Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR SECTION

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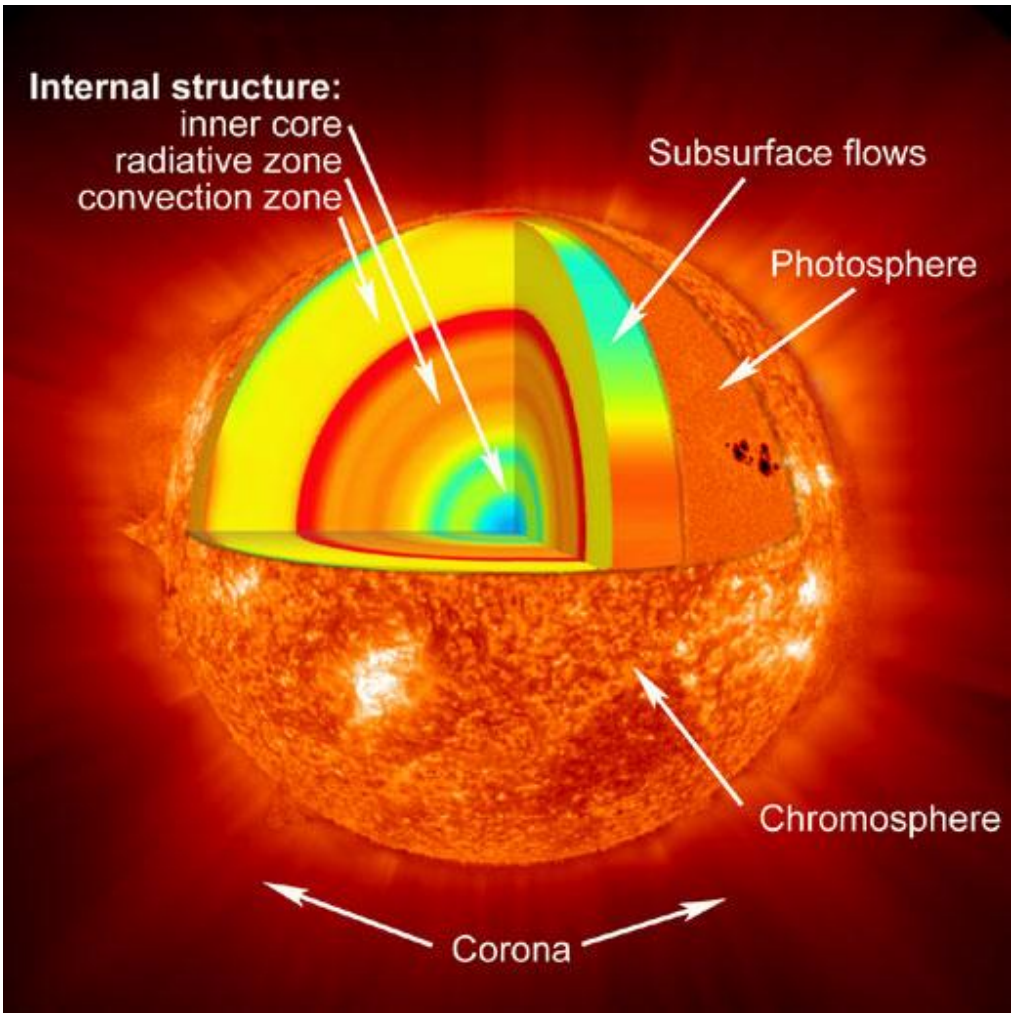
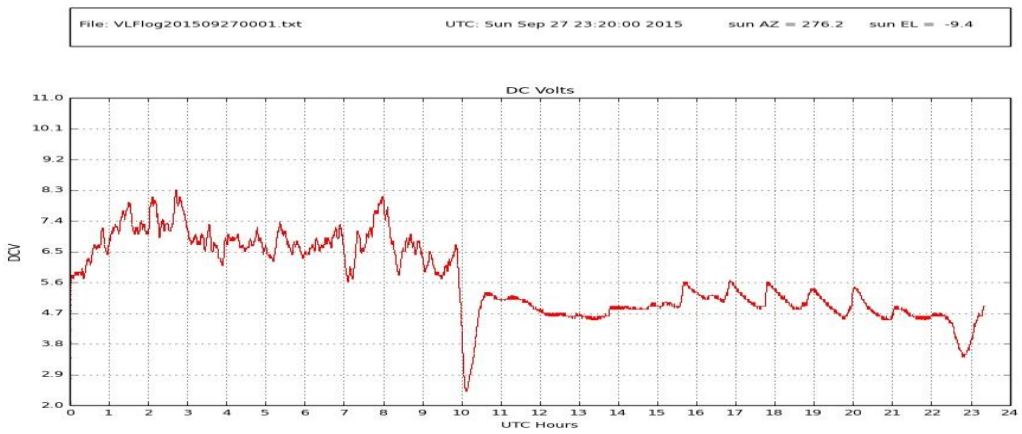


Internal Structure → Solar Irradiance
Energy generated by fusion in the core is radiated and then convected to the "surface" of the sun.
Photosphere → Visible Solar "Surface"
Visible by (and harmful to) the naked eye, this layer is where circulation patterns can be seen (granules), as well as sunspots (dark) and faculae (bright).
Chromosphere → Higher Yet Hotter
Its name comes from its good visibility in red light (the sphere of color). This region contains solar features such as prominences, filaments, plages, spicules, and the chromospheric network.
Corona → Faint Yet Harmful
Only seen when the brighter light of the photosphere is blocked, this very hot and thin outermost layer of the sun negatively impacts us via coronal mass ejections (CMEs). From Matthew Niznik, University of Miami, National Geophysical Data Center (NGDC) [NOAA → NESDIS → NGDC] and Dr. William Denig, Mentor

Sudden Ionospheric Disturbance Report



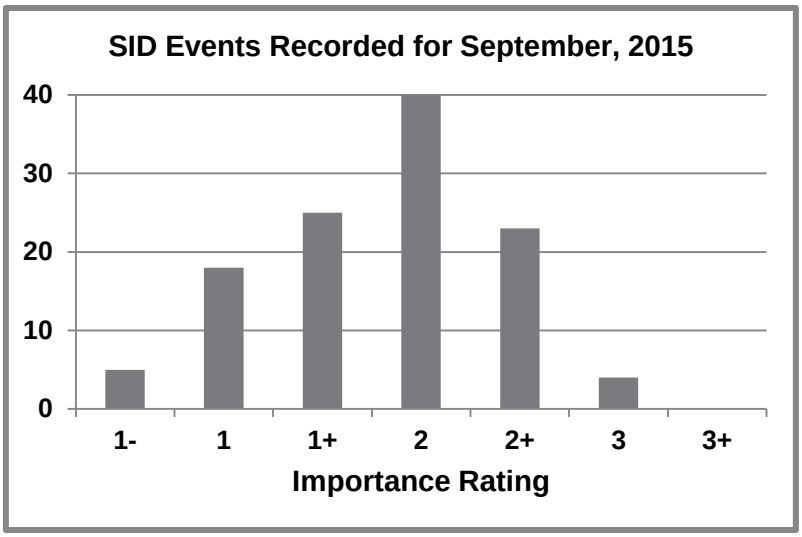
There were 5 flares on September 27, 2015. This graph shows SID events coming from AR2422.
Graph from John DuBois, recording NAA

Sudden Ionospheric Disturbances (SID) Records During September, 2015

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
150905	0215	2+	150923	0729	2	150928	1136	2
150909	1140	2	150923	1003	2	150928	1158	2
150909	2041	2	150923	1758	2+	150928	1320	2
150913	0500	2+	150924	2352	2	150928	2232	2
150913	1903	2+	150927	1538	2	150928	2345	2
150915	0258	2	150927	1648	2	150928	0355	3
150915	0505	2+	150927	1718	2	150928	0903	2+
150916	1529	2	150927	1744	2	150928	1307	2+
150916	1924	2	150927	1754	2	150928	2122	2+
150916	1543	2+	150927	1853	2	150929	0810	2
150917	0130	2	150927	2000	2	150929	1116	2
150917	1820	2	150927	2316	2	150929	0316	3
150917	2149	2	150927	1050	3	150929	0305	2+
150917	0303	2+	150927	1952	3	150929	0455	2+
150917	0939	2+	150927	0858	2+	150929	1304	2+
150917	0946	2+	150927	1040	2+	150930	0018	2
150920	1805	2	150927	2101	2+	150930	0656	2
150920	0500	2+	150928	0338	2	150930	1053	2
150920	1804	2+	150928	0734	2	150930	1057	2
			150928	1128	2	150930	1303	2
						150930	1318	2

*This is a truncated list of importance ratings greater than 1+, see the full SID report here: http://www.aavso.org/sid-database

Solar Events

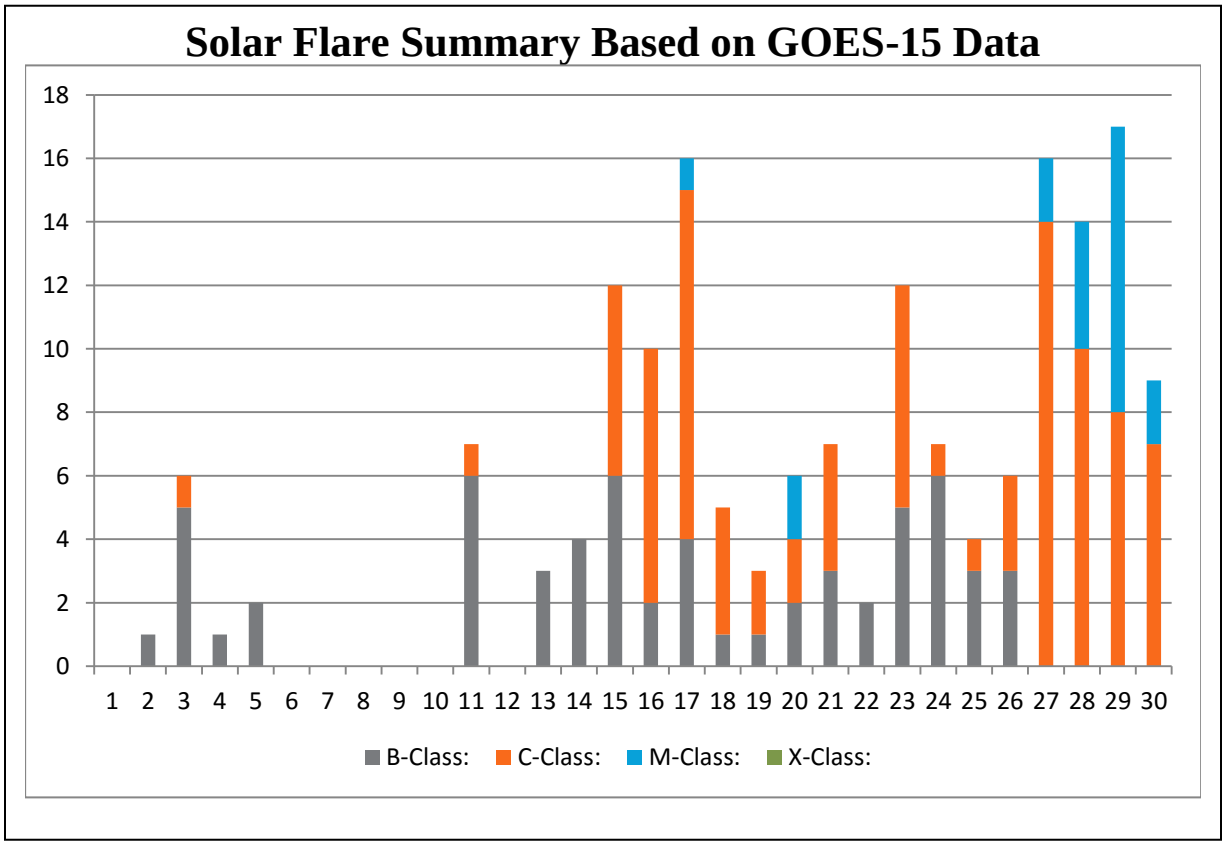


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: 125

Sudden Ionospheric Disturbances (SID) Observers During September, 2015

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	J Karlovsky	A131	DHO NSY
R Battaiola	A96	ICV	R Green	A134	NWC
J Wallace	A97	NAA	R Mrllak	A136	GQD
L Loudet	A118	GQD	G Silvis	A141	NLK NML NPM
J Godet	A119	GBZ GQD ICV	I Ryumshin	A142	DHO GQD
B Terrill	A120	NWC	R Rogge	A143	DHO GQD ICV
F Adamson	A122	NWC	K Menzies	A146	NAA
S Oatney	A125	NML			

There were 170 GOES XRA events recorded for September, 2015. Twenty M class flares, 90 C class flares and 60 B class flares. There were more M class flares this month, but fewer C and B class flares over all. It is interesting to note that there were 7 days at the beginning of September with no flares at all! There were 15 AAVSO SID observers who submitted reports this month.



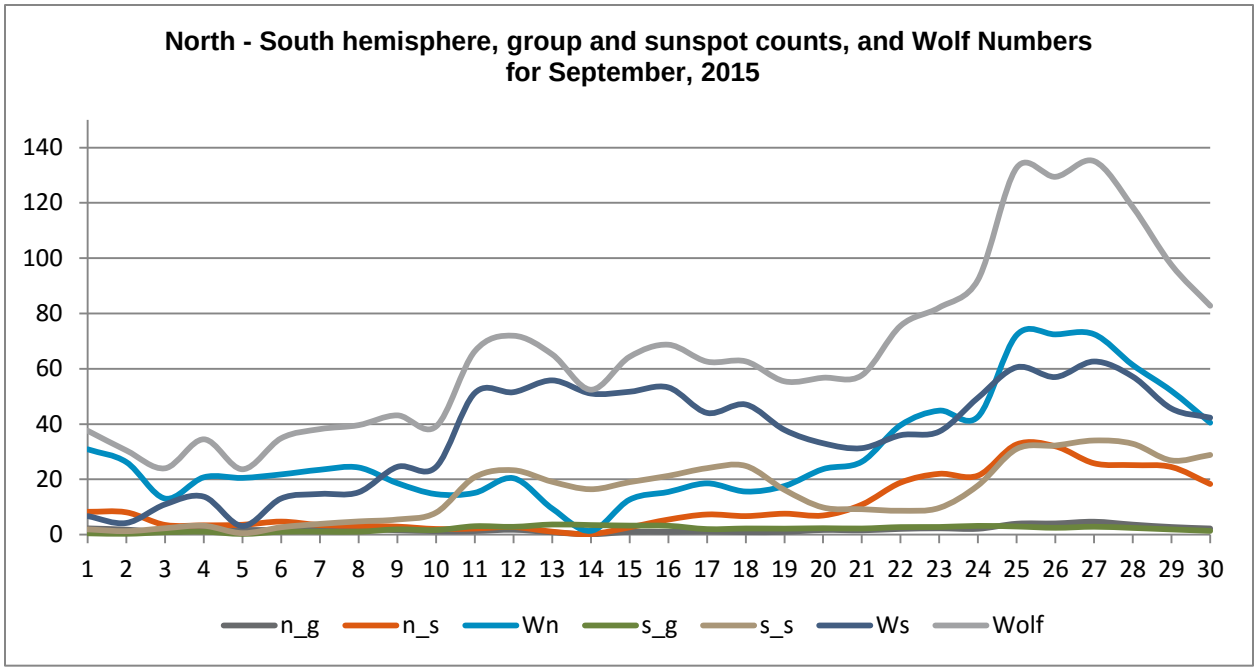
American Relative Sunspot Numbers (Ra) for September, 2015 [**boldface = maximum, minimum**]

DAY	NumObs	RAW	Ra
1	37	34	26
2	42	28	21
3	35	23	18
4	30	32	26
5	36	22	**17**
6	36	33	26
7	40	37	29
8	32	38	31
9	33	40	32
10	31	37	28
11	36	62	47
12	21	68	53
13	32	62	49
14	37	51	40
15	39	65	52
16	35	68	53
17	36	63	49
18	39	61	48
19	34	54	42
20	39	55	44
21	41	55	42
22	38	71	55
23	32	82	63
24	37	92	72
25	34	126	97
26	32	124	96
27	36	130	**100**
28	33	112	88
29	31	98	74
30	33	80	60
Average	**34.9**	**63.3**	**49.2**

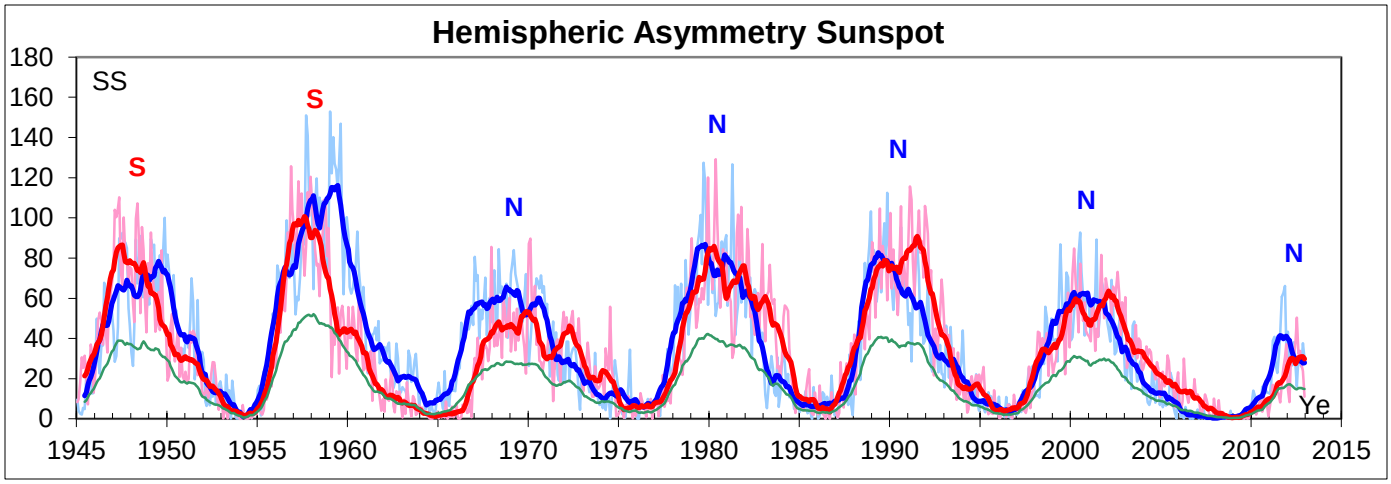
Obs	#Obs	Name
AAX	11	Alexandre Amorim
AJV	18	J. Alonso
ARAG	30	Gema Araujo
ASA	22	Salvador Aguirre
BARH	9	Howard Barnes
BERJ	21	Jose Alberto Berdejo
BLAJ	5	John A. Blackwell
BMF	20	Michael Boschat
BRAB	26	Brenda Branchett
BRAF	23	Raffaello Braga
BROB	28	Robert Brown
BSAB	23	Santanu Basu
BURS	5	Scott Burgess
CHAG	29	German Morales Chavez
CIOA	1	Ioannis Chouinavas
CKB	27	Brian Cudnik
CNT	7	Dean Chantiles
DEMF	4	Frank Dempsey
DGP	20	Gerald Dyck
DJOB	3	Jorge del Rosario
DUBF	28	Franky Dubois
FERJ	16	Javier Ruiz Fernandez
FLET	26	Tom Fleming
FLF	9	Fredirico Luiz Funari
FTAA	19	Tadeusz Figiel
FUJK	19	K. Fujimori
HALB	7	Brian Halls
HAYK	20	Kim Hay
HMQ	5	Mark Harris
HOWR	29	Rodney Howe
JDAC	20	David Jackson
JGE	5	Gerardo Jimenez Lopez
JJMA	16	Jessica M.Johnson
KAND	26	Kandilli Observatory
KAPJ	26	John Kaplan
KNJS	23	James & Shirley Knight
KROL	27	Larry Krozel
LKR	16	Kristine Larsen
LRRA	13	Robert LIttle
MARE	7	Enrico Mariani
MGAA	3	Gael Mariani
MILJ	14	Jay Miller
MJHA	28	John McCammon
MUDG	11	George Mudry
MWU	10	Walter Maluf
OATS	3	Susan Oatney
OBSO	20	IPS Observatory
ONJ	3	John O'Neill
RLM	13	Mat Raymonde
RRO	8	Ralph Rogge
SCGL	26	Gerd-Lutz Schott
SDOH	30	Jan Alvestad(SDO)
SIDM	17	Monika Sidor
SIMC	14	Clyde Simpson
SONA	8	Andries Son
SPIA	15	Piotr Skorupski
STAB	30	Brian Gordon-States
SUZM	22	Miyoshi Suzuki

TESD	22	David Teske
URBP	24	Piotr Urbanski
VARG	24	A. Gonzalo Vargas
VIDD	16	Dan Vidican
WAU	2	Artur Wargin
WILW	25	William M. Wilson
WRP	3	Russell Wheeler

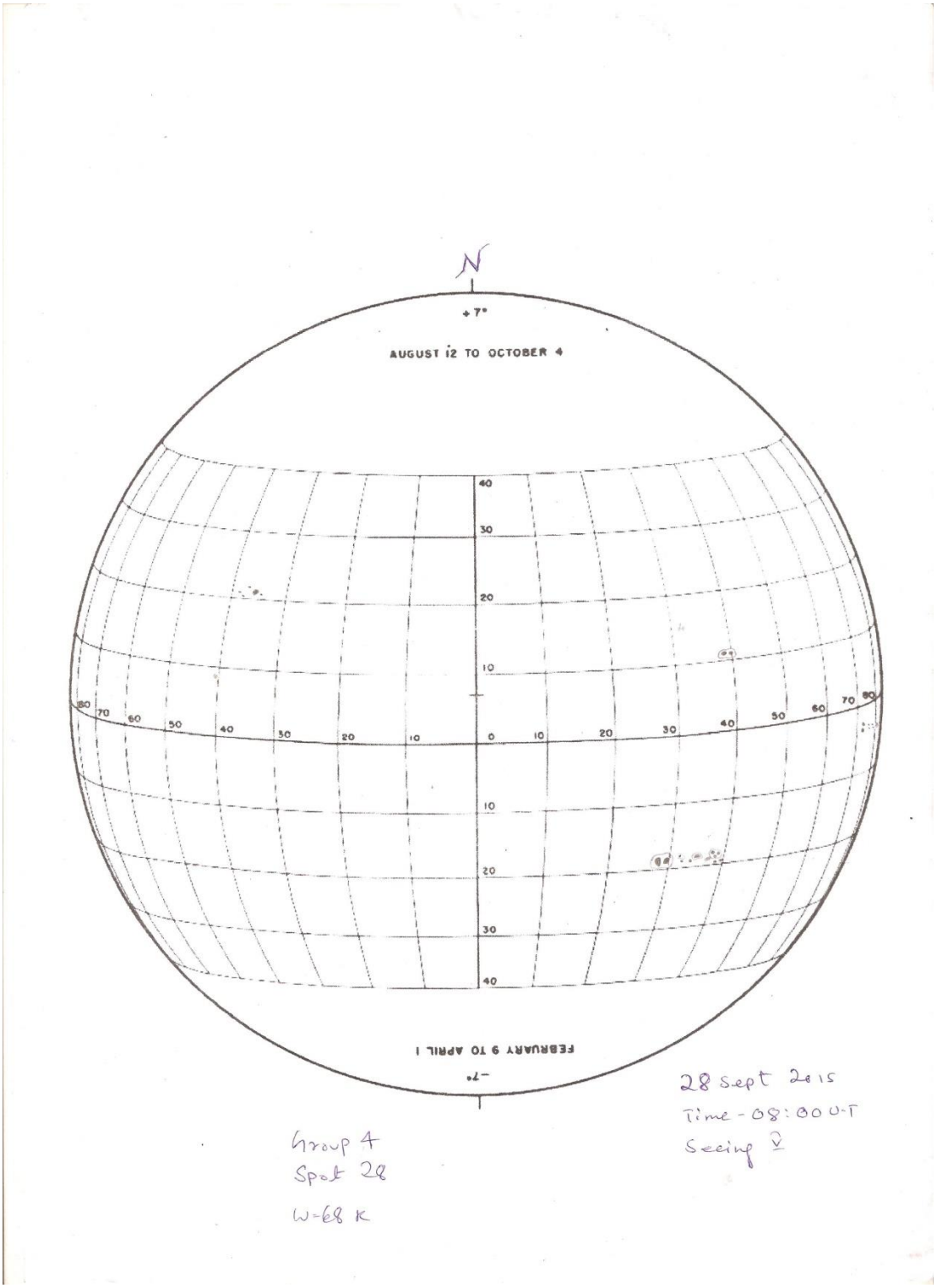
Total Observers: 65
Total Observations: 1080



There were 39 out of 65 observers who counted northern and southern hemisphere groups and sunspots this month. Neither northern nor southern hemisphere was predominant with days of crossover on the 9th, 22nd and 25th.



This graph by Leif Svalgaard: it shows the North/South Hemisphere crossovers for the past 6 cycles. So, the question is; can we consider that when the North/South asymmetry happens to crossover during the solar minimum, will that be the time of the beginning of the next solar cycle 25? (Data are from Kanzelhöhe and Greenwich observatories). By convention, the start of a cycle is defined as the minimum of the 13-month smoothed numbers. So, the date of the start of the next cycle can only be established one year after the minimum has occurred, at the earliest.



For 28 September, 8h 0m UT a drawing from Santanu Basu (BSAB) with four groups and 28 sunspot counts and this large Active Region AR2422.

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