

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR COMMITTEE



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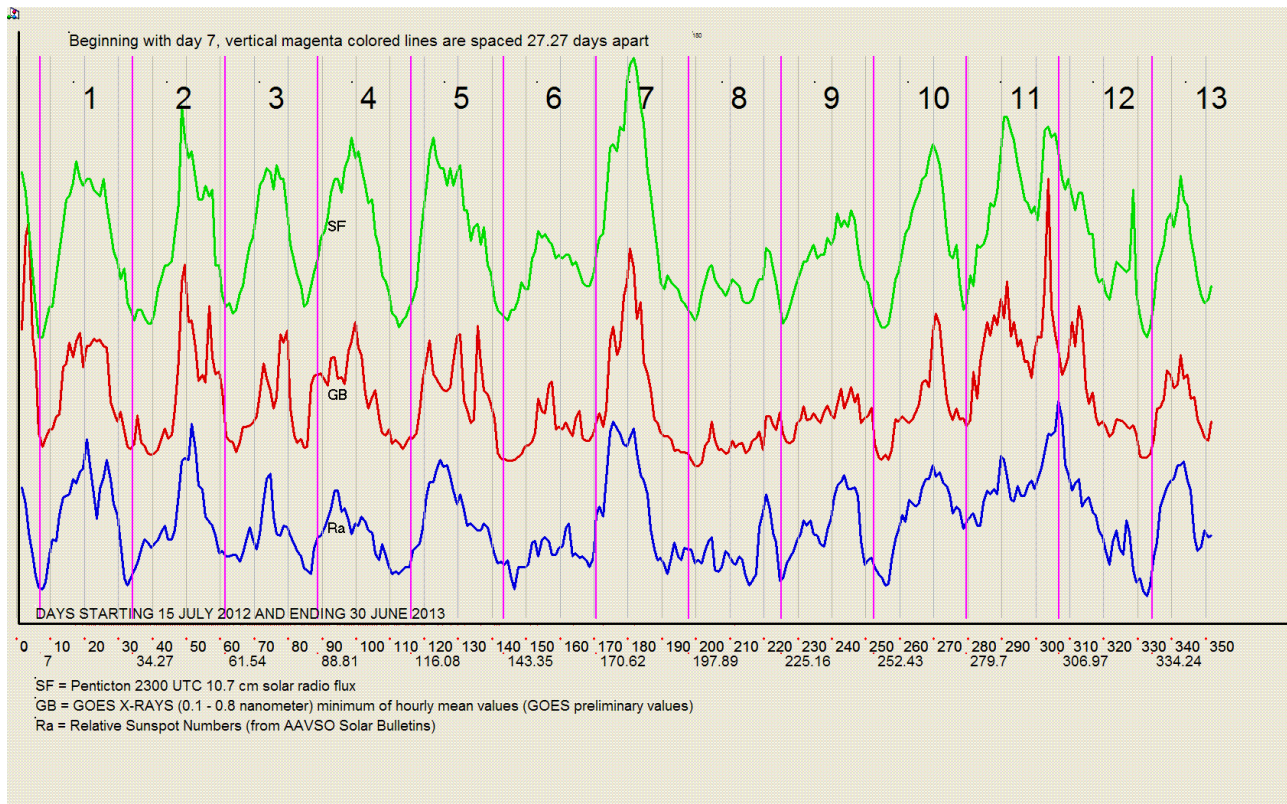
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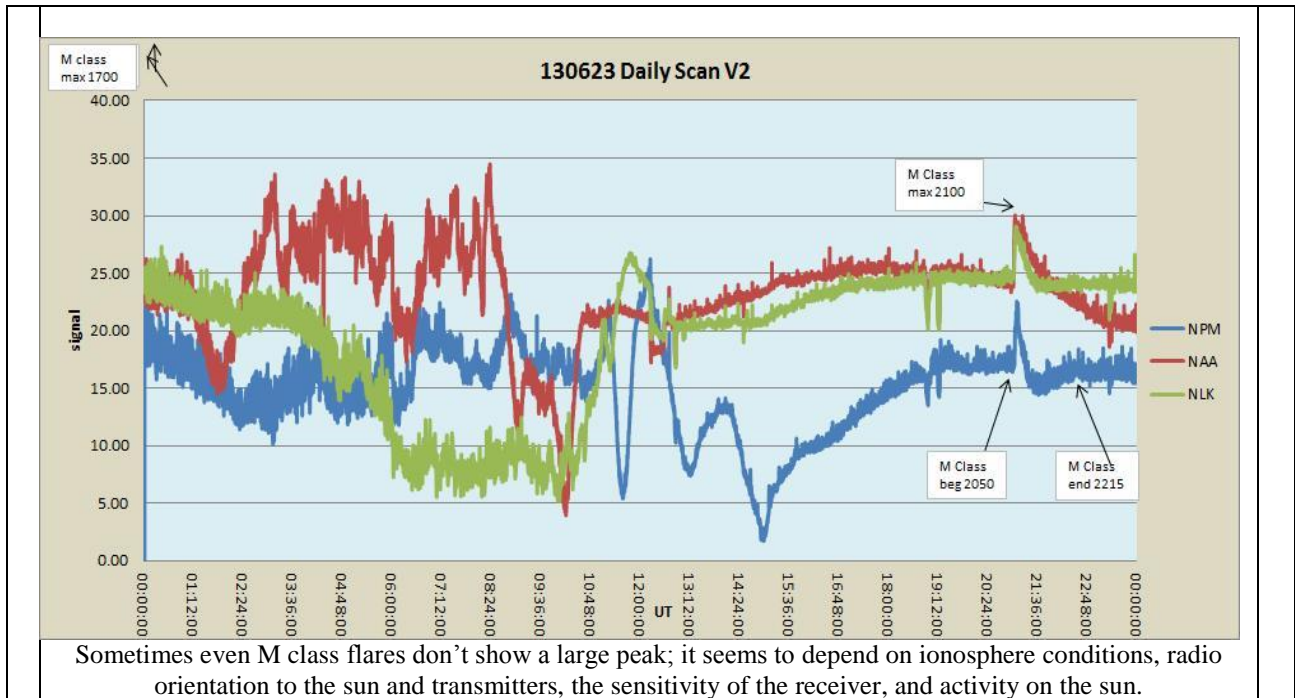
Alexander McWilliams (A94) creates this graph of 13 Carrington rotations; the Carrington rotation period is an average of 27.27 days. This covers almost an entire year of AAVSO Ra sunspot counts, GOES X-ray solar activity and the NRC Canada radiometer data for 10.7 cm Solar Flux Unit (SFU):

http://www.swpc.noaa.gov/ftpdir/lists/radio/45day_rad.txt

“GOES X-ray (GB) is calculated each day as follows: I download the GOES X-Ray data file which has 5 minute data: <http://www.swpc.noaa.gov/ftpmenu/lists/xray.html> then for each hour in the day my program sums the 5 minute X-ray levels for that hour. These 24 sums (one for each hour) are then compared and the lowest sum is used for GB.

In my opinion the most important thing about the graph is that it shows that solar activity is not randomly distributed over solar longitudes but rather can be confined over a fairly constant and limited longitude range for a very long time - as the graph shows and as most people who study the sun are well aware of. The graph shows that the "very long time" here is almost one year”.

Sudden Ionospheric Disturbance Report

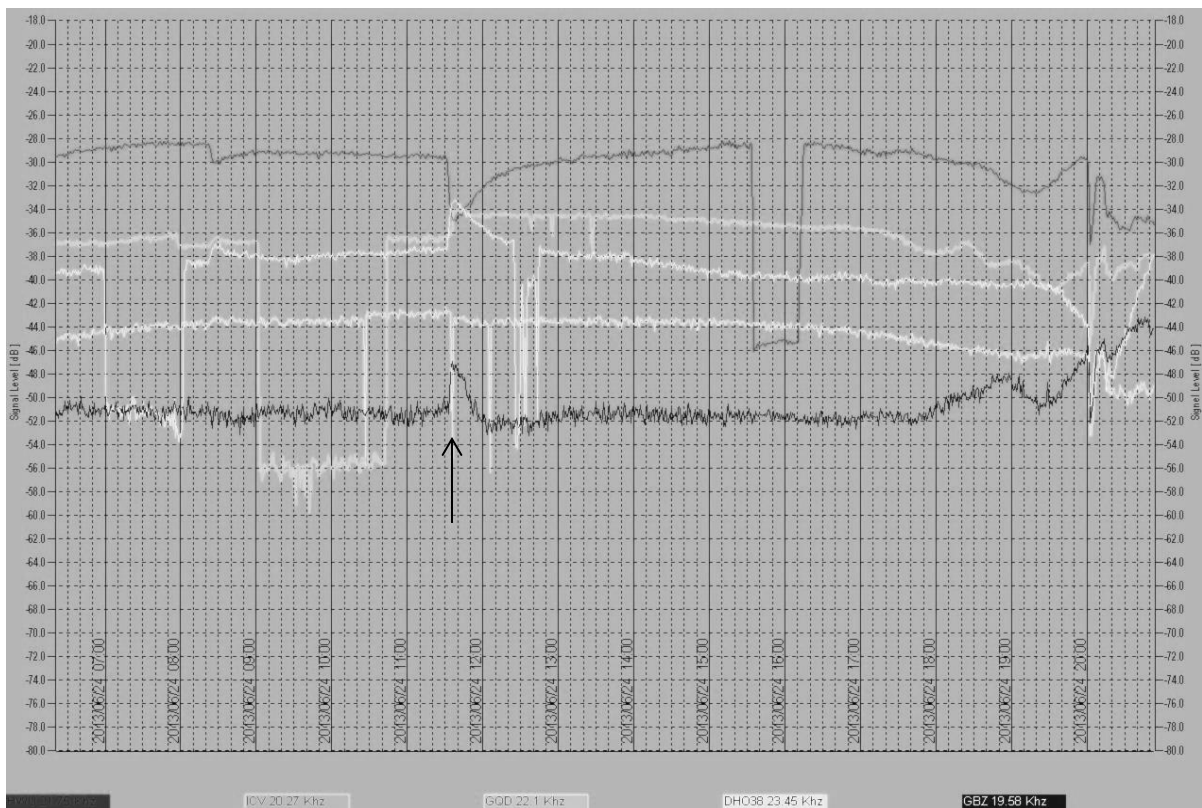


Sudden Ionospheric Disturbances (SID) Records During June, 2013

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
130602	510	-1	130608	906	1	130616	552	-1
130603	640	2+	130608	930	-1	130616	1019	1
130603	716	2+	130608	1918	2	130617	258	1
130603	722	2+	130608	2347	1	130617	432	1
130603	740	2	130609	148	-1	130617	813	2+
130603	1803	1+	130609	205	1+	130617	954	-1
130604	432	2+	130609	308	-1	130617	1001	-1
130604	1800	2+	130609	631	1	130618	652	2
130605	840	2+	130609	747	1	130618	719	2
130605	854	3	130609	1136	1+	130619	56	2
130605	900	1+	130610	308	-1	130619	723	-1
130606	1117	-1	130610	624	-1	130619	730	2
130606	1200	-1	130610	1423	1	130619	943	2
130607	106	-1	130611	847	1	130619	950	2+
130607	940	1+	130613	47	-1	130619	959	2
130607	1150	1+	130613	320	-1	130620	921	1+
130607	2250	2+	130613	431	-1	130621	257	3+
130608	807	1	130613	924	-1	130621	314	3
130608	831	-1	130615	400	2	130621	918	-1
130608	842	-1	130615	932	-1	130621	932	1+
130608	848	-1	130615	956	-1	130622	105	2
130608	856	-1	130616	213	-1	130622	505	-1

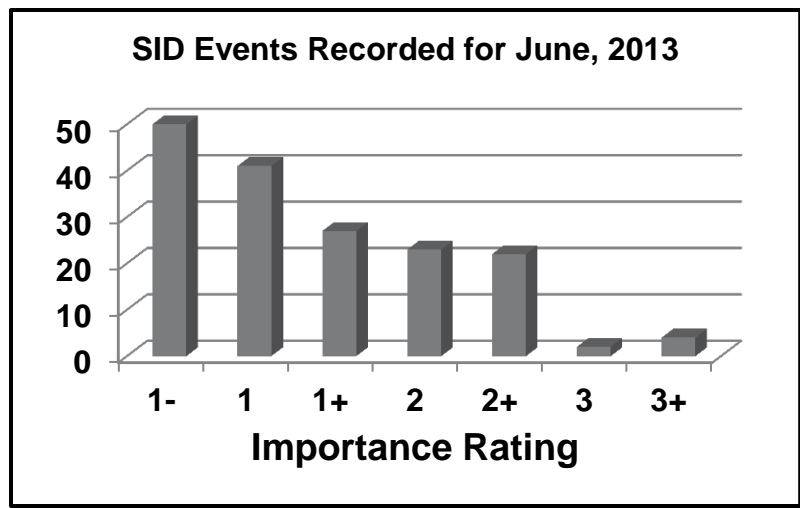
Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
130627	1210	1+	130624	1641	-1	130628	152	2+
130622	909	1	130624	2106	1+	130628	159	2
130623	2054	-1	130625	709	-1	130628	336	2
130623	2120	2	130626	411	-1	130628	419	-1
130624	824	1+	130626	1102	-1	130628	1702	1+
130624	1134	2	130626	1558	1+	130629	218	1
130624	1141	-1	130627	814	1	130629	1609	-1
130624	1332	3+	130627	857	-1	130630	920	1
			130627	950	1	130630	950	2
			130627	1200	2	130630	1517	1+
						130630	1647	-1

Emanuel Soubrouillard, Pierrefeu du Var, France, sends this graph for June 24, 2013.



GOES X-ray events show there to be a C9.9 flare starting UT 1127, maximum UT 1134, ending in this graph around UT 1200. Importance Rating for this flare would be a 2.

Solar Events

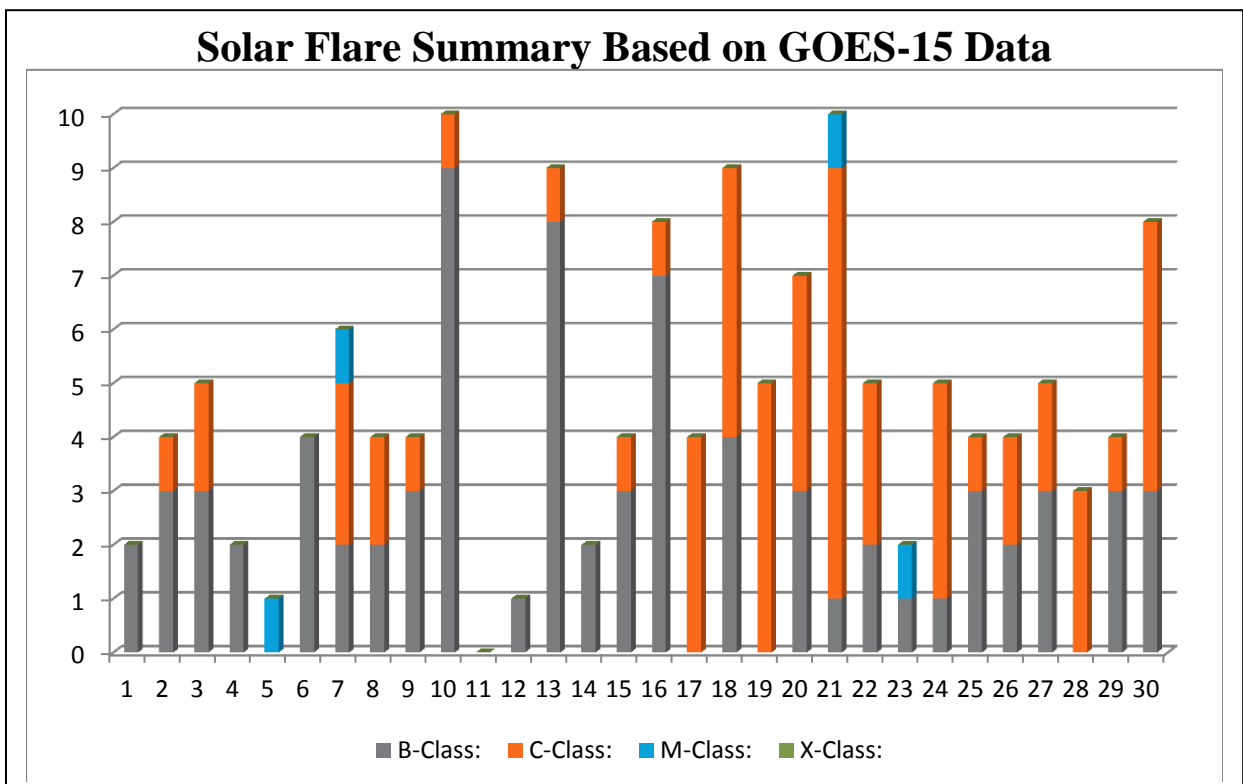


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
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Sudden Ionospheric Disturbances (SID) Observers During June, 2013

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	K Cotar	A129	GBZ
R Battaiola	A96	GQD	J Karlovsky	A131	DHO
J Wallace	A97	NAA	E Soubrouillard	A132	DHO HWU ICV
F Steyn	A102	NWC	R Green	A134	NWC
A Son	A112	DHO	R Mrlak	A136	GQD NSY
L Loudet	A118	GQD NAA	D Koawl	A137	NAA
J Godet	A119	GBZ GQD ICV	S Aguirre	A138	NLK
B Terrill	A120	NWC	F Francione	A139	HWU NAA
F Adamson	A122	NWC	I Corp	A140	DHO
S Oatney	A125	NLK NML			

There were 141 solar flares measured by GOES-15 for June, 2013, four M class, 60 C class and 77 B class flares. The sun was not active this month compared to last. There were 19 AAVSO SID observers who submitted reports this month.



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

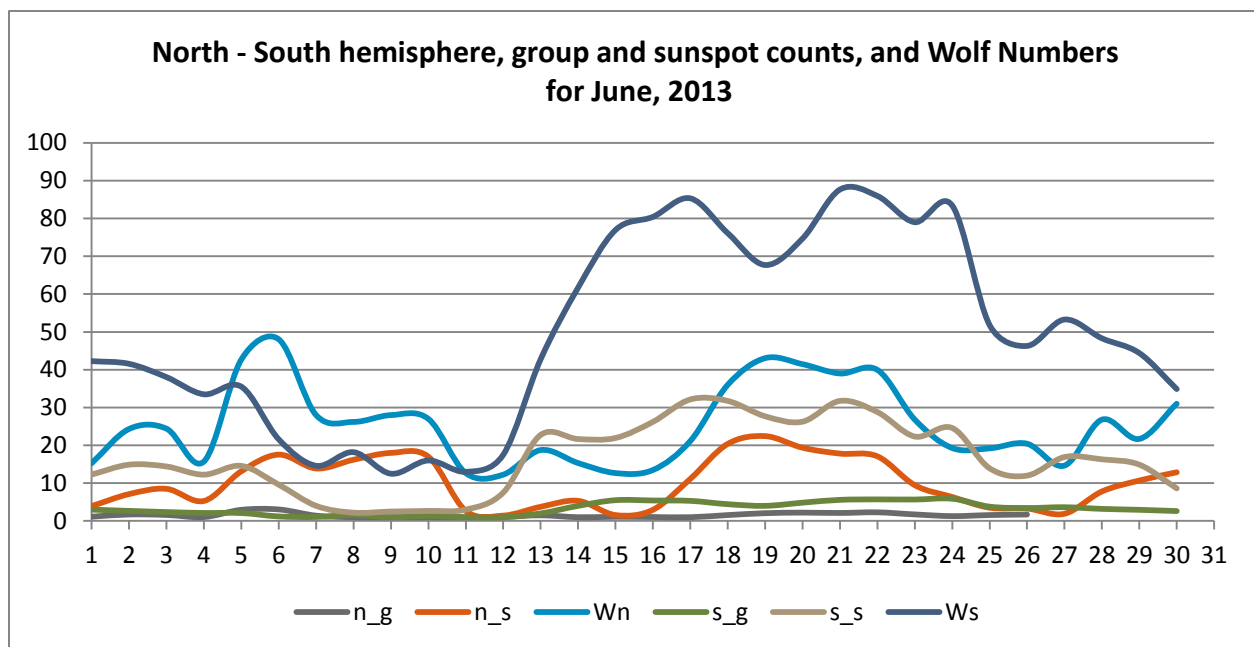
DAY	NumObs	RAW	Ra
1	37	54	41
2	38	69	49
3	39	60	43
4	46	49	37
5	42	76	55
6	35	66	48
7	30	41	28
8	35	28	20
9	35	32	22
10	28	23	16
11	33	17	12
12	35	26	19
13	27	48	34
14	33	63	45
15	39	88	63
16	40	96	70
17	41	104	76
18	34	107	78
19	35	110	82
20	39	119	91
21	34	122	90
22	42	125	90
23	30	107	78
24	35	99	72
25	32	64	47
26	28	52	38
27	28	57	42
28	21	68	51
29	38	65	45
30	36	64	48
Average	34.8	70	51.1

Obs	#Obs	Name
AAP	2	A. Patrick Abbott
AAX	8	Alexandre Amorim
AJV	17	J. Alonso
ARAG	30	Gema Araujo
ASA	14	Salvador Aguirre
BARH	11	Howard Barnes
BATR	9	Roberto Battaiola
BDDA	13	Diego Bastiani
BERJ	14	Jose Alberto Berdejo
BMF	12	Michael Boschat

BRAB	29	Brenda Branchett
BRAF	23	Raffaello Braga
BROB	23	Robert Brown
BXD	20	Alexandru Burda
CHAG	27	German Morales Chavez
CIOA	13	Ioannis Chouinavas
CKB	19	Brian Cudnik
CLZ	4	Laurent Corp
CNT	14	Dean Chantiles
CVJ	14	Jose Carvajal
DEMF	5	Frank Dempsey
DGP	20	Gerald Dyck
DJOB	16	Jorge del Rosario
DUBF	28	Franky Dubois
FAM	11	Fabio Mariuzza
FERJ	19	Javier Ruiz Fernandez
FLET	23	Tom Fleming
FLF	14	Fredirico Luiz Funari
FTAA	12	Tadeusz Figiel
FUJK	16	K. Fujimori
HAYK	19	Kim Hay
HMQ	3	Mark Harris
HOWR	29	Rodney Howe
HRUT	17	Timothy Hrutkay
JASK	20	Krystyna Wirkus
JGE	8	Gerardo Jimenez Lopez
JJMA	8	Jessica M.Johnson
KAND	10	Kandilli Observatory
KAPJ	25	John Kaplan
KNJS	22	James & Shirley Knight
KROL	14	Larry Krozel
LEVM	14	Monty Leventhal
LKR	10	Kristine Larsen
MARE	14	Enrico Mariani
MCE	18	Etsuiku Mochizuki
MGAA	8	Gael Mariani
MILJ	10	Jay Miller
MJHA	29	John McCammon
MMI	26	Michael Moeller
MUDG	8	George Mudry
OATS	7	Susan Oatney
OBSO	11	IPS Observatory
RLM	8	Mat Raymonde
SCGL	28	Gerd-Lutz Schott
SIMC	15	Clyde Simpson
SMNA	9	Michael Stephanou
SONA	16	Andries Son

STAB	28	Brian Gordon-States	WRP	5	Russell Wheeler
SUZM	18	Miyoshi Suzuki			
TESD	17	David Teske			
URBP	26	Piotr Urbanski	Total	Observers:	67
VARG	17	A. Gonzalo Vargas	Total	Observations:	1045
VIDD	14	Dan Vidican			
WAU	2	Artur Wargin			
WILW	28	William M. Wilson			
WKM	4	Michael Wiskirken			

Thirty eight of our sixty seven 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 5th and the 11th this month.



Reporting Addresses:

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SID Solar Flare Reports – Rodney Howe

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