Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

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Volume 60 Number 12 **December 2004**

Table I. American Relative Sunspot Numbers (Ra) for December 2004 [boldface = maximum, minimum]

Day	N	Raw Mean	Ra
1	26	49	**34**
2	27	48	33
3	27	46	31
4	25	40	29
5	28	43	31
6	20	31	21
7	17	14	10
8	21	22	15
9	19	13	8
10	21	18	13
11	26	26	18
12	21	30	20
13	20	24	17
14	26	20	14
15	36	7	**5**
16	31	16	11
17	22	39	27
18	31	27	19
19	29	20	14
20	26	19	14
21	26	29	20
22	26	33	23
23	23	35	23
24	29	31	22
25	22	19	13
26	21	19	13
27	25	18	12
28	24	26	17
29	20	20	13
30	23	24	18
31	23	37	25
Means:	**24.5**	**27.1**	**18.9**

Total No. of Observers: 56

Total No. of Observations: 761

Table II. December 2004 Observers

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 5 AAP  P.Abbott
29 ARAG G.Araujo
 8 BARH H.Barnes
 5 BATR R.Battaiola
 3 BEB  R.Berg
10 BERJ J.Berdejo
 2 BLAJ J.Blackwell
13 BMF  M.Boschat
22 BOSB B.Bose
23 BRAB B.Branchett
 9 BRAD D.Branchett
24 BRAR R.Branch
22 BROB R.Brown
 3 CAMP P.Cambell
26 CHAG G.Morales
23 CKB  B.Cudnik
 9 CLZ  L.Corp
 2 COMT T.Compton
24 DEJV J.van Delft
 8 DGP  G.Dyck
20 DRAJ J.Dragesco
14 DUBF F.Dubois
11 FEEC C.Feehrer
10 FERJ J.Fernandez
23 FLET T.Fleming
27 FUJK K.Fujimori
 2 HAYK K.Hay
 5 HRUT T.Hrutkay
18 JAMD D.James
12 KAPJ J.Kaplan
24 KNJS J&S Knight
 4 KROL L.Krozel
 8 LARJ J.Larriba
21 LEVM M.Leventhal
 7 MARE E.Mariani
18 MARJ J.Maranon
17 MCE  E.Mochizuki
 6 MEU  E.Mason
13 MMI  M.Moeller
13 OBSO IPS Observatory
 7 RICE E.Richardson
20 RITA A.Ritchie
10 SCGL G.Schott
 2 SIMC C.Simpson
13 STEM G.Stemmler
 9 STQ  N.Stoikidis
28 SUZM M.Suzuki
 7 SZAK K.Szatkowski
11 SZUM M.Szulc
22 TESD D.Teske
10 THR  R.Thompson
18 TJV  J.Temprano
 7 URBP P.Urbanski
17 VARG A.Vargas
17 WILW W.Wilson
20 YESH H.Yesilyaprak
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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 December 2004

1	3.1	5.6	**9**	1.1	1.9	**17**	2.9	3.5	**25**	1.1	6.8
2	3.1	5.6	**10**	1.3	3.8	**18**	2.0	3.2	**26**	1.5	2.8
3	3.0	5.1	**11**	1.4	8.0	**19**	1.4	3.6	**27**	1.5	1.8
4	3.2	2.6	**12**	1.3	13.7	**20**	1.0	8.2	**28**	1.8	4.5
5	3.6	1.8	**13**	1.1	12.2	**21**	1.5	8.6	**29**	1.2	6.8
6	2.6	1.8	**14**	1.2	7.0	**22**	1.6	10.4	**30**	1.2	9.5
7	1.2	1.7	**15**	0.5	2.5	**23**	2.0	7.7	**31**	2.0	8.7
8	1.9	1.9	**16**	1.3	2.5	**24**	1.8	7.8	**Mn.**	**1.8**	**5.5**

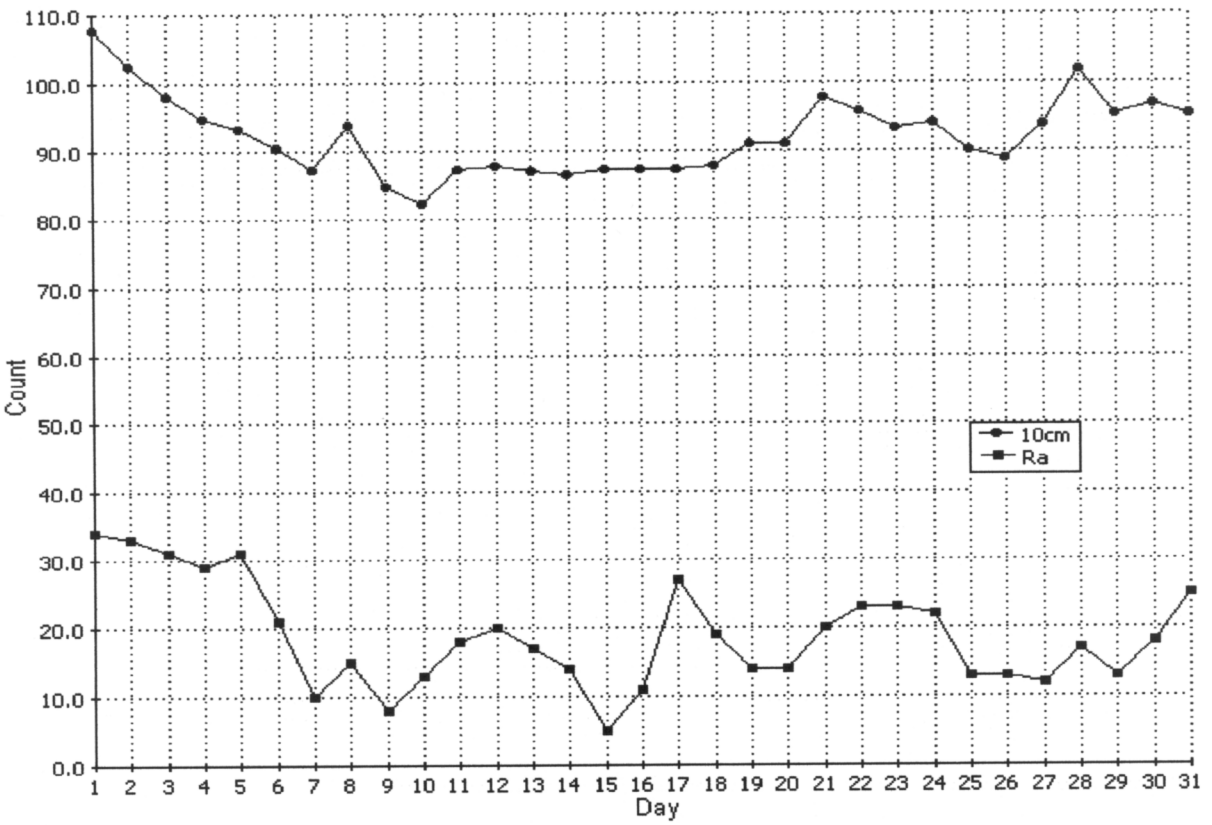

Fig. 1. 10 cm Solar Flux and American Relative Sunspot Numbers (Ra) for December 2004.
10 cm source: http://www.drao.nrc.ca/icarus

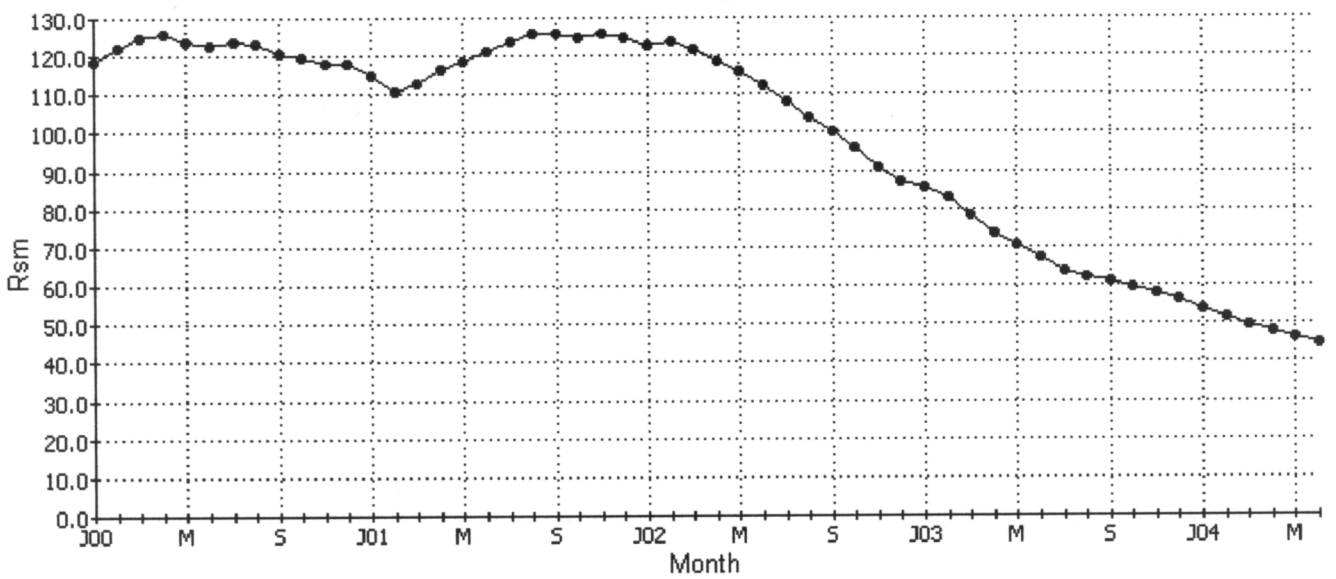

Fig. 2. Smoothed Mean Sunspot Numbers (Rsm) from January 2000 to June 2004 (Waldmeier Method).

Table IV. Sunspot and SID Observers Who Contributed Reports During 2004.

Sunspot Observers

AAP	Patrick Abbott	Canada
ARAG	Gema Araujo	India
ARE	Richard Allessi	USA
ATON	Antonio Attanasio	Italy
BARH	Howard Barnes	New Zealand
BATR	Roberto Battaiola	Italy
BEB	Ray Berg	USA
BERJ	Jose Berdejo	Spain
BLAJ	John Blackwell	USA
BMF	Michael Boschat	Canada
BOSB	Biswajit Bose	India
BRAB	Brenda Branchett	USA
BRAD	David Branchett	USA
BRAR	Robert Branch	USA
BROB	Bob Brown	USA
BURS	Scott Burgess	USA
BXA	Alexander Baransky	Ukraine
CAMP	Paul Campbell	Canada
CARJ	Jim Carlson	USA
CHAG	German Morales	Bolivia
CKB	Brian Cudnik	USA
CLZ	Laurent Corp	France
COMT	Thomas Compton	USA
CR	Tom Cragg	Australia
DEJV	Jacques van Delft	South Africa
DELS	Susan Delaney	USA
DEMF	Frank Dempsey	Canada
DGP	Gerald Dyck	USA
DPP	Pierre dePonthiere	Belgium
DRAJ	Jean Dragesco	France
DUBF	Franky Dubois	Belgium
FEEC	Carl Feehrer	USA
FERJ	Jose Fernandez	Spain
FLET	Tom Fleming	USA
FUJK	Kenichi Fujimori	Japan
GOEM	Martin Goetz	Germany
GOLA	Alexander Golovin	Ukraine
GUNM	Marcello Gundlach	Boliva
HALB	Brian Halls	England
HAYK	Kim Hayk	Canada
HRUT	Timothy Hrutkay	USA
JAMD	David James	USA
JEFT	Thomas Jeffrey	USA
JENJ	Jamey Jenkins	USA
JENS	Simon Jenner	England
KAPJ	John Kaplan	USA
KHAR	Rana Khan	India
KNJS	James Knight	South Africa
KQR	Richard Kinne	USA
KROL	Larry Krozel	USA
KUZM	Mikhail Kuzmin	Russia
LARJ	Jose Larriba	Spain
LERM	Michel Lerman	Canada
LEVM	Monty Leventhal	Australia
MARE	Enrico Mariani	Italy
MARJ	Jose Maranon	Spain
MAV	Dimitri Matsnev	Russia
MCE	Etsuiku Mochizuki	Japan
MEU	Euan Mason	New Zealand
MMI	Michael Moeller	Germany

Sunspot Observers (cont'd.)

OBSO	IPS Observatory	Australia
PARN	Norman Parker	USA
RICE	E. C. Richardson	England
RITA	Arthur Ritchie	USA
SCGL	Gerd Lutz Schott	Germany
SCHG	Greg Scholl	USA
SDP	Diane Sharples	USA
SIMC	Clyde Simpson	USA
STEF	George Stefanopoulos	Greece
STEM	Gerhard Stemmler	Germany
STQ	Nick Stoikidis	Greece
SUZM	Miyoshi Suzuki	Japan
SZAK	Kryzstoff Szatkowski	Poland
SZUM	Mieczyslaw Szulc	Poland
TESD	David Teske	USA
THR	Raymond Thompson	Canada
TJV	Javier Temprano	Spain
URBP	Piotr Urbanski	Poland
VALD	Daniel del Valle	Puerto Rico
VARG	Alberto Vargas	Boliva
VELM	Maria Vela	Romania
VIDD	Daniel Vidican	Romania
WILW	William Wilson	USA
YESH	Hulya Yesilyaprak	Turkey

SID Observers

A-29	Andy Clerkin	USA
A-50	Jerry Winkler	USA
A-52	Domenic Toldo	South Africa
A-63	James Ellerbe	Spain
A-80	Peter King	England
A-84	Walter Moos	Switzerland
A-87	Mike Hill	USA
A-90	Jim Mandaville	USA
A-93	Guglielmo Di Fillipo	Italy
A-95	Ted Poulos	USA
A-96	Roberto Battaiola	Italy
A-97	Jon Wallace	USA
A-99	Michael King	England
A-100	Paul Campbell	Canada
A-101	Giorgio Bressan	Italy
A-102	Francois Steyn	South Africa
A-103	Biswajit Bose	India
A-107	Nick Stoikidis	Greece
A-108	Paul Mortfield	USA
A-111	Kenyon Lennart	USA
A-112	Andries Son	Belgium

Sudden Ionospheric Disturbance Report

Michael Hill, SID Analyst
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Marlborough, MA 01752 USA
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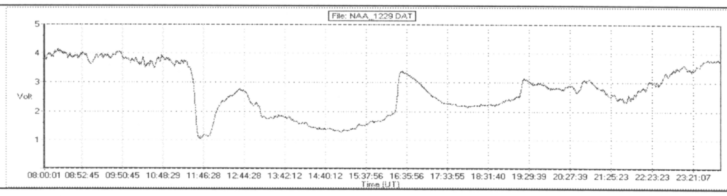


Sudden Ionospheric Disturbances (SID) Recorded During December 2004

(Analysis performed by Michael Hill, SID Analyst)

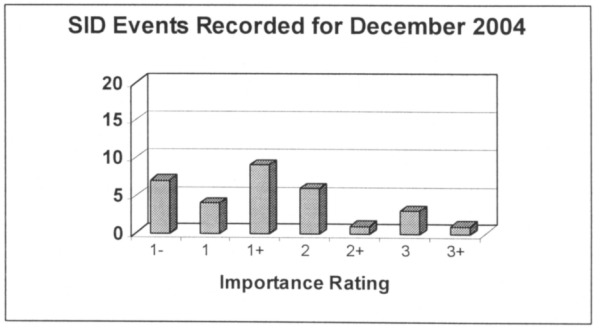
Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
041201	0720	3+	041230	1044	1+			
041201	1604	1-	041230	1117	1-			
041201	1620	1-	041230	2216	2			
041201	1912	1-	041231	0438	3			
041202	0005	1-	041231	1446	1			
041207	1629	3	041231	1456	1+			
041212	1612	3						
041219	0412	2						
041223	1007	1+						
041227	2131	1+						
041228	0011	2						
041228	0611	1+						
041228	0635	1-						
041228	0910	1-						
041228	0920	2						
041228	1551	1+						
041228	1557	1+						
041228	1754	2						
041228	1758	1+						
041229	0821	2+						
041229	1338	1						
041229	1626	2						
041229	1921	1+						
041230	0626	1						
041230	0741	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-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
J Winkler	A50	NAA NML NPM
D Toldo	A52	NWC VTX
S Hansen	A59	NAA
M Hill	A87	NAA
J Mandaville	A90	NPM
G DiFillipo	A93	HWU
T Poulos	A95	NAA
R Battaiola	A96	HWU
J Wallace	A97	NAA
M King	A99	HWU
P Campbell	A100	NLK
G Bressan	A101	DHO
F Steyn	A102	NAA NWC
P Mortfield	A108	NAA



Solar Events

Happy New Year to all SID Observers! This has been an exciting year with unexpectedly high levels of activity, providing for some interesting SID monitoring. Although some months were very slow, such as June with only 16 SID events or September with 20, other months were quite the opposite. The most active time clearly was this summer, with 120 events in July and 82 events in August. Just recently, last month, there were 73 events, which is a pretty large number considering our proximity to solar minimum.

This month was pretty much back to normal with only 31 correlated SID events reported by our observers. Most of these were of the lower importance rating, although there were a few long duration events. There were 157 X-Ray flares recorded by the GOES-12 satellite this month. Of these, seven were M Class flares. There were no X-Class flares, and many of the remaining flare events were, in fact, lower B-Class events.

One other notable event this month that was non-solar was the detection of a SGR event by a number of SID observers. Those of you who havn't heard about this, check the latest AAVSO circulars listed on their web page for details. Congratulations on your detections to all of you who were fortunate enough to be able to see this event. Some observers got a really strong signal. Quite impressive.