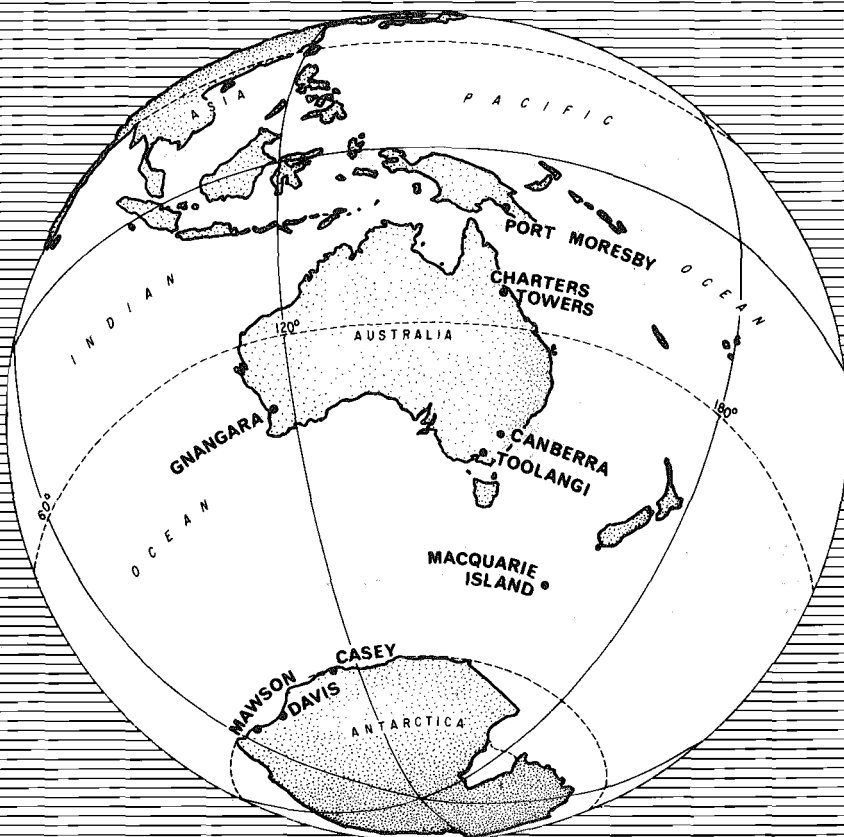




GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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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
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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	-18.2	219.6
CHARTERS TOWERS	J.M. Millican	20 05'S	146 15'E	-28.8	220.2
GNANGARA	P.J. Gregson	31 47'S	115 57'E	-42.9	187.8
CANBERRA	P.A. Hopgood	35 19'S	149 22'E	-43.5	226.4
MACQUARIE I	R. Lachal	54 30'S	158 57'E	-60.6	244.6
MAWSON	R. Hutchinson	67 36'S	62 53'E	-73.3	105.9
DAVIS	R.G. McLoughlin	68 35'S	77 58'E	-76.9	123.5
CASEY	B. Martin	66 17'S	110 32'E	-77.5	182.4

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	Photo-electronic magnetometer (D1/0.1)			

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.

NEW MAGNETIC OBSERVATORY AT LEARMONTH, NW AUSTRALIA

A new magnetic observatory is scheduled to come into operation in 1986 at Learmonth on North-West Cape, Western Australia, overlooking Exmouth Gulf. The geographic co-ordinates are latitude $22^{\circ}13'$ south, longitude $114^{\circ}6'$ east. The 3-letter code for the observatory is LRM.

The new observatory is a joint project between the Bureau of Mineral Resources, Geology and Geophysics (BMR) of the Australian Department of Resources and Energy, and the Ionospheric Prediction Service (IPS) of the Australian Department of Science.

The observatory will be situated within the area of the Learmonth Solar Observatory which is jointly operated by the Australian Department of Science and the United States Air Force.

An EDA 3-axis fluxgate magnetometer will be used to measure variations in X, Y and Z which will be recorded digitally each minute. Absolute observations of D, I and F will be performed semi-weekly using a fluxgate theodolite and a proton precession magnetometer.

The data will be reduced by the BMR and published in the Geophysical Observatory Report.

PORT MORESBY

MAGNETIC K-INDICES - FEBRUARY 1986

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

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	2	1	1	1	2	2	2	2	13
02	2	2	1	2	2	2	2	1	14
03	2	2	2	1	2	2	3	2	16
04	1	2	2	1	2	2	1	1	12
05	2	2	2	3	3	2	2	2	18
06	1	1	2	3	5	4	3	3	22
07	3	4	4	6	4	6	5	5	37
08	5	5	5	6	6	6	6	7	46
09	6	6	6	5	5	7	5	4	44
10	3	2	2	1	1	2	3	4	18
11	3	3	2	3	3	5	3	3	25
12	2	3	3	4	3	3	3	2	23
13	2	2	3	3	3	2	3	3	21
14	2	2	2	3	3	3	4	4	23
15	4	4	2	1	1	1	2	1	16
16	1	1	1	1	1	1	3	4	13
17	4	3	3	2	1	2	2	3	20
18	3	3	3	2	2	2	2	4	21
19	2	2	2	3	2	2	3	2	18
20	2	2	3	4	4	4	3	3	25
21	2	3	3	5	4	2	2	5	26
22	3	4	4	3	4	4	3	3	28
23	3	4	3	4	3	3	3	2	25
24	2	3	2	4	4	3	2	2	22
25	3	3	2	3	3	3	2	2	21
26	2	2	3	4	3	5	3	3	25
27	3	3	3	3	2	2	2	3	21
28	2	2	3	2	3	3	3	2	20

Mean of K-Sum is 22.6

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	25	77	71	27	13	9	2	0	0	0

GNANGARA

MAGNETIC K-INDICES - FEBRUARY 1986

Range for lower limit of K = 9 is 450 nT.

DAY	K-INDICES								K-SUM
01	2	2	2	1	2	3	1	2	15
02	2	2	2	1	2	2	2	2	15
03	1	2	2	1	2	1	2	2	13
04	1	2	4	2	2	3	2	1	17
05	2	1	1	2	2	2	2	2	14
06	1	1	4	2	3	4	3	4	22
07	2	4	3	5	6	6	5	7	38
08	6	5	5	6	8	7	7	8	52
09	7	6	5	4	4	7	5	4	42
10	2	1	1	1	1	1	3	2	12
11	2	2	1	3	4	4	4	4	24
12	3	2	3	3	3	4	4	2	24
13	2	2	2	2	3	2	3	4	20
14	2	2	1	2	3	3	3	4	20
15	2	2	2	1	1	1	1	1	11
16	1	1	1	1	1	1	3	3	12
17	3	2	1	2	1	2	1	2	14
18	2	2	2	1	2	2	0	1	12
19	2	1	2	3	2	1	1	1	13
20	2	2	2	2	3	4	4	2	21
21	3	3	3	4	4	2	3	4	26
22	2	3	4	3	4	4	3	3	26
23	3	3	3	3	4	4	4	2	26
24	2	2	2	3	4	2	2	3	20
25	2	2	2	3	3	3	3	3	21
26	2	1	3	3	4	5	3	3	24
27	3	3	2	4	2	2	3	2	21
28	2	2	2	3	3	4	4	2	22

Mean of K-Sum is 21.3

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	40	83	49	32	7	5	5	2	0	0

CANBERRA

MAGNETIC K-INDICES - FEBRUARY 1986

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

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	1	0	0	1	2	3	1	2	10
02	2	1	2	2	3	1	1	1	13
03	1	2	2	1	1	1	2	2	12
04	1	2	1	1	2	1	0	1	09
05	1	2	1	2	2	2	1	2	13
06	0	0	2	1	4	3	2	3	15
07	2	4	4	4	5	6	5	6	36
08	4	4	6	5	7	7	8	8	49
09	8	5	5	4	4	6	5	3	40
10	2	1	2	1	1	1	3	3	14
11	2	2	1	4	4	4	3	3	23
12	2	2	3	3	3	3	3	3	22
13	2	2	2	3	3	2	3	3	20
14	2	2	1	2	2	3	3	3	18
15	2	2	2	1	1	0	1	1	10
16	1	1	1	0	0	0	2	3	08
17	3	2	0	2	1	2	1	2	13
18	2	2	2	1	2	2	1	3	15
19	2	2	2	2	2	1	1	1	13
20	1	2	2	2	3	4	3	2	19
21	2	2	3	4	3	2	2	3	21
22	2	3	3	3	4	4	2	3	24
23	3	3	3	4	3	3	3	2	24
24	1	3	2	4	3	3	2	2	20
25	3	2	2	3	3	3	3	3	22
26	1	2	3	4	3	5	3	3	24
27	2	3	3	4	2	1	1	1	17
28	2	2	2	4	3	3	2	2	20

Mean of K-Sum is 19.4

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	10	46	75	57	20	7	4	2	3	0	0

MAWSON

MAGNETIC K-INDICES - FEBRUARY 1986

Range for lower limit of K = 9 is 450 nT.

DAY	K-INDICES								K-SUM
01	-	-	-	1	3	3	5	4	--
02	3	3	3	2	2	2	5	2	22
03	3	3	3	2	2	2	1	5	21
04	3	3	2	1	2	2	2	0	15
05	2	2	1	1	3	3	2	5	19
06	3	3	2	1	3	4	3	6	25
07	4	5	5	7	6	8	7	8	50
08	5	7	7	5	8	7	9	8	56
09	8	7	6	4	6	7	5	6	49
10	3	4	3	3	3	2	3	3	24
11	3	-	-	-	-	5	5	6	--
12	5	5	5	4	3	5	7	6	40
13	4	5	3	3	3	3	5	6	32
14	6	6	4	2	3	4	3	3	31
15	4	4	2	2	1	3	1	2	19
16	3	2	2	1	1	2	2	3	16
17	3	3	2	3	1	2	2	6	22
18	5	3	3	3	2	4	3	6	29
19	5	3	2	2	4	3	3	3	25
20	5	5	4	3	4	5	4	6	36
21	5	5	6	6	3	4	6	7	42
22	6	6	6	4	4	5	6	6	43
23	6	6	6	5	5	5	6	5	44
24	3	5	4	4	4	3	6	6	35
25	6	5	4	4	4	3	5	6	37
26	5	5	5	5	5	7	5	5	42
27	5	6	5	5	3	3	4	6	37
28	4	5	4	4	4	6	7	6	40

Mean of K-Sum is 32.7

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	11	30	52	30	43	33	11	5	1	7

FEBRUARY 1986
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	06	13	11	ssc	+0.2	+28	+23	08(8);09(6)	7	14	370	30	10	03
Charters Towers	06	13	11	ssc	-	+33	-3	08(8)	8	25.0	375	75	09	20
Gnangara	06	13	12	ssc*	+0.7*	+21	+3*	8(5)	8	62	390	410	10	00
Canberra	06	13	11	ssc	-0.9	+36	+9	08(7,8),09(1)	8	78.7	582	213	09	24

FEBRUARY 1986
PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35926	06° 34.5'E	-23716	43048
CHARTERS TOWERS	31775	07° 44.3'E	-38273	49744
GNANGARA	23237	03° 16.7'W	-53791	58596
CANBERRA	23699	12° 21.6'E	-53719	58714
MACQUARIE I	12604	29° 18 'E	-63615	64852
MAWSON	18467	63° 47.4'W	-46318	49863
DAVIS	16683	76° 44 'W	-52228	54828
CASEY	9653	90° 05 'W	NOT AVAILABLE	

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	06	ssc B	13 12	+28	+2	+23
CHARTERS TOWERS	06	ssc A	13 11	+33	-	-3
	16	ssc B	18 38	+18	-6	-2
GNANGARA	06	ssc B	13 12	+21	+4*	+3*
CMBERRA	06	ssc B	13 11	+36	-6	+9
	16	ssc C	18 37	+17	-	+5

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