

# Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR DIVISION

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March 2000

## Daily Mean Sunspot Numbers for March 2000

Day	Mn. Raw Ra	S.D.	Mn. RaK	S.D.
1	177	9.4	145	7.5
2	162	10.5	134	7.0
3	148	8.8	119	5.7
4	141	7.2	117	4.8
5	158	7.9	133	5.5
6	159	9.4	146	8.0
7	174	12.2	157	10.0
8	187	10.7	160	6.1
9	180	12.8	146	8.0
10	177	10.7	145	9.3
11	167	6.8	141	6.5
12	159	6.1	132	5.4
13	144	13.0	117	7.9
14	135	9.8	109	6.6
15	134	9.6	112	7.3
16	129	7.8	112	5.3
17	118	7.6	95	5.3
18	148	8.9	129	6.0
19	177	6.8	155	4.8
20	188	14.3	160	8.2
21	187	12.9	151	6.8
22	202	14.1	178	7.5
23	233	11.7	205	9.9
24	250	9.7	215	7.7
25	230	12.5	184	9.6
26	219	12.4	183	9.4
27	201	12.0	171	9.6
28	191	9.4	159	9.1
29	193	13.6	151	10.4
30	198	9.4	173	5.3
31	211	10.0	174	8.5

Means: 176.7

148.6

No. of Observations: 820

### Note:

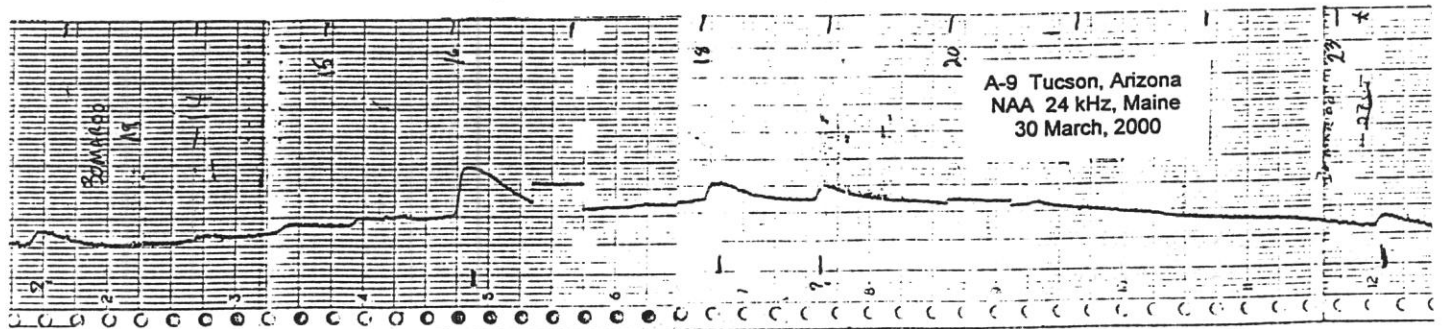
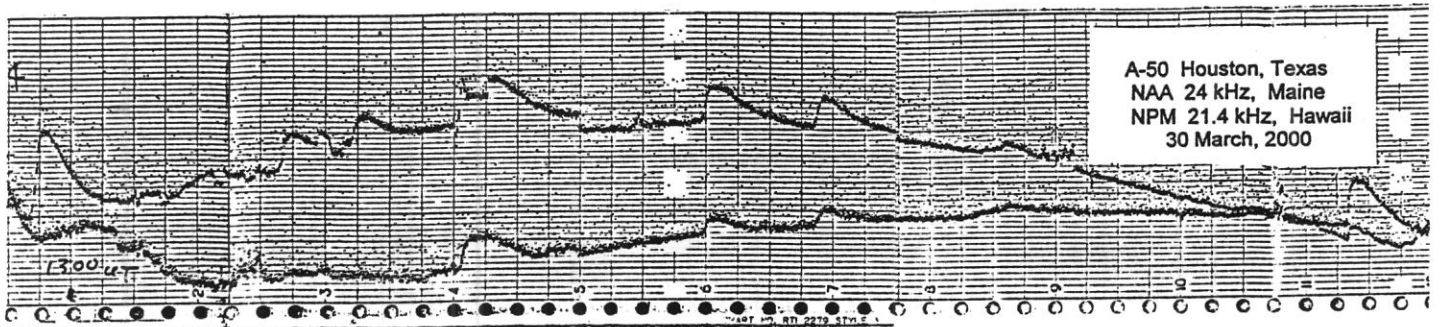
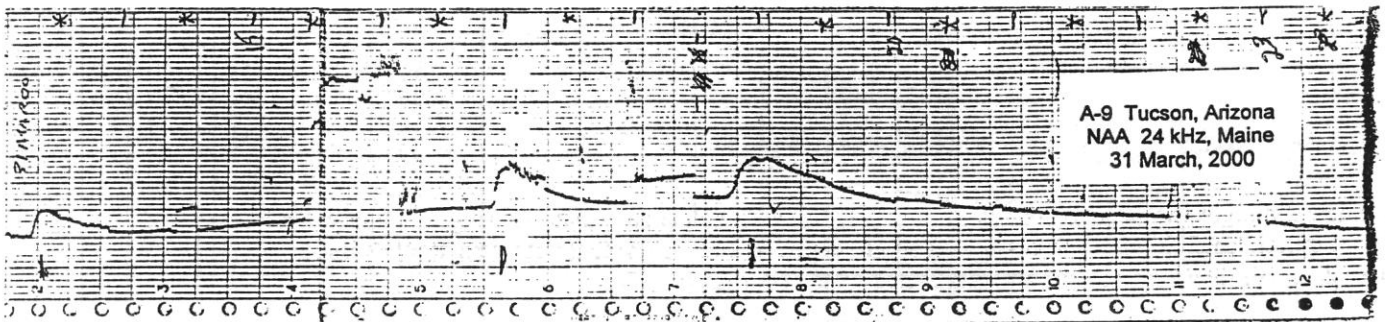
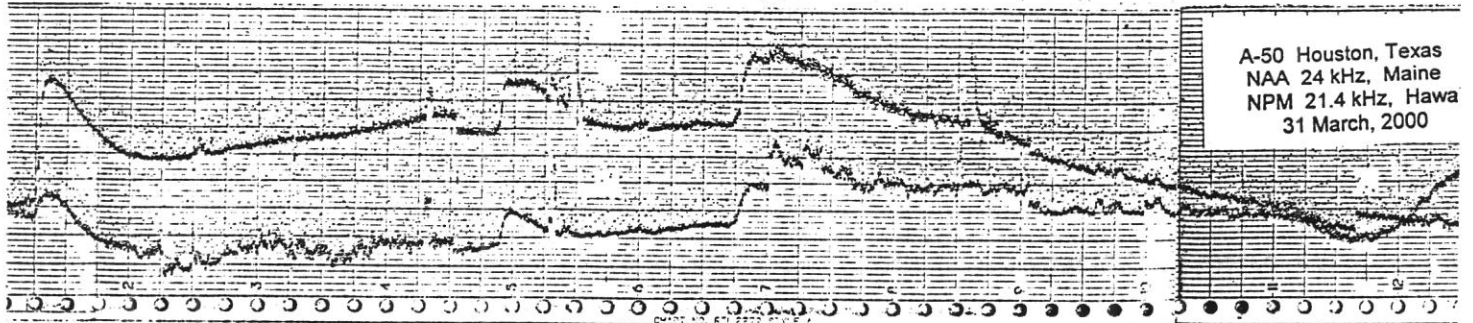
The estimates of raw and k-corrected Ra values presented in the initial March 2000 issue of this Bulletin (v.56, 3) were based on a reduced set of observer reports.

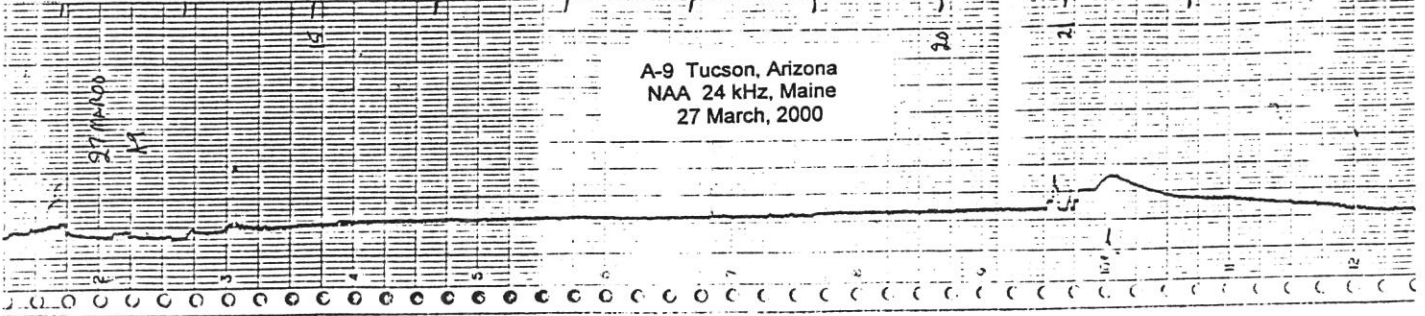
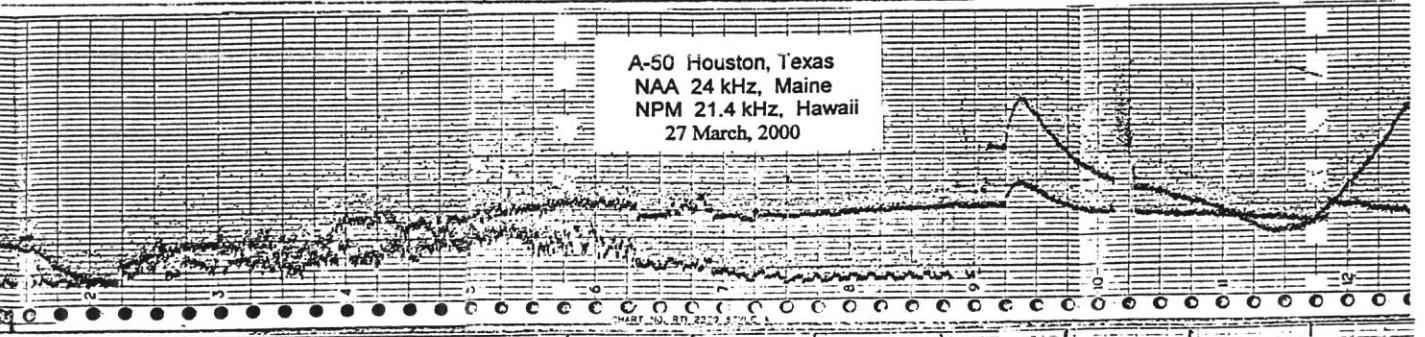
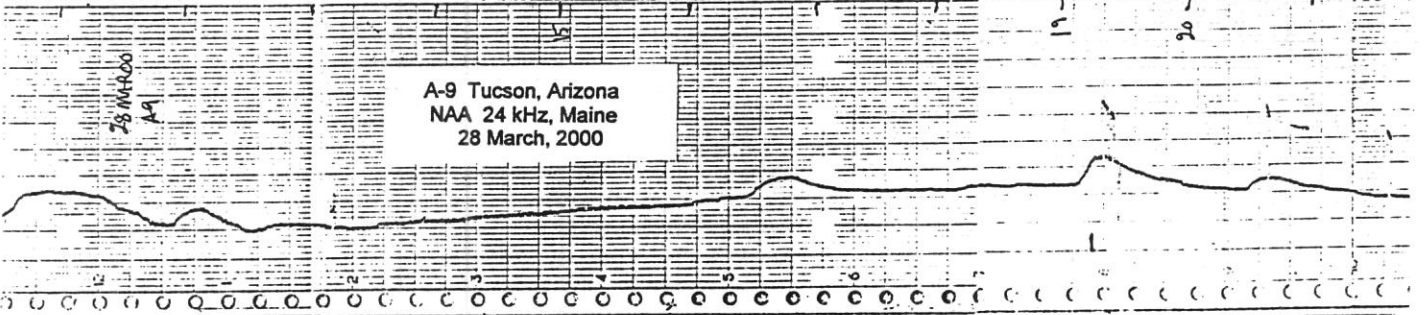
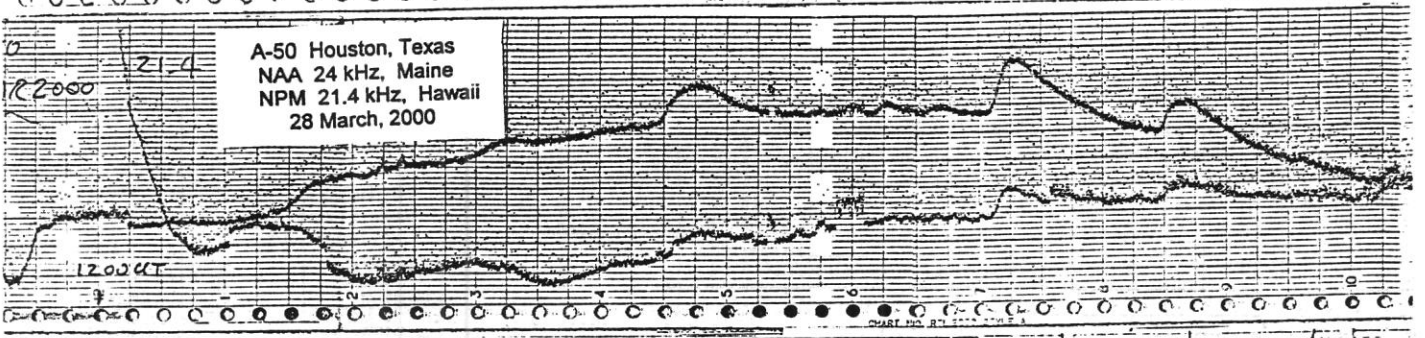
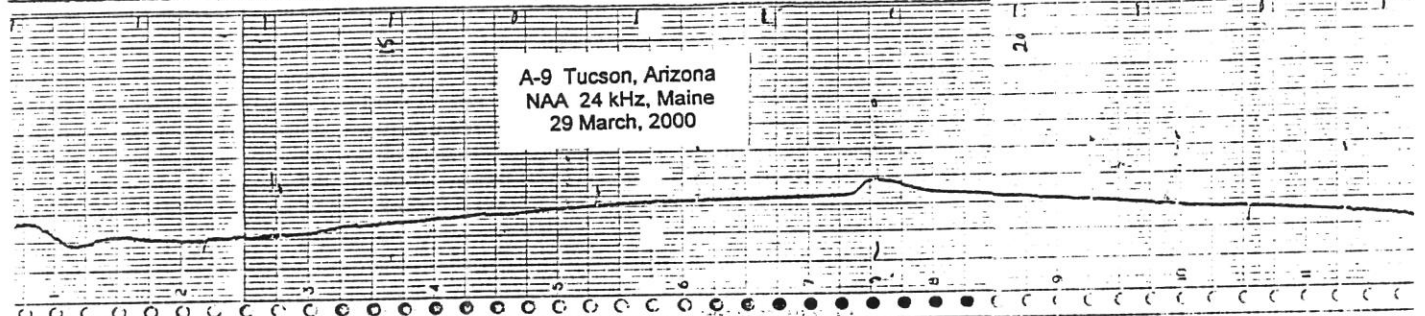
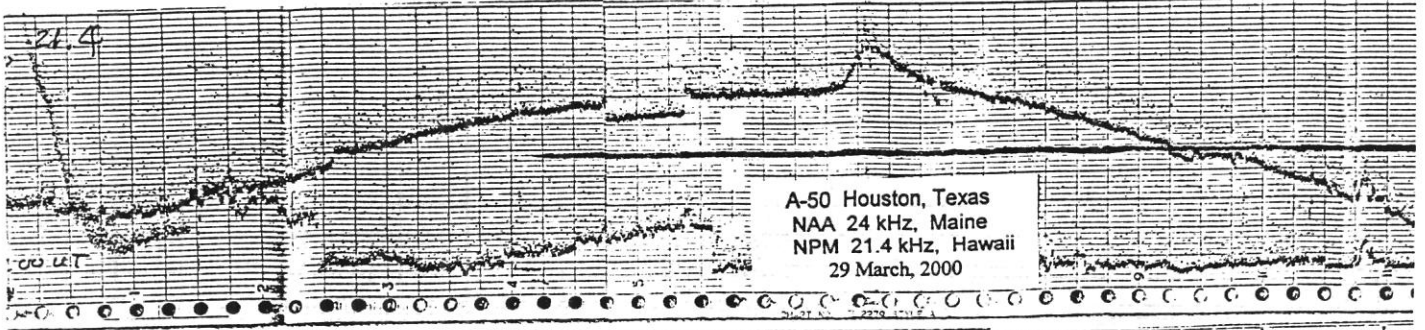
This revision contains updated estimates based on an essentially complete set and replaces the initial version

# Sudden Ionosphere Disturbances Recorded during March

Prepared by  
Casper H. Hossfield

Below are recordings of solar flares that occurred during the last days of March. These sudden ionospheric disturbances, SID, were recorded as sudden enhancements of the signal, SES, from very low frequency, VLF, Navy radio station, NAA in Cutler, Maine, USA, operating on 24 kHz and NPM in Hawaii on 21.4 kHz. They were made by Werner Scharlach, A-9, in Tucson, Arizona and Jerry Winkler, A-52, in Houston, Texas.

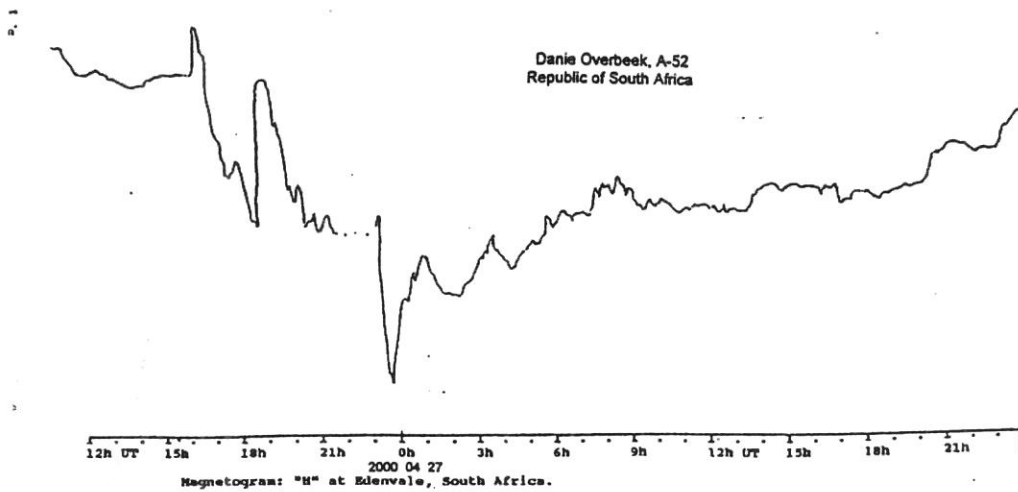
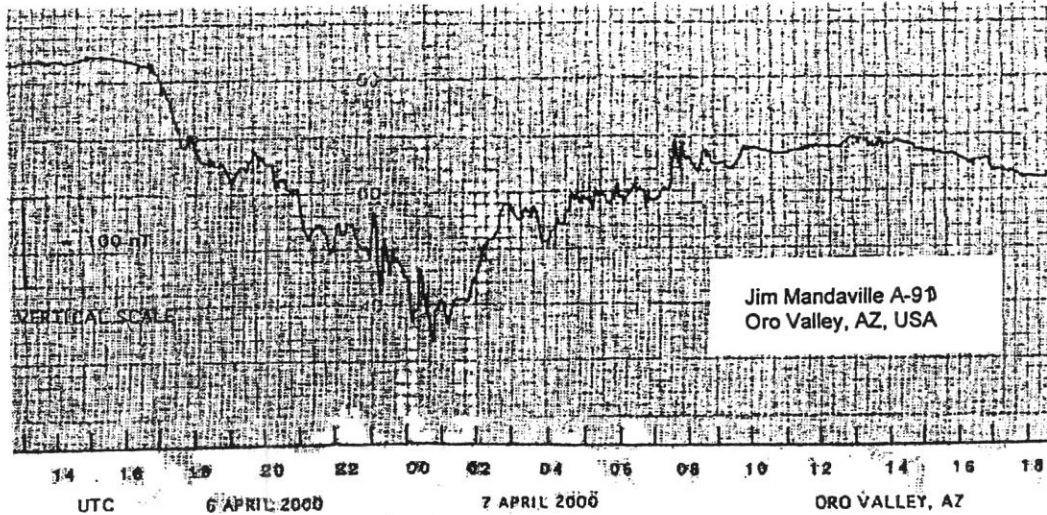




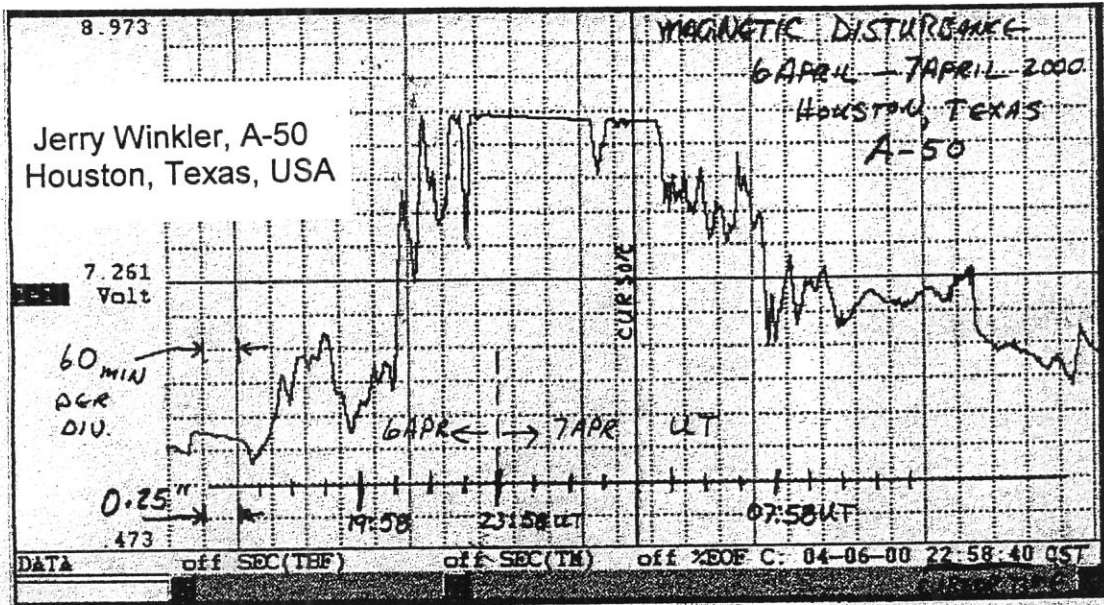
# Sudden Ionosphere Disturbances Recorded during April

Prepared by  
Casper H. Hossfield

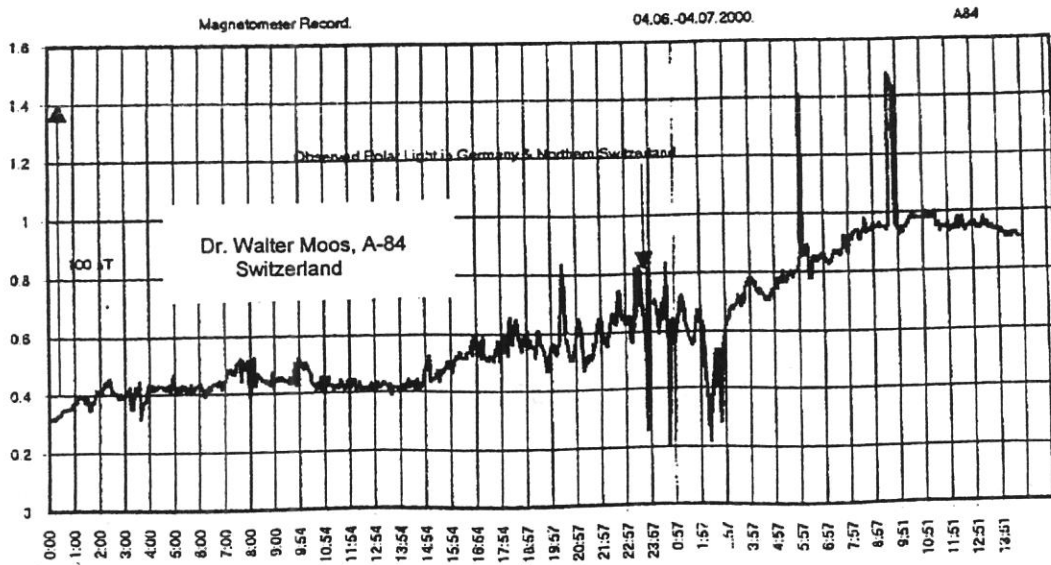
A strong magnetic storm occurred on 6 – 7 April that produced beautiful auroras in the northern part of Europe and the United States. This was the strongest magnetic storm and the best aurora produced so far by sunspot cycle 23. A recording of the magnetic storm is reproduced below that was made by Jim Mandaville. Beneath it is the same storm as it was recorded by the US Geological Survey magnetic observatory in nearby Tucson, AZ. Notice how similar the traces are. The USGS station made their recording with a professional fluxgate magnetometer. Jim Mandaville made his recording with his homemade McWilliams magnetometer. At the bottom of the page is a recording of the storm made in South Africa by Danie Overbeek. Danie also uses a McWilliams torsion balanced magnetometer with its simple photocell displacement sensor. More recording of the storm are shown on the next page.



Below are magnetograms of the storm made by Jerry Winkler and Dr. Walter Moos. Jerry also uses the traditional McWilliams design but he senses displacement with Hall Effect devices instead of the photocell bridge. Walter uses a magnetometer of his own design. It is not a torsion balanced instrument. Instead the magnetic vane is balanced with a magnet.



CORONA2.DAT Diagramm 1



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## Daily Mean Sunspot Numbers, Ra, for March 2000

[computational analysis performed by Carl Feehrer]

Simple Average			k-corrected		Observer*	Code	Days Obs.
Day	Ra	Std.Dev.	Rak	Std.Dev.			
1	170	12.7	140	10.8	P. Abbot	AAP	15
2	160	14.6	29	12.6	A. Attanasio	ATON	14
3	142	10.2	109	6.7	H. Barnes	BARH	16
4	146	11.9	117	7.5	R. Battaiola	BATR	8
5	158	11.5	140	8.3	J. Blackwell	BLAJ	8
6	163	13.4	160	9.3	M. Boschat	BMF	11
7	172	16.1	175	11.3	J. Carlson	CARJ	17
8	179	10.7	154	6.8	G. Chavez	CHAG	22
9	176	19.2	139	15.5	Corp Laurent	CLZ	9
10	178	17.1	144	14.1	F. Dempsey	DEMF	4
11	171	9.6	133	7.0	C. Feehrer	FEEC	23
12	167	7.8	143	6.5	K. Fujimori	FUJK	21
13	129	12.0	109	9.6	K. Hay	HAYK	6
14	129	8.0	113	4.4	J. Kaplan	KAPJ	21
15	136	14.0	119	12.8	J&S Knight	KNJS	4
16	130	12.9	108	9.8	M. Lerman	LERM	14
17	120	8.3	103	5.9	M. Leventhal	LEVM	16
18	140	9.3	127	9.7	K. Malde	MALK	18
19	183	10.6	159	6.0	E. Mariani	MARE	6
20	188	20.6	165	12.6	J. Maranon	MARJ	31
21	174	15.9	143	7.8	J. Miller	MILJ	6
22	189	11.8	181	7.5	G. Mudry	MUDG	9
23	237	13.0	227	10.1	T. Randall	RANT	3
24	242	9.9	214	9.0	A. Ritchie	RITA	23
25	235	17.0	197	17.9	G. Scholl	SCHG	15
26	223	18.0	185	15.8	N. Stoikidis	STQ	24
27	198	13.6	167	14.7	R. Thompson	THR	11
28	193	13.6	157	11.7	W. Wilson	WILW	13
29	194	14.3	158	13.8	L. Witkowski	WITL	22
30	194	11.0	174	6.9	H. Yesilyaprak	YESH	23
31	222	16.0	184	14.2			
<b>Mn.</b>	<b>175.4</b>		<b>150.8</b>				

No. of Observers: 30  
No. of Observations: 433

\*See EDITOR'S NOTES for information regarding this list.

## EDITOR'S NOTES

By now, many of you have learned that Joseph Lawrence has decided to step down from his positions as Solar Division Chairperson and SID analyst because of the heavy demands placed on him by family duties and work schedule. During his tenure Joseph has made important contributions to the education of observers, to the analysis and processing of monthly data, and to the overall functioning and health of the Division. I hope that all observers will join me in thanking him for his valuable service and in wishing him well. We will miss you, Joseph, and we hope that you will maintain your interest in the Solar Division as an active observer.

Beginning this month, I will assume the duties of Division chairperson and Bulletin editor. In those roles, I hope to continue the initiatives begun earlier and, with your help, to maintain the Division's importance within AAVSO and the solar research community. In future issues of the Bulletin, I will try to keep you informed of the progress being made and suggest ways in which you can support the effort.

With this issue of the Bulletin, the initial goal of reestablishing regular monthly analyses and publication of sunspot data gathered in the prior month has been met. Casper Hossfield, our SID Coordinator, has graciously offered to continue preparation of his monthly supplement, and his latest review is included here. I regret that our resources are not yet sufficient to treat the regular monthly SID data as in the past, but I want to encourage all SID observers to continue to send their reports to AAVSO headquarters, where they will be maintained until they can be processed.

An additional comment on this issue: You will note that the number of observers included in the compilation is slightly less than half of that normally included. The reports that have been processed are those received at AAVSO headquarters by the 10th of April, and the deficit is due largely to the fact that many observers did not receive notification of the change of address for the emailing/postal mailing of their reports. This is a consequence of the transition we are making, and I can assure all observers that their data for March will be processed and that each observer will receive credit for his/her contribution. If the month's mean values deviate significantly from those presented here, a revised edition of this issue will be distributed. The transition should be completed shortly, and monthly operations should return to normal.

During the next 2 months, we hope to process and publish the sunspot data contributed during in January and February of this year. Our current intention is to process the February data first and distribute it with next month's issue of the Bulletin. The January data will then be processed and distributed with a later issue.

I want to thank all observers for continuing to perform and report their observations over the past few months and for their patience in the absence of the Solar Bulletin. Also, thank you in advance for the valuable contributions you will make in the future. I look forward to working with you. And finally, I want to express my thanks to Arthur Ritchie (RITA), an AAVSO Hq. volunteer, for his willingness to assist in the preparation of this and future issues.

Clear Skies,

Carl E. Fehrer  
AAVSO Hq.

### **Addresses for Contributions via Regular and Electronic Mail**

Sunspot and SID reports sent via regular mail should be addressed to:

Solar Coordinator  
AAVSO  
25 Birch St.  
Cambridge, MA 01238

Sunspot and SID reports sent via email should be addressed to:

AAVSO@AAVSO.ORG  
SUBJ: attn. Solar Coordinator