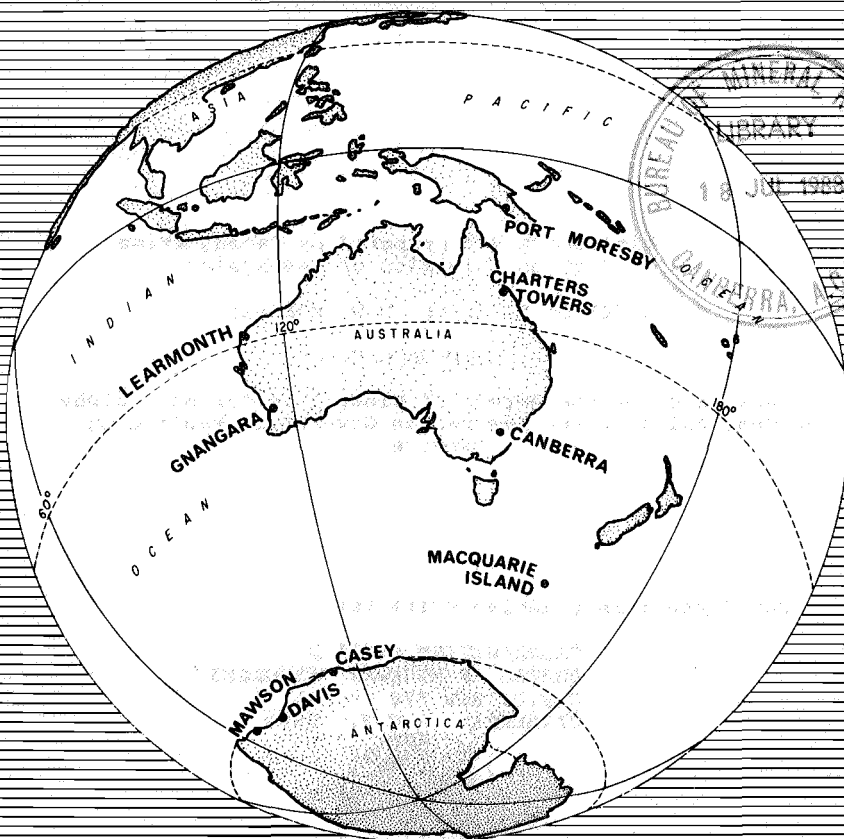




BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)



GEOFYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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OCTOBER 1987

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DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister:

The Hon. John Kerin MP

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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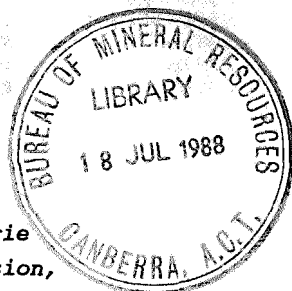


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The observers at Casey Davis and Macquarie Island are officers of the Antarctic Division, Department of Science and Technology: their contributions are gratefully acknowledged. These observers and the Bureau of Mineral Resources (BMR) geophysicist 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 International Association of Geomagnetism and Aeronomy. The unit of field intensity is nanotesla (nT). All times are in Universal Time.

CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC		GEOMAGNETIC	
		LAT	LONG	LAT	LONG
PORT MORESBY	I.D.Ripper	9° 25' S	147° 09' E	-18.2°	219.6°
CHARTERS TOWERS	J.M.Millican	20° 05' S	146° 15' E	-28.8°	220.2°
LEARMONTH	M.W.McMullan	22° 13' S	114° 06' E	-33.4°	185.5°
GNANGARA	P.J.Gregson	31° 47' S	115° 57' E	-42.9°	187.8°
CANBERRA	P.A.Hopgood	35° 19' S	149° 22' E	-43.5°	226.4°
MACQUARIE I	I.G.Jacobsen	54° 30' S	158° 57' E	-60.6°	244.6°
MAWSON	S.D.Dennis	67° 36' S	62° 53' E	-73.3°	105.9°
DAVIS	P. Williams	68° 35' S	77° 58' E	-76.9°	123.5°
CASEY	R.A.Rachinger	66° 17' S	110° 32' E	-77.5°	182.4°

MAGNETOGRAPHS

<u>OBSERVATORY</u>	<u>CODE</u>	<u>TYPE</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 ISLAND	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 = ditigal, 1 min readings, 1 nT resolution
D/.1 = ditigal, 1 min 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 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 - OCTOBER 1987

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 18.2

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	2	66	86	58	26	10	0	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - OCTOBER 1987

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 18.2

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	15	65	70	53	27	15	3	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - OCTOBER 1987

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 16.0

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	31	67	66	48	27	8	1	0	0	0	0

MAWSON

MAGNETIC K-INDICES - OCTOBER 1987

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	5	4	3	3	4	4	6	5	34
02	5	5	4	2	3	2	3	1	25
03	3	2	4	5	4	4	7	5	34
04	3	4	3	3	3	3	2	2	23
05	2	3	2	3	2	2	4	5	23
06	2	3	2	1	1	1	5	5	20
07	3	3	2	2	4	1	1	3	19
08	5	4	3	3	2	2	4	3	26
09	3	2	2	1	0	0	5	4	17
10	5	4	4	1	1	2	2	3	22
11	4	5	5	3	4	5	7	4	37
12	3	3	1	2	3	2	2	5	21
13	5	5	5	4	4	4	7	5	39
14	6	5	5	5	4	6	7	5	43
15	4	5	6	5	4	5	6	5	40
16	3	5	5	3	3	5	6	5	35
17	3	2	3	4	4	5	6	6	33
18	4	3	2	2	3	1	4	3	22
19	3	2	1	2	3	2	5	5	23
20	4	3	2	1	3	5	5	6	29
21	5	5	5	2	3	6	7	3	36
22	2	3	1	1	2	1	1	3	14
23	5	5	4	3	3	4	3	3	30
24	4	4	3	2	3	4	5	5	30
25	6	6	6	4	4	2	5	4	37
26	3	5	4	4	3	4	4	5	32
27	6	5	4	4	5	4	4	7	39
28	7	6	7	5	5	7	7	4	48
29	5	5	4	4	3	4	6	5	36
30	3	4	3	4	3	2	5	5	29
31	4	4	4	3	4	3	5	4	31

Mean of K-Sum is 29.9

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	2	17	35	55	56	57	16	10	0	0	0

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PRINCIPAL MAGNETIC STORMS

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	03	04	32	ssc	+0.5	+ 6	+ 7	03	(4,5)	5	5	70	60	04	00
	27	05	..	...	..	..	..	27	(4,6)	5	8	90	70	29	00
								28	(2,4)	5					
Charters Towers	03	04	..	...	..	..	..	03	(5)	6	7.8	102	28	03	22
	27	07	..	...	..	..	..	27	(4,6)	5	10.9	91	34	28	21
								28	(1,2,4)	5					
Gnangara	27	01	..	...	..	..	..	28	(4)	6	21	90	120	29	16
Canberra	27	04	..	...	..	..	..	27	(4,6)	5	16.7	145	43	28	21
								28	(1,4)	5					

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	deg min	nT	nT
PORT MORESBY	35928	06° 35.6' E	-23722	43053
CHARTERS TOWERS	31766	07° 46.2' E	-38272	49737
LEARMONTH	29471	00° 37.5' W	-44429	53315
GNANGARA	23215	03° 12.9' W	-53818	58612
CANBERRA	23677	12° 26.0' E	-53699	58687
MACQUARIE ISLAND	12579	29° 26.5' E	-63573	64805
MAWSON	18464	63° 59.0' W	-46191	49745
DAVIS	16632	77° 02.7' W	-52120	54710
CASEY	9567	91° 17.0' W	-64008	64817

The values are derived from magnetograms for selected quiet days except at Davis and Casey 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	03	ssc B	0432	+06	+05	+07
CHARTERS TOWERS			NIL			
GNANGARA			NIL			
CANBERRA			NIL			

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