

KODAIKANAL SOLAR, GEOMAGNETIC AND IONOSPHERIC DATA
JANUARY—MARCH 1953

Curves showing (a) Kodaikanal daily relative sunspot numbers, (b) daily areas of calcium prominences and (c) daily areas of H-alpha dark markings are given on page 258. Tables 1 to 4 below summarise the data on solar and geomagnetic phenomena. The hourly median values of critical frequency and virtual height for the ionospheric layers are given in Table 5.

TABLE 1
Prominent sunspot groups

No large sunspot groups were observed during the quarter

TABLE 2
Solar Flares

No solar flares were observed during the quarter

TABLE 3
Sudden disappearance of prominences and H-alpha dark markings

Nature of phenomenon	Date and time (GMT) of phenomenon when last seen		Co-ordinates of phenomenon		Remarks
			Mean latitude	Mean longitude	
Prominence	February 2	0832	15°S	90°E	Disappeared next day
	February 26	0627	33°N	90°E	Eruptive prominence (disappeared by 0911 hrs)

TABLE 4
Principal magnetic storms

Greenwich date 1953	Storm-time				Sudden commencement				Degree of activity ⁴	Maximal activity Greenwich day	Ranges		
	GMT of beginning		GMT of ending ¹		Type ²	Amplitude ³					D	H	Z
	h	m	d	h		D	H	Z					
						°	°	°					
January 5	05	42	6	02	s.c.	1	32	12	ms	5	6	310	46
January 25	08	10	30	20	...	—	—	—	m	26	3	160	47
February 22	15	30	28	21	...	—	—	—	m	27	2	132	59
March 2	01	30	4	20	...	—	—	—	m	2	4	249	64

The following symbols and conventions have been used according to recognised practice—

1. Approximate time of ending of storm construed as the time of cessation of reasonably marked disturbance movements in the traces
2. s.c.=Sudden commencement ... = Gradual commencement
3. Signs of amplitudes of D and Z taken algebraically :
(D—reckoned negative being westerly)
(Z—reckoned positive being vertically downwards)
4. Storm described by three degrees of activity :
m—for moderate (when range is between 150γ and 250γ)
ms—for moderately severe (when range is between 251γ and 400γ)
s—for severe (when range is above 400γ)

TABLE 5

Ionospheric data

(Median values)

Kodaikanal (10°2'N 77°5'E)

January 1953

Beginning from January 1952, systematic ionospheric observations are being made at Kodaikanal with the Automatic Multi-frequency Ionosphere Recorder (Type C-3) made by the National Bureau of Standards, U.S.A. The general electrical characteristics of the instrument are given below :

(a) Supply voltage—90 to 260 volts AC single phase

(b) Supply frequency—50 to 60 cps

(c) Power load—approximately 30 amperes at 115 volts

(d) Pulse recurrence frequency—from 10 to 90 pps

(e) Frequency sweep time—7½, 15 or 30 seconds and 30, 60 or 120 seconds

(f) Frequency sweep range—1 to 25 megacycles

(g) Frequency sweep interval—5, 15, 30 or 60 minutes

(h) Height ranges—0-500, 0-1000, 0-4000 kilometres

(i) Peak pulse power—approximately 10 kilowatts

The meanings of the symbols are as follows—

- (1) foE .. Ordinary-wave critical frequency for the E layer
- (2) foF1 .. Ordinary-wave critical frequency for the F1 layer
- (3) foF2 .. Ordinary-wave critical frequency for F2 layer
- (4) h'E .. Minimum virtual height on the ordinary-wave branch for the E layer
- (5) h'F1 .. Minimum virtual height on the ordinary-wave branch for the F1 layer
- (6) h'F2 .. Minimum virtual height on the ordinary-wave branch for the F2 layer
- (7) fEs .. Highest frequency on which echoes of the sporadic type are observed from the lower part of the E layer

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs
07	235	5.9	230		120	2.2	4.6
08	295	7.1	215		110	2.7	7.1
09	340	7.3	200	4.3	105		8.4
10	345	6.8	190	4.3	100		8.6
11	365	7.0	180	4.4	100		9.1
12	345	7.3	185	4.4	100		9.4
13	360	7.9	190	4.4	100	3.2	10.0
14	325	8.4	200	4.3	105	3.2	9.4
15	315	8.5	200		110	2.9	8.2
16	300	8.4	210		110	2.6	7.6
17	240	8.1	230		120	2.1	5.8

Time : 75°0'E. Meridian Time

Sweep : 1.0 Mc. to 25.0 Mc. in 30 seconds

February 1953

07	230	5.5	225		120	2.1	
08	300	6.9	210		105	2.6	7.2
09	330	7.4	200	4.2	100		9.0
10	345	7.3	195	4.3	100		10.0
11	360	6.9	190	4.4	100		10.5
12	360	7.0	185	4.4	100		11.0
13	340	7.3	190	4.4	100		10.3
14	330	7.8	190	4.2	100		10.0
15	320	8.4	200		105	2.9	8.8
16	300	8.7	210		110	2.6	7.2
17	225	8.5	225		120	2.2	7.0

Time : 75°0'E. Meridian Time

Sweep : 1.0 Mc. to 25.0 Mc. in 30 seconds

March 1953

07	245	6.4	225		115	2.3	5.8
08	290	7.9	210		105	2.8	8.6
09	310	8.4	200	4.3	100		10.0
10	330	7.8	200	4.4	100		10.6
11	335	7.5	190	4.4	100		11.4
12	345	7.8	190	4.4	100		11.0
13	340	7.7	190	4.4	100		10.8
14	330	8.2	190	4.3	105		10.2
15	315	8.6	200		110	3.1	9.0
16	295	9.1	215		110	2.7	7.7
17	235	9.3	230		120	2.4	7.5

Time : 75°0'E. Meridian Time

Sweep : 1.0 Mc. to 25.0 Mc. in 30 seconds

Kodaikanal
29 April 1953

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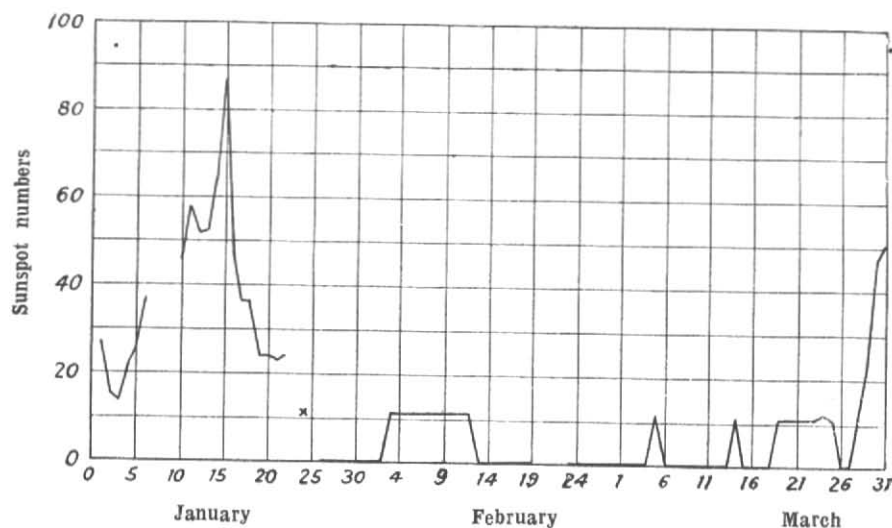


Fig. 1 (a) Kodaikanal daily relative sunspot numbers

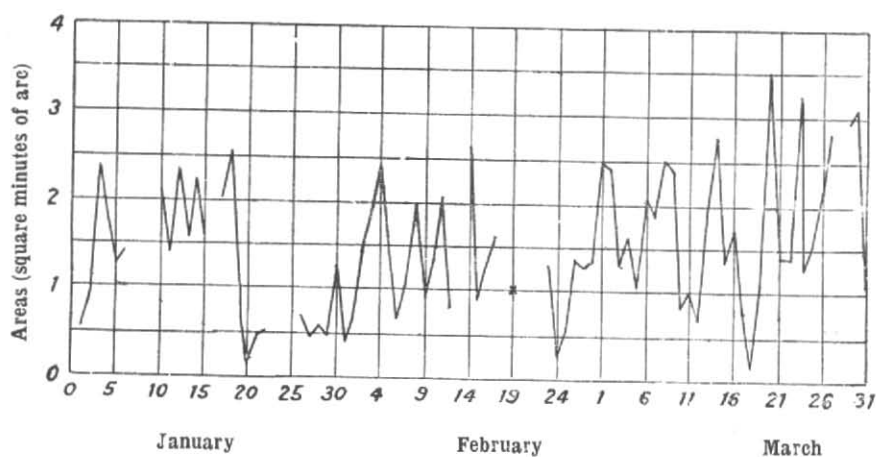


Fig. 1 (b) Daily areas of calcium prominences

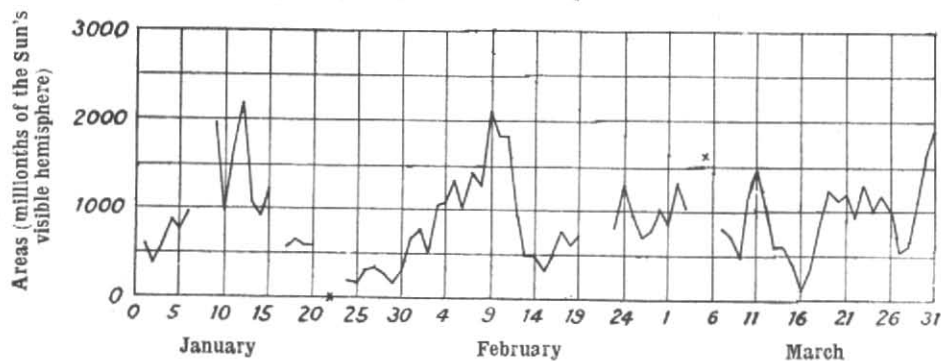


Fig. 1 (c) Daily areas of H-alpha dark markings

Note: Breaks in the graphs are due to lack of observations

MAGNETIC OBSERVATORY, ALIBAG (BOMBAY)

Three-hourly indices of Geomagnetic Activity

(Scale values of variometers in γ/mm :
D=11.3 ; H=4.4 ; Z=2.5)(K9=300 γ)

Greenwich day	JANUARY 1953				FEBRUARY 1953				MARCH 1953			
	K-indices	Sum	Character of the day*		K-indices	Sum	Character of the day*		K-indices	Sum	Character of the day*	
1	2123 3332	19	S		1111 1112	9	Ca		1232 1122	14	S	
2	2233 4442	24	Sa		2111 1211	10	Ca		2354 5655	35	Ma	
3	2212 2321	15	S		2112 1222	13	Ca		4533 3242	26	M	
4	1111 1232	12	S		2212 2211	13	Ca		3121 1211	12	Ca	
5	2466 6644	38	G		1000 1121	6	Ca		1312 1332	16	S	
6	2222 4422	20	S		1011 1211	8	Ca		1221 1224	15	S	
7	1211 2322	14	S		1111 1111	8	Ca		3222 1140	15	S	
8	2212 1121	12	S		1112 1212	11	Ca		1112 3455	22	M	
9	2211 1332	15	S		2222 2224	18	S		4324 3353	27	Sa	
10	2221 2222	15	Ca		1111 2332	14	S		3222 3332	20	S	
11	3312 2122	16	Ca		2131 2122	14	Ca		2112 1121	11	Ca	
12	1111 2211	10	Ca		1111 2210	9	Ca		2112 1111	10	Ca	
13	0223 3343	20	S		0111 1112	8	Ca		0001 1113	7	Ca	
14	1221 1211	11	Ca		1232 1341	17	S		3112 2223	16	Ca	
15	1121 2111	10	Ca		1322 3233	19	S		2224 3211	17	S	
16	1111 2211	10	Ca		3222 2532	21	Sa		2212 2113	14	Ca	
17	1111 2123	12	Ca		3433 2221	20	Sa		1332 1120	13	Ca	
18	1224 4333	22	S		1112 2222	13	Ca		0111 1122	9	Ca	
19	3344 4432	27	Sa		1222 2221	14	Ca		3334 3443	27	S	
20	2222 2132	16	S		2111 1331	13	Ca		2112 1233	15	S	
21	1222 2222	15	Ca		2222 2223	17	Ca		3233 2452	24	Sa	
22	1121 2123	13	Ca		2123 3454	24	M		4422 2233	22	S	
23	3321 2121	15	S		2234 4632	26	M		2434 4541	27	Sa	
24	2223 3341	20	S		3442 3544	29	M		1354 4465	32	Ma	
25	0126 5333	23	Ma		3334 4432	26	Sa		3343 4332	25	M	
26	3333 5543	29	M		2244 5453	29	M		2223 3344	23	S	
27	2224 4452	25	M		3234 2434	25	Sa		2223 2232	18	S	
28	2233 3343	23	Sa		2422 2442	22	Sa		2222 4341	20	S	
29	3213 3442	22	S						2111 2243	16	S	
30	2322 2532	21	S						3321 2343	21	S	
31	1222 3121	14	S						2212 2112	13	Ca	

* At Bombay, since 1883, a day is classed as (1) a quiet day, or a day of (2) small, (3) moderate, (4) great or (5) very great disturbance, the letters for distinguishing the respective classes being C, S, M, G, and VG. For representing intermediate conditions of activity of the smaller period movements, sub-classifications Ca, Sa, and Ma are used. Roughly speaking a storm having a range over 225 γ in the variations of the horizontal force during the first twentyfour hours after its commencement is classed as "Very Great". It is "Great" if the range is between 150 γ and 225 γ , "Moderate" if the range is between 65 γ and 150 γ and "Small" if the range is less than 65 γ . The range is however not the only criterion used in assigning the character of a storm. The oscillations in the magnetograms are duly taken into account in determining the class to which a particular storm should belong.

The corresponding international character figures can be determined from the following—

Bombay character
C }
Ca }
S }
Sa }

International character
0
1

Bombay character
M }
Ma }
G }
VG }

International character
2
2

Colaba, Bombay
17 May 1953

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