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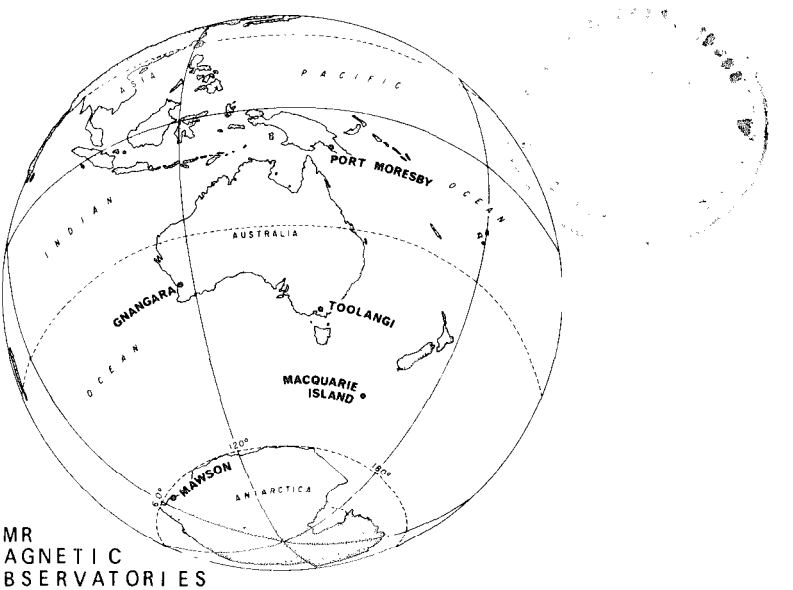
BUREAU OF MINERAL RESOURCES,
GEOLOGY & GEOPHYSICS

GEOPHYSICAL OBSERVATORY REPORT



BMR
MAGNETIC
OBSERVATORIES

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Issued under the authority of
The Hon. R.F.X. Connor, M.P., Minister for Minerals & Energy

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF MINERALS & ENERGY
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CONTENTS

Page

Contributing Observatories 2

K–Indices 3

Principal Magnetic Storms 8

Monthly Mean Values, Sudden Commencements
and Other Phenomena 9

The terminology used in this report is that accepted by international convention. The units of field intensity, nanotesla (nT), are those of the SI system. All times are in Universal Time. Should further information be required, apply to:

GEOPHYSICAL OBSERVATORY GROUP
BUREAU OF MINERAL RESOURCES
P.O. BOX 378
CANBERRA CITY, A.C.T. 2601

Note: 1nT ≡ 1 gamma in the C.G.S. system

CONTRIBUTING OBSERVATORIES

OBSERVATORY	OBSERVER IN CHARGE	GEOGRAPHIC		GEOMAGNETIC	
		LAT	LONG	LAT	LONG
GNANGARA	P.J. Gregson	31°47'S	115°57'E	− 43·3°	185·8°
MACQUARIE I	P.J. Hill	54°30'S	158°57'E	− 61·1°	243·1°
MAWSON	R.A. Almond	67°36'S	62°53'E	− 73·1°	102·9°
PORT MORESBY	I.B. Everingham	9°25'S	147°09'E	− 18·6°	217·9°
TOOLANGI	R.L. Paine	37°32'S	145°28'E	− 46·7°	220·8°

MAGNETOGRAPHS

OBSERVATORY	TYPE	NOMINAL SCALE VALUES								
		NORMAL			SENSITIVE			RAPID RUN		
		D	H	Z	D	H	Z	D	H	Z
GNANGARA	*Eschenhagen*	1	2½	5½						
MACQUARIE I	*La Cour*	2½	24	21				1	5½	6
MAWSON	*La Cour*	2½	21	22	1	10	10			
PORT MORESBY	*La Cour*	½	2½	3½						
TOOLANGI	*La Cour*	1	4½	5						

Scale values are in minutes of arc/mm (D) and nT/mm (H,Z)

MAGNETOMETERS

Absolute data are based on control observations made with QHM's BMZ's Askania Declinometers and Proton Precession Magnetometers
Errors in preliminary values are not likely to exceed ±5 nT or 0.5 minutes

G N A N G A R A

MAGNETIC K-INDICES - JULY1973

Range for lower limit of K=9 is 350 nT

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

M A C Q U A R I E I S L A N D

MAGNETIC K-INDICES - JULY 1973

Range for lower limit of K=9 is 1500 nT

Day					K-Indices				K-Sum	C
01	3	3	5	5	5	4	4	1	30	2
02	1	2	2	4	4	2	3	2	20	1
03	1	2	2	3	2	1	0	1	12	0
04	0	0	0	2	0	0	0	0	02	0
05	1	0	1	1	1	0	0	0	04	0
06	0	0	0	0	1	0	0	0	011	0
07	0	0	0	0	0	0	0	0	00	0
08	0	0	4	6	6	6	1	1	24	1
09	1	1	1	5	4	3	3	0	18	1
10	1	1	0	1	1	0	0	0	04	0
11	0	1	1	0	0	0	0	0	02	0
12	0	0	0	2	0	0	1	0	03	0
13	-	-	4	4	3	3	1	1	--	-
14	-	1	2	1	0	0	0	1	--	-
15	3	5	4	5	6	4	4	3	34	2
16	4	3	3	3	2	1	1	2	19	1
17	1	3	1	2	2	0	0	0	09	0
18	0	1	0	1	0	0	0	0	02	0
19	1	1	1	4	6	1	2	2	18	1
20	2	1	1	4	0	2	1	0	11	0
21	0	1	1	3	2	0	0	0	07	0
22	0	0	0	0	0	0	0	0	00	0
23	1	3	3	5	4	2	1	2	21	1
24	1	1	1	4	3	0	0	1	11	0
25	1	2	4	4	4	0	1	0	16	1
26	1	3	5	7	6	6	5	3	36	2
27	4	4	5	7	6	5	4	2	37	2
28	3	3	4	6	4	4	3	2	29	1
29	2	3	5	6	5	1	1	2	25	1
30	2	2	3	3	6	5	4	2	27	1
31	4	4	5	6	7	5	1	1	33	2

M A W S O N

MAGNETIC K-INDICES - JULY 1973

Range for lower limit of K-9 is 1500 nT

Day					K-Indices				K-Sum	C
01	6	6	6	5	4	6	6	5	44	2
02	5	4	4	4	3	3	4	5	32	2
03	4	5	3	4	4	3	2	4	29	1
04	5	2	3	3	2	2	4	5	26	1
05	3	3	2	2	2	2	1	1	16	0
06	2	1	2	2	2	2	2	3	16	0
07	2	1	2	1	0	0	2	2	10	0
08	2	4	3	4	4	4	3	4	28	1
09	2	3	3	3	3	3	3	3	23	1
10	6	2	3	3	2	1	1	5	23	1
11	3	3	2	1	1	1	3	5	19	1
12	4	3	3	1	2	2	5	5	25	1
13	4	3	4	3	3	3	2	6	28	1
14	4	5	3	4	2	1	2	5	26	1
15	5	5	4	5	4	4	8	8	43	2
16	6	5	5	4	3	1	6	5	35	2
17	6	5	2	2	2	2	4	5	28	1
18	4	3	2	3	2	3	2	5	24	1
19	4	3	4	5	4	3	2	6	31	2
20	4	4	4	3	3	3	4	4	29	1
21	3	3	3	2	3	3	2	5	24	1
22	6	2	1	1	1	2	6	3	22	1
23	4	5	6	4	4	2	6	7	38	2
24	3	-	2	4	3	2	2	5	--	-
25	5	4	4	4	3	1	3	5	29	1
26	4	4	5	5	5	5	6	7	41	2
27	7	6	6	6	4	6	7	5	47	2
28	4	5	6	6	4	4	3	4	36	2
29	4	6	5	5	4	2	6	6	38	2
30	5	4	5	5	4	5	6	6	40	2
31	7	7	6	6	4	4	4	5	43	2

P O R T M O R E S B Y

MAGNETIC K-INDICES - JULY 1973

Range for lower limit of K-9 is 300 nT

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

T O O L A N G I

MAGNETIC K-INDICES - JULY 1973

Range for lower limit of K=9 is 500 nT

Day					K-Indices				K-Sum	C
01	3	4	5	4	3	3	3	1	26	1
02	2	3	3	3	2	2	2	1	18	0
03	3	2	2	3	2	2	1	0	15	0
04	0	0	0	2	0	0	0	0	02	0
05	2	0	0	0	0	0	0	0	02	0
06	0	0	0	0	1	0	0	0	01	0
07	0	0	0	0	0	0	0	0	00	0
08	0	2	3	4	5	3	2	2	21	1
09	1	2	3	4	4	3	3	0	20	1
10	3	1	1	1	0	0	0	0	06	0
11	0	1	1	2	1	0	1	2	08	0
12	1	1	1	2	1	1	2	2	11	0
13	1	1	2	3	2	3	2	2	16	0
14	2	1	2	1	1	1	1	1	10	0
15	3	4	4	4	4	4	4	4	31	1
16	4	2	3	3	2	1	1	1	17	1
17	3	3	1	1	1	1	1	1	12	0
18	1	1	0	1	1	1	0	0	05	0
19	1	2	3	3	4	1	2	1	17	1
20	2	2	2	3	1	2	2	2	16	0
21	2	1	2	3	3	0	0	1	12	0
22	2	0	0	0	0	0	1	2	05	0
23	2	3	3	4	3	3	2	3	23	1
24	2	1	3	2	3	1	0	0	12	0
25	2	3	3	3	2	1	3	2	19	1
26	1	3	4	5	6	4	4	4	31	2
27	5	3	4	4	3	3	4	3	29	1
28	3	3	3	4	3	3	2	1	22	1
29	3	4	3	4	3	2	2	3	24	1
30	3	2	3	3	3	4	3	2	23	1
31	3	5	5	5	5	3	1	1	28	1

JULY 1973

PRINCIPAL MAGNETIC STORMS

Observatory	Storm - time					Sudden commencement				Degree of activity	Maximal activity on K - scale 0 to 9			Ranges		
	Begin			End		Type	Amplitudes				Day	3 - hour period	K	D	H	Z
							D	H	Z							
	d	h	m	d	h		′	nT	nT					′	nT	nT
GNANGARA	15	02	..	16	14	..				m	15	5,7,8	5	14	80	80
	26	03	..	31	18	..				ms	26	4,5	6	20	90	130
											31	5	6			
PORT MORESBY	25	05	..	28	00	..				m	26	4	5	4	140	50
												5	5			
												8	5			
											27	1	5			
	31	05	46	31	16	ssc	+0.2	+20	+13	m	31	2	5	2	50	40
TOOLANGI	26	03	..	29	21	..				ms	26	5	6	10	140	40
	30	03	..	02	18	..				m	31	2,3,4,5	5	18	100	35
											01	4	5			

JULY 1973

PRELIMINARY MONTHLY MEAN VALUES

Based on selected quiet days

OBSERVATORY	H nT	D ° ′	Z nT
GNANGARA	23684	03 07.6 W	-53464
MACQUARIE I.	12905	27 28.2 E	-63990
MAWSON	18392	62 18.5 W	-47483
PORT MORESBY	36124	06 16.0 E	-23270
TOOLANGI	22280	10 44.8 E	-56317

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA

OBSERVATORY	DAY	TIME	TYPE	SENSE OF MOVEMENT H	D	Z
GNANGARA	08	1159	bp B	+	-	
	25	1829	bps B	+	+	
	31	0546	si* B	+*	-*	
PORT MORESBY	26	1539	si B	+	+	
	31	0546	ssc B	+	+	
TOOLANGI	08	1201	bp B	+	-	
	17	0705	si B	+	+	
	26	1131	b B	+	-	
	31	0545	si* A	+*	-*	