ $M_D=1.66$ $K_5=2.29$
$M_Z=0.37$

1986

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		September					October		
1.	32333114	20	8	2		01126221	15	5	1
2.	32544311	23	8	2		34223993	35	6	4
3.	21122222	14	7	2		42110113	13	6	2
4.	32112121	13	7	1		31111131	12	7	3
5.	31122224	17	6	2		42233455	28	7	4
6.	81112303	19	5	1		11231212	13	7	1
7.	11122010	8	6	0		11221113	12	7	1
8.	21111112	10	6	2		20122321	13	7	2
9.	21112011	9	5	1		11121112	10	7	1
10.	22223111	14	5	1		20010001	4	4	0
11.	02221199	26	6	2		10011111	6	5	0
12.	99899568	63	7	6		20011111	7	3	0
13.	67243359	39	7	4		10122999	33	5	3
14.	42311163	21	8	3		64578365	44	7	5
15.	32235563	29	5	2		21244344	24	8	3
16.	11011114	10	5	1		11222123	14	7	2
17.	63324238	31	7	2		22222124	17	6	2
18.	72334395	36	7	3		11133865	28	8	5
19.	89423872	43	7	2		53349453	36	7	5
20.	41543257	31	7	3		12332674	28	8	3
21.	93223132	25	8	3		33243222	21	7	2
22.	11111122	10	7	1		31331110	13	7	1
23.	39557999	56	7	7		11112132	12	6	1
24.	33344546	32	7	4		00011102	5	6	0
25.	32249876	41	9	4		00121102	7	4	1
26.	94366642	40	8	5		10111011	6	5	1
27.	33445688	41	8	3		12122693	26	4	5
28.	32423126	23	8	2		45011007	18	4	3
29.	92322256	31	8	5		63233135	26	6	2
30.	21322100	11	5	1		94232267	35	4	4
						71111120	14	4	1

$T(N)=2.538$ $M_H=2.43$ $K_1=6.80$ $T(M)=1.754$ $M_H=1.75$ $K_1=5.94$
$T(E)=2.312$ $M_D=2.24$ $K_5=2.57$ $T(E)=1.491$ $M_D=1.54$ $K_5=2.19$
　　　　　　　 $M_Z=0.41$ 　　　　　 $M_Z=0.30$

1986

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
	November					December			
1.	25221110	14	3	1		93211240	22	4	3
2.	10221222	12	3	0		11111112	9	4	1
3.	13532152	22	6	2		20011112	8	3	1
4.	97999699	67	5	8		11101134	12	4	2
5.	69432142	31	4	6		40000000	4	5	0
6.	21122182	19	5	2		11010011	5	0	1
7.	42332211	18	6	1		12121110	9	3	1
8.	21121111	10	4	2		00000011	2	4	0
9.	11211101	8	7	1		10111112	8	4	1
10.	01110123	9	5	1		34111156	22	5	2
11.	23312112	15	6	3		14111111	11	7	1
12.	61222100	14	8	2		00011113	7	5	0
13.	10111251	12	4	1		31111248	21	5	2
14.	11121003	9	4	0		94541153	32	6	3
15.	23122555	25	7	3		10100111	5	5	0
16.	21222723	21	8	2		44112632	23	7	3
17.	22132311	15	7	2		01102221	9	4	0
18.	11111110	7	7	1		00111116	11	5	1
19.	10111112	8	6	0		11110003	7	7	1
20.	20101111	7	5	0		11121422	14	6	1
21.	00111111	6	6	0		20012269	22	7	2
22.	00010001	2	2	0		84112643	29	5	3
23.	00111139	16	5	2		22249949	41	6	4
24.	99366989	59	4	6		22011133	13	3	2
25.	84337899	51	3	6		13311102	12	5	0
26.	74125820	29	3	3		33233236	25	7	3
27.	13111100	8	4	1		32111213	14	4	1
28.	00111031	7	1	0		11011000	4	7	0
29.	01010733	15	3	1		11111001	6	4	1
30.	00213943	22	4	3		10010114	8	3	1
						01011200	5	3	1

$T(N)=1.708$ $M_H=1.64$ $K_1=4.83$
$T(E)=1.392$ $M_D=1.58$ $K_5=2.00$
                $M_Z=0.30$

$T(N)=1.141$ $M_H=1.22$ $K_1=4.94$
$T(E)=1.052$ $M_D=1.00$ $K_5=1.35$
                $M_Z=0.18$

1.

Three-hour electromagnetic activity indices (T-M)

1987.

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		January					February		
1.	13222694	29	4	4		21111111	9	6	2
2.	11112511	13	5	0		10012110	6	6	0
3.	12221111	11	7	1		11111011	7	3	1
4.	10111110	6	6	0		00111131	8	6	0
5.	11000011	4	3	0		00121111	7	5	0
6.	01001001	3	2	0		31012112	11	5	1
7.	01100114	8	2	1		31112335	19	6	2
8.	31111112	11	3	1		22231872	27	7	2
9.	11142110	11	5	1		11224315	19	5	1
10.	00112011	6	5	0		22111311	12	5	1
11.	01111121	8	5	0		21101181	15	6	2
12.	31311111	12	3	1		62222821	25	5	3
13.	10111142	11	6	1		22100002	7	3	0
14.	00001113	6	5	1		11111111	8	5	0
15.	00100123	7	5	1		01122112	10	7	1
16.	41233382	26	6	3		12123673	25	6	3
17.	03112213	13	5	2		11112354	18	7	2
18.	51111115	16	7	3		21121214	14	7	1
19.	20121212	11	6	2		11111214	12	7	0
20.	12332995	34	6	3		14598986	50	6	3
21.	11225225	20	7	1		32421615	24	6	2
22.	22223371	22	8	1		22343226	24	8	3
23.	32133214	19	8	2		62224471	28	8	1
24.	22122121	13	7	1		21133279	28	8	2
25.	01110122	8	7	1		21112222	13	8	1
26.	11113120	10	7	1		10223212	13	9	1
27.	11124101	11	5	0		11223483	24	7	2
28.	12122365	22	7	2		51155345	29	8	2
29.	93222111	21	7	1					
30.	11011121	8	4	0					
31.	33111112	13	5	1					

$T(N)=1.201$ $M_H=1.15$ $K_1=5.42$

$T(E)=1.121$ $M_D=0.91$ $K_5=1.16$

$M_Z=0.19$

$T(N)=1.616$ $M_H=1.57$ $K_1=6.25$

$T(E)=1.602$ $M_D=1.29$ $K_5=1.39$

$N_Z=0.32$

1987

Day	T-M	Sum	K$_1$	K$_5$		T-M	Sum	K$_1$	K$_5$

	March					April			
1.	42111344	20	7	2		23121022	13	5	1
2.	00111112	7	7	0		01011110	5	6	0
3.	11121132	12	7	1		00011000	2	1	0
4.	41111224	16	6	2		16366411	29	4	1
5.	23234959	37	7	5		23322346	25	7	2
6.	61333155	27	8	2		11112211	10	7	1
7.	55437322	31	7	2		32323232	20	7	1
8.	31222210	21	7	1		11233143	18	8	2
9.	33222210	15	8	2		01124153	17	6	2
10.	12335410	19	6	2		18211010	14	7	2
11.	11423361	21	8	1		01122112	10	5	1
12.	23122125	18	7	2		21112101	9	5	1
13.	72322114	22	8	2		11131777	28	4	2
14.	21122423	17	7	1		10124212	13	4	1
15.	21232121	14	8	2		11012131	10	3	1
16.	31224242	20	6	2		00112000	4	3	0
17.	43212211	16	8	2		10111110	6	4	0
18.	32112454	22	7	2		00121101	6	3	0
19.	72223232	23	9	1		12232211	14	3	0
20.	10111112	8	9	0		01243100	11	4	2
21.	11135987	35	6	3		00311000	5	3	0
22.	92223238	31	8	3		00101111	5	3	0
23.	12233111	14	7	1		11111111	8	4	0
24.	00141011	8	5	1		12212315	17	3	1
25.	00011732	14	6	0		11111111	8	4	1
26.	21252331	19	6	2		11113111	10	4	0
27.	14338755	36	5	6		11232422	17	3	1
28.	34334211	21	9	0		20001001	4	2	0
29.	11121012	9	4	1		11011131	9	3	0
30.	00111111	6	4	1		00111111	6	2	0
31.	00011110	4	3	1					

T(N)=1.702 M$_H$=1.67 K$_1$=7.10
T(E)=1.750 M$_D$=1.29 K$_5$=1.71
 M$_Z$=0.42

T(N)=1.104 M$_H$=0.97 K$_1$=4.23
T(E)=1.037 M$_D$=0.71 K$_5$=0.77
 M$_Z$=0.20

1987

Day	T-M	Sum	K_1	K_5	T-M	Sum	K_1	K_5
		May				June		
1.	20143231	16	5	1	21112312	13	5	1
2.	41121112	13	6	2	42412211	17	7	2
3.	01232110	10	4	0	01112121	9	7	0
4.	01222121	11	4	0	21222121	13	7	1
5.	00122120	8	3	1	22113322	16	4	2
6.	00102134	11	3	1	11257634	29	5	5
7.	33132103	16	4	1	31133222	17	5	3
8.	01011102	6	4	0	11111001	6	5	1
9.	11123101	10	2	2	30111021	9	3	0
10.	01234210	13	4	2	11111110	7	4	1
11.	11111024	11	3	2	21133211	14	5	1
12.	01100002	4	2	0	22133324	20	5	2
13.	01131223	13	4	2	21211111	10	4	0
14.	51122212	16	3	2	12221101	10	5	0
15.	11021101	7	4	1	11111121	9	4	0
16.	11111011	7	2	2	21112123	13	5	2
17.	11011111	7	3	0	21411103	13	6	2
18.	10011000	3	3	0	21122111	11	4	1
19.	01011100	4	3	0	22244215	22	5	3
20.	11011101	6	3	2	22122242	17	7	3
21.	11001012	6	3	0	52111021	13	6	2
22.	11011412	11	2	3	11111121	9	5	1
23.	21122224	16	5	2	01000121	5	4	1
24.	12222459	27	4	3	01111234	13	4	2
25.	79935962	50	4	3	31111136	17	3	1
26.	11222269	25	5	3	43111131	15	4	3
27.	32231245	22	4	3	23222100	12	7	2
28.	21122237	20	5	3	11121004	10	5	0
29.	36263110	22	5	3	11212112	11	5	1
30.	00025332	15	3	1	11121001	7	2	0
31.	12222351	18	4	1				

T(N)=1.226 M_H=1.22 K_1=3.65   T(N)=1.146 M_H=1.09 K_1=4.93
T(E)=1.202 M_D=0.89 K_5=1.48   T(E)=1.183 M_D=0.70 K_5=1.43
             M_Z=0.17 M_Z=0.22

1987

Day	T-M	Sum	K_1	K_5	T-M	Sum	K_1	K_5
		July				August		
1.	01001111	5	3	1	23232210	15	7	2
2.	01111112	8	3	1	21111111	9	5	0
3.	01012193	17	3	2	01212571	19	5	2
4.	62211222	18	7	2	11111133	12	3	1
5.	12221111	11	5	1	33222222	18	5	3
6.	11111102	8	4	1	01222421	14	5	2
7.	21011132	11	4	1	21111111	9	5	2
8.	13233211	16	6	2	11211121	10	4	3
9.	12211324	16	5	1	91313111	20	4	3
10.	33135511	22	3	2	11111111	8	4	0
11.	12111222	12	5	1	12111232	13	4	2
12.	11222322	15	6	2	41223535	25	6	5
13.	11111113	10	5	0	54373224	30	7	4
14.	21211112	11	5	1	33132223	19	7	2
15.	21446468	35	5	3	24455355	33	7	5
16.	83442665	38	6	4	23333222	20	6	1
17.	53336221	25	6	3	22222511	17	6	1
18.	22213324	19	5	2	14220212	14	7	0
19.	22013213	14	4	3	11212212	12	6	1
20.	12112224	15	5	3	22222211	14	7	2
21.	11111121	9	6	2	22111110	9	8	0
22.	22122223	16	5	2	01152242	17	6	2
23.	11111113	10	3	2	22222223	17	4	2
24.	11111863	22	4	1	11164322	20	5	2
25.	32363334	27	4	3	41359954	40	4	5
26.	11111011	7	3	1	98545445	44	7	5
27.	21122110	10	4	0	22247968	34	7	6
28.	01144769	32	4	6	12122388	27	9	3
29.	99954320	41	5	6	41116264	25	7	2
30.	32011113	12	4	1	33831245	29	6	3
31.	37322211	21	7	2	34748963	44	7	6

$T(n)=1.579$ $M_H=1.61$ $K_1=4.65$
$T(E)=1.558$ $M_D=1.08$ $K_5=2.00$
$M_Z=0.33$

$T(N)=2.024$ $M_H=1.95$ $K_1=5.81$
$T(E)=1.883$ $M_D=1.58$ $K_5=2.48$
$M_Z=0.27$

1987

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5

September

October

Day	T-M	Sum	K_1	K_5	T-M	Sum	K_1	K_5
1.	26479959	51	7	6	41322333	21	7	2
2.	32342231	20	7	2	32132110	13	7	2
3.	01111100	5	5	0	01339696	37	5	6
4.	02111313	12	5	1	32124611	20	5	2
5.	31132121	14	6	1	01121211	9	5	1
6.	21122224	16	6	3	11111113	10	5	1
7.	11233213	16	7	2	00115411	13	4	2
8.	32332313	20	8	2	12132121	13	4	1
9.	12233113	16	6	2	00111112	7	3	1
10.	21119989	40	7	6	23111122	13	3	1
11.	93296495	47	8	7	22443994	37	6	3
12.	23444587	37	7	3	31222422	18	8	1
13.	53334927	36	7	3	23546998	46	9	6
14.	95446347	42	7	6	43556995	46	9	6
15.	34564687	43	8	6	23456763	36	7	6
16.	62433224	26	7	4	22533642	27	7	4
17.	22233463	25	7	4	21169874	38	6	5
18.	21123213	15	7	2	22132212	15	8	1
19.	10121110	7	6	0	11122211	11	6	1
20.	11123592	24	3	3	20121237	18	6	3
21.	14245111	19	5	1	22121296	25	6	5
22.	34133499	35	7	6	11112121	10	7	0
23.	92232111	21	4	3	41112511	16	6	3
24.	46234214	26	4	4	02122199	26	6	5
25.	22345999	43	4	6	95665216	40	6	6
26.	92323251	27	6	3	11232321	15	6	2
27.	41232144	21	5	2	26337996	45	6	6
28.	59474364	37	7	3	93697999	61	9	9
29.	42236998	43	7	6	52426442	29	5	4
30.	57554896	49	6	8	22242113	17	6	1
31.					11122352	17	7	1

$T(N)=2.888$ $M_H=2.61$ $K_1=6.27$ $T(N)=2.480$ $M_H=2.21$ $K_1=6.19$

$T(E)=2.538$ $M_D=2.33$ $K_5=3.50$ $T(E)=1.964$ $M_D=2.21$ $K_5=3.19$

           $M_Z=0.41$ $M_Z=0.35$

1987

Day	T-M	Sum	K_1	K_5		T-M	Sum	K_1	K_5
		November					December		
1.	12111120	9	4	1		11021111	8	3	0
2.	11111899	31	5	6		10001210	5	5	0
3.	53234899	43	6	6		22212822	21	5	1
4.	23322113	17	5	2		21010149	18	5	2
5.	10245427	25	4	3		73342242	27	5	2
6.	13122131	14	5	2		01211323	13	5	1
7.	34122001	13	3	1		11112111	9	7	0
8.	01111111	7	5	1		00011011	4	5	0
9.	00122128	16	5	1		00011133	9	4	0
10.	72212111	17	5	2		63534999	48	7	3
11.	12232233	18	5	2		53222464	28	5	2
12.	93342176	35	7	4		32222110	13	6	2
13.	53445973	40	7	6		10211111	8	6	0
14.	86534864	44	7	6		00111001	4	5	0
15.	33343332	24	7	3		00011953	19	6	4
16.	12122221	13	6	0		66444997	49	6	8
17.	11011101	6	4	0		43232553	27	5	4
18.	01011011	5	3	1		52221110	14	7	3
19.	31232431	19	5	2		00112161	12	3	2
20.	11221242	15	5	2		10011210	6	4	0
21.	11111010	6	6	0		01111132	10	5	2
22.	11111102	8	6	0		63134147	29	6	4
23.	11379395	38	5	6		34122210	15	5	2
24.	52384712	32	6	2		01111221	9	3	1
25.	31111621	16	6	3		21111114	12	4	1
26.	21214271	20	5	2		11111012	8	4	0
27.	75233561	32	4	6		10000000	1	3	0
28.	11122131	12	5	1		00010014	6	3	0
29.	10021100	5	6	0		11111000	5	3	1
30.	00002131	7	3	0		00010001	2	3	0
31.						00011011	3	3	0

$T(N)=1.958$ $M_H=1.70$ $K_1=5.17$ $\qquad$ $T(N)=1.391$ $M_H=1.23$ $K_1=4.71$

$T(E)=1.629$ $M_D=1.68$ $K_5=2.37$ $\qquad$ $T(E)=1.190$ $M_D=1.15$ $K_5=1.46$

$M_Z=0.23$ $\qquad\qquad\qquad\qquad\qquad\qquad$ $M_Z=0.19$

2.

Disturbed and quiet days for 1986

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

2.

Disturbed and quiet days for 1987

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

3. Hourly averages of magnetic

	0	1	2	3	4	5	6	7	8	9	10	11

January

H	- 0.8	- 2.1	- 1.8	- 1.6	+ 1.0	+ 6.0	+ 6.8	+ 8.7	+ 7.7	+ 4.8	+ 1.1	- 0.4
D	+ 6.7	+ 2.1	+ 0.1	- 4.5	- 7.7	- 5.4	- 4.0	- 2.1	+ 1.3	+ 0.5	- 1.9	- 5.6
Z	+ 0.6	- 0.5	- 1.2	- 1.2	- 1.1	- 1.5	- 1.3	- 1.4	- 1.8	- 3.0	- 2.8	- 3.9

February

H	+ 6,7	+ 0.2	- 0.3	+ 2.6	+ 1.1	+ 4.0	+ 6.1	+ 9.6	+11.9	+ 6.7	- 0.6	- 7.4
D	+14.0	+ 5.5	- 1.2	- 5.5	- 6.7	- 4.5	- 6.0	- 4.0	+ 3.8	+ 6.0	+ 1.1	- 7.6
Z	- 3.5	- 5.9	- 7.0	- 5.0	- 3.6	- 2.7	- 2.5	- 2.1	- 2.1	- 3.8	- 5.7	- 6.7

March

H	+ 6.2	+ 5.1	+ 5.0	+ 3.3	+ 4.2	+ 5.0	+ 7.1	+ 7.9	+ 2.8	- 1.8	- 5.0	- 5.9
D	+ 5.4	+ 4.2	+ 4.1	+ 1.7	+ 2.8	+ 3.5	+ 4.8	+ 9.7	+14.0	+12.8	+ 1.8	-12.7
Z	+ 0.8	- 0.5	- 0.8	- 1.2	- 1.3	- 0.6	+ 0.6	+ 1.7	+ 0.3	- 3.3	- 7.9	- 9.9

April

H	+ 5.0	+ 5.0	+ 5.1	+ 4.0	+ 4.0	+ 4.2	+ 4.7	+ 1.1	- 6.3	-11.2	-12.5	- 9.0
D	+ 3.5	+ 2.5	+ 2.4	+ 3.7	+ 6.3	+10.9	+17.5	+24.5	+25.6	+16.4	+ 1.9	-13.9
Z	+ 3.7	+ 3.3	+ 2.6	+ 2.3	+ 2.6	+ 3.6	+ 4.3	+ 3.8	+ 1.1	- 3.5	- 9.2	-14.2

May

H	+ 7.7	+ 5.9	+ 5.1	+ 4.7	+ 5.0	+ 3.4	- 1.7	- 4.7	- 9.3	- 9.0	- 4.5	+ 1.6
D	+ 6.5	+ 7.0	+ 6.5	+ 8.8	+11.7	+16.7	+20.1	+20.7	+19.7	+10.4	- 2.9	-16.0
Z	+ 2.2	+ 1.5	+ 1.2	+ 1.4	+ 2.9	+ 3.2	+ 2.6	+ 1.8	+ 0.1	- 4.4	- 9.4	-14.1

elements (H, D, Z) for 1986

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages

+ 0.5	- 0.2	- 2.8	- 3.9	- 5.4	- 4.5	- 4.9	- 3.1	- 2.3	- 0.1	- 0.1	- 2.6	21 064 nT
-10.8	-11.2	- 5.0	- 0.6	- 1.7	+ 0.8	+ 4.2	+ 5.0	+ 7.6	+ 9.6	+11.3	+11.3	$1^o16.2'$
- 5.0	- 1.6	+ 1.4	+ 2.4	+ 2.8	+ 3.0	+ 3.5	+ 3.6	+ 3.4	+ 2.5	+ 1.7	+ 1.4	42 644 nT

- 9.5	- 8.6	- 6.2	- 1.9	- 8.4	-11.5	- 8.7	- 2.8	- 1.3	+ 4.9	+11.6	+ 1.8	21 045 nT
-13.1	-16.8	-16.7	- 8.7	- 2.0	+ 0.6	+ 4.2	+ 1.8	+ 8.0	+13.4	+19.5	+14.9	$1^o17.7'$
- 5.3	- 2.1	+ 1.6	+ 4.0	+ 9.1	+10.1	+10.4	+ 9.1	+ 7.8	+ 5.6	+ 1.6	- 1.3	42 662 nT

- 6.2	- 3.9	- 4.0	- 7.1	- 8.1	- 7.1	- 4.0	- 1.9	- 0.7	+ 1.9	+ 3.9	+ 3.3	21 059 nT
-23.1	-25.5	-23.3	-13.0	- 5.7	- 2.7	- 0.5	+ 2.2	+ 8.2	+ 9.7	+ 7.6	+ 8.6	$1^o16.8'$
- 8.5	- 6.3	- 2.1	+ 2.7	+ 4.9	+ 5.4	+ 5.2	+ 5.2	+ 5.0	+ 4.4	+ 3.4	+ 2.8	42 661 nT

- 3.6	- 2.4	- 2.7	- 2.8	- 2.4	- 1.5	+ 0.1	+ 2.3	+ 2.6	+ 4.0	+ 6.2	+ 6.1	21 071 nT
-26.2	-30.2	-26.3	-17.7	- 9.3	- 4.1	- 1.7	+ 0.1	+ 2.0	+ 2.5	+ 5.4	+ 4.2	$1^o16.7'$
-15.8	-12.2	- 6.6	- 1.5	+ 2.1	+ 3.8	+ 4.2	+ 4.9	+ 5.5	+ 5.4	+ 5.1	+ 4.7	42 654 nT

+ 2.4	- 2.4	- 6.6	- 6.0	- 5.9	- 4.4	- 1.8	+ 0.8	+ 3.4	+ 4.1	+ 6.3	+ 5.9	21 070 nT
-27.1	-30.3	-26.6	-20.6	-13.9	- 7.3	- 3.5	+ 1.1	+ 2.7	+ 3.2	+ 6.4	+ 6.7	$1^o17.1'$
-15.2	-12.7	- 6.3	- 0.1	+ 4.3	+ 6.2	+ 7.3	+ 6.8	+ 6.3	+ 5.6	+ 4.8	+ 4.0	42 653 nT

	0	1	2	3	4	5	6	7	8	9	10	11

June

H	+ 7.2	+ 5.3	+ 4.9	+ 5.8	+ 5.5	+ 5.9	+ 1.1	- 6.0	-11.9	-14.9	-14.0	- 8.0
D	+ 5.5	+ 6.9	+ 6.5	+ 9.7	+14.1	+19.8	+24.9	+26.3	+23.2	+12.6	- 1.0	-14.9
Z	+ 2.7	+ 1.8	+ 1.5	+ 1.7	+ 3.2	+ 3.7	+ 3.0	+ 2.8	+ 1.6	- 3.4	- 8.9	-12.7

July

H	+11.3	+ 7.9	+ 5.5	+ 4.6	+ 7.0	+ 7.5	+ 1.6	- 6.9	-14.8	-19.1	-18.4	-14.6
D	+ 3.6	+ 6.4	+ 9.4	+ 9.6	+13.6	+21.5	+26.9	+27.5	+25.9	+17.2	+ 2.6	-13.0
Z	+ 1.6	+ 1.0	+ 1.1	+ 2.1	+ 3.8	+ 4.0	+ 2.6	+ 2.2	+ 0.6	- 2.5	- 6.8	-10.7

August

H	+ 8.4	+ 6.7	+ 5.3	+ 5.2	+ 3.6	+ 3.1	+ 0.1	- 7.0	-12.5	-16.5	-12.9	- 6.0
D	+ 4.5	+ 6.4	+ 6.4	+ 7.6	+10.2	+14.6	+19.7	+23.2	+20.5	+10.3	- 4.0	-18.5
Z	+ 1.4	+ 0.3	+ 0.5	+ 0.1	+ 1.2	+ 1.9	+ 1.8	+ 2.0	+ 1.2	- 1.8	- 6.0	-10.7

September

H	+10.0	+ 6.4	+ 7.0	+ 7.0	+ 4.2	+ 1.1	- 3.4	-10.0	-16.0	-16.5	-13.4	- 8.0
D	+ 7.1	+ 6.0	+ 6.7	+ 8.4	+10.6	+ 8.1	+14.4	+17.9	+17.0	+ 9.7	- 3.3	-17.2
Z	+ 0.6	+ 0.1	- 0.6	- 1.0	- 0.8	- 0.4	+ 1.1	+ 2.2	+ 0.2	+ 0.1	- 4.7	- 8.6

October

H	+ 5.0	+ 2.7	+ 3.1	+ 0.2	+ 5.3	+ 5.8	+ 7.3	+ 5.4	+ 1.3	- 5.0	- 8.7	- 7.2
D	+ 7.4	+ 4.2	+ 2.3	+ 2.1	+ 0.6	+ 1.2	+ 2.7	+ 8.4	+15.3	+15.3	+ 5.9	-10.5
Z	+ 0.6	+ 0.2	- 0.2	- 0.4	- 0.8	- 0.6	+ 1.0	+ 2.8	+ 2.7	- 0.9	- 6.3	- 9.0

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages

- 4.4 - 3.2 - 1.9 - 3.2 - 2.9 - 1.3 + 2.7 + 4.4 + 7.3 + 8.4 + 7.0 + 6.2 21 078 nT
-21.7 -27.4 -28.6 -24.1 -16.3 -10.8 - 7.7 - 5.4 - 1.8 + 1.4 + 4.0 + 4.8 $1^0$17.1,
-12.9 -10.7 - 6.6 - 1.0 + 2.2 + 4.0 + 5.0 + 5.0 + 4.8 + 4.6 + 4.4 + 4.2 42 651 nT

- 9.0 - 6.1 - 5.2 - 3.1 - 1.1 + 0.4 + 3.0 + 6.9 +10.3 +12.1 + 9.5 +10.7 21 076 nT
-25.0 -30.3 -29.5 -22.8 -15.0 - 9.3 - 6.6 - 7.0 - 5.9 - 2.1 + 0.2 + 2.1 $1^0$17.7,
-10.9 - 8.6 - 4.4 - 0.7 + 3.4 + 4.5 + 3.8 + 2.9 + 2.9 + 2.6 + 3.0 + 2.5 42 649 nT

- 0.9 - 2.4 - 1.7 - 3.7 - 4.9 - 3.0 + 2.6 + 5.4 + 8.0 + 8.9 + 7.1 + 7.1 21 071 nT
-28.4 -29.5 -23.4 -18.2 -10.1 - 2.8 - 1.1 - 2.1 - 0.1 + 4.0 + 6.5 + 4.3 $1^0$17.8,
-10.8 - 7.6 - 3.0 + 0.5 + 4.0 + 5.3 + 3.9 + 3.7 + 3.6 + 3.5 + 2.8 + 2.2 42 652 nT

- 5.7 - 0.3 + 1.0 - 0.8 - 3.9 - 5.0 - 1.4 + 2.9 + 9.3 + 9.4 +11.9 +14.2 21 062 nT
-25.6 -25.4 -21.3 -12.8 - 6.9 - 3.6 - 3.2 - 1.0 + 2.1 + 2.7 + 4.9 + 4.7 $1^0$18.6,
- 8.1 - 5.9 - 2.5 + 1.0 + 3.5 + 3.9 + 4.6 + 4.5 + 4.0 + 3.3 + 2.6 + 0.9 42 663 nT

- 4.8 - 4.1 - 3.8 - 5.3 - 6.1 - 3.3 + 0.1 + 2.3 + 0.8 + 2.2 + 1.8 + 5.0 21 063 nT
-20.8 -24.4 -20.2 -12.2 - 7.0 - 4.0 - 2.5 + 1.4 + 6.9 +10.2 + 9.9 + 7.8 $1^0$18.8,
- 8.3 - 5.1 - 3.6 - 0.5 + 3.4 + 3.9 + 4.2 + 1.8 + 4.2 + 4.1 + 3.8 + 3.0 42 669 nT

	0	1	2	3	4	5	6	7	8	9	10	11

November

H	+ 2.5	+ 5.7	+ 6.1	+ 4.5	+ 6.7	+ 8.2	+11.1	+10.2	+ 6.3	+ 1.8	- 3.3	- 6.1
D	+ 7.4	+ 1.6	- 0.9	- 2.0	- 4.5	- 7.2	- 3.5	+ 1.8	+ 7.8	+ 8.9	+ 1.4	- 7.3
Z	- 2.6	- 3.8	- 4.9	- 5.0	- 4.6	- 4.4	- 4.7	- 3.4	+ 3.5	- 4.9	- 2.8	- 8.1

December

H	- 0.4	- 1.4	- 0.1	+ 2.1	+ 2.9	+ 3.9	+ 8.2	+ 9.3	+ 7.2	+ 2.2	- 3.6	- 6.2
D	+ 7.5	+ 2.9	+ 0.4	- 1.4	- 3.0	- 3.7	- 3.7	- 0.7	+ 3.0	+ 2.5	- 0.3	- 4.2
Z	- 2.0	- 2.3	- 3.0	- 5.1	- 2.8	- 2.5	- 2.4	- 2.1	- 2.2	- 2.1	- 0.6	- 1.9

1986 Yearly means

H	+ 5.7	+ 4.0	+ 3.7	+ 3.5	+ 4.2	+ 4.8	+ 4.1	+ 1.5	- 2.8	- 6.5	- 8.0	- 6.4
D	+ 6.6	+ 4.6	+ 3.7	+ 3.2	+ 4.0	+ 6.3	+ 9.5	+12.8	+14.8	+10.2	+ 0.1	-11.8
Z	+ 0.5	- 0.4	- 0.9	- 0.9	- 0.1	+ 0.3	+ 0.5	+ 0.9	- 0.2	- 2.8	- 5.9	- 9.2

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
- 5.2	- 3.4	- 2.1	- 5.8	- 8.9	-10.1	- 3.7	- 8.0	- 3.8	- 2.0	- 0.6	- 0.1	21 059 nT
-14.0	-15.8	-13.5	- 9.2	- 5.6	- 0.8	+ 2.1	+ 8.2	+ 9.9	+12.0	+11.8	+11.4	$1^o19.5$,
- 7.8	- 4.5	- 0.3	+ 2.7	+ 6.9	+ 8.2	+ 9.1	+ 9.4	+ 9.0	+ 8.2	+ 7.2	+ 4.6	42 684 nT
- 3.9	- 2.3	- 1.9	- 1.2	- 2.4	- 1.7	+ 0.1	- 1.0	- 3.6	- 3.2	- 1.9	- 1.1	21 063 nT
-10.5	-11.7	- 7.9	- 5.0	- 2.1	- 1.1	+ 0.3	+ 2.1	+ 6.7	+ 9.3	+11.2	+ 9.4	$1^o19.3$,
- 1.8	+ 0.5	+ 2.4	+ 3.1	+ 3.0	+ 3.0	+ 3.0	+ 3.2	+ 3.7	+ 3.6	+ 2.8	+ 2.5	42 673 nT
- 4.2	- 3.3	- 3.2	- 3.7	- 5.0	- 4.4	- 1.3	+ 0.7	+ 2.5	+ 4.2	+ 5.2	+ 4.7	21 065 nT
-20.5	-23.2	-20.2	-13.8	- 8.0	- 3.3	- 1.3	+ 0.5	+ 3.8	+ 6.3	+ 8.2	+ 7.5	$1^o17.8$,
- 9.2	- 6.4	- 2.5	+ 1.1	+ 4.1	+ 5.1	+ 5.4	+ 5.0	+ 5.0	+ 4.5	+ 3.6	+ 2.5	42 660 nT

3. Hourly averages

(H, D, Z)

	0	1	2	3	4	5	6	7	8	9	10	11

January

H	- 1.8	- 1.9	- 1.3	+ 0.1	+ 2.2	+ 4.3	+ 8.8	+ 9.5	+ 9.8	+ 5.5	+ 1.1	- 2.5
D	+ 6.9	+ 3.2	- 0.8	- 1.5	- 2.2	- 3.0	- 2.3	- 0.8	+ 1.0	+ 1.1	- 0.9	- 4.8
Z	- 0.5	- 0.9	- 1.1	- 1.5	- 1.6	- 1.5	- 1.6	- 2.0	- 2.4	- 1.7	- 1.6	- 2.5

February

H	+ 0.8	+ 0.2	- 1.0	- 0.7	+ 1.0	+ 2.9	+ 3.9	+ 6.0	+ 6.2	+ 6.8	+ 4.2	- 3.2
D	+ 5.1	+ 3.6	+ 3.1	+ 1.8	+ 1.0	+ 1.1	+ 0.6	+ 0.1	- 2.7	- 5.3	- 7.6	- 9.5
Z	+ 0.7	+ 0.1	- 0.1	- 0.1	- 0.1	- 0.1	- 0.2	- 0.8	- 1.5	- 2.7	- 4.0	- 4.0

March

H	+ 3.3	+ 2.3	+ 2.3	+ 2.5	+ 4.2	+ 4.8	+ 5.2	+ 5.1	+ 3.6	- 1.9	- 5.7	- 6.5
D	+ 5.5	+ 3.9	+ 2.5	+ 0.7	+ 2.6	+ 2.5	+ 2.8	+ 8.7	+15.8	+15.6	+ 6.8	- 7.1
Z	+ 1.2	+ 0.9	+ 0.8	+ 0.6	+ 0.2	+ 0.2	+ 1.2	+ 3.4	+ 2.5	- 1.7	- 6.4	- 9.5

April

H	+ 3.4	+ 2.8	+ 1.3	+ 1.3	+ 1.6	+ 2.8	+ 2.4	+ 0.2	- 2.6	- 6.3	- 4.5	- 0.9
D	+ 1.8	+ 2.9	+ 3.8	+ 4.1	+ 7.1	+ 9.8	+15.6	+20.1	+22.0	+17.1	+ 4.2	-10.9
Z	+ 3.4	+ 3.2	+ 3.2	+ 3.0	+ 2.9	+ 3.1	+ 2.8	+ 2.3	- 0.3	- 3.9	- 6.1	-13.4

May

H	+ 4.2	+ 4.0	+ 3.5	+ 3.5	+ 5.1	+ 3.0	- 1.3	- 7.2	-10.7	-11.7	- 9.2	- 1.6
D	+ 5.2	+ 4.7	+ 7.7	+10.3	+13.8	+20.3	+22.4	+24.8	+19.5	+ 9.3	- 5.4	-18.2
Z	+ 4.9	+ 4.3	+ 4.2	+ 4.6	+ 5.8	+ 6.6	+ 4.4	+ 0.3	- 1.9	- 6.1	-10.2	-13.3

of magnetic elements

for 1987

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
- 2.0	- 1.9	- 2.3	- 4.0	- 4.4	- 5.0	- 3.9	- 2.2	- 2.3	- 2.8	- 2.0	- 1.0	21 064 nT
-10.3	-10.3	- 5.5	- 2.7	- 2.2	+ 0.6	+ 3.1	+ 5.1	+ 4.5	+ 6.0	+ 8.0	+ 7.8	$1^{0}19.9$'
- 3.1	0	+ 2.4	+ 2.0	+ 2.0	+ 2.5	+ 2.8	+ 2.7	+ 2.6	+ 2.2	+ 1.7	+ 1.1	42 675 nT
+ 3.1	+ 2.9	+ 1.1	- 3.7	-10.4	-11.5	- 8.4	- 5.1	- 0.6	- 0.1	- 0.9	+ 1.1	21 065 nT
- 9.3	- 9.4	- 6.8	- 2.4	- 0.1	+ 0.6	- 0.1	+ 4.8	+ 8.6	+ 7.9	+ 8.5	+ 6.4	$1^{0}20.2$'
- 4.0	- 3.8	- 2.4	- 0.6	+ 0.6	+ 3.1	+ 3.8	+ 4.1	+ 3.7	+ 3.5	+ 2.6	+ 2.2	42 679 nT
- 5.7	- 3.7	- 4.0	- 3.8	- 5.6	- 6.9	- 5.0	- 0.7	+ 0.8	+ 4.7	+ 4.9	+ 5.8	21 069 nT
-17.7	-22.7	-20.4	-14.3	- 5.0	- 1.3	- 0.7	+ 1.2	+ 3.0	+ 6.2	+ 5.9	+ 5.5	$1^{0}20.1$'
- 9.4	- 7.8	- 4.5	+ 0.4	+ 3.4	+ 4.1	+ 4.1	+ 4.3	+ 4.1	+ 3.3	+ 2.7	+ 1.9	42 677 nT
+ 2.1	+ 2.3	- 1.9	- 4.2	- 4.2	- 3.7	- 2.6	+ 0.1	+ 2.0	+ 2.3	+ 3.0	+ 3.3	21 076 nT
-25.6	-30.9	-26.2	-16.5	- 8.1	- 2.3	+ 0.2	- 0.4	+ 2.3	+ 4.2	+ 3.2	+ 2.5	$1^{0}20.1$'
-16.4	-14.5	- 9.3	- 1.6	+ 2.4	+ 4.3	+ 5.7	+ 5.6	+ 5.9	+ 5.9	+ 6.0	+ 5.8	42 679 nT
+ 2.7	+ 1.8	- 2.2	- 2.3	- 1.6	- 0.5	+ 1.3	+ 2.9	+ 5.7	+ 4.3	+ 3.2	+ 3.1	21 087 nT
-29.1	-31.6	-25.8	-16.9	- 9.1	- 4.3	- 5.8	- 1.6	+ 0.1	+ 1.8	+ 3.2	+ 4.7	$1^{0}21.5$'
-14.8	-12.3	- 7.4	- 2.4	+ 1.5	+ 4.2	+ 5.2	+ 4.2	+ 5.4	+ 3.3	+ 5.0	+ 4.5	42 687 nT

	0	1	2	3	4	5	6	7	8	9	10	11

June

H	+ 5.0	+ 3.5	+ 3.2	+ 4.0	+ 6.6	+ 6.3	- 0.5	- 8.9	-14.8	-16.9	-13.2	- 6.6
D	+ 5.9	+ 7.1	+ 8.6	+10.9	+16.1	+22.6	+26.7	+26.4	+21.8	+10.1	- 4.2	-20.9
Z	+ 4.2	+ 3.8	+ 3.6	+ 4.3	+ 5.6	+ 5.9	+ 5.0	+ 4.1	+ 1.0	- 4.2	- 9.2	-12.6

July

H	+ 8.7	+ 6.8	+ 4.5	+ 6.2	+ 5.4	+ 6.9	+ 1.3	- 5.1	-11.2	-15.8	-14.3	-10.0
D	+ 6.3	+ 7.2	+ 9.5	+11.7	+13.6	+21.4	+28.4	+26.9	+24.0	+14.6	+ 1.4	-15.2
Z	+ 3.1	+ 2.6	+ 2.2	+ 2.2	+ 4.1	+ 3.7	+ 1.5	+ 0.9	- 1.0	- 4.2	- 8.9	-11.9

August

H	+ 8.5	+ 6.5	+ 7.1	+ 8.1	+ 8.3	+ 6.3	+ 1.6	- 6.8	-13.6	-16.0	-14.2	- 9.3
D	+ 5.7	+ 7.2	+ 6.2	+ 6.9	+10.8	+17.5	+23.2	+27.2	+23.5	+11.0	- 2.9	-16.9
Z	+ 1.8	+ 1.7	+ 1.3	+ 0.8	+ 2.2	+ 3.6	+ 2.8	+ 1.8	- 0.3	- 3.5	- 6.9	-10.4

September

H	+ 7.4	+ 7.5	+ 8.3	+ 7.3	+ 6.4	+ 5.0	+ 3.0	- 5.2	-11.7	-15.9	-12.5	- 6.6
D	+ 8.6	+ 7.2	+ 8.2	+ 9.2	+ 7.3	+ 8.8	+12.9	+16.6	+16.4	+ 9.6	- 5.1	-19.0
Z	- 0.4	- 0.8	- 1.6	- 1.9	- 1.8	- 0.8	+ 1.0	+ 2.1	+ 1.1	- 2.5	- 6.8	- 9.9

October

H	+ 5.7	+ 7.6	+ 6.4	+ 6.6	+ 7.4	+ 7.7	+ 8.7	+ 7.2	+ 1.9	- 4.1	- 7.7	-10.5
D	+ 6.4	+ 2.5	+ 5.4	+ 2.9	+ 1.5	+ 1.5	+ 0.5	+ 5.1	+10.8	+11.7	+ 2.7	- 8.8
Z	- 0.9	- 1.6	- 2.4	- 2.5	- 2.9	- 2.6	- 1.6	+ 0.7	+ 3.6	+ 0.3	- 5.2	- 5.8

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
- 1.8	- 1.3	- 0.5	- 1.8	- 0.6	+ 0.2	+ 2.3	+ 5.4	+ 7.5	+ 8.1	+ 7.6	+ 7.2	21 080 nT
-28.2	-29.3	-27.8	-21.0	-14.2	- 7.4	- 4.2	- 2.7	- 1.1	+ 0.4	+ 1.2	+ 3.2	$1^0$22.2'
-14.3	-13.1	- 7.7	- 2.4	+ 2.1	+ 4.0	+ 4.6	+ 4.3	+ 4.1	+ 3.3	+ 2.4	+ 1.6	42 686 nT
- 6.5	- 5.9	- 4.2	- 6.2	- 4.1	- 0.6	+ 2.8	+ 5.8	+ 7.4	+ 9.4	+ 9.3	+ 9.4	21 074 nT
-28.3	-31.2	-31.0	-23.0	-15.0	- 8.3	- 5.3	- 4.9	- 4.7	- 2.3	+ 1.0	+ 3.2	$1^0$22.6'
-13.6	-11.5	- 5.4	+ 0.5	+ 4.9	+ 6.0	+ 5.3	+ 4.8	+ 4.6	+ 4.2	+ 3.3	+ 2.6	42 672 nT
- 2.5	- 0.9	- 2.6	- 5.0	- 4.9	- 3.6	- 0.7	+ 3.2	+ 5.8	+ 8.1	+ 8.4	+ 8.2	21 066 nT
-27.7	-33.1	-30.3	-22.9	-14.3	- 3.3	- 2.0	- 1.6	+ 2.8	+ 2.6	+ 5.3	+ 5.1	$1^0$22.6'
-10.6	-10.6	- 5.9	- 1.3	+ 3.1	+ 5.6	+ 5.7	+ 5.1	+ 4.3	+ 2.9	+ 3.8	+ 3.0	42 691 nT
- 2.5	- 0.5	- 1.6	- 3.8	- 6.1	- 6.0	- 4.7	- 0.6	+ 4.8	+ 7.3	+ 9.7	+10.0	21 060 nT
-28.7	-30.7	-24.2	-17.2	- 6.2	- 5.1	- 0.6	+ 4.5	+ 5.3	+ 6.0	+ 6.8	+ 9.4	$1^0$22.6'
- 8.8	- 5.1	- 2.0	+ 1.0	+ 3.8	+ 5.6	+ 6.0	+ 6.7	+ 5.6	+ 4.8	+ 3.2	+ 1.5	42 689 nT
- 8.1	- 4.9	- 5.7	- 8.3	-12.2	- 7.5	- 5.1	- 4.3	+ 2.4	+ 4.4	+ 6.0	+ 6.4	21 056 nT
-22.9	-26.6	-20.8	-11.8	- 5.9	- 0.3	+ 2.3	+ 6.0	+10.0	+ 9.1	+11.4	+ 7.3	$1^0$23.3'
- 7.5	- 6.8	- 4.7	+ 1.6	+ 4.6	+ 5.6	+ 6.0	+ 6.3	+ 5.5	+ 4.2	+ 3.3	+ 2.8	42 702 nT

	0	1	2	3	4	5	6	7	8	9	10	11

November

H	+ 4.1	+ 1.6	+ 1.4	+ 2.8	+ 4.6	+ 8.4	+10.3	+ 9.8	+ 6.1	- 0.4	- 6.3	- 8.1
D	+ 8.4	+ 6.9	+ 1.6	- 0.4	- 1.3	- 1.9	- 1.7	- 0.2	+ 4.5	+ 5.9	+ 0.9	- 9.3
Z	- 0.5	- 1.1	- 1.0	- 1.1	- 1.3	- 1.3	- 1.3	- 0.3	- 1.0	- 1.6	- 4.3	- 6.3

December

H	- 1.3	- 0.2	+ 0.1	+ 1.1	+ 1.0	+ 4.0	+ 5.3	+ 4.9	+ 5.3	+ 2.7	+ 0.7	+ 2.2
D	+ 5.7	+ 5.4	+ 2.5	+ 0.8	- 0.8	- 1.6	- 1.8	+ 0.5	- 1.0	- 2.7	- 5.8	- 9.2
Z	+ 0.6	+ 0.1	- 0.2	- 0.5	- 0.6	- 1.0	- 0.9	- 1.3	- 0.7	- 2.4	- 2.1	- 2.7

Yearly means 1987

H	+ 4.0	+ 3.4	+ 3.0	+ 3.6	+ 4.5	+ 5.2	+ 4.1	+ 0.8	- 2.6	- 6.1	- 6.8	- 4.7
D	+ 6.0	+ 5.2	+ 4.9	+ 4.8	+ 5.8	+ 8.3	+10.6	+13.0	+13.0	+ 8.2	- 1.3	-12.5
Z	+ 1.5	+ 1.0	+ 0.7	+ 0.7	+ 1.0	+ 1.3	+ 1.1	+ 0.9	- 0.1	- 2.9	- 6.0	- 8.5

12	13	14	15	16	17	18	19	20	21	22	23	Monthly Averages
- 6.0	- 7.4	- 6.9	- 6.9	- 6.7	- 4.1	- 1.8	- 1.4	- 0.3	+ 0.2	+ 3.7	- 3.3	21 056 nT
-16.8	-16.3	-13.3	- 6.5	- 6.4	- 1.5	+ 1.7	+ 5.1	+ 7.2	+10.0	+11.9	+11.5	$1^{0}23.6'$
- 5.5	- 3.4	- 1.1	+ 2.2	+ 3.1	+ 3.8	+ 4.3	+ 4.5	+ 4.4	+ 4.0	+ 3.1	+ 1.7	42 727 nT
+ 4.1	+ 4.4	+ 1.6	- 2.1	- 6.7	- 6.8	- 5.8	- 3.4	- 4.3	- 2.9	- 2.3	- 1.6	21 055 nT
- 9.1	- 7.1	- 4.5	- 3.1	- 0.8	- 2.4	- 0.4	+ 3.0	+ 5.9	+ 9.8	+10.0	+ 6.7	$1^{0}23.7'$
- 2.3	- 1.4	- 1.7	- 1.8	+ 1.3	+ 2.5	+ 3.0	+ 3.1	+ 3.2	+ 2.4	+ 2.1	+ 1.3	42 706 nT
- 1.9	- 1.3	- 2.4	- 4.3	- 5.6	- 4.6	- 2.6	+ 0.1	+ 2.4	+ 3.4	+ 4.3	+ 4.1	21 067 nT
-21.1	-23.3	-19.7	-13.2	- 7.3	- 2.9	- 1.0	+ 1.5	+ 3.7	+ 5.1	+ 6.3	+ 6.1	$1^{0}21.9'$
- 9.2	- 7.5	- 4.1	- 0.2	+ 2.7	+ 4.3	+ 4.7	+ 4.6	+ 4.5	+ 3.7	+ 3.3	+ 2.5	42 689 nT

4. Yearly means of geomagnetic elements

Year	D		H	Z	I		X	Y	T
	o	,	nT		o	,	nT	nT	nT
1961	- 0	23.6	20816	42077	63	40.7	20816	- 143	46944
1962	- 0	19.6	20827	42093	63	40.5	20827	- 119	46964
1963	- 0	14.3	20839	42116	63	40.4	20839	- 87	46990
1964	- 0	10.5	20845	42126	63	40.4	20845	- 64	47001
1965	- 0	08.1	20877	42137	63	38.6	20877	- 49	47025
1966	- 0	06.8	20888	42156	63	38.5	20888	- 41	47047
1967	- 0	06.0	20903	42179	63	38.3	20903	- 36	47074
1968	- 0	03.0	20921	42196	63	37.7	20921	- 18	47098
1969	0	00.2	20942	42214	63	36.9	20942	1	47123
1970	0	02.8	20964	42235	63	36.1	20964	17	47152
1971	0	04.3	20992	42262	63	35.2	20992	26	47188
1972	0	06.5	21011	42286	63	34.7	21011	40	47218
1973	0	10.2	21028	42317	63	34.6	21028	62	47254
1974	0	13.6	21046	42350	63	34.5	21046	83	47291
1975	0	18.5	21072	42380	63	33.8	21072	113	47330
1976	0	23.8	21084	42413	63	34.0	21084	146	47365
1977	0	28.8	21106	42443*	63	33.6*	21105	177	47401*
1978	0	34.6	21108	42473*	63	34.4*	21107	212	47429*
1979	0	41.4	21113*	42496*	63	34.8*	21112*	254	47452*
1980	0	46.3	21107*	42512*	63	35.8*	21105*	284	47463*
1981	0	52.4	21097*	42530*	63	37.0*	21095*	322	47475*
1982	0	57.5	21078	42549	63	38.8	21075	353	47484
1983	1	02.7	21078	42581	63	39.8	21074	384	47512
1984	1	08.1	21075	42601	63	40.7	21071	417	47529
1985	1	12.7	21073	42625	63	41.7	21068	446	47550
1986	1	17.8	21065	42660	63	43.1	21060	477	47577
1987	1	21.9	21067	42689	63	44.0	21061	502	47604

* corrected values

5.

Special phenomena
(magnetic and earth current data)
SSC-s
1986

Month	Day	CET (UT+1h)	Amplitude in H(nT)	Hx	Hy	End of storm	
01.	06.	20.30 (?)	30	–	+	01.07	06.00
	25.	03.00	15	+	–	01.25	24.00
02.	06.	14.15	30	+	– (?)	no storm or	
						02.09	08.00
	09.	15.30 (?)					
		18.45 (?)	55	+	–	02.09	21.00
	14.	15.30	15	+	–	02.14	23.00
04.	09.	11.30 (?)	12	+	–	no storm	
	15.	05.30	12	+	–	no storm	
05.	01.	21.00 (?)	15	+	–	05.03	06.00
	04.	10.45	35	+	–	05.04	18.00
06.	27.	13.00	15	–	+	06.28	03.00
07.	24.	22.30	40	–	+	07.25	03.00
08.	20.	14.45	35	+	–	08.20	24.00
09.	11.	19.30	50	+	–	09.13	06.00
10.	13.	15.45	15	+	–	10.14	15.00
11.	04.	00.45	75	+	–	11.04	22.00
	10.	20.15 (?)	15	+	–	no storm	
	24.	10.30 (?)	40	+	–	11.26	02.00

1986

SI-s

Month	Day	CET (UT+1h)	Amplitude in H(nT)	Month	Day	CET (UT+1h)	Amplitude in H(nT)
01.	15.	13.15	8	08.	27.	17.45	11
	20.	18.00	7		28.	10.45	12
	28.	02.15	9		31.	10.45	15
02.	07.	06.30	27	09.	02.	09.30	14
	14.	19.00	18		05.	10.45	10
03.	02.	07.45	12		06.	16.45	17
	03.	23.15	12		10.	04.30	10
	06.	11.45	26			12.00	12
	13.	20.30	7		11.	06.45	10
	16.	03.15	8		12.	00.15	70
	17.	04.45	8		13.	05.15	22
	19.	21.00	10			15.45	12
	20.	09.30	6		16.	22.00	23
	21.	15.45	25			23.15	18
	27.	10.30	8		24.	04.30	14
	28.	06.15	12		25.	19.45	10
	30.	10.45	10	10.	02.	15.45	25
04.	07.	11.30	18		09.	09.30	12
	19.	15.30	12		15.	06.15	8
		17.30	15		21.	03.15	13
	20.	12.30	16			03.30	11
	21.	10.45	12		23.	11.30	5
	23.	04.15	12	11.	11.	03.45	10
	24.	04.30	10	12.	13.	19.45	12
05.	01.	12.30	12		14.	00.30	11
		13.30	14		26.	06.45	7
	10.	11.45	10				
	19.	23.45	15				
	25.	16.45	15				
	26.	16.45	18				
	27.	03.30	8				
		06.30	8				
	30.	10.45	8				
06.	11.	03.00	8				
	30.	00.45	20				
07.	02.	21.45	14				
	12.	04.15	7				
	21.	19.15	10				
	31.	18.30	16				
08.	01.	01.45	15				
	12.	14.45	18				
	14.	16.30	22				
	18.	12.45	10				
	24.	23.00	11				
	25.	07.15	12				

1986

		Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)	
01.	01.	01.45		+
		02.15		+
		15.00	85	
		17.30		+
	03.	22.15		+
	04.	01.15		+
		02.30		+
		16.30		+
		17.30		+
	05.	00.30		+
		22.00		+
		23.15		+
	07.	01.15	35	+
	09.	20.30	105	+
	11.	19.15		+
	12.	20.45		+
		21.30		+
	13.	23.45		+
	14.	01.00		+
		02.45		+
	16.	00.15		+
		23.30		+(pg?)
	18.	18.45		+
	20.	14.00		+(pg?)
		15.30		+
	21.	01.00	115	+
		19.00	50	+
		23.30	70	+
	22.	21.30	35	+
	23.	18.30	70	+
		21.15	70	+
	24.	22.45	35	+
	25.	20.00	110	+
	26.	18.00		+
	27.	04.00	70	
		14.00	105	
		16.30		+
		20.30	70	+
	28.	00.15	75	+
	29.	15.15	70	+
		18.45	55	+
		22.15	55	+
	30.	18.45	35	+
		18.45		+

		Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)	
01.	30.	21.15	20	+
	31.	21.45		+
02.	02.	04.30		+
		21.15		+
	03.	23.15		+
	04.	00.30	20	+
		17.30		+
		19.00		+
		19.15		+
		19.30		+
	05.	23.30	20	+
	06.	10.30		+
		22.00		+
		22.45		+
	10.	00.45		+
		01.30		+
		21.45	25	+
	11.	02.45		+
		17.30	100	
	12.	19.30	60	+
	13.	23.30	60	+
	16.	19.30	18	
	17.	22.00	45	+
		22.45		+
	18.	23.30	45	+
	19.	20.45		+
	21.	02.30		+
	22.	00.00	90	+
		17.00	100	
	23.	17.30	85	+
		20.45	110	+
	24.	01.00		+
	26.	16.00	105	+
	27.	00.15	45	+
		18.30		+
		22.45		+
		23.00		+
		23.15		+
	28.	18.30	105	+
03.	01.	16.30	70	
		21.00		+
		22.15		+
		22.45		+
	02.	22.15	20	+
		23.15		+

1986

	Bays		Pi-s			Bays		Pi-s
Month Day	CET (UT+1h)	Amplitude in H(nT)		Month Day	CET (UT+1h)	Amplitude in H(nT)	
03. 02.	23.45		+	03. 25.	20.00	60	+
03.	00.45		+		23.00	65	+
	22.30		+	26.	17.15	50	+
	23.30	70	+	27.	00.30		+
04.	20.00	25	+		02.00		+
05.	02.30				21.15		+
06.	15.00	70	+	28.	20.30	45	+
	23.45	100	+	31.	19.30		+
07.	17.15	80	+		19.45		+
	21.00	80	+		20.00	20	+
	21.45	70	+	04. 01.	19.45		+
08.	00.15	70	+		20.15	40	+
	17.15	35	+	03.	03.15		+
	19.15	65	+	04.	22.45		+
13.	03.00	50		05.	04.00		+
	22.30		+		19.15		+
14.	00.30		+		18.30		+
	01.30		+		22.30	40	+
	01.45		+	06.	19.15		+
	02.15	45	+		22.30	15	+
	23.30		+	08.	00.15		+
15.	00.15	25	+		00.30		+
	21.30	45	+		23.45		+
16.	20.30		+	09.	00.15		+
	22.00		+		01.00		+
	22.15		+		21.45		+
17.	01.30		+	10.	01.15	60	+
	02.30		+	11.	04.30		+
	21.15		+		22.00	25	+
	22.15		+	12.	01.00	30	+
18.	01.00	25	+		02.15		+
	01.45		+	13.	00.00		+
	04.00		+		01.45		+
19.	19.45		+		11.45		+
	23.00		+		21.45	25	+
	23.30	15	+		22.00		+
20.	00.30		+		22.30		+
	19.00		+	14.	21.45		+
	19.45		+		22.00		+
22.	00.00	50	+		23.30		+
	22.45		+	15.	00.15		+
23.	21.00	35	+	16.	00.45	30	+
24.	01.30		+		21.30		+
	17.00	75		18.	02.00		+
	20.45	45	+		02.15		+

1986

Month	Day	CET (UT+1h)	Bays Amplitude in H(nT)	Pi-s	Month	Day	CET (UT+1h)	Bays Amplitude in H(nT)	Pi-s
04.	18.	02.30		+	05.	14.	17.15		+
		23.15	20	+			20.30		+
	19.	00.00		+			21.45		+
		00.45		+		15.	05.00		+
		01.15		+			21.30		+
	20.	19.45		+		16.	23.30	35	+
		22.00		+		17.	02.30	30	+
	21.	01.30	35	+			23.15		+
		03.15		+		18.	21.15		+
	22.	21.30		+			23.30		+
		22.45		+		19.	01.00		+
		23.30		+		21.	20.00		+
		23.45		+			20.45		+
	25.	23.45		+			21.30		+
	26.	01.45		+		22.	10.15		+
		02.45		+			18.15		+
		03.30		+		23.	23.30	15	+
	27.	00.45		+		25.	22.15		+
		01.00		+		26.	01.15	10	+
	28.	00.30		+		27.	02.00		+
		01.45		+			02.30		+
	29.	02.15		+			23.45		+
05.	02.	20.15	55	+		28.	00.15		+
	03.	00.00	140	+		29.	22.30		+
		20.15	25	+			23.15		+
	04.	18.45		+		30.	04.30		+
		19.15		+			22.00		+
		20.30		+			22.15		+
		23.00	45	+		31.	23.45	35	+
	05.	20.45		+	06.	01.	00.15		+
		22.15	30	+			02.30	45	+
	06.	22.00	115	+			02.45		+
	07.	19.00	60	+			23.15	35	
	08.	13.15	30			02.	03.15		+
		20.30	15	+			03.45		+
	09.	00.00		+			20.45		+
		00.15		+			21.00		+
		00.45		+		03.	02.15		+
		01.30		+			21.15	40	+
	10.	01.15		+		04.	02.15		+
	12.	03.30		+			20.15		+
		23.30		+		05.	01.15		+
	13.	19.00		+			23.45		+
		21.45		+		06.	20.15		+
		23.00		+		07.	21.00		+

1986

Month	Day	Bays CET (UT+1h)	Amplitude in H(nT)	Pi-s	Month	Day	Bays CET (UT+1h)	Amplitude in H(nT)	Pi-s
06.	07.	22.15	30	+	06.	23.	17.45		+
	08.	21.00		+			19.00		+
		22.15		+			20.00		+
	09.	17.30		+			20.15		+
	10.	19.45		+			21.00		+
		23.30		+		24.	12.30	20	
	11.	00.30		+		25.	01.00		+
		00.45	30	+			02.00		+
		13.00		+			15.15		+
		22.00	12				18.15		+
	12.	01.00		+			18.45		+
		01.15		+			19.15		+
		01.30		+			20.15		+
		21.30		+		26.	19.00		+
		22.00		+			20.15		+
		23.15		+		27.	22.00	65	+
	13.	19.45		+		28.	23.45	.20	+
		23.30		+		29.	17.45	45	+
	14.	00.45		+		30.	02.30		+
		19.30		+	07.	01.	01.00	35	+
		20.45		+			19.15		+
		21.30		+			23.30		+
	15.	15.00	20			02.	19.30		+
	16.	23.30	20	+			20.30		+
	18.	02.45		+		04.	01.11	20	+
		14.45	25				18.15		+
		23.30		+			23.30		+
	19.	02.30		+		05.	00.30	20	+
		19.45		+			20.00		+
		21.30		+			22.45		+
	20.	00.45	20				23.45	30	+
		01.15		+		07.	22.00		+
		15.45		+			22.30		+
		19.30		+			23.00		+
		20.15		+		08.	00.00		+
		21.15		+			15.00		+
	21.	00.15		+			20.45		+
		01.15		+		09.	00.15		+
		04.30		+		10.	00.45		+
	22.	01.30		+			02.30	25	+
		02.15		+			10.00	18	
		15.45		+			22.00		+
	23.	01.30		+			22.30		+
		02.15	30	+		13.	23.00		+
		16.45	15			14.	00.00		+

1986

	Bays			Pi-s		Bays			Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)	
07.	15.	15.30		+	08.	10.	19.45		+
		20.45		+			21.00		+
		22.00		+		11.	20.15		+
	17.	23.30		+		13.	17.30	30	+
	19.	00.00		+		14.	21.30		+
		22.45		+		15.	01.30		+
	20.	17.15		+		16.	23.15		+
	21.	00.15		+		17.	00.30		+
		01.30		+			01.00		+
		01.45		+			02.00		+
		20.00		+			03.30		+
		22.00		+			17.45		+
	23.	01.00		+			18.30		+
		22.30		+			19.15		+
	25.	00.15	95	+		19.	22.45		+
		23.00		+		20.	03.30		+
	26.	00.15	75	+			21.00	85	+
		22.15		+		21.	17.30	85	+
	27.	22.45	30	+			20.45		+
		23.30	.	+			21.30		+
	29.	20.45	35	+			23.45	65	+
	30.	22.15		+		22.	09.30		+
		22.45		+			21.15	65	+
	31.	05.45		+			23.15		+
08.	01.	02.00		+		23.	00.00		+
	03.	00.45		+			18.45		+
		20.00	40				19.30	45	+
		21.00	70	+		24.	02.30		+
	04.	18.00	45	+			19.00	80	+
	05.	19.00		+			23.15	15	+
	06.	19.30		+		25.	20.15	25	+
	07.	00.15		+			23.15		+
		15.30		+		26.	22.30		+
		21.00		+			22.45		+
		22.00		+		27.	01.45		+
		23.15		+		28.	19.30	55	+
	08.	01.30		+		29.	21.45	40	+
		01.45		+		30.	21.00	75	+
	09.	17.30		+		31.	00.30	85	+
		23.30		+	09.	01.	00.45		+
	10.	00.45	35	+			01.15		+
		01.45		+		02.	01.45		+
		18.45		+		04.	10.45		+
		19.00		+		05.	00.00		+
		19.15		+			00.30		+

1986

	Bays		Pi-s		Bays		Pi-s
Month Day	CET (UT+1h)	Amplitude in H(nT)		Month Day	CET (UT+1h)	Amplitude in H(nT)	
09. 05.	15.45		+	09. 29.	21.45		+
	22.00		+		22.15		+
06.	00.30	45	+	10. 01.	12.15		+
	22.15		+		12.45		+
	23.15	12	+		21.15		+
07.	20.15		+	02.	00.15		+
08.	00.30		+		00.30		+
	16.15		+		03.15	30	+
	22.15		+		16.15	120	+
	23.15	20	+		23.30		+
09.	00.15		+		23.45		+
10.	01.45		+	03.	00.15		+
	02.45		+		02.00		+
11.	22.00	80	+		21.30		+
13.	22.15	90	+		22.30		+
14.	19.15		+	04.	00.30	30	+
	23.00		+		18.15		+
	23.45		+		19.00	20	+
15.	19.45		+	05.	00.45	35	+
	20.00		+		20.45	45	
	20.30	45	+	06.	09.30	25	
17.	00.30		+		20.45		+
	22.45	45	+		22.15		+
18.	01.30	30	+	07.	21.00	12	+
	19.30	65	+		22.00		+
19.	16.30	60	+		22.45		+
20.	19.30	45	+		23.30	20	+
	23.00	45		08.	00.30		+
21.	20.15	25	+		22.30		+
22.	02.15		+	09.	21.00	25	+
23.	18.30	55	+		21.30		+
	22.00	110	+		23.30		+
24.	22.15	45	+	10.	21.45		+
25.	14.30	90	+	11.	23.30		+
	17.45	70	+	12.	01.30	12	+
	23.45	80	+		18.00		+
27.	02.15		+		21.45		+
	16.15		+		22.15		+
	17.30		+	13.	00.30		+
	21.15	55	+	14.	19.00	50	+
	22.00		+		20.15		+
28.	20.15		+		20.45		+
	21.15	40	+		21.30		+
	22.00		+		22.45	45	+
29.	00.00	65	+	15.	20.30		+

1986

Month	Day	CET (UT+1h)	Amplitude in H(nT)	Pi-s	Month	Day	CET (UT+1h)	Amplitude in H(nT)	Pi-s
10.	16.	20.30		+	11.	07.	23.15		+
		20.45		+		09.	23.30		+
	17.	23.00	15	+		10.	20.45		+
	18.	17.30	70	+			23.15		+
	19.	03.45		+			23.45		+
		18.15		+		11.	21.00		+
		19.30	35	+		12.	01.30		+
		23.15		+			01.45		+
		23.45		+			02.00	40	+
	20.	15.15	45			13.	00.45		+
		20.00	50	+			19.15		+
	21.	21.30		+			19.30	35	+
		21.45		+		14.	01.30		+
	23.	00.30		+			02.00		+
		01.30		+			21.15		+
		18.45		+		15.	01.30		+
		19.30		+			19.30		+
		20.00	25	+			21.45	40	+
		23.00		+		16.	21.00		+
	24.	23.00		+		17.	22.15		+
		23.30		+			22.30		+
	25.	22.45	20	+		20.	00.45		+
	26.	23.30		+			01.15		+
	27.	18.00	75	+			01.30		+
		23.30	30	+			01.45		+
	28.	03.15	35	+			20.00		+
		21.45		+			22.00	12	+
		22.30	45	+			23.45		+
	29.	01.30	40	+		21.	20.30		+
		18.15		+		22.	22.00		+
		22.30		+		23.	23.00	65	+
		22.45		+		24.	02.00	110	+
		23.30	70	+			21.45	120	+
	30.	23.30	45	+		25.	19.45	185	+
	31.	18.45		+		26.	17.00	55	+
11.	01.	03.15	50	+		27.	23.30		+
	03.	00.30		+		28.	19.30	30	+
		18.30	45	+		29.	03.00		+
		22.00		+		30.	17.00	75	+
	04.	11.30	45.				22.00		+
	05.	01.00	40				23.30		+
		19.00	35	+	12.	01.	00.00	65	+
		22.45		+			16.30		+
	07.	00.00	25	+			17.15		+
		22.30		+			19.00	30	+

1986

Bays		Pi-s	Bays		Pi-s
Month Day CET (UT+1h)	Amplitude in H(nT)		Month Day CET (UT+1h)	Amplitude in H(nT)	
12. 02. 02.15		+	12. 13. 13.30	75	
22.30		+	22.45	65	+
03. 00.15	20	+	24. 18.45		+
15.15		+	25. 01.00		+
19.30		+	22.45		+
22.45		+	26. 21.15	40	+
23.30		+	27. 01.15		+
04. 03.00		+	01.30		+
03.30		+	23.30		+
22.30	35	+	29. 02.00		+
05. 01.15	30	+	23.15		+
06. 04.00		+	30. 00.30		+
07. 20.15		+	01.30		+
08. 03.45		+	03.15		+
09. 01.00		+	15.30		+
21.00	25		21.15		+
10. 03.00	40	+	21.30	30	+
18.15		+	22.15		+
21.30		+(pg)			
22.00	35	+			
11. 23.30		+			
12. 22.30		+			
22.45		+			
13. 02.45		+			
14. 20.00	35				
21.45		+			
15. 19.45		+			
20.45		+			
16. 02.15	30	+			
16.00	50				
20.00		+			
18. 21.00	35	+			
23.30		+			
23.45		+			
20. 17.30	20	+			
18.15		+			
23.15		+			
21. 00.30	25	+			
20.45	60	+			
23.30	50	+			
22. 15.45	45	+			
18.30		+			
22.30		+			
23.15		+			
13. 08.30	15				

1986

Pc 1-events

Month	Day	Duration hour min		Hour min	Quality
1.	4.	2154-		2215	C
		2300-		2312	C
	5.	606-		617	C
		633-		733	B
	6.	1818-		1942	C
	7.	1858-	8.	034	C
	11.	519-		539	B
	13.	157-		218	C
		418-		600	C
		642-		749	C
		1406-		1501	C
		2254-		2332	B
	14.	218-		247	C
		345-		600	B
		618-		706	C
	21.	056-		218	C
		1659-		2137	C
	22.	2226-		2313	C
	23.	228-		400	B
		1900-		1949	C
		2048-		2154	C
	25.	040-		121	C
		2000-		2028	C
	31.	1556-		1803	C
2.	1.	2317-		2356	C
	2.	546-		709	C
		734-		803	C
	4.	003-		028	B
		446-		515	C
	7.	1437-		1509	C
		1615-		1841	C
		2028-		2301	C
	8.	119-		145	C
		609-		912	C
		1445-	9.	911	C

Pc 1-events

Month	Day	Duration hour min		hour min	Quality
2.	9.	1401-		1542	C
		1847-		1908	C
	10.	1428-		1712	C
		1741-		1800	B
		2100-	11.	045	B
	11.	108-		326	B
		1534-		1704	B
		2154-		2302	C
	12.	103-		211	B
		343-		700	C
		1713-		1737	C
		1802-		1820	C
		2352-	13.	004	C
	13.	312-		726	A
		1423-		1729	C
		1751-		2104	C
		2202-		2219	A
		2302-		2314	B
		2357-	14.	018	C
	14.	126-		139	C
		213-		248	A
		343-		900	A
		1540-		1651	C
		1703-		1955	B
		2037-		2245	C
	15.	1500-		1717	C
		1802-		1828	C
		1930-		2034	C
		2116-		2206	C
		2300-		2343	C
	16.	557-		654	B
	17.	101-		117	C
		355-		421	C
	18.	051-		203	A
		436-		448	C
		823-		904	C

Month	Day	Duration		Quality
		hour min	hour min	
2.	19.	052-	120	C
		149-	203	C
		252-	356	C
		420-	550	B
		1654-	1720	C
		2302-	2315	C
	20.	010-	023	C
		034-	055	C
		1744-	1826	C
		2018-	2149	C
		2352- 21.	023	C
	21.	050-	103	C
		546-	615	C
	22.	004-	029	C
	23.	542-	636	C
	26.	204-	217	C
	27.	602-	617	B
	28.	706-	727	C
3.	3.	147-	622	A
		718-	842	C
	4.	017-	044	C
		259-	356	C
		612-	700	C
	5.	733-	758	C
	6.	409-	514	B
		647-	855	C
		2347- 7.	047	C
	7.	1715-	1755	C
		2013-	2213	C
	8.	018-	041	C
		1726-	1818	C
	10.	1838-	1848	C
	11.	153-	249	C
	13.	411-	422	C
		838-	859	C
	14.	012-	039	A

Month	Day	Duration		Quality
		hour min	hour min	
3.	15.	414–	614	B
		728–	831	C
		2139–	2204	C
	17.	055–	329	C
		347–	536	C
	18.	2322– 19.	020	C
	30.	924–	1009	C
	31.	531–	557	C
		2351– 4. 1.	046	B
4.	1.	2100–	2120	C
	2.	017–	035	C
		115–	204	B
	16.	245–	513	B
	22.	2300–	2326	C
5.	5.	222–	402	C
	8.	223–	303	C
		329–	410	C
	10.	221–	525	C
		743–	806	C
	11.	138–	205	C
9.	1.	642–	800	B
	2.	250–	321	B
	4.	1415–	1513	C
	5.	335–	534	C
	8.	418–	442	C
	13.	2308–	2352	C
	14.	140–	303	B
		431–	441	C
		2315–	2335	C
	15.	126–	316	C
		453–	748	B
	16.	156–	208	C
		414–	421	C
		2148–	2224	C
		2322–	2336	C
	17.	002–	009	C
		121–	601	B

		Duration			
Month	Day	hour min		hour min	Quality
9.	23.	1700-		1733	C
	26.	2129-	27.	106	B
	28.	2227-		2243	C
10.	2.	224-		423	C
	3.	233-		531	B
	14.	2052-		2237	C
	15.	1825-		2203	C
		2330-	16.	040	C
	17.	238-		536	B
		717-		734	C
	23.	530-		625	C
	24.	500-		523	C
11.	2.	225-		238	C
		610-		627	C
		1540-		1739	B
	3.	437-		445	C
	5.	1940-		2000	C
		2223-		2307	C
		2320-		2344	C
	6.	748-		842	C
	7.	327-		435	B
		446-		537	B
		647-		726	C
		1638-		2037	A
	8.	608-		617	C
		652-		806	C
	10.	415-		704	C
		1429-		1846	C
	11.	040-		113	C
		239-		700	C
		800-		913	C
		2105-		2400	C
	12.	512-		900	C
	13.	300-		911	C
	14.	245-		609	B
	15.	2154-		2251	C

		Duration			
Month	Day	hour min		hour min	Quality
11.	18.	546-		601	B
	19.	643-		810	C
	20.	606-		700	B
	21.	654-		908	C
	23.	2228-	24.	025	C
	24.	1700-		2001	C
		2112-		2300	C
	26.	1822-		2030	C
	27.	004-		536	A
		632-		910	B
	28.	500-		557	B
		616-		641	C
	29.	050-		138	C
		314-		337	C
		636-		718	C
	30.	139-		237	A
		700-		730	C
12.	2.	513-		707	C
	4.	520-		611	B
		640-		703	B
	5.	413-		632	C
	7.	2253-		2308	C
	8.	246-		325	C
	10.	2028-		2115	C
	12.	258-		318	C
	13.	607-		714	A

5.
Special phenomena
(magnetic and earth current data)
SSC-s
1987

Month	Day	CET (UT+1h)	Amplitude in H(nT)	Hx	Hy	End of storm	
04.	04.	04.15	35	+	−	04.04	17.00
07.	03.	20.15	45	+	−	07.04	02.00
	24.	17.30	50	+	−	07.24	23.00
	28.	09.45	25	+	−	07.29	17.00
		22.15	50	+	−	in storm	
08.	22.	10.45	25	+	−	no storm (si?)	
	24.	10.00	35	+	−	08.26	09.00
	29.	12.00	30	+	−	no storm	
09.	05.	19.30	12	−	+	no storm (si?)	
	10.	12.30	30	+	−	09.11	03.00
	20.	14.15	15	−	+	09.20	21.00
		17.30	13	+	−	in storm	
	24.	03.00	32	+	−	09.24	14.00
10.	03.	05.30	6	+	−	10.03	23.00
11.	03.	16.45	22	+	−	11.03	24.00 (si?)
	04.	11.00	22	+	−	18.04	24.00
	07.	04.30	30	+	−	no storm	
12.	09.	20.45	20	+	−	12.11	03.00

1987

SI-s

Month	Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)
01.	03.	03.30	10		11.	04.	04.00	10
	16.	08.30	10			13.	07.00	18
	20.	05.30	12		12.	12.	05.45	10
	22.	04.15	10					
	27.	12.00	18					
	29.	06.45	6					
02.	12.	15.15	9					
	16.	18.45	16					
	19.	22.45	16					
	22.	11.15	18					
03.	11.	08.30	12					
	14.	15.00	12					
	18.	20.30	15					
	23.	07.00	9					
	25.	16.45	12					
	31.	17.30	7					
04.	08.	06.45	7					
	21.	07.45	12					
05.	04.	08.45	10					
	09.	12.15	12					
	10.	12.30	10					
	25.	00.30	16					
		15.45	28					
		19.00	28					
		21.30	15					
06.	02.	16.15	7					
	22.	10.15	7					
07.	07.	04.15	15					
	12.	17.15	12					
	15.	01.45	7					
		13.15	18					
	16.	11.30	12					
	25.	01.00	10					
08.	13.	15.30	9					
	20.	05.00	7					
	25.	01.15	20					
		01.30	18					
	29.	07.00	32					
	30.	21.45	22					
09.	10.	12.00	16					
	11.	10.15	32(ssc?)					
	19.	11.15	18					
	24.	17.00	14					
	30.	07.30	18					
10.	18.	05.15	9					

1987

	Bays			Pi-s		Bays			Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)	
01.	01.	17.15	45	+	01.	27.	03.45		+
		19.30	75	+		28.	01.30		+
	02.	04.00		+			16.30		+
		17.30	25	+			18.30	45	+
	03.	19.45		+		29.	01.15		+
		23.15		+			01.45		+
	04.	01.15		+		30.	01.30		+
		18.30		+			02.15	20	+
		19.00		+			19.30		+
		23.30		+		31.	01.30		+
	05.	00.00		+			02.30	25	+
		18.30	10	+			21.30		+
	06.	22.15		+			22.30		+
	07.	23.15	30	+	02.	01.	01.00		+
	09.	18.30		+			01.30		+
		23.30		+			02.00	10	+
	10.	21.15		+			21.00		+
	11.	17.30		+			23.30		+
		18.30		+		02.	00.15	10	+
	12.	23.15		+			00.30		+
	13.	18.00	35			03.	01.15		+
	14.	21.00	25	+			01.30		+
	15.	20.45		+			14.45		+
		21.15		+			20.15		+
	16.	18.00	70	+			21.00		+
	17.	03.15	30	+		04.	19.30	20	
		16.45		+		06.	01.00		+
		23.15		+			01.15	25	+
	18.	22.15	25	+			02.15		+
		23.00	30	+			23.00		+
	19.	00.30		+		07.	00.15		+
		20.00	12				00.30	35	+
	20.	17.15	60	+			18.15	25	+
		22.00		+			18.45		+
	21.	19.00		+			21.45	30	+
	22.	18.45	60	+			22.30		+
	23.	22.30	30	+			23.00		+
	25.	21.00		+			23.15		+
		21.15		+			23.30	30	+
		21.30		+			23.45		+
		22.00		+		08.	20.30	45	+
		22.30	15	+		09.	01.00		+
	26.	14.15	25	+			22.15	30	+
		17.30		+			23.45	30	+
		17.45		+		10.	16.30		+

1987

		Bays		Pi-s			Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)	
02.	11.	01.30		+	02.	28.	20.30	25	+
		01.45		+			23.45	50	+
		04.00		+	03.	01.	18.45		+
		18.30		+			21.00	35	+
		19.15		+		02.	22.45		+
		19.30		+		03.	04.30		+
		19.45	60	+			05.15		+
		20.00		+			20.00		+
	12.	01.00	40	+			21.15		+
	13.	03.00		+		04.	00.45	25	+
		21.15	10	+			18.45		+
	14.	01.45		+			22.00	35	+
	16.	02.30		+		05.	17.15	70	+
		03.30		+			23.00	55	+
		20.15		+		06.	19.15		+
		20.30	50	+			20.30	30	+
		23.15		+			22.00	45	
	17.	23.00	35	+			23.30		+
	18.	00.30		+		07.	01.15		+
		03.30		+			01.30		+
		22.45	30	+			20.00		+
	19.	01.45		+			22.30	10	+
		18.15		+		08.	02.30	30	+
	20.	16.30	85	+		10.	01.15		+
		19.30	60	+			01.30		+
	21.	16.15	55			11.	02.30		+
	22.	00.30		+		12.	20.45		+
		00.45		+			21.15		+
		20.30		+			23.45	45	+
		22.15	50	+		13.	22.45	30	+
		23.15		+			23.30		+
	23.	17.45		+		14.	00.15		+
		19.15	40	+			21.15		+
		23.30		+			21.45		+
		23.45		+		15.	20.30	15	+
	24.	20.00	65	+		16.	00.30	25	+
	25.	00.30		+			00.45		+
		20.15		+			01.30	10	+
	26.	22.30		+			01.45		+
		22.45		+			21.15	30	+
		23.30		+		17.	01.30		+
	27.	01.00		+			01.45	30	+
		01.30		+			19.30		+
		23.45	40	+			22.30		+
	28.	14.15		pg			23.30		+

1987

Bays				Pi-s	Bays				Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)	
03.	18.	02.00		+	04.	19.	19.00		+
		21.00		+			21.00		+
	19.	20.30		+		20.	21.00		+
		20.45		+		22.	22.15		+
		21.30		+		23.	21.00		+
	20.	21.30		+			22.00		+
		23.15		+		24.	01.15		+
	21.	02.45		+			01.45		+
		21.00		+			02.15	5	+
		21.45		+			03.00		+
	22.	00.30	80	+			21.00	30	+
		19.30		+		25.	22.30		+
		20.45	35	+		26.	21.30		+
		21.30		pg			23.45		+
		22.30		+		27.	20.45		+
	24.	18.30		+			21.15		+
	25.	22.15		+			23.30		+
	26.	11.45	30			28.	23.00		+
		18.15	30	+		29.	01.15		+
		18.45		+			19.30	25	+
	27.	03.15		+		30.	16.30		+
		22.30	35	+			17.15		+
	28.	21.30		+			19.15		+
	29.	21.45		+	05.	01.	00.30		+
04.	01.	20.45		+		02.	00.15	25	+
		21.00		+			02.45		+
		21.30		+			23.00		+
	02.	18.45		+		05.	19.30		+
	05.	02.30		+			20.30		+
	07.	01.45		+		06.	14.30		+
		03.45		+			14.45		+
		18.30		+			22.15		+
	08.	00.45		+			22.45	15	+
		21.15		+		07.	00.45		+
	09.	13.00	12				14.30		+
		19.45	35	+			22.30		+
	10.	03.15	60	+		08.	23.30		+
	11.	23.30	15	+		09.	00.30		+
	13.	22.45	35	+		11.	19.15		+
	14.	00.45	13				21.45	25	+
		15.15		+		12.	22.15	7	+
		19.30		+			22.45		+
	15.	02.15		+		13.	15.00	15	(ssc?)
	17.	00.30		+			22.45		+
	18.	11.15	10				23.30		+

1987

		Bays		Pi-s				Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)			Month	Day	CET (UT+1h)	Amplitude in H(nT)	
05.	14.	01.00		+		06.	08.	22.30		+
		01.30		+				23.15		+
		23.15	25	+			09.	00.00		+
	15.	21.30		+				18.30		+
	16.	03.15		+			10.	00.45		+
	17.	20.45		+			12.	19.30		+
		21.30		+				20.30		+
		22.00		+			13.	01.45		+
		22.45		+				22.15		+
	20.	21.30		+			14.	03.00		+
	21.	20.00		+				23.00		+
		21.00		+			16.	00.00		+
		21.15		+				00.30		+
	22.	01.30		+				01.00		+
		22.00		+				01.45		+
		22.30		+				02.00		+
	24.	16.30		+				02.30		+
		22.30		+				20.45		+
		23.30	75	+				21.00	25	+
	25.	04.30	50				17.	02.15		+
	26.	20.45	75	+				23.15		+
	27.	21.00	30					23.30		+
		23.00		+			18.	00.30		+
	28.	23.30	50	+			19.	22.15	40	+
	29.	20.00		+			20.	18.45		+
	30.	19.45		+			21.	00.15	30	+
	31.	10.45	40	+				18.45		+
06.	01.	02.30		+				23.15		+
		02.45		+				23.30		+
		11.30		+			22.	20.15		+
	02.	00.45		+				21.15		+
		22.15		+			23.	20.15		+
	03.	18.45		+			24.	22.30		+
		19.15		+				23.15	30	+
	04.	20.00		+			25.	22.15		+
	05.	01.00		+				22.30	30	+
		04.30		+				23.15		+
		22.45		+			27.	00.45		+
		23.45		+			28.	22.45		+
	06.	00.00		+				23.45		+
		17.00	30				29.	03.30		+
		23.15	30	+				18.30		+
	07.	01.45		+				23.00	15	+
		11.15	25				30.	21.45		+
		23.30		+		07.	01.	20.45		+

1987

	Bays		Pi-s			Bays		Pi-s
Month Day	CET (UT+1h)	Amplitude in H(nT)		Month	Day	CET (UT+1h)	Amplitude in H(nT)	
02.	21.00		+	08.	02.	02.30		+
03.	19.00		+		03.	05.00		+
04.	01.00		+			20.30	25	+
	20.00		+		04.	18.15		+
	21.15		+		07.	01.45		+
	22.45		+			02.15	20	+
05.	21.30		+			02.30		+
06.	02.00	20	+		09.	00.15	55	+
07.	02.30		+		10.	00.30		+
	20.30	25	+			00.45		+
08.	20.15		+			01.00		+
09.	21.00		+		11.	00.30		+
	22.30		+			17.45		+
10.	02.30	25	+			19.15		+
11.	18.30		+			22.00		+
	23.30	15	+		12.	01.15	45	+
12.	22.15		+			23.00		+
	22.30		+		13.	21.45		+
13.	02.30		+		14.	20.00		+
	21.45		+		15.	20.00	40	+
	22.15		+			22.15	40	+
	23.30		+		16.	20.30		+
14.	23.15		+		18.	15.30		+
	23.45		+		19.	00.30		+
15.	22.30	65	+			02.00		+
16.	17.30	45	+			22.15		+
	23.30	40	+			23.30		+
18.	20.45		+		20.	23.30		+
	21.15	30	+		21.	01.15		+
19.	21.45		+			18.45		+
20.	22.45	35	+			19.30		+
	23.15		+		22.	20.15		+
22.	00.30		+		23.	02.30		+
	20.45	30	+			21.30		+
23.	21.45	20	+		24.	19.00		+
25.	00.30		+		26.	21.00	40	+
	21.15		+		27.	16.45	80	+
27.	02.30		+		28.	16.45		+
28.	13.30	35				19.00	55	+
	22.30	80	+			20.45	50	+
29.	03.45	35				23.15	80	+
30.	02.30		+		29.	20.15	35	+
31.	00.30		+		30.	01.00		+
	15.45		+			22.15		+
	20.15		+		31.	02.15		+

1987

		Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)	
08.	31.	17.00	110	+
09.	01.	15.45	95	+
		22.30	75	+
	02.	19.45		+
	03.	00.30		+
		19.00		+
	04.	21.00		+
		22.00	25	+
	05.	04.00		+
	06.	00.00		+
		01.45		+
		17.30		+
		20.45	35	+
	07.	23.45		+
	08.	00.45		+
		22.15		+
	09.	03.00		+
		21.30	20	+
		22.00		+
		23.00		+
	10.	00.15		+
	11.	20.30	75	+
	12.	20.15	70	+
	13.	16.00	85	+
		22.30	70	+
	14.	21.00	45	+
	15.	19.45	55	+
	16.	21.45	35	+
		22.45		+
		23.30		+
	18.	22.00		+
		22.30		+
		23.30		+
	19.	18.30		+
	20.	18.45	85	
	22.	02.00	30	+
		17.30		+
		18.15	75	+
		23.15		+
		23.45	120	+
	23.	01.00	40	+
		12.30		pg
	25.	20.15		+
		21.15	85	+
		23.45		+

		Bays		Pi-s
Month	Day	CET (UT+1h)	Amplitude in H(nT)	
09.	28.	22.30		+
		23.00		+
	29.	15.45	90	+
		19.15		+
	30.	18.15	160	+
		21.15		+
		23.00		+
10.	01.	20.30	35	+
		23.30		+
		23.45		+
	02.	19.45		+
	03.	20.00	120	+
		23.45		+
	04.	15.15	50	+
		23.15		+
		23.45		+
	06.	00.30		+
		21.00	25	+
		22.00	25	+
	07.	22.30		+
	08.	01.30		+
	09.	19.45		+
	10.	03.00	20	
	11.	02.15		+
		16.30	105	+
		19.00	80	+
	12.	20.15		+
	13.	00.45		+
	14.	16.30	120	+
		19.45	65	+
	15.	03.30		+
	16.	17.00	35	+
		19.15		+
	17.	14.30	80	
		16.45	55	+
	18.	21.30		+
		23.15		+
	19.	20.30		+
		23.45	20	+
	20.	22.00	60	+
	21.	18.15	55	+
		20.00		+
		20.15	70	+
	22.	20.45	18	
	23.	15.15		+

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	Bays		Pi-s		Bays		Pi-s
Month Day	CET (UT+1h)	Amplitude in H(nT)		Month Day	CET (UT+1h)	Amplitude in H(nT)	
10. 23.	16.45	35	+	11. 19.	00.45	20	+
24.	03.15		+	20.	01.00		+
	18.15		+		01.15		+
	21.15	70	+		01.30		+
25.	01.00	55	+		18.15		+
	22.30	50		21.	00.30		+
	23.00		+		19.00		+
27.	03.00	60		22.	01.00		+
	16.00	85	+		21.30		+
	19.30		+		22.00		+·
28.	00.45	130	+	23.	19.15	130	+
	17.00	105	+	24.	00.30		+
	18.00	115	+	25.	00.30	15	+
	20.30		+		15.00	40	+
	21.00	65	+	26.	18.00	65	+
29.	00.30		+		23.15		+
30.	00.00		+	27.	00.15	50	+
	21.45		+	28.	19.45		+
31.	20.00	35	+	29.	02.15		+
11. 02.	02.15		+	12. 01.	01.30		+
	03.00		+	03.	00.45		+
04.	19.15	145	+		16.00	55	
	21.15		+		20.30		+
	23.00		+		20.45		+
05.	22.45	45	+		23.45	30	+
06.	04.45		+	04.	18.30		+
	23.15		+		23.15	50	+
08.	23.00		+	05.	00.15		+
09.	22.45		+		00.30		+
	23.45	60	+	06.	21.45		+
10.	20.30		+		22.00		+
	22.45		+		22.30		+
	23.45		+	07.	20.30		+
11.	02.00		+	08.	20.30		+
	20.45		+		22.45		+
	22.15		+	10.	16.00	115	
12.	20.30	50			20.15		+
13.	17.30	105	+		20.30	105	+
	20.45		+	11.	19.00	50	+
	21.15		+		22.30		+
14.	17.15	70	+	14.	18.00		+
15.	20.00	35	+		21.45		+
17.	22.00		+	15.	16.00	75	
18.	20.15		+		20.00	15	+
	23.45		+		23.45		+

1987

		Bays		Pi-s

Month	Day	CET (UT+1h)	Amplitude in H(nT)	
12.	16.	00.45		+
		17.45	90	+
		18.30	80	+
		22.30	25	+
		23.30		+
	17.	19.45		+
		20.15	45	+
	19.	20.00		+
		20.30	30	+
	21.	04.30		+
	22.	19.00		+
		19.15	20	+
		21.30	55	+
	23.	02.15		+
	24.	20.30		+
	25.	00.00	20	+
		22.45	35	+
	26.	22.00		+
		22.30		+
		22.45		+
	28.	21.15	15	+
	30.	00.00		+
		01.15		+
		21.15		+

1987

Pc 1-events

Month	Day	Duration			Quality
		hour min		hour min	
1.	28.	524-		600	C
2.	19.	549-		648	C
	26.	539-		730	C
		754-		837	C
	27.	316-		346	C
		414-		636	C
		654-		745	C
3.	3.	600-		723	C
	4.	2249-	5.	015	C
	5.	042-		103	C
4.	5.	100-		137	C
5.	30.	1614-		1705	C
6.	6.	300-		406	C

6.

Activity indices for the micropulsations
(P1 to P12)
1986. January-December

	January	February	March	April
1.	135445542223	155525435511	155553354121	555522435455
2.	155423543345	155542354323	155544344133	155334545521
3.	155424545221	155423455322	355422555123	155422555114
4.	155523555313	154432455521	155513545511	155425555421
5.	145412555521	355423255441	155422445532	155553255531
6.	255322345543	155412545541	155513313342	155423555123
7.	155424335254	155412445355	155411425153	155522425513
8.	145245415222	155421143155	155523521243	255513115555
9.	155325554323	155411111555	155544132124	255322145555
10.	125324555213	154315553433	135525535111	155432445345
11.	155314555211	155313544353	155311325554	155414555422
12.	155413255411	155434214534	155442234355	155222345532
13.	355414544241	155421335241	155412445353	155314545112
14.	555212455441	155512114555	154435335111	155313135532
15.	155513223552	125543125144	155433455322	155423435234
16.	122323355441	155545423422	155513544121	155532345542
17.	155424444542	155523435322	155523445424	155422535131
18.	155521425543	155322225431	155412345423	155411345223
19.	155222135524	255412323554	155434455422	155532255325
20.	155212145453	155522254441	155323345511	155312245533
21.	155521255522	155514331315	155531225555	155532435322
22.	155545444111	155534245123	155533355144	155533235245
23.	255522543312	155523523353	155523553222	155552325225
24.	155534425243	155534434224	155522345244	155543355345
25.	155531442435	155553444141	155542535254	155324455542
26.	155324524545	155533343454	155534554134	155333455233
27.	155532452442	155533542322	155532342244	155412445532
28.	155544231155	155543311234	155544445344	155543445311
29.	155523545551		155435445221	145534255232
30.	155554444424		155424554342	155433355443
31.	155422555144		155323245423	

1986

	May	June	July	August
1.	255314345555	154435535434	154425555213	155555544114
2.	155421325555	155525554141	155522335124	000000000000
3.	155424234212	153333555223	355422555111	000000000000
4.	155412455435	155513345233	145525545121	155355545143
5.	155113554444	155214545522	155514554133	154424545222
6.	155323544245	155523435513	153312455134	155524555114
7.	155324543124	155512445455	155512555424	155512554531
8.	155513535125	153313355534	155522325555	000000000000
9.	155523455122	155211555434	154423554325	155521455245
10.	155334545241	155411245515	155415555123	155523555121
11.	155414555441	153312555331	155322545533	155411545255
12.	155552245452	155414345543	155311545435	154423445543
13.	155324555521	155223555424	155314435555	115445555214
14.	155314425511	155213555532	155312555241	154434555133
15.	155311235541	155412555244	155312255535	154412555323
16.	155412345542		155414415455	155434555311
17.	155423155152	155423435445	155431424555	155414445331
18.	155434555514	155413425454	155414544554	125424555422
19.	155222245544	155312555551	155213355545	000000000000
20.	155444435433	155312555441	155314545552	154413435554
21.	155333555325	155213555245	155524115555	145521445255
22.	155522445522	155511235353	155431245524	135523443145
23.	155521455552	155422355524	154423425553	135533333145
24.	155432445544	155411235455	155535325341	155533552355
25.	155522355354	155413425531	145425345345	000000000000
26.	245423345454	155412531542	125533411155	000000000000
27.	155543545414	155322345353	155544334255	000000000000
28.	155213455541	155434524335	155555354214	155531525343
29.	155213555554	155445544224	155521354145	155532345545
30.	155215335155	155513552225	155532445145	155543544135
31.			155534545325	155534522454

1986

	September	October	November	December
1.	112554544144	111354555554	125554224144	135543454513
2.	125555544322	115555355225	115455454155	115535555332
3.	115445555324	111545455314	125535554542	545433355522
4.	111455555524	124455554211	155533555455	225532555522
5.	115533555545	115455555522	155554554123	115455555411
6.	155444554522	115355355231	125544454114	125555555511
7.	125555544523	112544555511	523555424411	115554455522
8.	135455535541	112445555541	123455554413	155553445541
9.	125553335543	111455555543	112255555521	135553435521
10.	145553422345	115544541521	115355552322	125534555522
11.	145554555545	113555535541	125543435544	115554555511
12.	155544355455	115334555553	125455455511	155544555521
13.	115455353353	115543555554	125454555521	335553555551
14.	114454554121	115553255125	325553555531	125455345555
15.	335553355231	514455442322	125554555524	145343555523
16.	125455545234	313455554521	115553455523	135555555534
17.	515555155325	115355555522	115455354124	135534555521
18.	125454542123	125555555331	115355555222	145445555521
19.	135455432131	115553255431	115544555321	125455345531
20.	113555352144	113155344211	115454455521	115544555533
21.	115555553124	113554454153	115554555441	135554545544
22.	115545555224	112434554522	115543454541	135552255412
23.	125554344545	115355555521	125354434542	115542455423
24.	115554432145	115334555541	155554455553	125554535341
25.	125555444142	115355544454	155534455454	114455555224
26.	125445554144	114555555521	145554345341	115555545524
27.	115555433431	125553535551	545443455321	
28.	115444555432	114554555411	255533445551	
29.	125555353132	115555532143	155434545442	155323334531
30.	114455523431	115532555343	235532555531	155533545522
31.		115553244124		115552515541

Pc 1 indices 1986

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

0 = no record

Activity indices for the micropulsations
(P1 to P12)
1987. January-December

	January	February	March	April
1.	155532545444	155543545211	155434555124	155423335442
2.	155525445141	155545455111	155435555221	155433255421
3.	155554555221	155425524521	155533525322	355223424312
4.	155555555112	155555545221	155523434414	455412542555
5.	155552435521	155523425422	155554353124	155544454544
6.	154422345341	155544235523	155544551122	155554535223
7.	154422135552	153355425133	155523354144	155553355224
8.	155511235453	155534545144	154425545123	155551425443
9.	155554544554	155535535323	155535545111	154423555242
10.	155534345521	155434545312	155532455243	155434355513
11.	155522545442	155524555413	154425555243	155423545532
12.	155522345541	155543315143	155522155441	155435545323
13.	154425555522	155541545112	155543554142	255422445254
14.	155523545421	155524425432	155533545223	155532245323
15.	155515434551	155534453221	155542255112	155434435542
16.	155534435334	155542435113	455533544342	155442525142
17.	155512455342	145532355222	155523545123	155525325551
18.	155535555221	155445545112	155523455124	155524424554
19.	155533434223	355434555224	155554445121	155413445554
20.	255511245445	155521354155	155535545211	155235435354
21.	155435555143	155541345143	155511555423	155443434342
22.	115545551122	155553554135	155544544114	155533445345
23.	145435535131	145555543221	155532425442	155521555422
24.	155445555221	155553444123	155532314431	155431145444
25.	155535555221	155545525223	154434515444	154422525313
26.	115555523211	155325555121	155532355332	155523545433
27.	255545545423	455521435525	155553255254	154412345554
28.	245555535442	145534445244	155445524234	155433444521
29.	145445554144		155423554522	152223555513
30.	255415545531		155543445224	155422235351
31.	155534535221		155334325423	

1987

	May	June	July	August
1.	255513523455	155522455123	155311444553	115553432143
2.	155533445424	155554545314	155222555553	114555555213
3.	155533445544	155435545511	154422344553	145542455444
4.	155523534555	155325534333	125553335524	115535555522
5.	152223555535	154433434554	145533345343	115533455222
6.	155111135554	155411355554		115533455344
7.	155421455324	255523554123	154425555441	115535535431
8.	155411555321	455312455311	155543425541	125533255423
9.	155525555522	155324535541	155511235554	155532455521
10.	155541225352	155534422444	155413545545	155225555511
11.	155523525542	155531245454	155524545511	145521445544
12.	155213345531	255543335254	155525445324	125531235444
13.	155212335522	455423545534	155545444543	155523355242
14.	155512235234	155314554541	155434535451	135554455133
15.	155545534531	155414545342	145513545555	113535545144
16.	155414445544	155435535543	125535545425	125535542414
17.	155314535352	155534555421	115455535135	145545544212
18.	155213555541	155434545532	145434555344	
19.	155322435551	155532345335	125424555522	
20.		155553455111	115554455322	115553525523
21.	155513414353	154435545211	114555555521	115554345421
22.	155211235554	155235535542	135523355423	135534455521
23.	155511525553	155223545511	155523545323	
24.	155522445554	155331545552	125434555514	125443245545
25.		155224455241	155522235555	135412455555
26.		155531544221	155523445331	145521544252
27.	155421555425	155533555221	125533335522	115524521444
28.	155521544333	155424555542	135522525555	115535555221
29.	155523444354	155523255524	155512445555	115542444424
30.	155424335424	155322544531	115524545413	115535442325
31.	155512445544		115554434125	125522454253

1987

	September	October	November	December
1.	125543545222	115535552222	115533554211	115544135534
2.	115335554123	115445531122	115455345425	115555424421
3.	115323555321	115523543341	115521444544	115532355532
4.	125554554522	115533533341	115535555321	115544555221
5.	115534445412	115524555322	115544435244	115521345155
6.	115523555211	115522555543	115534545541	115545555223
7.	115554435321	225525535531	115533445532	115115555512
8.	115555335322	115533445411	115555434411	114435555411
9.	125523555434	115542234141	115535335422	115425555522
10.	125453425555	115521235341	115522235223	115544334254
11.	115543343225	115553355424	115533135434	115545554343
12.	115544244255	115534543244	115522424342	115555455222
13.	115532444134	115551235233	115535455134	113445555411
14.	115554213245	115553223144	115554544242	115535545321
15.	115554443144	115555445242	115545545143	115523555521
16.	115543444143	115555543241	115555544411	115555424142
17.	115534543123	115544554221	115534555321	115533444142
18.	115555544212	113455545112	115534435422	115555521122
19.	115534555214	113224554511	115543535444	115534554311
20.	515522255554	115543535551	115555345112	115555544421
21.	115533534352	115553544311	115545434112	115545544132
22.	115541332533	115554111132	115454445511	115532422122
23.	115545442413	135542325211	115545425153	115553313111
24.	115533424255	115553425242	115534444325	115345545421
25.	115433455554	115533534154	115535541211	115544545321
26.	115531123243	115555535122	115533342522	115553425511
27.	115521244135	115543533225	115545555222	115111355531
28.	115513542145	115554344324	115555533123	115323544543
29.	115534344142	115545531144	115543542111	115533345241
30.	115543352155	115535553232	112523551552	115421224552
31.		115553555424		115521232552

Pc 1 indices 1987

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

From July 1, 1989, Pc 1-recording was interrupted due to strong disturbances from the electrification of the reilway Győr-Sopron.

0 = no record

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

Hourly means of the potential

January

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	70	70	60	50	100	120	130	160	80	30	[30]	40
2.	40	30	0	-110	70	10	-40	-70	-70:	-90	[-80]	-60
3.	130	90	150	140	140	80	130	[130]	120	100	0	120
4.	-10	±S	-30	50	-60	80	180	70	130	[100]	130	130
5.	80	70	80	80	90	90	80	80	100	170	[180]	200
6.	60	-	30	50	50	-	20	-	-	90	100	120
7.	30	60	60	80	90	80	90	80	100	100	[70]	60
8.	60	50	50	50	50	60	70	50	80	80	70	[80]
9.	80	40	40	50	50	70	30	40	70	70	[170]	110
10.	30	40	60	60	40	60	70	60	80	60	[60]	80
11.	30	-50	-50	-10	0	-50	-60	-30	0	20	40	10
12.	120	110	130	100	90	90	120	+S	+S	+S	110	[120]
13.	10	10	20	30	40	40	50	-	-	80	120	100
14.	-50	-50	-10	20	20	-20	-90	50	90	120	140	[120]
15.	40	30	40	50	40	70	100	110	140	110	[100]	90
16.	10	50	60	50	60	50	50	40	[70]	70	50	70
17.	±S	40	40	40	40	50	50	60	70	50	60	[40]
18.	±S	40	20	50	70	80	80	80	90	100	100	[100]
19.	-70	-60	10	40	40	50	30	30	50	-70	0	[70]
20.	90	80	10	60	60	50	40	70	-	-	-	50
21.	50	40	50	50	50	50	50	70	60	60	70	[70]
22.	80	100	70	70	70	100	100	70	120	180	[140]	140
23.	40	40	50	20	-70	-80	-80	-80	10	60	-	-
24.	50	30	30	30	40	30	-S	±S	±S	±S	±S	±S
25.	40	±S	±S	40	40	40	40	50	50	70	50	[40]
26.	50	50	40	30	30	-S	40	+S	50	60	[70]	60
27.	50	50	50	40	40	50	50	-	-	90	90	80
28.	60	70	50	40	40	30	40	40	60	60	[80]	100
29.	-20	-30	-30	0	10	-10	-20	-30	-20	-10	[-20]	20
30.	0	-10	-10	0	30	30	10	0	20	20	30	[40]
31.	50	70	70	40	30	40	50	80	70	30	30	30
Means	41	38	38	42	45	46	47	48	65	65	71	77
Number of days	29	28	30	31	31	29	30	25	25	28	28	29

gradient for 1986

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
20	100	90	110	80	120	80	90	120	130	120	90	87
-10	-50	0	20	110	110	0	-20	40	70	100	30	1
140	70	130	80	80	50	0	50	130	50	90	60	94
90	120	90	30	70	80	90	110	110	100	90	90	80
140	140	170	160	130	140	130	120	120	140	110	90	120
120	120	120	130	170	130	110	160	160	120	100	90	-
70	80	70	70	80	90	120	80	100	90	70	70	79
90	100	100	100	120	130	110	110	100	70	60	80	80
80	60	60	50	60	80	40	30	50	60	20	-10	54
100	100	100	90	80	40	20	10	20	10	20	10	54
[-40]	10	20	70	140	+S	180	+S	140	±S	±S	+S	-
160	170	120	80	80	120	90	80	80	80	40	30	-
120	110	100	80	+S	+S	-50	0	-30	0	0	-50	-
120	120	150	180	170	-S	±S	±S	±S	±S	-20	10	-
90	110	120	100	70	80	80	80	60	60	50	±S	79
80	70	80	-120	-40	30	40	50	±S	-20	±S	±S	-
40	70	±S	±S	40	60	50	50	40	60	50	60	-
120	120	110	90	80	60	+S	-130	+S	+S	+S	-30	-
120	120	90	80	100	120	110	110	110	120	100	110	59
60	60	60	60	70	50	50	50	60	50	50	50	-
80	90	110	100	90	90	80	100	90	110	70	70	73
150	160	150	120	90	120	100	70	50	70	100	50	103
[110]	110	120	130	70	100	70	50	30	50	50	50	-
±S	±S	30	40	40	40	30	40	40	40	40	40	-
50	50	70	-S	50	60	50	50	50	50	50	40	-
60	60	50	60	50	70	70	80	80	70	50	50	-
80	50	70	30	60	80	90	90	80	80	60	40	-
100	90	80	100	100	80	70	70	60	70	50	30	65
-10	-20	0	0	-10	-20	10	30	30	0	-10	0	-7
50	40	40	60	60	60	80	80	110	100	60	40	39
[30]	50	+S	+S	70	40	70	100	120	80	120	120	-
80	83	86	75	79	79	68	62	77	68	60	47	
30	30	29	28	30	28	29	29	28	28	28	28	

February

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	90	90	90	100	70	70	80	70	30	20	20	[-10]
2.	±S	10	10	10	20	10	-10	30	20	20	[30]	40
3.	70	╎ 90	110	90	70	90	70	-	-	+S	100	90
4.	50	50	50	50	80	100	110	130	[+S]	[100]	110	130
5.	70	40	10	30	40	50	70	70	80	90	[90]	100
6.	90	70	60	50	40	40	40	30	110	130	[120]	160
7.	50	50	60	80	70	60	50	70	60	20	[80]	90
8.	110	120	130	130	120	100	I20	110	130	120	100	[110]
9.	-70	-S	±S	-S	±S	±S	-S	±S	±S	±S	[+S]	+S
10.	+S	-70	-30	-	-	-	-	-	-	-	-	-
11.	-	-	-	-	-	-	-	-	-	-	-	-
12.	-	-180	-230	-220	-	-	-	-	-120	-110	[-150]	-180
13.	-10	-10	-50	-40	-30	10	40	70	90	90	[100]	110
14.	80	100	100	80	50	70	60	90	130	120	[120]	100
15.	20	-10	-80	-70	-20	-40	-50	10	30	-	-	50
16.	30	40	40	-80	30	50	20	40	90	120	[110]	90
17.	50	-40	60	20	30	0	0	-50	-	40	80	110
18.	-120	-120	-50	-50	-100	10	-10	30	70	[70]	80	80
19.	60	80	100	110	120	130	150	150	140	[150]	100	70
20.	30	40	50	60	50	60	60	50	50	60	-	[70]
21.	70	70	60	90	80	60	50	90	70	50	[50]	60
22.	40	40	50	50	50	60	70	50	30	40	50	[70]
23.	60	100	120	70	150	120	90	60	0	-90	[40]	[40]
24.	80	70	90	90	-50	60	80	[70]	-	90	100	110
25.	90	120	130	130	130	120	130	110	130	160	[160]	170
26.	60	50	50	50	50	50	60	80	100	130	130	130
27.	80	60	50	50	50	50	60	90	120	90	[110]	150
28.	100	100	90	70	80	90	90	100	120	140	120	[130]
Means	49	37	41	38	49				70	72	83	83
Number of days	24	26	26	25	24			⌡	21	23	23	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
[-30]	-90	10	-10	50	+S	±S	-50	-90	+S	±S	±S	-
30	50	40	60	40	?0	20	40	20	30	40	60	28
80	100	60	70	80	90	80	80	100	80	60	60	-
140	150	130	120	110	100	100	100	80	90	70	50	96
100	100	100	100	100	100	100	100	100	100	100	90	80
120	140	160	160	120	110	90	90	70	70	50	50	90
70	40	40	20	50	90	120	180	150	130	120	120	78
[120]	120	80	90	70	100	120	120	110	0	0	-10	97
+S	20	-20	40	20	-60	100	-60	-80	-120	-120	±S	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-150	-120	-50	-30	40	70	10	0	30	-30	-10	0	-
140	150	170	170	160	140	130	110	40	80	70	100	76
110	130	170	170	130	110	80	80	70	-20	50	20	92
[80]	110	110	100	80	70	40	50	80	60	60	40	-
40	20	-30	-10	100	-50	+S	80	100	-10	120	80	44
120	140	130	90	60	40	40	-60	-100	-150	-150	-130	14
70	80	80	100	70	70	50	50	50	40	50	70	28
10	50	120	60	-20	40	40	30	40	0	20	30	74
120	130	120	130	130	13		120	150	150	110	80	90
60	70	60	70	80	11(		50	50	40	80	40	65
110	130	130	140	130	140		120	150	140	70	40	86
50	120	140	150	140	120		80	80	80	100	70	84
130	140	140	140	150	180	160	130	110	120	120	110	105
170	180	160	180	150	120	150	180	150	110	80	70	137
[120]	130	130	140	130	130	150	150	130	120	110	90	103
150	170	210	170	190	180	180	190	180	170	150	130	126
140	150	140	150	150	140	130	120	70	70	70	60	109
84	93	97	99	97	92	98	80	71	54	57	55	
25	26	26	26	26	25	24	26	26	25	25		

March

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	30	50	50	30	0	-30	-50	-50	-30	-50	-50	-10
2.	-60	-50	-30	-60	-30	-10	20	-10	20	20	10	10
3.	30	50	70	60	40	40	50	50	-	[90]	120	150
4.	30	140	130	80	80	20	130	180	120	130	70	[80]
5.	-100	-60	-20	80	+S	+S	+S	-	-	100	140	180
6.	100	50	80	70	40	30	60	60	80	120	140	[130]
7.	0	80	70	80	100	80	130	140	210	190	170	90
8.	40	40	40	40	30	20	30	40	40	40	40	50
9.	130	110	130	120	100	80	70	60	80	80	100	120
10.	60	60	70	60	70	60	70	[60]	-	130	120	110
11.	70	70	70	60	70	100	60	60	40	40	50	50
12.	80	50	40	30	30	130	120	110	120	+S	+S	160
13.	50	60	70	70	140	70	0	30	10	10	30	10
14.	50	50	90	110	70	60	200	+S	+S	+S	+S	+S
15.	160	170	180	180	180	170	190	140	110	90	80	90
16.	130	120	150	150	150	150	110	40	40	40	60	[60]
17.	0	-10	30	20	30	40	50	-	-	90	90	100
18.	50	60	70	80	70	70	80	70	100	80	100	[100]
19.	50	40	40	10	10	-10	-40	-20	10	40	[50]	80
20.	50	50	40	50	60	60	50	70	60	60	60	[70]
21.	-20	-40	0	-60	+S	+S	+S	20	10	20	30	[30]
22.	30	40	40	30	30	10	30	40	-	-	-	[50]
23.	30	0	10	0	0	10	10	20	70	80	[100]	110
24.	60	(70)	+S	+S	+S	(50)	70	-	-	50	60	60
25.	(50)	+S	(30)	(30)	+S	±S	±S	±S	±S	±S	±S	±S
26.	30	30	30	20	30	40	70	60	60	70	70	[70]
27.	+S	40	50	50	50	60	120	80	70	[70]	70	70
28.	290	280	280	270	270	280	(300)	50	30	10	[40]	60
29.	30	50	40	30	30	30	30	40	50	40	50	50
30.	50	40	40	50	30	30	[30]	10	±S	±S	±S	±S
31.	60	50	50	50	50	40	50	60	80	70	-	120
Means	52	56	66	61	64	60	64	54	63	66	72	80
Number of days	29	29	29	29	27	27	27	26	22	26	25	28

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
[-10]	-50	-90	-90	-80	-70	-70	-50	-90	-100	-60	-70	-39
[40]	+S	150	150	130	190	210	140	50	40	30	20	43
180	170	150	170	150	140	150	140	120	170	130	70	108
[110]	130	130	120	110	80	40	30	10	40	20	-50	82
[190]	180	180	170	150	170	190	170	180	180	130	130	-
[+S]	+S	+S	110	130	80	80	70	50	50	20	10	-
[120]	100	30	-180	-230	-100	-40	-20	30	40	40	30	48
[60]	70	60	80	80	-	-	-	80	120	110	100	-
[140]	150	130	100	90	80	80	70	50	60	70	60	94
140	120	90	90	70	80	120	100	130	130	80	70	91
[50]	50	70	70	80	80	60	50	50	70	60	70	63
190	120	90	110	70	50	120	120	60	10	30	20	-
0	30	0	30	60	90	160	50	30	+S	+S	160	-
+S	210	200	190	160	210	210	200	160	160	160	150	-
[70]	60	70	60	90	120	150	150	150	140	150	130	128
60	50	50	70	70	60	50	60	80	70	40	20	78
100	90	100	90	100	120	130	130	100	70	70	80	-
100	110	100	100	80	40	70	60	40	60	50	50	75
80	80	70	70	80	100	80	80	70	90	70	60	50
60	50	50	50	40	30	20	10	0	-30	-20	-20	38
10	20	40	70	60	80	90	100	110	50	40	30	-
70	80	70	70	70	80	70	70	80	50	40	40	-
120	120	120	+S	-S	-70	80	90	110	±S	±S	50	-
50	70	70	(120)	+S	70	70	70	50	60	60	60	-
±S	270	210	+S	260	270	270	(0)	0	20	30	30	-
70	60	50	60	50	50	±S	±S	±S	70	30	30	-
50	40	40	40	40	40	50	50	50	40	50	70	56
60	50	50	50	50	50	40	30	20	-10	30	10	100
30	[-10]	0	0	20	30	40	30	50	40	40	40	33
±S	30	50	-S	50	70	70	70	70	70	80	90	-
110	100	80	70	60	60	70	70	80	70	50	50	67
83	88	80	71	72	76	92	76	66	63	56	51	
27	29	30	27	29	30	29	28	30	29	29	31	

April

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	50	50	70	50	40	30	-	-	20	30	50	60
2.	±S	20	30	20	20	20	20	90	[0]	20	50	70
3.	20	0	-10	0	10	20	20	30	40	40	[30]	40
4.	(30)	(20)	-	(40)	30	20	[30]	30	30	30	40	40
5.	10	20	20	20	0	10	[0]	20	40	60	60	60
6.	-10	-10	10	20	-20	-20	-10	20	30	30	[40]	[40]
7.	20	10	20	20	20	0	(-20)	-	70	60	70	50
8.	30	30	20	20	20	30	60	40	40	[50]	40	50
9.	10	30	30	30	40	60	70	70	50	[40]	40	(40)
10.	40	60	50	40	50	50	70	80	70	70	50	[40]
11.	30	30	20	20	40	50	80	90	[80]	60	50	40
12.	40	40	0	0	-	30	-	-	-	-	-	(50)
13.	-20	10	30	30	20	40	50	60	50	[40]	50	40
14.	50	50	50	50	-20	0	-	-	50	60	60	70
15.	30	30	30	50	50	60	70	70	80	[80]	70	60
16.	-10	10	40	30	20	30	50	10	10	40	0	30
17.	20	40	50	50	60	70	(80)	(60)	80	80	60	[40]
18.	40	30	30	30	30	40	50	50	50	50	[-10]	-70
19.	50	40	30	30	50	50	70	60	(50)	(50)	50	[50]
20.	30	20	20	20	30	10	40	20	40	[30]	40	40
21.	30	30	40	40	60	70	-	-	80	80	70	80
22.	40	50	50	30	30	40	50	60	60	[40]	10	10
23.	60	60	60	60	50	60	50	60	70	70	[60]	40
24.	40	40	40	50	60	40	50	70	70	50	[60]	50
25.	40	50	50	50	40	60	70	[50]	50	50	40	30
26.	40	50	50	50	70	70	80	80	90	70	[70]	80
27.	-	-	-	-	-	-	-	-	-	-	-	-
28.	-	-	-	-	-	-	-	-	-	-	-	-
29.	-	-	-	-	-	-	-	-	-	-	-	-
30.	-	-	-	-	-	-	-	-	-	-	-	-
Means	28	32	33	32	32	36	49	53	52	51	46	43
Number of days	24	25	25	25	25	26	20	20	24	24	25	24

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
60	50	50	50	60	50	40	30	50	40	±S	20	-
60	50	40	40	40	30	60	50	20	20	10	20	35
30	(30)	-	-	-	20	20	30	(30)	-	-	-	-
50	40	50	50	30	20	20	10	0	0	0	10	-
70	70	70	70	70	20	-40	-60	-30	-20	-10	-10	22
30	60	70	70	30	30	40	70	70	60	40	30	30
30	30	20	20	30	20	30	20	10	10	10	20	-
30	20	20	20	30	30	30	30	40	40	30	20	32
30	30	30	±S	±S	±S	70	70	70	80	70	40	-
±S	+S	±S	±S	±S	±S	60	50	60	60	30	30	-
40	50	40	40	40	70	70	80	70	60	40	50	52
50	60	50	70	90	30	20	0	-30	-30	-20	0	-
10	-40	20	-10	0	30	40	60	60	60	60	50	31
70	80	80	90	80	50	50	40	40	40	30	40	-
50	50	50	50	50	50	40	50	50	50	30	30	51
-50	-30	-20	-40	-50	-20	-10	-30	0	20	10	0	2
30	40	40	40	40	50	40	50	50	50	50	50	-
20	0	0	40	60	40	50	0	-50	-50	0	20	19
60	50	50	50	50	50	60	50	40	40	40	30	-
40	40	40	40	40	40	40	50	40	40	40	30	34
60	50	50	40	40	30	40	40	30	10	10	30	-
0	10	30	40	40	40	50	60	60	50	50	60	40
50	70	80	50	50	70	70	70	50	50	50	40	58
80	70	50	50	60	80	70	70	60	70	60	50	58
30	40	40	30	40	40	60	80	60	60	50	50	48
70	80	60	70	70	60	60	50	40	60	50	50	63
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
40	40	42	42	43	39	42	39	34	35	30	30	
25	24	24	23	23	24	26	26	25	25	24	25	

May

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

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	! -	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
20	20	20	20	20	10	10	10	10	10	10	0	-
0	0	0	0	0	-10	-10	-10	-10	-10	-10	-10	-4
10	10	10	10	10	10	10	10	10	10	10	10	2
-S	-	-	-	-	+S	+S	20	20	20	10	20	-
20	30	30	20	20	20	20	20	20	20	20	20	23
30	20	20	20	20	20	20	10	10	10	10	10	17
20	20	20	10	20	20	20	20	20	10	10	10	16
30	20	20	20	(10)	10	10	10	10	10	10	10	-
20	20	10	10	0	0	0	0	0	0	0	0	7
10	20	20	20	20	10	10	10	10	0	10	10	11
20	20	30	+S	10	10	10	0	0	0	0	-10	11
30	40	50	40	30	30	20	30	30	30	30	30	18
30	50	40	30	20	10	10	10	10	10	10	10	19
30	20	30	30	30	20	20	30	30	30	30	20	19
(60)	50	50	40	20	40	20	20	10	10	10	20	29
20	(30)	30	30	20	20	20	30	20	10	10	10	-
-10	0	0	0	10	10	0	0	0	-10	-10	(40)	-6
20	30	30	30	30	20	20	20	20	20	20	10	-
20	30	20	20	20	10	10	10	10	-10	-10	-10	15
+S	20	-30	20	0	10	0	10	20	30	30	30	-
40	[40]	40	30	30	40	30	40	30	10	10	10	32
30	30	30	30	30	40	30	20	10	10	10	10	-
20	30	30	30	30	20	20	20	20	20	10	10	18
20	+S	40	20	30	20	10	±S	±S	±S	±S	+S	-
[40]	40	30	0	20	30	20	30	20	±S	±S	±S	-
20	10	20	30	30	30	20	40	40	40	30	30	-
-	-	-	-	-	-	-	-	-	-	-	-	-
21	25	24	21	20	18	14	16	15	12	11	11	
23	23	25	24	24	25	25	25	25	24	24	23	

June

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	–	–	–	–	–	–	–	30	40	40	[40]	30
2.	0	0	0	10	20	30	30	30	–	30	(20)	–
3.	40	40	30	20	40	50	70	60	[80]	80	30	10
4.	0	0	0	0	10	10	10	–	40	30	30	30
5.	–S	0	±S	±S	±S	±S	0	40	70	[100]	60	40
6.	20	20	20	10	20	20	20	10	10	10	[20]	10
7.	10	10	0	0	10	10	10	10	10	20	20	10
8.	10	10	10	20	20	20	20	10	20	10	10	[20]
9.	20	20	20	20	30	20	–	–	50	50	50	50
10.	20	10	0	0	0	0	20	30	40	[40]	40	30
11.	0	0	0	0	10	30	40	40	50	[50]	50	40
12.	–	–	–	–	–	–	–	–	–	–	–	–
13.	–	–	–	–	–	–	–	–	–	–	–	–
14.	–	–	–	–	–	–	–	–	–	–	–	–
15.	–	–	–	–	–	–	–	–	–	–	–	–
16.	–	–	–	–	–	–	–	–	–	–	–	–
17.	–	–	–	–	–	–	–	–	–	–	–	–
18.	–	–	–	–	–	–	–	–	–	–	–	–
19.	–	–	–	–	–	–	–	–	–	–	–	–
20.	–	–	–	–	–	–	–	–	–	–	–	–
21.	–	–	–	–	–	–	–	–	–	–	–	–
22.	–	–	–	–	–	–	–	–	–	–	–	–
23.	–	–	–	–	–	–	–	–	–	–	–	–
24.	–	–	–	–	–	–	–	–	[50]	40	30	30
25.	20	10	10	10	10	20	20	20	20	30	20	([30])
26.	10	20	10	10	20	20	30	40	40	40	40	[30]
27.	–	–	–	–	–	–	70	70	60	50	40	[30]
28.	40	40	30	30	30	40	40	50	50	40	[30]	30
29.	10	10	10	10	10	20	30	[+S]	–	–	–	–
30.	(10)	–	–	–	–	–	–	–	60	60	40
Means	15	14	11	11	18	22	29	34	42	42	36	29
Number of days	13	14	13	13	13	13	14	13	15	17	16	15

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
20	20	30	30	30	20	20	10	10	10	10	10	–
–	-10	30	30	20	20	±S	±S	±S	100	60	70	–
±S	20	20	30	0	±S	10	10	10	20	10	0	–
20	20	20	+S	±S	±S	(10)	20	0	-50	-70	-60	–
20	20	20	20	20	20	20	20	20	20	20	20	–
20	10	20	10	10	0	20	20	20	10	10	10	15
[10]	10	10	20	20	20	20	10	30	30	20	10	14
20	20	20	30	30	40	30	30	30	40	30	30	22
50	50	50	50	50	40	40	40	30	30	30	30	–
20	20	20	20	20	10	10	20	10	10	20	10	18
40	40	30	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–
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–	–	–	–	–	–	–	–	–	–	–	–	–
30	30	30	20	20	20	10	20	10	20	20	10	–
20	10	10	10	10	10	10	20	20	10	10	10	15
30	30	20	20	10	10	20	20	–	–	–	–	–
–	–	–	–	–	–	(40)	30	20	30	30	30	–
20	20	20	10	10	10	10	20	20	20	10	10	26
–	–	–	±S	-50	20	20	20	30	30	10	10	–
40	30	40	40	40	30	30	40	40	30	20	20	–
26	21	24	24	16	19	19	22	20	23	15	14	
14	16	16	14	15	14	14	16	15	16	16	16	

July

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	20	20	20	20	20	20	30	30	40	[40]	40	40
2.	20	20	30	10	10	30	20	30	[40]	40	30	±S
3.	-	-	-	-	-	-	-	-	-	-	-	-
4.	0	10	10	10	10	20	20	20	20	20	20	[20]
5.	20	10	10	10	10	10	10	10	10	10	[10]	10
6.	30	20	30	30	30	40	30	40	20	20	10	[10]
7.	10	30	10	0	30	10	-	-	20	30	20	20
8.	10	10	10	10	10	20	30	-	-	[30]	20	-
9.	0	0	0	0	0	10	10	20	30	(40)	40	30
10.	20	20	10	20	20	30	30	30	40	[10]	10	20
11.	20	20	20	20	20	30	20	10	10	-10	10	([10])
12.	10	0	10	10	10	20	20	30	40	40	40	[30]
13.	30	40	40	30	30	40	30	40	30	30	20	20
14.	20	20	20	20	30	30	-	-	40	40	40	40
15.	10	10	10	10	0	10	10	30	40	[40]	40	40
16.	10	10	20	20	20	30	40	50	50	[50]	50	40
17.	10	10	20	10	10	20	30	30	30	[30]	30	30
18.	0	0	0	10	10	20	30	30	30	[20]	30	30
19.	-30	-40	-30	0	-20	-10	-10	-30	±S	±S	±S	±S
20.	0	0	10	20	0	10	30	40	50	40	[30]	30
21.	30	30	40	40	40	50	-	-	50	50	40	40
22.	20	30	20	10	20	30	40	[40]	40	50	50	50
23.	20	20	20	20	20	30	30	[30]	[30]	10	10	20
24.	-10	0	-20	-S	+S	-20	-20	-10	-10	30	20	+S
25.	-	-	-	-	-	-	-	50	130	80	40	30
26.	30	30	20	10	20	30	[30]	[30]	40	50	40	30
27.	-	-	-	-	-	-	-	80	130	110	90	70
28.	0	10	10	10	20	40	30	-	40	40	40	40
29.	10	10	10	20	30	40	[40]	[50]	50	50	40	30
30.	-	-	-	-	-	-	-	40	60	40	30	30
31.	10	0	10	10	30	30	40	[40]	50	40	30	20
Means	12	13	13	15	17	23	24	30	41	37	32	31
Number of days	27	27	27	26	26	27	24	25	28	28	29	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	30	30	40	30	20	30	30	30	30	20	20	28
–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	20	10	10	10	10	10	0	0	0	–
30	10	10	10	10	20	20	20	30	20	10	10	16
10	20	10	20	30	30	30	30	30	40	40	30	19
10	-10	0	0	10	20	20	20	10	10	60	10	20
10	+S	±S	20	30	30	30	30	20	20	20	10	–
–	-S	20	10	10	20	30	10	0	0	10	10	–
30	40	30	20	30	30	30	40	40	20	20	10	21
10	10	-10	10	0	60	30	20	30	20	20	20	20
80	10	20	10	10	30	30	40	20	10	20	20	20
20	20	10	30	30	30	30	40	40	30	30	40	25
20	20	20	30	20	[10]	10	20	30	30	20	10	26
30	40	30	40	30	30	20	20	30	20	20	20	–
40	40	40	40	30	30	30	30	20	20	10	10	25
40	40	30	20	20	30	30	30	20	10	10	10	28
20	20	20	20	10	10	10	20	10	10	0	0	17
10	10	10	0	0	10	10	20	10	-10	-30	0	10
20	10	0	-10	-20	±S	±S	+S	-30	-20	-10	-10	–
10	30	30	30	30	40	40	50	40	40	40	30	28
40	40	30	40	40	40	30	50	40	30	20	10	–
–	–	–	40	30	20	10	10	10	20	20	20	–
0	-10	-10	0	0	-10	0	0	0	0	0	-10	–
–	–	–	–	–	–	–	–	–	–	–	–	–
30	30	10	10	10	10	20	30	40	40	30	30	–
30	30	20	30	–	–	–	–	–	–	–	–	–
40	30	20	20	20	20	20	30	20	20	0	0	–
40	40	40	40	30	30	30	40	30	30	20	10	29
20	20	10	10	20	–	–	–	–	–	–	–	–
30	20	10	-10	-30	-10	-10	0	0	0	0	0	–
10	-60	-50	-S	-S	20	20	30	30	20	30	30	–
25	19	15	19	16	22	22	26	21	17	16	13	
26	25	26	28	27	26	26	26	27	27	27	27	

August

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	10	10	10	0	10	30	40	[20]	40	50	30	20
2.	-	-	-	-	-	-	-	80	180	140	90	60
3.	-	-	-	-	-	-	-	110	200	150	(90)	-
4.	-	-	-	-	-	-	-	-	50	40	30	30
5.	20	20	20	30	30	40	[30]	30	30	20	20	20
6.	-	-	-	-	-	-	-	50	30	20	10	10
7.	-	-	-	-	-	-	-	20	20	10	10	10
8.	10	10	20	10	20	30	[40]	[30]	40	30	30	30
9.	-	-	-	-	-	-	-	-	-	-	-	-
10.	-	-	-	-	-	-	-	-	-	-	-	-
11.	-	-	-	-	-	-	-	[20]	20	10	10	20
12.	20	20	20	20	20	30	-	-	10	0	-10	-20
13.	-	-	-	-	-	-	-	30	40	20	10	0
14.	10	10	10	20	20	[30]	[30]	40	40	50	50	50
15.	20	10	20	10	10	[10]	[10]	20	20	30	30	20
16.	20	20	20	20	20	20	30	[20]	20	10	20	20
17.	30	30	20	10	10	20	30	[30]	30	30	30	30
18.	30	20	30	30	30	30	-	-	40	30	30	30
19.	±S	20	-	-	-	-	-	-	-	-	-	-
20.	-	-	-	-	-	-	-	30	[30]	30	20	30
21.	20	20	20	10	30	40	40	40	[60]	60	40	40
22.	20	20	20	30	30	30	30	30	-	-	[20]	20
23.	30	40	40	40	30	40	30	30	-10	-10	0	20
24.	-	-	-	-	-	-	-	20	30	40	30	30
25.	10	10	20	30	30	30	-	-	70	80	70	60
26.	20	20	40	20	20	40	10	40	50	50	[50]	50
27.	50	40	40	20	20	20	20	20	20	-	-	-
28.	20	10	0	10	±S	+S	-40	50	[40]	±S	+S	50
29.	-	-	10	+S	±S	10	20	50	40	50	[60]	40
30.	40	40	20	10	20	10	20	20	20	40	20	[40]
31.	10	10	10	10	10	20	20	20	20	[20]	10	10
Means	22	20	21	18	21	27	23	35	44	40	28	28
Number of days	18	19	19	18	17	18	16	24	27	25	25	26

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
-10	-10	-10	-10	0	-	-	-	-	-	-	-	-
30	20	20	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
30	30	40	40	30	30	20	20	30	20	20	30	-
20	30	20	30	20	-	-	-	-	-	-	-	-
10	10	-	-	-	-	-	-	-	-	-	-	-
20	10	10	10	10	10	10	20	20	10	10	10	-
30	30	30	20	10	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
30	±S	±S	±S	+S	40	30	30	20	20	20	20	-
-20	-30	-60	-60	+S	±S	-S	30	70	-	-	-	-
20	20	10	10	20	20	20	20	20	20	20	20	-
40	50	60	40	40	30	20	20	20	10	20	20	30
10	10	10	10	10	10	20	20	20	20	30	20	17
20	20	10	10	10	20	20	20	20	20	30	30	20
30	-S	-S	±S	70	+S	±S	30	30	20	20	30	-
20	30	40	60	±S	-	-	-40	10	±S	-S	±S	-
-	..	-	-	-	-	-	-	-	-	-	-	-
20	20	20	20	30	20	20	20	20	20	20	20	-
40	40	30	20	20	20	20	20	20	20	20	20	30
-80	-70	-30	-40	-10	10	40	40	40	40	40	40	-
-S	-	-	-	-	-	-	-	-	-	-	-	-
30	30	30	-S	±S	+S	±S	0	0	-20	-10	-10	-
40	50	50	40	40	40	50	50	50	40	40	40	-
50	50	50	40	50	50	50	40	50	50	50	50	41
-	[10]	10	10	10	20	10	50	0	20	20	40	-
50	40	-	-	-	-	-	-	-	-	-	-	-
40	40	50	50	50	40	50	50	50	50	50	40	-
40	20	40	20	20	20	20	20	40	40	20	20	26
10	10	20	20	20	20	50	40	20	20	20	20	18
21	19	20	17	24	25	28	25	28	23	24	26	
25	24	22	20	19	16	16	20	20	18	18	18	

September

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	20	10	20	40	40	40	–	–	40	50	50	40
2.	10	10	20	10	10	20	[20]	30	30	40	40	30
3.	10	20	20	30	30	20	–	–	[40]	40	30	10
4.	30	20	20	±5	±5	-5	20	30	30	30	[20]	40
5.	20	20	20	20	20	20	30	40	[50]	[40]	40	40
6.	30	20	20	30	20	30	30	40	40	50	[60]	50
7.	20	10	10	20	30	20	40	40	30	40	[30]	30
8.	0	0	0	10	10	10	–	–	70	60	40	30
9.	0	-10	10	20	20	30	60	[50]	60	60	60	60
10.	-20	-5	30	-40	0	-20	10	-10	[-10]	[-10]	0	0
11.	10	0	20	20	10	20	30	80	140	[80]	70	60
12.	50	40	40	40	50	40	40	40	[40]	40	50	40
13.	10	10	10	10	20	30	[40]	40	40	40	30	30
14.	40	30	40	50	50	60	[40]	[40]	40	30	30	40
15.	20	30	10	20	30	30	–	–	40	50	50	50
16.	30	40	40	40	40	40	40	40	[40]	30	40	30
17.	40	30	30	40	40	40	20	20	[30]	(40)	50	50
18.	50	40	50	50	70	60	60	60	[50]	20	10	30
19.	20	30	30	30	40	50	60	70	60	[70]	60	60
20.	20	20	20	20	20	30	[40]	40	30	40	40	40
21.	20	30	30	30	40	40	40	[40]	40	50	50	50
22.	30	30	30	30	40	40	–	–	40	40	30	30
23.	30	30	20	20	20	30	40	40	[40]	40	40	40
24.	30	30	20	30	30	40	50	50	50	50	[50]	–
25.	30	20	20	10	20	30	40	50	50	[50]	50	60
26.	20	20	30	30	20	10	10	[0]	20	20	0	-30
27.	40	30	30	40	30	30	[50]	40	40	50	50	50
28.	20	10	10	20	30	30	40	40	40	50	50	[50]
29.	20	10	20	30	40	–	–	–	–	30	30	40
30.	30	30	20	10	20	30	40	50	50	[50]	[40]	40
Means	23	21	23	24	29	30	37	40	43	42	40	38
Number of days	30	29	30	29	29	28	24	24	29	29	30	29

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	40	30	20	30	20	30	30	20	20	20	20	–
20	30	30	30	40	30	30	40	30	30	20	20	26
10	0	10	20	30	40	30	30	30	20	20	30	–
40	30	30	20	20	30	40	40	40	20	30	30	–
40	30	30	30	30	30	40	30	40	40	30	30	32
40	30	30	30	20	20	10	20	30	30	20	20	30
20	20	30	40	30	30	20	–	-50	-10	-10	10	20
30	30	30	30	20	20	20	40	40	20	20	10	–
50	60	70	60	40	40	40	10	10	10	90	-10	37
10	-20	-20	-10	10	10	20	20	30	20	10	10	1
60	50	50	30	30	30	40	40	30	40	40	50	43
40	30	30	30	30	20	10	20	20	10	10	20	33
30	30	40	30	40	40	30	30	30	40	40	30	30
40	40	40	40	30	30	30	30	30	30	30	30	37
40	(30)	(40)	30	40	30	30	10	10	10	20	30	–
20	20	20	20	10	30	40	30	20	10	30	30	32
50	40	40	40	40	50	50	30	60	30	50	50	40
40	10	0	0	-20	20	50	50	50	30	20	20	34
50	50	60	50	40	30	40	40	50	40	40	30	46
40	40	40	40	30	30	40	40	30	30	40	20	33
50	50	40	50	40	50	40	40	40	40	40	40	41
30	40	50	40	30	40	40	40	40	40	40	40	–
40	40	40	30	30	40	30	20	20	10	30	30	31
–	–	40	40	10	50	50	50	50	30	40	40	–
70	70	80	60	60	80	60	50	40	40	30	30	46
0	20	30	20	20	40	50	40	40	50	50	50	23
60	60	60	50	50	50	40	30	40	30	20	10	41
50	50	40	40	10	40	40	50	50	40	40	40	38
40	40	30	30	30	30	40	50	40	40	40	40	–
40	50	50	70	60	60	50	50	50	40	30	40	42
37	35	36	34	31	35	36	34	32	29	31	28	
29	28	29	30	30	30	30	29	30	30	30	30	

October

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	30	40	30	30	30	40	40	50	40	50	[40]	50
2.	20	30	30	30	50	60	50	50	[50]	70	60	50
3.	40	40	40	40	40	50	40	40	50	50	60	[50]
4.	30	20	20	20	20	40	[40]	40	40	50	50	60
5.	30	30	30	20	30	40	40	50	[70]	[50]	50	60
6.	30	20	20	20	30	30	40	-	-	-	40	30
7.	40	30	40	40	30	40	30	[30]	40	40	40	40
8.	10	30	30	10	10	20	20	[30]	20	10	30	10
9.	30	30	30	40	40	40	50	60	[60]	60	60	50
10.	10	20	20	30	30	30	50	[70]	60	40	50	40
11.	10	20	40	30	50	40	40	[50]	40	40	40	50
12.	10	20	-10	-10	0	-10	20	30	[40]	50	40	40
13.	30	20	30	30	30	40	40	-	-	[40]	40	50
14.	0	10	10	0	10	20	-10	-10	0	30	30	30
15.	-20	-10	0	30	20	20	50	[40]	[40]	40	50	60
16.	0	20	10	20	30	20	40	40	20	[20]	30	40
17.	40	40	50	50	40	30	30	50	60	[70]	80	70
18.	40	30	30	20	30	40	50	[40]	50	50	40	30
19.	50	50	40	40	30	40	30	30	10	-10	20	[20]
20.	30	30	50	-10	10	20	30	-	-	40	40	40
21.	0	20	20	20	30	0	50	70	+S	120	50	40
22.	-	-	-	-	-	-	-	-	-	-	[10]	-50
23.	40	30	30	20	10	10	10	[10]	[0]	50	+S	±S
24.	40	30	30	40	50	60	60	70	70	70	[60]	70
25.	30	30	40	30	20	30	40	-	-	-	-	60
26.	40	30	50	60	60	50	40	30	30	30	[40]	40
27.	-40	-60	-50	0	20	10	10	-	-	0	-10	0
28.	20	20	20	20	40	30	40	50	70	70	60	[40]
29.	40	50	40	40	40	40	70	70	40	30	40	[50]
30.	10	10	10	0	0	-10	0	0	30	40	30	40
31.	30	30	20	30	40	40	40	70	70	60	60	[40]
Means	22	24	25	25	29	30	36	42	42	45	42	40
Number of days	30	30	30	30	30	30	30	25	24	28	29	30

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
60	60	70	50	50	60	60	30	40	30	40	40	44
50	50	50	50	50	50	50	70	50	50	50	50	49
50	50	40	40	50	50	70	60	50	50	50	50	48
50	50	50	50	50	50	60	50	50	50	50	40	43
70	80	60	50	40	40	50	50	40	40	30	30	45
40	50	50	40	40	30	20	30	40	40	50	40	-
50	40	50	40	40	50	50	40	40	30	20	10	38
30	30	40	40	40	40	50	50	50	40	40	30	30
50	50	40	40	40	40	30	30	30	20	20	10	40
40	40	40	40	40	30	0	20	30	20	30	30	34
50	50	40	40	40	40	30	30	50	0	30	20	36
50	40	30	30	40	40	50	50	40	30	20	30	28
40	40	30	40	30	30	30	20	20	20	0	0	-
[40]	40	30	40	30	20	20	30	10	0	0	-10	15
50	40	30	40	30	30	30	30	10	0	-10	10	25
50	50	60	50	40	50	50	60	60	60	40	40	38
60	70	50	60	80	80	60	50	40	30	40	40	53
40	40	70	70	80	70	60	60	50	30	30	70	47
20	20	-30	+S	-40	-20	-10	-20	-80	-90	-10	40	6
50	60	30	30	20	20	-S	-40	0	10	0	±S	-
[60]	60	70	60	60	70	60	70	50	20	20	-S	46
10	50	50	70	80	50	50	50	40	40	40	40	-
±S	±S	±S	±S	±S	±S	30	20	10	-30	40	40	-
60	50	50	50	70	70	80	80	70	70	40	30	57
60	60	60	50	60	50	40	40	40	40	50	40	-
50	70	40	30	-10	60	80	70	30	40	20	-20	40
10	10	0	0	-10	-10	-20	0	10	0	0	10	-
40	30	30	50	30	50	60	70	40	40	40	40	42
50	50	60	40	60	80	70	50	20	30	20	30	46
[50]	60	60	60	40	30	30	30	40	30	30	30	27
[40]	40	50	60	50	60	70	60	50	30	40	40	47
46	48	43	45	41	44	44	40	33	25	28	29	
30	30	30	29	30	30	30	31	31	31	31	29	

November

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	50	20	10	20	30	30	40	80	70	60	50	[50]
2.	-10	-10	20	20	20	20	20	30	30	40	20	±S
3.	10	20	30	40	40	50	60	-	-	80	80	80
4.	40	30	40	40	40	40	60	[60]	[60]	60	60	50
5.	20	30	30	30	40	40	60	[60]	[70]	50	50	40
6.	40	30	30	20	30	40	30	40	50	30	[40]	40
7.	-	-	-	-	-	-	-	-	-	-	-	-
8.	20	30	20	20	30	40	50	50	60	50	40	[30]
9.	70	60	50	40	30	20	30	30	30	50	50	[60]
10.	10	10	0	-20	-10	-10	0	10	0	10	10	-
11.	0	30	60	120	120	110	130	80	70	40	[40]	30
12.	20	40	30	30	30	30	20	10	20	20	30	40
13.	120	90	90	80	70	30	40	30	30	30	[20]	10
14.	-10	-10	-10	-10	-10	-10	-10	-10	-10	0	10	30
15.	10	20	30	10	30	30	30	30	40	30	30	30
16.	0	-10	0	0	0	0	0	0	30	30	[30]	30
17.	20	40	40	30	10	10	30	[10]	-	20	40	30
18.	0	10	20	30	20	30	30	30	30	20	30	[40]
19.	80	70	80	60	80	70	60	80	30	20	20	0
20.	0	-10	-10	-10	0	0	0	0	10	0	0	0
21.	10	10	30	30	40	40	40	20	40	10	0	0
22.	0	0	0	0	0	0	0	0	0	10	0	0
23.	0	10	0	-10	0	0	0	-10	0	0	0	[10]
24.	0	-30	-20	-20	-30	-40	-50	-	-120	-100	-20	20
25.	30	40	40	40	40	60	80	120	[120]	(100)	80	80
26.	120	170	140	140	140	180	130	100	140	80	[70]	-
27.	20	20	-10	10	10	-10	0	40	60	50	[50]	60
28.	60	40	40	30	30	20	30	(30)	40	[60]	[60]	60
29.	10	20	30	30	30	30	[50]	30	30	20	40	30
30	40	50	50	50	60	60	40	70	[60]	20	40	30
Means	27	28	30	29	32	31	35	38	37	28	33	34
Number of days	29	29	29	29	29	29	29	26	27	28	29	26

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
60	70	50	30	10	20	10	10	10	0	-20	0	32
60	30	50	70	80	90	70	10	0	10	10	10	30
70	80	70	70	60	70	60	70	60	60	50	50	-
50	60	70	60	80	80	70	50	60	50	40	30	49
40	50	40	50	60	70	60	50	40	50	40	40	46
40	40	60	40	50	50	50	30	40	-	-	-	-
[30]	50	50	50	60	60	70	80	70	70	30	20	-
40	50	50	50	40	60	80	80	90	80	70	60	50
70	60	50	60	70	50	50	50	20	20	20	10	44
10	30	30	30	0	10	-10	0	30	30	0	-10	7
50	40	40	40	30	30	40	50	30	10	0	30	51
[40]	40	30	30	30	20	40	90	130	70	80	80	42
10	10	-10	-10	-10	0	0	0	0	0	0	-10	26
40	60	50	30	30	20	10	10	10	10	10	10	10
30	40	30	20	20	20	20	10	10	0	0	0	22
60	40	30	30	60	30	50	120	80	70	80	40	33
0	30	0	10	20	20	10	10	10	0	-10	-10	16
30	30	40	60	40	30	20	30	30	40	40	80	32
10	10	0	0	0	0	0	0	-10	0	-10	0	28
-10	0	0	10	0	0	10	0	10	20	20	10	2
0	0	0	0	0	0	0	0	0	0	0	-10	11
0	10	0	10	0	10	0	10	10	10	10	0	3
20	10	20	30	20	30	30	0	0	0	0	-10	6
30	50	60	60	50	50	30	40	40	80	70	40	8
80	70	80	80	70	90	80	90	110	120	120	110	80
90	120	80	30	-10	-50	-20	-10	-10	10	0	20	72
60	70	70	80	80	70	80	70	70	60	70	60	48
60	60	50	40	40	40	10	10	10	0	10	10	35
40	50	40	-40	40	30	10	0	30	50	50	40	29
70	80	50	30	100	80	120	100	0	-10	-100	-60	43
39	45	39	35	37	36	35	35	33	31	23	22	
30	30	30	30	30	30	30	30	30	29	29	29	

December

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	-50	40	80	70	30	70	40	-	-	30	20	30
2.	10	10	20	20	30	-10	40	40	30	[30]	60	60
3.	70	70	50	50	80	80	70	90	120	100	-	80
4.	160	140	130	140	150	130	130	130	120	60	[40]	130
5.	100	70	80	80	90	110	130	110	130	160	140	[130]
6.	50	80	40	30	30	30	30	50	60	70	80	50
7.	80	90	40	60	80	50	80	70	120	[80]	60	70
8.	70	30	30	30	30	40	30	-	-	-10	10	10
9.	-20	-20	-20	-10	-20	-10	-20	-30	[-20]	-50	-20	-20
10.	10	10	20	20	30	10	30	30	[30]	10	20	30
11.	10	10	10	20	20	10	0	0	-10	0	[10]	30
12.	30	20	20	30	20	0	10	10	20	40	50	[40]
13.	60	50	60	50	40	50	40	40	40	30	0	[10]
14.	10	10	0	10	0	20	30	40	40	-	30	40
15.	120	0	10	-40	40	20	±5	-	-	-30	-30	20
16.	30	-10	-40	-30	-30	-20	-50	-30	0	60	-	50
17.	20	20	20	30	20	20	40	70	80	80	100	[90]
18.	30	30	20	±5	30	40	40	60	60	0	-60	[-10]
19.	-70	-70	-60	10	70	80	60	-5	70	40	[50]	70
20.	10	20	40	30	30	10	60	50	70	60	70	[70]
21.	±5	-5	0	0	10	-5	-20	30	40	[50]	30	50
22.	-	-	-	-	-	-	-	-	-	20	-10	30
23.	10	20	20	20	30	40	30	40	40	50	70	[70]
24.	30	40	30	20	20	±5	±5	0	10	30	[50]	40
25.	50	60	60	70	60	50	50	70	80	80	[70]	80
26.	50	30	20	30	30	40	40	50	60	70	50	[80]
27.	60	±5	+5	30	40	80	±5	±5	0	0	30	[60]
28.	30	30	30	20	30	40	50	40	20	100	60	[70]
29.	40	-10	-5	-5	-50	-20	-10	-10	10	50	-	70
30.	30	30	40	40	40	30	40	70	[40]	40	40	(40)
31.	80	90	40	60	60	40	60	70	[80]	90	90	30
Means	38	32	28	33	35	38	33	44	50	45	40	52
Number of days	29	28	28	28	30	28	27	25	27	30	28	30

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	20	10	30	40	20	10	40	20	40	30	30	–
60	50	50	60	40	40	50	50	50	60	80	70	42
90	90	80	70	70	80	100	80	120	100	110	130	86
80	70	70	50	80	110	120	160	120	50	40	100	105
120	90	60	70	80	110	50	50	20	100	80	30	91
40	[110]	70	80	10	20	70	70	90	110	80	110	61
40	30	10	70	80	60	50	20	40	80	50	70	62
0	-20	-10	0	-10	-20	-20	-10	-10	0	0	-20	–
-10	0	-10	0	-30	-20	-10	-20	-10	-10	0	0	-16
40	30	20	30	40	40	50	60	50	40	70	50	32
30	20	30	30	40	60	50	40	60	40	40	20	24
50	40	50	60	60	70	80	90	70	80	50	50	43
20	30	30	40	10	10	20	0	30	30	10	0	29
50	50	40	40	70	80	70	60	50	20	40	10	35
70	40	30	50	70	90	50	30	40	50	30	0	–
70	70	60	50	50	70	70	60	50	70	30	20	26
80	50	80	70	80	80	80	70	50	60	50	40	58
-70	-30	-10	50	60	50	70	80	60	70	30	-20	25
80	70	70	80	80	60	60	40	50	40	10	40	43
60	60	50	30	20	40	40	30	20	40	40	±5	43
50	50	60	60	80	70	50	50	60	–	–	–	–
50	40	60	70	80	80	80	80	40	100	80	40	–
60	60	50	30	30	20	10	10	30	40	40	40	36
40	20	-20	-100	10	30	30	30	30	10	40	60	–
100	100	90	80	70	80	80	80	70	70	80	50	72
[80]	40	30	50	70	20	-10	50	+5	+5	90	90	–
70	20	-10	30	60	60	70	60	50	40	40	30	–
60	70	70	60	50	70	70	60	50	40	40	30	50
90	90	80	80	70	70	80	90	80	60	40	30	–
(40)	30	20	40	30	10	20	40	30	30	40	40	35
90	80	70	80	90	100	90	80	90	70	70	60	73
54	47	41	46	51	54	53	53	50	53	49	41	
30	31	31	31	31	31	31	31	30	29	30	29	

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
												January
1.	30	40	+S	+S	30	40	60	40	30	[30]	40	30
2.	-20	30	40	60	80	80	+S	30	60	60	[40]	60
3.	-90	0	10	20	30	60	60	70	80	[90]	90	90
4.	40	30	30	10	40	30	30	30	0	60	60	60
5.	40	60	40	70	20	0	40	(30)	–	60	20	40
6.	+S	+S	20	30	30	40	40	50	50	50	[60]	40
7.	-S	40	60	30	40	40	-30	-10	-S	-10	[-40]	-50
8.	50	50	50	40	50	40	50	60	[60]	50	50	60
9.	50	40	0	40	-S	+S	-S	-S	-10	[70]	50	40
10.	50	40	50	30	50	50	40	30	30	50	30	+S
11.	-30	40	+S	+S	+S	-S	+S	+S	+S	+S	(+S)	–
12.	–	–	–	–	–	–	–	–	+S	150	[100]	(90)
13.	30	(40)	–	–	–	–	–	–	(20)	80	80	90
14.	80	40	40	40	60	40	30	60	[100]	90	80	80
15.	+S	+S	+S	+S	-60	+S	+S	70	+S	+S	+S	30
16.	110	140	120	80	70	70	30	-20	110	40	0	40
17.	60	80	70	10	-20	-10	10	-40	[-70]	[-70]	-90	-60
18.	-70	-90	-90	-100	-40	-90	-110	-120	-90	-70	[-40]	[-40]
19.	0	0	-40	-40	-20	10	0	-30	-60	–	[10]	20
20.	-60	-70	-30	-50	-60	-50	-20	0	20	10	[20]	30
21.	50	80	70	80	20	10	30	40	40	30	[30]	50
22.	130	100	70	50	100	90	80	80	80	90	90	[70]
23.	0	0	-10	-10	-30	30	50	80	80	80	[100]	70
24.	-50	-50	-80	-40	-70	-70	-10	20	20	[70]	100	130
25.	50	30	-10	-10	-10	-10	-30	-60	-90	130	–	130
26.	120	90	0	20	-10	20	60	40	–	70	60	70
27.	40	40	40	50	50	60	50	70	100	130	[+S]	120
28.	50	50	60	50	50	70	70	70	100	60	[50]	80
29.	20	20	30	30	30	30	-S	50	+S	+S	[50]	30
30.	20	30	30	-10	0	20	30	40	50	50	70	[70]
31.	80	70	80	80	70	100	120	220	90	80	60	70
Means	29	34	25	22	19	27	23	33	34	57	43	52
Number of days	27	27	26	26	27	26	24	26	23	27	27	28

potential gradient for 1987

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
40	30	40	30	30	-100	-100	10	-S	0	10	20	-
60	60	60	60	90	90	80	70	70	60	30	0	54
90	90	100	90	90	130	160	160	120	90	80	40	73
[60]	60	70	70	60	80	90	80	70	80	70	60	53
30	50	30	0	40	40	50	20	40	50	-S	40	-
50	50	40	40	50	50	50	50	40	50	+S	+S	-
-80	-90	-50	-10	0	40	50	50	60	80	90	70	-
70	60	70	70	80	90	70	60	50	60	50	50	58
30	60	30	0	40	40	-S	-S	70	50	50	50	-
+S	[200]	150	120	150	120	150	170	160	100	30	-30	80
-	-	-	-	-	-	-	-	-	-	-	-	-
40	10	-10	20	40	60	60	70	60	30	40	30	-
[110]	90	70	90	100	70	90	130	130	90	80	70	-
60	60	80	90	+S	170	-S	-S	+S	+S	+S	+S	-
40	70	40	80	90	70	140	150	30	-20	40	30	-
[80]	110	80	90	90	80	40	20	80	110	80	90	73
-80	-80	-110	-70	-40	-40	-40	-60	-70	-60	-110	-90	-41
60	+S	-S	+S	+S	-10	-10	10	30	30	40	20	-
20	10	20	40	50	60	30	-10	-20	-10	10	-40	0
30	40	70	70	70	40	70	70	60	80	70	90	21
60	100	110	80	40	70	60	80	30	10	120	30	55
70	80	80	60	40	+S	40	30	30	20	10	0	65
30	110	140	130	90	100	60	100	120	90	+S	-60	59
180	170	170	130	90	130	160	90	120	90	70	70	60
130	140	130	140	140	130	180	190	160	110	40	110	75
70	60	70	-S	+S	70	+S	+S	+S	30	40	40	-
90	120	90	90	70	90	90	60	50	70	70	70	74
110	120	140	100	70	70	80	60	50	60	60	40	72
30	+S	50	120	+S	+S	+S	50	50	50	60	50	-
90	110	140	120	100	80	90	120	110	110	110	90	70
110	[30]	70	90	110	120	120	130	140	100	100	110	98
58	69	68	69	68	69	72	73	68	56	52	38	
29	28	29	28	26	28	26	27	27	29	26	28	

February

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	120	60	70	60	60	60	50	50	70	90	90	-
2.	70	60	50	40	20	30	30	-	-	60	70	70
3.	20	40	10	-20	-40	-60	-80	-20	-40	20	70	90
4.	50	60	40	50	50	60	60	50	50	60	110	110
5.	80	70	90	70	60	60	70	70	70	120	[90]	90
6.	60	50	50	40	50	60	60	70	70	70	[120]	130
7.	30	-20	-50	50	80	110	140	150	70	60	30	30
8.	40	30	30	30	40	50	50	50	70	90	[120]	-
9.	-90	-S	-S	-S	30	50	30	[30]	-	[80]	90	80
10.	80	80	80	70	70	80	120	150	140	80	[70]	80
11.	40	30	10	30	60	70	30	-40	-30	30	[30]	80
12.	50	40	50	50	50	40	40	50	80	90	[110]	140
13.	70	0	30	60	70	0	-30	-20	50	40	70	[80]
14.	80	100	80	50	60	50	50	50	50	70	70	90
15.	20	-10	-10	30	30	20	40	40	50	40	50	[60]
16.	30	20	20	50	70	70	60	[60]	(60)	60	50	40
17.	20	30	20	20	30	30	30	30	30	40	[30]	30
18.	40	10	-10	-80	-20	-S	-140	-90	-S	-50	110	60
19.	30	30	40	60	40	70	80	70	70	60	[80]	50
20.	30	10	30	-60	-S	+S	+S	-40	-40	-S	[0]	10
21.	10	20	20	20	20	20	30	30	30	(40)	(40)	60
22.	60	50	50	60	50	40	40	40	40	40	40	-
23.	30	30	40	30	30	10	-10	30	-	-S	-30	50
24.	30	50	50	50	50	40	50	(50)	(50)	50	[60]	60
25.	20	30	30	30	40	50	50	50	60	70	[70]	60
26.	40	40	40	40	40	40	40	50	50	(50)	[50]	60
27.	20	30	20	30	30	30	20	30	20	0	[30]	30
28.	30	0	10	40	50	50	-S	-S	50	20	-S	50
Means	40	35	33	33	41	43	35	38	46	54	65	68
Number of days	28	27	27	27	27	26	26	25	22	24	26	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
130	130	140	120	90	90	80	90	120	90	70	70	87
120	150	190	150	140	150	150	130	110	20	20	20	–
[120]	120	130	120	110	70	60	50	50	40	50	50	40
120	[130]	[120]	120	120	180	150	150	160	150	110	90	98
100	90	100	90	90	110	110	120	100	120	90	80	89
160	160	130	140	110	70	130	160	+S	160	100	50	96
90	[140]	70	50	70	70	80	60	+S	+S	40	40	–
100	100	90	80	70	120	90	80	-S	-S	-S	-120	–
80	90	70	80	80	70	110	150	170	130	120	80	–
70	70	60	50	40	40	30	40	30	40	30	20	68
90	90	100	90	50	60	30	60	80	60	60	50	48
100	100	110	120	110	80	90	100	130	90	90	90	83
80	50	80	90	80	90	100	100	90	120	100	70	61
70	[80]	70	30	30	80	70	50	50	70	60	40	63
70	60	60	70	80	50	30	80	60	80	40	40	45
50	50	40	30	20	10	30	0	-20	30	20	20	35
60	80	30	40	30	20	30	50	40	20	0	30	32
80	30	-10	0	30	0	0	10	-110	-20	10	10	–
10	10	10	20	10	10	30	40	30	30	30	30	39
20	30	60	30	70	30	-S	+S	+S	30	10	-10	–
[80]	80	80	70	50	40	50	50	60	50	50	60	–
50	60	50	50	60	40	50	40	40	40	40	30	46
60	50	50	50	50	50	70	70	70	70	50	40	–
70	80	70	50	50	50	60	50	50	70	50	40	–
60	70	50	50	50	50	60	70	50	50	50	50	51
70	80	70	60	50	50	50	50	50	50	50	40	50
20	30	40	40	30	40	10	-30	-110	-60	-50	-10	10
90	50	[-90]	-60	-50	+S	+S	60	-10	-50	-10	0	–
79	81	70	65	61	64	67	70	54	57	47	36	
28	28	28	28	28	27	26	27	24	26	27	28	

Hour GMT / Day	0	1	2	3	4	5	6	7	8	9	10	11
												March
1.	30	50	30	50	50	20	20	40	30	[10]	-	60
2.	+S	10	+S	30	40	+S	+S	+S	-	100	+S	-50
3.	-	-	-	-	-	-	(100)	90	150	130	[120]	110
4.	50	50	50	50	40	50	50	50	50	50	[50]	60
5.	40	40	30	40	30	10	10	50	(50)	60	60	80
6.	80	70	70	80	70	80	80	80	50	40	[30]	40
7.	0	10	10	0	-10	-60	0	-10	-10	30	60	70
8.	60	90	60	50	50	40	-	80	80	90	90	110
9.	50	40	40	30	40	60	30	[40]	60	50	40	30
10.	80	80	70	60	60	30	30	20	10	10	30	[30]
11.	20	30	40	10	10	10	50	80	60	80	[90]	110
12.	80	60	50	70	70	70	80	100	120	130	(110)	(110)
13.	80	70	60	60	50	50	50	60	70	70	[80]	80
14.	50	40	40	50	40	40	30	50	50	60	70	80
15.	40	50	50	40	40	50	60	60	70	90	90	-
16.	50	-10	-10	0	-20	30	30	10	(30)	-	40	60
17.	30	40	50	50	50	50	70	90	[80]	60	60	50
18.	-20	20	-30	10	30	60	60	60	90	120	[130]	90
19.	50	50	80	80	60	20	-S	30	30	-S	+S	+S
20.	10	10	+S	+S	+S	+S	+S	-90	+S	+S	[50]	20
21.	40	40	40	40	40	50	70	60	[60]	70	60	50
22.	20	10	20	20	30	40	50	50	60	70	60	-
23.	60	60	50	50	50	60	80	(90)	(80)	90	100	90
24.	40	40	40	50	40	50	70	70	60	40	[60]	80
25.	70	50	60	50	50	40	80	70	70	[50]	70	60
26.	50	50	70	80	90	90	100	100	100	[80]	90	20
27.	70	70	50	40	50	50	70	50	50	50	[30]	50
28.	40	30	40	30	30	40	50	50	50	30	50	[50]
29.	+S	+S	30	0	30	40	40	40	70	60	-	50
30.	40	50	60	50	50	70	[80]	(80)	80	60	70	70
31.	0	0	-10	-10	-10	0	10	0	0	[30]	20	20
Means	43	41	41	40	40	41	52	49	61	65	65	58
Number of days	28	29	28	29	29	28	26	28	26	28	26	27

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
50	50	+S	40	60	40	0	-S	+S	+S	30	50	-
+S	160	170	30	120	20	-50	+S	+S	(-70)	-	-	-
90	110	70	70	70	60	70	70	60	50	50	50	-
70	60	80	90	60	50	50	50	40	60	50	50	55
100	90	90	80	80	80	90	80	60	70	90	90	63
30	-10	-50	0	20	30	0	-S	-S	10	30	10	-
80	100	70	30	-60	-150	-30	0	-70	-60	30	20	2
130	120	130	130	120	110	90	100	100	100	70	60	90
-S	+S	40	60	70	80	80	80	80	90	90	80	-
[20]	70	40	80	10	20	20	10	-10	10	20	30	35
100	100	130	130	100	80	80	60	40	70	70	80	68
100	(110)	100	120	120	90	90	90	90	90	80	80	-
90	100	110	120	100	80	70	60	60	90	60	50	74
80	[80]	[80]	70	60	70	70	80	60	50	50	50	58
120	110	100	70	80	80	60	70	90	90	70	50	71
60	+S	+S	+S	0	-50	10	30	+S	+S	0	30	-
60	50	40	70	60	40	30	40	10	20	0	+S	48
80	80	80	60	70	60	70	90	70	70	80	60	62
+S	+S	+S	-30	-10	10	30	30	40	30	10	10	-
10	50	50	40	50	60	60	50	40	60	40	40	-
50	60	60	60	60	50	40	50	50	40	30	50	51
70	80	70	60	50	70	80	90	80	70	60	60	55
90	90	100	100	80	80	100	120	110	80	60	40	-
80	70	40	30	30	40	60	50	60	70	70	80	55
60	50	50	50	40	50	60	60	80	70	80	60	60
50	70	50	50	40	50	40	60	70	60	50	40	65
70	70	70	60	50	30	30	20	30	20	30	30	48
40	30	20	-20	-10	30	+S	-S	-50	-50	-10	-40	-
30	40	30	50	50	60	60	70	60	50	50	50	-
80	70	60	50	40	40	20	30	30	-S	30	40	53
10	10	30	10	20	30	40	30	10	40	0	-20	11
68	73	68	59	53	45	47	58	48	50	46	44	
28	27	28	30	31	31	30	27	27	27	30	29	

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
												April
1.	0	-20	-10	10	-10	0	20	50	40	30	50	[60]
2.	20	10	0	-10	0	0	-10	0	30	40	30	[30]
3.	-20	-20	0	0	-10	-20	-10	0	30	30	[40]	50
4.	40	30	30	20	30	30	40	50	60	50	40	20
5.	30	40	40	30	30	30	40	40	30	30	20	30
6.	40	40	40	30	20	30	+S	[+S]	-10	20	30	30
7.	20	10	10	20	30	40	80	60	50	40	40	[40]
8.	30	40	30	40	50	40	60	80	80	80	[70]	60
9.	10	-10	30	30	20	30	40	50	40	30	40	[40]
10.	20	20	20	20	10	-S	-S	-40	-40	30	10	[20]
11.	0	0	-20	-20	-30	-10	-20	[-10]	-20	-50	-S	+S
12.	40	40	50	40	40	40	50	50	50	50	-	30
13.	-10	-20	0	-10	-10	10	(0)	(-10)	20	30	50	30
14.	-20	-20	-20	-10	-20	0	30	40	50	[60]	50	70
15.	40	50	50	30	30	30	50	50	50	[40]	40	40
16.	30	40	30	20	30	40	30	30	40	[20]	20	30
17.	10	30	20	20	30	40	50	60	50	40	[50]	50
18.	10	10	20	20	10	[20]	40	50	50	50	40	50
19.	50	40	30	30	30	30	30	30	40	30	-	20
20.	20	0	10	20	20	30	40	40	40	30	-S	-10
21.	0	20	30	30	30	40	(50)	(70)	60	40	40	50
22.	10	20	20	30	30	30	30	30	30	[-S]	[0]	30
23.	40	30	20	20	10	30	50	40	60	[70]	80	70
24.	40	50	40	30	60	60	60	50	40	50	[50]	30
25.	0	-10	0	0	0	10	30	40	40	40	50	[60]
26.	20	20	20	20	20	30	30	30	20	-	30	30
27.	50	40	40	40	40	60	(60)	(70)	80	70	60	50
28.	50	40	50	40	40	60	70	[70]	80	60	60	60
29.	20	20	10	10	10	30	[30]	(40)	40	40	50	60
30.	40	40	40	40	40	40	40	40	[50]	40	40	40
Means	21	19	21	20	19	28	36	37	39	39	42	40
Number of days	30	30	30	30	30	29	25	25	30	28	26	29

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
70	80	80	70	80	100	60	80	70	70	50	30	44
30	30	40	50	40	40	40	40	40	50	30	-20	23
40	40	30	30	50	40	40	40	40	40	40	30	22
[10]	20	-20	0	30	20	30	30	30	30	20	30	28
-	30	40	40	30	40	-	-	40	50	40	40	-
40	30	40	50	+S	+S	0	40	30	40	30	30	-
40	40	40	40	30	30	20	20	20	40	30	30	34
40	40	40	30	20	20	20	10	30	40	30	20	42
30	30	30	40	20	10	10	0	10	10	10	20	24
-50	-70	-20	40	40	40	40	40	30	30	10	0	-
+S	+S	+S	+S	+S	+S	70	60	70	50	40	50	-
40	40	40	40	50	40	30	30	40	40	30	10	40
50	30	10	30	40	30	-10	-20	-30	-20	-10	-10	-
60	60	50	50	70	70	60	80	60	50	50	50	38
40	40	40	50	70	60	50	40	50	40	40	30	44
30	20	-10	20	30	20	10	-50	-40	0	-10	0	16
50	40	40	40	40	30	30	30	30	30	10	10	35
50	50	50	50	50	120	110	70	70	50	40	50	47
20	20	20	10	20	10	10	20	10	+S	+S	10	-
[10]	30	40	10	20	30	40	30	+S	30	20	-10	22
60	+S	+S	30	40	40	50	50	30	10	20	20	-
30	30	30	50	40	40	40	50	70	50	50	50	34
60	60	70	60	40	40	30	50	40	40	40	40	45
30	30	40	30	20	20	20	20	10	10	0	0	33
60	60	50	60	40	60	40	50	50	30	30	20	33
+S	-30	0	20	20	30	20	40	40	30	40	50	24
50	70	60	60	70	60	50	50	60	90	80	50	-
50	50	50	60	50	40	50	40	30	20	70	20	48
50	50	50	50	50	50	50	50	40	40	50	40	38
40	30	40	40	40	40	40	50	50	40	40	40	41
38	34	35	40	41	42	36	36	35	36	30	24	
27	28	28	29	28	28	29	29	29	29	29	30	

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

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
50	50	40	40	40	40	50	40	40	30	20	20	35
50	50	50	40	40	30	30	20	20	20	10	20	33
40	40	40	40	30	-	-	-	-	-	-	-	-
-20	-20	-30	-S	+S	+S	-	-	-	+S	20	40	-
50	30	40	40	40	60	80	60	50	40	20	10	37
-20	-20	-20	(-20)	-	-20	-10	10	-10	-10	30	40	-
30	30	40	40	30	20	-10	-10	-10	-20	-20	-10	-1
40	30	20	40	40	30	50	50	40	40	40	40	43
[40]	50	50	50	50	60	40	50	40	20	30	20	43
40	40	40	40	30	30	40	40	40	40	40	40	38
40	40	30	20	30	20	10	0	10	10	10	10	-
30	40	40	40	40	40	40	40	20	40	20	30	28
-10	-10	0	10	-	-	-	-	-	-	-	-	-
50	50	50	50	50	40	40	40	50	40	50	40	-
30	40	40	40	30	40	40	40	40	10	10	20	34
-10	+S	20	+S	+S	+S	+S	-20	30	50	40	30	-
20	20	20	30	30	30	40	40	40	40	30	30	32
30	20	0	10	30	30	30	40	30	30	20	30	27
30	-S	+S	-	-	-	-	-	-	-	-	-	-
-10	-10	0	0	0	0	10	10	10	-10	0	0	-
-40	-40	-40	-S	20	20	30	10	-60	-120	-140	-80	-
30	30	30	0	20	0	-40	10	10	-10	20	+S	-
[40]	-30	10	0	0	10	30	30	40	40	40	30	3
40	40	30	30	50	40	50	40	40	30	20	20	33
50	50	40	40	40	30	30	30	40	50	30	20	36
50	50	40	40	30	50	50	40	30	10	0	10	33
50	50	50	40	+S	+S	+S	+S	+S	+S	10	10	-
40	[30]	30	30	20	10	10	10	10	10	10	10	-
40	50	70	40	30	30	40	40	30	10	10	10	33
30	30	30	30	20	50	30	30	10	20	30	30	21
30	40	40	20	0	0	10	10	20	40	20	30	-
28	27	27	31	30	28	29	27	23	17	15	19	
31	29	30	26	25	25	25	26	26	26	28	27	

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
												June
1.	20	10	-20	0	-10	0	-10	(-10)	(-10)	10	70	50
2.	30	20	30	40	40	50	40	50	[50]	50	30	40
3.	30	30	30	30	30	30	30	(20)	[-30]	30	0	40
4.	30	30	40	30	40	40	40	30	[40]	40	30	20
5.	30	20	30	30	20	30	20	[30]	40	40	40	20
6.	20	20	20	20	30	[40]	30	40	50	50	40	30
7.	40	30	30	20	30	30	30	–	30	20	20	20
8.	10	10	10	20	10	0	[10]	–	20	20	20	30
9.	30	30	30	30	20	30	30	30	30	40	[50]	40
10.	10	20	10	10	10	20	10	-10	[10]	(30)	30	30
11.	20	10	10	10	20	30	30	30	40	[40]	40	30
12.	20	20	20	20	30	40	20	20	20	[10]	20	20
13.	30	10	30	30	50	60	40	40	40	30	40	30
14.	0	0	0	0	10	20	20	20	30	[40]	–	40
15.	30	40	20	-30	0	30	(40)	(30)	20	20	20	10
16.	20	+S	+S	10	-10	40	20	60	[60]	80	50	30
17.	10	10	20	10	20	20	30	30	[30].	40	30	30
18.	30	20	30	40	40	50	(50)	60	40	40	-S	–
19.	-20	+S	+S	30	10	30	30	30	[40]	40	40	30
20.	30	30	30	20	30	30	40	20	-10	30	-20	[10]
21.	10	-20	-30	10	0	-30	-S	-S	20	10	–	-20
22.	10	-10	-40	0	-50	0	10	-S	30	-20	40	30
23.	30	30	30	30	40	40	40	70	[70]	50	40	40
24.	20	20	10	10	30	50	50	40	30	[30]	40	40
25.	20	20	10	30	30	70	70	60	30	[30]	30	20
26.	10	10	10	10	0	0	10	10	10	0	0	0
27.	20	20	30	30	30	30	30	[40]	30	40	30	20
28.	0	-10	-10	0	0	0	10	20	30	–	50	50
29.	30	30	40	40	40	40	–	[50]	70	60	60	60
30.	20	10	10	10	20	20	30	30	[30]	30	30	40
Means	20	16	15	18	19	28	27	35	31	30	32	29
Number of days	30	28	28	30	30	30	26	23	29	28	27	29

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
40	40	30	40	40	40	50	50	50	40	40	30	-
40	20	70	30	40	50	30	60	70	60	50	40	43
60	50	40	40	50	50	30	70	80	40	40	40	37
20	20	-S	-	-	-	10	10	+S	-S	-20	10	-
30	40	20	30	30	30	40	40	30	30	20	20	30
30	40	40	40	40	40	40	40	40	30	40	50	36
10	10	20	10	20	20	20	30	20	20	30	20	23
20	30	30	30	20	30	20	30	30	30	40	30	22
30	30	10	10	30	10	0	20	10	0	20	30	25
30	40	40	90	70	40	40	30	30	30	40	20	28
20	20	20	20	20	20	20	20	20	10	10	0	21
30	30	40	30	30	30	20	20	10	20	20	40	24
[40]	40	20	20	20	20	20	20	20	20	10	10	29
40	40	30	30	30	+S	+S	+S	0	40	60	50	-
-20	-10	0	10	10	20	30	40	50	50	40	+S	-
30	20	10	0	30	40	30	20	20	20	20	10	-
30	40	40	+S	40	30	40	40	40	40	30	30	30
-	-	-	-	-	-	(50)	50	40	30	30	30	-
40	30	30	30	30	10	30	30	+S	30	30	40	-
-20	30	10	20	30	30	30	30	30	30	10	30	18
20	60	20	0	0	10	10	10	10	0	-10	20	-
-10	30	20	10	20	20	20	10	-10	0	10	10	6
40	30	30	30	20	30	30	30	40	30	10	20	35
+S	-	-	-	-	-	-	30	20	20	10	20	-
40	40	40	30	40	30	30	30	20	10	10	10	31
0	[0]	+S	+S	+S	30	30	30	30	10	20	40	-
20	20	30	20	30	30	20	30	20	10	10	0	25
60	50	60	70	60	50	50	40	40	30	30	30	31
60	50	50	40	40	40	30	30	20	20	10	20	40
30	40	40	40	50	40	40	40	40	30	20	30	30
27	31	30	29	32	30	28	32	29	25	23	24	
28	28	26	25	26	26	27	29	28	29	30	29	

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
												July
1.	20	30	30	30	30	30	30	[30]	30	30	30	30
2.	10	20	10	10	20	20	30	40	[40]	50	50	50
3.	30	20	30	40	40	50	60	[70]	60	60	70	70
4.	20	20	10	-10	-10	20	20	[50]	70	80	80	60
5.	-	-	-	-	-	-	-	-	-	-	-	-
6.	-	-	-	-	-	-	-	-	80	80	70	60
7.	30	30	20	20	30	[30]	20	30	40	40	40	30
8.	30	30	30	30	30	40	30	[30]	30	30	20	20
9.	40	40	40	30	30	40	40	[40]	40	30	10	10
10.	-	-	-	-	-	-	-	-	-	-	-	-
11.	-	-	-	-	-	-	-	-	-	-	-	-
12.	-	-	-	-	-	-	-	-	-	-	-	-
13.	-	-	-	-	-	-	-	-	40	40	60	30
14.	30	20	20	20	20	40	60	[40]	50	60	50	50
15.	40	30	30	20	30	30	40	[20]	20	20	20	30
16.	40	50	50	60	40	[50]	40	20	20	10	10	10
17.	10	20	30	30	40	30	[40]	[40]	30	40	40	40
18.	40	40	30	30	40	[40]	[40]	30	30	30	20	10
19.	30	20	30	40	30	[30]	30	40	50	60	60	50
20.	20	30	30	20	30	30	-	-	30	40	40	50
21.	10	20	20	10	30	30	20	[20]	30	40	40	50
22.	30	30	30	30	30	40	30	[40]	40	40	30	30
23.	10	20	10	20	30	40	50	[50]	60	60	70	60
24.	30	30	20	30	30	40	[30]	[30]	30	-	-	-
25.	-	-	-	-	-	-	40	40	40	40	30	+S
26.	+S	20	20	+S	+S	30	+S	+S	-	+S	10	10
27.	30	30	30	20	30	30	-	-	30	30	30	20
28.	-50	-10	20	20	30	30	40	[40]	40	40	30	30
29.	20	-40	10	10	30	20	40	[40]	40	40	40	40
30.	20	30	40	30	40	40	40	[40]	40	50	50	40
31.	-	-	-	-	-	-	0	[-20]	10	40	70	40
Means	22	23	26	25	30	34	35	35	39	43	41	37
Number of days	22	23	23	22	22	23	22	22	26	25	26	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	30	30	30	30	30	20	20	10	20	20	0	26
40	50	60	60	70	70	60	60	30	30	40	30	40
60	60	50	60	50	60	80	50	50	50	30	20	51
60	50	50	50	60	50	60	70	60	60	40	(20)	43
-	-	-	-	-	-	-	-	-	-	-	-	-
50	40	40	40	40	40	40	40	40	30	30	20	-
30	30	30	30	30	30	20	20	30	30	30	30	28
20	20	30	30	20	20	30	20	30	40	30	40	28
0	-120	20	40	50	40	50	30	30	20	30	(50)	25
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
+S	+S	+S	+S	+S	0	20	30	40	40	30	30	-
50	40	40	40	60	70	60	60	50	40	40	30	43
30	40	-S	-S	+S	50	40	70	60	40	40	30	-
10	10	20	20	20	40	30	30	20	20	10	20	27
40	40	40	40	40	40	40	40	40	40	40	40	36
10	10	20	10	20	20	30	30	30	30	30	30	27
40	40	40	40	50	30	-S	+S	20	40	40	30	-
50	40	40	40	40	30	30	30	30	30	30	10	-
50	60	50	50	50	50	10	20	30	30	30	30	33
30	20	20	20	20	20	30	30	20	10	10	10	27
50	60	50	50	60	50	50	50	40	20	30	30	43
-	-	50	+S	+S	+S	-	-	-	-	-	-	-
+S	+S	+S	+S	+S	+S	-20	-20	-20	10	20	-S	-
20	30	30	30	30	40	40	40	50	40	30	30	-
30	30	30	30	30	30	30	20	20	40	40	-30	-
40	40	40	50	50	60	50	40	40	50	30	10	32
40	40	20	40	60	70	50	40	20	30	20	10	30
30	20	20	30	30	30	30	70	+S	+S	30	-	-
30	50	50	30	20	40	40	30	30	30	40	40	-
35	30	36	36	40	40	37	37	32	33	30	20	
24	24	24	23	23	25	25	25	25	25	26	22	

Hour GMT\nDay	0	1	2	3	4	5	6	7	8	9	10	11
												August
1.	30	30	30	20	20	20	30	[40]	30	30	20	30
2.	10	10	0	10	20	30	40	-	[20]	20	10	30
3.	30	10	+S	-90	10	-	30	[90]	80	40	30	40
4.	10	30	$\overline{10}$	-40	0	30	0	-	40	70	+S	+S
5.	-	-	-	-	-	-	-	-	130	130	$\overline{90}$	$\overline{-S}$
6.	40	40	30	30	40	50	50	-	40	40	+S	-
7.	-	-	-	-	-	-	-	-	30	30	30	40
8.	40	40	30	30	30	40	50	[70]	40	40	40	40
9.	40	40	40	50	50	50	50	-	40	40	30	30
10.	-	-	-	-	-	-	-	0	10	0	0	-10
11.	-10	-	-	-	-	-	-	-	-	-	-	-
12.	30	30	10	30	30	40	50	[50]	50	50	50	50
13.	30	10	10	10	-40	40	70	[-90]	+S	-S	50	110
14.	30	30	40	50	50	50	50	(40)	$\overline{50}$	+S	-	-
15.	-	-	-	-	-	-	-	(70)	110	$\overline{90}$	70	70
16.	30	30	30	30	40	40	40	-	40	50	40	30
17.	0	30	40	30	10	40	-	-	40	30	30	40
18.	40	30	30	20	30	30	40	[30]	30·	10	10	10
19.	-10	-10	0	0	10	20	40	[30]	30	30	20	20
20.	20	10	10	20	20	30	[30]	[40]	40	40	30	30
21.	20	30	30	30	30	40	60	[60]	60	60	60	50
22.	30	30	30	20	30	40	50	[40]	30	30	40	40
23.	30	30	20	20	30	30	40	40	30	10	-	30
24.	40	40	40	40	30	40	40	-	[40]	40	20	20
25.	40	40	30	30	30	40	30	30	[20]	10	20	30
26.	-	-	-	-	-	-	-	40	50	40	40	[30]
27.	30	30	30	30	30	30	20	30	30	30	[0]	20
28.	40	40	30	+S	+S	30	40	40	50	40	[30]	30
29.	10	0	10	$\overline{10}$	$\overline{20}$	30	10	20	30	30	10	[10]
30.	30	30	30	20	10	10	10	10	-	30	50	60
31.	10	20	20	20	30	30	[40]	40	40	40	(40)	30
Means	25	26	24	18	23	35	38	32	44	39	33	35
Number of days	26	25	24	24	24	24	24	19	28	28	25	26

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	30	20	80	50	+S	40	10	+S	+S	20	10	-
30	30	30	20	30	30	30	20	10	0	40	50	23
40	+S	+S	30	40	50	+S	-10	40	10	30	10	-
+S	-	-	-	-	-	-	-	-	-	-	-	-
30	50	50	50	40	40	40	40	50	50	30	40	-
-	-	-	-	-	-	-	-	-	-	-	-	-
50	40	30	10	30	30	10	30	40	40	40	50	-
30	40	40	30	30	40	40	30	40	40	50	40	39
30	40	40	40	40	30	-	-	-	-	-	-	-
-80	+S	-	-	-	-	-	-	-	-	0	-10	-
-	0	0	0	0	0	10	30	30	10	10	30	-
50	50	50	40	40	0	30	40	40	40	40	40	39
110	40	30	30	40	40	40	30	30	10	30	10	-
-	-	-	-	-	-	-	-	-	-	-	-	-
70	50	40	40	50	40	40	40	40	40	40	40	-
30	40	40	40	50	50	40	40	40	50	40	10	38
30	20	40	30	40	40	40	40	40	50	60	40	-
10	20	10	10	20	20	30	+S	+S	+S	0	10	-
30	10	+S	-S	40	40	30	30	40	20	10	20	-
30	20	20	10	30	20	30	30	30	40	40	40	28
50	50	40	40	50	40	40	40	40	40	40	40	43
40	40	30	30	40	40	40	30	30	30	20	30	34
30	40	40	40	40	40	40	40	40	40	40	40	34
10	0	0	20	20	30	30	40	40	30	30	40	30
20	0	20	30	+S	30	30	-	-	-	-	-	-
30	20	20	20	20	20	20	30	40	30	30	30	-
0	-20	30	30	40	30	30	40	40	50	40	50	28
30	30	40	30	30	20	20	10	30	20	20	10	-
10	30	40	40	40	40	30	40	40	40	40	40	26
60	60	50	40	40	40	40	30	30	30	20	20	33
30	30	40	60	60	40	70	90	90	80	40	40	43
31	29	32	32	37	32	34	33	39	34	31	30	
27	26	25	26	26	26	25	24	23	23	26	26	

September

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	40	30	30	30	30	30	30	40	40	30	40	[30]
2.	30	20	10	10	0	10	40	40	40	30	[40]	40
3.	30	40	40	40	40	60	110	90	80	70	-	-
4.	30	30	30	30	20	40	80	40	40	[40]	30	30
5.	30	20	30	20	20	30	40	40	30	20	30	[30]
6.	40	30	30	10	10	+S	10	60	80	30	20	-
7.	20	30	20	20	20	30	[40]	[70]	80	60	40	40
8.	60	40	40	30	40	60	80	90	90	60	+S	-
9.	-	-	-	-	-	-	-	60	40	30	30	30
10.	30	20	20	10	30	70	60	40	30	40	[30]	20
11.	40	40	40	30	40	40	60	60	[40]	20	30	20
12.	10	10	10	10	10	10	30	30	30	30	40	60
13.	30	20	20	20	30	40	40	40	40	-	20	20
14.	20	20	20	20	30	30	(50)	50	4	50	50	40
15.	40	40	20	20	40	50	50	50	50	50	[50]	50
16.	20	20	10	10	20	-10	0	0	10	50	[40]	40
17.	50	50	50	50	60	100	80	70	70	70	[70]	60
18.	20	40	40	40	20	40	-	-	-	40	[40]	50
19.	-	-	-	-	-	-	50	50	50	60	50	50
20.	40	40	40	40	20	10	50	80	50	40	40	(50)
21.	40	50	50	50	50	60	[60]	-	-	-	60	40
22.	20	10	30	30	10	30	30	40	30	[30]	40	30
23.	40	40	40	30	10	40	40	40	40	40	[40]	40
24.	70	70	60	20	40	40	30	30	+S	+S	+S	10
25.	30	30	30	30	30	30	40	40	40	40	[40]	40
26.	40	30	20	20	30	0	20	20	30	40	40	[40]
27.	40	30	30	40	30	20	110	+S	+S	+S	-	-
28.	40	30	30	40	60	40	80	[+S]	[90]	90	80	70
29.	40	40	40	50	40	40	40	40	60	70	80	[70]
30.	10	30	20	30	30	30	40	50	60	-	[80]	80
Means	34	32	30	26	29	36	48	48	49	45	44	41
Number of days	28	28	28	28	28	27	27	26	26	25	26	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
20	30	40	30	40	30	30	30	20	10	20	20	30
30	40	40	40	60	+S	+S	0	30	30	30	30	-
60	40	40	30	40	40	60	60	40	40	30	30	-
30	30	30	40	40	40	40	40	30	20	20	30	35
30	40	40	40	40	40	40	20	30	10	30	20	30
10	20	+S	+S	30	30	40	30	40	40	30	30	-
40	40	60	60	60	60	60	70	60	60	70	60	49
-	-	-	-	-	-	-	-	-	-	-	-	-
30	40	30	30	30	20	30	40	40	40	60	40	-
30	30	20	30	30	40	40	40	40	40	40	40	34
30	40	0	+S	-10	30	20	10	20	40	30	20	30
40	60	[60]	60	40	30	40	40	40	40	40	30	33
20	30	30	30	30	40	30	30	20	20	20	20	28
40	50	50	50	50	60	60	60	50	50	50	50	43
40	50	50	40	40	50	50	50	50	60	60	50	46
50	50	50	50	60	50	50	50	50	50	60	60	35
40	40	20	40	20	20	0	0	0	0	20	10	41
50	40	50	50	70	60	50	60	60	60	60	50	-
+S	+S	-S	+S	-	0	20	20	40	10	10	20	-
40	40	50	50	50	50	50	50	60	50	60	50	46
(60)	40	40	40	60	60	40	40	30	30	30	30	-
30	40	40	40	40	40	40	30	40	30	40	40	33
30	40	40	60	40	60	60	70	80	70	40	40	45
+S	30	30	30	30	40	40	30	30	10	30	30	-
40	30	30	40	40	40	40	40	60	30	30	30	36
40	30	40	30	40	40	20	20	30	+S	-S	+S	-
-	-	-	-	40	70	60	60	40	60	60	40	-
80	80	90	90	100	90	80	70	80	80	60	50	70
30	40	30	20	70	80	40	50	40	40	30	30	46
70	60	-S	80	70	60	70	60	50	60	70	60	53
38	41	40	44	45	45	43	40	41	39	40	36	
25	27	25	25	28	28	28	29	29	28	28	28	

October

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	60	60	40	40	50	40	50	70	60	50	[50]	60
2.	30	20	20	20	10	30	40	40	40	40	40	40
3.	40	50	40	50	40	40	60	60	50	40	40	40
4.	40	30	30	30	30	40	40	30	-	30	30	40
5.	20	30	20	30	30	30	30	[30]	30	20	30	30
6.	0	-10	0	0	20	30	20	30	40	30	[20]	30
7.	40	30	10	10	20	40	50	50	50	40	[50]	50
8.	10	0	10	10	10	20	20	30	30	30	30	30
9.	-20	+S	-20	-10	10	10	20	40	50	40	[40]	40
10.	30	20	10	10	10	0	0	0	-10	-10	-10	-10
11.	0	-20	-20	-40	-50	-30	-40	-40	-30	-20	0	-
12.	50	40	40	30	30	30	60	[50]	0	10	30	10
13.	+S	+S	30	20	40	40	50	60	[70]	70	60	50
14.	30	20	20	10	20	30	40	50	50	50	[40]	40
15.	30	30	20	0	20	40	70	60	50	40	[40]	40
16.	10	10	0	10	10	20	20	20	30	30	[30]	30
17.	30	30	30	30	30	30	40	30	40	50	50	[30]
18.	30	-10	-10	20	10	70	50	40	40	0	-	10
19.	30	40	30	30	40	40	40	[50]	[40]	30	30	40
20.	20	20	30	20	10	20	20	30	20	20	[20]	30
21.	0	-10	0	-10	-10	-10	-10	-20	-20	-20	[-10]	-20
22.	50	60	60	70	80	70	10	10	0	10	0	-10
23.	0	0	0	0	30	0	10	10	20	10	[10]	10
24.	-10	-70	20	30	30	30	20	20	40	20	20	40
25.	-30	0	10	20	10	20	30	50	60	[60]	-	40
26.	30	20	30	40	40	40	40	[50]	[60]	40	30	30
27.	30	20	20	10	20	20	10	0	10	30	[30]	20
28.	10	10	20	20	30	40	40	40	40	40	30	[20]
29.	10	20	40	40	30	10	30	30	30	20	40	40
30.	0	10	10	20	30	30	40	30	30	30	[30]	40
31.	40	20	20	10	20	30	30	40	40	40	40	50
Means	20	16	18	18	23	27	30	32	32	28	27	30
Number of days	30	29	31	31	31	31	31	31	30	31	29	30

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
60	70	60	70	50	50	50	60	50	40	30	30	52
50	[40]	50	30	50	60	70	50	40	50	40	50	40
[40]	30	40	40	40	40	40	40	40	40	50	50	43
30	30	40	30	40	40	40	30	30	40	30	20	33
20	30	40	40	30	30	20	0	-10	-10	-10	0	21
40	50	50	40	50	50	40	40	30	20	20	40	28
50	50	60	50	40	30	40	30	30	30	30	20	38
[40]	40	40	40	40	40	40	40	40	40	30	10	28
30	20	30	40	50	50	40	40	40	30	40	30	28
[-10]	[-10]	-10	-10	10	(20)	(0)	(0)	0	0	-10	-10	-
30	30	40	40	40	30	40	40	30	40	30	50	7
30	40	30	30	30	30	40	+S	-S	+S	+S	+S	-
70	70	70	60	60	70	70	60	50	50	50	40	-
30	40	40	40	40	50	40	50	40	40	30	40	37
40	30	40	30	30	20	20	30	10	10	10	20	30
30	30	30	40	30	30	30	40	20	20	20	30	24
40	60	30	30	30	20	-10	-20	10	30	10	20	28
10	0	0	-10	0	0	10	0	0	10	20	20	14
30	40	30	30	40	40	50	50	40	30	20	20	36
20	20	10	10	20	20	10	10	0	0	20	0	17
10	30	10	10	20	40	50	50	50	40	60	40	11
-10	-10	0	10	10	0	0	0	30	20	20	10	20
30	20	30	-40	0	20	0	-10	10	20	30	30	10
50	[30]	30	10	0	20	10	10	10	-20	-20	-20	13
40	50	50	40	30	40	30	30	30	30	20	20	30
-60	-20	50	40	40	-30	10	50	80	30	30	30	29
30	30	40	30	40	30	30	10	10	10	20	10	21
10	20	10	-10	10	0	0	0	10	0	0	10	17
[40]	50	50	40	40	40	40	30	10	20	10	10	30
40	50	50	40	30	30	40	30	30	40	30	40	32
[50]	[60]	60	70	70	90	70	70	60	60	60	50	48
29	33	35	29	33	33	32	30	27	25	24	24	
31	31	31	31	31	30	30	29	30	30	30	30	

November

Hour GMT Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	50	50	50	50	80	60	50	60	40	40	40	[50]
2.	10	0	30	50	30	-10	0	-10	20	20	[10]	30
3.	30	30	20	0	0	10	70	80	80	50	50	[60]
4.	50	50	60	50	50	50	60	70	60	70	[70]	80
5.	60	50	40	50	50	60	60	80	80	70	[70]	70
6.	40	30	30	40	50	60	40	50	60	70	[70]	60
7.	30	30	20	30	20	10	20	20	30	40	50	[70]
8.	60	60	60	60	60	130	140	120	150	50	80	[80]
9.	130	130	120	130	70	80	70	-	-	70	30	30
10.	20	50	70	60	30	30	20	60	70	40	[30]	50
11.	30	20	0	-10	40	40	40	40	70	60	[60]	60
12.	30	20	30	30	30	30	30	10	20	30	40	40
13.	40	30	40	30	40	10	10	0	-20	0	30	[20]
14.	-20	+S	+S	+S	+S	+S	+S	-	-	-	-	-
15.	50	50	30	20	30	30	30	40	40	40	40	-
16.	30	40	10	10	0	-10	-20	-10	-	-10	10	30
17.	50	60	60	-S	80	60	40	20	40	[60]	-	-
18.	-	-	-	-	-	-	10	30	40	[40]	40	40
19.	30	40	30	40	30	20	40	-10	-60	[10]	-10	-S
20.	50	50	50	40	40	50	50	60	50	(30)	(30)	(40)
21.	20	30	20	30	30	30	30	+S	+S	80	60	[30]
22.	40	40	40	40	50	50	50	60	50	70	[70]	60
23.	30	30	30	30	30	40	40	[40]	-	30	50	50
24.	30	40	50	-10	-40	-40	0	20	20	20	[50]	70
25.	-S	-10	0	10	0	10	30	40	50	50	[50]	50
26.	50	50	40	40	40	50	30	40	50	50	[50]	50
27.	0	-20	-50	+S	+S	+S	-50	-20	0	-10	-100	[-30]
28.	30	30	20	30	20	30	30	40	40	50	30	30
29.	20	30	30	20	20	20	30	40	50	50	-	40
30.	-20	10	0	0	0	10	10	[0]	10	-10	-10	-30
Means	35	33	33	33	33	34	33	36	42	40	37	44
Number of days	28	28	28	26	27	27	29	27	25	28	26	25

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
50	60	60	60	40	–	30	10	50	60	40	40	49
30	10	20	50	40	10	50	30	20	20	30	30	22
70	80	80	80	90	80	80	90	90	70	60	70	59
70	70	60	40	40	50	60	80	90	90	80	70	63
80	80	80	70	90	130	120	80	80	70	60	30	71
70	90	90	90	120	80	60	50	40	60	50	30	60
40	50	40	40	40	40	30	30	20	20	30	40	33
[70]	80	80	70	130	190	210	190	140	60	100	120	104
80	30	20	30	30	20	70	60	40	30	20	20	–
70	50	40	30	70	40	40	0	40	30	-20	-20	38
40	50	40	30	40	60	70	80	70	50	40	30	44
30	40	40	50	50	60	70	90	80	40	30	30	40
-20	30	40	40	50	70	50	40	60	60	30	30	30
20	40	50	50	60	60	60	60	60	60	70	60	–
60	70	80	60	60	80	90	70	40	40	40	30	49
10	0	-20	20	30	40	70	50	50	70	50	70	20
–	–	–	–	–	–	–	–	–	–	–	–	–
40	40	(40)	40	50	60	70	70	50	40	40	30	–
-20	10	40	50	70	50	90	30	-10	-20	10	40	22
40	50	60	60	60	60	70	60	60	60	50	40	–
[50]	50	+S̄ / 50	+S	40	40	60	60	60	60	50	40	–
60	50	50	50	80	80	50	70	60	50	30	30	53
50	50	50	50	50	40	30	50	50	40	30	40	40
40	30	-60	-10	40	30	40	90	-S	100	70	-S	–
60	50	60	70	70	70	60	60	60	50	50	50	43
(60)	60	60	70	60	60	50	40	80	80	20	30	50
0	10	30	30	40	50	50	50	50	40	40	30	–
40	[30]	[40]	30	30	40	30	30	30	30	30	20	32
50	50	40	50	40	30	0	-S	+S	+S	+S	-10	–
-10	-10	10	0	0	10	10	30	30	50	20	0	5
42	45	44	46	56	58	61	59	55	50	41	36	
28	29	27	28	29	28	29	28	27	28	28	28	

Hour GMT	0	1	2	3	4	5	6	7	8	9	10	11
Day												

December

Day	0	1	2	3	4	5	6	7	8	9	10	11
1.	30	10	0	0	-10	10	70	50	30	10	[30]	30
2.	20	20	10	-10	10	0	10	10	0	20	-20	[0]
3.	50	60	50	50	60	50	50	50	90	(80)	(70)	80
4.	-10	-10	-10	-20	-20	-10	-10	0	-40	-30	[-40]	-30
5.	0	-10	-10	-20	-30	-20	10	30	-10	-20	(-10)	-10
6.	10	20	-10	-10	0	-10	20	0	-10	-20	-40	[10]
7.	90	140	170	150	80	-60	10	[10]	[60]	60	(80)	80
8.	20	+S	+S	50	-S	-30	-20	0	20	40	[80]	80
9.	90	70	70	70	90	100	90	80	100	90	[80]	90
10.	50	30	30	0	-40	-50	20	70	90	100	110	[100]
11.	40	60	50	50	40	70	70	80	100	100	90	[40]
12.	40	50	50	60	80	40	50	80	70	50	[40]	80
13.	40	40	50	70	80	60	70	50	50	10	-40	(-30)
14.	-110	-90	-130	-120	-80	-60	-60	(-60)	-70	-50	-60	-90
15.	70	70	80	80	50	30	30	40	50	40	[20]	40
16.	10	10	10	-10	-10	-10	-20	-30	-40	-40	-70	-60
17.	-50	-50	10	-10	-S	-90	-30	0	-S	-S	-40	[80]
18.	90	110	20	-S	-120	-60	80	[90]	[40]	50	20	-20
19.	-S	-S	-S	70	-S	-S	-110	10	10	40	80	[90]
20.	40	30	10	10	30	40	40	40	40	40	-	60
21.	30	30	40	40	40	50	50	[50]	(40)	50	(50)	(40)
22.	30	20	10	20	30	10	-30	-30	-	-	(-30)	-10
23.	40	40	40	30	40	40	40	50	50	60	[60]	50
24.	20	30	20	30	10	10	30	40	60	70	70	-
25.	70	40	10	20	10	0	10	-10	-30	[-40]	-40	-10
26.	80	70	30	50	0	-20	-20	0	-10	0	[-30]	0
27.	70	40	10	20	30	40	10	10	20	30	30	60
28.	110	40	70	30	20	30	50	[50]	10	30	60	50
29.	30	30	30	30	30	30	30	40	40	[50]	50	60
30.	10	10	10	0	0	20	20	30	40	50	50	-
31.	40	30	30	20	20	20	20	10	0	10	[20]	[20]
Means	35	32	26	25	16	8	19	30	27	29	20	32
Number of days	30	29	29	30	28	30	31	30	28	28	25	27

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
30	30	20	40	40	30	20	0	10	20	10	10	22
-10	0	0	10	-30	10	30	30	40	50	40	50	10
80	100	100	100	100	130	90	70	60	20	0	0	-
-10	0	0	0	10	10	10	0	10	10	0	0	-8
[20]	30	(30)	40	40	40	50	70	50	70	40	20	17
10	30	0	-10	10	50	-70	-10	100	120	130	150	20
80	70	50	50	80	80	80	80	70	70	80	60	71
90	90	100	90	90	100	100	110	100	90	90	90	-
90	90	90	90	100	90	80	90	110	110	90	50	88
110	100	110	90	90	90	90	80	90	50	40	50	63
[30]	60	70	70	60	50	80	80	80	90	60	50	65
90	60	70	80	100	90	80	60	60	60	80	30	65
10	10	-20	-30	-60	-60	-60	-70	-60	-80	-70	-90	-4
-50	-50	-20	0	10	50	80	70	60	70	80	100	-23
30	30	30	30	10	20	80	70	30	30	20	10	41
[-50]	-50	-50	-50	-S	-20	-40	-30	-50	-50	-60	-30	-32
0	-S	-S	-70	0	+S	30	130	150	130	110	40	-
-20	50	30	30	90	100	90	80	90	-40	-S	-30	35
[70]	70	50	40	60	20	30	40	40	30	30	40	-
50	50	50	40	60	60	-S	-20	-60	0	10	30	30
40	50	50	50	60	60	40	40	40	30	20	30	-
-10	-10	0	20	20	20	10	30	40	40	40	40	-
40	50	60	60	50	50	50	40	20	30	40	30	44
80	80	60	50	50	40	40	40	40	50	50	40	44
-10	10	10	30	10	0	-10	30	30	20	20	40	9
40	50	30	40	50	70	70	40	60	90	70	80	35
-	70	70	80	80	80	90	100	90	80	110	60	56
40	60	60	50	40	40	30	20	30	30	30	30	42
30	30	30	40	70	80	70	50	60	50	40	20	43
80	90	60	50	50	60	50	60	50	40	40	40	40
20	20	20	10	0	-10	0	10	30	10	0	10	15
33	42	39	36	45	48	43	45	47	43	41	34	
30	30	29	31	30	30	30	31	31	31	30	31	

II. Hourly means of the quantities of positive and negative

Hour GMT Month		0	1	2	3	4	5	6	7	8	9	10	11
January	+	1	2	0	0	0	0	0	2	2	12	0	13
	-	2	1	0	0	0	0	0	2	1'	14	0	1
February	+	7	0	0	0	0	0	0	0	0	0	0	0
	-	2	0	0	0	0	0	0	0	0	0	0	0
March	+	0	0	0	0	1	18	31	6	15	18	51	7
	-	0	0	0	0	0	6	34	60	15	39	11	14
April	+	1	0	0	0	0	0	0	0	0	0	0	0
	-	0	0	0	0	0	0	0	0	0	0	0	0
May	+	0	0	0	6	1	0	0	0	0	0	0	3
	-	1	0	0	3	1	0	0	0	4	0	0	3
June	+	0	0	1	0	0	0	0	12	2	0	0	3
	-	0	0	1	0	0	0	0	0	0	0	0	6
July	+	0	0	0	0	0	0	0	0	4	45	16	3
	-	0	0	0	12	0	0	0	0	2	39	28	2
August	+	0	0	0	1	83	1	0	0	0	0	0	0
	-	0	0	0	0	7	0	0	0	0	0	0	0
September	+	0	0	0	19	6	0	0	0	0	0	0	0
	-	0	0	0	23	0	0	0	0	0	0	0	0
October	+	0	0	0	0	0	0	0	0	0	0	1	1
	-	0	0	0	0	0	0	0	0	0	0	0	1
November	+	5	0	0	0	0	0	0	0	0	0	0	0
	-	6	5	0	0	0	0	0	0	0	1	0	0
December	+	1	0	1	0	0	1	2	2	0	0	0	0
	-	0	0	0	1	0	3	3	3	0	0	0	0

charges tansporte by point-discharge for each month in 1986

12	13	14	15	16	17	18	19	20	21	22	23	Means
15	2	0	1	0	1	0	1	6	2	4	1	2.7
13	0	1	3	0	1	0	0	15	3	15	1	3.0
0	0	0	0	0	0	0	0	0	0	0	2	0.4
0	0	0	0	0	0	0	0	0	0	0	21	0.9
1	0	0	0	0	0	0	1	0	6	0	0	6.5
0	0	0	0	1	0	0	0	0	10	0	0	7.9
1	0	13	11	11	2	4	11	7	4	0	0	2.7
1	0	9	12	23	5	3	10	6	4	1	0	3.1
6	0	4	16	4	6	0	1	2	9	9	1	2.8
8	0	1	24	16	0	3	0	21	2	48	0	5.6
3	25	5	13	15	2	0	0	0	0	5	35	5.0
41	52	3	2	60	52	0	0	0	0	78	5	12.5
20	1	5	0	0	7	18	0	0	0	0	0	5.0
43	1	5	1	0	20	2	0	0	0	0	0	6.5
0	0	14	21	42	8	6	7	0	9	0	14	8.6
1	26	75	15	23	43	13	79	0	11	2	71	15.3
0	0	0	0	0	0	0	0	0	0	0	0	1.0
0	0	0	0	0	0	0	1	0	0	0	0	1.0
8	1	2	1	4	1	0	0	0	0	0	1	0.8
10	1	1	3	4	2	0	0	0	0	1	0	1.0
0	0	0	0	0	0	0	0	4	6	0	0	0.6
0	0	0	0	0	0	0	0	2	6	0	0	0.8
0	0	0	0	0	0	0	0	0	0	0	2	0.4
0	0	0	0	0	0	0	0	0	· 0	0	3	0.5

Hour GMT Day		0	1	2	3	4	5	6	7	8	9	10	11

II. Hourly means of the quantities of positive and negative

Day		0	1	2	3	4	5	6	7	8	9	10	11
January	+	30	26	32	42	19	33	4	1	5	5	2	2
	-	15	3	1	0	0	6	0	0	2	14	0	0
February	+	0	0	0	0	0	0	0	0	0	0	0	0
	-	0	1	0	0	0	0	0	0	0	0	0	0
March	+	0	0	1	8	0	1	5	0	0	0	1	0
	-	0	0	1	11	0	0	11	0	0	1	1	1
April	+	0	0	0	0	0	0	0	0	0	0	0	0
	-	0	0	0	0	0	0	0	0	0	0	0	0
May	+	0	0	3	2	14	0	13	10	1	3	0	0
	-	5	0	0	3	6	1	0	30	0	3	0	0
June	+	7	3	4	0	0	0	0	0	3	0	0	0
	-	6	6	33	0	0	0	0	24	0	0	1	0
July	+	0	0	0	11	6	0	6	11	9	13	0	4
	-	0	0	0	0	3	0	0	6	25	13	0	18
August	+	0	0	1	0	1	0	0	0	0	4	0	7
	-	0	0	2	0	1	0	0	0	0	3	0	16
September	+	0	0	0	0	0	0	0	0	6	6	1	0
	-	0	0	0	0	0	0	0	0	9	19	2	0
October	+	5	4	0	0	0	0	0	0	0	0	0	0
	-	3	1	0	0	0	0	0	0	0	0	0	0
November	+	0	0	10	13	5	9	1	4	1	0	0	0
	-	0	0	0	1	7	7	9	1	0	0	0	1
December	+	0	0	0	0	0	0	0	0	0	0	0	0
	-	0	0	0	1	0	0	0	0	1	1	0	0

12	13	14	15	16	17	18	19	20	21	22	23	Daily means

charges transported by point-discharge for each month in 1987

12	13	14	15	16	17	18	19	20	21	22	23	Daily means
3	4	3	15	18	33	30	24	25	34	49	43	20.1
0	1	0	0	0	2	0	3	1	0	10	24	3.4
0	0	0	0	0	0	0	5	18	1	0	0	1.0
0	0	0	0	0	0	1	1	3	1	0	0	0.3
2	1	16	0	0	0	0	0	2	3	3	4	2.0
1	9	12	0	0	0	0	0	1	6	34	0	3.7
0	0	0	0	0	7	0	0	0	1	0	0	0.3
0	0	0	0	1	0	0	0	0	1	0	0	0.1
0	0	15	15	20	7	2	2	5	0	1	0	4.7
0	0	6	11	30	8	3	0	7	0	1	1	4.8
1	3	18	6	2	2	6	0	2	0	0	14	3.0
17	1	0	19	4	4	8	0	6	0	0	9	5.8
24	11	16	6	13	35	0	3	0	0	0	0	7.0
16	4	16	37	14	1	4	7	0	0	0	3	7.0
8	6	4	0	0	0	1	0	8	14	0	0	2.3
25	4	23	0	0	2	0	5	5	11	0	0	4.0
2	6	0	5	0	1	2	0	0	1	0	0	1.3
7	0	0	17	0	2	0	0	0	0	0	1	2.4
0	0	0	0	0	0	0	0	0	1	11	0	0.4
0	0	0	0	0	0	0	0	54	0	0	0	2.4
0	0	0	0	0	0	0	0	3	1	0	0	2.0
0	0	0	0	0	0	0	0	3	2	0	1	1.3
0	0	0	0	0	1	0	0	0	0	0	0	0.0
0	0	0	0	0	1	0	0	0	0	0	0	0.2

C. IONOSPHERE

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

The sky wave of the transmitter Československo (f = 272 kHz) has been recorded since January 1967. The geographical coordintes of the reflection point are 48.4^{O}N, 17.1^O 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. Data for September and partly for October 1986 are missing for the same reason in the present report.

The tables were compiled by F. MÁRCZ. The equipment and the method have been described in the papers by P. BENCZE and F. MÁRCZ: "Atmosphärisch-elektrische und ionosphärische Messungen im Observatorium bei Nagycenk". Observatoriumsberichte des Geophysikalischen Forschungslaboratoriums der Ungarischen Akademie der Wissenschaften vom Jahre 1966, Sopron, 1967, as well as by P. BENCZE, J. HORVÁTH and F. MÁRCZ: "A new equipment for the measurement of ionospheric absorption" Geophysical Observatory Report of the Geodetic and Geophysical Research Institute of the Hungarian Academy of Sciences, Year 1975. Observatory of Nagycenk, Sopron, 1976. Further information is given by P. BENCZE and F. MÁRCZ: "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)

for 1986. f = 272 kHz

January

Date of the night	SS	Night	SR
1/2	18.9	22.2	25.0
2/3	30.3	22.2	23.2
3/4	37.7	18.3	23.8
4/5	47.2	21.4	33.2
5/6	37.7	21.4	33.2
6/7	26.4	26.4	41.2
7/8	35.2	23.2	30.3
8/9	31.7	21.8	28.2
9/10	35.2	21.4	26.4
10/11	37.7	18.6	22.2
11/12	33.2	18.6	29.2
12/13	31.7	19.2	31.7
13/14	29.2	22.7	28.2
14/15	35.2	25.0	37.7
15/16	26.4	21.4	23.2
16/17	29.2	20.2	26.4
17/18	27.2	18.9	23.8
18/19	30.3	20.2	25.0
19/20	21.8	19.9	31.7
20/21	28.2	22.7	X
21/22	24.4	22.7	26.4
22/23	26.4	22.7	23.2
23/24	23.8	22.2	25.0
24/25	35.2	22.2	25.0
25/26	25.7	22.7	21.4
26/27	26.4	20.2	21.8
27/28	28.2	19.5	22.7
28/29	28.2	21.8	X
29/30	27.2	20.2	26.4
30/31	X	X	X
31/1	41.2	(22.7)	X
Median values	29.2	21.6	26.4

February

Date of the night	SS	Night	SR
1/2	25.7	27.2	28.2
2/3	30.3	25.0	35.2
3/4	27.2	23.8	35.2
4/5	21.8	25.0	30.3
5/6	41.2	20.6	35.2
6/7	30.3	22.7	30.3
7/8	33.2	29.2	35.2
8/9	31.7	26.4	30.3
9/10	35.2	25.0	30.3
10/11	31.7	22.7	X
11/12	31.7	22.7	47.2
12/13	31.7	22.7	44.2
13/14	31.7	23.8	33.2
14/15	35.2	23.2	27.2
15/16	37.7	21.8	35.2
16/17	33.2	22.2	25.0
17/18	35.2	26.4	33.2
18/19	29.2	19.9	30.3
19/20	21.0	20.6	23.8
20/21	16.9	19.5	21.4
21/22	37.7	25.0	24.4
22/23	30.3	29.2	20.6
23/24	19.9	20.2	22.2
24/25	27.2	21.0	20.2
25/26	22.7	20.6	X
26/27	37.7	20.2	26.4
27/28	23.8	22.7	30.3
28/1	29.2	23.8	21.4
Median values	30.3	22.7	31.0

March

Date of the night	SS	Night	SR
1/2	27.2	20.2	23.8
2/3	26.4	21.4	27.2
3/4	27.2	21.0	29.2
4/5	37.7	19.2	X
5/6	27.2	23.2	29.2
6/7	23.8	25.0	31.7
7/8	37.7	18.6	23.2
8/9	X	X	26.4
9/10	37.7	19.2	26.4
10/11	31.7	19.9	29.2
11/12	30.3	18.3	30.3
12/13	31.7	18.3	23.8
13/14	24.4	17.1	23.8
14/15	25.0	19.9	23.2
15/16	27.2	18.3	27.2
16/17	33.2	15.7	22.7
17/18	27.2	15.7	21.4
18/19	17.6	17.3	33.2
19/20	22.7	18.9	17.8
20/21	25.0	17.8	28.2
21/22	21.8	20.2	22.7
22/23	27.2	18.6	21.4
23/24	22.7	18.3	20.2
24/25	21.8	18.9	19.2
25/26	18.3	15.7	19.5
26/27	24.4	13.7	18.1
27/28	20.2	17.8	20.6
28/29	19.9	17.8	25.7
29/30	30.3	18.1	25.7
30/31	35.2	19.5	21.0
31/1	27.2	17.6	19.5
Median values	27.2	18.5	23.8

April

Date of the night	SS	Night	SR
1/2	19.9	18.6	14.4
2/3	19.2	20.6	18.3
3/4	16.9	22.2	20.6
4/5	22.7	21.8	21.8
5/6	25.7	18.1	15.9
6/7	18.9	18.1	18.3
7/8	20.6	17.1	17.1
8/9	24.4	19.9	19.5
9/10	28.2	22.2	19.9
10/11	18.1	22.2	19.2
11/12	35.2	20.6	17.8
12/13	19.2	19.2	17.8
13/14	17.3	18.6	25.7
14/15	23.8	19.2	23.2
15/16	25.7	16.5	22.7
16/17	25.7	18.1	24.4
17/18	19.5	19.5	19.5
18/19	25.0	22.2	21.4
19/20	22.2	18.6	28.2
20/21	21.0	16.1	23.2
21/22	25.0	20.2	25.0
22/23	33.2	19.2	26.4
23/24	27.2	16.3	21.0
24/25	21.0	18.3	22.7
25/26	23.2	15.9	16.3
26/27	21.0	19.9	23.2
27/28	25.7	21.4	20.2
28/29	x	17.6	23.2
29/30	25.0	18.6	25.7
30/1	30.3	20.6	22.2
Median values	23.2	19.2	21.2

May

Date of the night	SS	Night	SR
1/2	25.0	17.6	24.4
2/3	25.0	21.4	26.4
3/4	25.0	23.8	26.4
4/5	19.2	21.8	25.7
5/6	23.2	22.2	25.0
6/7	X	X	X
7/8	19.9	17.8	20.6
8/9	23.2	21.0	30.3
9/10	21.4	17.6	23.8
10/11	27.2	21.4	20.6
11/12	21.0	18.1	20.2
12/13	25.7	21.0	25.7
13/14	24.4	21.0	27.2
14/15	21.4	17.1	24.4
15/16	30.3	20.6	X
16/17	33.2	22.7	28.2
17/18	30.3	21.3	24.4
18/19	28.2	23.8	19.9
19/20	26.4	23.8	21.0
20/21	23.8	18.6	25.0
21/22	16.9	21.0	X
22/23	23.8	18.9	25.0
23/24	30.3	18.9	25.7
24/25	29.2	21.0	26.4
25/26	26.4	21.8	25.7
26/27	31.7	21.0	25.7
27/28	23.2	20.2	23.2
28/29	19.5	23.2	35.2
29/30	22.7	18.9	23.8
30/31	29.2	23.2	33.2
31/1	X	X	X
Median values	25.0	21.0	25.0

June

Date of the night	SS	Night	SR
1/2	26.4	22.7	19.9
2/3	21.4	15.9	X
3/4	27.2	19.9	26.4
4/5	27.2	19.9	21.8
5/6	26.4	18.3	23.8
6/7	26.4	22.2	23.8
7/8	23.2	21.0	30.3
8/9	35.2	21.0	21.7
9/10	29.2	21.8	22.7
10/11	26.4	22.2	26.4
11/12	23.8	15.9	X
12/13	26.4	20.6	X
13/14	28.2	X	X
14/15	28.2	22.7	25.7
15/16	25.7	21.4	26.4
16/17	26.4	20.6	27.2
17/18	28.2	18.6	25.7
18/19	27.2	19.9	23.8
19/20	25.0	21.0	29.2
20/21	31.7	25.7	26.4
21/22	X	X	X
22/23	30.3	20.6	24.4
23/24	22.7	19.9	23.8
24/25	23.2	22.2	X
25/26	20.6	23.8	33.2
26/27	23.2	X	X
27/28	27.2	25.7	25.7
28/29	30.3	23.8	31.7
29/30	33.2	21.0	X
30/1	28.2	23.2	25.7
Median values	26.4	21.0	25.7

July

Date of the night	SS	Night	SR
1/2	29.2	19.9	29.2
2/3	X	X	X
3/4	31.7	23.8	23.8
4/5	23.8	19.5	21.0
5/6	23.2	22.2	28.2
6/7	35.2	21.4	25.0
7/8	23.8	21.4	25.7
8/9	X	22.7	30.3
9/10	30.3	17.1	31.7
10/11	21.0	22.7	30.3
11/12	27.2	19.9	26.4
12/13	21.4	20.6	30.3
13/14	29.2	21.0	18.6
14/15	28.2	25.7	27.2
15/16	21.4	18.3	27.2
16/17	27.2	22.7	28.2
17/18	29.2	26.4	29.2
18/19	27.2	22.2	24.4
19/20	19.9	24.4	30.3
20/21	22.7	20.6	23.2
21/22	26.4	21.4	30.3
22/23	27.2	22.7	25.0
23/24	27.2	22.7	21.4
24/25	X	X	X
25/26	28.2	24.4	25.7
26/27	X	X	X
27/28	19.5	20.2	24.4
28/29	27.2	17.8	26.4
29/30	X	X	X
30/31	23.8	21.8	22.7
31/1	31.7	20.2	20.2
Median values	27.2	21.4	26.4

August

Date of the night	SS	Night	SR
1/2	X	X	X
2/3	X	X	X
3/4	X	X	X
4/5	23.8	20.6	X
5/6	22.7	22.7	26.4
6/7	35.2	19.5	30.3
7/8	X	X	X
8/9	X	X	X
9/10	23.2	23.8	29.2
10/11	X	X	X
11/12	21.8	18.1	25.0
12/13	23.2	X	X
13/14	18.9	15.2	23.8
14/15	24.4	21.0	22.7
15/16	X	X	X
16/17	24.4	20.2	31.7
17/18	22.2	19.5	28.2
18/19	X	19.5	Y
19/20	X	X	Y
20/21	21.4	22.7	30.3
21/22	27.2	23.8	26.4
22/23	30.3	23.8	29.2
23/24	X	X	24.4
24/25	27.2	23.8	X
25/26	X	X	X
26/27	X	X	X
27/28	X	X	X
28/29	X	X	X
29/30	X	X	X
30/31	X	X	X
31/1	X	X	X
Median values	23.5	20.8	27.2

October

Date of the night	SS	Night	SR
1/2	X	X	X
2/3	X	X	X
3/4	X	X	X
4/5	X	X	X
5/6	X	X	X
6/7	X	X	X
7/8	X	X	X
8/9	X	X	X
9/10	X	X	X
10/11	X	X	X
11/12	X	X	X
12/13	X	X	X
13/14	X	X	X
14/15	X	X	X
15/16	X	X	X
16/17	X	X	X
17/18	X	X	X
18/19	X	X	X
19/20	17.6	17.6	23.2
20/21	19.9	18.1	23.8
21/22	23.8	20.2	24.4
22/23	21.0	20.6	19.9
23/24	29.2	19.5	26.4
24/25	22.2	19.2	22.2
25/26	23.8	22.7	27.2
26/27	23.8	24.4	30.3
27/28	22.2	21.8	26.4
28/29	23.8	19.9	23.2
29/30	18.9	18.1	24.4
30/31	23.2	18.1	26.4
31/1	18.6	18.1	24.4
Median values	22.2	19.5	24.4

November

Date of the night	SS	Night	SR
1/2	19.5	17.6	21.0
2/3	21.4	16.5	20.2
3/4	18.6	16.9	22.7
4/5	22.7	22.7	27.2
5/6	25.0	18.3	22.2
6/7	20.2	18.1	X
7/8	21.4	21.0	24.4
8/9	21.8	21.0	25.7
9/10	26.4	19.5	22.7
10/11	30.3	20.6	24.4
11/12	28.2	20.6	25.7
12/13	25.7	19.5	17.1
13/14	28.2	22.7	21.4
14/15	26.4	18.9	24.4
15/16	20.2	17.6	22.7
16/17	23.2	17.1	25.7
17/18	19.2	18.3	27.2
18/19	22.2	19.2	30.3
19/20	23.2	18.3	25.7
20/21	25.0	20.6	24.4
21/22	17.6	19.5	24.4
22/23	25.0	18.3	25.7
23/24	22.2	18.3	24.4
24/25	31.7	20.2	23.8
25/26	21.0	22.2	X
26/27	19.5	19.2	19.2
27/28	22.7	19.2	23.8
28/29	22.2	19.2	25.7
29/30	19.5	21.8	23.8
30/1	33.2	23.8	25.0
Median values	22.5	19.2	24.4

December

Date of the night	SS	Night	SR
1/2	24.4	20.6	28.2
2/3	27.2	19.5	25.7
3/4	24.4	18.3	25.7
4/5	24.4	18.6	30.3
5/6	23.2	19.9	X
6/7	25.0	16.7	24.4
7/8	25.7	19.5	24.4
8/9	23.8	22.2	24.4
9/10	25.7	20.2	22.7
10/11	29.2	18.6	29.2
11/12	31.7	19.5	26.4
12/13	37.7	22.2	28.2
13/14	22.7	20.6	26.4
14/15	31.7	22.7	21.4
15/16	37.7	17.8	20.2
16/17	18.6	23.2	X
17/18	31.7	21.4	27.2
18/19	25.7	18.9	X
19/20	20.6	20.2	28.2
20/21	27.2	21.8	22.2
21/22	30.3	22.7	31.7
22/23	32.2	21.4	29.2
23/24	35.2	22.2	27.2
24/25	37.7	21.0	26.4
25/26	30.3	20.6	31.7
26/27	30.3	22.2	27.2
27/28	23.8	22.2	29.2
28/29	25.7	21.4	25.0
29/30	26.4	20.2	X
30/31	31.7	21.0	26.4
31/1	30.3	21.0	23.2
Median values	27.2	20.6	25.4

Mean Ionospheric Absorption L'(dB) at Oblique Incidence (A3)
for 1987. f = 272 kHz

Date of the night	SS	Night	SR
	January		
1/2	30.3	21.4	31.7
2/3	27.2	21.4	35.2
3/4	37.7	21.0	28.2
4/5	29.2	21.4	27.2
5/6	24.4	21.8	33.2
6/7	29.2	21.4	29.2
7/8	31.7	21.4	26.4
8/9	22.7	21.4	25.0
9/10	21.8	21.8	28.2
10/11	29.2	22.7	24.4
11/12	25.0	21.8	25.7
12/13	28.2	19.5	X
13/14	28.2	25.0	30.3
14/15	24.4	19.5	27.2
15/16	29.2	18.3	23.8
16/17	25.0	18.3	28.2
17/18	23.8	21.8	25.7
18/19	29.2	23.2	23.8
19/20	24.4	20.2	21.0
20/21	33.2	(22.2)	X
21/22	26.4	18.1	19.2
22/23	18.3	21.8	25.7
23/24	20.2	19.2	23.8
24/25	21.4	21.0	25.0
25/26	25.0	21.0	25.7
26/27	26.4	22.7	27.2
27/28	24.4	22.2	X
28/29	30.3	23.8	28.2
29/30	27.2	23.2	29.2
30/31	35.2	20.6	29.2
31/1	26.4	21.4	23.2
Median values	26.4	21.4	26.8

Date of the night	SS	Night	SR
		February	
1/2	21.8	18.6	23.8
2/3	20.6	18.6	23.8
3/4	23.8	20.6	21.4
4/5	17.3	19.5	21.4
5/6	26.4	16.9	22.2
6/7	23.2	16.9	22.7
7/8	22.2	20.2	23.8
8/9	26.4	19.5	23.8
9/10	18.1	18.1	23.8
10/11	19.9	16.3	25.0
11/12	25.7	15.7	26.4
12/13	22.2	19.5	22.7
13/14	21.0	19.9	24.4
14/15	22.7	20.2	25.0
15/16	27.2	20.2	22.7
16/17	27.2	18.3	18.3
17/18	18.3	19.9	X
18/19	20.6	21.4	26.4
19/20	19.9	19.9	23.8
20/21	17.3	16.9	18.3
21/22	18.3	17.8	18.1
22/23	21.8	17.8	30.3
23/24	16.5	18.9	23.2
24/25	16.9	18.6	20.2
25/26	16.7	16.9	25.7
26/27	16.9	18.6	19.5
27/28	18.9	21.4	21.8
28/1	21.4	16.5	21.4
Median values	20.8	18.6	23.2

Date of the night	SS	Night	SR
		March	
1/2	26.4	14.9	21.8
2/3	21.4	16.5	25.7
3/4	19.9	20.2	26.4
4/5	24.4	18.3	25.7
5/6	19.5	17.8	21.0
6/7	16.7	19.5	22.7
7/8	25.0	18.6	18.9
8/9	22.7	16.1	19.5
9/10	29.2	18.1	18.1
10/11	20.2	17.8	19.2
11/12	21.4	19.5	21.4
12/13	16.7	17.8	27.2
13/14	21.8	17.8	21.8
14/15	20.6	19.2	21.0
15/16	23.8	14.6	20.6
16/17	25.0	21.0	23.8
17/18	16.3	18.6	20.2
18/19	15.9	15.9	25.0
19/20	20.6	18.6	20.2
20/21	14.6	16.5	18.1
21/22	20.6	17.3	23.2
22/23	19.9	18.1	18.3
23/24	24.4	16.1	20.6
24/25	25.0	16.1	X
25/26	23.2	14.4	19.9
26/27	18.3	18.9	20.6
27/28	15.5	20.6	18.1
28/29	21.0	13.7	24.4
29/30	17.1	22.2	15.5
30/31	22.7	16.5	20.2
31/1	19.9	18.1	21.8
Median values:	20.6	17.8	20.8

Date of the night	SS	Night	ʼ SR
		April	
1/2	25.7	19.9	21.4
2/3	28.2	15.1	22.7
3/4	22.2	19.2	14.0
4/5	22.2	19.9	20.2
5/6	24.4	19.2	18.1
6/7	22.2	16.1	21.4
7/8	20.2	20.2	21.0
8/9	24.4	15.5	16.9
9/10	29.2	14.8	16.5
10/11	19.9	16.9	18.3
11/12	21.4	16.7	19.2
12/13	15.2	18.3	17.6
13/14	23.2	22.2	27.2
14/15	23.8	22.2	23.2
15/16	23.2	19.5	21.8
16/17	28.2	15.5	21.8
17/18	18.2	19.5	16.7
18/19	17.8	21.4	18.6
19/20	22.2	19.5	22.7
20/21	20.2	21.0	24.4
21/22	25.0	18.6	25.0
22/23	21.4	16.1	17.6
23/24	12.5	18.3	25.0
24/25	17.3	19.2	19.5
25/26	18.9	18.6	18.9
26/27	14.8	21.0	19.5
27/28	23.2	17.1	19.2
28/29	17.1	19.2	31.7
29/30	19.2	20.2	21.0
30/1	17.8	18.6	21.0
Median values:	21.8	19.2	20.6

Date of the night	SS	Night	SR
		May	
1/2	24.4	18.1	29.2
2/3	23.8	17.3	27.2
3/4	X	X	X
4/5	X	(26.4)	17.8
5/6	21.8	23.8	18.1
6/7	19.2	19.9	23.8
7/8	33.2	19.5	19.9
8/9	31.7	18.6	22.7
9/10	22.7	17.8	26.4
10/11	26.4	24.4	28.2
11/12	24.4	19.5	19.5
12/13	20.2	16.1	29.2
13/14	X	X	X
14/15	25.7	21.4	25.7
15/16	22.2	19.5	29.2
16/17	17.3	19.9	27.2
17/18	22.7	24.4	20.6
18/19	27.2	16.5	24.4
19/20	X	X	X
20/21	31.7	23.8	24.4
21/22	17.8	22.2	19.2
22/23	24.4	18.9	28.2
23/24	28.2	19.9	22.2
24/25	25.7	17.3	21.0
25/26	22.7	18.9	25.0
26/27	26.4	(41.2)	47.2
27/28	28.2	18.1	24.4
28/29	29.2	19.5	30.3
29/30	28.2	20.6	24.4
30/31	31.7	19.5	28.2
31/1	23.8	19.9	26.4
Median values	24.4	19.5	24.7

Date of the night	SS	Night	˙ SR
		June	
1/2	24.4	21.0	23.2
2/3	29.2	22.7	18.3
3/4	26.4	19.2	23.8
4/5	27.2	22.7	29.2
5/6	30.3	22.2	23.8
6/7	21.0	27.2	30.3
7/8	30.3	24.4	26.4
8/9	21.0	17.8	22.2
9/10	20.6	19.9	21.4
10/11	13.6	17.3	23.8
11/12	X	X	X
12/13	X	X	X
13/14	X	X	X
14/15	X	X	X
15/16	X	X	X
16/17	X	X	X
17/18	19.2	17.8	22.2
18/19	22.2	24.4	22.2
19/20	19.5	23.2	20.2
20/21	21.0	17.8	24.4
21/22	27.2	18.1	20.6
22/23	17.8	21.0	28.2
23/24	25.7	23.2	24.4
24/25	X	25.0	23.8
25/26	21.8	20.2	25.0
26/27	29.2	23.8	25.7
27/28	22.2	21.4	25.0
28/29	25.0	23.2	30.3
29/30	30.3	19.2	24.4
30/31	28.2	20.2	24.4
Median values:	24.4	21.2	24.1

Date of the night	SS	Night	SR
July			
1/2	30.3	19.2	29.2
2/3	29.2	23.2	25.7
3/4	30.3	23.2	28.2
4/5	29.2	23.2	27.2
5/6	27.2	20.2	23.8
6/7	X	X	X
7/8	X	X	X
8/9	X	X	X
9/10	X	X	X
10/11	X	X	X
11/12	X	X	X
12/13	21.4	19.5	21.0
13/14	37.7	18.1	23.2
14/15	27.2	22.2	22.2
15/16	41.2	23.8	31.7
16/17	35.2	22.2	25.7
17/18	29.2	21.0	23.8
18/19	35.2	22.7	30.3
19/20	29.2	22.7	25.7
20/21	41.2	22.7	21.8
21/22	41.2	20.2	27.2
22/23	33.2	19.9	22.7
23/24	41.2	23.2	25.0
24/25	31.7	X	X
25/26	47.2	21.8	29.2
26/27	37.7	19.2	26.4
27/28	41.2	21.8	23.2
28/29	30.3	19.9	25.0
29/30	41.2	16.5	23.8
30/31	30.3	20.2	X
31/1	35.2	21.4	21.0
Median values	33.2	21.6	25.0

Date of the night	SS	Night	SR
		August	
1/2	30.3	22.7	29.2
2/3	30.3	21.0	23.2
3/4	25.7	19.9	29.2
4/5	X	X	X
5/6	21.0	21.0	23.2
6/7	X	X	X
7/8	20.6	17.3	24.4
8/9	23.8	19.5	26.4
9/10	23.2	X	X
10/11	X	X	X
11/12	24.4	15.7	27.2
12/13	21.0	18.6	23.8
13/14	24.4	23.2	30.3
14/15	X	X	X
15/16	22.2	21.0	28.2
16/17	33.2	21.4	29.2
17/18	23.8	20.2	22.2
18/19	24.4	16.9	21.8
19/20	23.2	19.9	27.2
20/21	22.2	19.2	23.8
21/22	23.2	15.5	27.2
22/23	29.2	18.6	25.0
23/24	30.0	19.5	25.7
24/25	20.6	18.9	23.2
25/26	23.8	X	X
26/27	28.2	23.8	30.3
27/28	30.3	20.6	28.2
28/29	25.0	22.2	29.2
29/30	31.7	21.8	31.7
30/31	19.9	19.9	26.4
31/1	23.2	22.2	24.4
Median values	23.8	19.9	26.4

Date of the night	SS	Night	SR
		September	
1/2	25.0	19.9	25.7
2/3	X	X	X
3/4	X	X	X
4/5	31.7	15.7	33.2
5/6	27.2	16.1	21.0
6/7	24.4	15.5	24.4
7/8	29.2	18.1	25.0
8/9	X	X	X
9/10	17.6	21.8	23.2
10/11	21.0	15.4	25.7
11/12	25.0	21.8	23.2
12/13	19.9	17.1	26.4
13/14	25.0	17.8	30.2
14/15	21.0	22.2	23.8
15/16	30.3	15.9	28.2
16/17	29.2	14.4	23.8
17/18	25.0	18.9	19.9
18/19	24.4	15.7	X
19/20	X	17.6	21.8
20/21	22.2	18.1	21.8
21/22	33.2	14.8	31.7
22/23	37.7	18.1	24.4
23/24	29.2	15.9	25.0
24/25	21.4	15.9	25.7
25/26	26.4	21.4	21.8
26/27	19.9	18.1	20.6
27/28	18.6	19.5	21.8
28/29	21.0	17.6	19.5
29/30	18.1	19.5	33.2
30/1	20.6	17.1	20.6
Median values	24.7	17.6	24.1

Date of the night	SS	Night	SR
	October		
1/2	16.1	15.9	23.8
2/3	16.1	16.1	18.3
3/4	23.8	19.9	28.2
4/5	21.4	21.4	23.2
5/6	21.8	17.6	20.6
6/7	21.0	15.2	16.7
7/8	15.1	17.8	19.5
8/9	17.8	14.6	21.8
9/10	20.6	16.9	21.0
10/11	X	X	21.8
11/12	19.5	23.8	28.2
12/13	18.1	18.1	20.6
13/14	13.3	15.9	21.8
14/15	16.3	18.6	19.9
15/16	21.4	20.6	19.9
16/17	16.9	18.3	20.2
17/18	19.9	16.7	23.8
18/19	27.2	16.3	21.4
19/20	22.2	17.3	28.2
20/21	19.5	18.6	41.2
21/22	26.4	17.8	27.2
22/23	23.2	17.6	19.5
23/24	29.2	17.6	22.7
24/25	22.7	19.9	21.8
25/26	20.6	15.9	22.2
26/27	26.4	16.5	14.4
27/28	21.4	18.9	22.2
28/29	25.7	21.0	27.2
29/30	19.2	18.9	22.2
30/31	27.2	17.8	16.1
31/1	24.4	16.1	23.2
Median values	21.2	17.7	21.8

Date of the night	SS	Night	SR
		November	
1/2	21.0	17.3	29.2
2/3	25.0	21.0	21.8
3/4	25.0	19.9	23.8
4/5	30.3	19.9	26.4
5/6	30.3	16.9	21.8
6/7	X	X	X
7/8	21.8	17.1	22.7
8/9	22.7	16.3	26.4
9/10	24.4	17.6	28.2
10/11	28.2	16.3	29.2
11/12	21.4	14.9	23.2
12/13	19.9	20.6	27.2
13/14	26.4	21.8	25.7
14/15	31.7	19.9	23.2
15/16	25.7	17.8	25.0
16/17	25.7	18.6	30.3
17/18	37.7	18.9	31.7
18/19	35.2	20.6	21.8
19/20	33.2	21.0	20.2
20/21	25.0	19.5	21.0
21/22	22.2	19.2	21.8
22/23	26.4	16.7	21.0
23/24	23.8	17.8	20.2
24/25	30.3	17.6	33.2
25/26	27.2	17.8	24.4
26/27	24.4	18.1	X
27/28	27.2	16.7	28.2
28/29	23.2	22.7	26.4
29/30	24.4	16.3	24.4
30/1	23.2	20.6	35.3
Median values:	25.0	18.1	24.1

Date of the night	SS	Night	ˈ SR
December			
1/2	24.4	19.5	41.2
2/3	21.4	18.6	30.3
3/4	18.3	20.6	X
4/5	X	X	X
5/6	31.7	19.5	31.7
6/7	31.7	17.8	28.2
7/8	24.4	19.9	23.8
8/9	27.2	17.8	21.4
9/10	25.7	20.2	31.7
10/11	22.2	21.0	29.2
11/12	27.2	23.8	33.2
12/13	21.0	21.0	25.0
13/14	23.2	21.8	23.8
14/15	27.2	19.5	22.2
15/16	21.8	19.9	X
16/17	23.8	17.8	29.2
17/18	33.2	23.8	24.4
18/19	24.4	19.9	27.2
19/20	29.2	20.6	23.8
20/21	24.4	22.2	30.3
21/22	17.1	23.8	47.2
22/23	33.2	23.8	28.2
23/24	41.2	18.1	30.3
24/25	35.2	24.4	23.2
25/26	31.7	21.0	27.2
26/27	23.2	23.8	26.4
27/28	25.0	21.4	29.2
28/29	37.7	18.9	31.7
29/30	41.2	21.8	27.2
30/31	26.4	22.7	25.0
31/1	33.2	18.9	29.2
Median values:	26.1	20.6	28.2