Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR DIVISION

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Daily Mean Sunspot Numbers, R_a for October 1999

(computational analysis performed by Joseph Lawrence)

	simple average			k-corrected	
Day	R_a avg	Std. Dev.		R_a k	Std. Dev.
1	59	2.5		54	2.4
2	72	3.2		62	2.6
3	80	4.8		71	3.2
4	103	4.6		84	3.0
5	151	5.2		127	3.0
6	160	6.1		138	4.3
7	157	6.6		140	4.9
8	140	6.3		122	4.7
9	151	8.5		129	4.5
10	155	7.3		128	4.1
11	160	7.0		135	4.2
12	167	6.9		145	5.1
13	178	10.4		146	7.3
14	157	7.9		132	6.1
15	133	6.2		117	5.1
16	154	8.2		135	5.9
17	147	7.3		124	5.2
18	137	6.9		116	6.1
19	128	7.1		104	4.4
20	135	8.4		114	4.4
21	123	5.8		104	3.7
22	117	8.6		100	4.6
23	113	6.8		94	3.8
24	124	6.3		103	3.6
25	150	6.1		133	4.6
26	175	7.4		149	5.7
27	161	7.3		146	5.9
28	163	8.3		141	6.3
29	182	8.8		156	5.9
30	192	10.2		173	6.8
31	169	8.2		153	5.0

Monthly Mean R_a avg = 141.7
Monthly Mean R_a k = 121.8

Observer	Code	Country	Days Obs.
Abbott, P	AAP	Canada	6
Anderson, E	ANDE	USA, NY	8
Barnes, H	BARH	New Zealand	15
Barton, W	BARW	England	4
Battaiola, R	BATR	Italy	9
Berg, R	BEB	USA, IN	13
Blackwell, J	BLAJ	USA, NH	14
Boschat, M	BMF	Canada	21
Bose, B	BOSB	India	23
Branchett, B	BRAB	USA, FL	23
Branchett, D	BRAD	USA, FL	19
Branch, R	BRAR	USA, CA	28
Carlson, J	CARJ	USA, MA	22
Cudnik, B	CKB	USA, TX	27
Clemens, C	CLEC	USA, PA	14
Corp, L	CLZ	France	7
Collins, B	COLB	USA, OH	11
Compton, T	COMT	USA, MI	16
Cragg, T	CR	Australia	26
Dempsey, F	DEMF	Canada	2
Dragesco, J	DRAJ	France	14
Dubois, F	DUBF	Belgium	19
Reed, E	ELR	USA, TX	29
Feehrer, C	FEEC	USA, MA	26
Ruiz, J	FERJ	Spain	23
Fujimori, K	FUJK	Japan	20
Gallo, M	GALM	Argentina	5
Giovanoni, R	GIOR	USA, MD	25
Gottschalk, S	GOTS	USA, IA	22
Halls, B	HALB	England	11
Hay, K	HAYK	Canada	11
Hrutkay, T	HRUT	USA, PA	18
Ibanez, J	IBAJ	Spain	17
Iskum, J	ISKJ	Hungary	2
Jenkins, J	JENJ	USA, IL	9
Jenner, S	JENS	England	5
Jennings, V	JENV	USA, VA	11
Kaplan, J	KAPJ	USA, MN	21
Knight, J	KNJS	South Africa	17
Kosa-Kiss, A	KOS	Romania	17
Lerman, M	LERM	Canada	15
Leventhal, M	LEVM	Australia	14
Lohvinenko, T	LWT	Canada	7
Malde, K	MALK	Norway	17
Jarboles, J	MARJ	Spain	29
Mochizuki, E	MCE	Japan	22
McHenry, L	MCHL	USA, PA	5
Miller, J	MILJ	USA, MD	6
Moeller, M	MMI	Germany	21
Mudry, G	MUDG	Canada	3
Nilsson, B	NILB	Denmark	19
Nylander, H	NYLH	Finland	16
Prestage, N	OBSO	Australia	12
Randall, T	RANT	USA,NY	1
Richardson, E	RICE	England	20
Ritchie, A	RITA	USA, MA	26
Ramsey, J	RMAJ	USA, AR	4
Ramsey, S	RMAS	USA, AR	1
Schott, G	SCGL	Germany	23
Simpson, C	SIMC	USA, OH	16
Stemmler, G	STEM	Germany	23
Stoikidis, N	STQ	Greece	21
Suzuki, M	SUZM	Japan	22
Takuma, H	TAKH	Japan	23
Teske, D	TESD	USA, MS	25
Thompson, R	THR	Canada	15
Varsos, T	VART	Greece	14
Vazquez, C	VAZC	Argentina	9
Wilson, W	WILW	USA, TN	24
Witkowski, L	WITL	USA, FL	18
Watts, K	WKW	USA, CA	8
Yesilyaprak, H	YESH	Turkey	25

AAVSO - SOLAR DIVISION SUNSPOT REPORT

OBSERVER ID | MONTH/YEAR

OBSERVER NAME AND ADDRESS

☐ REFRACTOR ☐ REFLECTOR ☐ CATADIOPTRIC

APERTURE ( ) in / mm FL ( ) in / mm

☐ OBSERVATIONS DIRECT
☐ HERSCHEL WEDGE ☐ FILTER EYEPIECE FL ( ) in / mm

☐ OBSERVATIONS PROJECTION
DIAMETER OF PROJECTED IMAGE ( ) in / mm

☐ APERTURE STOP USED DIAMETER ( ) in / mm

Day	S	T	g	s	R	ng	sg	ns	ss	Remarks
1										
2										
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INCLUDE IN ALL REPORTS
S = seeing (P, F, G, E) T = Universal Time (24 hr)
g = number of groups s = number of spots
R = 10g + s (whole disk)

OPTIONAL (hemisphere locations)
ng = # northern groups sg = # southern groups
ns = # northern spots ss = # southern spots

Sudden Ionospheric Disturbance Report

Casper Hossfield, SID Coordinator
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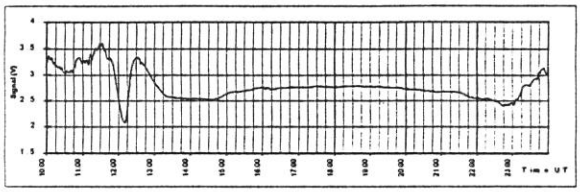

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Sudden Ionospheric Disturbances (SID) Recorded During October 1999

(correlation analysis performed by Joseph Lawrence, SID Analyst)

Date	Max	Imp	Date	Max	Imp	Date	Max	Imp	Date	Max	Imp
991001	0720	2	991015	1500	2	991021	1450	1+	991027	0910	1
991001	0946	1-	991015	1600	1	991021	1910	2	991027	1332	2
991001	1455	1	991016	1947	2	991021	1954	2	991027	1533	2+
991002	0802	1+	991017	0737	1	991022	0918	1+	991028	1445	1-
991002	1435	2	991017	0804	1-	991022	1930	1	991029	1110	1
991002	1645	1-	991017	1006	1-	991023	1255	1	991029	1708	2
991002	1702	1-	991017	1835	2+	991023	1440	2+	991029	2015	1+
991002	1820	2+	991017	0905	2	991023	1730	2+	991031	0704	2
991003	1540	2+	991019	0323	1+	991023	1918	2	991031	1716	1-
991003	1705	1	991019	0920	1-	991023	2157	1+	-	-	-
991005	0545	2	991019	1040	1-	991025	0634	2	-	-	-
991006	1545	1+	991019	1408	1	991025	0955	1	-	-	-
991007	1344	2	991019	1940	2+	991025	1450	2	-	-	-
991008	1020	2	991019	2025	1+	991025	1940	2+	-	-	-
991008	1255	2	991019	2205	2+	991026	0450	1-	-	-	-
991010	1340	2	991020	0610	2+	991026	0737	2+	-	-	-
991013	0703	1-	991020	0930	1-	991026	0915	1+	-	-	-
991014	0753	2	991020	1405	1-	991026	1155	1-	-	-	-
991014	0900	2	991021	1010	1	991026	1846	2+	-	-	-
991014	1750	2+	991021	1235	1	991026	2120	2+	-	-	-
991015	1229	1+	991021	1344	2	991027	0430	1	-	-	-

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

1) reported in at least two observers' reports.
2) visually analyzed with definiteness rating = 5 on submitted charts
3) reported by overseas observers with high definiteness rating

Observer	Code	Station(s) Monitored
Hossfield, C	A-05	NAA
Kielkopf, J	A-26	NAA
Winkler, J	A-50	NAA, NPM
Overbeek, D	A-52	NAA, NPM, NSW
Toldo, D	A-52	NAA, NPM, NSW
Stokes, A	A-62	NAA
Ellerbe, J	A-63	ICV
Witkowski, L	A-72	NAA
King, P	A-80	FTA
Landry, A	A-81	NAA
Panzer, A	A-83	NAA
Moos, W	A-84	FTA, GBZ, ICV
Hill, M	A-87	NAA
Mandaville, J	A-90	NAA, NPM

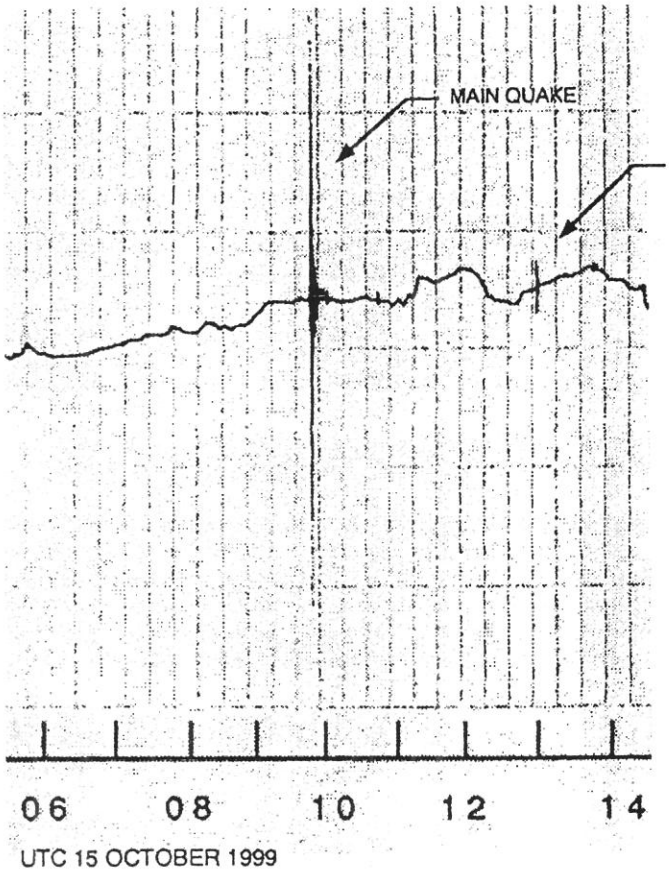
Importance	Duration (min)
1-	< 19
1	19 - 25
1+	26 - 32
2	33 - 45
2+	46 - 85
3	86 - 125
3+	> 125

Editor's Note: The sunspot observing form on the previous page supercedes all previous versions. Sunspot observers who must submit monthly reports by postal mail should begin using the revised form that includes a block specifically for the observer's code. All daily observations should include the seeing estimate (Poor, Fair, Good, Excellent), time (UT), group number, spot number, and computed Wolf number. Other observation remarks may be entered at the observer's discretion.

All observers who have e-mail access are encouraged to submit monthly reports electronically. The Solar Division can provide a simple sunspot data entry program that maintains your daily observations and formats the results in a file that is immediately ready for processing when sent via e-mail at the end of the month. About one-third of the monthly e-mail submissions conform to this file standard. The remaining reports require manual data entry that constitutes the most time-consuming task in the preparation of the *Solar Bulletin*.

Sudden Ionospheric Disturbances Recorded During October

Prepared by
Casper H. Hossfield

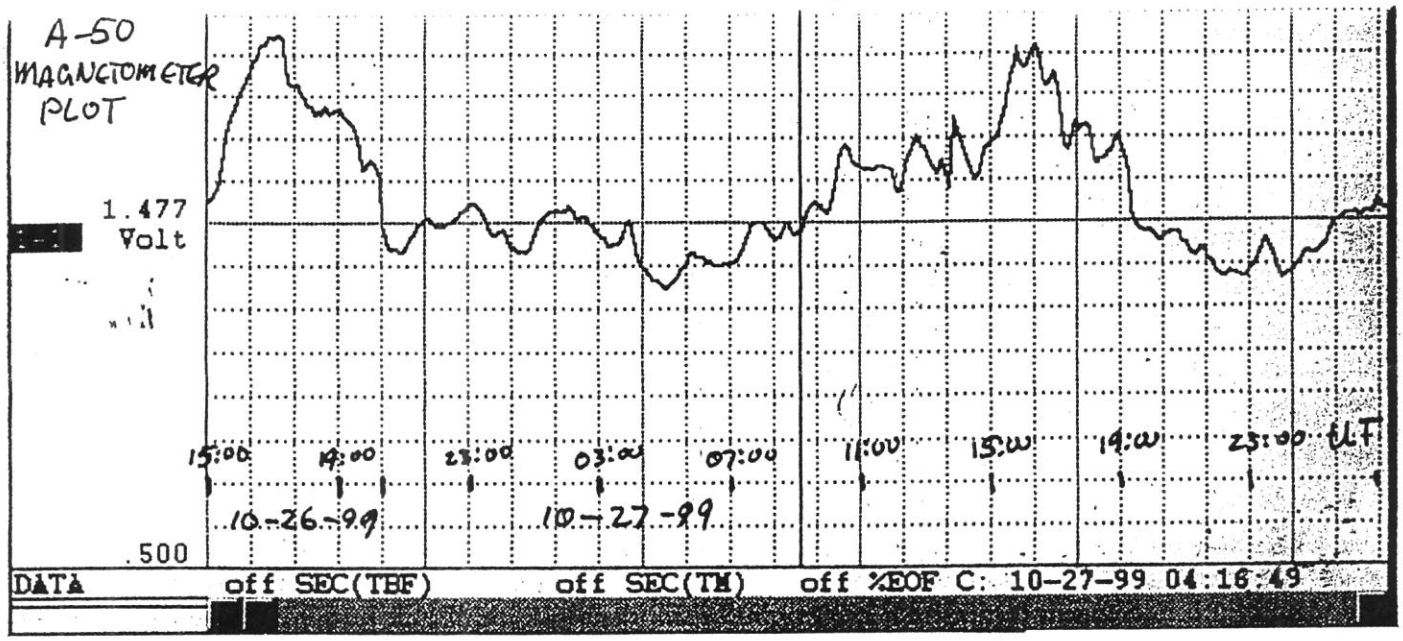


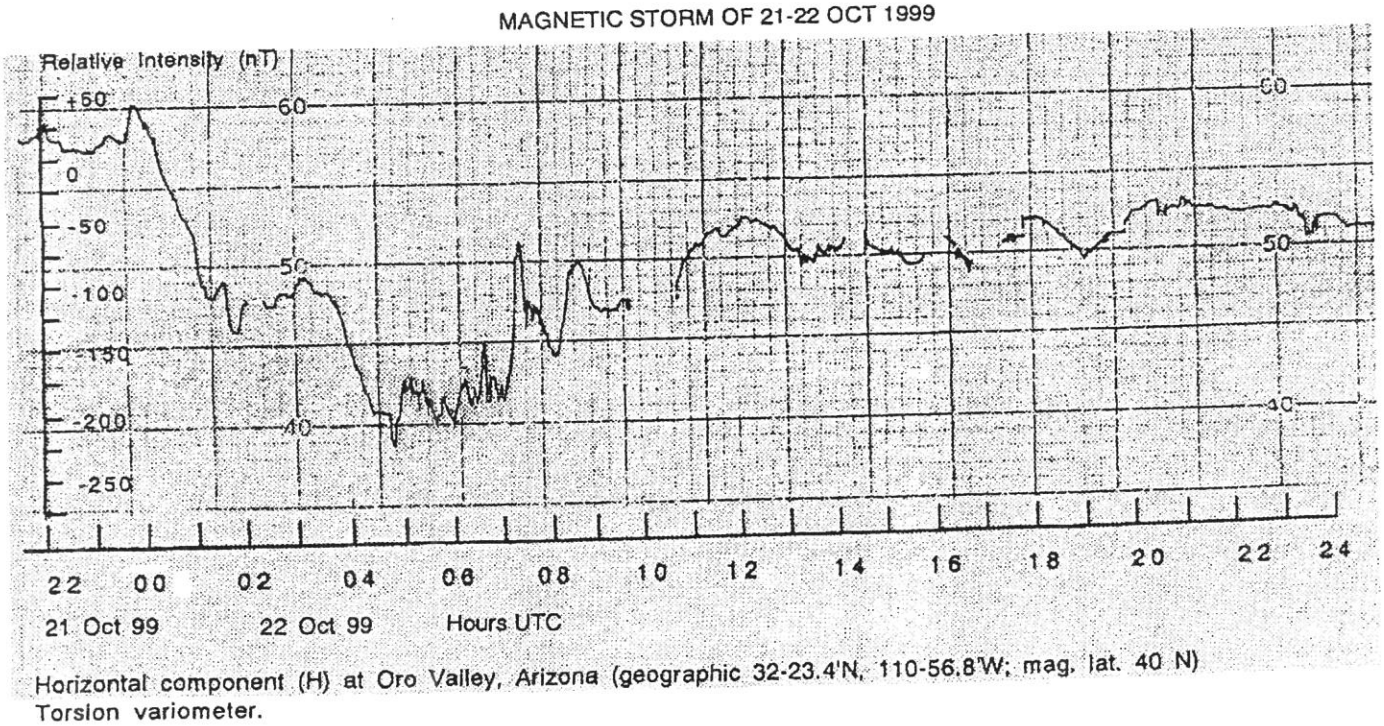
A – 90, Tucson, Arizona

Portion of magnetometer trace at Oro Valley (near Tucson), Arizona showing signature (left arrow, above) of Southern California earthquake which occurred at 02:46:44 PDT, magnitude 7.0. A second tremor of magnitude 5.3 occurred about 5 minutes later at 02:51:52. A major aftershock, magnitude 5.8, was also detected at Oro Valley (right arrow, above). Its time at the epicenter was 05:57:21 PDT. The 300-mile P-wave transit time to Tucson was on the order of 1 minute. Original seismic mark of the main event on paper measured 6.5 cm peak-to-peak. Detection is attributed to purely mechanical effects on the suspended magnet and photocell system of the torsion magnetometer. Seismic information from USGS-Caltech-UCSD Seismic Net web page.

The recording and commentary above are from Jim Mandaville, A- 90, in Tucson Arizona. Jim was surprised to see the big Southern California earthquake recorded in his magnetometer trace. Perhaps others have recorded earthquakes and not realized what they were. The torsion pendulum of the magnetometer is probably sensitive enough to earthquakes to pick up a little magnitude 3 or 4 quake nearby or even a nearby quarry blast. To be aware of such tiny earthquakes anywhere in the USA you can subscribe the US Geological Survey " Bigquake" e-mail service that will send you an e-mail notification of the time of first impulse of little ones outside of the West Coast seismically active region. This free service is primarily a source of first impulse times and locations of worldwide earthquakes of magnitude 5.5 or greater with details when there is damage but they also list little 3s and 4s and even 2s in USA locations that are not normally seismically active. To subscribe e-mail <<majordomo@ghtmail.cr.usgs.gov>> and ask to be put on the mailing list.

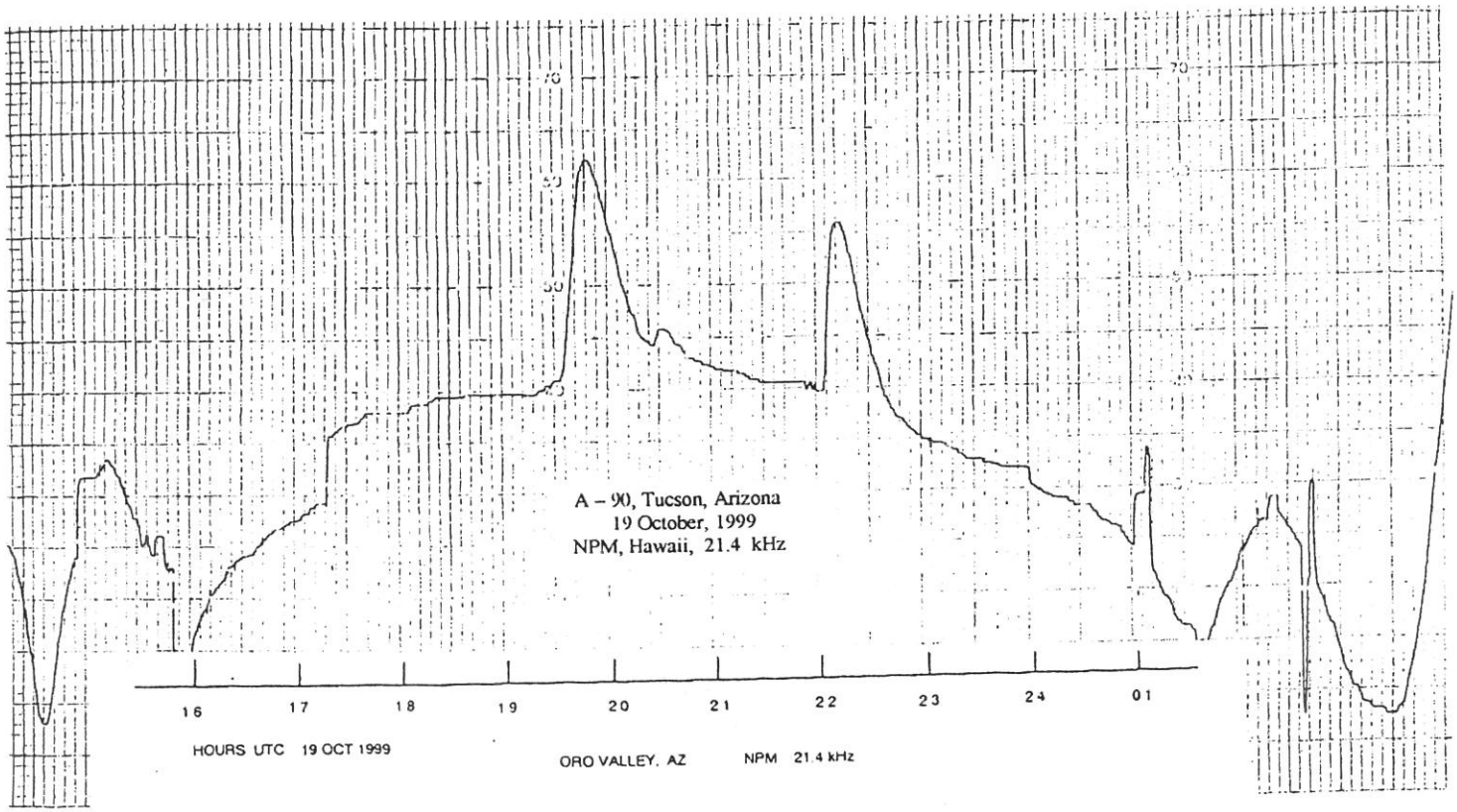
Two recordings of magnetic storms are shown below. Jim Mandaville made the 21-22 recording and Jerry Winkler, A-50 made the 26-27 recording. Jerry uses a Hall – Effect magnetometer that he has been experimenting with for some time. At last he has it working nicely and is recording on a computer and plots a very nice graph in Excel.

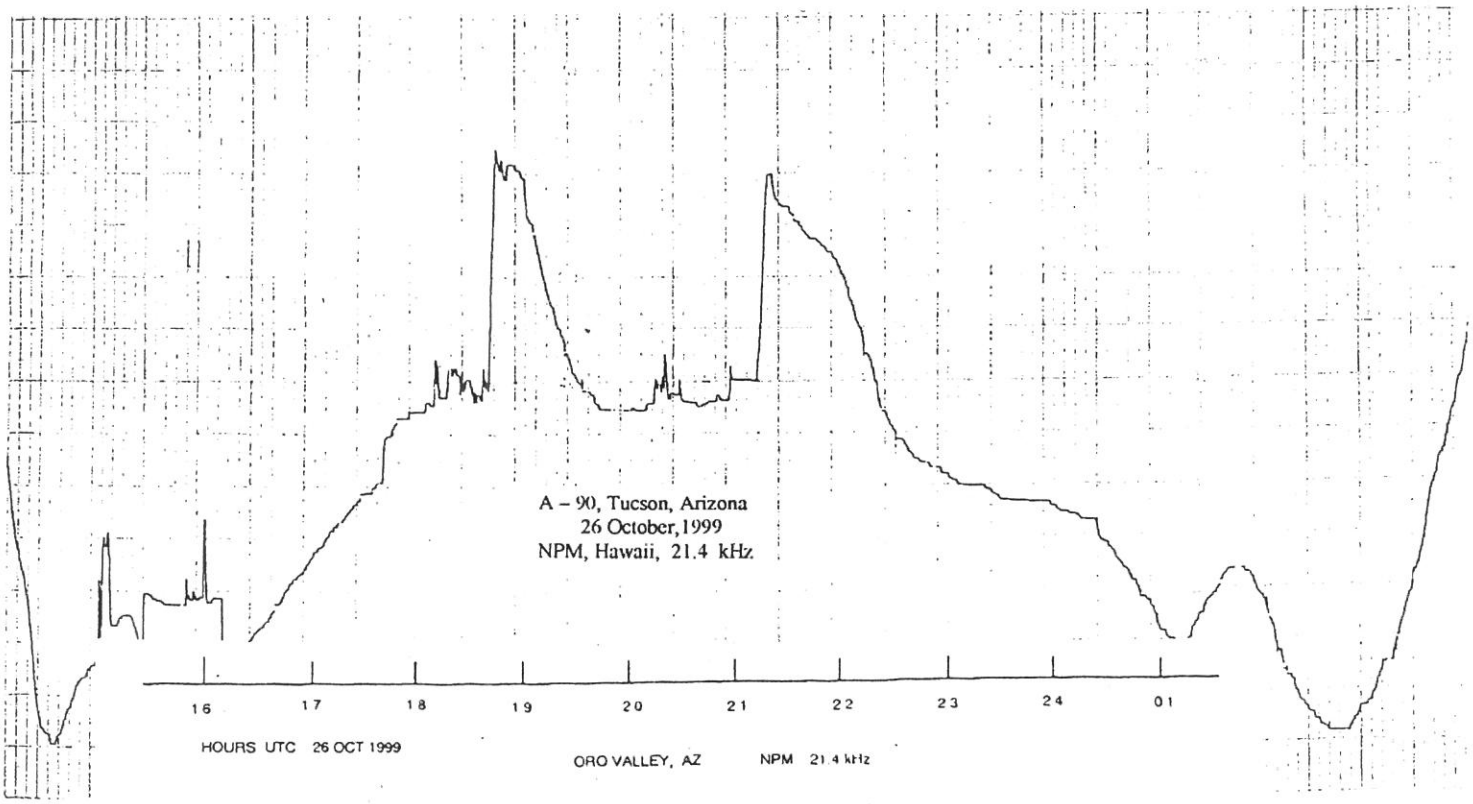




Horizontal component (H) at Oro Valley, Arizona (geographic 32-23.4'N, 110-56.8'W; mag. lat. 40 N)
Torsion variometer.

October was a rather quiet month until toward the end when solar flare activity picked up. Below are two recording of nice SESs, two on the 19th and two more on the 26th. Both were made by Jim Mandaville, A– 90, using a millivolt potentiometer recorder.





Here are more recordings of the end of he month activity by Jerry Winkler, A- 50 and Cap Hossfield, A- 5. The A-5 charts were made with an Art Stokes Gyrator-2 receiver that has been modified to search for gamma ray bursts. The distance from A-5 to the NAA transmitter in Maine is such that the SIDs normally start inverted but the big ones turn back up again even head down once more as can be seen on the 27th.