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COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

GEOPHYSICAL OBSERVATORY REPORT

VOL. 3 No. 7

JULY
1955

Issued under the authority of Senator The Hon. W. H. Spooner,
Minister for National Development

DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - SENATOR The HON. W. H. SPOONER

Secretary - H. G. RAGGATT

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J. C. DOOLEY - Supervising Geophysicist

C O N T E N T S

Unless otherwise stated all times are given in Greenwich Mean Time.

The terminology used in this report is that accepted by international convention. Should further information be required, explanation can be obtained by applying to:-

Chief Geophysicist,
Bureau of Mineral Resources,
Geology and Geophysics,
485 Bourke Street,
Melbourne, C.1.
AUSTRALIA.

CONTRIBUTING OBSERVATORIES

WATHEROO MAGNETIC OBSERVATORY A.F. TILLOTT, Observer in Charge.

Geographic Latitude 30°19'S Longitude 115°53'E
Geomagnetic Latitude -41.8° Longitude 185.6°

Instruments

Magnetic Equipment - Askania pattern Magnetometer No.508810.
D.T.M. C.I.W. Earth Inductor No.2.
Exchenhagen patten D,H,Z, recording variometers, normal sensitivity, 20mm/hour recorder.
La Cour pattern D,H,Z, recording variometers, normal sensitivity quick run (180mm/hour) recorder.

Ionospheric Equipment - C.S.I.R.O. pattern 1-16Mc/s
Sweeptime 2 minutes.

TOOLANGI MAGNETIC OBSERVATORY I.B. EVERINGHAM, Observer in Charge.

Geographic Latitude 37°32'S Longitude 145°28'E
Geomagnetic Latitude -46.7° Longitude 220.8°

Instruments

Ruska pattern Magnetometer No.4813.
La Cour pattern QHMs Nos.288,289,290.
Schulze Earth Inductor No.49.
La Cour pattern D,H,Z, recording variometers, normal sensitivity 15mm/hour recorder.

MACQUARIE ISLAND MAGNETIC OBSERVATORY P.E. MANN, Observer in Charge

Geographic Latitude 54°30'S Longitude 158°57'E
Geomagnetic Latitude -61° Longitude 243°

Instruments

La Cour pattern QHMs Nos.177,178,179.
La Cour pattern BMZ No.64.
La Cour pattern D,H,Z, recording variometers low sensitivity 15mm/hour recorder

MAGNETIC K-INDICES FOR JULY - WATHEROO

Range for lower limit of K=9 is 350 gammas

Day	K-Indices								K-Sum
1	2	1	2	0	0	0	0	1	06
2	1	1	2	0	1	2	5	3	15
3	3	2	2	2	0	1	0	1	11
4	1	1	1	0	0	0	1	1	05
5	1	1	2	0	1	0	1	1	07
6	2	(1)	(2)	0	0	3	1	1	(10)
7	3	2	(3)	(1)	1	2	0	1	(13)
8	(1)	(2)	2	2	2	2	2	1	(14)
9	2	2	2	3	3	0	0	1	13
10	1	1	1	2	4	2	3	1	15
11	1	2	2	3	4	2	1	2	17
12	5	1	3	3	3	2	2	2	21
13	2	2	1	0	2	2	1	1	11
14	1	2	2	1	1	1	1	0	09
15	1	0	1	0	3	3	2	2	12
16	3	1	1	1	2	0	1	2	11
17	1	2	2	1	0	0	1	1	08
18	1	4	(1)	1	1	0	1	1	(10)
19	1	1	1	0	1	0	0	0	04
20	1	1	1	1	1	1	1	0	07
21	1	1	2	0	0	0	0	2	06
22	1	1	2	0	0	0	0	0	04
23	2	1	2	0	0	1	1	1	08
24	2	3	2	1	1	0	0	0	09
25	2	2	1	1	0	0	0	1	07
26	1	1	3	3	3	2	3	2	18
27	2	1	1	0	1	1	1	0	07
28	1	1	(0)	0	0	0	1	1	(04)
29	1	1	2	0	0	1	2	2	09
30	1	0	1	1	1	0	0	1	05
31	2	2	2	0	2	1	0	0	09

() Doubtful.

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JULY

WATHEROO -	Declination	2° 43.9' west.
	Horizontal Intensity	24864 gammas.
	Vertical Intensity	-52188 gammas.

MAGNETIC K-INDICES FOR JULY - TOOLANGI

Range for lower limit of K=9 is 500 gammas

Day	K-Indices								K-Sum
1	2	2	3	1	1	1	0	2	12
2	2	2	0	1	2	3	4	3	17
3	2	3	3	3	1	1	1	1	15
4	2	1	2	0	0	1	0	2	8
5	2	1	1	1	1	0	0	1	7
6	1	2	2	1	0	3	2	2	13
7	3	2	2	1	1	2	1	1	13
8	1	3	2	4	3	2	2	2	19
9	2	1	1	3	3	1	1	2	14
10	1	2	2	3	4	3	3	1	19
11	2	2	3	4	4	3	2	2	22
12	4	2	3	4	3	3	3	3	25
13	3	3	2	0	2	2	1	2	15
14	2	2	2	2	2	2	1	1	14
15	2	1	1	2	4	3	2	2	17
16	3	2	1	3	3	1	1	2	16
17	2	3	3	2	1	1	1	1	14
18	1	4	3	2	1	1	1	1	14
19	1	2	1	0	1	0	0	2	7
20	2	1	2	1	2	2	1	0	11
21	2	1	1	1	1	1	1	2	10
22	2	2	2	1	1	1	0	1	10
23	2	2	1	1	1	1	1	2	11
24	2	3	3	1	3	0	1	1	14
25	2	3	2	1	1	1	1	2	13
26	2	3	3	3	3	3	2	2	21
27	3	2	1	1	2	1	1	1	12
28	2	1	1	0	1	2	0	1	8
29	2	2	2	0	0	2	2	3	13
30	2	2	2	2	1	1	1	2	13
31	3	3	3	1	2	0	1	1	14

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JULY

TOOLANGI - Declination 9° 59.4' east.
Horizontal Intensity 22760 gammas.
Vertical Intensity -56426 gammas.

MAGNETIC K-INDICES FOR JULY - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

Day	K-Indices								K-Sum
1	1	1	1	1	0	0	0	0	4
2	0	0	0	1	1	2	3	4	11
3	2	3	4	X	1	0	0	0	XX
4	1	1	2	1	0	0	0	0	5
5	0	0	0	0	1	0	X	X	XX
6	X	X	0	1	0	2	2	1	XX
7	2	3	1	2	1	3	0	0	12
8	0	2	2	5	5	2	2	1	19
9	1	0	0	3	4	0	0	1	9
10	0	1	1	4	5	4	3	1	19
11	2	2	3	5	6	2	0	1	21
12	2	1	5	7	7	4	4	3	33
13	3	1	0	1	2	3	0	1	11
14	0	1	2	3	1	1	0	0	8
15	0	0	0	1	4	3	0	1	9
16	3	1	2	4	3	1	0	0	14
17	1	1	3	2	1	0	0	0	8
18	0	2	4	1	2	0	1	0	10
19	0	0	0	1	1	0	0	0	2
20	0	0	0	1	2	1	0	0	4
21	0	1	0	1	0	0	0	1	3
22	0	1	0	1	1	0	0	1	4
23	1	1	0	1	1	1	0	1	6
24	1	2	2	3	3	0	0	0	11
25	1	0	1	1	0	0	0	0	3
26	0	1	1	3	3	1	1	3	13
27	1	0	0	0	1	0	0	0	2
28	1	0	0	0	1	0	0	0	2
29	1	1	1	0	0	0	1	1	5
30	0	0	1	2	2	0	0	0	5
31	1	1	2	0	3	1	0	0	8

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JULY

MACQUARIE ISLAND - Declination 24°41.4' east.
Horizontal Intensity 13350 gammas.
Vertical Intensity -64503 gammas.

PRINCIPAL MAGNETIC STORMS AT WATHEROO DURING JULY

Began at d h m	Ended at d h	Intensity	Maximum K-Index

N i l

SUDDEN COMMENCEMENTS AT WATHEROO DURING JULY

Day	Time h m	Type

N i l

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING JULY

Began at d h m	Ended at d h	Intensity	Maximum K-Index

N i l

SUDDEN COMMENCEMENTS AT TOOLANGI DURING JULY

Day	Time h m	Type
11	13 29	Polar Sudden Commencement

IONOSPHERIC DATA - WATHEROO

MEDIAN HOURLY VALUES

120° Mean Time	h'F1 Km	hpF2 Km	h'F2 Km	foE Mc/s	foF1 Mc/s	foF2 Mc/s	fEs Mc/s	MUF 3000 Mc/s	M3000
00		310	250			3.2	E	9.8	3.1
01		300	250			3.2	E	10.1	3.1
02		300	250			3.5	E	10.4	3.2
03		270	250			3.6	E	11.0	3.3
04		270	230			3.6	E	12.0	3.3
05		280	230			3.2	E	10.4	3.3
06		275	230			3.0	E	9.8	3.3
07		270	230			3.5	E	11.6	3.3
08	205	250	230	2.0	2.8	5.0	1.8	17.7	3.6
09	230	265	250	2.5	3.7	5.7	2.7	19.4	3.4
10	220	270	265	2.9	4.2	6.0	3.0	21.4	3.4
11	220	270	260	3.0	4.3	6.1	3.3	21.4	3.5
12	220	295	280	3.1	4.3	6.0	3.6	20.8	3.4
13	220	280	270	3.1	4.3	6.0	3.6	21.0	3.4
14	210	280	280	3.0	4.2	5.8	3.6	20.0	3.5
15	210	270	260	2.7	4.0	6.0	3.0	20.4	3.4
16	230	270	250	2.5	3.5	6.0	2.7	21.2	3.5
17	*	250	230	1.9	*	5.8	2.7	19.8	3.5
18		250	220			4.3	2.8	14.7	3.4
19		280	230			3.2	2.3	10.7	3.3
20		300	250			3.0	E	9.0	3.2
21		300	250			3.1	E	9.5	3.2
22		300	250			3.2	E	10.2	3.1
23		310	250			3.0	E	9.6	3.1

* Denotes insufficient numerical values.
E Denotes median below lower frequency limit of recorder.

IONOSPHERIC DATA - WATHEROO

SUMMARY SPORADIC E

120° Mean Time	Percentage of time above 7 Mc/s	5 Mc/s	3 Mc/s	Median in Mc/s	No. of Obs.
00	-	-	3	E	31
01	-	-	3	E	31
02	-	-	-	E	31
03	-	-	-	E	31
04	-	-	7	E	30
05	-	-	3	E	30
06	-	-	7	E	30
07	-	-	3	E	30
08	-	-	10	1.8	30
09	-	-	27	2.7	30
10	-	-	(57)	3.0	30(4G)
11	-	-	(87)	3.3	30(4G)
12	-	-	(90)	3.6	30(3G)
13	-	-	(93)	3.6	29(2G)
14	4	4	(89)	3.6	28(2G)
15	-	7	(50)	3.0	28(1G)
16	-	4	30	2.7	27
17	-	3	37	2.7	30
18	-	-	43	2.8	30
19	-	-	32	2.3	31
20	-	-	6	E	31
21	-	-	6	E	31
22	-	-	-	E	31
23	-	-	-	E	31

- Indicates zero percentage.
() Indicates doubtful.
E Denotes median below lower frequency limit of recorder.
(G) Signifies $fEs \leq foE \geq 3.0$ Mc/s.

PROVISIONAL SUMMARY OF AURORAE FOR JULY

Reported by and published through the courtesy of the Australian National Antarctic Research Expedition

MACQUARIE ISLAND

Day	Began	First Seen	Minimum Geomagnetic Latitude		Intensity and Form	Last Seen	Ended
			Degrees	Time			
	h m	h m		h m		h m	h m
8		09 10	64	09 40	2 HB	10 00	
10	08 10		64	10 00	2 HA	11 40	
11	Strength 4 display - no details						
16		12 10			2 G		
19		09 45			1 G		
20		12 10			1 G	16 20	
24		13 20			1 G	15 00	