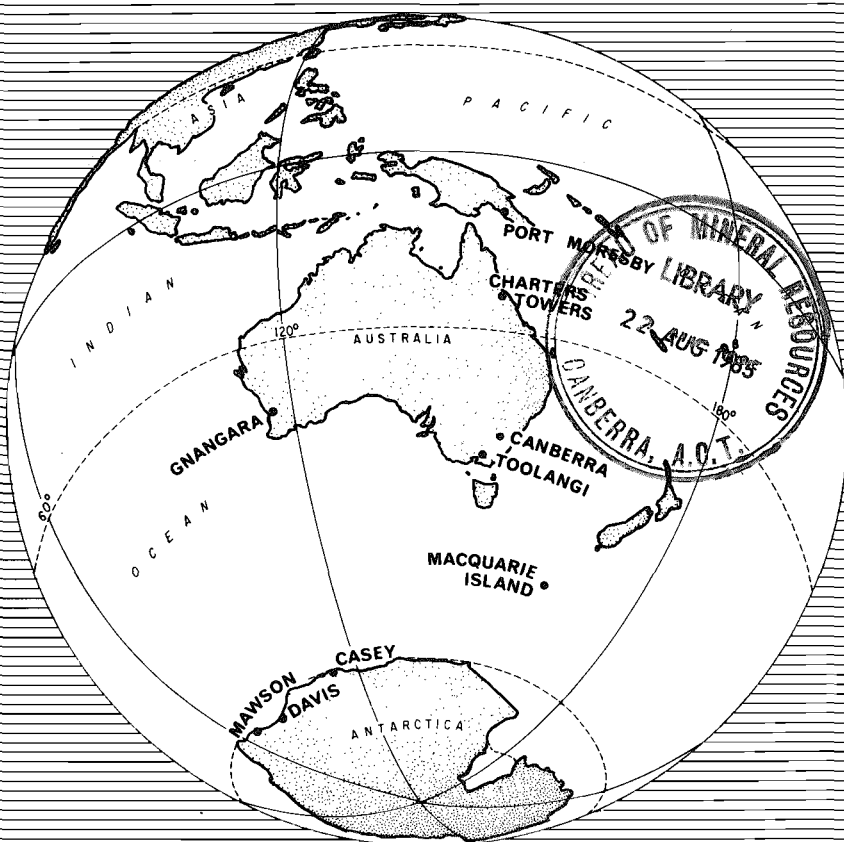


BMR PUBLICATIONS COMPACTUS
(LITHOGRAPHIC SECTION)



GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

BMR
\$550
\$389.5
AUS\$8
copy 2

VOLUME 33 No. 3
MARCH 1985

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF RESOURCES AND ENERGY

Minister: Senator The Hon. Gareth Evans

SECRETARY: A J Woods

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

DIRECTOR: R W R Rutland

THIS REPORT WAS PREPARED IN THE DIVISION OF GEOPHYSICS

CHIEF OF DIVISION: M W McElhinny

HEAD, GEOMAGNETISM SECTION: C E Barton

ISSN 0433-5015



Published for the Bureau of Mineral Resources,
Geology and Geophysics by the Australian Government
Publishing Service.

© Commonwealth of Australia 1984.

CONTENTS

	Page
Contributing Observatories.....	4
K-indices.....	5
Principal Magnetic Storms.....	9
Monthly Mean Values, Sudden Commencements and Other Rapid Variations.....	10

The observers at Casey and Davis are officers of the Antarctic Division (Department of Science and Technology) and their contributions are gratefully acknowledged: they and the BMR geophysicists of Macquarie Island and Mawson are members of the Australian National Antarctic Research Expeditions (ANARE).

The 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 IAGA. The units of field intensity, nanotesla (nT), are those of the SI system. All times are in Universal Time. Should further Information be required, apply to:

GEOMAGNETISM SECTION
BUREAU OF MINERAL RESOURCES
G.P.O. Box 378
CANBERRA A.C.T. 2601

CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC		GEOMAGNETIC	
		LAT	LONG	LAT	LONG
PORT MORESBY	I.D. Ripper	9 25'S	147 09'E	-18.6	217.9
CHARTERS TOWERS	J.M. Millican	20 05'S	146 15'E	-29.3	218.4
GNANGARA	P.J. Gregson	31 47'S	115 57'E	-43.3	185.8
CANBERRA	P.A. Hopgood	35 19'S	149 22'E	-44.0	224.7
MACQUARIE I	W.P. Barnaart	54 30'S	158 57'E	-61.1	243.1
MAWSON	P.G. Crosthwaite	67 36'S	62 53'E	-73.1	102.9
DAVIS	P.F.B. Williams	68 35'S	77 58'E	-76.7	119.9
CASEY	B.J. Whiteley	66 17'S	110 32'E	-77.8	179.1

MAGNETOGRAPHS

OBSERVATORY	CODE	TYPE	ELEMENT/SCALE-VALUE		
PORT MORESBY	PMG	La Cour (A)	H/3	D/5	Z/4
CHARTERS TOWERS	CTA	EDA/ELSEC digital (D1/1)			
GNANGARA	GNA	Eschenhagen (A)	H/3	D/7	Z/6
CANBERRA	CNB	Elsec digital (D1/0.1)			
MACQUARIE I	MCQ	Photo-electronic magnetometer (D1/0.1)			
MAWSON	MAW	La Cour (A)	H/21	D/13	Z/22

Scale values are in nT/mm

A = analogue, 20 mm/hr

D1/0.1,1 = digital/1 min readings/0.1 or 1 nT resolution

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.

PORT MORESBY

MAGNETIC K-INDICES - MARCH 1984

Range for lower limit of K = 9 is 300 nT.

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

Mean of K-Sum is 15,5

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	5	80	104	44	13	2	0	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - MARCH 1985

Range for lower limit of K = 9 is 450 nT.

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

Mean of K-Sum is 14.4

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	31	81	65	48	23	0	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - MARCH 1985

Range for lower limit of K = 9 is 450 nT.

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

Mean of K-Sum is 12.0

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	51	84	63	35	15	0	0	0	0	0	0

MAWSON

MAGNETIC K-INDICES - MARCH 1985

Range for lower limit of K = 9 is 1500 nT.

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	-	-	5	4	2	2	2	6	--
02	3	6	3	4	5	6	6	6	39
03	3	4	6	3	2	2	4	6	30
04	3	4	2	2	3	3	2	5	24
05	5	5	6	4	3	5	7	7	42
06	5	5	4	5	3	4	6	6	38
07	3	5	5	5	3	5	7	5	38
08	6	6	6	5	3	4	5	5	40
09	3	3	2	1	1	1	0	6	17
10	5	2	2	3	2	3	3	4	24
11	3	2	2	2	3	2	1	1	16
12	1	3	2	1	3	3	7	4	24
13	1	3	2	2	2	2	0	1	13
14	2	2	2	2	2	2	6	6	24
15	3	4	5	5	2	1	2	2	24
16	4	4	3	3	3	2	5	6	30
17	4	4	2	3	1	1	6	6	27
18	6	5	4	1	1	0	5	6	28
19	3	3	2	2	3	2	6	5	26
20	3	2	2	1	2	3	1	0	14
21	2	4	1	0	2	1	4	4	18
22	5	2	1	1	1	1	1	4	16
23	4	4	1	1	1	1	5	5	22
24	3	3	3	1	1	1	2	6	20
25	3	1	1	2	1	2	6	3	19
26	5	3	2	2	2	2	4	4	24
27	4	3	3	2	2	3	5	5	27
28	6	5	5	1	3	2	5	6	33
29	3	2	2	1	1	3	5	5	22
30	7	3	2	2	1	2	2	4	23
31	3	4	3	5	3	2	3	2	25

Mean of K-Sum is 25.5

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	5	37	59	50	28	36	26	5	0	0	2

MARCH 1985
PRINCIPAL MAGNETIC STORMS

OBSERVATORY	COMMENCEMENT				SSC			AMPLITUDES			MAX 3h K-INDEX			RANGES			UT END	
	d	h	min	TYPE	D(')	H(nT)	Z(nT)	d	(3h-PERIOD)	K	D(')	H(nT)	Z(nT)	d	h			
Port Moresby																		
Charters Towers																		
Gnangara																		
Canberra																		

MARCH 1984
PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35950	06 34.0'E	-23712	43066
CHARTERS TOWERS	31789	07 43.0'E	-38273	49753
GNANGARA	23262	03 18.7'W	-53761	58579
CANBERRA	23711	12 19.8'E	-53728	58728
MACQUARIE I	12666	29 12.1'E	-63652	64900
MAWSON	18456	63 38.6'W	-46367	49905
DAVIS	16622	76 45 'W	-52291	54869
CASEY	9647	90 47 'W		

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			NIL			
CHARTERS TOWERS			NIL			
GNANGARA			NIL			
CANBERRA			NIL			

GEOPHYSICAL OBSERVATORY REPORT VOLUME 33 No. 3 MARCH 1985

R84/258(9) Cat. No. 85 1427 5