

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR DIVISION

Carl E. Feehrer, Editor
9 Gleason Rd.
Bedford, MA 01730



Email: cfeehrer@hotmail.com

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Table I. Mean Sunspot Numbers (Ra) for August 2002 [boldface = maximum, minimum]

Day	N	Raw	s.d.	Ra	s.d.	s.e.
1	45	201	9.3	147	3.7	0.55
2	47	174	7.6	128	3.3	0.48
3	43	167	7.2	123	3.2	0.49
4	37	127	6.2	96	2.4	0.39
5	39	116	4.6	88	2.1	0.34
6	46	127	4.6	98	2.1	0.31
7	56	130	4.8	96	2.0	0.27
8	51	95	5.1	69	2.2	0.31
9	44	94	5.3	70	2.3	0.35
10	48	110	4.7	82	2.2	0.32
11	46	140	6.4	104	2.8	0.41
12	39	186	7.4	136	3.4	0.54
13	42	190	8.4	138	3.3	0.51
14	45	243	9.0	180	3.7	0.55
15	42	242	9.1	191	3.7	0.57
16	41	229	9.6	175	3.4	0.53
17	43	243	9.8	182	3.9	0.59
18	48	221	8.9	171	3.9	0.56
19	38	215	11.0	158	3.5	0.57
20	50	182	7.6	133	3.2	0.45
21	52	162	8.5	120	3.1	0.43
22	42	159	6.6	117	2.3	0.35
23	34	160	8.9	117	3.0	0.51
24	41	138	6.5	104	2.5	0.39
25	45	125	6.5	93	2.2	0.33
26	46	111	3.9	84	1.7	0.25
27	44	102	3.8	76	2.1	0.32
28	40	107	5.1	79	2.2	0.35
29	33	114	5.5	82	2.6	0.45
30	42	138	5.3	102	2.7	0.42
31	43	153	5.8	111	2.9	0.44

Means: **158.1** **117.7**

Total No. of Observers: 76

Total No. of Observations: 1352

Table II. August Observers

17 AAP P.Abbott	21 JAMD D.James
5 ANDE E.Anderson	8 JEFT T.Jeffrey
25 ARAG G.Araujo	26 KAPJ J.Kaplan
18 BARH H.Barnes	13 KHAR R.Khan
11 BATR R.Battaiola	18 KNJS J&S Knight
20 BEB R.Berg	11 KUZM M.Kuzmin
12 BERJ J.Berdejo	5 LARJ J.Larriba
7 BLAJ J.Blackwell	9 LERM M.Lerman
19 BMF M.Boschat	22 LEVM M.Leventhal
25 BOJP P.Bojda	13 LUBT T.Lubbers
13 BOSB B.Bose	28 MALK K.Malde
31 BRAB B.Branchett	5 MANV V.Manero
21 BRAD D.Branchett	16 MARE E.Mariani
12 BRAR R.Branch	29 MARJ J.Maranon
25 BROB R.Brown	25 MCE E.Mochizuki
6 BURS S.Burgess	27 MMI M.Moeller
5 CAMP P.Cambell	16 MUDG G.Mudry
21 CARJ J.Carlson	21 OBSO IPS Observatory
31 CHAG G.Morales	16 RICE E.Richardson
28 CKB B.Cudnik	29 RITA A.Ritchie
9 CLZ C.Laurent	28 SCGL G.Schott
18 COMT T.Compton	8 SCHG G.Scholl
31 CORA A.Coroas	3 SDP D.Sharples
19 CR T.Cragg	8 SIMC C.Simpson
5 DELS S.Delaney	16 STEF G.Stefanopoulos
11 DEMF F.Dempsey	27 STQ N.Stoikidis
29 DGP G.Dyck	27 SUZM M.Suzuki
26 DRAJ J.Dragesco	7 SZAK K.Szatkowski
28 DUBF F.Dubois	26 SZUM M.Szulc
31 ELR E.Reed	22 TESD D.Teske
1 ERRA A.Errico	15 THR R.Thompson
16 FEEC C.Feehrer	16 TJV J.Temprano
17 FERJ J.Fernandez	22 VARG A.Vargas
28 FLET T.Fleming	15 VIDD D.Vidican
21 FUJK K.Fujimori	20 WILW W.Wilson
2 GARE E.Garcia	18 WITL L.Witkowski
27 GIOR R.Giovanoni	
9 GOTS S.Gottschalk	
13 HALB B.Halls	
13 HRUT T.Hrutkay	

Reporting Addresses

Sunspot Reports -- email: solar@aavso.org
postal mail: AAVSO, 25 Birch St. Cambridge, MA 02138
FAX (AAVSO): (617) 354-0665

SES Reports -- email: noatak@aol.com
postal mail: Mike Hill

114 Prospect St. Marlboro, MA 01752

Magnetometer Reports -- email: capaavso@aol.com
postal mail: Casper Hossfield

PO Box 23, New Milford, NY 10959

FAX: (973) 853-2588 or (407) 482-3963

Table III. Means of Raw Group Counts (RG) and Ratios of Spots to Groups (S:G) in August

Day	RG	S:G	Day	RG	S:G	Day	RG	S:G	Day	RG	S:G
1	9.6	10.9	9	4.9	9.2	17	12.1	10.1	25	7.3	7.1
2	9.0	9.3	10	6.5	6.9	18	10.9	10.3	26	6.7	6.6
3	9.6	7.4	11	8.3	6.9	19	10.9	9.7	27	6.4	5.9
4	7.5	6.9	12	10.6	7.6	20	9.3	9.6	28	6.6	6.2
5	6.9	6.8	13	10.2	8.6	21	8.3	9.5	29	6.5	7.5
6	7.7	6.5	14	13.4	8.1	22	8.7	8.3	30	6.8	10.3
7	7.5	7.3	15	13.2	8.3	23	8.8	8.2	31	7.0	11.9
8	5.2	8.3	16	12.0	9.1	24	7.4	8.7	Mn.	8.6	8.3

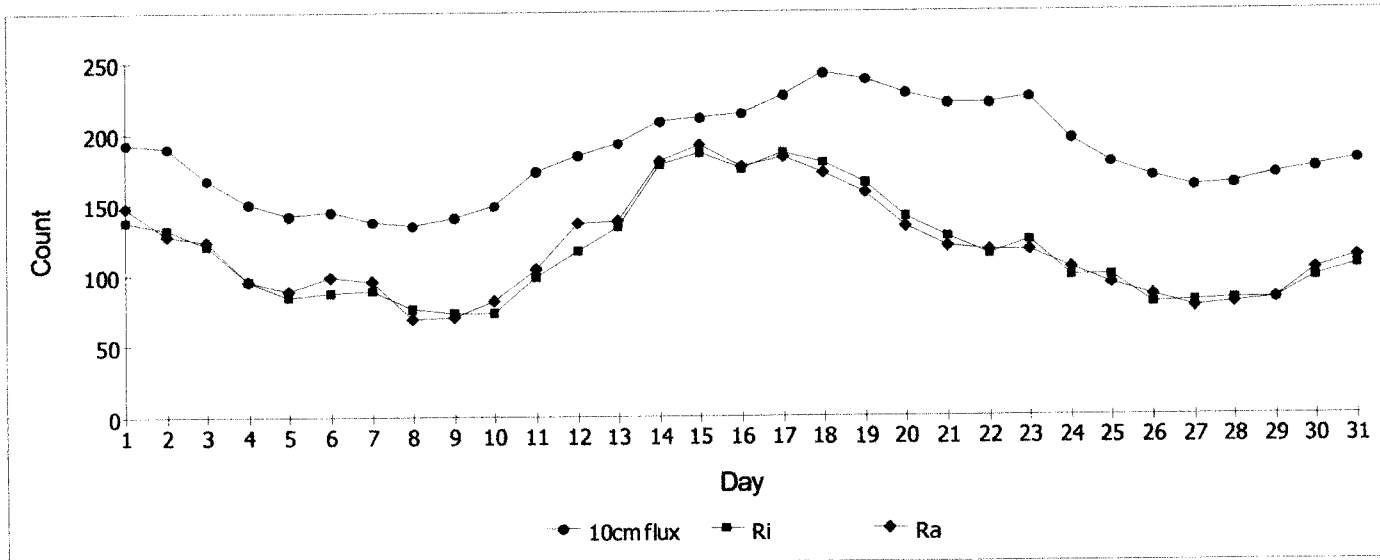


Fig. 1. 10 cm Solar Flux and Comparison of Ri (provisional) with Ra Estimates for August ($r= 0.981$).

Ri source: <http://www.sidc.oma.be/index.php3>
 10 cm source: <http://www.drao.nrc.ca/icarus>

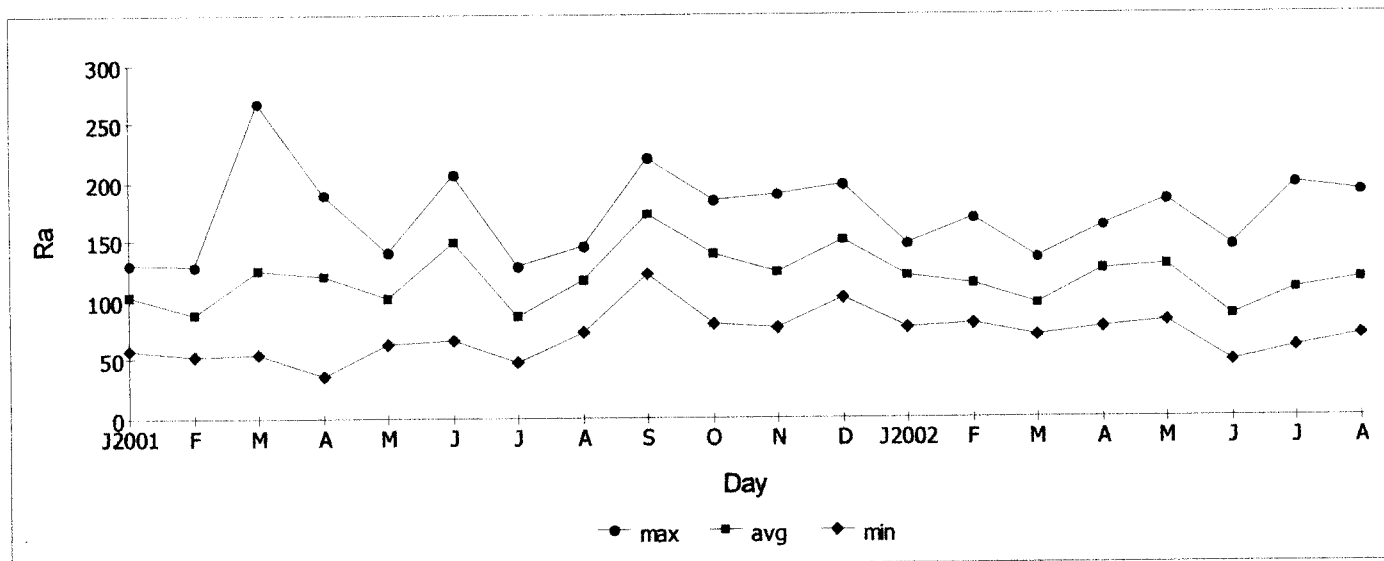
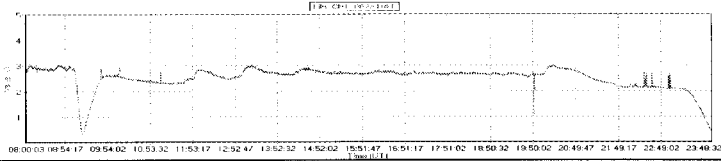


Fig. 2. Maximum, Mean, and Minimum Values of Ra for Each Month from January 2001 to Present.

Sudden Ionospheric Disturbance Report

Michael Hill, SID Analyst
 114 Prospect St
 Marlborough, MA 01752 USA
 noatak@aol.com



Sudden Ionospheric Disturbances (SID) Recorded During August 2002

(Analysis performed by Michael Hill, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
020801	0632	1+	020806	1528	2	020816	1815	2+
020801	0708	1	020806	1537	2+	020816	2214	2
020801	0745	1	020807	0125	2	020816	2336	2
020801	1347	1-	020807	0132	2	020817	0109	1+
020801	1405	1	020807	0719	2	020817	0633	1
020801	1544	1+	020809	0848	2	020817	0655	1
020801	1558	1-	020809	0856	2+	020817	1644	1-
020801	1708	1+	020811	1148	2	020817	1952	1
020802	0627	1+	020811	1337	1-	020817	2051	2+
020802	0653	1-	020811	1447	1+	020818	0147	1-
020802	0910	1-	020811	1651	1	020818	0336	2+
020802	0917	2	020811	1739	1-	020818	0734	2
020802	1055	1+	020811	1755	2+	020818	0953	1-
020802	1708	1	020812	0825	1+	020818	1004	2
020802	1955	1	020813	0549	1+	020818	1207	1
020802	2016	1+	020813	0710	1	020818	1349	1+
020802	2258	2+	020813	0927	1+	020818	1439	2
020803	0437	2	020813	1417	2	020818	1650	1+
020803	0455	2	020813	1506	1-	020818	1955	2
020803	0717	1+	020813	1515	2	020818	2023	2
020803	0921	1-	020813	1902	2+	020818	2124	2+
020803	1252	1-	020814	0907	1	020819	1035	1+
020803	1306	1+	020814	1011	1+	020819	1302	1
020803	1656	1	020814	1217	1+	020819	1442	2
020803	1905	2	020814	1407	1+	020819	2102	2
020803	2127	1	020814	1814	2	020820	0142	2
020804	0448	1	020814	1910	1	020820	0257	1
020804	0722	1+	020814	2141	1+	020820	0515	1-
020804	0913	2	020815	0606	2	020820	0623	1-
020804	0937	2+	020815	0734	1-	020820	0830	2
020804	1419	1+	020815	1135	1+	020820	1552	1-
020804	1500	1	020815	1335	2	020820	1640	1+
020804	1528	1-	020815	1516	1	020820	1657	1-
020805	2122	1+	020815	1956	2	020820	1704	1
020806	0140	1+	020815	2335	2+	020820	1739	1+
020806	0524	1	020816	0609	3	020820	1826	1+
020806	1133	1+	020816	1213	3	020821	0143	2
020806	1216	1-	020816	1221	3	020821	0533	2
020806	1234	1	020816	1347	1	020821	1301	1
020806	1301	2	020816	1517	1	020821	1352	1

Sudden Ionospheric Disturbances - Continued

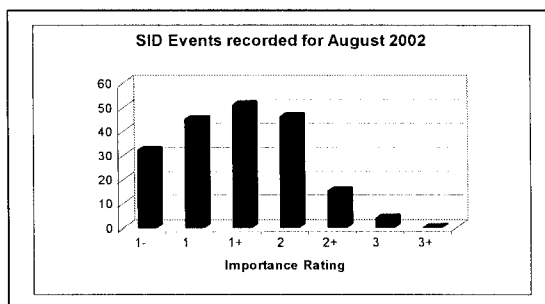
Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
020821	1443	1+	020824	1126	1+	020829	0252	1
020821	1612	1	020824	1248	2	020829	0508	1
020821	1725	1	020824	1259	2	020829	1250	1+
020821	1908	1+	020824	1515	2	020829	1427	1-
020822	0154	1+	020824	1742	1	020829	1525	1+
020822	0735	1-	020824	1808	1	020829	1533	1+
020822	0805	1	020824	1842	2	020829	1929	1+
020822	1321	1	020824	2107	1	020829	1937	1+
020822	1421	1+	020825	1852	2	020830	0240	1-
020822	1624	2	020825	2347	1+	020830	0430	1-
020822	1700	1	020826	0944	1	020830	0457	2
020822	1747	2+	020826	1626	2	020830	0741	1
020822	1956	1+	020827	0519	1-	020830	1053	1
020823	0420	1+	020827	1232	1+	020830	1252	1
020823	0533	1-	020828	1105	1+	020830	1315	1-
020823	0548	1-	020828	1448	1	020830	1330	2
020823	0855	3	020828	1513	1+	020830	1341	2
020823	0950	1+	020828	1554	1+	020830	1441	1
020823	1201	2	020828	1651	1+	020831	1333	1-
020823	1313	2	020828	1701	2+	020831	1422	1
020823	1430	1+	020828	1750	1-	020831	1528	1-
020823	2014	2+	020828	1815	1-	020831	1619	2
020824	0102	2	020828	1855	1+	020831	1929	1
020824	0527	1-	020828	2145	2+	020831	1957	1+
020824	0547	2	020824	1126	1+			

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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The events listed above meet at least one of the following criteria

- 1) Event Reported by two or more observers within ± 5 minutes
- 2) Event matched to GOES-8 XRA event to within ± 15 minutes and event time < 1000 UT
- 3) Reported by observer with a quality rating > 8 (scale 1 -10)

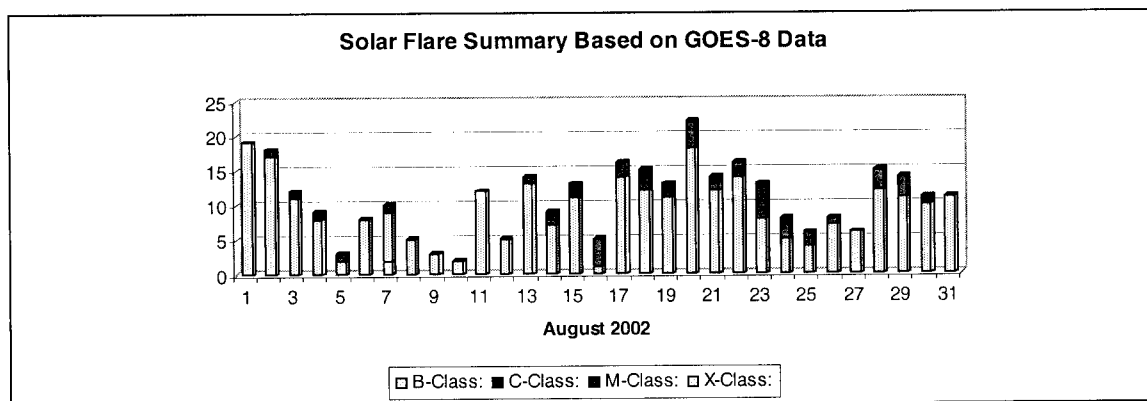
Observer	Code	Station(s) monitored
A Clerkin	A29	NAA
J Winkler	A50	NAA
D Toldo	A52	HWU NAA NWC
J Ellerbe	A63	ICV
W Moos	A83	NAA
W Moos	A84	FTA,ICV,DHJ
M Hill	A87	NAA
G DiFillipo	A93	HWU
T Poulos	A95	NAA
J Wallace	A97	NAA
M King	A99	HWU
P Campbell	A100	NLK
S Bressan	A101	HWU
F Steyn	A102	NAA NWC
D Welch	A104	NAA
E Smith	A105	DHO



Solar Events

August was another very busy month. In fact once again it was the busiest month yet. There were a record 335 X-Ray events reported by the GOES-8 Spacecraft. Of these 4 were X-Class, 43 were M-Class and all but one of the rest were C-Class. This is very impressive. Not only were there a lot of events, they were quite energetic for the most part. This fact is borne out in our observations. We recorded a record 193 correlated SID events this month. The graph scales really had to be bumped up this month to show all these high numbers. The most activity occurred in the second half of the month, especially centered about the 20th.

You may note a difference in the reporting criteria just below the data table. This is due to a major change in the method of analysis I now use. I have written a program that does all the analysis automatically. It uses slightly different, although comparable event detection criteria. It is based for the most part on observer-observer correlations which are made to ± 5 minutes. The reported peak time and importance rating are an average of all correlated entries for a given event. After this I use the GOES-8 X-RAY data set and try to match events that were not correlated with another observer but do match an X-Ray event to within 15 minutes. I only use events found under this criteria if the time of the event is < 1000 UT. This effectively allows me to accept events reported by observers that see those early hours but are not correlated with others because there are not as many observers overseas as there are here in the United States. Lastly, I maintain quality statistics for each observer that accumulate over time and reflect the number of events reported that go uncorrelated with another observer. The quality rating is a number from 1 – 10 where 10 indicates all events reported were matched to another observer and 1 means that none of them were. As a final event acceptance criteria, if an observer has a quality rating > 8 then all reported events from that observer are included. If you tend to report every little blip on your chart resulting in a lot of uncorrelated events, your quality rating will be low. If you only report very definite events, it will be high. I have been using this method for two months and have verified the results with a parallel manual analysis for two previous months. These comparisons allowed me to refine my correlation criteria which resulted in a very good match to events recored in the manual vs. the automated mode. The analysis task is now much more efficient and accurate. It event generates the AAVSO database file that is posted to the web site and the file to be sent to the NGDC data center.



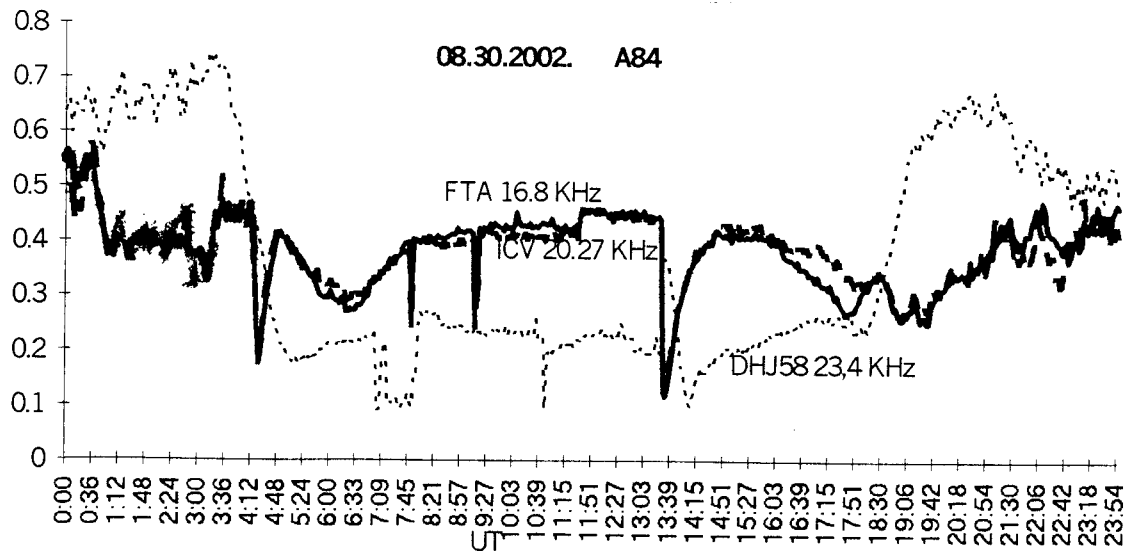
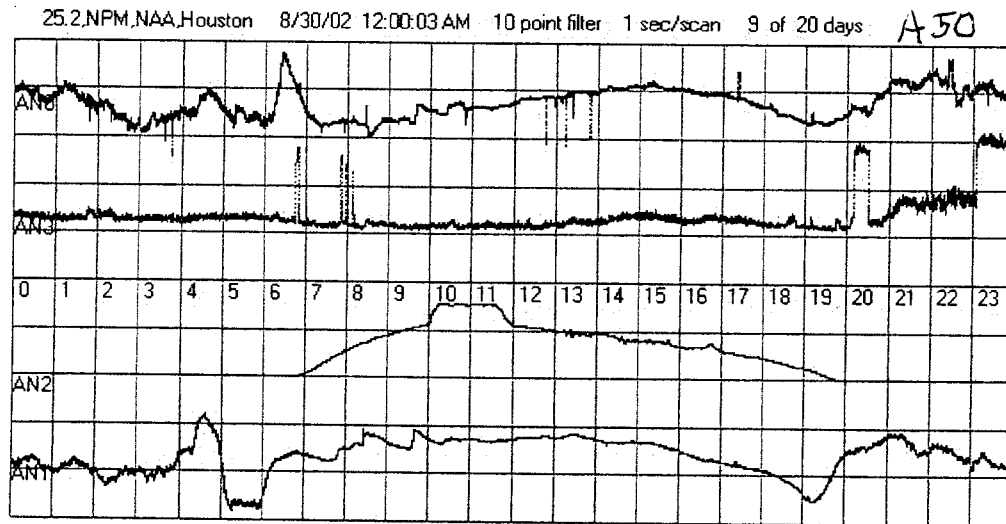
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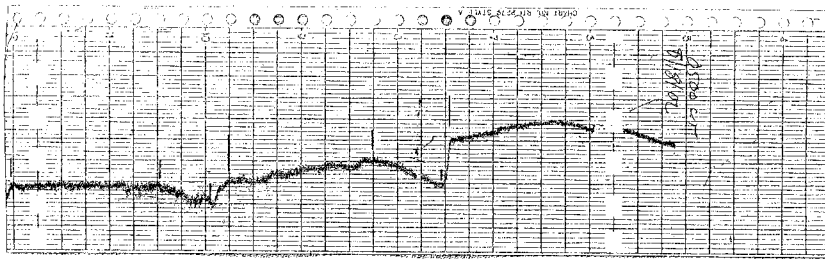
Casper H. Hossfield, SID Sup. Editor
PO Box 23
New Milford, NY 10959, USA

SUDDEN IONOSPHERIC DISTURBANCES
RECORDED DURING August, 2002

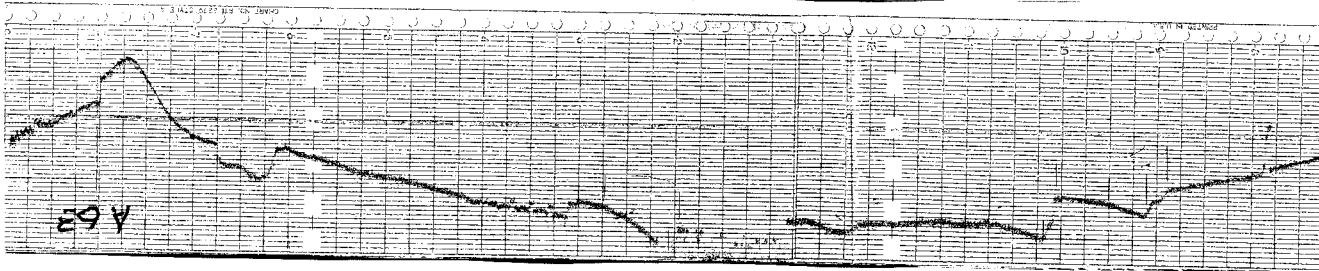
capaavso@aol.com
Fax 973 853 9054

August was a month of high solar activity that produced numerous SIDs. Below are charts that show some of these. They are from Dr. Walter Moos, A84, in Switzerland, Jamie Ellerbe, A63, in Spain, Jerry Winkler, A50, in Houston, Texas, USA and Cap Hossfield, A05, in Vernon, New Jersey, USA



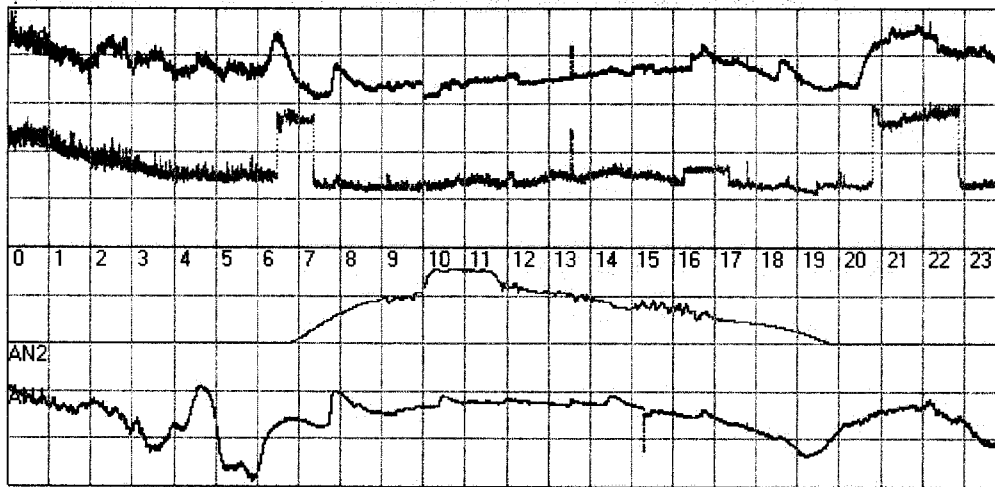


A63

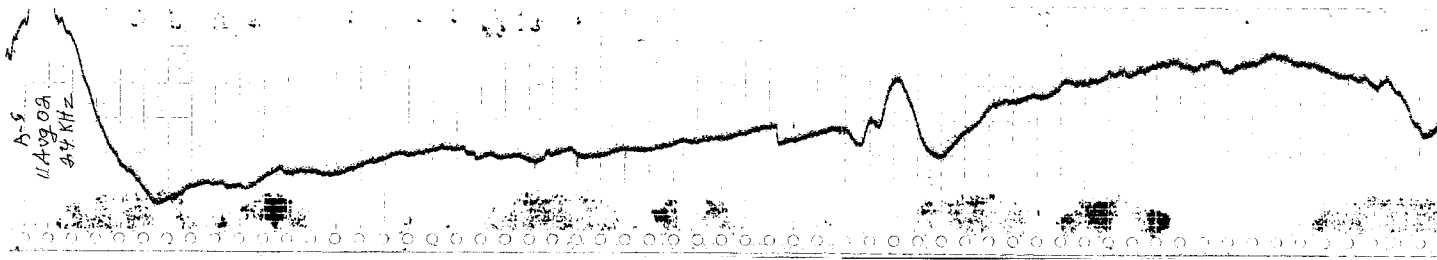


A63

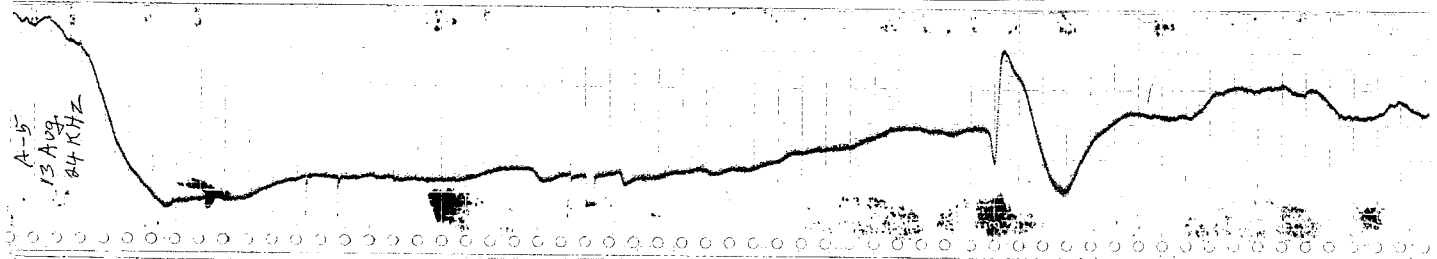
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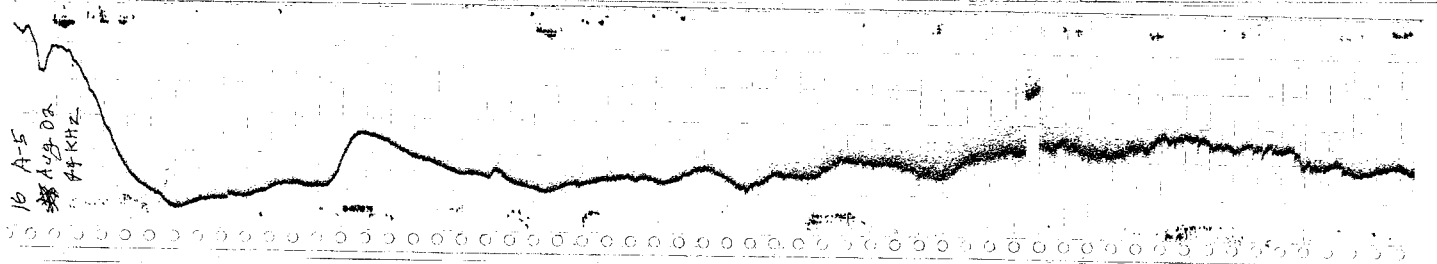
AN2



A-5
11 Avg. 0.8
84 KHz



A-5
13 Avg. 0.8
84 KHz



16 A-5
14 Avg. 0.8
84 KHz