

KODAIKANAL SOLAR, GEOMAGNETIC AND IONOSPHERIC DATA

(APRIL—JUNE 1959)

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 446. 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

Kodaikanal Serial No. of spotgroup	Mean latitude	Date of central meridian passage	Total area (millionths of the Sun's visible hemisphere at central meridian passage)
11441	26° N	April 1	1405
11503	18° N	May 14	1108
11539	17° N	June 17	794*
11545	09° N	June 23	1857**

*As measured on 17 June

**As measured on 19 June

TABLE 2
Solar Flares

Date	Time in GMT.			Co-ordinates		Importance	H-alpha line width Å	Remarks
	Beg.	Max.	End.	Mean latitude	Mean longitude			
	h m	h m	h m					
April 13	05 10	05 15	05 25	27° N	22° E	1	1.4	Observed both in spectro-helioscope and spectro-heliograph
May 13†	05 15	—	—	20° N	27° E	2 Probably	—	Observed through very thick sky and passing clouds

†Observation was very momentary and no measurements could be made

TABLE 5

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

Ionospheric data (Median values)

Kodaikanal (10°2'N, 77°5'E) April 1959

Time (hrs)	h'F2	foF2	h'F	foF1	h'E	foE	foEs (M3000) F2
00	U11.6	260				6.2	U 2.80
01	U10.9	240				..	U 2.80
02	10.4	240				..	2.80
03	9.6	240				..	2.95
04	8.3	230				..	3.05
05	7.4	225				..	3.10
06	..	8.5	260	..	125	2.0	4.3 3.00
07	..	11.6	240	..	110	2.9	7.2 2.90
08	..	13.3	230	..	110	..	11.6 2.60
09	..	13.6	220	..	..	..	12.6 2.30
10	..	12.8	215	..	..	..	14.0 2.20
11	..	11.8	210	..	..	..	14.0 2.15
12	..	11.7	205	..	..	..	14.4 2.10
13	..	11.6	210	..	..	..	13.9 2.10
14	..	11.8	215	..	..	..	12.9 2.10
15	..	12.2	225	..	110	..	12.0 2.15
16	..	12.7	240	..	115	..	10.4 2.20
17	..	13.0	260	..	110	..	8.2 2.20
18	..	12.5	300	..	..	..	2.10
19	..	11.0	425	..	..	..	U 2.00
20	U 10.6	430	..	..	..	..	U 2.05
21	U 11.1	360	..	..	..	3.2	U 2.15
22	U 12.5	305	..	..	..	4.2	U 2.40
23	..	12.8	275	..	..	5.6	2.70

Ionospheric data (Median values)

Kodaikanal (10°2'N, 77°5'E) May 1959

Time (hrs)	h'F2	foF2	h'F	foF1	h'E	foE	foEs (M3000) F2
00		10.8	280				6.0 2.60
01		10.1	280				4.3 2.60
02		10.2	290				3.6 2.70
03		9.8	260				3.9 2.85
04		9.4	230				.. 3.05
05		7.9	220				.. 3.15
06	..	9.2	260	..	120	2.2	G 2.95
07	..	11.4	240	..	110	3.1	9.1 2.85
08	..	12.4	230	..	110	..	12.0 2.55
09	..	12.7	220	..	100	..	13.0 2.35
10	..	12.0	215	..	..	..	14.1 2.20
11	..	11.6	210	..	..	..	14.5 2.15
12	..	11.8	210	..	..	..	14.9 2.10
13	..	11.8	210	..	..	..	14.2 2.15
14	..	11.8	215	..	110	..	13.8 2.10
15	..	12.3	220	..	110	..	12.4 2.15
16	..	12.7	240	..	115	3.3	10.6 2.20
17	..	12.7	260	..	120	..	9.0 2.30
18		11.6	300				U 3.7 2.25
19		11.4	400				.. 2.10
20		9.9	400				.. 2.10
21	U 10.4	380					3.4 U 2.20
22	U 10.8	320					3.4 U 2.40
23	U 11.5	300					3.4 U 2.55

Kodaikanal (10°2'N, 77°5'E) June 1959

Time (hrs)	h'F2	foF2	h'F	foF1	h'E	foE	foEs (M3000) F2
00		9.2	320				3.6 2.60
01		8.6	320				4.9 2.60
02		8.0	320				4.0 2.60
03		7.5	305				5.0 2.80
04		7.2	265				4.4 2.95
05		6.0	240				.. 3.10
06	..	8.3	265	..	120	2.3	G 2.90
07	..	10.3	240	..	110	3.0	9.8 2.75
08	..	11.6	230	..	110	3.6	12.1 2.50
09	..	11.7	220	..	110	..	12.6 2.30
10	..	11.8	210	..	..	..	14.2 2.20
11	..	11.4	200	..	..	..	14.7 2.15
12	..	11.0	205	..	..	..	15.0 2.10
13	..	10.8	200	..	..	..	14.6 2.10
14	..	11.0	210	..	..	..	14.0 2.10
15	..	11.0	220	..	110	..	12.8 2.10
16	..	11.4	240	..	115	3.4	10.9 2.20
17	..	11.8	260	..	120	2.9	9.0 2.25
18	..	11.8	290	..	..	..	4.0 2.35
19	..	10.8	360	..	..	..	.. 2.20
20	..	10.1	375	..	..	..	.. 2.15
21	..	9.7	390	..	..	..	2.6 2.20
22	..	9.4	370	..	..	..	3.5 2.35
23	U 9.7	335					4.2 U 2.55

Time: 75°0'E

Sweep: 1.0 Mc. to 25.0 Mc. in 27 seconds

Kodaikanal Observatory, Kodaikanal

31 July 1959

A. K. DAS

Deputy Director General of Observatories

The symbols and terminology used are in accordance with the recommendations of the Special Committee on World-wide Ionospheric Soundings to the U.R.S.I./A.G.I. in its first report (Brussels, 2 September 1956)

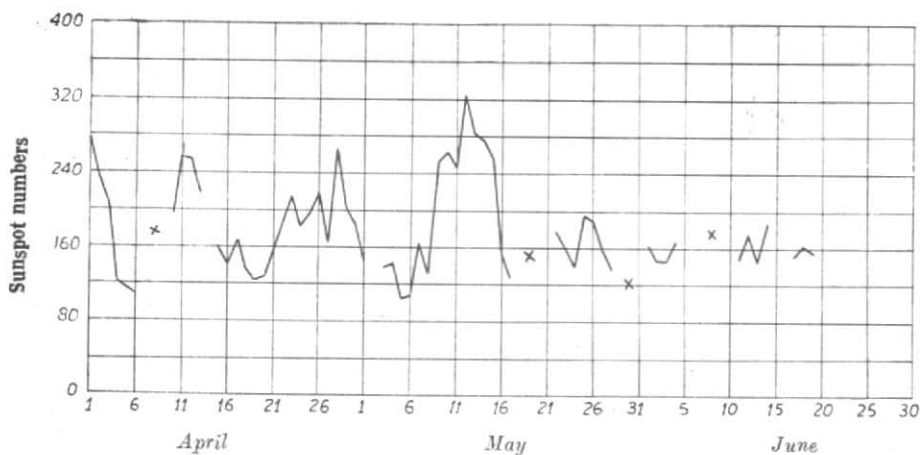


Fig. 1(a). Kodaikanal daily relative sunspot numbers

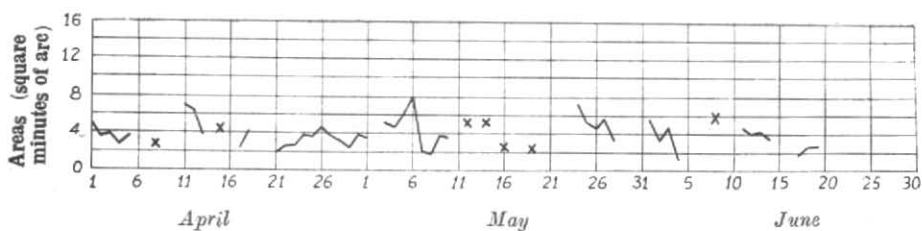


Fig. 1 (b). Daily areas of calcium prominences

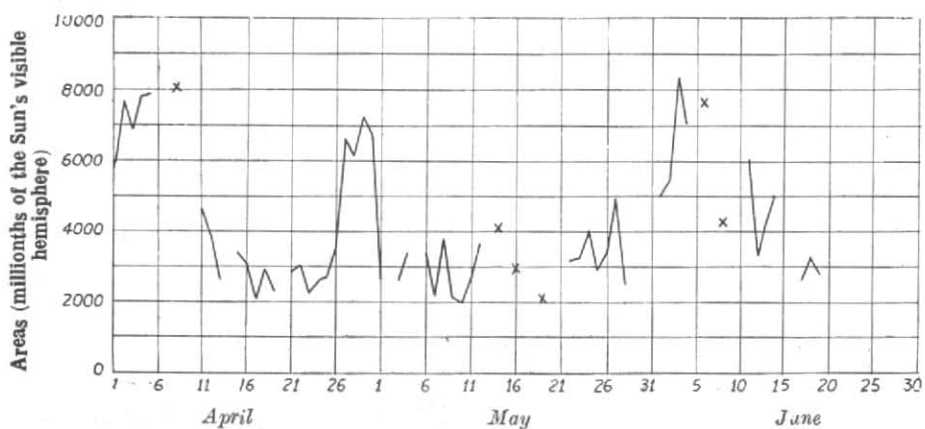


Fig. 1 (c). Daily areas of H-alpha dark markings

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	APRIL 1959				MAY 1959				JUNE 1959			
	K-indices	Sum	Character of the day*		K-indices	Sum	Character of the day*		K-indices	Sum	Character of the day*	
1	2321	1111	12	Ca	3333	2122	19	S	2222	2212	15	Ca
2	1113	2222	14	Ca	1212	1122	12	Ca	3332	2233	21	S
3	3233	2222	19	S	2323	2223	17	S	3324	3213	21	S
4	2222	2221	15	Ca	3223	3335	24	Sa	3335	3344	28	M
5	1212	2211	12	Ca	4545	4211	26	M	3322	2222	18	Ca
6	1332	2333	20	S	3222	2111	14	Ca	2223	3243	21	S
7	2323	2342	21	S	2222	2212	15	S	2323	2212	17	Ca
8	2234	4435	27	M	3454	4423	29	M	2332	2223	19	S
9	5443	2253	28	M	2323	3322	20	S	3245	4232	25	Sa
10	3556	7532	36	G	3442	2322	22	S	2222	2212	15	S
11	2234	3244	24	Sa	2343	2325	24	Sa	2226	3321	21	M
12	3434	1111	18	S	5454	4632	33	M	1111	1221	10	Ca
13	2334	2212	19	S	2222	2233	18	S	1112	2111	10	Ca
14	2222	3223	18	S	1111	2111	9	C	1222	3222	16	Ca
15	2222	2111	13	Ca	1235	4444	27	M	1232	2111	13	Ca
16	1232	2221	15	Ca	3322	2213	18	S	1232	1121	13	Ca
17	1234	4121	18	S	2433	3321	21	S	2111	2232	14	Ca
18	2113	2121	13	Ca	3432	2334	24	S	1123	2222	15	Ca
19	1221	1112	11	Ca	3325	2122	20	S	2323	2112	16	S
20	1212	2111	11	Ca	2221	2242	17	S	2222	2122	15	Ca
21	1234	2211	16	S	2222	2233	18	S	3212	2222	16	Ca
22	1100	2211	8	Ca	2222	3322	18	S	2234	3323	22	S
23	1215	5665	31	Ma	2223	2232	18	S	2434	2343	25	S
24	5554	5313	31	M	3555	3336	33	Ma	4412	1332	20	S
25	2344	3333	25	Sa	5532	2222	23	M	2223	2114	17	S
26	2323	2223	19	S	2223	3232	19	S	3353	3310	21	Sa
27	2123	3413	19	S	2211	2111	11	Ca	0223	4543	23	M
28	2234	2223	20	S	0222	2111	11	Ca	3334	4232	24	M
29	3333	5333	26	M	1112	2112	11	Ca	2355	3323	26	M
30	3333	5442	27	Sa	2223	3321	18	S	2446	4522	29	M
31					2233	4333	23	Sa				

*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 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 twenty-four 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 , "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	International Character	Bombay Character	International Character
C } Ca } S } Sa }	0	M } Ma } G } VG }	2
	1		2

Colaba, Bombay
17 August 1959

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DAILY OZONE DATA — INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1.233 and α' (3323) = 0.071

NEW DELHI

(Lat. 28° 35' N, Long. 77° 12' E)

Date	APRIL 1959			MAY 1959			JUNE 1959		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	16	0.265	Hazy	17	0.287	<i>Ci</i> 2	17	0.273	<i>Ac</i> 3
2	16	0.263	(<i>Ci, Cs</i>) 7	17	0.279	Clear	17	0.265	<i>Ac</i> 4
3	08	0.241	(<i>Sc, Cu</i>) 3, (<i>Ac, As</i>) 5	17	0.233	„	17	0.247	<i>Sc</i> 3, <i>Ac</i> 3
4	16	0.270	(<i>Sc, Cu</i>) 2	17	0.231	Dust haze	17	0.245	<i>Ac</i> 2, (<i>Ci, Cs</i>) 3
5	16	0.295	Clear	17	0.262	Very hazy	17	0.250	<i>Ac</i> 3, <i>Ci</i> 3
6	16	0.274	<i>Ci</i> 3, <i>Cs</i> 2	17	0.269	Hazy	17	0.289	Very hazy
7	16	0.295	Clear	17	0.258	„	No observation, Ozone instrument out of order		
8	17	0.262	(<i>Ci, Cs</i>) 3	17	0.241	<i>Cu</i> 2, <i>Ac</i> 4	18	0.242	Dusty
9	16	0.281	Clear	17	0.267	Clear	17	0.283	(<i>Sc, Cu</i>) 3, hazy
10	16	0.265	Slightly hazy	17	0.231	Hazy	17	0.281	(<i>Sc, Cu</i>) 2
11	17	0.243	Clear	17	0.246	(<i>Ci, Cs</i>) 4, hazy	17	0.251	(<i>Ci, Cs</i>) T
12	16	0.270	(<i>Ci, Cs</i>) 3	17	0.245	<i>Cu</i> 2, <i>Ac</i> 4	17	0.242	<i>Cu</i> 2, <i>Ac</i> 3, hazy
13	08	0.291	(<i>Ci, Cs</i>) 2	17	0.231	<i>Cu</i> 1, <i>Ci</i> T, hazy	17	0.257	<i>Sc</i> 2, very hazy
14	16	0.290	Hazy	17	0.270	<i>Sc</i> T, <i>Ci</i> 3	17	0.251	(<i>Ac, As</i>) 4
15	16	0.275	„	08	0.243	Very hazy	08	0.247	<i>Cs</i> 8, dust hazy
16	08	0.275	<i>Ac</i> 2, mist	09	0.242	Dust haze	08	0.239	<i>Cs</i> 8
17	17	0.281	(<i>Sc, Cu, Cb</i>) 6, <i>As</i> 2	08	0.249	(<i>Sc, Cu</i>) 5, <i>Cs</i> 3	08	0.243	<i>Ac</i> 2, <i>Cs</i> 4
18	16	0.266	(<i>Sc, Cu</i>) 3, (<i>Ac, As</i>) 4	17	0.249	<i>Cu</i> 1, <i>Sc</i> T	17	0.254	Hazy
19	No observation, Bad weather			17	0.267	Hazy	17	0.261	<i>Ac</i> 3, very hazy
20	16	0.277	<i>Cu</i> 1, hazy	17	0.257	Clear	08	0.245	Clear
21	16	0.278	(<i>Sc, Cu</i>) 2, <i>Ac</i> 3	17	0.243	„	08	0.242	(<i>Ac, As</i>) 2
22	16	0.247	<i>Cu</i> 3, <i>Ac</i> 3	17	0.257	Hazy	17	0.278	Hazy
23	16	0.281	(<i>Sc, Cu</i>) 1, hazy	16	0.247	<i>As</i> 3, <i>Ci</i> T, dusty	17	0.233	<i>Sc</i> T, (<i>Ci, Cs</i>) 1, hazy
24	16	0.269	<i>Cu</i> 4, <i>Ac</i> 2	17	0.285	Hazy	17	0.278	(<i>Ci, Cs</i>) 3
25	16	0.287	(<i>Sc, Cu</i>) 6	17	0.263	Very hazy	17	0.275	<i>Ac</i> 3, <i>Ci</i> 2
26	17	0.273	Hazy	17	0.231	„	17	0.269	<i>Sc</i> 4, <i>Ac</i> 3
27	17	0.255	<i>Sc</i> 2, <i>Ac</i> 3	12	0.261	<i>Sc</i> 3, (<i>Ac, As</i>) 5	17	0.290	<i>St</i> 2, hazy
28	17	0.259	<i>As</i> 3, (<i>Ci, Cs</i>) 3	17	0.293	<i>Sc</i> 2, <i>Ac</i> 4	17	0.246	<i>Sc</i> 2, (<i>Ac, As</i>) 2
29	16	0.275	(<i>Ci, Cs</i>) 5	18	0.259	<i>Cu</i> 2, <i>Ac</i> 2	17	0.249	<i>Sc</i> 3, <i>Ac</i> 2
30	16	0.277	<i>Sc</i> 2, (<i>Ci, Cs</i>) 5	08	0.267	<i>Ac</i> T	18	0.239	<i>Sc</i> 2, <i>Ac</i> 1, (<i>Ci, Cs</i>) 2
31				12	0.286	(<i>Sc, Cu</i>) 2, (<i>Ac, As</i>) 3			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA—INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1.233 and α' (3323) = 0.071

MT. ABU

(Lat. 24°36'N, Long. 72°43'E)

Date	APRIL 1959			MAY 1959			JUNE 1959		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	10	0.250	Hazy	17	0.266	Hazy	10	0.267	(Cu, Ci) 3
2	No observation			16	0.255	"	17	0.265	Thick Ci
3	17	0.251	(Cu, Ci) 2	17	0.250	"	17	0.263	(Cu, Ci) 2
4	10	0.251	Cu 2, Ci 3	16	0.250	"	10	0.258	Ci 2
5	17	0.273	Hazy	17	0.253	"	16	0.262	Very hazy, dusty
6	17	0.255	Overcast	17	0.250	Clear	17	0.265	Very hazy
7	17	0.250	Hazy	17	0.253	"	No observation		"
8	17	0.250	"	16	0.251	"	17	0.270	Hazy
9	17	0.251	"	17	0.250	Hazy	17	0.265	(Cu, Ci) 2
10	17	0.250	"	17	0.247	Clear	17	0.265	Very hazy
11	17	0.257	Sl. hazy	17	0.251	Mainly overcast	17	0.263	Hazy
12	15	0.258	Hazy	17	0.266	Cu 3, Ci 2	17	0.265	Cu 2
13	10	0.249	"	16	0.267	(Cu, Ci) 3	No observation		
14	17	0.253	Clear	17	0.261	Hazy	"		
15	16	0.254	"	16	0.261	(Cu, Ci) 2	17	0.257	Very hazy
16	10	0.259	Hazy	17	0.261	(Cu, Ci) 3	10	0.259	Hazy
17	17	0.259	"	17	0.263	Dusty	17	0.261	(Cu, Ci) 3
18	10	0.266	"	17	0.261	Hazy	10	0.261	Hazy
19	16	0.267	Clear	17	0.249	"	17	0.258	Cu, 3, Ci 2
20	16	0.265	Hazy	17	0.244	"	17	0.258	Hazy
21	16	0.261	"	17	0.243	"	17	0.253	Cu 3, Ci 2
22	16	0.262	Cu 2	17	0.244	(Cu, Ci) 2	17	0.254	Hazy
23	10	0.254	Hazy	10	0.250	Hazy	17	0.252	Cu 3, Ci 2
24	17	0.261	Cu 2, Ci 3	16	0.250	"	No observation		Overcast
25	11	0.253	Hazy	17	0.250	"	10	0.259	Ci 2
26	17	0.261	"	17	0.247	Dusty	17	0.254	Mainly overcast
27	17	0.261	Overcast	10	0.255	Very hazy	No observation		Overcast
28	17	0.261	(Cu, Ci) 3	No observation		Rain	"		"
29	17	0.262	Mainly overcast	"		"	10	0.255	Cu 4, Ci 3
30	17	0.261	"	17	0.256	Cu 3, Ci 2	No observation		Overcast
31				10	0.273	Hazy			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA—INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed z (3112) = 1.23 and α' (3323) = 0.08

KODAIKANAL

(Lat. 10° 14'N, Long. 77° 28'E)

Date	APRIL 1959			MAY 1959			JUNE 1959		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	08	0.247	<i>Ci</i> 2	08	0.257	<i>Cu</i> 1, <i>Ci</i> 4	08	0.246	<i>Ci</i> 6
2	08	0.246	<i>Ci</i> 1	No observation		Overcast, rain	11	0.271	<i>Cu</i> 2, <i>Cs</i> 1
3	09	0.249	Through thin <i>Cs</i>	09	0.247	<i>Cu</i> 1, <i>Ac</i> 1, <i>Ci</i> 4	08	0.257	<i>Cs</i> 1, <i>Ci</i> 1
4	No observation		<i>As</i> 3, <i>Cs</i> 4	11	0.259	<i>Cs</i> 4, <i>Ci</i> 4	09	0.259	<i>Ci</i> 1, <i>Cs</i> 1
5	"		Overcast	No observation		Overcast	16	0.258	<i>Cu</i> 4, <i>Sc</i> 2
6	09	0.238	<i>Cu</i> 2, <i>Ac</i> 4	10	0.269	Through thin <i>Ci</i>	No observation		Overcast, rain
7	No observation		Rain, overcast	No observation		Overcast	"		"
8	"		"	10	0.262	<i>Cs</i> 4, <i>Ci</i> 4	"		Overcast
9	"		"	08	0.261	<i>Ci</i> 4, <i>Cs</i> 2	"		"
10	"		Overcast	No observation		Overcast	"		"
11	"		"	"		"	11	0.273	<i>Sc</i> 3, <i>Ac</i> 2, <i>Ci</i> 2
12	"		"	08	0.267	<i>Cs</i> 4, <i>Ci</i> 4	08	0.261	<i>Cu</i> 1, <i>Cs</i> 1
13	"		"	No observation		Overcast	08	0.257	<i>Cu</i> 1, <i>As</i> 1, <i>Ci</i> 1, <i>Cs</i> 2
14	"		<i>Cu</i> 6, <i>Ci</i> 1	11	0.255	<i>Cu</i> 3, <i>Ci</i> 2	11	0.267	<i>Sc</i> 3, <i>Cs</i> 2
15	08	0.241	<i>Sc</i> 3, <i>Ci</i> 2	No observation		Overcast, rain	No observation		Overcast
16	09	0.247	<i>Sc</i> 5	"		<i>Sc</i> 3, <i>Cu</i> 4	"		Overcast, rain
17	08	0.243	<i>Sc</i> 4	"		Overcast	"		Overcast
18	08	0.241	<i>Sc</i> 4	"		"	08	0.271	<i>Cu</i> 1, <i>Sc</i> 2, <i>Ci</i> 1
19	No observation		Overcast	09	0.250	<i>Ac</i> 4, <i>Ci</i> 3	No observation		Overcast
20	"		<i>Sc</i> 1, <i>Ac</i> 3, <i>Cs</i> 3	No observation		Overcast	"		Rain, overcast
21	10	0.255	<i>Sc</i> 2	"		"	"		"
22	11	0.247	<i>Cs</i> 4, <i>Ci</i> 4	Unreliable observation			"		Overcast
23	08	0.249	<i>Sc</i> 4, <i>St</i> 1	10	0.261	<i>Ac</i> 3, <i>Cu</i> 1	"		Overcast, rain
24	08	0.250	Hazy	09	0.264	<i>Cu</i> 2, <i>Ci</i> 3	"		"
25	08	0.249	<i>Cu</i> 2, <i>Ci</i> 4	08	0.267	<i>Cs</i> 4, <i>Ci</i> 4	"		"
26	08	0.249	<i>Ci</i> 4, <i>Cs</i> 4	09	0.259	<i>Ci</i> 6	"		"
27	No observation		Overcast	08	0.259	<i>Cu</i> 1, <i>Ci</i> 4	"		Overcast
28	09	0.255	Clear	07	0.261	<i>Ci</i> 1, <i>Cs</i> 1	"		"
29	08	0.261	"	No observation		Overcast	"		Overcast, rain
30	09	0.261	"	10	0.262	<i>Cs</i> 2, <i>Ci</i> 2	"		Overcast
31				No observation		Overcast			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA—INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112)=1.233 and α' (3323)=0.071

SRINAGAR

(Lat. 34°05'N, Long. 74°50'E)

Date	JUNE 1958			JULY 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	17	0.343	<i>Cu</i> 2, <i>Ci</i> T	17	0.269	<i>Cu</i> 3, <i>Ci</i> 2
2	17	0.323	<i>Cu</i> 2, <i>Ci</i> T	17	0.272	<i>Cu</i> 2, hazy
3	16	0.302	<i>Cu</i> 3, <i>Ci</i> 2, obsn. through cloud	18	0.274	<i>Cu</i> 2, <i>Ci</i> 2
4	17	0.304	<i>Cu</i> 2, obsn. through cloud	08	0.272	<i>Cu</i> T, hazy
5	17	0.305	<i>Cu</i> 2, <i>Ci</i> T, hazy	18	0.271	Mainly overcast
6	10	0.303	<i>Cu</i> 2	08	0.263	<i>Cu</i> 2, <i>Ci</i> T
7	16	0.302	<i>Cu</i> 2, <i>Ci</i> T	No observation		Overcast
8	17	0.298	<i>Cu</i> 3, <i>Ci</i> 2, obsn. through cloud	"	"	"
9	17	0.288	<i>Cu</i> 2, <i>Ci</i> T	18	0.279	<i>Cu</i> 2, hazy
10	17	0.282	<i>Ac</i> 3, <i>Ci</i> T, hazy	08	0.258	<i>Cu</i> 2
11	17	0.278	<i>Cu</i> 2, <i>Ci</i> T	No observation		
12	10	0.284	Hazy	"	"	"
13	17	0.279	<i>Cu</i> 2, <i>Ci</i> T	"	"	"
14	17	0.276	<i>Ci</i> T, hazy	"	"	"
15	18	0.280	<i>Cu</i> 2, <i>Ci</i> T	"	"	"
16	17	0.280	<i>Cu</i> 2, <i>Ci</i> 2, obsn. through cloud	"	"	"
17	17	0.277	<i>Cu</i> 2	"	"	"
18	10	0.283	Mainly overcast	18	0.282	<i>Ci</i> T
19	17	0.289	<i>Cu</i> 3, <i>Ci</i> T, hazy	18	0.284	<i>Ci</i> T
20	17	0.300	<i>Cu</i> 2, <i>Ci</i> 3, hazy	08	0.275	Hazy
21	16	0.288	<i>Cu</i> 3, <i>Ac</i> 2, <i>Ci</i> T	16	0.284	<i>Cu</i> 2, hazy
22	15	0.284	<i>Cu</i> 2, <i>Ci</i> T	18	0.278	<i>Cu</i> 2, hazy
23	17	0.283	<i>Ci</i> T, hazy	18	0.272	<i>Cu</i> 2, hazy
24	17	0.270	<i>Cu</i> 3, <i>Ci</i> T	13	0.264	<i>Ci</i> T
25	17	0.271	Sl. hazy	18	0.272	<i>Cu</i> 2, <i>Ci</i> 2
26	10	0.270	Hazy	12	0.263	Mainly overcast
27	17	0.275	<i>Cu</i> 3, <i>Ac</i> 3	18	0.270	<i>Cu</i> 3, <i>Ac</i> 3
28	10	0.274	Hazy	18	0.267	<i>Cu</i> 2, <i>Ci</i> T
29	16	0.287	<i>Cu</i> 4, <i>Ac</i> 3	18	0.259	Sl. hazy
30	17	0.275	<i>Cu</i> 4, <i>Ac</i> 3	18	0.263	<i>Cu</i> 2, hazy
31				18	0.263	<i>Cu</i> 3, hazy

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA—INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112)=1.233 and α' (3323)=0.071

SRINAGAR

(Lat. 34°05'N, Long. 74°50'E)

Date	AUGUST, 1958			SEPTEMBER 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	18	0.265	<i>Cu</i> 2, hazy	17	0.279	<i>Cu</i> 3, <i>Ci</i> 2
2	18	0.266	<i>Cu</i> 3, hazy	No observation		Overcast
3	09	0.255	<i>Cu</i> 2, <i>Cs</i> 2	"		"
4	18	0.249	<i>Cu</i> 2, hazy	17	0.266	<i>Cu</i> 3, <i>Ci</i> 4
5	18	0.265	<i>Cu</i> 3, <i>Ci</i> 2, hazy	17	0.270	<i>Cu</i> 3, hazy
6	17	0.258	Obsn. through cloud	18	0.261	<i>Cu</i> 2, <i>Ci</i> 4
7	18	0.265	<i>Cu</i> 3, <i>Ci</i> 2, hazy	08	0.254	<i>Cu</i> 3, <i>Ac</i> 3
8	18	0.272	<i>Ci</i> T, sl. hazy	16	0.263	<i>Cu</i> 2, <i>Ac</i> 2
9	18	0.269	Hazy	17	0.242	Obsn. through cloud
10	18	0.266	<i>Ci</i> T, hazy	16	0.274	<i>Cu</i> 3, <i>Ci</i> 2
11	16	0.263	<i>Cu</i> 2, hazy	18	0.269	<i>Cu</i> 3, <i>Ci</i> 2
12	16	0.265	<i>Ac</i> 3, hazy	08	0.258	Mainly overcast
13	18	0.267	<i>Cu</i> 2, <i>Cs</i> 2	17	0.269	<i>Cu</i> 2, <i>Ci</i> 3
14	14	0.275	<i>Ci</i> T, hazy	15	0.254	<i>Cu</i> 2
15	18	0.271	<i>Ci</i> T, hazy	18	0.254	<i>Cu</i> 3, <i>Ac</i> 3
16	18	0.288	<i>Cu</i> 2, <i>Cs</i> 2	18	0.253	<i>Cu</i> 2, <i>Ci</i> 2
17	18	0.286	Hazy	17	0.253	<i>Cu</i> 2, <i>Ci</i> T
18	18	0.284	"	17	0.257	<i>Cu</i> 3, hazy
19	18	0.274	"	17	0.267	Hazy
20	18	0.272	"	17	0.254	<i>Cu</i> 2, <i>Ci</i> 3
21	18	0.272	<i>Cu</i> 4, <i>Ci</i> 3	17	0.255	<i>Cu</i> 3, <i>Ci</i> 2
22	18	0.270	<i>Cu</i> 3, <i>Cs</i> 2	10	0.267	Hazy
23	18	0.274	<i>Cu</i> 3, <i>Ci</i> 2	17	0.261	<i>Cu</i> 3, <i>Sc</i> 2
24	17	0.279	<i>Cu</i> 3, <i>Ci</i> 2, hazy	10	0.255	<i>Cu</i> 2, <i>Ci</i> 2
25	18	0.284	<i>Cu</i> 2, <i>Ci</i> 2	14	0.248	Mainly overcast
26	18	0.276	Mainly overcast	10	0.253	"
27	16	0.278	"	No observation		
28	18	0.282	<i>Cu</i> 2, <i>Ci</i> 2	11	0.250	Mainly overcast
29	17	0.288	<i>Cu</i> 2, <i>Ac</i> 2, hazy	14	0.259	<i>Cu</i> 2, <i>Ac</i> 2
30	17	0.288	<i>Cu</i> 2, <i>Ci</i> 3	11	0.265	<i>Cu</i> 3, <i>Ci</i> 2
31	17	0.278	Mainly overcast			

NOTE—The cloud amounts are in oktas

DAILY OZONE DATA—INDIA

(From direct sun observations on 3112/3323 Å and 4536/3323 Å)

Assumed α (3112) = 1.233 and α' (3323) = 0.071

SRINAGAR

(Lat. 34°05'N, Long. 74°50'N)

Date	OCTOBER 1958			NOVEMBER 1958			DECEMBER 1958		
	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky	Hours (IST)	Ozone amount (cm-atmos)	State of sky
1	14	0.243	Cu 2, Ci 3	09	0.247	Hazy	16	0.251	Cu 3, Ci 2, hazy
2	17	0.266	Cu 2, Ci 2	16	0.257	„	16	0.258	Mainly overcast
3	17	0.266	Cu 3, hazy	15	0.245	Ci T, hazy	No observation		Overcast
4	17	0.254	Cu T, hazy	16	0.241	Hazy	15	0.263	Cu 2, Ci 4
5	17	0.243	Hazy	10	0.255	„	16	0.251	Mainly overcast
6	17	0.251	„	16	0.255	Ac 2, Ci T	16	0.245	Cu 3, Ci 2, hazy
7	17	0.254	„	16	0.247	Overcast	16	0.252	Hazy
8	17	0.239	„	16	0.246	Hazy	No observation,		Instrument trouble
9	17	0.251	Sl. haze	16	0.254	Cu 3, Ci 4			„
10	17	0.262	(Cu, Ci) 2	12	0.262	Hazy			„
11	17	0.267	Ci T	14	0.267	„			„
12	17	0.267	Hazy	No observation		Overcast			„
13	17	0.262	(Cu, Ci) 3	14	0.263	Hazy			„
14	16	0.265	Hazy	16	0.266	„			„
15	17	0.263	„	16	0.255	„			„
16	17	0.258	„	15	0.257	Cu 3, Ci 2			„
17	15	0.257	Cu 2, Ci 3, hazy	No observation					„
18	16	0.249	Cu 2, Ci 3	14	0.266	Cu 6			„
19	14	0.258	Hazy	16	0.245	Overcast			„
20	15	0.261	„	16	0.247	„			„
21	16	0.250	„	14	0.251	Hazy			„
22	16	0.261	Cu 2, Ci T	14	0.223	Cu 3, Ci 4			„
23	16	0.261	Cu 3, hazy	16	0.212	Ci 8	No observation		Overcast
24	No observation		Rain	16	0.215	Cu 3, Ci 2	16	0.241	Cu 3, Ci 2, hazy
25	„		„	16	0.238	Cu 3, Ci 4	16	0.227	Cu 3, hazy
26	14	0.247	Cu 3, Ci 2	16	0.259	Ci 2, hazy	No observation		Rain
27	08	0.262	Cu 2, hazy	13	0.261	Hazy			„
28	09	0.257	Hazy	16	0.259	Cu 3, Ci 2			Overcast
29	16	0.261	„	16	0.253	Cu 2, Ci 3			„
30	16	0.249	„	16	0.255	Cu 3, Ci 2			„
31	16	0.253	Cu 3, Ci 2				15	0.230	Mainly overcast

NOTE—The cloud amounts are in oktas