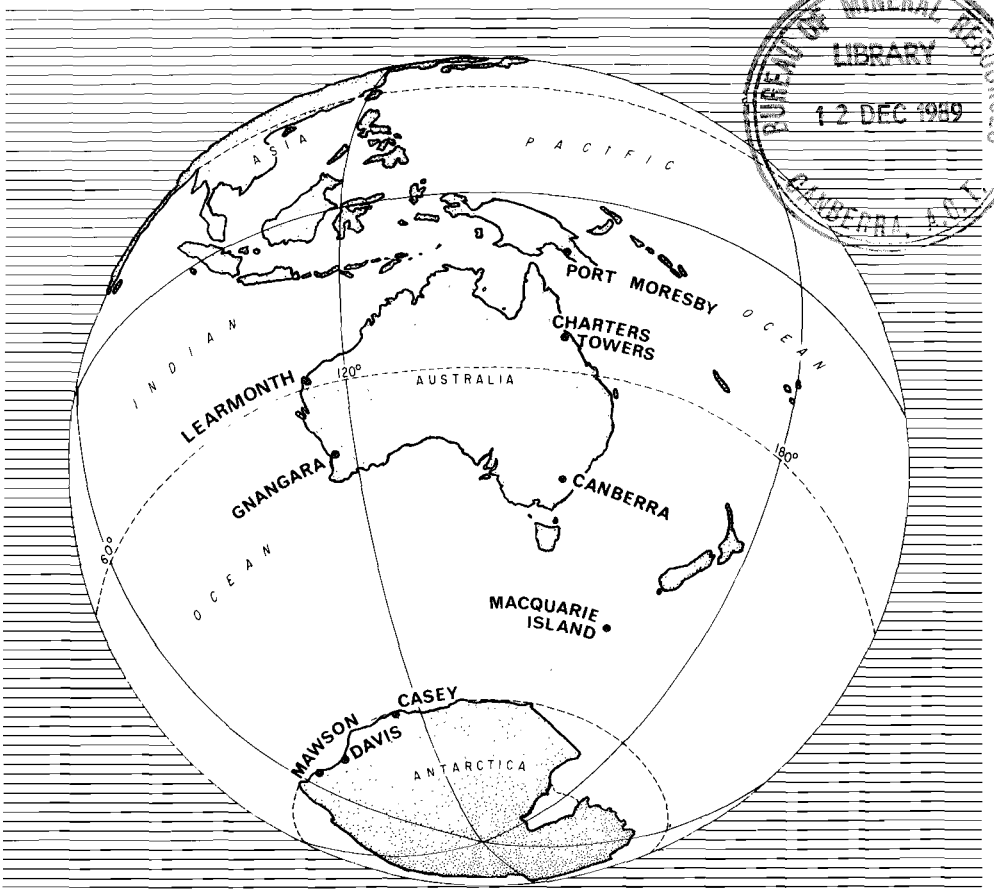
AUSTRALIA

GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

VOLUME 37 No. 6
JUNE 1989

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

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Senator the Hon. Peter Cook

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The observers at Casey, Davis and Macquarie Island are officers of the Antarctic Division, The Department of the Arts, Sport, the Environment, Tourism and Territories. Their contributions are gratefully acknowledged. These observers and the Bureau of Mineral Resources' (BMR) geophysicist at Mawson are members of the Australian National Antarctic Research Expeditions (ANARE).

Data from the Port Moresby Geophysical Observatory are contributed by the Geological Survey of Papua New Guinea.

The terminology used in this report is that accepted by the International Association of Geomagnetism and Aeronomy (IAGA). The unit of field intensity is the nanoTesla (nT). All times are in Universal Time (UT).
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CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC LAT.	GEOGRAPHIC LONG.	GEOMAGNETIC* LAT.	GEOMAGNETIC* LONG.
PORT MORESBY	I.D.Ripper	9° 25′S	147° 09′E	-18.1°	219.8°
CHARTERS TOWERS	J.M.Millican	20° 05′S	146° 15′E	-28.7°	220.3°
LEARMONTH	M.W.McMullan	22° 13′S	114° 06′E	-33.2°	185.5°
GNANGARA	P.J.Gregson	31° 47′S	115° 57′E	-42.7°	188.0°
CANBERRA	P.A.Hopgood	35° 19′S	149° 22′E	-43.3°	226.6°
MACQUARIE IS.	M.J.Underwood	54° 30′S	158° 57′E	-60.4°	244.7°
MAWSON	P.Crosthwaite	67° 36′S	62° 53′E	-73.2°	106.3°
DAVIS	R.McLoughlin	68° 35′S	77° 58′E	-76.8°	124.0°
CASEY	O. Holmwood	66° 17′S	110° 32′E	-77.3°	182.7°

* Geomagnetic co-ordinates based on the 1980 DGRF Geomagnetic North pole position of 78.8°N, 70.9°W

MAGNETOGRAPHS

OBSERVATORY	CODE	MODEL (TYPE/RES.)		ELEMENT/SCALE-VALUE		
PORT MORESBY	PMG	La Cour	(A)	H/3	D/5	Z/4
CHARTERS TOWERS	CTA	EDA/Elsec	(D/1)	X	Y	Z
LEARMONTH	LRM	EDA/Elsec	(D/1)	X	Y	Z
GNANGARA	GNA	Eschenhagen	(A)	H/3	D/7	Z/6
CANBERRA	CNB	Elsec	(D/.1)	D	I	F
MACQUARIE IS.	MCQ	PEM	(D/.1)	X	Y	Z
MAWSON	MAW	PEM	(D/.1)	X	Y	Z

A = analogue, 20mm/hr, scale values in nT/mm
D/1 = digital, 1 minute readings, 1 nT resolution
D/.1 = digital, 1 minute readings, 0.1 nT resolution
PEM = BMR Photo-electronic magnetograph

MAGNETOMETERS

Absolute data are based on observations made with QHM's, BMZ's, fluxgate-theodolites, declinometers, proton vector magnetometers and proton precession magnetometers.

Errors in preliminary values obtained from magnetograms are not likely to exceed 5 nT or 0.5 minutes of arc.

PORT MORESBY

MAGNETIC K-INDICES - JUNE 1989

Range for lower limit of K=9 is 300nT

DAY	K-INDICES								K-SUM
01	2	3	3	2	2	2	2	2	18
02	2	2	4	4	3	2	3	3	23
03	2	2	2	1	2	4	2	2	17
04	3	3	2	2	2	2	1	1	16
05	2	1	2	2	1	2	1	2	13
06	2	2	2	2	2	1	1	5	17
07	5	3	5	5	5	2	2	2	29
08	3	2	3	2	2	2	5	4	23
09	6	5	2	2	3	2	3	3	26
10	3	4	4	4	5	5	4	3	32
11	3	3	5	2	2	-	-	-	--
12	1	3	4	3	3	1	1	1	17
13	1	1	2	2	1	3	3	2	15
14	3	5	3	4	3	3	3	3	27
15	4	3	3	4	3	2	2	1	22
16	1	1	1	1	1	1	1	1	08
17	1	0	2	2	2	1	1	1	10
18	1	1	2	1	1	1	1	1	09
19	1	1	2	2	1	1	2	4	14
20	3	2	3	5	4	3	4	4	28
21	2	1	3	1	1	1	1	1	11
22	2	1	1	1	1	1	1	2	10
23	2	1	2	2	1	2	2	1	13
24	2	2	2	3	4	2	1	1	17
25	2	1	2	2	2	1	1	2	13
26	1	1	2	3	3	2	2	1	15
27	2	2	1	1	1	1	1	1	10
28	2	2	1	2	1	2	1	2	13
29	2	2	2	3	3	3	2	2	19
30	3	2	3	3	1	1	1	1	15

Mean of K-Sum is 17.2

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	75	87	44	17	12	1	0	0	0	3

GNANGARA

MAGNETIC K-INDICES - JUNE 1989

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	2	3	1	1	3	2	3	3	18
02	2	2	2	3	4	3	3	3	22
03	3	2	1	0	1	4	3	2	16
04	3	3	1	1	1	1	2	2	14
05	1	0	1	1	0	2	2	3	10
06	2	1	1	2	1	1	0	3	11
07	6	3	4	6	5	1	2	1	28
08	2	2	2	1	1	1	4	3	16
09	5	4	2	1	2	2	4	5	25
10	5	4	4	4	6	5	4	4	36
11	3	3	3	2	2	2	3	2	20
12	2	2	2	2	3	2	2	1	16
13	2	1	2	2	2	3	3	2	17
14	3	3	3	4	4	4	3	4	28
15	3	3	3	3	3	3	4	4	26
16	1	1	2	1	0	1	0	0	06
17	0	0	0	1	0	1	0	1	03
18	1	0	0	0	0	0	0	0	01
19	1	1	1	1	1	1	2	2	10
20	2	2	2	4	4	3	4	3	24
21	1	1	2	0	0	0	1	1	06
22	1	1	2	0	0	0	1	1	06
23	2	1	1	1	1	2	1	1	10
24	1	2	2	3	3	1	2	1	15
25	2	2	2	1	2	0	1	1	11
26	1	1	2	3	3	2	2	2	16
27	2	1	1	0	1	1	1	1	08
28	2	1	2	1	1	2	1	2	12
29	2	3	2	3	3	3	3	2	21
30	3	2	2	2	0	1	1	1	12

Mean of K-Sum is 15.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	28	72	67	45	20	5	3	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - JUNE 1989

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	2	2	1	1	3	2	2	2	15
02	2	2	4	3	4	3	3	2	23
03	1	2	0	1	2	4	2	1	13
04	2	2	1	1	0	1	1	1	09
05	1	0	0	2	0	2	0	2	07
06	2	2	1	1	2	0	0	(0)	(08)
07	-	(1)	4	5	4	0	1	1	--
08	2	2	3	1	1	0	4	3	16
09	3	3	2	2	3	2	3	3	21
10	3	3	4	4	5	5	5	3	32
11	2	3	4	1	2	2	2	2	18
12	2	2	3	2	1	1	1	1	13
13	1	1	1	3	3	3	3	1	16
14	2	2	3	4	4	4	5	3	27
15	2	2	4	4	3	3	3	3	24
16	1	1	1	2	0	0	0	0	05
17	0	0	0	1	1	1	1	1	05
18	1	1	0	0	0	0	0	0	02
19	1	1	2	2	1	1	2	2	12
20	2	2	2	5	4	3	4	2	24
21	1	1	1	0	0	0	0	1	04
22	1	0	0	0	0	0	1	2	04
23	1	1	1	1	1	1	1	1	08
24	0	1	2	2	3	1	1	0	10
25	1	2	2	2	2	1	0	1	11
26	(0)	(1)	1	3	1	2	2	1	(11)
27	1	1	0	1	1	0	0	1	05
28	1	1	1	1	0	2	0	1	07
29	1	3	2	4	4	3	1	1	19
30	2	2	2	2	0	0	1	0	09

Mean of K-Sum is 13.0

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	45	79	60	31	18	6	0	0	0	0	1

MAWSON

MAGNETIC K-INDICES - JUNE 1989

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	5	4	3	3	2	2	3	5	27
02	3	3	5	3	4	4	4	5	31
03	5	4	5	2	2	4	4	6	32
04	6	6	3	3	2	1	4	4	29
05	2	1	2	2	2	2	3	6	20
06	3	5	3	3	2	1	0	4	21
07	7	5	5	5	4	1	2	3	32
08	4	3	4	4	1	0	4	5	25
09	8	5	3	1	1	2	5	6	31
10	6	4	5	3	3	-	5	4	--
11	3	6	6	4	3	3	3	4	32
12	5	4	4	3	2	2	3	3	26
13	4	4	3	2	2	3	6	4	28
14	3	6	5	5	3	5	4	5	36
15	5	5	4	3	3	4	6	6	36
16	3	5	3	3	2	1	0	0	17
17	0	0	0	1	0	1	2	4	08
18	3	2	1	0	2	2	1	4	15
19	0	3	4	3	1	2	5	5	23
20	5	4	3	4	4	3	5	4	32
21	3	2	1	1	1	1	0	0	09
22	1	2	2	1	1	0	3	1	11
23	3	2	2	2	2	2	2	4	19
24	2	2	2	3	2	1	4	4	20
25	4	5	4	3	2	1	1	4	24
26	2	3	3	3	3	2	3	5	24
27	4	2	2	2	1	1	1	5	18
28	4	4	3	2	2	2	0	4	21
29	5	5	4	3	3	4	6	5	35
30	6	5	3	4	1	0	4	4	27

Mean of K-Sum is 24.4

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	15	28	45	52	49	34	14	1	1	0	1

PRINCIPAL MAGNETIC STORMS - JUNE 1989

OBSERVATORY	Commencement				SSC-amplitude			Max. 3hr K-index		Ranges			UT End	
	day	hr	min	type	D(´)	H(nT)	Z(nT)	day (3hr-period)	K	D(´)	H(nT)	Z(nT)	day	hr
Port Moresby	06	23	14	ssc	+1.0	+38	+27	09(1)	6	6	240	90	11	15
	13	17	41	ssc*	+0.5*	+16	+16	14(2)	5	6	160	60	15	21
Charters Towers	06	23	14	ssc*	-1.6*	+16	0	07(1,4)	6	6.7	191	44	07	14
	08	19	53	ssc*	+1.4*	+28	-2	09(1)	6	11.4	207	55	11	09
Gnangara	06	23	15	ssc*	+4.2*	+29	+34*	07(1,4)	6	21	150	120	07	14
	09	19	..	..	..	..	..	10(5)	6	33	140	190	11	10
Canberra	09	10	..	..	..	..	..	10(5,6,7)	5	21.3	149	59	11	09

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35912	06°	36.3′ E	-23710	43033
CHARTERS TOWERS	31744	07°	46.4′ E	-38262	49716
LEARMONTH	29478	00°	34.2′ W	-44438	53326
GNANGARA	23190	03°	08.2′ W	-53819	58603
CANBERRA	23655	12°	29.2′ E	-53684	58664
MACQUARIE IS.	12578	29°	44.0′ E	-63567	64800
MAWSON	18469	64°	13.6′ W	-46098	49660
DAVIS	16666	77°	29.3′ W	-52061	54664
CASEY	9650	91°	54.0′ W	-63967	64691

The values are derived from magnetograms for selected quiet days except at Davis, Casey and Macquarie Is. where they are derived from semi-weekly absolute measurements

INTERNATIONAL QUIET AND DISTURBED DAYS

Quietest days (1- 5):	21	22	18	23	17
Quietest days (6-10):	27	28	05	25	26
Most Disturbed days :	10	14	09	07	15

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SUDDEN COMMENCEMENTS AND OTHER RAPID VARIATIONS

OBSERVATORY	DAY	TYPE AND QUALITY	TIME	SENSE AND AMPLITUDE OF CHIEF MOVEMENT H(nT)	D(nT)	Z(nT)
PORT MORESBY	06	ssc B	2314	+38	+11	+27
	13	ssc*B	1741	+16	+5*	+16
CHARTERS TOWERS	06	ssc*A	2314	+16	-15*	0
	08	ssc*A	1953	+28	+13*	-2
	13	ssc*B	1742	+18	+7*	-2
GNANGARA	03	ssc*B	1551	+13	+11*	+7*
	06	ssc*A	2315	+29	+15*	+34*
	08	ssc*B	1953	+22	+47*	+31*
	13	ssc*B	1742	+19	+24*	+17*
CANBERRA	08	ssc B	1952	+16	+10	+6
	13	ssc*B	1546	+15	+6*	0

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