

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

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

Day	N	Raw	s.d.	Ra	s.d.	s.e.
1	26	40	2.9	27	1.1	0.22
2	19	43	2.5	32	1.9	0.44
3	19	92	6.0	69	2.8	0.64
4	28	107	5.7	79	3.0	0.57
5	34	105	4.6	78	2.1	0.36
6	24	139	5.9	97	3.0	0.61
7	30	141	8.0	102	3.7	0.68
8	28	165	8.3	115	3.5	0.66
9	28	164	8.8	115	2.6	0.49
10	24	162	9.0	112	3.3	0.67
11	31	169	9.7	116	3.0	0.54
12	30	158	9.3	112	3.0	0.55
13	25	137	8.4	98	4.9	0.98
14	29	131	7.8	99	3.0	0.56
15	33	133	5.4	98	2.3	0.40
16	36	124	4.6	92	2.8	0.47
17	32	120	4.4	86	2.0	0.35
18	32	111	7.4	86	3.1	0.55
19	28	121	4.8	91	3.4	0.64
20	33	107	7.5	78	3.8	0.66
21	31	107	6.2	78	3.3	0.59
22	23	109	6.1	85	3.0	0.63
23	21	109	4.8	85	3.0	0.65
24	30	115	6.3	83	3.0	0.55
25	34	93	5.8	72	2.8	0.48
26	25	124	9.3	82	3.9	0.78
27	23	116	5.1	88	2.9	0.60
28	26	126	6.4	89	3.2	0.63
29	26	122	7.3	86	3.7	0.73
30	28	97	3.9	69	2.1	0.40
31	23	69	5.1	47	2.3	0.48

Means: **27.7** 118.0

85.3

Total No. of Observers: 72

Total No. of Observations: 859

Table II. January Observers

9 AAP P.Abbott	21 KNJS J&S Knight
19 ARAG G.Araujo	6 KROL L.Krozel
13 BARH H.Barnes	6 LARJ J.Larriba
5 BATR R.Battaiola	3 LERM M.Lerman
11 BERJ J.Berdejo	22 LEVM M.Leventhal
18 BMF M.Boschat	25 MARJ J.Maranon
10 BOJP P.Bojda	25 MCE E.Mochizuki
25 BOSB B.Bose	8 MILJ J.Miller
27 BRAB B.Branchett	9 MMI M.Moeller
13 BRAD D.Branchett	2 MUDG G.Mudry
14 BRAR R.Branch	20 OBSO IPS Observatory
22 BROB R.Brown	10 RICE E.Richardson
2 BURS S.Burgess	14 RITA A.Ritchie
5 CAMP P.Campbell	13 SCGL G.Schott
10 CARJ J.Carlson	1 SDP D.Sharples
26 CHAG G.Morales	5 SIMC C.Simpson
22 CKB B.Cudnik	4 STAB B.Gordon-States
11 CLZ C.Laurent	4 STEF G.Stefanopoulos
31 CORA A.Coroas	10 STEM G.Stemmler
31 CR T.Cragg	14 STQ N.Stoikidis
1 CVJ J.Carvajal	22 SUZM M.Suzuki
3 DELS S.Delaney	11 SZAK K.Szatkowski
19 DGP G.Dyck	9 SZUM M.Szulc
11 DRAJ J.Dragesco	13 THR R.Thompson
11 ELR E.Reed	2 TJV J.Temprano
1 ERRA A.Errico	12 URBP P.Urbanski
13 FEEC C.Feehrer	13 VALD D.delValle
11 FERJ J.Fernandes	9 VARG A.Vargas
21 FLET T.Fleming	3 VELM M.Velea
22 FUJK K.Fujimori	6 VIDD D.Vidican
19 GIOR R.Giovanoni	7 WILW W.Wilson
2 GOEM M.Goetz	
7 GOTS S.Gottschalk	
2 HALB B.Halls	
6 HAYK K.Hay	
6 HRUT T.Hrutkay	
19 JAMD D.James	
4 JEFT T.Jeffrey	
16 KAPJ J.Kaplan	
10 KHAR R.Khan	

Reporting Addresses

Sunspot Reports -- email: solar@aaavso.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 January 2003

Day	RG	S:G	Day	RG	S:G	Day	RG	S:G	Day	RG	S:G
1	2.7	4.8	9	7.8	11.0	17	8.5	4.1	25	5.7	6.3
2	3.2	3.4	10	8.0	10.3	18	8.0	3.9	26	7.2	7.2
3	6.0	5.3	11	8.5	9.9	19	9.1	3.3	27	8.2	4.2
4	5.8	8.5	12	8.2	9.3	20	8.0	3.4	28	8.2	5.4
5	5.5	9.1	13	8.2	6.7	21	7.3	4.7	29	7.7	5.8
6	7.3	9.0	14	8.2	6.0	22	7.4	4.7	30	6.9	4.1
7	8.4	6.8	15	9.1	4.6	23	6.9	5.8	31	5.2	3.3
8	8.2	10.1	16	9.0	3.8	24	6.8	6.9	Mn.	7.3	6.2

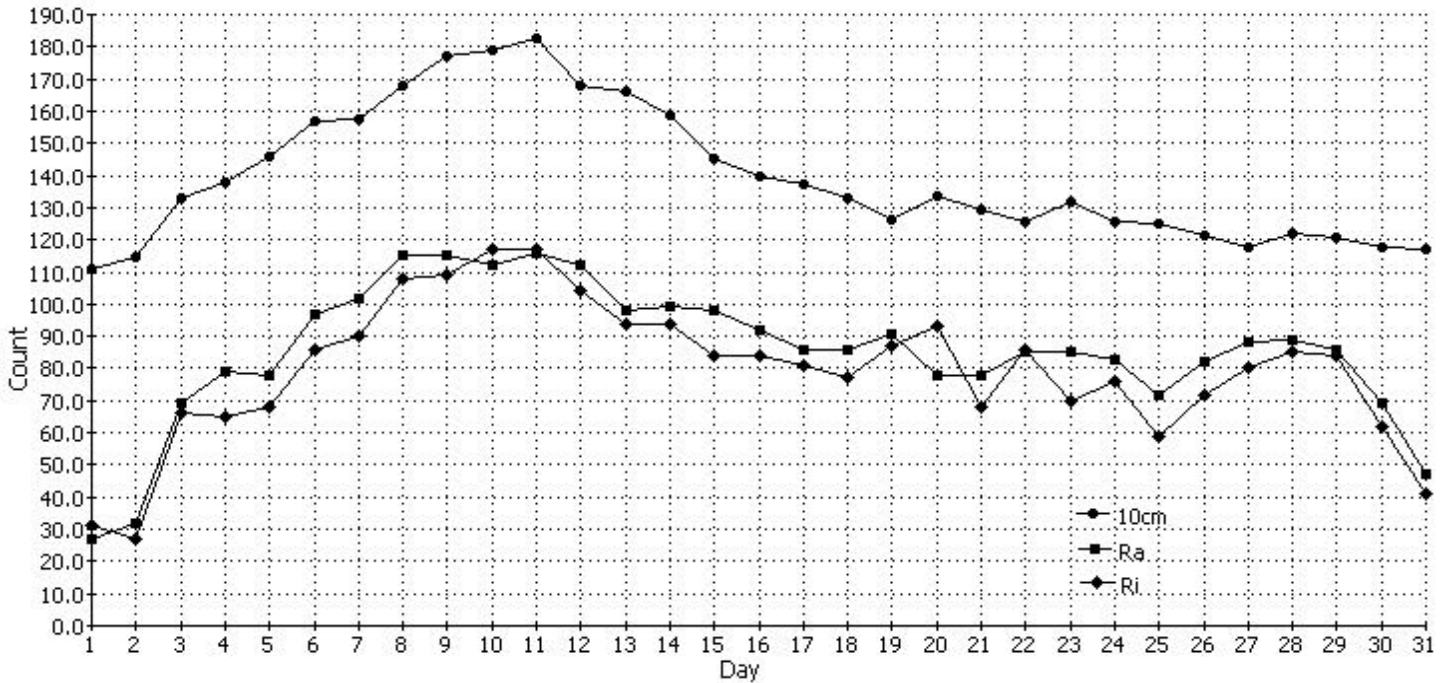


Fig. 1. 10 cm Solar Flux and Comparison of Ri (provisional) with Ra Estimates for January 2003 [$r= 0.958$]
 Ri source: <http://www.sidc.oma.be/index.php3>
 10 cm source: <http://www.drao.nrc.ca/icarus>

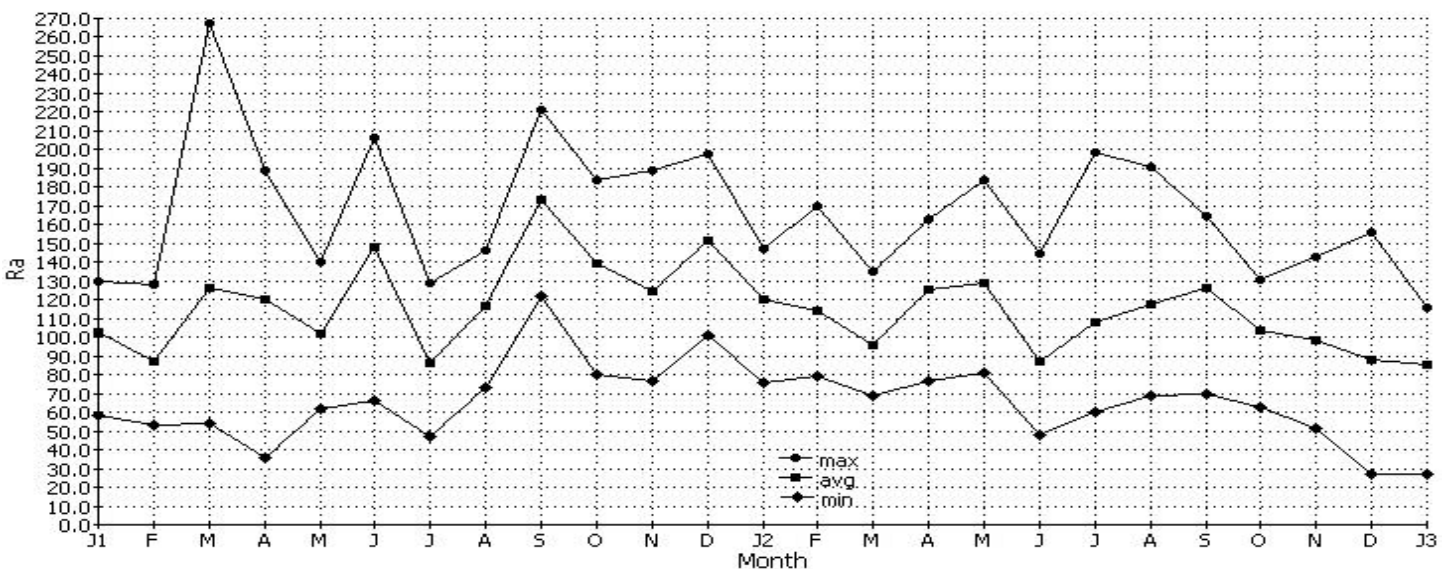


Fig. 2. Maximum, Mean, and Minimum Values of Ra for Each Month from January 2001 to Present.

Recently, several observers have asked to see a comparison of Solar Cycle 23 with Cycle 22. Fig. 3 below presents the smoothed monthly mean values, Rsm, from September 1986 to June 2002.

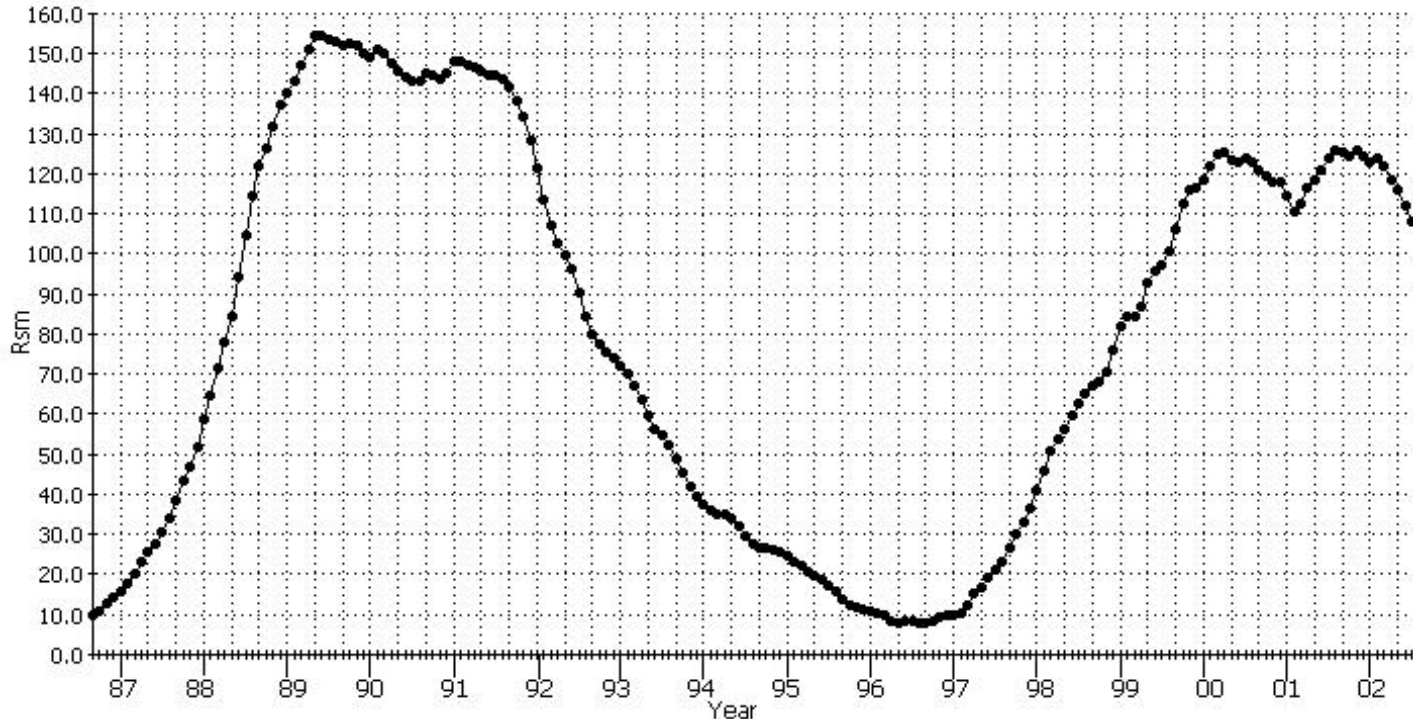


Fig. 3. Smoothed Sunspot Numbers (Rsm) from September 1986 to July 2002. (AAVSO data)

Graphical comparisons of Cycles 21, 22, and 23 and of Cycles 2, 10, 13, 17, 20, and 23 that employ smoothed International numbers (Ri) can be found at <http://www.dxlc.com/solar/cyclecomp.html> and at <http://www.dxlc.com/solar/cyclecomp2.html>, respectively. Related text points out that, at least with respect to its development, Cycle 23 is more nearly like Cycles 17 and 20 than like 22. The graphs, prepared by Jan Alvestad of the Norwegian DX-Listener's Club, are presented in color on the referenced website and on the AAVSO website. They are reprinted below with cycle numbers added at the right margins to aid viewers of black and white copy.

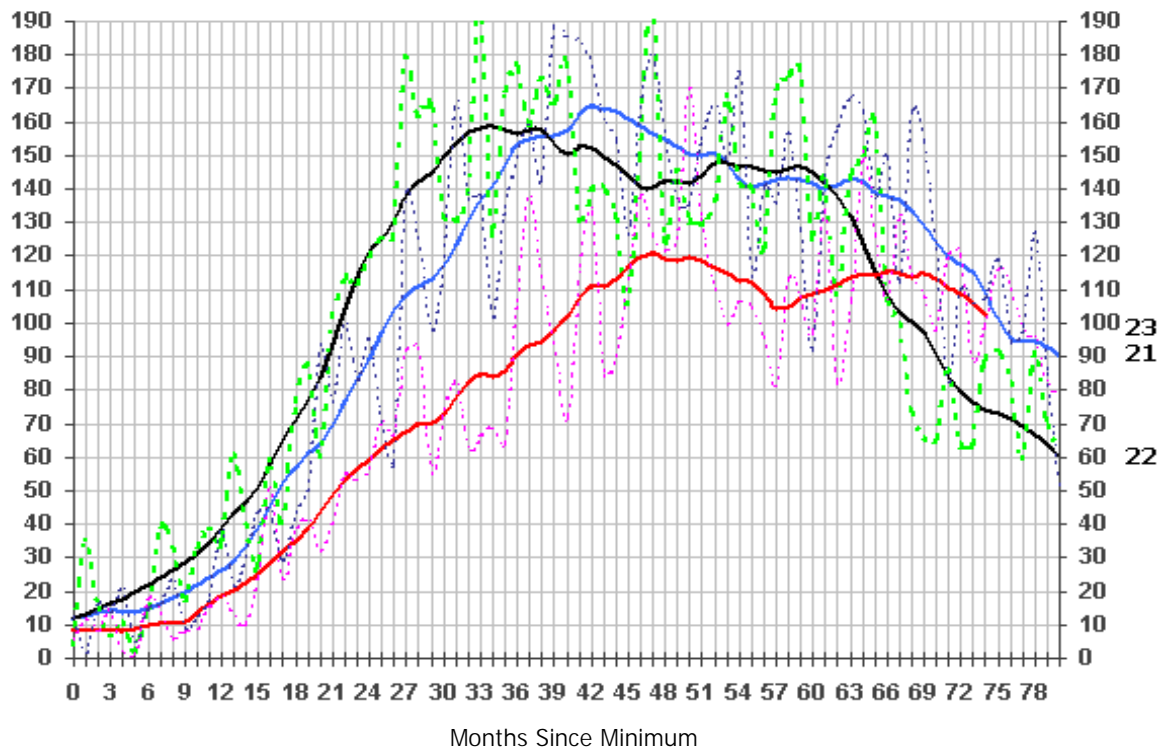


Fig. 4. Comparison of Cycles 21, 22 and 23. Solid Lines are Smoothed Values. Dotted Lines are Monthly Values. (Source: www.dxlc.com/solar/cyclcomp.html)

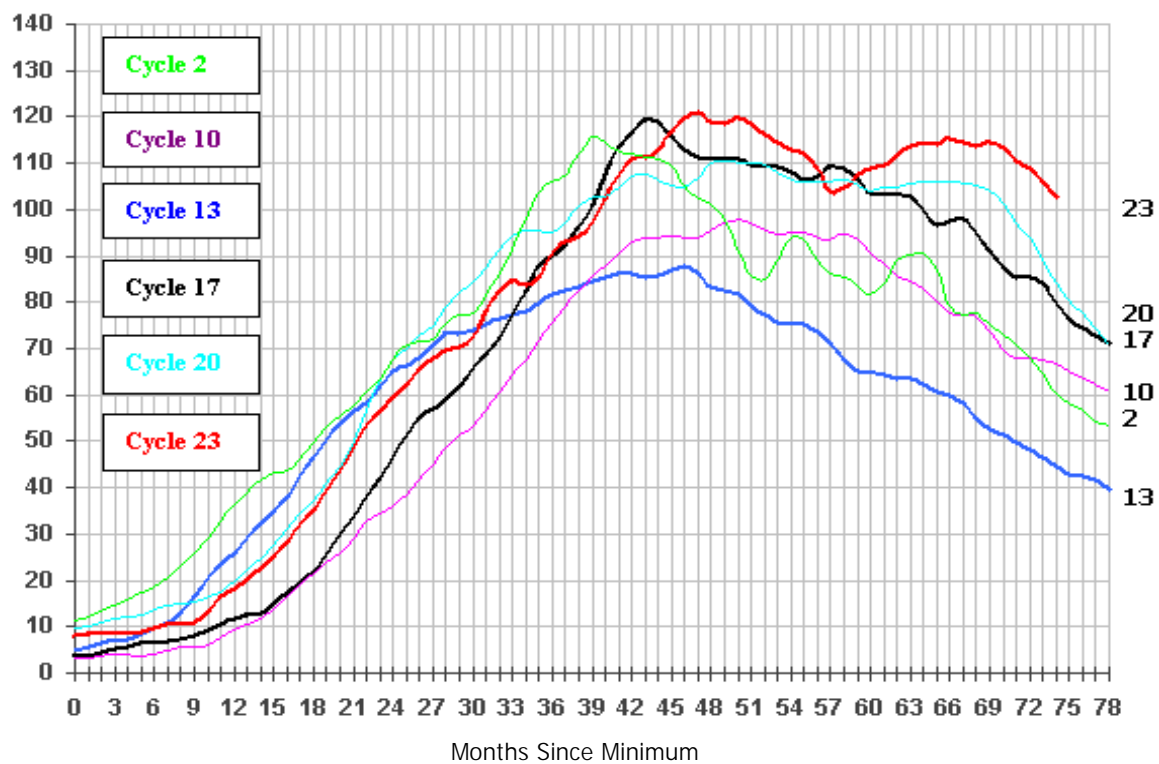


Fig. 5. Comparison of Cycle 23 with Cycles 2, 13, 10, 17, and 20.
 (Source: www.dxlc.com/solar/cyclcomp2.html)

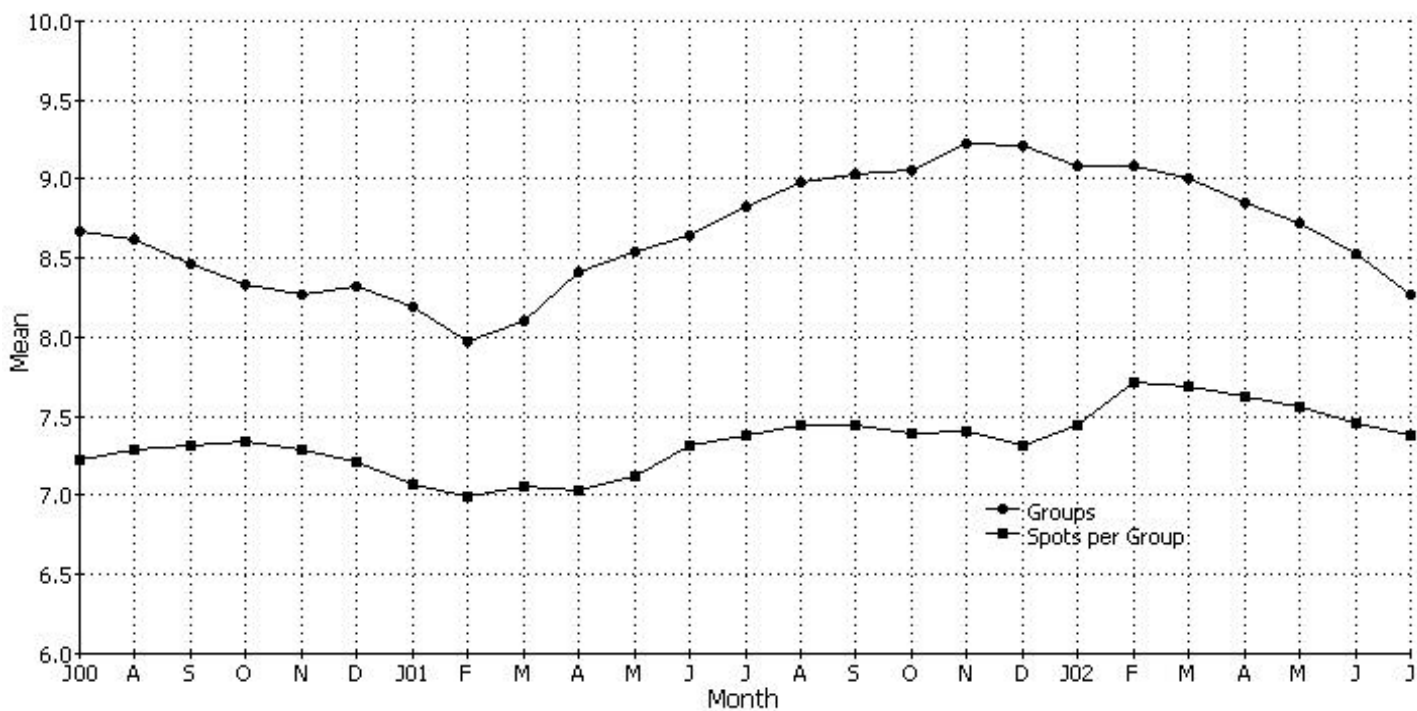
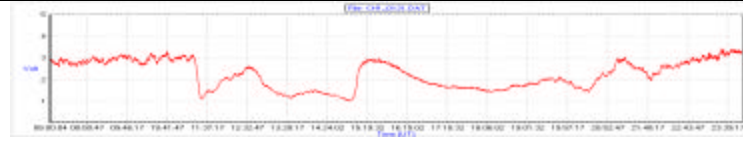


Fig. 6. Smoothed Mean Values of the Numbers of Sunspot Groups Reported and the Related Ratios of Spots to Groups from July 2000 to July 2002 (AAVSO data).

Sudden Ionospheric Disturbance Report

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Sudden Ionospheric Disturbances (SID) Recorded During January 2003

(Analysis performed by Michael Hill, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
030104	0903	2	030122	0445	2+			
030105	0608	2+	030123	0435	1-			
030106	0944	1	030123	0449	2+			
030107	0746	2+	030123	1242	2			
030107	0835	2	030124	0329	3			
030108	0553	2+	030124	0508	2			
030108	0728	2	030124	1548	1+			
030108	0847	1-						
030108	1531	1+						
030109	0138	2						
030109	0541	2+						
030109	0754	1+						
030109	1728	1+						
030111	1029	1						
030111	1609	2						
030112	0704	1						
030112	0739	2						
030112	1427	1+						
030114	0634	2+						
030114	0948	1						
030116	0450	1						
030121	0229	1						
030121	0558	2						
030121	1517	2+						
030121	1525	2+						

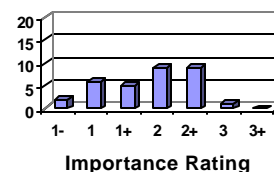
Importance rating : Duration(min)	-1: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
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The events listed above meet at least one of the following criteria

- 1) Event reported by two or more observers within ± 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)

Observer	Code	Station(s) monitored
A Clerkin	A29	NAA
A Panzer	A83	NAA
W Moos	A84	FTA ICV DHO
M Hill	A87	NAA
G DiFillipo	A93	HWU
T Poulos	A95	NAA
R Battaiaola	A96	HWU
J Wallace	A97	NAA
M King	A99	HWU
P Campbell	A100	NLK
F Steyn	A102	NAA NWC
L Observatory	A107	DHO

SID Events Recorded for January 2003



Solar Events

January was another slow month for SIDs. There were only 27 correlated SID events this month. The busiest time of the month appears to be centered about two time frames. The first active period was from the 7th to the 14th and then again from the 21st to the 24th. This corresponds quite well with the GOES-8 activity report that shows two active periods about the same time: The 7th – 11th and 19th to 25th. There were only 183 X-Ray flares recorded by GOES-8 Satellite. Of these, only 7 were M-Class and the rest were lower level C and B Class events.

I didn't get as many reports as I always have in the past this month. I hope the slowing of activity levels doesn't cause some of our observers to lose interest in continuing to submit data. Even when there is less activity it is important to keep the observation base constant so that the data during the peak of the solar cycle matches that of the minimum. We don't want the numbers to be low just because there are less observers submitting data. The more observers that report, even though only reporting a few to ten or fifteen events a month, help to average out any systematic errors in the data. If only one observer reports an event, it will not be correlated and therefore not included. So don't give up the ship just yet. We need your data.

I hope you all got to see the new SID/GRB Bulletin. Doug Welch has done a fine job of producing a publication that will be the successor to Cap Hossfields SID Supplement that was a prominent part of this publication. Together with the mailing list that Doug manages for the group he has vastly improved the strength of the SID Monitoring section of the AAVSO Solar Division. Many thanks to Doug for stepping in at this critical moment. I hope the new publication and the mailing list serve you all well with your technical issues to do with SID monitoring and SID equipment as well as GRB hunting.

