Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR COMMITTEE

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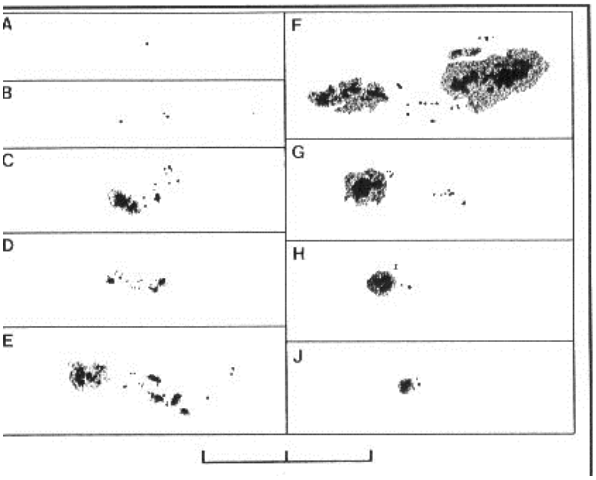
ISSN 0271-8480

Volume 68 Number 10 October. 2012



A la izquierda podemos ver la morfología de los grupos de manchas solares de acuerdo a la clasificación de Zurich.

Existen 9 tipos de grupos solares. La estimación es aproximada en las observaciones, a veces la complejidad de las formaciones hacen difícil su identificación.

On the left we see the morphology of sunspots groups according to the classification of Zurich.

There are 9 types of sunspot groups. The estimate is an approximate observation, sometimes the complexity of the formations makes identification difficult.

Alvaro Gonzalo Vargas Beltrán, ***Observatorio Aficionado Cruz del Sur,*** Cochabamba, Bolivia sends these drawings of the Zurich sunspot group classifications.

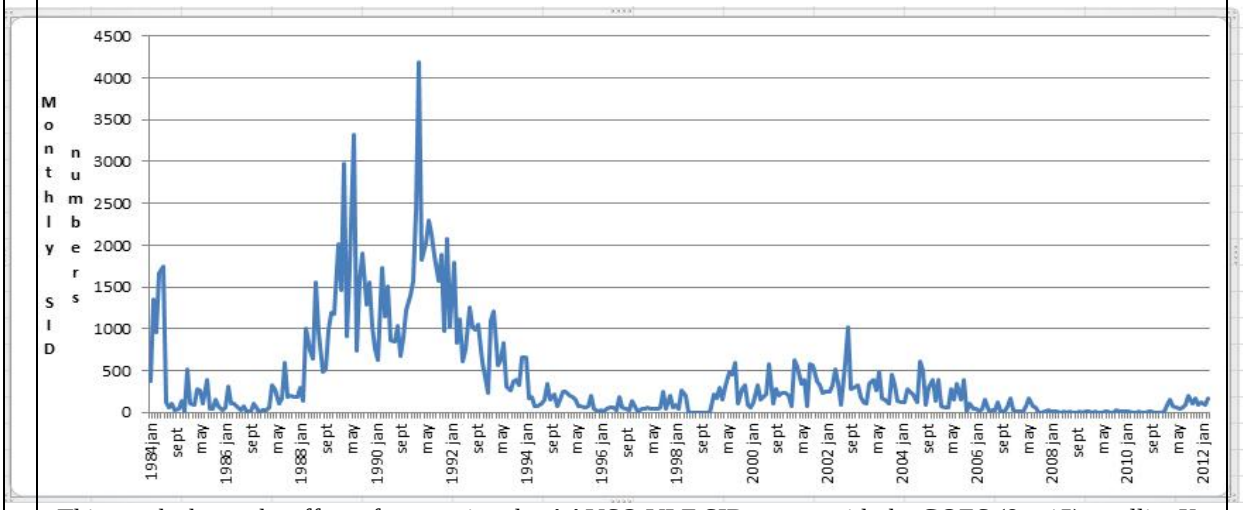
Sunspot groups do not move around very much on the Sun; most of their apparent motion is caused by the Sun's rotation. But the Sun, as a gaseous rather than solid body, *rotates differentially*: that is the various latitudes of the Sun rotate at different rates. The rate is most rapid at the equator and becomes progressively slower towards the poles. As a result the detailed movements of a spot complex are strongly influenced by the rotational rate of a particular latitudinal zone. However, very precise studies have shown that a groups principal spots do increase their separation as the complex evaolves to its maximum stage of development.

For example, Waldmeier (1955) found that both the preceding and following spots of a bipolar group show independent motions. (This movement is referred to as a spot's *proper motion*, and is derived by subtracting the effect due to solar differential rotation from measurements of the total movement.) According to Waldmeier, the most westerly spot shows the greatest movement.

On the average, this spot moves *westward* by approximately five degrees of longitude in the six days after the group forms. On the other hand, the following spot moves *eastward* by and average of three degrees during the same interval. The spreading ceases when the cluster reaches its maximum size, and thereafter the proper motion of *both* spots is *easterly*. The rate of this mvoement is greatest during the groups' initial growth phase.

(1991, Observing the Sun, Peter O. Taylor, Cambridge University Press, p90)

Sudden Ionospheric Disturbance Report

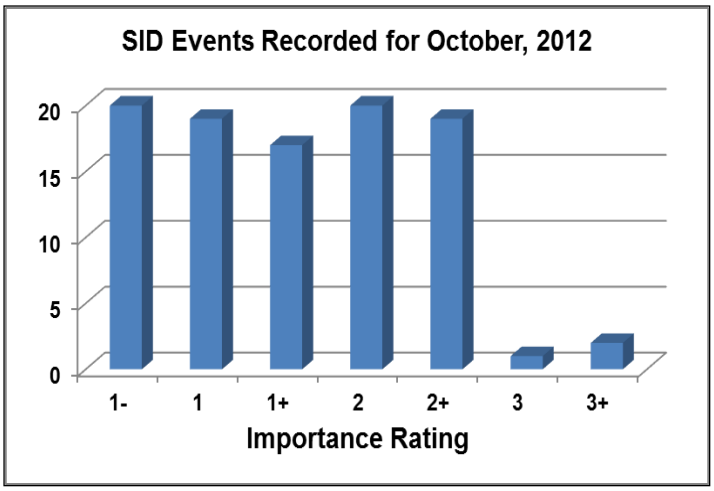


This graph shows the effect of comparing the AAVSO VLF SID events with the GOES (8 – 15) satellite X-ray events after 1998. Courtesy of Tarif Rashid Santo(A133)

Sudden Ionospheric Disturbances (SID) Records During October, 2012

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
121001	0148	2	121010	0644	1-	121020	1415	2+
121001	0351	1-	121010	0707	1-	121020	1445	1
121001	0504	2	121010	0837	1-	121020	1733	1+
121001	0627	2	121010	1130	1-	121020	1815	3
121001	1308	2+	121011	0804	1-	121020	2006	2+
121001	1314	2	121011	0926	1	121021	0310	2
121001	1521	1	121011	1023	1	121021	0537	2
121002	1249	2+	121012	0753	1	121021	1350	2+
121002	1256	2	121012	0810	2	121021	1519	1+
121005	1730	3+	121012	0819	2	121021	2008	2
121008	0805	1-	121012	0839	2	121021	2234	2
121008	0903	2	121012	0904	1-	121022	0026	1+
121008	1113	2+	121014	0230	2+	121022	1309	1+
121008	1121	2+	121015	0333	1+	121022	1600	2
121008	1356	2	121015	0424	1+	121022	1853	2+
121008	2010	2+	121015	1525	2+	121023	0319	2+
121009	0622	1+	121016	1623	1	121023	1316	1
121009	0851	1	121017	0605	1+	121023	1502	1-
121009	1151	2	121017	0800	1+	121023	1702	3+
121009	1456	1	121017	1221	1	121024	0540	1+
121009	1522	1	121017	1433	1	121024	0711	1
121009	2051	1	121019	1727	1-	121024	0914	1-
121009	2250	1-	121019	2053	1+	121024	0930	1+
121010	0204	2+	121020	1011	1	121024	1324	1-
121010	0310	2+				121024	1418	1
121010	0504	2+				121024	1457	1-

Solar Events

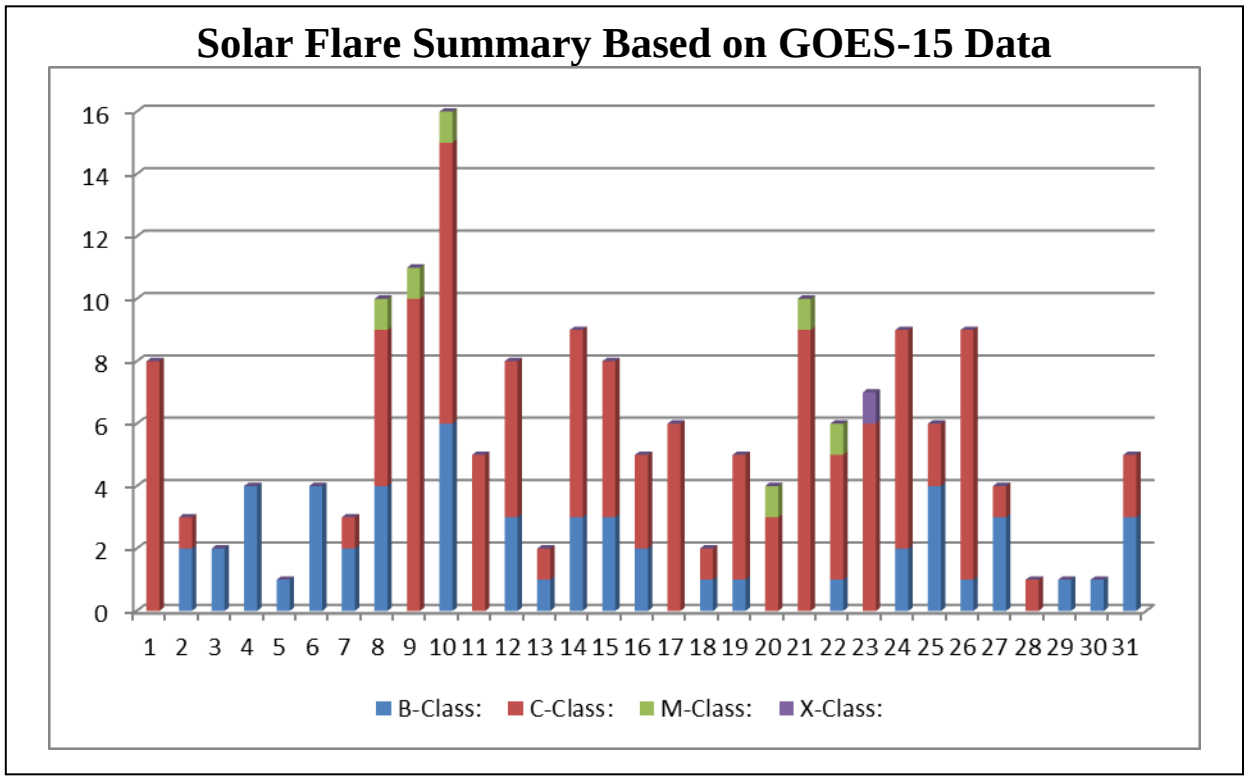


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125

Sudden Ionospheric Disturbances (SID) Observers During October, 2012

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	G Myers	A124	NLK
R Battaiola	A96	HWU	S Oatney	A125	NLK NML
J Wallace	A97	NAA	K Cotar	A129	DHO GBZ
F Steyn	A102	NWC	J Karlovsky	A131	DHO
L Loudet	A118	GBZ GQD TBB	E Soubrouillar	A132	DHO FTA HWU
J Godet	A119	GBZ GQD	T Santo	A133	NWC
F Adamson	A122	NWC			

There were 175 solar flares measured by GOES-15 for October, 2012. One X class flare, 7 M class flares, 112 C class and 55 B class flares. There were 13 AAVSO SID Observers who submitted reports on a month with many C class and M class flares.



American Relative Sunspot Numbers (Ra) for October, 2012 [**boldface = maximum, minimum**]

DAY	NumObs	RAW	Ra
1	33	67	53
2	35	69	48
3	32	61	43
4	34	55	39
5	31	51	36
6	28	39	29
7	37	38	28
8	35	36	26
9	38	59	41
10	29	65	47
11	32	66	48
12	36	73	53
13	38	78	58
14	31	85	63
15	34	98	74
16	31	101	74
17	31	85	62
18	31	85	64
19	32	80	57
20	28	71	49
21	33	76	55
22	34	75	54
23	33	86	59
24	27	83	56
25	31	71	51
26	25	71	50
27	30	56	38
28	27	49	34
29	26	62	43
30	28	50	36
31	31	42	30
Average	**31.6**	**67.2**	**48.4**

Obs.	# Obs.	Name
AAP	2	A. Patrick Abbott
AAX	16	Alexandre Amorim
AJV	14	J. Alonso
ARAG	30	Gema Araujo
ASA	27	Salvador Aguirre
BARH	9	Howard Barnes
BDDA	16	Diego Bastiani
BEB	7	Ray Berg
BERJ	11	Jose Alberto Berdejo
BMF	17	Michael Boschat
BRAB	30	Brenda Branchett
BRAF	11	Raffaello Braga
BROB	28	Robert Brown
BXD	3	Alexandru Burda
CADA	1	Adair Cardoso
CHAG	30	German Morales Chavez
CIOA	10	Ioannis Chouinavas
CKB	26	Brian Cudnik
CNT	10	Dean Chantiles
CVJ	8	Jose Carvajal
DELS	2	Susan Delaney
DEMF	3	Frank Dempsey
DGP	19	Gerald Dyck
DJOB	10	Jorge del Rosario
DUBF	20	Franky Dubois
FAM	1	Fabio Mariuzza
FERJ	19	Javier Ruiz Fernandez
FLET	23	Tom Fleming
FLF	15	Fredirico Luiz Funari
FTAA	5	Tadeusz Figiel
FUJK	21	K. Fujimori
HALB	5	Brian Halls
HAYK	13	Kim Hay
HMQ	4	Mark Harris
HOWR	25	Rodney Howe
HRUT	8	Timothy Hrutkay
JGE	7	Gerardo Jimenez Lopez
KAND	27	Kandilli Observatory
KAPJ	18	John Kaplan
KNJS	18	James & Shirley Knight
KROL	11	Larry Krozel
LEVM	21	Monty Leventhal
LKR	6	Kristine Larsen
MARE	4	Enrico Mariani
MCE	26	Etsuiku Mochizuki
MGAA	7	Gael Mariani
MILJ	9	Jay Miller
MJHA	27	John McCammon
MMI	24	Michael Moeller
MUDG	9	George Mudry
OATS	17	Susan Oatney
OBSO	19	IPS Observatory
RICE	11	E. C. Richardson
RLM	4	Mat Raymonde
SCGL	25	Gerd-Lutz Schott
SDP	1	Dolores Sharples

SIAK	24	Iakovos Marios Strikis
SIMC	7	Clyde Simpson
SMNA	1	Michael Stephanou
SONA	14	Andries Son
STAB	22	Brian Gordon-States
SUZM	27	Miyoshi Suzuki
TESD	21	David Teske
URBP	19	Piotr Urbanski
VARG	20	A. Gonzalo Vargas
VIDD	7	Daniel Vidican
WILW	26	William M. Wilson
WRP	3	Russell Wheeler

Total Observers: 68
Total Observations: 981

Reporting Addresses:

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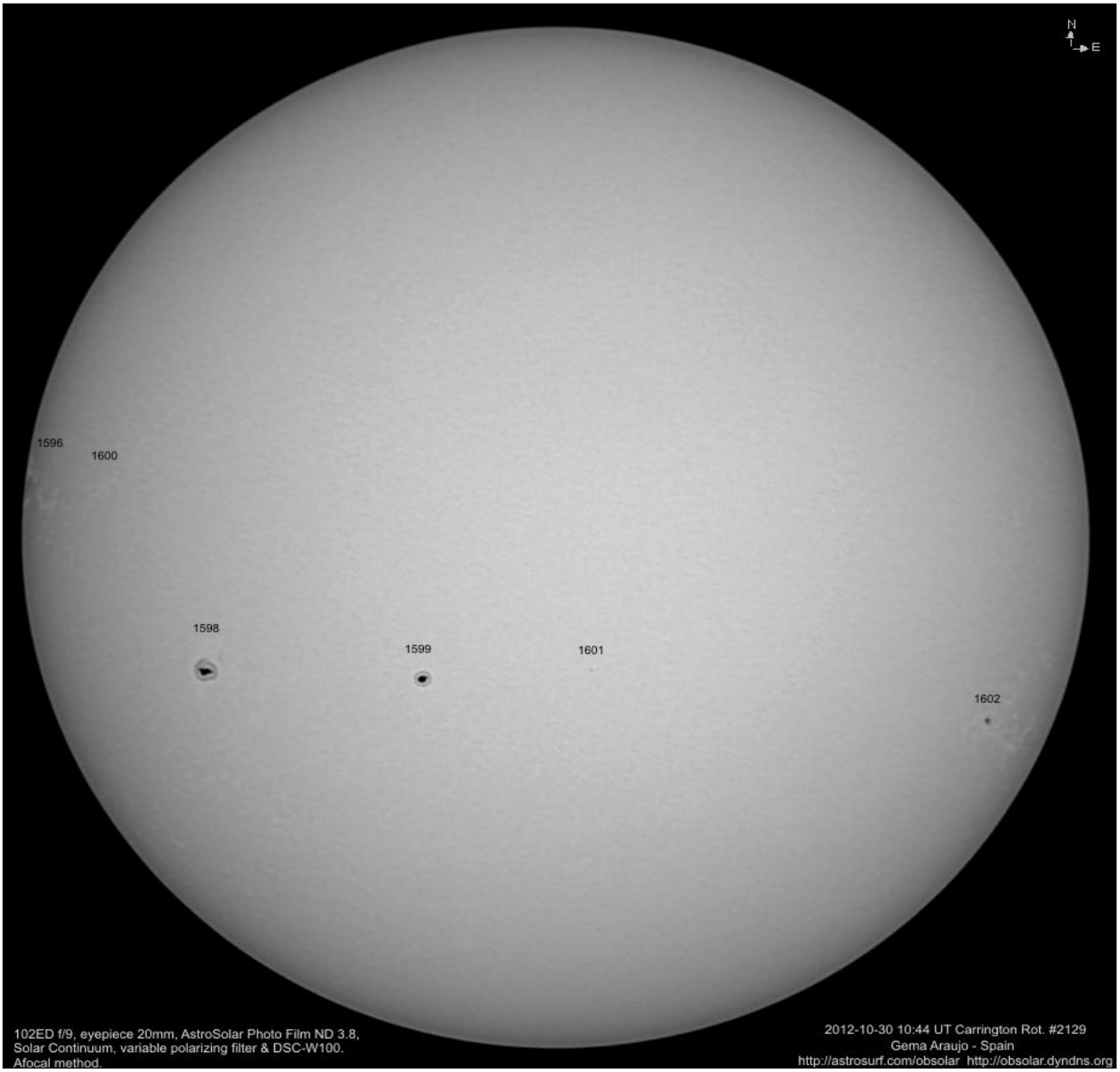
Email: **solar@aavso.org**

SID Solar Flare Reports – Rodney Howe

Email: **ahowe@frii.com**



Solar disk in white light, by Gema Araujo, Spain (http://astrosurf.com/obsolar http://obsolar.dyndns.org).