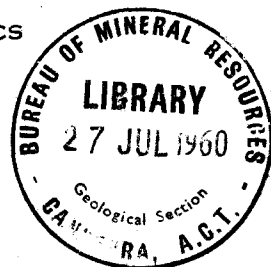


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COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS



GEOPHYSICAL OBSERVATORY REPORT

VOL. 8

No. 5

MAY

1960

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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

J. M. RAYNER - Director

This Report was prepared in the Geophysical Branch:

R. F. THYER - Chief Geophysicist

J. C. DOOLEY - Supervising Geophysicist

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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 & Geophysics,
203 Collins Street,
MELBOURNE, C.1. Victoria,
A U S T R A L I A.

CONTRIBUTING OBSERVATORIESTOOLANGI MAGNETIC OBSERVATORY B.G. Cook, Observer in Charge

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

Instruments

Ruska magnetometer No.4813
 Schulze earthinductor No.49
 La Cour QHMs Nos.288, 289, 290
 La Cour BMZ No.119
 La Cour D, H & Z recording variometers

Sensitivity	:	D 1.16 min/mm
		H 4.6 Y/mm
		Z 4.4 Y/mm
Recording speed	:	15 mm/hour

GNANGARA MAGNETIC OBSERVATORY P.M. McGregor, Observer in Charge

Geographic Latitude 31°47'S Longitude 115°57'E
 Geomagnetic Latitude -43.2° Longitude 185.8°

Instruments

C.I.W. field magnetometer and theodolite earthinductor No.7
 Askania magnetometer No.508810
 Askania earthinductor No.5111081
 La Cour QHMs No.291, 292, 293
 La Cour BMZ No.120
 La Cour D, H & Z recording variometers

Standard instrument : Sensitivity	:	D 0.9 min/mm
		H 3.2 Y/mm
		Z 5.4 Y/mm
Recording speed	:	15 mm/hour
Rapid-run instrument: Sensitivity	:	D 1.0 min/mm
		H 4.5 Y/mm
		Z 1.5 Y/mm
Recording speed	:	180 mm/hour
Askania (Eschenhagen type) H variometer with visual recorder		
Sensitivity	:	3 Y/mm
Recording speed	:	20 mm/hour

CONTRIBUTING OBSERVATORIES

MACQUARIE ISLAND MAGNETIC OBSERVATORY C. van Erkelens,
Observer in Charge

Geographic Latitude 54°30'S Longitude 158°57'E
Geomagnetic Latitude -60.7° Longitude 243.0°

Instruments

La Cour QHMs Nos.177, 178, 179

La Cour BMZ No.64

Kew pattern magnetometer No.158

La Cour D, H & Z recording variometers

Sensitivity : D 0.9 min/mm
H 12.5 Y/mm
Z 14.1 Y/mm

Recording speed : 15 mm/hour

MAWSON MAGNETIC OBSERVATORY R.W. Merrick, Observer in Charge

Geographic Latitude 67°36'S Longitude 62°53'E
Geomagnetic Latitude -73.2° Longitude 103.1°

Instruments

La Cour QHMs Nos.300, 301, 302

La Cour BMZ No.62

La Cour D, H & Z recording variometers

Sensitivity : D 0.8 min/mm
H 9.9 Y/mm
Z 10.3 Y/mm

Recording speed : 15 mm/hour

Bar fluxmeter magnetometer N-S, E-W and vertical components

CONTRIBUTING OBSERVATORIESWILKES MAGNETIC OBSERVATORY W.K. Jones, Observer in Charge

Geographic Latitude 66°15'S Longitude 110°35'E
 Geomagnetic Latitude -77.2° Longitude 179.2°

Instruments

C.I.W. field magnetometer and theodolite earthinductor No.28

La Cour QHMs Nos.492, 493, 494

La Cour BMZ No.236

Ruska D, H & Z recording variometers

Standard instrument : Sensitivity : D 11.3 min/mm
 H 24.2 Y/mm
 Z 24.7 Y/mm

Recording speed: 20 mm/hour

Rapid-run instrument: Sensitivity : D 1.2 min/mm
 H 5.2 Y/mm
 Z 5.7 Y/mm

Recording speed: 240 mm/hour

PORT MORESBY MAGNETIC OBSERVATORY J.A. Brooks, Observer in Charge

Geographic Latitude 9°24.'5S Longitude 147°09.'1E
 Geomagnetic Latitude -18.7° Longitude 218.0°

Instruments

La Cour QHMs Nos.187, 188, 189

La Cour BMZ No.68

La Cour D, H & Z recording variometers

Sensitivity :D 0.9 min/mm
 H 6.1 Y/mm
 Z 7.1 Y/mm

Recording speed:15 mm/hour

MAGNETIC K-INDICES FOR MAY - TOOLANGI

Range for lower limit of K=9 is 500 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Sum</u>				
1	5	5	4	4	3	2	3	2	28
2	2	3	3	3	2	2	2	2	19
3	2	2	2	4	3	2	1	1	17
4	1	1	1	1	1	1	1	2	09
5	1	2	2	1	2	1	2	2	13
6	3	3	3	4	4	5	6	5	33
7	4	4	3	4	4	4	3	2	28
8	3	5	5	6	6	7	5	4	41
9	4	4	3	3	4	3	1	2	24
10	3	3	3	3	3	3	2	3	23
11	3	5	6	5	3	2	2	2	28
12	3	4	4	3	4	3	2	2	25
13	3	3	2	2	1	3	2	3	19
14	2	3	2	3	2	2	2	2	18
15	1	3	2	3	3	2	1	0	15
16	3	3	2	3	4	4	4	3	26
17	2	2	4	3	3	2	1	2	19
18	2	2	3	0	1	1	1	1	11
19	2	2	2	2	0	0	1	2	11
20	2	2	1	1	0	0	0	2	08
21	1	1	2	1	1	1	1	1	09
22	0	1	0	0	2	1	1	2	07
23	2	2	1	2	2	3	3	3	18
24	3	3	4	5	4	3	2	3	27
25	3	2	3	2	4	4	4	2	24
26	2	3	3	3	3	3	3	3	23
27	4	4	2	1	2	1	3	2	19
28	2	2	3	2	0	1	4	3	17
29	5	3	4	3	3	3	4	4	29
30	3	3	4	4	5	4	2	2	27
31	3	1	2	2	2	2	1	3	16

MAGNETIC K-INDICES FOR MAY - GNANGARA

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	6	7	5	3	3	1	2	1	28
2	3	3	4	3	1	0	2	0	16
3	2	1	2	2	1	0	0	0	08
4	0	1	0	0	0	0	0	2	03
5	0	1	1	1	1	0	0	0	04
6	2	2	2	3	3	4	5	5	26
7	4	3	2	4	4	5	4	1	27
8	1	5	4	6	5	6	5	5	37
9	2	4	3	3	1	1	0	0	14
10	0	1	1	1	1	2	0	0	06
11	X	X	X	X	(1)	(1)	(0)	(2)	XX
12	2	2	3	3	4	1	0	0	15
13	2	4	0	0	0	1	2	2	11
14	0	1	2	2	1	2	1	0	09
15	0	0	0	2	2	1	0	0	05
16	0	2	1	2	3	4	5	3	20
17	4	2	3	2	3	2	0	0	16
18	0	2	1	0	0	1	0	0	04
19	2	2	2	0	0	0	0	0	06
20	2	1	1	0	0	0	0	0	04
21	1	0	1	1	0	0	0	0	03
22	0	2	1	1	2	0	0	0	06
23	1	0	1	0	2	2	3	2	11
24	2	3	4	2	4	2	2	2	21
25	2	1	2	0	4	4	4	0	17
26	2	2	2	0	2	3	2	2	15
27	3	2	0	0	0	0	3	1	09
28	0	0	0	0	0	0	4	3	07
29	5	2	4	2	3	2	4	1	23
30	2	0	2	3	4	1	1	0	13
31	0	1	1	1	1	2	0	3	09

SOLAR FLARE EFFECT

<u>Day</u>	<u>Began</u>	<u>K</u>	<u>K'</u>
	h m		
09	05 05	4	1

MAGNETIC K-INDICES FOR MAY - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	5	5	5	5	5	2	2	2	31
2	2	4	3	4	4	3	1	1	22
3	2	1	2	4	4	2	1	1	17
4	1	0	0	0	1	0	1	2	05
5	2	1	3	2	3	0	1	2	14
6	2	2	4	5	6	7	7	6	39
7	4	6	5	6	6	6	5	3	41
8	3	5	7	6	8	8	6	5	49
9	3	4	2	4	6	4	0	1	24
10	3	1	2	3	4	4	1	2	20
11	2	7	7	7	4	4	3	3	37
12	3	4	5	6	5	3	1	1	28
13	2	2	1	3	3	3	2	2	18
14	2	2	4	5	3	4	1	1	22
15	1	1	2	5	5	2	1	1	18
16	1	1	1	3	5	7	2	3	23
17	1	1	3	5	5	4	0	1	20
18	1	1	1	0	0	2	1	0	06
19	1	1	1	3	0	0	0	0	06
20	0	1	0	0	0	0	0	0	01
21	0	0	1	2	1	0	0	0	04
22	0	0	0	0	0	0	0	0	00
23	1	0	0	0	2	4	3	1	11
24	2	4	5	6	6	4	4	3	34
25	4	3	4	4	5	5	5	2	32
26	3	3	3	4	5	3	3	2	26
27	5	5	0	1	3	2	3	1	20
28	2	0	3	2	0	1	2	2	12
29	-	-	3	2	2	3	4	4	-
30	1	2	5	4	6	5	2	0	25
31	1	1	1	0	0	1	0	1	05

MAGNETIC K-INDICES FOR MAY - MAWSON

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Indices</u>				<u>K-Sum</u>
1	6	6	6	5	4	3	4	7	41
2	5	5	5	3	4	3	5	3	33
3	3	4	3	4	3	2	3	3	25
4	3	2	2	1	2	3	4	6	23
5	3	4	4	3	2	2	6	6	30
6	6	5	5	5	4	7	8	8	48
7	5	5	4	4	6	6	6	6	42
8	5	8	7	8	7	6	5	6	52
9	5	5	3	3	3	4	3	3	29
10	3	4	4	4	4	3	5	6	33
11	6	7	7	6	3	2	3	6	40
12	3	6	6	4	3	3	2	4	31
13	4	4	3	3	3	4	6	6	33
14	4	4	5	4	3	2	2	5	30
15	3	4	4	4	3	2	2	2	24
16	3	3	3	3	5	5	6	6	34
17	3	3	5	3	3	3	1	3	24
18	3	4	4	2	2	2	2	3	22
19	5	3	4	3	2	2	3	4	26
20	2	2	1	1	1	0	0	3	10
21	4	2	2	2	3	2	1	1	17
22	1	1	1	0	3	1	1	1	09
23	1	1	2	1	2	3	6	6	22
24	5	5	6	5	3	3	7	6	40
25	5	5	5	3	3	4	6	5	36
26	6	5	5	5	3	5	6	7	42
27	6	6	3	2	1	2	5	5	30
28	3	2	3	3	2	2	6	5	26
29	7	5	5	3	3	3	5	5	36
30	3	3	4	4	4	3	3	4	28
31	4	4	3	3	3	3	4	6	30

MAGNETIC K-INDICES FOR MAY - WILKES

Range for lower limit of K=9 is 2500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	5	6	6	5	3	1	5	3	34
2	3	4	4	3	2	1	2	2	21
3	3	3	3	2	2	1	2	2	18
4	2	3	2	1	1	1	2	2	14
5	3	3	3	2	2	0	2	2	17
6	3	3	3	3	3	6	5	5	31
7	4	3	3	4	4	4	3	3	28
8	4	8	8	6	5	6	4	4	45
9	4	5	5	4	2	3	2	2	27
10	3	4	3	2	2	3	2	3	22
11	3	5	5	4	2	3	2	3	27
12	3	4	3	3	3	2	1	2	21
13	3	4	3	3	3	2	3	3	24
14	3	4	3	2	2	1	2	1	18
15	2	3	3	2	2	2	1	1	16
16	2	3	2	2	3	3	4	4	23
17	3	3	4	3	2	3	0	1	19
18	2	3	2	1	1	2	1	1	13
19	3	3	3	2	2	1	0	2	16
20	2	3	2	2	1	0	0	1	11
21	1	3	2	0	2	0	1	2	11
22	1	3	2	0	1	0	1	2	10
23	1	2	2	1	2	3	3	3	17
24	2	3	3	2	1	1	3	3	18
25	3	3	3	1	3	3	3	2	21
26	3	3	3	2	2	4	3	3	23
27	3	4	2	2	1	1	3	3	19
28	3	3	3	1	1	1	4	4	20
29	5	4	4	2	2	2	3	3	25
30	3	3	3	2	3	3	1	2	20
31	2	3	3	1	2	1	2	3	17

MAGNETIC K-INDICES FOR APRIL AND MAY 1960 - PORT MORESBY

Range for lower limit of K=9 is 300 gammas

April
1960K-Indices

1	7	8	7	6	7	7	7	5
2	4	4	6	5	3	Q	3	5
3	6	7	7	4	3	3	Q	3
4	4	5	4	3	4	4	3	3
5	4	6	5	Q	3	3	3	3
6	4	3	4	Q	3	4	3	3
7	4	4	4	Q	Q	4	4	3
8	4	4	4	+3	3	3	3	3
9	3	4	4	4	Q	Q	Q	Q
10	4	5	3	3	3	3	4	3
11	4	5	5	3	3	3	3	3
12	5	5	4	4	3	3	Q	3
13	5	5	5	3	Q	Q	Q	3
14	3	3	3	Q	Q	Q	3	3
15	4	6	5	3	3	3	3	3
16	4	3	3	4	5	5	4	4
17	5	4	4	3	Q	3	4	3
18	5	4	5	3	Q	3	Q	Q
19	3	3	Q	Q	Q	Q	Q	Q
20	Q	Q	Q	Q	Q	Q	Q	Q
21	3	Q	Q	Q	Q	Q	Q	Q
22	3	Q	3	Q	Q	Q	Q	Q
23	3	3	3	Q	Q	Q	3	5
24	6	5	4	3	5	4	3	4
25	5	4	5	4	5	4	3	3
26	3	Q	4	4	4	3	Q	3
27	Q	Q	Q	3	3	Q	4	5
28	6	5	6	4	6	4	5	3
29	5	5	5	5	3	3	3	4
30	6	5	5	6	8	8	8	6

May
1960K-Indices

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

SOLAR FLARE EFFECTS

	<u>Day</u>	<u>Began</u>	<u>K</u>	<u>K'</u>
		h m		
April	10	01 26	4	4
May	13	05(20)	4	3

MAGNETIC K-INDICES FOR JUNE AND JULY 1959 - PORT MORESBY

Range for lower limit of K=9 is 300 gammas

June 1959	K-Indices				July 1959	K-Indices			
1	3	3	3	3	1	3	3	Q	Q
2	3	3	3	Q	2	3	3	Q	Q
3	4	3	3	3	3	Q	Q	3	Q
4	5	4	4	4	4	3	Q	3	4
5	3	4	3	Q	5	3	4	3	Q
6	3	Q	3	3	6	3	3	3	Q
7	3	3	Q	3	7	3	3	4	3
8	3	Q	4	3	8	3	3	3	3
9	3	3	4	4	9	3	4	3	3
10	3	3	3	3	10	4	3	3	Q
11	Q	3	5	4	11	5	3	4	Q
12	3	Q	Q	Q	12	4	3	Q	Q
13	3	Q	Q	Q	13	3	3	4	Q
14	3	3	Q	Q	14	3	4	4	3
15	Q	3	4	3	15	5	5	6	8
16	Q	3	Q	Q	16	5	5	4	Q
17	Q	Q	Q	Q	17	3	3	3	3
18	Q	3	3	Q	18	7	6	5	5
19	Q	3	Q	Q	19	3	3	3	3
20	3	Q	Q	Q	20	4	3	4	3
21	Q	Q	3	Q	21	3	3	3	3
22	3	3	3	4	22	3	3	3	Q
23	4	3	Q	Q	23	3+4	4	3	3
24	5	3	3	Q	24	3	3	3	4
25	3	3	3	Q	25	4	3	4	4
26	3	3	5	4	26	3	3	3	3
27	3	3	3	3	27	3	3	3	4
28	5	4	3	3	28	4	3	3	Q
29	3	3	5	6	29	3	3	3	Q
30	4	3	4	5	30	3	Q	Q	Q
					31	4	3	3	3

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING MAY

date	storm time		sudden commencements			act- iv- ity	max. activity			Ranges				
							0 to 9							
	begin	end	type	amplitudes			day	3-hr per.	K	D	H	Z		
				D	H								Z	
	h m	d h		γ	γ							γ	γ	
05	23..	0724				ms	06	7	6		27.0	152	82	
08	0420	0918	ssc*	+6	-28	-	ms	08	6	7		38.8	180	106

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT TOOLANGI DURING MAY

Day	Time		Type		Sense of Movement			Remarks
					H	D	Z	
	h	m						
01	02	12	pt	B				
08	04	20	ssc*	B	-*	+	-	
11	04	35	ssc*	B	+	-*	+	
28	20	19	ssc	B	+	-	+	

PRINCIPAL MAGNETIC STORMS AT GNANGARA DURING MAY

date	storm time		sudden commencements			act-iv-ity	max. activity		Ranges				
							0 to 9						
	begin	end	type	amplitudes			3-hr						
							day	per.	K	D	H	Z	
	h m	d h		D	H	Z				D	H	Z	
05	20..	0721		...	...	...	m	06	7,8				
								07	6	5	21	97	151
08	0421	0913	ssc	-5	-36	-19	ms	08	4,6	6	35	145	216
28	2019	3016	ssc*	+7*	+10	+31*	m	29	1	5	16	107	88

NOTE: No record 2300 10th - 1200 11th

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT GNANGARA DURING MAY

Day	Time		Type		Sense of Movement			Remarks
					H	D	Z	
	h	m						
08	04	21	ssc	A	-	-	-	
16	13	51	ssc	A	+	+	+	
17	00	04	si	A				
22	14	38	si	A				
25	17	41	b	A	+	..	..	D - at 1748 Z + at 1753
26	12	29	bp	B	+	-	-	
28	20	19	ssc*	A	+	+	+	

PRINCIPAL MAGNETIC STORMS AT PORT MORESBY DURING APRIL

date	storm time		sudden commencements				act-iv-ity	max. activity 0 to 9			Ranges		
	begin	end	type	amplitudes				day	3-hr per.	K	D	H	Z
				D	H	Z							
				Y	Y	Y							
	h m	d h											
02	2312	0315	ssc	+0.5	+30	+19	m				8	212	81
27	2001	2821	ssc*	+1.2*	+17	+17	m				5	222	100
30	1214	0110	ssc*	-5.0*	+97	+65	s				9	395	246

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT PORT MORESBY DURING APRIL

Day	Time		Type	Sense of Movement			Remarks
	h	m		H	D	Z	
02	23	12	ssc B	+	+	+	
04	04	03	si B	-	-	-	
06	16	27	si B	+	+	+	
24	14	03	bp B	+		+	
27	20	01	ssc* B	+	+*	+	
28	12	04	bp B	+	-	+	
30	01	32	ssc* B	+	+*	+	
	12	14	ssc* A	+	-*	+	

PRINCIPAL MAGNETIC STORMS AT PORT MORESBY DURING MAY

date	storm time		sudden commencements			act-iv-ity	max. activity 0 to 9						
	begin	end	type	amplitudes			day	3-hr per.	K	D	H	Z	
				D	H								Z
	h m	d h		D	H	Z					D	H	Z
08	0421	0911	ssc	+2	+55	+30	ms	08	4	7	11	208	139
16	1120	1714					ms	16	7,8	6	4	141	75
28	2019	2918	ssc	+1	+26	+29	ms	29	1	6	5	100	73

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT PORT MORESBY DURING MAY

Day	Time		Type	Sense of Movement			Remarks
	h	m		H	D	Z	
08	04	21	ssc B	+	+	+	
11	04	35	ssc* B	+*	+*	+	
16	13	51	si C	+	+	+	
	20	35	si A	+	+	+	
22	14	37	ssc C	+		+	
28	20	19	ssc B	+	+	+	
29	01	06	si B	-	-		