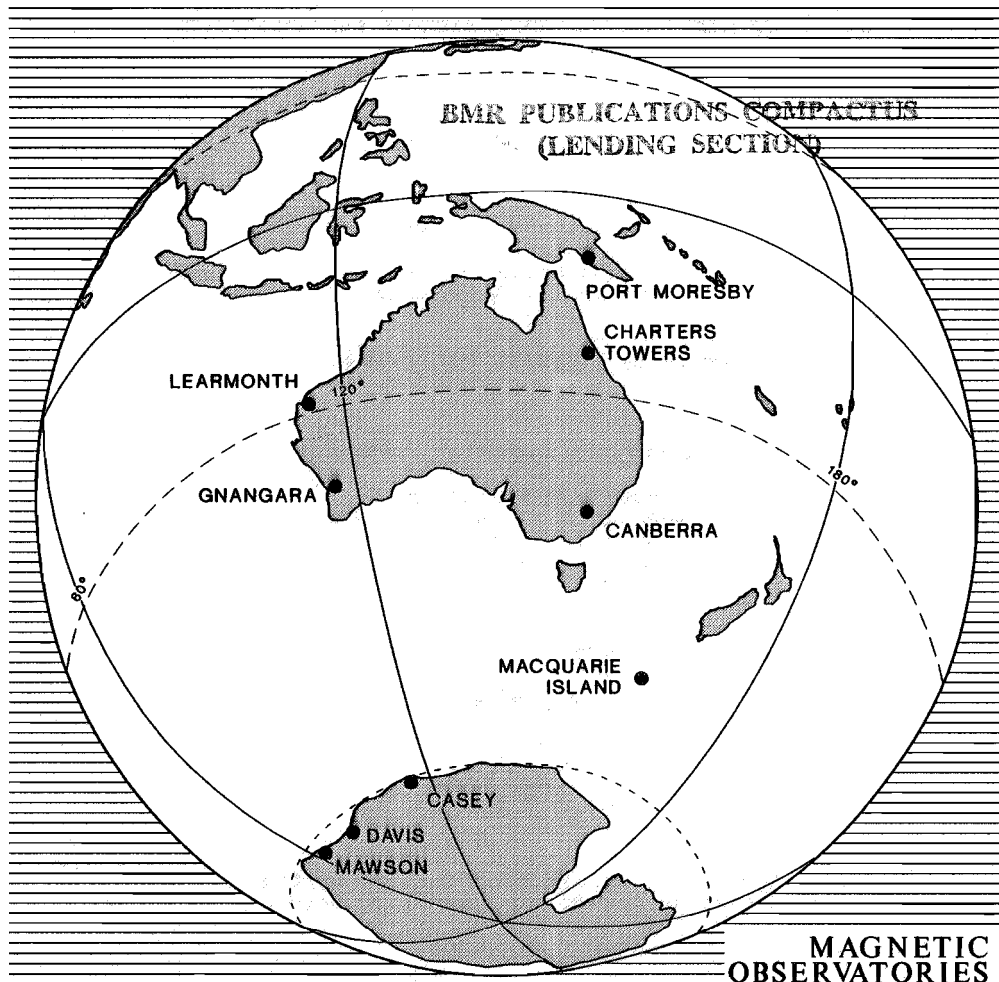


AUSTRALIAN GEOMAGNETISM REPORT



MAGNETIC
OBSERVATORIES

BMR
S550.389.5
Aus. 8

BMR PUBLICATIONS COMPACTUS VOLUME 39 No. 10
(LENDING SECTION) OCTOBER 1991

BUREAU OF MINERAL RESOURCES, GEOLOGY & GEOPHYSICS

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources:

The Hon. Alan Griffiths MP

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BMR
GEOLOGY AND
GEOPHYSICS
A U S T R A L I A

**Published for the B.M.R.G. & G. by the
Australian Government Publishing Service**

ISSN 1035-1515

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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.Crosthwait	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 - OCTOBER 1991

Range for lower limit of K=9 is 300nT

DAY	K-INDICES								K-SUM
01	3	3	3	4	4	3	5	5	30
02	3	3	5	5	6	5	3	3	33
03	3	3	3	2	3	2	3	3	22
04	2	2	3	3	4	3	5	4	26
05	3	2	3	2	3	3	3	2	21
06	3	1	2	3	3	5	4	5	26
07	5	3	3	3	3	2	3	3	25
08	3	3	4	5	4	4	3	3	29
09	3	3	2	2	2	2	2	2	18
10	3	3	4	2	4	4	2	2	24
11	2	1	1	3	3	2	2	2	16
12	2	1	1	1	1	1	2	1	10
13	1	0	2	2	1	0	1	1	08
14	1	1	1	1	3	2	3	1	13
15	2	1	1	1	1	-	-	-	--
16	2	1	1	1	0	0	0	1	06
17	-	-	-	-	-	-	-	-	--
18	4	4	2	3	3	3	2	2	23
19	2	3	2	3	3	2	3	3	21
20	3	3	3	5	5	3	2	2	26
21	4	4	3	5	4	5	5	3	33
22	2	2	4	4	2	3	2	2	21
23	2	2	3	2	2	3	5	4	23
24	4	3	4	3	3	3	3	3	26
25	2	2	2	4	5	4	5	4	28
26	3	1	3	3	4	4	3	4	25
27	4	3	4	3	4	4	4	4	30
28	5	4	3	6	7	9	5	5	44
29	5	6	6	7	5	5	5	5	44
30	2	2	3	2	4	5	4	4	26
31	4	3	5	6	5	5	5	6	39

Mean of K-Sum is 24.7

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	5	27	52	75	38	31	6	2	0	1	11

GNANGARA

MAGNETIC K-INDICES - OCTOBER 1991

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	3	4	4	4	4	4	6	6	35
02	4	3	4	5	7	5	3	3	34
03	3	3	3	3	3	3	3	4	25
04	2	1	4	3	4	4	6	4	28
05	4	3	3	3	2	2	2	3	22
06	3	1	1	4	2	5	4	6	26
07	5	4	4	3	3	3	2	3	27
08	3	2	-	-	6	5	4	3	--
09	3	-	-	-	-	1	2	3	--
10	4	-	-	-	-	4	3	3	--
11	3	1	-	-	3	3	2	2	--
12	3	-	-	-	-	-	2	2	--
13	-	-	-	-	-	2	2	1	--
14	2	0	0	2	2	1	3	1	11
15	3	2	1	1	1	1	2	2	13
16	2	2	1	1	2	1	1	2	12
17	1	1	-	-	3	2	2	2	--
18	3	2	2	3	3	3	3	3	22
19	2	3	2	3	2	3	4	3	22
20	4	2	3	4	4	4	3	2	26
21	2	2	2	4	4	5	5	5	29
22	3	-	-	-	3	3	4	3	--
23	3	3	4	3	2	4	4	5	28
24	4	2	3	3	3	3	4	4	26
25	3	3	3	4	5	4	5	5	32
26	3	2	4	3	5	4	3	5	29
27	4	4	4	3	4	4	5	5	33
28	5	4	4	5	6	7	4	5	40
29	6	5	6	6	5	5	6	4	43
30	2	2	4	3	5	6	5	4	31
31	4	2	5	5	5	5	5	6	37

Mean of K-Sum is 27.4

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	2	18	43	65	50	29	12	2	0	0	27

CANBERRA

MAGNETIC K-INDICES - OCTOBER 1991

Range for lower limit of K=9 is 450nT

DAY	K-INDICES								K-SUM
01	1	3	5	4	4	3	5	5	30
02	4	2	5	5	5	5	3	2	31
03	1	2	4	3	2	1	2	2	17
04	1	2	3	3	4	3	5	3	24
05	2	2	3	2	2	2	2	1	16
06	2	0	1	3	3	5	3	5	22
07	3	3	4	3	3	2	2	3	23
08	3	4	5	5	4	4	4	3	32
09	3	4	2	2	2	2	1	2	18
10	3	3	4	2	4	4	2	3	25
11	2	2	2	2	3	3	2	3	19
12	1	1	2	1	0	1	2	2	10
13	1	2	2	1	2	1	1	2	12
14	1	1	1	0	2	1	2	1	09
15	2	1	1	1	1	1	1	1	09
16	1	1	1	1	1	0	0	1	06
17	1	0	1	2	3	2	1	1	11
18	4	3	2	2	2	3	2	2	20
19	1	3	2	3	2	2	3	2	18
20	3	3	4	4	5	4	1	2	26
21	3	4	2	4	3	5	5	3	29
22	3	2	3	4	2	2	3	2	21
23	1	2	3	2	1	3	3	4	19
24	3	3	4	2	3	3	3	3	24
25	3	3	3	5	5	4	4	4	31
26	2	2	3	3	4	4	3	4	25
27	4	4	5	4	4	4	4	5	34
28	5	3	3	5	6	7	5	4	38
29	5	6	6	6	4	6	5	4	42
30	1	1	2	3	4	5	5	4	25
31	3	2	6	5	5	5	4	6	36

Mean of K-Sum is 22.6

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	6	43	62	59	41	29	7	1	0	0	0

MAWSON

MAGNETIC K-INDICES - OCTOBER 1991

Range for lower limit of K=9 is 1500nT

DAY	K-INDICES								K-SUM
01	4	5	5	5	4	4	7	6	40
02	6	6	6	5	5	7	5	5	45
03	4	4	4	3	3	3	6	6	33
04	5	6	6	4	5	4	7	7	44
05	6	5	5	3	2	2	2	2	27
06	3	4	3	3	3	7	6	7	36
07	7	6	5	5	3	3	3	3	35
08	6	5	5	6	6	5	5	3	41
09	6	5	4	4	3	3	3	3	31
10	4	7	6	4	4	5	4	3	37
11	3	4	4	3	3	5	4	5	31
12	3	4	3	2	1	1	3	4	21
13	3	3	3	2	2	2	4	3	22
14	4	4	3	2	2	2	6	2	25
15	5	4	3	1	1	1	1	1	17
16	3	4	3	3	2	1	1	3	20
17	4	3	2	1	2	2	1	4	19
18	5	3	3	3	3	3	2	3	25
19	4	5	4	3	2	2	3	3	26
20	3	4	5	5	5	4	3	2	31
21	4	6	5	5	4	4	5	3	36
22	4	5	6	5	4	4	4	3	35
23	5	4	6	3	2	3	6	7	36
24	6	6	5	4	3	5	4	4	37
25	6	6	6	5	5	5	6	4	43
26	5	6	7	4	5	6	5	5	43
27	6	6	6	4	5	6	6	5	44
28	6	7	6	7	6	7	5	6	50
29	7	8	5	6	5	7	7	5	50
30	4	4	3	5	5	6	6	7	40
31	6	5	5	5	5	7	5	7	45

Mean of K-Sum is 34.4

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	11	21	52	47	55	42	19	1	0	0

PRINCIPAL MAGNETIC STORMS - OCTOBER 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	01 18 13	SSC	-0.4	+19	+15	02(5)	6	7	180	90	03 15
	06 10 ..	...	..	..	..	06(8);7(1);8(4)	5	11	120	80	09 20
	18 01 45	SSC	+0.4	+36	+30	21(6,7);25(5,7)	5	11	280	140	26 00
	28 10 54	SSC	+1.0	+63	+49	28(6)	9	18	380	210	31 ..
Gnangara	01 18 13	SSC*	+7.2*	+30	+27*	01(5)	7	30	182	204	02 19
	28 10 55	SSC*	+11.2*	+76*	+18*	28(6)	7	43	300	240	30 00
	31 07 ..	...	..	..	..	31(8)	6	34	110	150	01 03
Canberra	01 18 14	SSC*	+3.4*	+13	0	01(7,8);02(3-6)	5	21.6	171	87	02 18
	25 06 ..	...	..	..	..	25(4,5);27(8); 28(1,4)	5	22.9	192	52	++
	28 10 55	SSC*	-5.0*	+85	+20	28(6)	7	45.0	335	300	30 00
	31 05 ..	...	..	..	..	31(3,8);01(4-8)	6	30.0	252	85	02 08 (Nov.)

++ Merges with next storm.

OCTOBER 1991

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35913	06°	35.7' E	-23692	43024
CHARTERS TOWERS	31706	07°	47.1' E	-38248	49681
LEARMONTH	29539	00°	25.2' W	-44418	53343
GNANGARA	23164	03°	01.5' W	-53795	58570
CANBERRA	23620	12°	31.3' E	-53649	58619
MACQUARIE IS.	12577	29°	48.8' E	-63465	64699
MAWSON	18504	64°	30.2' W	-45954	49539
DAVIS	16702	77°	55.3' W	-51908	54529
CASEY	9649	91°	53.3' W	-63853	64578

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): 16 15 12 17 13
Quietest days (6-10): 14 18 19 11 09
Most Disturbed days : 29 28 31 02 01

SUDDEN STORM COMMENCEMENTS (ssc): OCTOBER 1991

Observatory	Day	Type and Quality	U.T.	Sense and Amplitude of Chief Movement		
				H(nT)	D(nT)	Z(nT)
PORT MORESBY	01	ssc B	1813	+19	-4	+15
	18	ssc B	0145	+36	+4	+30
	28	ssc A	1054	+63	+10	+49
GNANGARA	01	ssc*B	1813	+30	+49*	+27*
	06	ssc*C	0958	+7*	-9*	-4*
	28	ssc*A	1055	+76*	+75*	+18*
CANBERRA	01	ssc*C	1814	+13	+23*	0
	28	ssc*A	1055	+85	-34*	+20

SOLAR FLARE EFFECTS (sfe): OCTOBER 1991

Observatory	----- U.T. of sfe -----				Con- fir- med.	Sense & Amplitude		
	Day	Began	Max.	Ended		H(nT)	D(nT)	Z(nT)
PORT MORESBY						Nil sfe's reported		
GNANGARA						Nil sfe's reported		
CANBERRA						Nil sfe's reported		

