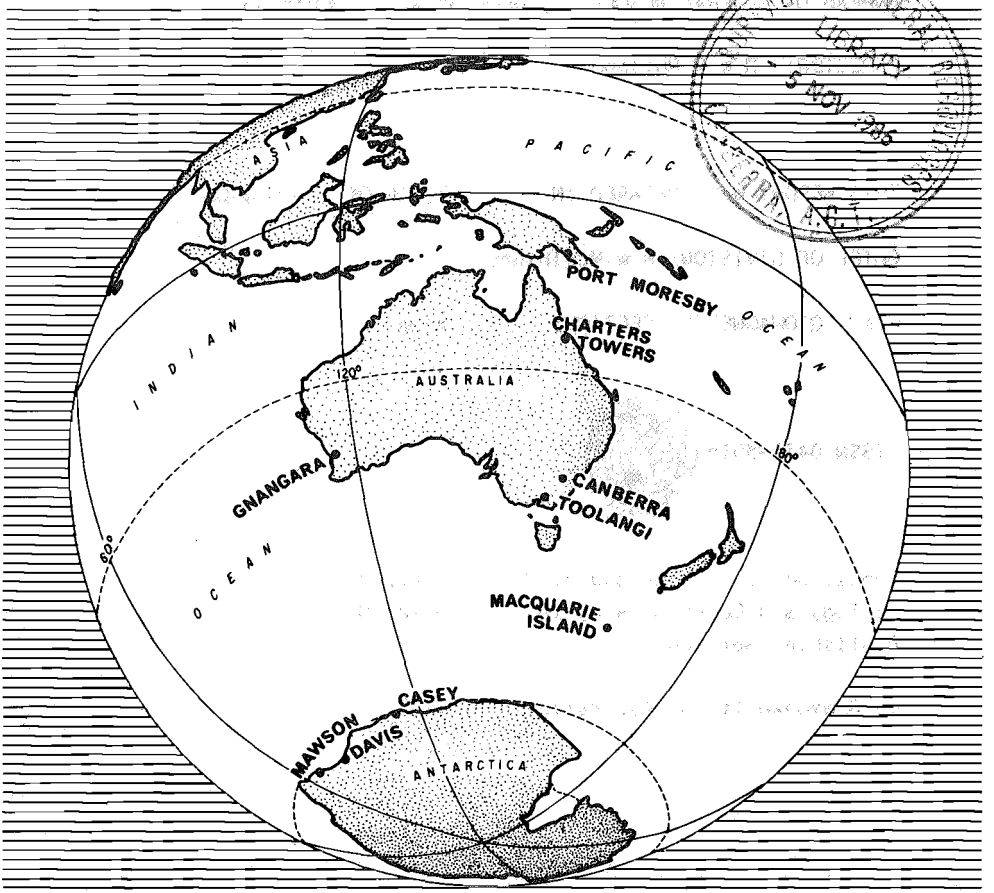
GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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The observers at Casey, Davis and Mcquarie Island are officers of the Antarctic Division (Department of Science and Technology) and their contributions are gratefully acknowledged: they and the BMR geophysicists of 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
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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	-18.2	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°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 - MAY 1986

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

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

Mean of K-Sum is 16.9

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	2	64	116	42	15	6	0	0	0	0	3

GNANGARA

MAGNETIC K-INDICES - MAY 1986

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

DAY	K-INDICES								K-SUM
01	1	1	2	1	1	0	1	1	08
02	2	2	2	4	5	4	4	5	28
03	4	3	3	3	2	2	2	1	20
04	0	0	1	3	5	3	1	3	16
05	2	2	1	2	3	4	3	3	20
06	3	5	3	5	4	4	5	5	34
07	2	1	2	2	2	3	4	1	17
08	1	1	1	1	3	1	2	1	11
09	1	1	1	1	1	1	1	2	09
10	0	0	1	2	2	1	1	0	07
11	1	2	2	1	1	1	1	0	09
12	1	1	1	1	2	1	0	1	08
13	0	1	1	1	2	0	1	2	08
14	1	1	1	0	0	1	1	1	06
15	0	0	0	1	0	1	1	1	04
16	1	1	2	2	4	3	2	3	18
17	2	2	2	1	3	3	2	1	16
18	1	2	2	2	2	1	1	1	12
19	1	1	2	1	2	3	3	1	14
20	0	1	0	1	0	1	1	2	06
21	0	1	1	1	2	1	2	1	09
22	1	0	1	0	0	1	1	1	05
23	1	2	3	2	2	2	1	1	14
24	1	1	1	2	3	2	0	1	11
25	2	2	3	3	2	1	1	0	14
26	1	1	3	3	1	3	2	1	15
27	1	2	2	1	1	1	2	2	12
28	2	0	0	0	1	0	0	0	03
29	1	1	0	0	1	0	0	0	03
30	1	0	1	1	2	3	4	2	14
31	3	4	3	3	4	2	4	2	25

Mean of K-Sum is 12.7

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	37	103	58	30	13	7	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - MAY 1986

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

DAY	K-INDICES								K-SUM
01	0	1	1	1	1	0	1	0	05
02	2	3	3	4	5	4	4	4	29
03	4	4	4	4	2	1	0	0	19
04	0	0	2	3	4	3	1	3	16
05	1	2	1	2	3	3	2	2	16
06	2	4	3	4	4	5	5	4	31
07	2	2	3	3	1	2	3	0	16
08	2	1	1	2	3	1	0	0	10
09	0	1	1	2	1	1	1	1	08
10	1	0	0	2	2	0	2	0	07
11	1	2	1	2	1	1	1	2	11
12	2	3	1	0	2	1	0	0	09
13	0	0	0	-	-	-	-	-	--
14	-	-	0	0	0	0	0	0	--
15	0	0	0	0	0	0	0	1	01
16	0	0	2	3	3	2	2	1	13
17	1	1	1	2	3	3	1	0	12
18	0	1	2	2	1	0	0	1	07
19	0	1	1	1	2	3	2	1	11
20	1	0	0	1	1	1	1	2	07
21	1	0	1	2	2	1	1	1	09
22	0	0	0	0	0	0	0	0	00
23	1	1	3	2	1	1	1	0	10
24	1	2	1	2	3	2	0	0	11
25	1	2	3	4	1	1	0	0	12
26	1	1	3	3	1	3	1	0	13
27	1	1	2	2	1	1	1	1	10
28	2	0	0	0	1	0	0	0	03
29	0	0	0	1	1	0	0	1	03
30	0	0	0	1	2	3	3	2	11
31	3	4	3	3	4	2	4	2	25

Mean of K-Sum is 11.5

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	72	75	45	29	17	3	0	0	0	0	7

MAWSON

MAGNETIC K-INDICES - MAY 1986

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

DAY	K-INDICES								K-SUM
01	2	2	2	2	1	0	1	3	13
02	3	4	3	3	5	3	6	6	33
03	5	6	6	3	2	1	5	4	32
04	3	3	3	5	4	3	2	7	30
05	3	3	3	2	2	4	5	6	28
06	5	7	6	4	3	4	6	8	43
07	5	3	4	3	2	3	6	4	30
08	2	3	2	3	3	1	6	5	25
09	4	3	3	2	2	2	1	1	18
10	6	3	2	2	1	2	4	3	23
11	2	3	4	3	1	1	1	4	19
12	1	4	3	2	2	1	1	4	18
13	2	2	2	1	0	0	2	5	14
14	4	3	2	1	0	0	4	3	17
15	2	2	1	1	0	1	4	4	15
16	2	3	3	1	1	3	-	-	--
17	-	-	-	-	3	3	1	4	--
18	1	2	2	2	2	1	0	4	14
19	3	3	2	2	2	2	3	1	18
20	2	3	1	1	2	2	2	3	16
21	2	2	2	2	2	1	5	3	19
22	1	1	0	0	0	1	2	0	05
23	2	3	3	3	3	1	1	4	20
24	2	4	3	1	3	2	1	4	20
25	2	5	5	2	3	1	1	2	21
26	3	2	3	3	2	3	3	3	22
27	5	4	3	2	2	1	1	6	24
28	4	2	2	0	1	1	0	4	14
29	1	2	1	2	2	0	0	5	13
30	3	1	1	2	0	3	4	6	20
31	5	5	5	3	2	3	6	5	34

Mean of K-Sum is 21.3

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	16	44	63	58	27	18	13	2	1	0	6

MAY 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	02	..	..	...	..	..	..	02(4,5);3(1,2)	5	5	160	60	03	16
	06	..	..	...	..	..	..	06 (2,4)	5	7	110	40	07	19
Charters Towers	01	20	..	...	..	..	..	02(4,5,8),03(1,2)	5	8.5	140	31	03	15
	05	12	..	...	..	..	..	06(2)	6	9.1	114	20	06	24
Gnangara	05	15	..	...	..	..	..	6(2,4,7,8)	5	18	100	130	07	02
Canberra	02	10	..	...	..	..	..	02(5)	5	19.3	123	51	03	11
	05	11	..	...	..	..	..	06(6,7)	5	21.7	117	55	06	24

MAY 1986

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35931	06° 35.0'E	-23715	43052
CHARTERS TOWERS	31777	07° 44.3'E	-38274	49746
GNANGARA	23238	03° 15.6'W	-53791	58596
CANBERRA	23497	12° 22.8'E	-53715	58710
MACQUARIE I	12586	29° 18 'E	-63596	64830
MAWSON	18474	63° 47.8'W	-46278	49829
DAVIS	16590	76° 52 'W	-52230	54801
CASEY	9620	91° 03 'W	-64149	64866

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		NIL				
CHARTERS TOWERS		NIL				
GNANGARA		NIL				
CANBERRA		NIL				

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