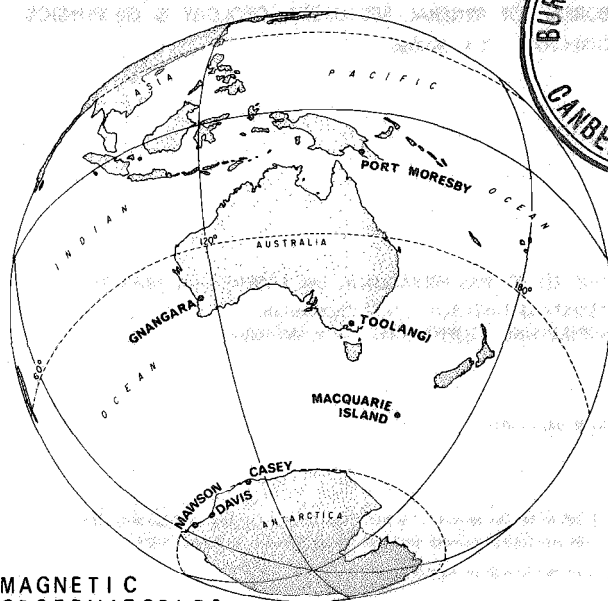
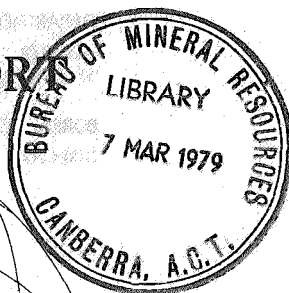




BUREAU OF MINERAL RESOURCES.
GEOLOGY & GEOPHYSICS

GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC
OBSERVATORIES

Volume 26, No. 9

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MINISTER: The Hon. K.E. Newman M.P.

SECRETARY: A. Woods

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DIRECTOR: L.C. Noakes

THIS REPORT WAS PREPARED IN THE GEOPHYSICAL BRANCH

ASSISTANT DIRECTOR: N.G. Chamberlain

SUPERVISING GEOPHYSICIST: P.M. McGregor

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1978-1979 ANARE REPORT

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The observers at Casey and Davis are physicists of the Antarctic Division (Department of Science) 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 geophysical observatory at Port Moresby, Papua New Guinea was transferred to that country's Geological Survey on 1 July 1978. Geomagnetic data will continue to be published in this Report series.

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 GROUP
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°
TOOLANGI	M.W. McMullan	37°32'S	145°28'E	-46.7°	220.8°
MACQUARIE I	P.M. Davies	54°30'S	158°57'E	-61.1°	243.1°
MAWSON	J.J. Petkovic	67°36'S	62°53'E	-73.1°	102.9°
DAVIS		68°35'S	77°58'E	-76.7°	119.9°
CASEY	R. Morris	66°17'S	110°32'E	-77.8°	179.1°

MAGNETOGRAPHS

OBSERVATORY	TYPE	NOMINAL SCALE VALUES								
		NORMAL			SENSITIVE			RAPID RUN		
		D	H	Z	D	H	Z	D	H	Z

PORT MORESBY	La Cour	½	2½	3½						
GNANGARA	Eschenhagen	1	2½	5½						
TOOLANGI	La Cour	1	4½	5						
MACQUARIE I	La Cour	2½	19½	21				1	5½	6
MAWSON	La Cour	2½	21	22	1	10	10			

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

MAGNETOMETERS

*Absolute data are based on control observations made with QHM's BMZ's
 Askania Declinometers and Proton Precession Magnetometers
 Errors in preliminary values are not likely to exceed ±5 nT or 0.5 minutes*

P O R T M O R E S B Y

MAGNETIC K-INDICES - SEPTEMBER 1978

Range for lower limit of K=9 is 300 nT

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

G N A N G A R A
MAGNETIC K-INDICES - SEPTEMBER 1978
Range for lower limit of K=9 is 350 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	3	3	4	4	3	3	2	4	26
02	3	2	4	2	4	2	4	4	25
03	3	2	2	2	3	4	2	2	20
04	2	2	3	2	1	2	2	2	16
05	1	1	1	1	2	1	2	2	11
06	2	2	4	4	3	2	1	0	18
07	1	1	1	1	1	2	2	3	12
08	4	3	4	3	1	1	1	3	20
09	3	4	4	6	5	4	4	3	33
10	4	2	2	3	3	2	1	1	18
11	1	1	1	2	5	5	3	3	21
12	2	2	3	3	5	3	3	2	23
13	3	0	2	2	1	2	2	2	14
14	3	1	1	1	1	0	1	1	09
15	0	1	1	0	0	0	1	1	04
16	2	3	1	1	1	2	2	3	15
17	2	3	3	2	1	0	0	1	12
18	0	1	1	0	1	0	1	0	04
19	1	0	0	0	1	0	0	0	02
20	0	0	1	1	1	0	1	2	06
21	2	2	3	2	1	2	1	1	14
22	3	2	3	2	3	4	3	3	23
23	2	1	2	2	4	3	3	2	19
24	2	1	2	1	1	3	3	4	17
25	3	2	4	5	5	5	4	4	32
26	3	4	6	5	4	5	4	4	35
27	5	5	4	4	4	4	5	5	36
28	5	5	4	5	5	4	4	5	37
29	4	6	7	8	8	6	4	4	47
30	2	4	4	3	1	2	2	3	21

T O O L A N G I

MAGNETIC K-INDICES - SEPTEMBER 1978

Range for lower limit of K=9 is 500 nT

Day	K-Indices										K-Sum
01	3	2	4	4	3	2	2	3		23	
02	2	2	4	3	4	2	4	2		23	
03	2	3	3	2	2	2	1	1		16	
04	2	2	3	3	1	1	1	1		14	
05	1	1	2	1	2	1	2	2		12	
06	2	3	5	5	3	1	0	0		19	
07	0	2	1	2	1	1	2	2		11	
08	3	3	3	2	1	1	1	2		16	
09	4	4	4	6	5	4	3	3		33	
10	2	3	2	3	3	2	1	2		18	
11	1	1	1	2	4	4	2	2		17	
12	1	2	3	3	4	3	2	2		20	
13	1	1	2	3	1	2	2	1		13	
14	2	1	2	1	1	0	0	1		08	
15	0	1	1	2	1	0	0	1		06	
16	1	2	1	0	1	1	2	2		10	
17	1	3	3	2	1	0	0	1		11	
18	0	1	1	0	2	0	0	0		04	
19	1	0	1	0	1	1	1	0		05	
20	1	1	1	0	1	0	2	3		09	
21	2	3	4	2	1	2	1	1		16	
22	2	2	2	1	3	3	3	2		18	
23	1	2	2	1	3	3	2	1		15	
24	2	2	2	1	1	3	2	3		16	
25	2	3	3	5	5	4	3	3		28	
26	2	4	6	5	3	5	4	3		32	
27	5	4	3	4	4	3	5	5		33	
28	4	4	4	5	5	2	3	4		31	
29	3	5	6	7	7	5	2	1		36	
30	2	4	3	2	2	2	2	2		19	

MACQUARIE ISLAND

MAGNETIC K-INDICES - SEPTEMBER 1978

Range for lower limit of K=9 is 1500 nT

Day	K-Indices										K-Sum
01	3	3	5	6	5	3	3	2		30	
02	2	3	5	5	4	2	5	2		28	
03	2	-	5	5	3	4	1	2		--	
04	-	-	-	-	-	-	-	-		--	
05	-	-	-	-	-	-	-	-		--	
06	-	4	6	6	5	-	-	-		--	
07	0	1	0	3	1	1	1	2		09	
08	5	4	5	1	0	0	1	1		17	
09	3	3	4	7	5	6	3	2		33	
10	3	2	1	3	5	1	0	1		16	
11	1	1	0	1	7	7	2	2		21	
12	2	2	4	5	6	5	4	2		30	
13	1	2	3	3	0	2	1	1		13	
14	2	1	0	0	0	0	0	0		03	
15	0	0	0	2	1	0	0	1		04	
16	0	2	2	0	0	0	1	1		06	
17	1	3	5	1	0	0	0	0		10	
18	0	1	0	0	2	0	0	0		03	
19	0	0	0	0	0	0	0	0		00	
20	0	0	0	0	0	0	0	1		01	
21	2	5	4	1	2	1	0	2		17	
22	1	2	5	2	5	4	4	1		24	
23	2	2	3	4	4	3	1	1		20	
24	2	3	4	0	2	3	1	3		18	
25	2	4	5	7	7	6	4	3		38	
26	3	6	8	6	5	7	4	4		43	
27	4	5	4	6	4	6	6	6		41	
28	4	4	6	6	7	4	5	5		41	
29	4	7	7	8	7	7	4	2		46	
30	2	4	6	4	1	2	1	1		21	

M A W S O N

MAGNETIC K-INDICES - SEPTEMBER 1978

Range for lower limit of K=9 is 1500 nT

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
01	3	4	6	4	3	3	4	6	33
02	3	3	4	3	4	4	6	7	34
03	4	4	4	4	3	3	6	5	33
04	5	4	3	2	2	3	7	5	31
05	4	3	3	1	2	3	4	3	23
06	5	4	6	4	2	2	2	3	28
07	1	3	2	2	1	1	2	3	15
08	6	6	4	2	1	1	2	2	24
09	3	4	3	4	4	5	6	7	36
10	6	3	2	3	3	2	3	5	27
11	3	2	1	2	3	5	6	5	27
12	3	5	4	4	3	4	4	4	31
13	5	4	3	2	2	3	2	3	24
14	4	3	2	1	1	1	1	2	15
15	1	1	2	2	1	1	1	5	14
16	4	5	5	1	1	1	2	5	24
17	3	5	5	2	1	1	2	4	23
18	1	2	1	2	1	1	2	4	14
19	3	2	1	1	1	1	1	3	13
20	2	3	1	1	1	1	2	5	16
21	2	6	5	2	2	2	1	1	21
22	2	3	3	2	3	5	5	4	27
23	2	4	3	3	3	4	3	5	27
24	4	4	4	2	3	3	4	6	30
25	4	6	6	7	6	6	4	4	43
26	3	5	7	6	4	5	5	6	41
27	7	7	5	4	3	6	7	7	46
28	6	5	6	6	5	4	6	8	46
29	6	7	7	6	5	5	4	4	44
30	2	4	5	3	2	2	5	4	27

SEPTEMBER 1978
PRINCIPAL MAGNETIC STORMS

OBSERVATORY	COMMENCEMENT			SSC - AMPLITUDES			MAX 3h - INDEX K		RANGES			UT END
	DAY	h min (UT)	TYPE	D (°)	H (nT)	Z (nT)	DAY (3h-PERIOD)	K	D (°)	H (nT)	Z (nT)	DAY h
PORT MORESBY	05	18 58	ssc	+0.3	+12	+10	06 (2)	5	10	145	80	06 18
	09	02 ..	...	..	..	..	09 (1,3,4,5)	5	6	150	100	11 00
	25	07 17	ssc	+0.3	+4	+5	25 (4)	6	11	150	70	29 03
	29	03 01	ssc	+0.3	+44	+33	29 (3)	8	10	360	140	30 15
GNANGARA	09	02 ..	..				09 (4)	6	16	80	120	10 19
	11	09 00	ssc	+0.8	+7	+5	12 (5)(6)	5	13	70	90	13 02
							12 (5)					
	25	07 17	ssc*	+1.4	-7*	+5	25 (4,5,6,)	5	20	80	110	26 00
	26	01 07	ssc*	+2.0	+5*	+5	26 (3)	6	20	140	130	29 00
TOOLANGI	29	03 01	ssc*	-11.0*	+22*	-32*	29 (4,5)	8	50	230	290	29 19
	05	18 59	ssc	-0.4	+9	+3	6(3,4)	5	17	100	50	06 15
	09	01 ..	..	..	..	..	9 (4)	6	21	140	150	10 18
	25	06 ..	..	..	..	..	26 (3)	6	32	170	70	29 02
	29	03 01	ssc*	-5.4	+41	+5	29 (4,5)	7	42	310	200	29 19

SEPTEMBER 1978
PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	°	nT	nT
PORT MORESBY	35994	6 25.4E	-23546	43852
GNANGARA	23474	3 15.6W	-53600	58515
TOOLANGI	22089	11 00.6E	-56300	60478
MACQUARIE I	12766	28 13.5E	-63829	65093
MAWSON	18416	62 51.1W	-46968	50449
DAVIS		not available		
CASEY	9533	88 57.8W	-64597	65297

*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	05	ssc	A	1858	+12	+3	+10
	25	ssc	B	0717	+4	+3	+5
	29	ssc	A	0301	+44	+3	+33
GNANGARA	05	ssc	B	1859	+12	+9	+8
	11	ssc	B	0900	+7	+5	+5
	25	ssc*	B	0717	+7*	+9	+5
	29	ssc*	B	0301	+22*	-75	-32*
TOOLANGI	05	ssc	B	1859	+9	-2	+3
	29	ssc*	B	0301	+41*	-35*	+5