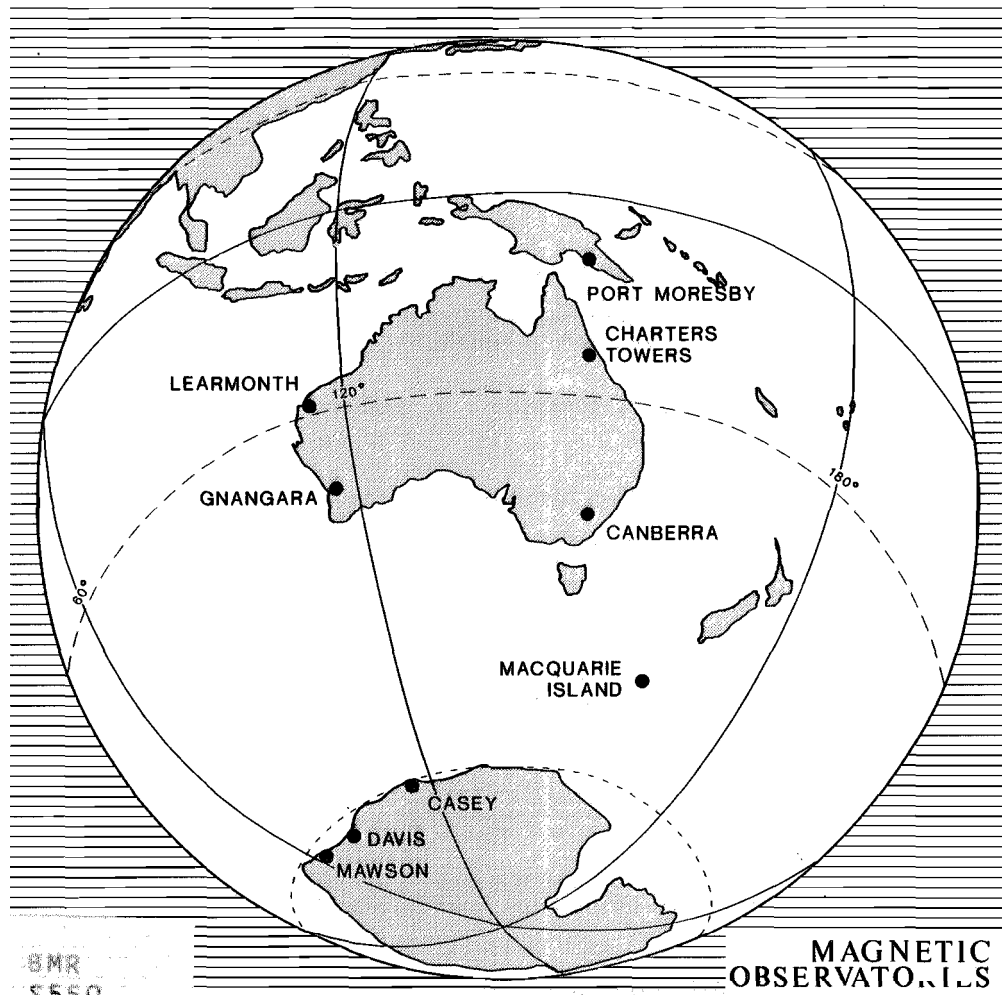


AUSTRALIAN GEOMAGNETISM REPORT



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MAGNETIC
OBSERVATIONS

VOLUME 39 No. 2

FEBRUARY 1991

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	Ll.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	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 - FEBRUARY 1991

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 15.6

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	12	63	84	49	6	3	0	0	0	0	7

GNANGARA

MAGNETIC K-INDICES - FEBRUARY 1991

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 16.8

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	6	60	86	53	16	3	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - FEBRUARY 1991

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 14.5

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	25	62	68	46	11	2	0	0	0	0	10

MAWSON

MAGNETIC K-INDICES - FEBRUARY 1991

Range for lower limit of K=9 is 1500nT

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

Mean of K-Sum is 28.4

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	3	42	67	67	34	8	3	0	0	0

PRINCIPAL MAGNETIC STORMS - FEBRUARY 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 40	SSC*	+0.9* +30 +26	01(8);02(1)	5	13 90 90	02 09		
Gnangara	Nil		Principal	Magnetic		Storms			
Canberra	01 18 42	SSC*	+5.5* +35 -5*	01(7,8)	5	28.2 124 51	02 09		

FEBRUARY 1991

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D		Z	F
	nT	deg	min	nT	nT
PORT MORESBY	35928	06°	35.7' E	-23699	43040
CHARTERS TOWERS	31747	07°	46.7' E	-38244	49704
LEARMONTH	29530	00°	27.3' W	-44426	53345
GNANGARA	23200	03°	03.0' W	-53784	58574
CANBERRA	23655	12°	30.8' E	-53644	58627
MACQUARIE IS.	12583	29°	45.5' E	-63492	64726
MAWSON	18497	64°	25.3' W	-45971	49553
DAVIS	16667	77°	26.8' W	-51959	54567
CASEY	9649	91°	56.6' W	-63885	64610

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): 18 17 16 03 06
Quietest days (6-10): 04 24 20 19 26
Most Disturbed days : 01 23 28 09 11

SUDDEN STORM COMMENCEMENTS (ssc): FEBRUARY 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	1840	+30	+9*	+26
GNANGARA	01	ssc*B	1841	+42	+80*	+64*
CANBERRA	01	ssc*A	1842	+35	+38*	-5*

SOLAR FLARE EFFECTS (sfe): FEBRUARY 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				

