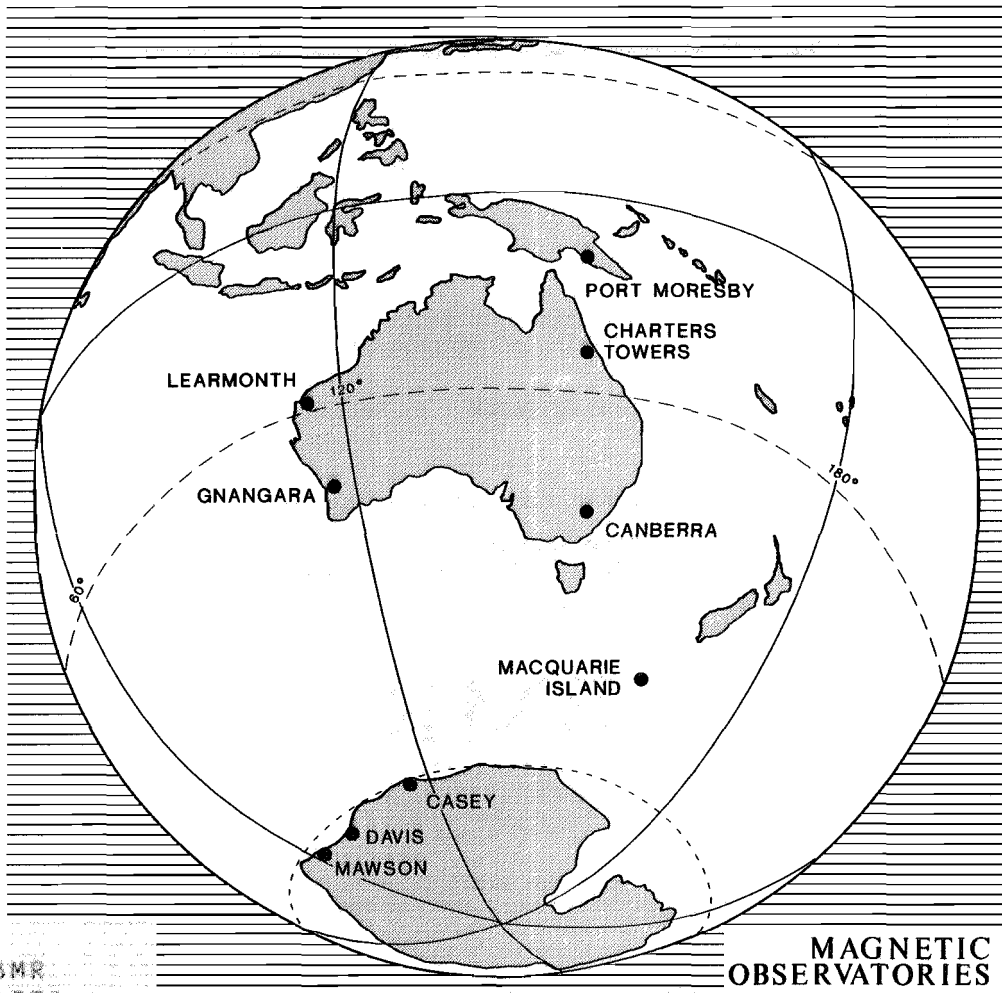


AUSTRALIAN GEOMAGNETISM REPORT



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MAGNETIC
OBSERVATORIES
VOLUME 39 No. 1
JANUARY 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 - JANUARY 1991

Range for lower limit of K=9 is 300nT

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

Mean of K-Sum is 12.7

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	22	103	69	28	11	1	0	0	0	0	14

GNANGARA

MAGNETIC K-INDICES - JANUARY 1991

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 15.7

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	13	76	91	48	15	5	0	0	0	0	0

CANBERRA

MAGNETIC K-INDICES - JANUARY 1991

Range for lower limit of K=9 is 450nT

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

Mean of K-Sum is 13.8

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	34	76	81	41	13	2	1	0	0	0	0

MAWSON**MAGNETIC K-INDICES - JANUARY 1991**

Range for lower limit of K=9 is 1500nT

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

Mean of K-Sum is 28.3

Frequency of K-Indices

K :	0	1	2	3	4	5	6	7	8	9	-
f :	0	8	37	93	58	35	9	8	0	0	0

PRINCIPAL MAGNETIC STORMS - JANUARY 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	23 20 29	ssc	+0.2 +10 +7	24(6)	5	9 120 60	26 09		
Gnangara	Nil		Principal	Magnetic		Storms			
Canberra	Nil		Principal	Magnetic		Storms			

JANUARY 1991

PRELIMINARY MONTHLY MEAN VALUES

OBSERVATORY	H	D	Z	F
	nT	deg min	nT	nT
PORT MORESBY	35929	06° 35.4' E	-23701	43042
CHARTERS TOWERS	31755	07° 46.5' E	-38248	49712
LEARMONTH	29542	00° 27.4' W	-44426	53352
GNANGARA	23203	03° 03.6' W	-53777	58569
CANBERRA	23660	12° 30.3' E	-53647	58633
MACQUARIE IS.	12593	29° 45.0' E	-63486	64686
MAWSON	18510	64° 23.3' W	-45973	49559
DAVIS	16670	77° 28.3' W	-51960	54569
CASEY	9656	91° 38.7' W	-63885	64611

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): 07 06 14 19 22
Quietest days (6-10): 30 29 21 20 28
Most Disturbed days : 24 12 31 25 15

SUDDEN STORM COMMENCEMENTS (ssc): JANUARY 1991

Observatory	Day	Type and Quality	U.T.	Sense and Amplitude of Chief Movement		
				H(nT)	D(nT)	Z(nT)
PORT MORESBY	23	ssc B	2029	+10	+2	+7
GNANGARA	12	ssc*B	0151	+9	-32*	-19*
CANBERRA	12	ssc B	0610	+35	+10	0

SOLAR FLARE EFFECTS (sfe): JANUARY 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	21	0637	0639	0641		+3	-8	-7
CANBERRA	25	0630	0638	0712	*	..	+25	-7

