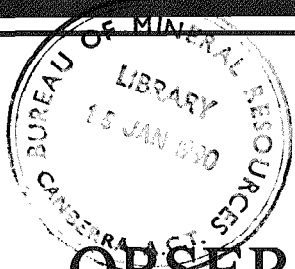


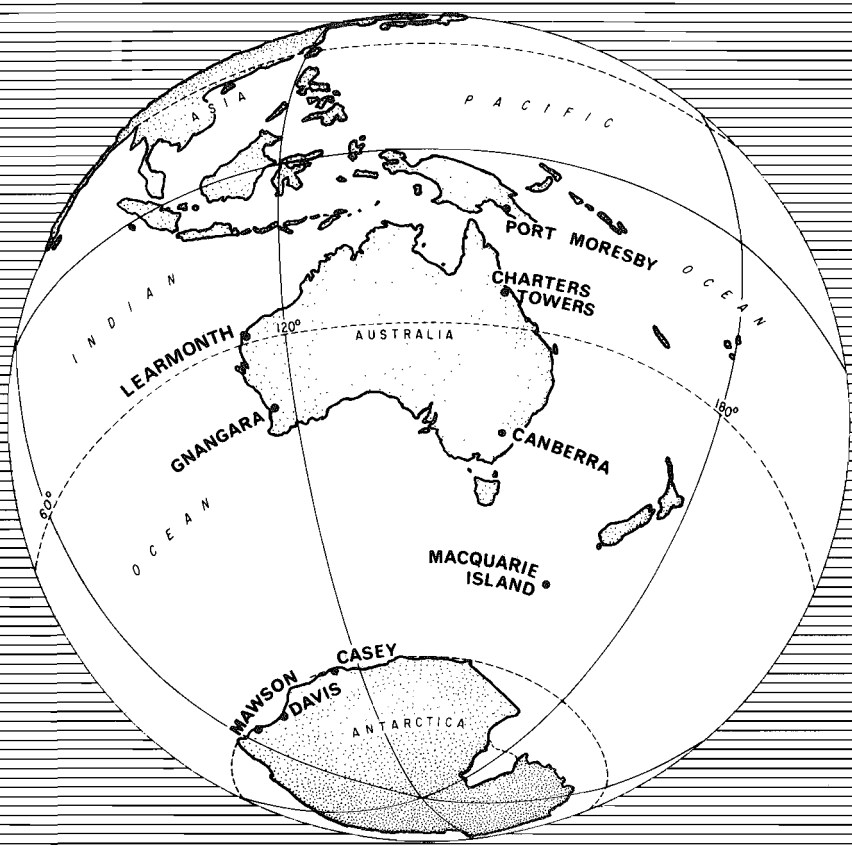
0.3



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GEOPHYSICAL OBSERVATORY EP



MAGNETIC OBSERVATORIES

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BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources:

Senator the Hon. Peter Cook

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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The observers at Casey, Davis and Macquarie Island are officers of the Antarctic Division, The Department of the Arts, Sport, the Environment, Tourism and Territories. 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 the International Association of Geomagnetism and Aeronomy (IAGA). The unit of field intensity is the nanoTesla (nT). All times are in Universal Time (UT).

CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC		GEOMAGNETIC	
		LAT.	LONG.	LAT.	LONG.
PORT MORESBY	I.D.Ripper	9° 25' S	147° 09' E	-18.1°	219.8°
CHARTERS TOWERS	J.M.Millican	20° 05' S	146° 15' E	-28.7°	220.3°
LEARMONTH	M.W.McMullan	22° 13' S	114° 06' E	-33.2°	185.5°
GNANGARA	P.J.Gregson	31° 47' S	115° 57' E	-42.7°	188.0°
CANBERRA	P.A.Hopgood	35° 19' S	149° 22' E	-43.3°	226.6°
MACQUARIE IS.	M.J.Underwood	54° 30' S	158° 57' E	-60.4°	244.7°
MAWSON	P.Crosthwaite	67° 36' S	62° 53' E	-73.2°	106.3°
DAVIS	R.McLoughlin	68° 35' S	77° 58' E	-76.8°	124.0°
CASEY	O. Holmwood	66° 17' S	110° 32' E	-77.3°	182.7°

* Geomagnetic co-ordinates based on the 1980 DGRF Geomagnetic North pole position of 78.8°N, 70.9°W

MAGNETOGRAPHS

<u>OBSERVATORY</u>	<u>CODE</u>	<u>MODEL (TYPE/RES.)</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 IS.	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 = digital, 1 minute readings, 1 nT resolution
D/.1 = digital, 1 minute 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, proton vector magnetometers 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 - JULY 1989

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 14.0

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	8	87	117	31	5	0	0	0	0	0	0

GNANGARA

MAGNETIC K-INDICES - JULY 1989

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 10.3

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	54	70	75	16	3	2	0	0	0	0	28

CANBERRA

MAGNETIC K-INDICES - JULY 1989

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 08.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	79	92	56	16	2	2	0	0	0	0	1

MAWSON

MAGNETIC K-INDICES - JULY 1989

Range for lower limit of K=9 is 1500nT

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

Mean of K-Sum is 19.3

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	40	36	56	48	41	21	4	2	0	0	0

PRINCIPAL MAGNETIC STORMS - JULY 1989

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	NIL											
Charters Towers	NIL											
Gnangara	NIL											
Canberra	01 15 46	ssc*	+0.9*	+15	0	01(7,8)	5	16.9	81	43	02	01

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PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35927	06°	36.3´ E	-23711	43046
CHARTERS TOWERS	31753	07°	46.7´ E	-38261	49721
LEARMONTH	29483	00°	34.2´ W	-44436	53328
GNANGARA	23203	03°	08.4´ W	-53812	58601
CANBERRA	23661	12°	29.2´ E	-53678	58662
MACQUARIE IS.	12582	29°	46.0´ E	-63546	64780
MAWSON	18478	64°	13.5´ W	-46077	49644
DAVIS	16645	77°	14.0´ W	-52027	54625
CASEY	9600	91°	57.0´ W	-63934	64651

The values are derived from magnetograms for selected quiet days except at Davis, Casey and Macquarie Is. where they are derived from semi-weekly absolute measurements.

INTERNATIONAL QUIET AND DISTURBED DAYS

Quietest days (1- 5): 16 3 4 8 11
Quietest days (6-10): 19 12 14 31 20
Most Disturbed days : 1 5 26 18 17

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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	01	ssc*B	0717	+18	-4*	+13
	17	ssc*B	0155	+33*	-2	+31*
CHARTERS TOWERS	01	ssc B	0718	+19	-6	-2
	17	ssc*A	0155	+30	+8*	-1
GNANGARA	01	ssc B	0718	+10	+6	+4
	17	ssc*B	0155	+10	-35*	-16*
CANBERRA	01	ssc*B	1546	+15	+6*	0

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