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AUGUST 1997 NUMBER 636 - Part I

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Data for June, July 1997 and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 636

(Issued in Two Parts)

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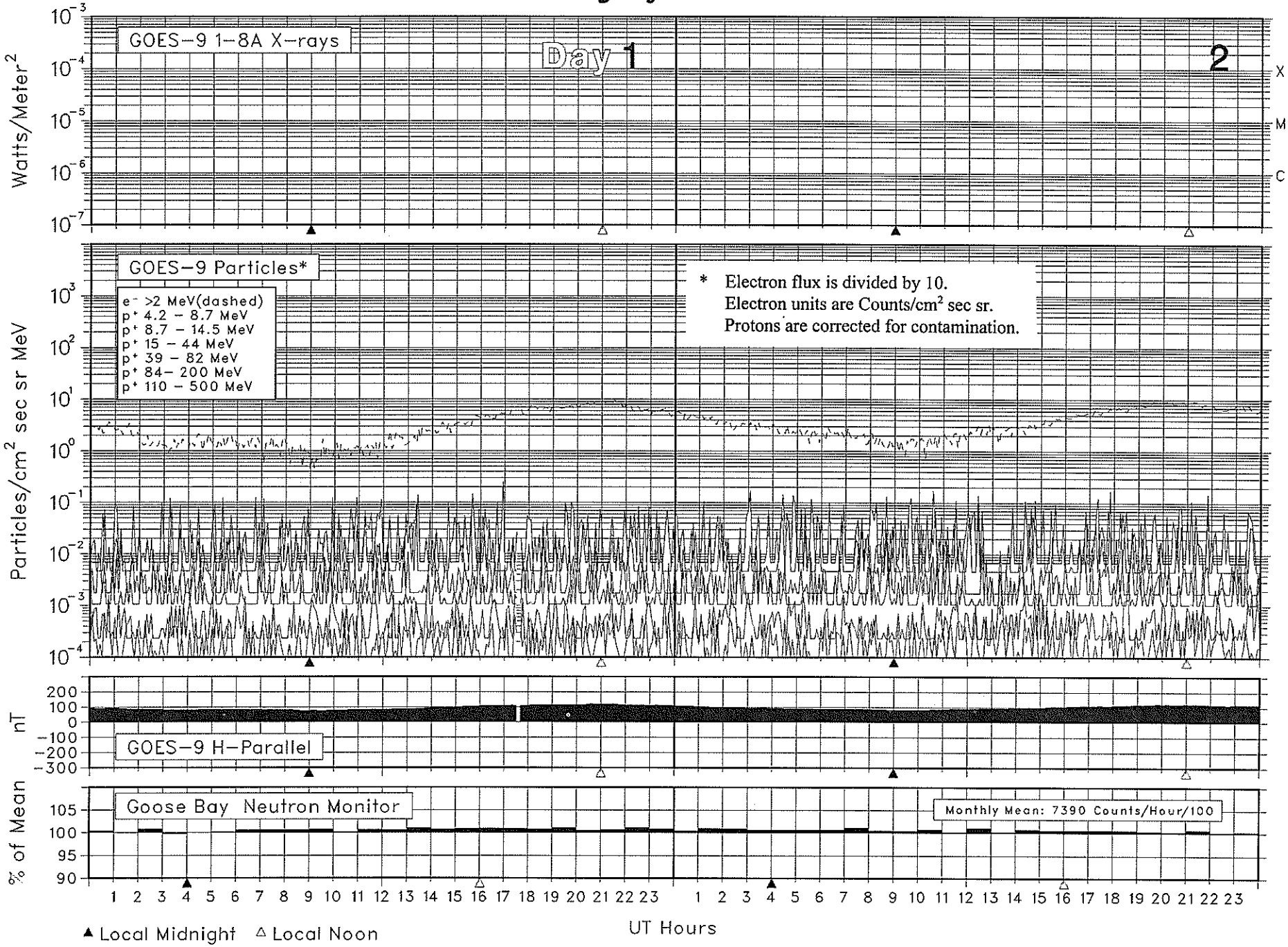

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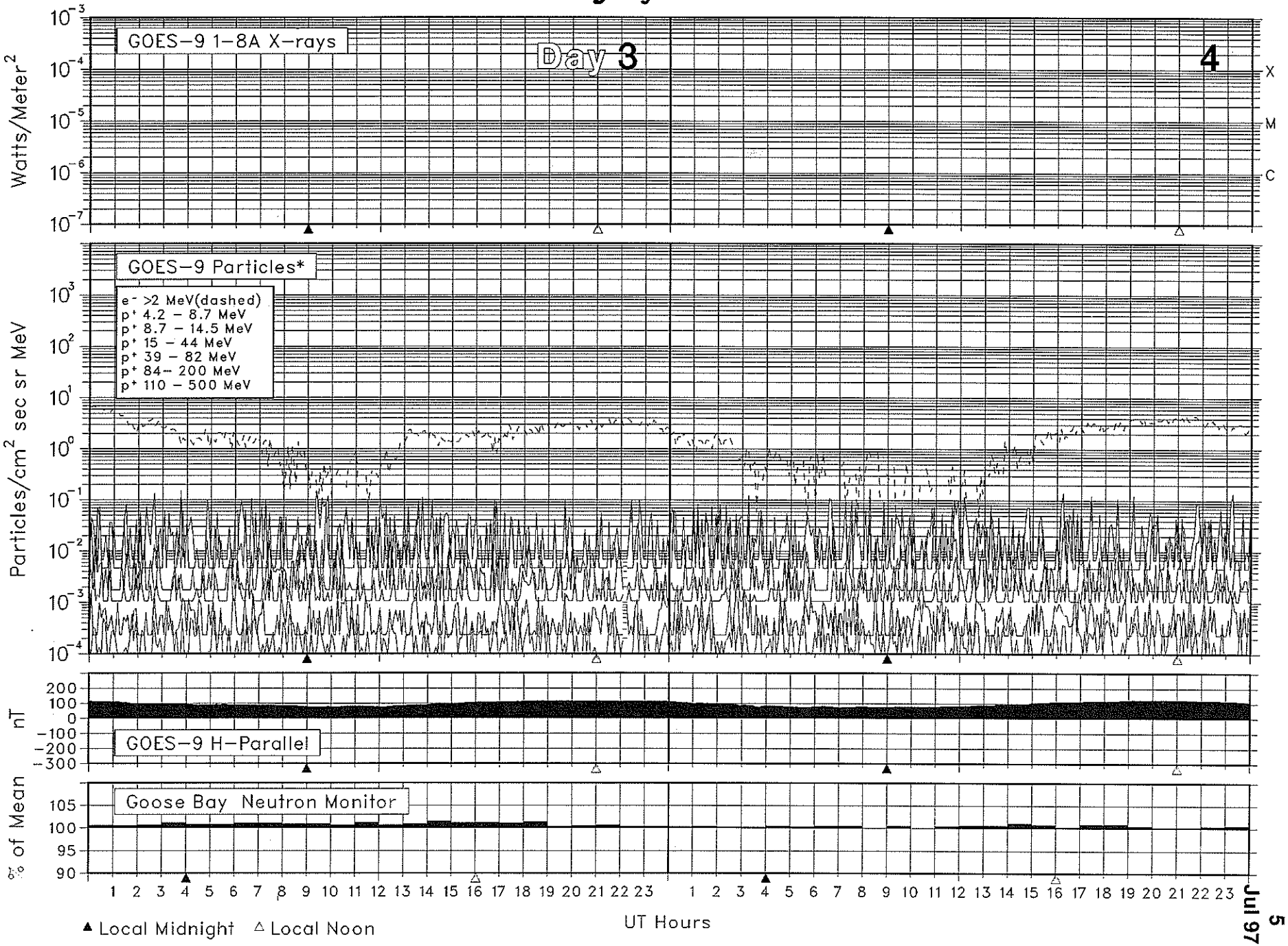

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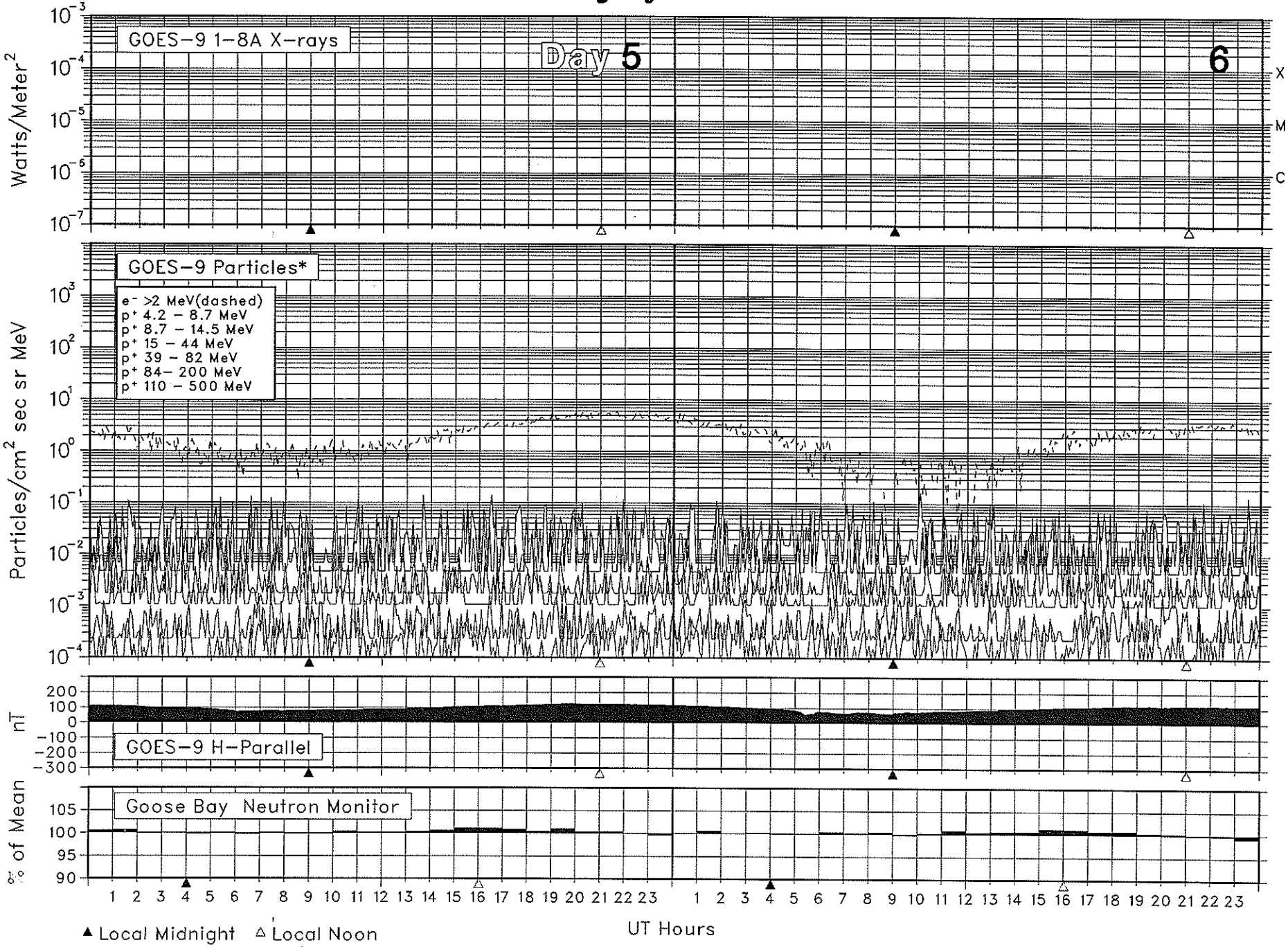

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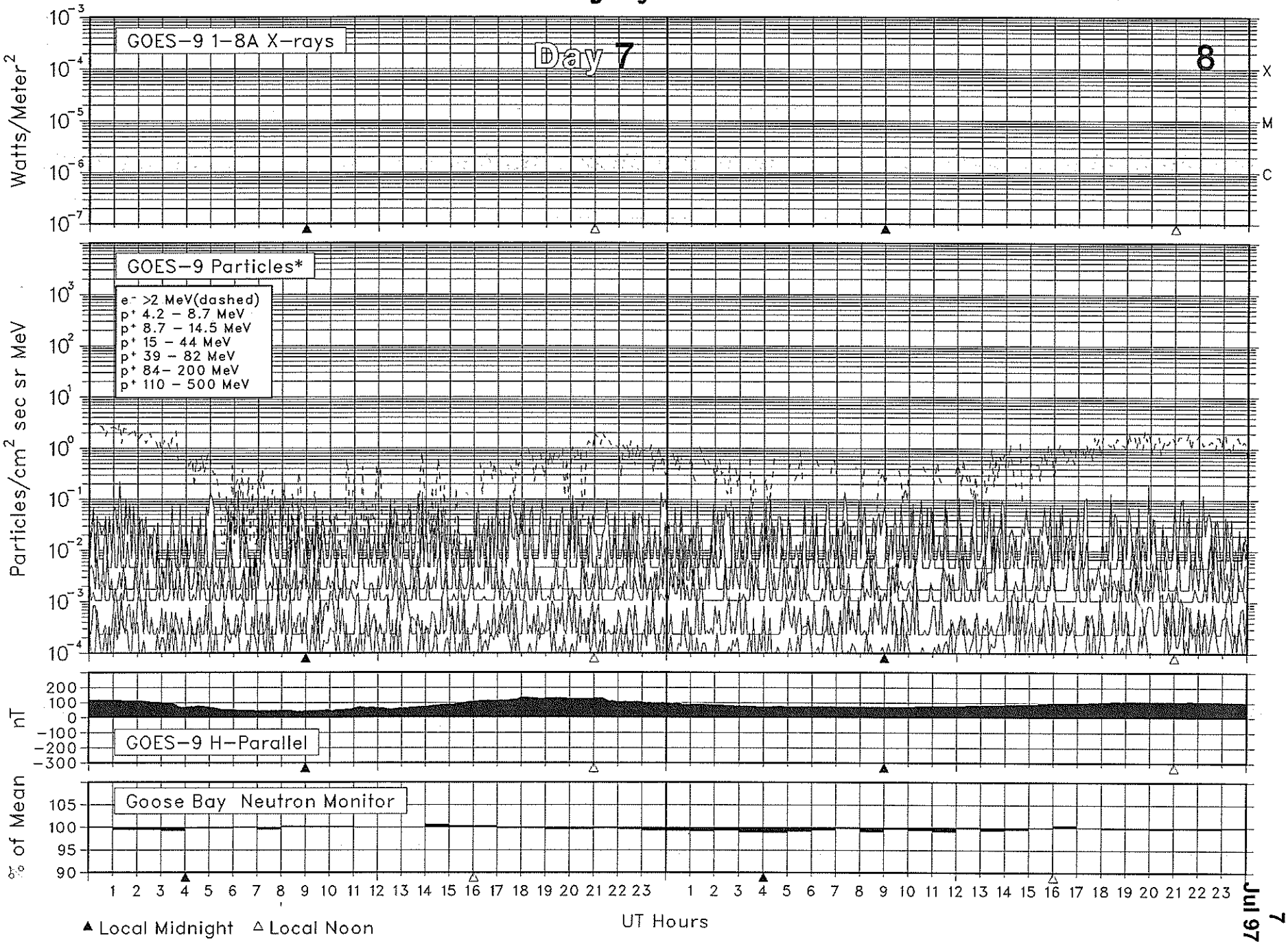

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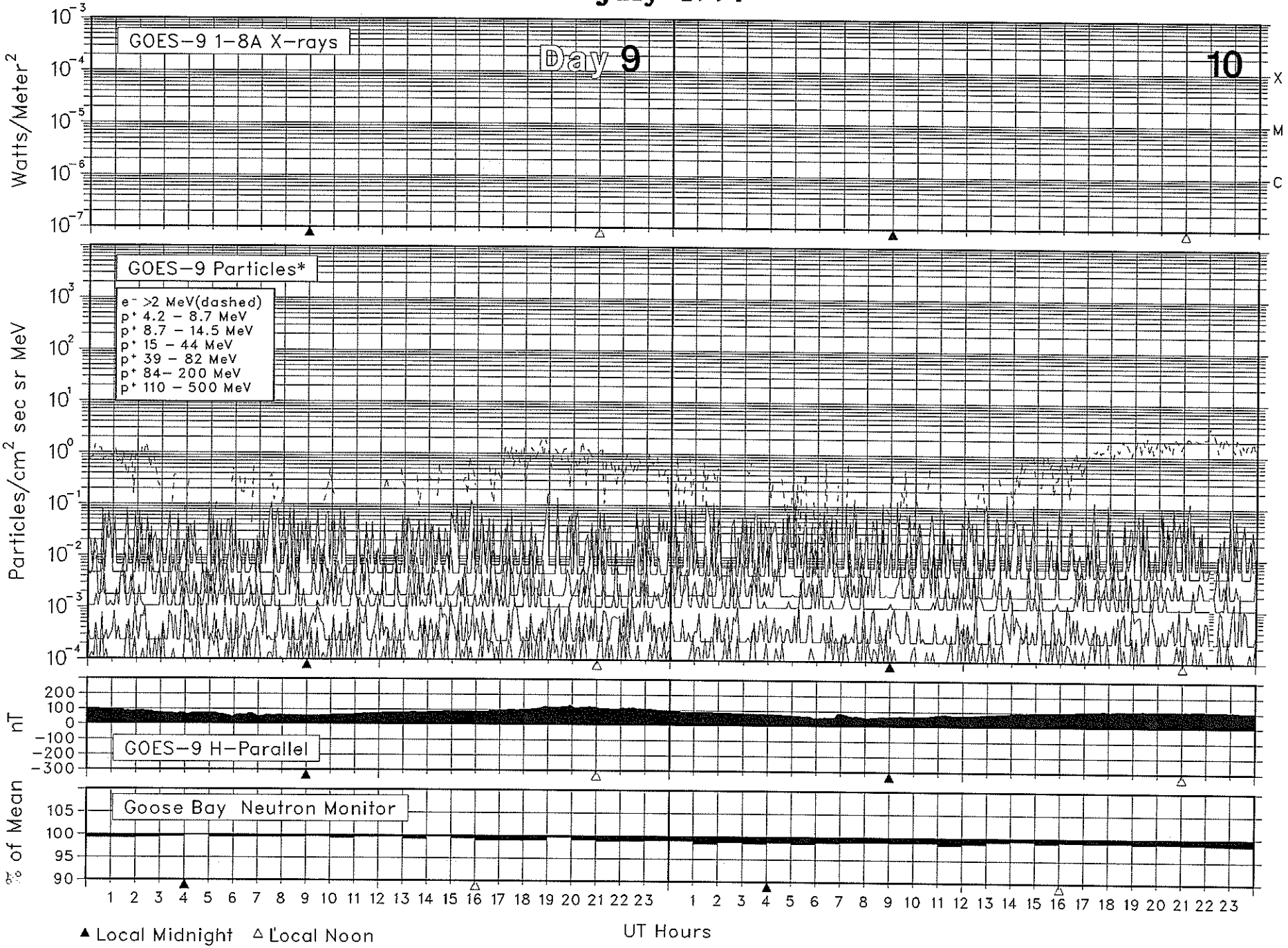

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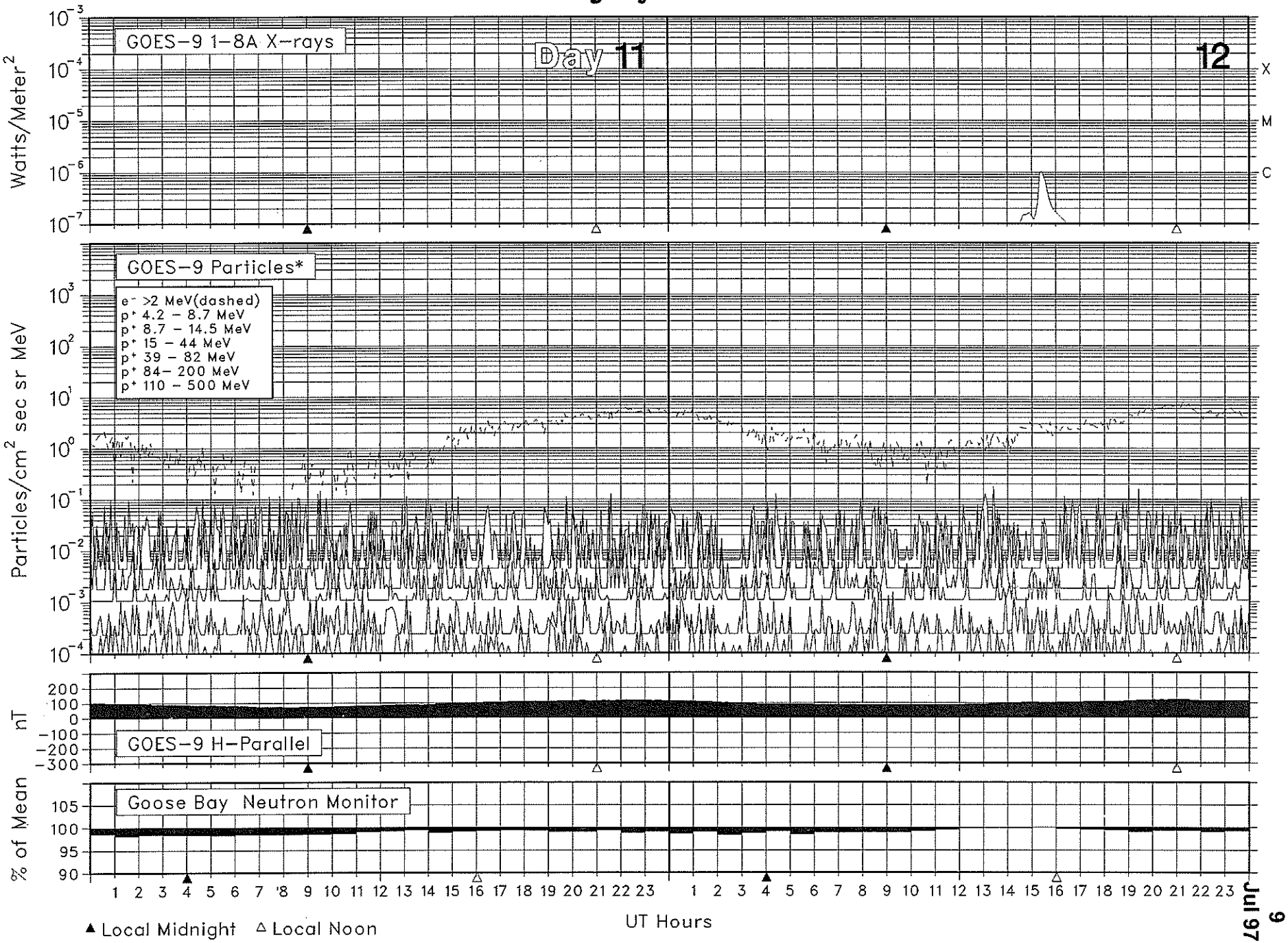

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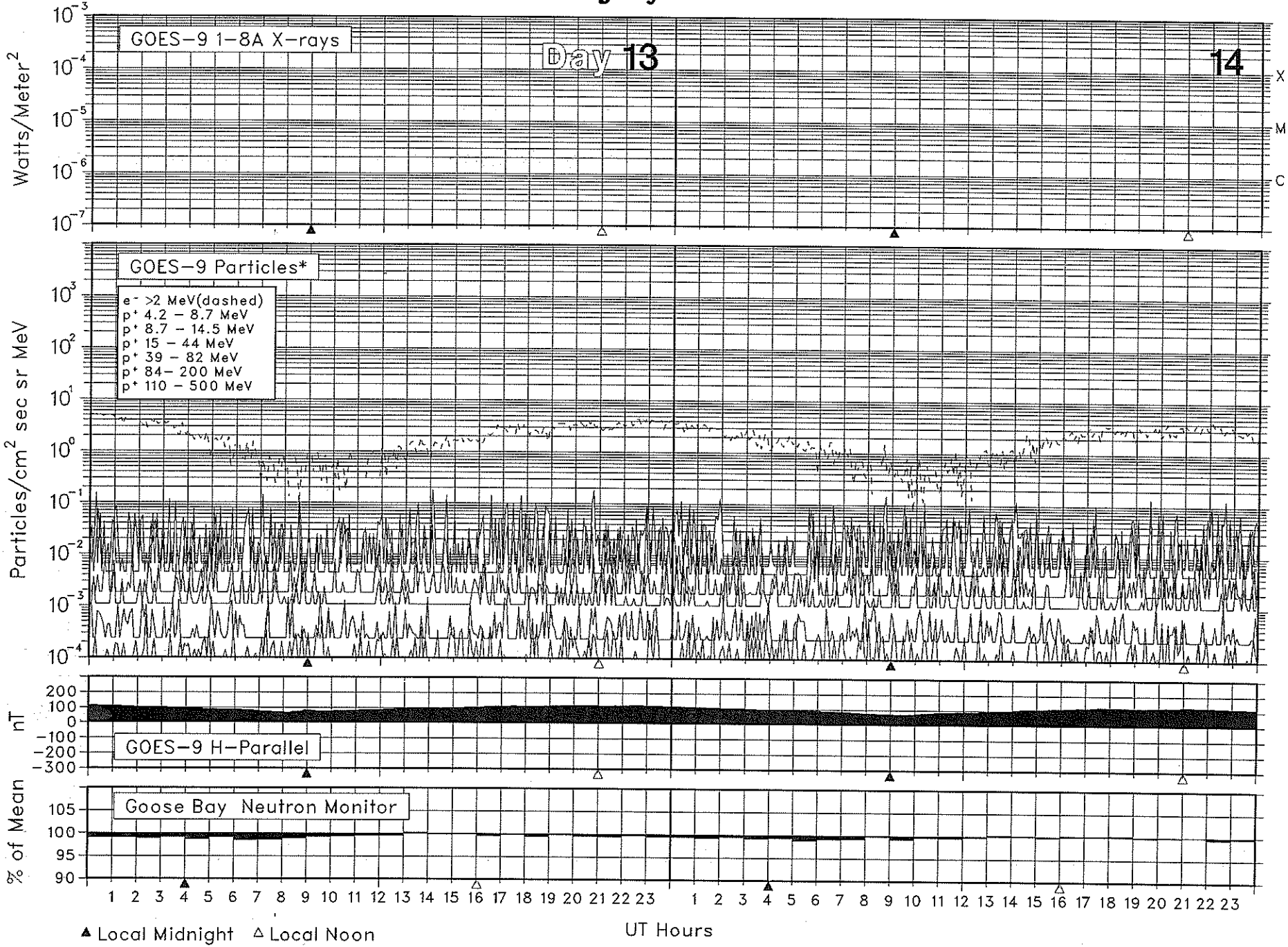

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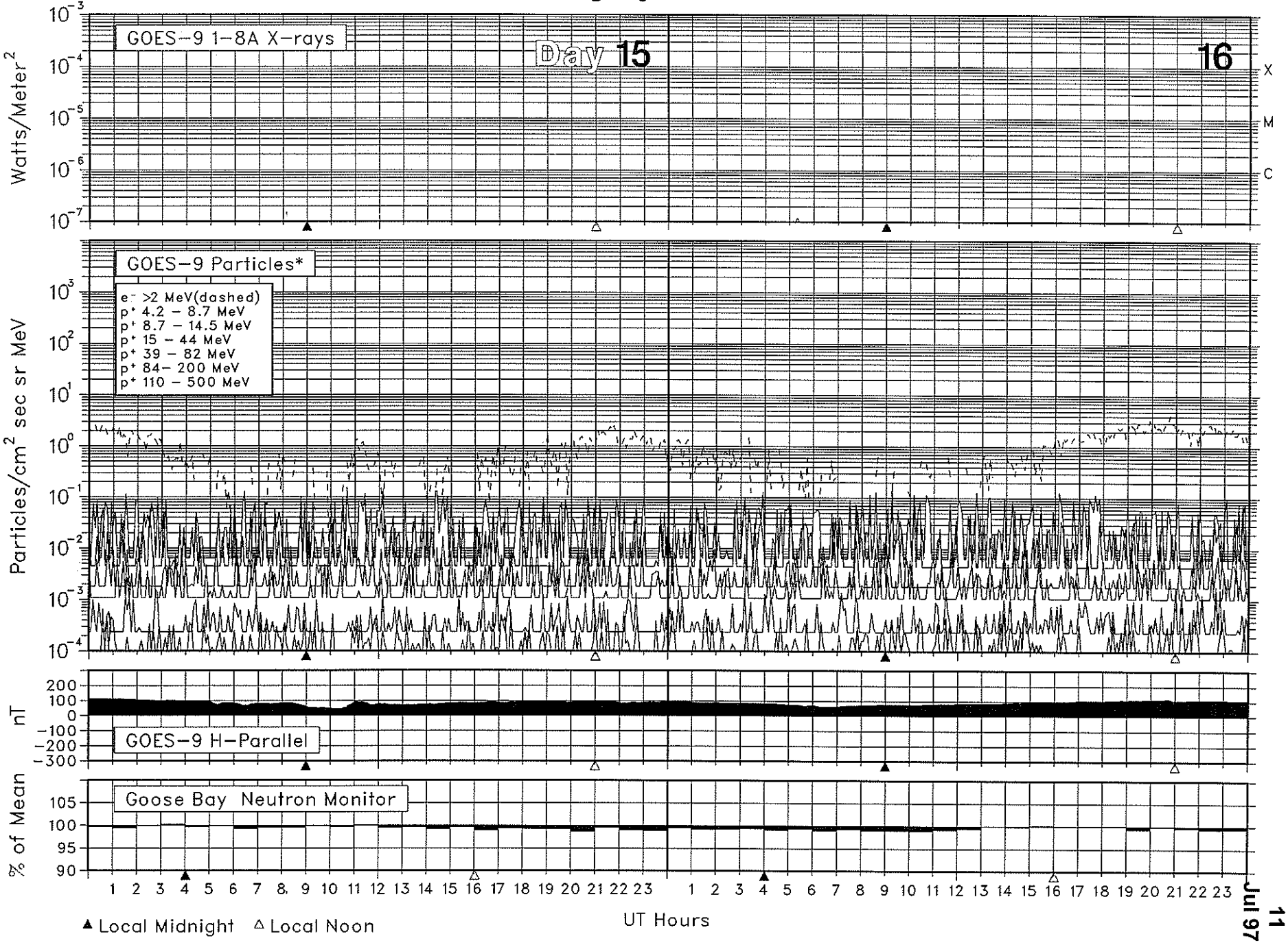

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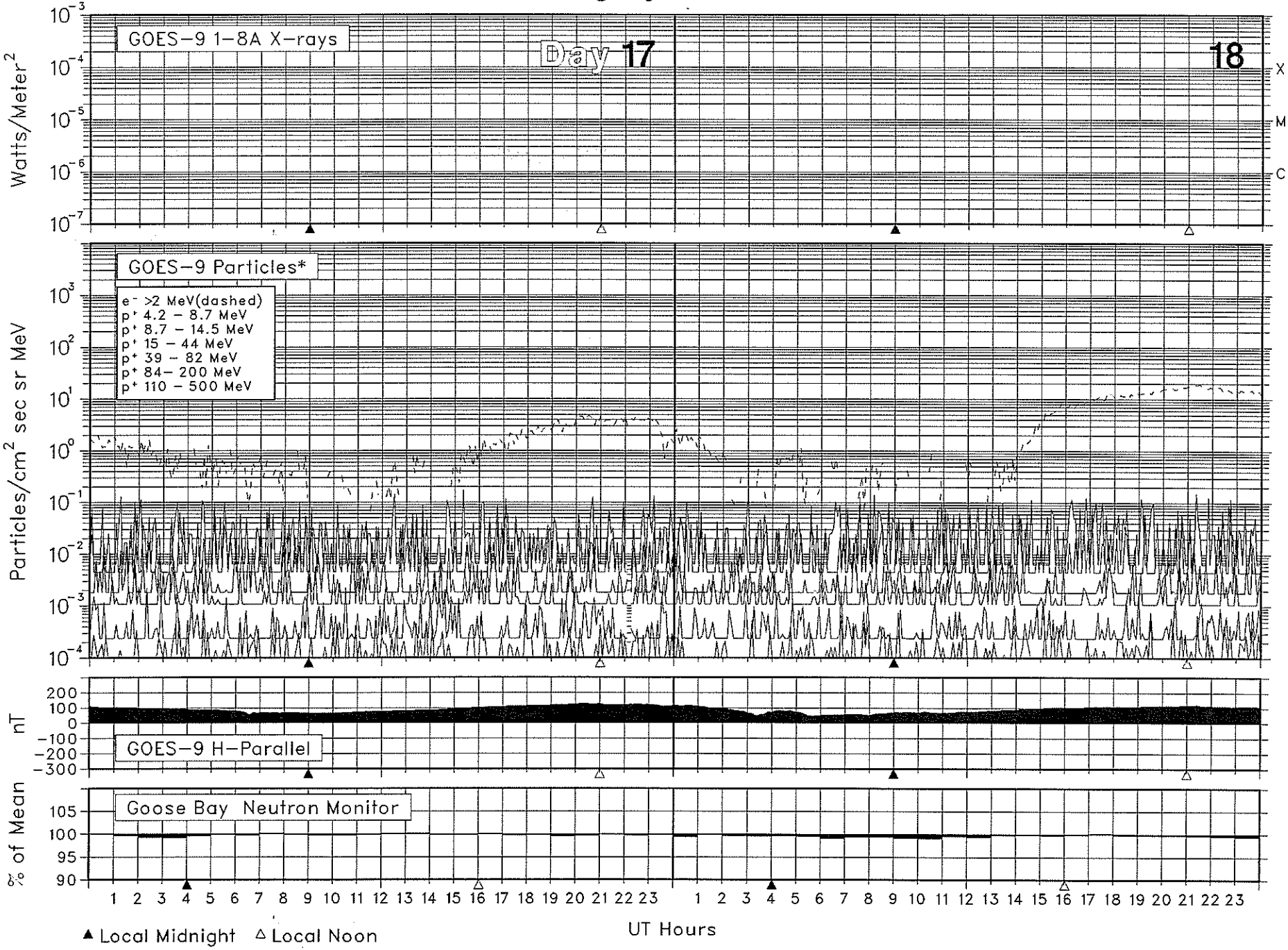

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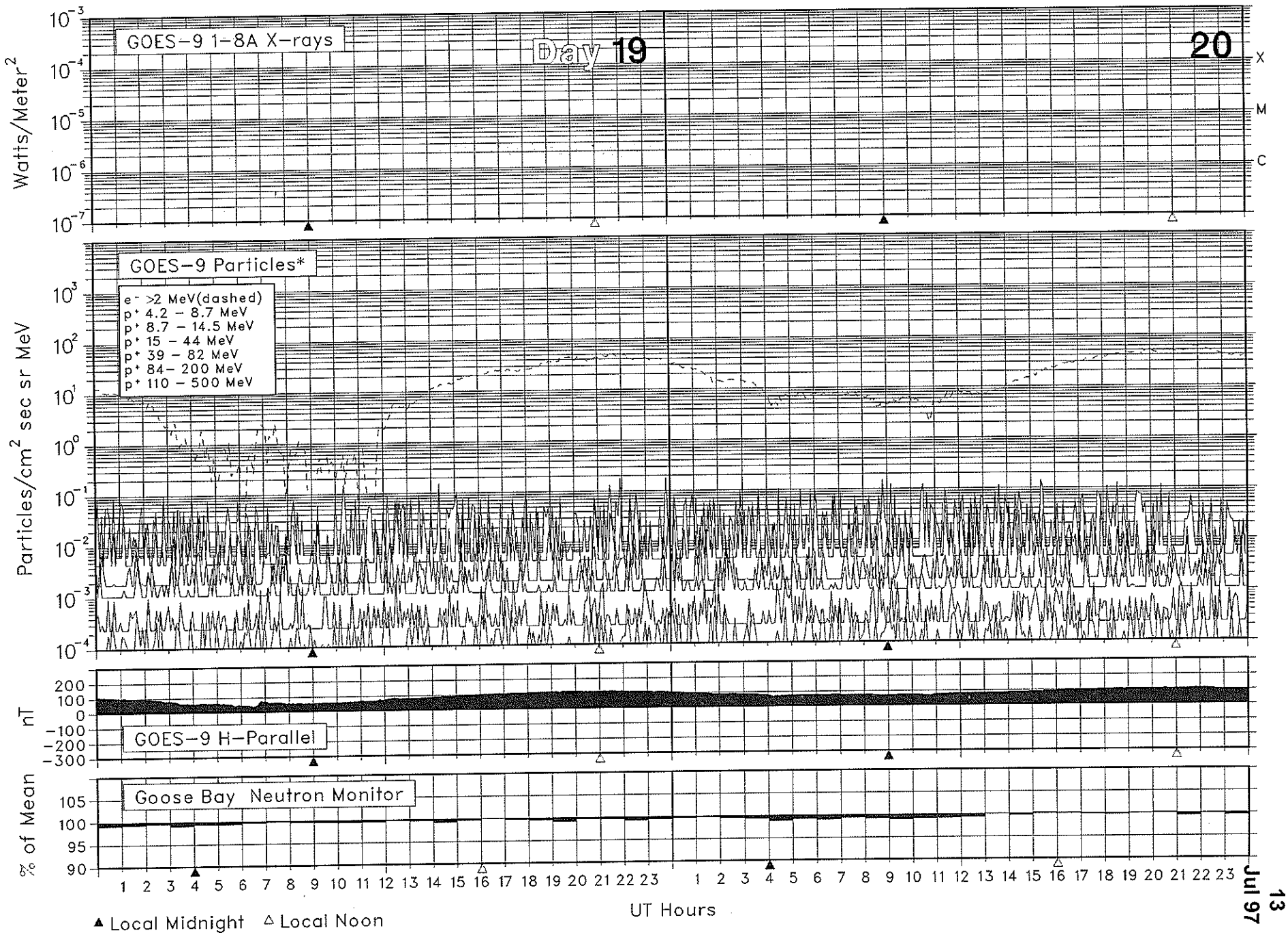

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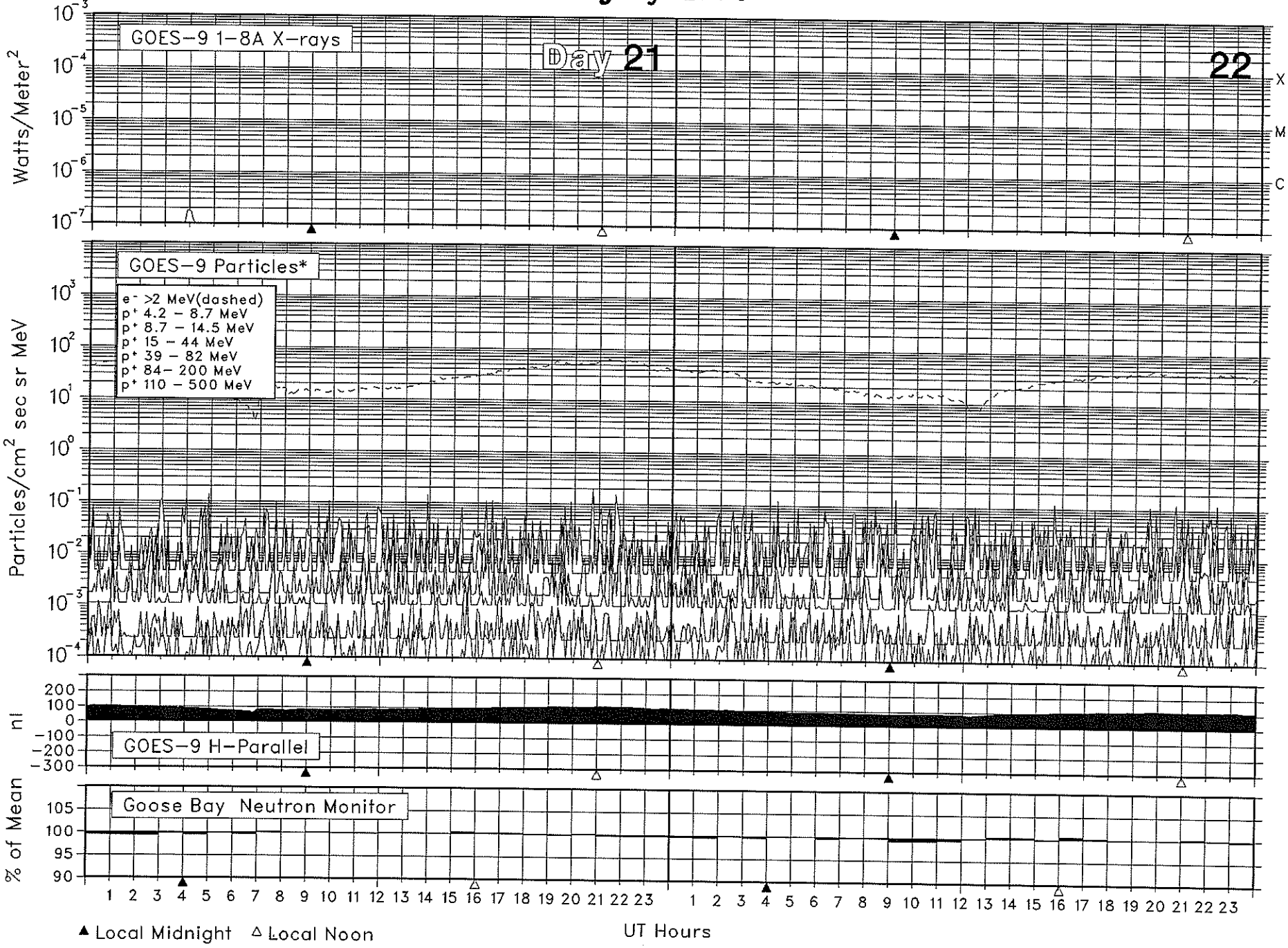

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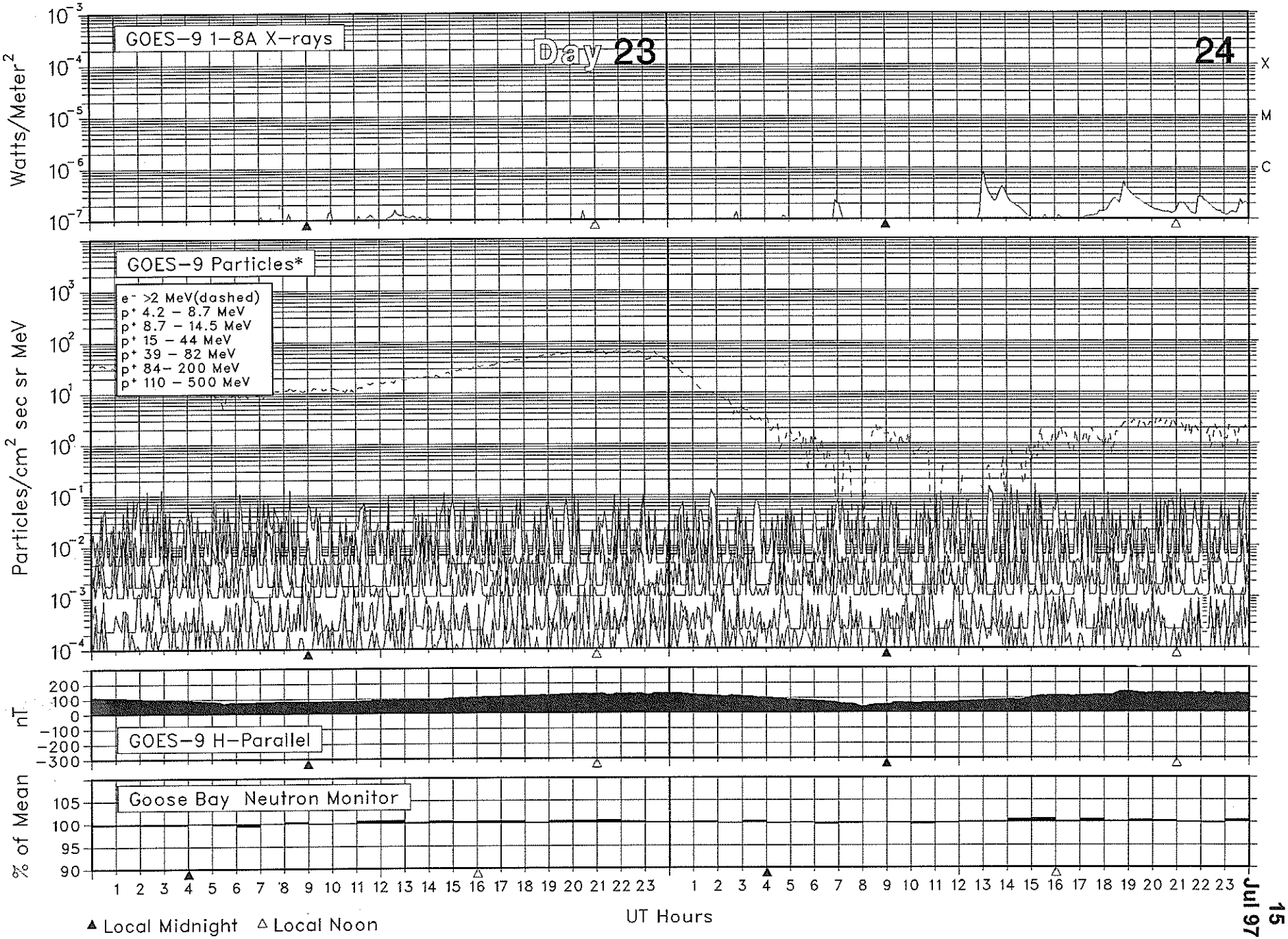

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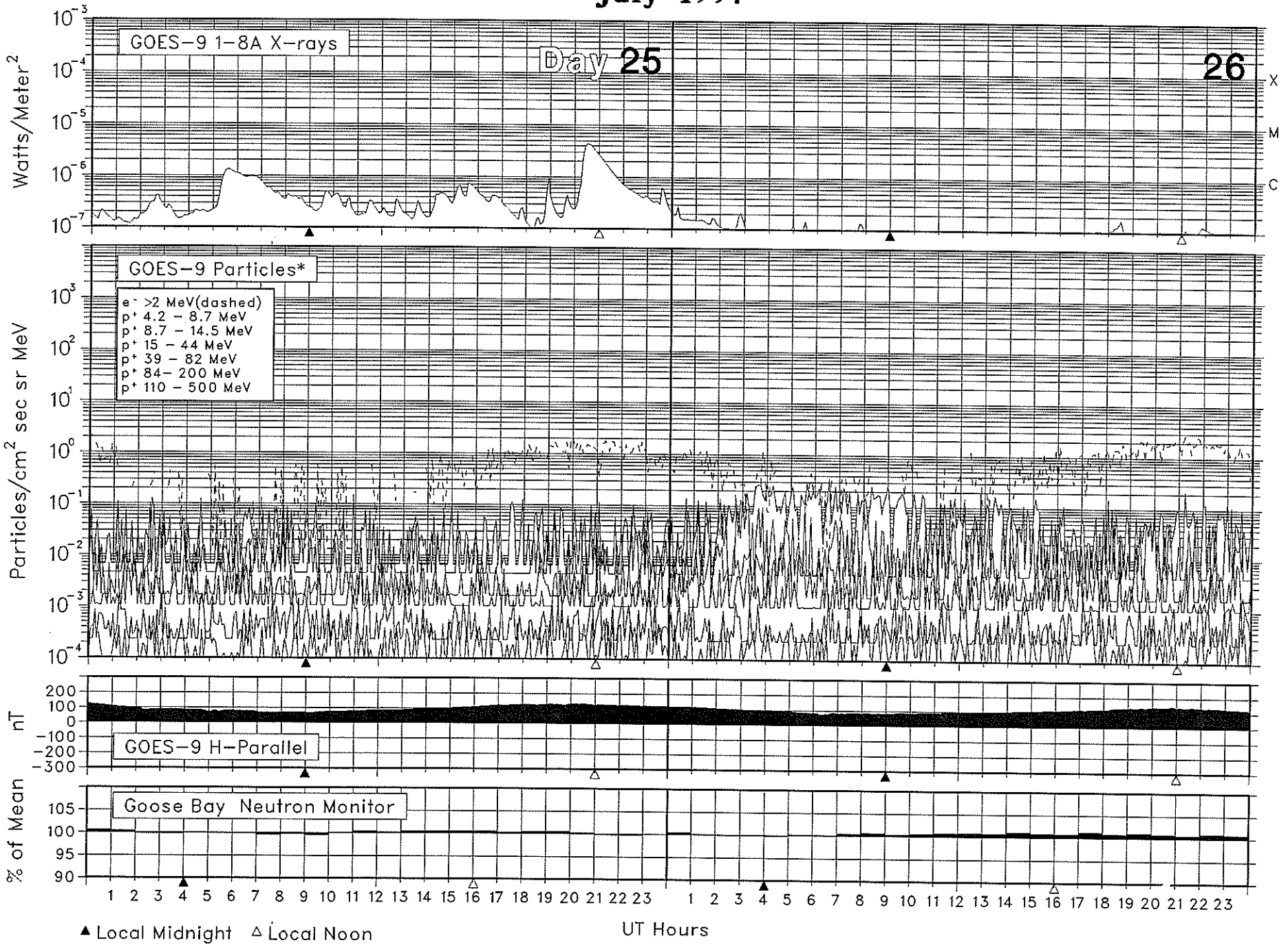

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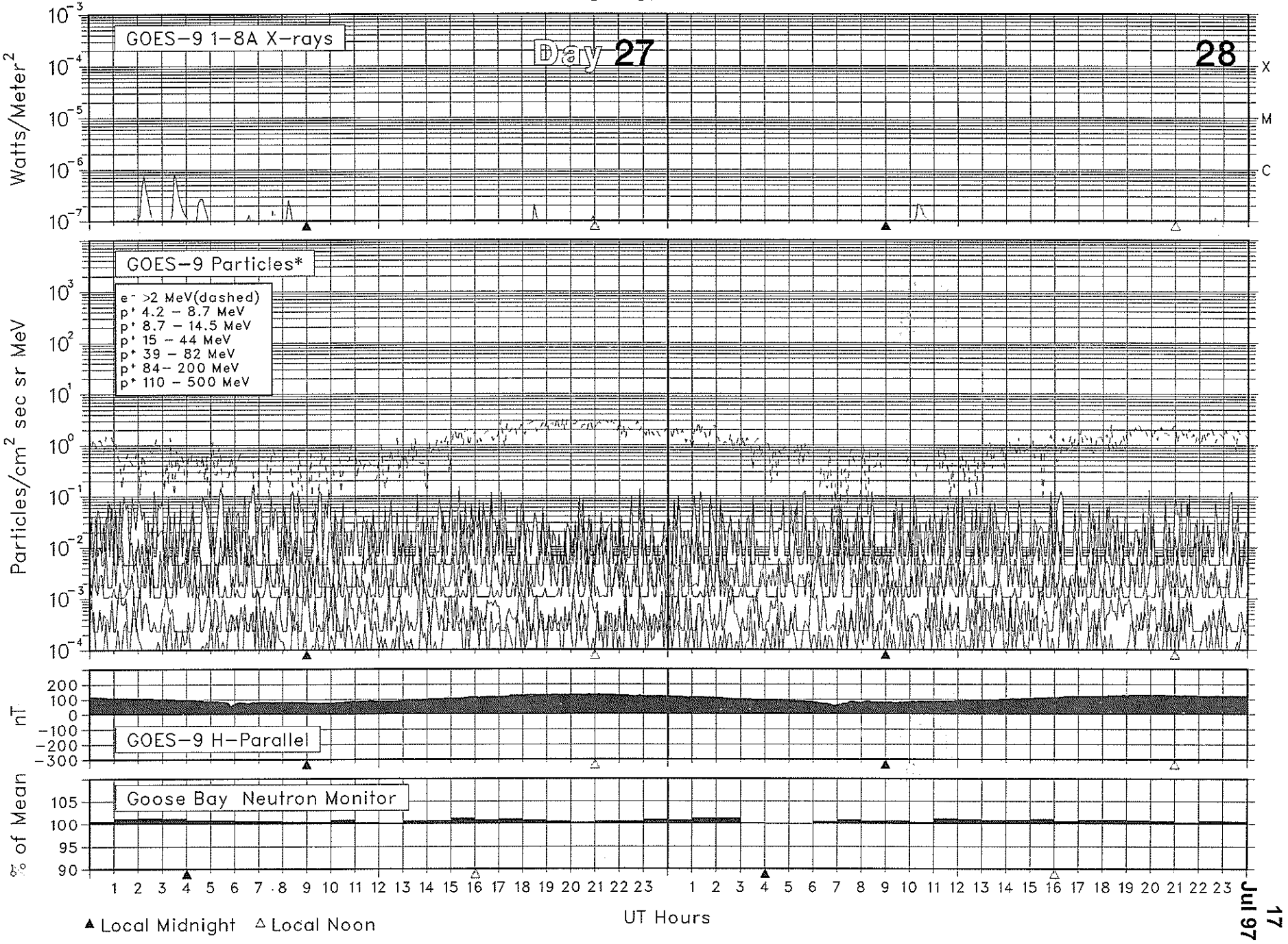

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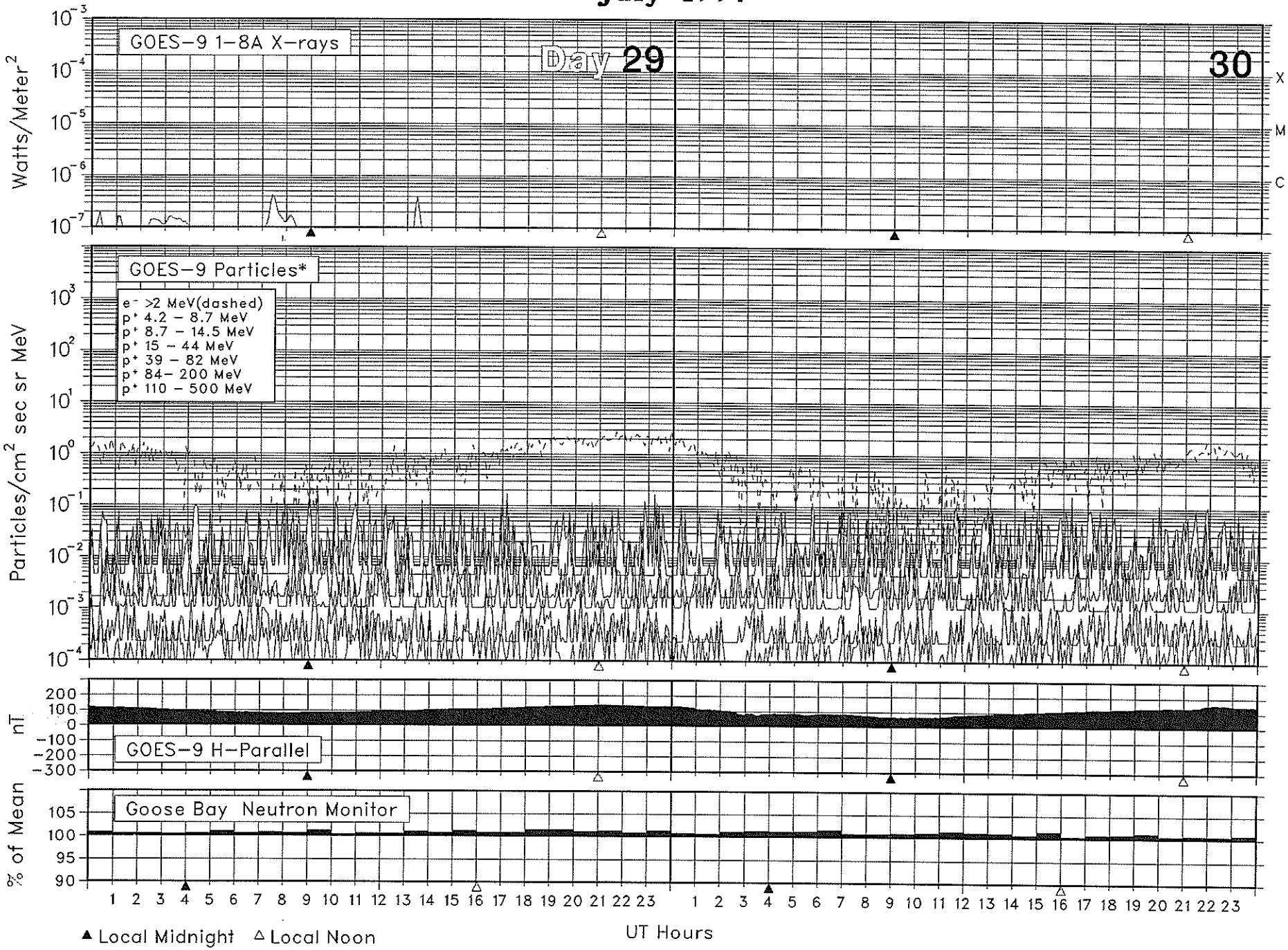

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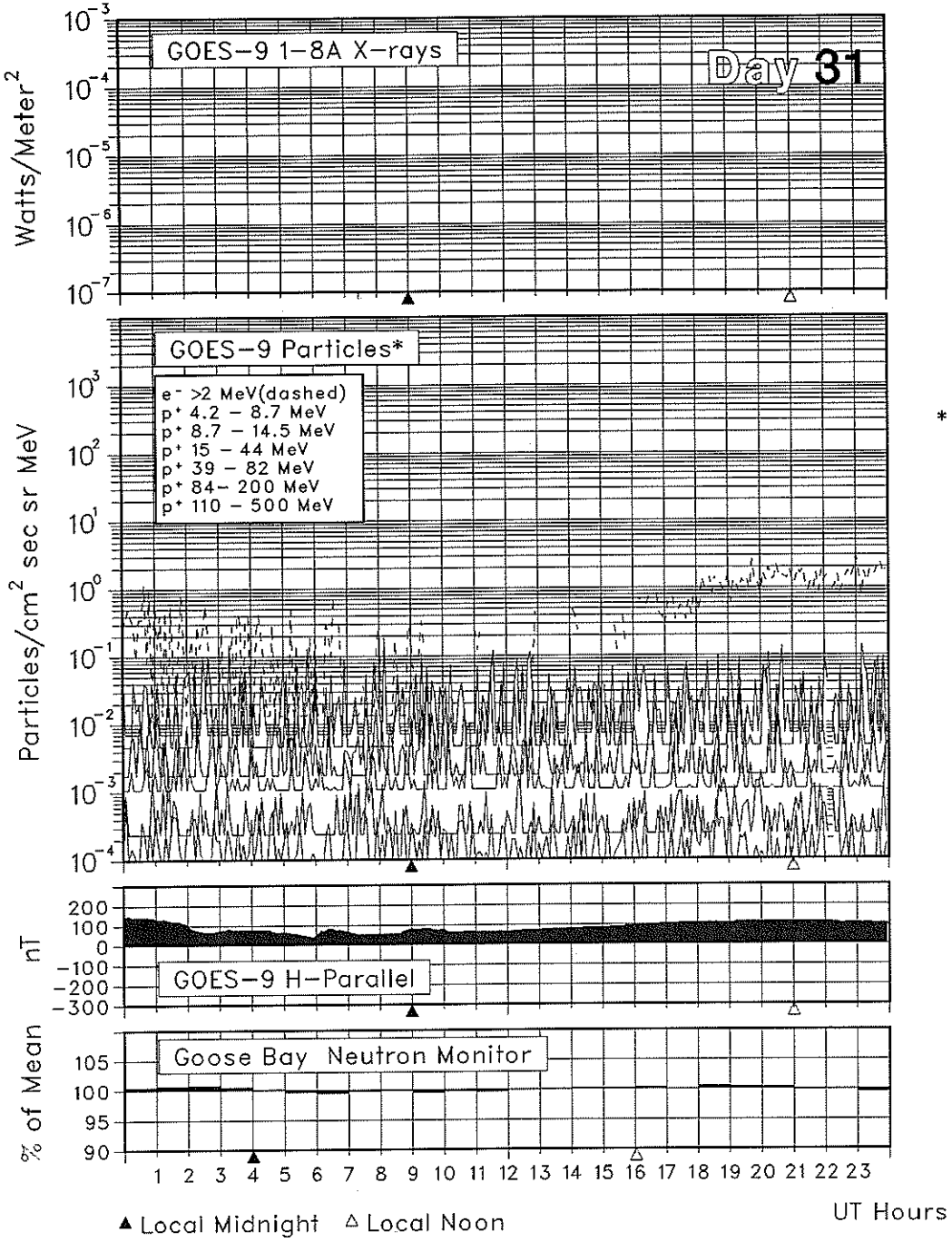


* Electron flux is divided by 10.
Electron units are Counts/cm^2 sec sr.
Protons are corrected for contamination.

A L E R T P E R I O D S
The International Space Environment Service

JULY 1997

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
182	01	30	0	70	3			0	0	0	01		SOL: Quiet
								0	0	0	01		MAG: Quiet
								0	0	0	01		PRO: Quiet
183	02	01	0	70	2			0	0	0	02		SOL: Quiet
								0	0	0	02		MAG: Quiet
								0	0	0	02		PRO: Quiet
184	03	02	12	70	2	S19	E44	0	0	0	03	Q	SOL: Quiet
								0	0	0	03		MAG: Quiet
								0	0	0	03		PRO: Quiet
185	04	03	12	69	5	S22	E30	0	0	0	04	Q	SOL: Quiet
								0	0	0	04		MAG: Quiet
								0	0	0	04		PRO: Quiet
186	05	04	12	70	5	S30	E02	0	0	0	05	Q	SOL: Quiet
								0	0	0	05		MAG: Quiet
								0	0	0	05		PRO: Quiet
187	06	05	11	70	4	S30	W14	0	0	0	06	Q	SOL: Quiet
								0	0	0	06		MAG: Quiet
								0	0	0	06		PRO: Quiet
188	07	06	11	68	3	S32	W23	0	0	0	07	Q	SOL: Quiet
								0	0	0	07		MAG: Quiet
								0	0	0	07		PRO: Quiet
189	08	07	26	70	11	S31	W36	0	0	0	08	Q	SOL: Quiet
						N05	E19	0	0	0	08	Q	MAG: Quiet
								0	0	0	08		PRO: Quiet
190	09	08	25	70	3	S31	W50	0	0	0	09	Q	SOL: Quiet
						N05	E06	0	0	0	09	Q	MAG: Quiet
								0	0	0	09		PRO: Quiet
191	10	09	31	70	8	S33	W62	0	0	0	10	Q	SOL: Quiet
						N04	W09	0	0	0	10	Q	MAG: Quiet
								0	0	0	10		PRO: Quiet
192	11	10	17	69	7	N05	W22	0	0	0	11	Q	SOL: Quiet
								0	0	0	11		MAG: Quiet
								0	0	0	11		PRO: Quiet
193	12	11	0	69	3			0	0	0	12		SOL: Quiet
								0	0	0	12		MAG: Quiet
								0	0	0	12		PRO: Quiet
194	13	12	0	67	0			0	0	0	13		SOL: Quiet
								0	0	0	13		MAG: Quiet
								0	0	0	13		PRO: Quiet
195	14	13	0	67	2			0	0	0	14		SOL: Quiet
								0	0	0	14		MAG: Quiet
								0	0	0	14		PRO: Quiet
196	15	14	11	68	1	S21	W02	0	0	0	15	Q	SOL: Quiet
								0	0	0	15		MAG: Quiet
								0	0	0	15		PRO: Quiet
197	16	15	0	69	9			0	0	0	16		SOL: Quiet
								0	0	0	16		MAG: Quiet
								0	0	0	16		PRO: Quiet
198	17	16	0	70	5			0	0	0	17		SOL: Quiet
								0	0	0	17		MAG: Quiet
								0	0	0	17		PRO: Quiet

A L E R T P E R I O D S
The International Space Environment Service

JULY 1997

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
199	18	17	11	70	8	N23	E66	0	0	0	18	Q	SOL: Quiet
								0	0	0	18		MAG: Quiet
								0	0	0	18		PRO: Quiet
200	19	18	11	70	6	N23	E52	0	0	0	19	Q	SOL: Quiet
								0	0	0	19		MAG: Quiet
								0	0	0	19		PRO: Quiet
201	20	19	0	71	9			0	0	0	20		SOL: Quiet
								0	0	0	20		MAG: Quiet
								0	0	0	20		PRO: Quiet
202	21	20	12	71	5	S25	W12	0	0	0	21	Q	SOL: Quiet
								0	0	0	21		MAG: Quiet
								0	0	0	21		PRO: Quiet
203	22	21	0	71	5			0	0	0	22		SOL: Quiet
								0	0	0	22		MAG: Quiet
								0	0	0	22		PRO: Quiet
204	23	22	11	72	2	N22	E75	0	0	0	23	Q	SOL: Quiet
								0	0	0	23		MAG: Quiet
								0	0	0	23		PRO: Quiet
205	24	23	31	76	4	N27	W09	0	0	0	24	Q	SOL: Quiet
						N24	E61	0	0	0	24	Q	MAG: Quiet
								0	0	0	24		PRO: Quiet
206	25	24	44	79	10	N27	W22	2	0	0	25	Q	SOL: Quiet
						N23	E47	0	0	0	25	Q	MAG: Quiet
						N17	W43	1	0	0	25	Q	PRO: Quiet
207	26	25	65	80	4	N28	W37	1	0	0	26	Q	SOL: Eruptive
						N22	E33	0	0	0	26	Q	MAG: Quiet
						N18	W56	5	0	0	26	E	PRO: Quiet
						N22	E73	2	0	0	26	Q	
208	27	26	58	77	3	N28	W52	0	0	0	27	Q	SOL: Eruptive
						N22	E20	0	0	0	27	Q	MAG: Quiet
						N17	W70	1	0	0	27	Q	PRO: Quiet
						N23	E59	0	0	0	27	Q	
209	28	27	53	75	5	N28	W65	2	0	0	28	Q	SOL: Quiet
						N22	E04	0	0	0	28	Q	MAG: Quiet
						N16	W82	0	0	0	28	Q	PRO: Quiet
						N24	E46	1	0	0	28	Q	
210	29	28	26	74	3	N24	W06	0	0	0	29	Q	SOL: Quiet
						N26	E35	0	0	0	29	Q	MAG: Quiet
								0	0	0	29		PRO: Quiet
211	30	29	24	73	2	N23	W21	0	0	0	30	Q	SOL: Quiet
						N27	E22	3	0	0	30	Q	MAG: Quiet
								0	0	0	30		PRO: Quiet
212	31	30	12	71	4	N24	E09	0	0	0	31	Q	SOL: Quiet
								0	0	0	31		MAG: Quiet
								0	0	0	31		PRO: Quiet

(1) Region Forecast and Flare (SOL) Advice
- 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, probability >=50%)
- P = Proton (Proton flares expected, probability >=50%)

A L E R T P E R I O D S
The International Space Environment Service

JULY 1997

W = Warning (activity levels are expected to increase, but no numerical forecast given)
/ = No forecast available

Magnetic (MAG) Geoadvice

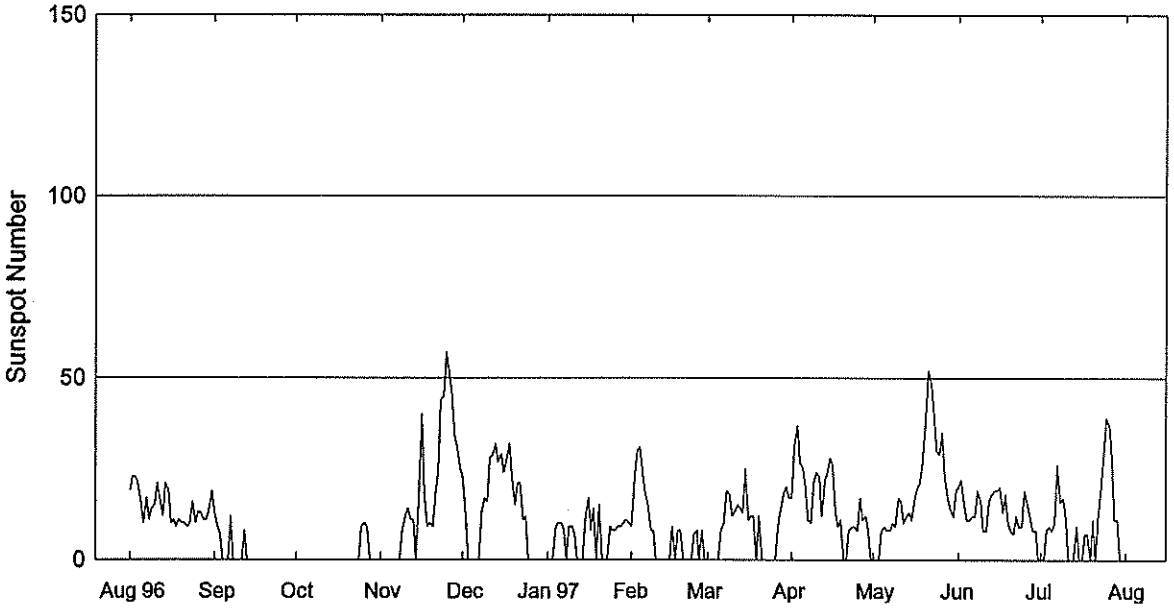
'Quiet'		
'Active'	conditions expected	(A>=20 or K=4)
'Minor'	storm expected	(A>=30 or K=5)
'Major'	storm expected	(A>=50 or K>=6)
'Severe'	storm expected	(A>=100 or K>=7)
'IP'	magstorm in progress	(A>=30 or K>=4)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

Proton (PRO) Geoadvice

'Quiet'		
'Proton'	event expected	(10pfu at >10MeV)
'Major'	proton event expected	(100pfu at >100 MeV)
'IP'	proton event in progress	(>10 MeV)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

STRATWARM ALERTS - NONE

International Relative Sunspot Numbers
Aug 1996 - Jul 1997

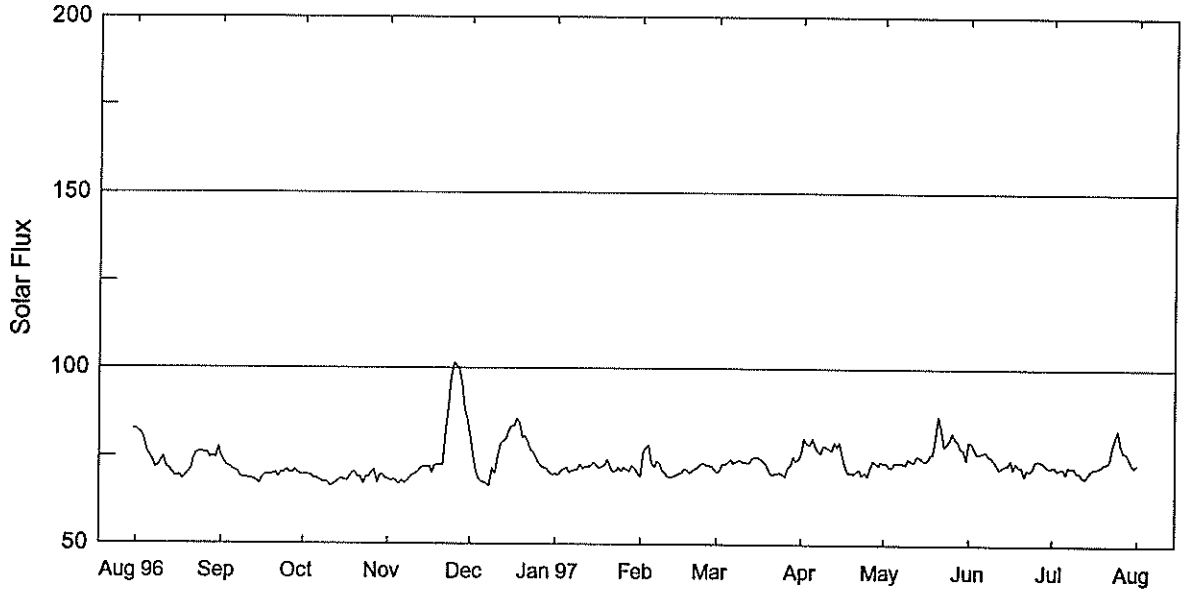


Day	Aug 96	Sep	Oct	Nov	Dec	Jan 97*	Feb *	Mar*	Apr*	May*	Jun*	Jul*
1	19	13	0	0	23	0	9	0	17	0	20	0
2	23	9	0	0	12	0	23	0	31	0	22	0
3	23	7	0	0	0	0	30	0	37	0	15	8
4	21	0	0	0	0	9	31	0	27	8	11	9
5	16	0	0	0	0	10	23	0	25	9	11	8
6	10	0	0	0	0	10	18	8	20	8	12	10
7	17	12	0	0	0	8	15	10	11	8	12	26
8	11	0	0	0	13	0	8	19	10	10	19	16
9	14	0	0	8	17	9	8	18	21	9	16	17
10	15	0	0	12	16	9	0	12	24	17	8	13
11	21	0	0	14	28	7	0	13	23	16	8	0
12	17	8	0	11	29	0	0	15	12	10	16	0
13	12	0	0	11	32	0	0	14	22	12	18	0
14	21	0	0	0	27	0	0	13	24	13	19	9
15	19	0	0	20	29	11	0	25	28	11	19	0
16	10	0	0	40	24	17	9	11	26	17	20	0
17	11	0	0	18	28	8	0	12	13	20	13	7
18	9	0	0	9	32	14	8	12	9	21	18	7
19	11	0	0	10	23	0	8	0	11	27	10	0
20	10	0	0	9	15	15	0	12	0	39	8	11
21	10	0	0	18	21	0	0	0	0	52	7	0
22	9	0	0	24	21	0	0	0	8	48	12	11
23	10	0	0	44	11	0	0	0	9	40	9	20
24	16	0	0	45	12	9	7	0	9	30	9	29
25	10	0	9	57	0	8	8	0	8	29	19	39
26	13	0	10	52	0	8	0	0	17	35	15	37
27	13	0	9	45	0	9	8	10	11	23	12	28
28	11	0	0	34	0	9	0	14	12	17	8	11
29	11	0	0	31	0	10		18	8	14	8	11
30	14	0	0	25	0	11		20	0	12	0	0
31	19		0		0	10		17		19		0
Mean	14.4	1.6	0.9	17.9	13.3	6.5	7.6	8.8	15.8	18.5	13.1	10.5

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Aug 96 - Jul 97

Adjusted to 1 AU



Day	Aug 96	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun	Jul
1	82.8	74.8	69.6	68.5	80.8	70.0	69.2	70.5*	76.2	73.4	79.6	72.4
2	81.9	73.6	69.8	67.9	75.7	69.7	76.2	71.1	80.4	73.3	79.1	72.4
3	81.6	72.4	69.6	68.3	70.7	70.8	77.4	72.8	78.8	72.3	77.4	71.4
4	79.9	72.0	69.4	67.8	68.6	71.4	78.4	72.8	78.6	72.1	76.1	72.0
5	76.2	71.4	68.5	67.1	67.6	71.9	73.3	73.4	80.3	73.6	76.1	72.0
6	75.1	70.8	68.8	68.0	67.6	70.6	72.2	74.2	78.3	73.4	76.4	70.6
7	73.7	70.5	68.2	67.3	67.1	70.9	73.7	73.1	77.0	73.3	76.9	72.6
8	71.7	69.2	67.7	67.8	66.6	71.3	73.2	73.6	76.3	73.3	75.4	72.1
9	72.1	68.8	67.7	68.9	71.5	71.3	71.2	74.1	78.3	73.0	75.3	72.3
10	73.6	68.9	67.4	69.6	70.2	72.9	70.4	73.8	78.0	74.6*	74.2	70.8
11	74.8	68.5	66.4	70.0	75.2	71.6	69.3	73.4	77.4	73.8	73.0	70.9
12	72.0	68.6	66.9	70.7	78.6	72.1	69.1	73.4	76.9	73.7	71.8	69.6
13	71.4	68.1	67.3	71.5	79.2	72.1	69.3	73.3	79.3	75.4	72.3	69.3
14	70.5	67.9	68.2	72.1	80.0	72.4	69.6	74.7	77.9	75.1	72.9	70.3
15	69.3	67.1	68.6	71.9	82.3	73.3	70.1	75.0	79.2	74.7	73.0	71.5
16	69.3	68.7	68.1	72.2	83.5	72.4	70.3	75.0	75.6	73.9	74.4	71.9
17	69.5	69.6	68.0	70.4	83.6	71.7	71.4	74.4	72.3	74.4	71.8	72.2
18	68.4	69.6	69.0	72.4	85.6	72.2	71.2	73.7	70.7	75.8	73.5	72.3
19	69.3	69.8	70.4	72.6	84.6	72.9	70.4	73.1	70.6	76.0	72.4	72.8
20	70.1	69.7	70.6	72.7	80.3	74.3	71.0	71.0	70.4	81.1	72.5	73.5
21	71.3	70.3	69.0	72.6	80.9	71.8	71.6	70.0	70.9	86.9	69.8	73.6
22	74.5	69.1	69.1	80.6	78.9	70.7	71.9	70.1	71.5	83.0	71.8	74.5
23	75.8	70.4	67.1	88.7	76.9	71.1	73.0	70.3	69.7	78.1	71.3	78.1
24	76.2	70.4	69.1	97.3	76.4	71.9	73.1	70.6	70.7	78.9	72.2	81.2
25	76.3	71.2	69.1	101.7	74.7	70.9	72.6	70.2	69.6	80.1	74.1	83.0
26	75.8	70.4	70.3	100.8	73.0	71.9	72.4	69.5	71.8	82.0#	74.2	79.0
27	75.9	70.1	71.2	100.0	72.2	71.3	72.4	71.9	74.1	80.4	74.1	76.8
28	74.7	71.2	67.5	95.4	71.8	70.8	71.5	72.9	73.4	79.5	73.6	76.5
29	75.0	70.3	69.4	88.5	71.4	72.4		75.1	72.9	77.6	72.6	75.0
30	74.7	69.7	69.7	85.1	70.1	71.5		73.8	73.7	77.2	72.1	73.2
31	77.6		68.6		69.8	70.3		74.6		74.5		72.5
Mean	74.2	70.1	68.7	76.9	75.3	71.6	72.0	72.8	75.0	76.3	74.0	73.4

NOTE: *=Average of 1700 and 2300UT readings. #=1900UT reading.

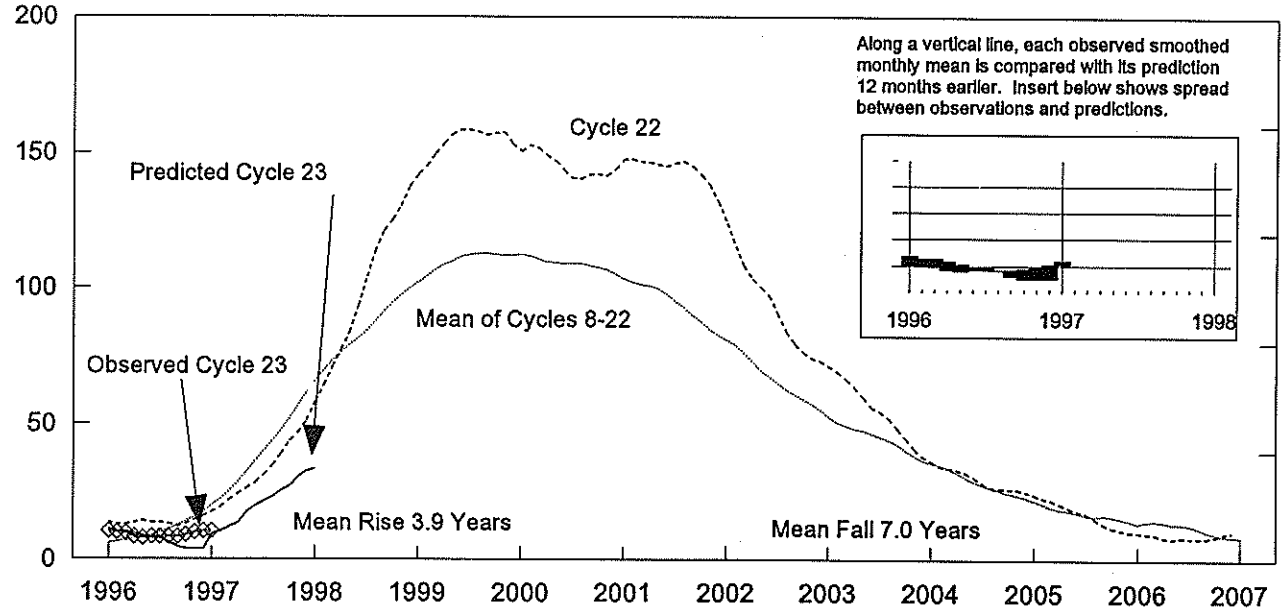
DAILY SOLAR INDICES

July 1997

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — PALE (15400)	LEAR (8800)	LEAR (4995)	Pentic (2800)	LEAR (2695)	LEAR (1415)	LEAR (610)	LEAR (410)	LEAR (245)
1	182	11	0	0	70.0	519	196	116	72.4	64	49	37	26	11
2	183	12	0	2	70.1	523	184	113	72.4	69	48	26	20	11
3	184	13	8	2	69.0	525	202	117	71.4	69	49	36	25	11
4	185	14	9	8	69.7	517	200	117	72.0	69	49	36	25	12
5	186	15	8	3	69.7	520	201	117	72.0	68	49	36	25	11
6	187	16	10	4	68.3	515	196	114	70.6	68	49	37	25	12
7	188	17	26	22	70.2	523	197	116	72.6	69	49	36	25	11
8	189	18	16	10	69.8	518	203	117	72.1	68	49	36	25	11
9	190	19	17	18	70.0	518	198	117	72.3	68	48	36	25	11
10	191	20	13	2	68.5	504	202	117	70.8	69	47	35	24	10
11	192	21	0	0	68.6	517	199	117	70.9	67	47	36	24	11
12	193	22	0	0	67.4	522	204	117	69.6	66	47	35	24	11
13	194	23	0	0	67.1	524	202	115	69.3	67	46	34	24	11
14	195	24	9	3	68.1	522	202	115	70.3	66	46	33	23	10
15	196	25	0	0	69.2	498	201	116	71.5	68	47	34	23	9
16	197	26	0	0	69.6	522	204	117	71.9	68	47	34	24	11
17	198	27	7	4	69.9	523	204	118	72.2	67	48	34	23	11
18	199	1	7	3	70.1	519	207	119	72.3	69	49	35	24	11
19	200	2	0	0	70.5	520	205	117	72.8	69	49	35	24	11
20	201	3	11	6	71.2	519	205	118	73.5	69	50	35	24	11
21	202	4	0	0	71.3	522	208	120	73.6	70	53	36	24	11
22	203	5	11	7	72.2	517	204	120	74.5	69	51	36	24	10
23	204	6	20	28	75.7	509	207	122	78.1	74	52	36	25	11
24	205	7	29	43	78.7	507	209	122	81.2	74	54	36	25	11
25	206	8	39	45	80.4	506	211	128	83.0	80	57	41	30	21
26	207	9	37	37	76.6	518	208	125	79.0	77	54	37	25	11
27	208	10	28	22	74.5	522	207	123	76.8	76	55	36	25	12
28	209	11	11	5	74.2	519	205	121	76.5		52	35	24	11
29	210	12	11	2	72.7	517	209	122	75.0	74	54	35	24	11
30	211	13	0	0	71.0	508	208	120	73.2	73	51	36	23	11
31	212	14	0	0	70.4	502	206	118	72.5	67	50	35	24	11
MEAN			10.5	8.9	71.1	516	203	118	73.4	69	49	35	24	11

The International numbers shown above are preliminary values; the American numbers are final.
NOTE: 15400 readings are from Palehua.

Cycle 23 Smoothed Sunspot Numbers: Observed and Predicted



Smoothed Sunspot Numbers (observed and Predicted) for Parts of Solar Cycles 22 and 23

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1992	124	115	108	103	100	97	91	84	80	76	74	73	93.8
1993	71	69	67	64	60	56	55	52	48	45	41	38	55.5
1994	37	35	34	34	33	31	29	27	27	27	26	26	30.5
1995	24	23	22	21	19	18	17	16	13	12	11	11	17.3
1996	11	10	10	9	8	9	9	8	9	9	10	11	9.4
1997	11	12	13	15	17	19	22	25	28	31	34	38	22
( )		(1)	(3)	(4)	(6)	(7)	(10)	(12)	(14)	(17)	(20)	(23)	(10)
1998	42	45	50	55	59	63	66	69	72	75	79	82	63
( )	(26)	(29)	(32)	(35)	(38)	(41)	(44)	(47)	(48)	(48)	(50)	(51)	(41)

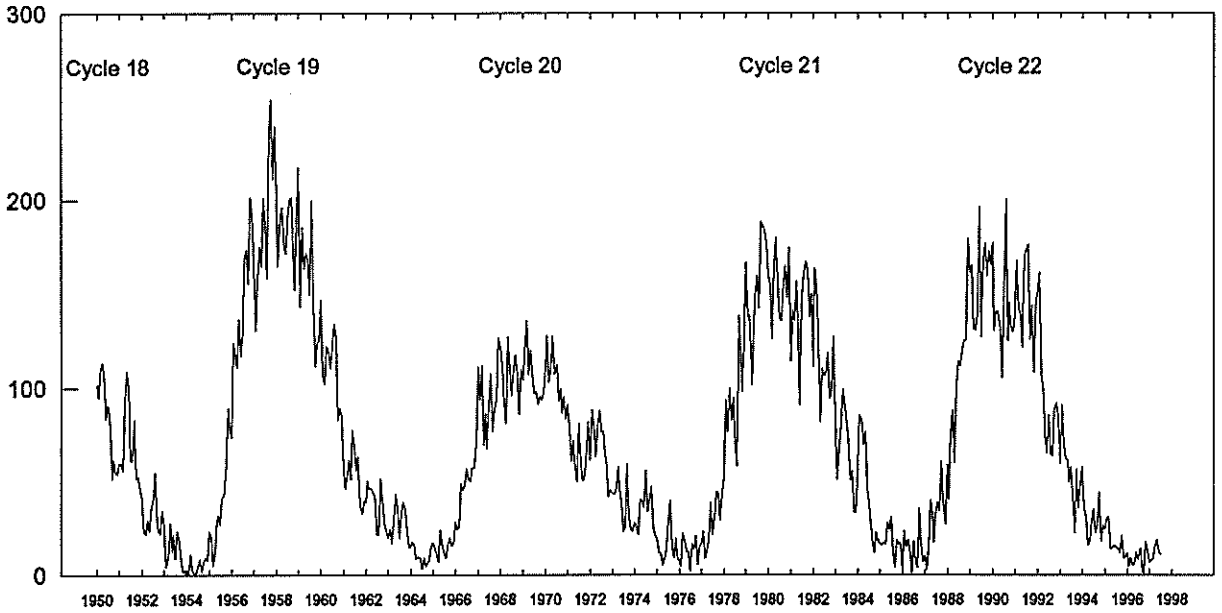
Solar Cycle 22 | Solar Cycle 23 | Min, Max, and Predictions

July 1989 marks the maximum of Solar Cycle 22. May 1996 marks the minimum of Solar Cycle 22 and the onset of Cycle 23.

Observed and Predicted Numbers. For the end of Cycle 22, and the rise and decline of Cycle 23, 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 Dec 1996 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 1998 prediction. There exists a 90% chance that in January 1998, the actual smoothed number will fall somewhere between 16 and 68.

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 15 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 8.0 that occurred in May 1996. For next solar maximum discussions, visit http://www.sec.noaa.gov.

Mean Monthly Sunspot Numbers
Jan 1950 - Jul 1997



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	122.3	
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	89.7	91.8	82.6	94.3	
1993	59.3	91.0	69.8	62.2	61.3	49.8	57.9	42.2	22.4	56.4	35.6	48.9	54.6	
1994	57.8	35.5	31.7	16.1	17.8	28.0	35.1	22.5	25.7	44.0	18.0	26.2	29.9	
1995	24.2	29.9	31.1	14.0	14.5	15.6	14.5	14.3	11.8	21.2	9.0	10.0	17.5	
1996	11.5	4.4	9.2	4.8	5.5	11.8	8.2	14.4	1.6	0.9	17.9	13.3	8.6	
1997	6.5	7.6	8.8	15.8	18.5	13.1	10.5						11.5	

Values are preliminary after Dec 1996. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

JULY 1997

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	04	1717	1726	1738						21	A	3.8						3.6E-05
GOES	12	1514	1524	1536						22	C	1.2						1.0E-03
GOES	16	0517	0522	0529						12	B	1.2						7.4E-05
GOES	20	2109	2112	2116						7	B	1.0						4.0E-05
GOES	21	0349	0400	0413						24	B	1.8						2.2E-04
GOES		1019	1023	1028						9	B	1.0						4.9E-05
GOES	23	0701	0706	0724						23	B	1.2						1.4E-04
GOES		0729	0733	0737						8	B	1.0						4.5E-05
GOES		0811	0815	0817						6	B	2.1						4.6E-05
GOES		0954	0958	1002						8	B	2.4						7.2E-05
GOES		1105	1109	1118						13	B	1.3						7.7E-05
GOES		1237	1240	1244						7	B	1.5						5.8E-05
GOES		2028	2031	2034						6	B	1.9						4.8E-05
GOES	24	0245	0249	0257						12	B	1.3						8.0E-05
GOES		0335	0338	0343						8	B	1.1						4.1E-05
SVTO		0606	0612	0615	N27	W13	8062	07	23.2	9	SF		3	E		35		
GOES		0651	0657	0711	N27	W14	8062			20	B	2.7						2.3E-04
LEAR		0656	0656	0701	N26	W09	8062	07	23.6	5	SF	B 2.7	3	E		13		
SVTO		0656	0657	0714	N27	W14	8062	07	23.2	18	SF	B 2.7	3	E		22		F
GOES		1254	1305	1311	N17	W37				17	B	9.1						5.0E-04
RAMY		1300	1304	1327	N17	W37		07	21.7	27	SF	B 9.1	3	E		23		F
SVTO		1302	1306U	1328D	N16	W38		07	21.7	26D	SF	B 9.1	3	E		25		
GOES		1844	1852	1903						19	B	5.0						4.3E-04
GOES		2153	2200	2222						29	B	2.5						3.7E-04
GOES		2335	2341	2348						13	B	2.5						1.6E-04
GOES	25	0019	0028	0036						17	B	1.9						1.8E-04
LEAR		0417	0417	0420	N20	W43	8065	07	21.9	3	SF		3	E		13		
LEAR		0512	0516	0520	N20	W43	8065	07	21.9	8	SF		3	E		18		
GOES		0515	0541	0658			8065			103	C	1.2						5.8E-03
LEAR		0529	0536	0600	N20	W44	8065	07	21.9	31	SF		3	E		36		
LEAR		0601	0602	0610	N20	W44	8065	07	21.9	9	SF		3	E		15		
GOES		1037	1040	1042	N23	E80				5	B	5.2						1.3E-04
RAMY		1040E	1040U	1102D	N23	E80		07	31.6	22D	SF	B 5.2	1	E		64		
GOES		1201	1204	1211						10	B	2.2						1.2E-04
GOES		1232	1238	1246						14	B	3.9						2.6E-04
GOES		1326	1331	1337						11	B	3.1						1.8E-04
GOES		1411	1428	1450						39	B	4.7						1.0E-03
RAMY		1507	1514	1525D	N28	W32	8062	07	23.1	18D	SF		3	E		22		
HOLL		1507	1515	1520	N27	W33	8062	07	23.0	13	SF		3	E		10		FH
SVTO		1508	1509U	1524D	N27	W33	8062	07	23.0	16D	SF		3	E		13		F
GOES		1533	1539	1548	N17	W51	8065			15	B	9.1						6.3E-04
RAMY		1537E	1537U	1544D	N17	W51	8065	07	21.8	7D	SF	B 9.1	3	E		12		
HOLL		1538	1538	1543	N17	W51	8065	07	21.8	5	SF	B 9.1	3	E		10		H
GOES		1744	1749	1752						8	B	3.3						1.1E-04
GOES		1824	1830	1834	-					10	B	1.6						8.2E-05
GOES		1845	1855	1859			8065			14	C	1.1						4.3E-04
RAMY		1849	1853	1856	N22	E74	8066	07	31.5	7	SF		3	E		24		
HOLL		1851	1851	1854	N24	E68	8066	07	31.0	3	SF		3	E		17		
RAMY		1854	1856	1909	N17	W52	8065	07	21.8	15	SF		3	E		26		
HOLL		1854	1857	1902	N16	W54	8065	07	21.7	8	SF		3	E		18		
GOES		1934	1941	1948						14	B	4.6						2.7E-04
HOLL		2011	2028	2115	N16	W54	8065	07	21.7	64	SF		3	E		78		H
GOES		2332	2336	2344						12	B	6.4						3.5E-04
GOES	26	0012	0016	0018	N22	W57	8065			6	B	4.3						9.8E-05
LEAR		0016	0016	0019	N22	W57	8065	07	21.6	3	SF	B 4.3	3	E		12		
GOES		0243	0252	0257						14	B	2.2						1.5E-04
GOES		0455	0500	0503						8	B	1.4						5.6E-05
GOES		0528	0531	0534						6	B	1.4						4.5E-05
GOES		0742	0749	0753						11	B	1.6						8.5E-05
GOES		1827	1830	1833						6	B	2.0						6.2E-05

Hα SOLAR FLARES

JULY 1997

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
GOES	26	2106	2110	2115						9		B 1.1						5.2E-05
GOES	27	0022	0026	0029						7		B 1.1						4.1E-05
GOES		0148	0154	0159						11		B 1.2						7.3E-05
GOES		0209	0215	0222						13		B 8.3						4.4E-04
GOES		0325	0333	0339	N32	W48	8062			14		B 9.5						4.8E-04
LEAR		0330	0332	0342	N32	W48	8062	07	23.3	12	SF	B 9.5	3	E		48		
GOES		0427	0439	0447						20		B 2.6						2.5E-04
GOES		0632	0637	0645						13		B 1.4						8.4E-05
GOES		0810	0816	0822	N26	W56	8062			12		B 2.7						1.4E-04
SVTO		0813	0815	0823	N26	W56	8062	07	23.0	10	SF	B 2.7	3	E		35		H
LEAR		0814	0815	0821	N32	W52	8062	07	23.2	7	SF		3	E		19		H
GOES		1827	1833	1837	N24	E50	8066			10		B 2.2						9.7E-05
RAMY		1830	1833	1838	N24	E50	8066	07	31.6	8	SF	B 2.2	3	E		22		
GOES		2049	2055	2059						10		B 1.4						6.7E-05
GOES		2110	2113	2116						6		B 1.0						3.3E-05
GOES	28	1016	1024	1033						17		B 2.2						1.9E-04
GOES		2234	2240	2243						9		B 1.4						5.9E-05
GOES	29	0015	0019	0023						8		B 2.6						8.7E-05
GOES		0103	0109	0113						10		B 2.0						9.4E-05
SVTO		0539	0544	0553	N28	E29	8066	07	31.5	14	SF		3	E		24		
GOES		0709	0728	0737			8066			28		B 4.0						4.1E-04
SVTO		0720	0730	0741	N27	E28	8066	07	31.5	21	SF	B 4.0	3	E		27		
GOES		1317	1324	1330	N25	E26	8066			13		B 5.1						2.2E-04
RAMY		1321	1323	1333	N25	E26	8066	07	31.6	12	SF	B 5.1	3	E		53		FH
SVTO		1322	1324	1340	N27	E25	8066	07	31.5	18	SF	B 5.1	3	E		80		H

"Remarks"

A = Eruptive prominence whose base is less than 90 degrees from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of Ca II.
P = Flare shows Helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

NOTE: Beginning July 1997, the times of all GOES X-ray events are now included in this table.

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

JULY 1997

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
25	2695	LEAR	8 S	0611.0	0612.0	2.0	13.0			QL=4 ST=2 TYP=3
	2695	SGMR	48 C	2018.0	2030.0	26.0	1500.0			QL=4 ST=2 TYP=8
	8800	SGMR	20 GRF	2021.0	2029.0	20.0	210.0			QL=4 ST=2 TYP=2
	8800	PALE	20 GRF	2022.0	2029.0U	22.0	250.0			QL=4 ST=2 TYP=2
	2695	SGMR	8 S	2048.0	2048.0	1.0	37.0			QL=4 ST=2 TYP=3

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

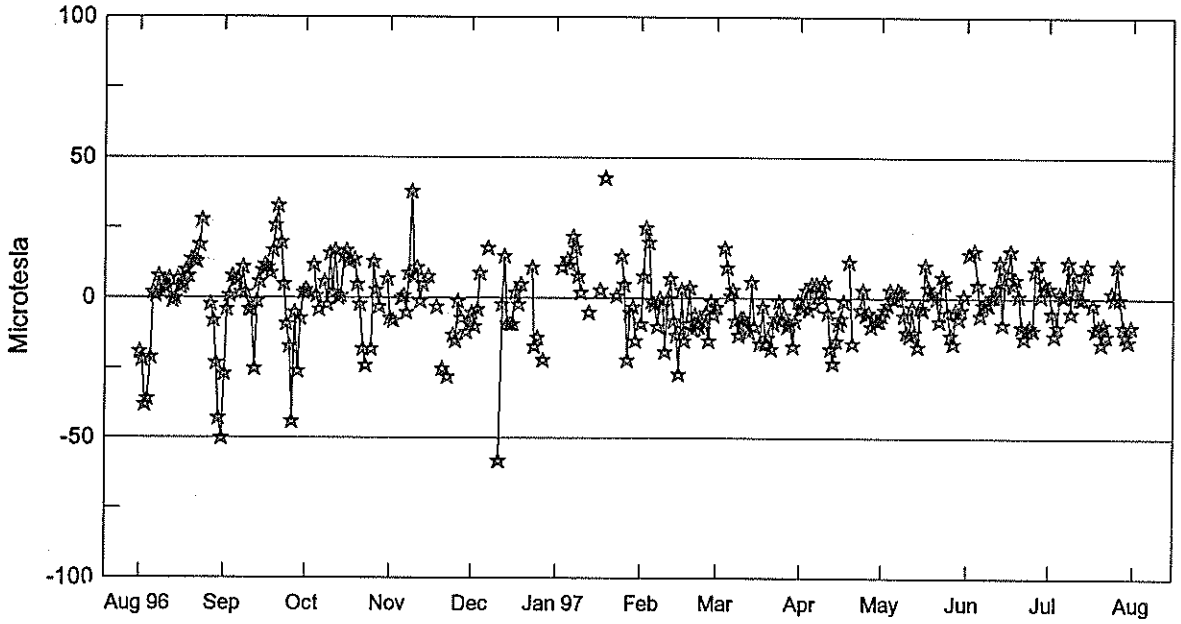
Explanation of Type Code:

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.

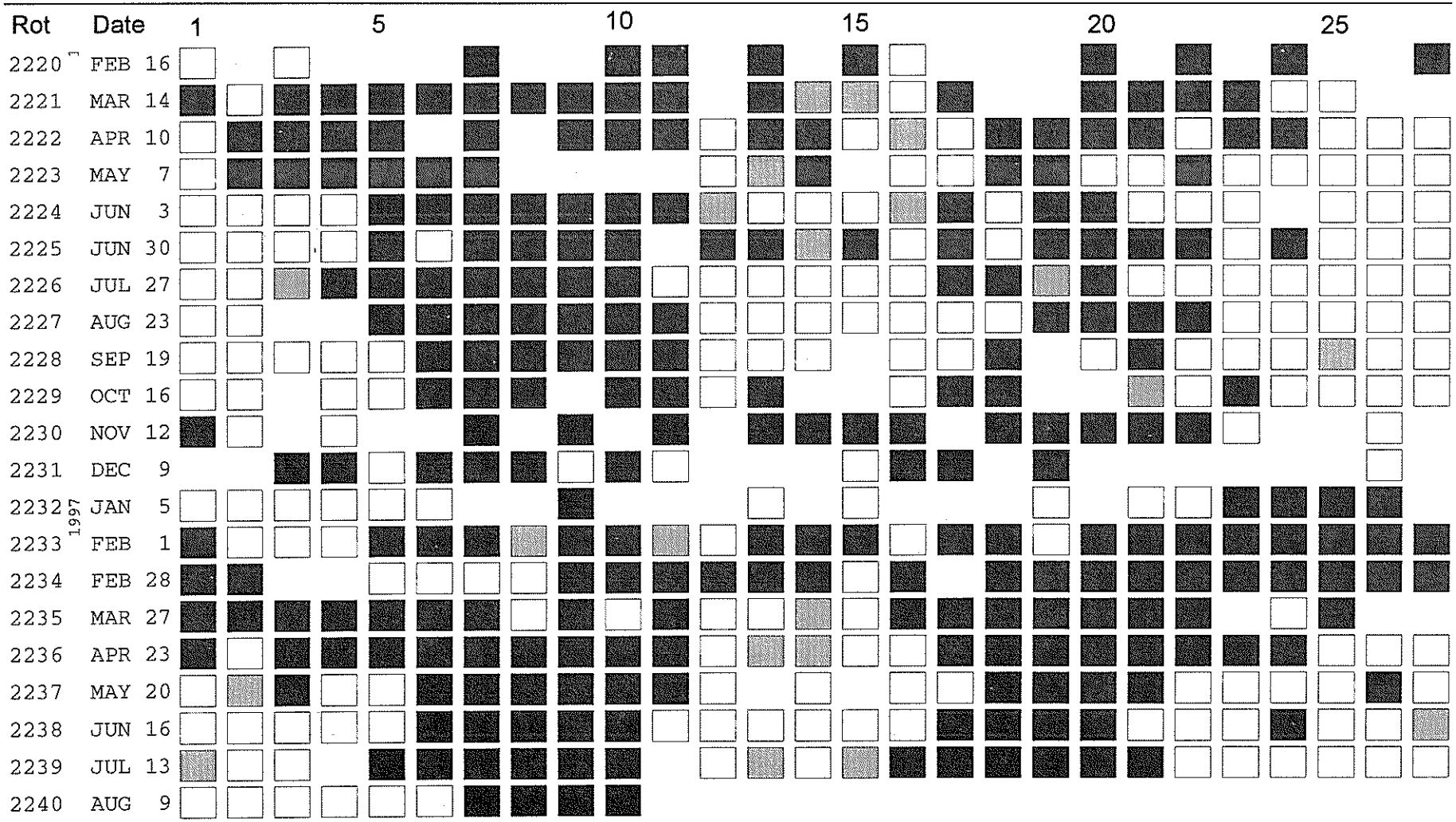
Stanford Mean Solar Magnetic Field (Microtesla)
"Sun-As-A-Star"



Day	Aug 96	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun	Jul
1	-19	-27	3	-7	-5	---	-9	-3	-4	-6	---	4
2	-22	-4	2	-8	-10	---	8	---	-3	-4	16	-5
3	-38	1	---	---	-4	11	25	---	3	-2	---	-13
4	-36	8	12	---	9	---	20	18	-4	3	17	-10
5	-21	6	1	0	---	14	-1	11	5	0	5	-2
6	2	7	-4	1	---	12	-2	1	-2	0	-6	1
7	1	2	---	-5	18	22	-10	3	5	3	-2	1
8	8	11	6	9	---	18	0	-8	2	2	-1	13
9	2	2	-2	38	---	8	-3	-13	0	-6	-2	-5
10	4	-4	16	8	---	2	-19	-7	6	-12	1	9
11	4	-4	2	11	-58	---	0	-7	-5	-13	1	3
12	7	-25	17	-1	-2	---	7	-9	-18	-3	4	0
13	-1	-1	0	5	15	-5	-8	-12	-23	-12	13	0
14	0	6	1	---	-9	---	-13	6	-15	-17	-9	9
15	7	10	15	8	-9	---	-27	-10	-9	-3	5	12
16	4	12	17	---	-9	---	3	---	-7	-4	9	---
17	5	11	13	---	2	3	-15	-16	-1	12	17	-2
18	10	9	---	-3	-2	---	-9	-3	---	4	5	-11
19	8	17	14		5	43	4	-16	13	2	7	-10
20	14	26	5	-25	---	---	-11	-14	-16	2	1	-16
21	14	33	-2	---	---	---	-6	-18	---	0	-10	-9
22	13	20	-18	-28	---	---	-9	-9	---	-8	-14	-13
23	19	5	-24	---	11	1	-8	-7	-4	8	-11	---
24	28	-9	---	-13	-17	---	-11	-1	3	6	-10	2
25	---	-17	-18	-15	-14	15	-5	-8	-6	-5	-11	0
26	---	-44	13	-1	---	5	-15	-6	-5	-13	10	12
27	-2	-5	3	-7	-22	-22	-1	-10	-10	-16	13	0
28	-8	-26	-3	---	---	-5	-6	-9	-7	-4	1	-10
29	-23	-7	---	-12	---	-3		-17	-8	-7	6	-13
30	-43	2	---	-9	---	-15		-8	-8	-4	4	-15
31	-50		7		---	---		-1		1		-10

Note: --- Indicates no data available for the day.

STANFORD MEAN SOLAR MAGNETIC FIELD

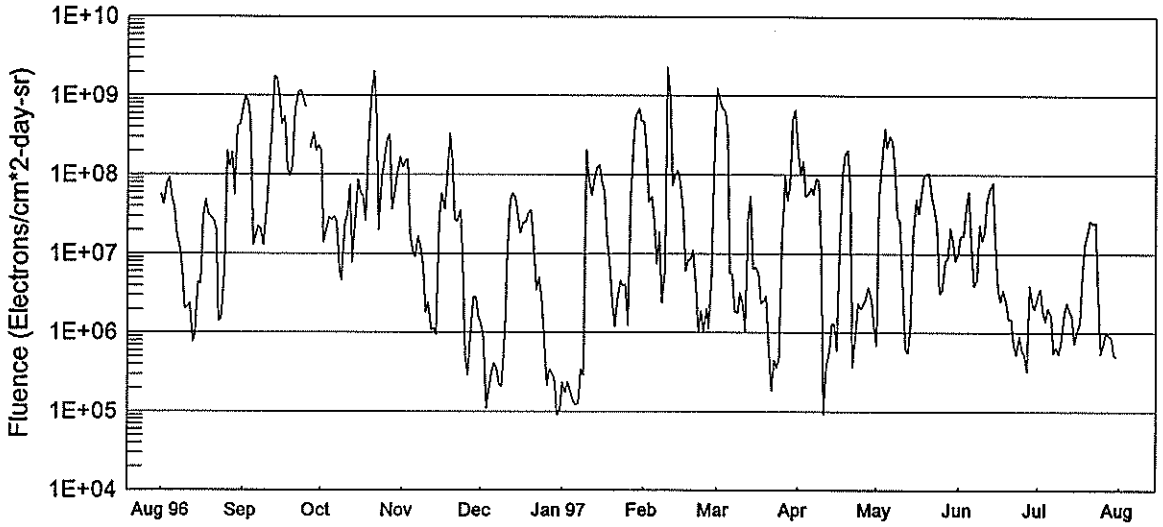


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

= 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.

GOES Daily Electron Fluence
Aug 96 - Jul 97



Day	Aug 96	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun	Jul
1	5.6E+07	7.0E+08	2.0E+08	1.2E+08	1.3E+06	2.3E+05	4.7E+08	1.2E+09	1.8E+08	6.8E+05	1.0E+07	2.9E+06
2	4.2E+07	9.9E+08	1.3E+07	1.4E+08	8.8E+05	1.7E+05	2.0E+08	9.0E+08	1.0E+08	5.2E+07	1.6E+07	3.6E+06
3	7.8E+07	8.3E+08	2.1E+07	1.5E+08	1.0E+05	2.3E+05	4.5E+07	7.0E+08	1.4E+08	1.3E+08	1.6E+07	1.8E+06
4	9.1E+07	4.8E+08	2.8E+07	1.7E+07	1.7E+05	1.8E+05	5.3E+07	6.3E+08	5.2E+07	3.8E+08	3.7E+07	1.4E+06
5	5.1E+07	1.2E+07	2.7E+07	1.0E+07	3.1E+05	1.4E+05	2.4E+07	3.4E+08	5.6E+07	2.2E+08	6.1E+07	2.0E+06
6	3.9E+07	1.7E+07	2.9E+07	9.2E+06	4.1E+05	1.2E+05	7.5E+06	5.6E+06	6.8E+07	3.1E+08	1.3E+07	1.6E+06
7	1.7E+07	2.2E+07	2.6E+07	1.6E+07	3.4E+05	1.2E+05	1.9E+07	5.5E+06	5.6E+07	2.6E+08	3.9E+06	5.5E+05
8	1.2E+07	2.0E+07	6.5E+06	1.2E+07	2.1E+05	3.4E+05	2.4E+06	1.8E+06	8.7E+07	1.1E+08	4.6E+06	6.6E+05
9	6.2E+06	1.2E+07	4.6E+06	6.8E+06	2.0E+05	2.8E+05	6.0E+06	1.8E+06	8.4E+07	2.9E+07	2.3E+07	5.2E+05
10	2.0E+06	3.6E+07	2.4E+07	1.8E+06	9.7E+05	2.0E+08	2.3E+09	3.2E+06	9.8E+06	2.6E+07	1.4E+07	7.6E+05
11	2.1E+06	8.5E+07	3.1E+07	2.4E+06	1.1E+07	8.6E+07	9.7E+08	2.3E+06	9.1E+04	3.1E+06	1.8E+07	1.7E+06
12	2.3E+06	3.8E+08	7.3E+07	1.0E+06	4.7E+07	5.4E+07	7.4E+07	1.0E+06	3.7E+05	6.1E+05	4.8E+07	2.4E+06
13	7.6E+05	1.7E+09	7.7E+06	1.1E+06	5.8E+07	8.2E+07	9.6E+07	2.6E+07	5.7E+05	5.5E+05	6.8E+07	1.9E+06
14	9.2E+05	1.6E+09	2.3E+07	9.4E+05	5.1E+07	1.2E+08	1.1E+08	5.3E+07	1.2E+06	1.2E+06	7.8E+07	1.6E+06
15	4.4E+06	9.7E+08	8.5E+07	2.6E+07	2.7E+07	1.3E+08	8.2E+07	6.6E+06	1.2E+06	1.6E+07	1.4E+07	7.2E+05
16	4.2E+06	4.3E+08	5.8E+07	5.7E+07	1.8E+07	7.9E+07	3.4E+07	6.6E+06	5.9E+05	4.9E+07	3.7E+06	1.0E+06
17	3.0E+07	5.4E+08	5.3E+07	3.7E+07	2.4E+07	6.2E+07	6.1E+06	5.8E+06	9.7E+06	3.2E+07	2.4E+06	1.3E+06
18	4.8E+07	1.2E+08	2.6E+07	1.0E+08	2.5E+07	1.7E+07	8.3E+06	2.4E+06	1.0E+08	5.5E+07	3.4E+06	5.4E+06
19	3.1E+07	9.6E+07	2.2E+08	3.3E+08	3.2E+07	6.8E+06	8.4E+06	2.4E+06	1.8E+08	9.8E+07	2.5E+06	1.3E+07
20	2.9E+07	1.2E+08	1.1E+09	1.4E+08	3.6E+07	2.4E+06	1.1E+07	2.9E+06	2.0E+08	1.0E+08	1.4E+06	1.8E+07
21	2.6E+07	6.5E+08	2.0E+09	2.7E+07	1.1E+07	1.1E+06	3.7E+06	5.6E+05	6.9E+07	1.0E+08	1.5E+06	2.6E+07
22	2.0E+07	1.1E+09	5.0E+08	2.5E+07	3.4E+06	2.6E+06	9.9E+05	1.8E+05	3.6E+05	5.0E+07	7.3E+05	2.4E+07
23	1.3E+06	1.1E+09	2.0E+07	3.5E+07	5.1E+06	4.6E+06	1.8E+06	4.5E+05	8.4E+05	3.6E+07	5.2E+05	2.5E+07
24	1.5E+06	9.3E+08	8.1E+07	7.9E+06	2.8E+06	3.9E+06	1.0E+06	3.5E+05	2.3E+06	2.1E+07	9.0E+05	2.9E+06
25	5.9E+06	7.1E+08	1.4E+08	5.0E+05	9.5E+05	4.0E+06	2.0E+06	4.8E+05	2.0E+06	3.1E+06	6.1E+05	5.4E+05
26	1.9E+08	--	2.8E+08	2.8E+05	2.1E+05	1.2E+06	1.1E+06	1.2E+07	2.3E+06	3.4E+06	5.2E+05	7.2E+05
27	1.2E+08	2.2E+08	3.2E+08	8.9E+05	3.4E+05	5.2E+07	5.7E+06	9.4E+07	2.7E+06	8.0E+06	3.2E+05	1.0E+06
28	1.9E+08	3.4E+08	3.6E+07	2.8E+06	3.0E+05	3.3E+08	2.2E+08	4.7E+07	3.8E+06	8.8E+06	4.0E+06	9.3E+05
29	5.6E+07	2.0E+08	5.7E+07	2.8E+06	2.6E+05	5.7E+08		7.3E+07	2.7E+06	2.1E+07	2.2E+06	8.7E+05
30	4.1E+08	2.3E+08	1.0E+08	1.5E+06	9.0E+04	6.8E+08		4.9E+08	1.2E+06	1.4E+07	2.0E+06	5.1E+05
31	4.4E+08		1.6E+08		1.0E+05	4.7E+08		6.6E+08		8.2E+06		5.0E+05

NOTE: The electron detector responds significantly to protons above 32 MeV; therefore, electron data are contaminated when a proton event is in progress. These days are indicated with '-999' in the table and are not plotted. '--' indicates data not available. GOES9 data began April, 1996.

CONTENTS

Prompt Reports Number 636 Part I

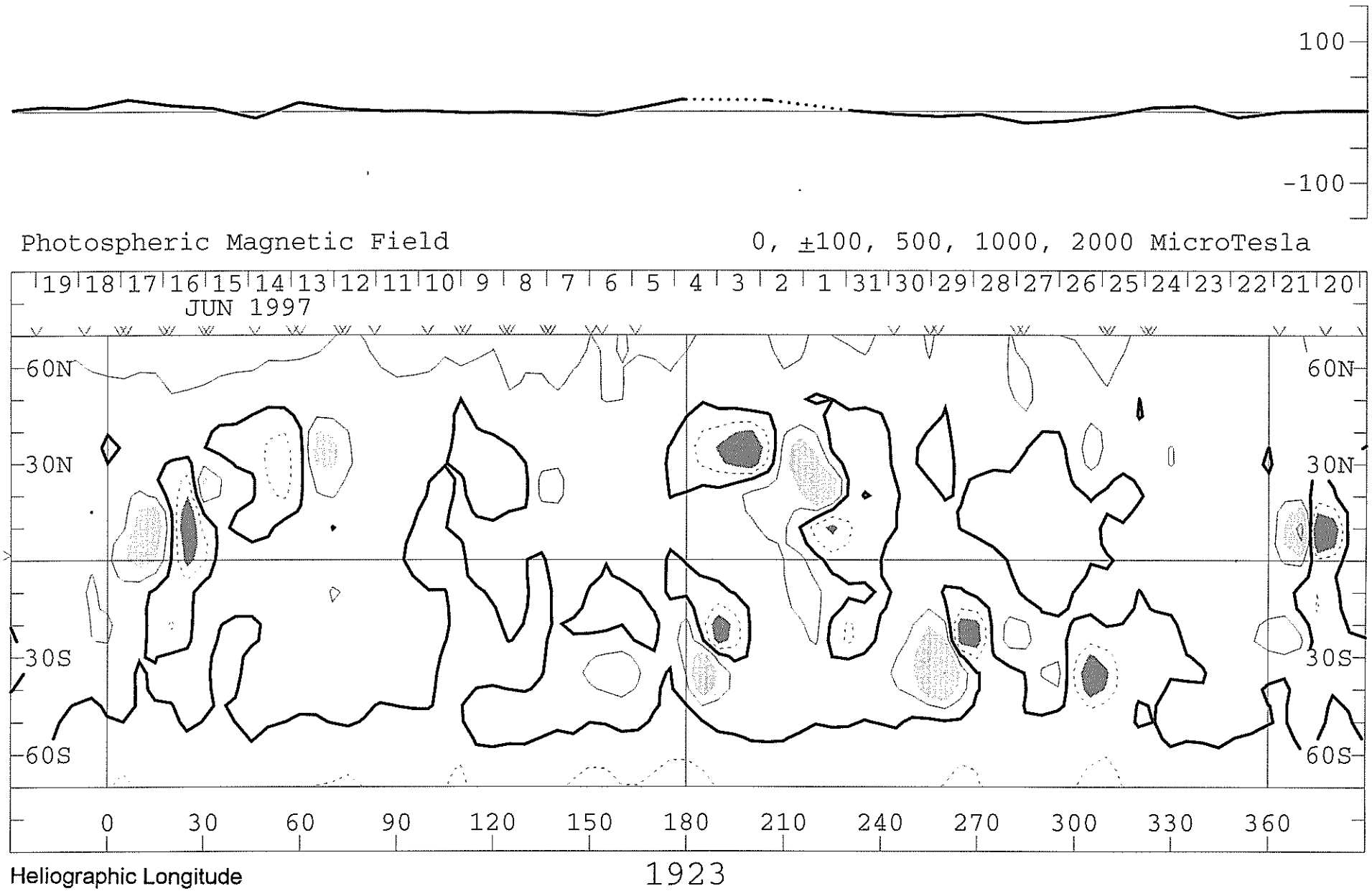
DATA FOR JUNE 1997

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1923

(22 May to 18 June 1997)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

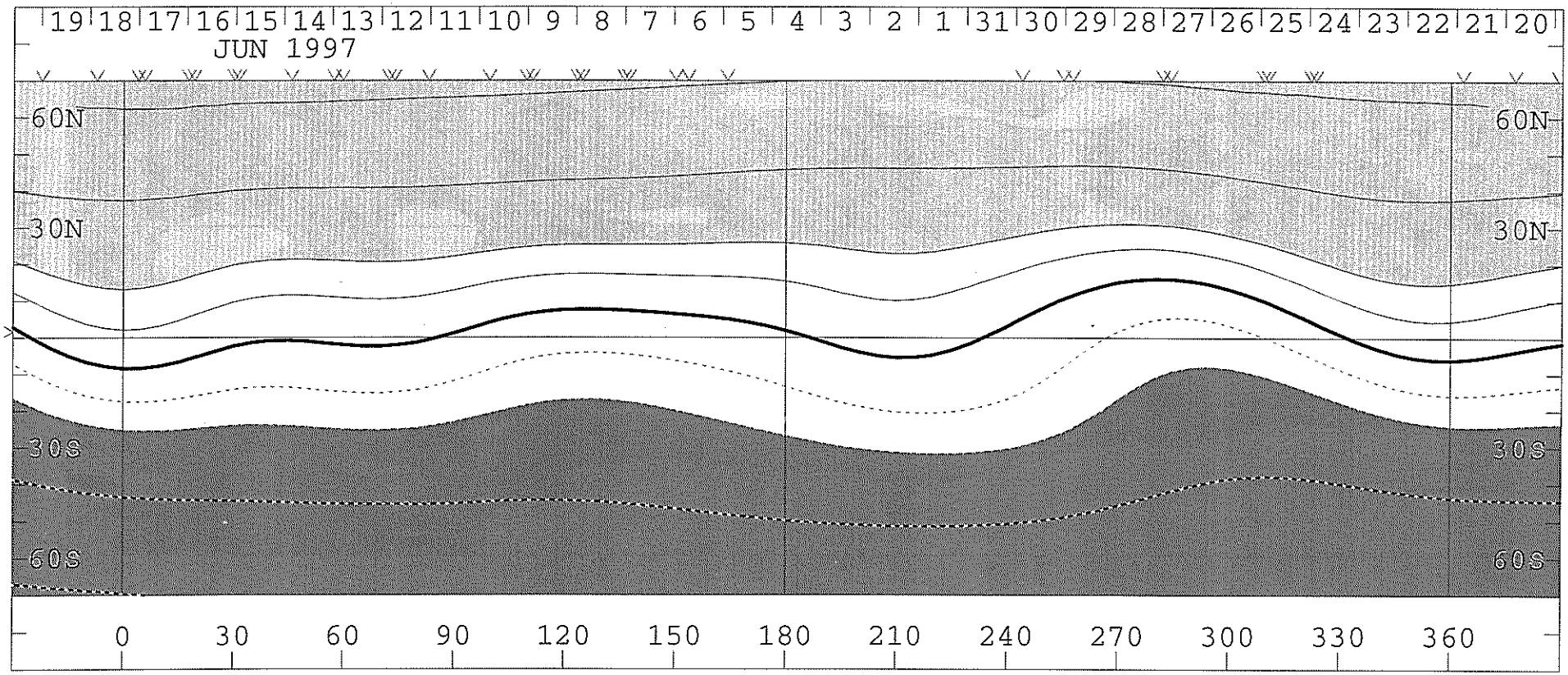
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1923

(22 May to 18 June 1997)

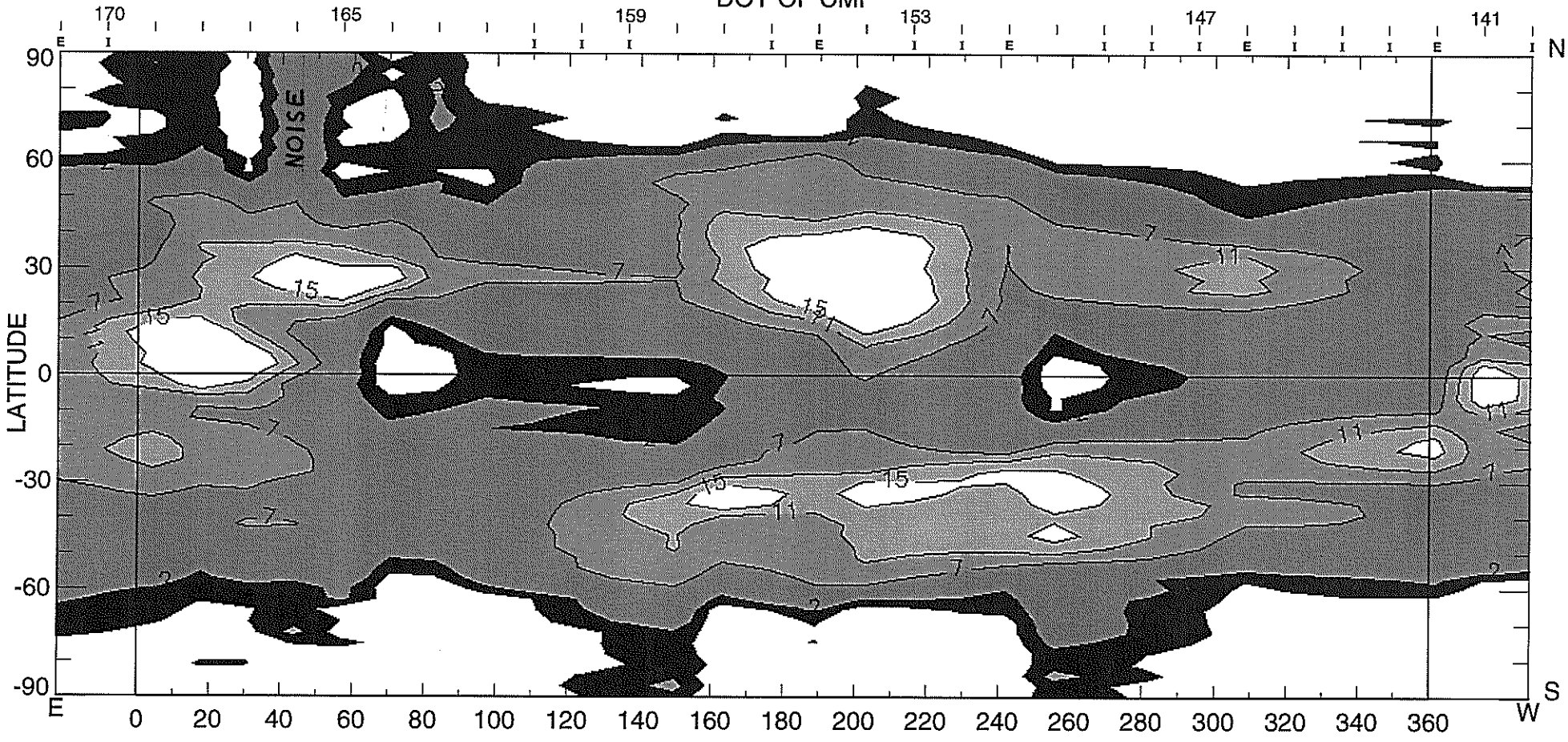
Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



37
Jun 97

CARRINGTON ROTATION NUMBER 1923 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



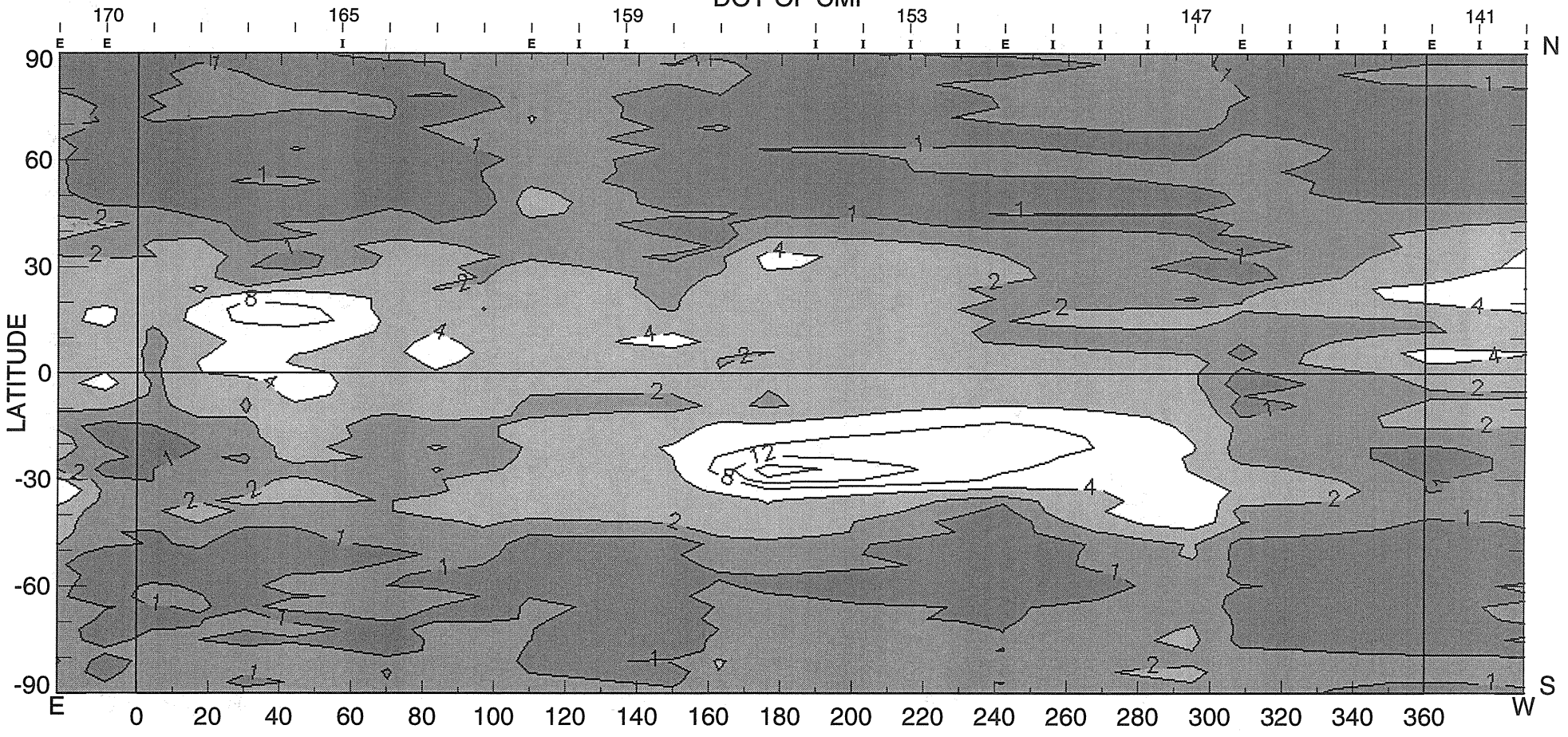
<I> = 4.80μ

(30-Jul-97)

1997 W+E LIMB CONTOURS: 1, 2, 7, 11, 15, 25, 35, 45 MILLIONTHS OF I_o

CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

CARRINGTON ROTATION NUMBER 1923 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



<I> = 1.87μ

(30-Jul-97) 1997 W+E LIMB CONTOURS: 1, 2, 4, 8, 12, 16, 32, 48 MILLIONTHS OF I_o

NOTE: No Ca XV emission observed at Sacramento Peak for rotation 1923.

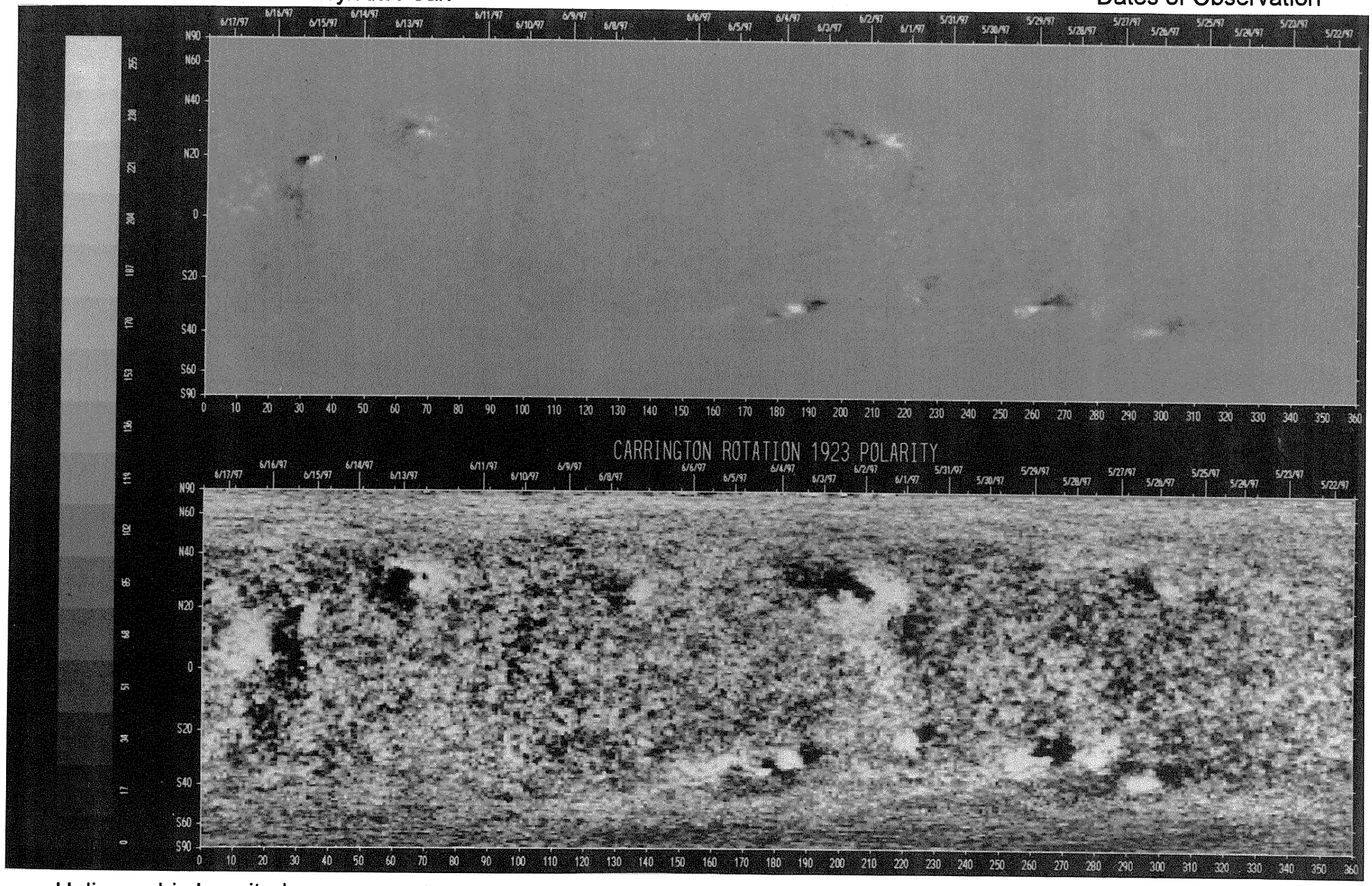
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1923

(22 May to 18 June 1997)

National Solar Observatory/Kitt Peak

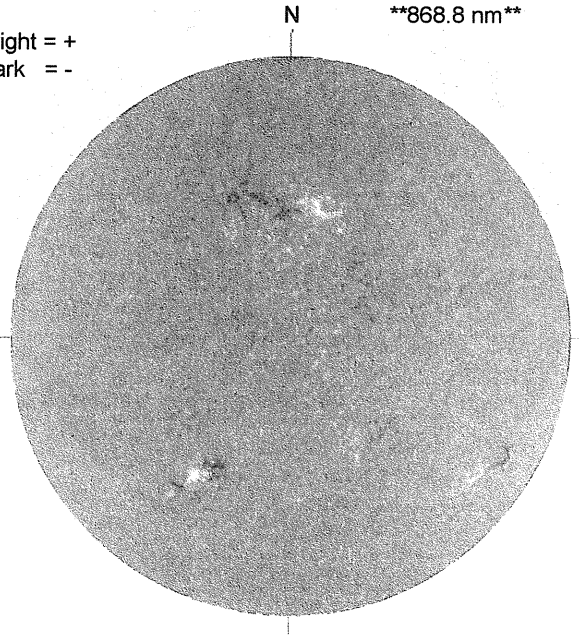
Dates of Observation



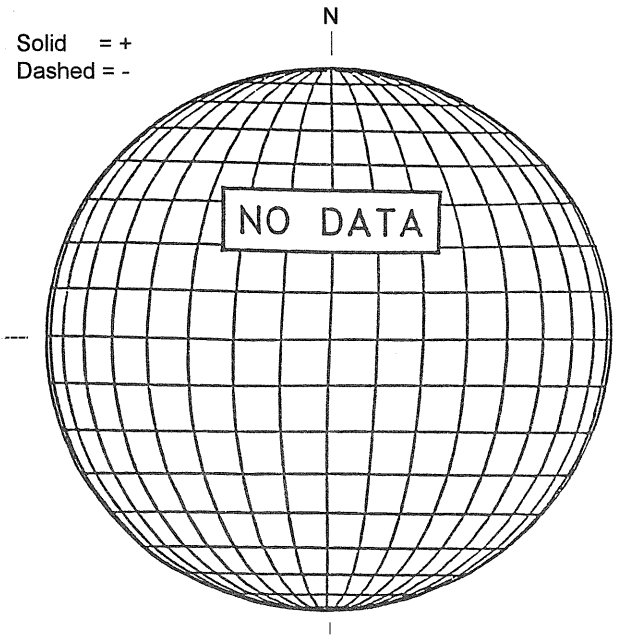
Heliographic Longitude

JUNE 1, 1997 (P= - 15.44 , Bo = - 0.65 , Lo = 229.03)

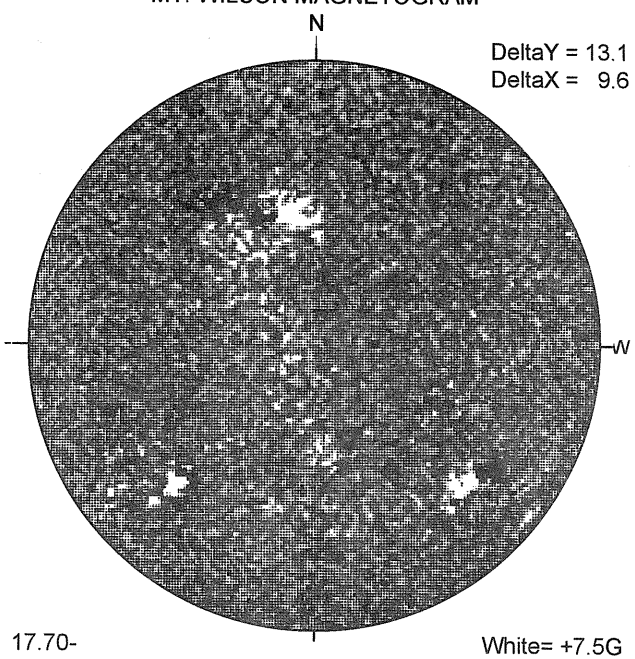
KITT PEAK MAGNETOGRAM



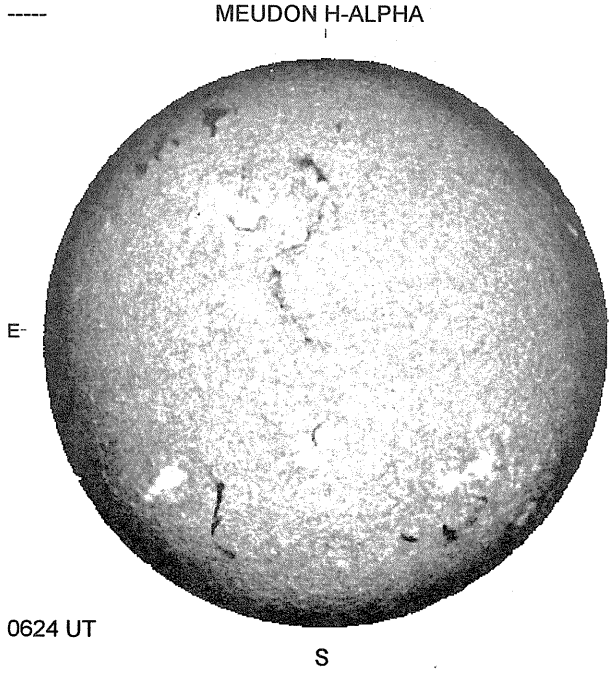
STANFORD MAGNETOGRAM



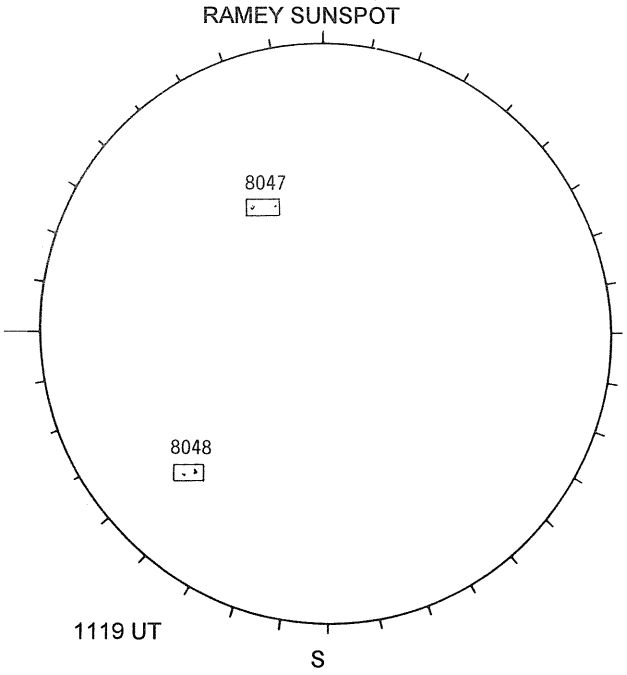
MT. WILSON MAGNETOGRAM



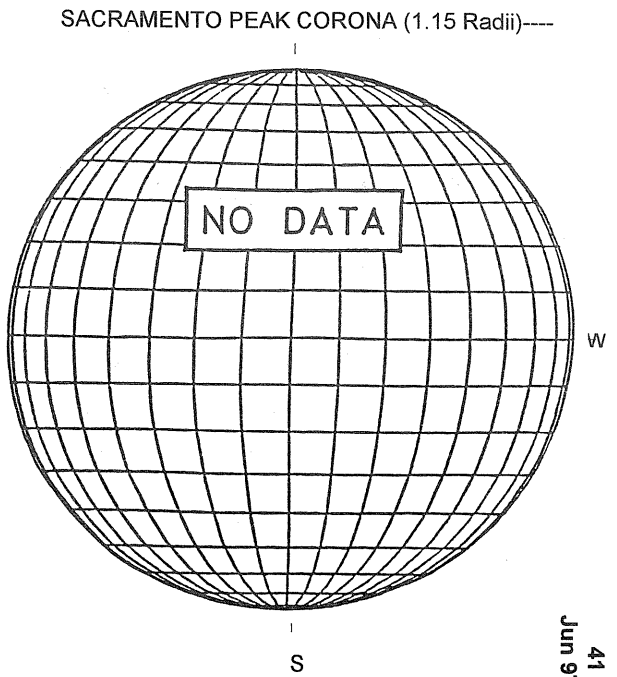
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----

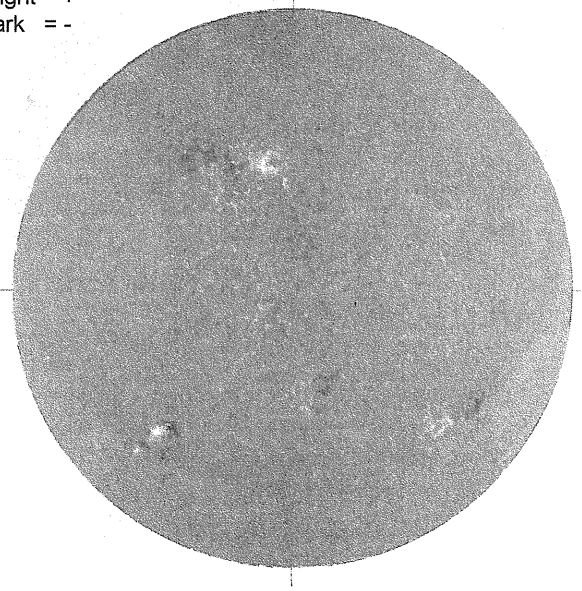


JUNE 2, 1997 (P= - 15.06, Bo = - 0.53, Lo = 215.80)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

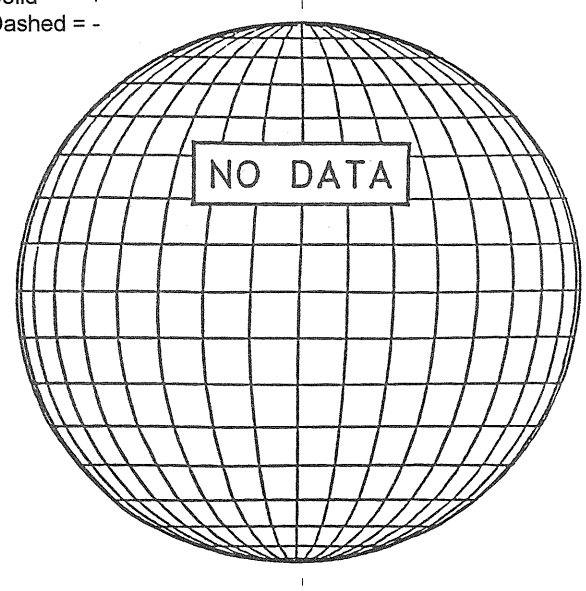


1410 UT

STANFORD MAGNETOGRAM

N

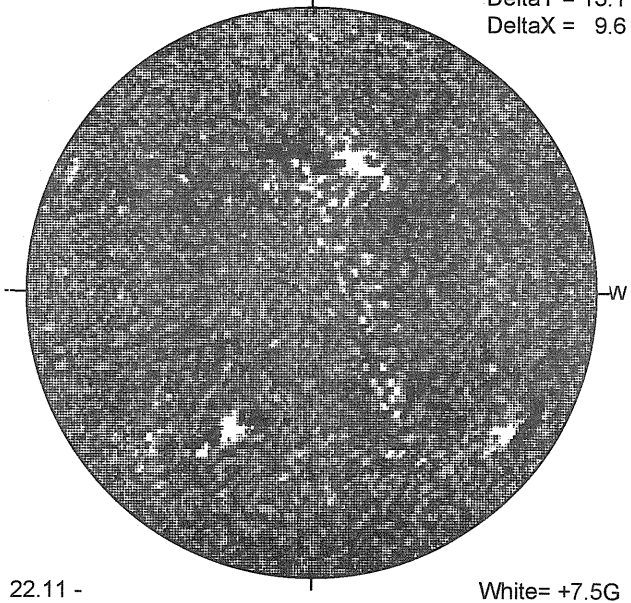
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

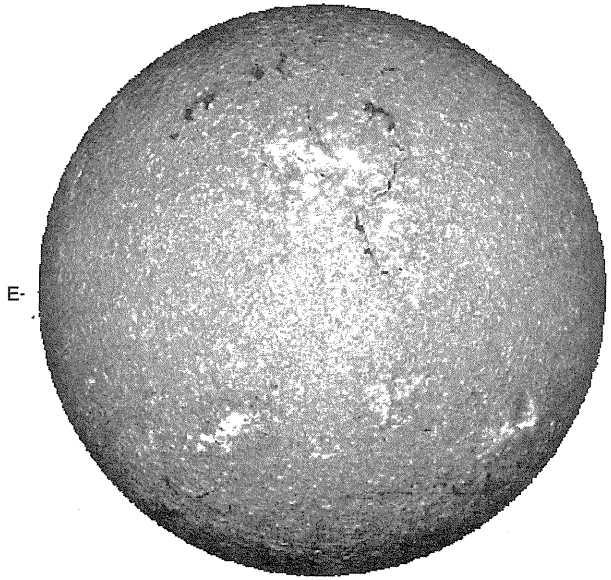
DeltaY = 13.1
DeltaX = 9.6



22.11 -
23.03 UT

White= +7.5G
Black = -7.5G

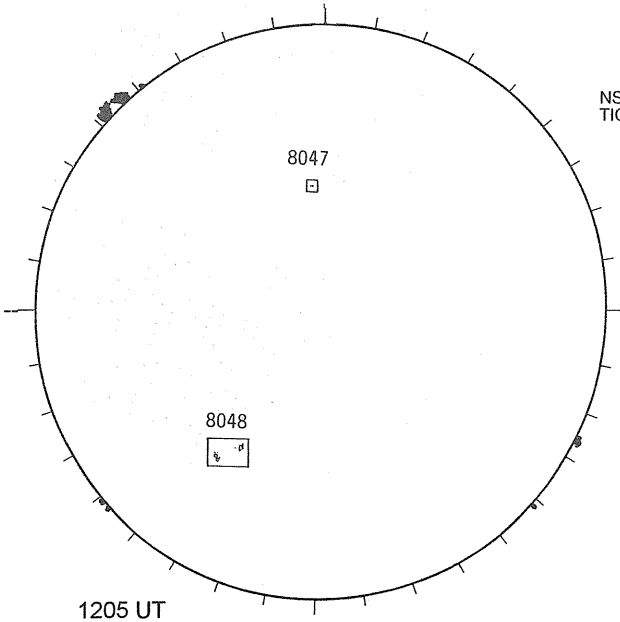
SACRAMENTO PEAK H-ALPHA



1440 UT

S

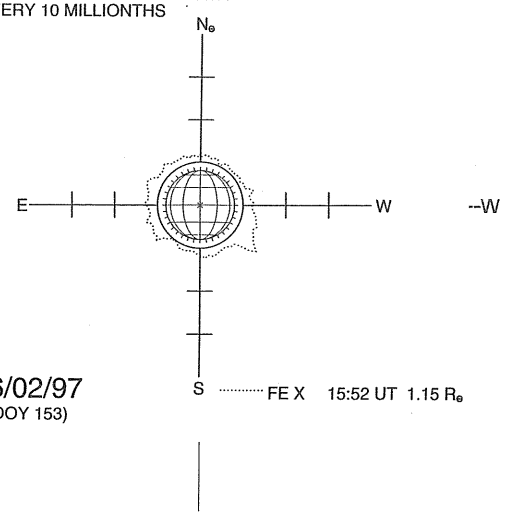
RAMEY SUNSPOT



1205 UT
0601 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/02/97
(DOY 153)

FE X 15:52 UT 1.15 R_e

S

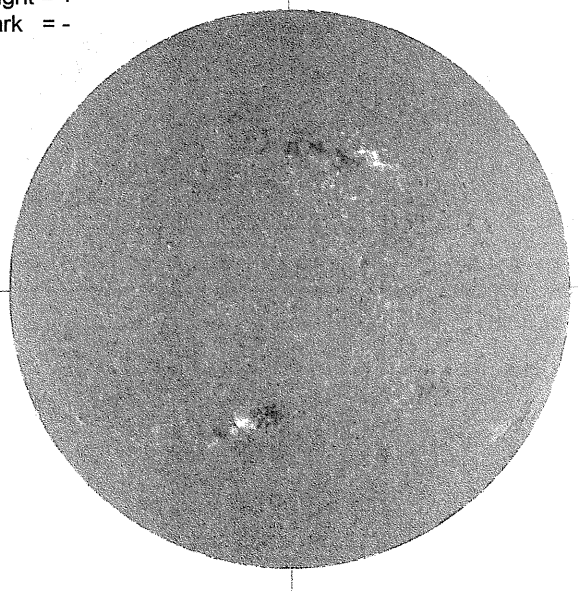
JUNE 3, 1997 (P= - 14.68, Bo = - 0.41 , Lo = 202.56)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



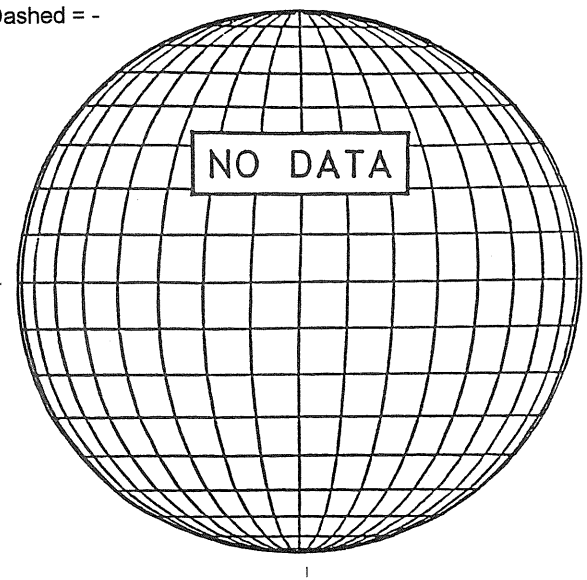
E

1429 UT

STANFORD MAGNETOGRAM

N

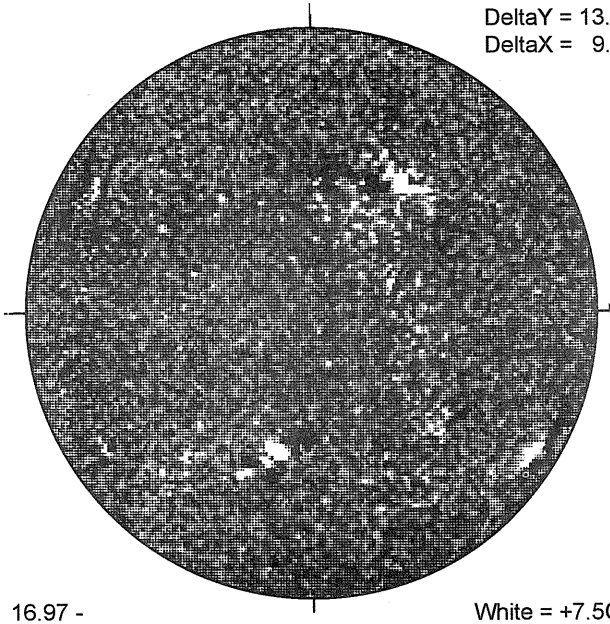
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

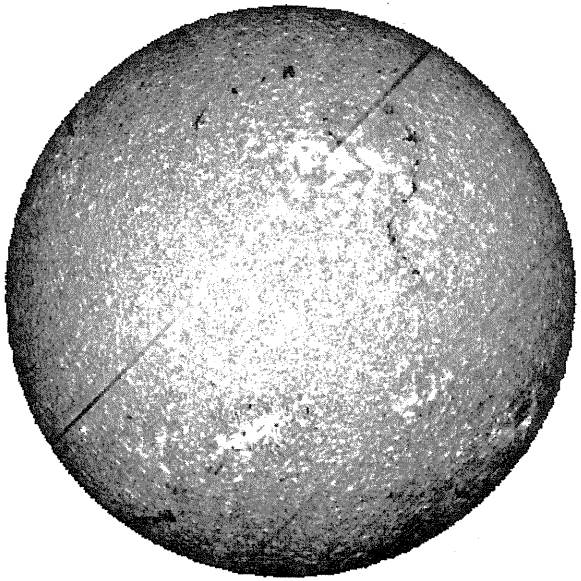


W

16.97 -
17.89 UT

White = +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

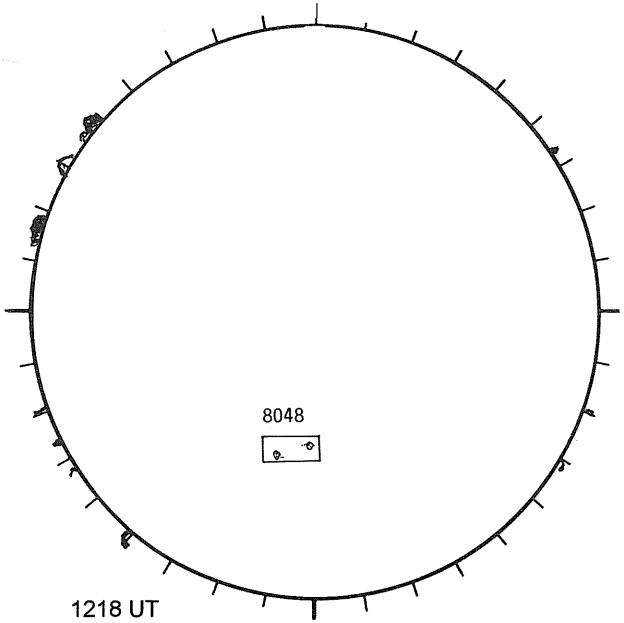


E

1443 UT

S

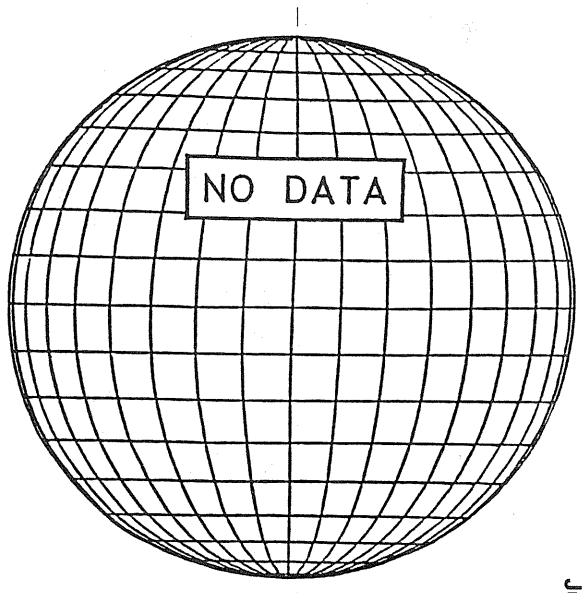
RAMEY SUNSPOT



1218 UT
0825 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

43
Jun 97

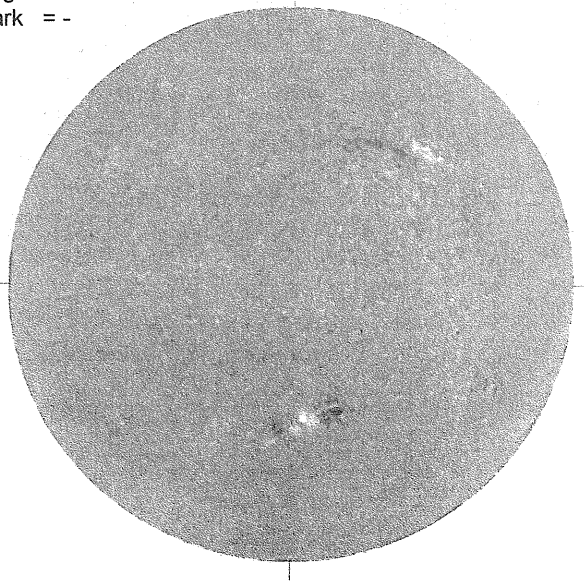
JUNE 4, 1997 (P= - 14.29 , Bo = - 0.29 Lo = 189.33)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



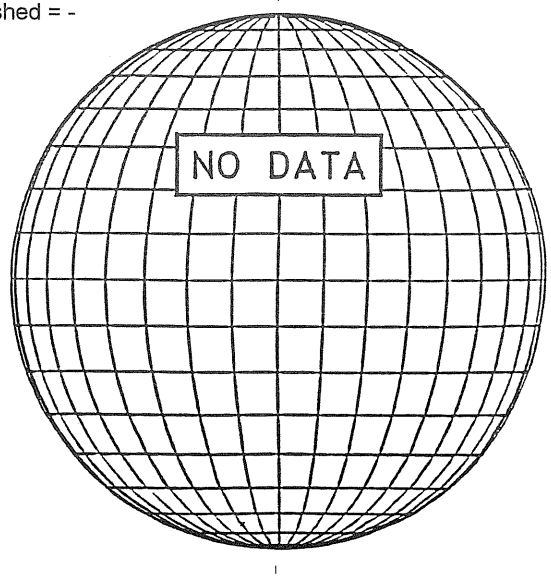
E

1409 UT

STANFORD MAGNETOGRAM

N

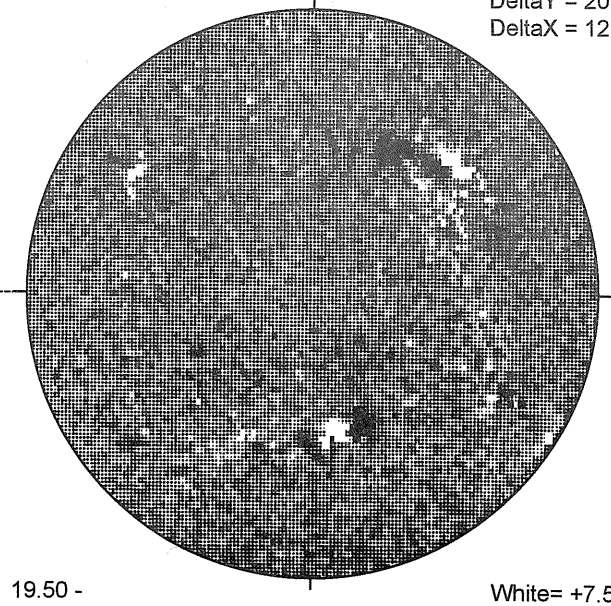
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 20.1
DeltaX = 12.9

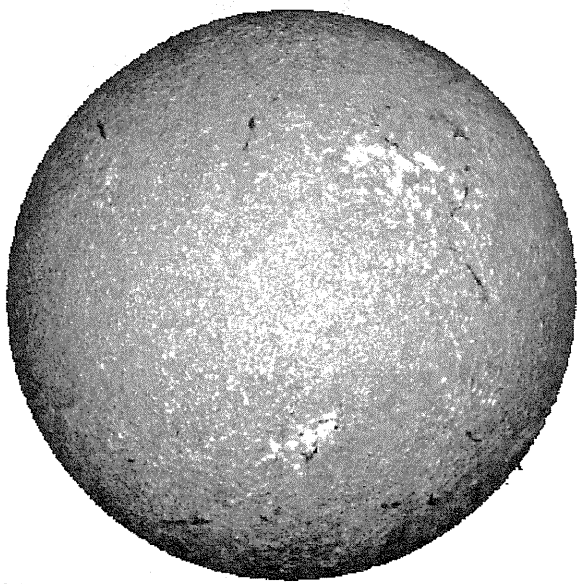


W

19.50 -
19.91 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

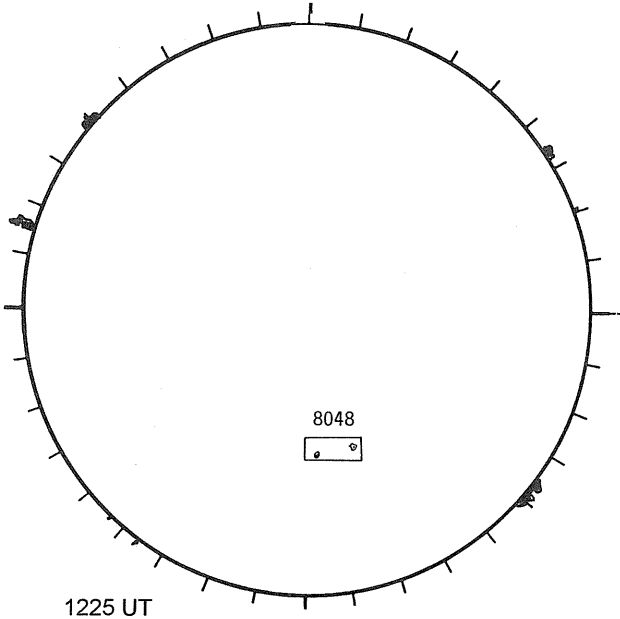


E

1504 UT

S

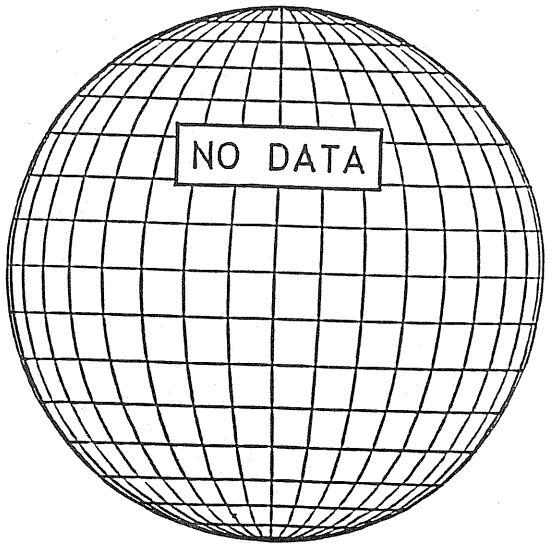
RAMEY SUNSPOT



1225 UT
0816 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)

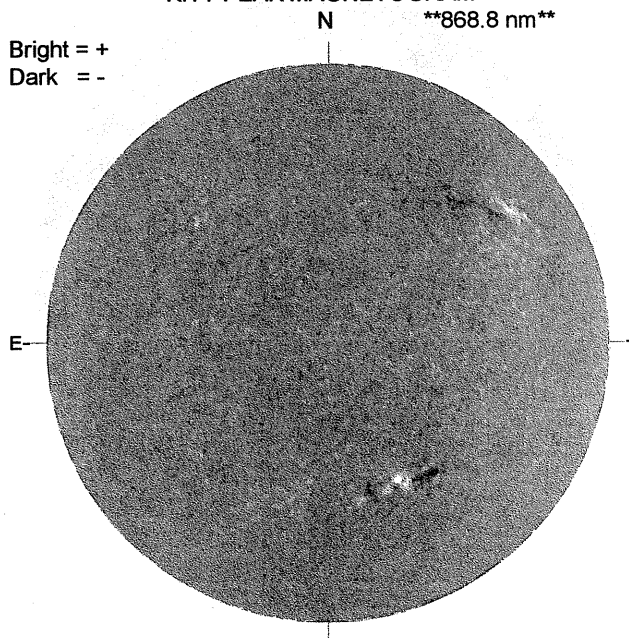


W

S

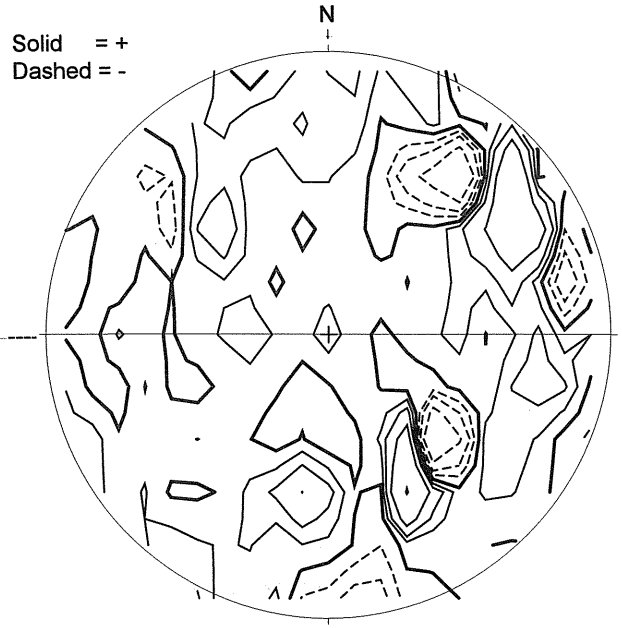
JUNE 5, 1997 (P= - 13.91 , Bo = - 0.17 , Lo = 176.10)

KITT PEAK MAGNETOGRAM



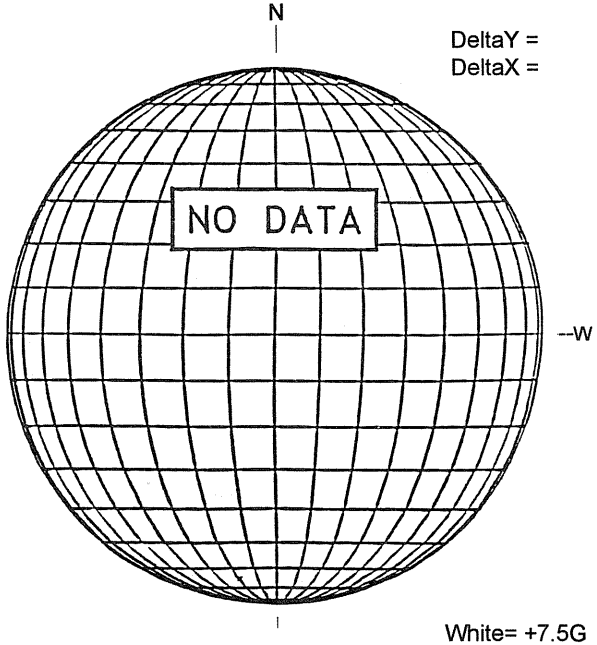
1717 UT

STANFORD MAGNETOGRAM



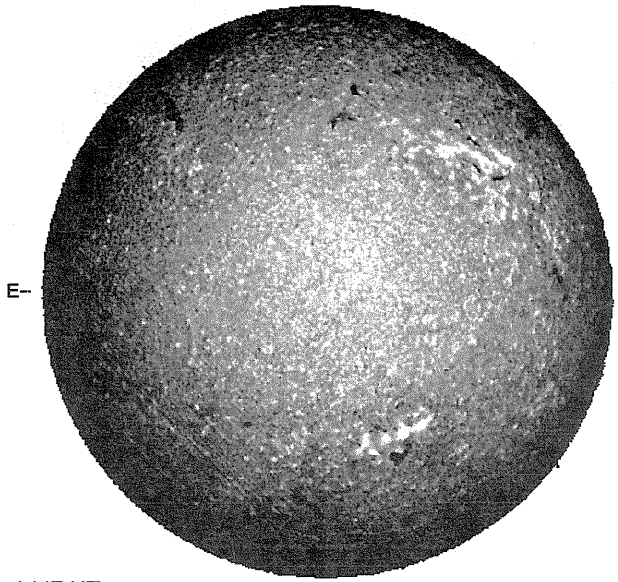
2145 UT

MT. WILSON MAGNETOGRAM



White= +7.5G
Black = -7.5G

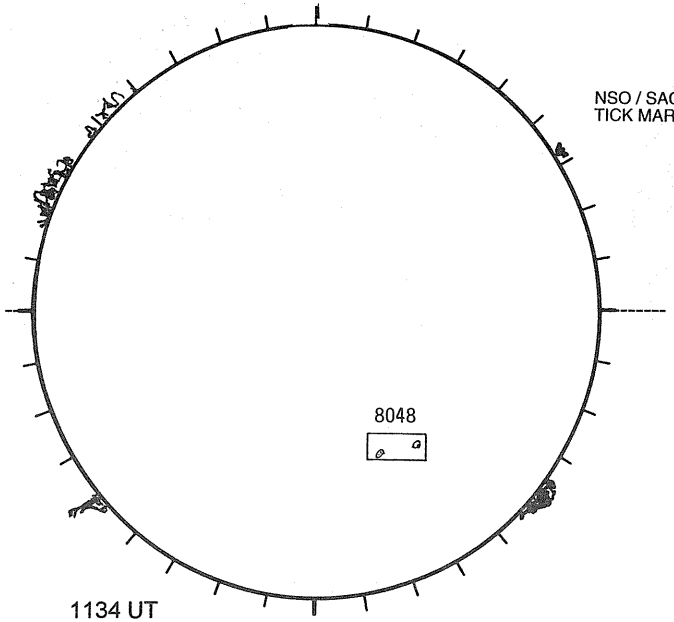
SACRAMENTO PEAK H-ALPHA



1447 UT

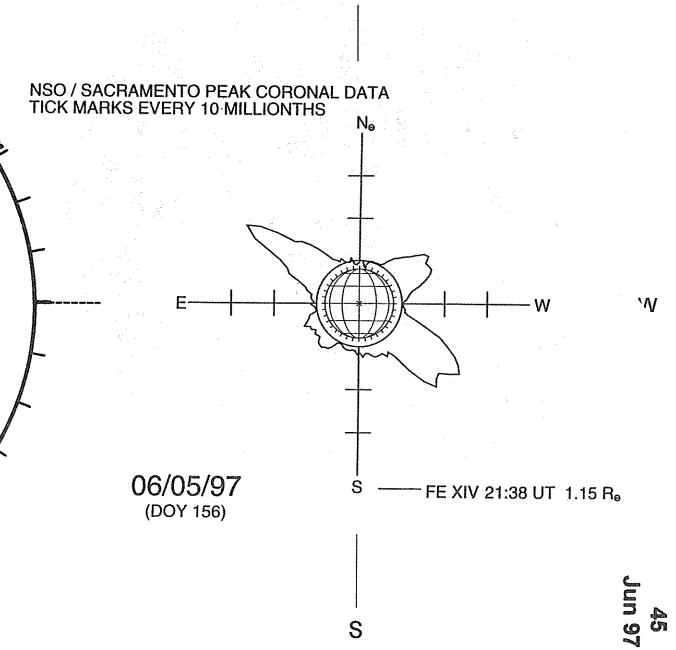
S

RAMEY SUNSPOT



1134 UT
0614 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

45
Jun 97

JUNE 6, 1997 (P= - 13.51, Bo = - 0.05 , Lo = 162.86)

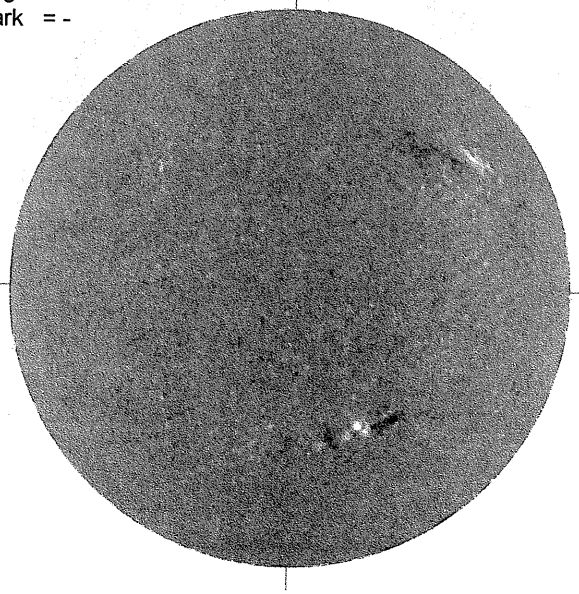
KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

E



1516 UT

STANFORD MAGNETOGRAM

N

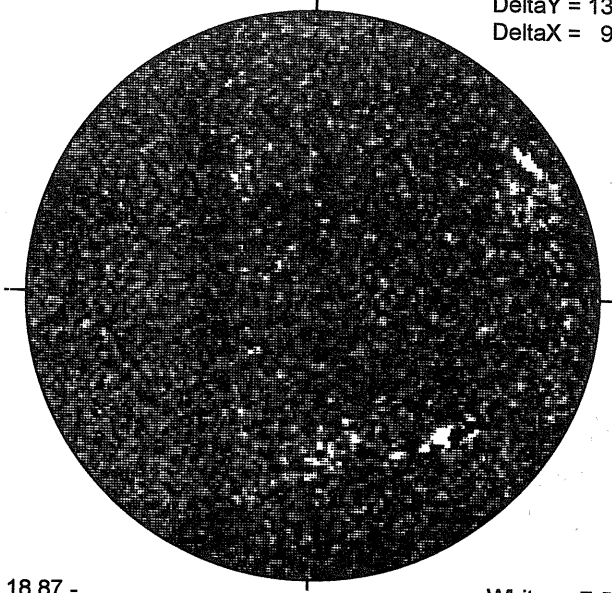
Solid = +
Dashed = -

1648 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

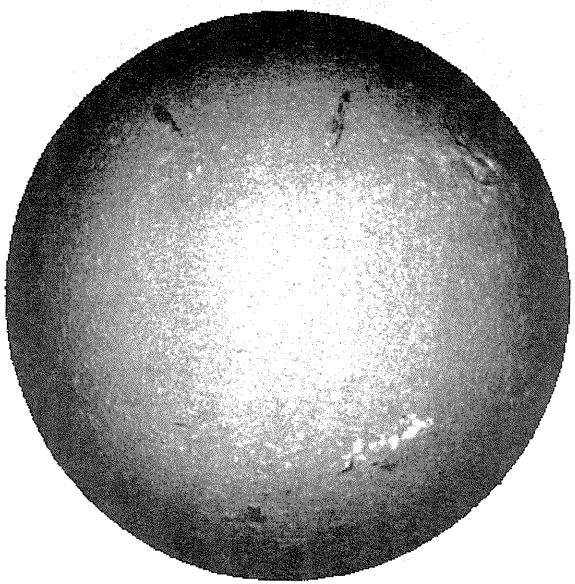


W

18.87 -
19.80 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

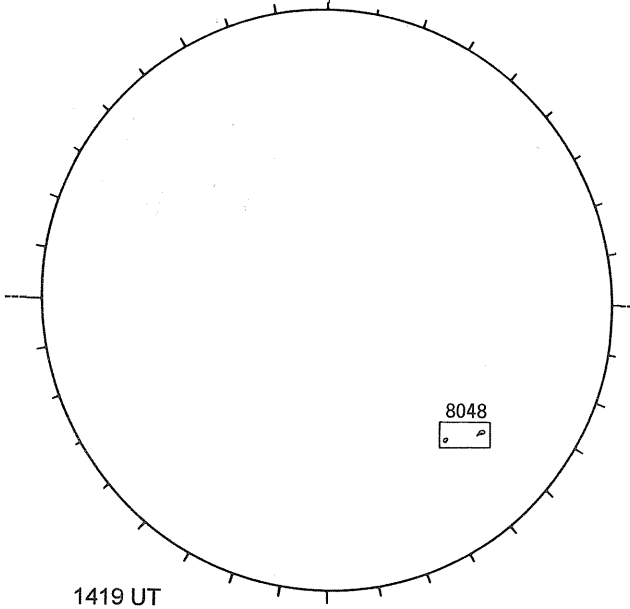


E

0736 UT

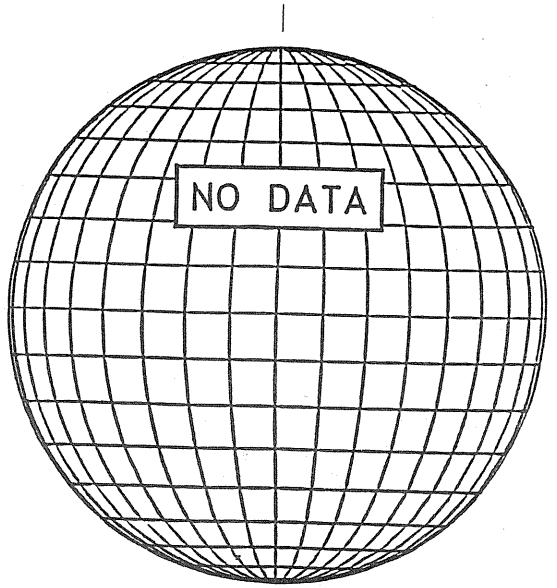
S

RAMEY SUNSPOT



1419 UT
0905 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii) ----

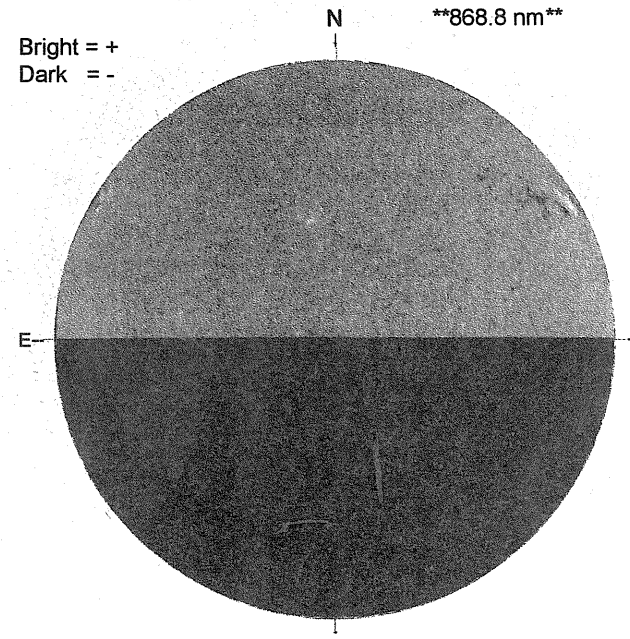


W

S

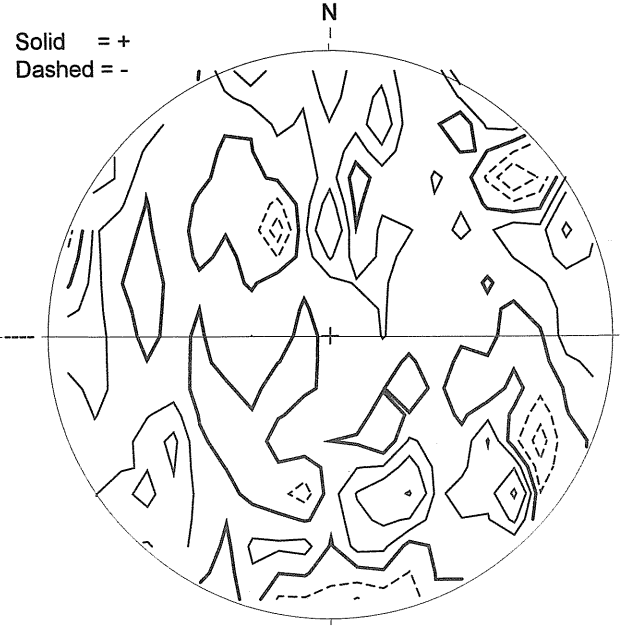
JUNE 7, 1997 (P= - 13.11, Bo = 0.07 Lo = 149.63)

KITT PEAK MAGNETOGRAM



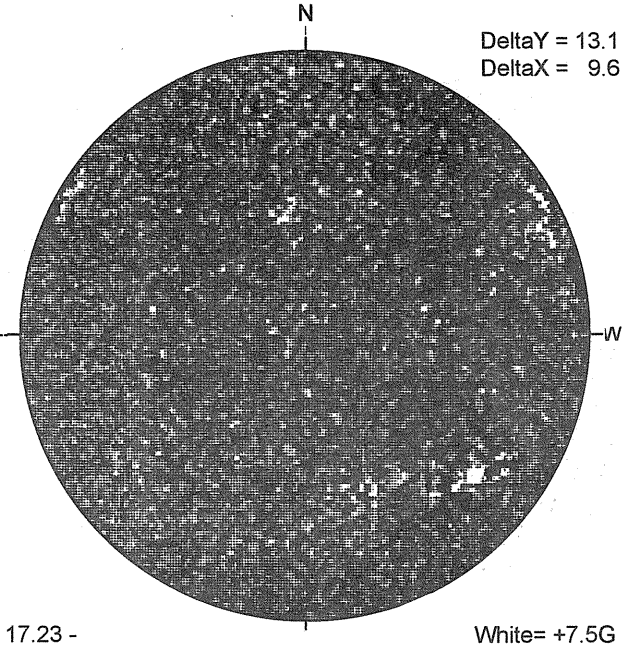
1534 UT

STANFORD MAGNETOGRAM



2156 UT

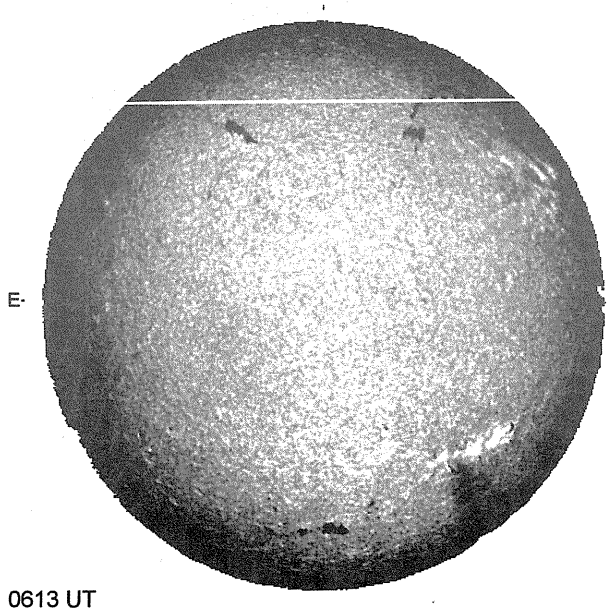
MT. WILSON MAGNETOGRAM



17.23 -
18.16 UT

White= +7.5G
Black = -7.5G

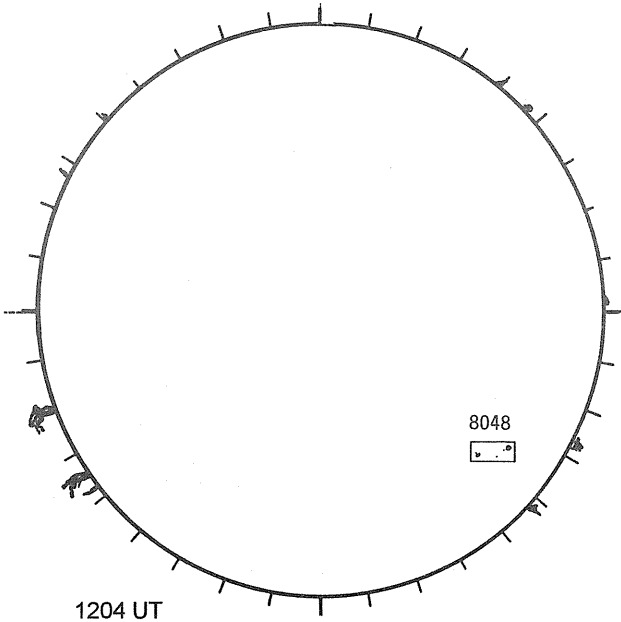
MEUDON H-ALPHA



0613 UT

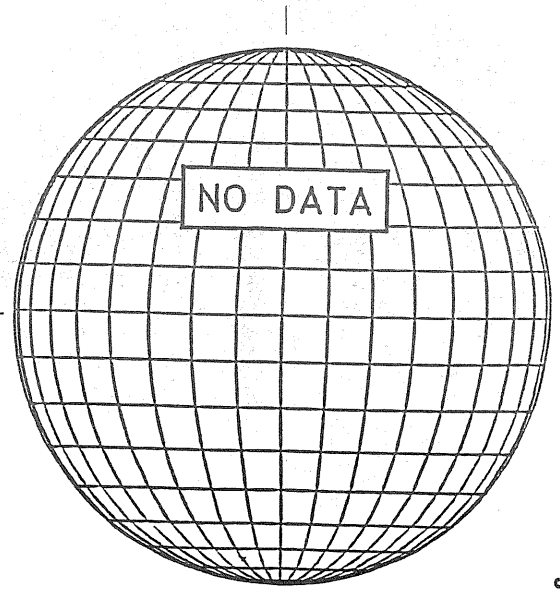
S

RAMEY SUNSPOT



1204 UT
0905 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



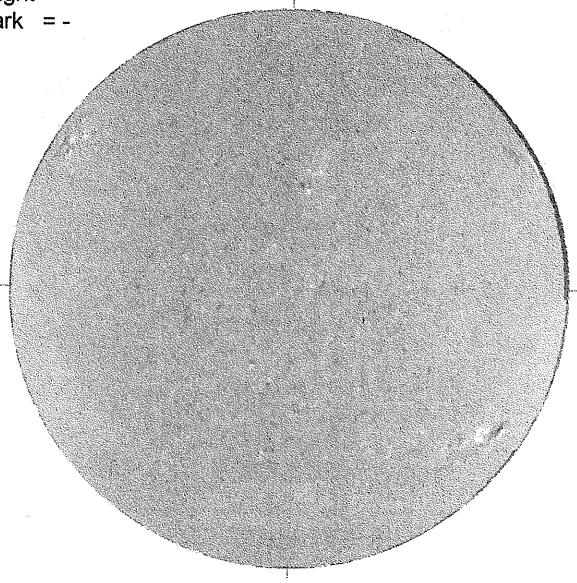
S

JUNE 8, 1997 (P= - 12.71, Bo = 0.19 , Lo = 136.39)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



1519 UT

STANFORD MAGNETOGRAM

N

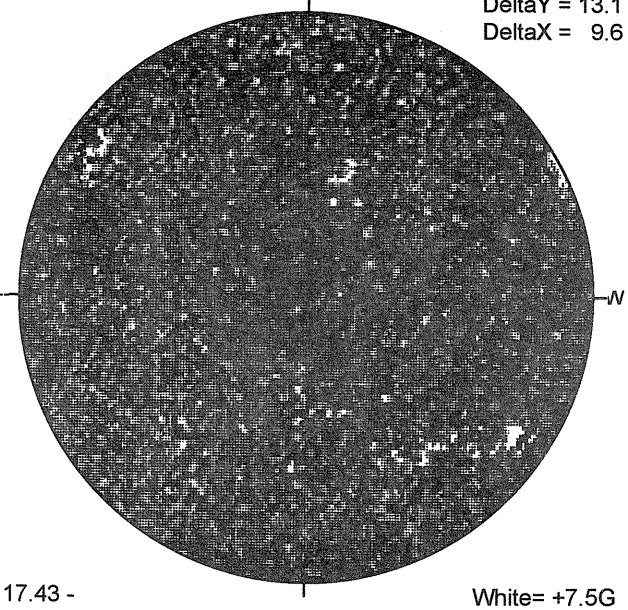
Solid = +
Dashed = -

2054 UT

MT. WILSON MAGNETOGRAM

N

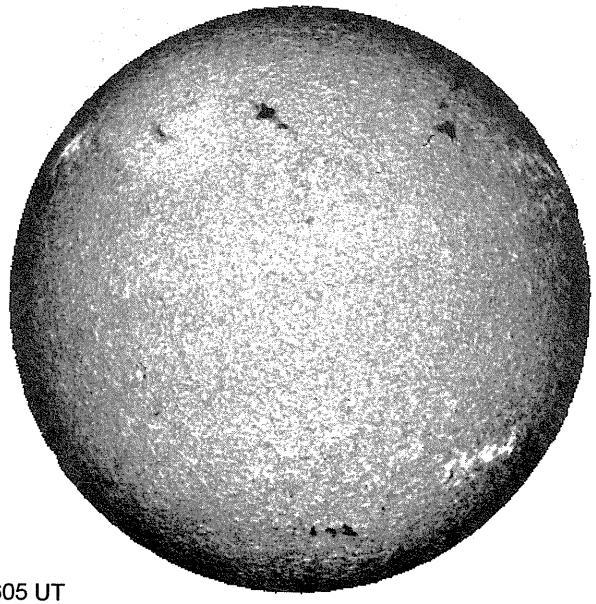
DeltaY = 13.1
DeltaX = 9.6



17.43 -
18.35 UT

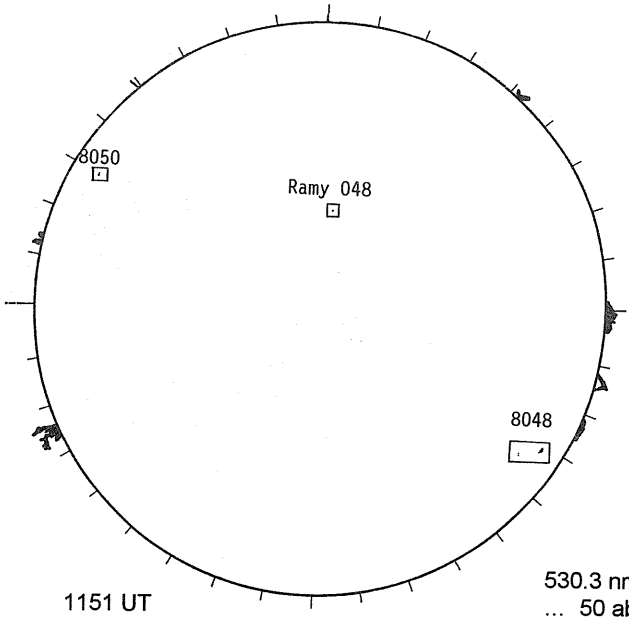
White= +7.5G
Black = -7.5G

MEUDON PEAK H-ALPHA



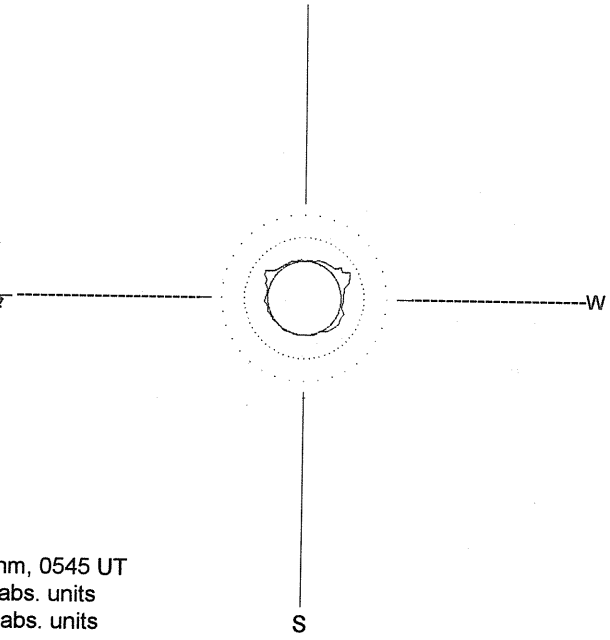
0605 UT

RAMEY SUNSPOT



1151 UT
0511 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----

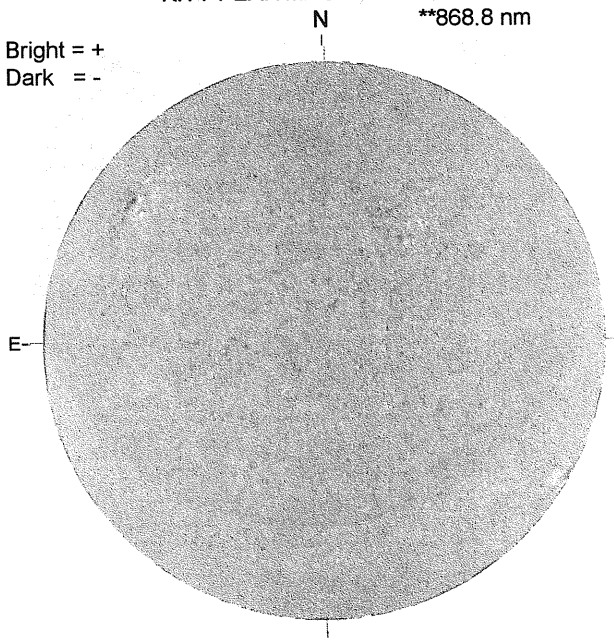


530.3 nm, 0545 UT
... 50 abs. units
. . 100 abs. units

JUNE 9, 1997 (P= - 12.31, Bo = 0.31, Lo = 123.16)

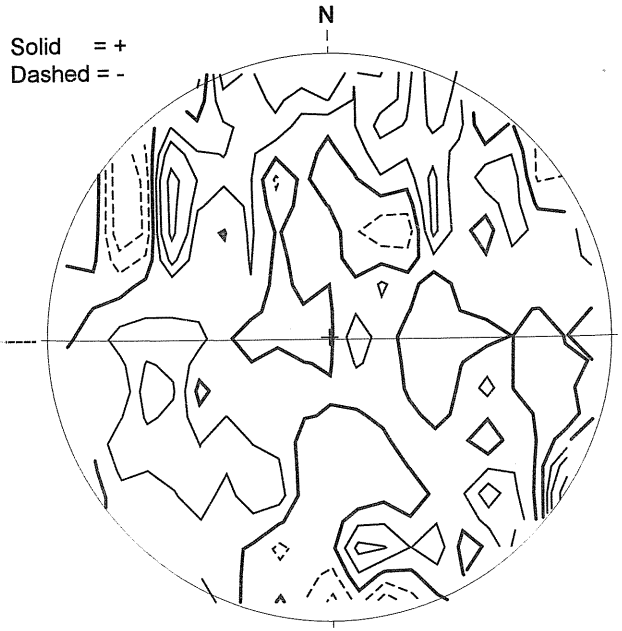
KITT PEAK MAGNETOGRAM

**868.8 nm



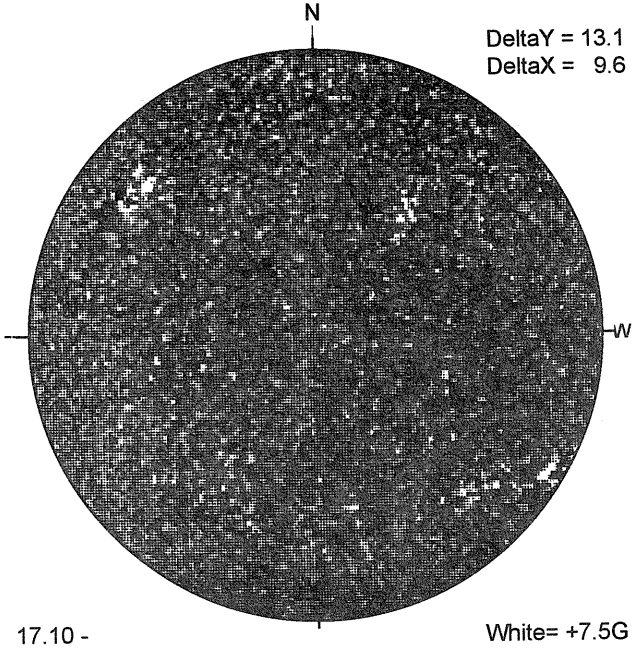
1537 UT

STANFORD MAGNETOGRAM



2126 UT

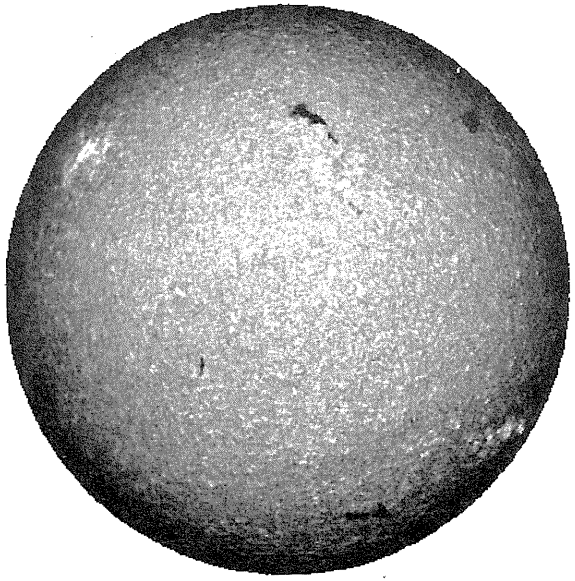
MT. WILSON MAGNETOGRAM



17.10 -
18.02 UT

White= +7.5G
Black = -7.5G

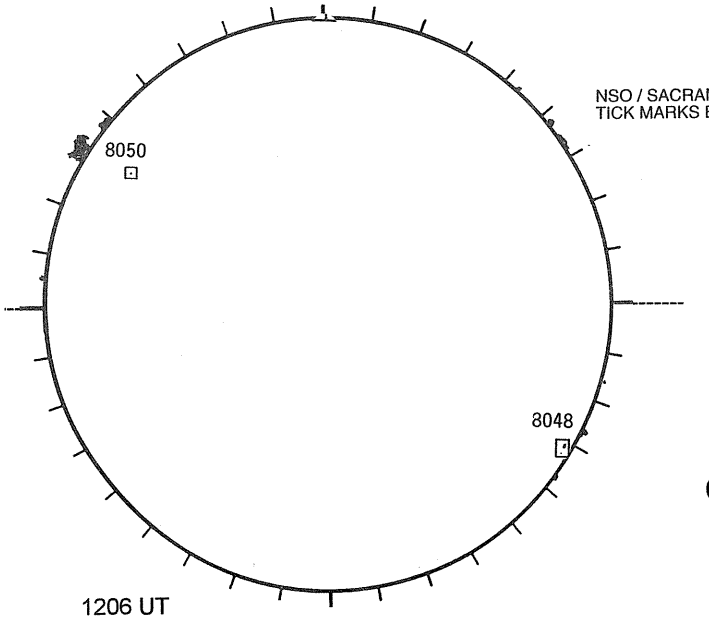
MEUDON PEAK H-ALPHA



0726 UT

S

RAMEY SUNSPOT

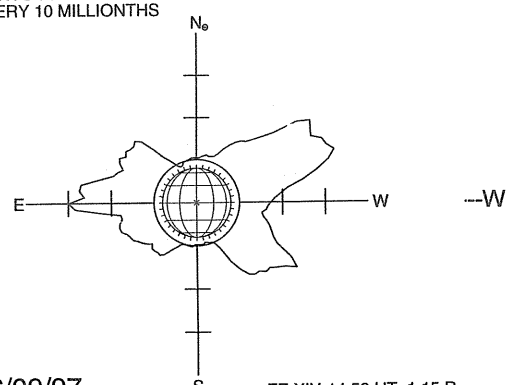


1206 UT
1248 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/09/97
(DOY 160)

FE XIV 14:58 UT 1.15 $R_\odot$

S

49
Jun 97

JUNE 10, 1997 (P= - 11.90, Bo = 0.43 Lo = 109.92)

50 Jun 97

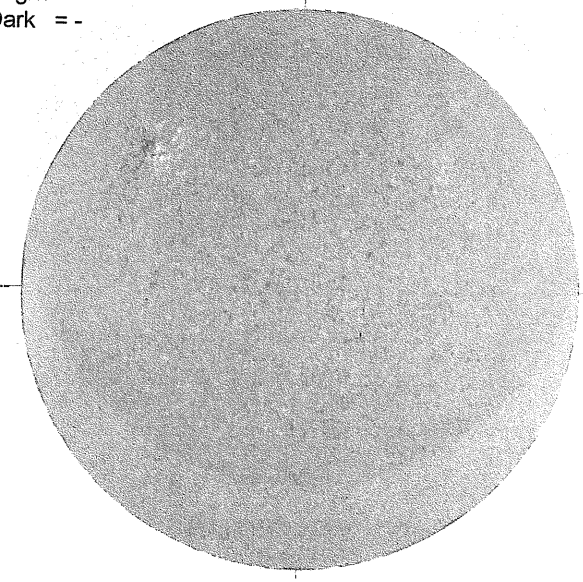
KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

E

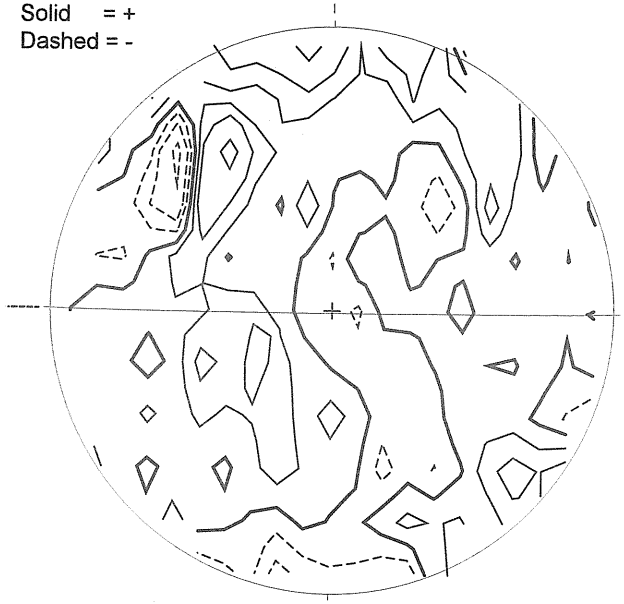


1558 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

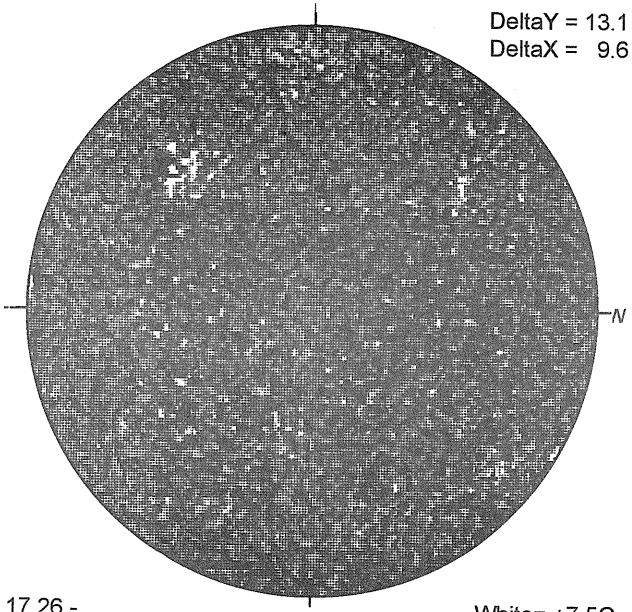


1850 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

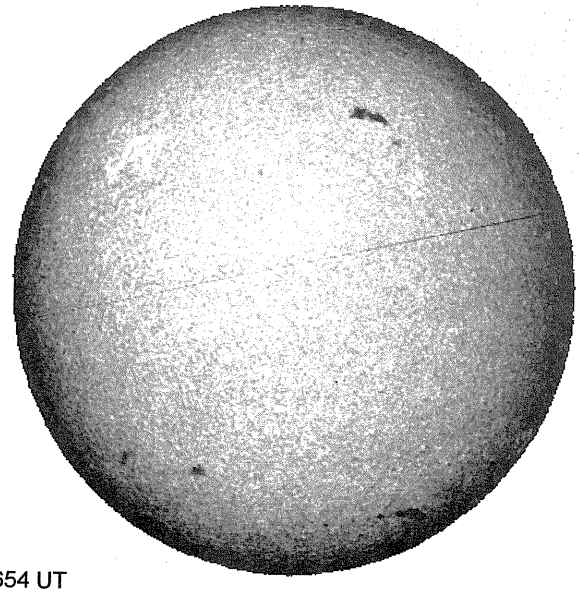


W

17.26 -
18.18 UT

White= +7.5G
Black = -7.5G

MEUDON PEAK H-ALPHA

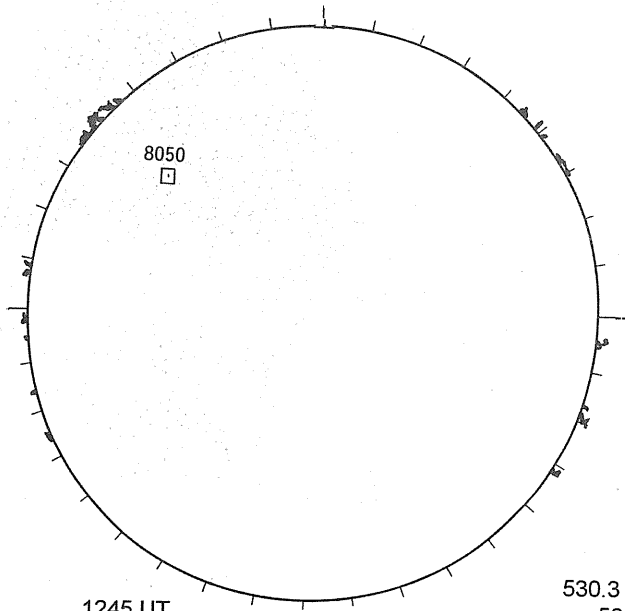


E

0654 UT

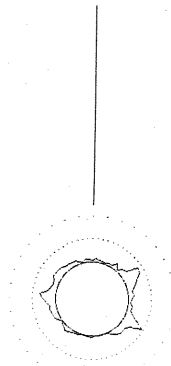
S

RAMEY SUNSPOT



1245 UT
0355 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



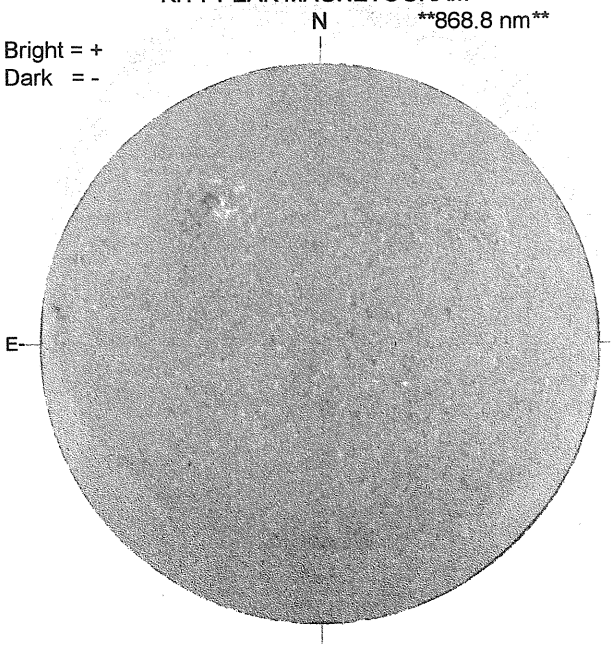
----------W

530.3 nm, 0403 UT
... 50 abs. units
. . 100 abs. units

S

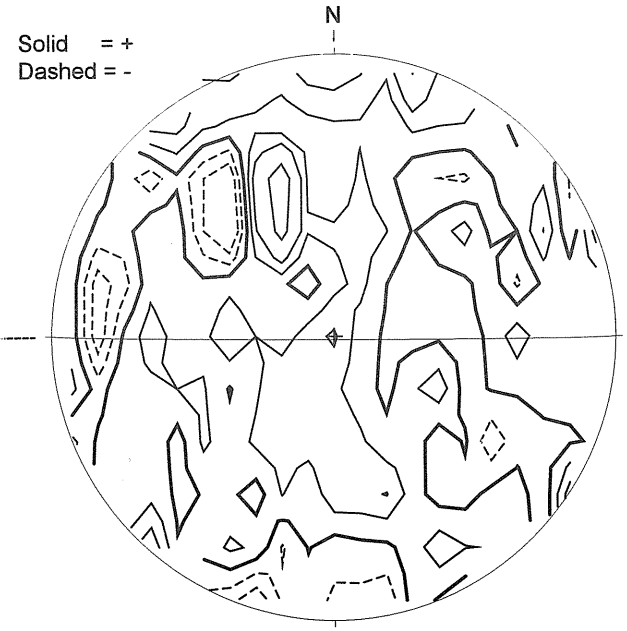
JUNE 11, 1997 (P= - 11.48, Bo = 0.55, Lo = 96.68)

KITT PEAK MAGNETOGRAM



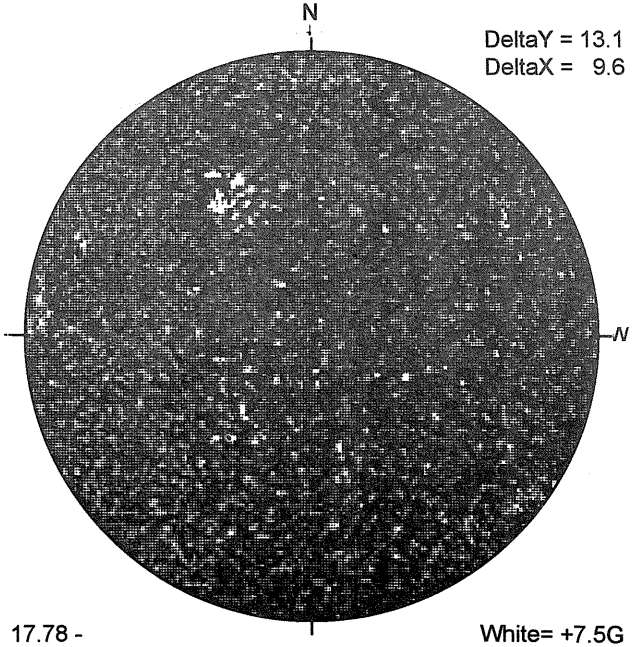
1554 UT

STANFORD MAGNETOGRAM



0044 UT
Jun 12

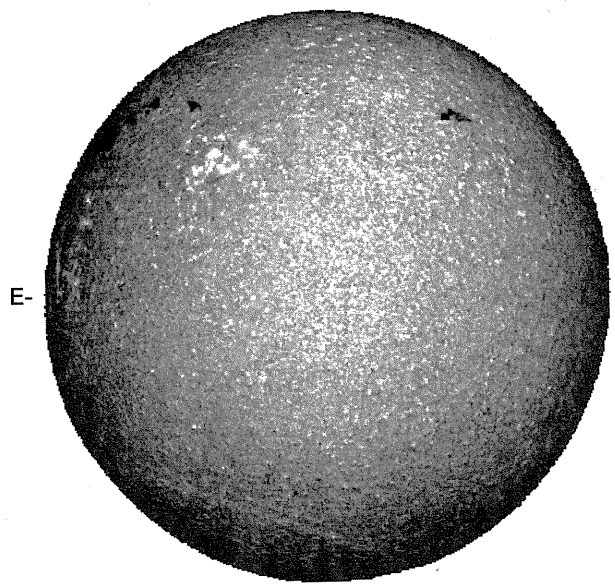
MT. WILSON MAGNETOGRAM



17.78 -
18.70 UT

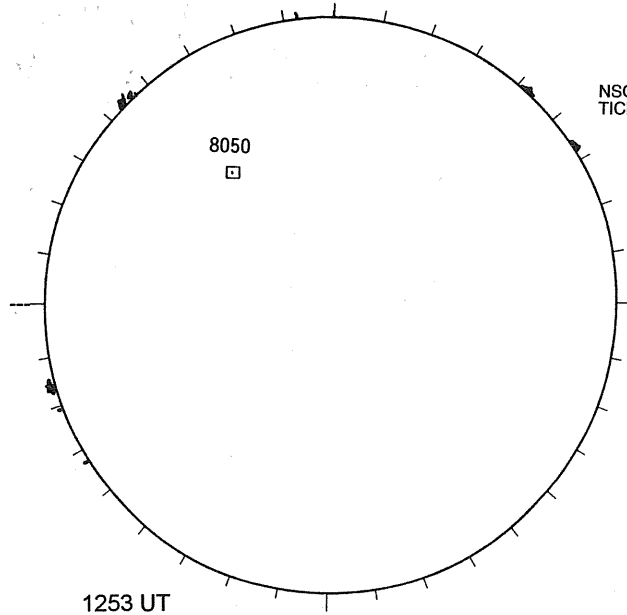
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



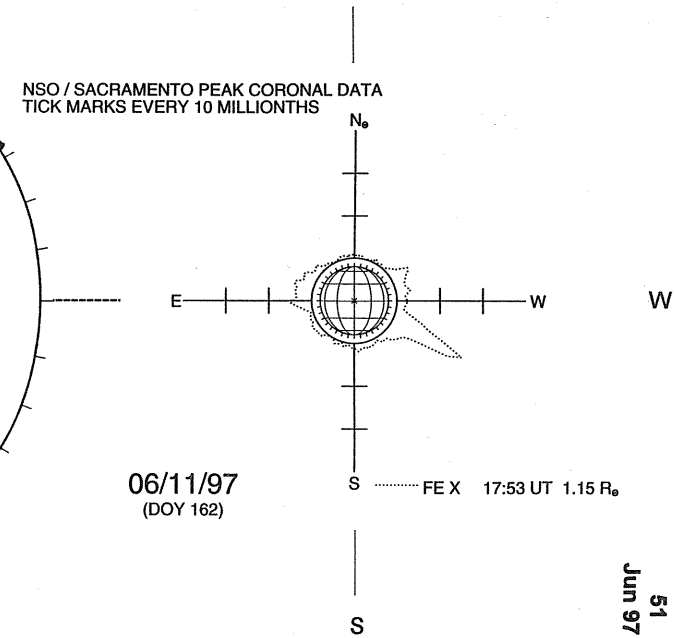
1257 UT

RAMEY SUNSPOT



1253 UT
0540 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)----



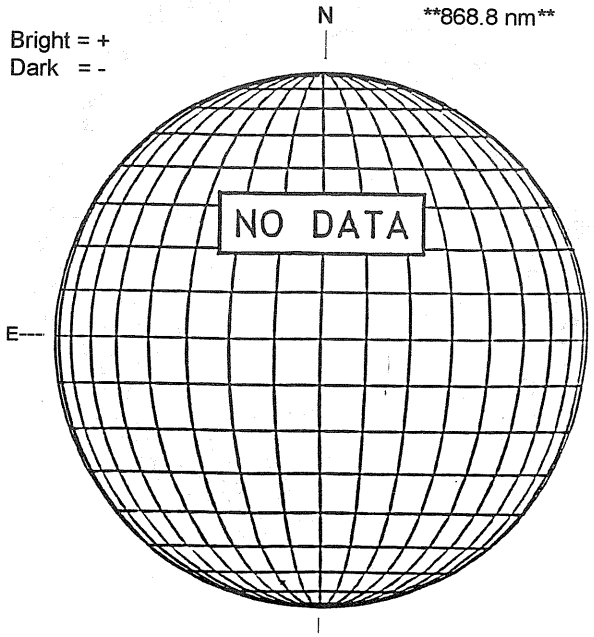
06/11/97
(DOY 162)

S

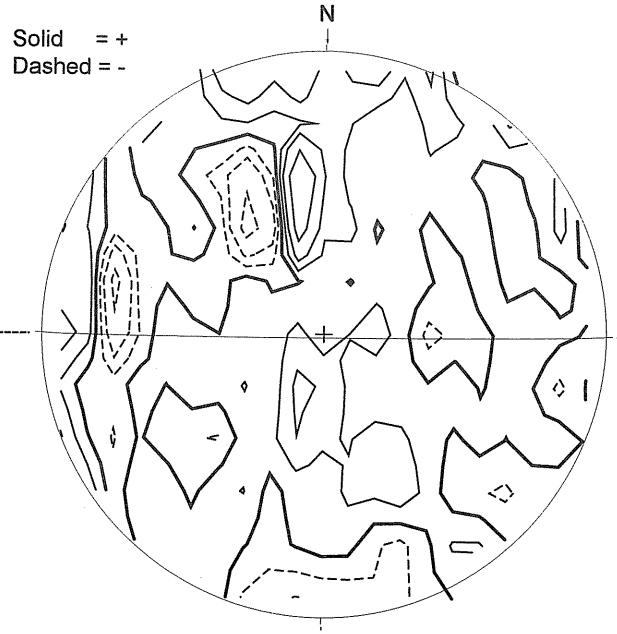
51
Jun 97

JUNE 12, 1997 (P= - 11.07, B0 = 0.67, L0 = 83.45)

KITT PEAK MAGNETOGRAM

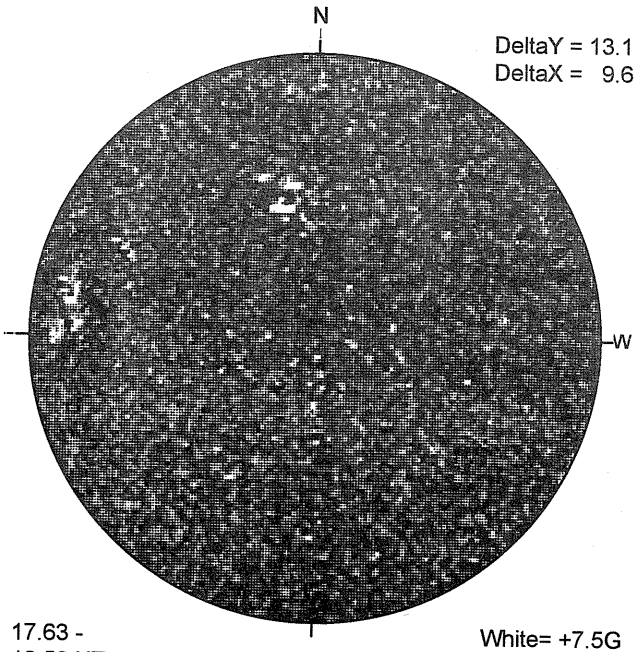


STANFORD MAGNETOGRAM



1734 UT

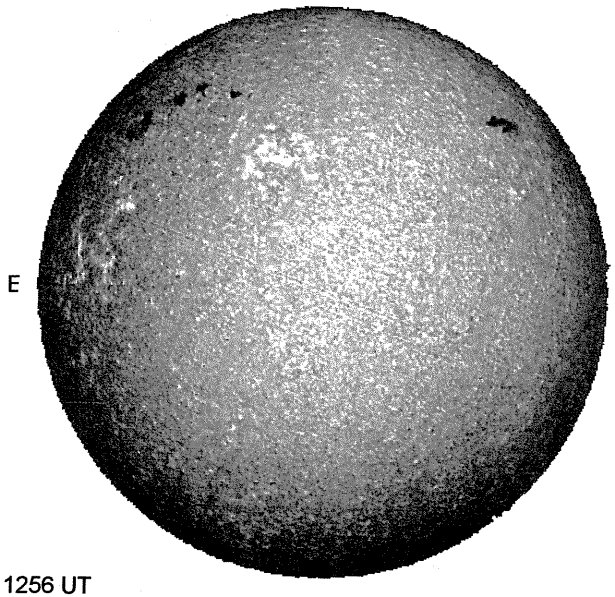
MT. WILSON MAGNETOGRAM



17.63 -
18.56 UT

White= +7.5G
Black = -7.5G

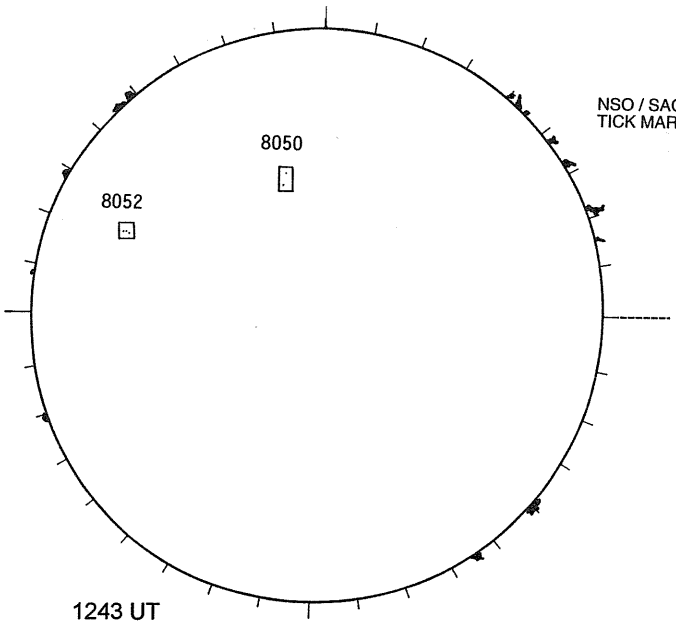
---- SACRAMENTO PEAK H-ALPHA



1256 UT

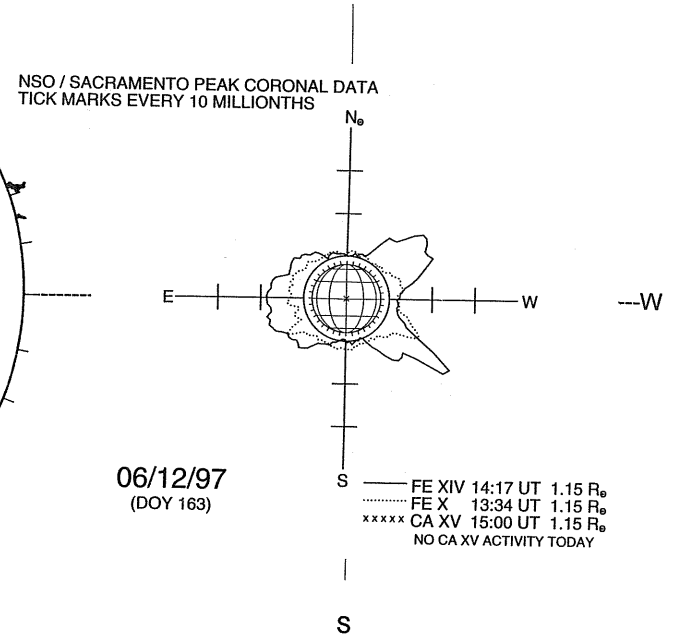
S

RAMEY SUNSPOT



1243 UT
0503 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



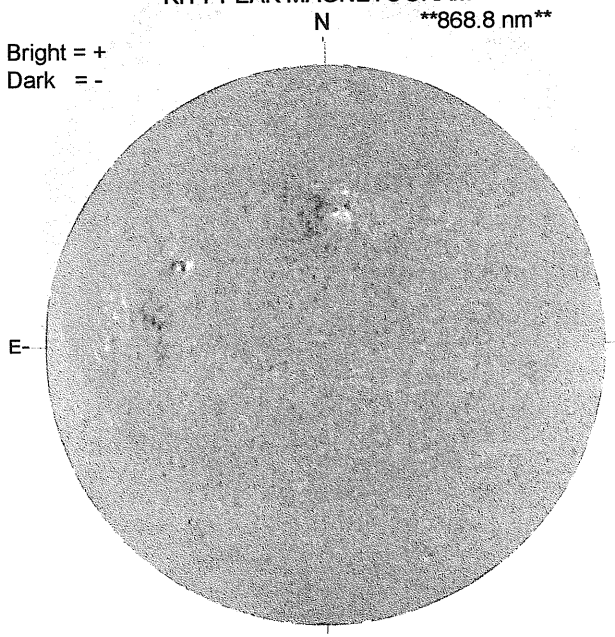
06/12/97
(DOY 163)

FE XIV 14:17 UT 1.15 R_e
FE X 13:34 UT 1.15 R_e
xxxxx CA XV 15:00 UT 1.15 R_e
NO CA XV ACTIVITY TODAY

S

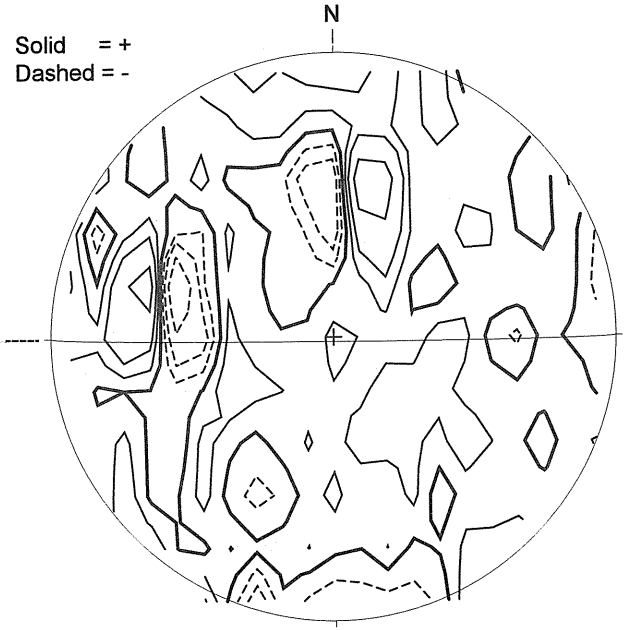
JUNE 13, 1997 (P= - 10.64, Bo = 0.79, Lo = 70.21)

KITT PEAK MAGNETOGRAM



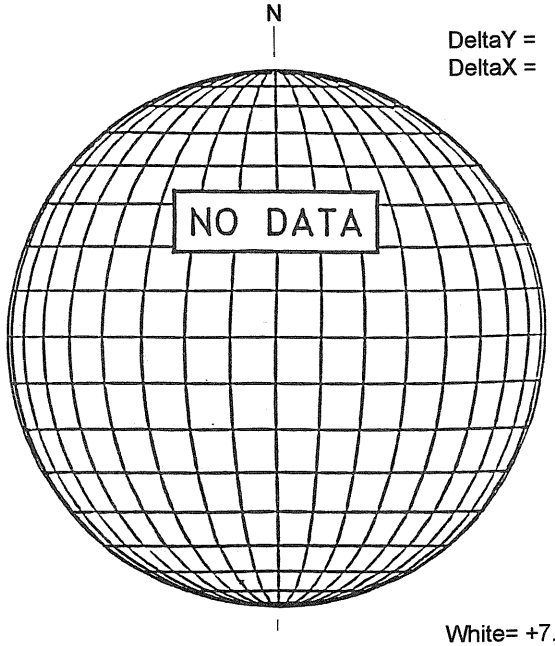
1357 UT

STANFORD MAGNETOGRAM



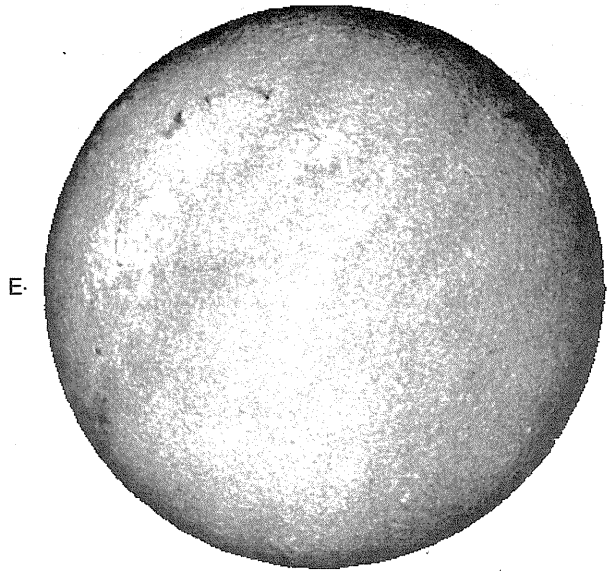
2316 UT

MT. WILSON MAGNETOGRAM



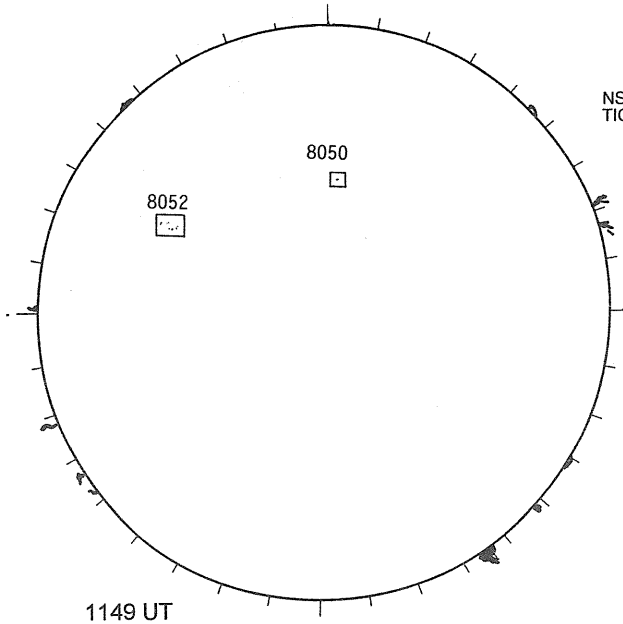
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



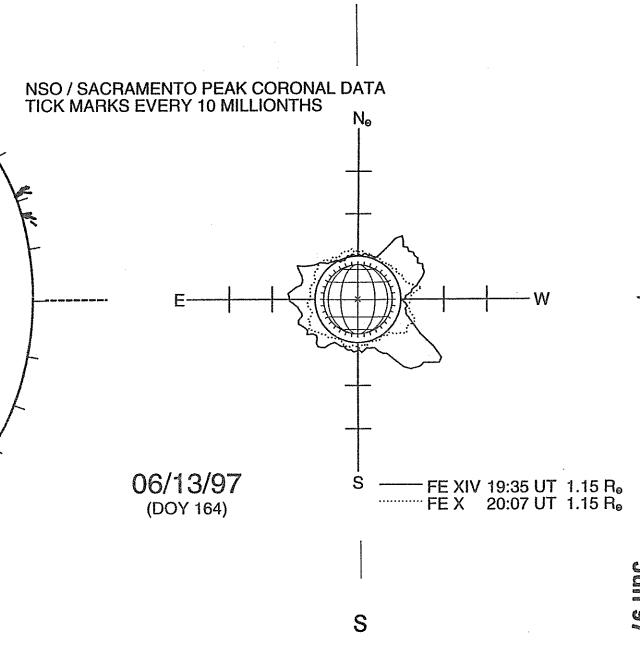
0701 UT

RAMEY SUNSPOT



1149 UT
0510 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)----



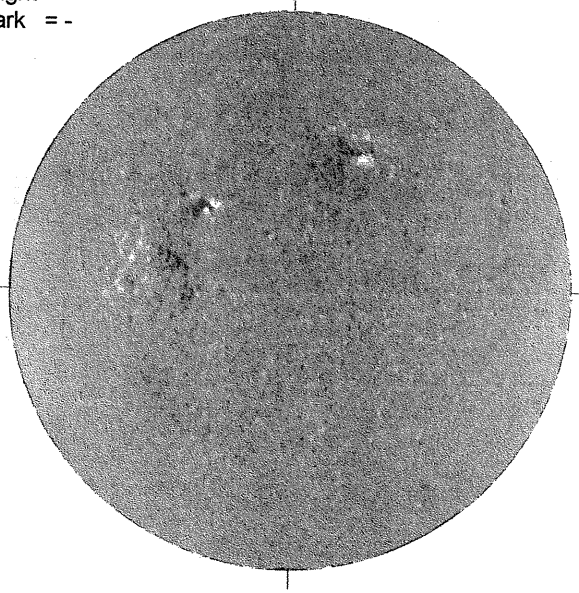
JUNE 14, 1997 (P= - 10.22, Bo = 0.91, Lo= 56.97)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



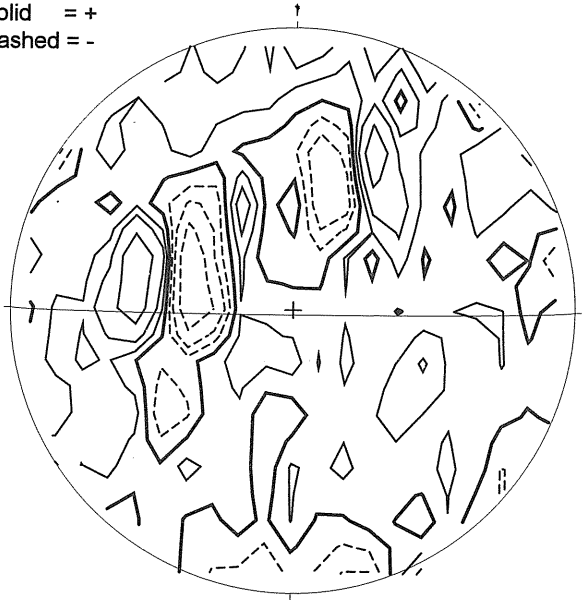
E

1407 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

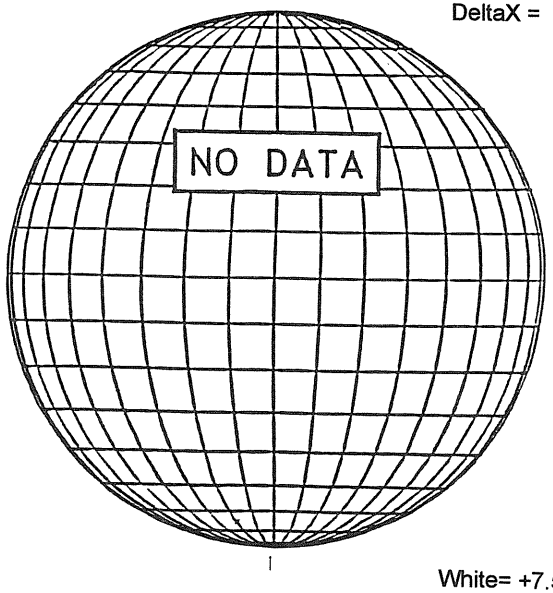


2016 UT

MT. WILSON MAGNETOGRAM

N

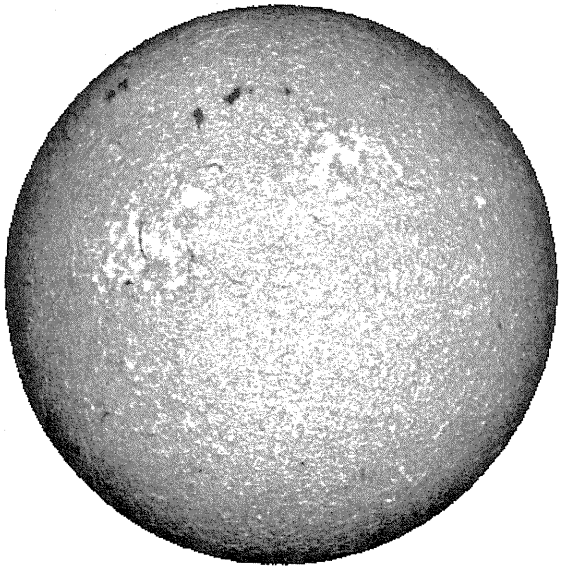
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

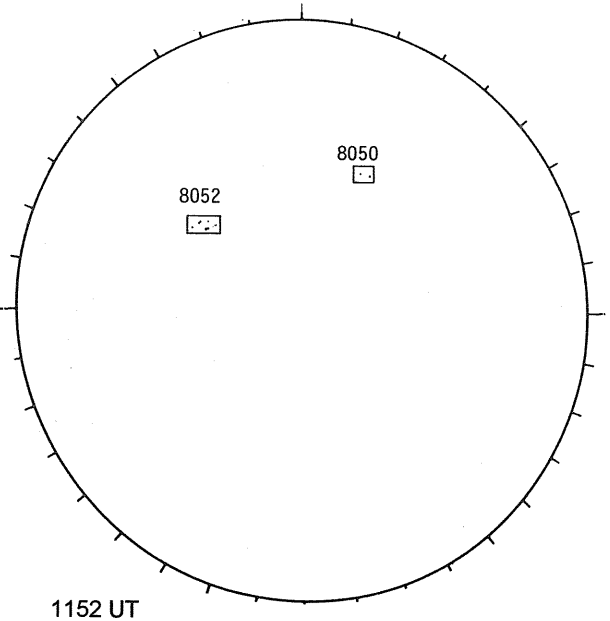


E

1241 UT

S

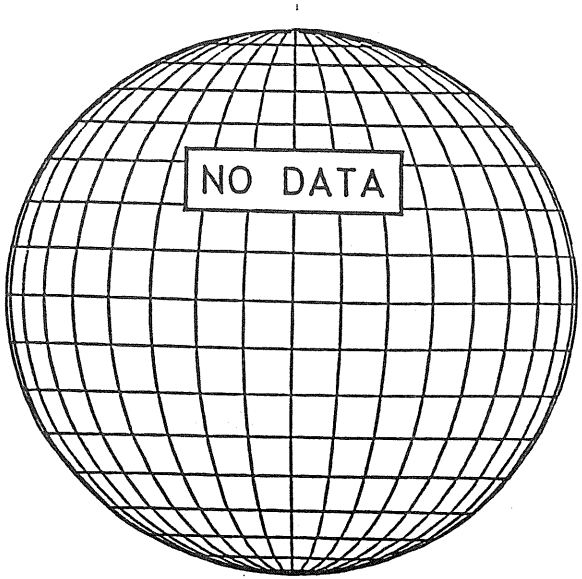
RAMEY SUNSPOT



1152 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

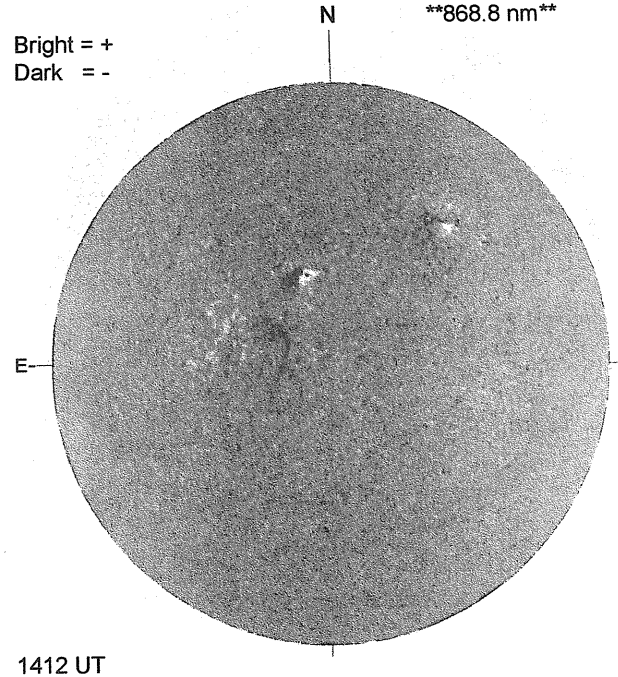


W

S

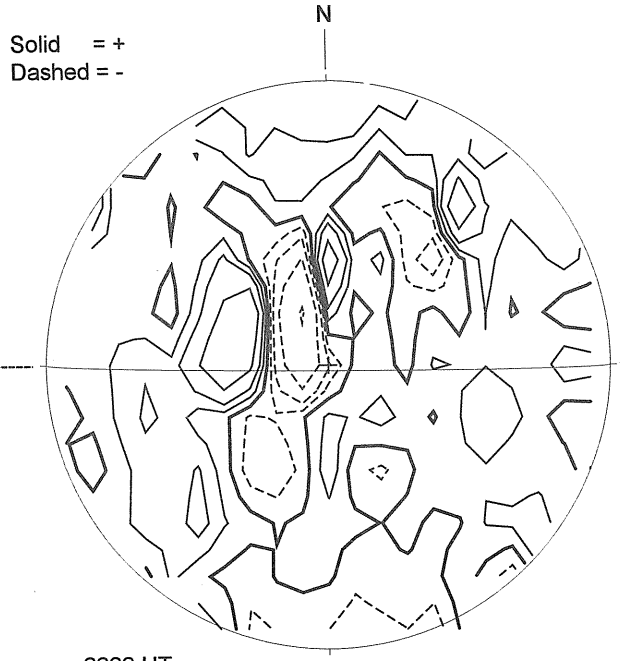
JUNE 15, 1997 (P= - 9.80, Bo = 1.03, Lo = 43.74)

KITT PEAK MAGNETOGRAM



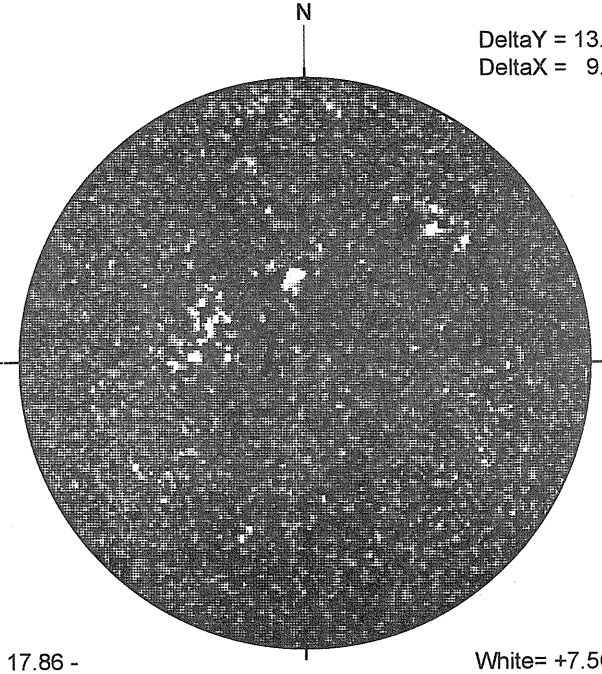
1412 UT

STANFORD MAGNETOGRAM



2222 UT

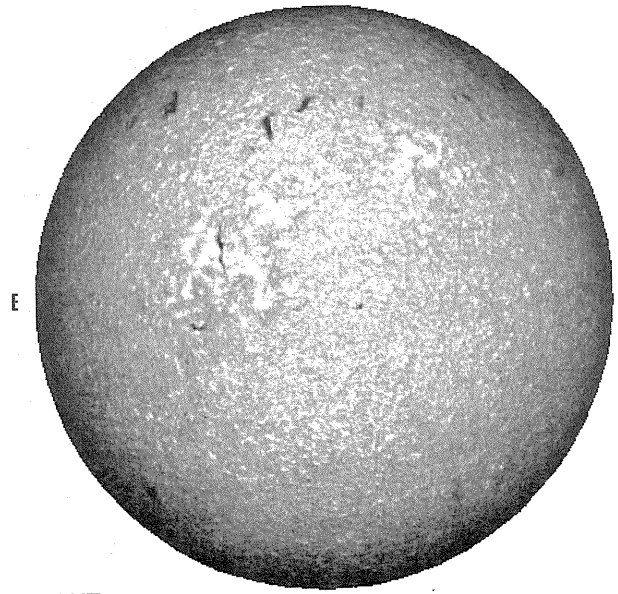
MT. WILSON MAGNETOGRAM



17.86 -
18.78 UT

White= +7.5G
Black = -7.5G

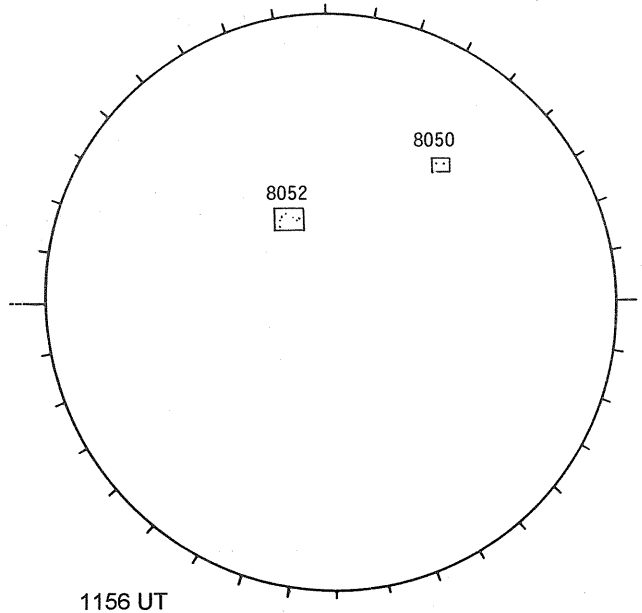
MEUDON H-ALPHA



0704 UT

S

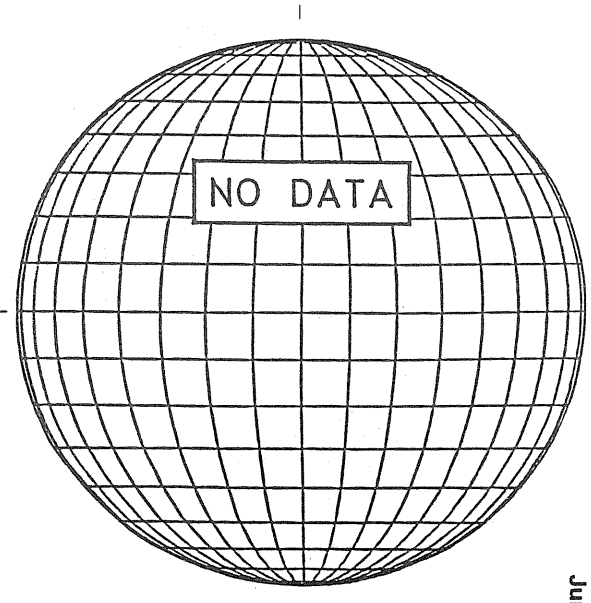
RAMEY SUNSPOT



1156 UT

S

LOMNICKY PEAK CORONA (1.04 Radii)----



S

55
Jun 97

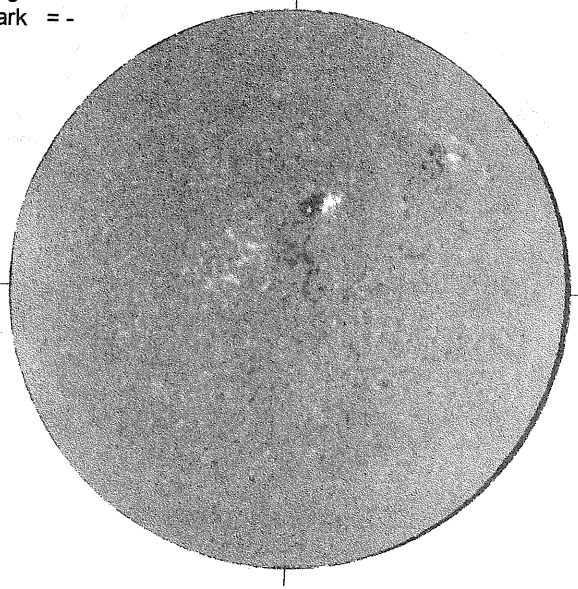
JUNE 16, 1997 (P= - 9.37, Bo = 1.15, Lo = 30.50)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



1559 UT

STANFORD MAGNETOGRAM

N

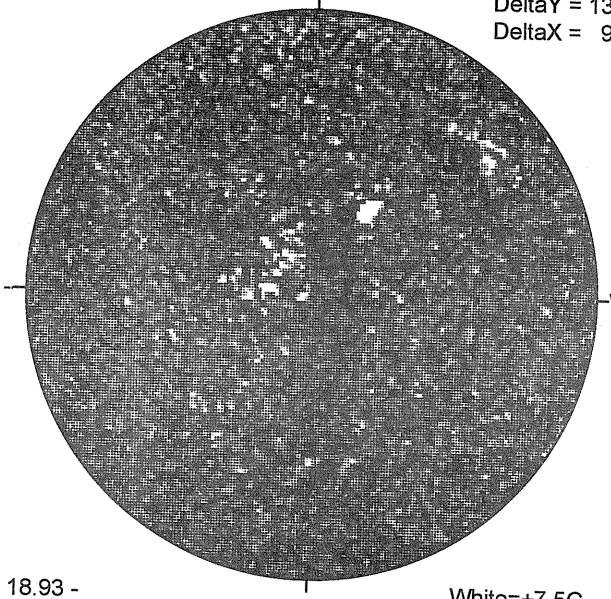
Solid = +
Dashed = -

2319 UT

MT. WILSON MAGNETOGRAM

N

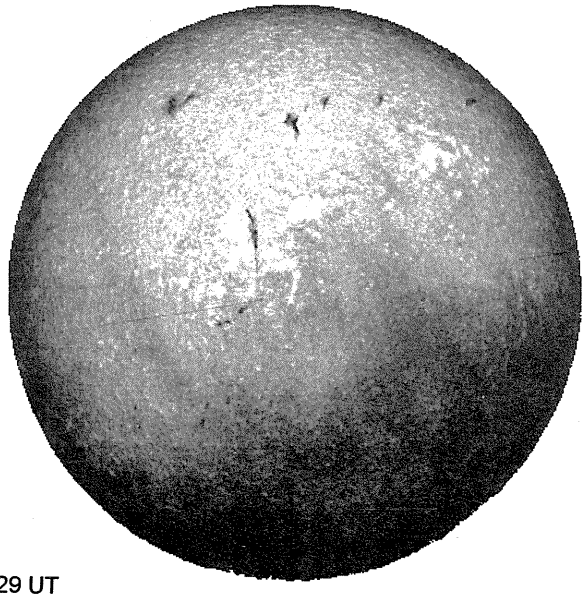
DeltaY = 13.1
DeltaX = 9.6



18.93 -
19.85 UT

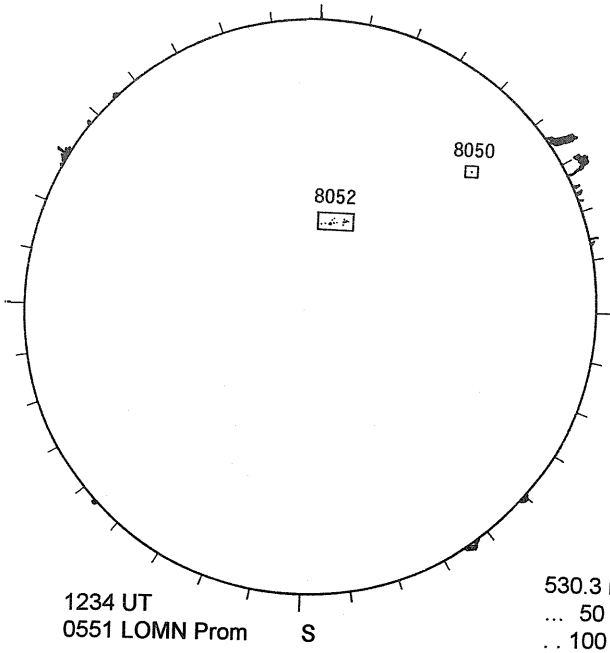
White=+7.5G
Black = 7.5G

MEUDON H-ALPHA



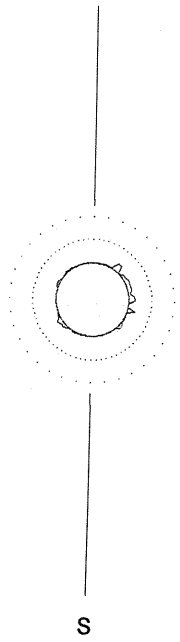
0629 UT

RAMEY SUNSPOT



1234 UT
0551 LOMN Prom

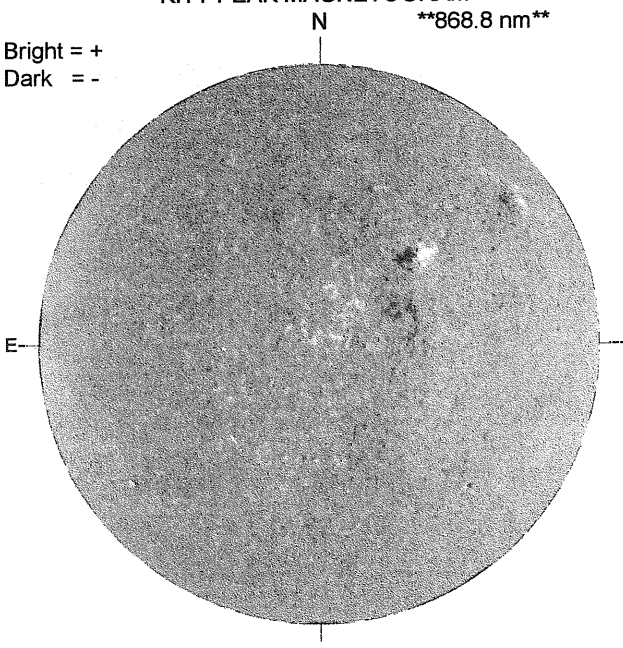
LOMNICKY PEAK CORONA (1.04 Radii)----



530.3 nm, 0634 UT
... 50 abs. units
. . 100 abs. units

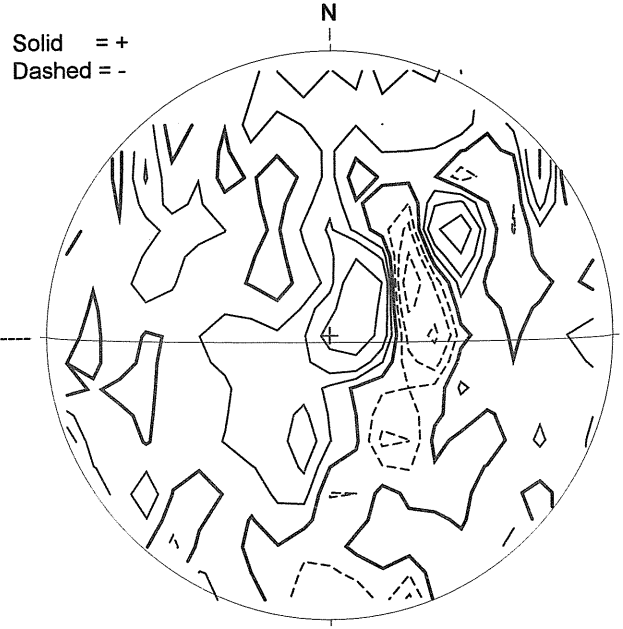
JUNE 17, 1997 (P= - 8.93, Bo = 1.27, Lo = 17.26)

KITT PEAK MAGNETOGRAM



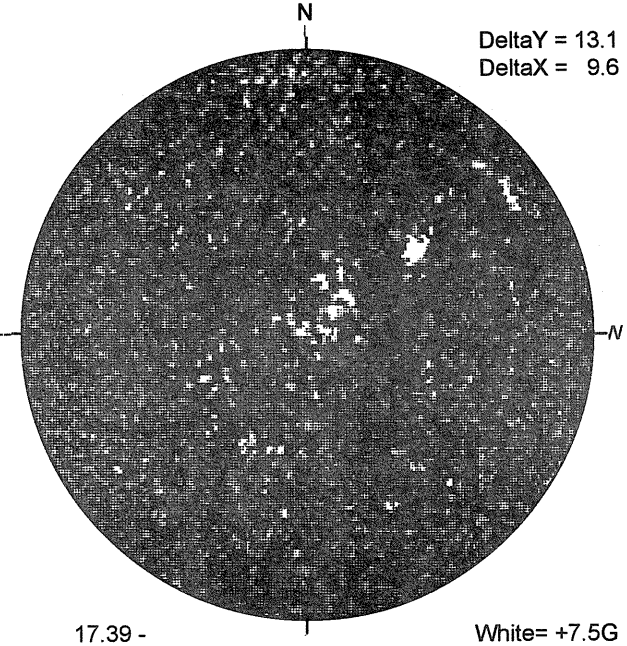
1741 UT

STANFORD MAGNETOGRAM



2052 UT

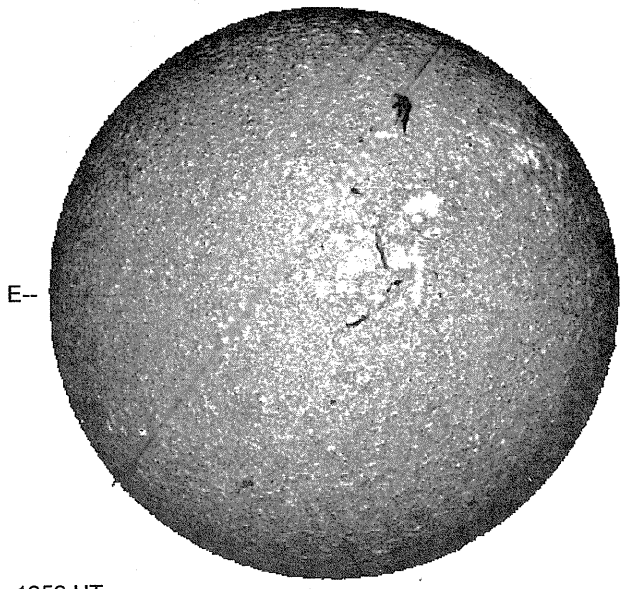
MT. WILSON MAGNETOGRAM



17.39 -
18.31 UT

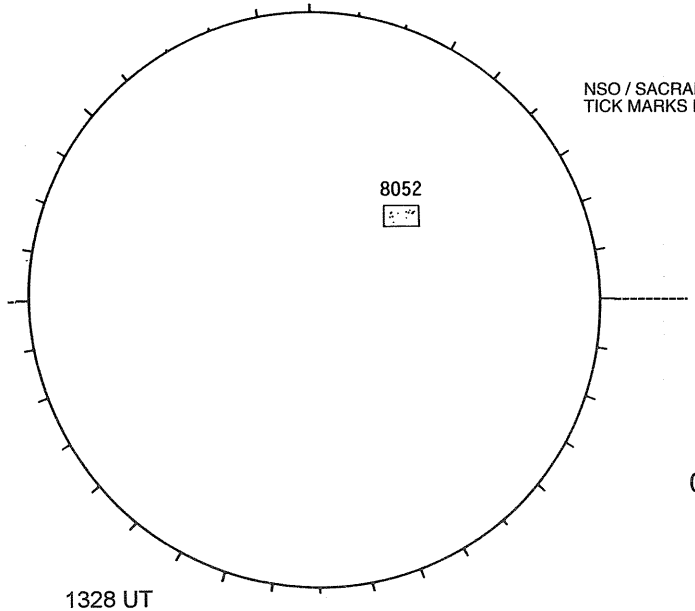
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



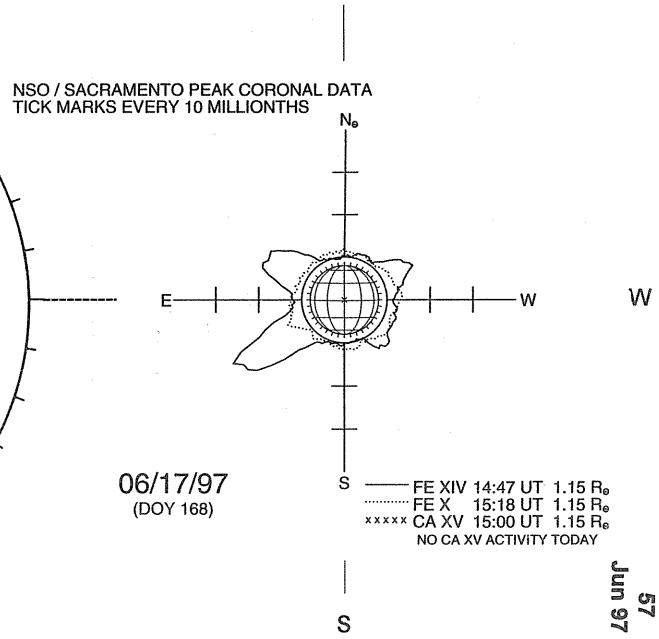
1356 UT

RAMEY SUNSPOT



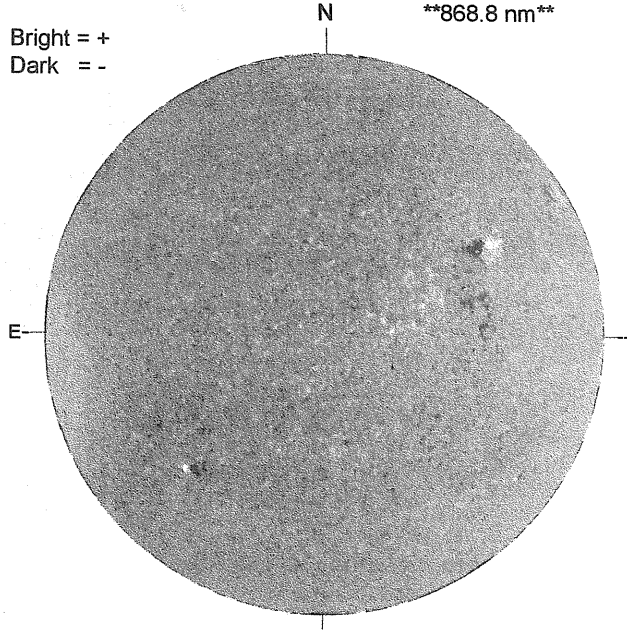
1328 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



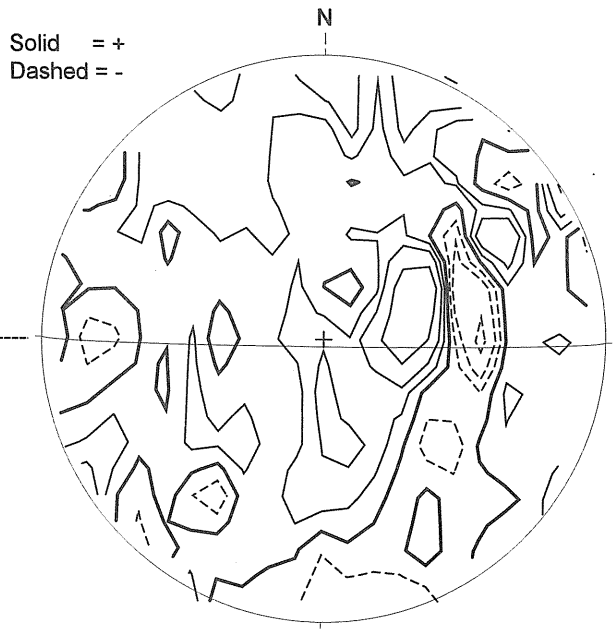
JUNE 18, 1997 (P= - 8.50, Bo = 1.39, Lo = 4.03)

KITT PEAK MAGNETOGRAM



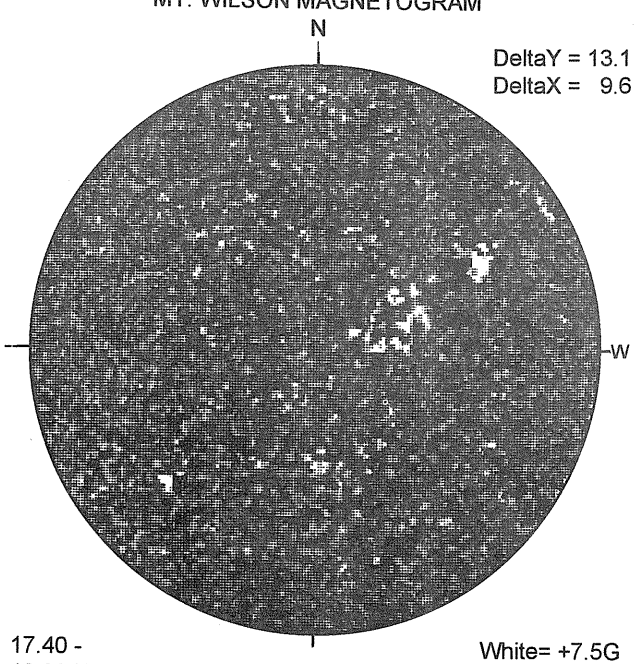
1841 UT

STANFORD MAGNETOGRAM



2037 UT

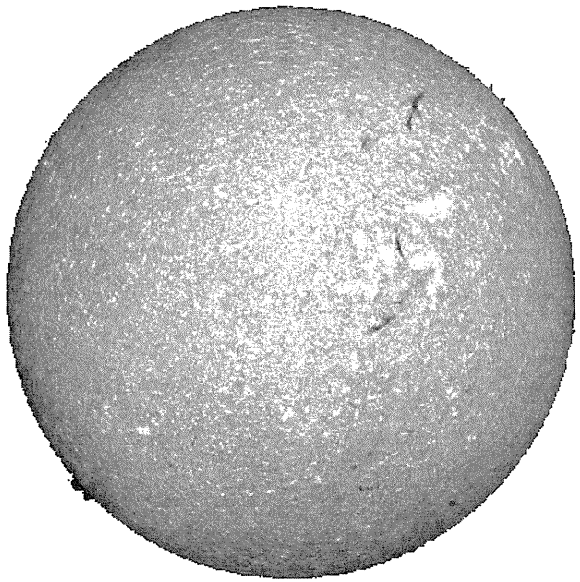
MT. WILSON MAGNETOGRAM



17.40 -
18.32 UT

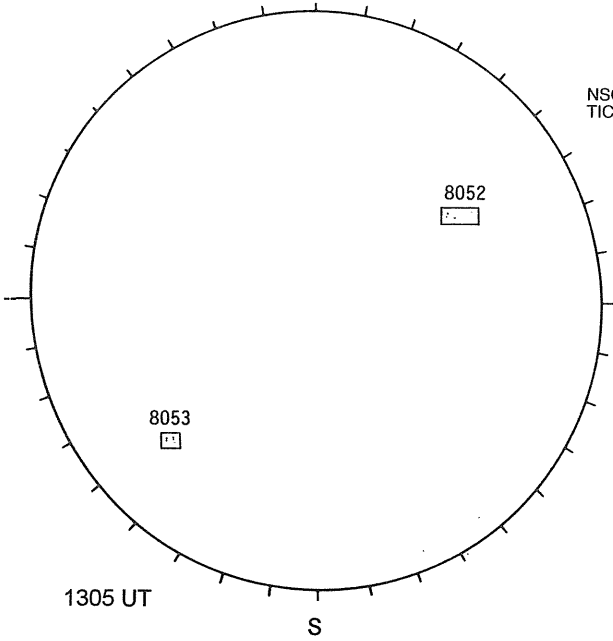
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



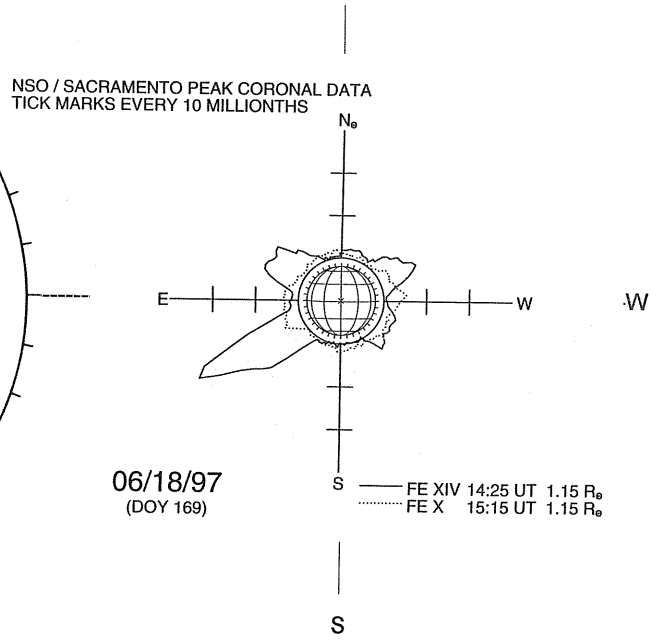
1350 UT

RAMEY SUNSPOT



1305 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



06/18/97
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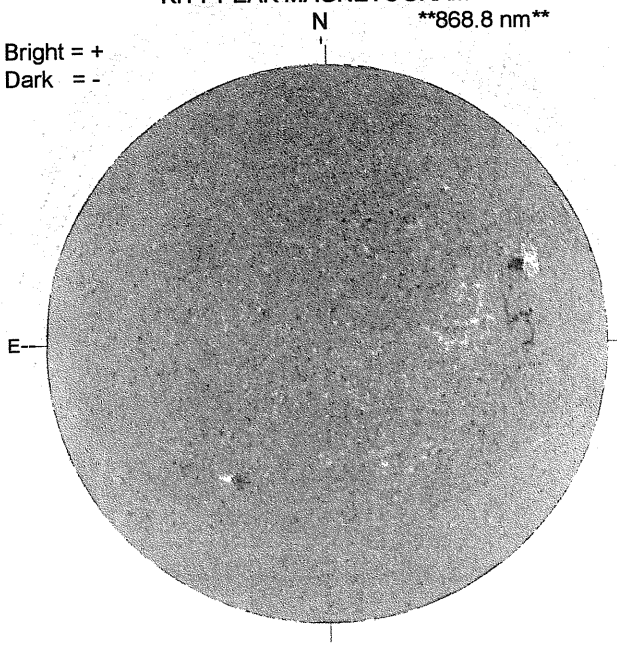
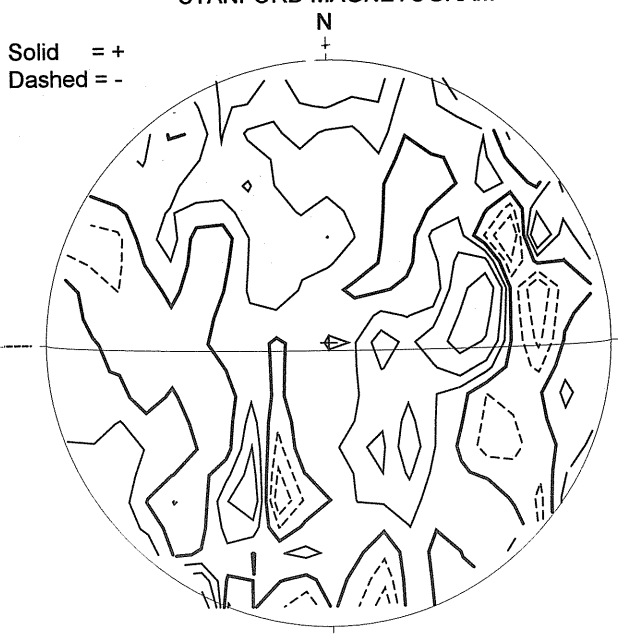
JUNE 19, 1997 (P= - 8.06, Bo = 1.51, Lo = 350.79)

KITT PEAK MAGNETOGRAM



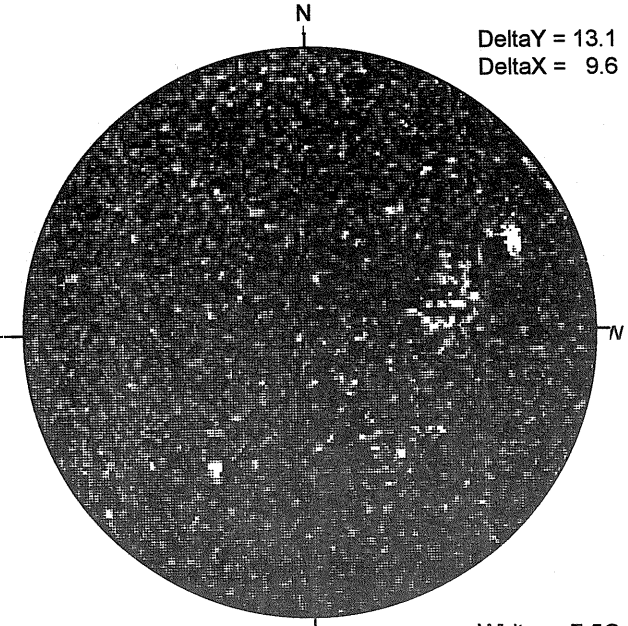
1710 UT

STANFORD MAGNETOGRAM



2339 UT

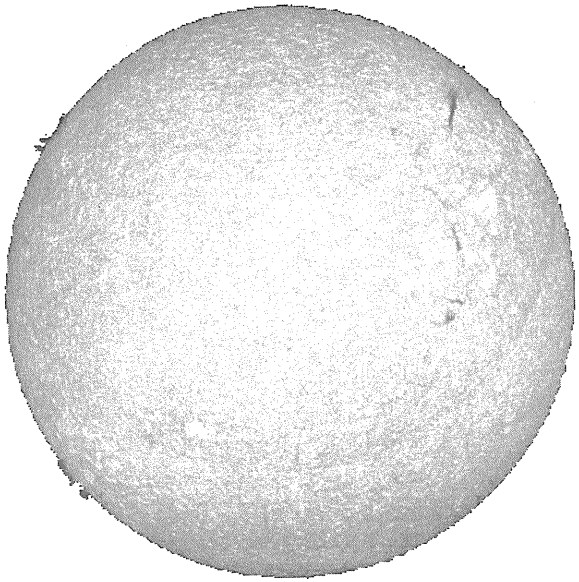
MT. WILSON MAGNETOGRAM



17.13 - 18.05 UT

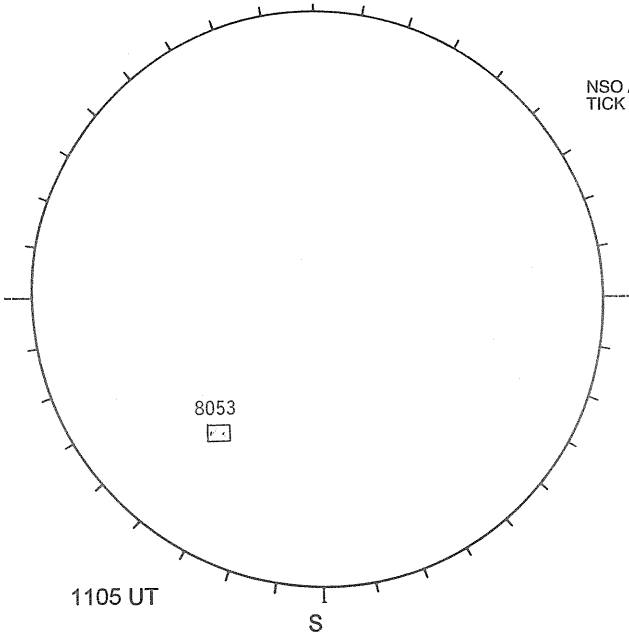
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



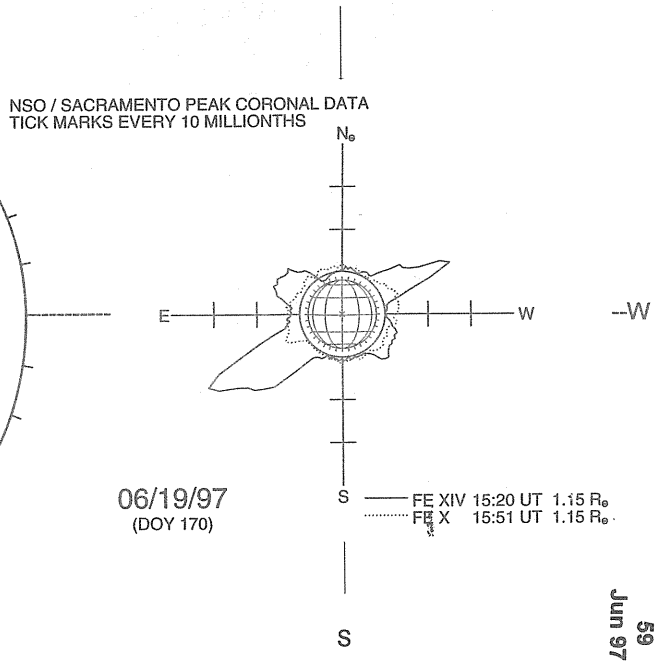
1418 UT

RAMEY SUNSPOT



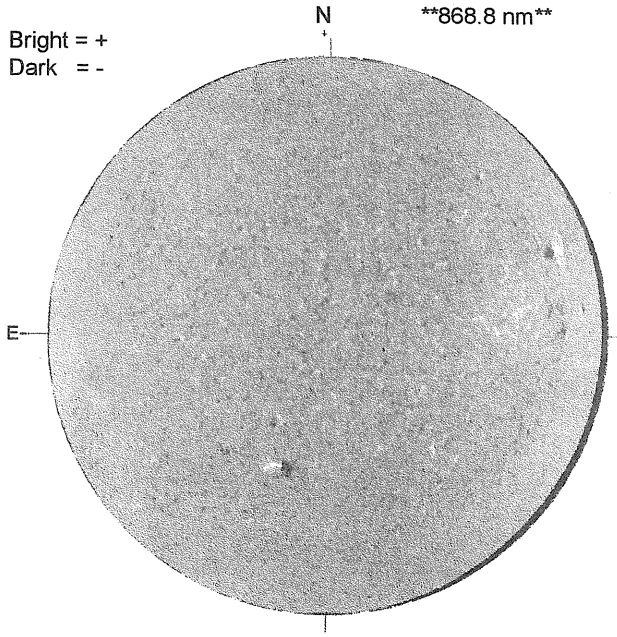
1105 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



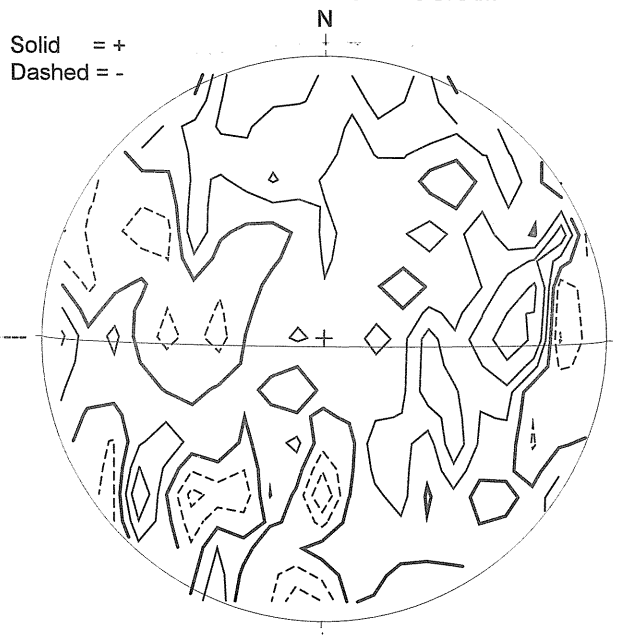
JUNE 20, 1997 (P= - 7.62, Bo = 1.63, Lo = 337.55)

KITT PEAK MAGNETOGRAM



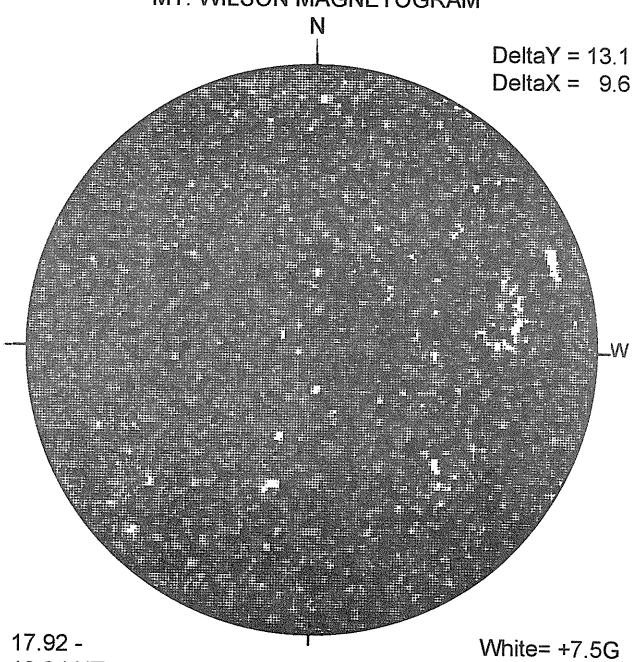
1617 UT

STANFORD MAGNETOGRAM



2042 UT

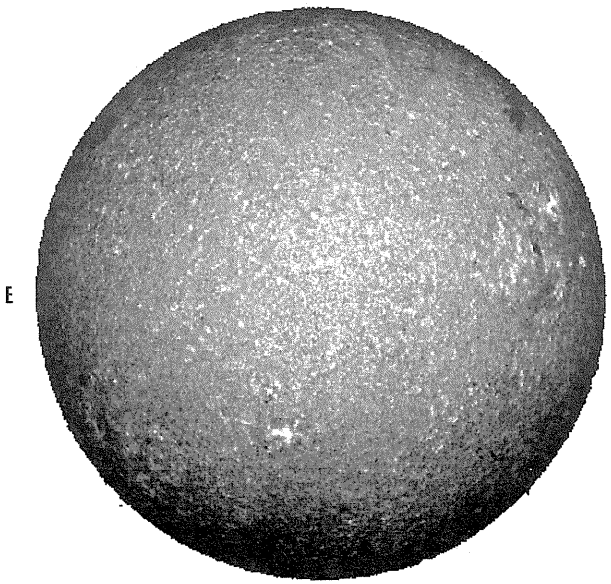
MT. WILSON MAGNETOGRAM



17.92 - 18.84 UT

White= +7.5G
Black = -7.5G

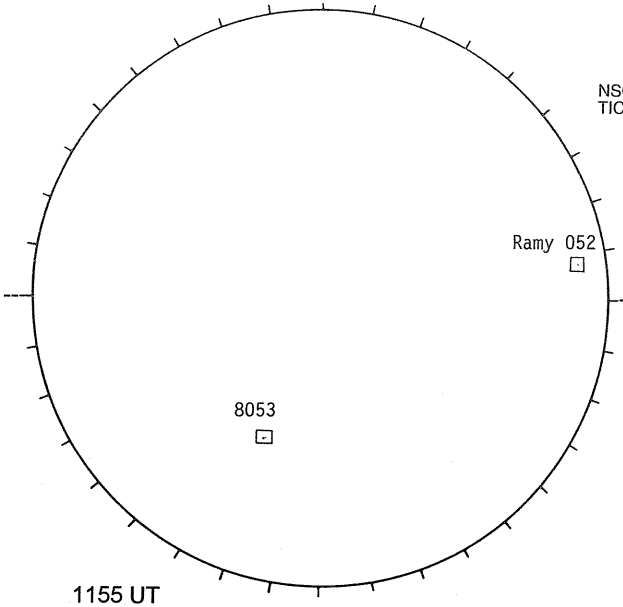
SACRAMENTO PEAK H-ALPHA



1415 UT

S

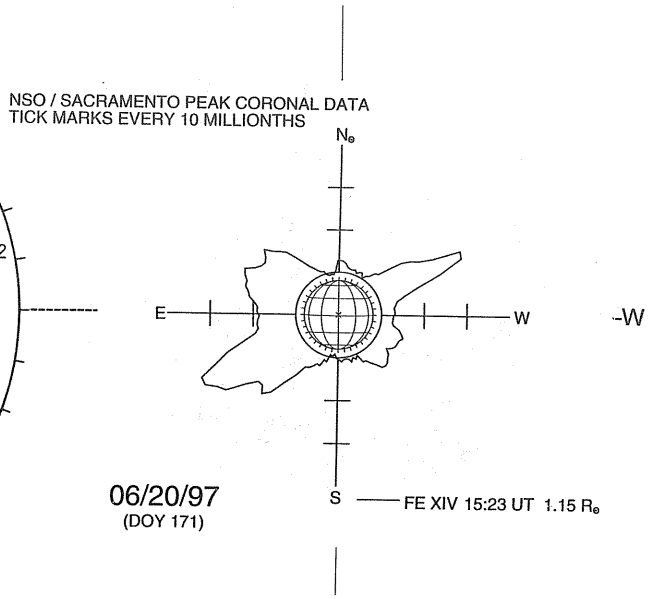
RAMEY SUNSPOT



1155 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

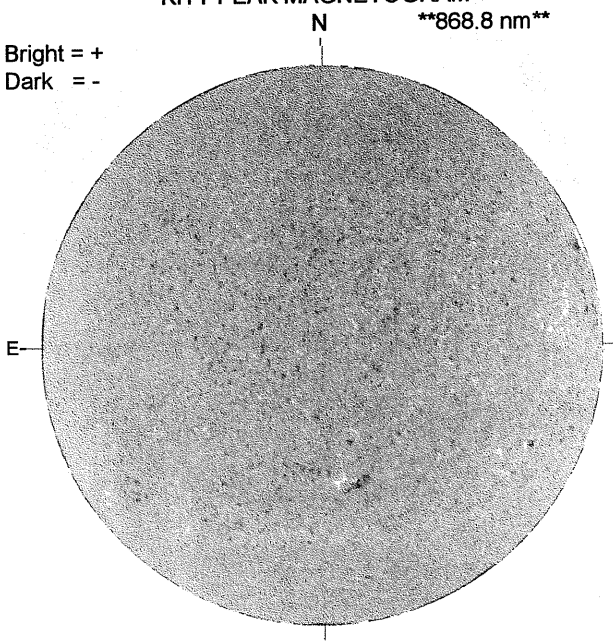


06/20/97
(DOY 171)

S

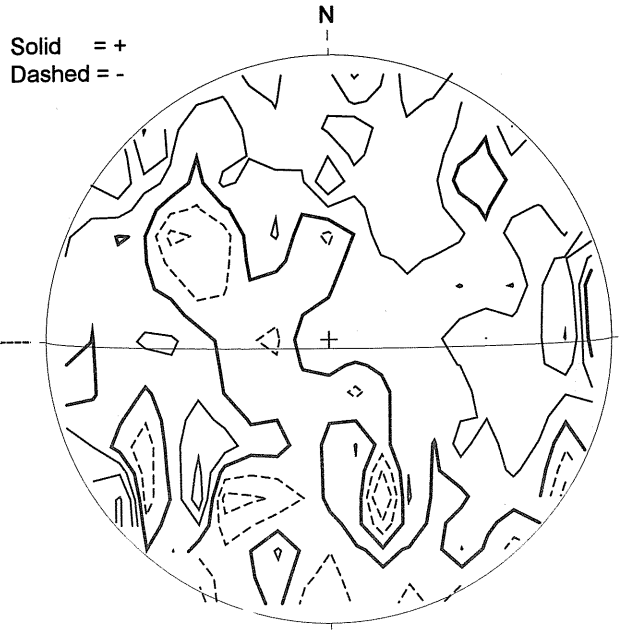
JUNE 21, 1997 (P= - 7.18, Bo = 1.74, Lo = 324.32)

KITT PEAK MAGNETOGRAM



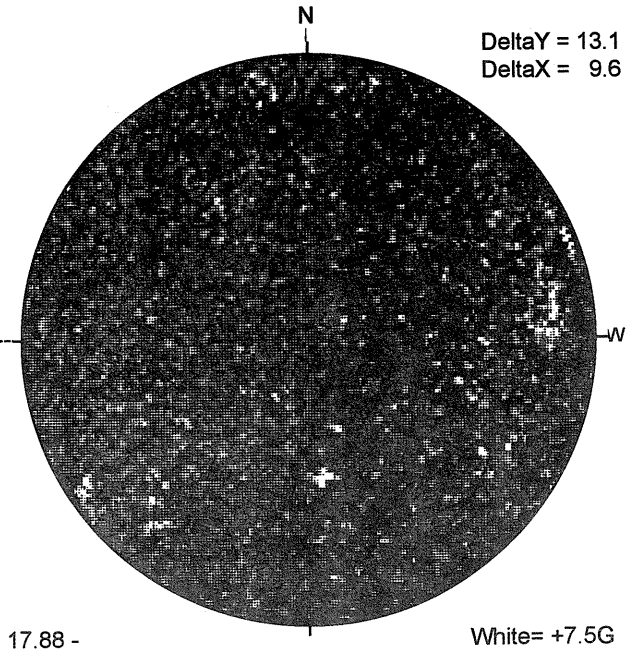
1548 UT

STANFORD MAGNETOGRAM



2107 UT

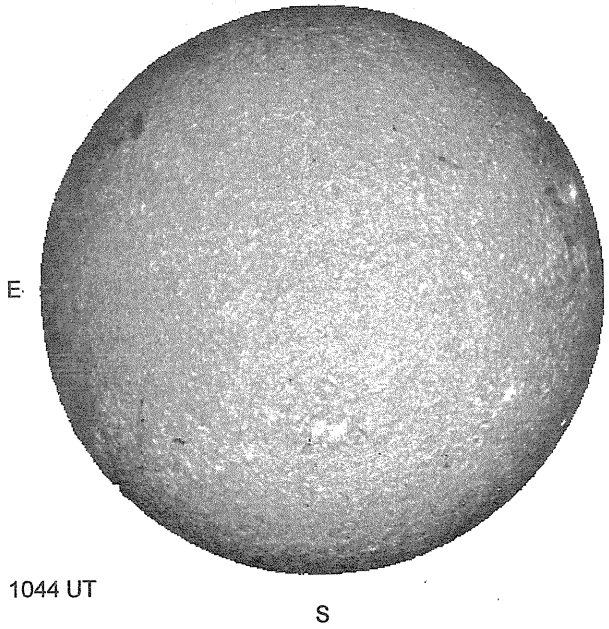
MT. WILSON MAGNETOGRAM



17.88 -
18.80 UT

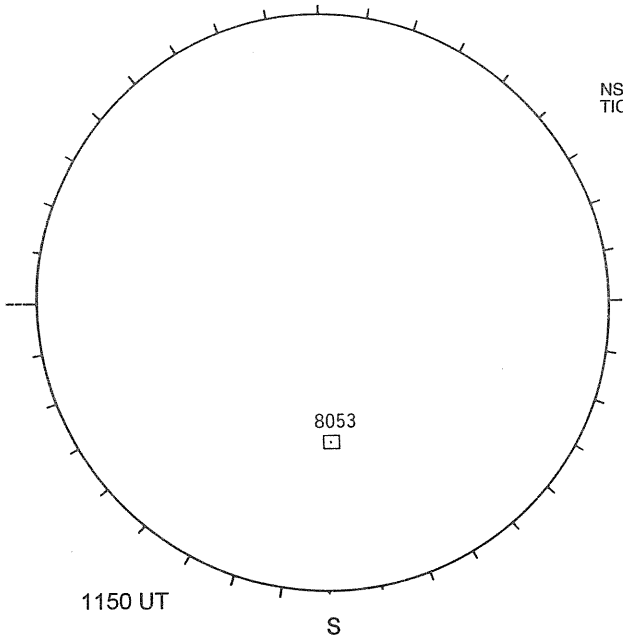
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



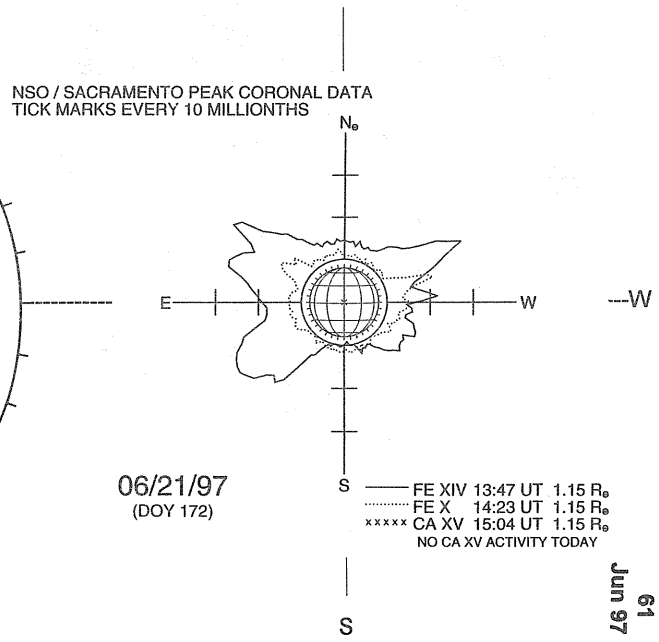
1044 UT

RAMEY SUNSPOT



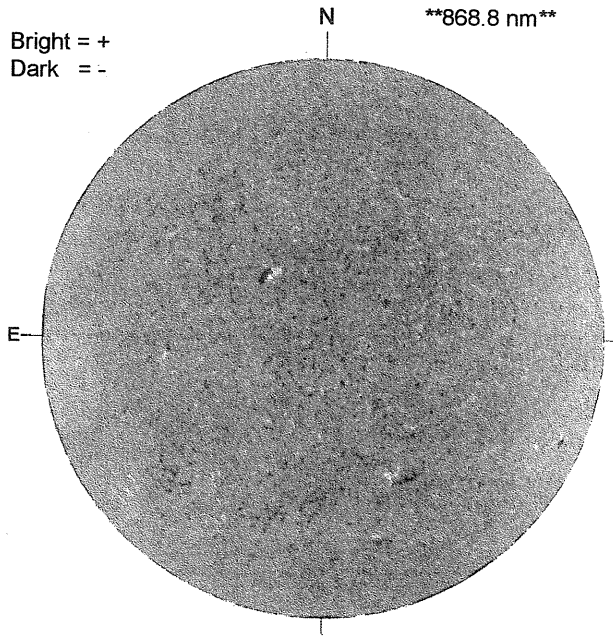
1150 UT

SACRAMENTO PEAK CORONA (1.15 Radii)--



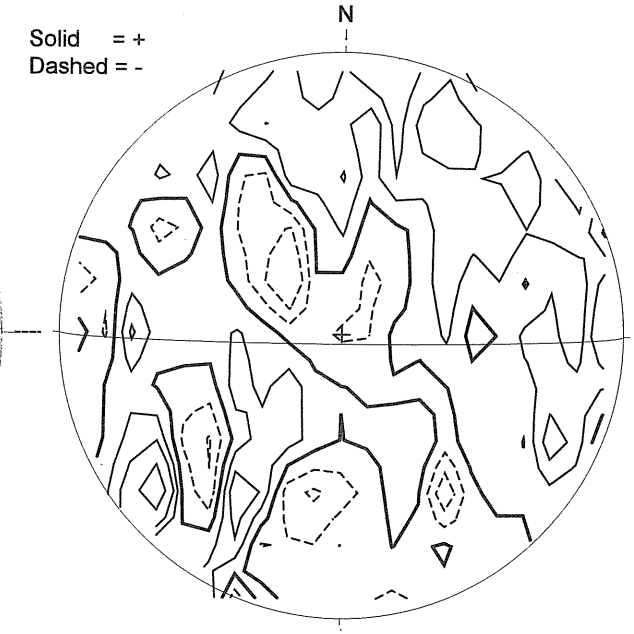
JUNE 22, 1997 (P= - 6.74, Bo = 1.86, Lo = 311.08)

KITT PEAK MAGNETOGRAM



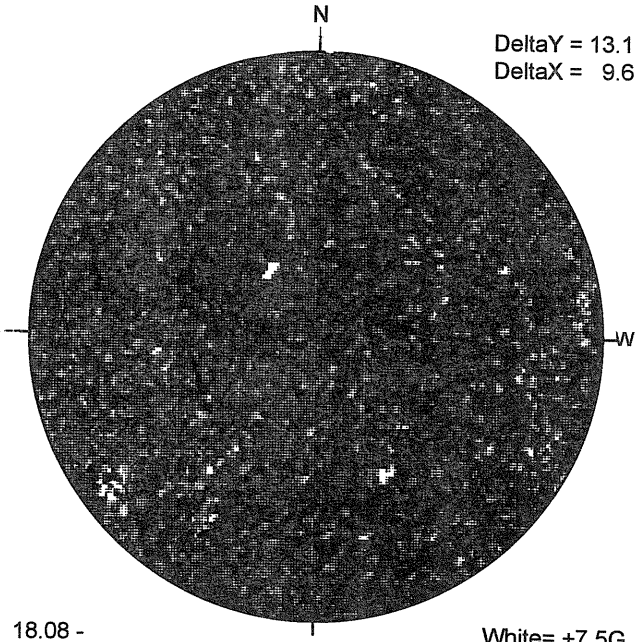
1645 UT

STANFORD MAGNETOGRAM



2130 UT

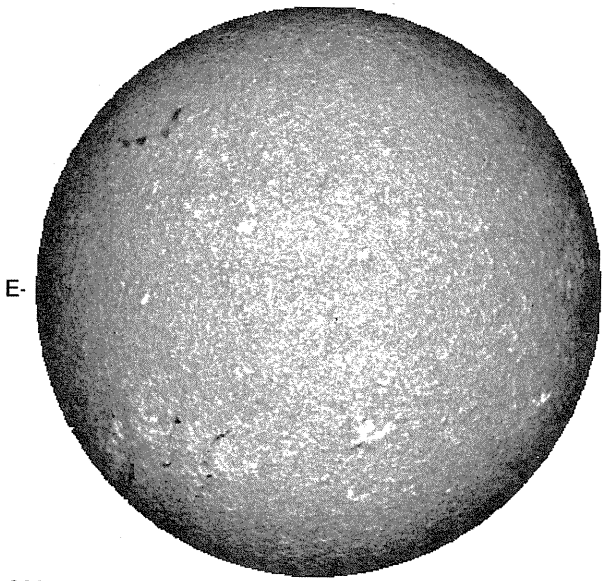
MT. WILSON MAGNETOGRAM



18.08 -
18.99 UT

White= +7.5G
Black = -7.5G

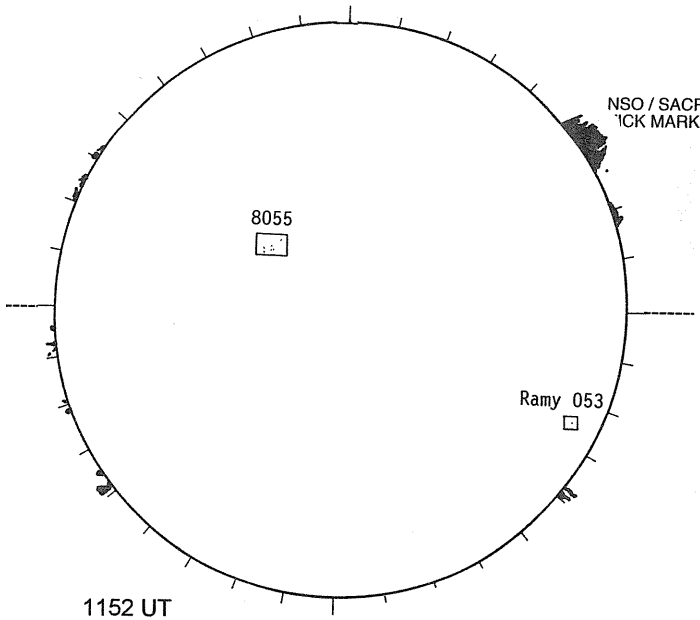
MEUDON H-ALPHA



0909 UT

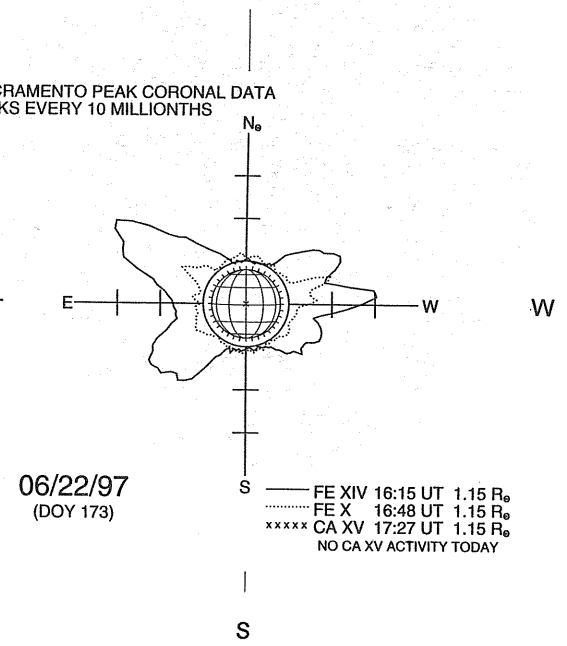
S

RAMEY SUNSPOT



1152 UT
0456 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)



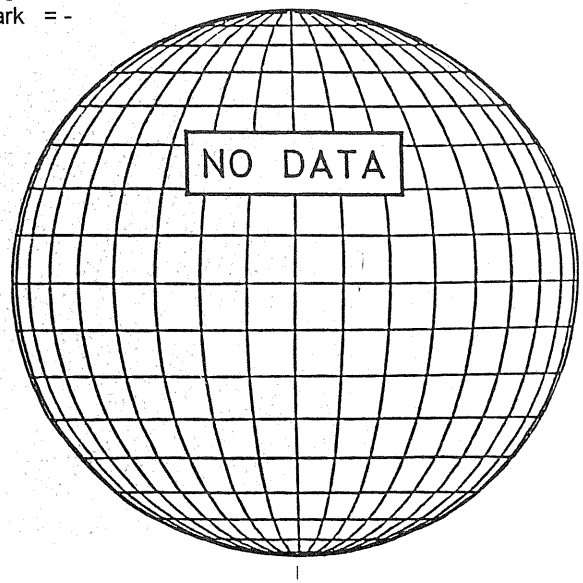
S

JUNE 23, 1997 (P= - 6.29, Bo = 1.98, Lo = 297.84)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

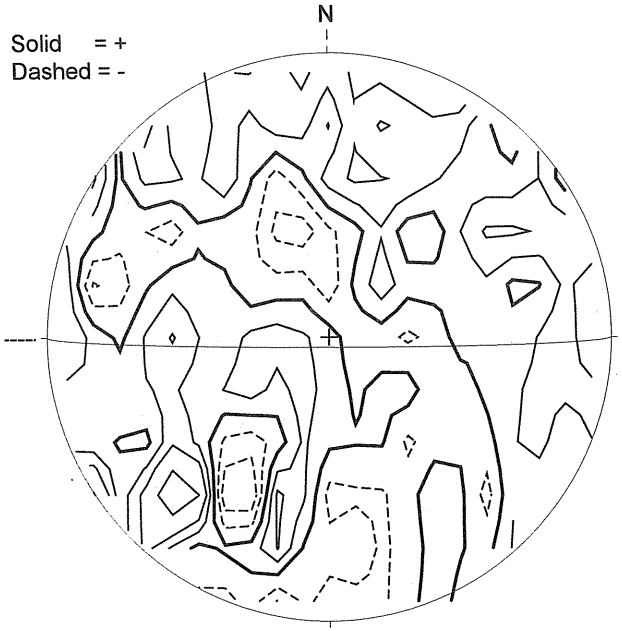
Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

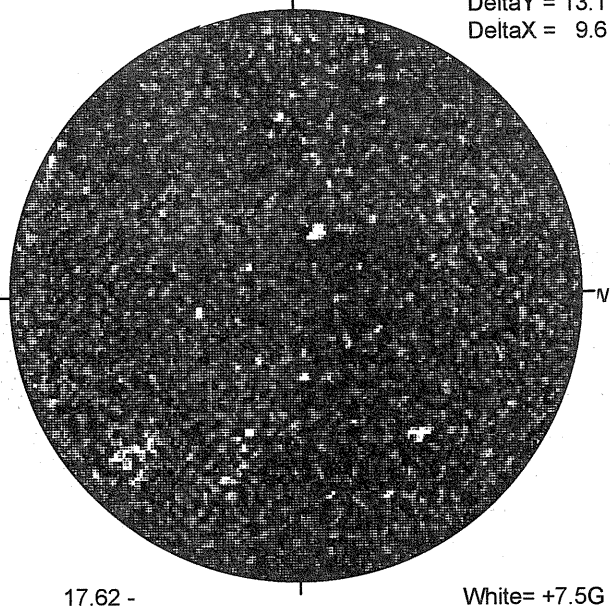


2120 UT

MT. WILSON MAGNETOGRAM

N

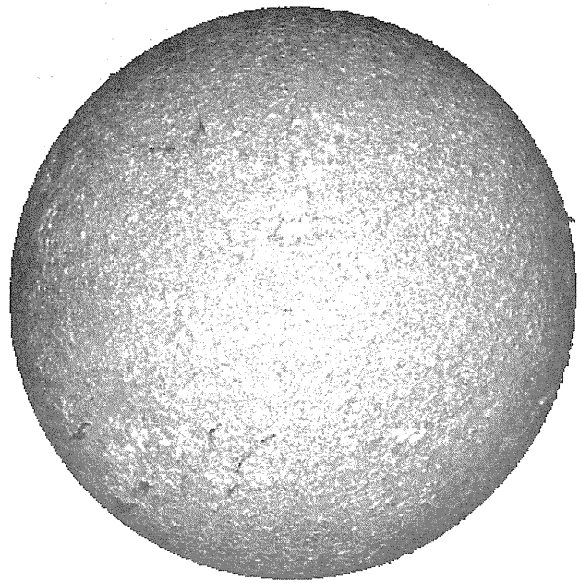
DeltaY = 13.1
DeltaX = 9.6



17.62 -
18.54 UT

White= +7.5G
Black = -7.5G

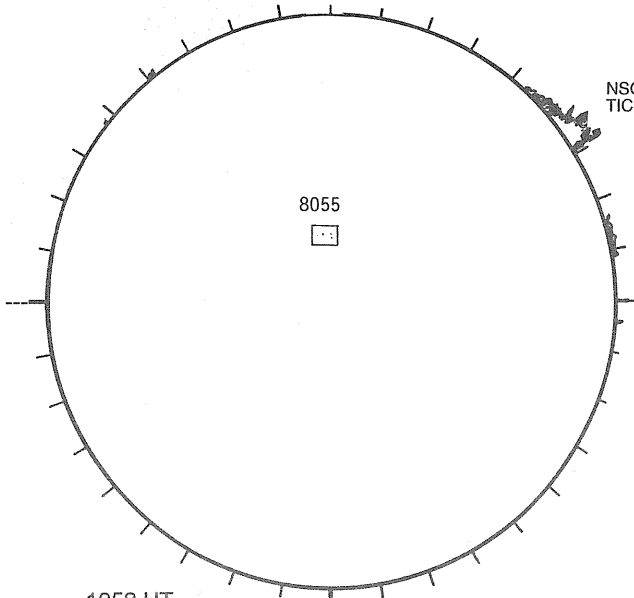
SACRAMENTO PEAK H-ALPHA



1401 UT

S

RAMEY SUNSPOT

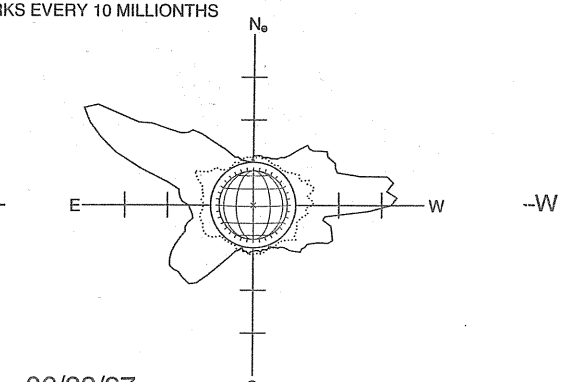


1058 UT
1224 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/23/97
(DOY 174)

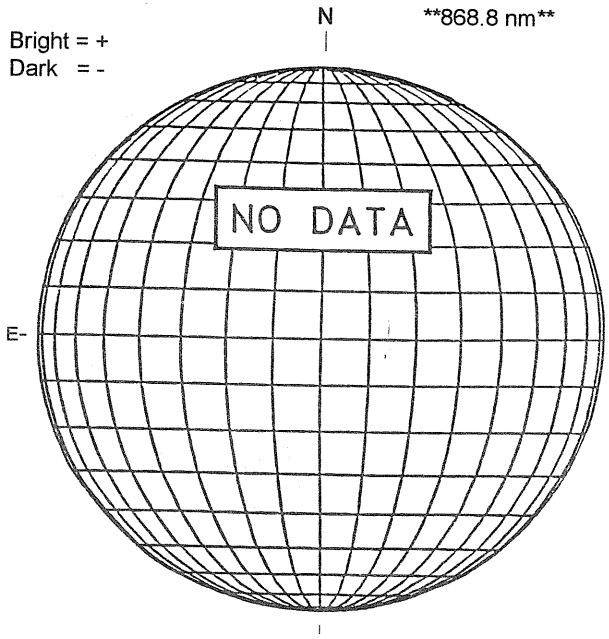
FE XIV 14:34 UT 1.15 $R_\odot$
FE X 15:21 UT 1.15 $R_\odot$
CA XV 15:04 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

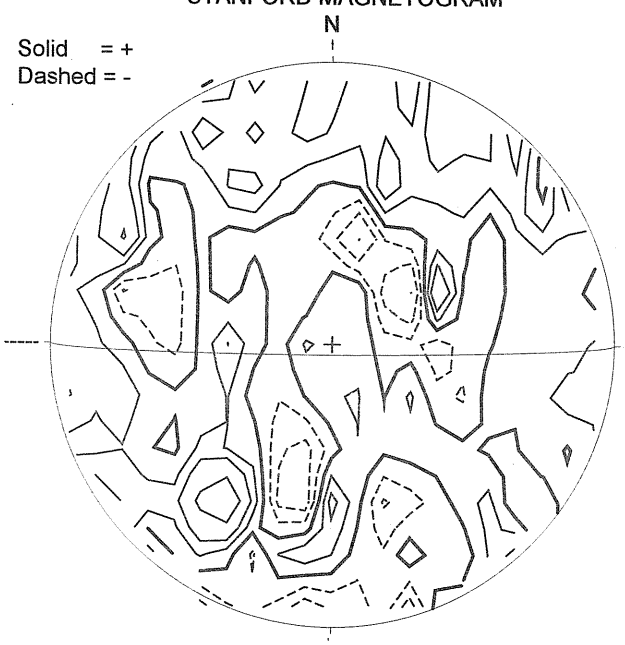
63 Jun 97

JUNE 24, 1997 (P= - 5.85, Bo = 2.09, Lo = 284.60)

KITT PEAK MAGNETOGRAM

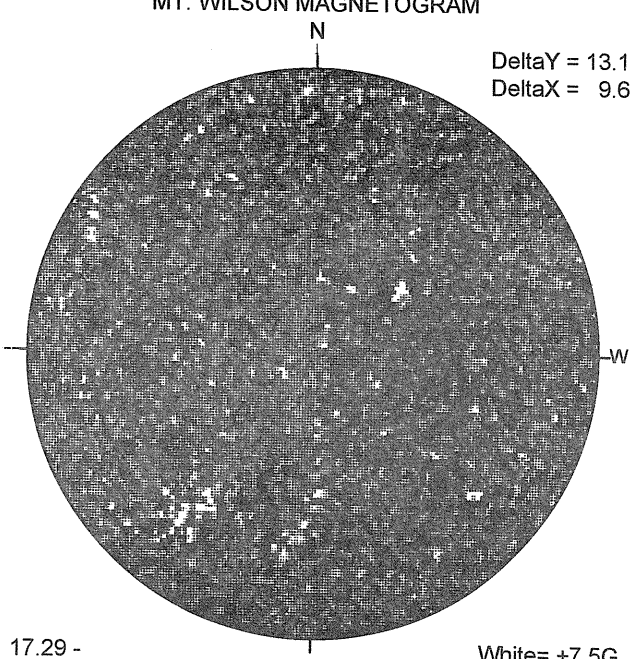


STANFORD MAGNETOGRAM



2032 UT

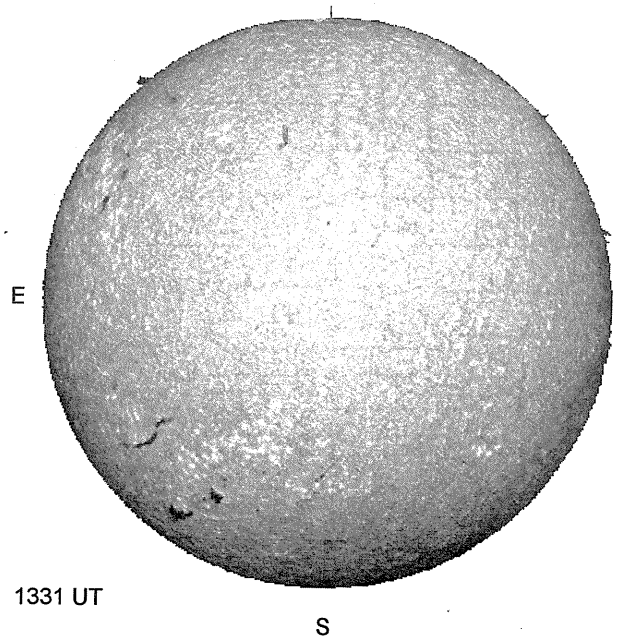
MT. WILSON MAGNETOGRAM



17.29 -
18.20 UT

White= +7.5G
Black = -7.5G

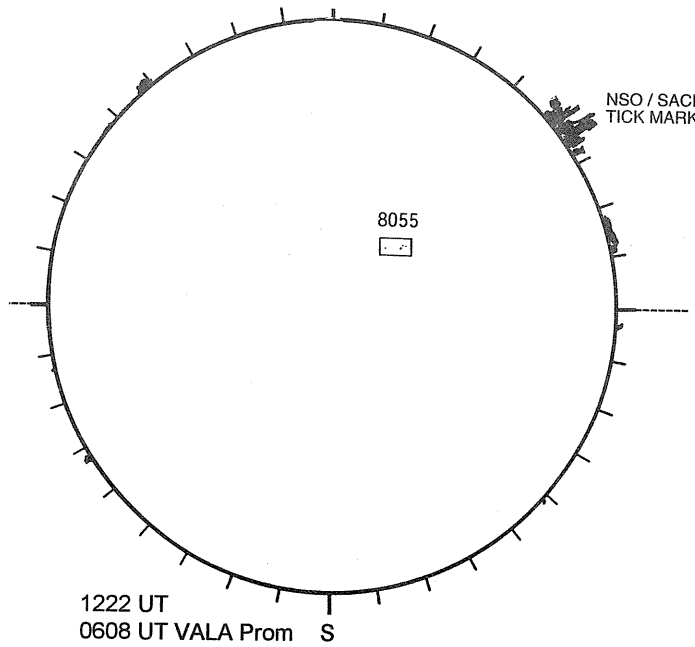
SACRAMENTO PEAK H-ALPHA



1331 UT

S

RAMEY SUNSPOT

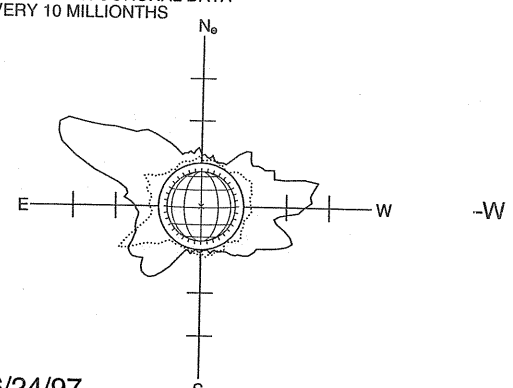


1222 UT
0608 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



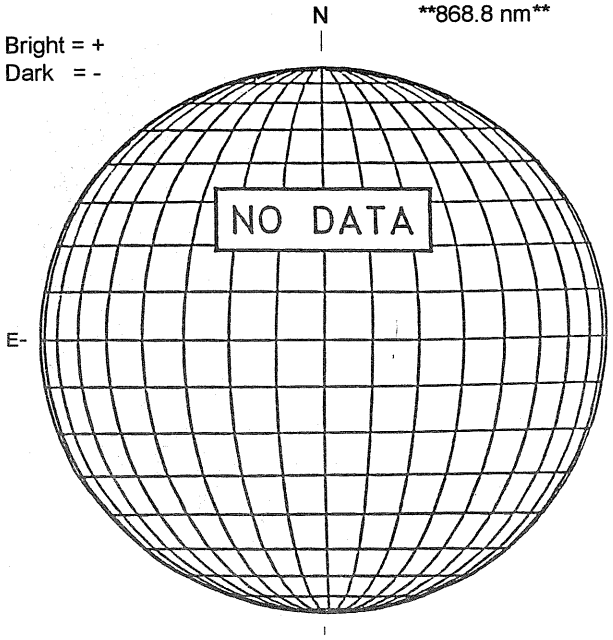
06/24/97
(DOY 175)

S

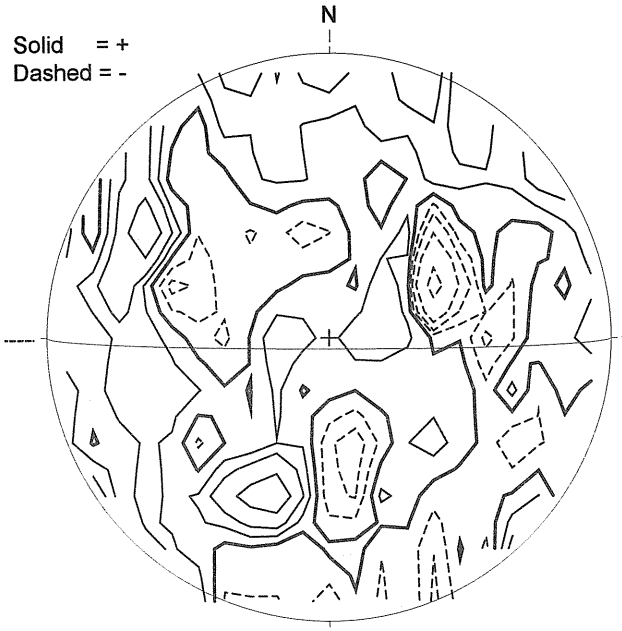
FE XIV 14:06 UT 1.15 $R_\odot$
FE X 14:53 UT 1.15 $R_\odot$
xxxxx CA XV 14:43 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

JUNE 25, 1997 (P= - 5.40, Bo = 2.21, Lo = 271.37)

KITT PEAK MAGNETOGRAM

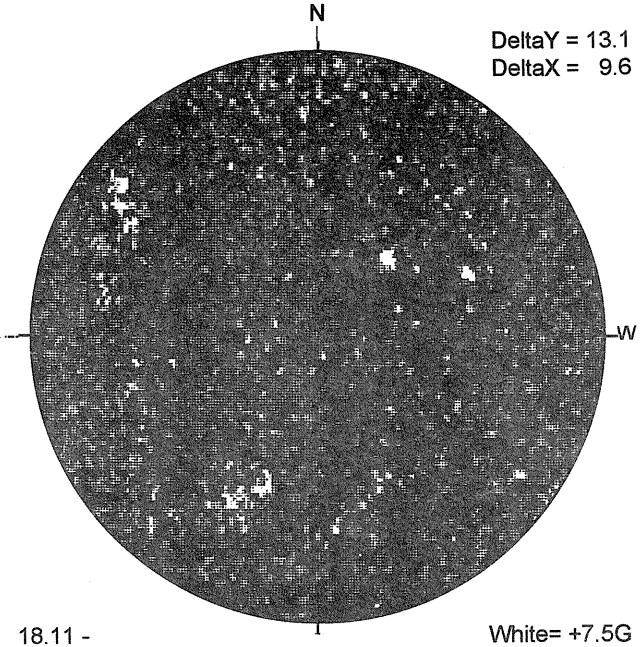


STANFORD MAGNETOGRAM



2217 UT

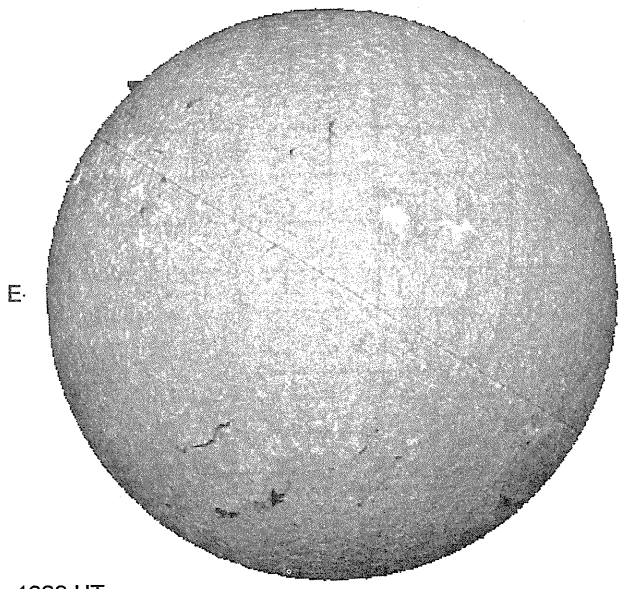
MT. WILSON MAGNETOGRAM



18.11 -
19.02 UT

White= +7.5G
Black = -7.5G

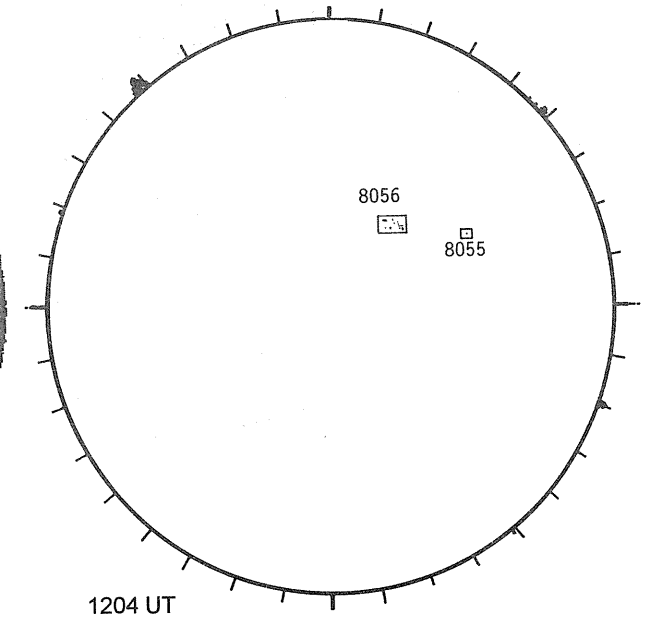
----- SACRAMENTO PEAK H-ALPHA



1329 UT

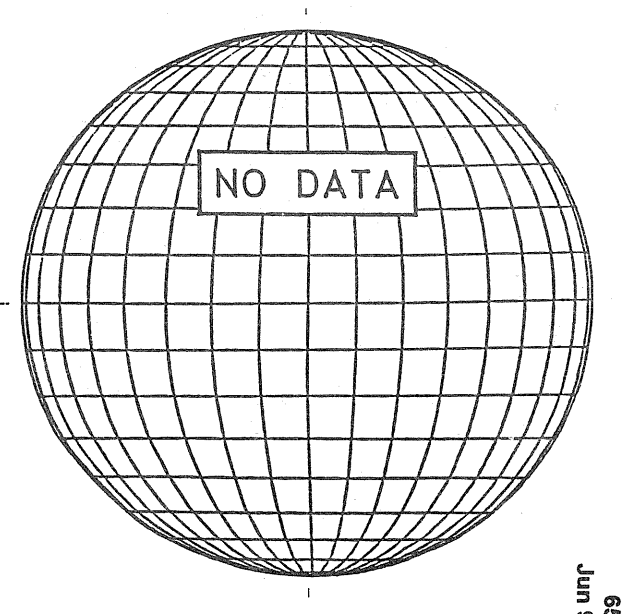
S

RAMEY SUNSPOT



1204 UT
0527 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

65
Jun 97

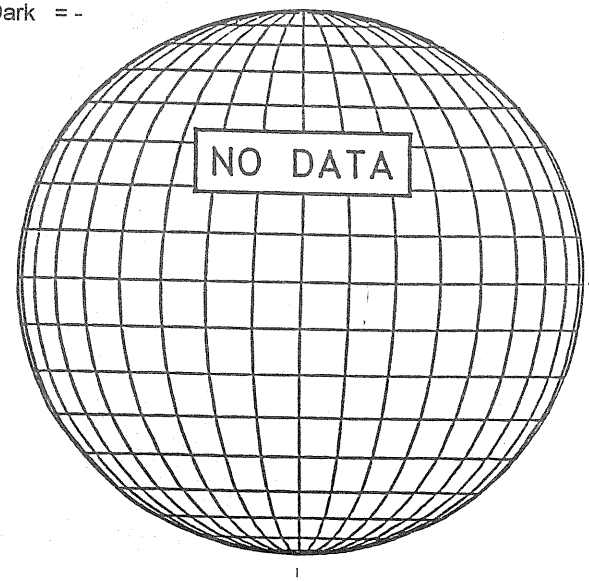
JUNE 26, 1997 (P= - 4.95, Bo = 2.32, Lo = 258.13)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

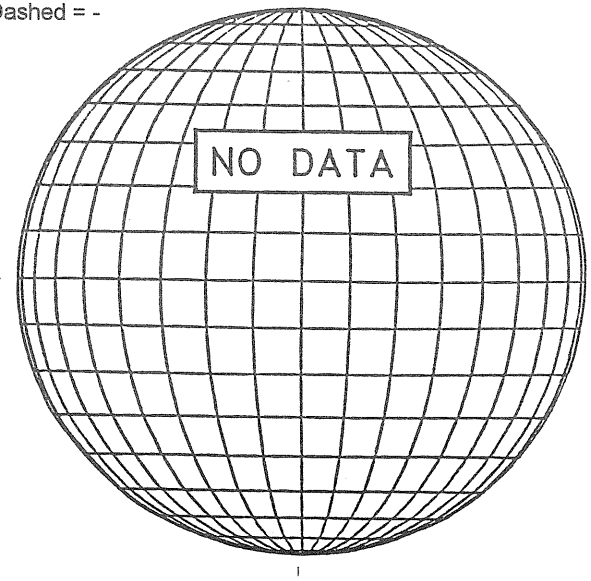


E

STANFORD MAGNETOGRAM

N

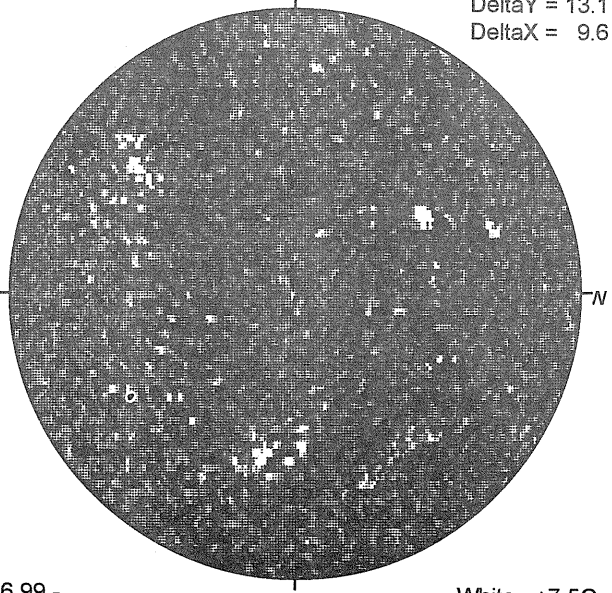
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6



W

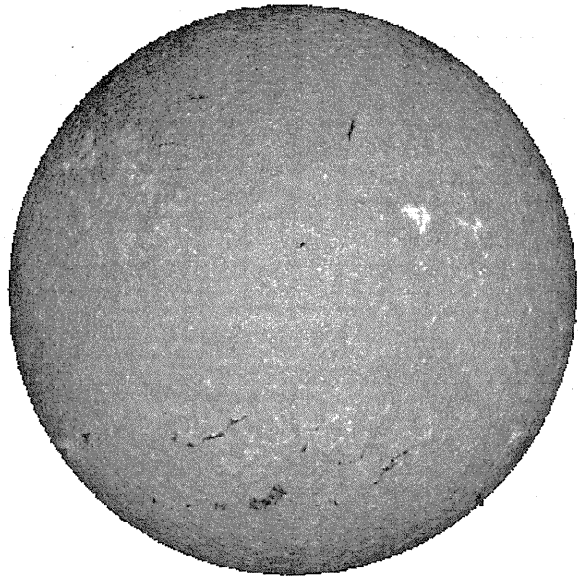
16.99 -
17.91 UT

White= +7.5G
Black = -7.5G

Jun 97

66

SACRAMENTO PEAK H-ALPHA

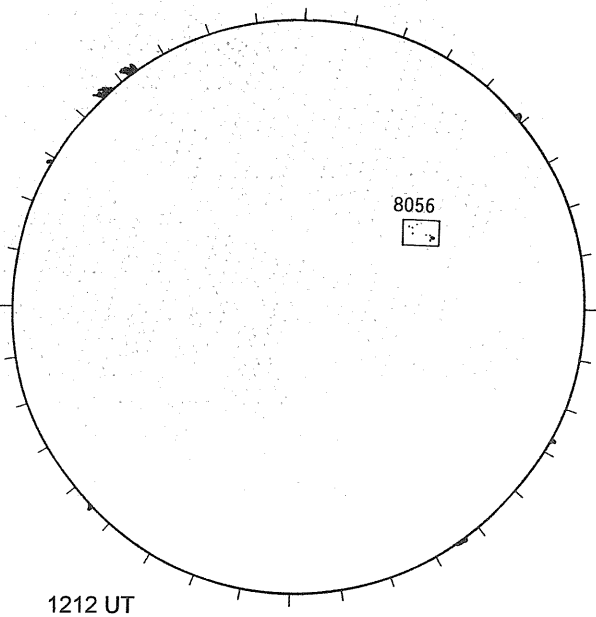


E

1322 UT

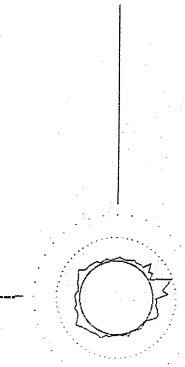
S

RAMEY SUNSPOT



1212 UT
0423 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)



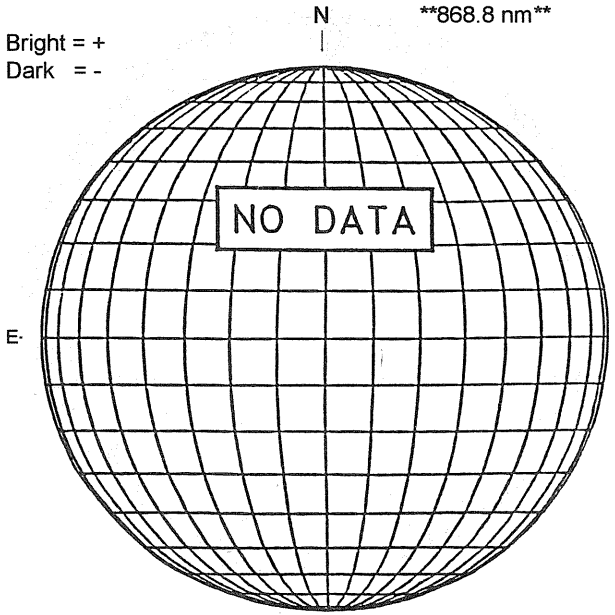
W

530.3 nm, 0445 UT
... .50 abs. units
. . 100 abs. units

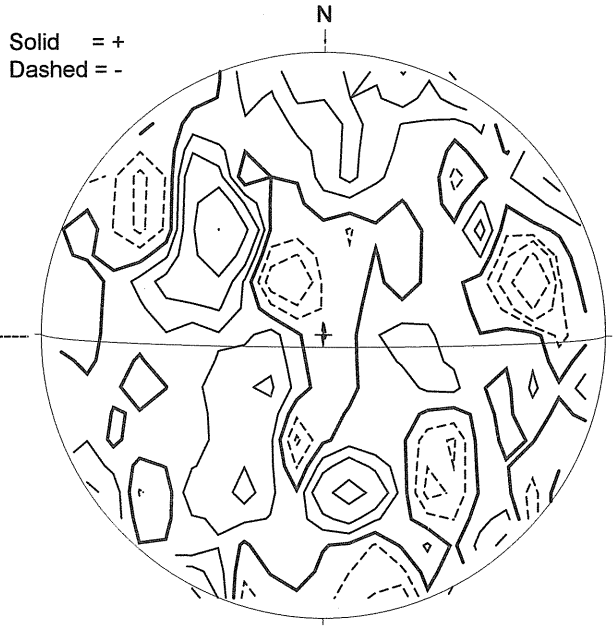
S

JUNE 27, 1997 (P= - 4.50, B0 = 2.43, L0 = 244.89)

KITT PEAK MAGNETOGRAM

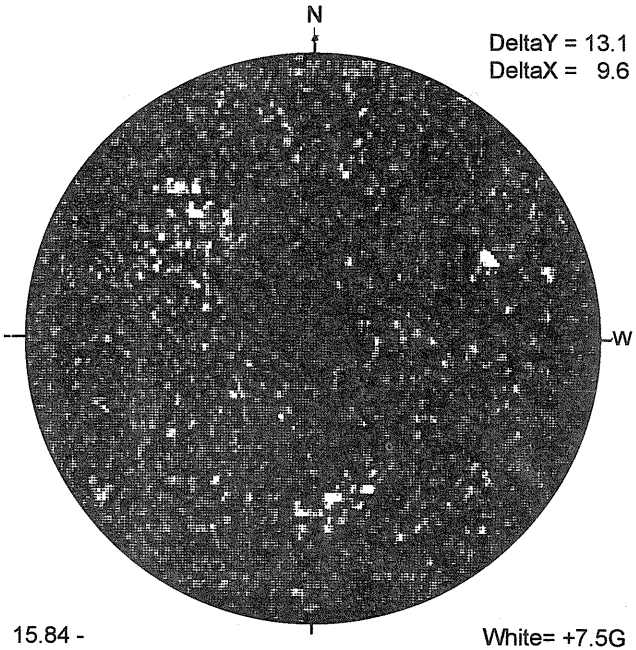


STANFORD MAGNETOGRAM



1835 UT

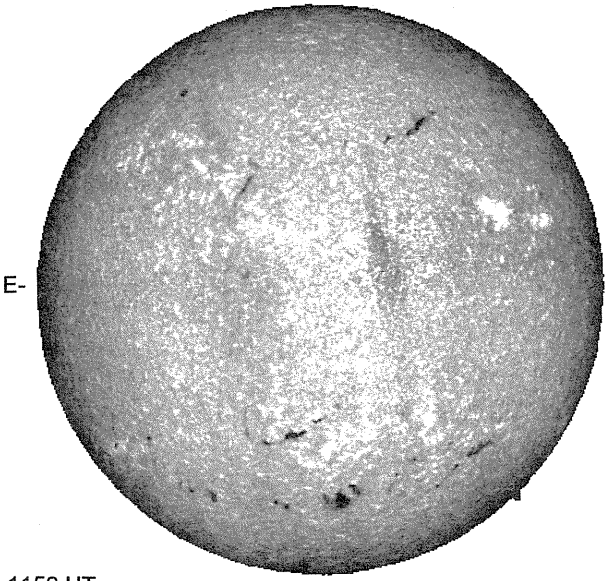
MT. WILSON MAGNETOGRAM



15.84 -
16.76 UT

White= +7.5G
Black = -7.5G

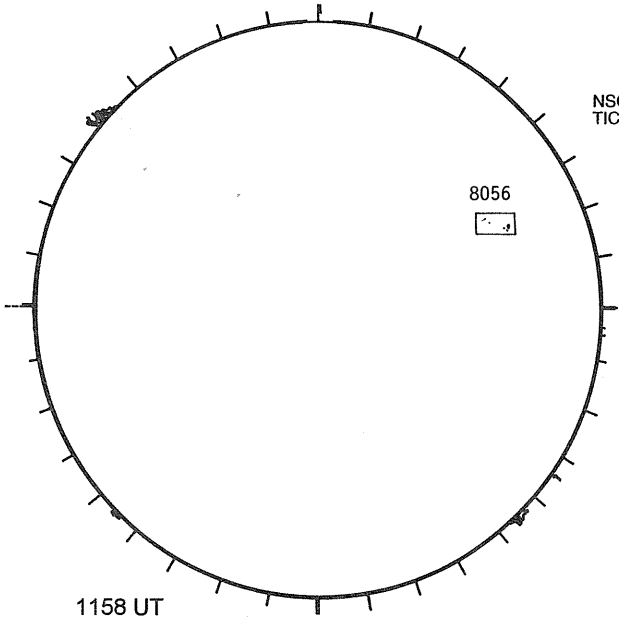
MEUDON H-ALPHA



1150 UT

S

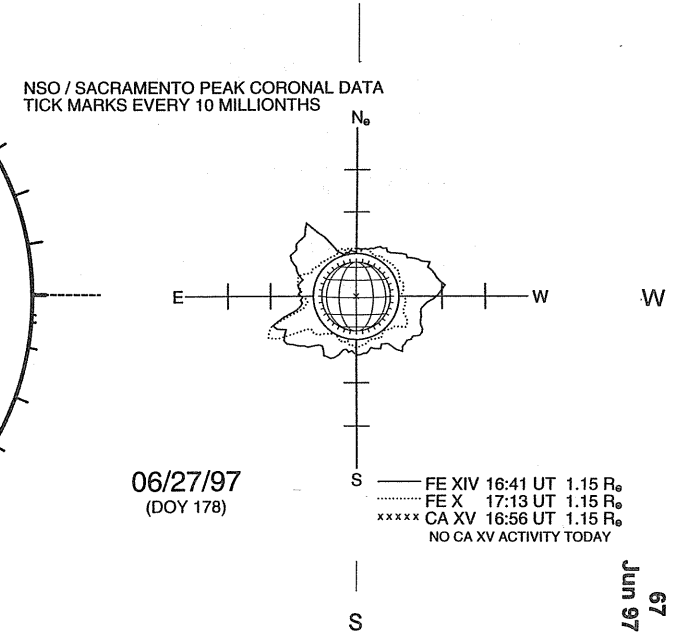
RAMEY SUNSPOT



1158 UT
1008 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

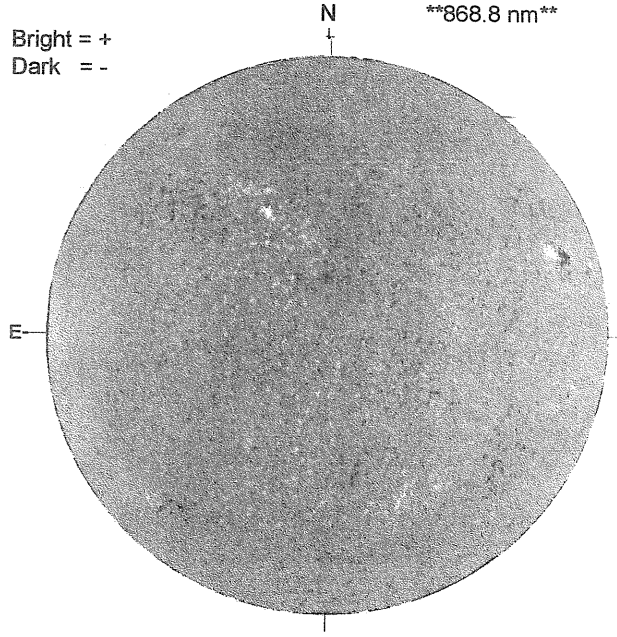


S

Jun 97
67

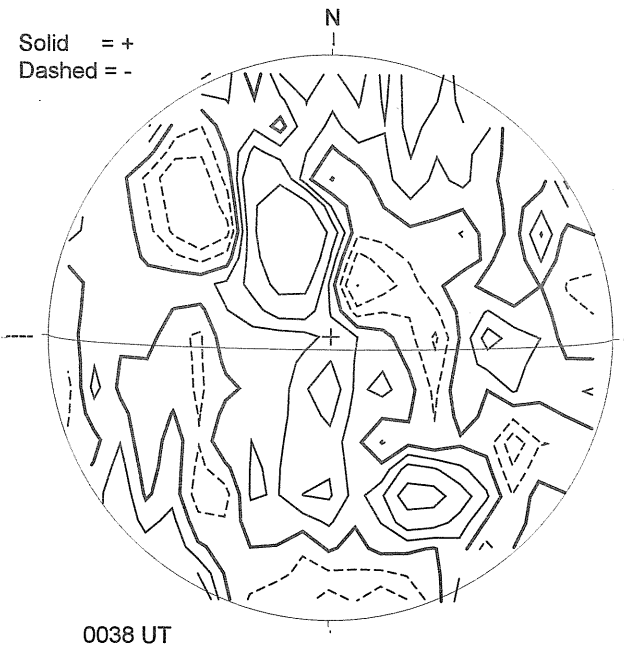
JUNE 28, 1997 (P= - 4.05, Bo = 2.55, Lo = 231.66)

KITT PEAK MAGNETOGRAM



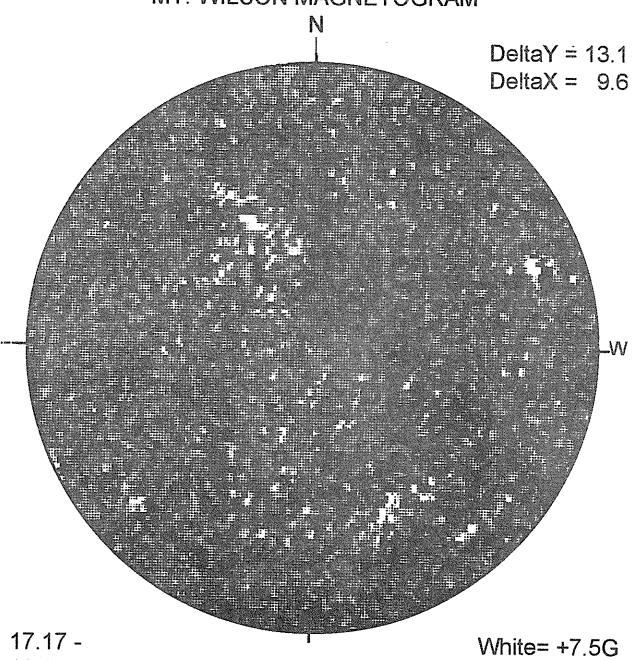
1704 UT

STANFORD MAGNETOGRAM



0038 UT
Jun 29

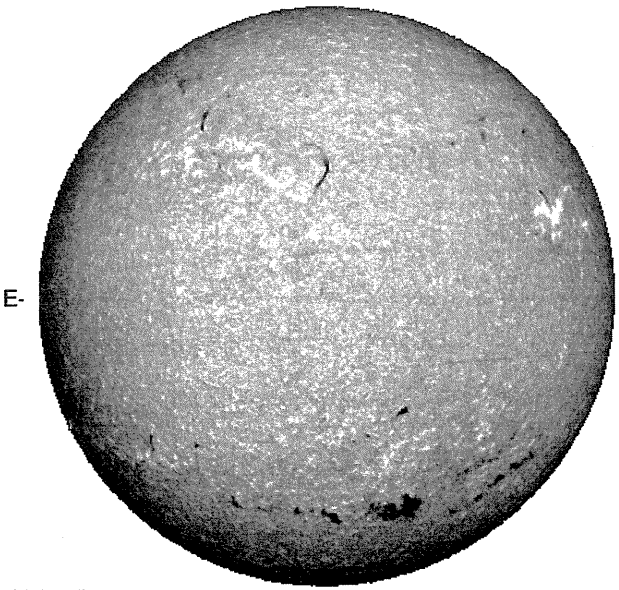
MT. WILSON MAGNETOGRAM



17.17 -
18.09 UT

White= +7.5G
Black = -7.5G

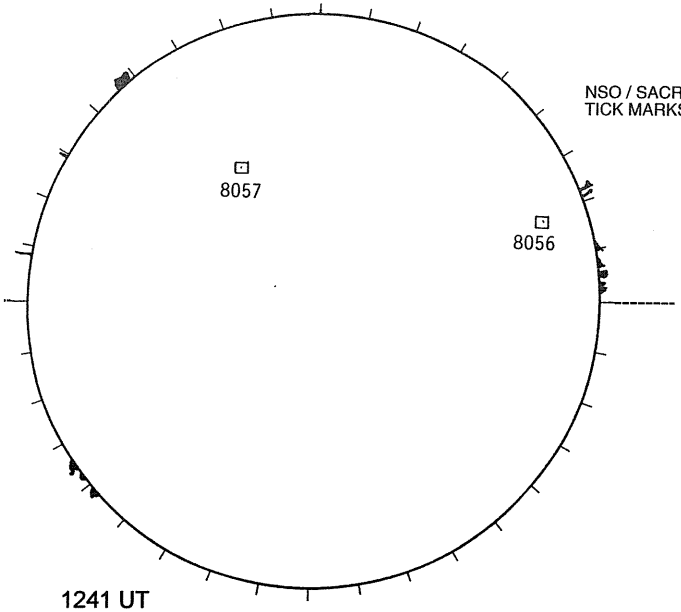
MEUDON H-ALPHA



1242 UT

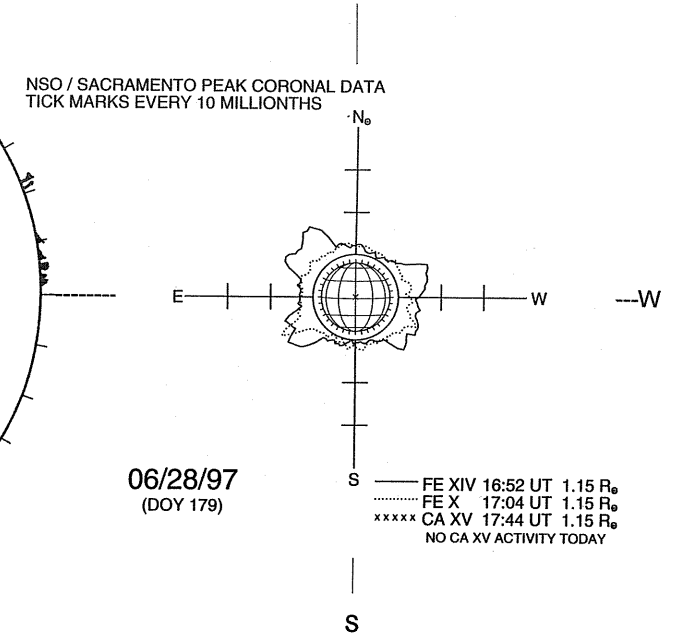
S

RAMEY SUNSPOT



1241 UT
0601 UT LOMN Prom S

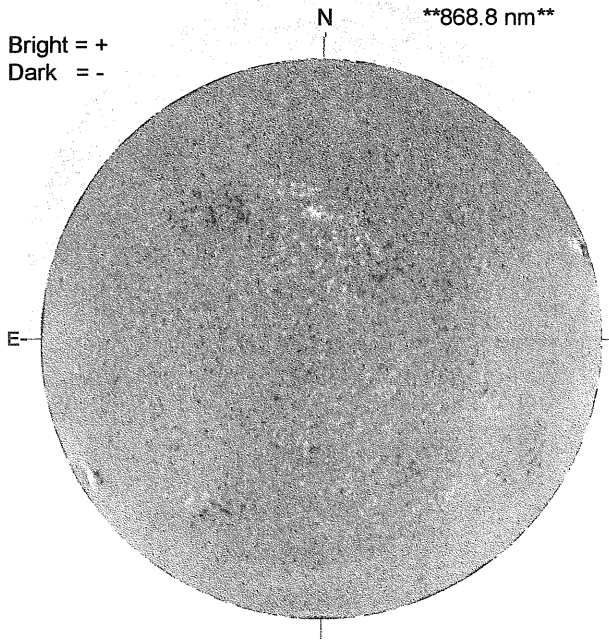
SACRAMENTO PEAK CORONA (1.15 Radii)----



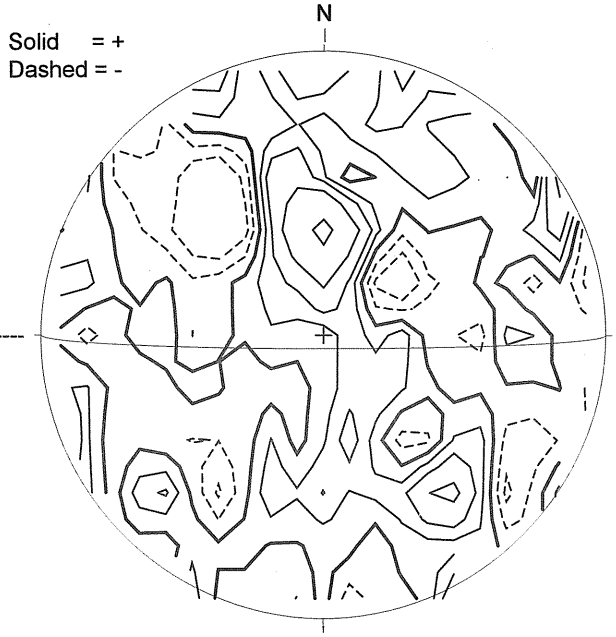
S

JUNE 29, 1997 (P= - 3.59, Bo = 2.66, Lo = 218.42)

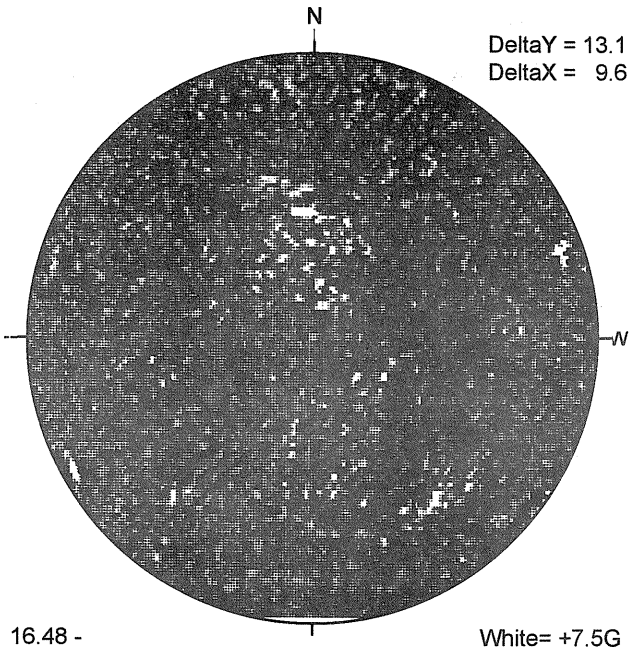
KITT PEAK MAGNETOGRAM



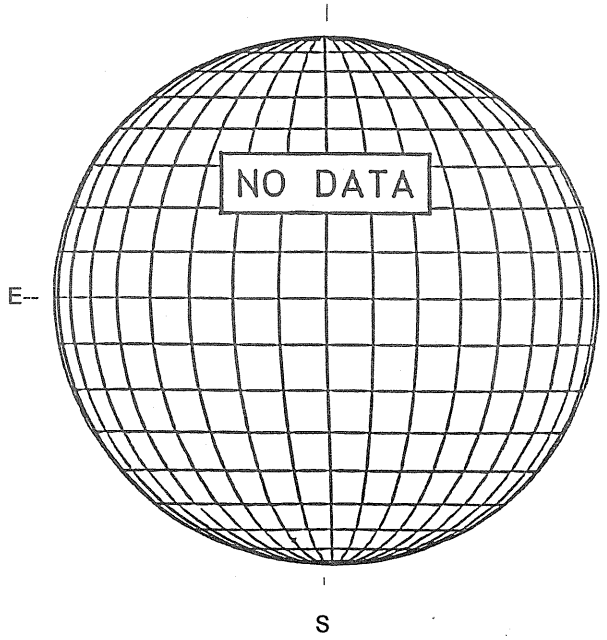
STANFORD MAGNETOGRAM



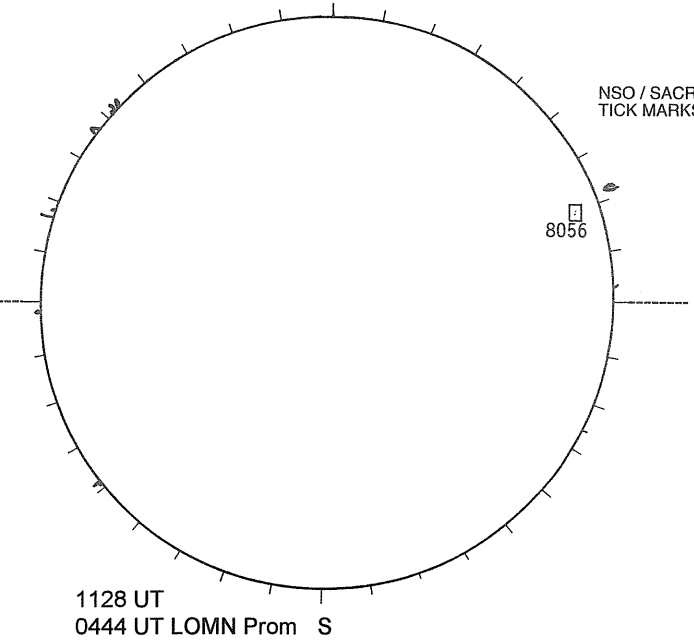
MT. WILSON MAGNETOGRAM



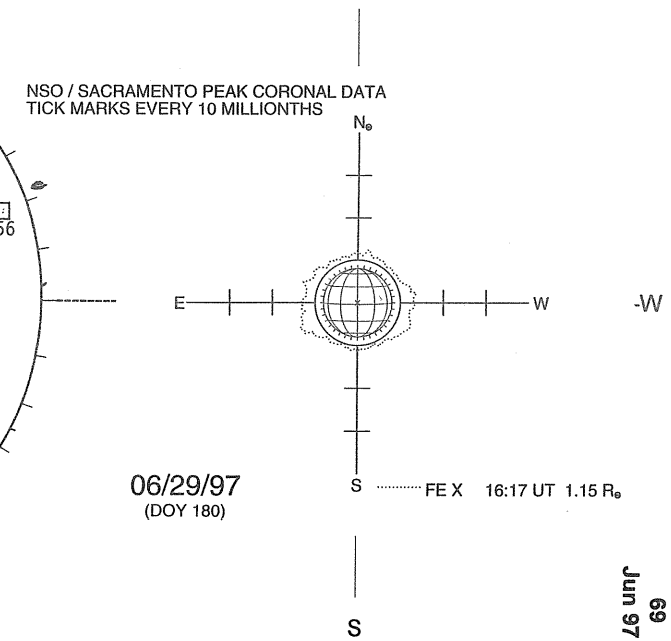
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



JUNE 30, 1997 (P= - 3.14, Bo = 2.77, Lo = 205.18)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

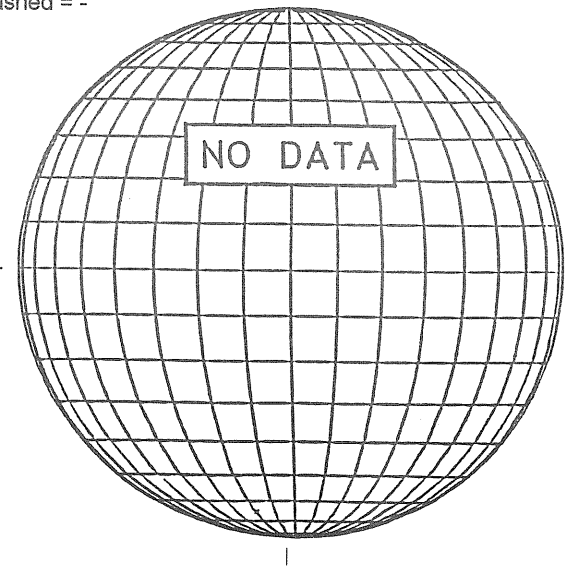
E

1339 UT

STANFORD MAGNETOGRAM

N

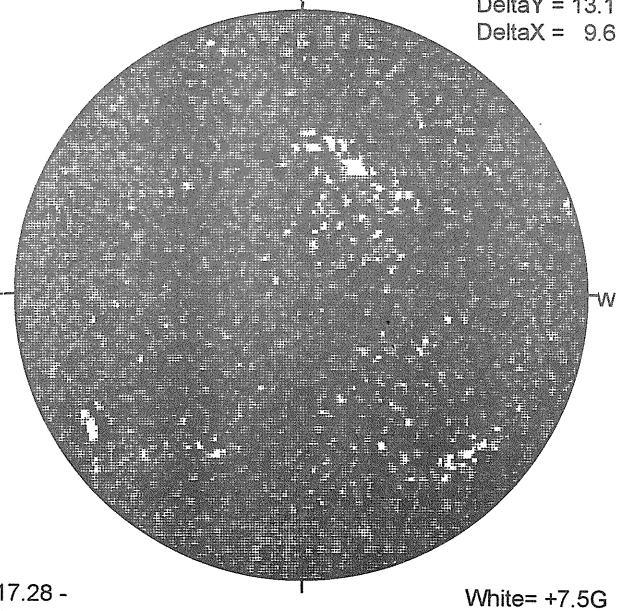
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

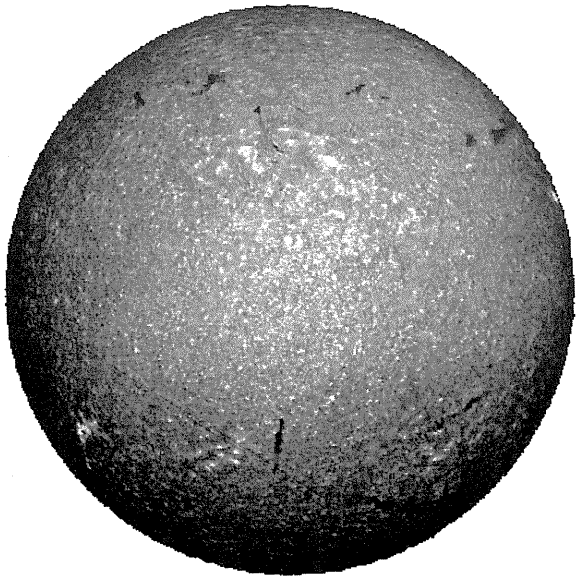


W

17.28 -
18.20 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

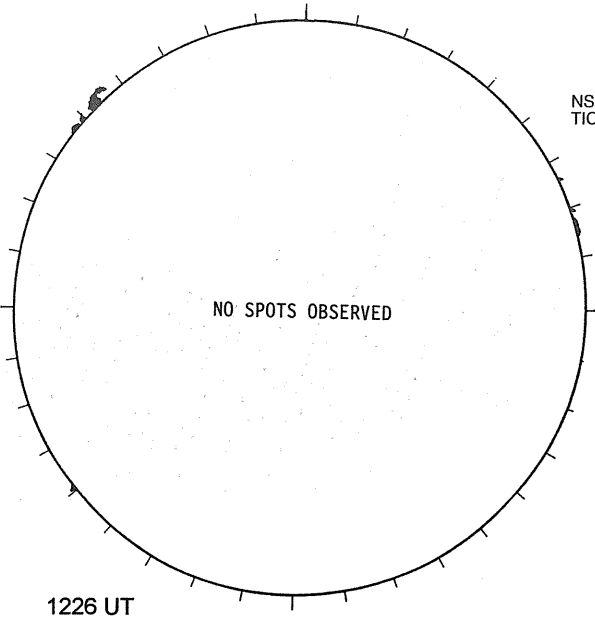


E

1321 UT

S

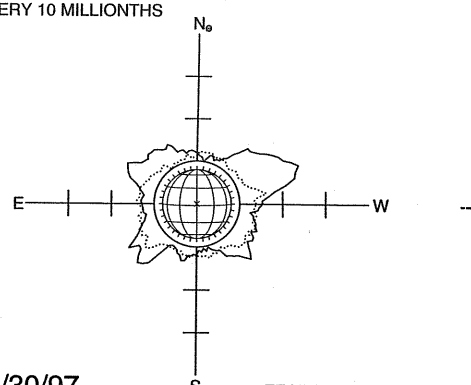
RAMEY SUNSPOT



1226 UT
0547 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



---W

06/30/97
(DOY 181)

FE XIV 14:19 UT 1.15 $R_\odot$
FE X 14:46 UT 1.15 $R_\odot$
xxxxx CA XV 14:36 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

DAILY SOFT X-RAY IMAGES FROM YOHKOH

SXT daily images are on-line via ftp at the Hiraiso Communications Research Laboratory in Japan and at the Solar Data Analysis Center at GSFC. The following document explains everything.

Daily YOHKOH/SXT Images by FTP

This document explains the service which provides access to the daily Yohkoh Soft X-ray Telescope (SXT) full-disk images stored at Hiraiso Solar Terrestrial Research Center, C.R.L. Before using this service, please read this document.

1. Purpose and Rules

This service is provided by CRL under the following agreement with the Yohkoh Team (Project Manager: Yoshiaki Ogawara, ISAS; Project Scientist: Yutaka Uchida, Univ. Tokyo). Those who wish to use the data in a way not explicitly permitted below are requested to contact the Yohkoh Team.

i) The main purpose of this data service is to encourage broad scientific use of the Yohkoh data and observing capability through collaboration with the Yohkoh Team. Both observational and theoretical collaborations are welcome. Scientists outside the Yohkoh Team are requested to obtain specific permission when they write scientific papers based upon data from this service.

ii) Solar images from this service may be published or presented for purposes of illustration without special permission. In such cases the following acknowledgment is appropriate:

The solar X-ray image is from the Yohkoh mission of ISAS, Japan. The X-ray telescope was prepared by the Lockheed Palo Alto Research Laboratory, the National As tronomical Observatory of Japan, and the University of Tokyo with the support of NASA and ISAS.

iii) This data service is also intended to contribute to improving solar activity prediction, to assist other solar observers in their choice of targets, and for public education and information. Use of the images for these purposes is unrestricted.

2. Instrument

A full description of the SXT may be found in the book "The YOHKOH (SOLAR-A) Mission" (Z. Svestka and Y. Uchida, eds.), Kluwer Academic Publishers, 1991; or in the paper, "The Soft X-ray Telescope for the Solar-A Mission" (Tsuneta, et al. Solar Physics, vol. 136, pp. 37-67, 1991.

3. Description of Data

The stored SXT images data are taken through an Al/Mg composite filter with a mean wavelength of about 20 A for normal coronal temperatures. The images are composites of a short and a long exposure with a pixel size of 4.9 arcsec. Background has been removed and all images are normalized to an

exposure time of one second. The 8-bit numbers give the logarithm of the signal byte- scaled so that an actual signal of 10^6 equals 255. To recover the actual signal in data numbers, use the relation

data_number = 10^((6*NN)/255)

where NN is the datum in the stored image. Conversion to intensity depends upon temperature but is of the order of 5 x 10^20 ergs, at the Sun, per data_number.

The file format is the usual FITS format. The file names are in the style

sf_fits930515.151807,

where sf means SXT FFI image ,"930515" means 15-May-93, and "151807" means 15:18:07 UT.

4. How to connect and transfer data

Those who wish to access these data are requested to send an application to the manager of this data service via e-mail. At least, the following items should be included in an application;

* Full name
* Institution
* Postal Address
* e-mail address
* your host machine and OS
* software for SXT data processing and display
* expected frequency of data transfer

The format of the application is free. This information is necessary to deliver additional information and service in future, and helpful to update data service for more convenience. The application should be sent to the following address via e-mail;

akioka@planet.crl.go.jp
or akioka@planet.hi.crl.go.jp.

The data server is the usual anonymous ftp server program of UNIX. The IP address is 133.243.32.7. Therefore, a typical example for data access is ...

```
% ftp 133.243.32.7
name: anonymous
password : (your e-mail address)
ftp> cd sxt
ftp> binary
ftp> get <file name>
%
```

When you have logged in with the anonymous ftp account, you will find a directory named sxt. In this directory, you will find available sxt images and some documents which all users should read.

5. Practical Limitations

The domestic network in Japan is very crowded. Therefore, to assure continuation of this service we request potential users to follow the following limitations;

i) Please avoid to access during office hours in Japan (23:30 - 08:00 UT). Our advice is to access between 13:00 UT and 24:00 UT.

ii) Please do not try to transfer more than two images at once. We request the users not to obtain more than a few images per day. If you need more images, please contact the manager for special arrangements.

If the above rules are consistently violated, there is a possibility that we will have to terminate this service or apply more severe limitations, so please cooperate fully until we have more experience with the effect of this service upon the network.

If you have some request or comment, please feel free to send e-mail to one of the following persons:

Yutaka Uchida, Project Scientist, Yohkoh
Department of Astronomy, University of Tokyo
e-mail: uchida@dept.astron.s.u-tokyo.ac.jp

Maki Akioka, Manager, CRL Data Service
Hiraiso Solar Terrestrial Research Center
Communications Research Laboratory
e-mail: akioka@planet.hi.crl.go.jp

Received Aug. 25, 1993 from acton@sxt4.oscs.montana.edu

Submitted by L. Acton for the Yohkoh Team

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Solar DAC Node Name Changes

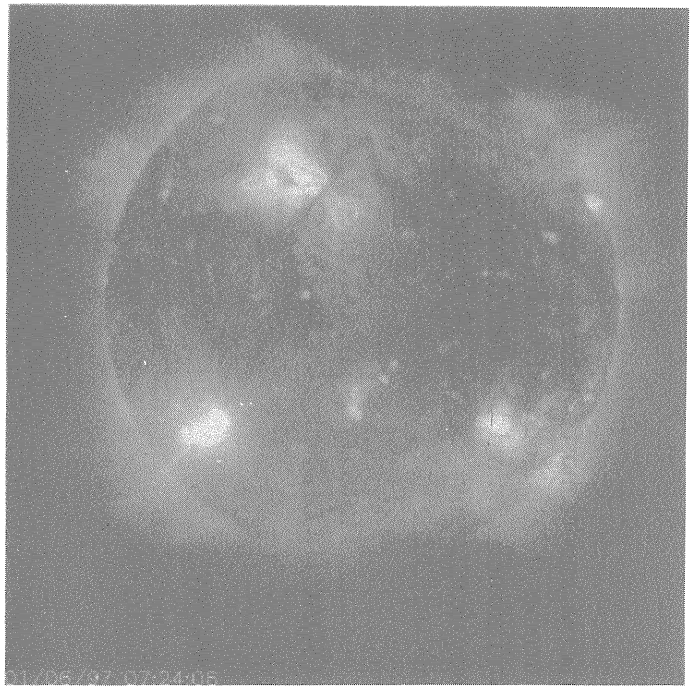
The NASA Goddard Solar Data Analysis Center (SDAC) nodes most familiar to the community will be undergoing some major changes in August and September, 1993. Nodes NEWMAX (newmax.gsfc.nasa.gov) and ISIS (isis.gsfc.nasa.gov) are being retired, and their functions combined on a single server, which will be known as SDAC (sdac.gsfc.nasa.gov). SDAC's IP (Internet) address will be 128.183.57.156, and its NSI/DECnet address will be 15.526.

Users of the BATSE solar flare database and other services of ISIS and NEWMAX should watch for messages warning of the actual changeover dates. (SDAC is a DEC 4000 Model 610 AXP, so users should see noticeable improvements in response.)

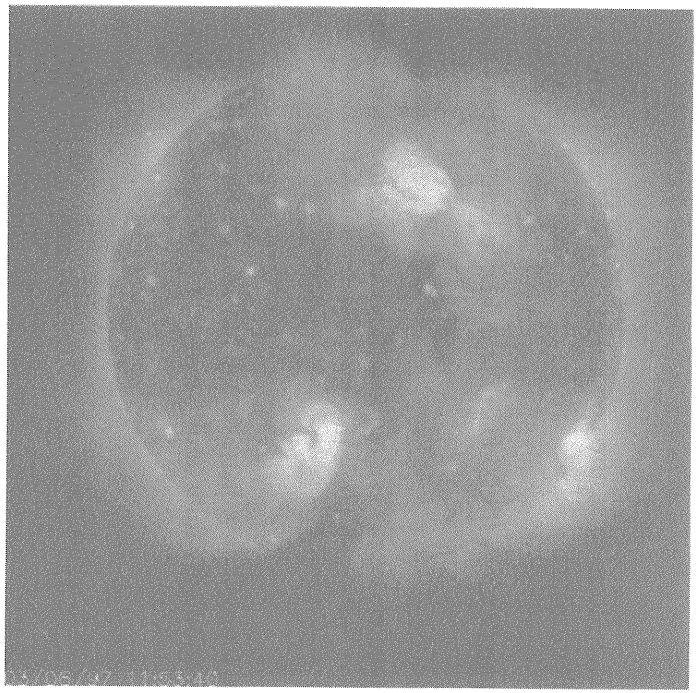
Received Aug. 10, 1993 from gurman@uvsp.gsfc.nasa.gov
--Joe Gurman

YOHKOH SOFT X-RAY TELESCOPE IMAGES

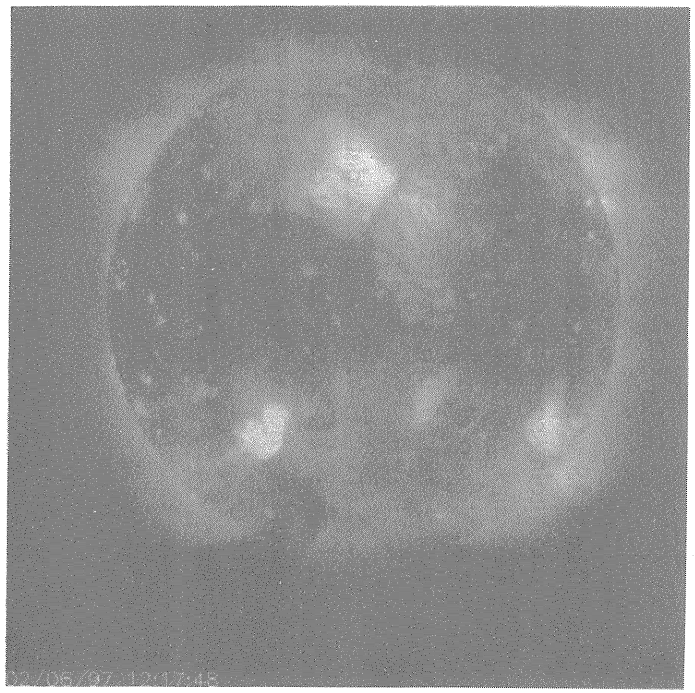
June
1997



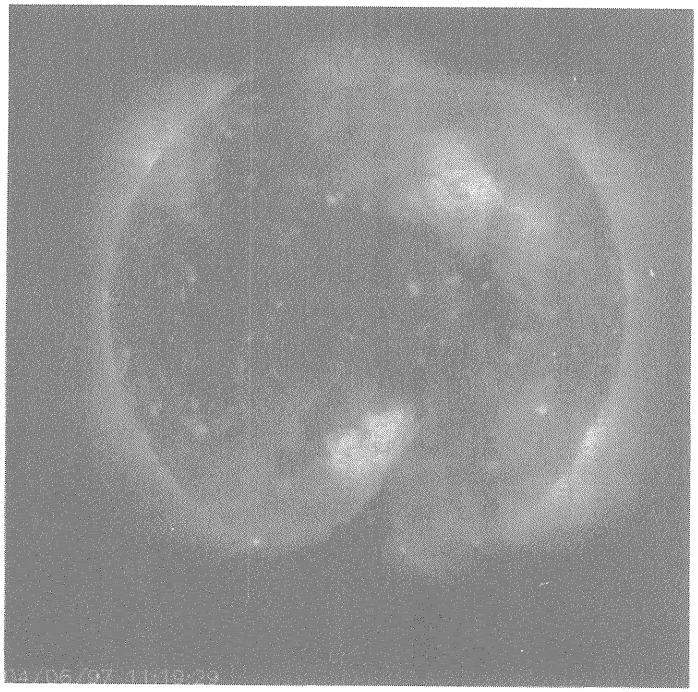
Day 1
07:24:06 UT



Day 3
11:53:40 UT



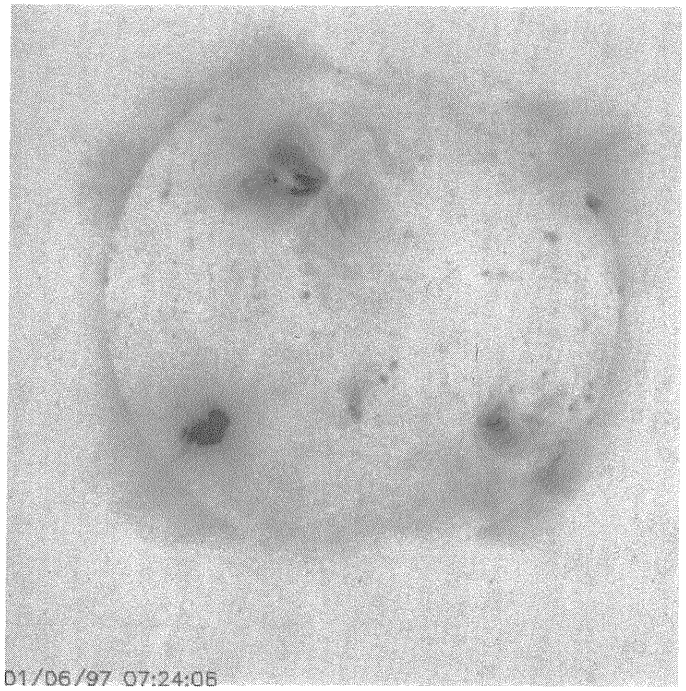
Day 2
12:17:48 UT



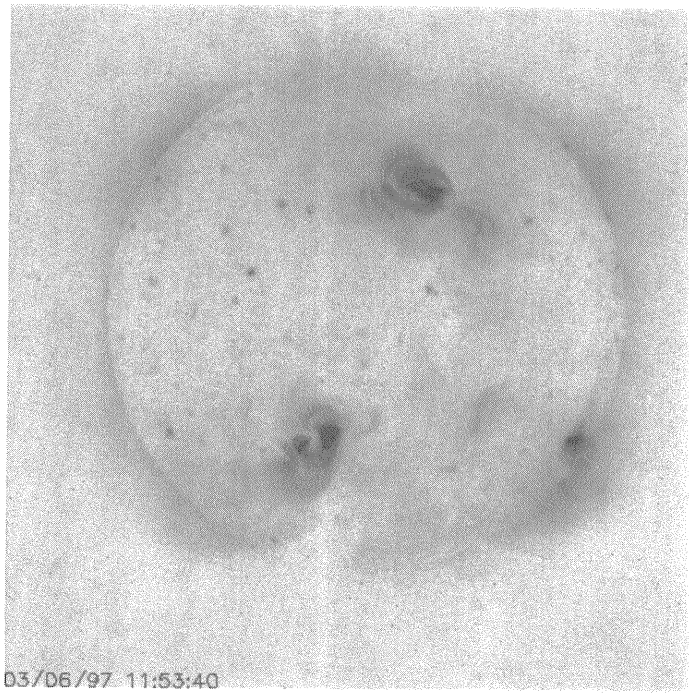
Day 4
11:19:29 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

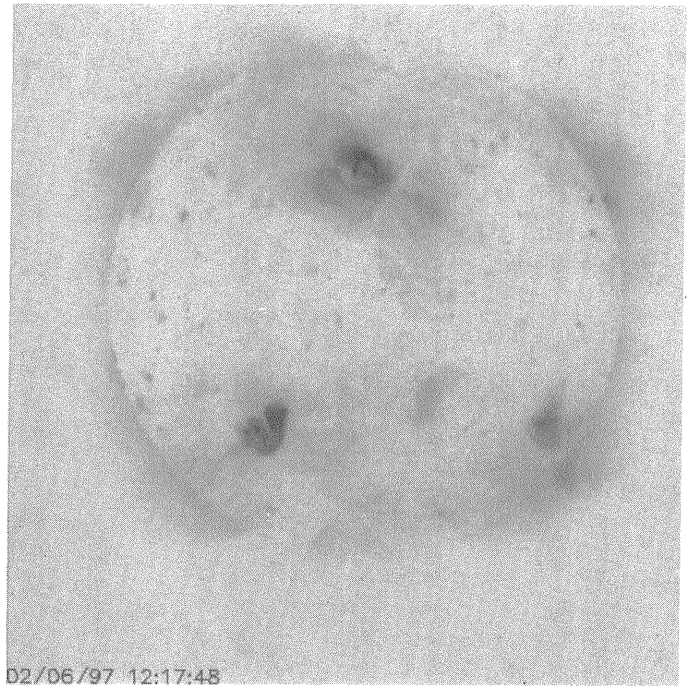
June
1997



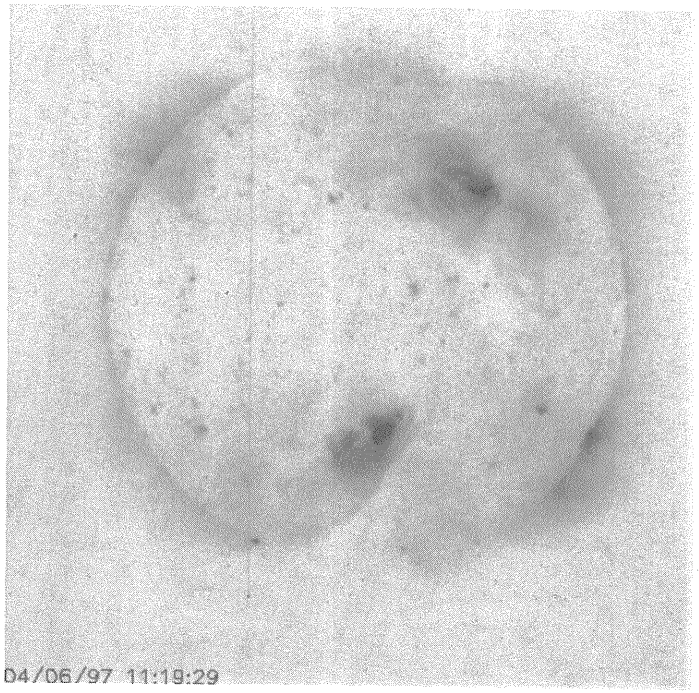
Day 1
07:24:06 UT



Day 3
11:53:40 UT



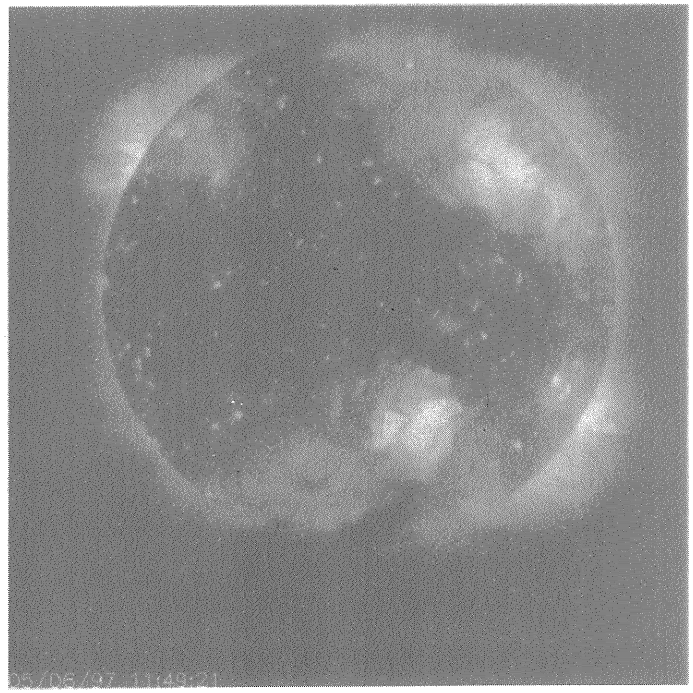
Day 2
12:17:48 UT



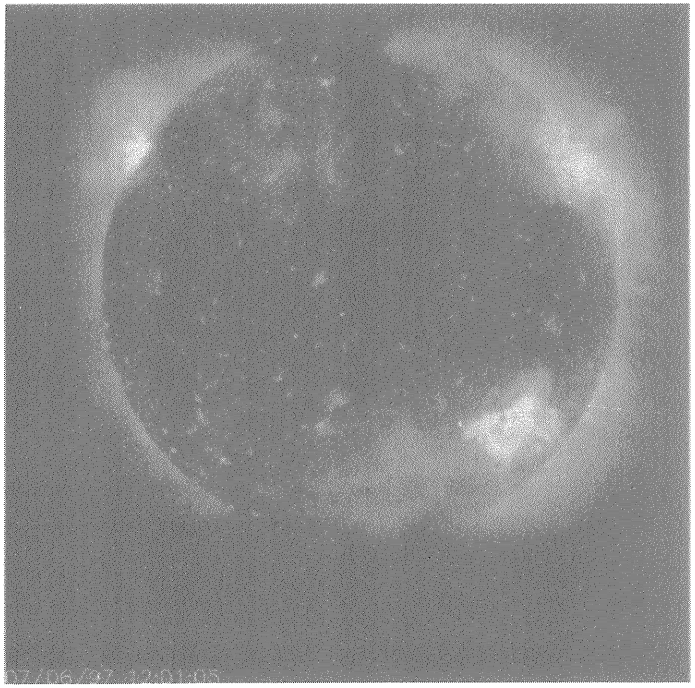
Day 4
11:19:29 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

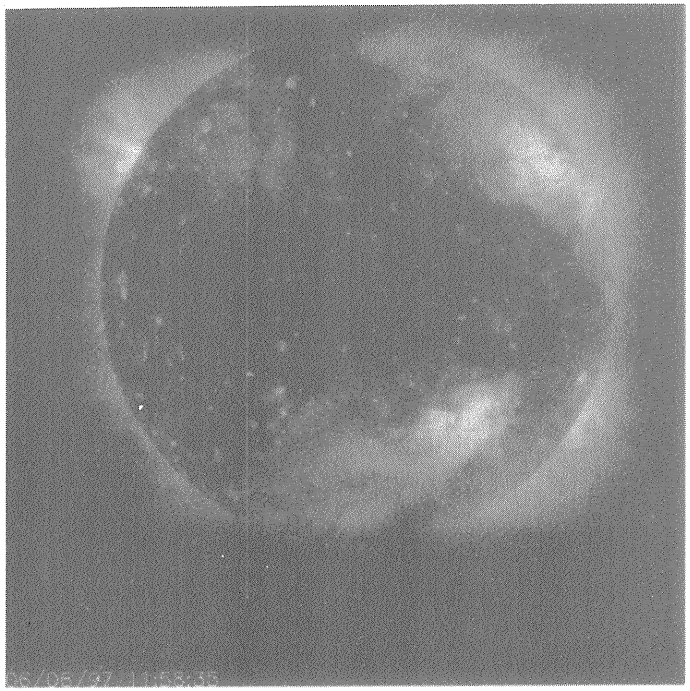
June
1997



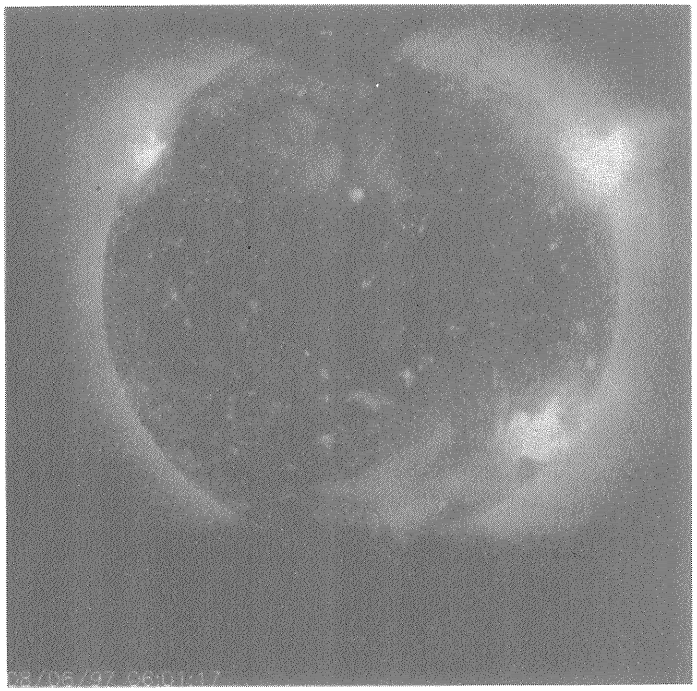
Day 5
11:49:21 UT



Day 7
12:01:05 UT



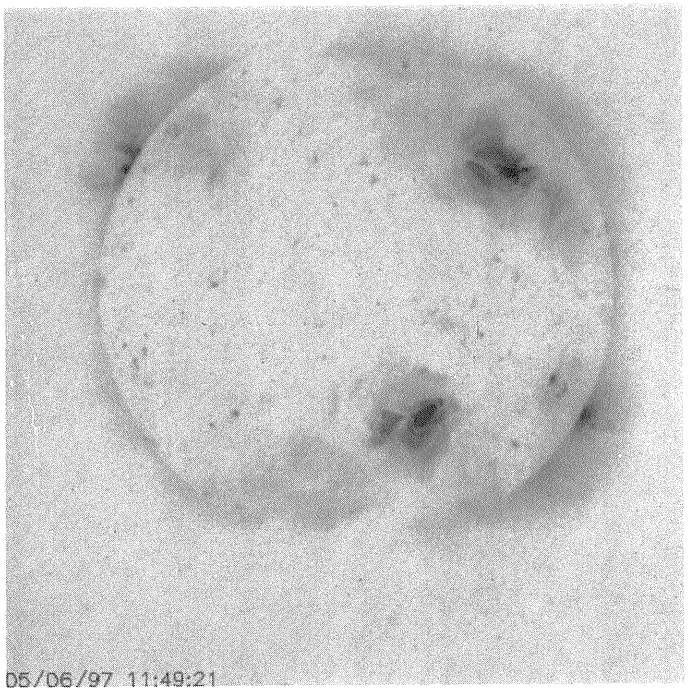
Day 6
11:58:35 UT



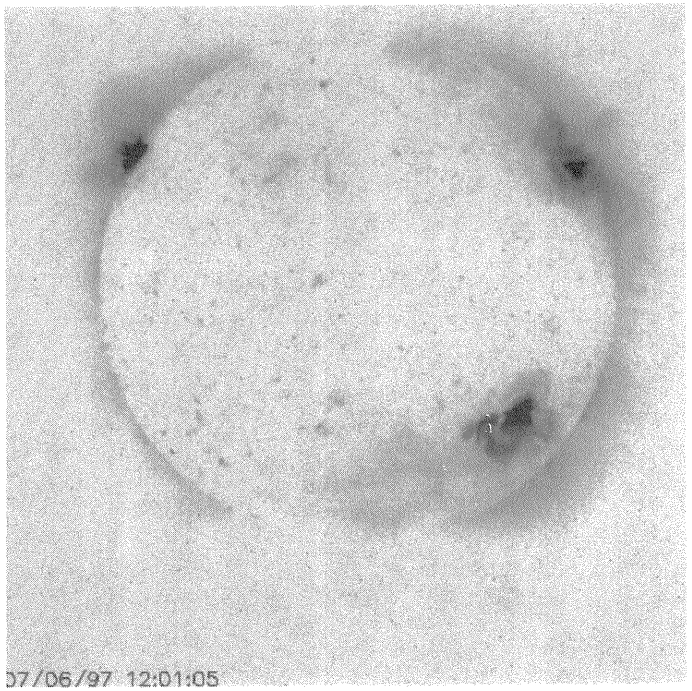
Day 8
06:01:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

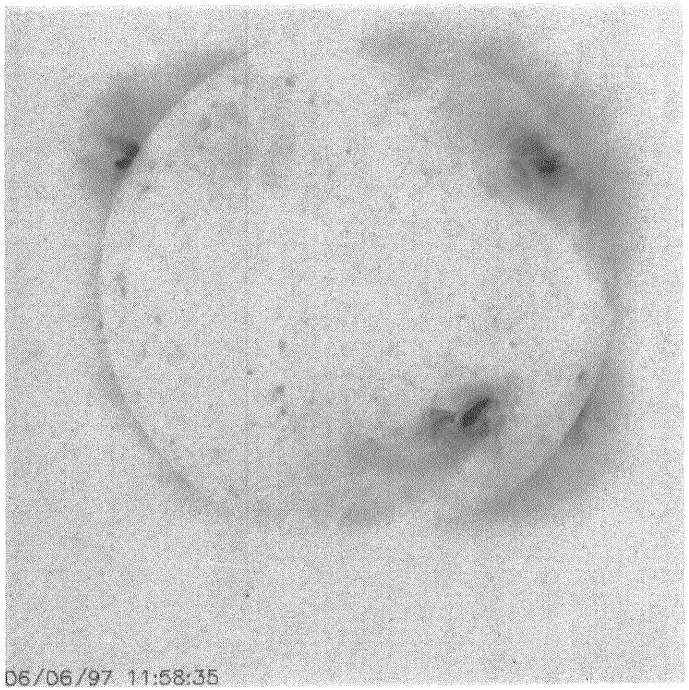
June
1997



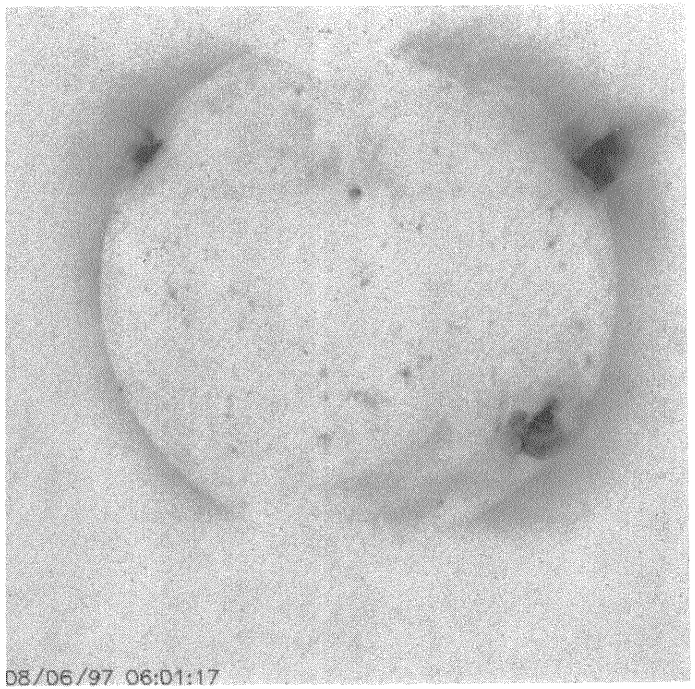
Day 5
11:49:21 UT



Day 7
12:01:05 UT



Day 6
11:58:35 UT



Day 8
06:01:17 UT

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77

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June
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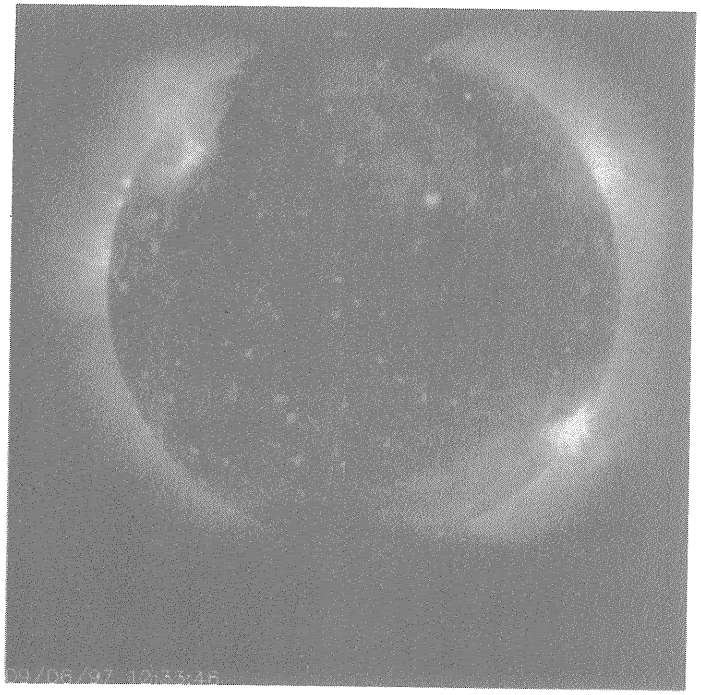
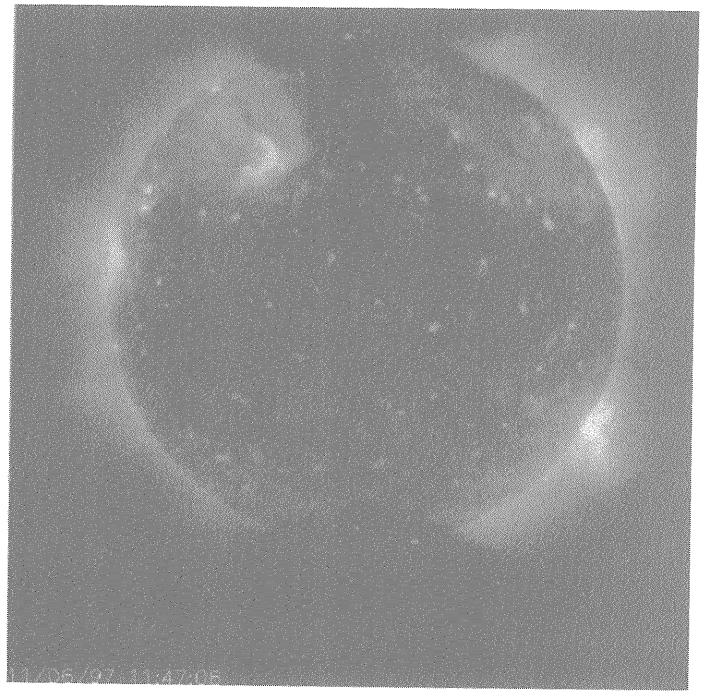
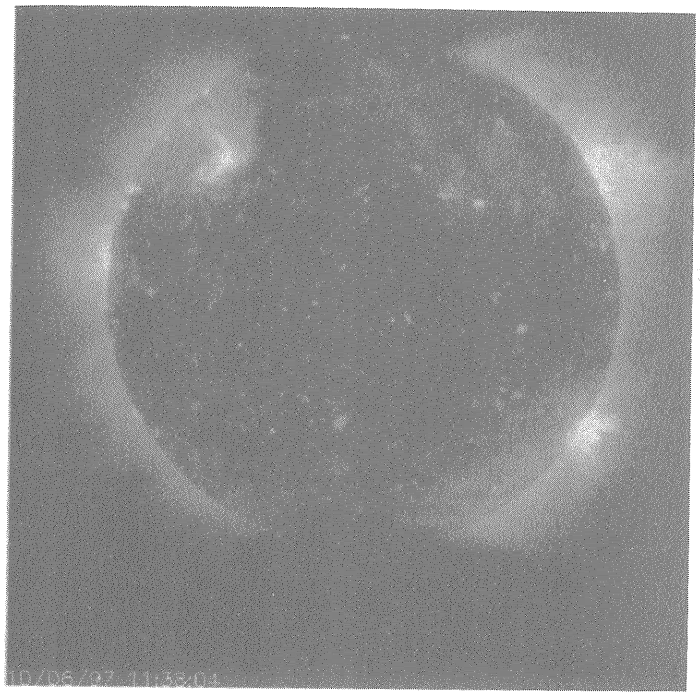


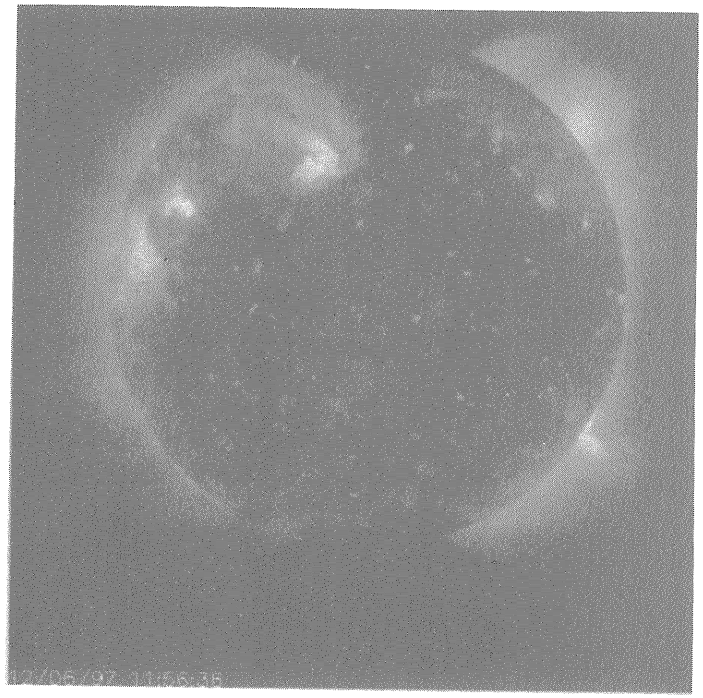
Day 9
12:33:46 UT



Day 11
11:47:06 UT



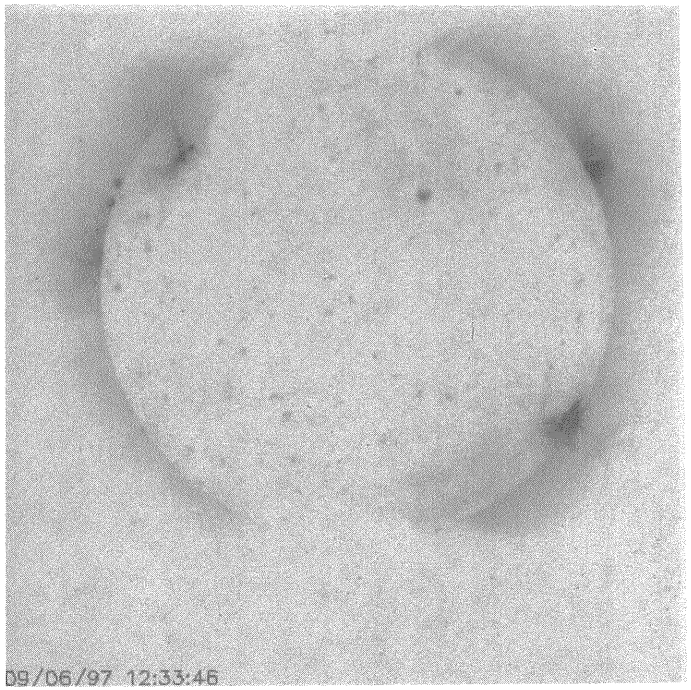
Day 10
11:38:04 UT



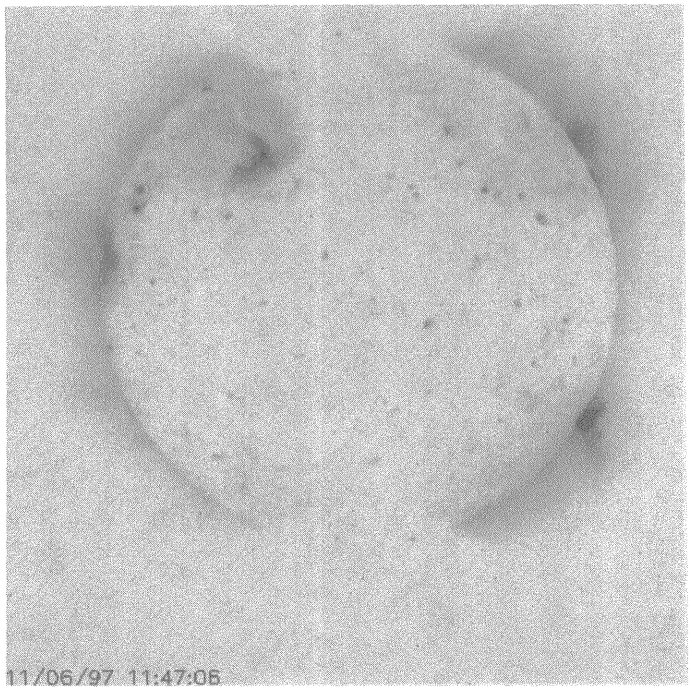
Day 12
11:56:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

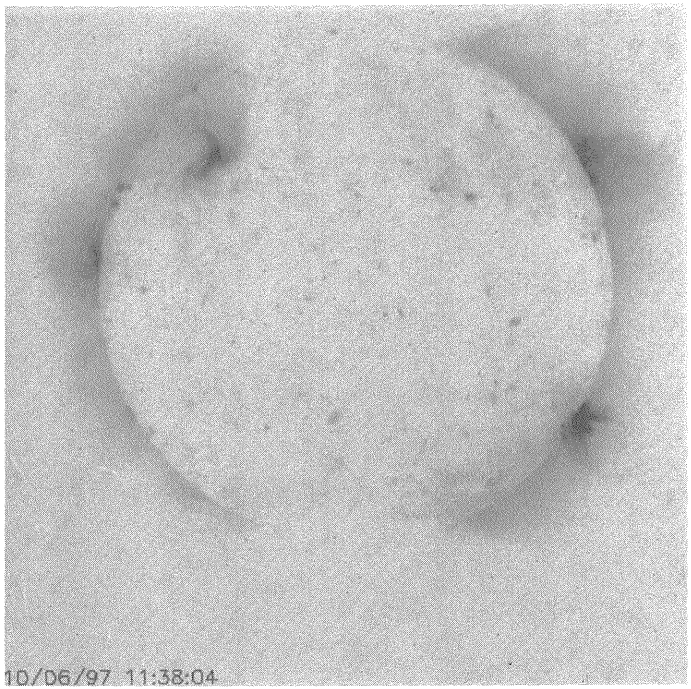
June
1997



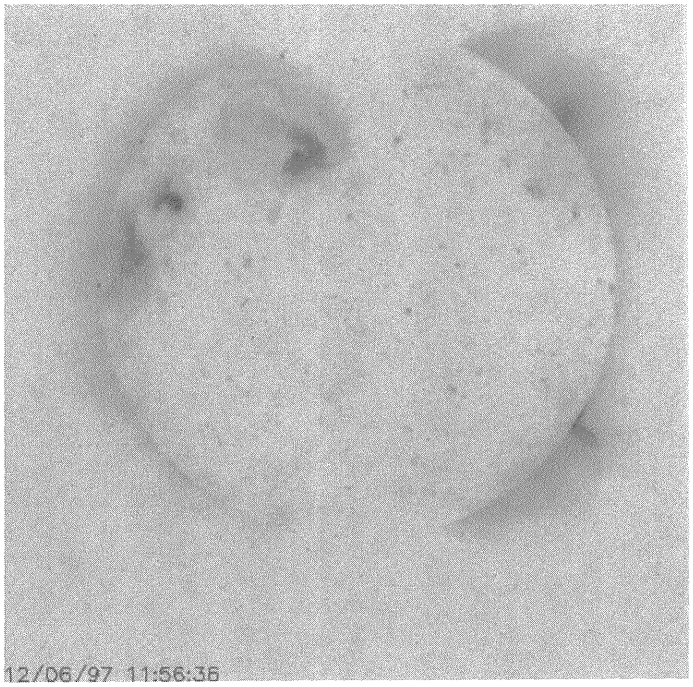
Day 9
12:33:46 UT



Day 11
11:47:06 UT



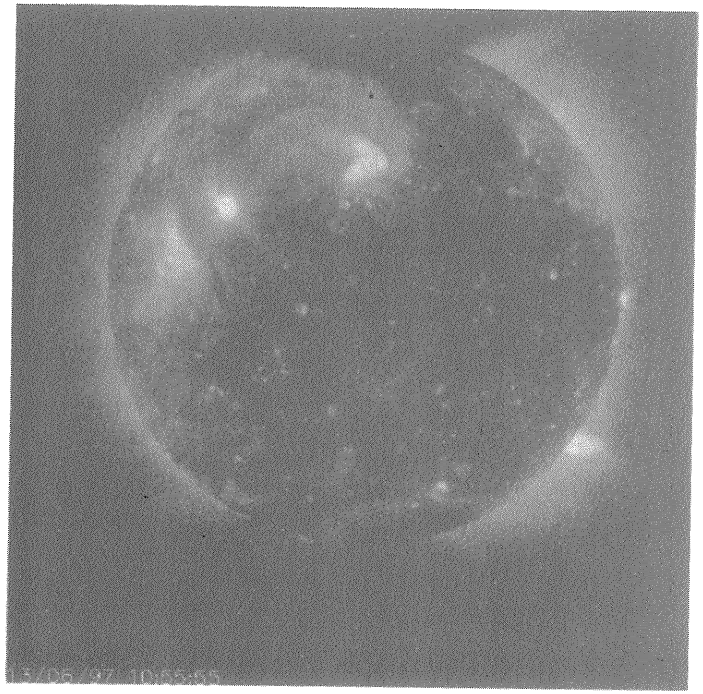
Day 10
11:38:04 UT



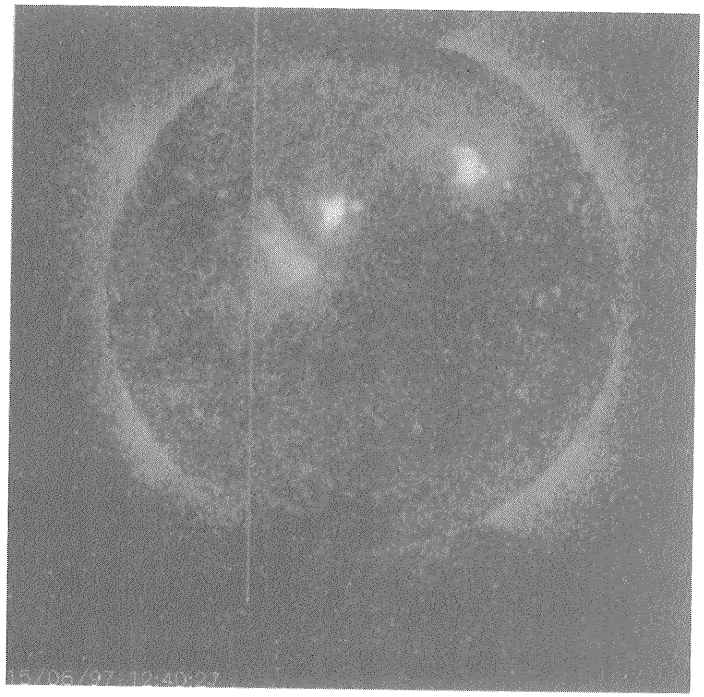
Day 12
11:56:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June
1997

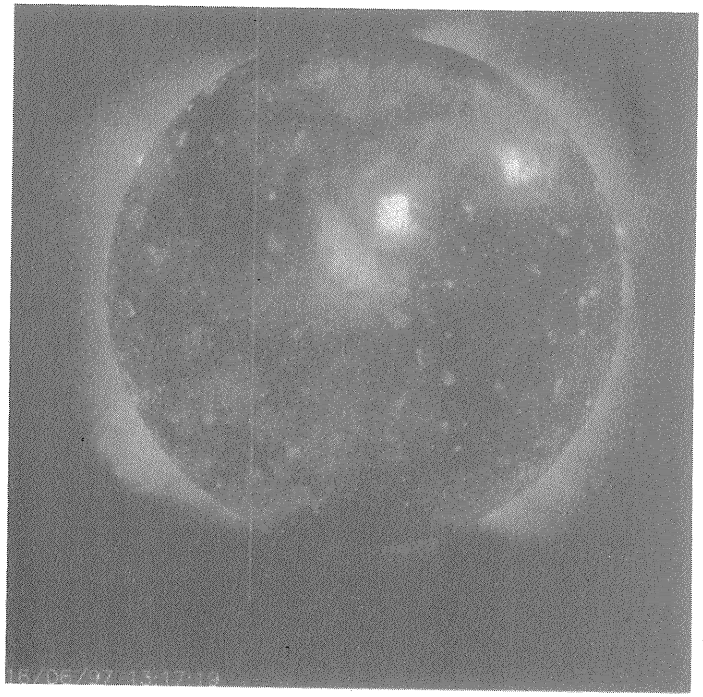


Day 13
10:55:55 UT



Day 15
12:40:27 UT

Day 14
05:46:57 UT



Day 16
13:17:19 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June
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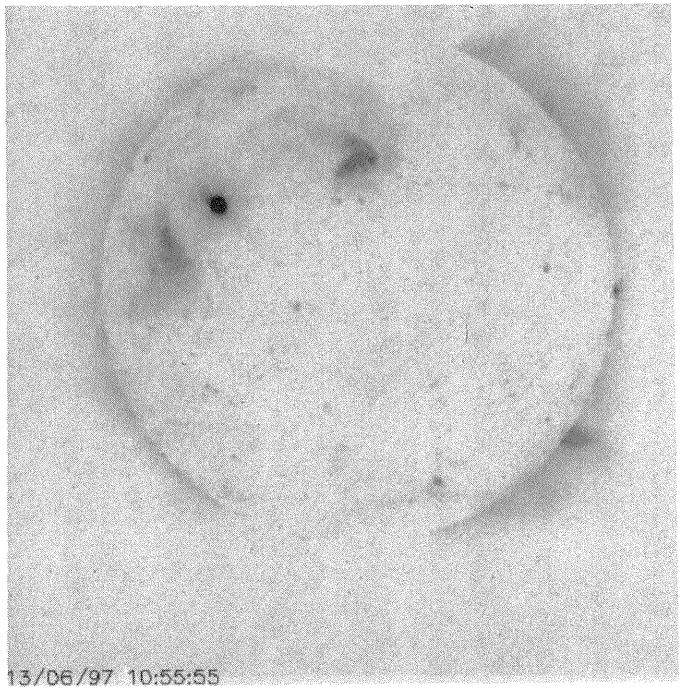
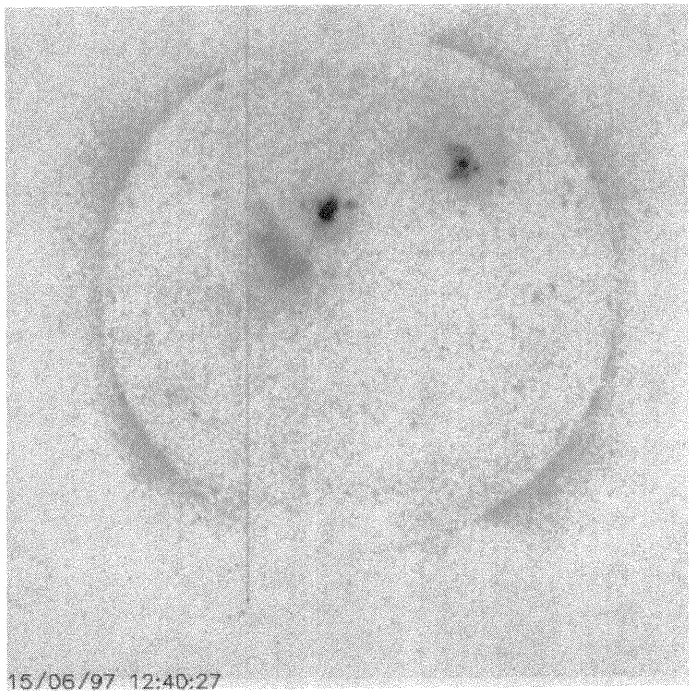
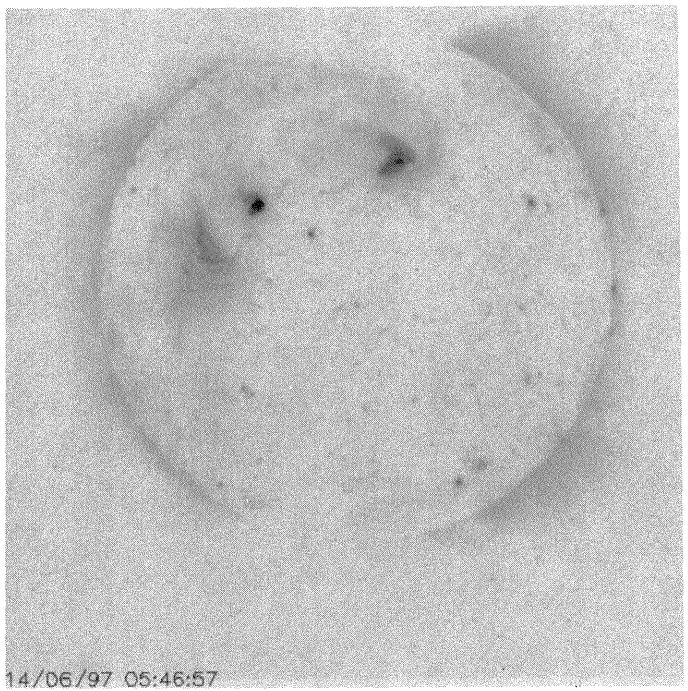


Day 13
10:55:55 UT

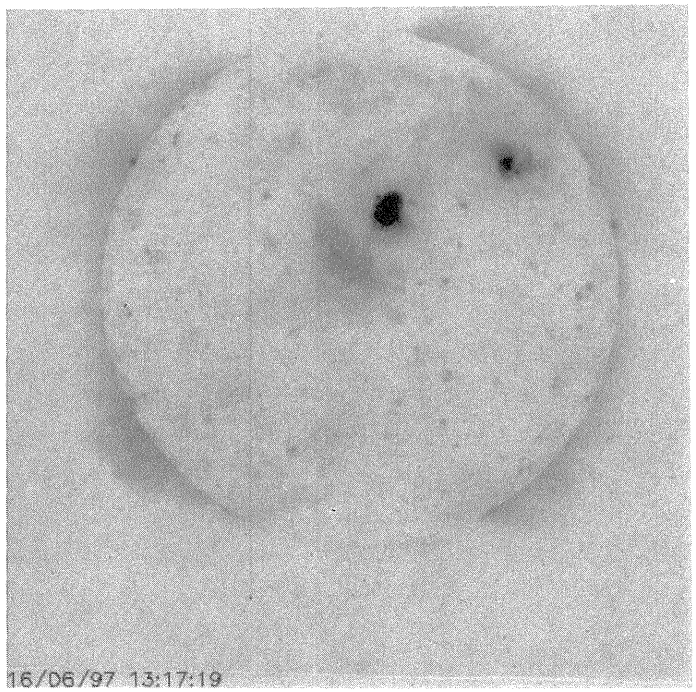
Day 15
12:40:27 UT





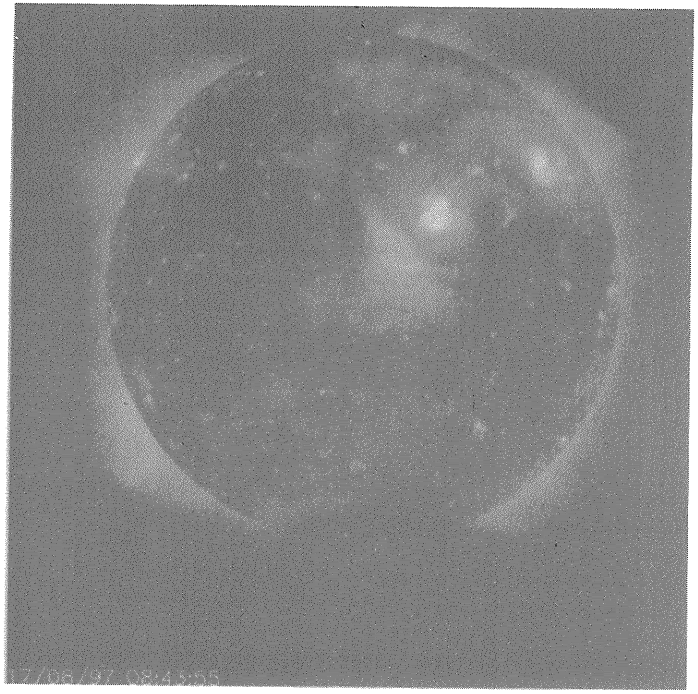
Day 14
05:46:57 UT

Day 16
13:17:19 UT

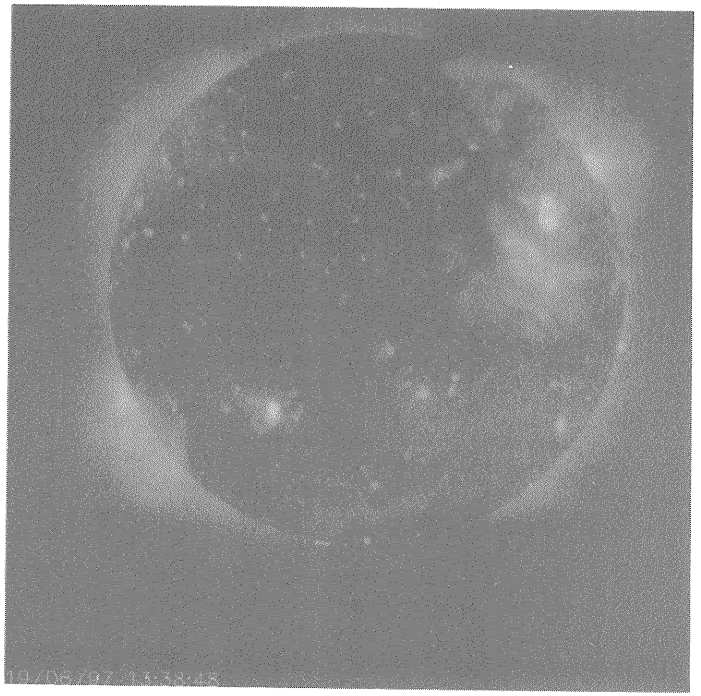


YOHKOH SOFT X-RAY TELESCOPE IMAGES

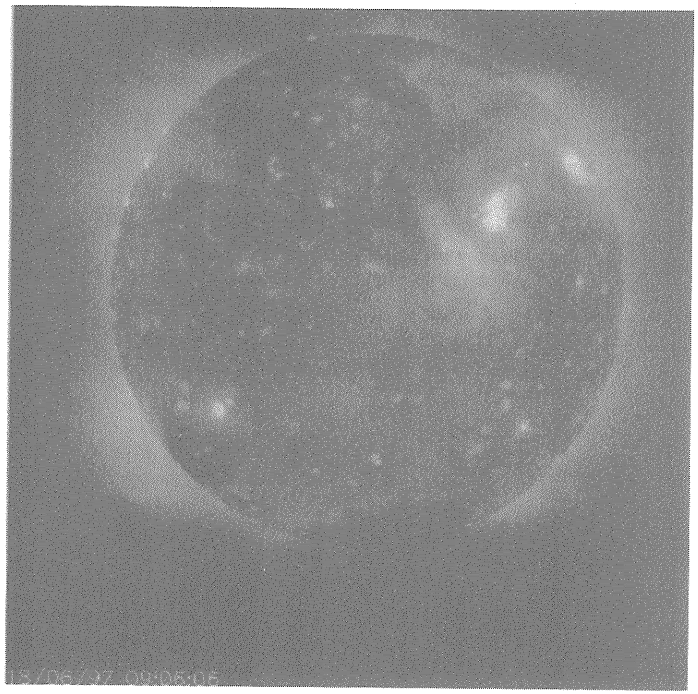
June
1997



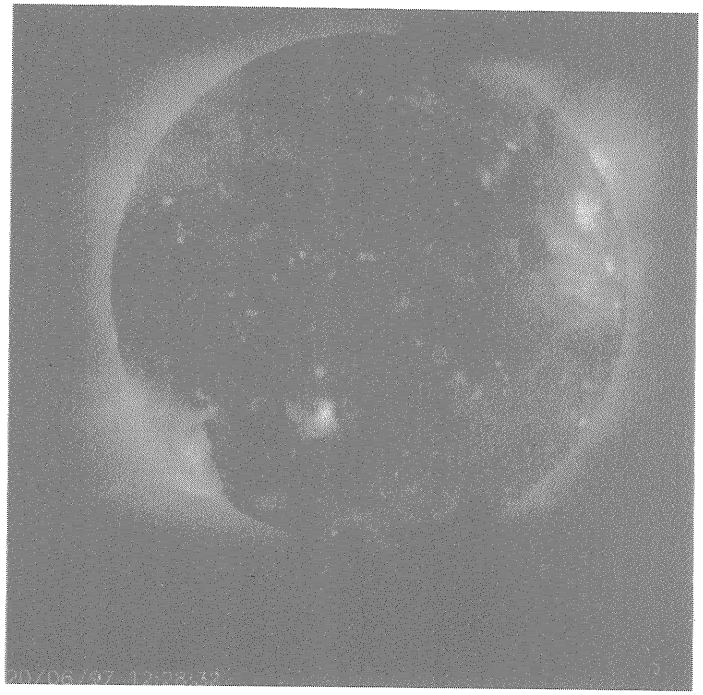
Day 17
08:43:55 UT



Day 19
13:38:48 UT



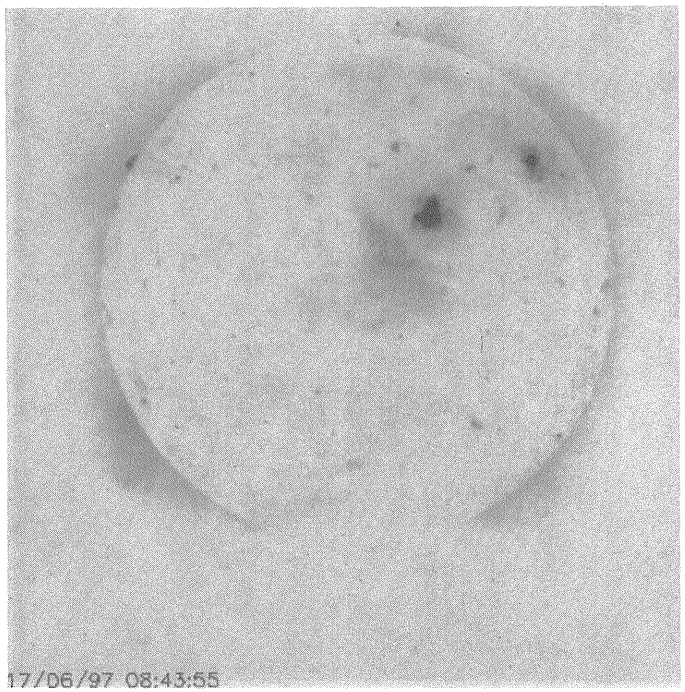
Day 18
09:06:06 UT



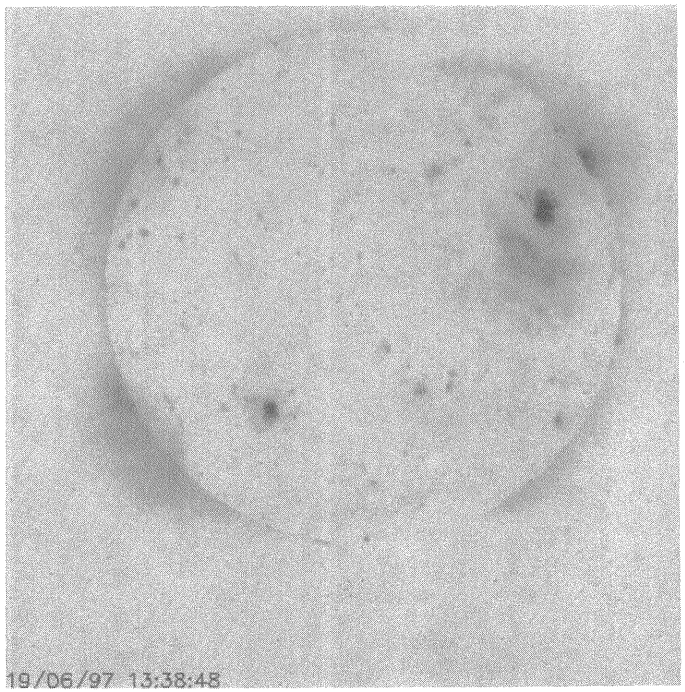
Day 20
12:28:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

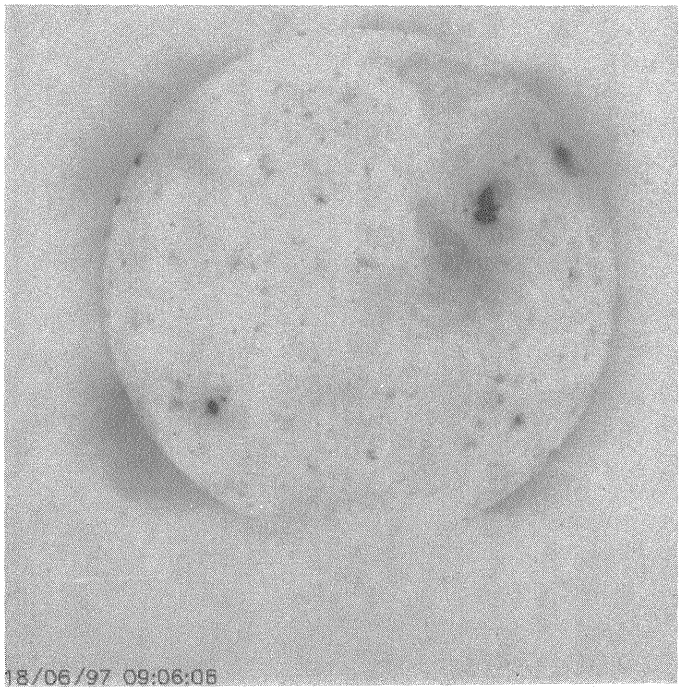
June
1997



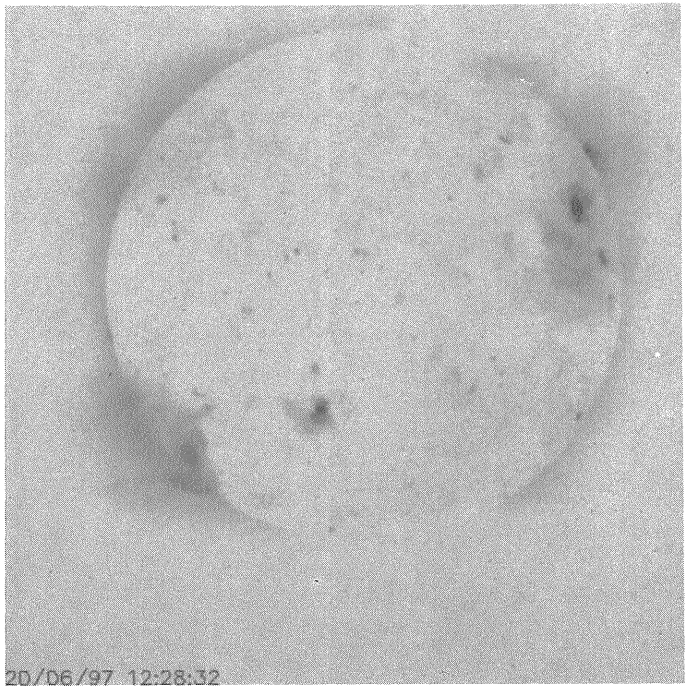
Day 17
08:43:55 UT



Day 19
13:38:48 UT



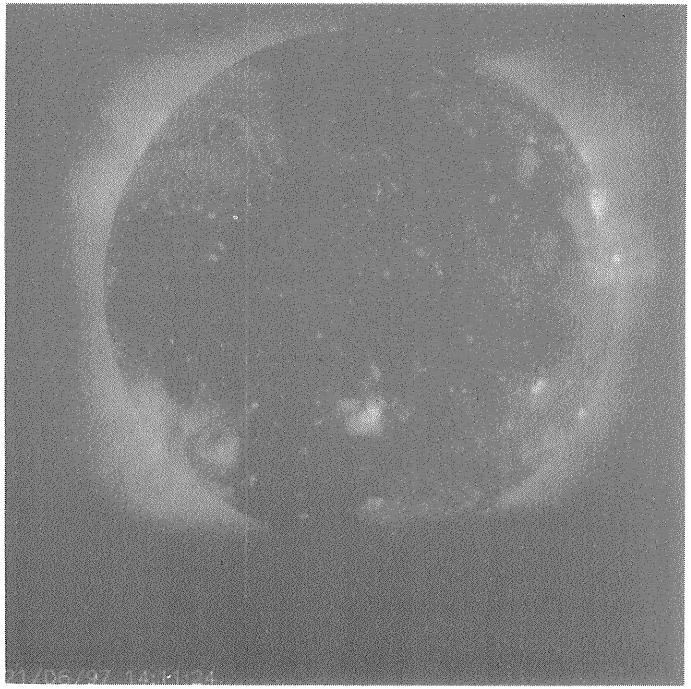
Day 18
09:06:06 UT



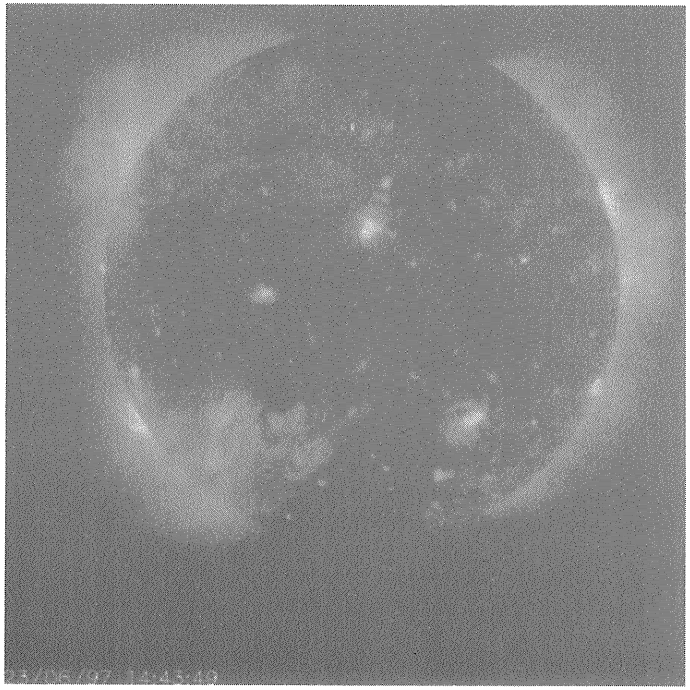
Day 20
12:28:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

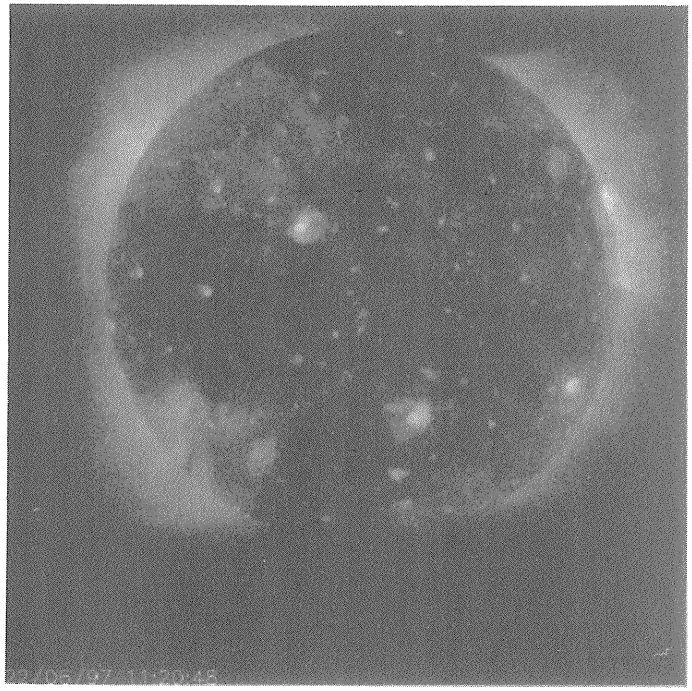
June
1997



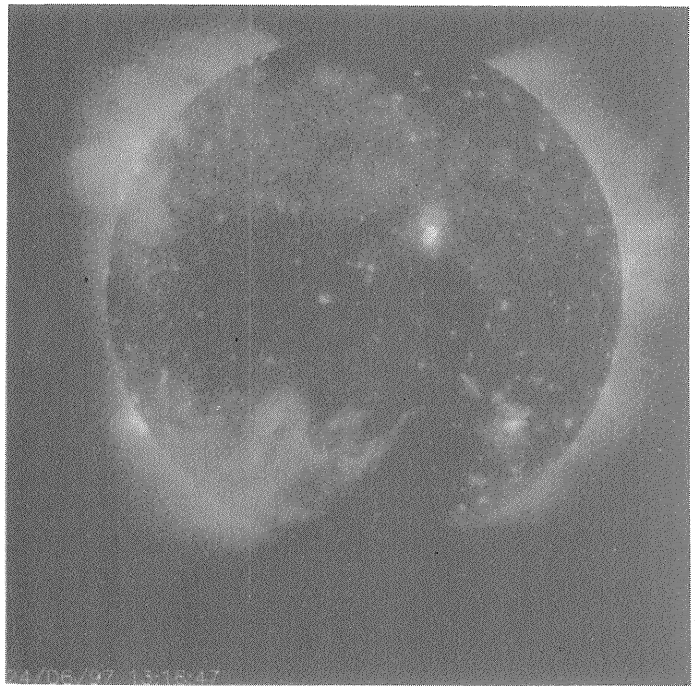
Day 21
14:11:24 UT



Day 23
14:43:49 UT



Day 22
11:20:48 UT

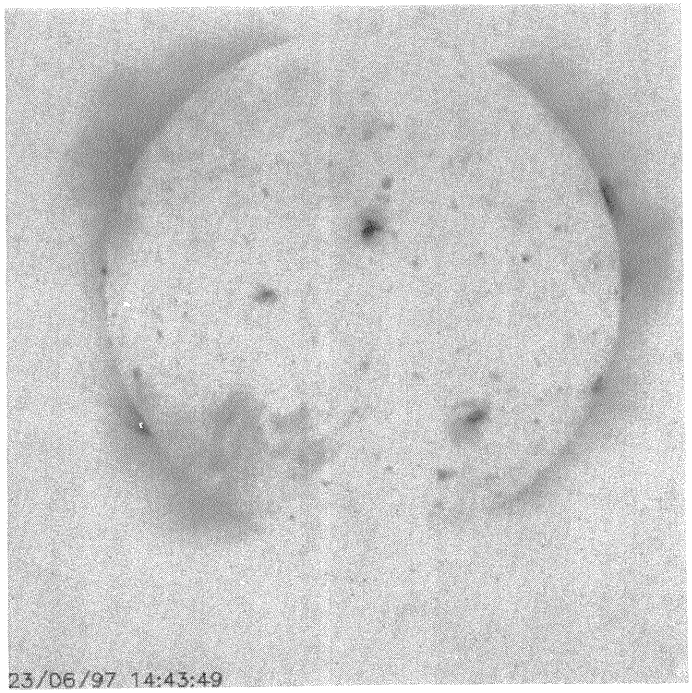


Day 24
13:16:47 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

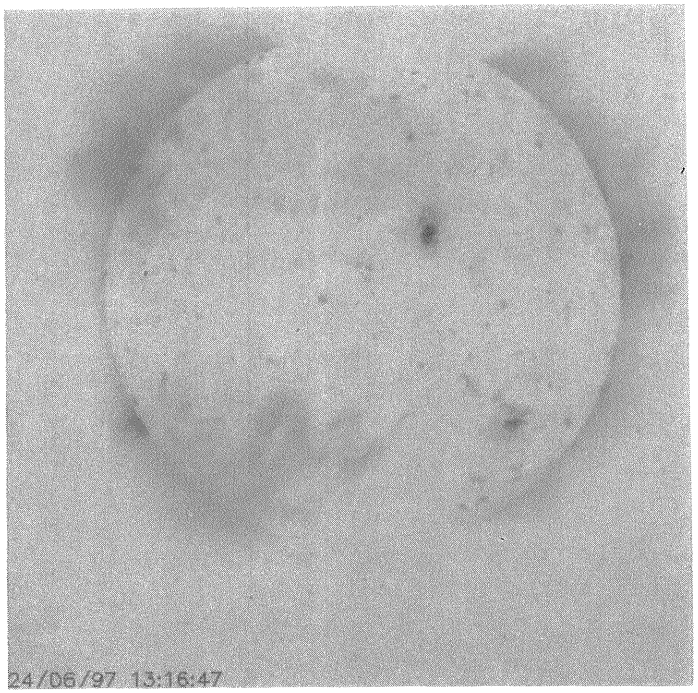
June
1997

Day 21
14:11:24 UT



Day 23
14:43:49 UT

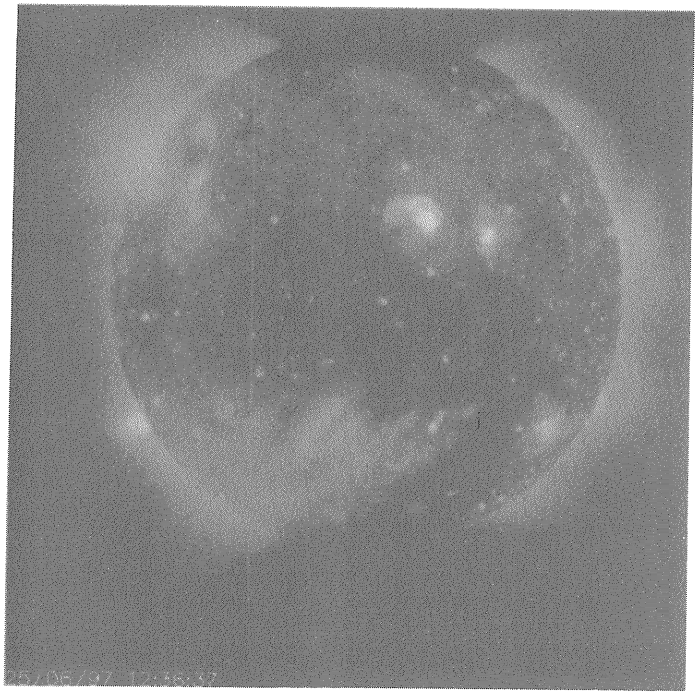
Day 22
11:20:48 UT



Day 24
13:16:47 UT

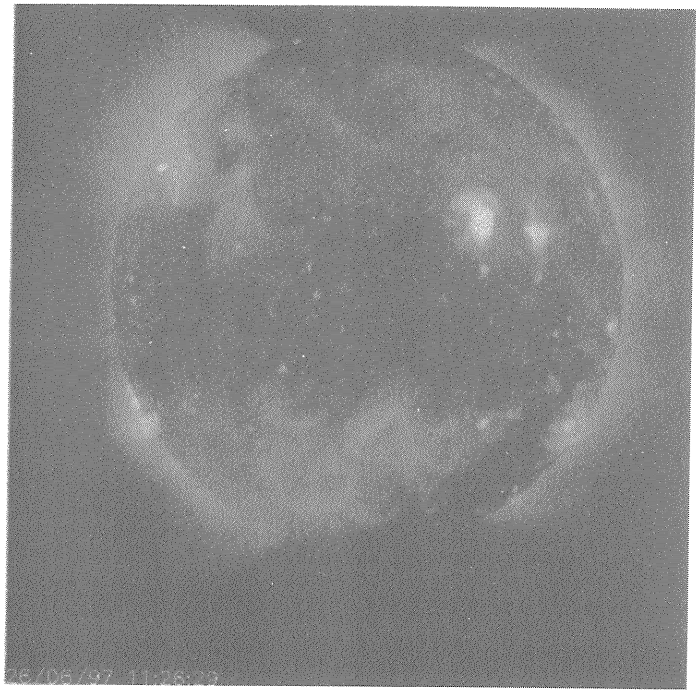
YOHKOH SOFT X-RAY TELESCOPE IMAGES

June
1997

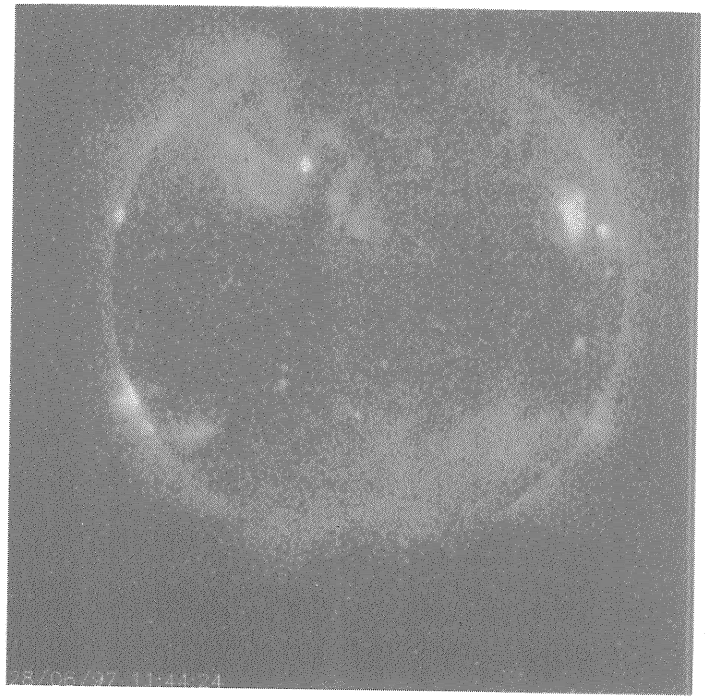


Day 25
12:36:37 UT

Day 27
11:36:09 UT



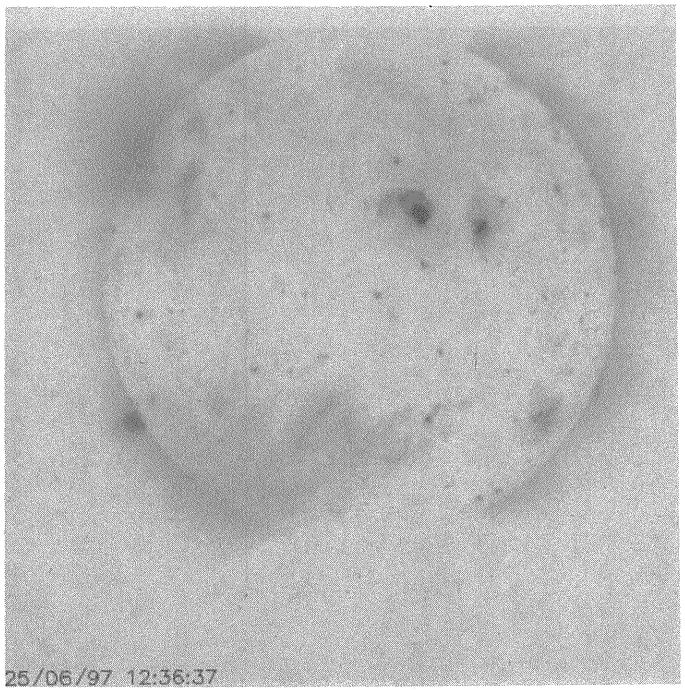
Day 26
11:26:29 UT



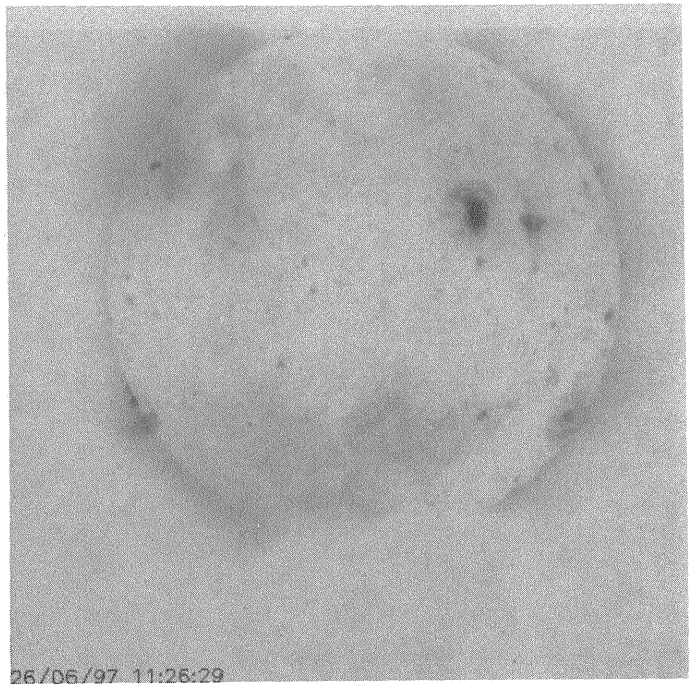
Day 28
11:44:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

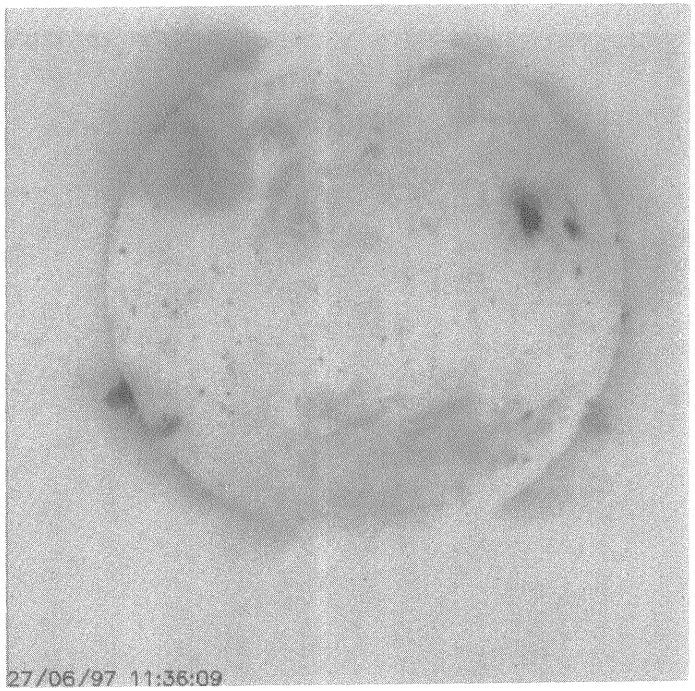
June
1997



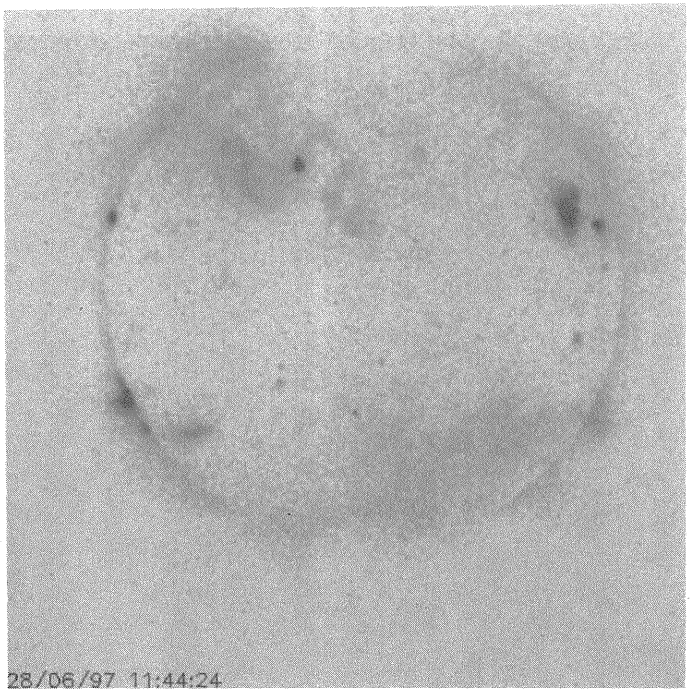
Day 25
12:36:37 UT



Day 26
11:26:29 UT



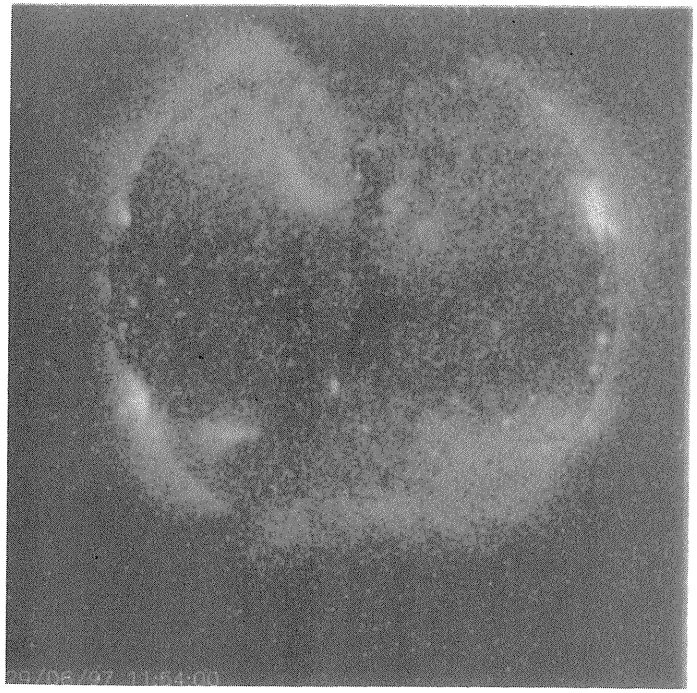
Day 27
11:36:09 UT



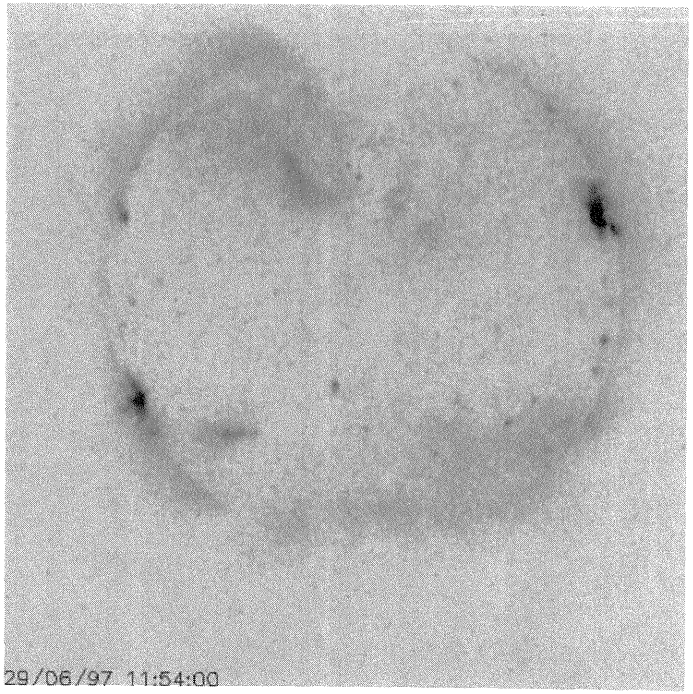
Day 28
11:44:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

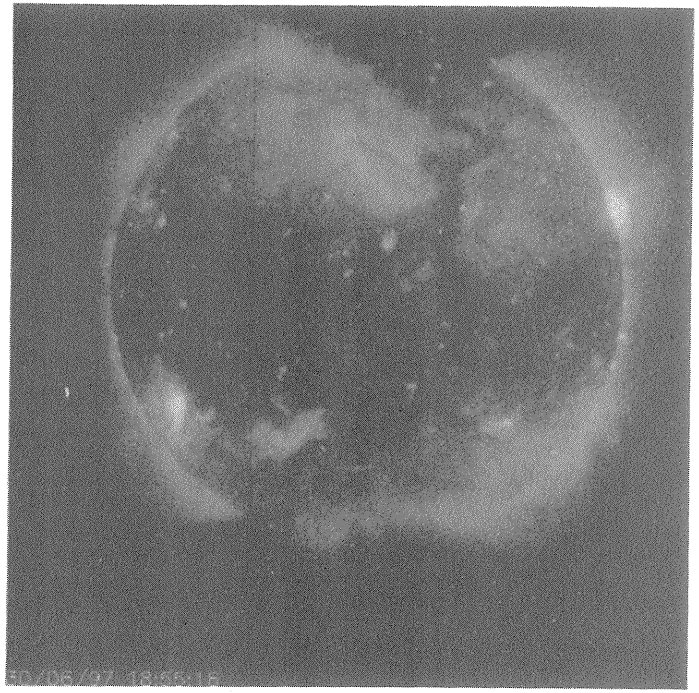
June
1997



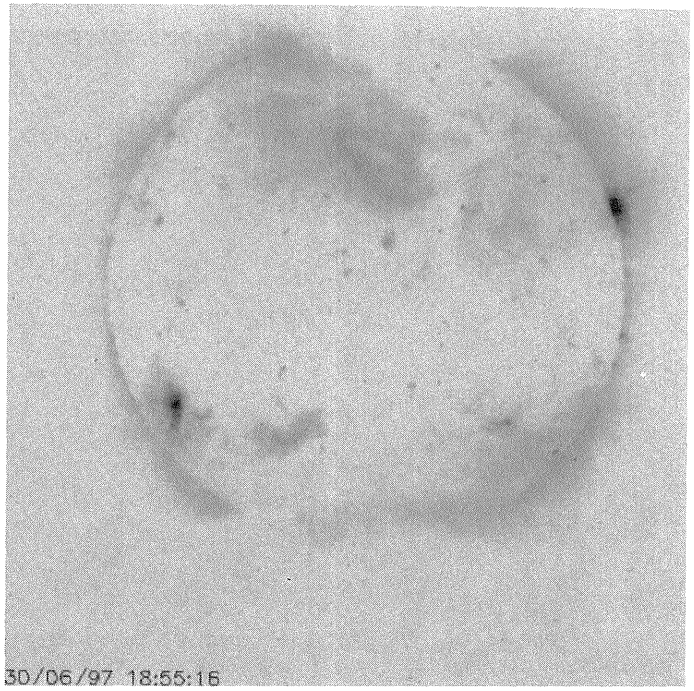
Day 29
11:54:00 UT



Day 29
11:54:00 UT



Day 30
18:55:16 UT



Day 30
18:55:16 UT

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JUNE 1997

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
8046E		RAMY	05 30 1204	S26 E23	06 1.3		A	AX		1		3
8047		SVTO	05 27 0700	N25 E74	06 2.0		A	AX	10	1	1	2
8047		RAMY	05 27 1235	N26 E75	06 2.3		B	BXO	10	3	6	3
8047		KAND	05 27 1330	N27 E75	06 2.4			BXO		2	8	2
8047		HOLL	05 27 1439	N26 E73	06 2.3		B	BXO	20	4	8	3
8047	28442	MWIL	05 27 1445	N27 E76	06 2.5	4	(B					
8047		LEAR	05 28 0122	N29 E65	06 2.1		B	BXO	30	3	8	3
8047		TACH	05 28 0408	N25 E67	06 2.4			BRO	6	3	8	3
8047		KAND	05 28 0700	N26 E65	06 2.3			BXO		3	7	3
8047		SVTO	05 28 0827	N25 E65	06 2.4		B	BXO	10	3	8	3
8047		RAMY	05 28 1116	N25 E61	06 2.2		B	BXO	20	4	7	4
8047	28442	MWIL	05 28 1430	N27 E62	06 2.4	4	(B)					
8047		HOLL	05 28 1839	N26 E58	06 2.3		B	BXO	20	4	7	3
8047		TACH	05 29 0406	N26 E54	06 2.4			BRO	31	5	8	4
8047		SVTO	05 29 0505	N27 E55	06 2.5		B	DRO	60	7	9	3
8047		KAND	05 29 1050	N26 E49	06 2.2			BXO		5	10	4
8047		RAMY	05 29 1119	N25 E50	06 2.3		B	CRO	30	5	8	4
8047	28442	MWIL	05 29 1430	N26 E49	06 2.4	4	(B)					
8047		HOLL	05 29 1450	N27 E48	06 2.3		B	CRO	50	6	9	3
8047		TACH	05 30 0500	N27 E39	06 2.2			CRO	42	3	8	3
8047		SVTO	05 30 0600	N27 E40	06 2.4		B	BRO	30	3	8	3
8047		KAND	05 30 0940	N27 E36	06 2.2			CRO		3	9	2
8047		RAMY	05 30 1204	N26 E37	06 2.4		B	CRO	20	3	8	3
8047	28442	MWIL	05 30 1415	N26 E35	06 2.3	5	(B)					
8047		HOLL	05 30 1532	N27 E35	06 2.4		B	CRO	30	4	9	3
8047		TACH	05 31 0350	N27 E27	06 2.3			BRO	30	2	9	2
8047		KAND	05 31 1005	N26 E28	06 2.6			HS		2	3	1
8047	28442	MWIL	05 31 1445	N26 E26	06 2.6	5	(AF)					
8047		LEAR	06 01 0100	N27 E19	06 2.5		B	CRO	20	2	2	3
8047		TACH	06 01 0534	N27 E18	06 2.6				50	1	1	4
8047		KAND	06 01 0730	N26 E17	06 2.6			HS		1	1	3
8047		RAMY	06 01 1119	N25 E14	06 2.5		B	CRO	20	4	6	5
8047		SVTO	06 01 1237	N25 E16	06 2.8		A	HS	20	2	1	2
8047		HOLL	06 01 1520	N26 E12	06 2.6		A	HR	20	3	1	3
8047	28442	MWIL	06 01 1545	N25 E10	06 2.4	4	(BF)					
8047		TACH	06 02 0420	N27 E06	06 2.6			AX	15	2	1	3
8047		KAND	06 02 0630	N25 E05	06 2.6			CSO		3	3	4
8047		RAMY	06 02 1205	N26 E03	06 2.7		A	AX	10	2	1	4
8047		HOLL	06 02 1515	N27 W02	06 2.5		A	HX	20	2	1	4
8047	28442	MWIL	06 02 1530	N26 W01	06 2.6	3	(AF)					
8047		SVTO	06 03 0608	N26 W11	06 2.4			AX		1		2
8047	28442	MWIL	06 03 1430	N28 W18	06 2.2	3	(B)					
8047	28442	MWIL	06 04 1545	N29 W30	06 2.3	4	(AP)					
8047		SVTO	06 07 1030	N29 W65	06 2.3		B	DAO	50	2	9	2
8048		SVTO	05 30 0600	S28 E65	06 4.3		A	AX		1		3
8048		RAMY	05 30 1204	S29 E59	06 4.1		A	AX		1		3
8048	28443	MWIL	05 30 1415	S29 E59	06 4.2	3	(AP)					
8048		HOLL	05 30 1532	S28 E60	06 4.3		A	AX	10	1		3
8048		KAND	05 31 1005	S27 E47	06 4.1			BXO		2	2	1
8048	28443	MWIL	05 31 1445	S29 E47	06 4.3	4	(B)					
8048		LEAR	06 01 0100	S27 E43	06 4.4		B	BXO	30	8	5	3
8048		TACH	06 01 0534	S27 E39	06 4.3			BRO	50	5	4	4
8048		KAND	06 01 0730	S29 E38	06 4.3			CSO		5	6	3
8048		RAMY	06 01 1119	S30 E33	06 4.1		B	DRO	40	9	6	5
8048		SVTO	06 01 1237	S31 E32	06 4.0		B	DSO	60	6	6	2
8048		HOLL	06 01 1520	S28 E33	06 4.2		B	CRO	60	15	7	3
8048	28443	MWIL	06 01 1545	S29 E34	06 4.3	5	(B)					
8048		TACH	06 02 0420	S27 E26	06 4.2			CRO	145	8	5	3
8048		KAND	06 02 0630	S29 E25	06 4.2			CAO		12	8	4
8048		RAMY	06 02 1205	S28 E21	06 4.1		B	DAO	90	12	8	4
8048		HOLL	06 02 1515	S28 E19	06 4.1		B	DAO	200	9	7	4
8048	28443	MWIL	06 02 1530	S28 E20	06 4.2	5	(B)					
8048		LEAR	06 03 0242	S27 E12	06 4.0		B	DSO	120	15	9	2
8048		TACH	06 03 0438	S28 E12	06 4.1			CSR	236	8	8	3
8048		SVTO	06 03 0608	S27 E13	06 4.3		B	DSO	170	9	10	2
8048		KAND	06 03 0720	S29 E09	06 4.0			DAO		12	10	5
8048		RAMY	06 03 1218	S28 E07	06 4.0		B	DSO	110	10	9	3

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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
8048	28443	MWIL	06 03 1430	S28 E06	06 4.1	5	(B)					
8048		HOLL	06 03 1515	S28 E08	06 4.3		B	DSO	180	9	8	4
8048		LEAR	06 04 0026	S28 E03	06 4.2		B	DSO	120	7	10	3
8048		SVTO	06 04 0530	S28 E02	06 4.4		B	DSO	140	8	10	2
8048		KAND	06 04 1210	S28 W08	06 3.9			DSO		4	10	1
8048		RAMY	06 04 1225	S28 W07	06 4.0		B	DSO	80	4	10	3
8048	28443	MWIL	06 04 1545	S28 W06	06 4.2	5	(B)					
8048		LEAR	06 05 0022	S28 W10	06 4.2		B	DSO	140	5	10	3
8048		TACH	06 05 0439	S27 W14	06 4.1			DSO	155	5	8	3
8048		KAND	06 05 0720	S29 W16	06 4.0			DSO		10	10	5
8048		SVTO	06 05 0745	S27 W15	06 4.1		B	DAO	100	6	10	3
8048		RAMY	06 05 1134	S27 W18	06 4.1		B	DAO	120	5	10	4
8048		HOLL	06 05 1547	S28 W22	06 3.9		B	DSO	100	2	10	3
8048		LEAR	06 06 0045	S28 W25	06 4.1		B	EAO	100	5	11	3
8048		VORO	06 06 0100	S29 W25	06 4.1			DHO	152	2	9	2
8048		TACH	06 06 0452	S27 W27	06 4.1			CSO	280	4	8	4
8048		KAND	06 06 0710	S29 W29	06 4.0			DAO		2	10	2
8048		SVTO	06 06 1140	S27 W30	06 4.1		B	DAO	80	9	10	1
8048		RAMY	06 06 1419	S27 W33	06 4.0		B	DAO	50	2	10	1
8048	28443	MWIL	06 06 1445	S28 W32	06 4.1	4	(B)					
8048		HOLL	06 06 1845	S28 W34	06 4.1		B	DAO	180	6	9	2
8048		LEAR	06 07 0105	S28 W37	06 4.1		B	DSO	110	8	9	3
8048		VORO	06 07 0147	S29 W39	06 4.0			DAO	110	2	10	2
8048		TACH	06 07 0714	S26 W40	06 4.2			CRO	161	4	8	3
8048		SVTO	06 07 1030	S28 W44	06 4.0		B	ESO	70	7	11	2
8048		KAND	06 07 1150	S29 W45	06 4.0			DAO		4	10	1
8048		RAMY	06 07 1204	S27 W44	06 4.1		B	DSO	50	6	10	3
8048		HOLL	06 07 1440	S28 W46	06 4.0		B	DAO	160	6	9	2
8048	28443	MWIL	06 07 1515	S28 W45	06 4.1	4	(B)					
8048		TACH	06 08 0442	S27 W51	06 4.2			BRO	55	3	9	3
8048		SVTO	06 08 0700	S27 W54	06 4.1		B	CSO	40	4	11	3
8048		RAMY	06 08 1151	S27 W58	06 4.0		B	CSO	40	4	10	3
8048	28443	MWIL	06 08 1445	S28 W58	06 4.1	5	(B)					
8048		HOLL	06 08 1508	S28 W64	06 3.6		A	HS	20	1	2	3
8048		KAND	06 09 0710	S28 W73	06 3.6			AX		1		1
8048		RAMY	06 09 1206	S28 W71	06 3.9		A	HR	30	2	2	4
8048		SVTO	06 09 1410	S27 W75	06 3.7		B	BXO	10	2	5	3
8048		HOLL	06 09 1420	S28 W78	06 3.5		A	AX	20	2	1	3
8048	28443	MWIL	06 09 1430	S29 W76	06 3.6	4	AP					
8048A	28444	MWIL	05 30 1415	S34 E69	06 5.1	3	(AF)					
8048A	28444	MWIL	05 31 1445	S34 E56	06 5.1	4	(B)					
8048A	28444	MWIL	06 01 1545	S34 E44	06 5.2	3	(AF)					
8048B		SVTO	06 08 0700	N21 W01	06 8.2		A	AX		1		3
8048B		RAMY	06 08 1151	N21 W03	06 8.3		A	AX		1		3
8050		TACH	06 08 0442	N29 E65	06 13.3			AX	15	1	1	3
8050		SVTO	06 08 0700	N27 E64	06 13.3		A	AX		1		3
8050		RAMY	06 08 1151	N27 E63	06 13.4		A	AX	20	1	1	3
8050	28445	MWIL	06 08 1445	N27 E60	06 13.3	4	(AP)					
8050		HOLL	06 08 1508	N27 E60	06 13.3		A	AX	20	1	1	3
8050		KAND	06 09 0710	N28 E50	06 13.2			AX		1		1
8050		RAMY	06 09 1206	N27 E49	06 13.3		A	AX	10	1		4
8050		SVTO	06 09 1410	N27 E46	06 13.2		A	AX	10	1	1	3
8050		HOLL	06 09 1420	N27 E47	06 13.2		A	AX	10	1	1	3
8050	28445	MWIL	06 09 1430	N27 E46	06 13.2	5	(AP)					
8050		LEAR	06 10 0058	N28 E41	06 13.2		A	AX	20	1		3
8050		SVTO	06 10 0801	N27 E37	06 13.2		A	AX		1		3
8050		KAND	06 10 0835	N28 E36	06 13.2			AX		1		3
8050		RAMY	06 10 1245	N27 E36	06 13.3		A	AX	10	1		4
8050	28445	MWIL	06 10 1430	N28 E34	06 13.3	5	(AP)					
8050		HOLL	06 10 1505	N28 E34	06 13.3		A	AX	10	1	1	4
8050		RAMY	06 11 1253	N28 E23	06 13.3		A	AX	10	1		4
8050	28445	MWIL	06 11 1430	N28 E21	06 13.2	4	(AP)					
8050		HOLL	06 11 1517	N28 E21	06 13.3		A	AX	10	1	1	3
8050		VORO	06 11 2306	N28 E17	06 13.3			AXX	11	1		3
8050		LEAR	06 12 0040	N28 E16	06 13.3		A	AX		1		3
8050		SVTO	06 12 0435	N28 E13	06 13.2		A	HR	10	1	1	3

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8050		TACH	06 12	0950	N27 E11	06 13.3			AX	12	2	1	3
8050		KAND	06 12	1020	N28 E10	06 13.2			AX		1		2
8050		RAMY	06 12	1243	N30 E09	06 13.2		B	BXO	10	2	3	3
8050	28445	MWIL	06 12	1445	N29 E08	06 13.2	4	(G)					
8050		HOLL	06 12	1445	N31 E08	06 13.2		B	BXO	40	3	4	4
8050		VORO	06 13	0017	N27 E02	06 13.2			AXX	10	1		3
8050		TACH	06 13	0444	N28 E01	06 13.3			AX	15	1	1	3
8050		SVTO	06 13	0528	N29 E01	06 13.3		A	AX		1		3
8050		KAND	06 13	0655	N28 W01	06 13.2			AX		1		3
8050		LEAR	06 13	0730	N28 W03	06 13.1		A	AX		1		1
8050		RAMY	06 13	1149	N29 W03	06 13.2		A	AX	10	1		4
8050		HOLL	06 13	1440	N28 W06	06 13.1		A	AX	10	1		4
8050		SVTO	06 14	0450	N28 W12	06 13.3		B	BXO	10	3	3	4
8050		TACH	06 14	0506	N28 W13	06 13.2			BR	3	3	1	3
8050		KAND	06 14	1030	N29 W14	06 13.3			BXO		2	3	4
8050		RAMY	06 14	1152	N29 W14	06 13.4		B	BXO	10	2	3	3
8050		HOLL	06 14	1451	N29 W18	06 13.2		A	AX	10	2	2	3
8050		TACH	06 15	0448	N30 W25	06 13.2			AX	3	1	1	3
8050		LEAR	06 15	0530	N28 W27	06 13.1		B	BXO		3	3	1
8050		SVTO	06 15	0545	N28 W26	06 13.2		A	AX		1		3
8050		KAND	06 15	1020	N29 W28	06 13.2			BXO		2	2	4
8050		RAMY	06 15	1156	N29 W27	06 13.4		B	BXO	10	2	2	2
8050	28445	MWIL	06 15	1445	N29 W30	06 13.3	3	(AP)					
8050		HOLL	06 15	1528	N28 W29	06 13.4		A	AX		1		3
8050		SVTO	06 16	0545	N28 W37	06 13.3		A	AX		1		3
8050		TACH	06 16	0838	N29 W38	06 13.4			AX	3	1	1	3
8050		RAMY	06 16	1234	N31 W40	06 13.4		A	AX		1		3
8050	28445	MWIL	06 16	1430	N29 W42	06 13.3	4	(AP)					
8050		HOLL	06 16	1525	N28 W43	06 13.3		A	AX		1		/
8050		LEAR	06 17	0035	N27 W48	06 13.3		A	AX		1		3
8050A		KAND	06 15	1020	N08 W24	06 13.6			AX		1		4
8050B		VORO	06 15	2237	N15 W06	06 15.5			BXO	32	2	3	2
8050C		RAMY	06 20	1155	N07 W66	06 15.5		A	AX		1		3
8050C	28448	MWIL	06 20	1430	N07 W67	06 15.6	4	(AP)					
8052		SVTO	06 12	0435	N16 E50	06 16.0		B	BXO	10	3	3	3
8052		TACH	06 12	0950	N17 E48	06 16.0			AX	20	1	1	3
8052		KAND	06 12	1020	N17 E48	06 16.1			CSO		2	2	2
8052		RAMY	06 12	1243	N17 E46	06 16.0		B	CRO	10	3	3	3
8052	28446	MWIL	06 12	1445	N16 E45	06 16.0	4	(B)					
8052		HOLL	06 12	1445	N17 E46	06 16.1		B	CRO	30	2	2	4
8052		VORO	06 13	0017	N18 E40	06 16.0			BXO	27	2	2	3
8052		TACH	06 13	0444	N17 E38	06 16.1			AX	36	3	1	3
8052		SVTO	06 13	0528	N17 E37	06 16.0		B	CRO	20	4	3	3
8052		KAND	06 13	0655	N17 E37	06 16.1			BXO		5	5	3
8052		LEAR	06 13	0730	N18 E36	06 16.0		B	BXO	10	4	3	1
8052		RAMY	06 13	1149	N18 E34	06 16.1		B	BXO	30	8	5	4
8052		HOLL	06 13	1440	N17 E32	06 16.0		B	BXO	30	7	6	4
8052		SVTO	06 14	0450	N18 E24	06 16.0		BG	BXO	20	7	6	4
8052		TACH	06 14	0506	N18 E25	06 16.1			BR	67	7	2	3
8052		KAND	06 14	1030	N18 E21	06 16.0			BXO		7	5	4
8052		RAMY	06 14	1152	N18 E21	06 16.1		B	CRO	30	8	5	3
8052		HOLL	06 14	1451	N18 E19	06 16.1		B	CRO	30	10	5	3
8052		VORO	06 14	2205	N17 E16	06 16.1			BXO	36	3	3	2
8052		TACH	06 15	0448	N18 E12	06 16.1			BR	67	6	3	3
8052		LEAR	06 15	0530	N18 E11	06 16.1		B	CRO	20	7	4	1
8052		SVTO	06 15	0545	N18 E12	06 16.1		B	DAO	30	9	4	3
8052		KAND	06 15	1020	N18 E09	06 16.1			BXI		14	5	4
8052		RAMY	06 15	1156	N18 E08	06 16.1		B	CRO	20	7	5	2
8052	28446	MWIL	06 15	1445	N17 E06	06 16.1	4	(B)					
8052		HOLL	06 15	1528	N18 E06	06 16.1		B	CRO	30	9	5	3
8052		VORO	06 15	2237	N19 E00	06 15.9			BXO	22	3	1	2
8052		SVTO	06 16	0545	N17 W02	06 16.1		B	CAO	50	20	6	3
8052		KAND	06 16	0620	N18 W02	06 16.1			CAO		9	7	3
8052		TACH	06 16	0838	N18 W04	06 16.0			BR	78	9	3	3
8052		RAMY	06 16	1234	N19 W05	06 16.1		B	CRO	40	14	7	3

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8052	28446	MWIL	06	16	1430	N18	W07	06	16.1	5	(B)					
8052		HOLL	06	16	1525	N18	W07	06	16.1		B	DRI	90	15	7	/
8052		LEAR	06	17	0035	N19	W12	06	16.1		B	BXI	60	11	7	3
8052		KAND	06	17	0710	N18	W16	06	16.1			CAO		10	7	4
8052		TACH	06	17	0820	N19	W16	06	16.1			BR	15	5	5	2
8052		SVTO	06	17	0855	N18	W16	06	16.1		B	BXO	20	8	6	3
8052		RAMY	06	17	1328	N19	W18	06	16.2		B	BXO	30	12	6	4
8052	28446	MWIL	06	17	1430	N18	W20	06	16.1	5	(B)					
8052		HOLL	06	17	1642	N18	W20	06	16.2		B	BXO	30	8	6	3
8052		VORO	06	18	0009	N19	W28	06	15.9			AXX	8	1		2
8052		LEAR	06	18	0042	N18	W26	06	16.0		B	BXO	20	6	7	3
8052		SVTO	06	18	0710	N18	W27	06	16.2		B	BXO	10	5	6	3
8052		KAND	06	18	0720	N17	W29	06	16.1			BXO		3	7	3
8052		RAMY	06	18	1305	N18	W32	06	16.1		B	BXO	10	4	7	3
8052	28446	MWIL	06	18	1445	N19	W34	06	16.0	4	(B)					
8052		HOLL	06	18	1540	N18	W33	06	16.1		A	AX	20	1	1	4
8052A		RAMY	06	22	1152	S18	W60	06	17.9		A	AX		1		4
8052A	28449	MWIL	06	22	1445	S18	W62	06	17.9	3	(AP)					
8052B		HOLL	06	19	1505	N08	E14	06	20.7		A	AX	10	1	1	3
8053		VORO	06	18	0009	S27	E45	06	21.5			BXO	28	4	3	2
8053		LEAR	06	18	0042	S27	E44	06	21.4		B	BXO		2	2	3
8053		SVTO	06	18	0710	S28	E39	06	21.3		B	BXO	10	4	4	3
8053		KAND	06	18	0720	S28	E40	06	21.4			BXO		2	2	3
8053		RAMY	06	18	1305	S28	E35	06	21.3		B	BXO	20	6	3	3
8053	28447	MWIL	06	18	1445	S27	E36	06	21.4	4	(B)					
8053		HOLL	06	18	1540	S27	E36	06	21.4		B	CRO	30	4	3	4
8053		LEAR	06	19	0040	S27	E29	06	21.3		B	BXO	10	6	4	3
8053		TACH	06	19	0530	S26	E27	06	21.3			BR	55	4	4	3
8053		SVTO	06	19	0701	S27	E25	06	21.2		B	DAO	30	5	4	3
8053		KAND	06	19	0715	S28	E27	06	21.4			CAO		6	5	3
8053		RAMY	06	19	1105	S25	E24	06	21.3		B	BXO	20	8	4	4
8053		HOLL	06	19	1505	S27	E22	06	21.3		B	BXO	30	5	3	3
8053	28447	MWIL	06	19	1530	S26	E23	06	21.4	4	(B)					
8053		VORO	06	19	2246	S27	E20	06	21.5			AXX	17	1		2
8053		TACH	06	20	0404	S26	E16	06	21.4			AX	15	2	1	3
8053		KAND	06	20	0550	S27	E16	06	21.5			AX		2	1	4
8053		SVTO	06	20	0603	S26	E14	06	21.3		B	BXO	10	3	2	3
8053		LEAR	06	20	0749	S27	E15	06	21.5		B	BXO	10	2	1	2
8053		RAMY	06	20	1155	S27	E12	06	21.4		A	AX	10	2	1	3
8053		HOLL	06	20	1427	S27	E11	06	21.4		A	AX		1		3
8053	28447	MWIL	06	20	1430	S26	E11	06	21.4	4	(AF)					
8053		LEAR	06	21	0141	S27	E06	06	21.5		A	AX		1	1	3
8053		SVTO	06	21	0536	S26	E02	06	21.4		A	AX		1		3
8053		KAND	06	21	0725	S26	E02	06	21.5			AX		1		3
8053		RAMY	06	21	1150	S27	W02	06	21.3		A	AX		1		3
8053	28447	MWIL	06	21	1445	S26	W07	06	21.1	3	(AP)					
8053		HOLL	06	21	1515	S27	W03	06	21.4		A	AX		1		3
8055		RAMY	06	22	1152	N15	E14	06	23.5		B	BXO	10	6	4	4
8055		HOLL	06	22	1350	N15	E12	06	23.5		B	BXO	10	3	3	3
8055		LEAR	06	23	0115	N15	E07	06	23.6		B	BXO		3	4	4
8055		SVTO	06	23	0640	N16	E02	06	23.4		A	AX		1		3
8055		RAMY	06	23	1058	N15	E01	06	23.5		B	BXO	10	5	4	4
8055		HOLL	06	23	1510	N16	W03	06	23.4		B	BXO	20	3	3	3
8055	28450	MWIL	06	23	1545	N15	W02	06	23.5	4	(B)					
8055		VORO	06	23	2149	N13	W06	06	23.4			BXO	32	2	3	3
8055		LEAR	06	24	0040	N15	W08	06	23.4		B	BXO		4	5	3
8055		TACH	06	24	0400	N15	W09	06	23.5			BX	27	4	4	4
8055		SVTO	06	24	0500	N16	W11	06	23.4		B	BXO	10	4	4	3
8055		KAND	06	24	0845	N14	W13	06	23.4			BXO		7	5	4
8055		RAMY	06	24	1222	N15	W14	06	23.4		B	BXO	10	5	5	3
8055		HOLL	06	24	1410	N15	W17	06	23.3		A	AX	30	3	2	3
8055	28450	MWIL	06	24	1430	N15	W16	06	23.4	4	(B)					
8055		LEAR	06	25	0040	N15	W22	06	23.4		B	BXO		2	4	3
8055		TACH	06	25	0358	N15	W25	06	23.3			AX	5	1	1	4
8055		SVTO	06	25	0550	N15	W25	06	23.3		A	AX		1		3

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

JUNE 1997

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
8055		KAND	06 25 0630	N15 W26	06 23.3			AX		1		3
8055	28450	MWIL	06 25 1430	N15 W31	06 23.2	4	(AP)					
8056		LEAR	06 25 0040	N18 W06	06 24.6		B	CRO	20	8	4	3
8056		TACH	06 25 0358	N15 W09	06 24.5			BX	34	5	3	4
8056		SVTO	06 25 0550	N17 W09	06 24.5		B	CRO	30	13	5	3
8056		KAND	06 25 0630	N18 W10	06 24.5			BXI		7	4	3
8056	28451	MWIL	06 25 1430	N18 W15	06 24.5	5	(B)					
8056		HOLL	06 25 1730	N17 W16	06 24.5		B	DRO	60	14	5	3
8056		LEAR	06 26 0100	N19 W20	06 24.5		B	DRO	50	16	8	3
8056		TACH	06 26 0445	N18 W23	06 24.4			BR	72	11	5	4
8056		SVTO	06 26 0730	N17 W24	06 24.5		B	DAI	50	14	7	3
8056		RAMY	06 26 1212	N18 W26	06 24.5		B	CAO	30	9	6	2
8056		KAND	06 26 1300	N17 W28	06 24.4			DAO		12	6	2
8056		HOLL	06 26 1414	N16 W29	06 24.4		B	CRO	40	13	8	3
8056	28451	MWIL	06 26 1430	N17 W29	06 24.4	4	(B)					
8056		LEAR	06 27 0005	N17 W35	06 24.3		B	DSO	30	10	7	3
8056		SVTO	06 27 0455	N18 W36	06 24.5		B	DRO	30	7	8	4
8056		TACH	06 27 0542	N18 W37	06 24.4			BR	45	7	6	3
8056		KAND	06 27 0855	N18 W40	06 24.3			DRO		4	7	3
8056		RAMY	06 27 1158	N18 W40	06 24.4		B	DAO	30	6	7	2
8056	28451	MWIL	06 27 1430	N18 W43	06 24.3	4	(B)					
8056		HOLL	06 27 1526	N16 W44	06 24.3		B	BXO	30	11	8	3
8056		LEAR	06 28 0205	N16 W48	06 24.4		B	BXO	10	4	5	4
8056		TACH	06 28 0436	N18 W54	06 24.1			AX	17	2	1	4
8056		SVTO	06 28 0559	N18 W52	06 24.3		B	BXO	10	4	6	4
8056		KAND	06 28 0900	N16 W56	06 24.1			AX		2	1	2
8056		RAMY	06 28 1241	N19 W58	06 24.1		A	AX	10	2		2
8056	28451	MWIL	06 28 1430	N17 W59	06 24.1	4	(BF)					
8056		LEAR	06 29 0410	N16 W61	06 24.5		A	AX		1		3
8056		KAND	06 29 0625	N19 W63	06 24.4			AX		1		4
8056		RAMY	06 29 1128	N20 W66	06 24.4		A	AX		2		3
8056	28451	MWIL	06 29 1430	N18 W69	06 24.3	3	(BF)					
8057		SVTO	06 28 0559	N27 E21	06 29.9		A	AX		3	2	4
8057		RAMY	06 28 1241	N29 E17	06 29.9		A	AX		1		2
8057		HOLL	06 29 1924	N31 W01	06 29.7		A	AX		2		4
8057	28452	MWIL	06 30 1430	N29 W12	06 29.7	3	(AP)					

Stations reporting:

HOLL = Holloman
KAND = Kandilli
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito
TACH = Tashkent
VORO = Voroshilov

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1997

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	LF-SES	Flare (UT)	X-ray Class	NOAA Region
01	0940	0945	1019	1	1		1				No flare		
01	1310	1316	1334	1	1		1				No flare		
04	0930	0955	1050	1-	1					1	No flare		
04	1008	1013	1049	1	1		1				No flare		
04	1218	1227	1246	1+	1		1				No flare		
05	0640	0648	0710	1-	1					1	No flare		
05	1130	1150	1250	1	1					1	No flare		
05	1251	1323	1403	1	1		1				No flare		
05	1410	1442	1606	1	1		1				No flare		
07	1333	1340U	1400	1	1		1				No flare		
07	1401	1424	1532	1	1		1				No flare		
09	1212	1231	1313	2	1		1				No flare		
11	1723	1728	1804	1	1		1				No flare		
14	0730	0753	0806	1	3		2				No flare		
15	1112	1127	1148	1	1		1				No flare		
18	1003	1016	1052	1-	1					1	No flare		
19	0850	0858	0922	1-	1					1	*		
19	0927	1002	1140	2	1		1				No flare		
19	1222	1254	1349	1	1		1				No flare		
20	1024	1044	1124	2	1		1				*		
20	1254	1326	1411	1	1		1				No flare		
22	1035	1110	1125	1-	1					1	No flare		
24	0608	0612	0633	1	1		1				No flare		
24	0718	0739	0755	1	1		1				No flare		
27	1543	1555U	1620	1	1		1				No flare		
28	1125	1145	1225	1-	1					1	1117	B2.1	
28	1602	1616U	1642	1	1		1				No flare		
29	1633	1649U	1758	1	1		1				No flare		
30	0506	0522	0522	1	1		1				No flare		
30	0522	0526	0630	3	1		1				No flare		
30	0853	0855	0916	1	1		1				No flare		

* = no flare patrol.

OBSERVATORIES REPORTING FOR JUNE 1997

Brazilian Antarctic Station	SPA	Sofia, Bulgaria	SES
Inubo, Japan	SPA	Upice, Czech Republic	SEA
Itapetinga, Brazil	SPA	Ziar nad Hronom, Slovakia	SEA
Panska Ves, Czech Republic	SES, SEA, SWF	Zilina, Slovakia	SEA
Rimavska Sobota, Slovakia	SEA		

Observations are not necessarily continuous.

SOLAR RADIO EMISSION
Spectral Observations

JUNE 1997

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
01	0000	0956	HIRA								
	0415	1740	ONDR								
	1919	2400	HIRA								
02	0000	0957	HIRA								
	0415	1742	ONDR								
			PALE	2116.0	2117.0	III		2	25U	75U	
			SGMR	2116.0	2117.0	III		2	30	80	
	1919	2400	HIRA	2116.7	2116.9	III	B	2	25X	160	
03	0000	0957	HIRA								
			LEAR	0118.0	0118.0	III		1	30	40	
			PALE	0118.0	0118.0	III		2	25	55	
			LEAR	0157.0	0157.0	III		1	30	37	
			LEAR	0247.0	0247.0	III		2	30	45	
			PALE	0247.0	0247.0	III		1	25	55	
	0414	1743	ONDR								
			LEAR	0508.0	0508.0	III		1	30	43	
			SVTO	0508.0	0508.0	III		2	35U	53U	
			SGMR	1902.0	2237.0	CONT		1	30	80	
			PALE	1914.0	0114.0	CONT		1	45	75	
	1918	2400	HIRA								
04	0000	0958	HIRA								
	0414	1742	ONDR								
	1040	1200	IZMI								
			PALE	2206.0	2206.0	III		2	25	60	
			SGMR	2206.0	2206.0	III		1	30	80	
	1918	2400	HIRA	2206.4	2206.5	III	B	2	25X	160	
			PALE	2209.0	2209.0	III		1	25	53	
05			LEAR	0348.0	0352.0	III		2	30	70	
	0000	0958	HIRA	0348.5	0348.6	III	B	1	25X	200	
	0413	1744	ONDR								
			LEAR	0544.0	0544.0	III		1	30	40	
	0712	0906	IZMI	0712.0E	0906.0D	I	S	1	45	160	
			IZMI	0756.1	0756.2	III	B	1	45	85U	
			SVTO	1028.0	1028.0	III		2	35U	85U	
			SVTO	1252.0	1259.0	III		2	35U	64U	
			SGMR	1301.0	1301.0	III		1	30	57	
			SGMR	1416.0	1420.0	III		1	30	57	
			SVTO	1416.0	1416.0	III		2	36U	65U	
			SGMR	1504.0	1506.0	V		2	30	80	
			SVTO	1504.0	1505.0	III		3	35	85	
			SGMR	1548.0	1558.0	III		1	30	50	
			SVTO	1548.0	1549.0	III		2	35U	64U	
	1918	2400	HIRA								
06	0000	0959	HIRA								
			LEAR	0121.0	0121.0	III		1	30	44	
			PALE	0121.0	0121.0	III		1	25	53	
			LEAR	0138.0	0138.0	III		2	30	73	
			PALE	0138.0	0138.0	III		1	25	60	
	0413	1744	ONDR								
	0707	0929	IZMI	0710.0E	0848.0U	I	N	1	90	160	
	1918	2400	HIRA								
07	0000	1000	HIRA								
			LEAR	0302.0	0303.0	III		1	30	40	
	0420	1746	ONDR								
			LEAR	0559.0	0559.0	III		2	30	50	
			SVTO	0559.0	0559.0	III		2	35U	85U	
	1918	2400	HIRA								
			SGMR	1922.0	1922.0	III		2	37	80	
08	0000	1000	HIRA								
	0412	1747	ONDR								
			LEAR	0443.0	0443.0	III		1	30	38	
			SGMR	1321.0	1321.0	III		1	35	55	

SOLAR RADIO EMISSION
Spectral Observations

JUNE 1997

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	EVENT Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
08			SVTO	1321.0	1321.0	III		2	35U	55U	
			SGMR	1454.0	1454.0	III		1	30	55	
			SVTO	1454.0	1454.0	III		3	35U	85U	
	1928	2400	HIRA								
09	0000	1001	HIRA								
	0412	1747	ONDR								
	1917	2400	HIRA								
10	0000	1001	HIRA								
	0412	1746	ONDR								
	0720	1105	IZMI	0815.7	0816.0	III	G	1	48	95	
	1917	2400	HIRA								
11	0000	1002	HIRA								
	0412	1747	ONDR								
	1917	2400	HIRA								
12	0000	1002	HIRA								
	0411	1748	ONDR								
	0530	1200	IZMI								
	1917	2400	HIRA								
13	0000	1003	HIRA								
	0411	1749	ONDR								
	0600	1200	IZMI								
	1917	2400	HIRA								
14	0000	1003	HIRA								
	0411	1749	ONDR								
	0700	1200	IZMI								
	1917	2400	HIRA								
15	0000	1003	HIRA								
	0411	1750	ONDR								
	0600	1200	IZMI	0851.0	0851.3	III	B	1	50	120	
			IZMI	0852.6	0852.8	III	B	1	50	135	
			SGMR	1105.0	1105.0	III		1	38	57	
			SVTO	1105.0	1106.0	III		2	35	76	
			IZMI	1105.4	1105.8	III	G	2	45X	148	
	1917	2400	HIRA								
16	0000	1004	HIRA								
	0411	1749	ONDR								
	0600	1200	IZMI								
	1917	2400	HIRA								
17	0000	1004	HIRA								
	0419	1750	ONDR								
	0600	0915	IZMI								
	1000	1200	IZMI								
	1917	2400	HIRA								
18	0000	1004	HIRA								
	0419	1752	ONDR								
	0810	1200	IZMI								
	1917	2400	HIRA								
19	0000	1005	HIRA								
	0412	1752	ONDR								
	0605	1200	IZMI								
	1918	2400	HIRA								
20	0000	1005	HIRA								
	0412	1752	ONDR								
	0600	1200	IZMI								
	1918	2400	HIRA								
21	0000	1005	HIRA								

SOLAR RADIO EMISSION
Spectral Observations

JUNE 1997

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
21	0412	1752	ONDR								
	0605	1200	IZMI								
	1918	2400	HIRA								
22	0000	1005	HIRA								
	0412	1753	ONDR								
	0750	1200	IZMI								
	1918	2400	HIRA								
23	0000	1006	HIRA								
	0412	1753	ONDR								
	0600	1200	IZMI								
	1918	2400	HIRA								
24	0000	1006	HIRA								
	0413	1753	ONDR								
	0600	1159	IZMI								
	1919	2400	HIRA								
			LEAR	2355.0	2355.0	III		1	30	45	
25	0000	1006	HIRA								
	0413	1753	ONDR								
			SVTO	0838.0	0838.0	III		2	37U	54U	
	0600	1200	IZMI	0838.4	0838.6	III	B	1	45	65	
	1919	2400	HIRA								
			PALE	2354.0	2355.0	III		1	28	55	
26	0000	1006	HIRA	0303.7	0304.1	III	B	1	30	250	
	0413	1753	ONDR								
			HIRA	0430.1	0431.4	III	G	1	50	260	
			HIRA	0551.8	0552.0	III	DP	1	25X	90	
			HIRA	0557.7	0557.8	III	B	1	30	240	
			HIRA	0606.4	0607.5	III	G	2	50	240	
			HIRA	0645.7	0646.4	III	G	1	30	230	
			HIRA	0650.6	0652.2	III	G	1	30	230	
	0600	1200	IZMI	0734.0U	1200.0D	I	N	1	95U	180U	
			HIRA	0734.1	0735.2	III	G	1	50	210	
	1919	2400	HIRA								
27	0000	1006	HIRA								
	0422	1753	ONDR								
	0600	1200	IZMI								
			SGMR	1334.0	1334.0	III		1	30	55	
			SVTO	1334.0	1334.0	III		3	35U	64U	
	1919	2400	HIRA								
28	0000	1006	HIRA								
			LEAR	0303.0	0304.0	III		2	30	50	
			PALE	0303.0	0304.0	III		1	25	55	
			LEAR	0345.0	0346.0	III		1	30	40	
			PALE	0345.0	0345.0	III		1	25	55	
	0414	1752	ONDR								
			LEAR	0551.0	0558.0	III		2	30	75	
			SVTO	0551.0	0552.0	III		3	35U	64U	
			SVTO	0557.0	0610.0	III	N	3	35	85	
			IZMI	0557.5	0557.8	III	G	2	45X	150	
			IZMI	0557.8	0557.9	V		2	45	90U	
			IZMI	0606.4	0608.0	III	GG	2	45X	245	
			LEAR	0607.0	0608.0	III		1	30	45	
			IZMI	0609.7	0610.2	III	G	2	55	175	
			IZMI	0617.0	0620.4	III	G	1	45	150	
			LEAR	0645.0	0652.0	III		2	30	52	
			SVTO	0645.0	0717.0	III	N	3	35U	85U	
			SVTO	0645.0	1717.0	III	N	3	35U	85U	
			IZMI	0645.2	0646.6	III	G	2	45X	170	
			IZMI	0650.1	0652.2	III	GG	2	45X	175	
			IZMI	0715.0	0716.7	III	G	2	45X	135	
			LEAR	0716.0	0717.0	III		2	30	50	
			IZMI	0733.9	0735.2	III	G	2	45	175	

SOLAR RADIO EMISSION
Spectral Observations

JUNE 1997

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
28			IZMI	0746.1	0746.2	III	G	2	50	160	
			SVTO	0750.0	0751.0	III		2	36U	49U	
			IZMI	0750.5	0750.8	III	G	2	45X	160	
			IZMI	0954.8	0955.4	III	G	2	45X	160	
			SVTO	0955.0	0955.0	III		2	35U	67U	
			IZMI	1102.8	1103.0	III	B	2	50	75	
			SVTO	1115.0	1122.0	CONT		3	35U	85U	
			SGMR	1116.0	1120.0	III		1	30	57	
			IZMI	1116.1	1128.6	III	GG	2	45X	160	
			SGMR	1237.0	1238.0	III		1	30	80	
			SVTO	1237.0	1238.0	III		3	35	85	
			SGMR	1410.0	1411.0	III		1	30	55	
			SVTO	1410.0	1411.0	III		2	35U	55U	
			SGMR	1432.0	1435.0	V		1	30	80	
			SVTO	1433.0	1435.0	V		3	35	85	
	2102	2400	HIRA								
			PALE	2129.0	2129.0	III		2	27	54	
			SGMR	2129.0	2129.0	III		1	30	70	
29	0000	1006	HIRA								
	0415	1751	ONDR								
	0605	1200	IZMI								
	1921	2400	HIRA								
30			LEAR	0000.0	0001.0	III		1	55	65	
			LEAR	0130.0	0131.0	III		1	30	45	
	0000	1006	HIRA	0131.2	0131.9	III	G	1	25X	260	
			LEAR	0315.0	0318.0	III		2	30	50	
			PALE	0315.0	0318.0	III		1	25	55	
			HIRA	0316.1	0319.5	III	G	1	25X	260	
	0415	1753	ONDR								
	0600	1200	IZMI								
	1921	2400	HIRA								

Event Remarks:
- B = Single burst
- C = Underlyling continuum (particularly with Type I)
- DC = Drifting chains
- DP = Drifting pairs
- FN = Fundamental emission (Type II)
- FS = Fine structures (Type IV) (includes fiber, pulsations, zebra)
- G = Small group of bursts (<10)
- GG = Large group of bursts (>10)
- H = Herringbone
- HARM = Harmonic
- N = Intermittent activity in this period
- MOV = Moving (Type IV)
- MWB = Meter wave burst
- RS = Reverse slope burst
- S = Storm in the sense of intermittent but apparently connected actively
- SH = Secondary harmonic emission
- STA = Stationary (Type IV)
- U = U-shaped burst of Type III
- UE = Uncertain emission (Type II)
- W = Weak

Frequency qualifiers:
- X = Extends beyond instrument range
- U = Uncertain frequency

Remarks:
- SWF = Associated short wave fade observed
- FLA = Associated flare observed (class optional)
- ESS = Estimated shock speed in km/s (Type II)

Stations Reporting: CULG = Culgoora, HIRA = Hiraiso, IZMI = Izmiran, LEAR = Learmonth, ONDR = Ondrejov, PALE = Palehua, POTS = Potsdam, SGMR = Sagamore Hill, SVTO = San Vito

SOLAR RADIO NOISE STORM AT 164 MHZ
FROM NANÇAY RADIOHELIOGRAPH
JUNE 1997

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/97	-0.61	-0.48	1	8H42 E	15H12 D
02/06/97	-0.40	-0.40	2	8H03 E	15H33 D
03/06/97	-0.30	-0.62	1	8H09 E	15H33 D
03/06/97	+0.08	-0.54	1	8H09 E	15H33 D
04/06/97	+0.05	-0.54	1	8H09 E	15H33 D
05/06/97	+0.51	-0.54	2	8H02 E	15H33 D
06/06/97	+0.67	-0.54	2	8H03 E	15H33 D
07/06/97	+0.87	-0.54	1	8H03 E	12H30
08/06/97	+1.03	-0.43	1	8H14 E	15H09 D
27/06/97	+0.38	+0.02	1	8H19 E	15H39 D

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANÇAY RADIOHELIOGRAPH
JUNE 1997

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/97	-0.54	-0.40	1	8H42 E	10H00
02/06/97	-0.45	-0.40	1	8H03 E	15H33 D
02/06/97	-0.16	-0.56	1	8H03 E	15H33 D
03/06/97	-0.19	-0.54	1	8H09 E	15H33 D
03/06/97	+0.06	-0.54	1	8H09 E	15H33 D
04/06/97	+0.01	-0.54	1	8H09 E	15H33 D
04/06/97	+0.26	-0.46	1	8H09 E	15H33 D
05/06/97	+0.48	-0.54	1	8H02 E	15H33 D
06/06/97	+0.43	-0.54	1	8H03 E	15H33 D
06/06/97	+0.63	-0.54	1	8H03 E	15H33 D
07/06/97	+0.84	-0.54	1	8H03 E	15H33 D
08/06/97	+0.95	-0.46	1	8H14 E	15H09 D
27/06/97	+0.54	+0.26	1	8H19 E	15H39 D

24 /06/97 :NO DATA
25-26 /06/97 FAILURE
OTHERS DAYS: NO DETECTABLE NOISE STORM

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[1] POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W QUADRANT

[2] IMP1: FLUX< 5 SFU IMP2: 5< FLUX < 20 SFU IMP3: 20< FLUX <100 SFU
IMP4: 100< FLUX <300 SFU IMP5> 300 SFU

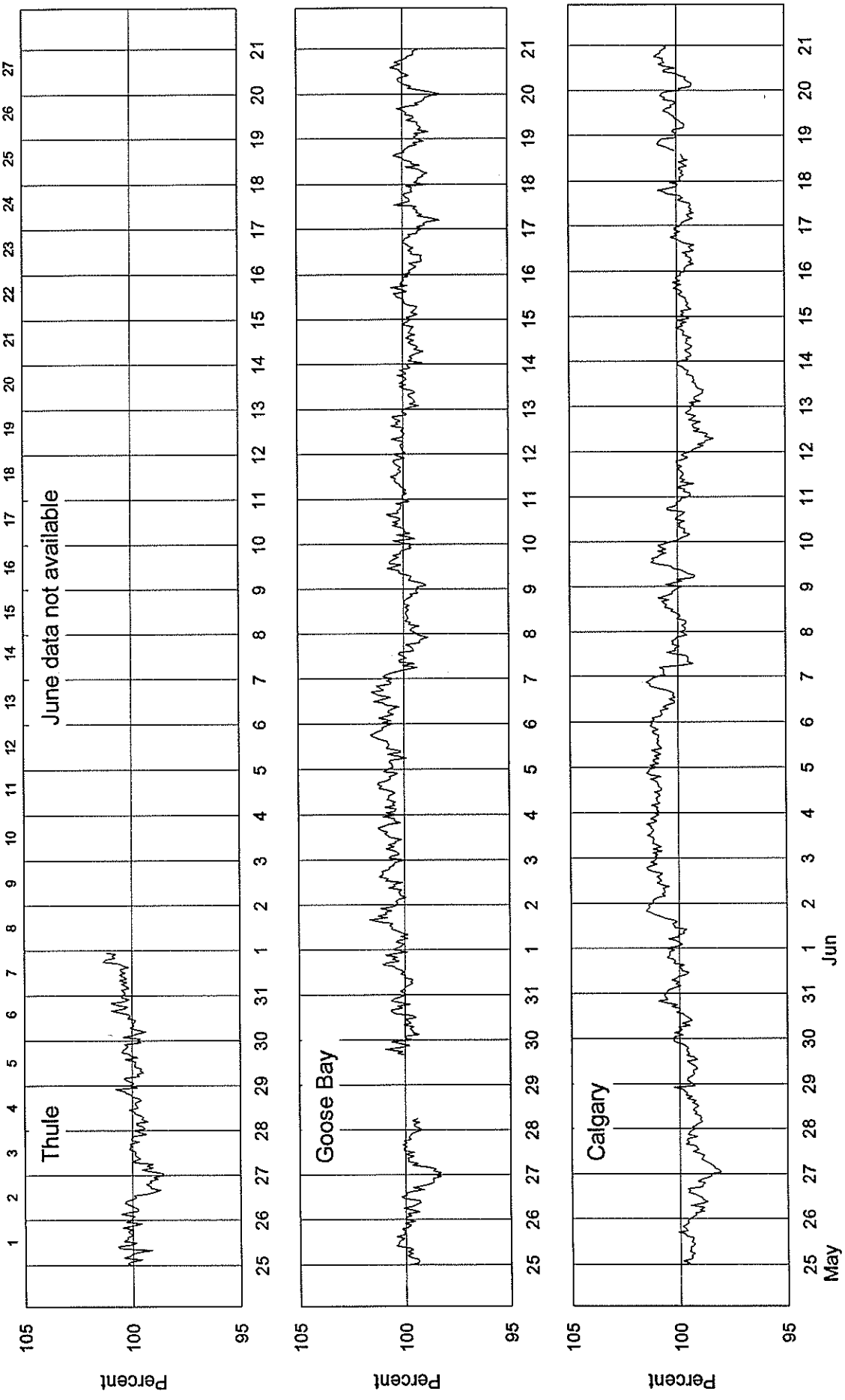
[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANÇAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

COSMIC RAY INDICES
(Neutron Monitor)
JUNE 1997

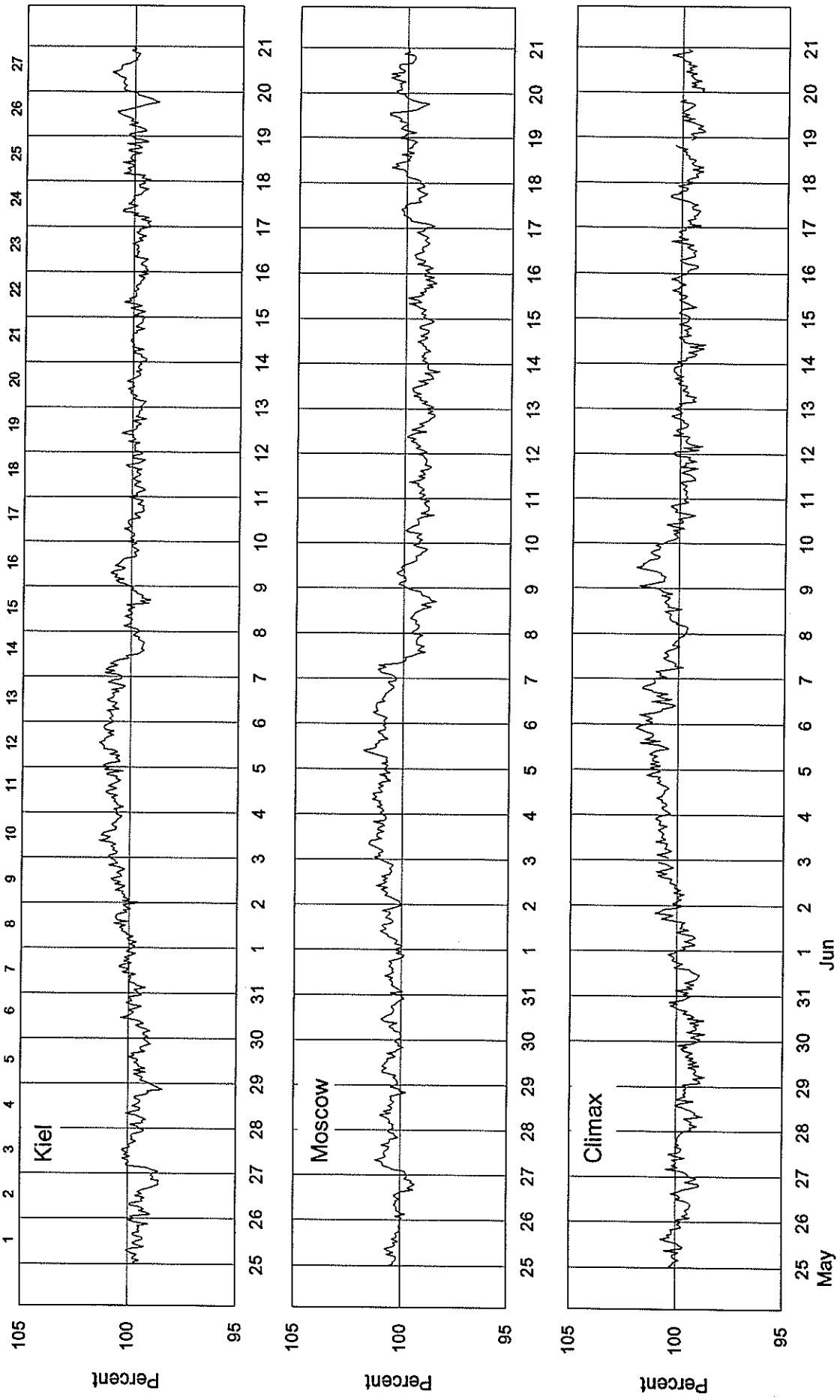
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	7461.6	4014.8	6343.0	9391.7	4278.9	1999.8	3595.8
2	at time of	7459.2	4034.8	6358.1	9400.4	4296.5	1998.6	3600.9
3	publication	7465.3	4041.5	6382.8	9445.8	4313.0	2005.1	3608.7
4	---	7472.1	4037.7	6378.1	9436.4	4316.8	2001.0	3597.7
5	---	7477.5	4037.0	6393.1	9439.9	4336.5	1996.5	3587.6
6	---	7485.9	4026.3	6380.7	9425.7	4330.5	1987.6	3595.9
7	---	7411.2	4000.3	6339.6	9335.6	4301.5	1986.1	3597.0
8	---	7398.2	4001.7	6321.5	9273.0	4296.7	1989.1	3591.3
9	---	7416.3	4010.8	6350.5	9319.1	4336.9	1993.4	3595.1
10	---	7429.5	3992.7	6322.7	9272.5	4288.5	1984.9	3571.0
11	---	7433.5	3986.0	6316.7	9265.7	4270.6	1976.1	3562.1
12	---	7429.7	3959.7	6322.0	9272.9	4277.8	1967.1	3573.9
13	---	7403.9	3968.2	6321.2	9260.2	4283.4	1959.0	3574.5
14	---	7387.7	3980.3	6318.3	9258.5	4269.9	1956.5	3579.6
15	---	7409.0	3987.0	6319.5	9266.7	4281.4	1953.9	3589.1
16	---	7387.1	3981.8	6312.3	9268.2	4273.2	1942.0	3591.1
17	---	7375.9	3987.5	6317.9	9301.7	4271.4	1941.9	3593.0
18	---	7382.2	3996.7 (23)	6329.7	9337.7	4266.8	1945.3	3585.1
19	---	7373.4	4003.8	6326.1	9344.0	4266.9	1951.6	3575.0
20	---	7402.9	4004.5	6355.2	9362.5	4268.2	1946.8	3567.1
21	---	7413.0	4014.5	6352.4	9349.9	4270.4 (21)	1944.1	3578.1
22	---	7408.5	3978.8	6351.3	9325.3	4269.6 (14)	1937.0	3575.8
23	---	7374.7	3997.0	6325.6	9281.2	4263.0 (22)	1932.1	3568.2
24	---	7376.6	3971.7	6307.4	9259.0	4249.5	1925.6	3562.6
25	---	7381.9	3964.8	6300.8	9253.6	4244.3	1927.1	3560.7
26	---	7376.6	3979.0	6319.5	9253.4	4243.3	1928.5	3554.2
27	---	7381.0	3986.7	6323.6	9261.6	4245.9	1930.7	3565.5
28	---	7383.6	3989.0	6317.3	9264.3	4256.4	1930.0	3573.0
29	---	7388.7	3996.2	6311.2	9289.5	4273.3	1931.2	3580.1
30	---	7409.5	3997.5	6348.3	9324.7	4283.8	1932.3	3583.8
Mean	---	7411.9	3997.6	6335.5	9318.0	4281.5	1960.0	3547.6

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, and for Haleakala, whenever the sum of all three sections falls below 60 hours.

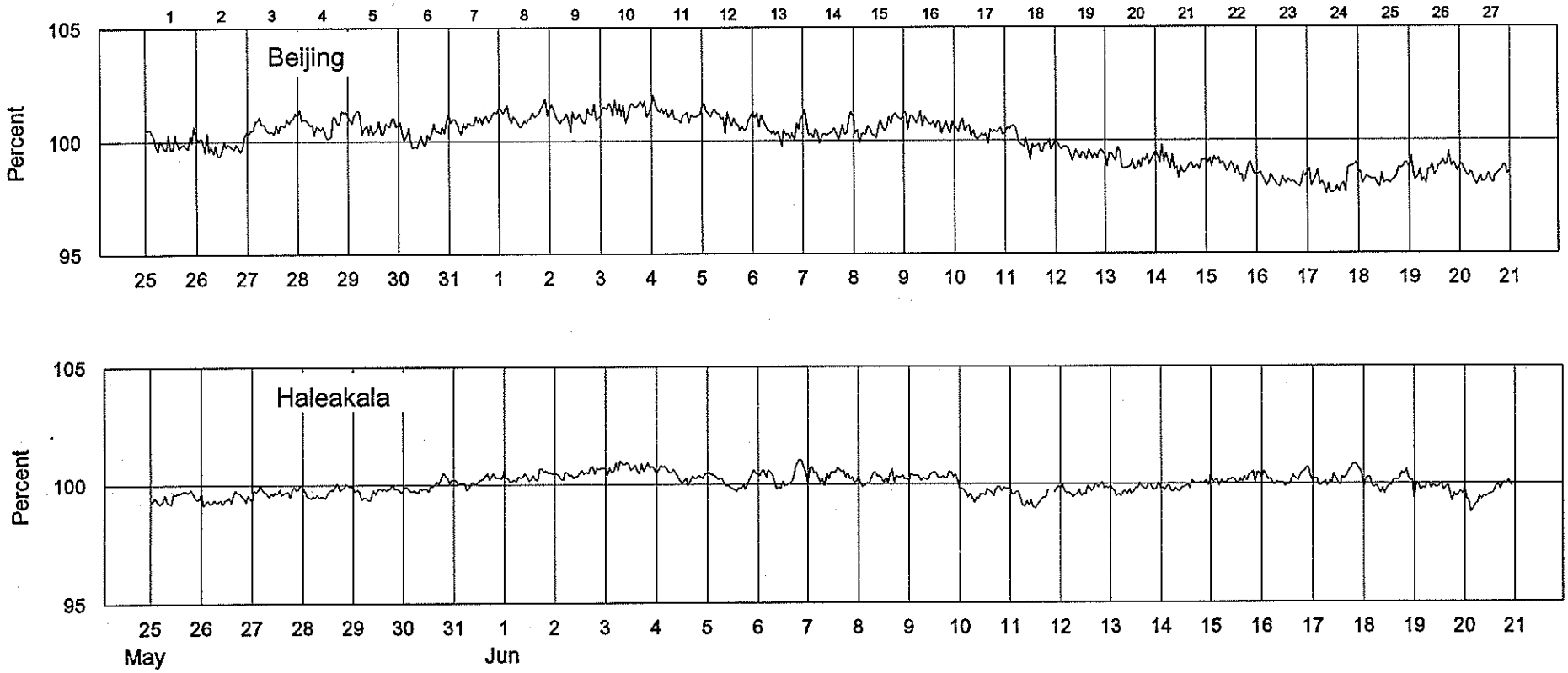
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2237 - Beginning 25 May 97



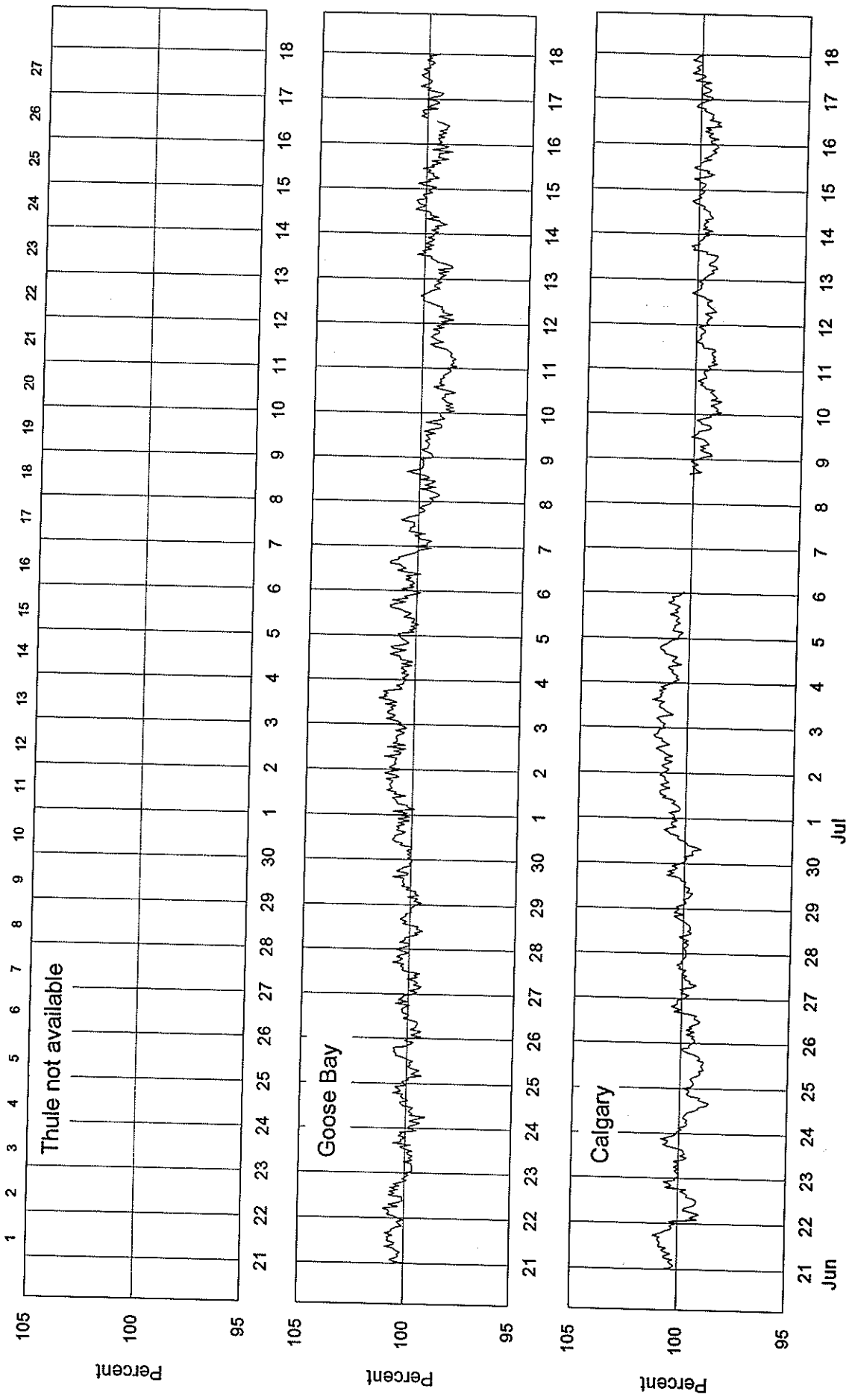
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2237 - Beginning 25 May 97



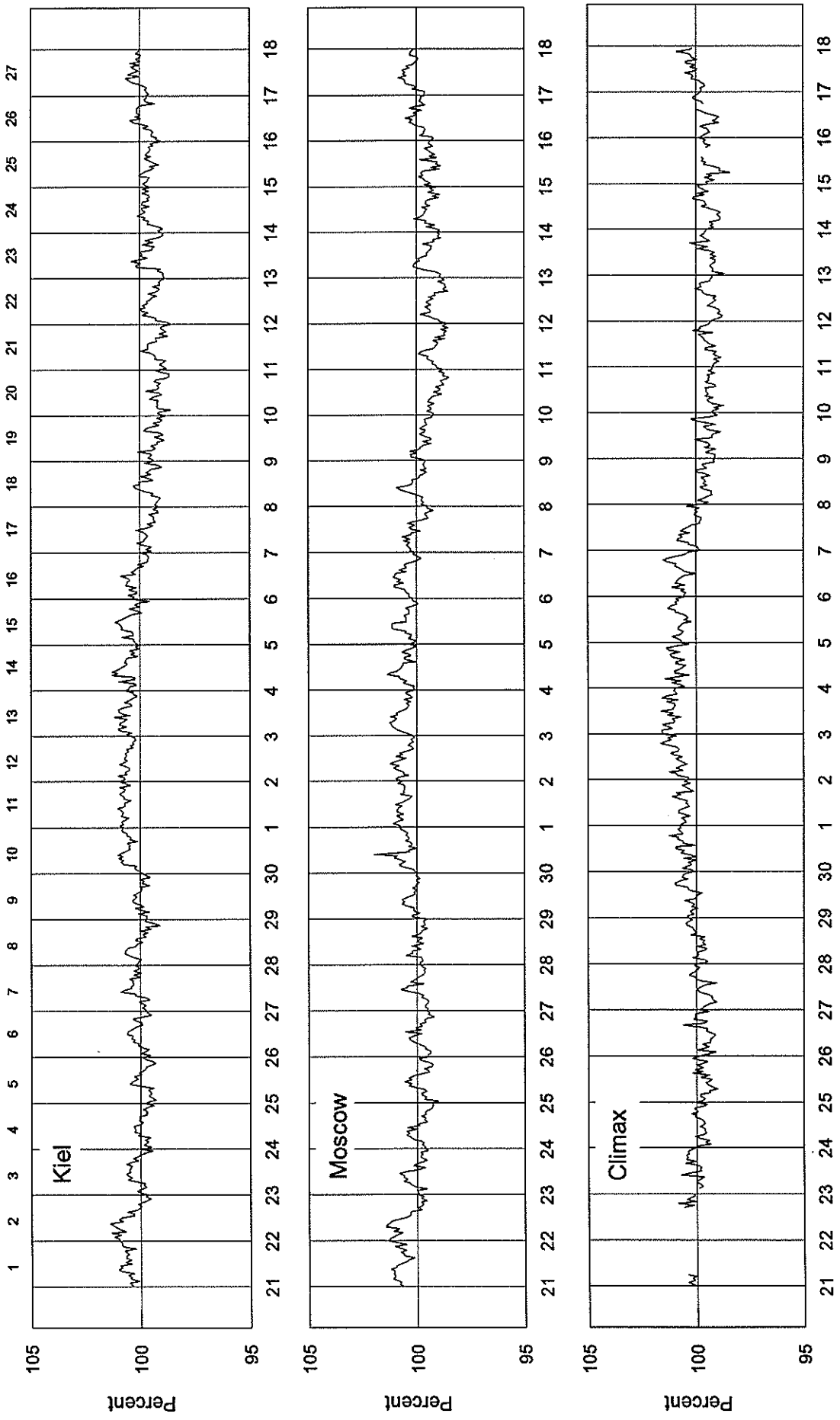
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2237 - Beginning 25 May 97



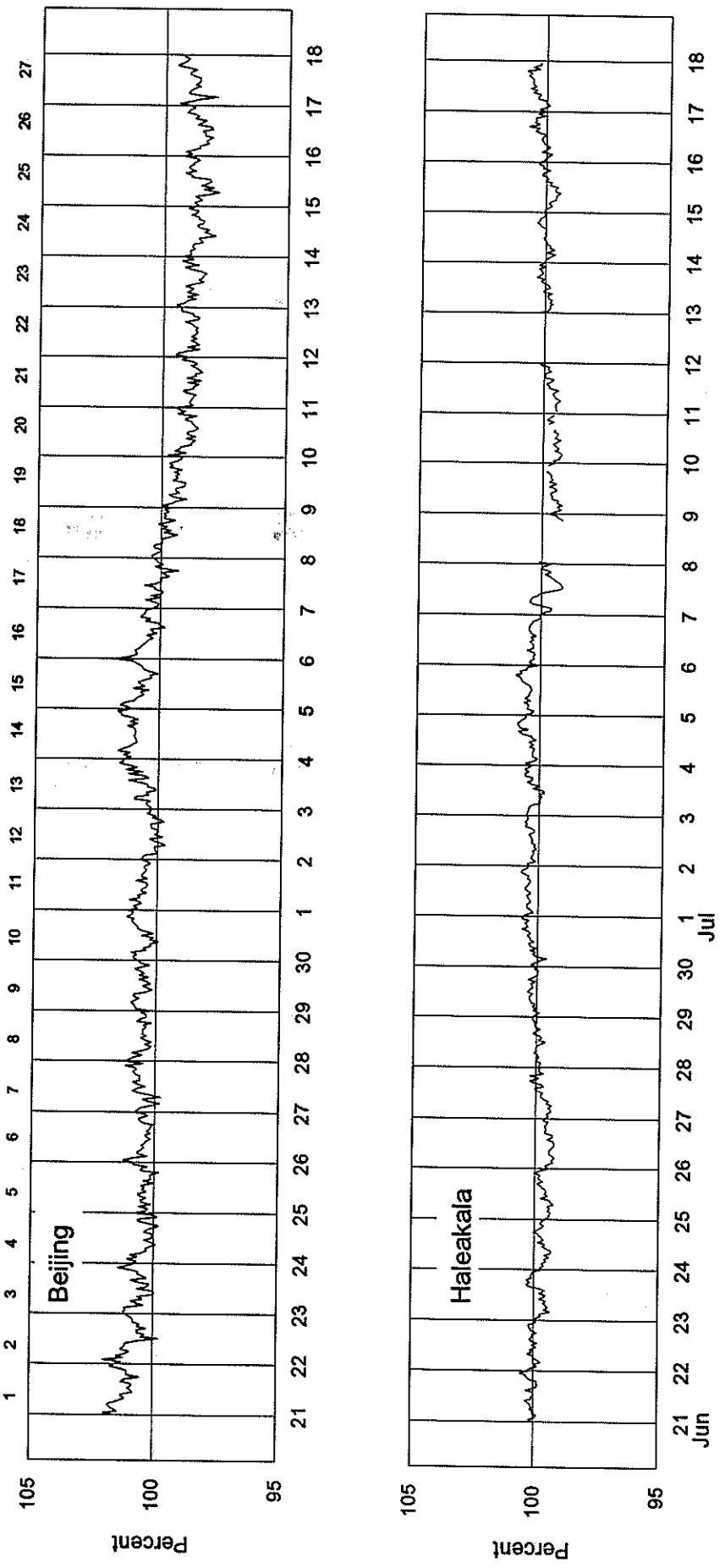
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2238 - Beginning 21 Jun 97



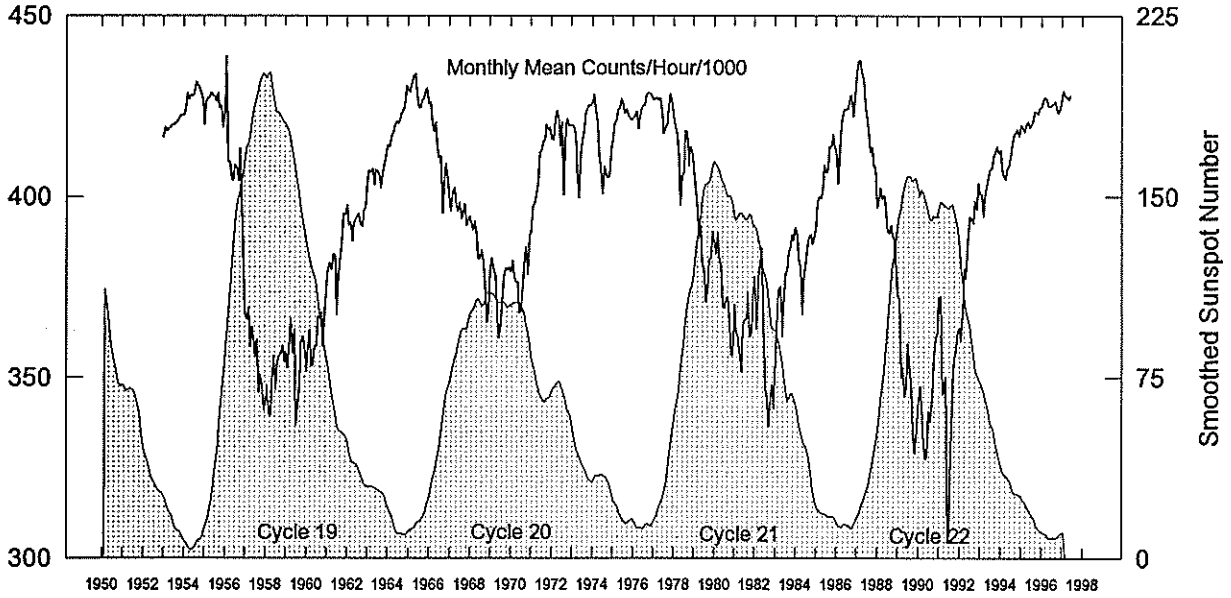
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2238 - Beginning 21 Jun 97



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2238 - Beginning 21 Jun 97



Climax Neutron Monitor Pressure-Corrected Values
Jan 1953 - Jun 1997



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1953	4165	4193	4182	4188	4190	4200	4197	4205	4208	4216	4225	4226	4200
1954	4225	4247	4285	4269	4280	4277	4284	4318	4308	4303	4286	4269	4279
1955	4200	4267	4272	4273	4287	4278	4279	4263	4286	4245	4252	4193	4258
1956	4234	4388	4097	4097	4049	4045	4088	4083	4044	4134	3980	3799	4087
1957	3677	3660	3695	3585	3640	3603	3557	3606	3458	3509	3484	3410	3574
1958	3435	3479	3400	3396	3490	3560	3467	3537	3561	3564	3589	3542	3502
1959	3573	3526	3606	3664	3567	3633	3367	3420	3484	3597	3615	3587	3553
1960	3516	3573	3631	3532	3534	3589	3587	3670	3670	3682	3586	3681	3604
1961	3761	3801	3819	3800	3843	3838	3675	3784	3834	3870	3955	3950	3828
1962	3977	3922	3931	3878	3927	3940	3950	3954	3924	3919	3963	3971	3938
1963	4049	4073	4065	4077	4033	4075	4072	4060	4024	4066	4094	4111	4067
1964	4144	4139	4168	4181	4198	4208	4202	4213	4232	4240	4254	4307	4207
1965	4294	4290	4314	4335	4340	4288	4247	4246	4267	4271	4294	4300	4291
1966	4258	4262	4211	4180	4207	4146	4108	4112	3956	4055	4091	4053	4137
1967	3991	3960	4014	4025	3974	3960	3985	3939	3955	3980	3922	3933	3970
1968	3946	3925	3909	3932	3895	3830	3830	3853	3817	3761	3652	3685	3836
1969	3801	3831	3798	3782	3656	3609	3652	3730	3781	3803	3798	3807	3754
1970	3792	3824	3781	3765	3765	3679	3684	3755	3832	3862	3786	3895	3785
1971	3898	3975	3981	4003	4032	4124	4124	4152	4156	4200	4184	4192	4085
1972	4162	4157	4209	4237	4215	4141	4207	4005	4198	4214	4198	4198	4178
1973	4200	4193	4173	4075	3997	4119	4150	4180	4235	4240	4255	4253	4173
1974	4261	4283	4237	4207	4121	4077	4009	4083	4061	4054	4058	4140	4133
1975	4155	4206	4210	4239	4244	4271	4262	4231	4243	4231	4218	4213	4227
1976	4216	4223	4236	4188	4218	4244	4254	4253	4283	4287	4285	4280	4247
1977	4268	4272	4274	4267	4272	4231	4175	4193	4197	4245	4284	4260	4245
1978	4213	4198	4173	4107	3976	4058	4068	4183	4180	4085	4139	4128	4126
1979	4071	4034	3983	3888	3920	3814	3806	3710	3745	3829	3829	3905	3878
1980	3873	3842	3900	3819	3817	3697	3692	3719	3723	3647	3564	3564	3738
1981	3703	3623	3616	3561	3518	3643	3663	3662	3732	3613	3624	3726	3640
1982	3780	3634	3778	3819	3860	3650	3463	3456	3364	3444	3482	3413	3595
1983	3550	3643	3744	3753	3613	3700	3789	3798	3845	3860	3897	3881	3756
1984	3915	3896	3830	3806	3677	3773	3813	3865	3891	3897	3871	3890	3844
1985	3919	3985	4002	3995	4026	4088	4066	4075	4139	4139	4174	4141	4062
1986	4128	4036	4098	4199	4232	4242	4243	4244	4277	4280	4221	4277	4206
1987	4331	4376	4378	4346	4323	4254	4216	4170	4123	4139	4080	4084	4235
1988	3970	3997	4024	3995	4005	3981	3906	3899	3923	3893	3886	3798	3940
1989	3731	3717	3500	3527	3446	3478	3594	3535	3467	3347	3291	3349	3499
1990	3432	3476	3424	3317	3275	3283	3406	3377	3450	3540	3608	3620	3434
1991	3719	3725	3451	3470	3501	3041	3062	3293	3482	3550	3570	3628	3458
1992	3639	3600	3684	3803	3776	3876	3945	3939	3928	3989	3966	4036	3848
1993	4011	4007	3947	4003	4028	4061	4075	4076	4113	4122	4138	4122	4059
1994	4130	4079	4058	4048	4076	4085	4117	4140	4173	4179	4187	4168	4120
1995	4198	4194	4180	4199	4208	4193	4198	4209	4235	4236	4228	4246	4210
1996	4249	4266	4276	4269	4252	4250	4254	4256	4264	4243	4231	4242	4254
1997	4273	4293	4278	4274	4268	4281							4278

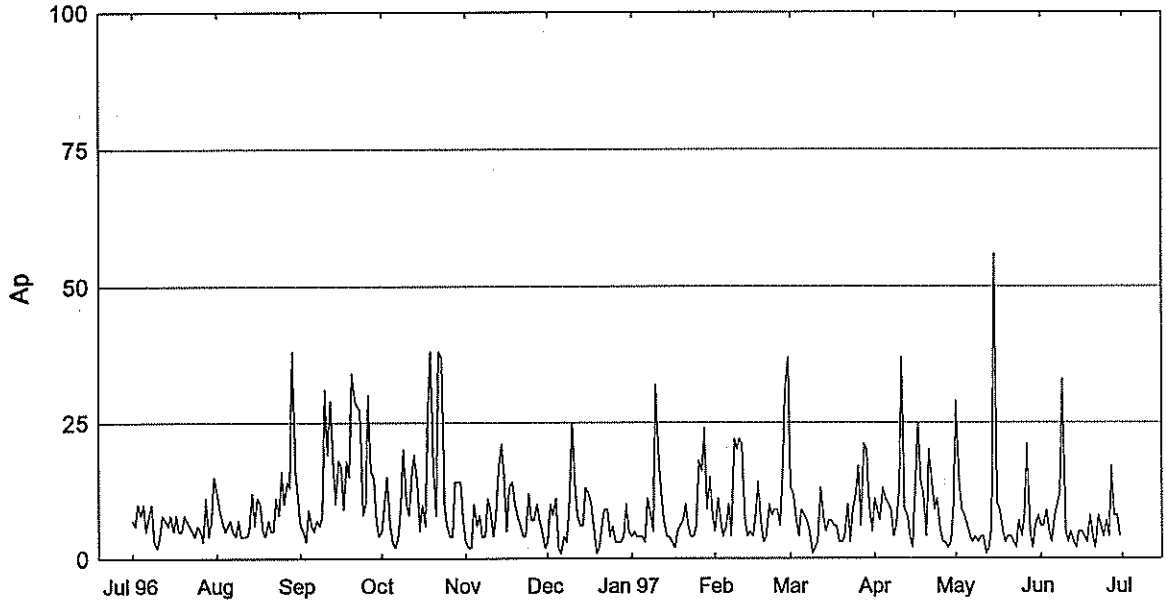
Multiply table entries by 100 to obtain hourly counting rate. Climax, Colorado: N39, W106, Alt=3400 m, Cutoff Rigidity=2.99GV (1980).
NOTE: Data may differ from previously reported values due to subsequent cleanup of data and slight changes in the averaging algorithm. See http://astro.uchicago.edu/home/web/pyle/neutron.html for latest changes. Sunspot numbers are preliminary after Dec 96.

Geomagnetic Activity Indices
June 1997

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		1+	1	1+	1+	1+	2	2+	2+	13	6	0.3	2-	1+	2-	1+	1o	2-	2+	2+	12	14	13	10	17 C
2		1+	1-	1-	1	1+	1+	2+	3-	11+	6	0.3	1+	1-	1-	1o	1+	1+	2-	3-	10	15	8	7	16 C
3	D5*	2+	3-	3	1+	2-	2-	2	2+	17	9	0.5	2+	3-	3+	2-	2-	2-	2o	2+	18	23	17	20	20
4		2	1+	1-	1	1	1+	2	1	10+	5	0.2	2o	2-	1+	1+	1o	1+	2o	1o	10	10	10	9	11 CC
5	Q5	1	1	1-	1-	0+	1-	1-	1	6	3	0.1	1o	1+	0+	0+	0o	0+	1o	1o	5	6	7	7	6 CC
6		3	1+	2-	2	2	1+	1+	3-	15+	8	0.4	3-	2o	2+	2+	2-	1+	1o	3-	16	18	12	15	15
7	D4*	3	3+	2-	2	3+	2+	1+	2-	19-	10	0.6	3o	3+	2o	3-	3o	2+	2-	2-	22	27	20	25	21
8	D3*	0+	1+	2	3-	2+	4-	3-	4	19	12	0.7	0+	1+	3-	3-	2+	3+	3-	3+	22	27	27	14	40
9	D1	5+	6-	5	5-	4-	2+	3-	3-	32	33	1.3	5-	5o	5-	5-	3+	3-	2+	2+	53	52	51	66	36
10		2-	2-	2-	1	1-	2-	2-	1-	11-	5	0.2	2-	2o	2o	2-	0+	2-	2-	1-	11	11	9	10	10 C
11	Q6	2-	1-	1-	0+	0+	1-	0+	1+	6	3	0.1	2-	1o	0+	1o	1o	1o	0+	1+	7	9	5	8	6 CC
12		2	1	1+	1+	2-	1	1	1-	10	5	0.2	2o	1o	1+	2o	2-	1+	1-	1-	9	10	11	11	10 CC
13	Q3	1-	0+	0+	0+	1	1-	0+	1-	4+	3	0.0	1-	1-	0+	1-	1-	1-	0o	1o	4	5	6	5	6 CC
14	Q2	0+	0+	0+	0+	1-	0+	1-	1-	4-	2	0.0	0+	0+	0+	0+	1-	0o	1-	0o	3	4	4	4	4 CC
15		2	2-	1+	1	1+	1+	1+	1	11	5	0.2	2+	2-	1+	1+	1+	1o	1+	1o	10	11	7	9	9 CC
16		1-	1+	1-	2	2	2-	2	1	11+	5	0.2	1o	1+	1o	2-	2o	2-	2-	1o	10	14	8	10	12 CC
17	Q8	0+	1+	1+	1	1	1	1-	0+	7	4	0.1	1-	2-	1+	1o	1-	1-	0+	0+	6	8	5	7	6 CC
18	Q4	1-	1	1-	0+	1+	1-	0+	0+	5+	3	0.1	1-	1o	1o	0+	1o	0+	0+	0+	4	7	3	4	6 CK
19		2	2-	3	2	2-	2	2-	3-	17-	8	0.4	2o	2o	3o	2+	2-	2-	2-	3+	19	20	16	20	17 K
20	Q9	1	1-	1+	1	1+	1+	0+	1-	8-	4	0.1	1+	1o	1+	1+	2-	1+	1-	1o	8	8	8	6	11 CC
21	Q1	0	0	0	1-	0+	0+	1-	1-	3-	2	0.0	0o	0o	0o	1-	0+	0+	0+	1-	2	4	3	3	4 CC
22		1-	3	2+	2	2+	2	2	1+	16-	8	0.4	1-	3o	3-	3-	2+	2o	2o	1+	17	18	15	17	15 K
23		1	1-	1-	1+	2+	2-	1+	2+	11+	6	0.2	1+	1-	1o	2-	2+	1+	2-	2+	11	14	11	7	17 CC
24	Q7	1-	1	1-	1+	1-	1	1	1	7+	4	0.1	1-	1o	1-	1+	1o	1o	1+	1o	7	10	5	7	9 CC
25		2-	2-	2-	2-	2	1+	2+	3-	15	7	0.4	1+	2o	2-	2o	2+	1+	2+	3-	15	16	14	12	18 C
26		2-	1+	1	0+	0+	0+	1+	2	8+	4	0.1	2-	2-	1+	1-	1-	0+	1o	2-	8	10	6	8	9 C
27	D2*	2-	1	2-	5-	4+	3	4-	2+	22+	17	0.9	2o	2-	2-	4o	4-	3-	3o	3-	27	34	29	25	38
28		2+	3	2-	2-	2-	1	1+	2+	15	8	0.4	3-	3+	2o	2-	2-	1o	2-	2+	16	18	16	20	14
29		3+	3	2-	2-	1	1	1+	2-	15-	8	0.4	3o	3o	3-	3-	1+	1+	1+	2-	18	17	21	24	14
30	Q10	2	1-	0+	0+	1-	1	1+	2-	8	4	0.1	3-	1+	0+	0+	0+	1-	1o	2-	7	8	6	7	8 CC
Mean											7	0.30									12.9	14.9	12.5		13.7

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	1+	2-	2o	2-	1+	2+	2+	3-	14	2o	1+	1+	1+	1o	1o	2+	2-	10	79.6	20	33	24	
2	1+	1-	1o	1o	2-	2-	2o	3o	12	1+	0+	1-	1-	1o	1o	1+	2+	8	79.1	22	27	23	
3	2+	3-	3o	2-	2o	2o	2o	2+	19	2+	2+	3+	2-	1o	1+	2o	2+	17	77.4	15	22	22	
4	2-	2-	1o	1+	1+	2-	2o	1+	10	2+	2o	1+	1+	1-	1+	2-	1-	10	76.1	11	16	20	
5	1-	1o	0o	1-	0+	0+	1o	1+	5	1o	2-	1-	0+	0o	0o	1-	1o	5	76.1	11	16	20	
6	3-	2o	3-	3-	2o	2-	1+	2+	17	3o	2-	2+	2-	1+	1o	1o	3-	14	76.4	12	18	21	
7	3o	3o	2+	3-	3o	3-	2-	2o	22	3o	3+	2o	3-	3+	2-	2-	1+	22	76.9	12	23	21	
8	0+	2-	3-	3-	3-	3+	3o	3+	23	0+	1o	2+	3-	2+	4-	3-	3+	21	75.4	19	21	19	
9	4o	5-	4+	4o	4-	3-	3-	3-	46	5o	5+	5-	5o	3+	3-	2o	2+	59	75.3	16	17	19	
10	2-	2o	2-	2-	1-	2-	2o	1o	11	2o	2o	2+	1+	0o	1+	2-	0+	10	74.2	8	11	18	
11	2-	1-	1-	1+	1+	1o	1-	1+	7	2-	1+	0o	0+	0+	1o	0o	1+	6	73.0	8	10	17	
12	2o	1+	1+	2+	2+	2-	1+	1o	12	2-	0+	1+	2-	1+	1o	0+	0o	6	71.8	16	20	16	
13	1-	1-	0+	1-	1+	1-	0+	1o	4	1-	1-	0+	1-	0+	1-	0o	1-	3	72.3	18	24	16	
14	0o	0+	0+	1-	1o	0+	1o	0+	4	0+	0o	0o	0+	1-	0o	0+	0o	2	72.9	19	22	17	
15	2-	1+	2-	2-	2-	1+	2-	1+	11	3-	2o	1+	1-	1-	1-	1-	1-	9	73.0	19	23	17	
16	1+	2-	1+	2-	2+	2o	2+	1+	13	1-	1+	1-	2-	2-	1o	1o	1o	8	74.4	20	25	18	
17	1-	2-	2-	1o	1o	1o	1-	1-	8	0+	1+	1o	1-	0+	0+	0o	0o	4	71.8	13	18	16	
18	1+	1+	1+	1-	1+	1-	0+	1-	7	0o	0+	0+	0o	0+	0o	0o	0o	1	73.5	18	21	17	
19	2+	2o	3o	2o	2-	2o	2-	3o	18	1+	2o	3+	2+	2-	1+	2-	4-	19	72.4	10	14	16	
20	1o	1o	1+	2-	2-	2o	1-	1+	9	1+	1o	1+	1o	2-	1o	0+	1-	7	72.5	8	10	16	
21	0+	0o	0+	1-	0+	1-	1-	1o	3	0o	0o	0o	1o	0o	0o	0+	0+	1	69.8	7	3	13	
22	1o	3o	3o	3-	3-	2+	2o	2-	19	0+	3o	2+	2+	2-	2-	2o	1-	14	71.8	12	1	16	
23	1+	1-	1+	2-	3-	2-	2-	3-	13	1-	1-	1-	1+	2o	1+	1+	2-	8	71.3	9	7	15	
24	1-	1+	1-	2-	1+	1+	2-	1+	9	1-	1-	1-	1+	1-	0+	1-	1-	5	72.2	9	15	16	
25	1+	2-	2-	2o	2+	2-	2+	3-	15	1+	2o	2-	2-	2+	1+	2o	3-	14	74.1	19	23	18	
26	2-	2-	1+	0+	1-	1-	2-	2+	9	2o	2-	1o	1o	0+	0o	0+	1+	7	74.2	15	22	18	
27	2o	1+	2-	4+	4o	3o	3o	3-	30	2-	2-	2-	4-	3+	3-	3o	3-	24	74.1	12	14	18	
28	3-	3+	2-	2-	2-	1+	2-	2+	17	2+	3+	2o	2-	1+	1-	1+	2o	15	73.6	8	9	17	
29	3o	3-	2+	2+	1+	1+	2-	2-	17	3o	3o	3-	3o	1o	1o	1+	2-	19	72.6	8	2	16	
30	2o	1o	0+	1-	1o	1+	1o	2o	8	3o	1+	0+	0o	0o	0o	1-	1o	6	72.1	0	0	16	
Mean									13.7									11.8	74.0	13.1	16.2	17.9	

Daily Average Indices Ap
Jul 1996 - Jun 1997

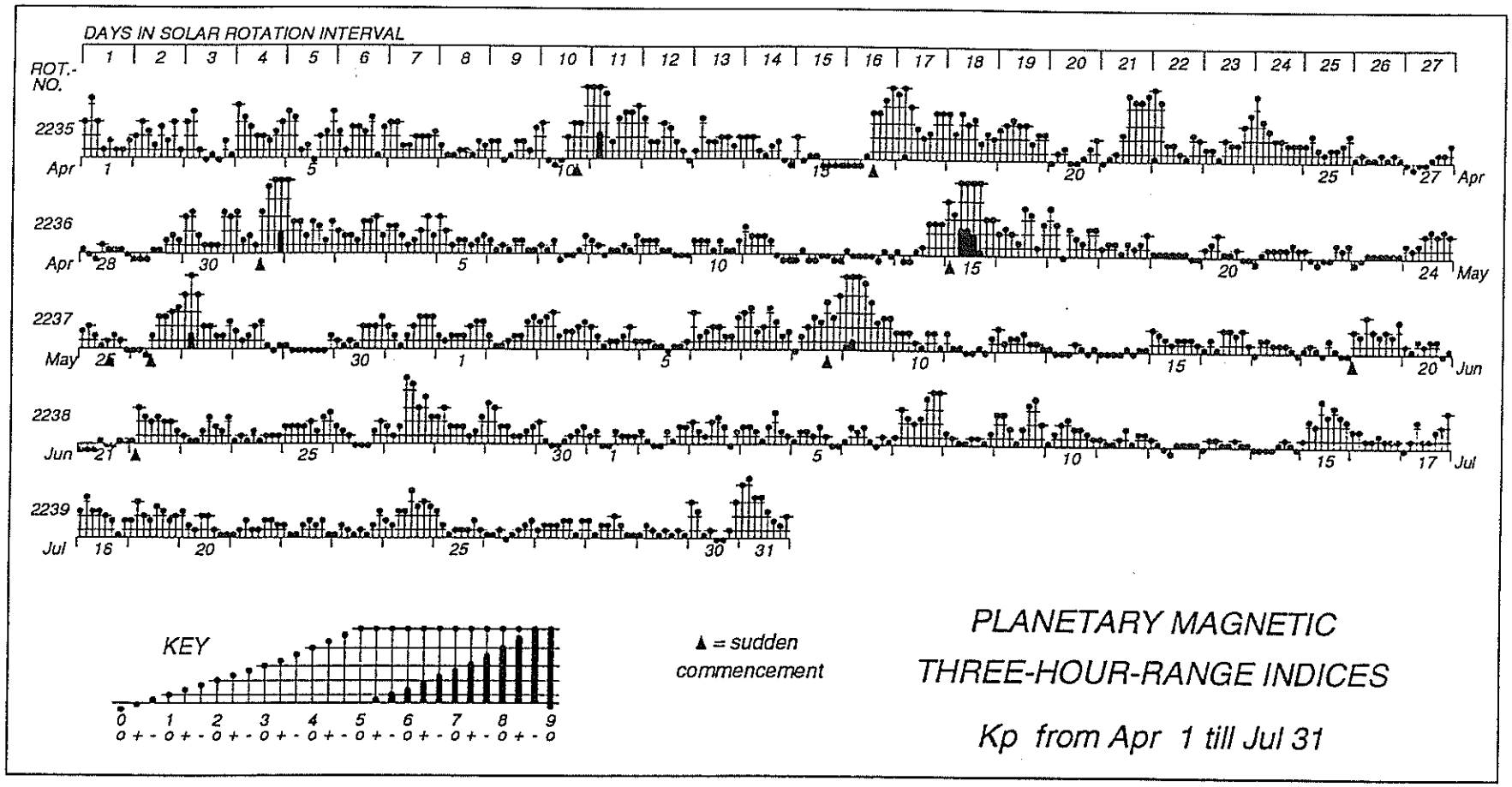


Day	Jul 96	Aug	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun
1	7	12	6	5	3	3	4	5	13	11	29	6
2	6	9	5	10	2	10	5	11	12	9	14	6
3	10	7	3	15	2	8	4	7	7	7	9	9
4	8	5	9	6	10	11	4	4	4	13	8	5
5	10	6	6	3	6	2	4	6	9	11	6	3
6	5	7	5	2	8	1	3	10	8	10	4	8
7	8	5	7	4	4	4	11	4	7	9	3	10
8	10	4	6	10	4	3	8	22	5	4	4	12
9	3	7	8	20	11	9	5	20	1	6	3	33
10	2	4	31	10	9	25	32	22	2	13	4	5
11	4	4	19	8	4	14	18	21	3	37	4	3
12	8	4	29	15	8	8	12	7	13	9	1	5
13	7	5	18	19	16	6	7	4	8	8	2	3
14	6	12	10	14	21	6	4	5	5	4	6	2
15	8	6	18	5	15	13	4	4	7	2	56	5
16	5	11	17	10	5	12	3	8	7	15	10	5
17	8	10	9	6	13	10	2	14	6	25	9	4
18	5	5	18	27	14	6	5	6	6	14	5	3
19	5	4	15	38	10	1	6	3	3	12	3	8
20	8	7	34	16	8	2	7	4	3	4	4	4
21	7	5	29	8	6	6	10	10	4	20	4	2
22	6	5	28	38	4	9	6	8	10	15	3	8
23	5	11	27	37	4	9	4	9	3	9	2	6
24	4	8	8	10	12	4	4	9	9	11	7	4
25	6	16	10	6	7	6	6	6	12	6	4	7
26	5	10	30	4	7	3	18	15	17	3	8	4
27	3	14	16	4	10	3	16	30	6	3	21	17
28	11	13	15	14	7	3	24	37	21	2	5	8
29	4	38	7	14	5	4	9		20	3	2	8
30	7	16	4	14	2	10	15		10	10	6	4
31	15	11		7		5	8		5	5	8	
Mean	7	9	15	13	8	7	9	11	8	10	8	7

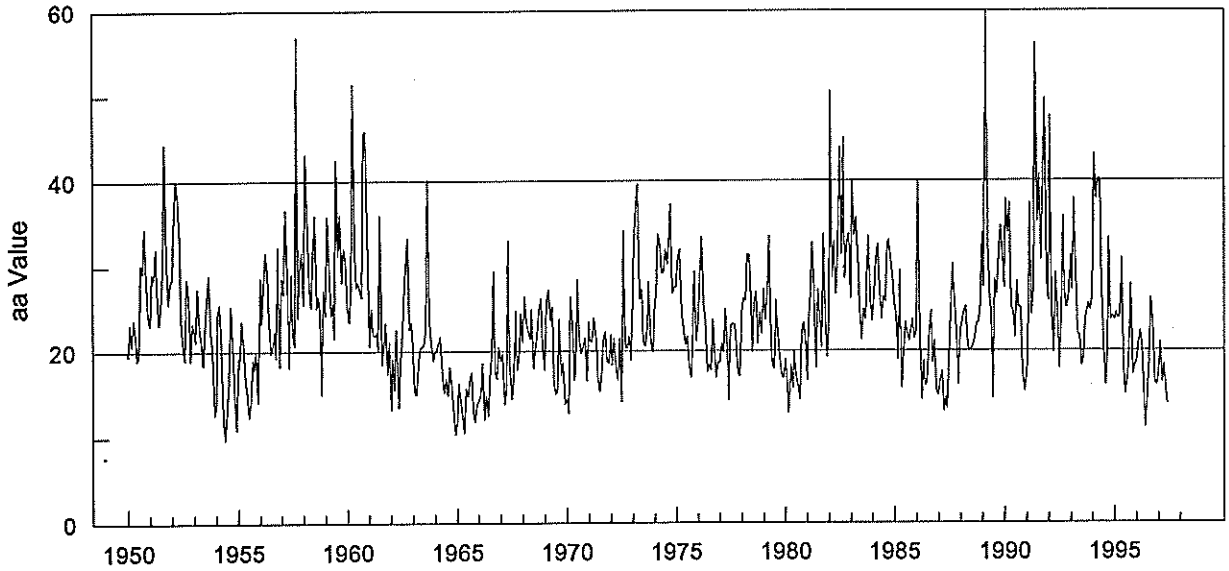
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Gottingen

Kp through June 30, 1997



Monthly Mean aa Index Jan 1950 - Jun 1997

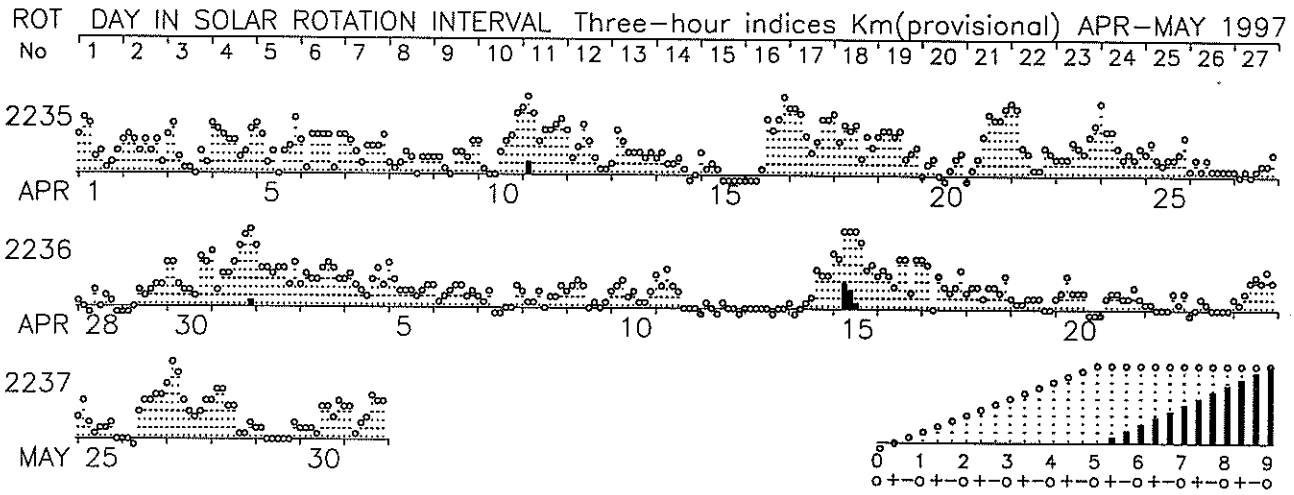


Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	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	18.2	19.2	23.8	24.6	25.5	24.8	25.5
1994	26.5	43.2	37.9	40.2	40.2	27.2	20.6	16.0	20.2	33.3	23.6	24.1	29.4
1995	23.6	24.5	23.8	24.2	30.9	19.1	14.9	17.0	22.2	27.9	17.2	18.2	22.0
1996	18.8	20.8	22.3	20.5	14.0	11.1	14.7	18.8	26.2	23.5	16.3	15.9	18.6
1997	17.4	21.0	16.3	18.4	15.1	13.7							17.0

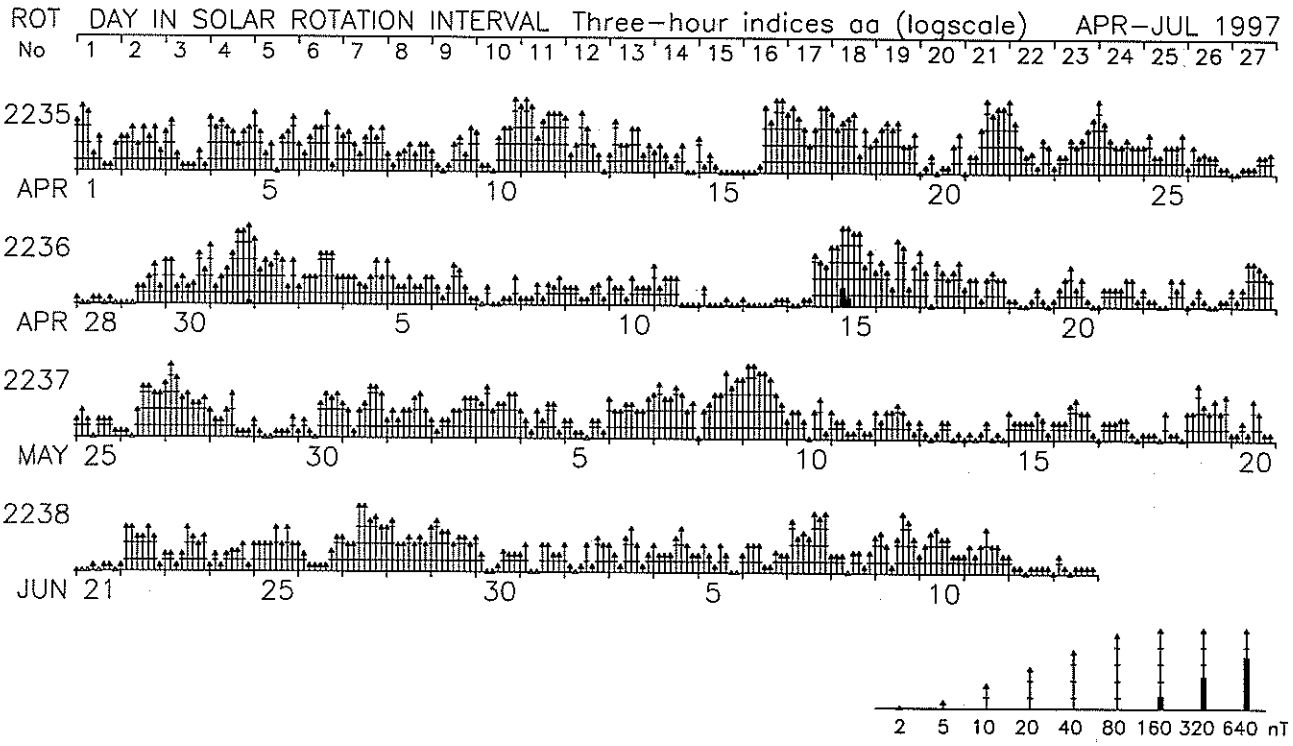
PLANETARY GEOMAGNETIC ACTIVITY

3-HOUR-RANGE INDICES Km AND aa BY 27-DAY SOLAR ROTATION INTERVAL

ISGI PUBLICATION OFFICE - EMail : ISGI.PUBOFF@cetp.ipsl.fr
CETP, 4 Avenue de Neptune, F-94107 Saint Maur des Fosses CEDEX - FRANCE



Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

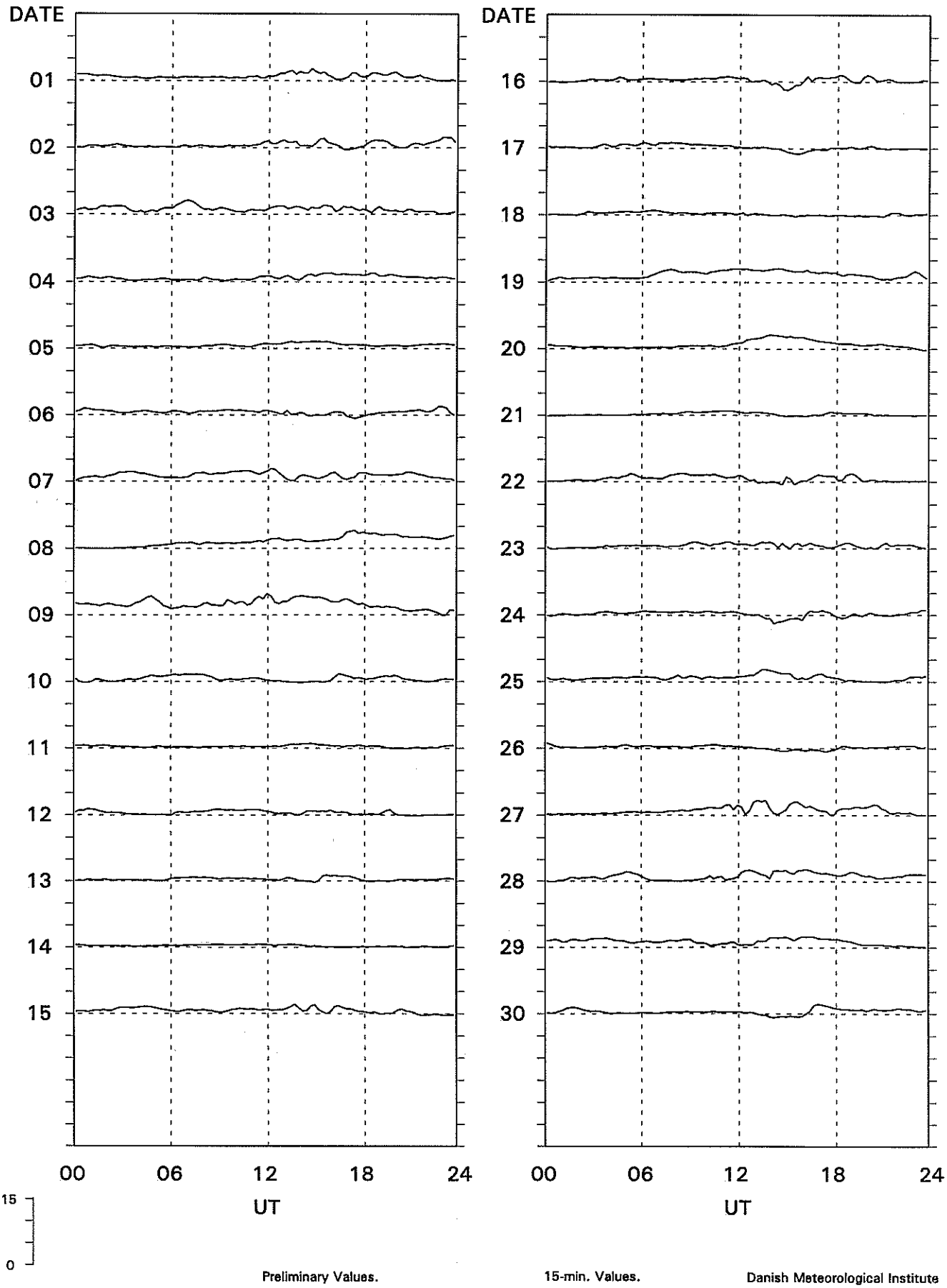


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

PC-INDEX

Thule

June, 1997



Preliminary Values.

15-min. Values.

Danish Meteorological Institute

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

JUNE 1997

Sta	Geomag Lat	Commencement Day	Time (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)
HYB	07.6N	06	0000	..	..	..	..	07(4)	5	5	92	26	07	19
ETT	00.7S	06	0000	..	..	..	..		-	--	129	32	07	22
FRD	49.4N	08	18--	..	..	..	..	09(2,3)	5	17	86	58	10	11
KRC	16.4N	08	1408	..	..	..	..	09(4)	5	8	100	40	10	00
UJJ	13.6N	08	1600	..	..	..	..		-	7	82	17	09	22
NGP	11.3N	08	1600	..	..	..	..		-	7	75	15	09	22
ABG	09.4N	08	1600	..	..	..	..	08(6) 09(1,2,3)	4	7	77	39	09	22
HYB	07.6N	08	0200	..	..	..	..	09(1)	5	6	112	27	09	24
PND	02.0N	08	1600	..	..	..	..		-	6	76	67	09	22
ETT	00.7S	08	0400	..	..	..	..		-	--	141	55	10	11
TRD	01.1S	08	1600	..	..	..	..		-	5	73	71	09	22
AMS	46.8S	08	11--	..	..	..	..	09(2)	5	24	138	62	10	00
CZT	51.5S	08	11--	..	..	..	..	09(2)	6	43	130	60	10	00
PAF	57.2S	08	1102	SC	1.0	- 0.9	- 1.2	08(6) 09(1,2)	5	24	241	93	10	00
DRV	75.2S	08	11--	..	..	..	..	09(5)	5	433	345	583	10	07
HER	33.6S	09	01--	..	..	..	..	09(2)	5	32	79	94	09	14
ETT	00.7S	22	0313	SC	0.1	15	10		-	--	102	29	22	22
HYB	07.6N	26	1800	..	..	..	..	27(4)	6	4	124	20	28	16
ETT	00.7S	26	1800	..	..	..	..		-	--	126	44	28	16
KRC	16.4N	27	0314	..	..	..	..	27(4)	6	5	109	36	28	06
UJJ	13.6N	27	0400	..	..	..	..		-	4	101	32	28	21
NGP	11.3N	27	0400	..	..	..	..		-	4	119	27	28	21
ABG	09.4N	27	0400	..	..	..	..	27(4)	5	4	109	36	28	21
GUA	04.3N	27	0754	..	..	..	..	27(4)	5	--	80	10	27	19
PND	02.0N	27	0400	..	..	..	..		-	4	121	50	28	21
TRD	01.1S	27	0400	..	..	..	..		-	--	125	71	28	21

Stations:

ABG = ALIBAG
AMS = MARTIN DE VIVIES
ANN = ANNAMALAINAGAR
BJI = BEIJING
CAN = CANBERRA
CMO = COLLEGE
CZT = PORT ALFRED
DRV = DUMONT D'URVILLE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KRC = KARACHI
NGP = NAGPUR
PAF = PORT AUX FRANCAIS
PMG = PORT MORESBY
PND = PONDICHERRY
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN

Stations reporting no storms observed: BJI

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

JUNE 1997

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
08	1636	A: DOB	None		
19	0032	B: HRB TEN C: NGK BDV NAG* (0030-0034)			
22	0313	A: TEN C: BDV* CLF NAG* SPT (0312-0316)			

REPORTING OBSERVATORIES (up to the 2nd of August 1997):
SOD DOB NUR WNG NGK DOU BDV CLF HRB NAG GCK MMB EBR COI BJI SPT FRD KAK HTY KNY QUE TEN LNP HYB ETT HER CNB

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, but unmistakable; C means very poor, doubtful; and - means no quality figure given. The * means that the SSC, at least in one component, was preceded by a small reversed impulse. SSCs are given only when five or more stations report the event. SFEs include all reports. If an SFE is confirmed by solar or ionospheric events, the name of the station is identified with a plus sign (+).

*U.S. GOVERNMENT PRINTING OFFICE: 1997-537-001/29004

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."