

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
SOLAR COMMITTEE



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

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

Email: solar.aavso@gmail.com

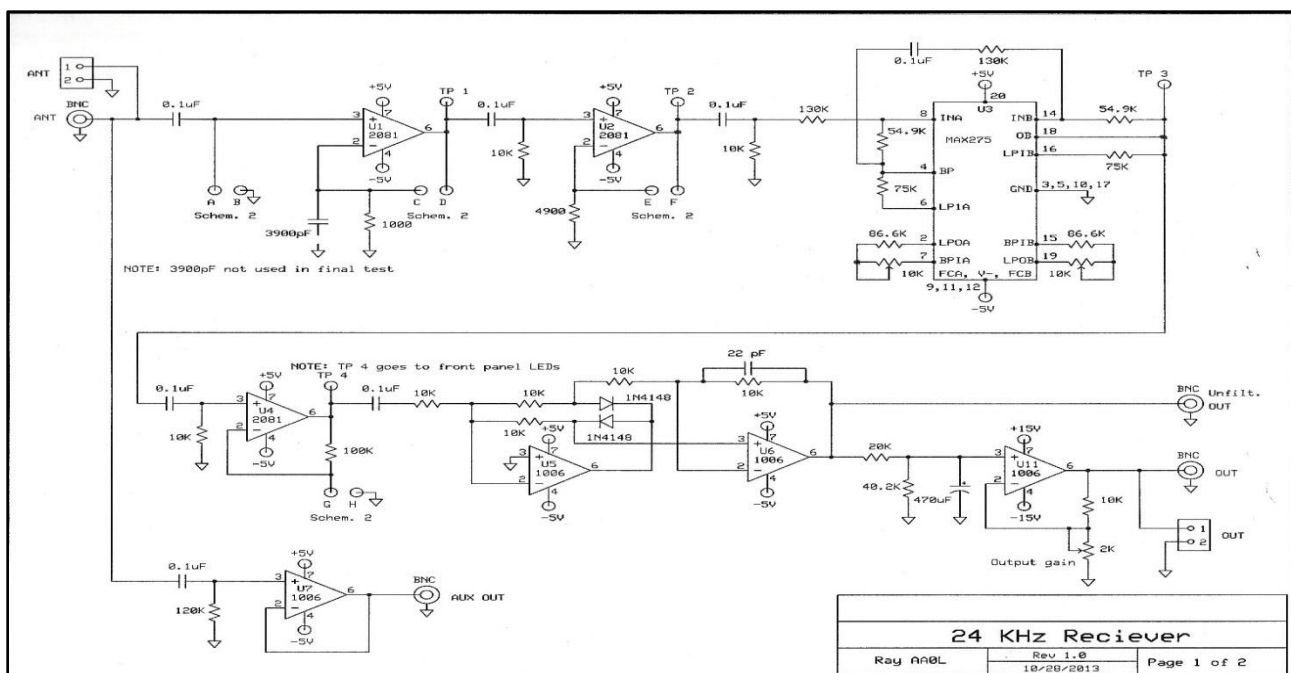
ISSN 0271-8480

Volume 69 Number 12

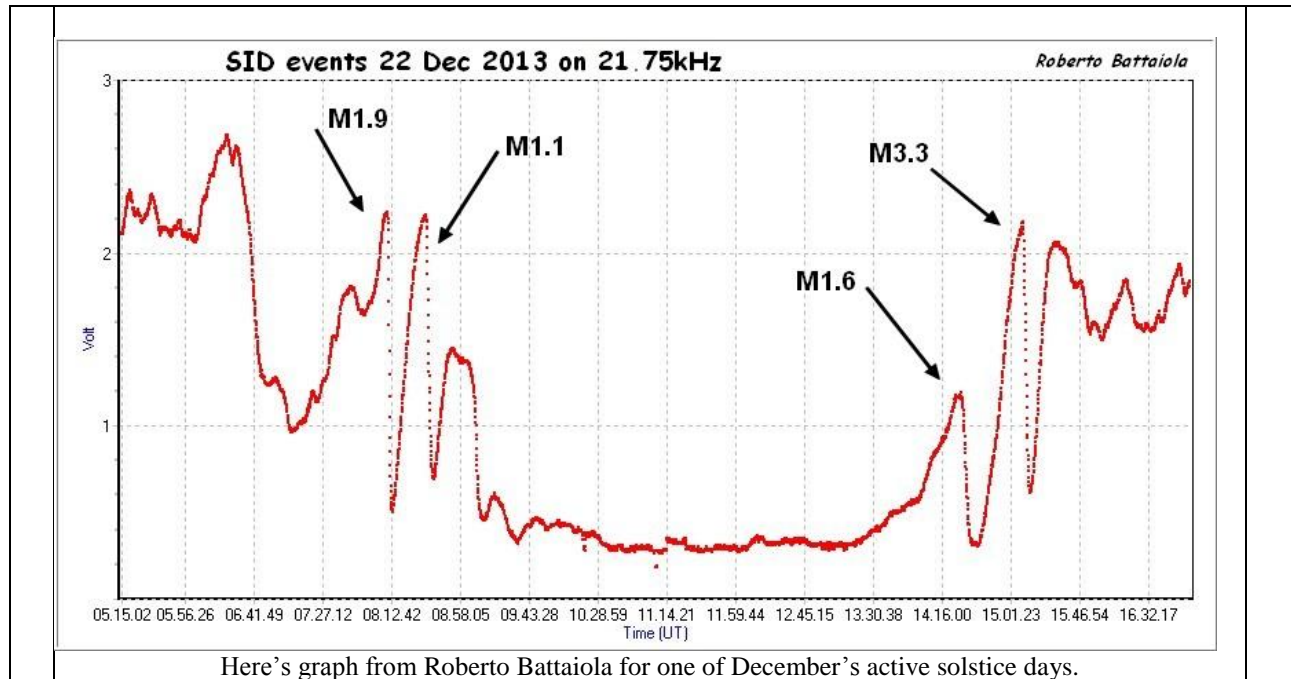
December, 2013



This is a new design for a VLF radio from John DuBois using a diode detector circuit to create voltage output for an analog to digital converter. This radio is not to be used for the soundcard! At this time it is tuned to 24.8 kHz using the 1.5 meter loop. The loop has 24 turns of #18 gauge braided copper wire.



Sudden Ionospheric Disturbance Report

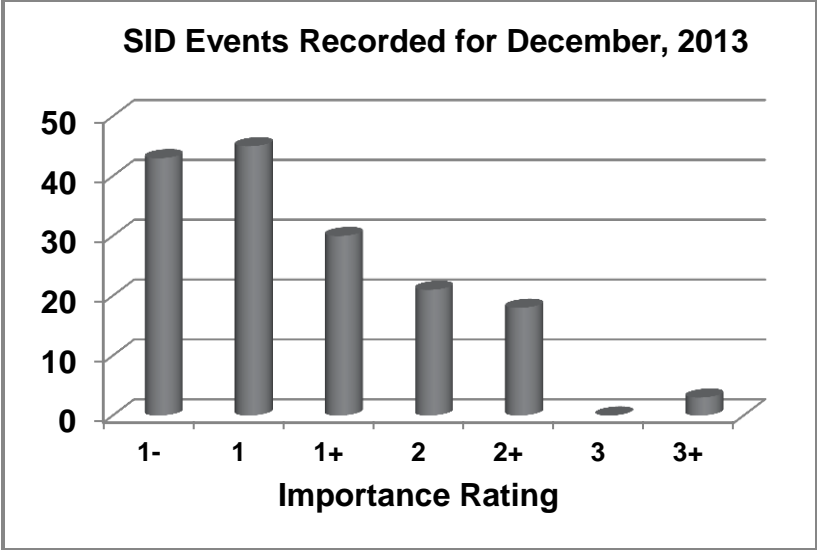


Sudden Ionospheric Disturbances (SID) Records During December, 2013

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
131201	1115	2+	131209	1131	2+	131218	0441	2+
131201	1528	1-	131211	0734	1	131218	0525	1
131204	0058	1+	131211	0741	2	131219	2253	2+
131204	0456	2	131212	0328	2+	131219	2314	2
131204	1828	1	131212	0649	1+	131219	2352	2+
131204	1835	2	131212	2209	1+	131220	0137	1
131205	1128	1+	131212	2325	1+	131220	0258	1
131205	1459	1-	131213	0138	1	131220	1154	1+
131205	1740	1	131213	0314	2	131220	1530	1
131206	0942	1-	131213	2315	1	131220	1630	1-
131206	0948	1	131214	1121	1	131221	0301	1+
131206	1448	1+	131214	1515	1-	131221	0947	2
131206	2300	1-	131215	0822	1-	131221	1032	1+
131206	2316	2+	131215	0901	1-	131221	1039	1-
131206	2326	1-	131215	0913	1-	131221	1259	1
131207	0443	1	131215	0914	1-	131221	1305	1
131207	0532	1-	131216	0122	1	131221	1929	1
131207	0723	1	131216	0329	1-	131221	2148	1+
131207	0737	2+	131216	2054	1	131221	2342	2
131207	0810	2+	131216	2115	2+	131222	0313	1+
131208	1009	1+	131217	0757	1+	131222	0342	1+

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
131222	0441	1+	131222	2352	1-	131227	1212	1-
131222	0457	1	131223	0550	2+	131228	0716	1
131222	0809	1	131223	0707	1	131228	0734	2
131222	0838	1-	131223	0755	1-	131228	1249	1-
131222	0845	1+	131223	0847	1-	131228	1310	1
131222	0909	2	131223	0906	1	131228	1520	1
131222	1126	1-	131223	1531	1-	131228	1802	1+
131222	1240	1	131223	1724	1+	131229	0513	1
131222	1436	1+	131223	1731	1+	131229	0736	2
131222	1510	1-	131223	2305	1+	131229	0755	1
131222	1518	1	131223	2337	1+	131229	0859	1-
131222	1908	1-	131225	0527	2+	131229	1152	1-
131222	2136	2+	131225	0627	1+	131229	1445	1-
131222	2207	1-	131225	0639	1	131229	1927	1
131222	2241	1	131225	0701	2+	131229	2231	1
131222	2331	2	131225	0710	1-	131230	0612	2
			131226	0648	2	131230	2203	2+
			131226	0658	1	131231	0215	1+
			131226	0704	1-	131231	0237	1+
			131226	0831	2	131231	1100	3+
			131227	0735	1	131231	1100	3+
						131231	1138	2+
						131231	2157	2

Solar Events

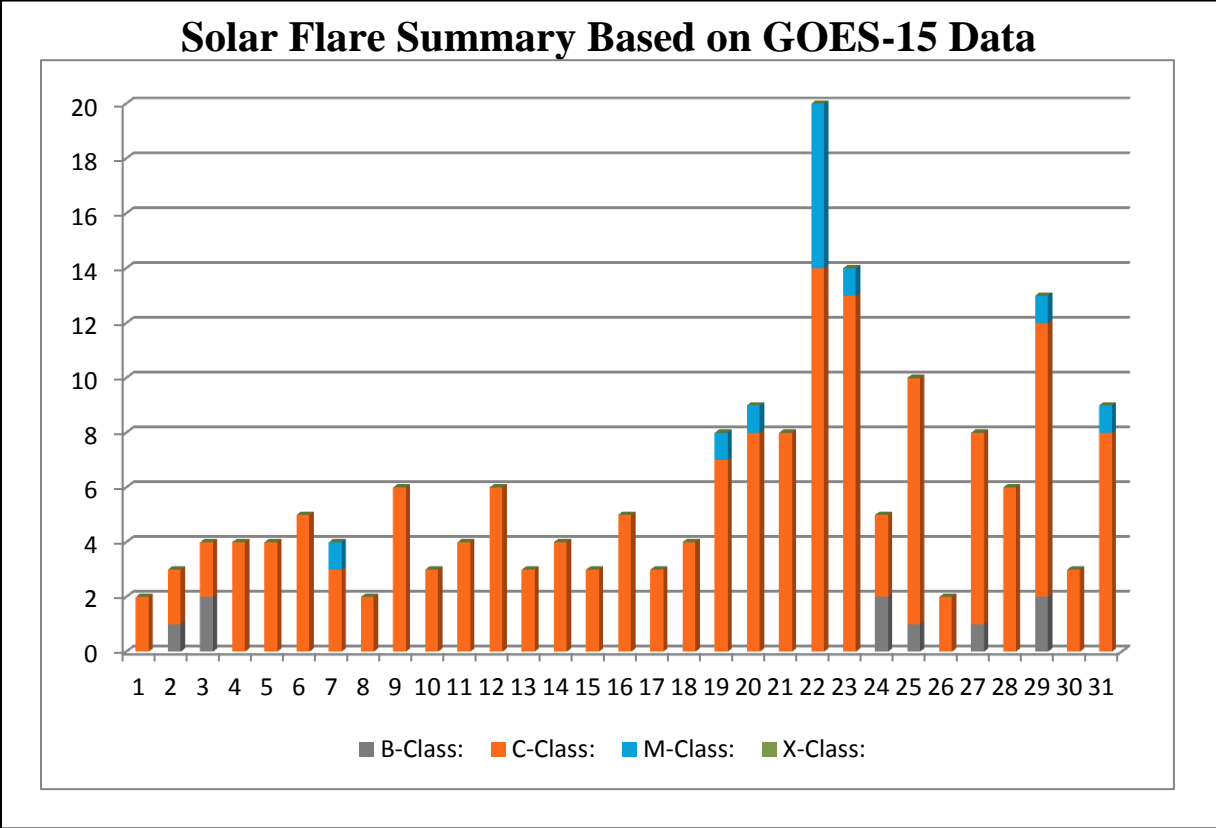


Importance rating: Duration (min)	1-: <19	1: 19-25	1+: 26-32	2: 33-45	2+: 46-85	3: 86-125	3+: >125
-----------------------------------	---------	----------	-----------	----------	-----------	-----------	----------

Sudden Ionospheric Disturbances (SID) Observers During December, 2013

Observer	Code	Station(s) monitored	Observer	Code	Station(s) monitored
A McWilliams	A94	NML	S Oatney	A125	NLK NML
R Battaiola	A96	HWU	J Karlovsky	A131	DHO NSY
J Wallace	A97	NAA	R Green	A134	JJI NWC
L Loudet	A118	GBZ GQD NAA	R Mrlak	A136	GQD NSY
J Godet	A119	GBZ GQD ICV	D Koawl	A137	DHO HWU NPM
B Terrill	A120	JJI NWC	S Aguirre	A138	NPM
F Adamson	A122	NWC	F Francione & C Re	A139	HWU NAA NSY

There were 184 solar flares measured by GOES-15 for December, 2013, 12 M class, 162 C class and 10 B class flares. The sun less active this month compared to last, with some strong flaring. There were 14 AAVSO SID observers who submitted reports this month.



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

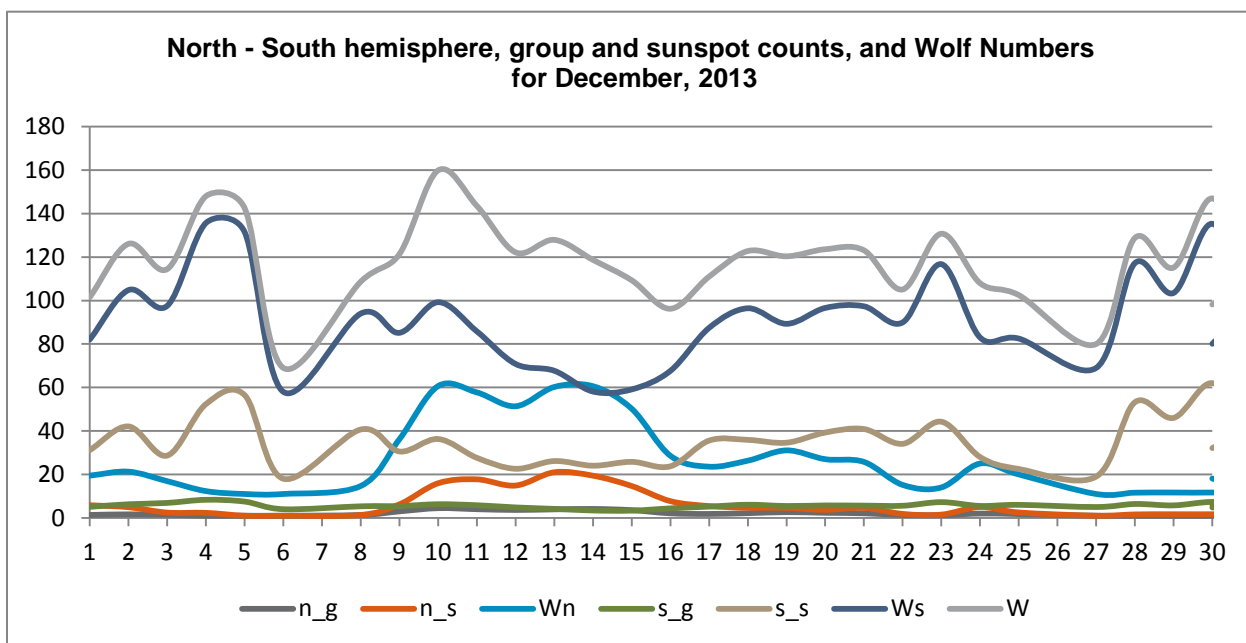
DAY	NumObs	RAW	Ra
1	24	99	72
2	26	115	82
3	32	97	73
4	27	101	72
5	22	92	66
6	22	86	62
7	33	76	57
8	27	86	64
9	22	117	91
10	27	156	116
11	25	144	103
12	32	122	91
13	27	122	91
14	29	120	88
15	35	103	76
16	41	94	68
17	31	105	81
18	27	126	94
19	28	112	86
20	22	124	93
21	27	118	90
22	32	93	72
23	27	100	69
24	27	89	66
25	29	81	56
26	35	87	69
27	25	97	73
28	34	99	73
29	32	99	74
30	31	95	67
31	35	105	77
Average	28.8	105.2	77.8

BMF	11	Michael Boschat
BRAB	29	Brenda Branchett
BRAF	13	Raffaello Braga
BROB	31	Robert Brown
BSAB	31	Santanu Basu
BXD	12	Alexandru Burda
CFO	7	Jean F. Coliac
CHAG	26	German Morales Chavez
CIOA	12	Ioannis Chouinavas
CKB	16	Brian Cudnik
CLZ	2	Laurent Corp
CNT	8	Dean Chantiles
CVJ	10	Jose Carvajal
DGP	13	Gerald Dyck
DJOB	10	Jorge del Rosario
DUBF	21	Franky Dubois
FAM	5	Fabio Mariuzza
FERJ	20	Javier Ruiz Fernandez
FLET	21	Tom Fleming
FLF	15	Fredirico Luiz Funari
FTAA	8	Tadeusz Figiel
FUJK	17	K. Fujimori
HALB	2	Brian Halls
HAYK	4	Kim Hay
HOWR	23	Rodney Howe
JASK	8	Krystyna Wirkus
JGE	7	Gerardo Jimenez Lopez
JJMA	6	Jessica M. Johnson
KAPJ	8	John Kaplan
KNJS	29	James & Shirley Knight
KROL	18	Larry Krozel
LEVM	25	Monty Leventhal
LKR	7	Kristine Larsen
MARE	5	Enrico Mariani
MCE	24	Etsuiku Mochizuki
MGAA	5	Gael Mariani
MILJ	7	Jay Miller
MJHA	27	John McCammon
MMI	11	Michael Moeller
MUDG	2	George Mudry
OATS	9	Susan Oatney
OBSO	9	IPS Observatory
ONJ	4	John O'Neill
RICE	10	E. C. Richardson
RLM	12	Mat Raymonde
SCGL	20	Gerd-Lutz Schott
SDOH	30	Solar Dynamics Obs - HMI

Obs	#Obs	Name
AAX	17	Alexandre Amorim
AJV	14	J. Alonso
AMG	1	Margarete J. Amorim
ARAG	29	Gema Araujo
ASA	15	Salvador Aguirre
BARH	10	Howard Barnes
BATR	4	Roberto Battaiola
BDDA	19	Diego Bastiani
BERJ	15	Jose Alberto Berdejo

SONA	11	Andries Son	WRP	2	Russell Wheeler
SPIA	4	Piotr Skorupski			
STAB	19	Brian Gordon-States			
SUZM	25	Miyoshi Suzuki			
TESD	13	David Teske	Total	Observers:	67
URBP	10	Piotr Urbanski	Total	Observations:	893
VARG	15	A. Gonzalo Vargas			
VIDD	5	Daniel Vidican			
WAU	2	Artur Wargin			
WILW	13	William M. Wilson			

37 of our 67 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 14th and 15th day this month; the southern hemisphere is predominant.



Reporting Addresses:

Sunspot Reports – Kim Hay

solar.aavso@gmail.com

SID Solar Flare Reports – Rodney Howe

ahowe@frii.com