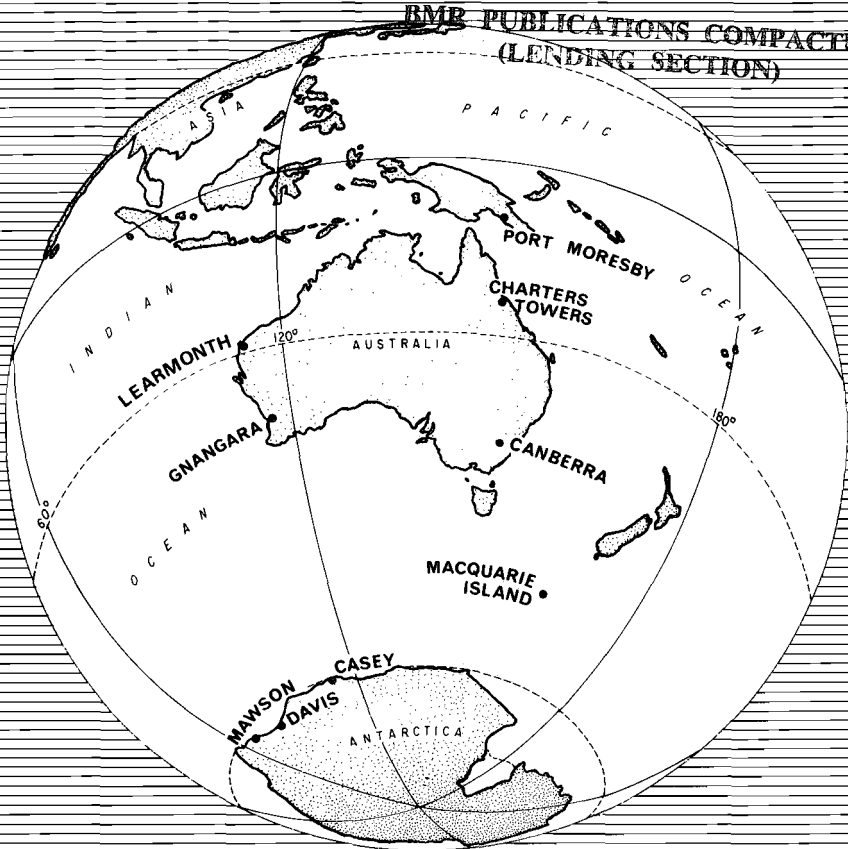


GEOPHYSICAL OBSERVATORY REPORT

BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)



MAGNETIC OBSERVATIONS

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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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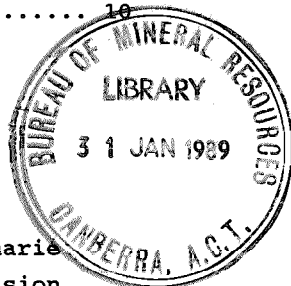
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The observers at Casey, Davis and Macquarie Island are officers of the Antarctic Division, Department of Administrative Services: Their contributions are gratefully acknowledged. These observers and the Bureau of Mineral Resources (BMR) geophysicist 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	T. Maggs	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

<u>OBSERVATORY</u>	<u>CODE</u>	<u>MAKE (TYPE/RES.)</u>	<u>ELEMENT/SCALE-VALUE</u>			
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 - AUGUST 1988

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 18.6

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	3	36	118	67	17	6	1	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - AUGUST 1988

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 14.6

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	39	56	85	47	18	3	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - AUGUST 1988

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	2	2	2	0	0	1	2	1	10
02	2	2	0	0	1	0	1	1	07
03	1	2	1	2	2	0	0	0	08
04	0	0	0	0	0	0	0	0	00
05	1	0	1	1	3	4	0	1	11
06	2	2	3	0	0	0	0	1	08
07	1	1	1	1	0	0	0	0	04
08	0	0	1	0	0	0	0	1	02
09	1	2	2	2	2	3	3	2	17
10	1	1	1	1	0	0	2	1	07
11	1	1	2	4	3	2	0	2	15
12	3	3	2	3	4	4	3	2	24
13	3	3	2	4	4	3	2	1	22
14	2	3	4	4	3	3	2	1	22
15	1	3	5	5	4	4	2	1	25
16	1	1	3	3	2	1	1	0	12
17	0	1	1	1	1	0	0	1	05
18	0	2	2	3	2	2	1	0	12
19	1	2	2	2	2	3	1	1	14
20	1	2	2	2	3	3	2	1	16
21	1	2	2	0	1	0	0	3	09
22	4	5	2	1	1	0	1	1	15
23	2	1	2	1	2	4	3	2	17
24	0	1	1	2	1	0	2	3	10
25	1	2	3	4	4	3	2	1	20
26	2	3	2	1	2	1	1	3	15
27	2	3	2	3	1	2	2	1	16
28	1	2	2	2	1	2	1	2	13
29	2	2	3	3	0	2	1	2	15
30	3	4	3	1	0	2	1	1	15
31	2	2	1	0	1	4	2	2	14

Mean of K-Sum is 12.9

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	50	72	72	35	16	3	0	0	0	0	0

MAWSON

MAGNETIC K-INDICES - AUGUST 1988

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	4	4	3	1	1	1	5	3	22
02	4	2	2	0	1	0	5	4	18
03	4	5	4	2	0	0	2	2	19
04	2	2	0	0	0	0	1	4	09
05	1	1	2	0	2	3	2	5	16
06	3	2	3	0	0	0	0	3	11
07	3	3	0	0	0	0	2	3	11
08	1	0	0	0	0	0	1	2	04
09	3	3	2	2	1	3	6	5	25
10	3	2	2	2	2	1	7	5	24
11	4	3	3	3	3	2	1	1	20
12	2	3	3	3	4	4	4	7	30
13	5	6	5	5	3	4	4	4	36
14	6	4	5	5	3	4	5	4	36
15	5	5	5	4	4	6	6	6	41
16	5	4	4	3	2	1	5	5	29
17	2	5	2	2	1	1	1	4	18
18	4	5	3	2	2	3	2	2	23
19	3	4	2	2	2	2	2	6	23
20	3	5	5	2	4	2	4	3	28
21	1	2	2	0	0	0	2	5	12
22	3	7	5	2	2	0	4	5	28
23	5	5	3	2	2	2	3	5	27
24	2	4	3	2	3	2	4	6	26
25	4	5	5	4	3	3	6	4	34
26	3	4	2	0	3	2	3	6	23
27	6	5	4	5	3	3	7	4	37
28	3	3	4	4	2	2	4	6	28
29	4	4	5	4	2	3	1	6	29
30	6	5	5	2	0	2	6	6	32
31	3	3	2	1	2	4	5	5	25

Mean of K-Sum is 24.0

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	28	20	56	45	42	37	16	4	0	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	21	22 30	ssc	+0.4	+35	+23	22 (1)	6	6	160	70	22 14
Charters Towers	15	04 ..	..	..	..	..	15 (3,4)	5	6.3	68	36	15 21
	21	22 29	ssc	-1.2	+13	0	22 (1,2)	6	9.6	172	45	22 07
Gnangara	NIL			PRINCIPAL			MAGNETIC		STORMS			
Canberra	15	04 ..	..	..	..	..	15 (3,4)	5	10.2	85	31	15 21

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35911	06°	36.3' E	-23716	43035
CHARTERS TOWERS	31761	07°	46.5' E	-38266	49730
LEARMONTH	29485	00°	36.1' W	-44434	53327
GNANGARA	23209	03°	10.9' W	-53812	58604
CANBERRA	23671	12°	27.8' E	-53687	58673
MACQUARIE IS.	12597	29°	36.3' E	-63563	64799
MAWSON	18471	64°	06.3' W	-46133	49693
DAVIS	16685	77°	03.5' W	-52127	54732
CASEY	9638	91°	28.9' W	-63937	64660

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

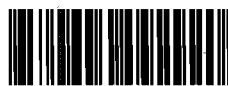
SUDDEN COMMENCEMENTS AND OTHER RAPID VARIATIONS

OBSERVATORY	DAY	TYPE AND QUALITY	TIME	SENSE AND AMPLITUDE OF CHIEF MOVEMENT		
				H(nT)	D(nT)	Z(nT)
PORT MORESBY	21	ssc B	2230	+35	+4	+23
	25	ssc B	0933	+31	+4	+23
CHARTERS TOWERS	21	ssc B	2229	+13	-11	0
	25	ssc B	0933	+27	-7	-3
GNANGARA	21	ssc*B	2230	+5	+5*	+5*
	25	ssc*B	0932	+20*	+25	+13
CANBERRA	25	ssc B	0932	+34	-6	+8

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