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BUREAU OF MINERAL RESOURCES,
GEOLOGY & GEOPHYSICS

GEOPHYSICAL OBSERVATORY REPORT

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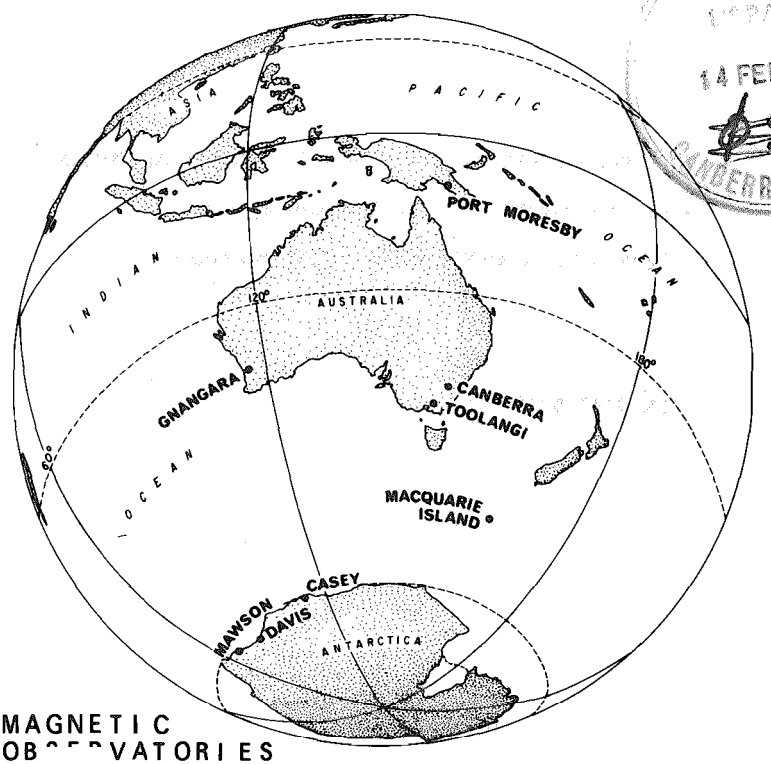

MAGNETIC OBSERVATORIES

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Volume 27, No. 8
August 1979

DEPARTMENT OF NATIONAL DEVELOPMENT

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BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

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ISSN 0433-5015

Printed by Canberra Publishing and Printing Co.

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The observers at Casey and Davis are physicists of the Antarctic Division (Department of Science and the Environment) 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 international convention. 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:

GEOPHYSICAL OBSERVATORY SUBSECTION
BUREAU OF MINERAL RESOURCES
P.O. BOX 378
CANBERRA CITY, 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°
GNANGARA	P.J. Gregson	31°47'S	115°57'E	-43.3°	185.8°
CANBERRA	R.S. Smith	35°19'S	149°22'E	-44.0°	224.7°
TOOLANGI	R.S. Smith	37°32'S	145°28'E	-46.7°	220.8°
MACQUARIE I	K.D. Wake-Dyster	54°30'S	158°57'E	-61.1°	243.1°
MAWSON	M.J. Sexton	67°36'S	62°53'E	-73.1°	102.9°
DAVIS	J. Morrisey	68°35'S	77°58'E	-76.7°	119.9°
CASEY	J. Hudsworth	66°17'S	110°32'E	-77.8°	179.1°

MAGNETOGRAPHS

OBSERVATORY	TYPE	NOMINAL SCALE VALUES					
		NORMAL			SENSITIVE		
		D	H	Z	D	H	Z
PORT MORESBY	La Cour	0.5	3	4			
GNANGARA	Eschenhagen	1	3	6			
TOOLANGI	La Cour	1	5	5			
MACQUARIE I	La Cour	2.5	20	21			
MAWSON	La Cour	2.5	21	22	1	10	10
CANBERRA	Elsec digital	D	F 0.1nT	I			

Scale values are in minutes of arc/mm (D) and nT/mm (H,Z)

MAGNETOMETERS

Absolute data are based on observations made with QHM'S BMZ's declinometers and proton precession magnetometers.
Errors in preliminary values are not likely to exceed 5 nT or 0.5 minutes.

PORT MORESBY

MAGNETIC K-INDICES - AUGUST 1979

Range for lower limit of K = 9 is 300 nT

Day	K-Indices								K-Sum
01	0	1	1	3	5	3	2	2	17
02	2	3	3	2	1	2	1	1	15
03	1	2	3	3	3	1	1	1	15
04	2	1	1	3	3	2	1	1	14
05	1	3	2	1	0	1	1	1	10
06	2	3	5	4	3	3	1	1	22
07	1	1	3	3	2	2	3	2	17
08	1	2	3	2	2	0	1	0	11
09	1	1	1	1	1	1	0	0	06
10	1	0	1	3	2	2	3	1	13
11	3	2	0	1	1	1	2	2	12
12	3	2	2	4	2	1	3	4	21
13	3	2	4	5	6	6	4	2	32
14	2	2	2	1	1	2	1	2	13
15	1	1	0	0	1	1	1	1	06
16	1	1	3	2	1	1	1	0	10
17	2	1	1	1	0	2	2	1	10
18	1	1	1	1	1	2	3	4	14
19	5	5	4	5	3	4	2	3	31
20	3	2	4	4	3	5	5	3	29
21	4	3	3	4	3	2	3	2	24
22	1	2	1	2	3	2	1	1	13
23	0	1	1	1	1	0	0	2	06
24	1	1	0	1	3	4	3	2	15
25	2	2	2	3	4	4	4	3	24
26	2	1	3	2	2	1	2	1	14
27	2	2	3	4	3	3	1	0	18
28	-	-	2	2	2	1	1	1	--
29	1	4	5	6	5	5	5	4	35
30	4	4	3	2	2	2	2	1	20
31	1	2	2	3	3	2	2	2	17

GNANGARA

MAGNETIC K-INDICES - AUGUST 1979

Range for lower limit of K = 9 is 450 nT

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

TOOLANGI

MAGNETIC K-INDICES - AUGUST 1979

Range for lower limit of K = 9 is 500 nT

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

MACQUARIE ISLAND

MAGNETIC K-INDICES - AUGUST 1979

Range for lower limit of K = 9 is 1500 nT

Day	K-Indices								K-Sum
01	0	0	0	1	5	3	1	2	12
02	2	2	3	3	1	3	1	0	15
03	1	2	4	4	4	3	0	1	19
04	1	2	4	3	5	3	4	2	24
05	1	2	2	1	0	0	1	2	09
06	2	2	5	4	4	4	2	1	24
07	1	2	4	5	5	5	4	1	27
08	1	2	2	4	3	2	2	1	17
09	1	1	1	2	3	2	1	0	11
10	0	1	0	3	5	1	2	1	13
11	2	2	1	1	1	2	1	1	11
12	3	2	2	6	0	0	2	3	18
13	3	1	4	7	7	6	6	4	38
14	-	-	2	0	0	1	1	1	--
15	1	1	1	0	0	1	1	0	05
16	1	1	1	2	1	0	0	0	06
17	1	1	1	0	0	1	2	1	07
18	0	1	0	1	0	0	0	3	05
19	3	4	5	5	4	4	3	2	30
20	2	2	5	3	4	7	8	3	34
21	5	4	5	7	4	3	2	2	32
22	2	3	3	4	3	3	1	1	20
23	0	2	1	0	0	0	0	1	04
24	0	1	0	1	3	4	3	1	13
25	1	1	4	7	6	3	4	3	29
26	2	2	5	1	4	2	3	1	20
27	2	2	4	5	3	3	2	1	22
28	2	2	2	4	3	4	1	1	19
29	1	4	7	6	7	8	8	5	46
30	4	4	4	4	4	0	1	1	22
31	1	1	1	4	6	1	1	1	16

MAWSON

MAGNETIC K-INDICES - AUGUST 1979

Range for lower limit of K = 9 is 1500 nT

Day	K-Indices								K-Sum
01	0	0	1	3	4	3	5	6	22
02	6	3	3	3	2	3	2	0	22
03	2	6	3	3	3	2	2	6	27
04	5	5	4	4	3	3	5	5	34
05	3	5	4	2	1	2	5	5	27
06	3	4	6	4	3	4	2	5	31
07	4	4	5	2	3	3	5	5	31
08	3	3	3	2	2	1	3	3	20
09	4	3	2	1	2	2	3	2	19
10	2	2	2	2	3	2	4	5	22
11	4	4	2	1	1	1	4	6	23
12	5	3	3	2	2	2	4	5	26
13	4	2	5	5	5	5	5	6	37
14	3	2	3	2	1	1	3	4	19
15	2	3	2	1	1	1	5	5	20
16	4	3	3	1	2	0	0	1	14
17	5	2	1	1	0	1	4	2	16
18	4	2	2	1	1	2	6	7	25
19	6	4	6	4	3	3	4	6	36
20	6	4	6	4	3	5	8	5	41
21	7	4	6	4	5	4	6	5	41
22	3	4	5	3	3	3	5	5	31
23	2	2	2	2	2	0	3	3	16
24	2	1	1	2	2	3	3	5	19
25	3	3	4	5	3	3	4	5	30
26	5	4	5	4	1	2	6	3	30
27	3	4	4	3	2	3	5	3	27
28	5	4	4	2	3	2	1	5	26
29	5	5	5	6	4	8	6	5	44
30	7	5	5	3	3	2	1	2	28
31	2	2	3	3	2	2	4	6	24

AUGUST 1979

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	11	46	ssc	+0.4	+16	+13	01 (5)		5	4	70	35	02	04
	12	17	..	...	..	..	..	13 (5,6)		6	10	220	90	14	00
	18	21	25	...	..	..	..	19 (1,2,4)		5	6	150	60	20	06
	20	06	25	ssc*	+1.0*	+36	+32	20 (6,7)		5	9	95	55	22	00
	29	04	59	ssc	+0.9	+19	+21	29 (4)		6	9	230	100	31	00
GNANGARA	13	06	40	ssc*	-4.8	+22*	-24	13 (4,5,6)		6	20	120	130	14	09
	20	06	25	ssc*	+4.3*	+42*	+18*	20 (6)		6	18	110	90	21	10
	29	04	58	ssc	+1.0	+ 6	+ 4	29 (5)		6	29	130	230	30	11
TOOLANGI	13	06	13	ssc*	+0.2*	-48*	- 5	13 (4,5)		6	38	220	70	13	23
	81	21	..	...	..	..	..	19 (3,4)		5	14	140	50	19	17
	20	06	26	ssc*	+3.4*	+84*	+ 5	20 (6,7)		5	22	190	40	21	12
	29	04	59	ssc*	0	+42*	+ 4	29 (6,7)		6	34	150	130	30	07

AUGUST 1979

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	o '	nT	nT
PORT MORESBY	35977	06 27.0E	-23600	43027
GNANGARA	23433	03 16.6W	-53626	58522
CANBERRA	23822	12 05.4E	-53782	58822
TOOLANGI		no absolute control		
MACQUARIE I	12738	28 20.4E	-63804	65063
MAWSON	18423	62 59.1W	-46897	50386
DAVIS	16862	76 06.8W	-52859	55483
CASEY	9525	89 31.3W	-64448	65148

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	01	ssc A	1146	+16	+ 4	+13
	20	ssc* A	0625	+36	+10*	+32
	29	ssc A	0459	+19	+ 9	+21
GNANGARA	01	ssc* B	1145	+12*	+ 9	+ 6
	13	sfe	0612 - 0622	-34	-29	-24
	13	ssc* A	0640	+22*	-33	-24
	20	ssc* A	0625	+42*	+29*	+18*
	29	ssc B	0458	+ 6	+ 7	+ 4
TOOLANGI	01	ssc* B	1146	+24*	+ 5	+ 4
	13	ssc* B	0613	-48*	+ 2	- 5
	20	ssc* A	0626	+84*	+22*	+ 5
	29	ssc* B	0459	+42*	0	+ 4

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