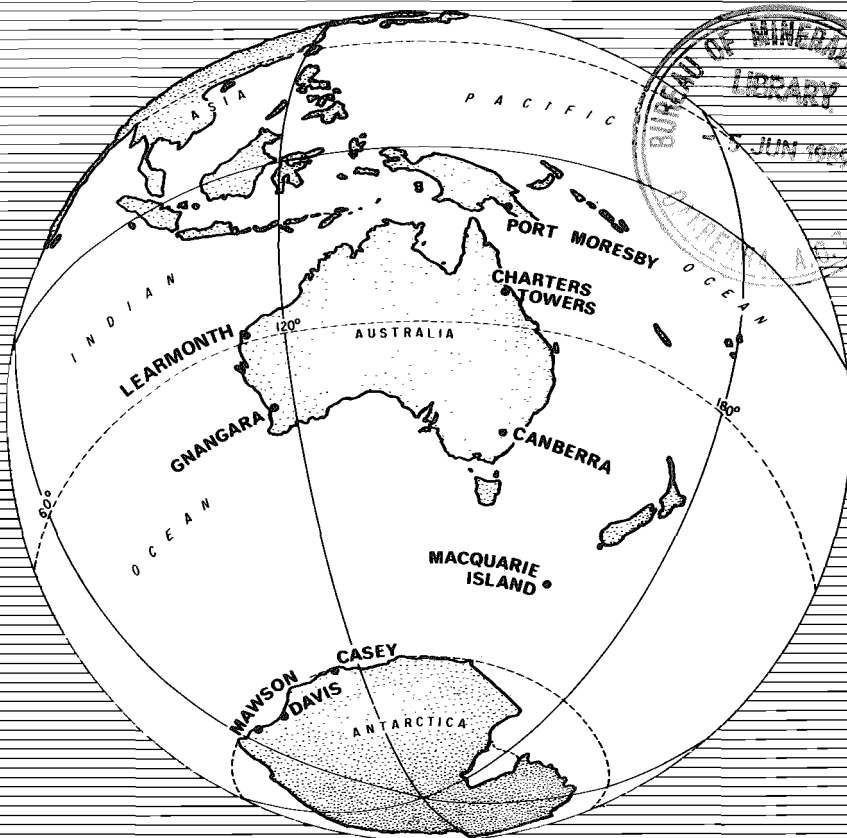


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GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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VOLUME 36 No. 11

NOVEMBER 1988

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources:

Senator the Hon. Peter Cook

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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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).

CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC		GEOMAGNETIC	
		LAT.	LONG.	LAT.	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.	G. Kowalik	54° 30'S	158° 57'E	-60.4°	244.7°
MAWSON	R. Hutchinson	67° 36'S	62° 53'E	-73.2°	106.3°
DAVIS	M. Craven	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	MAKE (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 - NOVEMBER 1988

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 17.2

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	60	99	52	16	2	2	0	0	0	8

GNANGARA

MAGNETIC K-INDICES - NOVEMBER 1988

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 17.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	11	65	74	58	24	6	2	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - NOVEMBER 1988

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 16.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	16	63	84	51	20	5	1	0	0	0	0

MAWSON

MAGNETIC K-INDICES - NOVEMBER 1988

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	4	4	2	1	1	5	5	3	25
02	6	4	4	4	5	6	6	4	39
03	4	6	5	4	5	3	7	5	39
04	3	3	4	3	3	3	6	2	27
05	5	4	3	2	4	3	3	2	26
06	2	6	5	3	3	4	6	4	33
07	4	6	3	3	4	5	5	5	35
08	4	4	4	3	4	5	6	4	34
09	4	3	3	3	4	4	3	3	27
10	3	5	5	4	4	3	1	2	27
11	3	2	2	2	2	3	6	6	26
12	4	4	4	5	4	5	3	5	34
13	4	3	4	3	2	2	4	3	25
14	3	5	4	4	3	2	5	5	31
15	5	6	5	3	3	2	5	5	34
16	3	5	5	5	4	4	6	5	37
17	4	5	5	4	2	2	3	3	28
18	3	4	3	3	3	2	5	3	26
19	2	2	2	2	2	1	1	1	13
20	2	1	1	1	2	1	0	4	12
21	5	3	3	1	1	1	2	3	19
22	3	4	4	2	1	2	1	3	20
23	2	5	4	1	0	0	1	3	16
24	4	4	3	1	0	0	2	2	16
25	5	4	2	2	2	2	4	4	25
26	5	6	5	4	5	4	6	3	38
27	5	4	4	4	3	4	4	5	33
28	2	4	2	2	4	3	3	5	25
29	4	4	2	2	2	3	2	4	23
30	4	5	5	8	6	5	6	2	41

Mean of K-Sum is 27.8

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	5	18	42	52	61	43	17	1	1	0	0

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PRINCIPAL MAGNETIC STORMS

OBSERVATORY	<u>Commencement</u>		<u>SSC-amplitude</u>			<u>Max. 3hr K-index</u>		<u>Ranges</u>			<u>UT End</u>	
	day	hr min	type	D(')	H(nT)	Z(nT)	day (3hr-period)	K	D(')	H(nT)	Z(nT)	day hr
Port Moresby	30	08 00	ssc	+1.1	+66	+59	30 (3,4)	6	7	200	140	30 21
Charters Towers	30	08 01	ssc	+0.5	+62	-10	30 (4,5)	6	9.1	184	19	30 21
Gnangara	11	07 51	ssc*	+0.2*	-18*	+1*	30 (7)	5	12	20	62	12 04
	30	08 00	ssc*	+5.5*	-79*	+31*	30 (4,6)	6	30	155	180	30 21
Canberra	30	08 01	ssc	+1.7	+101	+13	30 (4)	6	15.8	210	53	30 21

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35931	06°	35.8' E	-23723	43056
CHARTERS TOWERS	31766	07°	46.5' E	-38267	49733
LEARMONTH	29488	00°	35.9' W	-44430	53325
GNANGARA	23220	03°	10.4' W	-53810	58606
CANBERRA	23677	12°	27.9' E	-53680	58670
MACQUARIE IS.	no data				
MAWSON	18483	64°	05.7' W	-46121	49687
DAVIS	16719	76°	57.9' W	-52103	54720
CASEY	9775	91°	48.9' W	-63997	64739

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

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	30	ssc A	0800	+66	+11	+59
CHARTERS TOWERS	11	ssc B	0755	+16	-2	-2
	30	ssc A	0801	+62	+5	-10
GNANGARA	10	sfe	0610	+8	+23	+16
	11	ssc*A	0751	-18*	+2*	+1*
	30	ssc*A	0800	-79*	+36*	+31*
CANBERRA	11	ssc*B	0755	+23*	0	+3
	30	ssc A	0801	+101	+12	+13

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