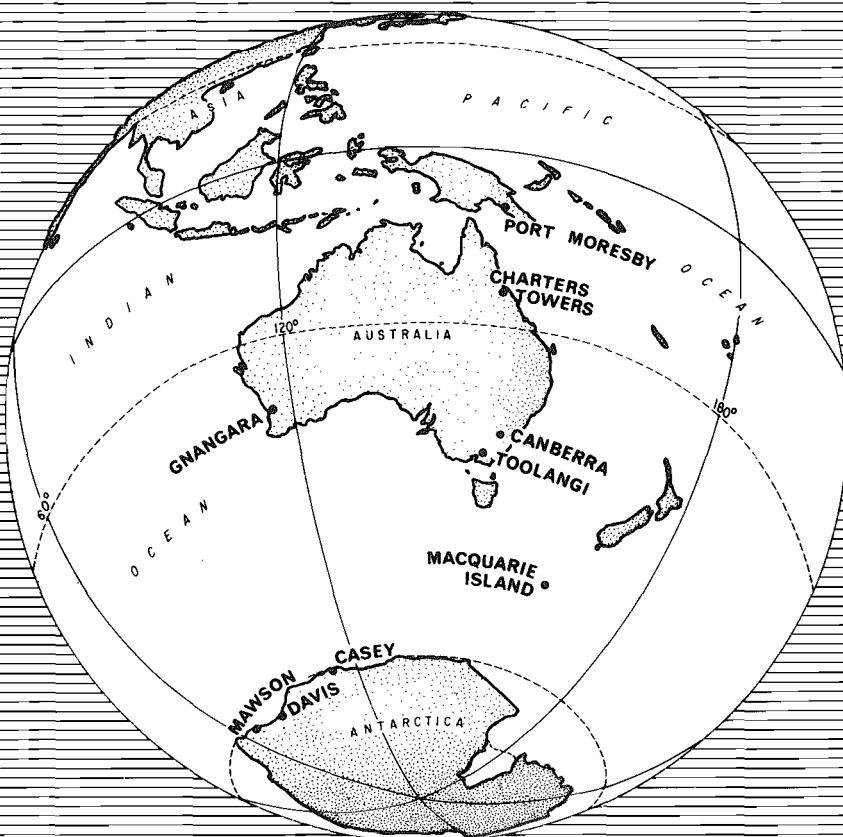




GEOFYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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JANUARY 1986

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF RESOURCES AND ENERGY

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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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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		GEOMAGNETIC	
		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	P.J. Kelsey	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 - JANUARY 1986

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

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

Mean of K-Sum is 18.6

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	4	54	90	62	33	5	0	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - JANUARY 1986

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

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

Mean of K-Sum is 17.3

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	11	72	71	57	31	6	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - JANUARY 1986

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

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

Mean of K-Sum is 14.5

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	39	77	49	59	20	4	0	0	0	0	0

MAWSON

MAGNETIC K-INDICES - JANUARY 1986

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

<u>DAY</u>	<u>K-INDICES</u>								<u>K-SUM</u>
01	5	5	5	5	5	6	5	6	42
02	4	5	5	4	5	5	-	-	--
03	-	3	3	4	4	3	2	3	--
04	4	4	2	1	2	1	2	4	20
05	4	2	2	2	2	2	1	3	18
06	3	2	2	2	2	2	5	6	24
07	6	6	-	-	-	-	-	-	--
08	-	-	-	-	-	3	5	3	--
09	4	4	2	3	3	4	7	7	34
10	5	4	4	3	2	2	2	2	24
11	3	3	3	3	2	2	2	1	19
12	4	3	3	1	2	3	5	5	26
13	3	3	2	3	2	1	1	2	17
14	3	3	2	1	2	2	2	2	17
15	2	2	1	2	2	3	3	1	16
16	3	2	2	2	1	1	1	2	14
17	2	2	-	-	2	2	3	4	--
18	4	5	4	3	2	2	4	4	28
19	3	3	2	1	2	1	4	4	20
20	5	6	5	5	3	2	4	5	35
21	6	4	2	2	5	3	5	5	32
22	3	5	4	3	3	3	6	6	33
23	4	4	4	4	4	5	7	6	38
24	4	5	5	4	3	3	3	5	32
25	4	5	3	3	4	4	7	6	36
26	5	4	4	3	4	2	2	4	28
27	3	7	6	5	5	5	6	6	43
28	5	6	6	4	4	5	7	5	42
29	5	4	3	4	4	5	5	7	37
30	6	-	4	3	3	3	6	6	--
31	4	5	3	3	2	2	3	4	26

Mean of K-Sum is 28.0

Frequency of K-indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	15	54	50	46	40	19	7	0	0	17

JANUARY 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	14	33	ssc	0	+18	+15	06(7,8),07(1)	5	5	110	50	08	00
	27	02	..	...	..	..	..	27(5)	5	7	70	50	28	21
Charters Towers	06	13	..	...	..	..	..	06(7,8),07(1)	5	6.4	121	18	07	15
	27	03	..	...	..	..	..	27(5)	6	12.1	89	28	28	24
Gnangara	NIL													
Canberra	06	17	..	...	..	..	..	06(7,8),07(1)	5	10.8	121	47	07	15
	27	03	..	...	..	..	..	27(5)	5	16.6	142	41	28	24

JANUARY 1986
PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H nT	D deg min	Z nT	F nT
PORT MORESBY	35939	06° 34.2'E	-23714	43058
CHARTERS TOWERS	31783	07° 44.1'E	-38271	49748
GNANGARA	23254	03° 17.2'W	-53784	58596
CANBERRA	23709	12° 21.5'E	-53717	58717
MACQUARIE I	12601	29° 16 'E	-63599	64835
MAWSON	18455	63° 44.2'W	-46267	49812
DAVIS	16649	76° 49 'W	-52270	54858
CASEY	9656	90° 27 '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	14 33	+18	0	+15
	25	ssc B	02 35	+15	0	+13
CHARTERS TOWERS	25	ssc B	02 34	+15	-	-
GNANGARA	NIL					
CANBERRA	25	ssc B	02 35	+10	-	-

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