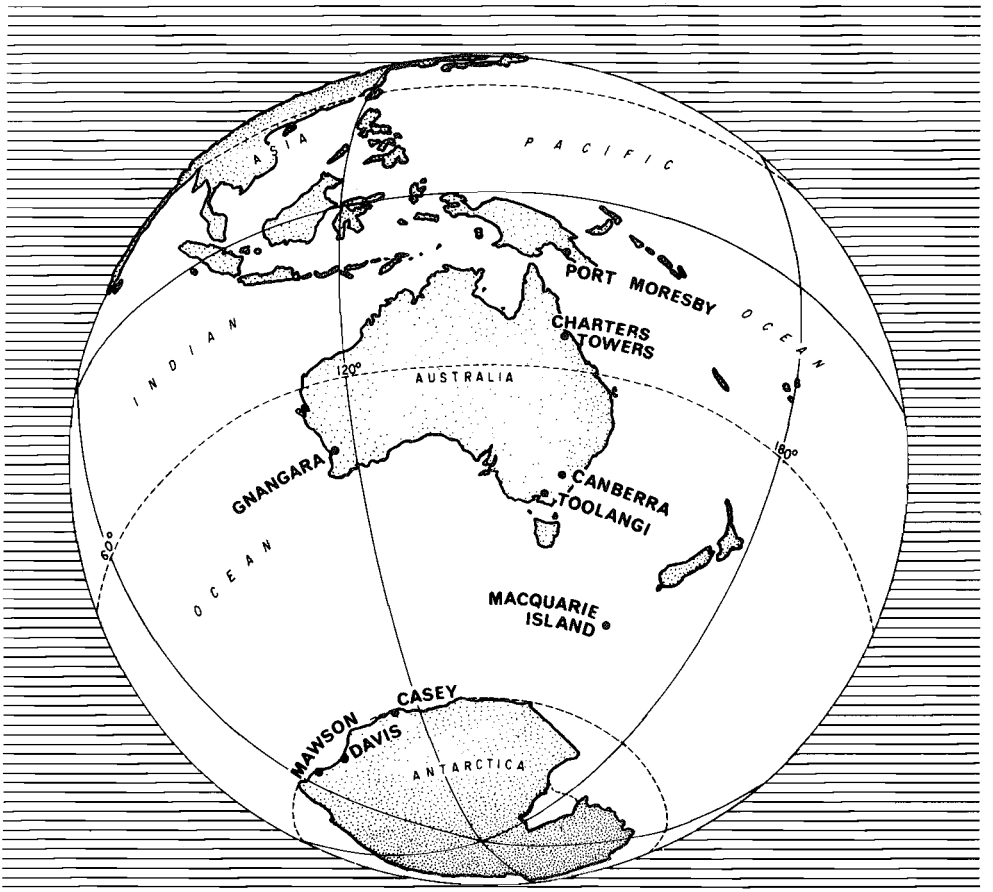
AUSTRALIA

GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

VOLUME 33 No. 11
NOVEMBER 1985

DEPARTMENT OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF RESOURCES AND ENERGY

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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	GEOGRAPHIC LAT	GEOGRAPHIC LONG	GEOMAGNETIC LAT	GEOMAGNETIC 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	B. Martin	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.

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°13' south, longitude 114°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 - NOVEMBER 1985

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

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

Mean of K-Sum is 18.0

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	57	98	54	24	6	0	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - NOVEMBER 1985

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

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

Mean of K-Sum is 17.8

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	10	55	93	47	24	8	3	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - NOVEMBER 1985

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

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

Mean of K-Sum is 15.4

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	31	60	81	40	21	5	2	0	0	0	0

MAWSON

MAGNETIC K-INDICES - NOVEMBER 1985

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

DAY	K-INDICES								K-SUM
01	4	3	3	4	4	5	6	5	34
02	3	4	3	3	5	4	7	6	35
03	5	5	4	5	4	6	5	6	40
04	5	6	4	3	3	6	5	5	37
05	4	2	2	4	3	4	5	4	28
06	4	5	3	3	3	4	4	4	30
07	4	5	3	3	3	2	3	4	27
08	4	3	2	1	1	2	5	5	23
09	3	4	2	3	4	4	6	3	29
10	5	4	4	4	5	3	3	7	35
11	3	3	3	4	3	3	4	5	28
12	3	2	3	2	2	2	3	4	21
13	4	4	3	3	5	3	6	5	33
14	6	5	3	3	4	4	5	6	36
15	5	5	3	5	4	3	6	6	37
16	5	5	3	3	3	3	3	6	31
17	2	3	3	3	4	6	6	3	30
18	5	5	5	2	4	4	5	6	36
19	4	4	2	3	3	3	5	5	29
20	2	2	2	1	2	2	3	4	18
21	4	3	2	1	2	2	3	4	21
22	6	5	3	2	3	2	4	3	28
23	3	4	2	1	2	2	2	5	21
24	3	2	2	2	3	2	3	5	22
25	5	3	2	3	2	1	2	5	23
26	4	5	4	3	2	3	4	3	28
27	3	6	4	5	6	6	5	3	38
28	3	4	3	4	2	2	3	4	25
29	3	3	3	3	4	5	6	6	33
30	7	6	6	4	5	4	6	4	42

Mean of K-Sum is 29.9

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	6	37	72	54	43	25	3	0	0	0

NOVEMBER 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	29	08	06	ssc	+0.4	+22	+19	29(7,8);30(3,4,5)	5	6	110	60	30	18
Charters Towers	29	08	05	ssc	+0.2	+26	-4	29(8);30(5)	6	10.4	160	50	30	18
Gnangara	29	08	05	ssc	2.2	18	13	29(7,8);30(1)	6	24	200	160	30	14
Canberra	29	08	06	ssc	+0.3	+30	+5	29(8);30(1)	6	20.6	220	53	30	18

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35940	06° 34.5'E	-23717	43060
CHARTERS TOWERS	31792	07° 43.7'E	-38274	49755
GNANGARA	23258	03° 17.4'W	-53777	58591
CANBERRA	23716	12° 20.9'E	-53715	58718
MACQUARIE I	12604	29° 10.4'E	-63590	64827
MAWSON	18466	63° 42.7'W	-46317	49863
DAVIS	16627	76° 37 'W	-52021	54614
CASEY	9649	90° 28 'W	-64066	64789

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	29	ssc B	08 06	+22	+ 4	+19
CHARTERS TOWERS	29	ssc B	08 05	+26	+ 2	- 4
GNANGARA	29	ssc B	08 05	+18	+15	+13
CANBERRA	29	ssc B	08 06	+30	+ 2	+ 5

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