

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS  
SOLAR SECTION

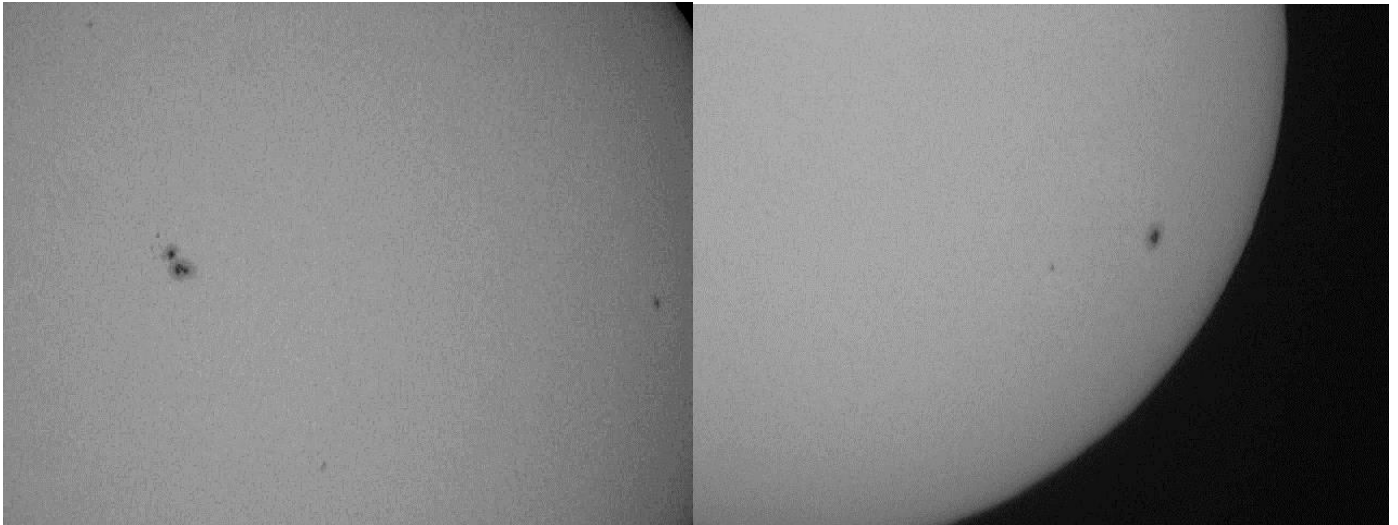


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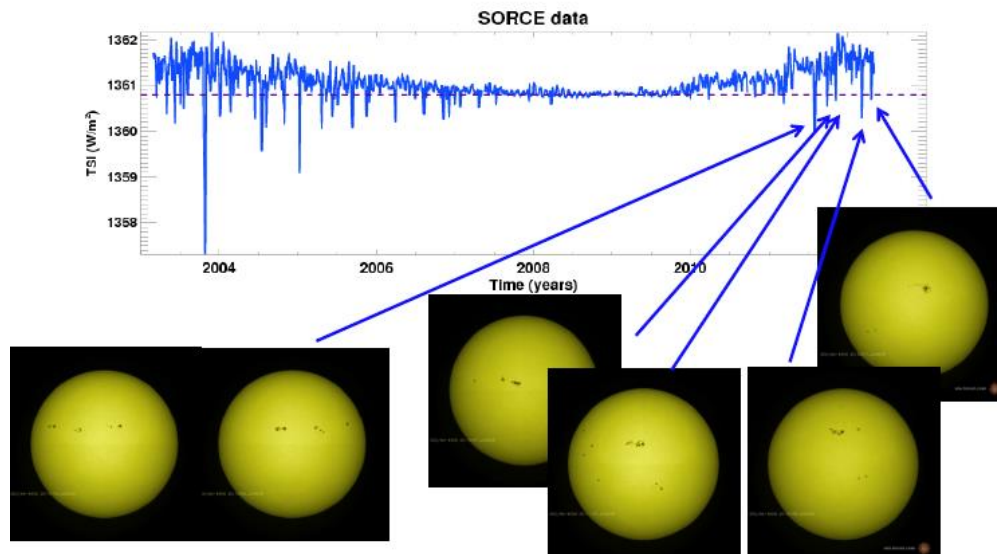
March, 2015



## Where do all the sunspots go?

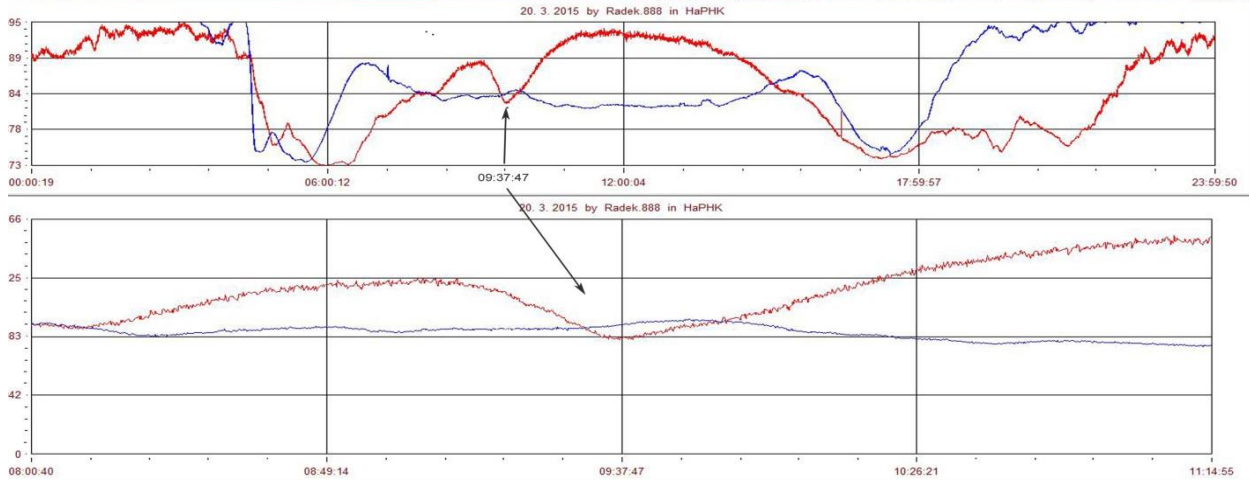
Dan Vidican sends these images of Active Region 2305 as it progresses toward the limb and disappears behind the sun. North is up, west at right: 2015-03-26; UT; 0943 for the left image, and 2015-03-31; UT; 0749 for the right image. Below, Giuliana de Toma (HAO-NCAR-LASP) makes this graph for Total Solar Irradiance (TSI) from the SOURCE satellite (2014, ), showing how sunspots in this cycle 24 have had fewer large sunspots than all past cycles except perhaps those before cycle 11. [http://lasp.colorado.edu/home/sorce/data/tsi-data/#historical\\_TSI](http://lasp.colorado.edu/home/sorce/data/tsi-data/#historical_TSI)

## Recent TSI record - Cycle 24



Only 7 spot groups larger than 700  $\mu$ hem in cycle 24

# Sudden Ionospheric Disturbance Report



Radovan Mrllak, A136, SID monitor in Hradec Kralove detected partial solar eclipse on March 20, 2015

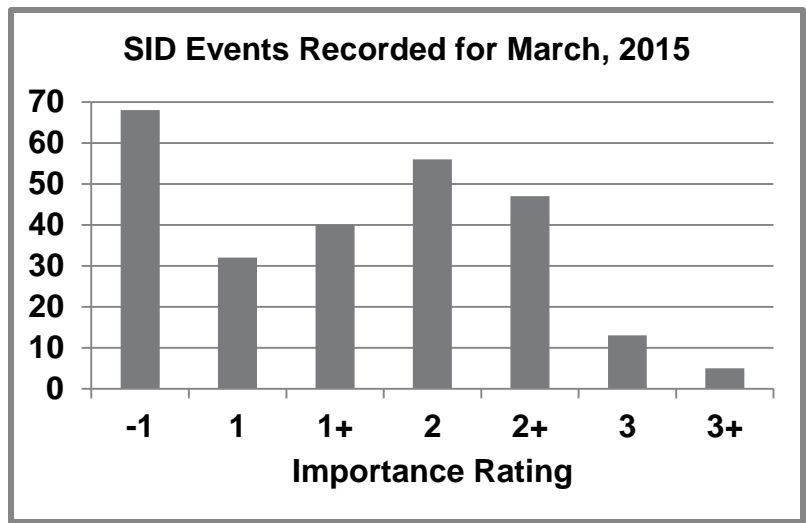
## Sudden Ionospheric Disturbances (SID) Records During March, 2015

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
150301	1601	2	150302	953	2+	150306	602	2+
150302	1303	2	150302	1036	2+	150307	1737	2
150302	1309	2	150302	1951	2+	150307	1852	2
150302	1355	2	150303	314	2	150307	1422	2+
150302	1454	2	150303	1334	2	150307	1721	2+
150302	2317	2	150303	31	1+	150307	2204	2+
150302	520	1+	150303	227	1+	150307	2213	2+
150302	1527	1+	150304	1017	2+	150308	926	2
150302	1736	1+	150304	1453	3+	150308	1358	3
150302	301	2+	150305	942	1+	150308	919	1+
150302	558	2+	150305	950	2+	150308	1515	2+
150302	946	2+	150306	743	3	150309	1009	1+

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
150309	1432	1+	150314	2333	2+	150319	2023	2+
150309	1438	1+	150315	2100	2	150319	2106	2+
150309	2345	1+	150315	940	1+	150319	1948	3+
150309	1947	3+	150315	2350	1+	150320	134	3
150310	324	2	150315	213	2+	150320	932	3
150310	421	2	150315	1149	2+	150320	2120	3
150310	430	2	150315	1202	2+	150320	1400	2+
150310	634	2	150315	2240	2+	150320	2159	3+
150310	2101	1+	150315	2322	2+	150321	743	2
150311	757	2	150316	1052	2	150321	1858	2
150311	1129	2	150316	2049	2	150321	2033	3
150311	1619	2	150316	1109	3	150322	1951	2+
150311	1623	2	150316	946	1+	150322	2109	2+
150311	1851	2	150316	1100	2+	150322	2117	2+
150311	2218	2	150317	845	2	150323	1933	1+
150311	1547	3	150317	1652	1+	150323	1615	2+
150311	1438	1+	150318	359	2	150323	1621	2+
150311	2346	1+	150318	654	2	150323	2046	2+
150311	1139	2+	150318	700	2	150323	2229	2+
150312	821	2	150318	1032	2	150324	1729	2
150312	1149	2	150318	1314	2	150324	2057	2
150312	1401	2	150318	1500	2	150324	600	1+
150312	2150	2	150318	1529	2	150324	2155	1+
150312	1215	1+	150318	1703	2	150324	1704	2+
150312	1408	1+	150318	2158	2	150325	148	2
150312	2035	1+	150318	2218	2	150325	723	2
150312	912	2+	150318	408	3	150325	1640	1+
150312	1445	2+	150318	749	1+	150325	446	2+
150313	744	2	150318	1025	1+	150326	26	3
150313	1127	2	150318	1626	1+	150327	1453	2+
150313	2048	2	150318	1950	2+	150328	525	2
150313	400	3	150318	1646	3+	150328	532	1+
150313	606	1+	150319	1555	2	150328	555	2+
150313	2037	2+	150319	1653	2	150329	1045	1+
150314	153	2	150319	1740	2	150329	1536	1+
150314	1835	2	150319	1956	1+	150329	1149	2+
150314	2253	2	150319	1233	2+	150330	1256	1+
150314	202	1+	150319	1424	2+			
150314	1154	1+	150319	1827	2+			
150314	1843	1+						
150314	440	2+	*					

\*This is a truncated list of importance ratings greater than 1, see the full SID report here:  
<http://www.aavso.org/sid-database>

# Solar Events

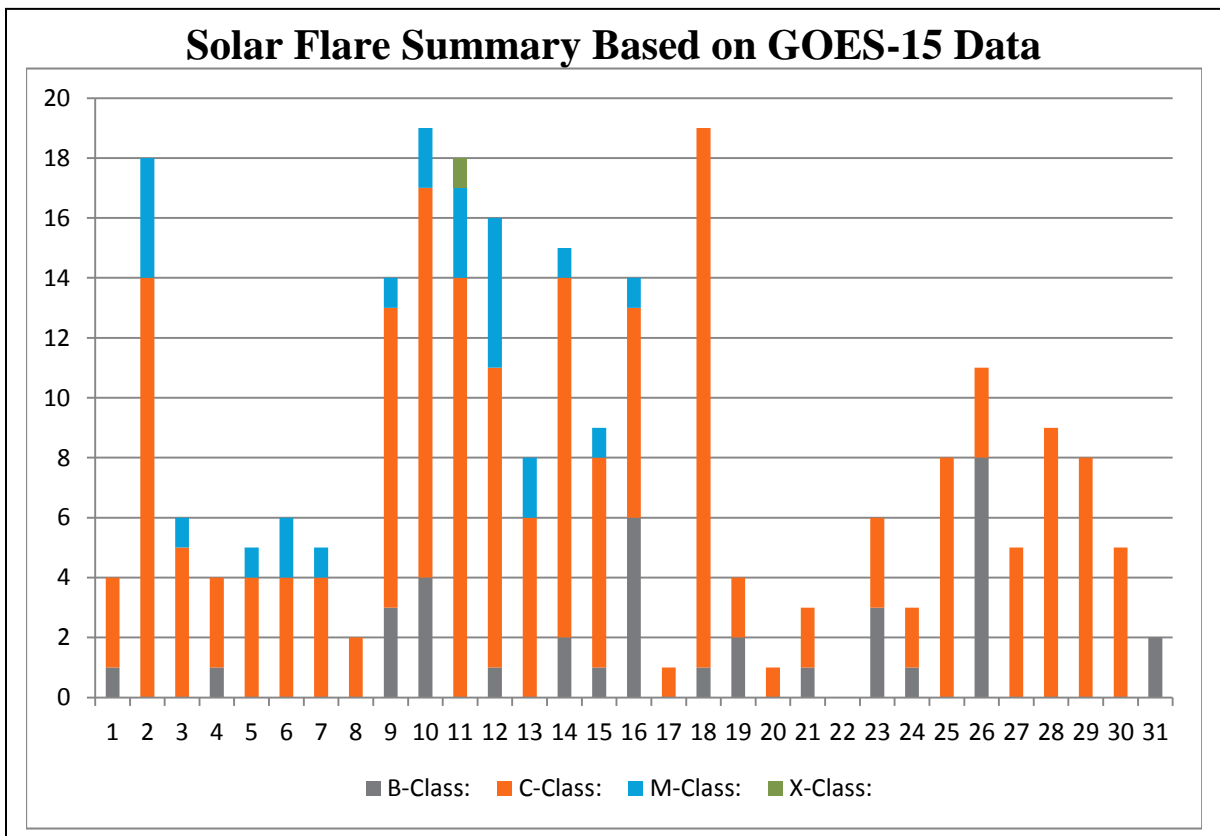


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: 125
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## Sudden Ionospheric Disturbances (SID) Observers During March, 2015

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	S Oatney	A125	NAA NLK NML
R Battaiola	A96	ICV	J Karlovsky	A131	DHO NSY
J Wallace	A97	NAA	R Green	A134	NWC
L Loudet	A118	DHO GQD NAA	R Mrllak	A136	GQD NSY
J Godet	A119	GBZ GQD ICV	S Aguirre	A138	NLK
B Terrill	A120	NWC	G Silvis	A141	NAA
F Adamson	A122	NWC	R Rogge	A143	DHO GQD ICV

There were 248 solar flares measured by GOES-15 for March, 2015: One X class, 25 M class, 185 C class and 37 B class flares. Far more flaring this month compared to last. There were 14 AAVSO SID observers who submitted reports this month.



American Relative Sunspot Numbers (Ra) for  
 March, 2015 [**boldface = maximum, minimum**]

DAY	NumObs	RAW	Ra
1	23	58	43
2	32	49	39
3	30	44	33
4	27	36	27
5	29	23	17
6	24	26	20
7	39	18	15
8	43	24	18
9	33	24	20
10	35	26	20
11	30	36	27
12	41	53	40
13	29	57	41
14	28	49	37
15	22	53	39
16	33	33	25
17	34	37	28
18	29	43	34
19	32	39	30
20	28	20	<b>15</b>
21	26	34	27
22	35	68	52
23	34	94	71
24	39	98	<b>76</b>
25	34	94	71
26	27	89	67
27	31	96	70
28	33	65	49
29	31	60	45
30	32	46	36
31	38	36	28
<b>Average</b>	<b>31.6</b>	<b>49.3</b>	<b>37.4</b>

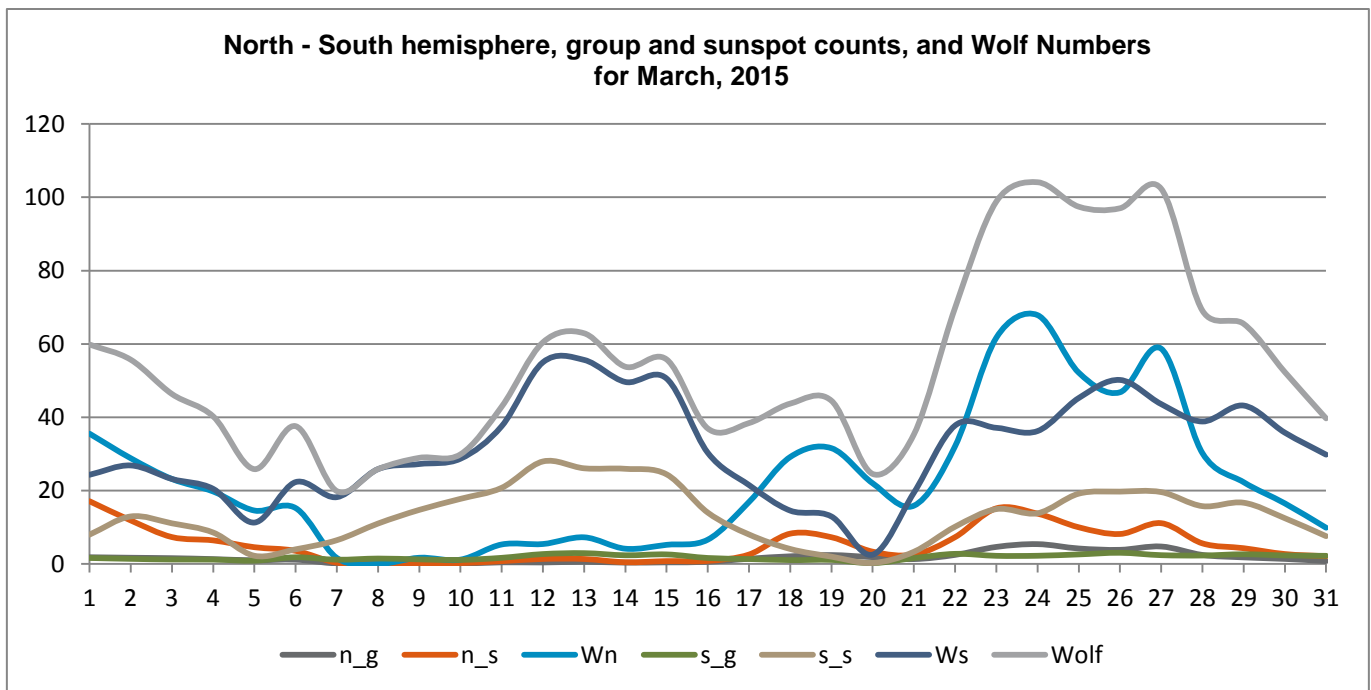
Obs	#Obs	Name
AAX	19	Alexandre Amorim
AJV	25	J. Alonso
ARAG	30	Gema Araujo
ASA	17	Salvador Aguirre
BARH	13	Howard Barnes
BATR	4	Roberto Battaiola
BDDA	5	Diego Bastiani
BERJ	17	Jose Alberto Berdejo
BLAJ	2	John A. Blackwell
BMF	14	Michael Boschat

BRAB	30	Brenda Branchett
BRAF	14	Raffaello Braga
BROB	26	Robert Brown
BSAB	27	Santanu Basu
BXD	18	Alexandru Burda
CHAG	28	German Morales Chavez
CIOA	6	Ioannis Chouinavas
CKB	17	Brian Cudnik
CNT	10	Dean Chantiles
CVJ	16	Jose Carvajal
DJOB	17	Jorge del Rosario
DUBF	24	Franky Dubois
FERJ	12	Javier Ruiz Fernandez
FLET	19	Tom Fleming
FLF	10	Fredirico Luiz Funari
FTAA	13	Tadeusz Figiel
FUJK	23	K. Fujimori
HALB	4	Brian Halls
HAYK	14	Kim Hay
HMQ	6	Mark Harris
HOWR	27	Rodney Howe
JDAC	17	David Jackson
JGE	7	Gerardo Jimenez Lopez
JJMA	6	Jessica M. Johnson
KAND	11	Kandilli Observatory
KAPJ	21	John Kaplan
KNJS	28	James & Shirley Knight
KROL	21	Larry Krozel
LEVM	17	Monty Leventhal
LKR	7	Kristine Larsen
LRRR	20	Robert Little
MGAA	4	Gael Mariani
MILJ	2	Jay Miller
MJHA	24	John McCammon
MMI	17	Michael Moeller
MUDG	8	George Mudry
MWU	9	Walter Maluf
OATS	11	Susan Oatney
OBSO	21	IPS Observatory
ONJ	7	John O'Neill
RLM	13	Mat Raymonde
SCGL	24	Gerd-Lutz Schott
SIDM	12	Monika Sidor
SIMC	5	Clyde Simpson
SMNA	3	Michael Stephanou
SODH	31	Jan Alvestad (SDO)
SONA	9	Andries Son

SPIA	6	Piotr Skorupski
STAB	28	Brian Gordon-States
SUZM	23	Miyoshi Suzuki
TESD	13	David Teske
URBP	24	Piotr Urbanski
VARG	22	A. Gonzalo Vargas
VIDD	16	Dan Vidican
VRUA	6	Ruben Verboven
WAU	1	Artur Wargin
WILW	10	William M. Wilson

WRP 1 Russell Wheeler

**Total Observers: 68**  
**Total Observations: 1012**



There were 42 out of 68 observers who counted northern and southern hemisphere groups and sunspots this month. The northern hemisphere was somewhat predominant although there were many days of crossover.

**Reporting Addresses:**

**Sunspot Reports – Kim Hay [solar.aavso@gmail.com](mailto:solar.aavso@gmail.com)**

**SID Solar Flare Reports – Rodney Howe [ahowe@frii.com](mailto:ahowe@frii.com)**