

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS  
SOLAR COMMITTEE

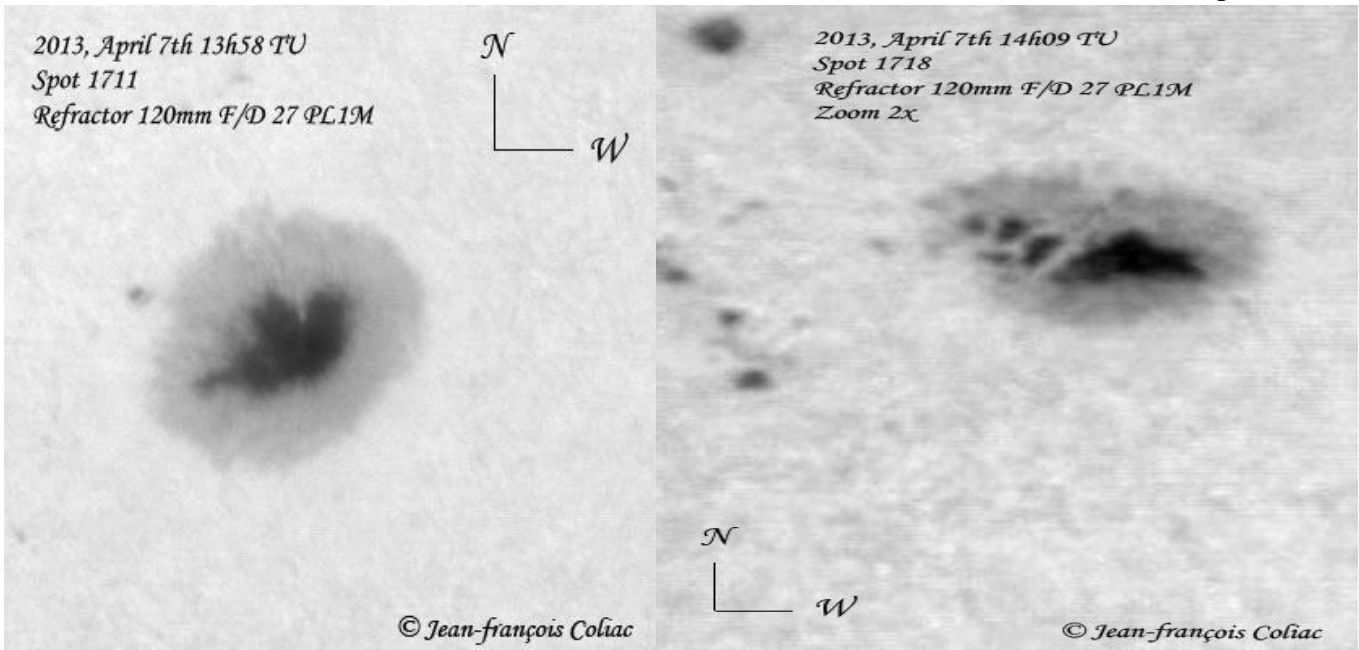


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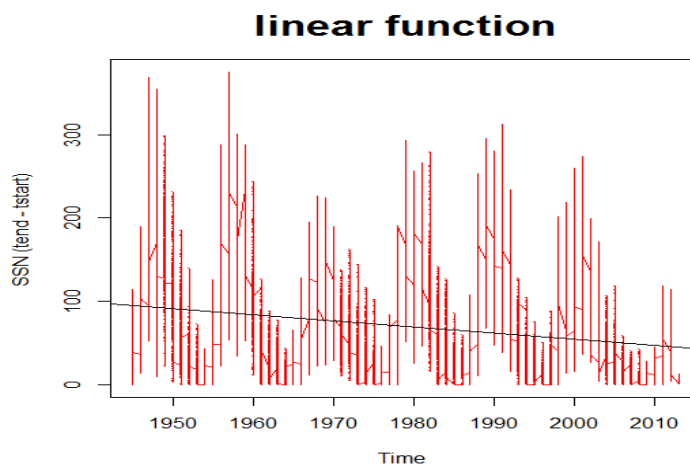
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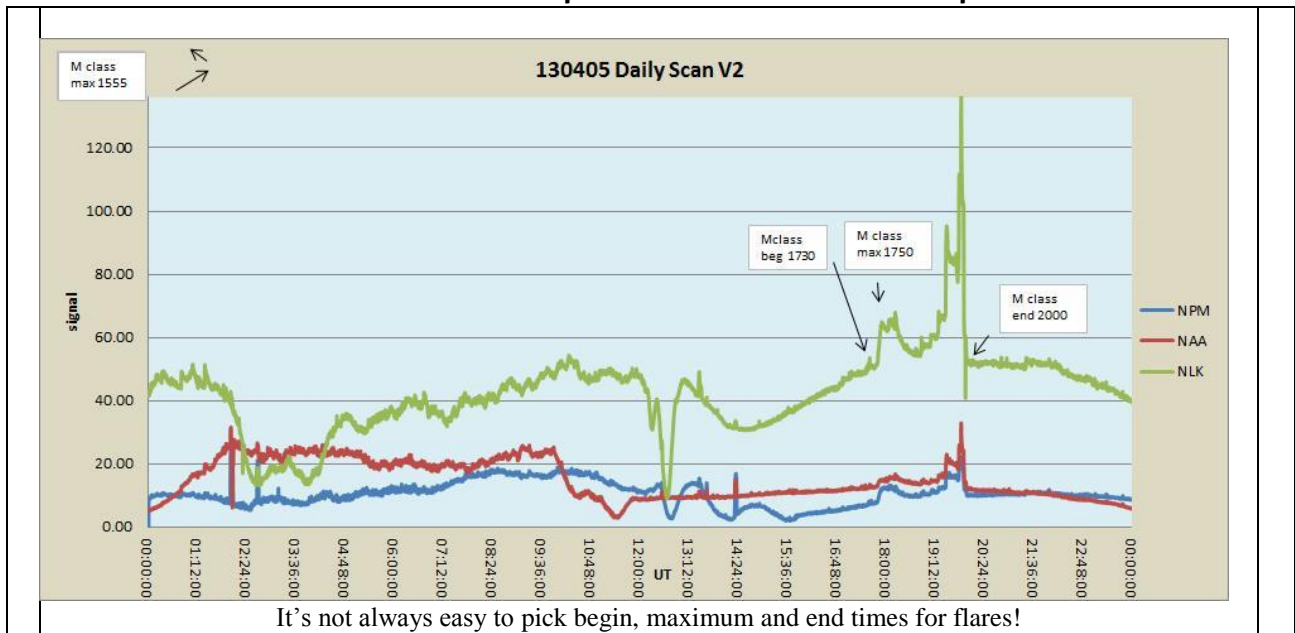
Thanks to Jean-francois Coliac for these well annotated images.

Here is a graph of AAVSO Relative American sunspot numbers (SSN\*) going back to 1944:



If you had to guess where the regression line in this graph was going to converge with the future, where would it be?

# Sudden Ionospheric Disturbance Report

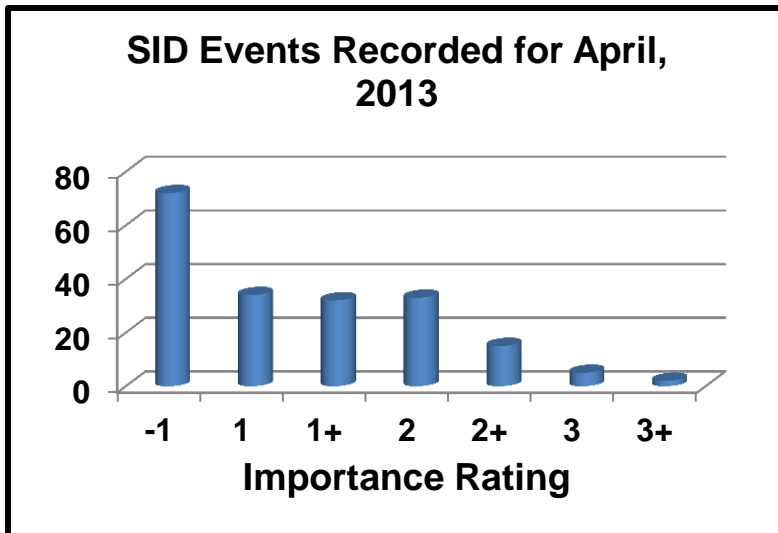


## Sudden Ionospheric Disturbances (SID) Records During April, 2013

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
130401	1253	1	130406	0947	1	130411	2258	1+
130401	1959	2	130406	1138	2	130412	0413	1
130402	0059	1-	130406	1227	1-	130412	0745	1+
130402	0207	1-	130406	1943	1+	130412	1848	2
130402	0242	1-	130406	2129	2	130412	2037	2+
130402	1504	1-	130406	2156	1-	130413	0335	1+
130403	0018	1-	130407	1145	1-	130413	0658	2
130403	0039	1-	130407	1211	1-	130413	0928	1-
130403	0155	1-	130407	1602	1	130413	1700	1+
130403	0244	1-	130407	1702	1-	130413	2040	1+
130403	0550	1-	130408	0402	1-	130415	0923	1-
130403	0624	1-	130408	1350	1	130415	1112	1-
130403	0944	1	130409	0723	1-	130415	1404	1-
130403	1820	1-	130409	0734	1	130416	0359	1+
130403	1842	1+	130409	0859	1-	130416	0428	1+
130403	2235	1-	130409	1139	2	130416	0735	1-
130404	0957	1-	130410	1330	1+	130416	0936	2
130405	0700	1-	130410	1801	1-	130418	0818	2+
130405	0940	1-	130410	2223	2	130418	1712	1
130405	1746	2	130411	0554	3	130419	0208	2
130405	1758	2+	130411	0707	1+	130419	1443	1-
130406	0552	2	130411	1014	1-	130420	0057	2+
130406	0802	1-	130411	1040	2	130420	0231	1-
130406	0811	2	130411	1247	1+	130420	0802	1-
130406	0840	1-	130411	2143	2+	130420	1031	3

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
130420	1052	1-	130424	2143	1	130427	0622	1+
130421	0000	3+	130425	0021	1	130427	0918	2
130421	0110	1	130425	0204	2+	130427	1057	1+
130421	0251	1-	130425	0341	1-	130427	1212	1+
130421	0602	1	130425	0832	2	130427	1220	2+
130421	0925	1+	130425	0946	1	130427	1347	1+
130421	1421	1-	130425	1049	2	130427	1514	1+
130421	1604	1	130425	1102	2	130428	1457	1-
130421	1837	1+	130425	1148	1+	130428	1544	1-
130422	1015	1-	130425	1723	1+	130428	1557	1
130422	1029	2	130425	1940	2	130428	1806	1
130422	2251	1+	130426	0000	3+	130428	2331	1-
130423	1331	1	130426	0407	2+	130429	0000	3
130423	1415	2	130426	0603	2+	130429	0741	1+
130423	1505	1-	130426	0627	2	130429	0900	2
130423	1519	1	130426	0858	1+	130429	0945	1
130424	0328	1-	130426	1258	1+	130429	2032	1
130424	1004	1+	130426	1356	1-	130429	2158	1-
130424	1012	2	130426	1538	2	130430	0130	1+
130424	1100	1	130426	1544	2+	130430	0340	1-
130424	1124	1+	130426	1550	2+	130430	0846	1-
130424	1323	1	130427	0150	2	130430	1651	1-
130424	1622	2	130427	0229	3	130430	2328	1
130424	1659	1+	130427	0252	2			
130424	1718	1-	130427	0356	1			

# Solar Events

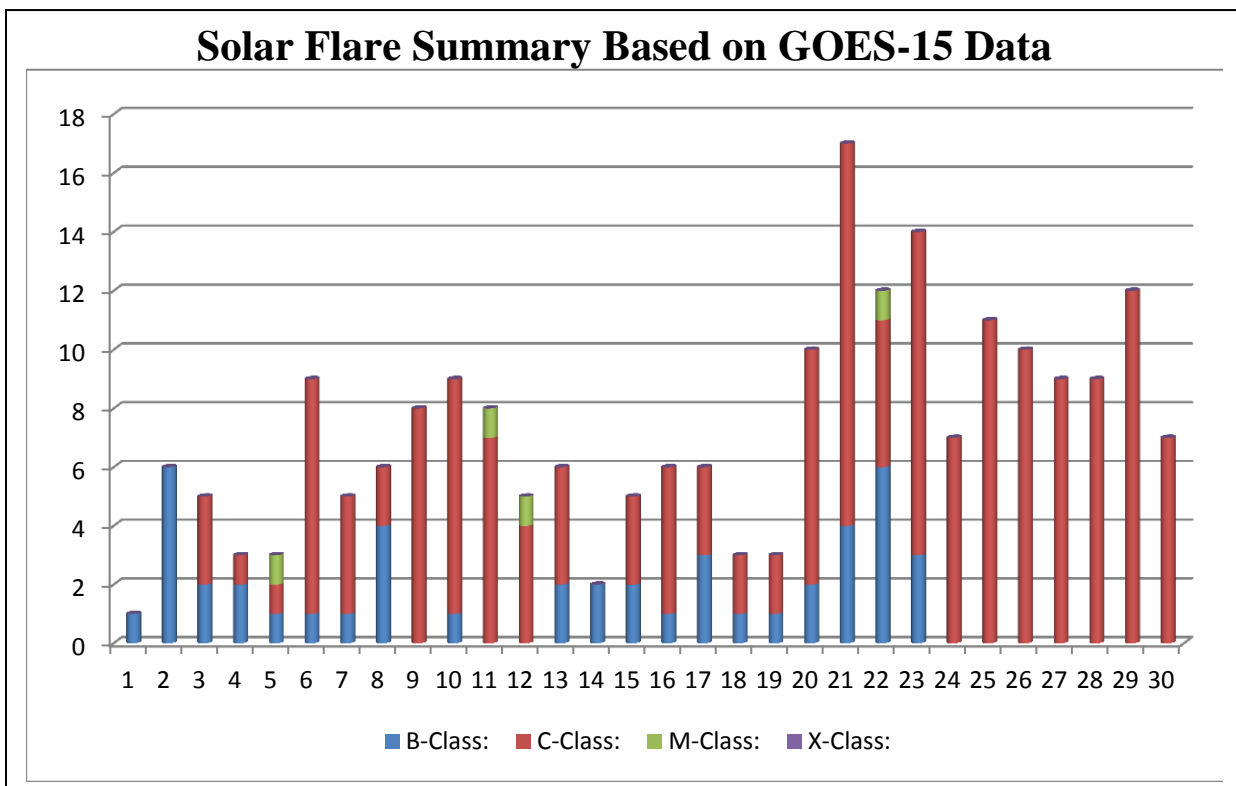


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
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## Sudden Ionospheric Disturbances (SID) Observers During April, 2013

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	K Cotar	A129	DHO GBZ
R Battaiola	A96	HWU	J Karlovsky	A131	DHO
J Wallace	A97	NAA	E Soubrouillard	A132	DHO GQD HWU
F Steyn	A102	NWC	R Green	A134	NWC
L Loudet	A118	DHO GQD NAA	R Mrlak	A136	GQD NSY
J Godet	A119	GBZ GQD ICV	D Koawl	A137	NPM
B Terrill	A120	NWC	F Francione	A139	DHO HWU SAS
F Adamson	A122	NWC	L Corp	A140	DHO
S Oatney	A125	NLK NML	G Silvis	A141	GQD HWU NAA

There were 217 solar flares measured by GOES-15 for April, 2013, four M class, 167 C class and 46 B class flares. The sun was more active with C class flares this month. There were 18 AAVSO SID Observers who submitted reports this month.



American Relative Sunspot Numbers (Ra) for April, 2013 [**boldface = maximum, minimum**]

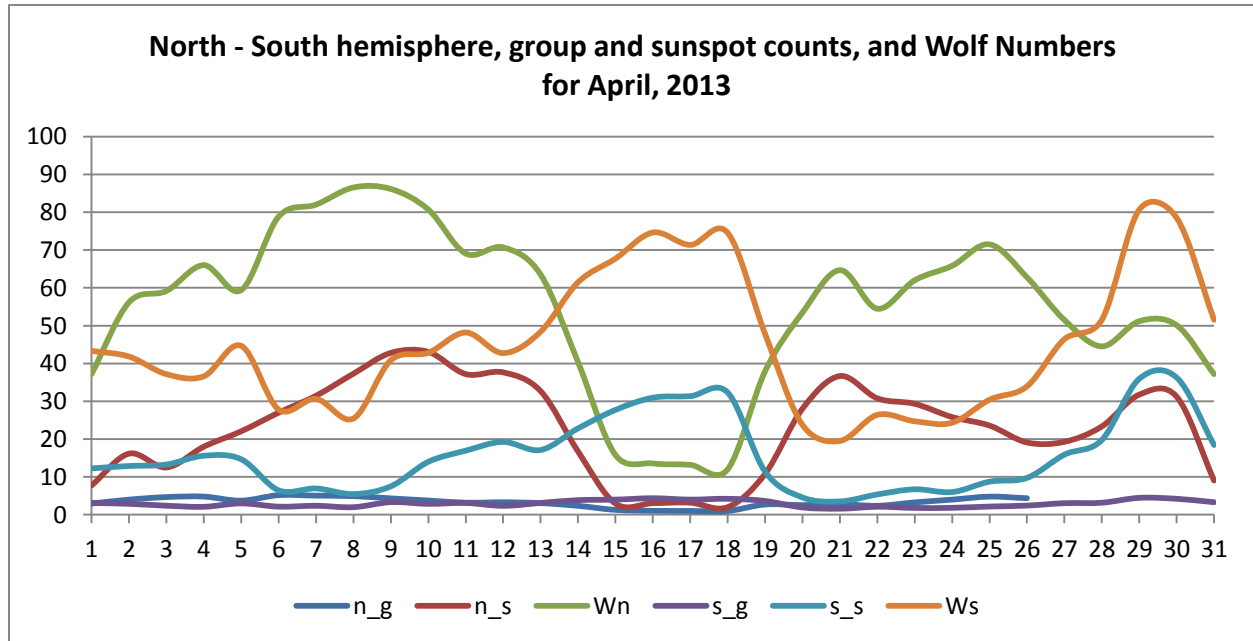
DAY	NumObs	RAW	Ra
1	40	73	56
2	31	95	69
3	35	92	67
4	26	93	65
5	30	93	67
6	42	100	76
7	37	111	81
8	25	113	81
9	36	126	89
10	26	123	82
11	27	120	85
12	32	112	79
13	47	107	77
14	44	101	72
15	37	86	61
16	38	88	65
17	37	87	63
18	39	74	<b>52</b>
19	29	78	56
20	41	76	59
21	45	84	61
22	44	71	54
23	35	73	54
24	35	85	67
25	47	101	74
26	38	89	72
27	34	99	75
28	34	96	72
29	30	130	<b>94</b>
30	33	120	92
<b>Average</b>	<b>35.8</b>	<b>96.5</b>	<b>70.5</b>

Obs	#Obs	Name
AAP	5	A. Patrick Abbott
AAX	20	Alexandre Amorim
AJV	15	J. Alonso
ARAG	30	Gema Araujo
ASA	23	Salvador Aguirre
BARH	7	Howard Barnes
BATR	3	Roberto Battaiola
BDDA	24	Diego Bastiani
BERJ	20	Jose Alberto Berdejo
BMF	18	Michael Boschat

BRAB	28	Brenda Branchett
BRAF	12	Raffaello Braga
BROB	28	Robert Brown
BXD	16	Alexandru Burda
CADA	1	Adair Cardoso
CHAG	30	German Morales Chavez
CIOA	17	Ioannis Chouinavas
CKB	24	Brian Cudnik
CLZ	5	Laurent Corp
CNT	13	Dean Chantiles
CPAB	6	Paul Coliac
CVJ	6	Jose Carvajal
DELS	2	Susan Delaney
DEMF	4	Frank Dempsey
DGP	22	Gerald Dyck
DJOB	17	Jorge del Rosario
DUBF	26	Franky Dubois
FAM	9	Fabio Mariuzza
FERJ	19	Javier Ruiz Fernandez
FLET	21	Tom Fleming
FLF	17	Fredirico Luiz Funari
FTAA	10	Tadeusz Figiel
FUJK	20	K. Fujimori
HAYK	13	Kim Hay
HMQ	5	Mark Harris
HOWR	22	Rodney Howe
HRUT	6	Timothy Hrutkay
JASK	15	Krystyna Wirkus
JGE	7	Gerardo Jimenez Lopez
JJK	5	Jerry Klotz
JJMA	8	Jessica M. Johnson
KAND	22	Kandilli Observatory
KAPJ	19	John Kaplan
KNJS	22	James & Shirley Knight
KROL	24	Larry Krozel
LEVM	19	Monty Leventhal
LKR	16	Kristine Larsen
MARE	9	Enrico Mariani
MCE	21	Etsuiku Mochizuki
MGAA	4	Gael Mariani
MILJ	15	Jay Miller
MJHA	13	John McCammon
MJOC	1	Joseph Michail
MMI	23	Michael Moeller
MUDG	9	George Mudry
OATS	11	Susan Oatney
OBSO	19	IPS Observatory

RLM	9	Mat Raymonde	WAU	3	Artur Wargin
SCGL	26	Gerd-Lutz Schott	WILW	18	William M. Wilson
SDP	1	Dolores Sharples	WKM	2	Michael Wiskirken
SIMC	16	Clyde Simpson	WRP	4	Russell Wheeler
SMNA	4	Michael Stephanou			
SONA	15	Andries Son			
STAB	26	Brian Gordon-States	<b>Total</b>	<b>Observers:</b>	<b>73</b>
SUZM	25	Miyoshi Suzuki	<b>Total</b>	<b>Observations:</b>	<b>1073</b>
TESD	22	David Teske			
URBP	20	Piotr Urbanski			
VARG	25	A. Gonzalo Vargas			
VIDD	12	Dan Vidican			

Forty of our seventy three observers submitted data on the sunspot and group counts for the Sun's north and south hemispheres. It is interesting to note how the Wolf numbers of groups and Sunspots counts cross over on the 14th and 19th this month, and then on the 27th.



### 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)

(SSN\*) <ftp://ftp.ngdc.noaa.gov/STP/space-weather/solar-data/solar-indices/sunspot-numbers/american/lists/>