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

GEOPHYSICAL OBSERVATORY REPORT

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JUNE
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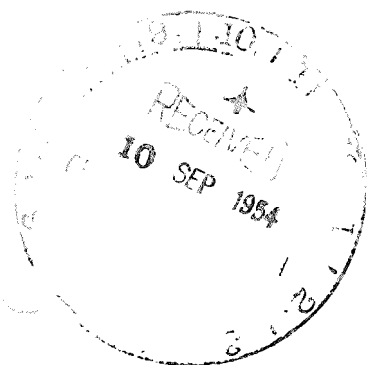

Issued under the authority of Senator The Hon. W. H. Spooner, Minister for National Development

DEPARTMENT OF NATIONAL DEVELOPMENT

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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

P. B. NYE - Director

J. M. RAYNER - Deputy Director

This Report was prepared in the Geophysical Section:

R. F. THYER - Chief Geophysicist

L. S. PRIOR - 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 P.M. McGREGOR, 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.
Eschenhagen pattern 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 P.B. TENNI, Observer in Charge.

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

Instruments

Askania pattern Magnetometer No.508813.
Schulze Earth Inductor No.49.
La Cour pattern D,H,Z, recording variometers, normal sensitivity 15mm/hour recorder.

MACQUARIE ISLAND MAGNETIC OBSERVATORY C.S. ROBERTSON, 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.

HEARD ISLAND MAGNETIC OBSERVATORY K.B. LODWICK, Observer in Charge.

Geographic Latitude 53°02'S Longitude 73°22'E
Geomagnetic Latitude -61° Longitude 129°

Instruments

La Cour pattern QHMs Nos.172,173,174.
La Cour pattern BMZ No.62.
La Cour pattern D,H,Z, recording variometers low sensitivity 15mm/hour recorder.

MAGNETIC K-INDICES FOR JUNE - WATHEROO

Range for lower limit of K=9 is 350 gammas

Day	K-Indices								K-Sum
1	1	1	0	0	0	1	0	0	03
2	1	2	2	3	2	1	0	0	11
3	1	1	2	2	0	0	0	1	07
4	2	1	4	2	2	0	2	1	14
5	1	1	1	0	0	0	2	0	05
6	1	0	1	0	0	1	0	0	03
7	1	2	1	0	3	2	1	0	10
8	2	1	1	0	0	0	0	0	04
9	2	3	1	2	0	1	0	1	10
10	2	3	3	3	X	X	X	X	XX
11	X	2	0	2	1	0	1	0	XX
12	2	1	0	0	1	3	4	1	12
13	1	2	1	1	1	3	3	0	12
14	1	1	1	3	4	0	1	0	11
15	2	1	1	1	0	0	0	0	05
16	1	1	1	0	0	1	0	0	04
17	1	1	1	1	0	0	0	1	05
18	1	1	(1)	0	0	2	3	2	(10)
19	1	1	1	1	0	0	1	1	06
20	2	1	2	0	1	0	0	0	06
21	1	0	1	1	1	1	0	2	07
22	2	1	1	0	0	0	1	1	06
23	2	1	1	0	0	1	1	0	06
24	1	2	0	1	0	0	0	0	04
25	1	1	1	0	3	1	0	0	07
26	1	0	1	1	1	0	1	0	05
27	1	1	2	0	1	1	1	2	09
28	3	2	3	1	0	0	1	0	10
29	2	2	2	0	0	0	1	0	07
30	2	0	2	1	1	0	0	3	09

( ) Indicates doubtful.

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

WATHEROO - Declination 2° 45.9' west.
Horizontal Intensity 24882 gammas.
Vertical Intensity -52178 gammas.

MAGNETIC K-INDICES FOR JUNE - TOOLANGI

Range for lower limit of K=9 is 500 gammas

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

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

TOOLANGI - Declination 9° 54.3' east.
Horizontal Intensity 22770 gammas.
Vertical Intensity -56410 gammas.

MAGNETIC K-INDICES FOR JUNE - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

Day	K-Indices								K-Sum
1	0	1	0	1	1	0	1	0	04
2	1	1	0	5	2	0	0	0	09
3	0	1	2	2	1	0	0	0	06
4	1	1	5	3	1	0	1	1	13
5	1	0	0	1	0	0	1	1	04
6	1	0	1	1	1	1	0	0	05
7	0	1	0	1	3	3	1	0	09
8	1	0	1	1	0	0	0	0	03
9	1	0	0	2	0	0	0	0	03
10	1	2	6	4	3	2	3	1	22
11	0	0	0	2	2	0	0	1	05
12	0	0	0	0	4	2	2	2	10
13	1	1	1	2	1	2	2	1	11
14	1	1	1	5	6	0	0	1	15
15	1	1	0	1	0	0	0	1	04
16	0	1	0	2	1	0	0	0	04
17	0	0	0	2	1	0	0	0	03
18	0	0	0	0	1	0	2	2	05
19	1	1	1	2	1	0	0	1	07
20	1	1	1	2	1	0	0	0	06
21	0	0	0	1	1	1	0	1	04
22	2	2	1	0	1	0	0	1	07
23	1	0	0	1	0	0	1	1	04
24	1	1	1	1	0	0	0	1	05
25	1	1	0	1	3	1	0	1	08
26	0	0	0	3	1	0	1	0	05
27	0	1	0	2	3	1	0	1	08
28	1	1	4	3	1	1	1	0	12
29	0	1	1	1	1	0	0	0	04
30	1	0	2	1	3	0	0	1	08

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

MACQUARIE ISLAND - Declination 24°25.5' east.
Horizontal Intensity 13357 gammas.
Vertical Intensity -64518 gammas.

MAGNETIC K-INDICES FOR JUNE - HEARD ISLAND

Range for lower limit of K=9 is 1000 gammas

Day	K-Indices								K-Sum
1	2	2	1	1	0	2	0	1	09
2	1	2	2	1	1	1	1	1	10
3	1	1	1	1	1	0	1	2	08
4	2	2	2	2	1	0	3	1	13
5	1	0	1	0	0	1	2	1	06
6	0	X	1	0	1	1	2	2	XX
7	1	1	1	1	2	1	1	1	09
8	1	0	0	0	0	0	0	1	02
9	1	2	1	0	0	0	0	2	06
10	2	2	3	2	1	3	3	1	17
11	1	0	X	X	X	X	X	X	XX
12	X	X	1	0	0	4	4	1	XX
13	0	1	1	0	0	1	5	X	XX
14	X	0	X	X	X	X	X	X	XX
15	X	X	0	1	0	0	1	2	XX
16	1	1	0	0	0	0	0	1	03
17	1	0	0	0	0	0	X	X	XX
18	X	X	0	0	0	0	4	2	XX
19	0	1	0	1	0	0	2	2	06
20	X	X	1	X	X	X	X	X	XX
21	X	X	1	0	1	0	1	3	XX
22	3	2	1	X	X	X	X	X	XX
23	X	X	0	X	X	X	X	X	XX
24	X	X	X	X	X	X	X	X	XX
25	X	X	0	0	2	1	0	1	XX
26	1	0	1	1	0	0	1	2	06
27	1	1	1	1	1	1	1	2	09
28	3	2	2	1	X	X	X	X	XX
29	X	X	1	0	0	0	0	2	XX
30	0	1	0	0	0	0	0	3	04

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

HEARD ISLAND - Declination 50°19.6' west.
Horizontal Intensity 18495 gammas.
Vertical Intensity -47281 gammas.

PRINCIPAL MAGNETIC STORMS AT WATHEROO DURING JUNE

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

n i l.

SUDDEN COMMENCEMENTS AT WATHEROO DURING JUNE

Day	Time h m	Type
13	17 40	Polar Sudden Commencement
15	00 45	Sudden Impulse
18	20 23	Polar Sudden Commencement

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING JUNE

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

n i l.

SUDDEN COMMENCEMENTS AT TOOLANGI DURING JUNE

Day	Time h m	Type
13	17 40	Polar Sudden Commencement
14	11 42	Polar Sudden Commencement
18	17 31	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		290	240			3.2	+	10.4	3.3
01		280	240			3.6	+	11.4	3.3
02		280	240			3.7	+	12.6	3.3
03		270	240			3.6	+	12.2	3.4
04		270	240			3.6	+	11.9	3.4
05		250	220			3.5	1.9	11.8	3.4
06		260	220			3.0	+	10.4	3.4
07		250	220	*		3.5	+	12.0	3.4
08	*	245	225	1.9	*	4.4	1.9	16.0	3.7
09	230	250	240	2.4	3.5	4.6	2.7	16.6	3.6
10	220	260	260	2.7	3.8	4.8	2.9	17.2	3.6
11	230	275	270	2.8	4.0	5.0	3.4	18.1	3.5
12	230	270	275	2.9	4.0	5.0	3.5	17.6	3.5
13	220	285	280	2.9	4.0	5.2	3.5	18.0	3.5
14	230	270	270	2.7	3.8	5.1	3.2	18.0	3.5
15	220	265	260	2.6	3.7	5.2	2.9	17.4	3.5
16	230	250	240	2.3	3.3	5.1	3.1	18.4	3.6
17		250	230	*		4.5	2.8	16.3	3.6
18		250	220			3.5	2.7	13.0	3.5
19		270	230			2.8	2.3	9.3	3.3
20		270	240			3.0	1.9	9.7	3.3
21		270	240			3.1	+	10.7	3.3
22		280	240			3.5	+	11.4	3.3
23		280	230			3.4	+	11.0	3.3

+ Indicates fEs median below lowest frequency recorded.

* Denotes insufficient values.

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	+	30
01	-	-	-	+	30
02	-	-	3	+	30
03	-	-	7	+	29
04	-	-	10	+	29
05	-	-	10	1.9	29
06	-	-	14	+	28
07	-	-	7	+	28
08	-	-	22	1.9	27
09	-	3	33	2.7	30
10	-	-	48	2.9	29
11	-	-	73	3.4	26
12	-	-	(73)	3.5	26(1G)
13	-	-	78	3.5	27
14	-	-	79	3.2	29
15	-	3	45	2.9	29
16	-	3	56	3.1	27
17	-	4	46	2.8	28
18	-	-	14	2.7	29
19	-	-	27	2.3	30
20	-	-	13	1.9	30
21	-	-	3	+	29
22	-	-	10	+	30
23	-	-	7	+	29

G Signifies $fEs < foE \geq 3.0$ Mc/s.

\+ Indicates fEs median below lowest frequency recorded.

\- Indicates zero percentage.

PROVISIONAL SUMMARY OF AURORAE FOR JUNE

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

MACQUARIE ISLAND

Day	Cloud Cover	First Seen h m	Time of Maximum h m	Last Seen h m	Time End h m	Intensity	Remarks
03	6	08 45	10 00		11 50	3	
04	8	06 45	10 30		16 30	3	
11	3	10 05	10 20		12 50	3	
14	8	11 45	11 45		12 50	3	
23	8	09 45	unknown	14 20	unknown	1	
25	8	12 00	12 10	19 00	unknown	3	
27	8	11 05	11 05	14 20	unknown	2	

HEARD ISLAND

N i l