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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
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APRIL 1988 NUMBER 524 - Part I

Solar-Geophysical Data prompt reports

Data for March, February 1988, and Late Data

International Standard Serial Number: 0038-0911
Library of Congress Catalog Number: 79-640375 //r81

NATIONAL GEOPHYSICAL DATA CENTER
Michael A. Chinnery, Director
Boulder, Colorado

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NUMBER 524

(Issued in Two Parts)

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C O N T E N T S

PART I (PROMPT REPORTS)

PART II (COMPREHENSIVE REPORTS)

Published with partial support from ONR (N00014-86-F-0049).

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C O N T E N T S

Prompt Reports DATA FOR **MARCH 1988** Number 524 Part I

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — MARCH 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
061	01	29	054	105	002	N20 E36	0	0	0	01	N20 E36	Q	Solquiet, Magquiet.
						N17 E44	1	0	0		N17 E44	E	
						S20 E24	3	0	0		S20 E24	E	
062	02	01	087	103	006	N20 E23	0	0	0	02	N20 E23	Q	Solquiet, Magquiet.
						N18 E31	4	0	0		N18 E31	E	
						S21 E11	4	0	0		S21 E11	E	
						S19 W18	0	0	0		S19 W18	Q	
						S24 E73	0	0	0		S24 E73	Q	
063	03	02	083	101	006	N20 E11	0	0	0	03	N20 E11	Q	Solquiet, Magquiet.
						N18 E19	5	0	0		N18 E19	Q	
						S21 W01	3	0	0		S21 W01	Q	
						S23 E63	0	0	0		S23 E63	Q	
						N23 E20	1	0	0		N23 E20	Q	
064	04	03	089	103	012	N18 E06	0	0	0	04	N18 E06	E	Solquiet, Magquiet.
						S20 W14	1	0	0		S20 W14	Q	
						S23 E49	0	0	0		S23 E49	Q	
						N24 E07	0	0	0		N24 E07	Q	
						S34 W64	2	0	0		S34 W64	Q	
065	05	04	087	110	021	N17 W07	0	0	0	05	N17 W07	E	Solquiet, Magquiet.
						S21 W27	2	0	0		S21 W27	Q	
						N23 W07	4	0	0		N23 W07	Q	
						S33 W78	5	0	0		S33 W78	Q	
066	06	05	091	110	008	N18 W20	5	0	0	06	N18 W20	E	Solquiet, Magquiet.
						S20 W40	1	0	0		S20 W40	E	
						N23 W20	2	0	0		N23 W20	E	
						S32 W86	0	0	0		S32 W86	Q	
						N30 E27	0	0	0		N30 E27	Q	
067	07	06	070	109	015	N18 W32	5	0	0	07	N18 W32	E	Solquiet, Magquiet.
						S21 W52	0	0	0		S21 W52	Q	
						N23 W33	7	0	0		N23 W33	E	
068	08	07	077	109	010	N17 W46	2	0	0	08	N17 W46	E	Solquiet, Magquiet.
						S22 W66	1	0	0		S22 W66	Q	
						N22 W47	6	0	0		N22 W47	E	
						N30 E00	1	0	0		N30 E00	Q	
		Presto:[2] Kakioka				Magstorm begins 07/1726 UT.							
069	09	08	072	107	023	N17 W58	0	0	0	09	N17 W58	Q	Solquiet, Magquiet.
						S21 W77	1	0	0		S21 W77	Q	
						N23 W59	2	0	0		N23 W59	Q	
						N30 W14	1	0	0		N30 W14	E	
070	10	09	070	103	010	N17 W70	0	0	0	10	N17 W70	Q	Solquiet, Magquiet.
						S22 W90	0	0	0		S22 W90	Q	
						N23 W72	0	0	0		N23 W72	Q	
						N29 W26	1	0	0		N29 W26	E	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **MARCH 1988**

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
071	11	10	051	101	007	N17 W83	0	0	0	11	N17 W83	Q	Solquiet, Magquiet.
						N21 W81	1	0	0		N21 W81	Q	
						N29 W41	4	0	0		N29 W41	E	
072	12	11	044	104	012	N30 W55	2	0	0	12	N30 W55	E	Solquiet, Magquiet.
						S23 E73	5	0	0		S23 E73	E	
						N23 E79	0	0	0		N23 E79	E	
073	13	12	061	105	009	N29 W67	0	0	0	13	N29 W67	Q	Solquiet, Magquiet.
						S22 E68	13	0	0		S22 E68	E	
						N25 E67	0	0	0		N25 E67	Q	
						S26 E29	0	0	0		S26 E29	Q	
074	14	13	088	109	004	N29 W81	0	0	0	14	N29 W81	Q	Solquiet, Magquiet.
						S23 E61	11	0	0		S23 E61	E	
						N23 E53	0	0	0		N23 E53	Q	
						S27 E15	0	0	0		S27 E15	Q	
						S22 E50	0	0	0		S22 E50	Q	
075	15	14	071	112	012	S23 E49	10	0	0	15	S23 E49	A	Solquiet, Magquiet.
						N23 E41	0	0	0		N23 E41	Q	
						S26 E03	1	0	0		S26 E03	Q	
						S22 E38	1	0	0		S22 E38	Q	
076	16	15	059	119	018	S20 E36	14	6	0	16	S20 E36	A	Solalert 16/17,
						N23 E27	0	0	0		N23 E27	Q	Magquiet.
		Presto:[2] Toyokawa Tenflare 240 flux units 15/2215 UT, duration 10 minutes.											
077	17	16	100	121	019	S23 E22	17	7	0	17	S23 E22	A	Solalert 17/XX,
						N23 E14	0	0	0		N23 E14	Q	Magalert 17/19.
						S16 E08	0	0	0		S16 E08	Q	
						S25 E13	0	0	0		S25 E13	Q	
						S30 W11	0	0	0		S30 W11	Q	
						N23 E57	0	0	0		N23 E57	Q	
078	18	17	107	119	009	S23 E09	16	1	0	18	S23 E09	A	Solalert 18/XX,
						N23 E02	0	0	0		N23 E02	Q	Magalert 18/20.
						S13 W07	0	0	0		S13 W07	Q	
						S26 W01	0	0	0		S26 W01	Q	
						S30 W27	0	0	0		S30 W27	Q	
079	19	18	115	117	008	S23 W04	15	1	0	19	S23 W04	E	Solalert 19/XX,
						N22 W12	1	0	0		N22 W12	Q	Magalert 19/20.
						S18 W20	0	0	0		S18 W20	Q	
						S31 W40	0	0	0		S31 W40	Q	
						N24 E78	0	0	0		N24 E78	Q	
080	20	19	117	118	004	S24 W17	12	0	0	20	S24 W17	E	Solalert 20/XX,
						N22 W24	1	0	0		N22 W24	E	Magalert 20/XX.
						S29 W55	2	0	0		S29 W55	Q	
						N21 E61	0	0	0		N21 E61	Q	
						N29 W22	0	0	0		N29 W22	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages MARCH 1988

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
081	21	20	103	115	004	S24 W30	4	0	0	21	S24 W30	E	Solalert 21/XX.
						N22 W36	3	0	0		N22 W36	E	Magnil.
						S30 W67	0	0	0		S30 W67	Q	
						N20 E47	1	0	0		N20 E47	Q	
						N29 W37	0	0	0		N29 W37	Q	
082	22	21	104	119	001	S25 W40	4	0	0	22	S25 W40	E	Solalert 22/XX,
						N22 W49	3	0	0		N22 W49	E	Magquiet.
						S29 W81	0	0	0		S29 W81	Q	
						N21 E36	4	0	0		N21 E36	E	
						N28 W52	0	0	0		N28 W52	Q	
						S33 E73	1	0	0		S33 E73	Q	
083	23	22	101	118	002	S26 W50	2	0	0	23	S26 W50	E	Solalert 23/25,
						N22 W62	0	0	0		N22 W62	E	Magquiet.
						S29 W95	1	0	0		S29 W95	Q	
						N21 E22	2	0	0		N21 E22	E	
						S32 E61	1	0	0		S32 E61	Q	
084	24	23	091	122	006	S26 W64	6	0	0	24	S26 W64	E	Solalert 24/26,
						N23 W76	2	0	0		N23 W76	Q	Magquiet.
						N21 E09	1	0	0		N21 E09	E	
						S33 E48	1	0	0		S33 E48	E	
085	25	24	108	122	004	S26 W77	10	1	0	25	S26 W77	E	Solnil, Magquiet.
						N23 W86	1	0	0		N23 W86	Q	
						N21 W04	2	0	0		N21 W04	E	
						S33 E37	2	0	0		S33 E37	Q	
						N19 E71	5	1	0		N19 E71	E	
086	26	25	117	129	010	S26 W84	9	1	0	26	S26 W84	E	Solalert 26/XX,
						N20 W17	0	0	0		N20 W17	E	Magquiet.
						S32 E25	0	0	0		S32 E25	E	
						N19 E60	2	0	0		N19 E60	A	
						N25 W32	0	0	0		N25 W32	Q	
						S23 E69	2	0	0		S23 E69	Q	
		Presto:[2]	Boulder	Tenflare 150 flux units began 25/2137 UT duration 4 minutes.									
			Boulder	Proton event 10 particles/cm^2-s-sr at greater than 10 MeV began 25/2225 UT, remains in progress.									
			Sydney	Culgoora Intense Type II began 25/2141 UT.									
087	27	26	117	130	020	N21 W31	0	0	0	27	N21 W31	E	Solalert 27/XX,
						S33 E13	0	0	0		S33 E13	E	Magalert Minor 27/29.
						N19 E47	6	0	0		N19 E47	A	
						N24 W45	0	0	0		N24 W45	Q	
						S21 E56	0	0	0		S21 E56	Q	
						S22 E69	1	0	0		S22 E69	E	
		Presto:	Kakioka	Magstorm began 26/03XX UT.									
088	28	27	115	131	022	N20 W45	0	0	0	28	N20 W45	Q	Solnil, Magalert 28/29.
						S33 W01	0	0	0		S33 W01	E	
						N19 E33	0	0	0		N19 E33	E	
						N24 W58	0	0	0		N24 W58	Q	
						S22 E58	0	0	0		S22 E58	E	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — MARCH 1988

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast[1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
089	29	28	144	130	017	N20 W58	2	0	0	29	N20 W58	Q	Solquiet, Magalert 29.
						S34 W14	0	0	0		S34 W14	Q	
						N19 E21	5	0	0		N19 E21	E	
						N24 W71	0	0	0		N24 W71	Q	
						S23 E27	1	0	0		S23 E27	Q	
						S21 E45	0	0	0		S21 E45	E	
090	30	29	118	132	022	N20 W71	0	0	0	30	N20 W71	Q	Solquiet,
						S34 W25	0	0	0		S34 W25	Q	Magalert Minor 30.
						N19 E07	5	0	0		N19 E07	E	
						S23 E14	0	0	0		S23 E14	Q	
						S22 E32	3	0	0		S22 E32	E	
091	31	30	128	129	028	N21 W83	3	0	0	31	N21 W83	Q	Solquiet,
						S33 W40	0	0	0		S33 W40	Q	Magalert 30/30.
						N19 W05	11	0	0		N19 W05	E	
						S23 E01	0	0	0		S23 E01	Q	
						S22 E20	0	0	0		S22 E20	E	
092	01	31	146	134	009	S34 W53	2	0	0	01	S34 W53	Q	Solquiet, Magnil.
						N18 W18	3	0	0		N18 W18	E	
						S23 W13	2	0	0		S23 W13	Q	
						S21 E07	2	0	0		S21 E07	Q	
						N16 W61	0	0	0		N16 W61	Q	

[1]Q = quiet, E = eruptive, A = active, P = proton.
[2]Presto message is a rapid report of a major event.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

STRATWARM ALERTS

01 March Stratwarm exists. Intense warming over Siberia reached with center the Siberian Arctic at 10-HPA level, extending northeastwards. Reversed temperature gradient between 60° N and the pole only in the upper stratosphere above around 5 HPA.

02 March Stratwarm exists. The intense warming over Siberia and the adjacent Arctic slightly weakening, but continuously extending northeastwards at 10-HPA level. Cold center and polar vortex exist between Greenland and Scandinavia. Temperature gradient reversed between 60° N and the pole further in the upper stratosphere.

03 March Stratwarm exists. At 10-HPA level a new warming developed over southern Europe extending northeastwards. The intense warming continuously exists over central and eastern Siberia and the adjacent Arctic, but weakening. Temperature gradient further reversed between 60° N and the pole in the upper stratosphere.

04 March Stratwarm exists. At 10-HPA level a very large and intense warm region exists from Europe across Siberia to Alaska. The slowly weakening polar vortex and the cold center exists around Spitzbergen –Greenland– Iceland. In the upper stratosphere continuously reversed temperature gradient between 60° N and the pole.

05 March Stratwarm exists. The large and intense warming over Europe and Siberia extending northeastwards and intensifying. The cold center continuously weakening and exists around Greenland at 10-HPA level. In the upper stratosphere further reversed temperature gradient between 60° N and the pole.

06 March Stratwarm exists. At 10-HPA level the large and intense warm region from Europe to Siberia continues, extending north and northeastwards. The temperature gradient reversed between 60° N and the pole only still in the uppermost stratosphere.

07 March Stratwarm exists. The intense warm region from Europe to Siberia continues. The Siberian warming extending north and northeastwards, the cold center further exists around southern Greenland. The temperature gradient continuously reversed between 60° N and the pole in the uppermost stratosphere.

08 March Stratwarm exists. Intense warm region from Europe to Siberia spreading north and eastwards over Siberia. Reversed temperature gradient between 60° N and the pole only in the upper stratosphere.

09 March Stratwarm exists. Intense warm region from northeastern Europe across Siberia to Alaska. Centers moving slowly eastward. Reverse temperature gradient between 60° N and the pole only in the upper stratosphere.

10 March Stratwarm exists. The large and intense warm region from Europe across Siberia to Alaska and the western part of Canada continues, warm air extending northeastwards. Continuously reversed temperature gradient between 60° N and the pole in the upper stratosphere. Final warming in progress.

11 March Stratwarm exists. Large warm region centered over the Siberian Arctic further intensifies. Temperature gradient between 60° N and the pole reversed throughout the stratosphere. Final warming in progress.

12 March Stratwarm exists. Large and very intense warm region over Europe and Siberia continues. Temperature gradient reversed between 60° N and the whole stratosphere. At 1 HPA mean zonal wind from east at 60° N. Final warming in progress.

13 March Stratwarm exists. Large and very intense warm region over Europe, Siberia, and the polar region continues. A weakening cold area exists over Atlantic and the U.S. at 10 HPA. Temperature gradient reversed between 60° N and the pole throughout the whole stratosphere. Mean zonal wind at 60° N from west weakening. At 1 HPA mean zonal wind at 60° N from east. Final warming in progress.

14 March Stratwarm exists. Large and intense warm region from central Europe to Siberia and the whole Arctic continues. Cold area exists south of 50° N from western Europe across the Atlantic to the U.S. at 10 HPA. Temperature gradient reversed between 60° N and the pole throughout the whole stratosphere and mean zonal wind at 60° N from west continuously weakening at 1 HPA mean zonal wind at 60° N from east. Final warming in progress.

15 March Stratwarm exists. Large and intense warm region from central Europe to Siberia and the whole Arctic continues. Temperature gradient between 60° N and the pole reversed throughout the stratosphere below 5 HPA. In the uppermost stratosphere late winter cooling exists. Mean zonal wind at 60° N from east at 10 HPA and above. Final warming continues.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

STRATWARM ALERTS

16 March Stratwarm exists. Intense warm region from Europe across the whole Arctic to Siberia continues. A weakened cold area exists from Spain across the Atlantic to the U.S. and the Gulf of Alaska. Temperature gradient between 60° N and the pole reversed throughout the stratosphere below 5 HPA. In the uppermost stratosphere late winter cooling exists. Mean zonal wind at 60° N from east above 10 HPA. Final warming continues.

17 March Stratwarm exists. Intense warm region from Europe across the whole Arctic to eastern Siberia continues. Temperature gradient between 60° N and the pole reversed between about 30 HPA and 5 HPA. In the uppermost stratosphere late winter cooling exists and the derived 1 HPA map shows mean zonal wind at 60° N weakly from west again. At 10 HPA mean zonal wind at 60° N weakly from east. Final warming continues.

18 March Stratwarm exists. Warm region over eastern Siberia, the Arctic, and Europe persists. Reversed temperature gradient over high latitudes throughout the stratosphere, but mean zonal flow at 60° N weakly from the west. Final warming continues.

19 March Stratwarm exists. Large warm region over the Arctic and Europe persists, polar vortex slowly weakens, final warming continues.

20 March Stratwarm exists. Warm air covers the whole of the polar region, temperature gradient reversed over high latitudes in the middle and upper stratosphere, final warming continues.

21 March Stratwarm exists. Warm air covers the polar region, final warming continues.

22 March Stratwarm exists. Warm air covers the polar region, final warming continues.

23 March Stratwarm exists. Final warming slowly in progress with a weak polar vortex covered by warm air in the middle stratosphere.

24 March Stratwarm exists. Polar vortex covered with warm air in the middle stratosphere. Final warming slowly progresses.

25 March Stratwarm exists. Warm air governs the polar region of the middle stratosphere but weak polar vortex persists over the Canadian Arctic. Final warming slowly progresses.

26 March Stratwarm exists. Final warming slowly progressing in the middle stratosphere. Weak late winter cooling in the upper stratosphere.

27 March Stratwarm exists. Final warming slowly progressing in the middle stratosphere. Weak late winter cooling continues in the upper stratosphere.

28 March Stratwarm exists. Final warming slowly progressing in the middle stratosphere. Weak late winter cooling continues in the upper stratosphere.

29 March Stratwarm exists. Final warming in the middle and weak late winter cooling in the upper stratosphere continues.

30 March Stratwarm exists. Final warming in the middle stratosphere and late winter cooling in the upper stratosphere continue.

31 march Stratwarm exists. Final warming in the middle stratosphere and late winter cooling in the upper stratosphere continue. Slow transition to summer circulation is expected during April without significant events.

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Apr 87	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec 87	Jan† 88	Feb†	Mar†
01	14	39	15	13	45	33	34	56	17	47	70	68
02	12	40	11	0	47	38	25	57	16	31	68	66
03	10	27	0	0	39	37	31	57	16	25	68	72
04	13	23	0	0	33	38	58	46	15	26	74	77
05	28	24	10	0	31	39	54	47	19	32	60	59
06	47	27	0	0	32	44	48	27	24	40	43	61
07	56	34	0	9	38	56	39	31	34	58	44	65
08	64	25	0	12	45	67	55	43	36	57	46	67
09	69	23	0	13	39	64	50	42	41	59	50	49
10	77	25	0	11	47	59	51	30	34	68	38	36
11	80	26	11	0	56	58	63	28	22	75	26	20
12	80	23	21	0	48	44	53	25	13	71	12	39
13	79	22	14	0	47	25	74	18	20	81	21	53
14	77	13	10	0	49	20	92	23	26	97	28	62
15	78	39	11	13	49	21	101	22	42	90	30	63
16	60	50	12	17	55	24	101	33	40	83	42	78
17	41	68	14	14	46	25	91	46	39	72	35	99
18	36	54	24	17	43	30	86	48	39	68	55	88
19	29	65	13	23	45	35	82	51	28	73	66	105
20	12	46	22	38	51	38	79	49	26	78	59	85
21	19	41	29	67	48	32	61	51	14	84	22	81
22	26	38	38	87	34	23	50	70	24	66	15	76
23	25	40	37	102	39	26	33	83	17	47	12	74
24	35	38	38	92	35	25	22	56	13	44	23	83
25	25	37	38	88	35	12	29	42	25	40	19	92
26	21	37	41	85	34	12	40	47	27	44	15	89
27	11	35	33	77	24	19	70	21	29	54	34	103
28	14	21	41	60	23	22	79	11	28	67	40	109
29	20	17	25	60	13	26	82	20	30	59	50	104
30	30	15	14	62	10	26	85	16	42	56		108
31		12		63	20		62		43	57		120
Mean	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	59.6	40.2	75.8

† = preliminary. The yearly mean sunspot number equaled 29.2 in 1987.

Algonquin Radio Observatory — OTTAWA 2800 MHz (10.7 cm) SOLAR FLUX — Adjusted to 1 AU

Day	Apr 87	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 88	Feb	Mar
01	72.5	79.3	77.8	76.0	91.0	85.3*	84.2	99.1	87.6	100.1	105.5	99.8*
02	71.9	80.2	77.9	74.4	89.7	85.5	84.8	105.0	86.5	93.7	104.3	99.1
03	72.4	82.8	76.4	73.7	87.1	87.5	85.6*	98.0	85.8	101.2	103.6	101.9*
04	74.0	84.4	77.3	73.2	84.0	89.6	89.2	101.1*	85.1	98.2	103.1	102.6*
05	77.6	86.1	76.1	73.4	81.6	93.5*	90.1	99.2	86.8	99.5	102.6	106.7*
06	89.4	87.9	75.8	73.3	85.2	95.6*	89.5	94.9	85.7	101.7	103.6	107.6
07	94.4	88.1	76.0	74.1	89.5*	99.5*	90.9	94.4	85.3	102.1	105.3	107.3
08	94.8	89.1	77.0	76.1	93.8	101.9	95.0	92.7	88.7	105.6	102.5	104.1*
09	100.5	87.3	76.8	76.3	94.8	100.9	92.7	90.3	91.2	100.6*	101.0	101.5
10	100.0	89.5	78.1	76.3	94.0	97.8	101.1	89.2	90.1	100.9	100.2	99.2
11	101.3	86.4	80.7	75.7	99.8*	95.4	100.8*	92.6	91.1	101.7*	99.6	102.9
12	98.6	85.4	82.1	75.5	100.0	91.1	102.2	92.6	91.5*	107.5*	101.3	103.5
13	99.3	87.4	82.3	75.1	101.8*	89.7	105.5	92.9	91.1	108.1*	102.9	107.8
14	97.7	91.2	80.6	76.6	102.4	86.8	113.3*	92.3	91.5	113.7	102.6	108.9*
15	97.8	93.6	80.4	78.8	101.3	85.0	117.8I	93.7	92.0*	112.4	100.4	112.6*
16	95.3*	98.2	81.3	80.9	102.7	83.5	111.1	95.0	93.4*	121.8*	101.0	114.1*
17	97.3	96.7	81.8	81.5	101.2	84.0	106.0	96.8	92.2	116.4*	106.2	117.4
18	94.0	98.5	82.9	82.5	100.4	82.4	106.5	100.0	90.2	110.9	112.5	116.1
19	91.7	100.1	82.4	85.1	99.0	82.7	100.4	106.6	88.4	114.2	109.0	116.1*
20	85.6	99.8	81.1	93.8	101.2	84.9	95.6	112.2	86.9	112.7	106.5	116.3*
21	78.3	99.9	82.6	95.6	96.6	83.0	89.3	115.3	90.7	111.6	104.7	117.5*
22	76.5	101.0	87.1	102.6*	94.4*	81.3	88.2	117.8	88.1	104.5	102.5	117.6
23	76.5	94.9	87.5	115.6	91.8	80.4	87.0	115.1	88.2	104.7	100.2	120.9*
24	78.6	98.5	89.1	115.0	89.6	80.3	87.1	109.4	89.9	102.2	99.6	123.0*
25	75.8	96.8	86.3	114.9	89.9	77.9	92.3	104.9	96.2*	94.9	96.4	128.5*
26	74.3	92.3	84.3	109.8*	87.3	76.4	96.9	101.3	96.8*	93.5	96.7	127.5*
27	74.8	87.5	78.9	105.4	85.1	80.2	105.9	94.9	101.4	101.6	96.3	128.0*
28	74.3	85.1	79.2	102.5	81.3	82.3	106.2	92.3	102.5	103.0	97.1	129.8
29	73.6E	79.3	76.6	97.3	79.9	83.5	102.7	90.7	101.4	99.1	103.3	131.7
30	76.8	77.9	75.9H	94.0	78.5	81.9	104.2	89.1	99.2	100.1		128.3
31		77.3		91.9	83.2		97.8		99.7	103.1		130.6*
Mean	85.5	89.8	80.4	87.0	92.2	87.0	97.4	99.0	91.5	104.6	102.4	113.8

* = corrected for burst in progress; E = corrected for snow on antenna; H = measured at Penticton; I = 1700 UT calibration taken at 1915 UT. The yearly mean flux equaled 85.3 in 1987.

D A I L Y S O L A R I N D I C E S

March 1988

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit: PALE (15400)	PALE (8800)	PALE (4995)	Ottawa (2800)	PALE (2695)	PALE (1415)	PALE (610)	PALE (410)	PALE (245)
01	61	4	68	70	101.6*	541	267	147	99.8*	100	68	52	27	17
02	62	5	66	70	100.8	559	263	139	99.1	100	69	52	24	15
03	63	6	72	68	103.6*	540	240	137	101.9*	101	70	70	27	28
04	64	7	77	72	104.3*	559	272	147	102.6*	105	73	53	24	16
05	65	8	59	70	108.4*	536	269	150	106.7*	108	75	53	25	16
06	66	9	61	63	109.3	538	268	145	107.6	104	72	57	23	14
07	67	10	65	68	108.9	554	270	144	107.3	104	72	53	25	15
08	68	11	67	69	105.6*	539	270	138	104.1*	102	71	46	24	12
09	69	12	49	56	102.9	537	272	134	101.5	99	70	51	24	13
10	70	13	36	34	100.5	556	258	134	99.2	96	69	49	24	14
11	71	14	20	22	104.2	544	270	144	102.9	102	70	53	24	14
12	72	15	39	45	104.8	557	267	144	103.5	101	69	53	25	13
13	73	16	53	54	109.1	555	286	156	107.8	109	71	53	26	16
14	74	17	62	58	110.1*	549	289	147	108.9*	111	77	48	30	--
15	75	18	63	58	113.8*	548	284	153	112.6*	109	76	47	26	--
16	76	19	78	82	115.2*	---	238	144	114.1*	118	80	54	24	--
17	77	20	99	91	118.5	554	284	162	117.4	129	83	51	23	13
18	78	21	88	97	117.1	541	271	159	116.1	116	84	65	--	--
19	79	22	105	99	117.1*	546	---	---	116.1*	102	74	53	25	17
20	80	23	85	87	117.2*	554	268	160	116.3*	123	86	50	28	28
21	81	24	81	82	118.3*	517	252	138	117.5*	106	75	53	26	30
22	82	25	76	79	118.4	559	285	147	117.6	113	78	54	30	--
23	83	26	74	81	121.6*	---	284	157	120.9*	120	81	54	26	17
24	84	27	83	89	123.7*	560	292	168	123.0*	123	81	55	25	17
25	85	1	92	94	129.1*	546	287	164	128.5*	124	82	51	28	16
26	86	2	89	98	128.1*	555	286	169	127.5*	128	83	66	27	18
27	87	3	103	100	128.5*	557	282	173	128.0*	128	85	55	28	17
28	88	4	109	111	130.2	557	277	165	129.8	128	86	--	--	--
29	89	5	104	105	132.1	563	282	165	131.7	126	86	60	27	22
30	90	6	108	110	128.6	558	251	154	128.3	125	85	59	--	--
31	91	7	120	120	130.8*	558	260	170	130.6*	129	87	56	31	38
Mean			75.8	77.5	114.9	550	271	152	113.8	112	77	54	26	18

The International numbers shown above are preliminary values; the American numbers are final.

The observed and the adjusted Ottawa fluxes tabulated here are the "Series C" daily values reported by the Algonquin Radio Observatory, Ottawa, Ontario, Canada. Numbers in parentheses in the column headings denote frequencies in MHz. Qualifiers after an entry have the following meaning:

* = corrected for burst in progress

Equipment problems produced any gaps shown above in the Air Weather Service's Learmonth, Australia, observations.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

MARCH 1988

Date	RELATIVE SUNSPOT NUMBERS: International (R_i) Monthly Mean	International (R_i) Smoothed	American (R_a) Monthly Mean	American (R_a) Smoothed	Derived (R_s) Monthly Mean	Derived (R_s) Smoothed	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Monthly Mean	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Smoothed
May 84	76.4	48	72.1	45	79.6	49	131.1	103
Jun	46.1	46	45.2	44	49.8	48	103.5	102
Jul	37.4	44	36.2	42	37.6	39	92.2	99
Aug	25.5	40	24.5	38	30.7	41	85.8	95
Sep	15.7	34	13.6	32	23.2	35	78.9	90
Oct	12.0	29	9.8	27	16.9	31	73.1	86
Nov	22.8	25	19.4	23	18.6	26	74.6	72
Dec	18.7	22	17.0	20	17.4	23	73.5	79
Jan 85	16.5	20	14.5	19	15.9	21	72.1	77
Feb	15.9	20	16.3	18	15.7	20	71.9	76
Mar	17.2	19	11.8	16	16.3	19	72.5	75
Apr	16.2	18	17.1	17	19.8	19	75.7	75
May	27.5	18	24.0	17	26.6	19	82.0	75
Jun	24.2	18	22.2	16	22.8	19	78.5	75
Jul	30.7	17	30.8	16	25.8	19	81.3	75
Aug	11.1	17	10.7	15	17.2	19	73.3	75
Sep	3.9	17	3.4	16	13.8	20	70.2	76
Oct	18.6	17	16.5	16	18.1	20	74.2	76
Nov	16.2	17	16.4	15	16.4	19	72.6	75
Dec	17.3	15	10.1	14	16.2	19	72.4	75
Jan 86	2.5	14	2.3	12	14.6	18	70.9	74
Feb	23.2	13	23.8	11	26.0	17	81.5	74
Mar	15.1	13	12.5	11	20.3	17	76.2	73
Apr	18.5	14	13.8	12	19.6	18	75.6	74
May	13.7	14	11.6	12	18.1	18	74.2	74
Jun	1.1	14	0.8	11	13.3	18	69.7	74
Jul	18.1	14	17.7	11	16.3	18	72.5	74
Aug	7.4	13	7.6	11	13.7	17	70.1	73
Sep	3.8	12	3.5	10	13.0	17	69.4	73
Oct	35.4	13	19.8	11	27.0	17	82.4	73
Nov	15.2	15	14.7	13	19.5	18	75.5	74
Dec	6.8	16	5.1	14	14.0	19	70.4	75
Jan 87	10.4	18	9.4	16	13.8	20	70.2	76
Feb	2.4	20	3.0	18	13.4	22	69.8	78
Mar	14.7	22	13.3	20	17.2	24	73.3	80
Apr	39.6	24	39.4	23	30.3	25	85.5	81
May	33.0	26	30.7	26	35.0	27	89.8	83
Jun	17.4	28	18.0	28	24.8	29	80.4	84
Jul	33.0	31*	34.3	31	32.0	32	87.0	87
Aug	38.7	35*	39.0	34	37.6	35	92.2	89
Sep	33.9	39*	34.0	38	32.0	38	87.0	93
Oct	60.6	45(3)*	55.8	43	43.2	43	97.4	--
Nov	39.9	52(5)*	42.5	51	44.9	51	99.0	--
Dec	27.1	59(7)*	26.7	58	36.8	58	91.5	--
Jan 88	59.6*	65(11)*	56.8	64	51.0	64	104.6	--
Feb	40.2*	71(16)*	39.1	69	48.6	69	102.4	--
Mar	75.8*	76(20)*	77.5	74	60.9	74	113.8	--
Apr	----	81(24)*	----	80	----	80	----	--
May	----	87(27)*	----	85	----	85	----	--
Jun	----	92(30)*	----	90	----	90	----	--
Jul	----	100(35)*	----	97	----	97	----	--
Aug	----	107(39)*	----	105	----	105	----	--
Sep	----	114(43)*	----	111	----	111	----	--

*An asterisk marks either a preliminary value or one based in part on preliminary observations.

Underlined entries indicate predicted values and parentheses enclose the absolute value of the 90% confidence limits. The two columns headed "Derived" represent a sunspot number computed from a linear regression equation between the 2800 MHz solar flux (adjusted to 1 astronomical unit) and the Zurich sunspot number.

SMOOTHED (OBSERVED AND PREDICTED) SUNSPOT NUMBERS: CYCLES 21 AND 22

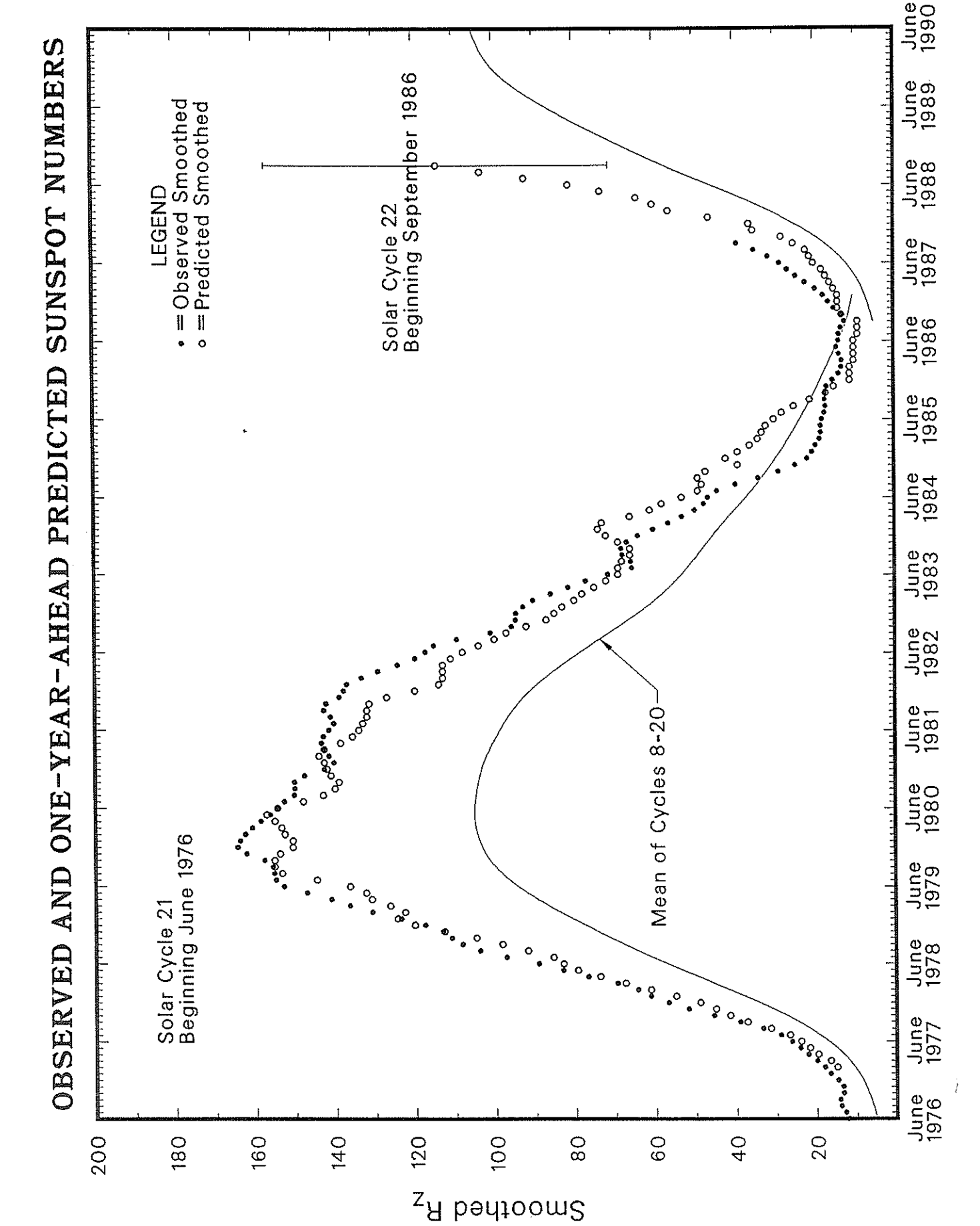
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	120	117	115	109	101	96	95	95
1983	93	90	86	82	77	71	66	66	68	68	67	64
1984	60	56	53	50	48	47	44	40	34	29	25	22
1985	21	20	19	18	18	18	17	17	17	17	17	15
1986	14	13	13	14	14	14	14	13	12*	13	15	16
1987	18	20	22	24	27	28	31	35	39	45	52	59
										(3)	(5)	(7)
1988	65	71	76	81	87	92	100	107	114	120	124	127
	(11)	(16)	(20)	(24)	(27)	(30)	(35)	(39)	(43)	(47)	(51)	(54)
1989	130	136	146	156	164	171	176	181	188	195	198	198
	(55)	(53)	(54)	(54)	(55)	(57)	(57)	(58)	(62)	(64)	(64)	(67)
1990	196	194	189	179	170	162	157	152	143	132	121	116
	(69)	(72)	(74)	(73)	(69)	(64)	(63)	(63)	(60)	(55)	(49)	(43)

*September 1986 marks the onset of Sunspot Cycle 22.

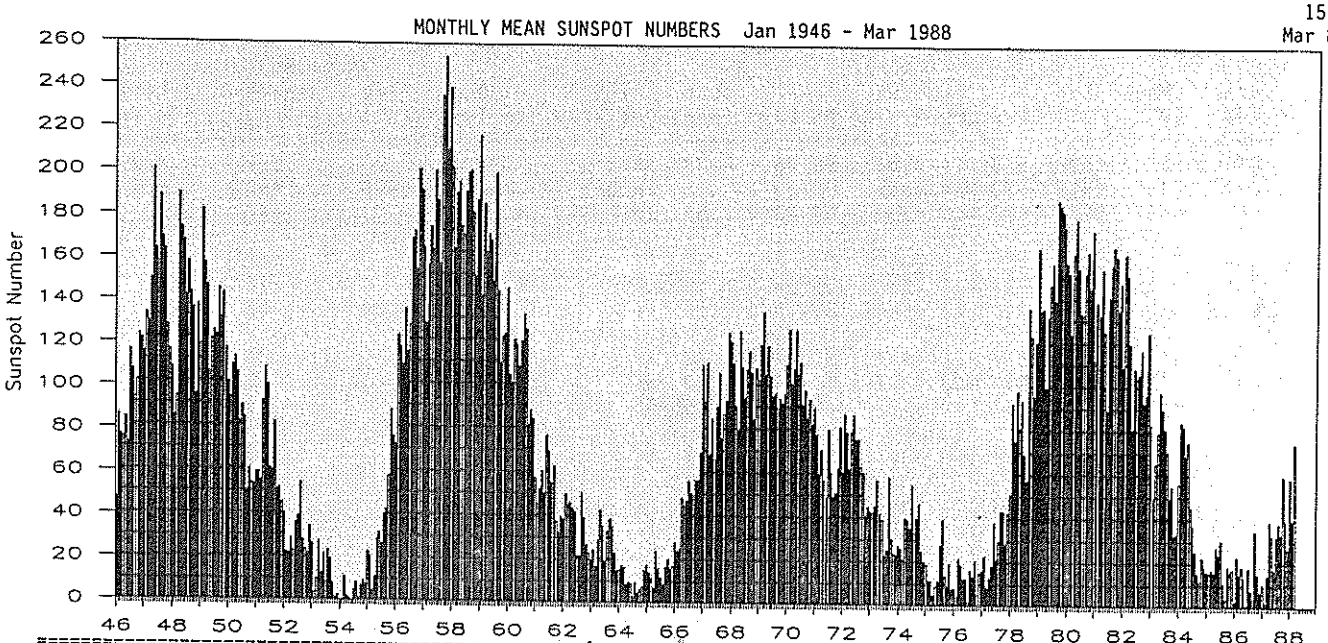
For the end of Solar Cycle 21, and the beginning of 22, the table gives observed smoothed sunspot numbers up to the one calculated from the most recently available monthly mean. These smoothed observed values are based on final, monthly means through December 1987 and on provisional numbers thereafter.

Table entries, with numbers in parentheses below them, denote predictions by the McNish-Lincoln method. (See page 9 in the July 1987 supplement to *Solar-Geophysical Data*.) Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval; subtracting the number from the predicted value generates the lower limit. Consider, for example, the September prediction. There exists a 90% chance that in September 1988 the actual smoothed sunspot number will fall somewhere between 71 and 157.

THE MCNISH-LINCOLN PREDICTION METHOD GENERATES USEFUL ESTIMATES OF SMOOTHED, MONTHLY MEAN SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 14 cycles used in the computation. Moreover, the method is very sensitive to the data defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the minimum value of 12.3 that occurred in September 1986.


OBSERVED AND ONE-YEAR-AHEAD PREDICTED SUNSPOT NUMBERS
LEGEND
• = Observed Smoothed
o = Predicted Smoothed
Solar Cycle 21
Beginning June 1976
Solar Cycle 22
Beginning September 1986
Mean of Cycles 8-20
Smoothed R_Z
200
180
160
140
120
100
80
60
40
20
June 1976
June 1977
June 1978
June 1979
June 1980
June 1981
June 1982
June 1983
June 1984
June 1985
June 1986
June 1987
June 1988
June 1989
June 1990

MONTHLY MEAN SUNSPOT NUMBERS Jan 1946 - Mar 1988



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1946	47.6	86.2	76.6	75.7	84.9	73.5	116.2	107.2	94.4	102.3	123.8	121.7	92.6
1947	115.7	133.4	129.8	149.8	201.3	163.9	157.9	188.8	169.4	163.6	128.0	116.5	151.6 M
1948	108.5	86.1	94.8	189.7	174.0	167.8	142.2	157.9	143.3	136.3	95.8	138.0	136.3
1949	119.1	182.3	157.5	147.0	106.2	121.7	125.8	123.8	145.3	131.6	143.5	117.6	134.7
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4 m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2 M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	112.3
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2 m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9 M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6 m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4 M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4 m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.2
1988	59.6*	40.2*	75.8*										58.5*

*Preliminary

For the yearly means, each "M" marks a sunspot cycle maximum and each "m" a minimum.

H - ALPHA S O L A R F L A R E S

MARCH 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0001		01	04405	04544	0538	S20	W14	4954	02	29.1	58	1N	C	3.1				302	4.7	EFU
	PEKG	01	0440	0458	0525	S20	W14	4954	02	29.1	45	1N	C	3.1		P	0458	463	4.7	E
	LEAR	01	0445	0454	0551	S20	W15	4954	02	29.0	66	1N	C	3.1	3	E		142		UF
0002		01	0825	08263	0835	S20	E22	4958	03	3.0	10	SF						40	0.7	EF
	LEAR	01	0825	0826	0835	S21	E22	4958	03	3.0	10	SF			3	E		18		F
	KAND	01	0825	0829	0835	S20	E22	4958	03	3.0	10	SF				P	0829	62	0.7	E
0003		01	1414	1419	1446	N17	E38	4957	03	4.5	32	SF						20		
	RAMY	01	1414	1419	1434	N17	E37	4957	03	4.4	20	SF			3	E		15		
	HOLL	01	1423E	1423U	1458	N17	E40	4957	03	4.6	35D	SF			3	E		25		
0004	HOLL	01	1524	1524	1530	N17	E38	4957	03	4.5	6	SF			3	E		12		
0005		01	1534	15371	1546	S22	E17	4958	03	2.9	12	SF						32		F
	RAMY	01	1534	1537	1546	S22	E18	4958	03	3.0	12	SF			3	E		28		F
	HOLL	01	1534	1538	1547	S22	E16	4958	03	2.9	13	SF			3	E		36		F
0006	HOLL	01	1600	1602	1607	N15	E38	4957	03	4.5	7	SF			3	E		12		F
0007	HOLL	01	1627	1628	1636	N17	E39	4957	03	4.6	9	SF			3	E		15		F
0008		01	2027	20273	2046	S22	E16	4958	03	3.1	19	SF						34		F
	HOLL	01	2023E	2027	2047	S22	E17	4958	03	3.1	24D	SF			2	E		36		F
	RAMY	01	2027	2030	2044	S22	E15	4958	03	3.0	17	SF			3	E		32		
0009		01	2344*	2346*	2435	S20	E13	4958	03	3.0	51	SF						27		F
	HOLL	01	2344	2346	2430D	S21	E13	4958	03	3.0	46D	SF			2	E		35		F
	LEAR	02	0022	0029	0035	S20	E13	4958	03	3.0	13	SF			3	E		19		F
0010	YUNN	02	0210E	0210U	0240	S22	E14	4958	03	3.2	30D	1N				P	0210	209	2.3	F
0011	LEAR	02	0600	0601	0605	N23	E31		03	4.6	5	SF			3	E		21		
0012	LEAR	02	0654	0655	0659	S21	E09	4958	03	3.0	5	SF			3	E		16		F
0013	LEAR	02	0933	0937	0946	N17	E27	4957	03	4.4	13	SF			3	E		12		
0014	RAMY	02	1213	1216	1238	N16	E28	4957	03	4.6	25	SF			3	E		12		
0015	HOLL	02	1439	1439	1511	N18	E26	4957	03	4.6	32	SF			3	E		53		
0016	HOLL	02	1445	1458	1519	S21	W33	4954	02	29.1	34	SF			3	E		19		
0017		02	17479	1747*	1810	N16	E24	4957	03	4.6	23	SF						20		F
	HOLL	02	1747	1747	1755	N16	E24	4957	03	4.6	8	SF			3	E		19		
	HOLL	02	1756	1800	1826	N15	E23	4957	03	4.5	30	SF			3	E		20		F
0018	HOLL	02	1752	1752	1756	S21	E01	4958	03	2.8	4	SF			3	E		19		
0019		02	19345	19393	2004	N16	E23	4957	03	4.5	30	SF						30		F
	HOLL	02	1934	1942	2019	N15	E22	4957	03	4.5	45	SF			2	E		48		F
	RAMY	02	1939	1939	1949	N16	E24	4957	03	4.6	10	SF			3	E		11		
0020	KAND	03	0835	0840	0857D	S20	W04	4958	03	3.0	22D	SN				P	0840	42	0.4	E
0021		03	15251	1528	1544	S34	W58	4962	02	28.1	19	SF						44		E
	RAMY	03	1525	1528	1549	S33	W58	4962	02	28.1	24	SF			3	E		59		E
	SVTO	03	1526	1528	1540	S35	W59	4962	02	28.0	14	SF			3	E		30		
0022	RAMY	03	1659	1704	1711	S32	W59	4962	02	28.1	12	SF			3	E		10		
0023	RAMY	03	2022	2028	2032	S21	W12	4958	03	2.9	10	SF			3	E		12		
0024	HOLL	03	2321	2324	2329D	N21	W28	4956	03	1.8	8D	SF			3	E		12		F
0025	LEAR	04	0240	0240	0246	S24	E52	4960	03	8.1	6	SF			3	E		23		
0026	YUNN	04	0517E	0517U	0525	S32	W63	4962	02	28.3	8D	SN				P	0517	64	1.5	G

H - ALPHA S O L A R F L A R E S

MARCH 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0027	YUNN	04	0714	0716	0722D	S33	W66	4962	02	28.1	8D	SN			P		64		G
0028	LEAR	04	0733	0751	0812	S33	W66	4962	02	28.2	39	SF		3	E		40		
0029	LEAR	04	0753	0754	0802	N21	E01	4961	03	4.4	9	SF		3	E		14		F
0030	KAND	04	1203	1203	1210D	S30	W70	4962	02	28.1	7D	SN			P	1203	62		DG
0031	RAMY	04	1234	1238	1243	S32	W69	4962	02	28.2	9	SF		3	E		18		
0032		04	1511*	15461	1614	S32	W70	4962	02	28.2	63	SF					30		
	HOLL	04	1511	1546	1636	S32	W70	4962	02	28.2	85	SF		3	E		47		
	RAMY	04	1547	1547	1553	S32	W71	4962	02	28.1	6	SF		3	E		12		
0033	RAMY	04	1639	1645	1704	N22	W02	4961	03	4.5	25	SF		3	E		23		
0034		04	17011	1707	1722	S22	W24	4958	03	2.9	21	SF					26		F
	HOLL	04	1701	1707	1727	S21	W23	4958	03	2.9	26	SF		3	E		37		F
	RAMY	04	1702	1707	1717	S22	W24	4958	03	2.9	15	SF		3	E		15		F
0035		04	2158*	2200*	2213	N23	W02	4961	03	4.8	15	SF					12		H
	RAMY	04	2158	2200	2204	N23	W02	4961	03	4.8	6	SF		2	E		14		
	HOLL	04	2210	2218	2222	N23	W02	4961	03	4.8	12	SF		3	E		11		H
0036	HOLL	04	2208	2211	2234	S33	W76	4962	02	28.0	26	SF		3	E		31		
0037	HOLL	04	2303	2307	2320	S33	W74	4962	02	28.2	17	SF		3	E		36		
0038	HOLL	04	2303	2309	2314	S20	W28	4958	03	2.8	11	SF		3	E		25		
0039	HOLL	05	0022	0023	0037D	N23	W04	4961	03	4.7	15D	SF		3	E		18		F
0040	RAMY	05	1208E	1226U	1239	N15	W14	4957	03	4.4	31D	SN		1	E		45		
0041	RAMY	05	1436	1438	1444	N19	W13	4957	03	4.6	8	SF		4	E		20		F
0042		05	1534*	15451	1554	N19	W14	4957	03	4.6	20	SF					22		F
	RAMY	05	1534	1545	1558	N19	W14	4957	03	4.6	24	SF		3	E		31		F
	HOLL	05	1544	1546	1550	N19	W15	4957	03	4.5	6	SF		4	E		13		F
0043		05	1701	17021	1706	S20	W37	4958	03	2.9	5	SF					11		
	HOLL	05	1701	1702	1706	S21	W36	4958	03	2.9	5	SF		3	E		11		
	RAMY	05	1701	1703	1707	S19	W38	4958	03	2.8	6	SF		3	E		11		
0044	HOLL	05	1937	1945	1953	N15	W19	4957	03	4.4	16	SF		3	E		13		
0045	HOLL	05	2105	2121	2140	N16	W17	4957	03	4.6	35	SF		3	E		17		
0046		06	0542	0550	0602	N18	W23	4957	03	4.5	20	SN					30	0.6	EF
	LEAR	06	0542	0550	0602	N17	W23	4957	03	4.5	20	SF		3	E		13		F
	YUNN	06	0544E	0544U	0554D	N18	W23	4957	03	4.5	10D	SN			P	0544	48	0.6	E
0047	LEAR	06	0713	0713	0721	N14	W28	4957	03	4.2	8	SF		3	E		26		
0048	RAMY	06	1135	1136	1141	N24	W25	4961	03	4.5	6	SF		3	E		14		
0049	RAMY	06	1246	1249	1313	N17	W26	4957	03	4.5	27	SF		3	E		14		
0050	RAMY	06	1539	1539	1546	N23	W28	4961	03	4.5	7	SF		3	E		14		
0051	RAMY	06	1556	1601	1606	N22	W29	4961	03	4.4	10	SF		3	E		14		
0052	HOLL	06	1730	1730	1733	N22	W29	4961	03	4.5	3	SF		3	E		13		
0053	HOLL	06	1916	1923	1953	N23	W30	4961	03	4.5	37	SF	C 1.3	3	E		47		EF
0054		06	2027	20367	2049	N23	W32	4961	03	4.4	22	SF					12		FZ
	HOLL	06	2027	2036	2038	N24	W33	4961	03	4.3	11	SF		3	E		13		ZF
	HOLL	06	2027	2043	2100	N22	W32	4961	03	4.4	33	SF		3	E		11		F

H - ALPHA S O L A R F L A R E S

MARCH 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0055	HOLL	06	2302	2304	2317	N27	E12	4963	03	7.9	15	SF		3	E		11		F
0056	HOLL	06	2323	2332	2405	N30	E13	4963	03	8.0	42	SF		3	E		42		
0057	HOLL	06	2349	2349	2354	N25	W30	4961	03	4.7	5	SF		3	E		11		
0058	LEAR	07	0034	0035	0057	N22	W34	4961	03	4.4	23	SF		3	E		11		
0059	LEAR	07	0552	0555	0626	N24	W35	4961	03	4.5	34	SF		3	E		23		
0060	LEAR	07	0635	0636	0654	N23	W37	4961	03	4.4	19	SF		3	E		26		
0061	RAMY	07	1223	1225	1230	N16	W44	4957	03	4.2	7	SF		3	E		18		
0062	RAMY	07	1328	1328	1338	S19	W58	4958	03	3.1	10	SF		3	E		41		
0063	RAMY	07	1449	1450	1502	N16	W45	4957	03	4.2	13	SF	C 1.3	3	E		32		
0064		07	15506	15542	1558	N26	W44	4961	03	4.2	8	SF					14		
	HOLL	07	1550	1554	1556	N26	W44	4961	03	4.2	6	SF		3	E		15		
	HOLL	07	1556	1556	1559	N25	W43	4961	03	4.3	3	SF		3	E		13		
0065		07	17422	1745	1804	N23	W40	4961	03	4.6	22	SF					20		F
	HOLL	07	1742	1745	1756	N23	W40	4961	03	4.6	14	SF		3	E		21		
	RAMY	07	1744	1745	1812	N23	W41	4961	03	4.6	28	SF		3	E		20		F
0066	HOLL	07	1808	1809	1816	N27	E01	4963	03	7.8	8	SF		3	E		12		
0067	HOLL	07	1852	1852	1856	N24	W41	4961	03	4.6	4	SF		3	E		13		
0068	LEAR	08	0423	0424	0433	S24	W69	4958	03	2.8	10	SF		3	E		13		
0069		08	15311	15331	1538	N24	W55	4961	03	4.4	7	SF					19		
	RAMY	08	1531	1534	1545D	N22	W55	4961	03	4.4	14D	SF		3	E		19		
	HOLL	08	1532	1533	1538	N26	W55	4961	03	4.4	6	SF		3	E		19		
0070		08	16381	16461	1706	N22	W54	4961	03	4.5	28	SF					57		F
	HOLL	08	1638	1646	1701	N23	W54	4961	03	4.5	23	SF		3	E		54		
	RAMY	08	1639	1647	1712	N22	W55	4961	03	4.5	33	SF		3	E		60		F
0071		08	17571	18031	1816	N28	W10	4963	03	8.0	19	SF	C 1.1				38		F
	HOLL	08	1757	1804	1817	N29	W09	4963	03	8.0	20	SF	C 1.1	3	E		46		F
	RAMY	08	1758	1803	1815	N27	W11	4963	03	7.9	17	SF	C 1.1	3	E		30		F
0072	YUNN	09	0300	0304	0325	N30	W13	4963	03	8.1	25	SN			C		80	1.1	
0073	HOLL	09	1950	1955	2045	N28	W26	4963	03	7.8	55	SF	C 1.4	3	E		75		EF
0074	LEAR	10	0524	0525	0530	N29	W28	4963	03	8.0	6	SF		3	E		17		
0075	LEAR	10	0553	0556	0619	N27	W31	4963	03	7.8	26	1F	C 4.2	3	E		101		
0076		10	0648	0651	0709	N29	W30	4963	03	7.9	21	SN					55	1.5	E
	LEAR	10	0648	0651	0656	N28	W28	4963	03	8.1	8	SF		3	E		14		
	YUNN	10	0705E	0705U	0722	N30	W31	4963	03	7.8	17D	SN			P	0705	96	1.5	E
0077	PALE	10	2004	2005	2015	N25	W90		03	3.9	11	SF		3	E				
0078	HOLL	10	2232	2239	2303	N28	W39	4963	03	7.9	31	SF		3	E		23		
0079	RAMY	11	1657	1658	1706	S23	E89	4964	03	18.6	9	SF		3	E		15		
0080		11	1735	17361	1742	N30	W45	4963	03	8.2	7	SF					18		
	HOLL	11	1735E	1736	1742	N30	W45	4963	03	8.2	7D	SF		3	E		13		
	RAMY	11	1735	1737	1741	N30	W45	4963	03	8.2	6	SF		3	E		24		
0081	RAMY	11	1933	1933	1952	N30	W46	4963	03	8.2	19	SF		3	E		22		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0082		11	2027	20271	2030	S22	E89	4964	03	18.7	3	SF					38		
	PALE	11	2027	2027	2029	S22	E93	4964	03	19.0	2	SF		3	E		19		
	RAMY	11	2027	2027	2030	S23	E86	4964	03	18.5	3	SF		3	E		35		
	HOLL	11	2027	2028	2031	S22	E88	4964	03	18.6	4	SF		3	E		59		
0083		11	2155	2156	2204	S23	E83	4964	03	18.3	9	SF					35		
	RAMY	11	2155	2156	2200	S24	E80	4964	03	18.1	5	SF		3	E		26		
	HOLL	11	2155	2156	2201	S22	E84	4964	03	18.4	6	SF		3	E		52		
	PALE	11	2155	2156	2210	S24	E84	4964	03	18.4	15	SF		3	E		26		
0084	HOLL	11	2209	2211	2216	S22	E90	4964	03	18.8	7	SF		3	E		46		
0085	HOLL	11	2222	2226	2229	S23	E90	4964	03	18.9	7	SF		3	E		45		
0086		11	22392	2241*	2308	S23	E90	4964	03	18.9	29	SF	C 3.4				44		
	HOLL	11	2239	2311	2329	S22	E90	4964	03	18.9	50	SF	C 3.4	3	E		76		
	PALE	11	2241	2241	2246	S24	E90	4964	03	18.9	5	SF		3	E		13		
0087	HOLL	11	2334	2334	2355	S21	E90	4964	03	18.9	21	SF		3	E		22		F
0088	HOLL	12	0009	0010	0014	S22	E89	4964	03	18.8	5	SF		3	E		25		
0089		12	0023*	0028*	0043	S21	E87	4964	03	18.7	20	SF					44		
	HOLL	12	0023	0028	0038	S23	E82	4964	03	18.3	15	SF		3	E		36		
	LEAR	12	0025	0029	0035	S21	E86	4964	03	18.6	10	SF		3	E		24		
	MITK	12	0029E	0037	0053	S21	E90	4964	03	18.9	24D	1N			C	0037	100		
	LEAR	12	0036	0040	0045	S20	E90	4964	03	18.9	9	SF		3	E		16		
0090	LEAR	12	0138	0140	0145	S24	E84	4964	03	18.5	7	SF	C 7.3	3	E		27		
0091		12	0423	0424	0431	S22	E86	4964	03	18.8	8	SN	C 6.5				34		A
	YUNN	12	0155E	0202U	0430D	S22	E87	4964	03	18.8	155D	SN			P	0202	16		A
	LEAR	12	0423	0424	0431	S21	E84	4964	03	18.6	8	SF	C 6.5	3	E		51		
0092	SVTO	12	0828	0830	0849	S24	E84	4964	03	18.8	21	SF		3	E		57		F
0093	RAMY	12	1148	1150	1156	S25	E79	4964	03	18.6	8	SF		3	E		11		
0094		12	15067	1515	1534	S22	E74	4964	03	18.3	28	1N	C 5.0				155		FH
	HOLL	12	1506	1515	1543	S23	E79	4964	03	18.7	37	1N	C 5.0	3	E		242		H
	SVTO	12	1513	1515	1524	S20	E68	4964	03	17.8	11	SF	C 5.0	3	E		68		F
0095	RAMY	12	1602	1603	1607	S25	E78	4964	03	18.7	5	SF		3	E		17		
0096		12	18446	18571	1916	S24	E78	4964	03	18.8	32	SF					64		
	RAMY	12	1844	1857	1917	S25	E76	4964	03	18.7	33	SF		3	E		58		
	PALE	12	1850	1858	1916	S24	E80	4964	03	19.0	26	SF		4	E		69		
0097		12	20466	20531	2100	S24	E70	4964	03	18.3	14	SF					52		FH
	RAMY	12	2046	2054	2104	S25	E74	4964	03	18.6	18	SF		3	E		66		
	HOLL	12	2052	2053	2057	S23	E66	4964	03	17.9	5	SF		3	E		38		FH
0098	RAMY	12	2117	2122	2131	S22	E65	4964	03	17.9	14	SF		3	E		34		
0099	HOLL	12	2122	2122	2126	S28	E31	4966	03	15.3	4	SF		3	E		14		
0100	HOLL	12	2135	2139	2143	S24	E76	4964	03	18.8	8	SF		3	E		12		F
0101	HOLL	12	2159	2159	2204	S23	E75	4964	03	18.7	5	SF		3	E		12		F
0102	LEAR	13	0424	0427	0431	S22	E62	4964	03	17.9	7	SF		2	E		22		
0103	LEAR	13	0448E	0448	0453	S21	E68	4964	03	18.4	5D	SF		3	E		31		
0104	YUNN	13	0829	0835	0842	S23	E70	4964	03	18.7	13	SN			C		64		E
0105		13	14102	14136	1430	S26	E69	4964	03	18.9	20	SF					37		
	HOLL	13	1410	1419	1432	S25	E69	4964	03	18.9	22	SF		3	E		45		
	RAMY	13	1412	1413	1429	S27	E69	4964	03	19.0	17	SF		3	E		29		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0106	SVTO	13	1549	1551	1556	S25	E66	4964	03	18.8	7	SF			3	E		14		
0107	HOLL	13	1626	1642	1645D	S24	E70	4964	03	19.1	19D	SF			3	E		78		
0108	HOLL	13	1713	1804	1911	S26	E67	4964	03	18.9	118	SF			3	E		70		
0109	HOLL	13	1713	1804	1923	S20	E55	4964	03	17.9	130	SF			3	E		70		F
0110	HOLL	13	1925	1935	1951	S23	E66	4964	03	18.9	26	SF			3	E		26		
0111	HOLL	13	1954	1959	2011	S23	E66	4964	03	18.9	17	SF			3	E		32		
0112	HOLL	13	2014	2047	2136	S25	E68	4964	03	19.1	82	SF	C	1.1	3	E		26		F
0113	HOLL	13	2137	2205	2212	S24	E64	4964	03	18.8	35	SF	C	2.8	3	E		35		
0114	HOLL	13	2307	2309	2317	S24	E63	4964	03	18.8	10	SF			3	E		36		F
0115	HOLL	13	2320	2323	2352	S27	E65	4964	03	19.0	32	SN	C	1.1	3	E		39		F
0116	HOLL	14	0013	0013	0032	S27	E64	4964	03	19.0	19	SF			3	E		13		
0117	HOLL	14	0020	0025	0028	S28	E16	4966	03	15.3	8	SF			3	E		17		
0118	SVTO	14	0717	0719	0728	S26	E62	4964	03	19.1	11	SF			3	E		15		F
0119	SVTO	14	0737	0809	0922	S27	E62	4964	03	19.1	105	SF			3	E		47		
0120		14	0805*	08156	0837	S22	E50	4964	03	18.2	32	1B	C	8.7				230	4.8	ETV
	KAND	14	0805	0815	0827	S23	E51	4964	03	18.3	22	1B	C	8.7		P	0815	291	4.8	ETV
	SVTO	14	0815	0821	0847	S21	E48	4964	03	18.0	32	1N	C	8.7	3	E		169		
0121		14	13302	13361	1344	S27	E58	4964	03	19.1	14	SF	C	1.2				20		
	SVTO	14	1330	1337	1343	S25	E58	4964	03	19.0	13	SF	C	1.2	3	E		15		
	RAMY	14	1332	1336	1345	S29	E58	4964	03	19.1	13	SF	C	1.2	3	E		25		
0122	HOLL	14	1408	1413	1428D	S26	E56	4964	03	18.9	20D	SF	C	1.1	3	E		60		F
0123	RAMY	14	1646E	1651	1701	S30	E56	4964	03	19.1	15D	SF	C	2.9	3	E		28		F
0124	RAMY	14	1850	1852	1857	S28	E55	4964	03	19.1	7	SF			3	E		34		
0125	HOLL	14	2218	2218	2226	S27	E53	4964	03	19.0	8	SF	C	1.0	3	E		22		
0126	PALE	14	2234	2238	2245	S24	E47	4964	03	18.6	11	SF	C	2.2	3	E		35		
0127		14	2301*	2307*	2345	S25	E52	4964	03	19.0	44	1N	C	6.6				83		F
	PALE	14	2301	2307	2345	S27	E55	4964	03	19.2	44	1N	C	6.6	3	E		108		F
	HOLL	14	2312	2433	2441D	S23	E49	4964	03	18.7	89D	SF			3	E		58		F
0128		15	0214	0216	0223	S26	E50	4964	03	19.0	9	SN	C	1.3				30	0.7	
	YUNN	15	0214E	0214U	0226	S25	E44	4964	03	18.5	12D	SB	C	1.3		P	0214	48	0.7	
	PALE	15	0214	0216	0220	S28	E55	4964	03	19.4	6	SF	C	1.3	3	E		12		
0129	PEKG	15	0312	0314E	0314D	S21	E47	4964	03	18.7	2D	SF				P	0314	50	0.7	D
0130		15	0825	0827	0843	S23	E44	4964	03	18.7	18	1B	M	2.5				144	3.9	F
	YUNN	15	0825E	0825U	0832D	S23	E46	4964	03	18.9	7D	1B	M	2.5		P	0825	257	3.9	F
	LEAR	15	0825	0827	0843	S23	E41	4964	03	18.5	18	SN	M	2.5	3	E		32		
0131		15	0921	09302	0938	S23	E44	4964	03	18.8	17	SB	M	3.3				50	0.6	DIT
	SVTO	15	0921	0932	0941	S23	E46	4964	03	18.9	20	SN	M	3.3	3	E		57		
	KAND	15	0927E	0930	0935	S23	E42	4964	03	18.6	8D	SB	M	3.3		P	0930	42	0.6	DIT
0132	KAND	15	1043	1050	1055	S22	E40	4964	03	18.5	12	SN				P	1050	52	0.7	EF
0133		15	11151	11178	1139	S22	E40	4964	03	18.5	24	SN	C	4.8				44	0.8	EF
	KAND	15	1115	1125	1136	S23	E39	4964	03	18.5	21	SN	C	4.8		P	1125	62	0.8	EF
	SVTO	15	1116	1117	1142	S22	E40	4964	03	18.5	26	SF	C	4.8	3	E		27		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0134		15	11432	11514	1224	S23	E44	4964	03	18.9	41	1N	M 5.9				151	2.6	EF
	SVTO	15	1143	1151	1257	S23	E43	4964	03	18.8	74	1F	M 5.9	3	E		146		F
	KAND	15	1144	1155	1209	S23	E43	4964	03	18.8	25	1B	M 5.9		P	1155	187	2.6	EF
	RAMY	15	1145	1154	1206	S23	E47	4964	03	19.1	21	1B	M 5.9	3	E		120		F
0135		15	13242	13271	1340	S23	E41	4964	03	18.7	16	SF	C 6.3				68		F
	RAMY	15	1324	1327	1341	S24	E41	4964	03	18.7	17	SF	C 6.3	3	E		97		F
	SVTO	15	1326	1328	1333	S22	E40	4964	03	18.6	7	SF	C 6.3	3	E		47		
	HOLL	15	1333E	1340U	1345	S23	E41	4964	03	18.7	12D	SF	C 6.3	2	E		59		F
0136		15	1607*	1617*	1720	S26	E38	4964	03	18.6	73	1N	M 6.5				95		FH
	HOLL	15	1607	1617	1740	S24	E41	4964	03	18.8	93	1B	M 6.5	3	E		148		FH
	RAMY	15	1613	1617	1658	S27	E37	4964	03	18.5	45	1B	M 6.5	3	E		131		FH
	RAMY	15	1700	1708	1728	S26	E40	4964	03	18.8	28	SN	C 7.3	3	E		72		
	PALE	15	1707	1709	1714	S25	E36	4964	03	18.5	7	SF	C 7.3	3	E		29		
0137	HOLL	15	1816	1820	1837	S27	E39	4964	03	18.8	21	SF		3	E		18		
0138		15	20107	2020	2031	S25	E34	4964	03	18.5	21	SF	C 1.8				20		F
	HOLL	15	2010	2020	2033	S26	E33	4964	03	18.4	23	SF	C 1.8	3	E		26		
	PALE	15	2016	2020	2030	S24	E35	4964	03	18.5	14	SF	C 1.8	3	E		21		F
	RAMY	15	2017	2020	2029	S24	E34	4964	03	18.5	12	SF	C 1.8	3	E		14		F
0139		15	20381	20451	2108	S24	E34	4964	03	18.5	30	1N	M 4.4				133		F
	PALE	15	2038	2045	2113	S25	E35	4964	03	18.6	35	1N	M 4.4	3	E		141		F
	RAMY	15	2038	2046	2107	S24	E33	4964	03	18.4	29	1N	M 4.4	3	E		118		F
	HOLL	15	2039	2045	2105	S22	E34	4964	03	18.5	26	1B	M 4.4	4	E		139		F
0140		15	2216*	2219*	2248	S26	E34	4964	03	18.6	32	1N	M 3.7				100		FH
	RAMY	15	2216	2219U	2219D	S26	E31	4964	03	18.3	3D	1B	M 3.7	3	E		131		
	HOLL	15	2216	2219	2243	S24	E34	4964	03	18.5	27	1B	M 3.7	4	E		224		FH
	PALE	15	2227	2234	2244	S29	E37	4964	03	18.8	17	SN	M 3.7	3	E		32		H
	HOLL	15	2251	2251	2256	S23	E32	4964	03	18.4	5	SF		4	E		13		F
0141		16	00332	0035	0044	S24	E35	4964	03	18.7	11	SF	C 1.3				22		F
	HOLL	16	0033	0035	0046	S24	E35	4964	03	18.7	13	SF	C 1.3	4	E		30		F
	PALE	16	0035	0035	0042	S23	E35	4964	03	18.7	7	SF	C 1.3	3	E		15		F
0142	LEAR	16	0058	0058	0103	S23	E37	4964	03	18.9	5	SF		3	E		12		
0143		16	0119	0121	0216	S23	E35	4964	03	18.7	57	SN	C 6.5				93	1.3	E
	LEAR	16	0119	0121	0216	S21	E34	4964	03	18.7	57	SN	C 6.5	3	E		90		
	YUNN	16	0126E	0131U	0157D	S25	E36	4964	03	18.8	31D	SN	C 6.5		P	0131	96	1.3	E
0144		16	0237*	0251*	0317	S24	E32	4964	03	18.6	40	1B	M 1.4				156	2.5	DF
	LEAR	16	0237	0301	0328	S21	E31	4964	03	18.5	51	1N	M 1.4	3	E		120		
	PALE	16	0244	0251	0316	S26	E34	4964	03	18.7	32	1N	M 1.4	3	E		100		F
	YUNN	16	0252E	0300U	0318	S24	E32	4964	03	18.6	26D	1B	M 1.4		P	0300	193	2.4	
	PEKG	16	0255	0259	0306	S24	E32	4964	03	18.6	11	1B	M 1.4		P	0259	210	2.6	D
0145	YUNN	16	0430E	0431U	0458	S25	E31	4964	03	18.6	28D	SN			P	0431	161	2.0	H
0146		16	05445	05533	0622	S22	E30	4964	03	18.5	38	SN	M 2.4				119	3.3	E
	MITK	16	0544	0556	0621	S23	E27	4964	03	18.3	37	SN	M 2.4		C	0556			E
	LEAR	16	0548	0555	0623	S22	E29	4964	03	18.5	35	SN	M 2.4	3	E		51		
	YUNN	16	0549	0553	0622D	S23	E30	4964	03	18.5	33D	1B	M 2.4		P		273	3.3	
	SVTO	16	0610E	0610U	0622D	S22	E34	4964	03	18.9	12D	SF	M 2.4	1	E		34		
0147		16	0727	0731	0800	S24	E28	4964	03	18.5	33	1B					176	2.2	
	YUNN	16	0727	0731	0734D	S24	E28	4964	03	18.5	7D	1B			P		289	3.5	
	BUCA	16	0730E	0730U	0800	S23	E29	4964	03	18.5	30D	SN			C	0730	64	0.8	
0148		16	09451	09471	1005	S23	E30	4964	03	18.7	20	1N	M 1.0				166	2.8	EFHZ
	SVTO	16	0945	0947	1013	S22	E29	4964	03	18.6	28	1N	M 1.0	3	E		146		
	KAND	16	0945	0948	0955	S25	E30	4964	03	18.7	10	1B	M 1.0		P	0948	229	2.8	EFHZ
	LEAR	16	0946	0947	1006	S22	E32	4964	03	18.9	20	1F	M 1.0	3	E		123		
0149		16	11402	1145	1152	S24	E27	4964	03	18.6	12	SF	C 3.2				30	0.5	EH
	KAND	16	1140	1145	1152	S22	E25	4964	03	18.4	12	SF	C 3.2		P	1145	42	0.5	E
	RAMY	16	1142	1145	1151	S25	E29	4964	03	18.7	9	SF	C 3.2	3	E		17		H

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0150		16	14048	14059	1414	S24	E25	4964	03	18.5	10	SF	C 2.6				34		FH
	HOLL	16	1345E	1345U	1400	S23	E25	4964	03	18.5	15D	SF		2	E		27		
	RAMY	16	1345E	1405	1423	S24	E24	4964	03	18.4	38D	SN	C 2.6	3	E		32		FH
	SVTO	16	1404	1406	1410	S23	E25	4964	03	18.5	6	SF	C 2.6	3	E		50		F
	HOLL	16	1412	1414	1424	S24	E25	4964	03	18.5	12	SF	M 2.1	3	E		27		
0151	HOLL	16	1520	1522	1534	S22	E26	4964	03	18.6	14	SF		3	E		20		
0152		16	1541	1546	1615	S24	E26	4964	03	18.7	34	SB	M 1.3				68		F
	HOLL	16	1541	1546	1615	S24	E27	4964	03	18.7	34	SB	M 1.3	3	E		86		F
	SVTO	16	1543E	1547U	1602D	S23	E26	4964	03	18.6	19D	SB	M 1.3	2	E		50		F
0153	PALE	16	1756	1756	1802	S24	E27	4964	03	18.8	6	SF		3	E		10		F
0154		16	1826*	18531	1957	S23	E22	4964	03	18.5	91	1B	M 8.2				180		EF
	PALE	16	1826	1853	2014	S23	E22	4964	03	18.5	108	1B	M 8.2	3	E		187		FE
	HOLL	16	1834	1853	2020	S22	E22	4964	03	18.5	106	1B	M 8.2	3	E		229		
	RAMY	16	1838	1854	1916	S24	E21	4964	03	18.4	38	1B	M 8.2	3	E		124		F
0155		16	1902	19051	1933	S16	E12	4968	03	17.7	31	SF					68		F
	RAMY	16	1902	1905	1932	S16	E11	4968	03	17.6	30	SF		3	E		57		
	HOLL	16	1902	1905	1935	S16	E13	4968	03	17.8	33	SF		3	E		87		F
	PALE	16	1902	1906	1931	S17	E11	4968	03	17.6	29	SF		3	E		61		F
0156	RAMY	16	1935	1936U	1948	S26	E23	4964	03	18.6	13	SN		1	E		46		
0157		16	19351	19405	1953	S26	E13	4964	03	17.8	18	SF	C 3.3				101		F
	HOLL	16	1935	1940	1956	S25	E14	4964	03	17.9	21	SF	C 3.3	3	E		53		F
	PALE	16	1935	1945	1950D	S27	E13	4964	03	17.8	15D	1F	C 3.3	3	E		205		
	RAMY	16	1936	1937U	1950	S27	E12	4964	03	17.7	14	SF	C 3.3	1	E		44		
0158		16	20261	2028*	2039	S24	E24	4964	03	18.7	13	SF	C 3.8				33		FH
	HOLL	16	2026	2028	2031	S24	E25	4964	03	18.8	5	SF		3	E		11		
	PALE	16	2027	2040	2047	S23	E22	4964	03	18.5	20	SF	C 3.8	3	E		55		FH
0159		16	21254	2133	2203	S24	E20	4964	03	18.4	38	1N	M 2.4				96		EFH
	RAMY	16	2125	2133	2157D	S23	E17	4964	03	18.2	32D	1N	M 2.4	3	E		113		EH
	HOLL	16	2129	2133	2203	S24	E21	4964	03	18.5	34	1N	M 2.4	4	E		132		FE
	PALE	16	2141E	2142U	2144D	S24	E21	4964	03	18.5	3D	SF	M 2.4	3	E		44		
0160	HOLL	16	2235	2236	2251	S23	E22	4964	03	18.6	16	SN	C 5.0	3	E		60		
0161	LEAR	16	2338	2340	2354	S23	E18	4964	03	18.4	16	SN	C 5.7	3	E		43		
0162	LEAR	17	0130	0131	0135	S23	E17	4964	03	18.4	5	SF		3	E		10		H
0163	LEAR	17	0205	0209	0242	S23	E18	4964	03	18.5	37	SF	C 2.8	3	E		52		H
0164		17	0322	0325	0343	S24	E19	4964	03	18.6	21	SF	C 2.7				20		H
	LEAR	17	0322	0325	0337	S23	E16	4964	03	18.4	15	SF	C 2.7	3	E		24		H
	PALE	17	0330E	0330U	0349	S24	E22	4964	03	18.8	19D	SF	C 2.7	2	E		15		
0165		17	0407	04098	0434	S24	E18	4964	03	18.6	27	SN	C 7.7				103	2.2	EFH
	PALE	17	0407	0409	0419D	S24	E20	4964	03	18.7	12D	SF	C 7.7	2	E		20		F
	LEAR	17	0407	0417	0432	S23	E17	4964	03	18.5	25	SN	C 7.7	3	E		97		H
	YUNN	17	0426E	0426U	0437	S24	E16	4964	03	18.4	11D	1N	C 7.7		P	0426	193	2.2	E
0166	LEAR	17	0507	0512	0522	S23	E16	4964	03	18.4	15	SF		3	E		40		
0167	LEAR	17	0526	0528	0544	S22	E21	4964	03	18.8	18	SF	C 7.6	3	E		35		F
0168	LEAR	17	0718	0721	0724	S24	E14	4964	03	18.4	6	SF		3	E		11		
0169		17	0727	0742	0830	S22	E16	4964	03	18.5	63	SN					42	0.5	E
	LEAR	17	0727	0742	0910	S23	E15	4964	03	18.5	103	SF		3	E		37		
	YUNN	17	0740E	0740U	0749	S22	E16	4964	03	18.5	9D	SN			P	0740	48	0.5	E
0170	LEAR	17	0935	0936	0940	S23	E13	4964	03	18.4	5	SF		3	E		15		
0171	RAMY	17	1452	1454	1459	S23	E11	4964	03	18.5	7	SF		3	E		15		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0172		17	16302	16342	1645	S24	E09	4964	03	18.4	15	SF	C 1.3				22		F
	RAMY	17	1630	1634	1644	S24	E09	4964	03	18.4	14	SF	C 1.3	3	E		24		
	HOLL	17	1632	1636	1646	S23	E09	4964	03	18.4	14	SF	C 1.3	3	E		21		F
0173	RAMY	17	1655	1656	1659	S24	E08	4964	03	18.3	4	SF		3	E		19		
0174		17	1707*	1713*	1751	S24	E10	4964	03	18.5	44	SF	C 2.6				29		F
	RAMY	17	1707	1753	1814	S25	E13	4964	03	18.7	67	SF	C 2.6	3	E		42		F
	HOLL	17	1713	1713	1719	S24	E09	4964	03	18.4	6	SF		3	E		23		
	HOLL	17	1747	1754	1800	S24	E09	4964	03	18.4	13	SF	C 2.6	3	E		22		
0175		17	1844*	1850*	1908	S23	E09	4964	03	18.5	24	SF	C 2.3				33		F
	PALE	17	1844	1850	1913	S23	E10	4964	03	18.5	29	SF	C 2.3	3	E		44		F
	HOLL	17	1847	1851	1900	S23	E10	4964	03	18.5	13	SF	C 2.3	3	E		26		F
	HOLL	17	1904	1904	1911	S23	E08	4964	03	18.4	7	SF		3	E		29		
0176		17	2046	2053	2159	S23	E10	4964	03	18.6	73	1N	M 2.2				103		FH
	HOLL	17	2046	2053	2159	S23	E07	4964	03	18.4	73	SB	M 2.2	3	E		97		FH
	PALE	17	2113E	2114U	2120D	S23	E13	4964	03	18.9	7D	1F	M 2.2	3	E		109		F
0177		17	2221	2229	2252	S23	E06	4964	03	18.4	31	SF	C 4.8				51		F
	HOLL	17	2221	2229	2252	S23	E07	4964	03	18.5	31	SF	C 4.8	3	E		58		
	PALE	17	2226E	2233U	2240D	S23	E06	4964	03	18.4	14D	SF	C 4.8	2	E		44		F
0178	HOLL	17	2338	2340	2414	S23	E05	4964	03	18.4	36	SF	C 3.4	3	E		41		FH
0179	YUNN	18	0052	0053	0107D	S23	E06	4964	03	18.5	15D	2N			P		482	5.2	F
0180		18	0121*	0123*	0154	S23	E05	4964	03	18.4	33	1N	C 7.1				146	2.0	EF
	YUNN	18	0121	0123	0126	S22	E05	4964	03	18.4	5	SN			C		64	0.7	E
	YUNN	18	0134	0135	0140	S23	E05	4964	03	18.4	6	SN			C		129	1.4	E
	PALE	18	0134	0155U	0211D	S23	E04	4964	03	18.4	37D	1N		2	E		189		
	LEAR	18	0135	0136	0140	S23	E05	4964	03	18.4	5	SF		3	E		11		
	LEAR	18	0148	0154	0229	S23	E06	4964	03	18.5	41	1F	C 7.1	3	E		115		F
	YUNN	18	0152	0156	0215	S24	E06	4964	03	18.5	23	1N	C 7.1		C		370	4.0	F
0181	LEAR	18	0233	0234	0237	N20	E01	4965	03	18.2	4	SF		3	E		13		
0182	LEAR	18	0234	0247	0253	S23	E05	4964	03	18.5	19	SF		3	E		18		F
0183		18	03162	0317*	0414	S24	E06	4964	03	18.6	58	1N	C 2.0				181	2.9	F
	PALE	18	0316	0320	0336	S23	E03	4964	03	18.4	20	SF	C 2.0	1	E		60		
	LEAR	18	0317	0317	0400	S23	E04	4964	03	18.4	43	SF	C 2.0	3	E		44		F
	YUNN	18	0318	0318U	0337D	S23	E03	4964	03	18.4	19D	1N	C 2.0		P	0318	321	3.4	
	YUNN	18	0318E	0327U	0448	S26	E12	4964	03	19.1	90D	1N			P	0327	241	2.7	
	YUNN	18	0318E	0340	0433	S25	E07	4964	03	18.7	75D	1N			P		241	2.6	F
0184	LEAR	18	0741	0741	0759	S23	E03	4964	03	18.5	18	SF		3	E		13		
0185	LEAR	18	0816	0818	0846	S27	E09	4964	03	19.0	30	SF	C 1.2	3	E		60		
0186		18	1004	1005	1028D	S24	E04	4964	03	18.7	24D	1N	M 1.0				131		
	LEAR	18	1004	1005	1019D	S24	E04	4964	03	18.7	15D	1N	M 1.0	3	E		142		
	SVTO	18	1005E	1005U	1028D	S23	E03	4964	03	18.6	23D	1F	M 1.0	1	E		120		
0187		18	1137	1139	1154	S26	E02	4964	03	18.6	17	SN	C 3.1				51		F
	RAMY	18	1123E	1139U	1158	S26	E02	4964	03	18.6	35D	SN	C 3.1	2	E		69		F
	SVTO	18	1137	1139	1151	S26	E02	4964	03	18.6	14	SF	C 3.1	3	E		33		F
0188	RAMY	18	1256	1300	1324	S16	W12	4968	03	17.6	28	SF		3	E		69		
0189	RAMY	18	1404E	1404	1410	S28	E05	4964	03	19.0	6D	SF		3	E		23		
0190	HOLL	18	1601	1603	1617	S23	W04	4964	03	18.3	16	SF		3	E		30		F
0191		18	1830*	1835*	1902	S24	W02	4964	03	18.6	32	SF					26		F
	HOLL	18	1830	1835	1842	S27	E00	4964	03	18.8	12	SF		3	E		15		
	PALE	18	1830	1851	1859	S22	W05	4964	03	18.4	29	SF		4	E		31		F
	HOLL	18	1845	1851	1925	S25	W01	4964	03	18.7	40	SF		3	E		44		
	RAMY	18	1850	1851	1904	S24	W04	4964	03	18.5	14	SF		3	E		15		F

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0192		18	19313	19371	2001	S24	W03	4964	03	18.6	30	SF	C 1.5				84		F
	PALE	18	1931	1938	1956	S23	W05	4964	03	18.4	25	SF	C 1.5	3	E		79		F
	HOLL	18	1932	1938	2006	S25	W01	4964	03	18.7	34	1F	C 1.5	3	E		104		
	RAMY	18	1934	1937	2001	S24	W04	4964	03	18.5	27	SF	C 1.5	3	E		69		F
0193	RAMY	18	2045	2046	2052	S23	W04	4964	03	18.5	7	SF		3	E		13		F
0194		18	2122*	2127*	2149	S24	W03	4964	03	18.6	27	SF	C 1.1				29		F
	RAMY	18	2122	2127	2151D	S23	W04	4964	03	18.6	29D	SF		3	E		31		F
	PALE	18	2124	2135	2140D	S25	W01	4964	03	18.8	16D	SF	C 1.1	3	E		19		
	HOLL	18	2133	2140	2149	S23	W04	4964	03	18.6	16	SF	C 1.1	3	E		36		
0195	HOLL	18	2207	2210	2229	S24	W02	4964	03	18.8	22	SF		3	E		15		
0196		18	23171	2319	2335	S24	W04	4964	03	18.7	18	SF					24		F
	HOLL	18	2317	2319	2334	S23	W07	4964	03	18.4	17	SF		3	E		29		F
	LEAR	18	2318	2319	2336	S26	W01	4964	03	18.9	18	SF		3	E		18		
0197	HOLL	19	0003	0003	0012	S29	W42	4970	03	15.7	9	SF		3	E		13		
0198		19	0015	0016	0035	S24	W04	4964	03	18.7	20	SF					24		
	LEAR	19	0015	0016	0034	S26	W02	4964	03	18.8	19	SF		3	E		22		
	HOLL	19	0015	0016	0036	S23	W07	4964	03	18.5	21	SF		3	E		26		
0199	LEAR	19	0138	0138	0159	S23	W09	4964	03	18.4	21	1F	C 2.0	3	E		104		H
0200		19	0226*	0226*	0243	S26	E00	4964	03	19.1	17	SF					12		
	LEAR	19	0226	0226	0237	S27	E01	4964	03	19.2	11	SF		3	E		14		
	LEAR	19	0243	0243	0249	S26	E00	4964	03	19.1	6	SF		3	E		11		
0201		19	0335*	0341*	0401	S25	W06	4964	03	18.7	26	SF					90	2.2	E
	YUNN	19	0335	0341	0356	S23	W11	4964	03	18.3	21	SF			C		161	1.8	E
	LEAR	19	0340	0345	0346	S26	W03	4964	03	18.9	6	SF		3	E		11		
	YUNN	19	0350	0356	0411	S25	W04	4964	03	18.8	21	1N			C		241	2.6	E
	LEAR	19	0351	0357	0403	S24	W06	4964	03	18.7	12	SF		3	E		21		
	LEAR	19	0404	0404	0408	S25	W06	4964	03	18.7	4	SF		3	E		16		
0202	LEAR	19	0501	0501	0506	S30	W43	4970	03	15.8	5	SF		3	E		12		
0203	YUNN	19	0504	0513	0516	S28	E03	4964	03	19.4	12	1N			C		289	3.2	D
0204		19	0615*	0615*	0637	S24	W09	4964	03	18.6	22	SF					118	3.5	E
	LEAR	19	0615	0615	0622	S26	W05	4964	03	18.9	7	SF		3	E		20		
	YUNN	19	0621	0630	0644	S23	W12	4964	03	18.3	23	1N			C		321	3.5	E
	LEAR	19	0637	0637	0644	S23	W10	4964	03	18.5	7	SF		3	E		14		
0205		19	07045	07082	0714	S24	W08	4964	03	18.7	10	SN					51	1.0	DF
	SVTO	19	0704	0708	0715	S26	W06	4964	03	18.8	11	SF		3	E		22		F
	BUCA	19	0705E	0710	0714	S23	W09	4964	03	18.6	9D	SN			C	0710	107	1.2	
	LEAR	19	0706	0708	0712	S25	W06	4964	03	18.8	6	SF		3	E		12		
	PEKG	19	0709	0710	0715	S24	W09	4964	03	18.6	6	SN			C	0710	63	0.7	D
0206	LEAR	19	0822	0822	0830	N20	W14	4965	03	18.3	8	SF		3	E		14		
0207		19	1432*	14552	1507	S27	W07	4964	03	19.1	35	SF					19		F
	SVTO	19	1432	1434U	1511D	S26	W08	4964	03	19.0	39D	SF		2	E		17		F
	RAMY	19	1452	1457	1504	S27	W07	4964	03	19.1	12	SF		3	E		16		F
	HOLL	19	1454	1455	1510	S27	W06	4964	03	19.1	16	SF		3	E		23		F
0208	PALE	19	1717	1724	1743	S28	W53	4966	03	15.6	26	SF		3	E		19		
0209	PALE	19	1906	1906	1909	S26	W10	4964	03	19.0	3	SF		3	E		20		
0210		19	22251	22287	2256	S26	W13	4964	03	18.9	31	SF					16		
	HOLL	19	2225	2228	2245	S26	W13	4964	03	18.9	20	SF		3	E		13		
	PALE	19	2226	2235	2306	S26	W13	4964	03	18.9	40	SF		3	E		18		
0211	HOLL	19	2253	2257	2305	N20	E66	4972	03	25.0	12	SF		3	E		15		
0212	HOLL	19	2303	2341	2431	S26	W13	4964	03	18.9	88	SF	C 3.6	3	E		59		F

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0213	HOLL	20	1518	1518	1540	N23	W34	4965	03	18.0	22	SF			4	E		12		FH
0214		20	15341	15421	1627	S27	W20	4964	03	19.1	53	SN	C	5.4				62		EF
	RAMY	20	1534	1542	1620D	S27	W19	4964	03	19.2	46D	SF	C	5.4	3	E		56		F
	HOLL	20	1535	1543	1627	S27	W21	4964	03	19.0	52	SN	C	5.4	4	E		68		FE
0215		20	16401	16421	1649	N22	W34	4965	03	18.1	9	SF						18		
	RAMY	20	1640	1643	1650	N22	W34	4965	03	18.1	10	SF			3	E		18		
	HOLL	20	1641	1642	1648	N23	W34	4965	03	18.1	7	SF			4	E		18		
0216	PALE	20	1803	1803	1815	S26	W21	4964	03	19.1	12	SF			3	E		13		F
0217	HOLL	20	1821	1836	1854	S27	W25	4964	03	18.8	33	SF			4	E		28		
0218		20	18226	18254	1838	N21	W33	4965	03	18.2	16	SF						15		
	HOLL	20	1822	1825	1842	N23	W35	4965	03	18.1	20	SF			3	E		20		
	PALE	20	1828	1829	1834	N20	W33	4965	03	18.2	6	SF			3	E		15		
	RAMY	20	1828	1829	1838D	N20	W32	4965	03	18.3	10D	SF			3	E		10		
0219		20	19151	1920	2004	N20	W32	4965	03	18.3	49	SN						94		FZ
	PALE	20	1915	1920	2006	N20	W31	4965	03	18.4	51	SN			3	E		90		F
	HOLL	20	1916	1920	2003	N20	W32	4965	03	18.3	47	SN			3	E		98		ZF
0220	PALE	20	1941	1945	1948	S26	W23	4964	03	19.0	7	SF			3	E		14		F
0221		20	21098	2123*	2257	N22	E54	4972	03	25.0	108	2B	C	5.5				270		FU
	HOLL	20	2109	2123	2305	N23	E53	4972	03	25.0	116	1B	C	5.5	3	E		107		UF
	PALE	20	2117	2133	2249	N21	E56	4972	03	25.2	92	2B	C	5.5	3	E		432		
0222	PALE	20	2132	2136	2143	N21	W35	4965	03	18.2	11	SF			3	E		16		
0223	HOLL	21	0021	0024	0031	S34	E83	4974	03	27.6	10	SF			3	E		29		
0224	YUNN	21	0128	0137	0146	N20	E49	4972	03	24.8	18	SN				C		48	0.9	D
0225	YUNN	21	0131E	0131U	0143	N25	W34	4965	03	18.4	12D	SN				P	0131	96	1.4	D
0226	YUNN	21	0131	0137	0153	S27	W26	4964	03	19.0	22	SN				C		80	1.0	D
0227	YUNN	21	0222	0228	0252	S26	W26	4964	03	19.1	30	SN				C		64	0.8	D
0228		21	03202	03245	0338	N21	E52	4972	03	25.1	18	1B	C	2.6				218	6.3	E
	PALE	21	0320	0329	0335D	N21	E52	4972	03	25.1	15D	SN	C	2.6	3	E		115		
	YUNN	21	0322	0324	0338	N21	E52	4972	03	25.1	16	2B	C	2.6		C		321	6.3	E
0229	LEAR	21	0450	0452	0502	N22	E47	4972	03	24.8	12	SF			3	E		18		F
0230		21	0558*	0615	0653	N22	E47	4972	03	24.9	55	SN						70	2.8	
	YUNN	21	0558	0615	0708	N21	E47	4972	03	24.8	70	1B				C		161	2.8	
	LEAR	21	0613	0615	0617	N22	E47	4972	03	24.9	4	SF			3	E		26		
	SVTO	21	0634	0634U	0714	N23	E48	4972	03	25.0	40	SF			2	E		22		
0231		21	0705*	07182	0734	N19	W39	4965	03	18.3	29	SN	C	1.6				91	3.1	F
	YUNN	21	0705	0718	0746D	N19	W39	4965	03	18.3	41D	1B	C	1.6		P		209	3.1	
	SVTO	21	0713	0718	0740	N17	W40	4965	03	18.3	27	SF	C	1.6	2	E		42		F
	LEAR	21	0718	0720	0728	N20	W39	4965	03	18.3	10	SF	C	1.6	2	E		23		
0232		21	11522	1155*	1216	N23	E46	4972	03	25.0	24	SF	C	2.2				45	1.4	EFHT
	RAMY	21	1152	1207	1218	N21	E45	4972	03	24.9	26	SF	C	2.2	3	E		32		F
	KAND	21	1153	1155	1220D	N22	E46	4972	03	25.0	27D	SN	C	2.2		P	1155	83	1.4	ETH
	SVTO	21	1154	1206	1213	N25	E46	4972	03	25.0	19	SF			3	E		20		
0233		21	15372	15413	1615	S25	W36	4964	03	18.9	38	SF	C	2.5				72		F
	HOLL	21	1537	1541	1626	S27	W32	4964	03	19.1	49	SF	C	2.5	4	E		81		F
	RAMY	21	1539	1544	1604	S23	W40	4964	03	18.6	25	SF	C	2.5	3	E		64		
0234		21	16372	1646	1715	S27	W33	4964	03	19.1	38	SF	C	1.2				30		F
	HOLL	21	1637	1646	1723	S27	W32	4964	03	19.2	46	SF	C	1.2	4	E		40		F
	RAMY	21	1639	1646	1702	S27	W34	4964	03	19.0	23	SF	C	1.2	3	E		26		
	PALE	21	1701E	1702U	1720	S27	W32	4964	03	19.2	19D	SF			1	E		25		F

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0235		21	1716	1756	1846	N18	W43	4965	03	18.4	90	SF					38		
	HOLL	21	1716	1756	1900	N19	W43	4965	03	18.4	104	SF		3	E		52		
	RAMY	21	1807E	1812U	1833	N18	W43	4965	03	18.5	26D	SF		2	E		25		
0236		21	18411	18412	1852	S24	W38	4964	03	18.8	11	SF					21		
	HOLL	21	1841	1841	1850	S24	W37	4964	03	18.9	9	SF		4	E		27		
	PALE	21	1842	1843	1853	S25	W38	4964	03	18.8	11	SF		3	E		15		
0237	HOLL	21	2129	2130	2142	S24	W38	4964	03	18.9	13	SF	C 1.7	3	E		40		F
0238	HOLL	21	2315E	2315U	2322	N26	W49	4965	03	18.2	7D	SF		3	E		37		H
0239	HOLL	22	0009	0009	0025	N21	E40	4972	03	25.1	16	SF		3	E		28		
0240	HOLL	22	0029	0029	0037	S28	W79	4970	03	15.8	8	SF		3	E		18		
0241	YUNN	22	0201E	0203	0208	S26	W41	4964	03	18.9	7D	SF			P		129	1.8	D
0242	YUNN	22	0722E	0723U	0727D	S27	W42	4964	03	19.0	5D	1N			P	0723	321	4.7	E
0243	KAND	22	1000	1001	1008	S25	W50	4964	03	18.5	8	SN			P	1001	21	0.3	D
0244	HOLL	22	1851	1855	1909	S33	E66	4974	03	28.0	18	SF		4	E		26		
0245		22	2024	2024	2035	N21	E28	4972	03	25.0	11	SF					35		
	HOLL	22	2024	2024	2033	N21	E28	4972	03	25.0	9	SF		3	E		39		
	RAMY	22	2024	2024	2037	N21	E29	4972	03	25.1	13	SF		3	E		31		
0246		22	20514	20592	2117	S28	W48	4964	03	19.1	26	SN	C 3.6				47		EF
	HOLL	22	2051	2059	2119	S28	W47	4964	03	19.2	28	SN	C 3.6	3	E		40		
	RAMY	22	2051	2059	2122	S28	W48	4964	03	19.1	31	SN	C 3.6	3	E		62		FE
	PALE	22	2055	2101	2109	S28	W50	4964	03	19.0	14	SF	C 3.6	3	E		39		
0247	HOLL	22	2313	2315	2318	S26	W52	4964	03	18.9	5	SF		3	E		30		
0248	PALE	23	0057	0104	0141	S24	W55	4964	03	18.8	44	SF		3	E		44		F
0249		23	01452	01531	0204	S26	W46	4964	03	19.5	19	SB					102	2.0	EF
	YUNN	23	0145	0153	0204	S26	W46	4964	03	19.5	19	SB			C		129	2.0	E
	PALE	23	0147	0154	0203	S25	W47	4964	03	19.4	16	SN		3	E		76		F
0250		23	01507	0150*	0220	N24	E28	4972	03	25.2	30	1N					192	3.9	EFS
	PALE	23	0150	0150	0218	N23	E30	4972	03	25.4	28	SF		3	E		95		FS
	YUNN	23	0157	0202	0221	N24	E27	4972	03	25.2	24	1N			C		289	3.9	E
0251	YUNN	23	0229	0244	0304	N27	W61	4965	03	18.3	35	SN			C				D
0252	PALE	23	0410	0414	0428D	S25	W47	4964	03	19.5	18D	SF		1	E		32		
0253	YUNN	23	0723	0729	0737	S24	W57	4964	03	18.9	14	SF			C		48	0.9	D
0254	YUNN	23	0813	0834	0854	N15	E88	4975	03	30.0	41				C				A
0255	YUNN	23	0857	0903	0904D	S25	W59	4964	03	18.8	7D	SF			P		48	1.0	D
0256	HOLL	23	1458	1505	1528	S36	E56	4974	03	28.1	30	SF		3	E		36		F
0257	HOLL	23	1536	1537	1700	S22	W62	4964	03	18.9	84	SF		3	E		25		F
0258	HOLL	23	1727	1728	1734	N22	W70	4965	03	18.3	7	SF		3	E		20		
0259	HOLL	23	1951	1952	1958	S26	W56	4964	03	19.5	7	SF		3	E		17		F
0260	HOLL	23	2017	2020	2034	S25	W56	4964	03	19.5	17	SF	C 2.8	3	E		44		
0261	HOLL	23	2226	2259	2342	N20	W71	4965	03	18.5	76	SN		3	E		27		
0262	YUNN	24	0207E	0207U	0215	N25	W87		03	17.3	8D	SN			P	0207	32		
0263	PALE	24	0320	0320	0337	S35	E48	4974	03	28.0	17	SF		3	E		28		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0264		24	03328	0334*	0358	S26	W64	4964	03	19.2	26	SF	C 1.2				45		
	PALE	24	0332	0334	0354	S27	W65	4964	03	19.1	22	SF	C 1.2	2	E		45		
	LEAR	24	0340	0351	0401	S25	W64	4964	03	19.2	21	SF	C 1.6	3	E		45		
0265	LEAR	24	0435	0440	0446	N24	W77	4965	03	18.2	11	SF		3	E		21		
0266	YUNN	24	0812E	0816U	0820	N21	E06	4972	03	24.8	8D	SN			P	0816	64	0.7	D
0267	SVTO	24	1019	1026	1041	N21	E87		03	31.1	22	1F	M 4.3	3	E		143		
0268		24	1307	13072	1313	S27	W66	4964	03	19.4	6	SF					23		
	SVTO	24	1307	1307	1312	S27	W65	4964	03	19.5	5	SF		2	E		19		
	RAMY	24	1307	1309	1314	S27	W66	4964	03	19.4	7	SF		3	E		27		
0269		24	13522	13556	1425	N17	E76	4975	03	30.3	33	SF	C 2.8				34		F
	RAMY	24	1352	1355	1417	N15	E74	4975	03	30.2	25	SF	C 2.8	3	E		45		
	SVTO	24	1354	1401	1433	N19	E78	4975	03	30.5	39	SF	C 2.8	3	E		24		F
0270		24	1434*	1436*	1453	S26	W67	4964	03	19.4	19	SF	C 1.3				45		EF
	HOLL	24	1434	1436	1439	S25	W66	4964	03	19.5	5	SF		3	E		17		F
	RAMY	24	1437	1448	1501	S27	W67	4964	03	19.4	24	SN	C 1.3	3	E		55		E
	HOLL	24	1445	1449	1456	S27	W67	4964	03	19.4	11	SF	C 1.3	3	E		69		F
	SVTO	24	1445	1449	1456	S27	W67	4964	03	19.4	11	SF	C 1.3	3	E		39		
0271	HOLL	24	1547	1548	1552	S28	W68	4964	03	19.3	5	SF		3	E		15		
0272		24	1634	16351	1649	S26	W68	4964	03	19.4	15	SN	M 1.2				76		E
	HOLL	24	1634	1635	1649	S26	W69	4964	03	19.3	15	SN	M 1.2	3	E		78		E
	RAMY	24	1634	1636	1646D	S27	W68	4964	03	19.4	12D	SN	M 1.2	3	E		74		
0273	HOLL	24	1707	1729	1821	N21	E72	4975	03	30.2	74	SF	C 1.7	3	E		52		F
0274	HOLL	24	1741	1741	1751	S24	W77	4964	03	18.8	10	SF		3	E		18		
0275		24	1825	2013	2032	N20	E00	4972	03	24.8	127	1B	C 3.2				140		EF
	HOLL	24	1825	2013	2039	N20	E00	4972	03	24.8	134	1N	C 3.2	3	E		122		FE
	PALE	24	1829E	1840U	2025	N20	E01	4972	03	24.8	116D	1B		2	E		157		FE
0276		24	1918*	1920*	1944	S26	W69	4964	03	19.4	26	SF	C 6.5				32		F
	PALE	24	1918	1920	1957	S25	W69	4964	03	19.4	39	SF	C 6.5	2	E		40		
	HOLL	24	1920	1927	1931	S27	W69	4964	03	19.4	11	SF	C 6.5	3	E		20		F
	HOLL	24	1936	1941	1945	S26	W70	4964	03	19.4	9	SF		3	E		35		
0277		24	2022	2034	2049	S26	W70	4964	03	19.4	27	1B	C 3.2				124		FH
	HOLL	24	2022	2034	2049	S26	W71	4964	03	19.3	27	1B	C 3.2	3	E		167		F
	PALE	24	2029E	2034U	2035D	S25	W69	4964	03	19.5	6D	SN	C 3.2	2	E		81		FH
0278	HOLL	24	2030	2031	2054	S36	E38	4974	03	27.9	24	SF		3	E		23		
0279	HOLL	24	2052	2055	2101	S29	W72	4964	03	19.2	9	SF		3	E		45		
0280	HOLL	24	2138	2142	2151	N21	E70	4975	03	30.3	13	SN	C 3.0	3	E		93		F
0281	HOLL	24	2316	2319	2326	N21	E78	4975	03	30.9	10	SF		3	E		14		
0282	YUNN	25	0121	0137	0149	S26	W72	4964	03	19.5	28	SN			C		16		D
0283	YUNN	25	0311	0317	0335	S27	W75	4964	03	19.3	24	SN			C		32		D
0284		25	07241	07261	0805	N22	E64	4975	03	30.2	41	1N	C 2.7				175		D
	YUNN	25	0724	0727	0830	N22	E65	4975	03	30.3	66	1B	C 2.7		C		225		D
	LEAR	25	0725	0726	0740	N21	E64	4975	03	30.2	15	1F	C 2.7	3	E		125		
0285		25	08441	08491	0900	S26	W78	4964	03	19.3	16	1B	C 3.5				172		D
	YUNN	25	0844	0850	0900	S26	W77	4964	03	19.4	16	1B	C 3.5		C		177		D
	LEAR	25	0845	0849	0901	S25	W78	4964	03	19.3	16	1N	C 3.5	3	E		168		
0286	SVTO	25	1117	1122	1129	S30	W80	4964	03	19.2	12	1N	M 2.0	3	E		120		
0287	HOLL	25	1609	1611	1620	S28	W79	4964	03	19.5	11	SF	C 1.3	3	E		34		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0288	RAMY	25	1644	1644	1654	S23	E67	4977	03	30.8	10	SF		3	E		11		
0289		25	18266	18312	1846	S28	W80	4964	03	19.5	20	SF					18		
	HOLL	25	1826	1831	1847	S28	W81	4964	03	19.4	21	SF		3	E		21		
	RAMY	25	1832	1833	1845	S27	W80	4964	03	19.5	13	SF		3	E		15		
0290		25	1908*	1910*	1932	S26	W87	4964	03	19.0	24	SF	C 1.0				27		
	HOLL	25	1908	1910	1922	S25	W88	4964	03	19.0	14	SF		3	E		38		
	RAMY	25	1908	1912	2029D	S24	W89	4964	03	18.9	81D	SF		3	E		20		
	HOLL	25	1937	1939	1942	S28	W83	4964	03	19.3	5	SF	C 1.0	3	E		22		
0291	HOLL	25	2050	2050	2102	N18	E61	4975	03	30.5	12	SF		3	E		14		
0292	HOLL	25	2102	2109	2115	S22	E61	4977	03	30.6	13	SF		3	E		12		
0293	HOLL	25	2127	2128	2132	S28	W82	4964	03	19.5	5	SF		3	E		15		
0294	HOLL	25	2204	2206	2210	S21	E87	4978	04	1.6	6	SF		3	E		26		
0295	HOLL	25	2210	2218	2224	S26	W83	4964	03	19.5	14	SF		3	E		12		
0296	LEAR	26	0238	0238	0243	N16	E57	4975	03	30.4	5	SF		3	E		14		
0297	LEAR	26	0442	0443	0448	S22	E81	4978	04	1.4	6	SF		3	E		13		
0298		26	04517	04519	0506	N16	E56	4975	03	30.4	15	SF					20		
	LEAR	26	0451	0451	0454	N18	E57	4975	03	30.5	3	SF		3	E		16		
	LEAR	26	0458	0500	0518	N15	E56	4975	03	30.4	20	SF		3	E		24		
0299	LEAR	26	0610	0610	0624	N16	E57	4975	03	30.6	14	SF		3	E		12		
0300	HOLL	26	1641	1657	1708	N17	E54	4975	03	30.8	27	SF		3	E		24		F
0301	HOLL	26	2245	2251	2322	N18	E50	4975	03	30.7	37	SF	C 1.1	3	E		46		
0302		27	19541	19562	2004	S24	E42	4977	03	31.1	10	SF					16		
	PALE	27	1954	1958	2007	S25	E42	4977	03	31.1	13	SF		3	E		19		
	HOLL	27	1955	1956	2001	S23	E42	4977	03	31.1	6	SF		3	E		14		
0303	PALE	28	0212	0216	0226	N22	W43	4972	03	24.8	14	SF		2	E		38		
0304	PALE	28	0359	0400	0406	N16	E32	4975	03	30.6	7	SF		2	E		15		F
0305	HOLL	28	1614	1617	1619	N22	W48	4972	03	25.0	5	SF		3	E		10		
0306		28	1756	17564	1808	N18	E26	4975	03	30.7	12	SF					19		F
	PALE	28	1756	1756	1806	N16	E25	4975	03	30.6	10	SF		3	E		17		F
	HOLL	28	1756	1800	1809	N20	E27	4975	03	30.8	13	SF		4	E		21		
0307		28	1910*	1912*	1941	N16	E24	4975	03	30.6	31	SF					34		F
	PALE	28	1910	1912	1922	N16	E25	4975	03	30.7	12	SF		3	E		19		
	HOLL	28	1910	1926	1955	N17	E22	4975	03	30.5	45	SF		3	E		36		
	PALE	28	1924	1928	1947	N16	E24	4975	03	30.6	23	SF		3	E		48		F
0308	HOLL	28	2314	2315	2332	S24	E28	4977	03	31.1	18	SF		3	E		18		
0309	HOLL	28	2329	2332	2337	N22	E21	4975	03	30.6	8	SF		3	E		43		F
0310	HOLL	28	2353	2358	2407	N22	E21	4975	03	30.6	14	SF		3	E		27		
0311	YUNN	29	0049	0050	0112	N21	E29	4975	03	31.2	23	2B	C 3.9		C		563	7.6	F
0312	LEAR	29	0137	0139	0148	N19	E23	4975	03	30.8	11	SF		3	E		16		F
0313	SVTO	29	0629	0629	0638	N21	E16	4975	03	30.5	9	SF	C 3.1	3	E		40		
0314		29	18261	18292	1857	S23	E35	4978	04	1.5	31	1F	C 1.9				127		EFR
	PALE	29	1826	1829	1858	S24	E35	4978	04	1.5	32	1N	C 1.9	3	E		119		FE
	HOLL	29	1827	1830	1859	S20	E34	4978	04	1.4	32	1F	C 1.9	3	E		124		FR
	RAMY	29	1827	1831	1853	S24	E36	4978	04	1.5	26	1F	C 1.9	3	E		139		F

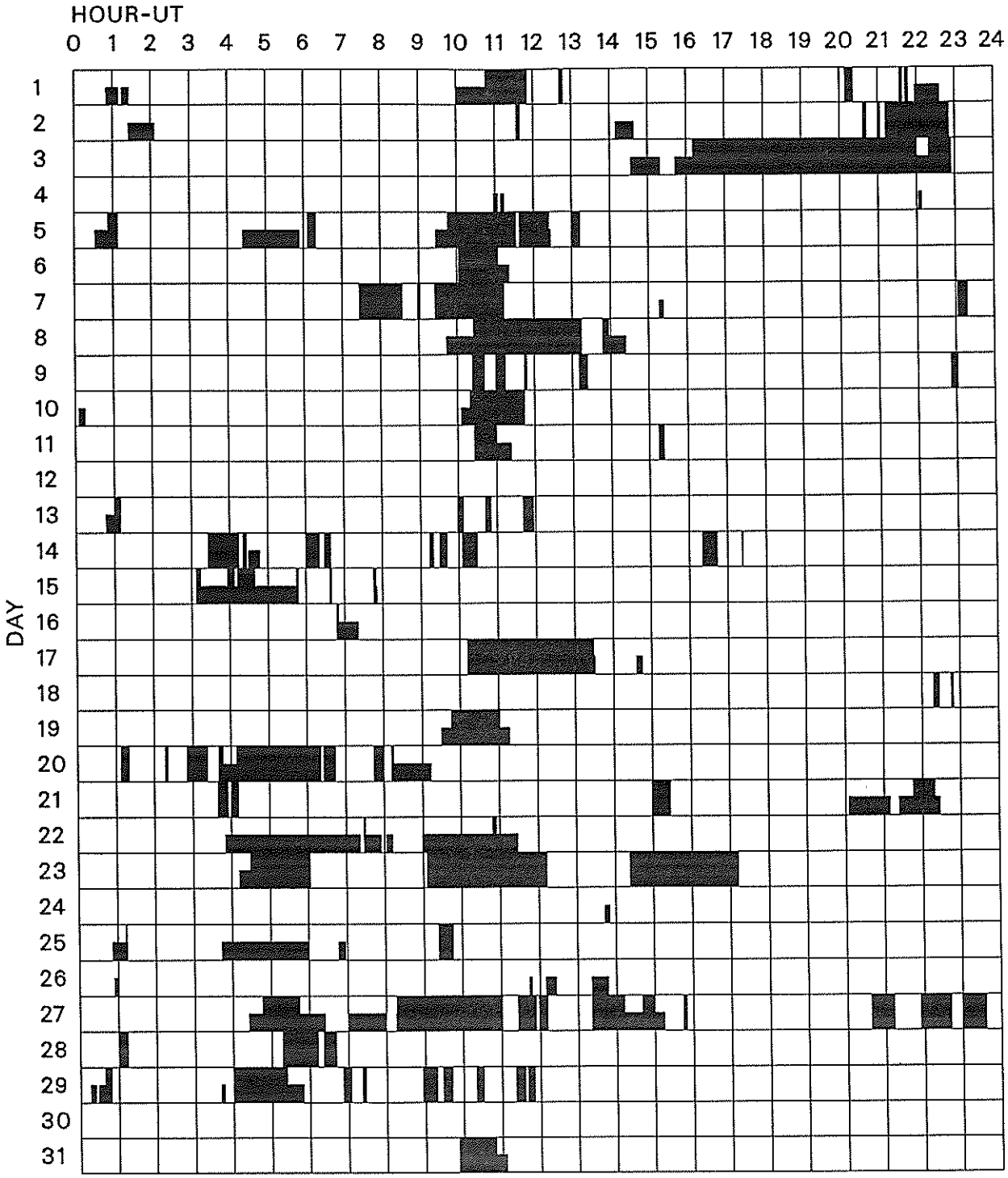
H - ALPHA S O L A R F L A R E S

MARCH 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0315		29	1949*	1953*	2022	S18	E32	4978	04	1.3	33	SF					12		F
	HOLL	29	1949	1953	2017	S18	E32	4978	04	1.3	28	SF		3	E		11		F
	PALE	29	2011	2011	2027	S19	E31	4978	04	1.2	16	SF		3	E		12		F
0316	HOLL	29	2239	2249	2309	N21	E09	4975	03	30.6	30	SF	C 1.4	3	E		16		F
0317	HOLL	29	2243	2245	2253	S22	E33	4978	04	1.5	10	SF	C 1.4	3	E		12		F
0318	LEAR	29	2319	2325	2329	N15	E11	4975	03	30.8	10	SF		3	E		14		
0319	SVTO	30	0800	0800	0807	N22	E17	4975	03	31.6	7	SF		3	E		11		
0320	LEAR	30	0942	0942	0945	N19	E05	4975	03	30.8	3	SF		3	E		21		
0321	RAMY	30	1307	1311	1318	N21	E06	4975	03	31.0	11	SF		3	E		15		
0322	HOLL	30	1513	1517	1519	N20	E00	4975	03	30.6	6	SF		3	E		26		
0323	HOLL	30	1527	1530	1532	N21	W05	4975	03	30.3	5	SF		3	E		17		F
0324	HOLL	30	1556	1600	1609	N23	W70	4972	03	25.3	13	SF		3	E		14		
0325		30	16057	1612	1623	N19	E00	4975	03	30.7	18	SF	C 1.3				50		FH
	HOLL	30	1605	1612	1626	N19	E01	4975	03	30.7	21	SF	C 1.3	3	E		62		FH
	RAMY	30	1612	1612	1620	N19	W01	4975	03	30.6	8	SF	C 1.3	3	E		37		
0326	HOLL	30	1611	1612	1626	S21	E25	4978	04	1.6	15	SF		3	E		26		F
0327	HOLL	30	1640	1641	1650	N18	W66	4972	03	25.7	10	SF		3	E		14		
0328	HOLL	30	1651	1651	1657	N20	W02	4975	03	30.5	6	SF		3	E		29		
0329	HOLL	30	1653	1653	1701	N21	W77	4972	03	24.8	8	SF		3	E		11		
0330		30	1812	18132	1825	N20	W00	4975	03	30.7	13	SF					31		F
	HOLL	30	1812	1813	1823	N20	W02	4975	03	30.6	11	SF		3	E		37		
	RAMY	30	1812	1815	1827	N20	E01	4975	03	30.8	15	SF		3	E		25		F
0331		30	1911	1915	1919	N20	E02	4975	03	30.9	8	SN	C 1.0				58		FH
	HOLL	30	1911	1915	1919	N20	E02	4975	03	30.9	8	SN	C 1.0	3	E		58		F
	RAMY	30	1911	1915	1925D	N20	E03	4975	03	31.0	14D	SF	C 1.0	3	E		57		H
0332	HOLL	30	2107	2110	2119	N18	W04	4975	03	30.6	12	SF		3	E		13		
0333	HOLL	30	2309	2310	2334	N21	W03	4975	03	30.7	25	SF	C 1.0	3	E		38		F
0334	LEAR	31	0534	0537	0546	S22	E16	4978	04	1.5	12	SF		3	E		50		
0335		31	0725	0726	0731	S32	W45	4974	03	27.7	6	SN					37	0.8	D
	LEAR	31	0725	0726	0731	S32	W44	4974	03	27.8	6	SF		3	E		26		
	YUNN	31	0726E	0726U	0729D	S33	W46	4974	03	27.6	3D	SN			P	0726	48	0.8	D
0336		31	08023	08061	0810	S32	W44	4974	03	27.8	8	SN					30	0.8	D
	YUNN	31	0802	0806	0810	S32	W45	4974	03	27.8	8	SN			C		48	0.8	D
	LEAR	31	0805	0807	0809	S32	W44	4974	03	27.8	4	SF		3	E		13		
0337	LEAR	31	0925	0926	0935	S22	W02	4977	03	31.2	10	SF		3	E		13		
0338	RAMY	31	1121	1123	1127	N14	W13	4975	03	30.5	6	SF		3	E		16		
0339	RAMY	31	1126	1130	1138	S22	E14	4978	04	1.5	12	SF		3	E		17		
0340	RAMY	31	1331	1331	1334	S23	W04	4977	03	31.2	3	SF		3	E		17		
0341		31	20368	2046	2125	N19	W15	4975	03	30.7	49	SF	C 3.2				86		F
	RAMY	31	2036	2043U	2130D	N20	W15	4975	03	30.7	54D	SF	C 3.2	3	E		82		F
	PALE	31	2044	2046	2125	N18	W15	4975	03	30.7	41	SF	C 3.2	3	E		89		F
0342	PALE	31	2203	2206	2212	N18	W16	4975	03	30.7	9	SF		3	E		41		F
0343	LEAR	31	2338	2339	2342	N13	E67		04	6.0	4	SF		3	E		20		

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

MARCH 1988



Times of no flare patrol, shown here as shaded areas, combine reports from the observatories listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind, that is, of neither visual nor cinematographic; portions of a panel with only the bottom half shaded mark times of strictly visual patrol.

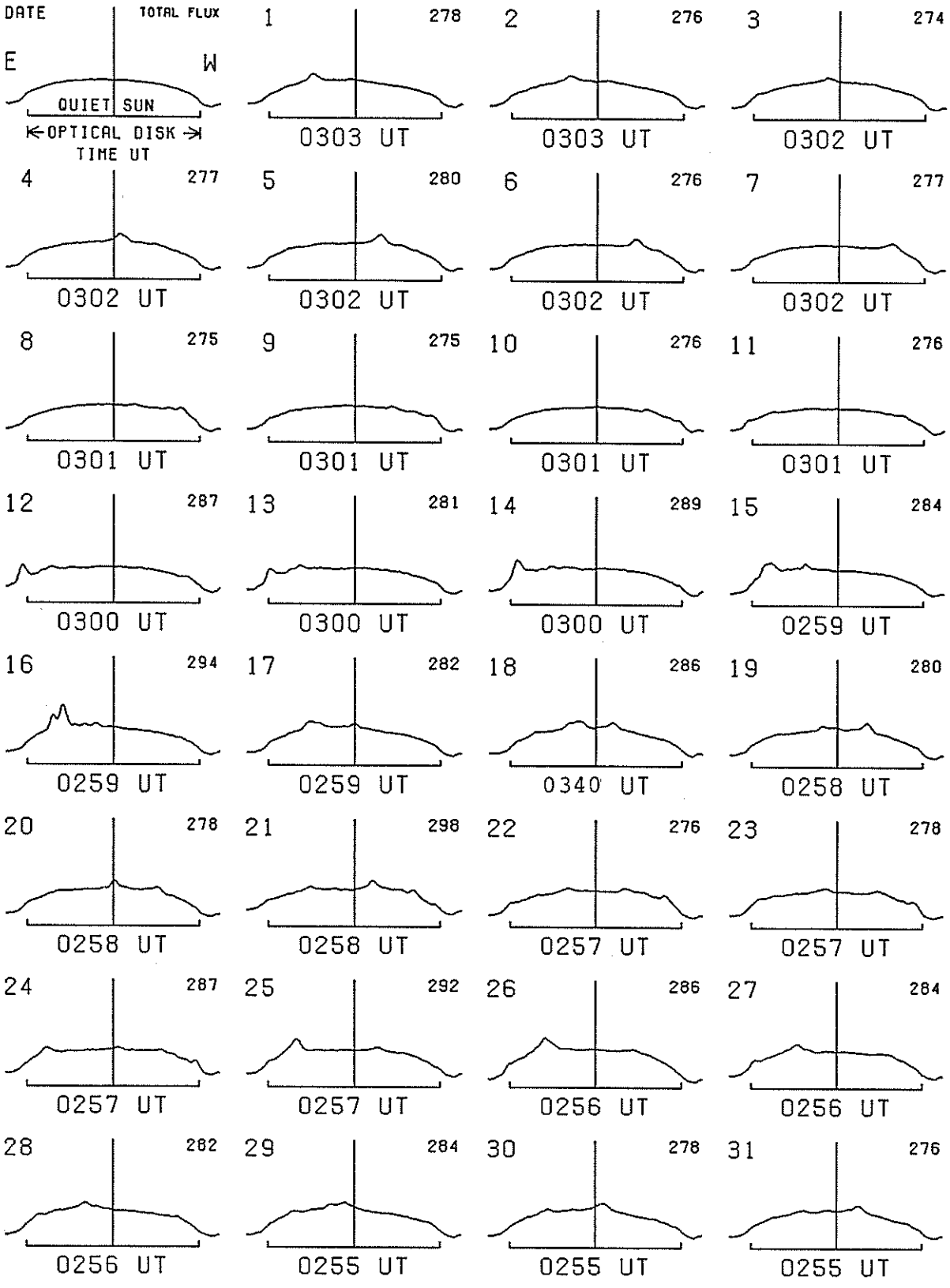
Bucharest	Istanbul	Learmonth	Palehua	Ramey
Holloman	Kandilli	Mitaka	Peking	San Vito
				Yunnan

EAST-WEST SOLAR SCANS

MARCH 1988

TOYOKAWA, JAPAN

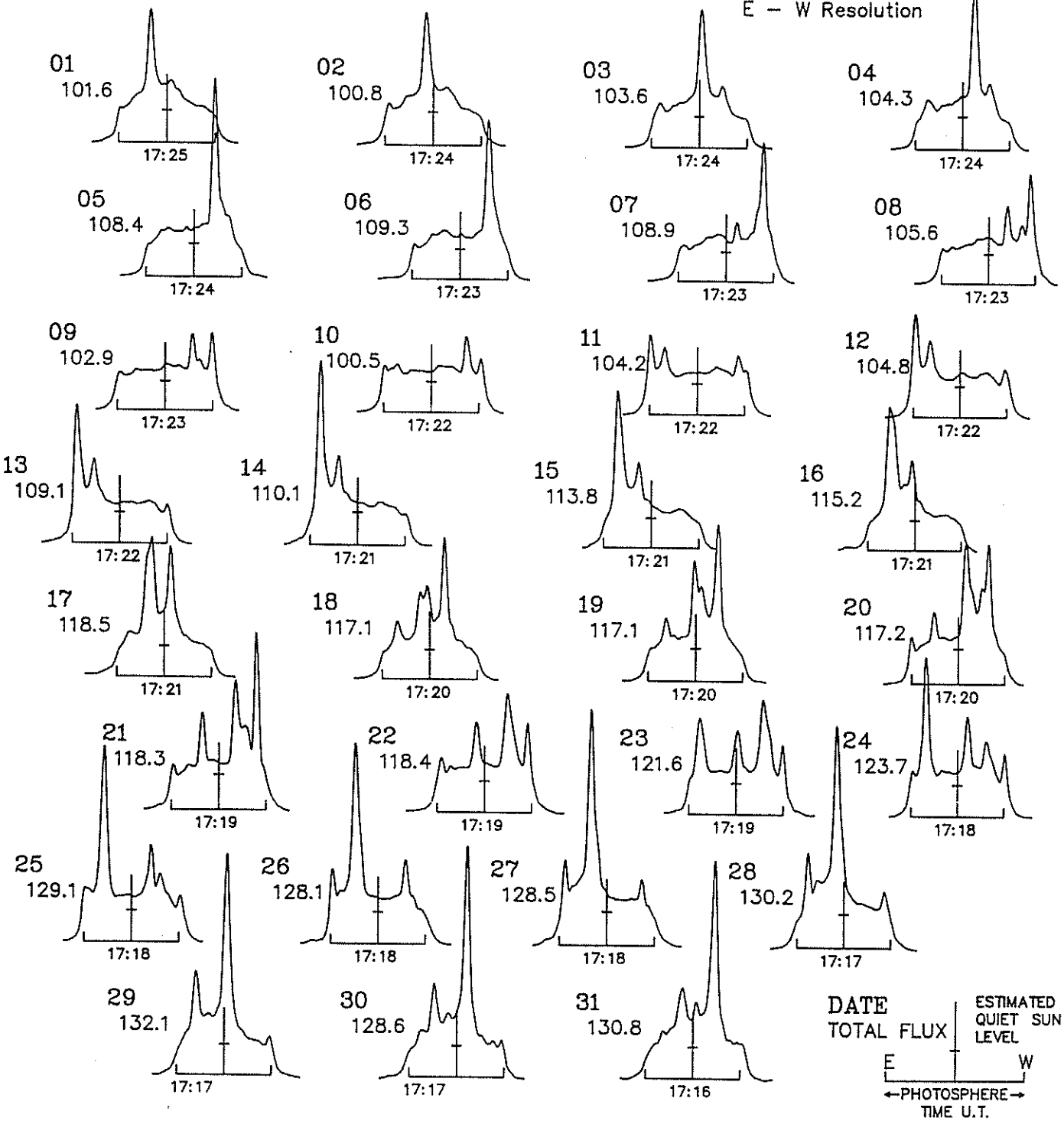
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST – WEST SOLAR SCANS
MARCH 1988

ALGONQUIN RADIO OBSERVATORY
CANADA

10.7 cm
Fan Beam with 1.5 minutes of arc
E – W Resolution

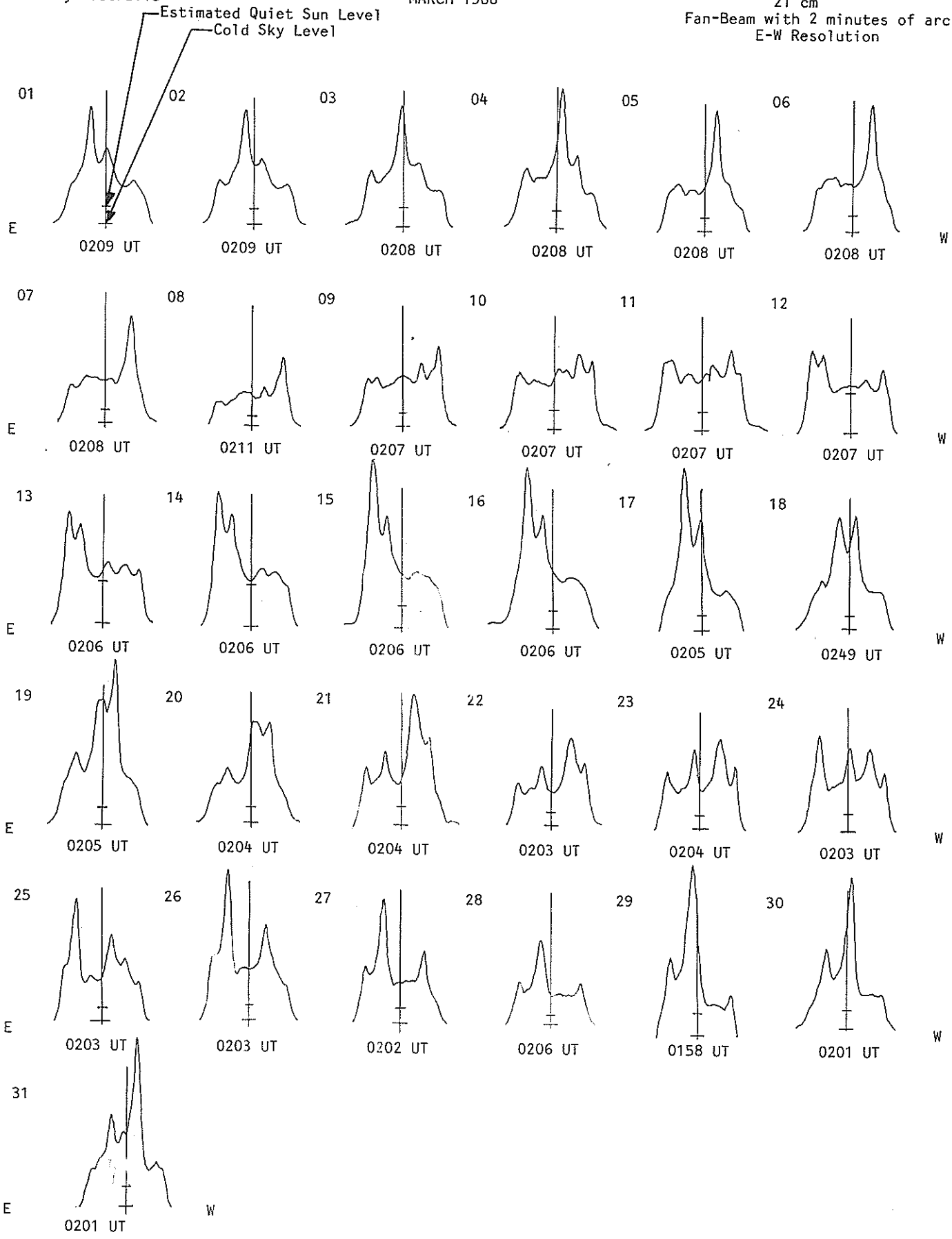


EAST-WEST SOLAR SCANS

Fleurs, Australia

MARCH 1988

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



E A S T - W E S T S O L A R S C A N S

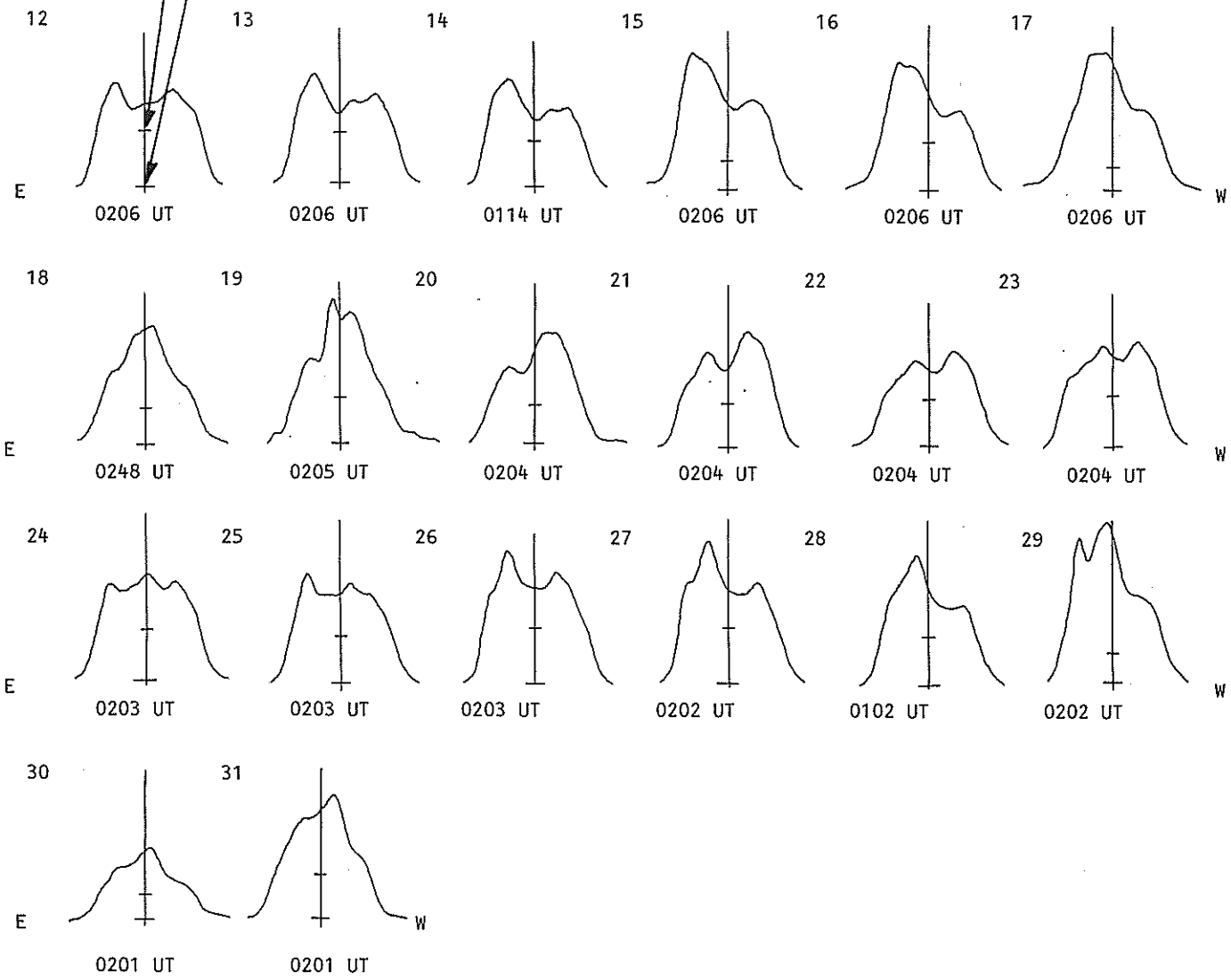
MARCH 1988

Fleurs, Australia

Estimated Quiet Sun Level
Cold Sky Level

43 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

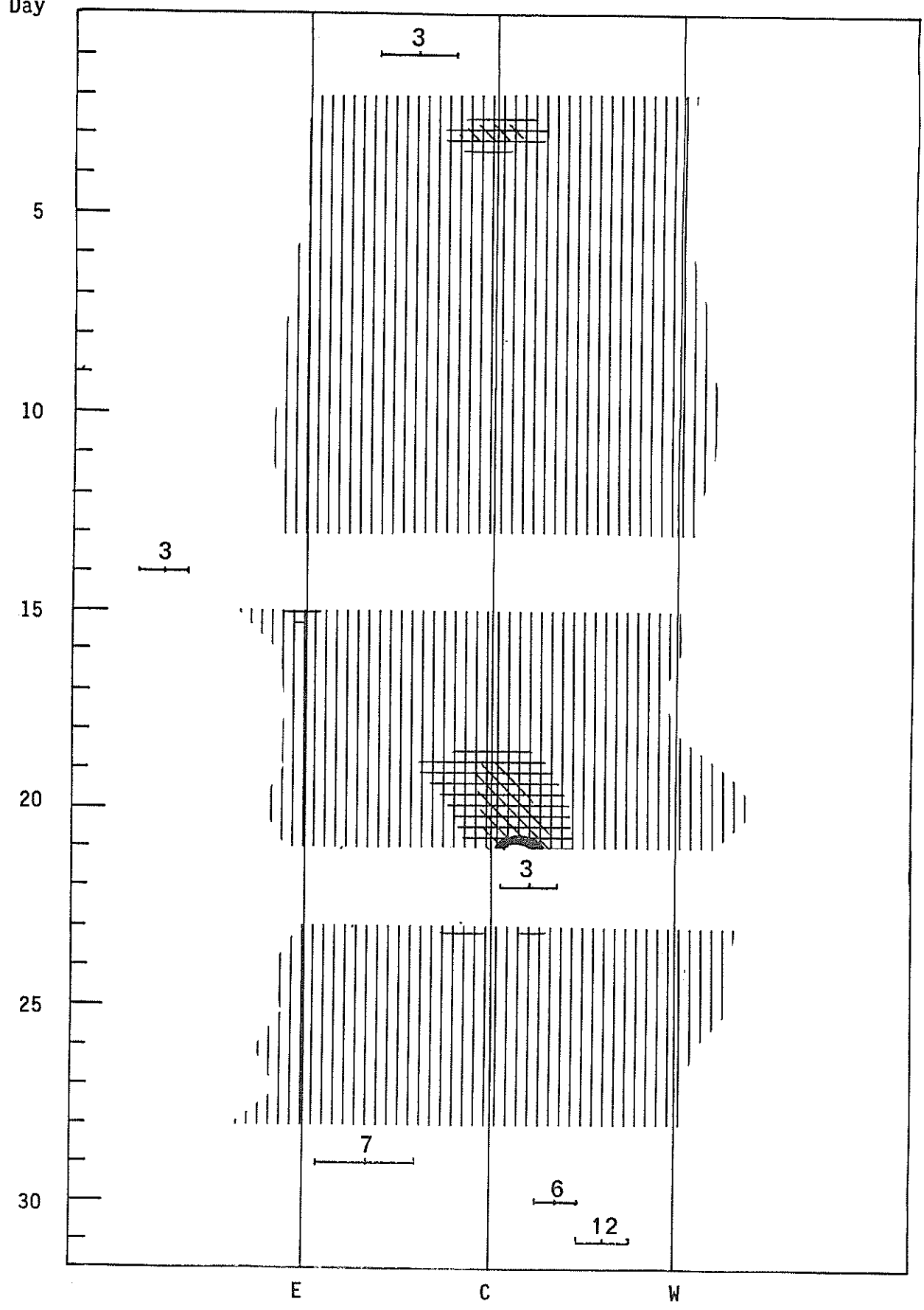
NO DATA MARCH 1-11, 1988



SOLAR INTERFEROMETRIC OBSERVATIONS
MARCH 1988

Nancay

164 MHz



SOLAR RADIO EMISSION--SELECTED FIXED FREQUENCY EVENTS

MARCH 1988

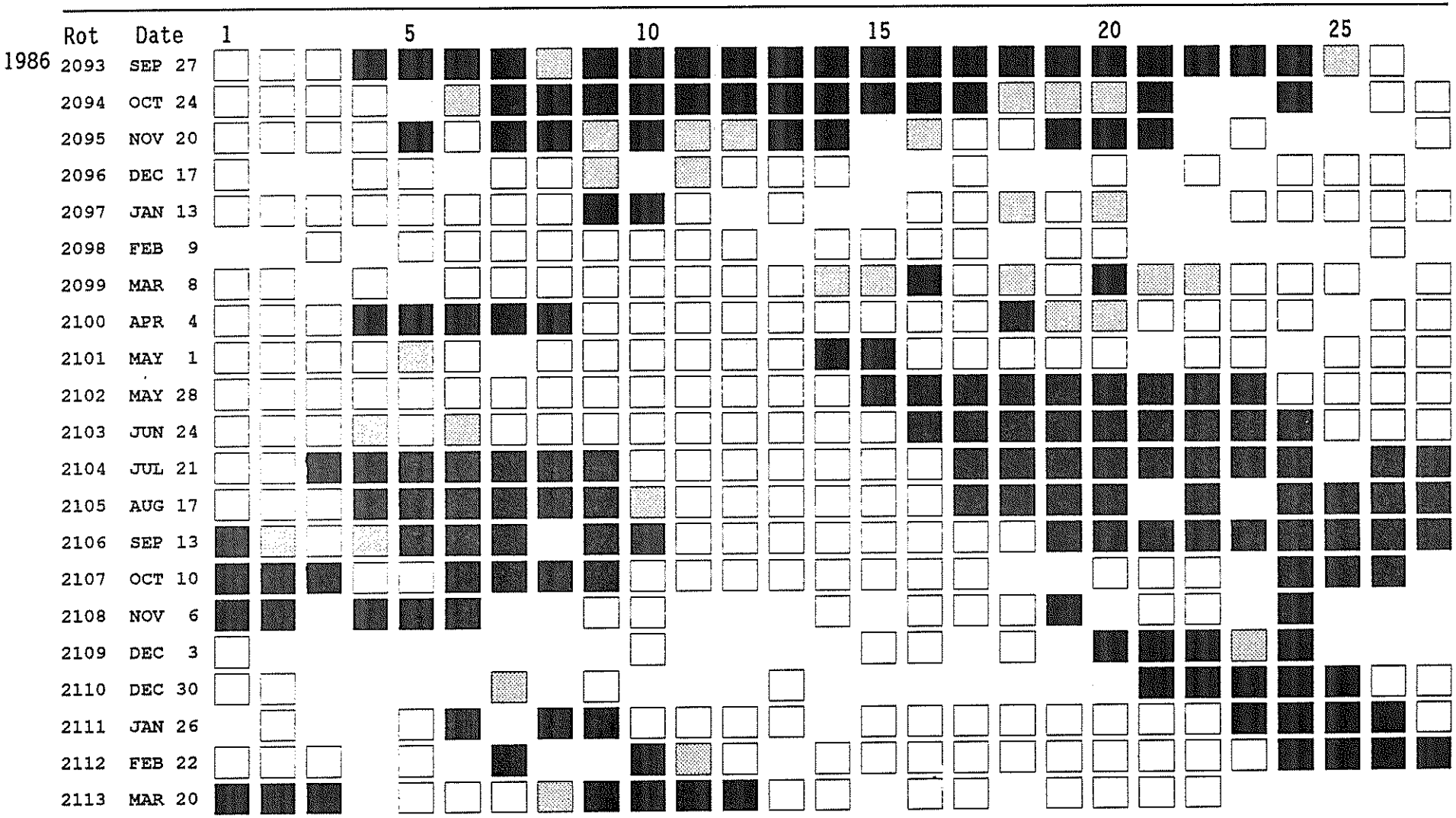
Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
01	2800	OTTA	22	GRF	1510.0	1630.0	140.0	2.5			
	2800	OTTA	1	S	2026.0	2027.0	5.0	8.7	4.3		
02	2800	OTTA	22	GRF	1744.0	1752.0	44.0	2.8	1.0		
03	2800	OTTA	32	ABS	1605.0	1712.0	98.0	-2.0	1.0		
	2800	OTTA	32	ABS	1803.0	1817.0	35.0	-2.5	1.0		
04	2800	OTTA	24	R	1400.0	1700.0	480.0D	2.9	2.0		
	2800	OTTA	23	GRF	1534.0	1554.0	150.0	2.8	1.0		
05	2800	OTTA	32	ABS	1327.0	1400.0	70.0	2.3	1.0		
	2800	OTTA	22	GRF	1520.0	1541.0	160.0	2.3	1.0		
08	2800	OTTA	20	GRF	1637.0	1640.0	40.0	2.3	1.0		
	2800	OTTA	22	GRF	1755.0	1758.0	45.0	3.5	2.0		
12	2800	OTTA	45	C	1511.0	1512.0	5.0	47.2	19.0		
	8800	SVTO	4	S/F	1511.0	1511.0	3.0	26.0			QL=5 ST=2 TYP=3
	2695	SVTO	8	S	1511.0	1511.0	2.0	53.0			QL=5 ST=2 TYP=5
	2800	OTTA	29	PBI	1516.0	1516.0	4.0	5.2			
	2800	OTTA	31	ABS	1521.2	1524.5	12.0	1.0			
13	2800	OTTA	24	R	2100.0	2115.0	240.0D	4.0			
14	2800	OTTA	3	S	1519.0	1523.5	8.0	17.2			
	2800	OTTA	29	PBI	1527.0	1527.0	210.0	12.4			
15	8800	SVTO	4	S/F	0823.0	0824.0	4.0	140.0			QL=5 ST=2 TYP=5
	2695	LEAR	8	S	0824.0	0824.0	1.0	66.0			QL=5 ST=2 TYP=5
	8800	LEAR	4	S/F	0824.0	0824.0	3.0	110.0			QL=5 ST=2 TYP=5
	2695	SVTO	4	S/F	0824.0E	0824.0		69.0			QL=5 ST=1 TYP=5
	8800	LEAR	4	S/F	0924.0	0926.0	3.0	68.0			QL=5 ST=2 TYP=5
	2695	LEAR	8	S	0925.0	0925.0	1.0	34.0			QL=5 ST=2 TYP=3
	8800	SVTO	8	S	0925.0	0926.0	1.0	71.0			QL=5 ST=2 TYP=5
	2695	SVTO	8	S	0925.0	0925.0	1.0	33.0			QL=5 ST=2 TYP=3
	8800	SVTO	4	S/F	1151.0E	1151.0		36.0			QL=5 ST=3 TYP=3
	2695	SVTO	8	S	1155.0	1155.0	1.0	16.0			QL=5 ST=3 TYP=3
	8800	SVTO	8	S	1155.0E	1155.0	1.0D	54.0			QL=5 ST=3 TYP=5
	2800	OTTA	1	S	1313.5	1314.0	2.0	9.5	3.9		
	2800	OTTA	1	S	1325.5	1326.2	3.0	6.8	3.4		
	2695	SVTO	8	S	1328.0	1328.0	1.0	33.0			QL=5 ST=2 TYP=3
	2800	OTTA	1	S	1328.5	1328.8	6.0	25.9	5.2		
	2800	OTTA	3	S	1445.8	1446.6	4.0	17.0	6.5		
	2800	OTTA	22	GRF	1545.0	1650.0	245.0	5.0			
	2800	OTTA	4	S/F	1615.0	1617.5	8.0	59.0	12.0		
	2800	OTTA	22	GRF	2035.0	2110.0	90.0D				
	2800	OTTA	1	S	2039.5	2040.4	4.0	10.6	5.0		
	8800	PALE	4	S/F	2043.0	2043.0	3.0	74.0			QL=5 ST=2 TYP=5
	2695	PALE	8	S	2043.0	2043.0	1.0	34.0			QL=5 ST=2 TYP=3
	2800	OTTA	3	S	2043.2	2044.0	7.0	33.9	10.0		
	2800	OTTA	45	C	2215.0	2219.0	13.0	185.7	37.0		
	2695	PALE	4	S/F	2216.0	2218.0	5.0	180.0			QL=5 ST=2 TYP=5
	8800	PALE	48	C	2217.0	2220.0	4.0	170.0			QL=5 ST=2 TYP=8
	2800	OTTA	3	S	2220.0	2221.0	2.0	74.0			
16	8800	LEAR	8	S	0119.0	0120.0	1.0	21.0			QL=5 ST=2 TYP=3
	8800	LEAR	4	S/F	0608.0	0609.0	5.0	52.0			QL=5 ST=2 TYP=5
	2695	LEAR	8	S	0609.0E	0609.0	2.0D	29.0			QL=5 ST=2 TYP=3
	8800	SVTO	8	S	0609.0	0609.0	1.0	41.0			QL=1 ST=3 TYP=3
	2695	SVTO	8	S	0609.0	0609.0	1.0	30.0			QL=5 ST=3 TYP=3
	2695	SVTO	4	S/F	0727.0	0727.0	4.0	14.0			QL=5 ST=3 TYP=3
	8800	SVTO	4	S/F	0727.0	0727.0	4.0	25.0			QL=5 ST=3 TYP=3
	2800	OTTA	22	GRF	1325.0	1525.0	300.0	7.5			
	2695	SVTO	8	S	1404.0	1405.0	2.0	45.0			QL=5 ST=2 TYP=3
	8800	SVTO	4	S/F	1405.0	1405.0	4.0	37.0			QL=5 ST=2 TYP=3
	2800	OTTA	28	PRE	1542.0	1544.2	3.0	11.7	5.0		
	2695	SVTO	4	S/F	1543.0	1545.0	3.0	19.0			QL=5 ST=2 TYP=3
	8800	SVTO	4	S/F	1543.0	1550.0	7.0	70.0			QL=5 ST=2 TYP=5
	2800	OTTA	3	S	1545.0	1545.8	2.0	17.6	11.0		
	2800	OTTA	30	PBI	1547.0	1547.0	5.5	4.4	2.0		
	2800	OTTA	3	S	1555.7	1558.0	2.2	15.4	5.0		
	2800	OTTA	30	PBI	1558.0	1558.0	10.0	2.9	1.5		
	2800	OTTA	40	F	1830.4	1839.0	9.6	5.3			
	2800	OTTA	28	PRE	1849.5	1851.0	6.3	45.7	18.0		
	8800	PALE	8	S	1850.0	1850.0	1.0	24.0			QL=5 ST=2 TYP=3
	2695	PALE	8	S	1850.0	1851.0	1.0	41.0			QL=5 ST=2 TYP=3

SOLAR RADIO EMISSION--SELECTED FIXED FREQUENCY EVENTS

MARCH 1988

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
16	2695	PALE	8	S	1854.0	1854.0	1.0	26.0			QL=5 ST=2 TYP=3
	2800	OTTA	22	GRF	1855.8	1912.0	120.0	7.0	3.0		
	2800	OTTA	3	S	2026.5	2027.5	4.0	18.7	4.0		
	2800	OTTA	1	S	2038.4	2038.9	8.3	6.6	2.0		
	2695	SYDN	4	S/F	2131.0	2135.0	5.0	12.0			QL= ST= TYP=3
	2800	OTTA	28	PRE	2131.2	2133.2	2.8	6.6	4.0		
	8800	PALE	4	S/F	2132.0	2134.0	3.0	31.0			QL=5 ST=2 TYP=3
	2695	PALE	8	S	2134.0	2134.0	1.0	25.0			QL=5 ST=2 TYP=3
	2800	OTTA	3	S	2134.0	2134.5	1.6	27.7	14.0		
	2800	OTTA	22	GRF	2135.6	2315.0		8.6	4.0		
	2800	OTTA	1	S	2241.5	2242.1	1.8	4.4	2.0		
	2800	OTTA	1	S	2243.3	2243.6	1.3	13.6	7.0		
	2800	OTTA	1	S	2337.4	2338.0	1.7	6.6	3.0		
17	2695	SVTO	4	S/F	1053.0	1054.0	5.0	120.0			QL=1 ST=2 TYP=5
	8800	SVTO	4	S/F	1053.0	1055.0	4.0	140.0			QL=1 ST=2 TYP=5
	2800	OTTA	24	R	1704.5	1809.5	300.0	4.6	2.0		
	2800	OTTA	22	GRF	1720.0	1833.0	80.0	4.1	2.0		
	2800	OTTA	22	GRF	1845.0	1848.0	100.0	3.9	2.0		
	2695	SYDN	4	S/F	2050.0	2051.0	9.0	18.0			QL= ST= TYP=4
	8800	PALE	8	S	2051.0	2051.0	1.0	25.0			QL=5 ST=2 TYP=3
	2695	PALE	8	S	2051.0	2051.0	1.0	16.0			QL=5 ST=2 TYP=3
	2800	OTTA	46	C	2051.5	2052.0	11.5	18.0	9.0		
	2800	OTTA	30	PBI	2103.0	2103.0	70.0	4.5	2.7		
	2800	OTTA	3	S	2225.0	2227.0	7.0	12.5	6.0		
18	2695	LEAR	8	S	1003.0	1004.0	2.0	82.0			QL=5 ST=2 TYP=5
	2695	SVTO	8	S	1003.0	1004.0	2.0	68.0			QL=5 ST=2 TYP=5
	2800	OTTA	32	ABS	1437.0	1517.0	90.0	3.7	2.0		
	2800	OTTA	1	S	1933.0	1935.0	24.0	3.0	1.0		
19	2800	OTTA	1	S	1444.0	1448.0	22.0	4.4	2.0		
	2800	OTTA	20	GRF	1533.0	1641.0	140.0	4.4	2.0		
20	2800	OTTA	24	R	1320.0	1920.0	540.0D	13.7			
	2800	OTTA	46	C	1532.5	1536.0	7.0	10.5	6.0		
	2800	OTTA	46	C	1532.5	1543.0	13.0	21.9	10.0		
	2695	SVTO	4	S/F	1539.0	1542.0	4.0	24.0			QL=5 ST=3 TYP=3
	2800	OTTA	46	C	1539.5	1543.0	6.0	21.9	15.0		
	8800	SVTO	8	S	1540.0	1541.0	2.0	25.0			QL=1 ST=3 TYP=3
	2800	OTTA	30	PBI	1545.5	1545.5	39.0	8.6	4.0		
21	2800	OTTA	22	GRF	1534.0	1541.0	250.0	2.8	2.0		
	2800	OTTA	21	GRF	1635.0	1650.0	38.0	2.0			
	2800	OTTA	3	S	1717.6	1718.8	2.0	23.1	6.0		
22	2800	OTTA	1	S	2022.5	2024.0	4.5	3.8	2.0		
	2800	OTTA	22	GRF	2047.0	2051.0	30.0	8.2	4.0		
23	2800	OTTA	22	GRF	1445.0	1605.0	260.0	11.7	6.0		
	2800	OTTA	22	GRF	2015.0	2019.0	70.0	8.2	4.0		
24	2695	LEAR	8	S	0936.0	0937.0	2.0	31.0			QL=5 ST=2 TYP=3
	8800	SVTO	20	GRF	1016.0	1031.0	78.0	12.0			QL=5 ST=2 TYP=2
	2695	SVTO	20	GRF	1017.0	1028.0	71.0	6.0			QL=3 ST=2 TYP=2
	2800	OTTA	22	GRF	1210.0	1305.0	210.0	4.7	2.0		
	2800	OTTA	21	GRF	1351.0	1357.0	25.0D	4.2	2.0		
	2695	SVTO	8	S	1634.0	1635.0	1.0	29.0			QL=3 ST=2 TYP=3
	2800	OTTA	3	S	1634.0	1635.5	15.0	38.6	9.0		
	2695	PALE	8	S	1654.0	1655.0	2.0	23.0			QL=3 ST=2 TYP=3
25	2800	OTTA	40	F	1420.0	1600.0	420.0	6.0			
	2800	OTTA	41	F	2136.0	2139.0	15.0	81.0	24.0		
	2695	PALE	4	S/F	2137.0	2138.0	1.0	80.0			QL=5 ST=3 TYP=5
27	2800	OTTA	40	F	1425.0	1615.0	200.0	3.9			
29	2695	LEAR	8	S	0627.0	0628.0	2.0	19.0			QL=5 ST=2 TYP=3
	8800	LEAR	4	S/F	0627.0	0628.0	4.0	21.0			QL=5 ST=2 TYP=3
	2800	OTTA	4	S/F	1826.0	1827.0	6.0	23.9	9.5		
	2800	OTTA	29	PBI	1832.0	1832.0	44.0	4.8	2.4		
30	2695	LEAR	8	S	2308.0	2308.0	1.0	68.0			QL=5 ST=2 TYP=5
31	2800	OTTA	22	GRF	1545.0	1745.0	240.0	6.0	3.0		
	2800	OTTA	20	GRF	2015.0	2040.0	100.0	10.5	5.0		
	8800	PALE	8	S	2044.0	2045.0	1.0	30.0			QL=5 ST=2 TYP=3

STANFORD MEAN SOLAR MAGNETIC FIELD



Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

= field <-2 microT; No box = no data available

Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1987 Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1988 Jan	Feb	Mar
1	10	14	2	11	39	12	-3	.	.	.	.	.
2	.	17	3	20	43	-3	-4	-20	.	.	-16	-16
3	8	11	12	26	27	-16	-3	-19	2	.	-5	1
4	13	5	23	33	14	-19	-17	-24	.	.	16	22
5	10	0	27	33	4	-31	-28	.	.	0	25	.
6	2	3	24	32	-10	.	-35	-10	.	.	42	49
7	-5	.	29	17	-16	-49	-28	-12	.	20	40	50
8	-14	6	38	2	-29	.	-24	.	.	.	.	49
9	-13	6	31	-10	-37	-50	-20	-28	.	.	62	44
10	-12	5	8	-13	-38	-39	-16	-28	.	.	56	53
11	-5	20	-8	-19	-36	-24	-6	-20	.	29	58	52
12	5	17	-17	-29	-43	-18	-3	.	19	.	58	49
13	18	5	-19	-24	-32	-10	6	.	.	.	48	36
14	30	-6	-21	-22	.	-1	7	4	.	.	47	35
15	30	-4	-21	-18	-19	4	-11	5	.	.	23	21
16	25	2	-16	-15	-7	-1	-9	.	.	.	16	-13
17	19	4	-12	-9	2	-5	-10	.	22	.	-13	-9
18	13	3	-16	4	6	-5	-6	.	30	.	-22	-13
19	6	4	-6	9	3	-8	5	18	.	-12	-25	-9
20	2	7	9	11	-13	.	6	.	20	-22	-13	-20
21	-3	.	13	7	-15	-10	9	21	.	-35	11	-14
22	-2	19	12	11	-18	-5	12	30	-10	-28	14	-8
23	1	21	7	-5	-22	7	23	3	-17	-15	35	.
24	2	.	7	-12	-25	14	25	-10	-18	4	37	18
25	6	3	11	-11	-18	19	21	.	-1	15	.	21
26	8	8	6	-10	-2	21	23	4	-3	.	17	12
27	10	8	-1	-10	12	22	.	4	.	23	.	-1
28	.	12	4	-5	26	20	.	.	.	.	-14	-13
29	12	17	-1	-10	33	15	15	-5	.	.	.	-43
30	12	16	5	6	22	5	2	.	24	3		-40
31		4		27	16		4		24	-15		-11

Dot symbol indicates no data available for the day.

VOSTOK INFERRED INTERPLANETARY MAGNETIC FIELD
PRELIMINARY DATA

1988

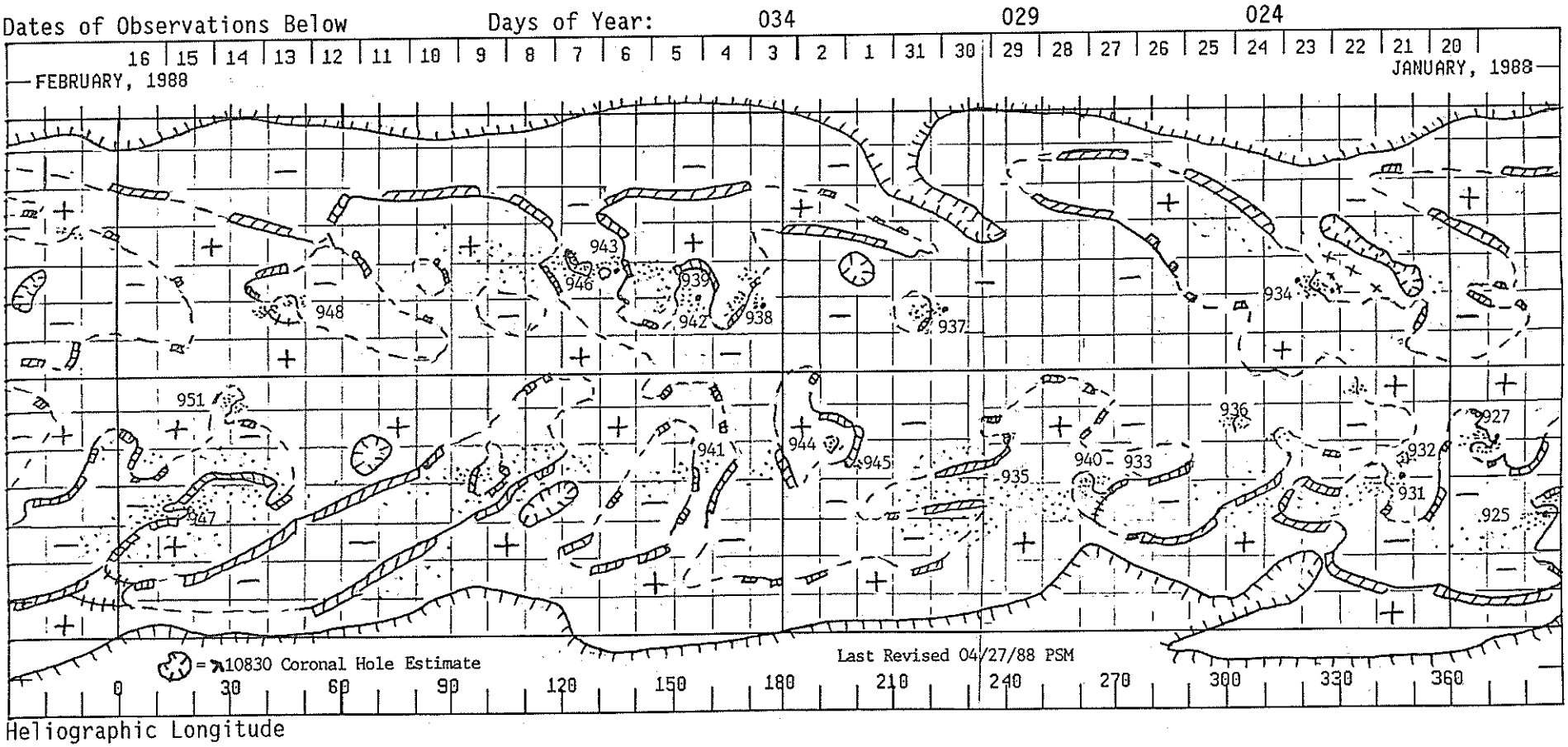
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1		T	A									
2		A	A									
3		A	T									
4		A	AT									
5		T	T									
6		T	A									
7		A	A									
8		AT	A									
9		A	AT									
10		A	T									
11		A	A									
12		A	A									
13		A	A									
14		A	A									
15		A	A									
16		A	A									
17		A	T									
18		A	A									
19		A	A									
20		A	TA									
21		A	A									
22		A	A									
23		A	T									
24		A	T									
25		AT	AT									
26		-	AT									
27		-	A									
28		-	TA									
29		-	-									
30			-									
31			-									

CONTENTS

Prompt Reports DATA FOR **FEBRUARY 1988** Number 524 Part I

PRELIMINARY H-ALPHA SOLAR SYNOPTIC CHART

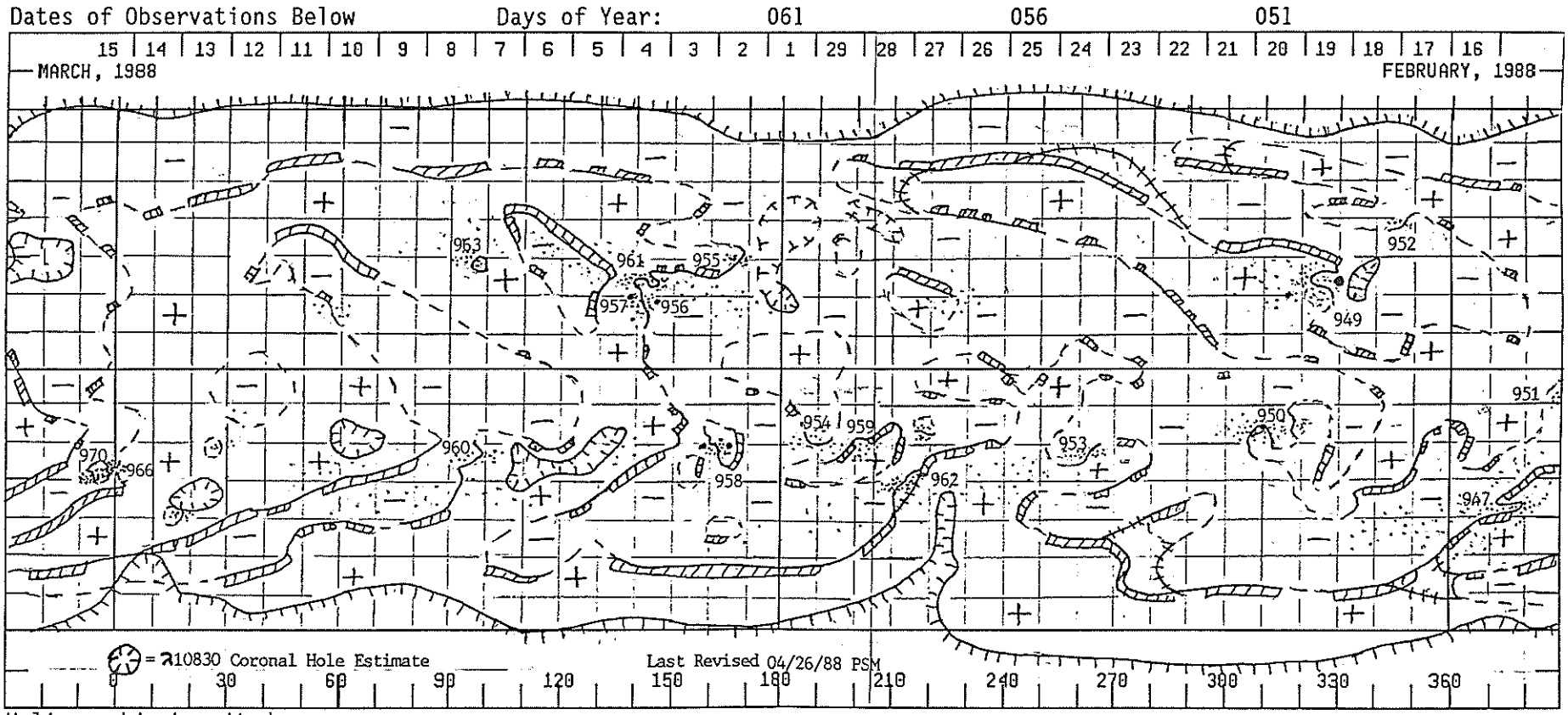
CARRINGTON ROTATION NUMBER 1798
(20 January to 16 February 1988)



P R E L I M I N A R Y H - A L P H A S O L A R S Y N O P T I C C H A R T

CARRINGTON ROTATION NUMBER 1799

(16 February to 15 March 1988)

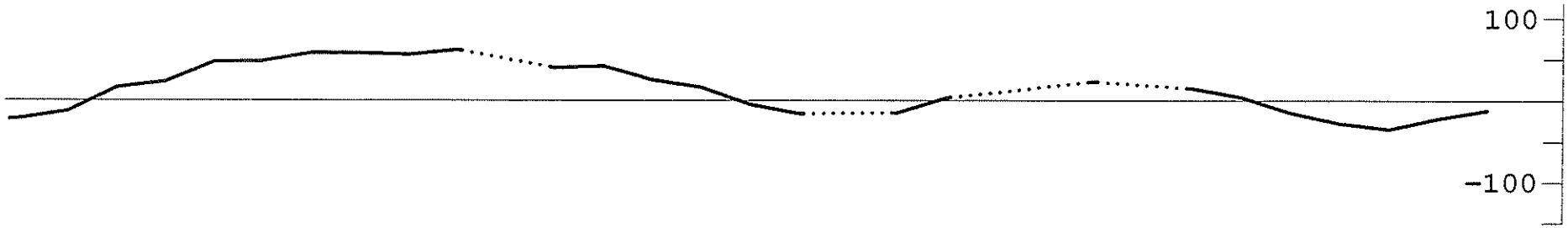


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1798
(20 January to 16 February 1988)

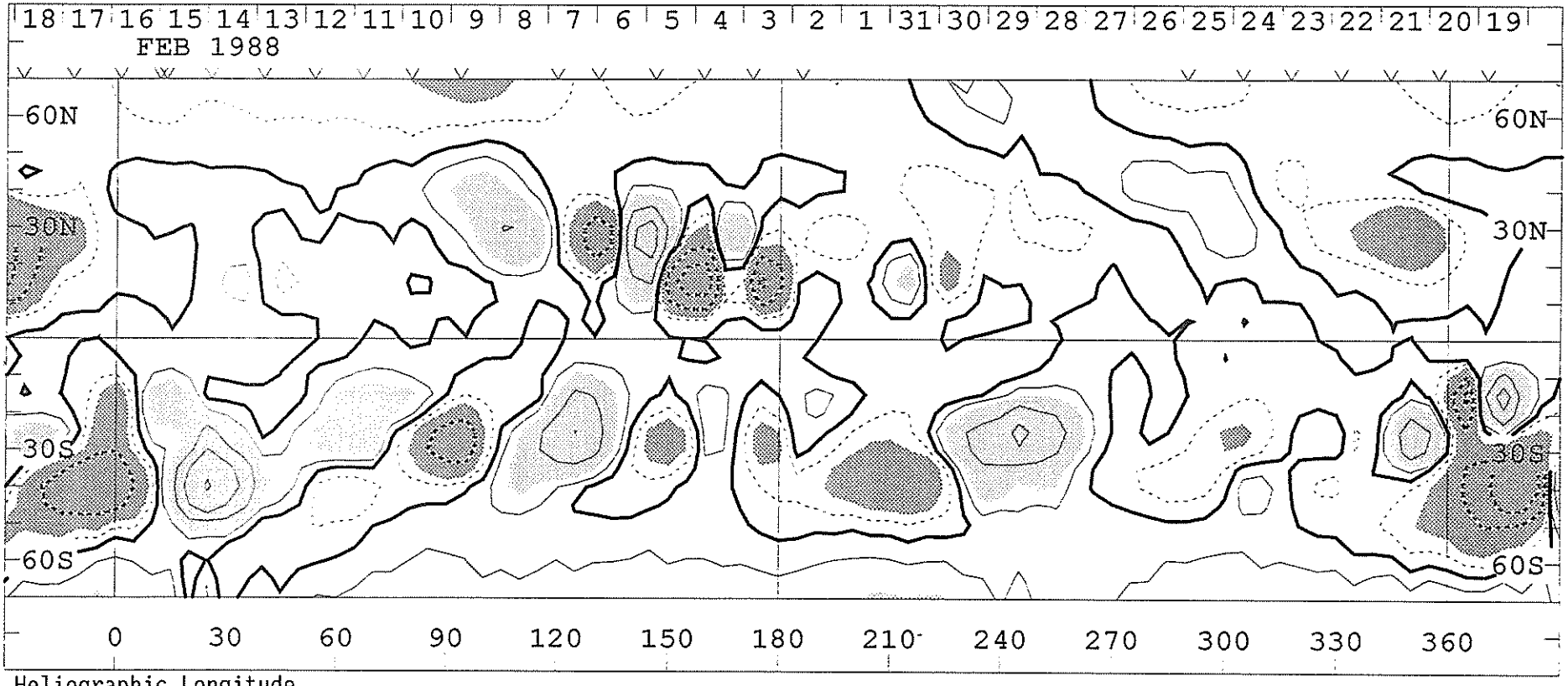
Stanford Solar Observatory

0, ±100, 500, 1000, 2000 microTesla



Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla

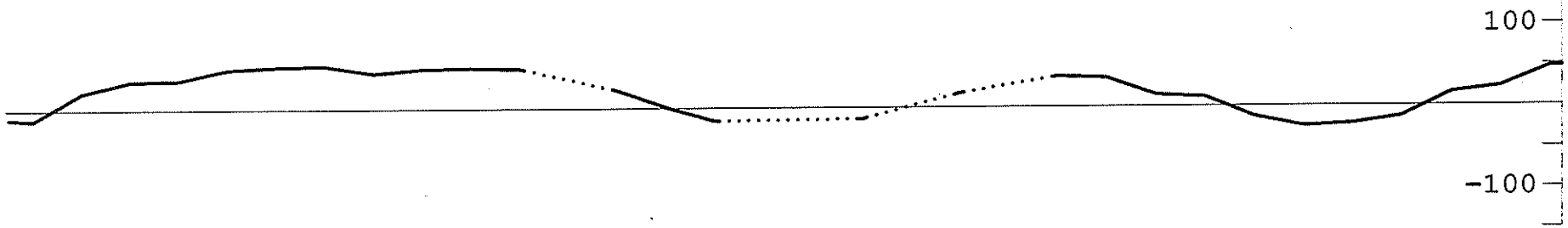


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1799
(16 February to 15 March 1988)

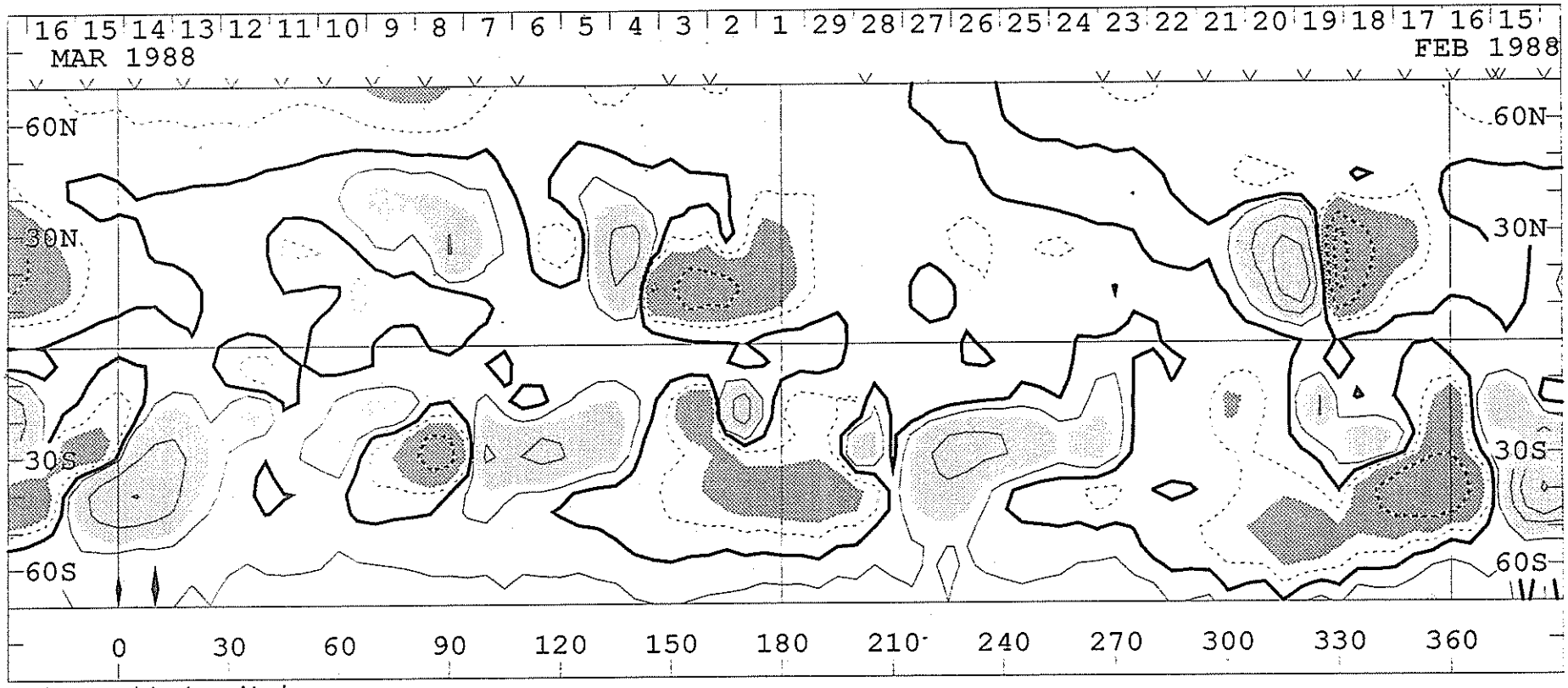
Stanford Solar Observatory

0, ±100, 500, 1000, 2000 microTesla



Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla



Heliographic Longitude

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB

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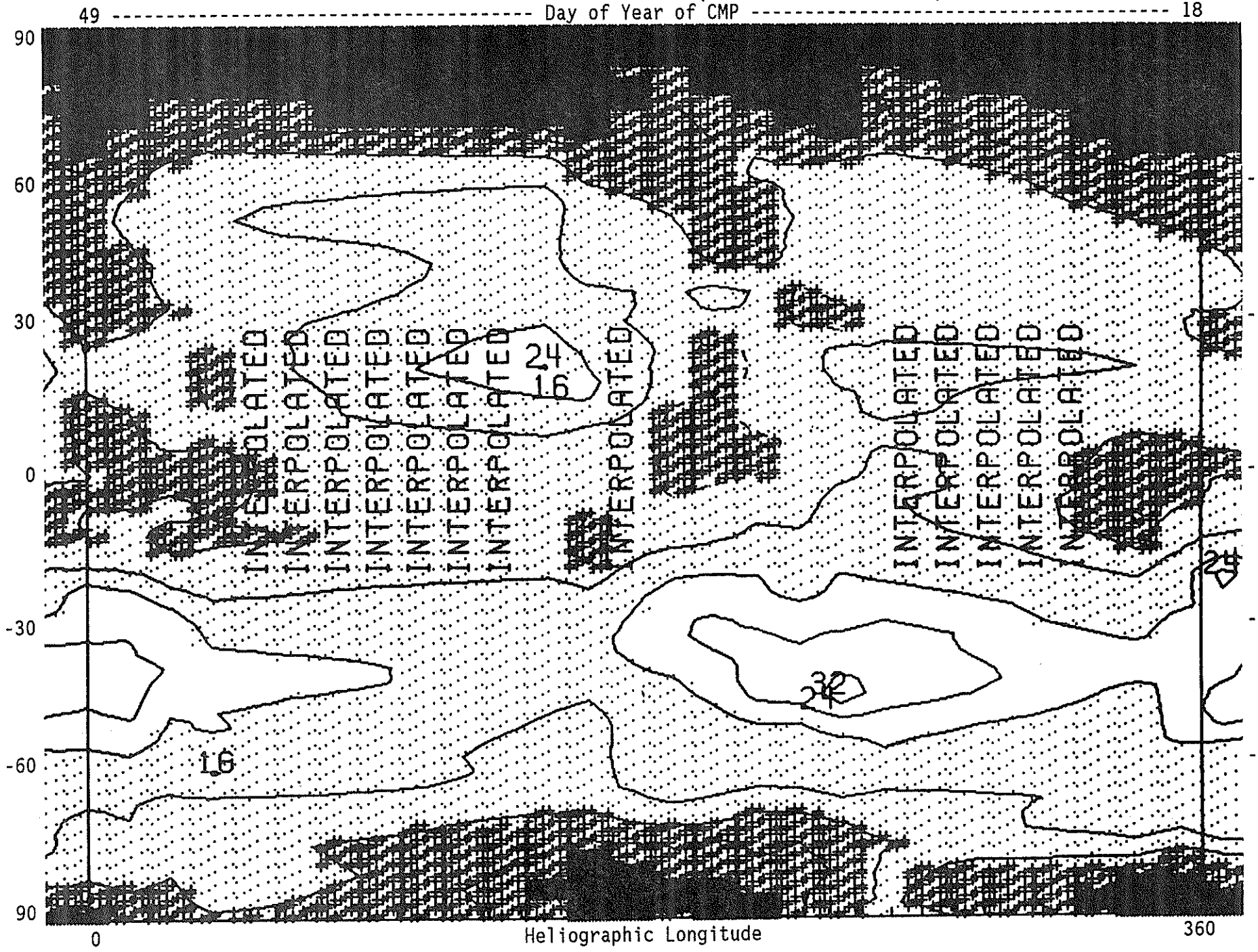

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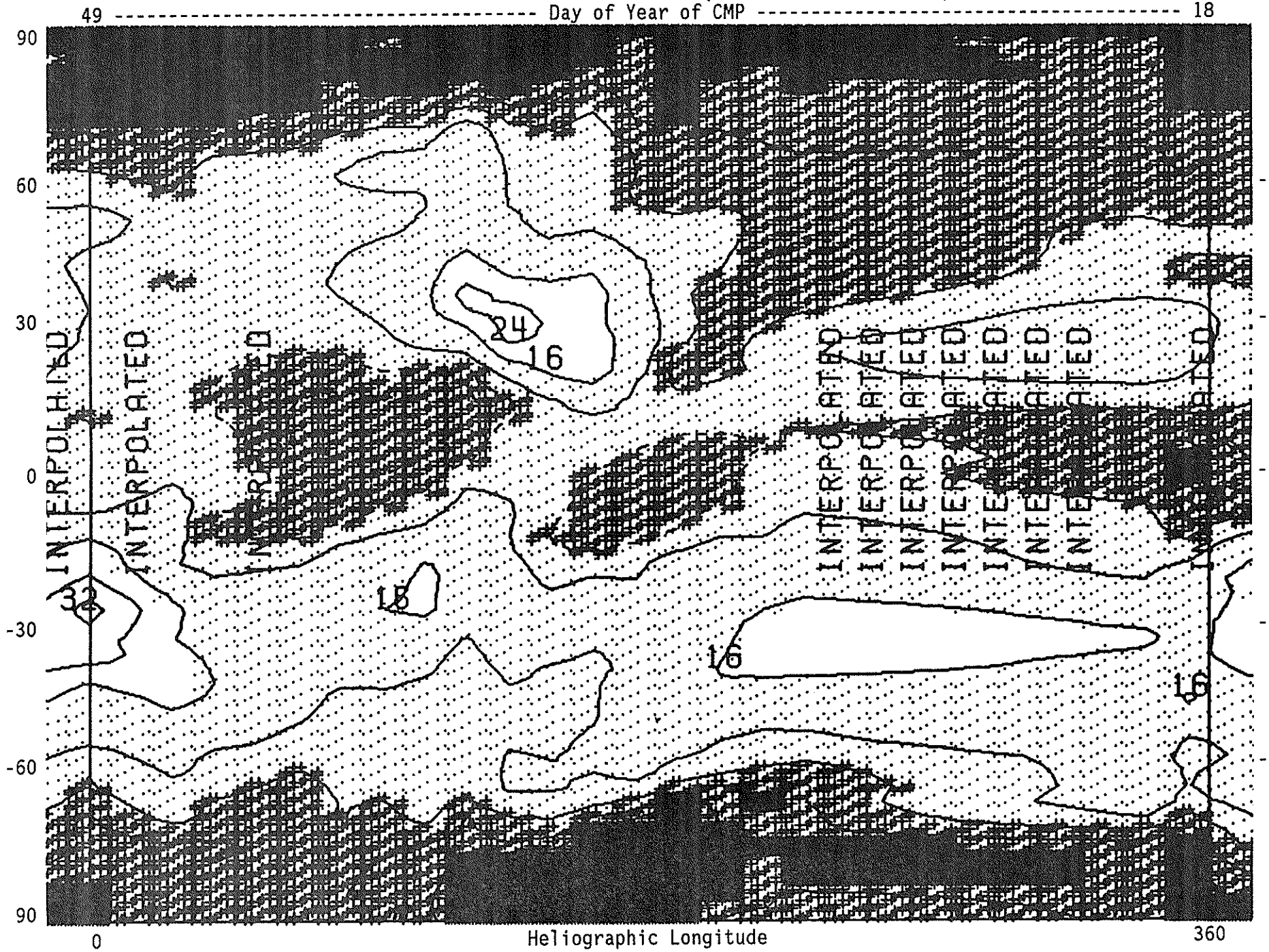
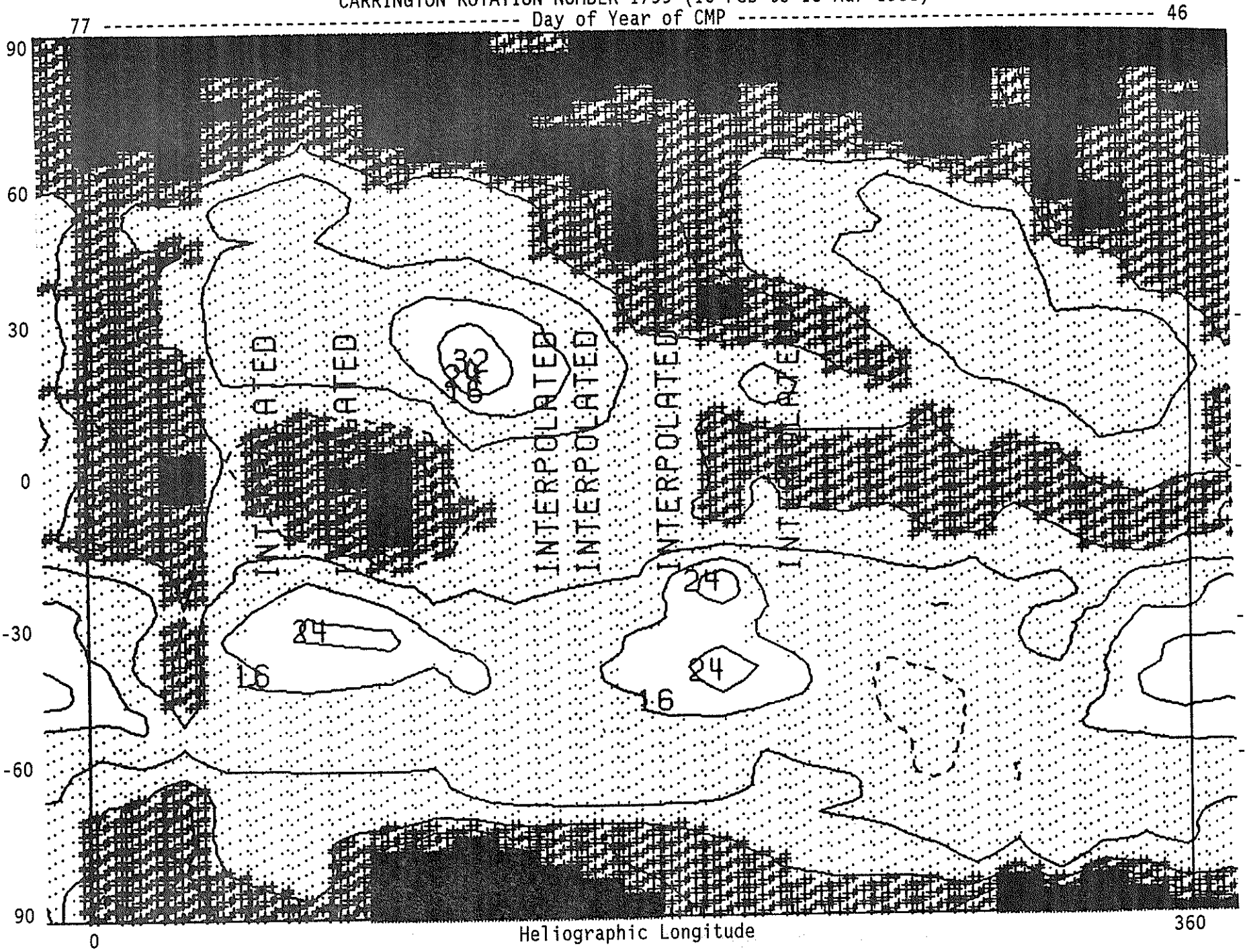


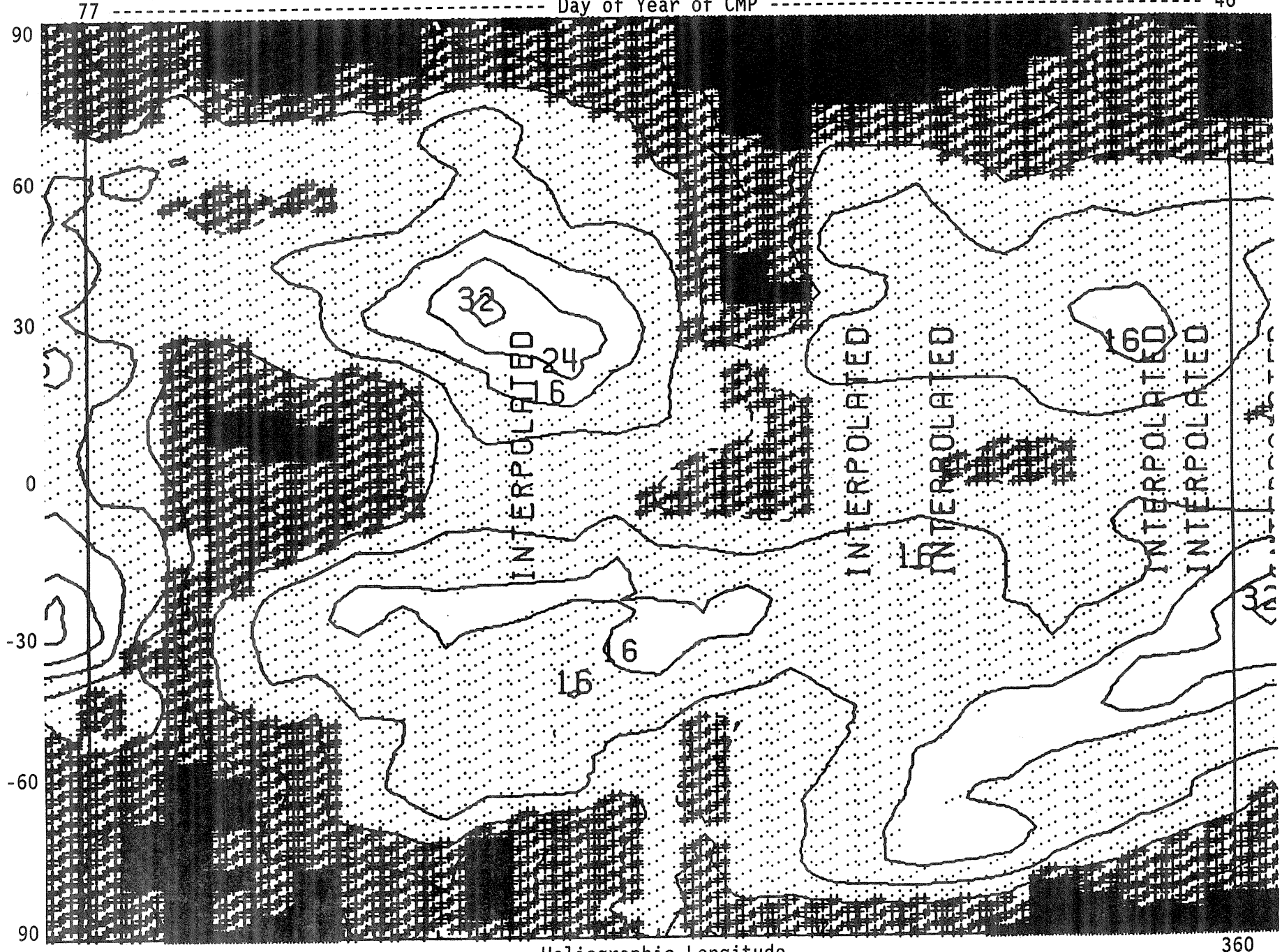
47
Feb 88

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB

CARRINGTON ROTATION NUMBER 1799 (16 Feb to 15 Mar 1988)



SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1799 (16 Feb to 15 Mar 1988)

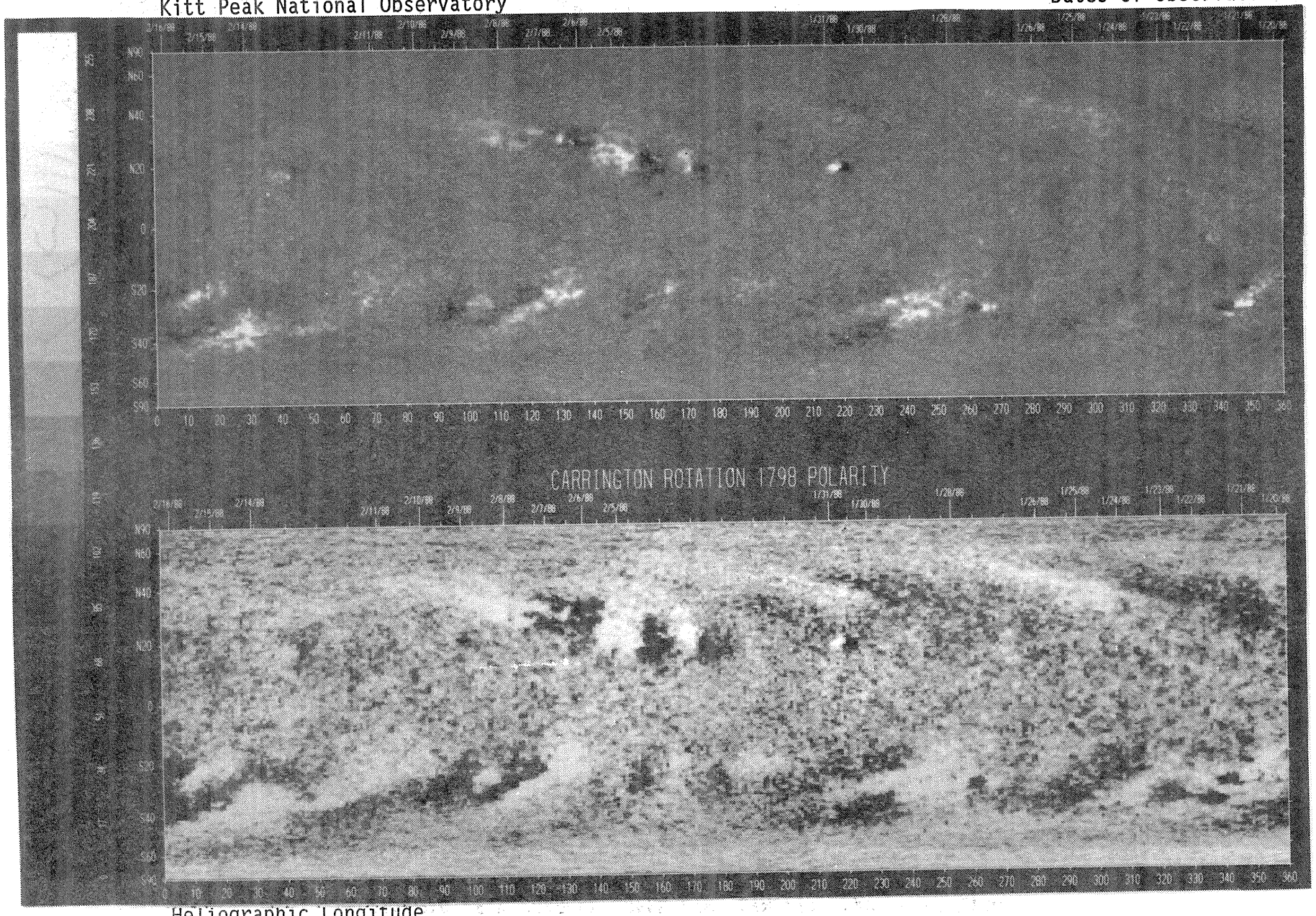


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1798
(20 January to 16 February 1988)

Kitt Peak National Observatory

Dates of Observation



Heliographic Longitude

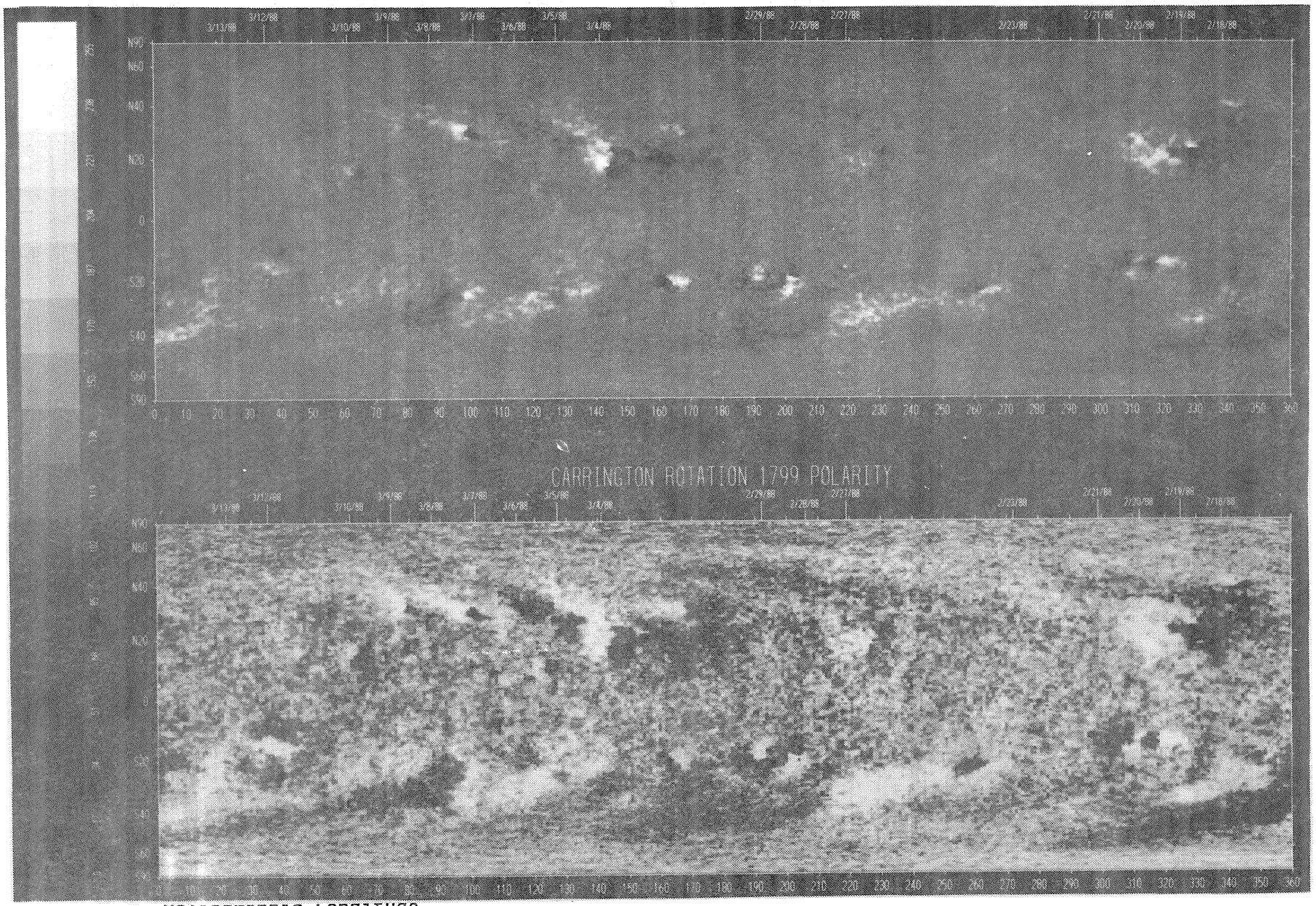
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1799

(16 February to 15 March 1988)

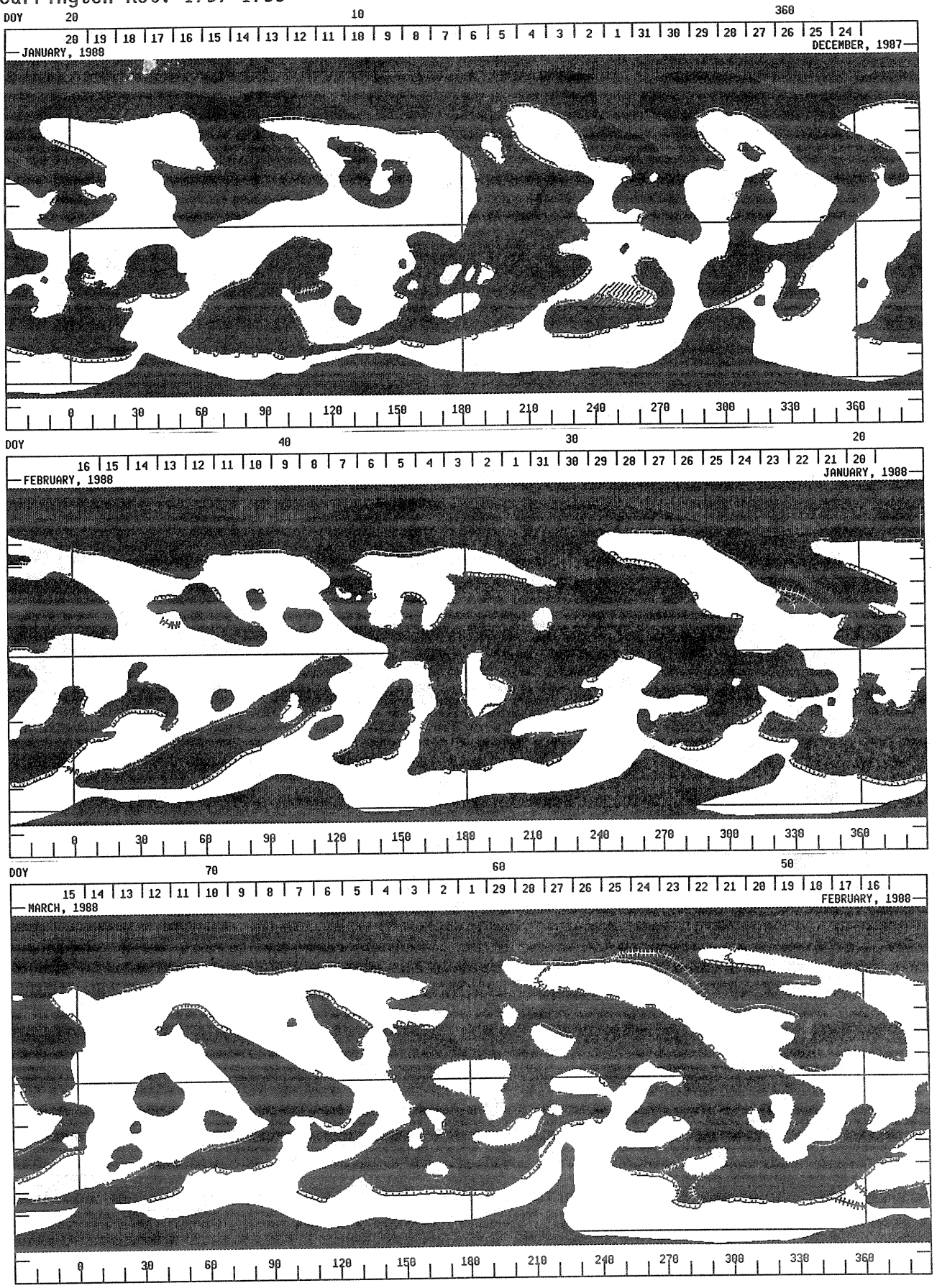
Kitt Peak National Observatory

Dates of Observation



SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1797-1799 — 24 December 1987 to 15 March 1988

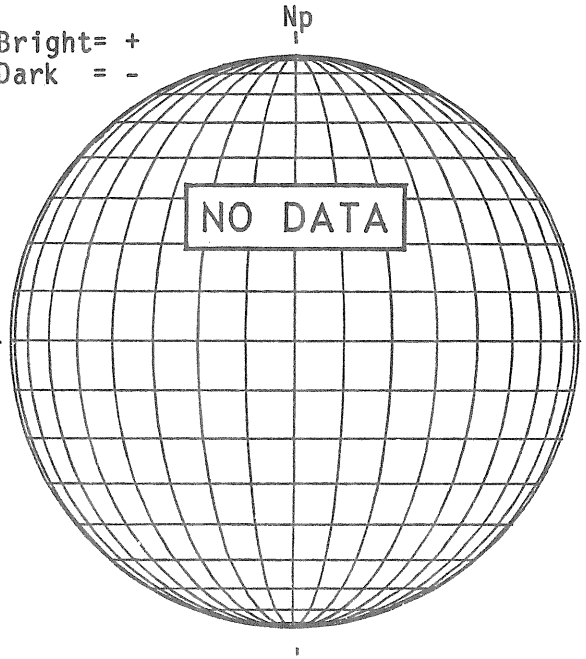


□ = Positive Polarity ■ = Negative Polarity ■ = 10830 Coronal Hole Estimate ▨ = X-Ray Flares > M1

Heliographic Longitude

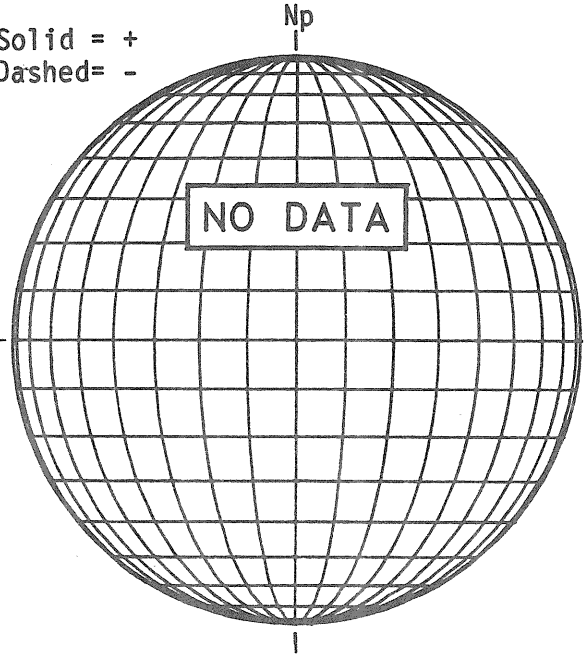
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

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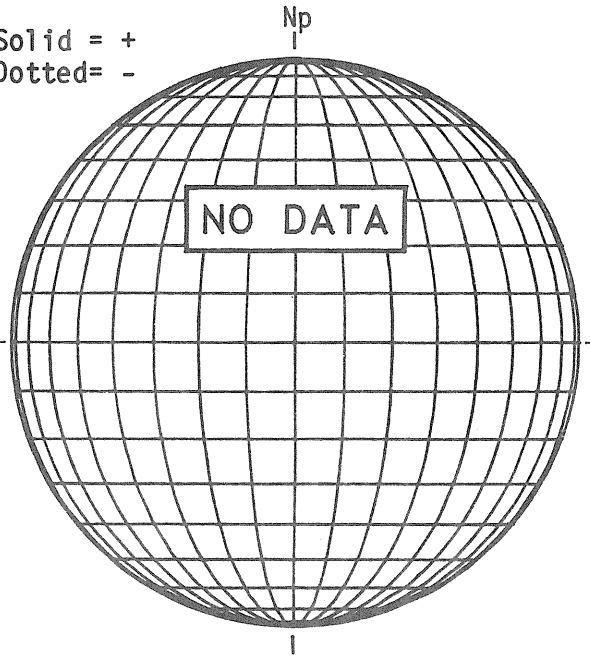
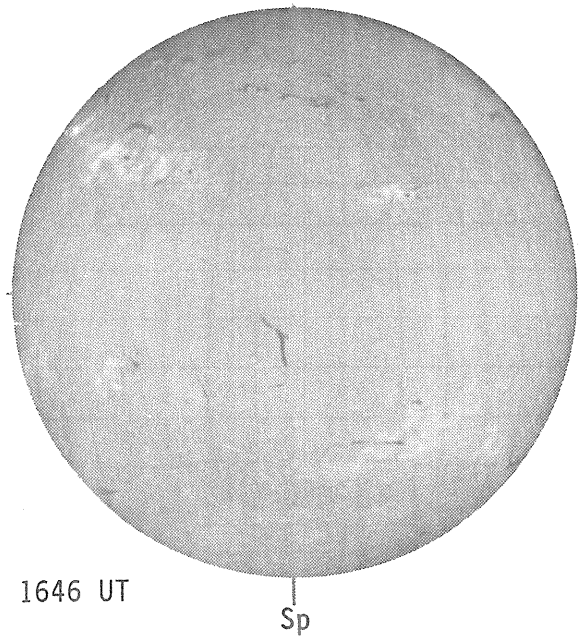
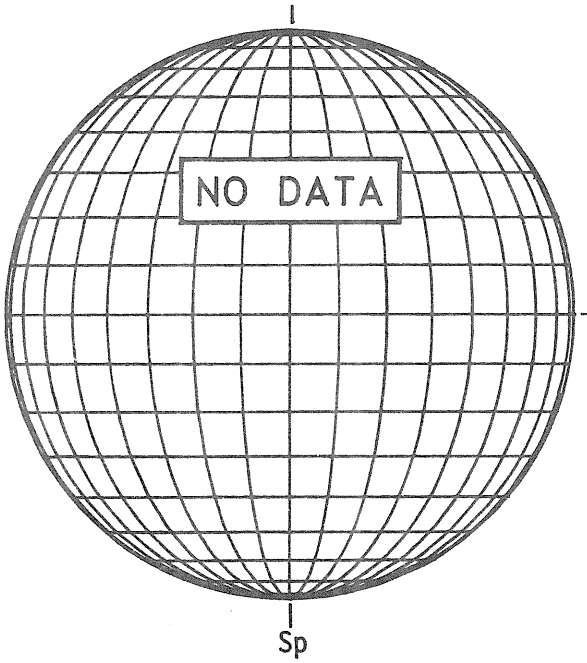
Dotted= -



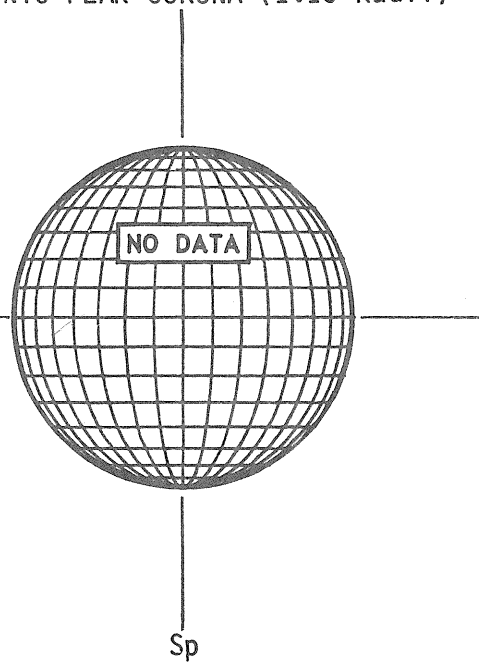
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS

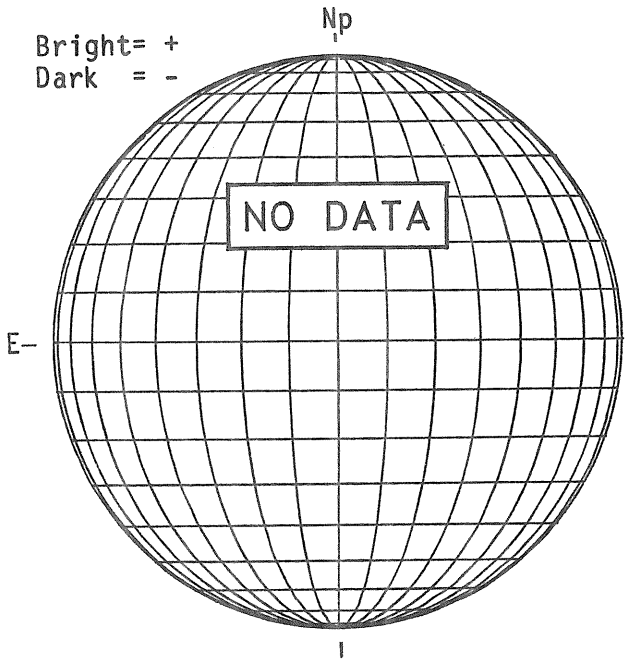


SACRAMENTO PEAK CORONA (1.15 Radii)

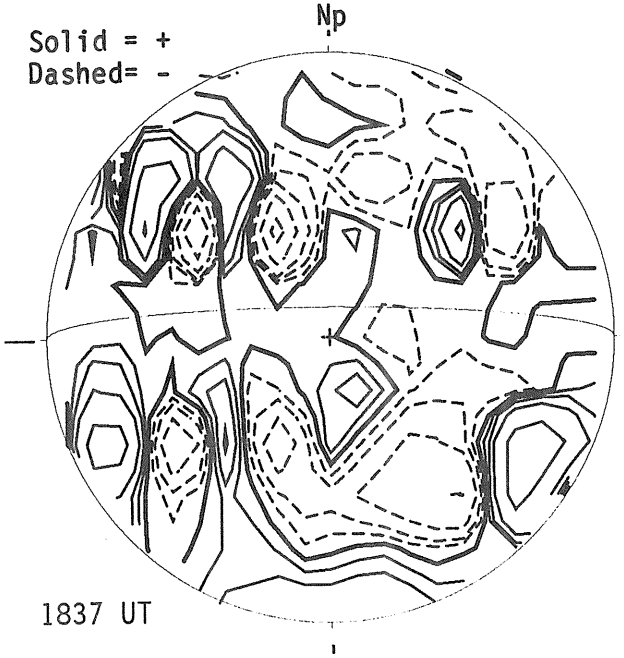


FEBRUARY 01, 1988 (P=-11.89, B_o=-5.97, L_o= 210.14)

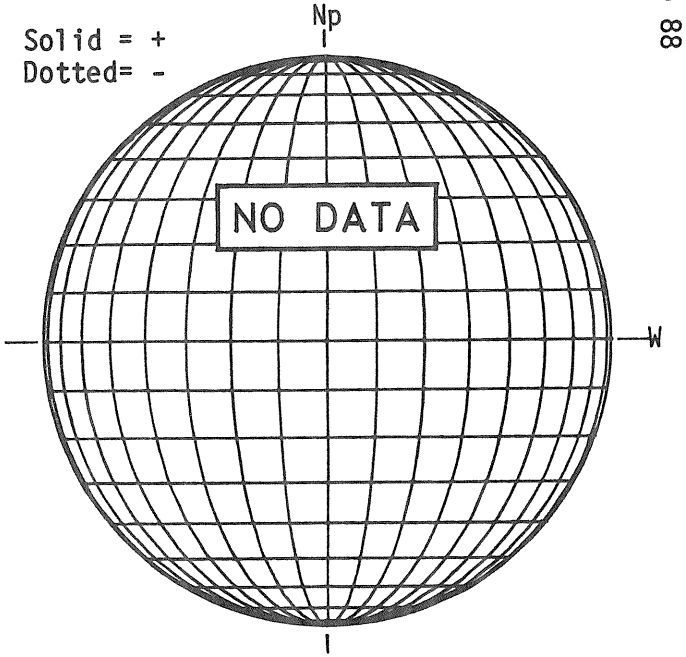
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM



MT. WILSON MAGNETOGRAM



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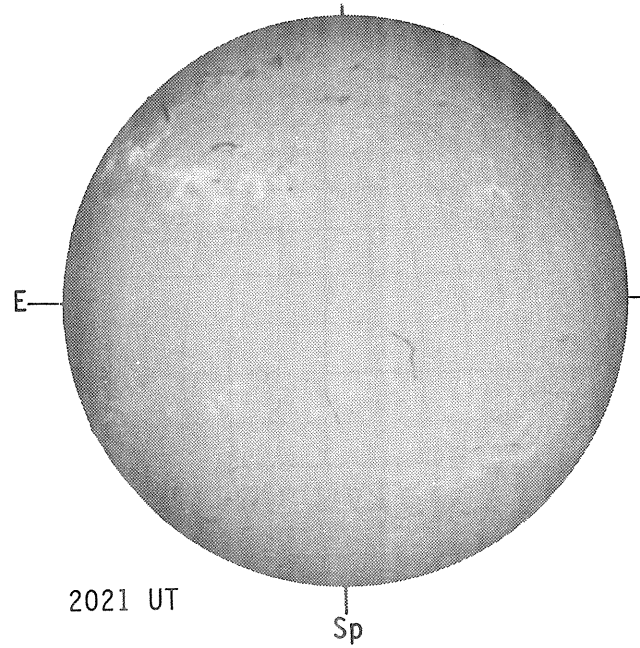
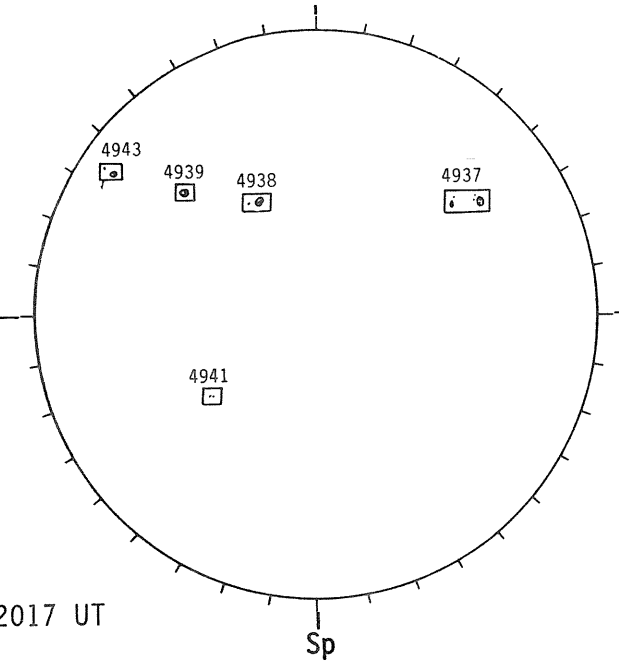
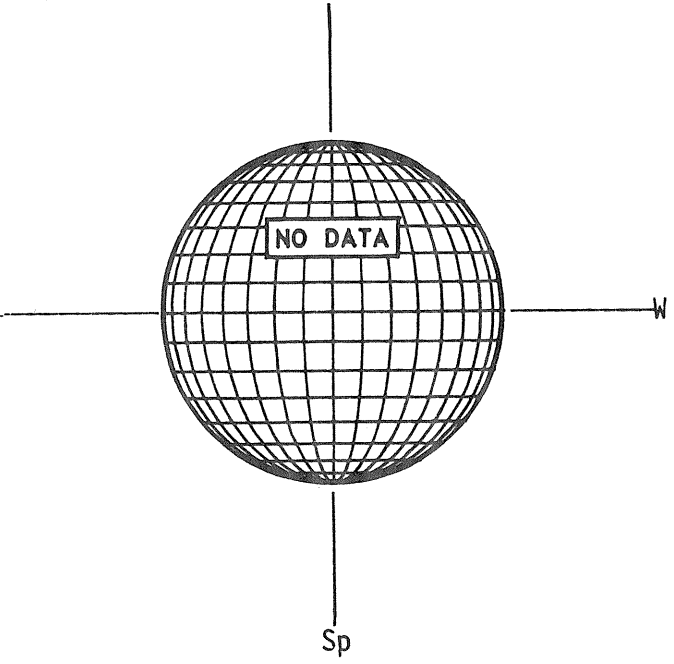


RAMEY SUNSPOTS

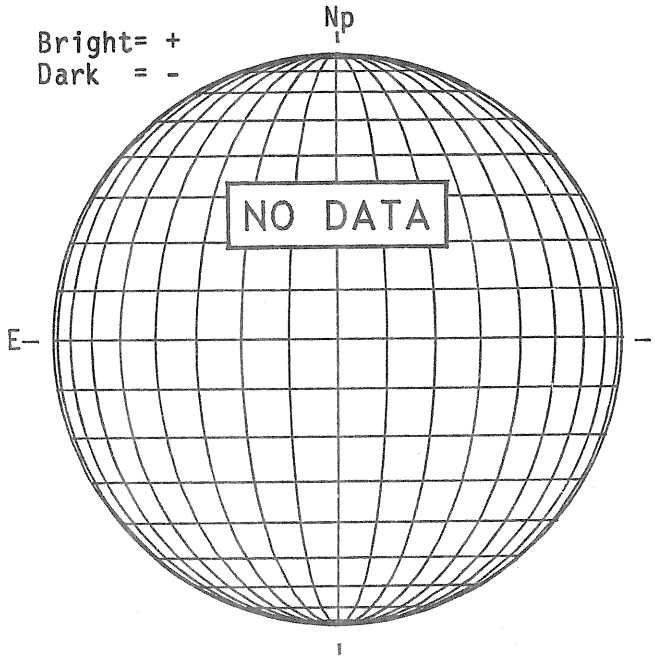


SACRAMENTO PEAK CORONA (1.15 Radii)

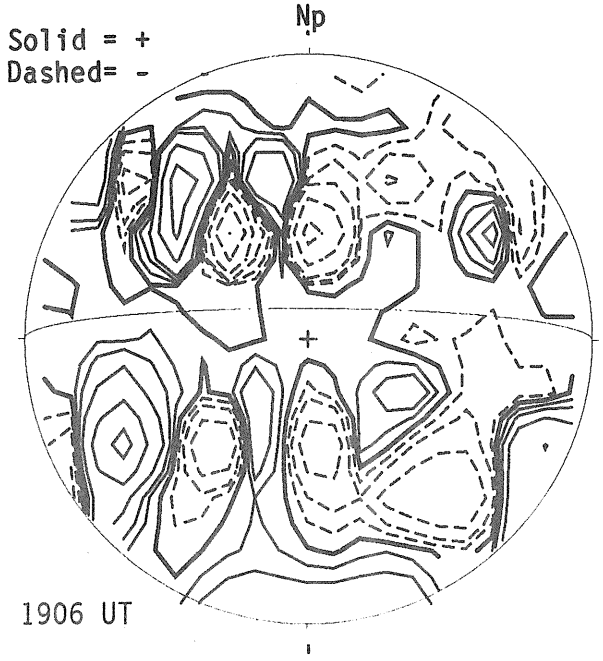


FEBRUARY 02, 1988 (P=-12.30, B_o=-6.04, L_o= 196.97)

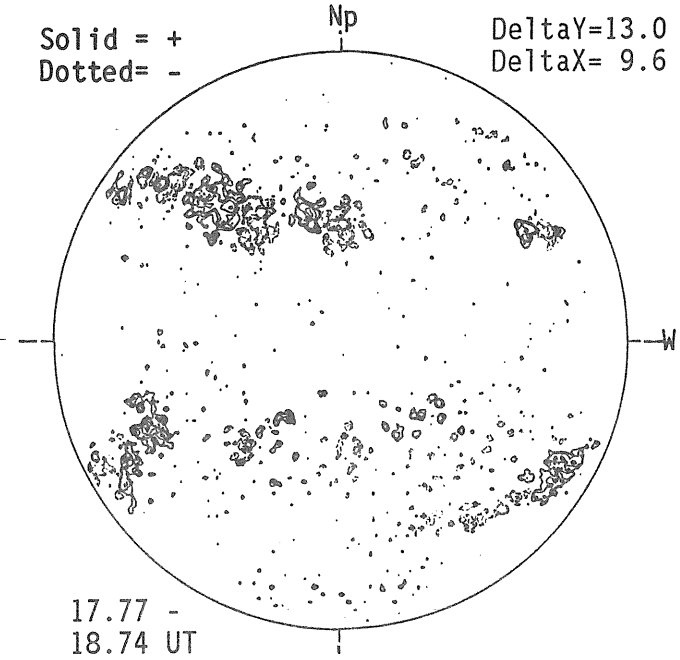
KITT PEAK MAGNETOGRAM



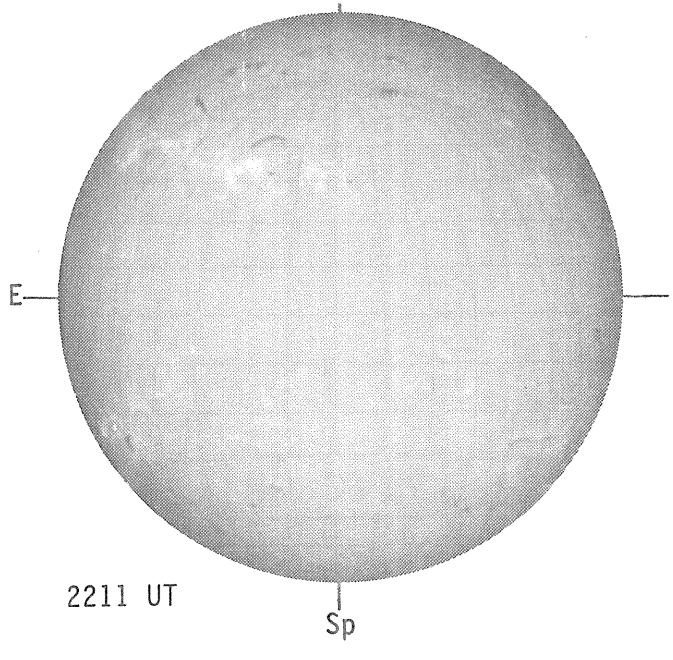
STANFORD MAGNETOGRAM



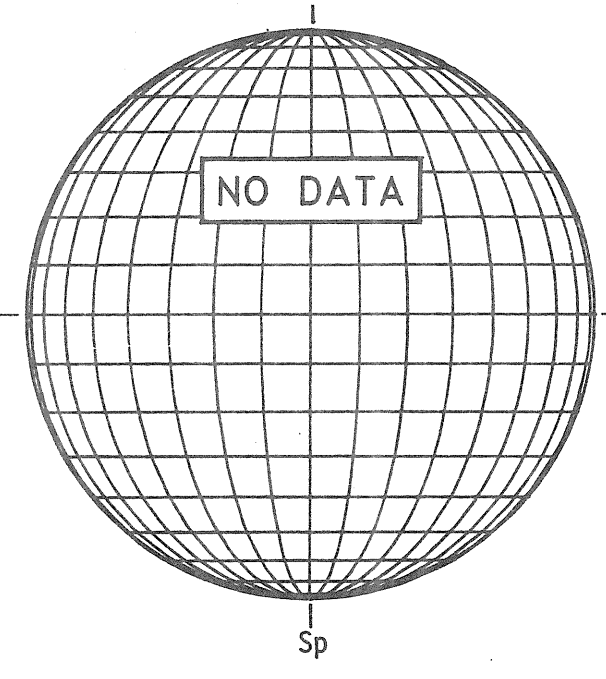
MT. WILSON MAGNETOGRAM



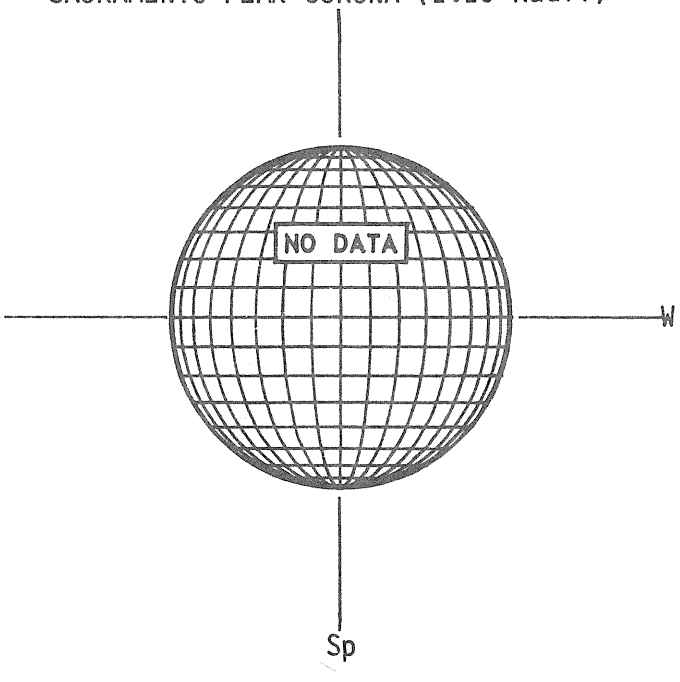
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



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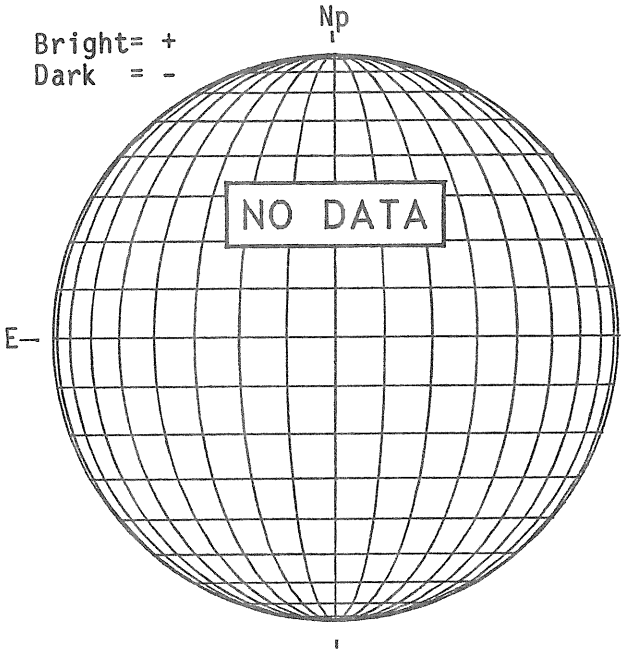
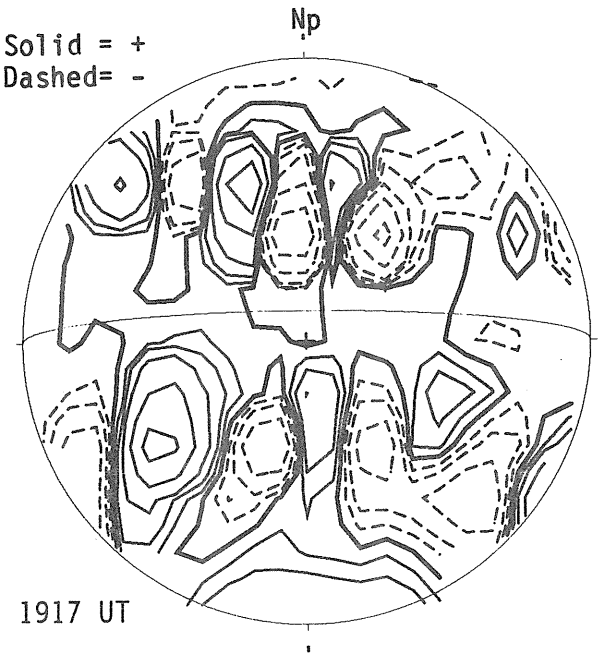
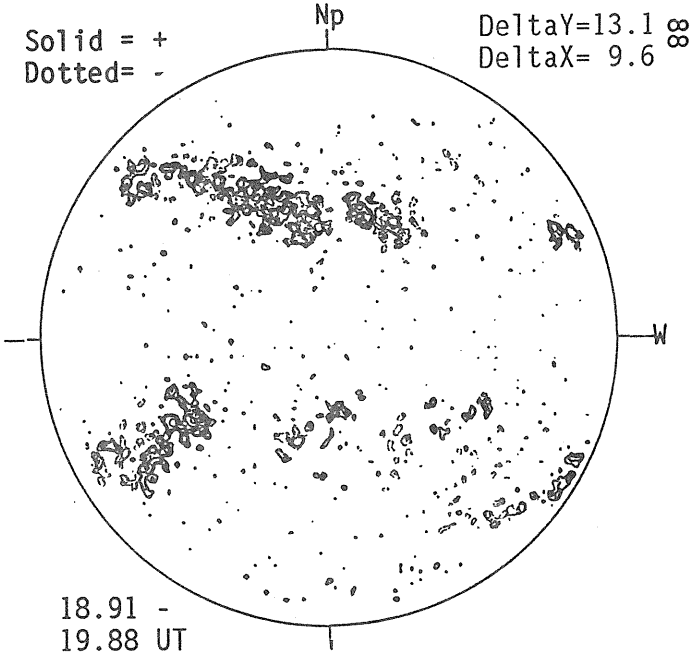
KITT PEAK MAGNETOGRAM



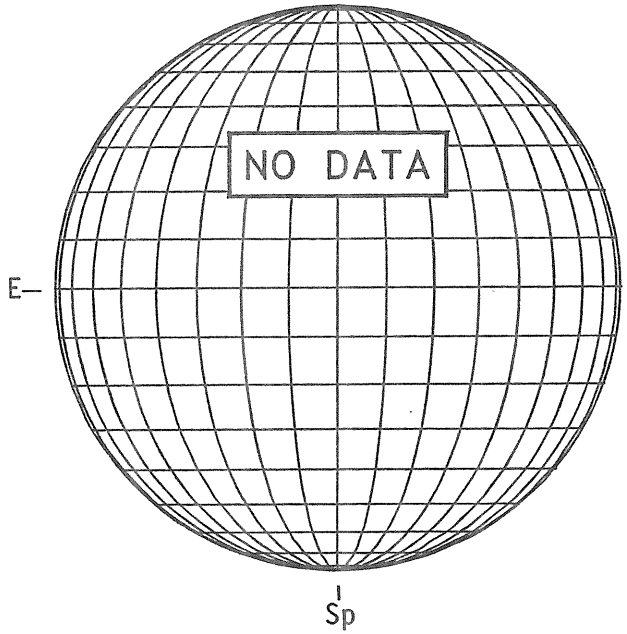
STANFORD MAGNETOGRAM



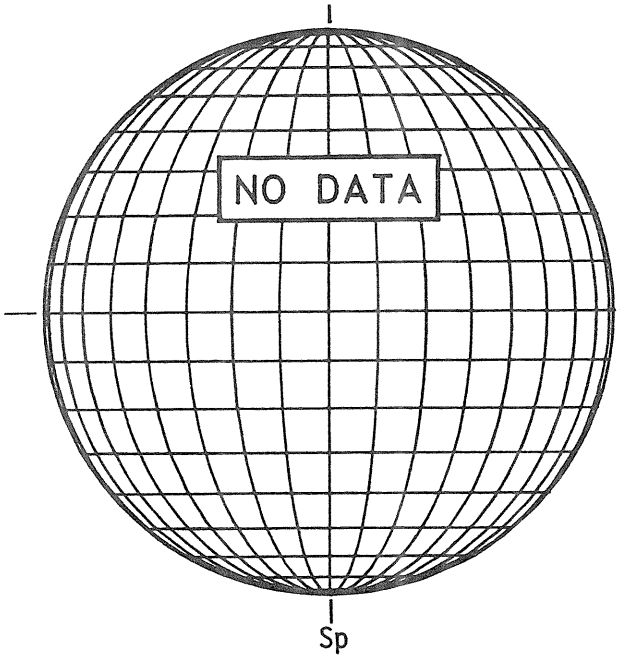
MT. WILSON MAGNETOGRAM



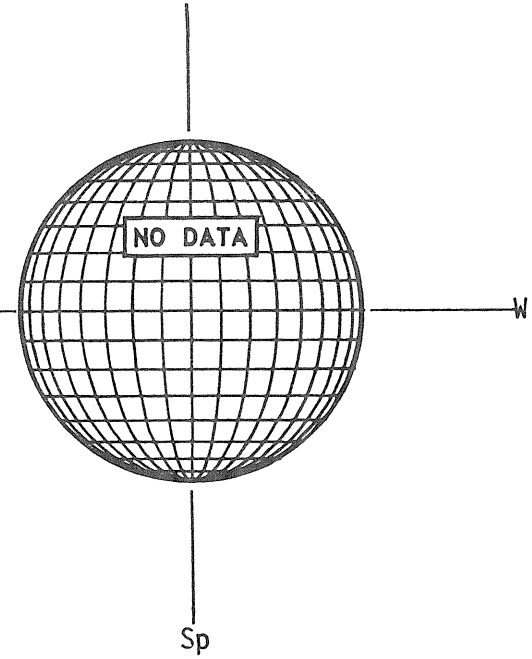
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

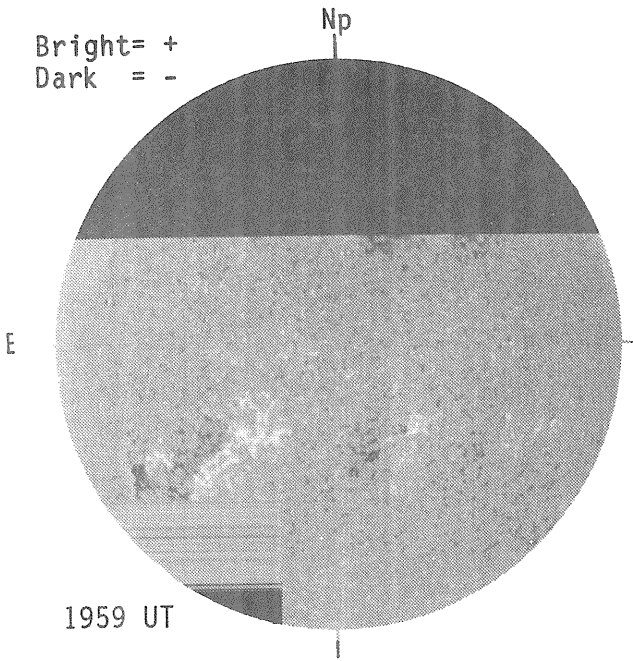


SACRAMENTO PEAK CORONA (1.15 Radii)

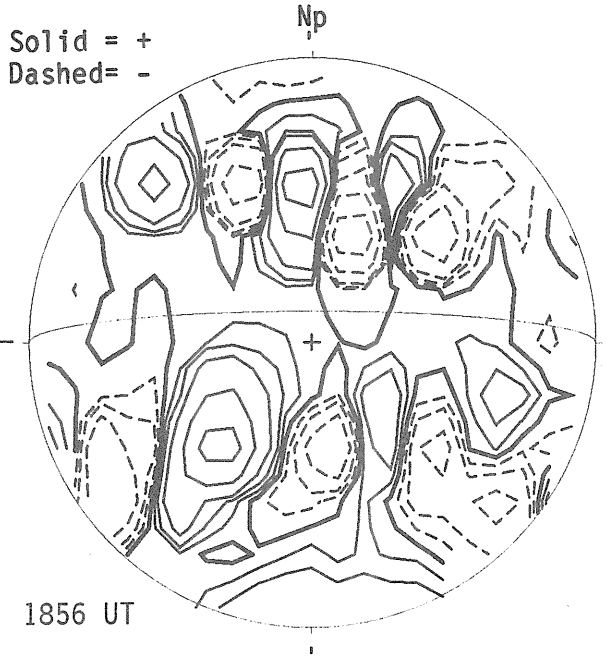


FEBRUARY 04, 1988 (P=-13.11, B_o=-6.18, L_o=170.64)

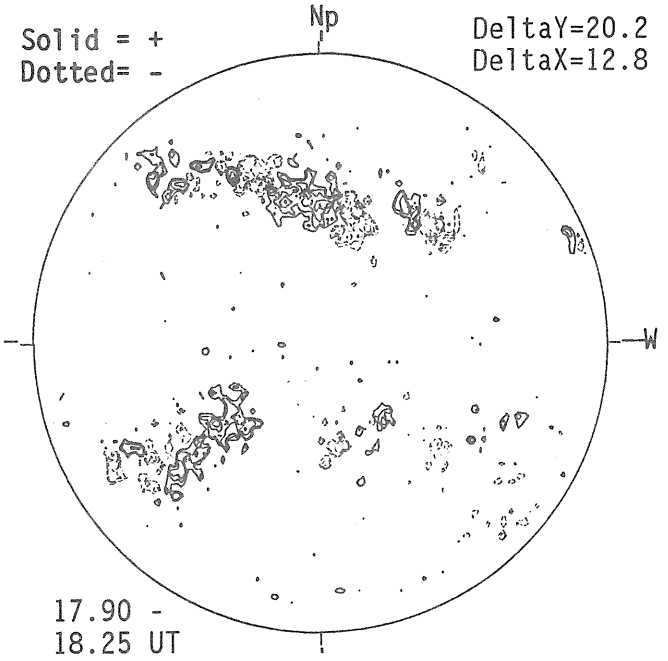
KITT PEAK MAGNETOGRAM



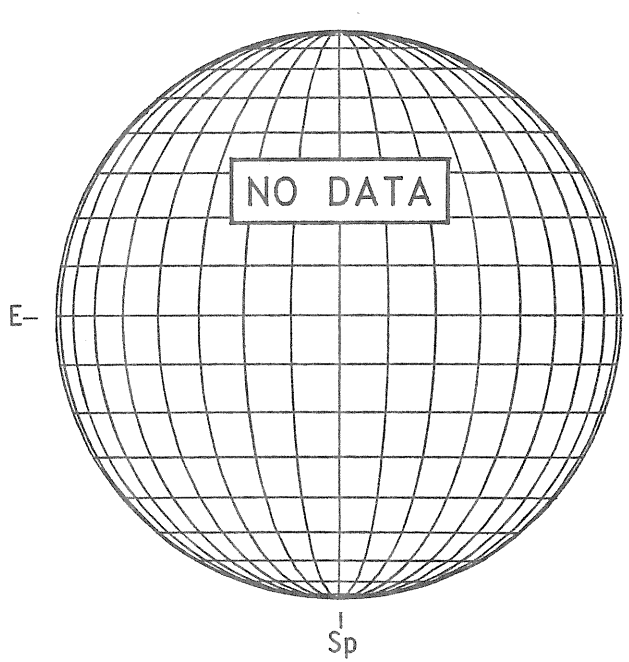
STANFORD MAGNETOGRAM



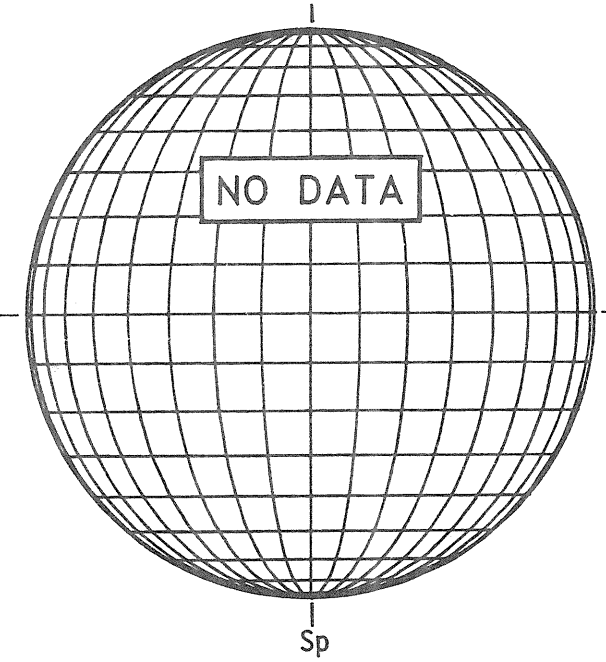
MT. WILSON MAGNETOGRAM



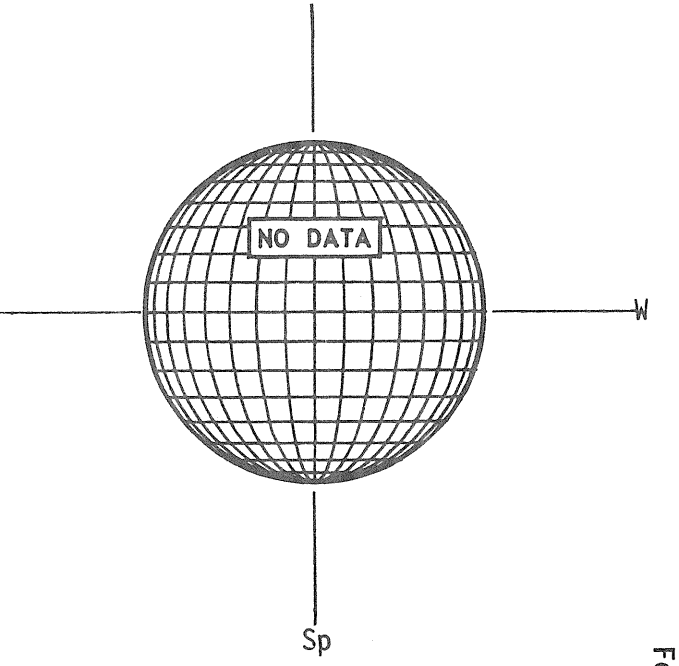
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

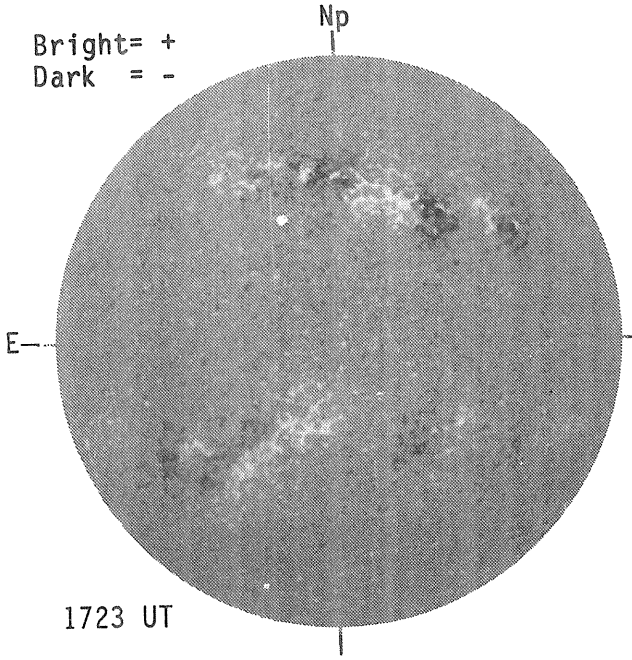


SACRAMENTO PEAK CORONA (1.15 Radii)



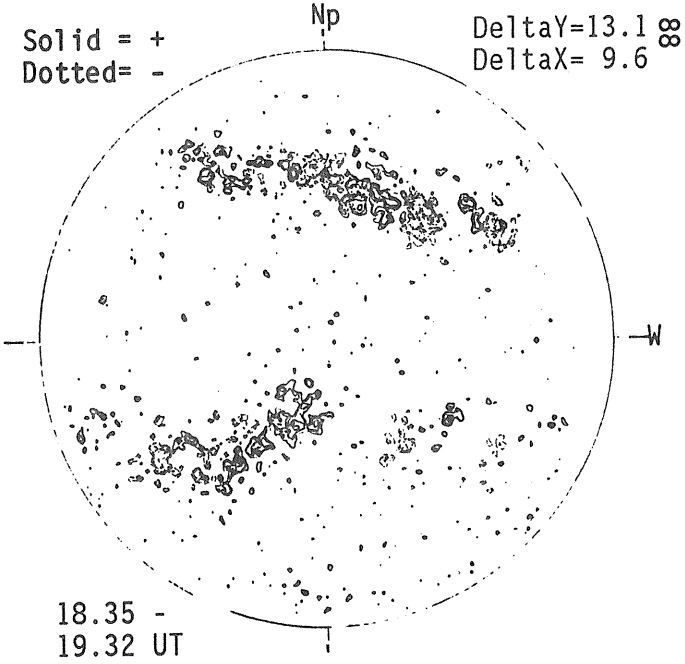
FEBRUARY 05, 1988 (P=-13.50, B_o=-6.25, L_o=157.47)

KITT PEAK MAGNETOGRAM

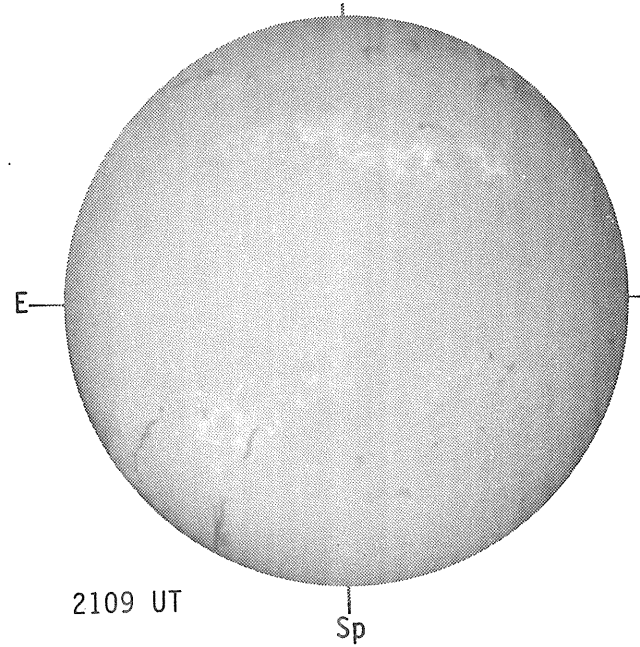


STANFORD MAGNETOGRAM

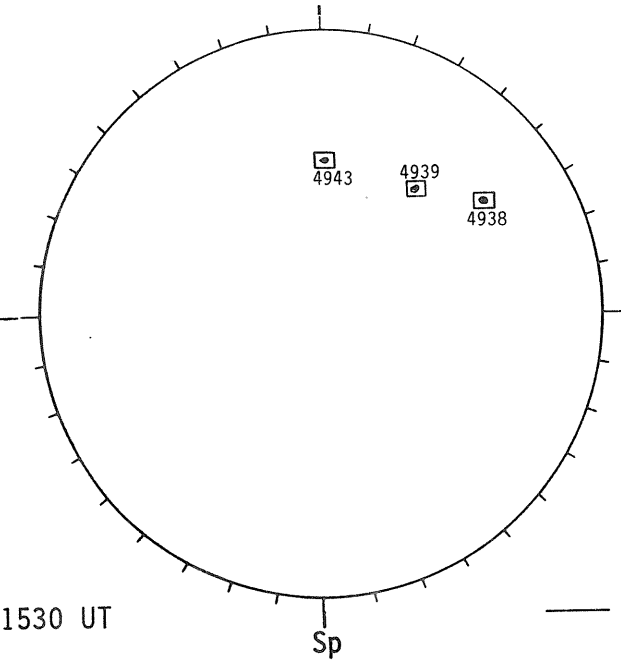
MT. WILSON MAGNETOGRAM



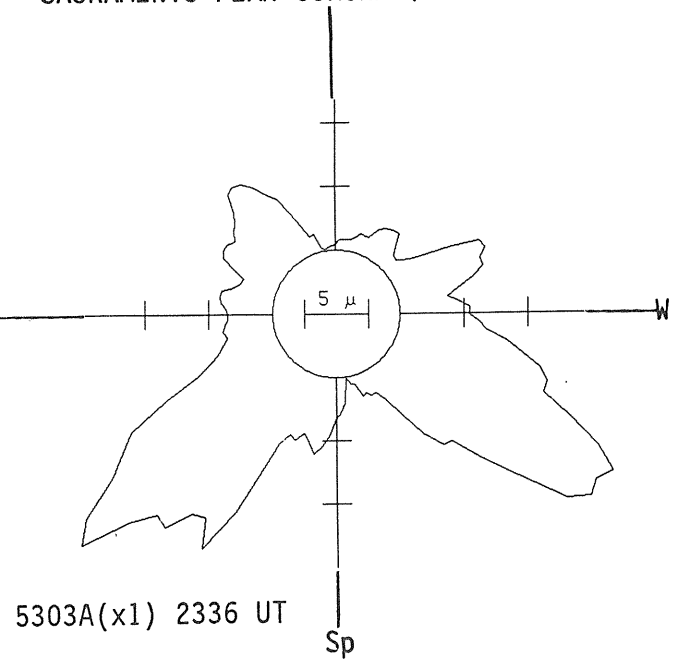
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



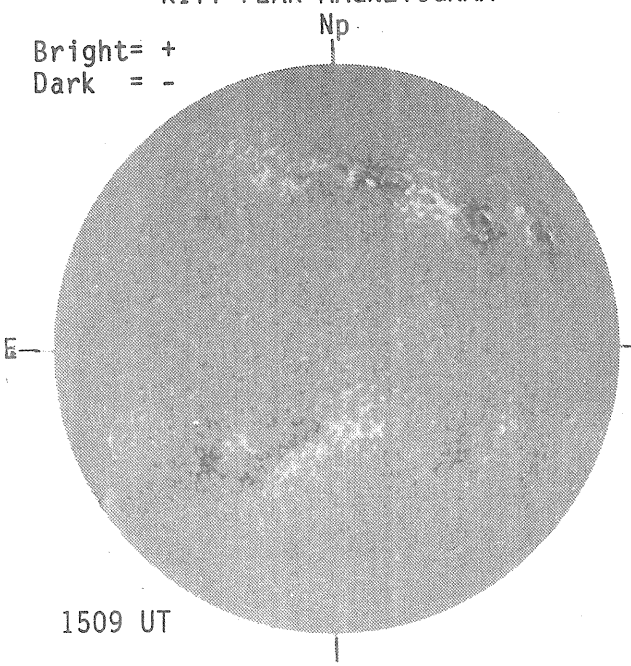
SACRAMENTO PEAK CORONA (1.15 Radii)



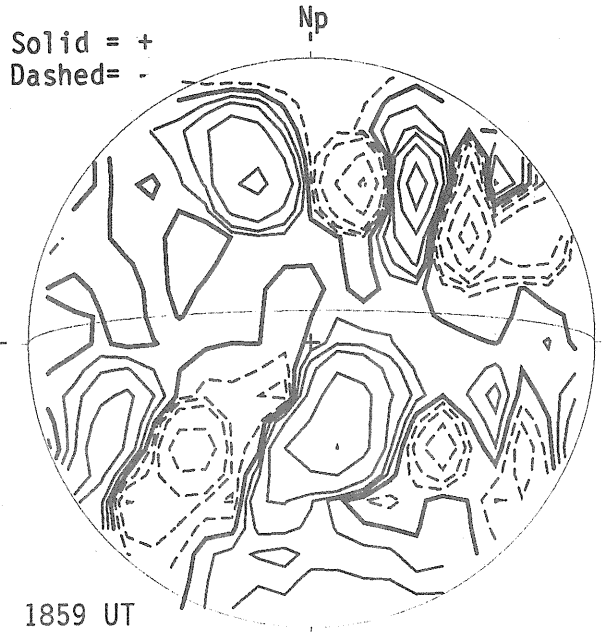
5303A(x1) 2336 UT

FEBRUARY 06, 1988 (P=-13.89, B_o=-6.31, L_o= 144.31)

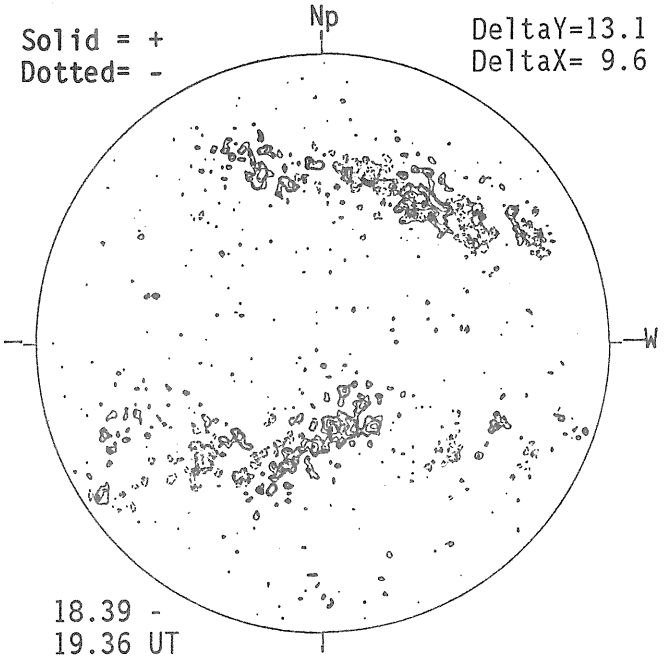
KITT PEAK MAGNETOGRAM



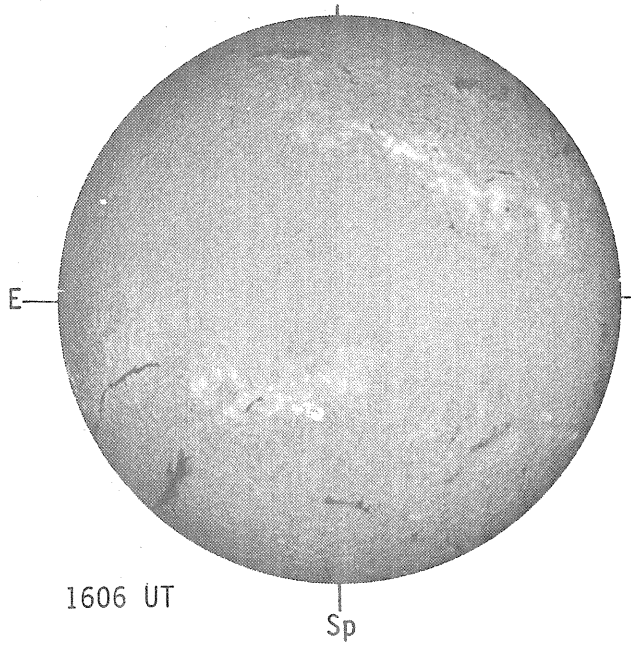
STANFORD MAGNETOGRAM



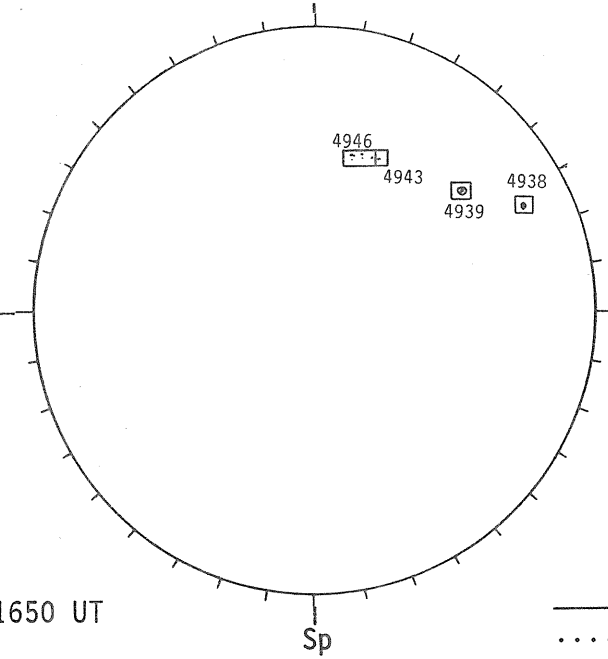
MT. WILSON MAGNETOGRAM



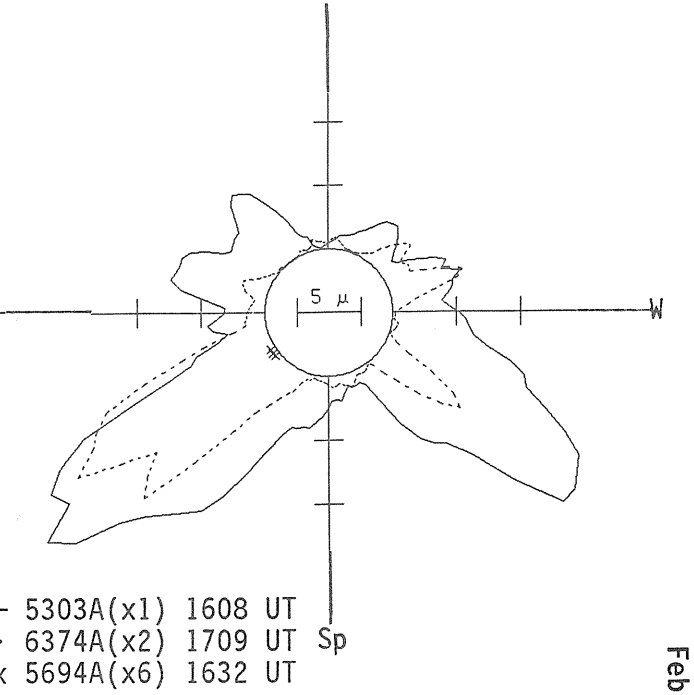
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

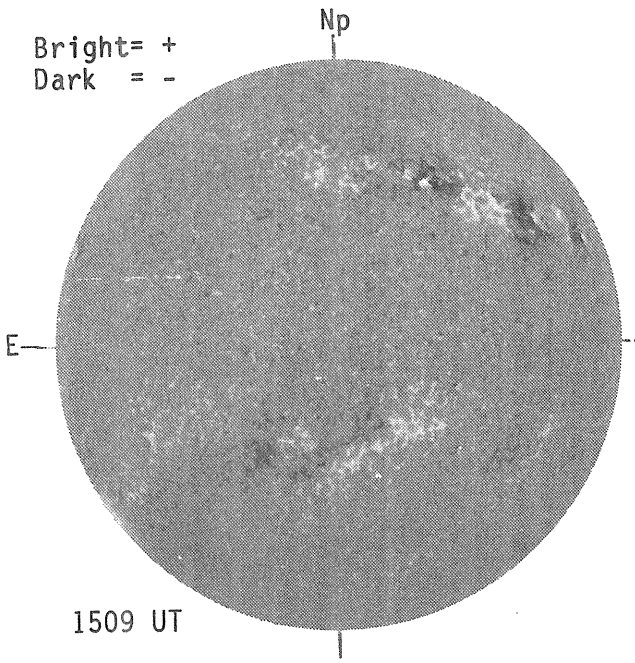


—— 5303A(x1) 1608 UT
···· 6374A(x2) 1709 UT
xxxx 5694A(x6) 1632 UT

FEBRUARY 07, 1988 (P=-14.28, B_0=-6.37, L_0= 131.14)

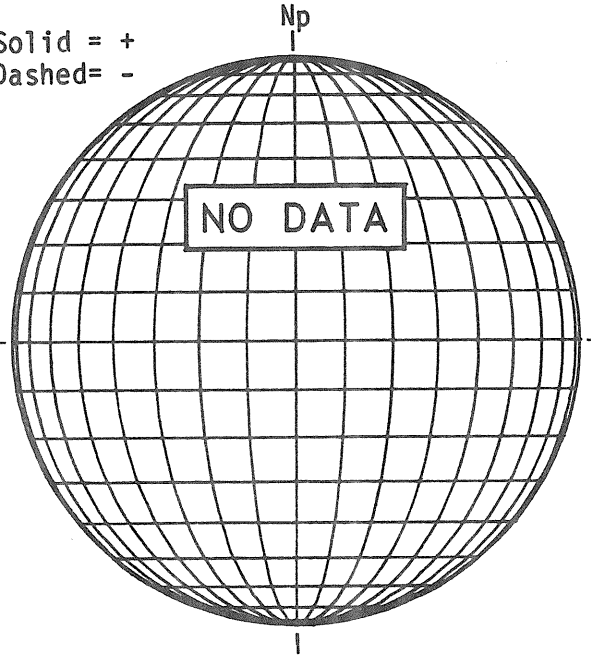
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



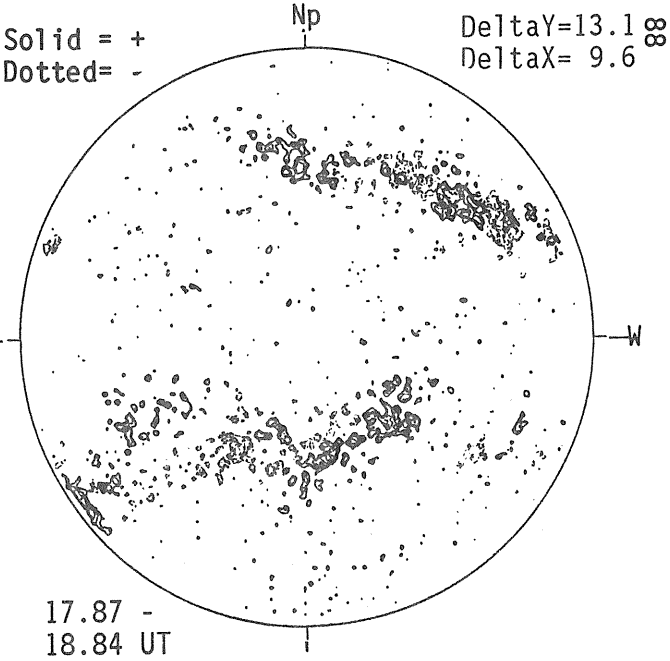
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

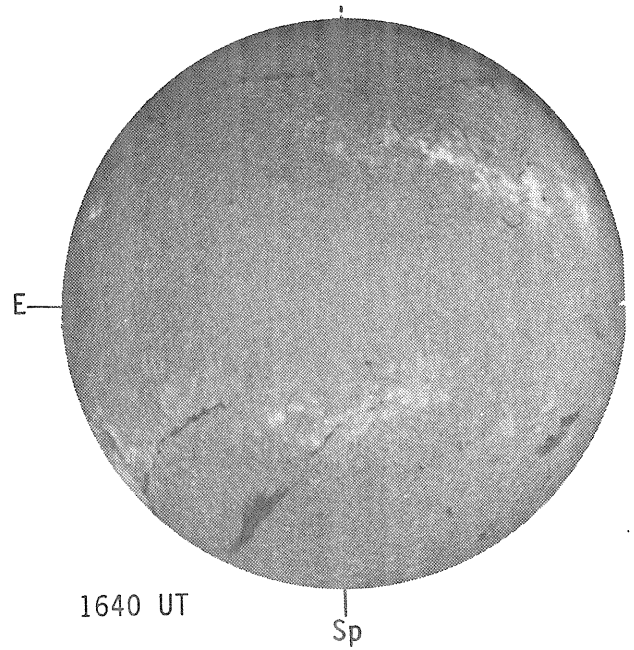


MT. WILSON MAGNETOGRAM

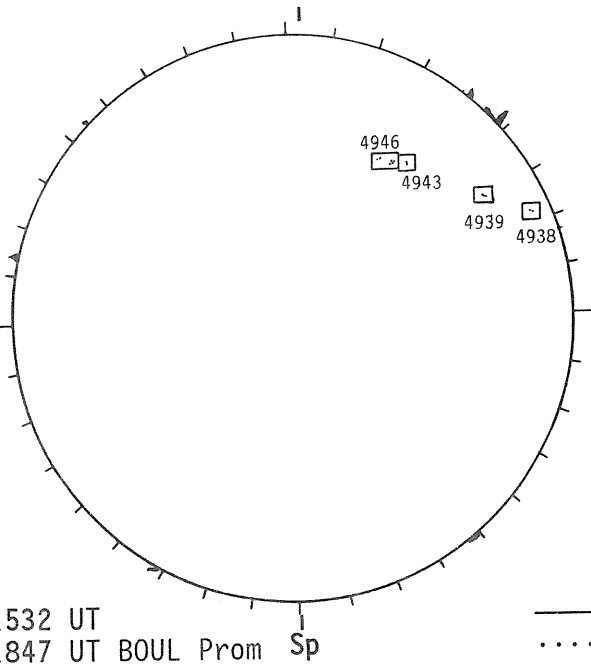
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



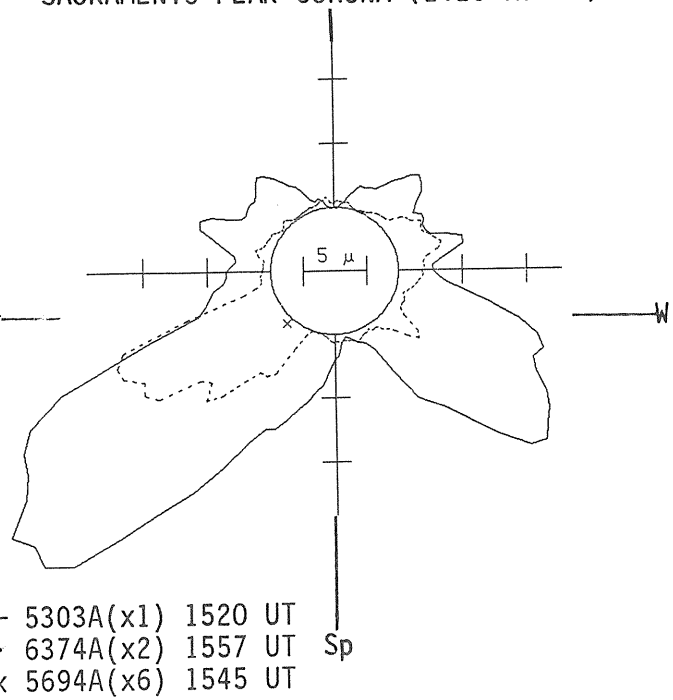
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



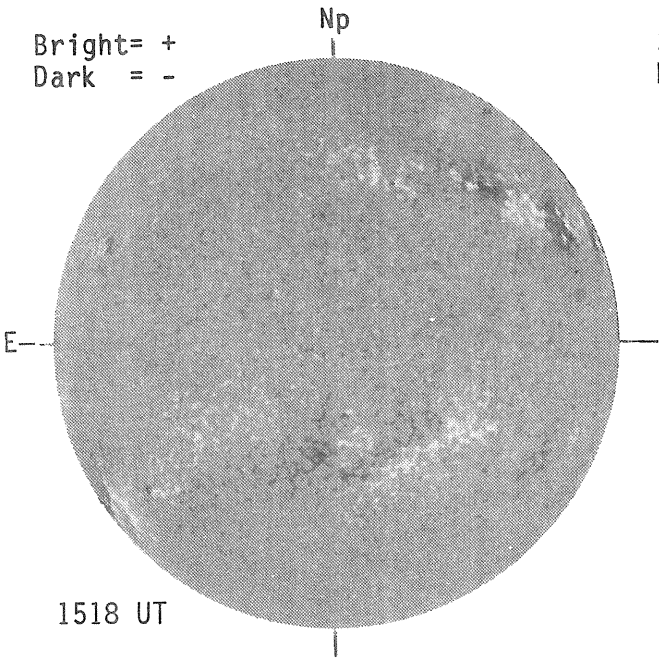
SACRAMENTO PEAK CORONA (1.15 Radii)



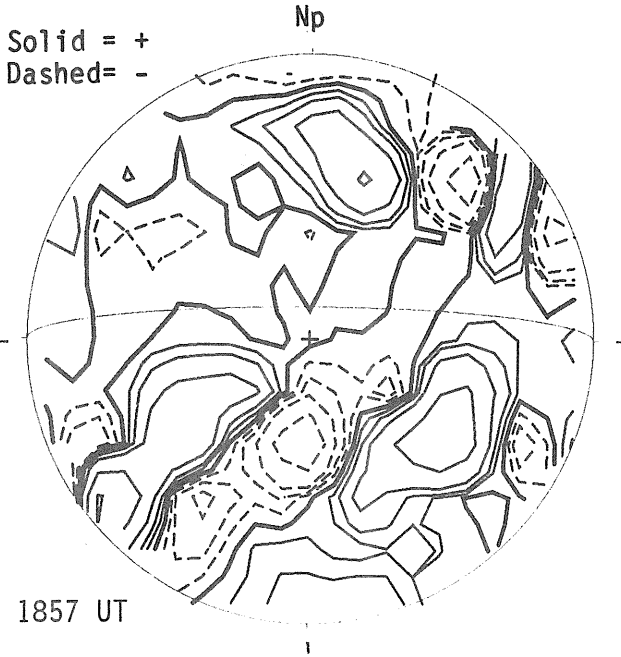
—— 5303A(x1) 1520 UT
···· 6374A(x2) 1557 UT
xxxx 5694A(x6) 1545 UT

FEBRUARY 08, 1988 (P=-14.66, B_o=-6.43, L_o= 117.97)

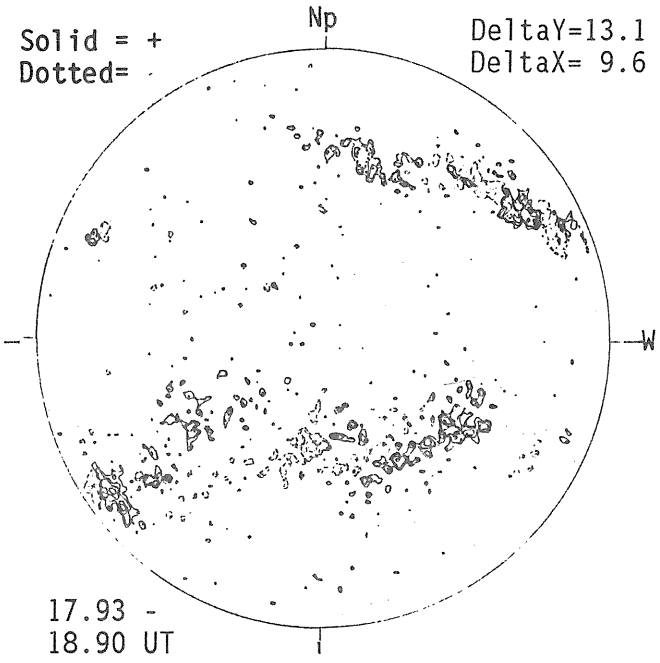
KITT PEAK MAGNETOGRAM



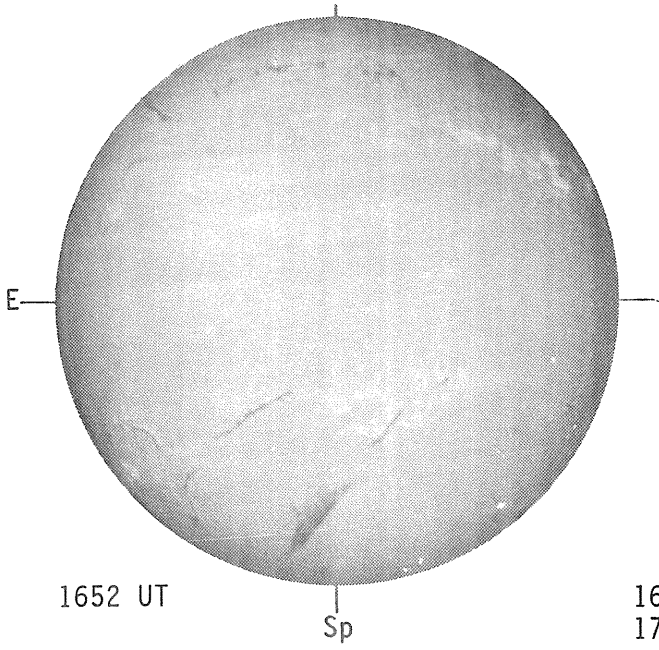
STANFORD MAGNETOGRAM



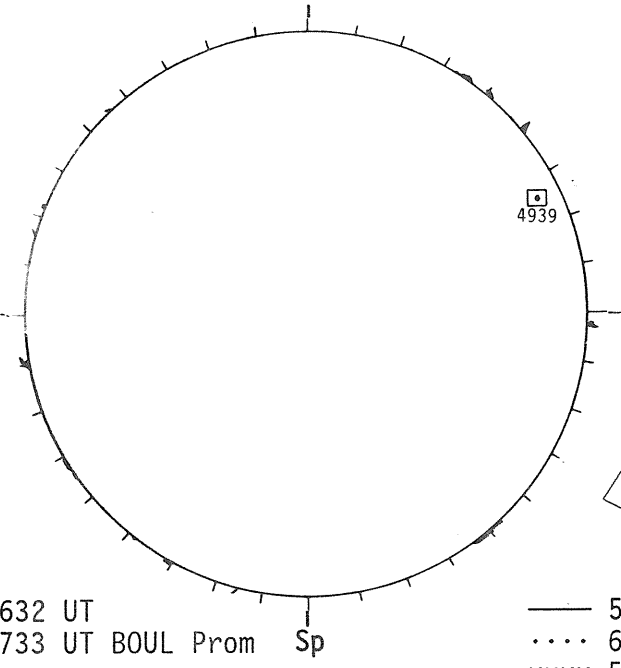
MT. WILSON MAGNETOGRAM



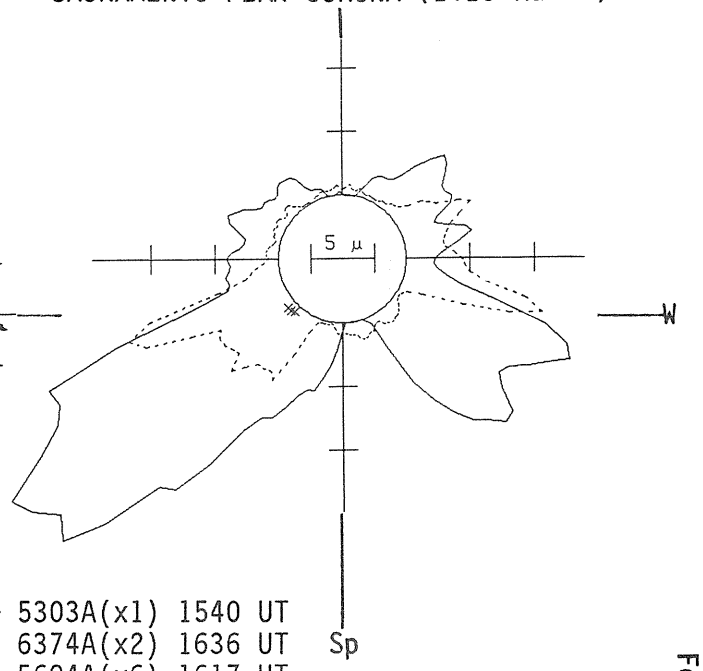
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



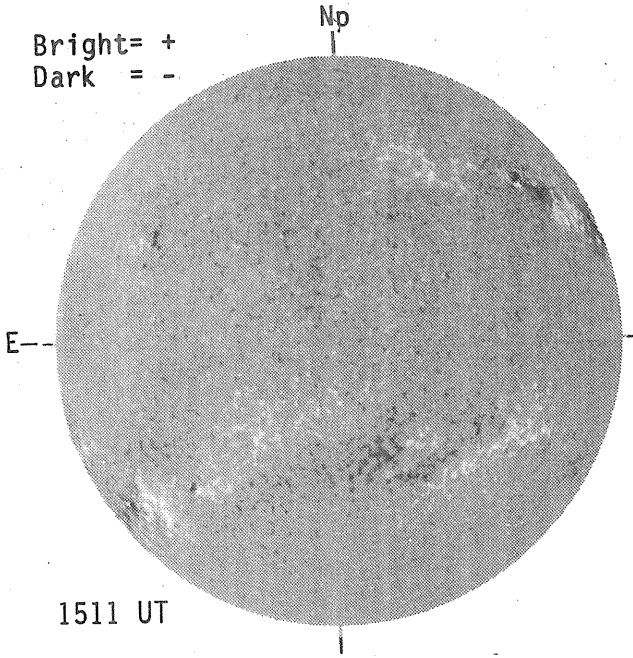
SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 09, 1988 (P=-15.03, B_o=-6.49, L_o= 104.81)

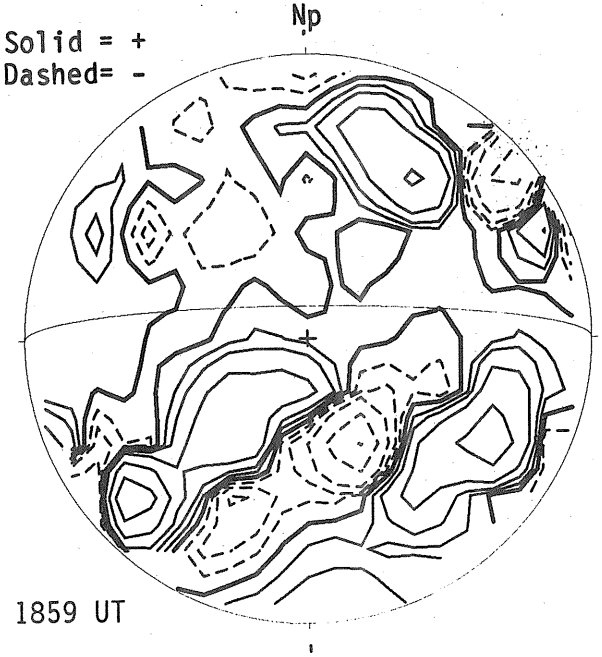
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



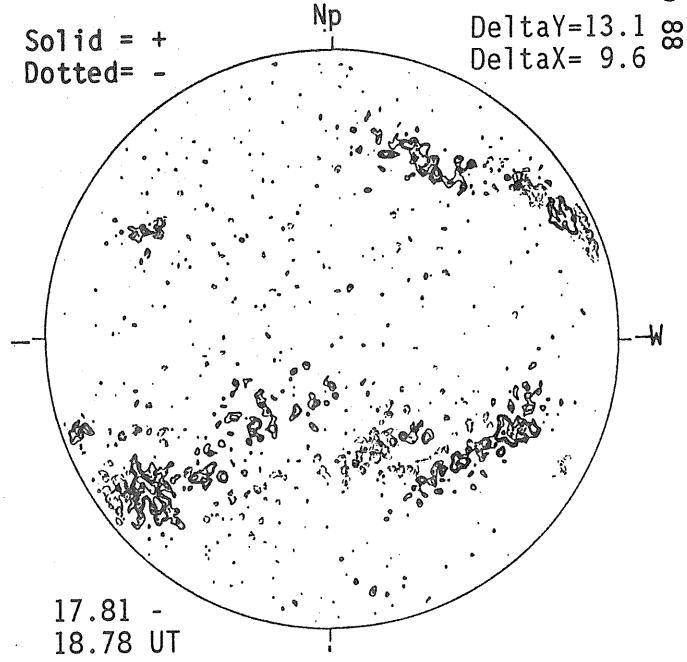
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

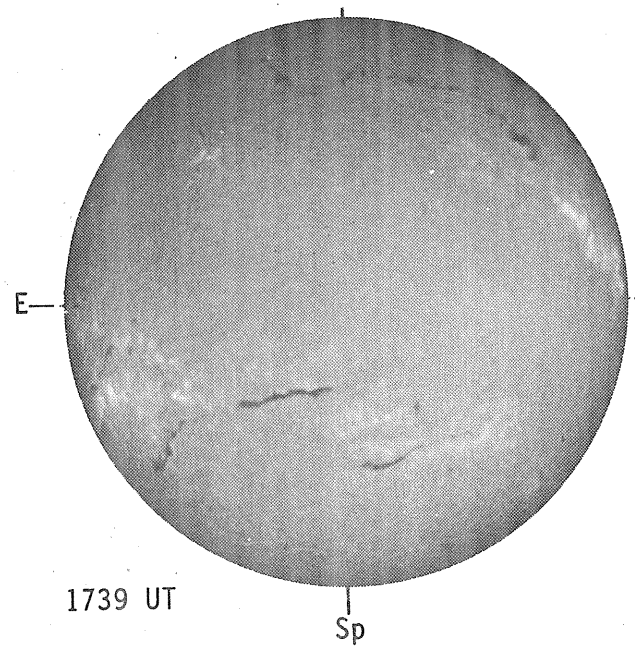


MT. WILSON MAGNETOGRAM

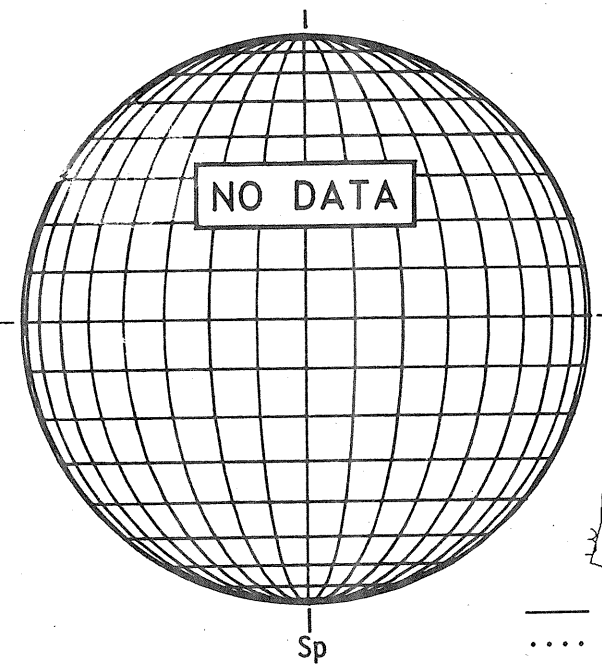
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



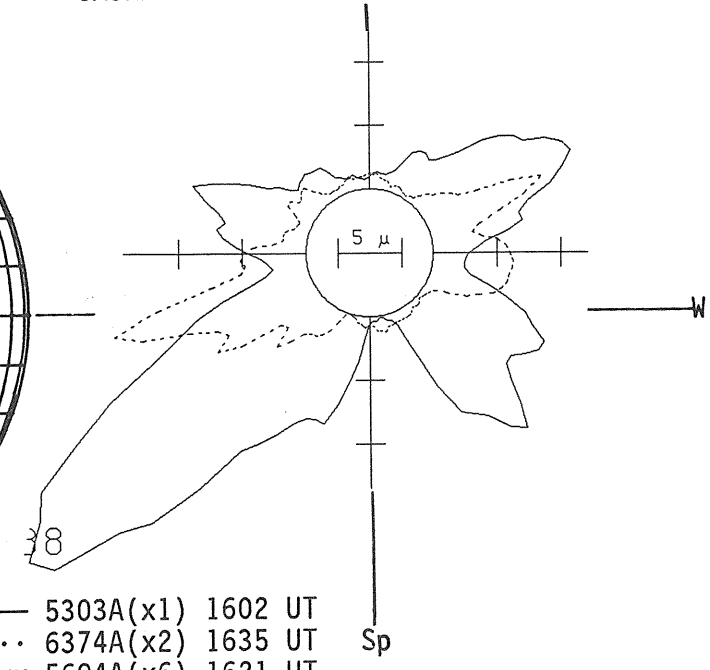
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



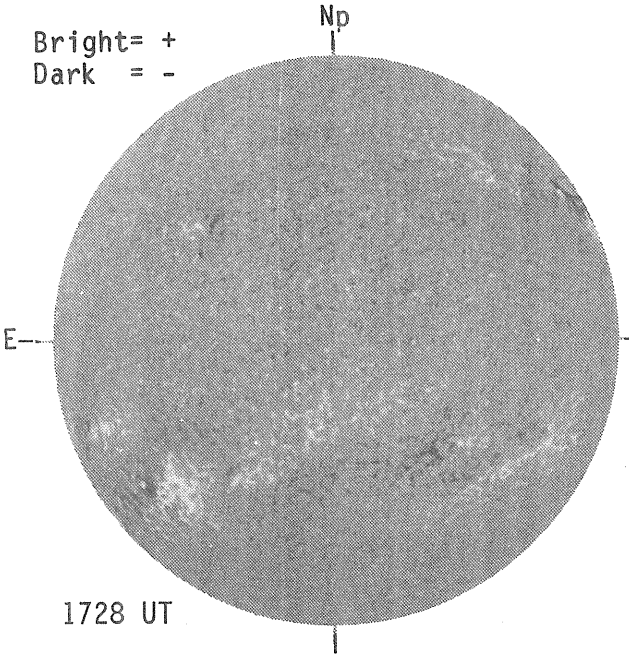
SACRAMENTO PEAK CORONA (1.15 Radii)



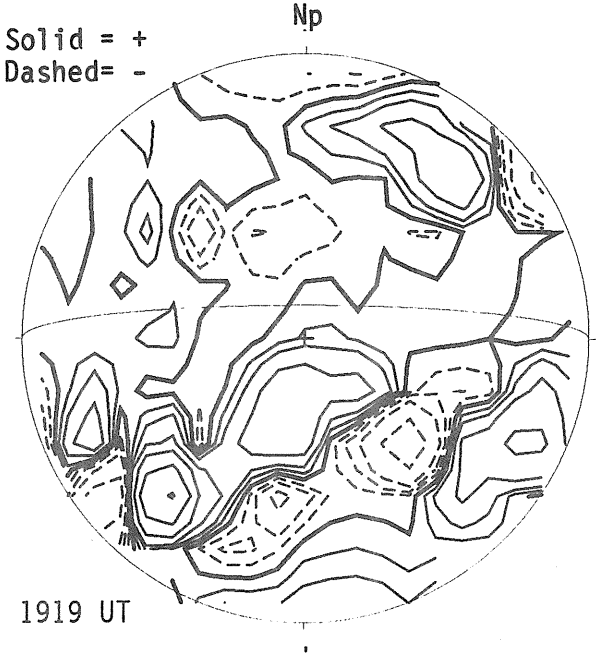
—— 5303A(x1) 1602 UT
···· 6374A(x2) 1635 UT
xxxx 5694A(x6) 1621 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 10, 1988 (P=-15.40, B_o=-6.54, L_o= 91.64)

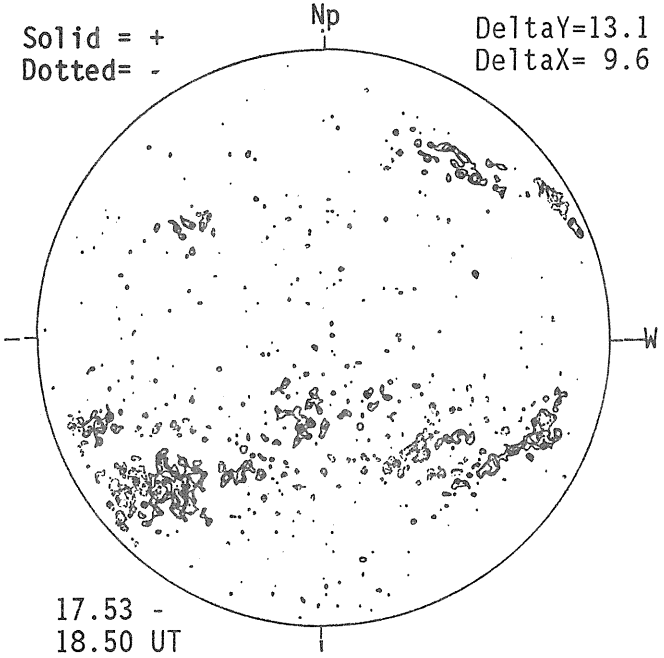
KITT PEAK MAGNETOGRAM



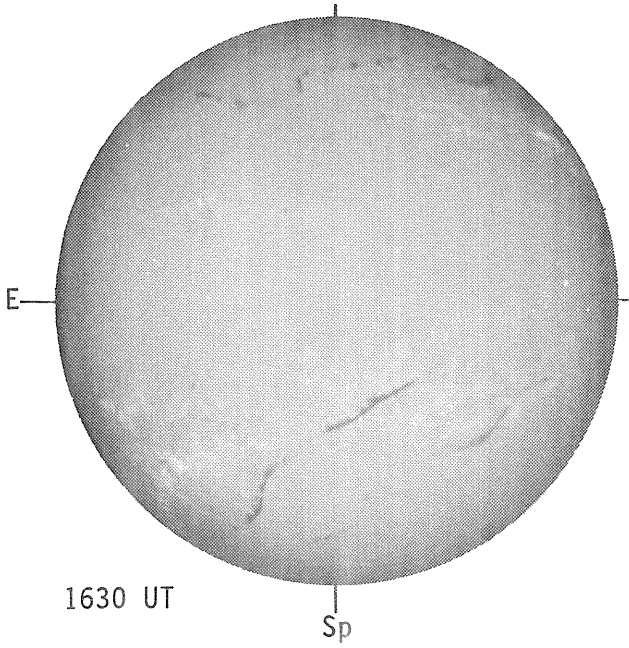
STANFORD MAGNETOGRAM



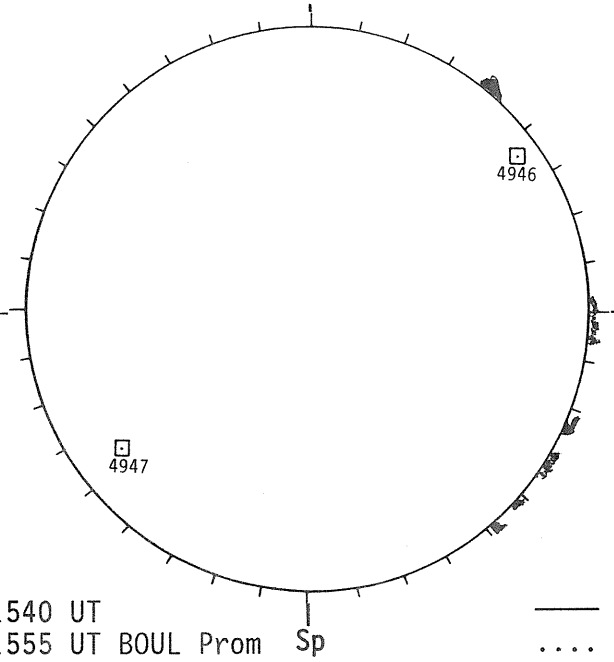
MT. WILSON MAGNETOGRAM



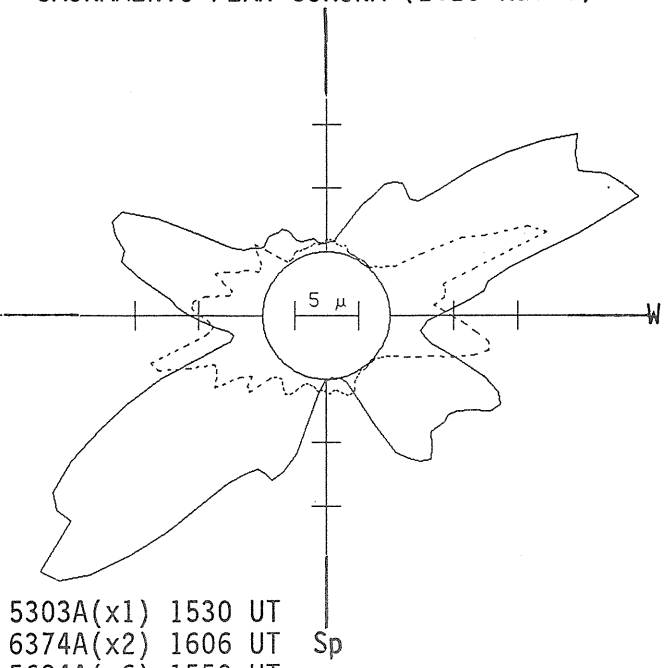
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



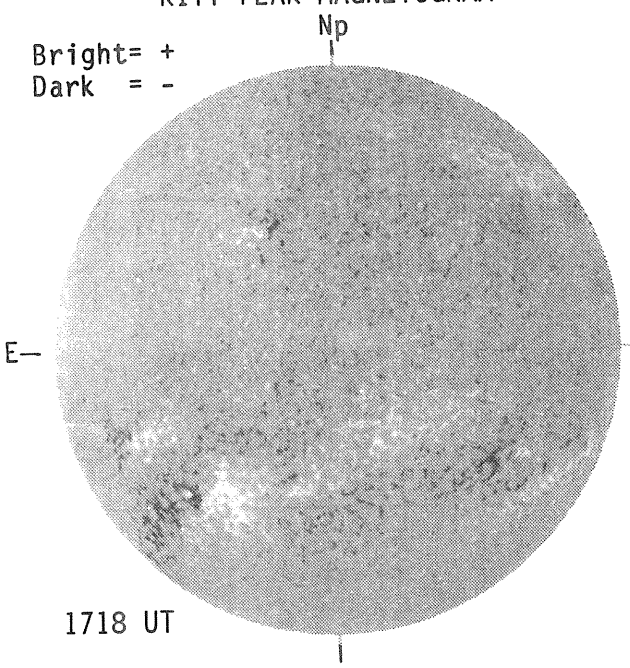
SACRAMENTO PEAK CORONA (1.15 Radii)



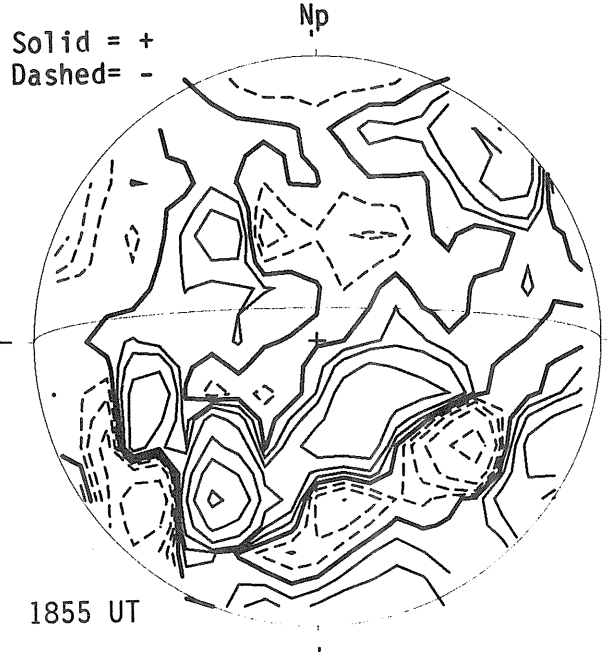
FEBRUARY 11, 1988 (P=-15.77, B_o=-6.60, L_o= 78.47)

63
Feb 88

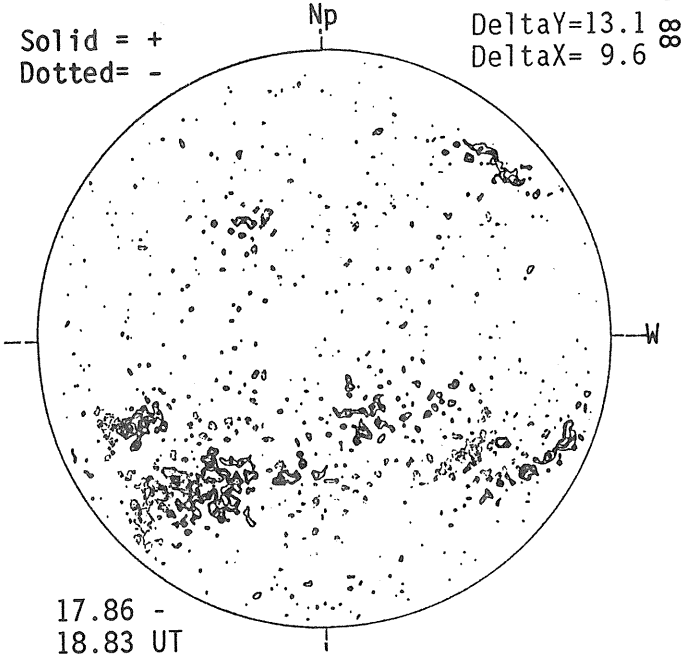
KITT PEAK MAGNETOGRAM



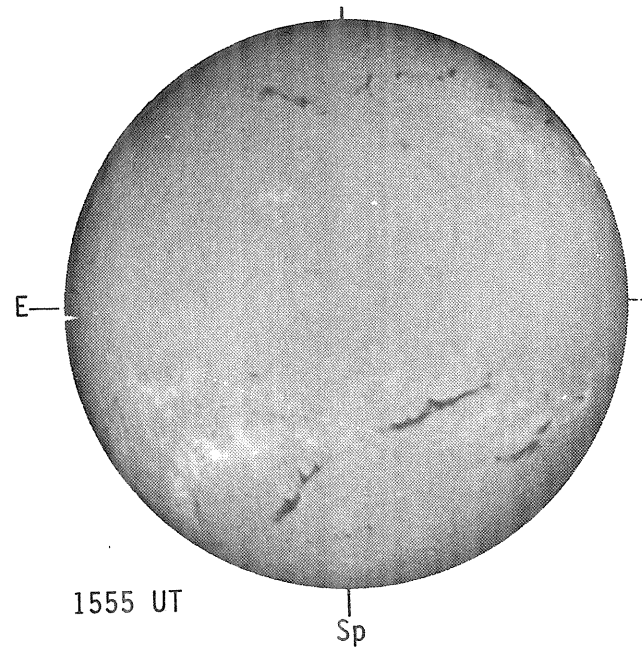
STANFORD MAGNETOGRAM



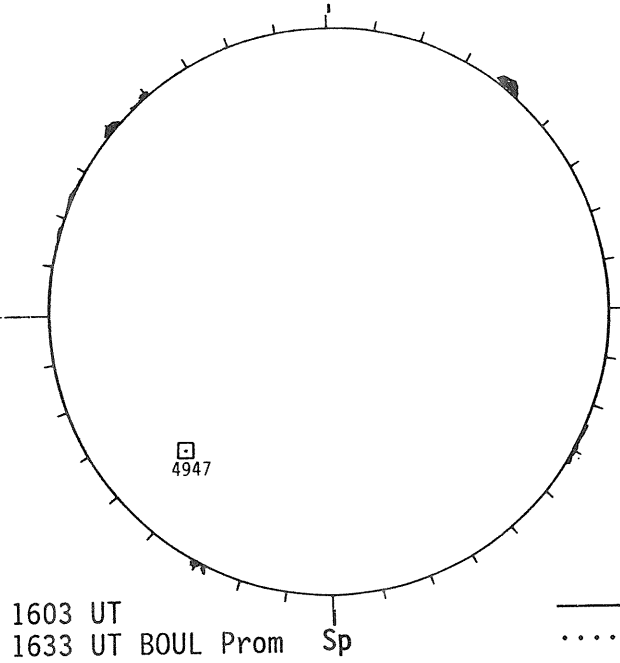
MT. WILSON MAGNETOGRAM



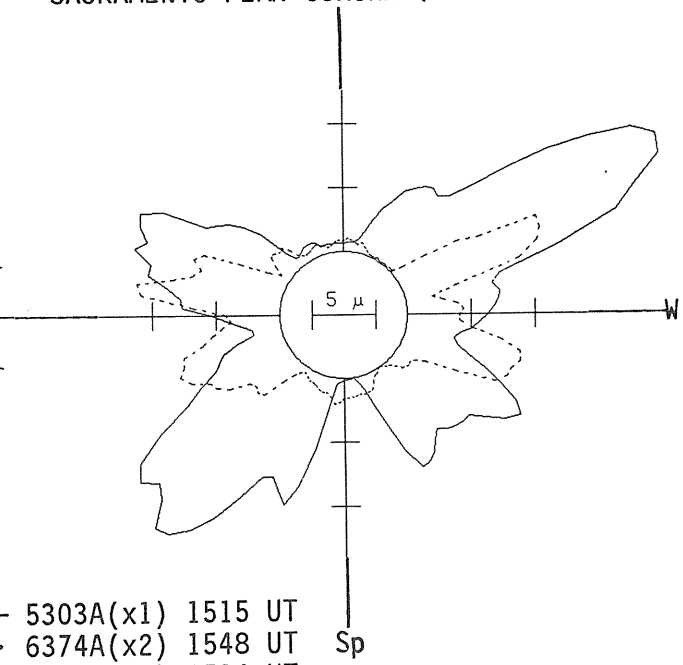
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



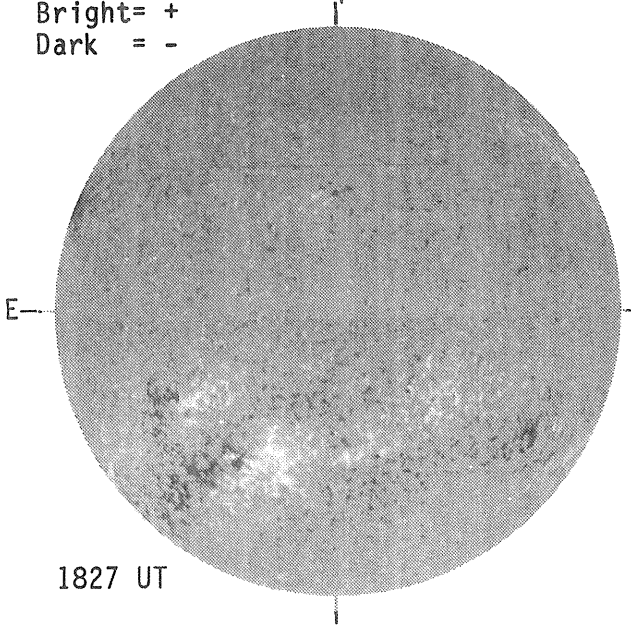
SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 12, 1988 (P=-16.12, B_o=-6.65, L_o= 65.31)

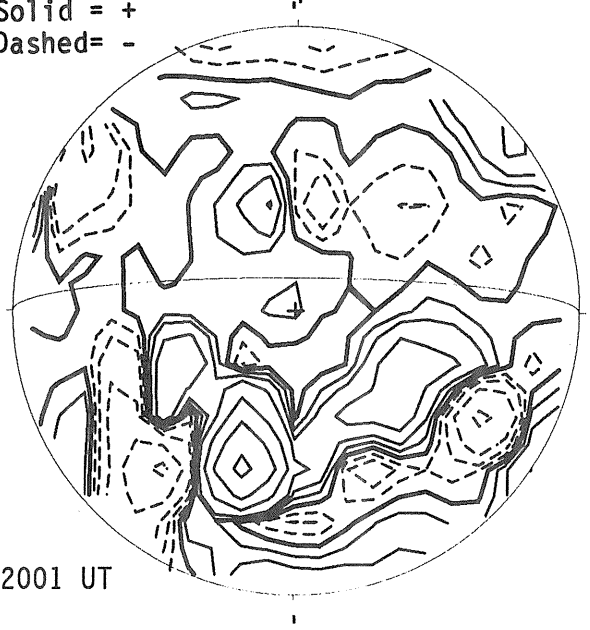
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



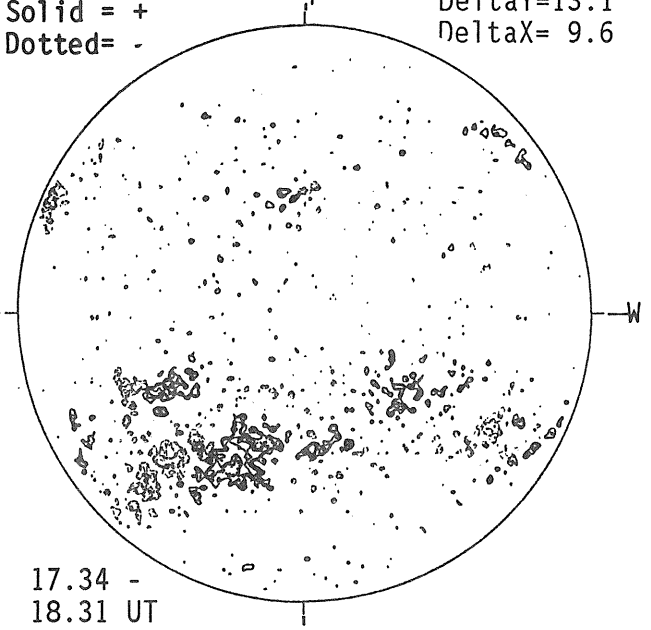
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

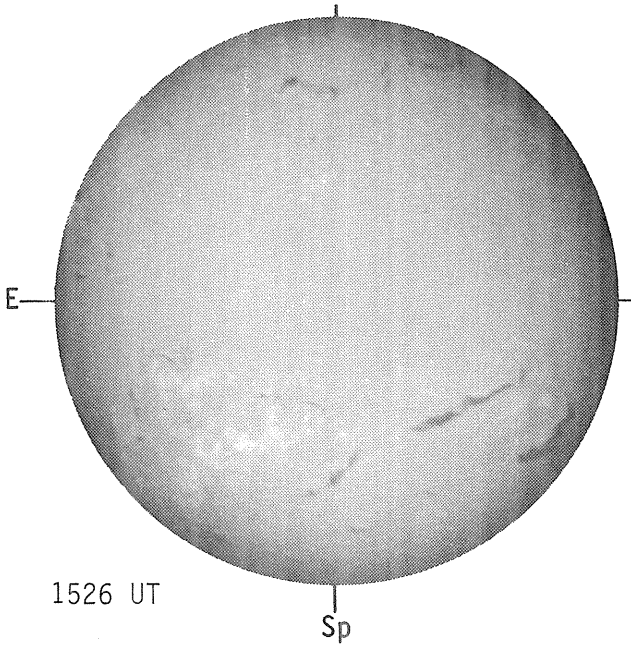


MT. WILSON MAGNETOGRAM

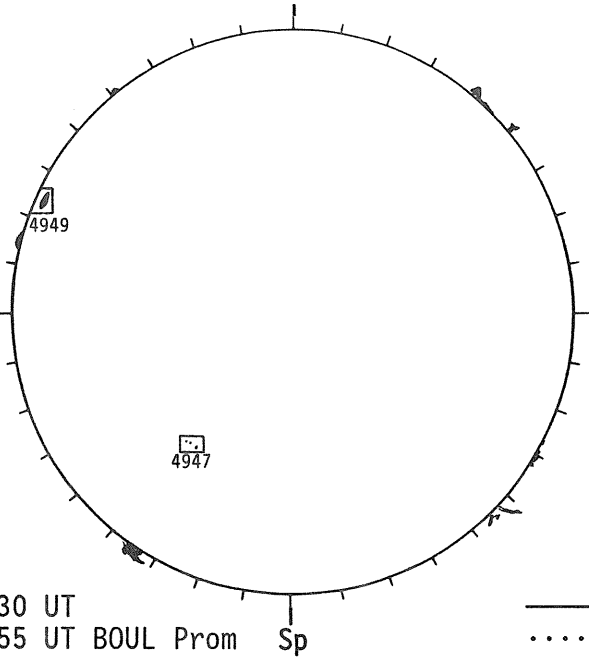
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



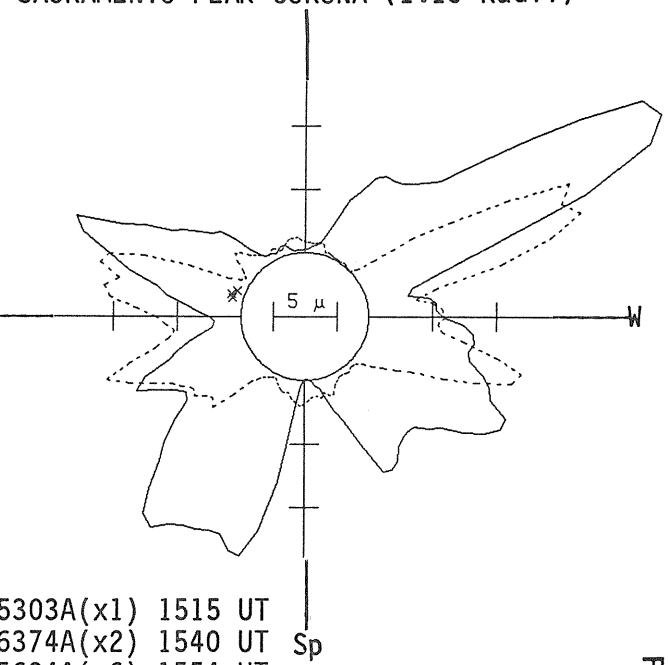
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

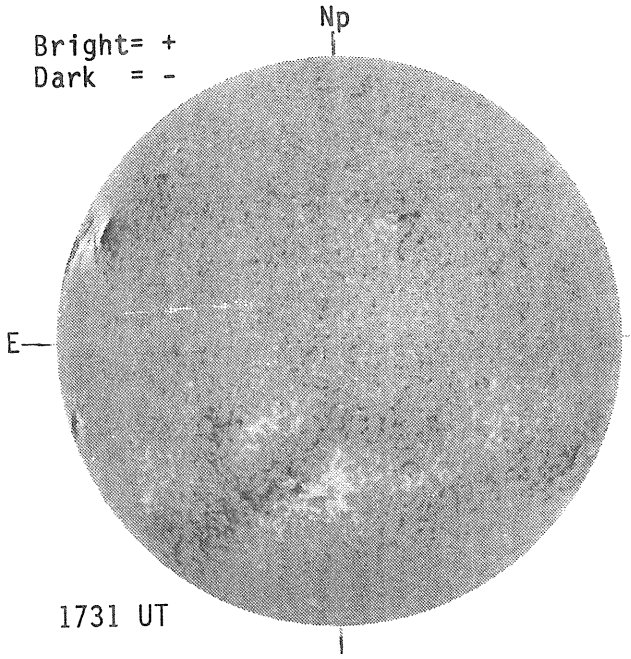


—— 5303A(x1) 1515 UT
···· 6374A(x2) 1540 UT
xxxx 5694A(x6) 1554 UT
NO 5694A ACTIVITY TODAY

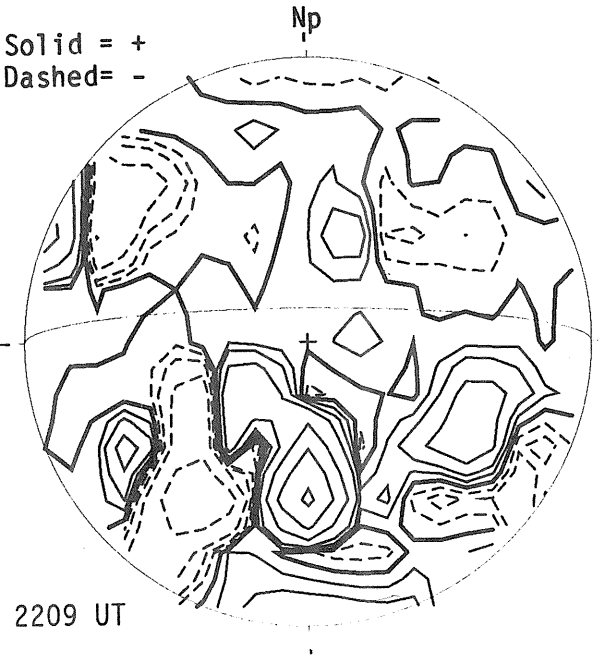
FEBRUARY 13, 1988 (P=-16.48, B_o=-6.70, L_o= 52.14)

65
Feb 88

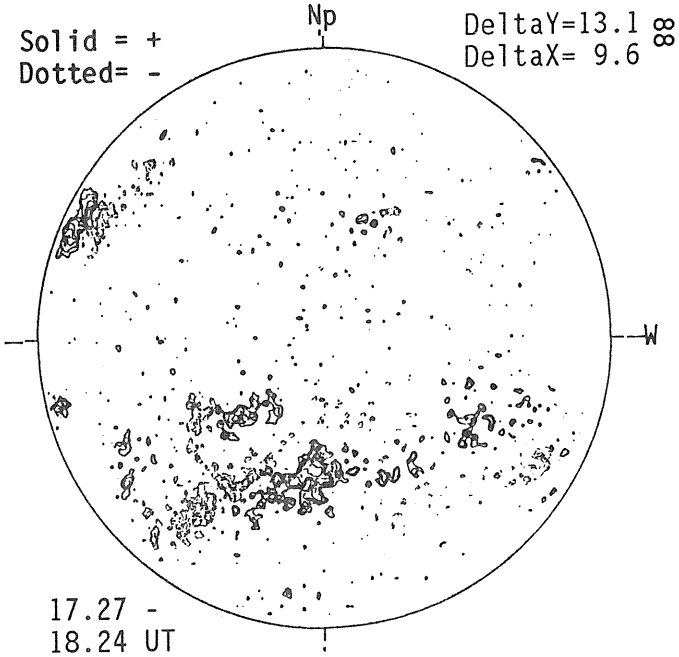
KITT PEAK MAGNETOGRAM



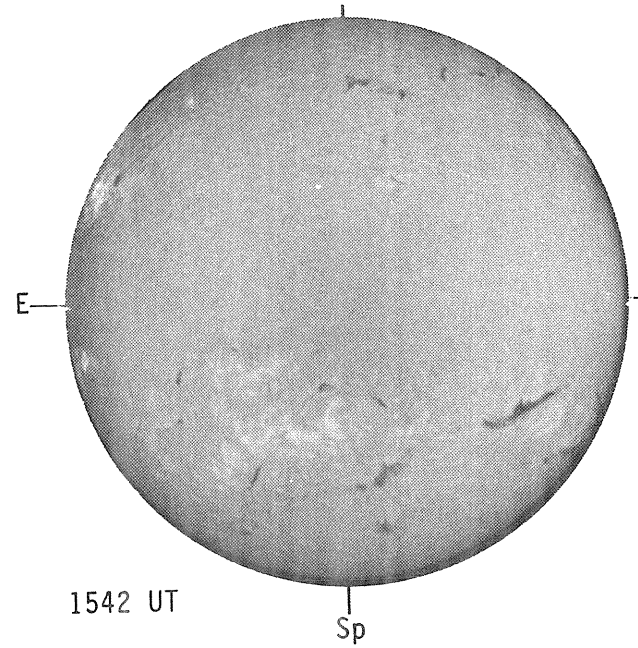
STANFORD MAGNETOGRAM



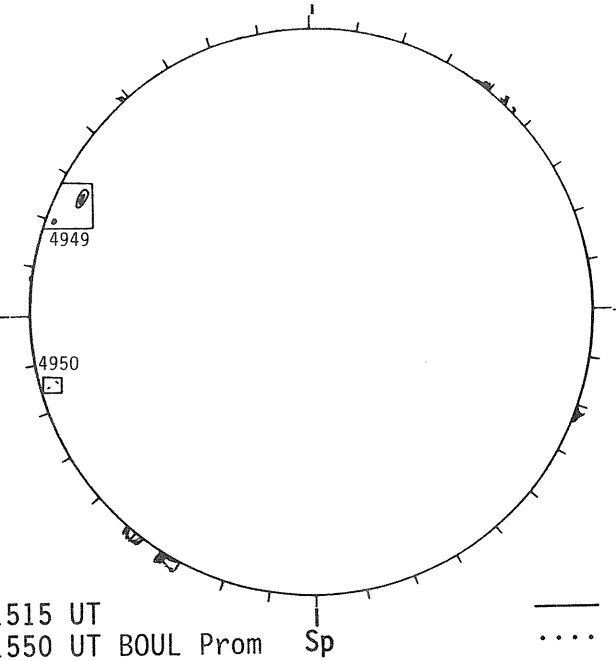
MT. WILSON MAGNETOGRAM



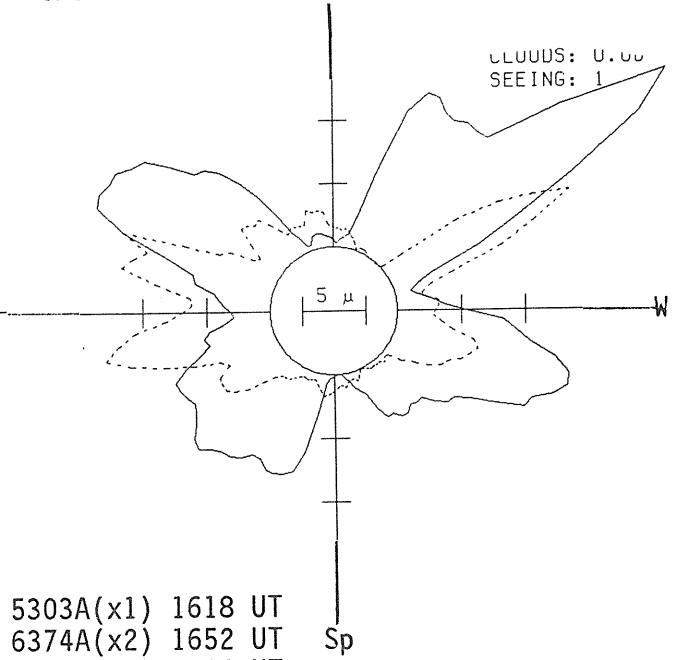
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS

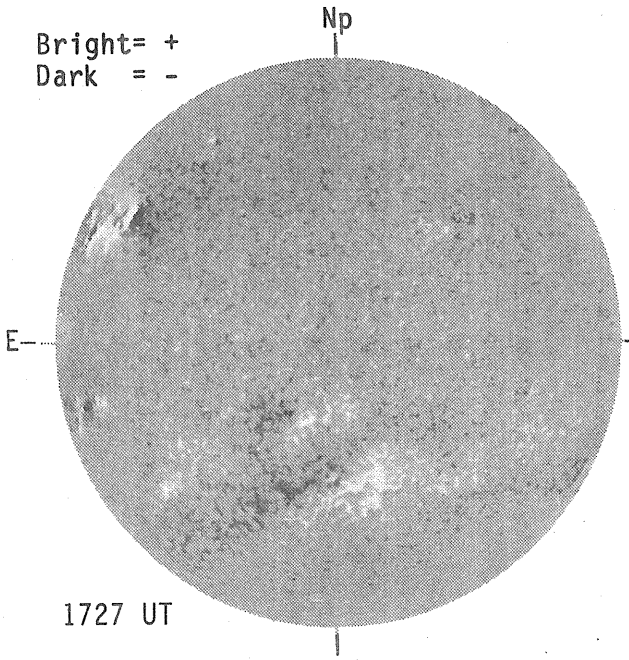


SACRAMENTO PEAK CORONA (1.15 Radii)

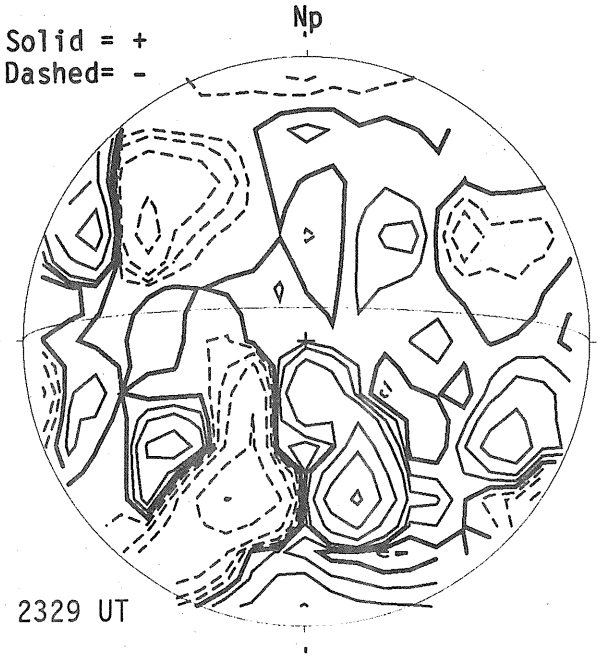


FEBRUARY 14, 1988 (P=-16.83, B_o=-6.75, L_o= 38.97)

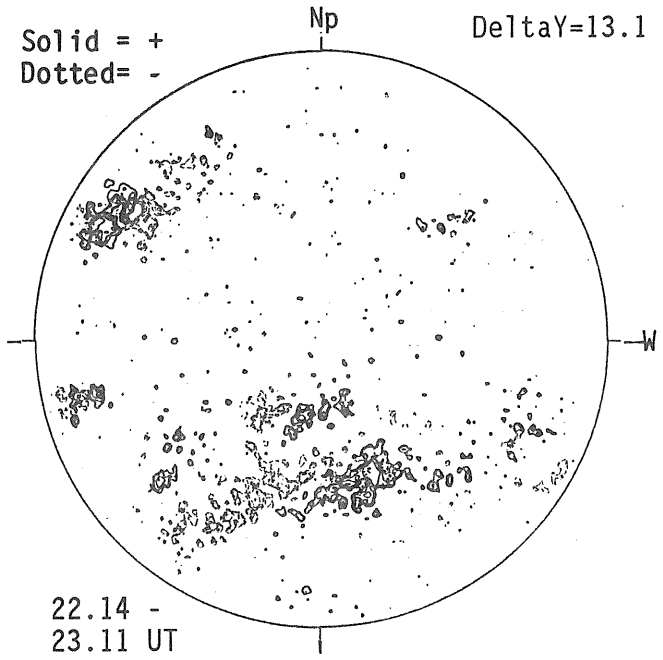
KITT PEAK MAGNETOGRAM



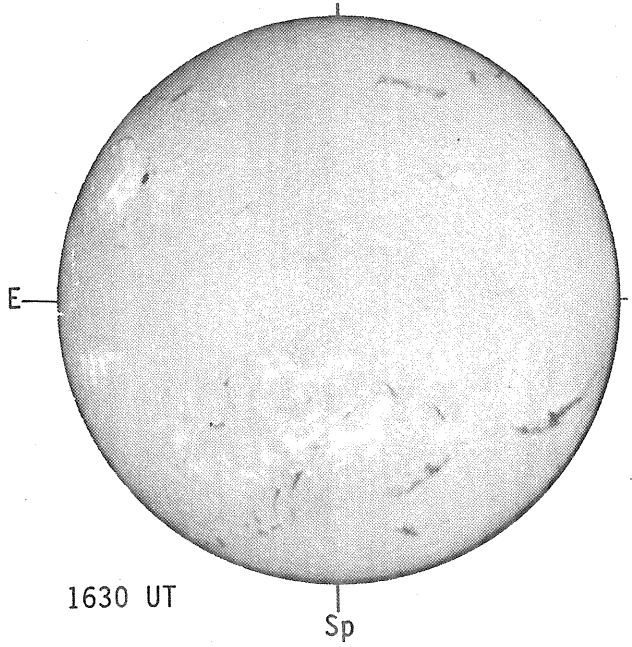
STANFORD MAGNETOGRAM



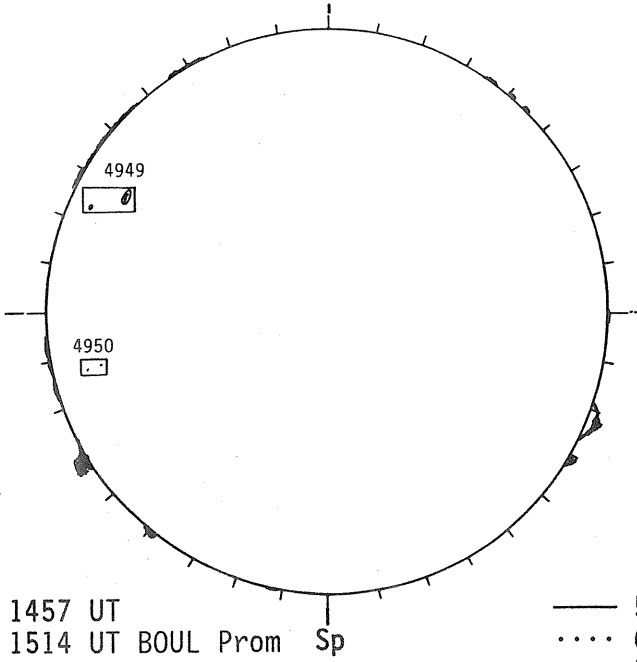
MT. WILSON MAGNETOGRAM



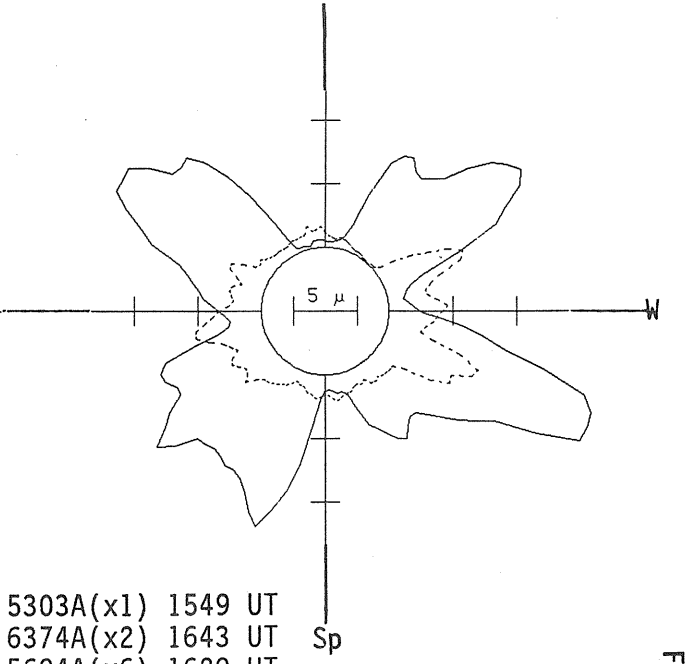
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



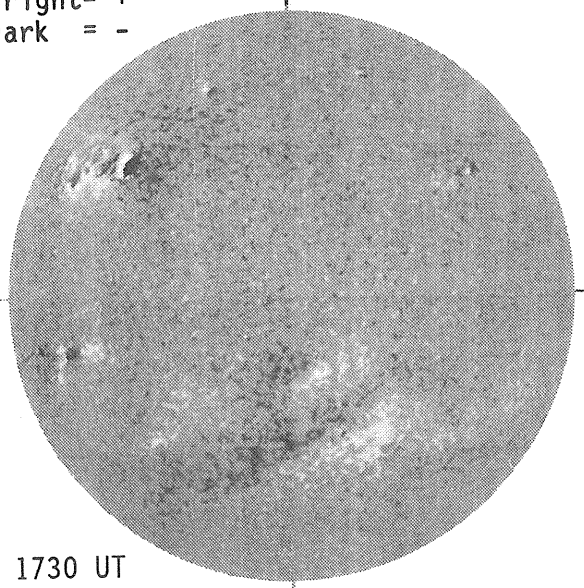
—— 5303A(x1) 1549 UT
···· 6374A(x2) 1643 UT
xxxx 5694A(x6) 1629 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 15, 1988 (P=-17.17, B_o=-6.79, L_o= 25.80)

67
Feb 88

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

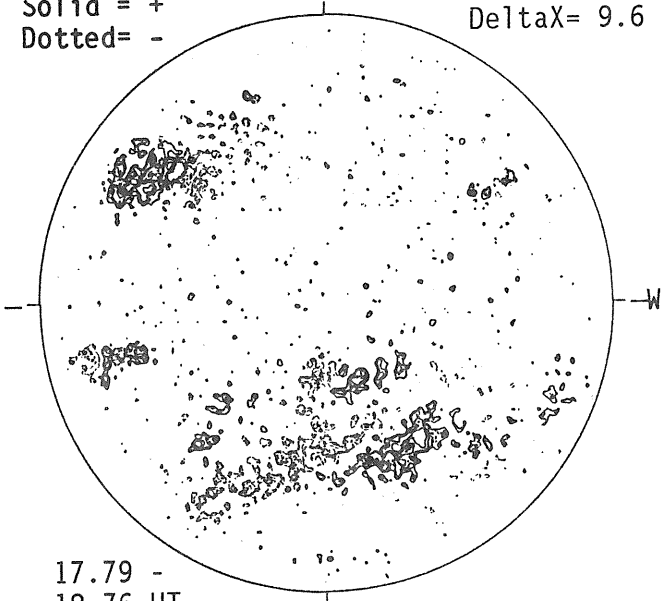


STANFORD MAGNETOGRAM

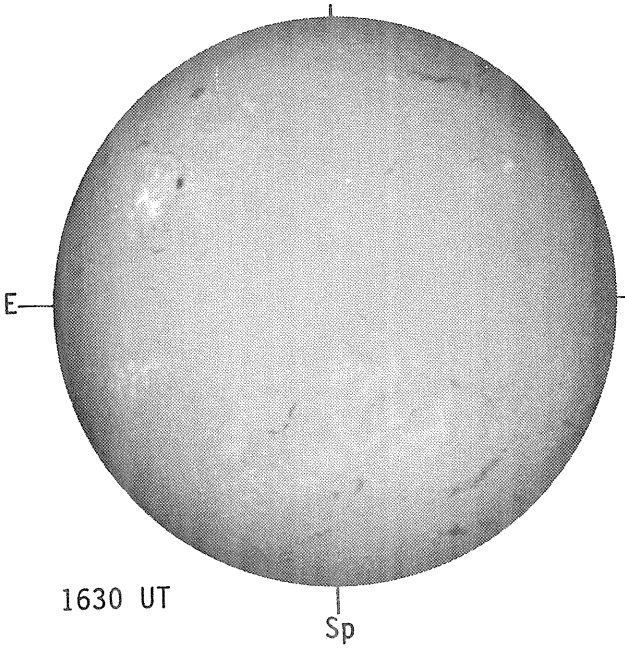
Solid = +
Dashed= -

MT. WILSON MAGNETOGRAM

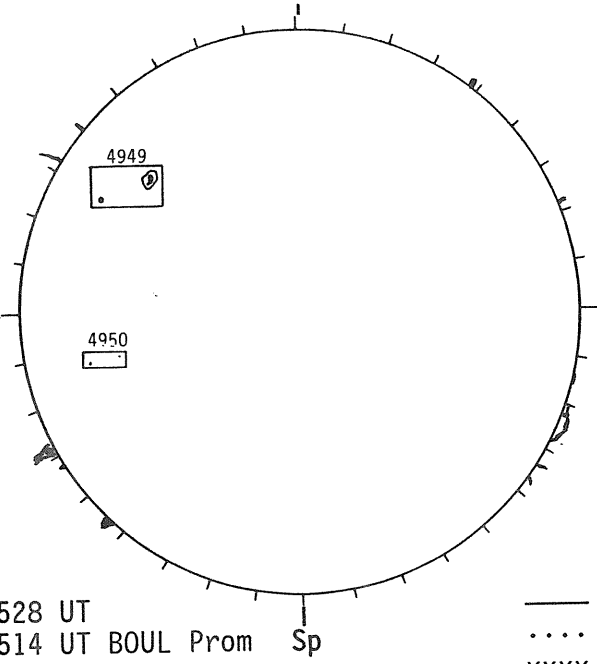
Solid = +
Dotted= -
Delta= 13.1
DeltaX= 9.6



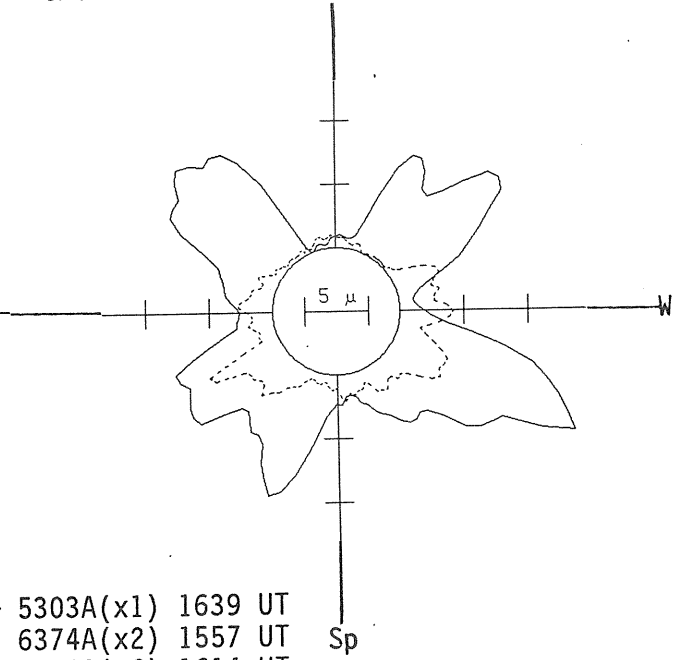
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

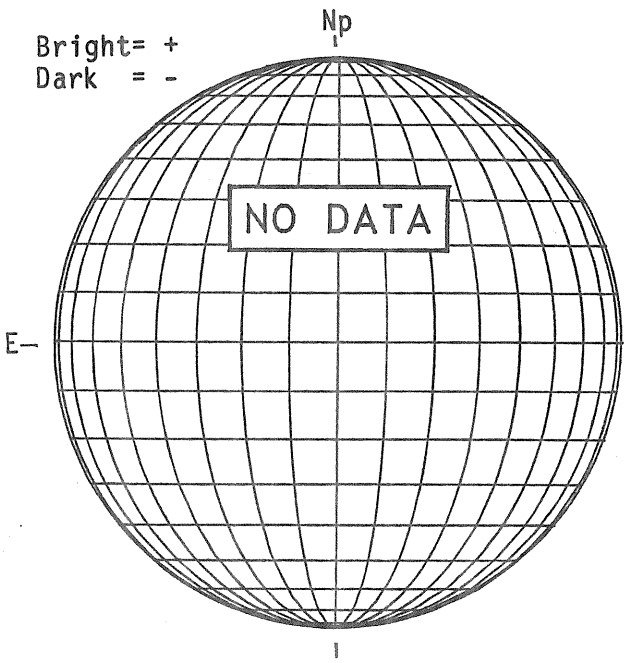


—— 5303A(x1) 1639 UT
···· 6374A(x2) 1557 UT
xxxx 5694A(x6) 1614 UT
NO 56994A ACTIVITY TODAY

FEBRUARY 16, 1988 (P=-17.51, B_o=-6.83, L_o= 12.64)

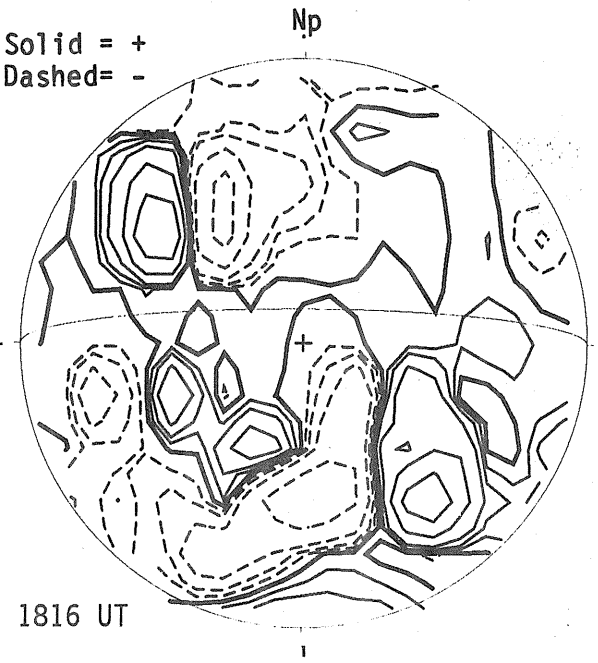
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

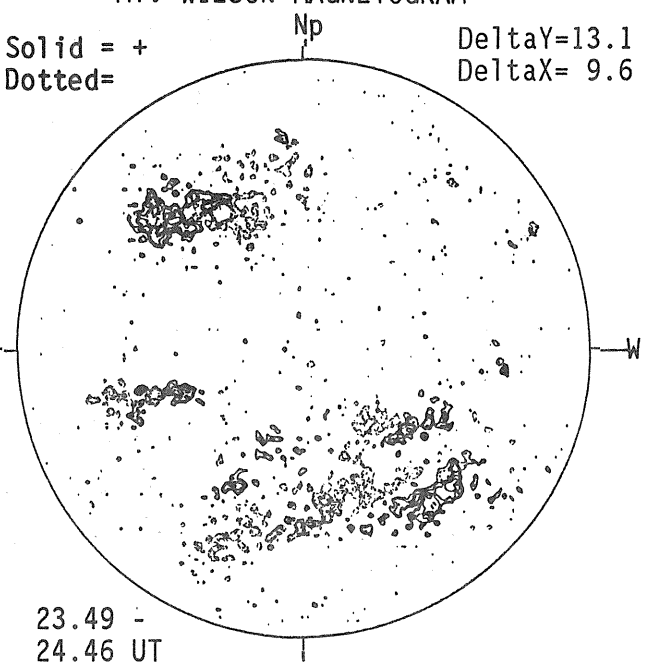
Solid = +
Dashed= -



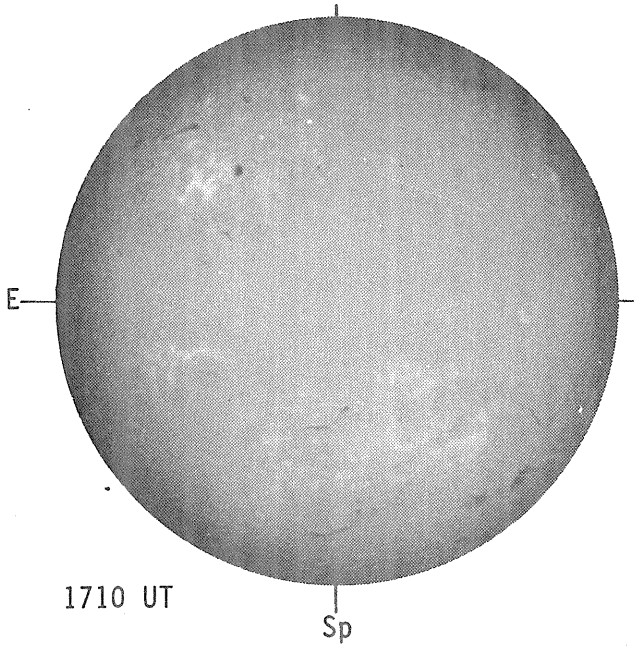
MT. WILSON MAGNETOGRAM

Solid = +
Dotted=

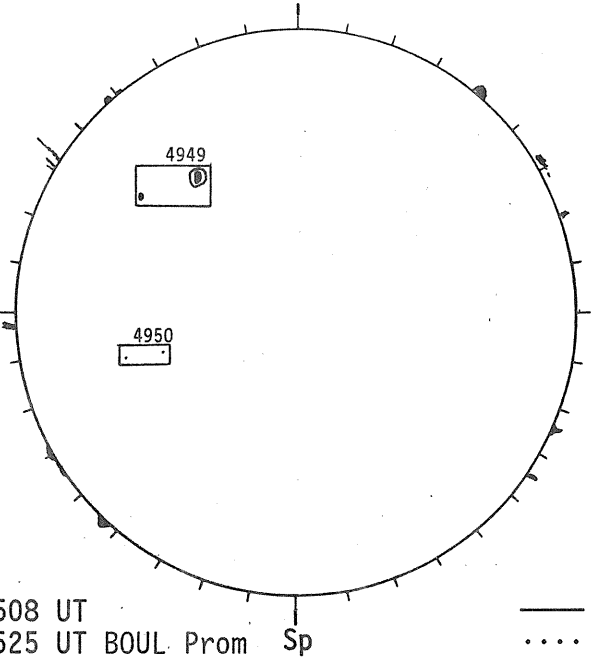
DeltaY=13.1
DeltaX= 9.6



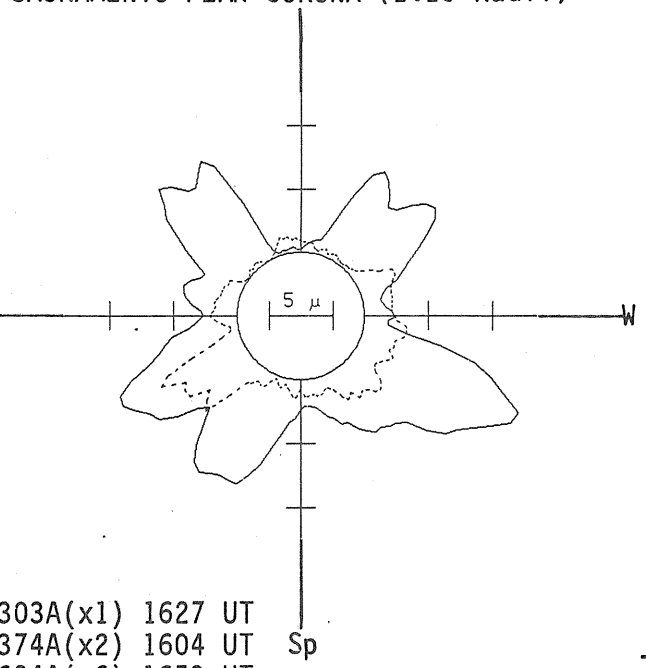
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



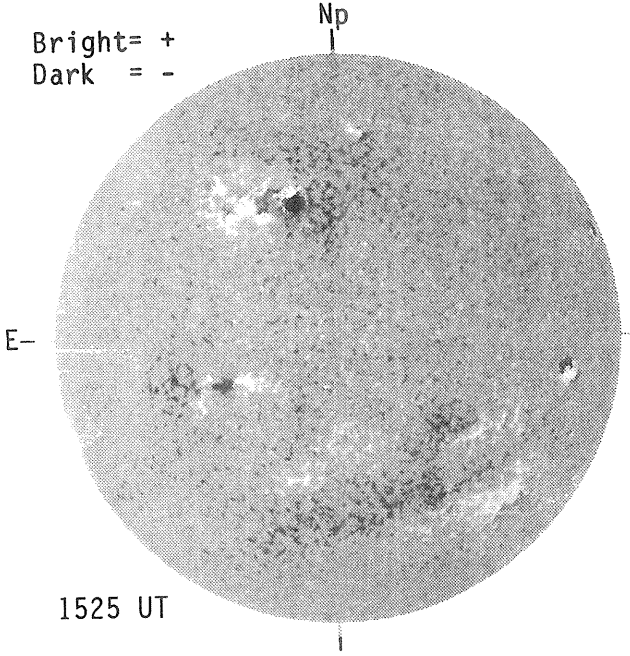
SACRAMENTO PEAK CORONA (1.15 Radii)



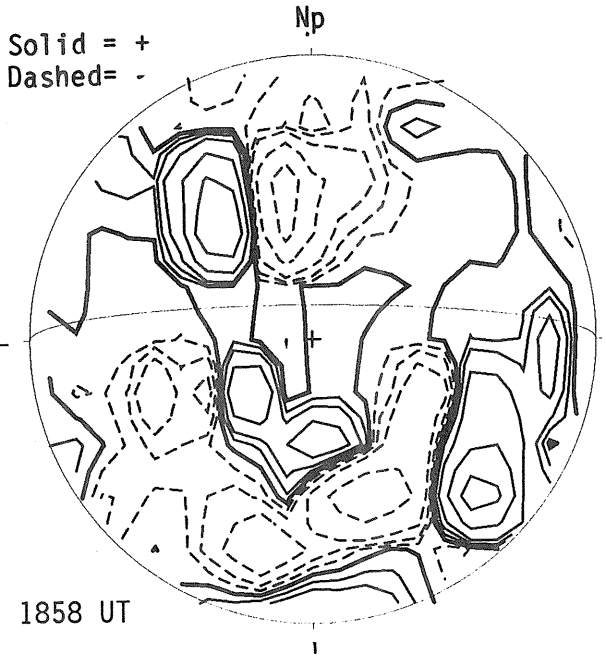
—— 5303A(x1) 1627 UT
···· 6374A(x2) 1604 UT
xxxx 5694A(x6) 1653 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 17, 1988 (P=-17.84, B_o=-6.88, L_o= 359.47)

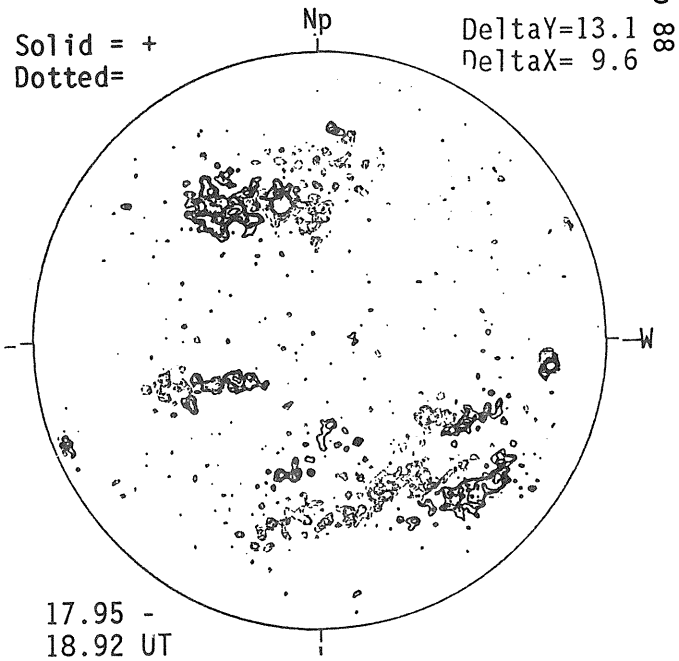
KITT PEAK MAGNETOGRAM



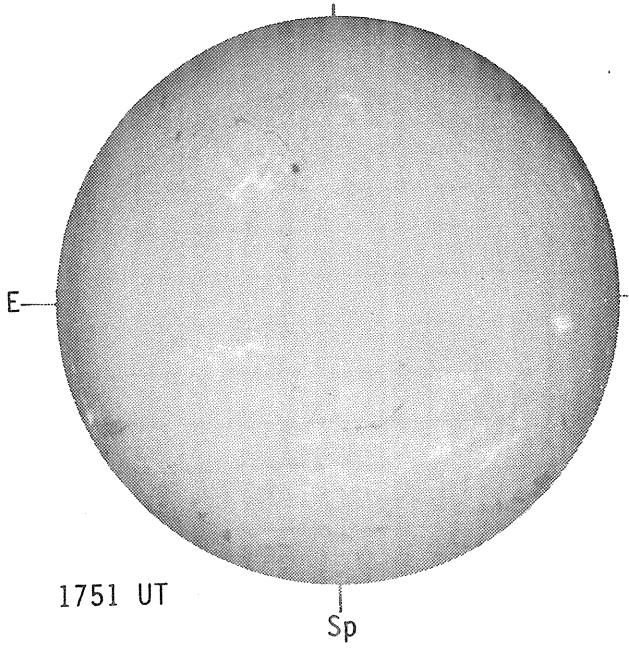
STANFORD MAGNETOGRAM



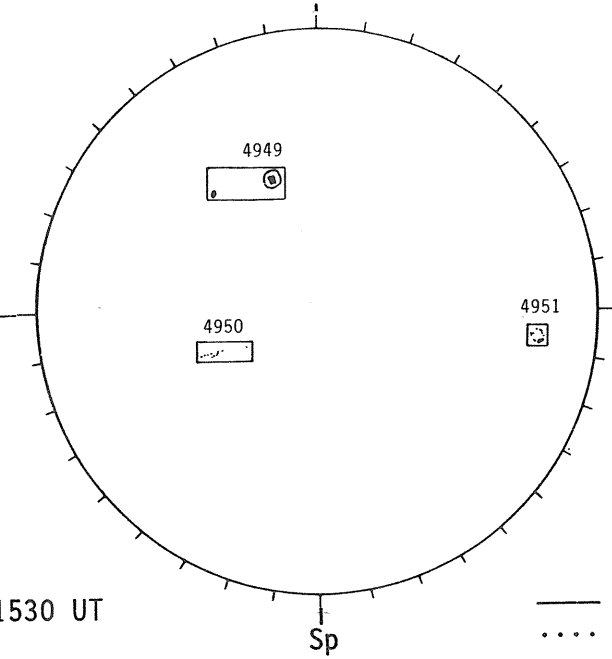
MT. WILSON MAGNETOGRAM



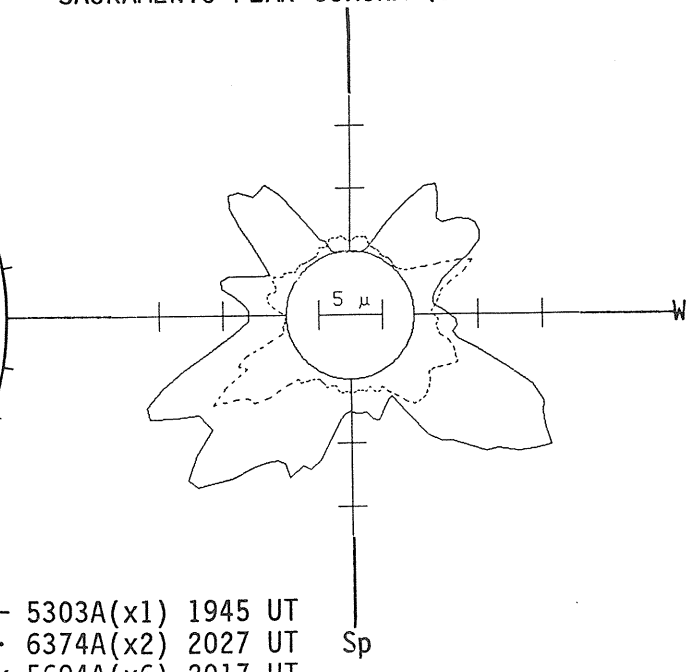
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

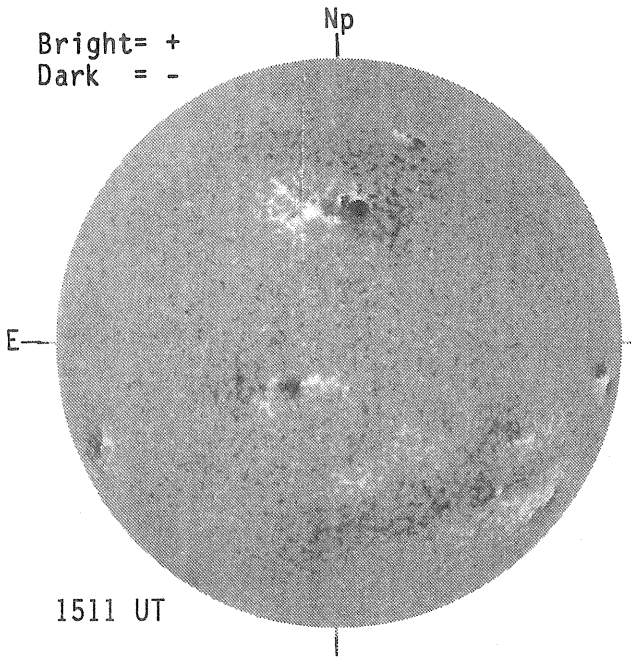


—— 5303A(x1) 1945 UT
···· 6374A(x2) 2027 UT
xxxx 5694A(x6) 2017 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 18, 1988 (P=-18.17, B_o=-6.91, L_o= 346.30)

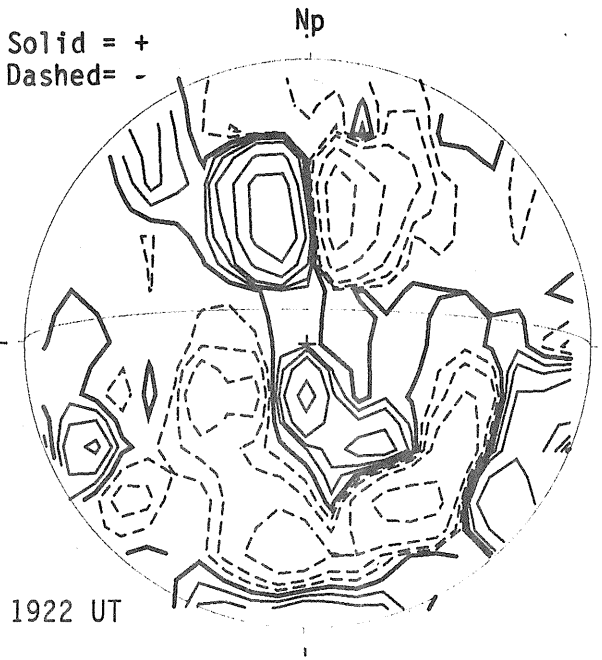
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



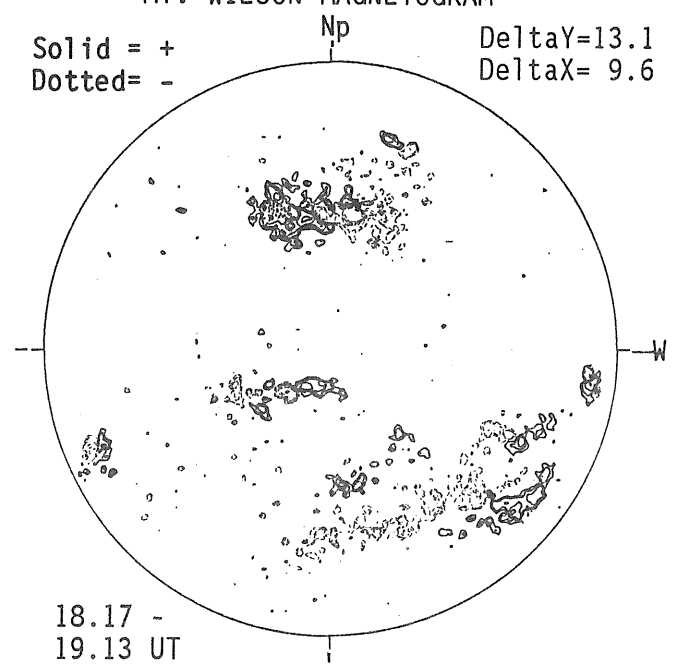
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

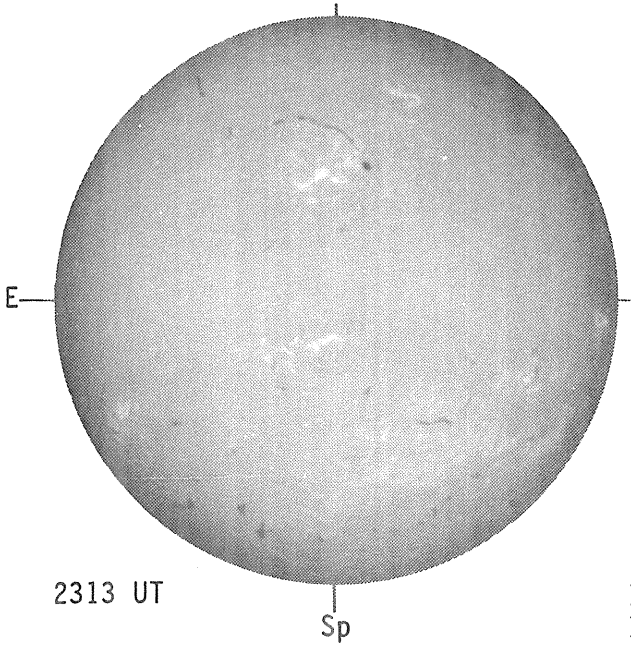


MT. WILSON MAGNETOGRAM

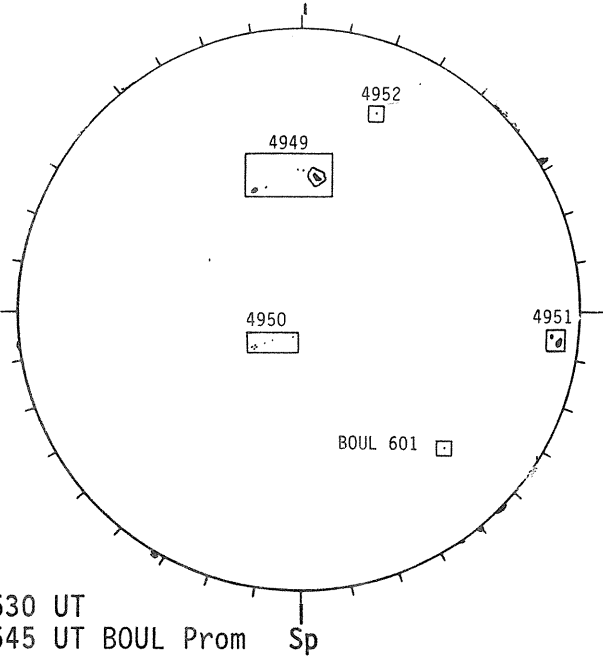
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



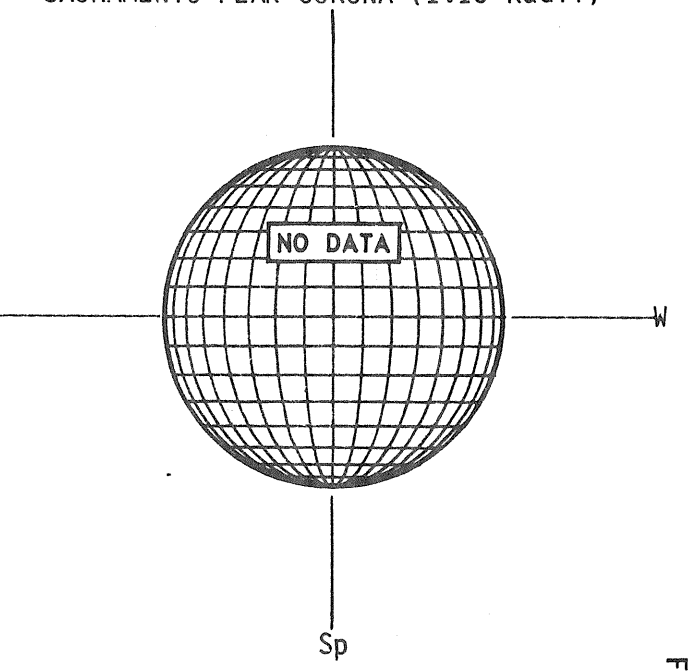
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



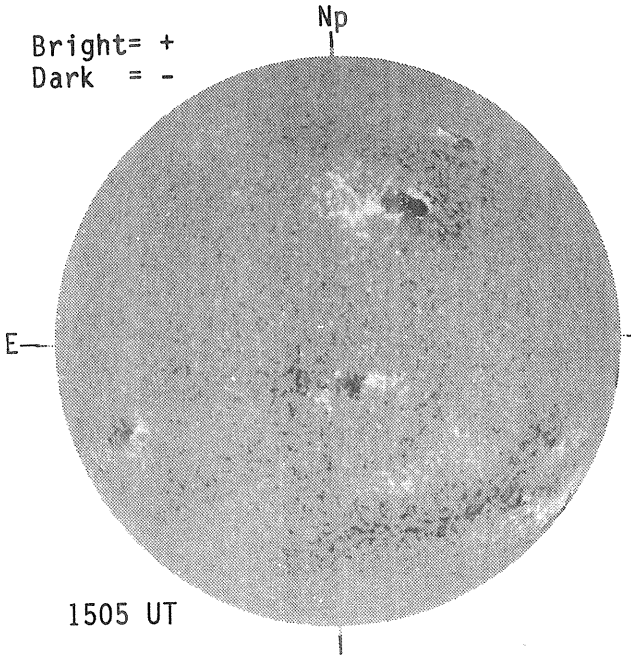
SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 19, 1988 (P=-18.49, B_o=-6.95, L_o= 333.13)

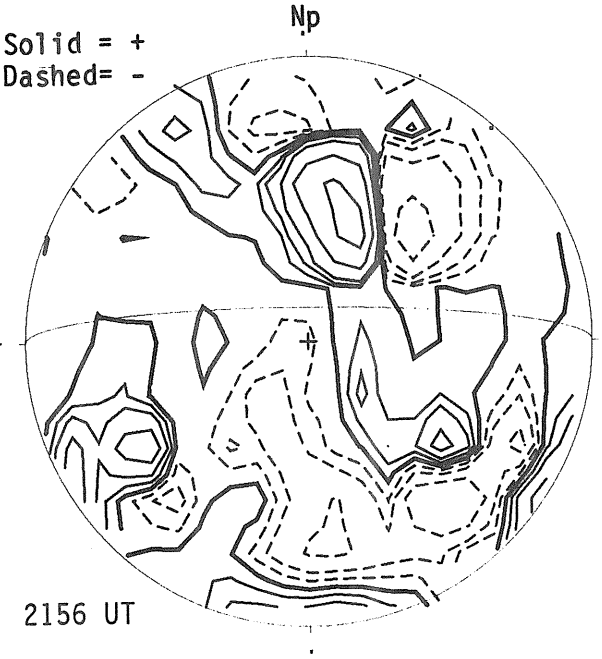
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



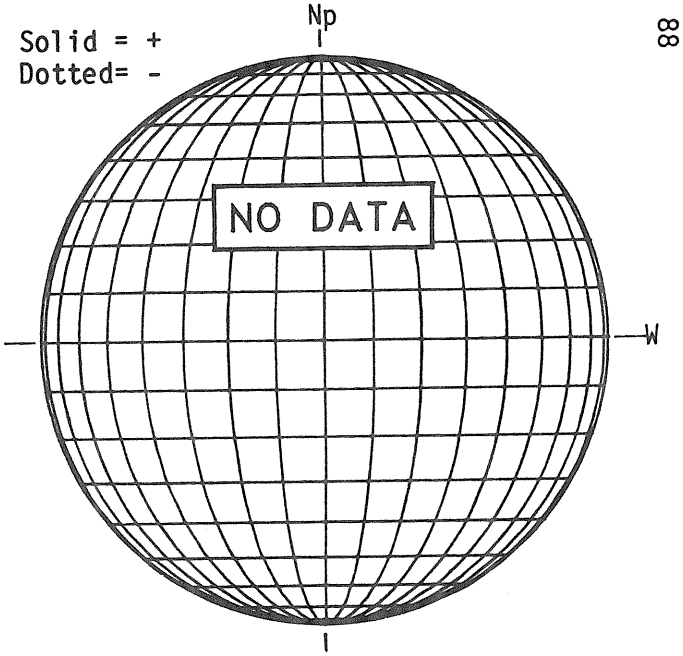
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

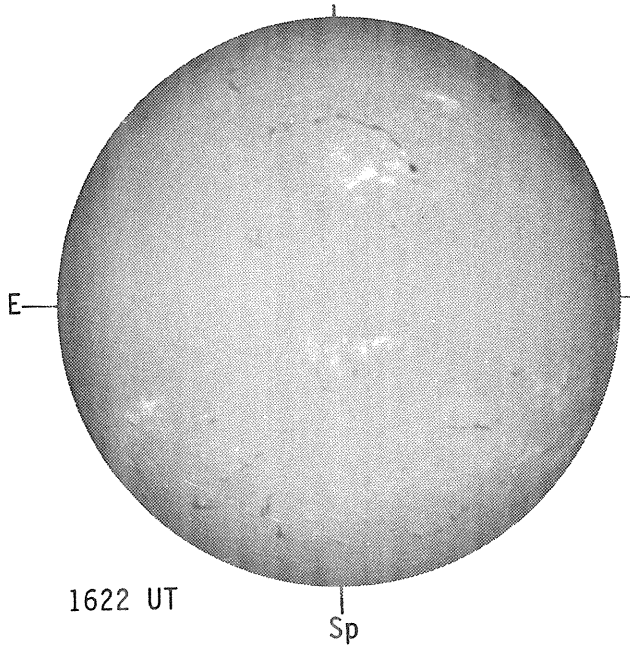


MT. WILSON MAGNETOGRAM

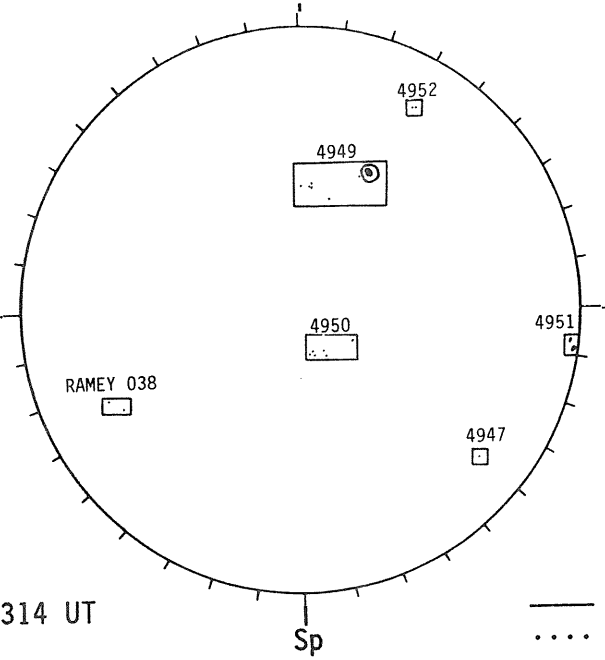
Solid = +
Dotted= -



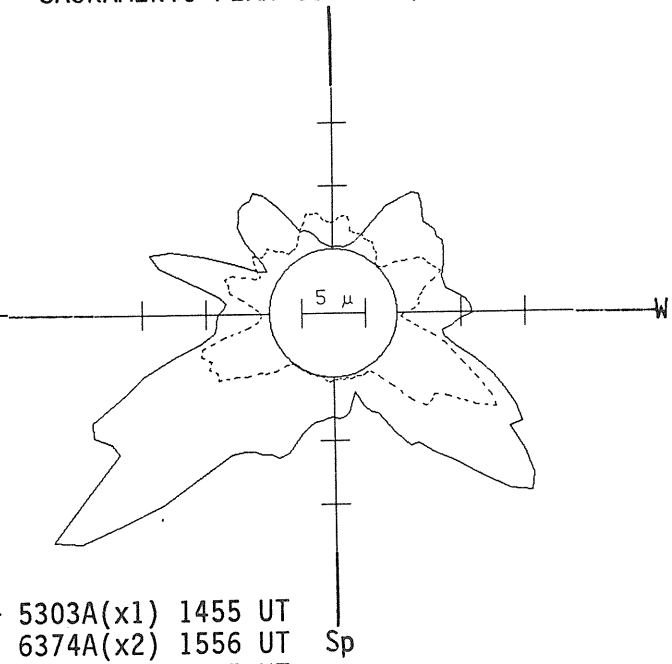
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



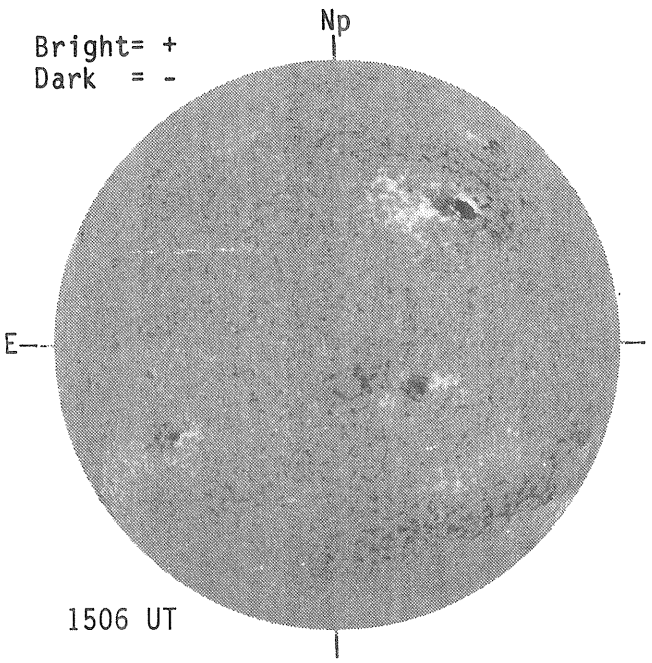
SACRAMENTO PEAK CORONA (1.15 Radii)



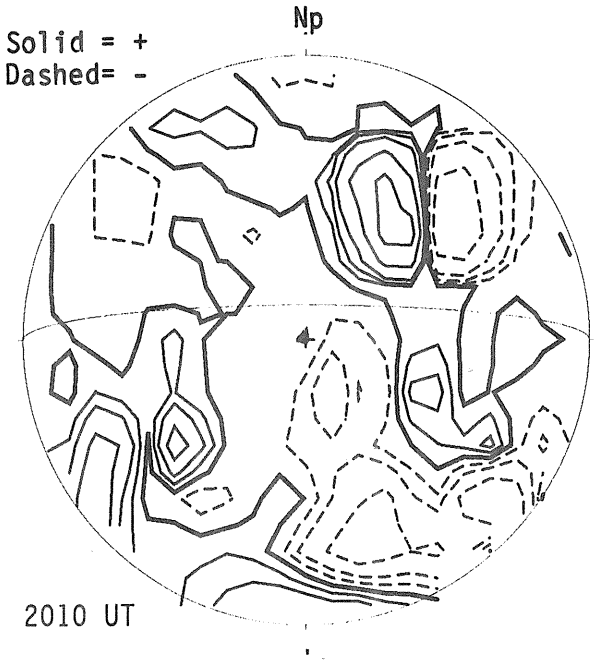
—— 5303A(x1) 1455 UT
···· 6374A(x2) 1556 UT
xxxx 5694A(x6) 1545 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 20, 1988 (P=-18.80 B_o=-6.99, L_o=319.96)

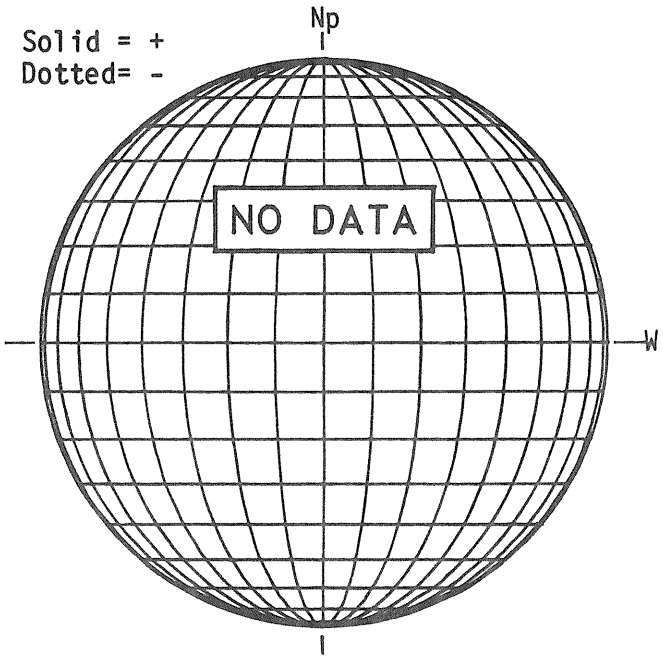
KITT PEAK MAGNETOGRAM



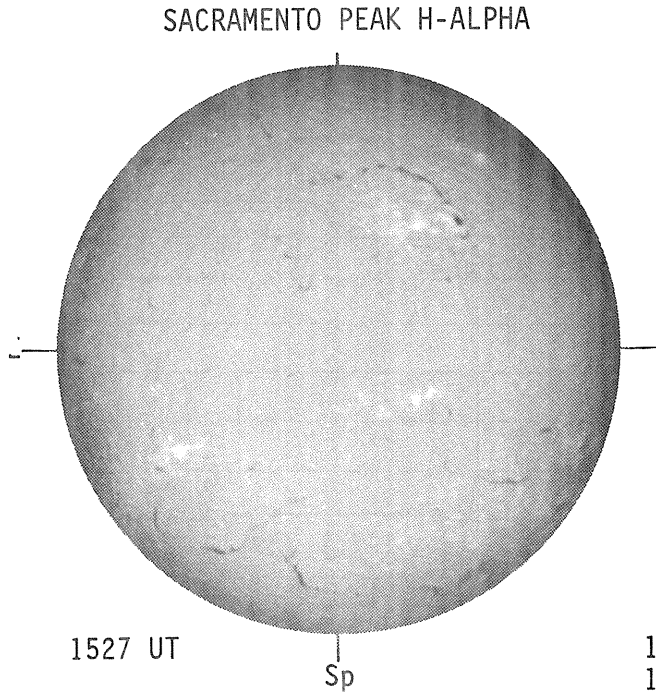
STANFORD MAGNETOGRAM



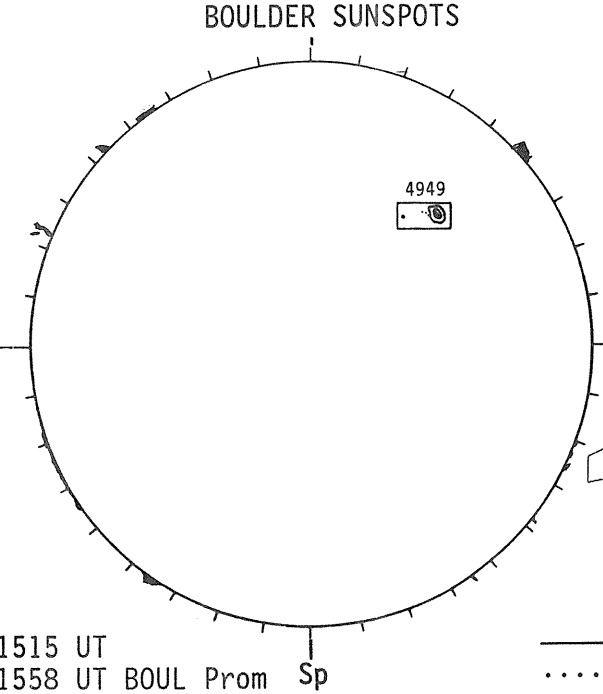
MT. WILSON MAGNETOGRAM



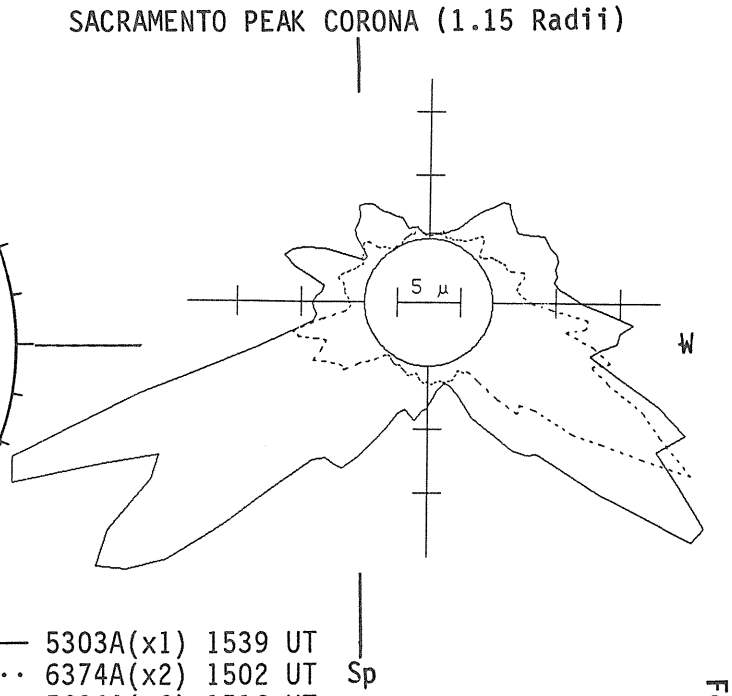
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A(x1) 1539 UT
···· 6374A(x2) 1502 UT
xxxx 5694A(x6) 1516 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 21, 1988 (P=-19.11, B_o=-7.02, L_o=306.79)

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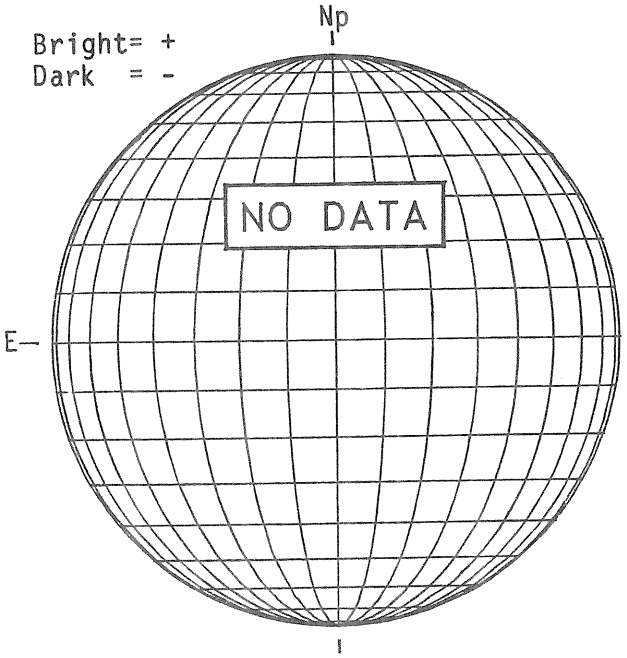
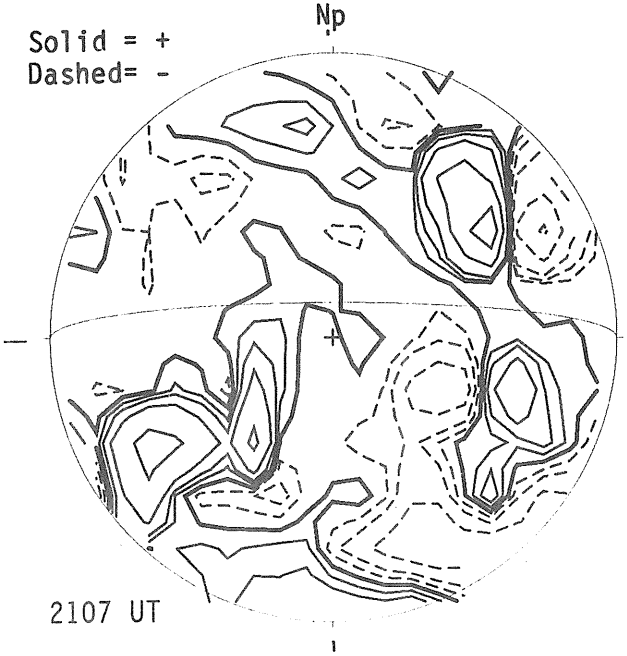
Feb 88

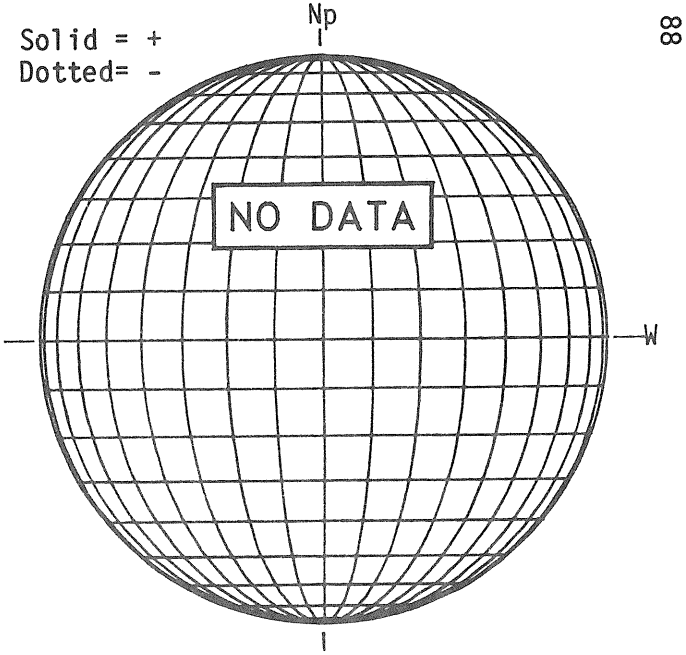
KITT PEAK MAGNETOGRAM



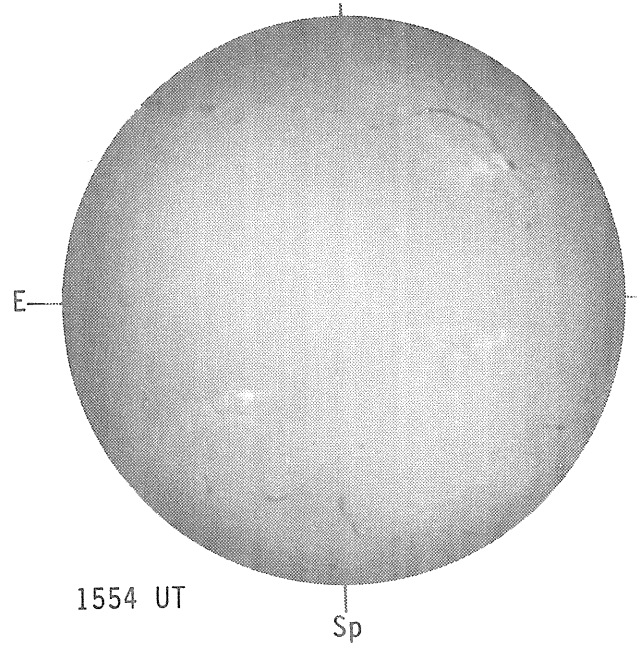
STANFORD MAGNETOGRAM



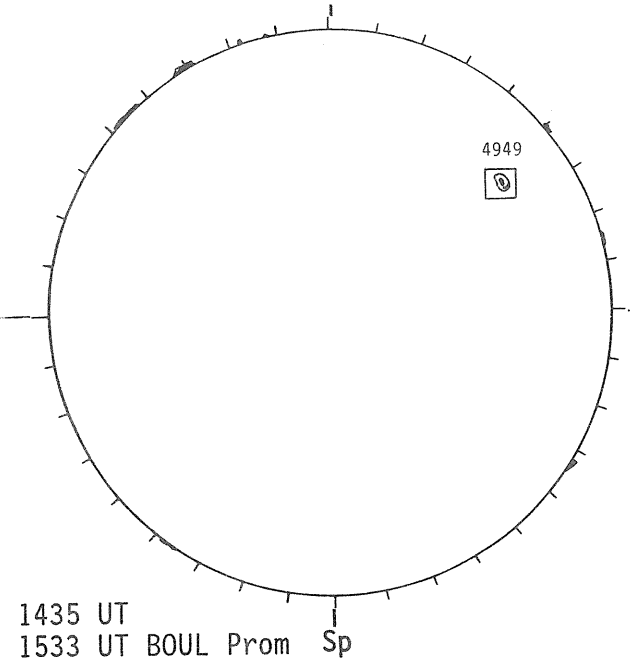
MT. WILSON MAGNETOGRAM



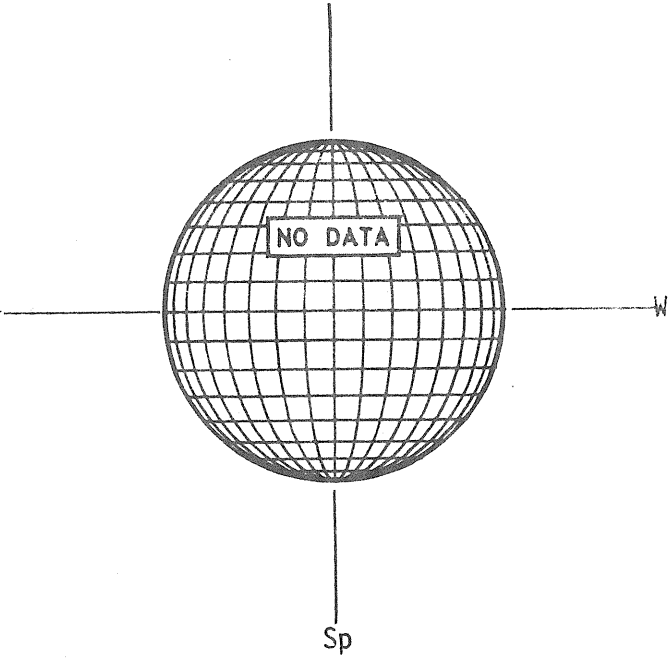
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

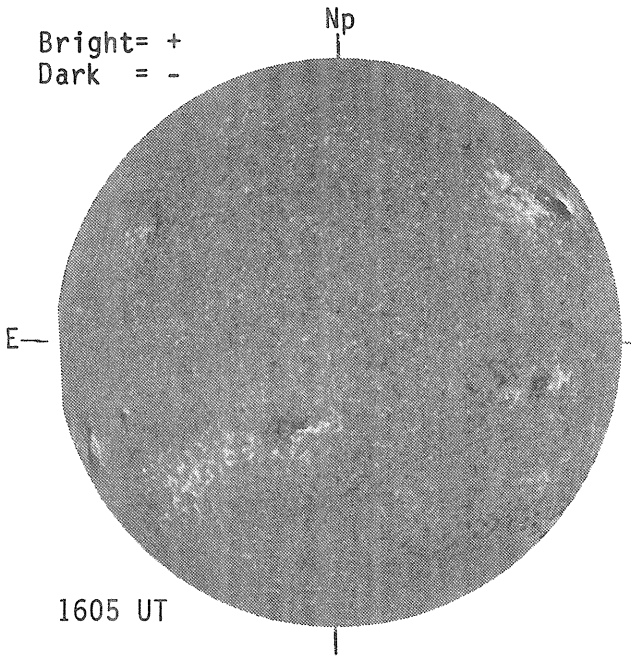


SACRAMENTO PEAK CORONA (1.15 Radii)

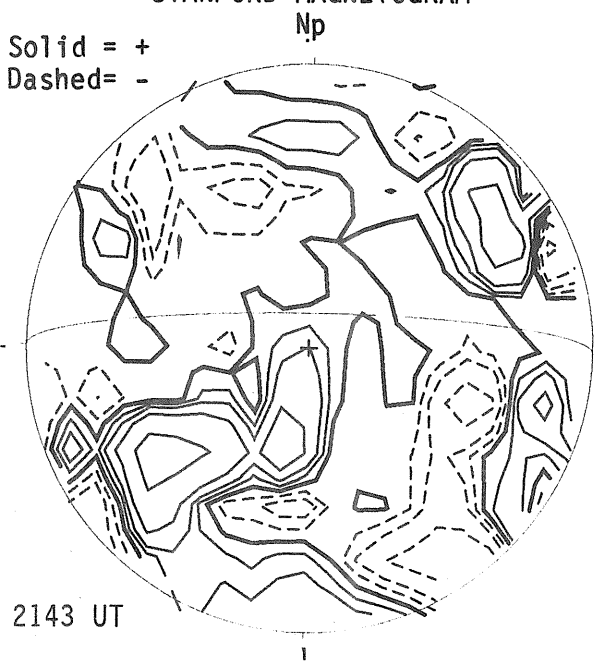


FEBRUARY 22, 1988 (P=-19.41, B_o=-7.05, L_o=293.63)

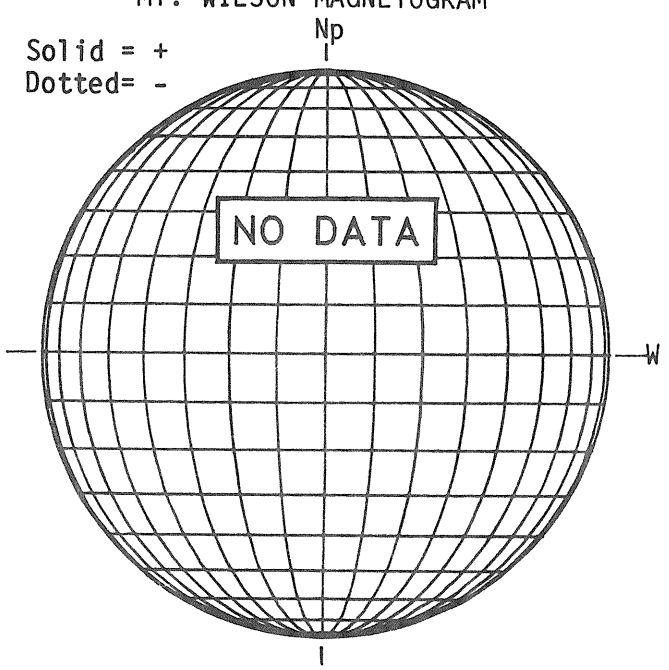
KITT PEAK MAGNETOGRAM



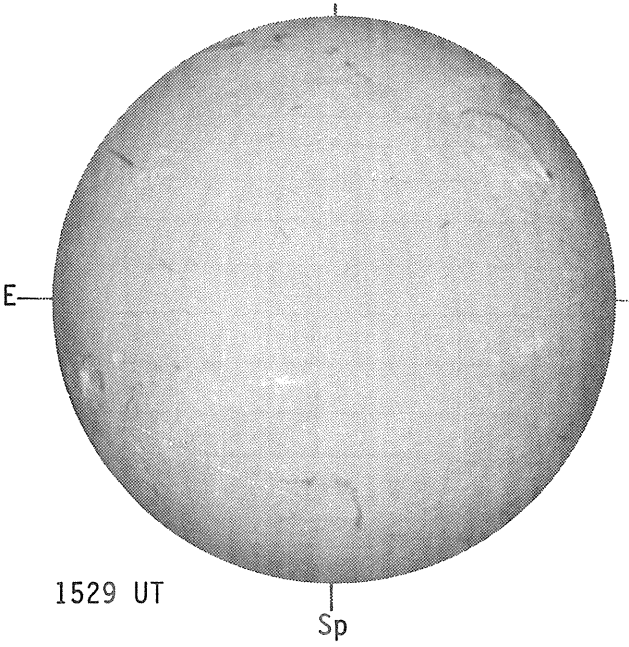
STANFORD MAGNETOGRAM



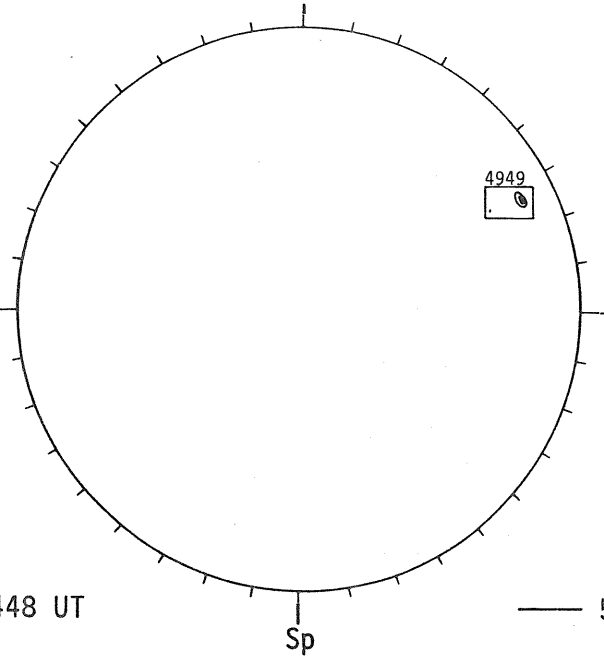
MT. WILSON MAGNETOGRAM



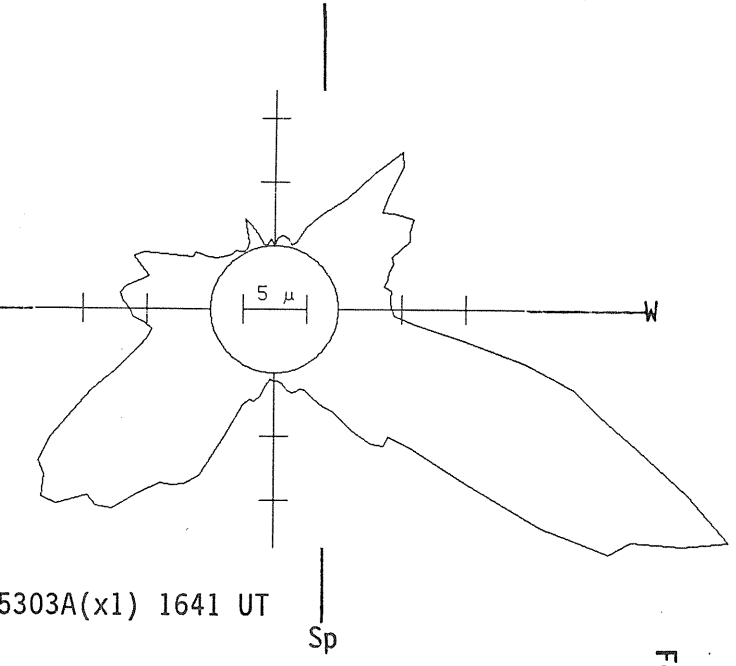
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 23, 1988 (P=-19.71, B_o=-7.08, L_o=280.46)

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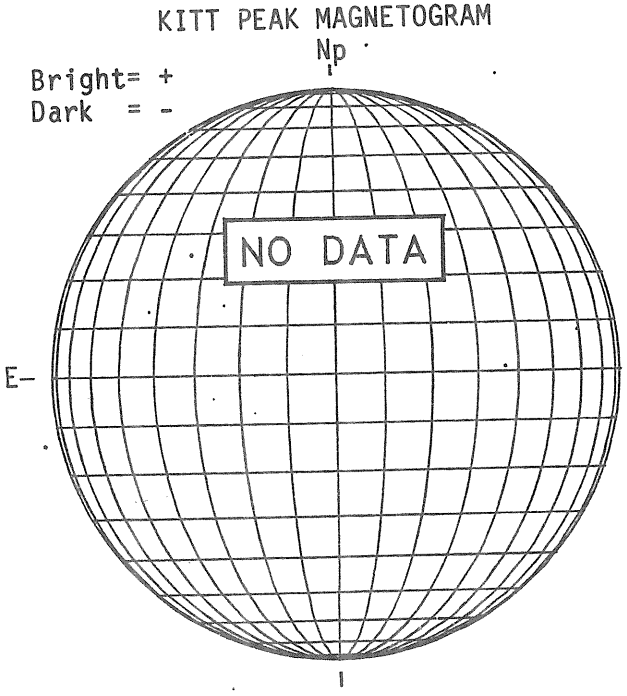
Feb 88

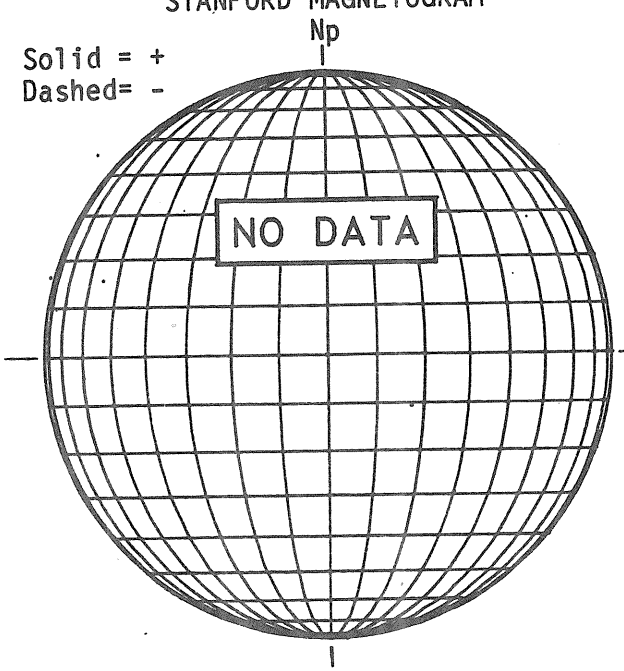
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



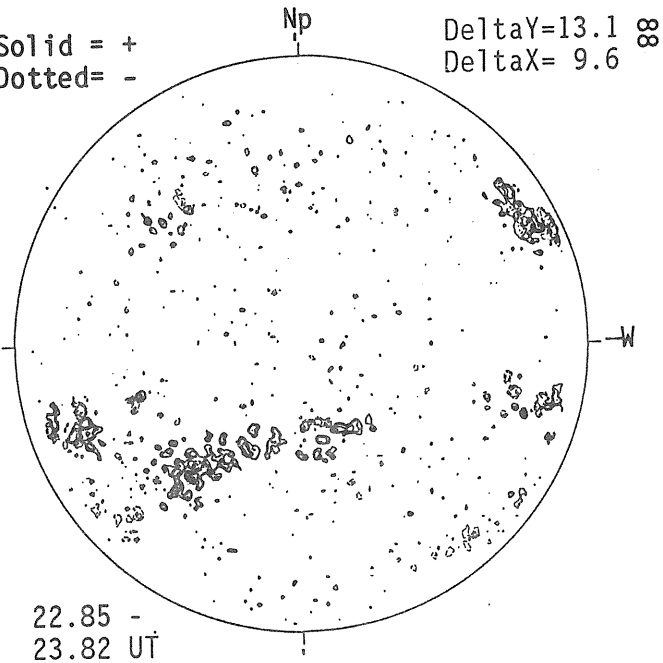
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



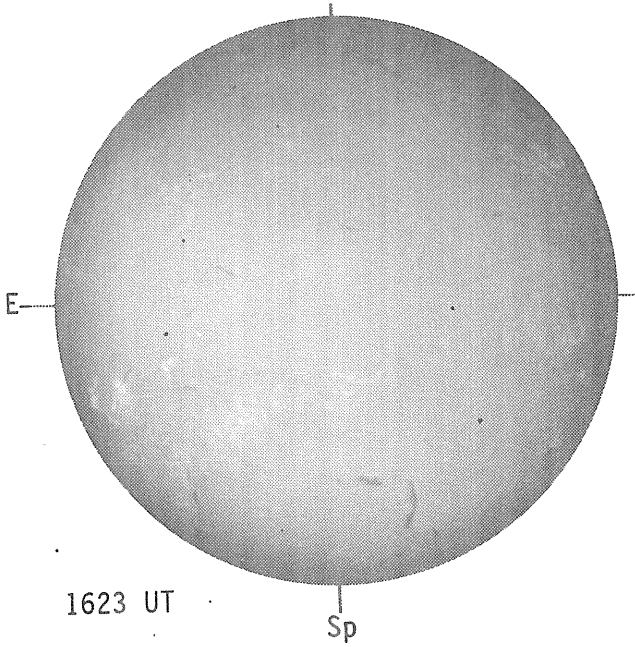
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



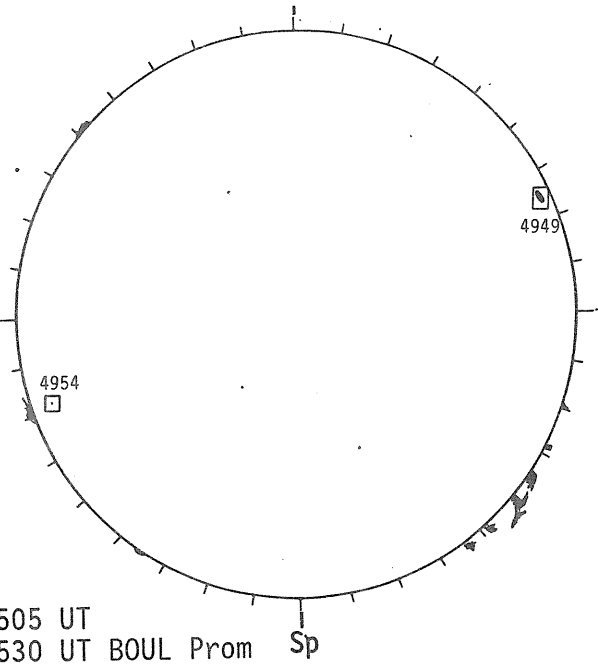
22.85 -
23.82 UT

SACRAMENTO PEAK H-ALPHA



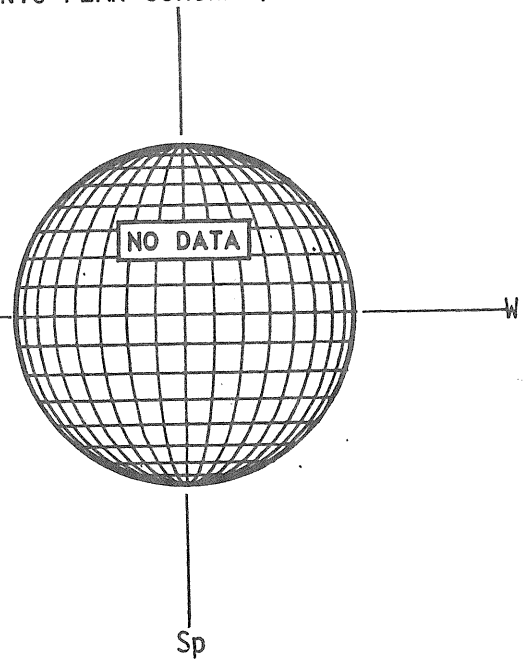
1623 UT

BOULDER SUNSPOTS



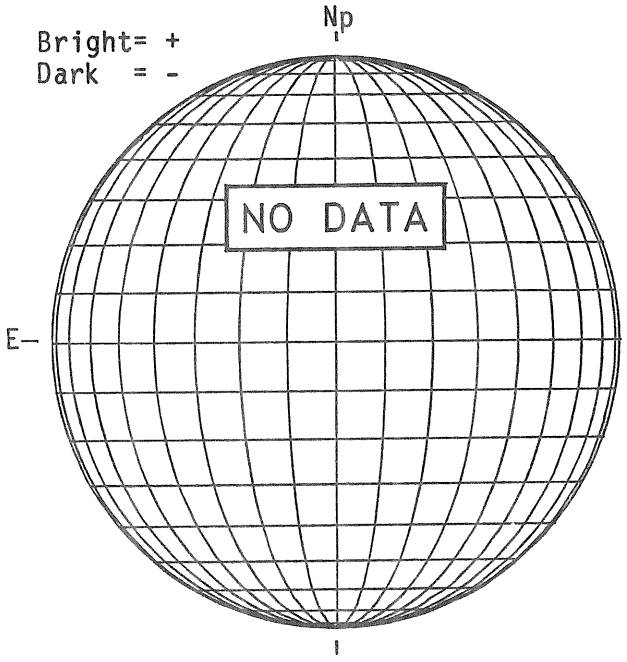
1505 UT
1530 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

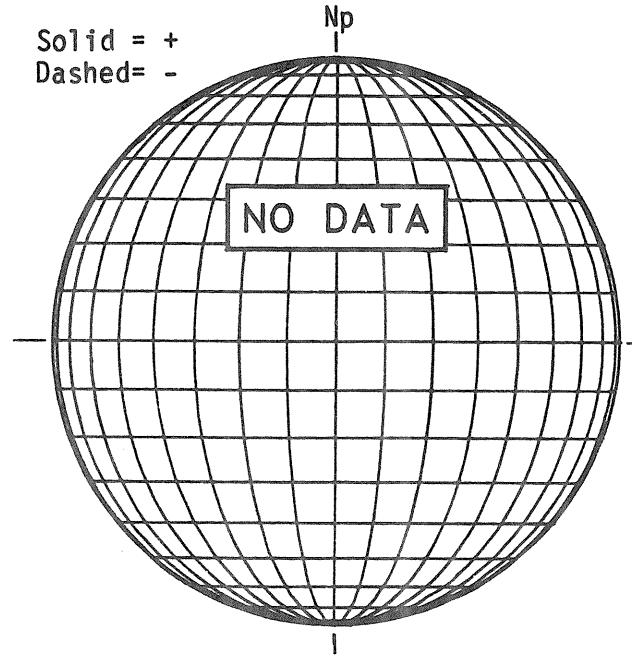


FEBRUARY 24, 1988 (P=-20.00, B_o=-7.10, L_o=267.29)

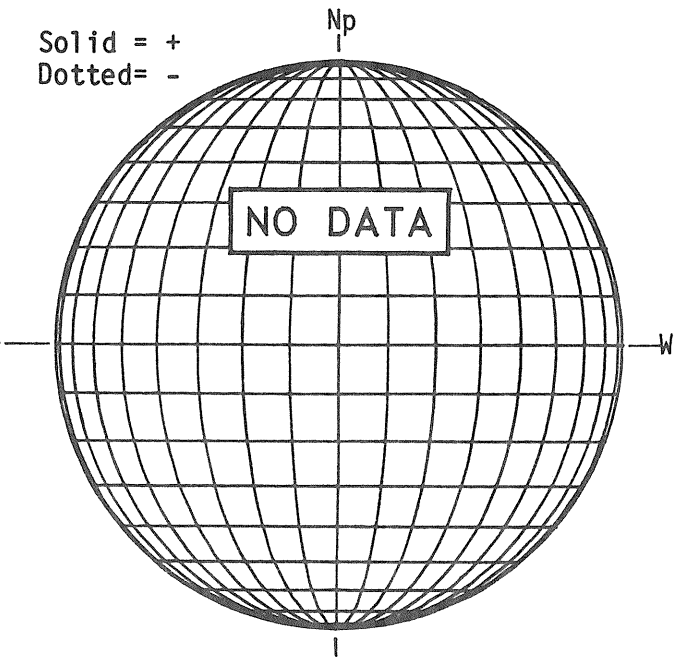
KITT PEAK MAGNETOGRAM



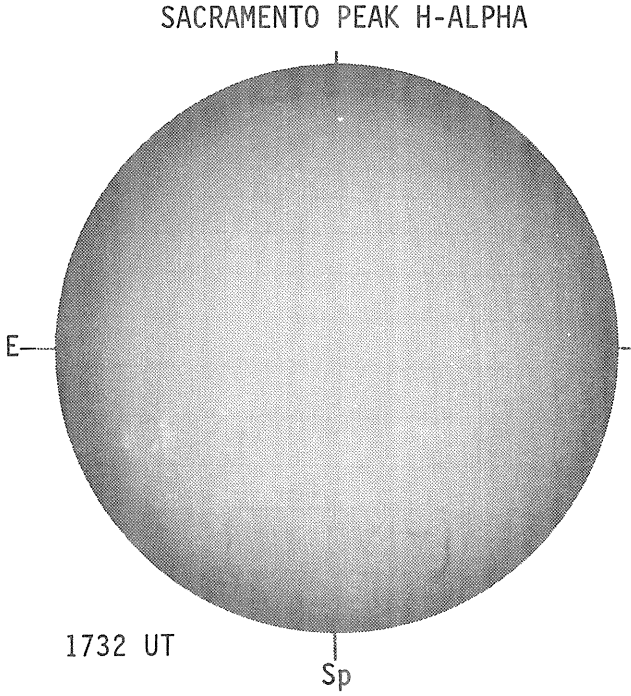
STANFORD MAGNETOGRAM



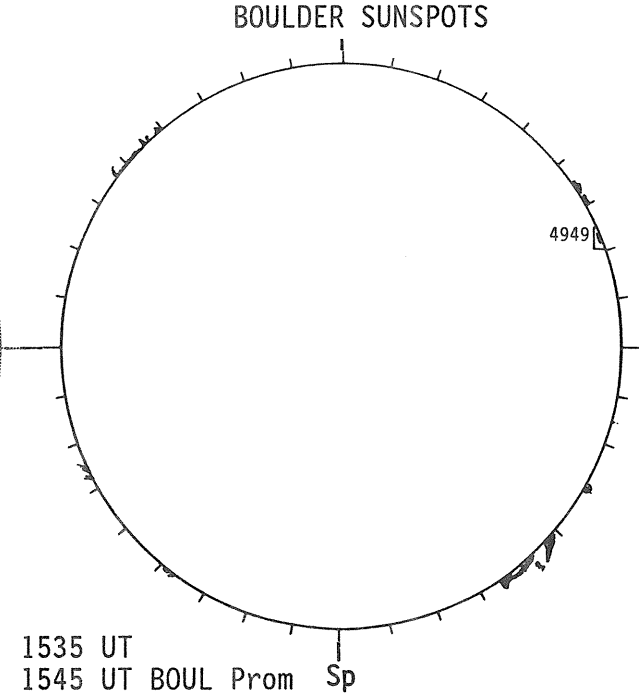
MT. WILSON MAGNETOGRAM



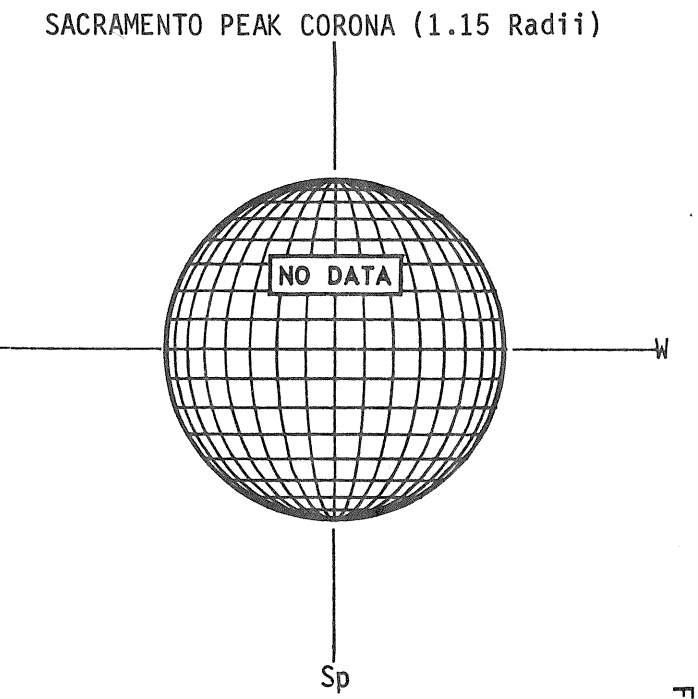
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 25, 1988 (P=-20.28, B_0=-7.12, L_0= 254.12)

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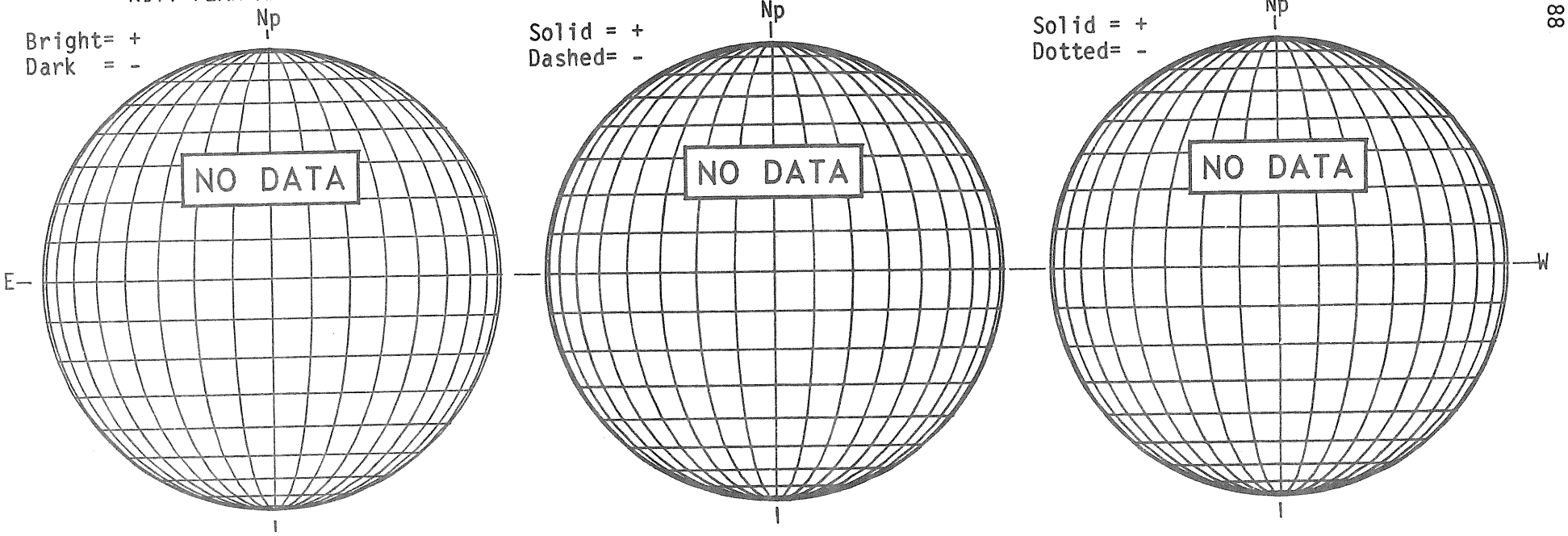
Feb 88

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



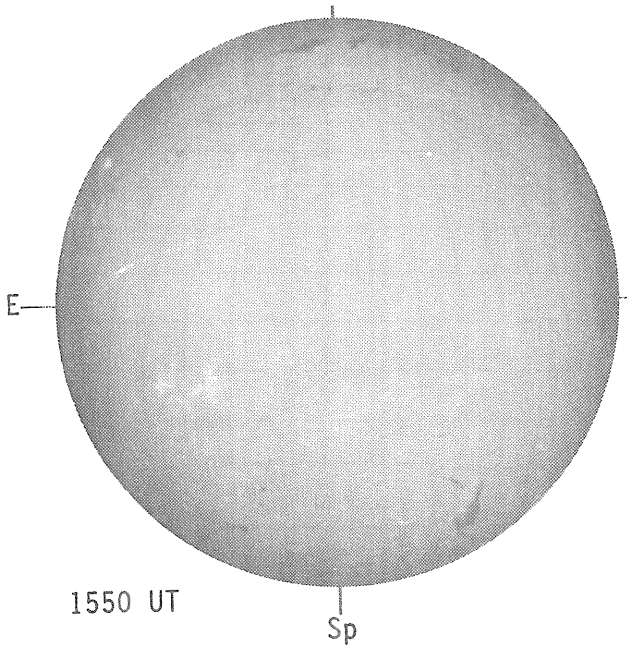
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

MT. WILSON MAGNETOGRAM

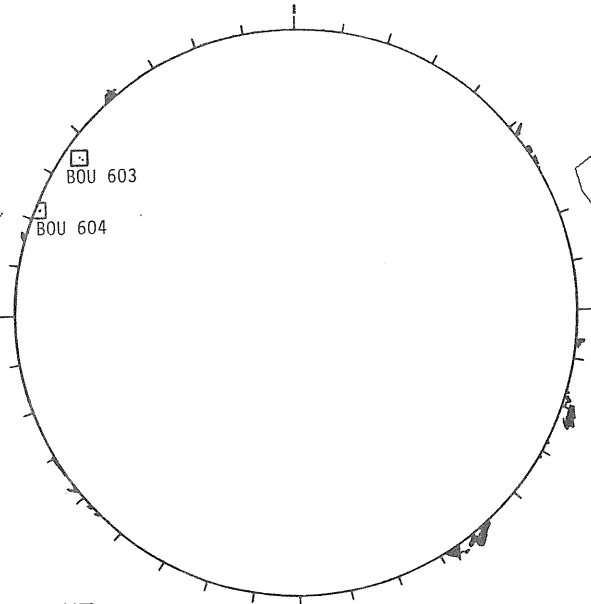
Solid = +
Dotted= -

SACRAMENTO PEAK H-ALPHA



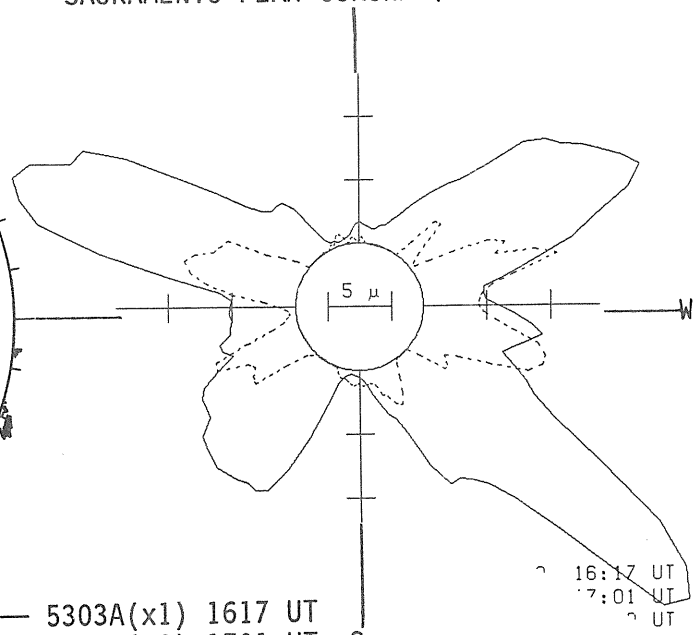
1550 UT

BOULDER SUNSPOTS



1530 UT
1540 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

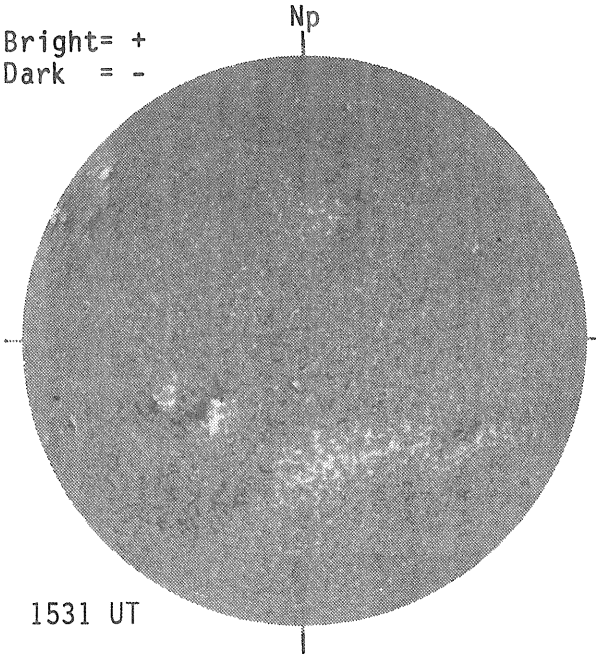


—— 5303A(x1) 1617 UT
···· 6374A(x2) 1701 UT
xxxx 5694A(x6) 1639 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 26, 1988 (P=-20.56, B_o=-7.15, L_o= 240.94)

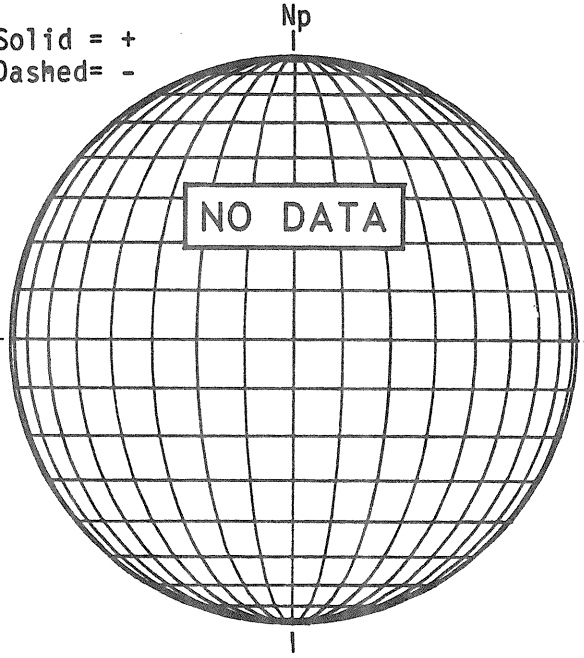
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



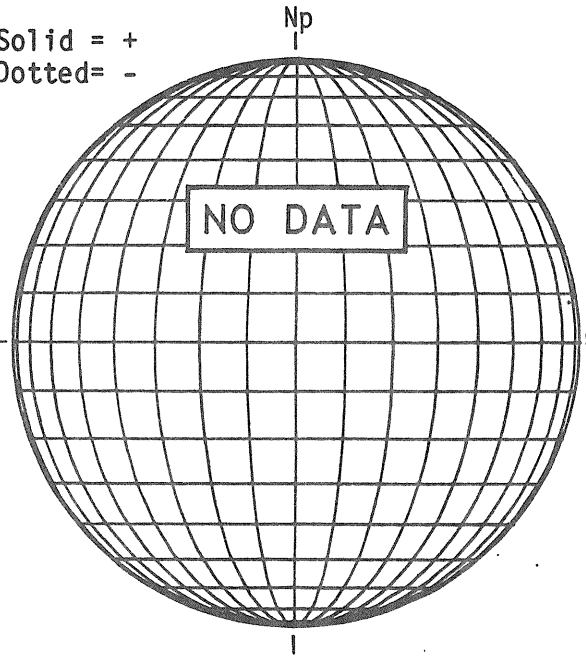
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

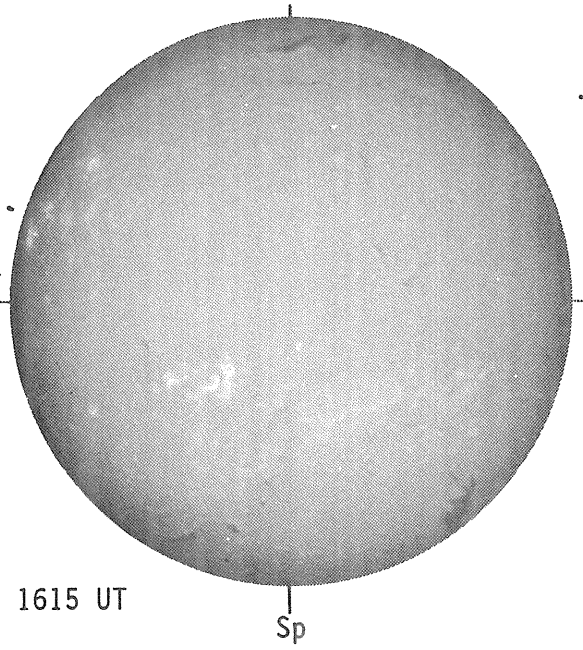


MT. WILSON MAGNETOGRAM

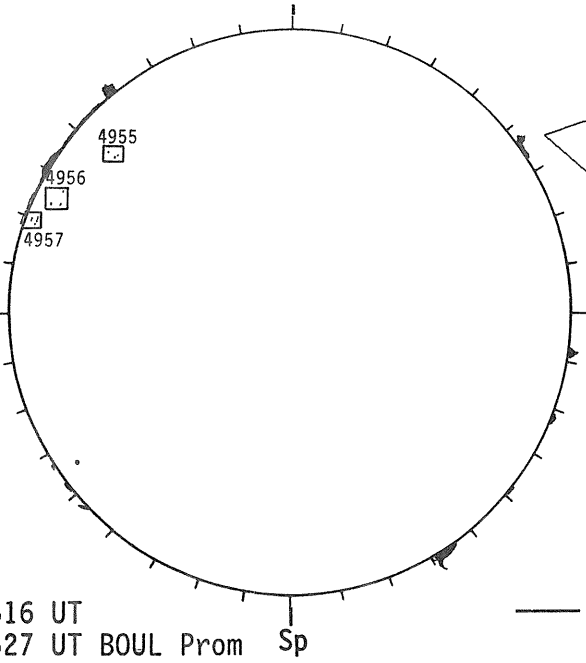
Solid = +
Dotted= -



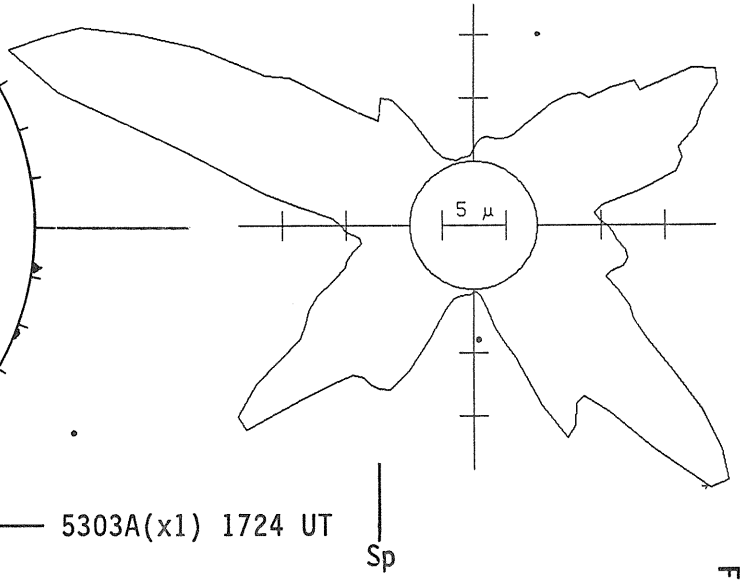
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



FEBRUARY 27, 1988 (P=-20.84, B_o=-7.16, L_o= 227.77)

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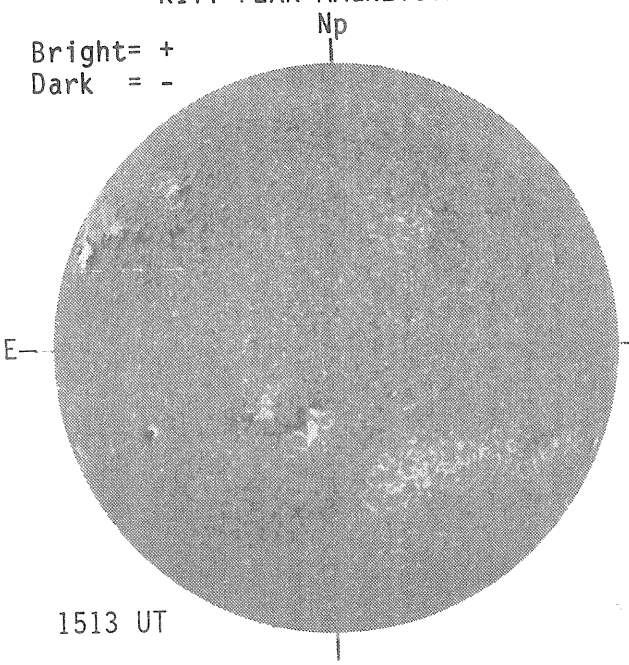
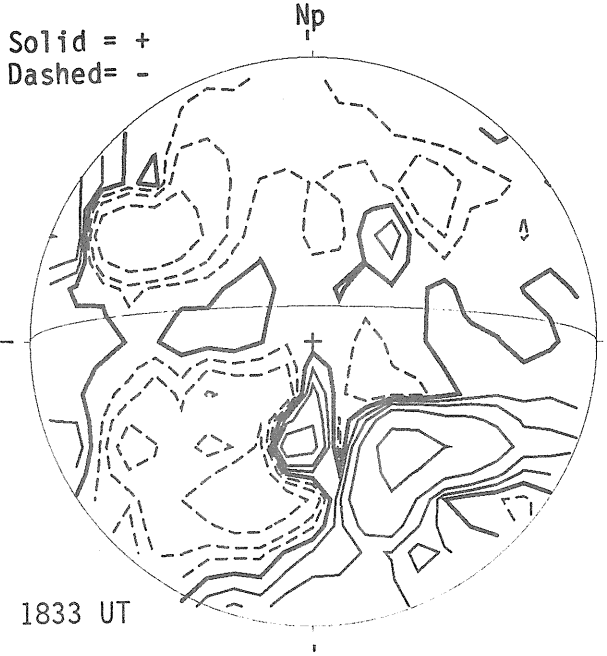
Feb 88

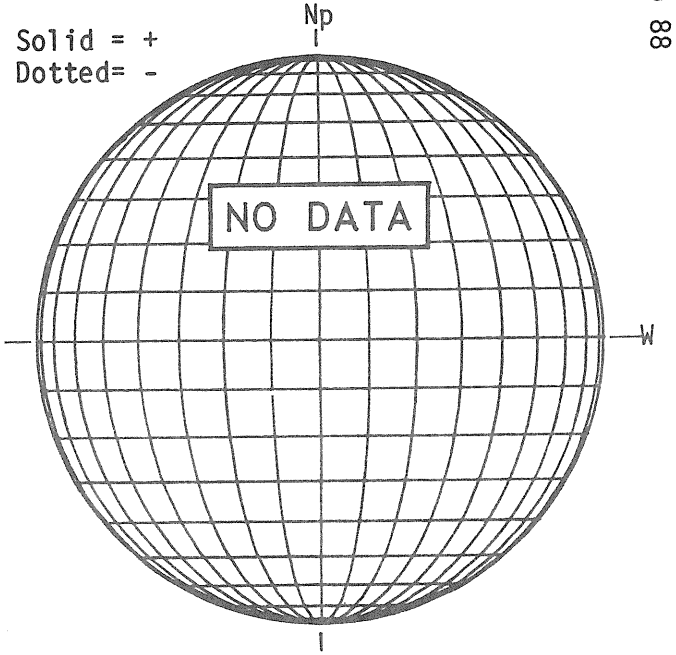
KITT PEAK MAGNETOGRAM



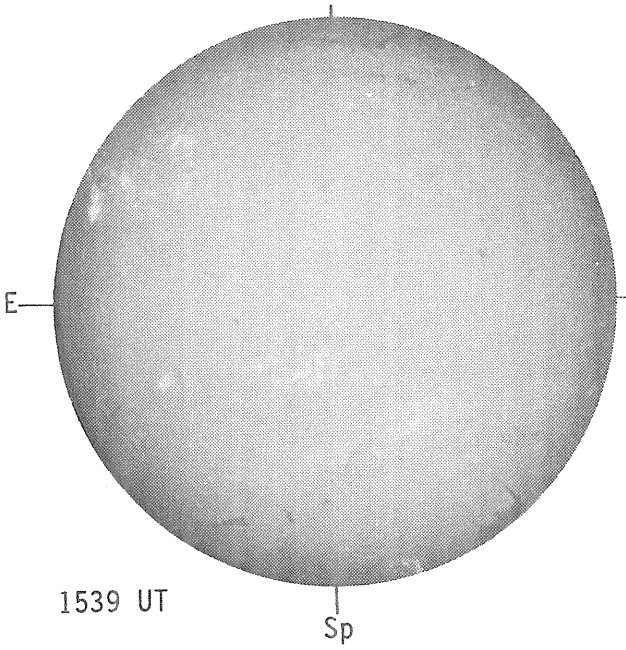
STANFORD MAGNETOGRAM



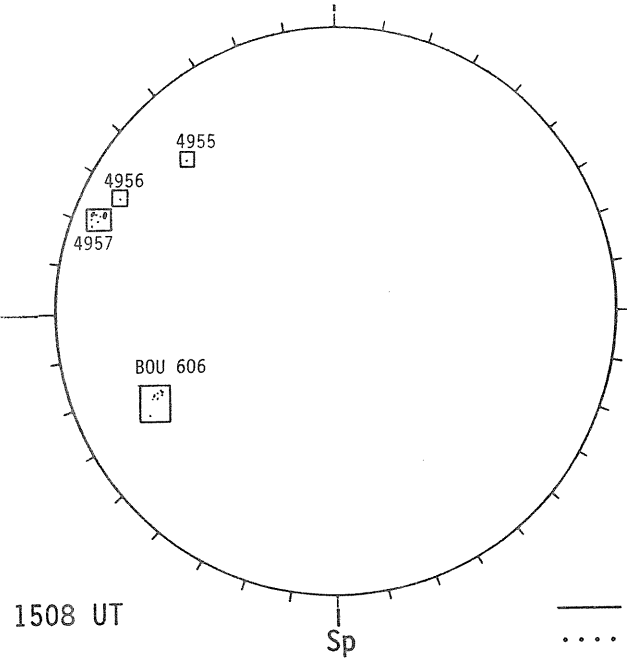
MT. WILSON MAGNETOGRAM



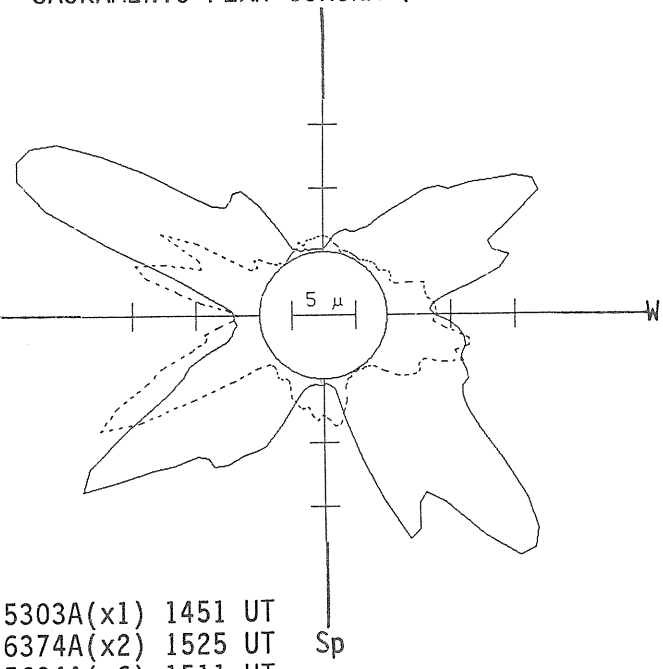
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

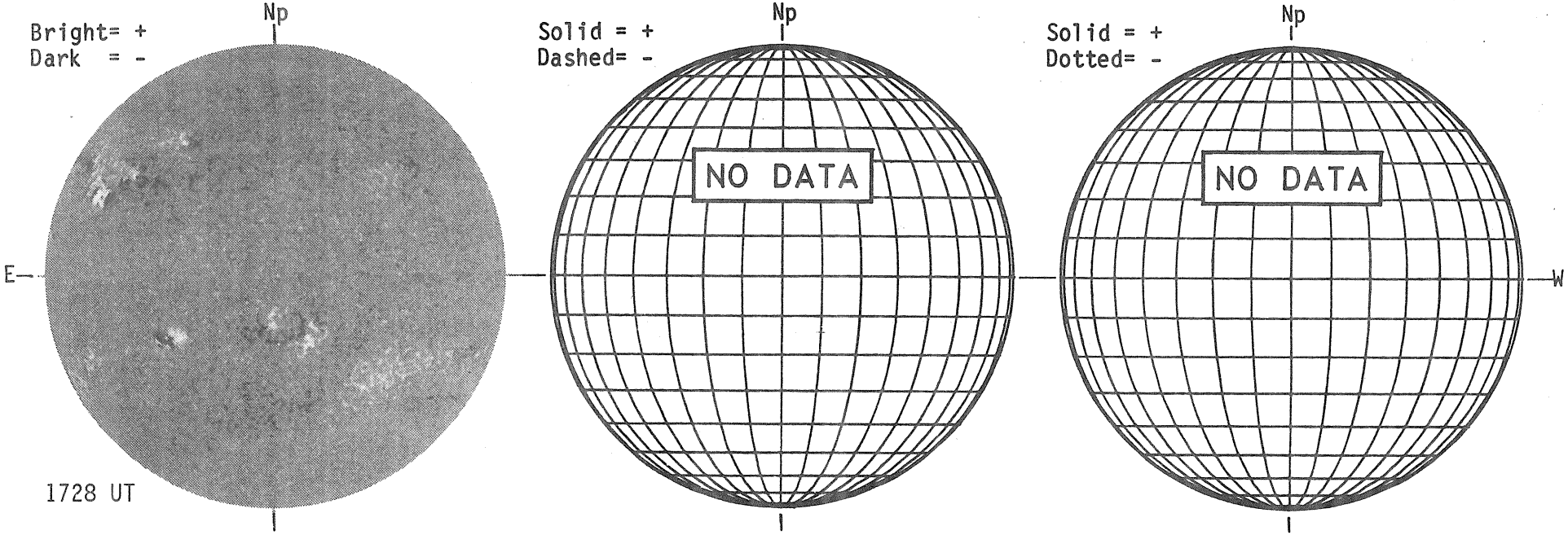


—— 5303A(x1) 1451 UT
···· 6374A(x2) 1525 UT
xxxx 5694A(x6) 1511 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 28, 1988 (P=-21.10, B_o=-7.18, L_o= 214.60)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



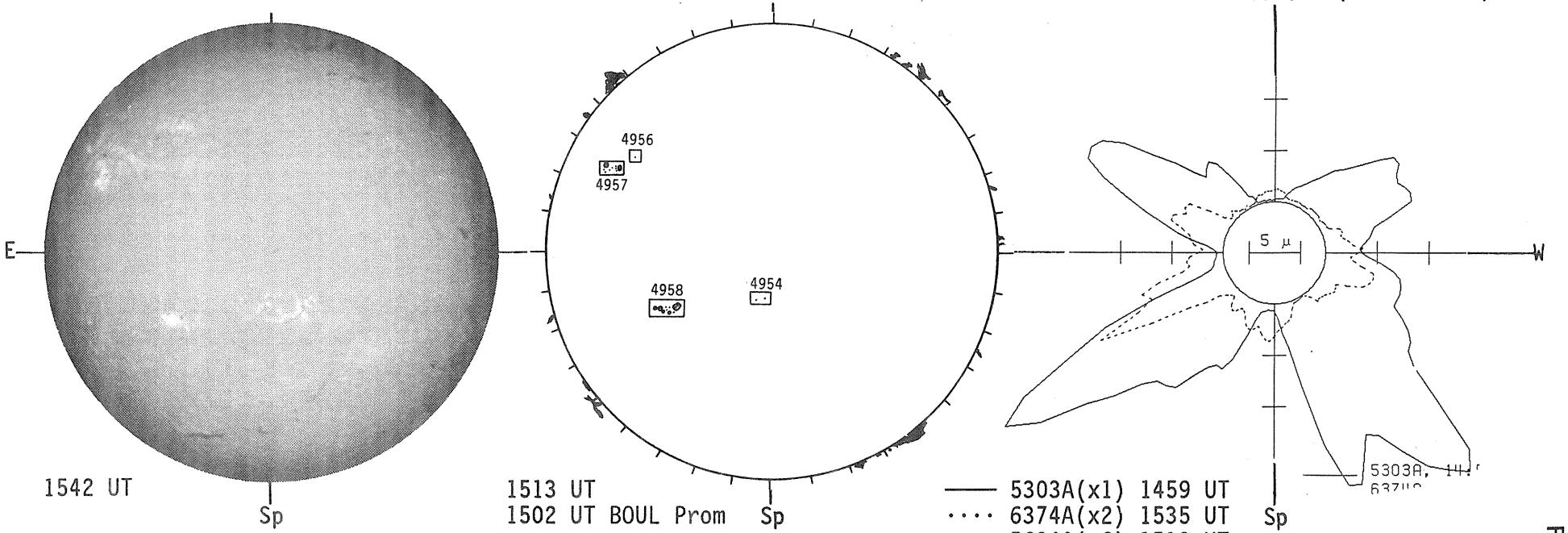
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

SACRAMENTO PEAK CORONA (1.15 Radii)

—— 5303A(x1) 1459 UT
···· 6374A(x2) 1535 UT
xxxx 5694A(x6) 1518 UT
NO 5694A ACTIVITY TODAY

FEBRUARY 29, 1988 (P=-21.36, B_o=-7.20, L_o= 201.43)

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

FEBRUARY 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4937A		SVTO	02	03	0750	S24	W21	02	1.7		B	BXO	10	2	2	4
4937B		SVTO	02	03	0750	S18	W15	02	2.2		A	AX	10	2	3	4
4938		RAMY	01	28	1331	N18	E82	02	3.8		A	HS	70	1	3	4
4938	24521	MWIL	01	28	1600	N18	E80	02	3.8	4	AP					
4938		HOLL	01	28	1745	N16	E79	02	3.7		A	HS	100	2	3	2
4938		PALE	01	28	2358	N18	E80	02	4.1		B	DSO	90	2	8	2
4938		LEAR	01	29	0023	N21	E79	02	4.1		B	DAO	300	2	7	3
4938		CULG	01	29	0500	N21	E75	02	3.9		B	CSO	40	2	5	3
4938		SVTO	01	29	1413	N18	E69	02	3.8		B	DSO	170	2	5	1
4938		RAMY	01	29	1430	N18	E69	02	3.8		B	DAO	240	2	5	2
4938	24521	MWIL	01	29	1600	N18	E68	02	3.8	5	(AP)					
4938		PALE	01	29	1830	N18	E68	02	3.9		B	DSO	140	2	3	2
4938		HOLL	01	29	1910	N16	E66	02	3.8		B	DAO	100	2	4	3
4938		LEAR	01	30	0041	N18	E62	02	3.7		B	DAO	110	2	5	4
4938		CULG	01	30	0540	N21	E59	02	3.7		B	CSO	40	2	3	3
4938		SVTO	01	30	0655	N18	E60	02	3.8		B	DSO	120	2	6	1
4938		RAMY	01	30	1356	N17	E56	02	3.8		B	DSO	150	2	5	3
4938	24521	MWIL	01	30	1545	N18	E55	02	3.8	4	(AP)					
4938		PALE	01	30	1810	N18	E55	02	3.9		B	DSO	160	2	6	3
4938		LEAR	01	31	0330	N19	E48	02	3.8		A	HS	140	2	4	3
4938		CULG	01	31	0440	N21	E47	02	3.8		A	HS	30	2	2	3
4938		SVTO	01	31	1050	N18	E44	02	3.8		B	DSO	120	2	5	4
4938		RAMY	01	31	1403	N18	E42	02	3.8		B	DSO	110	2	4	1
4938		HOLL	01	31	1617	N15	E42	02	3.8		B	DAO	80	2	4	2
4938	24521	MWIL	01	31	1730	N18	E40	02	3.8	5	(AP)					
4938		PALE	01	31	1833	N18	E41	02	3.9		A	HS	110	2	3	3
4938		LEAR	02	01	0005	N19	E36	02	3.7		A	HS	100	2	3	3
4938		CULG	02	01	0350	N21	E32	02	3.6		A	HS	60	2	3	3
4938		SVTO	02	01	0843	N18	E32	02	3.8		B	DSO	140	2	4	2
4938		PALE	02	01	1903	N19	E27	02	3.8		A	HS	120	2	3	3
4938		LEAR	02	02	0022	N19	E23	02	3.8		B	DAO	140	2	4	3
4938		SVTO	02	02	1201	N19	E16	02	3.7		B	DSO	90	3	5	2
4938		HOLL	02	02	1619	N19	E14	02	3.7		B	DSO	160	3	3	3
4938		RAMY	02	02	2017	N18	E13	02	3.8		B	DSO	130	2	3	2
4938		PALE	02	02	2100	N18	E12	02	3.8		B	DSO	110	2	4	1
4938		LEAR	02	03	0010	N19	E10	02	3.8		B	DAO	120	3	4	2
4938		CULG	02	03	0425	N19	E10	02	3.9		A	HS	40	2	3	3
4938		SVTO	02	03	0750	N18	E06	02	3.8		B	DSO	110	3	4	4
4938	24521	MWIL	02	03	1600	N18	E03	02	3.9	5	(BP)					
4938		HOLL	02	03	1620	N18	E03	02	3.9		B	DSO	70	2	4	2
4938		PALE	02	03	2025	N18	W02	02	3.7		A	HS	120	2	3	2
4938		LEAR	02	04	0018	N18	W03	02	3.8		B	DSO	80	2	4	4
4938		CULG	02	04	0430	N19	W05	02	3.8		A	HS	50	2	4	2
4938	24521	MWIL	02	04	1545	N18	W12	02	3.7	5	(AP)					
4938		PALE	02	04	1830	N18	W12	02	3.8		A	HS	90	2	4	3
4938		LEAR	02	05	0020	N18	W16	02	3.8		B	CAO	40	4	3	4
4938		CULG	02	05	0440	N20	W18	02	3.8		B	CSO	40	3	4	2
4938		SVTO	02	05	1418	N18	W24	02	3.8		A	HS	50	1	2	3
4938	24521	MWIL	02	05	1615	N18	W26	02	3.7	5	(AP)					
4938		PALE	02	05	1835	N18	W27	02	3.7		A	HS	70	1	2	4
4938		LEAR	02	06	0015	N18	W31	02	3.6		A	HS	70	2	2	4
4938		SVTO	02	06	0943	N18	W36	02	3.7		A	HS	80	1	2	4
4938		BOUL	02	06	1530	N19	W38	02	3.7		A	HA	50	1	2	1
4938	24521	MWIL	02	06	1615	N18	W38	02	3.8	5	(AP)					
4938		PALE	02	06	1811	N19	W40	02	3.7		A	HS	40	1	2	3
4938		LEAR	02	07	0004	N18	W43	02	3.7		A	HS	60	1	2	3
4938		SVTO	02	07	0820	N18	W48	02	3.7		A	HS	50	1	2	2
4938	24521	MWIL	02	07	1615	N18	W52	02	3.7	5	(AP)					
4938		BOUL	02	07	1650	N18	W51	02	3.8		A	HA	60	1	2	2
4938		PALE	02	07	1822	N19	W53	02	3.7		A	HS	70	1	2	3
4938		HOLL	02	07	1830	N21	W53	02	3.7		A	HS	40	1	1	2
4938		LEAR	02	08	0004	N17	W57	02	3.7		A	HS	80	1	2	3
4938		CULG	02	08	0435	N21	W60	02	3.6		A	HS	30	1	1	2
4938		SVTO	02	08	1035	N18	W63	02	3.6		A	HS	50	1	2	2
4938		RAMY	02	08	1430	N19	W63	02	3.8		A	HS	60	1	2	4
4938		BOUL	02	08	1532	N18	W65	02	3.7		A	AX		2	2	1
4938		HOLL	02	08	1535	N21	W66	02	3.6		A	HS	50	1	1	3

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

FEBRUARY 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4938	24521	MWIL	02	08	1545	N18	W64	02	3.8	5	(AP)					
4938		PALE	02	08	1835	N18	W68	02	3.6		A	HS	100	1	2	3
4938		LEAR	02	09	0017	N18	W70	02	3.7		A	HS	30	1	2	3
4938		CULG	02	09	0530	N20	W73	02	3.6		A	HS	20	1	1	2
4938		RAMY	02	09	1328	N18	W75	02	3.8		A	HA	60	1	2	4
4938		SVTO	02	09	1455	N18	W77	02	3.7		A	AX	20	1	1	2
4938		HOLL	02	09	1510	N21	W75	02	3.9		A	HS	30	1	1	3
4938	24521	MWIL	02	09	1535	N17	W78	02	3.7	4	(AP)					
4938		PALE	02	09	1825	N18	W81	02	3.6		A	HS	50	1	2	3
4941		RAMY	01	30	1356	S27	E69	02	4.9		A	AX		1	1	3
4941		SVTO	01	31	1050	S27	E58	02	5.0		B	BXO	10	2	1	4
4941		RAMY	01	31	1403	S28	E56	02	5.0		B	BXO	50	2	1	1
4941	24523	MWIL	01	31	1730	S28	E54	02	4.9	3	(B)					
4941		PALE	01	31	1833	S27	E53	02	4.9		B	BXO		2	3	3
4941		LEAR	02	01	0005	S26	E49	02	4.8		A	AX	10	1	1	3
4941		SVTO	02	01	0843	S23	E44	02	4.7		B	BXO	10	2	1	2
4941		PALE	02	01	1903	S22	E38	02	4.7		A	AX	10	1	1	3
4941		LEAR	02	02	0022	S21	E36	02	4.8		A	AX	30	1	1	3
4941		HOLL	02	02	1619	S21	E25	02	4.6		A	AX	20	3	1	3
4941		RAMY	02	02	2017	S22	E23	02	4.6		A	AX	10	2	2	2
4941		PALE	02	02	2100	S22	E22	02	4.6		A	AX		1		1
4941		LEAR	02	03	0010	S20	E22	02	4.7		A	AX	10	1	1	2
4941		CULG	02	03	0425	S22	E18	02	4.6		A	AX	20	1	1	3
4941		SVTO	02	03	0750	S21	E16	02	4.5		A	AX		1		4
4941		PALE	02	04	1830	S22	W01	02	4.7		A	AX		1		3
4939	24522	MWIL	01	29	1600	N19	E82	02	4.9	3	AP					
4939		PALE	01	29	1830	N20	E85	02	5.3		A	HS	60	1	3	2
4939		HOLL	01	29	1910	N18	E86	02	5.3		A	HS	60	1	1	3
4939		LEAR	01	30	0041	N21	E77	02	4.9		A	HA	50	1	2	4
4939		CULG	01	30	0540	N23	E75	02	5.0		A	HS	60	1	1	3
4939		SVTO	01	30	0655	N19	E76	02	5.1		A	HS	80	1	3	1
4939		RAMY	01	30	1356	N19	E72	02	5.1		B	CSO	130	2	3	3
4939	24522	MWIL	01	30	1545	N20	E71	02	5.1	3	(AP)					
4939		PALE	01	30	1810	N17	E70	02	5.1		B	CSO	70	2	9	3
4939		LEAR	01	31	0330	N22	E63	02	5.0		A	HS	100	1	2	3
4939		CULG	01	31	0440	N24	E63	02	5.1		A	HS	50	1	1	3
4939		SVTO	01	31	1050	N21	E60	02	5.0		B	CSO	90	3	2	4
4939		RAMY	01	31	1403	N20	E59	02	5.1		A	HS	160	2	2	1
4939		HOLL	01	31	1617	N18	E61	02	5.3		B	CSO	80	3	7	2
4939	24522	MWIL	01	31	1730	N20	E57	02	5.1	5	(BP)					
4939		PALE	01	31	1833	N19	E59	02	5.3		B	CSO	80	6	7	3
4939		LEAR	02	01	0005	N23	E55	02	5.2		B	CSO	110	6	7	3
4939		CULG	02	01	0350	N24	E49	02	4.9		A	HS	50	1	1	3
4939		SVTO	02	01	0843	N22	E51	02	5.3		B	CAO	110	6	6	2
4939		PALE	02	01	1903	N22	E46	02	5.3		B	CSO	90	6	7	3
4939		LEAR	02	02	0022	N22	E41	02	5.2		B	CAO	180	9	8	3
4939		SVTO	02	02	1201	N21	E33	02	5.0		B	CAO	60	6	4	2
4939		HOLL	02	02	1619	N20	E33	02	5.2		B	CAO	90	8	6	3
4939		RAMY	02	02	2017	N21	E29	02	5.1		B	CSO	110	4	3	2
4939		PALE	02	02	2100	N21	E29	02	5.1		B	CSO	120	3	3	1
4939		LEAR	02	03	0010	N23	E29	02	5.2		B	HSO	160	9	9	2
4939		CULG	02	03	0425	N20	E27	02	5.2		B	CAO	80	4	9	3
4939		SVTO	02	03	0750	N21	E26	02	5.3		B	CSO	130	8	10	4
4939	24522	MWIL	02	03	1600	N21	E19	02	5.1	5	(BP)					
4939		HOLL	02	03	1620	N20	E20	02	5.2		B	CAO	90	9	6	2
4939		PALE	02	03	2025	N21	E18	02	5.2		B	CSO	120	9	5	2
4939		LEAR	02	04	0018	N22	E15	02	5.2		B	DAI	100	13	6	4
4939		CULG	02	04	0430	N20	E13	02	5.2		B	DAI	120	8	7	2
4939	24522	MWIL	02	04	1545	N21	E06	02	5.1	6	(BP)					
4939		PALE	02	04	1830	N21	E06	02	5.2		B	CSO	100	5	6	3
4939		LEAR	02	05	0020	N21	E02	02	5.2		B	DAO	100	10	6	4
4939		CULG	02	05	0440	N20	E00	02	5.2		B	CSO	70	4	5	2
4939		SVTO	02	05	1418	N21	W05	02	5.2		B	CSO	70	5	5	3
4939	24522	MWIL	02	05	1615	N21	W07	02	5.1	5	(AP)					
4939		PALE	02	05	1835	N22	W08	02	5.1		B	CSO	100	7	6	4
4939		LEAR	02	06	0015	N21	W12	02	5.1		B	CSO	100	7	5	4
4939		SVTO	02	06	0943	N22	W16	02	5.2		B	CSO	120	7	5	4

SUNSPOT GROUPS
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4939		BOUL	02	06	1530	N20	W20	02	5.1		A	HA	60	1	2	1
4939	24522	MWIL	02	06	1615	N22	W20	02	5.1	6	(AP)					
4939		PALE	02	06	1811	N21	W22	02	5.1		A	HS	40	1	2	3
4939		LEAR	02	07	0004	N21	W26	02	5.0		B	CSO	100	8	6	3
4939		SVTO	02	07	0820	N23	W30	02	5.0		B	CSO	90	5	4	2
4939	24522	MWIL	02	07	1615	N21	W34	02	5.1	6	(AP)					
4939		BOUL	02	07	1650	N20	W34	02	5.1		A	HS	80	1	2	2
4939		PALE	02	07	1822	N20	W36	02	5.0		B	CSO	90	2	4	3
4939		HOLL	02	07	1830	N23	W36	02	5.0		B	CSO	60	2	3	2
4939		LEAR	02	08	0004	N19	W38	02	5.1		B	CSO	130	3	6	3
4939		CULG	02	08	0435	N23	W42	02	4.9		A	HS	50	1	1	2
4939		SVTO	02	08	1035	N19	W46	02	4.9		B	CSO	100	2	3	2
4939		RAMY	02	08	1430	N21	W46	02	5.1		A	HS	120	1	2	4
4939		BOUL	02	08	1532	N20	W47	02	5.0		A	AX		3	2	1
4939		HOLL	02	08	1535	N23	W47	02	5.0		A	HS	60	1	1	3
4939	24522	MWIL	02	08	1545	N20	W46	02	5.1	5	(AP)					
4939		PALE	02	08	1835	N20	W49	02	5.0		A	HS	60	1	2	3
4939		LEAR	02	09	0017	N21	W52	02	5.0		A	HS	80	1	2	3
4939		CULG	02	09	0530	N22	W56	02	4.9		A	HS	40	1	1	2
4939		RAMY	02	09	1328	N19	W59	02	5.0		B	CSO	110	4	3	4
4939		SVTO	02	09	1455	N20	W60	02	5.0		A	HA	40	1	2	2
4939		HOLL	02	09	1510	N22	W58	02	5.2		B	CSO	90	3	3	3
4939	24522	MWIL	02	09	1535	N20	W60	02	5.1	5	(AP)					
4939		BOUL	02	09	1632	N20	W61	02	5.0		A	HR	70	1	2	1
4939		PALE	02	09	1825	N20	W62	02	5.0		B	CSO	120	4	6	3
4939		LEAR	02	10	0004	N20	W64	02	5.1		A	HS	70	1	2	4
4939		CULG	02	10	0445	N23	W70	02	4.8		A	HS	40	1	1	2
4939		SVTO	02	10	0741	N20	W70	02	5.0		A	HS	60	1	2	3
4939	24522	MWIL	02	10	1545	N21	W75	02	4.9	5	(AP)					
4939		HOLL	02	10	1545	N23	W71	02	5.2		B	HSO	20	3	5	3
4939		PALE	02	10	1835	N22	W80	02	4.6		A	HS	60	1	2	3
4939		LEAR	02	11	0045	N19	W79	02	5.0		A	HS	60	1	1	3
4939		SVTO	02	11	0718	N20	W82	02	5.0		A	HS	20	1	1	3
4939A	24529	MWIL	02	09	1535	N15	W59	02	5.2	4	(B)					
4942	24524	MWIL	01	31	1730	N16	E60	02	5.3	2	(AP)					
4942		LEAR	02	01	0005	N17	E55	02	5.2		A	AX	10	1	1	3
4942		PALE	02	01	1903	N16	E46	02	5.3		A	AX		1		3
4942		LEAR	02	02	0022	N17	E42	02	5.2		B	BXO	20	2	2	3
4943		PALE	02	01	1903	N28	E71	02	7.3		A	AX	10	2	2	3
4943		LEAR	02	02	0022	N28	E65	02	7.1		B	BXO	20	4	3	3
4943		SVTO	02	02	1201	N30	E62	02	7.4		B	CRO	40	4	6	2
4943		HOLL	02	02	1619	N27	E60	02	7.3		B	CSO	60	3	1	3
4943		RAMY	02	02	2017	N27	E55	02	7.1		B	CAO	100	2	6	2
4943		PALE	02	02	2100	N28	E56	02	7.2		B	CSO	80	2	7	1
4943		LEAR	02	03	0010	N30	E53	02	7.2		B	CSO	140	4	6	2
4943		CULG	02	03	0425	N26	E53	02	7.3		B	CSO	70	2	7	3
4943		SVTO	02	03	0750	N27	E49	02	7.1		B	CSO	40	4	5	4
4943	24525	MWIL	02	03	1600	N28	E42	02	6.9	5	(B)					
4943		HOLL	02	03	1620	N27	E45	02	7.2		B	CSO	40	2	8	2
4943		PALE	02	03	2025	N28	E39	02	6.9		A	HS	50	1	2	2
4943		LEAR	02	04	0018	N28	E36	02	6.8		A	HA	50	1	2	4
4943		CULG	02	04	0430	N27	E36	02	7.0		A	HS	20	1	2	2
4943	24525	MWIL	02	04	1545	N27	E27	02	6.8	5	(AP)					
4943		PALE	02	04	1830	N29	E29	02	7.0		B	CSO	60	2	8	3
4943		LEAR	02	05	0020	N28	E25	02	7.0		B	CSO	50	3	8	4
4943		CULG	02	05	0440	N28	E24	02	7.1		B	CSO	50	2	8	2
4943		SVTO	02	05	1418	N27	E17	02	6.9		B	CSO	30	3	8	3
4943	24525	MWIL	02	05	1615	N27	E14	02	6.8	5	(B)					
4943	24528	MWIL	02	05	1615	N27	E21	02	7.3	3	(B)					
4943		PALE	02	05	1835	N28	E15	02	6.9		B	CSO	70	6	9	4
4943		LEAR	02	06	0015	N28	E12	02	6.9		B	CSO	60	8	9	4
4943		SVTO	02	06	0943	N29	E08	02	7.0		B	CRO	70	11	10	4
4943		BOUL	02	06	1530	N27	W01	02	6.6		A	HS	50	1	2	1
4943	24525	MWIL	02	06	1615	N28	W00	02	6.7	5	(BP)					
4943	24528	MWIL	02	06	1615	N30	E08	02	7.3	4	(B)					
4943		PALE	02	06	1811	N28	W02	02	6.6		B	CSO	50	5	4	3

S U N S P O T G R O U P S
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4943		LEAR	02	07	0004	N27	W05	02	6.6		B	CAO	80	6	5	3
4943		SVTO	02	07	0820	N28	W08	02	6.7		B	DRO	40	9	7	2
4943	24525	MWIL	02	07	1615	N27	W12	02	6.7	5	(B)					
4943		BOUL	02	07	1650	N26	W15	02	6.5		A	HS	10	1	1	2
4943		PALE	02	07	1822	N28	W14	02	6.7		A	HS	20	2	2	3
4943		HOLL	02	07	1830	N29	W16	02	6.5		A	HS	20	1	1	2
4943		LEAR	02	08	0004	N27	W17	02	6.7		B	CAO	90	7	6	3
4943		CULG	02	08	0435	N29	W22	02	6.5		A	HS	30	1	1	2
4943		SVTO	02	08	1035	N28	W24	02	6.6		B	BXO	30	9	5	2
4943		RAMY	02	08	1430	N28	W26	02	6.6		A	AX	30	2	1	4
4943		BOUL	02	08	1532	N26	W28	02	6.5		A	AX		2	1	1
4943		HOLL	02	08	1535	N30	W27	02	6.5		A	AX	10	2	1	3
4943	24525	MWIL	02	08	1545	N28	W24	02	6.8	5	(B)					
4943		PALE	02	08	1835	N28	W30	02	6.4		A	AX		1		3
4943		LEAR	02	09	0017	N28	W32	02	6.5		B	CSO	40	6	5	3
4943		CULG	02	09	0530	N29	W36	02	6.4		A	AX		1		2
4943		RAMY	02	09	1328	N27	W40	02	6.4		A	AX	20	1	1	4
4943		SVTO	02	09	1455	N27	W37	02	6.7		A	AX	10	1		2
4943	24525	MWIL	02	09	1535	N27	W35	02	6.9	5	(B)					
4943		LEAR	02	10	0004	N27	W42	02	6.7		A	AX	10	2	1	4
4943		SVTO	02	10	0741	N27	W47	02	6.6		A	AX	10	1	1	3
4943	24525	MWIL	02	10	1545	N27	W48	02	6.9	4	(B)					
4943		HOLL	02	10	1545	N27	W55	02	6.4		A	AX	10	1	1	3
4943		LEAR	02	11	0045	N26	W58	02	6.5		B	BXO	10	2	2	3
4943		SVTO	02	11	0718	N26	W60	02	6.6		A	AX	10	2	1	3
4943	24525	MWIL	02	11	1545	N29	W58	02	7.1	3	(AP)					
4943		HOLL	02	11	1804	N30	W66	02	6.6		A	AX	10	1	1	1
4943		LEAR	02	12	0026	N26	W69	02	6.6		A	AX	10	1	1	3
4946		LEAR	02	07	0004	N29	E04	02	7.3		A	AX	10	1	1	3
4946		BOUL	02	07	1650	N26	W09	02	7.0		B	CAO	10	6	3	2
4946		PALE	02	07	1822	N29	W10	02	7.0		B	CRO	20	8	4	3
4946		HOLL	02	07	1830	N29	W09	02	7.1		B	CRO	40	9	5	2
4946		LEAR	02	08	0004	N28	W12	02	7.1		B	CRO	20	3	3	3
4946		CULG	02	08	0435	N29	W15	02	7.0		B	DAO	80	7	4	2
4946		SVTO	02	08	1035	N29	W19	02	6.9		A	AX	20	7	2	2
4946		RAMY	02	08	1430	N28	W20	02	7.0		B	BXO	70	10	7	4
4946		BOUL	02	08	1532	N26	W23	02	6.9		B	BXO	30	5	5	1
4946		HOLL	02	08	1535	N29	W21	02	7.0		B	BXI	40	9	6	3
4946		PALE	02	08	1835	N28	W24	02	6.9		B	BXO	30	6	5	3
4946		LEAR	02	09	0017	N28	W26	02	7.0		B	DSO	20	3	2	3
4946		CULG	02	09	0530	N29	W30	02	6.9		B	CRO	30	4	4	2
4946		RAMY	02	09	1328	N28	W34	02	6.9		B	BXO	30	6	6	4
4946		SVTO	02	09	1455	N28	W33	02	7.0		A	AX	10	3	2	2
4946		HOLL	02	09	1510	N29	W34	02	7.0		B	CRO	40	5	6	3
4946		PALE	02	09	1825	N28	W38	02	6.8		B	BXO	20	4	6	3
4946		LEAR	02	10	0004	N28	W38	02	7.0		A	AX	20	3	2	4
4946		SVTO	02	10	0741	N27	W43	02	7.0		A	AX	10	3	2	3
4946		HOLL	02	10	1545	N28	W44	02	7.2		B	CRO	60	6	10	3
4946		PALE	02	10	1835	N29	W53	02	6.6		B	BXO	10	2	7	3
4946		LEAR	02	11	0045	N29	W53	02	6.9		B	BXO	10	2	5	3
4946		SVTO	02	11	0718	N28	W55	02	7.0		B	BXO	10	2	2	3
4946		BOUL	02	11	1540	N30	W59	02	7.0		A	AX	20	1	1	2
4946		PALE	02	11	1820	N32	W63	02	6.8		A	AX	10	1	1	4
4946		LEAR	02	12	0026	N28	W63	02	7.1		B	BXO	10	3	3	3
4946A		LEAR	02	04	0018	S22	E46	02	7.5		A	AX	10	1	1	4
4946A		CULG	02	04	0430	S22	E41	02	7.3		A	AX	10	1		2
4946A	24526	MWIL	02	04	1545	N25	E50	02	8.5	2	(AP)					
4946A		PALE	02	04	1830	N25	E49	02	8.6		A	AX		1		3
4946B		LEAR	02	04	0018	S28	E73	02	9.7		A	AX	10	1	1	4
4946B	24527	MWIL	02	04	1545	S27	E68	02	9.9	3	(AP)					
4946B		PALE	02	04	1830	S28	E69	02	10.2		A	AX	10	1	1	3
4946B		LEAR	02	05	0020	S28	E63	02	9.9		A	AX	10	1	1	4
4946B		CULG	02	05	0440	S30	E60	02	9.9		A	AX	10	1		2
4946B		LEAR	02	06	0015	S27	E52	02	10.1		A	AX	20	1	1	4
4948	24533	MWIL	02	15	1545	N20	W28	02	13.5	2	(AF)					

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4948		LEAR	02 16 0000	N20 W33	02 13.5		B	BXO	10	3	3	3
4948		RAMY	02 16 1345	N21 W41	02 13.4		A	AX		1	1	4
4948	24533	MWIL	02 16 1545	N20 W41	02 13.5	2	(B)					
4948		HOLL	02 16 1556	N23 W41	02 13.5		A	AX		1	1	3
4948		LEAR	02 17 0001	N19 W46	02 13.5		B	BXO	10	2	1	3
4948		HOLL	02 18 1735	N19 W68	02 13.5		A	AX	10	1	1	3
4948A		RAMY	02 12 1236	S35 E13	02 13.6		A	AX		1	1	3
4951		RAMY	02 17 1400	S08 W41	02 14.5		A	AX		1	1	4
4951		CULG	02 18 0520	S11 W48	02 14.6		B	BXO	10	2	1	3
4951		SVTO	02 18 0950	S08 W48	02 14.8		B	DRO	40	11	3	3
4951		RAMY	02 18 1252	S08 W52	02 14.6		B	CRO	60	8	4	3
4951	24534	MWIL	02 18 1530	S08 W54	02 14.6	4	(B)					
4951		BOUL	02 18 1530	S09 W53	02 14.7		B	CRI	140	12	5	2
4951		HOLL	02 18 1735	S09 W55	02 14.6		B	DAI	130	9	5	3
4951		LEAR	02 19 0010	S10 W56	02 14.8		B	DSI	90	8	5	4
4951		CULG	02 19 0450	S09 W59	02 14.8		B	DSO	50	3	4	4
4951		SVTO	02 19 1210	S09 W60	02 15.0		B	DSO	130	10	6	4
4951		RAMY	02 19 1325	S08 W65	02 14.7		B	DAI	120	10	7	4
4951		BOUL	02 19 1530	S09 W67	02 14.6		B	DAO	120	3	5	3
4951	24534	MWIL	02 19 1615	S08 W66	02 14.7	3	(B)					
4951		HOLL	02 19 2223	S09 W70	02 14.7		B	DSO	100	3	7	2
4951		LEAR	02 20 0220	S09 W70	02 14.8		B	CAO	100	4	3	4
4951		CULG	02 20 0500	S09 W78	02 14.3		A	HS	30	1	5	3
4951		SVTO	02 20 0815	S09 W73	02 14.9		B	CSO	100	4	6	2
4951		RAMY	02 20 1314	S08 W79	02 14.6		B	DAO	90	2	6	4
4951	24534	MWIL	02 20 1545	S09 W84	02 14.3	2	X					
4951		HOLL	02 20 1732	S10 W81	02 14.6		A	HS	30	2	2	3
4947		HOLL	02 08 1535	S36 E84	02 15.4		A	AX	10	1	1	3
4947		RAMY	02 09 1328	S35 E78	02 15.8		B	BXO	40	2	2	4
4947		SVTO	02 09 1455	S35 E76	02 15.7		B	BXO	20	2	3	2
4947		HOLL	02 09 1510	S36 E75	02 15.6		B	BXO	20	2	3	3
4947	24530	MWIL	02 09 1535	S35 E75	02 15.6	3	(BG)					
4947		PALE	02 09 1825	S35 E75	02 15.8		B	BXO	20	3	7	3
4947		LEAR	02 10 0004	S35 E70	02 15.6		B	BXO	20	4	7	4
4947		SVTO	02 10 0741	S35 E66	02 15.6		B	CRO	40	7	8	3
4947	24530	MWIL	02 10 1545	S35 E64	02 15.8	3	(BG)					
4947		HOLL	02 10 1545	S37 E63	02 15.7		B	CSO	30	7	5	3
4947		PALE	02 10 1835	S35 E62	02 15.7		B	BXO	20	3	3	3
4947		LEAR	02 11 0045	S33 E58	02 15.6		B	CRO	40	3	4	3
4947		CULG	02 11 0445	S30 E60	02 15.9		A	AX	10	1	1	3
4947		SVTO	02 11 0718	S34 E55	02 15.7		B	CRO	20	4	8	3
4947		BOUL	02 11 1540	S34 E53	02 15.9		A	AX	20	1	1	2
4947	24530	MWIL	02 11 1545	S34 E52	02 15.8	3	(AP)					
4947		HOLL	02 11 1804	S37 E50	02 15.8		A	HS	20	1	1	1
4947		PALE	02 11 1820	S36 E51	02 15.8		A	AX	10	1	1	4
4947		LEAR	02 12 0026	S33 E47	02 15.7		A	AX	10	1	1	3
4947		CULG	02 12 0440	S33 E47	02 15.9		A	AX	20	1	1	1
4947		SVTO	02 12 1140	S33 E40	02 15.7		A	HR	10	1	1	1
4947		RAMY	02 12 1236	S34 E40	02 15.7		A	AX	10	1	1	3
4947	24530	MWIL	02 12 1530	S35 E39	02 15.8	4	(AP)					
4947		BOUL	02 12 1603	S34 E39	02 15.8		A	AX	10	1	1	1
4947		HOLL	02 12 1815	S36 E37	02 15.7		A	HS	30	1	1	1
4947		PALE	02 12 1850	S35 E38	02 15.8		A	AX	10	1		3
4947		LEAR	02 13 0625	S34 E31	02 15.7		A	AX	10	2	1	3
4947		RAMY	02 13 1242	S34 E28	02 15.8		B	BXO	10	3	2	4
4947	24530	MWIL	02 13 1530	S34 E26	02 15.7	4	(B)					
4947		BOUL	02 13 1530	S35 E25	02 15.6		A	AX	10	4	3	2
4947		PALE	02 13 1935	S36 E24	02 15.7		A	AX		2	2	2
4947		HOLL	02 13 2010	S36 E21	02 15.5		B	BXO	10	2	3	3
4947		LEAR	02 14 0010	S35 E23	02 15.8		B	BXO	10	2	2	3
4947A		BOUL	02 19 1530	S36 W39	02 16.5		A	AX	10	1	1	3
4947A		HOLL	02 19 2223	S36 W43	02 16.5		A	AX	10	2	2	2
4947A		RAMY	02 20 1314	S36 W51	02 16.4		A	AX	10	1	1	4
4947A		HOLL	02 20 2000	S36 W53	02 16.6		A	AX	10	2	1	4

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4952		RAMY	02	17	1400	N39	E08	02	18.2		B	BXO	10	3	3	4
4952		HOLL	02	18	1735	N38	W07	02	18.2		B	BXO	10	3	5	3
4952		LEAR	02	19	0010	N37	W12	02	18.0		A	AX	10	1	1	4
4952		CULG	02	19	0450	N38	W14	02	18.1		A	AX	10	1	1	4
4952		SVTO	02	19	1210	N38	W15	02	18.3		B	BXO	20	2	4	4
4952		RAMY	02	19	1325	N39	W19	02	18.0		A	AX	10	1	1	4
4952		BOUL	02	19	1530	N37	W20	02	18.0		A	AX	10	1	1	3
4952		HOLL	02	19	2223	N38	W25	02	17.9		A	AX	10	1	1	2
4952		LEAR	02	20	0220	N38	W28	02	17.8		A	AX	10	1	1	4
4952		SVTO	02	20	0815	N39	W29	02	18.0		B	BXO	10	2	4	2
4952		RAMY	02	20	1314	N39	W32	02	17.9		A	AX	20	2	1	4
4952		HOLL	02	20	2000	N38	W34	02	18.1		B	BXO	10	3	5	4
4952		SVTO	02	21	0905	N39	W38	02	18.3		A	AX	20	3	3	3
4952		RAMY	02	21	1348	N40	W46	02	17.8		A	AX	10	1	1	4
4952A		LEAR	02	25	0009	S22	W73	02	19.4		A	AX	10	1	1	3
4949		LEAR	02	13	0625	N22	E78	02	19.3		A	HH	990	1	5	3
4949		RAMY	02	13	1242	N22	E78	02	19.5		A	HK	450	1	5	4
4949		BOUL	02	13	1530	N22	E72	02	19.2		A	HK	360	1	4	2
4949	24531	MWIL	02	13	1530	N22	E73	02	19.2	4	(AP)					
4949		PALE	02	13	1935	N22	E76	02	19.6		A	HH	450	1	9	2
4949		HOLL	02	13	2010	N18	E74	02	19.5		A	HH	420	1	4	3
4949		LEAR	02	14	0010	N18	E73	02	19.6		B	CKO	630	2	10	3
4949		SVTO	02	14	0845	N18	E69	02	19.6		B	CHO	560	3	16	3
4949		RAMY	02	14	1345	N21	E70	02	19.9		B	FHO	770	5	17	4
4949		BOUL	02	14	1515	N20	E63	02	19.4		B	FKO	530	2	16	2
4949	24531	MWIL	02	14	1515	N20	E66	02	19.7	5	(B)					
4949		HOLL	02	14	1535	N16	E69	02	19.9		B	FHO	530	2	18	4
4949		PALE	02	14	1910	N20	E68	02	20.0		B	FHO	590	3	17	3
4949		LEAR	02	15	0024	N22	E61	02	19.7		B	FKO	460	4	16	4
4949		CULG	02	15	0430	N19	E61	02	19.8		B	FHO	630	2	17	2
4949		SVTO	02	15	0930	N19	E58	02	19.8		B	FHO	700	5	20	3
4949		RAMY	02	15	1325	N20	E57	02	19.9		B	FHO	570	5	16	3
4949		BOUL	02	15	1457	N19	E53	02	19.7		B	FKO	400	2	16	2
4949	24531	MWIL	02	15	1545	N22	E50	02	19.5	6	(B)					
4949		HOLL	02	15	1630	N17	E55	02	19.9		B	FHO	580	3	14	3
4949		PALE	02	15	1800	N20	E55	02	19.9		B	FHO	590	3	16	3
4949		LEAR	02	16	0000	N20	E49	02	19.7		B	FKO	420	5	16	3
4949		CULG	02	16	0600	N20	E49	02	20.0		B	FHO	400	2	17	3
4949		SVTO	02	16	1310	N20	E42	02	19.8		B	FKO	640	4	16	2
4949		RAMY	02	16	1345	N20	E43	02	19.9		B	FHO	710	11	17	4
4949		BOUL	02	16	1528	N20	E40	02	19.7		B	FKO	480	3	16	2
4949	24531	MWIL	02	16	1545	N22	E37	02	19.5	6	(BP)					
4949		HOLL	02	16	1556	N18	E43	02	19.9		B	FKO	490	4	16	3
4949		PALE	02	16	1825	N20	E41	02	19.9		B	FHO	550	3	17	3
4949		LEAR	02	17	0001	N21	E37	02	19.8		B	FKO	560	5	16	3
4949		CULG	02	17	0450	N20	E33	02	19.7		B	FHO	350	2	15	3
4949		SVTO	02	17	0830	N20	E32	02	19.8		B	FKO	580	13	16	3
4949		RAMY	02	17	1400	N21	E31	02	20.0		B	FHO	710	29	18	4
4949		BOUL	02	17	1508	N20	E28	02	19.8		B	FKO	680	2	18	1
4949		HOLL	02	17	1543	N21	E31	02	20.0		B	FHO	620	4	17	3
4949		PALE	02	17	1815	N20	E27	02	19.8		B	FHO	470	10	16	2
4949	24531	MWIL	02	17	2130	N22	E18	02	19.3	6	(BP)					
4949		LEAR	02	18	0030	N22	E25	02	19.9		B	FHO	590	10	20	2
4949		CULG	02	18	0520	N21	E18	02	19.6		B	FHO	400	4	15	3
4949		SVTO	02	18	0950	N22	E21	02	20.0		B	FHO	630	6	16	3
4949		RAMY	02	18	1252	N20	E19	02	20.0		B	FHO	640	5	16	3
4949		BOUL	02	18	1530	N21	E15	02	19.8		B	FHO	570	4	16	2
4949	24531	MWIL	02	18	1530	N22	E11	02	19.5	6	(BP)					
4949		HOLL	02	18	1615	N21	E16	02	19.9		B	FHO	480	4	17	3
4949		LEAR	02	19	0010	N21	E10	02	19.8		B	FHO	420	2	16	4
4949		CULG	02	19	0450	N20	E06	02	19.7		B	FHO	400	82	15	4
4949		SVTO	02	19	1210	N21	E05	02	19.9		B	EKO	500	13	15	4
4949		RAMY	02	19	1325	N22	E05	02	19.9		B	FHO	610	16	16	4
4949		BOUL	02	19	1530	N22	E03	02	19.9		B	EKO	530	8	15	3
4949	24531	MWIL	02	19	1615	N22	W03	02	19.4	6	(BP)					
4949		HOLL	02	19	2223	N20	E01	02	20.0		B	FHO	480	7	16	2
4949		LEAR	02	20	0220	N21	W03	02	19.9		B	FKO	430	15	16	4

SUNSPOT GROUPS
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4949		CULG	02	20	0500	N20	W08	02	19.6		B	FHO	400	2	15	3
4949		SVTO	02	20	0815	N21	W08	02	19.7		B	EKO	600	8	15	2
4949		RAMY	02	20	1314	N21	W09	02	19.9		B	FKO	510	11	17	4
4949	24531	MWIL	02	20	1545	N22	W16	02	19.4	6	(BP)					
4949		HOLL	02	20	2000	N22	W12	02	19.9		B	CHO	510	11	16	4
4949		CULG	02	21	0415	N20	W18	02	19.8		A	HH	380	2	3	2
4949		LEAR	02	21	0507	N20	W18	02	19.8		B	EKO	350	8	15	2
4949		SVTO	02	21	0905	N21	W20	02	19.8		B	EKO	490	5	12	3
4949		RAMY	02	21	1348	N21	W20	02	20.0		B	FKO	480	9	17	4
4949		HOLL	02	21	1500	N22	W23	02	19.8		B	CHO	490	9	11	4
4949		BOUL	02	21	1515	N21	W25	02	19.7		B	EKO	500	5	11	2
4949		LEAR	02	22	0024	N22	W33	02	19.5		B	CHO	430	5	5	3
4949		CULG	02	22	0425	N20	W38	02	19.3		A	HH	420	3	6	2
4949		SVTO	02	22	0714	N21	W38	02	19.4		A	HH	540	1	4	3
4949		BOUL	02	22	1435	N21	W41	02	19.5		A	HH	450	1	7	2
4949		HOLL	02	22	1752	N22	W42	02	19.5		B	CHO	460	4	7	2
4949		LEAR	02	23	0008	N22	W43	02	19.7		B	EHO	320	6	10	3
4949		CULG	02	23	0420	N20	W45	02	19.7		A	HH	360	1	5	3
4949		SVTO	02	23	0856	N21	W52	02	19.4		A	HH	520	2	5	3
4949		RAMY	02	23	1448	N18	W49	02	19.9		B	CHO	340	2	14	2
4949		HOLL	02	23	1912	N22	W55	02	19.6		B	CHO	400	2	6	3
4949		CULG	02	24	0500	N21	W64	02	19.3		A	HH	280	1	5	2
4949		LEAR	02	24	0555	N21	W65	02	19.3		A	HH	270	1	6	3
4949		RAMY	02	24	1341	N20	W67	02	19.4		B	CHO	340	2	16	3
4949		SVTO	02	24	1355	N22	W67	02	19.4		A	HH	390	1	4	2
4949		BOUL	02	24	1505	N21	W70	02	19.3		A	HH	250	1	3	1
4949		HOLL	02	24	1830	N21	W68	02	19.5		A	HH	300	1	3	2
4949		LEAR	02	25	0009	N20	W71	02	19.6		B	CKO	450	3	14	3
4949		CULG	02	25	0455	N21	W75	02	19.4		A	HH	200	1	4	2
4949		SVTO	02	25	1220	N20	W76	02	19.7		B	CHO	430	3	15	3
4949		RAMY	02	25	1300	N20	W77	02	19.6		B	CHO	190	3	15	3
4949	24531	MWIL	02	25	1513	N21	W77	02	19.7	3	(BP)					
4949		BOUL	02	25	1535	N22	W82	02	19.3		A	HS	120	1	2	3
4950		HOLL	02	13	2010	S16	E82	02	20.0		A	AX	30	1	1	3
4950		LEAR	02	14	0010	S15	E81	02	20.1		A	HA	60	1	1	3
4950		SVTO	02	14	0845	S16	E73	02	19.9		A	AX	10	1	1	3
4950		RAMY	02	14	1345	S15	E73	02	20.1		B	BXO	50	7	7	4
4950		BOUL	02	14	1515	S16	E73	02	20.2		B	BXO	20	3	8	2
4950	24532	MWIL	02	14	1515	S16	E73	02	20.2	4	(B)					
4950		HOLL	02	14	1535	S17	E74	02	20.3		B	CSO	50	3	9	4
4950		PALE	02	14	1910	S16	E72	02	20.2		B	BXO	20	2	9	3
4950		LEAR	02	15	0024	S15	E66	02	20.0		B	DAO	20	2	7	4
4950		CULG	02	15	0430	S17	E65	02	20.1		B	CRO	30	2	6	2
4950		SVTO	02	15	0930	S15	E62	02	20.1		B	BXO	10	2	7	3
4950		RAMY	02	15	1325	S15	E61	02	20.2		B	BXO	20	2	7	3
4950		BOUL	02	15	1457	S15	E60	02	20.2		B	BXO	20	2	7	2
4950	24532	MWIL	02	15	1545	S16	E59	02	20.1	3	(B)					
4950		HOLL	02	15	1630	S17	E60	02	20.2		B	CSO	30	2	8	3
4950		PALE	02	15	1800	S15	E59	02	20.2		B	BXO	20	2	8	3
4950		LEAR	02	16	0000	S15	E54	02	20.1		B	DRO	20	2	8	3
4950		CULG	02	16	0600	S17	E53	02	20.3		B	BXO	10	2	8	3
4950		SVTO	02	16	1310	S14	E48	02	20.2		B	CRO	30	4	8	2
4950		RAMY	02	16	1345	S15	E47	02	20.1		B	CRO	40	6	9	4
4950		BOUL	02	16	1528	S15	E45	02	20.0		B	BXO	10	3	8	2
4950	24532	MWIL	02	16	1545	S15	E46	02	20.1	4	(B)					
4950		HOLL	02	16	1556	S17	E47	02	20.2		B	CRO	30	4	9	3
4950		PALE	02	16	1825	S16	E46	02	20.2		B	BXO	10	2	9	3
4950		LEAR	02	17	0001	S15	E42	02	20.2		B	DRO	40	3	9	3
4950		CULG	02	17	0450	S16	E39	02	20.1		B	BXO	10	2	8	3
4950		SVTO	02	17	0830	S14	E38	02	20.2		B	CRO	20	3	9	3
4950		RAMY	02	17	1400	S14	E33	02	20.1			CRO	30	5	10	4
4950		BOUL	02	17	1508	S15	E34	02	20.2		B	BXO	20	2	10	1
4950		HOLL	02	17	1543	S13	E34	02	20.2		B	BXO	30	2	10	3
4950		PALE	02	17	1815	S15	E32	02	20.2		B	DRO	10	2	10	2
4950	24532	MWIL	02	17	2130	S13	E32	02	20.3	3	(B)					
4950		LEAR	02	18	0030	S14	E27	02	20.1		B	ERO	60	7	11	2
4950		CULG	02	18	0520	S13	E26	02	20.2		B	BXO	20	2	10	3
4950		SVTO	02	18	0950	S15	E24	02	20.2		B	BXO	10	4	10	3

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

FEBRUARY 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4950		RAMY	02	18	1252	S14	E22	02	20.2					0	11	3
4950		BOUL	02	18	1530	S14	E21	02	20.2		B	BXI	70	11	10	2
4950	24532	MWIL	02	18	1530	S15	E20	02	20.1	3	(B)					
4950		HOLL	02	18	1735	S13	E18	02	20.1		B	CRO	30	5	8	3
4950		LEAR	02	19	0010	S14	E15	02	20.1		B	BXO	30	11	9	4
4950		CULG	02	19	0450	S14	E16	02	20.4		A	AX	20	1	1	4
4950		SVTO	02	19	1210	S15	E09	02	20.2		B	BXO	30	12	10	4
4950		RAMY	02	19	1325	S13	E06	02	20.0		B	CRO	40	12	10	4
4950		BOUL	02	19	1530	S14	E06	02	20.1		B	BXO	60	7	8	3
4950	24532	MWIL	02	19	1615	S15	E10	02	20.4	2	(B)					
4950		HOLL	02	19	2223	S13	E02	02	20.1		B	CRO	40	7	10	2
4950		LEAR	02	20	0220	S14	E01	02	20.2		B	BXO	20	14	10	4
4950		CULG	02	20	0500	S14	E03	02	20.4		A	AX	40	2	2	3
4950		SVTO	02	20	0815	S13	E01	02	20.4		B	CSO	20	8	4	2
4950		RAMY	02	20	1314	S14	W06	02	20.1		B	BXO	30	6	9	4
4950	24532	MWIL	02	20	1545	S14	W06	02	20.2	3	(B)					
4950		HOLL	02	20	2000	S13	W04	02	20.5		B	BXO	10	5	6	4
4950		LEAR	02	21	0507	S15	W15	02	20.1		B	BXO	10	2	1	2
4950		SVTO	02	21	0905	S13	W13	02	20.4		A	AX	10	2	1	3
4950		RAMY	02	21	1348	S14	W19	02	20.1		A	AX	10	2	1	4
4950		HOLL	02	21	1500	S14	W18	02	20.3		B	BXO	10	5	5	4
4950		HOLL	02	22	1752	S15	W34	02	20.2		A	AX		2	1	2
4950A		HOLL	02	28	1515	S21	W75	02	22.9		A	AX	60	2	3	3
4950B		RAMY	02	20	1314	S23	E48	02	24.2		A	AX	20	2	1	4
4962		SVTO	03	03	0915	S35	W55	02	28.1		B	BXO	20	2	3	3
4962		RAMY	03	03	1353	S33	W58	02	28.1		B	BXO	20	4	6	3
4962		LEAR	03	04	0027	S33	W65	02	27.9		B	BXO	20	3	4	3
4962		SVTO	03	04	0930	S33	W72	02	27.8		B	CRO	50	6	6	4
4962		RAMY	03	04	1345	S31	W70	02	28.1		B	CRO	30	3	4	3
4962		BOUL	03	04	1520	S33	W74	02	27.9		B	BXO	60	2	6	3
4962	24540	MWIL	03	04	1545	S33	W71	02	28.1	4	(B)					
4962		HOLL	03	04	1735	S33	W71	02	28.2		B	BXO	20	3	7	3
4962		LEAR	03	05	0025	S32	W72	02	28.4		A	AX	20	1	1	2
4962		RAMY	03	05	1420	S32	W81	02	28.3		A	AX	10	1	1	3
4962		HOLL	03	05	1608	S34	W82	02	28.2		A	AXO	30	2	1	3
4954		LEAR	02	24	0555	S18	E72	02	29.7		A	AX	10	1	1	3
4954		RAMY	02	24	1341	S19	E69	02	29.8		A	AX	10	1	1	3
4954		SVTO	02	24	1355	S19	E69	02	29.8		A	AX	10	1		2
4954		BOUL	02	24	1505	S19	E69	02	29.9		A	AX	10	1	1	1
4954		HOLL	02	24	1830	S19	E66	02	29.8		A	AX	20	1	1	2
4954		LEAR	02	25	0009	S17	E64	02	29.9		A	AX	10	1	1	3
4954		CULG	02	25	0455	S20	E59	02	29.7		B	BXO	20	2	5	2
4954		SVTO	02	25	1220	S18	E56	02	29.8		A	AX		1		3
4954		RAMY	02	25	1300	S19	E57	02	29.9		B	BXO	20	2	4	3
4954	24535	MWIL	02	25	1513	S19	E54	02	29.7	3	(AP)					
4954		HOLL	02	26	1615	S19	E41	02	29.8		A	AX		1	1	4
4954		HOLL	02	27	1420	S19	E27	02	29.6		A	AX		2	1	3
4954		BOUL	02	29	1513	S17	E03	02	29.9		A	AX		2	2	2
4954		HOLL	02	29	2135	S18	W01	02	29.8		B	BXO	20	2	3	4
4959		LEAR	03	01	0015	S18	W03	02	29.8		B	BXO	10	1	3	3
4959		SVTO	03	01	1125	S19	W09	02	29.8		B	BXO	10	3	4	2
4959		RAMY	03	01	1315	S19	W10	02	29.8		B	BXO	10	3	3	4
4959		HOLL	03	01	1535	S19	W11	02	29.8		B	BXO	30	5	5	4
4959		BOUL	03	01	1732	S18	W11	02	29.9		B	BXO	20	5	6	3
4959		LEAR	03	02	0005	S19	W15	02	29.8		B	BXO	10	2	3	2
4959		SVTO	03	02	0901	S20	W16	03	1.1				20	1		3

Stations reporting:

BOUL = Boulder
CULG = Culgoora
HOLL = Holloman
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
01	1127	1224	1246	1	1		1						
02	1215	1227	1236	1	1		1				No flare		
03	0246	0249	0309	1-	1			1			No flare		
03	1300	1303	1320	1	3					4	No flare		
04	0632		0730	2-	1		1				No flare		
04	1414	1426	1458	2	1		1				*		
07	0442	0445	0500	1	1				1		No flare		
08	0926	0930	0940	1	3		2				0931 UT		4946
09	1517	1530	1540	1	1		1				No flare		
09	1925	1928	1937	1-	1	1					No flare		
11	0250	0253	0314	1-	1			1			0246 UT	C1.1	4946
11	0930	0942	1020	2-	1		1				0935 UT	No data	
11	1235	1242	1246	1-	1	1					No flare		
12	0358	0402	0418	1-	1			1			No flare		
12	0905	0935	0945	2	1		1				No flare		
13	0852	0932	0958	2	1		1				No flare		
15	1528	1539	1544	1-	1	1					No flare		
16	1520	1532	1540	1	1		1				1520 UT		4949
17	0606	0614	0641	2	1		1				No flare		
17	1503	1513	1546	1-	1	1					No flare		
19	1650	1654	1703	1-	1	1					No flare		
20	0407	0422	0620	2+	3	1		1	1		0405 UT	M1.1	4951
22	1244	1258	1404	1	1		1				*		
23	0807	0828	0900	2	3		2				*		
24	0121	0133	0211	1-	1				1		*		
24	0925	1028	1200	2	1		1				*		
25	1601	1616	1654	1	1	1					*		
26	1233	1253	1516	3+	1		1				*		
28	1559	1602	1625	1	3					7	1559 UT	C1.3	4957
29	0506	0512	0535	1-	1			1			No flare		
29	0814	0824	0840	1	1		1				No flare		
29	1820	1845	1847	1	1	1					No flare		

*No flare patrol

OBSERVATORIES REPORTING FOR FEBRUARY 1988

Amherst, New Hampshire, USA	SES		
Ayrshire, Scotland	SES	Panska Ves, Czechoslovakia	SES, SEA, SWF
Darmstadt, German Federal Republic	SWF	Paterson, New Jersey, USA	SES
Farsta, Sweden	SES	Rimavska Sobota, Czechoslovakia	SEA
Hiraiso, Japan	SWF	Somersworth, New Hampshire, USA	SES
Huancayo, Peru	SWF	Tavares, Florida, USA	SES
Inubo, Japan	SPA	Upice, Czechoslovakia	SEA
Kandilli, Turkey	SEA	Valley Cottage, New York, USA	SES
Lintong, Peoples Republic of China	SPA	Zilina, Czechoslovakia	SEA
Louisville, Kentucky, USA	SES		

SIDs BY NOAA/SESC REGIONS
FEBRUARY 1988

Day:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Region Number																													
4946								1																					
4949																1													
4951																				1									
4957																												1	
Number of events with X-Ray flares																													
											1									1								1	
Number of events with no flare reported																													
		1	2	1			1		2		1	2	1		1		2		1										3
Number of events with flare but no active region reported																													
											1																		
Number of events with no flare patrol																													
	1			1																		1	1	2	1	1			
Total SID events																													
	1	1	2	2			1	1	2		3	2	1		1	1	2		1	1		1	1	2	1	1		1	3

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1988

Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
01		LEAR				0003.0	0003.0	2				III
		PALE				0003.0	0003.0	1				III
0000	0329	CULG				0003.5	0003.5	1	0003.5	0003.5	1	IIIB
		LEAR				0016.0	0017.0	3				III
		PALE				0016.0	0018.0	3				V
		CULG				0017.0	0018.0	3	0017.0	0018.5	3	IIIG
		CULG				0022.0	0022.0	1				IIIB
		CULG				0024.0	0024.0	1	0024.0	0024.0	1	IIIB
		LEAR				0026.0	0028.0	3				III
		PALE				0026.0	0028.0	2				V
		CULG				0027.0	0028.0	2	0027.0	0028.5	2	IIIG
		CULG				0044.0	0045.0	3	0044.0	0046.0	3	IIIG,V
		LEAR				0049.0	0050.0	3				V
		PALE				0049.0	0050.0	3				V
		CULG				0129.0	0129.0	1				IIIB
		LEAR				0129.0	0129.0	1				III
		LEAR				0137.0	0138.0	1				III
		CULG				0138.5	0138.5	1				IIIB
		LEAR				0223.0	0235.0	3				S
		PALE				0223.0	0224.0	3				V
		CULG				0224.0	0235.0	3	0224.0	0235.5	3	IIIG
		PALE				0229.0	0235.0	2				V
		LEAR				0248.0	0248.0	3				III
		PALE				0248.0	0302.0	2				S
		CULG	0248.5	0303.0	1	0248.5	0303.0	3	0248.5	0303.0	3	IIIGG
		LEAR				0252.0	0302.0	2				S
		LEAR				0257.0	0259.0	3				V
		CULG				0258.0	0259.0	3	0258.0	0259.0	3	V
		LEAR				0446.0	0442.0	3				III
0352	0745	CULG	0447.0	0453.0	1	0447.0	0453.0	3	0447.0	0453.0	3	IIIG
		LEAR				0520.0	0521.0	2				III
		CULG				0521.5	0522.0	2				IIIB
		LEAR				0534.0	0545.0	3				S
		CULG	0535.0	0545.0	1	0535.0	0545.0	3	0535.0	0545.0	3	IIIGG,V
		LEAR				0559.0	0600.0	1				III
		LEAR				0620.0	0632.0	2				S
		CULG				0621.5	0630.0	1				IIIG
		CULG				0633.0	0633.0	1				IIIB
		LEAR				0655.0	0656.0	1				III
		CULG				0656.5	0656.5	1				IIIB
		LEAR				0844.0	0901.0	3				S
0732	1110	WEIS				0844.6	0845.6	2				IIIGG
		WEIS				0851.8	0852.6	1				IIIGG
		WEIS				0854.2	0901.9	3				IIIGG
		WEIS				0957.6	0959.8	1				IIIG
		WEIS				1039.7	1042.2	1				IIIG
1113	1549	WEIS				1121.1	1124.7	2				IIIG
		WEIS				1142.7	1142.8	2				IIIB
		WEIS				1144.7	1147.7	3				IIIG
		WEIS				1200.1	1200.7	2				IIIG
		WEIS				1206.9	1210.3	3				IIIG
		WEIS				1213.4	1213.9	3				IIIG
		WEIS				1215.4	1215.7	1				IIIG
		WEIS				1334.6	1334.7	2				RS
		WEIS				1426.3	1426.4	1				IIIB
		SGMR				1500.0	1504.0	1				V
		WEIS				1500.3	1501.3	3				IIIGG
		WEIS				1502.7	1504.4	2				IIIG
		SGMR				1612.0	1612.0	1				III
		SGMR				1703.0	1704.0	1				V
		PALE				2016.0	2017.0	2				V
2045	2400	CULG				2049.0	2049.0	1				IIIB
		CULG				2134.0	2134.0	1				IIIB
		CULG				2222.0	2223.0	1				IIIG
		CULG				2232.0	2233.0	3	2232.0	2233.5	3	IIIG
		LEAR				2232.0	2233.0	1				III
		CULG				2254.0	2255.0	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
02			LEAR				0032.0	0033.0	2				III
			PALE				0032.0	0033.0	1				III
	0000	0745	CULG				0033.0	0033.0	1				IIIB
			CULG				0102.0	0102.0	1				IIIB
			CULG				0131.0	0131.0	1				IIIB
			LEAR				0131.0	0134.0	2				III
			PALE				0131.0	0134.0	1				III
			CULG				0134.5	0134.5	1				IIIB
			CULG				0138.0	0138.0	1				IIIB
			LEAR				0252.0	0254.0	2				III
			PALE				0252.0	0253.0	1				III
			LEAR				0506.0	0508.0	2				V
			CULG				0507.0	0508.0	2	0507.0	0508.0	2	IIIG
			CULG				0554.0	0557.0	2				IIIG
			LEAR				0641.0	0641.0	1				III
			CULG				0642.0	0642.0	1				IIIB
	0731	1600	WEIS				0812.8	0812.9	1				IIIG
			LEAR				0813.0	0813.0	1				III
			LEAR				0905.0	0914.0	2				III
			WEIS				0905.0	0905.3	1				IIIB
			WEIS				0914.5	0914.7	2				IIIG
			WEIS				1012.4	1013.4	2				IIIG
			WEIS				1038.8	1039.1	1				IIIG
			WEIS				1101.6	1103.1	3				IIIG
			SGMR				1509.0	1509.0	1				V
			SGMR				1515.0	1516.0	1				V
			WEIS				1515.7	1515.9	1				IIIG
			SGMR				1547.0	1548.0	1				V
			WEIS				1547.6	1548.0	2				IIIG
			SGMR				1711.0	1711.0	1				V
			SGMR				1730.0	2134.0	1				CONT
			PALE				1913.0	1913.0	1				III
	2046	2400	CULG				2051.0	2051.0	1	2051.0	2051.0	1	IIIB
			CULG				2057.0	2058.5	2	2057.0	2058.5	2	IIIG
			PALE				2057.0	2057.0	1				III
			CULG				2103.0	2103.0	1	2103.0	2103.0	1	IIIB
			CULG				2133.0	2210.0	1	2133.0	2210.0	1	IIIBN
03	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIBN,GN
			LEAR				0014.0	0014.0	1				III
			LEAR				0544.0	0550.0	2				III
			LEAR				0653.0	0708.0	2				S
			LEAR				0722.0	0722.0	1				III
			LEAR				0859.0	0859.0	1				III
	0731	1433	WEIS				0923.8	0923.9	1				RS
			WEIS				0928.1	0928.6	1				IIIG,RS
			WEIS				1022.7	1024.9	3				IIIG,RS
			WEIS				1051.8	1051.9	1				IIIB
			WEIS				1101.3	1101.5	3				IIIG
			WEIS				1105.9	1106.5	3				IIIG
			WEIS				1412.8	1420.3	3				IIIGG,RS
	1430	1602	WEIS										
	2046	2400	CULG				2046.0	2400.0	1	2046.0	2400.0	1	IIIBN
			LEAR				2334.0	2335.0	2				III
			PALE				2334.0	2334.0	1				III
04	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIBN
			LEAR				0040.0	0041.0	1				III
			LEAR				0045.0	1052.0	1				CONT
			CULG				0413.0	0422.5	2	0413.0	0422.5	2	IIIGG
			LEAR				0827.0	0828.0	2				III
			SVTO				0827.0	0828.0	3				III
	0728	1604	WEIS				0828.9	0829.3	3				IIIC
			WEIS				0846.0	1522.0	1				IIIS,B
			WEIS				1420.0	1420.1	2				IIIB
			WEIS				1451.7	1451.9	3				IIIG
	2046	2325	CULG										

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Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
05	0345	0746	CULG										
	0726	1605	WEIS				1128.3	1152.0	2			II	H,B
			WEIS				1138.7	1147.7	2				RS
	2046	2400	CULG										
06	0000	0746	CULG										
	0726	1607	WEIS				1115.7	1117.7	1				IIIG
			WEIS				1120.3	1120.4	1				IIIG
	2046	2400	CULG										
07	0000	0746	CULG										
	0723	1549	WEIS				0845.2	0846.1	1				IIIG
			WEIS				1115.8	1116.0	1				IIIB
			WEIS				1125.0	1125.4	1				IIIG
	2046	2309	CULG										
			PALE				2108.0	2108.0	1				III
08			PALE				0135.0	0139.0	1				III
	0016	0746	CULG				0137.5	0138.5	2				IIIG
			LEAR				0138.0	0139.0	2				III
			CULG				0139.0	0140.0	2	0139.0	0140.0	2	VB
			LEAR				0831.0	0837.0	3				V
	0804	1611	WEIS				0833.6	0836.7	3				IIIGG
			SVTO				0834.0	0836.0	2				V
			LEAR				0928.0	0931.0	3				V
			SVTO				0928.0	0930.0	2				V
			WEIS				0928.1	0931.8	3				IIIG
			WEIS				1334.7	1335.2	3				IIIG,U
			PALE				1817.0	1817.0	1				III
			PALE				1837.0	1900.0	1				S
			PALE				1915.0	1915.0	1				III
			PALE				1929.0	1954.0	1				S
			PALE				2032.0	2105.0	1				S
	2046	2400	CULG										
			PALE				2115.0	2133.0	1				S
09			LEAR				0000.0	0000.0	1				III
	0000	0746	CULG				0001.0	0001.5	1				IIIB
			LEAR				0112.0	0112.0	1				III
			PALE				0112.0	0112.0	1				III
			CULG				0113.0	0113.5	1				IIIB
	0720	1612	WEIS				1532.1	1532.3	2				IIIB
			PALE				1735.0	1735.0	1				III
			PALE				1858.0	1903.0	1				III
			PALE				1951.0	1952.0	1				III
	2046	2400	CULG										
10	0000	0746	CULG										
	0718	1614	WEIS										
	2046	2400	CULG										
11	0000	0746	CULG				0657.5	0659.5	1				IIIG
	0700	1632	WEIS				0712.0	1610.0	2				IIIN,DP
			LEAR				0729.0	0729.0	1				III
			LEAR				0745.0	0745.0	1				III
			SVTO				1247.0	1248.0	2				V
	0716	1615	WEIS				1247.8	1249.1	3				IIIG
			PALE				2022.0	2022.0	1				III
			PALE				2041.0	2051.0	1				S
	2046	2400	CULG										
			PALE				2112.0	2112.0	1				III
12	0717	0848	WEIS										
	0854	1617	WEIS										
			PALE				1941.0	1941.0	1				III
	2046	2400	CULG										
13	0000	0746	CULG										

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Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
13	0713	1619	WEIS										
	2046	2400	CULG				2119.0	2122.0	1				IIIG
14	0711	1619	WEIS										
	0000	0746	CULG				0740.5	0741.0	1	0740.5	0741.0	1	IIIB
	2046	2400	CULG										
15	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIBN
			LEAR				0313.0	0314.0	1				III
	0711	1622	WEIS				1119.8	1120.7	3				IIIG
	2046	2400	CULG				2149.0	2153.0	1				IIIG
16	0000	0746	CULG				0044.5	0746.0	1				IIIN
			LEAR				0515.0	1046.0	1				CONT
			LEAR				0707.0	0708.0	2				III
			CULG				0708.0	0742.0	1	0708.0	0742.0	1	IIIGG
			LEAR				0736.0	0737.0	2				III
	0707	0811	WEIS				0736.0	1528.0	3				IIIN
	0820	1624	WEIS										
			LEAR				0957.0	1006.0	2				III
			SVTO				1005.0	1006.0	2				III
			SVTO				1206.0	1206.0	2				III
			PALE				2039.0	2039.0	1				III
	2046	2400	CULG				2046.0	2400.0	1	2046.0	2400.0	1	IIIS
			PALE				2053.0	2054.0	1				III
			CULG				2054.0	2054.0	1	2054.0	2054.0	1	IIIB
			PALE				2105.0	2111.0	1				III
			CULG				2134.0	2136.0	1	2134.0	2136.0	1	IIIG
			PALE				2134.0	2136.0	2				III
17	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIS
			LEAR				0014.0	0014.0	1				III
			PALE				0014.0	0014.0	1				III
			LEAR				0051.0	1045.0	1				CONT
			LEAR				0132.0	0134.0	1				III
			LEAR				0305.0	0306.0	2				III
	0706	1625	WEIS				0803.0	1535.0	2				IIIN,DP
			LEAR				0804.0	0804.0	2				III
			LEAR				0845.0	0846.0	2				III
			WEIS				1029.4	1029.6	2				IIIG
			PALE				2019.0	2022.0	2				III
	2046	2400	CULG				2046.0	2230.0	1	2046.0	2230.0	1	IIIS
			PALE				2059.0	2059.0	1				III
			CULG				2118.0	2118.0	2	2118.0	2118.0	2	IIIB
			PALE				2140.0	2140.0	2				III
			PALE				2149.0	2149.0	1				III
			CULG				2230.0	2230.0	1	2230.0	2230.0	1	IIIS
18	0000	0746	CULG				0000.0	0650.0	1	0000.0	0650.0	1	IIIS
			LEAR				0000.0	1044.0	1				CONT
			PALE				0131.0	0148.0	1				S
			CULG				0650.0	0650.0	1	0650.0	0650.0	1	IIIS
	0706	0944	WEIS				0811.0	1543.0					IIIN,DP
			PALE				2038.0	2039.0	2				III
	2046	2400	CULG				2046.0	2400.0	1	2046.0	2400.0	1	IIIS
			PALE				2110.0	2111.0	2				III
19	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIS
			LEAR				0132.0	0133.0	2				III
			LEAR				0132.0	1044.0	1				CONT
			PALE				0132.0	0133.0	1				III
			LEAR				0536.0	0537.0	3				III
			CULG				0537.0	0537.0	2	0537.0	0537.0	2	IIIB
	0702	1629	WEIS				0810.0	1451.0	2				IIIN
			LEAR				1011.0	1011.0	2				III
			WEIS				1011.1	1011.3	3				IIIB
	2152	2400	CULG				2152.0	2400.0	1	2152.0	2400.0	1	IIIS

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20	0000	0746	CULG				0000.0	0645.0	1	0000.0	0645.0	1	IIIS
			LEAR				0103.0	1043.0	1				CONT
			CULG				0151.0	0153.0	2	0151.0	0153.0	2	IIIG
			LEAR				0151.0	0152.0	3				III
			PALE				0151.0	0151.0	2				V
			CULG				0303.5	0305.0	1				IIIG
			CULG	0407.0	0414.0	1	0407.0	0414.0	1				IIIGG
			CULG				0411.5	0421.5	1			II	III
			PALE				0415.0	0431.0	2			II	
			LEAR				0421.0	0445.0	3			II	
			PALE				0421.0	0431.0	2			II	
			CULG				0421.5	0442.0	3	0421.5	0445.0	3	II
			CULG				0645.0	0645.0	1	0645.0	0645.0	1	IIIS
			LEAR				0646.0	0646.0	2				III
			SVTO				0646.0	0646.0	2				III
	0700	1630	WEIS				0732.0	1600.0	2				IIIN,DP
			LEAR				0752.0	0756.0	2				III
			LEAR				0842.0	0842.0	2				III
			PALE				1949.0	0416.0	1				CONT
	2046	2400	CULG				2046.0	2400.0	2	2046.0	2400.0	2	IIIS
			LEAR				2318.0	1042.0	1				CONT
21	0000	0746	CULG				0000.0	0746.0	2	0000.0	0746.0	2	IIIS
			LEAR				0040.0	0041.0	2				III
			LEAR				0355.0	0404.0	2				III
			LEAR				0426.0	0426.0	2				III
			LEAR				0450.0	0450.0	2				III
			LEAR				0526.0	0526.0	2				III
			LEAR				0610.0	0611.0	2				III
			LEAR				0647.0	0647.0	2				III
	0700	1632	WEIS				0712.0	1610.0	2				IIIN,DP
			SVTO				0727.0	0728.0	2				V
			LEAR				0728.0	0729.0	2				III
			PALE				1922.0	1927.0	1				III
			PALE				2021.0	2150.0	1				CONT
	2054	2400	CULG				2054.0	2400.0	2	2054.0	2400.0	2	IIIG,BN
			LEAR				2317.0	2317.0	1				III
			PALE				2317.0	2317.0	1				III
22	0000	0746	CULG				0000.0	0746.0	1	0000.0	0746.0	1	IIIG,BN
			LEAR				0055.0	0058.0	1				III
			PALE				0055.0	0055.0	1				III
			LEAR				0128.0	0128.0	1				III
			LEAR				0144.0	0202.0	2				S
			PALE				0151.0	0151.0	1				III
			PALE				0201.0	0202.0	1				III
			LEAR				0216.0	0216.0	2				III
			PALE				0216.0	0216.0	1				III
			LEAR				0301.0	0301.0	1				III
			LEAR				0544.0	0807.0	2				CONT
	0656	0744	WEIS										
			WEIS				0753.9	0753.9	1				IIIB
			WEIS				0755.9	0756.8	1				IIIG
	0753	1634	WEIS				0805.5	0805.6	1				IIIB
			WEIS				0942.9	0943.1	3				IIIB
			LEAR				0943.0	0943.0	1				III
			WEIS				1008.2	1008.3	1				DP
			WEIS				1020.7	1020.8	1				IIIB
			WEIS				1032.4	1032.6	1				IIIB,DP
			WEIS				1128.1	1128.2	2				DP
	2045	2400	CULG				2045.0	2400.0	1	2045.0	2400.0	1	IIIBN
23	0000	0745	CULG				0000.0	0209.0	1	0000.0	0209.0	1	IIIBN
			LEAR				0800.0	0800.0	1				III
	0654	1633	WEIS				1028.3	1028.7	1				IIIB
			WEIS				1407.6	1407.8	3				IIIB
24	0000	0745	CULG										

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24	0654	0833	WEIS										
	0837	1637	WEIS										
			SVTO				1359.0	1400.0	2				III
	2045	2400	CULG										
25	0000	0745	CULG										
	0650	1639	WEIS										
			PALE				1656.0	1659.0	1				III
			PALE				1927.0	1927.0	1				III
	2045	2400	CULG										
			PALE				2150.0	2159.0	1				S
26	0000	0745	CULG										
	0648	0903	WEIS										
	0908	1638	WEIS										
	2045	2400	CULG										
27	0030	0800	CULG										
	0648	1642	WEIS				1101.7	1104.1	3				IIIG
	2044	2400	CULG										
28	0000	0744	CULG										
	0644	1644	WEIS										
	2044	2400	CULG										
29	0000	0744	CULG										
	0642	1508	WEIS										
			PALE				1826.0	1826.0	1				III
			PALE				2015.0	2015.0	1				III
	2044	2400	CULG										

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

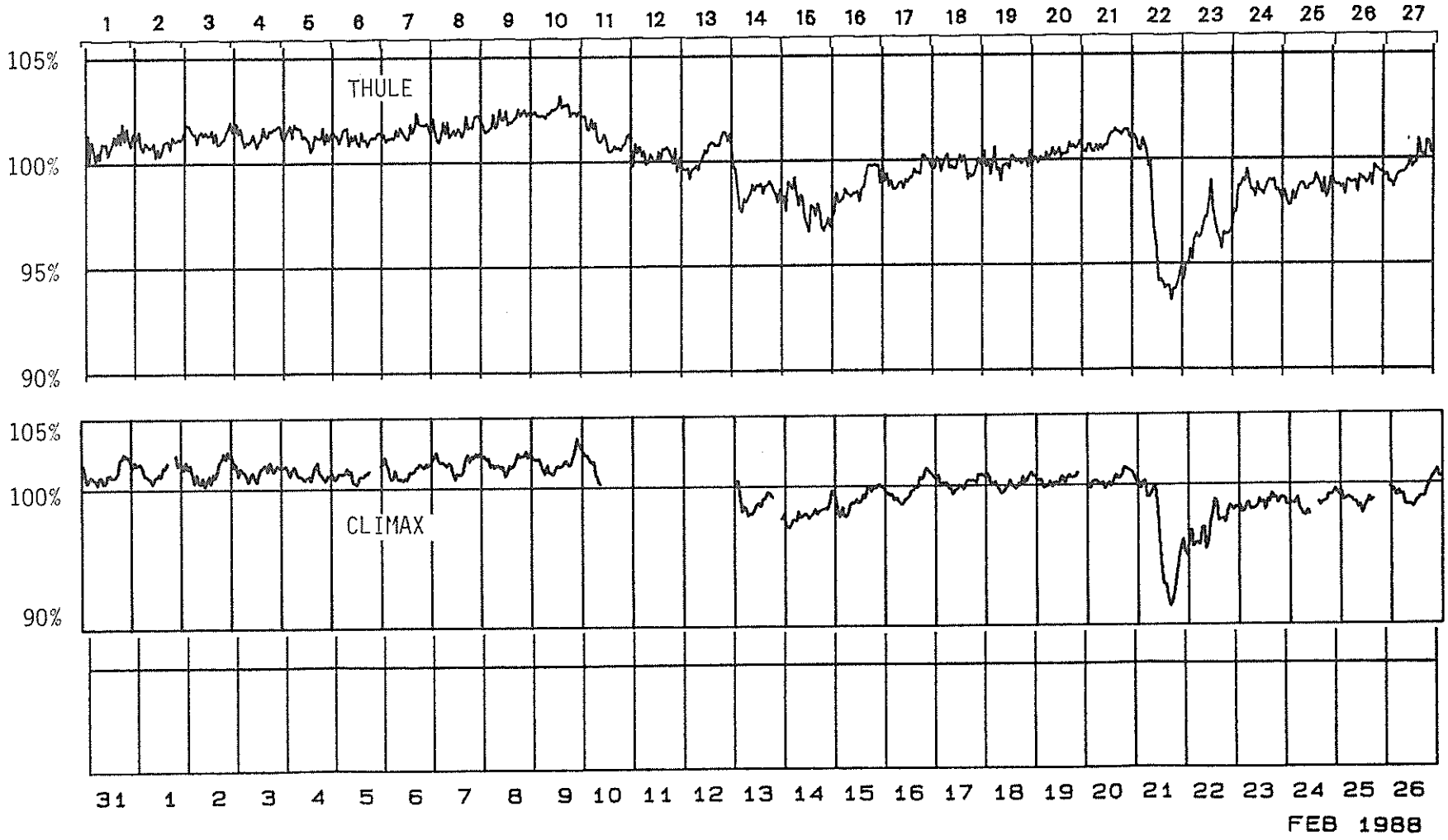
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

Stations Reporting:

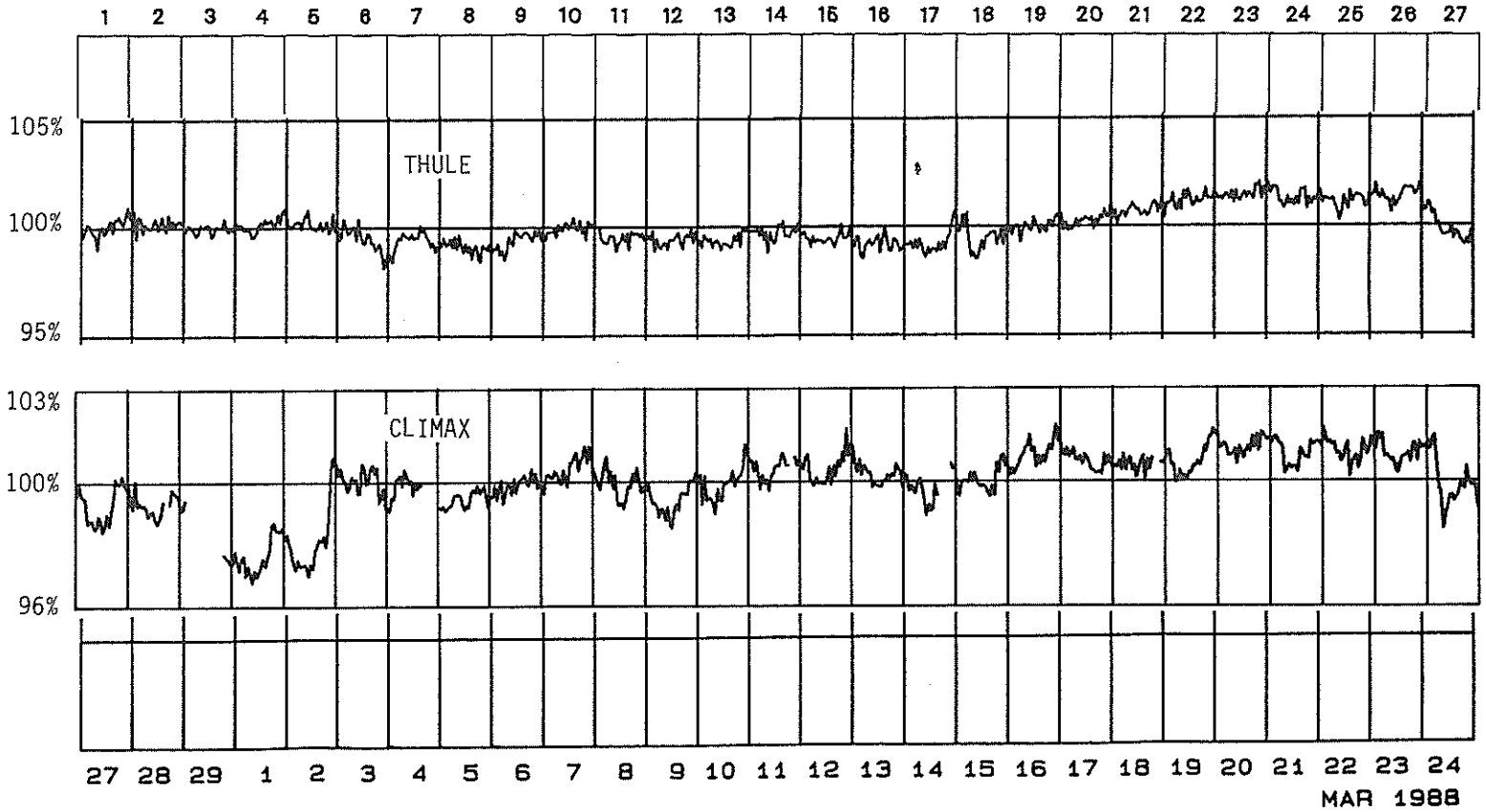
BLEN = Bleien
CULG = Culgoora
LEAR = Learmonth
PALE = Palehua
SGMR = Sagamore Hill
SVTO = San Vito
WEIS = Weissenau

COSMIC RAY INDICES
(Neutron Monitor)



BARTELS ROTATION 2111

COSMIC RAY INDICES
(Neutron Monitor)



BARTELS ROTATION 2112

99
Feb 88

COSMIC RAY INDICES
(Neutron Monitor)

FEBRUARY 1988

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
01	4364			6134.5	4003.4			
02	4384			6153.9	4000.8			
03	4381			6141.9	4001.0			
04	4381			6147.3	3992.0			
05	4377			6140.9	3986.1			
06	4389			6154.7	3997.2			
07	4395			6163.6	4019.2			
08	4413			6179.0	4021.0			
09	4429			6175.1	4020.2			
10	4374			6121.9	4010.3(18)			
11	4335			6082.5	---			
12	4341			6071.9	---			
13	4262			5959.1	3902.7			
14	4226			5904.3	3873.2			
15	4273			5979.2	3913.0			
16	4293			6019.9	3940.1			
17	4314			6050.3	3956.0			
18	4318			6038.2	3955.8			
19	4340			6062.4	3960.8			
20	4364			6081.8	3964.5			
21	4187			5848.5	3799.5			
22	4170			5880.9	3839.5			
23	4263			6010.0	3895.7			
24	4263			6006.4	3897.0			
25	4280			6031.9	3901.9(34)			
26	4312			6045.3	3926.4			
27	4347			6058.5	3939.3			
28	4350			6085.0	3940.4			
29	4342			6121.8	3899.7(14)			
Mean	4326			6063.8	3946.5			

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

February 1988

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	aa Provisional Am	N	S	M	
1	Q1	1+	0	0+	0+	0	0+	1-	1	4	2	0.0	1+	0+	0+	0+	0+	0+	1	1	4	6	6	6	7 CC
2	Q4	1	1-	0+	1	1-	1	3-	2-	9	5	0.0	1-	0+	0+	1+	1-	1-	3-	2-	8	12	8	8	13 CC
3	Q3	2-	0+	1	1	0+	0+	0+	1-	6-	3	0.0	1+	0+	1-	1+	0	0+	0+	1	4	6	6	8	4 CC
4	Q9A	1	1	1+	1+	2-	2	2+	3	14-	7	0.0	1+	1	1+	1+	2-	2	2+	3-	12	17	11	10	18
5	D3	4-	5-	5	5-	4-	4	4-	3	32+	29	0.1	3+	4	5-	4	3+	4	3+	2+	46	42	36	42	36
6		3	2+	2+	2+	2	2+	2-	4-	20-	11	0.1	2+	2-	2	2+	2+	2	2-	3+	18	23	17	20	20
7	Q8	3-	2+	2-	2-	1	1-	0+	1	11+	6	0.0	2-	2-	1+	1+	1-	0+	1-	1	8	14	5	13	6 CK
8	Q7K	1+	1-	0+	0+	1-	1	3	2-	9	5	0.0	1-	1-	0	0+	0+	1+	3	2-	8	15	6	6	15 KK
9		1+	1+	3-	2+	2	3	3+	3	19	11	0.1	1+	2-	2+	3-	2	3	3+	3-	20	25	19	17	27
10		3-	3-	4-	3+	4-	2+	2-	1	21	13	0.1	2+	2+	3	3	4-	2	2-	1	21	21	24	24	21
11		0+	1-	2+	3-	2+	2	4-	4	18	11	0.1	1-	1-	2	3	3-	2+	3+	3	20	26	12	12	26
12		3+	4-	4	3-	2-	2-	3+	4-	24	16	0.1	3	3-	3+	3-	2-	2	3+	4-	27	26	26	30	22
13		2-	4-	3	3+	3	4-	2+	2+	23	14	0.1	2-	3	2+	3	3	3+	3-	3-	25	25	21	22	24
14	Q10A	2+	1	3-	3	1+	1-	1-	1+	13	7	0.0	2+	1+	3-	3-	1+	1-	1	2-	13	12	15	19	8 K
15	D5*	2+	3-	4	5-	3+	4	3-	2-	25+	19	0.1	2-	2	3+	4+	4-	4-	3-	2	32	29	34	35	29
16		1+	1	2	2	4-	5-	4	2-	20+	15	0.1	1+	1	2-	2	4-	5	4	1+	30	37	33	10	60
17		2+	2+	1	4	2-	4-	2	4+	21+	14	0.1	2	2-	1-	3+	2	3	2+	3+	22	29	21	20	31
18		4+	2+	3-	4+	1	2+	4	4	25	19	0.1	3+	2-	2	4-	2-	3-	3+	3+	27	43	23	31	35
19		1	2+	2	1+	2-	2+	3-	1	14+	7	0.0	1+	2-	2-	2-	2-	2+	2+	1	13	16	12	12	16
20	Q6	1-	0+	0+	1	2-	2-	2+	2	10	5	0.0	1-	0+	0	1	2-	2	2+	2+	10	15	7	4	18 C
21	D4	4	4	5-	4	2+	3-	3	5	30-	26	0.1	3+	4-	4+	3	3-	2+	3	4+	39	38	42	48	32
22	D1	7-	6+	7+	6	7-	7-	6-	5	50+	97	0.2	5+	5-	6-	6-	6	6	5+	5-	120	140	90	117	114
23	D2	6	6+	4+	4-	3	3+	4-	1+	32-	36	0.1	5	5	4-	4-	3-	3+	3+	1+	49	50	34	56	28
24		4-	3+	2+	2+	3-	2-	3	2-	21-	12	0.1	3-	3-	2	3-	3-	2-	3	1	20	30	18	25	23
25		3+	4	3-	2	2+	2	3	3	22+	14	0.1	3-	3	2	2	3-	2	3	3	23	29	18	24	23
26		3	2	2	2-	1-	3-	3-	2+	17	9	0.1	2+	1+	2-	1+	1	3	3-	3-	17	21	14	14	21
27		2+	3+	2+	1+	1-	0+	1-	2	13	7	0.0	2-	3-	2+	1+	1	1-	1	2	12	14	8	14	8 CK
28	Q5	2-	1+	2-	1	1+	1+	2-	1-	11-	5	0.0	1+	1+	1+	1	1+	1+	2-	1-	8	8	8	8	8 CC
29	Q2	1-	0+	1-	1	1-	1	1	0+	6-	3	0.0	1-	0+	1-	1-	1	1+	1+	1-	6	6	6	4	8 CC
Mean										15	0.64										22.8	26.8	20.0	23.4	

Day		Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF	
1		1	0	0+	0+	0+	0+	1-	1	4	1+	0+	0+	1-	0	0	1	1+	5	105.5	70	59	52	T	-
2		1-	0+	0	1	1	1	3-	2-	8	1-	1-	1-	2-	1-	0+	3-	2-	8	104.3	68	69	51	A	-
3		1+	0	1	1+	0+	0+	0+	1-	4	1+	0+	1-	1+	0	0+	0+	1	5	103.6	68	66	50	A	-
4		1	1-	1	1+	2-	2+	2+	3-	13	1+	1	1+	1+	2-	2-	2+	2+	12	103.1	74	62	49	A	-
5		3+	4+	5-	4+	3+	4	4-	3-	51	3+	4-	4+	3+	4-	4-	3+	2	41	102.6	60	53	49	T	-
6		2+	2-	2	2+	3-	2	2-	3+	19	2+	1+	2	3-	2	2-	2-	3+	17	103.6	43	42	50	T	-
7		2	1+	1+	2-	1+	1-	1-	1	8	2-	2-	1+	1	0+	0	1-	1	7	105.3	44	43	52	A	-
8		1-	1-	0+	0+	1-	1+	3	2-	9	1	1-	0	0+	0+	1-	3	2-	7	102.5	46	44	49	AT	-
9		1+	1+	2	2+	2	3+	3	3-	19	2-	2-	2+	3-	2-	3-	3+	3	21	101.0	50	47	47	A	-
10		2	2+	3	3	4-	2+	2	1	23	3-	2+	3-	3-	4-	2-	2-	1	21	100.2	38	40	46	A	-
11		0+	1-	2+	3	3	3-	4-	3+	23	1	0+	2-	3-	2	2-	3+	3	17	99.6	26	29	46	A	-
12		3	3	3+	3-	2-	2+	3+	4-	28	3	2+	3+	3-	1+	2-	3+	4-	26	101.3	12	10	47	A	-
13		1+	3+	3-	3	3	4-	3-	2+	26	2	3-	2	3+	3	3	3-	3-	24	102.9	21	19	49	A	-
14		2+	1	2	3-	2-	1	1	1+	12	3-	1+	3-	3	1+	0+	1-	2-	14	102.6	28	24	49	A	-
15		2-	2+	4-	4+	4-	4	3-	2	35	1+	2-	3+	4	3	3+	3-	2	29	100.4	30	28	46	A	-
16		1	1-	2-	2	4	5	4-	1+	32	2-	1	2-	2-	4-	5-	4	1+	28	101.0	42	32	47	A	-
17		2-	2-	1-	3+	2+	3+	2	4-	22	2+	2-	1	3+	2	3	2+	3+	21	106.2	35	34	53	A	-
18		3+	2-	2+	4	2-	3-	4-	4-	30	3+	1+	2	3+	2-	2+	3+	3+	25	112.5	55	58	60	A	-
19		1+	2	2-	1+	2+	3-	3-	1	14	1+	2-	2-	2-	1+	2-	2+	1-	11	109.0	66	60	56	A	-
20		0+	0+	0+	1-	2-	2+	2+	2+	10	1	0+	0	1+	1+	2-	2+	2+	10	106.5	59	53	53	A	-
21		3	4-	4+	3	3-	3-	3+	4+	39	4-	4-	4+	3	2+	2	2+	4+	38	104.7	22	24	51	A	-
22		6-	5	6	6+	6	6	5+	5	135	5-	5-	5+	5	6-	6	5	4	105	102.5	15	19	49	A	-
23		5	5	4-	4-	3	4-	3+	1+	49	5+	5	4-	4-	2+	3	3+	1+	50	100.2	12	11	46	A	-
24		3	3-	2-	3-	3-	2-	3	1+	20	3-	3	2	3-	3-	1+	3-	1	19	99.6	23	21	46	A	-
25		3-	3	2+	2	3-	2	3	3	22	3	3-	2-	2-	3-	2	3+	3	24	96.4	19	21	42	AT	-
26		2+	1+	2-	1+	1	3	3	3-	17	2+	1+	2-	2-	1-	3	2+	3-	16	96.7	15	19	42	-	-
27		2-	3-	2+	1+	1	1	1	2	12	2-	3-	2+	1+	1	0	1-	2	11	96.3	34	37	42	-	-
28		1+	1+	2-	1	1+	2-	2	1-	9	1	1	1	1+	1+	1+	1+	1-	8	97.1	40	48	43	-	-
29		1-	0+	1-	1	1+	1+	1+	0+	6	1	0+	1-	1-	1-	1+	1+	1-	6	103.3	50	61	50	-	-
Mean										24.1									21.6	102.4	40.2	39.1	48.6		

D A I L Y A V E R A G E I N D I C E S Ap

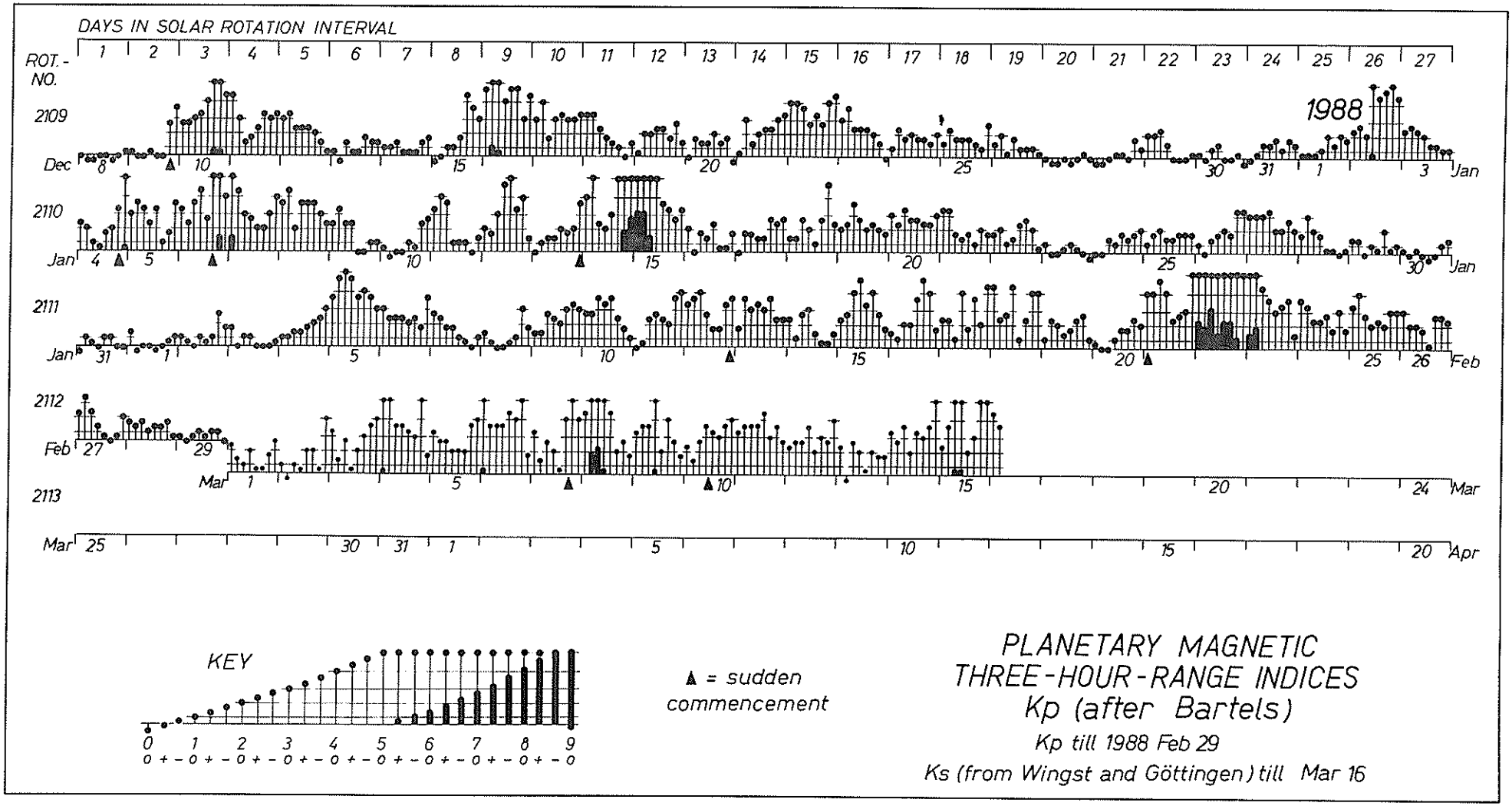
March 1987 to February 1988

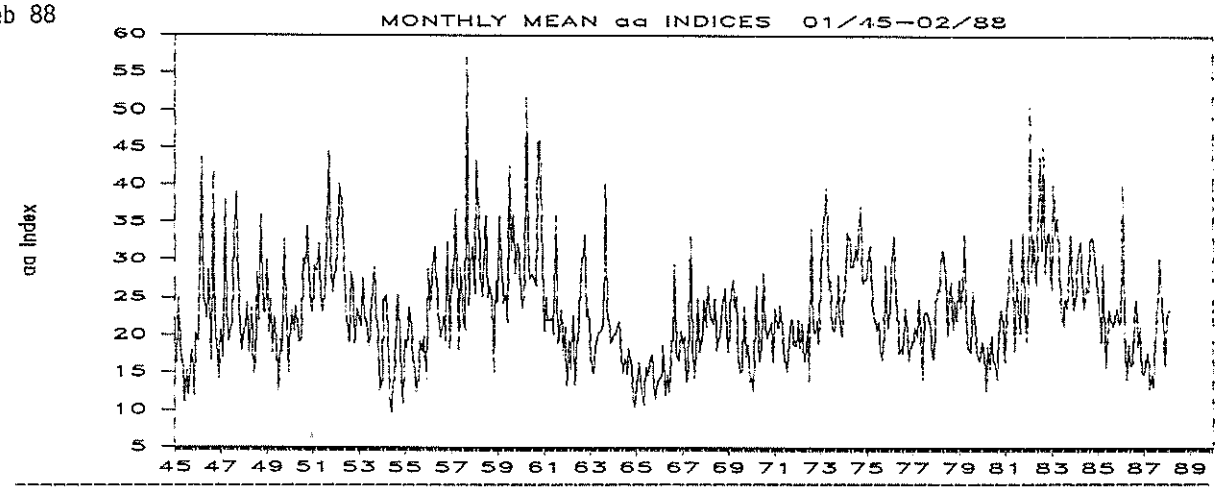
DAY	MAR 87	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN 88	FEB
1	9	10	7	8	2	10	34	13	7	5	5	2
2	3	4	6	8	3	5	12	9	23	4	29	5
3	6	2	6	4	9	12	4	36	27	12	7	3
4	10	16	5	6	8	7	6	14	9	10	14	7
5	21	12	4	7	6	13	6	6	10	17	14	29
6	10	7	5	25	5	8	9	5	9	8	31	11
7	21	13	8	9	4	4	11	8	5	4	24	6
8	12	11	4	4	10	10	10	8	4	1	19	5
9	9	8	4	3	9	8	10	3	10	6	7	11
10	11	10	10	4	11	4	38	7	11	28	4	13
11	8	7	6	7	7	7	40	28	14	15	11	11
12	14	5	2	13	7	16	22	8	20	9	21	16
13	8	12	6	6	4	23	23	24	27	4	7	14
14	8	6	9	6	5	16	26	31	22	4	48	7
15	10	6	4	4	24	19	29	26	14	11	63	19
16	12	4	4	8	20	12	19	13	8	39	5	15
17	10	5	4	6	14	11	17	18	3	16	7	14
18	12	4	2	6	10	6	7	5	5	8	12	19
19	11	8	2	17	8	9	3	6	12	7	10	7
20	4	12	4	8	9	8	11	8	10	4	12	5
21	18	3	3	6	6	5	10	13	6	10	9	26
22	15	4	7	4	8	7	29	5	7	22	7	97
23	6	4	8	3	6	10	17	11	35	10	2	36
24	5	9	20	7	12	11	14	19	24	6	5	12
25	6	4	25	7	17	39	46	28	12	7	6	14
26	13	4	9	9	4	40	20	11	17	4	8	9
27	26	9	14	5	5	21	11	35	20	1	12	7
28	12	2	10	4	26	15	22	44	9	2	6	5
29	5	4	21	5	52	12	30	19	3	5	4	3
30	4	4	9	3	9	14	43	13	3	3	3	
31	4		11		14	34		11		4	3	
MEAN	10	7	8	7	11	14	19	16	13	9	13	15

PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Göttingen

Kp through February 29, 1988





Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1945	16.1	16.4	25.0	19.1	15.4	11.1	15.3	12.1	15.6	17.9	12.0	20.2	16.3
1946	19.2	30.2	43.5	25.0	24.1	22.3	28.6	16.7	41.7	19.6	19.3	14.3	25.4
1947	20.6	17.1	37.9	23.3	19.1	21.1	21.4	32.9	39.1	31.3	20.7	17.9	25.2
1948	20.8	21.0	24.2	17.7	23.7	15.0	16.2	28.3	22.0	36.1	23.1	23.0	22.6
1949	29.8	20.4	24.7	17.6	22.4	17.9	11.8	19.2	17.8	32.7	24.6	15.1	21.2
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	33.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	16.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	35.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	17.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.2	33.6	35.7	31.6	24.9	21.3	24.9	23.7	23.3	33.5	26.0	29.1
1984	23.5	24.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	23.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.4	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4											22.9

P R I N C I P A L M A G N E T I C S T O R M S

FEBRUARY 1988

Sta	Geomag Lat	Commencement Day	Commencement Time (UT)	Type	SC Amplitudes D (Min)	SC Amplitudes H (Gamma)	SC Amplitudes Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	Ranges H (Gamma)	Ranges Z (Gamma)	End Day	End Hour (UT)
HYB	07.6N	04	1100	..	..	..	..	05(3)	5	3	77	28	06	03
ETT	00.6S	04	1600	..	..	..	..		-	3	112	50	05	24
COL	64.6N	05	04--	..	..	..	..	05(3)	7	172	1580	690	05	22
FRD	49.6N	05	01--	..	..	..	..	05(2,3,4)	5	19	78	39	05	20
GUA	04.0N	05	0257	..	..	..	..	05(2)	5	--	150	40	05	20
HYB	07.6N	08	1700	..	..	..	..	10(5)	5	2	113	24	10	21
ETT	00.6S	08	2300	..	..	..	..		-	4	143	28	10	21
FRD	49.6N	12	2127	SC*	2.6	35.3	- 6.1	12(8) 13(2)	4	9	59	21	13	--
JAI	17.3N	12	2124	SC	- 1.1	26	- 6		-	4	66	19	14	12
SHL	14.7N	12	2124	SC	- 0.6	21	5		-	4	67	20	14	12
UJJ	13.5N	12	2124	SC	- 0.7	29	- 7		-	3	68	22	14	12
ABG	09.5N	12	2124	SC	- 0.9	26	- 7	12(8) 13(6)	4	3	79	32	14	12
HYB	07.6N	12	2127	SC	- 0.5	25	- 1	12(8) 13(6)	4	3	77	16	14	04
ETT	00.6S	12	2127	SC	- 0.6	22	19		-	4	130	39	14	13
TRD	01.1S	12	2124	SC	0.3	25	29		-	4	139	62	14	12
KGL	56.5S	12	2127	SC	..	24	8	12(7)	4	7	64	88	13	18
HYB	07.6N	14	2200	..	..	..	..	15(3,6) 16(5,6,7)	5	3	107	18	16	22
ETT	00.6S	15	0100	..	..	..	..		-	3	137	31	15	21
GUA	04.0N	16	12--	..	..	..	..	16(6)	5	--	70	10	16	24
ETT	00.6S	16	0100	..	..	..	..		-	3	158	48	17	24
KGL	56.5S	16	1330	..	..	..	..		-	30	272	80	16	22
COL	64.6N	21	0156	SC*	15	162	30	22(6)	9	653	3400	2450	23	21
SIT	60.0N	21	0156	SC	- 4	- 11	- 2	22(4)	8	--	--	--	23	12
WIT	54.2N	21	0156	SC	- 3	36	0	22(1)	7	63	325	195	23	08
FRD	49.6N	21	0126	SC	1.1	24.1	- 4.2	22(3,4)	7	61	206	115	23	21
JAI	17.3N	21	0152	SC	- 0.6	15	- 4		-	12	249	33	24	00
SHL	14.7N	21	0152	SC	0.3	18	3		-	12	242	29	24	00
UJJ	13.5N	21	0152	SC	- 0.3	18	- 3		-	8	229	30	24	00
ABG	09.5N	21	0152	SC	- 0.4	17	- 4	22(1)	6	10	259	37	24	00
HYB	07.6N	21	0157	SC	- 0.2	18	- 1	22(1,6)	6	8	276	23	23	21
GUA	04.0N	21	0156	SC*	0.1	39	- 13	21(1)	5	--	130	30	21	17
GUA	04.0N	21	21--	..	..	..	..	22(1)	6	10	150	50	23	15
ETT	00.6S	21	0157	SC	- 0.3	12	11		-	9	315	72	23	21
TRD	01.2S	21	0152	SC	- 0.3	27	26		-	5	315	104	24	00
HER	33.7S	21	0156	SC	3	19	17	22(6)	6	45	205	173	23	06
GNA	43.2S	21	15--	..	..	..	..	22(5,6)	6	28	150	170	23	14
KGL	56.5S	22	0904	SC	21	- 80	32		-	199	1104	616	23	12

Stations Reporting:

ABG = ALIBAG
COL = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KGL = KERGUELEN
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN
WIT = WITTEVEEN

MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS
(PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

FEBRUARY 1988

Storm Sudden Commencements (ssc)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
12	2127	A: WNG* WIT DOU NAG	01	1003-1014	MPO
		SPT MPO	01	2345-2349	LNP
		B NGK VAL BDV CLF	02	0947-1008	TEN
		EBR* FRD TEN LNP	04	0432-0437	LNP
		C: GCK KGL	04	1802-1828	SPT
21	0156	A: SOD DOM WNG* WIT	09	0730-0754	MPO
		NAG FRD TEN LNP*	12	1214-1216	CLF
		MPO	14	1130-1150	TEN
		B: COL NUR NGK VAL		(1136 si	MPO,
		DOU BVD* CLF GCK		1142 ssc	DOU(B))
		MMB* EBR* SPT KAK	29	1554-1624	MPO
		KNY* GNA*			
		C: CZT			

Reporting Observatories: (up to the 1st of April)

SOD COL DOM NUR WNG WIT NGK VAL DOU BDV CLF NAG GCK MMB EBR SPT FRD
KAK KNY QUE TEN LNP MPO GNA AMS CZT KGL DUM

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, ordinary, but unmistakable; and C means very poor, doubtful.

RADIO PROPAGATION INDICES
FEBRUARY 1988

Day	Bracknell	Rome	For Circuits from Norddeich to: Teheran	New York	Tokyo	Canberra
1.	6.6	6.9	6.8	8.0	8.9	7.3
2.	7.1	7.0	7.5	8.0	9.4	7.8
3.	7.4	6.6	6.8	7.9	9.4	7.5
4.	8.1	6.8	8.6	7.8	9.1	7.8
5.	7.6	6.6	8.7	6.9	7.4	7.7
6.	7.3	6.7	7.4	7.3	7.7	6.6
7.	7.1	6.4	6.3	7.2	7.8	6.0
8.	7.2	6.4	5.7	7.3	7.5	6.7
9.	7.4	6.9	5.1	7.9	8.5	7.2
10.	6.5	6.5	6.2	5.9	7.5	6.8
11.	6.3	6.1	5.0	5.9	7.3	6.5
12.	6.4	5.5	6.7	5.2	6.0	6.0
13.	5.3	5.3	6.4	5.0	6.0	5.9
14.	4.9	4.9	5.3	5.1	7.8	5.8
15.	6.2	6.0	6.0	5.6	7.7	6.0
16.	6.0	5.0	6.4	4.7	7.9	5.8
17.	5.9	5.2	5.1	4.5	7.1	4.8
18.	6.1	5.2	5.0	4.7	8.4	5.3
19.	5.7	5.3	5.7	4.7	7.8	4.4
20.	6.4	6.0	6.1	6.5	8.1	5.8
21.	5.9	5.8	6.6	6.5	7.5	6.0
22.	3.2	3.7	4.8	1.3	1.8	3.2
23.	3.2	4.2	4.2	1.2	2.9	2.4
24.	3.2	4.1	4.1	2.7	2.8	2.8
25.	4.1	4.4	6.4	3.0	3.0	4.0
26.	5.4	5.5	6.9	4.4	3.7	4.7
27.	6.1	5.5	5.6	5.7	7.2	6.0
28.	7.2	6.7	7.5	6.4	8.3	7.2
29.	7.5	6.9	6.4	7.5	8.7	7.5
MEAN:	6.1	5.8	6.2	5.7	7.0	5.9

CALCULATION OF QUALITY INDICES (Q)
From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is valculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sunrotation).

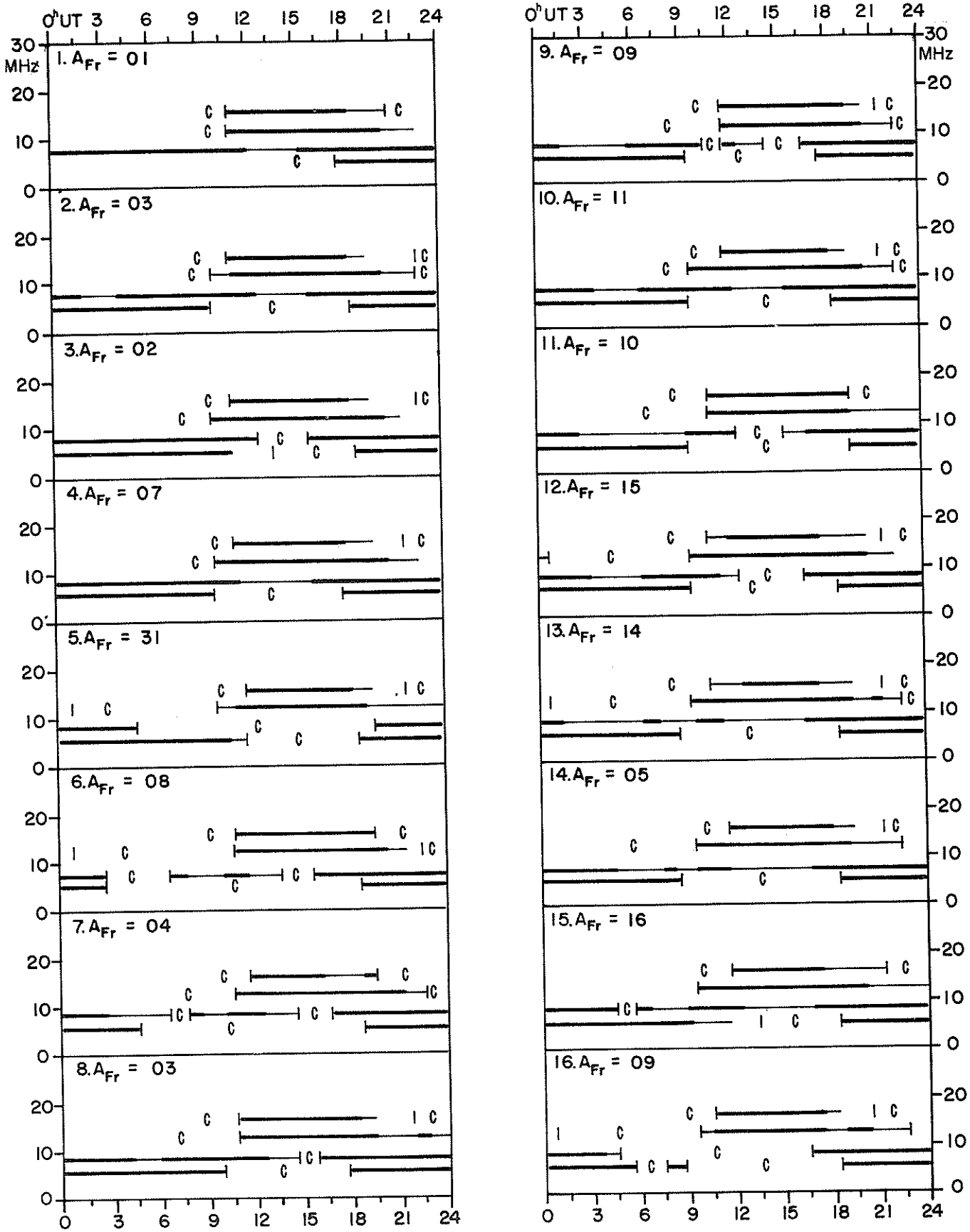
$Q = 6.0 + 20 \log (FD/FA)/3.0$

The quality indices vary from 0.1 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they respond to the average of the preceeding 27 days.

SCALE FOR QUALITY INDICES:
0.1 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 = normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

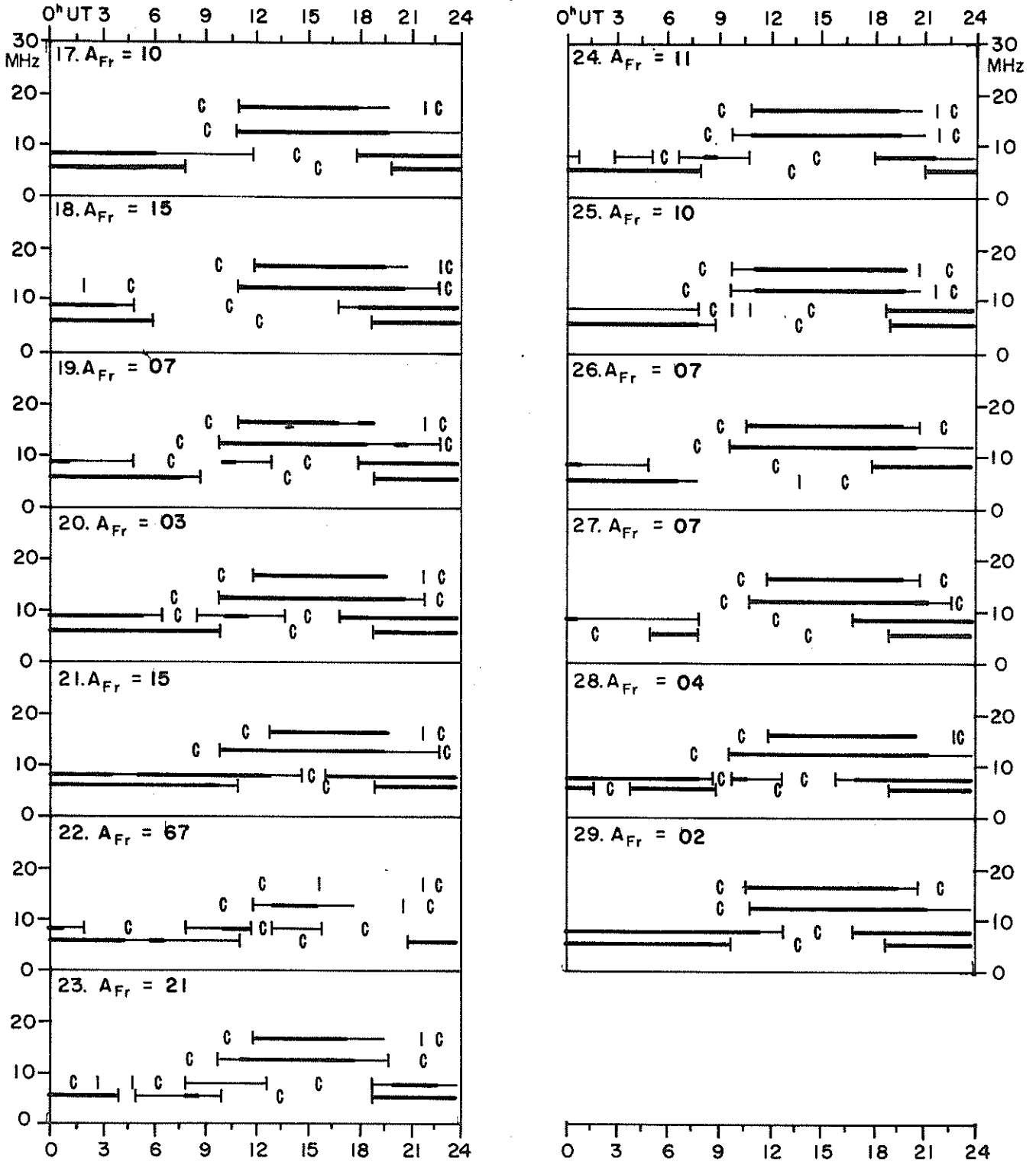
TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

FEBRUARY 1988



TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

FEBRUARY 1988



Field strengths from four frequencies, 6.4, 8.6, 13.0, and 17.0 MHz, observed on a Norddeich-New York circuit are represented above. Heavy solid lines represent field strengths $\geq$ -12 dB above 1 μV/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB and -40 dB above 1 μV/m are represented by the fine line.

CONTENTS

Prompt Reports **LATE DATA** Number 524 Part I

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME				NANOTESLAS				REG
				BXvso	BYvso	BZvso	BT	W=W
87	182	JUL 1	12:50:00	11.65	-3.10	-2.54	12.57	W
87	183	JUL 2	12:50:00	.91	-10.17	6.31	12.12	W
87	184	JUL 3	12:50:00	11.61	-2.73	-5.45	13.44	W
87	185	JUL 4	12:50:00					
87	186	JUL 5	12:50:00	3.61	-6.91	.20	7.82	W
87	187	JUL 6	12:50:00	-3.53	5.32	11.20	13.93	W
87	188	JUL 7	12:50:00					
87	189	JUL 8	12:50:00	-3.94	6.85	2.73	8.39	
87	190	JUL 9	12:50:00	-13.50	2.06	.31	13.74	
87	191	JUL 10	12:50:00	1.61	-6.22	5.94	10.14	
87	192	JUL 11	12:50:00	-8.38	3.41	-5.19	17.03	
87	193	JUL 12	12:50:00	-6.90	5.50	-2.63	10.88	
87	194	JUL 13	12:50:00	-4.52	5.45	1.12	7.64	
87	195	JUL 14	12:50:00	-.36	4.93	-.82	5.66	
87	196	JUL 15	12:50:00	5.39	-.86	2.23	6.56	
87	197	JUL 16	12:50:00	.74	-2.97	1.21	3.44	
87	198	JUL 17	12:50:00	4.68	-4.57	6.72	11.76	
87	199	JUL 18	12:50:00	-6.70	2.79	-1.72	10.62	
87	200	JUL 19	12:50:00					
87	201	JUL 20	12:50:00	-6.60	10.24	-9.99	15.93	
87	202	JUL 21	12:50:00	-9.85	2.22	-1.80	10.79	
87	203	JUL 22	12:50:00	-6.72	3.09	-1.13	10.07	
87	204	JUL 23	12:50:00	-6.77	6.44	-.25	9.87	
87	205	JUL 24	13:00:00	1.34	-3.09	1.45	5.90	
87	206	JUL 25	13:00:00	8.55	-7.12	-1.74	11.91	
87	207	JUL 26	13:00:00	10.20	-6.79	.39	12.54	
87	208	JUL 27	13:00:00	9.88	-4.92	.41	11.26	
87	209	JUL 28	13:00:00					
87	210	JUL 29	13:00:00	.44	12.54	6.06	14.46	
87	211	JUL 30	13:00:00	8.87	-9.06	-5.75	16.80	
87	212	JUL 31	13:00:00	1.01	-9.26	.52	10.51	

Source: Institute of Geophysics and Planetary Physics, UCLA

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS BXvso	BYvso	BZvso	BT	REGION W=WAKE
87 213 AUG 1 13:00:00	9.15	-2.81	-2.33	10.79	
87 214 AUG 2 13:00:00	3.87	-6.43	2.68	10.65	
87 215 AUG 3 13:00:00					
87 216 AUG 4 13:00:00	14.04	-.06	24.00	28.49	
87 217 AUG 5 13:00:00	-6.35	2.78	-8.90	12.10	
87 218 AUG 6 13:00:00					
87 219 AUG 7 13:00:00					
87 220 AUG 8 13:00:00	.70	.68	3.36	3.77	
87 221 AUG 9 13:00:00					
87 222 AUG 10 13:00:00					
87 223 AUG 11 13:00:00					
87 224 AUG 12 13:00:00					
87 225 AUG 13 13:00:00					
87 226 AUG 14 13:00:00					
87 227 AUG 15 13:00:00					
87 228 AUG 16 13:00:00					
87 229 AUG 17 13:00:00					
87 230 AUG 18 13:00:00					
87 231 AUG 19 13:00:00					
87 232 AUG 20 13:00:00					
87 233 AUG 21 13:00:00					
87 234 AUG 22 13:00:00					
87 235 AUG 23 13:00:00					
87 236 AUG 24 13:00:00					
87 237 AUG 25 13:00:00					
87 238 AUG 26 13:00:00					
87 239 AUG 27 13:00:00					
87 240 AUG 28 13:00:00					
87 241 AUG 29 13:00:00					
87 242 AUG 30 13:00:00					
87 243 AUG 31 13:00:00					

Source: Institute of Geophysics and Planetary Physics, UCLA

NOTE: The large gap in the records in August and early September 1987 occurred as Venus passed behind the Sun as seen from Earth (i.e., superior conjunction).

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS BXvso	BYvso	BZvso	BT	REGION W=WAKE
87 244 SEP 1 13:00:00					
87 245 SEP 2 13:00:00					
87 246 SEP 3 13:00:00					
87 247 SEP 4 13:00:00					
87 248 SEP 5 13:00:00					
87 249 SEP 6 13:00:00	7.57	-6.84	-.26	10.50	
87 250 SEP 7 13:10:00	6.64	-4.08	.60	9.33	
87 251 SEP 8 13:10:00	4.63	-4.38	4.20	9.45	
87 252 SEP 9 13:10:00	-1.58	-.67	2.66	3.36	
87 253 SEP 10 13:10:00	.16	-2.99	-6.58	7.72	
87 254 SEP 11 13:10:00					
87 255 SEP 12 13:10:00	-11.50	-.90	-22.96	25.85	
87 256 SEP 13 13:10:00	-13.70	13.35	8.52	24.77	
87 257 SEP 14 13:10:00	-6.23	3.75	-1.55	10.46	
87 258 SEP 15 13:10:00	-4.96	7.47	-.67	11.27	
87 259 SEP 16 13:10:00	-6.50	7.24	1.28	11.10	
87 260 SEP 17 13:10:00	-6.00	6.01	-3.02	10.04	
87 261 SEP 18 13:10:00	-4.83	-.57	-1.70	6.51	
87 262 SEP 19 13:10:00					
87 263 SEP 20 13:10:00	-6.45	2.05	-3.75	9.74	
87 264 SEP 21 13:10:00	-10.66	.95	.10	10.74	
87 265 SEP 22 13:10:00	-.31	5.98	.97	8.33	
87 266 SEP 23 13:10:00	-1.74	5.42	4.01	7.70	
87 267 SEP 24 13:10:00	-7.30	5.11	-5.69	10.79	
87 268 SEP 25 13:10:00	-21.17	-8.29	24.52	33.72	
87 269 SEP 26 13:10:00	3.52	7.98	-19.28	21.25	
87 270 SEP 27 13:20:00	5.76	-.45	3.04	11.41	
87 271 SEP 28 13:20:00	7.45	-8.81	4.39	13.36	
87 272 SEP 29 13:20:00	-1.17	-7.45	1.58	11.06	
87 273 SEP 30 13:20:00	4.51	-2.54	-.97	8.26	

Source: Institute of Geophysics and Planetary Physics, UCLA

NOTE: The large gap in the records in August and early September 1987 occurred as Venus passed behind the Sun as seen from Earth (i.e., superior conjunction).

COSMIC RAY INDICES
(Neutron Monitor)

JUNE 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4510	7347.1	7104.7	6299.3	4193.1		3658.1	1781.7
2	4524	7368.9	7094.6	6309.1	4192.0		3653.1	1783.3
3	4543	7383.3	7077.3	6327.9	4184.2		3646.2	1779.0
4	4537	---	7120.3	6321.1	4183.6		3654.5	1778.1
5	4563	7444.4	7185.5	6347.3	4219.0		3667.6	1786.8
6	4587	7486.8	7201.3	6385.4	4241.4		3680.1	1788.7
7	4555	7425.3	7142.7	6358.0	4214.3		3659.8	1783.7
8	4530	7367.4	7134.4	6341.4	4205.7		3656.1	1780.4
9	4539	7389.4	7155.5	6336.7	4206.2		3648.1	1782.9
10	4561	7438.9	7151.1	6338.3	4210.4		3652.3	1784.3
11	4546	7398.4	7117.7	6314.0	4200.8		3654.3	1777.3
12	4558	7431.7	7114.0	6332.4	4207.9		3652.0	1778.9
13	4543	7412.0	7127.6	6337.3	4208.7		3653.8	1778.8
14	4557	7464.5	7145.5	6347.6	4220.8		3658.9	1783.7(32)
15	4558	7454.9	7136.3	6351.7	4217.8		3655.0	1783.3
16	4561	7465.3	7145.0	6360.0	4228.7		3662.9	1781.9
17	4578	7492.6	7158.0	6365.3	4233.3		3661.1	1785.5
18	4565	7466.8	7137.1	6350.3	4225.0		3661.6	1782.6
19	4560	7454.0	7122.0	6336.9	4225.2		3659.8	1783.0
20	4544	7430.0	7097.7	6318.2	4208.5		3651.5	1781.4
21	4554	7427.0	7124.0	6315.9	4217.9		3658.8	1782.9
22	4523	7388.7	7121.1	6295.2	4202.3		3658.4	1777.2
23	4521	7379.8	7105.2	6300.7	4194.4		3651.7	1783.1
24	4518	7392.7	7108.4	6301.8	4172.5		3647.9	1780.5
25	4520	7391.7	7101.2	6276.1	4171.6		3640.2	1779.0
26	4529	7399.1	7087.0	6289.1	4189.8		3643.5	1784.7
27	4514	7389.1	7085.3	6267.6	4178.7		3642.7	1786.2
28	4523	7404.9	7095.8	6247.5	4183.0		3642.5	1783.1
29	4532	7414.1	7083.2	6240.7	4180.7		3639.7	1783.9
30	4540	7419.2	7075.5	6260.8	4184.0		3645.6	1783.9
Mean	4543	7418.3	7121.9	6319.1	4203.5		3653.9	1782.3

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)

JULY 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4539	7409.2	7084.3	6272.6	4175.5		3638.4	1781.1(34)
2	4543	7410.2	7094.5	6275.1	4183.0		3643.8	1783.0
3	4542	7394.1	7125.6	6286.1	4189.7		3640.8	1784.5
4	4524	7382.4	7087.7	6282.2	4184.3		3645.9	1783.3
5	4531	7396.5	7078.9	6275.6	4181.8		3648.2	1786.1
6	4528	7403.7	7076.3	6274.9	4183.7		3647.9	1785.1
7	4538	7425.8	7063.2	6294.3	4178.2		3647.5	1786.9
8	4530	7412.3	7058.1	6293.4	4181.2		3640.4	1788.0
9	4534	7401.5	7063.7	6303.0	4175.8		3637.7	1787.2
10	4537	7402.6	7077.6	6302.6	4188.3		3643.1	1788.0
11	4528	7390.8	7071.0	6283.6	4186.2		3644.5	1787.9
12	4547	7422.9	7083.0	6300.9	4187.8		3644.8	1788.3
13	4545	7427.9	7086.9	6291.7	4179.8		3639.5	1791.2(38)
14	4541	7415.8	7083.1	6286.1	4173.7		3638.7	1791.0
15	4523	7379.0	7102.4	6289.5	4175.3		3638.0	1789.4(36)
16	4534	7388.5	7103.8	6297.3	4195.0		3654.7	1792.3(28)
17	4525	7394.0	7075.0	6295.2	4181.8(38)		3648.6	1788.2(32)
18	4514	7371.7	7046.4	6270.5	4171.8		3639.9	1784.5
19	4515	7380.7	7048.0	6281.3	4170.4		3638.7	1783.5
20	4517	7398.3	7045.6	6282.3	4161.4(38)		3640.3	1784.7
21	4506	7385.0	7042.3	6266.7	4151.4		3639.1	1783.5
22	4517	7398.9	7049.1	6271.1	4157.4		3638.8	1784.3
23	4518	7377.8	7047.6	6273.9	4156.0		3646.1	1786.7
24	4493	7343.7	7036.3	6255.4	4149.7		3656.2	1785.3
25	4485	7346.9	7000.7	6239.5	4118.7		---	1780.6
26	4488	7333.5	7004.4	6228.4	4103.5		---	1780.0
27	4478	7328.1	7045.1	6250.8	4125.5		---	1781.0
28	4478	7308.1	7048.3	6248.3	4137.7		---	1782.2
29	4468	7307.8	7008.9	6216.3	4145.0		---	1783.4
30	4477	7298.6	7017.4	6230.1	4132.2		3641.2	1783.2
31	4480	7307.0	7029.3	6227.6	4136.4		---	1784.4
Mean	4517	7378.9	7060.8	6272.4	4164.9		3642.8	1785.3

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)

AUGUST 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4469	7291.6	7024.0	6232.3	4127.0		3633.2	
2	4485	7327.3	7035.6	6252.0	4139.2		3635.0	
3	4460	7297.4	7002.6	6233.8	4130.5		3637.0	
4	4468	7303.7	6996.7	6236.1	4127.7		3630.4	
5	4460	7297.0	7021.3	6229.2	4138.2		3636.9	
6	4460	7305.0	7028.2	6257.6	4139.5		3634.5	
7	4467	7317.9	7024.1	6241.5	4136.4		3630.8	
8	4470	7331.6	7043.5	6236.6	4140.0		3634.0	
9	4484	7337.7	7056.0	6257.3	4149.8		3643.4	
10	4494	7366.6	7078.5	6271.4	4162.4		3647.4	
11	4504	7377.7	7091.8	6266.6	4165.0		3641.2	
12	4489	7366.4	7082.4	6264.8	4167.3		3647.1	
13	4489	7367.3	7076.7	6267.4	4178.7		---	
14	4494	7376.0	7036.9	6256.8	4171.1		3632.7	
15	4487	7350.8	7010.2	6245.3	4162.2		3639.5	
16	4491	7357.8	7005.1	6234.7	4161.6		---	
17	4481	7331.7	7003.0	6215.9	4145.8		3615.6	
18	4486	7344.5	7040.5	6233.8	4150.9		3618.1	
19	4482	7347.5	7048.2	6217.0	4143.0(30)		3618.2	
20	4497	7362.5	7064.8	6228.7	---		3622.2	
21	4517	7391.3	7071.3	6241.9	---		3626.5	
22	4484	7341.9	7053.2	6235.8	---		3611.9	
23	4462	7328.5	7036.6	6204.9	---		3616.6	
24	4462	7348.7	7026.4	6213.6	---		3610.9	
25	4404	7243.4	6918.2	6134.9	---		3593.7	
26	4429	7279.7	6944.7	6208.8	4069.5		3612.6	
27	4396	7237.2	6870.7	6136.8	4014.3		3597.0	
28	4371	7184.7	6850.5	6087.8	3995.7		3579.3	
29	4392	7188.2	6888.4	6117.1	4009.1		3590.9	
30	4405	7230.6	6919.5	6139.9	4031.4		3602.4	
31	4368	7211.6	6906.1	6119.2	4030.7		3610.7	
Mean	4462	7314.3	7008.3	6216.7	4119.5		3621.8	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)

SEPTEMBER 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4372	7187.7	6915.0	6136.1	4030.3(36)		3602.5	
2	4403	7224.4	6918.1	6141.0	4032.5		3604.3	
3	4421	7265.7	6944.8	6157.2	4038.4		3610.0	
4	4422	7269.1	6956.4	6166.2	4064.3		3607.7	
5	4440	7301.2	6965.9	6193.2	4078.8		3612.3	
6	4443	7308.2	6978.5	6209.1	4081.5		3616.2	
7	4435	7313.7	6975.2	6205.2	4082.1		3620.4	
8	4423	7304.1	6959.2	6209.6	4086.2		3619.2	
9	4425	7311.7	6985.7	6224.1	4101.5		3616.7	
10	4434	7306.9	7007.2	6228.0	4113.1		3619.0	
11	4441	7319.7	6978.3	6223.8	4111.0		3624.9	
12	4400	7279.9	6935.3	6178.8	4079.0		3619.0	
13	4408	7268.2	6936.2	6178.2	4079.4		3614.2	
14	4400	7250.5	6940.7	6167.1	4079.1		3613.9	
15	4388	7233.1	6941.8	6149.7	4067.9		3606.8	
16	4403	7237.8	6944.0	6169.6	4084.9		3607.8	
17	4409	7242.3	6955.7	6155.3	4074.2		3609.1	
18	4410	7235.8	6968.6	6161.3	4090.7(36)		3611.0	
19	4405	7242.6	6981.8	6186.9	4094.6		3618.9	
20	4395	7233.5	6943.6	6158.2	4075.6		3615.0	
21	4393	7219.7	6930.6	6150.7	4062.0		3606.7	
22	4433	7301.0	6961.1	6181.4	4088.8		3618.0	
23	4456	7337.5	6997.4	6223.6	4121.6		3632.7	
24	4410	7251.5	6929.6	6150.3	4049.2		3610.5	
25	4396	7241.9	6939.5	6181.4	4064.4		3603.1	
26	4382	7217.9	6907.3	6152.3	4058.2		3615.0	
27	4365	7198.4	6872.2	6100.9	4018.8		3601.9	
28	4389	7247.7	6895.4	6131.0	4054.2		3612.5	
29	4398	7238.2	6912.1	6142.2	4066.2		3616.9	
30	4397	7227.2	6921.9	6124.4	4062.8		3615.3	
Mean	4410	7260.6	6946.7	6171.2	4073.1		3613.3	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)

OCTOBER 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4422	7271.5	6953.0	6151.3	4065.4		3614.2	
2	4436	7304.7	6964.6	6175.4	4077.7		3618.0	
3	4402	7248.5	6960.2	6185.0	4085.2		3633.0	
4	4419	7268.7	6966.4	6188.7	4077.6		3627.0	
5	4441	7270.9	6975.3	6209.4	4086.1		3627.7	
6	4445	7291.9	6999.5	6236.4	4093.5		3632.1	
7	4439	7297.6	7009.5	6240.6	4098.4		3632.1	
8	4439	7281.3	6999.6	6246.5	4091.4		3631.1	
9	4434	7270.8	6965.6	6204.9	4081.3		3636.2	
10	4432	7294.3	6991.8	6217.8	4093.0		3637.5	
11	4407	7251.2	6951.7	6196.1	4057.8		3612.5	
12	4373	7183.8	6921.5	6164.7	4048.5		3602.9	
13	4394	7247.4	6951.2	6189.2	4071.3		3608.3	
14	4415	7284.5	6969.7	6224.6	4109.8		3610.1	
15	4420	7284.7	6967.5	6227.5	4110.7		3614.0	
16	4410	7243.0	6955.0	6200.5	4096.6		3609.2	
17	4416	7254.6	6943.1	6179.4	4077.3		3617.6	
18	4421	7236.4	6959.7	6179.3	4088.4		3630.5	
19	4442	7274.6	6987.5	6204.2	4103.4		3629.4	
20	4452	7282.5	6994.4	6222.6	4107.9		3634.2	
21	4458	7295.2	---	6232.5	4111.6		3633.0	
22	4456	7282.2	---	6233.6	4108.5		3632.2	
23	4432	7267.8	---	6193.3	4090.9		3628.4	
24	4424	7253.8	6963.9	6195.8	4090.6		3618.3	
25	4406	7224.2	---	6161.9	4083.3		3609.8	
26	4432	7257.0	---	6156.3	4074.8		3606.7	
27	4423	7245.4	---	6177.2	4093.8		3622.0	
28	4408	7221.8	---	6178.1	4093.8		3628.0	
29	4417	7234.2	---	6186.1	4086.5		3625.5	
30	4424	7248.8	6988.5	6181.3	4097.2		3622.7	
31	4435	7272.8	6979.8	6204.0	4103.2		3634.8	
Mean	4425	7262.8	7287.3	6198.2	4088.9		3623.2	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours

COSMIC RAY INDICES
(Neutron Monitor)

NOVEMBER 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
01	4440	7260.2	6982.0	6203.2	4095.4		3642.1	
02	4438	7266.5	6998.5	6207.3	4120.3		3630.9	
03	4392	7201.0	6884.8	6129.7	4047.0		3610.2	
04	4377	7164.9	6853.8	6090.2	4012.7		3607.7	
05	4381	7178.8	6900.3	6099.7	4023.1		3625.1	
06	4379	7164.5	6943.6	6111.6	4044.6		3633.7	
07	4353	7137.6	6902.0	6110.8	4017.4		3609.6	
08	4354	7138.5	6888.7	6110.1	4021.8		3609.3	
09	4360	7144.1	6875.0	6118.5	4001.8		3599.2	
10	4385	7169.2	6915.3	6157.8	4037.1		3615.7	
11	4375	7160.0	6931.7	6156.0	4030.3		3619.4	
12	4366	7150.5	6898.5	6148.4	4014.5		3612.0	
13	4372	7148.0	6902.7	6161.1	4037.7		3617.6	
14	4377	7149.4	6876.2	6133.0	4028.6		3617.4	
15	4357	7127.6	6852.9	6097.0	4010.2		3618.2	
16	4342	7110.8	6846.9	6094.2	4010.1		---	
17	4357	7139.9	6852.5	6098.8	4023.6		---	
18	4369	7179.7	6907.4	6105.4	4029.7		3631.0	
19	4366	7169.2	6912.5	6112.5	4010.1		3636.7	
20	4377	7199.7	6944.1	6163.8	4024.8		3638.0	
21	4397	7213.3	6985.0	6165.9	4052.8		3633.3	
22	4390	7197.4	6960.2	6182.7	4061.6		3641.5	
23	4362	7163.9	6914.7	6162.9	4053.5		3636.9	
24	4334	7127.5	6855.7	6124.9	4028.2		3630.2	
25	4320	7081.3	6829.8	6078.9	3997.8		3610.1	
26	4337	7076.9	6816.9	6106.1	4001.7		3615.7	
27	4346	7052.3	6837.2	6093.7	4005.0		3611.5	
28	4385	7114.5	6871.2	6101.8	4016.7		3619.3	
29	4411	7158.0	6890.1	6132.9	4032.1		3627.5	
30	4405	7126.2	6914.8	6154.0	4037.7		3630.0	
Mean	4373	7155.8	6898.2	6130.4	4030.5		3622.5	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours

C O S M I C R A Y I N D I C E S
(Neutron Monitor)

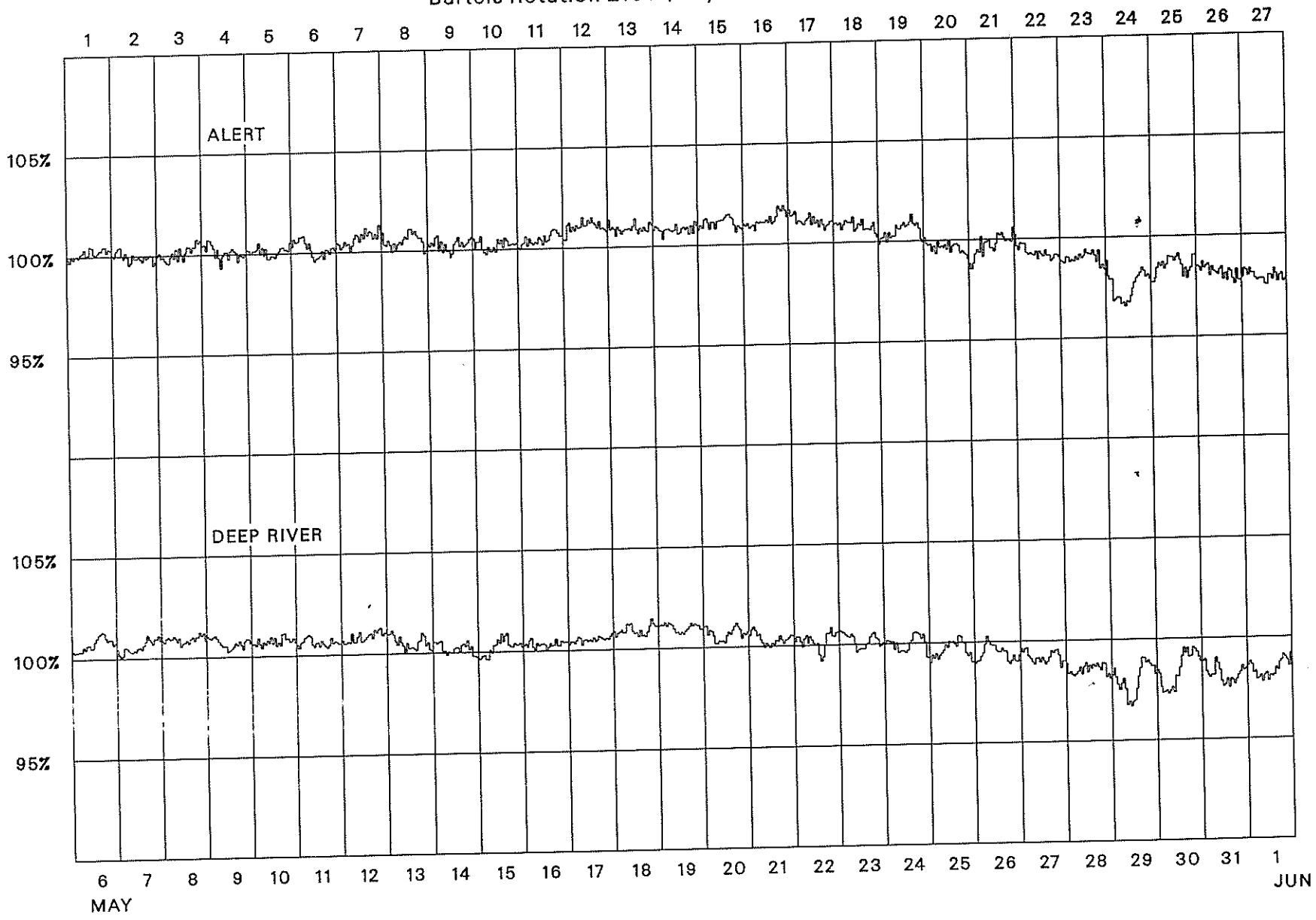
DECEMBER 1987

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDIGTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
01	4379	7084.4	6927.5	6105.5	4036.1		3625.5	
02	4331	7006.8	6867.3	6085.3	3983.2		3623.8	
03	4320	6987.7	6848.1	6075.1	3969.7		3614.3	
04	4340	7026.1	6869.7	6087.5	3981.0		3619.5	
05	4308	7009.3	6848.5	6079.4	3975.2		3624.0	
06	4309	7037.2	6834.1	6071.1	3977.9		---	
07	4350	7122.4	6875.1	6107.3	4006.2		3625.5	
08	4370	7159.2	6880.5	6128.5	4023.6		3625.1	
09	4376	7165.4	6872.5	6141.0	4023.8		3616.6	
10	4353	7137.8	6867.8	6120.0	4007.7		3617.4	
11	4362	7135.0	6902.5	6131.0	4019.3		3625.4	
12	4367	7126.8	6913.0	6137.1	4030.4		3625.3	
13	4385	7124.3	6907.3	6158.9	4055.4		3635.0	
14	4403	7134.1	6923.3	6170.1	4065.0		3632.2	
15	4404	7007.6	6928.4	6174.2	4059.0		3630.1	
16	4378	6877.6	6909.5	6164.0	4056.0		3629.7	
17	4375	6847.1	6898.9	6130.1	4039.8		3634.8	
18	4410	6877.7	6919.0	6152.5	4048.9		3639.7	
19	4391	6829.3	6900.1	6149.4	4055.8		3633.0	
20	4396	6822.1	6878.8	6124.2	4044.8		3628.5	
21	4387	6814.6	6899.6	6122.5	4053.1		3632.6	
22	4382	6853.0	6892.5	6117.6	4042.0		3626.7	
23	4386	---	6895.5	6124.7	4057.8		3622.2	
24	4401	---	6900.6	6153.9	4069.7		3628.8	
25	4423	---	6908.3	6169.9	4072.8		3629.0	
26	4420	---	6934.9	6164.7	4084.6		3632.7	
27	4426	---	6939.3	6151.9	4071.7		3635.3	
28	4429	---	6941.5	6145.0	4052.5		3631.7	
29	4415	---	6940.4	6126.2	4031.1		3623.1	
30	4412	---	6928.7	6138.7	4045.0(30)		3619.0	
31	4400	---	6902.3	6138.6	4033.8		3629.5	
Mean	4380	7008.5	6898.6	6130.5	4034.6		3627.2	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available.
For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

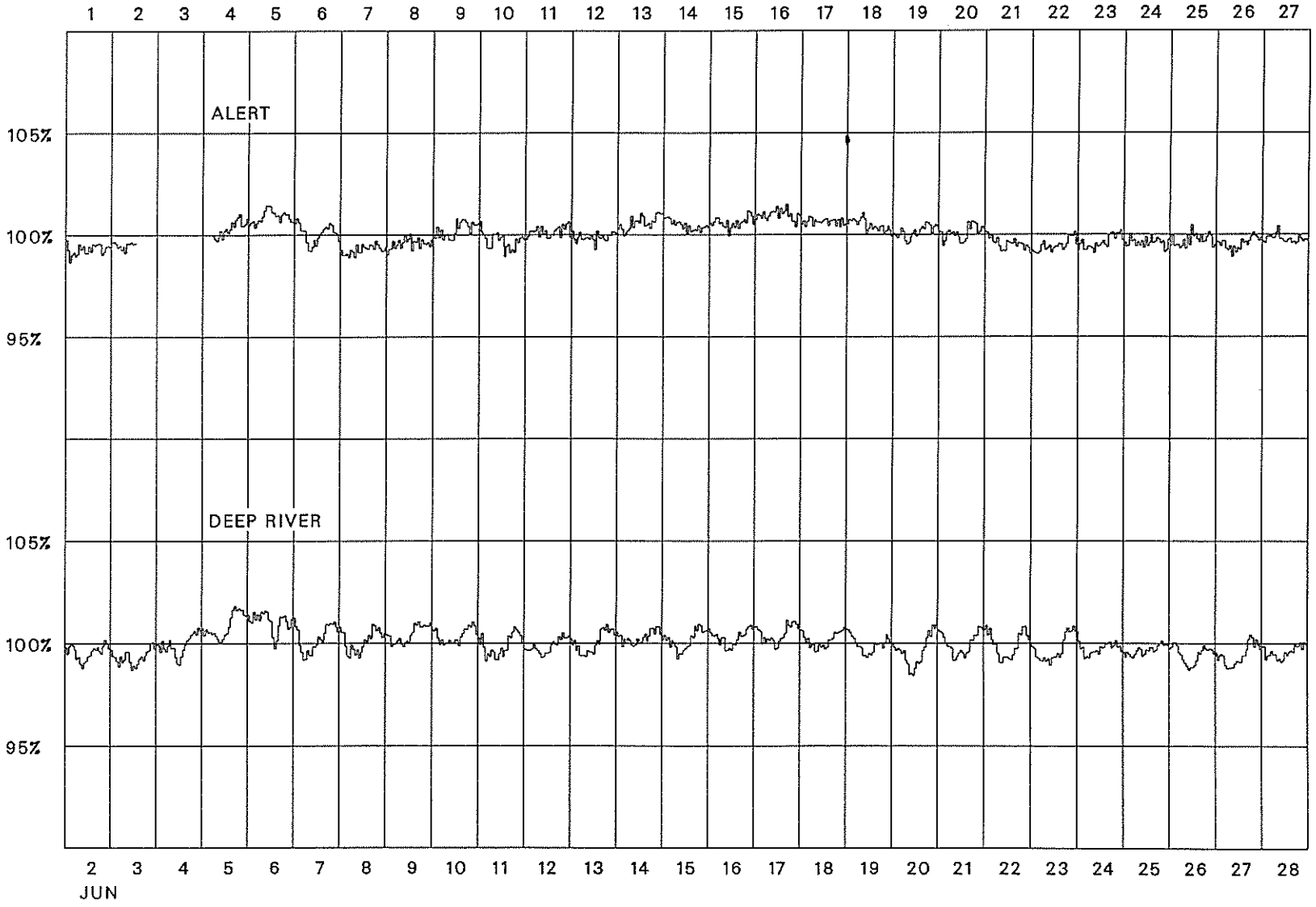
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2101 (May 1987-June 1987)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2102 (June 1987)

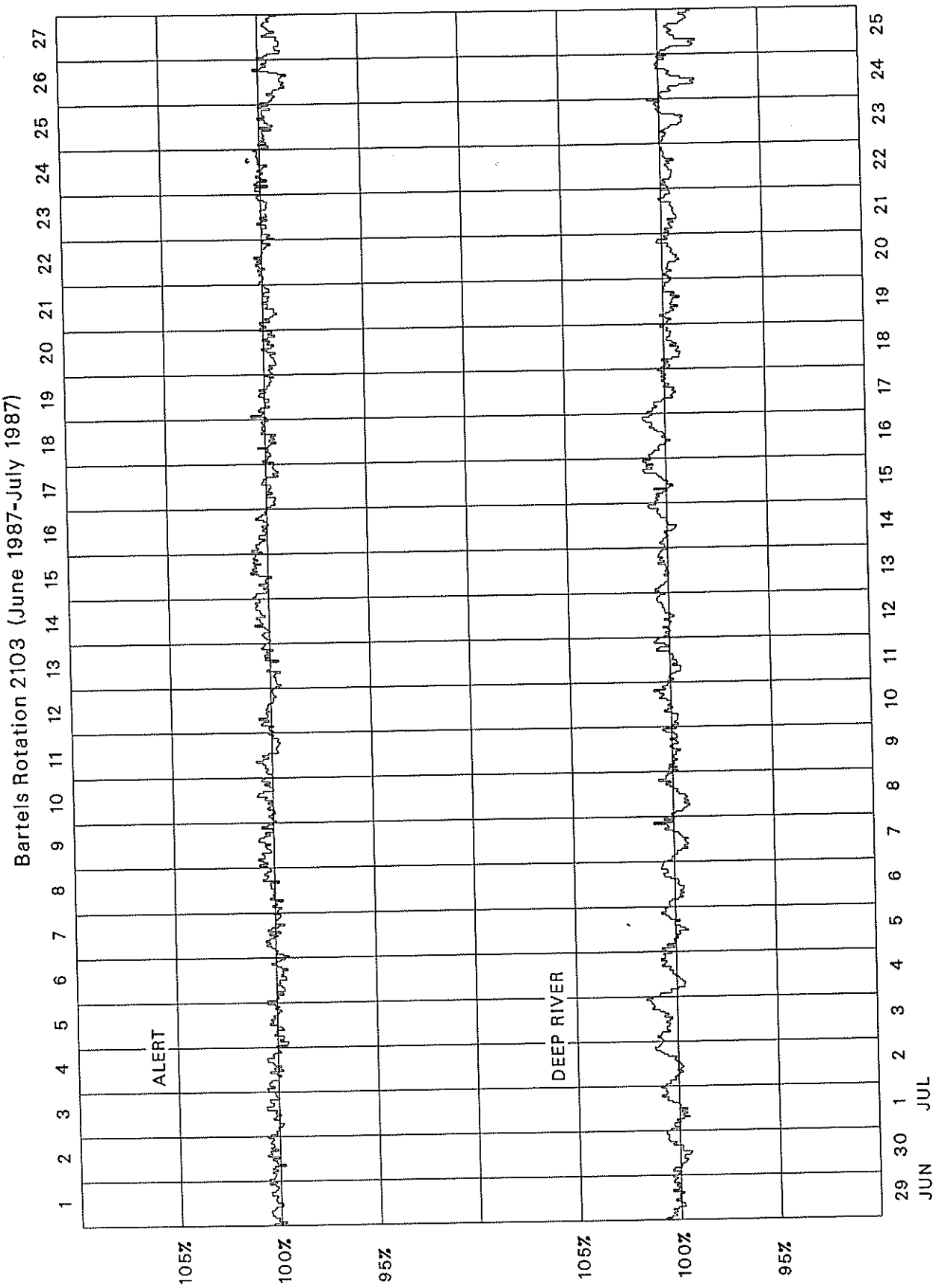


123
Late
Jun 87

124
Late
Jul 87

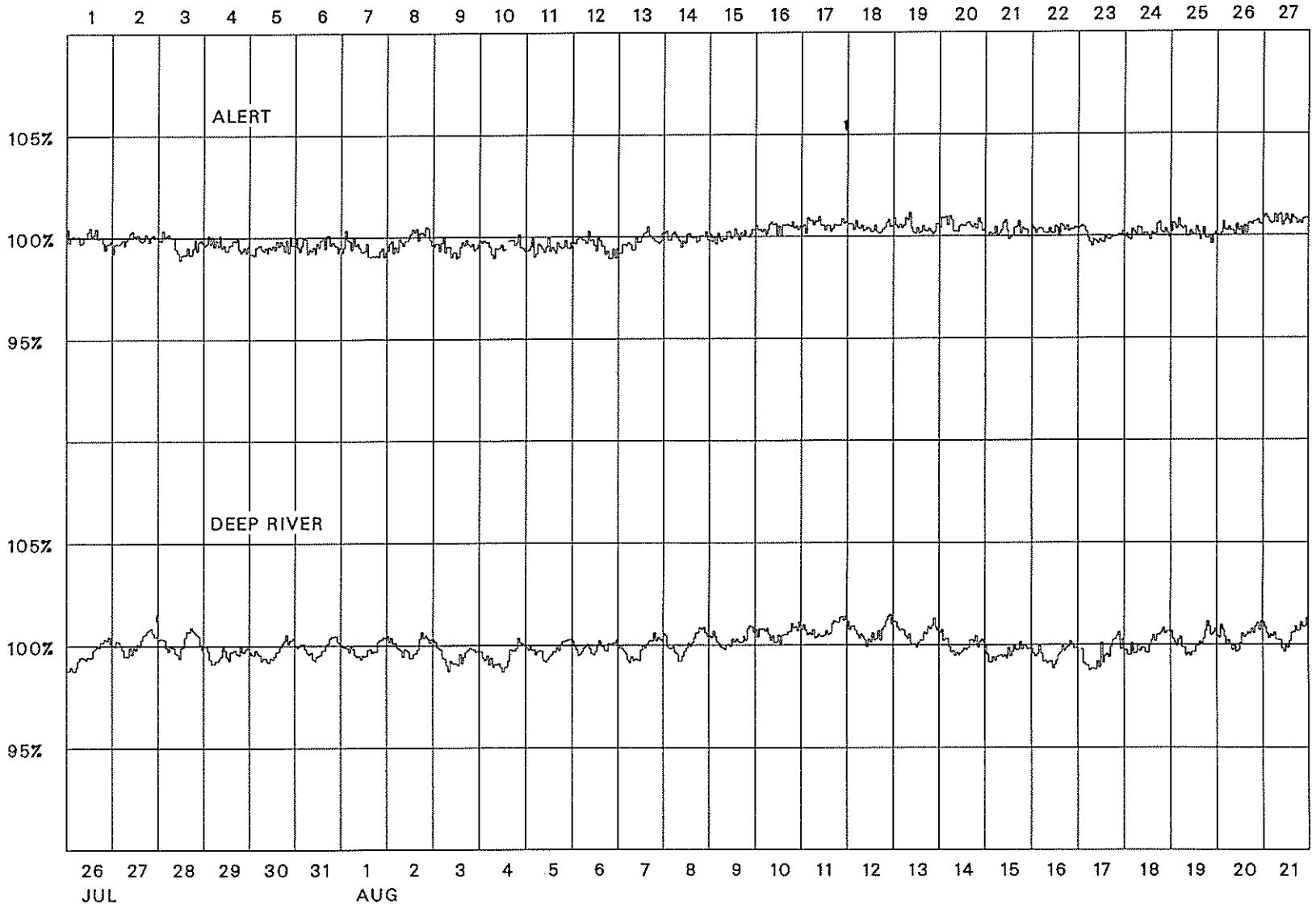
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2103 (June 1987-July 1987)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2104 (July 1987-August 1987)

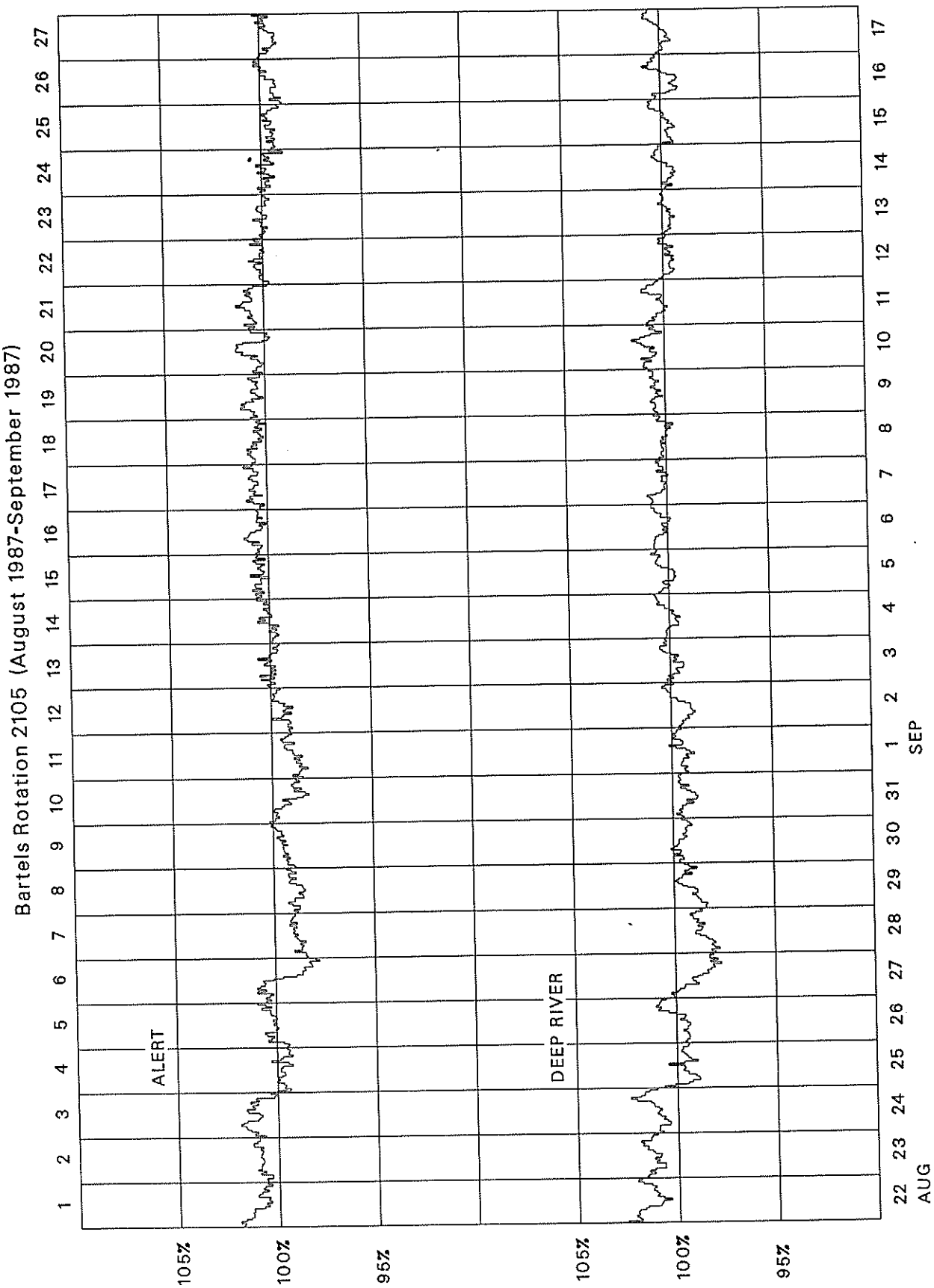


125
Late
Aug 87

126
Late
Sep 87

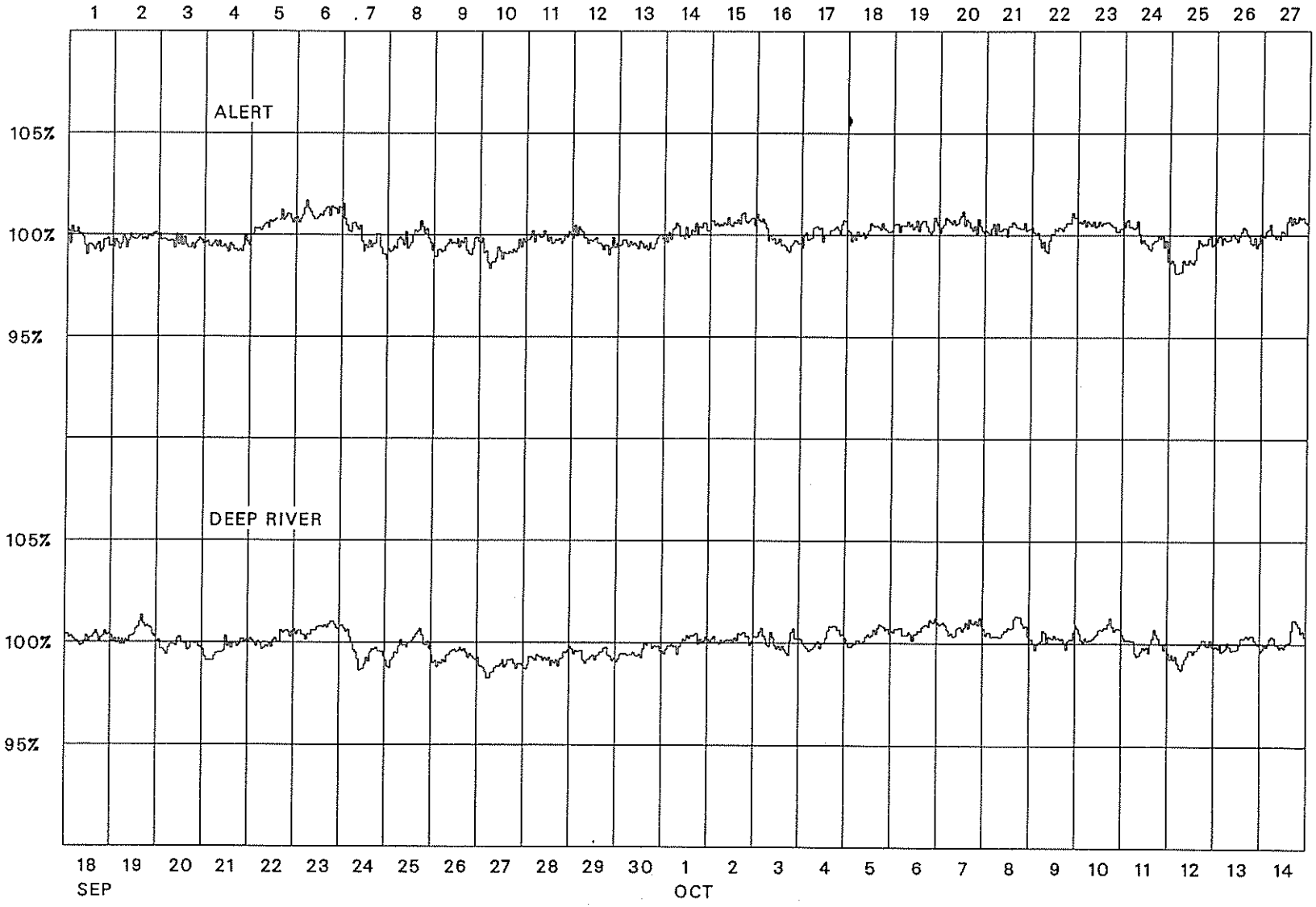
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2105 (August 1987-September 1987)



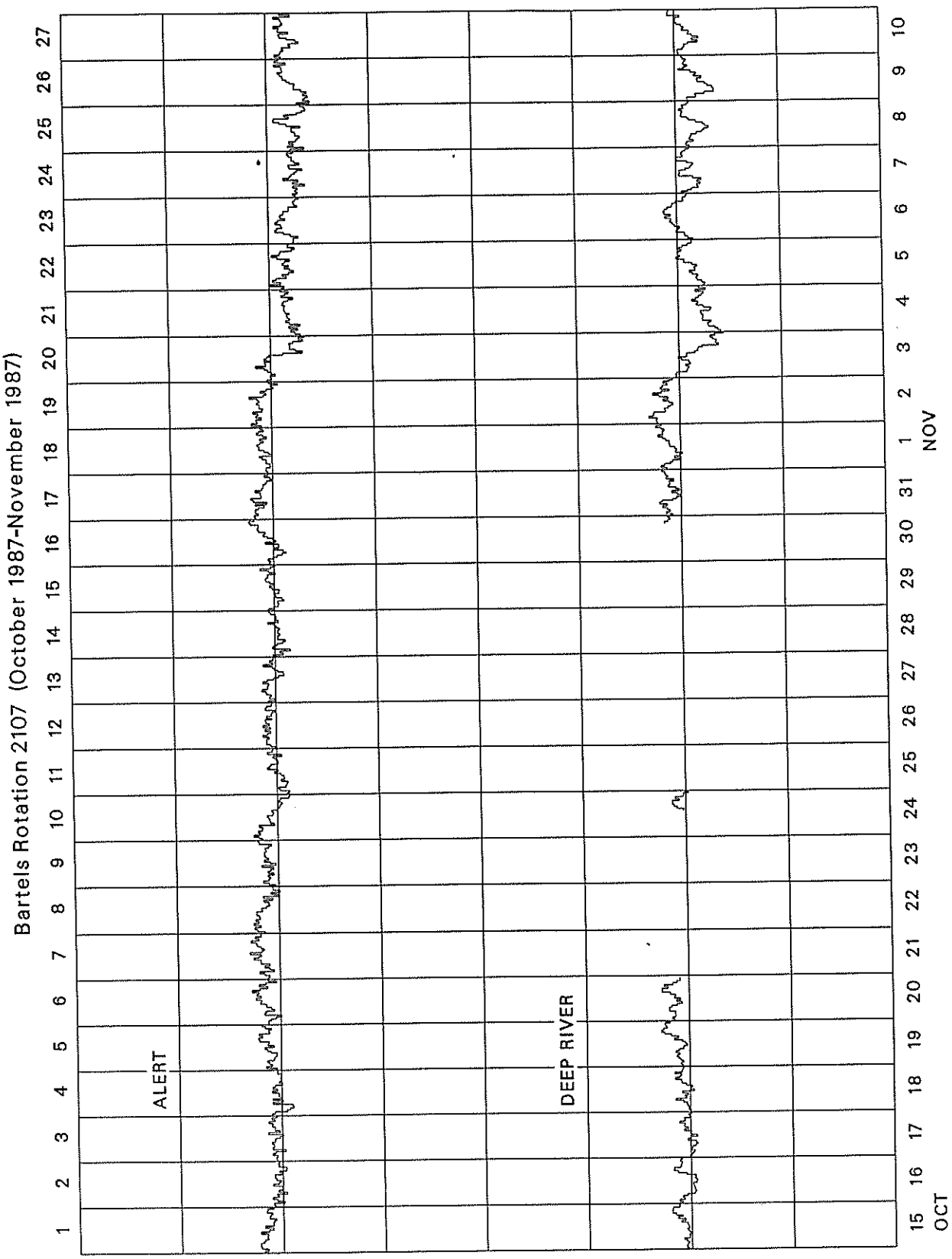
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2106 (September 1987-October 1987)



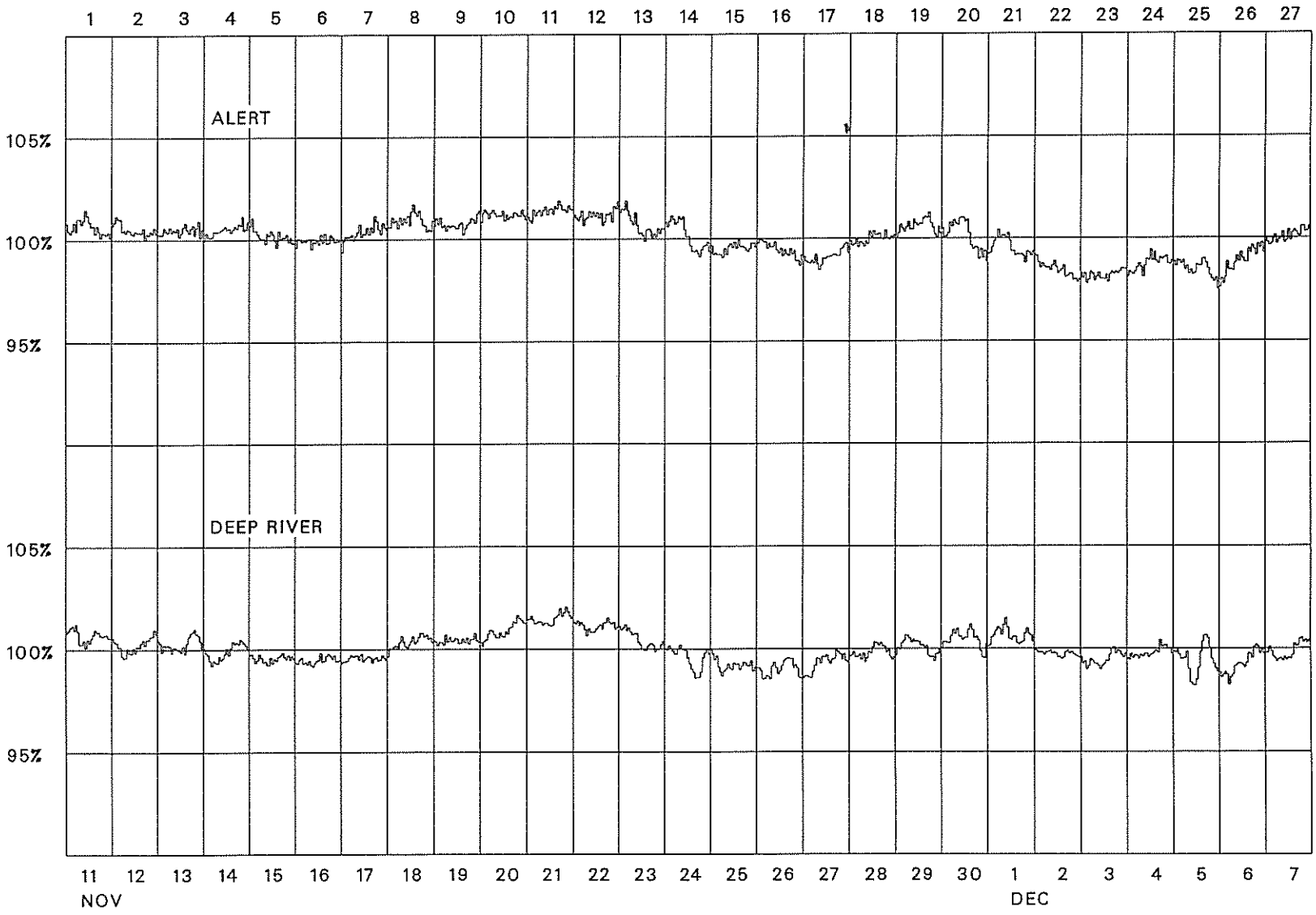
128
Late
Oct 87

COSMIC RAY INDICES
(Neutron Monitor)



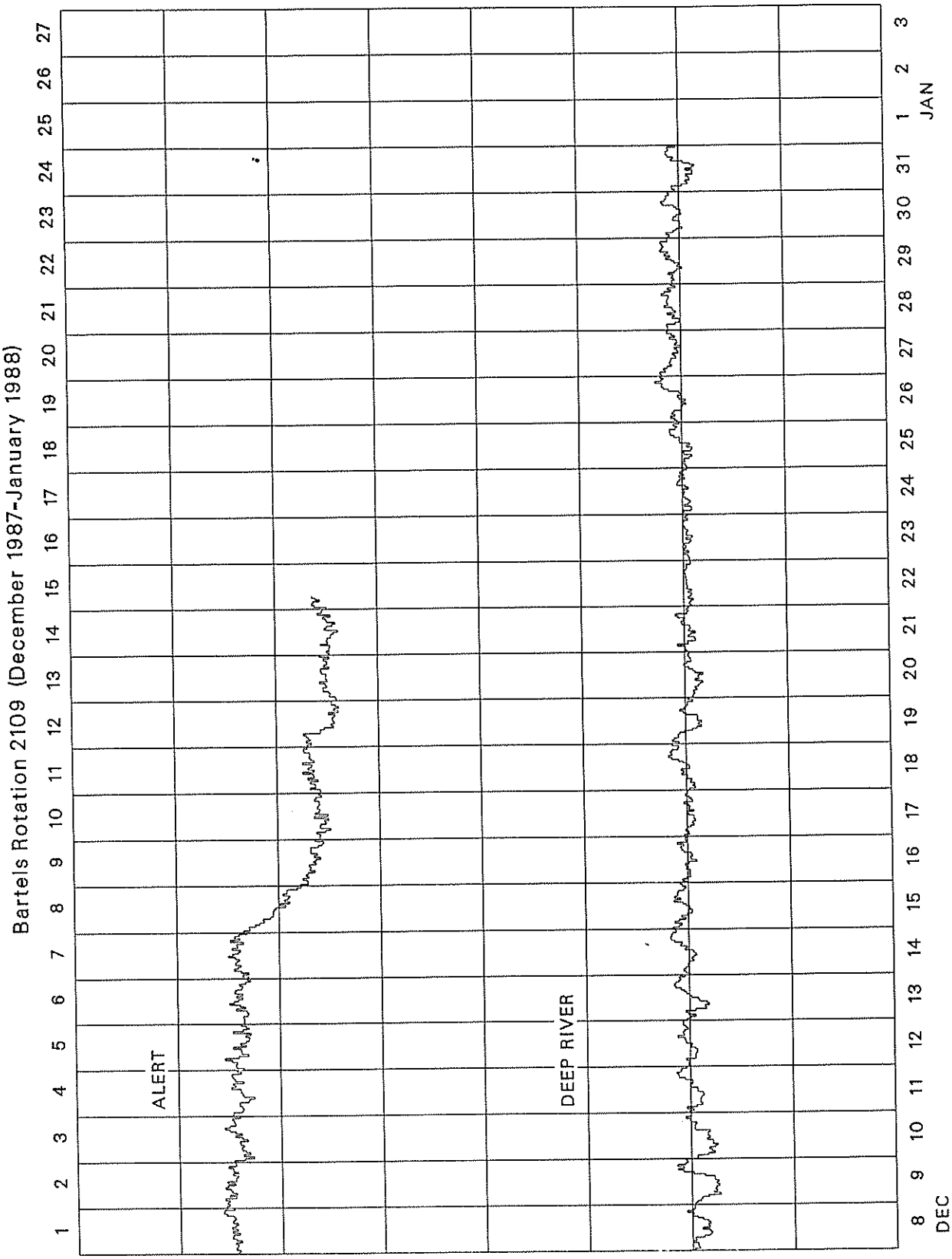
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2108 (November 1987-December 1987)



130
Late
Dec 87

COSMIC RAY INDICES
(Neutron Monitor)



MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS
(PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

JANUARY 1988

Storm Sudden Commencements (ssc)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
04	2012	A: PEK MPO GNA	06	0755-0802	CLF (ssc SPT(C))
		B: WNG* WIT CLF SPT	06	0952-1000	CLF (ssc DOM(B))
		QUE TEN CAA* AMS	13	1204-1209	WIT
		CZT KGL			
		C: NGK BDV* GCK			
		si: KNY*			
06	1631	A: NAG COI QUE			
		B: WNG WIT CLF GCK PEK MPO			
		C: BDV NAG MMB AQU EBR AMS KGL			
13	2330	A: DOM WNG* WIT* NAG* EBR* COI*			
		PEK* SPT* KNY* TEN MPO			
		B: NGK* BDV* CLF* GCK* MMB* AQU*			
		KAK* GNA* CAA* AMS CZT			
		C: COL			

Reporting Observatories: (up to the 29th of February)

SOD COL DOM NUR WNG WIT NGK BDV CLF NAG GCK MMB AQU EBR
COI PEK SPT KAK KNY QUE TEN MPO GNA CAA AMS CZT KGL

New Reporting Observatory:

Beijing: provisional symbol PEK: Geographic coordinates: N40.0 E116.2
Geomagnetic coordinates: N28.9 E186.1

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, ordinary, but unmistakable; and C means very poor, doubtful.

WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

The ICSU Panel on WDCs has recommended that it would be appropriate courtesy to acknowledge in publications that data were obtained from the originating station or investigator through the intermediary of the WDCs. The following statement is suggested:

"Data used in this study were provided by WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder Colorado 80303, USA."