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AUGUST 1993 NUMBER 588 - Part I

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Data for July, June 1993, and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 588

(Issued in Two Parts)

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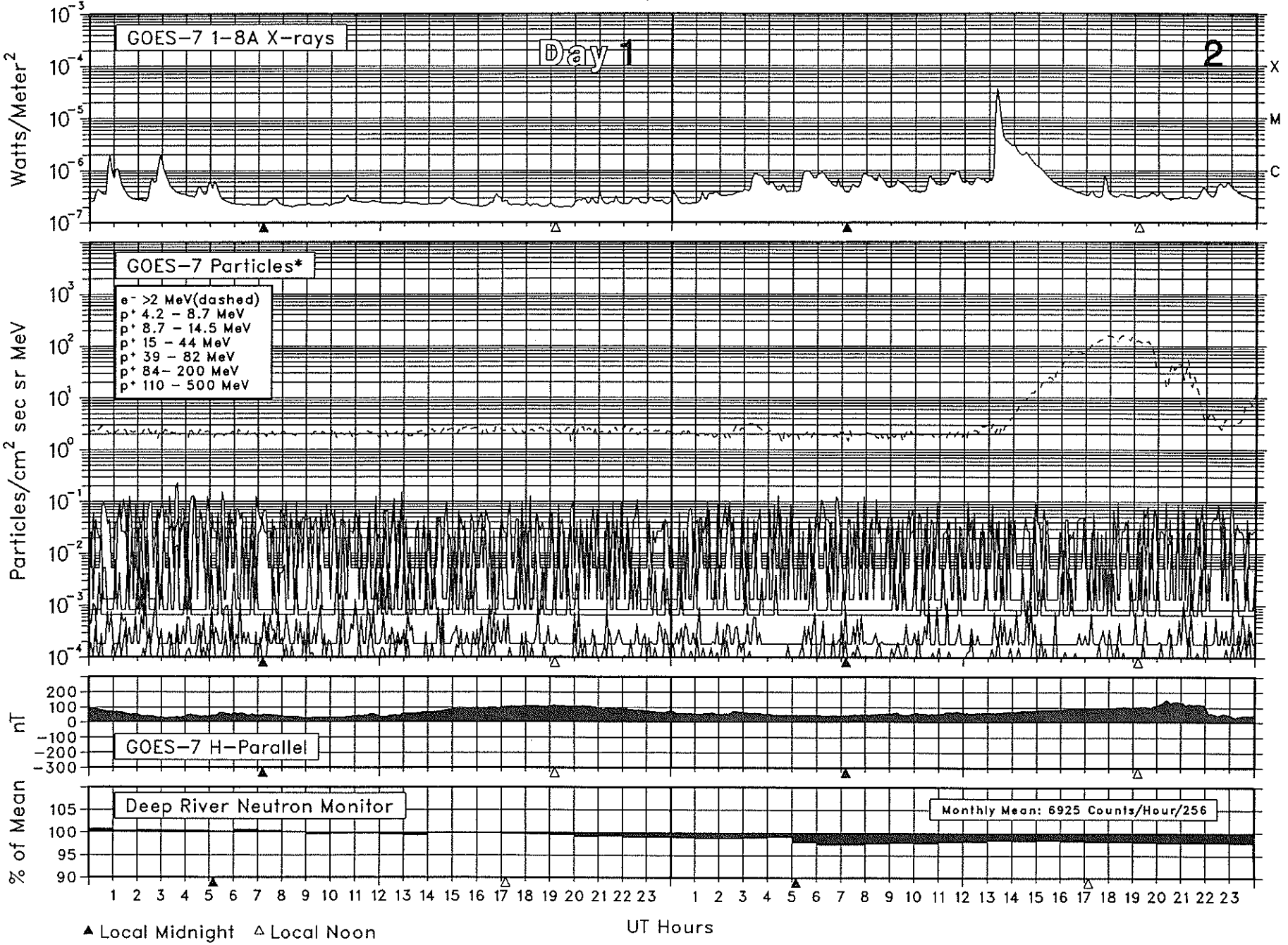

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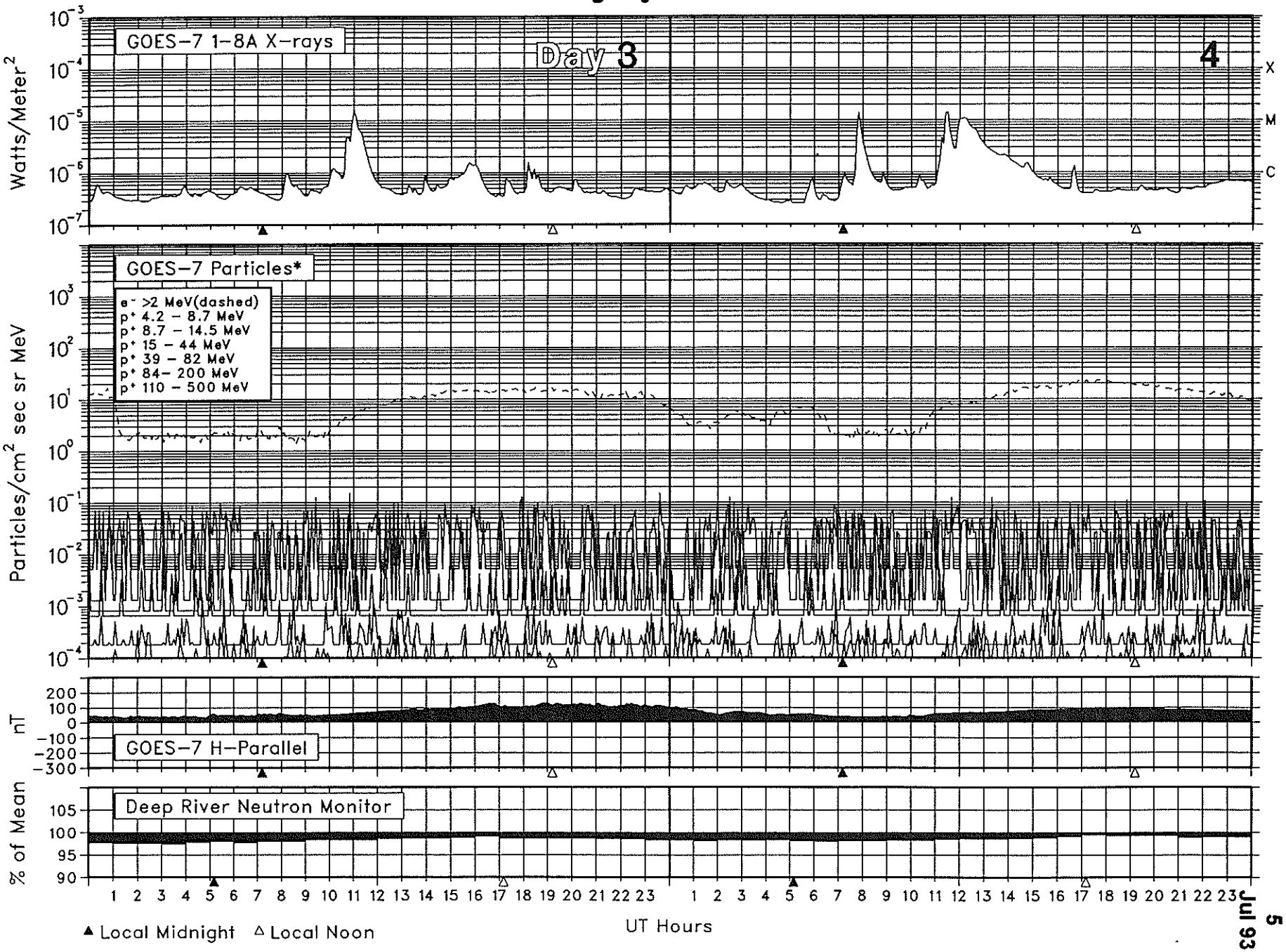

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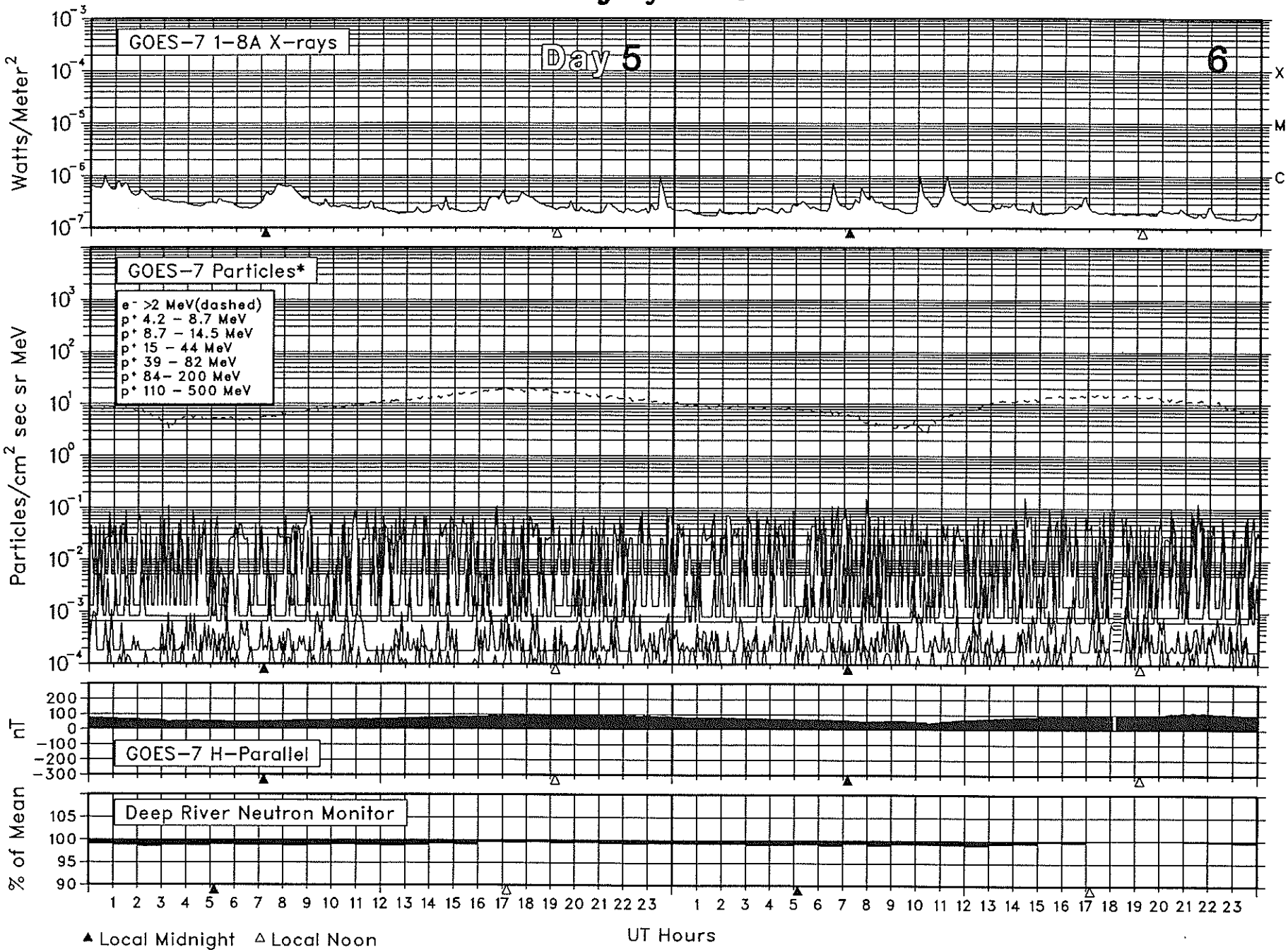

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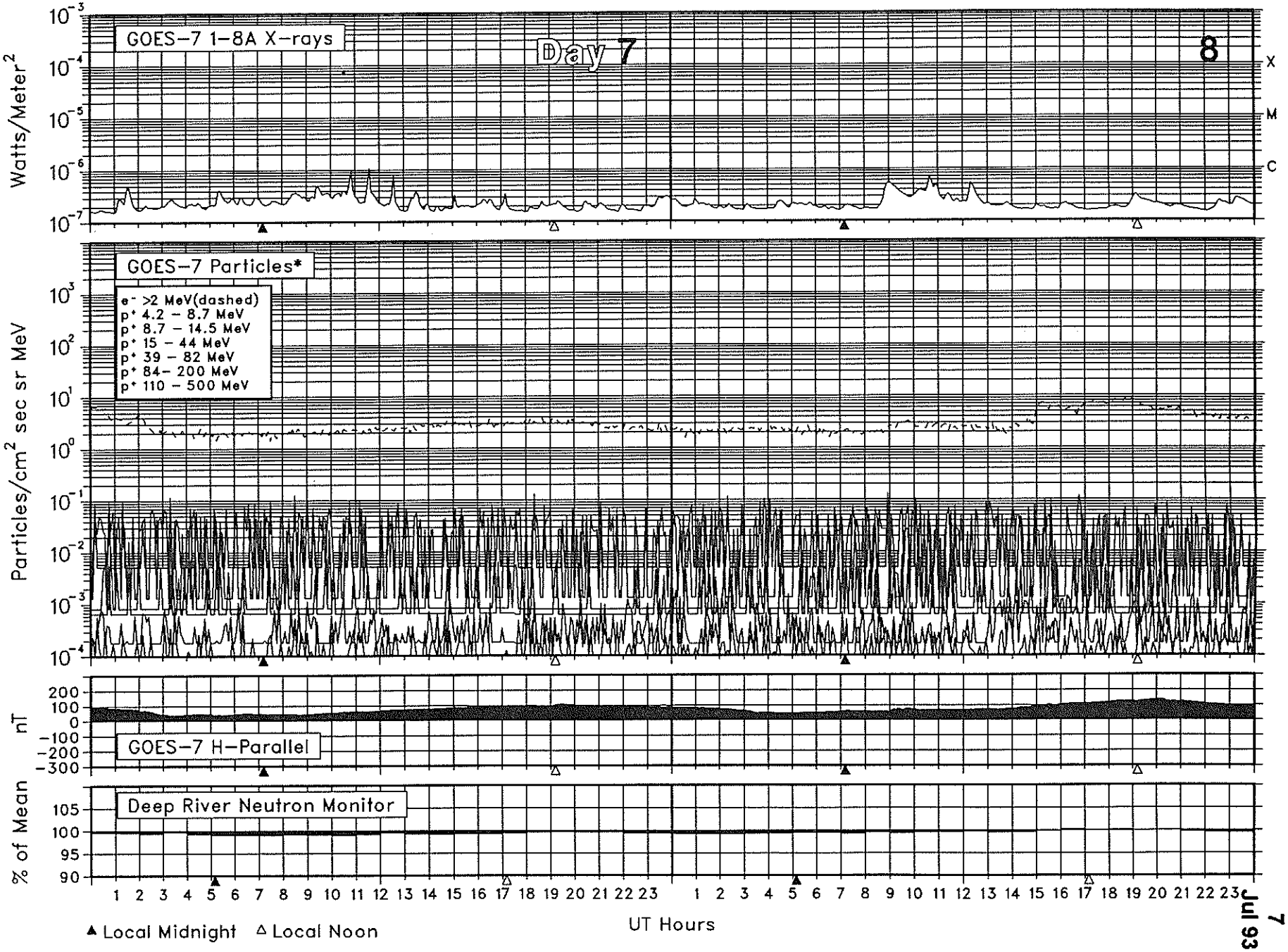

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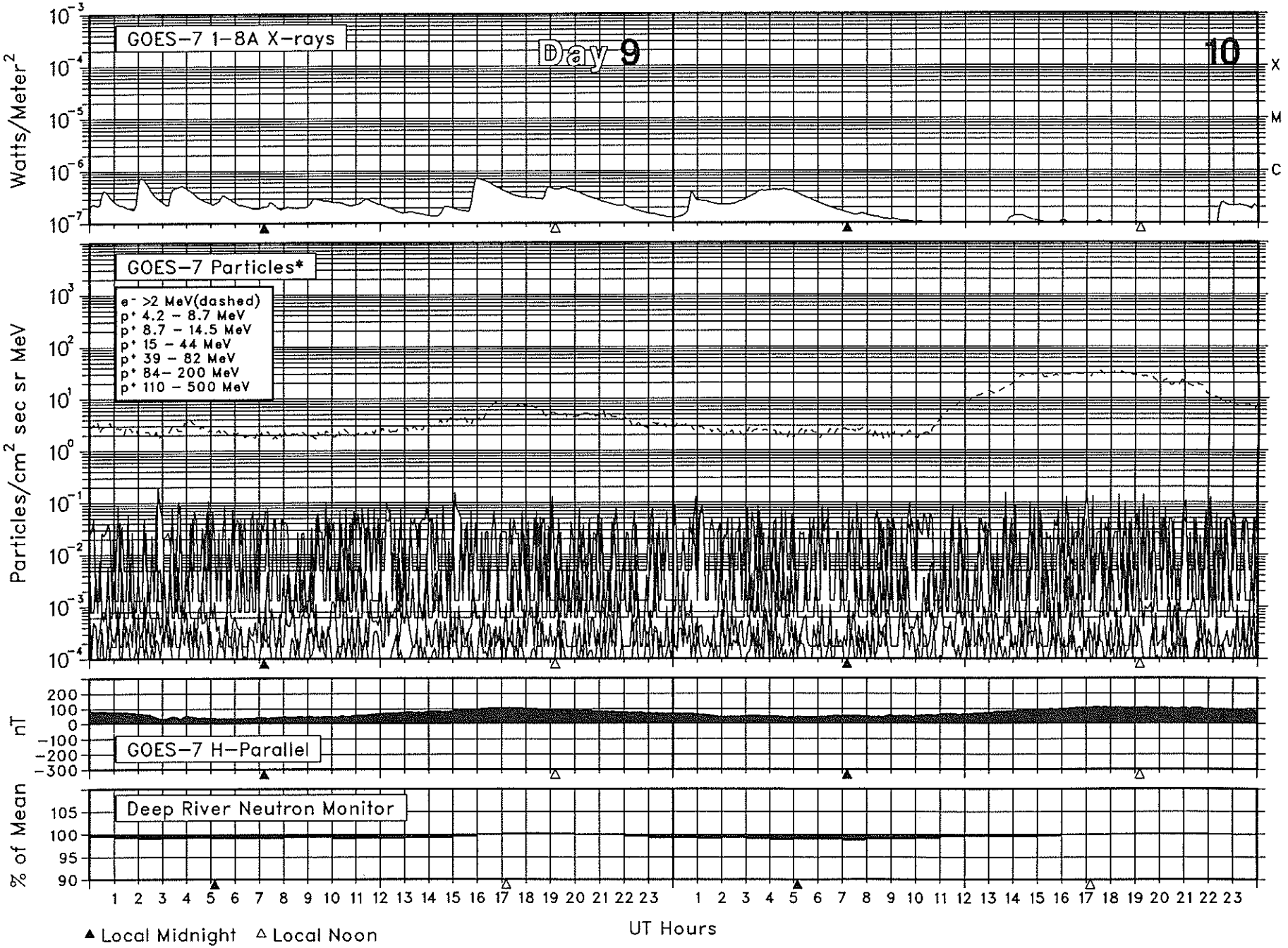

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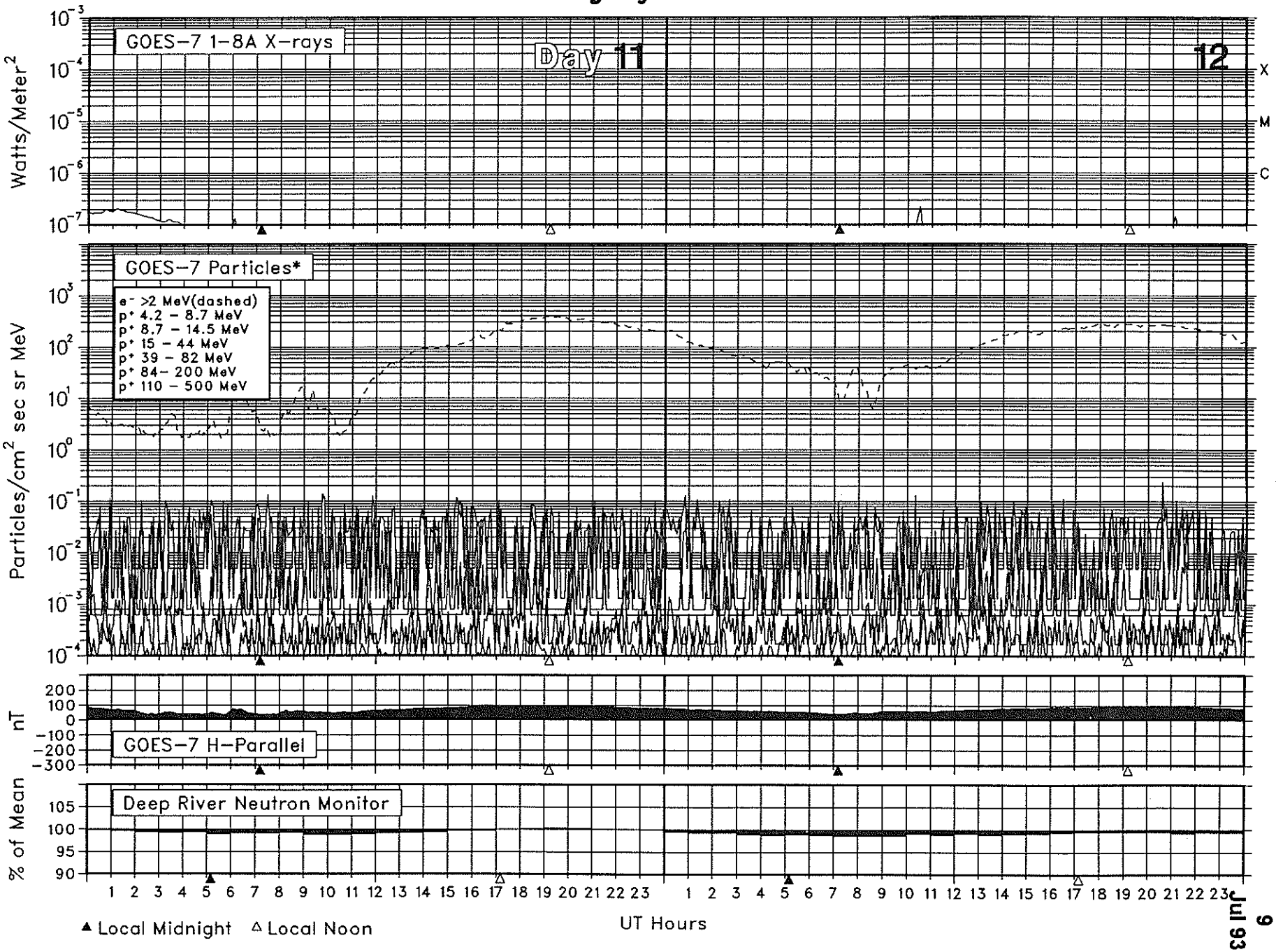

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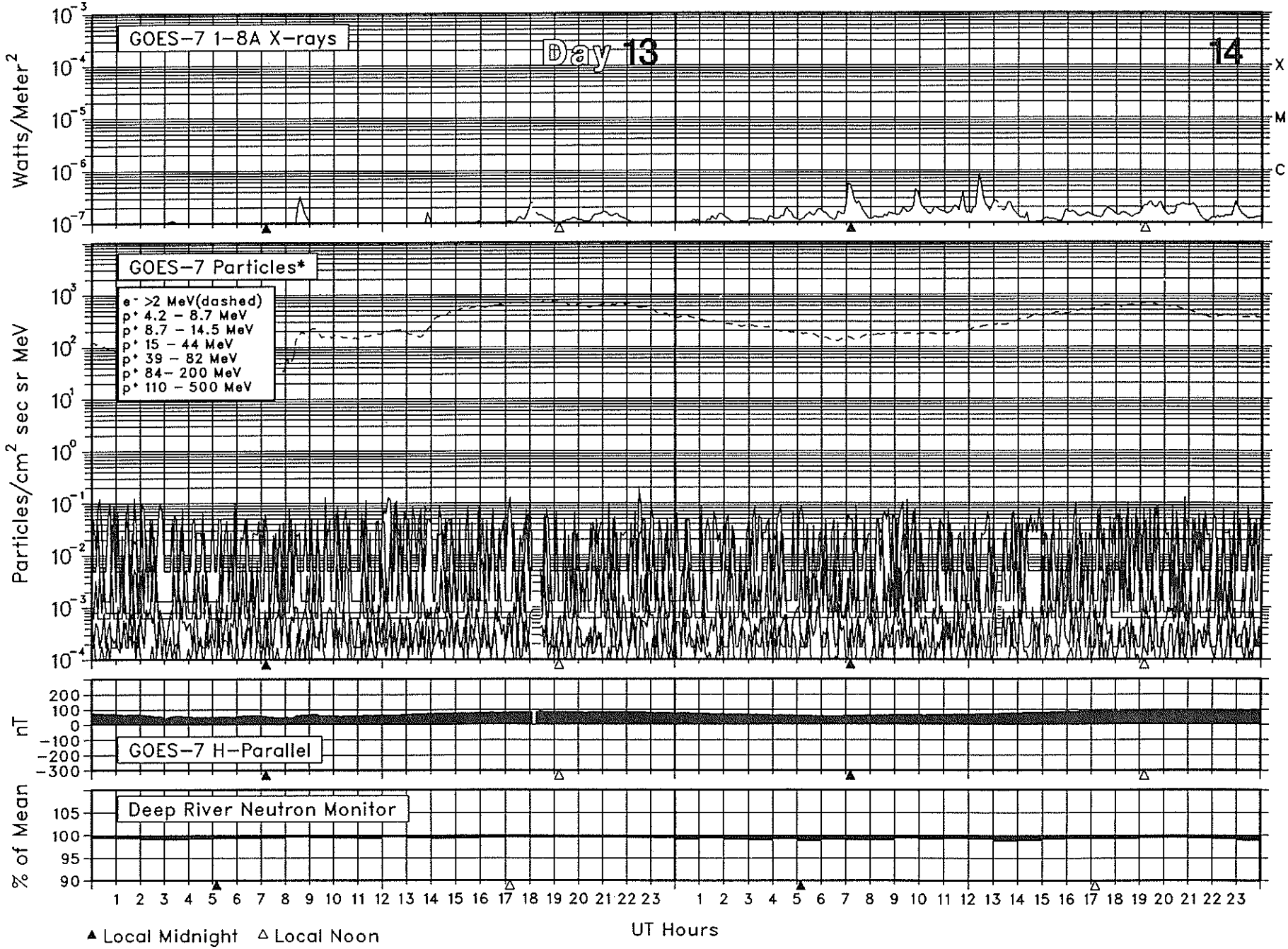

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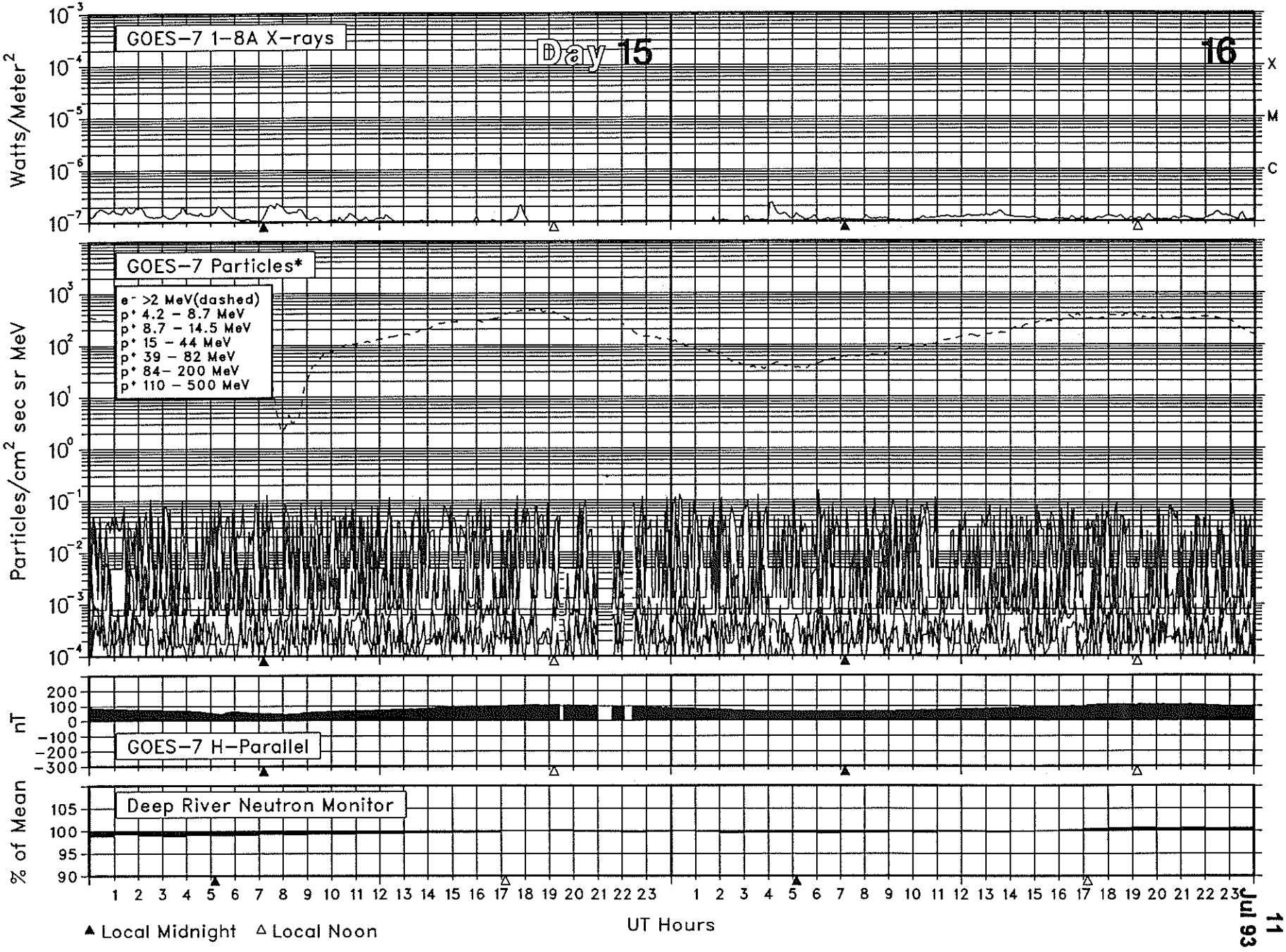

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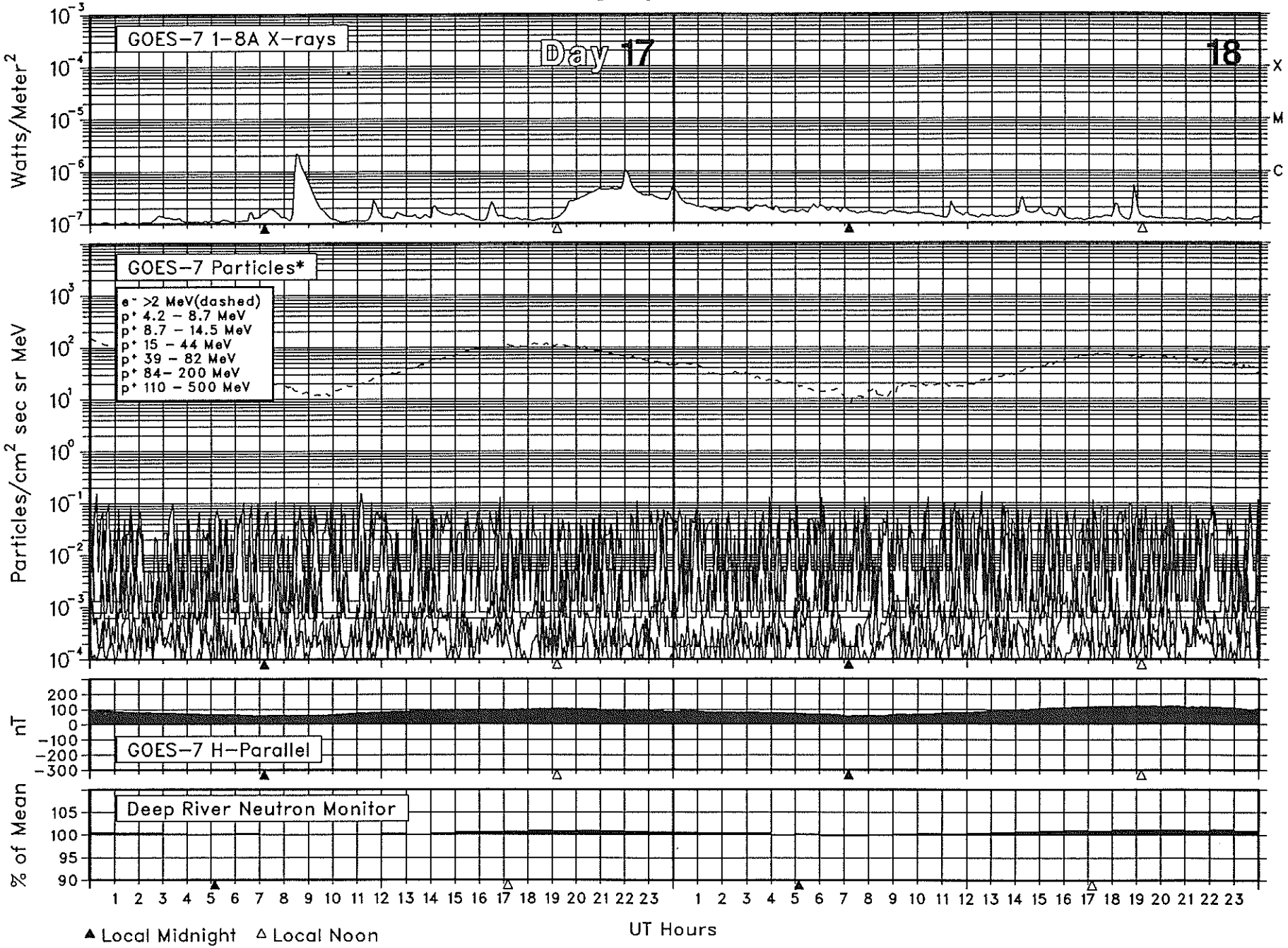

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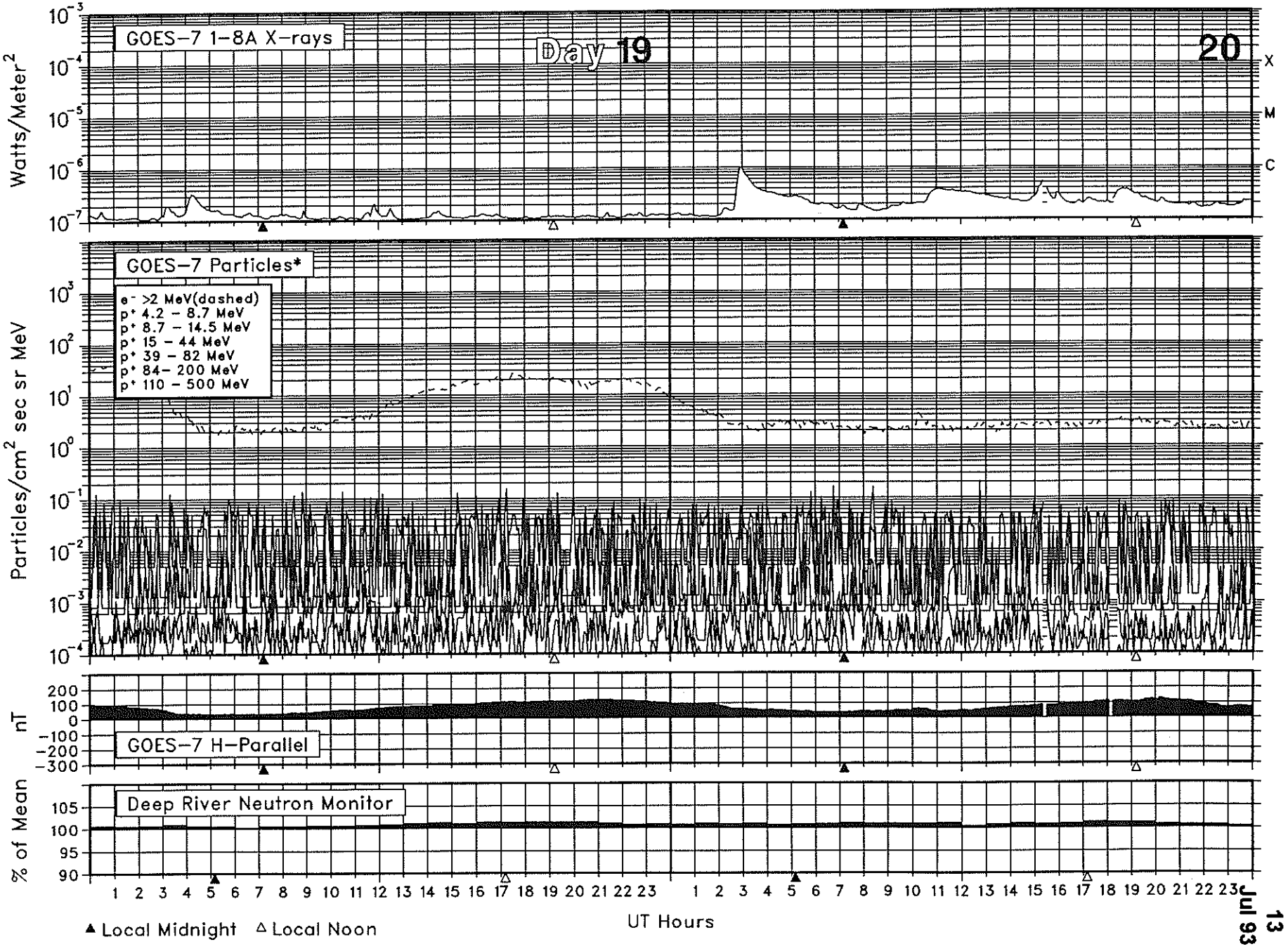

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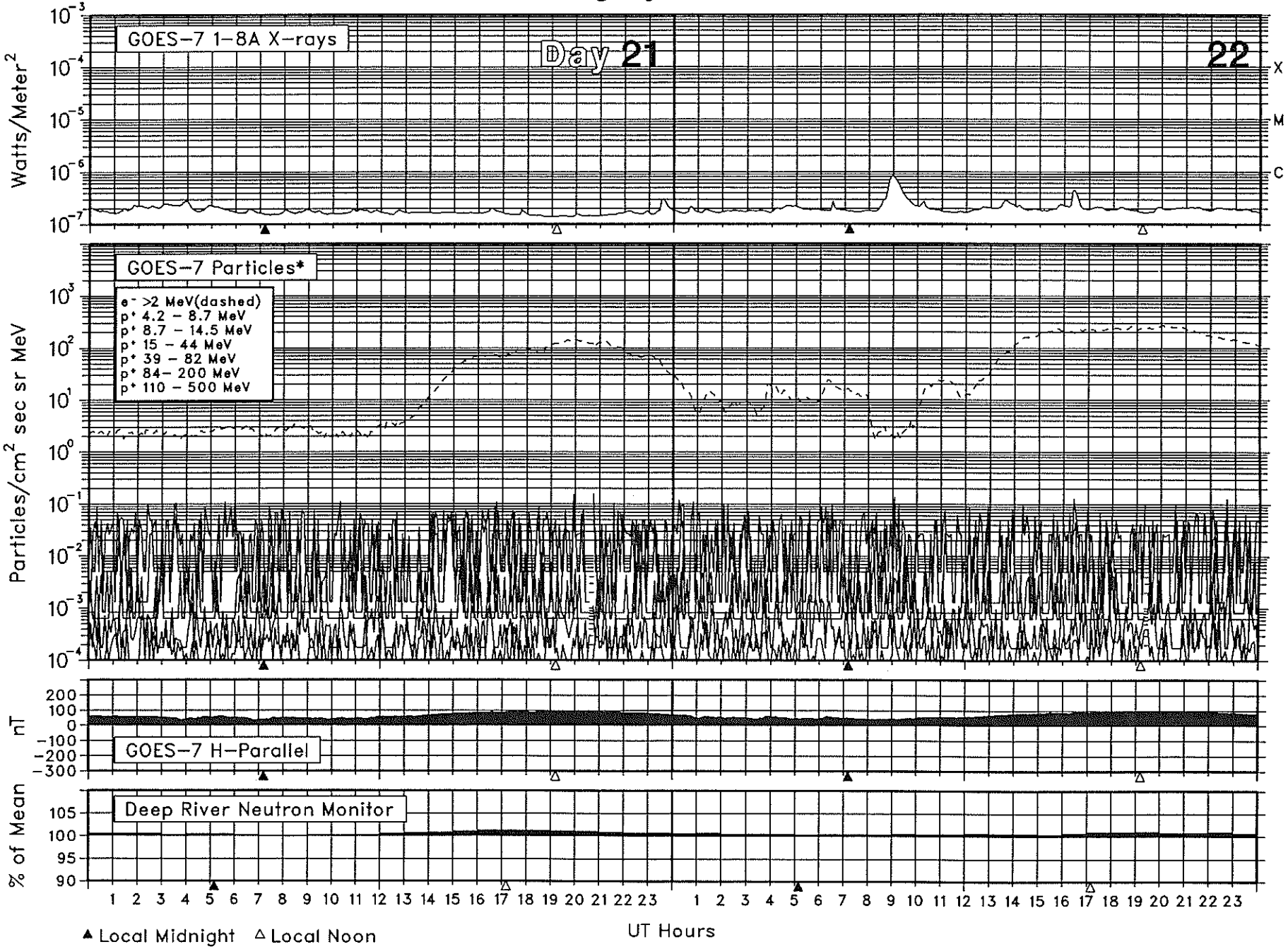

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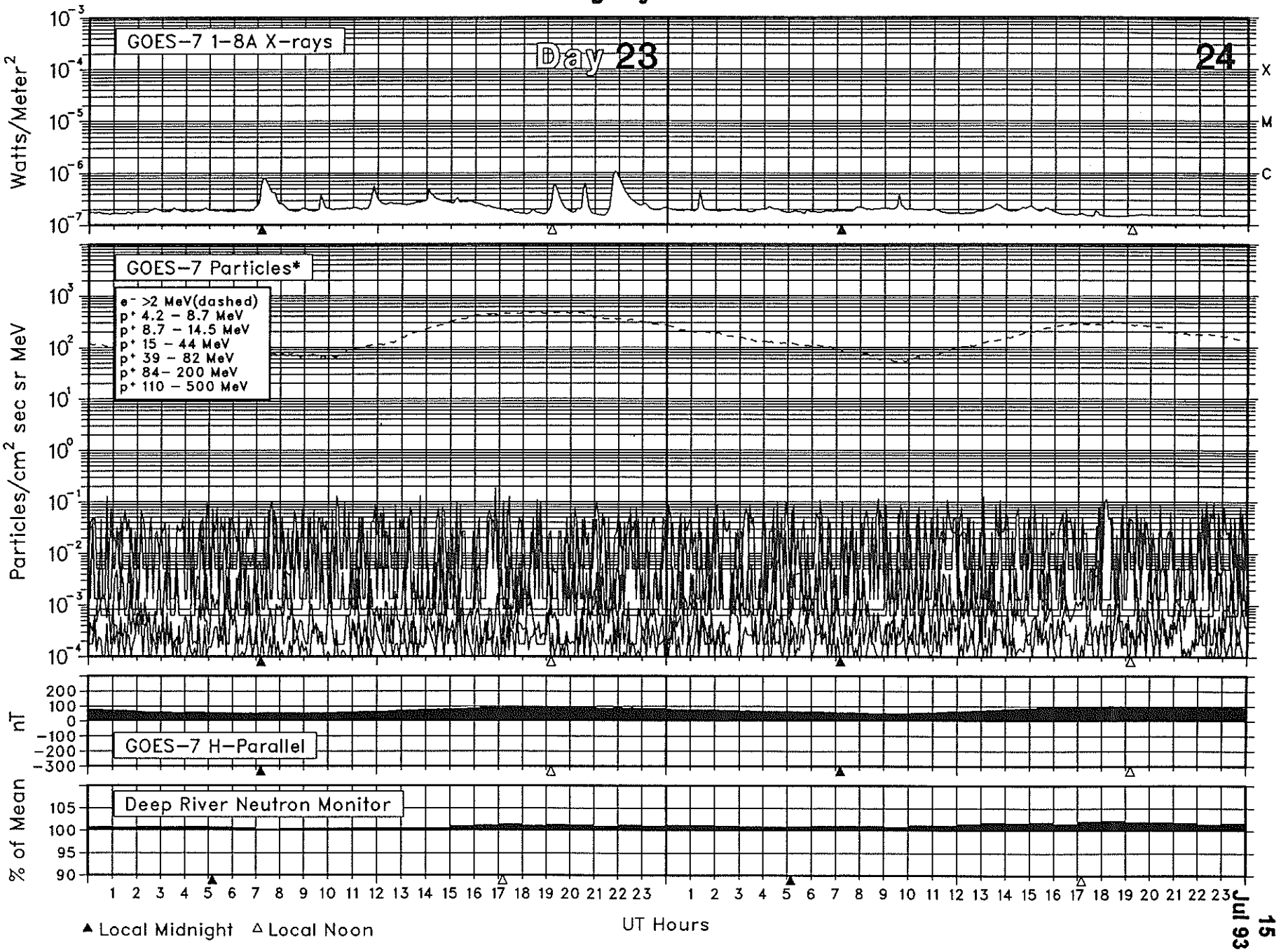

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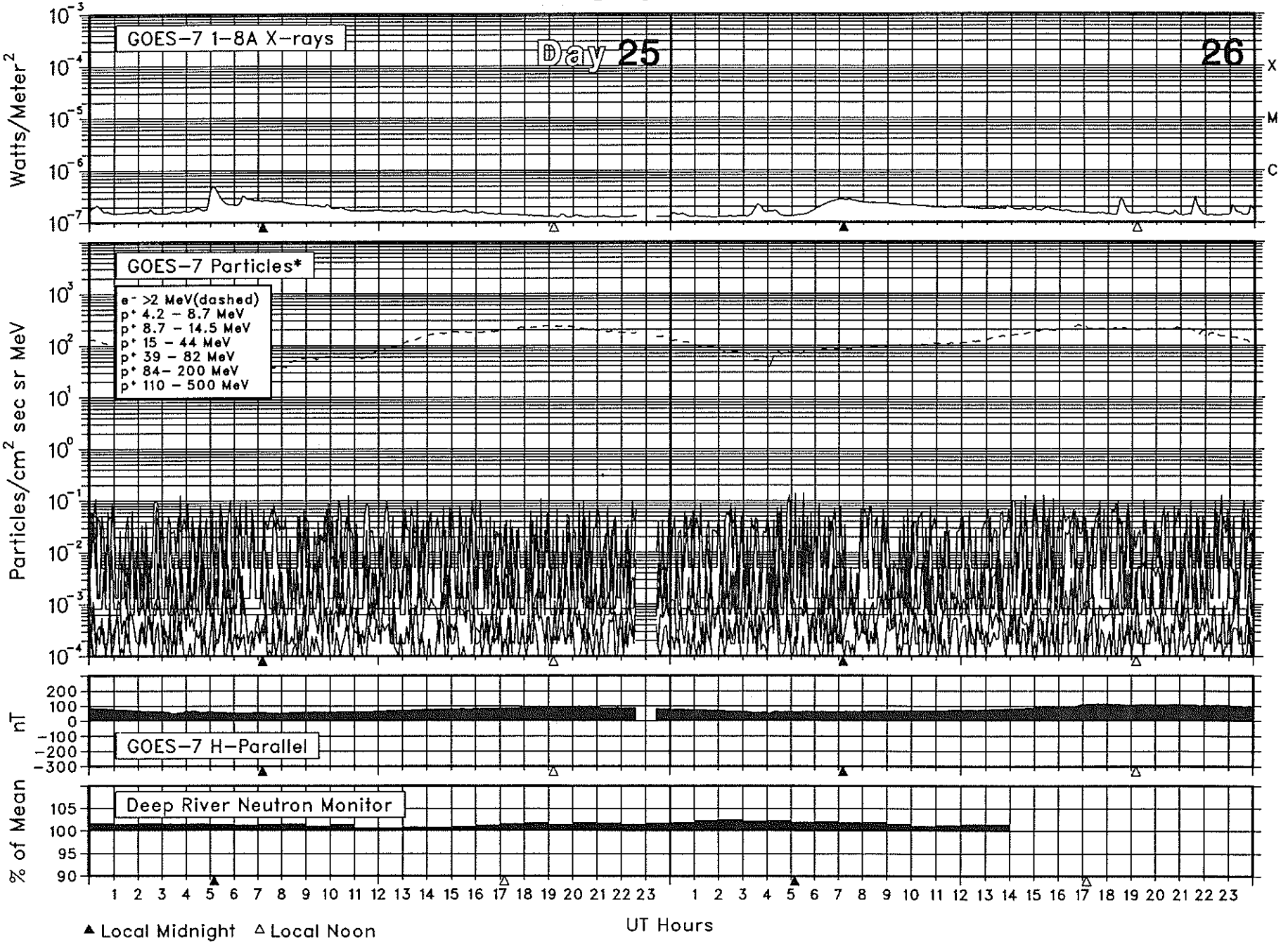

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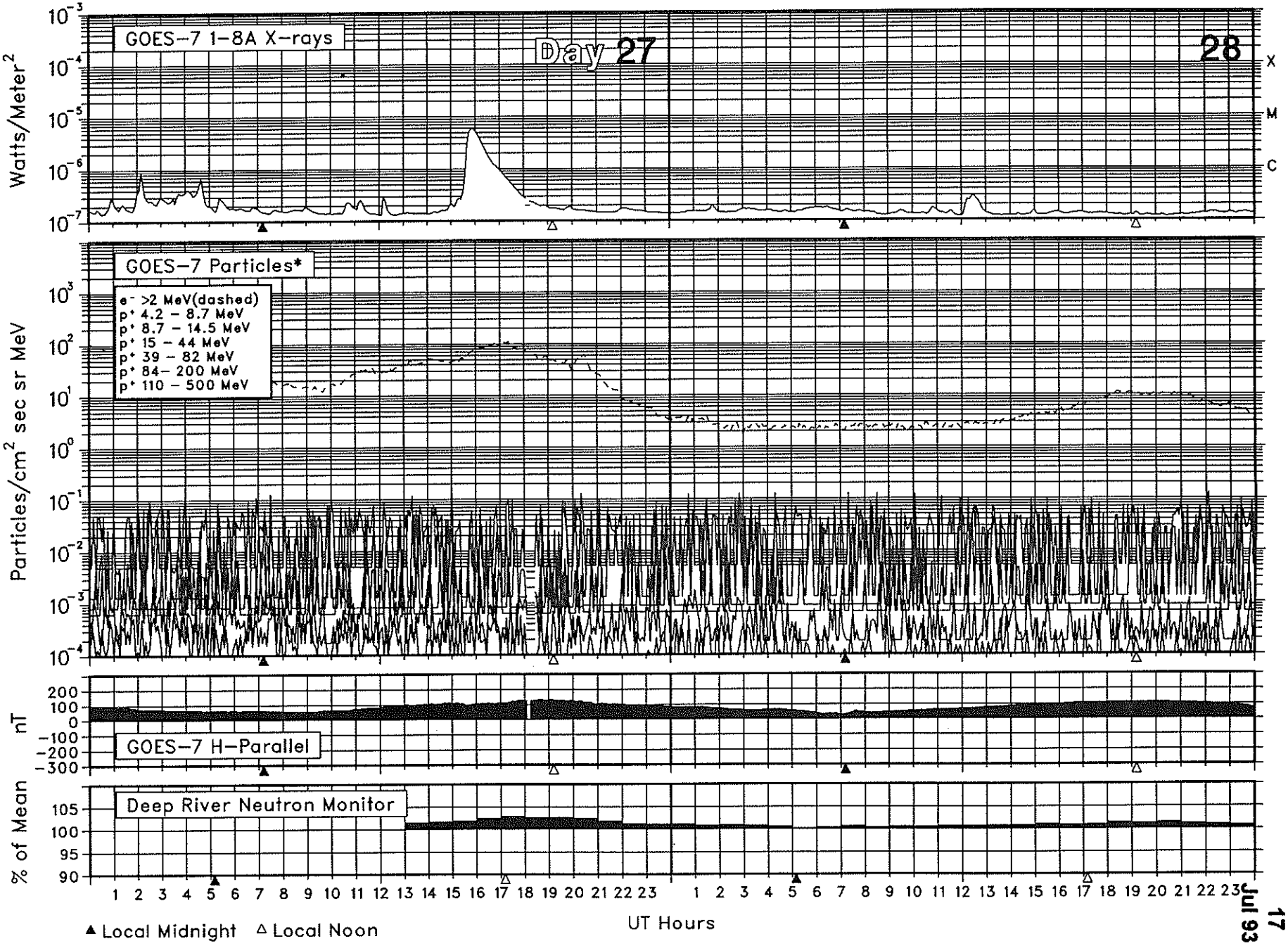

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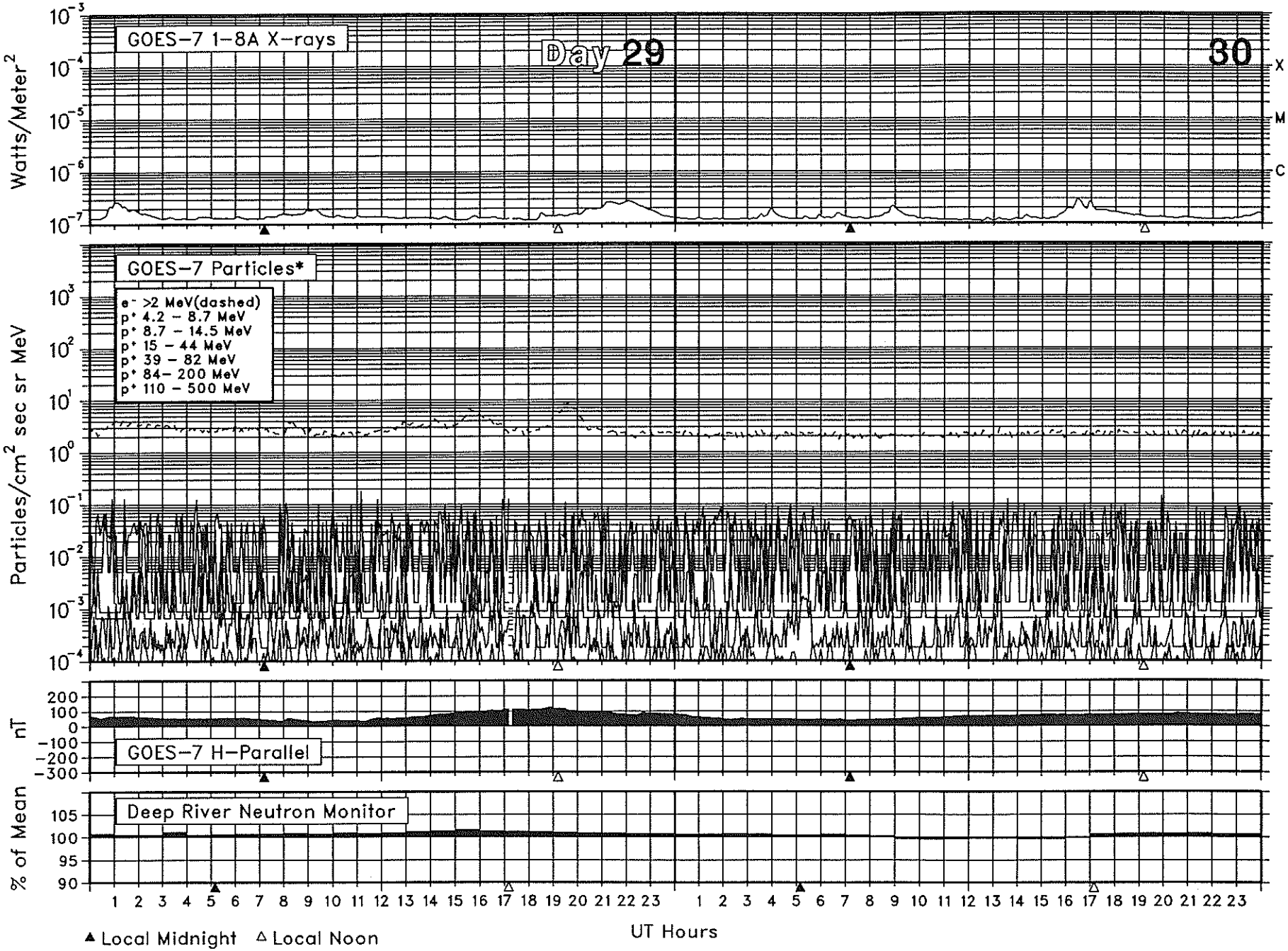

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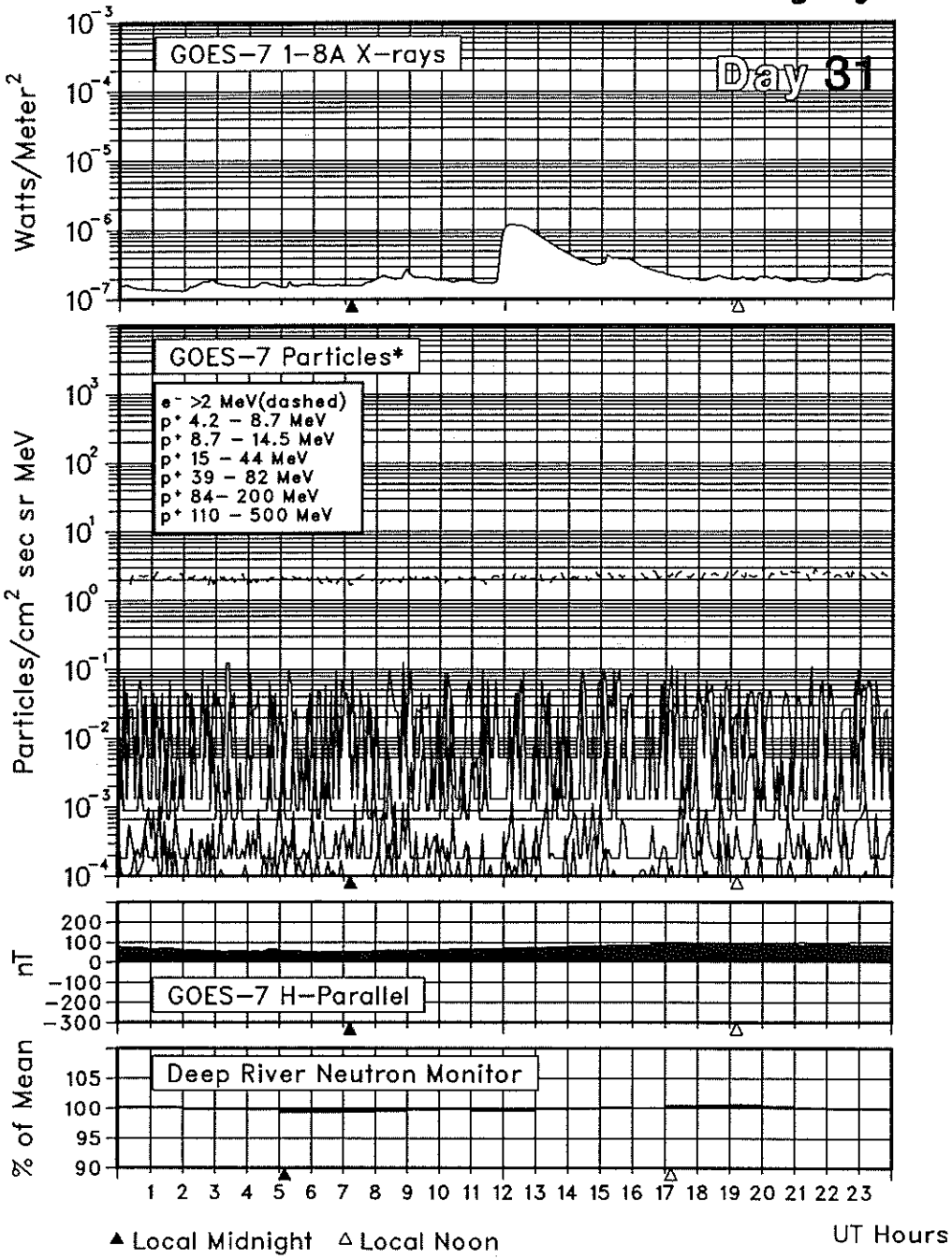

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ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages JULY 1993

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat	Location °Long	Flares Total	Flares M	Flares X	Date of Forecast	Region Forecast [1]	Geoadvice[1]
182	01	30	108	116	8	N02	W91	0	0	0	01	Q	SOL: Eruptive
						S12	W25	0	0	0	01	E	MAG: Active
						S11	E05	1	0	0	01	E	PROTON: Quiet
						S14	E23	0	0	0	01	Q	
						S06	W07	0	0	0	01	Q	
183	02	01	102	108	18	S12	W37	0	0	0	02	Q	SOL: Eruptive
						S11	W08	5	0	0	02	E	MAG: Active
						S14	E09	0	0	0	02	Q	PROTON: Quiet
						N01	E16	0	0	0	02	Q	
						S09	W20	0	0	0	02	Q	
184	03	02	073	110	23	S12	W51	0	0	0	03	Q	SOL: Eruptive
						S11	W21	4	1	0	03	E	MAG: Active
						N11	W18	0	0	0	03	Q	PROTON: Quiet
						S09	E66	0	0	0	03	E	
185	04	03	095	111	15	S12	W65	0	0	0	04	Q	SOL: Eruptive
						S12	W34	6	1	0	04	E	MAG: Active
						S17	W18	0	0	0	04	Q	PROTON: Quiet
						N11	W31	0	0	0	04	Q	
						S09	E51	0	0	0	04	E	
						S17	W06	0	0	0	04	Q	
186	05	04	104	107	8	S12	W77	0	0	0	05	Q	SOL: Active
						S12	W48	5	2	0	05	E	MAG: Quiet
						S17	W28	2	0	0	05	Q	PROTON: Quiet
						N10	W44	1	0	0	05	Q	
						S09	E38	0	0	0	05	Q	
						N05	W34	1	0	0	05	Q	
						N22	E63	0	0	0	05	Q	
187	06	05	099	101	2	S12	W88	0	0	0	06	Q	SOL: Eruptive
						S11	W60	4	0	0	06	E	MAG: Quiet
						N10	W55	0	0	0	06	Q	PROTON: Quiet
						S09	E26	0	0	0	06	Q	
						N06	W46	0	0	0	06	Q	
						N22	E51	0	0	0	06	Q	
						N08	E70	1	0	0	06	Q	
188	07	06	080	095	5	S11	W75	4	0	0	07	E	SOL: Eruptive
						N10	W72	1	0	0	07	Q	MAG: Quiet
						S10	E12	0	0	0	07	Q	PROTON: Quiet
						N06	W62	0	0	0	07	Q	
						N22	E37	0	0	0	07	Q	
						N08	E57	1	0	0	07	Q	
189	08	07	063	093	10	S11	W88	3	0	0	08	Q	SOL: Eruptive
						S10	W02	0	0	0	08	Q	MAG: Quiet
						N06	W74	0	0	0	08	Q	PROTON: Quiet
						N22	E25	0	0	0	08	Q	
						N08	E44	0	0	0	08	Q	
190	09	08	063	093	14	S09	W15	1	0	0	09	Q	SOL: Quiet
						N22	E11	0	0	0	09	Q	MAG: Active
						N08	E32	0	0	0	09	Q	PROTON: Quiet
						S08	E68	0	0	0	09	Q	
						N03	E61	0	0	0	09	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JULY 1993

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	Flares M	Flares X	Date of Forecast	Region Forecast [1]	Geoadvice[1]
191	10	09	063	090	11	S10 W26	0	0	0	10	Q	SOL: Quiet
						N22 W01	0	0	0	10	Q	MAG: Quiet
						N08 E18	0	0	0	10	Q	PROTON: Quiet
						S08 E55	0	0	0	10	Q	
						N04 E45	0	0	0	10	Q	
192	11	10	049	086	10	S07 W42	0	0	0	11	Q	SOL: Quiet
						N08 E05	0	0	0	11	Q	MAG: Quiet
						S09 E41	0	0	0	11	Q	PROTON: Quiet
						N04 E33	0	0	0	11	Q	
193	12	11	045	083	22	N08 W08	0	0	0	12	Q	SOL: Quiet
						S09 E29	0	0	0	12	Q	MAG: Quiet
						N05 E20	0	0	0	12	Q	PROTON: Quiet
194	13	12	060	086	9	N08 W22	1	0	0	13	Q	SOL: Quiet
						S09 E18	0	0	0	13	Q	MAG: Quiet
						N05 E06	0	0	0	13	Q	PROTON: Quiet
						N08 E44	0	0	0	13	Q	
195	14	13	076	087	8	N08 W34	0	0	0	14	Q	SOL: Quiet
						S09 E03	1	0	0	14	Q	MAG: Quiet
						N04 W08	0	0	0	14	Q	PROTON: Quiet
						N07 E28	0	0	0	14	Q	
						S08 E35	0	0	0	14	Q	
196	15	14	092	093	0	N08 W48	0	0	0	15	Q	SOL: Quiet
						S09 W11	8	0	0	15	E	MAG: Quiet
						N05 W22	0	0	0	15	Q	PROTON: Quiet
						N07 E15	0	0	0	15	Q	
						S08 E21	0	0	0	15	Q	
197	16	15	102	093	3	N07 W61	0	0	0	16	Q	SOL: Eruptive
						S09 W25	0	0	0	16	E	MAG: Quiet
						N03 W37	0	0	0	16	Q	PROTON: Quiet
						N06 E03	1	0	0	16	Q	
						S08 E14	0	0	0	16	Q	
						N08 E75	0	0	0	16	Q	
198	17	16	096	097	1	N07 W73	0	0	0	17	Q	SOL: Eruptive
						S09 W38	0	0	0	17	Q	MAG: Quiet
						N03 W52	0	0	0	17	Q	PROTON: Quiet
						N05 W11	0	0	0	17	Q	
						S08 W07	0	0	0	17	Q	
						N08 E61	0	0	0	17	Q	
						S11 E75	0	0	0	17	Q	
199	18	17	088	099	1	N08 W88	1	0	0	18	Q	SOL: Eruptive
						S08 W53	0	0	0	18	Q	MAG: Quiet
						N07 W24	2	0	0	18	E	PROTON: Quiet
						N08 E50	0	0	0	18	Q	
						S11 E64	0	0	0	18	Q	
						S17 W14	0	0	0	18	Q	
200	19	18	118	100	3	S08 W67	0	0	0	19	Q	SOL: Eruptive
						N03 W77	0	0	0	19	Q	MAG: Quiet
						N07 W38	0	0	0	19	Q	PROTON: Quiet
						N08 E36	0	0	0	19	Q	
						S11 E49	0	0	0	19	Q	
						S17 W27	1	0	0	19	Q	
						S19 E52	1	0	0	19	Q	
						S09 E70	0	0	0	19	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JULY 1993

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat	Location °Long	Flares Total	Flares M	Flares X	Date of Forecast	Region Forecast [1]	Geoadvice[1]
201	20	19	102	101	2	S09	W84	0	0	0	20	Q	SOL: Quiet
						N07	W51	0	0	0	20	Q	MAG: Quiet
						N09	E24	1	0	0	20	Q	PROTON: Quiet
						S11	E36	1	0	0	20	Q	
						S17	W41	0	0	0	20	Q	
						S20	E40	0	0	0	20	Q	
						S09	E59	0	0	0	20	Q	
202	21	20	094	102	12	N06	W63	0	0	0	21	Q	SOL: Eruptive
						N08	E10	0	0	0	21	Q	MAG: Active
						S11	E23	0	0	0	21	Q	PROTON: Quiet
						S17	W53	1	0	0	21	Q	
						S20	E28	2	0	0	21	Q	
						S10	E47	0	0	0	21	Q	
203	22	21	079	105	13	N08	W03	0	0	0	22	Q	SOL: Quiet
						S11	E11	1	0	0	22	Q	MAG: Active
						S16	W68	0	0	0	22	Q	PROTON: Quiet
						S19	E15	0	0	0	22	Q	
						S09	E34	0	0	0	22	Q	
204	23	22	076	108	11	N09	W16	0	0	0	23	Q	SOL: Quiet
						S11	W02	1	0	0	23	Q	MAG: Quiet
						S19	E02	0	0	0	23	Q	PROTON: Quiet
						S08	E21	0	0	0	23	Q	
205	24	23	097	110	5	N08	W29	0	0	0	24	Q	SOL: Eruptive
						S12	W16	2	0	0	24	Q	MAG: Quiet
						S20	W11	1	0	0	24	Q	PROTON: Quiet
						S09	E08	1	0	0	24	Q	
						N14	E68	2	0	0	24	Q	
						S13	E60	1	0	0	24	Q	
206	25	24	092	106	2	N09	W43	0	0	0	25	Q	SOL: Eruptive
						S11	W28	1	0	0	25	Q	MAG: Quiet
						S20	W24	2	0	0	25	Q	PROTON: Quiet
						S09	W03	0	0	0	25	Q	
						N14	E55	1	0	0	25	Q	
						S13	E45	0	0	0	25	Q	
207	26	25	080	102	2	N09	W56	0	0	0	26	Q	SOL: Quiet
						S12	W41	1	0	0	26	Q	MAG: Quiet
						S20	W38	1	0	0	26	Q	PROTON: Quiet
						S09	W16	1	0	0	26	Q	
						N15	E43	1	0	0	26	Q	
						S13	E30	1	0	0	26	Q	
208	27	26	082	104	4	S12	W54	0	0	0	27	Q	SOL: Quiet
						S20	W53	0	0	0	27	Q	MAG: Quiet
						S10	W26	0	0	0	27	Q	PROTON: Quiet
						N14	E30	0	0	0	27	Q	
						S13	E18	0	0	0	27	Q	
						S07	E11	0	0	0	27	Q	
						N06	E71	2	0	0	27	Q	
209	28	27	098	103	7	S12	W68	0	0	0	28	Q	SOL: Quiet
						S20	W68	0	0	0	28	Q	MAG: Active
						S11	W38	0	0	0	28	Q	PROTON: Quiet
						N15	E17	1	0	0	28	Q	
						S12	E07	1	0	0	28	E	
						S08	W04	0	0	0	28	Q	
						N07	E57	3	0	0	28	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JULY 1993

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat	Location °Long	Flares Total	Flares M	Flares X	Date of Forecast	Region Forecast [1]	Geoadvice[1]
210	29	28	072	102	5	S12	W81	0	0	0	29	Q	SOL: Eruptive
						N14	E05	0	0	0	29	Q	MAG: Active
						S12	W07	0	0	0	29	Q	PROTON: Quiet
						S10	W18	0	0	0	29	Q	
						N07	E43	0	0	0	29	E	
211	30	29	072	100	14	N16	W07	0	0	0	30	Q	SOL: Quiet
						S12	W20	0	0	0	30	Q	MAG: Active
						S07	W31	0	0	0	30	Q	PROTON: Quiet
						N08	E30	0	0	0	30	Q	
212	31	30	051	098	5	N15	W20	1	0	0	31	Q	SOL: Quiet
						S12	W32	0	0	0	31	Q	MAG: Quiet
						N07	E17	0	0	0	31	Q	PROTON: Quiet

[1] **Region Forecast and Flare Geoadvice**

Q =Quiet (<50% probability of C-class flares)
E =Eruptive (C-class flares expected, probability >=50%)
A =Active (M-class flares expected, probability >=50%)
M =Major (X-class flares expected, probabiljty >=50%)
P =Proton (Proton flares exptected, probability >=50%)
Warning condition (activity levels expected to increase, but no numeric forecast given)
Nil (end of Alert period)
No forecast

Magnetic Geoadvice

Quiet
Active conditions expected (A>=20 or K=4)
Minor storm expected (A>=30 or K=5)
Major magstorm expected (A>=50 or K>=6)
Severe magstorm expected (A>=100 or K>=7)
Magstorm in progress (A>=30 or K>=4)
Warning condition (activity levels expected to increase, but no numeric forecast given)
Nil (end of Alert period)
No forecast

Proton Geoadvice

Quiet
Proton event expected (10 pfu at >10 MeV)
Major proton event expected (100 pfu at >100 MeV)
Proton event in progress (>10 MeV)
Warning condition (activity levels expected to increase, but no numeric forecast given)
Nil (end of Alert period)
No forecast

STRATWARM ALERTS

NO STRATWARMS RECORDED

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Aug 92	Sep	Oct	Nov	Dec	Jan 93	Feb	Mar	Apr†	May†	Jun†	Jul†
01	65	47	85	104	65	46	22	76	67	33	105	58
02	90	49	98	88	56	41	34	80	67	30	102	57
03	103	44	95	68	59	38	73	84	75	42	101	66
04	103	46	105	86	59	52	85	93	67	69	82	80
05	94	47	122	95	51	71	119	105	75	80	74	68
06	89	52	113	95	48	84	121	96	89	71	83	58
07	86	44	103	96	34	81	128	93	79	74	70	45
08	93	38	88	74	63	89	134	82	81	81	55	40
09	93	57	91	76	91	94	126	85	87	87	46	38
10	74	54	73	74	99	100	114	81	74	120	47	31
11	60	59	57	84	116	91	95	86	55	125	35	35
12	53	63	41	83	109	94	97	77	37	111	18	35
13	61	77	36	62	113	96	92	67	19	85	10	51
14	82	77	43	69	115	69	82	56	15	59	8	63
15	76	75	40	70	112	58	73	60	15	51	9	66
16	96	76	54	84	109	59	88	56	15	37	10	63
17	90	62	55	100	105	62	68	60	36	32	17	67
18	71	54	73	102	98	66	80	69	49	29	13	80
19	69	63	92	108	97	68	88	72	51	13	15	76
20	59	62	75	98	97	52	97	70	89	33	21	69
21	48	65	98	85	84	47	92	78	98	27	25	64
22	44	66	104	95	91	34	100	73	93	20	27	54
23	36	89	95	115	79	30	101	63	96	23	51	68
24	38	90	114	122	78	45	90	42	98	33	50	66
25	20	75	113	125	81	51	88	40	88	53	55	61
26	30	84	125	116	90	37	86	46	50	66	62	55
27	34	86	138	116	73	43	86	51	62	59	67	66
28	33	62	131	99	86	37	88	51	51	74	69	59
29	40	72	111	92	78	35		54	41	88	75	47
30	35	81	100	74	69	36		58	38	97	70	45
31	36		82		56	32		61		96		46
Mean	64.5	63.9	88.7	91.8	82.6	59.3	91.0	69.8	61.9	61.2	49.1	57.3

†=preliminary. The yearly mean sunspot number equals 94.3 for 1992.

Dominion Radio Observatory — PENTICTON 2800 MHz (10.7 cm) SOLAR FLUX — Adjusted to 1 AU

Day	Aug 92	Sep	Oct	Nov	Dec	Jan 93	Feb	Mar	Apr	May	Jun	Jul
01	113.6	101.6	118.2	144.8	127.1	118.3	121.5	129.6	123.5	104.2	140.4	111.8
02	128.2	106.3	119.5	138.8	126.0	117.4	124.7	141.0	120.7	104.7	143.4	113.6
03	135.1	108.9	120.2	132.9	121.3	120.6	133.0	148.6	117.0	108.9	140.4	114.2
04	134.7	106.4	126.1	140.4	115.9	117.1	143.2	163.8	116.4	112.4	133.7	110.1
05	134.3	121.2	130.1	133.6	112.4	120.8	155.6	162.5	118.9	120.0	137.7	103.9
06	141.9	141.3	137.3	130.5	115.9	125.8	178.8	164.0	133.1	122.2	131.3	98.4
07	145.4	133.6	135.8	132.4	116.1	126.3	171.2	150.9	130.0	133.0	115.7	96.5
08	147.5	130.8	125.4	129.7	124.8	128.6	183.4	144.3	143.5	131.2	115.2	96.4
09	141.1	118.5	121.0	129.9	129.6	124.5	180.3	140.6	136.0	131.5	118.9	93.2
10	136.3	118.4	112.1	133.7	137.5	127.7	175.0	146.7	139.2	136.8	116.0	89.0
11	133.9	120.1	110.0	132.0	159.0	127.4	168.8	148.0	119.4	134.7	104.9	85.8
12	131.7	118.7	106.5	124.7	163.1	135.6	144.9	158.7	103.7	129.0	96.2	88.7
13	132.3	128.8	108.2	122.2	167.6	136.6	131.7	139.9	97.7	122.4	89.4	89.5
14	132.0	123.1	104.9	123.4	161.8	128.8	137.9	134.2	92.8	114.6	86.4	95.7
15	133.8	121.5	97.8	124.1	150.4	121.9	131.6	129.7	88.8	106.7	84.6	96.3
16	140.0	127.9	99.9	133.7	145.8	129.1	130.5	120.5	90.0	101.1	85.0	100.3
17	137.1	120.6	105.8	148.9	145.5	121.9	121.4	122.4	96.5	98.4	86.1	102.6
18	132.7	118.5	111.4	158.2L	144.9	117.7	123.2	126.2	106.6	93.5	87.4	103.7
19	138.0	113.4	123.4	157.1	142.2	112.7	113.4	133.4	111.9	93.1	88.8	104.1
20	159.1	107.1	131.9	155.0	143.2	106.5	120.6	127.0	119.9	93.4	94.1	105.6
21	127.8	110.4	139.2	161.3K	140.8	103.3	120.3	129.7	120.5	93.3	94.0	108.9
22	124.4	112.3	149.2	162.0	137.6	101.0	130.3	126.6	118.4	94.1	99.8	111.2
23	113.2	112.6	140.3	171.7	139.3	102.7	129.6	120.1	122.9	97.3	113.1	113.3
24	104.0	112.6	145.1	169.4	132.0	101.6	132.7	114.4	130.3	100.9	125.4	109.8
25	100.1	116.5	159.4	162.4	132.0	102.6	125.5	116.0	126.2	102.4	122.6	105.1
26	94.4	117.3	167.9	158.2	127.2	103.3	123.8	116.4	125.0	110.4	126.0	106.8
27	95.8	121.6	168.9	152.6	121.2	107.6	121.6	122.4	119.6	122.7	131.7	106.4
28	97.6	116.6	172.3	144.7	123.4	108.6	121.4	125.8	115.2	129.2	127.8	104.6
29	97.1	117.7	161.6	136.0	121.3	110.7		128.3	108.1	132.5	126.7	103.5
30	96.6	116.2	225.8*	135.9	121.9	109.6		128.7	107.4	144.1	120.3	100.8
31	99.0		147.3		125.8	115.6		124.9		142.1		99.1
Mean	125.1	118.0	130.0*	142.0	134.6	117.2	139.1	135.0	116.7	114.9	112.8	102.2

* = corrected for burst in progress; K = wet snow on antenna (2300 UT measurement); L = value enhanced by burst

DAILY SOLAR INDICES

July 1993

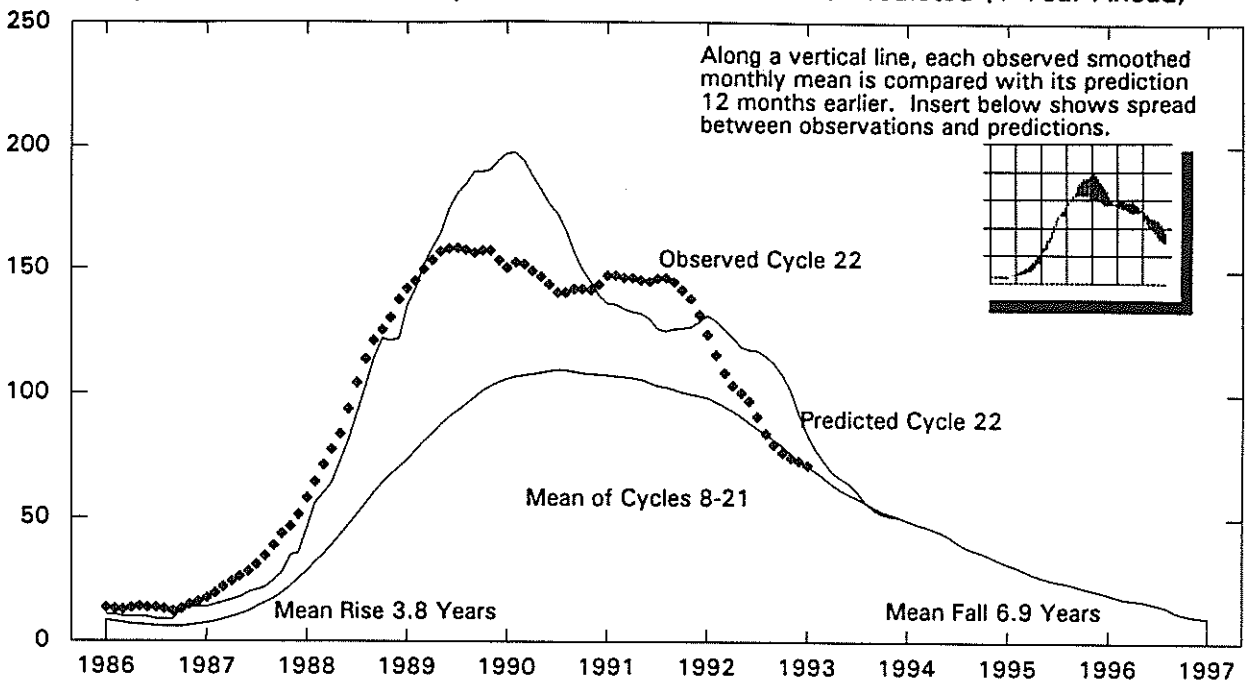
Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — LEAR (15400)	LEAR (8800)	LEAR (4995)	Pentic (2800)	LEAR (2695)	LEAR (1415)	LEAR (610)	LEAR (410)	LEAR (245)
1	182	8	58	63	108.1	510	245	164	111.8	113	85	58	33	25
2	183	9	57	61	109.9	530	246	162	113.6	110	83	58	31	15
3	184	10	66	70	110.5	518	246	161	114.2	110	83	56	35	21
4	185	11	80	73	106.5	---	245	159	110.1	109	84	53	33	19
5	186	12	68	71	100.5	542	246	160	103.9	103	81	54	34	--
6	187	13	58	54	95.2	541	239	147	98.4	97	70	43	29	20
7	188	14	45	42	93.4	534	236	147	96.5	94	70	48	28	18
8	189	15	40	45	93.3	522	237	144	96.4	90	70	49	29	26
9	190	16	38	38	90.2	526	235	144	93.2	89	67	47	28	18
10	191	17	31	33	86.1	529	234	140	89.0	84	67	48	29	14
11	192	18	35	34	83.0	530	226	132	85.8	87	63	47	27	14
12	193	19	35	38	85.8	513	230	138	88.7	83	65	44	26	14
13	194	20	51	52	86.6	521	229	137	89.5	85	63	44	27	15
14	195	21	63	62	92.6	518	231	142	95.7	90	65	48	27	14
15	196	22	66	68	93.2	518	232	145	96.3	93	70	48	28	18
16	197	23	63	64	97.1	523	233	144	100.3	94	68	46	30	15
17	198	24	67	65	99.3	526	235	146	102.6	96	73	52	29	14
18	199	25	80	82	100.4	524	240	150	103.7	101	75	52	30	14
19	200	26	76	77	100.8	534	240	154	104.1	104	72	59	32	16
20	201	27	69	69	102.2	523	242	152	105.6	101	75	48	31	15
21	202	1	64	66	105.4	536	240	157	108.9	105	76	54	32	17
22	203	2	54	62	107.7	---	---	---	111.2	---	--	--	--	--
23	204	3	68	65	109.8	531	243	156	113.3	106	82	56	33	18
24	205	4	66	65	106.4	529	245	158	109.8	109	83	58	35	22
25	206	5	61	51	101.9	537	242	153	105.1	104	80	57	35	27
26	207	6	55	58	103.6	532	229	148	106.8	103	83	57	32	14
27	208	7	66	67	103.2	526	243	153	106.4	105	86	60	32	15
28	209	8	59	53	101.5	532	240	151	104.6	105	82	56	32	18
29	210	9	47	46	100.4	449	225	144	103.5	100	82	52	30	14
30	211	10	45	41	97.9	529	237	147	100.8	99	81	54	30	13
31	212	11	46	45	96.2	526	235	145	99.1	94	77	53	30	14
MEAN			57.3	57.4	99.0	524	237	149	102.2	98	75	51	30	17

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

The observed and the adjusted Penticton fluxes tabulated here are the "Series C" daily values reported by the Dominion Radio Astrophysical Observatory, Penticton, British Columbia, Canada. Numbers in parentheses in the column headings denote frequencies in MHz.

Equipment problems produced any gaps in the Air Weather Service's Learmonth (LEAR) observations.

Cycle 22 Smoothed Sunspot Numbers: Observed and Predicted (1 Year Ahead)



Smoothed Sunspot Numbers (Observed and Predicted) for Parts of Solar Cycles 21 and 22

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1987	18	20	22	24	26	28	31	35	39	44	47	51	32
1988	58	65	71	78	84	94	104	114	121	125	130	138	98
1989	142	145	150	154	157	158	158	158	157	157	158	154	154
1990	151	153	152	149	147	144	141	140	142	142	142	144	146
1991	148	148	147	146	146	145	146	147	145	142	138	132	144
1992	124	115	108	103	100	97	91	84	80	76	74	73	94
1993	71	69	67	64	62	60	59	57	55	53	52	51	60
( )		(3)	(6)	(8)	(9)	(9)	(11)	(13)	(15)	(16)	(18)	(19)	(11)
1994	50	48	47	46	45	43	41	39	38	36	35	33	42
( )	(20)	(21)	(21)	(22)	(22)	(22)	(23)	(24)	(25)	(25)	(25)	(25)	(23)
1995	32	31	29	28	27	26	25	24	23	22	22	21	26
( )	(25)	(24)	(24)	(24)	(23)	(23)	(23)	(22)	(22)	(20)	(19)	(19)	(23)

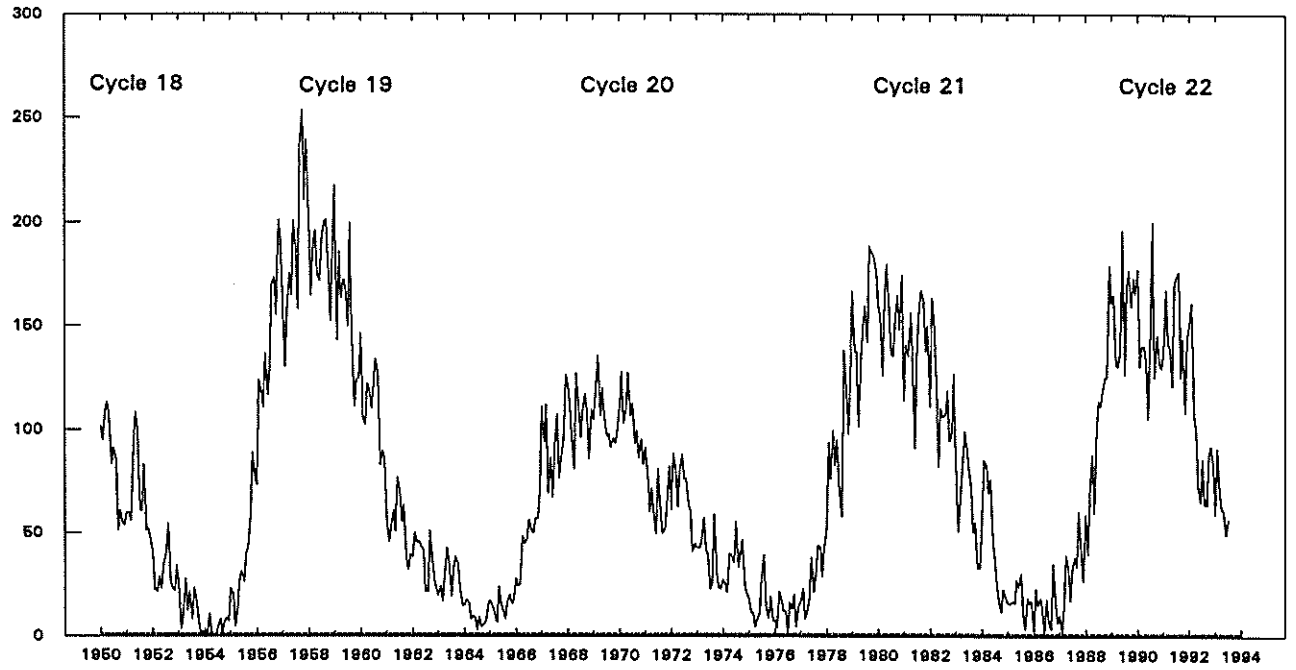
Solar Cycle 21 | Solar Cycle 22 | Min, Max, and Predictions

September 1986 marks the minimum of Solar Cycle 21 and the onset of Cycle 22, which in turn, reached a maximum in July 1989.

Observed and Predicted Numbers. For the end of Cycle 21, and the rise and decline of Cycle 22, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Mar 1993 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 Jul 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 January 1994 prediction. There exists a 90% chance that in January 1994 the actual smoothed number will fall somewhere between 30 and 70.

Points to Ponder. The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 14 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current 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 Sep 1986.

Monthly Mean Sunspot Numbers Jan 1950 - Jul 1993



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	
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	29.4	
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	100.2	
1989	161.3	165.1	131.4	130.6	138.5	196.2	126.9	168.9	176.7	159.4	173.0	165.5	157.6	M
1990	177.3	130.5	140.3	140.3	132.2	105.4	149.4	200.3	125.2	145.5	131.4	129.7	142.6	
1991	136.9	167.5	141.9	140.0	121.3	169.7	173.7	176.3	125.3	144.1	108.2	144.4	145.7	
1992	150.0	161.1	106.7	99.8	73.8	65.2	85.7	64.5	63.9	88.7	91.8	82.6	94.3	
1993	59.3	91.0	69.8	61.9	61.2	49.1	57.3						64.2	

Values are preliminary since Apr 1993. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

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JULY 1993

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	01	0043	0050	0056						13		C 2.1						
GOES		0105	0109	0113						8		C 1.2						
LEAR		0230	0252	0329	S15	E07	7530	07	1.6	59	SF	C 2.0	3	E		44		F
GOES		0454	0502	0505						11		B 6.6						
SVTO		1039	1040	1045	S12	W03	7530	07	1.2	6	SF		3	E		21		F
SVTO		1449	1450	1505	S13	W05	7530	07	1.2	16	SF		3	E		18		F
SVTO		1643	1646	1652	S12	W07	7530	07	1.2	9	SF	B 5.1	3	E		13		F
HOLL		1644E	1646U	1649	S12	W08	7530	07	1.1	5D	SF	B 5.1	3	E		21		F
RAMY		1646	1647	1658	S12	W07	7530	07	1.2	12	SF		3	E		25		F
GOES		1650	1655	1657						7	SF	B 3.7						
GOES		2057	2101	2105						8	SF	B 4.4						
HOLL		2122	2126	2130	S11	W06	7530	07	1.4	8	SF		3	E		12		
HOLL		2141	2142	2144	S12	W11	7530	07	1.1	3	SF	B 3.9	3	E		26		
GOES	02	0113	0116	0120						7		B 4.3						
GOES		0648	0651	0654						6	SF	B 7.4						
SVTO		0827	0837	0856	S10	W89	7531	06	25.8	29	SF	C 1.0	3	E		27		
GOES		1028	1037	1047						19		B 8.5						
RAMY		1128	1132	1146	S10	W10	7530	07	1.7	18	SF		3	E		29		F
RAMY		1314	1318	1345D	S11	W14	7530	07	1.5	31D	2B	M 4.3	3	E		276		FE
RAMY		1317	1317	1322	S20	E02	7534	07	2.7	5	SF		3	E		14		F
HOLL		1318	1324	1415D	S10	W20	7530	07	1.0	57D	SB		1	E		95		FH
RAMY		1350	1351	1401	S11	W14	7530	07	1.5	11	SF		3	E		49		F
HOLL		1415	1419	1445	S10	W04	7534	07	2.3	30	SF		3	E		48		
HOLL		1428	1430	1452	S13	W14	7530	07	1.5	24	SF		3	E		59		
RAMY		1429	1429	1431	S10	W15	7530	07	1.5	2	SF		3	E		12		
GOES		1743	1747	1753						10		B 8.6						
GOES	03	0802	0812	0825						23		B 9.9						
RAMY		1039E	1101	1153	S11	W25	7530	07	1.6	74D	1N		3	E		104		FE
SVTO		1040	1106	1151	S13	W26	7530	07	1.5	71	1N	M 1.6	3	E		134		FE
SVTO		1306	1306	1314	S11	W25	7530	07	1.7	8	SF		3	E		16		
SVTO		1318	1320	1342	S11	W25	7530	07	1.7	24	SF	B 8.0	3	E		45		
GOES		1353	1357	1400						7		C 1.1						
GOES		1423	1427	1431						8		B 6.6						
GOES		1454	1458	1507						13		B 8.6						
HOLL		1537	1546	1634	S11	W29	7530	07	1.5	57	SN		3	E		82		
GOES		1712	1716	1730						18		B 8.3						
HOLL		1715	1824	1907	S11	W28	7530	07	1.6	112	SF	C 1.2	3	E		86		FE
GOES		1806	1812	1817						11		C 1.7						
GOES		1833	1837	1839						6		B 9.6						
GOES		2003	2009	2014						11		B 8.8						
HOLL		2016	2021	2032	S11	W30	7530	07	1.6	16	SF		3	E		29		F
GOES	04	0218	0222	0227						9		B 7.4						
SVTO		0713	0715	0721	S11	W37	7530	07	1.5	8	SF	C 1.0	3	E		28		F
SVTO		0721	0756	0840	S16	W38	7530	07	1.4	79	1B	M 1.6	3	E		203		FE
SVTO		0850	0850	0904	S16	W39	7530	07	1.4	14	SF	C 1.1	3	E		12		FE
GOES		1016	1020	1025						9		B 9.8						
SVTO		1101	1206	1355	S11	W37	7530	07	1.7	174	2B	M 1.8	3	E		272		F
RAMY		1118E	1213U	1330	S12	W41	7530	07	1.4	132D	1B		3	E		248		UF
SVTO		1227	1238	1323	S15	W24	7534	07	2.7	56	SF		3	E		20		
HOLL		1228E	1232U	1321	S20	W31	7530	07	2.1	53D	1F		2	E		149		
HOLL		1427	1433	1521	N05	W29		07	2.4	54	SF		3	E		16		
HOLL		1440	1448	1459	S12	W44	7530	07	1.3	19	SF		3	E		26		
SVTO		1441	1445	1458	S11	W39	7530	07	1.7	17	SF		3	E		15		
HOLL		1634	1646	1659	S13	W28	7534	07	2.6	25	SF		3	E		43		
HOLL		1636	1639	1650	S12	W44	7530	07	1.4	14	SF	C 1.5	3	E		32		
HOLL		1659	1659	1703	N11	W41	7537	07	1.6	4	SF		3	E		32		
HOLL	05	0033	0035	0045	S13	W46	7530	07	1.5	12	SF	C 1.1	3	E		49		F
LEAR		0034	0035	0040	S12	W46	7530	07	1.5	6	SF	C 1.1	3	E		31		F
LEAR		0708	0708	0712	S12	W42	7530	07	2.1	4	SF		3	E		10		F
SVTO		0710E	0710U	0716	S14	W41	7534	07	2.2	6D	SF		3	E		10		
GOES		0937	0941	0945						8		B 3.8						
GOES		1130	1134	1136						6		B 4.6						
HOLL		1412	1415	1419	N07	E74		07	11.1	7	SF		3	E		32		
GOES		1431	1437	1441						10		B 4.1						

Hα S O L A R F L A R E S

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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	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	05	1920	1923	1933	S11	W61	7530	07	1.2	13	SF		3	E		16		F
HOLL		1944	1947	1956	S13	W58	7530	07	1.4	12	SF		3	E		39		H
GOES		2010	2013	2015						5		B 3.1						
GOES		2302	2306	2309						7		B 3.2						
GOES		2322	2328	2331						9		C 1.4						
LEAR	06	0141	0149	0200	S09	W63	7530	07	1.3	19	SF	B 2.8	3	E		18		
GOES		0324	0328	0331						7		B 2.9						
GOES		0450	0454	0458						8		B 3.1						
LEAR		0503	0514	0523	S09	W64	7530	07	1.4	20	SF		3	E		16		
LEAR		0626	0628	0636	S09	W65	7530	07	1.4	10	SF	B 8.9	3	E		21		
LEAR		0725	0725	0729	N06	E63	7542	07	11.0	4	SF		3	E		17		
GOES		0738	0741	0744						6		B 7.3						
SVTO		1004	1004	1016	S15	W68	7530	07	1.3	12	SF	C 1.0	3	E		18		F
SVTO		1011	1011	1018	N08	W65	7537	07	1.5	7	SF		3	E		10		
GOES		1106	1112	1115						9		C 1.1						
GOES		1302	1305	1307						5		B 3.2						
GOES		1438	1443	1445						7		B 4.2						
RAMY		1634	1651	1659	S12	W69	7530	07	1.5	25	SN	B 4.5	3	E		73		FE
HOLL		1645	1651	1657	S11	W68	7530	07	1.6	12	SN	B 4.5	3	E		30		
RAMY		1647	1650	1659	N06	E63	7542	07	11.4	12	SF		3	E		15		F
GOES		2151	2155	2205						14		B 2.6						
GOES	07	0109	0114	0124						15		B 3.2						
GOES		0129	0134	0141						12		B 5.7						
GOES		0519	0524	0531						12		B 4.6						
GOES		0615	0619	0621						6		B 4.2						
GOES		0922	0929	0937						15		B 5.2						
GOES		1045	1051	1054						9		C 1.2						
RAMY		1131	1134	1147	S12	W89	7530	06	30.8	16	SF	C 1.6	3	E		49		
GOES		1231	1236	1238						7		C 1.3						
GOES		1329	1334	1336						7		B 4.7						
GOES		1354	1400	1402						8		B 2.6						
HOLL		1359	1359	1404	S12	W82	7530	07	1.4	5	SF		3	E		19		
HOLL		1505	1507	1511	S11	W81	7530	07	1.5	6	SF	B 4.2	3	E		20		
HOLL		1704	1712	1722	S13	W89	7530	07	1.0	18	SF	B 4.8	4	E		84		
RAMY		1707	1712	1716	S12	W89	7530	07	1.0	9	SF	B 4.8	3	E		19		
GOES	08	0834	0900	0929						55		B 5.5						
GOES		1036	1042	1048						12		B 7.0						
GOES		1055	1059	1101						6		B 5.9						
GOES		1214	1222	1231						17		B 5.5						
HOLL		2250	2252	2259	S10	W12	7538	07	8.0	9	SF		3	E		16		F
GOES	09	0029	0034	0050						21		B 4.3						
GOES		0157	0209	0229						32		B 7.5						
GOES		0319	0348	0420						61		B 5.2						
GOES		1545	1601	1657						72		B 7.2						
GOES		1845	1858	2012						87		B 4.9						
GOES	10	0038	0046	0056						18		B 4.2						
GOES		2221	2353	2406						105		B 2.5						
GOES	11	0603	0606	0611						8		B 1.7						
GOES	12	0940	0944	0946						6		B 1.3						
SVTO		1026	1031	1036	N07	W16	7542	07	11.2	10	SF	B 2.1	3	E		25		
GOES		1029	1032	1035						6		B 2.7						
GOES		1833	1837	1841						8		B 1.5						
GOES		2103	2108	2110						7		B 1.8						
GOES	13	0018	0021	0024						6		B 1.0						
GOES		0124	0127	0130						6		B 1.0						
SVTO		0833	0835	0854	S09	E12	7543	07	14.2	21	SF	B 3.4	3	E		21		F
GOES		1346	1352	1359						13		B 1.6						
HOLL		1747	1754	1840	S08	E08	7543	07	14.3	53	SF		3	E		37		F
GOES	14	0429	0434	0442						13		B 1.9						

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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
SVTO	14	0654	0704	0731	S07	W01	7543	07	14.2	37	SF	B 6.0	3	E		79		F
LEAR		0703	0704	0724	S07	W03	7543	07	14.1	21	SF	B 6.0	3	E		34		F
SVTO		0944	0951	1003	S09	W03	7543	07	14.2	19	SF	B 4.8	3	E		29		F
SVTO		1143	1145	1150	S08	W03	7543	07	14.3	7	SF	B 6.0	3	E		36		F
RAMY		1144	1145	1150	S08	W05	7543	07	14.1	6	SF		3	E		47		F
RAMY		1223	1223	1235	S09	W06	7543	07	14.1	12	SF	B 9.5	3	E		14		F
RAMY		1311	1315	1327	S09	W06	7543	07	14.1	16	SF	B 2.7	3	E		13		F
GOES		1418	1421	1423						5		B 1.8						
GOES		1551	1555	1604						13		B 1.8						
HOLL		1738	1738	1742	S08	W08	7543	07	14.1	4	SF		3	E		12		F
HOLL		1800	1801	1809	S08	W09	7543	07	14.1	9	SF		3	E		20		F
HOLL		2036	2040	2045	S08	W11	7543	07	14.0	9	SF		3	E		17		
GOES		2250	2255	2302						12		B 2.7						
GOES	15	0350	0353	0355						5		B 2.4						
GOES		0720	0728	0742						22		B 2.1						
GOES		0743	0748	0752						9		B 2.5						
LEAR		0843	0845	0852	N07	E12	7545	07	16.3	9	SF	B 1.8	3	E		16		F
GOES		1556	1600	1602						6		B 1.5						
GOES		1743	1754	1756						13		B 2.4						
GOES	16	0402	0410	0419						17		B 2.4						
GOES		2326	2329	2333						7		B 1.7						
GOES	17	0635	0639	0642						7		B 2.1						
GOES		0821	0833	0844						23		C 2.3						
SVTO		1140	1141	1146	N05	W79	7542	07	11.6	6	SF	B 3.0	3	E		27		F
SVTO		1406	1406	1413	N02	W57	7544	07	13.3	7	SF	B 2.3	3	E		15		F
HOLL		1409	1418	1439	S08	W14	7546	07	16.5	30	SF		3	E		19		
RAMY		1438	1441	1446	N06	W20	7545	07	16.1	8	SF		3	E		11		
GOES		1617	1632	1639						22		B 2.7						
HOLL		2031	2033	2037	N06	W22	7545	07	16.2	6	SF		3	E		17		
GOES		2156	2203	2210						14		C 1.1						
LEAR	18	0706	0709	0715	S17	W19	7549	07	16.8	9	SF		3	E		15		
GOES		1116	1122	1127						11		B 2.7						
SVTO		1159	1159	1207	S18	E62		07	23.2	8	SF		3	E		15		F
GOES		1408	1415	1420						12		B 3.3						
GOES		1544	1548	1552						8		B 2.1						
GOES		1800	1809	1815						15		B 2.6						
GOES		1846	1852	1858						12		B 5.8						
LEAR	19	0310	0312	0326	N09	E38	7547	07	22.0	16	SF	B 2.1	3	E		20		
LEAR		0407	0416	0432	S08	E47	7548	07	22.7	25	SF	B 3.3	3	E		20		
SVTO		0410	0412U	0435	S05	E45	7548	07	22.5	25	SF	B 3.3	1	E		15		
GOES		0853	0856	0859						6		B 1.9						
GOES		1144	1150	1154						10		B 2.4						
GOES		1226	1231	1236						10		B 1.8						
GOES	20	0243	0259	0319						36		C 1.0						
LEAR		0805	0809	0842	S20	E35	7550	07	23.0	37	SF		3	E		21		F
RAMY		1522	1522	1532	S20	E34	7550	07	23.2	10	SF	B 5.5	3	E		10		
SVTO		1522	1522	1532	S20	E30	7550	07	22.9	10	SF	B 5.5	3	E		11		F
GOES		1553	1557	1605						12		B 3.3						
GOES		1817	1843	1911						54		B 3.6						
GOES		2017	2019	2021						4		B 3.0						
HOLL		2027	2029	2036D	S19	W50	7549	07	17.0	9D	SF		2	E		13		
HOLL	21	2255	2255	2257	S12	E09	7548	07	22.6	2	SF		3	E		17		
GOES		2327	2335	2345						18		B 3.1						
SVTO	22	0634	0636	0641	S11	E06	7548	07	22.7	7	SF	B 4.2	3	E		11		F
GOES		0824	0900	0920						56		B 8.4						
SVTO		0915E	0915U	0930	N14	E84		07	28.7	15D	SF		2	E		19		F
HOLL		1555E	1621	1654	S08	E26	7551	07	24.6	59D	SF		3	E		50		UE
GOES		1618	1624	1633						15		B 5.0						
GOES	23	0706	0717	0734						28		B 8.5						

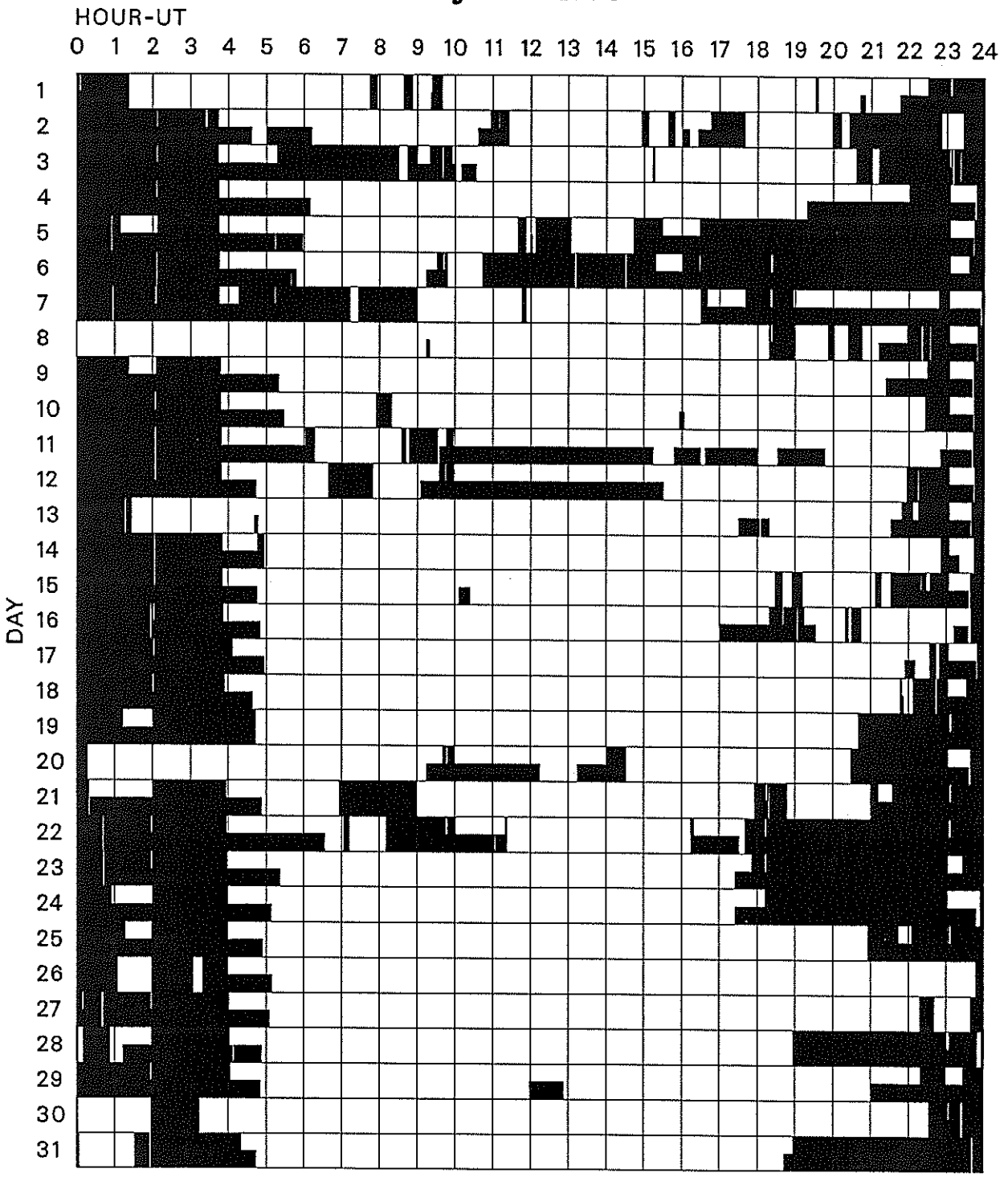
Hα SOLAR FLARES

JULY 1993

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	23	0938	0944	0946						8		B 6.6						
SVTO		1149	1150	1201	S09	E16	7551	07	24.7	12	SF	B 6.3	3	E		16		F
HOLL		1405	1405	1409	N18	E85		07	30.0	4	SF	B 5.4	3	E		26		
HOLL		1633	1633	1639	S13	E62		07	28.4	6	SF		3	E		14		
HOLL		1913	1918	1945	S11	W10	7548	07	23.0	32	SF	B 6.3	3	E		41		F
HOLL		2031	2034	2041	N17	E76	7552	07	29.6	10	SF	B 8.0	3	E		24		
HOLL		2138	2151U	2255	S10	W16	7548	07	22.7	77	1N	C 1.0	2	E		132		S
HOLL		2305	2305	2318	S19	W11	7550	07	23.1	13	SF		3	E		15		
HOLL	24	0118E	0121	0130	S19	W12	7550	07	23.1	12D	SF	B 5.6	1	E		58		F
LEAR		0120	0122	0126	S18	W13	7550	07	23.1	6	SF	B 5.6	3	E		33		F
SVTO		0433E	0434U	0441D	S11	W17	7548	07	22.9	8D	SF		2	E		23		
SVTO		0935	0935	0942	S19	W16	7550	07	23.2	7	SF	B 5.0	3	E		15		F
HOLL		1741	1744	1758	N17	E64	7552	07	29.6	17	SF		3	E		23		
HOLL	25	0008	0023	0038	S08	W04	7551	07	24.7	30	SF		3	E		14		F
HOLL		0016	0017	0021	S14	E45	7553	07	28.4	5	SF		3	E		14		
LEAR		0233	0234	0238	S21	W27	7550	07	23.0	5	SF		3	E		20		F
SVTO		0501	0505	0528	S11	W30	7548	07	22.9	27	SF	B 5.1	3	E		12		F
SVTO		0622	0623	0636	N13	E40		07	28.3	14	SF		3	E		24		F
HOLL	26	1833E	1835U	1842	N15	E69	7555	08	1.0	9D	SF	B 2.9	3	E		12		F
HOLL		2133	2134	2144	N13	E66	7555	07	31.9	11	SF	B 3.4	3	E		58		F
GOES		2304	2307	2312						8		B 2.4						
GOES		2347	2351	2357						10		B 2.2						
LEAR	27	0055	0056	0107	S14	E17	7553	07	28.3	12	SF	B 2.9	3	E		15		
GOES		0121	0124	0130						9		B 2.3						
GOES		0157	0200	0205						8		B 4.1						
GOES		0206	0211	0216						10		B 9.6						
GOES		0340	0408	0419						39		B 4.3						
GOES		0430	0443	0445						15		B 7.5						
GOES		0521	0525	0538						17		B 3.2						
GOES		1109	1115	1121						12		B 2.7						
SVTO		1212	1212	1217	N15	E26	7552	07	29.5	5	SF	B 4.2	3	E		13		
RAMY		1212	1213	1220	N15	E26	7552	07	29.5	8	SF	B 4.2	3	E		21		F
SVTO		1455	1543	1713	N08	E61	7555	08	1.2	138	1F	C 5.9	3	E		209		F
RAMY		1456	1456	1502	N10	E55	7555	07	31.7	6	SF		3	E		64		F
RAMY		1537	1544	1714	N13	E59	7555	08	1.1	97	SF		3	E		73		UF
HOLL		1605	1621	1800	N13	E58	7555	08	1.0	115	1N		2	E		175		F
HOLL		1852	1853	1858	S11	W67	7548	07	22.7	6	SF		3	E		12		
HOLL		1945	1947	1951	N08	E57	7555	08	1.1	6	SF		3	E		34		F
SVTO	28	0808	0809	0813	N62	E41	7555	08	1.0	5	SF		3	E		15		
GOES		1209	1230	1246						37		B 2.9						
HOLL	29	1827	1833	1841	N11	E27	7555	07	31.8	14	SF		3	E		15		
HOLL	30	1657	1658	1709	N17	W08	7552	07	30.1	12	SF	B 2.7	3	E		10		F
SVTO	31	0853	0853	0859	N16	W17	7552	07	30.1	6	SF		3	E		14		
GOES		1147	1209	1320						93		C 1.2						
HOLL		1428	1430	1455	S11	W41	7553	07	28.5	27	SF		3	E		16		
SVTO		1513	1514	1521	N16	W21	7552	07	30.0	8	SF		3	E		22		F

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

JULY 1993



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.

Holloman Learmonth Palehua Ramey San Vito

S O L A R R A D I O E M I S S I O N
Selected Fixed Frequency Events

JULY 1993

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
02	8800	SGMR	49	GB	1115.0	1318.0	130.0	850.0			QL=4 ST=2 TYP=6
	2695	SVTO	4	S/F	1314.0	1318.0	15.0	400.0			QL=4 ST=2 TYP=3
	8800	SGMR	49	GB	1315.0	1318.0	10.0	850.0			QL=4 ST=3 TYP=6
	2695	SGMR	4	S/F	1315.0	1318.0	10.0	270.0			QL=2 ST=2 TYP=3
	8800	SVTO	49	GB	1315.0	1318.0	12.0	730.0			QL=4 ST=2 TYP=6
04	8800	LEAR	4	S/F	0747.0	0750.0	5.0	97.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0747.0	0750.0	5.0	38.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	0747.0	0748.0	3.0	100.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	0748.0	0748.0	U	25.0			QL=4 ST=2 TYP=3
20	8800	SVTO	8	S	1008.0	1008.0	2.0	100.0			QL=4 ST=2 TYP=3
22	2695	SGMR	8	S	1228.0	1229.0	1.0	120.0			QL=4 ST=3 TYP=3
27	2695	SVTO	4	S/F	1538.0	1539.0	5.0	32.0			QL=4 ST=2 TYP=3

Reports are received routinely from the following observatories:
LEAR = Learmonth PALE = Palehua SGMR = Sagamore Hill SVTO = San Vito

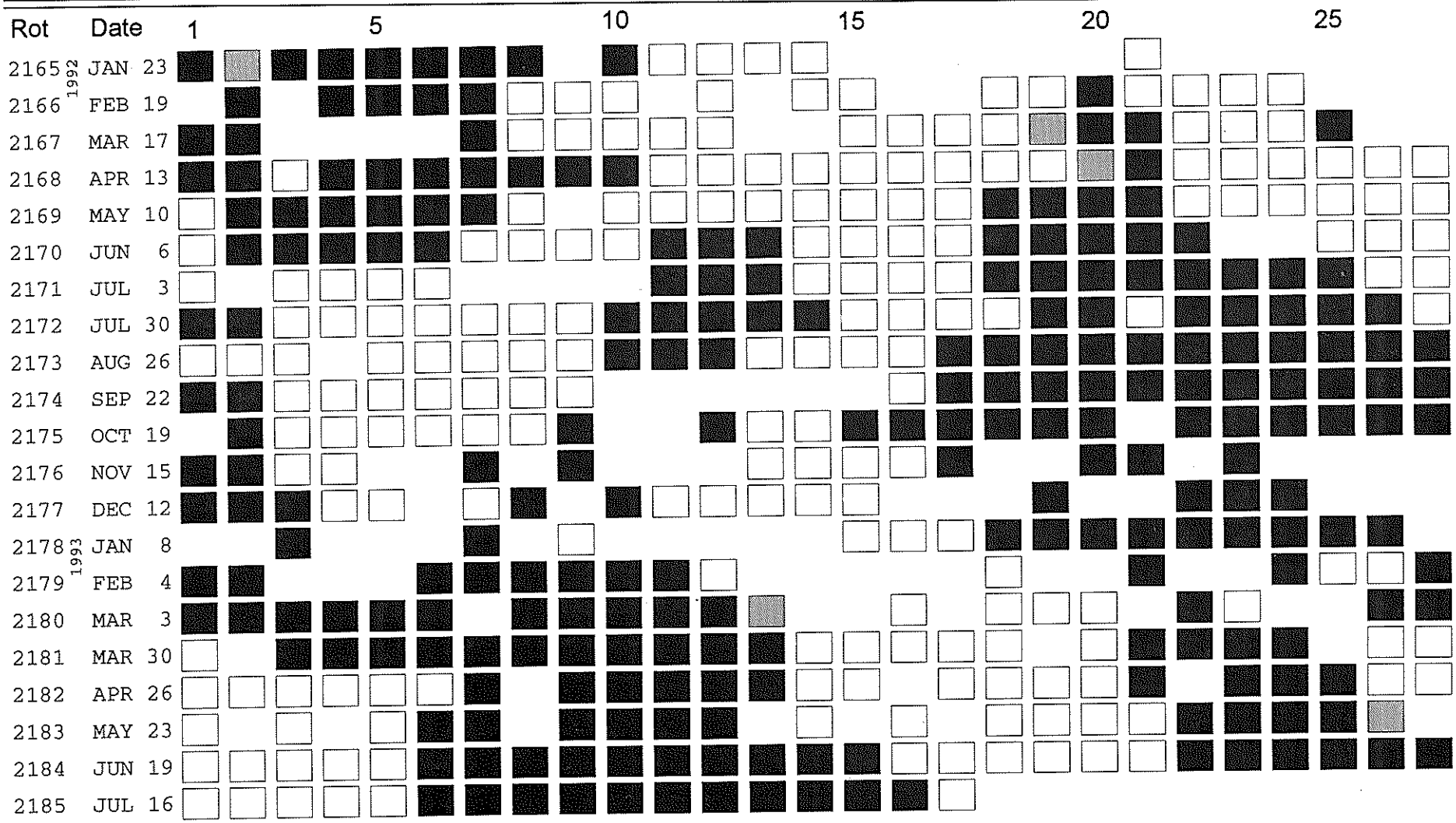
Explanation of Type Code:

1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precusor	41 Group of Bursts	47 Great Burst
6 Minor	23 Simple 3AF	29 Post Burst Increase	42 Series of Bursts	48 Major

1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A	40 Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	40F Rise Only F	260 Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A

RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; Hiraiso, Japan 500 and 200 MHz; and Toyokawa, Japan 9400, 3750, 2000 and 1000 MHz.

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 are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1992					1993						
Day	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1	39	88	.	19	-16	.	-8	1	-1	4	-81	-31
2	60	67	.	-5	.	-33	-25	-30	-11	-29	-84	-12
3	58	43	.	-24	.	-28	.	-38	-11	.	-56	-2
4	58	-22	.	-41	-39	-22	-61	-44	-25	-86	.	13
5	46	-27	.	-57	-38	.	-52	-56	-38	-85	3	34
6	38	-18	.	-47	.	.	.	-51	-63	-83	.	30
7	37	13	4	-48	-20	.	.	-58	-68	-48	60	26
8	-4	24	-17	.	.	.	.	-40	-59	-14	.	19
9	-45	19	-40	-29	.	.	-27	.	-55	9	56	7
10	-44	29	-68	-7	.	-38	-30	-25	-37	44	37	-5
11	-10	-18	-57	-1	.	.	-28	-41	-14	.	21	-8
12	-2	-25	-31	-5	-50	.	-51	-37	20	75	6	-10
13	10	-53	-38	-16	-41	.	-46	-50	44	41	-5	-24
14	9	-46	-29	-24	-15	-3	-36	-19	59	30	-17	-11
15	34	-33	-33	-23	8	.	21	0	64	7	-16	-2
16	14	-30	-14	-19	11	1	.	.	53	-7	-22	46
17	-19	-26	-5	20	.	.	.	.	.	.	0	55
18	-4	-26	-13	57	6	.	.	65	13	-12	.	43
19	11	-9	.	.	-9	.	.	.	-1	-26	42	43
20	-14	-13	-5	.	.	.	.	41	-11	-14	70	13
21	-12	-22	.	-2	-3	.	48	36	-13	3	66	-19
22	-17	-23	24	.	11	67	.	4	-9	19	60	-28
23	-3	-1	50	-9	42	69	.	.	.	38	45	-26
24	-6	17	66	.	57	61	-43	-26	20	.	-12	-22
25	1	54	47	.	49	-14	.	4	1	60	-53	-28
26	4	79	20	.	40	-53	.	.	9	.	-61	-45
27	25	85	-7	60	.	-62	-1	.	18	21	-61	-20
28	55	60	.	62	.	-44	13	-11	39	-15	-66	-13
29	.	39	.	55	.	-19		-11	43	-42	-74	-26
30	101	7	-14	11	-59	-28		8	18	.	-44	-33
31	97		22		.	-2		.		-75		-2

Dot symbol indicates no data available for the day.

CONTENTS

Prompt Reports

Number 588 Part I

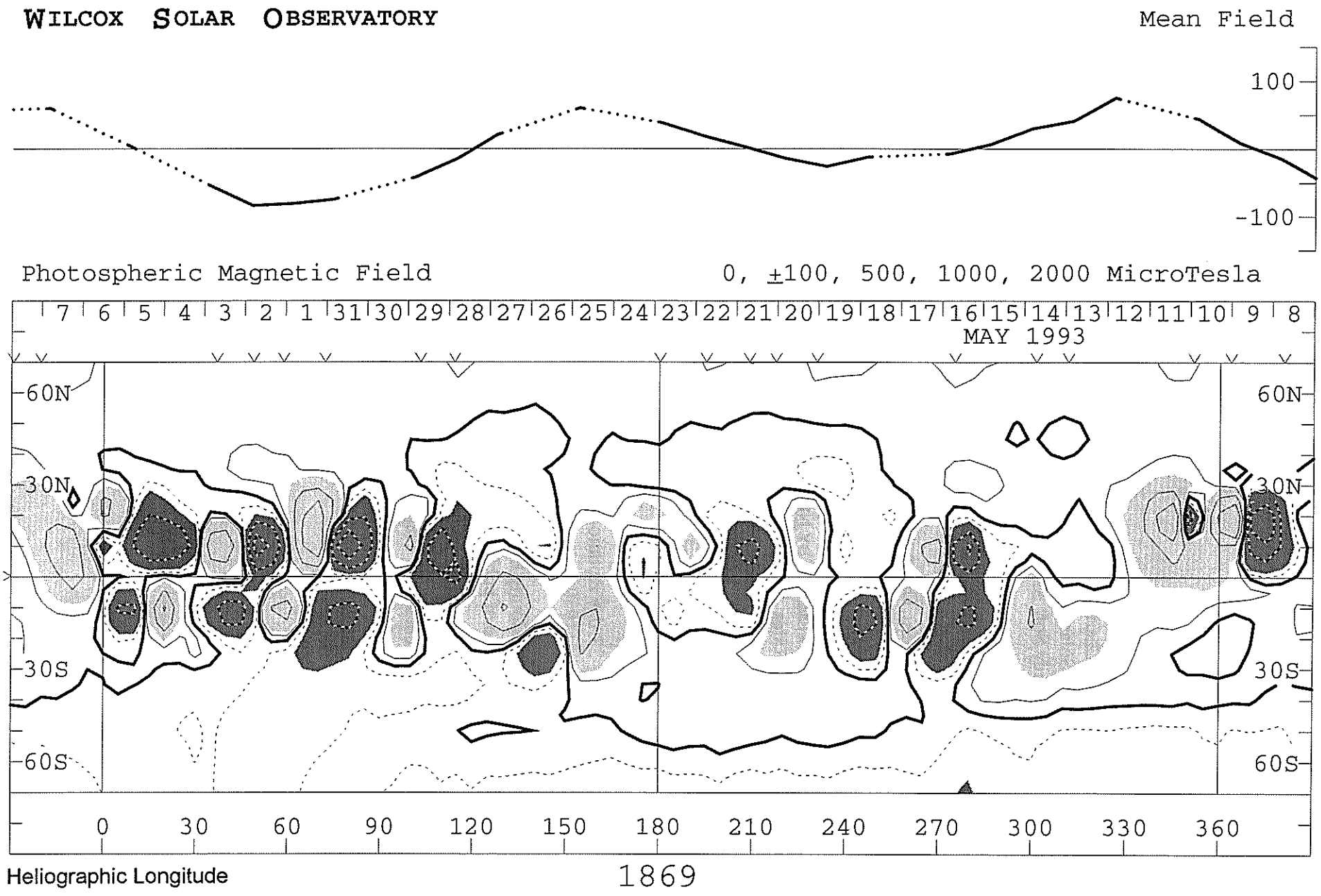
DATA FOR JUNE 1993

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1869

(10 May to 6 June 1993)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

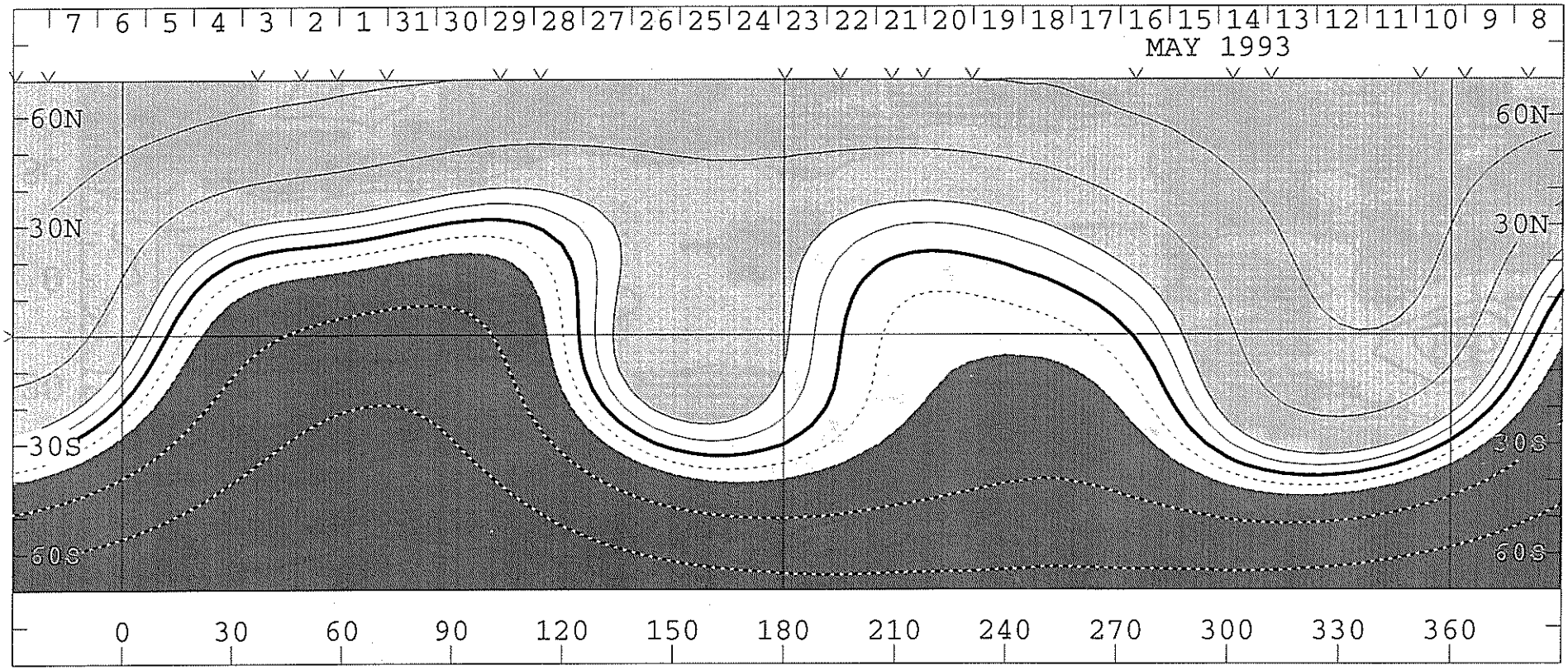
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1869

(10 May to 6 June 1993)

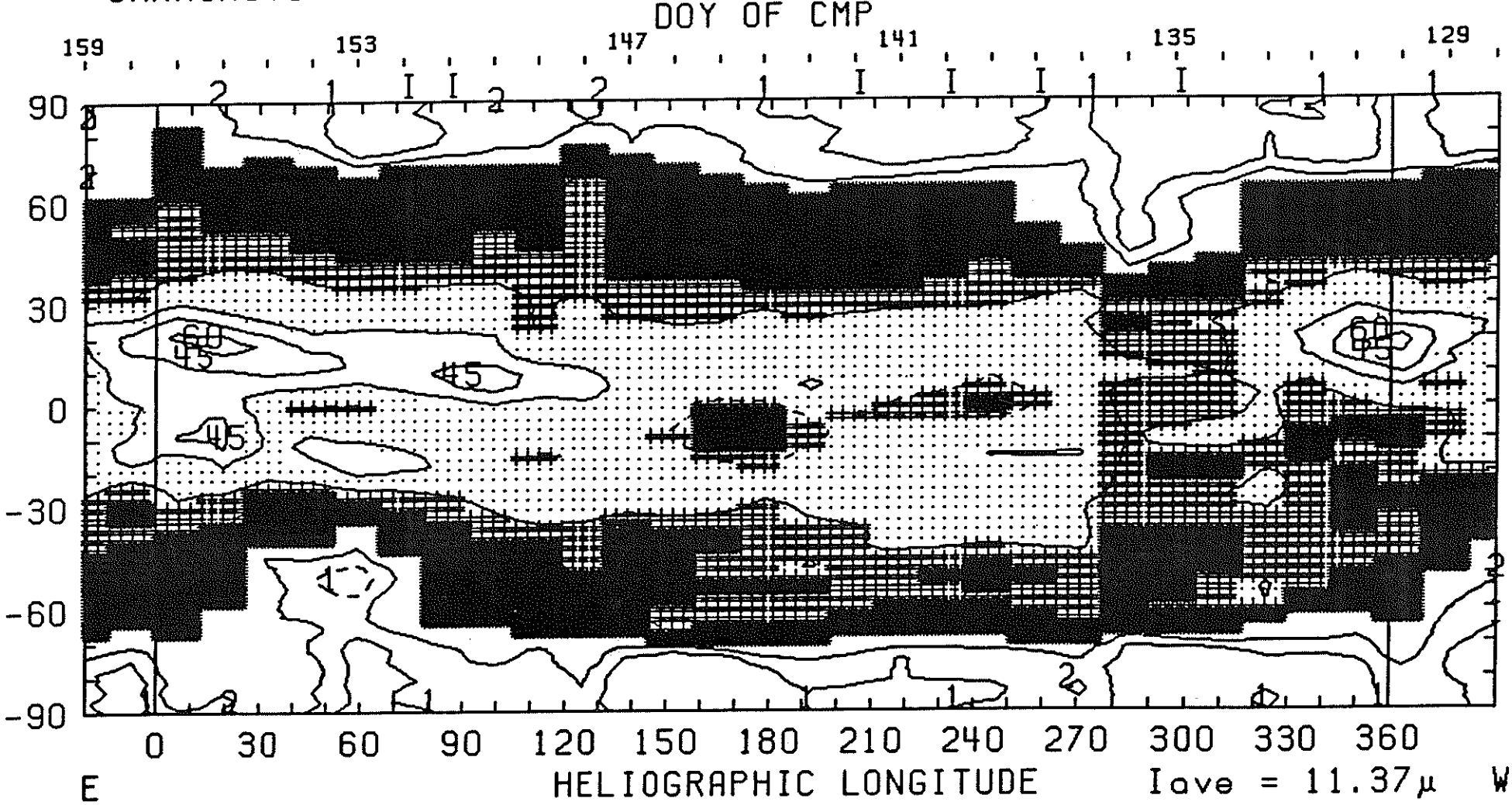
Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla

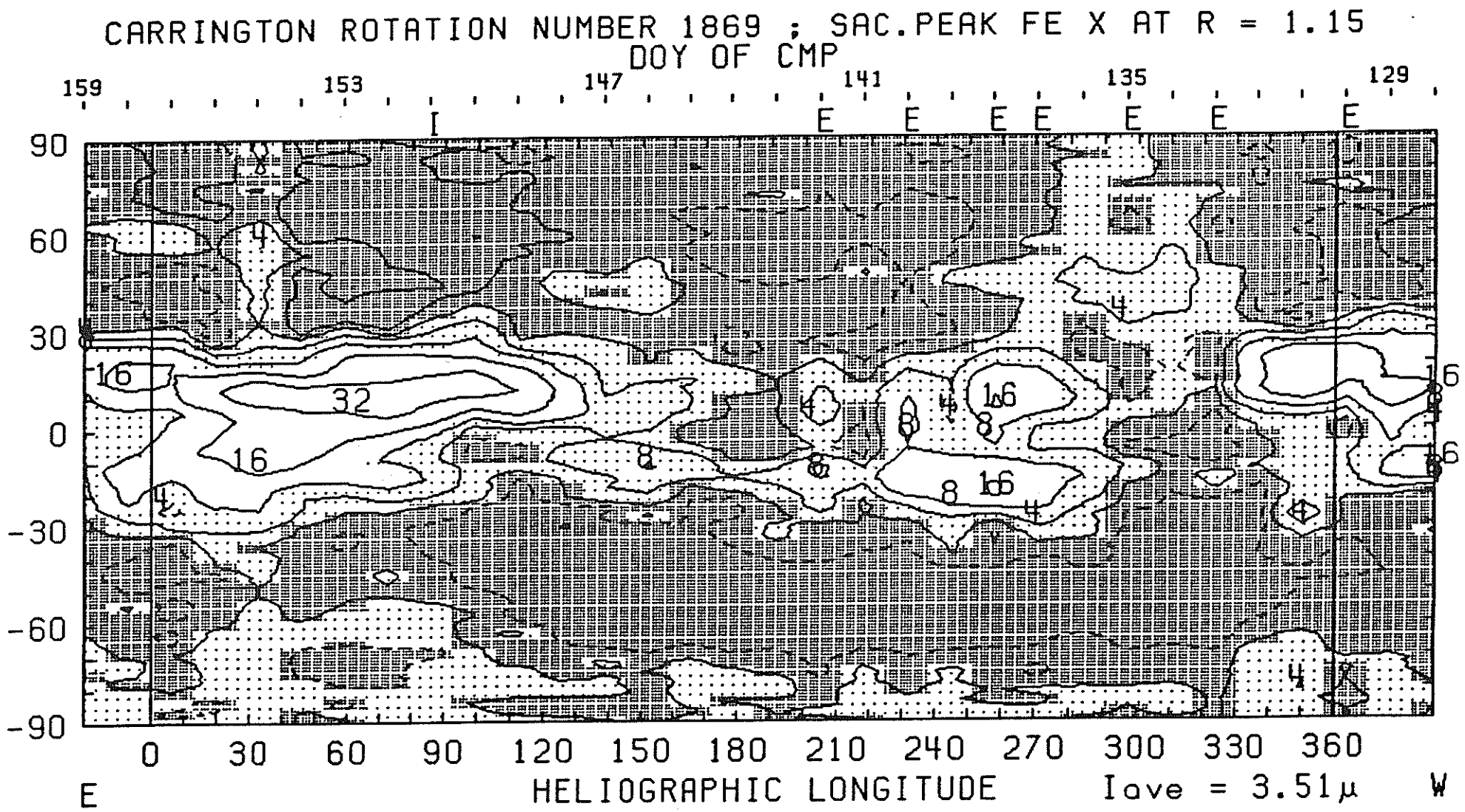


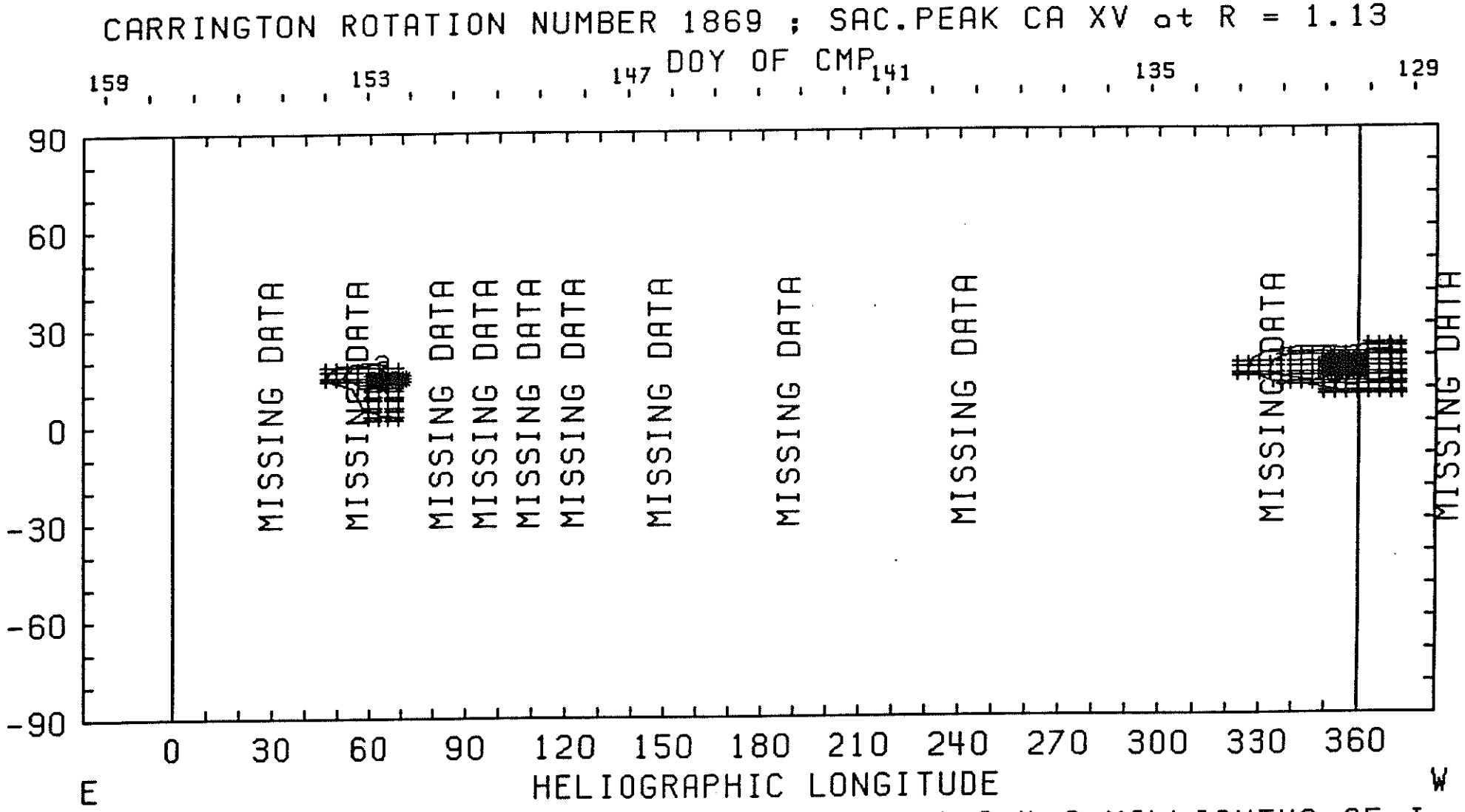
39
Jun 93

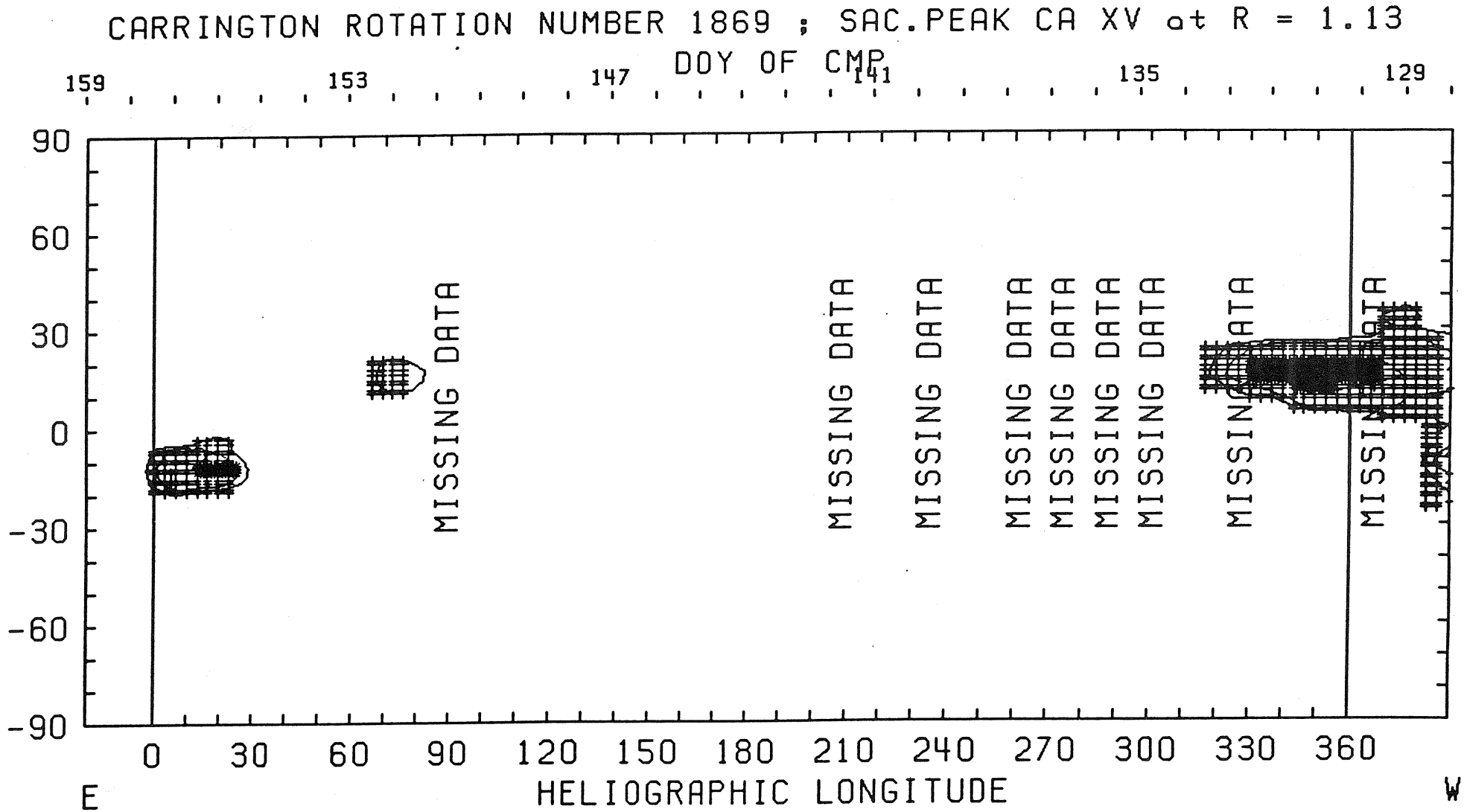
CARRINGTON ROTATION NUMBER 1869 ; SAC.PEAK FE XIV AT R = 1.15



1993 W LIMB CONTOURS: 1,2,6,10,15,30,45,60,75 MILLIONTHS OF I
(12-Jul-93) CORONAL HOLES ARE SHOWN AS WHITE SURROUNDED BY BLACK


CARRINGTON ROTATION NUMBER 1869 ; SAC.PEAK FE X AT R = 1.15
DOY OF CMP
159
153
147
141
135
129
I
E
E
E
E
E
E
E
90
60
30
0
-30
-60
-90
0
30
60
90
120
150
180
210
240
270
300
330
360
E
HELIOGRAPHIC LONGITUDE
Iave = 3.51μ
W
1993 W+E LIMB CONTOURS: 1,2,4,8,16,32,48,64,80 MILLIONTHS OF Io
(12-Jul-93)


CARRINGTON ROTATION NUMBER 1869 ; SAC.PEAK CA XV at R = 1.13
DOY OF CMP
159
153
147
141
135
129
90
60
30
0
-30
-60
-90
MISSING DATA
0
30
60
90
120
150
180
210
240
270
300
330
360
E
HELIOGRAPHIC LONGITUDE
W
1993 EAST LIMB CONTOURS: YELLOW-MINIMUM,1,2,4,8 MILLIONTHS OF Io
(12-Jul-93)


CARRINGTON ROTATION NUMBER 1869 ; SAC.PEAK CA XV at R = 1.13
DOY OF CMP
159
153
147
141
135
129
90
60
30
0
-30
-60
-90
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
0
30
60
90
120
150
180
210
240
270
300
330
360
E
HELIOGRAPHIC LONGITUDE
W
1993 WEST LIMB CONTOURS: YELLOW-MINIMUM,1,2,4,8 MILLIONTHS OF Io
(12-Jul-93)

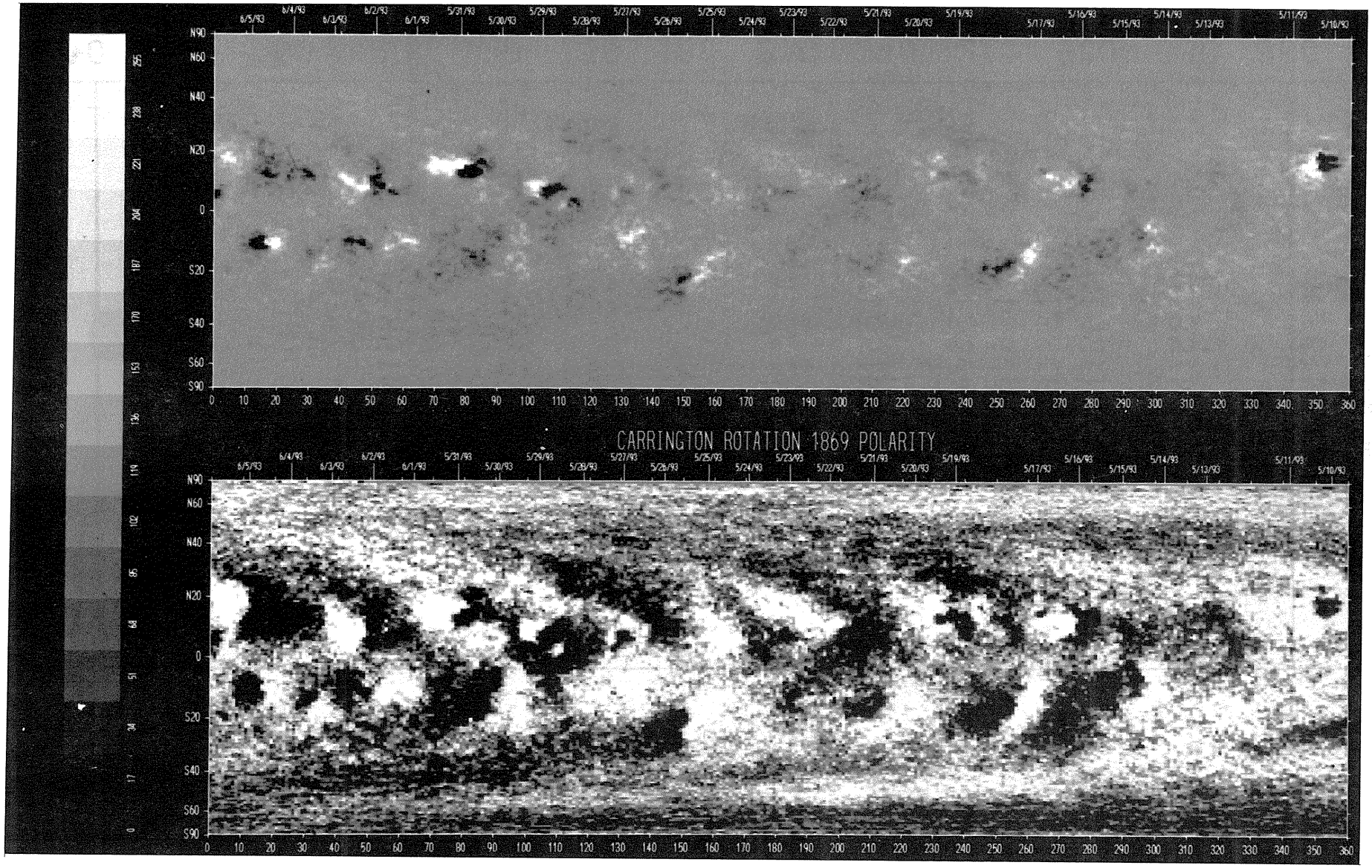
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1869

(10 May to 6 June 1993)

National Solar Observatory/Kitt Peak

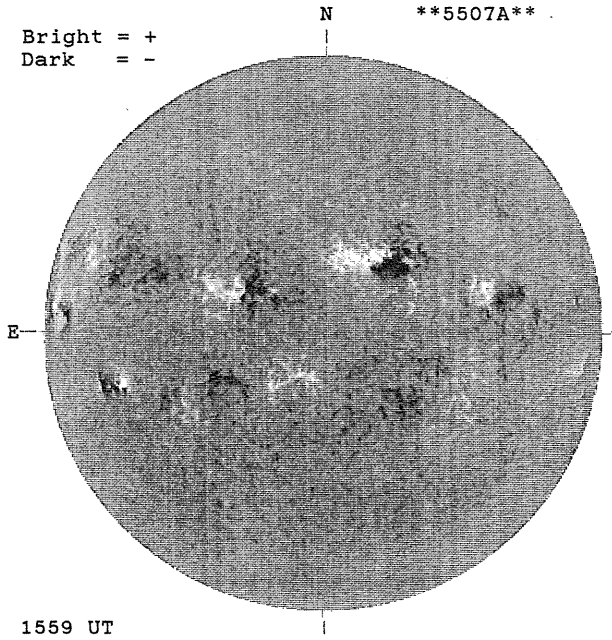
Dates of Observation



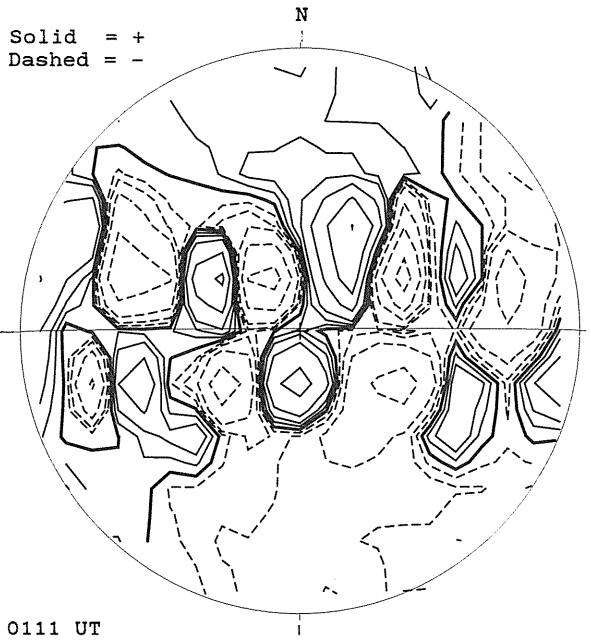
Heliographic Longitude

JUNE 1, 1993 (P=-15.43, B_o =-0.65, L_o = 72.48)

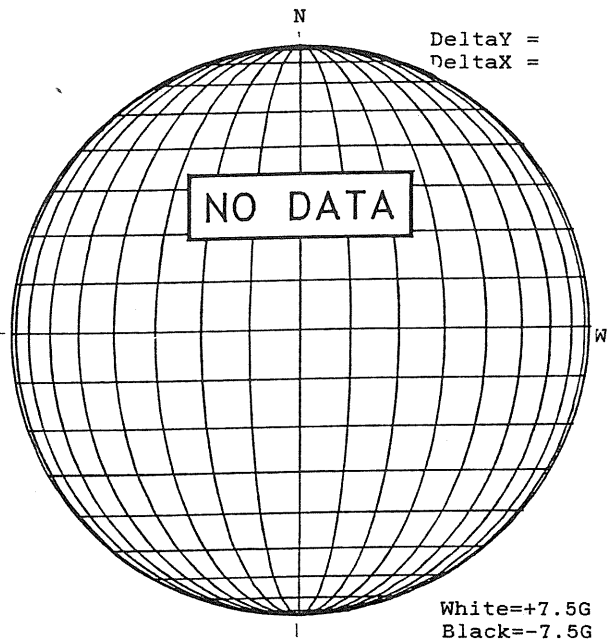
KITT PEAK MAGNETOGRAM



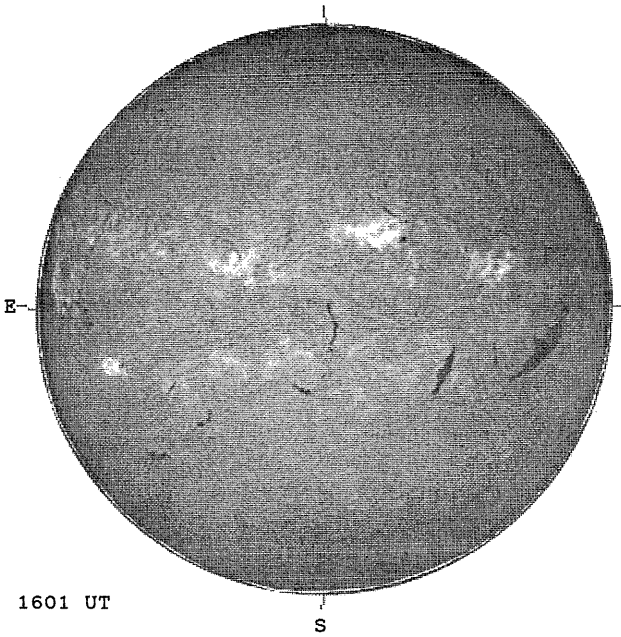
STANFORD MAGNETOGRAM



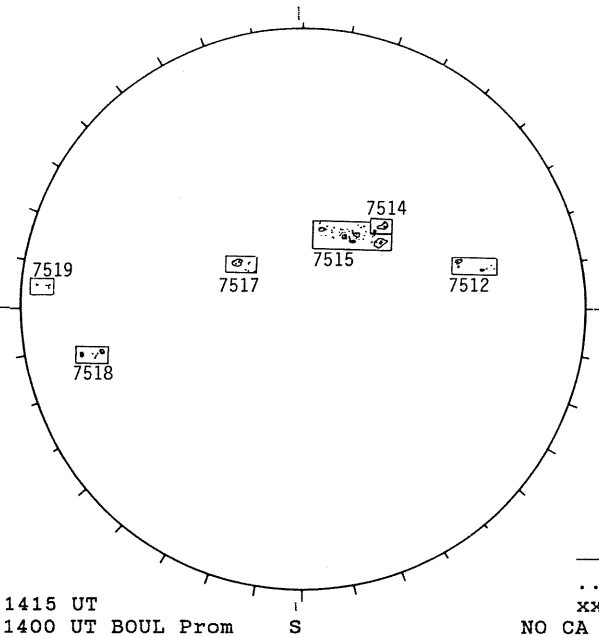
MT. WILSON MAGNETOGRAM



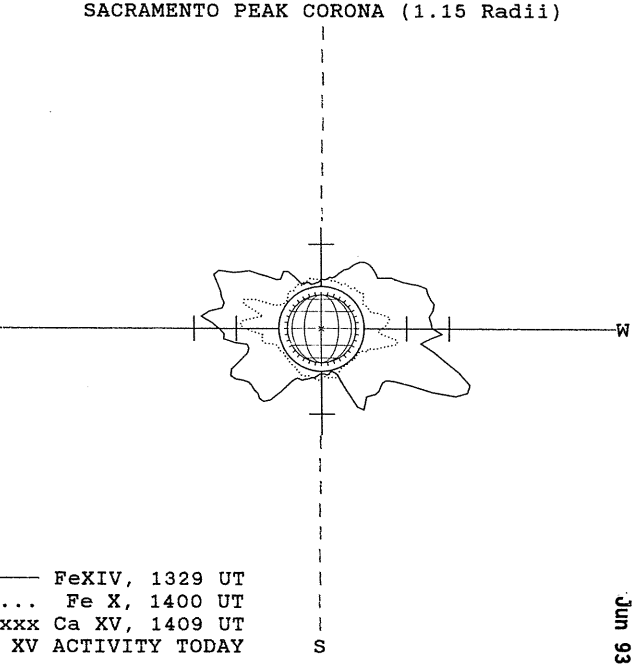
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



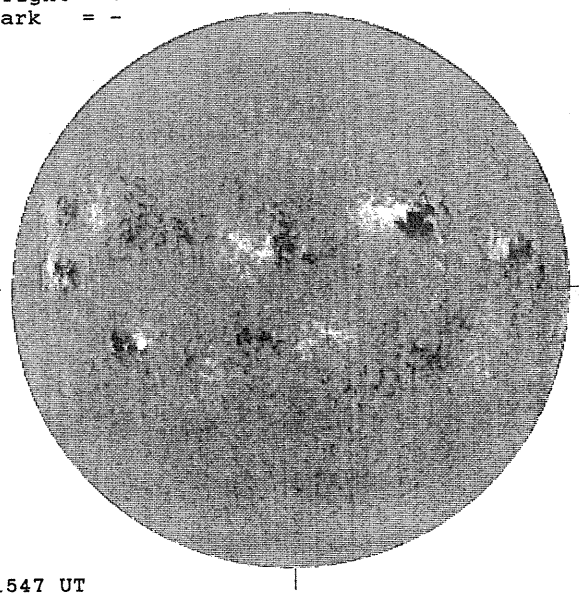
45
Jun 93

JUNE 2, 1993 (P=-15.05, B_o =-0.53, L_o = 59.24)

KITT PEAK MAGNETOGRAM

N **5507A**

Bright = +
Dark = -

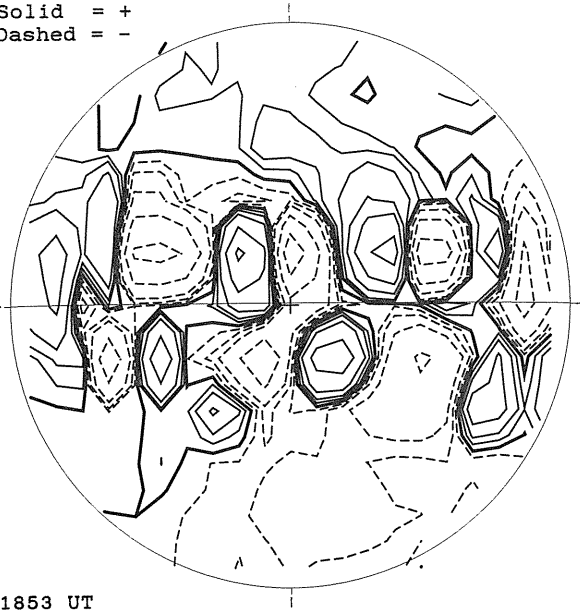


1547 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

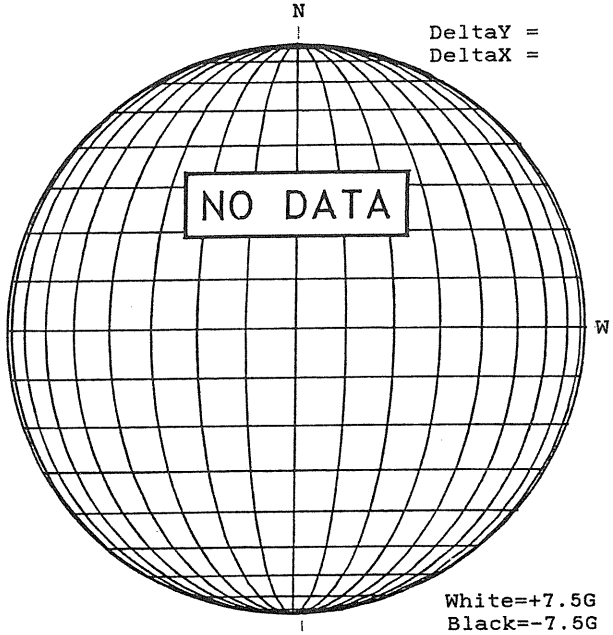


1853 UT

MT. WILSON MAGNETOGRAM

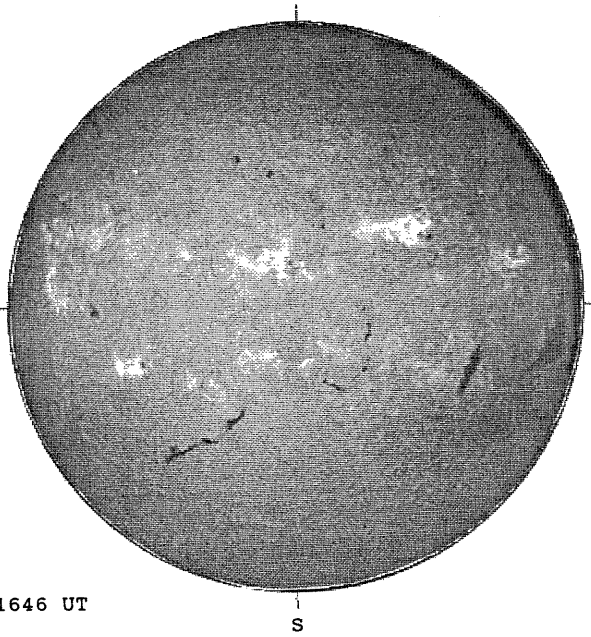
N

DeltaY =
DeltaX =



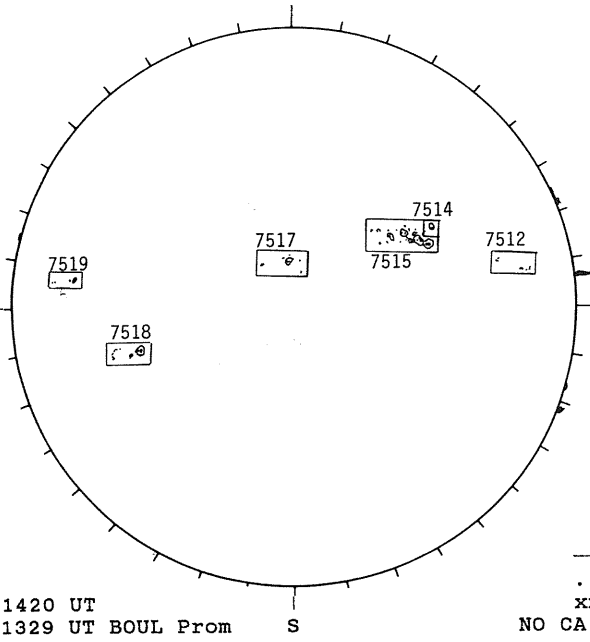
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



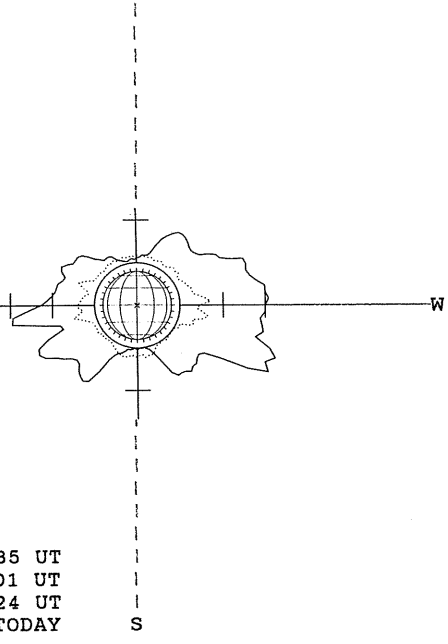
1646 UT

BOULDER SUNSPOT



1420 UT
1329 UT BOUL Prom

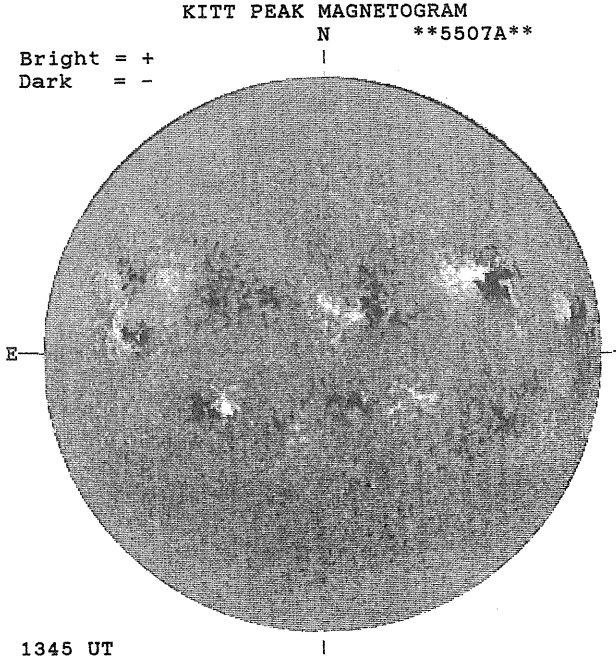
SACRAMENTO PEAK CORONA (1.15 Radii)



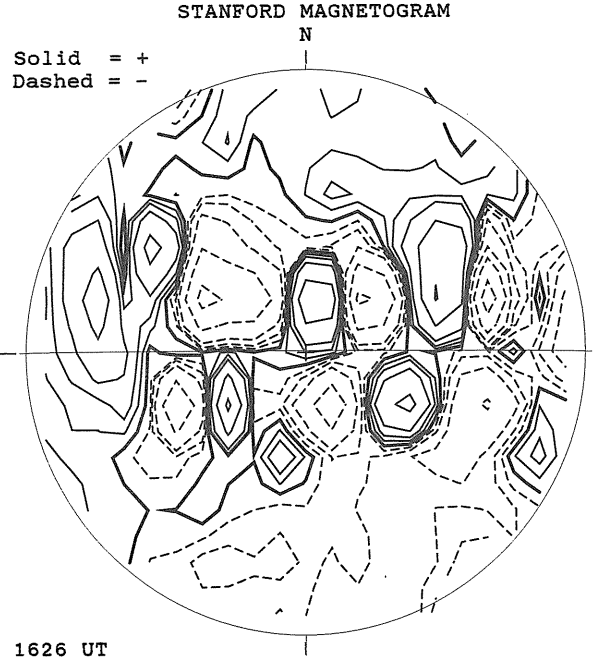
—— FeXIV, 1335 UT
.... Fe X, 1401 UT
xxxx Ca XV, 1424 UT
NO CA XV ACTIVITY TODAY

JUNE 3, 1993 (P=-14.67, B_o =-0.41, L_o = 46.01)

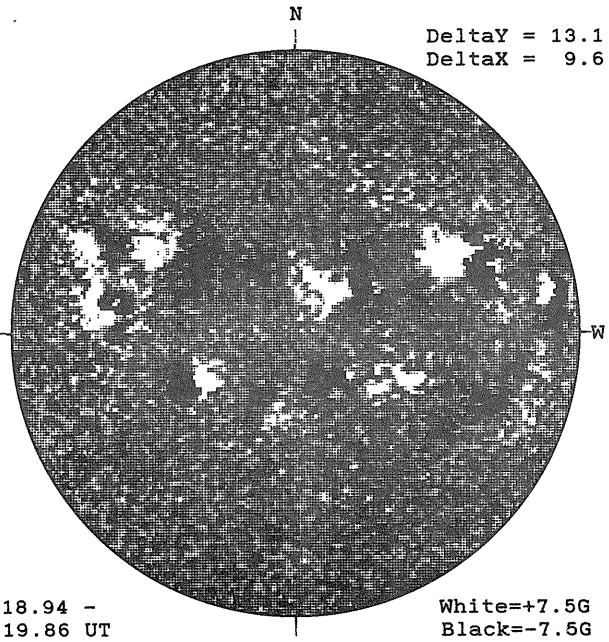
KITT PEAK MAGNETOGRAM



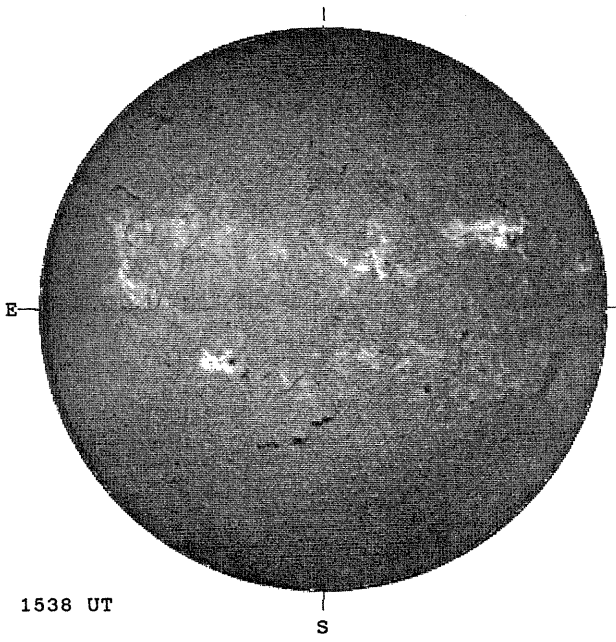
STANFORD MAGNETOGRAM



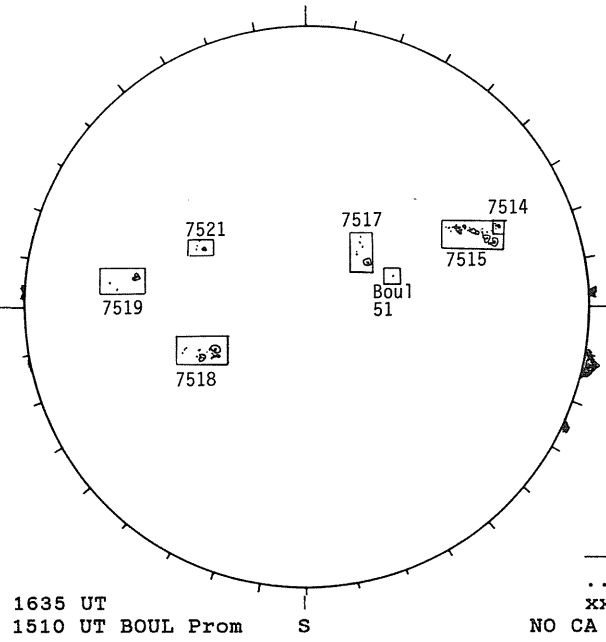
MT. WILSON MAGNETOGRAM



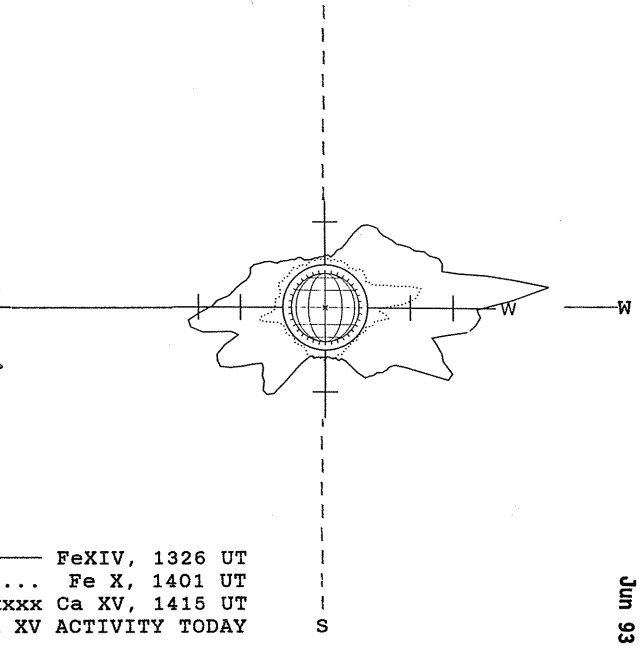
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

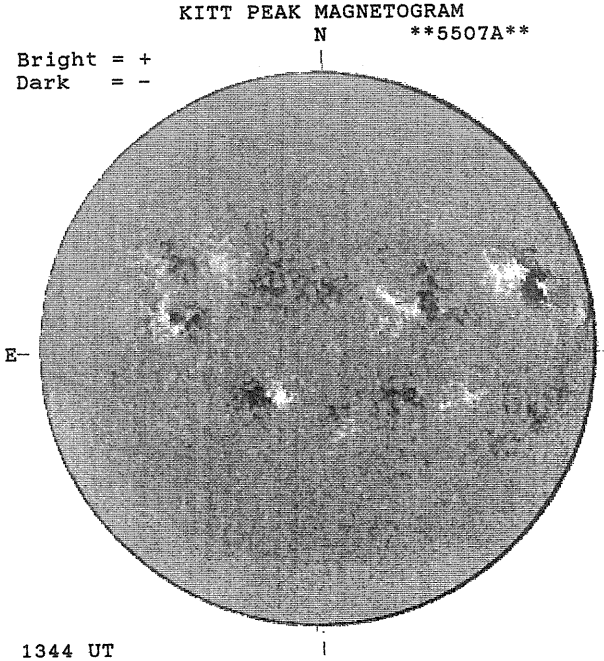


—— FeXIV, 1326 UT
.... Fe X, 1401 UT
xxxx Ca XV, 1415 UT
NO CA XV ACTIVITY TODAY

JUNE 4, 1993 (P=-14.29, B_o =-0.29, L_o = 32.77)

KITT PEAK MAGNETOGRAM

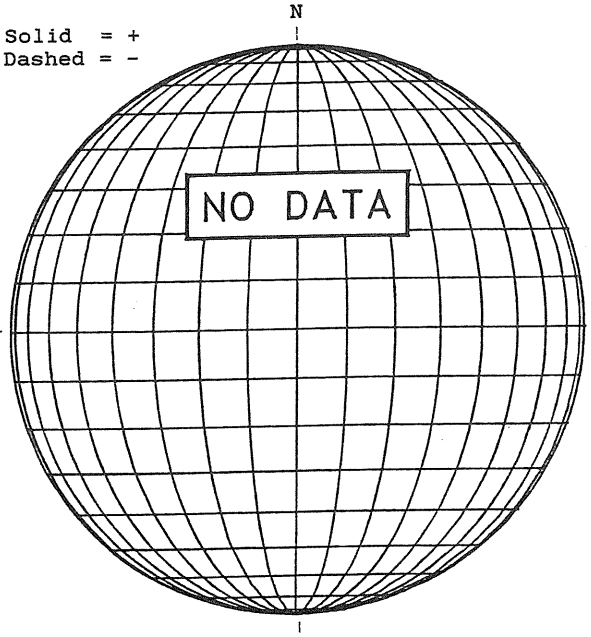
Bright = +
Dark = -



1344 UT

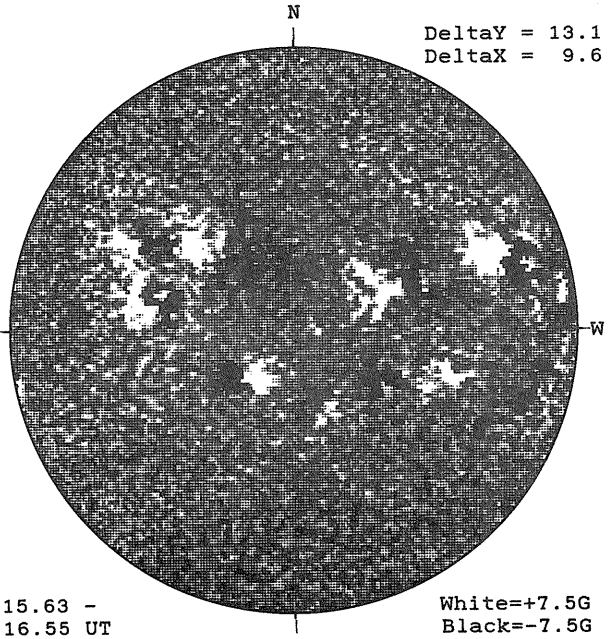
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

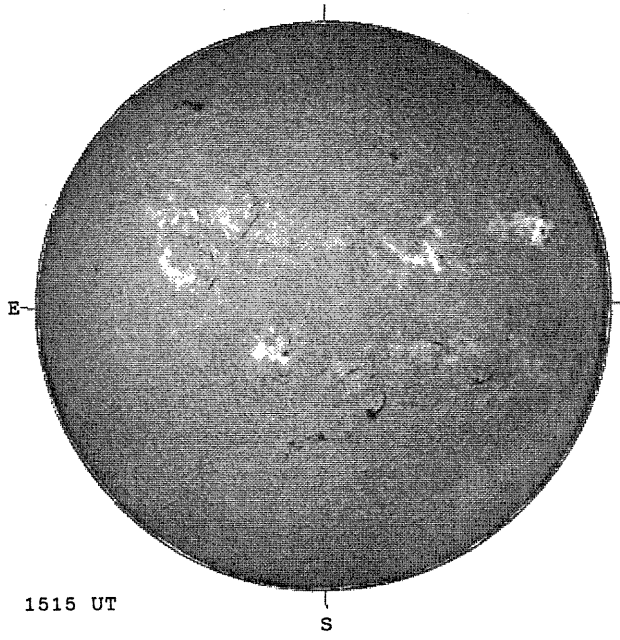
DeltaY = 13.1
DeltaX = 9.6



15.63 -
16.55 UT

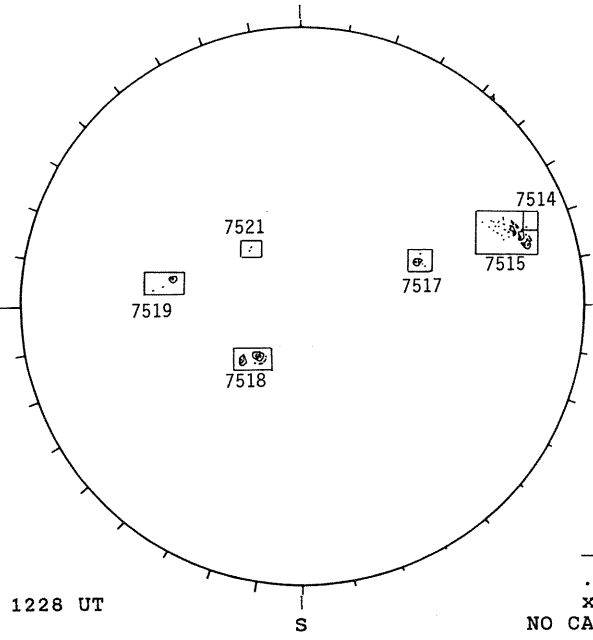
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



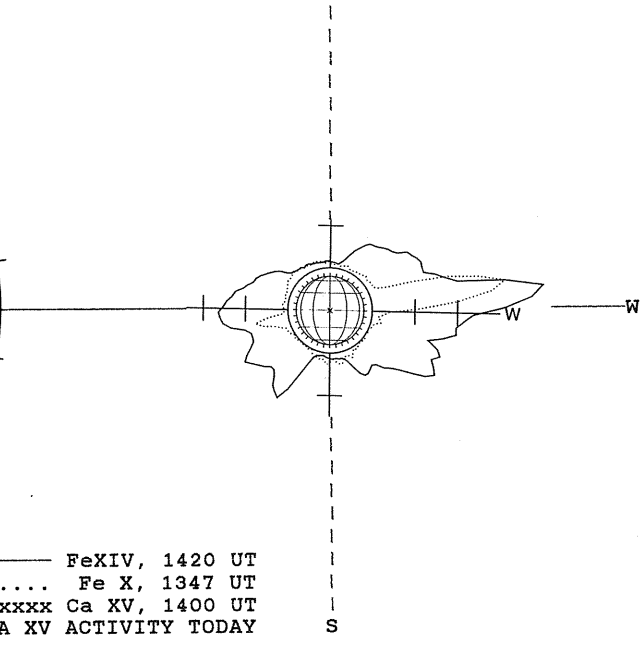
1515 UT

RAMEY SUNSPOT



1228 UT

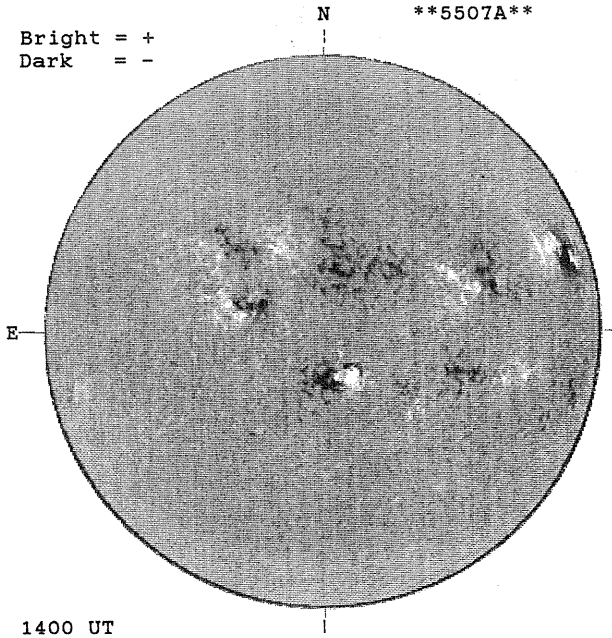
SACRAMENTO PEAK CORONA (1.15 Radii)



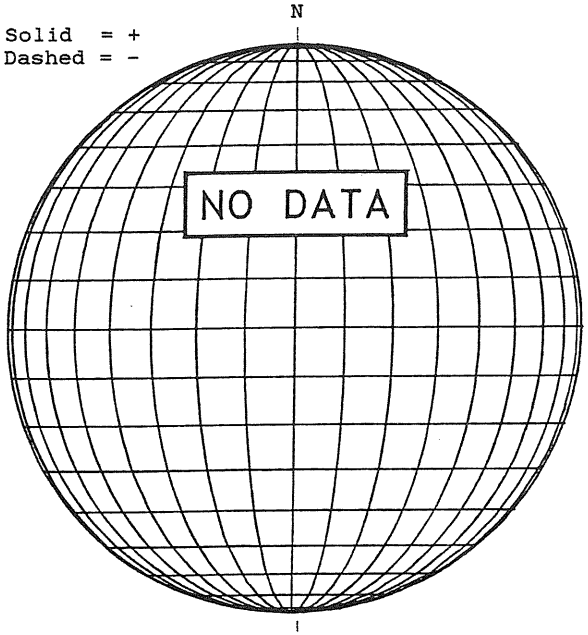
—— FeXIV, 1420 UT
.... Fe X, 1347 UT
xxxx Ca XV, 1400 UT
NO CA XV ACTIVITY TODAY

JUNE 5, 1993 (P=-13.90, B_o =-0.17, L_o = 19.54)

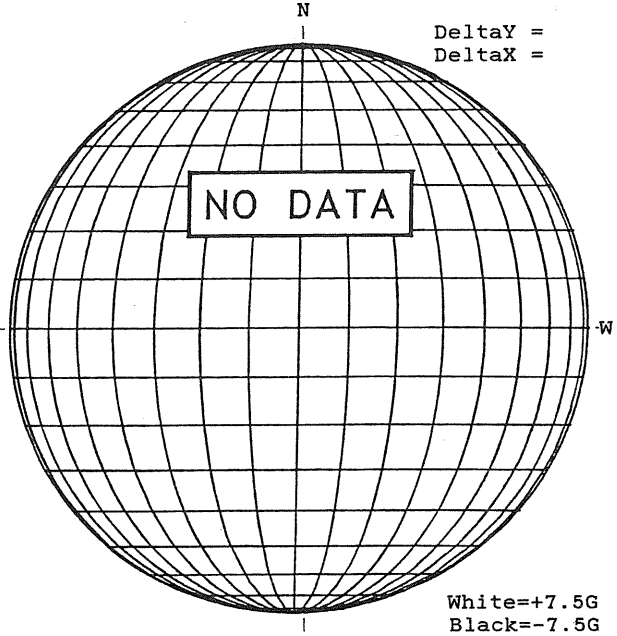
KITT PEAK MAGNETOGRAM



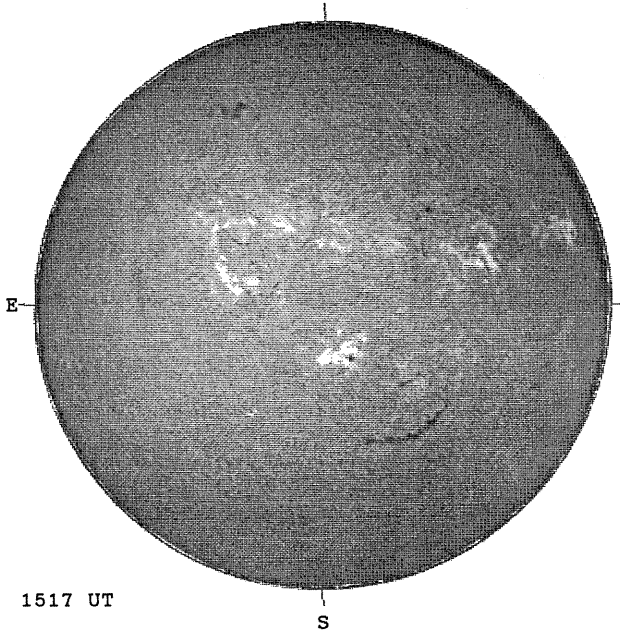
STANFORD MAGNETOGRAM



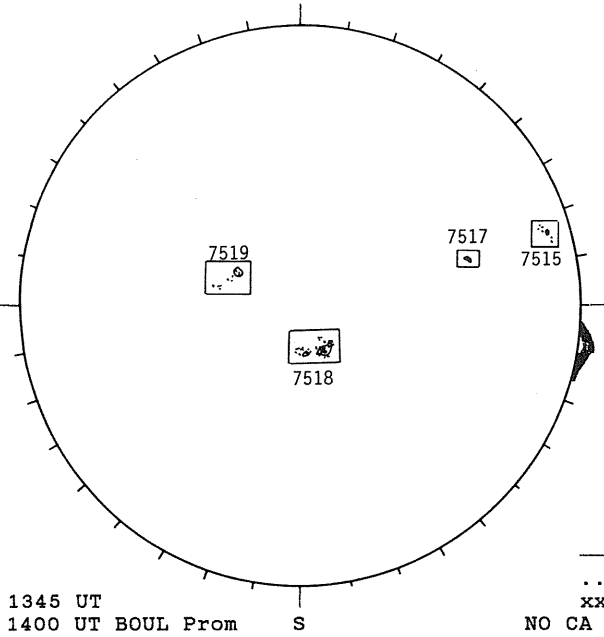
MT. WILSON MAGNETOGRAM



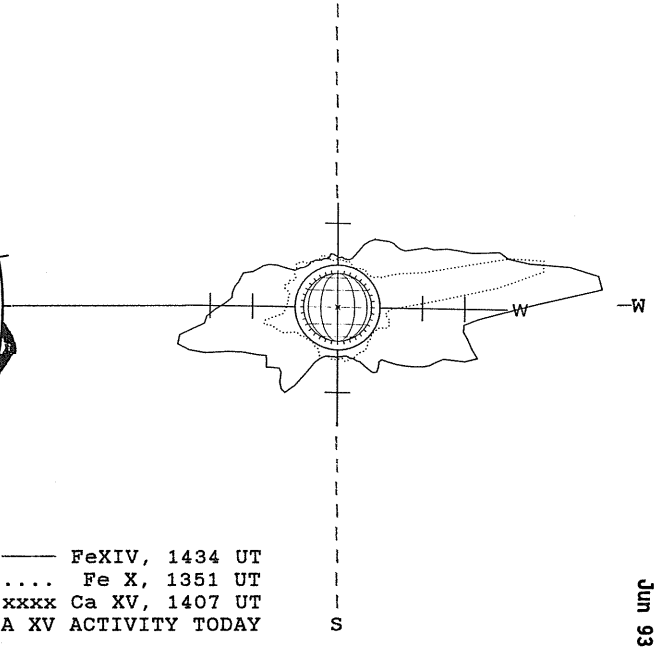
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



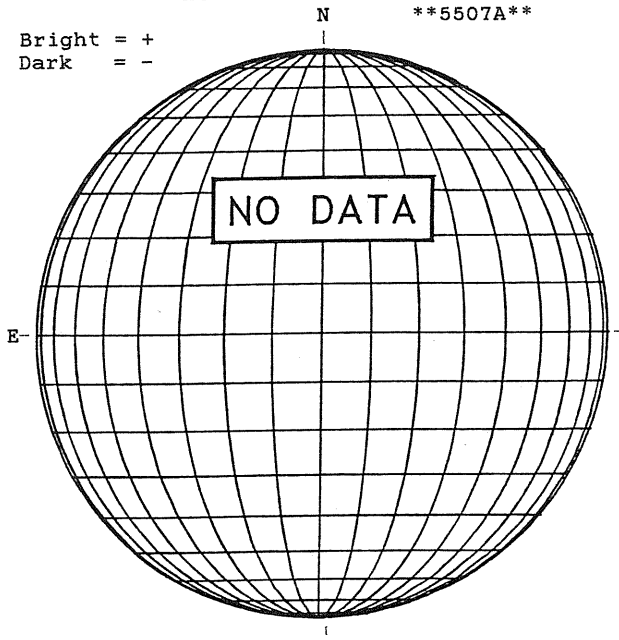
SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 6, 1993 (P=-13.51, B_o =-0.05, L_o = 6.30)

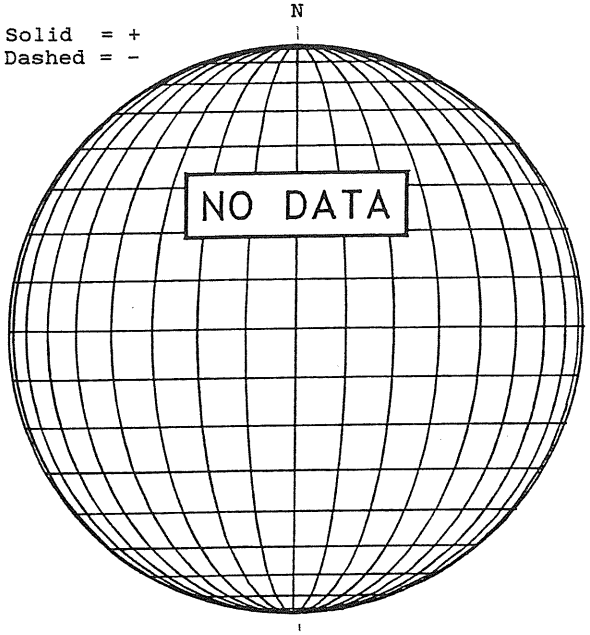
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



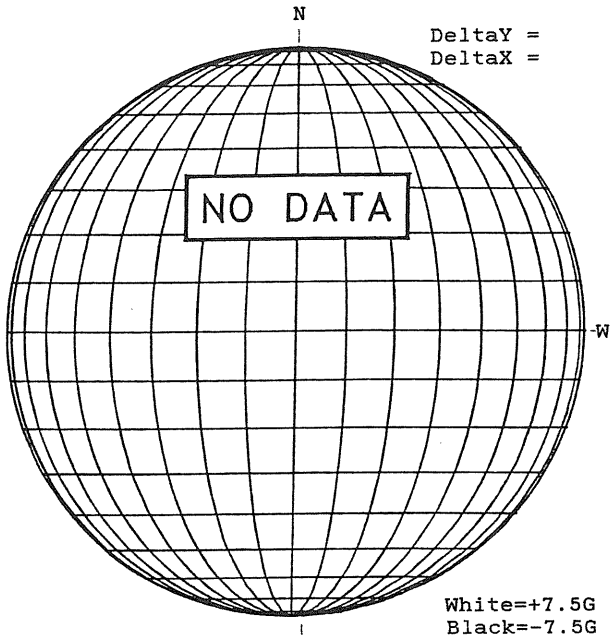
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



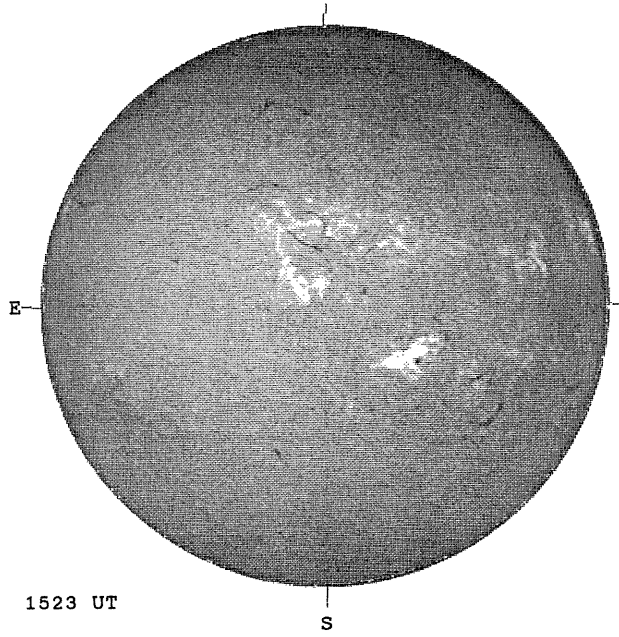
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



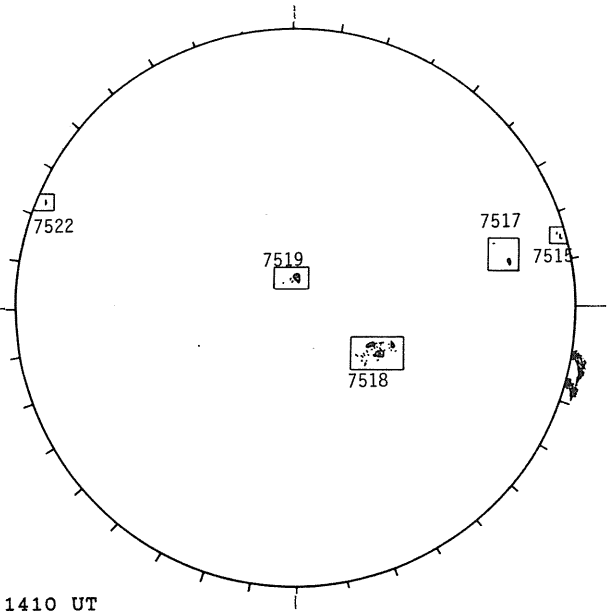
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



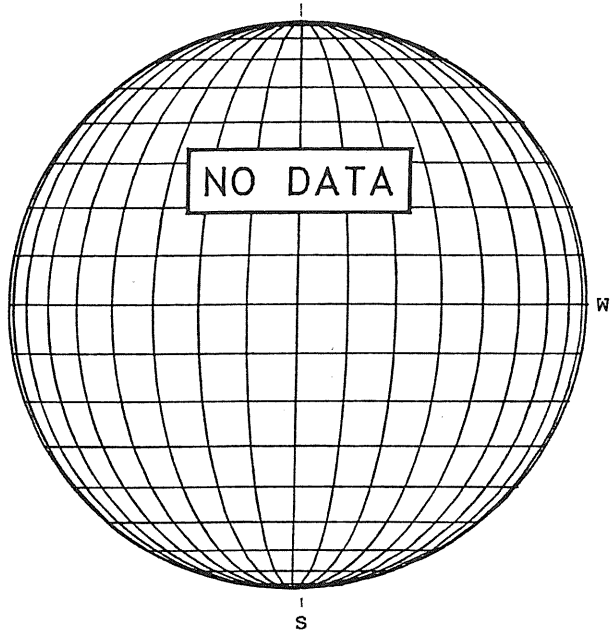
1523 UT

BOULDER SUNSPOT



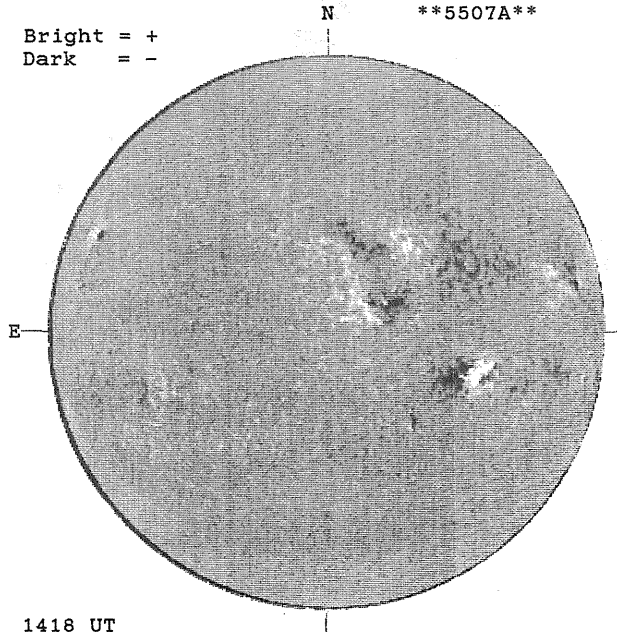
1410 UT
1420 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

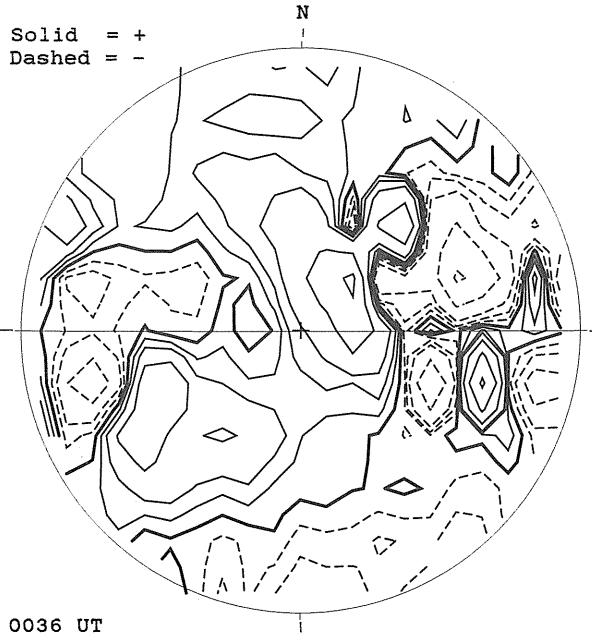


JUNE 7, 1993 (P=-13.11 B_o = 0.07, L_o = 353.07)

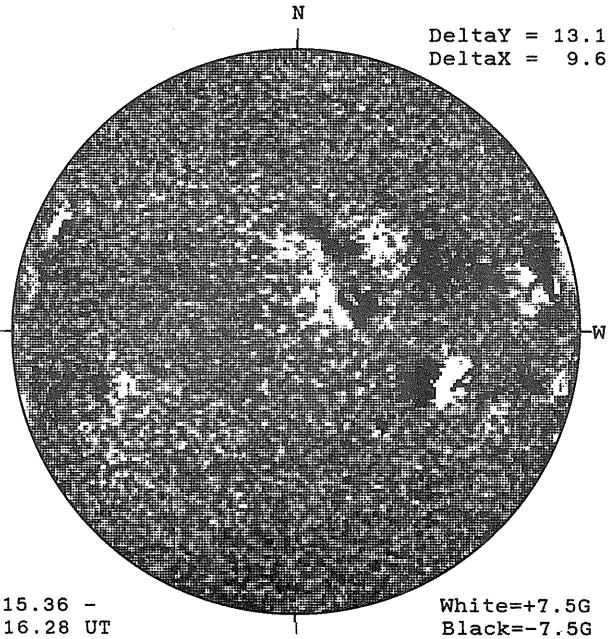
KITT PEAK MAGNETOGRAM



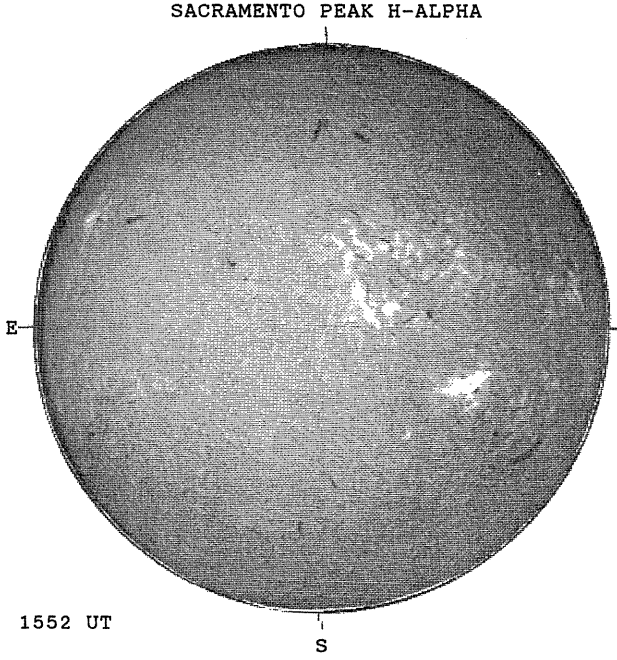
STANFORD MAGNETOGRAM



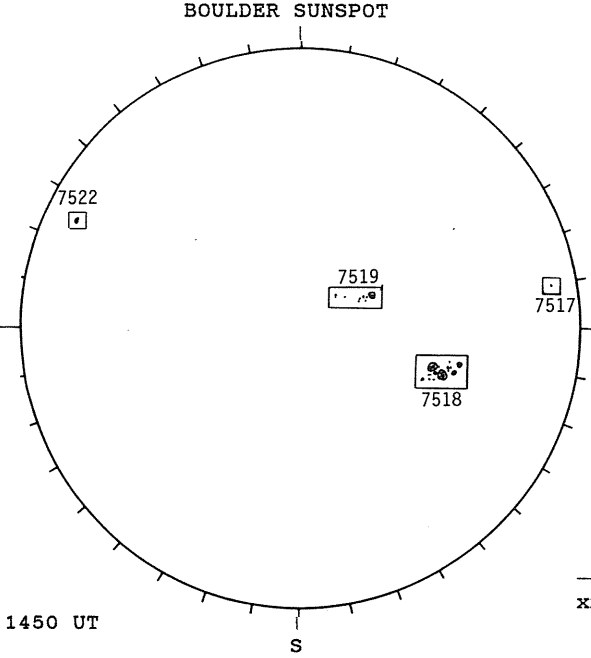
MT. WILSON MAGNETOGRAM



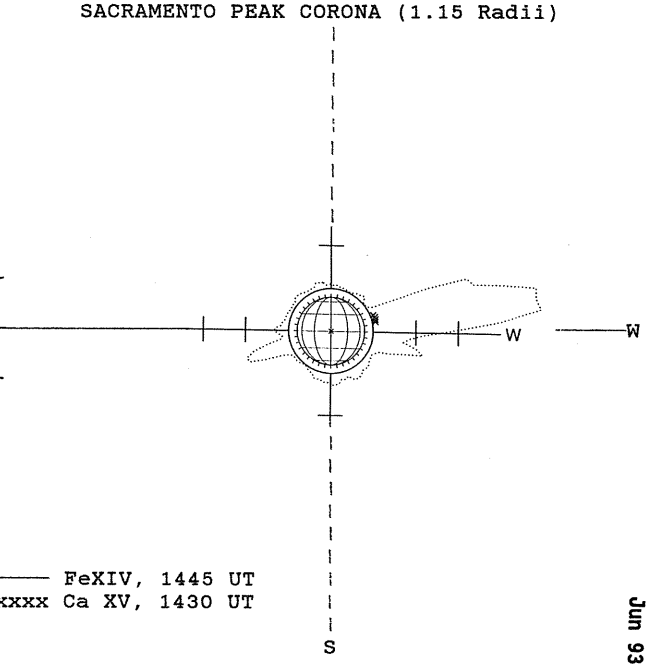
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

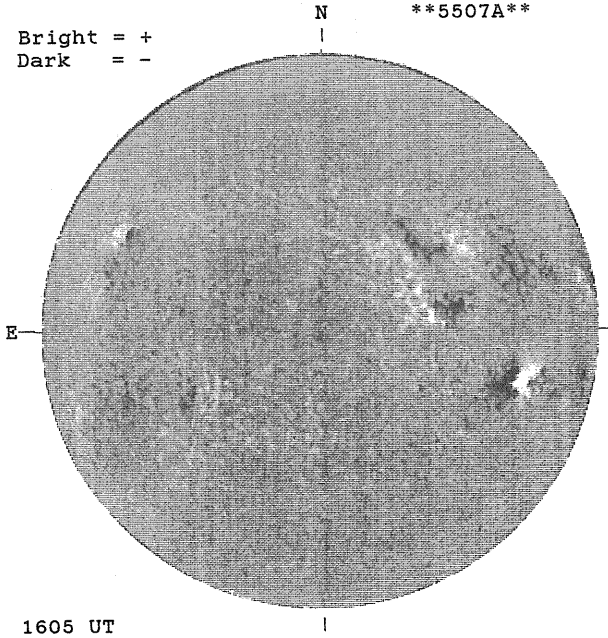


JUNE 8, 1993 (P=-12.71, B_o = 0.19, L_o = 339.83)

KITT PEAK MAGNETOGRAM

5507A

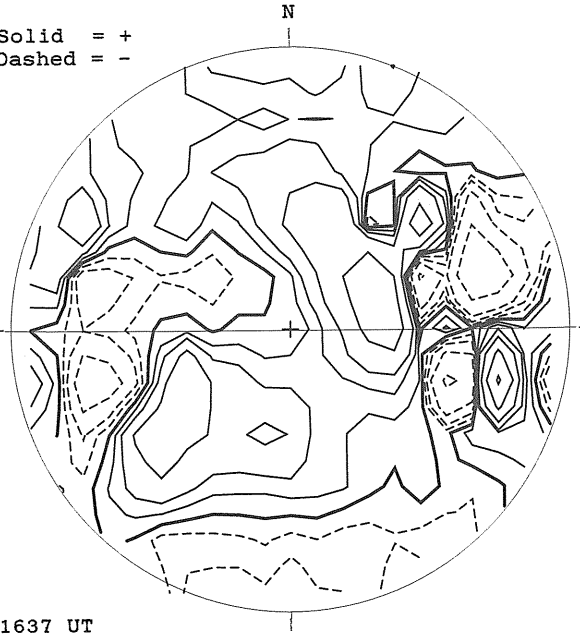
Bright = +
Dark = -



1605 UT

STANFORD MAGNETOGRAM

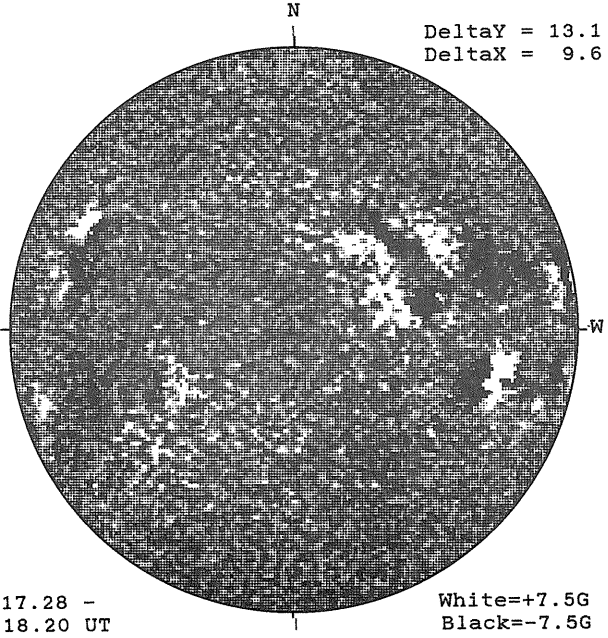
Solid = +
Dashed = -



1637 UT

MT. WILSON MAGNETOGRAM

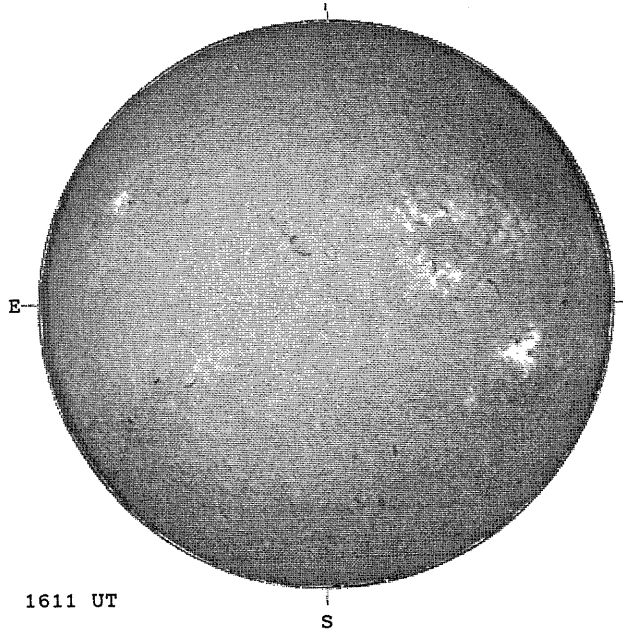
DeltaY = 13.1
DeltaX = 9.6



17.28 -
18.20 UT

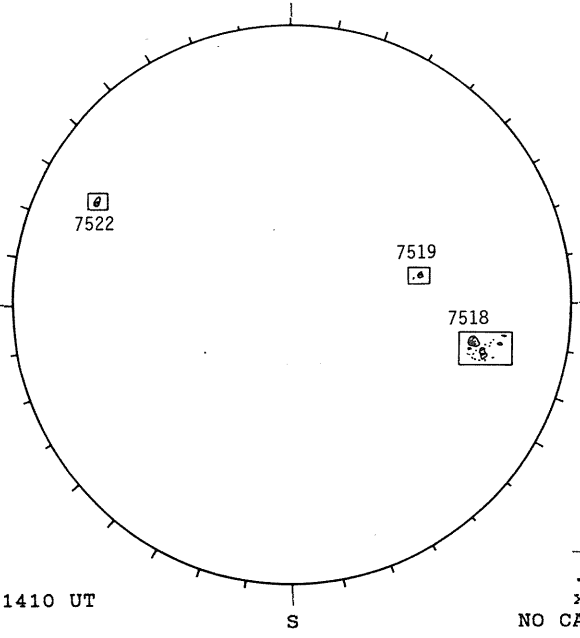
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



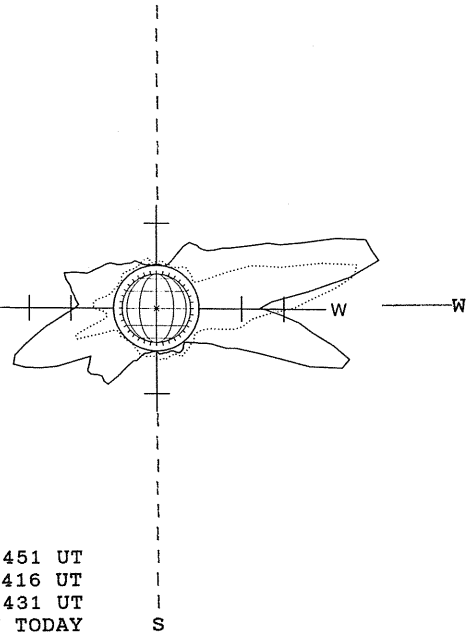
1611 UT

BOULDER SUNSPOT



1410 UT

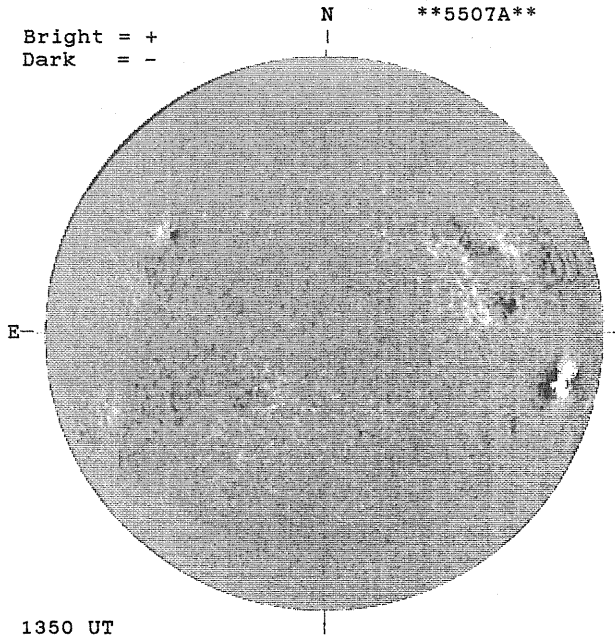
SACRAMENTO PEAK CORONA (1.15 Radii)



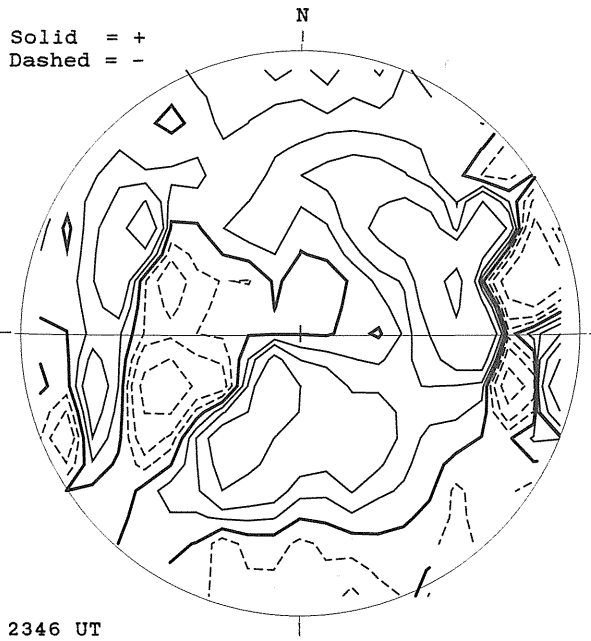
—— FeXIV, 1451 UT
.... Fe X, 1416 UT
xxxx Ca XV, 1431 UT
NO CA XV ACTIVITY TODAY

JUNE 9, 1993 (P=-12.30 B_o = 0.31, L_o = 326.60)

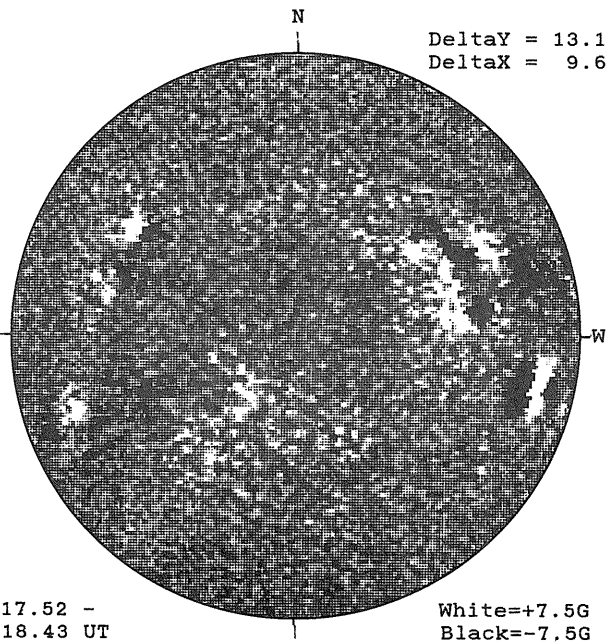
KITT PEAK MAGNETOGRAM



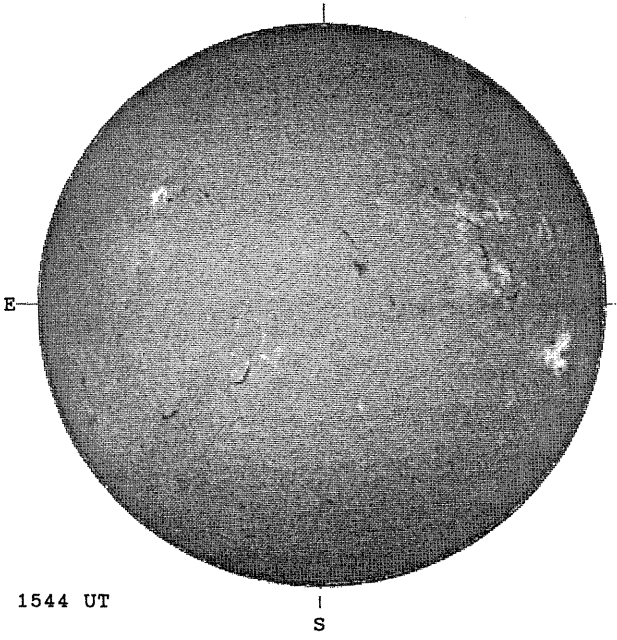
STANFORD MAGNETOGRAM



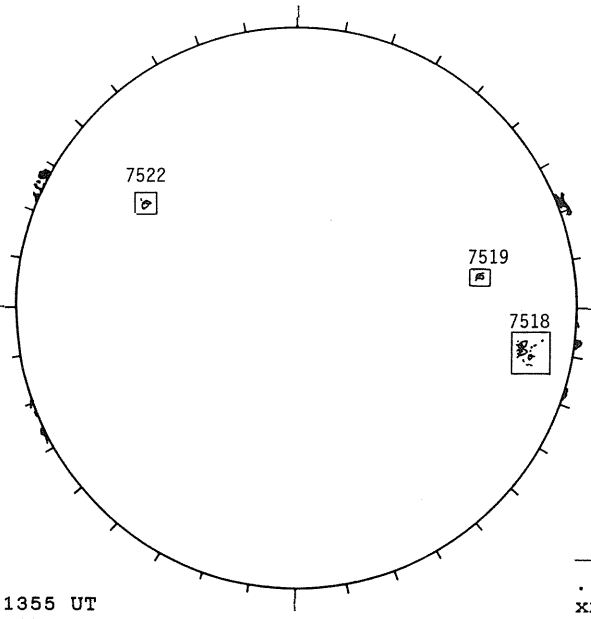
MT. WILSON MAGNETOGRAM



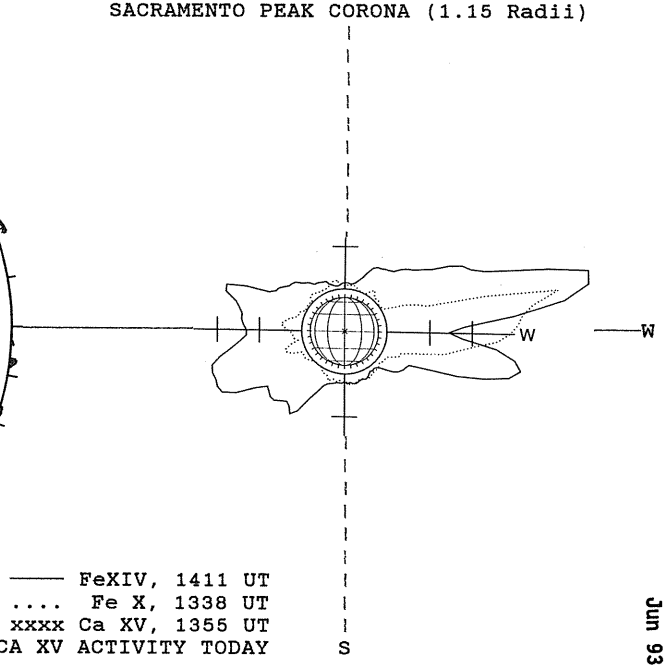
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT

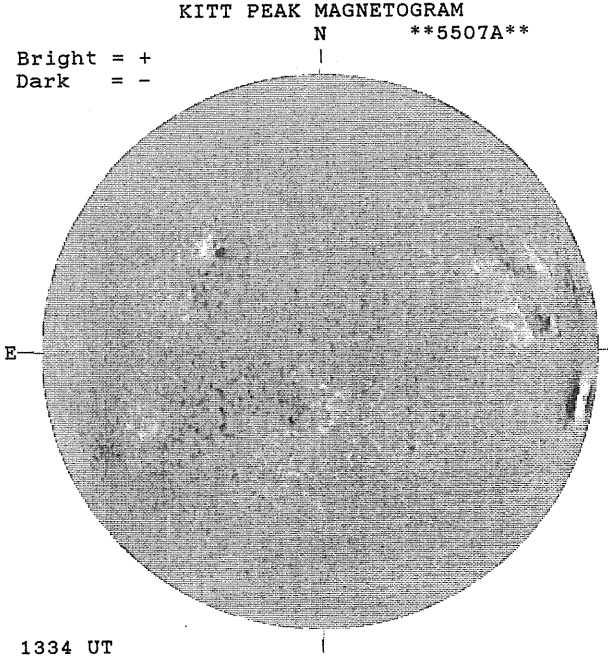


SACRAMENTO PEAK CORONA (1.15 Radii)

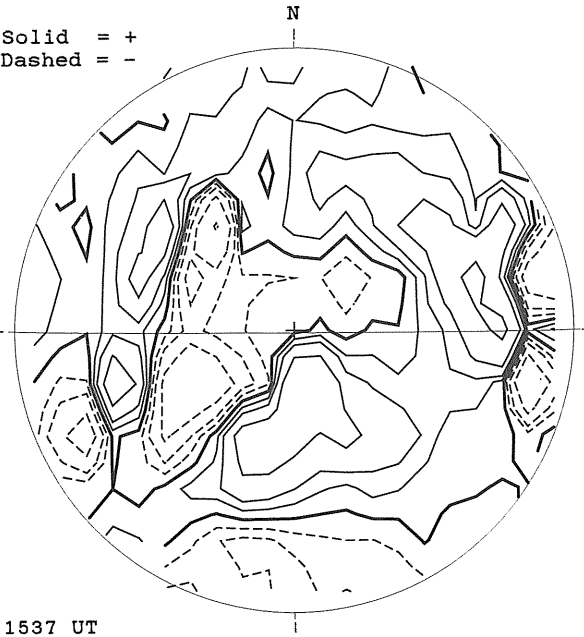


JUNE 10, 1993 (P=-11.89, B_o = 0.43, L_o = 313.36)

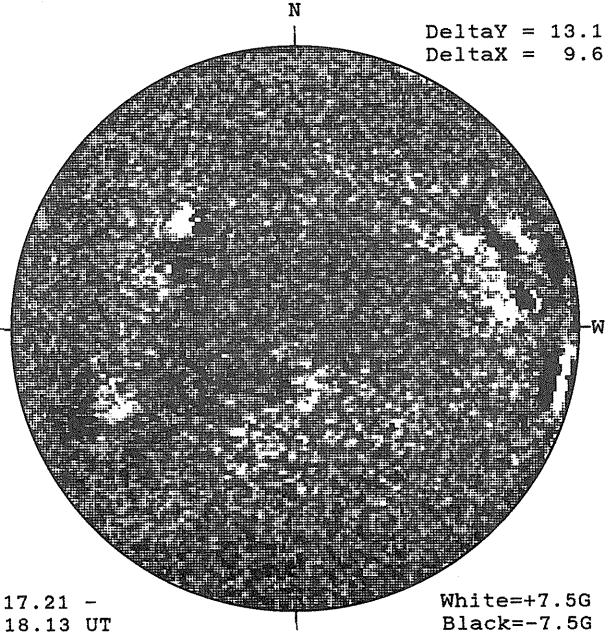
KITT PEAK MAGNETOGRAM



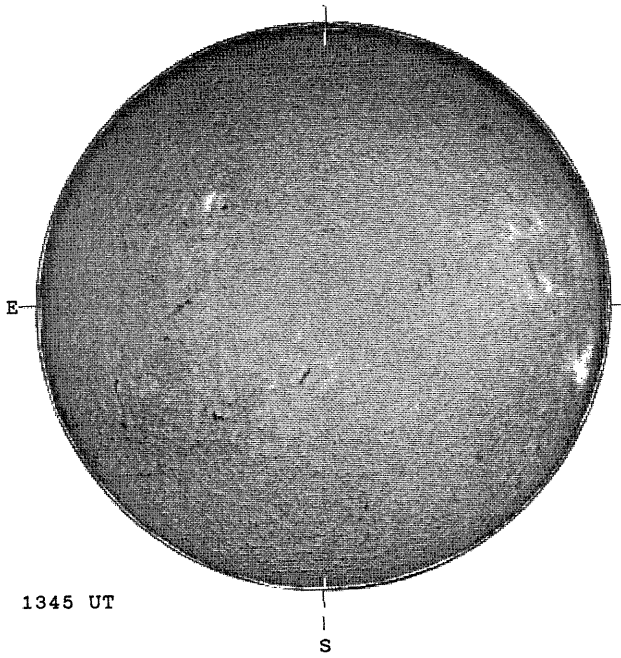
STANFORD MAGNETOGRAM



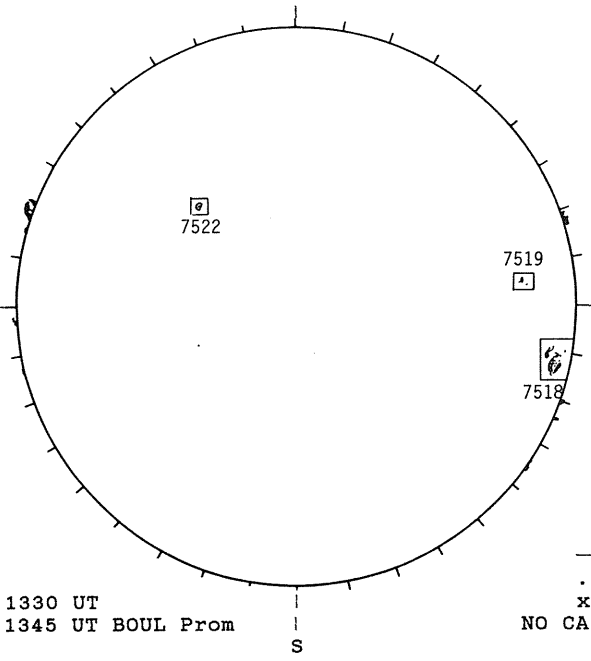
MT. WILSON MAGNETOGRAM



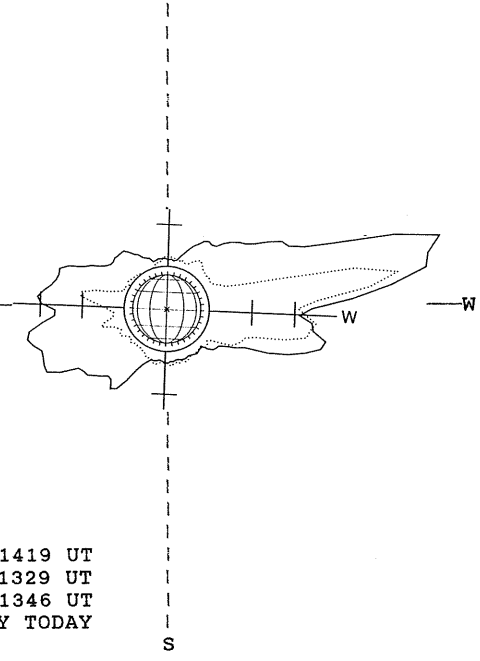
BOULDER H-ALPHA



BOULDER SUNSPOT



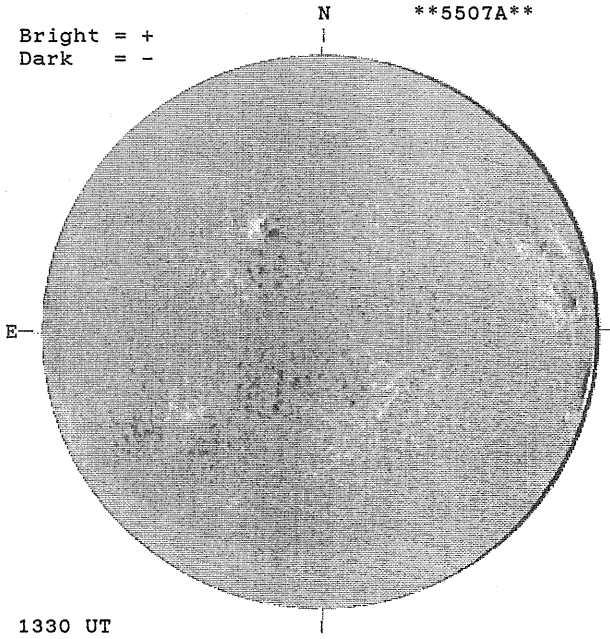
SACRAMENTO PEAK CORONA (1.15 Radii)



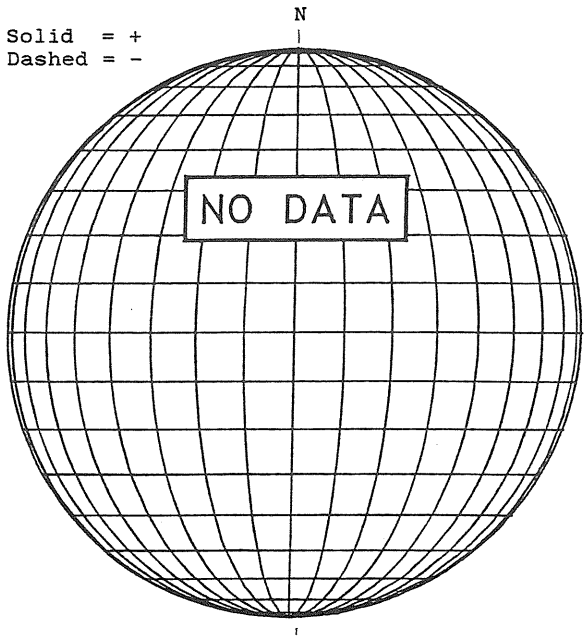
—— FeXIV, 1419 UT
.... Fe X, 1329 UT
xxxx Ca XV, 1346 UT
NO CA XV ACTIVITY TODAY

JUNE 11, 1993 (P=-11.48, B_o = 0.55, L_o = 300.13)

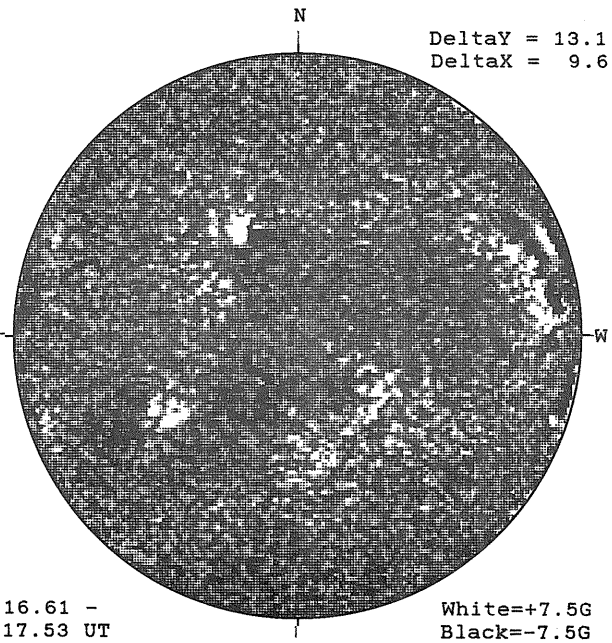
KITT PEAK MAGNETOGRAM



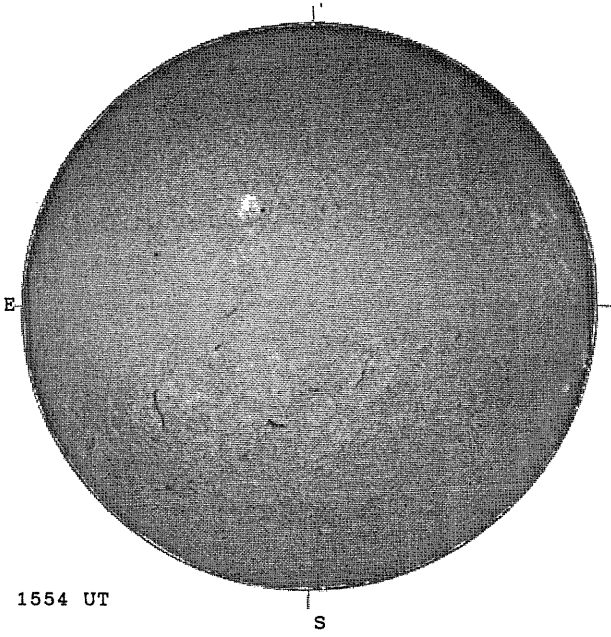
STANFORD MAGNETOGRAM



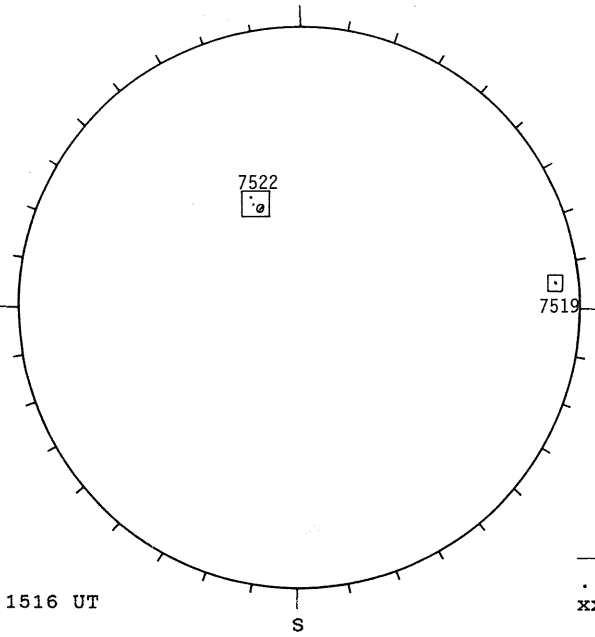
MT. WILSON MAGNETOGRAM



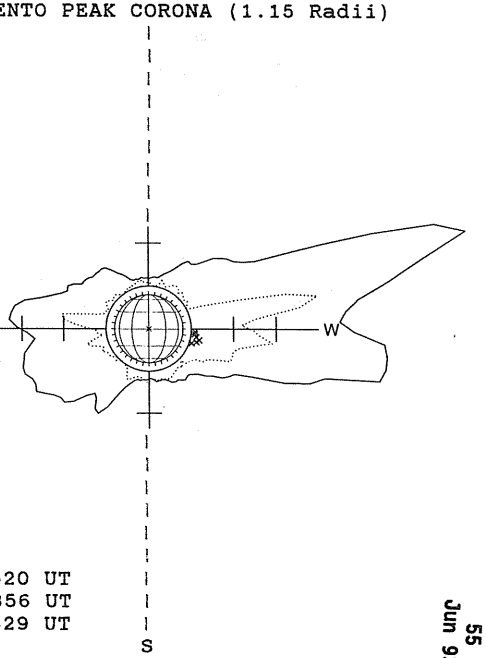
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

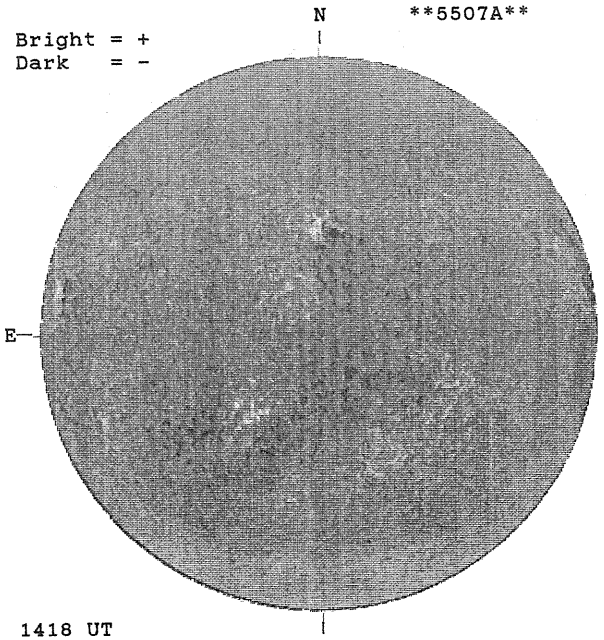


—— FeXIV, 1520 UT
.... Fe X, 1356 UT
xxxx Ca XV, 1429 UT

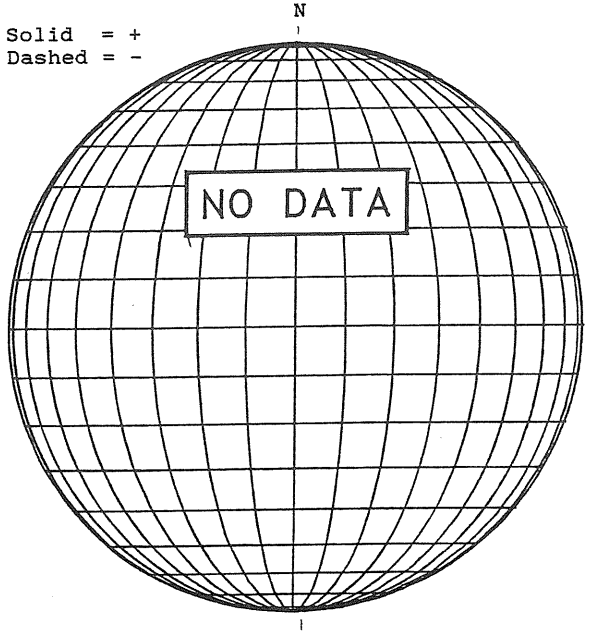
55
Jun 93

JUNE 12, 1993 (P=-11.06, B_o = 0.67, L_o = 286.89)

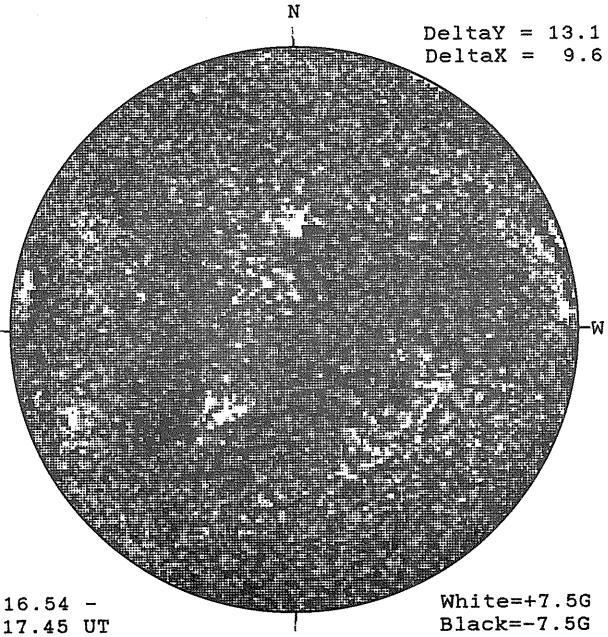
KITT PEAK MAGNETOGRAM



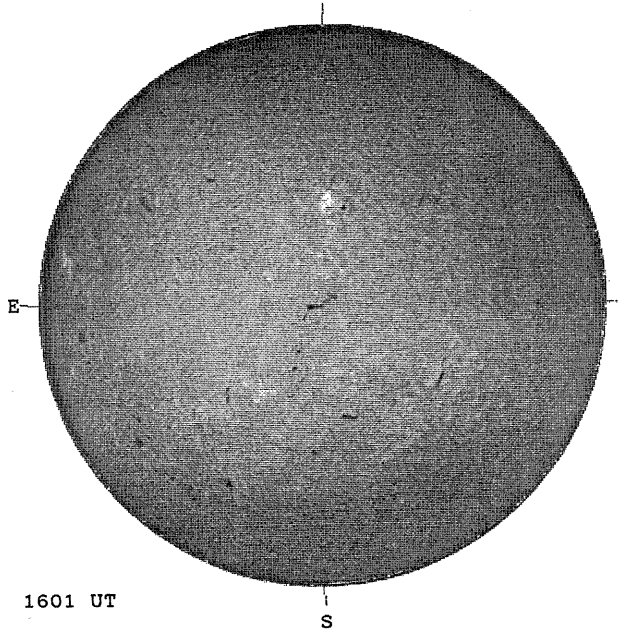
STANFORD MAGNETOGRAM



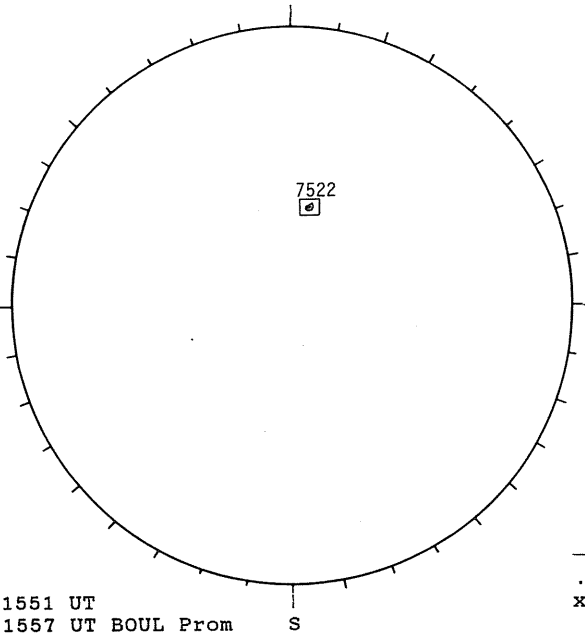
MT. WILSON MAGNETOGRAM



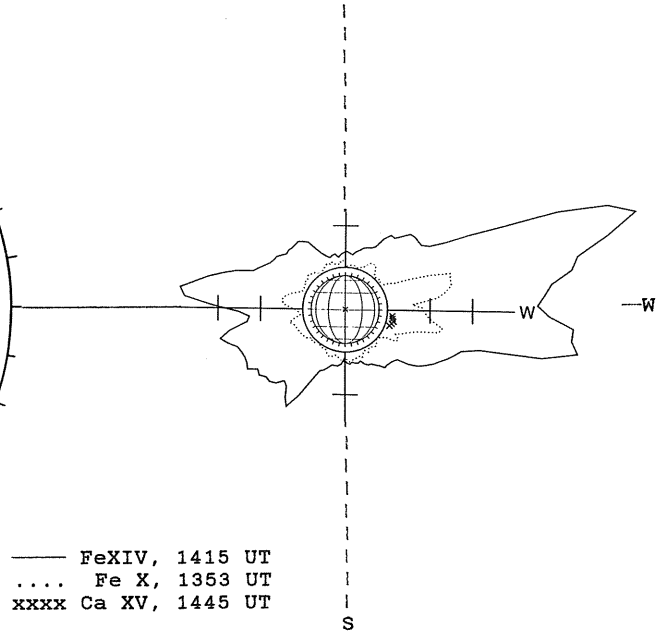
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

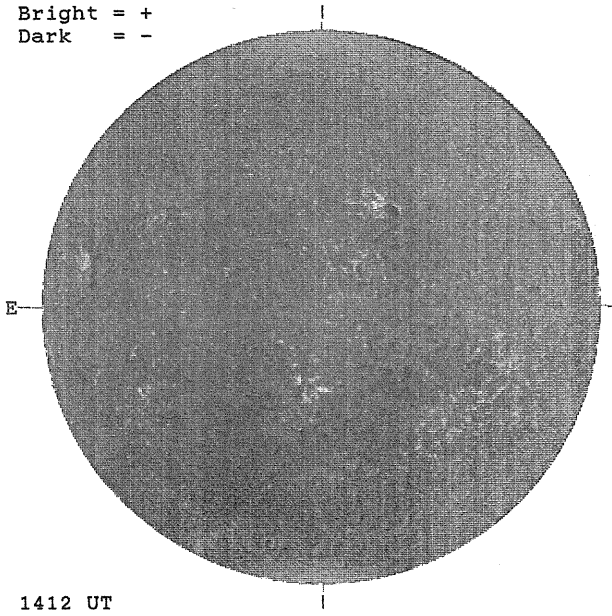


JUNE 13, 1993 (P=-10.64, B_o = 0.79, L_o = 273.65)

KITT PEAK MAGNETOGRAM

N **5507A**

Bright = +
Dark = -

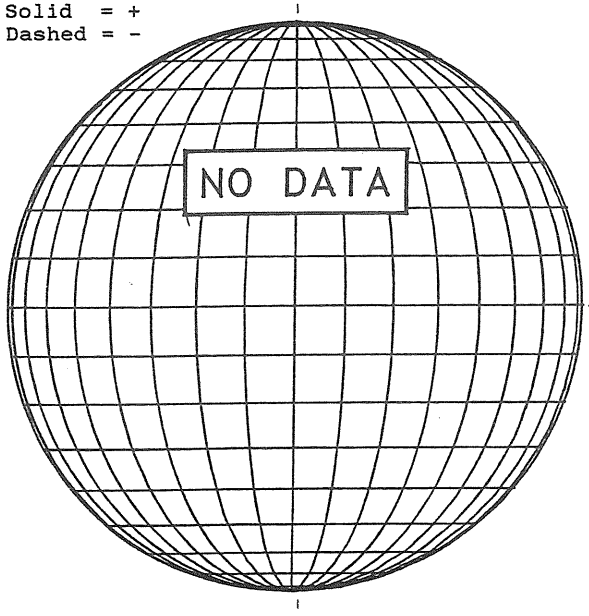


1412 UT

STANFORD MAGNETOGRAM

N

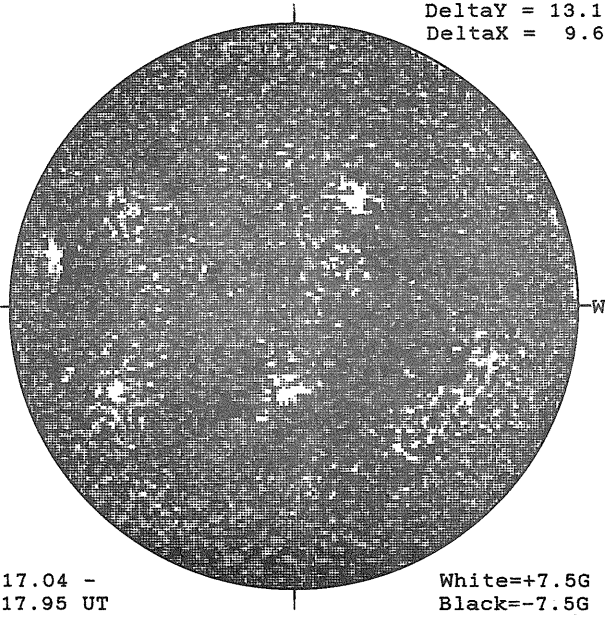
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

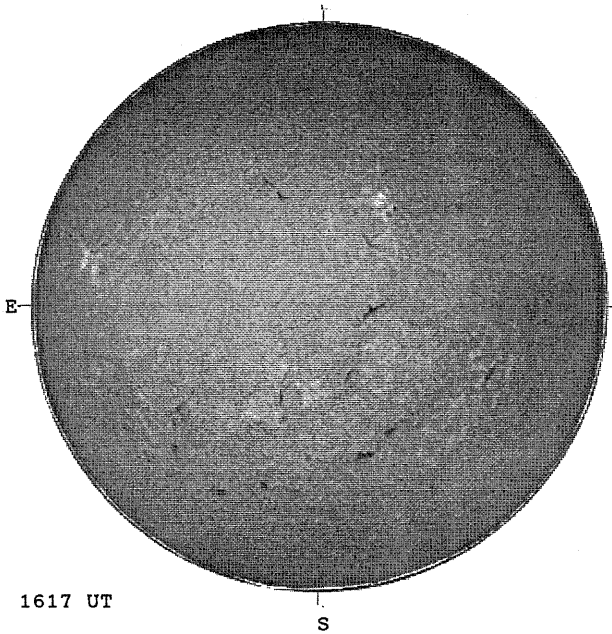
DeltaY = 13.1
DeltaX = 9.6



17.04 -
17.95 UT

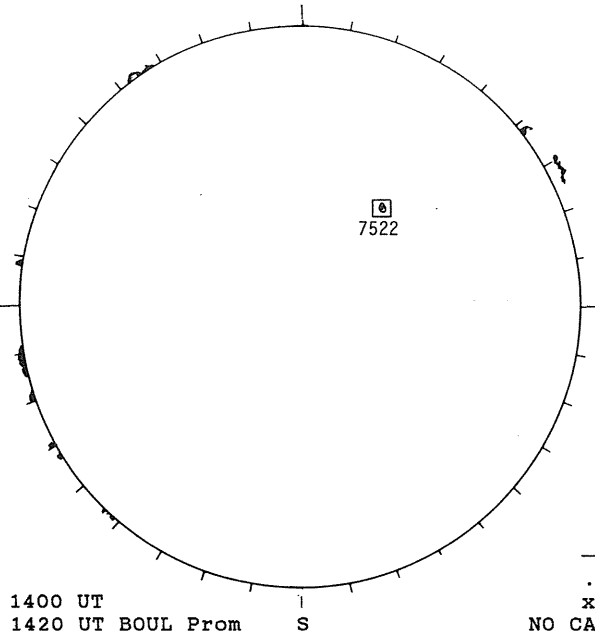
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



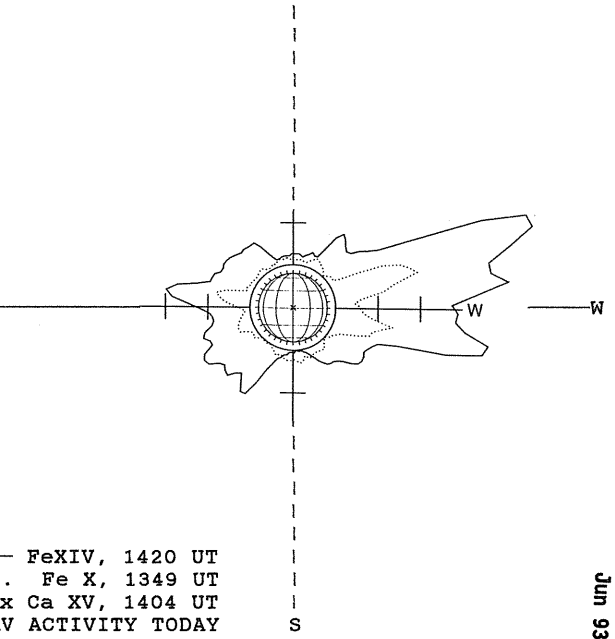
1617 UT

BOULDER SUNSPOT



1400 UT
1420 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



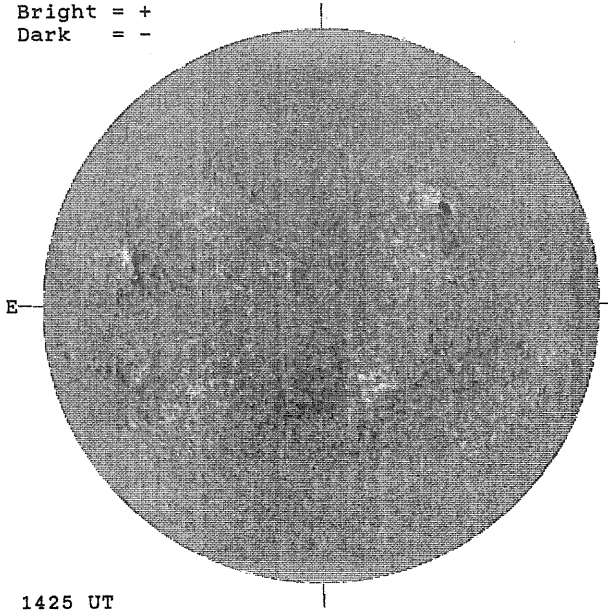
—— FeXIV, 1420 UT
.... Fe X, 1349 UT
xxxx Ca XV, 1404 UT
NO CA XV ACTIVITY TODAY

JUNE 14, 1993 (P=-10.22, B_o = 0.91, L_o = 260.42)

KITT PEAK MAGNETOGRAM

N **5507A**

Bright = +
Dark = -

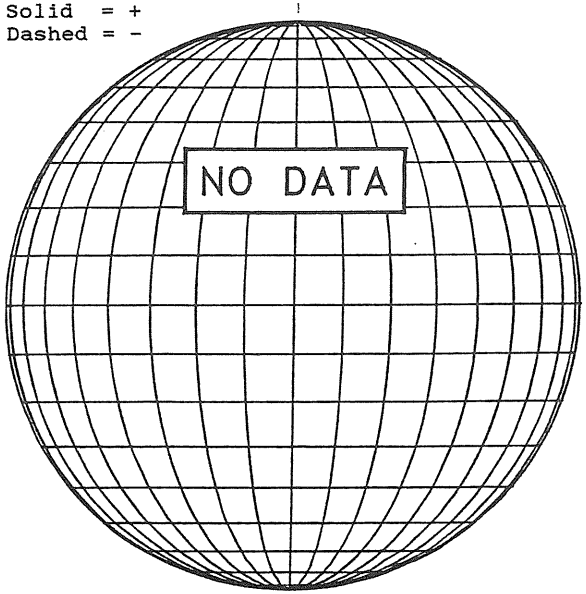


1425 UT

STANFORD MAGNETOGRAM

N

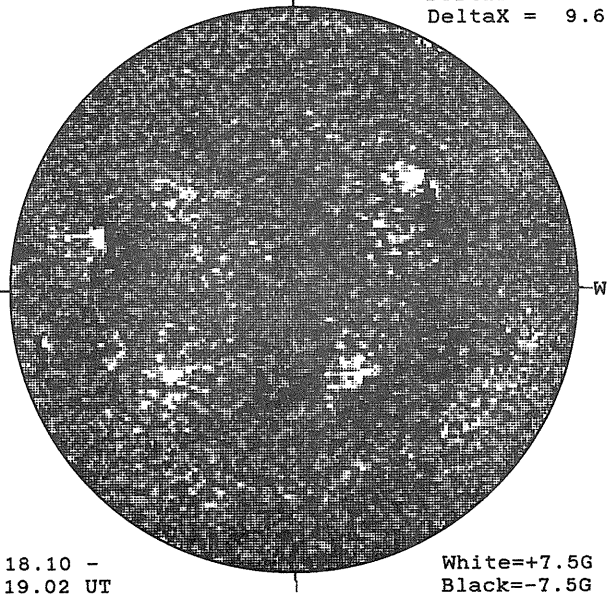
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

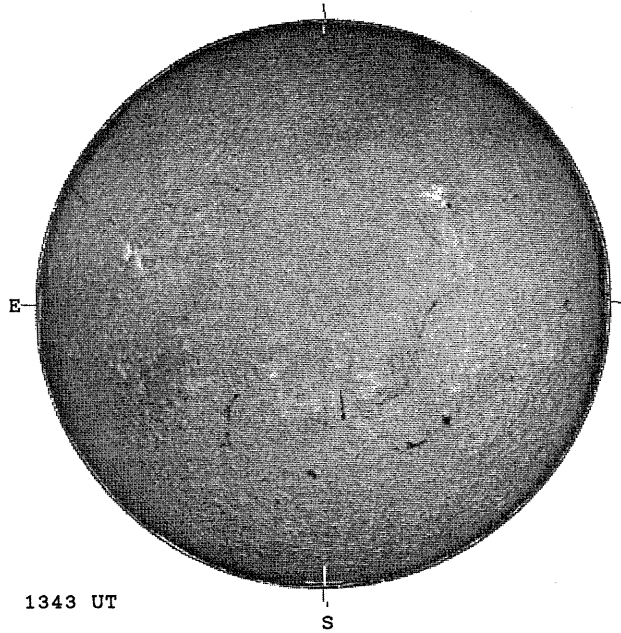
DeltaY = 13.1
DeltaX = 9.6



18.10 -
19.02 UT

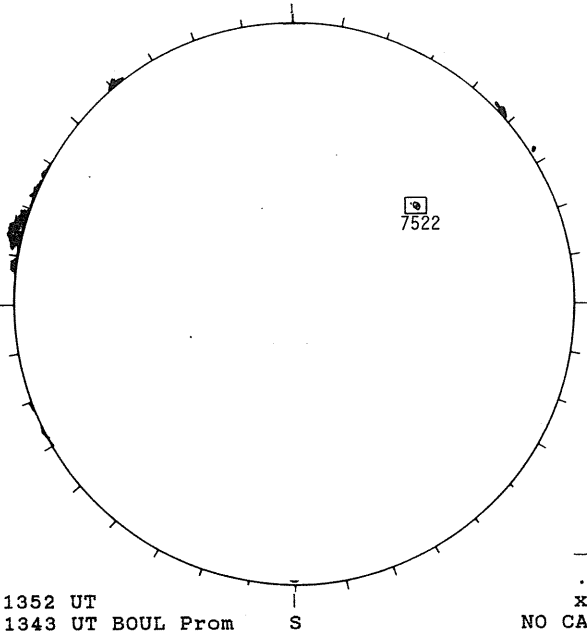
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



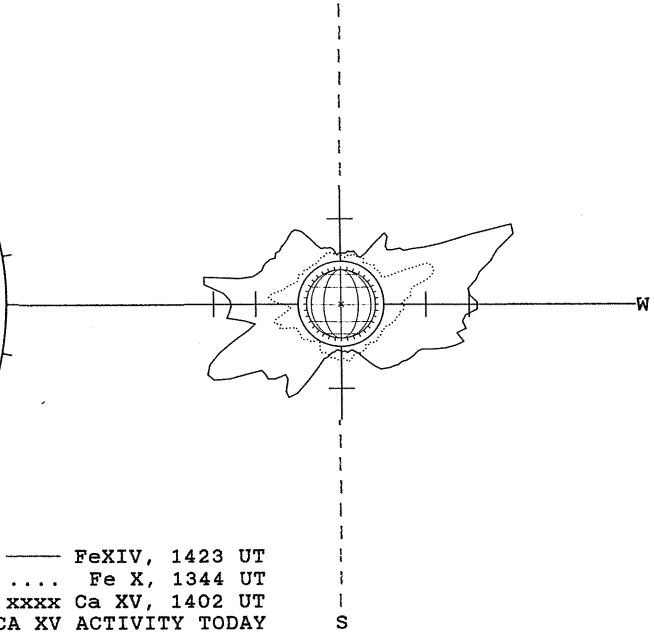
1343 UT

BOULDER SUNSPOT



1352 UT
1343 UT BOUL Prom

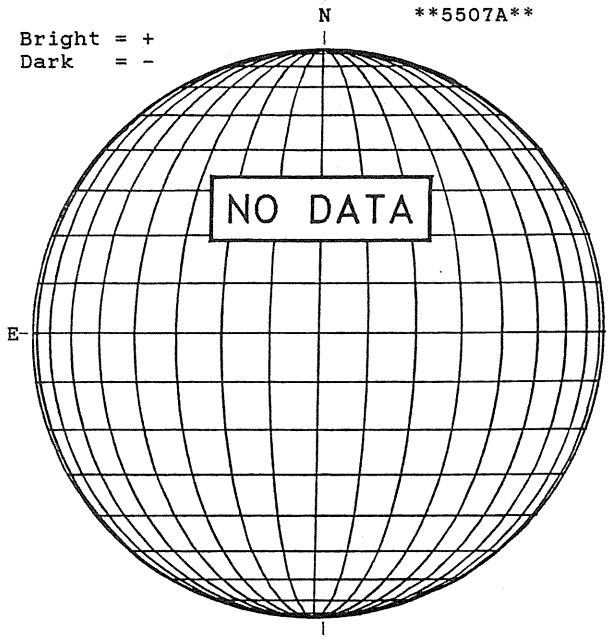
SACRAMENTO PEAK CORONA (1.15 Radii)



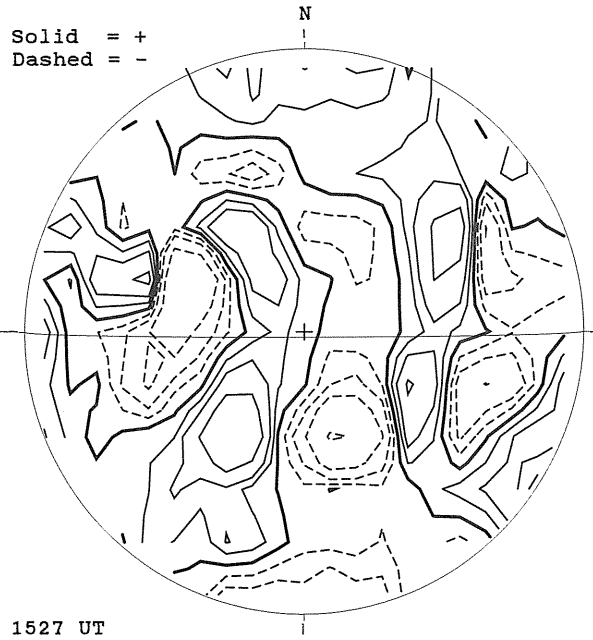
—— FeXIV, 1423 UT
.... Fe X, 1344 UT
xxxx Ca XV, 1402 UT
NO CA XV ACTIVITY TODAY

JUNE 15, 1993 (P= -9.79, B_o = 1.03 L_o = 247.18)

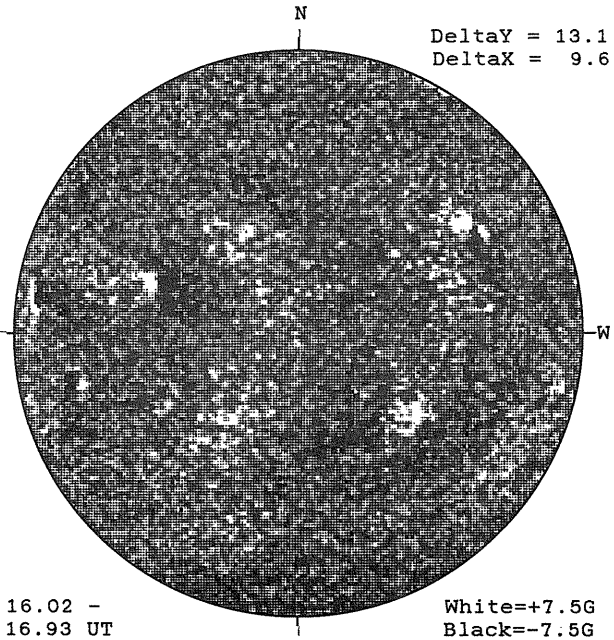
KITT PEAK MAGNETOGRAM



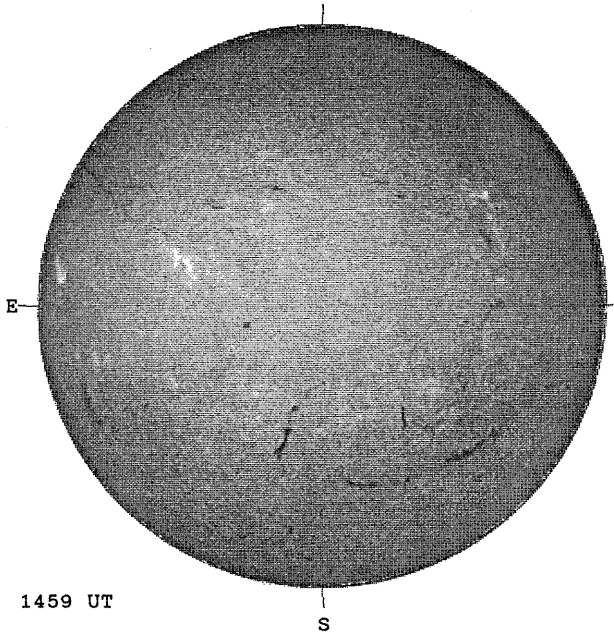
STANFORD MAGNETOGRAM



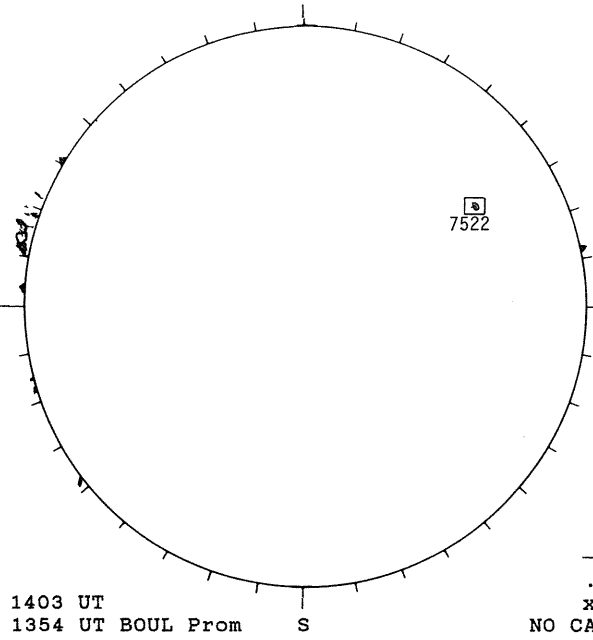
MT. WILSON MAGNETOGRAM



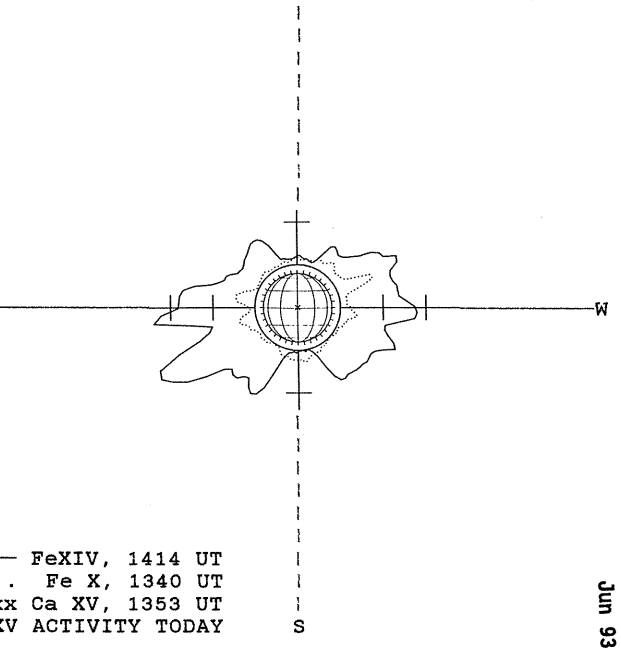
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



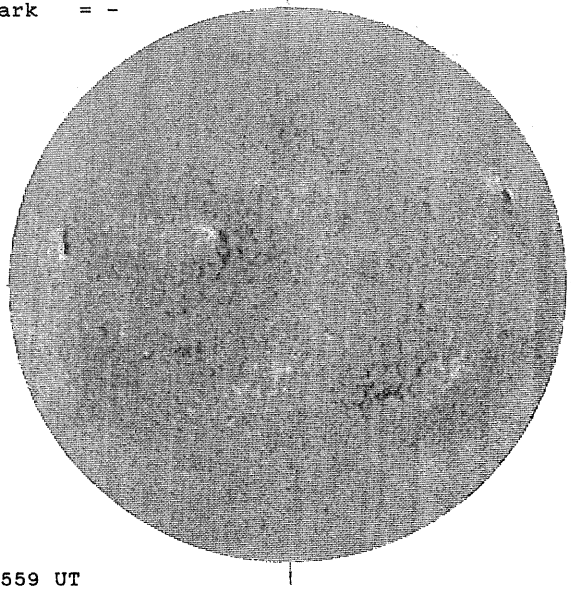
59
Jun 93

JUNE 16, 1993 (P= -9.36, B_o = 1.15, L_o = 233.94)

KITT PEAK MAGNETOGRAM

N **5507A**

Bright = +
Dark = -



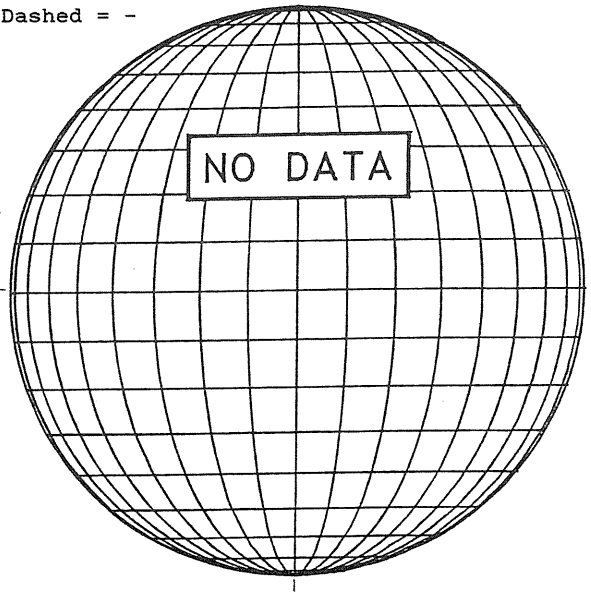
E

1559 UT

STANFORD MAGNETOGRAM

N

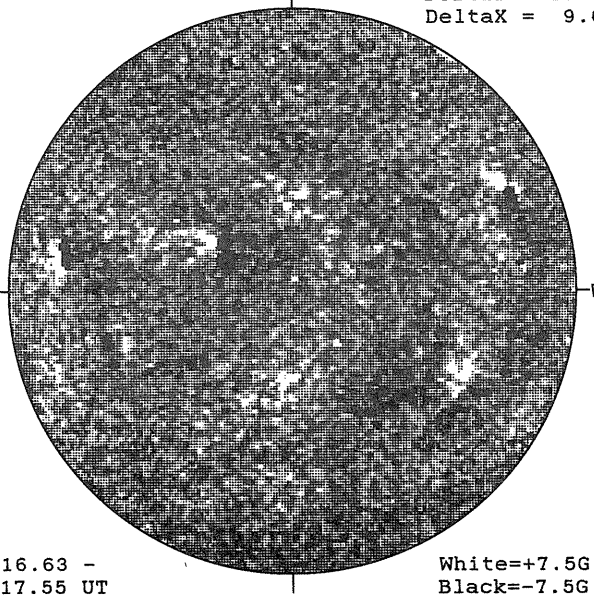
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

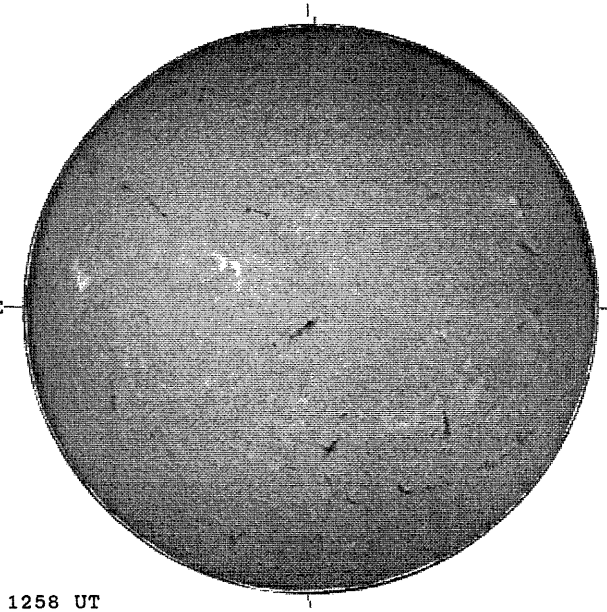


W

16.63 -
17.55 UT

White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA

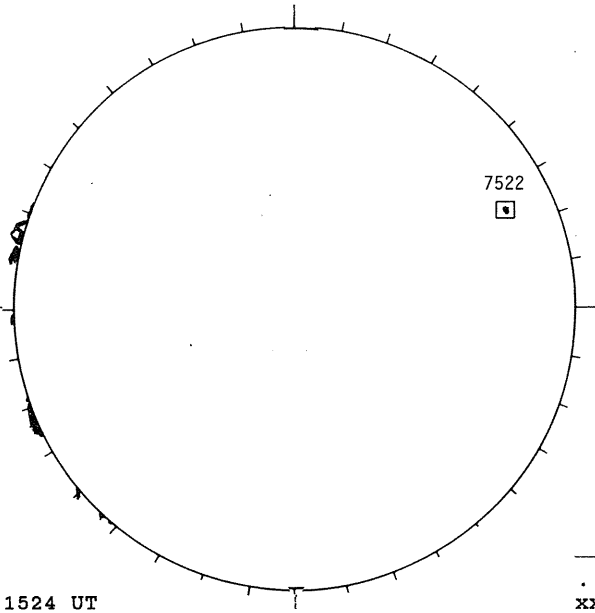


E

1258 UT

S

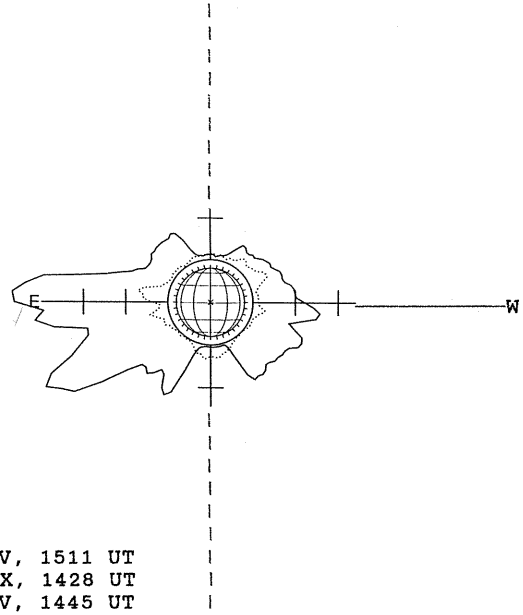
BOULDER SUNSPOT



1524 UT
1542 UT BOUL Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)



E

W

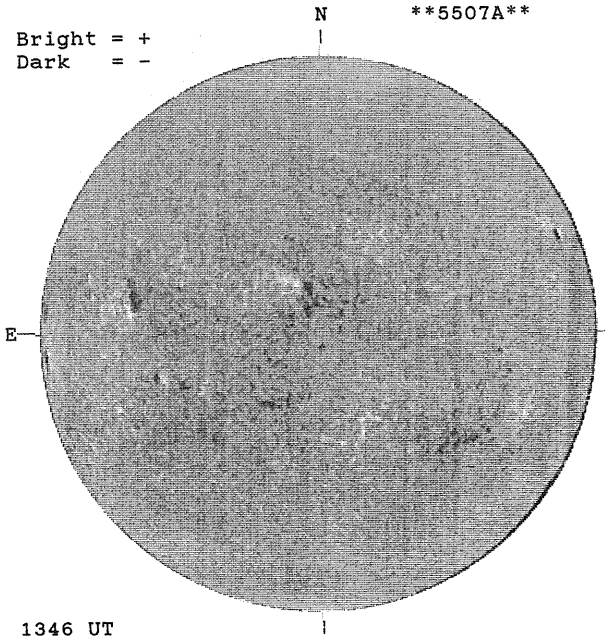
S

—— FeXIV, 1511 UT
.... Fe X, 1428 UT
xxxx Ca XV, 1445 UT
NO CA XV ACTIVITY TODAY

JUNE 17, 1993 (P= -8.93, B_o = 1.27, L_o = 220.71)

KITT PEAK MAGNETOGRAM

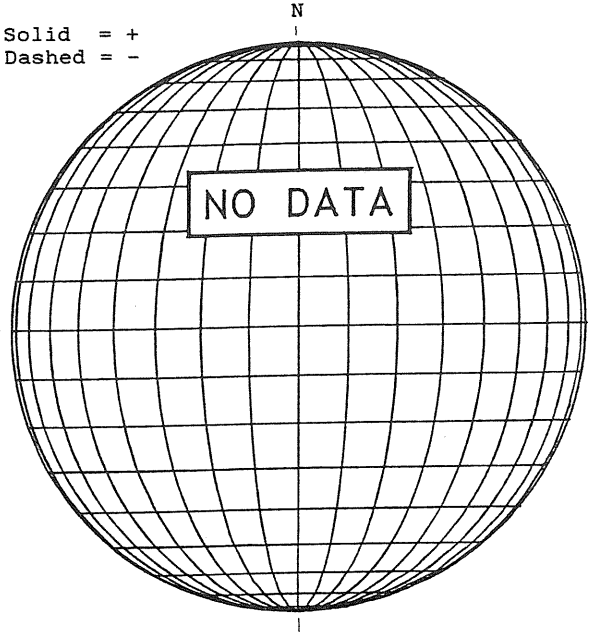
Bright = +
Dark = -



1346 UT

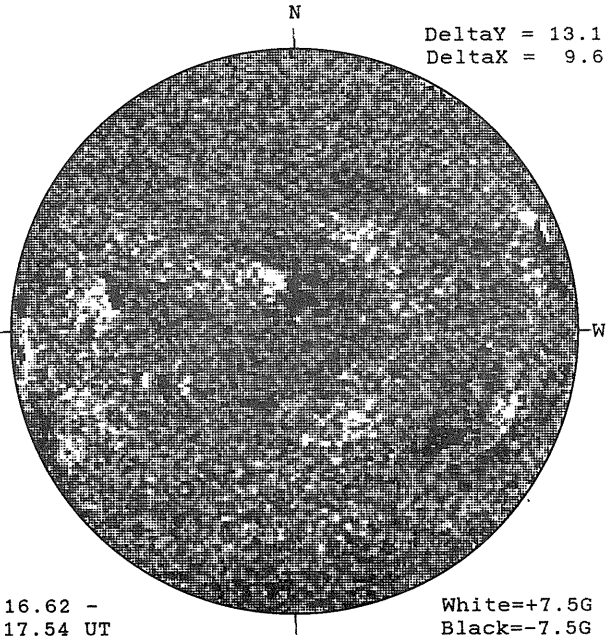
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

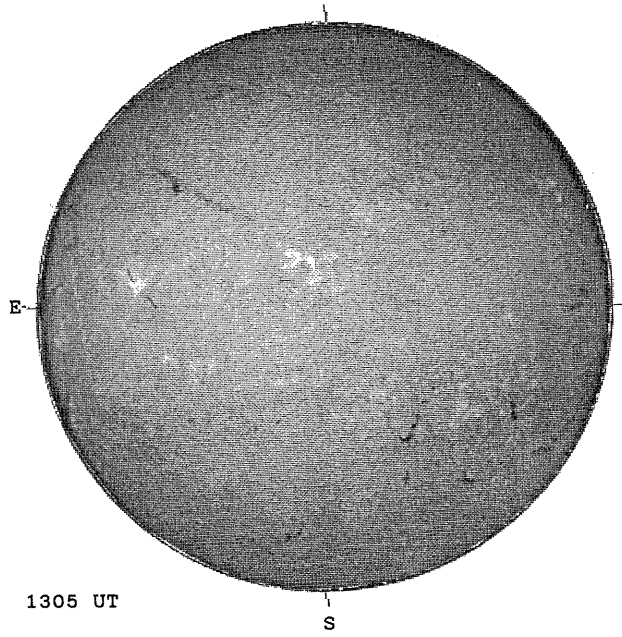
DeltaY = 13.1
DeltaX = 9.6



16.62 -
17.54 UT

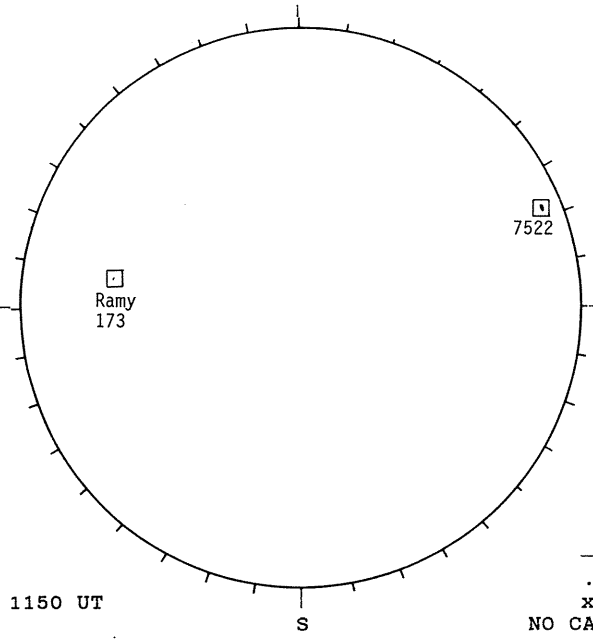
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



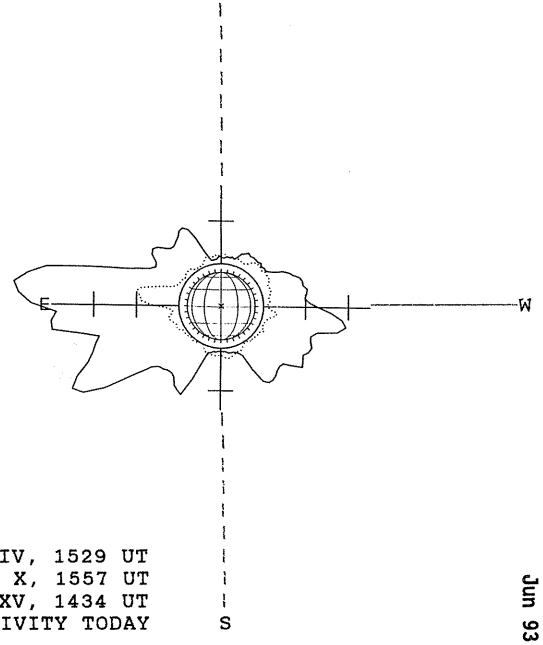
1305 UT

RAMEY SUNSPOT



1150 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

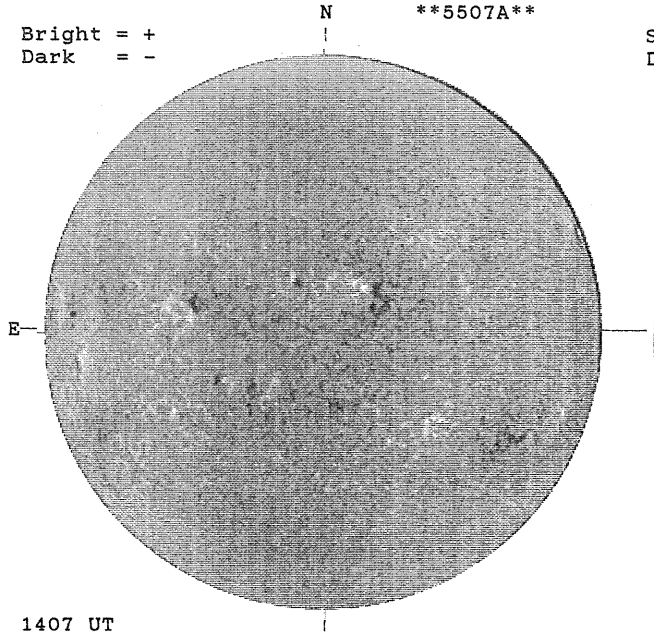


—— FeXIV, 1529 UT
.... Fe X, 1557 UT
xxxx Ca XV, 1434 UT
NO CA XV ACTIVITY TODAY

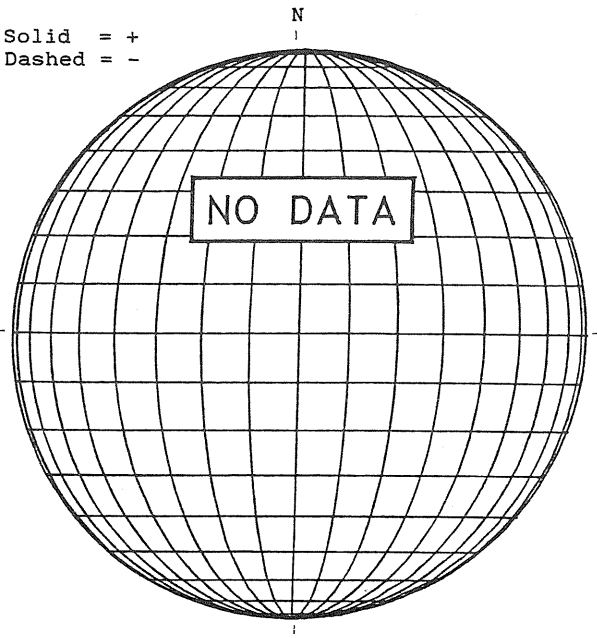
61
Jun 93

JUNE 18, 1993 (P= -8.50, B_o = 1.39, L_o = 207.47)

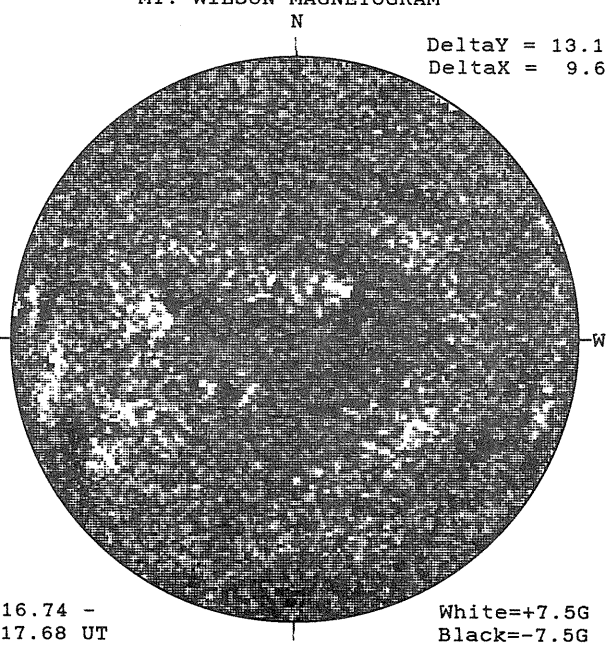
KITT PEAK MAGNETOGRAM



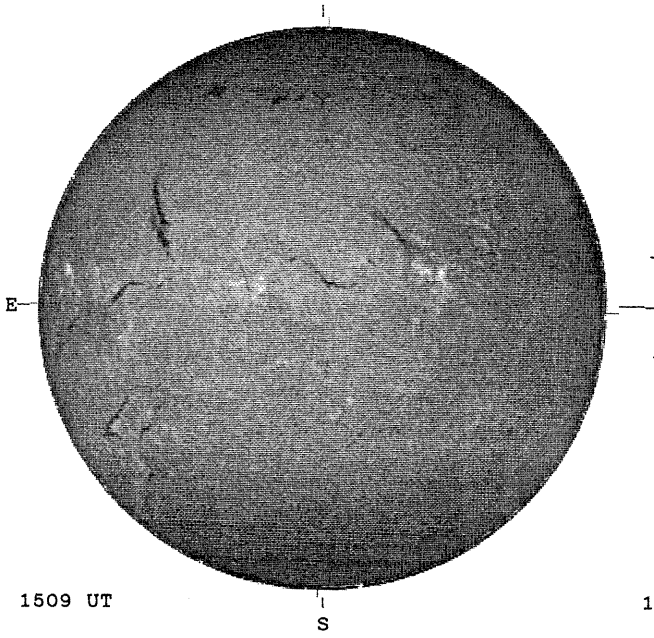
STANFORD MAGNETOGRAM



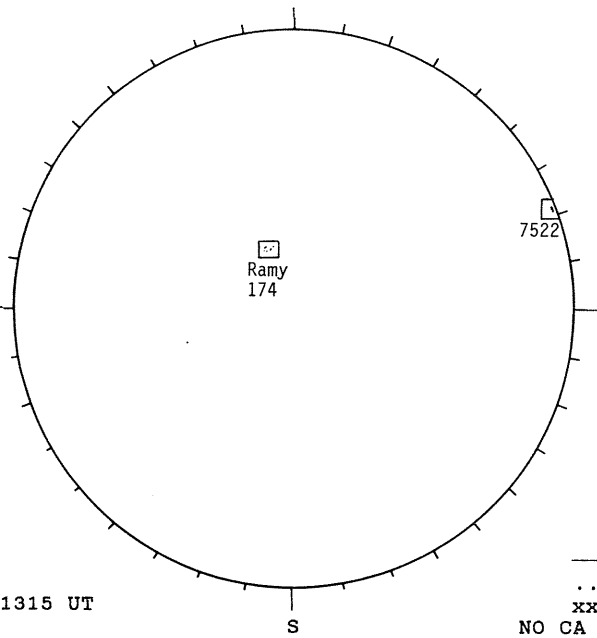
MT. WILSON MAGNETOGRAM



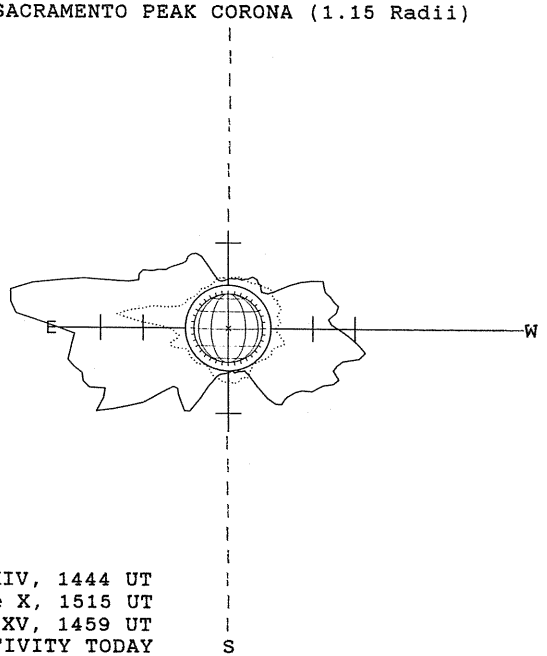
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



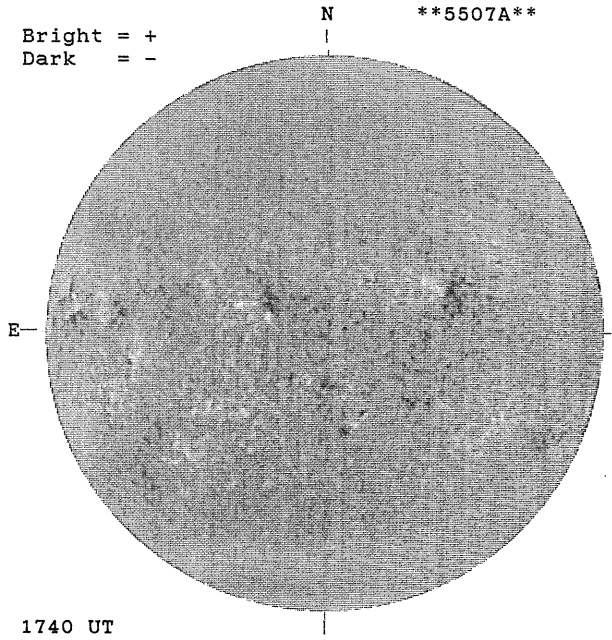
SACRAMENTO PEAK CORONA (1.15 Radii)



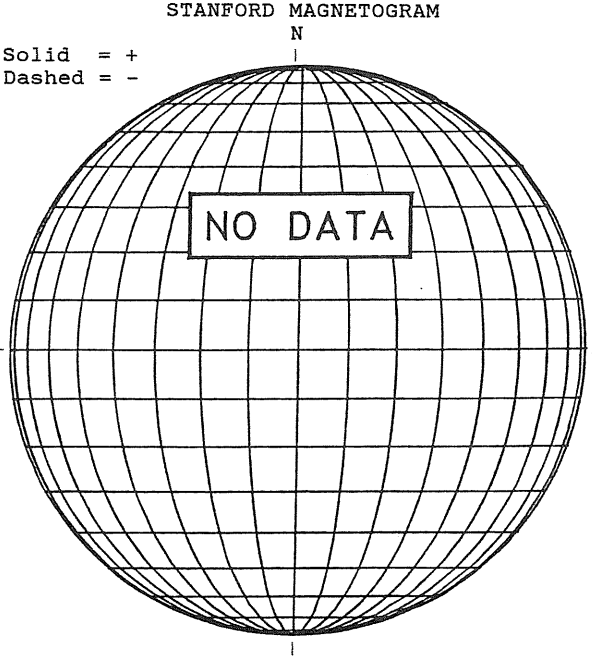
—— FeXIV, 1444 UT
.... Fe X, 1515 UT
xxxx Ca XV, 1459 UT
NO CA XV ACTIVITY TODAY

JUNE 19, 1993 (P= -8.06, B_o = 1.50, L_o = 194.23)

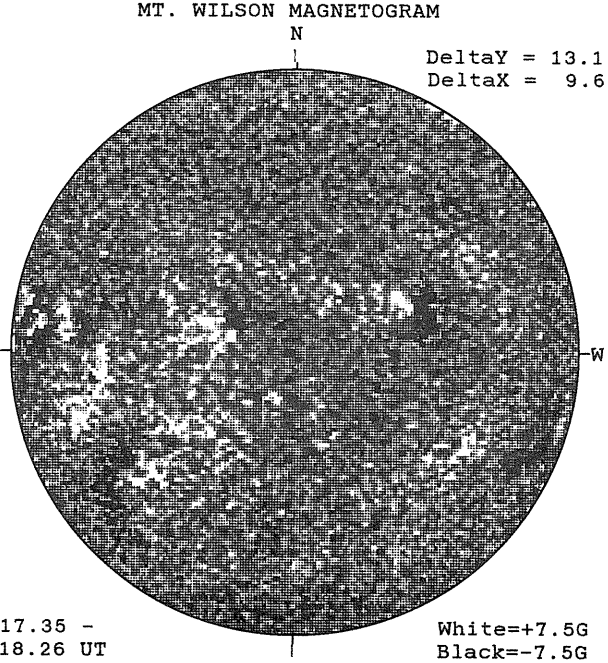
KITT PEAK MAGNETOGRAM



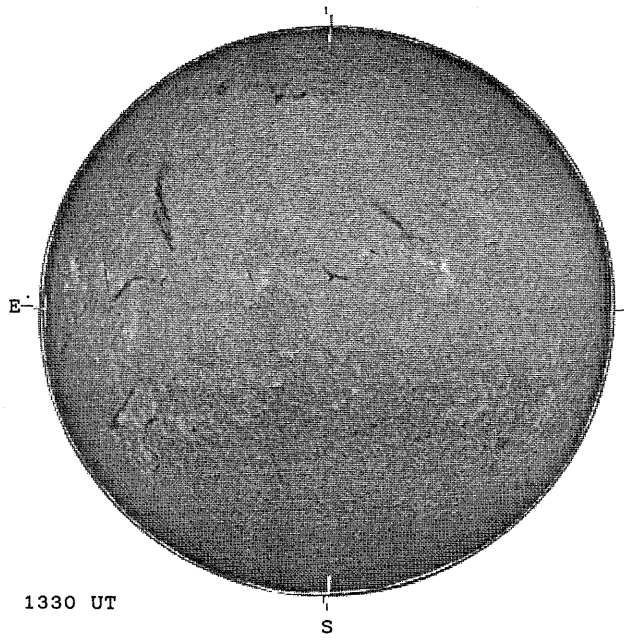
STANFORD MAGNETOGRAM



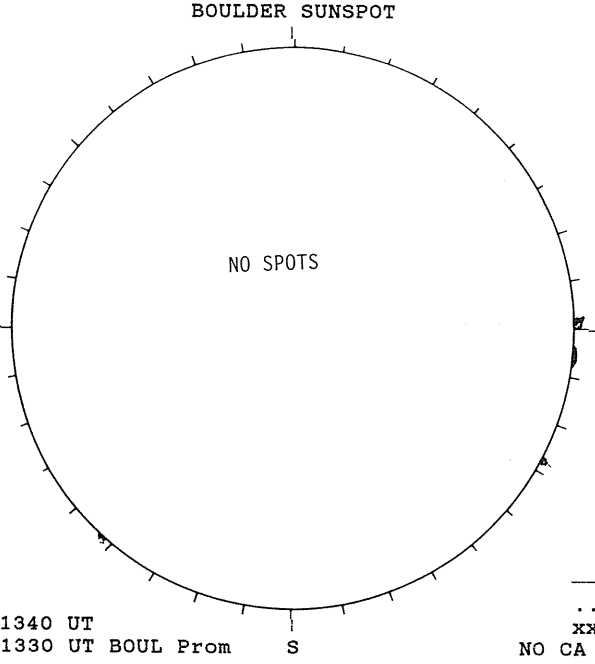
MT. WILSON MAGNETOGRAM



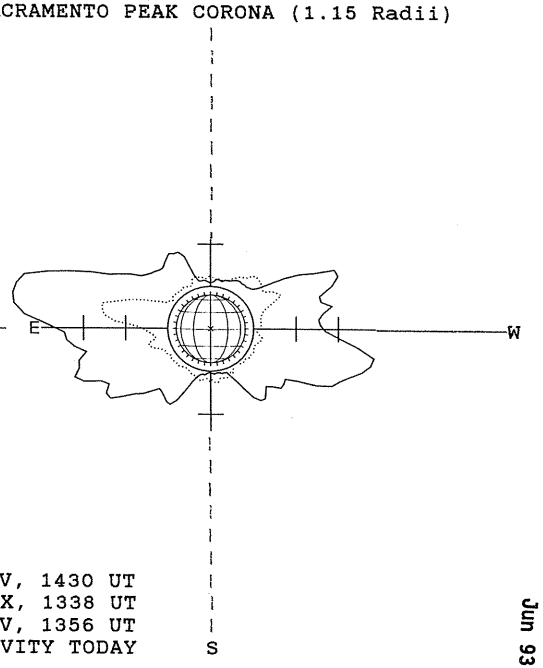
BOULDER H-ALPHA



BOULDER SUNSPOT

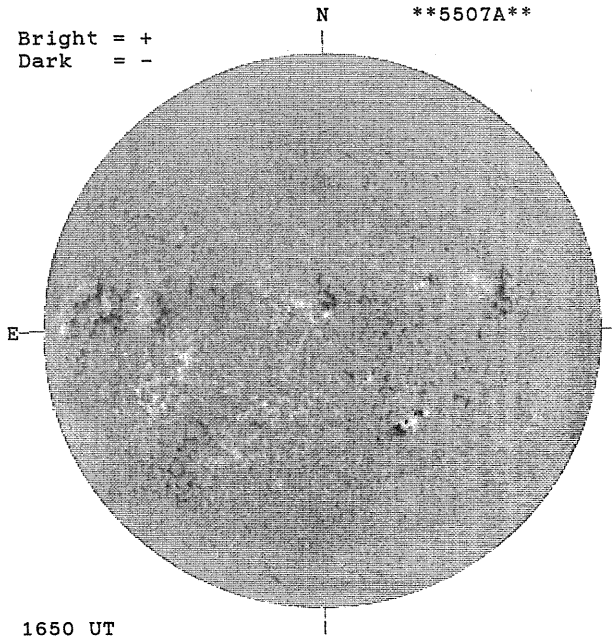


SACRAMENTO PEAK CORONA (1.15 Radii)

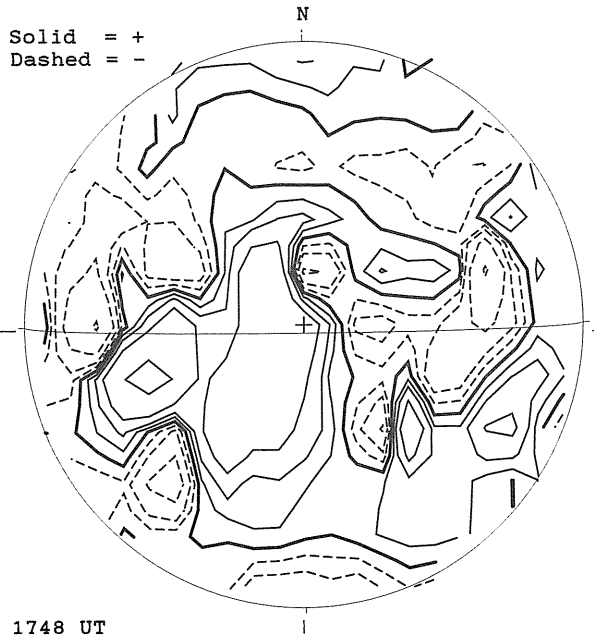


JUNE 20, 1993 (P= -7.62, B_o = 1.62, L_o = 181.00)

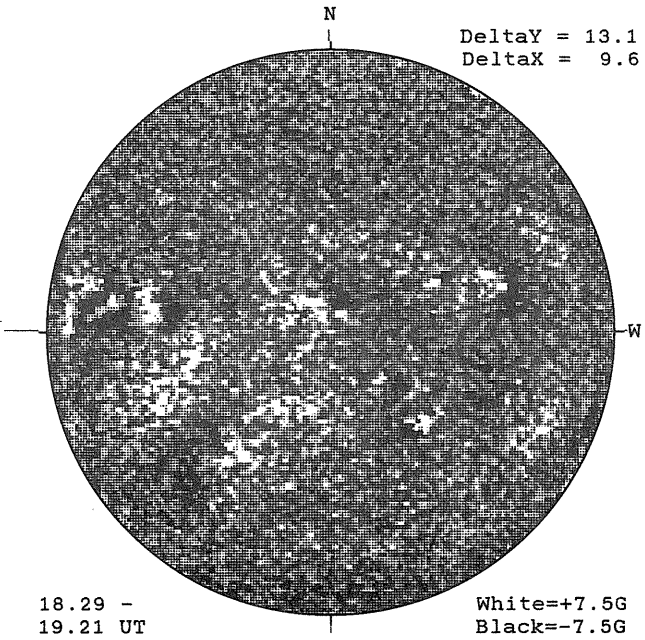
KITT PEAK MAGNETOGRAM



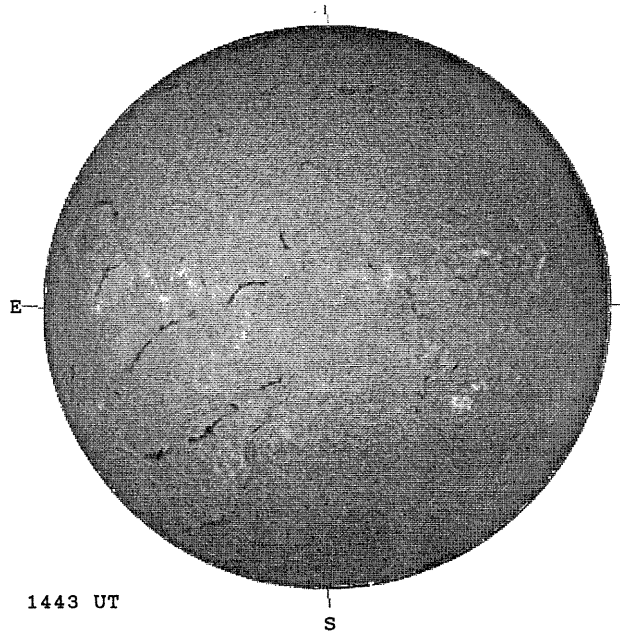
STANFORD MAGNETOGRAM



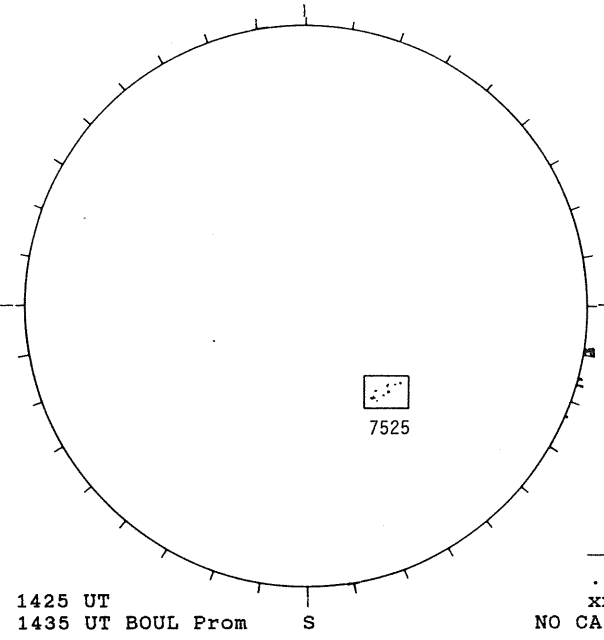
MT. WILSON MAGNETOGRAM



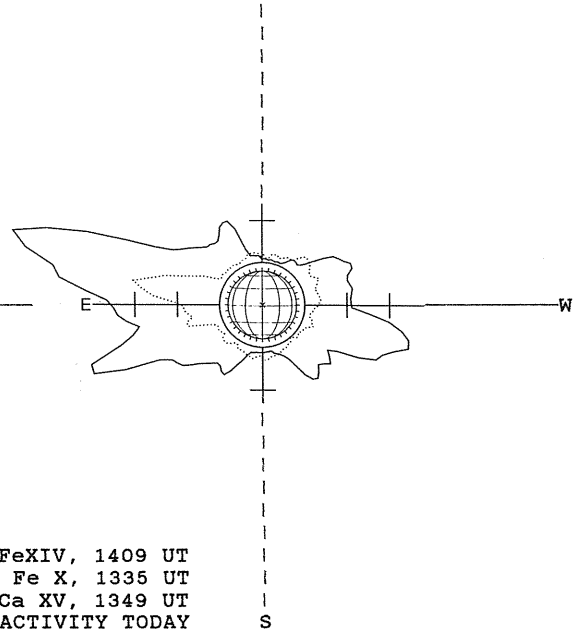
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT

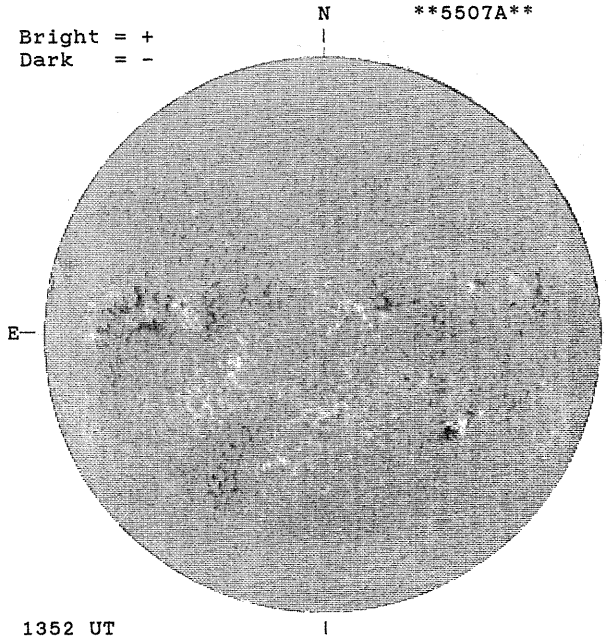


SACRAMENTO PEAK CORONA (1.15 Radii)

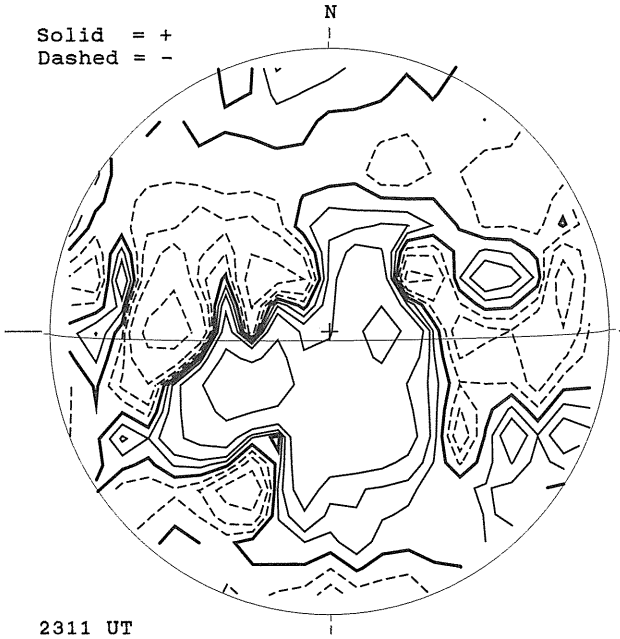


JUNE 21, 1993 (P= -7.18, B_o = 1.74 L_o = 167.76)

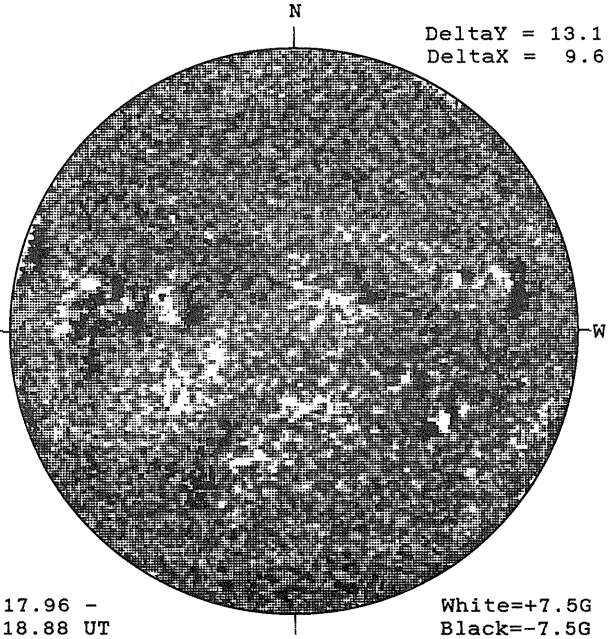
KITT PEAK MAGNETOGRAM



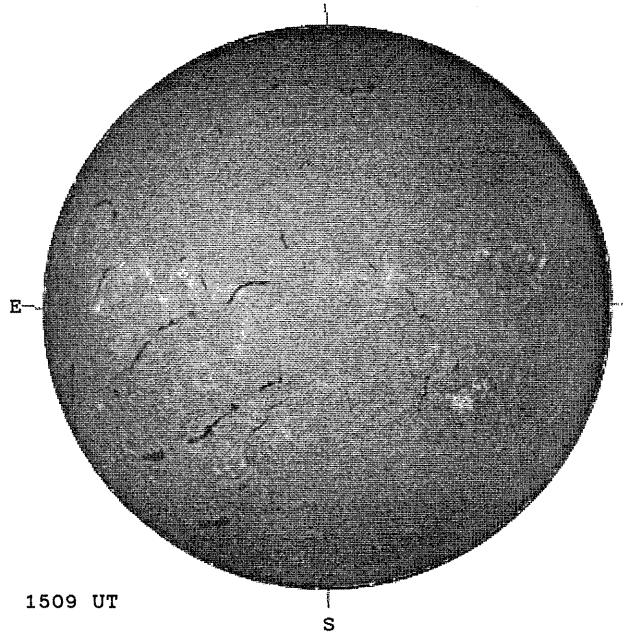
STANFORD MAGNETOGRAM



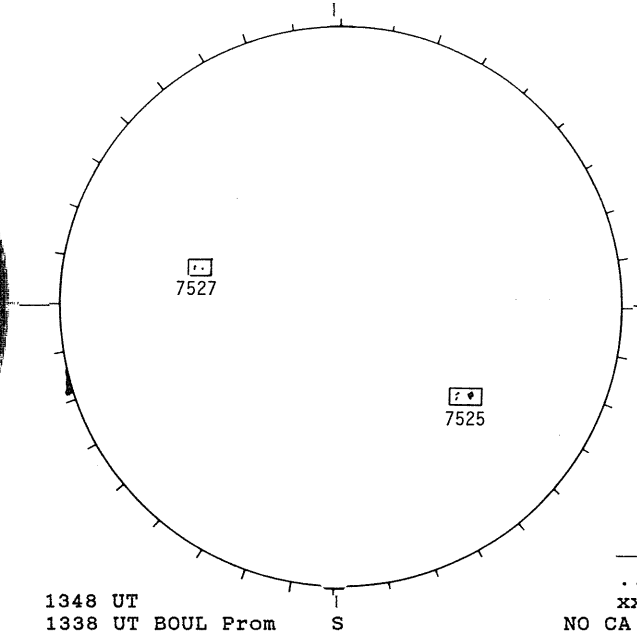
MT. WILSON MAGNETOGRAM



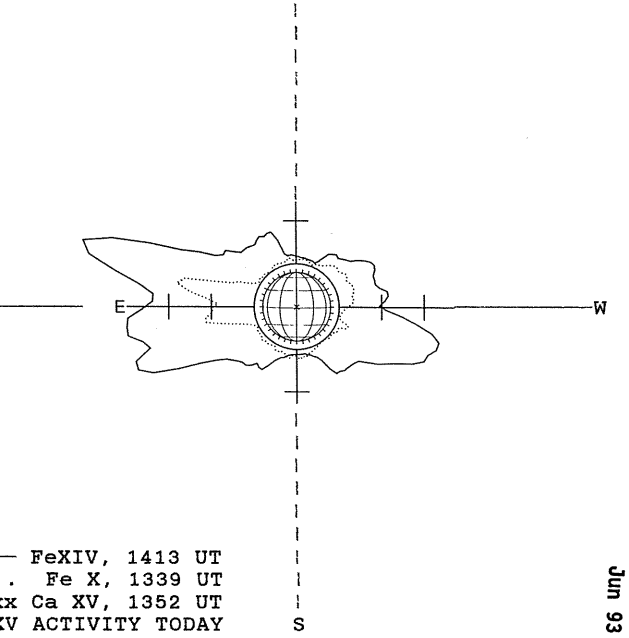
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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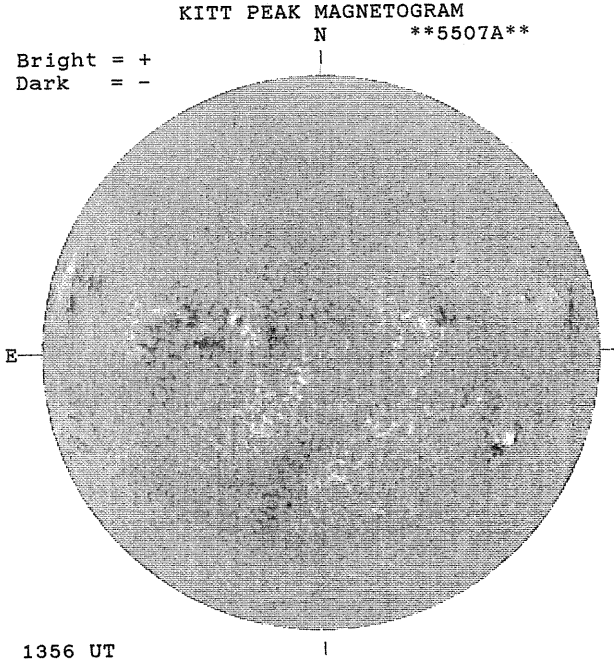
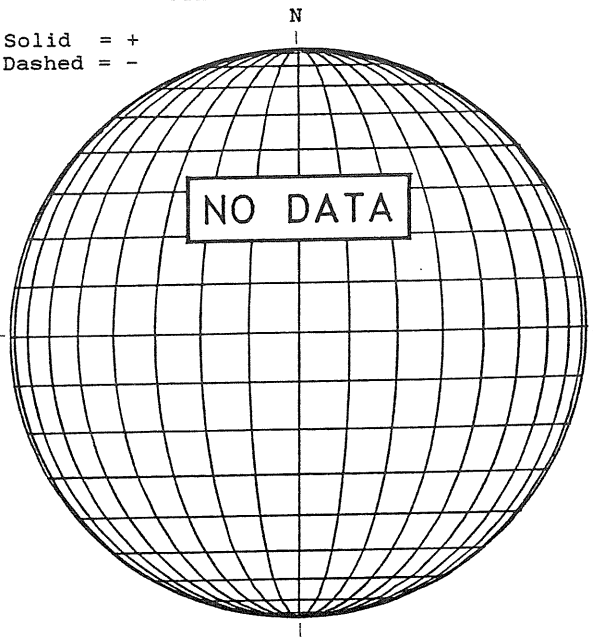
Jun 93

JUNE 22, 1993 (P= -6.73, B_o = 1.86, L_o = 154.52)

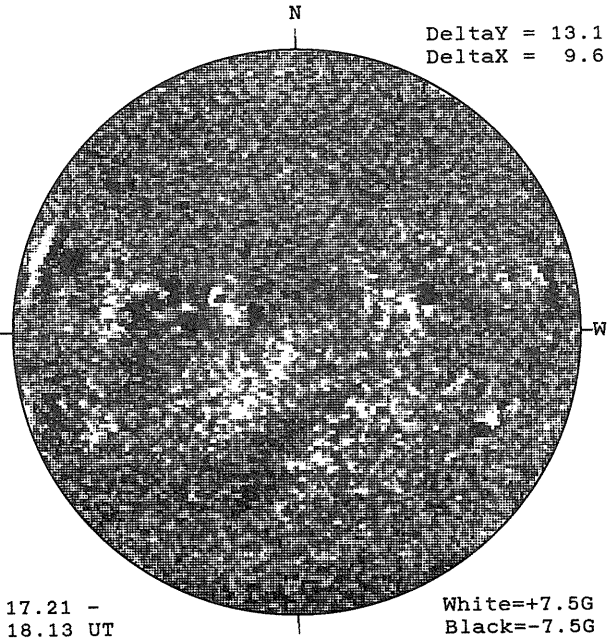
KITT PEAK MAGNETOGRAM



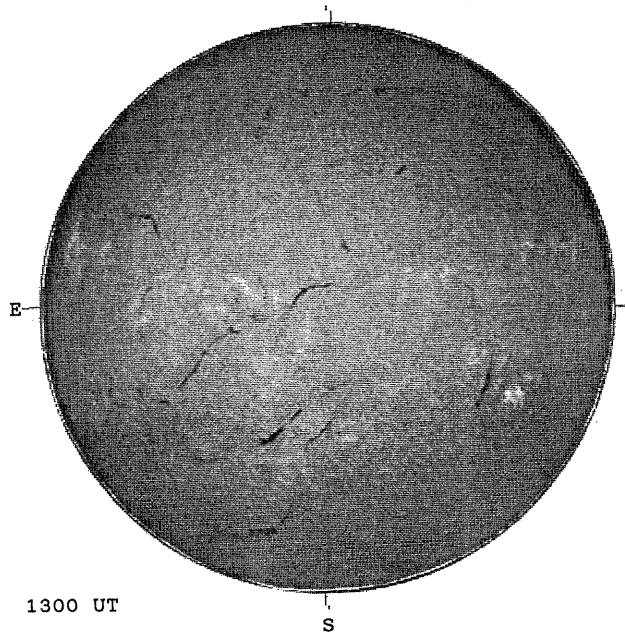
STANFORD MAGNETOGRAM



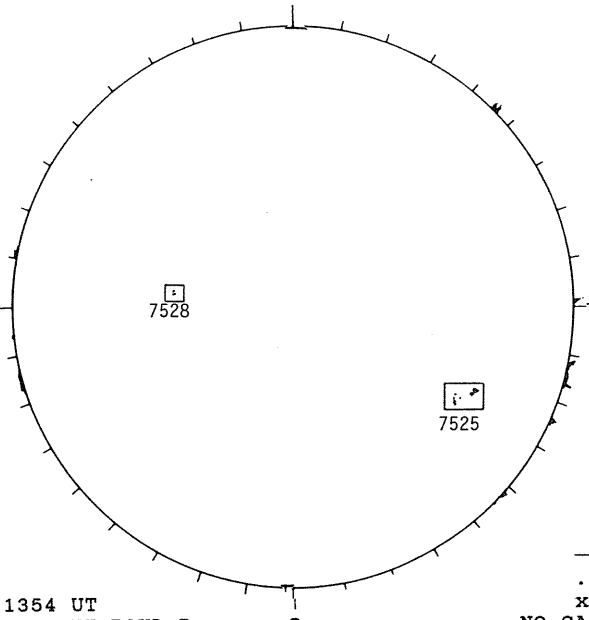
MT. WILSON MAGNETOGRAM



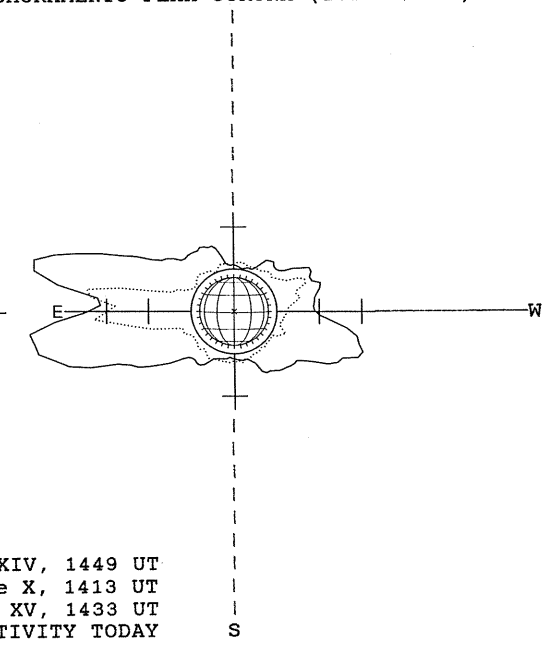
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



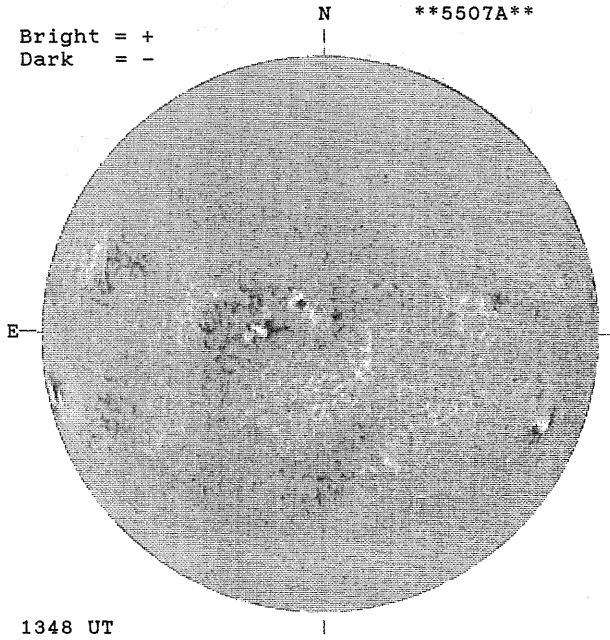
SACRAMENTO PEAK CORONA (1.15 Radii)



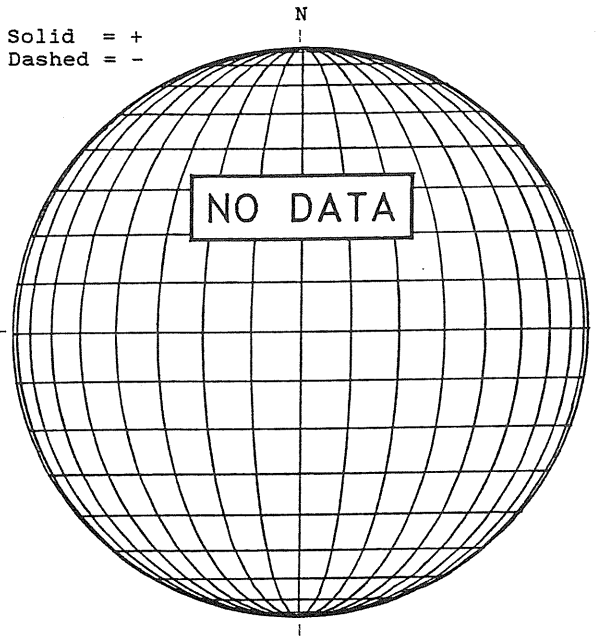
—— FeXIV, 1449 UT
.... Fe X, 1413 UT
xxxx Ca XV, 1433 UT
NO CA XV ACTIVITY TODAY

JUNE 23, 1993 (P= -6.29, B_o = 1.97, L_o = 141.29)

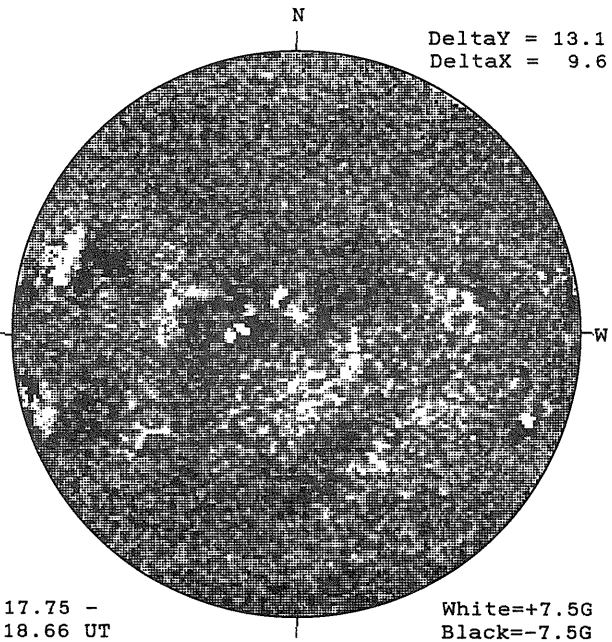
KITT PEAK MAGNETOGRAM



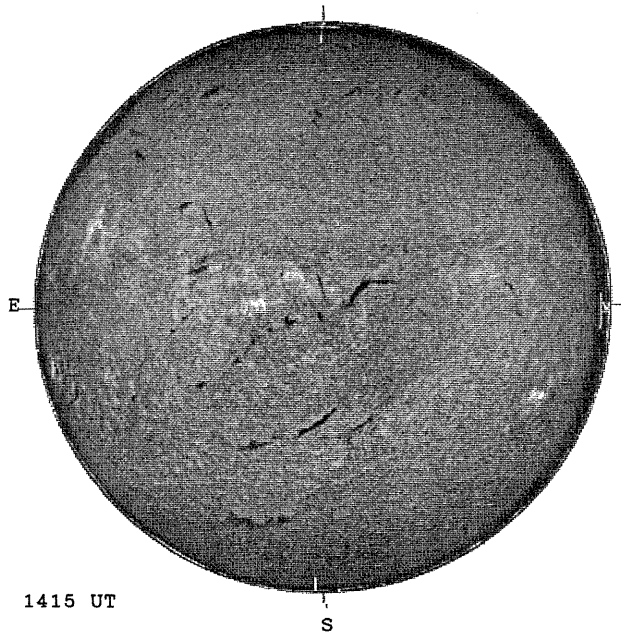
STANFORD MAGNETOGRAM



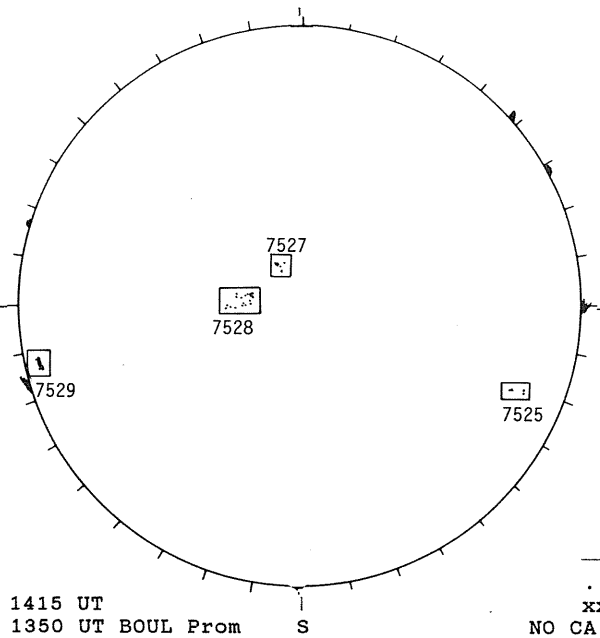
MT. WILSON MAGNETOGRAM



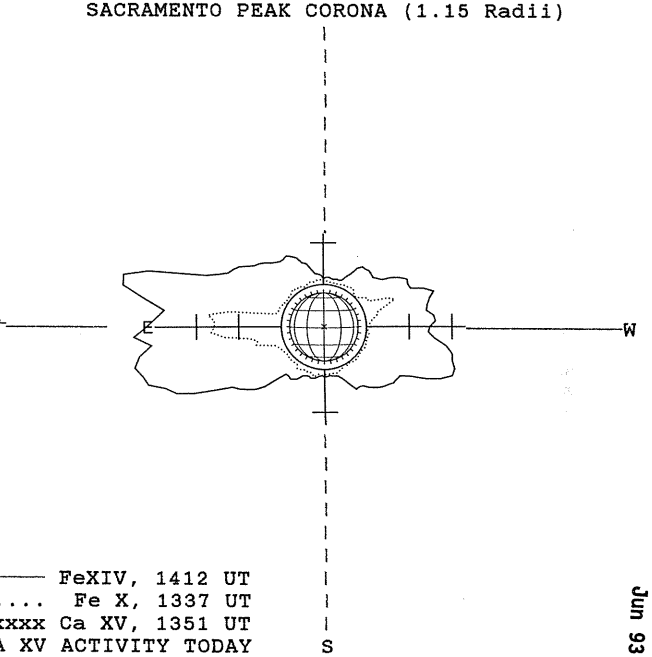
BOULDER H-ALPHA



BOULDER SUNSPOT

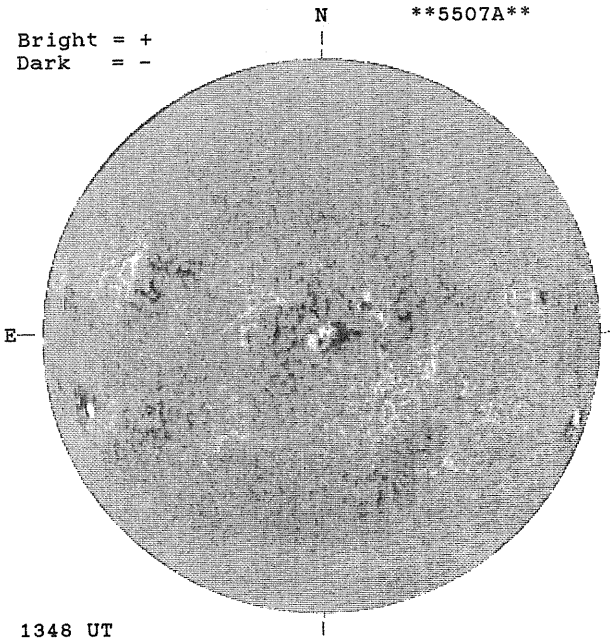


SACRAMENTO PEAK CORONA (1.15 Radii)

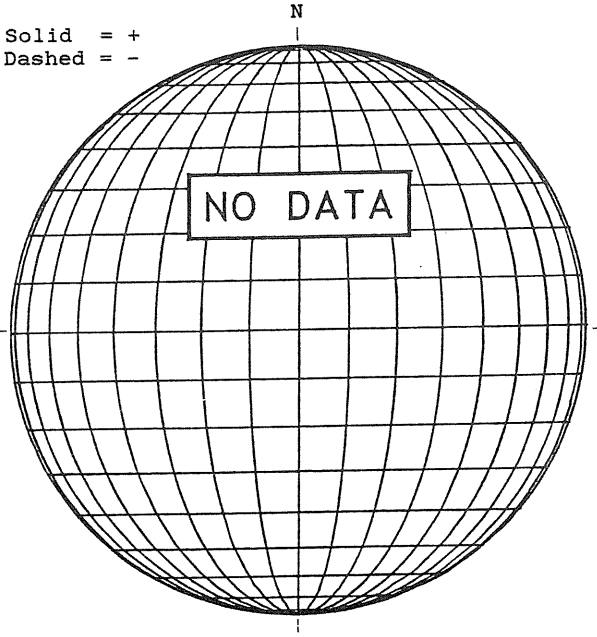


JUNE 24, 1993 (P= -5.84 B_o = 2.09, L_o = 128.05)

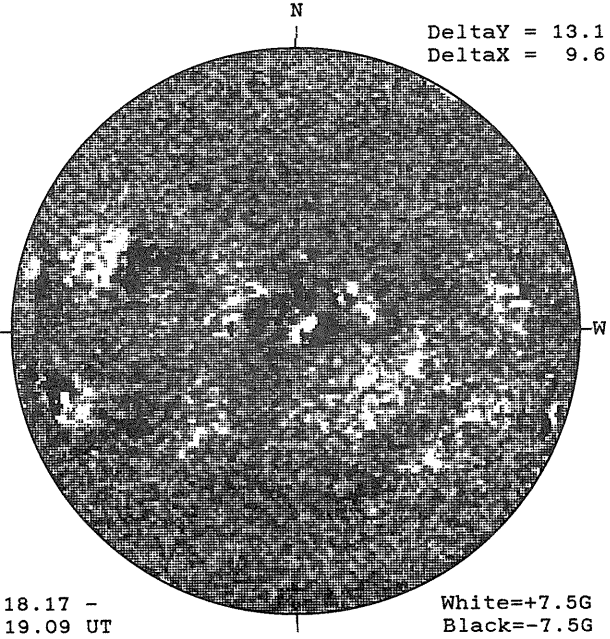
KITT PEAK MAGNETOGRAM



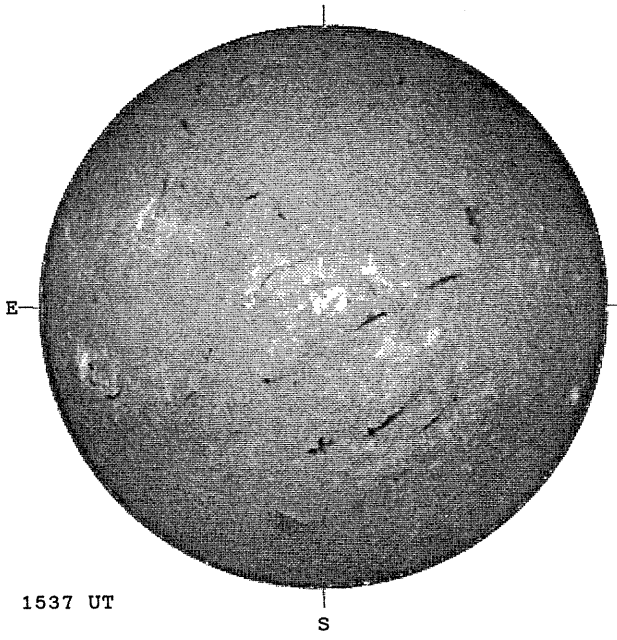
STANFORD MAGNETOGRAM



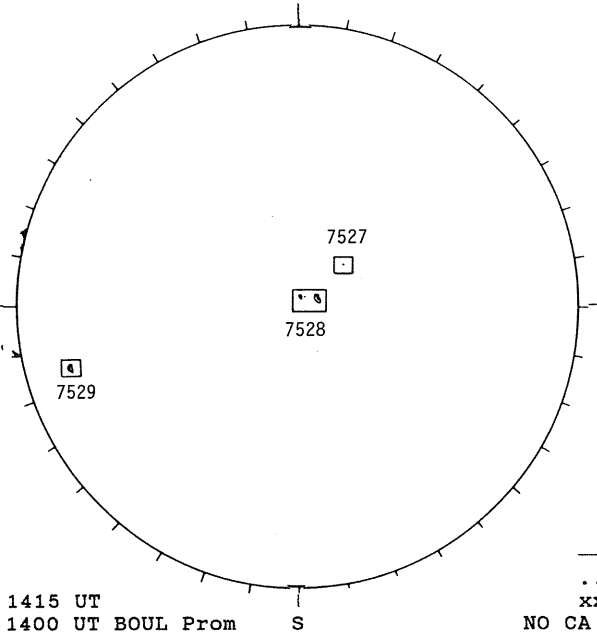
MT. WILSON MAGNETOGRAM



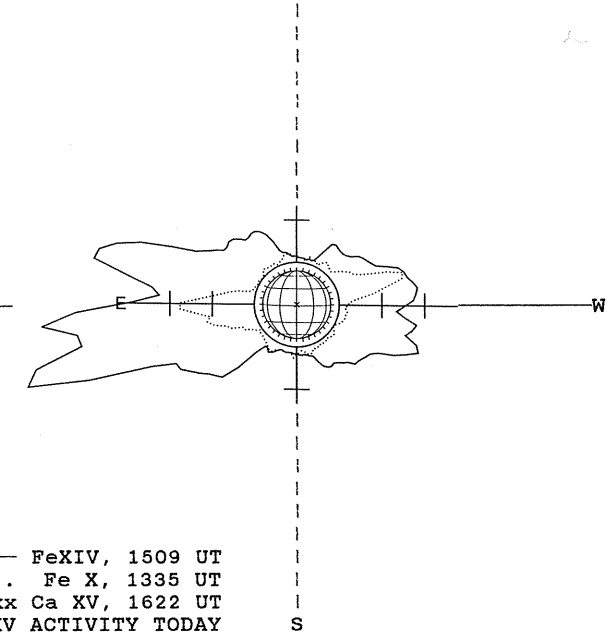
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT

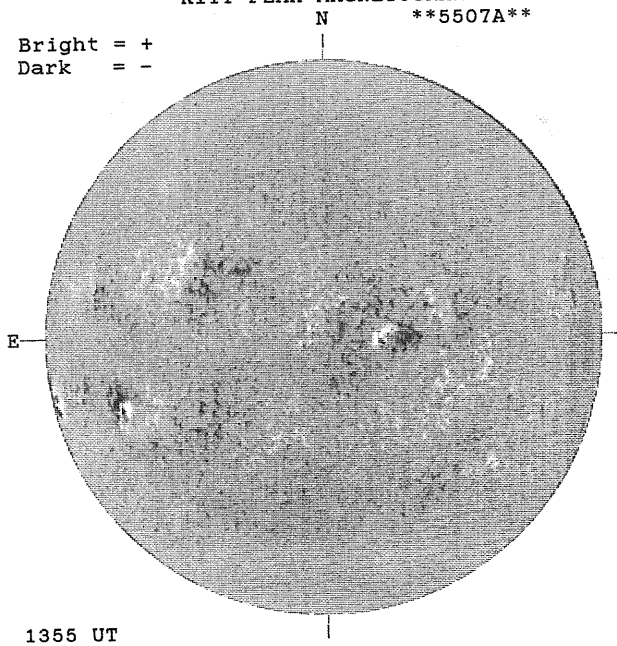


SACRAMENTO PEAK CORONA (1.15 Radii)

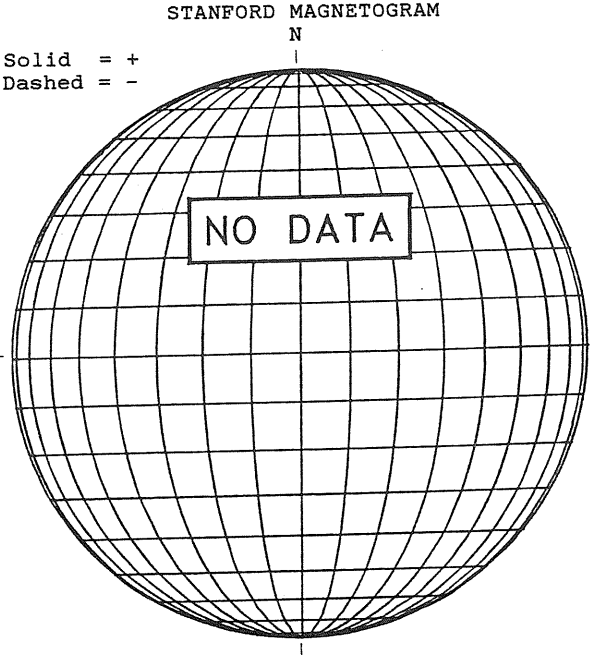


JUNE 25, 1993 (P= -5.39 B_o = 2.20, L_o = 114.81)

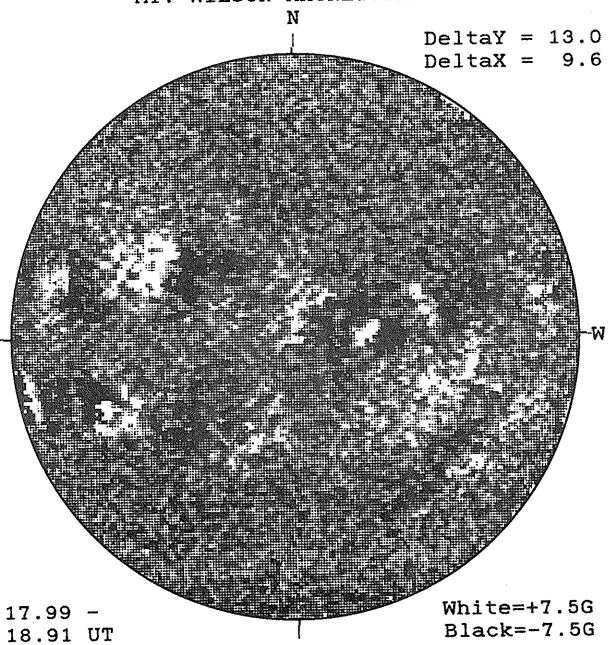
KITT PEAK MAGNETOGRAM



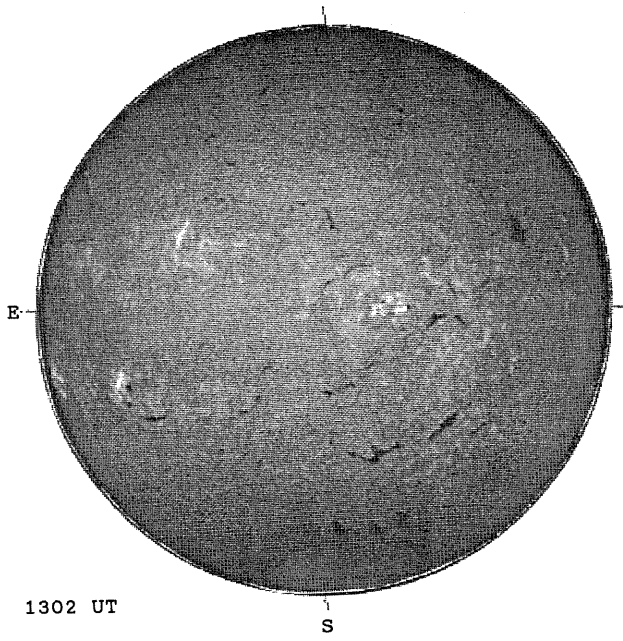
STANFORD MAGNETOGRAM



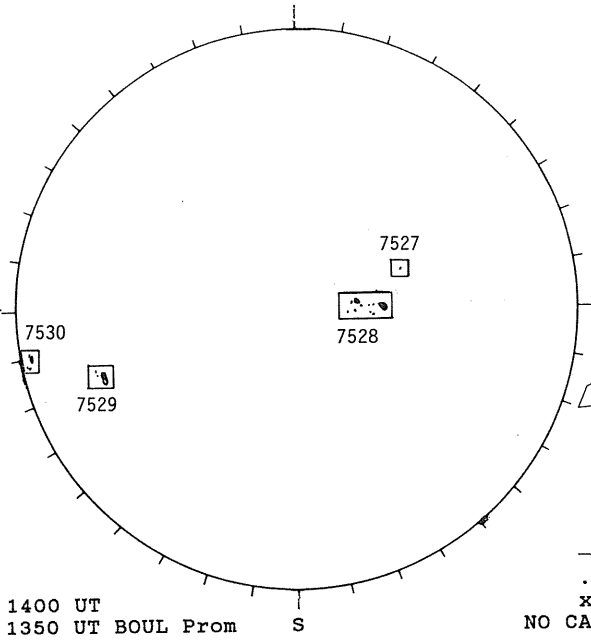
MT. WILSON MAGNETOGRAM



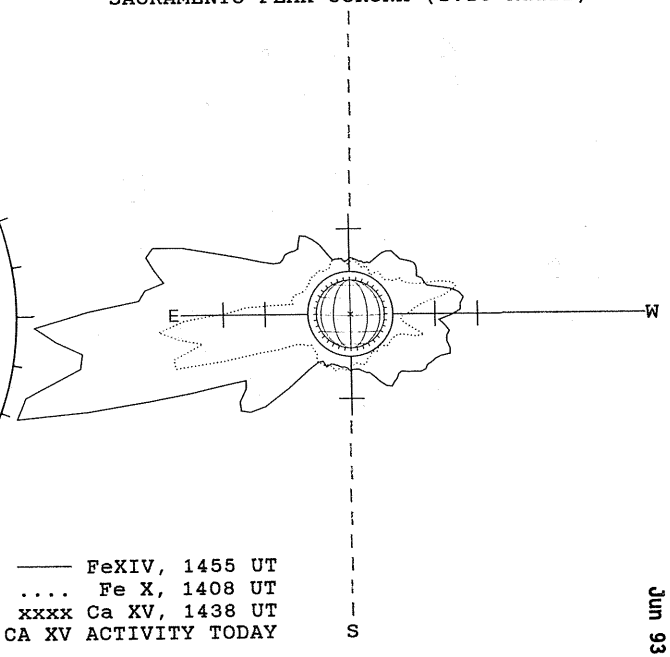
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT

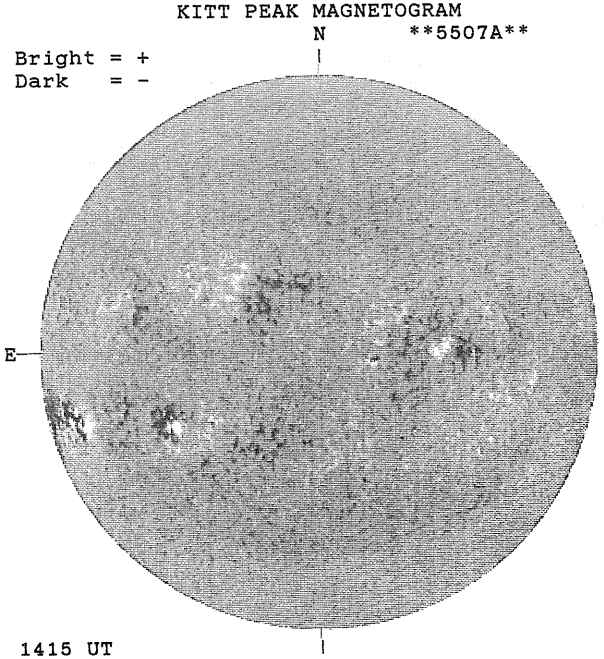


SACRAMENTO PEAK CORONA (1.15 Radii)

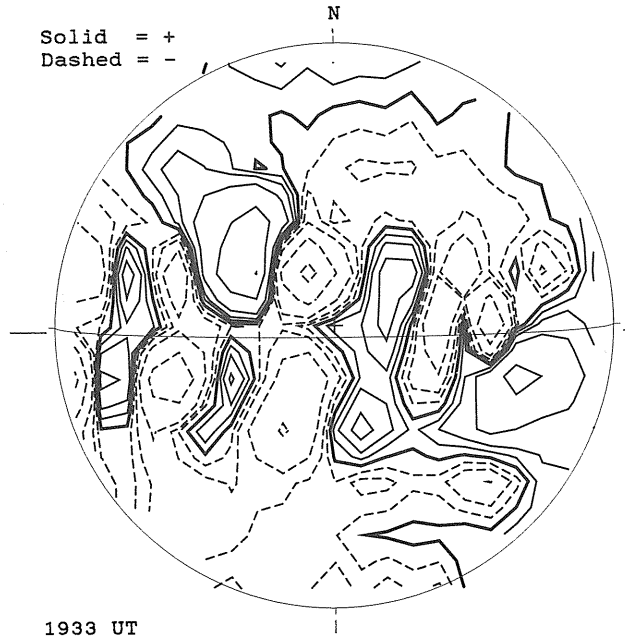


JUNE 26, 1993 (P= -4.94, B_o = 2.32, L_o = 101.58)

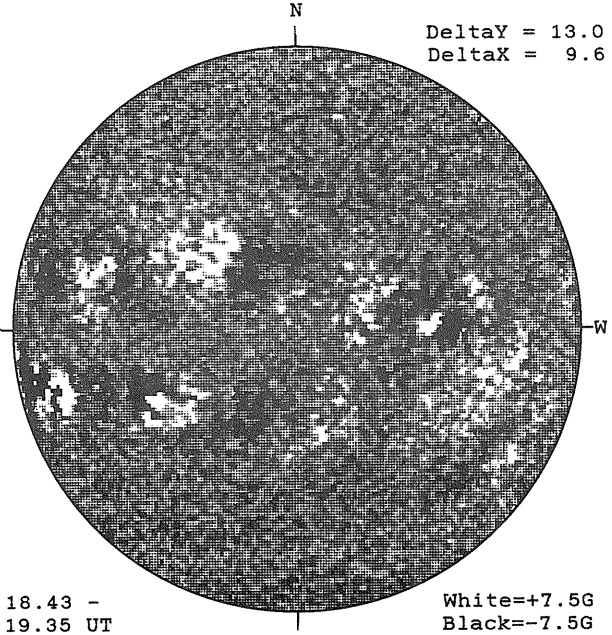
KITT PEAK MAGNETOGRAM



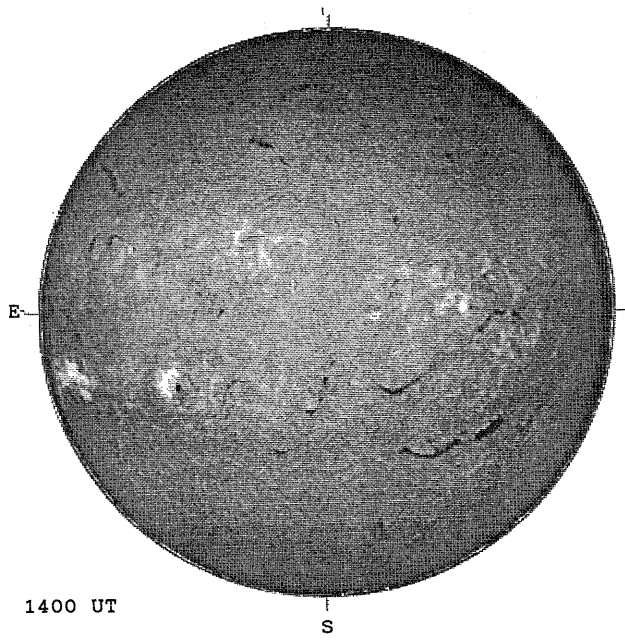
STANFORD MAGNETOGRAM



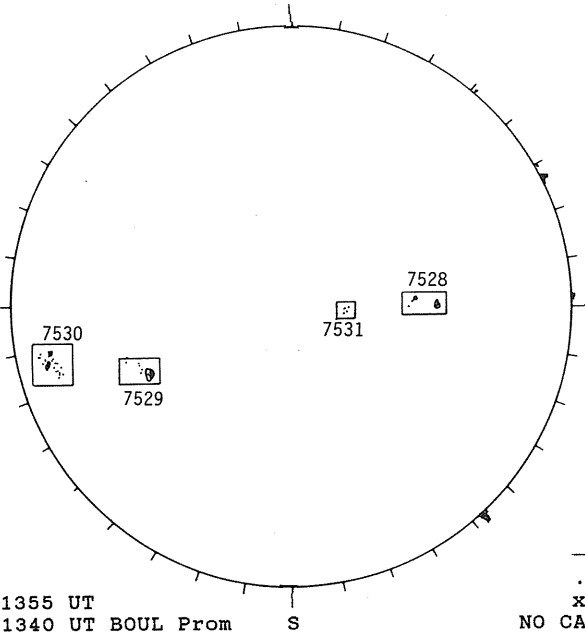
MT. WILSON MAGNETOGRAM



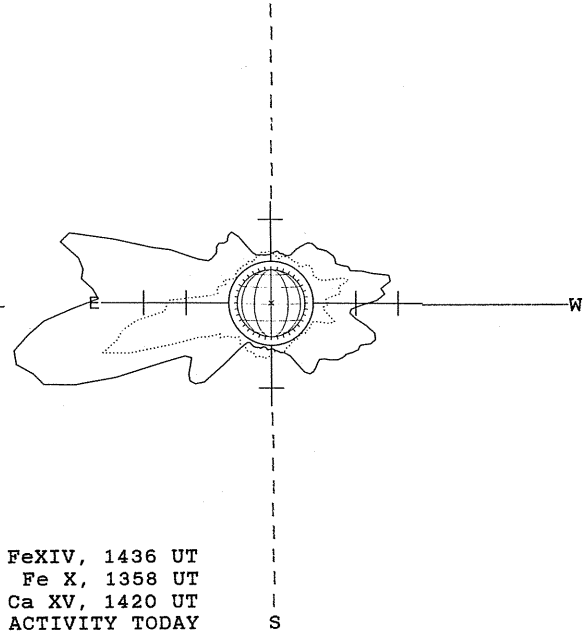
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



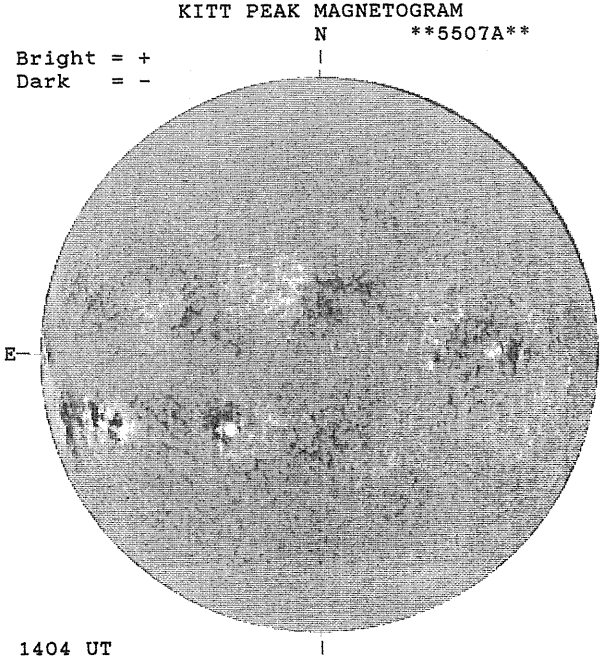
SACRAMENTO PEAK CORONA (1.15 Radii)



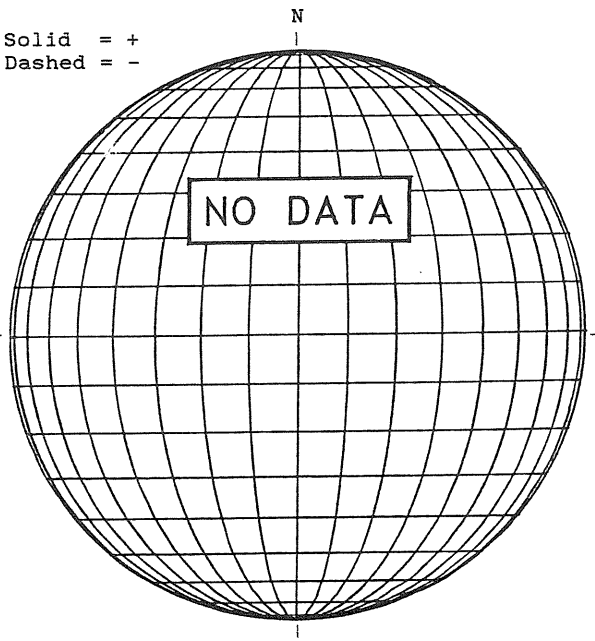
—— FeXIV, 1436 UT
.... Fe X, 1358 UT
xxxx Ca XV, 1420 UT
NO CA XV ACTIVITY TODAY

JUNE 27, 1993 (P= -4.49, B_o = 2.43, L_o = 88.34)

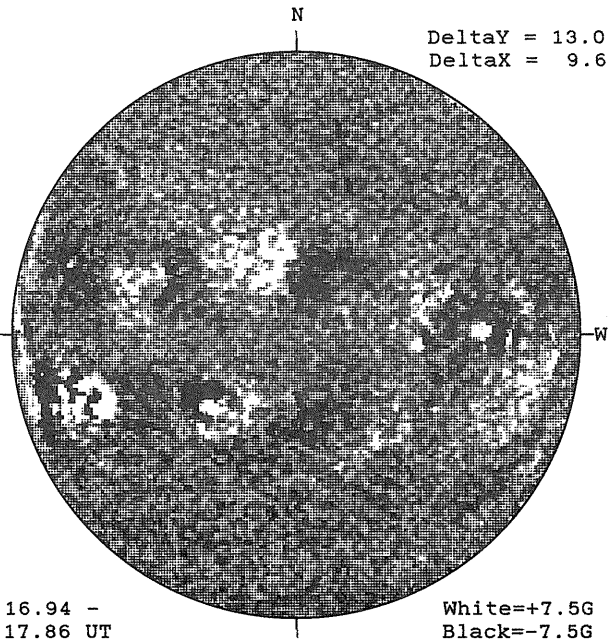
KITT PEAK MAGNETOGRAM



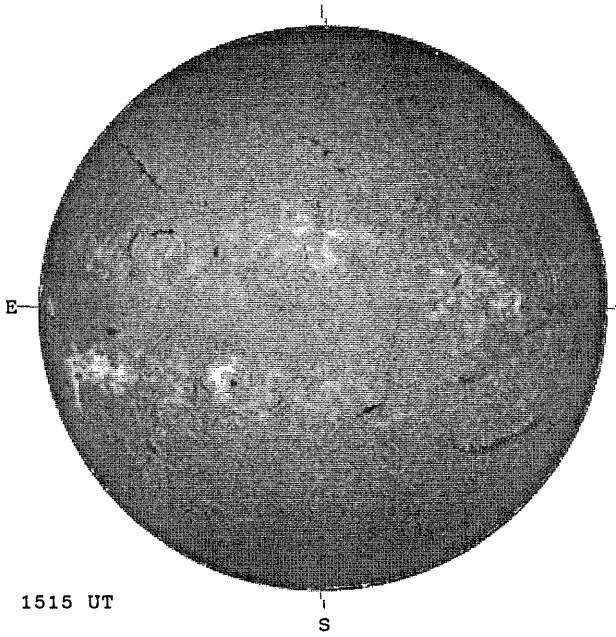
STANFORD MAGNETOGRAM



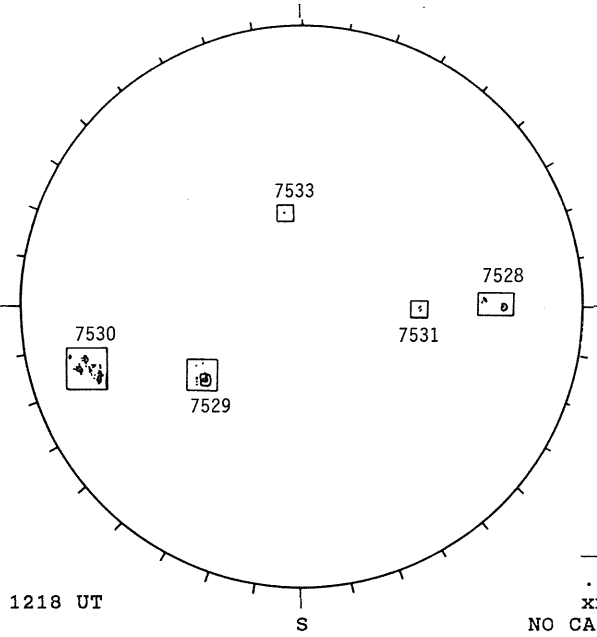
MT. WILSON MAGNETOGRAM



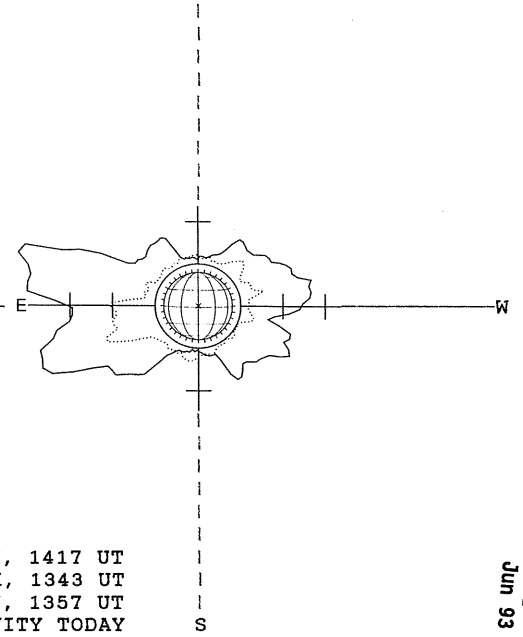
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 1417 UT
.... Fe X, 1343 UT
xxxx Ca XV, 1357 UT
NO CA XV ACTIVITY TODAY

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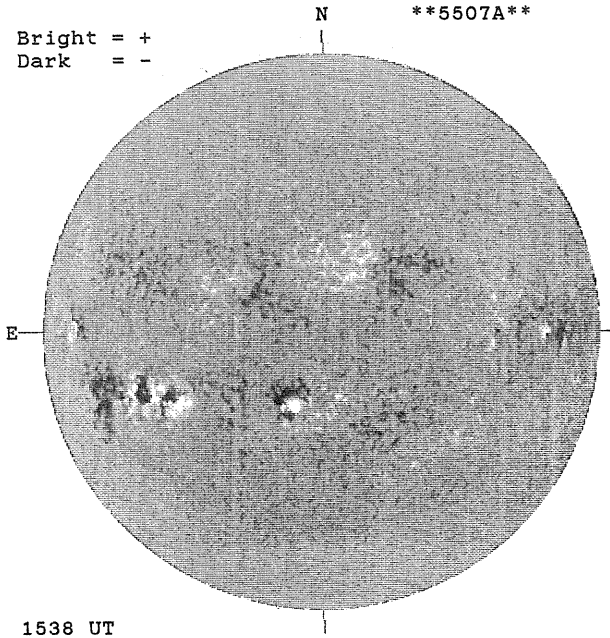
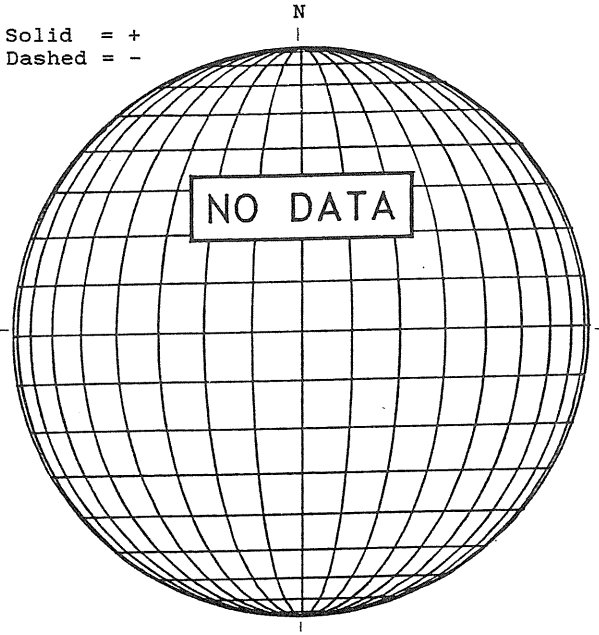
Jun 93

JUNE 28, 1993 (P= -4.04 B_o = 2.54, L_o = 75.10)

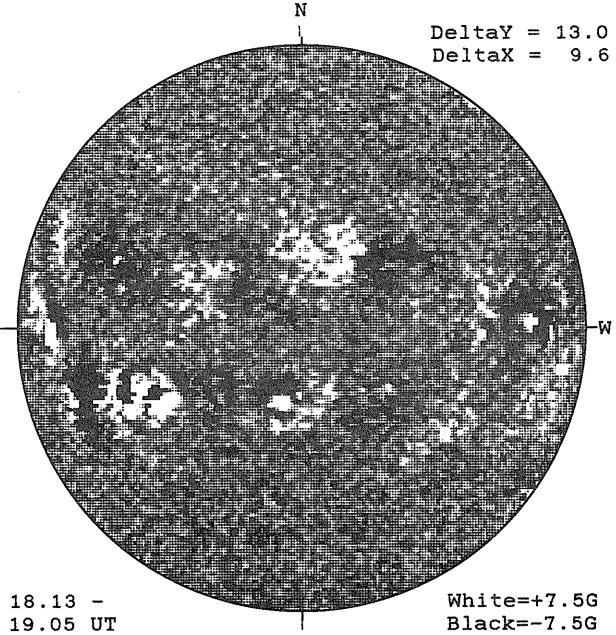
KITT PEAK MAGNETOGRAM



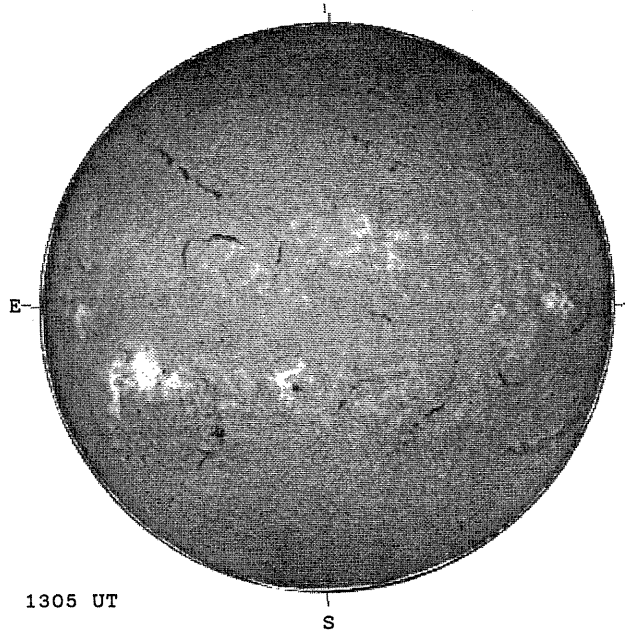
STANFORD MAGNETOGRAM



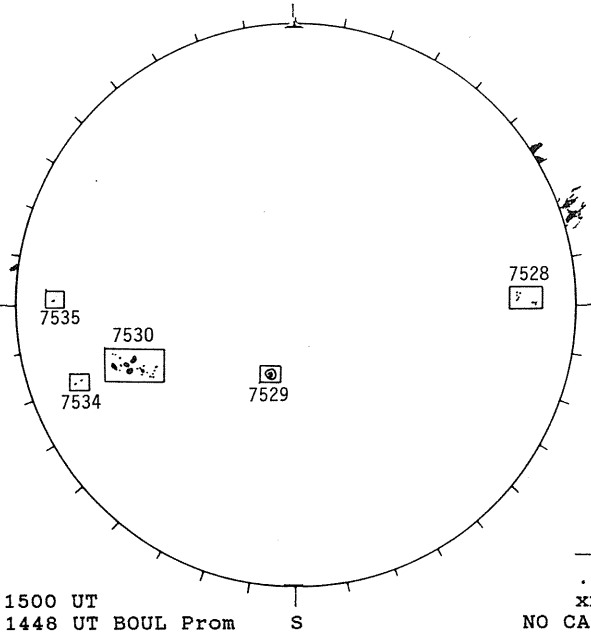
MT. WILSON MAGNETOGRAM



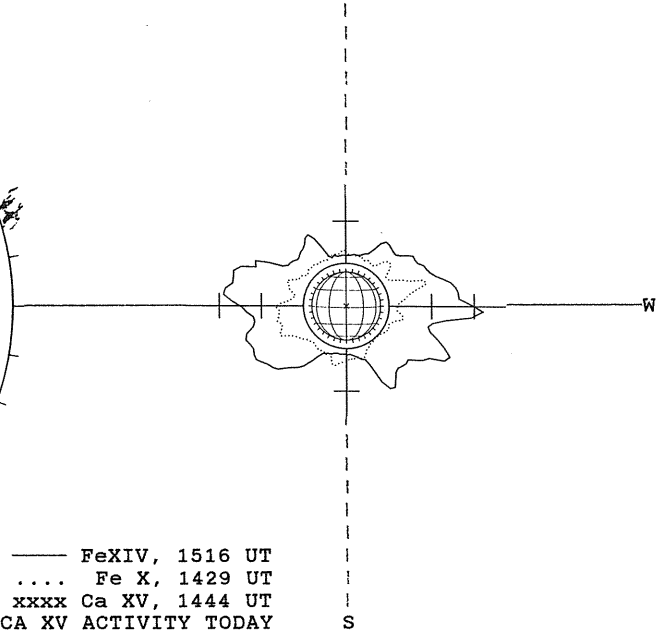
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT

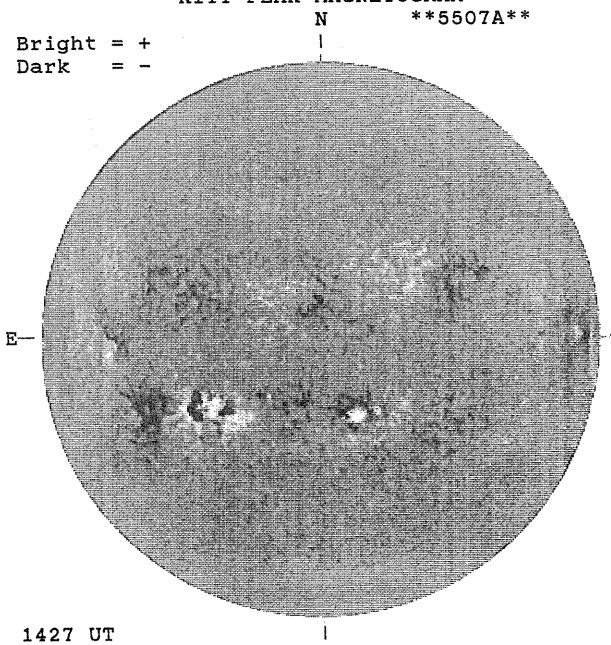


SACRAMENTO PEAK CORONA (1.15 Radii)

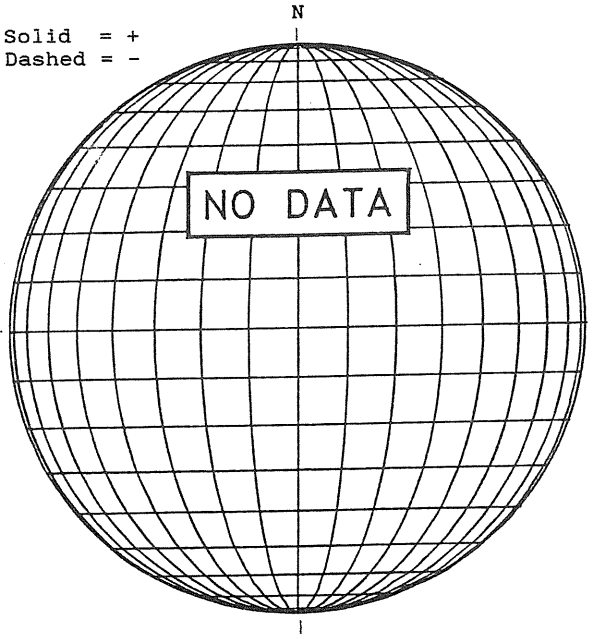


JUNE 29, 1993 (P= -3.59, B_o = 2.65, L_o = 61.87)

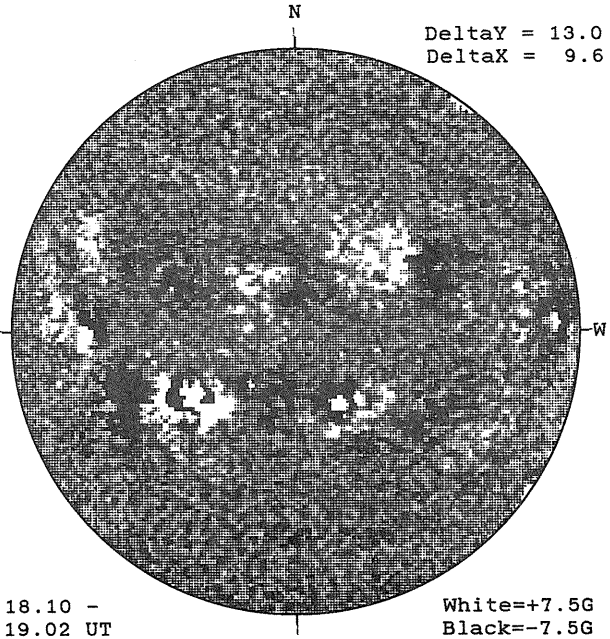
KITT PEAK MAGNETOGRAM



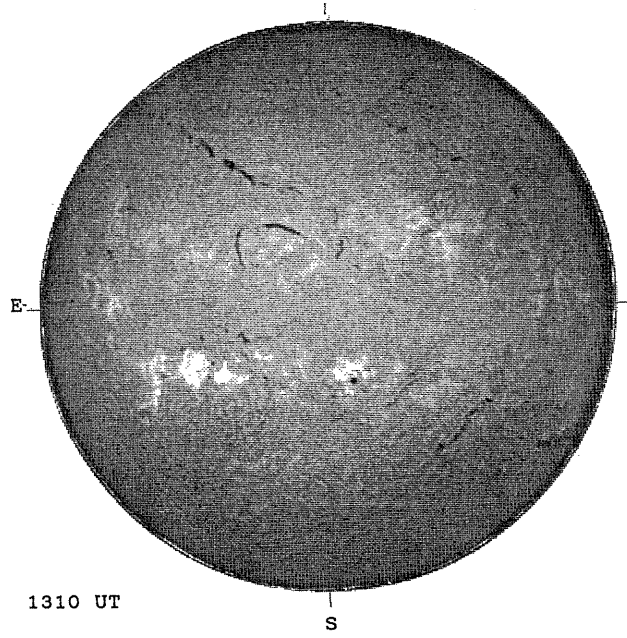
STANFORD MAGNETOGRAM



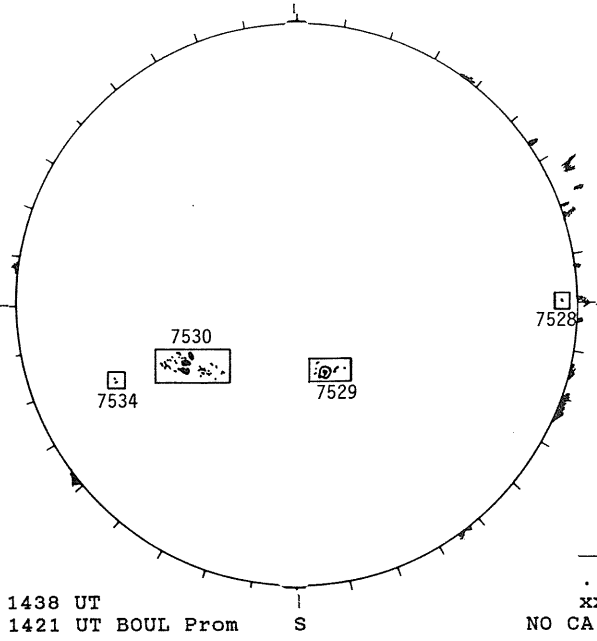
MT. WILSON MAGNETOGRAM



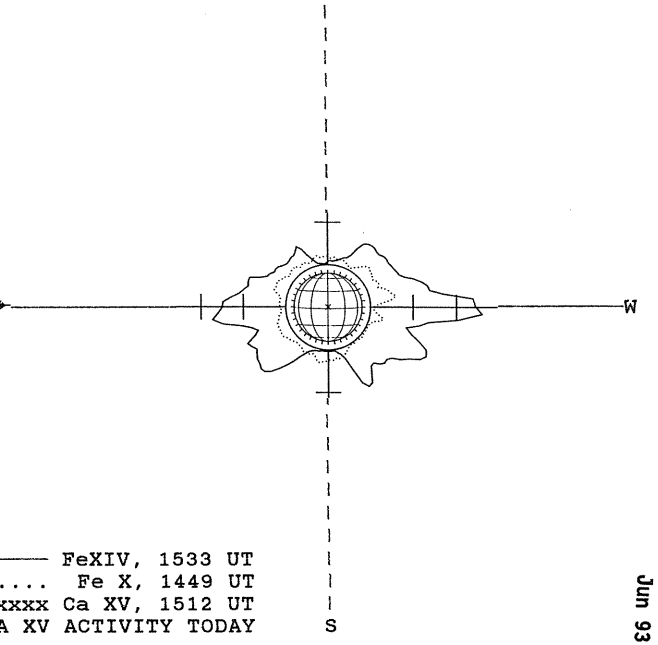
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

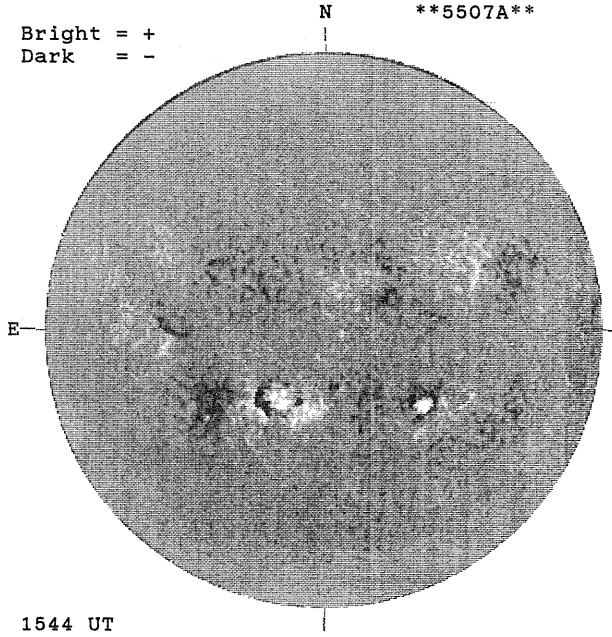


—— FeXIV, 1533 UT
.... Fe X, 1449 UT
xxxx Ca XV, 1512 UT
NO CA XV ACTIVITY TODAY

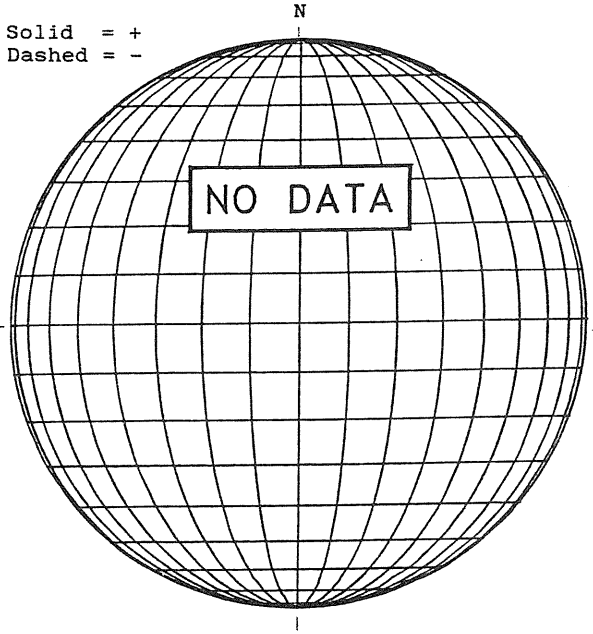
73
Jun 93

JUNE 30, 1993 (P= -3.14, B_o = 2.77, L_o = 48.63)

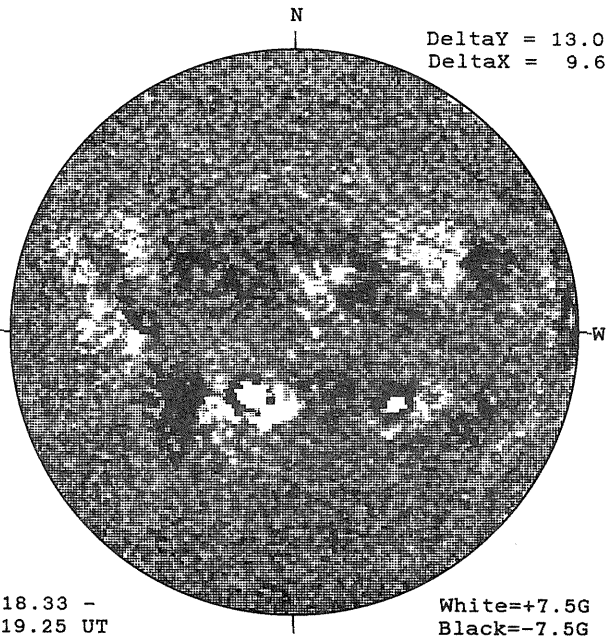
KITT PEAK MAGNETOGRAM



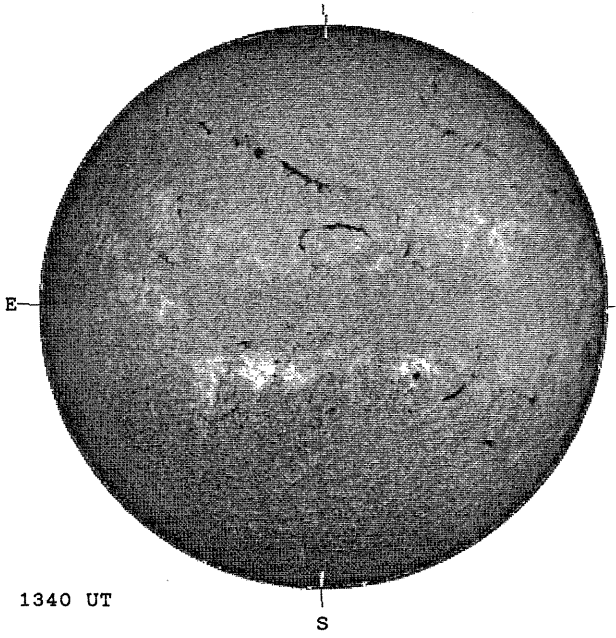
STANFORD MAGNETOGRAM



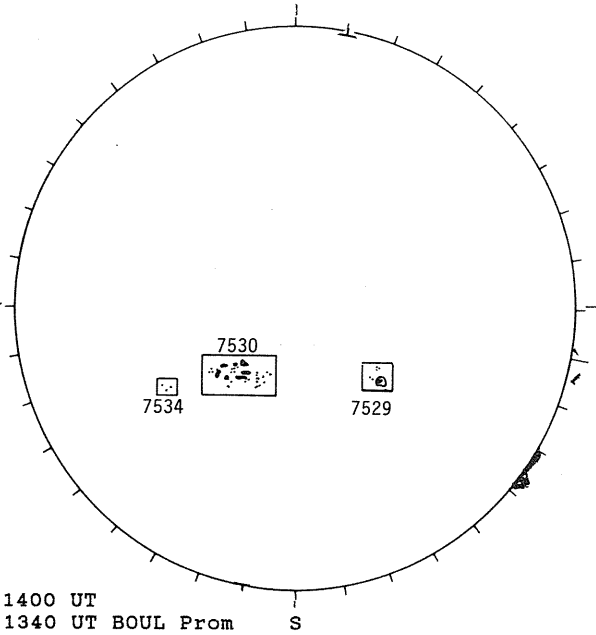
MT. WILSON MAGNETOGRAM



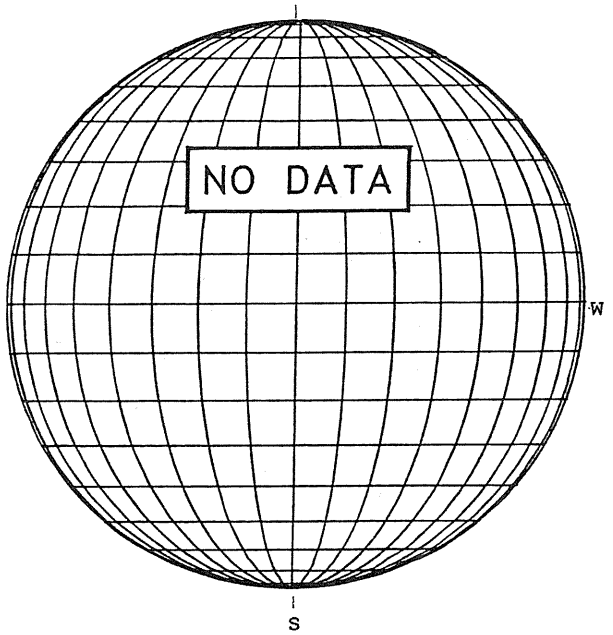
BOULDER H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



DAILY SOFT X-RAY IMAGES FROM YOHKOH

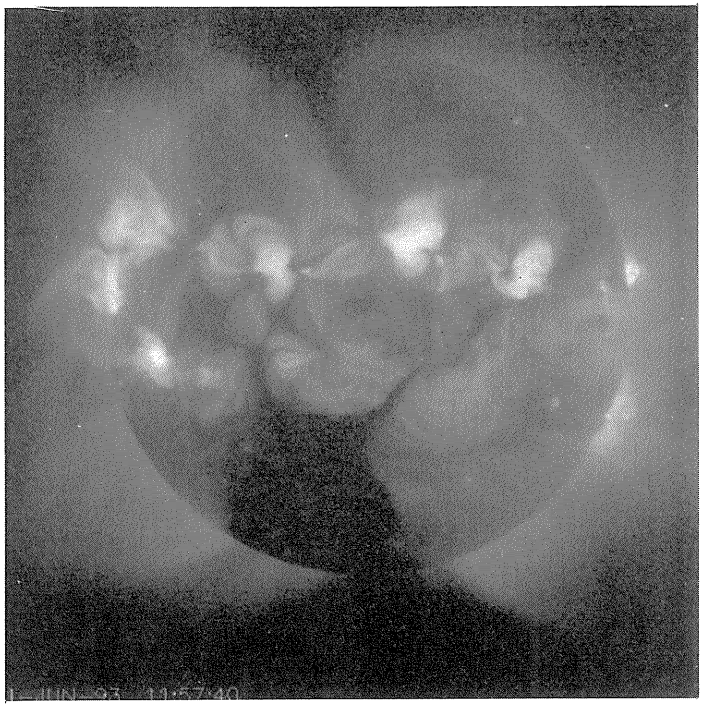
The YOHKOH ("sunbeam") mission is a Japanese program designed to answer many questions in solar flare and coronal physics that have been raised by the highly successful Hinotori and SMM missions. It includes the United States and the United Kingdom as participating partners. The Japanese Institute for Space and Astronautical Sciences (ISAS) provided overall program management, the launch vehicle, the spacecraft, and two science instruments -- a Hard X-ray Telescope, one of the primary mission instruments, and a Wide Band Spectrometer. The other primary instrument, a Soft X-ray Telescope, was prepared by the Lockheed Palo Alto Research Laboratory, under NASA support, in collaboration with the National Astronomical Observatory of Japan and the University of Tokyo. The U.K., in collaboration with the E. O. Hulburt Center for Space Research, provided a Bragg Crystal Spectrometer. The NASA Deep Space Network cooperates in tracking Yohkoh.

The Soft X-ray Telescope (SXT) uses low-scatter grazing incidence optics to form direct images on a CCD detector. It employs a Nariai-Werner design which differs from the more commonly used Wolter Type 1 in that both mirror segments have been made hyperbolic in order to gain better off-axis performance at the expense of a slight loss of on-axis resolution. The optical system includes an entrance aperture filter, the X-ray mirror, a filter wheel assembly, a rotating shutter, and the CCD camera. A detailed description of the SXT has been published in Tsuneta, et al., **Solar Physics, Vol. 136**, pp. 37-67, 1991.

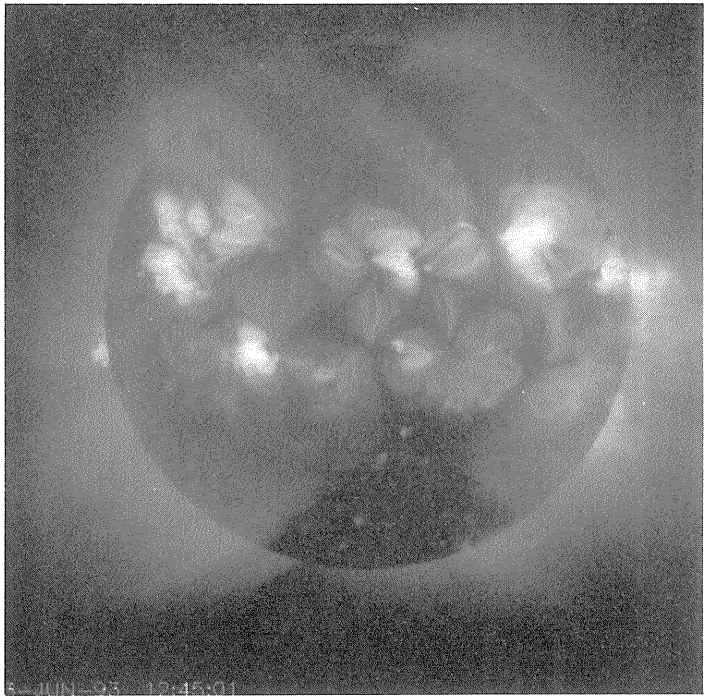
ISAS bears full responsibility for YOHKOH operations. U.S. and U.K. investigators in residence at ISAS participate in mission operations and scientific analyses. With the approval of Professor Y. Ogawara, Yohkoh Program Manager, and the YOHKOH Science Committee, the Lockheed Palo Alto Research Laboratory is kindly providing daily digital SXT images for publication in SGD. The digital images are 512x512 (5" pixels) or 256x256 (10" pixels) in size. They combine two exposures differing by a factor of 35 in duration and are printed with a logarithmic intensity scale to cope with the great range in intensity of the X-ray corona. The brightest features are typically more than 100,000 times brighter than the faintest. The mean wavelength of the pictures is about 20 angstroms. We display these images of the solar corona in soft X-rays in both positive and negative forms. They are printed on a dye sublimation printer at NGDC.

YOHKOH SOFT X-RAY TELESCOPE IMAGES

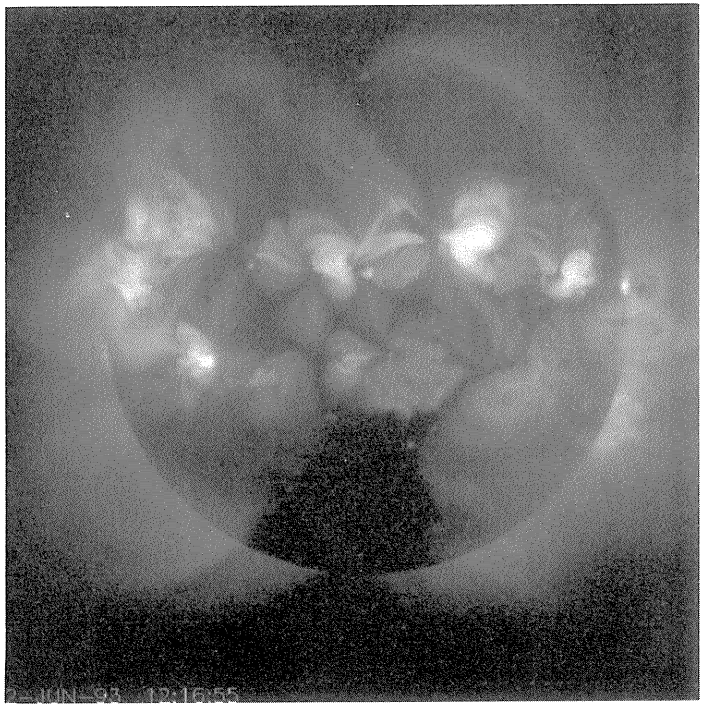
June 1993



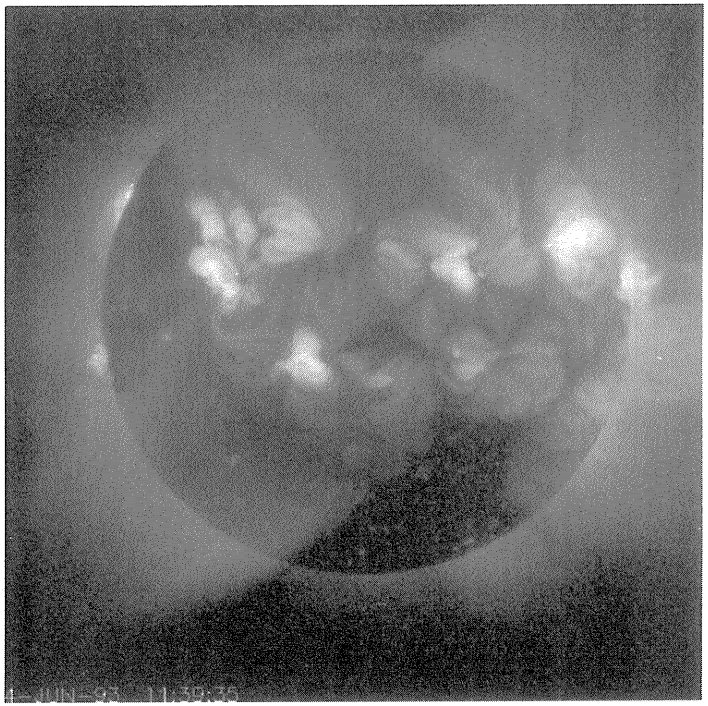
Day 1
11:57:40 UT



Day 3
12:45:01 UT



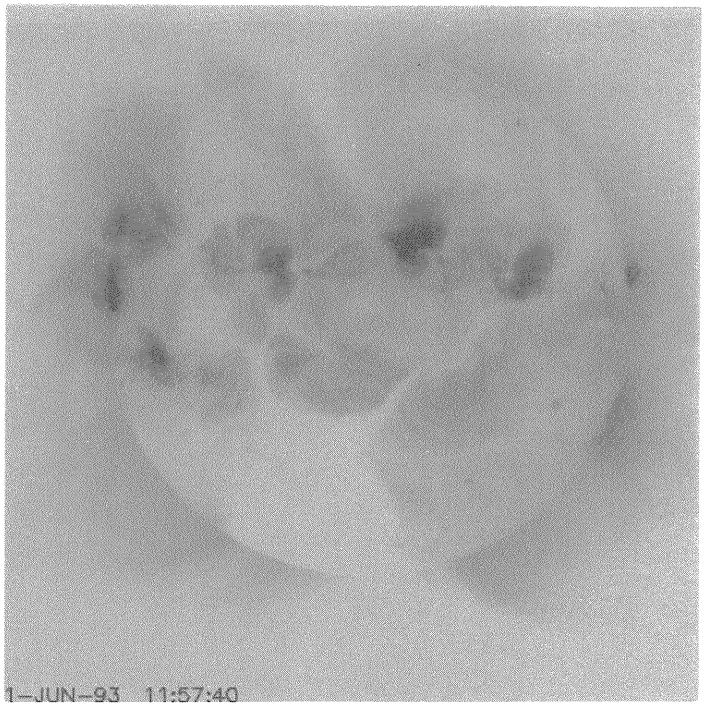
Day 2
12:16:55 UT



Day 4
11:39:35 UT

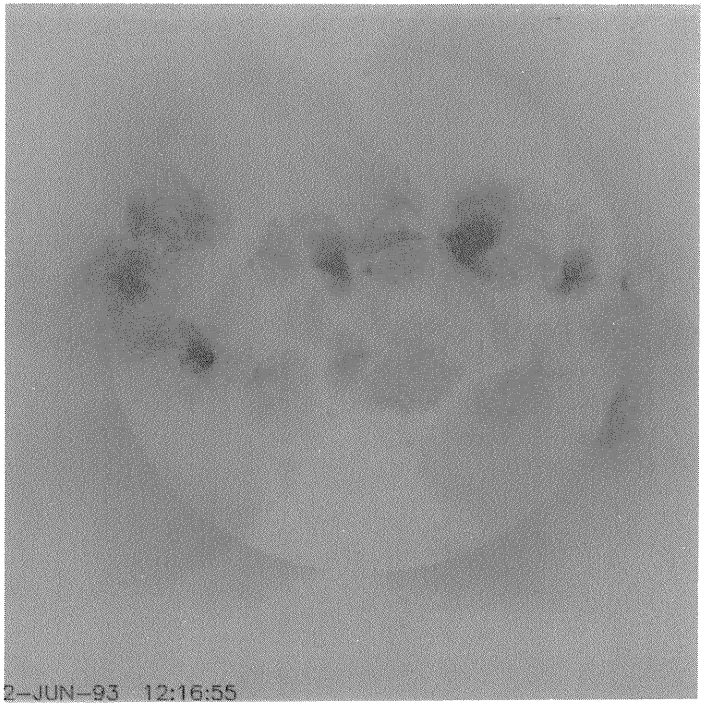
YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993



Day 1
11:57:40 UT

Day 3
12:45:01 UT

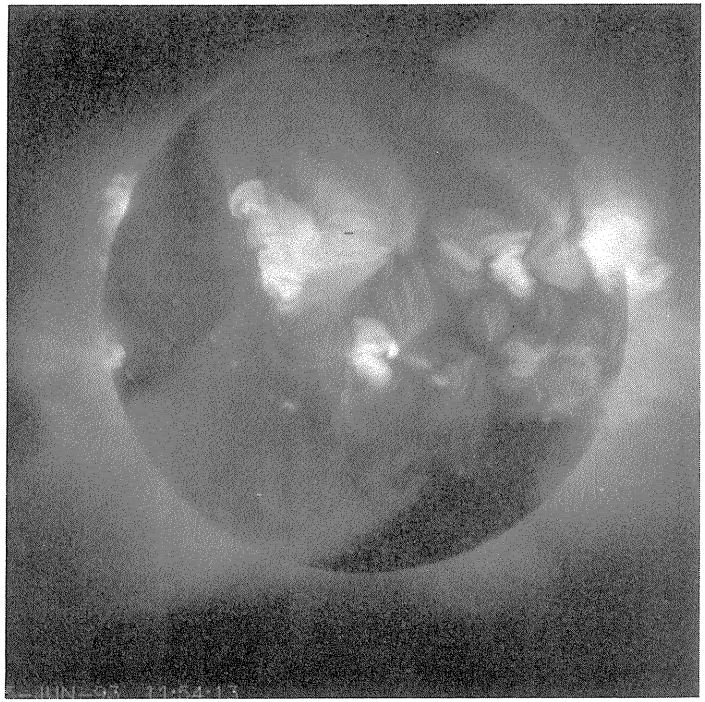


Day 2
12:16:55 UT

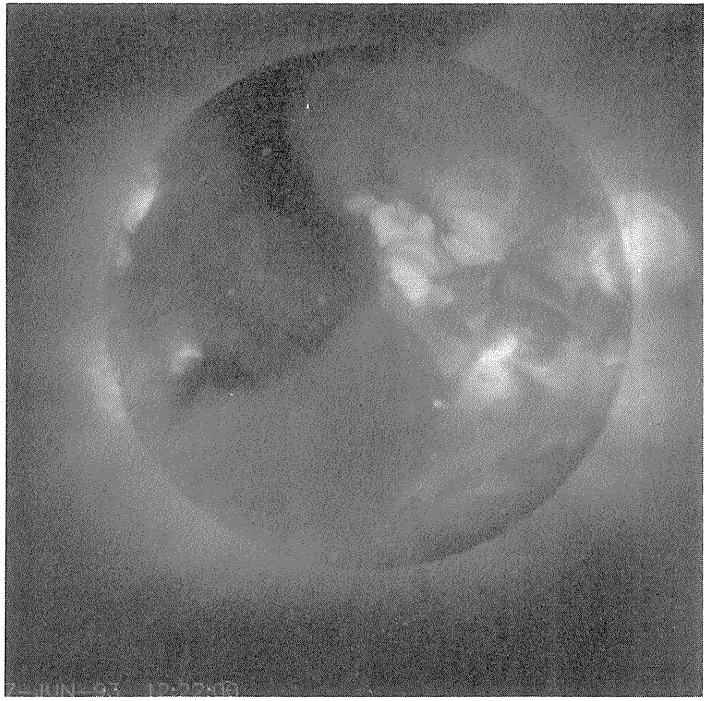
Day 4
11:39:35 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

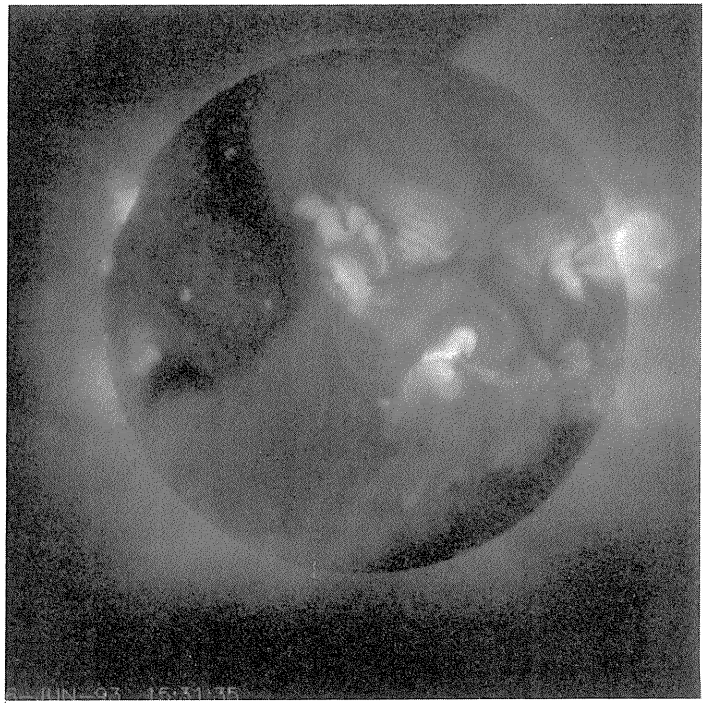
June 1993



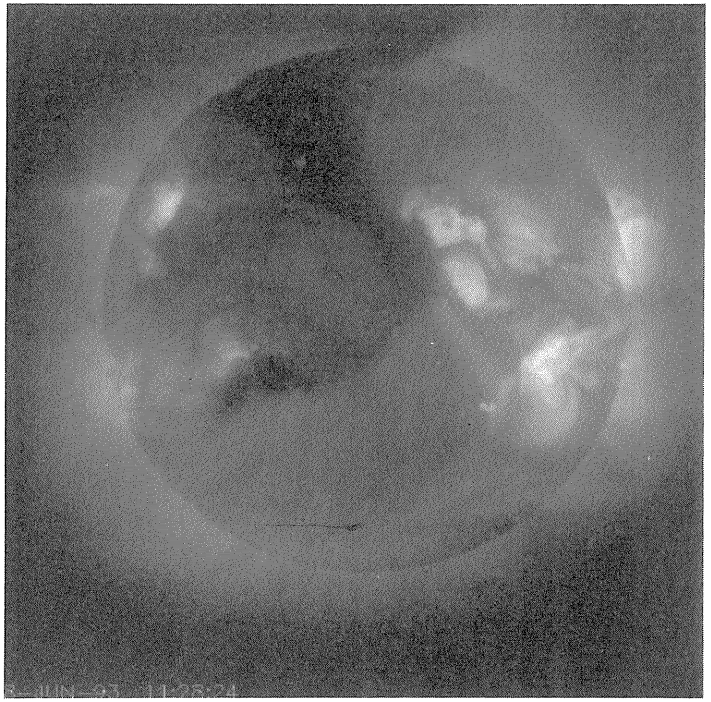
Day 5
11:54:13 UT



Day 7
12:22:00 UT



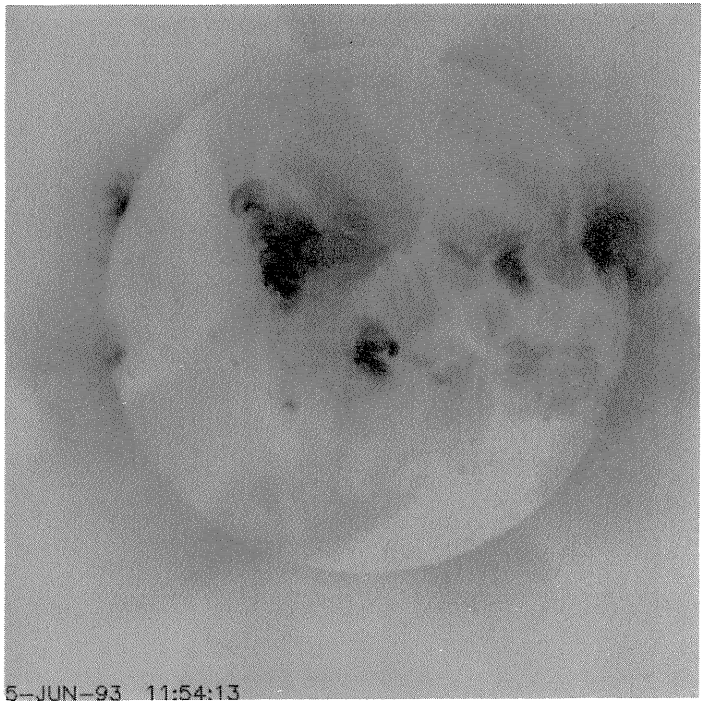
Day 6
15:31:35 UT



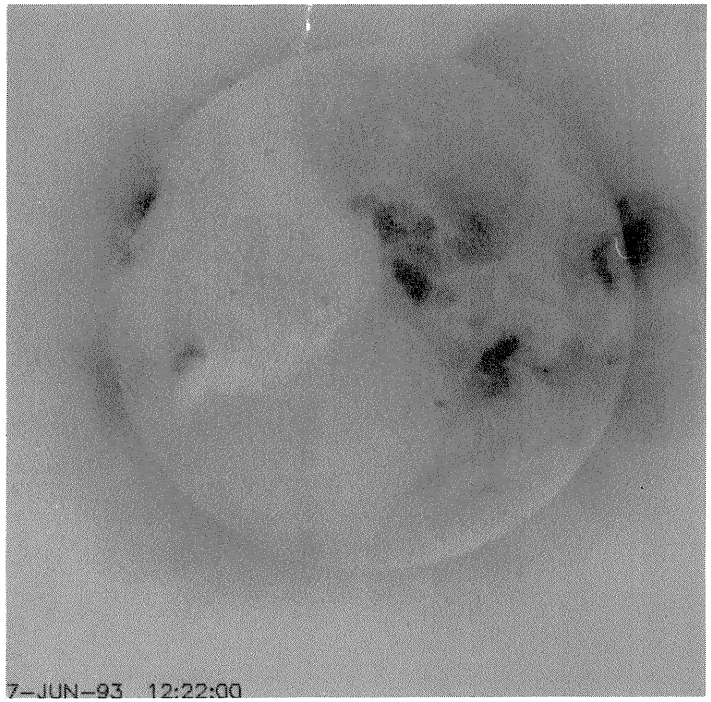
Day 8
11:28:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993

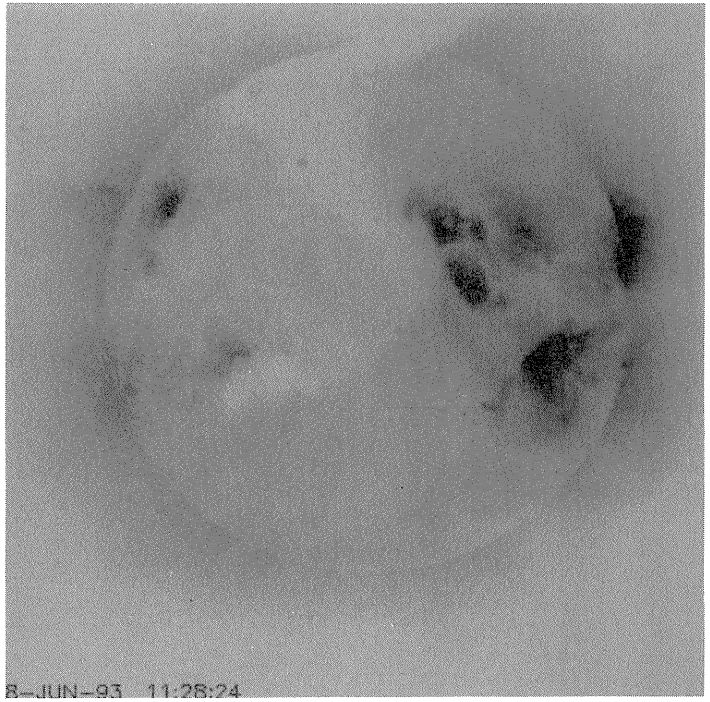


Day 5
11:54:13 UT



Day 7
12:22:00 UT

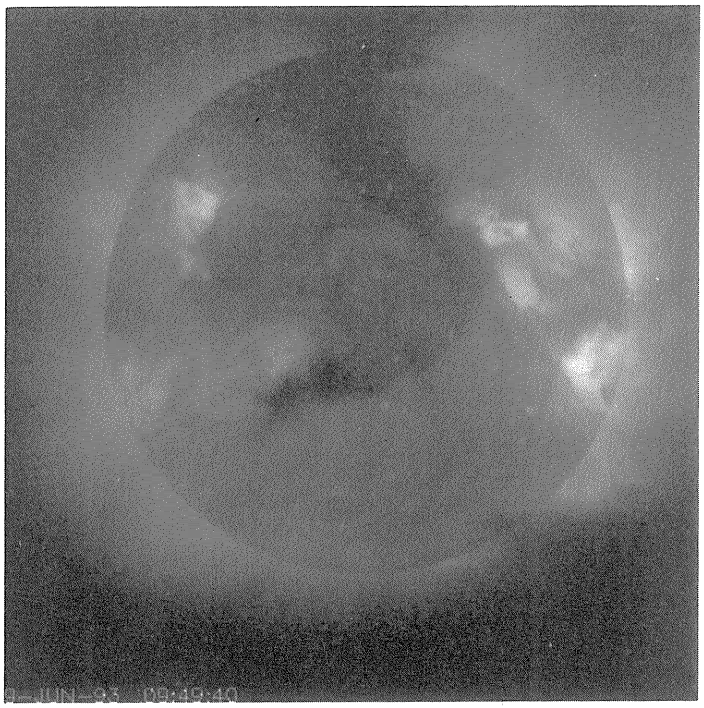
Day 6
15:31:35 UT



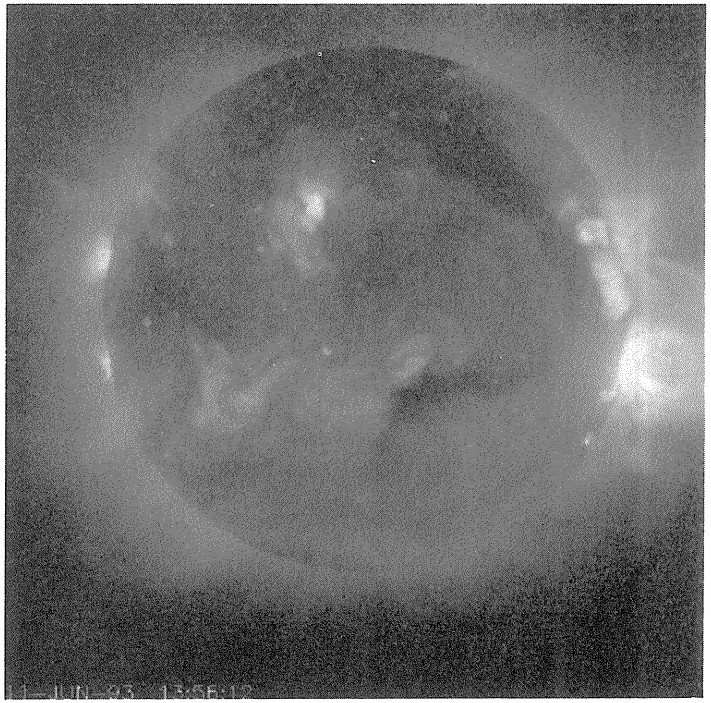
Day 8
11:28:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

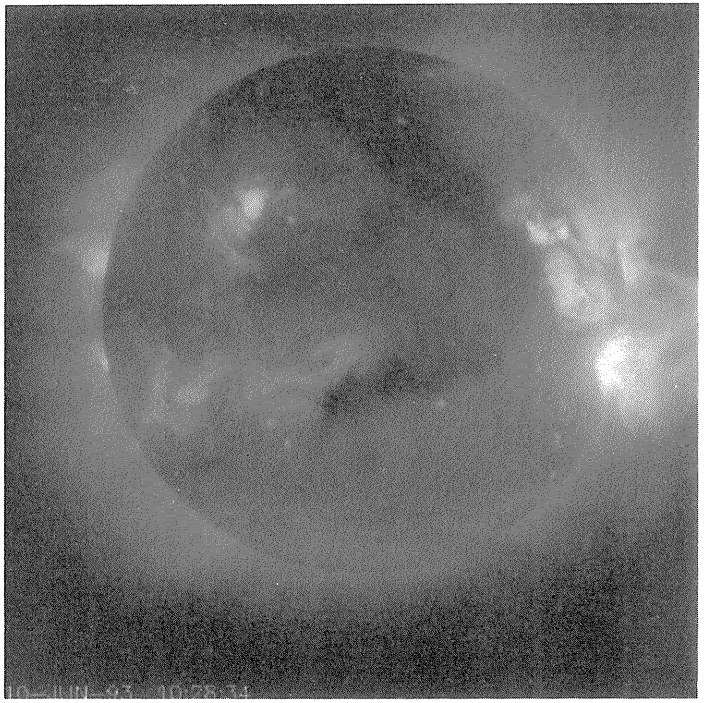
June 1993



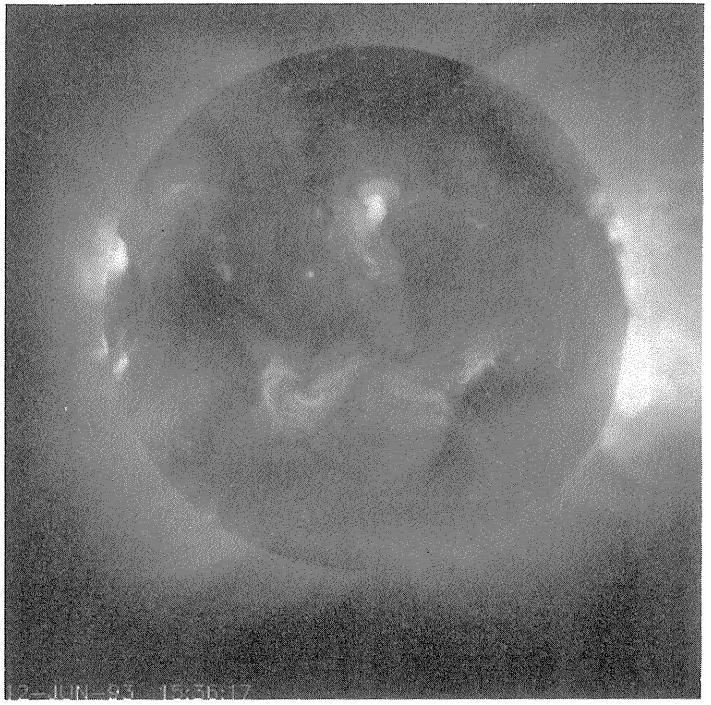
Day 9
09:49:40 UT



Day 11
13:56:12 UT



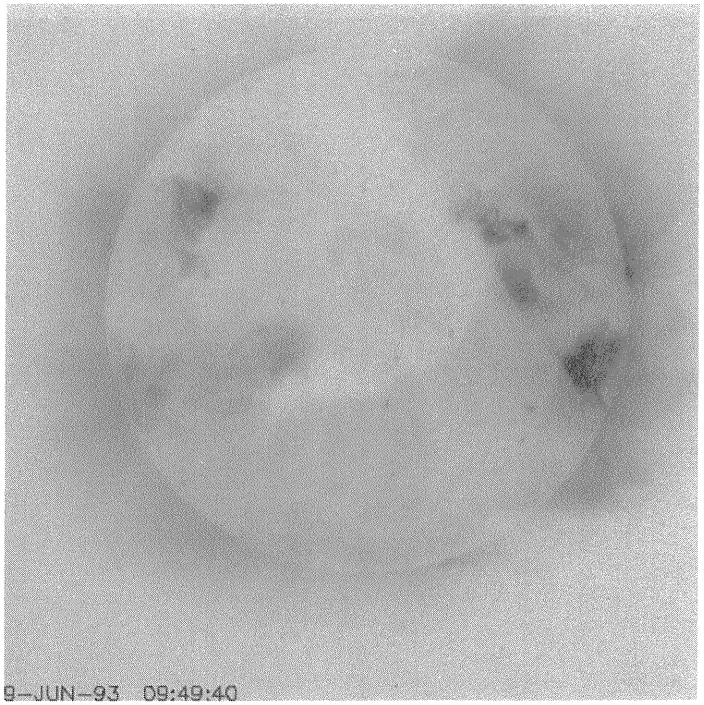
Day 10
10:28:34 UT



Day 12
15:36:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

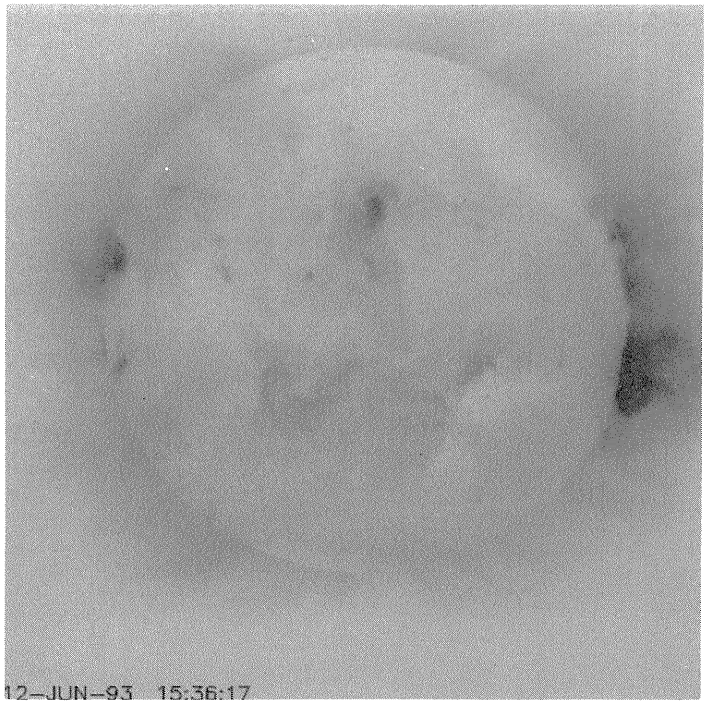
June 1993



Day 9
09:49:40 UT

Day 11
13:56:12 UT

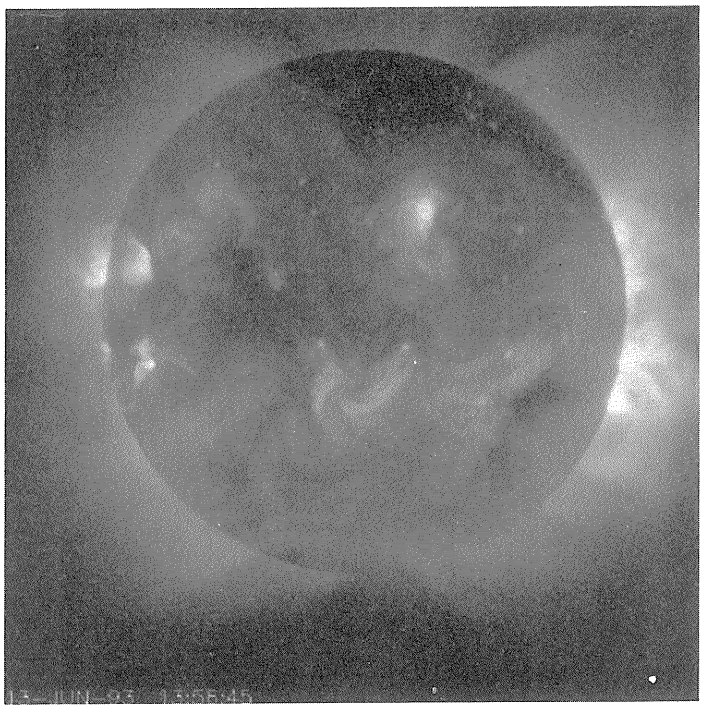
Day 10
10:28:34 UT



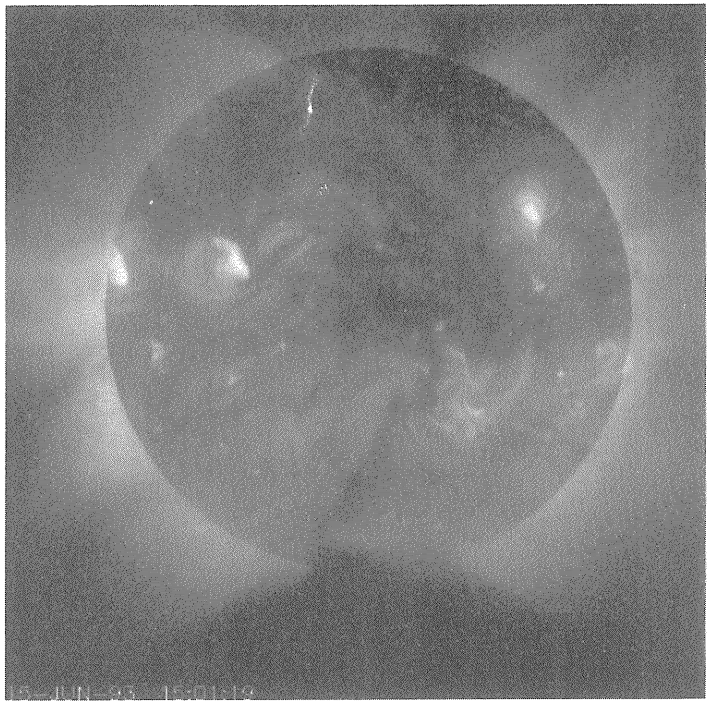
Day 12
15:36:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

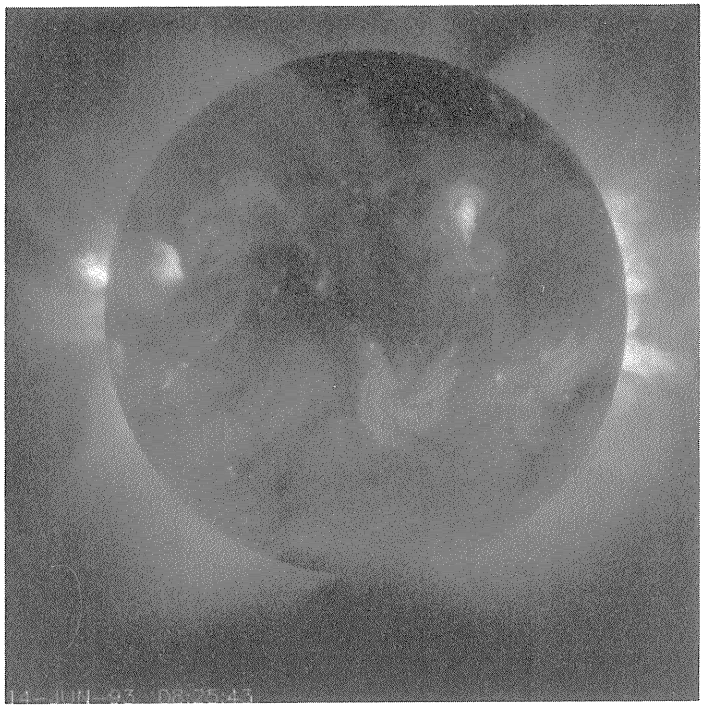
June 1993



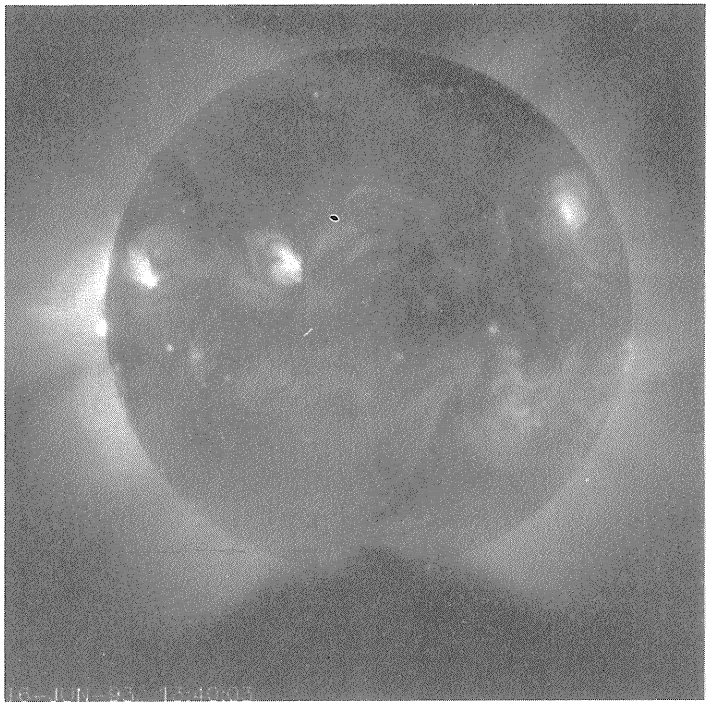
Day 13
13:56:45 UT



Day 15
15:01:19 UT



Day 14
08:25:43 UT



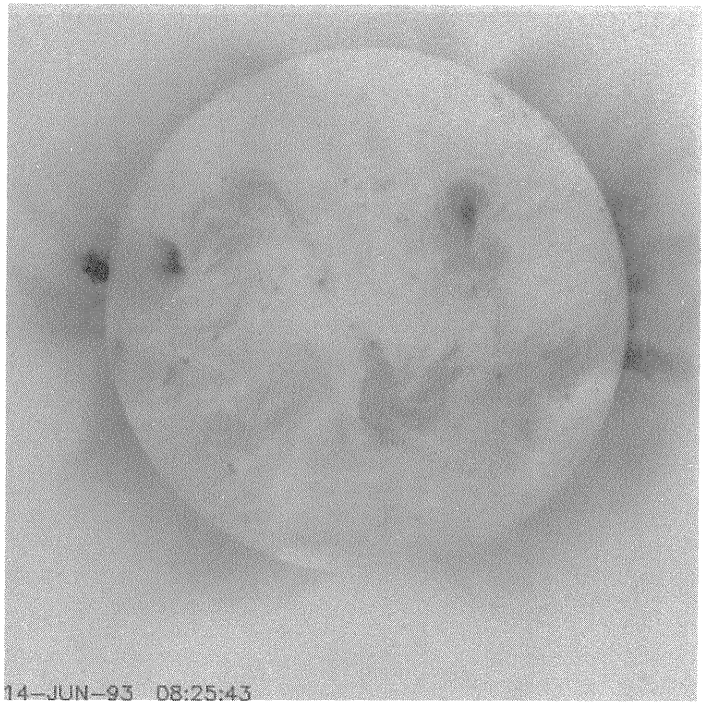
Day 16
13:40:03 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993

Day 13
13:56:45 UT

Day 15
15:01:19 UT

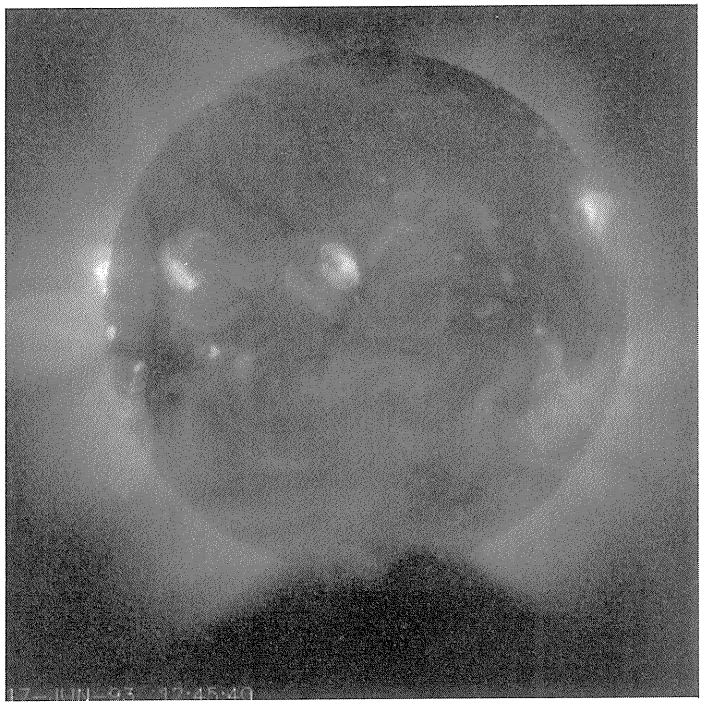


Day 14
08:25:43 UT

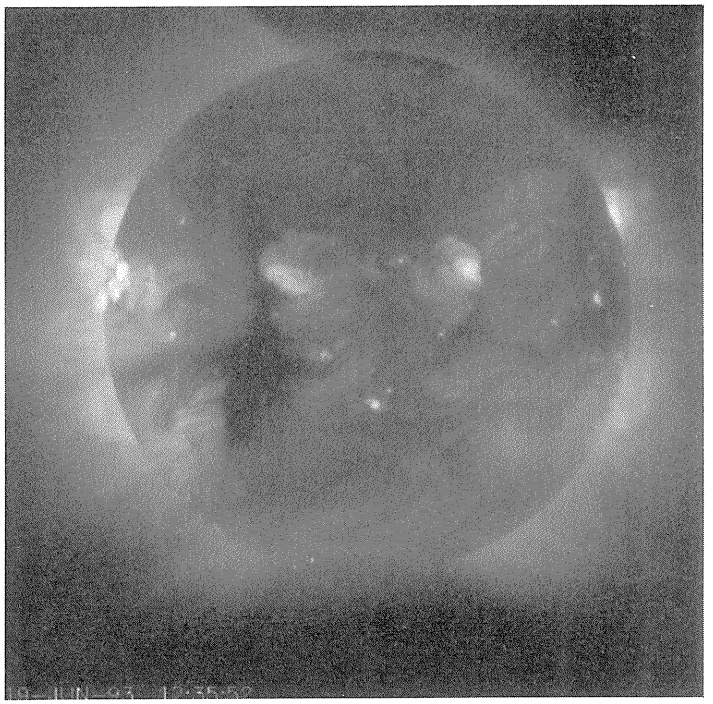
Day 16
13:40:03 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

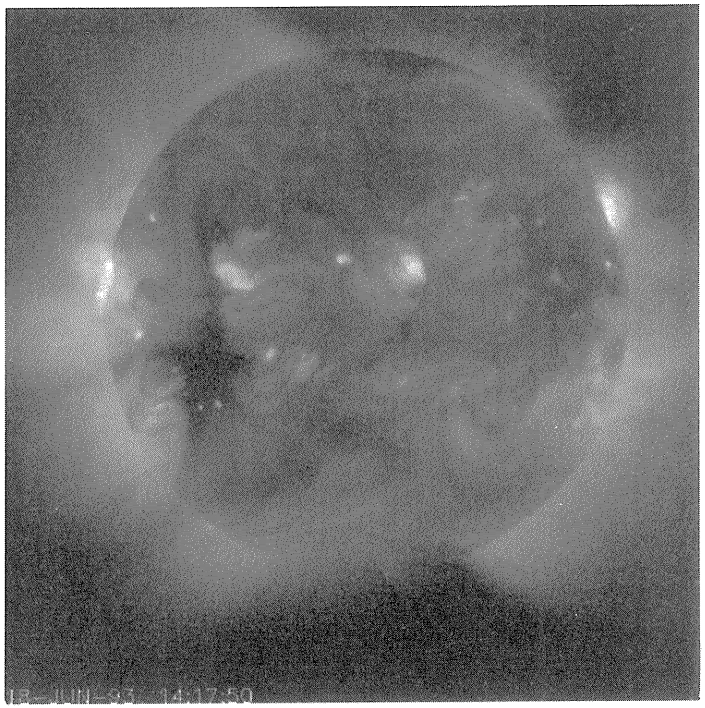
June 1993



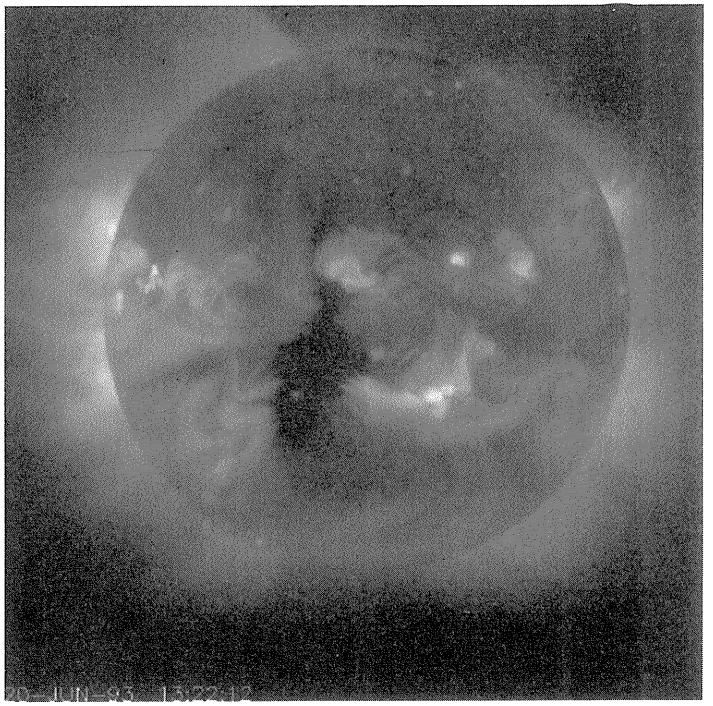
Day 17
12:45:40 UT



Day 19
12:35:52 UT



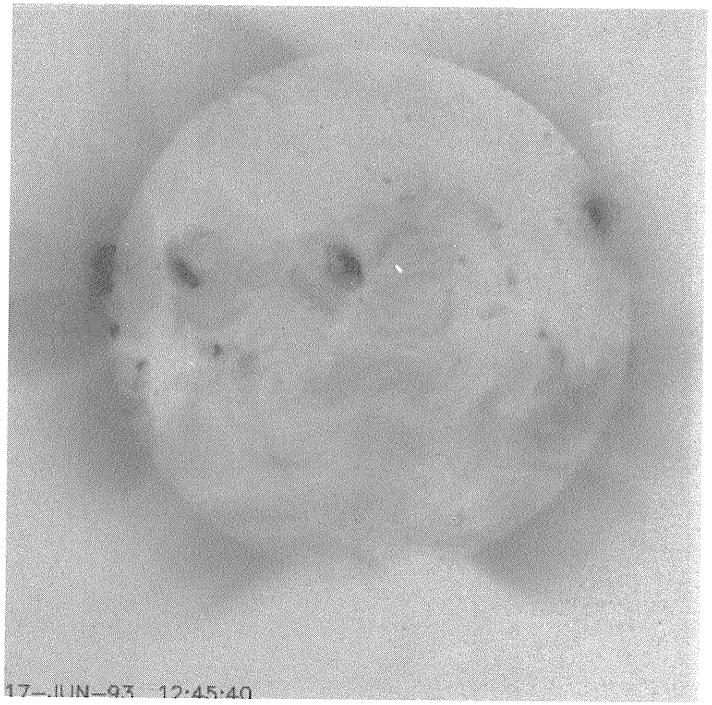
Day 18
14:17:50 UT



Day 20
13:22:12 UT

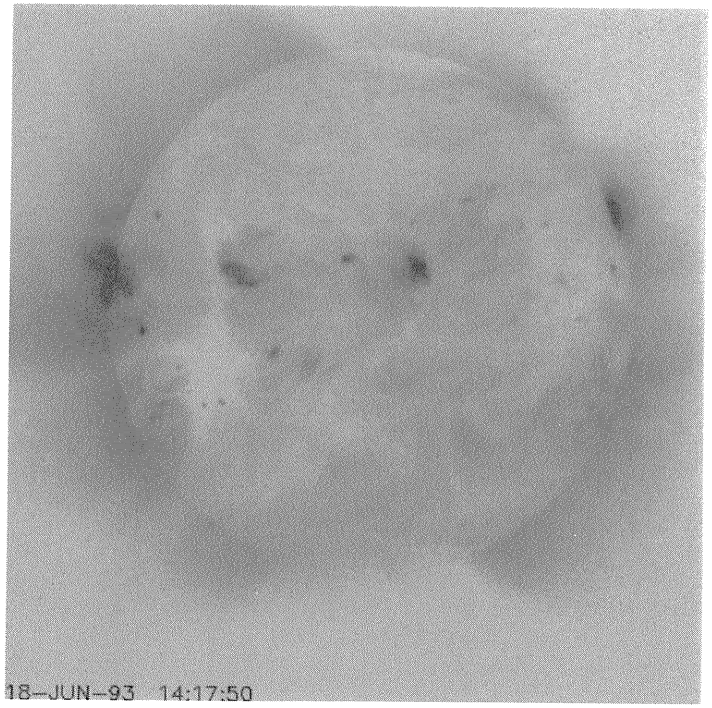
YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993

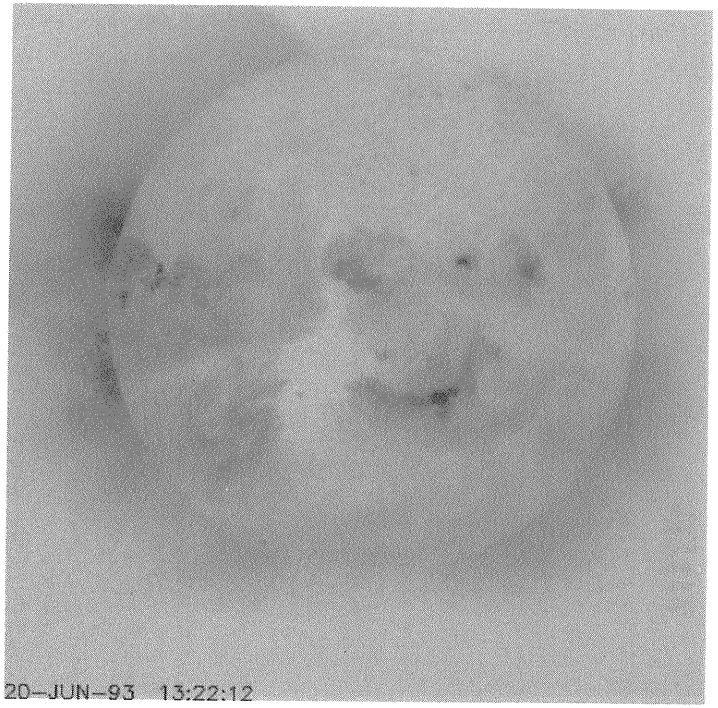


Day 17
12:45:40 UT

Day 19
12:35:52 UT



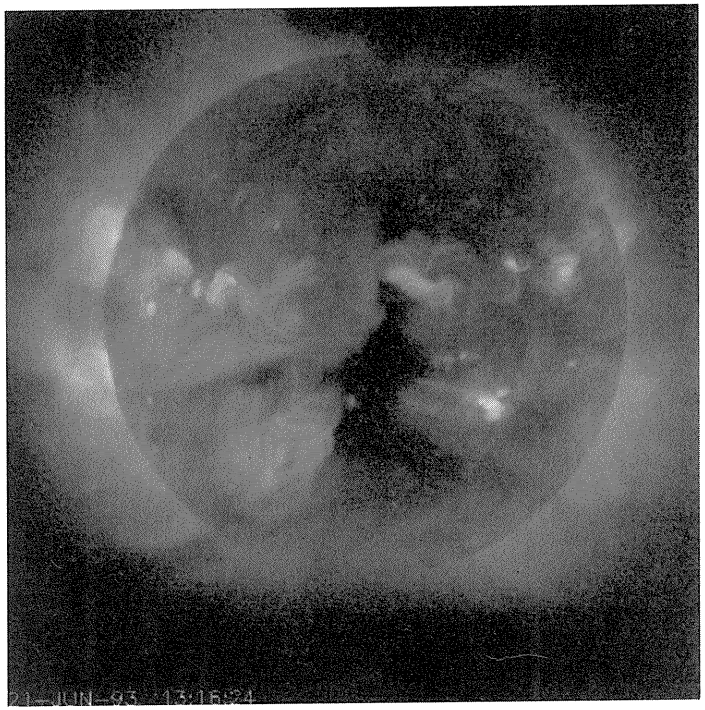
Day 18
14:17:50 UT



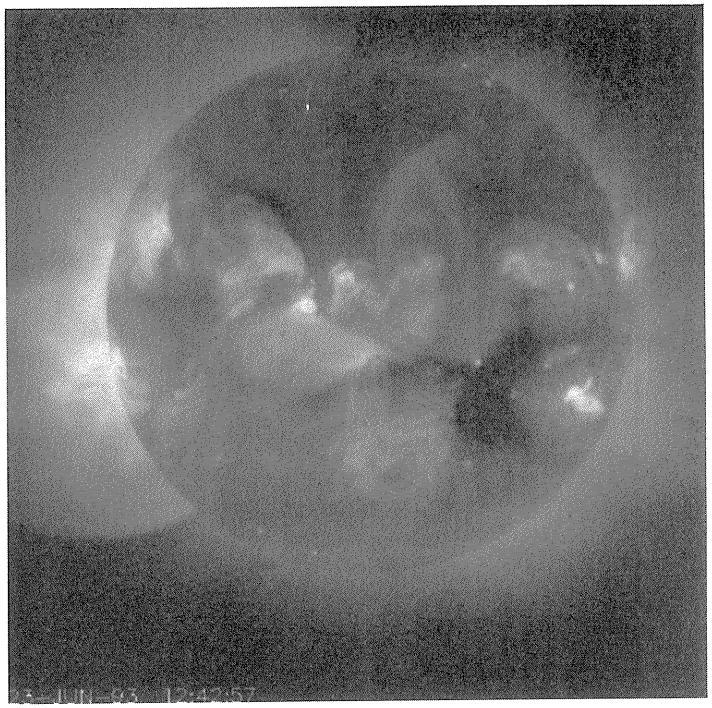
Day 20
13:22:12 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

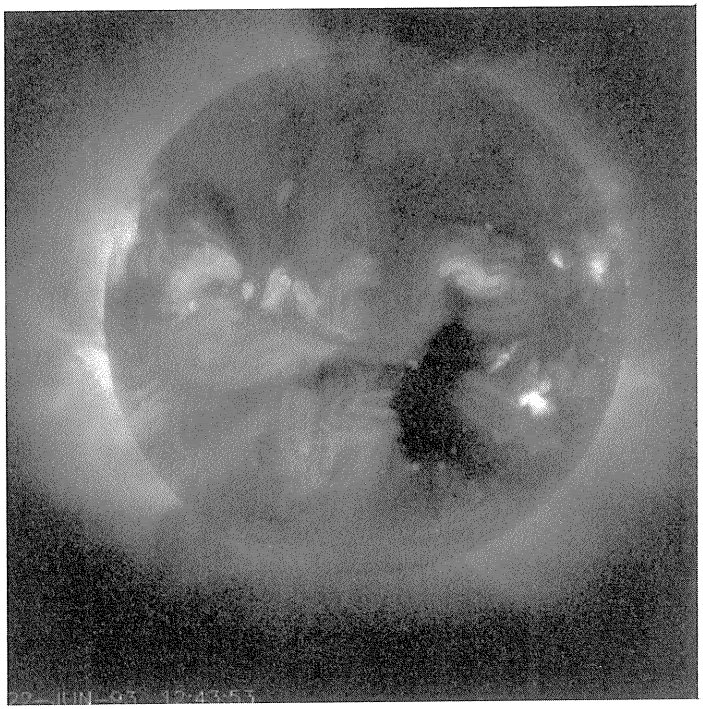
June 1993



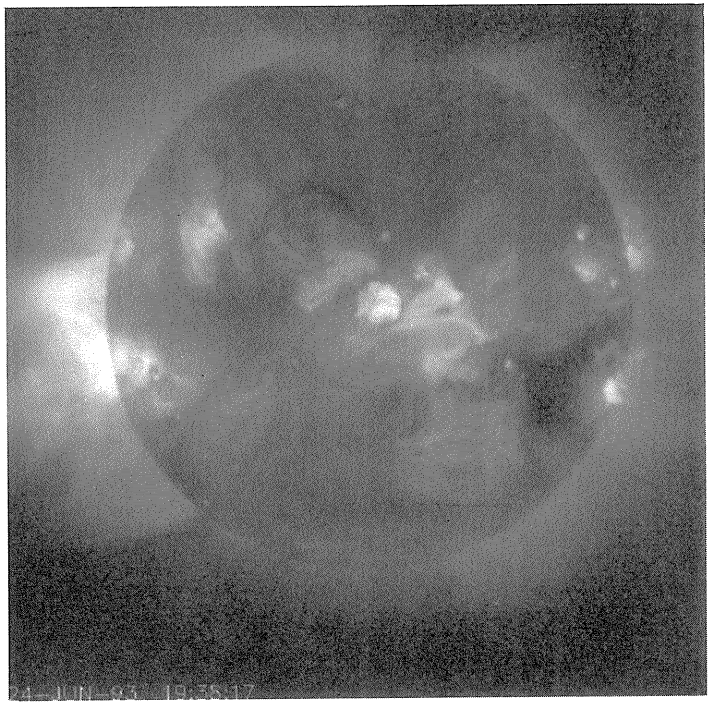
Day 21
13:16:24 UT



Day 23
12:42:57 UT



Day 22
12:43:53 UT



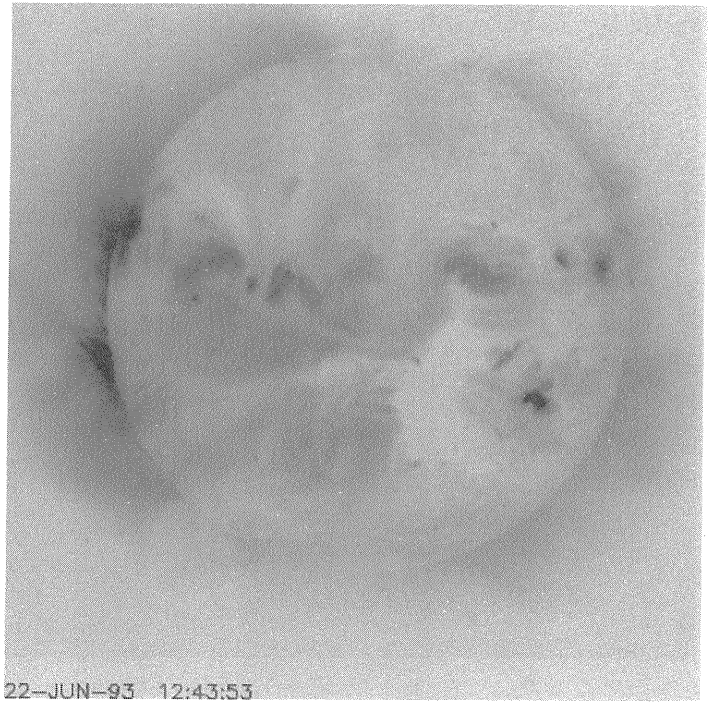
Day 24
19:38:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993

Day 21
13:16:24 UT

Day 23
12:42:57 UT

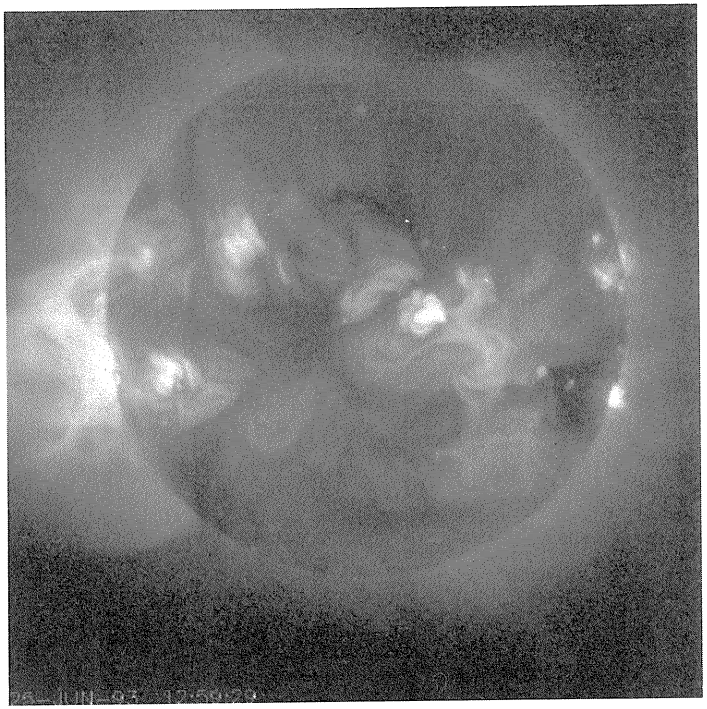


Day 22
12:43:53 UT

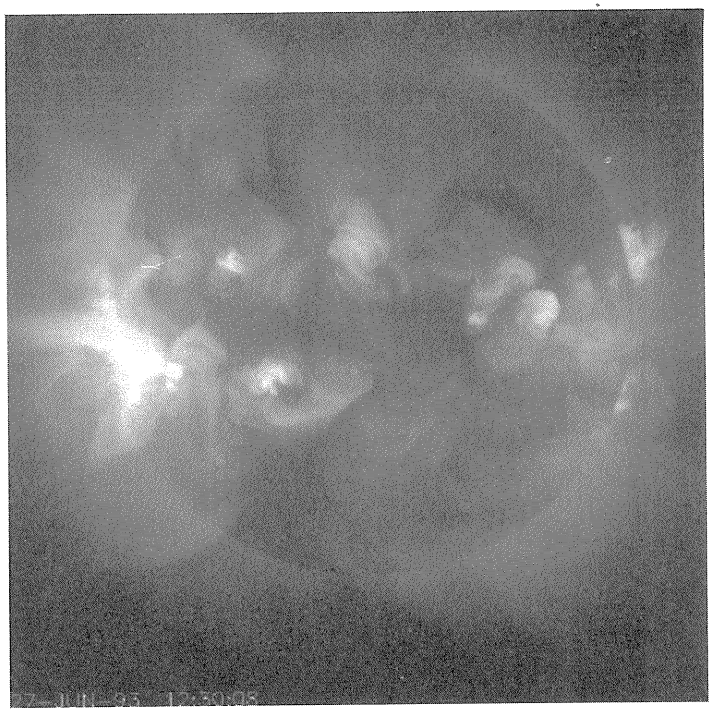
Day 24
19:38:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

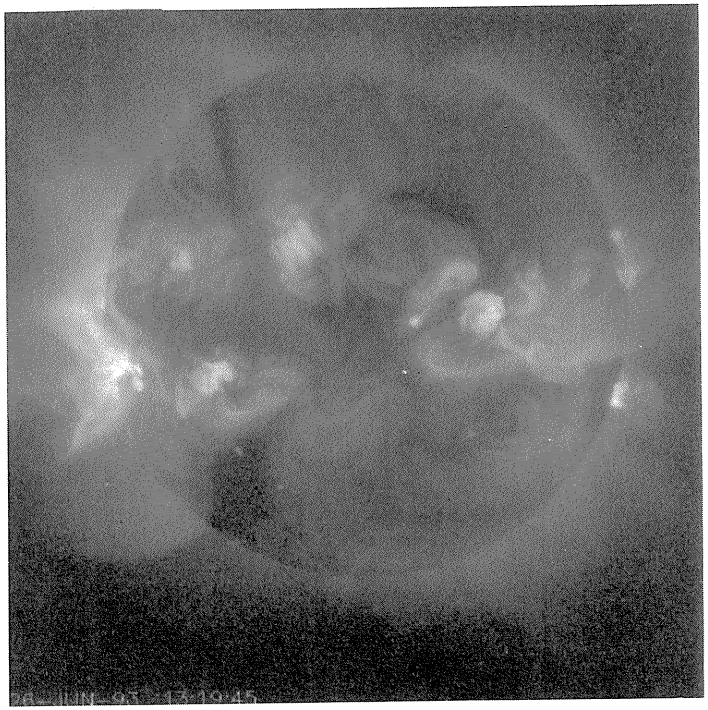
June 1993



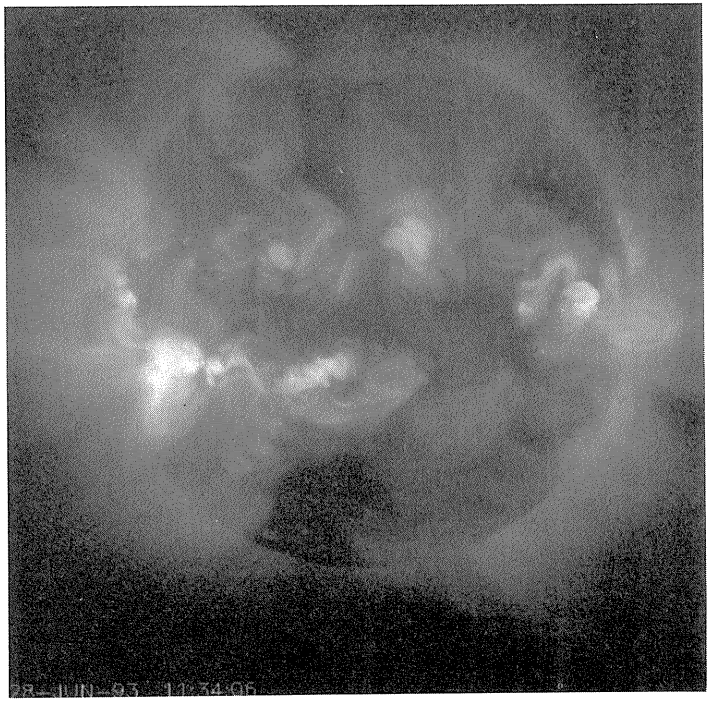
Day 25
12:59:29 UT



Day 27
12:30:08 UT



Day 26
13:19:45 UT

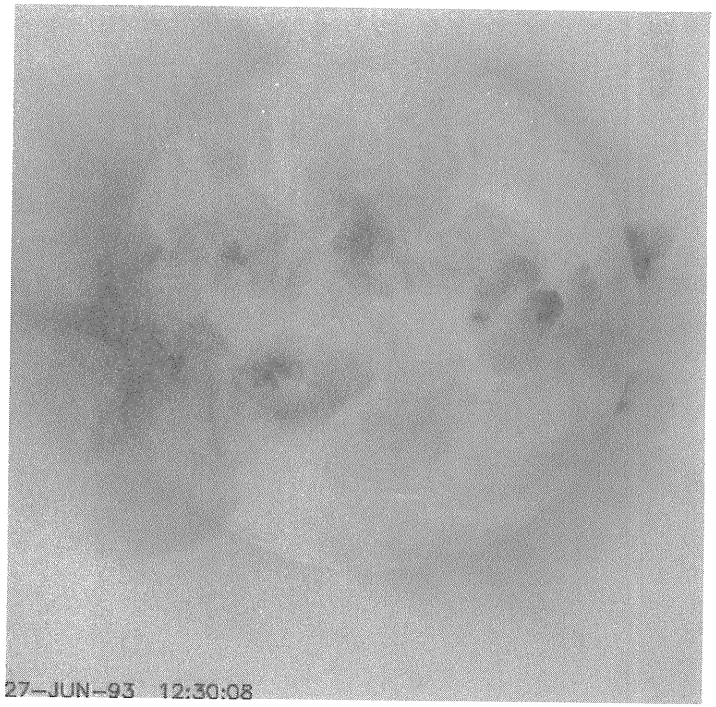


Day 28
11:34:06 UT

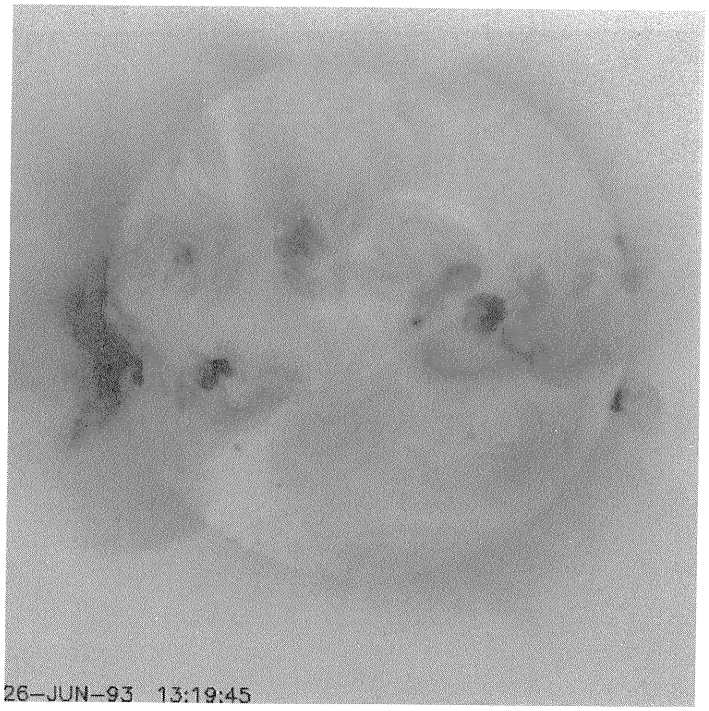
YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1993

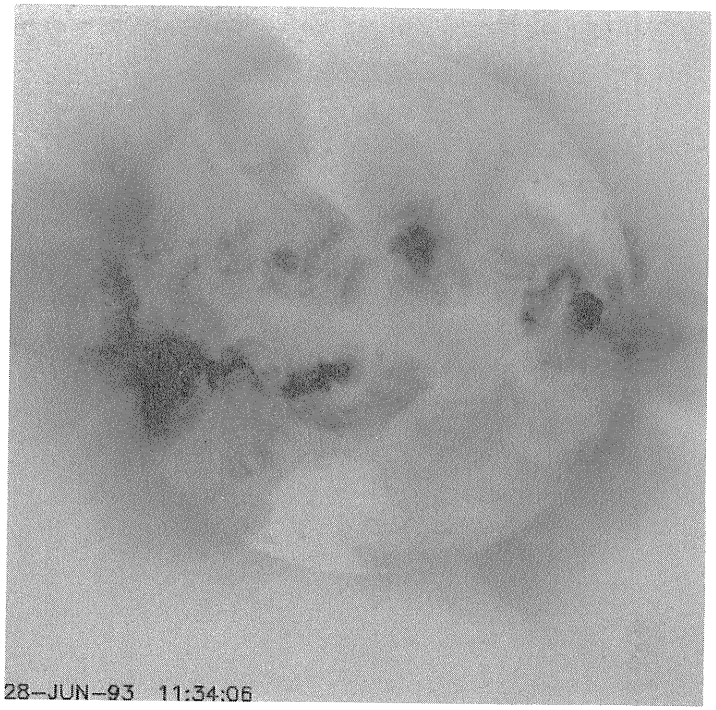
Day 25
12:59:29 UT



Day 27
12:30:08 UT



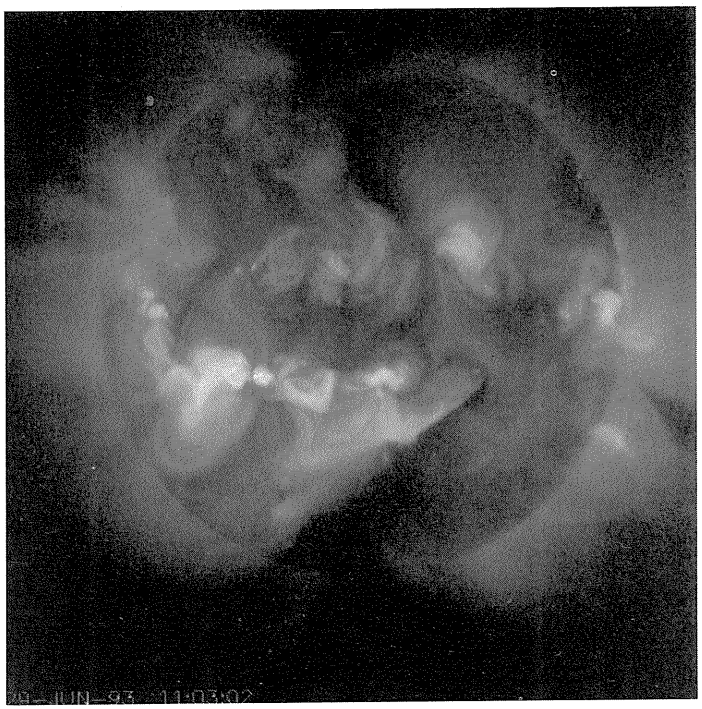
Day 26
13:19:45 UT



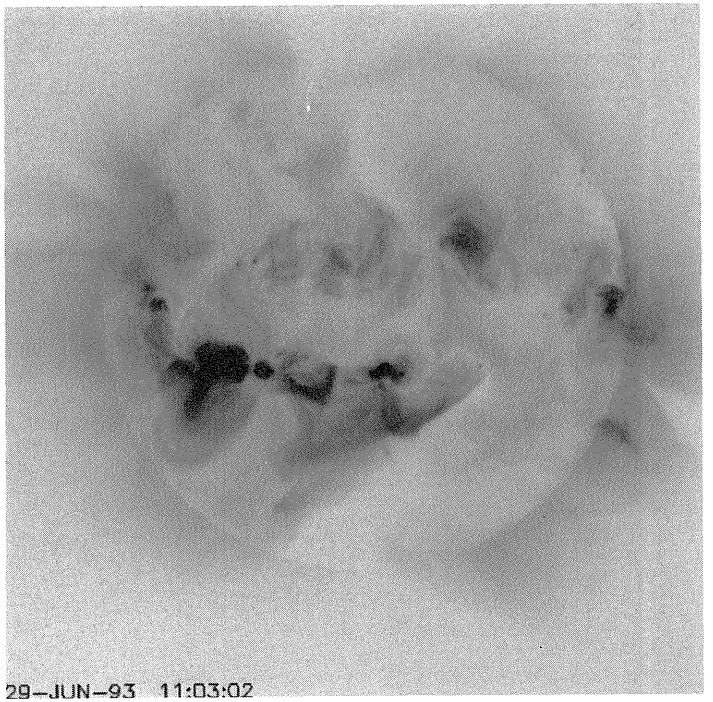
Day 28
11:34:06 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

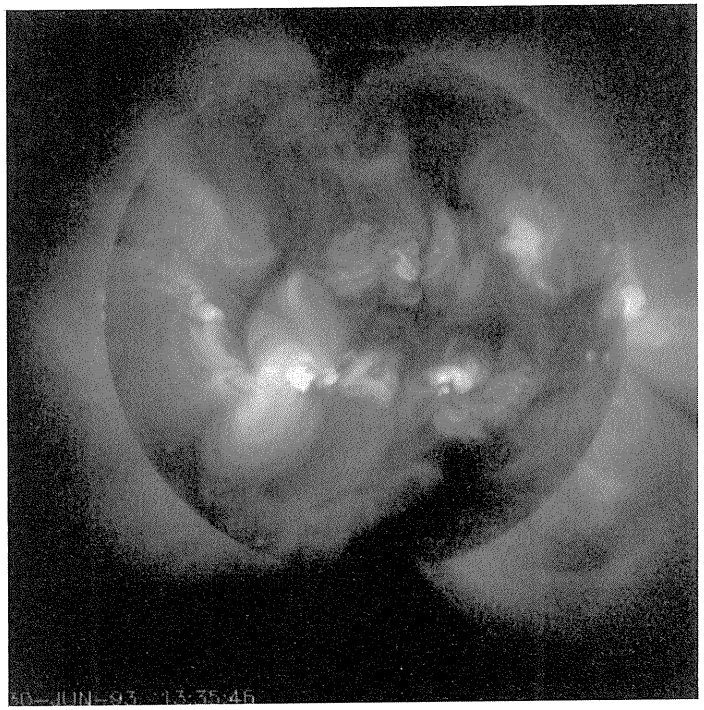
June 1993



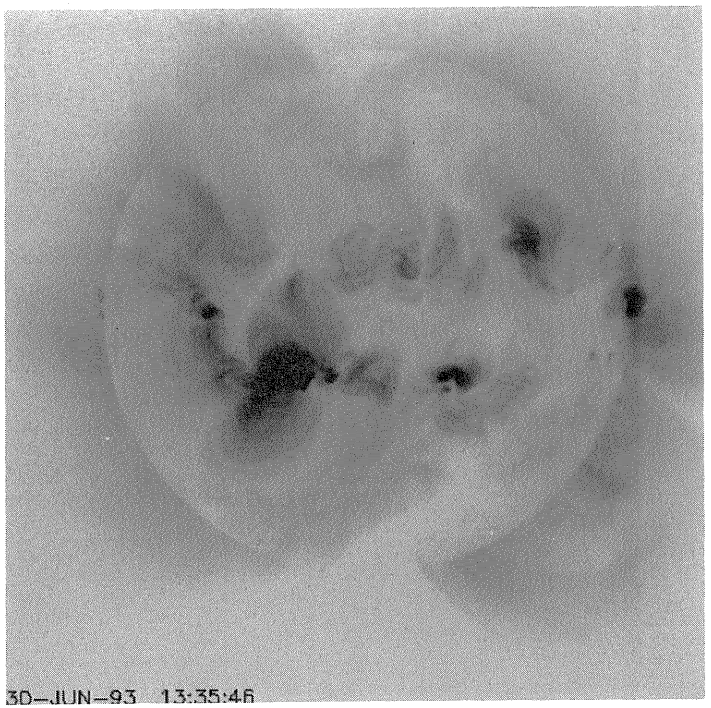
Day 29
11:03:02 UT



Day 29
11:03:02 UT



Day 30
13:35:46 UT



Day 30
13:35:46 UT

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

JUNE 1993

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
7515A	27877	MWIL	06	02	1500	S09	W09	06	1.9	4	(AP)					
7515B		BOUL	06	03	1635	N06	W18	06	2.3		A	AX		1	1	2
7517		SVTO	05	27	0825	N07	E85	06	2.7		A	HS	120	1	2	3
7517		RAMY	05	27	1136	N08	E80	06	2.5		A	HS	80	1	2	3
7517		HOLL	05	27	1420	N08	E78	06	2.4		A	HS	120	1	2	4
7517		BOUL	05	27	1610	N09	E77	06	2.4		A	HA	50	1	2	2
7517	27873	MWIL	05	27	2000	N08	E77	06	2.6	3	(AP)					
7517		LEAR	05	28	0205	N08	E73	06	2.6		A	HS	120	2	2	2
7517		SVTO	05	28	0845	N08	E70	06	2.6		B	CAO	190	4	8	2
7517		RAMY	05	28	1213	N08	E70	06	2.7		B	CAO	120	4	11	3
7517		BOUL	05	28	1400	N08	E68	06	2.7		B	CSO	90	2	9	2
7517	27873	MWIL	05	28	1400	N08	E70	06	2.8	4	(BP)					
7517		LEAR	05	29	0300	N08	E65	06	3.0		B	CAO	110	4	11	2
7517		SVTO	05	29	0742	N07	E55	06	2.4		B	CAO	60	6	12	4
7517		RAMY	05	29	1234	N08	E58	06	2.9		B	EAO	110	8	13	3
7517		HOLL	05	29	1315	N08	E58	06	2.9		B	CSO	90	10	11	4
7517		BOUL	05	29	1410	N09	E55	06	2.7		B	DAO	40	4	10	2
7517	27873	MWIL	05	29	1430	N08	E57	06	2.9	5	(BG)					
7517		LEAR	05	30	0400	N07	E49	06	2.8		B	DAO	150	6	10	2
7517		SVTO	05	30	0827	N07	E47	06	2.9		B	CAO	170	11	10	3
7517		RAMY	05	30	1220	N08	E46	06	3.0		B	EAO	130	10	11	4
7517		BOUL	05	30	1405	N08	E42	06	2.7		B	CAO	120	4	10	3
7517	27873	MWIL	05	30	1430	N09	E44	06	2.9	5	(BP)					
7517		HOLL	05	30	1619	N08	E42	06	2.8		B	CAO	100	10	11	3
7517		SVTO	05	31	1140	N08	E33	06	3.0		B	CAO	90	12	12	4
7517		RAMY	05	31	1242	N08	E32	06	2.9		B	CAO	100	16	9	4
7517		BOUL	05	31	1346	N10	E30	06	2.8		B	CSO	110	5	7	2
7517		HOLL	05	31	1646	N08	E30	06	2.9		B	CSO	110	8	8	2
7517	27873	MWIL	05	31	1730	N08	E28	06	2.8	5	(BP)					
7517		LEAR	06	01	0231	N09	E21	06	2.7		A	HA	60	2	2	2
7517		SVTO	06	01	0744	N07	E22	06	3.0		B	CAO	70	9	7	3
7517		RAMY	06	01	1202	N08	E17	06	2.8		B	CAO	100	11	8	3
7517		BOUL	06	01	1415	N08	E13	06	2.6		B	CAO	110	6	4	3
7517	27873	MWIL	06	01	1515	N08	E14	06	2.7	5	(BG)					
7517		HOLL	06	01	1717	N08	E13	06	2.7		B	CSO	90	9	8	3
7517		RAMY	06	02	1235	N09	E05	06	2.9		B	CAO	80	10	9	2
7517		BOUL	06	02	1420	N09	E03	06	2.8		B	CSO	70	8	9	2
7517		HOLL	06	02	1456	N09	E02	06	2.8		B	CSO	90	10	8	3
7517	27873	MWIL	06	02	1500	N08	E01	06	2.7	5	(BG)					
7517		LEAR	06	03	0135	N09	W05	06	2.7		B	CSO	80	4	5	3
7517		SVTO	06	03	0800	N08	W06	06	2.9		B	CSO	90	4	7	3
7517		RAMY	06	03	1230	N10	W09	06	2.8		B	CSO	90	4	3	3
7517		HOLL	06	03	1457	N12	W11	06	2.8		B	CSO	90	5	4	3
7517	27873	MWIL	06	03	1500	N09	W13	06	2.6	5	(AP)					
7517		BOUL	06	03	1635	N12	W12	06	2.8		B	DSO	70	6	3	2
7517		SVTO	06	04	0750	N09	W22	06	2.7		B	CSO	90	9	4	3
7517		RAMY	06	04	1228	N10	W23	06	2.8		B	DAO	100	5	6	3
7517	27873	MWIL	06	04	1445	N09	W26	06	2.7	5	(AP)					
7517		HOLL	06	04	1448	N10	W25	06	2.7		B	CSO	90	11	5	3
7517		LEAR	06	05	0425	N09	W31	06	2.8		A	HA	90	1	2	3
7517		SVTO	06	05	0745	N09	W33	06	2.8		A	HA	70	2	2	3
7517		BOUL	06	05	1345	N09	W37	06	2.8		A	HA	30	1	2	2
7517		RAMY	06	05	1458	N09	W39	06	2.7		A	HA	50	2	2	3
7517		HOLL	06	05	1500	N08	W40	06	2.6		A	HS	50	3	2	4
7517		RAMY	06	06	1215	N09	W50	06	2.7		A	HA	60	3	2	3
7517		SVTO	06	06	1230	N10	W49	06	2.8		A	HS	40	4	2	3
7517		BOUL	06	06	1410	N11	W49	06	2.9		B	CSO	30	2	5	2
7517		HOLL	06	06	1535	N08	W53	06	2.7		A	HS	50	1	1	2
7517		SVTO	06	07	0901	N10	W60	06	2.9		A	HR	20	2	1	3
7517		RAMY	06	07	1242	N09	W64	06	2.7		A	HA	30	3	2	2
7517	27873	MWIL	06	07	1430	N09	W66	06	2.6	3	(AP)					
7517		BOUL	06	07	1450	N09	W65	06	2.7		A	AX	10	1		2
7517		HOLL	06	07	1612	N07	W65	06	2.8		A	AX	20	1	1	3
7517A		SVTO	06	03	0800	S09	W04	06	3.0		B	BXO	20	4	3	3
7517A		RAMY	06	03	1230	S09	W07	06	3.0		A	AX		2	2	3
7517A	27879	MWIL	06	03	1500	S09	W08	06	3.0	3	(B)					

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JUNE 1993

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
7518		SVTO	05	30	0827	S11	E80	06	5.4		A	AX	10	1		3
7518		RAMY	05	30	1220	S10	E78	06	5.4		B	CRO	20	2	4	4
7518	27874	MWIL	05	30	1430	S09	E78	06	5.4	3	(AP)					
7518		HOLL	05	30	1619	S10	E74	06	5.2		A	AX	10	1		3
7518		SVTO	05	31	1140	S10	E67	06	5.5		B	CRO	50	5	7	4
7518		RAMY	05	31	1242	S09	E67	06	5.5		B	DAO	90	9	8	4
7518		BOUL	05	31	1346	S08	E62	06	5.2		B	CSO	20	2	5	2
7518	27874	MWIL	05	31	1730	S10	E63	06	5.5	5	(B)					
7518		LEAR	06	01	0231	S10	E56	06	5.3		B	CAO	70	7	7	2
7518		SVTO	06	01	0744	S12	E55	06	5.5		B	DAO	100	11	9	3
7518		RAMY	06	01	1202	S10	E52	06	5.4		B	DAO	150	15	7	3
7518		BOUL	06	01	1415	S10	E48	06	5.2		B	DSO	90	7	7	3
7518	27874	MWIL	06	01	1515	S10	E52	06	5.5	5	(B)					
7518		HOLL	06	01	1717	S10	E50	06	5.5		B	DAO	150	9	7	3
7518		RAMY	06	02	1235	S09	E39	06	5.4		B	DKO	200	12	7	2
7518		BOUL	06	02	1420	S09	E36	06	5.3		B	DAO	170	15	8	2
7518		HOLL	06	02	1456	S10	E38	06	5.5		B	DSO	170	14	8	3
7518	27874	MWIL	06	02	1500	S11	E37	06	5.4	5	(BG)					
7518		LEAR	06	03	0135	S10	E32	06	5.5		B	DAO	210	12	9	3
7518		SVTO	06	03	0800	S12	E28	06	5.4		B	DKO	300	15	9	3
7518		RAMY	06	03	1230	S09	E25	06	5.4		B	DAO	200	18	9	3
7518		HOLL	06	03	1457	S09	E25	06	5.5		B	DAI	150	16	9	3
7518	27874	MWIL	06	03	1500	S10	E23	06	5.3	5	(B)					
7518		BOUL	06	03	1635	S09	E22	06	5.3		B	DAO	230	16	8	2
7518		SVTO	06	04	0750	S11	E14	06	5.4		B	DSO	270	19	8	3
7518		RAMY	06	04	1228	S11	E11	06	5.3		B	DAO	300	12	5	3
7518	27874	MWIL	06	04	1445	S11	E09	06	5.3	5	(D)					
7518		HOLL	06	04	1448	S09	E09	06	5.3		B	DAI	150	23	7	3
7518		LEAR	06	05	0425	S09	E05	06	5.5		B	DAO	240	24	8	3
7518		SVTO	06	05	0745	S10	W01	06	5.2		BG	DAI	250	26	8	3
7518		BOUL	06	05	1345	S09	W03	06	5.3		B	DAI	240	28	8	2
7518		RAMY	06	05	1458	S10	W03	06	5.4		B	DKO	300	32	8	3
7518		HOLL	06	05	1500	S09	W03	06	5.4		B	DKI	230	40	9	4
7518		RAMY	06	06	1215	S10	W16	06	5.3		B	DAI	420	40	10	3
7518		SVTO	06	06	1230	S08	W15	06	5.4		BG	DHI	420	54	9	3
7518		BOUL	06	06	1410	S09	W12	06	5.7		B	DAI	210	32	8	2
7518		HOLL	06	06	1535	S10	W18	06	5.3		B	DSI	360	28	9	2
7518		SVTO	06	07	0901	S10	W27	06	5.3		BG	DAI	600	43	10	3
7518		RAMY	06	07	1242	S08	W31	06	5.2		B	DKI	460	46	10	2
7518	27874	MWIL	06	07	1430	S10	W31	06	5.3	5	(D)					
7518		BOUL	06	07	1450	S09	W30	06	5.4		B	DAI	310	18	9	2
7518		HOLL	06	07	1612	S10	W31	06	5.3		B	EKI	430	27	13	3
7518		SVTO	06	08	0950	S10	W40	06	5.4		BG	DKI	530	20	12	3
7518		RAMY	06	08	1229	S09	W43	06	5.3		B	DKI	450	36	10	2
7518	27874	MWIL	06	08	1430	S10	W45	06	5.2	5	(D)					
7518		HOLL	06	08	1728	S11	W47	06	5.2		B	EKI	570	30	11	3
7518		LEAR	06	09	0234	S10	W50	06	5.4		BGD	DKC	560	30	8	3
7518		SVTO	06	09	0930	S10	W56	06	5.2		B	EKI	650	30	12	3
7518		RAMY	06	09	1109	S08	W56	06	5.3		B	EKO	490	21	11	3
7518		BOUL	06	09	1355	S09	W57	06	5.3		B	DAO	270	16	10	2
7518	27874	MWIL	06	09	1430	S10	W58	06	5.2	5	(D)					
7518		LEAR	06	10	0300	S08	W66	06	5.2		B	DAI	570	20	11	3
7518		SVTO	06	10	0856	S10	W69	06	5.2		B	EKI	670	30	13	3
7518		RAMY	06	10	1115	S10	W67	06	5.4		B	EKI	530	26	12	2
7518		BOUL	06	10	1330	S11	W70	06	5.3		B	EKI	480	17	12	2
7518	27874	MWIL	06	10	1430	S10	W70	06	5.3	5	(B)					
7518		HOLL	06	10	1455	S12	W67	06	5.6		B	EKI	590	25	15	3
7518		LEAR	06	11	0750	S12	W78	06	5.4		B	EAI	240	12	12	3
7518		SVTO	06	11	0835	S10	W75	06	5.7		B	DKI	390	9	7	3
7518		RAMY	06	11	1112	S10	W79	06	5.5		B	DKI	310	7	6	3
7518	27874	MWIL	06	11	1430	S09	W80	06	5.6	5	X					
7521		HOLL	06	01	1717	N12	E48	06	5.3		A	AX	10	1	1	3
7521	27878	MWIL	06	02	1500	N12	E36	06	5.3	4	(AP)					
7521		LEAR	06	03	0135	N12	E30	06	5.3		A	AX	10	2	1	3
7521		SVTO	06	03	0800	N11	E26	06	5.3		B	BXO	20	4	2	3
7521		RAMY	06	03	1230	N12	E24	06	5.3		A	AX		2	2	3
7521		HOLL	06	03	1457	N12	E22	06	5.3		B	BXO	10	3	3	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JUNE 1993

NCAA/ 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
7521	27878	MWIL	06 03 1500	N12 E23	06 5.3	4	(AP)					
7521		BOUL	06 03 1635	N12 E22	06 5.3		B	CAO	30	5	3	2
7521		SVTO	06 04 0750	N12 E14	06 5.4		B	BXO	10	2	3	3
7521		RAMY	06 04 1228	N12 E11	06 5.3		A	AX		2	1	3
7521	27878	MWIL	06 04 1445	N12 E09	06 5.3	4	(AP)					
7521		HOLL	06 04 1448	N13 E09	06 5.3		A	AX	10	3	2	3
7521		LEAR	06 05 0425	N11 E04	06 5.5		B	BXO	10	2	3	3
7521		RAMY	06 05 1458	N12 W03	06 5.4		A	AX		1		3
7521		HOLL	06 05 1500	N11 W06	06 5.2		A	AX		1		4
7521A		HOLL	06 05 1500	N03 E06	06 6.1		A	AX		1		4
7521B		RAMY	06 06 1215	S19 W03	06 6.3		B	BXO	10	3	2	3
7519		RAMY	05 31 1242	N04 E80	06 6.5		A	HR	20	3	2	4
7519		HOLL	05 31 1646	N04 E78	06 6.5		B	BX	30	2	2	2
7519	27875	MWIL	05 31 1730	N04 E80	06 6.7	3	AP					
7519		LEAR	06 01 0231	N04 E74	06 6.6		A	HS	50	1	2	2
7519		SVTO	06 01 0744	N03 E74	06 6.8		B	BXO	30	5	8	3
7519		RAMY	06 01 1202	N04 E69	06 6.6		B	DAO	100	7	7	3
7519		BOUL	06 01 1415	N04 E66	06 6.5		B	BXO	60	5	7	3
7519	27875	MWIL	06 01 1515	N05 E70	06 6.9	5	(BP)					
7519		HOLL	06 01 1717	N05 E68	06 6.8		B	CSO	50	3	8	3
7519		RAMY	06 02 1235	N05 E58	06 6.9		B	DAO	60	4	8	2
7519		BOUL	06 02 1420	N06 E55	06 6.7		B	CAO	50	4	8	2
7519		HOLL	06 02 1456	N05 E57	06 6.9		B	CAO	50	4	8	3
7519	27875	MWIL	06 02 1500	N05 E55	06 6.7	5	(BP)					
7519		LEAR	06 03 0135	N05 E49	06 6.7		B	CSO	70	4	9	3
7519		SVTO	06 03 0800	N04 E47	06 6.8		B	CSO	100	4	9	3
7519		RAMY	06 03 1230	N05 E44	06 6.8		B	CSO	90	4	8	3
7519		HOLL	06 03 1457	N07 E40	06 6.6		B	CSO	70	4	3	3
7519	27875	MWIL	06 03 1500	N06 E39	06 6.5	5	(BP)					
7519		BOUL	06 03 1635	N05 E40	06 6.7		B	CAO	80	5	7	2
7519		SVTO	06 04 0750	N07 E35	06 6.9		B	CSO	110	5	11	3
7519		RAMY	06 04 1228	N05 E28	06 6.6		B	CAO	100	8	6	3
7519	27875	MWIL	06 04 1445	N05 E26	06 6.5	5	(BP)					
7519		HOLL	06 04 1448	N07 E29	06 6.8		B	CSO	80	8	6	3
7519		LEAR	06 05 0425	N05 E22	06 6.8		B	DAO	100	7	6	3
7519		SVTO	06 05 0745	N07 E18	06 6.7		BG	CAO	120	6	6	3
7519		BOUL	06 05 1345	N06 E14	06 6.6		B	CAO	80	9	8	2
7519		RAMY	06 05 1458	N05 E15	06 6.7		B	DAO	100	11	6	3
7519		HOLL	06 05 1500	N06 E15	06 6.7		B	DAO	100	10	6	4
7519		RAMY	06 06 1215	N05 E04	06 6.8		B	CAO	70	11	9	3
7519		SVTO	06 06 1230	N05 E04	06 6.8		B	DAO	80	10	7	3
7519		BOUL	06 06 1410	N07 E01	06 6.7		B	CAO	70	8	4	2
7519		HOLL	06 06 1535	N05 E00	06 6.6		B	CAO	80	10	5	2
7519		SVTO	06 07 0901	N04 W05	06 7.0		B	CAO	120	13	12	3
7519		RAMY	06 07 1242	N07 W09	06 6.8		B	CAO	60	12	11	2
7519	27875	MWIL	06 07 1430	N05 W11	06 6.8	5	(BP)					
7519		BOUL	06 07 1450	N07 W12	06 6.7		B	DSO	50	8	8	2
7519		HOLL	06 07 1612	N06 W12	06 6.8		B	CSO	80	12	10	3
7519		SVTO	06 08 0950	N05 W23	06 6.7		B	CSO	80	4	5	3
7519		RAMY	06 08 1229	N07 W27	06 6.5		A	HR	50	3	2	2
7519	27875	MWIL	06 08 1430	N06 W29	06 6.4	4	(BP)					
7519		HOLL	06 08 1728	N05 W30	06 6.5		A	HS	70	5	2	3
7519		LEAR	06 09 0234	N06 W36	06 6.4		B	CAO	70	4	2	3
7519		SVTO	06 09 0930	N06 W36	06 6.7		B	CAO	70	8	5	3
7519		RAMY	06 09 1109	N07 W39	06 6.5		B	CAO	60	4	2	3
7519		BOUL	06 09 1355	N07 W42	06 6.4		A	HA	60	3	2	2
7519	27875	MWIL	06 09 1430	N06 W42	06 6.5	5	(BP)					
7519		LEAR	06 10 0300	N08 W48	06 6.5		B	CAO	60	2	2	3
7519		SVTO	06 10 0856	N07 W52	06 6.5		B	CAO	30	2	3	3
7519		RAMY	06 10 1115	N05 W55	06 6.3		B	CSO	40	5	7	2
7519		BOUL	06 10 1330	N06 W55	06 6.4		B	CSO	20	3	3	2
7519	27881	MWIL	06 10 1430	N04 W58	06 6.3	4	(B)					
7519	27875	MWIL	06 10 1430	N06 W55	06 6.5	5	(AP)					
7519		HOLL	06 10 1455	N04 W56	06 6.4		B	CSO	50	6	5	3
7519		LEAR	06 11 0750	N06 W65	06 6.5		A	HS	40	1	1	3
7519		SVTO	06 11 0835	N07 W63	06 6.6		B	CRO	40	3	2	3

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JUNE 1993

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
7519		RAMY	06 11 1112	N07 W67	06 6.4		A	HS	20	2	2	3
7519	27875	MWIL	06 11 1430	N06 W69	06 6.4	4	(AP)					
7519		BOUL	06 11 1516	N06 W67	06 6.6		A	AX		1		1
7519		LEAR	06 12 0319	N06 W75	06 6.5		A	AX	30	1	1	3
7519		SVTO	06 12 0610	N06 W71	06 6.9		A	AX	20	1	1	4
7519		RAMY	06 12 1145	N06 W80	06 6.5		A	AX	10	1		3
7519	27875	MWIL	06 12 1430	N06 W81	06 6.5	3	AP					
7519A		LEAR	06 10 0300	S32 E21	06 11.8		A	AX	10	1	1	3
7522		RAMY	06 06 1215	N22 E77	06 12.4		A	HS	90	1	2	3
7522		SVTO	06 06 1230	N21 E79	06 12.6		A	HA	90	1	2	3
7522		BOUL	06 06 1410	N23 E72	06 12.1		A	AX	10	1		2
7522		HOLL	06 06 1535	N22 E72	06 12.2		A	HS	60	1	1	2
7522		SVTO	06 07 0901	N22 E67	06 12.5		A	HS	110	1	2	3
7522		RAMY	06 07 1242	N23 E62	06 12.3		A	HS	100	1	2	2
7522	27880	MWIL	06 07 1430	N23 E62	06 12.4	4	(AP)					
7522		BOUL	06 07 1450	N22 E60	06 12.2		A	HS	40	1	1	2
7522		HOLL	06 07 1612	N24 E60	06 12.3		A	HS	80	1	2	3
7522		SVTO	06 08 0950	N22 E52	06 12.4		A	HS	90	1	2	3
7522		RAMY	06 08 1229	N22 E50	06 12.4		A	HS	100	1	2	2
7522	27880	MWIL	06 08 1430	N22 E49	06 12.4	5	(AP)					
7522		HOLL	06 08 1728	N24 E47	06 12.3		A	HS	120	1	2	3
7522		LEAR	06 09 0234	N21 E42	06 12.3		A	HS	110	1	2	3
7522		SVTO	06 09 0930	N22 E38	06 12.3		B	CSO	80	1	3	3
7522		RAMY	06 09 1109	N21 E38	06 12.4		A	HS	100	1	2	3
7522		BOUL	06 09 1355	N22 E35	06 12.3		A	HA	90	3	3	2
7522	27880	MWIL	06 09 1430	N22 E36	06 12.4	5	(BP)					
7522		LEAR	06 10 0300	N19 E31	06 12.5		B	DAO	130	3	4	3
7522		SVTO	06 10 0856	N23 E26	06 12.4		B	CAO	90	4	5	3
7522		RAMY	06 10 1115	N24 E25	06 12.4		B	CAO	110	2	6	2
7522		BOUL	06 10 1330	N22 E21	06 12.2		A	HS	90	2	2	2
7522	27880	MWIL	06 10 1430	N22 E23	06 12.4	5	(BP)					
7522		HOLL	06 10 1455	N22 E22	06 12.3		A	HS	110	6	2	3
7522		LEAR	06 11 0750	N20 E15	06 12.5		A	HH	100	1	3	3
7522		SVTO	06 11 0835	N22 E13	06 12.3		B	CAO	120	5	4	3
7522		RAMY	06 11 1112	N22 E13	06 12.5		B	CAO	130	7	5	3
7522	27880	MWIL	06 11 1430	N23 E11	06 12.4	5	(BP)					
7522		BOUL	06 11 1516	N22 E09	06 12.3		B	CSO	80	3	3	1
7522		LEAR	06 12 0319	N22 E03	06 12.4		A	HH	100	2	3	3
7522		SVTO	06 12 0610	N22 E02	06 12.4		B	CAO	100	3	2	4
7522		RAMY	06 12 1145	N22 W02	06 12.3		B	CAO	120	3	3	3
7522		HOLL	06 12 1352	N22 W04	06 12.3		A	HS	110	1	2	3
7522	27880	MWIL	06 12 1430	N22 W03	06 12.4	5	(AP)					
7522		BOUL	06 12 1551	N22 W04	06 12.3		A	HS	80	1	2	2
7522		LEAR	06 13 0052	N22 W08	06 12.4		A	HS	100	1	2	3
7522		SVTO	06 13 0615	N22 W12	06 12.3		B	CAO	100	3	2	3
7522		RAMY	06 13 1315	N22 W14	06 12.5		B	CSO	70	2	4	2
7522		BOUL	06 13 1400	N22 W18	06 12.2		A	HS	90	1	2	3
7522	27880	MWIL	06 13 1430	N22 W17	06 12.3	5	(BP)					
7522		HOLL	06 13 1524	N22 W16	06 12.4		B	CSO	120	3	6	3
7522		LEAR	06 14 0008	N20 W21	06 12.4		A	HS	100	1	2	3
7522		SVTO	06 14 0605	N21 W24	06 12.4		A	HS	120	1	2	4
7522		RAMY	06 14 1125	N22 W27	06 12.4		B	CAO	90	2	3	3
7522		BOUL	06 14 1352	N22 W27	06 12.5		A	HS	90	2	2	2
7522	27880	MWIL	06 14 1430	N22 W29	06 12.4	5	(AP)					
7522		HOLL	06 14 1630	N21 W31	06 12.3		A	HS	90	1	2	2
7522		LEAR	06 15 0044	N21 W35	06 12.3		A	HS	100	1	2	3
7522		SVTO	06 15 0725	N22 W38	06 12.4		A	HA	100	1	2	4
7522		RAMY	06 15 1111	N21 W39	06 12.5		A	HS	60	1	2	3
7522		HOLL	06 15 1400	N21 W43	06 12.3		A	HS	80	1	2	3
7522		BOUL	06 15 1403	N21 W41	06 12.4		A	HS	110	1	2	2
7522	27880	MWIL	06 15 1430	N21 W42	06 12.4	5	(AP)					
7522		LEAR	06 16 0010	N21 W46	06 12.5		A	HS	90	1	2	3
7522		SVTO	06 16 0618	N22 W49	06 12.5		A	HS	120	1	2	4
7522		RAMY	06 16 1323	N21 W53	06 12.5		A	HS	100	1	2	3
7522		HOLL	06 16 1349	N22 W55	06 12.3		A	HS	70	1	2	3
7522	27880	MWIL	06 16 1445	N22 W56	06 12.3	5	(AP)					
7522		BOUL	06 16 1524	N21 W54	06 12.5		A	HS	100	1	2	2

SUNSPOT GROUPS
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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
7522		LEAR	06 17 0025	N20 W58	06 12.6		A	HS	110	1	3	3
7522		SVTO	06 17 0820	N22 W65	06 12.3		A	HS	80	1	2	3
7522		RAMY	06 17 1150	N21 W67	06 12.3		A	HS	70	1	2	3
7522		HOLL	06 17 1332	N22 W68	06 12.3		A	HS	110	1	2	3
7522	27880	MWIL	06 17 1445	N21 W68	06 12.4	5	(AP)					
7522		LEAR	06 18 0029	N21 W73	06 12.4		A	HS	80	1	2	4
7522		SVTO	06 18 0605	N21 W78	06 12.3		A	HA	50	1	2	/
7522		RAMY	06 18 1315	N22 W77	06 12.6		A	HS	30	1	2	3
7522	27880	MWIL	06 18 1430	N21 W82	06 12.3	5	(AP)					
7522		HOLL	06 18 1554	N22 W85	06 12.1		A	AX	30	1	1	3
7522A	27883	MWIL	06 13 1430	S07 E09	06 14.3	4	(AF)					
7523		RAMY	06 12 1145	N12 E69	06 17.7		A	AX	10	1		3
7523	27882	MWIL	06 12 1430	N11 E70	06 17.9	4	(AP)					
7523		LEAR	06 13 0052	N11 E63	06 17.8		A	AX	20	1	1	3
7523	27884	MWIL	06 16 1445	N11 E15	06 17.7	4	(B)					
7523		SVTO	06 17 0820	N10 E05	06 17.7		B	BXO	10	3	3	3
7523		SVTO	06 18 0605	N05 W08	06 17.6		A	AX	10	2	2	/
7523		SVTO	06 19 0630	N07 W18	06 17.9		B	BXO	10	4	3	3
7526		SVTO	06 18 0605	N13 E10	06 19.0		B	BXO	10	2	2	/
7526		RAMY	06 18 1315	N14 E06	06 19.0		B	BXO	10	4	3	3
7526		SVTO	06 19 0630	N12 W04	06 19.0		B	BXO	10	2	3	3
7526		LEAR	06 20 0010	N13 W13	06 19.0		A	AX	10	1	1	3
7526		HOLL	06 20 1407	N13 W20	06 19.1		A	AX	10	2	1	3
7526	27885	MWIL	06 20 1445	N13 W21	06 19.0	4	(B)					
7526		LEAR	06 21 0010	N12 W26	06 19.0		B	BXO	10	4	3	3
7526		SVTO	06 21 0955	N11 W29	06 19.2		B	BXO	20	3	1	3
7526		HOLL	06 21 1356	N12 W33	06 19.1		A	AX	10	2	2	3
7526	27885	MWIL	06 21 1430	N13 W33	06 19.1	4	(AF)					
7525		HOLL	06 17 1332	S15 E21	06 19.1		A	AX	10	3	2	3
7525		SVTO	06 19 0630	S19 E03	06 19.5		B	BXO	20	7	3	3
7525		LEAR	06 20 0010	S18 W10	06 19.2		B	CSO	20	7	3	3
7525		SVTO	06 20 0745	S20 W15	06 19.2		B	DRO	40	7	7	2
7525		HOLL	06 20 1407	S16 W18	06 19.2		B	CSO	40	16	8	3
7525		BOUL	06 20 1425	S15 W18	06 19.2		B	BXO	40	10	8	3
7525	27886	MWIL	06 20 1445	S17 W17	06 19.3	5	(BG)					
7525		LEAR	06 21 0010	S18 W22	06 19.3		B	DSO	70	8	8	3
7525		SVTO	06 21 0955	S16 W28	06 19.3		B	DSO	100	12	10	3
7525		RAMY	06 21 1218	S17 W32	06 19.1		B	DAO	30	9	10	2
7525		BOUL	06 21 1348	S15 W30	06 19.3		B	CAO	60	7	8	2
7525		HOLL	06 21 1356	S17 W32	06 19.1		B	DAO	110	18	8	3
7525	27886	MWIL	06 21 1430	S17 W32	06 19.2	5	(B)					
7525		LEAR	06 22 0508	S17 W37	06 19.4		B	DAO	80	8	6	3
7525		SVTO	06 22 0905	S16 W40	06 19.3		B	DAO	100	19	8	3
7525		RAMY	06 22 1258	S18 W43	06 19.3		B	DAO	70	9	6	3
7525		BOUL	06 22 1354	S16 W41	06 19.5		B	DSO	70	7	8	2
7525		HOLL	06 22 1406	S17 W43	06 19.3		B	DAO	100	11	7	3
7525	27886	MWIL	06 22 1530	S17 W44	06 19.3	5	(B)					
7525		LEAR	06 23 0250	S17 W47	06 19.5		B	CAO	80	7	6	2
7525		SVTO	06 23 1055	S17 W52	06 19.5		B	DAO	80	8	7	3
7525		RAMY	06 23 1320	S17 W56	06 19.3		B	CRO	40	7	7	3
7525		HOLL	06 23 1350	S19 W56	06 19.3		B	CSO	40	3	7	3
7525		BOUL	06 23 1415	S16 W55	06 19.4		B	BXO	20	3	5	3
7525	27886	MWIL	06 23 1445	S17 W57	06 19.3	5	(B)					
7525		LEAR	06 24 0057	S17 W63	06 19.2		B	CAO	50	2	3	3
7525		RAMY	06 24 1140	S17 W67	06 19.4		B	CAO	60	8	6	4
7525		SVTO	06 24 1147	S16 W69	06 19.2		B	CAO	30	2	1	3
7525		HOLL	06 24 1330	S16 W70	06 19.2		B	CSO	50	2	4	3
7525	27886	MWIL	06 24 1430	S17 W70	06 19.3	4	(B)					
7525		LEAR	06 25 0625	S17 W76	06 19.5		A	AX	10	1	1	4
7525		SVTO	06 25 0723	S16 W80	06 19.2		A	AX	20	1	2	3
7525A		LEAR	06 22 0508	S21 E03	06 22.4		A	AX	10	1	1	3
7527		RAMY	06 17 1150	N07 E84	06 23.8		A	AX		1		3
7527		RAMY	06 21 1218	N09 E32	06 23.9		A	AX		2	1	2

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7527		BOUL	06 21	1348	N10 E29	06 23.7		B	BXO	10	3	3	2
7527	27887	MWIL	06 21	1430	N09 E31	06 23.9	4	(B)					
7527		SVTO	06 22	0905	N09 E22	06 24.0		B	BXO	10	5	4	3
7527		RAMY	06 22	1258	N09 E20	06 24.0		A	AX		1		3
7527	27887	MWIL	06 22	1530	N10 E18	06 24.0	4	(B)					
7527		LEAR	06 23	0250	N10 E12	06 24.0		B	CAO	20	5	3	2
7527		SVTO	06 23	1055	N09 E09	06 24.1		B	DRO	20	6	3	3
7527		RAMY	06 23	1320	N09 E06	06 24.0		B	CAO	20	7	2	3
7527		HOLL	06 23	1350	N06 E04	06 23.9		B	DSO	20	4	3	3
7527		BOUL	06 23	1415	N10 E05	06 24.0		B	CRO	10	4	3	3
7527	27887	MWIL	06 23	1445	N09 E05	06 24.0	4	(B)					
7527		LEAR	06 24	0057	N09 W02	06 23.9		B	CSO	30	3	3	3
7527		RAMY	06 24	1140	N11 W08	06 23.9		A	HA	10	3	1	4
7527		SVTO	06 24	1147	N10 W07	06 24.0		B	CRO	20	2	1	3
7527		HOLL	06 24	1330	N07 W09	06 23.9		A	HS	10	1	1	3
7527		BOUL	06 24	1415	N11 W10	06 23.8		A	AX		1		2
7527	27887	MWIL	06 24	1430	N10 W09	06 23.9	4	(AF)					
7527		LEAR	06 25	0625	N09 W18	06 23.9		A	AX	10	1	1	4
7527		SVTO	06 25	0723	N09 W19	06 23.9		A	AX	20	1	1	3
7527		RAMY	06 25	1351	N09 W24	06 23.8		A	HR	10	1		3
7527		BOUL	06 25	1400	N10 W23	06 23.8		A	AX	10	1		3
7527	27887	MWIL	06 25	1430	N10 W23	06 23.9	4	(AF)					
7527		LEAR	06 26	0035	N09 W29	06 23.8		A	AX	10	1	1	3
7528		SVTO	06 19	0630	N09 E73	06 24.7		A	AX	20	1	1	3
7528		HOLL	06 19	1357	N06 E69	06 24.7		A	AX	30	1		3
7528		LEAR	06 22	0508	N04 E32	06 24.6		B	BXO	20	3	1	3
7528		SVTO	06 22	0905	N04 E27	06 24.4		A	AX	10	4	2	3
7528		RAMY	06 22	1258	N03 E27	06 24.5		A	AX		2	1	3
7528		BOUL	06 22	1354	N04 E23	06 24.3		A	AX		2		2
7528		HOLL	06 22	1406	N04 E26	06 24.5		A	AX		2	1	3
7528	27888	MWIL	06 22	1530	N04 E25	06 24.5	4	(AP)					
7528		LEAR	06 23	0250	N04 E19	06 24.5		B	BXO	20	7	2	2
7528		SVTO	06 23	1055	N02 E15	06 24.6		B	CAO	20	8	4	3
7528		RAMY	06 23	1320	N03 E13	06 24.5		B	DAO	50	14	6	3
7528		HOLL	06 23	1350	N01 E13	06 24.5		BG	DAO	50	13	7	3
7528		BOUL	06 23	1415	N04 E12	06 24.5		B	CRI	40	17	5	3
7528	27888	MWIL	06 23	1445	N03 E12	06 24.5	5	(BG)					
7528		LEAR	06 24	0057	N03 E07	06 24.6		B	DAO	100	14	7	3
7528		RAMY	06 24	1140	N03 E01	06 24.6		B	DAO	150	18	8	4
7528		SVTO	06 24	1147	N03 W01	06 24.4		BG	DAI	160	9	6	3
7528		HOLL	06 24	1330	N03 E00	06 24.6		B	DAI	100	15	8	3
7528		BOUL	06 24	1415	N04 W02	06 24.4		B	DAO	50	5	4	2
7528	27888	MWIL	06 24	1430	N03 W02	06 24.4	5	(B)					
7528		LEAR	06 25	0625	N02 W11	06 24.4		B	DAO	130	22	7	4
7528		SVTO	06 25	0723	N02 W11	06 24.5		B	DS	130	14	8	3
7528		RAMY	06 25	1351	N02 W15	06 24.4		B	DAO	130	13	8	3
7528		BOUL	06 25	1400	N02 W14	06 24.5		B	DAO	100	10	8	3
7528	27888	MWIL	06 25	1430	N02 W15	06 24.5	5	(B)					
7528		LEAR	06 26	0035	N02 W21	06 24.4		B	DAO	120	9	8	3
7528		RAMY	06 26	1322	N02 W28	06 24.5		B	DAO	70	6	9	3
7528		BOUL	06 26	1355	N03 W28	06 24.5		B	DAO	70	7	8	4
7528	27888	MWIL	06 26	1430	N02 W29	06 24.4	5	(B)					
7528		HOLL	06 26	1730	N02 W30	06 24.5		B	DSO	90	5	8	3
7528		LEAR	06 27	0030	N02 W34	06 24.5		B	DAO	100	5	8	3
7528		SVTO	06 27	0715	N03 W39	06 24.4		B	DSO	100	5	6	3
7528		RAMY	06 27	1218	N02 W42	06 24.4		B	DAO	70	5	6	3
7528		HOLL	06 27	1357	N02 W43	06 24.4		B	DAO	80	4	7	3
7528	27888	MWIL	06 27	1430	N03 W43	06 24.4	5	(B)					
7528		LEAR	06 28	0320	N01 W48	06 24.5		B	DAO	100	4	6	3
7528		SVTO	06 28	0740	N02 W52	06 24.4		B	CSO	70	5	7	3
7528		RAMY	06 28	1323	N02 W56	06 24.4		B	DAO	50	8	7	3
7528		HOLL	06 28	1418	N02 W55	06 24.5		B	CHO	70	7	8	3
7528		BOUL	06 28	1500	N03 W54	06 24.6		B	BXO	30	7	7	2
7528	27888	MWIL	06 28	1500	N03 W56	06 24.4	5	(B)					
7528		LEAR	06 29	0200	N04 W60	06 24.6		B	BXO	40	5	8	3
7528		SVTO	06 29	0740	N03 W68	06 24.2		B	DRO	50	2	2	4
7528		RAMY	06 29	1145	N03 W67	06 24.5		B	CAO	70	4	7	4
7528		HOLL	06 29	1315	N02 W68	06 24.5		B	CAO	60	3	6	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JUNE 1993

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
7528		BOUL	06	29	1438	N02	W70	06	24.4		A	AX	10	1		3
7528	27888	MWIL	06	29	1445	N02	W71	06	24.3	4	(B)					
7528		LEAR	06	30	0016	N02	W78	06	24.2		A	AX	30	2	1	3
7528A		LEAR	06	26	0035	N09	W11	06	25.2		A	AX	10	1	1	3
7528A		RAMY	06	26	1322	N09	W17	06	25.3		A	AX		2	1	3
7528A		BOUL	06	26	1355	N09	W19	06	25.1		B	BXO	10	4	2	4
7528A		HOLL	06	26	1730	N09	W18	06	25.4		A	AX		1		3
7531		HOLL	06	21	1356	N03	E56	06	25.8		A	AX	10	2	2	3
7531		RAMY	06	26	1322	N01	W11	06	25.7		A	CRO	10	5	2	3
7531	27891	MWIL	06	26	1430	N01	W12	06	25.7	5	(B)					
7531		HOLL	06	26	1730	N00	W14	06	25.7		B	BXO	20	4	3	3
7531		LEAR	06	27	0030	N01	W18	06	25.7		B	CSO	30	2	3	3
7531		SVTO	06	27	0715	N01	W21	06	25.7		B	BXO	10	4	3	3
7531		RAMY	06	27	1218	N00	W24	06	25.7		A	AX		2	2	3
7531		HOLL	06	27	1357	N03	W26	06	25.6		A	AX		2	1	3
7531	27891	MWIL	06	27	1430	N02	W26	06	25.7	3	(AP)					
7531A		LEAR	06	27	0030	N21	E11	06	27.9		A	AX	10	1	1	3
7531A		SVTO	06	27	0715	N19	E06	06	27.8		B	BXO	10	2	4	3
7531A		RAMY	06	27	1218	N21	E04	06	27.8		A	AX		1		3
7531A	27892	MWIL	06	27	1430	N18	E04	06	27.9	4	(AF)					
7529A	27895	MWIL	06	29	1445	N12	W10	06	28.9	4	(AP)					
7529A	27895	MWIL	06	30	1445	N13	W23	06	28.9	4	(AP)					
7529A	27900	MWIL	07	02	1500	N17	W49	06	29.0	3	(AF)					
7529A		RAMY	07	03	1240	N17	W62	06	28.9		B	BXO	10	3	3	3
7529A	27900	MWIL	07	03	1500	N16	W64	06	28.9	4	(B)					
7529A		HOLL	07	03	1920	N16	W66	06	28.9		A	AX		1		4
7529		LEAR	06	23	0250	S11	E79	06	29.1		A	HA	180	1	2	2
7529		SVTO	06	23	1055	S13	E75	06	29.1		A	HS	120	2	3	3
7529		RAMY	06	23	1320	S12	E72	06	29.0		B	DAO	210	4	5	3
7529		HOLL	06	23	1350	S13	E74	06	29.1		B	CSO	170	2	5	3
7529		BOUL	06	23	1415	S12	E70	06	28.9		A	HA	180	3	1	3
7529	27889	MWIL	06	23	1445	S13	E72	06	29.0	5	(AP)					
7529		LEAR	06	24	0057	S13	E64	06	28.9		A	HA	150	2	5	3
7529		RAMY	06	24	1140	S12	E61	06	29.1		B	DAO	270	8	5	4
7529		SVTO	06	24	1147	S13	E60	06	29.0		B	CAO	270	6	5	3
7529		HOLL	06	24	1330	S14	E60	06	29.1		B	CAO	160	6	4	3
7529		BOUL	06	24	1415	S11	E56	06	28.8		A	HS	70	1	2	2
7529	27889	MWIL	06	24	1430	S12	E59	06	29.0	5	(BP)					
7529		LEAR	06	25	0625	S13	E50	06	29.0		B	DSO	240	7	4	4
7529		SVTO	06	25	0723	S13	E49	06	29.0		B	DS	140	6	4	3
7529		RAMY	06	25	1351	S13	E46	06	29.0		B	DAI	280	7	4	3
7529		BOUL	06	25	1400	S12	E45	06	29.0		B	CAO	130	4	4	3
7529	27889	MWIL	06	25	1430	S12	E46	06	29.1	5	(BP)					
7529		LEAR	06	26	0035	S12	E40	06	29.0		B	DAO	230	5	4	3
7529		RAMY	06	26	1322	S12	E33	06	29.0		BGD	DHI	230	7	4	3
7529		BOUL	06	26	1355	S12	E33	06	29.1		B	CAO	130	7	6	4
7529	27889	MWIL	06	26	1430	S13	E33	06	29.1	6	(BG)					
7529		HOLL	06	26	1730	S13	E31	06	29.1		B	CSO	200	5	4	3
7529		LEAR	06	27	0030	S12	E28	06	29.1		B	CSO	200	9	4	3
7529		SVTO	06	27	0715	S13	E23	06	29.0		B	CHO	230	14	5	3
7529		RAMY	06	27	1218	S13	E21	06	29.1		B	DKI	240	9	5	3
7529		HOLL	06	27	1357	S16	E22	06	29.2		B	CKI	220	6	4	3
7529	27889	MWIL	06	27	1430	S12	E19	06	29.0	5	(BP)					
7529		LEAR	06	28	0320	S13	E15	06	29.3		B	CKO	210	7	5	3
7529		SVTO	06	28	0740	S14	E10	06	29.1		B	CHO	220	11	8	3
7529		RAMY	06	28	1323	S12	E07	06	29.1		B	CHO	220	8	5	3
7529		HOLL	06	28	1418	S12	E06	06	29.0		B	CHI	210	16	7	3
7529		BOUL	06	28	1500	S11	E06	06	29.1		B	CSO	160	2	3	2
7529	27889	MWIL	06	28	1500	S13	E06	06	29.1	6	(BG)					
7529		LEAR	06	29	0200	S11	W01	06	29.0		B	CHO	220	5	6	3
7529		SVTO	06	29	0740	S12	W04	06	29.0		B	CHO	240	9	7	4
7529		RAMY	06	29	1145	S12	W06	06	29.0		BG	DKO	280	15	7	4
7529		HOLL	06	29	1315	S12	W08	06	28.9		BG	DSO	220	11	7	4
7529		BOUL	06	29	1438	S11	W06	06	29.1		B	CSO	220	7	6	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

JUNE 1993

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
7529	27889	MWIL	06 29 1445	S13 W07	06 29.1	6	(BG)					
7529		LEAR	06 30 0016	S12 W13	06 29.0		B	CSO	210	15	7	3
7529		SVTO	06 30 0825	S12 W17	06 29.1		B	CHO	250	10	7	4
7529		RAMY	06 30 1117	S12 W18	06 29.1		B	DKO	260	9	7	4
7529		BOUL	06 30 1400	S11 W18	06 29.2		B	CAO	150	6	4	3
7529	27889	MWIL	06 30 1445	S13 W21	06 29.0	6	(BG)					
7529		HOLL	06 30 1915	S13 W23	06 29.1		B	CSO	230	6	7	2
7529		LEAR	07 01 0157	S13 W26	06 29.2		A	HS	150	1	2	3
7529		SVTO	07 01 0740	S12 W28	06 29.3		A	HH	240	2	3	2
7529		RAMY	07 01 1120	S12 W28	06 29.5		B	CKO	200	4	8	4
7529		BOUL	07 01 1415	S11 W32	06 29.3		A	HS	180	1	3	3
7529	27889	MWIL	07 01 1500	S13 W33	06 29.2	6	(BG)					
7529		HOLL	07 01 1655	S12 W35	06 29.2		A	HS	240	1	2	3
7529		RAMY	07 02 1258	S12 W44	06 29.3		A	HS	140	1	2	3
7529		BOUL	07 02 1420	S12 W45	06 29.3		A	HS	210	1	4	3
7529	27889	MWIL	07 02 1500	S13 W47	06 29.2	6	(AP)					
7529		HOLL	07 02 1810	S12 W50	06 29.1		A	HS	180	1	2	2
7529		SVTO	07 03 0838	S12 W57	06 29.2		A	HS	190	1	2	2
7529		RAMY	07 03 1240	S12 W58	06 29.2		A	HS	160	1	2	3
7529		BOUL	07 03 1405	S12 W58	06 29.3		A	HS	150	1	3	3
7529	27889	MWIL	07 03 1500	S12 W60	06 29.2	5	(AP)					
7529		HOLL	07 03 1555	S12 W62	06 29.1		A	HA	180	2	2	3
7529		SVTO	07 04 0547	S13 W67	06 29.3		A	HS	180	1	2	2
7529		RAMY	07 04 1316	S12 W72	06 29.2		A	HA	1800	2	2	4
7529		BOUL	07 04 1405	S12 W70	06 29.4		A	HS	110	1	2	2
7529	27889	MWIL	07 04 1500	S12 W73	06 29.2	5	(AP)					
7529		HOLL	07 04 1508	S12 W74	06 29.1		A	HA	120	2	2	3
7529		LEAR	07 05 0410	S12 W75	06 29.6		A	HA	120	1	2	2
7529		SVTO	07 05 0801	S12 W82	06 29.2		A	HS	120	1	4	2
7536	27896	MWIL	06 29 1445	S07 E12	06 30.5	4	(B)					
7536		LEAR	06 30 0016	S07 E07	06 30.5		B	BXO	20	4	3	3
7536		RAMY	06 30 1117	S07 E01	06 30.5		B	BXO		2	3	4
7536	27896	MWIL	06 30 1445	S07 W01	06 30.5	4	(B)					
7536		HOLL	06 30 1915	S08 W02	06 30.6		A	AX		1		2
7536		HOLL	07 01 1655	S09 W16	06 30.5		A	AX		1	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

JUNE 1993

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
01	0442	0452	0534	1	5			1		1	0439	C4.0	
01	0546	0556U	0648	1	1		1				0540		7515
01	0748	0753	0854	1	1		1				No flare		
01	0933	0949	1018	1	3		2				No flare		
01	2002	2003	2014	1-	3					2	2002	C1.7	7515
01	2304	2308	2318	1-	5			1		1	2305	C1.5	7515
02	1247	1249	1307	1	1					1	1246		7518
03	0240	0242	0308	1+	1					1	0237	C1.0	
03	0310	0316	0332	1-	5			1		1	0306	C1.1	
03	1523	1529	1545	1	1					1	1523	C1.0	7518
03	1552	1558	1624	1-	5			1		10	1550E	M1.0	7514
03	1655	1656	1709	1-	3					2	1653	B9.9	7518
03	2246	2252	2316	1-	5			1		3	2241	C2.8	
03	2320	2338	2430	2-	5	1		1		4	2317	M1.0	
04	0945	0950	1000	1-	3					2	0941E		7519
04	1125	1131	1143	1-	1					1	1126	C1.0	
05	0527	0602	0644	1	1		1				No flare		
05	0808	0822	0912	1-	5		1	1		1	0802	C3.9	7519
05	1322	1342U	1416	1	1		1				1342		7518
05	1544	1606	1655	1	1		1				No flare		
06	0108	0115	0140	1-	1			1			0108	C1.8	7518
06	0530	0602	0635	1	1		1				No flare		
06	0720	0726	0744	1-	1			1			0718	C1.8	7518
06	0936	0940	1000	1	1					1	0936	C1.2	7518
06	1454	1504	1525	1+	5		1			3	1453	C2.0	7515
06	1542	1553	1614	1	3	1	1				No flare		
06	1643	1650	1716	1+	3					6	1643	C2.3	7518
06	1725	1749U	1804	1	1		1				No flare		
06	1808	1814	1828	1	3					2	1808	C1.0	7518
06	1847	1852	1914	1	3					6	1845	C1.8	
06	2118	2125	2145U	1+	1					1	2118	C1.1	7518
06	2236	2240	2254	1-	1			1			2242	C1.8	7518
07	0543	0610	0648	2	5		1	1		2	0543	C4.1	7518
07	1353	1409	1501	2-	5					2	1354	M5.4	7518
07	1412	1428	1530	3-	5	3	1	1		7	1354	M5.4	7518
07	1716	1731	1815	2+	1					1	1702	C1.7	7518
07	1830	1834	1924	2-	3					5	1827	C3.4	
07	1836	1849	1941	1+	3					2	1831	C3.6	7518
08	0204	0216	0350	2	5	1		1		1	0147	M1.1	
08	0434	0440	0517	2	3					2	0416E	C1.2	7518
08	0728	0730	0734U	1-	1					1	0727	B6.3	
08	1646	1653	1700	1-	1					1	1646	B5.0	
08	1659	1711	1728	1	1		1				No flare		
08	1851	1858	1935	1+	3					3	1852	C1.6	7518
08	2255	2310	0001	2+	1					1	2255	B4.2	
09	0246	0306	0342	1-	1			1			0227	C1.7	
09	0814	0824	0900	1+	5	1	1	1			0757	C5.0	
09	1255	1300	1315	1	1					1	No flare		
09	1427	1432	1452	1-	5					5	1427	C1.8	7518
09	1702	1719U	1745	1	1		1				No flare		
09	1832	1842	1918	1	5	1	1	1		10	1829	M2.2	7518
09	2108	2118	2142	1-	5	1		1		5	2106	C4.8	7518
09	2200	2212	2238	1-	5	1		1		1	2206	C4.9	7518
10	0542	0608	0706	3	5	3	1	1		2	0557	M1.9	7518
10	0748	0756	0820	1-	1			1			0746	C2.3	
10	1002	1008U	1033	1	1		1				0949	C1.4	

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1993

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
10	1048	1052	1115	1+	1					1	1047		7518
10	1214	1220	1243	1	3					3	1212		7518
10	1325	1345	1345D	1	1					1	1342		7518
10	1420	1428	1456	1-	5			1		5	1417	C6.8	7518
10	1540	1552	1632	1-	5			1		5	1539	C7.9	7518
10	2138	2200	2238	1-	1			1			2131	C2.5	
11	0410	0431	0558	2+	1		1				0421	C1.6	
11	0438	0454	0524	1-	1			1			0421	C1.6	
11	0631	0708	0829	2	3		2				No flare		
11	1014	1030	1104	2-	5	2	1	1		3	1015	C5.7	7518
11	1356	1402	1423	1-	3					2	No flare		
11	1451	1456	1516	1-	1					1	1449	C2.0	
11	1704	1737	1737	1	1					1	1706	C3.6	
11	1808	1828	1924	1-	1			1			No flare		
11	1847	1853	1924	1	3					6	*		
11	2056	2100	2118	1	1			1			2049	C2.0	
11	2212	2220	2230	1-	5			1		1	2210	C2.1	7518
12	0404	0414	0430	1-	5			1		2	0402	C1.4	
12	0810	0832	0848	1-	1			1			0807	C1.9	
12	0858	0910	0938	1-	5		1	1			0853	C3.5	
12	1021	1100U	1149	3	1		1				*		
12	1112	1120	1212	1	1		1				No flare		
12	1148	1153	2020D	1	1					1	No flare		
12	1407	1412	1433	1	3					3	1405	B9.5	
12	1610	1616	1703	2-	1					2	1610	C1.2	
13	0954	1008	1026	1-	1		1	1			0952	B3.4	
16	0410	0422	0447	1	3		2				No flare		
17	1136	1140	1150	1-	1					1	1136	B1.0	
18	0615	0621	0627	1-	3					2	0615	B2.8	
18	0814	0816	0830	1-	1					1	0814	B2.4	
18	1043	1045	1054	1-	5					3	1038	B3.5	
19	0008	0020	0046	1-	3	1		1			0008	C1.4	
19	2345	2348	0005	1-	5	1				1	2345	C5.1	7524
20	1138	1142	1159	1-	1					2	1132	C1.2	
20	1218	1243	1426	1	1		1				No flare		
20	1522	1621	1750	1	1		1				1455	B9.8	
21	1016	1038	1110	2-	3		2				No flare		
21	1840	1846	1906	1+	5					2	1845		7525
22	0944	0959	1042	1	1		1				No flare		
22	1324	1330	1352	1	1					3	1320	C1.5	7525
22	1835	1839	1900	1	1					1	1835	B4.8	7525
23	0452	0505	0513	1	1		1				0438E	B8.5	7525
23	0543	0604	0620	1+	1		1				No flare		
23	0803	0815	0941	1	1		1				No flare		
23	2046	2113	2138	2	3					5	2046	C1.8	
23	2234	2256	2314	1+	5	1		1		5	2239	C4.0	
24	0108	0126	0224	1+	5	1		1		1	0107	C4.1	
24	0310	0321	0340	1	1	1					*		
24	0538	0552	0624	1-	5		1	1			0539	C1.2	
24	0722	0738	0954	3	5	2	3	1		3	0719	M9.7	7529
24	1046	1052	1100	1-	5			1		2	1029	C5.2	
24	1100	1107	1145	1	1		1				No flare		
24	1236	1240	1328	1	1		1				No flare		
24	1456	1504	1532	1	5	1	1	1		11	1451	C5.9	

* = no flare patrol.

JUNE 1993

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
24	1600	1611	1632	1+	3					7	1601	C2.5	7528
24	1722	1732	1810	2-	5	4	5	1		11	1722	M4.2	
24	1815	1820	1845	1+	5	1				10	1810	M1.3	
25	0305	0324	0448	3	5	1		1		1	0302	M5.1	
25	0614	0618	0632	1-	1			1			0607	C1.9	7528
25	0817	0834	0909	2-	3		2				No flare		
25	1028	1038	1102	1-	5			1		2	1022	C2.8	
25	1251	1259	1424	1	1		1				No flare		
25	1405	1406	1414	1-	1					1	1405	B9.8	
25	1455	1518	1541	1	1		1				No flare		
25	1556	1626	1652	1	1		1				1547	B7.5	7530
25	1918	1923	1935	1-	3					4	1917	C2.2	7530
25	1939	1946	2013	2-	3					4	1940	C3.8	7530
25	1944	1952	2011	1+	3					2	1943		7528
25	2028	2034	2103	1+	3					8	2029	C4.4	7530
26	0142	0148	0240	2-	3	1		1			0147E	M1.1	7530
26	0810	0818	0844	1-	5			1		2	0809	C2.2	7529
26	0940	0956	1024	1-	5		1	1		2	0938	C4.0	7530
26	1034	1043	1100	1+	1					1	1032	C2.1	7530
26	1116	1123	1152	2	1					1	No flare		
26	1238	1246	1310	1-	5		1	1		5	1229	C3.6	7530
26	1502	1512	1534	1-	5		2	1		18	1454	M1.1	7530
26	1536	1544	1613	1	3					2	1531	C4.1	
26	1833	1837	1848	1-	3					4	1829	C1.7	7530
26	1919	1925	2005	2	3					4	1921	C2.2	7530
26	2115	2130	2202	2+	1					1	No flare		
26	2310	2316	2334	1-	1			1			2309	C2.9	
26	2354	2402	2416	1-	1			1			2351	C3.6	
27	0036	0050	0130	1-	5			1		1	0034	C3.2	
27	0148	0212	0234	1-	1			1			0145	C2.1	
27	0236	0242	0300	1-	1			1			0233	C2.6	
27	0430	0436	0512	2+	3	1		1			0431	C9.8	7530
27	0732	0738	0750	1-	1			1			0736	B9.7	
27	1014	1018	1042	1+	3					3	1015	C2.3	7529
27	1116	1130	1208	2	5	1	2	1		8	1115	M3.6	7530
27	1444	1448	1459	1-	1					1	1444	C1.4	7530
27	1644	1652	1718	1	1		1				1648	C1.4	
27	1853	1856	1912	1-	3					3	1855	C1.3	7530
27	2332	2338	2352	1-	1			1			2332	C2.5	7530
28	0016	0024	0052	1-	5			1		1	0012	C2.4	7530
28	0106	0138	0156	1-	5	1		1		1	0106	C6.5	
28	0548	0552	0620	1-	3	1		1			0549	C2.1	
28	0832	0836	0846	1-	1					1	No flare		
28	0913	0934	1030	3-	3		2				0913	C1.3	7529
28	1252	1301	1325	1+	5	1	1			4	1242	C5.3	7530
28	1430	1431	1447	1-	1					1	1430	C1.0	
28	1515	1520	1536	1	1					1	1511	C1.0	7528
28	1537	1540	1626	1	1		1				No flare		
28	1652	1655	1710	1-	1					1	1655	C1.6	7528
28	1656	1716	1750	1	1					1	1655	C1.6	7528
28	2156	2204	2214	1-	5			1		3	2157	C2.0	7528
29	0749	0754	0804	1-	3					2	0752	C1.3	7529
29	1733	1742U	1751	1	1		1				No flare		
29	1751	1757	1842	2	1		1				No flare		
30	0442	0508	0558	1-	1			1			0443	C2.0	7530
30	2344	2346	2352	1-	1					2	2342	B3.4	

* = no flare patrol.

OBSERVATORIES REPORTING FOR JUNE 1993

Amherst, New Hampshire, USA	SES	Locust Grove, Georgia, USA	SES
Athens, Georgia, USA	SES	Madison, Wisconsin, USA	SES
Boksburg, Rep of S. Africa	SES	Manahawkin, New Jersey, USA	SES
Cambridge, England, UK	SES	Maui, Hawaii, USA	SWF
Cranford, New Jersey, USA	SES	Nampa, Idaho, USA	SES
Darmstadt, Germany	SWF	Nerja, Spain	SES
Durham, New Hampshire, USA	SES	Panska Ves, Czechoslovakia	SES, SEA, SWF
Gettysburg, Pennsylvania, USA	SES	Rimavska Sobota, Slovakia	SEA
Hiraiso, Japan	SWF	Rochester, New Hampshire, USA	SES
Houston, Texas, USA	SES	Tucson, Arizona, USA	SES
Hudson, Ohio, USA	SES	Upice, Czechoslovakia	SEA
Huntsville, Alabama, USA	SES	Wellington, Ohio, USA	SES
Inubo, Japan	SPA	Windsor Locks, Connecticut, USA	SES
Itapetinga, Brazil	SPA, SES	Ziar nad Hronom, Slovakia	SEA
LaCrescenta, California, USA	SES	Zilina, Slovakia	SEA

Observations are not necessarily continuous.

S O L A R R A D I O E M I S S I O N
Spectral Observations

JUNE 1993

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
03	0600	1200	IZMI				0603.0	0606.8	1				IIIGG
			IZMI				0733.8	0739.5	1				IIIGG
			IZMI				0924.0	0926.2	1				IIIG
			SVTO				1549.0	1553.0	3				III
			SGMR				1550.0	1551.0	2				III
05	0600	1200	IZMI				0819.1	0839.0	1				IIIGG
07	0600	1200	IZMI				0600.0E	1200.0	1				IS
			SGMR				1423.0	1433.0	3				II 1200km/s
			SVTO				1423.0	1651.0	3				IV
			SGMR				1434.0	1815.0	3				IV
09			PALE				2319.0	2319.0	1				III
10			LEAR				0142.0	0143.0	1				III
			PALE				0142.0	0143.0	1				III
			LEAR				0242.0	0242.0	1				III
	0600	1200	IZMI				0600.0E	1200.0	1				IS
			IZMI				0742.5	0747.6	2				II
			PALE				2141.0	2143.0	3				V
			SGMR				2141.0	2143.0	2				III
11	0600	1200	IZMI				0600.0	1200.0	1				IN
14	0600	1200	IZMI				0732.8	0737.7	1				II
17			SGMR				1500.0	1502.0	2				V
18			SGMR				1444.0	1456.0	1				S
			SVTO				1445.0	1458.0	1				S
			PALE				2101.0	2101.0	1				III
			SGMR				2101.0	2101.0	1				III
19			LEAR				0005.0	0008.0	3				V
			PALE				0005.0	0008.0	3				V
			LEAR				0740.0	0746.0	1				III
	0600	1200	IZMI				0740.3	0747.2	2				IIIGG
			SVTO				0741.0	0749.0	2				V
			SVTO				1125.0	1129.0	1				III
			IZMI				1125.4	1129.2	2				IIIG
			SGMR				1126.0	1129.0	1				III
			SGMR				1900.0	1903.0	1				III
			PALE				1903.0	1903.0	1				III
			PALE				1903.0	1927.0	2				II 1200km/s
			SGMR				1906.0	1934.0	1				II 1400km/s
			PALE				2020.0	2020.0	1				III
			SGMR				2020.0	2020.0	1				III
			PALE				2243.0	2244.0	1				III
			PALE				2344.0	2349.0	3				V
			LEAR				2345.0	2348.0	2				III
			SGMR				2345.0	2347.0	2				III
20			PALE				0003.0	0021.0	1				II 1600km/s
			SGMR				1447.0	1558.0	2				IV
			SVTO				1447.0	1530.0	2				IV
			SGMR				1647.0	1651.0	1				III
			PALE				2003.0	2003.0	2				III
			PALE				2258.0	2302.0	1				III
			PALE				2344.0	2349.0	3				V
			SGMR				2345.0	2347.0	2				III
21			SGMR				1619.0	1625.0	1				III
			SVTO				1624.0	1624.0	2				III
22			PALE				0003.0	0014.0	1				V
			SGMR				2059.0	2059.0	1				III
23			LEAR				0048.0	0049.0	2				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

JUNE 1993

Observation Day	Start (UT)	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
23			LEAR				0128.0	0128.0	1				III
	0600	1200	IZMI				1025.4	1028.1	2				IIIG
24			LEAR				0119.0	0134.0	1				S
			LEAR				0237.0	0254.0	1				S
			IZMI				0600.0E	1200.0	1				IIIN
	0600	1200	IZMI				0600.0E	1200.0	2				IS,C
			SVTO				0613.0	0616.0	1				III
			LEAR				0616.0	0616.0	1				III
			LEAR				0729.0	0900.0	3				IV
			IZMI				0729.7	0804.0	3				II
			IZMI				0729.7	0804.0	3				IV IIIG
			SVTO				0732.0	0736.0	3				II 2500km/s
			SVTO				1256.0	1304.0	2				III
			SGMR				1302.0	1316.0	1				S
			SVTO				1315.0	1316.0	1				III
			SGMR				1413.0	1511.0	1				S
			SVTO				1413.0	1432.0	1				S
			SGMR				1610.0	1611.0	1				III
			SVTO				1610.0	1610.0	1				III
25			LEAR				0305.0	0313.0	3				III
			PALE				0305.0	0308.0	3				III
			SVTO				0752.0	0752.0	2				III
			LEAR				0805.0	0805.0	1				III
			SVTO				0805.0	0805.0	2				III
	0600	1200	IZMI				0952.0	0954.5	2				IIIG
			SGMR				1547.0	1547.0	2				V
			SGMR				1754.0	1755.0	1				III
			PALE				1823.0	1823.0	1				III
			SGMR				1823.0	1823.0	1				III
			SGMR				1948.0	1949.0	1				III
			PALE				2029.0	2033.0	1				V
			SGMR				2029.0	2034.0	1				III
			PALE				2139.0	2154.0	2				S
			SGMR				2139.0	2144.0	1				III
			SGMR				2152.0	2154.0	2				III
26			LEAR				0123.0	0124.0	1				III
	0600	1200	IZMI				0618.1	0618.2	1				IIIB
			IZMI				0742.9	0744.0	1				IIIG
			IZMI				0810.0	1012.4	3				IIIGG,V
			LEAR				0810.0	0812.0	2				III
			SVTO				0810.0	0812.0	3				V
			IZMI				1021.2	1035.0	1				IIIG
			SGMR				1237.0	1241.0	1				III
			SGMR				1624.0	1626.0	1				V
			SGMR				1657.0	1657.0	1				V
			PALE				1831.0	1834.0	1				III
			SGMR				1831.0	1834.0	1				III
			PALE				1921.0	1921.0	1				III
			SGMR				1921.0	1921.0	1				III
			PALE				2128.0	2130.0	1				III
			PALE				2303.0	2303.0	1				III
			LEAR				2358.0	2358.0	1				III
			PALE				2358.0	0004.0	2				III
27			LEAR				0035.0	0037.0	3				III
			PALE				0035.0	0037.0	3				III
			LEAR				0146.0	0147.0	1				III
			PALE				0146.0	0147.0	1				III
			LEAR				0159.0	0201.0	2				III
			PALE				0200.0	0201.0	2				III
			LEAR				0235.0	0240.0	3				III
			PALE				0335.0	0339.0	2				III
			LEAR				0401.0	0404.0	3				III
			PALE				0402.0	0402.0	2				III
			SVTO				0404.0	0404.0	2				III
			LEAR				0427.0	0434.0	3				V

SOLAR RADIO EMISSION
Spectral Observations

JUNE 1993

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
27		SVTO				0429.0	0433.0	3				V
		PALE				0430.0	0434.0	2				III
		SVTO				0559.0	0631.0	3				S
		LEAR				0616.0	0617.0	1				III
	0600 1200	IZMI				0616.8	0617.0	1				IIIG
		LEAR				0630.0	0631.0	2				III
		IZMI				0630.6	0631.2	3				IIIG
		IZMI				0652.3	0654.6	1				IIIGG
		IZMI				0710.0	0800.0	1				IN
		SVTO				0807.0	0807.0	2				III
		IZMI				0808.5	0808.6	1				IIIB
		IZMI				0906.3	0706.4	1				IIIB
		IZMI				0928.1	0932.5	2				IIIG
		IZMI				0938.8	0939.4	1				IIIG
		SVTO				1015.0	1017.0	3				III
		IZMI				1015.2	1021.0	3				IIIGG,V
		SGMR				1016.0	1017.0	2				III
		SVTO				1049.0	1050.0	2				III
		IZMI				1049.8	1050.5	3				IIIG
		SGMR				1050.0	1050.0	1				III
		IZMI				1100.0	1200.0	1				IS
		IZMI				1133.3	1143.3	1				II
		SGMR				1134.0	1136.0	1				III
		IZMI				1146.0	1200.0	1				IN
		SGMR				1156.0	1200.0	2				V
		SVTO				1156.0	1159.0	2				V
		IZMI				1156.3	1200.3	3				IIIGG,V
		SGMR				1211.0	1211.0	1				III
		SVTO				1211.0	1211.0	2				III
		SGMR				1215.0	1448.0	1				CONT
		SVTO				1446.0	1447.0	1				III
		SGMR				1649.0	1656.0	1				III
		PALE				1854.0	1857.0	3				III
		SGMR				1855.0	1856.0	3				V
		PALE				1938.0	1939.0	1				III
		SGMR				1938.0	1938.0	1				III
		PALE				2003.0	2005.0	1				III
		SGMR				2003.0	2005.0	1				III
		PALE				2045.0	2046.0	2				III
		SGMR				2045.0	2046.0	1				III
		PALE				2113.0	2113.0	1				III
		PALE				2132.0	2133.0	2				V
		SGMR				2132.0	2132.0	2				III
		PALE				2201.0	2202.0	1				III
		SGMR				2201.0	2201.0	1				III
		PALE				2249.0	2250.0	1				III
		PALE				2307.0	2315.0	1				III
28		LEAR				0427.0	0427.0	1				III
		LEAR				0444.0	0443.0	1				III
		LEAR				0444.0	0444.0	1				III
		LEAR				0514.0	0516.0	1				III
		LEAR				0547.0	0550.0	3				III
		SVTO				0547.0	0550.0	3				III
	0545 1205	IZMI				0549.2	0549.8	3				IIIG
		IZMI				0633.7	0634.0	1				IIIG
		IZMI				0704.5	0705.9	1				IIIG
		IZMI				1101.9	1102.1	1				IG
		SGMR				1141.0	1143.0	1				III
		SVTO				1141.0	1143.0	1				III
		IZMI				1141.9	1142.2	3				IIIB,V
		IZMI				1202.9	1203.3	1				IIIG
		SGMR				1431.0	1432.0	1				V
		SVTO				1431.0	1432.0	1				III
		SGMR				1507.0	1537.0	2				S
		SVTO				1507.0	1517.0	2				S
		SGMR				1612.0	1630.0	1				S
		SGMR				1647.0	1649.0	2				III
		SVTO				1647.0	1649.0	2				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

JUNE 1993

Observation Day	Start (UT)	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
28			SGMR				1654.0	1657.0	1				V
			PALE				1822.0	1828.0	2				V
			SGMR				1822.0	1824.0	2				V
			SGMR				1826.0	1828.0	2				V
			SGMR				1932.0	1933.0	1				III
			PALE				1933.0	1933.0	1				III
			SGMR				2011.0	2012.0	1				V
			PALE				2107.0	2107.0	1				III
			SGMR				2107.0	2107.0	1				III
			PALE				2143.0	2144.0	1				III
			SGMR				2143.0	2144.0	1				III
			PALE				2157.0	2202.0	2				V
			SGMR				2157.0	2200.0	2				V
29			LEAR				0108.0	0111.0	2				V
			PALE				0108.0	0110.0	1				V
			LEAR				0217.0	0217.0	1				III
			PALE				0217.0	0217.0	1				III
			LEAR				0225.0	0227.0	2				V
			PALE				0225.0	0227.0	2				III
			LEAR				0524.0	0530.0	3				III
			SVTO				0524.0	0529.0	3				III
	0600	1200	IZMI				0600.0E	1200.0	3				IS,C,OC,P
			IZMI				0607.7	0608.0	2				IIIG
			SVTO				0610.0	1529.0	2				CONT
			LEAR				0715.0	0932.0	1				CONT
			LEAR				0757.0	0759.0	3				V
			SVTO				0757.0	0759.0	3				V
			IZMI				0757.7	0758.8	3				IIIG,V
			SGMR				1054.0	1452.0	1				CONT
			PALE				2037.0	2038.0	2				III
			SGMR				2037.0	2038.0	2				III
30			LEAR				0228.0	0234.0	1				III
			PALE				0228.0	0234.0	1				III
			LEAR				0702.0	0707.0	1				III
			SVTO				0702.0	0707.0	2				III
	0600	1200	IZMI				0702.3	0702.4	1				IIIB
			IZMI				0707.1	0707.2	1				IIIB
			SVTO				0744.0	0828.0	2				S
			IZMI				0812.7	0812.8	1				IIIB
			LEAR				0820.0	0820.0	1				III
			IZMI				0820.3	0820.7	2				IIIG
			IZMI				0827.4	0829.4	1				IIIG
			SVTO				0918.0	0919.0	1				III
			IZMI				0918.7	0919.1	1				IIIG

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
SP = SPIKES
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:

IZMI = IZMIRAN
LEAR = Learmonth
ONDR = Ondrejov
PALE = Palehua
POTS = Potsdam
SGMR = Sagamore Hill
SVTO = San Vito

SOLAR RADIO NOISE STORMS AT 164 MHZ FROM NANCAY RADIOHELIOGRAPH

JUNE 1993

DAY	HELIOGRAPHIC POSITIONS MEAN VALUES*		IMP**	OBSERVING TIME***	
	E-W	S-N		START(UT)	END (UT)
02/06/93	-0.55	-0.39	1	1200	1545D
03/06/93	-0.49	-0.35	2	0800E	1545D
04/06/93	-0.11	-0.16	1	1130	1400
04/06/93	+0.96	+0.50	1	1345	1545D
06/06/93	+0.43	-0.33	2	0800E	1235
07/06/93	+0.78	-0.23	2	0930	1400
07/06/93	+0.64	-0.27	4	1400	1545D
10/06/93	+1.35	-0.14	2	0845E	1545D
23/06/93	-0.46	-0.05	1	0900	1435D
24/06/93	-1.28	-0.38	4	0745E	0845
24/06/93	-0.27	+0.00	3	0745E	1300
24/06/93	-0.12	+0.00	4	1300	1545D
25/06/93	+0.44	-0.26	1	0750E	1400
27/06/93	-0.86	-0.26	1	0750E	1545D
29/06/93	+0.08	-0.24	5	0750E	1545D

01 JUNE-: NO DATA
OTHER DAYS : NO DETECTABLE NOISE STORMS

*** POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W SOLAR QUADRANT**

**** IMP 1: FLUX<5 SFU IMP 2 : 5<FLUX<20 SFU IMP 3: 20<FLUX<100 SFU**
IMP 4: 100<FLUX<300 SFU IMP 5: FLUX>300 SFU

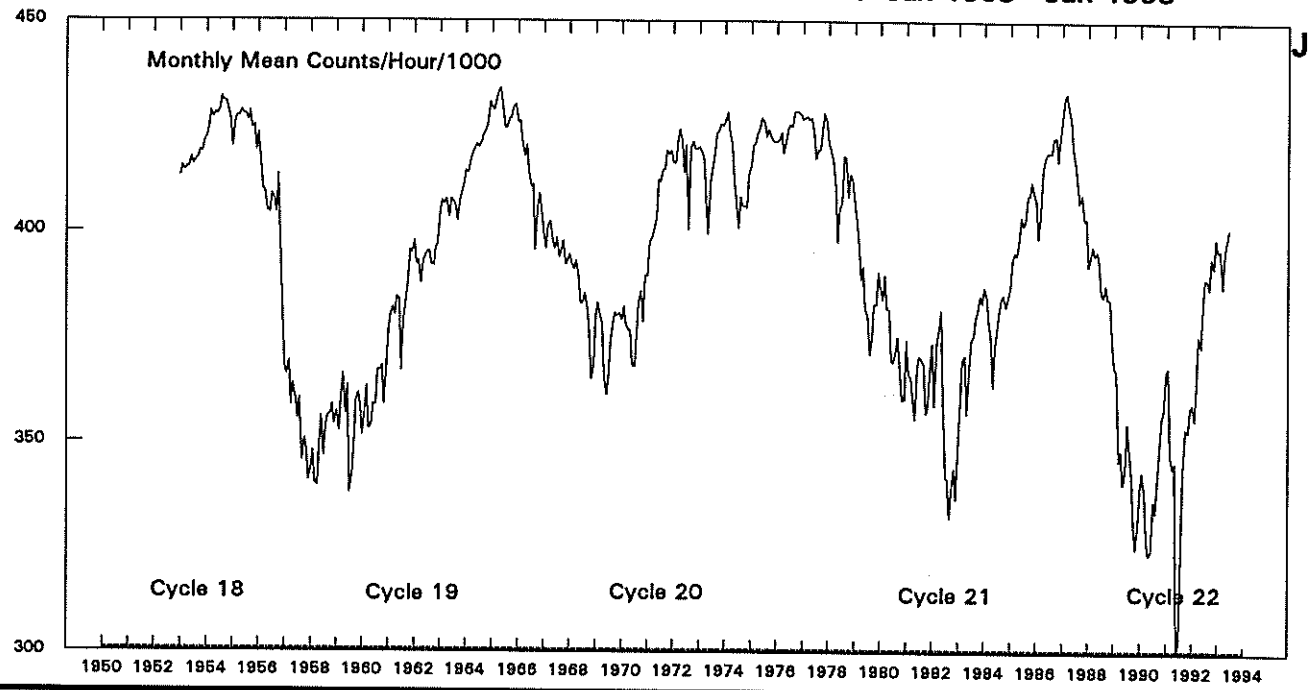
***** E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANCAY OBSERVATIONS**
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

COSMIC RAY INDICES
(Neutron Monitor)
JUNE 1993

Day	THULE Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h) 256	TOKYO Average (cts/h)/256	HALEAKALA Average (cts/h)/100
1	4391	6951.5	6088.0	4004.0	1939.5	3516.5	
2	4414	6983.6	6101.0	4024.0	1948.2	3518.6	
3	4419	6961.2	6098.2	4017.8	1937.4	3523.6	
4	4357	6862.1	6049.5	3990.0	1928.3	3509.3	
5	4328	6834.0	5998.6	3967.4	1918.3	3497.3	
6	4325	6822.2	5995.4	3962.0	1919.9	3501.6	
7	4328	6822.8	6012.0	3972.6	1918.3	3504.5	
8	4335	6847.4	6042.2	3997.3	1922.8	3513.6	
9	4363	6893.1	6090.1	4019.1	1930.1	3537.4	
10	4379	6894.1	6106.0	4012.6	1929.9	3532.3	
11	4365	6869.3	6078.7	3992.2	1934.5	3531.0	
12	4358	6867.0	6073.8	3992.8	1930.5	3511.0	
13	4367	6869.8	6091.5	3983.0	1922.3	3495.0	
14	4369	6885.7	6093.6	3986.9	1922.2	3494.5	
15	4382	6893.4	6083.4	4003.5	1919.4	3487.0	
16	4373	6894.9	6082.1	4000.6	1919.5	3491.0	
17	4390	6887.6	6089.3	4008.3	1922.3	3498.0	
18	4409	6884.5	6098.3	4016.5	1918.1	3500.1	
19	4389	6896.5	6091.6	4012.8	1913.1	3501.0	
20	4427	6924.3	6115.3	4026.7	1914.0	3521.0	
21	4444	6951.8	6136.8	4039.2	1916.4	3526.7	
22	4451	6984.1	6167.2	4062.6	1924.0	3528.9	
23	4438	6988.3	6149.8	4060.0	1923.2	3534.8	
24	4378	6895.0	6081.9	4019.6	1917.1	3519.3	
25	4367	6866.0	6069.3	3997.5	1911.1	3507.2	
26	4401	6880.5	6076.6	3994.7 (38)	1904.1	3501.6	
27	4435	6950.6	6117.0	4040.1	1907.4	3510.9	
28	4436	6974.0	6130.1	4051.2	1919.0	3512.8	
29	4429	6962.8	6116.0	4044.8	1926.1	3518.3	
30	4440	6983.5	6154.8	4061.0	1927.4	3522.8	
Mean	4389.6	6906.1	6089.3	4012.0	1922.8	3512.3	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.
* = A&B includes only hours when both A&B sections are available.

Climax Neutron Monitor Pressure-Corrected Values Jan 1953 - Jun 1993

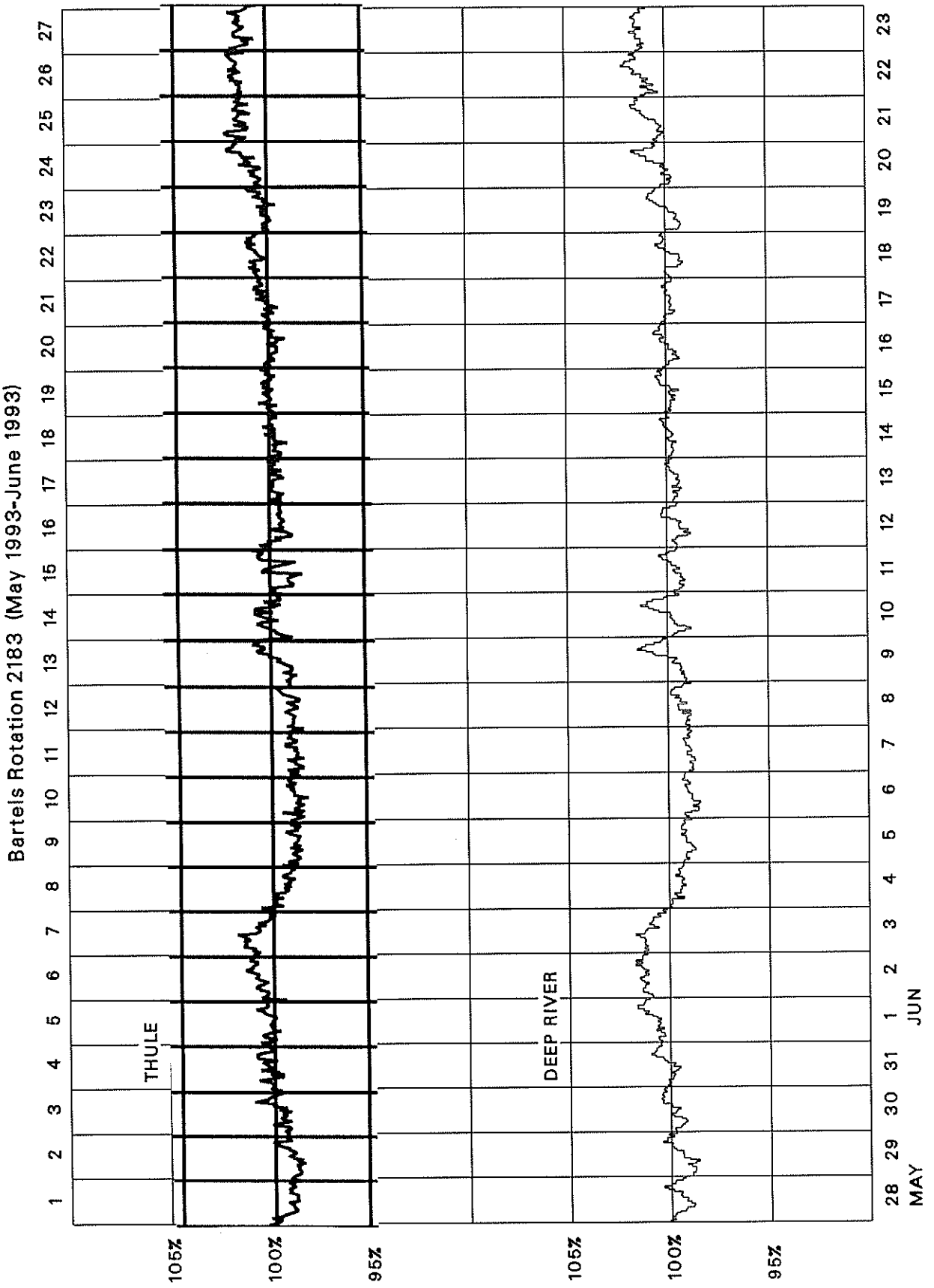


Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950													
1951													
1952													
1953	4131	4155	4143	4152	4152	4175	4158	4168	4173	4192	4188	4213	4167
1954	4224	4248	4283	4269	4280	4276	4287	4319	4308	4307	4287	4269	4280
1955	4201	4266	4272	4273	4287	4278	4279	4263	4286	4245	4252	4192	4258
1956	4234	4160	4099	4097	4049	4044	4089	4083	4044	4136	3979	3800	4068
1957	3676	3661	3693	3586	3640	3602	3555	3605	3456	3508	3482	3409	3573
1958	3437	3480	3401	3396	3489	3560	3467	3537	3561	3564	3588	3542	3502
1959	3573	3526	3606	3663	3567	3634	3380	3419	3483	3597	3614	3574	3554
1960	3517	3573	3631	3531	3537	3589	3588	3670	3669	3681	3588	3682	3605
1961	3763	3802	3819	3801	3843	3838	3668	3784	3833	3872	3955	3950	3827
1962	3977	3922	3930	3878	3927	3941	3951	3953	3922	3919	3962	3971	3938
1963	4049	4073	4065	4077	4034	4075	4073	4060	4024	4067	4093	4113	4067
1964	4145	4139	4168	4181	4198	4208	4200	4212	4232	4240	4254	4307	4207
1965	4294	4289	4314	4334	4340	4289	4247	4246	4268	4271	4295	4300	4291
1966	4258	4262	4211	4179	4206	4143	4107	4112	3956	4056	4090	4053	4136
1967	3990	3959	4013	4024	3974	3960	3986	3940	3955	3979	3923	3933	3970
1968	3946	3923	3911	3931	3894	3830	3830	3853	3817	3756	3650	3684	3835
1969	3790	3831	3798	3783	3659	3611	3652	3734	3784	3807	3799	3806	3755
1970	3790	3823	3780	3766	3765	3682	3679	3753	3831	3859	3785	3896	3784
1971	3894	3975	3982	4002	4032	4124	4118	4148	4149	4193	4184	4192	4083
1972	4166	4165	4215	4244	4215	4141	4206	4005	4198	4215	4197	4198	4180
1973	4201	4193	4173	4074	3996	4119	4149	4178	4235	4240	4255	4253	4172
1974	4262	4283	4237	4207	4121	4077	4009	4083	4062	4062	4058	4138	4133
1975	4158	4206	4210	4238	4247	4272	4263	4228	4243	4230	4218	4214	4227
1976	4216	4222	4236	4187	4217	4244	4254	4251	4284	4287	4285	4280	4247
1977	4268	4272	4274	4266	4271	4233	4175	4195	4196	4244	4282	4264	4245
1978	4214	4198	4173	4107	3977	4058	4068	4182	4179	4084	4137	4129	4125
1979	4071	4035	3983	3887	3919	3816	3806	3709	3745	3829	3829	3905	3878
1980	3871	3840	3900	3820	3817	3695	3692	3718	3752	3687	3604	3604	3750
1981	3744	3663	3656	3601	3557	3683	3706	3701	3688	3570	3581	3682	3653
1982	3735	3589	3732	3773	3814	3608	3420	3415	3324	3402	3441	3367	3552
1983	3507	3601	3700	3708	3569	3656	3744	3755	3799	3813	3851	3833	3711
1984	3870	3850	3784	3761	3633	3727	3766	3818	3845	3851	3825	3843	3798
1985	3872	3937	3954	3947	3978	4039	4018	4026	4088	4090	4122	4091	4013
1986	4080	3988	4048	4148	4180	4191	4191	4193	4226	4228	4172	4226	4156
1987	4277	4324	4332	4294	4271	4204	4164	4120	4073	4089	4031	4035	4184
1988	3922	3947	3970	3948	3957	3934	3859	3849	3877	3845	3841	3752	3892
1989	3686	3670	3458	3485	3404	3437	3549	3493	3423	3306	3251	3309	3491
1990	3392	3434	3384	3277	3236	3244	3365	3337	3409	3497	3565	3575	3393
1991	3675	3680	3473	3443	3456	3003	3025	3253	3440	3538	3529	3585	3425
1992	3595	3557	3640	3757	3730	3830	3892	3890	3868	3941	3919	3987	3800
1993	3958	3960	3872	3955	3979	4012							3956

Multiply table entries by 100 to obtain hourly counting rate. Climax, Colorado: N39, W106, Alt=3400 m, Cutoff Rigidity=2.96 GV.

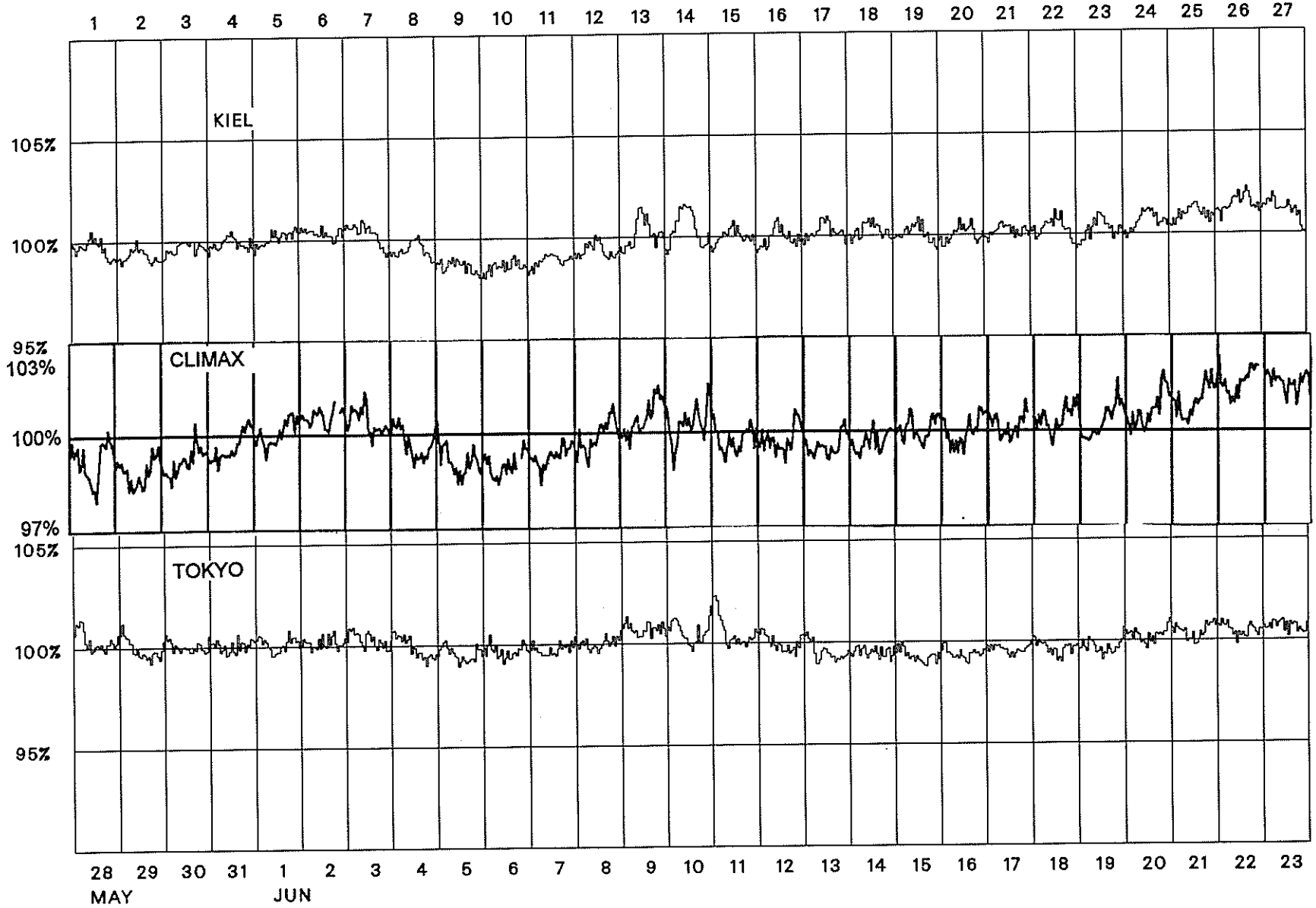
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2183 (May 1993-June 1993)

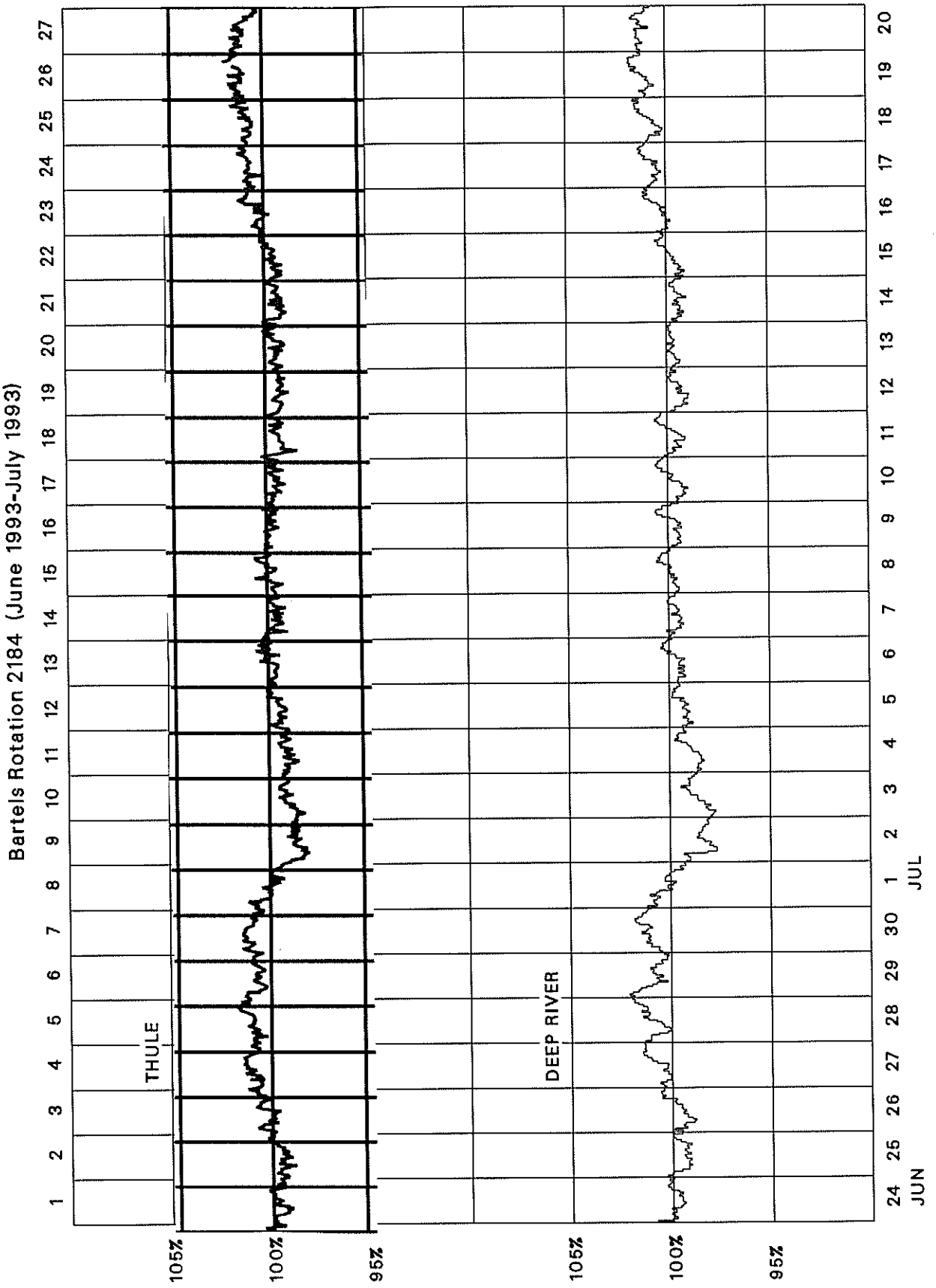


COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2183 (May 1993-June 1993)

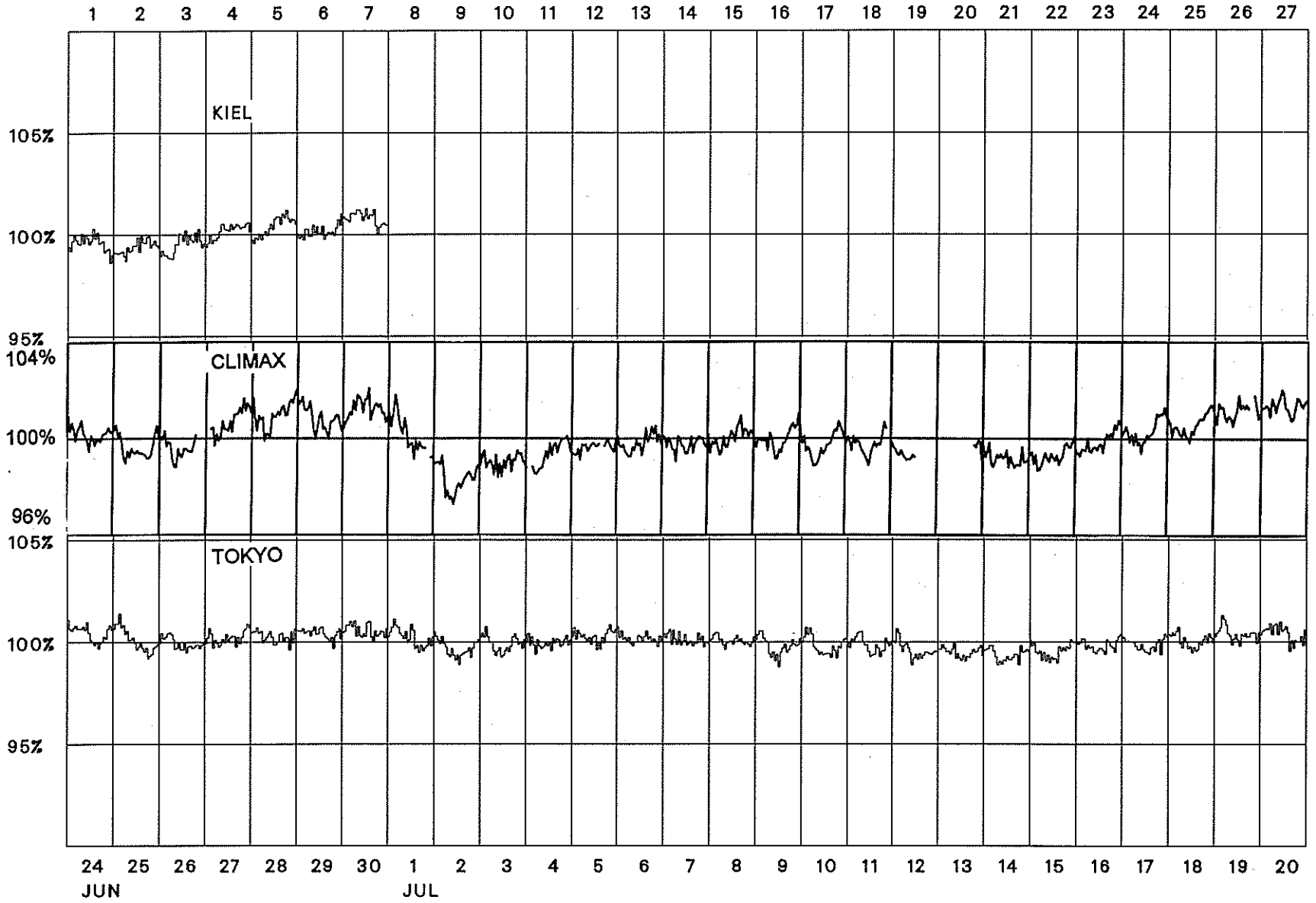


COSMIC RAY INDICES
(Neutron Monitor)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2184 (June 1993-July 1993)



GEOMAGNETIC ACTIVITY INDICES

June 1993

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	Q5	2	1	1-	1-	2-	1-	1-	0+	8-	4	0.1	2-	1+	1	1	1+	0+	1-	0+	6	10	5	8	7 CC
2		1	1	1+	2	3-	1	2-	1	12-	6	0.3	1	1	2-	2+	2+	1	2	1	11	13	9	10	13 CK
3		2+	2	3	3+	3+	4-	3-	3-	23	14	0.8	2+	2-	3	4-	3	3	3-	2+	26	29	25	24	30
4	D1	4	5+	6-	6	5-	4	6-	6-	41	54	1.6	4-	4	5-	5+	4-	3	5-	4+	64	74	81	84	72
5	D2	6-	5+	4+	4	4-	4-	5	3+	35	36	1.4	5	5-	4	4	3	3	4-	3	53	62	60	77	45
6		3+	3+	4	3-	3-	3	4	3+	26+	18	1.0	3	3	4-	3	3-	3-	4-	3	31	34	35	35	34
7	D4	3+	2	3+	4+	4+	3+	3+	4	28	21	1.1	3	2-	3+	3+	4-	3	2+	3+	32	43	37	38	41
8		4-	3	3-	2	3	2+	4-	2-	22	14	0.8	3+	3	2+	2+	2+	2	3	2-	23	31	14	22	23
9		2+	1+	1	1+	1+	1+	1+	2+	12+	6	0.3	3-	2-	1	1+	1+	2-	1+	2-	12	16	8	11	13 C
10	D5	0	1+	2-	2-	1	3-	5+	7	21-	28	1.2	0+	2-	2	2	1+	2+	4	6+	38	45	25	9	62
11		4	2	2-	2-	2-	2	2+	2-	17	9	0.5	4-	2	2-	2	2+	2-	2+	1+	18	22	16	21	16
12		2-	2+	3-	4	2+	2+	2	3+	21-	12	0.7	1+	2+	3	3+	2+	2+	2	3	22	21	22	23	20
13		2+	3-	4-	3+	3-	2-	2+	3-	21+	12	0.7	2-	2+	3+	3-	2+	1+	2-	2+	19	31	22	31	22
14		1	2+	2-	3+	2-	2	2-	2	16-	8	0.4	1	2+	2	3+	2-	2-	1+	2	17	18	18	23	14
15	Q10	2	2+	2	1+	1+	1-	1-	1-	11	5	0.2	2-	2+	2+	1+	1	0+	1-	1-	9	13	7	14	6 CC
16	Q2	1-	1	1+	1	1-	0+	0+	0+	6-	3	0.1	1-	1	1+	2-	1	0+	0+	0+	6	9	5	8	6 CC
17	Q6	1-	1-	1	1	1+	1	2	2-	9+	4	0.2	0+	1	2-	1+	1+	1+	2-	2-	8	12	6	7	11 CC
18	Q3	1-	0+	0	0+	1-	2	1-	1-	5+	3	0.1	1-	0+	0	0	1-	1+	0+	1-	4	10	3	4	9 CC
19	Q8	0+	2-	2-	1	2-	1+	2-	2-	11	5	0.2	0+	1+	2-	1+	1+	1+	1+	1+	8	13	9	10	12 CC
20	Q7	1-	1+	2+	2-	2-	1-	1+	0+	10	5	0.2	1-	1+	2+	2-	1+	1-	1-	0+	8	12	4	9	7 CC
21	Q1	0+	0	0	0+	0+	1-	0+	0+	2+	2	0.0	0+	0+	0+	0+	0+	0+	0+	0+	3	6	2	4	4 CC
22	Q9	1	1	1	1	1-	1	2	3-	10+	5	0.2	1+	1-	1	1+	0+	1	1+	3-	9	12	6	6	12 CC
23		3-	2-	1+	3-	3+	3	5+	3	23	17	0.9	3-	2	2-	3	3+	3-	4-	3	27	39	17	17	39
24	D3	3+	4+	5-	3+	4+	4+	3	3+	31-	26	1.2	3+	4	4+	3+	4	4-	3-	3	43	50	44	46	49
25		3	2+	4+	4	3	3+	3-	3-	25+	18	1.0	3-	2+	4	4-	3	2+	2	2+	28	36	28	36	28
26		3-	2+	2-	1	2-	2	1+	2+	15	7	0.4	2	3-	2-	1+	1+	2-	1+	2	13	15	7	11	11 C
27		2	1+	1+	2+	1+	2	1+	1-	12+	6	0.3	2-	1+	2-	3-	2-	2-	1+	1-	11	13	8	11	9 CC
28	Q4	1	1+	1+	2-	1	1-	1-	1-	8+	4	0.1	1-	1+	1	2-	1-	1-	0+	0+	6	9	5	8	6 CK
29		2	2+	2-	3+	3+	3-	1	2	18+	10	0.6	1+	2	2	3+	3+	2	1	1+	18	22	20	21	22
30		3-	2+	2+	1	1+	3+	3-	3	19-	10	0.6	3-	2	2+	1	1+	3-	2+	2+	17	25	11	14	22
Mean											12	0.57									19.7	24.9	18.7	21.8	

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	2	2-	2-	1+	2	1	1	1-	10	1+	1-	0	0+	0+	0	0	0	3	140.4	105	99	90		
2	1+	1	2-	2+	3-	1+	2+	2-	14	1	1	2-	2	2-	1-	1+	0+	9	143.4	102	98	93		
3	2+	2+	3+	4	3+	3+	3	2+	32	2	1+	3-	3	2	3-	2	2	19	140.4	101	97	90		
4	3+	4+	5	5	4-	3+	4	4	61	4	4	5-	5+	4-	3	5-	5-	68	133.7	82	83	82		
5	5-	4	4-	4-	3	3	4-	3-	42	5+	5+	4+	4+	3	3	4	3+	63	137.7	74	76	87		
6	3-	3	4-	3+	3	3	3+	3	33	3	3-	4-	3	2	2-	4-	3-	29	131.3	83	84	80		
7	3-	2-	3	4-	4-	3	3-	3+	30	4-	2	4-	3+	4-	3-	2	4-	34	115.7	70	66	63		
8	3+	3+	3-	3-	3-	2+	3	2	26	3+	3-	2+	2	2	2-	3	1	19	115.2	55	56	62		
9	2+	2-	2-	1+	1+	2	2-	2+	13	3	2-	1-	1+	1+	1+	1-	1-	10	118.9	46	49	66		
10	1-	2	2+	2+	2-	3	5-	6	42	0	1	2-	2-	1-	2-	3-	6+	33	116.0	47	47	63		
11	4	2+	2	2	3-	2	2+	2	22	3+	2-	1+	2-	2-	1+	2	1	15	104.9	35	36	51		
12	2-	3-	4-	4-	3-	2+	2+	3	27	1+	2-	3-	3	2	2	2-	3-	17	96.2	18	18	42		
13	2	3-	3+	3-	2	2-	2	2+	19	2-	2+	4-	2+	3-	1-	1+	2	19	89.4	10	14	35		
14	1+	2+	2-	4-	2-	2+	2-	2	17	1	2+	2+	3+	2-	1+	1	2+	16	86.4	8	10	31		
15	1+	2+	3-	2-	1+	1-	1	1	11	2-	2	2+	1+	1	0	0	0+	8	84.6	9	10	29		
16	1+	2-	1+	2	1+	1-	1	1-	8	0	0+	1	1+	1-	0	0	0	3	85.0	10	11	30		
17	1	1	2	2-	2-	2-	2-	2-	11	0	1	1	1-	1-	0+	1+	1+	6	86.1	17	16	31		
18	1-	1-	0	0+	1	2-	1-	1+	5	0+	0	0	0	0	0+	0	0+	1	87.4	13	11	32		
19	1-	2-	2-	1	1+	1+	1+	1+	9	0+	1	2-	1+	1+	1+	1	1+	8	88.8	15	15	34		
20	1	2-	3-	2	2-	1	1	1-	11	1-	1	2+	1-	1-	0	0+	0	5	94.1	21	21	40		
21	0+	1-	0+	1-	1	1-	1-	1-	4	0	0	0	0	0	0	0	0	0	94.0	25	28	40		
22	1+	1	1+	2-	1-	1+	2-	3	12	1+	0+	1-	1-	0	1-	1	2-	6	99.8	27	31	46		
23	3-	2	2	4-	4	3	4+	3+	34	3	2+	1	2	3-	2-	3+	2+	20	113.1	51	50	60		
24	3+	4	5-	3+	4	4-	3-	3+	47	3	4-	4	3+	4	3+	2	2+	38	125.4	50	50	73		
25	3-	2+	4	4-	3-	3-	2	3-	28	3-	3-	4	4-	3	2	2	2-	27	122.6	55	57	70		
26	2+	3	2	2	2-	2+	2	2+	17	2-	2+	1+	1-	1-	1-	1	2	10	126.0	62	61	74		
27	2	2-	2	3	2	2	1+	1-	15	1+	1-	2-	2+	1-	1	1	1-	8	131.7	67	69	80		
28	1+	1+	1+	2	1	1	1-	1-	8	0+	1	1	1+	0+	0+	0	0	4	127.8	69	76	76		
29	2-	2+	2	3	3+	3-	1+	2-	20	1+	2-	2-	3+	3+	1+	1-	1	15	126.7	75	77	75		
30	2+	2	2	1	2-	3	3-	3-	18	3	2+	2+	1-	1+	2	2-	2-	15	120.3	70	70	68		
Mean									21.5									17.6	112.8	49.1	49.5	59.8		

DAILY AVERAGE INDICES Ap

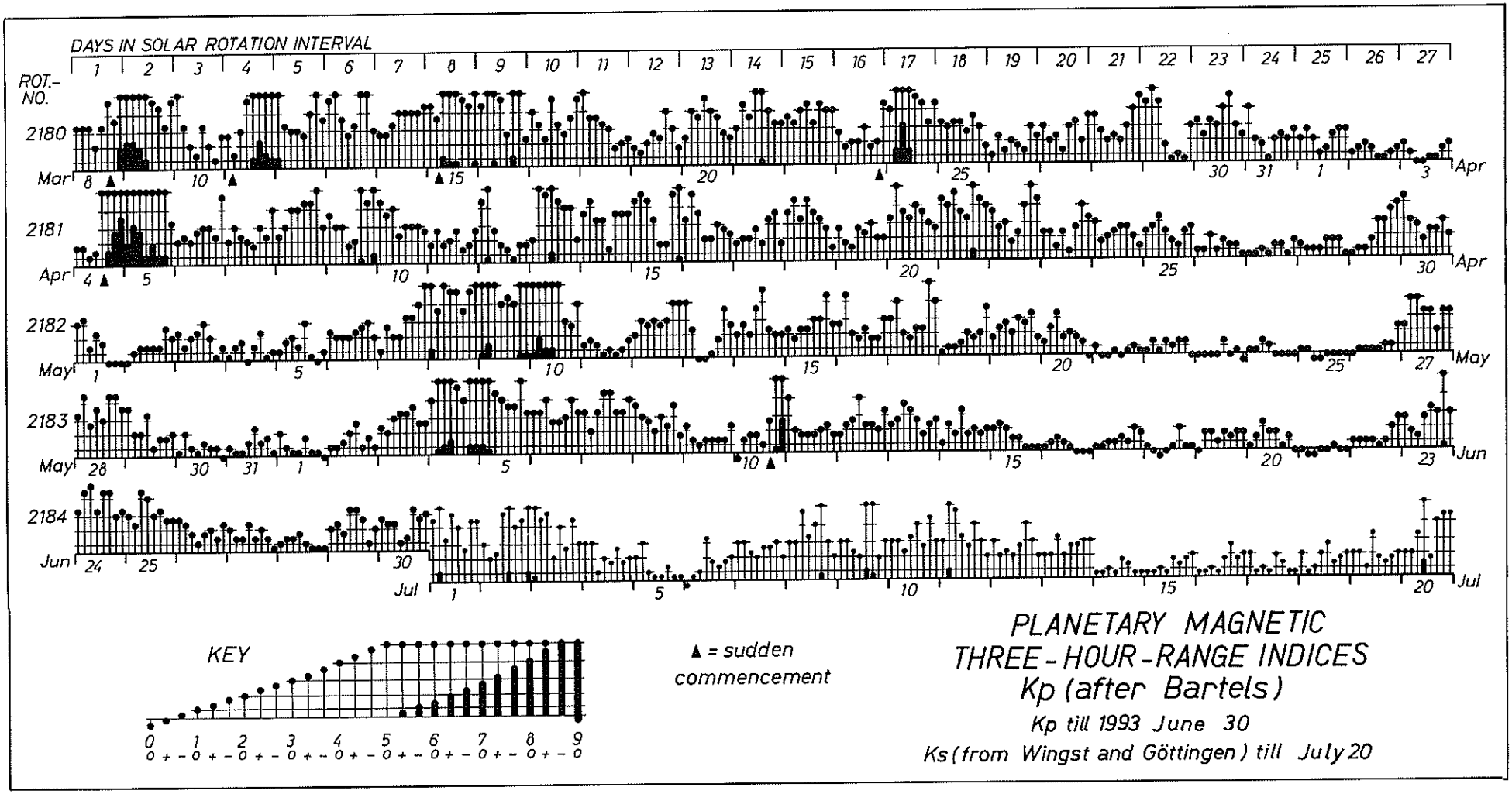
July 1992 to June 1993

DAY	1992 JUL	AUG	SEP	OCT	NOV	DEC	1993 JAN	FEB	MAR	APR	MAY	JUN
1	19	8	2	26	16	17	10	31	18	8	7	4
2	16	5	23	9	23	9	24	21	24	4	6	6
3	5	4	48	6	17	15	33	10	35	4	8	14
4	4	15	33	7	25	15	31	7	23	58	5	54
5	9	35	28	5	15	7	17	6	7	87	6	36
6	5	16	17	10	14	5	16	5	8	14	9	18
7	4	26	22	8	12	16	23	27	22	12	18	21
8	5	16	18	8	11	26	15	40	29	26	40	14
9	4	12	84	26	42	19	16	28	64	28	48	6
10	6	7	88	10	12	17	25	17	15	18	48	28
11	4	13	32	24	19	10	21	20	50	8	4	9
12	15	6	5	34	16	8	12	11	28	16	16	12
13	23	11	5	23	17	8	12	12	31	32	10	12
14	12	15	8	25	12	10	22	6	23	20	14	8
15	6	8	10	35	19	14	14	4	45	28	13	5
16	12	8	12	22	10	6	11	6	39	16	12	3
17	5	4	93	16	8	25	13	36	23	10	18	4
18	5	6	31	12	7	9	11	13	18	20	7	3
19	4	9	13	16	7	11	22	7	11	9	11	5
20	8	26	8	12	4	13	14	26	21	23	7	5
21	11	20	7	6	7	14	7	27	30	33	3	2
22	34	39	17	9	17	7	7	30	25	21	4	5
23	16	73	9	5	31	8	4	8	12	12	2	17
24	7	10	4	3	12	8	10	6	58	9	3	26
25	11	5	11	7	12	5	25	6	16	10	2	18
26	4	11	8	14	10	4	22	5	8	5	4	7
27	7	14	4	31	5	8	11	4	12	4	18	6
28	17	5	16	19	6	39	7	19	17	5	23	4
29	5	16	62	27	5	42	5		18	12	10	10
30	9	6	35	16	13	10	12		19	13	4	10
31	10	4		10		11	59		10		5	
MEAN	10	15	25	15	14	13	17	16	24	19	12	12

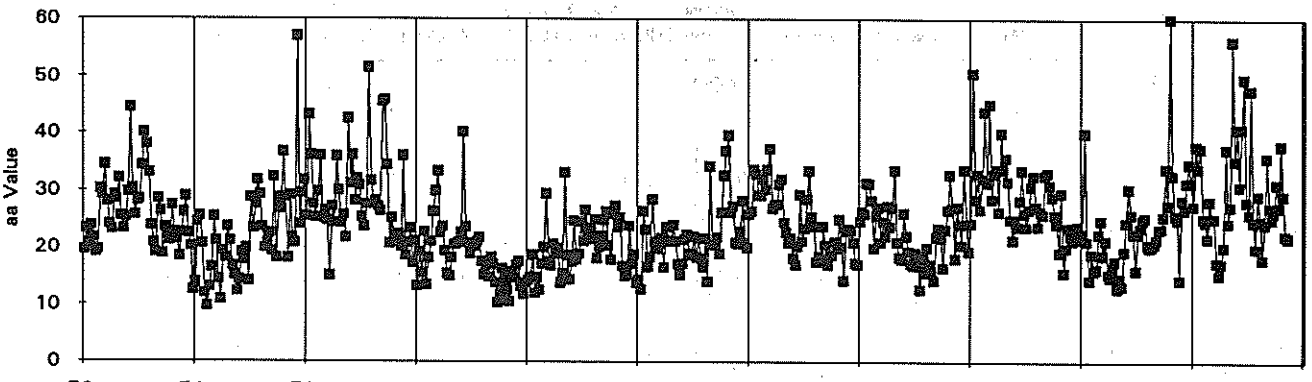
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Gottingen

Kp through June 30, 1993



MONTHLY MEAN aa INDICES 01/50-06/93



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
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	23.5	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	15.3	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	25.8	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	19.0	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	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	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	16.6	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	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9	14.4	28.4	26.7	31.4	34.7	31.4	31.0
1990	27.4	37.8	33.9	37.4	25.1	24.6	21.6	28.2	25.1	25.1	17.4	15.2	26.6
1991	17.2	20.1	37.3	24.3	27.3	56.2	35.2	40.8	30.7	44.1	49.7	28.0	34.2
1992	25.9	47.7	24.5	19.8	29.1	24.8	17.9	24.1	35.8	27.0	25.0	26.1	27.3
1993	31.2	27.1	37.9	29.2	22.1	21.8							28.2

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

JUNE 1993

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
ABG	09.4N	02	1900	..	..	..	..	04(4)	5	8	131	51	05	21
ANN	01.5N	02	1900	..	..	..	..			6	159	75	05	21
BJI	28.8N	03	07--	..	..	..	..	04(4)	6	15	135	54	05	21
HYD	07.6N	03	0600	..	..	..	..	03(4) 04(4)	5	7	144	39	05	24
GUA	04.3N	03	09--	..	..	..	..	03(4)	5	--	60	10	03	20
KGL	57.2S	03	17--	..	..	..	..	04(7,8)	6	37	120	74	08	06
GUA	04.3N	04	00--	..	..	..	..	04(4)	5	10	190	30	04	15
GUA	04.3N	04	21--	..	..	..	..	04(8)	5	10	70	40	05	19
ETT	00.7S	04	0313	SC	- 1.4	36	25			7	193	81	05	19
HER	33.6S	04	00--	..	..	..	..	04(4) 05(1)	5	14	50	34	05	06
GNA	43.0S	04	00--	..	..	..	..	04(4)	6	22	110	130	05	12
CNB	43.6S	04	03--	..	..	..	..	04(4)	6	29	158	58	05	12
BJI	28.8N	10	1728	SC	.5	21	2	10(8)	6	13	105	29	11	12
KRC	16.4N	10	1730	..	..	..	..	10(7,8)	5	50	89	42	11	03
ABG	09.4N	10	1726	SC	- .1	14	- 2	10(8)	5	6	71	45	11	22
HYD	07.6N	10	1729	SC	- .1	15	- 2	10(8)	5	6	88	38	13	03
GUA	04.3N	10	1727	..	..	..	..	10(8)	6	10	70	30	11	05
ANN	01.5N	10	1726	SC	- .5	15	8			5	87	59	11	22
ETT	00.7S	10	1727	SC	- .5	12	11			5	118	50	11	20
HER	33.6S	10	1728	SC	0	9	2	10(8)	6	10	35	28	11	01
KGL	57.2S	10	1728	SC	1	8	3	10(8)	8	74	527	245	11	10
ABG	09.4N	22	1700	..	..	..	..	23(5,7) 24(1,3)	4	6	103	36	25	21
ANN	01.5N	22	1700	..	..	..	..			6	113	62	25	21
ETT	00.7S	22	1700	..	..	..	..			6	145	59	25	21
BJI	28.8N	23	0958	SC	- .1	10	1	24(3)	5	11	108	40	24	24
HYD	07.6N	23	0000	..	..	..	..	23(7) 24(3) 25(3)	5	7	115	33	25	21
GUA	04.3N	23	18--	..	..	..	..	24(1)	5	--	100	30	24	10
KGL	57.2S	23	10--	..	..	..	..	23(7) 24(3,5,6)	4	21	111	55	26	09
HYD	07.6N	30	1500	..	..	..	..	03(2,3)	5	7	104	36	04	05

Stations:

ABG = ALIBAG
ANN = ANNAMALAINAGAR
API = APIA
BJI = BEIJING
CNB = CANBERRA
CMO = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KGL = KERGUELEN
KRC = KARACHI
PMG = PORT MORESBY
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN
WIT = WITTEVEEN

CONTENTS

Prompt Reports Number 588 Part I

LATE DATA

GEOMAGNETIC ACTIVITY INDICES

May 1993

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		3 3+ 1+ 2+	2- 0+ 0+ 0+	13-	7	0.4	3- 3- 2- 2+	2- 0+ 0+ 0+	12	13	10	19	4 KK
2		0+ 1 1+ 1+	1+ 1+ 3- 2	11+	6	0.3	0+ 1 2- 2-	2- 1+ 2+ 2-	11	12	10	7	15 CC
3		2+ 1+ 2 2+	3 2 1- 1+	15	8	0.4	2 1+ 2+ 3-	3- 2- 1- 1+	15	17	17	17	17
4	Q9	1- 1+ 2- 0+	1+ 2+ 1- 1	9+	5	0.2	1- 1+ 2 0+	1+ 2- 1- 1	8	11	7	7	12 CK
5		1 2- 2 1+	3 1- 0+ 1	11	6	0.3	1- 1 3 2	3- 0+ 0+ 1+	11	11	10	11	10 KK
6		2+ 2 2 2	2+ 3- 3 2	18+	9	0.5	2 2- 2+ 3-	2+ 3 3- 2-	18	21	20	17	23
7		1 3- 2 2	3+ 3+ 4 5	23+	18	1.0	1 3- 2+ 3-	3- 3- 3+ 5-	30	32	36	16	51
8	D3	6- 4- 5 5-	5- 4- 5- 5	37	40	1.5	5- 3 4+ 4	4+ 3+ 4 4+	57	62	76	60	79
9	D1	5+ 6 5 4	4+ 4 5+ 5+	39+	48	1.6	5- 6- 5- 4-	3+ 3 5- 4+	67	66	87	86	66
10	D2	5+ 6+ 6- 6-	5 3 3- 4	38-	48	1.6	5- 5+ 5- 5-	5- 3- 3- 4-	64	60	71	86	46
11	Q8	1+ 2- 1+ 1-	1 1- 1 2-	9+	4	0.2	1+ 2 2- 1	1+ 1- 1+ 1+	9	10	7	9	8 C
12		2 3 3- 3	3- 3 4 4	24+	16	0.9	1+ 2+ 3- 3	3 3 4 4-	30	32	32	25	40
13		4 2+ 0+ 0+	1- 2- 4- 3-	16-	10	0.6	3+ 2 1- 0	1- 2- 3 2+	15	25	14	17	22
14		2 3- 2 4-	5- 2+ 2 2	21+	14	0.8	2- 2+ 2+ 3+	4 2+ 2- 2	24	23	22	21	24
15		2+ 2- 2+ 2+	3 3 4+ 3-	22-	13	0.8	2 1+ 3- 3-	2+ 2 4- 2+	21	30	21	19	33
16		3- 4+ 2 2-	2+ 2- 2- 3	19+	12	0.7	3- 4 1+ 2-	2+ 1+ 2- 3	21	27	22	29	20
17	D5*	3 4 3 2-	2+ 2+ 5 4	24+	18	1.0	3+ 4- 2 2	2+ 2 4 4-	31	47	34	30	51
18		1- 1 1 1+	2 2- 2 4-	13+	7	0.4	1- 1 1+ 2-	2- 1+ 2- 3	12	16	10	7	19 K
19		2- 2+ 3- 2	3 3- 3+ 2-	19+	11	0.6	1 2+ 3- 3-	2+ 2+ 3 2-	19	27	24	22	29
20		1+ 2+ 3+ 2-	2 2- 1+ 0+	14	7	0.4	2- 2 3+ 3-	2- 1 1+ 0+	15	15	15	19	11
21	Q3	1 0+ 0+ 1-	0+ 1- 1 1-	5	3	0.1	1- 0+ 0+ 1-	1- 1- 1- 1-	4	9	4	7	6 CC
22	Q5	1- 1+ 1- 1+	1 1+ 1+ 0+	8	4	0.1	1- 1+ 1- 2-	1+ 1+ 1+ 1-	8	10	7	8	9 CC
23	Q2	0+ 0+ 0+ 0+	1+ 0+ 1- 0	4-	2	0.0	0+ 0+ 0+ 1-	1+ 0+ 1- 0+	4	7	5	5	7 CC
24	Q4	1- 1- 1+ 1	0+ 0+ 0+ 0+	5	3	0.1	0+ 0+ 1+ 1	1 0+ 0+ 0+	5	8	4	7	5 CC
25	Q1	1- 1- 0 0	0+ 0+ 0+ 0+	3-	2	0.0	1- 1- 0 1-	0+ 0 0+ 0+	3	6	2	4	4 CC
26	Q6	0+ 1- 1- 1-	1- 1 1 2+	7+	4	0.1	0+ 1- 1- 1-	1- 1- 1 2	6	10	4	5	9 CK
27		2+ 4 4 3+	3+ 2 3+ 3+	26-	18	1.0	2 4- 4- 3	3+ 2 3- 3	30	30	23	28	25
28	D4	3+ 4+ 3- 4-	3 4+ 4+ 4-	29+	23	1.1	3 3+ 3- 3+	3- 3+ 3 3	32	43	28	38	35
29		4- 2 2 3+	1 2- 2- 2	17+	10	0.5	3 2 2 3+	1+ 1 1 1+	16	18	16	23	11
30	Q7	1- 2 1 1-	1+ 1 1 0+	8	4	0.1	1- 2- 1+ 1-	1 1- 1 1-	7	11	6	9	9 CC
31	Q10	1 1- 1- 1+	2+ 1+ 2- 1-	10-	5	0.2	1+ 1- 1 1+	2 1 1+ 1-	8	13	7	7	13 CC
					12	0.56			19.8	23.3	21.0	22.1	

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	Prov Sa	Ri	Ra	Rs	IMF
1	3- 3- 2- 2+	2- 1- 1 1-	14	3- 3- 2 2	1+ 0 0 0	10	104.2	33	28	51	
2	0+ 1 2 2	2 1+ 3- 2-	12	0+ 1- 2- 2-	1+ 1 2+ 1+	9	104.7	30	24	51	
3	2+ 1+ 3- 3	3 2 1 2-	17	2- 1+ 2+ 3-	2 2- 0+ 1	12	108.9	42	42	56	
4	1 2- 2 1-	2- 2+ 1+ 2-	11	0+ 1 2 0+	1 1 0+ 0+	5	112.4	69	61	59	
5	1 1+ 3- 2	3 1 1- 2-	13	0+ 1 3 2-	2+ 0 0 1-	9	120.0	80	64	68	
6	2+ 2 3- 3-	3- 3 3- 2	22	2- 1+ 2 2+	2- 3- 3- 1+	15	122.2	71	65	70	
7	2- 3 3- 3-	3+ 3 4- 4+	33	1- 2 2+ 2+	2+ 3- 3 5	27	133.0	74	67	82	
8	5- 3+ 5- 4	4- 4- 4 4+	58	5- 3- 4 4+	5- 3 4 5-	56	131.2	81	79	80	
9	5- 6- 5- 4-	3 4- 5- 4+	70	5- 5+ 5- 3+	3+ 3- 5- 5-	63	131.5	87	93	80	
10	5 6- 5 5-	5- 3 3- 4-	74	5- 5+ 4+ 4	4+ 2- 2+ 3+	55	136.8	120	105	86	
11	1+ 2+ 2 1+	2- 1 2- 2	12	1+ 1+ 1+ 1-	1- 0+ 1 1	7	134.7	125	106	83	
12	2- 3- 3- 3	3- 3 4- 4-	29	1+ 2 2+ 3	3 3 4 4	31	129.0	111	99	77	
13	3+ 2 1- 0	1 2+ 3 3-	17	3+ 2- 0+ 0	0 1+ 3 2+	14	122.4	85	77	70	
14	2 3- 2+ 4-	5- 3 2+ 2+	30	2- 2+ 2 3-	4- 2- 1- 2-	17	114.6	59	50	62	
15	2+ 2- 3 3-	3- 3- 4- 3	26	2- 1 3- 3-	2+ 1 3+ 2-	17	106.7	51	39	53	
16	3- 4+ 2 2+	2+ 2- 2 3-	25	2+ 4- 0+ 1+	2+ 1- 1+ 3	17	101.1	37	31	47	
17	3 4- 2+ 2	3- 2+ 4+ 4	34	3+ 4- 2 2-	1+ 2- 4- 4-	27	98.4	32	28	44	
18	1 1 1+ 2	2+ 2- 2 3	15	0+ 1- 1 2-	1 1 1+ 3-	9	93.5	29	17	39	
19	1+ 3- 3- 3-	3- 2+ 3 2	21	1- 2- 3- 2+	2+ 3- 3 1+	17	93.1	13	20	39	
20	2- 3- 4- 3	2+ 1+ 1+ 1-	19	1+ 2- 3 2	1+ 0+ 1 0	10	93.4	33	30	39	
21	1 1- 1- 1	1- 1 1+ 1	6	0+ 0 0 1-	0+ 0 0 0	2	93.3	27	22	39	
22	1+ 2- 1+ 2	1+ 2 2 1	12	0 1 0+ 1+	1 0+ 0+ 0	4	94.1	20	12	40	
23	0+ 0+ 1- 1	2- 1- 1 1-	6	0 0 0+ 1-	1+ 0 0+ 0	3	97.3	23	14	43	
24	1- 1 2- 1-	1 0+ 1- 1-	6	0 0 1- 1	1- 0+ 0 0	3	100.9	33	28	47	
25	1 1 0 1-	1- 0+ 1- 1-	4	1- 0 0 0+	0 0 0 0	1	102.4	53	41	49	
26	1- 1 1 1-	1 1+ 1+ 2+	8	0 0 0+ 1-	0 0+ 0+ 2-	4	110.4	66	51	57	
27	2+ 4+ 4- 3-	3+ 3- 3 3+	34	2 3+ 4- 3	3+ 2- 2 3-	26	122.7	59	62	71	
28	3+ 4- 3- 4	3- 4- 3+ 4-	39	3- 3 3- 3	3- 3 3- 3-	25	129.2	74	78	78	
29	3+ 2 2+ 3+	1+ 1+ 2- 2	19	2+ 2 2 3	1+ 0+ 0+ 1	13	132.5	88	86	81	
30	1+ 2 1+ 1-	1+ 1+ 1+ 1	9	0+ 2- 1+ 0+	1- 0+ 1- 0+	5	144.1	97	90	94	
31	1+ 1 1+ 2	3- 2- 2- 1+	12	1 0 0+ 1	1+ 0+ 0+ 0+	4	142.1	96	92	91	
Mean			22.8			16.7	114.9	61.2	54.9	62.1	

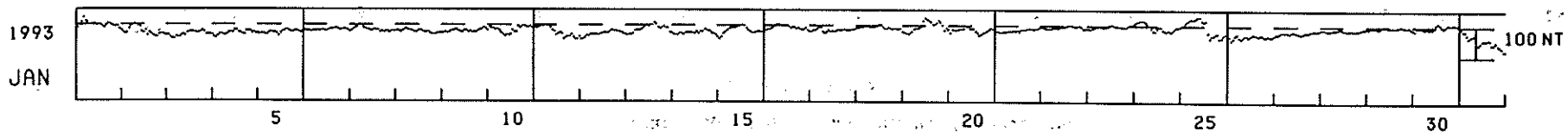
WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

JANUARY 1993

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-10	-2	8	23	12	9	0	2	1	3	-1	0	0	-6	-10	-1	3	2	-1	-5	-5	-5	-14	-18
2	-25	-30	-27	-14	-5	-1	1	0	-3	-7	-23	-27	-19	-35	-27	-31	-36	-39	-41	-32	-30	-31	-33	-35
3	-34	-40	-46	-46	-39	-40	-41	-35	-33	-35	-28	-23	-23	-24	-25	-27	-28	-23	-19	-23	-32	-32	-32	-34
4	-40	-43	-38	-30	-30	-34	-34	-30	-26	-26	-25	-17	-19	-26	-27	-31	-32	-20	-20	-21	-27	-23	-29	-28
5	-30	-29	-29	-32	-32	-26	-24	-26	-26	-29	-36	-28	-21	-20	-16	-18	-22	-23	-22	-19	-21	-23	-25	-21
6	-19	-20	-19	-22	-19	-20	-18	-18	-18	-17	-18	-20	-17	-14	-16	-12	-10	-13	-17	-15	-13	-15	-17	-22
7	-18	-13	-11	-7	-2	-2	-9	-12	-13	-16	-18	-19	-14	-17	-17	-24	-21	-23	-21	-20	-25	-21	-21	-21
8	-18	-21	-23	-18	-14	-14	-17	-19	-20	-24	-23	-19	-17	-21	-24	-25	-22	-27	-30	-31	-30	-28	-28	-27
9	-25	-23	-26	-24	-21	-18	-16	-16	-20	-23	-24	-18	-18	-24	-20	-23	-24	-23	-18	-15	-13	-9	-12	-17
10	-9	-10	-12	-16	-14	-18	-25	-30	-38	-32	-34	-31	-17	-23	-23	-3	-8	-3	-2	-5	-8	-4	-9	-10
11	-9	-10	-7	-4	-3	2	-2	-2	-9	-17	-22	-33	-28	-25	-29	-46	-40	-38	-37	-31	-39	-45	-46	-38
12	-45	-46	-40	-34	-35	-31	-31	-31	-31	-32	-29	-27	-24	-26	-25	-20	-15	-18	-19	-21	-22	-23	-27	-30
13	-33	-30	-30	-27	-19	-15	-17	-16	-11	-5	-2	-3	1	2	8	4	-7	-12	-8	-3	-9	-8	-24	-26
14	-31	-30	-33	-27	-26	-30	-25	-24	-24	-24	-25	-28	-21	-27	-21	-20	-13	-14	-19	-18	-25	-27	-30	-38
15	-44	-37	-27	-22	-15	-10	-9	-9	-8	-6	-1	0	2	0	-8	-15	-20	-24	-24	-22	-19	-20	-21	-19
16	-15	-14	-12	-11	-7	-1	5	4	1	-1	-1	1	-1	-9	-6	-6	-11	-8	-12	-14	-13	-8	-16	-20
17	-20	-16	-15	-11	-5	-7	-20	-25	-20	-16	-20	-19	-20	-15	-15	-16	-15	-14	-15	-16	-16	-14	-14	-11
18	-9	-7	-6	-5	0	-3	-6	-6	-6	-5	-2	1	1	-6	-10	-11	-7	-11	-12	-10	-12	-12	-11	-21
19	-22	-26	-28	-28	-20	-12	-10	-10	-9	-3	15	24	21	16	11	3	4	8	17	10	2	-17	-9	-13
20	-23	-13	-16	-15	-14	-12	-12	-11	-2	-4	-10	-10	-11	-19	-24	-32	-29	-25	-22	-18	-14	-9	-12	-16
21	-19	-21	-22	-22	-20	-20	-19	-19	-19	-17	-18	-17	-17	-13	-13	-14	-11	-10	-10	-12	-12	-11	-8	-6
22	-6	-8	-10	-11	-11	-8	-7	-7	-8	-6	-5	-3	-3	0	1	1	-2	-3	-2	0	-4	-11	-11	-11
23	-10	-12	-9	-7	-3	-2	-3	-5	-5	-5	-1	3	3	0	-1	-2	-3	-3	-5	-5	0	1	2	6
24	10	13	17	17	17	14	9	0	-9	-17	-18	-9	-4	-5	-13	-17	-18	-15	-21	-17	-10	-6	-7	-4
25	0	5	12	17	22	22	22	26	31	29	19	14	16	-22	-41	-32	-32	-28	-26	-40	-40	-32	-27	-26
26	-36	-47	-41	-32	-28	-38	-42	-38	-33	-32	-37	-32	-27	-29	-30	-34	-29	-30	-36	-36	-33	-35	-35	-31
27	-27	-27	-23	-20	-21	-20	-21	-23	-19	-17	-21	-22	-24	-27	-23	-21	-20	-21	-17	-15	-15	-16	-15	-12
28	-10	-11	-14	-15	-16	-12	-12	-12	-11	-8	-8	-12	-13	-15	-14	-14	-15	-15	-14	-13	-12	-8	-8	-7
29	-8	-6	-5	-6	-6	-9	-7	-2	1	1	-3	-5	-3	-4	-4	-1	-1	1	-1	-3	-4	-2	-7	-10
30	-13	-3	-4	-3	-5	-8	-7	-9	-7	-8	-3	8	12	6	0	-3	1	6	5	5	7	5	3	5
31	-9	-15	-16	-27	-37	-33	-31	-28	-53	-60	-52	-45	-44	-45	-42	-44	-58	-57	-51	-61	-64	-69	-79	-79



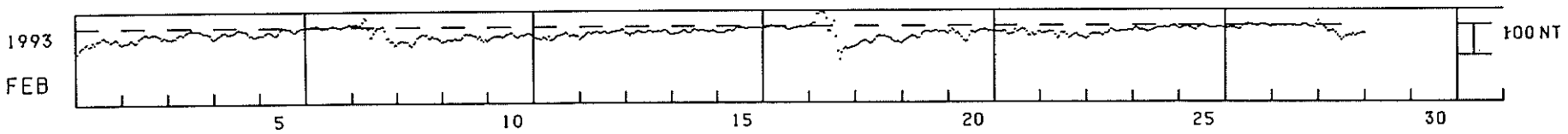
Note: The baselines for the observatories were adjusted for secular change. Therefore there is a small discontinuity in the Provisional Dst values between the last hour of December 1992 and the first hour of January 1993.

WDC-C2 FOR GEOMAGNETISM. KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

FEBRUARY 1993

DAY	UNIT=NT 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	U.T. 23	24
1	-82	-69	-62	-59	-52	-50	-58	-54	-44	-51	-41	-40	-38	-30	-29	-35	-37	-44	-42	-39	-34	-39	-47	-52
2	-51	-47	-47	-44	-37	-42	-47	-45	-34	-29	-25	-21	-21	-23	-24	-20	-21	-21	-23	-28	-35	-30	-32	-36
3	-35	-37	-34	-34	-25	-21	-21	-23	-17	-13	-10	-9	-9	-11	-10	-10	-12	-16	-19	-19	-20	-24	-33	-37
4	-34	-31	-25	-20	-15	-16	-20	-22	-20	-18	-15	-10	-7	-9	-10	-12	-12	-19	-25	-26	-30	-30	-27	-26
5	-25	-25	-19	-15	-13	-17	-21	-25	-24	-18	-9	-3	-2	-3	-5	-6	-10	-15	-13	-9	-5	-2	-2	0
6	-1	-1	3	3	3	5	1	-4	-5	-3	-1	-1	1	4	3	1	0	-2	-2	1	3	5	9	7
7	8	8	8	4	7	16	30	26	-6	-34	-33	-18	-9	-1	-1	0	1	-10	-37	-35	-47	-47	-60	-57
8	-51	-48	-46	-47	-48	-49	-58	-62	-54	-47	-35	-30	-27	-24	-28	-26	-35	-37	-31	-35	-35	-38	-42	-49
9	-48	-46	-42	-41	-44	-43	-38	-41	-40	-41	-34	-26	-24	-25	-24	-27	-29	-30	-38	-30	-41	-47	-41	-46
10	-40	-35	-33	-31	-30	-30	-31	-34	-30	-25	-24	-21	-21	-27	-32	-36	-31	-25	-29	-26	-22	-22	-28	-33
11	-36	-37	-39	-41	-34	-35	-40	-30	-44	-43	-37	-31	-28	-28	-26	-22	-18	-23	-30	-27	-27	-30	-30	-42
12	-38	-32	-27	-21	-18	-23	-20	-19	-16	-19	-22	-19	-16	-20	-22	-20	-17	-16	-16	-14	-13	-8	-12	-20
13	-24	-29	-22	-23	-18	-15	-16	-18	-18	-21	-17	-14	-16	-19	-17	-17	-15	-17	-16	-12	-14	-18	-24	-26
14	-25	-23	-24	-22	-18	-13	-14	-18	-21	-20	-14	-10	-12	-15	-13	-12	-13	-16	-17	-17	-16	-14	-17	-21
15	-20	-20	-21	-21	-15	-13	-14	-16	-12	-6	-5	-7	-4	-5	-8	-7	-5	-6	-6	-6	-6	-6	-7	-10
16	-7	-6	-3	1	2	-1	-4	-4	-1	-2	-3	-7	-10	-10	-8	-7	-5	-3	-2	-1	-3	-2	1	0
17	5	10	10	41	40	45	46	42	26	-16	-16	3	17	-34	-81	-108	-86	-74	-69	-75	-73	-70	-68	-67
18	-63	-57	-52	-49	-46	-49	-55	-57	-52	-45	-36	-32	-32	-34	-32	-35	-37	-39	-46	-51	-53	-51	-55	-56
19	-49	-45	-40	-37	-33	-32	-35	-40	-39	-28	-22	-18	-17	-19	-21	-18	-17	-16	-20	-19	-18	-18	-23	-26
20	-18	-11	-16	-26	-22	-29	-38	-47	-53	-50	-32	-19	-21	-23	-19	-17	-14	-14	-12	-13	-18	-15	-18	-32
21	-19	-18	-20	-20	-17	-18	-27	-30	-27	-25	-14	-20	-17	-14	-10	-14	-21	-33	-32	-26	-32	-31	-21	-20
22	-25	-24	-25	-22	-18	-21	-20	-31	-43	-38	-24	-23	-23	-31	-41	-37	-32	-29	-28	-34	-36	-37	-40	-44
23	-39	-30	-28	-28	-28	-28	-28	-32	-32	-26	-25	-18	-12	-15	-18	-21	-21	-18	-17	-17	-18	-16	-16	-17
24	-11	-8	-10	-15	-14	-16	-18	-21	-18	-15	-13	-11	-8	-7	-8	-7	-6	-8	-8	-4	-2	0	-6	-10
25	-11	-8	-6	-6	-6	-8	-10	-14	-15	-8	-5	-2	1	-2	-6	-7	-8	-7	-8	-6	-6	-5	-8	-10
26	-11	-9	-7	-9	-9	-12	-14	-10	-4	2	3	5	2	1	0	-1	-1	2	3	1	1	-2	-6	-6
27	-4	-3	0	-2	-1	-2	-3	-2	0	0	-4	-1	-3	-4	-1	1	1	1	-3	-5	-6	-8	1	13
28	3	-1	-7	-12	-20	-21	-18	-18	-26	-34	-41	-49	-42	-36	-38	-33	-35	-29	-35	-31	-30	-28	-25	-27



WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

MARCH 1993

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	1	-8	-9	-9	-6	0	5	5	2	-10	-3	-1	-11	-17	-32	-36	-32	-32	-32	-27	-30	-38	-36	-21
2	-28	-25	-25	-22	-18	-23	-24	-22	-33	-31	-21	-12	-17	-14	-13	-13	-21	-30	-32	-28	-35	-45	-44	-45
3	-42	-44	-43	-47	-40	-37	-41	-44	-50	-43	-46	-42	-40	-43	-46	-42	-39	-37	-28	-39	-41	-41	-46	-45
4	-54	-59	-55	-52	-43	-34	-32	-33	-35	-34	-32	-28	-27	-28	-29	-23	-24	-27	-21	-21	-21	-23	-21	-22
5	-23	-23	-19	-18	-18	-17	-15	-16	-14	-12	-15	-16	-18	-20	-21	-21	-20	-20	-22	-23	-23	-21	-19	-19
6	-18	-17	-15	-13	-12	-11	-11	-13	-13	-11	-4	-5	-5	-8	-9	-7	-8	-8	-17	-18	-18	-15	-11	-5
7	1	4	0	-9	-24	-36	-50	-59	-59	-51	-41	-38	-40	-37	-33	-30	-34	-34	-31	-40	-44	-45	-45	-39
8	-37	-40	-43	-32	-28	-32	-35	-30	-35	-32	-27	-18	-12	-15	-22	-34	-38	-32	-23	-11	-9	10	17	2
9	-56	-63	-65	-79	-95	-118	-138	-124	-108	-105	-99	-80	-66	-63	-60	-54	-47	-46	-45	-37	-44	-48	-53	-53
10	-61	-56	-61	-57	-53	-54	-55	-46	-44	-52	-50	-50	-46	-44	-39	-37	-42	-45	-44	-40	-40	-39	-39	-37
11	-37	-37	-30	-25	-25	-25	-23	-15	-17	-14	-38	-59	-37	-42	-56	-59	-85	-108	-120	-107	-87	-85	-92	-93
12	-92	-74	-62	-66	-67	-63	-63	-55	-53	-56	-50	-48	-51	-51	-47	-48	-47	-47	-53	-51	-38	-43	-47	-38
13	-31	-40	-39	-37	-28	-29	-34	-31	-32	-29	-33	-27	-25	-23	-24	-23	-33	-41	-63	-64	-56	-49	-51	-47
14	-42	-37	-33	-29	-29	-29	-29	-18	-23	-26	-27	-32	-32	-26	-29	-26	-30	-31	-27	-29	-33	-33	-37	-43
15	-42	-40	-36	-31	-31	-27	-42	-51	-56	-70	-66	-84	-88	-77	-79	-83	-91	-83	-73	-66	-62	-61	-64	-66
16	-57	-64	-63	-51	-45	-55	-65	-49	-40	-46	-36	-41	-43	-35	-34	-40	-40	-54	-53	-48	-42	-41	-43	-41
17	-46	-45	-40	-41	-40	-39	-39	-31	-37	-46	-37	-32	-36	-32	-27	-26	-29	-30	-30	-29	-28	-33	-46	-52
18	-46	-46	-42	-39	-34	-39	-44	-36	-34	-36	-33	-34	-35	-32	-29	-26	-26	-26	-25	-23	-19	-17	-21	-21
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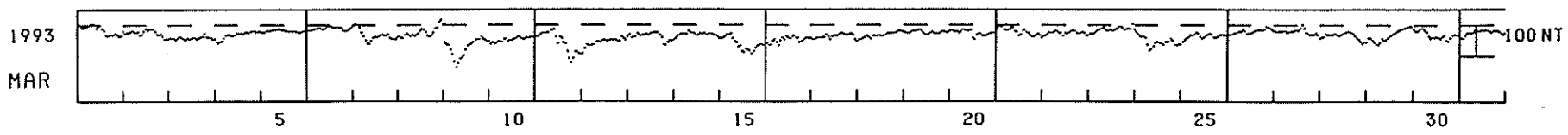

WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

APRIL 1993

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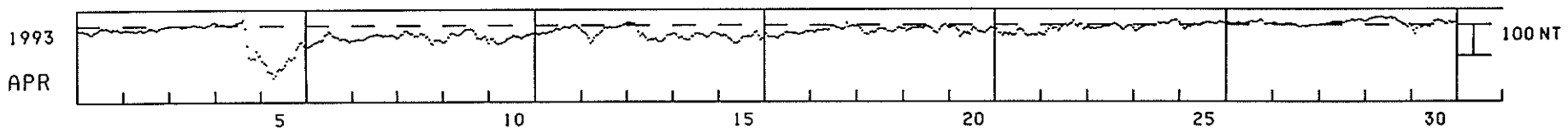

WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

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."