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20 SEP 1955

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

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GEOPHYSICAL
OBSERVATORY REPORT

VOL. 3

No. 6

JUNE

1955

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

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DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - SENATOR The HON. W. H. SPOONER

Secretary - H. G. RAGGATT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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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 OBSERVATORIESWATHEROO 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 JUNE - WATHEROO

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Sum</u>			
1	2	2	1	0	1	3	1	11
2	2	1	2	3	3	0	1	13
3	1	1	1	0	0	0	1	05
4	1	1	3	2	2	1	2	13
5	2	1	1	0	1	1	2	09
6	0	1	1	3	1	2	4	16
7	3	4	2	2	3	2	0	19
8	3	4	2	3	5	4	2	25
9	0	1	2	2	2	2	0	11
10	3	1	1	2	0	2	0	09
11	2	1	2	2	1	1	1	12
12	1	1	1	1	2	0	1	08
13	2	1	1	1	3	2	1	13
14	2	2	3	4	3	3	2	21
15	3	3	4	2	3	2	3	23
16	2	2	2	5	4	2	1	20
17	1	1	1	3	2	3	1	14
18	1	2	3	2	0	0	1	10
19	2	2	1	1	1	0	0	08
20	1	1	0	0	0	2	0	04
21	1	1	0	0	0	0	0	02
22	1	1	1	3	3	2	1	14
23	2	3	3	2	1	1	4	19
24	2	2	3	3	3	2	1	17
25	2	2	4	4	2	1	2	18
26	2	2	1	1	0	1	1	10
27	2	2	(2)	1	1	0	0	(08)
28	1	2	2	1	2	0	0	10
29	2	1	2	1	1	0	(1)(2)	(10)
30	1	1	1	0	0	0	0	04

() Doubtful.

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

WATHEROO - Declination 2° 44.3' west.
 Horizontal Intensity 24858 gammas.
 Vertical Intensity -52180 gammas.

MAGNETIC K-INDICES FOR JUNE - TOOLANGI

Range for lower limit of K=9 is 500 gammas

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

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

TOOLANGI - Declination 9° 59.1' east.
Horizontal Intensity 22758 gammas.
Vertical Intensity -56431 gammas.

MAGNETIC K-INDICES FOR JUNE - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

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

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR JUNE

MACQUARIE ISLAND - Declination 24°39.9' east.
Horizontal Intensity 13350 gammas.
Vertical Intensity -64508 gammas.

PRINCIPAL MAGNETIC STORMS AT WATHEROO DURING JUNE

<u>Began at</u>	<u>Ended at</u>	<u>Intensity</u>	<u>Maximum</u>
d h m	d h		<u>K-Index</u>

n i l

SUDDEN COMMENCEMENTS AT WATHEROO DURING JUNE

<u>Day</u>	<u>Time</u>	<u>Type</u>
	h m	
22	10 39	Sudden Impulse

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING JUNE

<u>Began at</u>	<u>Ended at</u>	<u>Intensity</u>	<u>Maximum</u>
d h m	d h		<u>K-Index</u>

n i l

SUDDEN COMMENCEMENTS AT TOOLANGI DURING JUNE

<u>Day</u>	<u>Time</u>	<u>Type</u>
	h m	
22	10 38	Sudden Commencement

IONOSPHERIC DATA - WATHEROOMEDIAN HOURLY VALUES

120° Mean Time	<u>h'F1</u> Km	<u>h_pF2</u> Km	<u>h'F2</u> Km	<u>f_oE</u> Mc/s	<u>f_oF1</u> Mc/s	<u>f_oF2</u> Mc/s	<u>fEs</u> Mc/s	MUF 3000 Mc/s	M3000
00		310	250			3.5	E	10.8	3.1
01		310	250			3.5	E	11.2	3.1
02		300	250			3.6	E	11.4	3.1
03		300	240			3.8	E	12.0	3.2
04		280	240			3.9	E	12.6	3.3
05		270	210			3.6	E	12.0	3.3
06		270	210			3.3	E	11.1	3.3
07		250	210	1.3		3.9	G	13.7	3.4
08	*	240	210	1.9	2.8	5.5	G	20.2	3.7
09	200	250	230	2.5	3.7	5.9	2.5	22.0	3.6
10	210	250	250	2.8	4.0	6.4	G	22.5	3.5
11	200	260	250	3.0	4.2	6.3	3.0	22.0	3.6
12	200	265	260	3.0	4.2	6.5	3.7	22.2	3.4
13	210	250	250	3.0	4.3	6.8	3.7	24.0	3.6
14	200	270	250	2.9	4.1	6.7	3.5	22.8	3.4
15	210	260	250	2.7	3.8	6.7	3.2	23.1	3.5
16	210	250	230	2.3	3.3	6.7	2.8	23.1	3.5
17	*	250	210	1.8	*	6.0	2.4	21.4	3.6
18		250	200			4.4	3.1	15.4	3.5
19		270	210			3.1	2.8	9.9	3.3
20		275	220			2.9	2.7	10.0	3.3
21		295	240			3.0	E	9.6	3.2
22		300	240			3.1	E	9.8	3.2
23		310	240			3.2	E	10.0	3.1

* Denotes insufficient numerical values

G Denotes $fEs \leq f_{oE}$

E Denotes median below lower frequency limit of recorder.

IONOSPHERIC DATA - WATHEROOSUMMARY SPORADIC E

120° Mean Time	Percentage of time above			Median in Mc/s	No. of Obs.
	7 Mc/s	5 Mc/s	3 Mc/s		
00	-	-	-	E	25
01	-	-	-	E	25
02	-	-	-	E	25
03	-	-	4	E	25
04	-	-	4	E	25
05	-	-	12	E	25
06	-	-	13	E	23
07	-	-	13	G	23
08	-	-	35	G	23
09	-	4	44	2.5	25
10	-	-	(40)	G	25 (2G)
11	-	4	(54)	3.0	24 (7G)
12	-	8	(68)	3.7	25 (5G)
13	-	8	(76)	3.7	25 (4G)
14	-	4	(68)	3.5	25 (5G)
15	-	4	62	3.2	24
16	-	4	42	2.8	24
17	-	4	42	2.4	24
18	-	-	54	3.1	24
19	-	-	46	2.8	24
20	-	-	35	2.7	23
21	-	-	30	E	23
22	-	-	17	E	23
23	-	-	12	E	25

(G) Denotes $fEs \leq foE \leq 3.0$ Mc/sG Denotes $fEs \leq foE$

E Denotes median below lower frequency limit of recorder.

PROVISIONAL SUMMARY OF AURORAE FOR JUNE

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

MACQUARIE ISLAND

<u>Day</u>	<u>Began</u>	<u>First</u>	<u>Minimum</u>	<u>Geomagnetic</u>	<u>Intensity</u>	<u>Last</u>	<u>Ended</u>
		<u>Seen</u>	<u>Latitude</u>		<u>and Form</u>	<u>Seen</u>	
			Degrees	Time			
	h	m	h	m		h	m
14		07 40	59	10 20	1 HB	15 20	
15		09 00	64	10 50	3 HA	19 00	
17	10 00		59	12 20	2 RB	17 30	
19	07 00		63	10 20	1 RB	11 00	
23		10 40	63	13 00	1 HB	17 00	
24		07 20	57	08 00	2 HB		19 00
25	07 00		63	07 20	3 RA	08 20	