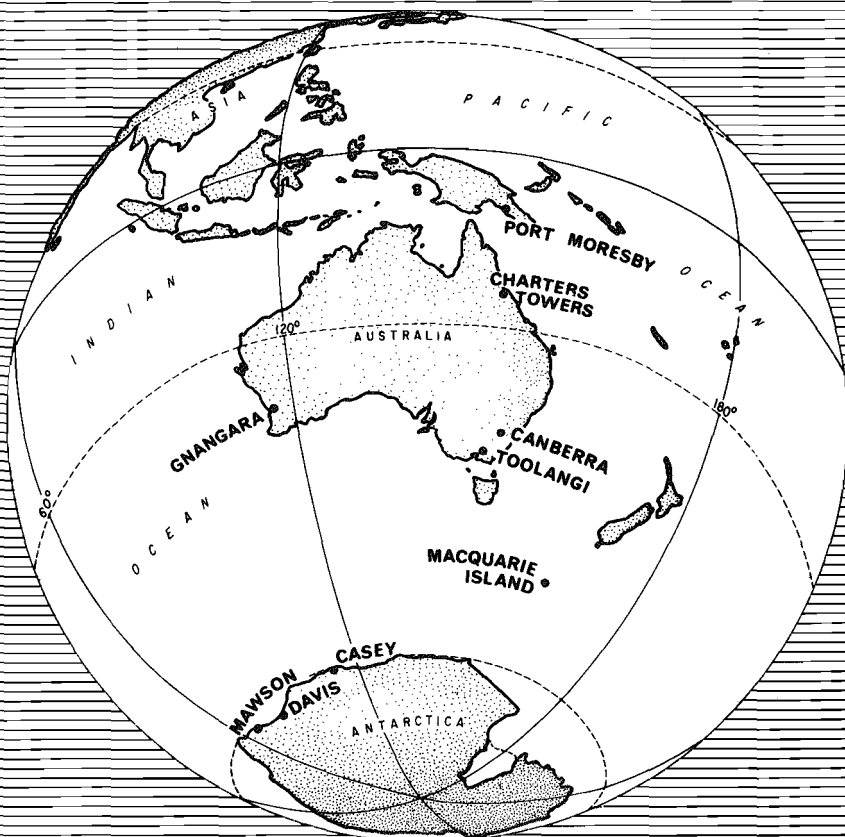


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GEOFYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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VOLUME 33 No. 4

APRIL 1985

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF RESOURCES AND ENERGY

Minister: Senator The Hon. Gareth Evans

SECRETARY: A J Woods

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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ISSN 0433-5015



Published for the Bureau of Mineral Resources,
Geology and Geophysics by the Australian Government
Publishing Service.

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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 of 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	<u>GEOGRAPHIC</u>		<u>GEOMAGNETIC</u>	
		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
MACQUARIE I	W.P. Barnaart	54 30'S	158 57'E	-61.1	243.1
MAWSON	P.J. Kelsey	67 36'S	62 53'E	-73.1	102.9
DAVIS	R. Morris	68 35'S	77 58'E	-76.7	119.9
CASEY	J. Smart	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)			
MACQUARIE I	MCQ	Photo-electronic magnetometer (D1/0.1)			
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.

PORT MORESBY

MAGNETIC K-INDICES - APRIL 1985

Range for lower limit of K = 9 is 300 nT.

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	2	2	2	3	5	3	3	2	22
02	2	3	2	3	3	2	2	2	19
03	4	2	2	3	2	2	2	2	19
04	2	2	2	3	2	3	2	1	17
05	1	2	1	2	3	1	1	1	12
06	1	1	2	2	1	1	1	1	10
07	1	1	3	3	2	2	1	1	14
08	1	1	1	1	2	3	3	3	15
09	2	4	4	5	5	4	3	1	28
10	1	3	2	4	3	2	2	3	20
11	3	3	2	2	2	3	1	1	17
12	2	1	2	1	2	2	2	1	13
13	1	1	2	1	2	2	2	2	13
14	2	2	2	2	3	2	1	1	15
15	1	2	1	2	2	1	1	2	12
16	2	2	2	3	2	2	1	2	16
17	2	2	2	1	1	1	1	1	11
18	1	1	2	2	1	1	1	2	11
19	3	3	4	3	4	3	3	3	26
20	2	5	7	5	3	3	4	5	34
21	5	6	5	5	4	5	4	3	37
22	3	3	3	3	3	2	2	2	21
23	3	2	3	2	3	3	2	2	20
24	3	4	4	2	2	1	1	1	18
25	4	4	3	3	3	2	2	2	23
26	4	4	4	5	2	3	3	3	28
27	4	4	4	5	4	3	2	4	30
28	3	5	6	6	3	3	3	2	31
29	2	6	3	1	3	2	1	2	20
30	2	1	2	5	7	5	4	3	29

Mean of K-Sum is 20.0

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	53	86	57	23	15	4	2	0	0	0

GNANGARAMAGNETIC K-INDICES - APRIL 1985Range for lower limit of K = 9 is 450 nT.

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

Mean of K-Sum is 18.3

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	18	61	69	44	26	16	6	0	0	0	0

CANBERRAMAGNETIC K-INDICES - APRIL 1985Range for lower limit of K = 9 is 450 nT.

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	1	2	3	3	5	4	3	2	23
02	2	3	3	2	2	3	2	1	18
03	3	2	2	3	1	2	3	2	18
04	1	2	3	3	2	3	2	1	17
05	1	2	0	2	3	0	0	1	09
06	0	0	1	2	1	0	0	0	04
07	0	1	3	3	2	2	0	0	11
08	0	0	1	2	0	2	3	3	11
09	3	3	4	5	6	5	3	0	29
10	0	2	2	4	4	3	1	1	17
11	2	2	1	1	1	3	0	0	10
12	1	1	2	0	1	1	1	0	07
13	0	1	1	1	1	1	1	2	08
14	1	2	2	1	3	1	1	0	11
15	0	1	0	1	1	0	0	0	03
16	0	1	1	3	3	1	0	1	10
17	0	1	1	0	1	0	0	1	04
18	1	0	0	0	0	0	0	0	01
19	1	1	3	2	4	4	4	3	22
20	2	4	6	4	2	3	5	5	31
21	5	4	7	5	4	5	4	2	36
22	1	1	2	3	3	2	1	1	14
23	1	1	2	2	2	2	2	1	13
24	2	3	4	3	1	1	1	0	15
25	3	4	3	4	4	1	1	1	21
26	3	4	4	4	1	2	2	3	23
27	2	3	4	4	4	3	1	4	25
28	3	4	5	6	4	2	2	1	27
29	2	5	3	0	2	1	1	0	14
30	1	0	1	4	6	3	3	2	20

Mean of K-Sum is 15.7

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	44	65	48	42	26	10	4	1	0	0	0

MAWSON

MAGNETIC K-INDICES - APRIL 1985

Range for lower limit of K = 9 is 1500 nT.

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	3	3	3	4	5	5	6	5	34
02	2	5	4	4	4	5	7	5	36
03	7	4	4	3	3	6	7	5	39
04	3	5	5	5	3	4	7	6	38
05	3	4	2	3	3	2	1	4	22
06	3	2	2	4	3	2	6	6	28
07	2	5	4	3	3	3	3	2	25
08	2	2	3	2	2	2	7	7	27
09	6	4	6	4	6	6	4	4	40
10	2	4	4	4	3	2	4	5	28
11	6	6	5	2	1	3	2	4	29
12	4	3	4	2	2	2	2	2	21
13	2	2	2	2	2	2	3	6	21
14	5	5	5	3	3	3	2	5	31
15	2	2	2	2	1	1	2	5	17
16	3	2	2	2	2	3	2	6	22
17	4	2	3	1	1	2	3	5	21
18	4	3	2	1	1	2	1	1	15
19	2	5	4	4	4	4	5	7	35
20	4	6	6	4	3	5	6	7	41
21	9	8	5	5	5	5	6	7	50
22	4	3	4	5	3	3	2	3	27
23	6	5	5	4	3	4	3	2	32
24	5	5	6	4	3	8	-	-	--
25	-	-	5	3	4	3	5	5	--
26	4	6	6	5	3	4	6	7	41
27	6	7	6	5	4	5	6	7	46
28	7	6	6	5	4	3	4	4	39
29	4	7	3	2	3	3	3	2	27
30	2	1	2	4	6	5	3	3	26

Mean of K-Sum is 30.6,

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	11	50	47	44	39	28	14	2	1	4

APRIL 1985
PRINCIPAL MAGNETIC STORMS

OBSERVATORY	COMMENCEMENT				SSC			AMPLITUDES		MAX 3h K-INDEX		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	20	03	11	ssc	-0,3	+17	+12			20(3)	7	8	240	70	22	00
	26	02	..	...	..	..	..			28(3,4)29(2)	6	4	180	70	29	07
	30	09	23	ssc	+0,5	+30	+24			30(05)	7	6	170	90	01	00
Charters Towers	08	16	..	...	..	..	..			09(5)	6	11,2	116	28	09	18
	20	03	11	ssc*	-0,4	+14*	-			20(3)	7	14,4	236	39	21	20
	27	21	..	...	..	..	..			28(3,4)	6	8,8	144	24	28	15
	30	09	23	ssc*	-0,7*	+31	-3			30(5)	7	8,9	158	22	30	21
Gnangara	19	08	..	...	..	..	..			20(7)	6	27	260	240	21	20
										21(3)						
	26	02	..	...	..	..	..			28(4)	6	22	150	150	28	16
	30	09	23	ssc*	+4,2	+24*	+18			30(5)	6	17	180	(240)	30	22
Canberra	09	05	..	...	..	..	..			09(5)	6	23,9	155	48	09	19
	20	03	11	ssc*	-2,2	+29*	+9*			21(3)	7	39,9	218	92	21	21
	27	22	..	...	..	..	..			28(4)	6	21,2	140	64	28	18
	30	09	24	ssc*	-1,3*	+35*	+8			30(5)	6	24,2	156	61	30	21

APRIL 1985
PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35942	06° 34.1'E	-23715	43061
CHARTERS TOWERS	31787	07° 42.8'E	-38273	49752
GNANGARA	23264	03° 18.4'W	-53769	58586
CANBERRA	23713	12° 19.8'E	-53725	58725
MACQUARIE I	12659	29° 10.6'E	-63643	64890
MAWSON	18450	63° 40.1'W	-46362	49898
DAVIS	16634	76° 42 'W	-52266	54849
CASEY	9627	90° 47 '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	20	ssc B	03.11	+17	-3	+12
	30	ssc B	09.23	+30	+5	+24
CHARTERS TOWERS	20	ssc* B	03.11	+14*	-4	-
	30	ssc* B	09.23	+31	-6*	-3
GNANGARA	30	ssc* B	09.23	+24*	+29	+18
CANBERRA	20	ssc* B	03.11	+29*	-15	+9*
	30	ssc* B	09.24	+35*	-9*	+8

GEOPHYSICAL OBSERVATORY REPORT VOLUME 33 No. 4 APRIL 1985

Cat. No. 85 1623 3

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