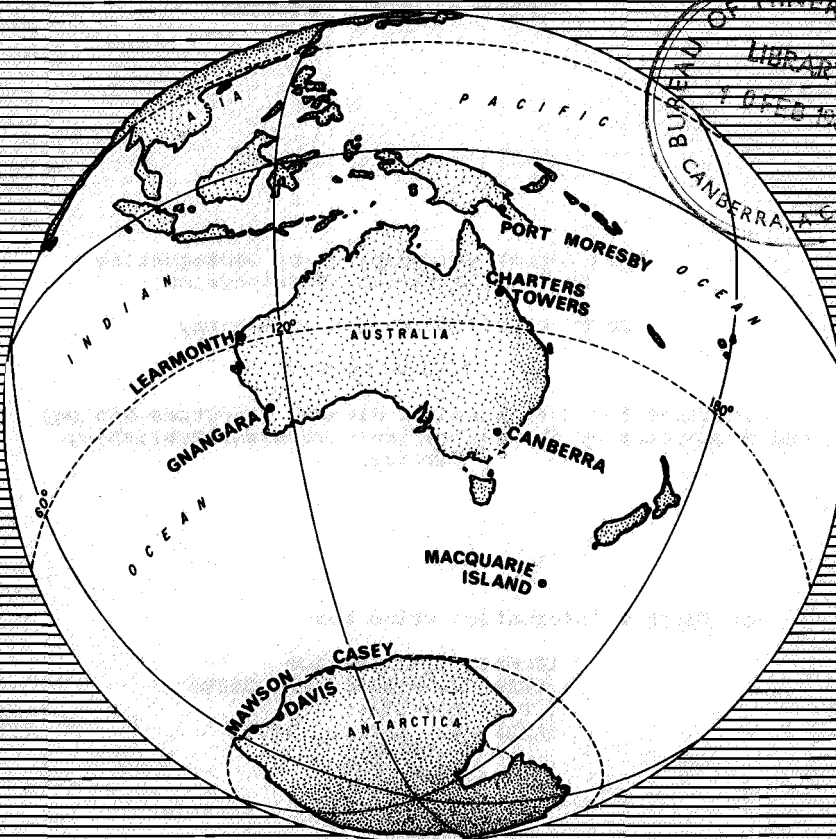


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GEOPHYSICAL OBSERVATORY REPORT



MAGNETIC OBSERVATORIES

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VOLUME 35 No. 8
AUGUST 1987

OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister: Senator The Hon. John Kerin MP

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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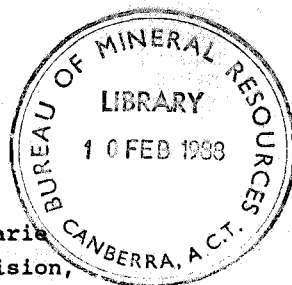


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CONTENTS

	Page
Contributing Observatories	4
K-Indices	5
Principal Magnetic Storms	9
Monthly Mean Values, Sudden Commencements and Other Rapid Variations	10



The observers at Casey Davis and Macquarie Island are officers of the Antarctic Division, Department of Science and Technology: their contributions are gratefully acknowledged. These observers and the Bureau of Mineral Resources (BMR) geophysicist at Mawson are members of the Australian National Antarctic Research Expeditions (ANARE).

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 International Association of Geomagnetism and Aeronomy. The unit of field intensity is nanotesla (nT). All times are in Universal Time.

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°
LEARMONTH	M.W.McMullan	22° 13' S	114° 06' E	-33.4°	185.5°
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	I.G.Jacobsen	54° 30' S	158° 57' E	-60.6°	244.6°
MAWSON	S.D.Dennis	67° 36' S	62° 53' E	-73.3°	105.9°
DAVIS	P. Williams	68° 35' S	77° 58' E	-76.9°	123.5°
CASEY	R.A.Rachinger	66° 17' S	110° 32' E	-77.5°	182.4°

MAGNETOGRAPHS

<u>OBSERVATORY</u>	<u>CODE</u>	<u>TYPE</u>	<u>ELEMENT/SCALE-VALUE</u>			
PORT MORESBY	PMG	La cour (A)	H/3	D/5	Z/4	
CHARTERS TOWERS	CTA	EDA/ELSEC (D/1)	X	Y	Z	
LEARMONTH	LRM	EDA/ELSEC (D/1)	X	Y	Z	
GNANGARA	GNA	Eschenhagen (A)	H/3	D/7	Z/6	
CANBERRA	CNB	ELSEC (D/.1)	D	I	F	
MACQUARIE ISLAND	MCQ	PEM (D/.1)	X	Y	Z	
MAWSON	MAW	PEM (D/.1)	X	Y	Z	

A = analogue, 20mm/hr, scale values in nT/mm
D/1 = ditigal, 1 min readings, 1 nT resolution
D/.1 = ditigal, 1 min readings, 0.1 nT resolution
PEM = BMR Photo-electronic magnetograph.

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 of arc.

PORT MORESBY

MAGNETIC K-INDICES - AUGUST 1987

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 18.4

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	1	59	91	65	16	11	1	0	0	0	4

GNANGARA

MAGNETIC K-INDICES - AUGUST 1987

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 17.8

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	13	63	80	51	32	6	3	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - AUGUST 1987

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 14.9

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	36	75	61	47	18	7	3	0	0	0	1

MAWSON

MAGNETIC K-INDICES - AUGUST 1987

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	4	5	4	2	2	2	5	5	29
02	4	3	3	2	2	2	2	4	22
03	3	4	3	2	4	4	3	3	26
04	3	3	2	2	3	2	4	6	25
05	6	5	4	4	2	2	5	5	33
06	2	4	3	3	2	3	5	4	26
07	4	3	2	1	2	1	1	3	17
08	4	4	4	3	3	3	3	7	31
09	6	5	5	2	3	3	2	3	29
10	2	2	2	1	1	2	2	4	16
11	3	3	1	1	1	2	3	6	20
12	5	5	5	3	3	4	5	6	36
13	4	5	5	6	3	2	5	7	37
14	6	5	4	3	3	3	6	7	37
15	4	6	6	5	4	2	5	7	39
16	5	6	5	5	3	1	5	5	35
17	4	4	3	3	4	4	5	5	32
18	3	4	3	3	2	2	3	5	25
19	4	5	4	3	3	2	3	5	29
20	-	-	-	3	3	2	2	4	--
21	4	3	3	1	1	2	2	3	19
22	2	2	3	2	1	3	6	2	21
23	3	4	4	2	3	5	5	6	32
24	4	4	2	4	3	3	4	2	26
25	2	2	4	5	5	5	6	6	35
26	7	7	6	4	4	4	6	5	43
27	4	5	5	4	4	5	6	3	36
28	3	4	3	3	3	4	8	5	33
29	4	4	3	3	2	4	7	5	32
30	3	4	5	3	3	3	3	6	30
31	4	4	6	3	5	6	4	5	37

Mean of K-Sum is 29.6

Frequency of K-Indices

K : 0 1 2 3 4 5 6 7 8 9 -
f : 0 12 44 64 53 43 21 7 1 0 3

AUGUST 1987

PRINCIPAL MAGNETIC STORMS

OBSERVATORY	Commencement			SSC-amplitude			Max. 3hr K-index		Ranges				UT End	
	day	hr	min	type	D(')	H(nT)	Z(nT)	day (3hr-period)	K	D(')	H(nT)	Z(nT)	day	hr
Port Moresby	24	09	39	ssc	+0.3	+29	+23	25 (5)	6	9	150	60	27	18
	30	02	..	...	..	..	..	30 (3)	5	5	130	80	31	20
Charters Towers	24	09	39	ssc*	-0.9*	+25	- 3	25 (5)	6	13.2	127	34	27	21
Gnangara	12	12	..	...	..	..	..	13 (3)	6	19	100	180	14	06
	25	06	57	ssc*	+1.0	+ 5*	+ 5	25 (5)	6	26	80	150	27	20
								26 (5)	6					
Canberra	24	09	40	ssc	+0.6	+30	+ 3	25 (5)	6	26.5	138	75	26	21
								26 (5)	6					

AUGUST 1987

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	deg min	nT	nT
PORT MORESBY	35929	06° 35.7' E	-23717	43051
CHARTERS TOWERS	31769	07° 45.5' E	-38271	49739
LEARMONTH	29473	00° 37.5' W	-44426	53314
GNANGARA	23223	03° 13.1' W	-53804	58602
CANBERRA	23683	12° 25.6' E	-53697	58688
MACQUARIE ISLAND	12586	29° 27.1' E	-63580	64813
MAWSON	18468	63° 58.3' W	-46183	49739
DAVIS	16612	77° 08' W	-52150	54732
CASEY	9535	91° 35' W	-64074	64779

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	24	ssc B	0939	+29	+ 3	+23
CHARTERS TOWERS	22	ssc B	0939	+18	- 1	- 2
	29	ssc*B	0939	+25	- 8*	- 3
GNANGARA	24	ssc B	0657	+ 5*	+ 7	+ 5
	25	ssc B	0940	+15	+15	+ 6
CANBERRA	24	ssc B	0940	+30	+ 4	+ 3

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