

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR SECTION

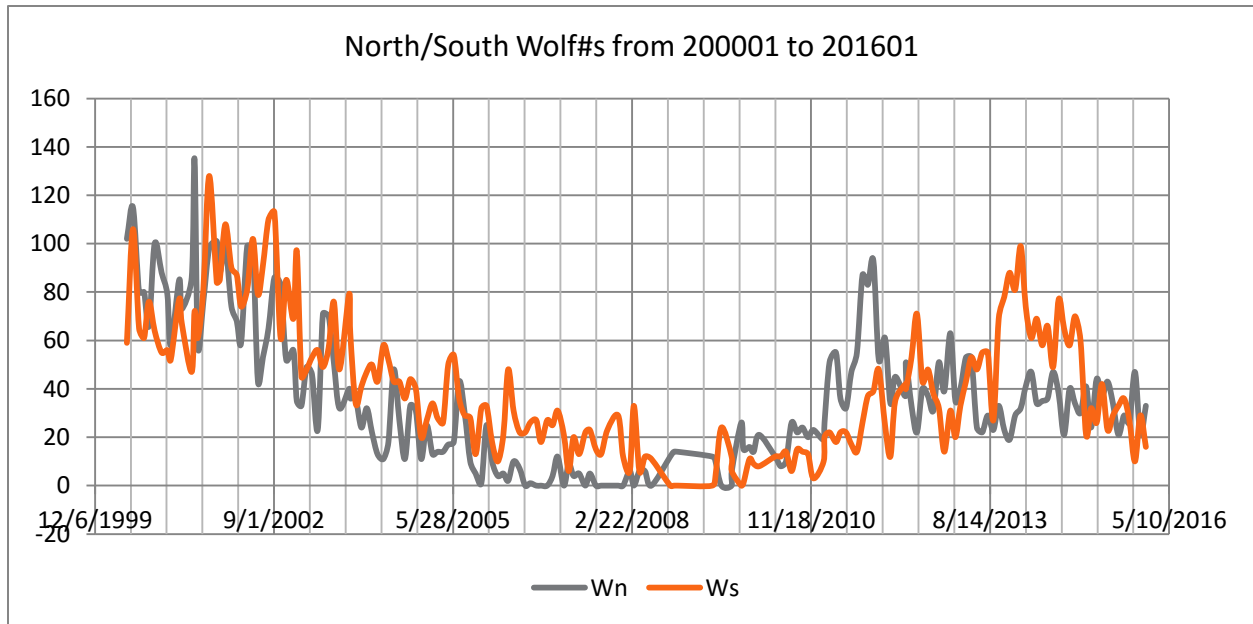


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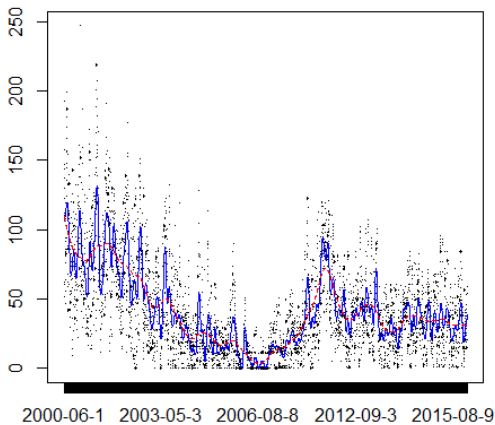
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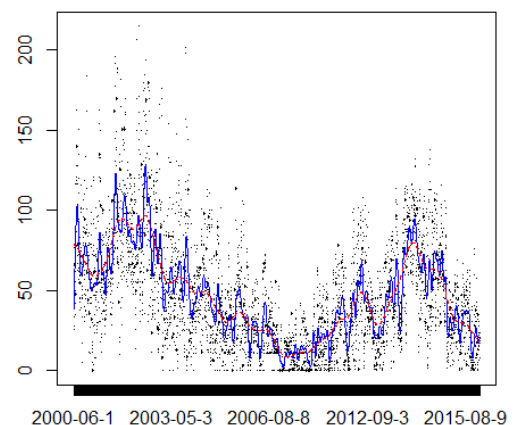


These are AAVSO North and South hemisphere Wolf numbers for cycle 23 and this cycle 24. Notice how north and south numbers switch during solar maximums and solar minimum. The spline graphs below show what seems to be two different solar cycles.

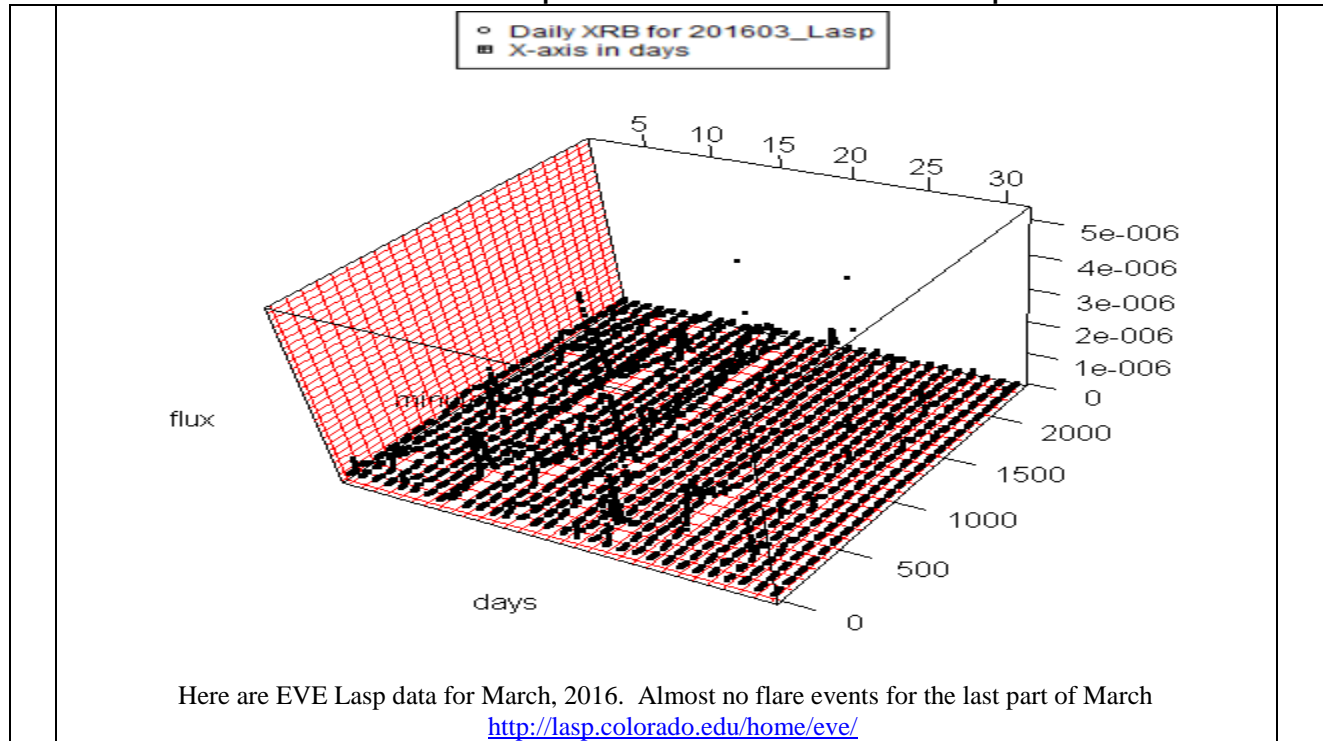
Wn smoothing splines



Ws smoothing splines



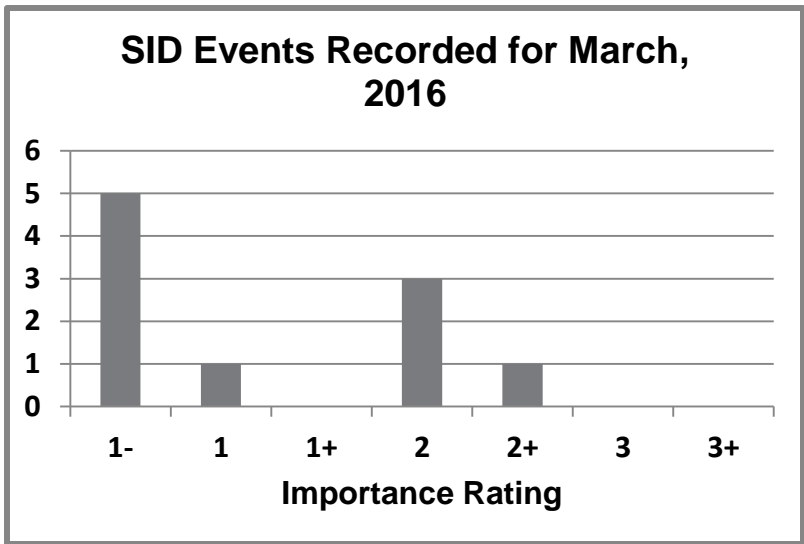
Sudden Ionospheric Disturbance Report



Sudden Ionospheric Disturbances (SID) Records During March, 2016

Date	Max	Imp
160300	0	-1
160308	1306	-1
160309	1249	2
160312	1309	1
160313	1252	2
160315	930	-1
160315	1538	-1
160316	645	2+

Solar Events

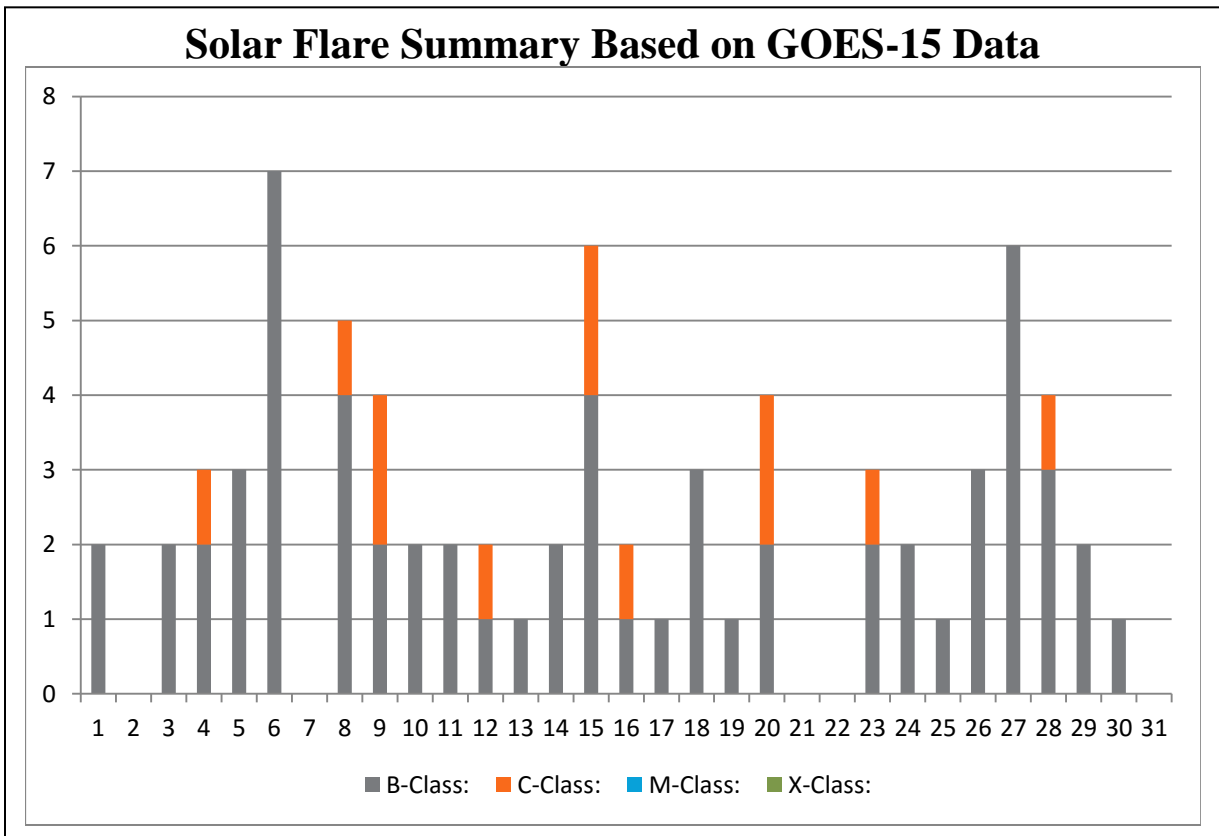


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: 125
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Sudden Ionospheric Disturbances (SID) Observers During March, 2016

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	J Karlovsky	A131	DHO NSY
R Battaiola	A96	HWU	R Mrllak	A136	GQD
J Wallace	A97	NAA	G Silvis	A141	NAA NLK HWU
L Loudet	A118	GQD	I Ryumshin	A142	DHO GQD
J Godet	A119	GBZ GQD ICV	R Rogge	A143	DHO GQD ICV
B Terrill	A120	NWC	K Menzies	A146	NAA
F Adamson	A122	NWC	D Russel	A147	NML
S Oatney	A125	NLK			

There were 74 solar flares measured by GOES-15 for March, 2016: Twelve C class and 62 B class flares. Far less flaring this month compared to last month. There were 15 AAVSO SID observers who submitted reports this month.



American Relative Sunspot Numbers (Ra) for
 March, 2016 [**boldface = maximum, minimum**]

DAY	NumObs	RAW	Ra
1	28	48	37
2	33	53	41
3	29	58	46
4	24	80	60
5	30	56	46
6	33	58	46
7	29	46	35
8	35	47	38
9	27	59	48
10	19	58	43
11	32	33	25
12	36	46	37
13	31	42	33
14	25	51	41
15	26	55	43
16	29	50	38
17	35	46	36
18	25	33	27
19	27	31	26
20	32	28	22
21	34	21	17
22	32	17	14
23	27	17	14
24	31	27	23
25	23	27	21
26	40	24	19
27	30	25	20
28	32	20	16
29	33	15	12
30	30	12	10
31	28	13	10
Average	29.8	38.6	30.5

Obs	#Obs	Name
AAX	21	Alexandre Amorim
AJV	18	J. Alonso
ARAG	31	Gema Araujo
ASA	26	Salvador Aguirre
BARH	10	Howard Barnes
BATR	2	Roberto Battaiola
BERJ	21	Jose Alberto Berdejo
BRAB	28	Brenda Branchett
BRAF	14	Raffaello Braga
BROB	23	Robert Brown

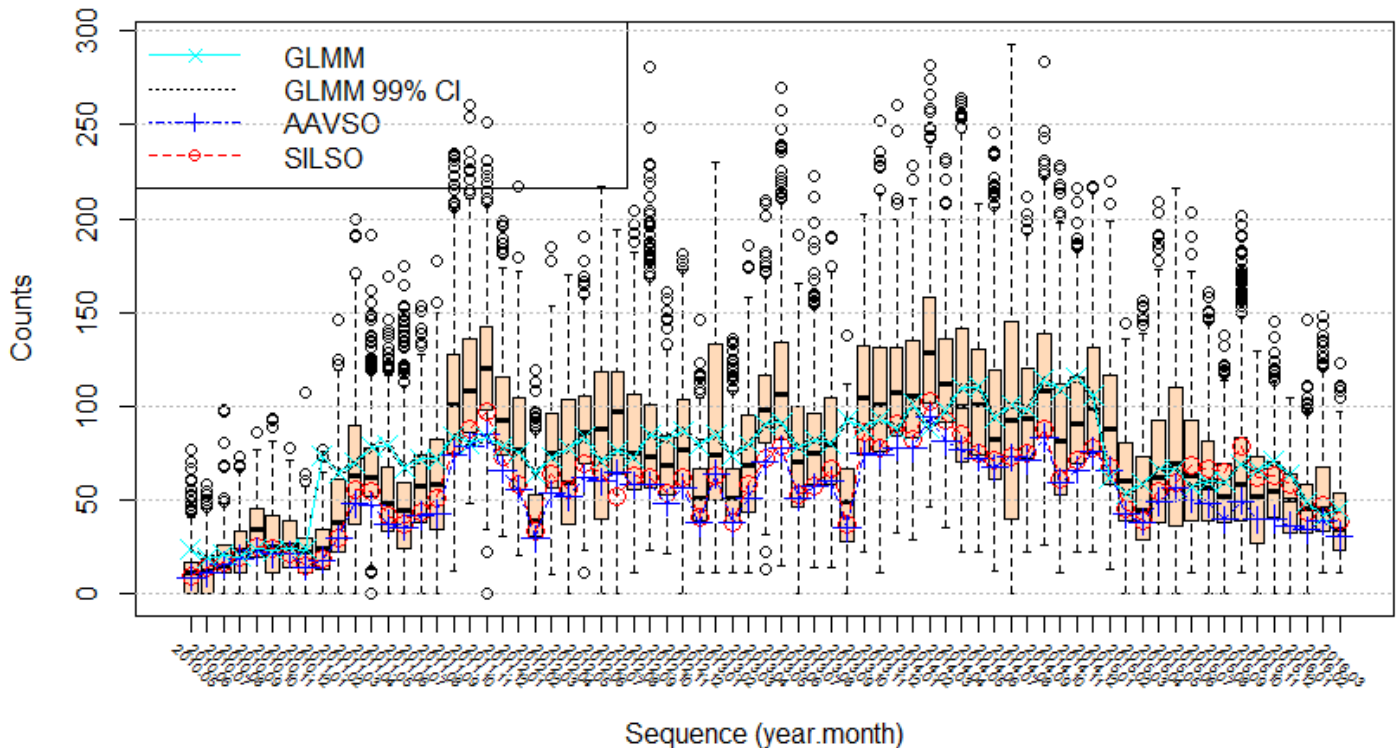
BSAB	29	Santanu Basu
BXD	2	Alexandru Burda
CHAG	31	German Morales Chavez
CIOA	3	Ioannis Chouinavas
CKB	11	Brian Cudnik
CNT	6	Dean Chantiles
DEMF	7	Frank Dempsey
DJOB	7	Jorge del Rosario
DUBF	26	Franky Dubois
FERJ	14	Javier Ruiz Fernandez
FLET	22	Tom Fleming
FLF	15	Fredirico Luiz Funari
FTAA	9	Tadeusz Figiel
FUJK	24	K. Fujimori
HAYK	15	Kim Hay
HMQ	5	Mark Harris
HOWR	26	Rodney Howe
JASK	5	Krystyna Wirkus
JDAC	19	David Jackson
JGE	9	Gerardo Jimenez Lopez
JJMA	8	Jessica M. Johnson
KAND	23	Kandilli Observatory
KAPJ	11	John Kaplan
KNJS	28	James & Shirley Knight
KROL	24	Larry Krozel
LEVM	21	Monty Leventhal
LKR	8	Kristine Larsen
LRRR	15	Robert Little
MARE	6	Enrico Mariani
MILJ	11	Jay Miller
MJAF	31	Juan Antonio Moreno Quesada
MJHA	30	John McCammon
MUDG	3	George Mudry
MWU	8	Walter Maluf
OATS	1	Susan Oatney
OBSO	15	IPS Observatory
ONJ	6	John O'Neill
RLM	11	Mat Raymonde
RRO	2	Ralph Rogge
SCGL	23	Gerd-Lutz Schott
SDOH	31	Solar Dynamics Obs - HMI
SMNA	2	Michael Stephanou
SONA	9	Andries Son
STAB	26	Brian Gordon-States
SUZM	25	Miyoshi Suzuki
TESD	27	David Teske
URBP	17	Piotr Urbanski

VARG	27	A. Gonzalo Vargas
VIDD	9	Dan Vidican
VRUA	6	Ruben Verboven
WAU	1	Artur Wargin
WILW	15	William M. Wilson
WRP	4	Russell Wheeler

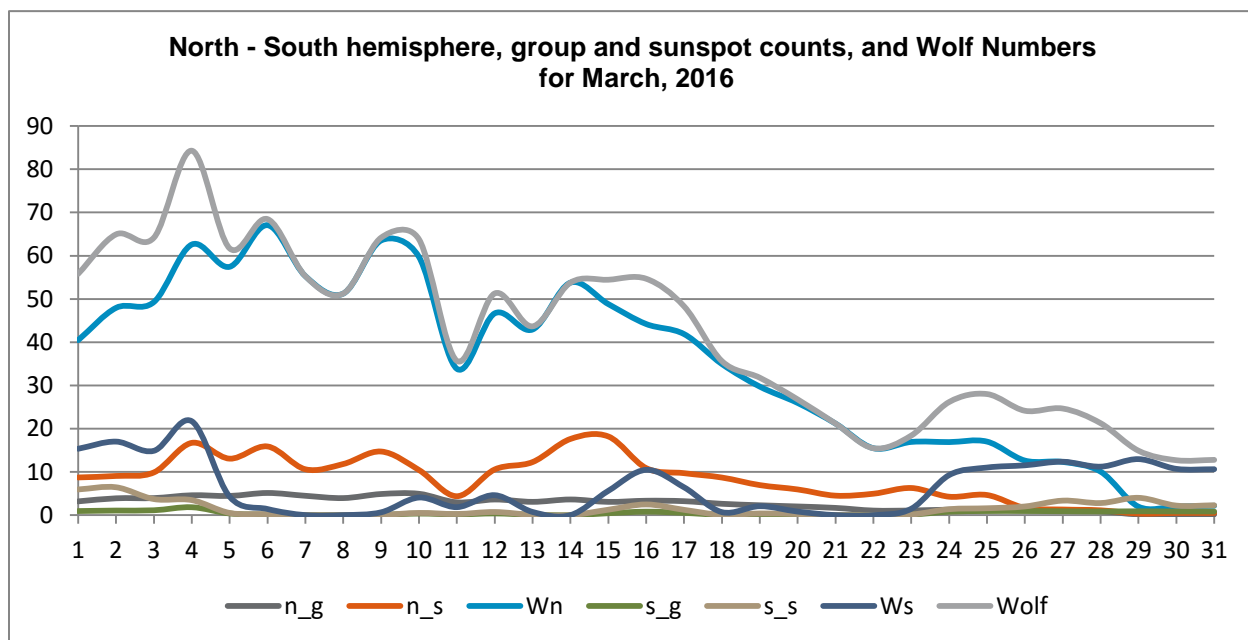
Total Observers: 63
Total Observations: 963

Loglinear Mixed Model Fit, AAVSO, and SILSO Values vs Sequence

Boxes and whiskers represent unprocessed counts



The above graph, made from raw AAVSO sunspot and group counts data, is developed by Dr. Jamie Riggs and shows the comparison of the SILSO International Sunspot Number (ISN) along with the AAVSO American Relative (Ra) number, as well as her Generalized Log-linear Mixed Model (GLMM). AAVSO data go back to the beginning of this solar cycle 24 (2010). A close look will show how the ISN and Ra numbers match up until July, 2015, when SILSO changed their method for calculating the ISN. <https://www.aavso.org/silso-warning-major-changes-sunspot-number-reference-series> <http://www.sidc.be/silso/> However, now the SILSO numbers do not match up to the American Ra since July, 2015, but rather match more closely to Jamie’s GLMM, which does not use the AAVSO k – factors, only raw daily counts. However, it seems all the numbers are converging. The SILSO relative mean sunspot number is 38.9 for March, 2016. (See last page of their March Solar Bulletin). <http://www.sidc.be/sunspots/bulletins/monthly/monthlybull201603.pdf>



There were 42 out of 63 observers who counted northern and southern hemisphere groups and sunspots this month. It looks like the northern hemisphere was predominant with days of crossover on the 26th - 28th.

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