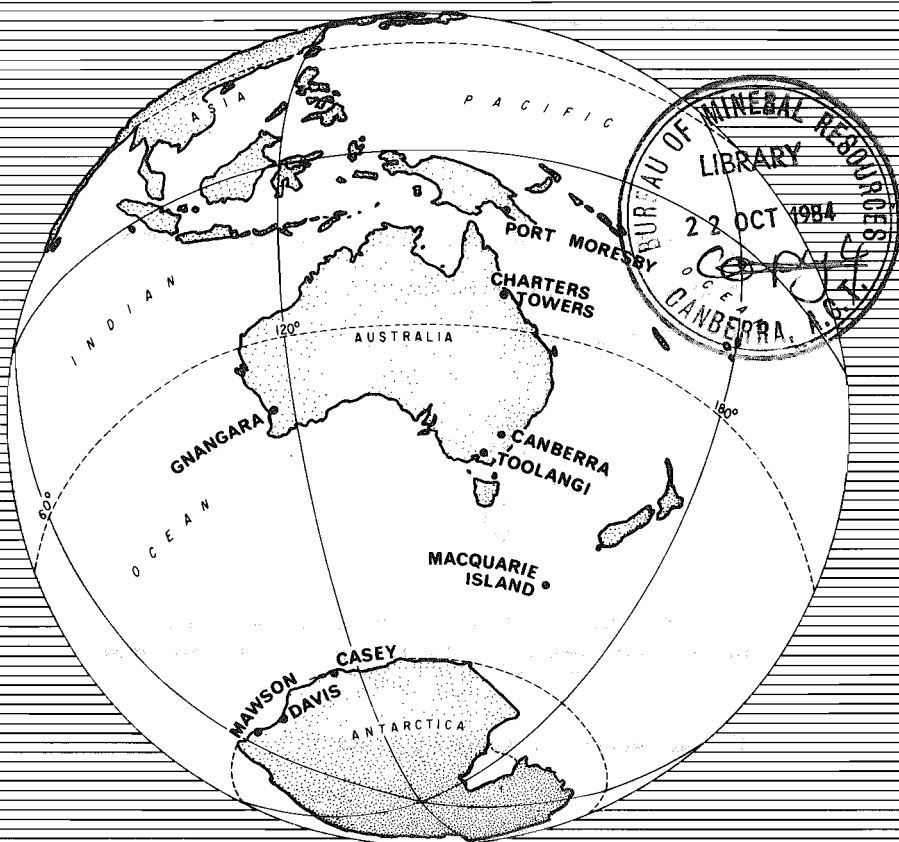


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DLF **GEOPHYSICAL
OBSERVATORY REPORT**



MAGNETIC OBSERVATORIES

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**VOLUME 32 NO. 4
APRIL 1984**

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF RESOURCES AND ENERGY

MINISTER: Senator The Hon. Peter Walsh

SECRETARY: A.J. Woods

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

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CONTENTS

	Page
Contributing Observatories.....	4
K-Indices.....	5
Principal Magnetic Storms.....	11
Monthly Mean Values, Sudden Commencements and Other Rapid Variations.....	12

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 at 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°
*TOOLANGI	P.A. Hopgood	37°32'S	145°28'E	-46.7°	220.8°
MACQUARIE I	W.D. Prohasky	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. Whitely	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)			
TOOLANGI	TOO	La Cour (A)	H/5	D/6	Z/5
MACQUARIE I	MCQ	La Cour (A)	H/20	D/9	Z/21
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.

* Toolangi Observatory is only a variation observatory, since 1 July 1979.

PORT MORESBY

MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 300 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	2	3	4	4	3	4	2	2	24
02	4	2	5	5	4	3	3	5	31
03	4	4	3	3	3	3	3	-	--
04	-	2	4	4	4	5	5	5	--
05	3	3	3	4	4	3	4	4	28
06	3	2	1	3	2	2	1	2	16
07	3	4	3	6	3	3	3	2	27
08	3	3	5	5	4	3	3	4	30
09	4	3	3	3	4	3	4	2	26
10	2	2	2	2	2	1	1	2	14
11	3	1	2	2	1	2	2	1	14
12	1	2	2	2	1	3	2	3	16
13	3	2	3	2	3	2	2	2	19
14	2	2	1	2	3	3	2	4	19
15	2	2	2	2	2	1	2	1	14
16	0	0	2	2	2	1	1	1	09
17	1	1	0	0	3	3	2	2	12
18	1	2	1	2	2	2	2	2	14
19	2	2	4	3	3	2	2	3	21
20	2	5	4	3	3	2	2	2	23
21	2	2	3	1	3	2	2	2	17
22	1	1	2	1	1	1	1	1	09
23	1	1	0	1	2	2	2	2	11
24	1	2	2	2	2	1	2	1	13
25	5	3	3	2	3	4	3	4	27
26	4	4	5	5	5	5	5	3	36
27	4	4	4	3	2	2	2	3	24
28	2	3	3	5	3	3	2	2	23
29	2	2	2	3	3	3	2	2	19
30	2	3	3	2	0	0	2	4	16

Mean of K-Sum is 19.7

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	7	33	89	61	31	16	1	0	0	0	2

GNANGARA

MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 450 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	4	4	5	5	4	5	3	3	33
02	4	3	4	5	4	4	4	5	33
03	4	3	2	4	5	4	4	5	31
04	4	3	4	4	4	5	6	6	36
05	4	3	3	4	5	6	5	5	35
06	3	2	2	2	2	2	3	3	19
07	3	2	3	5	3	2	3	3	24
08	3	3	5	5	4	5	5	5	35
09	5	3	4	3	4	3	4	2	28
10	1	1	1	1	1	1	2	3	11
11	3	2	2	2	1	3	3	2	18
12	2	2	2	2	2	3	2	3	18
13	2	2	2	1	2	2	2	1	14
14	2	1	1	0	2	5	3	5	19
15	4	1	2	2	1	1	2	0	13
16	1	0	2	1	1	0	1	2	08
17	1	0	0	0	3	3	2	2	11
18	2	2	1	1	2	1	1	2	12
19	2	0	3	2	2	2	3	3	17
20	2	3	3	3	2	2	2	3	20
21	3	2	3	1	3	2	2	2	18
22	2	1	2	1	0	0	0	1	07
23	1	0	0	0	2	2	3	3	11
24	1	1	2	1	1	1	1	0	08
25	2	2	4	2	5	5	5	5	30
26	4	5	6	4	5	6	6	4	40
27	4	4	4	3	2	3	2	2	24
28	1	2	3	4	3	4	2	2	21
29	2	2	3	3	3	4	3	3	23
30	2	1	0	0	0	0	1	3	07

Mean of K-Sum is 20.8

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	19	37	68	51	33	26	6	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 450 nT

Day	K-Indices								K-Sum
01	3	3	5	4	4	4	2	2	27
02	4	2	4	4	3	4	3	4	28
03	3	3	4	4	4	4	3	3	28
04	3	3	4	4	3	5	6	6	34
05	3	3	3	4	5	4	4	4	30
06	3	2	2	3	3	1	2	1	17
07	3	2	3	5	3	2	2	2	22
08	3	4	5	6	4	3	3	3	31
09	4	3	2	3	4	2	3	(1)	(22)
10	1	1	1	1	1	1	1	2	09
11	3	2	2	3	1	3	2	1	17
12	1	3	1	1	1	3	2	4	16
13	1	2	2	2	2	1	2	2	14
14	2	2	1	0	2	4	2	4	17
15	2	2	2	3	1	1	1	0	12
16	0	0	1	1	1	0	0	1	04
17	1	1	1	1	3	2	1	1	11
18	1	2	1	2	2	1	2	1	12
19	1	2	3	2	2	2	2	3	17
20	1	4	4	3	2	2	1	1	18
21	2	1	3	0	3	2	0	1	12
22	0	0	1	1	0	0	0	1	03
23	0	0	0	0	2	2	2	2	08
24	1	2	2	1	1	0	1	0	08
25	2	2	3	2	3	5	4	5	24
26	2	4	5	4	4	5	6	3	33
27	3	4	5	3	1	2	2	2	22
28	1	2	3	4	3	4	2	1	20
29	1	2	3	2	3	3	2	2	18
30	0	1	0	0	0	0	0	3	04

Mean of K-Sum is 17.9

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	25	54	63	51	34	5	4	0	0	0	0

TOOLANGI
MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	3	3	5	5	4	5	2	2	29
02	4	2	4	4	4	5	3	4	30
03	4	4	4	5	4	4	4	4	33
04	3	3	4	4	4	5	6	6	35
05	3	3	4	5	5	4	5	4	33
06	3	2	2	3	2	1	2	1	16
07	3	2	2	5	3	2	2	2	21
08	3	4	5	6	4	4	4	4	34
09	5	3	3	3	4	2	3	2	25
10	1	1	1	1	2	1	1	2	10
11	3	2	2	3	1	3	2	1	17
12	1	3	2	1	0	3	2	4	16
13	2	3	2	1	2	2	2	1	15
14	2	2	0	0	2	4	2	3	15
15	2	2	2	3	1	0	1	0	11
16	0	0	1	1	1	0	0	1	04
17	0	0	0	0	3	2	1	0	06
18	1	1	1	2	1	1	1	1	09
19	1	1	3	2	2	2	1	2	14
20	2	4	4	3	2	2	1	2	20
21	2	1	3	1	3	2	1	2	15
22	1	1	1	1	0	0	0	1	05
23	0	0	0	1	2	2	2	2	09
24	1	2	2	1	1	1	1	0	09
25	2	2	4	2	4	4	4	4	26
26	3	4	5	4	4	5	6	4	35
27	3	4	5	3	2	2	2	2	23
28	2	3	3	4	3	4	2	1	22
29	1	2	3	2	3	3	2	2	18
30	1	2	0	0	0	0	0	3	06

Mean of K-Sum is 18.7

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	26	49	66	39	41	15	4	0	0	0	0

MACQUARIE ISLAND

MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 1500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	4	5	8	7	6	7	3	2	42
02	3	3	5	6	6	7	6	5	41
03	4	4	7	6	6	6	5	5	43
04	5	5	6	6	7	8	7	7	51
05	4	5	6	6	7	7	6	5	46
06	3	3	3	6	5	2	2	1	25
07	2	2	2	7	5	3	4	2	27
08	5	5	7	7	6	6	4	4	44
09	5	5	4	5	6	4	4	2	35
10	1	1	1	3	2	0	2	1	11
11	2	2	3	5	2	4	3	1	22
12	1	3	3	1	2	4	1	3	18
13	3	3	3	2	3	2	3	1	20
14	3	2	0	0	3	5	2	3	18
15	3	2	3	5	1	1	0	0	15
16	0	1	2	3	2	0	0	1	09
17	0	1	0	1	1	1	1	1	06
18	0	2	1	0	0	0	1	1	05
19	1	2	1	1	3	1	1	2	12
20	1	4	4	4	4	3	1	2	23
21	2	1	4	2	5	3	1	1	19
22	1	0	1	2	0	0	0	1	05
23	1	0	0	1	2	2	1	1	08
24	0	2	3	3	3	0	0	0	11
25	2	1	2	2	7	6	5	4	29
26	5	5	7	6	7	8	8	5	51
27	5	5	7	6	5	4	4	3	39
28	3	3	4	6	6	5	1	2	30
29	2	3	4	5	7	5	2	2	30
30	1	3	2	0	0	0	0	3	09

Mean of K-Sum is 24.8

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	28	43	39	36	22	30	21	17	4	0	0

MAWSON

MAGNETIC K-INDICES - APRIL 1984

Range for lower limit of K = 9 is 1500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	6	7	6	6	4	5	-	-	--
02	-	-	6	6	4	7	6	8	--
03	7	7	6	5	5	6	7	7	50
04	6	7	-	5	5	9	8	8	--
05	6	5	7	5	5	8	6	6	48
06	5	5	4	4	4	4	5	6	37
07	5	3	3	6	5	4	6	5	37
08	6	7	7	5	4	5	5	6	45
09	4	5	4	3	2	3	5	3	29
10	2	4	3	3	2	2	4	5	25
11	6	4	3	3	3	4	6	3	32
12	2	4	4	2	3	3	2	6	26
13	4	3	4	3	2	2	2	3	23
14	3	3	2	0	2	4	6	7	27
15	5	3	5	4	3	1	3	2	26
16	2	2	3	2	1	0	3	4	17
17	2	0	0	0	2	2	2	4	12
18	2	4	3	1	1	0	1	1	13
19	1	2	3	2	1	2	3	5	19
20	3	5	6	4	2	3	3	5	31
21	3	4	3	2	2	3	4	5	26
22	5	3	3	2	1	2	0	0	16
23	2	2	1	0	1	3	6	6	21
24	3	4	3	1	1	1	1	4	18
25	2	3	4	1	4	5	5	6	30
26	6	7	7	6	6	8	8	6	54
27	6	7	6	4	3	4	6	6	42
28	5	5	4	5	4	5	4	6	38
29	3	5	4	4	4	6	7	6	39
30	5	6	5	3	0	0	3	7	29

Mean of K-Sum is 30.0

Frequency of K-Indices

K:	0	1	2	3	4	5	6	7	8	9	-
f:	11	16	32	42	38	36	37	16	6	1	5

APRIL 1984

PRINCIPAL MAGNETIC STORMS

OBSERVATORY	COMMENCEMENT				SSC AMPLITUDES			MAX 3h INDEX K		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	01	08	..	...	..	..	..	02	(3,4,8)	5	6	110	60	03	20
	04	06	..	...	..	..	..	04	(6,7,8)	5	6	120	70	06	05
	07	00	..	...	..	..	..	07	(4)	6	7	190	70	09	21
	25	00	..	...	..	..	..	26	(3,4,5,6,7)	5	13	190	70	27	14
CHARTERS TOWERS	01	03	..	...	..	..	..	04	(7,8)	6	11.2	149	35	06	04
	08	04	..	...	..	..	..	08	(3,4,5)	5	12.8	146	28	09	21
	25	03	..	...	..	..	..	26	(7)	6	9.1	164	38	27	09
GNANGARA	02	00	..	...	..	..	..	04	(7,8), 5 (6)	6	20	90	90	06	05
	08	01	..	...	..	..	..	08	(3,4,6,7,8)	5	21	110	130	09	21
								09	(1)						
	25	00	00	sc	-2.2	+10	-7	26	(3,6,7)	6	28	150	150	27	12
CANBERRA	04	17	..	...	..	..	..	04	(7,8)	6	28.6	201	53	05	21
	08	04	..	...	..	..	..	08	(4)	6	29.8	156	73	09	03
	25	13	..	...	..	..	..	26	(7)	6	22.1	136	74	27	12

APRIL 1984

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	o	nT	nT
PORT MORESBY	35943	06 33.1E	-23714	43061
CHARTERS TOWERS	31792	07 41.7E	-38272	49755
GNANGARA	23268	03 18.8W	-53750	58570
CANBERRA	23720	12 18.2E	-53741	58743
MACQUARIE I	12633	29 02.3E	-63657	64898
MAWSON	18448	63 32.3W	-46426	49957
DAVIS	16613	76 40 W	-52372	54944
CASEY	9621	90 48 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	17	ssc*B	1742	+19*	+ 4*	+15*
CHARTERS TOWERS	17	ssc*B	1442	+21*	- 2	- 2
	25	sfe	0000	+21	-45	+ 9
GNANGARA	25	ssc B	0000	+10	- 8	- 7
CANBERRA	25	sfe	0000	-18	-27	+ 5