Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

Carl E. Feehrer, Editor
9 Gleason Rd.
Bedford, MA 01730

Email: cfeehrer@hotmail.com

ISSN 0271-8480

Volume 59 Number 6 **June 2003**

Table I. Mean Sunspot Numbers (Ra) for June 2003 [boldface = maximum, minimum]

Day	N	Raw	s.d.	Ra	s.d.	s.e.
1	47	53	3.0	**40**	1.9	0.28
2	45	55	2.8	40	1.3	0.19
3	40	55	2.3	42	1.1	0.17
4	38	67	3.3	52	1.6	0.26
5	40	85	4.3	62	2.3	0.36
6	50	122	5.9	88	2.6	0.37
7	40	136	6.8	103	2.1	0.33
8	44	134	7.4	100	2.3	0.35
9	49	150	8.8	112	3.8	0.54
10	45	148	8.2	110	3.3	0.49
11	44	163	7.3	**121**	3.3	0.50
12	40	161	6.6	120	2.7	0.43
13	43	131	6.2	100	3.2	0.49
14	40	96	5.8	70	2.3	0.36
15	41	64	4.7	49	2.5	0.39
16	52	73	3.4	56	1.6	0.22
17	44	74	3.9	56	1.8	0.27
18	45	86	3.5	66	1.6	0.24
19	46	101	4.7	76	1.9	0.28
20	44	105	5.5	78	2.3	0.35
21	45	93	5.2	69	2.1	0.31
22	46	85	4.3	65	2.2	0.32
23	45	94	4.5	69	2.1	0.31
24	53	98	4.4	74	2.1	0.29
25	44	107	4.3	79	1.7	0.26
26	48	114	5.1	84	2.5	0.36
27	46	124	4.5	93	2.2	0.32
28	46	125	4.4	95	1.6	0.24
29	46	126	5.2	92	2.0	0.29
30	39	117	5.8	85	2.3	0.37
31	---	---	---	---	---	---

Means: 44.5 104.7 78.2

Total No. of Observers: 79

Total No. of Observations: 1335

Table II. June Observers

```
10 AAP  P.Abbott
27 ARAG G.Araujo
28 ATON A.Attanasio
15 BARH H.Barnes
20 BATR R.Battaiola
16 BERJ J.Berdejo
 9 BLAJ J.Blackwell
19 BMF  M.Boschat
25 BOJP P.Bojda
27 BRAB B.Branchett
14 BRAD D.Branchett
23 BRAR R.Branch
30 BROB R.Brown
 2 BURS S.Burgess
23 BWJ  J.Bohdanowicz
10 CAMP P.Campbell
17 CARJ J.Carlson
30 CHAG G.Morales
30 CKB  B.Cudnik
17 CLZ  C.Laurent
17 COMT T.Compton
29 CORA A.Coroas
25 CR   T.Cragg
 8 CVJ  J.Carvajal
25 DEJV J.van Delft
 4 DELS S.Delaney
15 DEMF F.Dempsey
25 DRAJ J.Dragesco
27 DUBF F.DuBois
10 FEEC C.Feehrer
18 FERJ J.Fernandes
 6 FLET T.Fleming
24 GIOR R.Giovanoni
15 GOEM M.Goetz
 7 GOLA A.Golovin
11 GOTS S.Gottschalk
 7 HALB B.Halls
 7 HAYK K.Hay
13 HRUT T.Hrutkay
17 JAMD D.James
 6 JEFT T.Jeffrey
 4 JENS S.Jenner
22 KAPJ J.Kaplan
15 KHAR R.Khan
21 KNJS J&S Knight
 3 KROL L.Krozel
 1 KUZM M.Kuzmin
15 LARJ J.Larriba
19 LERM M.Lerman
21 LEVM M.Leventhal
10 LUBT T.Lubbers
22 MALK K.Malde
24 MARJ J.Maranon
18 MCE  E.Mochizuki
12 MILJ J.Miller
20 MMI  M.Moeller
14 OBSO IPS Observatory
 8 PARN N.Parker
22 RICE E.Richardson
16 RITA A.Ritchie
25 SCGL G.Schott
 6 SCHG G.Scholl
 2 SDP  D.Sharples
12 SIMC C.Simpson
30 STAB B.Gordon-States
 6 STEF G.Stefanopoulis
26 STEM G.Stemmler
29 STQ  N.Stoikidis
14 SUZM M.Suzuki
14 SZAK K.Szatkowski
26 SZUM M.Szulc
25 TESD D.Teske
20 THR  R.Thompson
 9 TJV  J.Temprano
21 VARG A.Vargas
23 VIDD D.Vidican
18 WILW W.Wilson
30 YESH H.Yesilyaprak
 4 ZDM  D.Zhdanok
```

Reporting Addresses

Sunspot Reports **-- email:** solar@aavso.org
postal mail: AAVSO, 25 Birch St. Cambridge, MA 02138
FAX *(AAVSO):* (617) 354-0665

SID Solar Flare Reports **-- email:** noatak@aol.com
postal mail: Mike Hill
114 Prospect St. Marlboro, MA 01752

Table III. Means of Raw Group Counts (RG) and Ratios of Spots to Groups (S:G) in June 2003

Day	RG	S:G	Day	RG	S:G	Day	RG	S:G	Day	RG	S:G
1	3.4	5.6	**9**	5.4	17.8	**17**	4.8	5.4	**25**	6.6	6.2
2	3.4	6.2	**10**	5.1	19.0	**18**	5.3	6.2	**26**	7.4	5.4
3	3.3	6.7	**11**	5.6	19.1	**19**	5.4	8.7	**27**	8.2	5.1
4	4.2	6.0	**12**	6.1	16.4	**20**	4.8	11.9	**28**	7.9	5.8
5	5.2	6.4	**13**	6.1	11.5	**21**	4.0	13.2	**29**	7.9	6.0
6	6.8	7.9	**14**	5.3	8.1	**22**	4.0	11.3	**30**	6.9	7.0
7	6.8	10.0	**15**	4.0	6.0	**23**	5.0	8.8	**31**	---	---
8	5.8	13.1	**16**	4.6	5.9	**24**	5.9	6.6	**Mn.**	**5.5**	**9.1**

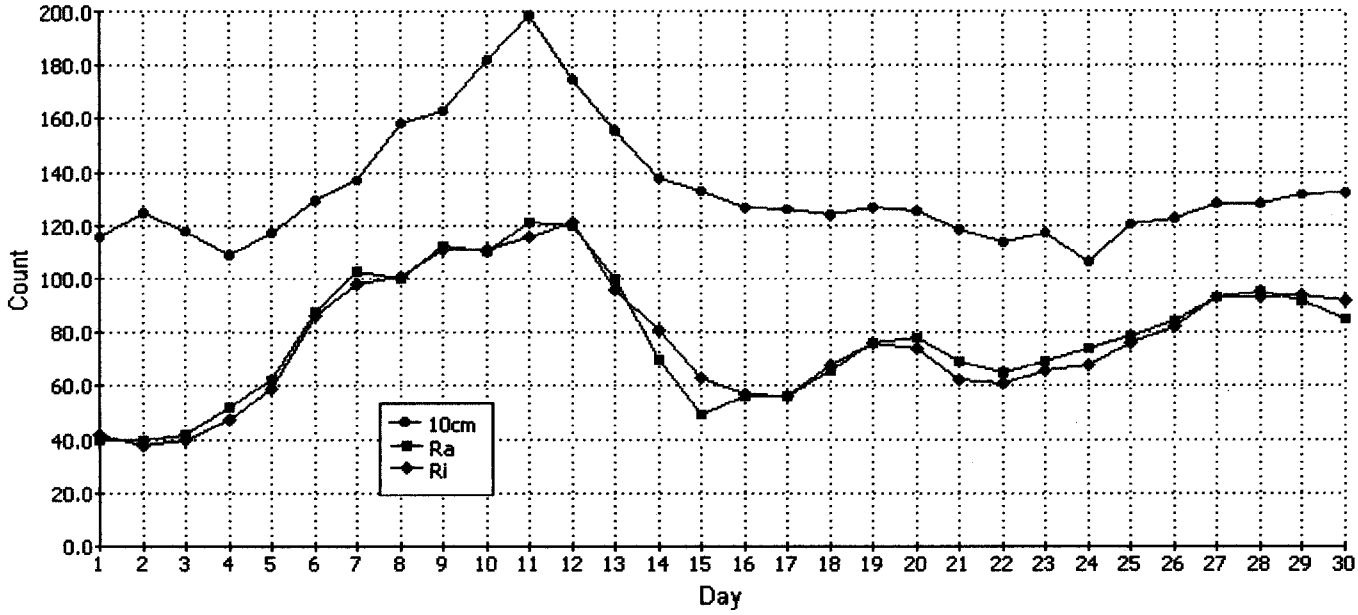


Fig. 1. 10 cm Solar Flux and Comparison of Ri (provisional) with Ra Estimates for June 2003 [r=0.980]
Ri source: http://www.sidc.oma.be/index.php3
10 cm source: http://www.drao.nrc.ca/icarus

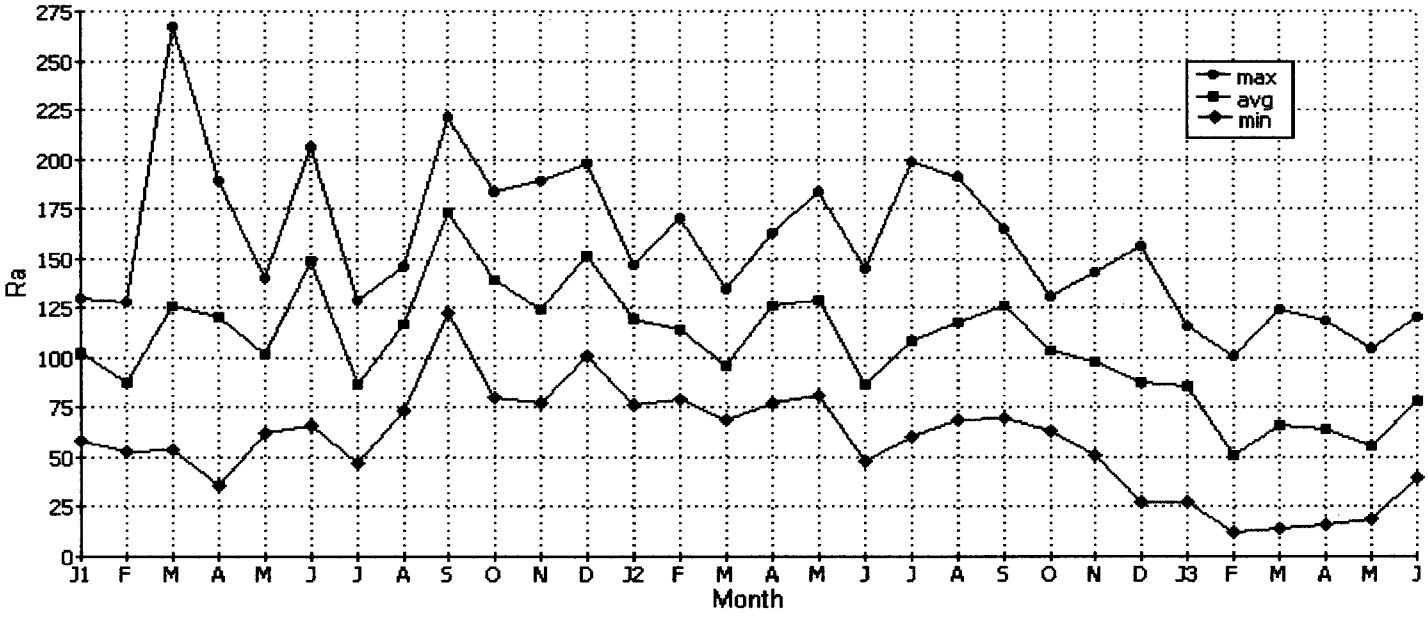
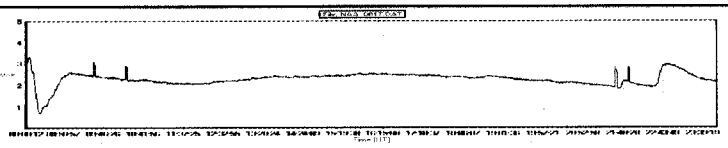


Fig. 2. Maximum, Mean, and Minimum Values of Ra for Each Month from January 2001 to Present.

Sudden Ionospheric Disturbance Report

Michael Hill, SID Analyst
114 Prospect St
Marlborough, MA 01752 USA
noatak@aol.com



Sudden Ionospheric Disturbances (SID) Recorded During June 2003

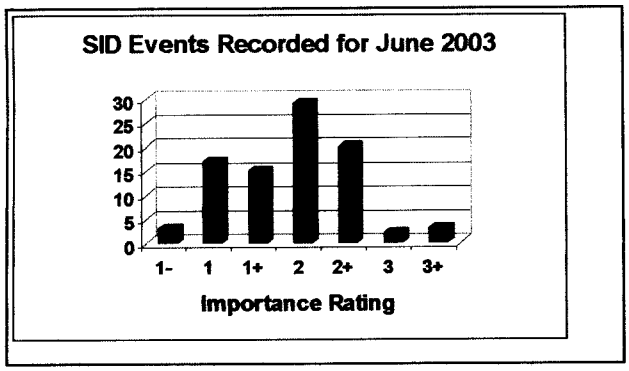
(Analysis performed by Michael Hill, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
030601	0711	2	030609	2113	1	030612	0900	1-
030601	0751	1	030609	2137	1+	030612	1006	1
030601	0905	2	030610	0001	2+	030612	1027	1
030601	1251	2	030610	0837	1+	030612	1148	2
030601	1259	2+	030610	1104	2+	030612	1407	2
030601	1653	2	030610	1113	2+	030612	1712	1+
030601	1729	1	030610	1204	1+	030612	2013	2
030601	2107	2	030610	1245	2+	030612	2127	2
030602	0835	2	030610	1254	2+	030613	0203	2
030602	1318	2	030610	1302	2+	030613	0435	2
030602	1543	2+	030610	1417	1	030613	0635	3
030602	1733	2+	030610	1435	2	030613	0644	3+
030604	1537	2+	030610	1625	1	030613	1452	2+
030606	1254	1	030610	1631	2	030613	1624	2+
030606	1316	1+	030610	1816	2	030613	1734	2+
030606	1359	1	030610	1854	2	030613	2033	2+
030606	1618	1	030611	0450	2	030614	0535	3
030606	1746	1+	030611	0553	2	030614	0558	3+
030608	0504	1	030611	0829	1+	030616	1201	2+
030608	0612	1+	030611	1101	2+	030617	2154	1+
030608	0700	1	030611	1321	2	030617	2253	2+
030608	0746	1	030611	1529	2	030621	1314	1+
030608	1145	2	030611	1630	2+	030624	0933	1+
030608	1610	2	030611	1743	2	030624	1024	1
030609	0908	1+	030611	2006	2	030625	1554	2
030609	1111	2	030612	0118	2	030628	0656	1
030609	1128	2	030612	0129	3+	030630	0735	2+
030609	1447	1	030612	0714	1	030630	0742	2+
030609	1633	1+	030612	0813	1-	030630	0748	1+
030609	2059	1-	030612	0833	1+			

Importance rating : Duration(min)	-1: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125

The events listed above meet at least one of the following criteria

1) Event reported by two or more observers within ±5 minutes
2) Event matched to GOES-12 XRA event to within ±15 minutes and event time < 1000 UT
3) reported by observer with a quality rating > 8 (scale 1-10)



Observer	Code	Station(s) monitored
A Clerkin	A29	NAA
J Winkler	A50	NAA NPM NPR
D Toldo	A52	NAA NWC XXX
J Ellerbe	A63	ICV
A Panzer	A83	NAA
W Moos	A84	FTA
M Hill	A87	NAA
L Anderson	A91	NWC
G DiFillipo	A93	DHO
T Poulos	A95	NAA
J Wallace	A97	NAA
M King	A99	HWU
P Campbell	A100	NLK
F Steyn	A102	NAA NWC
L Observatory	A107	DHO

Solar Events

June was indeed a very unusual month in comparison to what one expects from a sun receding into solar minimum. Whereas the last number of months have shown declining activity, this past month showed a sudden spike in activity with a SID event count of 89 correlated events. This is the kind of number we were seeing back when the sun was peaking. Even more unusual was that so many of the events happened during one predominant time interval from June 6th to June 13th. During this time alone there were 3 X-Class events with one more following a few days later. There were 226 X-Ray flares recorded by the GOES-12 satellite. Of these, 4 were X-Class and 32 were M-Class. Seventeen of the M-Class events occurred on June 9th and 10th. A couple of very busy days! This burst of activity was due to sunspot region 375, a very large grouping that many of us, I'm sure, studied visually over the last month as well. This grouping is a very long lived region that has persisted for longer than the 27 day solar rotation period so has therefore been seen crossing the surface two times now. Out of the 89 correlated SID events 49 of them were 2 and 2+ events with another five long duration 3 and 3+ events. So not only did we have a lot of events we also had a lot of very energetic events.