

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS  
SOLAR SECTION



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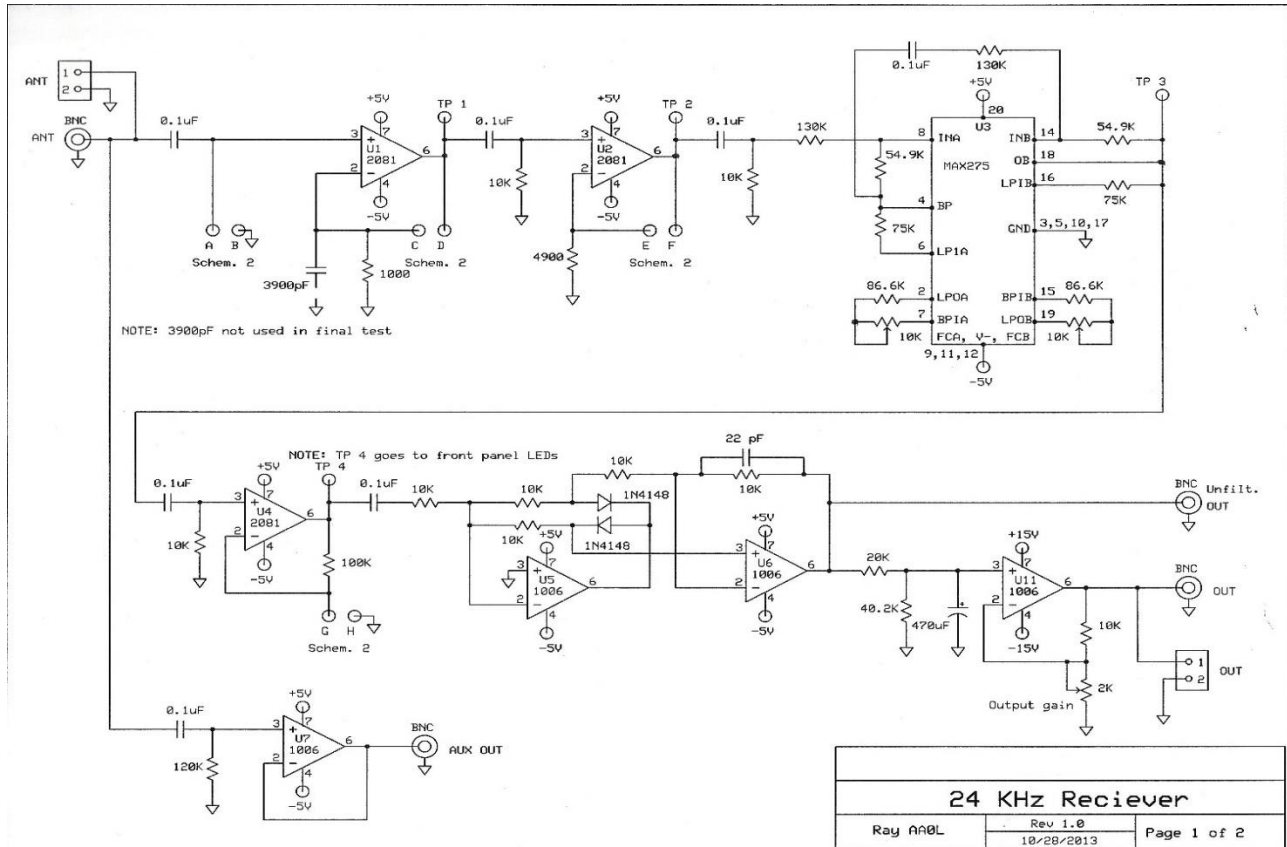
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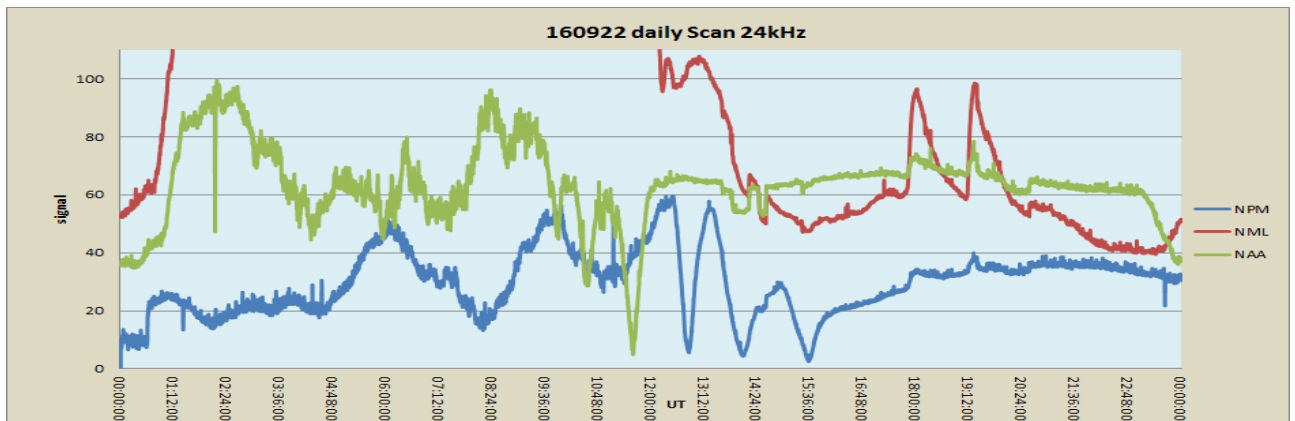
September, 2016



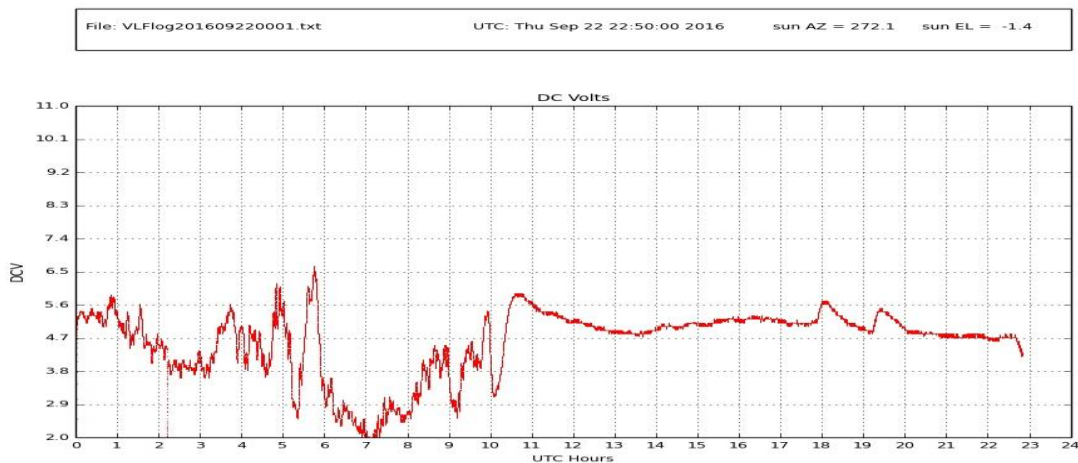
How about building a new VLF receiver? Here's a schematic from John DuBois that lets you record from either (or both) the computer's sound card, or from an analog to digital voltage recorder. The receiver's DC output is tuned to 24 kHz (NAA in Cutler Maine), however there is a 'Take Off' tap after the audio amplifiers which can be used to record data with a 96 kHz sound card. With this audio tap the receiver is similar to the SuperSID: <http://radio-astronomy.org/node/210> (or any other sound card receiver) that records SID Events using a computer's sound card. You can use the SID DataGrabber software: <https://www.aavso.org/sid-data-grabber> if data is captured with the Stanford SuperSID software. (There are other Python programs that save daily data for both recording DC Volts with an Analog to Digital (A/D) device, or recording Naval transmitter signals from the sound card). Diagram and receiver are from Ray Ubereken.



Picture above is what the 24 kHz receiver looks like in the rack box, it is designed with multiple stage amplifier gain switches for the audio, and the red knob is for DC gain.

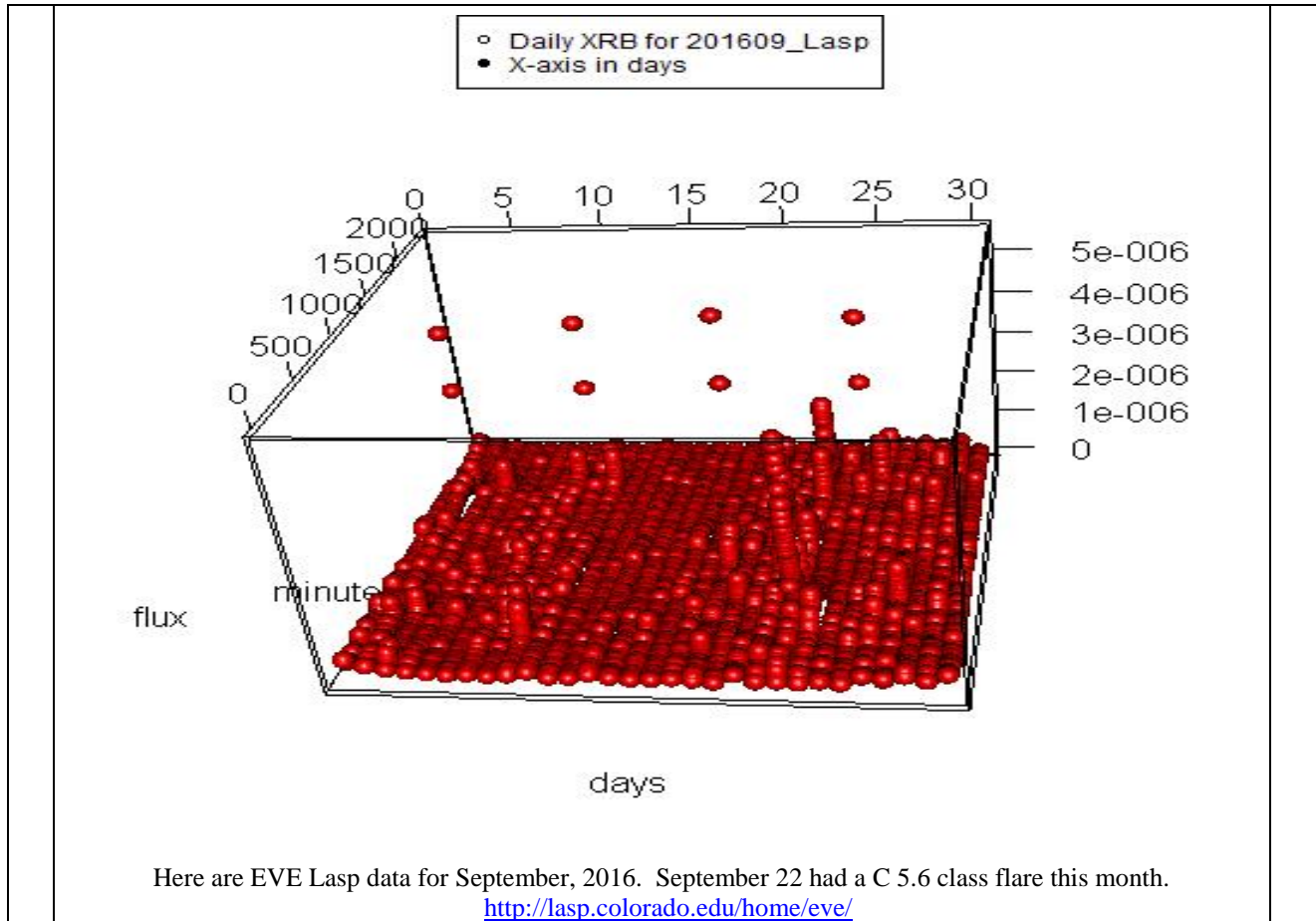


Above is a sound card recording from the receiver of two C class flares on the most active day this month, September 22<sup>nd</sup>.



Here is the DC Volts recording of NAA Cutler Maine for September, 22<sup>nd</sup>.

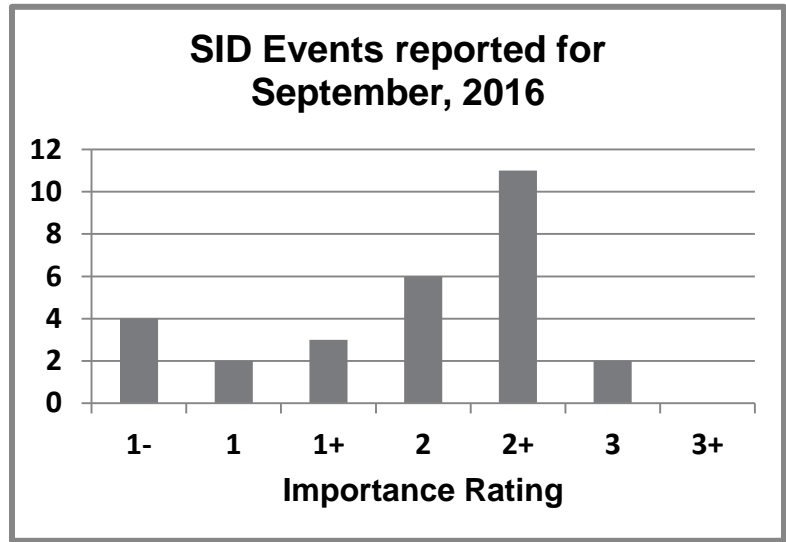
# Sudden Ionospheric Disturbance Report



## Sudden Ionospheric Disturbances (SID) Records During September, 2016

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
160918	240	2+	160922	530	2+	160922	1756	2
160921	156	2+	160922	546	1+	160922	1918	2+
160921	1151	-1	160922	728	3	160923	438	2
160922	408	3	160922	829	1	160925	1915	-1
160922	515	2+	160922	1026	2	160925	2337	2+
			160922	1153	2	160927	748	2

# Solar Events

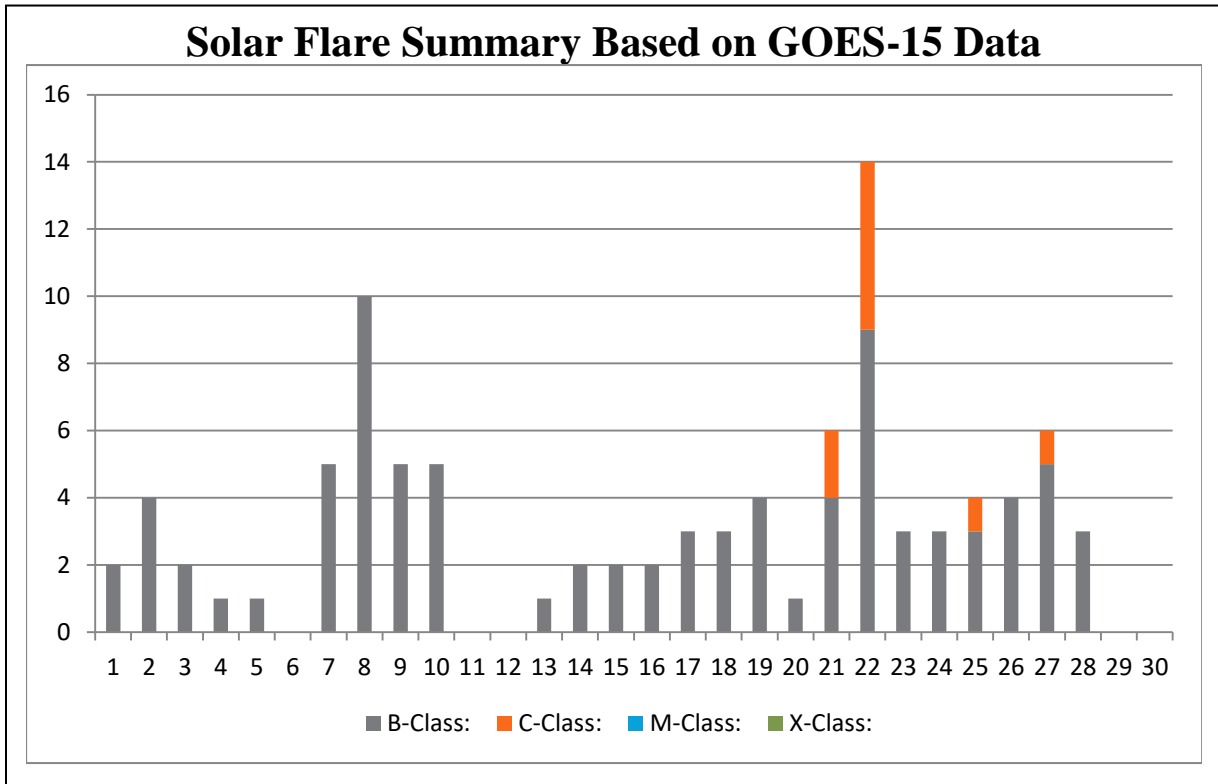


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: 125
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### Sudden Ionospheric Disturbances (SID) Observers During September, 2016

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

There were 96 solar flares measured by GOES-15 for September, 2016: Nine C class and 87 B class flares. About the same flaring this month compared to last month. There were 5 days with no flares at all. There were 16 AAVSO SID observers who submitted reports this month.



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

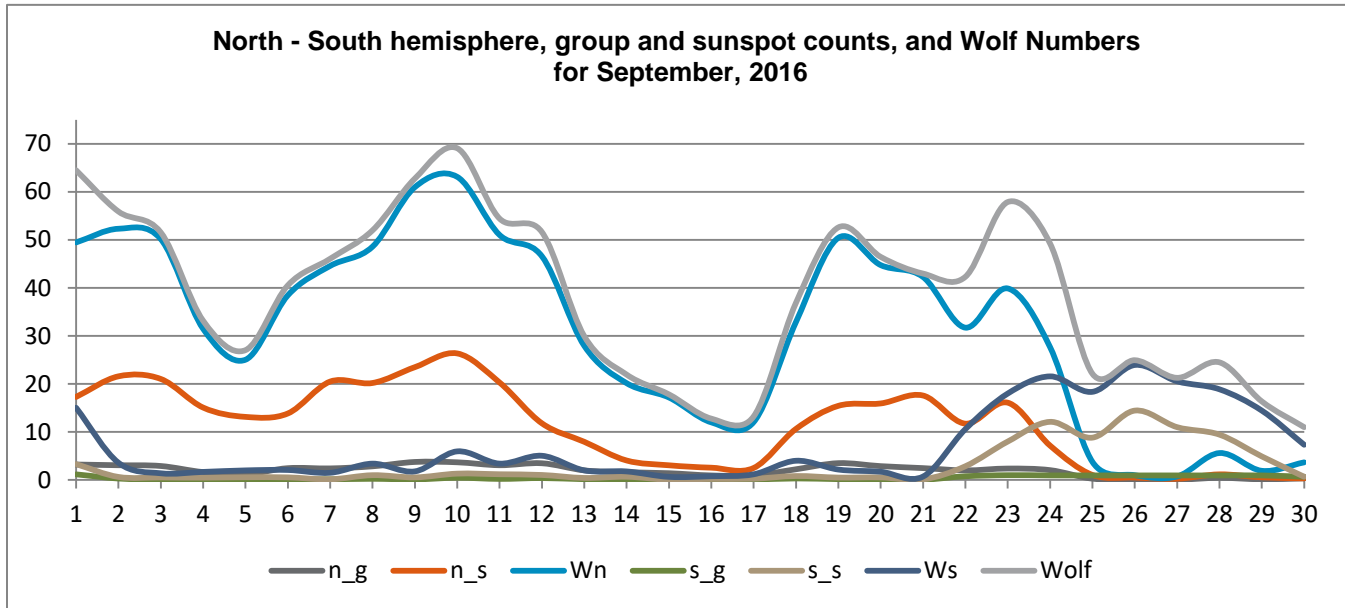
DAY	NumObs	RAW	Ra
1	35	60	46
2	39	54	41
3	33	50	36
4	37	33	24
5	31	25	19
6	35	38	27
7	34	45	34
8	37	49	38
9	35	62	47
10	40	67	<b>52</b>
11	38	53	44
12	37	47	36
13	28	28	21
14	30	20	16
15	28	16	11
16	28	11	9
17	32	14	11
18	28	34	26
19	29	47	36
20	26	45	35
21	28	38	30
22	29	39	30
23	32	53	41
24	29	47	36
25	31	24	18
26	31	25	20
27	34	21	17
28	29	24	17
29	30	15	12
30	25	2	<b>1</b>
<b>Average</b>	<b>31.9</b>	<b>36.2</b>	<b>27.7</b>

Obs	#Obs	Name
AAX	19	Alexandre Amorim
AJV	24	J. Alonso
ARAG	30	Gema Araujo
ASA	24	Salvador Aguirre
BARH	6	Howard Barnes
BERJ	24	Jose Alberto Berdejo
BRAB	29	Brenda Branchett
BRAF	20	Raffaello Braga
BROB	17	Robert Brown
BSAB	16	Santanu Basu
BXD	4	Alexandru Burda

CHAG	28	German Morales Chavez
CIOA	4	Ioannis Chouinavas
CKB	24	Brian Cudnik
CNT	8	Dean Chantiles
CVJ	11	Jose Carvajal
DEMF	11	Frank Dempsey
DJOB	25	Jorge del Rosario
DUBF	22	Franky Dubois
FERJ	19	Javier Ruiz Fernandez
FLET	24	Tom Fleming
FLF	14	Fredirico Luiz Funari
FTAA	7	Tadeusz Figiel
FUJK	10	K. Fujimori
HALB	8	Brian Halls
HAYK	15	Kim Hay
HOWR	27	Rodney Howe
JDAC	10	David Jackson
JENS	1	Simon Jenner
JGE	5	Gerardo Jimenez Lopez
KAND	27	Kandilli Observatory
KAPJ	17	John Kaplan
KNJS	17	James & Shirley Knight
KROL	18	Larry Krozel
LEVM	19	Monty Leventhal
LKR	6	Kristine Larsen
LRRR	25	Robert Little
MARE	12	Enrico Mariani
MCE	18	Etsuiku Mochizuki
MILJ	13	Jay Miller
MJAF	29	Juan Antonio Moreno
MJHA	30	John McCammon
MWU	10	Walter Maluf
ONJ	9	John O'Neill
RLM	15	Mat Raymonde
SDOH	30	Jan Alvestad (SDO)
SIMC	11	Clyde Simpson
SNE	8	Neil Simmons
SONA	21	Andries Son
STAB	27	Brian Gordon-States
SUZM	17	Miyoshi Suzuki
TESD	30	David Teske
URBP	25	Piotr Urbanski
VARG	29	A. Gonzalo Vargas
VIDD	18	Dan Vidican
VRUA	10	Ruben Verboven
WAU	1	Artur Wargin
WGI	4	Guido Wollenhaupt

WILW 27 William M. Wilson  
WRP 4 Russell Wheeler

**Total Observers: 60**  
**Total Observations: 1013**



There were 40 out of 60 observers who counted northern and southern hemisphere groups and sunspots this month. The northern hemisphere was predominant with one day of crossover on the 24<sup>th</sup>. (These data include the SDO north/south hemisphere group and sunspot counts.)

**Reporting Addresses:**

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**SID Solar Flare Reports – Rodney Howe [ahowe@frii.com](mailto:ahowe@frii.com)**