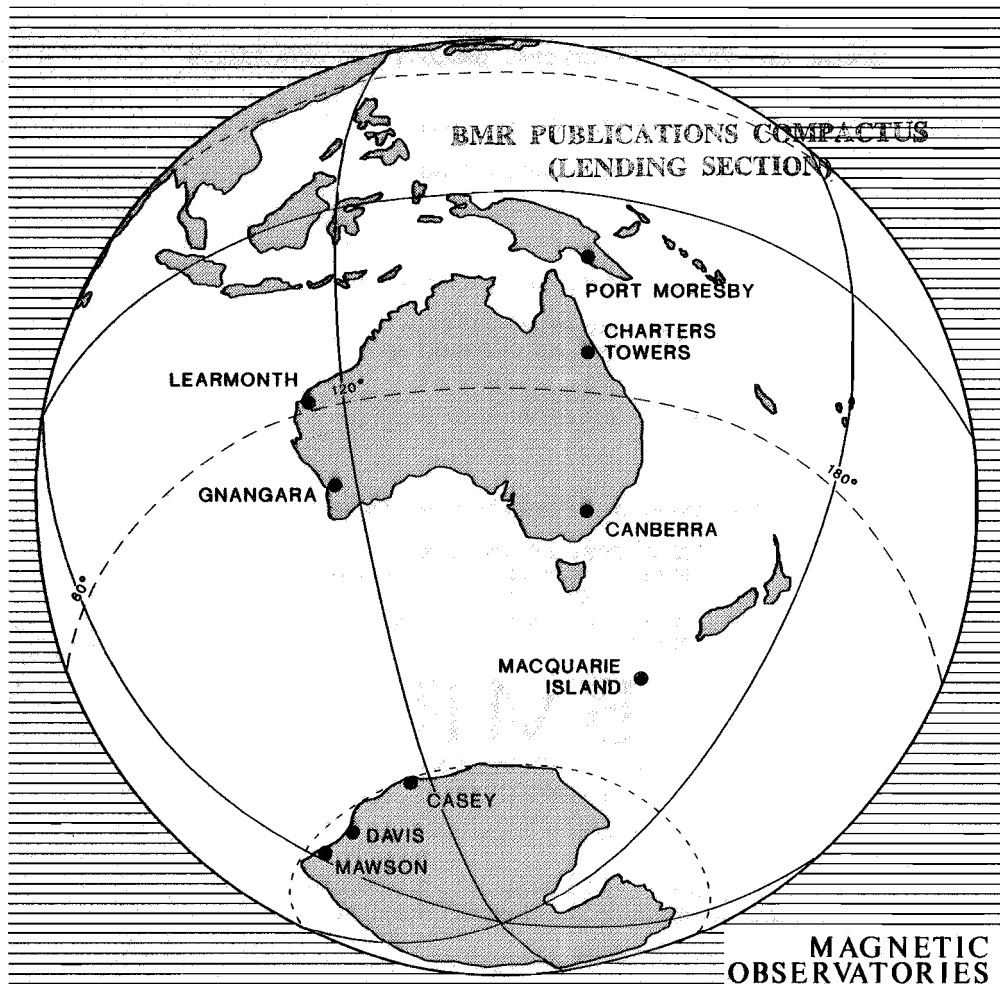


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MAGNETIC
OBSERVATORIES

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BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources:

The Hon. Alan Griffiths MP

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.	P.Barnaart	54° 30' S	158° 57' E	-60.4°	244.7°
MAWSON	M.A.DeDeuge	67° 36' S	62° 53' E	-73.2°	106.3°
DAVIS	L. Symons	68° 35' S	77° 58' E	-76.8°	124.0°
CASEY	P.Roberts	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

OBSERVATORY	CODE	MODEL (TYPE/RES.)	ELEMENT/SCALE-VALUE			
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	Elsec (D/.1)	D	I	F	
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 1991

Range for lower limit of K=9 is 300nT

DAY	K-INDICES								K-SUM
01	2	3	2	0	2	2	3	2	16
02	3	3	3	3	2	3	2	3	22
03	3	4	4	4	3	2	3	3	26
04	3	2	2	2	2	2	2	2	17
05	1	1	1	1	1	1	1	1	08
06	0	1	1	1	1	2	1	2	09
07	1	2	2	1	1	1	1	2	11
08	1	2	3	4	3	7	5	4	29
09	4	4	8	6	5	4	3	2	36
10	3	4	3	3	2	1	2	1	19
11	1	2	3	4	2	3	2	2	19
12	2	2	3	5	4	4	2	2	24
13	4	5	5	6	6	6	5	5	42
14	6	5	5	4	4	3	4	4	35
15	3	2	3	3	0	0	0	2	13
16	2	1	2	1	0	4	4	3	17
17	4	3	4	2	2	3	2	2	22
18	3	2	1	1	1	2	3	3	16
19	3	3	3	3	3	3	4	4	26
20	3	4	4	4	3	3	2	4	27
21	3	3	4	3	3	3	2	3	24
22	3	3	3	3	4	2	2	3	23
23	3	2	3	2	3	3	1	1	18
24	1	1	2	1	1	1	1	1	09
25	1	1	3	1	2	1	2	1	12
26	1	1	0	0	1	1	0	1	05
27	1	1	1	1	0	1	1	2	08
28	1	1	1	0	0	0	0	3	06
29	2	2	2	1	1	1	0	1	10
30	1	2	4	2	1	2	2	1	15
31	3	2	2	0	1	1	0	1	10

Mean of K-Sum is 18.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	17	65	61	59	30	9	5	1	1	0	0

GNANGARA

MAGNETIC K-INDICES - JULY 1991

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	2	3	2	0	2	2	2	2	15
02	1	2	2	3	1	4	3	3	19
03	3	2	3	3	2	4	4	3	24
04	4	2	3	2	1	1	1	1	15
05	1	0	0	0	0	0	0	0	01
06	1	1	1	1	1	2	2	3	12
07	2	2	0	0	1	1	2	3	11
08	1	1	2	2	2	6	5	4	23
09	2	4	6	6	7	6	5	3	39
10	3	3	3	3	3	3	2	1	21
11	2	2	2	3	3	3	2	2	19
12	2	1	2	5	3	4	2	2	21
13	4	4	4	6	7	7	5	7	44
14	5	5	4	5	6	4	5	4	38
15	4	2	1	2	1	1	1	1	13
16	1	2	1	1	1	4	4	3	17
17	3	3	3	3	2	5	3	4	26
18	4	2	1	0	1	3	4	3	18
19	3	3	3	3	5	5	5	3	30
20	3	3	4	4	4	3	4	3	28
21	3	3	3	3	3	3	3	3	24
22	3	3	3	2	3	2	2	3	21
23	2	3	2	2	4	4	3	2	22
24	2	1	1	0	0	2	2	1	09
25	1	1	3	2	1	2	3	1	14
26	0	1	0	0	1	0	0	1	03
27	1	0	0	0	0	0	2	3	06
28	2	0	0	0	0	0	0	2	04
29	2	1	0	0	1	0	0	1	05
30	1	2	3	2	1	3	3	1	16
31	2	1	2	1	1	2	2	3	14

Mean of K-Sum is 18.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	33	49	58	61	25	12	6	4	0	0	0

CANBERRA

MAGNETIC K-INDICES - JULY 1991

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	2	2	2	0	2	1	1	1	11
02	1	2	3	3	2	3	3	3	20
03	3	3	4	4	3	3	3	3	26
04	2	2	3	1	2	1	1	0	12
05	0	0	0	1	0	1	0	0	02
06	0	1	1	1	1	2	2	2	10
07	2	2	0	0	1	1	1	1	08
08	2	2	2	3	3	6	5	4	27
09	2	4	7	6	6	4	4	4	37
10	3	3	4	3	3	2	2	1	21
11	1	3	3	4	2	3	1	2	19
12	2	2	3	5	3	4	1	1	21
13	3	5	5	6	6	6	4	6	41
14	3	3	5	5	5	5	4	2	32
15	2	2	2	3	0	0	0	0	09
16	1	2	2	0	0	4	3	3	15
17	5	4	5	3	2	4	3	4	30
18	3	3	2	0	1	3	3	3	18
19	3	3	3	4	4	4	5	4	30
20	3	4	4	4	3	2	2	3	25
21	4	4	3	3	3	3	2	3	25
22	4	3	2	2	3	2	2	3	21
23	2	2	2	2	3	3	2	1	17
24	1	2	1	1	1	2	2	1	11
25	1	2	3	1	2	2	2	1	14
26	0	1	0	0	2	0	0	0	03
27	0	1	0	1	0	1	2	2	07
28	1	1	1	0	0	0	0	3	06
29	2	1	1	1	1	0	1	1	08
30	0	1	2	1	1	3	3	0	11
31	2	1	1	0	1	0	0	1	06

Mean of K-Sum is 17.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	37	53	57	56	26	11	7	1	0	0	0

MAWSON**MAGNETIC K-INDICES - JULY 1991**

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	3	3	4	2	3	3	3	5	26
02	2	4	5	4	3	4	5	5	32
03	5	4	4	3	3	4	4	6	33
04	6	5	5	3	2	2	2	2	27
05	1	1	1	1	1	1	2	3	11
06	3	3	2	2	2	2	2	5	21
07	3	4	1	1	1	2	3	5	20
08	5	5	5	5	5	7	6	6	44
09	4	6	7	4	5	5	6	5	42
10	6	5	5	4	4	3	2	5	34
11	6	5	5	5	3	3	3	5	35
12	3	5	5	7	5	4	4	5	38
13	6	5	7	6	4	8	5	7	48
14	7	7	7	6	5	5	6	6	49
15	5	4	4	3	2	0	4	3	25
16	3	3	2	2	2	5	8	6	31
17	7	7	5	4	3	4	5	7	42
18	6	4	4	2	3	4	8	7	38
19	6	6	6	4	3	5	7	6	43
20	5	4	5	5	4	4	2	5	34
21	6	6	7	4	3	4	7	7	44
22	5	4	5	4	3	3	4	7	35
23	5	4	4	3	3	6	4	2	31
24	2	4	4	3	1	2	4	5	25
25	3	4	4	3	3	3	4	4	28
26	4	3	3	1	1	2	1	2	17
27	4	3	1	1	0	1	4	5	19
28	3	3	3	1	0	0	1	2	13
29	3	3	3	1	1	1	3	4	19
30	3	3	5	2	1	2	5	3	24
31	3	2	2	0	1	1	4	6	19

Mean of K-Sum is 30.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	5	24	30	50	48	48	23	17	3	0	0

PRINCIPAL MAGNETIC STORMS - JULY 1991

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	08 16 36	ssc*	+1.6*	+107	+93	09(3)	8	10	350	180	10 19
	12 09 24	ssc	+0.4	+46	+36	13(4,5,6);14(1)	6	10	270	100	15 12
Gnangara	09 03 00	..	..	..	..	09(5)	7	39	210	260	10 06
	13 01 00	..	..	..	..	13(5,6,8)	7	47	250	300	15 02
Canberra	08 16 36	ssc*	+9.0*	+118	+12	09(3)	7	39.6	332	126	10 09
	12 09 25	ssc	0	+42	+6	13(4,5,6,8)	6	43.8	210	98	14 21

JULY 1991

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35918	06°	35.5' E	-23696	43030
CHARTERS TOWERS	31740	07°	46.9' E	-38243	49699
LEARMONTH	29523	00°	26.2' W	-44418	53335
GNANGARA	23160	03°	01.8' W	-53799	58572
CANBERRA	23644	12°	31.7' E	-53644	58624
MACQUARIE IS.	12566	29°	47.9' E	-63498	64729
MAWSON	18495	64°	30.0' W	-45956	49538
DAVIS	16692	77°	50.6' W	-51927	54544
CASEY	9625	92°	09.0' W	-63891	64612

The values are derived from magnetograms over the Quietest 5 International Days, except at Mawson, Davis and Casey, where the locally quietest days are used.

INTERNATIONAL QUIET AND DISTURBED DAYS

Quietest days (1- 5): 05 26 31 28 29
Quietest days (6-10): 24 07 27 06 30
Most Disturbed days : 13 09 14 08 17

SUDDEN STORM COMMENCEMENTS (ssc): JULY 1991

Observatory	Day	Type and Quality	U.T.	Sense and Amplitude of Chief Movement		
				H(nT)	D(nT)	Z(nT)

PORT MORESBY

08	ssc*A	1636	+107	+17*	+93
12	ssc B	0924	+46	+4	+36

GNANGARA

Nil ssc's reported

CANBERRA

08	ssc*A	1636	+118	+62*	+12
12	ssc B	0925	+42	0	+6

SOLAR FLARE EFFECTS (sfe): JULY 1991

Observatory	----- U.T. of sfe -----				Con- fir- med.	Sense & Amplitude		
	Day	Began	Max.	Ended		H(nT)	D(nT)	Z(nT)

PORT MORESBY

31	0047	0050	0110	*	+10	-14	+5
----	------	------	------	---	-----	-----	----

GNANGARA

Nil sfe's reported

CANBERRA

31	0048	0052	0120	*	+8	-10	0
----	------	------	------	---	----	-----	---

