

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR SECTION



Rodney Howe, Editor, Chairperson
c/o AAVSO, 49 Bay State Rd
Cambridge, MA 02138

Web: <http://www.aavso.org/solar-bulletin>

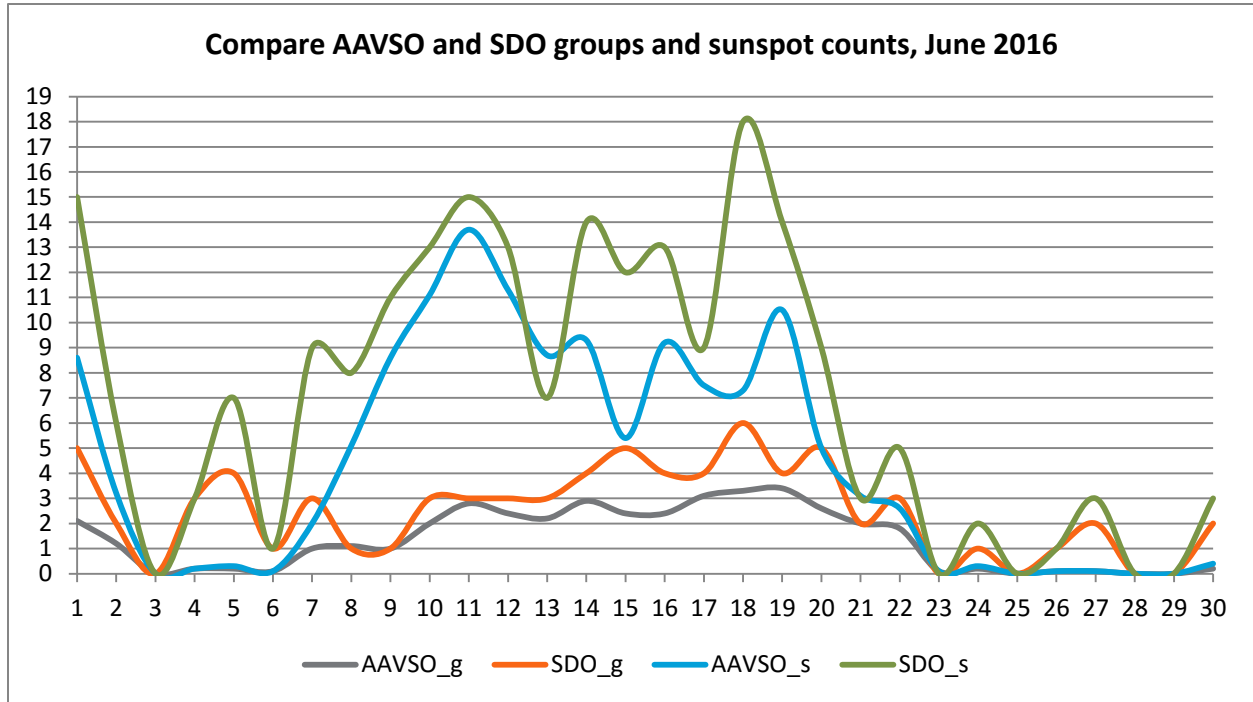
Email: solar@aavso.org

ISSN 0271-8480

Please note the new email address for AAVSO

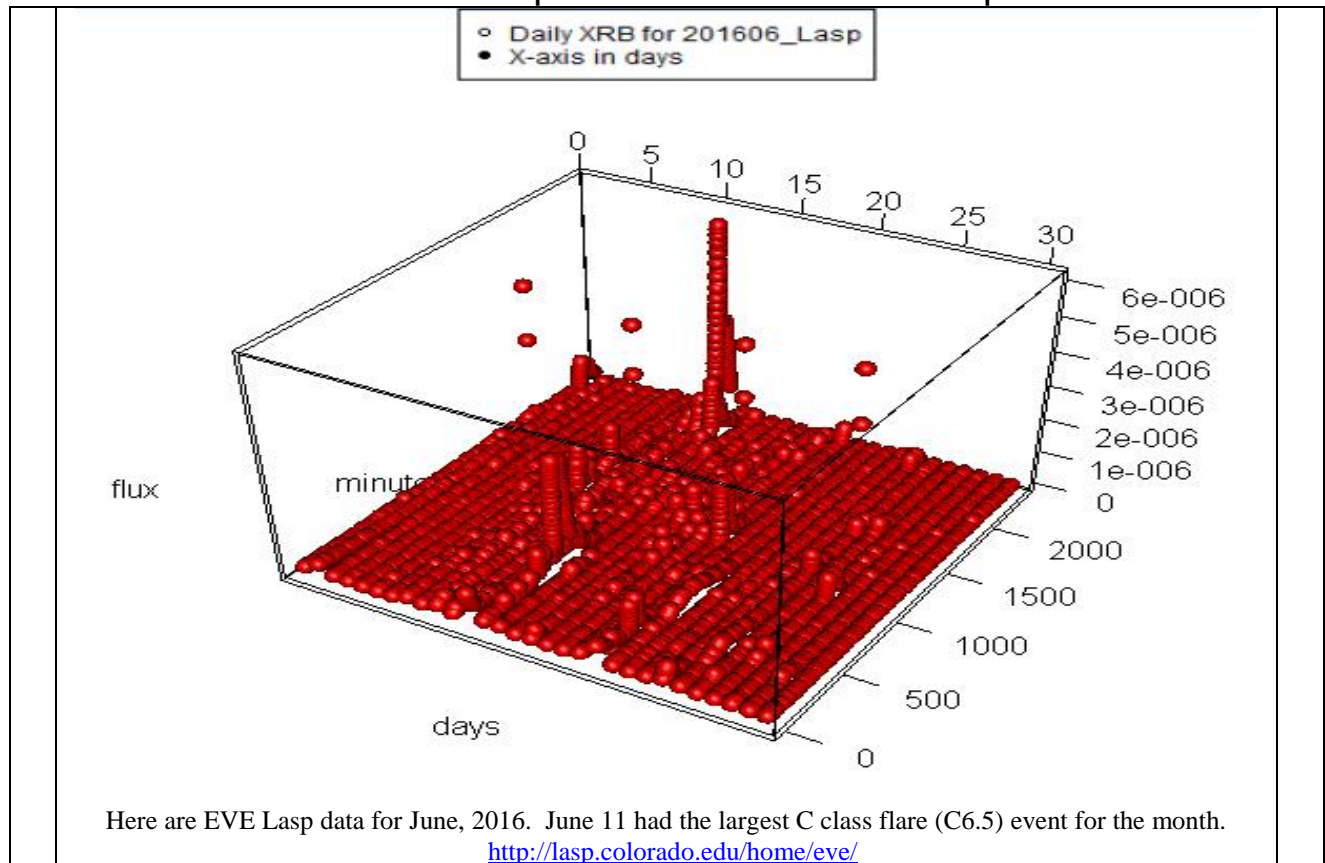
Volume 72 Number 6

June, 2016



Here is a comparison of the average of all visual observers group and sunspot counts with Jan Alvestad's computer generated counts from the Solar Dynamic Observatory (SDO) magneto-grams (groups) and SDO white light intensity images (sunspots) <http://jsoc.stanford.edu/> Jan Alvestad's SDO magneto-gram group counts and white light intensity gram sunspot counts are computer generated <http://www.solen.info/solar/> You can see in this graph, that the SDO computer algorithms counted more groups and sunspots from the magneto-grams and white light intensity images respectively, than the overall averages from visual observations. Please note that Jan Alvestad's data is not included in the American Relative Ra number, as these are not earth based visual observations.

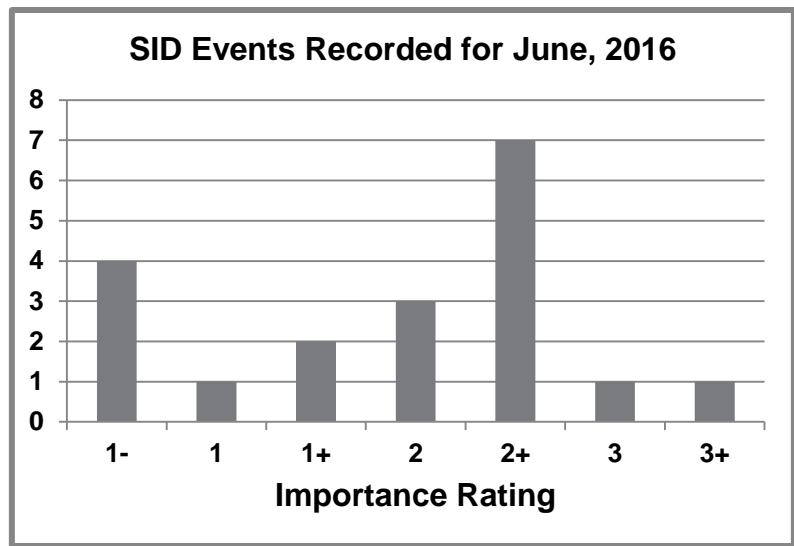
Sudden Ionospheric Disturbance Report



Sudden Ionospheric Disturbances (SID) Records During June, 2016

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
160609	1233	1+	160612	2032	1-	160619	1157	2
160609	1515	1+	160613	0415	2+	160620	0300	2+
160611	2215	2+	160613	0549	2	160625	0315	3+
160611	2227	2	160617	0922	2+	160625	1106	2+
						160627	0955	3

Solar Events

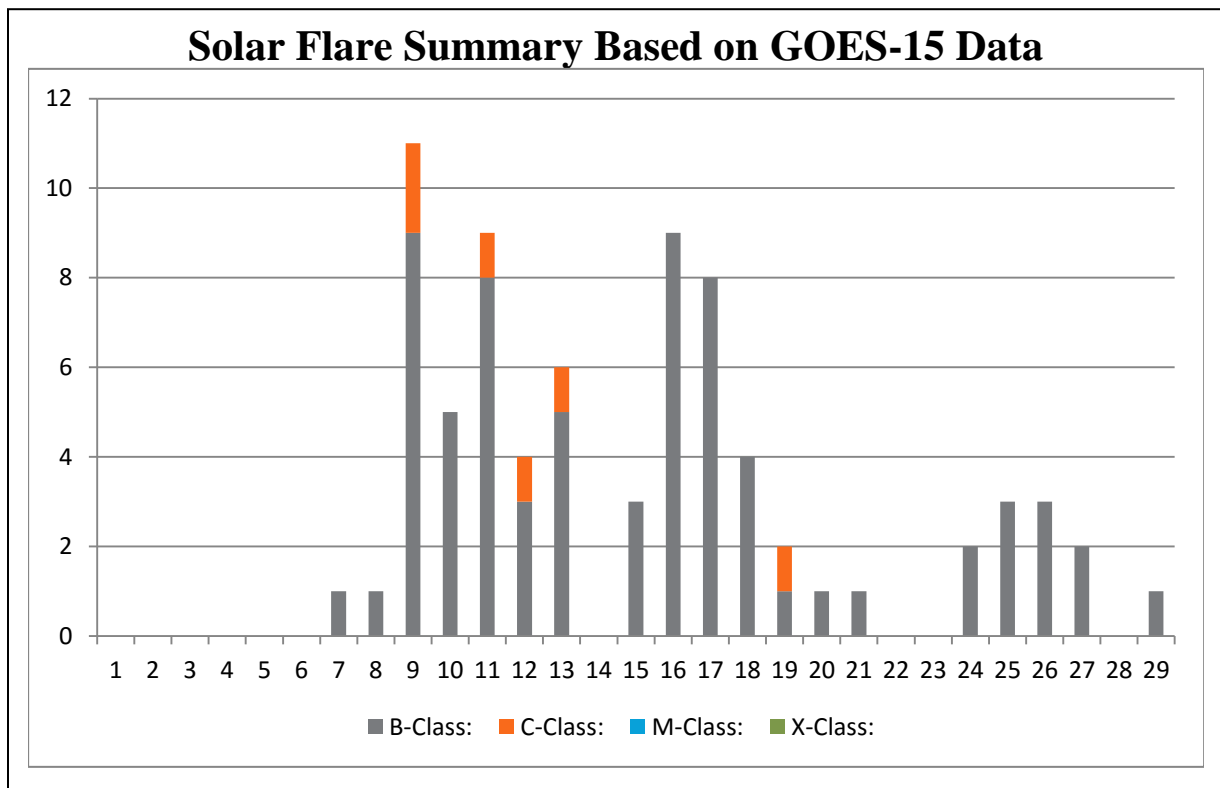


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: 125
-----------------------------------	---------	----------	-----------	----------	-----------	-----------	---------

Sudden Ionospheric Disturbances (SID) Observers During June, 2016

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	R Green	A134	NWC
R Battaiola	A96	HWU	R Mrllak	A136	GQD NSY
J Wallace	A97	NAA	D Koawl	A137	NPM
L Loudet	A118	DHO	S Aguirre	A138	NPM
J Godet	A119	GBZ GQD ICV	I Ryumshin	A142	DHO GQD
B Terrill	A120	NWC	R Rogge	A143	DHO GQD
F Adamson	A122	NWC	K Menzies	A146	NAA
S Oatney	A125	NLK NML	D Russel	A147	NML
J Karlovsky	A131	DHO NSY			

There were 76 solar flares measured by GOES-15 for June, 2016: Six C class and 70 B class flares. Very little flaring this month compared to last month. There were 17 AAVSO SID observers who submitted reports this month.



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

DAY	NumObs	RAW	Ra
1	37	27	20
2	35	14	10
3	30	0	0
4	31	1	0
5	33	0	0
6	35	1	0
7	33	9	6
8	39	16	12
9	34	18	15
10	39	30	24
11	34	40	32
12	33	35	28
13	32	30	24
14	37	35	27
15	37	28	21
16	29	30	23
17	34	35	28
18	37	37	28
19	37	40	33
20	37	30	25
21	39	23	18
22	36	19	15
23	42	2	1
24	38	2	1
25	33	0	0
26	39	0	0
27	38	0	0
28	36	0	0
29	32	0	0
30	42	1	1
Average	35.6	16.8	13.1

Obs	#Obs	Name
AJV	26	J. Alonso
ARAG	30	Gema Araujo
ASA	23	Salvador Aguirre
BARH	7	Howard Barnes
BERJ	30	Jose Alberto Berdejo
BRAB	28	Brenda Branchett
BRAF	19	Raffaello Braga
BROB	30	Robert Brown
BSAB	20	Santanu Basu
BXD	5	Alexandru Burda
CHAG	30	German Morales Chavez

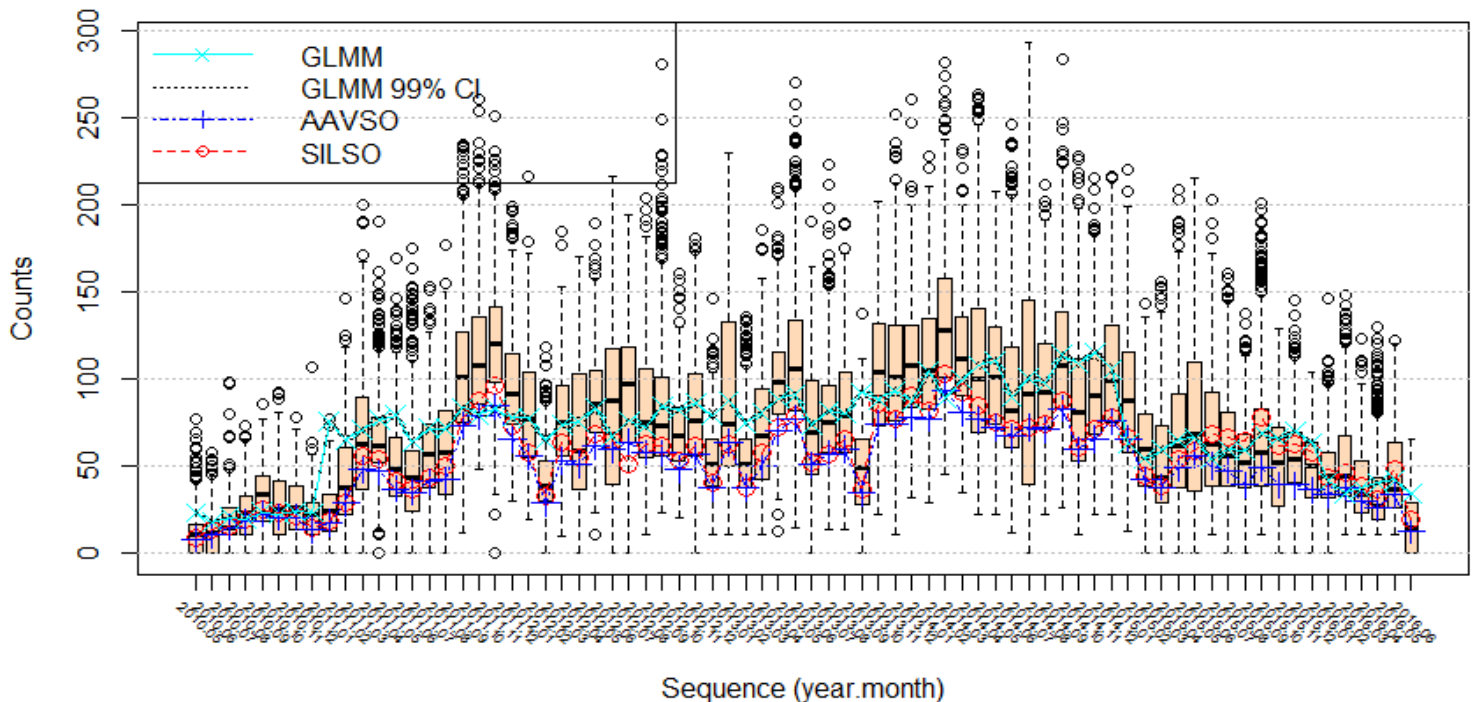
CIOA	24	Ioannis Chouinavas
CKB	21	Brian Cudnik
CNT	7	Dean Chantiles
CVJ	22	Jose Carvajal
DEMF	6	Frank Dempsey
DJOB	8	Jorge del Rosario
DUBF	22	Franky Dubois
FERJ	18	Javier Ruiz Fernandez
FLET	27	Tom Fleming
FLF	16	Fredirico Luiz Funari
FTAA	12	Tadeusz Figiel
FUJK	16	K. Fujimori
HAYK	24	Kim Hay
HMQ	5	Mark Harris
HOWR	29	Rodney Howe
JDAC	19	David Jackson
JGE	8	Gerardo Jimenez Lopez
JJMA	1	Jessica M. Johnson
KAND	30	Kandilli Observatory
KAPJ	26	John Kaplan
KNJS	26	James & Shirley Knight
KROL	27	Larry Krozel
LEVM	17	Monty Leventhal
LKR	12	Kristine Larsen
LRRA	26	Robert Little
MARE	17	Enrico Mariani
MCE	18	Etsuiku Mochizuki
MILJ	20	Jay Miller
MJAF	28	Juan Antonio Moreno
MJHA	30	John McCammon
MMAE	5	Aaron McNeely
MUDG	7	George Mudry
MWU	13	Walter Maluf
OATS	4	Susan Oatney
ONJ	8	John O'Neill
RLM	14	Mat Raymonde
SDOH	30	Jan Alvestad(SDO)
SIMC	9	Clyde Simpson
SONA	10	Andries Son
SPIA	7	Piotr Skorupski
STAB	29	Brian Gordon-States
SUZM	18	Miyoshi Suzuki
TESD	30	David Teske
URBP	29	Piotr Urbanski
VARG	29	A. Gonzalo Vargas
VIDD	22	Dan Vidican
WAU	1	Artur Wargin

WGI	1	Guido Wollenhaupt
WILW	29	William M. Wilson
WRP	1	Russell Wheeler

Total Observers: 61
Total Observations: 1106

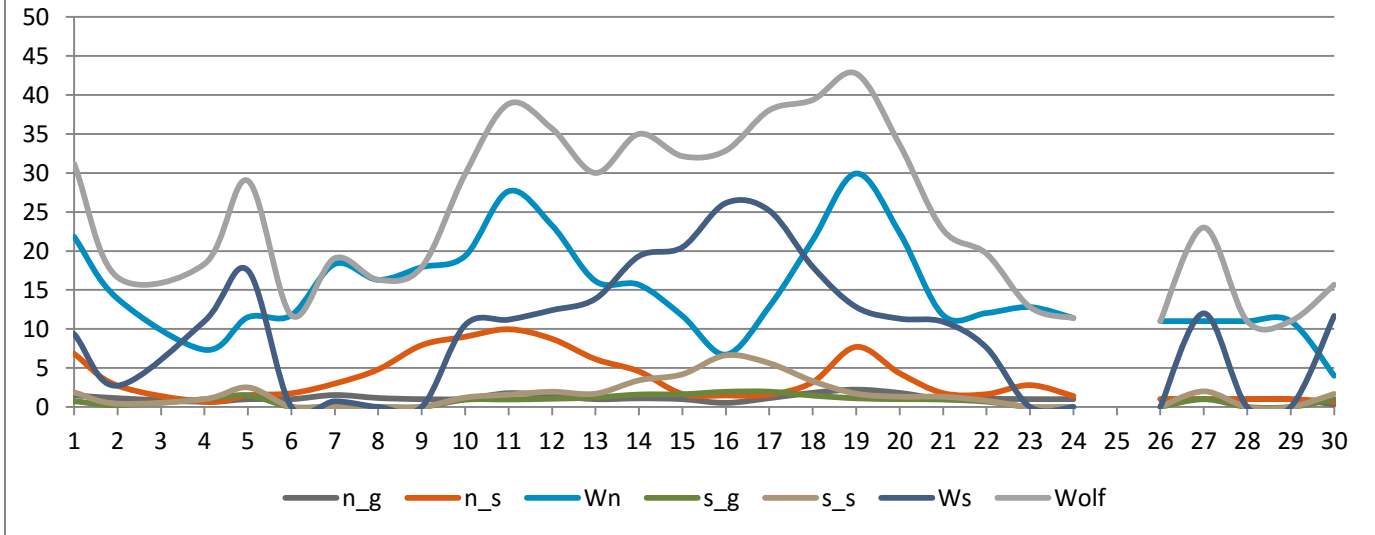
Loglinear Mixed Model Fit, AAVSO, and SILSO Values vs Sequence

Boxes and whiskers represent unprocessed counts

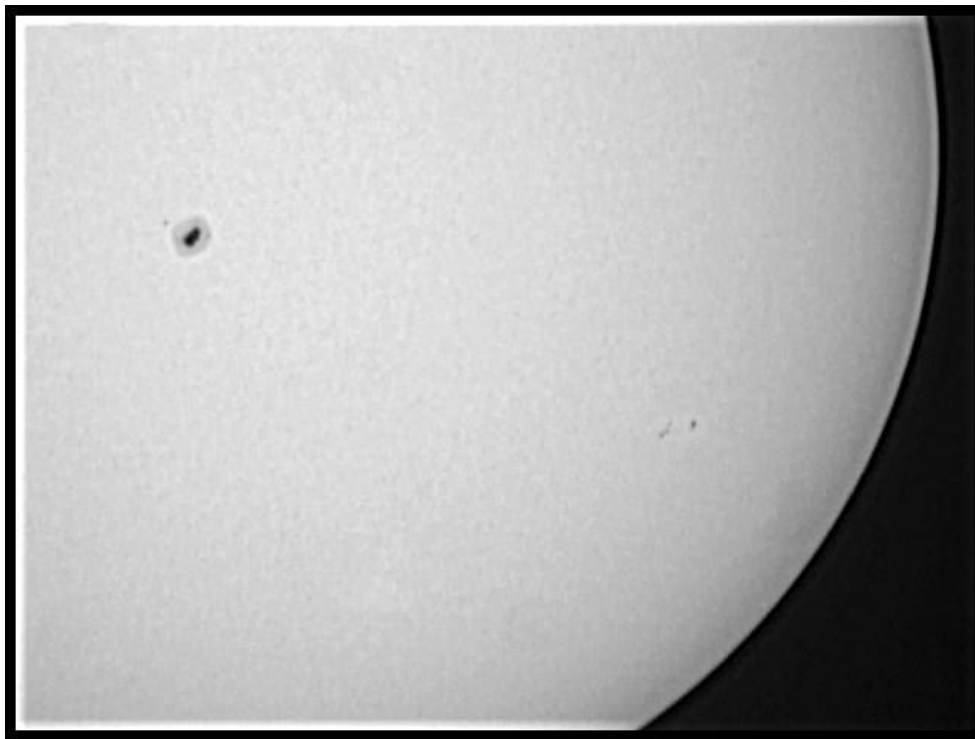


The above graph, made from raw AAVSO sunspot and group counts data, is developed by Dr. Jamie Riggs and shows the comparison of the SILSO International Sunspot Number (ISN) along with the AAVSO American Relative (Ra) number, as well as her Generalized Log-linear Mixed Model (GLMM). AAVSO data go back 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/> Now the SILSO numbers are a closer match up to the AAVSO American Ra. Jamie's GLMM, which does not use the AAVSO k – factors, only raw daily counts is a little higher than either AAVSO or SILSO numbers. The SILSO relative mean sunspot number is 19.5 for June, 2016. (See last page of their June Solar Bulletin). <http://www.sidc.be/sunspots/bulletins/monthly/monthlybull201606.pdf>

**North - South hemisphere, group and sunspot counts, and Wolf Numbers
for June, 2016**



There were 38 out of 61 observers who counted northern and southern hemisphere groups and sunspots this month. The northern hemisphere was somewhat predominant with days of crossover on the 4th, 6th, 13th, 22nd, and 1 day with no sunspot counts at all. (These data include the SDO north/south hemisphere group and sunspot counts.)



Please find attached a picture of the two Sunspot groups from 16 June 2016. N is up; W at right

Yours faithfully,

Dan Vidican

Reporting Addresses:

Sunspot Reports – Kim Hay solar@aavso.org

SID Solar Flare Reports – Rodney Howe ahowe@frii.com