



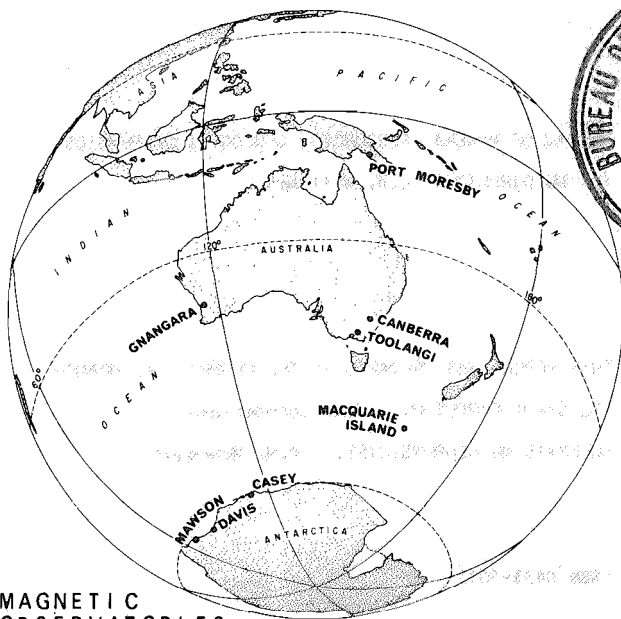
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BUREAU OF MINERAL RESOURCES.
GEOLOGY & GEOPHYSICS

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GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC
OBSERVATORIES

Volume 27, No. 4
April 1979

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BUREAU OF MINERAL RESOURCES

GEOPHYSICS & GEOLOGY

DEPARTMENT OF NATIONAL DEVELOPMENT

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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°
TOOLANG	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

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

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 - APRIL 1979

Range for lower limit of K # 9 is 300 nT

Day	K-Indices								K-Sum
01	4	3	5	5	4	3	2	4	30
02	6	5	4	2	3	4	3	2	29
03	2	2	3	3	3	5	5	6	29
04	5	5	5	4	4	3	1	2	29
05	5	4	6	7	6	5	3	2	38
06	3	3	3	2	2	3	1	2	19
07	2	1	2	3	1	1	2	2	14
08	2	2	2	3	2	2	3	3	19
09	3	3	2	1	1	2	1	1	14
10	1	2	3	2	2	3	1	2	16
11	1	1	1	2	2	1	2	2	12
12	1	2	3	3	2	3	3	3	20
13	1	2	2	2	3	3	2	1	16
14	2	2	2	2	1	2	1	4	15
15	3	3	2	2	4	3	3	3	23
16	3	4	4	3	2	2	3	1	22
17	3	3	3	2	1	1	1	1	15
18	1	1	1	3	2	1	0	0	09
19	1	2	2	1	1	2	0	0	09
20	0	0	0	0	0	0	1	1	02
21	1	2	2	3	5	3	4	5	25
22	5	4	4	4	3	3	3	3	29
23	3	4	4	3	3	3	2	1	23
24	3	2	2	3	2	3	0	5	20
25	7	7	7	7	7	5	3	4	47
26	3	1	3	2	1	2	2	2	16
27	4	3	4	3	2	5	4	5	30
28	4	5	5	5	3	1	3	4	30
29	4	6	4	4	3	4	3	5	33
30	4	2	4	3	4	2	2	2	23

GNANGARA

MAGNETIC K-INDICES - APRIL 1979

Range for lower limit of K = 9 is 450 nT

Day	K-Indices								K-Sum
01	4	3	2	4	4	4	2	5	28
02	6	4	3	3	3	4	4	3	30
03	3	2	3	3	2	5	5	5	28
04	5	3	4	3	5	2	2	1	25
05	4	4	4	5	5	5	3	2	32
06	3	3	3	2	2	2	2	2	19
07	3	2	3	3	1	2	2	2	18
08	3	2	2	2	2	2	4	4	21
09	4	3	2	2	1	1	1	1	15
10	2	3	3	2	3	3	3	2	21
11	1	1	1	1	1	2	1	1	09
12	1	3	3	2	2	3	2	3	19
13	3	3	3	1	3	2	2	3	20
14	3	2	2	2	1	3	3	4	20
15	4	2	2	2	3	3	2	3	21
16	4	3	3	2	2	2	2	2	20
17	3	2	3	3	2	1	2	1	17
18	2	1	2	2	1	1	2	2	13
19	2	2	2	1	1	3	1	1	13
20	1	0	0	0	0	0	1	1	03
21	1	1	2	3	4	3	4	4	22
22	5	3	4	4	3	4	5	4	32
23	4	4	3	3	3	3	2	2	24
24	3	2	3	2	2	3	2	4	21
25	7	6	6	7	6	5	5	5	47
26	3	2	3	2	1	2	3	3	19
27	5	4	3	3	3	4	4	5	31
28	4	4	4	5	3	3	4	5	32
29	4	4	4	4	4	4	4	5	33
30	3	3	3	4	4	2	2	3	24

TOOLANGI

MAGNETIC K-INDICES - APRIL 1979

Range for lower limit of K = 9 is 500 nT

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

MACQUARIE ISLAND

MAGNETIC K-INDICES - APRIL 1979

Range for lower limit of K = 9 is 1500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	4	5	3	6	6	4	3	4	35
02	4	5	4	5	5	5	3	3	34
03	2	1	2	1	1	8	8	6	29
04	4	5	6	7	7	2	2	1	34
05	3	3	4	5	6	5	5	2	33
06	4	2	4	2	1	4	1	1	19
07	1	1	2	4	0	1	2	2	13
08	2	1	1	4	3	1	3	2	17
09	2	3	1	1	0	0	1	1	09
10	0	3	4	4	4	4	1	1	21
11	0	1	1	1	4	3	0	1	11
12	1	3	2	4	2	2	2	2	18
13	1	2	3	2	5	3	2	2	20
14	2	2	1	3	2	4	3	3	20
15	2	2	1	3	4	4	2	2	20
16	3	4	3	3	4	1	2	1	21
17	2	2	3	5	4	1	1	1	19
18	1	1	1	2	0	0	0	1	06
19	1	2	1	0	0	3	1	0	08
20	0	0	0	0	0	0	0	0	00
21	1	1	2	2	6	6	5	4	27
22	4	4	4	7	5	7	6	3	40
23	4	4	5	6	5	6	3	1	34
24	3	2	3	5	4	4	1	1	23
25	6	6	7	8	7	6	6	4	50
26	2	1	1	1	0	1	4	3	13
27	2	3	4	6	5	7	6	5	38
28	4	4	5	5	5	6	3	3	35
29	4	6	6	7	6	6	5	3	43
30	3	4	5	7	6	3	2	1	31

MAWSON

MAGNETIC K-INDICES - APRIL 1979

Range for lower limit of K = 9 is 1500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	5	5	4	5	5	4	3	7	38
02	7	4	5	3	4	6	5	5	39
03	5	5	5	3	2	6	5	7	38
04	5	5	5	5	5	2	3	5	35
05	5	5	5	6	5	6	4	4	40
06	4	5	5	3	3	3	4	6	33
07	3	5	4	4	2	2	4	6	30
08	5	4	3	1	2	3	5	6	29
09	5	4	2	1	2	1	1	2	18
10	2	4	4	3	4	4	2	4	27
11	2	2	2	1	1	3	1	3	15
12	4	4	4	3	3	2	3	5	28
13	4	3	3	2	3	3	3	4	25
14	2	4	3	3	2	4	3	7	28
15	3	4	4	4	3	3	3	4	28
16	3	6	4	3	1	2	3	2	24
17	5	3	5	2	3	1	6	6	31
18	4	3	2	3	2	1	4	5	24
19	4	4	3	2	1	3	3	4	24
20	2	2	1	1	0	0	1	3	10
21	2	3	2	2	4	4	4	5	26
22	6	4	4	4	4	5	5	5	37
23	5	6	5	4	3	5	5	4	37
24	6	6	5	3	2	3	4	5	34
25	8	7	7	6	5	4	7	7	51
26	5	5	2	2	1	1	5	6	27
27	6	6	4	3	3	5	6	5	38
28	6	5	6	4	3	4	6	7	41
29	6	6	6	4	3	6	6	8	45
30	6	6	5	4	5	3	5	5	39

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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	25	45	ssc*	-1.3*	+14	+7	2	(1)	6	7	110	50	02	22
	03	10	01	ssc	+0.3	+14	+11	3	(8)	6	8	190	50	04	17
	05	01	55	ssc*	-0.5*	+42	+42	5	(4)	7	6	190	160	06	03
	21	02	..	...	..	..	..	21	(5,8)	5	7	170	60	23	16
									22 (1)						
	24	23	57	ssc*	-1.3*	+55	+44	25	(1,2,3,4,5)	7	10	370	130	28	15
	29	03	..	...	..	..	..	29	(2)	6	7	100	60	30	15
GNANGARA	01	21	50	ssc*	-4.9*	-17*	+16*	02	(1)	6	23	120	100	02	23
	03	10	01	ssc*	+1.6	+17*	+6	03	(6,7,8)	5	23	200	170	04	14
								04	(1,5)						
	05	01	56	ssc*	-11.5*	+27*	-41*	05	(4,5,6)	5	28	110	130	05	19
	21	02	..	...	..	..	..	22	(1,7)	5	15	120	110	23	21
TOOLANGI	24	23	58	ssc*	-11.3*	-32*	-44*	25	(1,4)	7	34	280	250	26	12
	01	21	51	ssc*	-38*	-25	0	02	(1)	6	13	155	45	02	22
	03	10	02	ssc	+0.9	+19	+4	03	(7,8)	6	37	260	90	04	13
								04	(5)	6					
	05	01	56	ssc*	-4*	+9	+10	05	(4)	6	15	140	50	05	19
	21	09	..	...	..	..	..	21	(8)	5	22	140	40	23	17
								22	(4)	5					
	24	22	..	...	..	..	..	25	(5)	7	54	250	155	26	00

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	o	'	nT	nT
PORT MORESBY	35988	06	26.4E	-23583	43027
GNANGARA	23448	03	16.4W	-53622	58525
CANBERRA	23840	12	03.4E	-53784	58831
TOOLANG	22061	11	02.8E	-56303	60471
MACQUARIE I	12743	28	18.5E	-63819	65079
MAWSON	18413	62	57.6W	-46916	50400
DAVIS	16837	76	09.1W	-52883	55499
CASEY	9588	89	35.3W	-64517	65226

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	2145	+14	+13*	+ 7
	03	ssc* A	1001	+14	+ 3	+11
	05	ssc* A	0155	+42	- 5*	+42
	24	ssc* A	2357	+55	-14*	+44
GNANGARA	01	ssc* B	2150	-17*	+55*	+16*
	03	ssc* B	1001	+17*	+11	+6
	05	ssc* A	0156	+27*	-79*	-41*
	24	ssc* A	2358	-32*	-77*	-44*
TOOLANG	01	ssc* B	2151	-25	-25*	0
	03	ssc* B	1002	+19	+ 6	+ 4
	05	ssc* B	0156	+ 9	-26*	+10