

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

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March 2003

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

Day	N	Raw	s.d.	Ra	s.d.	s.e.
1	29	68	2.5	53	2.0	0.37
2	31	83	4.7	63	3.3	0.59
3	30	87	5.7	64	2.7	0.49
4	25	114	9.0	77	3.7	0.74
5	29	108	8.6	73	3.8	0.71
6	34	89	5.9	66	2.7	0.46
7	35	110	7.9	80	3.6	0.61
8	43	106	5.7	77	3.0	0.46
9	43	125	6.5	91	2.9	0.44
10	41	110	6.0	78	2.5	0.39
11	32	110	5.2	74	1.8	0.32
12	37	83	4.3	59	2.3	0.38
13	37	76	4.0	56	2.2	0.36
14	46	93	4.1	68	2.0	0.29
15	45	99	3.5	75	2.0	0.30
16	53	85	3.2	62	1.5	0.21
17	44	61	2.6	46	1.7	0.26
18	39	61	2.8	46	1.3	0.21
19	51	55	2.3	41	1.2	0.17
20	35	47	2.3	32	1.2	0.20
21	38	23	2.7	16	1.7	0.28
22	44	18	1.5	14	1.0	0.15
23	51	35	1.7	25	1.0	0.14
24	57	53	2.0	40	1.5	0.20
25	41	71	3.9	52	2.0	0.31
26	45	102	4.8	71	2.2	0.33
27	46	124	5.8	88	2.4	0.35
28	38	144	5.8	105	3.5	0.57
29	37	177	8.0	124	3.2	0.53
30	40	168	5.8	124	2.5	0.40
31	40	151	5.3	108	2.5	0.40

Means: 39.9 91.4 66.1

Total No. of Observers: 76

Total No. of Observations: 1236

Table II. March Observers

15 AAP P.Abbott	26 KNJS J&S Knight
21 ARAG G.Araujo	5 KROL L.Krozal
17 ATON A.Attanasio	6 LARJ J.Larriba
8 BARH H.Barnes	4 LERM M.Lerman
6 BATR R.Battaiola	19 LEVM M.Leventhal
14 BERJ J.Berdejo	5 LUBT T.Lubbers
12 BOJP P.Bojda	16 MALK K.Malde
26 BOSB B.Bose	8 MARE E.Mariani
21 BRAB B.Branchett	28 MARJ J.Maranon
19 BRAR R.Branch	21 MCE E.Mochizuki
26 BROB R.Brown	10 MILJ J.Miller
2 CAMP P.Campbell	25 MMI M.Moeller
13 CARJ J.Carlson	17 OBOS IPS Observatory
27 CHAG G.Morales	17 RICE E.Richardson
18 CKB B.Cudnik	19 RITA A.Ritchie
13 CLZ C.Laurent	22 SCGL G.Schott
7 COMT T.Compton	6 SCHG G.Scholl
31 CORA A.Coroas	3 SDP D.Sharpley
30 CR T.Cragg	12 SIMC C.Simpson
3 CVJ J.Carvajal	25 STAB B.Gordon-States
14 DELS S.Delaney	3 STEF G.Stefanopoulos
8 DEMF F.Dempsey	20 STEM G.Stemmler
17 DGP G.Dyck	19 STQ N.Stoikidis
20 DRAJ J.Dragesco	25 SUZM M.Suzuki
22 DUBF F.Dubois	28 SZAK K.Szatkowski
28 ELR E.Reed	18 SZUL M.Szulc
13 FEEC C.Feehrer	15 TESD D.Teske
25 FERJ J.Fernandes	16 THR R.Thompson
24 FLET T.Fleming	11 TJV J.Temprano
22 FUJK K.Fujimori	24 URBP P.Urbanski
23 GIOR R.Giovanoni	13 VARG A.Vargas
21 GOEM M.Goetz	13 VELM M.Velea
11 GOTS S.Gottschalk	15 WILW W.Wilson
7 HALB B.Halls	21 YESH H.Yesilyaprak
7 HAYK K.Hay	
8 HRUT T.Hrutkay	
22 JAMD D.James	
19 JEFT T.Jeffrey	
13 JENJ J.Jenkins	
4 JENS S.Jenner	
20 KAPJ J.Kaplan	
24 KHAR R.Khan	

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 March 2003

Day	RG	S:G	Day	RG	S:G	Day	RG	S:G	Day	RG	S:G
1	4.9	3.9	9	8.4	4.9	17	3.2	9.1	25	4.9	4.5
2	5.8	4.3	10	7.4	4.9	18	3.4	7.9	26	5.6	8.2
3	6.0	4.5	11	7.0	5.7	19	3.1	7.7	27	6.2	10.0
4	7.0	6.3	12	5.3	5.7	20	3.2	4.7	28	7.7	8.7
5	6.4	6.9	13	4.6	6.5	21	1.8	2.8	29	8.3	11.3
6	5.6	5.9	14	5.2	7.9	22	1.5	2.0	30	9.0	8.7
7	7.0	5.7	15	5.7	7.4	23	2.5	4.0	31	8.3	8.2
8	6.8	5.6	16	4.4	9.3	24	3.7	4.3	Mn.	5.5	6.4

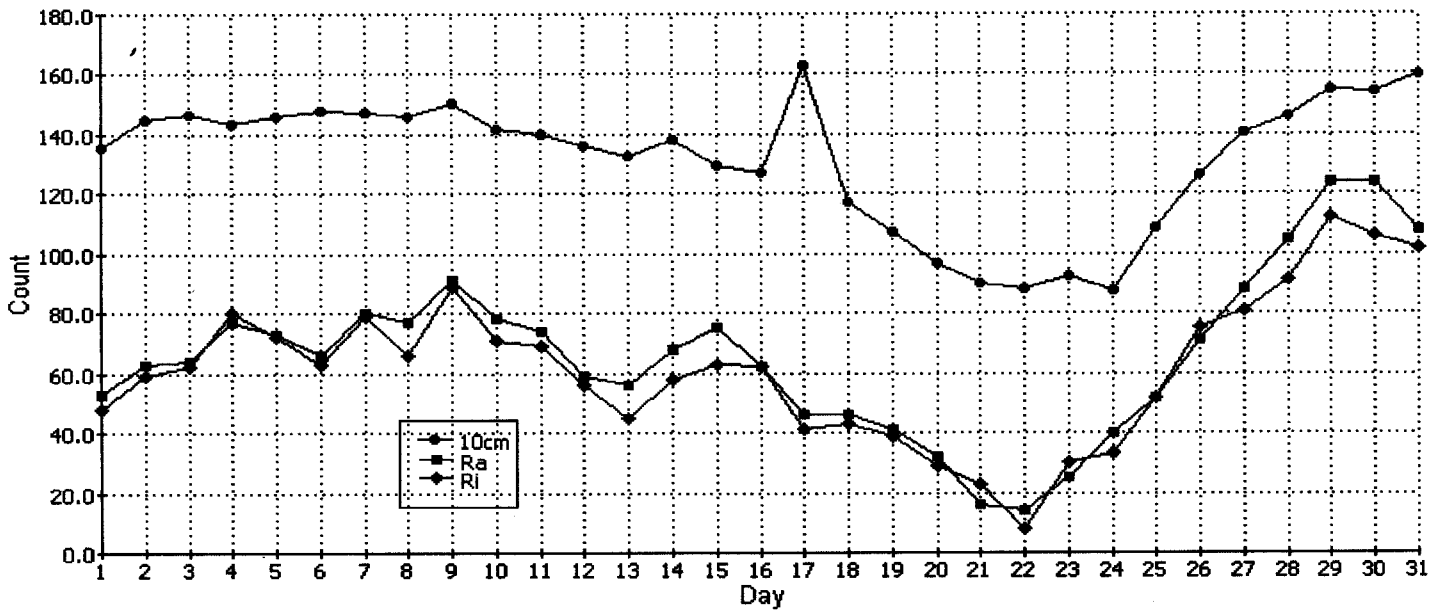


Fig. 1. 10 cm Solar Flux and Comparison of Ri (provisional) with Ra Estimates for March 2003 [$r = 0.982$]

Ri source: <http://www.sidc.oma.be/index.php3>

10 cm source: <http://www.drao.nrc.ca/icarus>

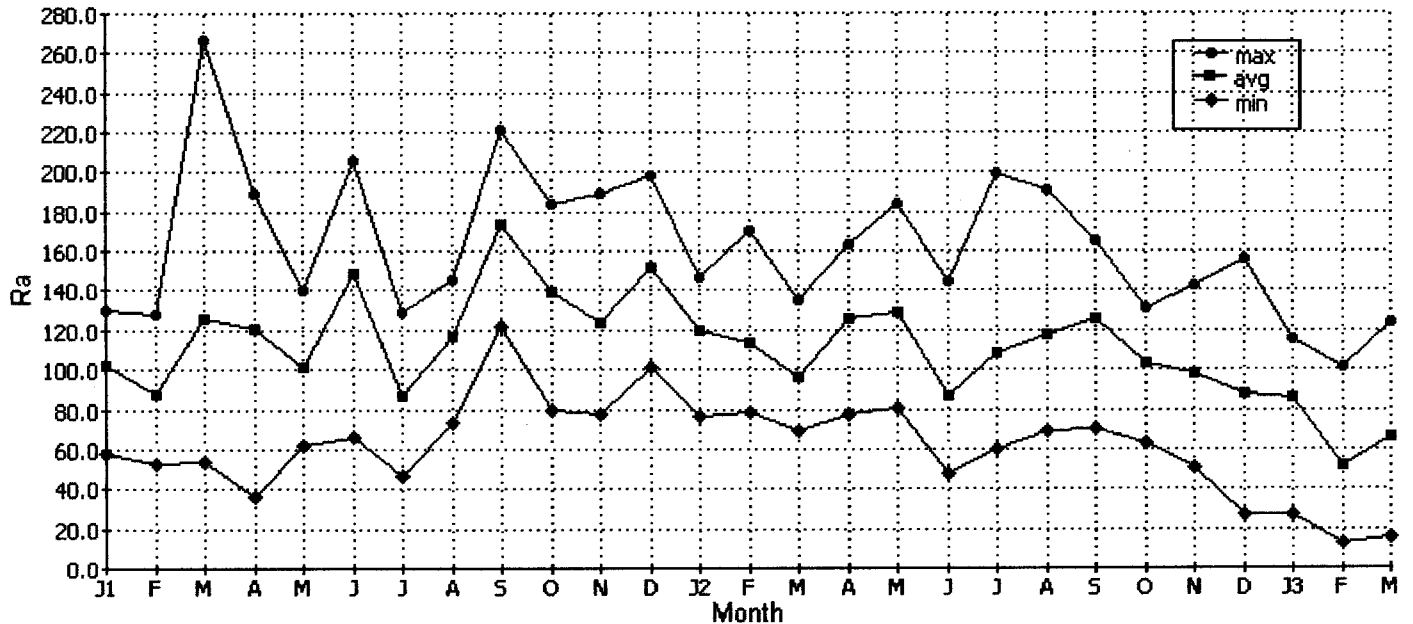
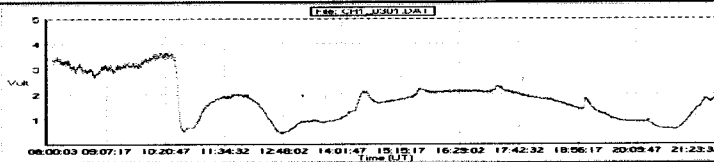


Fig. 2. Maximum, Mean, and Minimum Values of Ra for Each Month from January 2001 to Present.

Sudden Ionospheric Disturbance Report

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 Marlborough, MA 01752 USA
 noatak@aol.com



Sudden Ionospheric Disturbances (SID) Recorded During March 2003

(Analysis performed by Michael Hill, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
030301	0843	2	030318	1610	1-	030327	0947	1+
030301	1333	1-	030318	1620	1	030327	1456	1
030301	1422	1-	030318	1905	2	030327	1947	1+
030301	1433	1+	030319	0306	2	030329	1018	1+
030301	1542	1-	030319	0645	2	030329	1023	1
030301	1720	1	030319	0955	1+	030329	1231	1
030301	1909	1-	030319	1132	1+	030329	1307	1-
030305	1336	1-	030319	1334	1+	030329	1412	2
030308	0936	2	030319	1613	1-	030329	1516	1+
030309	0648	1+	030319	1648	1+	030329	1522	2+
030309	1755	1	030319	1710	1-	030329	1701	1
030315	1337	1+	030319	1823	1	030329	1840	2
030315	1530	1+	030319	1854	2	030330	0128	1
030315	2010	2	030319	2130	1-			
030315	2020	2+	030319	2202	1			
030316	1131	1-	030320	1135	1+			
030316	1429	1+	030320	1736	3			
030318	0000	3+	030321	0910	1-			
030318	0600	2	030321	1429	1			
030318	0744	2+	030322	0658	2			
030318	1024	1+	030322	0858	1-			
030318	1158	3	030322	0951	1-			
030318	1206	2+	030326	1711	1			
030318	1214	2+	030327	0539	2+			
030318	1414	1	030327	0704	1+			

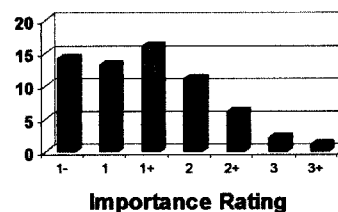
Importance rating : Duration(min)	-1: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
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The events listed above meet at least one of the following criteria

Observer	Code	Station(s) monitored
A Clerkin	A29	NAA
J Winkler	A50	NAA NPR
D Toldo	A52	NAA NWC XXX
J Ellerbe	A63	ICV
A Panzer	A83	NAA
W Moos	A84	FTA
M Hill	A87	NAA
G DiFillipo	A93	DHO HWU
T Poulos	A95	NAA
R Battaiola	A96	DHO HWU
J Wallace	A97	NAA
M King	A99	HWU
P Campbell	A100	NLK
S Bressan	A101	DHO
F Steyn	A102	NAA NWC
D Welch	A104	NAA
L Observatory	A107	DHO

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

SID Events Recorded for March 2003



Solar Events

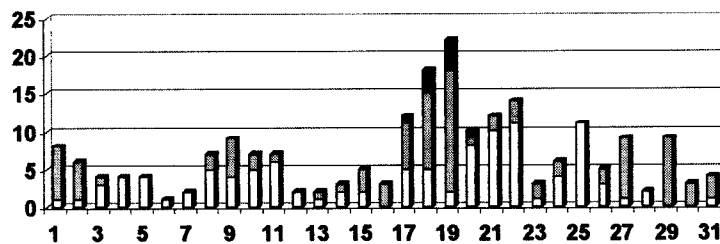
The month of March started out with a day of SID events that was to be a sure sign of the days ahead. On March 1st, there were no fewer than seven correlated events. I myself, as I'm sure others did as well, observed four of them in the short 8 hour day when the Ionosphere is stable at this time of year. The rest of the month proved just as active with not only significant flare activity but visual sunspot activity as well. A fun month for all of us. The 18th and 19th was particularly active with many flares, some of them quite powerful. The end of the month as active as well as it still is as of this writing.

The GOES-8 Satellite recorded 214 X-Ray flare events. Of these, 7 were M-Class and 2 were X-Class events: one on the 17th and one on the 18th. SID observers recorded a total of 63 events, the most since last November. Curiously none were recorded for the 17th. There were certainly flares that day, one of them an X-Class event. What happened? Well, unfortunately, the 17th was a Monday. As many of us in the Eastern half of the United States monitor NAA, we missed all the events because this is the day that NAA shuts down for maintenance. Most of the stronger, observable events occurred during the hours of 15 – 23 UT when we would normally be the most likely to see them. That day we didn't. It looks like some of us should try to get a second station in our sights to provide Monday coverage for these UT times. Speaking of station maintenance, a few weeks ago someone asked that others post known maintenance times for stations they observe. I saved all the responses and have compiled a list for you to refer to. If you have any additions, please send them along to me. I will add them to the list.

VLF Stations - Known Maintenance Days (off-Air)

Station	Frequency	Day	Time
NWC	19.8 Khz	Monday	0 - 8 UT
DHO	23.4 Khz	Everyday	7 - 8 UT
NAA	24.0 Khz	Monday	12 - 20 UT
NLK	24.8 Khz	Thursday	15 - ?? UT
??? (North Dakota)	25.2 Khz	Tuesday	12 - 20 UT

Solar Flare Summary Based on GOES-8 Data



March 2003

□ B-Class: ■ C-Class: ■ M-Class: ■ X-Class: