Bulletin de Géophysique

No 18
NOVEMBRE 1965

SOMMAIRE

Observatoire de Géophysique
COLLÈGE JEAN-DE-BRÉBEUF
MONTRÉAL

OBSERVATOIRE DE GEOPHYSIQUE

COLLEGE JEAN-DE-BREBEUF

3200 Chemin Ste-Catherine
Montreal 26, Canada.

Directeur: M. Buist, S.J.
Directeur des Recherches: E. Gherzi, S.J.

C'est grâce à l'aide financière apportée à l'Observatoire de Géophysique par l'International Nickel Company of Canada Limited que cette publication a été rendue possible.

Bulletin de Géophysique - No 18 - Collège Jean-de-Brébeuf, Montréal, novembre 1965

THE DAILY VARIATION PRODUCED BY A MODEL MAGNETOSPHERE

Henry R. Radoski
Department of Geophysics
Boston College
Weston Observatory
Weston, Massachusetts

Sommaire. - Grâce à un modèle du champ géomagnétique déformé produit par un dipôle-image amplifié parallèle au dipôle de la terre, les composantes de la variation journalière à la surface de la terre ont été calculées. Ce champ calculé présente qualitativement plusieurs des traits de la variation journalière observée dépendant de la latitude et de la longitude.

Abstract. - Using a model of the deformed geomagnetic field produced by a magnified image dipole parallel to the earth's dipole, the components of the daily variation at the surface of the earth have been calculated. This calculated field qualitatively represents many of the features of the latitude and longitude dependence of the observed daily variation.

1. INTRODUCTION

Almost a century and a half has passed since C. F. Gauss (1832) initiated the analytical era of geomagnetism. Although an enormous amount of data has been amassed and continues to be collected at an almost exponential rate, the quality of the theories has not kept pace with the quality of the experiments. This is true in all phases of geomagnetism: the main field with its possible reversals measured in millions of years, the secular variation measured in hundreds of years, solar-cycle interactions measured in tens of years, the monthly and daily lunar variations, the solar daily variation, down to micropulsations with periods of seconds and minutes. The cause of this situation is two-fold: the mathematical complexity of the governing equations and ignorance of the pertinent physical

processes and parameters both within and beyond the earth.

The source of the quiet day solar daily variation, whose time scale is approximately the geometric mean between the secular variation and micropulsations, has been sought in numerous places: both on the sun and inside the earth and at most points between (Champman and Bartels, 1962). Its supposed origin has finally been placed in dynamo driven current systems in the ionosphere. Fortunately, recent rocket experiments have corroborated the possible existence of such current systems (Burrows and Hall, 1964; Davis, Stolarik, and Heppner, 1965). Another obvious, though perhaps secondary, cause of the daily variation will be produced by the non-axisymmetric shape of the magnetospheric boundary, which confines and reflects the earth's field. Such a result has been indicated and discussed by Mead (1964). In this paper the first order effect of the magnetosphere will be obtained by employing the simple magnetosphere model of Hones (1963), which consists of a magnified image dipole parallel to the earth's dipole. The calculated magnetic components of the daily variation at the surface of the earth qualitatively display the latitude and longitude dependence that has been observed.

2. BASIC EQUATIONS AND RESULTS

A mathematical model of the magnetosphere (Hones, 1963) has the interesting property of reproducing many of the features of the solar daily variation. In this model the deformed magnetic field is represented as a superposition of the earth's dipole field and a parallel image dipole of strength n times the earth's moment. If the image dipole is placed at a distance R_0 the magnetic scalar potential in spherical coordinates with origin at the earth will be

$$\phi = -H_0 a^3 \cos\theta \left[\frac{1}{r^2} + \frac{nr}{(r^2 + R_0^2 - 2rR_0 \sin\theta\cos\varphi)^{3/2}}\right] \qquad (1)$$

where a is the radius of the earth and H_0 is the equatorial magnetic field: $H_0 \approx 0.3$ gauss, θ is measured from the north pole, and φ eastward from the noon meridian. By expanding the radical in (1) for radial distances near the surface of the earth the first order portion of the potential having an azimuthal dependence is found to be:

$$\phi' = -3nH_0\left(\frac{a^3 r^2}{R_0^4}\right)\cos\theta\sin\theta\cos\varphi \qquad (2)$$

The components of the magnetic field derived from the above potential are

$$Z = \frac{\partial\phi'}{\partial r} = -3nH_0\left(\frac{a}{R_0}\right)^4 \sin 2\theta\cos\varphi \qquad (3)$$

$$X = \frac{1}{r}\frac{\partial\phi'}{\partial\theta} = -3nH_0\left(\frac{a}{R_0}\right)^4 \cos 2\theta\cos\varphi \qquad (4)$$

$$Y = -\frac{1}{r\sin\theta}\frac{\partial\phi'}{\partial\varphi} = -3nH_0\left(\frac{a}{R_0}\right)^4 \cos\theta\sin\varphi \qquad (5)$$

The latitude and longitude dependence of these fields approximates the variations indicated by Chapman and Bartels (1962).

The Z component, measured positive downwards, displays the noon minimum in the northern hemisphere, the equatorial null, and the phase change across the equator. The Y, or eastward, component, also shows the equatorial null and change of phase between northern and southern hemispheres as well as the characteristic morning maximum and evening minimum in the northern hemisphere. The X, or northward, component is symmetric across the equator, has a mid-latitude null (from (4) at 45°) and possesses the noon minimum north and the noon maximum south of this null in the northern hemisphere. In Hones' treatment n = 28, R_0 = 28 earth radii, and the front of the magnetosphere is at 7.5 earth radii. For this case the range, Δ, of the daily variation will be

$$\Delta = 6n\left(\frac{a}{R_0}\right)^4 H_0 \approx 8.2\gamma \qquad (6)$$

This is an improvement over the simple plane model. For a dipole reflected by a perfectly conducting plane placed at 7.5 earth radii the angular dependence of the fields will be identical to that given by (3), (4), (5) but the range will be reduced to approximately 3.6 γ.

3. DISCUSSION

Although the qualitative agreement of (3), (4), (5) with

the observed solar daily variation is evident, they also possess several deficiencies. First of these is the observed large horizontal daily variation at the equator. This effect (over 100 γ) is so pronounced that it evidently must be ascribed to an independent cause, such as a localized ring current. Secondly, the magnitude of the range given by (6) is approximately one-fourth of the observed range, which has a value of about 30 γ . Thirdly, the observed daily variation displays a pronounced day-night asymmetry which is clearly not represented by the simple sinusoids in the above results. Such an effect immediately suggests an ionospheric origin produced by the decrease in the conductivity from day to night. However, if future experiments should indicate that the ionospheric current system hypothesis is untenable, a logical area of investigation is to ascertain the possible amplification and damping of the magnetospheric daily variation produced by an interaction with the plasma filling the magnetosphere. The presence and the effect of this plasma has been neglected in the above analysis.

Acknowledgment. - The research reported in this paper was sponsored by the Air Force Cambridge Research Laboratories, Office of Aerospace Research, under contract AF19(628) 236.

REFERENCES

Burrows, K., Hall, S. H., In situ detection of an ionospheric electric current. Nature, 721-722, November 21, 1964.

Chapman, S., Bartels, J., Geomagnetism, Vol. 2, 750 ff, Vol. 1, 215, Oxford University Press, 1962.

Davis, T., Stolarik, J., Heppner, J., Rocket measurements of mid-latitude Sq currents, NASA Goddard Space Flight Center, X-612-65180, February 1965.

Hones, E., Motion of charged particles trapped in the earth's magnetosphere, Journal of Geophysical Research, 68 (5), 1209-1219, 1963.

Mead, G., Deformation of the geomagnetic field, Journal of Geophysical Research, 69 (7), 1181-1195, April 1, 1964.

DETERMINATION OF THE FACTOR FOR REDUCING THE ATMOSPHERIC ELECTRIC POTENTIAL TO ONE METER ABOVE GROUND

In this present issue appears for the first time, at the top of each table of the electric potential values, the K factor for reducing the data to the standard one-meter level; thus, if the potential recorded at the elevation of the probe is V, the mean gradient at one meter above ground is given by KV.

The K factor was obtained by comparing the potentials read simultaneously at two sites, one on the roof of the College building, the second in an open area located on a lawn field of the College campus. At a distance of 450 feet from the regular recording site, a Keithley electrometer was installed in the flat open field, some 100 feet from the nearest trees with tops 50 feet high, and 325 feet from the nearest building with roof 75 feet high.

A Polonium-210 radioactive source was fixed at the end of a coaxial cable mounted on a vertical wooden mast one meter high; that cable was connected, at the other end, to the electrometer through a teflon insulator. Great care was taken to have the same time constant of the measuring apparatus at both sites, on the roof and in the field.

The experiment was undertaken in a fair weather morning (August 17, 1965) characterized by a few Cirri in the sky and northeasterly winds not stronger than 5 mph. A reading was made at both sites every two minutes and at the same second, thanks to a radio communication between both operators. The operation lasted from 10:40 to 11:32 LST, thus yielding 27 pairs of readings. For each pair, the K ratio of the potential at one meter above ground over the potential at roof elevation was calculated, and the arithmetic mean of those ratios was found to be 0.113 with a standard deviation of 0.0065.

C. East, S.J.
E. Gherzi, S.J.

ATMOSPHERIC ELECTRIC POTENTIAL AND AIR-EARTH CURRENT DENSITY

(January - June 1965)

Hourly averages of the electric potential and of the air-earth current density, as recorded at Brébeuf College during the first six months of 1965, are presented in the following tables. Another set of tables gives the daily weather summary for the period concerned, as issued by Dorval Weather Station. Information about the recording site, the instrumentation and data presentation, can be found in the previous issues (Nos. 16 and 17) of this Bulletin. A note, presented in the present issue, explains how the K factor for reducing the potential data to the one-meter standard level has been obtained.

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

JANUARY 1965

V-1

Time LST Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of Hours	Mean
1	600	800	1250	1550	1700	1900	2200	2550	2800	2700	>3000	>3000	>3000	>2500	2700*	2850	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	12	1970
2	>3000	>3000	>2950	>3000	>3000	>3000	>2750	>3000	>2900	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>2900	2450	2100	2050	2050	2050	1900	2350	7	2140
3	1200	1850*	2250*	2350	2900*	>2950	>2950	>3000	>3000	>3000	>2950	>2950	>3000	>2750	2350	2400	2200	2200	2050	2100	2600	2350	2050	2100	15	2200
4	2400	2000	1800	1800	1600	1550	1900	2100	>2950	>2950	2850*	2100	2500	2400	2750	2250	2350	2350	1150	250	100	-100	-200	400	20	1830
5	250	300	1300	600	-250	-250	50	150	500	1200	1200	250	300	1150	550	250	-150	0	-50	-150	-700	-1050	-950	-1050	15	540
6	-400	-300	0	150	500	750	1500	2100	2200	2150	2100	2200	2000	2350	2250	1950	1800	2450	2350	2250	1800	1850	2450	2250	22	1790
7	2150	2050	2300	1500	2550	2900*	2750	>2750	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>2900	2700	M	2100	1600	1500	1450	1650	13	2090
8	1650	1400	1100	1000	600	300	250	350	650	600	200	200	450	650	1300	1500	950	550	M	M	M	M	M	M	18	760
9	M	M	M	M	M	M	M	M	M	M	1600*	1600	2000	1550	1450	1600	1650	1650	1900	1800	1650	1550	1500	1800	14	1660
10	1600	1600	1900	1900	1900	1550	1850	2000	2400	2300	1800	1700	1500	1400	1750	1700	2100	1950	1750	1950	2250	2600*	2750	>2900	23	1920
11	1950	2300	2100	2200	2400	>2900	2950*	2850*	>2950	>3000	>2700	2150	2150	2500	2750	2250	1850	1600	1000	650	650	500	650	400	20	1790
12	400	300	650	2100	700	-200	300	900	450	D	D	D	D	900	1000	1200	1350	1550	1650	1350	1050	1100	1600	1550	19	1060
13	1200	1050	1250	1200	1000	850	950	1100	1300	1200	1150	1250	1350	900	1100	800	700	1950	2250	D	D	D	50	500	20	1040
14	700	1100	1050	1100	1450	1300	1550	1700	2000	>2850	>2900	>3000	2850*	2450*	2500	2800*	2850*	2550	2200	2050	1950	1700	2100	2050	21	1860
15	2350	2350	2450	2600	2700	2600	>2950	>3000	>3000	>2800	1900	1650	2800	2700	2550	>2750	>3000	2750	2200	2150	1800	2050	2100	1700	18	2300
16	1650	1900	1750	1700	1850	>2800	2450	2250	2150	2400	2350*	>3000	2650*	2700	2450	2000	1350	2000	1600	1200	2250	2100	2100	1500	22	2020
17	1600	1650	2300	2500	2100	1450	>2450	>3000	>3000	>3000	>3000	>3000	>2850	2700*	2900*	2800*	2450	2700	2650	2500	2350	2250	2250*	1400	17	2270
18	1500	2200	2550	2550	2200	1800	1900	1750	2000	2800	2800*	2300	2600	2900*	>2900	2200	1650	1200	950	1400	1300	1200	D	1100	21	1910
19	1500	2000	1200	1250	1200	800	500	750	50	-450	-1150	-300	450	250	850	1100	850	1500	1500	1150	1150	950	650	700	21	970
20	750	1200	D	300	900	450	200	0	-300	750	550	D	D	D	300*	850	-300	650	-700	D	-100	600	1100	1100	15	650
21	1350	1400	1200	1000	1400	1600	2000	2400	>2700	2800*	>3000	2800*	2700	2400	2550	1950	1500	1200	950	800	550	750	1000	1050	22	1610
22	1000	750	200	50	650	600	50	-1000	-850	-750	-300	350	950	1050	1400	1750	2200	1500	550	-200	150	350	450	850	19	780
23	-150	1150	1800	1500	1500	1450	1750	1750	2200	2300	2800	2250	2000	2100	2150	2800	2200	2050	1950	1800	1750	1700	1600	1450	23	1910
24	1550	1850	2050	1150	1600	1400	1750	>2750	>3000	>3000	> 2250	2400*	1200	1400	>3000	D	D	D	D	D	D	D	D	-550	10	1630
25	100	200	750	550	750	600	-50	200	100	300	750	1150	1200	1350	1650	1600	2000	1600	1600	1650	1500	2000	1850	2500	23	1170
26	2150	2300	2250	>2150	2150*	2150	2050	1250	50	1100	650	1200	0	D	D	?	?	?	?	?	?	?	?	D	12	1440
27	D	D	-450	600	D	-1400*	-300	300	1050	1450	1650	1450	1450	1700	D	D	500	100	200	300	350	900	800	900	16	860
28	1100	1200	1250	1250	1400	1650	>2500	1850*	>2500	>3000	2700	>2900	>2900	>2700	1700	1700	1400	1450	1400	1550	1800	2450	2300	2000	18	680
29	1650	1800	2200	>2250	>3000	>3000	>3000	>3000	>3000	>3000	>3000	2800*	>2900	2700	2800	2450	2400	2400	2100	2450	2650	2700	2650	2400	15	2410
30	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>2950	2600	2750	2400	1700	1600*	1300	1400	1250	1150	900	1000	1100	12	1600
31	1250	1550	1750	1750	1800	1750	1900	1850	2350	2150	2200	2100	1950	1600	1800	2250	2050	1900	2100	2550	2500	2600	2750	2700*	24	2050
No. of Hours	25	26	26	26	25	21	21	21	16	14	17	19	22	24	25	25	23	28	23	23	24	24	24	25	547	
Mean	1340	1470	1560	1390	1580	1400	1470	1440	1390	1670	1720	1680	1710	1860	1920	1870	1710	1720	1620	1620	1540	1610	1630	1500		1600

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

JANUARY 1965

I-1

Time LST Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	118	126	126	114	108	110	112	102	76	60	64	68	70	34	74	62	70	68	68	64	72	74	72	68	24	83
2	54	50	46	92	72	72	50	58	90	74	70	74	72	72	72	66	60	60	68	82	80	90	98	120	24	73
3	110	>122	110	130	136	>140	>146	>144	>146	122	106	100	98	78	62	56	56	68	70	62	60	42	42	50	19	82
4	52	40	40	42	40	38	46	52	60	54	52	54	56	58	60	48	54	60	48	94	142	146*	>148	>150	22	61
5	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	10	18	6	4	12	18	D	>144	>150	>146	148*	112	30	12	10	37
6	22	36	38	30	108*	>148	>150	>150	>140	104	74	72	68	72	62	62	60	82	60	58	50	50	74	62	20	62
7	64	68	64	58	80	78	70	82	86	80	66	66	94	70	74	62	62	64	M	76	70	74	88	100	23	74
8	114	140*	>148	>150	>150	>150	>150	M	M	M	>150	>150	>150	>150	>150	>150	>150	>150	M	M	M	M	M	M	2	127
9	M	M	M	M	M	M	M	M	M	M	128*	140*	>150	120	82	72	68	58	58	50	44	42	44	50	13	74
10	50	50	54	56	54	48	60	52	66	60	42	40	36	38	48	34	50	30	32	40	40	44	44	58	24	47
11	40	64	64	60	68	76	68	58	92	52	>150	>146	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	10	64
12	>150	>150	>150	>150	>150	>150	D	D	D	D	D	>-100	>-100	>-100	>-64	20	40	40	40	38	32	38	50	52	9	39
13	40	48	80	116	>144	>150	>146	142*	>150	>150	>150	>150	142*	134	>150	>150	>146	D	D	D	64	D	D	>150	8	96
14	>150	>150	>150	>150	>142	>150	138*	>150	>150	>150	>150	>150	D	D	D	D	D	84	60	64	74	54	66	70	8	76
15	104	118	M	72	92	78	62	72	54	18	D	>150	72	48	22	28	36	26	22	30	30	26	20	16	21	50
16	24	30	22	32	50	D	80	54	56	42	50	42	36	30	18	20	D	34	8	32	40	38	20	24	22	36
17	44	30	42	30	20	10	58	56	44	56	30	30	52	46	58	40	46	60	60	48	26	62	64	66	24	45
18	60	68	54	54	58	70	78	>132	>150	>150	>150	>150	>148	>150	>146	>150	>150	>150	>150	>150	>150	>150	>142	>150	7	63
19	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>146	>146	134	>150	>138	112	120	136	148*	120	120	>146	>150	>150	6	130
20	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150		
21	>150	>148	>150	>150	>150	>150	>150	>150	>150	>138	100	108*	58	28	46	46	54	70	78	108	134	118	102	116	14	83
22	144	>150	>150	>150	>150	>150	>150	>150	>114	84	126	>150	>144	88	60	42	40	30	D	D	D	8	-8	28	10	65
23	D	42	40	26	26	22	38	30	34	34	44	26	26	30	36	30	28	28	30	32	52	40	40	30	23	33
24	40	48	50	46	48	50	>110	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	6	47
25	>150	>150	>150	>150	>150	>150	>150	>116	38	30	40	30	D	>150	>146	52	40	20	22	20	22	30	26	44	13	32
26	D	D	36	34	10	D	24	8	16	24	10	20	2*	D	D	D	D	D	>150	>150	>150	>150	>150	D	10	18
27	>142	D	D	D	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-80	16	28	>90	D	D	D	>150	>150	>150	58*	28	28	5	32
28	28	20	22	14	18	24	52	D	>150	>150	>150	>150	>150	>150	120	50	>130	68	108	62	>150	>142	62	36	14	49
29	30	32	36	38	60	60	38	46	46	48	34	28	40	38	38	30	30	28	22	28	30	28	30	34	24	36
30	60	72	60	58	68	68	60	60	48	42	20	D	>-100	>-100	>-100	-30	12	18	30	40	50	48	78	36	19	49
31	22	30	30	30	30	30	36	32	46	40	42	34	32	28	30	38	24	28	28	34	30	34	30	24	24	32
No.of hours	20	19	19	20	19	15	17	15	15	18	19	17	19	19	18	20	19	22	20	21	22	22	21	22	458	
Mean	61	59	52	57	60	56	63	60	57	57	58	56	58	55	54	44	50	53	53	56	64	57	53	51		57

D: disturbed M: missing *: estimated ?: unknown

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

V-2 K = 0.11 FEBRUARY 1965

Time LST / Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	No. of Hours	Mean
1	>2650	>3000	>3000	2250	>3000	>2950	>2900	>2950	>2550	>3000	D	2100	2500	2250	>2750	1250	1150	>2450	750	1200	1350	300	1000	1100	12	1430
2	1300	1700	1400	1050	800	200	750	300	>2650	>1400	800	1250	1150	M	1000	1200	1200	1200	1350	1550	1700	1700	1800	1900	21	1200
3	1850	2150	1800	1950	1800	2000	1850	>2450	2500	2100	1850	2100	2400	2750	2000	1400	1150	800	1350	900	700	1300	1200	1400	23	1710
4	1300	1600	2000	1950	2300	2300	2700*	2200	1650	1700	1950	2400*	>2600	1900	1750	1300	1600	1150	1300	1200	1250	1100	1150	1400	23	1700
5	1400	1900	2250	2350	2350	2350	2250	2100	1850	1900	2150	1800	1900	2400	2200	1500	D	D	D	D	>-1400	D	650	150	18	1860
6	D	>250	50	1000	700	700	550	650	750	650	400	350	300	750	850	650	300	400	450	250	0	200	250	150	22	470
7	-350	50	400	450	100	-200	-150	500	650	700	1050	1000	800	1150	1000	700	-500	-900	>-1500	>-1550	>-1200	>-2000	>-2000	>-2000	13	660
8	>-1650	-1450*	150	400	150	100	400	650	1400	1850	1400	1100	300	-650	>-1000	-350	-500	150	750	1000	1100	1150	1300	1400	18	820
9	1300	-50	500	1100	1250	1300	1450	800	200	1400	1250	1600	2200	2000	2000	2200	1950	1950	2150	1800	1600	1350	1300	1500	23	1480
10	1450	1450	1200	1150	950	950	D	D	D	D	D	D	-550	M	M	M	M	M	M	M	M	M	M	M	6	1190
11	-450	-300	500	750	900	800	900	1050	1300	1550	1850	1700	1400	1100	1100	1550	1450	1700	2050	1450	950	1600	1350	1250	22	1280
12	1200	1350	1350	1200	1100	1000	>2200	D	D	-150	-100	-350	-150	700	350	500	400	100	-100	D	900*	0	700	800	15	780
13	650	700	750	800	1000	500	400	600	900	1650	1400	1450	1400	1350	1450	1550	1500	1300	1350	1400	1800	2050	1750	1800	24	1230
14	1850	1550	1800	1950	1600	1550	1750	850	2350	2400	2200	2300	2050	2200	2000	1700	1600	1500	1600	1750	1700	1700	1550	1450	24	1830
15	1300	1150	1400	1050	1200	1450	850	1500	1500	1600	1750	1550	1550	1700	1500	1350	1350	1500	1400	1200	1100	1000	950	950	24	1330
16	700	450	950	D	D	D	-50	400	D	0	900	1300	1800	1650	1450	1800	1650	1800	1750	1500	1400	1500	1750	1750	19	1290
17	2050	2400	2650	2600	2000	2650	2100	>2150	>3000	>2900	2750	2650	2550	2550	>2800	>2950	>2850	2500	2250	1900	1800	2100	1750	1200	18	2250
18	D	D	D	D	D	1600	-150*	D	D	D	-400	-150	-100	-400	-300*	-250	-50	-100	-50	250	650	750	800	800	6	810
19	1100	1150	1450	1500	1550	1150	1150	1550	1600	1450	1550	1250	1250	950	700	650	800	900	1100	1400	1450	1400	1650	1850	24	1270
20	1650	1450	1450	1500	1450	1350	1550	1600	1900	1800	2000	2100	1850	1950	1300	1250	1450	1600	1900	1850	1750	1700	1600	1900	24	1660
21	1400	1600	2250	2100	950	700	300	700	650	400	100	0	600	1100	1350	1100	650	550	0	-100	1300	950	550	300	23	850
22	600	200	-50	0	500	1900	2300	M	1800	1700	2400	2450	2300	2400*	>3000	>3000	1500	250	500	400	900	850	800	700	20	1220
23	600	900	750	700	700	600	500	500	850	800	650	850	850	650	M	M	850	900	1100	1150	1150	1000	700	750	22	800
24	500	500	550	M	M	M	M	M	M	1750	1650	2050	1800	1500	1500	1500	950	800	600	400	350	300	300	200	18	960
25	150	250	250	300	250	>-1750	>-500	650	1100	1100	-950	450	850	250	0	-400	-300	-500	-1100	>-1100	-450	-200	-450	-500	12	470
26	-1100	-800	>-1350	-600	-850	>-650	-50	200	400	500	950	800	1000	750	1250	300	-300	0	150	100	150	-50	0	200	15	450
27	350	350	450	500	550	700	1000	M	M	M	M	1100	1150	1100	900	850	800	800	750	700	700	900	800	1000	20	770
28	600	1400	1150	450	350	1350*	1050	D	1450	1000	1200	750	900	950	700	700	600	700	650	700	650	750	650	500	23	830
No. of Hours	21	21	24	24	23	22	19	18	19	21	22	25	24	24	21	21	20	22	22	22	24	23	25	25	532	
Mean	1110	1150	1140	1210	1070	1240	1250	930	1310	1330	1460	1460	1450	1500	1250	1190	1140	1020	1150	1090	1100	1120	1050	1060		1205

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

I-2 FEBRUARY 1965

Time LST / Day	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	No. of hours	Mean
1	36	40	38	16	52	58	58	48	D	52	>136	>96	50	>128	>150	>150	>140	>150	>150	>150	>150	>150	>130	>144	10	48
2	>150	>150	>150	>150	>150	>144	130	70	84	>150	D	>120	D	>150	>150	>150	>150	74	32	30	30	22	28	22	10	52
3	20	38	26	24	30	30	24	D	86	104	92	106	120	136	100	70	58	36	64	42	34	66	60	70	23	64
4	12	26	26	26	60	46	60	38	22	62	82	>132	>150	>126	>112	>150	>150	88	22	16	12	14	24	20	18	36
5	24	28	30	22	38	38	44	32	18	42	>114	52	>114	>150	>150	>150	>150	>150	>150	>150	D	>150	>150	>140	11	33
6	D	D	D	>140	>150	>150	>150	140	>144	>150	>150	90	82	76	90*	>140	126*	80	58	52	40	40	40	30	13	73
7	34	40	40	28	2	6	10	6	4	4	20	22	18	30	18	24	D	18	D	D	D	D	D	D	17	19
8	D	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	M	M	M	M	M	M	-78	-10	40	48	38	34	38	38	6	39
9	32	D	38	38	30	18	26	22	70	76	30	62	46	38	28	42	32	38	46	28	26	20	34	44	23	38
10	30	20	16	18	14	>84	>150	>150	>150	D	D	D	D	>150	>150	M	M	M	M	M	M	M	M	M	5	20
11	M	M	M	M	M	M	M	M	M	M	34	30	28	26	30	44	38	40	36	28	10	38	28	22	14	31
12	26	30	26	24	28	28	120	D	D	D	>148	60*	>-100	>92	-26	-22	-38	-58	-52	D	D	D	40	40	9	34
13	40	46	44	48	54	>90	58	32	62*	>120	46	42	52	48	40	40	34	30	30	32	46	42	32	34	22	42
14	40	34	42	44	38	40	24	18	54	56	78	70	68	54	42	40	40	36	34	28	32	18	18	18	24	40
15	14	16	18	14	46	40	20	44	34	44	56	44	46	50	44	40	42	38	32	24	30	30	30	30	24	34
16	18	10	D	D	D	84	D	>-100	>-100	>-100	-20*	62	72	56	48	66	48	50	38	30	30	36	40	38	16	46
17	44	56	54	56	26	44	14	50	58	D	82	86	78	70	80	60	48	40	30	22	32	38	18	18	23	48
18	D	D	D	>150	>150	>150	>150	>150	D	D	>-100	>-100	>-100	>-100	>-100	>-90	-26	30	52	54	50	40	42	66	7	48
19	52	42	40	32	36	16	12	30	36	48	34	38	50	28	18	50	50	70	32	28	22	18	30	>112	23	35
20	60*	30	22	30	24	26	28	28	30	30	44	38	30	30	-12	20	42	38	30	26	26	26	18	22	23	30
21	22	32	44	18	-2	-4	0	8	12	14	6	34	42	48	10	2	2	12	2	22	>140	>150	>150	>150	18	18
22	114	>106	>150	>150	>150	>150	>150	>150	>150	118*	D	D	D	D	D	D	D	-26	10	8	20	14	12	12	8	38
23	10	20	14	12	12	12	10	8	20	14	16	24	18	12	M	M	18	20	20	20	16	14	8	10	22	15
24	4*	8	M	M	M	M	M	M	M	10	24	22	20	20	30	22	2	10	8	8	6	10	4	2	17	12
25	8	6	8	6	10	D	D	46	38	32	-16	98	100	104	D	116*	92	D	48	106*	70	78	58	42	19	56
26	50	32	D	58	>60	>140	54	34	12	50	>110	>150	>148	D	D	28	>128	86	54	34	28	12	20	22	15	39
27	24	26	28	28	30	30	38	M	M	M	M	70	68	66	54	50	40	42	40	42	44	76	58	58	20	46
28	50	68	62	34	8	24	30	-10	12	48	>140	>140	116	120	114	110	104	110	116	104	92	112	106	106	21	78
No. of hours	23	21	19	20	18	16	18	17	17	17	14	19	19	18	15	17	17	21	23	23	22	22	23	22	461	
Mean	33	31	32	29	30	34	36	38	38	47	46	55	58	56	50	48	48	47	38	36	33	36	34	35		40

D: disturbed M: missing *: estimated ?: unknown

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

V-3 K = 0.11 MARCH 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of Hours	Mean
1	1450	450	1500	300	1850	2150	2550*	2600	M	2250	2000	1650	1900	2200	1700	500	250	800	1600	1100	1350	1350	1650	1500	23	1510
2	1250	1450	1050	1050	-200	-100	550	500	500	2350	>3000	>3000	2050	800	2550	>2850	D	750	550	250	-50	50	150	850	17	980
3	1000	400	300	250	50	0	M	M	M	M	M	M	M	M	M	M	>2750	>3000	>2650	1100	1500	1450	1200	1300	11	780
4	1450	1650	1350	D	1700	900	350	1200	-550	1650	1950	>2950	>3000	>3000	>3000	>2950	2900*	2850*	2300	1950	1900	2250	>2600	>2800	15	1760
5	2250	2150	2200	2000	1750	1850	1750	1900	1850	1850	2150	2450	2550	2450	2250	1700	1750	1600	?	500	450	600	650	550	23	1700
6	350	400	450	450	500	650	600	600	700	1000	1100	1100	1400	900	1000	1000	1400	900	850	700	600	700	50	-50	23	760
7	-100	50	650	600	700	750	850	1350	1850	1450	1250	1200	1250	1350	1650	1600	1500	1450	1250	1400	1500	1300	1300	1100	23	1180
8	1350	1600	1750	1550	1400	1750	2450	>2800	>3000	>3000	2650*	2500	2000	1950	2050	1900	2050	1950	2250	1800	1800	1500	1300	1350	21	1850
9	2050	2350*	1400	1750	1800	1750	1850	1600	1700	1500	1050	1150	1150	1000	500	350	50	300	500	500	150	0	0	0	24	1020
10	-50	300	450	600	650	400	250	250	250	100	100	550	800	900	900	900	900	1350	1500	850	950	650	700	650	23	650
11	950	800	650	550	700	800	900	1500	1500	1500	1400	1250	1300	1300	1450	1350	1500	1650	1500	1400	1450	1600	1800	1900	24	1280
12	1900	1750	1650	1550	1580	1750	1850	2100	2250	1950	M	1700	1400	1500	1400	M	M	M	M	M	M	M	M	M	14	1740
13	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	1300	1350	2	1320
14	1450	1150	1200	1450	1500	1350	1400	1300	1250	1400	1300	1050	900	800	1000	850	800	800	950	950	850	1150	1000	750	24	1110
15	800	250	400	650	700	850	1050	1500	1500	950	1150	850	1150	1200	1000	950	1100	1200	1300	1200	1050	1000	1250	1650	24	1030
16	1700	1600	1500	1300	1250	2450	2500	2800*	>3000	>3000	2500	1250	1250	1150	1050	1100	900	950	1100	1450	1900	2100	2000	2050	22	1630
17	2300	2300	2750	2250	1000	1500	1500	2000	1150	1250	D	1100	1200	300	300	750	1600	1750	1250	1250	1200	1050	1050	1200	23	1390
18	1100	1000	850	-250	D	D	D	D	-500	-300	D	450	550	250	350	-100	-50	-100	0	200	600	600	650	600	13	550
19	600	500	600	550	750	550	650	1500	1600*	D	1300	1000	1000	D	D	D	650	600	950	850	1000	1050	1200	1250	20	910
20	1300	1250	1200	1050	900	950	1200	1650	2150	2100	1750	1550	1400	1400	1250	1200	1250	1100	1050	1100	1050	1150	1300	1100	24	1310
21	1100	1150	1200	1750	1750	1600	2000	2150	1900	1500	1200	1100	1050	1000	900	850	850	1150	1050	1050	1050	1250	1500	1550	24	1320
22	1100	700	200	100	250	450	750	1050	1400	1400	1350	1250	950	800	700	>2000	D	>-1000	-1000	450	D	300	50	>-1600	18	740
23	D	>-2000	D	-200	-100	-950	-600	-900*	-350	200	1100	1150	1450	1600	1600	1500	1400	1450	1350	1300	1450	2400	1900	1450	15	1420
24	1350	1350	1250	850	600	800	1150	2350	>3000	>3000	2300*	1400	1100	1000	950	900	900	1000	1150	1150	1200	1300	1250	150	22	1160
25	1050	1050	1350	1600	1600	2200	2300	2600	2500	1550	1000	1150	1100	1150	1300	1750	1750	1350	1500	1550	1250	950	950	850	24	1470
26	550	300	-100	500	-100	D	D	D	500	D	450	D	D	D	D	D	100	700	-50	-500	-250	-100	200	500	9	420
27	200	100	-200	D	1650	100	150	100	400	650	D	D	1000	1100	950	900	950	1150	1500	1800	2050	1850	1800	2250	20	1030
28	2050	2100	1600	1000	850	1400	1700	2300	1950	2050	1900	1600	1500	1450	1350	1500	1600	1650	1500	1800	1850	2350	2050	1900	24	1710
29	1800	2100	1850	1900	2050	1900	1900	2150	2300	1900	1500	750	700	800	900	1150	1050	1350	750	250	300	600	-1000	>-750	22	1360
30	D	-1250*	-250	300	300	950	1150	1550	2150	1750	1750	1800	1350	1300	1350	1300	1300	1350	1400	1350	1500	1500	1800	1700	21	1380
31	1850	1950	1900	2100	1600	1650	2300	2450	2000	1550	1400	1400	1350	1300	1150	1050	1100	1300	1350	1400	1350	1300	1350	1500	24	1570
No. of Hours	26	28	26	26	26	26	26	25	22	23	24	25	27	26	26	22	25	26	25	28	26	28	28	26	617	
Mean	1280	1150	1200	1080	1130	1210	1370	1640	1520	1470	1520	1300	1290	1190	1210	1140	1180	1250	1220	1090	1200	1190	1120	1190		1275

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

I-3 MARCH 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	8	0	24	D	42	44	42	50	M	10	26	30	44	40	20	0	0	38	40	18	34	40	36	28	22	28
2	14	46	30	40	20	20	48	20	26	70	60	42	28	38	56	40	D	42	38	10	D	26	-8	14	21	35
3	30	24	44	52	84	D	120*	116*	112*	92*	70	54	54	42	40	48	42	52	20	10	16	20	22	26	23	52
4	32	40	58	D	D	D	D	D	D	58	34	42	44	72	50	56	56	52	32	30	46	D	74	D	16	48
5	26	26	38	48	64	D	66	50	50	50	52	44	40	38	38	26	100*	80	92	98	108	104	88	52	23	60
6	18	10	80	94	102	108	118	120	134	136*	96	80	70	84	80	92	86	78	90	86	90	112	140*	140*	24	93
7	>140	>136	110	70	96	122	74	82	60	48	32	26	38	40	52	42	50	42	38	38	46	40	52	M	21	57
8	M	M	40	30	36	50	58	70	80	34	14	34	22	32	50	44	50	42	52	40	42	30	24	40	22	42
9	54	80	20	44	22	28	22	16	30	34	18	26	24	18	0	10	4	10	26	38	34	34	-2	-18	22	27
10	-18	-30	-20	-58	D	D	56	44	D	-4	-6	8	18	18	18	20	22	30	30	16	20	10	12	10	15	22
11	28	22	22	22	28	28	28	46	42	48	56	46	48	56	58	58	58	56	46	36	38	46	46	42	24	42
12	36	40	40	34	40	46	44	50	60	48	M	46	46	50	38	M	M	M	M	M	M	M	M	M	14	44
13	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	50	46	2	48
14	44	36	54	60	60	56	52	46	54	66	30	28	26	30	38	32	38	38	38	30	24	32	20	26	24	40
15	24	6	30	22	16	24	30	34	30	30	26	12	32	34	30	38	40	48	44	32	22	22	38	48	24	30
16	44	42	42	22	30	62	48	78	76	40	30	8	30	32	36	30	30	30	34	44	52	40	48	40	24	40
17	40	40	52	34	D	44	40	50	D	38	D	D	38	0	4	30	44	46	30	32	28	28	40	40	20	35
18	34	36	30	-14	D	D	D	D	D	D	D	D	28	0	18	20*	2	-8	0	8	20	18	18	30	14	19
19	24	18	24	20	28	12	22	48	46	48	32	30	D	D	D	D	62	32	50	36	34	40	38	32	20	34
20	36	30	30	20	20	24	40	50	58	48	56	48	40	42	38	38	40	30	28	26	28	30	30	26	24	36
21	24	30	30	48	40	28	50	44	42	46	42	38	34	32	30	30	D	58	34	30	M	M	42	38	21	38
22	20	10	-2	4	10	14	22	36	52	54	54	38	30	30	30	>118	>115	>116	D	D	D	20	6	>-100	16	27
23	D	D	D	42	8	D	60	D	D	D	40	30	D	60	50	44	42	42	38	34	42	58	30	22	16	40
24	18	26	D	18	4	28	30	60	70	50	40	40	40	38	32	30	30	34	40	30	30	30	30	28	23	34
25	18	22	32	30	44	46	38	54	52	30	30	40	34	38	36	36	38	32	40	42	26	20	22	20	24	34
26	8	8	-8	14	-2	D	D	D	D	D	D	>150	D	D	D	D	>126	126*	90	96	108	92	>110	88	9	70
27	104	96	90	D	>150	>100	50	0*	2	42	70	M	100*	96*	60	50	32	40	44	44	34	26	34	40	20	53
28	26	30	18	6	12	30	28	30	22	36	32	22	26	30	32	42	44	46	32	34	30	52	36	28	24	30
29	30	28	D	24	38	30	30	40	42	40	30	20	28	26	28	30	28	>98	>150	>150	>150	>150	>150	>150	16	31
30	D	D	>150	>126	48	14	20	32	40	30	34	42	38	44	48	44	40	46	38	36	40	32	42	32	20	37
31	40	42	30	40	26	32	46	50	48	44	42	46	40	40	34	34	34	36	36	36	30	28	30	30	24	37
No. of Hours	25	25	23	24	24	22	27	26	23	26	25	26	27	28	28	26	25	26	27	27	25	26	26	25	612	
Mean	31	32	42	36	38	40	47	51	53	48	42	35	39	39	37	37	40	46	41	37	41	39	40	39		41

D: disturbed M: missing *: estimated ?: unknown

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

V-4 K = 0.11 APRIL 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of Hours	Mean
1	1700	1650	1750	1700	1750	1850	1850	2450	2850*	2500	1700	1600	1500	1400	1500	1300	1450	1500	1550	1650	1450	1600	1650	1350	24	1720
2	1550	2050	1800	1600	1900	1700	1900	2200	2050	D	250	1450	1300	1200	1150	1050	1100	1200	1150	1400	1600	1450	1300	1300	23	1460
3	1250	1350	1100	1650	1900	1800	2200	2050	1850	1650	1600	1300	1200	1200	900	650	0	900	-250	350	1000	1200	2150	2050	23	1360
4	2150	1750	1850	2150	2450	2050	2100	1700	1800	1900	1400	1300	1250	1100	1200	1150	1100	1150	1300	1600	1700	1650	1600	1800	24	1630
5	1950	2150	2300	2400	2150	2050	1950	2150	2500	2350	2100	2100	2100	1800	1100	1050	1000	1000	1000	900	950	950	1000	1350	24	1680
6	1200	0	1050	1300	1400	1800	2100	2400	2450	1900	1300	1550	1700	1850	1600	1450	1300	1650	1700	1600	1400	1350	1250	1150	24	1520
7	1350	1300	1300	1350	1350	1300	1250	1300	1350	1350	D	D	D	D	D	D	D	D	D	-150	50	350	300	300	14	1010
8	250	50	D	D	50	0	D	0	-500	-100	D	D	650	550	750	1300	1250	800	750	700	350	100	150	200	17	460
9	450	600	500	-450	-650	-700	-450	350	1600	2050	1500	1100	750	1250	1300	1200	1250	1450	1150	750	1100	1050	900	850	20	1060
10	1500	1650	1650	1800	850	600	100	500	1100	1450	1300	900	700	750	650	600	550	500	900	1500	1100	450	1050	1000	24	930
11	1050	1100	1500	1550	1600	1950	1750	1650	1700	1900	1600	1150	1200	1200	1200	1500	1900	1350	1000	1100	1150	1000	1050	900	24	1320
12	850	800	750	500	D	D	D	D	D	-200	500	150	D	D	D	D	M	M	M	D	D	D	D	D	6	590
13	D	D	D	D	D	D	D	D	>-1800	>-2000	>-1800	-800	50	400	1250	1250	1250	1100	-700	D	750	800	1050	1000	10	890
14	750	1150	1700	1500	1850	1550	1600	2600	>2750	M	M	2400	2000	1650	1150	800	750	1100*	1300	1750	2050	1800	2050	2200	21	1600
15	2200	2100	2000	1850	1700	1800	2300	2600	2800	2200	1800	1600	1250	1350	1600	700	900	D	350	800	D	D	D	-1250	19	1680
16	D	D	D	D	D	-200	100	300	400	0	-350	-350	M	M	-850	>-1250	>-2000	D	D	D	-400	0	450	700	7	280
17	700	800	650	650	1100	1100	1250	1350	1400	1500	1200	1100	1000	1050	800	600	800	750	1000	1050	800	600	900	M	23	960
18	M	M	M	M	M	M	M	M	M	1550	1400	1150	1000	900	900	1100	1050	1100	1350	1450	1200	1850	2150	200	15	1220
19	1900	1800	1450	1500	1750	1800	2000	2100	2250	2350	2050	1400	1350	1200	1300	1100	1150	1000	850	1050	1350	1450	1500	1300	24	1540
20	1150	1200	1300	1200	1150	1400	1200	1550	1600	1350	1150	650	450	700	500	700	650	600	1150	1300	1600	1900	2050	1850	24	1180
21	1850	1600	2250	2050	1750	>2500	>3000	2700	>2900	2400	2150	1650	1350	1000	900	800	800	0*	D	D	>-2000	D	>-800	300	16	1470
22	200	50	-700	200	700	1150	D	D	900	800	750	400	450	400	500	450	500	800	1250	1500	1500	1400	600	650	21	720
23	1250	1400	1450	1500	1600	1450	1350	1350	1000	1450	1450	1550	1300	1400	1250	900	1250	1400	1750	1050	D	700	150	0	23	1220
24	1050	850	0	150	1250	1750	1650	1500	1400	1150	1100	750	700	600	450	500	650	700	800	1100	1450	1800	1600	1850	24	1030
25	2000	2000	2350	2500	2000	2150	1950	2050	1900	1450	950	600	700	400	800	1050	850	800	1050	1250	1300	1050	1000	900	24	1380
26	900	950	950	1050	1000	950	1100	1550	800	-350	-150	-150	0	300	300	300	D	D	D	D	-100	-600	650	-50	14	770
27	D	D	D	-100	-150	D	1050	1500	1200	1350	1650	850	1050	1450	1150	1350	1600	1100	1100	1050	800	1050	1050	1050	18	1190
28	950	1150	950	1100	1450	1200	1000	2200	2050	1150	750	750	700	550	500	400	400	400	750	1250	1650	1750	2000	1800	24	1120
29	1900	1950	2100	2050	2050	2350	2300	2700	2350	2350	1900	1050	700	700	700	700	1000	1100	1200	1150	1200	1300	1300	1350	24	1560
30	1450	1400	1100	850	950	1050	1500	1300	>1000	D	700	850	650	450	300	150	200	150	-150	-250	-450	850	1350	1200	19	860
No. of Hours	26	26	24	24	24	23	23	26	23	23	24	25	27	27	27	27	26	25	22	23	23	26	27	26	597	
Mean	1290	1260	1410	1420	1490	1510	1550	1700	1710	1660	1340	1170	1000	990	940	890	950	930	1110	1180	1200	1130	1190	1100		1245

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

I-4 APRIL 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	40	38	40	36	38	38	40	52	54	52	32	40	40	36	38	32	40	38	36	36	28	36	30	20	24	38
2	32	30	28	28	28	24	32	44	46	D	D	42	30	30	30	28	30	28	22	32	30	24	20	22	22	30
3	26	22	20	34	38	30	60	44	40	36	34	30	30	32	>122	24	D	30	-24	18	18	38	48	40	21	33
4	44	24	34	42	52	44	44	40	50	M	M	M	40*	32	40	40	32	34	40	44	44	42	42	48	21	41
5	50	56	54	58	50	44	40	42	52	50	50	60	62	52	32	32	26	26	22	20	20	22	22	28	24	40
6	24	D	40	30	34	34	40	52	54	30	20	28	32	36	36	34	30	40	30	20	30	28	28	30	23	33
7	38	30	32	30	32	20	24	22	26	24	D	D	0	D	D	D	D	D	D	-12	24	44	52	50	15	30
8	58	48	D	D	D	42	D	D	D	-32	D	24	60	48	40	60	50	28	28	30	30	38	40	38	16	41
9	50	78	70	70	80	40	-2	20	42	40	32	28	22	40	42	34	38	36	20	20	32	24	22	28	23	39
10	48	56	58	66	28	20	-6	30	34	54	38	26	24	32	30	28	24	18	26	30	2	12	30	20	23	32
11	28	26	20	26	22	22	20	32	36	48	46	44	44	44	44	48	52	30	22	30	30	30	28	20	24	33
12	20	22	22	20	D	D	D	D	D	64	60	36	D	D	D	D	D	D	D	D	D	D	D	D	7	35
13	D	D	D	D	-2*	D	D	D	D	-6*	D	76*	76*	72*	84	48	32	28	D	D	80	58	56	50	11	60
14	60	74	76	62	70	56	42	58	58	M	M	78	62	58	48	38	32	44*	48	60	50	48	54	58	22	56
15	60	50	58	50	52	52	70	86	90	72	72	54	48	48	42	22	D	D	28	68*	D	D	D	D	18	57
16	D	D	D	D	D	56	84	74	88	62	54	62	M	M	42*	78*	D	D	D	D	104*	50	52	48	13	65
17	30	36	38	46	64	46	42	42	48	46	34	34	30	30	10*	14	22	22	38	62	68	68	70	M	23	41
18	M	M	M	M	M	M	M	M	M	M	M	44	30	26	26	30	32	30	48	46	38	54	54	40	13	38
19	40	42	40	50	58	64	56	50	60	78	70	58	54	40	40	34	36	28	28	26	32	34	28	22	24	44
20	20	26	30	34	30	40	30	54	42	30	18	10	18	12	10	34	38	48	44	40	30	30	8	12	24	29
21	44	28	34	40	32	62	42	38	50	30	48	48	44	30	26	26	26	>-18	D	D	>-100	D	>120	118	18	43
22	118	124	84	72	54	42	30	D	D	D	22	20	8	10	18	20	18	18	24	34	32	32	24	10	21	39
23	32	26	26	30	44	46	40	30	18	D	50	30	30	22	24	18	36	38	46	10	30	20	4	2	23	28
24	58	30	-2	10	54	60	40	36	36	36	38	22	22	20	18	14	12	20	22	34	44	56	50	44	23	34
25	50	60	64	60	44	50	56	60	58	60	40	24	26	16	32	44	42	34	30	32	22	20	18	16	24	39
26	20	24	22	30	24	22	20	40	34*	D	D	>130	140*	90*	40	54	D	D	D	D	126	118	138*	140*	17	64
27	D	D	D	D	D	D	D	92	50	60	30	4	28	22	22	40	42	26	24	28	24	26	22	24	17	33
28	D	28	28	30	32	22	16	52	28	10	18	28	58	56	36	24	18	16	30	40	42	42	46	42	23	32
29	58	62	72	74	70	74	70	68	58	64	58	94*	>150	92	D	D	120	92	56	36	32	36	34	34	21	64
30	38	34	30	30	32	30	42	34	42*	>150	>72	30	30	20	16	76*	84	38	12	-14	-22	30	30	36	20	36
No. of hours	25	25	24	25	24	26	23	25	25	20	21	27	27	27	26	27	24	24	23	23	26	27	27	27	598	
Mean	43	43	42	42	44	42	43	48	48	47	41	40	40	39	33	36	38	33	31	35	40	39	39	39		40

D: disturbed M: missing *: estimated ?: unknown

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

V-5 K = 0.11 MAY 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of Hours	Mean
1	1100	850	900	150	-450	850	1600	2050	1700	1400	950	600	-50	-150	-250	-100	200	150	350	400	400	600	350	-50	18	810
2	0	500	550	600	900	1200	1300	1400	1650	1200	850	700	450	0	150	150	350	400	500	800	900	950	900	800	24	720
3	750	900	1000	1000	950	950	1350	1500	1300	800	600	600	750	600	450	350	400	400	500	600	400	550	550	D	23	750
4	D	450	350	150	250	600	600	650	850	650	500	600	400	350	300	100	100	300	550	700	900	800	1000	1000	23	530
5	1100	650	1000	900	1150	1250	1600	1450	1200	1000	850	750	450	300	150	-200	-200	50	300	500	500	500	700	600	22	770
6	600	1000	1250	1350	1300	1300	1650	1600	2000	1500	1100	400	500	1000	1150	950	700	550	600	1100	1100	1050	900	1000	24	1070
7	1150	1300	1550	1700	1550	1450	1700	2200	2150	1900	1750	1400	1050	700	1100	800	400	250	350	650	700	800	900	800	24	1180
8	750	650	1000	1000	400	450	450	800	400	750	750	550	500	D	D	500	750	1100	1100	1100	900	850	800	700	22	740
9	600	600	600	800	750	1000	D	D	D	400	750	750	600	600	650	650	600	650	200	300	M	M	M	M	17	620
10	M	M	M	M	M	M	M	M	M	D	750	1000	1600	2000	1600	1450	1350	950	1000	1400	1250	750	550	400	14	1150
11	200	D	D	D	450	500	-100	200	1000	1200	1000	800	450	600	450	600	600	650	800	1000	1000	1050	1000	1100	20	730
12	1100	1050	1000	900	650	1200	1550	1650	1400	1850	1800	1250	1150	1350	1250	1900	1100	900	950	900	550	D	700	650	23	1170
13	150	-450	-400	-500	-1000	-50	1000	1100	1300	500	100	100	150	100	150	150	300	300	450	M	800	850	1000	950	18	520
14	850	900	1200	1050	650	400	600	1100	1750	1600	1000	450	0	100	350	300	100	100	300	500	1000	1000	1000	800	24	710
15	900	950	1100	650	950	1100	1250	1300	1150	900	800	650	600	700	700	700	550	450	350	600	650	850	600	700	24	800
16	650	450	500	550	300	50	350	400	600	600	600	300	450	550	450	450	500	550	700	D	400	D	D	D	20	460
17	D	D	0	-150	100	50	150	300	550	750	850	650	500	200	150	50	-450	650	-300	-550	-50	-50	M	M	14	350
18	M	M	M	M	M	M	M	M	-750	-800	-1150	-1000	-1000	150	350	-50	250	300	550	650	700	700	450	300	10	440
19	150	-150	550	700	600	500	1150	1400	550	750	700	700	500	450	D	D	1350	800	750	700	600	600	650	450	21	700
20	250	200	50	100	100	100	400	100	600	500	400	450	600	450	350	-100	100	-150	-350	-300	-450	800	1050	600	19	380
21	600	800	1550	1850	1750	1700	1150	1400	1000	750	650	550	500	550	550	500	500	300	300	300	400	450	300	250	24	780
22	300	350	400	400	250	200	250	300	400	300	-550	-200	650	600	500	450	400	400	500	600	850	550	800	850	22	470
23	700	750	800	1000	1100	750	300	350	450	600	500	400	200	200	150	0	100	50	300	250	-50	400	400	650	23	450
24	700	850	850	750	700	800	900	1100	1100	850	500	400	450	500	550	600	600	600	800	700	800	800	900	1050	24	740
25	750	600	650	700	700	750	950	1000	950	1000	1050	700	550	200	400	350	300	500	700	550	550	550	600	500	24	650
26	250	200	50	250	250	250	700	950	800	750	800	750	550	600	650	D	D	D	D	D	D	400	500	550	18	510
27	D	D	500*	D	D	-100	D	700	850	1350	D	700	900	D	300	D	100	750	700	550	500	400	550	600	15	630
28	450	300	350	350	350	500	750	800	600	600	500	500	600	600	450	350	300	100	250	300	450	500	550	650	24	460
29	500	300	400	350	300	450	650	600	500	600	550	550	450	450	450	500	550	600	500	450	450	400	350	400	24	470
30	500	550	650	650	650	700	800	650	750	850	800	750	700	600	500	400	300	450	500	450	500	700	600	500	24	600
31	500	600	700	750	600	500	550	600	650	550	450	550	450	D	D	-950	300	800	550	700	650	450	300	400	21	550
No. of Hours	26	24	27	25	26	27	26	28	28	29	28	29	29	27	27	23	28	29	28	26	26	27	28	26	647	
Mean	600	660	720	750	680	720	910	990	1010	910	780	640	580	540	530	530	470	480	550	640	690	680	680	660		685

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

I-5 MAY 1965

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	34	30	36	-6	-8	28	44	66	58	56	42	38	48	D	D	82	22	10	20	10	12	20	10	32	20	35
2	14	38	26	24	36	32	24	30	40	24	4	16	10	-8	2	0	10	12	20	20	20	20	16	18	23	20
3	20	24	24	26	22	22	32	30	32	44	34	42	20	20	16	20	20	30	50	20	10	20	28	D	23	26
4	D	42	66	54	20	26	20	26	30	26	12	18	20	8	8	0	20	10	22	18	20	14	22	24	23	23
5	26	4	26	20	28	30	38	30	30	40	54	58	120	>144	>150	>130	30	18	12	10	12	14	20	20	21	30
6	30	34	30	22	20	26	28	24	38	30	18	6	20	28	36	32	24	16	18	30	20	20	20	28	24	25
7	30	30	30	30	30	30	30	40	48	58	60	54	30	34	66	60	114	M	52	30	30	30	30	30	23	42
8	30	28	42	38	20	22	22	22	12	28	30	24	20	D	D	70	32	30	30	24	26	38	48	62	22	32
9	84	82	72	62	64	>80	D	D	D	D	52	30	20	20	20	18	M	M	0	M	M	M	M	M	12	44
10	M	M	M	M	M	M	M	M	M	D	14	22	30	46	22	22	22	0	24	30	28	12	6	6	14	20
11	4*	D	D	D	56	94	102	112	88	60	44	34	30	28	32	42	32	32	30	40	40	40	40	44	21	49
12	42	50	54	54	48	50	48	44	48	72	64	58	70	88	106	54	68	56	54	28	20	D	>88	30	22	55
13	46	22	16	-16	-26	30	72	58	40	30	12	18	20	16	18	12	20	30	30	M	26	30	32	40	21	29
14	42	44	32	8	8	20*	52	32	38	32	26	4	-8	0	8	6	-6	-2	4	12	26	18	18	16	21	21
15	30	32	34	20	48	50	50	52	54	42	42	40	42	40	44	40	30	20	10	18	18	28	16	24	24	34
16	20	20	54	22	2	-4	14	14	26	22	24	8	18	30	50	58	44	28	38	D	14	D	D	D	19	27
17	D	D	0	0*	>118	102	112	118	106	88	62	42	30	60	112	68	88	86	12	-84 *	4	-8	4	30	19	59
18	62	76	64	42	>-78	>-96	-28	D	D	D	D	D	D	78*	D	52	D	88	62	78	80	90	76	82	13	72
19	78	84	112	116	114	104	140*	120	130	106	60	60	22	28	D	D	64	32	42	26	20	20	24	38	22	70
20	20	>-100	>-100	>-70	-10	20	42	14	52	34	26	28	42	34	24	-2*	18	-6	-8	-28	-14	44	24	12	15	29
21	30	36	34	30	20	12	30	34	24	40	32	30	34	30	30	30	28	18	20	16	22	20	14	24	24	27
22	26	30	24	24	24	28	>146	82	66	98	>150	>150	>150	84	46	42	36	40	40	32	34	20	48	36	20	43
23	42	50	42	36	38	40	22	38	34	40	34	28	16	18	16	4	4	2	26	18	-8	22	18	30	23	27
24	42	64	70	70	60	66	54	60	60	46	30	28	32	38	38	42	50	46	48	34	30	28	32	40	24	46
25	36	30	38	32	46	46	52	38	44	56	54	48	72	>150	>144	118	42	50	58	42	42	40	60*	108*	22	52
26	>150	>150	>150	>150	>150	>150	>150	>140	84	78	56	10	30	40	D	D	D	D	D	D	D	>150	>150	>150	6	50
27	D	D	>150	D	D	>150	D	34	>150	>150	D	>150	>150	>150	>150	D	D	>150	>150	>150	>150	>150	>150	>150	1	34
28	>150	>150	>150	D	>150	>150	>150	104	56	38	102*	106	80	80	122*	132*	70	28	22	26	40	34	34	42	17	66
29	36	34	50	62	70	84	82	60	90	60	36	32	30	32	38	40	38	40	32	26	34	54	124	>150	23	51
30	>150	>150	>150	>150	>150	>150	>150	>150	>128	66	52	40	34	40	36	26	18	18	18	18	22	34	40	48	15	34
31	52	104	>150	>150	>150	>144	68	48	38	48	56	30	32	D	D	D	>150	>150	140*	>146	>150	>150	>150	>150	10	61
No. of hours	24	23	23	21	20	22	23	26	26	27	28	28	27	24	22	25	25	24	28	23	25	24	25	24	587	
Mean	36	43	42	38	39	44	51	51	53	50	40	34	36	38	40	43	38	31	33	26	26	30	32	36		39

D: disturbed M: missing *: estimated ?: unknown

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

JUNE 1965

V-6

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of Hours	Mean
1	600	600	550	600	700	1000	1150	1150	1150	800	700	400	350	350	300	150	200	100	150	250	350	400	350	400	24	530
2	400	450	400	350	450	500	750	750	850	200	300	-250	50	350	300	300	200	250	250	M	M	-150	-400	-50	18	390
3	-300	-100	300	850	650	800	1350	1350	750	850	350	350	150	250	200	150	500	550	250	150	650	650	950	1050	22	600
4	900	650	500	650	650	800	1100	1200	950	550	400	0	100	150	150	150	150	250	400	600	600	600	600	600	24	530
5	550	450	450	450	450	500	650	700	650	500	450	100	-100	-100	-100	50	150	200	450	350	200	250	200	200	21	380
6	150	150	200	200	200	300	300	300	400	500	300	150	300	400	350	150	300	M	M	M	M	400	300	200	20	280
7	200	200	200	100	100	100	D	D	150	500	750	D	1600	1050	1300	950	400	D	>-1100	D	0	-50	-50	0	16	475
8	200	-50	-200	-250	-450	-400	-250	-150	-50	350	500	500	600	600	500	550	600	500	500	600	550	450	500	450	16	500
9	350	300	200	150	200	250	250	250	250	400	650	600	600	550	850	800	950	750	1000	1150	1400	600	400	500	24	560
10	300	250	400	500	600	800	550	800	650	500	-50	350	D	D	900	750	550	600	350	600	650	800	950	750	21	600
11	700	700	750	750	800	1000	1300	1350	1150	750	650	700	650	600	550	500	550	400	450	600	700	800	700	800	24	750
12	850	850	700	450	550	700	750	800	950	1000	1000	850	650	D	D	D	850	1100	1000	550	300	D	D	-200	18	770
13	-350	-200	-250	-250	-450	-250	-200	-150	200	200	600	400	D	?	?	?	?	?	?	?	?	?	?	?	4	350
14	?	?	?	?	?	?	400	400	400	400	600	700	800	650	750	800	1150	1050	900	950	950	1000	1100	900	18	770
15	750	800	750	650	650	750	1050	1350	1300	1100	1050	900	700	900	900	900	950	950	800	700	850	950	950	950	24	900
16	1250	1000	1150	1100	1100	1700	2050	2500	2100	1700	1300	950	800	800	750	650	600	500	450	400	700	900	900	1150	24	1100
17	1600	1100	1050	1200	1350	1200	950	1500	1700	1000	1350	1400	1200	1150	350	150	200	350	D	1150*	150*	D	450	400	22	950
18	200	100	250	100	150	100	200	550	650	800	1000	1050	900	650	600	700	650	700	700	800	900	D	150	550	23	540
19	400	350	350	250	300	400	650	1150	1300	1300	1200	1250	1100	800	750	750	650	700	700	800	750	700	700	700	24	750
20	750	750	700	600	400	600	650	700	700	800	800	800	700	750	750	650	700	700	800	750	700	700	700	700	24	700
21	750	650	700	650	650	650	D	D	800	1050	950	900	650	600	650	550	700	900	950	900	850	700	500	600	22	740
22	850	950	800	700	650	900	1100	1100	1150	1150	1250	1200	1150	1000	1000	1000	850	900	900	950	850	850	750	750	24	950
23	700	700	800	750	700	700	800	1150	1100	1100	1000	2000*	2250*	1150	850	400	850	1550	1100	850	750	700	600	700	24	970
24	650	400	350	550	550	650	850	800	700	850	800	700	750	650	700	900	750	700	850	950	950	700	800	800	24	720
25	800	800	850	850	850	1000	1300	1200	850	700	600	600	600	650	700	750	700	700	700	800	850	950	1150	1200	24	840
26	M	M	M	M	M	M	M	M	M	M	850	600	650	600	500	450	550	500	500	600	800	1000	750	800	14	650
27	650	600	D	850	1000	1200	1000	950	1000	1000	850	800	750	600	550	500	600	600	550	550	850	650	600	550	23	750
28	600	550	550	550	600	700	750	750	950	750	800	900	900	100*	200	D	800	850	900	1050	850	D	350*	500	22	680
29	550	550	300	150	150	250	300	550	700	850	700	D	900	750	800	800	650	950	1250	1400	1250	950	1200	1100	23	740
30	1050	1550	1400	1300	1450	1600	1900	1850	1650	1100	1150	1250	750	500	550	400	300	550	900	1000	1450	1450	1300	1400	24	1160
No. of Hours	26	25	25	26	26	26	25	25	28	29	29	27	27	26	27	27	29	27	26	26	27	23	26	27	635	
Mean	640	620	590	590	610	740	880	1010	900	780	790	760	760	640	620	540	580	660	690	710	740	750	700	690		710

D: disturbed M: missing *: estimated ?: unknown

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

JUNE 1965

I-6

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	>150	>150	>150	>150	>150	>150	>150	>150	68	46	36	24	20	24	20	12	18	8	12	18	14	52	90	134	16	37
2	>150	>150	>150	>150	>150	>150	>150	>126	36	26	30	26	>150	>150	M	M	M	M	M	M	M	4	6	4	7	19
3	20	56	>134	>150	>150	>150	>150	>150	>150	>150	>150	M	M	M	M	M	102	90	66	80	>140	>150	>150	>150	6	69
4	>150	>150	>150	>150	>150	>150	>150	>140	102	40	24	30	28	M	52	22	22	30	40	36	34	30	40	46	15	38
5	70	>140	>150	>150	>150	>150	>150	104*	48	34	30	52	50	46	46	56	54	30	38	22	20	22	20	18	18	42
6	20	18	20	26	36	68	66	52	42	34	20	16	20	28	18	14	24	M	M	M	M	24	18	20	20	29
7	14	18	20	50	72	70	D	D	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	6	41
8	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>120	>150	>150	>140	106	96	58	72	>116	>150	>150	>150	>150	4	83
9	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	M	M	M	0	0
10	M	M	M	M	M	M	M	M	M	34	D	84	D	>150	>136	52	30	30	22	30	44	52	100	108	11	53
11	130	>150	>150	>150	>150	>150	>138	62	42	38	40	38	40	58	54	28	40	22	22	30	48	130	64	78	18	54
12	>140	>150	>150	>150	>150	>150	>150	>150	>150	>124	76	50	86	D	D	D	>150	>150	106	84	>140	D	>150	>150	5	80
13	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	130*	68	34	74	>150	>150	4	76
14	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>140	118	>150	>150	>150	>150	>150	>150	1	118
15	>150	>150	>150	>150	>150	>150	>150	>150	>150	D	94	38	30	40	30	30	32	30	28	22	36	40	44	44	14	38
16	70	>150	>150	>150	>150	>150	>150	>140	44	32	28	22	20	26	24	20	16	10	8	M	M	36	26	40	15	28
17	56	44	34	30	D	D	>140	80	84	14	30	28	30	22	-8	-12	-8	-2	D	D	D	D	20	60*	13	41
18	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>130	82	42	30	34	32	34	38	72	>140	>150	>150	>150	8	45
19	>150	>150	>150	>150	>150	>150	>150	>150	>150	92	76	64	54	38	32	28	28	26	24	26	24	30	86*	>120	14	45
20	74	>130	>150	>150	>150	>150	94	80	106	106	80	44	26	36	44	48	44	44	48	32	24	26	26	32	19	53
21	40	48	52	40	40	38	D	D	>150	>150	>150	>140	130	102	96	134*	132	>144	100*	50	102	>150	>150	>150	14	79
22	>130	82	76	54	44	52	48	38	40	40	42	38	40	48	52	78	86	60	42	34	18	20	16	20	23	46
23	18	22	28	24	18	18	20	30	28	30	26	D	60	28	22	D	84	72	88	140*	>150	>118	40	60	20	43
24	30	30	22	38	50	32	48	58	54	38	46	48	48	48	40	40	52	56	44	42	40	38	26	26	24	41
25	32	42	46	46	42	38	48	38	36	40	40	40	38	44	40	42	32	32	32	36	34	M	M	M	21	39
26	M	M	M	M	M	M	M	M	M	M	34	20	28	28	22	22	28	20	18	14	20	32	20	28	14	24
27	24	24	D	48	50	D	D	42*	48	44	40	38	40	48	40	30	24	30	24	14	16	22	16	16	21	32
28	20	20	22	24	26	30	26	30	40*	40	46	50	54	>110	>150	D	90*	>108	94	66	64	D	28*	40	19	43
29	28	26	22	88	>150	>150	>130	76	40	40	38	D	42	38	32	30	18	24	40	56	40	28	32	26	20	38
30	38	60*	42	32	34	32	40	40	30	16	20	20	18	8	16	6	2	18	24	34	42	40	34	42	24	29
No. of hours	16	13	11	12	10	9	8	13	17	19	21	20	22	19	19	19	23	21	24	22	18	18	20	19	414	
Mean	43	38	35	42	41	42	49	56	52	41	43	38	45	40	37	42	47	40	48	46	36	39	38	44		43

D: disturbed M: missing *: estimated ?: unknown

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

January 1965

1. Clear.
2. Clear night then generally cloudy.
3. Partly cloudy.
4. Few clouds.
5. Cloudy at night then overcast with light snow.
6. Partly cloudy.
7. Clear becoming cloudy in evening.
8. Clear night becoming overcast. Light to moderate rain late evening.
9. Overcast with rain during the night then clearing slowly.
10. Clear night then generally cloudy.
11. Generally cloudy. Occasional light snow.
12. Overcast with snow till noon then cloudy.
13. Overcast. Snow mid P.M. till late evening.
14. Generally cloudy becoming clear in evening. Very cold.
15. Clear and very cold.
16. Clear and very cold.
17. Clear and cold becoming overcast in evening.
18. Variable sky. Occasional light snow.
19. Clear night then increasing cloudiness becoming overcast with snow late evening.
20. Overcast with snow all day.
21. Cloudy P.M. Clear at other periods.
22. Variable cloudiness. Light snow A.M.
23. Overcast.
24. Overcast. Snow beginning in the morning and lasting all day. Occasional ice pellets P.M. and evening.
25. Overcast with light freezing drizzle and snow pellets during the night then partly cloudy.
26. Cloudy night then overcast. Snow P.M. and evening.
27. Overcast and snow during the night then partly cloudy.
28. Overcast with snow A.M. till mid-P.M.. Clear at other periods.
29. Clear.
30. Few clouds.
31. Variable cloudiness early A.M. All other periods: clear.

February 1965

1. Clear night then overcast. Snow beginning at noon and lasting rest of the day.
2. Overcast with snow during the night then clear.
3. Variable sky. Snowshowers A.M. and P.M.
4. Cloudy with snowshowers P.M.. Partly cloudy at other periods.
5. Clear night then overcast. Snow beginning at noon and lasting rest of the day.
6. Overcast with snow during the night. Cloudy at other periods.
7. Overcast. Freezing drizzle during the early night. Rain mid-P.M. lasting rest of the day.
8. Overcast with drizzle till noon. Rain P.M.. Clearing in evening.
9. Few clouds.
10. Overcast. Snow, freezing rain and sleet A.M. till mid-P.M.
11. Cloudy during the night then partly cloudy.
12. Cloudy or overcast. Freezing rain and ice pellets early A.M.. Rainshowers in evening.
13. Cloudy with snowshower early A.M. Clear at other periods.
14. Clear.
15. Variable cloudiness.
16. Overcast with snow during the night then gradually clearing.
17. Few clouds all day becoming cloudy late evening.
18. Overcast with snow during the night then cloudy.
19. Partly cloudy.
20. Clear except partly cloudy in evening.
21. Overcast. Snow A.M. and late evening.
22. Generally partly cloudy.
23. Clear.
24. Partly cloudy till noon then cloudy.
25. Overcast all day. Drizzle late P.M. and evening.
26. Generally cloudy with frequent snowshowers all day.
27. Clear.
28. Overcast . Very light snow at night then clearing.

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

March 1965

1. Mostly cloudy. Clearing in evening.
2. Clouding over late P.M. Cloudy rest of day.
3. Clearing early A.M. Sunny.
4. Mostly sunny. Haze and smoke early A.M.
5. Variable cloudiness.
6. Cloudy to overcast. Very light rain showers P.M. and late evening.
7. Cloudy. Very light shower early night.
8. Sunny.
9. Cloudy A.M., P.M. and evening. Light snow P.M.
10. Cloudy A.M. and evening. Sunny P.M. Light snowflurry late evening.
11. Sunny.
12. Sunny.
13. Sunny.
14. Cloudy early night. Sunny rest of day.
15. Sunny.
16. Sunny.
17. Sunny. Clouding over late P.M.
18. Cloudy. Breaks in evening. Flurries and showers P.M. Light snow during the night.
19. Cloudy clearing mid-P.M. Flurries early P.M.
20. Clear night and early A.M. Cloudy late A.M. and P.M. Few breaks in evening.
21. Few clouds night and A.M. Cloudy P.M. Clearing in evening. Flurry P.M.
22. Clouding over P.M. Cloudy evening. Light snow from late P.M.
23. Cloudy until mid A.M. Few Clouds rest of day. Light snow early night.
24. Sunny.
25. Sunny. Cloudy in evening.
26. Overcast. Snow beginning early A.M.
27. Clearing A. M. Light snow during night. Sunny rest of
28. Sunny. day.
29. Cloudy to overcast. Light snow in evening.
30. Clearing early A.M. Light snow early night.
31. Sunny.

April 1965

1. Sunny
2. Sunny
3. Sunny
4. Sunny . Few gusts P.M.
5. Sunny
6. Sunny
7. Cloudy to overcast. Rain late A.M. and P.M. Gusty winds P.M.
8. Overcast all day. Rain during the night and morning. Few gusts A.M.
9. Cloudy to overcast.
10. Sunny.
11. Few clouds night and A.M. Cloudy rest of day.
12. Overcast all day. Rain early A.M.P.M. and evening. Gusty winds.
13. Mostly overcast. Rain drizzle and snow night and early A.M. Showers evening. Few gusts.
14. Sunny. Few gusts P.M.
15. Clouding over A.M. Overcast rest of day. Rain P.M. and evening.
16. Overcast all day. Rain all day ending early evening.
17. Cloudy to overcast. Clearing late evening. Very light snowflurry P.M.
18. Clear night. Clouding over A.M. Clearing in evening.
19. Sunny.
20. Cloudy P.M. Few clouds rest of day.
21. Clouding over P.M. Rain in evening.
22. Cloudy night. Sunny rest of day.
23. Cloudy to overcast all day. Few breaks in evening. Very light snowflurries A.M.
24. Sunny.
25. Sunny.
26. Overcast all day. Light rain A.M. and evening.
27. Cloudy to overcast. Few breaks late P.M. and evening.
28. Sunny. Few gusts P.M.
29. Sunny. Gusty winds P.M. and evening.
30. Variable cloudiness A.M. Sunny P.M. Gusty winds P.M. Clear evening.

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

May 1965

1. Clouding over late P.M. Gusty winds P.M.
2. Sunny.
3. Variable cloudiness. Light rainshowers early night.
4. Cloudy night. Sunny rest of day. Few gusts P.M.
5. Sunny. Gusty winds P.M.
6. Sunny.
7. Cloudy A.M. and early P.M. Sunny rest of day.
8. Cloudy clearing late P.M. Rainshowers early P.M.
9. Cloudy. Showers and thundershowers evening.
10. Cloudy to overcast. Light rain during the night.
11. Cloudy clearing in evening. Thundershower early night. Gusty winds.
12. Sunny clouding over in evening. Very light shower evening. Gusty winds P.M.
13. Clearing early morning. Sunny rest of day.
14. Sunny clouding over late evening.
15. Clearing during the night. Sunny A.M. and P.M. Clouding over in evening.
16. Cloudy. Few breaks P.M. Thundershower late evening.
17. Overcast all day. Showers and drizzle P.M. and evening Gusty winds P.M.
18. Overcast all day. Drizzle during the night and early A.M. Light showers P.M.
19. Cloudy clearing late P.M.
20. Cloudy periods A.M. Sunny rest of day. Few gusts PM.
21. Sunny.
22. Clouding over during the night. Clearing early afternoon. Rainshower A.M. Gusty winds.
23. Sunny.
24. Sunny.
25. Variable cloudiness. Few gusts P.M. and evening.
26. Variable cloudiness. Thundershowers late P.M. and early evening. Hail late P.M.
27. Cloudy clearing late P.M. Thundershower early A.M. Light rain P.M. Gusty winds late evening.
28. Clouding over early A.M. Very light shower late P.M. Gusty winds.
29. Cloudy all day. Very light showers late evening.
30. Variable cloudiness all day.
31. Variable cloudiness all day. Thundershower P.M.

June 1965

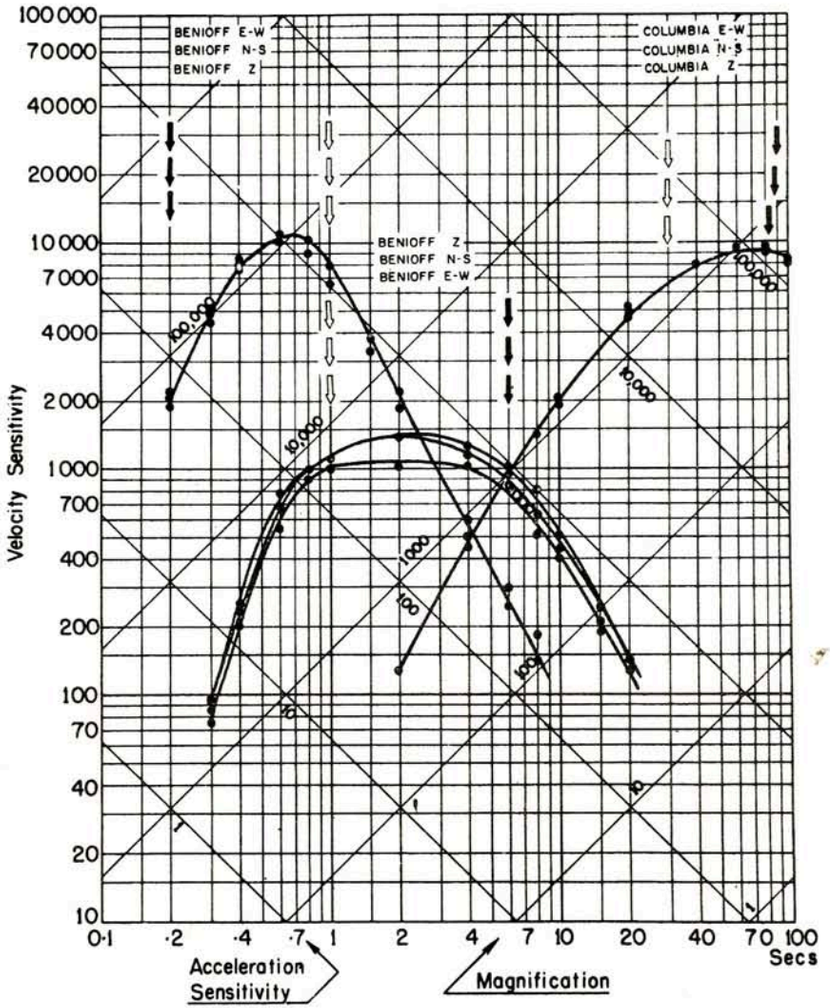
1. Cloudy periods A.M. Cloudy P.M.
2. Cloudy P.M. Sunny rest of day. Very light shower P.M.
3. Cloudy late A.M. and early P.M. Sunny rest of day.
4. Sunny.
5. Sunny. Gusty winds P.M.
6. Cloudy. Few breaks evening. Very light shower A.M.
7. Cloudy to overcast. Thundershower A.M.
8. Cloudy during the night. Sunny rest of day. Light showers early A.M.
9. Variable cloudiness. Clearing in the evening. Few gusts P.M.
10. Cloudy A.M. and early P.M. Sunny rest of day. Showers early P.M. Few gusts P.M.
11. Sunny. Gusty winds P.M.
12. Clouding over early P.M. Thundershowers P.M. and evening. Few gusts P.M.
13. Overcast all day. Showers A.M. and early P.M. Drizzle P.M. Few gusts during the night.
14. Cloudy clearing early evening. Light shower early AM.
15. Cloudy periods P.M.
16. Sunny.
17. Cloudy all day.
18. Variable cloudiness. Few gusts P.M. Thundershowers evening.
19. Sunny.
20. Sunny. Few cloudy periods in evening. Gusty winds.
21. Clearing A.M. Sunny rest of day. Showers A.M. Gusty winds.
22. Sunny. Gusty Winds P.M.
23. Cloudy to overcast all day. Light shower P.M.
24. Cloudy clearing late P.M. Gusty winds till mid P.M.
25. Sunny. Gusty winds A.M. and early P.M.
26. Sunny.
27. Sunny.
28. Sunny at first. High clouds P.M. and evening. Gusty winds P.M. and evening.
29. Cloudy all day. Light shower A.M. Few gusts early A.M.
30. Cloudy clearing mid-P.M.

RAYONNEMENT SOLAIRE 1965

DATE	Rayonnement total						Rayonnement diffus					
	Janvier	Février	Mars	Avril	Mai	Juin	Janvier	Février	Mars	Avril	Mai	Juin
1	185	100	193	524	612	552	51	99	187	168	142	315
2	89	230	374	561	631	545	89	118	77	130	136	336
3	189	187	389	581	493	499	65	152	82	97	253	309
4	188	165	366	582	621	663	43	153	104	95	145	170
5	77	134	334	538	645	687	76	123	141	185	124	166
6	165	146	240	564	645	383	78	142	198	112	118	319
7	172	101	129	150	451	411	68	98	128	138	333	320
8	47	32	373	114	217	519	47	27	109	108	209	274
9	123	289	210	294	339	478	72	88	169	231	228	354
10	126	25	323	559	335	460	112	24	169	M	311	226
11	110	308	439	392	405	668	95	76	94	M	232	226
12	107	40	464	88	658	509	74	35	79	M	146	197
13	63	309	423	142	646	102	63	78	156	M	139	101
14	184	318	446	574	661	239	87	69	109	M	136	231
15	102	242	459	319	627	489	92	143	91	M	143	286
16	180	280	425	52	394	693	86	87	121	51	278	168
17	205	319	416	379	177	446	60	72	131	238	164	321E
18	144	195	79	345	66	574	116	126	78	229	64	254E
19	170	295	389	588	294	663	109	184	247	128	244	190
20	69	358	369	358	538	672	67	79	263	251	241	206
21	216	98	470	464	694	554	61	98	153	227	132	315
22	99	364	357	623	337	702	81	99	189	120	212	157
23	115	356	393	252	727	276	113	114	228	247	129	253
24	52	285	497	615	693	412	50	179	124	136	157	262
25	190	63	505	629	486	682	91	63	99	118	328	141
26	67	235	101	85	430	722	66	209	100	80	293	111
27	170	382	551	393	234	667	89	82	131	293	215	181
28	129	362	486	618	447	559	122	129	184	137	263	299
29	253		231	612	431	327	76		231	142	289	258
30	250		554	562	586	549	72		138	189	256	319
31	236		572		399		105		115		307	
Moyenne	143	222	374	419	482	523	81	105	143	160	204	242

Unité de mesure: 1 langley (= 1 calorie-gramme par cm^2) M: manquant E: une (plusieurs) heure (s) durant le jour fut (furent) estimée (s).

STATION : MONTREAL



ϕ = 45°30'09"N λ = 73°37'23"W Altitude 112M

Foundation : Ordovician Limestone (Trenton)

T_s ⇕ T_g ⇕

Date of Calibration: April - 1962
Feb. - 1964

BENIOFF'S		BENIOFF'S		COLUMBIA'S	
S.P. - Z	Apr. 4	I.P. - Z	Apr. 4	L.P. - Z.	Feb. 13
S.P.H. - N.S.	Apr. 4	I.P.H. - N.S.	Apr. 4	L.P.H. - N.S.	Feb. 12
S.P.H. - E.W.	Apr. 5	I.P.H. - E.W.	Apr. 5	L.P.H. - E.W.	Feb. 11

BULLETIN SEISMOLOGIQUE

INSTRUMENTS DE LA STATION

3 séismographes Benioff de 100 kg. avec 6 galvanomètres.
t_o=1 sec., t_g=0.2 sec. pour ZNE. Enregistreur, 60mm/min.
t_g=6 sec. pour Z'N'E'. Enregistreur, 30mm/min.
3 séismographes Sprengnether, type Columbia Z"N"E".
Avant le 13 février 1964, t_o=17 sec., t_g=100 sec.
Après le 13 février 1964, t_o=30 sec., t_g=100 sec.pour Z"N"E".
Enregistreur, 15mm/min.

Le 13 février 1964, l'amplification des Columbia a été augmentée. Cf. graphiques.

Dans notre bulletin, nous indiquons toujours sur quel séismogramme chaque phase a été lue en ajoutant après cette phase une des lettres suivantes:

ZNE pour celles données par les Benioff avec galvanomètres de 02.sec.

Z'N'E' pour celles données par les Benioff avec galvanomètres de 6 sec.

Z"N"E" pour celles données par les Columbia avec galvanomètres de 100 sec.

L'heure est inscrite à chaque minute sur les séismogrammes par la Société Radio-Canada au moyen d'une ligne téléphonique avec une précision de $\pm$ 0.1 sec. à l'année. Cette Société nous fournit en même temps un courant alternatif de 60 cycles de fréquence absolument constante, pour les moteurs des enregistreurs. De plus, le signal horaire de l'Observatoire du Dominion relayé par le poste local de radio CBF, à 01 00 00 p.m. s'enregistre automatiquement sur tous les séismogrammes.

Les positions géographiques des épicentres ainsi que l'heure d'origine et la profondeur sont toujours empruntées à U.S.C.G.S. pour les séismes éloignés. Pour les locaux, ces données nous sont fournies par l'Observatoire du Dominion, et cela est indiqué chaque fois. Pour sauver de l'espace, nous ne mentionnons pas U.S.C.G.S. à chaque séisme.

Nous indiquons aussi quelques fois, après une phase, sur la ligne suivante, la période de l'onde du sol et son amplitude en microns.

Nous tenons à exprimer publiquement notre reconnaissance à l'Observatoire du Dominion qui envoie chaque année ses techniciens refaire l'étalonnage complet de tous les séismographes et pour toute la gamme des fréquences, par la méthode de Willmore.

M. Buist, S.J.

1 jan. 35.7 N., 4.4 E.
Algeria

h	about 10 km.		
H	21	38	29.2
iPZ	21	48	22.0 c

2 jan. 19.1 N., 145.4 E.
Mariana Isl.

h	about 142 km.		
H	13	44	18.9
eLN"	14	28	

3 jan. 60.2 N., 151.2 W.
Kenai Penin. Alaska

h	about 93 km.		
H	23	13	50.4
iPZ	23	22	07.5 c

5 jan. 20.3 S., 174.1 W.
Tonga Isl.

h	about 33 km.		
H	18	05	58.6
eLE"	19	04	

6 jan. 7.0 S., 122.9 E.
Flores Sea

h	about 546 km.		
H	00	55	27.4
eP'Z	01	13	45.7

6 jan. 44.9 N., 112.7 W.
E. Idaho

h	about 7 km.		
H	02	01	22.2
eZ	02	07	40

6 jan. 41.4 S., 85.4 W.
W. Chile Rise

h	about 33 km.		
H	09	19	01.2
ePZ	09	31	45

6 jan. 60.0 N., 151.8 W.
Kenai Penin. Alaska

h	about 53 km.		
H	18	27	34.0
iPZ	18	35	55.3 d

7 jan. 36.5 N., 26.9 E.
Dodecanese Isl.

h	about 45 km.		
H	10	22	17.5
iPZ	10	33	36.6 c

7 jan. 16.2 N., 97.2 W.
Oaxaca Mexico

h	about 43 km.		
H	15	56	32.5
iPZ	16	03	26.3 c

8 jan. 56.3 N., 153.5 W.
Kodiak Isl. region

h	about 33 km.		
H	11	25	56.5
eLZ"	11	52.5	

8 jan. 13.2 S., 112.0 W.
N. Easter Isl. Cordillera

h	about 33 km.		
H	21	08	06.0
iSN"	21	28	11
eSSN"		32	44

9 jan. 32.2 S., 66.9 W.
San Luis Prov. Argentina

h	about 132 km.		
H	12	03	11.4
iPZ	12	14	54.5 d

9 jan. 11.9 N., 126.2 E.
Philippine Isl. region

h	about 5 km.		
H	13	32	46.4
ePZ	13	51	40.5

10 jan. 5.8 S., 147.3 E.
E. New Guinea region

h	about 113 km.		
H	07	37	35.1
iP'Z	07	56	26.7 c

10 jan. 13.5 S., 166.6 E.
New Hebrides Isl.

h	about 32 km.		
H	13	36	30.7
eP'Z	13	55	20.8 d
ePPZ"		56	43
eSKSE"	14	02	12
eSKKSE"		03	38
iPSZ"		06	36
ePPSZ"		07	58
eSSZ"		13	10
eSSSE"		17	16

11 jan. 14.0 N., 89.5 W.
El Salvador

h	about 144 km.		
H	04	10	04.4
iPZ	04	16	37.4 d

11 jan. 61.1 N., 151.0 W.
S. Alaska

h	about 59 km.		
H	16	57	27.0
iPZ	17	05	44.9 d

11 jan. 43.0 N., 139.2 E.
E. Sea of Japan

h	about 189 km.		
H	20	14	33.5
iPZ	20	26	59.4

11 jan. 48.8 N., 153.5 E.
Kurile Isl.

h	about 102 km.		
H	22	47	06.3
iPZ	22	58	52.0 c

12 jan. 9.7 S., 75.0 W.
Peru

h	about 48 km.		
H	13	36	51.0
iPZ	13	46	19.5 c

12 jan. 46.7 N., 27.5 W.
N. Atlantic Ridge

h	about 33 km.		
H	20	31	01.8
eL'	20	46	

13 jan. 10.1 N., 86.3 W.
Off Coast of Costa Rica

h	about 33 km.		
H	02	19	49.2
ePZ	02	26	56.8 d

13 jan. 36.5 S., 98.6 W.
S. Pacific Ocean

h	about 33 km.		
H	16	57	16.0
eE"	17	32	

14 jan. 5.5 S., 81.3 W.
Near coast of N. Peru

h	about 32 km.		
H	08	25	17.5
iPZ	08	34	20.6 d

14 jan. 6.2 S., 149.9 E.
New Britain region

h	about 63 km.		
H	08	28	45.3
iP'Z	08	47	42.0 d

14 jan. 38.8 S., 176.0 E.
North Isl. New Zealand

h	about 82 km.		
H	18	46	20.4
eLN"	19	54	

14 jan. 5.3 N., 76.3 W.
Colombia

h	about 117 km.		
H	22	04	26.6
ePZ	22	11	55.0 d

14 jan. 14.4 N., 92.9 W.
Near coast of Chiapas, Mexico

h	about 33 km.		
H	23	54	00.4
ePZ	00	00	51

15 jan. 49.9 N., 79.0 E.
E. Zazakh SSR

h	about ? km.		
H	05	59	58.5
iPZ	06	12	21.8 c

15 jan. 35.7 N., 4.3 E.
Algeria

h	about 31 km.		
H	23	47	27.8

ePZ 23 57 18

16 jan. 56.6 S., 27.4 W.
S. Sandwich Isl. region
h about 101 km.
H 11 32 37.4
eSSSE" 12 07 16

17 jan. 58.3 N., 151.8 W.
Kodiak Isl. region
h about 33 km.
H 02 13 28.6
ePZ 02 21 59

17 jan. 15.1 S., 173.7 W.
Tonga Isl.
h about 33 km.
H 08 19 44.5
eLE" 09 10

17 jan. 6.8 S., 109.1 E.
Java
h about 242 km.
H 20 57 41.3
eP'Z 21 16 45.5

18 jan. 37.7 S., 72.9 W.
Central Chile
h about 52 km.
H 00 03 11.9
ePZ 00 15 32.5
eSE" 25 56

21 jan. 34.2 S., 179.8 E.
S. of Kermadec Isl.
h about 33 km.
H 06 09 58.4
eLN" 07 01.4

23 jan. 8.8 N., 83.1 W.
Costa Rica
h about 46 km.
H 20 07 31.4
iPZ 20 14 43.2 c

23 jan. 7.4 N., 123.9 E.
Mindanao Isl.
h about 627 km.
H 23 24 29.6
eP'Z 23 42 21

24 jan. 2.4 S., 126.0 E.
Ceram Sea
h about 6 km.
H 00 11 12.1
eP'Z 00 30 20.5
iZ 33.5
ePKSE' 33 54
eSKSN' 37 16
eSSN' 49 30

24 jan. 6.8 N., 73.1 W.
N. Colombia
h about 169 km.
H 01 19 32.9
iPZ 01 26 41.2 c

26 jan. 36.1 N., 139.5 E.
Honshu, Japan
h about 104 km.
H 23 47 38.2
ePZ 00 00 43.5

28 jan. 2.5 S., 102.5 E.
S. Sumatra
h about 33 km.
H 02 34 03.0
eP'Z 02 53 25

28 jan. 15.3 N., 93.9 W.
Near coast of Chiapas, Mexico
h about 33 km.
H 04 03 39.5
ePZ 04 10 26.5

28 jan. 4.0 S., 104.2 W.
N. Easter Isl. Cordillera
h about 33 km.
H 16 15 35.0
eLE" 16 39

29 jan. 23.9 N., 108.7 W.
Gulf of California
h about 33 km.
H 00 11 22.1
ePZ 00 18 24

29 jan. 24.2 N., 108.6 W.
Gulf of California
h about 33 km.

H 02 21 54.5
eLN" 02 37

29 jan. 54.8 N., 161.7 E.
Near coast of Kamchatka
h about 33 km.
H 09 35 25.7
ePZ 09 46 32.5

30 jan. 51.6 N., 179.8 W.
Andreanof Isl. Aleutian Isl.
h about 33 km.
H 04 37 15.1
iPZ 04 47 47.0 c

31 jan. 21.2 S., 67.8 W.
Chile-Bolivia border
h about 71 km.
H 12 57 29.1
iPZ 13 08 14.3 c
iZ 26.5

31 jan. 21.1 S., 67.8 W.
Chile Bolivia border
h about 71 km.
H 14 57 24.9
iPZ 15 08 10.4 c
ipPZ 37.5

31 jan. 51.2 N., 178.6 E.
Rat. Isl. Aleutian Isl.
h about 33 km.
H 23 36 13.4
ePZ 23 46 46

2 fév. 14.0 N., 91.0 W.
Guatemala
h about 33 km.
H 03 37 13.9
ePZ 03 44 01.5

2 fév. 17.2 N., 94.5 W.
Chiapas, Mexico
h about 140 km.
H 04 30 33.1

2 fév. 2.1 S., 138.9 E.
W. New Guinea
h about 12 km.
H 07 58 15

eP'Z 08 17 23

2 fév. 37.5 N., 73.4 E.
Tadzhik, S.S.R.
h about 33 km.
H 15 56 51.0

3 fév. 13.9 N., 92.0 W.
Off coast of Chiapas, Mexico
h about 56 km.
H 18 28 51.7
ePZ 18 35 42

4 fév. 51.8 S., 139.7 E.
S. of Australia
h about 33 km.
H 03 25 00.8
eP'Z 03 44 56

4 fév. 51.1 N., 178.4 E.,
Rat Isl. Aleutian Isl.
foreshock
h about 40 km.
H 04 53 57.7
ePZ 05 04 46.5

4 fév. 51.3 N., 178.6 E.
Rat Isl. Aleutian Isl.
Mag. 7 3/4
h about 40 km.
H 05 01 21.8
ePZ 05 12 01

Toutes les Secousses subséquentes de ce Séisme jusqu'au 1 mars sont renvoyées à la fin du Bulletin.

6 fév. 53.2 N., 161.9 W.
S. of Alaska
h about 33 km.
H 01 40 33.2
iPZ 01 49 57.9 d
iSE' 57 36

6 fév. 53.3 N., 161.8 W.
South of Alaska
h about 33 km.
H 16 50 28.6
iPZ 16 59 52.0 c

iPcPZ 17 00 59.0
ePPZ" 01 32
iSN" 07 32
iPSN" 41

7 fév. 53.3 N., 161.9 W.
S. of Alaska
h about 10 km.
H 11 30 40.8
iPZ 11 40 08.1 c

11 fév. 1.4 S., 77.8 W.
Ecuador
h about 190 km.
H 11 10 30.4
ePZ 11 18 44

12 fév. 40.3 N., 124.9 W.
Near coast of N. California
h about 33 km.
H 10 50 19.7
ePZ 10 57 32

14 fév. 72.8 N., 05.4 E.
Norwegian Sea
h about 14 km.
H 17 55 42.4
ePZ 18 03 52

14 fév. 73.0 N., 06.5 E.
Greenland Sea
h about 33 km.
H 19 37 17.8
ePZ 19 45 27.6 d
eSN" 52 02

15 fév. 9.9 N., 86.5 W.
Off coast of Costa Rica
h about 33 km.
H 02 29 48.0
iPZ 02 36 59.9 d

15 fév. 55.3 N., 167.1 W.
Fox Isl. Aleutian Isl.
h about 35 km.
H 09 43 00
eScSN" 10 01 56
eN" 09 20

15 fév. 3.0 N., 125.9 E.
Talaud Isl.
h about 33 km.
H 10 43 19.8
eP'Z 11 02 26

15 fév. 53.6 N., 81.3 E
Central Russia
h about 11 km.
H 12 34 54.8
iPZ 12 46 59.6 d

16 fév. 26.4 N., 110.0 W.
Gulf of California
h about 33 km.
H 10 59 17.5
ePZ 11 06 07

16 fév. 30.7 N., 113.2 W.
Honshu, Japan
h about 33 km.
H 12 24 08.8
iPZ 12 37 04.5 d

18 fév. 9.9 S. 71.2 W.
Peru-Brazil border region
h about 594 km.
H 22 32 19.6
iPZ 40 58.8 d
ipPZ 42 50.6

19 fév. 17.4 S., 69.1 W.
Peru-Bolivia border region
h about 136 km.
H 09 36 02.5
ePZ 09 46 16

19 fév. 12.4 S., 166.4 E.
Santa Cruz Isl.
h about 65 km.
H 10 08 41.6
eLZ" 11 12

21 fév. 15.1 S., 173.2 W.
Tonga Isl.
h about 33 km.
H 11 14 15.1
eLN" 11 58.8

21 fév. 22.6 S., 69.0 W.
N. Chile
h about 109 km.
H 14 09 19.1
ePZ 14 20 08

22 fév. 16.8 S., 175.7 E.
Fiji Isl. region
h about 73 km.
H 21 38 15.5
eLZ" 22 35

23 fév. 25.7 S., 70.5 W.
Near coast of N. Chile
h about 80 km.
H 22 11 50.2
ePZ 22 23 00.5 d
iPZ 01.1 c
iSE" 32 14
eSSE" 36 32
eSSSE" 40 10

24 fév. 14.0 N., 92.2 W.
Near coast of Chiapas, Mexico
h about 56 km.
H 08 09 17.2
ePZ 08 16 03

24 fév. 14.2 N., 92.1 W.
Near coast of Chiapas, Mexico
h about 33 km.
H 09 37 16.6
ePZ 09 44 03

25 fév. 61.2 N., 146.7 W.
S. Alaska
h about 40 km.
H 02 02 37.4
ePZ 02 10 40

25 fév. 5.5 S., 152.0 E.
New Britain region
h about 35 km.
H 04 51 27.8
eP'Z 05 10 23.4 d

25 fév. 11.4 S., 166.1 E.
Santa Cruz Isl.
h about 86 km.
H 19 23 33.0
eLN" 20 11.5

26 fév. 18.9 S., 176.3 W.
Fiji Isl. region
h about 61 km.
H 05 36 01.1
eLN" 06 22

26 fév. 6.7 S., 102.7 E.
S.W. of Sumatra
h about 33 km.
H 08 55 42.2
eLE" 09 56

26 fév. 6.9 N., 73.0 W.
N. Colombia
h about 146 km.
H 23 36 12.2
iPZ 23 43 23.3 d

27 fév. 28.5 N., 112.1 W.
Gulf of California
h about 33 km.
H 07 46 29.1
ePZ 07 53 20 c

27 fév. 24.2 N., 5.1 E.
S. Algeria
h about 0 km.
H 11 29 59.0
iPZ 11 40 45.0 c

1 mars 5.5 S., 152.1 E.
New Britain region
h about 35 km.
H 07 20 55.3
eP'Z 07 39 51

1 mars 5.4 S., 152.0 E.
New Britain region
h about 29 km.
H 09 08 45.0
eP'Z 09 27 42

1 mars 52.2 N., 173.9 E.
Rat Isl. aftershock
h about 30 km.
H 19 22 01.6
ePZ 19 32 51

1 mars 15.4 N., 92.5 W.
Mexico-Guatemala border

h	about 93 km.		
H	21	32	11.8
iPZ	21	38	49.5 d
ipPZ		39	10.7
iZ		40	01.7
iSN'		44	11
iScSE"		49	04

2 mars 27.4 S., 177.7 W.
Kermadec Isl.

h	about 33 km.		
H	02	50	35.5
eLE"	03	58	

2 mars 61.0 S., 154.8 E.
N. of Macquarie Isl.

h	about 33 km.		
H	06	34	48
eP'Z	06	54	33.5

2 mars 27.2 S., 177.9 W.
Kermadec Isl.

h	about 39 km.		
H	09	19	41.6
eLZ"	10	15	

2 mars 27.3 S., 177.7 W.
Kermadec Isl.

h	about 34 km.		
H	14	23	08.6
eLZ"	15	25	

2 mars 27.2 S., 177.9 W.
Kermadec Isl.

h	about 33 km.		
H	19	51	01.0
eLZ"	20	57	

2 mars 38.6 N., 28.3 E.
Turkey

h	about 45 km.		
H	22	00	07.8
ePZ	22	11	22

3 mars 27.2 S., 177.6 W.
Kermadec Isl.

h	about 33 km.		
H	03	17	04.1
eLZ"	04	12	

3 mars 49.8 N., 78.1 E.
E. Kazakh, S.S.R.

h	about 0 km.		
H	06	14	57.0
ePZ	06	27	19.7

3 mars 27.2 S., 177.6 W.
Kermadec Isl.

h	about 33 km.		
H	11	36	28.3
eZ"	12	39	

3 mars 27.0 S., 177.8 W.
Kermadec Isl.

h	about 43 km.		
H	14	39	05.0
eLN"	15	27	

3 mars 5.5 S., 151.9 E.
New Britain region

h	about 44 km.		
H	15	14	09.7
eP'Z	15	33	05

3 mars 53.1 N., 171.2 E.
Rat Isl. aftershock

h	about 23 km.		
H	16	47	25.7
ePZ	16	58	18.8 c

3 mars 45.7 N., 150.9 E.
Kurile Isl.

h	about 56 km.		
H	19	29	16.1
iPZ	19	41	29.3 c

4 mars 5.4 S., 147.0 E.
E. of New Guinea region

h	about 191 km.		
H	01	48	54.1
iP'Z	02	07	35.3

4 mars 50.3 N., 176.9 E.
Rat Isl. Aleutian Isl.

h	about 33 km.		
H	01	42	48.8
eLN"	02	14	

4 mars 52.0 N., 175.0 E.
Rat Isl. aftershock

h	about 40 km.		
H	06	30	16.2
iPZ	06	41	02.0

5 mars 51.2 N., 179.3 E.
Rat Isl. aftershock

h	about 25 km.		
H	06	15	01.1
ePZ	06	25	40

5 mars 49.9 N., 177.4 E.
Rat Isl. aftershock

h	about 15 km.		
H	06	25	56
ePZ	06	36	47

5 mars 52.3 N., 174.9 E.
Rat Isl. aftershock

h	about 35 km.		
H	13	42	44.1
iPZ	13	53	29.5 d

5 mars 27.0 S., 63.3 W.
Santiago del Estero Prov.
Argentina

h	about 573 km.		
H	14	32	19.2
iPZ	14	42	51.1 d

5 mars 51.5 N., 176.6 E.
Rat Isl. aftershock

h	about 35 km.		
H	16	33	52.7
ePZ	16	44	28

5 mars 52.3 N., 174.2 E.
Rat Isl. aftershock

h	about 35 km.		
H	17	59	13.5
iPZ	18	10	00.4 d

5 mars 27.5 S., 177.0 W.
Kermadec Isl.

h	about 33 km.		
H	19	36	43
eLZ"	20	24	

5 mars 21.0 S., 68.4 W.
Chile-Bolivia border Region

h	about 84 km.		
H	21	25	53.1
ePZ	21	36	36.4 d

5 mars 53.0 N., 171.1 E.
Rat Isl. aftershock

h	about 45 km.		
H	23	29	23.2
ePZ	23	40	05

6 mars 26.7 S., 177.3 W.
S. of Fiji Isl. region

h	about 24 km.		
H	04	06	48.5
eLN"	04	55	

6 mars 1.2 S., 78.4 W.
Ecuador

h	about 13 km.		
H	04	43	07.1
ePZ	04	51	42

6 mars 52.4 N., 174.2 E.
Rat Isl. aftershock

h	about 25 km.		
H	08	19	30.5
ePZ	08	30	19

6 mars 18.4 S., 132.9 W.
S. Pacific Ocean.

h	about 35 km.		
H	11	10	53.1
iPZ	11	23	17.2 c

6 mars 52.1 N., 175.4 E.
Rat Isl. aftershock

h	about 35 km.		
H	13	41	17.0
iPZ	13	52	01.9

6 mars 37.4 N., 91.1 W.
Missouri

h	about 18 km.		
H	21	08	49.9
eZ	21	16	43

7 mars 30.3 S., 177.9 W.
Kermadec Isl. region

h	about 60 km.		

H	01	43	11.4
eP'Z	02	01	57

7 mars 3.3 N., 79.0 W.
S. of Panama

h	about 33 km.		
H	06	33	17.7
ePZ	06	41	12

7 mars 51.8 N., 176.4 E.
Rat Isl. aftershock

h	about 35 km.		
H	11	04	39.3
ePZ	11	15	22

8 mars 24.6 S., 67.1 W.
Chile-Argentina border region

h	about 168 km.		
H	23	11	31.7
ePZ	23	22	26

9 mars 39.4 N., 24.0 E.
Aegean Sea

h	about 18 km.		
H	17	57	53.7
ePZ	18	08	54
iSN"		17	55

9 mars 39.2 N., 23.8 E.
Aegean Sea

h	about 13 km.		
H	21	20	04.9
eLN"	21	53	

10 mars 15.9 N., 94.5 W.
Near Coast of Oaxaca, Mexico

h	about 33 km.		
H	00	10	40.1
ePZ	00	17	30.5

10 mars 56.3 N., 155.6 W.
Alaska Penin.

h	about 33 km.		
H	21	52	57.6
eLN"	22	20	

12 mars 5.8 S., 77.8 W.
N. Peru

h	about 52 km.		
H	22	54	44.7
ePZ	23	03	49.5

13 mars 39.1 N., 23.9 E.
Aegean Sea

h	about 33 km.		
H	04	09	38.5
ePZ	04	20	38

13 mars 11.2 S., 111.6 E.
S. of Java

h	about 33 km.		
H	04	36	43
eP'Z	04	56	23

13 mars 0.7 S., 133.0 E.
W. of New Guinea region

h	about 33 km.		
H	06	47	53.1
eP'Z	07	07	33

13 mars 53.1 N., 162.2 W.
S. of Alaska

h	about 37 km.		
H	07	33	23.0
iPZ	07	42	48.7

13 mars 26.8 S., 173.3 W.
S. of Fiji Isl.

h	about 31 km.		
H	08	55	34.7
eLE"	09	57	

14 mars 18.8 N., 94.6 W.
Gulf of Campeche

h	about 97 km.		
H	08	52	22.2
ePZ	08	58	42

14 mars 31.9 S., 138.8 E.
S. of Australia

h	about 26 km.		
H	12	47	42.2
iP'Z	13	07	37

14 mars 36.3 N., 70.7 E.
Hindu Kush region

h	about 219 km.		
H	15	53	06.6

ePZ	16	05	54.5
iPZ			56.3
iPPZ'		09	36
iPPPZ'		11	40
iSKSE'		16	04.5
iSE'			39

14 mars 4.6 N., 82.6 W.
S. of Panama

h	about 33 km.		
H	22	41	36.1
ePZ	22	49	24.5

16 mars 49.7 N., 155.2 E.
Kurile Isl.

h	about 52 km.		
H	04	10	21
ePZ	04	22	05

18 mars 19.9 S., 176.1 W.
Fiji Isl. region

h	about 151 km.		
H	06	22	02.9
eSN"	06	48	38
eSSN"		56	40

19 mars 52.0 N., 174.9 E.
Near Isl. Aleutian Isl.

h	about 35 km.		
H	07	35	21.7
ePZ	07	46	08

19 mars 0.0, 123.4 E.
N. Celebes

h	about 173 km.		
H	22	58	34.9
eP'Z	23	17	31

21 mars 50.1 N., 178.3 E.
Rat Isl. Aleutian Isl.

h	about 21 km.		
H	01	20	46.0
ePZ	01	31	33

21 mars 11.7 N., 86.4 W.
Near coast of Nicaragua

h	about 36 km.		
H	09	42	41.3
iPZ	09	49	37

21 mars 1.5 S., 126.5 E.
Molucca Sea

h	about 33 km.		
H	11	08	16.2
eP'Z	11	27	24

21 mars 36.2 N., 136.6 E.
Near W. Coast of Honshu, Japan

h	about 270 km.		
H	12	41	47.5
ePZ	12	54	37

21 mars 45.4 N., 150.6 E.
Kurile Isl.

h	about 14 km.		
H	19	02	32.9
ePZ	19	14	30.5

22 mars 11.9 N., 87.9 W.
Near Coast of Nicaragua

h	about 32 km.		
H	00	17	27
ePZ	00	24	26

22 mars 15.3 S., 173.4 W.
Tonga Isl.

h	about 51 km.		
H	02	44	47.5
ePPZ"	03	03	40
eSKSE"		09	44
ePSE"		12	56

22 mars 23.8 S., 66.7 W.
Jujuy Prov. Argentina

h	about 176 km.		
H	03	05	33.3
iPZ	03	16	23.6 d
epPZ			45

22 mars 13.9 N., 90.9 W.
Near Coast of Guatemala

h	about 60 km.		
H	07	53	07
ePZ	07	59	53

22 mars 6.6 N., 72.8 W.
N. Colombia

h	about 187 km.		

H 09 46 07.7
iPZ 09 53 17.0 d

23 mars 15.2 S., 173.5 W.
Tonga Isl.
h about 130 km.
H 23 54 14.7
eSKSE" 00 19 06
ePSE" 22 06

24 mars 56.6 N., 152.4 W.
Kodiak Isl.
h about 30 km.
H 08 08 05.2
ePZ 08 16 44

24 mars 18.5 N., 68.5 W.
Chile-Bolivia border region
h about 33 km.
H 11 16 51
iPZ 11 27 25.1 d

25 mars 52.3 N., 176.6 E.
Near Isl. Aleutian Isl.
h about 31 km.
H 08 53 13.6
ePZ 09 04 05.5

27 mars 2.6 S., 126.2 E.
Ceram Sea
h about 33 km.
H 23 56 57.3
eLN" 00 58

28 mars 15.0 S., 72.3 W.
Peru
h about 108 km.
H 05 30 25.4
ePZ 05 40 24

28 mars 15.7 S., 74.1 W.
Near Coast of Peru
h about 45 km.
H 09 59 58.0
iPZ 10 10 08.5 d

28 mars 32.4 S., 71.2 W.
Near Coast of Central Chile
h about 61 km.
H 16 33 14.6
iPZ 16 45 05.9 d
ipPZ 23.8
iSE 54 50.8

29 mars 40.8 N., 142.8 E.
Near E. coast of Honshu, Japan
h about 33 km.
H 10 47 37.6
ePZ 11 00 25.6 c
eSN" 10 56

30 mars 20.0 S., 173.9 W.
Tonga Isl.
h about 33 km.
H 00 21 00.2
eLZ" 01 15

30 mars 50.6 N., 177.9 W.
Rat Isl. Aleutian Isl.
h about 51 km.
H 02 27 07.2
iPZ 02 37 50.0 d
iSE' 46 43

30 mars 50.4 N., 177.5 E.
Rat Isl. Aleutian Isl.
h about 33 km.
H 02 53 15.5
ePZ 03 04 01

30 mars 50.4 N., 177.6 E.
Rat Isl. Aleutian Isl.
h about 35 km.
H 04 32 50.0
iPZ 04 43 36.2

30 mars 50.1 N., 177.3 E.
Rat Isl. Aleutian Isl.
h about 30 km.
H 06 25 01.1
ePZ 06 35 35.0

30 mars 50.2 N., 177.8 E.
Rat Isl. Aleutian Isl.
h about 35 km.
H 07 10 53.4
ePZ 07 21 41

30 mars 41.0 N., 142.7 E.

Near E. coast of Honshu, Japan
h about 32 km.
H 15 59 34.1
ePZ 16 12 36.0 d

31 mars 51.4 N., 178.3 E.
Rat Isl. Aleutian Isl.
h about 44 km.
H 08 21 28.5
eLN" 08 54

31 mars 38.6 N., 22.4 E.
Greece
h about 78 km.
H 09 47 30.7
iPZ 09 58 19.6 c
iSE" 07 13
20 sec., 61 micr.
eSSE" 11 24
iSSSE" 14 46

31 mars 50.3 N., 178.2 E.
Rat Isl. Aleutian Isl.
h about 30 km.
H 10 46 08.6
ePZ 10 56 58.5 c

21 mars 1.9 S., 77.9 W.
Ecuador
h about 130 km.
H 16 50 13.8
ePZ 16 59 15

31 mars 50.4 N., 177.5 E.
Rat Isl., Aleutian Isl.
h about 30 km.
H 22 32 31.9
ePZ 22 43 20.5

1 avril 50.0 S., 114.1 W.
Easter Isl. Cordillera
h about 33 km.
H 21 20 43.8
eSKKSN" 21 47.7
eSSE" 53.3

2 avril 12.5 N., 123.5 E.
Luzon Philippine Isl.
h about 33 km.
H 13 04 01.8
eL 14 02

3 avril 44.0 N., 82.9 E.
N. Sinkian Prov. China
h about 10 km.
H 03 01 56.9
eLE" 04 12

3 avril 37.7 N., 73.1 E.
Tadzhik S.S.R.
h about 33 km.
H 03 54 52.3
eLZ" 04 31

3 avril 26.8 S., 176.4 W.
S. of Fiji Isl.
h about 109 km.
H 08 39 40.8
eLN" 09 40

3 avril 16.0 N., 97.9 W.
N. Coast of Oaxaca, Mexico
h about 16 km.
H 11 20 43.5
ePZ 11 27 45.2
eSE" 33 24

3 avril 16.1 N., 97.8 W.
Oaxaca, Mexico
h about 45 km.
H 11 29 13.0
ePZ 11 36 08.8

4 avril 51.9 N., 175.2 E.
Rat Isl. Aleutian Isl.
h about 40 km.
H 13 30 37.8
iPZ 13 41 23.3 d

4 avril 26.9 S., 176.1 W.
S. of Fiji Isl.
h about 33 km.
H 15 36 11.9
eN" 16 04.1
eZ" 06.1

4 avril 8.8 S., 74.5 W.
Peru-Brazil border region

h about 143 km.
H 20 09 41.1
iPZ 20 18 52.6 c
ipPZ 19 26.9

4 avril 4.9 N., 76.1 W.
Colombia
h about 102 km.
H 20 31 35.0
iPZ 20 39 07.7 c

5 avril 37.9 N., 21.8 E.
S. Greece
h about 34 km.
H 03 12 54.2
e(P)Z 03 23 51
e(P)Z 53
eSE" 32 52

5 avril 3.2 S., 148.4 E.
Bismarck Sea
h about 10 km.
H 06 21 34.2
e 06 59.3

5 avril 44.6 N., 151.1 E.
Kurile Isl. region
h about 81 km.
H 13 52 13.4
iPZ 14 04 25.7 d
eSN" 14 36

6 avril 52.2 N., 173.2 E.
Near Isl. Aleutian Isl.
h about 30 km.
H 03 19 01.7
ePZ 03 29 52.5

6 avril 36.1 N., 139.6 E.
Honshu, Japan
h about 69 km.
H 05 31 59.7
iPZ 05 45 09.4 d

6 avril 0.5 S., 119.9 E.
N. Celebes
h about 33 km.
H 09 42 28.2
eP'Z 10 01 43
ePPZ" 04 16
eSKPZ" 05 12

6 avril 50.2 N., 178.3 E.
Rat Isl. Aleutian Isl.
h about 40 km.
H 13 30 45.1
ePZ 13 41 29

6 avril 14.2 N., 92.6 W.
Near Coast of Chiapas Mexico
h about 57 km.
H 16 53 57.8
ePZ 17 00 48.0

6 avril 3.1 S., 78.2 W.
Peru-Ecuador border region
h about 97 km.
H 19 21 49.7
iPZ 19 30 24.6 d

8 avril 17.6 S., 178.7 W.
Fiji Isl. region
h about 575 km.
H 12 51 27.8
eP'Z 13 09 57

8 avril 52.2 N., 173.5 E.
Near Isl. Aleutian Isl.
h about 46 km.
H 13 43 52.8
ePZ 13 54 41
eSN" 14 03 36

8 avril 52.0 N., 173.4 E.
Near Isl. Aleutian Isl.
h about 34 km.
H 14 31 10.9
ePZ 14 02 01

9 avril 57.6 N., 151.4 W.
Kodiak Isl. region
h about 33 km.
H 01 28 48.2
eLN" 02 05.5

9 avril 51.7 N., 176.3 E.
Rat Isl. Aleutian Isl.
h about 33 km.
H 03 02 53.0

eLN" 03 34

9 avril 52.3 N., 171.9 E.
Near Isl. Aleutian Isl.
h about 38 km.
H 05 49 02.0
ePZ 05 59 55

9 avril 32.6 S., 178.3 W.
S. of Kermadec Isl.
h about 52 km.
H 10 45 29.4
eSSN" 11 22 40

9 avril 59.6 N., 144.9 W.
Gulf of Alaska
h about 52 km.
H 17 33 45.3
ePZ 17 41 50.5

9 avril 54.8 S., 118.4 W.
Easter Isl Cordillera
h about 33 km.
H 18 20 01.5
eLN" 19 12

9 avril 4.2 S., 134.1 E.
W. of New Guinea region
h about 33 km.
H 22 52 24.3
eLE" 23 32

9 avril 35.1 N., 24.3 E.
Crete
h about 51 km.
H 23 57 03.2
iPZ 00 08 17.7 c
iScSE" 17 31

10 avril 52.8 N., 172.0 E.
Near Isl. Aleutian Isl.
h about 13 km.
H 01 22 30.6
ePZ 01 33 24

10 avril 37.6 N., 73.4 E.
Tadzhik S.S.R.
h about 33 km.
H 14 11 22.0
eLE" 14 55

10 avril 53.1 N., 170.9 E.
Near Isl. Aleutian Isl.
h about 8 km.
H 16 54 55.8
iPZ 17 05 52.0 d

10 avril 17.8 S., 178.8 W.
Fiji Isl. region
h about 543 km.
H 22 32 46.6
eP'Z 20 50 23.5

11 avril 42.7 S., 173.9 E.
South Isl., New Zealand
h about 7 km.
H 00 11 08.8
eP'Z 00 30 23

11 avril 19.8 N., 109.2 W.
Revilla Gigedo Isl. region
h about 33 km.
H 04 59 39.3
ePZ 05 07 04
eSN" 13 06

11 avril 26.2 S., 178.5 E.
S. of Fiji Isl. region
h about 581 km.
H 18 51 38.1
eP'Z 19 09 23.5 c

12 avril 56.6 N., 152.7 W.
Kodiak Isl. region
h about 33 km.
H 03 59 40.2
ePZ 04 08 18

12 avril 52.7 N., 167.4 W.
Fox Isl. Aleutian Isl.
h about 16 km.
H 04 36 11.6
ePZ 04 46 02

12 avril 32.5 S., 178.1 W.
S. of Kermadec Isl.
h about 22 km.
H 08 51 16.7
eLE" 09 56

12 avril 15.2 S., 175.7 W.
Tonga Isl.
h about 118 km.
H 17 26 57.8

eLN" 18 12

12 avril 26.5 S., 70.8 W.
Near coast of N. Chile
h about 52 km.
H 19 36 41.7
iPZ 19 48 00.6 c

12 avril 30.2 N., 138.5 E.
S. of Honshu, Japan
h about 421 km.
H 20 41 16.3
ePZ 20 54 12
ePPZ 58 19

13 avril 51.5 N., 172.1 E.
Near Isl. Aleutian Isl.
h about 35 km.
H 15 23 06.0
eLZ" 16 03

13 avril 26.8 S., 175.9 W.
S. of Tonga Isl.
h about 33 km.
H 17 22 38.6
eLE" 18 21

13 avril 50.7 N., 177.2 E.
Rat Isl. Aleutian Isl.
h about 32 km.
H 17 55 32.9
ePZ 18 06 20

13 avril 54.2 N., 163.4 W.
h about 36 km.
H 23 22 57.2
eLN" 23 52

14 avril 56.3 N., 153.5 W.
Kodiak Isl. region
h about 27 km.
H 07 35 39.4
eN" 07 55

14 avril 18.1 N., 94.1 W.
Gulf of Campeche
h about 106 km.
H 10 18 49.2
ePZ 10 25 08.5

15 avril 6.9 N., 73.0 W.
N. Colombia
h about 161 km.
H 01 21 47.5
iPZ 01 28 57.4 d

15 avril 34 N., 117.5 W.
S. California
h about 15 km.
H 20 08 31.8
eN" 20 26

15 avril 50.2 S., 113.4 E.
S.E. Indian Rise
h about 33 km.
H 22 09 52.1
eSSN" 22 56.7

15 avril 17.6 S., 173.4 W.
Tonga Isl.
h about 45 km.
H 23 39 54.6
eN" 00 43

16 avril 14.0 N., 91.6 W.
Guatemala
h about 75 km.
H 04 53 02.8
ePZ 04 59 50

16 avril 14.0 N., 91.5 W.
Guatemala
h about 65 km.
H 11 01 52.4
ePZ 11 08 40

16 avril 21.7 S., 68.1 W.
Chile-Bolivia border region
h about 127 km.
H 12 51 48.7
ePZ 13 02 30.5
epPZ 03 03

16 avril 13.7 N., 91.7 W.
Near coast of Guatemala
h about 78 km.
H 13 39 00
ePZ 13 45 48

16 avril 64.7 N., 160.1 W.
Central Alaska
h about 5 km.
H 23 22 18.6 c

iPZ 23 31 04.6 c
iPPZ 33 02
iSN" 38 08
iSSN" 41 40

17 avril 52.6 N., 173.1 E.
Near Isl. Aleutian Isl.
h about 43 km.
H 00 00 29.7
ePZ 00 11 17

18 avril 41.5 N., 127.1 W.
Off coast of N. California
h about 20 km.
H 06 33 58.8
ePZ 06 41

18 avril 59.8 S., 26.8 W.
S. Sandwich Isl. region
h about 29 km.
H 09 39 18.7
eZ 09 58 35
ePSN" 10 08 18
eSSN" 14 50

18 avril 59.7 S., 26.4 W.
S. Sandwich Isl. region
h about 25 km.
H 12 41 54.9
eSSN" 13 17 26

18 avril 11.8 N., 89.8 W.
Off coast of Central America
h about 33 km.
H 13 03 06.2
iPZ 13 10 18.0 c

19 avril 34.9 N., 138.0 E.
Near S. coast of Honshu, Japan
h about 36 km.
H 23 41 58.8
ePZ 23 55 20
eSKSN" 00 05 53
eSN" 06 34
ePSN" 07 48
eSSN" 13 06

20 avril 52.4 N., 172.0 E.
Near Isl. Aleutian Isl.
h about 35 km.
H 06 43 08.8
ePZ 06 54 01

20 avril 54.6 N., 161.4 E.
Near East Coast of Kamchatka
h about 33 km.
H 06 50 17.6
iPZ 07 01 26.6 d

20 avril 14.3 N., 92.2 W.
Near coast of Chiapas, Mexico
h about 84 km.
H 13 12 46.4
ePZ 13 19 32

21 avril 19.0 N., 108.1 W.
Revilla Gigedo Isl. region
h about 33 km.
H 20 34 22.8
iPZ 20 41 46.9 c

21 avril 18.8 N., 107.9 W.
Off coast of Jalisco, Mexico
h about 30 km.
H 21 28 22.6
eLN" 21 55

22 avril 51.8 N., 176.1 W.
Rat Isl. Aleutian Isl.
h about 37 km.
H 18 36 01.2
ePZ 18 46 45

22 avril 5.6 S., 78.6 W.
N. Peru
h about 18 km.
H 22 13 54.7
ePZ 22 22 59

23 avril 16.2 N., 96.0 W.
Oaxaca, Mexico
h about 34 km.
H 01 05 56.1
ePZ 01 12 45

23 avril 19.2 N., 108.2 W.
Revilla Gigedo Isl. region

h about 33 km.
H 05 06 02.2
ePZ 05 13 24

24 avril 32.8 S., 178.4 W.
S. of Kermadec Isl.
h about 33 km.
H 00 04 32.6
eSSE" 00 42.8

24 avril 7.3 N., 126.6 E.
Mindanao Philippine Isl.
h about 95 km.
H 03 06 00.3
eLN" 03 42

24 avril 19.2 N., 121.2 E.
Philippine Isl. region
h about 43 km.
H 08 02 26.3
eLE" 08 53

24 avril 17.7 S., 69.6 W.
Peru-Bolivia border region
h about 159 km.
H 18 29 18.3
ePZ 18 39 29

24 avril 53.0 N., 171.0 E.
Near Isl. Aleutian Isl.
h about 25 km.
H 20 12 42.8
iPZ 20 23 36.8 d

24 avril 11.4 N., 140.1 E.
W. Caroline Isl.
h about 59 km.
H 21 55 26.5
ePSN" 22 25

25 avril 32.5 S., 177.9 W.
S. of Kermadec Isl.
h about 33 km.
H 00 25 14.8
eE" 00 55.9

25 avril 24.5 S., 142.7 E.
Volcano Isl. region
h about 15 km.
H 01 00 11.6
eSKSN" 01 24 48
eSE" 25 52

25 avril 51.5 N., 178.8 E.
Rat Isl. Aleutian Isl.
h about 49 km.
H 01 43 28.0
ePZ 01 54 11

25 avril 2.2 S., 29.1 E.
Lake Tanganyika, region
h about 13 km.
H 10 01 09.7
eLN" 10 51

25 avril 51.4 N., 174.5 E.
Near Isl. Aleutian Isl.
h about 38 km.
H 15 23 40
ePZ 15 34 30.5

25 avril 51.5 N., 174.2 E.
Near Isl. Aleutian Isl.
h about 36 km.
H 15 32 33.6
ePZ 15 43 24

25 avril 51.3 N., 176.4 W.
Adreanof Isl. Aleutian Isl.
h about 40 km.
H 21 15 32.3
ePZ 21 26 20.5

26 avril 58.9 N., 142.7 W.
Gulf of Alaska
h about 33 km.
H 01 57 14.4
iPZ 02 05 07.0 c

26 avril 1.3 S., 77.8 W.
Ecuador
h about 193 km.
H 08 39 03.9
iPZ 08 47 15.9 d
ipPZ 55.3

26 avril 1.7 S., 126.6 E.
Molucca Sea
h about 15 km.
H 09 47 25.1

eLE" 10 44

26 avril 54.5 N., 162.6 W.
Alaska Peninsula
h about 53 km.
H 20 29 07.4
iPZ 20 38 28.2 c

26 avril 21 N., 120.7 E.
Taiwan region
h about 33 km.
H 22 15 42.5
eP'Z 22 34 19
ePSN" 44 28

27 avril 7.0 S., 129.5 E.
Banda Sea
h about 67 km.
H 10 54 28.0
eP'Z 11 13 35

27 avril 35.7 N., 23.5 E.
Crete
h about 50 km.
H 14 09 07.1
iPZ 14 20 16.4 d

27 avril 35.8 S., 103.2 W.
S. Pacific Ocean
h about 33 km.
H 15 06 42.6
eLN" 15 48.5

27 avril 1.5 N., 85.2 W.
Off coast of Ecuador
h about 33 km.
H 20 09 18.4
eSN" 20 24 14

28 avril 27.1 S., 176.5 W.
Kermadec Isl.
h about 33 km.
H 10 26 43.6
eLE" 11 25

29 avril 52.1 N., 152.2 E.
N.W. of Kurile Isl.
h about 451 km.
H 06 09 31.1
iPZ 06 20 26.5 d

29 avril 1.6 N., 85.2 W.
Off coast of Ecuador
h about 33 km.
H 08 11 08.1
eE" 08 29.5

29 avril 47.4 N., 122.4 W.
Washington
h about 57 km.
H 15 28 43.3
iPZ 15 35 13.6 c
iPPZ' 36 22
iSE' 40 28

1 mai 60.4 N., 145.9 W.
S. Alaska
h about 13 km.
H 01 58 02.9
ePZ 02 06 08

1 mai 12.3 N., 143.7 E.
S. of Mariana Isl.
h about 5 km.
H 13 02 44.5
eE" 13 54

1 mai 6.8 N., 72.8 W.
N. Colombia
h about 167 km.
H 16 35 39.1
iPZ 16 42 50

1 mai 60.4 N., 146.0 W.
S. Alaska
h about 33 km.
H 21 27 44.4
ePZ 21 35 58.5
eSE" 42 30
eScS 45 54

2 mai 19.8 S., 69.5 W.
N. Chile
h about 117 km.
H 05 47 43.9
ePZ 05 58 13.8 d
iPZ 14.3 c
ipPZ 41.5

2 mai 28.9 N., 128.9 E.
Ryukyu Isl.

h about 30 km.
H 07 13 42.0
eLN" 46.5

3 mai 32.5 S., 70.6 W.
Chile-Argentina border region
h about 77 km.
H 01 09 31.5
ePZ 01 21 21.1 c

3 mai 13.5 N., 89.3 W.
El Salvador
h about 23 km.
H 10 01 35.2
iPZ 10 08 23.8
eSN" 13 48

3 mai 24.2 S., 67.8 W.
Chile-Argentina border region
h about 114 km.
H 16 09 09.0
iPZ 16 20 07.1 c
iZ 25.0
iZ 40.5

3 mai 22.1 S., 68.8 W.
N. Chile
h about 33 km.
H 19 17 30.7
ePZ 19 28 25

4 mai 41.7 N., 79.4 E.
Kirgiz-Sinking border region
h about 6 km
H 08 34 39.8
eLE" 09 11.5

5 mai 17.0 S., 176.9 W.
Fiji Isl. region
h about 33 km.
H 07 09 29.3
eLN" 07 55

5 mai 13.9 S., 75.9 W.
Peru
h about 94 km.
H 09 13 56.7
ePZ 09 23 49

5 mai 52.6 N., 173.5 W.
Near Isl. Aleutian Isl.
h about 32 km.
H 23 02 01.7
iPZ 23 12 49.6 d

6 mai 25.0 S., 68.4 W.
Chile-Argentina border region
h about 90 km.
H 02 25 12.0
iPZ 02 36 17.7

6 mai 30.2 N., 129.0 E.
E. China Sea
h about 131 km.
H 07 31 46.5
eLN" 08 18

7 mai 32.5 S., 178.2 W.
S. of Kermadec Isl.
h about 33 km.
H 15 43 23.0
eL 16 47

7 mai 22.2 S., 68.5 W.
N. Chile
h about 84 km.
H 23 56 11.6
ePZ 00 06 59
iPZ 59.9 d
ipPZ 07 28.6
eSE" 15 48
eScSE" 16 37

8 mai 28.0 S., 70.8 W.
Near coast of N. Chile
h about 35 km.
H 11 32 57.1
ePZ 11 44 26.5

9 mai 6.5 N., 82.5 W.
S. of Panama
h about 56 km.
H 14 11 08.1
ePZ 14 18 36.5

9 mai 2.9 S., 77.4 W.

Peru-Ecuador border region
h about 108 km.
H 19 58 59.2
ePZ 20 07 31

11 mai 19.1 N., 65.2 W.
Puerto-Rico region
h about 68 km.
H 08 06 44.2
iPZ 08 13 04.9 c

11 mai 61.4 N., 149.6 W.
S. Alaska
h about 58 km.
H 17 37 38.3
ePZ 17 45 47

12 mai 6.2 S., 130.3 E.
Banda Sea
h about 125 km.
H 10 33 43.5
eP'Z 10 52 41

12 mai 21.9 S., 65.9 W.
S. Bolivia
h about 283 km.
H 19 35 41.6
iPZ 19 46 08.6 d

13 mai 19.6 N., 65.4 W.
Puerto-Rico region
h about 30 km.
H 00 08 16.6
e(P)Z 00 14 03

13 mai 19.3 S., 63.8 W.
S. Bolivia
h about 589 km.
H 02 23 27.4
iPZ 02 33 08.1 d
ipPZ 35 05.0

13 mai 4.8 N., 76.3 W.
Colombia
h about 126 km.
H 04 13 08.6
iPZ 04 20 05.0 d

15 mai 48.0 S., 165.6 E.
Off coast of South Isl, New Zealand
h about 15 km.
H 16 39 01.5
eLN" 17 41

15 mai 52.3 N., 173.2 E.
Near Isl. Aleutian Isl.
h about 10 km.
H 21 01 17.7
ePZ 21 12 11

15 mai 4.1 S., 135.1 E.
W. New Guinea region
h about 33 km.
H 23 58 34.4
eP'Z 00 17 43

16 mai 4.6 S., 105.5 W.
N. Easter
h about 16 km.
H 05 15 10.0
ePZ 05 25 00.5

16 mai 5.3 N., 125.7 E.
Mindanao Philippine Isl.
h about 36 km.
H 11 35 46.0
iP'Z 11 54 47.2 d
ePPZ" 56 44

16 mai 5.2 N., 82.4 W.
S. of Panama
h about 53 km.
H 15 51 16.1
ePZ 15 58 57.5

17 mai 22.5 N., 121.3 E.
Taiwan region
h about 21 km.
H 17 19 25.9
ePPZ" 38 44
eN" 44 36
iN" 48 20

18 mai 43.7 N., 146.5 E.
Kurile Isl.
h about 45 km.
H 22 46 31.7
iPZ 22 59 00.0 d

19 mai 9.2 S., 159.0 E.
Solomon Isl.

h	about 50 km.		
H	03	00	59.0
iP'Z	03	19	49.5 d

19 mai 52.4 N., 173.4 E.
Near Isl. Aleutian Isl.

h	about 49 km.		
H	03	11	12.5
ePZ	03	22	02

19 mai 27.6 N., 110.9 W.
Gulf of California

h	about 33 km.		
H	06	17	12
eSN"	06	29	34

19 mai 4.9 N., 76.2 W.
Colombia

h	about 98 km.		
H	10	58	26.6
iPZ	11	05	59.6 d

19 mai 4.8 S., 152.3 E.
New Britain region

h	about 70 km.		
H	13	59	55.2
eP'Z	14	18	46

19 mai 51.6 N., 175.2 E.
Rat Isl. Aleutian Isl

h	about 35 km.		
H	22	07	14.1
ePZ	22	18	02.5

20 mai 14.7 S., 167.4 E.
New Hebrides Isl.

h	about 16 km.		
H	00	40	10.9
eP'Z	00	59	08
eE"	01	10	30
eE"		16	44

20 mai 51.2 N., 173.7 E.
Near Isl. Aleutian Isl.

h	about 41 km.		
H	02	13	38.9
iPZ	02	24	31.4 c

20 mai 45.1 S., 167.6 E.
South Isl. New Zealand

h	about 105 km.		
H	20	37	41.4
eN"	21	38.5	

22 mai 20.4 S., 70.0 W.
N. Chile

h	about 33 km.		
H	00	36	48.5
ePZ	00	47	30.5

22 mai 1.3 N., 126.3 E.
Molucca Passage

h	about 25 km.		
H	03	05	43.6
eP'Z	03	24	54.5

22 mai 21.1 S., 178.7 W.
Fiji Isl. region

h	about 578 km.		
H	10	31	39.5
iP'Z	10	49	17.6 c

22 mai 14.5 S., 167.1 E.
New Hebrides Isl.

h	about 27 km.		
H	13	19	04.5
eLE"	14	18	

22 mai 14.7 S., 167.4 E.
New Hebrides Isl.

h	about 17 km.		
H	14	10	45.0
eLE"	15	07	

22 mai ePZ 20 11 56

23 mai 14.1 S., 13.9 W.
S. Atlantic Ridge

h	about 33 km.		
H	07	46	33.7
ePZ	07	58	43

23 mai 52.2 N., 175.0 E.
Near Isl. Aleutian Isl.

h	about 22 km.		
H	23	46	12.0
iPZ	23	56	59.1 c
eSE"	00	05	44

24 mai 9.5 S., 113.0 E.
S. of Java

h	about 67 km.		
H	05	02	11.8
eP'Z	05	21	40.5

24 mai 38.0 N., 141.6 E.
Near E. coast of Honshu, Japan

h	about 29 km.		
H	13	48	28.8
ePZ	13	01	32

24 mai 13.0 N., 124.5 E.
Samar, Philippine Isl.

h	about 33 km.		
H	23	21	10.6
eP'Z	23	39	58.7

25 mai 51.3 N., 178.7 E.
Rat Isl. Aleutian Isl.

h	about 40 km.		
H	13	07	49.7
ePZ	13	18	28

25 mai 19.3 S., 69.6 W.
N. Chile

h	about 109 km.		
H	16	22	52.0
iPZ	16	33	19.1 d
ipPZ			45.5
isPZ			55.0

26 mai 13.7 N., 90.6 W.
Near coast of Guatemala

h	about 39 km.		
H	04	58	39.2
iPZ	05	05	28.2
eSSE"		11	30

26 mai 35.7 S., 180.0 E.
Off coast of North Isl., New Zealand

h	about 63 km.		
H	06	42	53.9
eP'Z	07	01	55

26 mai 56.1 S., 27.6 W.
S. Sandwich Isl. region

h	about 120 km.		
H	19	44	10.9
eP'Z	20	02	28
eN"	20	12	00

27 mai 53.7 N., 156.7 W.
S. of Alaska

h	about 33 km.		
H	19	29	24.8
ePZ	19	38	28.4

29 mai 35.2 N., 22.8 E.
Mediterranean Sea

h	about 68 km.		
H	01	47	49.3
eN"	02	42.7	

29 mai 7.0 N., 77.6 W.
Panama-Colombia border region.

h	about 33 km.		
H	11	53	45.8
iPZ	12	01	08.8 d

29 mai 57.8 S., 147.3 W.
S. Pacific Cordillera

h	about 33 km.		
H	15	36	31.9
e E"	16	27	

30 mai 51.6 N., 174.7 E.
Near Isl. Aleutian Isl.

h	about 38 km.		
H	01	14	18.6
eLE"	01	50	

30 mai 17.0 S., 167.8 E.
New Hebrides Isl.

h	about 38 km.		
H	02	09	03.9
eLE"	03	11.5	

30 mai 22.0 S., 68.5 W.
N. Chile

h	about 124 km.		
H	14	02	29.4
ePZ	14	13	42.7

30 mai 1.8 N., 98.2 W.
W. of Galapagos Isl.

h	about 33 km.		

H	19	28	31.0
ePZ	19	37	05
eE"		44	14

31 mai 32.6 N., 78.2 E.
Kashmir-Tibet border region

h	about 33 km.		
H	02	04	42.9
eLE"	02	52	

31 mai 49.3 N., 127.8 W.
Vancouver Isl. region

h	about 11 km.		
H	03	20	42.0
ePZ	03	27	46.5

31 mai 44.1 N., 128.8 W.
Off coast of Oregon

h	about 33 km.		
H	05	07	43.4
ePZ	05	15	04
eSE"		21	04

31 mai 7.5 S., 128.7 E.
Banda Sea

h	about 37 km.		
H	11	38	28.0
eP'Z	11	57	46

1 juin 7.0 N., 73.4 W.
N. Colombia

h	about 150 km.		
H	15	10	58.4
ePZ	15	18	07.5

2 juin 23.5 S., 180.0
S. of Fiji Isl.

h	about 539 km.		
H	05	12	59.1
eP'Z	05	30	43.5

2 juin 4.6 S., 105.6 W.
N. Easter Isl. Cordellera

h	about 33 km.		
H	13	57	50.9
ePZ	14	07	39

2 juin 16.0 N., 46.8 W.
N. Atlantic Ridge

h	about 33 km.		
H	23	40	24.4
iPZ	23	47	34.3 c
iSN"		53	27

3 juin 51.1 N., 174.9 E.
Near Isl. Aleutian Isl.

h	about 33 km.		
H	04	13	38.1
eLN"	05	01	

3 juin 8.8 S., 157.1 E.
Solomon Isl.

h	about 50 km.		
H	04	45	13.4
eP'Z	05	04	13

3 juin 16.1 N., 46.7 W.
N. Atlantic Ridge

h	about 33 km.		
H	07	14	59.0
ePZ	07	22	19.5

3 juin 51.9 N., 175.8 E.
Rat Isl. Aleutian Isl.

h	about 58 km.		
H	07	43	39.1
iPZ	07	54	20.5 d

3 juin 18.5 N., 70.3 W.
Dominican Republic region

h	about 27 km.		
H	10	57	08.8
iPZ	11	02	51.7

4 juin 44.2 S., 75.9 W.
Off Coast of S. Chile

h	about 33 km.		
H	08	05	36.7
ePZ	08	18	30.5

4 juin 51.1 N., 178.5 E.
Rat Isl. Aleutian Isl.

h	about 41 km.		
H	15	02	18.3
ePZ	15	13	17.5

4 juin 51.8 N., 176.8 E.
Rat Isl. Aleutian Isl.

h	about 25 km.		

H	22	54	58.3
ePZ	23	05	25

4 juin 19.1 S., 177.1 W.
Fiji Isl. Region

h	about 378 km.		
H	23	47	57.1
iP'Z	00	05	28.9 d

5 juin 60.2 S., 18.4 W.
S.W. Atlantic Ocean

h	about 33 km.		
H	12	39	17.4
eLN"	13	11.7	

8 juin 12.6 N., 87.5 W.
Near Coast of Nicaragua

h	about 106 km.		
H	01	26	21.6
ePZ	01	33	01.5

8 juin 42.1 N., 126.4 W.
Off Coast of Oregon

h	about 33 km.		
H	12	41	43.0
eLN"	13	02	

8 juin 23.3 N., 108.5 W.
Gulf of California

h	about 33 km.		
H	13	39	58.2
ePZ	13	46	59
eSN"		52	36

9 juin 52.6 N., 173.2 E.
Near Isl. Aleutian Isl.

h	about 25 km.		
H	13	26	52.2
ePZ	13	37	42

11 juin 35.2 S., 107.5 W.
Easter Isl. Cordillera

h	about 31 km.		
H	01	34	20.3
ePZ	01	47	06

11 juin 51.8 N., 174.1 E.
Near Isl. Aleutian Isl.

h	about 35 km.		
H	02	37	34.7
iPZ	02	48	24.7 d
ipPZ			35.0

11 juin 44.7 N., 148.7 E.
Kurile Isl.

h	about 47 km.		
H	03	33	44.9
iPZ	03	46	04.5 c
iPPZ		49	13.0
iSE"		56	17

11 juin 44.3 N., 149.0 E.
Kurile Isl.

h	about 48 km.		
H	04	14	51.4
ePZ	04	27	11

11 juin 44.5 N., 149.2 E.
Kurile Isl.

h	about 42 km.		
H	04	44	53.1
ePZ	04	47	14

11 juin 44.2 N., 149.3 E.
Kurile Isl.

h	about 46 km.		
H	05	57	09.2
ePZ	06	09	30.5

11 juin 44.4 N., 149.2 E.
Kurile Isl.

h	about 50 km.		
H	07	11	05.7
iPZ	07	23	26.1 d

11 juin 44.1 N., 149.4 E.
Kurile Isl.

h	about 61 km.		
H	07	27	45.5
ePZ	07	40	05

11 juin 44.3 N., 149.0 E.
Kurile Isl.

h	about 54 km.		
H	08	41	01.1
iPZ	08	53	21.8 d

11 juin 44.4 N., 149.3 E.
Kurile Isl.

h	about 29 km.		

H 10 16 37.3
ePZ 10 29 02.5

11 juin 44.2 N., 149.1 E.
Kurile Isl.
h about 33 km.
H 12 00 00.8
ePZ 12 12 31

12 juin 44.2 N., 149.8 E.
Kurile Isl.
h about 41 km.
H 05 28 40.3
ePZ 05 41 02

12 juin 44.0 N., 149.1 E.
Kurile Isl.
h about 64 km.
H 05 41 00.3
ePZ 05 53 20

12 juin 44.3 N., 149.0 E.
Kurile Isl.
h about 48 km.
H 06 03 34.8
ePZ 06 16 11

12 juin 19.2 N., 64.9 W.
Virgin Isl.
h about 24 km.
H 10 59 16.8
eLN" 11 13

12 juin 44.1 N., 149.0 E.
Kurile Isl.
h about 41 km.
H 18 45 43.3
ePZ 18 57 58

12 juin 20.3 S., 68.9 W.
Chile-Bolivia Border Region
h about 103 km.
H 18 50 11.3
ePZ 19 00 46.5 c
iPZ 47.0 d
ipPZ 01 12.7
iPPZ 03 13
iSE" 09 28
isSE" 10 10
eSSE" 13 38
eSSSE" 17 00

12 juin 44.2 N., 149.0 E.
Kurile Isl.
h about 48 km.
H 22 16 46.3
ePZ 22 29 07.5 d

13 juin 44.1 N., 149.3 E.
Kurile Isl.
h about 50 km.
H 02 20 52.0
ePZ 02 33 14

13 juin 41.9 N., 143.4 E.
Hokkaido Japan region
h about 32 km.
H 07 06 13.6
ePZ 07 18 57
iSE" 07 29 32

13 juin 37.8 N., 29.4 E.
Turkey
h about 18 km.
H 20 01 48.1
ePZ 20 13 12.5
eSN" 22 40

14 juin 39.8 S., 45.8 E.
Atlantic-Indian Rise
h about 33 km.
H 07 30 43.6
eL 08 25.5

14 juin 44.6 N., 129.5 W.
Off Coast of Oregon
h about 33 km.
H 09 40 09.5
eLN" 09 58

15 juin 50.1 N., 178.2 E.
Rat Isl. Aleutian Isl.
h about 28 km.
H 04 46 13.1
ePZ 04 57 00

15 juin 37.9 S., 177.5 E.
Off E. Coast of North Isl. N.Z.

h about 58 km.
H 09 20 29.8
iP'Z 09 39 27.7

15 juin 20.9 S., 173.7 E.
New Hebrides Isl. Region
h about 22 km.
H 23 10 25.2
eSSN" 23 47 12

16 juin 34.3 S., 112.2 W.
Easter Isl. Cordillera
h about 33 km.
H 03 55 17.6
eSKSE" 04 18 42
eSSE" 24 32

17 juin 33.0 N., 115.6 W.
California Mexico Border Region
h about 16 km.
H 04 32 23.7
eLE" 05 17

18 juin 11.1 S., 73.6 W.
Peru
h about 111 km.
H 22 45 16.4
iPZ 22 54 48.1 c
ipPZ 55 14.8

19 juin 13.0 N., 90.3 W.
Near Coast of Guatemala
h about 32 km.
H 01 39 37.8
ePZ 01 46 30

19 juin 52.3 N., 172.0 E.
Near Isl. Aleutian Isl.
h about 54 km.
H 06 38 12.6
iPZ 06 49 02.2 d

19 juin 55.6 N., 35.0 W.
N. Atlantic Ocean
h about 33 km.
H 11 09 03.6
ePZ 11 14 37

19 juin 6.2 N., 73.3 W.
N. Colombia
h about 174 km.
H 18 00 53.0
ePZ 18 08 05

20 juin 44.6 N., 149.2 E.
Kurile Isl.
h about 40 km.
H 01 57 24.8
iPZ 02 09 45.0 c

20 juin 42.8 N., 126.4 W.
Off Coast of Oregon
h about 33 km.
H 17 23 55.4
eLE" 17 46

20 juin 42.8 N., 126.5 W.
Off Coast of Oregon
h about 33 km.
H 18 04 35.7
iPZ 18 11 47.1 c

20 juin 25.4 N., 109.4 W.
Gulf of California
h about 33 km.
H 19 16 21.2
ePZ 19 23 12

21 juin 28.1 N., 56.0 E.
Southern Iran
h about 28 km.
H 00 21 14.5
ePZ 00 34 30 d

21 juin 6.8 N., 73.3 W.
N. Colombia
h about 167 km.
H 09 27 55.4
ePZ 09 35 04

21 juin 3.5 S., 77.4 W.
Peru-Ecuador Border Region
h about 5 km.
H 10 46 34.8
iPZ 10 55 25.2 d

22 juin ePE" 12 56

22 juin 20.9 S., 173.2 E.
New Hebrides Isl. Region
h about 8 km.
H 13 13 23.1
eLZ" 14 09

22 juin 18.3 S., 69.1 W.
Northern Chile
h about 122 km.
H 14 19 50.4
iPZ 14 30 10.8 c

22 juin 7.1 N., 123.5 E.
Mindanao Philippine Isl.
h about 60 km.
H 23 48 07.1
eP'Z 00 07 03.5
eSSE" 25 56

23 juin 11.5 N., 87.7 W.
Near Coast of Nicaragua
h about 25 km.
H 07 37 46.3
iPZ 07 44 46.9 c
ipPZ 53.9

23 juin 56.6 N., 152.9 W.
Kodiak Isl. region
h about 36 km.
H 11 09 15.3
ePZ 11 17 54
ipPZ 18 02.2
iSE" 24 54
iScSN" 27 46
iSSN" 28 16

23 juin 56.6 N., 152.8 W.
Kodiak Isl. region
h about 25 km.
H 12 23 22.2
ePZ 12 32 04

23 juin 2.7 S., 127.9 E.
Ceram Sea
h about 24 km.
H 16 57 05.7
eP'Z 17 16 18

24 juin 18.1 S., 69.7 W.
Northern Chile
h about 80 km.
H 03 29 46.2
iPZ 03 40 09.4 c

24 juin 17.1 N., 99.5 W.
Guerrero, Mexico
h about 57 km.
H 03 45 43.6
iPZ 03 52 39.0 d

24 juin 7.0 N., 126.2 E
Mindanao, Philippine Isl.
h about 50 km
H 07 45 13.6
eP'Z 08 04 11.0 d

24 juin 15.4 S , 70.2 W.
S. Peru
h about 177 km.
H 16 54 02.2
ePZ 17 03 57

24 juin 20.1 N., 120.8 E.
Philippine region
h about 33 km
H 23 08 40.4
eLE" 00 09

25 juin 59.5 N., 144.6 W.
Gulf of Alaska
h about 22 km.
H 07 47 25.1
eLE" 08 10

27 juin 9 2 N , 94 1 E.
Nicobar Isl. region
h about 8 km.
H 01 04 23.8
eLE" 01 54

27 juin 54.5 S., 5.6 E.
Bouvet Isl. region
h about 33 km.
H 09 45 48.0
eP'Z 10 04 35

27 juin 60.3 N., 141.2 W.
S.E. Alaska
h about 12 km.
H 11 08 55.9

ePZ 11 16 43

27 juin 12.5 N., 87.9 W.
Near Coast of Nicaragua
h about 33 km.
H 13 08 28.4
ePZ 13 15 18

27 juin 2.5 S., 77.0 W.
Peru-Ecuador Region
h about 108 km.
H 17 09 02.9
iPZ 17 17 31.8 d
ipPZ 18 02.7

28 juin 5.1 S., 153.0 E.
New Ireland Region
h about 50 km.
H 03 33 36.5
eP'Z 03 52 29
iP'Z 30.2 c

28 juin 23.9 N., 121.6 E.
Taiwan
h about 33 km.
H 15 44 53.8
eLE" 16 39

29 juin 44.4 N., 149.4 E.
Kurile Isl.
h about 33 km.
H 02 04 22.6
eLE" 02 42

29 juin 39.6 N., 110.3 W.
Utah
h about 0 km.
H 07 46 28.1
eLE" 08 39

30 juin 1.6 S., 126.7 E.
Molucca Sea
h about 33 km.
H 02 53 14.0
eP'Z 03 12 30

30 juin 51.7 N., 176.5 E.
Rat Isl. Aleutian Isl.
h about 60 km.
H 08 33 31.8
iPZ 08 44 11.5 c

30 juin 21.3 S., 66.5 W.
S. Bolivia
h about 191 km.
H 11 12 46.6
iPZ 11 23 19.5 c

30 juin 51.8 N., 176.5 E.
Rat Isl. Aleut an Isl.
h about 59 km.
H 17 10 53.1
eLN" 17 44

1 juil. 23.3 S., 67.8 W.
Chile-Argentina Border Region.
h about 91 km.
H 04 54 51.9
iPZ 05 05 48.4 c

Secousses subséquentes du Séisme du 4 février de l'Île Aleutienne Rat

					Lat.	Long.	h
4 fév.	H	06	04	57.7	51.7	174.9	35
	iPZ	06	15	44.5			
4 fév.	H	06	37	05.4	52.6	172.0	35
	iPZ	06	47	56.8			
4 fév.	H	06	39	30.1	51.7	175.8	30
	iPZ	06	50	15.3			
4 fév.	H	06	52	51.7	52.2	173.1	33
	ePZ	07	03	43			
4 fév.	H	07	11	22.7	51.1	177.7	35
	ePZ	07	22	04			
4 fév.	H	07	14	58.7	52.0	173.9	25
	iPZ	07	25	46.5c			
4 fév.	H	07	23	12.3	51.9	173.2	25
	ePZ	07	34	06			
4 fév.	H	07	43	42.2	52.7	179.9	33
	iPZ	07	54	32.3c			
4 fév.	H	07	51	39.6	52.3	174.5	20
	iPZ	08	02	04.4d			
4 fév.	H	08	04	09.4	52.1	172.8	30
	ePZ	08	15	11			
4 fév.	H	08	06	16.6	61.9	174.3	40
	iPZ	08	17	04.5d			
4 fév.	H	08	10	09.6	52.1	173.3	30
	ePZ	08	21	01.5			
4 fév.	H	08	33	40.9	51.9	174.0	30
	iPZ	08	44	30.6d			
4 fév.	H	08	37	14.5	51.7	174.6	35
	ePZ	08	48	03.0d			
4 fév.	H	08	40	40.9	51.3	179.5	40
	ePZ	08	51	17			
4 fév.	H	08	54	04.3	52.0	172.5	30
	ePZ	09	05	02.5			

4 fév.	H	08	59	17.9	52.4	173.7	25
	iPZ	09	10	11.5d			
4 fév.	H	09	00	31.5	51.9	174.3	35
	iPZ	09	11	19.5d			
4 fév.	H	09	35	20.3	51.8	176.6	30
	ePZ	09	46	04			
4 fév.	H	09	42	51.6	51.8	174.6	15
	ePZ	09	52	48			
4 fév.	H	09	52	02.9	51.5	175.9	30
	ePZ	10	02	49			
4 fév.	H	10	01	01.5	51.7	174.7	33
	ePZ	10	11	50			
4 fév.	H	10	14	24.2	51.8	172.7	30
	ePZ	10	25	17			
4 fév.	H	10	41	33.9	51.5	176.5	35
	ePZ	10	52	19			
4 fév.	H	11	00	23.2	52.0	173.2	25
	ePZ	11	11	10.5			
4 fév.	H	11	08	46.0	51.4	176.1	35
	ePZ	11	19	31			
4 fév.	H	11	27	22.0	51.5	174.9	20
	iPZ	11	38	12.3d			
4 fév.	H	11	48	23.9	51.2	177.2	40
	ePZ	11	59	04.5			
4 fév.	H	11	58	06.9	51.6	176.3	40
	ePZ	12	08	50			
4 fév.	H	12	06	04.3	52.6	172.1	25
	iPZ	12	16	51.5c			
4 fév.	H	12	53	07.7	52.1	174.2	25
	ePZ	13	03	57			
4 fév.	H	13	29	54.6	51.6	174.7	40
	ePZ	13	40	44			
4 fév.	H	14	18	27.9	53.0	171.0	30
	iPZ	14	29	20.3c			
	iSE"		38	12			

4 fév.	H	15	51	25.5	53.1	170.8	40
	iPZ	16	02	17.5c			
4 fév.	H	16	32	36.0	52.0	173.1	30
	ePZ	16	43	33			
4 fév.	H	18	13	50.9	51.9	173.3	30
	ePZ	18	24				
4 fév.	H	18	34	07.3	51.2	176.7	35
	ePZ	18	44	58			
4 fév.	H	18	48	11.0	52.0	174.9	40
	iPZ	18	58	57.7d			
4 fév.	H	19	54	37.1	51.6	175.3	25
	ePZ	20	05	21			
4 fév.	H	20	32	25.1	51.6	176.6	40
	iPZ	20	43	08.0d			
4 fév.	H	20	47	12.1	51.5	175.4	30
	iPZ	20	58	08.4d			
4 fév.	H	21	29	38.9	52.4	174.7	15
	ePZ	21	40	29.5			
4 fév.	H	22	30	05.1	51.8	174.2	31
	iPZ	22	40	54.6c			
5 fév.	H	00	31	35.5	52.0	176.6	40
	iPZ	00	42	16.5d			
5 fév.	H	00	42	22.2	52.2	172.4	35
	ePZ	00	53	15			
5 fév.	H	02	58	28.5	51.5	174.9	36
	ePZ	03	09	21			
5 fév.	H	03	02	46.3	51.7	176.2	33
	ePZ	03	13	30.5			
5 fév.	H	06	25	23.1	51.8	177.0	40
	ePZ	06	36	03			
5 fév.	H	06	39	49.6	51.8	175.1	25
	iPZ	06	50	37.8 d			
5 fév.	H	07	19	15.0	51.7	174.7	40
	iPZ	07	30	02.5d			

5 fév.	H	07	29	16.2	51.6	175.2	35
	ePZ	07	40	04			
5 fév.	H	07	31	32.4	51.6	176.1	33
	iPZ	07	42	16.2d			
5 fév.	H	08	51	23.0	52.2	175.1	35
	iPZ	09	02	07.6			
5 fév.	H	09	32	09.3	52.3	174.3	41
	iPZ	09	42	54.2c			
	iSE"		51	41			
	eSSE"		55	50			
5 fév.	H	10	50	27.2	52.3	172.4	40
	ePZ	11	01	18			
5 fév.	H	12	55	41.8	51.7	173.8	25
	ePZ	13	06	34			
5 fév.	H	13	38	46.7	52.0	174.0	35
	iPZ	13	49	35.4c			
5 fév.	H	13	51	48.6	52.1	173.3	35
	ePZ	14	02	39			
5 fév.	H	14	08	22.7	51.6	174.4	35
	iPZ	14	19	12.0d			
5 fév.	H	14	28	42.2	51.8	174.5	30
	iPZ	14	39	31.2d			
5 fév.	H	14	38	14.5	51.7	174.7	30
	ePZ	14	49	04			
5 fév.	H	16	50	49.1	51.5	174.1	40
	ePZ	17	01	39			
5 fév.	H	18	16	07.6	51.9	173.7	30
	ePZ	18	26	58			
5 fév.	H	18	24	02.8	51.6	174.0	34
	ePZ	18	34	54			
5 fév.	H	19	00	41.9	52.0	173.2	27
	ePZ	19	11	41			
5 fév.	H	20	47	13.3	51.9	174.6	35
	iPZ	20	58	02.0c			
5 fév.	H	22	15	59.5	51.5	176.7	25
	ePZ	22	26	44			

6 fév.	H	03	22	26.6	51.3	173.9	30
	ePZ	03	33	19			
6 fév.	H	03	39	15.5	51.5	175.3	31
	ePZ	03	50	03			
6 fév.	H	04	02	52.7	52.1	175.7	35
	ePZ	04	13	31			
	iSSSE"		30	00			
6 fév.	H	05	32	12.2	51.5	175.8	30
	ePZ	05	42	59			
6 fév.	H	06	23	39.0	52.0	173.2	30
	ePZ	06	34	30.5			
6 fév.	H	07	14	45.1	52.1	173.0	35
	ePZ	07	25	36.5d			
6 fév.	H	08	46	51.2	51.9	174.0	30
	ePZ	08	57	41			
6 fév.	H	08	54	38.9	52.1	175.4	30
	iPZ	09	05	24.5d			
6 fév.	H	11	32	15.8	51.5	174.9	33
	ePZ	11	43	04			
6 fév.	H	12	22	26.2	51.8	175.3	35
	ePZ	12	33	12			
6 fév.	H	14	11	10.1	51.7	174.2	38
	iPZ	14	21	59.0d			
6 fév.	H	18	10	28.8	51.5	176.5	35
	ePZ	18	21	13			
6 fév.	H	21	02	59.6	52.8	172.0	20
	ePZ	21	13	52			
6 fév.	H	22	34	44.8	51.3	174.5	35
	ePZ	22	45	35.5			
6 fév.	H	23	23	40.4	51.5	176.5	33
	ePZ	23	34	24			
6 fév.	H	23	48	16.9	51.9	173.4	31
	ePZ	23	59	07.7			
7 fév.	H	01	00	12.5	52.2	172.1	30
	ePZ	01	11	06			

7 fév.	H	02	17	09.2	51.4	173.4	40
	ePZ	02	28	01.3d			
7 fév.	H	04	11	19.3	51.9	175.3	25
	iPZ	04	22	05.9d			
7 fév.	H	05	58	54.3	51.7	174.9	25
	iPZ	06	09	43.3d			
7 fév.	H	08	40	05.3	51.8	174.7	35
	ePZ	08	50	53d			
7 fév.	H	09	25	51.1	51.4	179.1	30
	iPZ	09	36	29.4c			
7 fév.	H	11	23	14.8	52.2	172.4	35
	ePZ	11	34	07			
7 fév.	H	12	21	21.1	53.0	171.7	25
	iPZ	12	32	12.8d			
7 fév.	H	14	47	11.6	51.7	174.6	33
	ePZ	14	58	00.5			
7 fév.	H	17	13	08.2	52.2	173.1	35
	ePZ	17	23	59			
7 fév.	H	19	29	23.9	55.2	175.2	20
	iPZ	19	40	23.3d			
8 fév.	H	07	23	08.8	51.8	174.6	33
	ePZ	07	33	58			
8 fév.	H	09	29	25.4	52.1	176.7	25
	ePZ	09	40	07.5d			
8 fév.	H	10	09	18.4	51.7	175.0	25
	ePZ	10	20	07			
8 fév.	H	15	46	49.9	55.1	175.7	40
	iPZ	15	57	45.2c			
	ipPZ			56.7			
	eSN"	16	06	44			
8 fév.	H	17	37	24.6	55.2	165.3	30
	iPZ	17	48	22.4c			
8 fév.	H	23	25	52.6	55.1	175.2	40
	ePZ	23	36	49.5			
9 fév.	H	04	34	55.1	51.6	179.0	40
	iPZ	04	45	28.7d			

9 fév.	H	17	37	15.9	52.8	171.9	41
	iPZ	17	48	05.7			
	ipPZ			16.0			
9 fév.	H	18	18	21.2	51.8	173.9	10
	ePZ	18	29	17			
9 fév.	H	23	11	26.7	52.2	173.3	33
	ePZ	23	22	17			
10 fév.	H	00	38	06.1	52.4	173.5	35
	ePZ	00	48	56			
10 fév.	H	02	08	32.9	52.2	172.9	33
	ePZ	02	19	25			
10 fév.	H	05	06	43.5	50.7	175.0	33
	ePZ	05	17	32			
10 fév.	H	08	12	00.1	51.4	175.2	35
	iPZ	08	22	49.0d			
10 fév.	H	11	28	14.7	50.7	175.1	25
	ePZ	11	39	08.5			
11 fév.	H	06	46	23.3	52.9	171.6	25
	iPZ	06	57	15.9d			
11 fév.	H	13	04	54.8	51.0	175.9	35
	ePZ	13	15	43			
12 fév.	H	00	43	17.1	51.5	175.8	33
	ePZ	00	54	03			
12 fév.	H	00	55	06.2	52.2	172.8	25
	ePZ	01	05	59			
12 fév.	H	01	03	18.0	51.3	176.2	35
	ePZ	01	14	08.5			
12 fév.	H	01	35	53.6	52.1	172.8	33
	ePZ	01	46	36			
12 fév.	H	12	11	58.0	52.2	171.3	35
	ePZ	12	22	53.5			
13 fév.	H	18	08	41.6	52.0	173.2	33
	ePZ	18	19	38			
14 fév.	H	17	01	13.9	55.1	165.6	20
	ePZ	17	12	12			

14 fév.	H	21	17	34.4	52.4	173.9	39
	iPZ	21	28	21.4d			
15 fév.	H	01	25	08.8	51.4	179.4	42
	ePZ	01	35	44			
	eSN"		44	34			
15 fév.	H	05	01	27.2	52.2	172.7	33
	ePZ	05	12	19			
15 fév.	H	06	04	57.5	52.3	172.6	26
	ePZ	06	15	50			
15 fév.	H	06	42	11.2	51.4	179.5	28
	ePZ	06	52	56			
17 fév.	H	02	52	26.0	51.9	175.1	34
	ePZ	03	03	13			
17 fév.	H	10	13	03.2	50.3	173.1	23
	ePZ	10	24	02.5			
17 fév.	H	10	18	51.3	51.8	176.6	44
	ePZ	10	29	33			
	eSE"		38.4				
18 fév.	H	07	26	57.8	51.9	174.1	36
	iPZ	07	37	41.4d			
18 fév.	H	08	34	05.4	51.8	176.4	15
	iPZ	08	44	51.4d			
18 fév.	H	09	34	52.4	51.6	174.9	20
	ePZ	09	45	48			
18 fév.	H	23	13	36.3	51.4	179.1	28
	ePZ	23	24	13 d			
	eSE"		32	48			
	eSSE"		40	12			
18 fév.	H	23	26	38.9	51.4	174.7	44
	ePZ	23	37	27			
19 fév.	H	03	24	43.1	51.6	175.0	23
	ePZ	03	35	30			
19 fév.	H	06	22	23.4	51.2	177.8	40
	eL	06	54				
19 fév.	H	18	52	42.1	51.1	178.4	35
	ePZ	19	03	21			

20 fév.	H	20	44	03.9	51.7	176.4	33
	ePZ	20	54	47			
20 fév.	H	22	06	38.3	50.4	178.2	32
	ePZ	22	17	23			
22 fév.	H	09	14	51.3	51.9	173.4	35
	ePZ	09	25	42			
24 fév.	H	20	53	52.4	52.2	174.4	34
	iPZ	21	04	39.2d			
25 fév.	H	05	22	14.5	52.1	173.2	35
	ePZ	05	33	05.1d			
25 fév	H	06	20	57.5	51.9	173.4	30
	ePZ	06	31	49			
25 fév.	H	12	27	51.9	51.1	178.1	33
	eLE''	13	01				
28 fév.	H	01	16	21.8	50.4	177.7	34
	iPZ	01	27	07.9c			

M. Buist, S.J.

Bulletin de Géophysique

No 20

DECEMBRE 1966

SOMMAIRE

Observatoire de Géophysique
COLLÈGE JEAN-DE-BRÉBEUF
MONTRÉAL

OBSERVATOIRE DE GEOPHYSIQUE

COLLEGE JEAN-DE-BREBEUF

3200 Chemin Ste-Catherine
Montreal 26, Canada.

Directeur: M. Buist, S.J.
Directeur des Recherches: E. Gherzi, S.J.

C'est grâce à l'aide financière apportée à l'Observatoire de Géophysique par l'International Nickel Company of Canada Limited que cette publication a été rendue possible.

EFFECTS OF MORE RIGOROUS DEFINITIONS OF "FAIR WEATHER HOUR" ON ATMOSPHERIC ELECTRICITY AVERAGES

Conrad East, S.J.

Sommaire. - Des données d'électricité atmosphérique de Montréal, basées sur une définition un peu lâche de "beau temps", ont été soumises successivement à deux définitions plus strictes d' "heure de beau temps". Une évaluation des changements apportés ainsi aux données suggère que l'influence des vents élevés, comme générateur local d'électricité, n'est pas très importante; par suite, les valeurs associées à ce phénomène météorologique n'auraient pas à être rejetées préalablement au calcul des moyennes horaires de "beau temps". L'influence de l'activité des nuages non-précipitants semble plus importante et, par suite, peut difficilement être négligée quand les moyennes de beau temps sont établies.

Abstract. - Some atmospheric electricity data of Montreal, based on a loosely defined "fair weather" concept, were submitted stepwise to two more rigorous definitions of the "fair weather hour". An evaluation of the changes introduced in the data suggests that the influence of high winds as a local electric generator is not very important; therefore, values associated with this meteorological phenomenon would not have to be rejected prior to the calculation of the "fair weather" averages. The influence of cloud activity, independently of any precipitation, seems to be more important and, therefore, can hardly be neglected when the fair weather averages are established.

INTRODUCTION

According to the IAGA/IAMAP Joint Committee on atmospheric electricity (1966), a theoretical definition of "fair weather hour" with respect to electric measurements of the atmosphere may be given as follows: "hour during

which the local atmospheric electric generators at the station have but a negligible influence as compared with the influence of the global generators". Unfortunately, it is far more difficult to present a practical definition, that is to differentiate at one station the local generators from the global ones. All investigators, so far it is known, considered the occurrence of any hydrometeor as being a local electric generator: this means that "fair weather" periods should not be associated with precipitation, fog, blowing snow, ocean spray. Most of the investigators also acknowledged the influence of cloud activity as a local generator, but not always with the same appreciation: some allowed no more than half the sky covered by Cumuli (Reiter, 1958), others accepted only completely cloudless periods (Krasnogorskaya, 1961). Lastly, high wind occurrences were also considered by a few authors as a local electric generator: for instance, Van der Schueren and Koenigsfeld (1963) excluded all periods associated with wind speed higher than 10 knots. A small sample of the various definitions of "fair weather" is presented in Table 1.

TABLE 1 : Examples of fair weather definitions

Author and location	Hydrometeor	Clouds	High winds
Wait(1953), Tucson, U.S.A.	none	no cloud	no mention
Reiter(1958), Bavaria, Germ.	none	half sky	no mention
Krasnogorskaya(1961), USSR	none	no cloud	no mention
Cobb and Phillips(1962), Hawaii	none	no mention	no mention
Van der Schueren and Koenigsfeld (1963), Antarctic.	none	no mention	<10 knots

As a good "guideline" for low-land stations located in the moderate latitudes, the IAGA/IAMAP Joint Committee (1966) on atmospheric electricity recommended the following practical definition: "no hydrometeors, less than 3/10 cloudiness and less than 3 Beaufort wind".

DATA AND METHOD OF ANALYSIS

The Montreal data published so far in this Bulletin had been averaged according to the following definition: "electrically quiet hours", a definition which had been adopted after a comparison of the records with the meteorological observations. This resulted into a set of data almost completely expurgated from the hydrometeorological conditions such as precipitation, fog and blown-up snow. However, no account had been taken of cloudiness nor of high winds that occurred in the absence of hydrometeors.

It is the purpose of this paper to try evaluating the limitations of the definition so far used, by submitting a part of the Montreal data to two more rigorous definitions of "fair weather hour". These are: 1) "Fair weather": the "electrically quiet" data were diminished by all hourly values obtained when more than half the sky was covered by Cumuli; as a result, the data were made similar to Reiter's (1958); 2) "Strict fair weather" : the previous "fair weather" data were expurgated from all values which were associated with mean hourly wind speed higher than 12 mph (3 Beaufort wind); this led to a third set of data which almost corresponds to the practical definition proposed by the IAGA/IAMAP Joint Committee on atmospheric electricity. Thus, three sets of data are now available for comparison: 1) set A : electrically quiet values (in general, no hydrometeors); 2) set B : fair weather (no hydrometeors, no more than half cloudiness); 3) set C: strict fair weather (no hydrometeors, no more than half cloudiness, no mean hourly wind speed higher than 12 mph).

The meteorological conditions were read from the hourly observations of Dorval International Airport Station, 11 kilometers away from Brebeuf College Observatory, in Montreal. It is felt that the meteorological conditions were practically the same at both stations, especially so far as continuous precipitation and cloudiness were concerned. The wind speed might have been slightly lower at the College station due to building friction within the city, but this has probably led only to a slightly more rigorous definition of the "strict fair weather" period. Only precipitation of a showery type might have yielded some discrepancy from station to station, but since this should

TABLE 2 : MONTHLY MEAN HOURLY VALUES (in percent departure from the overall monthly mean)

POTENTIAL GRADIENT

MONTH	TIME(LST) / DATA	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	Mean (Volts/m)
January	A	76	87	88	81	85	84	82	82	104	111	132	125	117	122	123	115	118	111	101	101	86	77	89	86	114 (579)
	B	99	103	90	101	83	82	75	100	116	109	123	115	110	111	99	98	114	105	97	95	97	95	97	111	146 (269)
	C	103	106	95	109	83	78	59	88*	136*	100	122	112	115	109	100	95	115	104	100	93	98	94	94	107	153 (159)
April	A	94	96	102	104	111	109	114	134	140	129	124	111	96	89	83	84	77	85	82	81	89	88	89	92	90 (629)
	B	105	113	106	99	116	115	129	141	138	124	121	114	99	83	76	74	74	74	73	76	82	86	89	96	104 (351)
	C	128	128	120	102	119	118	134	150	134	116	69*	80*	91	82	64*	49*	62	73	72	75	80	87	93	98	111 (209)
July	A	86	84	77	85	92	91	116	129	136	136	115	102	102	96	89	92	106	95	88	104	106	101	89	87	78 (676)
	B	89	84	77	92	95	101	121	125	131	144	123	91	100	93	82	85	101	93	86	106	111	98	95	93	81 (458)
	C	96	86	78	97	102	103	119	134	142	161	121	81	98	81	68	77	94	81	74	109	111	101	97	99	82 (325)
October	A	84	81	73	71	71	71	85	103	109	116	120	130	115	114	122	123	125	114	105	89	90	99	103	88	84 (660)
	B	73	73	72	73	73	77	81	92	132	135	142	134	124	121	123	116	114	109	102	98	88	95	97	82	95 (350)
	C	71	70	67	77	80	82	76	107	154	147	142	139	127	132	133	121	119	103	98	95	85	93	96	85	97 (264)
		CURRENT DENSITY																								(10^{-13}A/m^2)
January	A	88	109	103	106	100	100	103	106	126	135	115	121	121	115	118	115	130	100	100	94	91	79	91	94	34 (516)
	B	95	113	102	95	102	92	90	108	118	121	136	123	126	113	110	97	97	80	80	102	95	82	85	87	39 (257)
	C	92	119	116	95	103	89	87	89*	113*	103	143	122	122	103*	114	92*	97	92	78	97	78	70	73	81	37 (146)
April	A	83	98	90	100	90	100	110	122	127	117	122	115	110	105	107	110	95	95	80	85	88	83	88	83	41 (583)
	B	93	98	98	104	102	104	120	133	131	122	131	125	116	100	98	93	89	91	80	78	82	82	80	85	45 (341)
	C	109	107	109	109	107	111	219	162	131	124	96*	98*	102	102	89*	73*	80	82	73	80	82	84	84	89	45 (209)
July	A	104	111	109	107	105	107	105	114	100	100	102	91	89	87	85	93	98	100	93	98	100	96	89	98	56 (557)
	B	109	113	116	111	122	107	111	113	106	96	98	84	89	75	75	95	95	106	106	102	102	98	95	100	55 (391)
	C	118	120	127	120	136	118	116	114	107	95	89	71	85	69	58	84	75	78	87	93	100	93	96	102	55 (284)
October	A	68	85	89	85	92	145	127	119	121	129	110	108	90	102	108	111	106	110	103	97	98	85	102	89	64 (221)
	B	55	81*	97	90*	103*	173*	156*	124*	129*	108	103	95	97	107	111	107	100	97	92	87	84	59*	95	79	62 (140)
	C	60*	56*	97	87*	103*	172*	156*	124*	129*	97	118*	74*	89*	116	126	123	113	95	92	87	84	58*	98*	53*	62 (108)

* Averages based on less than 5 readings

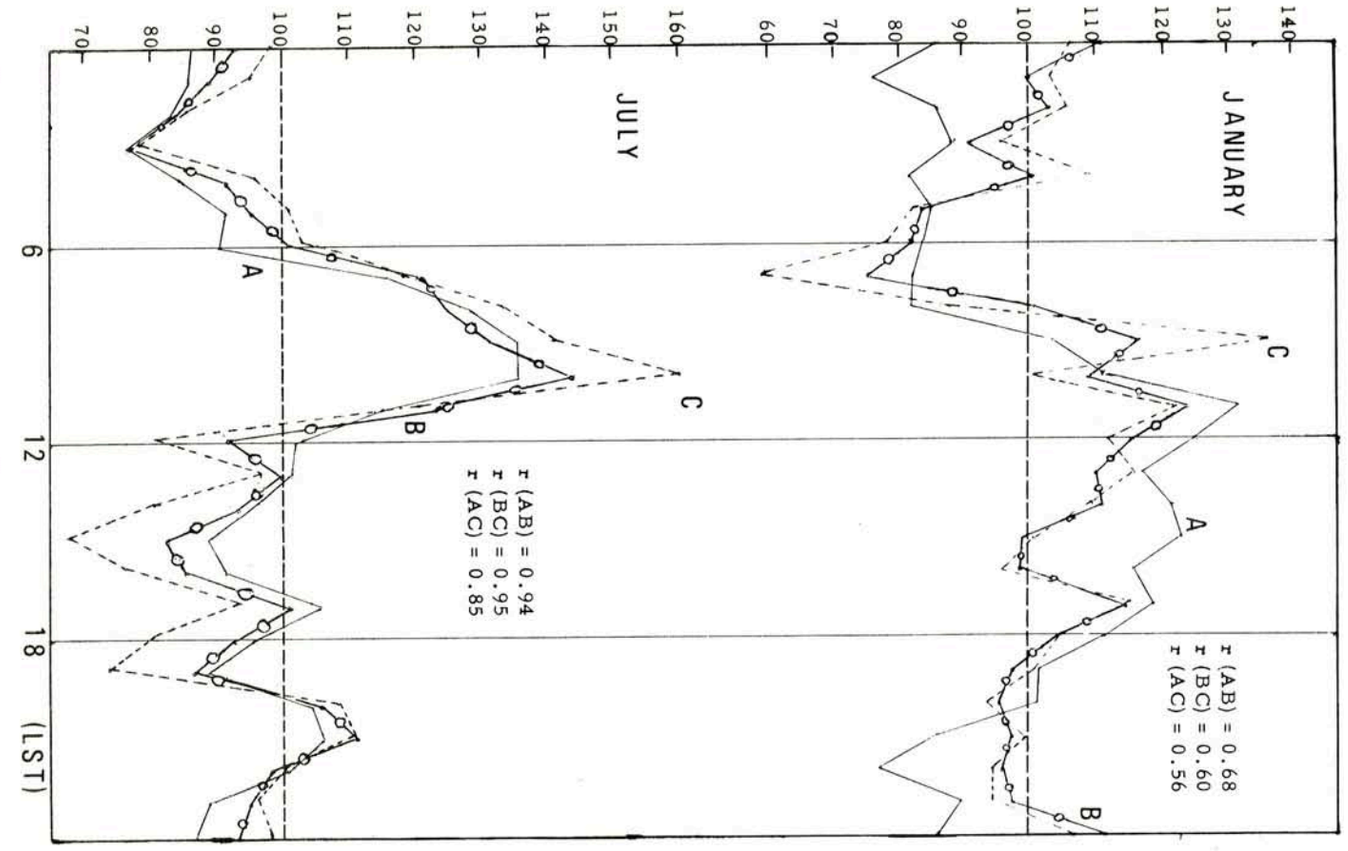


Fig. 1 : Monthly mean diurnal variations (in percent departure from the overall monthly mean) of potential gradient for January and July, 1964, during "electrically quiet" (A), "fair weather" (B) and "strict fair weather" (C) hours.

already have been reflected on the cloudiness conditions, it is not believed to bias the data in any way.

A comparison of the three sets of data was undertaken for electric potential gradient and air-earth current density of four months in 1964, January, April, July and October, each month being centred with respect to the season. The comparison was made between the curves exhibiting the monthly mean diurnal variations of each parameter, as they appear in Table 2.

RESULTS

In order to compare the different sets of data and, thus, to evaluate the modifications introduced in set A by applying more rigorous definitions of fair weather hours, two features of the data will be considered: their overall monthly means and their hour-to-hour variations. Indeed, two sets of data may differ from each other by their average level, which is measured by their mean, and/or by their fluctuations about that mean, which can be measured by the coefficient of correlation between the two sets of data.

The monthly means, in standard one-meter height units (reduction factor K= 0.11), are presented in Table 2 at the end of each row, together with the total number of hours (intra parentheses) that entered into the computation of each mean. In Table 3 appear the correlation coefficients between

TABLE 3 : Correlation coefficients

		January	April	July	October
Potential Gradient	r(AB)	0.68 (22)	0.94 (20)	0.94 (24)	0.91 (24)
	r(BC)	0.60 (22)	0.95 (20)	0.95 (24)	0.97 (24)
	r(AC)	0.56 (22)	0.83 (20)	0.85 (24)	0.86 (24)
Current Density	r(AB)	0.69 (20)	0.81 (20)	0.86 (24)	--
	r(BC)	0.90 (20)	0.79 (20)	0.69 (24)	--
	r(AC)	0.65 (20)	0.80 (20)	0.78 (24)	--

the various sets of data: for instance, r(AB), being the coefficient between set A and set B, and so on. The numbers intra parentheses in Table 3 indicate how many hours, out of a possible maximum of 24, were used in calculating the correlation coefficients. This procedure is being justified by referring to Table 2, wherein the total number of hours used in calculating the monthly means is seen to decrease as one goes from set A to set C. In data set C, so many values had been rejected that, at a few hours, the monthly mean was based on a rather low number of values. Such a low number was suspected to introduce, at a few hours, discrepancies between the various sets of data which very likely were not due to the use of a more rigorous definition of "fair weather hours", but rather to the low number of values. It was therefore decided not to use, in the computation of the coefficients, the hourly values for which the means (starred in Table 2) had been established on less than 5 individual readings, out of a possible maximum of 30 or 31 in one month. No coefficient was calculated for the current density data of October, because there were altogether only 10 hourly values out of 24, whose means had been based on 5 readings or more.

Graphs for some of the data presented in Table 2 appear in Figure 1. The data for the potential gradient of January and July were chosen for such a display, in order to illustrate how the hour-to-hour variations look like when the correlation coefficients are the lowest (January) and the highest (July).

DISCUSSION

1) Potential gradient data

The general consequence of using more rigorous definitions of fair weather hour is, first, to increase the general level of the data. Going from "quiet" (A) to "strict fair weather" (C), there is a consistent increase in the monthly means of the potential gradient, less important, however, as one goes from "fair weather" to "strict fair weather". The increases, indeed, range from 1 to 6 percent in the second step (B to C), as compared to 5 and 28 percent in the first step (A to B).

To correctly interpret this result, one thing has to be borne in mind: set B has been established by rejecting from set A all hourly values associated with more than half cloudiness, and set C has been established by rejecting from set B all hourly values associated with high wind conditions. However, some of the high wind conditions were accompanied by high cloudiness and, thus, were already absent from set B. Table 4 presents, for each month, the number of hours during which various meteorological conditions prevailed.

TABLE 4 : Number of hours associated with various mentioned meteorological conditions

Meteorological conditions Sky	Wind	January	April	July	October
> half covered	any	310	278	218	210
> half covered	>12 mph	120	57	27	48
> half covered	⩽12 mph	190	221	191	162
⩽ half covered	>12 mph	110	142	142	86

From this table, it is seen that, out of the total number of hours associated with more than half cloudiness, there was only a small fraction with high winds, except in January. Leaving out again the same January case, there were also, amongst the high wind values, far more low cloudiness than high cloudiness conditions; for instance, 142 against 57 in April. Thus, it is felt that, for April, July and October, sets A and B differ from each other mainly by cloudiness conditions, without too much interference from the high winds, and sets B and C differ mainly by the high winds.

For the special case of January, where a relatively large number of high wind conditions were associated with high cloudiness and where an almost equal number of high wind values were successively rejected from set A and set B (120 and 110, respectively), there is evidence that the rejection of the 120 high wind values from set A did not interfere with the rejection of the high cloudiness values in an extent greater than the rejection of the 110 values from set B: in-

deed, the averages of the wind speed for those two groups are 18.8 and 17.7 mph for high and low cloudiness, respectively, a difference that is not significant. It is therefore concluded that, even for the January case, sets A and B differ mainly by high cloudiness, and sets B and C, mainly by high winds.

For this reason, the differences noted in the monthly means of the potential gradient lead to the following conclusions that the high winds alone have less bearing than cloudiness on a rigorous definition of a "fair weather hour", without any prejudice, however, to what could come out later from an examination of the correlation coefficients.

It is also worth mentioning that the most important changes in the data level occurred in January (28 percent), then in April and October (15 and 13 percent) and, lastly, in July (4 percent). This suggest a seasonal trend, that could be worth examining more closely in a subsequent work, in which more data could be used.

About the hour-to-hoour variations, two questions may be raised: 1) which set, B or C, mostly resembles set A ? This question may be answered by comparing the coefficients r(AB) and r(AC). 2) What amount of change is larger, the one introduced by discarding values of cloudiness (A to B) or by discarding values of high winds (B to C)? This question may be answered by comparing r(AB) and r(BC). Noting that all r(AC) are smaller than the r(AB), it is concluded that data C preserved less likeless to data A than data B did. Comparing r(AB) with r(BC), it is seen that no general conclusion can be drawn: the larger change is introduced in the data, sometimes by the rejection of the cloudiness values, sometimes by the rejection of the high wind values. For those cases on which r(BC) is smaller than or equal to r(AB), it is really difficult to decide whether the change introduced in set B by discarding the high wind values is not due to the low number of values left for calculating each hourly mean. More data, for instance all readings of one season being pooled together, would be required to solve this question. For the time being, allowance being made to the high correlation coefficients found in 3 out of 4 months, a switch from "fair weather" to "strict fair weather" does not seem mandatory for the measurements of potential gradient.

2) Current density data

Here again, it is fair to characterize the various sets of data in the same way as it was done for the potential gradient data. The figures, which appear in Table 4, strictly refer to potential gradient data, not to current density data, because the missing hourly values were not exactly the same for both parameters. However, except for October, which will be otherwise rejected because of too few values, the discrepancies are so small that the conclusions drawn for the potential gradient are still valid for the current density. Therefore, also for current density, sets A and B differ mainly by cloudiness; sets B and C, by high winds.

The changes introduced in the average level of the current density data are less important than for potential gradient. The only significant changes occurred in January and April, with an increase of 15 and 10 percent respectively, when switching from "quiet" to "fair weather".

Turning to the hour-to-hour variations, here again there is not too much dissimilarity between the data sets, 0.65 being the lowest coefficient computed. However, the discrepancies are in general larger than for the potential gradient. Coming to the details, it is interesting to note that practically all the variations of A that were preserved in B are present also in C, a fact which is evidenced by r(AC) being most of the times equal to r(AB). However, as well as in the case of potential measurements, there is no clear indication of what operation did introduce the larger modification in the data, the rejection of high wind values or the rejection of cloudiness values. Since there was but one case on which the rejection of the high winds seemed to operate more efficiently (July) than the rejection of cloudiness data, and since the general level of the data, as noted earlier, is not significantly changed by the rejection of the high wind data, the switch from "fair weather" to "strict fair weather" does not seem either mandatory for the current density measurements.

CONCLUSIONS

Although it seems acceptable to neglect the high wind periods in applying a "fair weather" definition to the Montreal data, surely enough the cloud activity should not be neglected. Whether this should be done extensively hour by hour on all the past data or by the mere application of an overall correction, cannot be answered at this stage of the research.

ACKNOWLEDGMENTS

The meteorological observations from Dorval Airport Station were graciously supplied by the Meteorological Branch of the Department of Transport of Canada.

REFERENCES

Cobb W.M. and B.B. Phillips (1962): Atmospheric electric measurement results at Mauna Loa Observatory. U.S. Department of Commerce, Weather Bureau. Tec. paper No. 46. In the abstract.

IAGA/IAMAP Joint Committee (1966): Circular Letter No.5 of the Working Group I, "IQSY/IGC", of the Joint Committee on Atmospheric Electricity of the IAMAP/IAGA in the Union Géophysique Internationale. P. 5.

Krasnogorskaya, N.V. (1961): An Investigation of atmospheric electricity at Mt. Elbrus. Izvestiya Acad. of Sci. USSR, Geophysics Series, 12, 1208-1215.

Reiter, R. (1958): Behaviour of atmospheric electric magnitudes recorded simultaneously at seven mountain stations between 700 and 3000 metres above sea level. Tec. Report, Vol. II, p. 1.

Van der Schueren A. and L. Koenigsfeld (1963): Electricité atmosphérique à la base Roi Beaudoin. Institut Royal Météorologique de Belgique. Publications, Série A, No. 40.

Wait, G.R. (1953): Investigation of Electrical Properties of the Atmosphere. Appendix to final Report. Department of Terrestrial Magnetism. Carnegie Institution of Washington. Washington, D.C.

ATMOSPHERIC ELECTRIC POTENTIAL

AND

AIR-EARTH CURRENT DENSITY

Hourly averages of the electric potential and of the air-earth current density, as recorded at Brébeuf College, Montreal, are presented in the following tables. Another set of tables gives the daily weather summary for the period concerned, as issued by Dorval Weather Station. Information about the recording site, the instrumentation and data presentation, can be found in the previous issues (Nos. 16 and 17) of this Bulletin. A note, presented in the Bulletin No. 18, explains how the K factor for reducing the potential data to the one-meter level has been obtained.

The grant of the National Research Council of Canada, which permitted the reading and treatment of the data, is gratefully acknowledged.

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

JANUARY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	100	350	550	450	350	- 50	500	750	800	700	750	700	550	400	650	550	550	650	650	600	800*	450	550	650	23	570
2	800	750	950	900	850	900	600	800	1000	900	1000*	1050	1200	1200	1100	950	800	600	400	250	D	D	D	D	20	850
3	D	D	-700	-550	-450	-750	D	D	D	D	D	-400	-150	- 50	800	-250*	500	700	550	450	400	500	600	550	9	560
4	700	800	850	900	900	900	1000	850	1500	1400	1500	1700	1550	1600	1500	1550	1500	1400	1400	1050	600	750	900	1000	24	1160
5	900	950	850	900	950	1000	1250	1100	1550	1500	1000	1400	1750	2100	2450	1450	1150	650	950	1000	1050	800	800	750	24	1170
6	500	600	550	450	200	200	400	600	750	950	1250	600	- 50	-950	-750	-100	0	50	50	100	100	50	0	0	20	370
7	50	0	0	50	150	300	450	600	800	950	950	1050	1050	900	1000	1100	1150	1200	1100	200	650	300	150	-150	23	620
8	-1350	-1300	-1350	-850	650	1100	950	1150	1350	1450	1400	1250	600	600	500	650	800	800	900	950	850	900	700	750	20	910
9	700	900	1000	950	900	900	950	1150	1300	1450	1750	1800	1900	1900	2200	2300	2150	2100	1550	1900	1600	1200	1100	1000	24	1440
10	850	1150	850	400	150	0	150	350	600	700	450	550	600	550	500	400	D	950	1000	700	600	D	350	1850	22	620
11	1250	1150	850	550	450	450	350	950	D	D	200	700	700	850	850	800	800	800	600	800	800	750	750	750	22	730
12	800	800	700	1000	1050	950	1050	1050	1200	1400	1200	1100	1150	1150	1150	1000	950	1000	900	950	950	1050	1000	1300	24	1040
13	1350	1450	1350	1550	1400	1250	400	1150	1500	1650	950	1600	1800	1650	1700	1450	1200	700	800	400	100	650	600	600	24	1140
14	200	400	0	200	550	0	-300	100	300	550	1100	1300	1400	1600	1650	1450	1450	1250	1200	950	1050	1250	800	400	23	830
15	300	250	550	350	100	100	600	1000	1450	M	1900	1700	2200	2150	1900	1750	1350	1200	1500	1400	1400	1200	1000	1100	23	1150
16	1050	950	1050	1250	1300	1250	1300	1350	1200	1650	1550	1600	1900	1700	1950	2000	1700	1650	1350	1150	850	750	750	500	24	1320
17	1350	1750	800	650	450	450	700	600	650	1050	1150	1000	1000	1000	1150	1050	850	650	500	450	350	600	450	500	24	800
18	600	350	250	250	400	600	900	1200	1350	1050	1100	1050	950	1000	1150	1300	1350	1250	1200	800	550	600	850	950	24	880
19	850	1350	600	600	750	750	900	900	1300	1650	1350	1050	650	650	800	950	1350	1000	700	300	600	650	750	50	24	850
20	-150	250	100	200	1250	550	550	-200	1250	900	D	-250	50	550	550	50	D	D	100	-150	600	150	-500	-450	15	470
21	-750	-250	50	300	250	300	50	800	1200	1500	1250	750	1400	1300	700	1050	1300	1800	1300	900	450	50	250	300	22	780
22	300	200	-350	-350	-250	50	850	650	650	400	350	600	1000	1000	950	950	1050	600	900	800	450	400	300	350	21	610
23	500	400	300	400	600	750	800	750	600	700	D	D	M	M	M	M	M	M	M	M	M	M	M	M	10	580
24	M	M	M	M	M	M	M	M	M	M	M	M	M	50	-50	150	-150	100	50	-50	50	150	300	550	8	170
25	800	900	900	1400	1550	1700	1900	1500	1750	1900	1950	2000	1850	1850	1850	M	1600	1750	M	M	M	M	M	M	17	1600
26	M	M	M	M	M	M	M	M	M	M	M	350	600	900	1500	700	1750	1300	D	D	M	M	M	M	7	1010
27	M	M	M	M	M	M	M	M	M	M	M	1150	1600	700	1900	1250	1000	600	D	1500	1650	300	D	-350	10	1160
28	-500	-200	-50	50	400	350	650	1100	1350	1900	2250	2200*	>3000	>3000	>300	>3000	>3000	>2850	1650	1300	300	250	900	1950	15	1110
29	2950	2900	D	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	>3000	2650	2350	2250	1850	1750	1600	1400	1300	1200	1400	1300	1250	14	1870
30	D	1800	1150	-100	-550	-1250	>-1800	D	D	D	D	-500	-1500	-1850	D	D	D	>-2000	>-2000	>-2000	D	D	D	D	2	1470
31	D	D	D	400	200	350	350	>2300	>2450	1100	200	-150	250	550	450	300	700	350	150	400	600	600	500	400	18	440
No. of Hours	21	23	22	23	24	24	24	23	23	23	23	24	25	26	26	25	25	27	26	25	26	25	24	23	580	
Mean	800	890	650	620	660	630	730	890	1100	1190	1150	1180	1210	1160	1270	1080	1050	990	880	820	720	630	650	760		915

D: disturbed M: missing *: estimated

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

JANUARY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	-18	-8	32	40	28	30	>148	>150	>150	>150	>150	2800	3000	3200	1800	1400	600	0	M	M	D	0	0	0	4	32
2	0	0	0	0	0	200	400	600	800	1000	1800	1800	1800	1700	2500	2600	2800	2900	>3000	>3000	D	D	>3000	D	0	---
3	D	D	D	D	>3000	D	D	D	D	D	D	>15000	>14600	-10000	-6000	D	-1000	-600	-400	-400	-400	-200	0	0	0	---
4	0	0	0	0	0	0	0	0	0	0	36	36	36	32	28	32	64	80	72	D	116	120	124	140	13	71
5	128	136	120	D	104	88	D	96	96	D	D	70	130	122	112	102	102	>120	112	130	132	140	146	146	19	116
6	124	110	106	60	28	54	70	70	86	104	118	122	116	88	28	0	-42	-56	-68	-74	-64	-54	-56	-36	16	80
7	-26	-6	14	30	46	52	50	52	54	38	36	40	108	92	D	D	40	58	56	24	92	108	106	>150	19	58
8	>150	>150	>150	>150	>150	>150	>150	>150	>150	>146	60	12	-8	10	18	58	48	30	50	50	34	30	48	88	13	41
9	70	58	70	76	66	74	68	78	84	56	50	48	50	46	52	50	46	40	28	40	70	64	110*	>150	23	61
10	>150	128	114	120	>140	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	D	D	D	3	121	
11	D	120	112	116	114	118	124	>146	>134	>150	D	>150	>128	42	28	20	26	22	18	22	28	18	22	20	17	57
12	26	20	20	28	28	24	28	22	28	28	16	24	28	30	28	22	22	28	26	26	18	28	38	58	24	27
13	62	62	58	52	48	40	>140	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	6	54
14	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	130	134	>144	>150	>150	>150	>150	>150	>150	>150	2	132
15	>150	>150	>150	>150	>150	>150	>150	>150	>150	124	80	50	74	66	54	38	30	28	30	24	30	26	30	40	15	48
16	52	68	D	>150	>150	>150	>150	>150	>150	>150	>144	108	80	76	72	110	>148	>150	>150	>150	>150	>150	>150	>150	7	81
17	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	0	---
18	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	0	---
19	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	>15000	0	---
20	>15000	>15000	>15000	>15000	>11000	8200	9000	11800	>15000	>15000	>10000	5600	6000	3800	4400	6600	6000	5400	4400	3400	1600	1200	-600	-800	0	---
21	0	-800	-2000	3000	4000	4400	5000	4600	2800	2000	1400	600	200	400	400	200	600	1200	2200	3600	5400	6000	6200	5600	0	---
22	4400	4000	3600	4000	3000	1600	1200	2200	3000	3400	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	94	82	2	88
23	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	D	>150	D	D	D	>150	>150	>150	>150	>150	>150	>150	>150	>150	0	---
24	>150	>150	>150	>150	>150	>150	>150	>150	>150	>140	>-50	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
25	>-100	>-100	>-76	M	M	M	M	M	M	M	M	36	44	34	36	D	D	60	M	M	M	M	M	M	5	42
26	M	M	M	M	M	M	M	M	M	M	M	70*	>142	>150	48	-4	D	D	D	D	M	M	M	M	2	59
27	M	M	M	M	M	M	M	M	M	M	>146	56	D	98	72	92	>126	D	>150	>150	>138	D	D	122	5	88
28	140*	>150	D	>150	>146	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	1	140
29	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	130*	90	68	58	48	48	50	40	50	46	32	20	18	13	54
30	D	D	146*	>142	>150	>150	>150	>150	D	>150	>150	>150	>150	>150	D	D	108	110*	>150	D	D	D	D	D	3	121
31	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
No. of Hours	7	8	10	8	8	8	5	5	5	5	7	13	10	13	14	12	10	10	9	8	9	9	10	9	212	
Mean	86	88	79	65	58	60	68	64	70	70	57	62	76	62	55	59	53	51	48	46	63	63	74	79		64

D: disturbed M: missing *: estimated

ELECTRICAL POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

FEBRUARY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	-500	-600	100	300	550	700	600	600	-550	500	600	500	250	900	750	1250	1150	1300	500	250	600	550	200	400	21	600
2	800	400	900	800	600	850	800	850	1050	900	400	900	1100	1050	1100	350	550	300	700	700	350	500	750	400	24	710
3	200	200	250	500	500	1050	100	700	600	-800	0	500	950	1750	850	600	750	300	900	700	550	550	650	900	23	610
4	600	900	950	750	800	1050	1100	1150	1450	2050	1950	1650	1900	1400	1500	1800	1200	1100	1100	900	700	600	600	650	24	1160
5	850	1000	300	-50	1050	1750	1900	2400	2700	2350	1850	1950	1750	1450	1100	1050	1100	1300	800	700	650	750	850	1050	23	1330
6	900	950	900	1000	1200	1450	1350	1200	1950	2100	2100	2100	2200	2100	2000	1850	1800	1900	1900	1850	2100	1600	1850	1900	24	1680
7	1950	1800	2250	2050	1950	1700	1700	1600	1650	2600*	2850*	>2800	>3000	>2950	>3000	>2950	2350*	1600	2150	1550	1650	M	M	M	16	1960
8	M	M	M	M	M	M	M	M	M	M	M	2300	2000	2300	2700	2400	1900	1750	1600	1950	2050	D	2250	1850	12	2090
9	1300	1300	1250	1250	1350	1750	1850	1850	1750	1700	1750	1400	850	1050	400	1100	900	800	800	1050	950	1000	1100	1000	24	1230
10	1050	1000	1050	1200	1300	1350	1550	1500	1400	1550	1350	1300	1150	900	1000	900	800	800	650	300	>-500	>-1150	>-700	200	21	1060
11	D	-100	100	D	D	D	D	D	-550	-500	50	250	300	800	950	900	900	1100	900	800	700	600	800	600	15	650
12	300	450	550	750	800	800	850	1200	1400	1400	1300	1200	1000	1100	1100	1250	1200	1400	950	1150	1000	900	750	750	24	1400
13	800	850	850	800	900	1150	900	1050	1000	1200	1200	1100	500	1150	D	D	D	M	M	M	M	M	M	M	14	960
14	M	M	M	M	M	M	250	400	100	550	850	1000	900	650	-50	250	50	-200	100	650	1000	950	1000	1000	16	610
15	1450	1400	1150	400	1700	1000	1100	1400	1800	2100	2050	2550	2600	2300	2200	2000	1800	1900	1700	1350	1100	1250	1300	1100	24	1610
16	1250	900	850	900	900	1000	1050	1200	1550	2350	2450	2200	D	D	D	D	M	M	M	M	M	M	M	M	12	1380
17	50	D	D	-750	400	800	1100	1350	1300	1400	1650	1450	1350	1750	1750	1800	1550	1300	1450	1100	1200	200	50	100	21	1100
18	700	850	1100	1050	1100	1400	1750	2050	1950	2100	2000	1900	1900	2200	1800	1700	1650	2150	1750	1800	2250	2350	2300	2350	24	1760
19	>2650	2500*	1750	1650	2100	1950	2000	>3000	>3000	>3000	>3000	>3000	>3000	2850	2650	2450	2300	2000	2100	1700	1650	1700	2000	2400	17	2100
20	2700	2000	2600	2700	>2850	>2900	>2950	>3000	>3000	>3000	>2850	2300	2200	M	M	1950	1250	1450	1850	1500	1350	1350	1350	1200	15	1850
21	1050	1150	1200	1550	1850	2350	2050	1700	>3000	>3000	>3000	2700*	2100	1950	2100	2450	>2950	2500	1900	1350	1200	1600	1300	1300	20	1770
22	1850	1150	1150	1150	1100	350	400	550	1000	1650	1700	1750	1400	1700	1550	1550	1550	1400	1800	2250	2250	1750	1750	1650	24	1430
23	1300	1450	1700	1850	1850	2000	2350	2600	2350	1850	1850	1600	1200	1450	1600	1450	1400	1800	1550	1500	1500	1700	1550	1500	24	1710
24	1450	1450	1450	1600	1500	1750	>2250	>2000	2150	1950	2550	2700	2700	2850	>3000	>3000	2900*	2650	1700	1200	950	800	850	950	20	1800
25	700	650	550	500	500	800	500	-150	-50	-350	-700	200	1100	>-50	>-1100	D	>-2000	>-1900	>-1550	>-1650	>-1550	-750	-700*	-250*	9	610
26	400	500	100	-400	-350	-400	-550	400	-50	250	1350	250	1150	1550	1600	1900	2100	1800	1600	1600	1750	1400	1550	1500	19	1200
27	1850	1850	1600	1500	1700	1650	1800	1600	1900	1950	2700	1900	2300	2200	2600	2400	2150	1950	1850	2000	2050	1550	1650	1650	24	1930
28	1450	1000	1300	1750	1700	1650	1900	2150	2500	2450*	>3000	>2700	1900	2350	2600	2100	1850	1600	1150	950	400	0	-150	>-500	20	1640
29																										
30																										
31																										
No. of Hours	23	23	25	22	23	23	23	22	20	21	22	25	25	24	21	23	24	24	25	25	24	22	22	23	554	
Mean	1080	1120	1040	1180	1190	1320	1260	1340	1580	1660	1570	1510	1470	1660	1610	1540	1460	1510	1330	1230	1250	1070	1200	1150		1365

D: disturbed M: missing *: estimated

18

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

FEBRUARY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100		0	---
2	>-100	>-100	>-96	>-100	-90*	-60	>-100	>-100	>-94	-30	D	18	32	28	40	D	40	38	32	30	30	28	20	18	12	29
3	14	10	0	-6	-14	-12	-20	-10	-6	D	38	16	12	20	-8	10	74	78	58	48	46	40	28	18	16	32
4	10	0	-8	0	0	2	-2	4	22	30	14	14	24	2	40	22	12	32	30	34	42	66	76	74	22	25
5	80	64	62	56	44	42	40	66	68	70	30	22	22	50	50	42	110*	>150	>150	>146	138	122	112	124	21	67
6	>150	>150	>150	>150	>146	>148	132	>150	>150	>126	D	68	60	50	46	42	54	78	70	74	84	104	120	126	14	79
7	122	112	>140	148*	132*	72	60	84	D	64	16	38	28	22	44	48	20	20	32	34	6	M	M	M	19	58
8	M	M	M	M	M	M	M	M	M	M	M	20	10	26	52	34	34	30	28	44	D	D	52	40	11	34
9	12	16	10	18	20	22	32	20	20	50	36	14	48	32	8	40	16	26	40	30	32	60	86	80	24	32
10	78	88	72	104	60	106	104	>150	>150	>146	>150	>150	>150	>150	>140	>150	>150	>150	>150	>150	>150	110	50	60	10	83
11	D	-28	32	D	D	>-100	>-100	>-100	>-100	>-100	>-90	0	46	80	108	128	140	144	146	146	142	142	140	122	14	108
12	114	118	122	130	140	140	142	>150	>150	>150	>150	140	116	>140	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	9	129
13	>150	>150	>150	>150	>150	>150	>150	>150	>150	>140	110	102	>150	60*	D	D	D	>150	>150	>150	>150	>150	>150	>150	3	91
14	>150	>150	>150	>150	>150	>150	>150	>150	>150	D	>114	10	10	-14	D	D	-60	-40	-10	14	20	22	26	24	7	18
15	32	22	10	D	D	D	18	14	28	26	22	46	32	32	42	32	36	38	20	18	16	24	20	10	21	26
16	10	2	4	4	-8	0	-10	-18	8	32	28	16	D	D	D	D	D	120*	120	>140	>150	>150	90	D	12	36
17	M	M	D	D	70*	66	50	38	40	36	46	52	36	50	46*	M	M	M	M	12	20	-40	M	M	13	43
18	M	M	M	30*	20	44	46	50	48	66*	54	50	52	60	40	38	40	48	30	34	32	38	32	26	21	42
19	D	D	10*	16	38	20	22	52	50	46	44	70	38	40	36	58	50	42	40	28	30	28	36	42	22	38
20	42	24	48	40	38	48	44	52	62	74	60	56	68	D	D	M	M	M	M	M	88	40	28	>100	16	51
21	M	M	M	M	>132	>150	>150	M	M	M	M	130*	106*	48	46	62	74	38	24	12	18	20	8	20	13	47
22	38	10	16	10	10	>150	>150	>150	>80	30	38	50	22	42	30	30	26	18	30	34	20	12	14	10	20	24
23	8	16	20	38	52	92	58	42	42	76	72	50	34	42	50	30	34	40	14	20	16	16	8	2	24	36
24	-6	-2	-4	0	0	12*	40	-12	40	30	64	40	32	38	36	40	34	40	18	4	6	0	4	6	20	24
25	-8	-4	-10	-6	-10	-4	-16	-8	22	38	72*	34	>126	D	D	D	-90*	-4*	-2	-8*	-30	>-100	>-100	>-100	4	42
26	>-96	-86	-74	-26	18	10	38	26	42	92	36	30*	76	40	40	52	38	32	38	32	26	26	28	30	20	37
27	38	28	18	28	30	20	18	10	34	40	52	40	40	42	54	62	50	48	40	40	40	18	22	10	24	34
28	-4	-8	8	20	14	20	18	34	44	32	52	20	38	78	64	38	30	10	12	10	2	6	10	>-20	21	27
No. of Hours	13	13	14	15	16	16	16	13	15	17	19	26	23	21	19	18	19	19	19	20	21	20	22	19	433	
Mean	46	39	31	43	43	45	54	38	38	49	47	44	43	42	46	45	48	48	43	35	41	46	46	44		43

D: disturbed M: missing *: estimated

19

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

MARCH 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	>-2000	>-1750	>-2000	>-1900	>-2000	>-1600	-1000*	D	D	200	100	-50	-150	350	450	400	-100	-800	-850	-1050	-600	-600	-450	-400	5	300
2	-150	100	150	150	250	350	550	600	1400	1050	950	1000	800	950	1100	1300	1400	1200	1050	900	850	900	900	850	23	820
3	950	1150	1200	1300	1200	1250	1400	1750	2250	2200	2200	1800	1900	2050	2000	2150	2150	2100	2000	1600	1500	1350	850	1000	24	1640
4	900	950	900	700	800	850	900	1000	850	800	1100	1450	1600	1400	1100	900	-550	M	M	M	M	M	M	M	16	1010
5	M	M	M	M	D	D	D	D	D	D	D	D	D	D	-750	-100	-350	-700	-750	D	D	D	100	150	2	120
6	200	750	350	200	600	300	200	-150	-400	500	1000	950	650	750	700	350	650	900	750	600	450	400	350	350	22	540
7	500	450	500	700	750	800	800	600	-250	550	950	1050	1050	1100	1000	950	900	900	850	800	1100	1100	900	750	23	830
8	800	850	950	1100	1250	1250	1200	1700	1850	1650	1400	1400	1250	1250	1450	1500	1800	1800	1700	1550	1700	1550	1550	1650	24	1420
9	1900	1600	1450	1750	1750	1650	2050	2300	2700	>3000	2500	1850	1550	1500	1700	1700	1800	1850	2000	1650	1550	1400	900	800	23	1730
10	850	750	700	750	750	800	1000	1100	1400	1450	1450	1300	1050	1150	1000	1150	1200	1450	1300	1300	550	50	-100	-500	22	1020
11	-50	0	-100	100	1050	1400	1500	2050	2400	2200	550	650	1800	1600	1850	1650	1600	2400	1950	1650	1400	1250	1150	1000	22	1420
12	1500	850	750	800	950	700	850	1050	1400	1550	1400	1200	1150	1100	1100	1150	800	200	450	400	>-2000	D	>2800	>2450	20	970
13	D	D	M	M	M	M	M	M	M	M	M	M	-650	-800	-350	450	1050	1150	1250	1350	1600	1550	1750	1650	9	1310
14	1400	1450	1300	1250	1650	2100	1750	1700	2050	2500	2750	2150	1900	1900	1750	1500	1150	1150	1150	650	800	950	1100	1200	24	1550
15	1150	1200	900	700	800	1050	1650	2250	2050	1550	1400	1350	1300	1400	1650	1600	1700	1800	2150	2250	2050	1900	2000	1350	24	1550
16	-50	1050	1400	700	1000	2250	2600*	>2850	>3000	>3000	2750	2300	2200	2050	2250	2100	2200	2300	2350	1900	1950	2250	2200	2100	20	1990
17	2100	1650	1200	1150	1650	1650	1450	1800	2650	>2850	2300	2250	2000	2150	1800	1550	D	>2150	D	750	D	D	400	>-750	17	1680
18	350	150	50	300	D	D	250	750	1650	1800	2200	D	2350	2600	2050	1950	1950	1500	1050	950	750	M	M	M	18	1260
19	M	M	M	M	M	M	M	M	M	M	900	1300	1400	1350	1300	1300	1300	1050	700	650	600	500	350	D	13	980
20	D	D	>-400	400	800	1000	650	600	950	850	650	800	700	800	600	400	250	50	-100	0	-100	-50	0	100	18	530
21	450	600	600	100	100	150	0	100	400	600	800	650	800	800	700	850	850	650	550	550	600	550	400	500	24	510
22	850	950	950	900	800	650	950	1000	1400	1650	1500	1550	1300	1350	700	800	250	400	150	1500	350	700	650	500	24	910
23	-100	-200	-150	-250	-350	-200	0	-50	150	650	850	1000	600	650	900	850	650	600	550	200	200	0	0	-100	16	490
24	-50	50	0	50	100	200	300	300	400	500	350	450	550	700	850	750	550	800	500	500	100	-450	-700	D	20	400
25	D	850	-150	D	D	-50	200	500	800	1250	1200	1150	1100	1150	1300	1050	950	950	800	-150	250	250	-100	100	17	810
26	-50	400	450	550	350	D	200	900	1000	950	900	850	400	700	1000	800	700	450	350	550	1350	D	1300*	750	21	710
27	650	600	650	700	750	800	950	850	950	1100	1150	1150	1050	1100	950	950	950	950	950	1100	1150	1200	1350	1500	24	980
28	1500	1450	1400	1250	1050	850	950	1200	1250	1050	850	950	950	850	850	800	900	1100	1000	950	850	900	1050	1050	24	1000
29	1200	1150	1150	1050	1100	1150	1200	1200	1100	1050*	950	850	800	850	850	850	850	950	1050	1350	1200	950	850	800	24	1020
30	900	950	1000	800	550	400	500	900	450	1100	750	1200	D	D	1500	550	1000	-100	-750	-200	-150	-100	-350	-300	15	840
31	-150	150	100	200	200	300	400	550	800	900	1100	1300	1200	1150	1100	1050	1000	1000	>1700	700	800	700	550	350	22	710
No. of Hours	18	25	23	25	24	23	27	24	24	25	29	27	27	28	29	30	27	26	24	26	24	21	23	21	600	
Mean	990	800	790	710	840	950	910	1100	1350	1190	1270	1260	1240	1240	1230	1110	1130	1140	1110	1010	990	970	900	880		1055

D: disturbed M: missing *: estimated

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

MARCH 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
2	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	-72	-36	-20	-18	6	20	30	18	2	-6	8	-2	0	2	0	9	10
3	2	-8	-20	-10	-30	-32	-28	4	36	52	62	52	70	72	70	80	72	70	52	38	36	26	10	12	18	45
4	0	-20	-30	-30	-32	-36	-38	-34	-20	-10	6	20	20	20	22	38	D	D	>-100	>-100	>-100	>-100	>-100	>-100	7	18
5	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
6	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	-98*	>-100	-100*	-70	-40	-18	-14	-20	-20	-20	0	---
7	-20	-24	-28	-26	-22	-22	-18	22	12	2	8	20	22	32	34	30	22	22	20	18	24	12	20	12	17	20
8	12	8	10	10	26	80	40	40	48	38	40	40	36	32	42	38	44	46	60	62	70	108	118	118	24	49
9	132	98	120	128	130	132	126	120	100	94	64	58	52	52	60	62	68	98	92	54	48	40	28	32	24	83
10	64	76	64	54	60	76	110	116	104	112	132	40	36	40	40	38	36	46	44	40	48	96	50	30	24	65
11	36	14	-2	24	32	30	30	50	54	38	D	20	44	24	32	20	36	48	34	28	22	26	18	40	22	32
12	54	2	16	30	36	54	88	94	108	94	80	78	82	108	116	>140	>150	102*	-28	-14	D	>150	>150	>150	16	71
13	D	D	D	>150	>150	>150	>150	>150	>150	>150	>128	>-10	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
14	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-70	16	12	30	34	30	20	18	2	2	2	-2	0	40	52	13	20
15	46	40	22	24	28	38	50	52	48	34	40	40	46	40	52	50	48	48	58	54	38	38	28	10	24	40
16	-26	38	16	0	16	46	38	26	52	50	40	52*	M	M	66	50	62	M	M	M	M	M	M	M	14	39
17	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
18	M	M	M	M	M	M	M	M	40*	32*	58*	D	28*	46*	28	M	M	M	M	M	28	M	M	M	7	37
19	M	M	M	M	M	M	M	M	M	M	40	50	50	48	48	58	60	28	16	18	20	22	16	D	13	36
20	D	D	30	14	26	24	16	16	22	28	28	30	32	38	26	14	12	-8	-12	-18	-22	-18	-24	-30	15	24
21	-32	-38	-48	-64	-52	-56	-60	-46	-20	-6	8	16	26	22	18	14	16	18	10	6	2	-2	-8	0	12	13
22	12	0	-8	-18	-16	-6	-2	8	20	20	20	26	28	34	4	22	12	18	8	72	18	32	32	22	19	21
23	10	0	-22	-30	-24	-20	-20	4	40	64	70	70	76	78	62	56	60	68	64	72	82	100	106	110	19	63
24	102	96	92	88	86	78	70	68	80	76	84	86	60	56	56	52	64	74	56	48	16	0	D	D	22	62
25	D	>-100	-90	D	D	>-100	>-100	>-92	-60	-22	-12	2	20	32	42	48	50	30	12	6	4	-4	2	-22	11	23
26	-12	-20	-20	-12	72*	D	D	40	52	52	56	48	92	52	50	60	92	78	>120	>126	>120	D	>122	40	13	60
27	16	18	24	18	20	20	20	20	26	46	52	38	44	42	44	38	36	30	28	28	28	24	28	28	24	30
28	28	28	22	18	16	18	26	32	28	24	26	30	30	30	32	30	38	40	30	28	24	24	22	18	24	27
29	20	18	22	22	28	28	22	22	28	26	30	24	26	30	30	34	36	32	28	40	20	20	24	24	24	26
30	30	30	22	20	32	20	10	>124	>80	60	86*	90	D	D	D	-10	40	36	36	16	-10	-52	-82	-98*	14	38
31	-46	-56	-68	-68	-52	-36	-18	4	42	76	78	110	56	40	38	40	34	32	D	44	56	60	92	110	16	57
No. of Hours	15	14	12	13	14	13	13	18	19	20	23	24	23	24	25	23	23	22	18	20	18	17	17	17	445	
Mean	38	33	38	35	43	50	50	41	49	51	49	44	44	42	42	40	42	43	36	34	32	35	37	39		41

D: disturbed M: missing *: estimated

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

APRIL 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	100	300	300	500	900	1000	850	1350	2000	2350	2600	1900	1550	1600	1550	1400	1350	1250	950	700	700	700	450	500	24	1120
2	900	550	250	150	700	-50	400	600	700	1200	1350	800	650	500	400	450	500	300	850	800	700	800	800	900	22	690
3	800	900	900	800	700	750	800	800	650	750	650	650	400	450	300	D	750	1100	750	450	200	50	-50	-100	21	650
4	50	300	450	750	1000	1150	1200	1950	1800	1150	950	700	600	650	650	850	900	1100	1150	1000	850	750	700	800	24	890
5	700	700	700	550	600	650	600	800	1000	1200	1100	800	600	700	900	850	1150	700	D	400	550	600	450	500	23	730
6	650	600	650	850	1000	1100	1250	1450	1750	1650	1450	1200	D	1250	D	D	D	D	1600	1050	750	700	550	500	19	1050
7	500	550	500	450	500	500	550	750	1050	450	550	1350	900	D	650	1000	850	1100	1100	900	650	D	750	650	22	740
8	700	700	600	650	500	500	150	0	-250	D	D	D	D	-300	-100	250	650	650	650	500	600	600	550	600	17	520
9	700	150	400	250	-600	200	300	1350	500	D	>-1000	>-1500	-650	-650	-250	200	650	850	500	400	600	500	350	400	17	490
10	400	350	100	-300	200	200	150	250	600	550	750	600	650	800	>-150	-700*	-200	1050	D	D	550	400	600	650	18	490
11	750	600	700	800	850	1100	1400	1750	2050	1250	1000	1150	1150	950	D	D	1250	1150	1750	1750	1850	1400	1500	1350	22	1250
12	1350	1250	1400	1550	2050	1450	2150	2350	2600	2500	2000	1550	1350	1000	1200	1400	1450	1300	1800	1950	1950	1250	1100	1100	24	1630
13	1400	1650	1950	1350	800	950	1400	1950	2800	2600	1750	1050	1100	900	850	900	950	1150	1300	1050	1100	1200	600	1450	24	1340
14	1250	1850	1800	1300	1000	1000	1100	1150	1900	1750	1350	500	650	450	400	400	650	650	800	750	900	1300	1000	1000	24	1040
15	1200	1650	1050	D	2200	1950	1950	>2700	2300	1650	1350	1200	700	600	600	600	600	950	1250	1500	1400	1450	1400	1650	22	1330
16	1400	1400	1350	1350	1200	1150	1150	1300	1350	1300	1600	1250	900	700	600	450	450	450	600	700	900	1100	1200	1350	24	1050
17	1400	1500	1350	1400	1400	1400	1500	1800	2000	1800	1200	600	600	500	500	450	500	550	650	900	950	1100	1100	900	24	1090
18	1050	1100	1150	1400	1550	1700	1900	1850	2050	1650	1450	900	750	850	800	750	800	900	1000	1150	1200	1150	1100	1000	24	1220
19	1050	1050	1000	1050	850	1000	1450	1600	2050	2050	1450	1250	900	900	800	850	800	750	550	900	1050	800	550	450	24	1050
20	450	350	300	200	250	350	350	400	650	300	200	100	-100	100	-300	300	-200	300	300	450	400	300	300	50	21	300
21	50	M	M	M	M	M	M	50*	350	500	550	500	400	400	350	D	M	M	M	M	M	M	M	M	9	350
22	M	M	150	150	200	500	1400	1850	1500	1150	850	750	400	400	500	500	600	600	650	800	950	1150	1350	1350	22	810
23	700	300	400	1000	850	500	1150	1500	1900	1300	1200	1000	600	350	450	550	600	800	800	750	600	600	550	300	24	780
24	D	-200	D	500*	150	400	250	100	300	50	-350	-50	1050	D	-100	150	350	350	400	300	300	450	350	250	17	340
25	300	400	450	550	350	250	700	850	850	900	750	950	850	650	550	350	300	400	500	650	750	800	800	350	24	590
26	D	400	700	700	800	850	900	850	800	800	700	550	500	400	300	200	250	200	400	650	700	800	750	550	23	600
27	200	-50	250	800	950	1300	1100	850	650	700	600	400	-100	-100	-150	0	-150	0	-350	300	1200	900	850	950	18	670
28	950	900	900	900	900	900	1000	1150	1050	1200	1150	1100	800	450	500	500	300	500	650	450	D	D	-150	0	21	770
29	100	400	650	800	300	300	600	400	400	650	1200	1100	1100	650	650	500	450	950	950	1000	900	900	900	950	24	700
30	950	1000	1100	1100	1100	1250	1600	1750	1350	1100	1000	850	900	D	D	D	1650	900	600	400	750	850	900	300	21	1020
No. of Hours	27	26	28	26	28	28	29	29	29	28	27	27	25	24	21	24	25	28	26	28	28	27	27	28	643	
Mean	740	800	770	830	850	870	1010	1130	1340	1230	1140	920	800	670	640	580	750	750	870	810	860	840	800	740		870

D: disturbed M: missing *: estimated

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

APRIL 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	74	46	20	12	20	30	64	84	70	60	80	68	58	52	42	D	42	36	>110	>144	110	74	64	66	21	56
2	60	>130	132	>144	118	82	110	118	86	54	30	10	16	12	10	16	20	10	26	18	40	34	28	30	22	48
3	20	30	42	48	46	40	40	30	24	30	40	42	50	36	18	D	116	>150	>150	146*	>150	120	64	74	20	53
4	90	66	48	40	48	60	76	72	52	34	30	30	26	22	22	36	30	40	40	50	66	74	98	100	24	52
5	122	120	128	102	70	48	104	146*	136*	>150	140*	120	60	46	42	34	54	64	D	>146	>110	100	120	>140	19	92
6	>150	>150	>150	>150	>150	>150	>150	>150	>144	82	60	58	D	88	D	D	D	>150	>150	>148	>150	>150	>150	>150	4	72
7	>138	122	102	88	84	110	128	116	92	42	50	78	40	D	54	44	D	28	28	30	28	D	54	60	20	69
8	76	108	110	140	144	110	90	64	36	D	D	D	D	126	140	136	130	122	134	110	104	92	74	68	20	106
9	58	>-18	>-100	>-100	>-74	-60	-70	-44	-70	-84*	-76*	-50	-8	22	60	108	120	120	90	108	100	102	94	86	12	89
10	70	50	22	8	-16	-18	24	64	116	126	128	122	128	114	D	>116	102*	118	D	D	118	130	130	136	18	95
11	124	138	134	136	140	150*	150*	130	126	92	86	72	56	60	D	D	110	112	72	70	70	60	72	78	22	102
12	114	128	>140	>150	>130	114	102	88	90	84	62	32	30	28	34	36	38	30	58	48	38	30	28	30	21	59
13	48	38	48	34	32	46	40	50	52	40	20	26	28	22	30	38	38	40	38	22	28	20	12	38	24	34
14	30	50	34	22	38	>120	>140	106*	82	40	16	2	12	32	24	16	22	12	18	18	20	38	10	38	22	31
15	D	54	D	D	54	40	40	70*	40	34	48	44	28	26	30	22	20	36	40	40	40	38	42	50	21	40
16	32	44	40	48	46	48	48	46	46	48	64	38	40	40	50	22	20	12	16	18	20	24	30	30	24	36
17	34	50	38	40	42	40	40	50	50	24	28	16	24	24	26	20	22	20	14	18	12	22	28	24	24	29
18	22	26	30	38	24	20	32	26	38	20	20	8	20	28	20	18	24	28	28	32	32	32	30	24	24	26
19	24	26	24	38	58	102	50	44	54	42	40	42	32	36	34	36	30	20	14	28	30	20	14	26	24	36
20	46	72	66	68	44	40	40	60	68	60	70	80	72	64	34	90	52	80	66	70	64	64	90	>146	23	63
21	>150	>150	>150	>150	>144	124	>150	>150	>150	>150	116	68	90	96	120	D	D	-50*	-20*	-22	10	30	30	20	10	70
22	22	30	20	42	36	42	50	58	34	28	20	20	10	16	16	18	26	20	20	26	28	34	38	26	24	28
23	16	40	22	26	30	26	28	42	26	30	40	34	16	10	20	20	18	22	16	18	18	20	10	4	24	23
24	D	D	D	D	48	70	>-90	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	-68	-60	-68	-66	-148*	-72*	2	59
25	-18	-10	0	22	34	-4	-4	54	60	58	48	52	44	40	34	42	78	62	30	22	40	36	20	-4	19	41
26	D	28	26	32	30	40	48	24	28	30	24	20	22	18	10	14	20	10	20	22	18	22	10	18	23	23
27	D	-4	10	24	36	30	20	26	30	32	26	12	-10	-4	-14	0	-10	-8	-20	48	30	36	40	38	16	27
28	32	38	40	38	32	50	60	50	50	52	38	38	18	38	62	84	>118	144*	122	98	>134	D	>150	>106	19	57
29	120	120	40	>-80	>-100	>-100	>-100	>-94	-38	52	98	50	40	22	22	16	20	34	28	34	32	30	32	32	18	46
30	30	32	36	38	38	50	62	54	46	36	38	42	38	D	D	D	58*	10	14	36	120	>150	>150	>62	18	43
No. of Hours	22	23	24	22	24	24	23	25	25	25	27	27	25	26	24	22	24	25	22	24	25	25	26	23	582	
Mean	57	63	51	49	54	63	63	67	61	49	54	45	40	43	40	39	50	49	42	47	49	51	49	48		51

D: disturbed M: missing *: estimated

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

MAY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	450	600	1650	650	-150	200	0	-50	0	700	700	650	600	500	450	400	450	500	600	600	600	600	600	800	22	550
2	950	950	950	1050	1000	600	400	800	700	550	500	400	300	400	400	300	100	200	400	700	1100	1000	1300	950	24	670
3	800	900	1150	1300	900	850	1100	1300	1650	1100	900	650	450	500	D	D	D	D	D	D	D	D	800	700	16	940
4	700	700	650	500	200	D	D	-250	50	250	50	350	250	450	450	500	500	600	600	800	850	950	1100	1150	21	550
5	1100	1400	1150	1100	1100	1000	1400	1250	1100	1050	900	400	650	D	950	850	D	D	D	D	750	1300	150	800	19	970
6	650	900	800	1000	700	1150	1400	1450	1300	1250	1050	850	700	500	D	D	800	D	D	600	250	100	800	950	20	860
7	600	600	850	1100	1150	1350	1350	900	750	700	600	550	650	600	500	400	500	550	600	800	950	900	650	700	24	770
8	750	900	D	D	350	600	850	900	900	800	600	450	300	350	350	300	250	200	350	500	500	250	-150	-50	20	520
9	-50	300	250	250	100	-50	-500	-750	-150	-550	-150	50	-450	D	D	D	D	1000	1100	1000	1100	1150	1150	1050	12	710
10	1200	1200	1100	1050	1000	1200	1450	1450	1150	M	650	650	700	D	D	800	D	550	700	750	800	850	800	750	20	940
11	850	800	700	700	900	1150	1200	1050	950	700	450	200	0	100	200	300	350	400	550	800	950	1000	1300	1650	24	720
12	1400	1000	950	1050	1100	1350	1550	1600	1600	1400	950	850	700	600	450	400	2050	>-400	>-1500	-150	150	200	100	-150	20	970
13	>-1500	0*	D	D	-200	650	D	D	D	D	D	-150	800	750	600	800	850	900	800	800	1100	950	1150	1150	14	810
14	1200	1150	1050	1100	950	900	1000	1200	1200	1200	1200	1150	900	800	850	700	550	200	450	650	600	850	950	900	24	900
15	900	800	900	800	750	650	650	900	900	1050	900	650	350	250	500	300	150	100	250	200	100	>-2800	D	D	21	570
16	D	D	700	-100	100	400	D	D	D	650	750	850	600	350	>-1350	-700*	250	800	M	M	M	M	M	M	10	540
17	D	0	D	D	-200	50	100	450	600	550	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6	290
18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
20	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
27	M	M	M	M	M	M	M	M	1100	950	800	550	300	350	550	700	400	700	650	550	550	D	D	D	13	630
28	450	50*	350	150	300	600	950	1000	1000	850	500	550	300	400	400	500	500	450	650	700	1050	950	800	500	24	580
29	150	300	150	350	650	750	1200	1150	1200	850	D	D	D	100	D	-700	50	650	D	D	300	600	600	450	17	560
30	450	550	550	400	600	750	1100	1100	1150	1000	850	700	600	700	550	600	600	600	700	800	800	800	750	750	24	730
31	850	900	800	850	850	1100	1400	1700	1600	1250	D	D	D	950	550	500	450	450	600	800	850	950	1000	1100	21	930
No. of Hours	17	20	18	17	18	19	17	16	19	19	17	18	18	18	15	16	17	17	15	16	19	17	17	16	416	
Mean	790	700	820	790	710	810	1010	1040	990	890	730	580	510	480	520	480	520	520	600	690	700	790	820	900		730

D: disturbed M: missing *estimated

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

MAY 1966

Time LST / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	>100	>100	>-100	>100	>-100	>-100	>-100	>-60	-24	36	34	32	40	28	28	20	44	34	26	18	20	20	18	22	15	28
2	26	28	30	32	24	10	8	18	14	14	10	4	6	10	8	6	0	2	10	18	28	20	28	20	24	16
3	20	20	20	30	12	20	26	30	40	30	26	16	10	10	D	D	D	D	D	D	D	>130	120	98	16	33
4	102	146	144	M	M	D	M	M	M	M	M	32	16	22	20	20	20	16	18	20	22	26	24	28	16	42
5	28	42	34	>132	>150	>120	104	78	60	42	40	22	28	D	90	66	D	D	D	D	>150	>150	>150	>130	12	52
6	56	64	76	90	96	80	52	40	44	52	38	32	22	18	>-50	D	D	D	D	D	>-100	>-100	>-100	-46	14	54
7	-14	-36	8	18	24	32	26	26	24	26	26	20	22	20	14	16	26	18	20	22	24	18	12	12	22	20
8	20	20	D	D	10	18	24	26	32	30	28	16	10	16	12	10	8	8	12	10	8	0	-12	-6	20	16
9	-4	12	8	10	4	4	-2	-4	-4	-20	-6	-14	D	D	D	D	D	>140	>150	>150	>150	110*	60	26	8	29
10	30	30	34	36	36	46	58	52	50	M	50	50	54	D	D	62	D	80	60	30	24	26	28	26	20	43
11	30	28	24	24	30	40	40	38	38	30	20	24	38	56	48	22	20	20	22	28	28	30	36	50	24	32
12	38	28	32	32	30	46	50	42	54	50	>130	52	26	20	18	16	>108	D	10*	28	22	20	16	>-30	20	31
13	>-100	>-100	>-100	>-100	>-100	>-100	D	>-100	D	D	D	>-40	42	22	20	30	28	28	20	22	30	28	40	46	12	30
14	70	84	70	60	46	32	28	40	42	48	42	40	30	30	32	28	18	4	16	20	14	30	30	30	24	37
15	26	26	32	28	30	28	30	44	46	48	42	26	10	10	22	14	6	2	8	0	0	>-100	D	D	21	23
16	D	>150	82	76	24	52	D	D	D	64	46	48	78	130	42	106	>150	>150	M	M	M	M	M	M	11	68
17	>-100	>-100	>-100	>-100	>-100	>-100	-58	-8	18	28	M	M	M	M	M	M	M	M	M	M	M	M	M	M	2	23
18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
20	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
21	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
27	M	M	M	M	M	M	M	M	58	54	38	38	68	90	64	68	54	60	62	44	30	D	D	M	13	56
28	M	M	D	14	M	M	52*	M	M	M	30	42	22	26	28	32	30	26	38	34	50	40	30	10	16	31
29	6	20	12	30	34	32	34	30	44	40	D	>-100	D	>100	D	D	112	60	D	80*	>150	>150	>150	128	14	47
30	114	132	126	110	88	100	110	102	70	72	82	54	38	42	30	30	32	32	40	40	36	40	30	42	24	66
31	50	58	60	68	70	60	64	86	96	70	D	D	D	-12	24	24	20	20	34	36	38	40	38	42	20	50
No. of Hours	14	15	16	15	15	15	15	14	16	17	15	17	18	16	16	17	14	15	15	16	15	14	14	14	368	
Mean	44	49	49	44	37	40	47	47	46	43	37	32	31	34	31	33	29	27	26	28	25	32	36	41		37

D: disturbed M: missing *:estimated

ELECTRIC POTENTIAL IN VOLTS AT 23 METERS ABOVE GROUND

K = 0.11

JUNE 1966

Time LST Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	1200	1000	1050	1100	1250	2050	1800	1650	1350	900	900	D	D	D	1150	600	600	750	750	1100	1000	1300	1400	1100	21	1140
2	1100	1150	1050	900	1000	1300	1600	2050	1500	1150	900	600	450	500	250	200	300	400	450	650	700	750	700	600	24	840
3	650	650	750	750	950	950	1150	1100	1050	1000	900	800	600	300	400	500	600	600	600	600	550	500	400	150	24	690
4	-300	300	400	400	450	700	600	550	800	M	800	650	600	500	500	350	300	500	500	600	750	800	350	350	22	530
5	500	500	450	500	750	800	800	700	700	650	700	600	500	450	500	450	150	400	400	300	200	200	300	350	24	490
6	250	300	400	550	D	600*	-200	350	1300	1350	1300	1100	850	1000	850	650	650	650	450	600	650	550	300	350	22	680
7	350	350	D	D	-200	150	250	100	100	100	500	1150	1000	650	450	650	1100	850	900	850	850	600	550	750	21	580
8	700	750	750	950	950	950	1050	900	750	D	D	D	D	950	D	D	M	850	800	1050	950	1200	1300	1050	17	940
9	950	1050	1100	1000	1050	1650	1950	1700	1300	950	750	650	650	700	600	750	950	650	1100	950	450	500	350	300	24	920
10	D	950	D	-550	D	D	D	D	D	D	D	100	-600	-950	-1150	D	D	-850	D	-450*	-250	-250	-600	-1250	2	520
11	-650	-100	-450	-250	50	500	1600	1300	1200	750	400	200	500	400	750	800	1100	850	1000	1100	1050	1200	1100	1100	20	850
12	1200	1050	1100	1000	1050	1300	1450	1350	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	8	1190
13	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	1000	900	600	700	900	900	750	M	M	7	850
14	M	500	600	400	450	600	800	900	1000	750	600	600	700	700	D	D	D	D	D	150	100	-50	-50	100	16	560
15	200	250	350	200	250	650	650	750	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	8	410
16	M	M	M	M	M	M	M	M	-850*	-550	M	M	-150	50	1050	1300	D	D	200	450	550	500	400	300	9	530
17	100	-50	100	350	150	350	400	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	6	240
18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
20	M	M	M	M	M	M	M	M	250	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	1	250
21	M	M	M	M	M	M	M	300	450	500	M	M	M	M	M	M	M	M	M	M	M	M	M	M	3	420
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	-
27	M	M	M	M	M	M	M	M	M	500	450	450	500	400	200	150	250	300	250	400	500	600	300	50	15	350
28	300	300	300	300	450	650	300	600	850	1000	650	300	-50	-300	-250	-50	-100	-100	-200	50	200	250	150	200	17	400
29	200	400	400	400	350	200	600	700	650	600	450	250	M	M	M	M	M	M	M	M	M	M	M	M	12	430
30	M	M	M	M	M	M	M	850	700	600	250	100	100*	50	0	50	-100	100	100	400	450	300	400	400	16	300
No. of Hours	13	15	14	14	14	16	15	17	16	14	14	14	11	13	12	13	11	13	14	16	16	15	14	15	339	
Mean	590	630	630	630	650	840	1000	930	870	770	680	540	590	510	560	570	630	590	590	630	620	670	570	480		665

D: disturbed M: missing *: estimated

VERTICAL AIR-TO-EARTH CURRENT DENSITY (10^{-13} A/m^2)

JUNE 1966

Time LST Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	No. of hours	Mean
1	46	38	40	48	58	72*	38	34	28	30	38	>70	D	D	34	22	32	38	32	38	34	44	44	40	21	39
2	50	66	64	60	56	66	60	72	54	44	42	30	28	32	22	22	28	30	30	32	32	38	32	30	24	42
3	32	32	40	44	50	48	56	52	62	60	54	50	100	116	98	88	54	38	34	28	22	20	30	28	24	51
4	>90	>150	>150	>150	>150	>150	>150	>150	>150	M	>150	>150	130	112	128	108	84	96	82	56	56	62	>150	>150	10	91
5	>150	>150	>150	>150	104	90	44	38	30	30	32	24	20	18	22	20	16	38	30	26	42	50	46	78	20	40
6	>148	>150	>150	>150	D	D	D	D	>140	70	70	62	50	52	42	42	50	40	30	48	46	50	62	46	15	51
7	40	38	D	D	>140	>150	>150	>150	>150	>150	>150	>146	90	52	D	110	98	88	80	66	60	44	50	60	13	67
8	56	56	92	128	142	>148	110*	54	48	D	D	D	D	>148	D	D	D	4	32	40	34	M	54*	M	13	65
9	M	54	56	44	50	60	58	40	30	18	22	20	16	16	18	18	30	18	42	30	14	20	10	12	23	30
10	D	>150	D	>-76	D	D	D	D	D	D	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	>-100	0	---
11	>-100	>-100	>-100	>-100	-78	-64	-20	16	26	30	10	2	4	22	16	40	40	48	30	38	42	40	44	40	17	29
12	42	44	44	52	102	102	82	84	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	8	69
13	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	48	38	30	30	34	28	24	M	M	7	33
14	M	20	36	46	46	36	30	28	30	24	22	28	30	32	D	D	D	D	D	-18	48	68	74	80	17	38
15	80	84	84	74	80	88	86	92	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	8	83
16	M	M	M	M	M	M	M	M	56	90	M	M	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	2	73
17	>150	>150	>148	122	132	>150	>148	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	2	127
18	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
19	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
20	M	M	M	M	M	M	M	M	42	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	1	42
21	M	M	M	M	M	M	M	48	40	34	M	M	M	M	M	M	M	M	M	M	M	M	M	M	3	41
22	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
24	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
25	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
26	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	0	---
27	M	M	M	M	M	M	M	M	M	54	58	48	56	50	46	42	48	50	46	48	48	46	28	26	15	46
28	42	46	48	38	32	34	16	20	24	30	18	10	4	-6	4	6	6	2	4	18	18	20	16	24	23	21
29	24	50	50	>124	>142	>140	62	38	42	54	50	36	M	M	M	M	M	M	M	M	M	M	M	M	9	45
30	M	M	M	M	M	M	M	48	34	26	18	16	14	16	14	16	6	24	18	24	22	14	22	10	17	20
No. of Hours	9	11	10	10	11	9	11	14	14	14	12	11	12	11	11	13	13	14	14	14	15	14	13	12	292	
Mean	46	48	55	66	77	66	58	47	39	42	36	30	45	47	40	45	41	39	37	38	36	39	39	39		44

D: disturbed M: missing *: estimated

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

January 1966

1. Overcast at night then generally partly cloudy.
2. Clear night then overcast rest of the day.
3. Freezing rain and ice pellets early morning. Rain A.M. Snowshowers P.M. and evening.
4. Clear till noon then cloudy.
5. Generally overcast.
6. Variable cloudiness. Freezing drizzle P.M.
7. Generally cloudy.
8. Overcast with snow all night till mid A.M. then clearing.
9. Clear becoming overcast late evening.
10. Overcast till mid P.M. then cloudy.
11. Cloudy till noon. Snowshowers A.M. then partly cloudy.
12. Clear.
13. Clear night then overcast. Snow late evening.
14. Snow during the night and evening. Partly cloudy daylight hours.
15. Generally clear.
16. Snowshowers during the night and late evening. Partly cloudy at other periods.
17. Snowshower during the night till mid A.M. then cloudy.
18. Cloudy during the day. Overcast other periods.
19. Overcast all day. Snow during the night and A.M.
20. Overcast with light snow all day.
21. Partly cloudy A.M. and P.M. Overcast other periods.
22. Generally overcast clearing in evening.
23. Overcast. Snow mid A.M. and rest of the day.
24. Overcast with snow till late P.M. then clearing.
25. Clear.
26. Clear. Ice fog early morning.
27. Partly cloudy becoming overcast with snow mid P.M. and evening.
28. Partly cloudy becoming overcast with snow mid P.M. and evening.
29. Overcast with snow during the night then clearing.
30. Overcast. Snow beginning early A.M. and lasting rest of the day. Strong winds.
31. Generally overcast. Snow most of the day.

February 1966

1. Cloudy P.M. Generally overcast with snow at other periods
2. Generally cloudy.
3. Foggy till noon then cloudy.
4. Generally cloudy.
5. Generally cloudy. Foggy and snowgrains A.M. Snow in evening.
6. Cloudy and snow till mid-A.M. then clearing.
7. Few clouds.
8. Clear becoming cloudy in evening.
9. Mainly overcast but clearing in evening. Occasional freezing rain and ice pellets P.M.
10. Partly cloudy at night then overcast. Rain in evening.
11. Overcast with rain A.M. then cloudy.
12. Cloudy at night then clear.
13. Overcast. Snow P.M. and evening.
14. Variable cloudiness then clear in evening.
15. Cloudy A.M. then clear.
16. Clear night then overcast. Snow beginning at noon till late P.M.
17. Clear.
18. Partly cloudy.
19. Partly cloudy A.M. and P.M. Clear other periods.
20. Clear night then cloudy. Snow P.M.
21. Variable cloudiness.
22. Overcast with snowshowers at night. Generally cloudy at other periods.
23. Overcast till mid A.M. then gradually clearing.
24. Few clouds. Dense fog early A.M.
25. Mainly overcast. Snow P.M. and evening.
26. Cloudy at night then clear.
27. Clear.
28. Increasing cloudiness becoming overcast late P.M. Rain in evening.

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

March 1966

1. Overcast. Rain till mid A.M. Rain and snow in evening.
2. Overcast occasional snow during the night then cloudy.
3. Clear becoming cloudy in evening.
4. Cloudy becoming overcast with rain and drizzle in evening.
5. Overcast. Rain occasionally heavy till mid P.M.
6. Generally overcast. Drizzle early morning.
7. Cloudy with snowshower mid A.M. then clearing.
8. Snow early morning and A.M. then clearing.
9. Generally partly cloudy.
10. Clearing P.M.
11. Sunny.
12. Clouding over P.M. Light snow from mid-afternoon.
13. Clearing late afternoon. Snow ending mid-afternoon.
14. Variable cloudiness. Gusty winds P.M.
15. Clear.
16. Sunny.
17. Clouding over late P.M. Very light snow and light rain beginning late evening.
18. Cloudy A.M. and evening. Sunny in afternoon. Light rain ending during the night.
19. Cloudy. Breaks P.M. and evening. Light showers early night and late evening.
20. Cloudy clearing late evening. Light showers.
21. Clearing mid-afternoon.
22. Clouding over mid-afternoon. Light rain in evening.
23. Becoming sunny mid-P.M. Gusty winds P.M. and evening.
24. Cloudy. Drizzle and rain late evening. Gusty winds P.M. Light snow very late evening.
25. Cloudy. Gusty winds P.M. Light snow to early A.M.
26. Cloudy. Flurries and light snow P.M. and evening. Gusty winds A.M. and P.M.
27. Cloudy periods. Gusty winds P.M.
28. Cloudy clearing in the evening. Few gusts P.M.
29. Sunny. Few gusts P.M.
30. Overcast. Light snow ending in mid-evening.
31. Cloudy till early P.M. Slow clearing thereafter.

April 1966

1. Becoming cloudy late P.M.
2. Variable cloudiness.
3. Cloudy periods late A.M. to mid-P.M. Light flurries late A.M. to early P.M.
4. Cloudy in the afternoon.
5. Cloudy from early A.M. Light to very light showers and flurries in afternoon.
6. Variable cloudiness. Light showers and flurry P.M.
7. Cloudy clearing late evening. Scattered very light showers.
8. Cloudy. Partial clearing in evening. Rain and snow from early A.M. to early P.M.
9. Overcast. Partial clearing early evening. Rain and snow ending early P.M.
10. Cloudy. Showers. Thundershower early evening.
11. Cloudy. Showers P.M.
12. Cloudy. Very light shower early evening.
13. Cloudy.
14. Sunny.
15. Sunny.
16. Sunny. Few cloudy periods in the morning.
17. Sunny.
18. Sunny.
19. Sunny. Clouding over late evening.
20. Overcast clearing late evening. Few gusts.
21. Cloudy P.M. to mid-evening. Showers P.M. Few gusts.
22. Sunny.
23. Clouding over late P.M. Shower late evening.
24. Overcast. Light rain and drizzle to mid-P.M. Gusty
25. Clearing early P.M. Gusty winds.
26. Few cloudy periods early night. Sunny rest of day. Gusty winds. Snow flurry early night.
27. Clouding over late P.M. Few gusts late evening.
28. Overcast. Light rain in evening. Ice pellets late P.M. Gusty winds.
29. Becoming sunny at noon. Light drizzle early night.
30. Clouding over in mid-morning. Light shower P.M.

DAILY WEATHER SUMMARY AT DORVAL, QUEBEC

May 1966

1. Overcast clearing in early afternoon. Light drizzle early night. Gusty winds.
2. Sunny.
3. Clouding over in late morning. Few showers late P.M. and in the evening. Few gusts evening.
4. Cloudy clearing in the early evening. Light rain and snow to mid-A.M.
5. Clouding over in late morning. Few showers P.M.
6. Clouding over in early afternoon. Light rain and snow to mid-evening. Few gusts.
7. Sunny. Few gusts P.M.
8. Sunny. Cloudy periods during the night and late afternoon.
9. Cloudy, clearing in late evening. Light snow early P.M.
10. Clouding over A.M. Clearing early evening. Gusty winds. Light snowflurries P.M.
11. Sunny. Gusty winds to early evening.
12. Cloudy to overcast. Showers beginning late P.M.
13. Clearing early P.M. Showers to late A.M. Gusts A.M. & P.M.
14. Sunny.
15. Clouding over early evening. Showers beginning late
16. Cloudy to overcast. Light rain from late A.M. (eve. Few gusts.
17. Overcast. Light shower, rain and drizzle P.M.
18. Cloudy to overcast. Light rain P.M. and evening. Few gusts.
19. Cloudy, clearing in late afternoon. Light rain to late A.M. Few gusts.
20. Partly cloudy. Shower evening. Strong gusty winds mid P.M.
21. Sunny.
22. Sunny.
23. Sunny.
24. Generally partly cloudy.
25. Cloudy till noon then clearing.
26. Sunny.
27. Clear night then generally cloudy. Thunderstorm late P.M.
28. Cloudy.
29. Variable cloudiness. Occasional showers.
30. Generally cloudy.
31. Cloudy then clearing in evening.

June 1966

1. Cloudy daylight hours. Partly cloudy at other periods.
2. Cloudy P.M. Clear other periods.
3. Clear night, then generally cloudy.
4. Cloudy, showers in evening.
5. Cloudy to overcast.
6. Cloudy till noon then clearing. Showers early morning.
7. Overcast till mid A.M. then cloudy. Night and afternoon showers.
8. Cloudy A.M. and P.M. Thundershower P.M. Clear at other periods.
9. Increasing cloudiness becoming overcast mid P.M.
10. Overcast with rain or drizzle all day. Occasionally heavy.
11. Overcast all night then gradually clearing.
12. Partly cloudy.
13. Few clouds.
14. Clear night. Increasing cloudiness becoming overcast late P.M. Thundershower P.M.
15. Generally cloudy. Thundershower P.M.
16. Mainly overcast. Rain A.M. till mid P.M. Evening showers.
17. Cloudy.
18. Clear.
19. Clear.
20. Clear becoming cloudy late P.M. Showers in evening.
21. Few Clouds.
22. Generally partly cloudy.
23. Sunny. Clouding over in mid-evening.
24. Cloudy. Clearing late P.M. Light early night.
25. Cloudy. Few showers early evening. Thunder late evening.
26. Sunny. Very light shower early morning.
27. Sunny. Few light showers early night.
28. Sunny.
29. Cloudy periods P.M. and evening. Thundershowers P.M. Light shower in evening
30. Sunny.

30

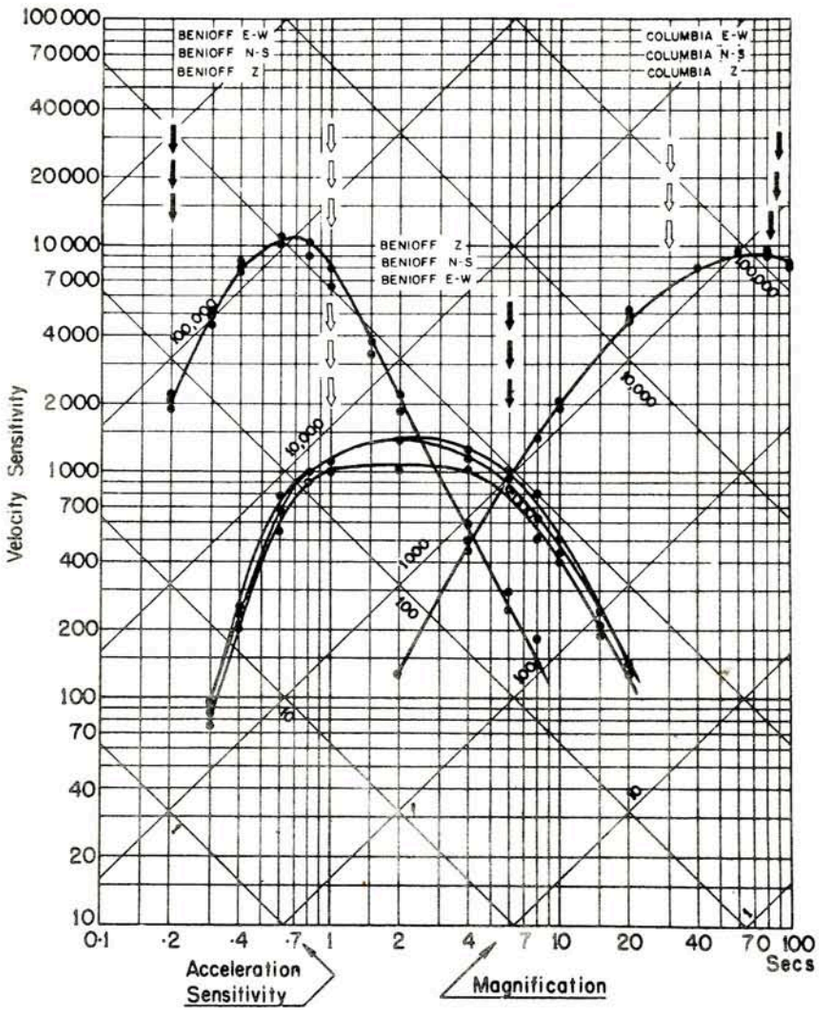
RAYONNEMENT SOLAIRE 1966

DATE	Rayonnement total						Rayonnement diffus					
	Janvier	Février	Mars	Avril	Mai	Juin	Janvier	Février	Mars	Avril	Mai	Juin
1	93	176	52	319	353	486	44	125	52	M	235	242
2	88	161	272	341	655	618	81	131	177	M	108	242
3	34	183	365	460	420	652	34	119	88	M	251	233
4	157	190	222	318	277	418	49	141	158	177	211	315
5	81	233	39	345	286	447	75E	88	38	237	199	355
6	56	256	131	345	453	551	45	68	125	198	214	306
7	92	242	290	260	571	345	72	82	148	239	176	251
8	139	263	322	117	533	326	85	73	141	114	224	220E
9	180	88	339	89	190	569	42	84	157	88	187	210E
10	22	133	304	236	363	46	22	129	197	198E	272	46
11	105	212	393	236	574	680	84	86	90	205E	189	146
12	176	255	218	267	374	722	46	79	180	M	241	142E
13	80	64	81	308	380	719	79	63	74	M	192	101
14	176	220	379	539	601	495	56	134	200	122	250	292
15	195	243	449	569	637	513	49	113	93	107	168	262
16	149	131	435	459	236	217	92	89	90	187E	214	138
17	102	323	305	593	92	577	100	64	143	92	92	239
18	93	325	370	563	324	712	93	69	144	123	285	126
19	71	268	219	566	228	710	71	140	177	132	176	130
20	34	269	157	125	570	626	34	162	134	125	206	207
21	166	185	248	390	671	714	91	171	189E	M	159	154
22	44	183	246	593	644	695	44	168	169	104	176	153
23	26	227	211	439	634	606	26	150	188	195E	173	306
24	47	335	213	49	612	447	47	78	193	48	241	339
25	218	89	302	396	579	383	60	88	214E	M	197	345
26	151	347	340	626	697	556	101	76	M	134E	115	311
27	169	357	419	579	561	654	91	80	M	160	224	215
28	151	272	311	175	645	547	143	151	M	171	195	272E
29	204		491	400	308	483	100		117	196	171	199E
30	48		119	242	432	698	47		119	210	325	129
31	141		293		492		140		M		282	
Moyenne	113	223	276	366	466	540	70	106	145	162	205	222

Unité de mesure: 1 langley (= 1 calorie-gramme par cm^2) M: manquant E: une (plusieurs) heure (s) durant le jour fut (furent) estimée (s).

31

STATION : MONTREAL



ϕ = 45°30'09"N λ = 73°37'23"W Altitude 112M

Foundation : Ordovician Limestone (Trenton)

T_s T_g

Date of Calibration: April - 1962
Feb. - 1964

BENIOFF'S		BENIOFF'S		COLUMBIA'S	
S.P. - Z	Apr. 4	I.P. - Z	Apr. 4	L.P. - Z.	Feb.
S.P.H. - N.S.	Apr. 4	I.P.H. - N.S.	Apr. 4	L.P.H. - N.S.	Feb.
S.P.H. - E.W.	Apr. 5	I.P.H. - E.W.	Apr. 5	L.P.H. - E.W.	Feb.

INSTRUMENTS DE LA STATION

3 séismographes Benioff de 100 kg. avec 6 galvanomètres.
t_o=1 sec., t_g=0.2 sec. pour ZNE. Enregistreur, 60mm/min.
t_g=6 sec. pour Z'N'E'. Enregistreur, 30mm/min.
3 séismographes Sprengnether, type Columbia Z"N"E".
Avant le 13 février 1964, t_o=17 sec., t_g=100 sec.
Après le 13 février 1964, t_o=30 sec., t_g=100 sec.pour Z"N"E".
Enregistreur, 15mm/min.

Le 13 février 1964, l'amplification des Columbia a été augmentée. Cf. graphiques.

Dans notre bulletin, nous indiquons toujours sur quel séismogramme chaque phase a été lue en ajoutant après cette phase une des lettres suivantes:
ZNE pour celles données par les Benioff avec galvanomètres de 0.2 sec.
Z'N'E' pour celles données par les Benioff avec galvanomètres de 6 sec.
Z"N"E" pour celles données par les Columbia avec galvanomètres de 100 sec.

L'heure est inscrite à chaque minute sur les séismogrammes par la Société Radio-Canada au moyen d'une ligne téléphonique avec une précision de $\pm$ 0.1 sec. à l'année. Cette Société nous fournit en même temps un courant alternatif de 60 cycles de fréquence absolument constante, pour les moteurs des enregistreurs. De plus, le signal horaire de l'Observatoire du Dominion relayé par le poste local de radio CBF, à 01 00 00 p.m. s'enregistre automatiquement sur tous les séismogrammes.

Les positions géographiques des épicentres ainsi que l'heure d'origine et la profondeur sont toujours empruntées à U.S.C.G.S. pour les séismes éloignés. Pour les locaux, ces données nous sont fournies par l'Observatoire du Dominion, et cela est indiqué chaque fois. Pour sauver de l'espace, nous ne mentionnons pas U.S.C.G.S. à chaque séisme.

Nous indiquons aussi quelques fois, après une phase, sur la ligne suivante, la période de l'onde du sol et son amplitude en microns.

Nous tenons à exprimer publiquement notre reconnaissance à l'Observatoire du Dominion qui envoie chaque année ses techniciens refaire l'étalonnage complet de tous les séismographes et pour toute la gamme des fréquences, par la méthode de Willmore.

M. Buist, S.J.

1 juil. 50.0 N., 158.9 E.
Kurile Isl.

h	about 66 km.		
H	17	41	34.3
iPZ	17	53	07

1 juil. 53.5 N., 163.6 W.
Unimak Isl. region

h	about 50 km.		
H	19	49	03.9
eLN"	20	18	

1 juil. 63.0 S., 163.7 W.
S. Pacific Cordillera

h	about 33 km.		
H	23	12	45.4
eP'Z	23	31	49.5
eSSN"		51.6	
eSSSN"		56	30

2 juil. 52.3 N., 173.2 E.
Near Isl. Aleutian Isl.

h	about 96 km.		
H	05	07	22.5
eLN"	05	35	

2 juil. 52.0 N., 175.3 E.
Rat Isl. Aleutian Isl.

h	about 40 km.		
H	20	19	41.8
iPZ	20	30	26.0 d
ipPZ			37.0

2 juil. 53.1 N., 167.7 W.
Fox Isl. Aleutian Isl.

h	about 59 km.		
H	20	58	40.0
ePZ	21	08	23
iPZ			23.7 c
iPPE'		10	36
iSE"		16	14
iScSN'		18	16
eSSE'		20	18

3 juil. 22.6 N., 101.4 E.
Burma-China border region

h	about 33 km.		
H	11	26	11.6
ePSN"	11	55	16
ePKKPZ"		56	12

3 juil. 15.3 S., 176.3 W.
Fiji Isl. region

h	about 33 km.		
H	20	48	24.2
eLN"	21	35	

5 juil. 52.9 N., 34.2 W.
North Atlantic Ocean

h	about 33 km.		
H	08	31	58.9
iPZ	08	37	36.1 d
iSN		42	08

6 juil. 38.7 N., 22.6 E.
Greece

h	about 28 km.		
H	03	18	44.6
ePZ	03	29	39.7 d
eSE"		38	32
eSSE"		43	14
iSSSN"		46	12

6 juil. 46.7 N., 162.4 E.
Kurile Isl.

h	about 35 km.		
H	04	08	46.1
iPZ	04	20	51.1 d

6 juil. 55.1 N., 162.1 E.
Near E. coast of Kamchatka

h	about 33 km.		
H	04	58	55.7
ePZ	05	10	00.5

7 juil. 32.7 N., 138.7 E.
S. of Honshu, Japan

h	about 218 km.		
H	21	38	50.5
iPZ	21	51	58.3 d

7 juil. 6.9 S., 105.6 E.
Sunda Strait

h	about 109 km.		
H	23	00	06.8
eP'Z	23	19	27

8 juil. 47.3 N., 11.3 E.
Austria

h	about 33 km.		
H	23	20	04.6
eN"	23	33	

9 juil. 15.4 S., 175.6 W.
Tonga Isl.

h	about 33 km.		
H	17	05	32.7
eLN"	17	46	

10 juil. 55.3 N., 162.6 E.
Near E. coast of Kamchatka

h	about 33 km.		
H	04	26	41.9
ePZ	04	37	45.5

10 juil. 41.6 N., 140.3 E.
Hokkaido, Japan region

h	about 139 km.		
H	19	22	19.5
iPZ	19	34	55.8 d

11 juil. 56.7 N., 152.1 W.
Kodiak Isl. region

h	about 33 km		
H	06	12	07.4
eLN"	06	39	

11 juil. 58.0 N., 151.4 W.
Kodiak Isl. region

h	about 8 km.		
H	07	12	58.6
eLN"	07	37	

12 juil. 16.5 S., 172.9 W.
Samoa Isl. region

h	about 79 km.		
H	05	34	12.5
eLN"	06	19	

12 juil. 28.4 S., 68.2 W.
La Rioja Prov. Argentina

h	about 118 km.		
H	13	57	14.7
iPZ	14	08	37.5 d
ipPZ		09	08.0

13 juil. 15.5 N., 91.7 W.
Mexico-Guatemala border region

h	about 150 km.		
H	00	36	34.1
iPZ	00	43	05

14 juil. 57.0 N., 147.5 W.
Gulf of Alaska

h	about 8 km.		
H	02	29	23.2
eSSN"	02	47.7	

14 juil. 17.6 S., 69.5 W.
Peru - Bolivia border region

h	about 143 km.		
H	12	29	56.0
iPZ	12	40	07.9 c

14 juil. 1.4 N., 90.7 W.
Galapagos Isl. region

h	about 33 km.		
H	17	06	48
eSN"	17	22	06

14 juil. 2.2 N., 95.2 W.
Galapagos Isl. region

h	about 33 km.		
H	18	06	02.8
eLN"	18	25	

15 juil. 37.3 N., 74.3 W.
Kodiak Isl. region

h	about 0 km.		
H	14	16	07.1
iPZ	14	18	10.1 d
iZ			10.6 c

15 juil. 7.7 N., 123.8 E.
Mindanao Philippine Isl.

h	about 588km.		
H	18	33	29.9
iP'Z	18	51	25.5 c

16 juil. 12.1 N., 87.7 W.
Near coast of Nicaragua

h	about 42 km.		
H	10	34	16.8
iPZ	10	41	10.5 d

17 juil. 9.7 S., 159.8 E.
Solomon Isl.

h	about 23 km.		
H	07	20	30.5
eP'Z	07	39	27.5
eSKSE"		46.4	
ePSN"		50	56
eSSN"		57.5	

19 juil. 9.2 N., 70.4 W.
Venezuela

h	about 33 km.		
H	04	13	20.4
iPZ	04	20	23.7 c

19 juil. 25.5 S., 179.8 E.
S. of Fiji Isl.

h	about 482 km.		
H	23	53	55.1
eN"	01	05.5	

21 juil. 20.8 S., 175.8 W.
Tonga Isl.

h	about 57 km.		
H	02	51	39.0
eSKKS	03	18	52

21 juil. 53.3 N., 170.4 E.
Near Isl. Aleutian Isl.

h	about 26 km.		
H	17	52	30.5
iPZ	18	03	24.8 d

22 juil. 51.0 N., 176.0 E.
Rat Isl. Aleutian Isl.

h	about 33 km.		
H	01	18	50.9
iPZ	01	29	38.8 c

23 juil. 21.4 S., 71.0 W.
Off coast of N. Chile

h	about 43 km.		
H	00	58	55.5
ePZ	01	09	41

23 juil.

eL	17	19.7	

24 juil. 54.8 N., 162.8 E.
Near E. coast of Kamchatka

h	about 33 km.		
H	11	45	08.8
eLN"	12	21	

25 juil. 2.0 N., 99.3E.
N. Sumatra

h	about 98 km.		
H	03	40	40.4
eP'Z	03	59	48.5

25 juil. 41.7 N., 126.9 W.
Off coast of N. California

h	about 33 km.		
H	08	44	22.5
eSE"	08	57	38

25 juil. 41.3 N., 126.6 E.
Off coast of Hokkaido, Japan.

h	about 33 km.		
H	13	33	05.2
iPZ	13	45	45.4 d
eSKSN"		56	18

25 juil. 51.4 N., 176.0 E.
Rat Isl. Aleutian Isl.

h	about 37 km.		
H	21	46	45.3
iPZ	21	57	30.7 d
iZ			43.5
eSE"	22	06	16
eSSE"		10.6	

26 juil. 15.8 S., 172.9 W.
Samoa Isl. region

h	about 25 km.		
H	15	23	46.1
eSSE"	15	58.0	

27 juil. 51.2 N., 177.5 E.
Rat Isl. Aleutian Isl.

h	about 34 km.		
H	11	20	27.7
eE"	11	55.5	

27 juil. 6.8 S., 155.1 E.
Solomon Isl.

h	about 86 km.		
H	15	53	44.1
eLE"	16	59	

28 juil. 2.2 S., 101.8 E.
S. Sumatra

h	about 110 km.		
H	22	29	04.9
eP'Z	23	48	14.5

29 juil. 15.2 S., 172.8 W.
Samoa Isl. region

h	about 33 km.		
H	05	26	55.0
eLN"	06	13	

29 juil. 51.2 N., 171.3 W.
Fox Isl. Aleutian Isl.

h	about 23 km.		
H	08	29	22.1
iPZ	08	39	30.2 d
iSN"		47	45

29 juil. 51.2 N., 171.6 W.
Fox Isl. Aleutian Isl.

h	about 33 km.		
H	08	51	44.9
iPZ	09	01	54

29 juil. 16.6 N., 60.1 W.
Leewards Isl.

h	about 33 km.		
H	08	54	01.1
ePZ	09	00	18.5

29 juil. 51.1 N., 171.3 W.
Fox Isl. Aleutian Isl.

h	about 33 km.		
H	15	08	37.0
eLE"	15	38	

30 juil. 22.8 S., 63.7 W.
Salta Prov. Argentina

h	about 526 km.		
H	02	11	39.0
iPZ	02	21	50.0

30 juil. 18.0 S., 70.6 W.
Near coast of N. Chile

h	about 73 km.		
H	05	45	16.1
iPZ	05	55	39.1 c
ipPZ			57.5
iZ		56	06.2
iZ			10.5

30 juil. 6.7 N., 73.0 W.
N. Colombia

h	about 174 km.		
H	07	20	10.3
iPZ	07	27	18.8 c

30 juil. 24.4 S., 67.7 W.
Chile - Argentina border region

h	about 140 km.		
H	18	58	58.8
ePZ	19	09	55
iPZ			55.6
ipPZ		10	31.9
iZ			44.9

30 juil. 51.8 N., 171.8 W.
Fox Isl. Aleutian Isl.

h	about 32 km.		
H	21	07	43.3
eE"	21	38	

31 juil. 35.9 N., 142.2 E.
Off E. coast of Honshu, Japan.

h	about 52 km.		
H	07	36	31.5
eSKSE"	08	00	40

31 juil. 56.4 N., 153.3 W.
Kodiak Isl. region

h	about 33 km.		
H	11	16	05.6
eE"	11	35.5	

31 juil. 20.6 S., 174.4 W.
Tonga Isl.

h	about 33 km.		
H	15	20	40.3
eE"	16	21	

31 juil. 12.3 S., 166.1 E.
Santa Cruz Isl.

h	about 33 km.		
H	20	33	04.5
eE"	21	22	

31 juil. 32.7 N., 93.1 E.
Tibet

h	about 21 km.		
H	21	44	47.8
eN"	22	42	

1 août 56.0 N., 154.2 W.
S. of Alaska

h	about 33 km.		
H	05	31	11.4
eN"	05	59	

1 août

eE"	11	20.6	

1 août 46.9 N., 143.8 E.
Sakhalin Isl.

h	about 400 km.		
H	15	02	56.1
iPZ	15	14	34.5 d
epPZ		16	04
eSN"		24	14

1 août 52.7 N., 153.4 E.
N.-W. of Kurile Isl.

h	about 462 km.		
H	16	41	13.7
iPZ	16	52	52.5 d

1 août 13.3 S., 165.8 E.
New Hebrides Isl.

h	about 28 km.		
H	20	34	19.6
eP'Z	20	53	09

1 août 32.5 S., 178.9 W.
S. of Kermadec Isl.

h	about 44 km.		
H	23	44	28.3
eP'Z	00	03	24.5
eSSN"		21	36

2 août 59.5 N., 145.6 W.
Gulf of Alaska

h	about 38 km.		
H	07	26	59.0
eLN"	07	50	

2 août 56.2 S., 158.2 E.
Macquarie Isl. region

h	about 33 km.		
H	13	19	54.7
iP'Z	13	39	34.6 c
ePPPZ"		43	06
eSSSN"	14	01	44

2 août 7.4 N., 78.7 W.
Panama

h	about 22 km.		
H	14	34	21.6
iPZ	14	41	43.0 c

2 août

ePZ	14	43	31

2 août 7.4 N., 78.7 W.
Panama

h	about 2 km.		
H	16	43	09.4
iPZ	16	50	34

2 août 7.5 N., 78.5 W.
Panama

h	about 33 km.		
H	18	04	56.3
iPZ	18	12	16.5 d

2 août 7.7 N., 78.4 W.
Panama

h	about 33 km.		
H	18	44	22.8
iPZ	18	51	42.0

2 août 7.4 N., 78.8 W.
Panama

h	about 33 km.		
H	19	07	57.1
iPZ	19	15	16.8 d

2 août 7.5 N., 78.4 W.
Panama

h	about 33 km.		
H	20	43	30.6
iPZ	20	50	49.5 d

3 août 7.7 S., 81.3 W.
Off coast of N. Peru

h	about 49 km.		
H	02	01	52.2
iPZ	02	11	07.9 d
eSN"		18	37

3 août 7.8 N., 78.4 W.
Panama

h	about 33 km.		
H	19	56	13.2
ePZ	20	03	33

4 août 16.8 N., 94.5 W.
Oaxaca, Mexico

h	about 118 km.		
H	01	05	53.0
ePZ	01	12	21
ipPZ			45.7
isPZ			58.5
eSN"		17	38

4 août 13.2 S., 167.0 E.
New Hebrides Isl.

h	about 237 km.		
H	08	47	12.4
eSKKSN"	09	13.8	

5 août 5.3 S., 151.7 E.
New Britain region

h	about 47 km.		
H	00	07	50.5
eP'Z	00	26	42.5
iP'Z			45.0
ePPZ		28	08
eSKKSE"		34	06
ePSE"		37	18
eSSN"		44	48

6 août 0.5 S., 19.6 W.
Central Mid-Atlantic Ridge

h	about 33 km.		
H	01	58	40.8
ePZ	02	09	27

6 août 41.4 N., 131.2 E.
Sea of Japan

h	about 560 km.		
H	18	15	11.3
iPZ	18	27	15.7 d

7 août 51.2 N., 174.4 E.
Near Isl Aleutian Isl.

h	about 11 km.		
H	06	48	05.9
ePZ	06	59	01

7 août 61.7 N., 150.8 W.
S. Alaska

h	about 33 km.		
H	21	14	40.0
iPZ	21	22	56.8 c

8 août 52.6 N., 173.4 E.
Near Isl. Aleutian Isl.

h	about 35 km.		
H	05	19	26.2
iPZ	05	30	14.0 d

8 août 20.3 S., 68.4 W.
Chile - Bolivia border region

h	about 89 km.		
H	06	31	56.9
iPZ	06	42	33.3 d

8 août 19.8 S., 68.5 W.
Chile - Bolivia border region

h	about 53 km.		
H	06	32	26.4
iPZ	06	43	04.6 d

8 août 51.9 N., 175.3 W.
Andreanof Isl. Aleutian Isl.

h	about 53 km.		
H	12	49	23.1
iPZ	12	59	38.7 c

9 août 1.3 S., 78.7 W.
Ecuador

h	about 133 km.		
H	08	40	29.9
iPZ	08	48	48.5 d

9 août 28.6 S., 71.0 W.
Central Chile

h	about 15 km.		
H	23	12	18.4
ePZ	23	23	54
iPZ			55.2 c

10 août 61.2 N., 60.1 W.
Davis Strait

h	about 33 km.		
H	08	21	06.5
iPZ	08	25	13.8 d

11 août 15.4 S., 166.9 E.
New Hebrides Isl.

h	about 26 km.		
H	03	40	56.2
ePZ"	03	56	20
iP'Z		59	47.5
iPPZ"		01	20
eSKSE"		06	44

11 août 15.7 S., 167.1 E.
New Hebrides Isl.

h	about 33 km.		
H	19	52	29.8
eP'Z	20	11	21

11 août 15.8 S., 167.2 E.
New Hebrides Isl.

h	about 33 km.		
H	22	31	48.9
iP'Z	22	50	40.5 d

12 août 15.9 S., 167.5 E.
New Hebrides Isl.

h	about 25 km.		
H	08	01	43.3
eP'Z	08	20	34

12 août 5.3 S., 152.2 E.
New Britain region

h	about 41 km.		
H	12	57	09.7
iP'Z	13	16	04.3 d

13 août 4.3 S., 81.0 W.
Peru-Bolivia border region

h	about 34 km.		
H	00	54	42.7
iPZ	01	03	35.4 d

13 août 13.6 S., 120.1 E.
Mindoro, Philippine Isl.

h	about 38 km.		
H	02	13	14.3
eLE"	03	07	

13 août 15.9 S., 167.5 E.
New Hebrides Isl.

h	about 34 km.		
H	04	40	55.3
eE"	05	18	

13 août 16.0 S., 167.0 E.
New Hebrides Isl.

h	about 33 km.		
H	11	24	51.8
eE"	11	45	

13 août 15.9 S., 166.8 E.
New Hebrides Isl.

h	about 33 km.		
H	12	40	08.3
e(P)	12	59	13

14 août 15.8 S., 166.8 E.
New Hebrides Isl.

h	about 33 km.		
H	11	07	47.1
eP'Z	11	26	44

14 août 11.5 S., 166.3 E.
Santa Cruz Isl.

h	about 49 km.		
H	13	18	06.0
eLN"	14	06	

14 août 19.2 S., 174.0 W.
Tonga Isl. region

h	about 41 km.		
H	14	13	50.1
eLE"	15	12	

14 août 15.6 S., 166.6 E.
New Hebrides Isl.

h	about 33 km.		
H	20	00	13.5
eN"	20	28	

15 août 15.0 N., 92.3 W.
Mexico - Guatemala border region

h	about 127 km.		
H	04	12	55.2
ePZ	04	19	50

16 août 35.2 N., 35.6 W.
N. Atlantic Ridge

h	about 33 km.		
H	04	36	37.7
eP	04	42	47

16 août 5.2 N., 77.5 W.
Near W. coast of Colombia

h	about 15 km.		
H	12	16	49.9
iPZ	12	24	29.9 c

16 août 5.0 N., 77.6 W.
Near W. coast of Colombia

h	about 33 km		
H	12	19	35.5
iPZ	12	27	13.8 c

16 août 0.6 S., 19.9 W.
Central Mid-Atlantic Ridge

h	about 33 km.		
H	12	36	23.3
ePZ	12	47	06
iPZ			07.2 c

16 août

ePZ	13	15	58

16 août 6.0 S., 153.9 E.
New Ireland region

h	about 78 km.		
H	14	43	48.0
eLE"	15	48	

16 août 61.4 S., 154.3 E.
Balleny Isl. region

h	about 33 km.		
H	17	01	26.8
eZ"	18	20	

16 août 35.9 N., 35.0 W.
Azores Isl. region

h	about 33 km.		
H	19	53	17.7
eSSN"	20	06	20

16 août 17.3 S., 167.8 E.
New Hebrides Isl.

h	about 33 km.		
H	22	59	22.9
eLZ"	23	59	

17 août 35.1 N., 35.2 W.
N. Atlanta Ridge

h	about 33 km.		
H	00	22	23.9
eSSN"	00	35	28

17 août 5.4 N., 76.7 W.
Colombia

h	about 193 km.		
H	07	30	29.9
ePZ	07	37	54

17 août 5.3 N., 96.2 E.
N. Sumatra

h	about 33 km.		
H	10	35	04.1
eP'Z	10	54	12

17 août 15.2 N., 92.1 W.
Mexico - Guatemala border region

h	about 121 km.		
H	14	02	18.8
iPZ	14	08	53 c
iPZ			53.7 d

17 août 15.2 S., 166.6 E.
New Hebrides Isl.

h	about 19 km.		
H	16	17	41.5
eP'Z	16	36	34.5

17 août 21.1 S., 69.1 W.
N. Chile

h	about 103 km.		
H	20	45	32.7
iPZ	20	56	39.6 c
ipPZ			51.0

17 août 20.4S., 168.8 E.
Loyalty Isl.

h	about 33 km.		
H	22	18	52.5
eLN''	23	13	

18 août 16.0 S., 167.0 E.
New Hebrides Isl.

h	about 5 km.		
H	14	51	29.3
eP'Z	15	10	27

20 août 5.7 S., 128.6 E.
Banda Sea

h	about 326 km.		
H	05	54	50.0
eP'Z	06	13	25
iZ		16	33.2

20 août 19.0 S., 69.1 W.
N. Chile

h	about 129 km.		
H	09	42	48.5
iPZ	09	53	11.1 c
iSN	10	01	40

20 août 22.9 S., 172.3 W.
S. of Fiji Isl.

h	about 77 km.		
H	21	21	50.9
eP'Z	21	41	19

21 août 5.9 S., 104.2 E.
S. Sumatra

h	about 33 km.		
H	15	04	17.6
eLE''	16	04	

22 août 28.0 S. 176.2 W.
Kermadec Isl.

h	about 33 km		
H	03	48	48.6
eLE''	04	49	

22 août 50.6 N., 150.1 E.
N.-W. of Kurile Isl.

h	about 487 km.		
H	13	20	02.1
iPZ	13	31	05.0

23 août 40.5 N., 26.1 E.
Turkey

h	about 33 km.		
H	14	08	58.1
ePZ	14	20	08

23 août 16.3 N., 95.8 W.
Oaxaca, Mexico

h	about 28 km.		
H	19	46	02.9
ePZ	19	52	50
iPZ			51.6 c

23 août 16.2 N., 95.5 W.
Oaxaca, Mexico

h	about 33 km.		
H	23	12	27.1
ePZ	23	19	14

23 août 14.9 N., 95.7 W.
Near coast of Oaxaca, Mexico

h	about 48 km.		
H	23	13	47.2
iPZ	23	20	34.8 c

24 août 15.9 N., 96.2 W.
Near coast of Oaxaca, Mexico

h	about 12 km.		
H	00	56	21.4
iPZ	01	03	16.0 c

24 août 16.2 N., 96.2 W.
Oaxaca, Mexico

h	about 31 km.		
H	01	01	00.8
iPZ	01	07	51.0 c

24 août 35.7 N., 23.3 E.
Crete

h	about 33 km.		
H	01	11	05.1
ePZ	01	22	27

24 août 15.9 N., 96.0 W.
Near coast of Oaxaca, Mexico

h	about 33 km.		
H	08	25	24.2
ePZ	08	32	16

24 août 59.4 N., 145.6 W.
Gulf of Alaska

h	about 19 km.		
H	13	12	19.4
ePZ	13	20	29

25 août 34.7 N., 25.1 E.
Gulf of Alaska

h	about 26 km.		
H	04	57	47.5
ePZ	05	09	18

25 août 17.3 S., 69.6 W.
Peru-Bolivia border region

h	about 147 km.		
H	14	50	36.3
iPZ	15	00	46.4 d
ipPZ		01	23.0

27 août 16.0 N., 96.0 W.
Near coast of Oaxaca, Mexico

h	about 33 km.		
H	08	35	05.2
iPZ	08	41	57.0 d

27 août 44.6 N., 148.9 E.
Kurile Isl.

h	about 38 km.		
H	18	22	02.8
eP	18	34	20

28 août 16.0 N., 95.5 W.
Oaxaca, Mexico

h	about 67 km.		
H	03	45	30.3
ePZ	03	52	16

29 août 14.1 N., 90.5 W.
Guatemala

h	about 107 km.		
H	01	45	57.3
iPZ	01	52	37.2 c

29 août 15.7 S., 167.6 E.
New Hebrides Isl.

h	about 10 km.		
H	12	46	30.1
eLN''	13	37	

30 août 16.9 S., 167.4 E.
New Hebrides Isl.

h	about 15 km.		
H	03	32	02.2
eLN''	04	23	

31 août 39.3 N., 40.9 E.
Turkey

h	about 22 km.		
H	07	29	47.4
eLN''	08	25	

31 août 1.0 N., 27.8 W.
Central Mid-Atlantic Ridge

h	about 33 km.		
H	09	12	00.9
ePZ	09	22	09

31 août 15.5 S., 166.8 E.
New Hebrides Isl.

h	about 33 km.		
H	16	36	35.7
eLE''	17	36	

31 août 13.5 N., 92.0 W.
Off coast of Chiapas, Mexico

h	about 33 km.		
H	23	18	07.3
iPZ	23	25	01.9 d

1 sept. 51.3 N., 150.6 E.
Sea of Okhotsk

h	about 537 km.		
H	04	29	21.8
iPZ	04	40	15.8 d

1 sept. 34.6 S., 179.6 E.
S. of Kermadec Isl.

h	about 107 km.		
H	04	47	34.9
eP'Z	05	06	21

2 sept. 29.0 N., 112.9 W.
Gulf of California

h	about 33 km.		

H 02 08 02.1
iPZ 02 14 53.0 c

2 sept. 51.9 N., 175.5 E.
Rat Isl. Aleutian Isl.
h about 31 km.
H 04 26 37.3
iPZ 04 37 23

2 sept. 48.4 N., 128.4 W.
Vancouver Isl. region
h about 33 km.
H 14 02 37.0
eLN" 14 21

2 sept. 49.1 N., 129.0 W.
Vancouver Isl. region
h about 33 km.
H 15 42 15.7
eLN" 16 00

2 sept. 48.3 N., 128.4 W.
Vancouver Isl. region
h about 33 km.
H 19 41 25.2
eLN" 19 59

2 sept. 48.4 N., 128.2 W.
Vancouver Isl. region
h about 19 km.
H 21 27 15.5
eLN" 21 45

3 sept. 51.9 N., 176.1 E.
Rat Isl. Aleutian Isl.
h about 39 km.
H 16 18 51.3
eLN" 16 50

3 sept. 5.2 S., 153.7 E.
New Ireland region
h about 54 km.
H 21 38 53.6
eLN" 22 36

4 sept. 52.0 N., 170.4 W.
Fox Isl. Aleutian Isl.
h about 38 km.
H 07 48 45.1
iPZ 07 58 46.3 c

4 sept. 46.6 N., 153.5 E.
Kurile Isl.
h about 27 km.
H 10 19 51.3
iPZ 10 31 55.5 d

4 sept. 58.2 N., 152.6 W.
Kodiak Isl. region
h about 19 km.
H 14 32 47.9
iPZ 14 41 23.0 c

4 sept. 36.1 N., 98.8 W.
S. Pacific Ocean
h about 33 km.
H 21 37 26.6
eSN" 22 00 22

6 sept. 21.2 N., 121.4 E.
Tai'wan region
h about 33 km.
H 03 18 39.1
eLN" 04 13

6 sept. 6.6 N., 84.4 W.
Off coast of Central America
h about 21 km.
H 21 13 30.5
iPZ 21 21 08.0 c

7 sept. 24.3 N., 142.6 E.
Volcano Isl. region
h about 16 km.
H 06 57 24.8
eLE" 07 44

7 sept. 15.6 S., 167.1 E.
New Hebrides Isl.
h about 29 km.
H 08 28 51.2
eLE" 09 29

8 sept. 57.5 N., 152.1 W.
Kodiak Isl. region
h about 25 km.
H 03 26 20.7

iPZ 03 34 55

8 sept. 11.0 S., 73.8 W.
Peru
h about 97 km.
H 04 10 35.4
iPZ 04 20 06.6 d

8 sept. 55.7 N., 155.4 W.
S. of Alaska
h about 33 km.
H 11 16 34.4
ePZ 11 25 30

9 sept. 43.5 N., 144.0 E.
Hokkaido, Japan region
h about 33 km.
H 04 39 43.5
ePZ 04 52 18

9 sept. 6.5 N., 84.4 W.
Off coast of Central America
h about 27 km.
H 10 02 25.4
iPZ 10 10 00.3 d

9 sept. 7.0 N., 84.3 W.
Off coast of Central America
h about 19 km.
H 15 26 56.0
eLE 15 44

10 sept. 15.9 S., 167.2 E.
New Hebrides Isl.
h about 35 km.
H 07 19 27.8
eLE" 08 20

11 sept. 5.3 S., 153.0 E.
New Britain region
h about 67 km.
H 06 53 01.5
eP'Z 07 11 52.5 d

12 sept. 6.3 S., 151.6 E.
New Britain region
h about 48 km.
H 08 40 12.8
eP'Z 08 59 09.5 d

12 sept. 36.4 S., 97.8 W.
S.-E. Central Pacific Ocean
h about 33 km.
H 20 21 19.4
ePZ 20 33 51

12 sept. 6.4 S., 70.8 E.
Chagos Archipelago region
h about 33 km.
H 22 02 34.3
eP'Z 22 21 43.5

13 sept. 55.5 N., 165.7 E.
Komandorski Isl. region
h about 23 km.
H 13 07 48.3
ePZ 13 18 44

13 sept. 36.5 S., 97.5 W.
S.-E. Central Pacific Ocean
h about 33 km.
H 16 15 44.5
ePZ 16 28 27

14 sept. 8.4 N., 126.8 E.
Mindanao Philippine Isl.
h about 33 km.
H 08 27 15.9
eSSE" 09 04 40

14 sept. 51.4 N., 174.6 E.
Near Isl. Aleutian Isl.
h about 11 km.
H 14 18 03.5
eLE" 14 51

16 sept. 40.4 N., 125.7 W.
Off coast of N. California
h about 33 km.
H 04 10 22.6
ePZ 04 17 39

16 sept. 7.1 N., 126.5 E.
Mindanao, Philippine Isl.
h about 179 km.
H 13 50 11.8

iP'Z 14 08 52

16 sept. 37.2 N., 74.3 W.
Off E. coast of U.S.A.
h about 0 km.
H 19 51 08.4
iPZ 19 53 08.8 c

17 sept. 1.4 S., 77.6 W.
Ecuador
h about 190 km.
H 11 13 56.4
iPZ 11 22 09.1 c
iSN" 28 44
iSE" 49

17 sept. 36.5 N., 141.4 E.
Near E. coast of Honsku, Japan
h about 45 km.
H 13 20 58.3
eLE 13 50

17 sept. 36.5 N., 141.4 E.
Near E. coast of Honsku, Japan
h about 23 km.
H 14 22 36.5
eLE" 15 10

17 sept. 36.3 N., 141.2 E.
Near E. coast of Honsku, Japan
h about 66 km.
H 15 18 38.4
eLE" 16 07

17 sept. 36.3 N., 141.1 E.
Near E. coast of Honsku, Japan
h about 72 km.
H 16 21 21.9
iPZ 16 34 29.4 d

17 sept. 12.7 S., 166.3 E.
Santa Cruz Isl.
h about 65 km.
H 22 54 30.0
eLN" 23 55

18 sept. 59.5 N., 145.1 W.
Gulf of Alaska
h about 22 km.
H 20 46 39.2
ePZ 20 54 44

18 sept. 8.2 N., 126.8 E.
Mindanao, Philippine Isl.
h about 85 km.
H 22 03 18.8
eLE" 22 54

19 sept. 22.1 N., 174.9 W.
Tonga Isl. region
h about 33 km.
H 01 26 52.5
eLE" 02 23

19 sept. 53.1 N., 35.3 W.
N. Atlantic Ocean
h about 33 km.
H 03 52 44.9
ePZ 03 58 21

19 sept. 54.4 S., 135.7 W.
S. Pacific Cordillera
h about 33 km.
H 13 55 39.9
eLN" 14 48

19 sept. 16.2 S., 74.7 W.
Near coast of Peru
h about 47 km.
H 14 17 49.3
ePZ 14 28 01

19 sept. 35.9 N., 120.0 W.
Central California
h about 20 km.
H 15 42 10.0
eLN" 16 01

21 sept. 29.1 N., 128.2 E.
E. China Sea
h about 197 km.
H 01 38 30.2
ePZ 01 52 09

21 sept. 40.7 N., 50.0 W.
N. Atlantic Ocean
h about 23 km.
H 03 26 37.2
iPZ 03 30 41.2 c

22 sept. 20.8 N., 99.3 E.
Burma
h about 35 km.
H 04 24 47.8
eLN" 05 00

22 sept. 1.3 S., 134.0 E.
W. New Guinea region
h about 14 km.
H 09 35 25.3
eP'Z 09 54 44

22 sept. 32.5 N., 131.4 E.
Kyushu, Japan
h about 6 km.
H 12 48 42.9
eLE" 13 34

22 sept. 11.2 S., 162.1 E.
Solomon Isl.
h about 33 km.
H 17 12 18.1
eLN" 18 10

22 sept. 5.4 S., 151.5 E.
New Britain region
h about 57 km.
H 20 01 49.3
eP'Z 20 20 43

22 sept. 36.4 N., 141.3 E.
Near E. coast of Honshu, Japan
h about 44 km.
H 22 08 01.1
ePZ 22 21 10

24 sept. 16.1 N., 105.2 W.
Off coast of Michoachan, Mexico
h about 33 km.
H 03 33 50.0
eLE" 03 54

24 sept. 9.3 S., 78.8 W.
Near coast of N. Peru
h about 49 km.
H 09 40 40.1
ePZ 09 50 07

24 sept. 13.1 N., 145.3 E.
Mariana Isl.
h about 58 km.
H 23 53 42.1
eLE" 00 40

25 sept. 36.1 S., 103.3 W.
S. Pacific Ocean
h about 33 km.
H 02 55 40.1
eLN" 03 37

25 sept. 54.0 N., 35.0 W.
N. Atlantic Ocean
h about 33 km.
H 10 11 29.1
eLN" 10 26

25 sept. 1.0 S., 29.1 W.
Central Mid-Atlantic Ridge
h about 33 km.
H 10 55 59.8
eLN" 11 24

25 sept. 53.3 N., 33.9 W.
N. Atlantic Ocean
h about 33 km.
H 11 59 53.6
eLN" 12 13

25 sept. 39.7 N., 143.2 E.
Off E. coast of Honshu, Japan
h about 44 km.
H 14 37 15.4
ePZ 14 50 07

25 sept. 34.7 N., 116.5 W.
S. California
h about 16 km.
H 17 43 42.6
eN" 17 51

25 sept.

eZ	18	01	41

25 sept. 54.1 N., 35.2 W.
N. Atlantic Ocean

h	about 33 km.		
H	20	10	06.6
ePZ	20	15	37

25 sept. 24.5 S., 68.6 W.
Chile - Argentina border region

h	about 102 km.		
H	20	59	18.6
iPZ	21	10	21

26 sept. 18.4 N., 101.2 W.
Guerrero, Mexico

h	about 93 km.		
H	00	36	23.6
iPZ	00	43	12.0

26 sept. 54.3 N., 35.2 W.
N. Atlantic Ocean

h	about 33 km.		
H	10	03	18.4
ePZ	10	08	48

26 sept. 54.8 S., 38.2 W.
S. Georgia Isl. region

h	about 33 km.		
H	21	33	54.4
iP'Z	21	52	16.5 d

27 sept. 51.9 N., 175.5 E.
Rat Isl. Aleutian Isl.

h	about 41 km.		
H	05	09	13.3
ePZ	05	19	52 c
iPZ			52.3 d

28 sept. 28.0 S., 178.1 W.
Kermadec Isl.

h	about 33 km.		
H	05	06	36.8
ePPZ	05	26	47
ePSE"		36	30

29 sept. 52.5 N., 170.7 W.
Fox Isl. Aleutian Isl.

h	about 62 km.		
H	13	49	26.6
iPZ	13	59	23

29 sept. 45.1 N., 28.2 W.
N. Atlantic Ridge

h	about 33 km.		
H	23	20	19.0
iPZ	23	26	41.4 d

30 sept. 59.7 N., 143.4 W.
Gulf of Alaska

h	about 19 km.		
H	23	47	40.7
ePZ	23	55	42.5

1 Oct. 50.1 N., 178.3 E.
Rat Isl. Aleutian Isl.

h	about 32 km.		
H	08	52	05.8
iPZ	09	02	50.9
iSE"		11	40

1 oct. 60.7 S., 24.9 W.
S. Sandwich Isl. region

h	about 33 km.		
H	22	34	25.5
eN"	23	03	20

3 oct. 38.2 S., 48.4 E.
Atlantic - Indian Rise

h	about 20 km.		
H	05	12	22.5
eLZ"	06	17	

3 oct. 52.6 N., 170.6 W.
Fox Isl. Aleutian Isl.

h	about 22 km.		
H	10	46	16.7
iPZ	10	56	17.2 d

3 oct. 49.5 N., 156.5 E.
Kurile Isl.

h	about 33 km.		
H	14	45	26.8
iPZ	14	57	10.5 c

3 oct. 42.9 S., 75.4 W.

Off coast of S. Chile

h	about		28 km.
H	16	14	54.9
iPZ	16	27	44.5 c

4 oct. 52.3 N., 173.0 E.
Near Isl. Aleutian Isl.

h	about 33 km.		
H	00	02	32.9
ePZ	00	13	22

4 oct. 6.4 S., 147.4 E.
E. New Guinea region

h	about 75 km.		
H	00	13	25.8
eP'Z	00	32	23.5

4 oct. 44.0 N., 128.3 W.
Off coast of Oregon

h	about 33 km.		
H	04	12	49.1
eZ	04	20	07

4 oct. 8.9 N., 82.7 W.
Panama-Costa Rica border region

h	about 38 km.		
H	06	23	04.5
ePZ	06	30	18

7 oct. 12.6 N., 114.5 E.
S. China Sea

h	about 17 km.		
H	03	35	59.6
eLE"	03	33	

7 oct. 17.5 S., 167.9 E.
New Hebrides Isl.

h	about 24 km.		
H	09	19	21.5
eLE"	10	19	

8 oct. 52.9 N., 171.5 E.
Near Isl. Aleutian Isl.

h	about 33 km.		
H	04	05	11.0
eL	04	36	

8 oct. 49.9 N., 78.0 E.
E. Kazakh S.S.R.

h	about 0 km.		
H	05	59	58.6
eZ	06	12	19
ePZ			21

8 oct. 51.4 N., 173.9 W.
Andreanof Isl. Aleutian Isl.

h	about 43 km.		
H	16	32	31.8
iPZ	16	42	44.8 c

8 oct. 8.3 S., 76.0 W.
Peru

h	about 141 km.		
H	22	28	48.7
iPZ	22	37	57.2 c

9 oct. 16.6 N., 97.0 W.
Oaxaca, Mexico

h	about 33 km.		
H	07	47	19.3
iPZ	07	54	09.8 d

10 oct. 51.9 N., 175.3 W.
Andreanof Isl. Aleutian Isl.

h	about 42 km.		
H	00	35	58.7
ePZ	00	46	15

10 oct. 59.1 S., 24.8 W.
S. Sandwich Isl. region

h	about 55 km.		
H	17	25	44.0
eP'Z	17	44	10

11 oct. 50.6 N., 129.4 W.
Vancouver Isl. region

h	about 33 km.		
H	15	47	55.4
eLN"	16	04	

11 oct. 50.7 N., 129.3 W.
Vancouver Isl. region

h	about 52 km.		
H	17	54	55.0
eLN"	18	12	

12 oct. 59.5 N., 144.8 W.
Gulf of Alaska

h	about 14 km.		
H	08	16	23.8
eN"	08	38	

12 oct. 22.6 N., 44.6 W.
N. Atlantic Ridge

h	about 33 km.		
H	10	43	07.5
eLN"	10	57	

12 oct. 56.3 N., 153.7 W.
Kodiak Isl. region

h	about 11 km.		
H	13	40	55.9
ePZ	13	49	43

13 oct. 22.6 S., 171.0 E.
Loyalty Isl. region

h	about 24 km.		
H	14	46	25.0
eLN"	15	38	

15 oct. 8.5 N., 103.0 W.
Off coast of Mexico

h	about 33 km.		
H	00	34	09.3
iPZ	00	42	21.2 c

16 oct. 9.0 N., 83.5 W.
Costa Rica

h	about 50 km.		
H	14	22	55.5
ePZ	14	30	05

16 oct. 56.2 N., 164.7 E.
Komandorski Isl. region

h	about 33 km.		
H	20	01	52.5
ePN	20	12	56.5

18 oct. 27.8 S., 66.5 W.
Catamarca Prov. Argentina

h	about 151 km.		
H	00	55	31.4
ePZ	01	06	48

18 oct. 1.4 N., 85.3 W.,
Off coast of Ecuador

h	about 21 km.		
H	04	58	00.6
iPZ	05	06	16.0 d

18 oct. 1.6 N., 85.1 W.
Off coast of Ecuador

h	about 48 km.		
H	05	24	43.4
ePZ	05	32	54.5 d

18 oct. 1.1 S., 127.9 E.
Halmahera

h	about 33 km.		
H	21	50	04.5
eP'Z	22	09	20.5

18 oct. 18.6 N., 61.1 W.
Leewards Isl.

h	about 33 km.		
H	22	48	36.9
ePZ	22	57	28

19 oct. 52.3 N., 174.3 E.
Near Isl. Aleutian Isl.

h	about 48 km.		
H	20	48	47.4
ePZ	20	59	31.1 c
iPZ			32.3 d

20 oct. 20.0 S., 113.2 W.
Easter Isl. Cordillera

h	about 23 km.		
H	09	29	59.4
eLN"	10	07	

20 oct. 51.6 N., 173.8 W.
Andreanof Isl. Aleutian Isl.

h	about 32 km.		
H	11	08	11.1
iPZ	11	18	25.0 d

20 oct. 6.9 N., 73.1 W.
N. colombia

h	about 141 km.		
H	11	53	31.6
iPZ	12	00	43.6 c

20 oct. 12.5 N., 87.4 W.
Near coast of Nicaragua

h	about 70 km.		
H	23	54	29.9
iPZ	00	01	16.5 c

21 oct. 37.5 N., 91.0 W.
E. Missouri

h	about 22 km.		
H	02	04	38.3
eZ	02	08	08.5
iPZ			10.0 c

22 oct. 25.0 S., 71.3 W.
Off coast of N. Chile

h	about 13 km.		
H	18	35	54.5
eZ	18	47	07.5 c
iPZ			08.2 d

23 oct. 53.8 N., 165.5 W.,
Fox Isl. Aleutian Isl.

h	about 16 km.		
H	06	00	48.5
ePZ	06	10	27

23 oct. 29.4 S., 71.6 W.
Near coast of Central Chile

h	about 11 km.		
H	06	53	32.8
ePZ	07	05	11.5

23 oct. 55.1 S., 146.0 E.
W. of Macquarie Isl.

h	about 43 km.		
H	08	33	48.6
eLN"	09	38	

24 oct. 4.1 N., 125.9 E.
Talaud Isl.

h	about 175 km.		
H	14	32	13.7
eP'Z	14	51	37

24 oct. 49.7 N., 156.1 E.
Kurile Isl.

h	about 30 km.		
H	18	15	04.9
iPZ	18	26	49.2 c

24 oct. 45.0 N., 149.3 E.
Kurile Isl.

h	about 48 km.		
H	18	45	38.3
ePZ	18	57	56

25 oct. 22.2 S., 170.3 E.
Loyalty Isl. region

h	about 33 km.		
H	08	38	30.6
eLE"	09	39	

25 oct. 44.2 N., 145.3 E.
Hokkaido, Japan region

h	about 180 km.		
H	22	34	24.3
iPZ	22	46	35.6 c

26 oct. 24.4 S., 70.2 W.
Near coast of N. Chile

h	about 55 km.		
H	12	15	08.3
iPZ	12	26	13.5 d

27 oct. 46.0 N., 142.9 E.
Sakhalin Isl.

h	about 230 km.		
H	22	40	17.1
iPZ	22	52	19.1 d

28 oct. 51.8 N., 176.5 E.
Rat Isl. Aleutian Isl.

h	about 65 km.		
H	01	46	45.9
iPZ	01	57	25 d

28 oct. 12.7 S., 165.7 E.
Santa Cruz Isl.

h	about 76 km.		
H	05	45	34.3
eLE"	06	51	

28 oct. 1.3 S., 127.7 E.
Halmahera

h	about 33 km.		
H	08	58	25.9
eLE"	09	53	

28 oct. 44.5 N., 130.1 W.

Off coast of Oregon
h about 33 km.
H 21 19 50.2
eE" 21 39

29 oct. 51°26'17" N., 179°10' 57" E.
Anchitka Isl.
"Longshot" Nuclear explosion = 8000 tons TNT
h 0 km.
H 21 00 00.1
iPZ 21 10 37.0 d

30 oct. 16.5 S., 173.3 W.
Tonga Isl.
h about 33 km.
H 06 57 39.7
eN" 07 42.6

30 oct. 15.8 S., 167.6 E.
New Hebrides Isl.
h about 33 km.
H 19 35 40.2
eLE" 20 38

31 oct. 24.9 S., 69.0 W.
Chile-Argentina border region
h about 107 km.
H 13 47 56.8
eZ 13 58 59 d
iPZ 59.9 c
ipPZ 59 26.6

31 oct. 14.2 S., 95.2 E.
S. Indian Ocean
h about 33 km.
H 17 24 06.4
iPZ 17 43 48.2 c

2 nov. 39.6 N., 25.2 E.
Aegean Sea
h about 11 km.
H 03 27 07.2
eLN" 03 57

3 nov. 9.1 S., 71.4 W.
Peru-Brazil border region
h about 583 km.
H 01 39 02.5
iPZ 01 47 36.3 d

3 nov. 58.3 N., 32.4 W.
N. Atlantic Ocean
h about 33 km.
H 07 53 12.6
eLN" 08 07

3 nov. 58.1 N., 32.1 W.
N. Atlantic Ocean
h about 33 km.
H 08 33 51.6
eLN" 08 48

4 nov. 37.1 N., 91.0 W.
E. Missouri
h about 33 km.
H 07 43 38.9
ePZ 07 51 29

6 nov. 60.6 N., 147.3 W.
S. Alaska
h about 37 km.
H 06 38 41.5
ePZ 06 46 49

6 nov. 22.1 S., 113.8 W.
Easter Isl. region
h about 33 km.
H 09 21 48.6
ePZ 09 33 37.5

6 nov. 51.4 N., 176.7 E.
Rat Isl. Aleutian Isl.
h about 40 km.
H 22 30 20.5
eLE" 23 04

7 nov. 18.6 N., 71.8 W.
Dominican Republic region
h about 33 km.
H 04 43 51.1
eN" 04 51.8

7 nov. 47.2 N., 76.3 W
Southern Quebec
h about 33 km.

H 20 57 42.8
iP_nZ 20 58 23.0 d
Δ 320 km.

8 nov. 16.6 N., 46.6 W.
N. Atlantic Ridge
h about 33 km.
H 18 05 10.4
eSSSN" 18 21.0

9 nov. 28.4 N., 43.6 W.
N. Atlantic Ridge
h about 33 km.
H 02 39 37.9
eLE" 02 52

9 nov. 51.8 N., 174.4 E.
Near Isl. Aleutian Isl.
h about 33 km.
H 11 38 14.8
ePZ 11 49 14

11 nov. 60.7 S., 154.0 E.
W. of Macquarie Isl.
h about 33 km.
H 02 51 25.4
ePZ 03 11 13

11 nov. 61.3 S., 154.5 E.
Balleny Isl. region
h about 33 km.
H 16 52 23.4
eLN" 17 55

11 nov. 28.4 S., 176.5 W.
Kermadec Isl.
h about 47 km.
H 22 49 57.8
eLN" 23 57

12 nov. 56.0 S., 121.5 W.
Easter Isl. Cordillera
h about 33 km.
H 02 04 19.5
eSSN" 02 39.0

12 nov. 10.6 N., 84.4 W.
Costa Rica
h about 25 km.
H 08 59 53.3
ePZ 09 56 57 d

12 nov. 30.4 N., 139.8 E.
S. of Honshu, Japan
h about 150 km.
H 17 14 27.6
eLN" 17 55

12 nov. 30.5 N., 140.2 E.
S. of Honshu, Japan
h about 40 km.
H 17 52 24.1
iPZ 18 06 00.2 c

12 nov. 53.3 N., 153.6 E.
Sea of Okhotsk
h about 469 km.
H 18 53 33.8
iPZ 19 04 18.7 d

13 nov. 43.8 N., 87.8 E.
N. Sinkiang Prov. China
h about 59 km.
H 04 33 53.0
iPZ 04 46 45.8 d

13 nov. 56.7 N., 152.7 W.
Kodiak Isl. region
h about 33 km.
H 10 43 51.7
eN" 11 06.5

13 nov. 29.4 S., 68.1 W.
San Juan Prov. Argentina
h about 48 km.
H 17 59 41.7
iPZ 18 11 18.0 c

13 nov. 1.5 S., 77.7 W.
Ecuador
h about 188 km.
H 19 02 21.8
ePZ 19 10 35 c

14 nov. 1.9 N., 90.5 W.
Galapagos Isl. region
h about 33 km.
H 03 10 06.9
eE" 03 26 32

14 nov. 2.0 N., 90.3 W.
Galapagos Isl. region

h	about 19 km.		
H	04	20	17.1
eSN"	04	35	40

14 nov. 36.8 N., 140.8 E.
Near E. coast of Honshu, Japan

h	about 67 km.		
H	05	54	16.7
ePZ	06	07	20

15 nov. 40.4 N., 125.8 W.
Off coast of N. California

h	about 33 km.		
H	06	49	59.0
eLN"	07	08	

15 nov. 0.3 S., 18.7 W.
Central Mid-Atlantic Ridge

h	about	24 km.	
H	11	18	49.9
ePZ	11	29	40
iSN"		38	32
iSSSN"		46	56

16 nov. 31.0 N., 41.5 W.
North Atlantic Ridge

h	about 17 km.		
H	15	24	42.9
iPZ	15	30	43.9

16 nov. 25.4 N., 125.2 E.
S.W. Kyukyu Isl.

h	about 77 km.		
H	17	05	37.9
eLN"	17	54	

16 nov. 48.1 N., 153.2 E.
Kurile Isl.

h	about 102 km.		
H	23	35	08.0
ePZ	23	47	07

18 nov. 18.8 S., 177.9 W.
Fiji Isl. region

h	about 421 km.		
H	20	00	19.0
eSKKS	20	26	12

18 nov. 53.9 N., 160.7 E.
Near E. coast of Kamchatka

h	about 12 km.		
H	21	58	12.4
iPZ	22	09	29

18 nov. 53.1 N., 161.9 W.
S. of Alaska

h	about 8 km.		
H	22	08	45.7
ePZ	22	18	13

19 nov. 45.3 N., 150.9 E.
Kurile Isl.

h	about 13 km.		
H	07	14	13.2
ePZ	07	26	31.5

20 nov. 5.8 S., 153.2 E.
New Ireland region

h	about 36 km.		
H	09	56	38.6
eLN"	11	00	

20 nov. 7.3 S., 129.2 E.
Banda Sea

h	about 132 km.		
H	15	05	39.0
eP'Z	15	24	45

21 nov. 39.8 N., 104.8 W.
Colorado

h	about 5 km.		
H	04	02	28.7
eZ	04	12	45

21 nov. 49.8 N., 78.1 E.
E. Kazakh

h	about 0 km.		
H	04	57	57.9
ePZ	05	10	20

21 nov. 6.1 S., 130.4 E.
Banda Sea

h	about 93 km.		
H	10	31	49.7
ePZ	10	50	52
iZ		54	18.1

21 nov. 16.4 N., 98.8 W.
Near coast of Guerrero

h	about 18 km.		
H	21	39	26.7
ePZ	21	46	29

22 nov. 52.0 N., 176.1 W.
Andreanof Isl., Aleutian Isl.

h	about 49 km.		
H	14	00	27.0
ePZ	14	10	45

22 nov. 51.3 N., 179.8 W.
Andreanof Isl. Aleutian Isl.

h	about 40 km.		
H	20	25	30.4
ePZ	20	36	02

23 nov. 3.0 N., 124.8 E.
Celebes Sea

h	about 45 km.		
H	01	17	31.2
eSSE"	01	56	15

23 nov. 51.4 N., 179.7 W.
Andreanof Isl. Aleutian Isl.

h	about 48 km.		
H	02	17	49.4
iPZ	02	28	21.0 c

24 nov. 30.0 S., 114.7 W.
Easter Isl. region

h	about 33 km.		
H	03	12	42.5
eN"	03	53	

24 nov. 63.2 N., 151.0 W.
Central Alaska

h	about 129 km.		
H	08	22	38.7
iPZ	08	30	43.3

24 nov.

iP_nZ	21	28	39.8 d
iS_nZ		29	11.3

25 nov. 17.1 S., 100.4 W.
S.E. Central Pacific Ocean

h	about 29 km.		
H	10	50	38.1
iPZ	11	01	29.1 d

25 nov. 6.9 N., 73.1 W.
N. Colombia

h	about 144 km.		
H	23	29	46.1
ePZ	23	36	57

26 nov. 51.8 N., 174.2 W.
Andreanof Isl. Aleutian Isl.

h	about 27 km.		
H	01	26	32.8
ePZ	01	36	48

27 nov. 6.1 S., 148.5 E.
New Britain region

h	about 56 km.		
H	01	29	49.5
eE"	02	31	

27 nov. 30.6 N., 140.2 E.
S. of Honshu, Japan

h	about 60 km.		
H	03	04	20.6
eE"	03	45	

27 nov. 9.7 S., 159.7 E.
Solomon Isl.

h	about 51 km.		
H	12	01	51.9
iP'Z	12	20	42.3 d

28 nov. 45.6 S., 72.4 W.
Near coast of N. Chile

h	about 53 km.		
H	03	56	45.9
eSKSN"	04	20	18
eSN"			47

28 nov. 36.1 N., 27.7 E.
Dodecanese Isl.

h	about 89 km.		
H	05	26	05.6
iPZ	05	37	23.7 c

28 nov. 4.9 S., 103.2 E.
S. Sumatra

h	about 87 km.		
H	21	31	47.3
eN"	22	51	

29 nov. 6.0 S., 78.6 W.
N. Peru

h	about 33 km.		
H	17	07	01.6
iPZ	17	16	06

30 nov. 6.9 N., 73.0 W.
N. Colombia

h	about 159 km.		
H	09	16	11.6
iPZ	09	23	22 d

30 nov. 8.1 S., 74.4 W.
Near coast of N. Chile

h	about 144 km.		
H	09	46	10.9
iPZ	09	55	07.8 c

30 nov. 26.0 N., 109.8 W.
Gulf of California

h	about 33 km.		
H	12	34	54.8
eN"	12	51	

2 déc. 16.4 S., 69.6 W.
Peru-Bolivia border region

h	about 196 km.		
H	00	36	30.1
iPZ	00	46	28.2 d
ipPZ		47	17.6

2 déc. 51.3 N., 176.3 E.
Rat Isl. Aleutian Isl.

h	about 17 km.		
H	05	58	41.5
ePZ	06	09	29

2 déc. 31. 3 S., 68.5 W.
San Juan Prov. Argentina

h	about 46 km.		
H	10	16	27.0
iPZ	10	28	27.6 d

2 déc. 15.3 S., 173.1 W.
Tonga Isl.

h	about 20 km.		
H	23	38	13.3
eN"	00	27	

3 déc. 20.4 S., 174.2 E.
Tonga Isl.

h	about 33 km.		
H	06	45	02.5
eN"	07	31	

3 déc. 35.3 N., 118.5 W.
Central California

h	about 4 km.		
H	07	34	58.4
iPZ	07	41	11.1 d

3 déc.

iPZ	15	19	35.2 d

3 déc. 47.4 S., 100.0 E.
S.E. Indian Rise

h	about 33 km.		
H	15	21	23.5
eN"	16	34	

3 déc. 36.3 N., 69.5 E.
Hindu Kush region

h	about 19 km.		
H	21	17	33.6
eP'Z	21	35	57

4 déc. 51.3 N., 170.6 W.
Fox Isl. Aleutian Isl.

h	about 18 km.		
H	02	11	49.9
ePZ	02	21	56.0
iPZ			56.4

4 déc. 36.1 S., 103.1 W.
S. Pacific Ocean

h	about 33 km.		
H	03	00	46.8
eE"	03	36.5	

4 déc. 34.2 N., 26.2 E.
Crete

h	about 21 km.		
H	16	39	58.4
iPZ	16	51	28.5 c

5 déc. 52.6 N., 173.2 E.
Near Isl. Aleutian Isl.

h	about 36 km.		
H	18	14	50.2
iPZ	18	25	38.5 d

6 déc. 50.6 N., 177.4 E.
Rat Isl. Aleutian Isl.

h	about 37 km.		
H	01	22	36.0
iPZ	01	33	20.3 c

6 déc. 43.7 N., 134.0 E.
Near E. coast of E. Russia

h	about 349 km.		
H	07	55	03.4
ePZ	08	07	15.5

6 déc. 18.9 N., 107.1 W.
Gulf of Jalisco, Mexico

h	about 37 km.		
H	11	34	53.7
iPZ	11	42	13.8 d

6 déc. 18.8 N., 107.0 W.
Off coast of Jalisco, Mexico

h	about 40 km.		
H	18	42	33.2
ePZ	18	49	53

7 déc. 6.4 S., 146.3 E.
E. New Guinea region

h	about 109 km.		
H	22	19	14.8
iP'Z	22	38	09.0 c

8 déc. 37.1 S., 177.5 E.
Off E. coast of North Isl. N.Z.

h	about 165 km.		
H	18	05	26.1
eSSN"	18	43	22

9 déc. 43.5 S., 39.0 E.
Prince Edward Isl. region

h	about 33 km.		
H	02	52	43.8
eE"	03	53	

9 déc. 17.3 N., 100.0 W.
Guerrero, Mexico

h	about 57 km.		
H	06	07	48.6
ePZ	06	14	43.5

9 déc. 18.0 S., 178.2 W.
Fiji Isl. region

h	about 650 km.		
H	13	12	55.5
eSSN"	13	46	20

10 déc. 11.4 S., 166.2 E.
Santa Cruz Isl.

h	about 55 km.		
H	21	53	17.4
eN"	22	42	

11 déc. 29.7 S., 67.0 W.
La Rioja Prov. Argentina

h	about 29 km.		
H	13	40	12.6
ePZ	13	51	55

12 déc. 50.3 N., 149.5 E.
Sea of Okhotsk

h	about 438 km.		
H	19	25	09.1
iPZ	19	36	18.4 d

13 déc. 44.1 N., 150.2 E.
Kurile Isl. region

h	about 33 km.		
H	05	45	12.7
ePZ	05	57	34

13 déc. 44.7 N., 150.1 E.
Kurile Isl. region

h	about 35 km.		
H	10	52	08.5
iPZ	11	04	27.9

13 déc. 44.7 N., 150.2 E.
Kurile Isl region

h	about 33 km.		
H	14	46	10.2
ePZ	14	58	35

13 déc. 44.7 N., 149.9 E.
Kurile Isl.

h	about 33 km.		

H	22	53	17.1
ePZ	23	04	40

14 déc. 18.3 S., 70.4 W.
Near coast of N. Chile

h	about 50 km.		
H	04	55	13.9
iPZ	05	05	41.6 d

14 déc. 14.4 N., 89.8 W.
Guatemala

h	about 276 km.		
H	14	21	05.3
iPZ	14	27	24.4 d

14 déc. 25.9 N., 109.7 W.
Gulf of California

h	about 33 km.		
H	17	27	01.7
eN"	17	42	

15 déc. 0.0, 123.7 E.
N. Celebes

h	about 162 km.		
H	08	22	21.9
iZ	08	44	34.4

15 déc. 50.5 N., 4.2 E.
Belgium

h	about 8 km.		
H	12	07	15.1
eN"	12	46	

15 déc. 7.5 N., 82.2 W.
S. of Panama

h	about 15 km.		
H	23	05	20.7
iPZ	23	12	45.6 d

16 déc. 47.4 S., 99.7 E.
S.E. Indian Rise

h	about 33 km.		
H	10	09	23.3
eN"	10	56	

16 déc. 22.4 S., 68.5 W.
N. Chile

h	about 116 km.		
H	22	46	30.2
iPZ	22	57	17.3 d

17 déc. 8.6 N., 39.4 W.
Central Mid-Atlantic Ridge

h	about 33 km.		
H	06	17	24.7
ePZ	06	25	56

18 déc. 44.7 N., 149.9 E.
Kurile Isl.

h	about 33 km.		
H	08	30	45.8
iPZ	08	43	04.6 c

18 déc. 44.3 N., 150.2 E.
Kurile Isl. region

h	about 36 km.		
H	13	20	23.4
eN"	13	57	

19 déc. 14.8 S., 73.6 W.
Peru

h	about 94 km.		
H	20	10	23.5
iPZ	20	20	21.4 d

19 déc. 32.2 S., 78.8 E.
Mid-Indian Rise

h	about 33 km.		
H	22	06	32.7
eZ	22	26	23

20 déc. 40.2 N., 24.8 E.
Aegean Sea

h	about 33 km.		
H	00	08	15.2
ePZ	00	19	14

20 déc. 50.4 N., 156.6 E.
Kurile Isl.

h	about 33 km.		
H	07	12	33.7
iPZ	07	24	13.4 d

21 déc. 52.6 N., 158.8 E.
Near E. coast of Kamchatka

h	about 67 km.		
H	00	32	00.7
iPZ	00	43	20.8 d

21 déc. 16.8 N., 98.1 W.
Near coast of Guerrero, Mexico

h	about 53 km.		
H	08	41	00.4
ePZ	08	47	52

21 déc. 6.9 N., 73.0 W.
N. Colombia

h	about 72 km.		
H	12	25	43.2
iPZ	12	32	52.2 c

22 déc. 52.4 N., 160.5 E.
Off E. coast of Kamchatka

h	about 5 km.		
H	00	28	46.2
ePZ	00	40	11

22 déc. 58.4 N., 153.0 W.
Kodiak Isl. region

h	about 50 km.		
H	19	41	23.0
iPZ	19	49	55.6 d
ipPZ		50	09.7

23 déc. 60.5 N., 141.0 W.
S.E. Alaska

h	about 33 km.		
H	20	47	37.5
ePZ	20	55	20

25 déc. 18.0 S., 179.2 W.
Fiji Isl. region

h	about 625 km.		
H	02	57	57.9
eSKSE"	03	21	20

25 déc. 25.1 N., 108.9 W.
Gulf of California

h	about 33 km.		
H	12	34	18.8
eN"	12	53	

26 déc. 5.5 S., 151.4 E.
New Britain region

h	about 133 km.		
H	03	53	16.6
eP'Z	04	12	02

28 déc. 3.2 S., 77.2 W.
Peru-Ecuador border region

h	about 14 km.		
H	22	04	52.0
ePZ	22	13	37

30 déc. 54.1 N., 164.3 W.
Unimak Isl. region

h	about 28 km.		
H	02	06	31.1
ePZ	02	16	02
iPZ			02.9 c

30 déc. 16.8 S., 71.2 W.
S. Peru

h	about 118 km.		
H	06	16	03.9
iPZ	06	26	12.3 c
iZ			13.4 d

30 déc. 58.1 N., 152.4 W.
Kodiak Isl. region

h	about 33 km.		
H	16	33	43.4
ePZ	16	42	25

30 déc. 44.2 N., 148.5 E.
Kurile Isl.

h	about 70 km.		
H	16	56	56.2
iPZ	17	09	11.2 d

31 déc. 9.6 S., 123.5 E.
Timor

h	about 33 km		
H	19	43	45.8
eP'Z	20	03	18

1 jan. 1966

eN	11	31	17.5

1 jan. 42.8 N., 78.2 W.
New York

h	about 10 km.		
H	13	23	38.8
iP_nZ	13	24	45.0 d
iS_nE'			49

M. Buist, S.J.