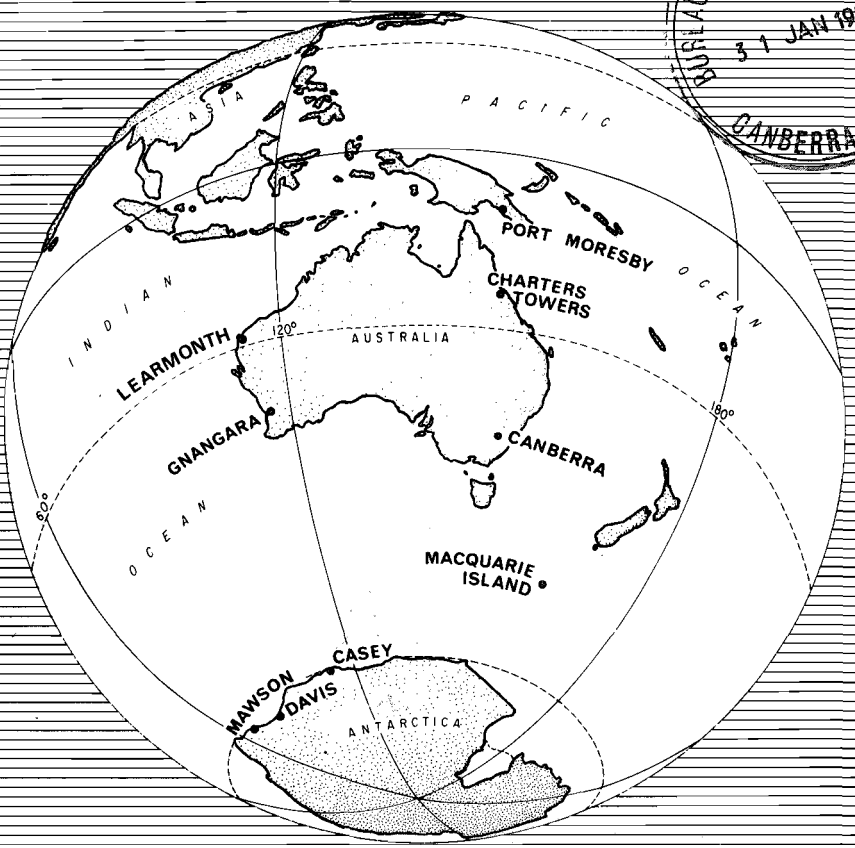
AUSTRALIA

GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

VOLUME 36 No. 9
SEPTEMBER 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

DIRECTOR:

R.W.R. Rutland AO

This report was prepared by:

Geomagnetism Section
Division of Geophysics

CHIEF OF DIVISION (Acting): D. Denham

For further Information write to:

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

Published for the B.M.R.G. & G. by the
Australian Government Publishing Service

ISSN 0433-5015

CONTENTS

~~~~~~~~~~~~*****~~~~~~~~~~~~

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 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.	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

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 - SEPTEMBER 1988

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 15.9

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	4	75	107	34	16	3	1	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - SEPTEMBER 1988

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 14.7

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	29	75	68	49	12	6	1	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - SEPTEMBER 1988

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 13.9

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	38	71	74	35	14	5	0	0	0	0	3

MAWSON

MAGNETIC K-INDICES - SEPTEMBER 1988

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	5	6	5	4	3	5	4	6	38
02	5	4	4	3	3	4	3	6	32
03	3	5	3	2	2	2	6	5	28
04	5	3	3	2	2	1	3	5	24
05	4	3	0	1	2	0	0	2	12
06	1	0	0	0	0	0	5	2	08
07	2	2	2	2	1	0	0	0	09
08	1	2	2	1	1	2	5	5	19
09	2	2	0	0	0	0	4	4	12
10	4	0	1	0	0	0	4	4	13
11	3	5	5	5	5	7	6	6	42
12	7	5	6	4	2	3	6	6	39
13	2	6	5	2	3	2	6	3	29
14	5	4	4	3	3	3	4	4	30
15	4	4	4	2	2	3	2	5	26
16	1	5	3	2	3	1	0	0	15
17	4	5	6	3	3	3	3	5	32
18	6	6	5	2	2	1	6	5	33
19	3	5	5	3	3	3	4	7	33
20	4	5	4	3	3	1	6	5	31
21	3	5	3	2	2	2	6	4	27
22	2	5	5	3	3	5	2	5	30
23	5	5	6	2	3	2	3	5	31
24	2	3	3	2	2	1	5	6	24
25	5	3	3	2	2	3	5	5	28
26	2	3	3	2	3	2	0	4	19
27	4	3	3	0	0	0	1	3	14
28	4	3	2	1	0	0	0	2	12
29	3	2	1	0	0	0	0	0	06
30	1	0	2	1	2	3	5	2	16

Mean of K-Sum is 23.7

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	34	18	48	50	27	41	19	3	0	0	0

SEPTEMBER 1988

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	11	02	..	..	..	..	..	11 (5)	6	6	210	90	12	08
	17	18	45	ssc*	+0.2*	+20	+15	18 (2); 19 (1)	5	8	110	60	19	16
Charters Towers	11	03	..	..	..	..	..	11 (3,5)	6	8.8	170	43	12	07
	17	18	45	ssc*	+0.5*	+ 8	- 1	18 (2)	6	10.1	85	22	18	09
Gnangara	11	03	..	..	..	..	..	11 (5); 18 (2)	6	27	60	180	12	09
	17	18	45	ssc	+2.2	+10	+ 9	19 (1)	5	18	60	90	19	20
Canberra	11	03	..	..	..	..	..	11 (3,4,5); 12 (1)	5	15.5	117	51	12	08

SEPTEMBER 1988

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	deg min	nT	nT
PORT MORESBY	35933	06° 36.0′ E	-23719	43055
CHARTERS TOWERS	31763	07° 46.4′ E	-38263	49729
LEARMONTH	29488	00° 35.9′ W	-44436	53330
GNANGARA	23207	03° 10.6′ W	-53806	58597
CANBERRA	23673	12° 27.7′ E	-53683	58671
MACQUARIE IS.	12607	29° 39.3′ E	-63560	64798
MAWSON	18473	64° 07.5′ W	-46131	49692
DAVIS	16663	77° 03.6′ W	-52107	54706
CASEY	9617	91° 18.4′ W	-64001	64720

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	17	ssc*B	1845	+20	+2*	+15
CHARTERS TOWERS	17	ssc*C	1845	+8	+5*	-1
GNANGARA	17	ssc*B	1845	+10	+15	+9
CANBERRA	17	ssc*C	1846	+6	+10*	-2*

GEOPHYSICAL OBSERVATORY REPORT VOLUME 36 No. 9 SEPTEMBER 1988

B88/21968(a) Cat. No. 88 20378

Printed in Australia by Better Printing Service, 1 Foster Street, Queanbeyan N.S.W. 2620