

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

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



Email: cfehrer@hotmail.com

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**Table I. American Relative Sunspot Numbers (Ra) for November 2003 [boldface = maximum, minimum]**

Day	N	Raw Mean	Ra
1	31	171	<b>122</b>
2	33	141	102
3	34	96	71
4	32	50	38
5	24	21	18
6	31	16	13
7	34	10	<b>8</b>
8	38	27	22
9	33	50	38
10	30	55	41
11	31	36	28
12	26	19	14
13	36	26	19
14	28	29	21
15	27	38	28
16	28	40	30
17	26	41	30
18	31	58	42
19	31	85	64
20	34	100	76
21	27	118	80
22	27	125	87
23	34	128	91
24	24	135	94
25	29	159	110
26	31	152	111
27	27	154	111
28	23	167	116
29	22	149	111
30	21	124	90
31	---	---	---

Means:                    **29.4**                    **84.0**                    **61.0**

Total No. of Observers: **63**

Total No. of Observations: **883**

**Table II. November Observers**

13 AAP P.Abbott	17 MAIK K.Malde
18 ARAG G.Araujo	25 MARJ J.Maranon
13 BARH H.Barnes	17 MCE E.Mochizuki
2 BATR R.Battaiola	16 MMI M.Moeller
8 BEB R.Berg	17 OBSO IPS Observatory
10 BERJ J.Berdejo	11 RICE E.Richardson
3 BLAJ J.Blackwell	15 RTTA A.Ritchie
12 BMF M.Boschat	12 SCGL G.Schott
22 BOSB B.Bose	1 SDP D.Sharples
20 BRAB B.Branchett	8 SIMC C.Simpson
20 BRAR R.Branch	7 STEF G.Stefanopoulos
21 BROB R.Brown	18 STEM G.Stemmler
5 CAMP P.Campbell	14 STQ N.Stoikidis
13 CARJ J.Carlson	19 SUZM M.Suzuki
29 CHAG G.Morales	14 SYP P.Soron
22 CKB B.Cudnik	11 SZUM M.Szule
10 CLZ C.Laurent	20 TESD D.Teske
8 COMT T.Compton	8 THR R.Thompson
30 CR T.Cragg	18 TJV J.Temprano
20 DEJV J.van Delft	15 URBP P.Urbanski
13 DGP G.Dyck	19 VARG A.Vargas
16 DRAJ J.Dragesco	15 WILW W.Wilson
13 DUBF F.Dubois	16 YESH H.Yesilyaprak
10 FEEC C.Fehrer	
17 FERJ J.Fernandes	
19 FLET T.Fleming	
19 FUJK K.Fujimori	
23 GIOR R.Giovanoni	
3 GOEM M.Goetz	
4 GOL A.Golovin	
7 HAYK K.Hay	
7 HRUT T.Hrutkay	
22 JAMD D.James	
16 JEFT T.Jeffrey	
12 KAPJ J.Kaplan	
26 KHAR R.Khan	
16 KNJS J&S Knight	
2 KROL L.Krozel	
3 LARJ J.Larriba	
4 LERM M.Lerman	
19 LEVM M.Leventhal	

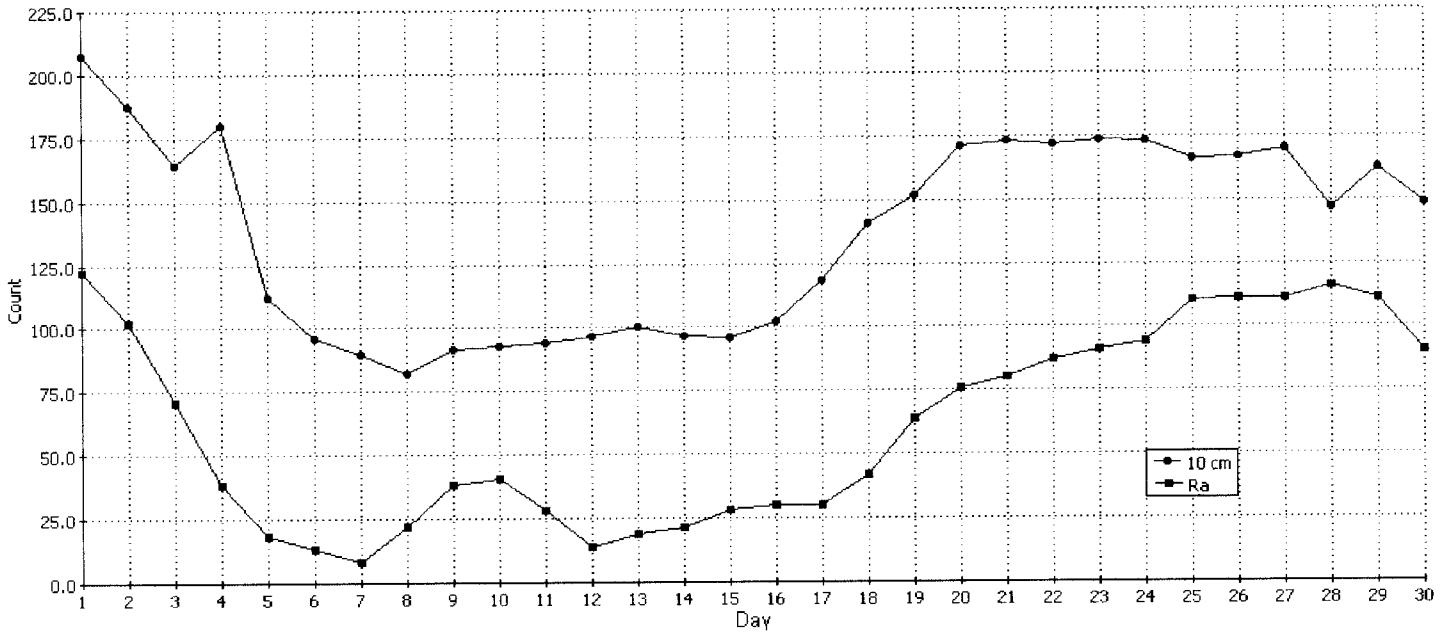
## Reporting Addresses

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

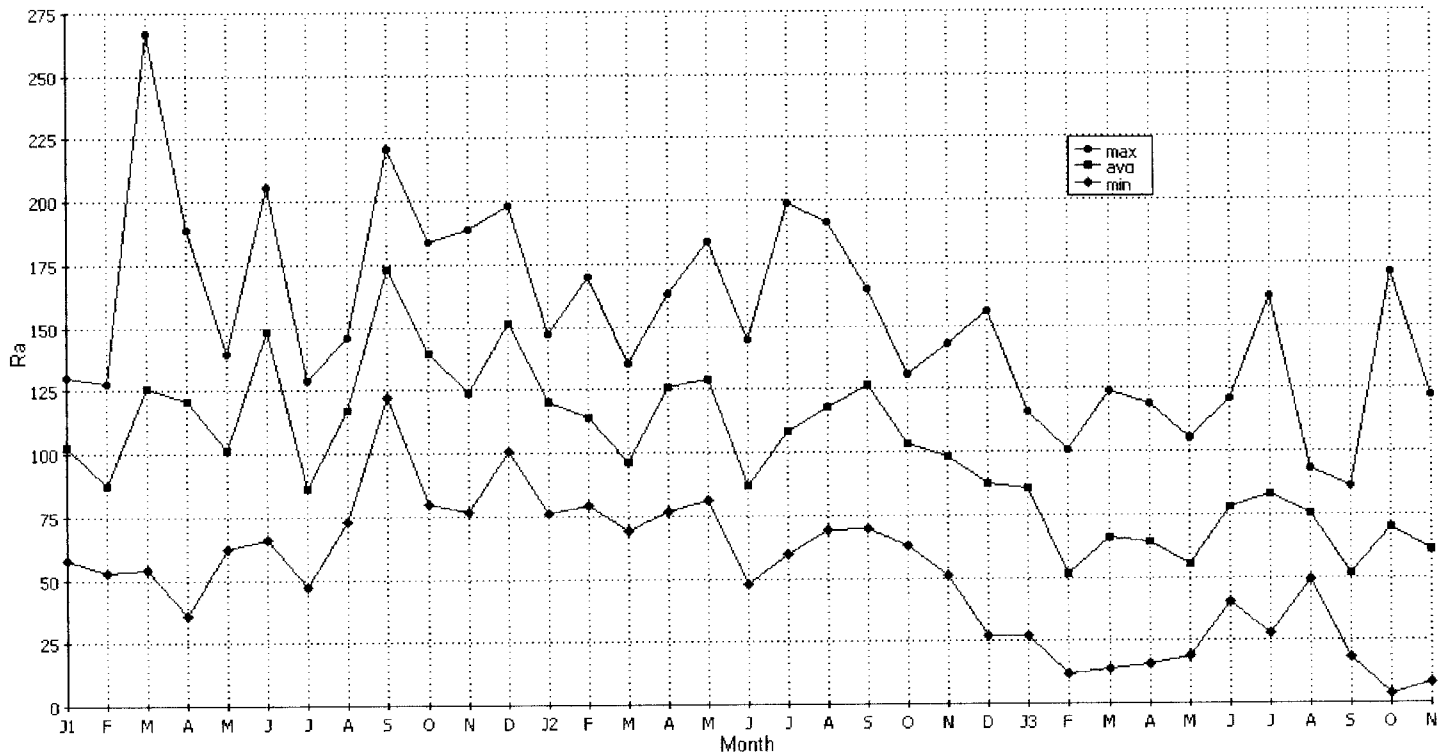
**SID Solar Flare Reports -- email:** noatak@aol.com  
**postal mail:** Mike Hill  
114 Prospect St. Marlboro, MA 01752

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

Day	RG	S:G	Day	RG	S:G	Day	RG	S:G	Day	RG	S:G
1	6.3	17.2	9	3.2	5.7	17	2.2	8.3	25	8.2	9.3
2	6.3	12.4	10	3.5	5.8	18	3.5	6.7	26	7.5	10.3
3	4.9	9.4	11	2.6	3.6	19	4.4	9.6	27	7.8	9.7
4	3.5	4.3	12	1.5	3.2	20	4.7	11.3	28	9.0	8.6
5	1.7	2.7	13	2.0	3.2	21	5.4	11.8	29	8.2	8.3
6	1.3	2.9	14	1.9	5.0	22	5.6	12.4	30	8.0	5.5
7	0.8	3.0	15	2.3	6.1	23	5.9	11.8	31	---	---
8	1.9	3.9	16	2.5	6.3	24	6.7	10.3	Mn.	4.4	7.6



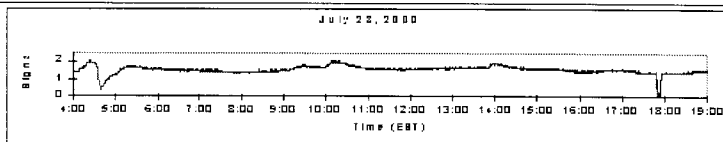
**Fig. 1. 10 cm Solar Flux and American Relative Sunspot Numbers (Ra) for November 2003**  
 10 cm source: <http://www.drao.nrc.ca/icarus>



**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 November 2003

(Analysis performed by Michael Hill, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
031101	0423	1	031104	1021	2	031119	0813	2+
031101	0440	1-	031104	1121	1-	031119	0934	2
031101	0456	1	031104	1350	1+	031119	1516	2+
031101	0531	1-	031105	0243	1+	031120	0442	1+
031101	0812	1	031105	0759	2	031120	0729	1-
031101	0822	1	031105	1053	1+	031120	0744	2
031101	0849	2	031111	0545	2	031120	0940	1-
031101	1143	2+	031111	1050	2+	031120	1020	1
031101	1751	2	031112	0939	2	031120	1240	1-
031102	0246	1-	031113	0500	2	031121	0941	1
031102	0756	1	031113	0922	2	031124	2016	1
031102	1244	2+	031113	1105	1-	031125	0604	2+
031102	1445	1+	031115	0433	1-	031127	0644	1+
031102	1715	1	031116	0755	1	031127	0818	2+
031103	0450	1-	031116	1020	1-	031127	1700	3+
031103	0640	1	031116	1038	2	031128	0915	1+
031103	0949	2+	031117	0903	2	031129	0641	1
031103	1035	1+	031118	0140	1+	031129	0659	1-
031103	1532	2	031118	0517	1	031129	0836	1
031104	0413	1	031118	0530	1+			
031104	0429	2	031118	0736	1+			
031104	0552	2	031118	0752	2			
031104	0654	1	031118	0824	2+			
031104	0833	2	031118	2222	1+			
031104	1015	2	031119	0402	2			

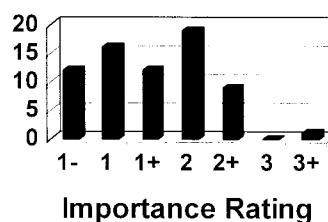
Importance rating : Duration(min)	-1: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
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The events listed above meet at least one of the following criteria

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

Observer	Code	Station(s) monitored
J Winkler	A50	NPM NXX
D Toldo	A52	NSS NWC
J Ellerbe	A63	ICV
P King	A80	ICV
W Moos	A84	FTA
M Hill	A87	NAA
G DiFillipo	A93	DHO HWU
M King	A99	HWU
P Campbell	A100	NLK
F Steyn	A102	NWC
B Bose	A103	VTX3
L Observatory	A107	DHO
P Mortfield	A108	NLK

### SID Events Recorded for November 2003

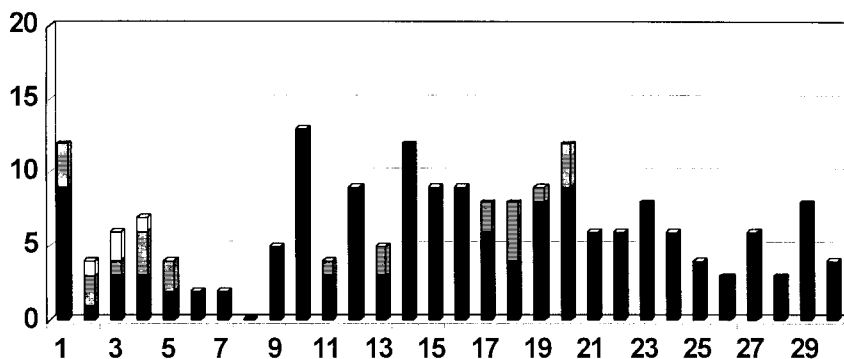


# Solar Events

November started out as a bit of a carry over from the very active month of September. There was a lot of activity throughout the month but the most powerful events were at the beginning. The GOES-12 Spacecraft detected 190 X-Ray flares. Of these 24 were M-Class and 4 of them were X-Class. All of the X-Class events occurred in the first four days of the month. Observers reported a total of 69 correlated SID events. Most of these were pretty evenly spread across the importance rating of 1 to 2+ with only a few long duration events reported. Thanks to all of you who contributed. I hope you all have a Merry Christmas and Happy New Year.

I am happy to say that NAA in Cutler, Maine is finally back on the air after a very long maintenance period that lasted all summer and most of this fall. I hope they got all they had to get done completed. All of us that rely on NAA as our SID detection signal base are, I am sure, quite disappointed to have missed out watching all the action of the last couple months when the sun burst forth with a flurry of activity. But we seem to be back in business now. So to those of you who have your rigs shut off, its time to fire them back up and start monitoring once again.

## Solar Flare Summary Based on GOES-12 Data



November 2003

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