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JULY 1997 NUMBER 635 - Part I

Solar-Geophysical Data prompt reports

Data for May, June 1997 and Late Data

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NATIONAL GEOPHYSICAL DATA CENTER
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SOLAR-GEOPHYSICAL DATA

Number 635

(Issued in Two Parts)

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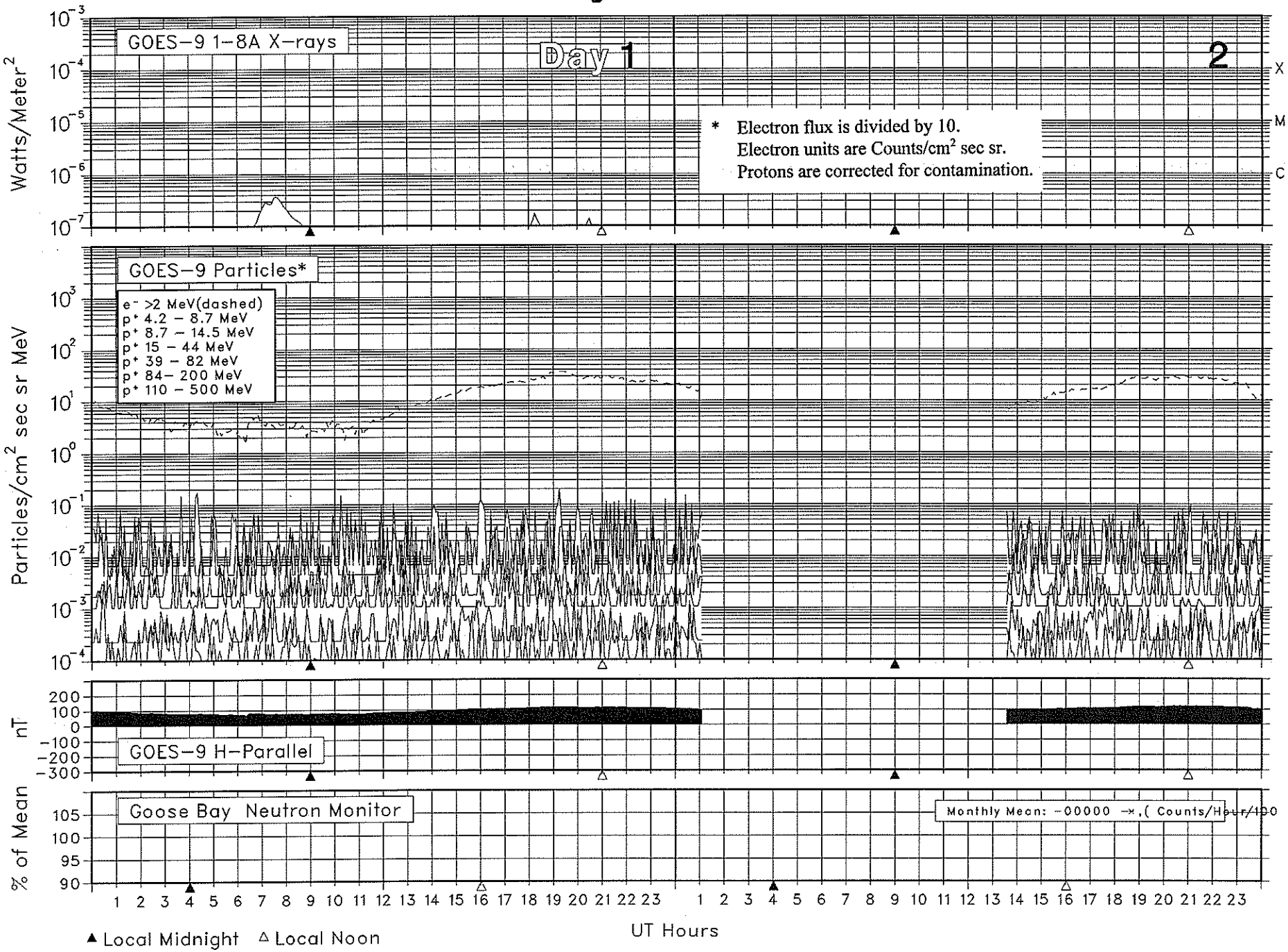
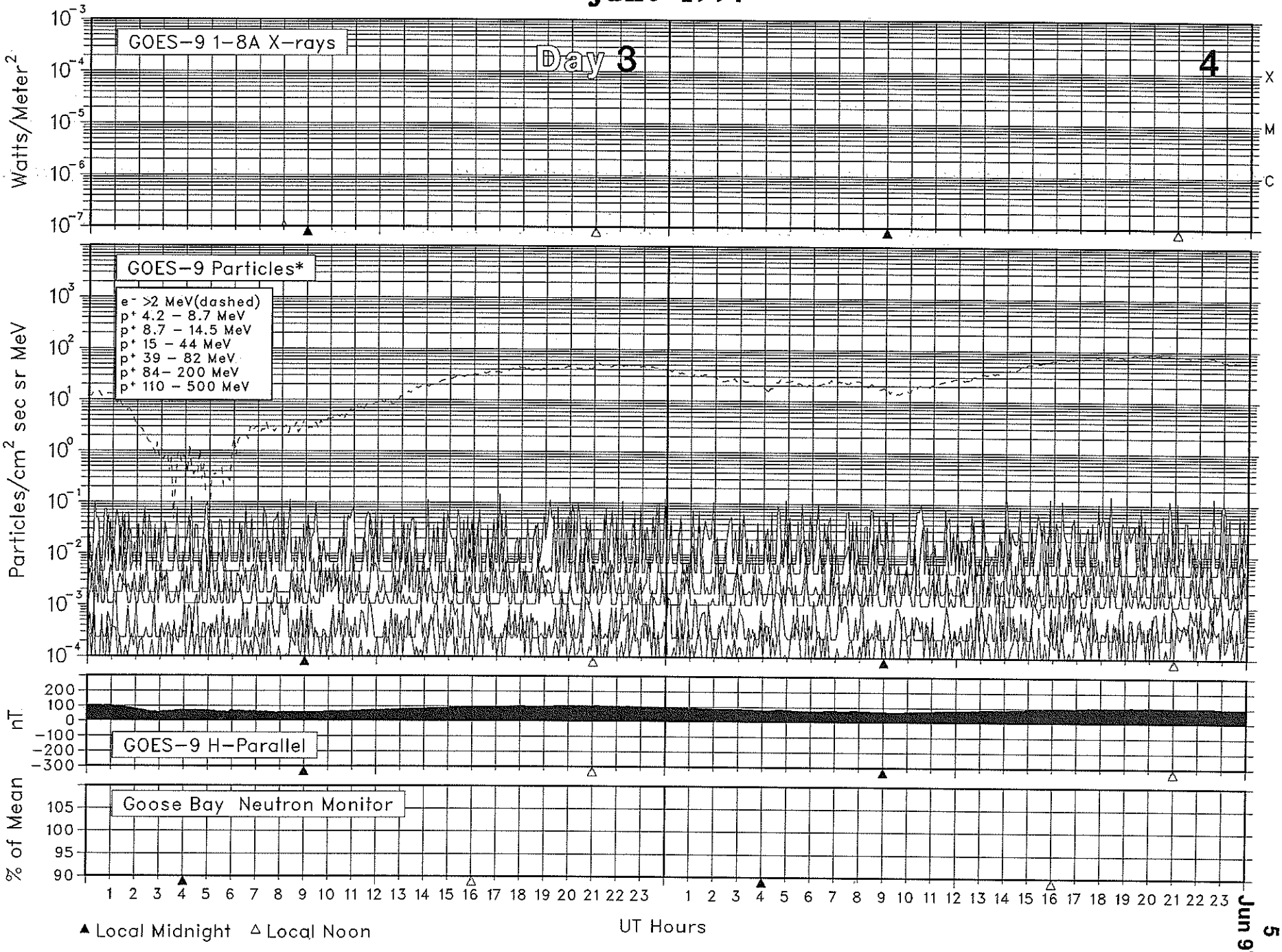


SOLAR-TERRESTRIAL ENVIRONMENT
June 1997



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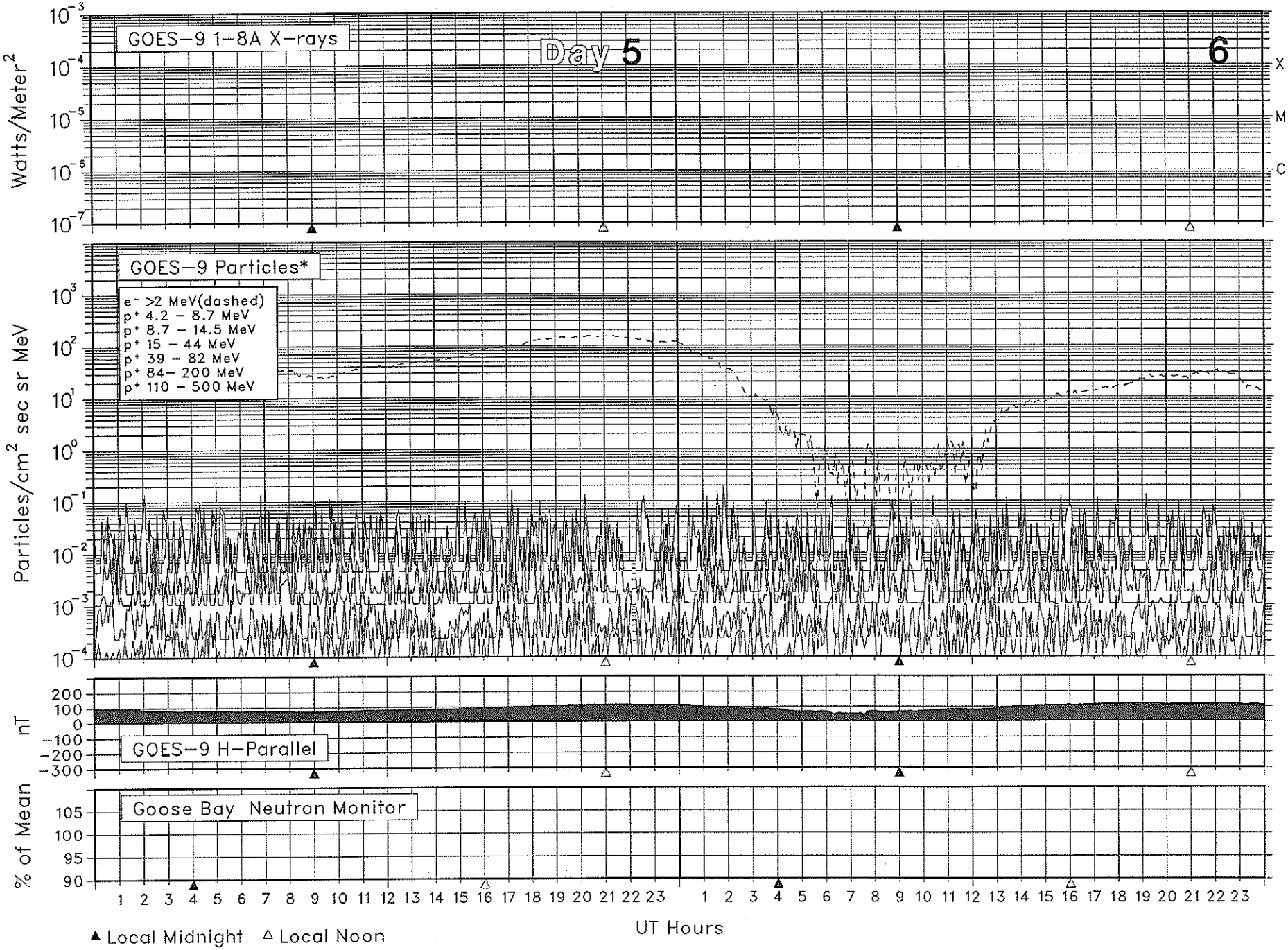

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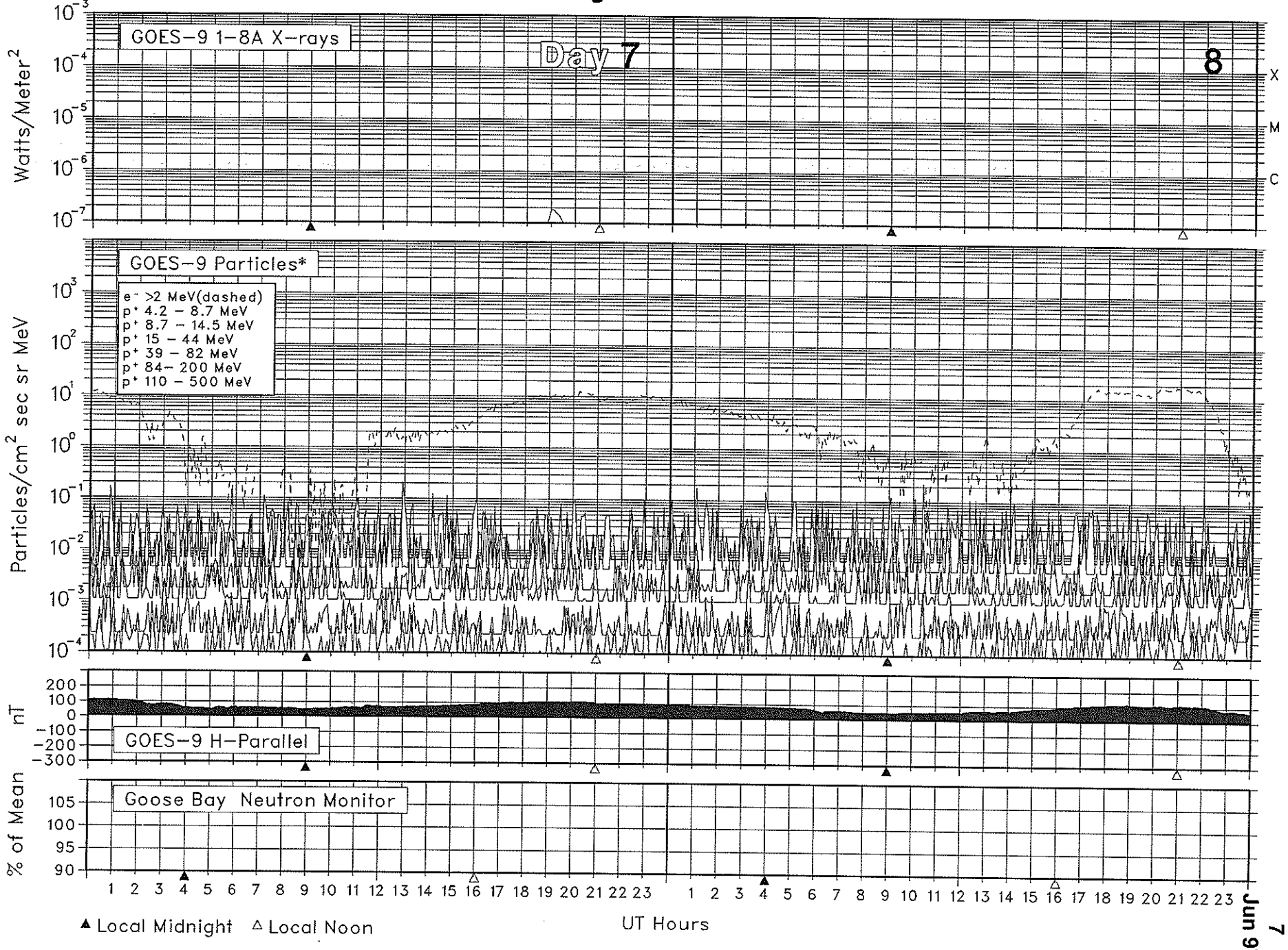

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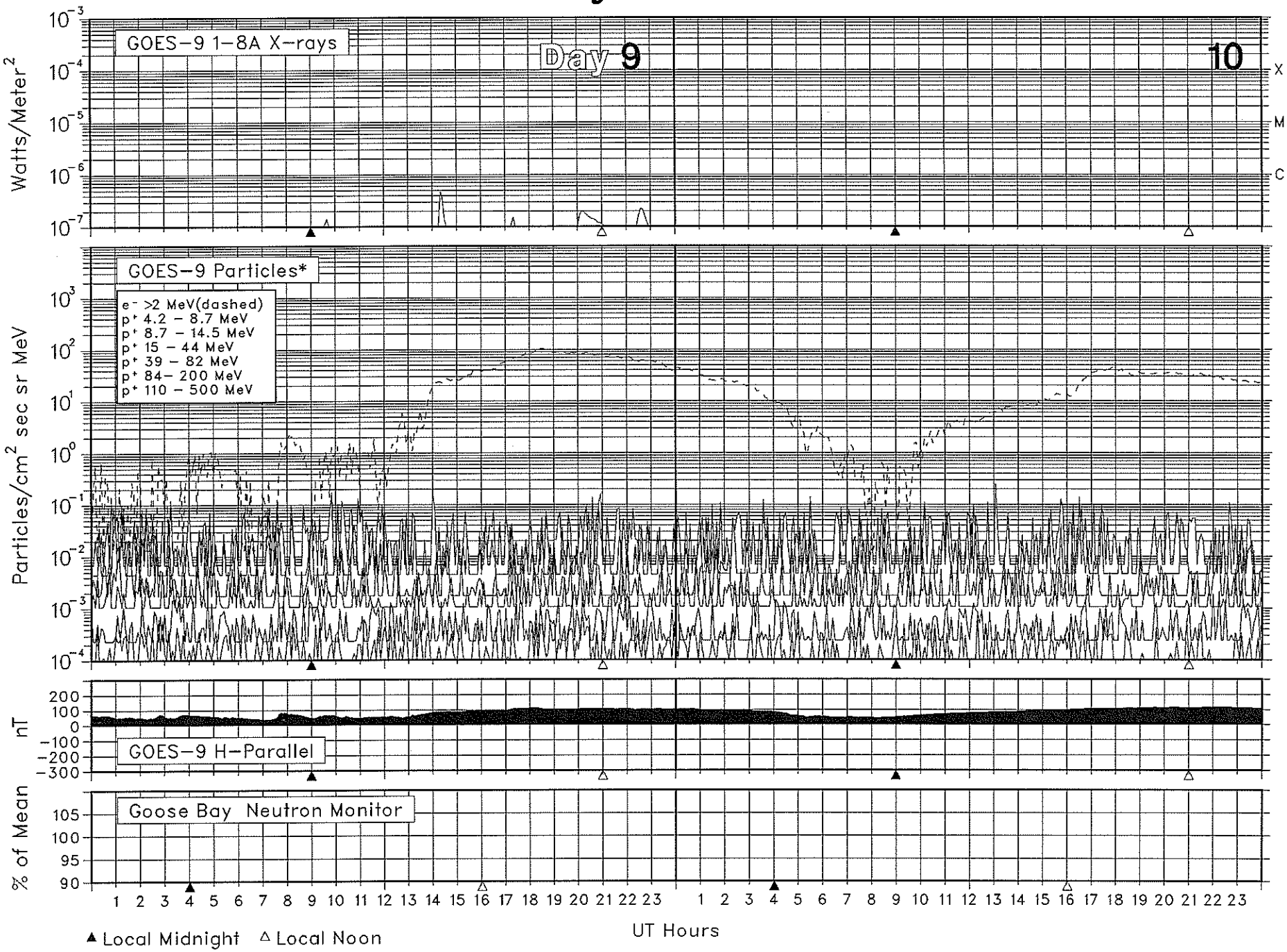

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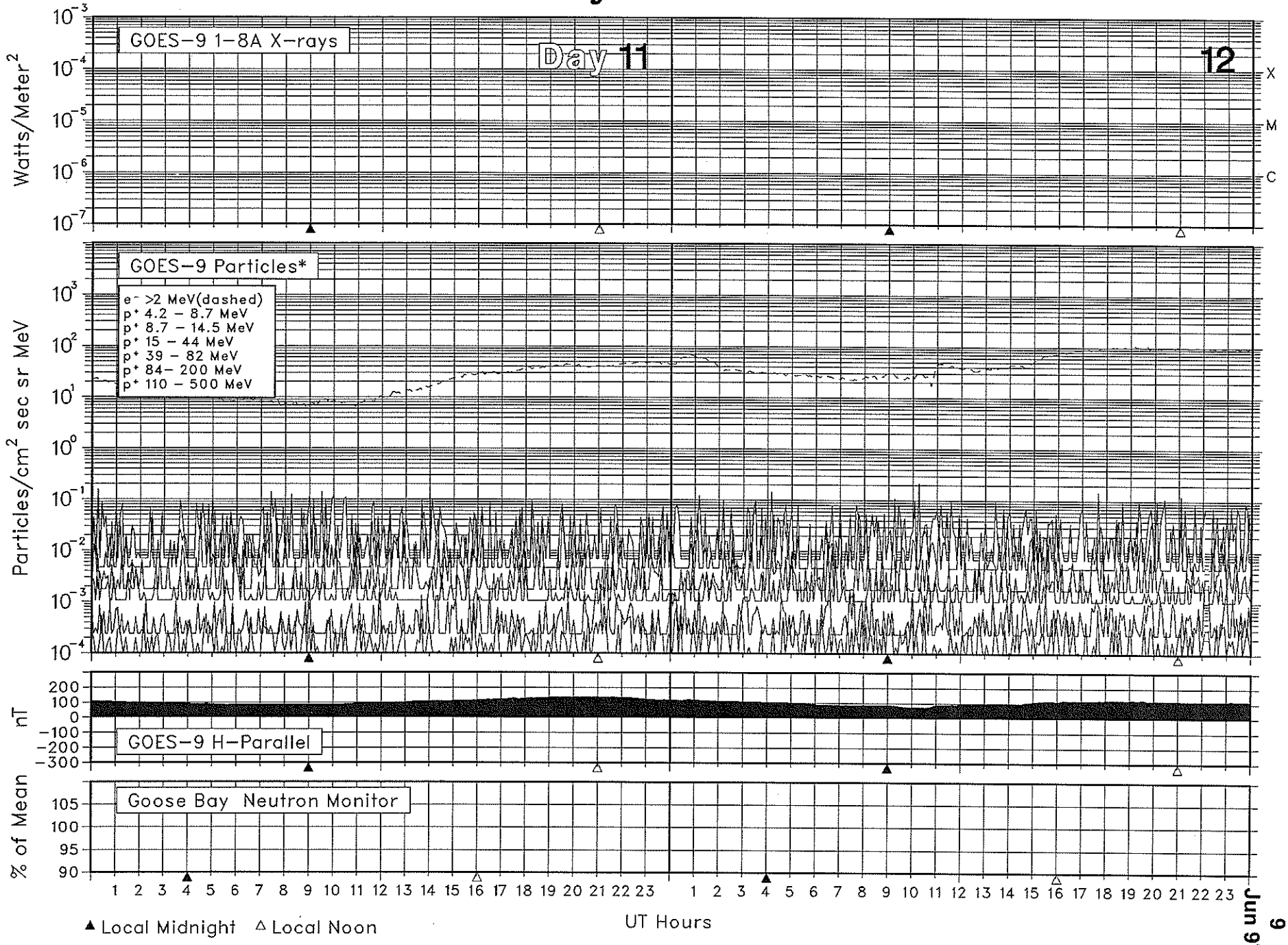

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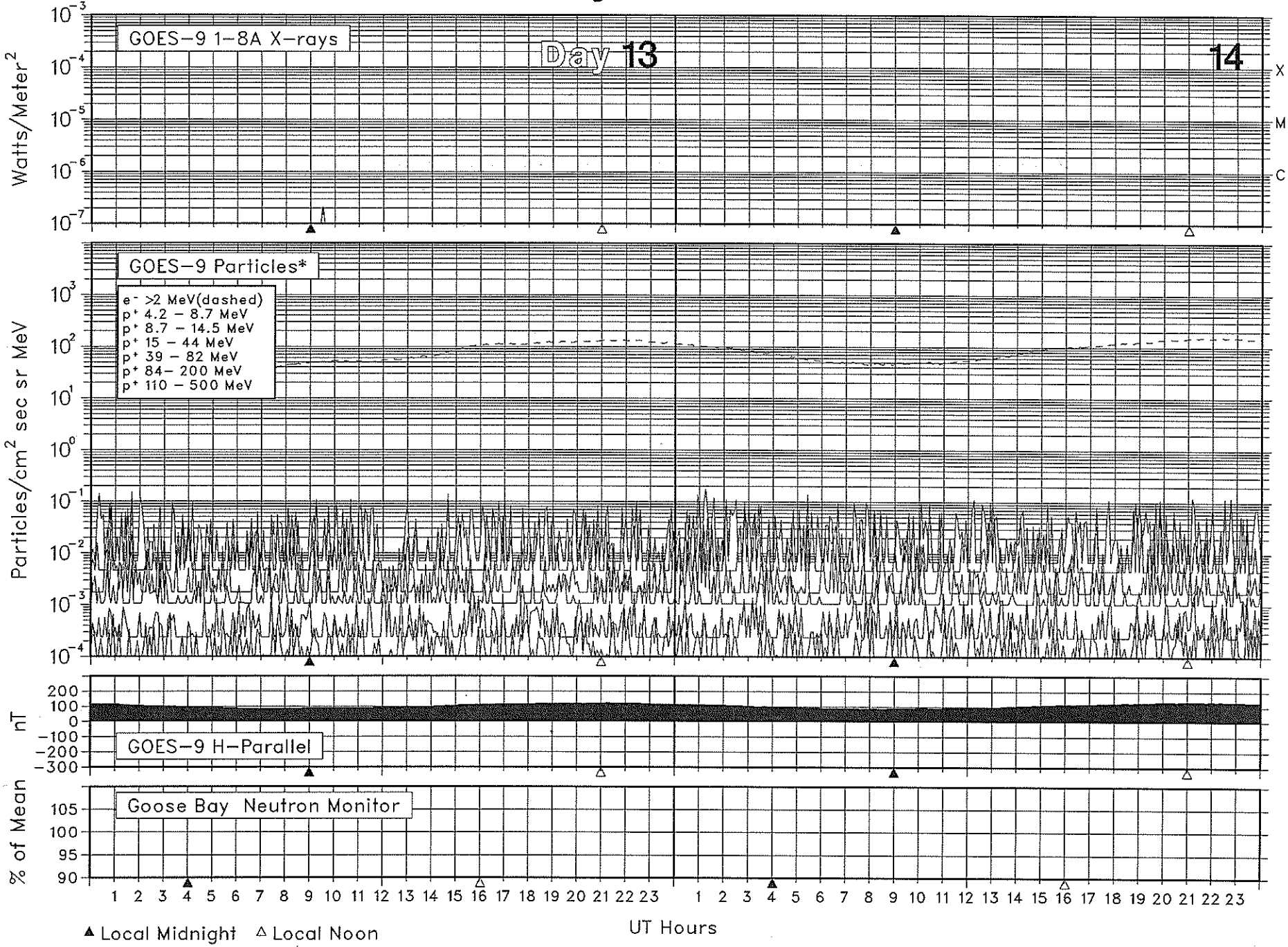

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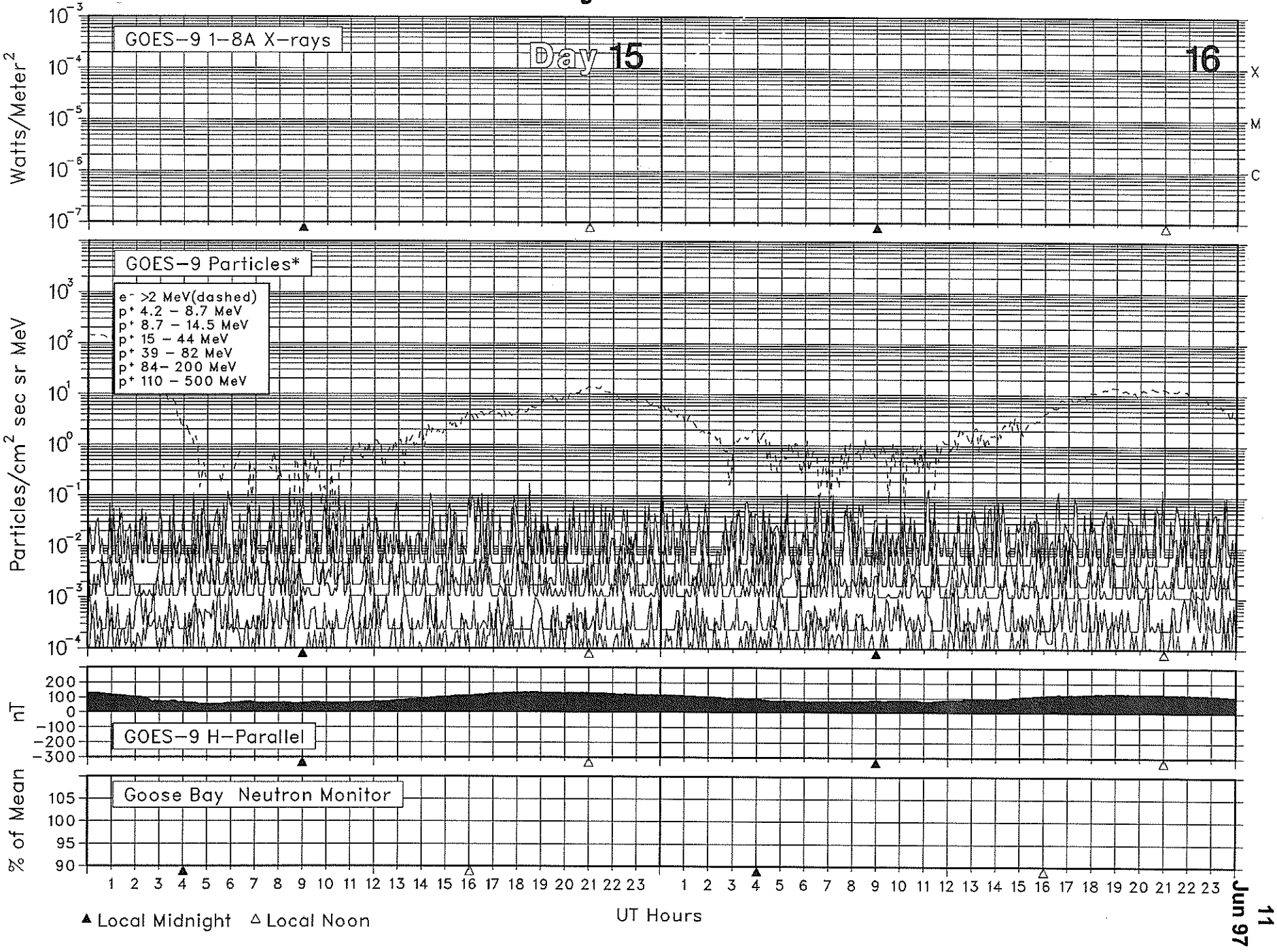

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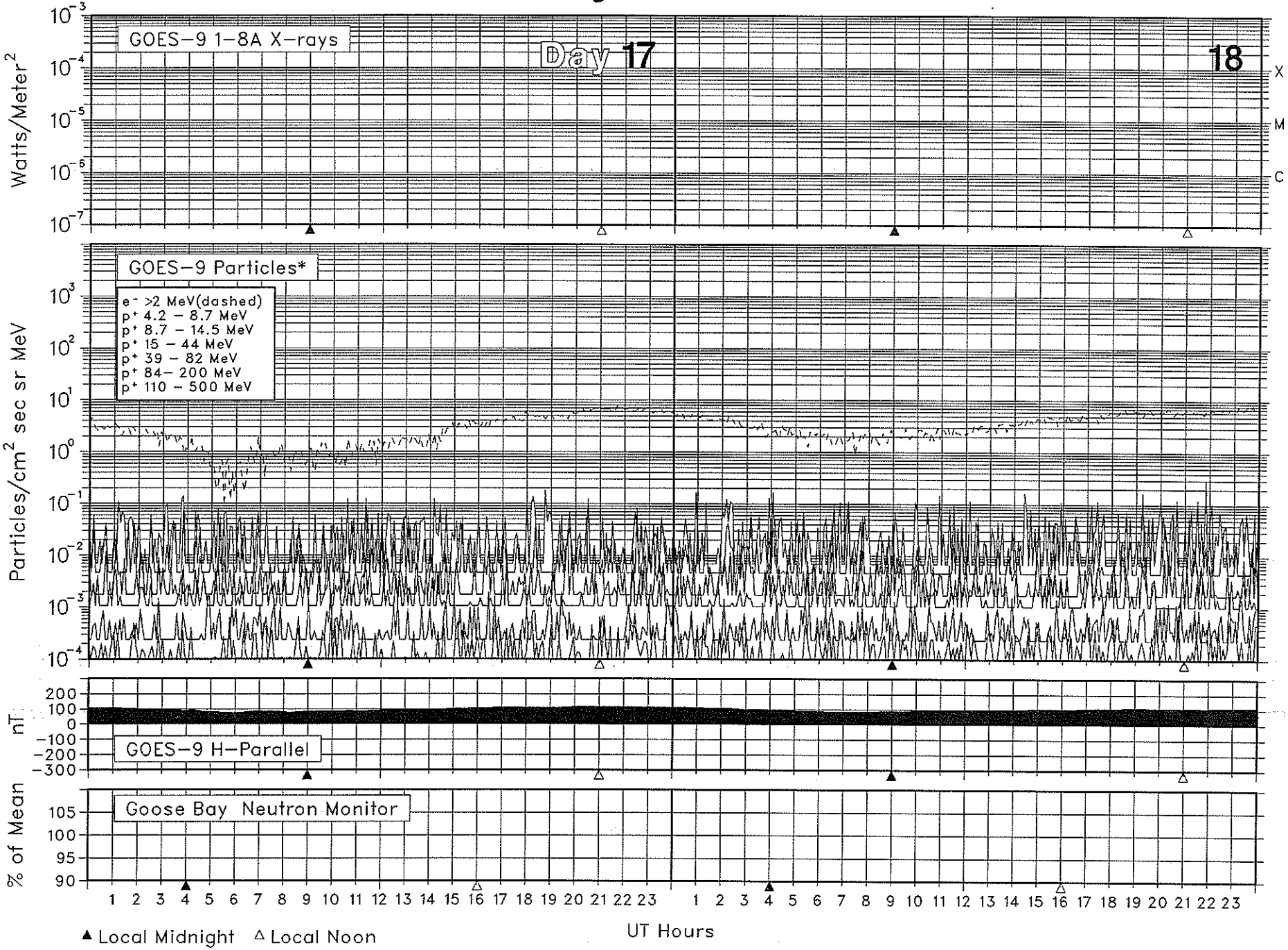

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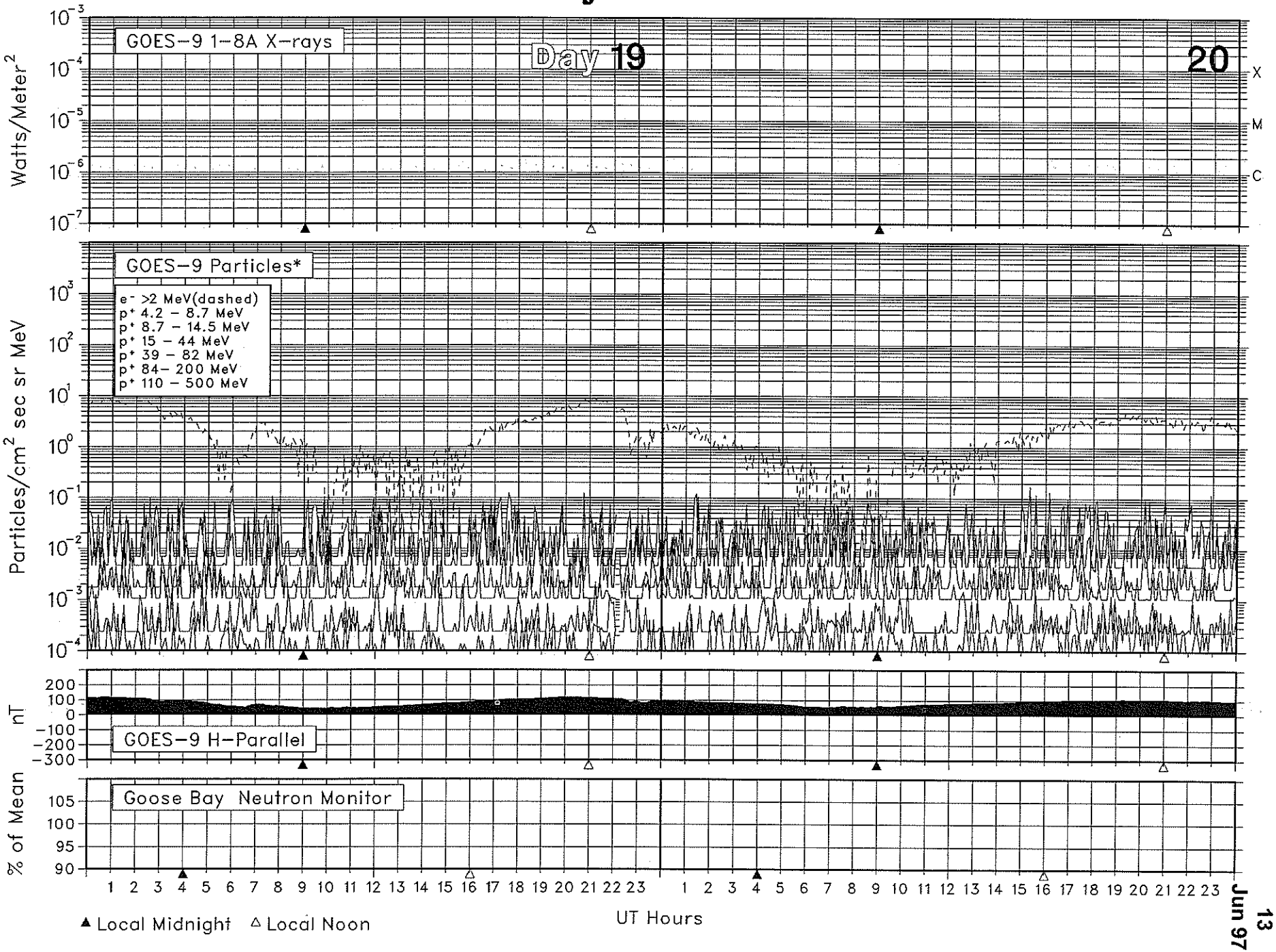
June 1997



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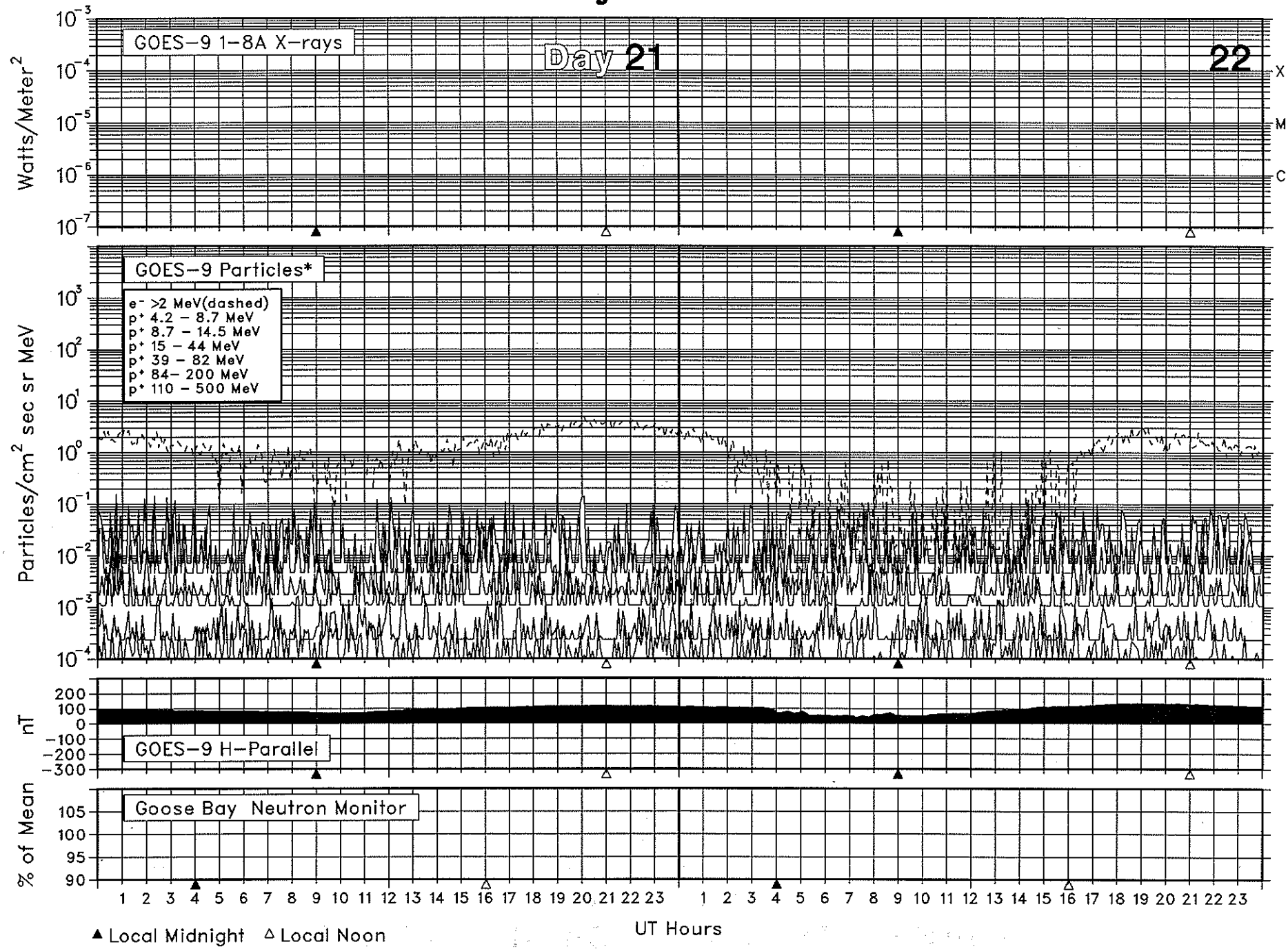

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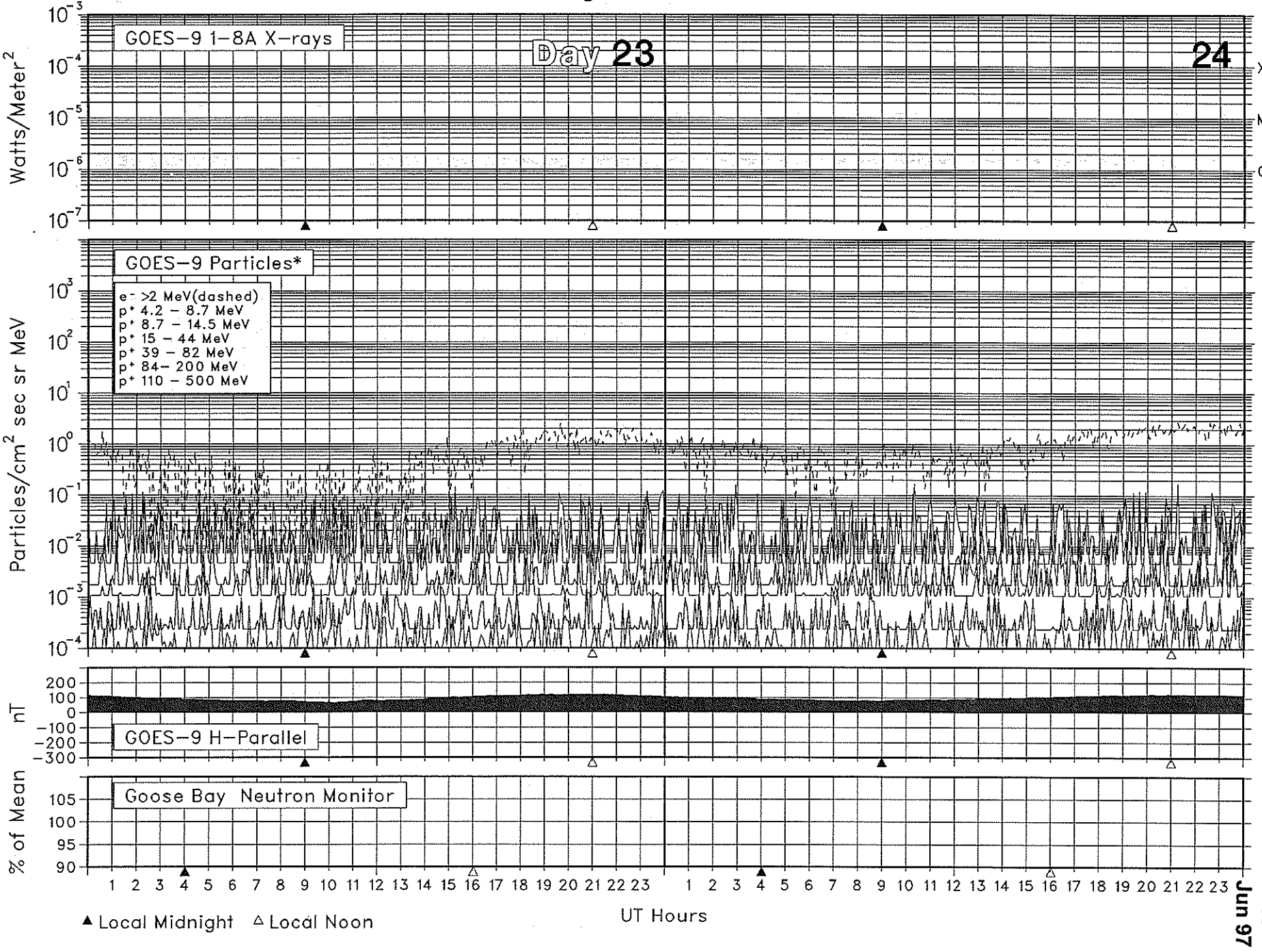

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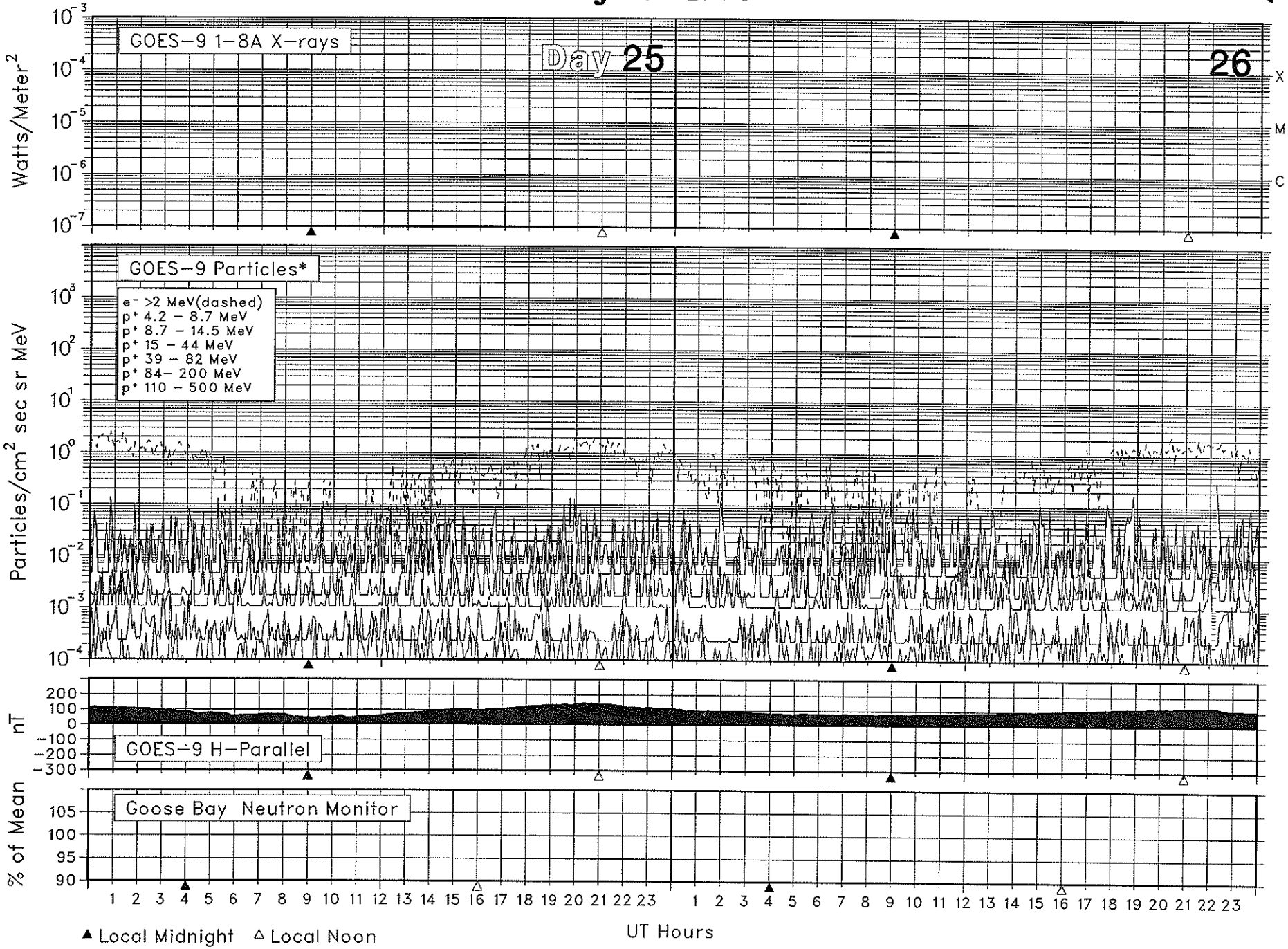
June 1997



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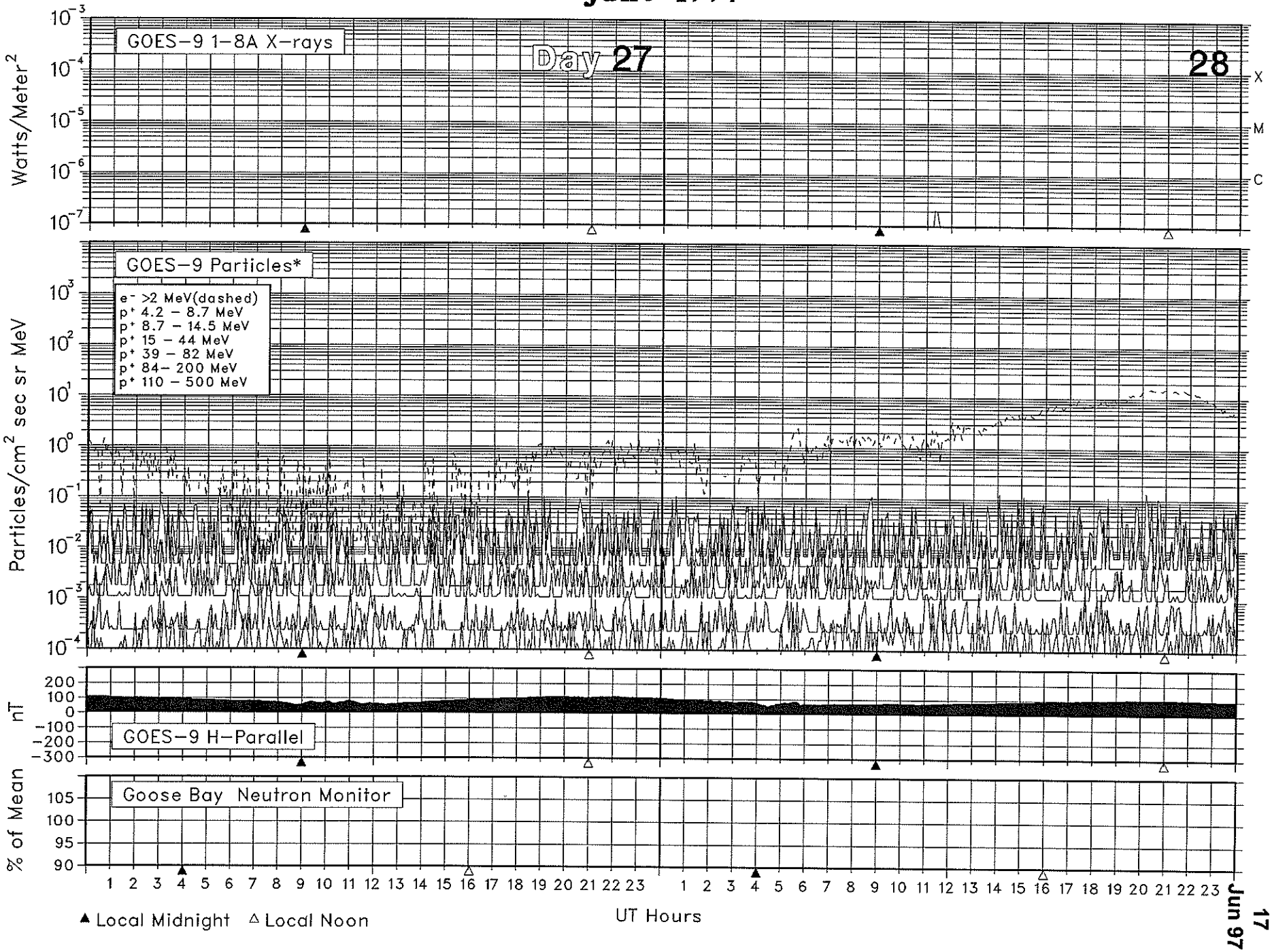

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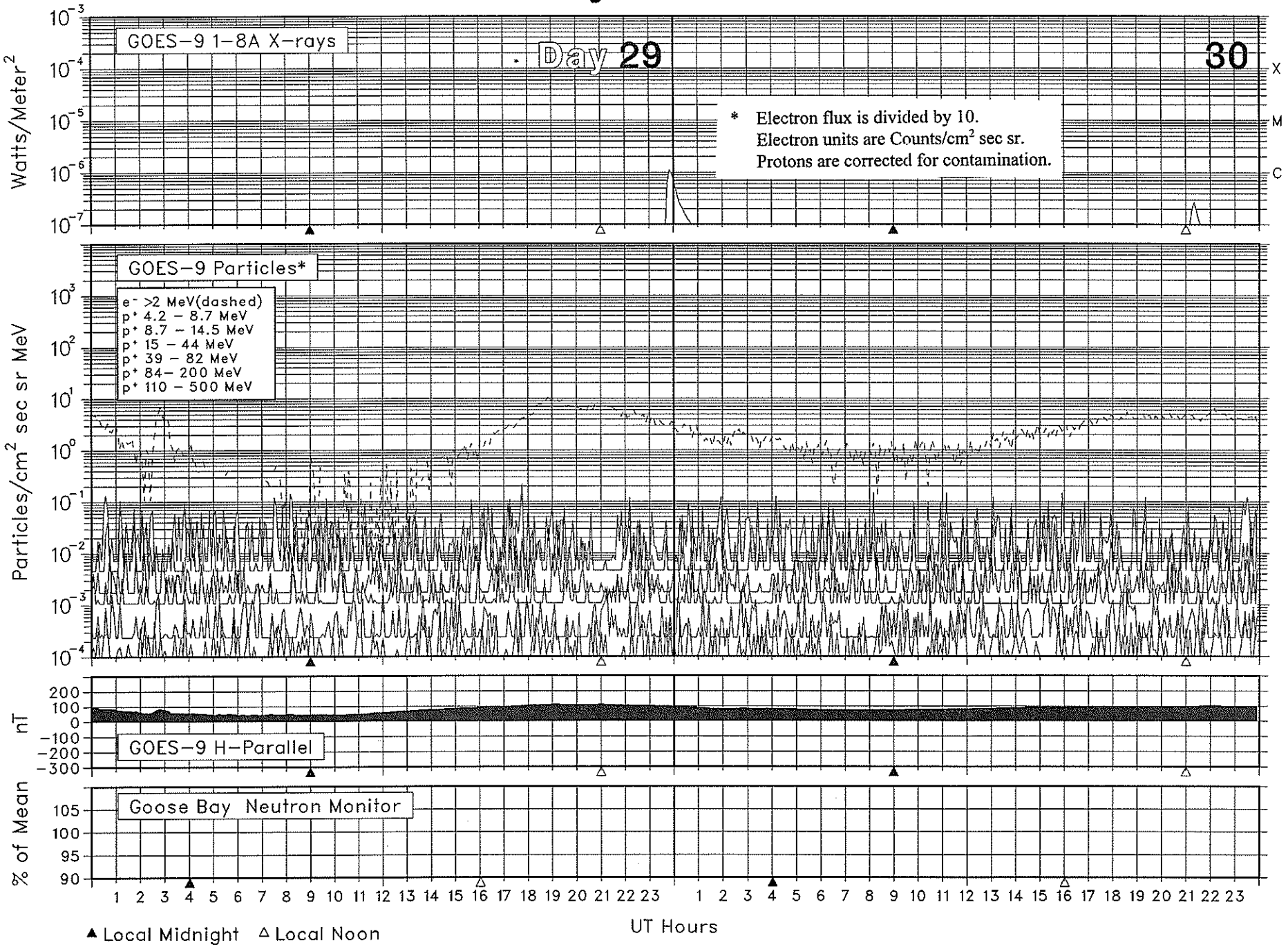


A L E R T P E R I O D S
The International Space Environment Service

JUNE 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)
152	01	31	29	73	7	N27	E19	0	0	0	01	Q	SOL: Quiet
						S29	E41	0	0	0	01	Q	MAG: Quiet
								0	0	0	01		PRO: Quiet
153	02	01	33	77	6	N26	E08	0	0	0	02	Q	SOL: Eruptive
						S29	E28	2	0	0	02	Q	MAG: Quiet
								0	0	0	02		PRO: Quiet
154	03	02	35	77	4	N26	W04	0	0	0	03	Q	SOL: Quiet
						S28	E15	0	0	0	03	Q	MAG: Quiet
								0	0	0	03		PRO: Quiet
155	04	03	20	75	8	S28	E03	0	0	0	04	Q	SOL: Quiet
								0	0	0	04		MAG: Quiet
								0	0	0	04		PRO: Quiet
156	05	04	16	74	4	S28	W13	0	0	0	05	Q	SOL: Quiet
								0	0	0	05		MAG: Quiet
								0	0	0	05		PRO: Quiet
157	06	05	15	74	2	S27	W24	0	0	0	06	Q	SOL: Quiet
								0	0	0	06		MAG: Quiet
								0	0	0	06		PRO: Quiet
158	07	06	15	74	24	S28	W37	0	0	0	07	Q	SOL: Quiet
								0	0	0	07		MAG: Quiet
								0	0	0	07		PRO: Quiet
159	08	07	17	75	8	S28	W50	0	0	0	08	Q	SOL: Quiet
								0	0	0	08		MAG: Quiet
								0	0	0	08		PRO: Quiet
160	09	08	36	73	8	S28	W65	0	0	0	09	Q	SOL: Quiet
						N27	E56	0	0	0	09	Q	MAG: Quiet
						N21	W09	0	0	0	09	Q	PRO: Quiet
161	10	09	23	73	26	S28	W80	0	0	0	10	Q	SOL: Quiet
						N27	E43	0	0	0	10	Q	MAG: Quiet
								0	0	0	10		PRO: Quiet
162	11	10	11	72	5	N28	E30	0	0	0	11	Q	SOL: Quiet
								0	0	0	11		MAG: Quiet
								0	0	0	11		PRO: Quiet
163	12	11	11	71	2	N28	E17	0	0	0	12	Q	SOL: Quiet
								0	0	0	12		MAG: Quiet
								0	0	0	12		PRO: Quiet
164	13	12	26	70	5	N29	E03	0	0	0	13	Q	SOL: Quiet
						N17	E40	0	0	0	13	Q	MAG: Quiet
								0	0	0	13		PRO: Quiet
165	14	13	27	70	2	N29	W10	0	0	0	14	Q	SOL: Quiet
						N17	E27	0	0	0	14	Q	MAG: Quiet
								0	0	0	14		PRO: Quiet
166	15	14	31	71	1	N29	W22	0	0	0	15	Q	SOL: Quiet
						N18	E14	0	0	0	15	Q	MAG: Quiet
								0	0	0	15		PRO: Quiet
167	16	15	29	71	4	N28	W34	0	0	0	16	Q	SOL: Quiet
						N18	E02	0	0	0	16	Q	MAG: Quiet
								0	0	0	16		PRO: Quiet
168	17	16	38	72	4	N30	W46	0	0	0	17	Q	SOL: Quiet
						N18	W11	0	0	0	17	Q	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

JUNE 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)
169	18	17	31	70	3	N27	W60	0	0	0	18	Q	SOL: Quiet
						N19	W24	1	0	0	18	Q	MAG: Quiet
								0	0	0	18		PRO: Quiet
170	19	18	29	71	2	N18	W39	0	0	0	19	Q	SOL: Quiet
						S27	E31	0	0	0	19	Q	MAG: Quiet
								0	0	0	19		PRO: Quiet
171	20	19	16	70	8	S26	E17	0	0	0	20	Q	SOL: Quiet
								0	0	0	20		MAG: Quiet
								0	0	0	20		PRO: Quiet
172	21	20	23	70	5	S27	E06	0	0	0	21	Q	SOL: Quiet
						N07	W72	0	0	0	21	Q	MAG: Quiet
								0	0	0	21		PRO: Quiet
173	22	21	11	68	2	S27	W07	0	0	0	22	Q	SOL: Quiet
								0	0	0	22		MAG: Quiet
								0	0	0	22		PRO: Quiet
174	23	22	15	70	8	N15	E08	0	0	0	23	Q	SOL: Quiet
								0	0	0	23		MAG: Quiet
								0	0	0	23		PRO: Quiet
175	24	23	14	69	5	N15	W06	0	0	0	24	Q	SOL: Quiet
								0	0	0	24		MAG: Quiet
								0	0	0	24		PRO: Quiet
176	25	24	14	70	4	N15	W21	0	0	0	25	Q	SOL: Quiet
								0	0	0	25		MAG: Quiet
								0	0	0	25		PRO: Quiet
177	26	25	34	72	7	N15	W34	0	0	0	26	Q	SOL: Quiet
						N17	W18	0	0	0	26	Q	MAG: Quiet
								0	0	0	26		PRO: Quiet
178	27	26	23	72	4	N17	W33	0	0	0	27	Q	SOL: Quiet
								0	0	0	27		MAG: Quiet
								0	0	0	27		PRO: Quiet
179	28	27	19	72	11	N17	W47	0	0	0	28	Q	SOL: Quiet
								0	0	0	28		MAG: Quiet
								0	0	0	28		PRO: Quiet
180	29	28	26	71	6	N17	W61	1	0	0	29	Q	SOL: Quiet
						N30	E12	1	0	0	29	Q	MAG: Quiet
								0	0	0	29		PRO: Quiet
181	30	29	24	70	8	N19	W70	0	0	0	30	Q	SOL: Quiet
						N31	W03	0	0	0	30	Q	MAG: Quiet
								0	0	0	30		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%)
- 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)

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

JUNE 1997

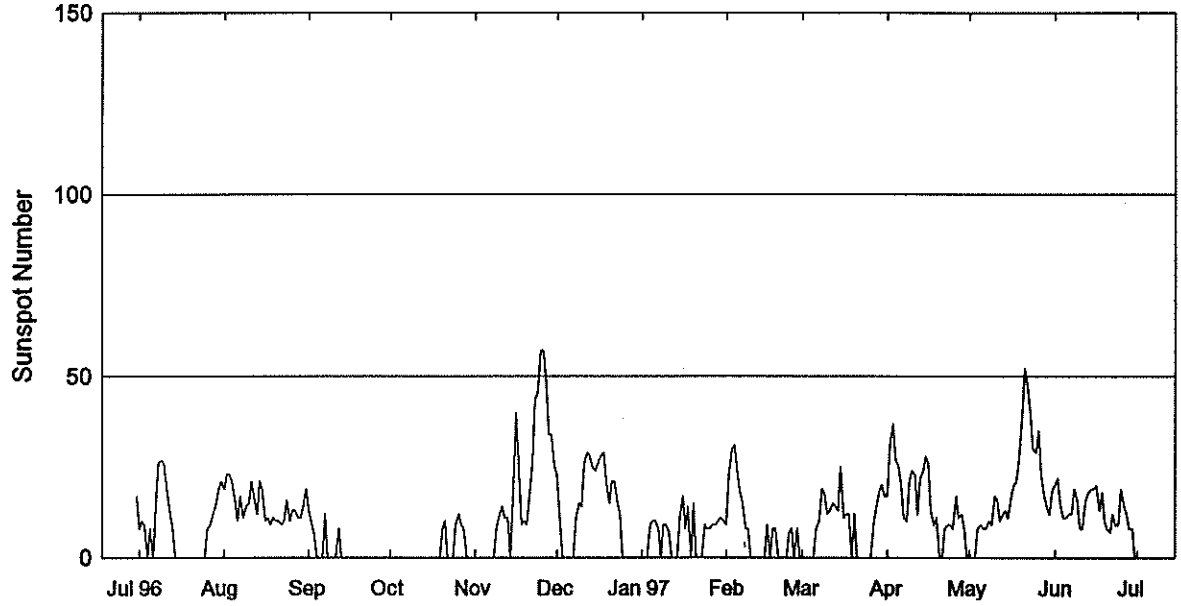
'Major'	storm expected	(A>=50 or K>=6)
'Severe'	storm expected	(A>=100 or K>=7)
'IP'	magstorm in progress	(A>=30 or K>=4)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

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
Jul 1996 - Jun 1997

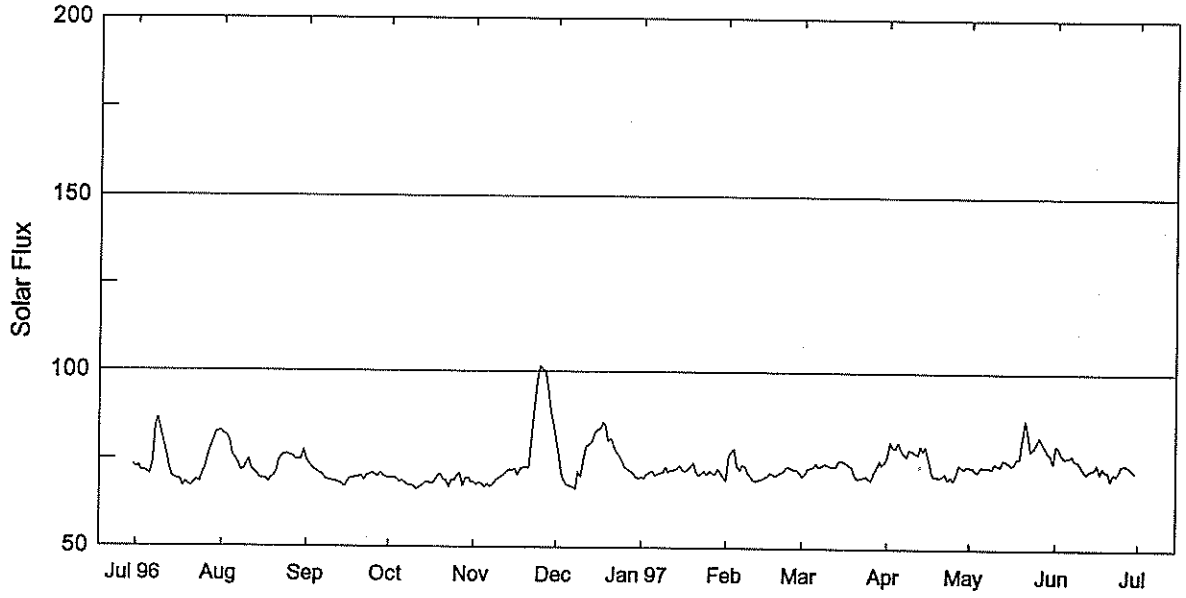


Day	Jul 96	Aug	Sep	Oct*	Nov*	Dec*	Jan 97*	Feb *	Mar*	Apr*	May*	Jun*
1	8	19	13	0	0	23	0	9	0	17	0	20
2	10	23	9	0	0	12	0	23	0	31	0	22
3	9	23	7	0	0	0	0	30	0	37	0	15
4	0	21	0	0	0	0	9	31	0	27	8	11
5	8	16	0	0	0	0	10	23	0	25	9	11
6	0	10	0	0	0	0	10	18	8	20	8	12
7	14	17	12	0	0	0	8	15	10	11	8	12
8	26	11	0	0	0	11	0	8	19	10	10	19
9	27	14	0	0	8	15	9	8	18	21	9	16
10	26	15	0	0	12	14	9	0	12	24	17	8
11	20	21	0	0	14	26	7	0	13	23	16	8
12	13	17	8	0	11	29	0	0	15	12	10	16
13	9	12	0	0	11	28	0	0	14	22	12	18
14	0	21	0	0	0	25	0	0	13	24	13	19
15	0	19	0	0	20	24	11	0	25	28	11	19
16	0	10	0	0	40	26	17	9	11	26	17	20
17	0	11	0	0	27	28	8	0	12	13	20	13
18	0	9	0	0	9	29	14	8	12	9	21	18
19	0	11	0	0	10	21	0	8	0	11	27	10
20	0	10	0	8	9	15	15	0	12	0	39	8
21	0	10	0	10	18	21	0	0	0	0	52	7
22	0	9	0	0	26	21	0	0	0	8	48	12
23	0	10	0	0	44	15	0	0	0	9	40	9
24	0	16	0	0	45	12	9	7	0	9	30	9
25	0	10	0	9	57	0	8	8	0	8	29	19
26	8	13	0	12	57	0	8	0	0	17	35	15
27	9	13	0	9	48	0	9	8	10	11	23	12
28	12	11	0	8	34	0	9	0	14	12	17	8
29	15	11	0	0	34	0	10		18	8	14	8
30	19	14	0	0	25	0	11		20	0	12	0
31	21	19		0		0	10		17		19	
Mean	8.2	14.4	1.6	1.8	18.6	12.7	6.5	7.6	8.8	15.8	18.5	13.1

* = Provisional.

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

Adjusted to 1 AU



Day	Jul 96	Aug	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun
1	72.4	82.8	74.8	69.6	68.5	80.8	70.0	69.2	70.5*	76.2	73.4	79.6
2	72.8	81.9	73.6	69.8	67.9	75.7	69.7	76.2	71.1	80.4	73.3	79.1
3	71.3	81.6	72.4	69.6	68.3	70.7	70.8	77.4	72.8	78.8	72.3	77.4
4	71.5	79.9	72.0	69.4	67.8	68.6	71.4	78.4	72.8	78.6	72.1	76.1
5	71.0	76.2	71.4	68.5	67.1	67.6	71.9	73.3	73.4	80.3	73.6	76.1
6	70.5	75.1	70.8	68.8	68.0	67.6	70.6	72.2	74.2	78.3	73.4	76.4
7	74.3	73.7	70.5	68.2	67.3	67.1	70.9	73.7	73.1	77.0	73.3	76.9
8	84.3	71.7	69.2	67.7	67.8	66.6	71.3	73.2	73.6	76.3	73.3	75.4
9	86.5	72.1	68.8	67.7	68.9	71.5	71.3	71.2	74.1	78.3	73.0	75.3
10	82.5	73.6	68.9	67.4	69.6	70.2	72.9	70.4	73.8	78.0	74.6*	74.2
11	79.6	74.8	68.5	66.4	70.0	75.2	71.6	69.3	73.4	77.4	73.8	73.0
12	76.2	72.0	68.6	66.9	70.7	78.6	72.1	69.1	73.4	76.9	73.7	71.8
13	72.5	71.4	68.1	67.3	71.5	79.2	72.1	69.3	73.3	79.3	75.4	72.3
14	70.0	70.5	67.9	68.2	72.1	80.0	72.4	69.6	74.7	77.9	75.1	72.9
15	69.3	69.3	67.1	68.6	71.9	82.3	73.3	70.1	75.0	79.2	74.7	73.0
16	69.1	69.3	68.7	68.1	72.2	83.5	72.4	70.3	75.0	75.6	73.9	74.4
17	69.0	69.5	69.6	68.0	70.4	83.6	71.7	71.4	74.4	72.3	74.4	71.8
18	67.0	68.4	69.6	69.0	72.4	85.6	72.2	71.2	73.7	70.7	75.8	73.5
19	68.3	69.3	69.8	70.4	72.6	84.6	72.9	70.4	73.1	70.6	76.0	72.4
20	67.5	70.1	69.7	70.6	72.7	80.3	74.3	71.0	71.0	70.4	81.1	72.5
21	67.2	71.3	70.3	69.0	72.6	80.9	71.8	71.6	70.0	70.9	86.9	69.8
22	68.2	74.5	69.1	69.1	80.6	78.9	70.7	71.9	70.1	71.5	83.0	71.8
23	68.9	75.8	70.4	67.1	88.7	76.9	71.1	73.0	70.3	69.7	78.1	71.3
24	68.3	76.2	70.4	69.1	97.3	76.4	71.9	73.1	70.6	70.7	78.9	72.2
25	70.4	76.3	71.2	69.1	101.7	74.7	70.9	72.6	70.2	69.6	80.1	74.1
26	72.4	75.8	70.4	70.3	100.8	73.0	71.9	72.4	69.5	71.8	82.0#	74.2
27	75.6	75.9	70.1	71.2	100.0	72.2	71.3	72.4	71.9	74.1	80.4	74.1
28	77.8	74.7	71.2	67.5	95.4	71.8	70.8	71.5	72.9	73.4	79.5	73.6
29	80.3	75.0	70.3	69.4	88.5	71.4	72.4		75.1	72.9	77.6	72.6
30	82.3	74.7	69.7	69.7	85.1	70.1	71.5		73.8	73.7	77.2	72.1
31	82.7	77.6		68.6		69.8	70.3		74.6		74.5	
Mean	73.5	74.2	70.1	68.7	76.9	75.3	71.6	72.0	72.8	75.0	76.3	74.0

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

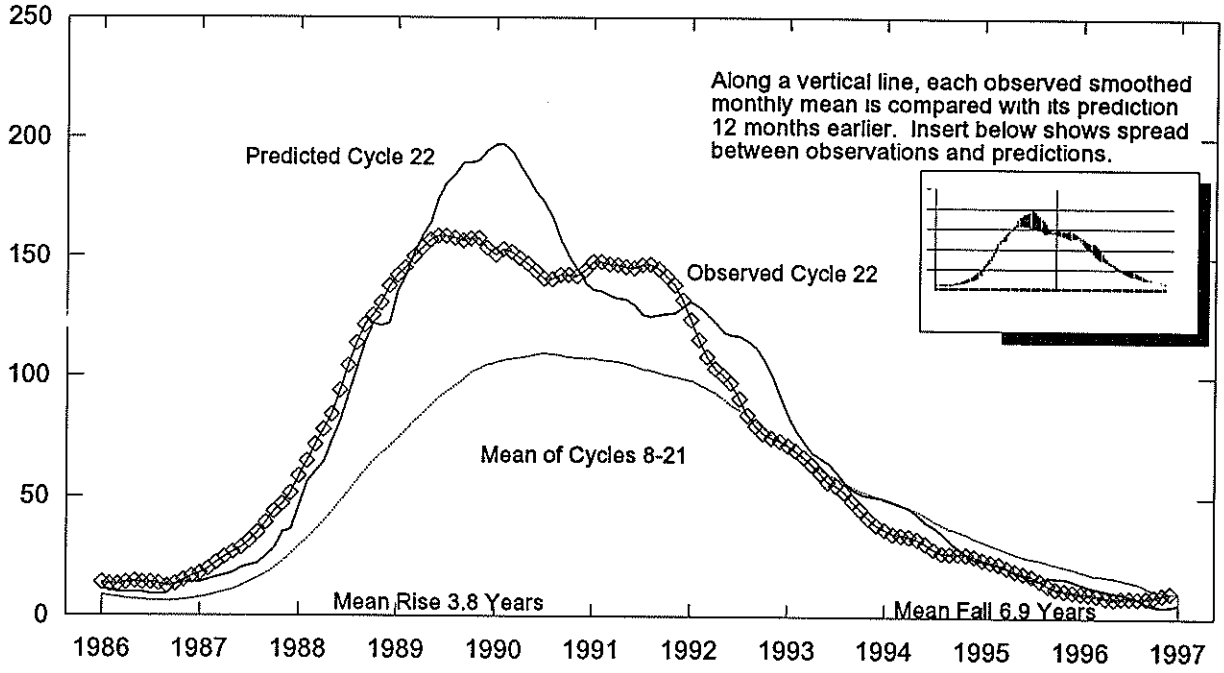
DAILY SOLAR INDICES

June 1997

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — LEAR (15400)	LEAR (8800)	LEAR (4995)	Pentic (2800)	LEAR (2695)	LEAR (1415)	LEAR (610)	LEAR (410)	LEAR (245)
1	152	8	20	33	77.3	523	204	121	79.6	76	54	38	25	11
2	153	9	22	27	76.9	--	--	--	79.1	--	--	--	--	--
3	154	10	15	22	75.2	--	206	122	77.4	74	54	39	30	23
4	155	11	11	16	73.9	--	202	120	76.1	72	54	39	31	27
5	156	12	11	16	73.9	--	201	120	76.1	74	54	39	28	21
6	157	13	12	18	74.2	--	205	121	76.4	72	53	40	31	20
7	158	14	12	23	74.7	--	202	120	76.9	73	52	37	26	13
8	159	15	19	21	73.2	--	205	121	75.4	73	53	37	27	15
9	160	16	16	17	73.1	--	197	119	75.3	71	51	32	23	11
10	161	17	8	11	71.9	--	202	119	74.2	71	51	36	25	11
11	162	18	8	10	70.8	--	201	118	73.0	70	50	36	25	12
12	163	19	16	20	69.6	--	200	117	71.8	69	49	36	25	11
13	164	20	18	24	70.1	--	200	117	72.3	69	49	36	24	11
14	165	21	19	22	70.6	--	197	116	72.9	69	48	36	24	11
15	166	22	19	23	70.7	--	203	118	73.0	68	49	36	24	11
16	167	23	20	25	72.1	--	202	118	74.4	69	49	35	24	11
17	168	24	13	18	69.6	--	201	116	71.8	69	50	36	24	11
18	169	25	18	21	71.2	--	204	118	73.5	70	50	36	24	11
19	170	26	10	14	70.1	--	204	118	72.4	69	50	36	24	11
20	171	27	8	10	70.2	--	201	117	72.5	67	48	29	19	9
21	172	1	7	3	67.6	--	202	116	69.8	69	48	35	24	11
22	173	2	12	1	69.5	--	205	118	71.8	68	48	35	24	11
23	174	3	9	7	69.0	--	204	117	71.3	69	49	36	25	11
24	175	4	9	15	69.9	--	204	118	72.2	68	49	35	24	11
25	176	5	19	23	71.7	--	200	117	74.1	69	50	37	25	13
26	177	6	15	22	71.8	--	204	118	74.2	72	50	37	26	13
27	178	7	12	14	71.7	--	202	118	74.1	70	50	37	26	13
28	179	8	8	9	71.2	--	202	119	73.6	71	51	37	26	12
29	180	9	8	2	70.2	599	199	117	72.6	68	49	37	26	12
30	181	10	0	0	69.8	--	202	118	72.1	69	49	37	25	12
MEAN			13.1	16.2	71.7	561	202	118	74.0	70	50	36	25	13

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

Cycle 22 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
1989	142	145	150	154	157	158	158	158	157	157	158	154	154
1990	151	153	152	149	147	144	141	140	142	142	142	144	146
1991	148	148	147	146	146	145	146	147	145	142	138	132	144
1992	124	115	108	103	100	97	91	84	80	76	74	73	94
1993	71	69	67	64	60	56	55	52	48	45	41	38	56
1994	37	35	34	34	33	31	29	27	27	27	26	26	31
1995	24	23	22	21	19	18	17	16	13	12	11	11	17
1996	11	10	10	9	8	9	9	8	9	9	10	11	9
1997	10	11	11	11	11	11	12	13	13	14	15	16	12
( )	(2)	(3)	(4)	(6)	(8)	(10)	(12)	(14)	(15)	(17)	(19)	(22)	(11)

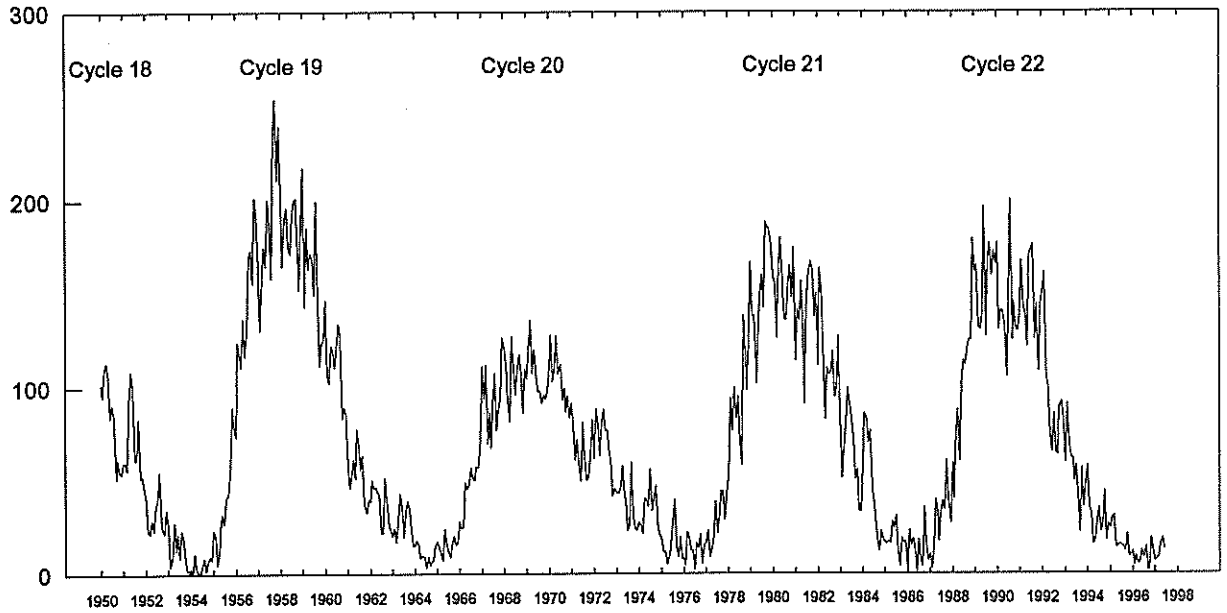
Solar Cycle 22 | Min, Max, and Predictions

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

Observed and Predicted Numbers. For the end of Cycle 21, and the rise and decline of Cycle 22, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Jun 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 December 1997 prediction. There exists a 90% chance that in December 1997, the actual smoothed number will fall somewhere between 0 and 38.

Points to Ponder. The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 14 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the minimum value of 12.3 that occurred in Sep 1986.

Mean Monthly Sunspot Numbers
Jan 1950 - Jun 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	88.7	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	1.8	18.6	12.7	8.7	
1997	6.5	7.6	8.8	15.8	18.5	13.1							11.7	

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

Hα SOLAR FLARES

JUNE 1997

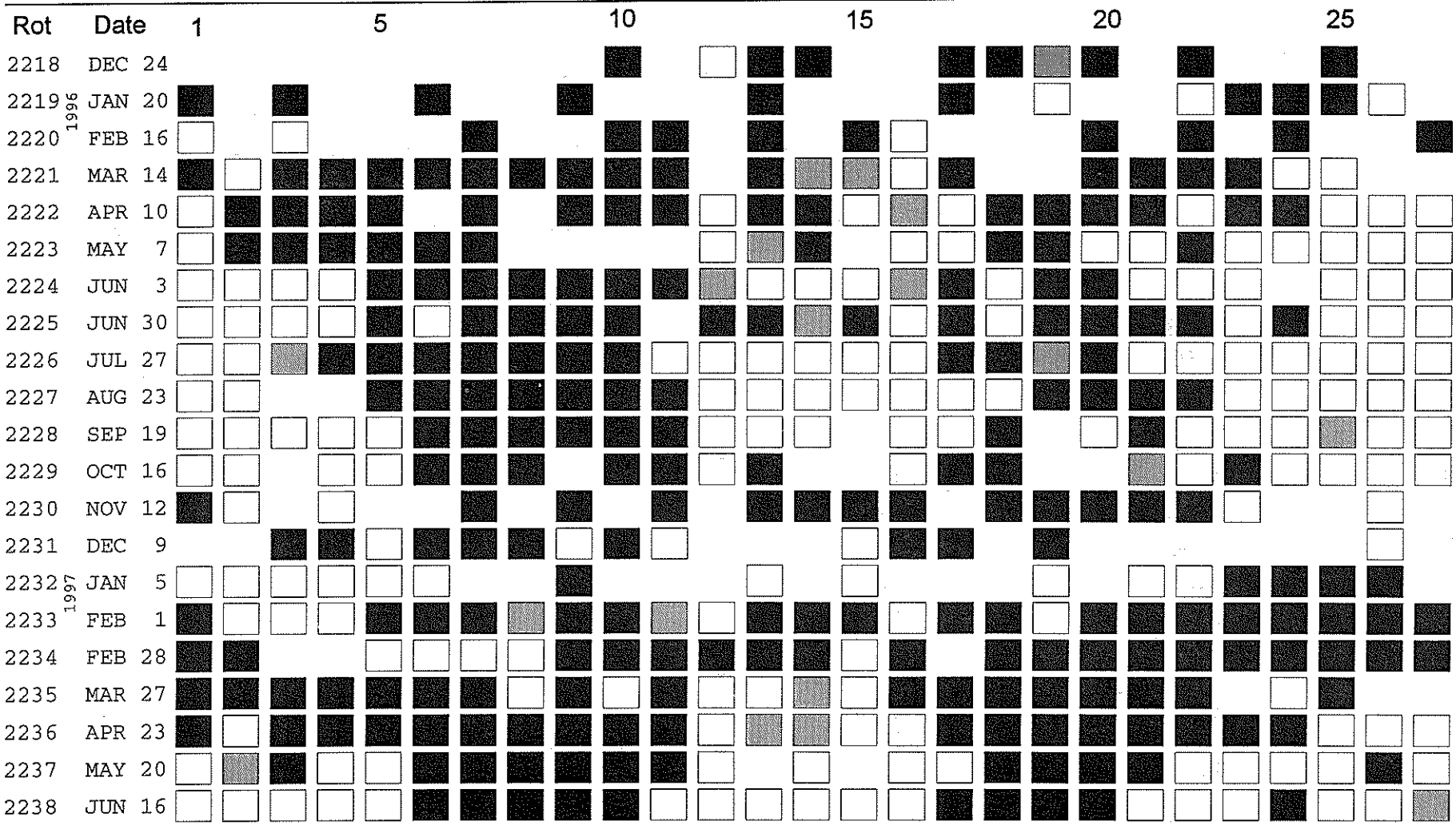
Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
SVTO	01	1133	1137U	1140D	S31	E35	8048	06	4.2	7D	SF		2	E		12		
RAMY		1617	1621	1642	S30	E34	8048	06	4.3	25	SF		3	E		19		
GOES		2024	2028	2036						12		B 1.5						
GOES	03	0758	0802	0809						11		B 1.3						
GOES	07	1313	1316	1322						9		B 1.0						
GOES		1853	1905	1925						32		B 1.8						
GOES	09	0934	0940	0944						10		B 1.7						
GOES		1416	1422	1429						13		B 5.0						
GOES		1715	1720	1723						8		B 2.1						
GOES		2001	2013	2040						39		B 2.0						
GOES		2229	2238	2247						18		B 2.3						
LEAR	17	0545	0546	0551	N17	W19	8052	06	15.8	6	SF		3	E		11		H
LEAR	28	0653	0654	0659	N23	W55	8056	06	24.0	6	SF		3	E		13		
GOES		1117	1124	1131						14		B 2.1						
HOLL		2127	2130	2140	N31	E13	8057	06	29.9	13	SF		3	E		1		
HOLL	29	2345	2347		N17	W82	8056	06	23.7	15	SF		3	E		20		
LEAR	30	0318	0320	0324	N29	W01	8057	06	30.0	6	SF		3	E		16		
GOES		2112	2121	2130						18		B 2.8						

"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

STANFORD MEAN SOLAR MAGNETIC FIELD

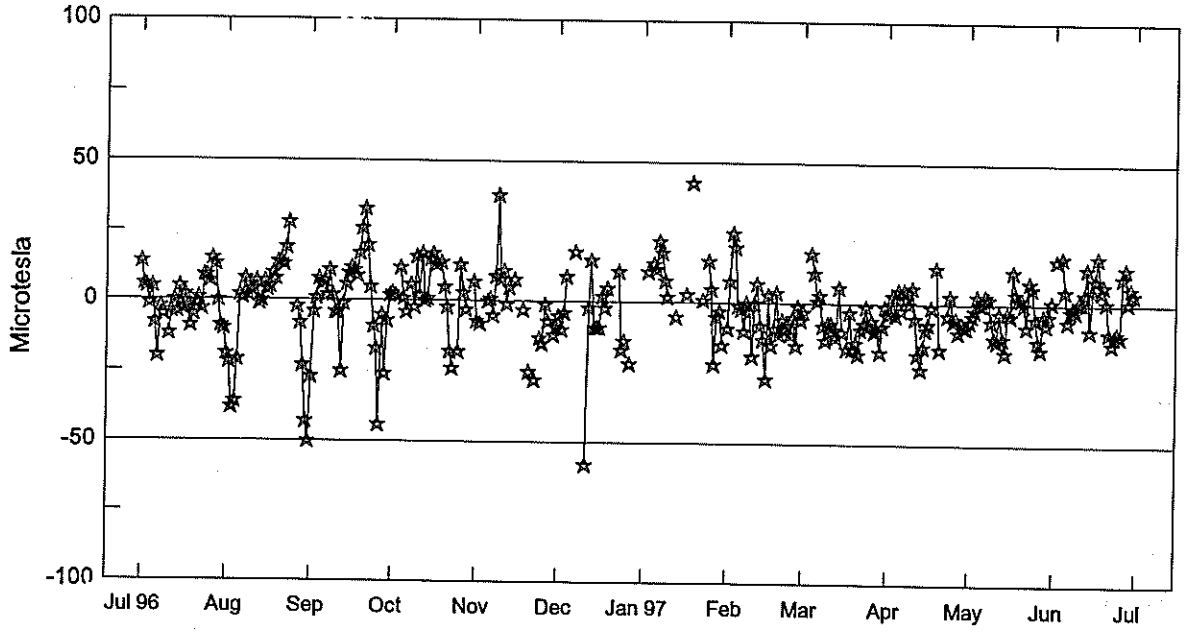


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

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

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

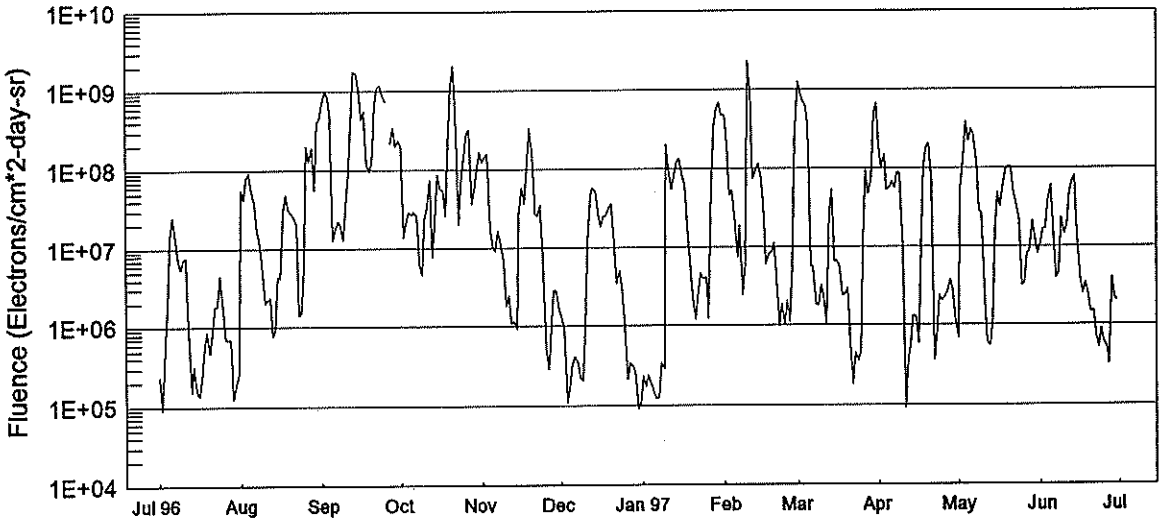
Stanford Mean Solar Magnetic Field (Microtesla)
"Sun-As-A-Star"



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

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

GOES Daily Electron Fluence
Jul 96 - Jun 97



Day	Jul 96	Aug	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May	Jun
1	2.3E+05	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	9.1E+04	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	5.1E+05	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
4	1.8E+06	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
5	1.4E+07	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
6	2.5E+07	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
7	1.5E+07	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
8	6.9E+06	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
9	5.4E+06	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
10	7.4E+06	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
11	7.6E+06	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
12	9.6E+05	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
13	1.5E+05	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
14	3.1E+05	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
15	1.5E+05	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
16	1.3E+05	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
17	2.2E+05	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
18	5.2E+05	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
19	8.5E+05	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
20	4.7E+05	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
21	8.5E+05	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
22	1.8E+06	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
23	1.8E+06	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
24	4.4E+06	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
25	1.6E+06	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
26	6.9E+05	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
27	6.8E+05	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
28	6.9E+05	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
29	1.2E+05	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
30	1.8E+05	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
31	2.5E+05	4.4E+08		1.6E+08		1.0E+05	4.7E+08		6.6E+08		8.2E+06	

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 635 Part I

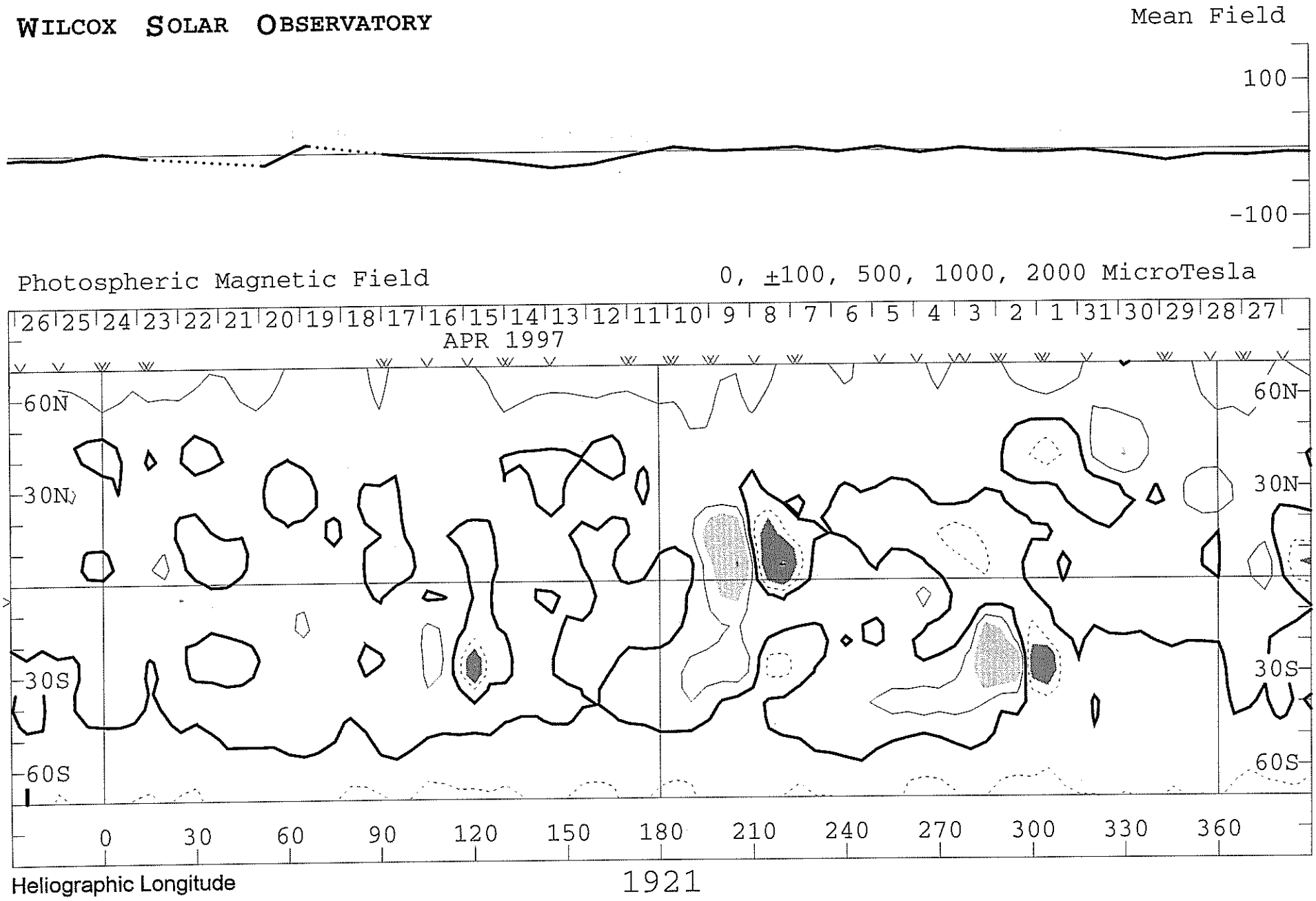
DATA FOR MAY 1997

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1921

(28 March to 24 April 1997)

WILCOX SOLAR OBSERVATORY

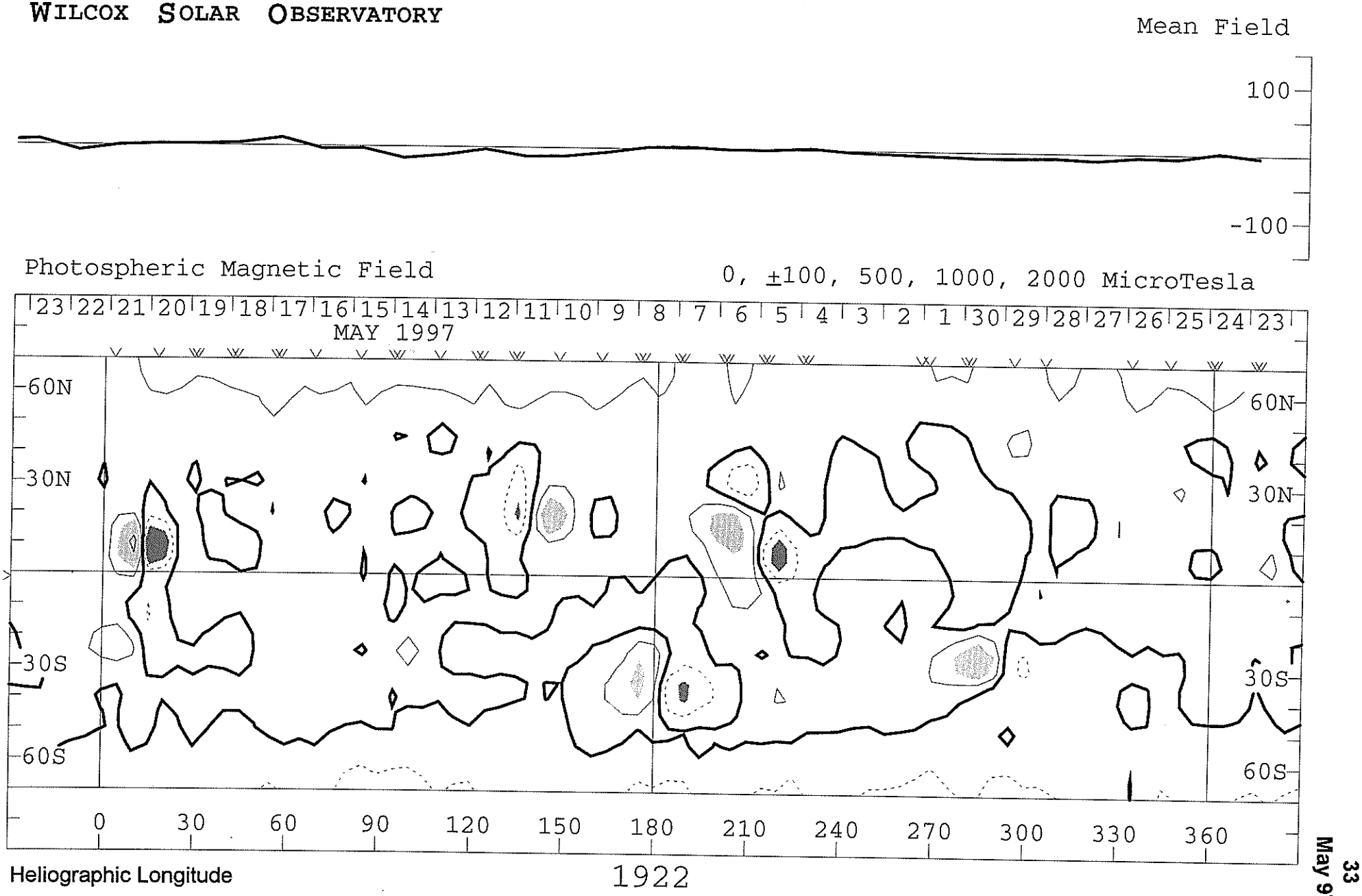


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1922

(24 April to 22 May 1997)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

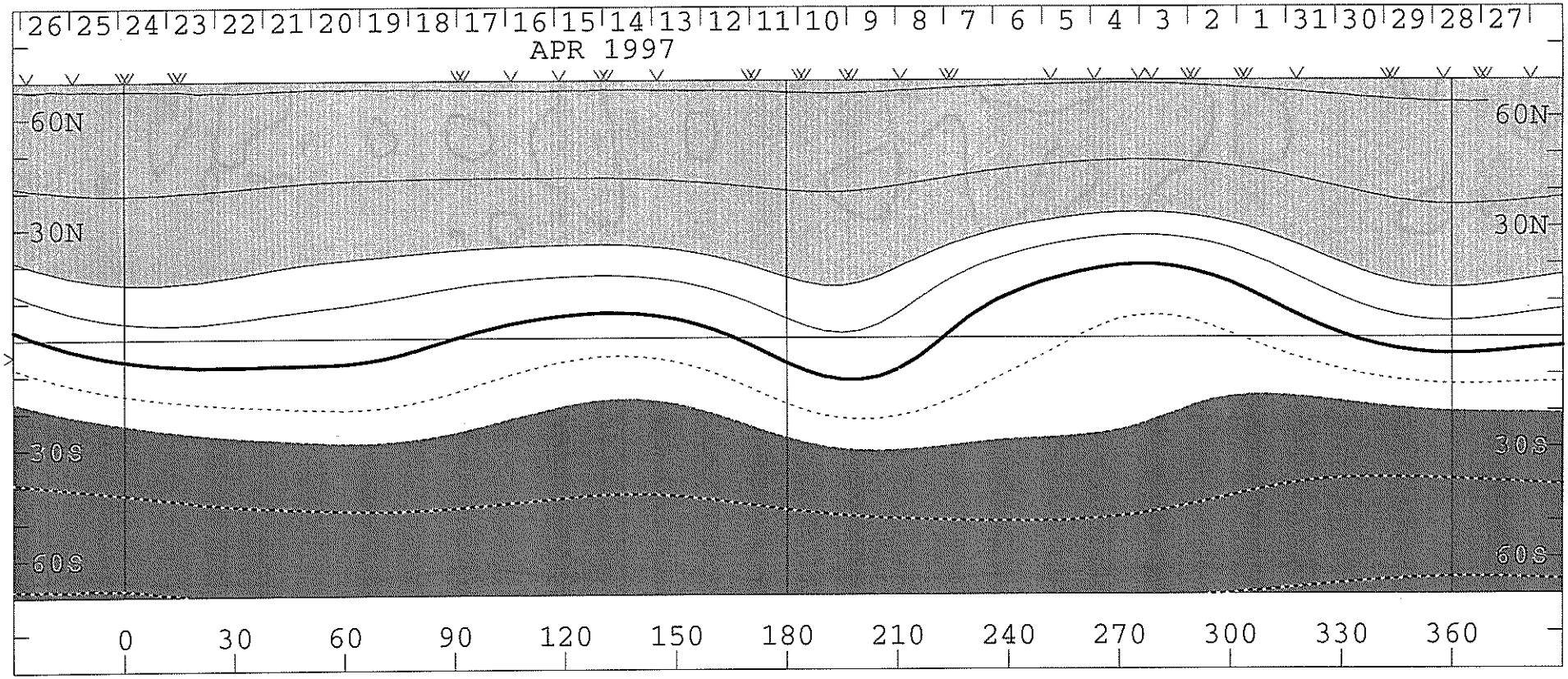
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1921

(28 March to 24 April 1997)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



SOLAR MAGNETIC FIELD SYNOPTIC CHART

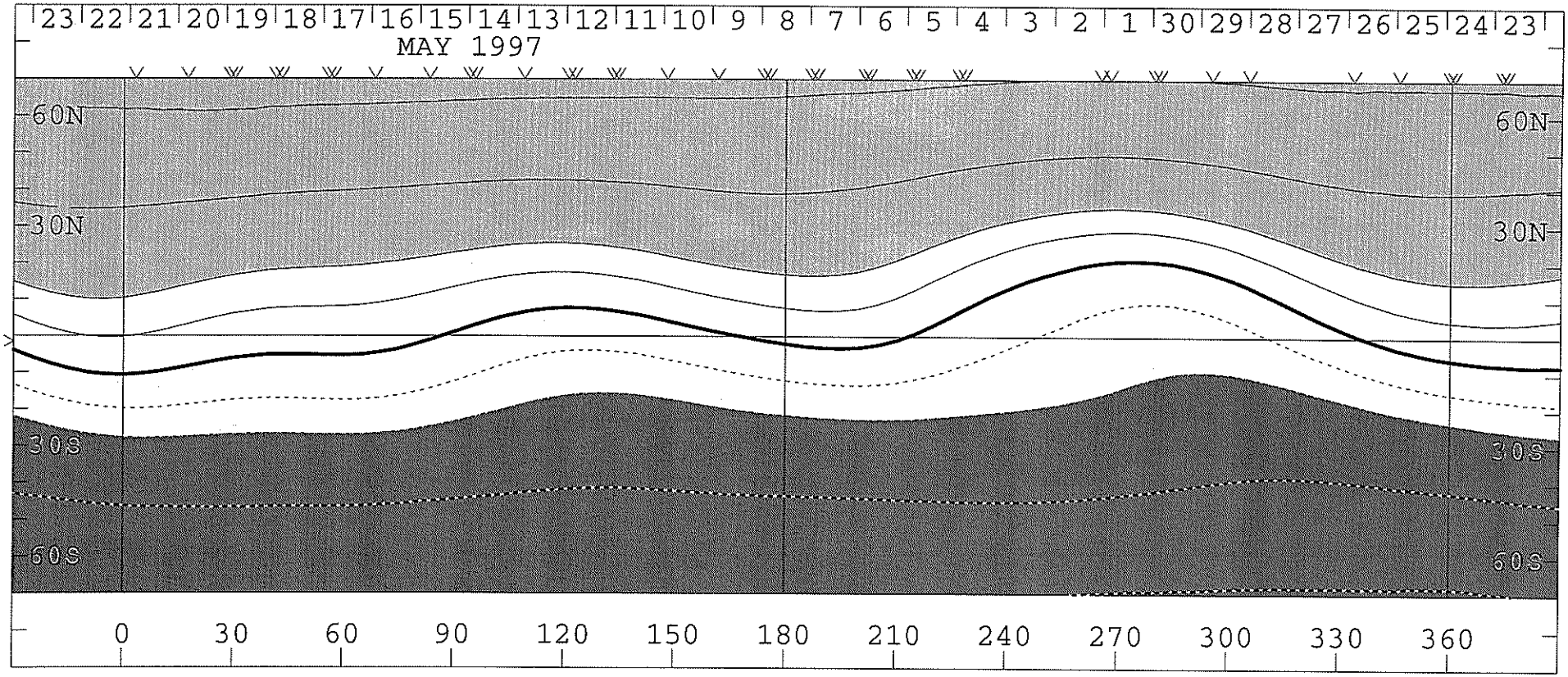
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1922

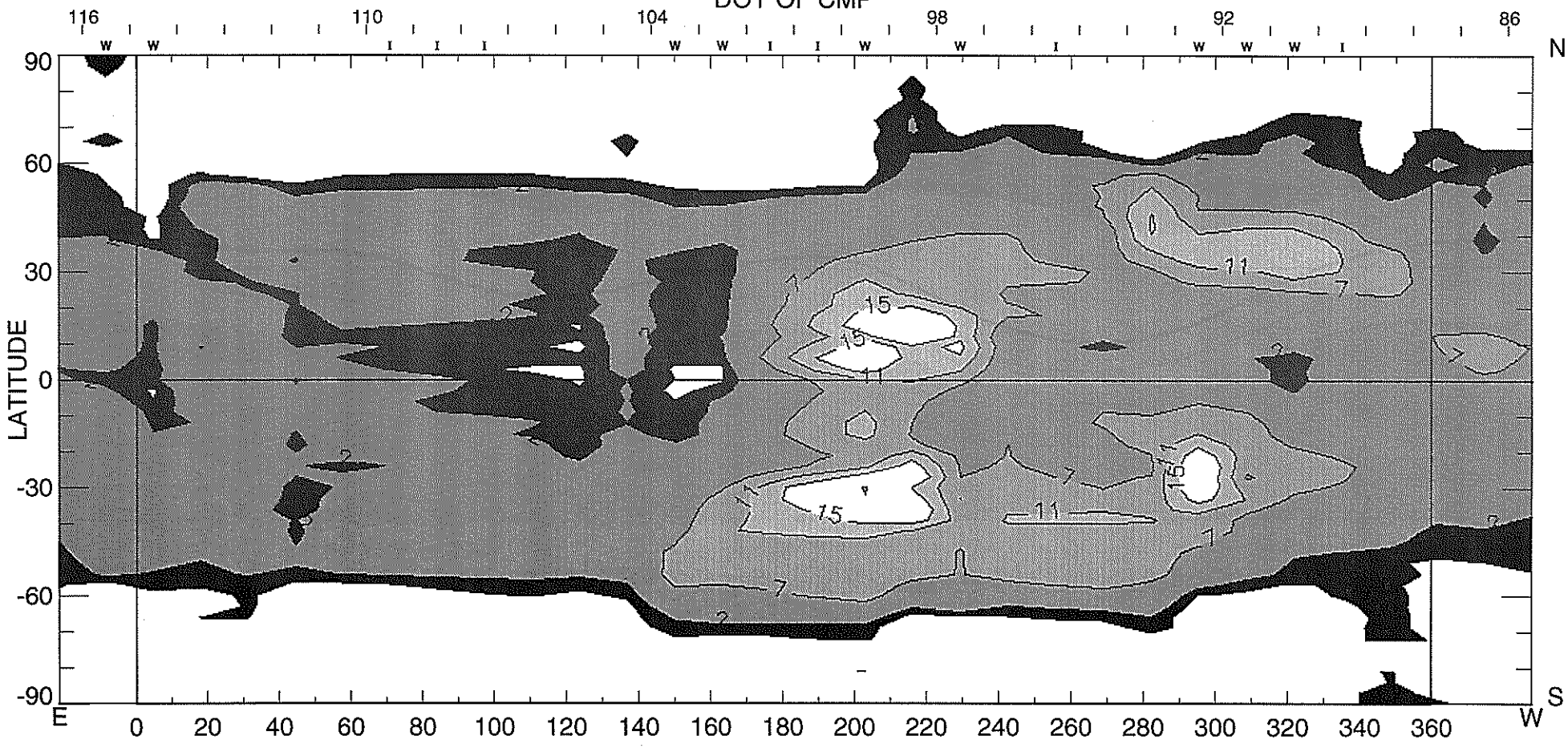
(24 April to 22 May 1997)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



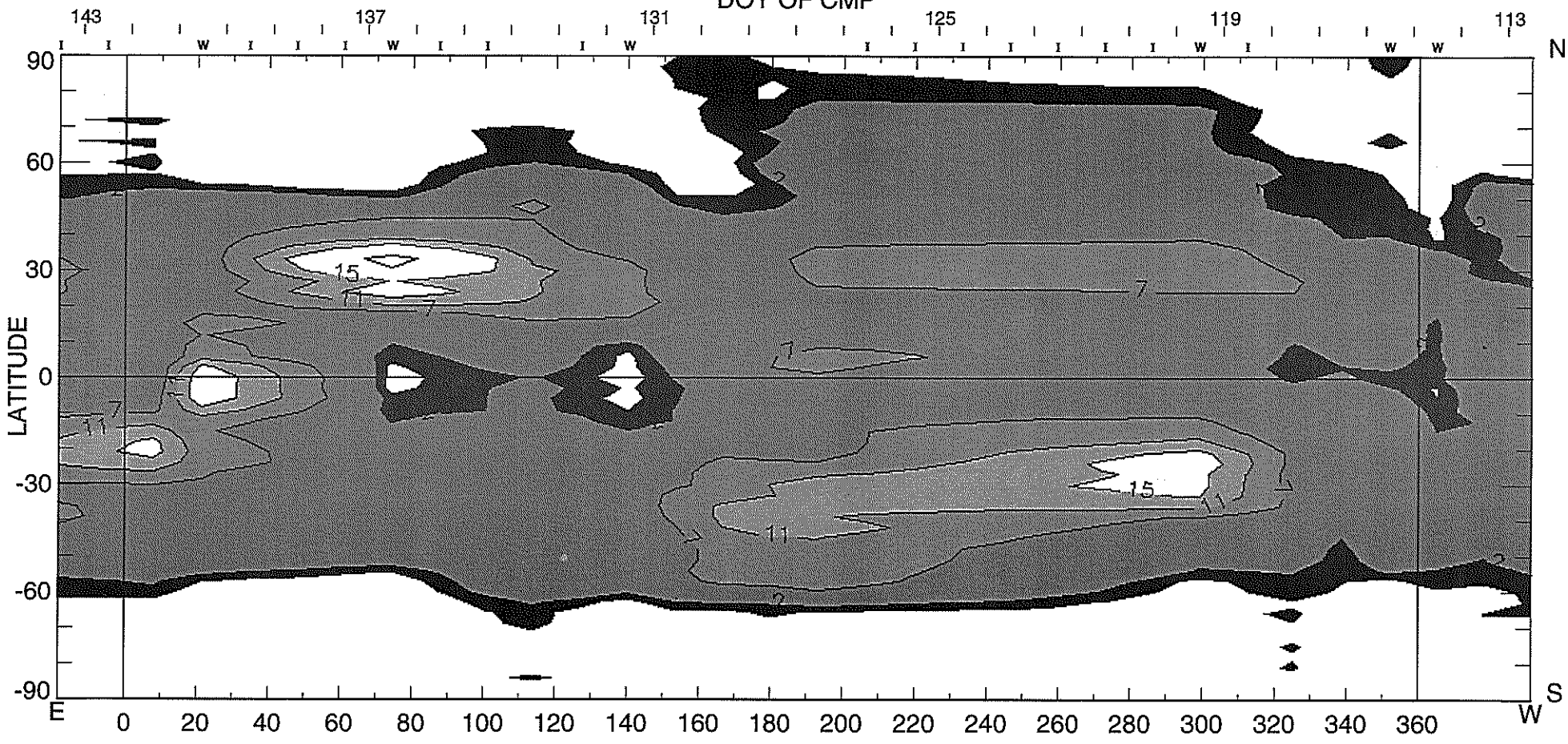
CARRINGTON ROTATION NUMBER 1921 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



(30-Jun-97)

1997 E+W 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 1922 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



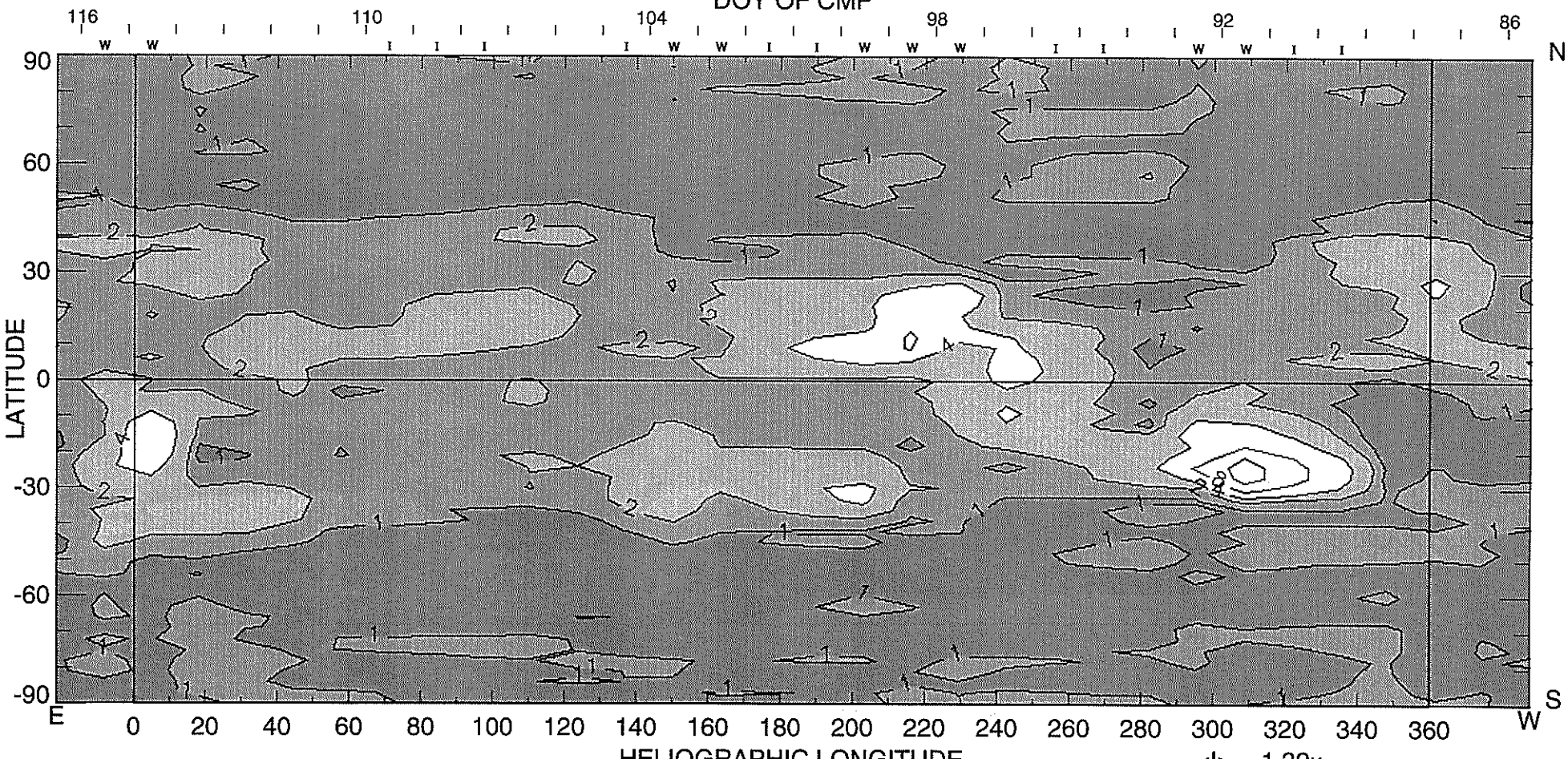
<I> = 3.77μ

(09-Jul-97)

1997 E+W 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 1921 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



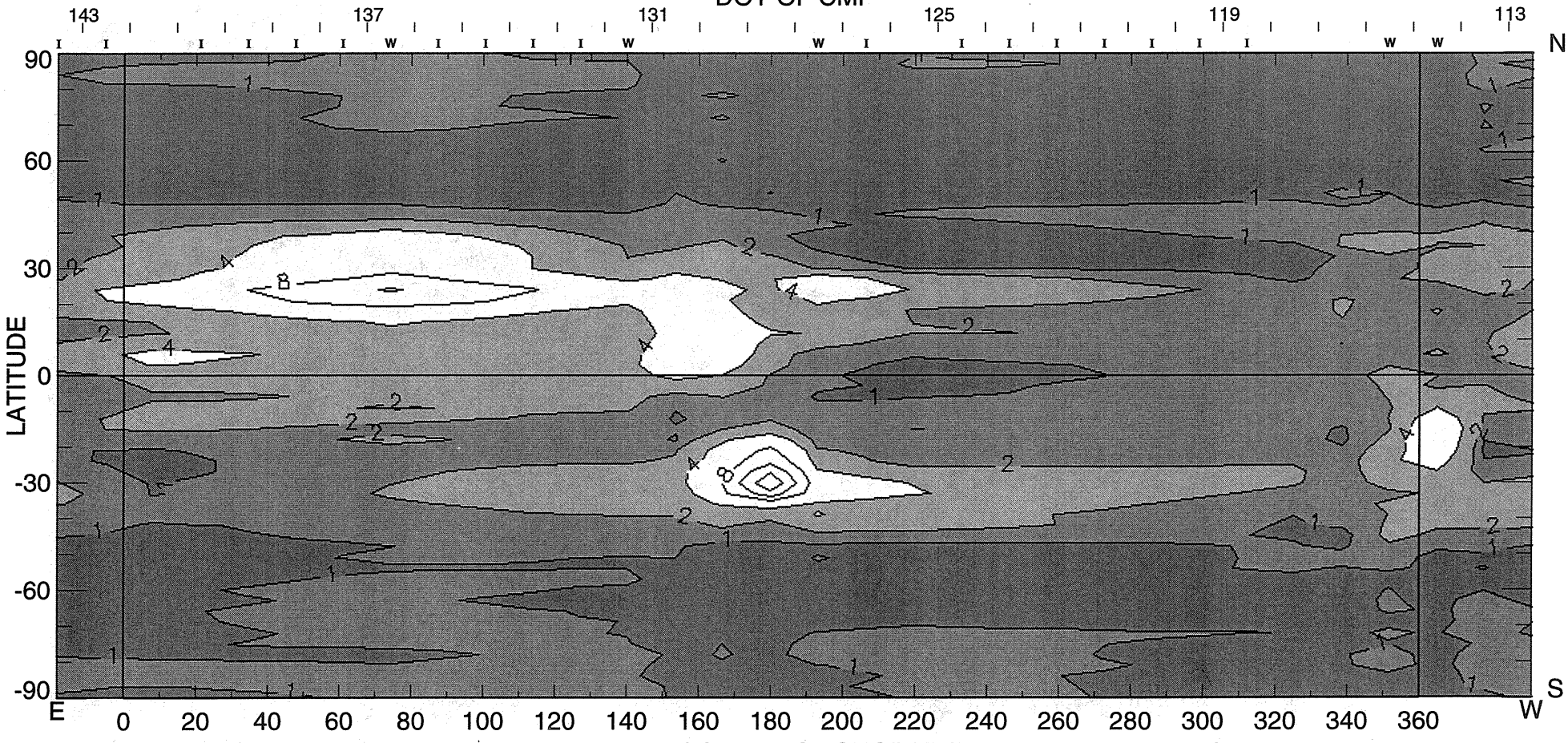
<I> = 1.32μ

(30-Jun-97)

1997 E+W 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 1921.

CARRINGTON ROTATION NUMBER 1922 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



(09-Jul-97) 1997 E+W 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 1922.

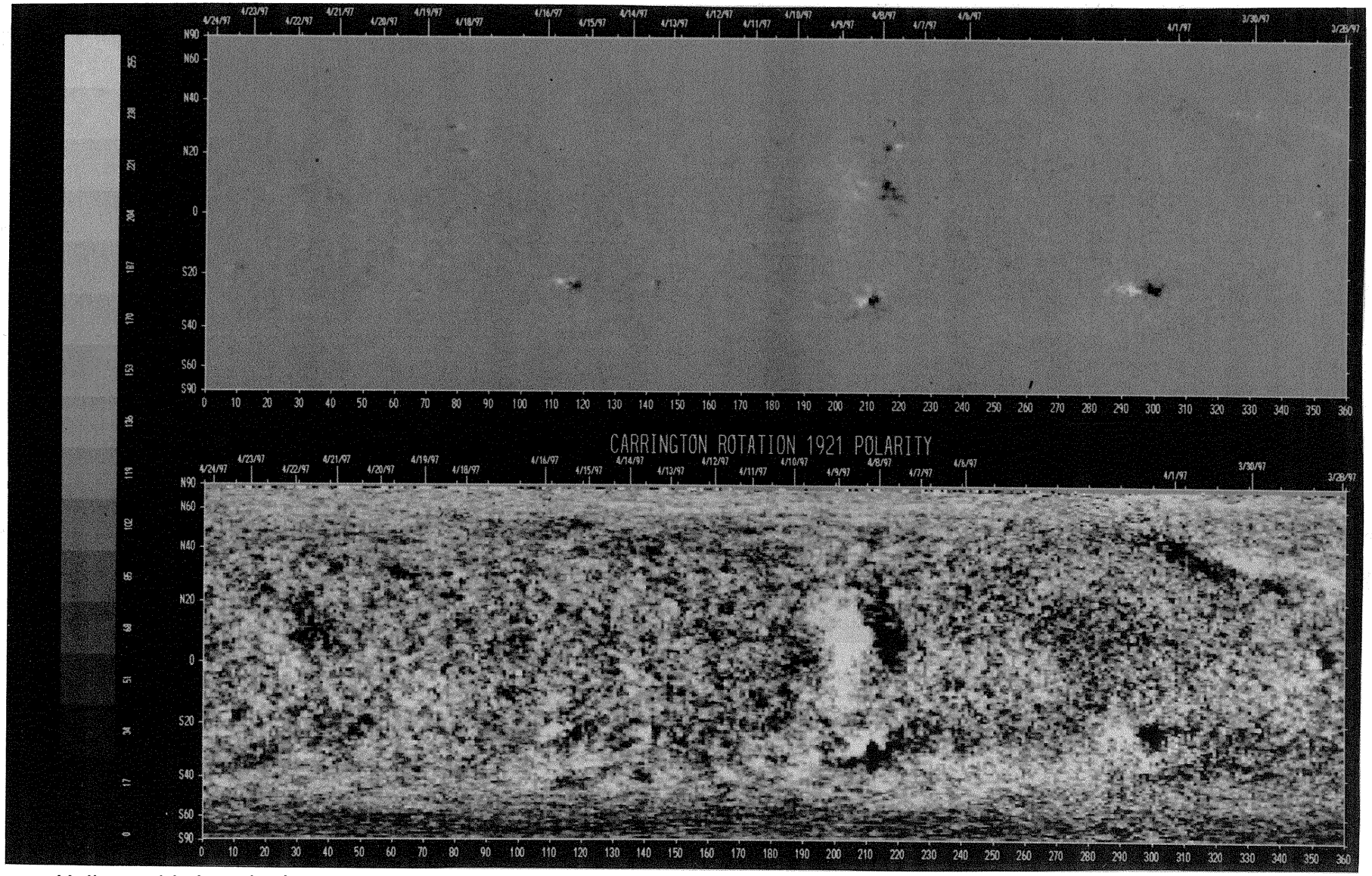
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1921

(28 March to 24 April 1997)

National Solar Observatory/Kitt Peak

Dates of Observation



Heliographic Longitude

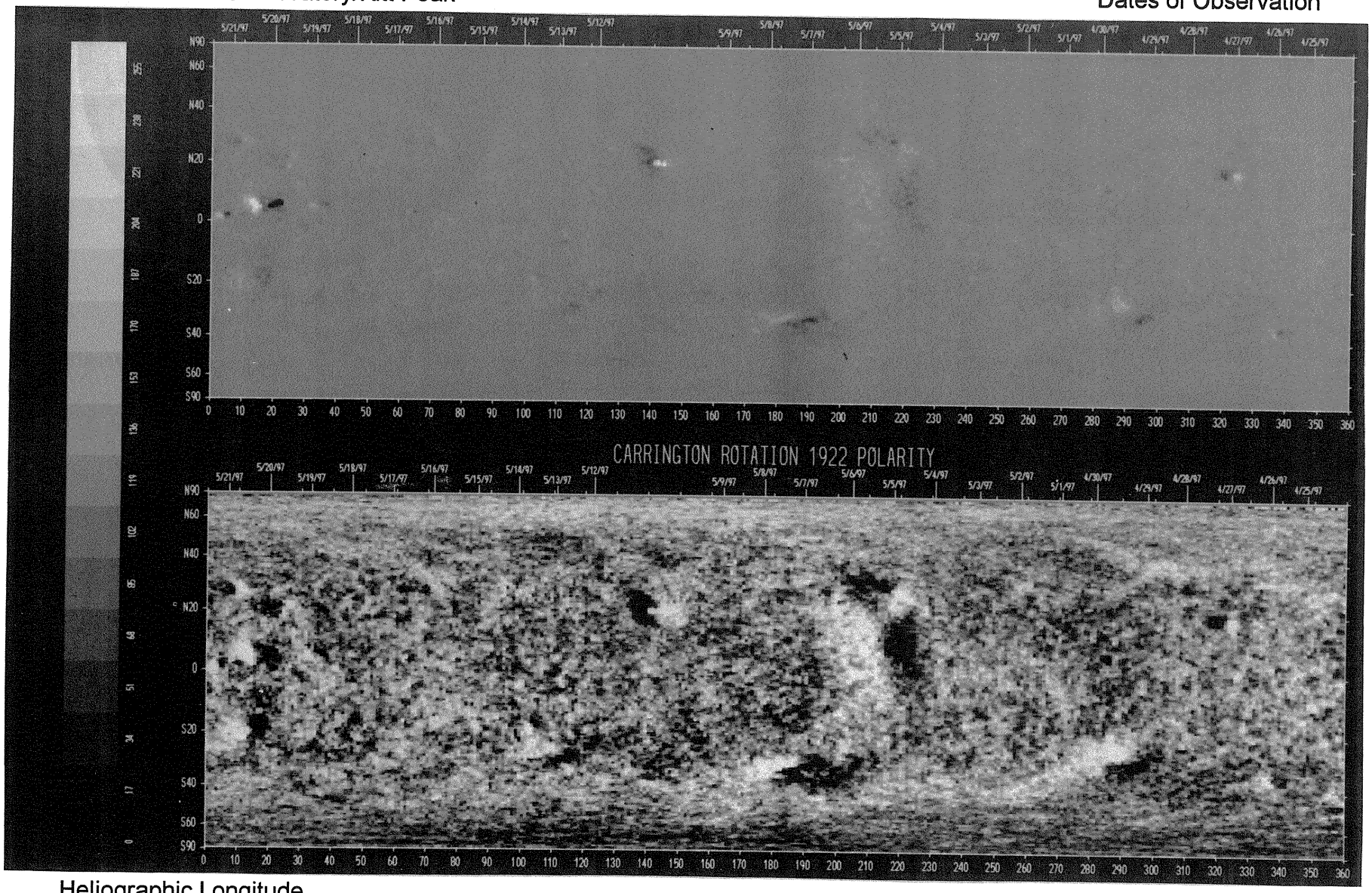
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1922

(24 April to 22 May 1997)

National Solar Observatory/Kitt Peak

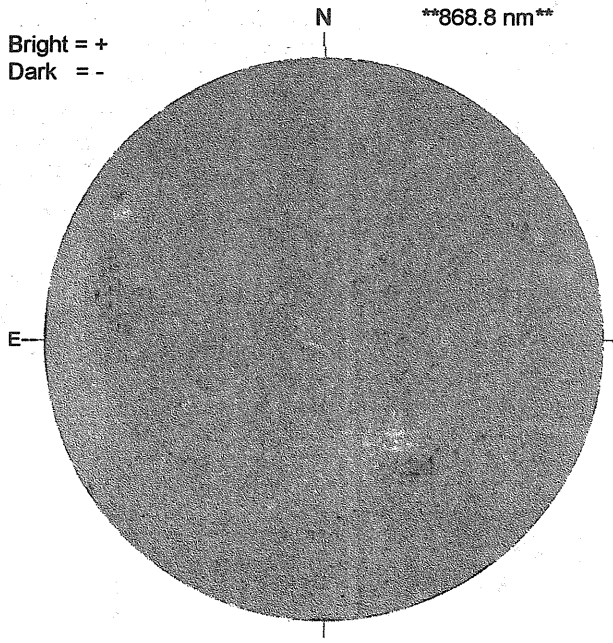
Dates of Observation



Heliographic Longitude

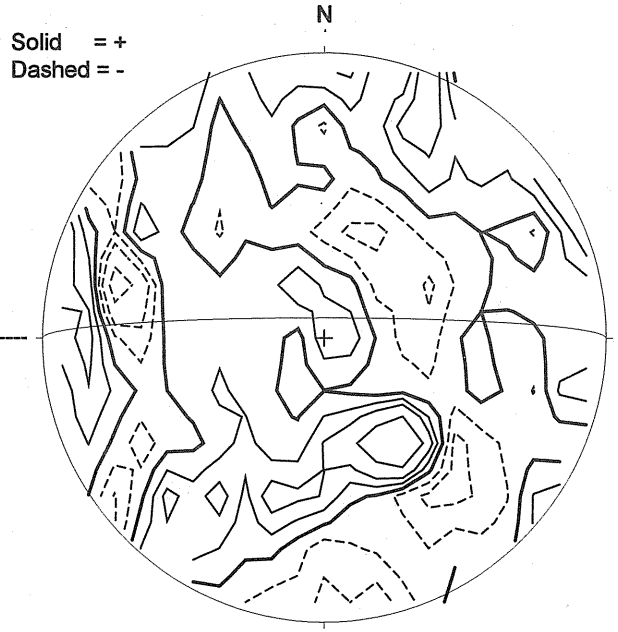
MAY 1, 1997 (P= - 24.15 , Bo = - 4.16 , Lo = 279.04)

KITT PEAK MAGNETOGRAM



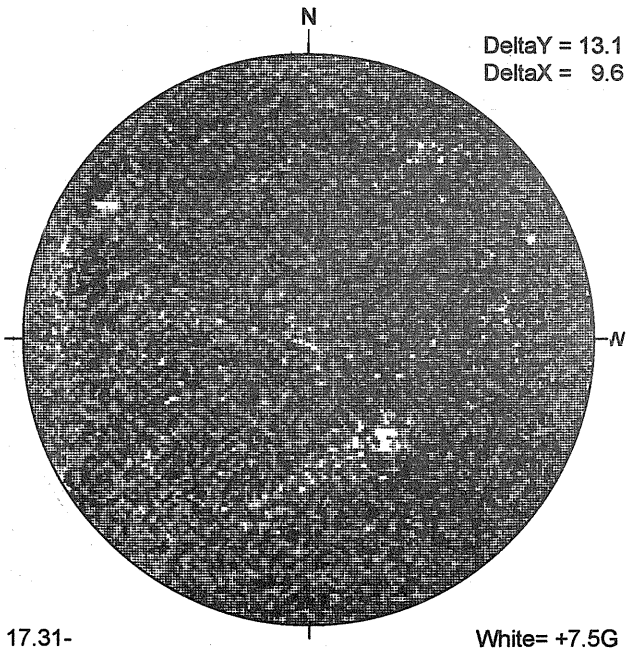
1438 UT

STANFORD MAGNETOGRAM



2017 UT

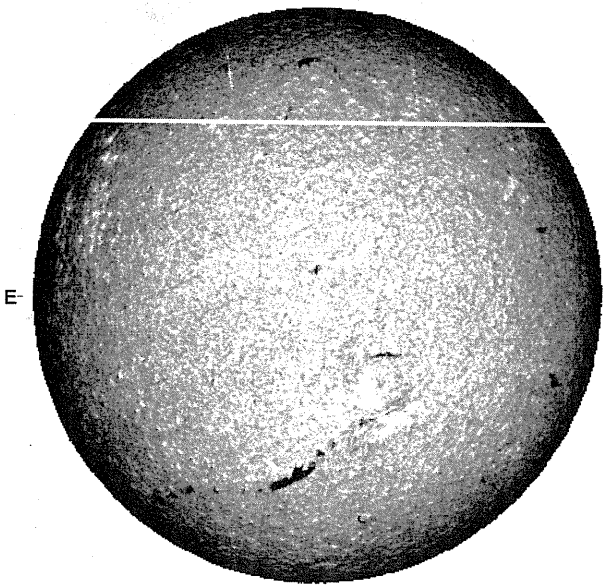
MT. WILSON MAGNETOGRAM



17.31-
18.25 UT

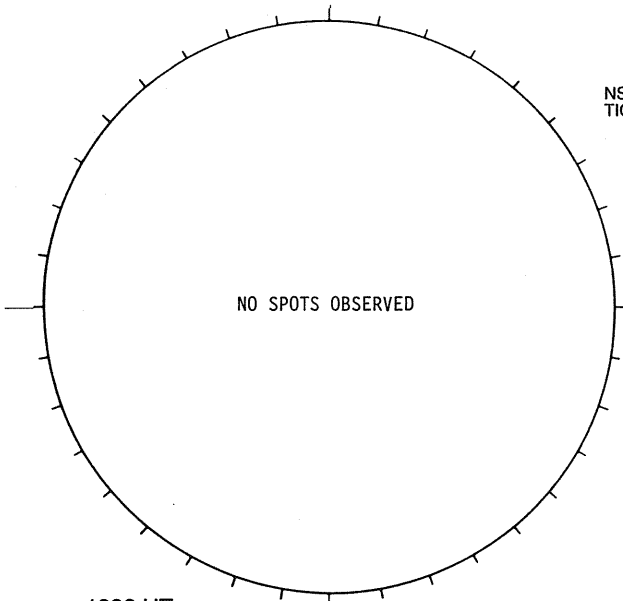
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



1455 UT

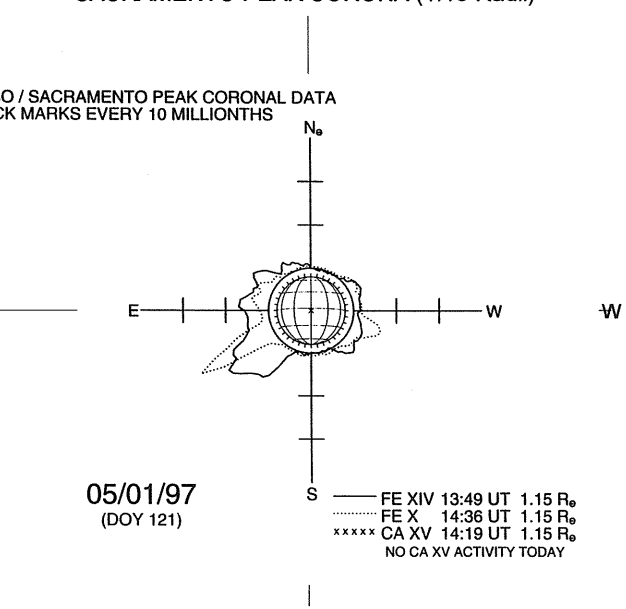
RAMEY SUNSPOT



1330 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS

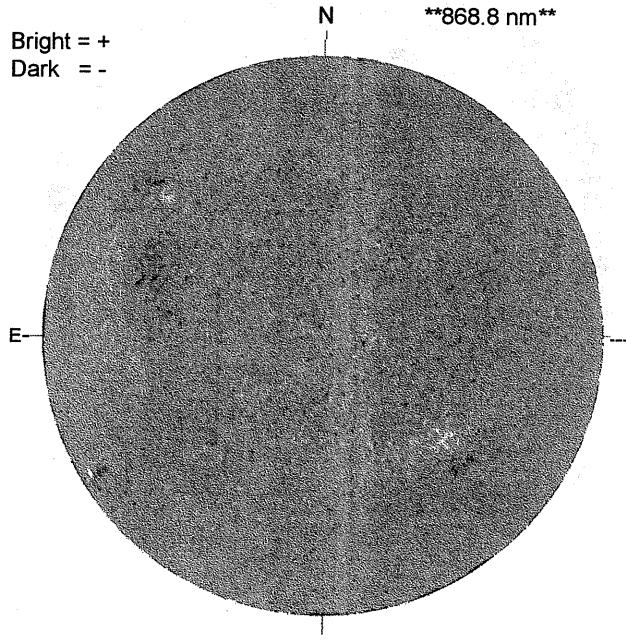


05/01/97
(DOY 121)

FE XIV 13:49 UT 1.15 $R_\odot$
FE X 14:36 UT 1.15 $R_\odot$
CA XV 14:19 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

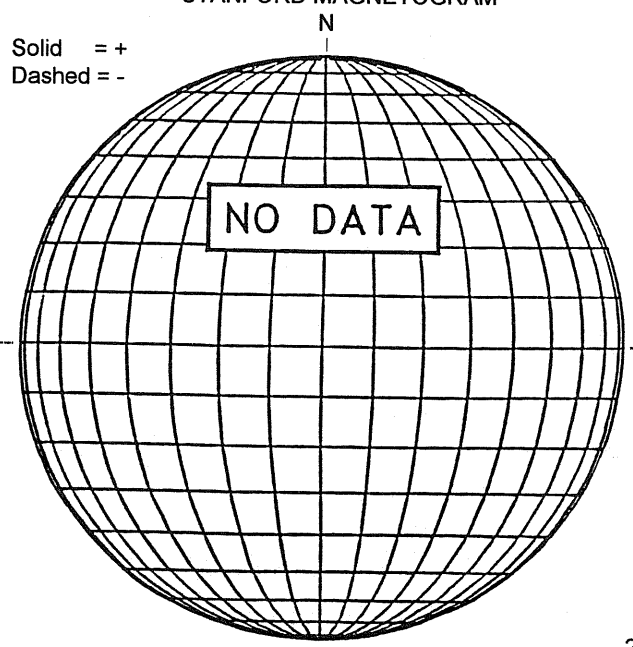
MAY 2, 1997 (P= - 23.97, Bo = - 4.06, Lo = 265.82)

KITT PEAK MAGNETOGRAM

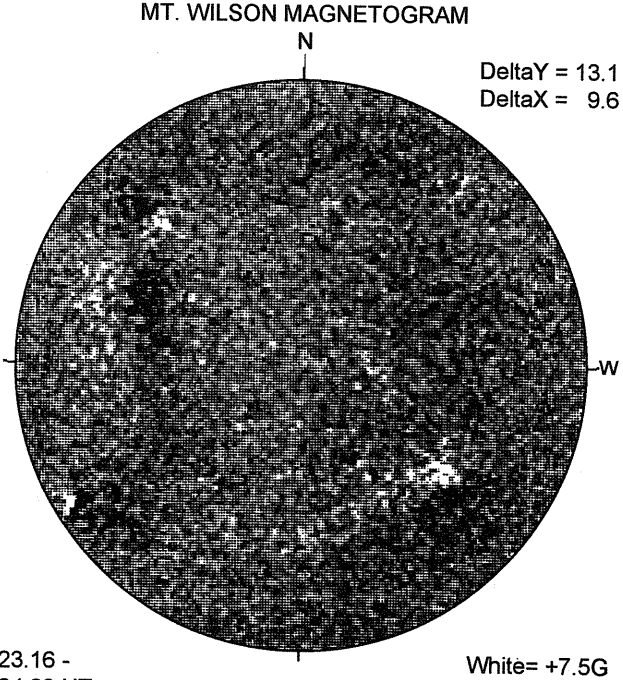


1423 UT

STANFORD MAGNETOGRAM



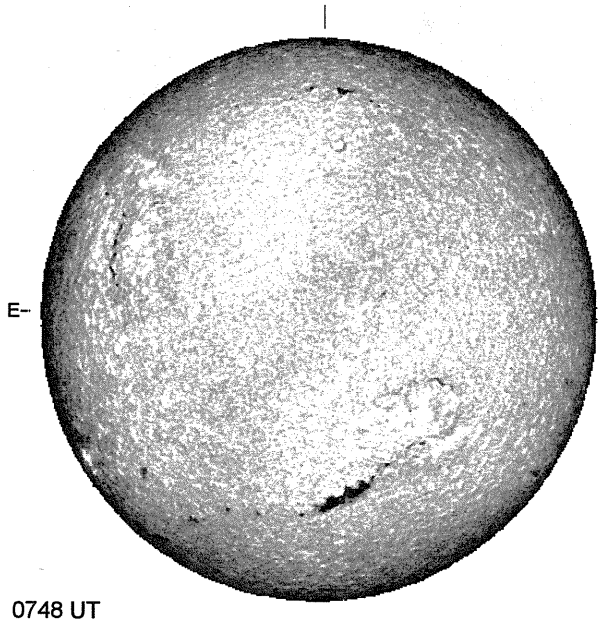
MT. WILSON MAGNETOGRAM



23.16 -
24.09 UT

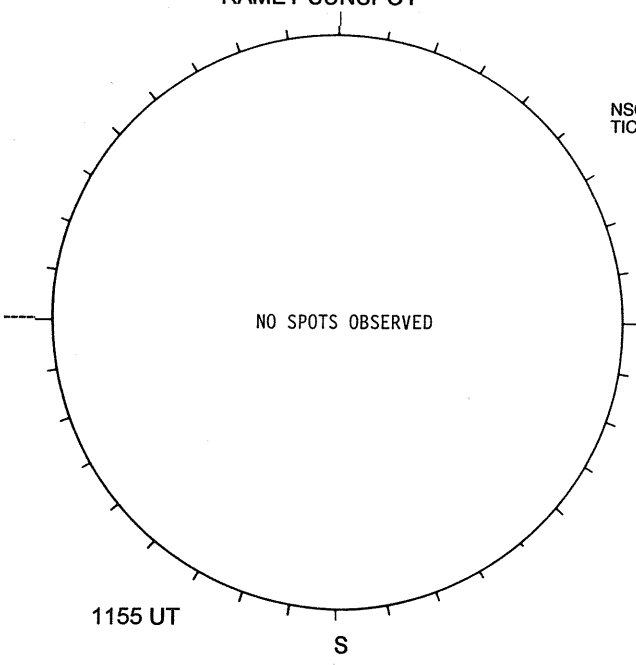
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



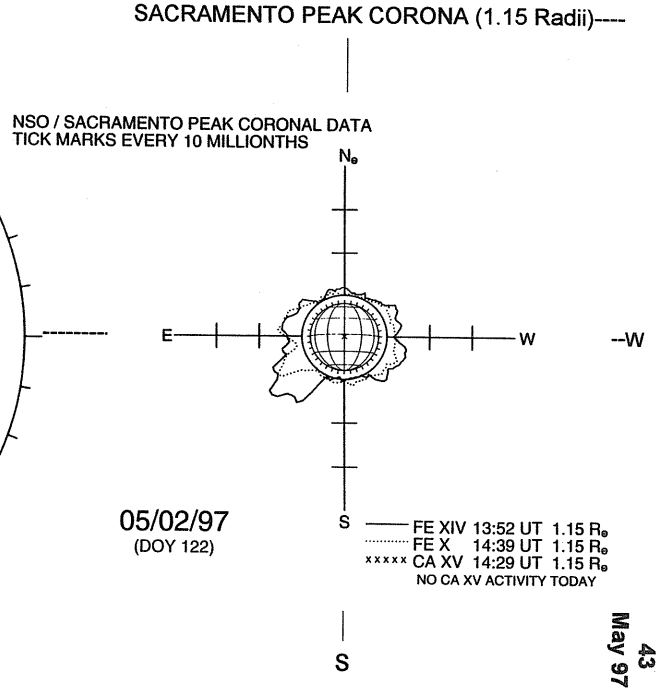
0748 UT

RAMEY SUNSPOT



1155 UT

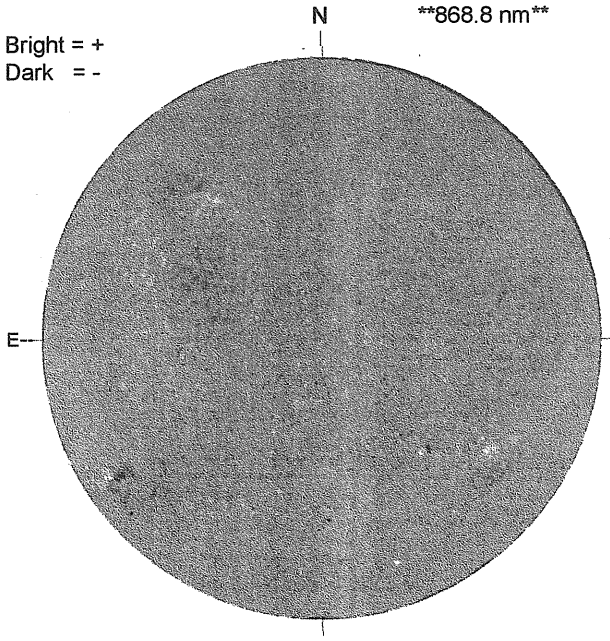
SACRAMENTO PEAK CORONA (1.15 Radii)----



05/02/97
(DOY 122)

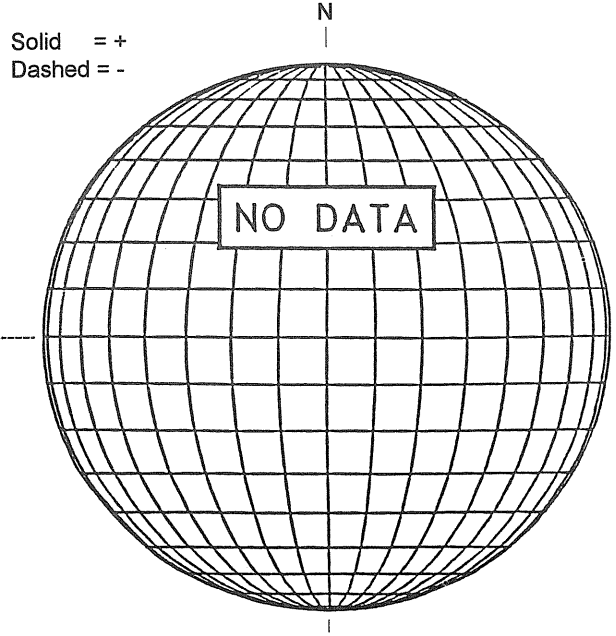
MAY 3, 1997 (P= - 23.78, Bo = - 3.96 , Lo = 252.60)

KITT PEAK MAGNETOGRAM

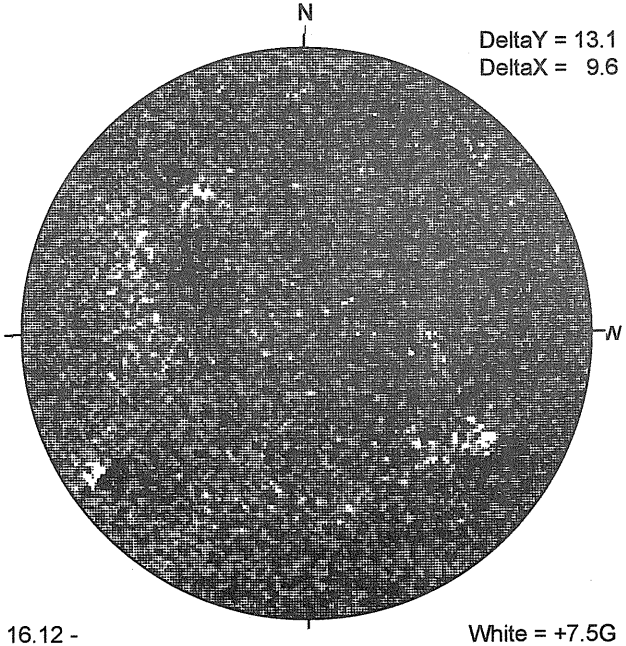


1429 UT

STANFORD MAGNETOGRAM



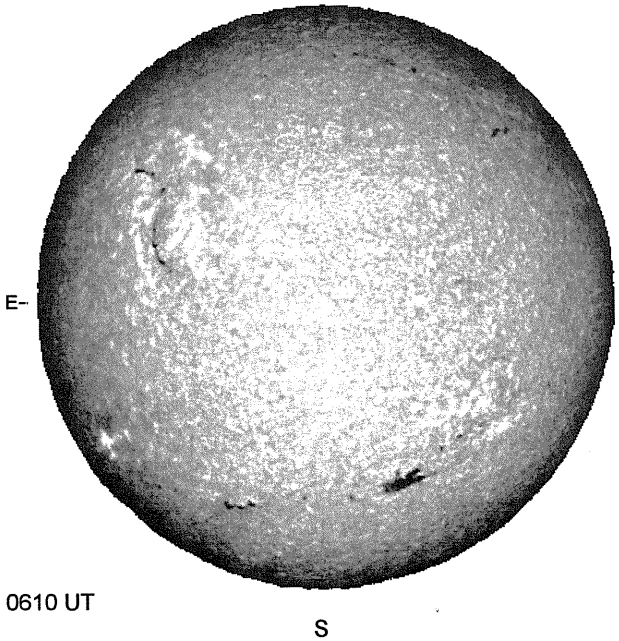
MT. WILSON MAGNETOGRAM



16.12 -
17.13 UT

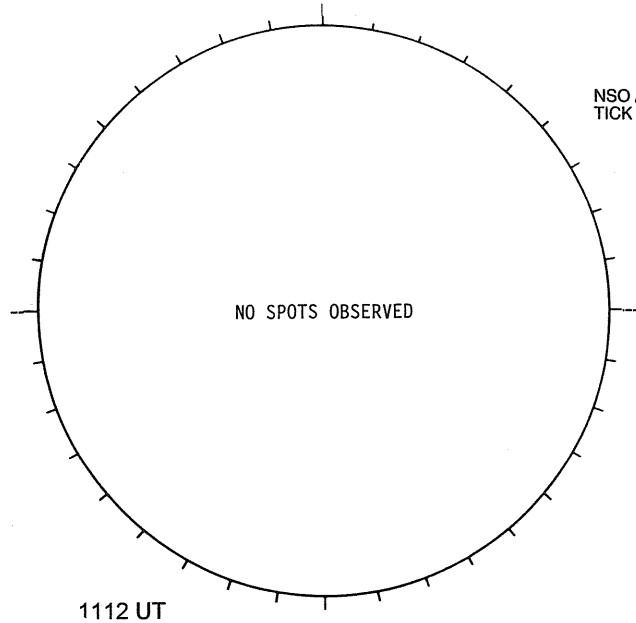
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



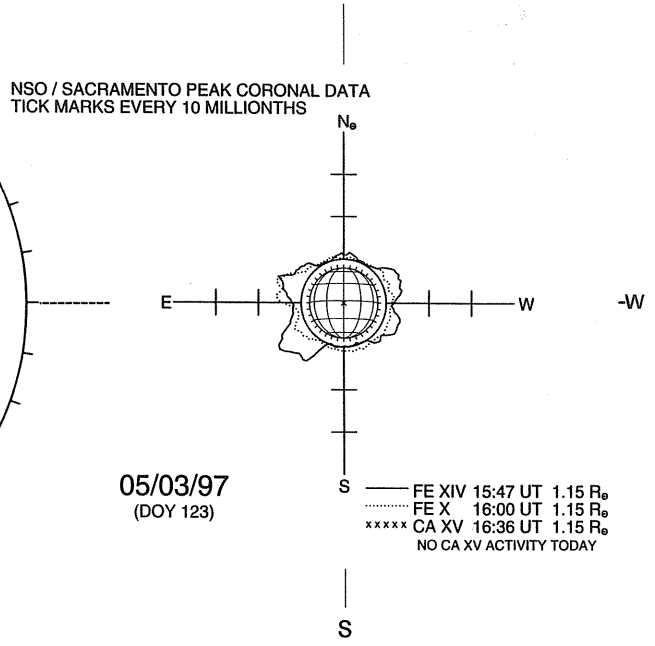
0610 UT

RAMEY SUNSPOT



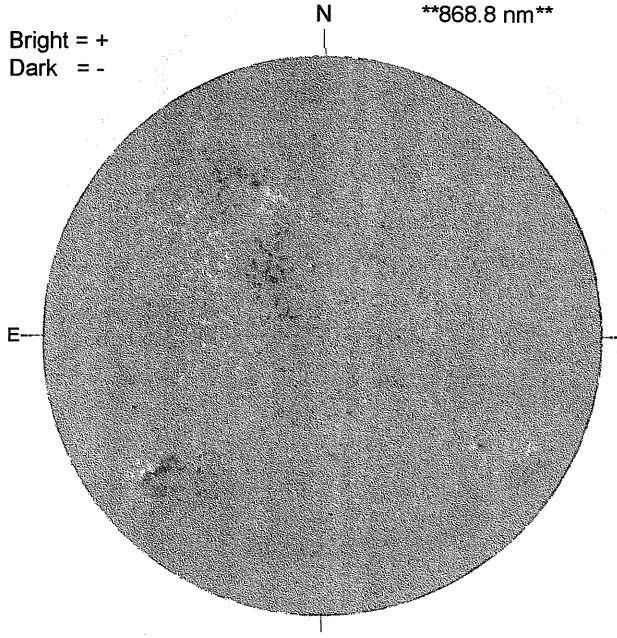
1112 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



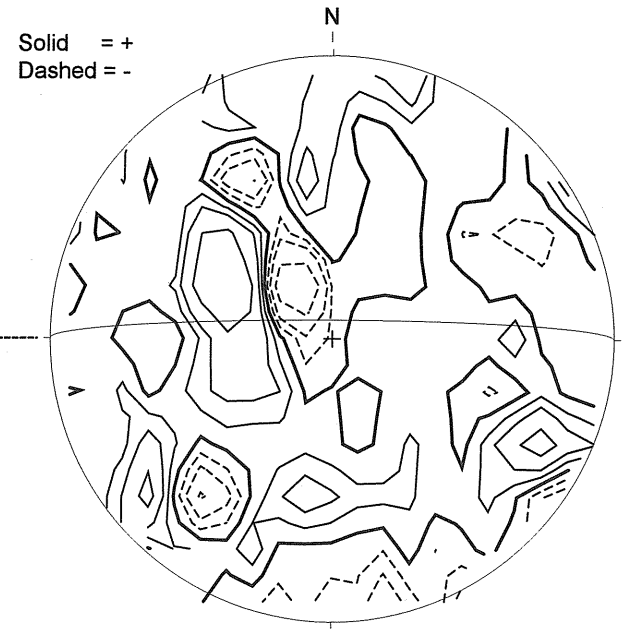
MAY 4, 1997 (P= - 23.58 , Bo = - 3.85 Lo = 239.39)

KITT PEAK MAGNETOGRAM



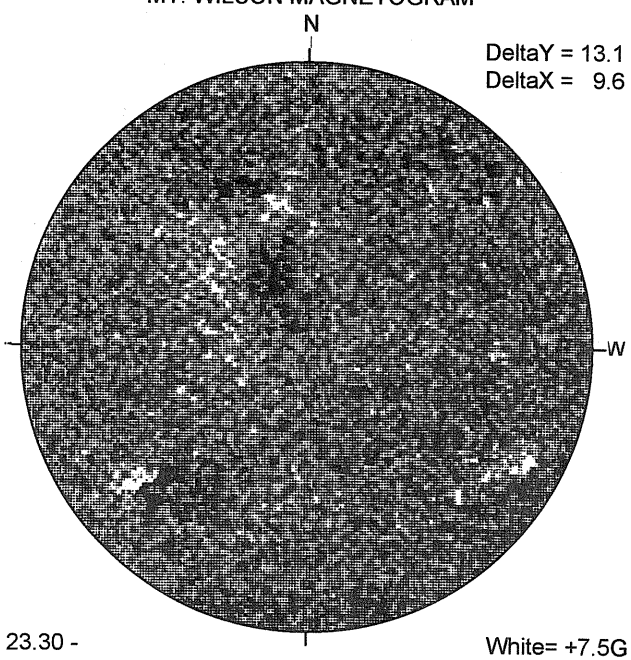
1547 UT

STANFORD MAGNETOGRAM



1935 UT

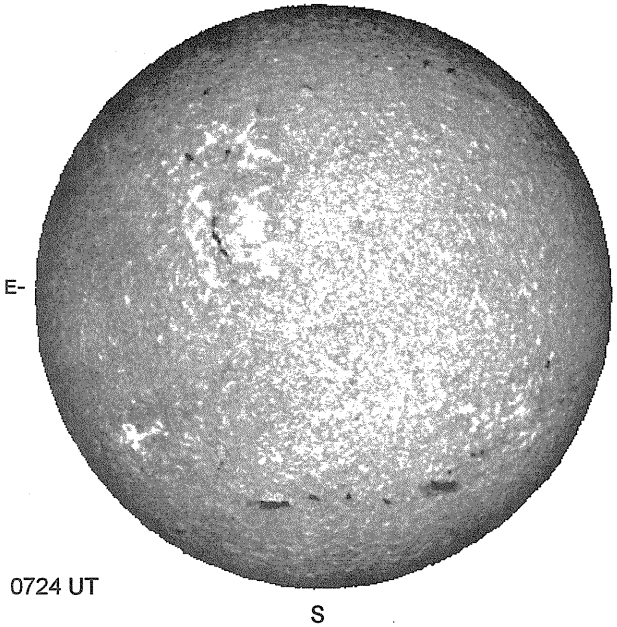
MT. WILSON MAGNETOGRAM



23.30 -
24.23 UT

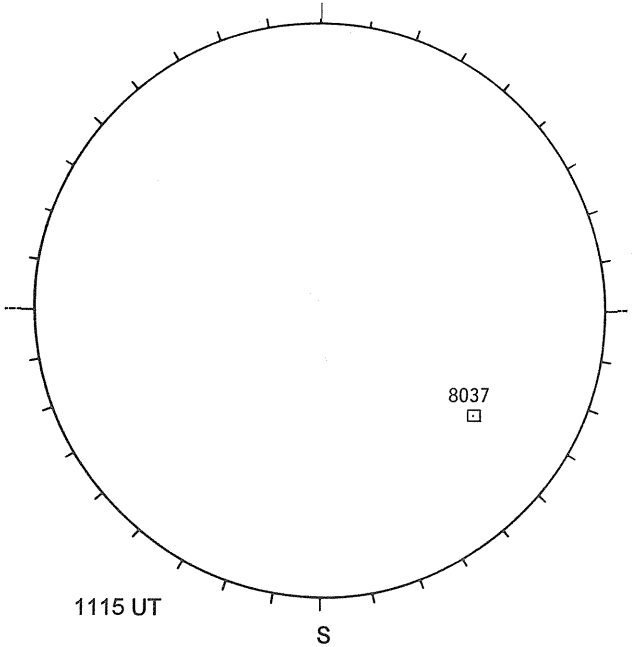
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



0724 UT

RAMEY SUNSPOT



1115 UT

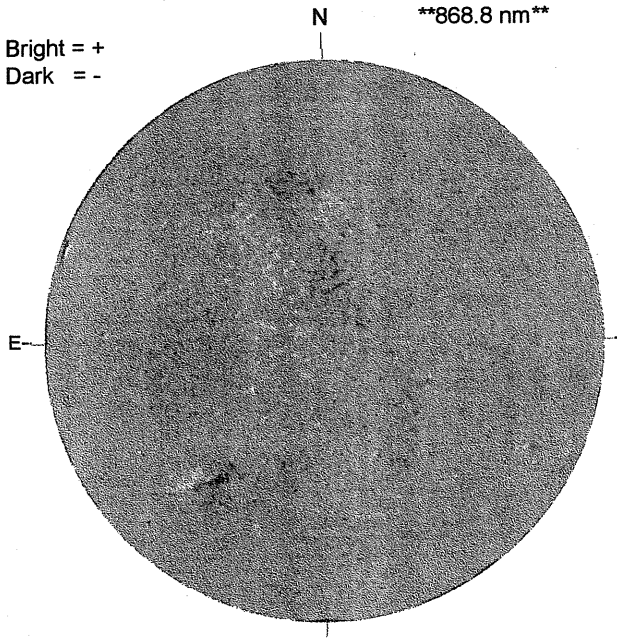
SACRAMENTO PEAK CORONA (1.15 Radii)----

MAY 5, 1997 (P= - 23.38 , Bo = - 3.75 , Lo = 226.17)

KITT PEAK MAGNETOGRAM

868.8 nm

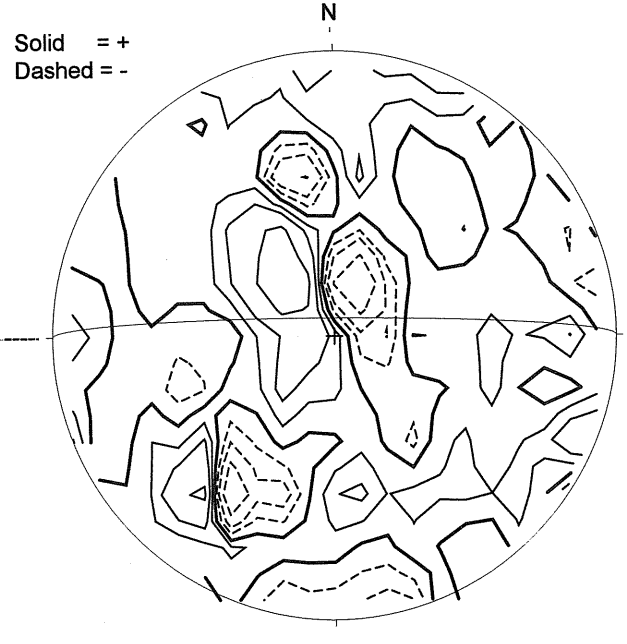
Bright = +
Dark = -



1438 UT

STANFORD MAGNETOGRAM

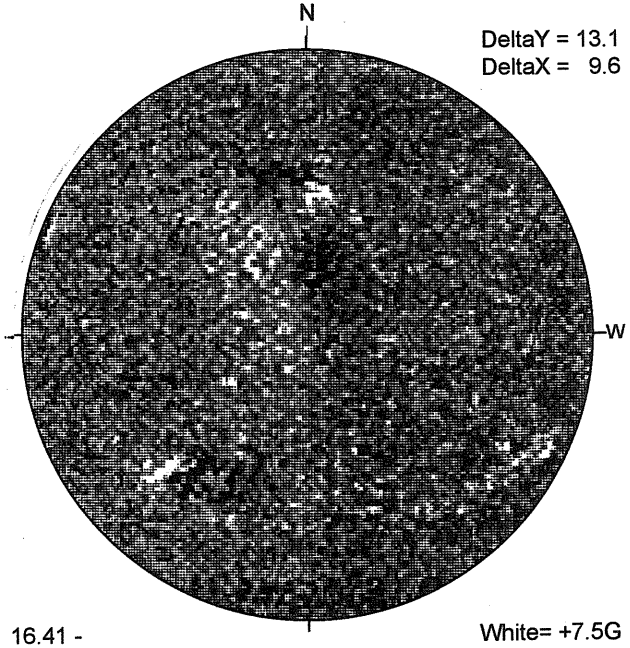
Solid = +
Dashed = -



1841 UT

MT. WILSON MAGNETOGRAM

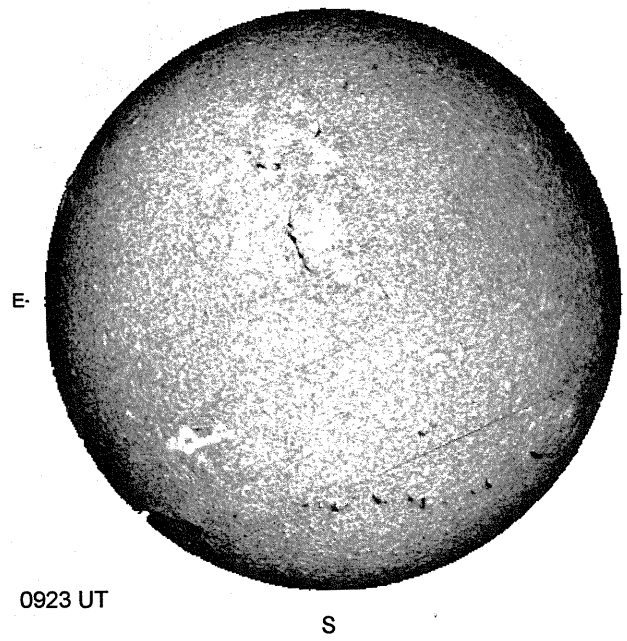
DeltaY = 13.1
DeltaX = 9.6



16.41 -
17.34 UT

White= +7.5G
Black = -7.5G

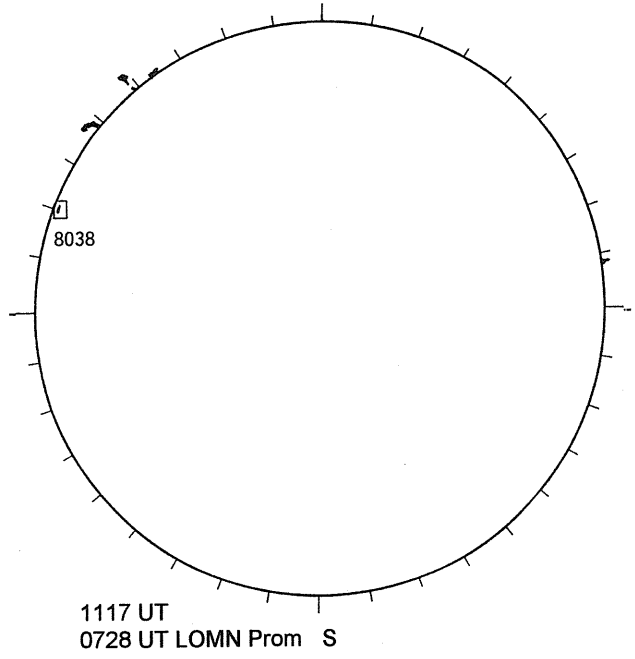
MEUDON H-ALPHA



0923 UT

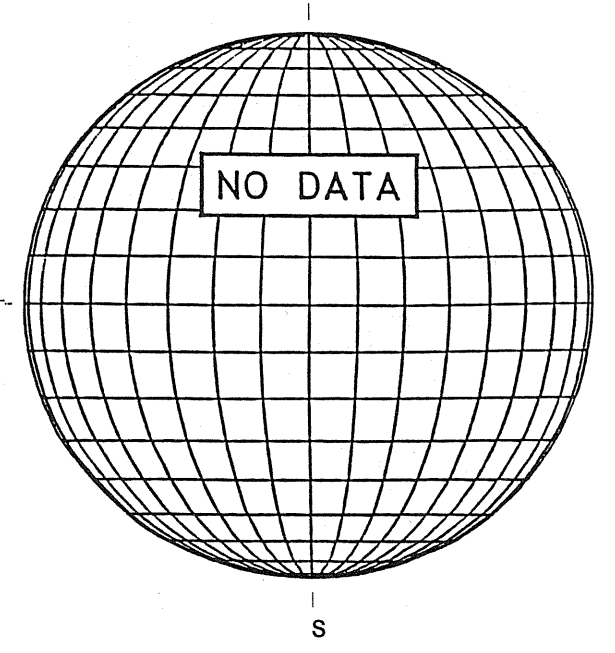
S

RAMEY SUNSPOT



1117 UT
0728 UT LOMN Prom S

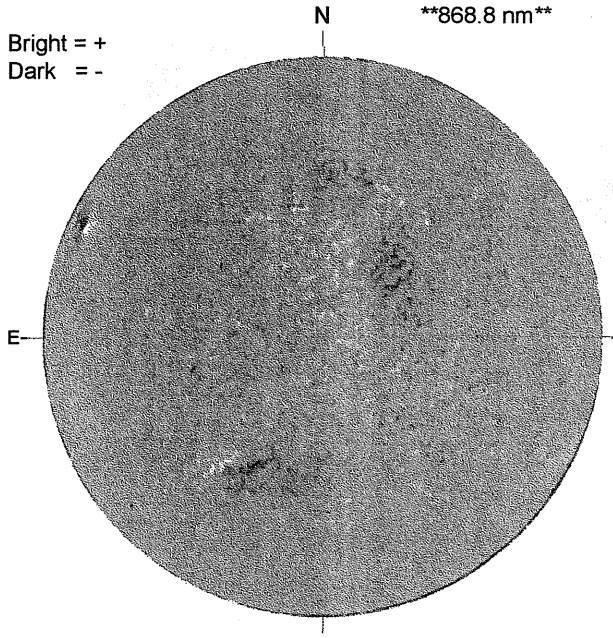
SACRAMENTO PEAK CORONA (1.15 Radii)----



S

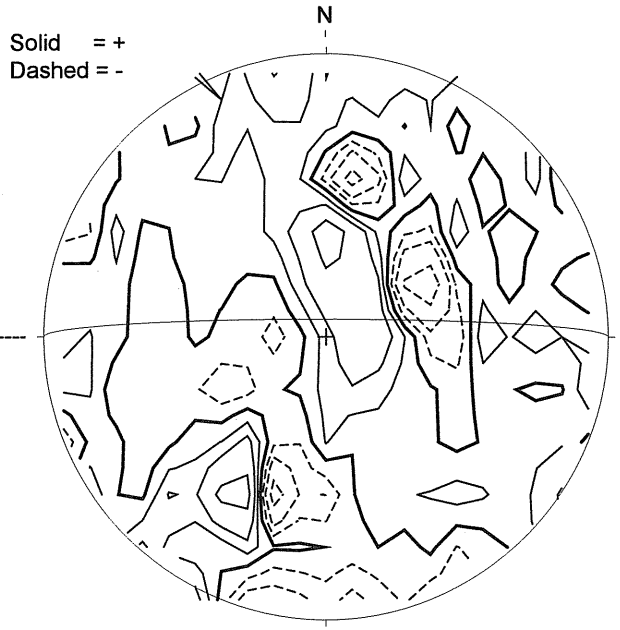
MAY 6, 1997 (P= - 23.17, Bo = - 3.64 , Lo = 212.95)

KITT PEAK MAGNETOGRAM



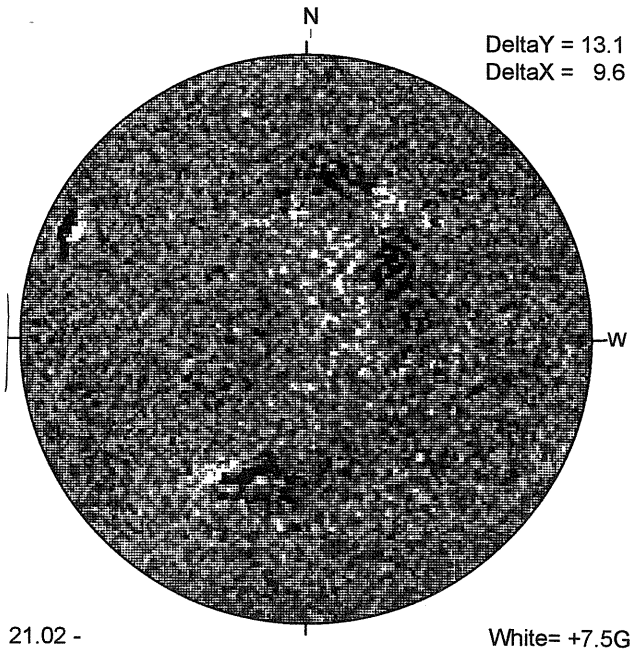
1508 UT

STANFORD MAGNETOGRAM



2055 UT

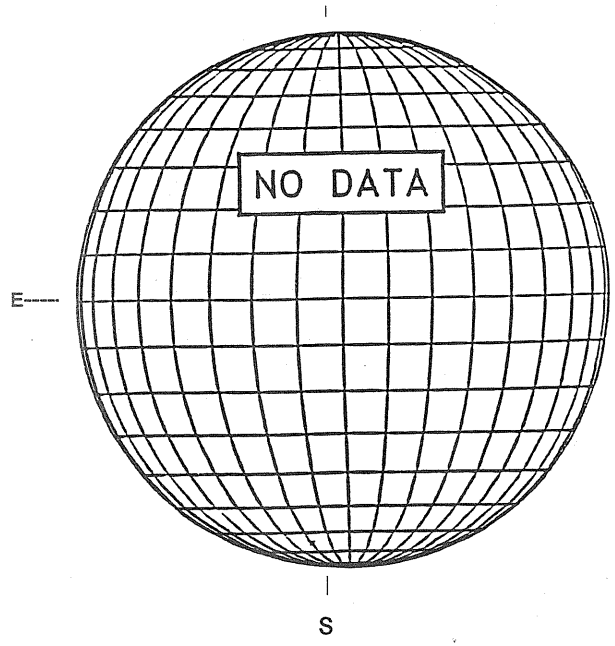
MT. WILSON MAGNETOGRAM



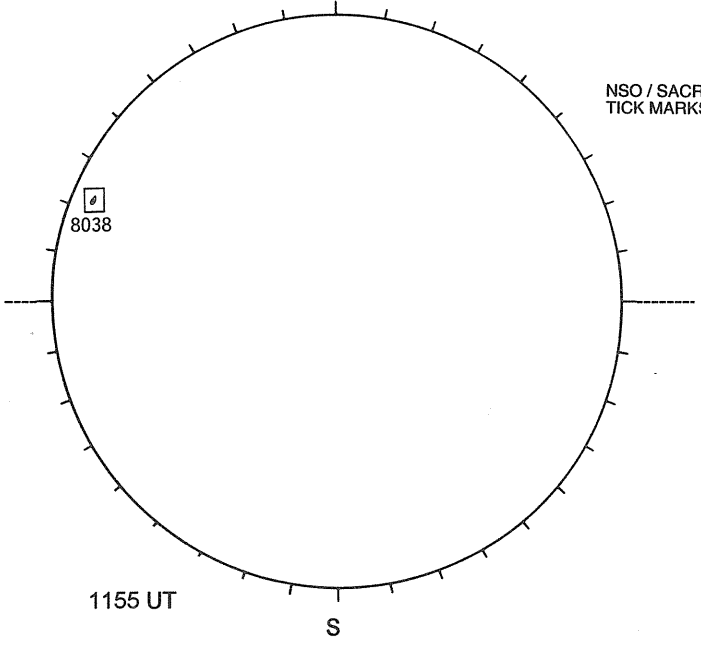
21.02 -
21.95 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

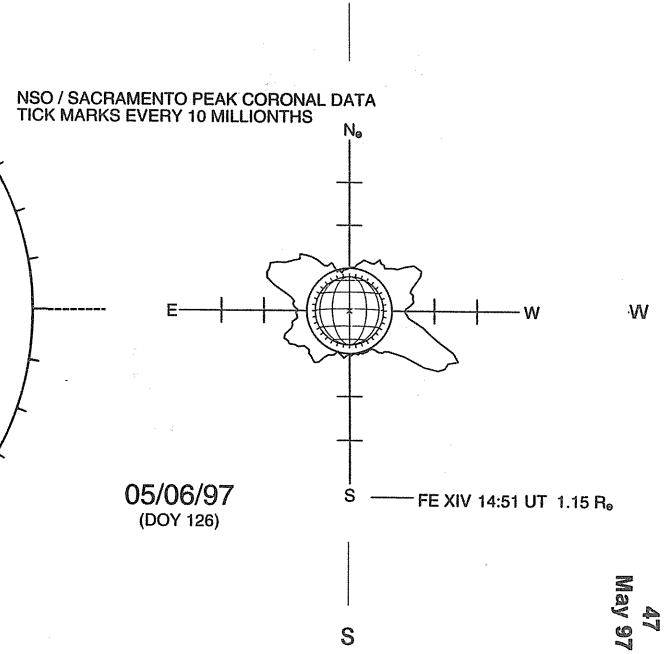


RAMEY SUNSPOT



1155 UT

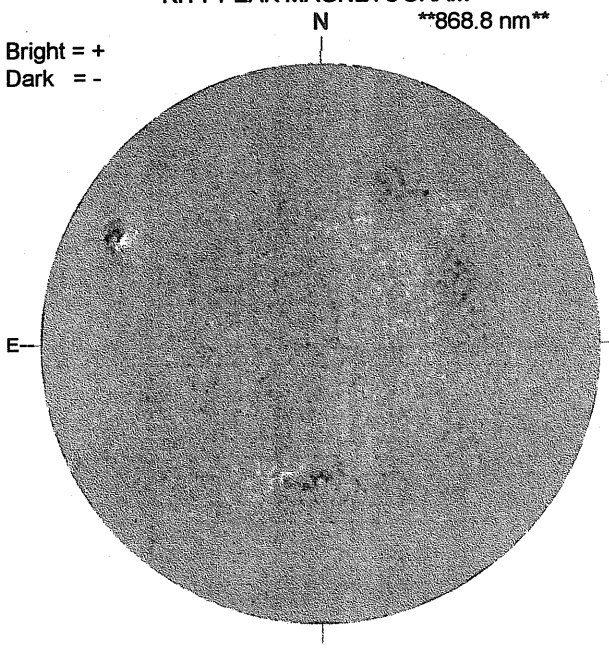
SACRAMENTO PEAK CORONA (1.15 Radii)



05/06/97
(DOY 126)

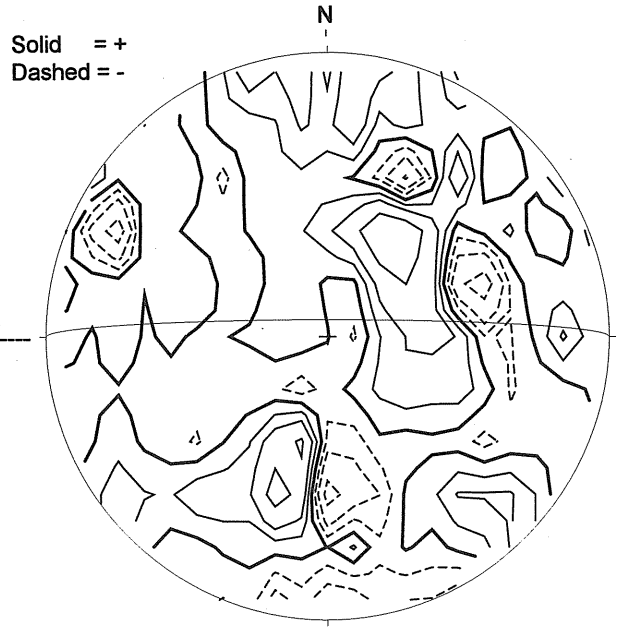
MAY 7, 1997 (P= - 22.96, Bo = - 3.54 Lo = 199.73)

KITT PEAK MAGNETOGRAM



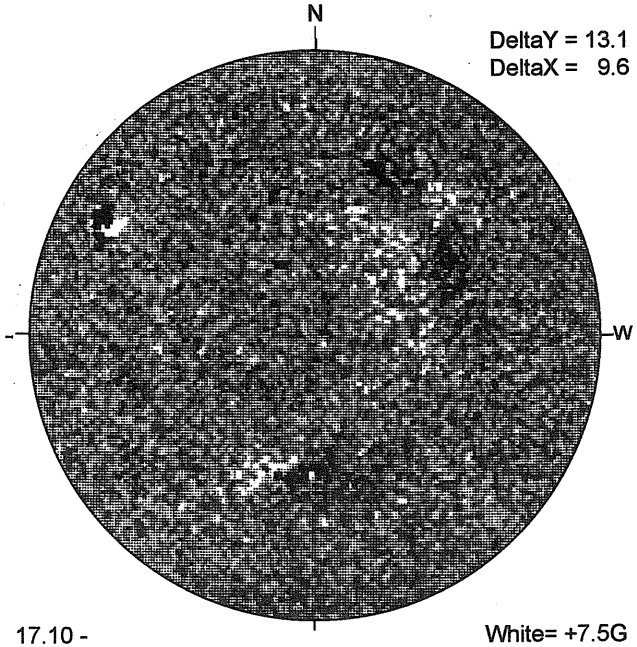
1718 UT

STANFORD MAGNETOGRAM



2026 UT

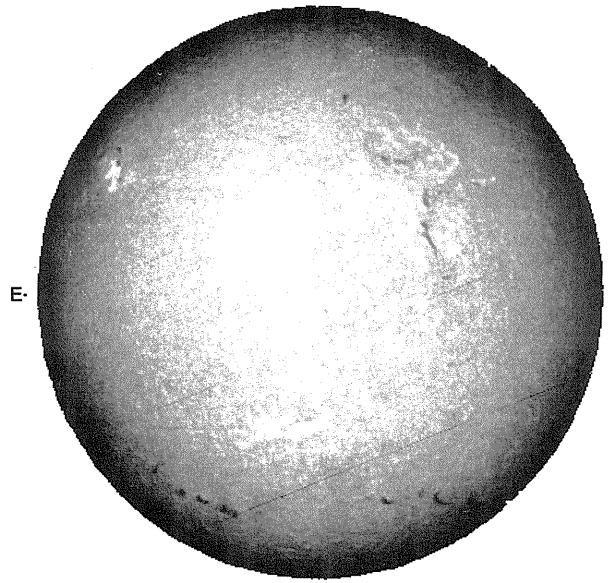
MT. WILSON MAGNETOGRAM



17.10 -
18.03 UT

White= +7.5G
Black = -7.5G

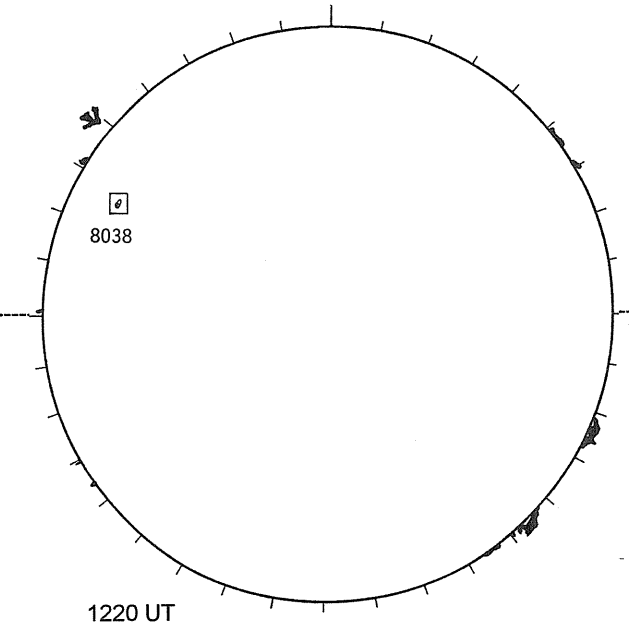
MEUDON H-ALPHA



1455 UT

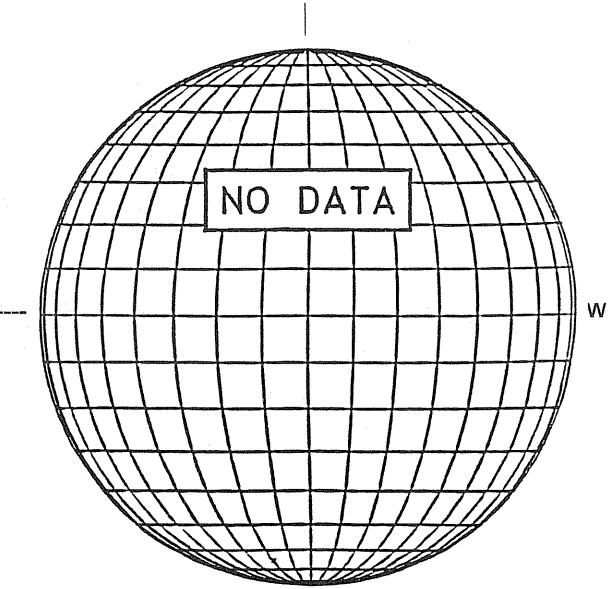
S

RAMEY SUNSPOT



1220 UT
0952 UT LOMN Prom S

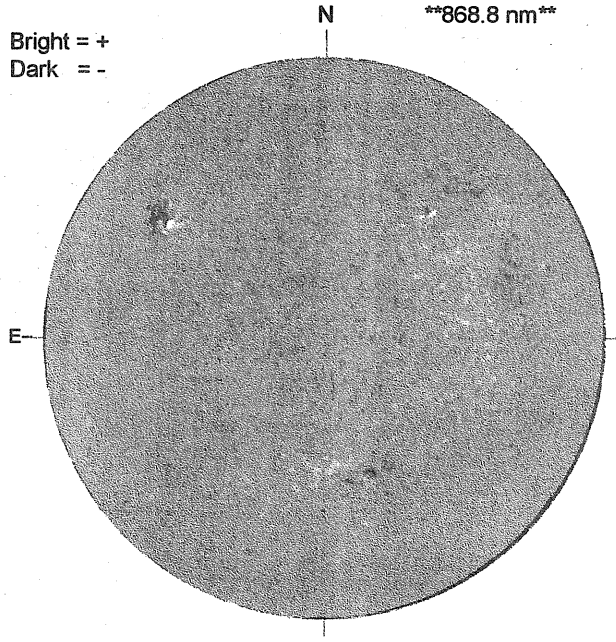
SACRAMENTO PEAK CORONA (1.15 Radii)----



S

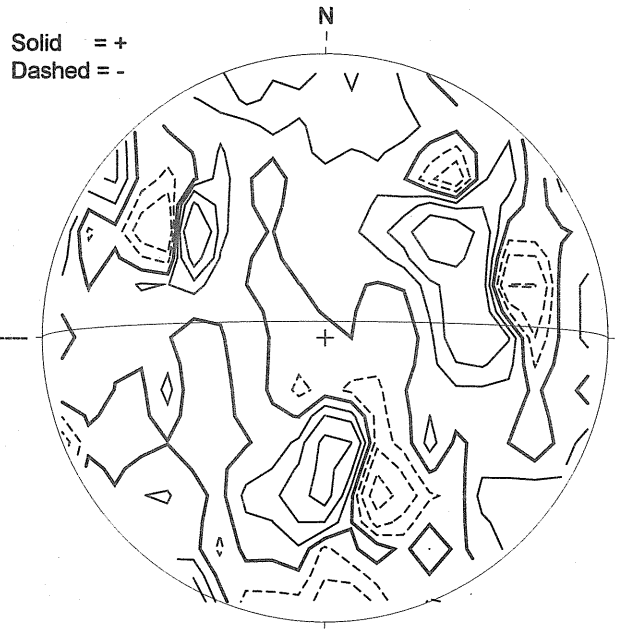
MAY 8, 1997 (P= - 22.73, Bo = - 3.43 , Lo = 186.51)

KITT PEAK MAGNETOGRAM



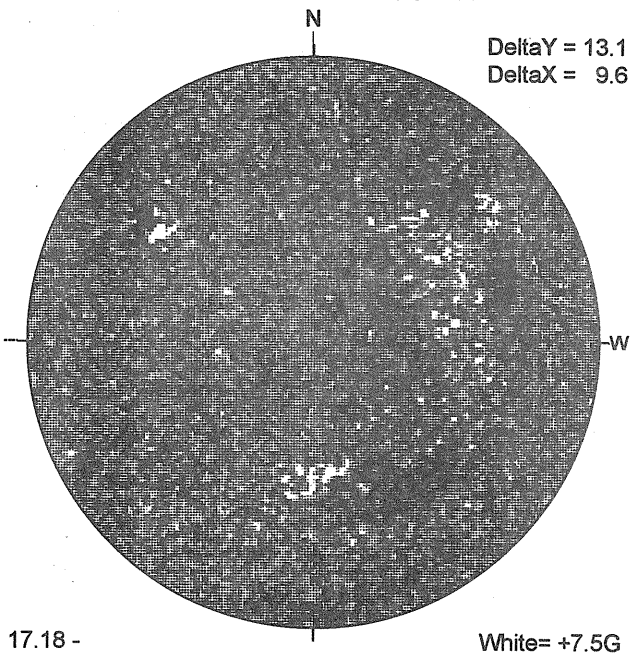
1750 UT

STANFORD MAGNETOGRAM



1947 UT

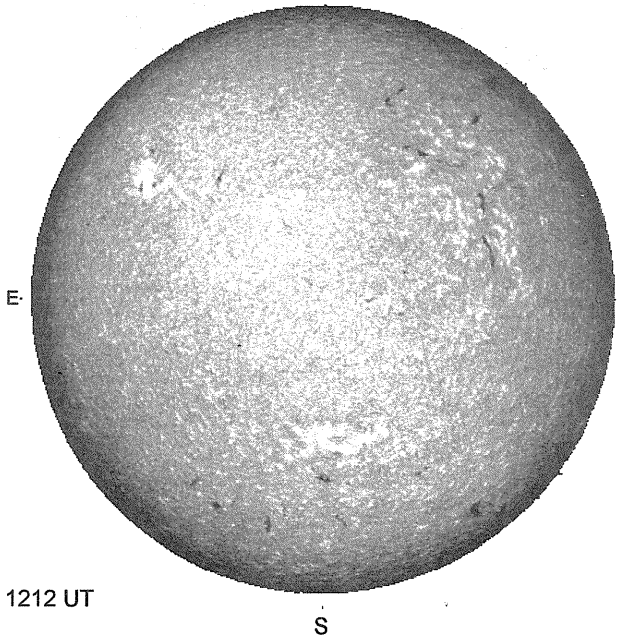
MT. WILSON MAGNETOGRAM



17.18 -
18.11 UT

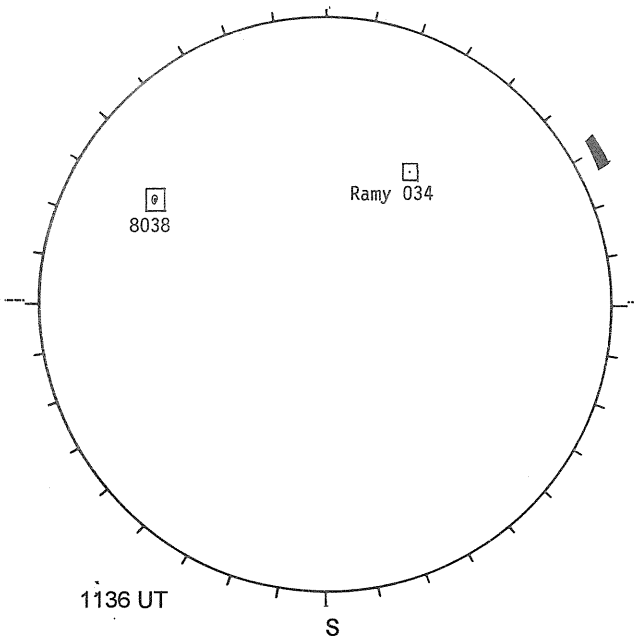
White= +7.5G
Black = -7.5G

MEUDON PEAK H-ALPHA



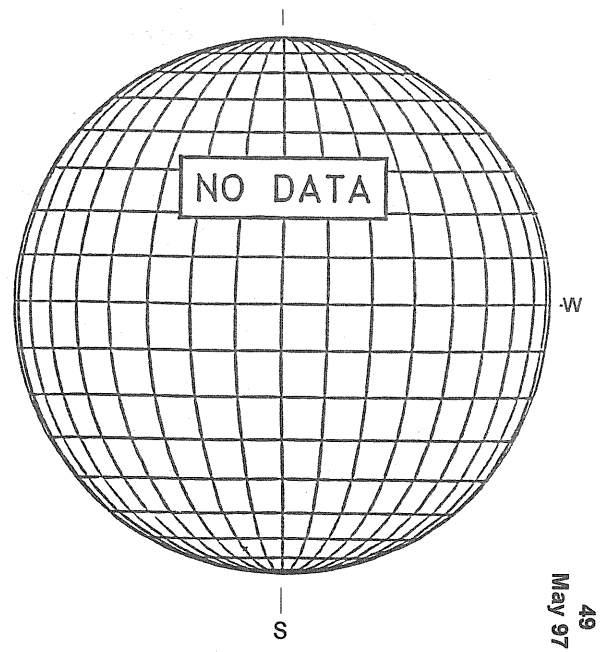
1212 UT

RAMEY SUNSPOT



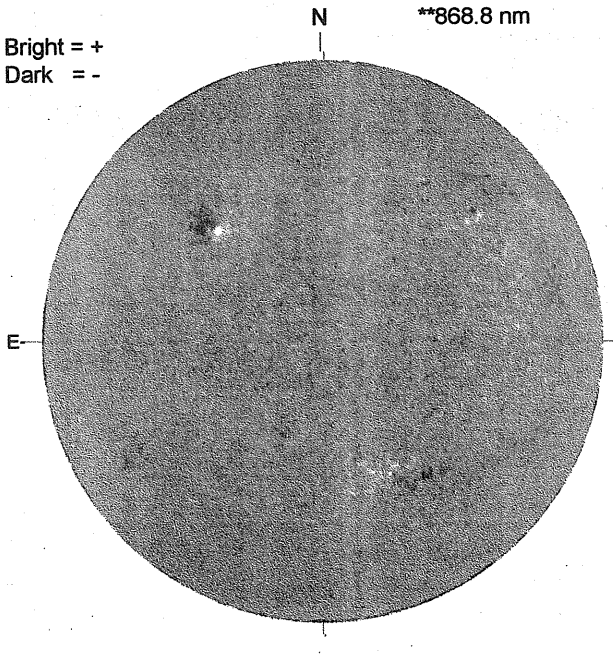
1136 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



MAY 9, 1997 (P= - 22.50, Bo = - 3.32, Lo = 173.29)

KITT PEAK MAGNETOGRAM

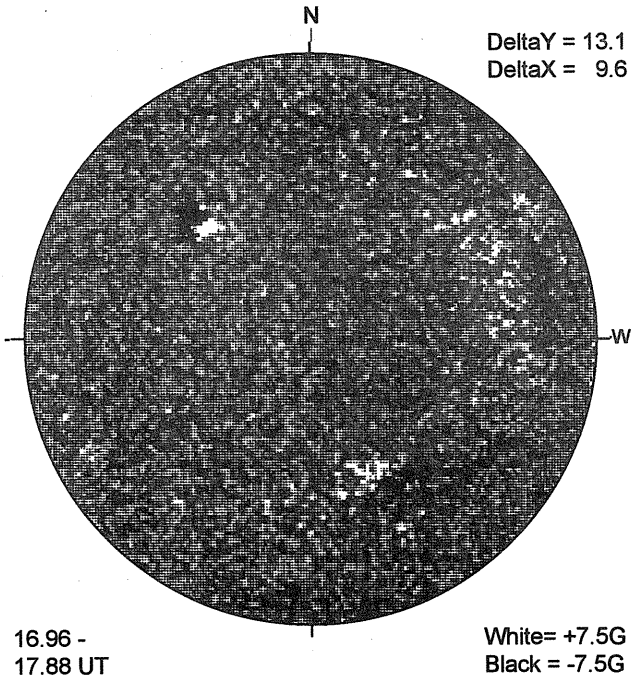


1652 UT

STANFORD MAGNETOGRAM

2058 UT

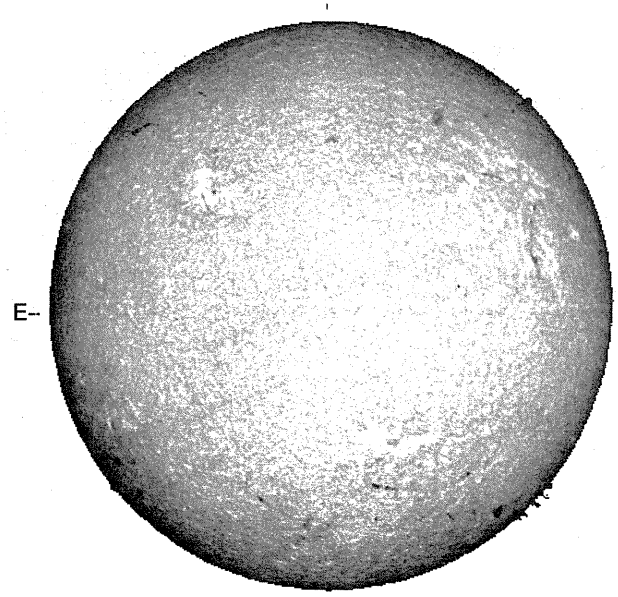
MT. WILSON MAGNETOGRAM



16.96 -
17.88 UT

White= +7.5G
Black = -7.5G

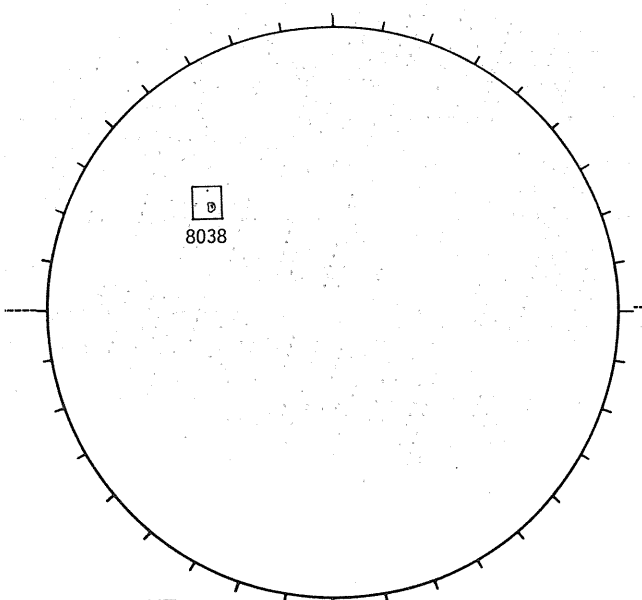
----- MEUDON PEAK H-ALPHA



0956 UT

S

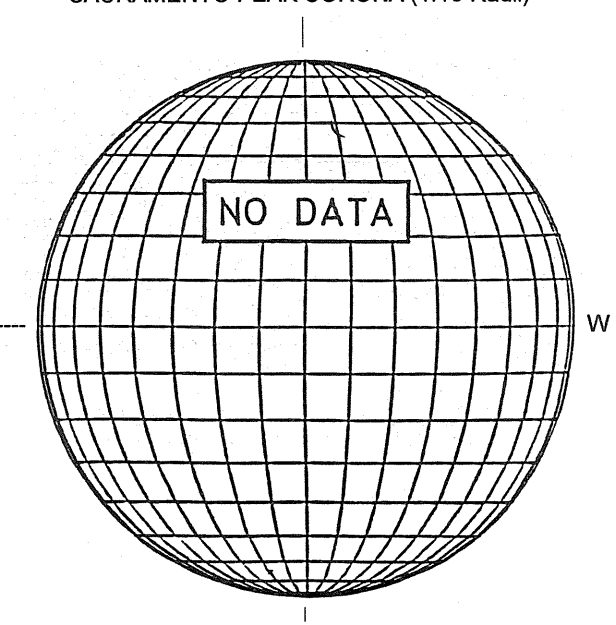
RAMEY SUNSPOT



1116 UT

S

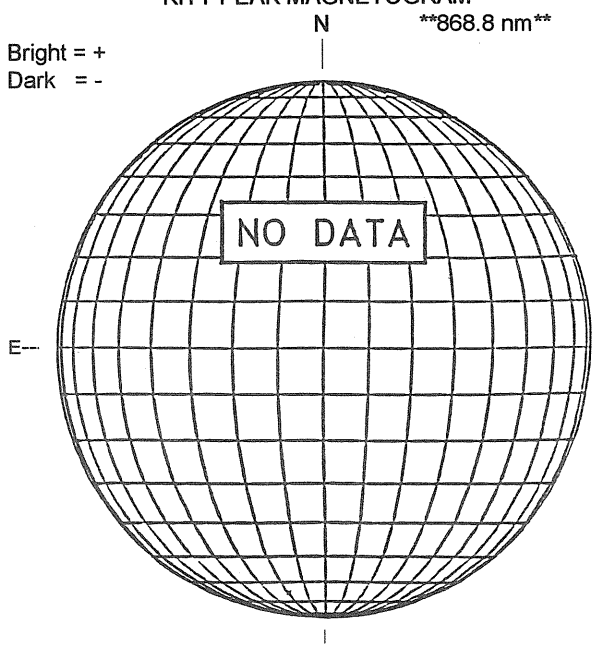
SACRAMENTO PEAK CORONA (1.15 Radii)----



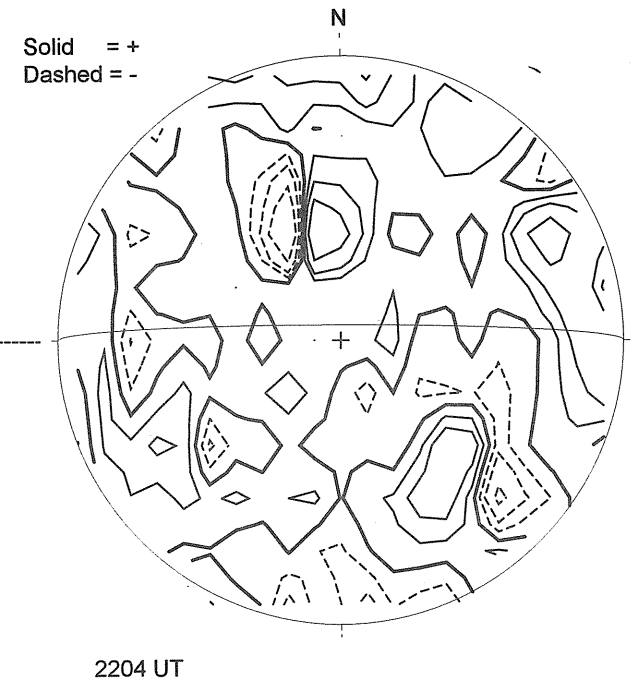
S

MAY 10, 1997 (P= - 22.26, Bo = - 3.21 Lo = 160.07)

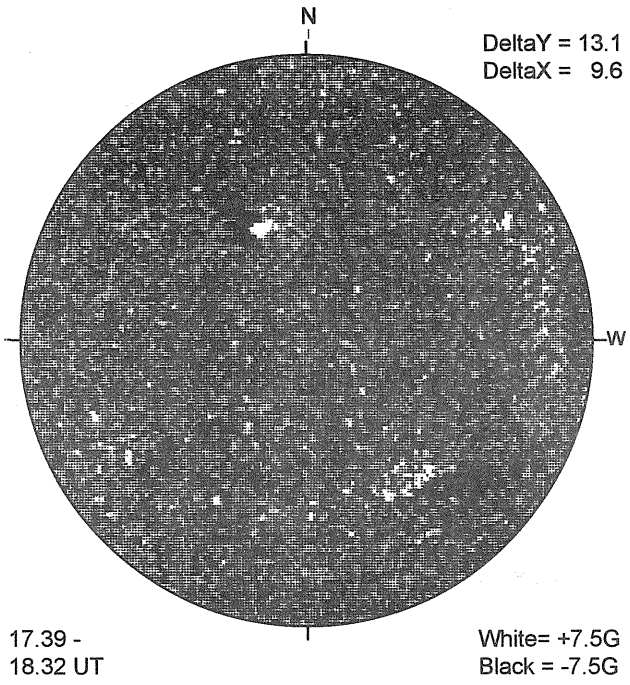
KITT PEAK MAGNETOGRAM



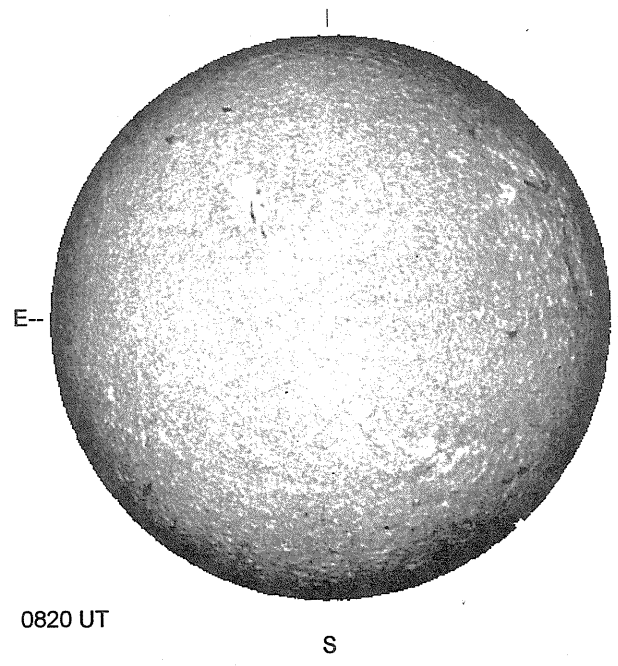
STANFORD MAGNETOGRAM



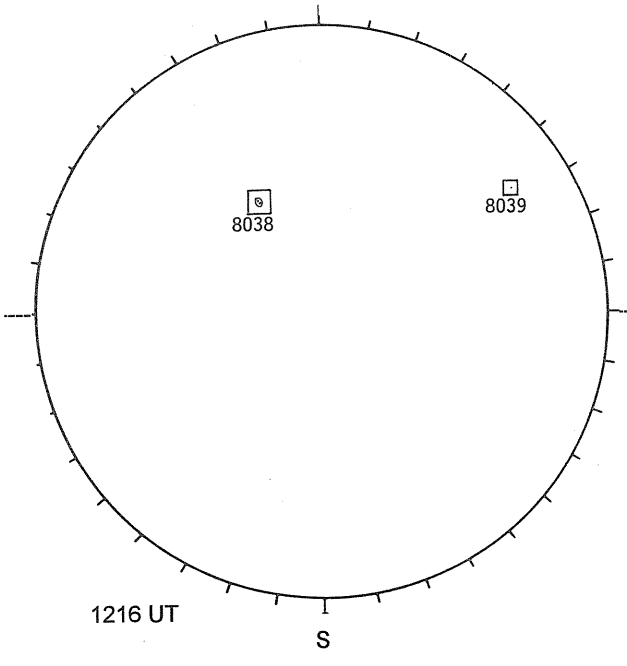
MT. WILSON MAGNETOGRAM



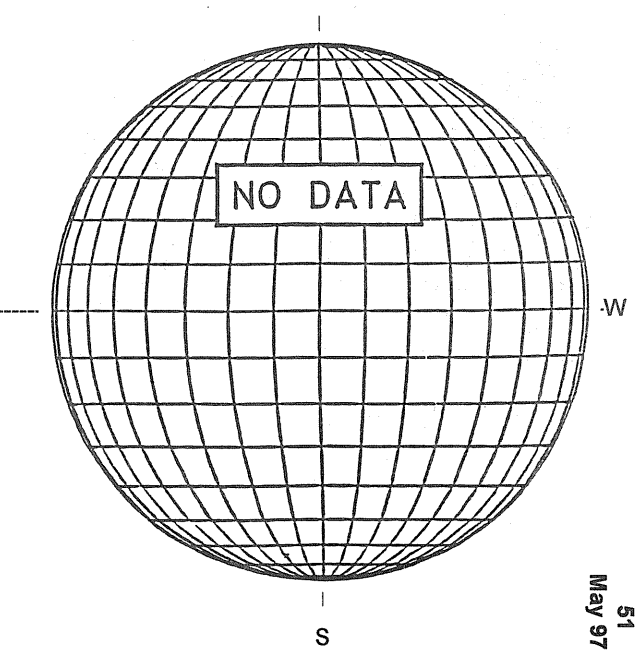
MEUDON PEAK H-ALPHA



RAMEY SUNSPOT

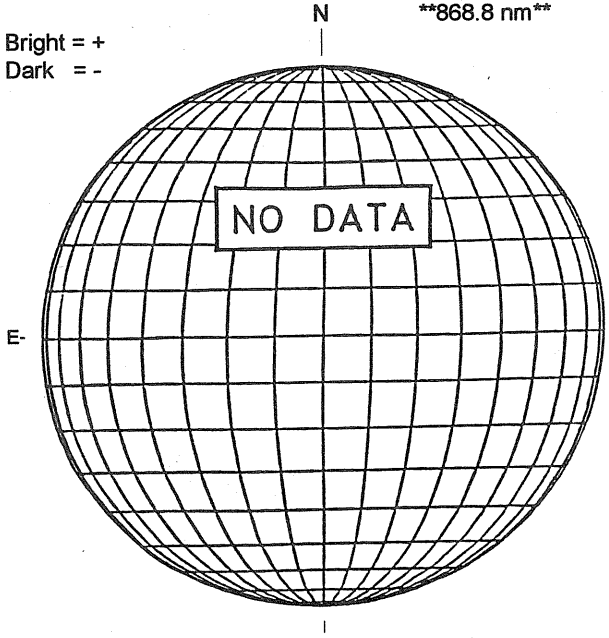


SACRAMENTO PEAK CORONA (1.15 Radii)----

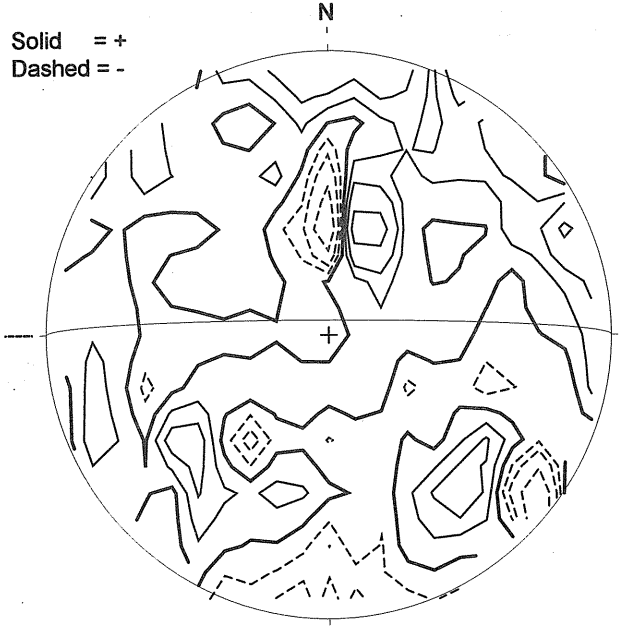


MAY 11, 1997 (P= - 22.02, Bo = - 3.10, Lo = 146.84)

KITT PEAK MAGNETOGRAM

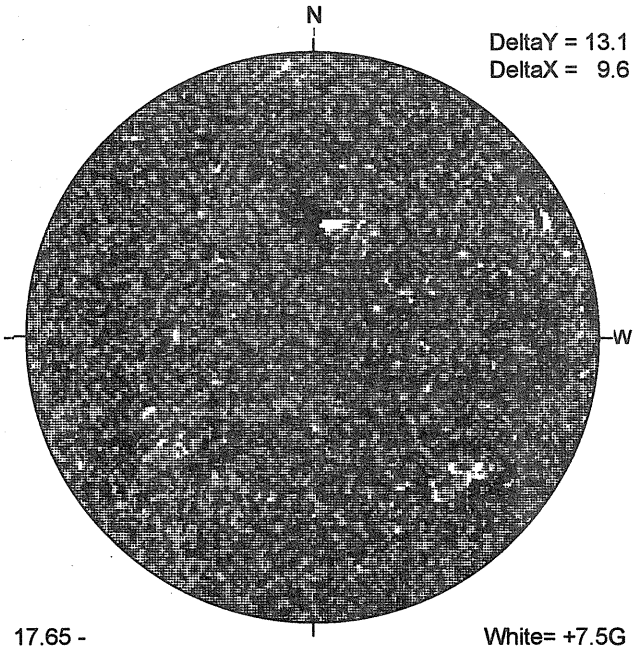


STANFORD MAGNETOGRAM



2220 UT

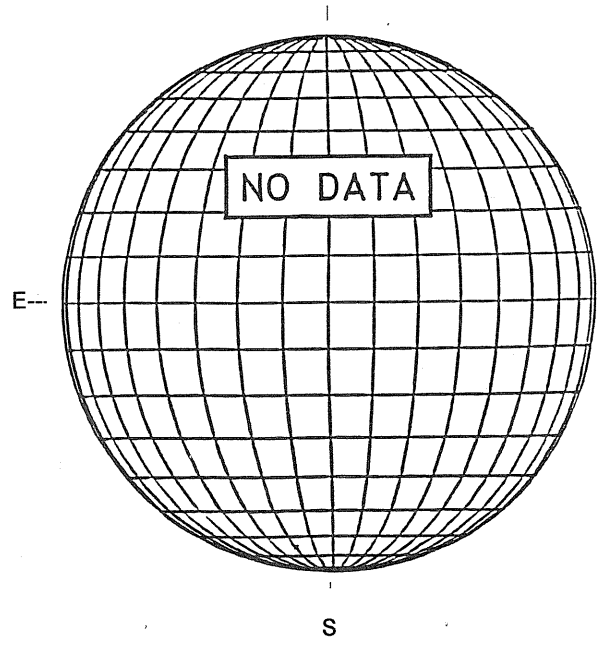
MT. WILSON MAGNETOGRAM



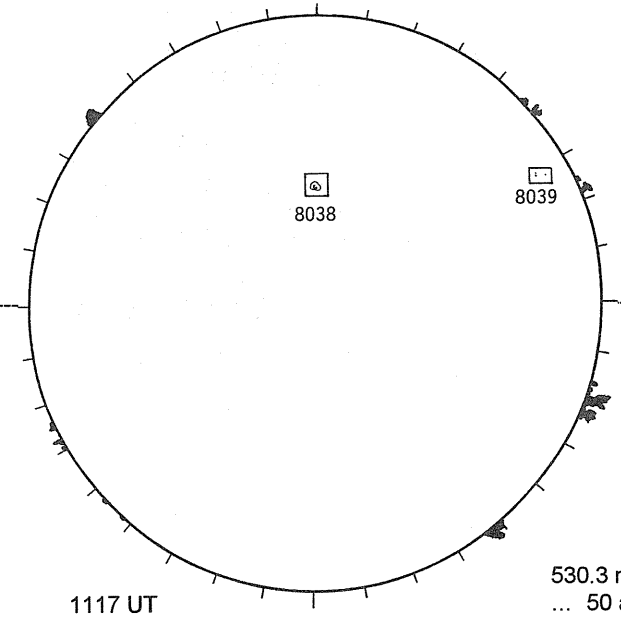
17.65 -
18.58 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

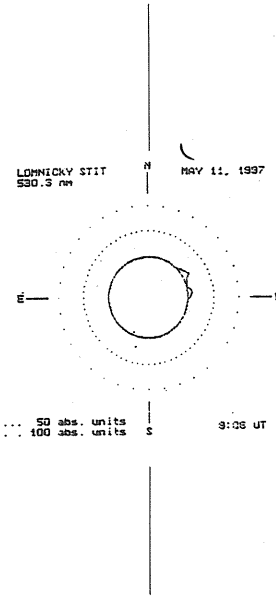


RAMEY SUNSPOT



1117 UT
0423 UT LOMN Prom

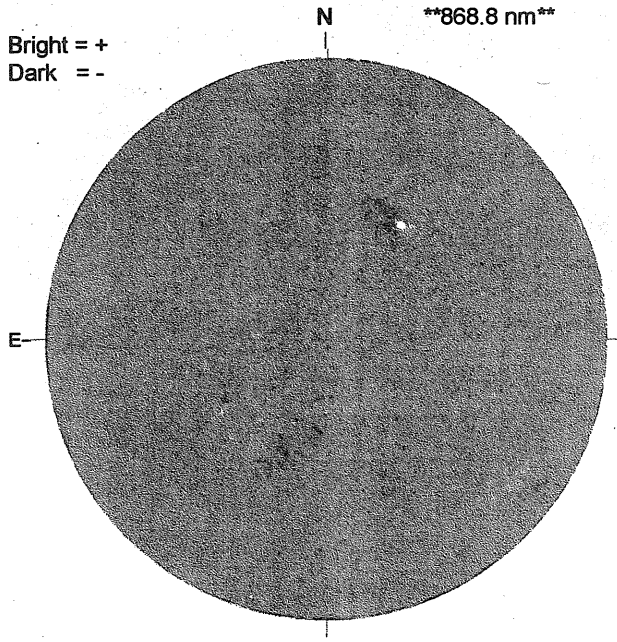
LOMNICKY PEAK CORONA (1.04 Radii)----



530.3 nm, 0908 UT
... 50 abs. units
. . 100 abs. units

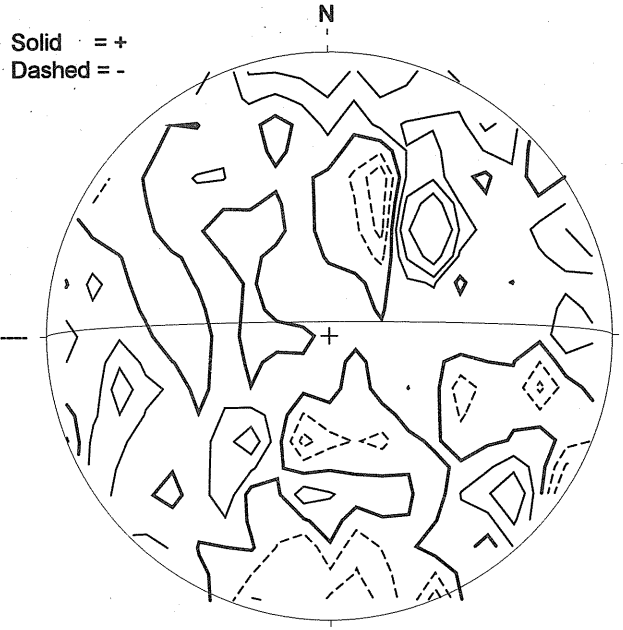
MAY 12, 1997 (P= - 21.77, Bo = - 2.99, Lo = 133.62)

KITT PEAK MAGNETOGRAM



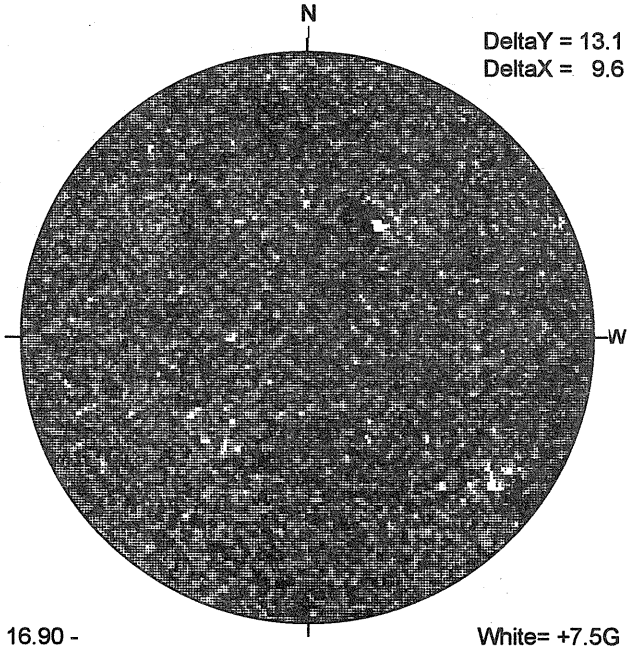
1833 UT

STANFORD MAGNETOGRAM



2249 UT

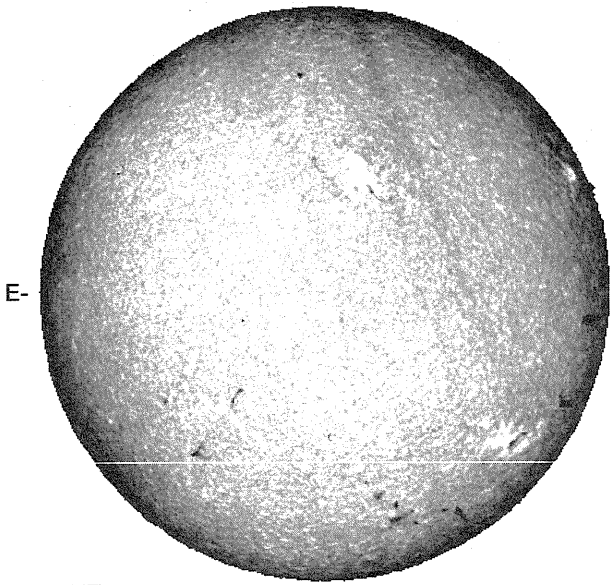
MT. WILSON MAGNETOGRAM



16.90 -
17.83 UT

White= +7.5G
Black = -7.5G

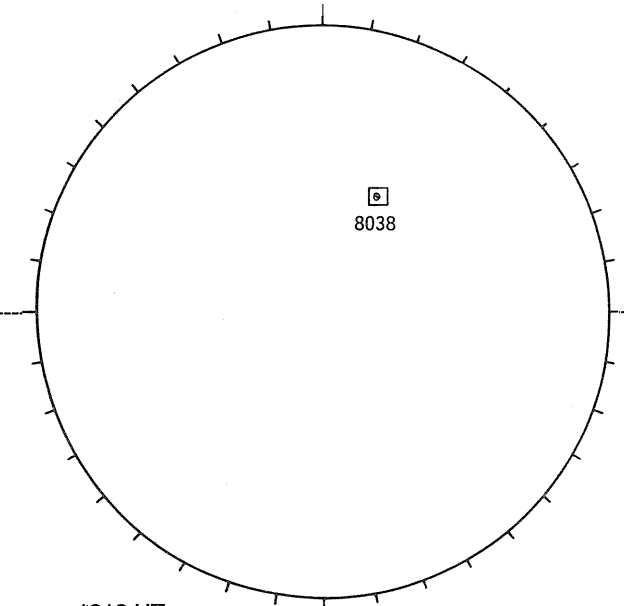
---- MEUDON H-ALPHA



0654 UT

S

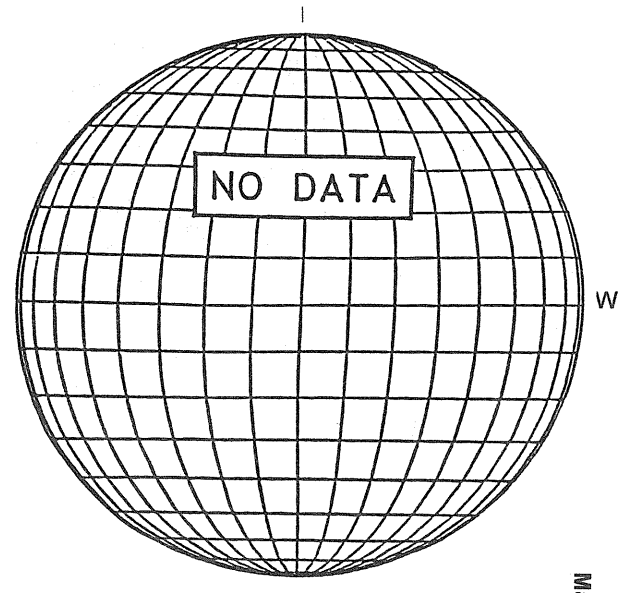
RAMEY SUNSPOT



1210 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

MAY 13, 1997 (P= - 21.51, Bo = - 2.88, Lo = 120.40)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

E

1643 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

2037 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

W

17.47 -
18.40 UT

White= +7.5G
Black = -7.5G

---- MEUDON H-ALPHA

E

0730 UT

S

RAMEY SUNSPOT

8038

1145 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

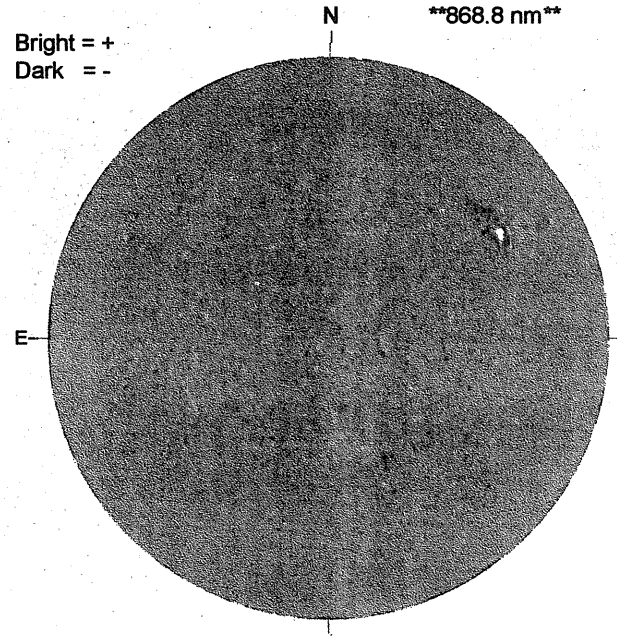
NO DATA

N

S

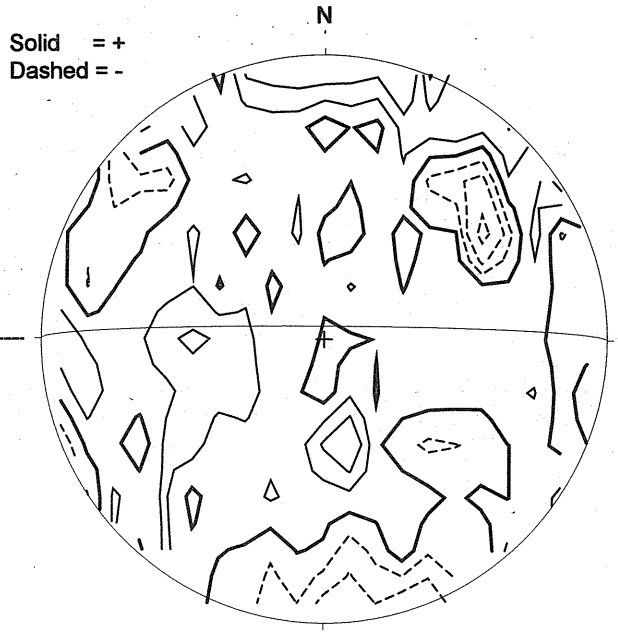
MAY 14, 1997 (P= - 21.25, Bo = - 2.77, Lo= 107.17)

KITT PEAK MAGNETOGRAM



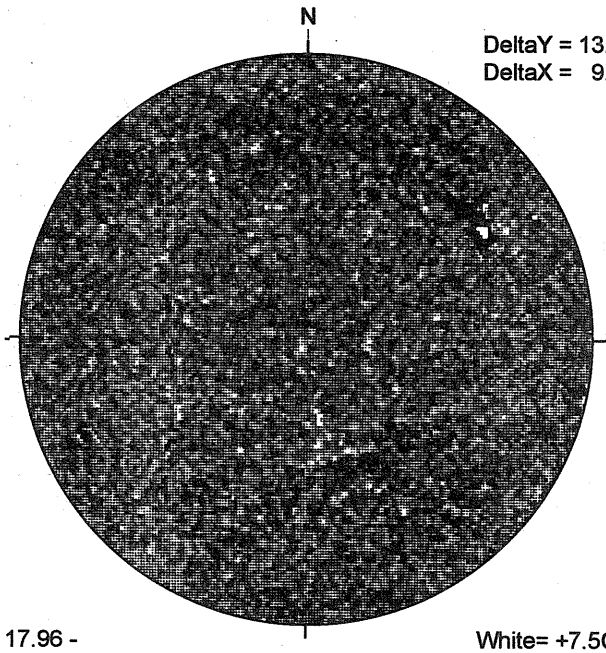
1545 UT

STANFORD MAGNETOGRAM



2048 UT

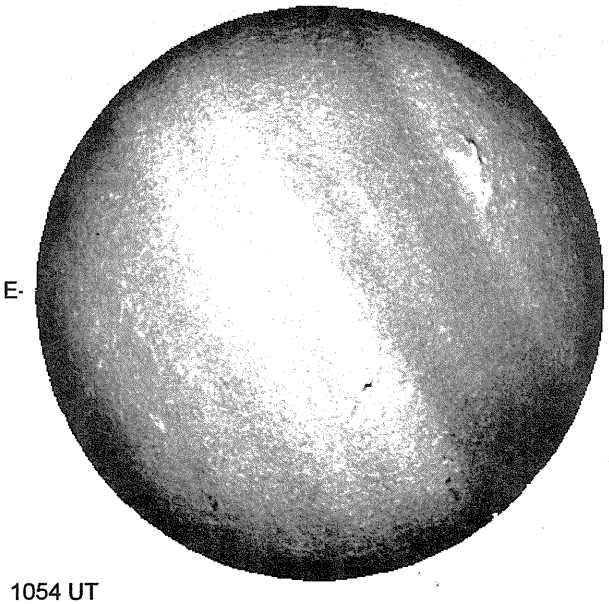
MT. WILSON MAGNETOGRAM



17.96 -
18.89 UT

White= +7.5G
Black = -7.5G

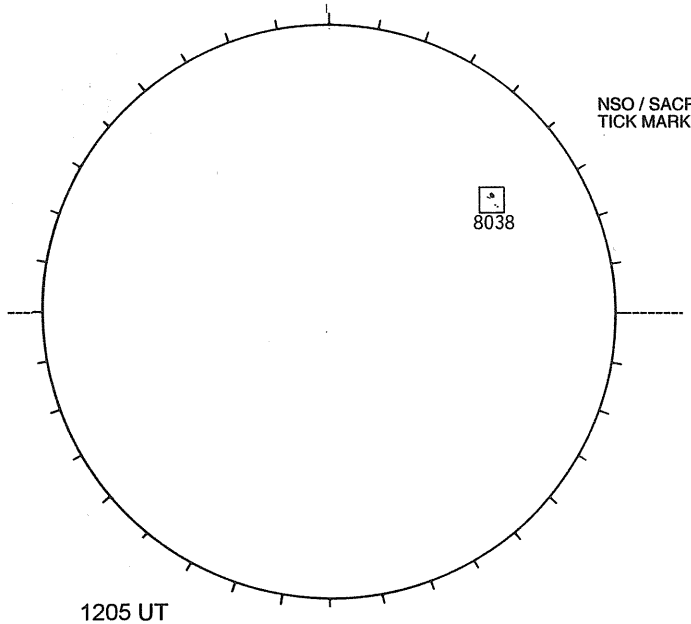
---- MEUDON PEAK H-ALPHA



1054 UT

S

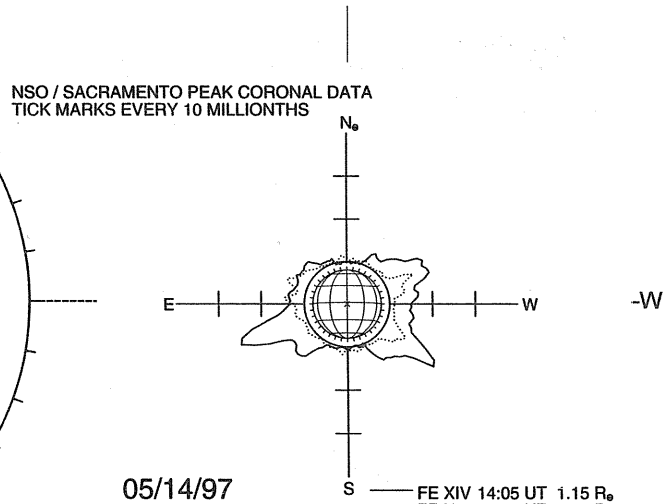
RAMEY SUNSPOT



1205 UT

S

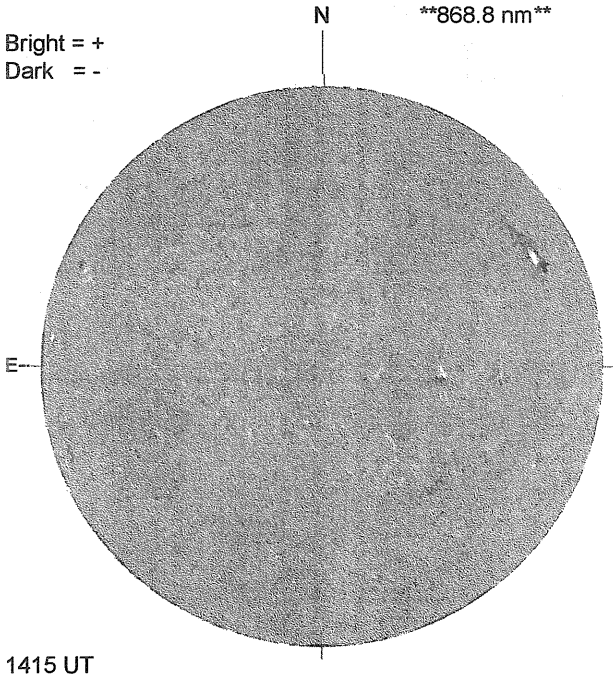
SACRAMENTO PEAK CORONA (1.15 Radii)----



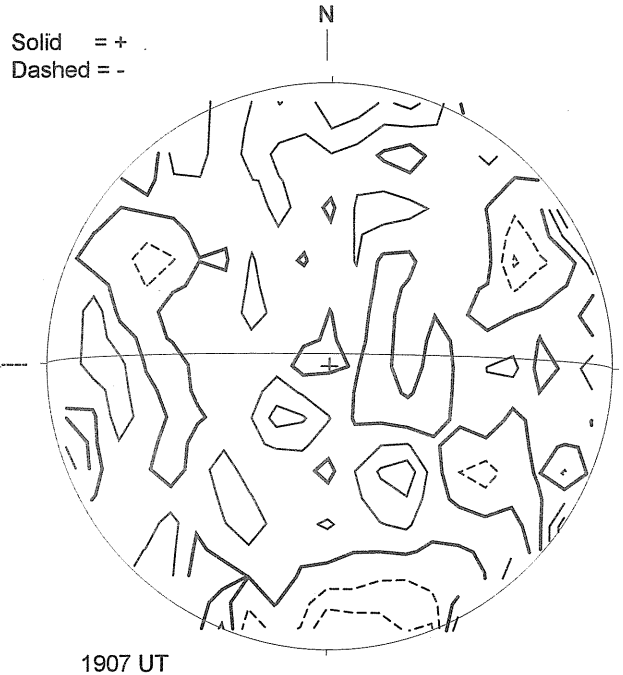
S

MAY 15, 1997 (P0 = 20.96, B0 = + 2.65, L0 = 93.94)

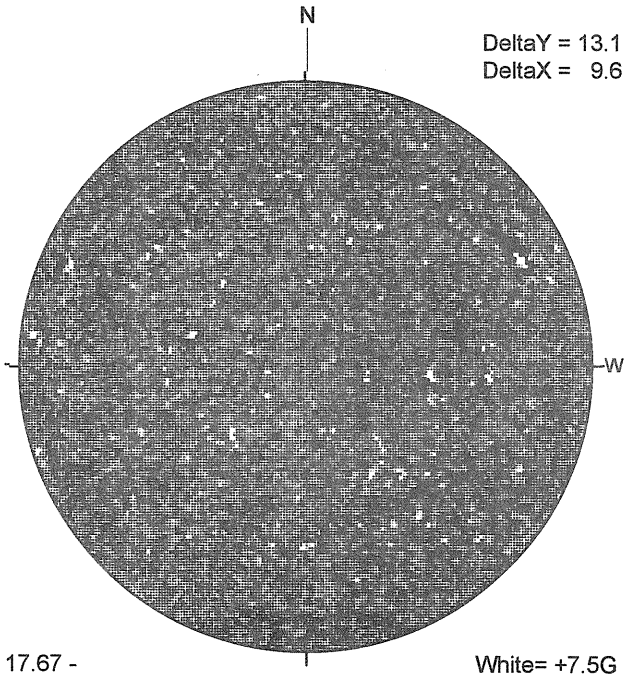
KITT PEAK MAGNETOGRAM



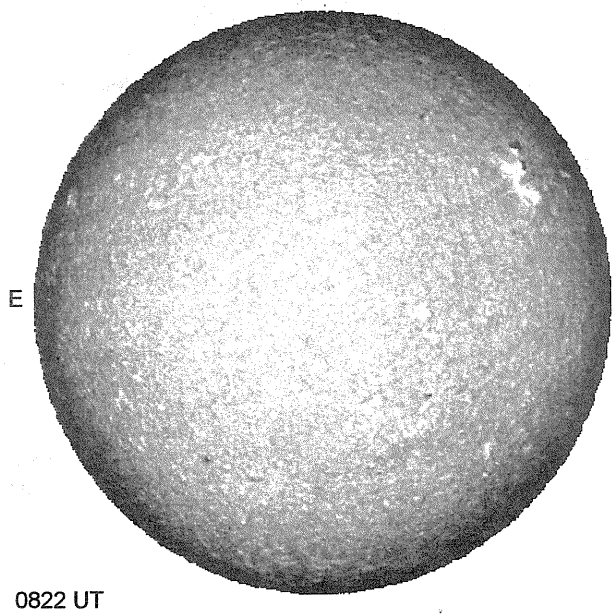
STANFORD MAGNETOGRAM



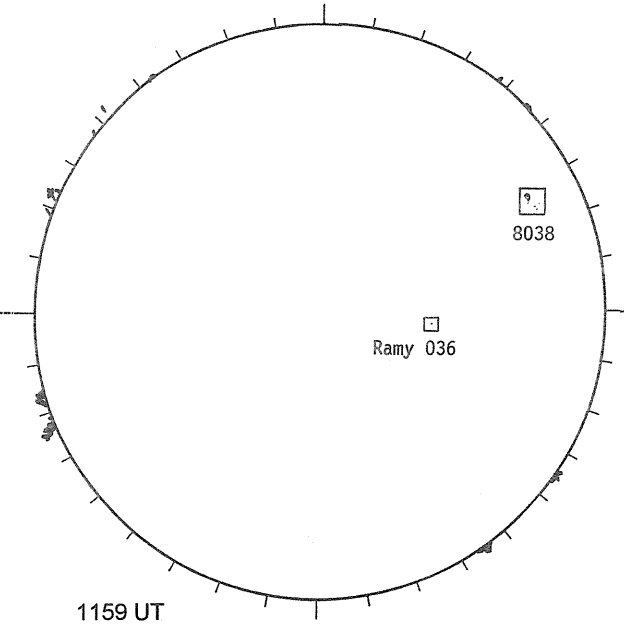
MT. WILSON MAGNETOGRAM



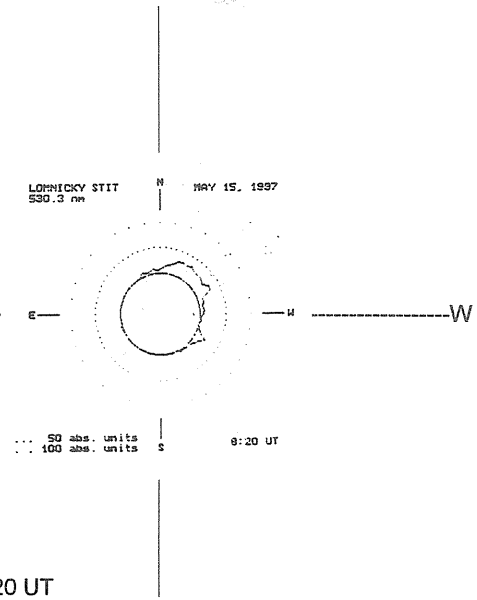
MEUDON PEAK H-ALPHA



RAMEY SUNSPOT

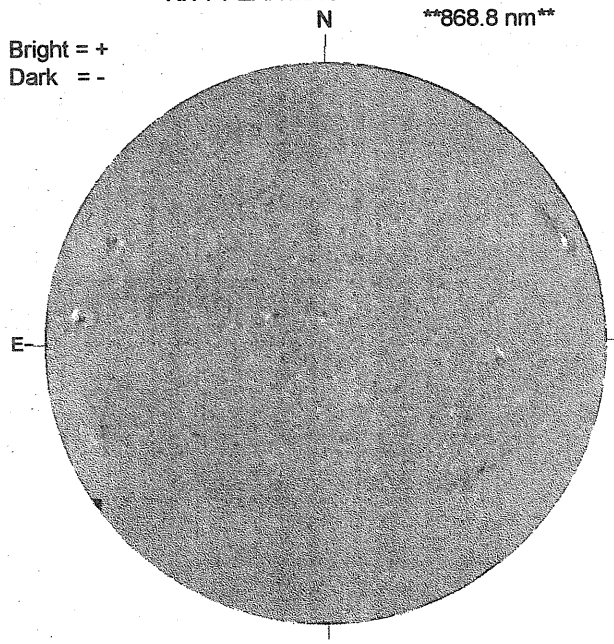


LOMNICKY PEAK CORONA (1.04 Radii)



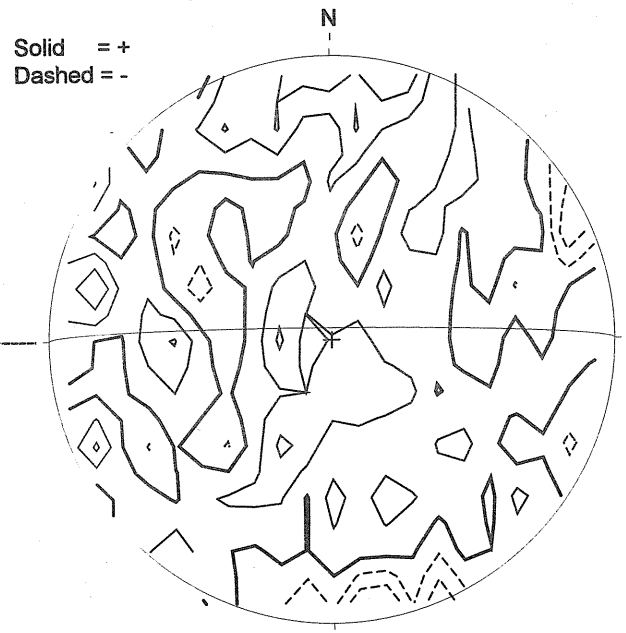
MAY 16, 1997 (P= - 20.70, Bo = - 2.54, Lo = 80.72)

KITT PEAK MAGNETOGRAM



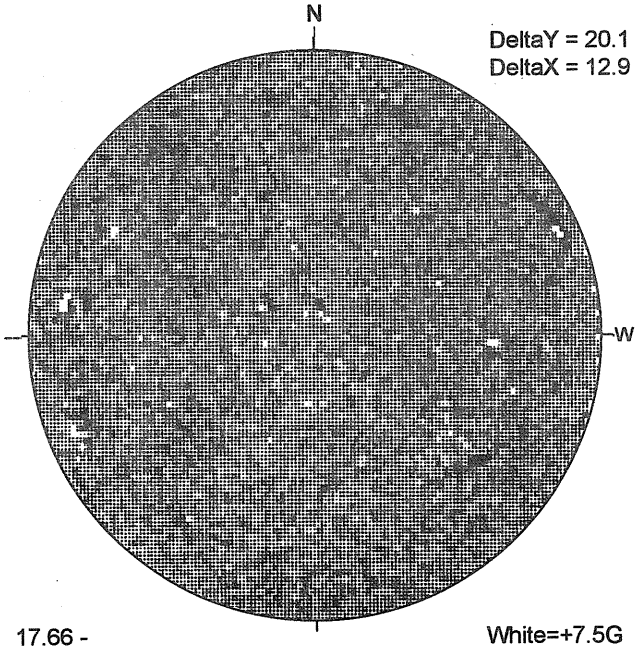
1522 UT

STANFORD MAGNETOGRAM



2208 UT

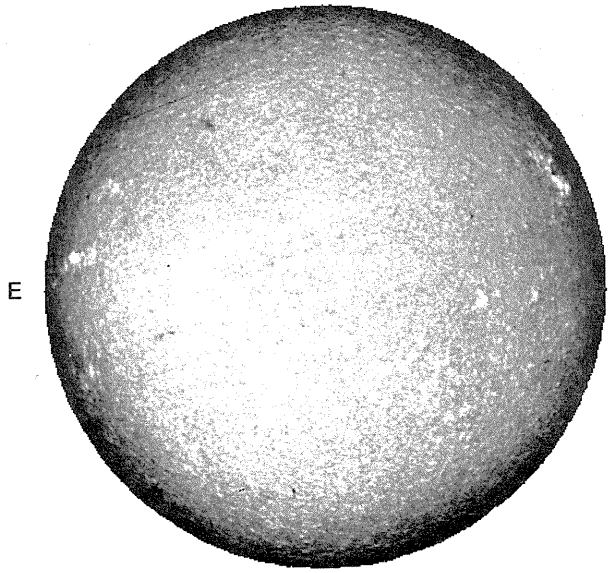
MT. WILSON MAGNETOGRAM



17.66 -
18.07 UT

White=+7.5G
Black = 7.5G

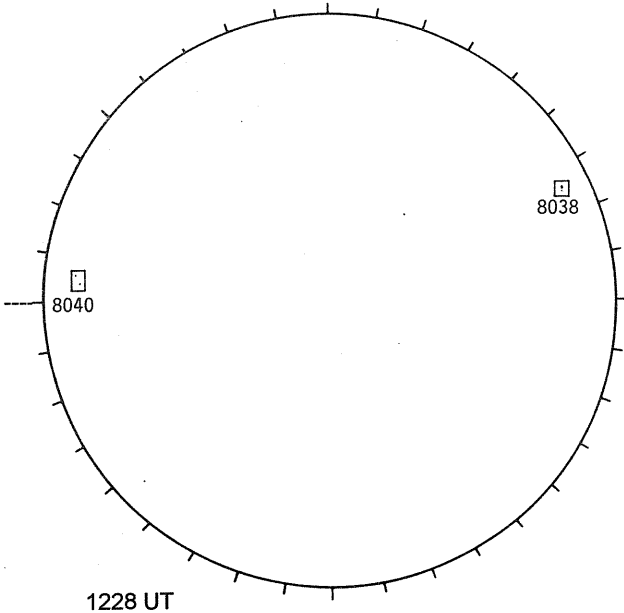
MEUDON PEAK H-ALPHA



0839 UT

S

RAMEY SUNSPOT



1228 UT

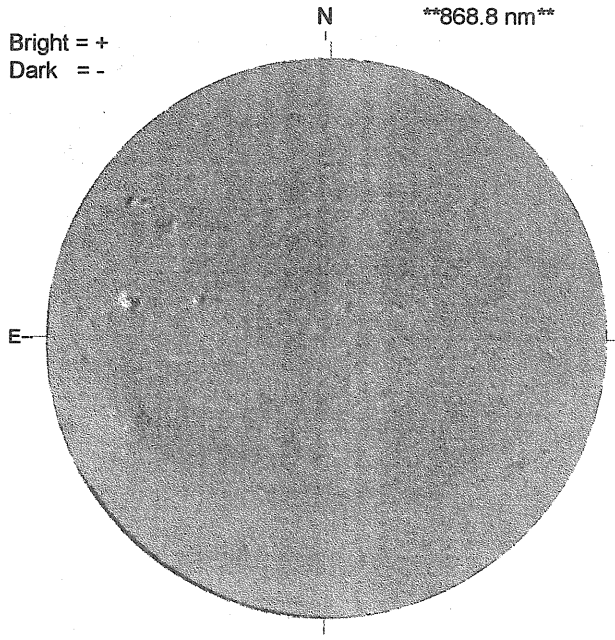
S

SACRAMENTO PEAK CORONA (1.15 Radii)----

S

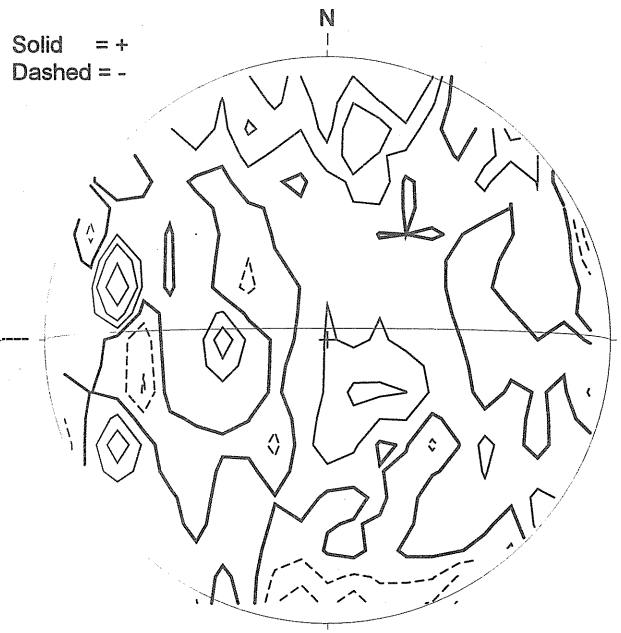
MAY 17, 1997 (P= - 20.41, Bo = - 2.43, Lo = 67.49)

KITT PEAK MAGNETOGRAM



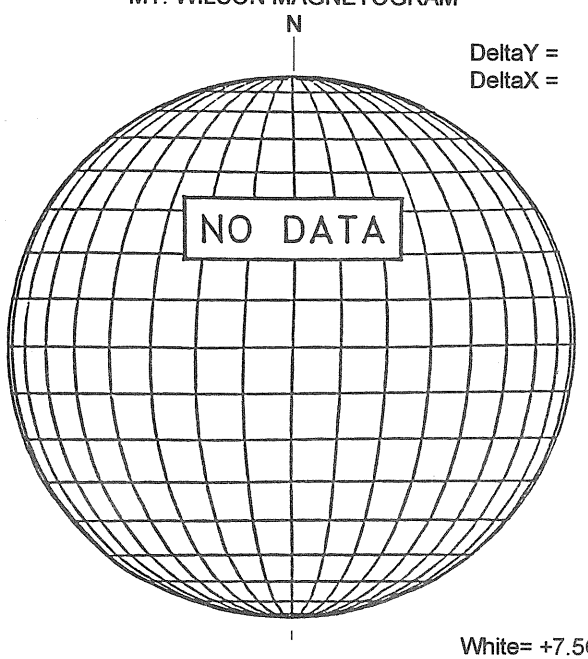
1528 UT

STANFORD MAGNETOGRAM



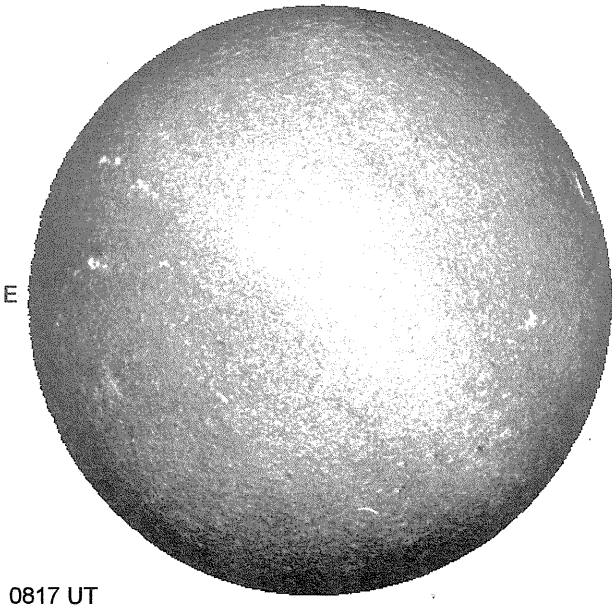
1830 UT

MT. WILSON MAGNETOGRAM



White= +7.5G
Black = -7.5G

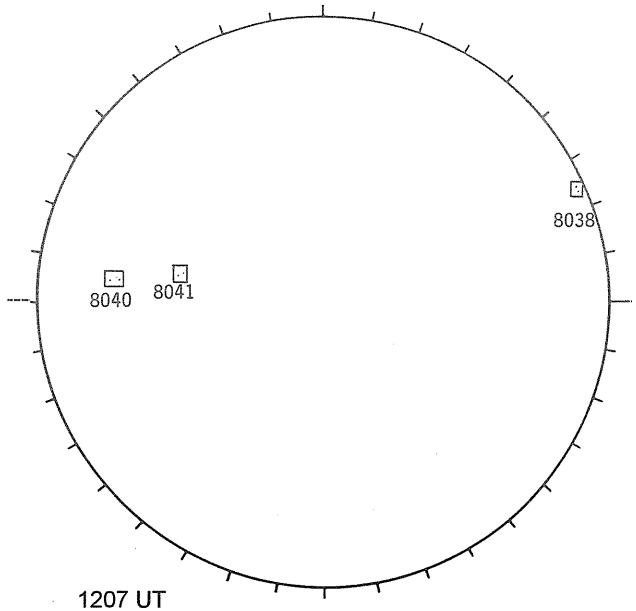
MEUDON H-ALPHA



0817 UT

S

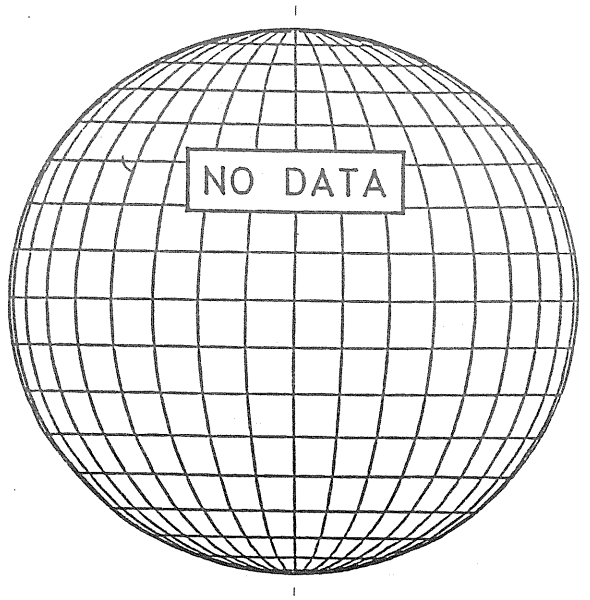
RAMEY SUNSPOT



1207 UT

S

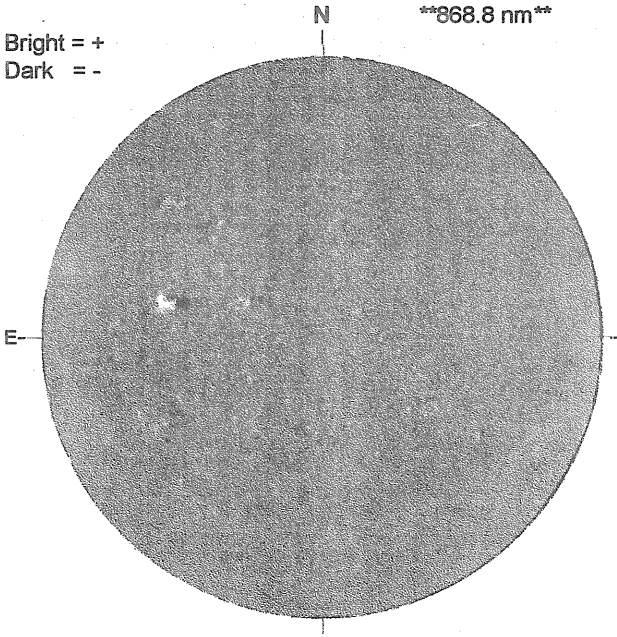
SACRAMENTO PEAK CORONA (1.15 Radii)



S

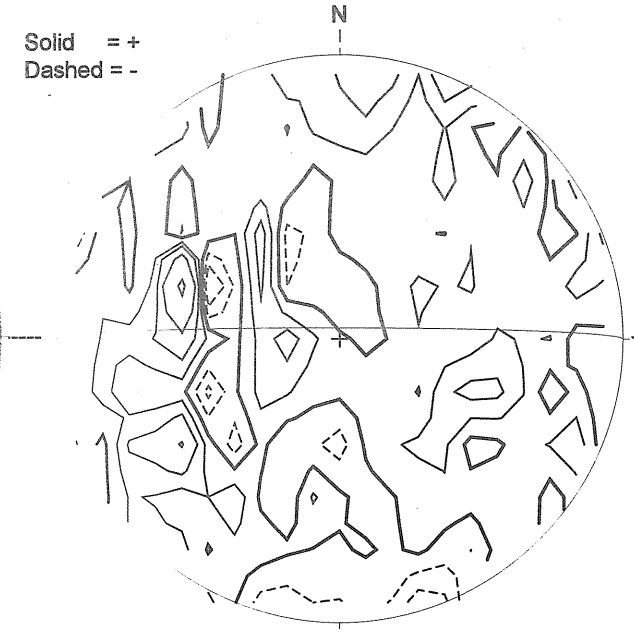
MAY 18, 1997 (P= - 20.12, Bo = - 2.31, Lo = 54.26)

KITT PEAK MAGNETOGRAM



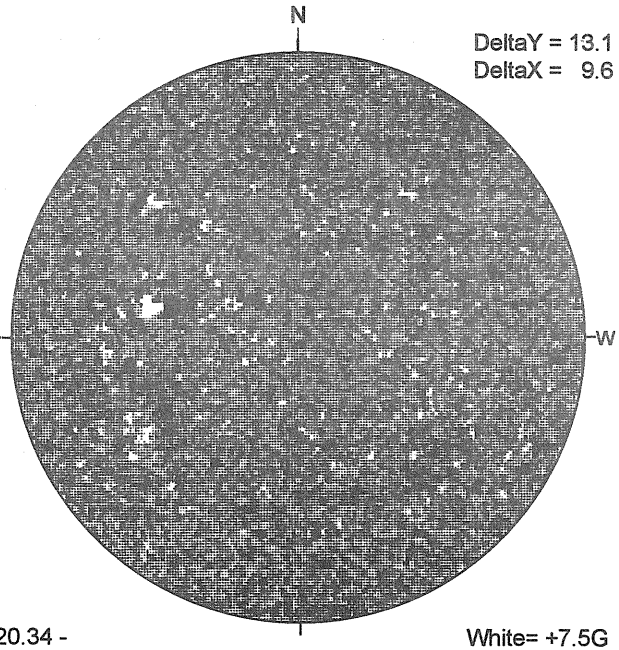
1507 UT

STANFORD MAGNETOGRAM



2022 UT

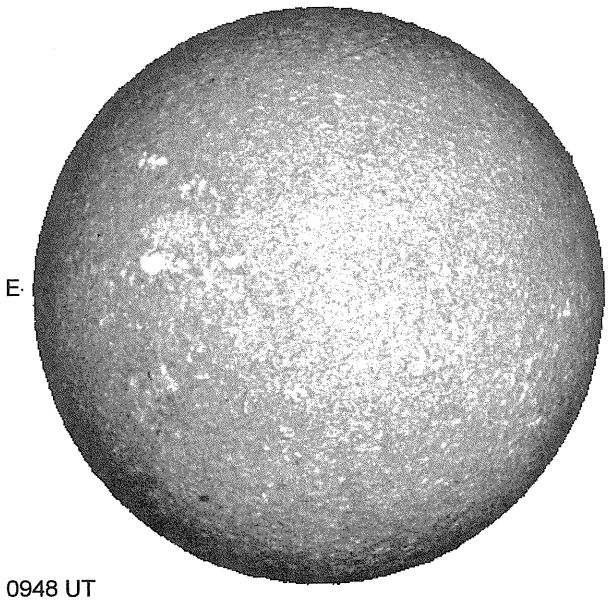
MT. WILSON MAGNETOGRAM



20.34 -
21.27 UT

White= +7.5G
Black = -7.5G

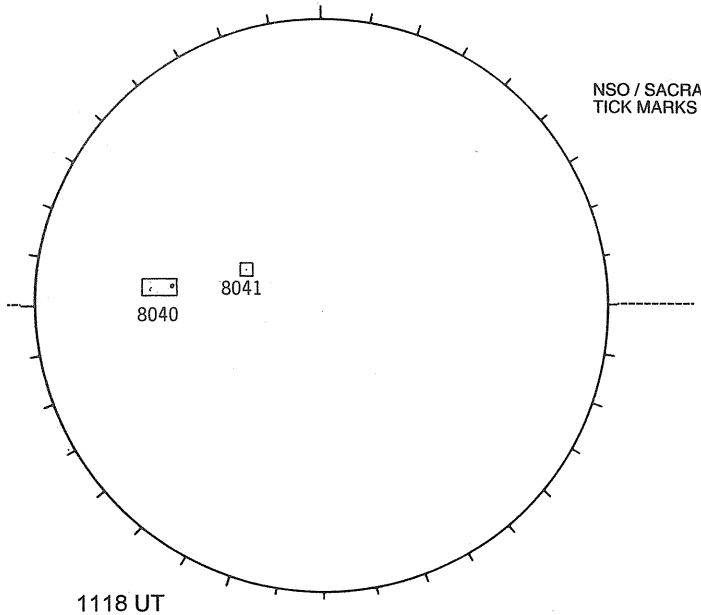
MEUDON H-ALPHA



0948 UT

S

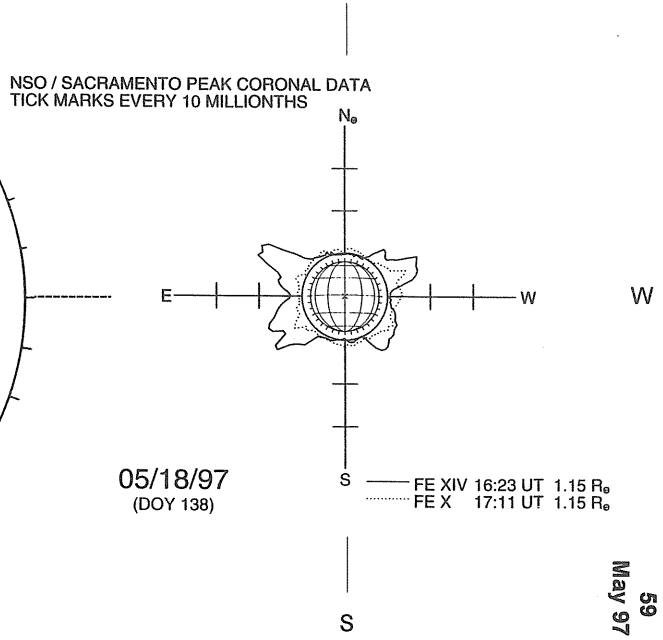
RAMEY SUNSPOT



1118 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

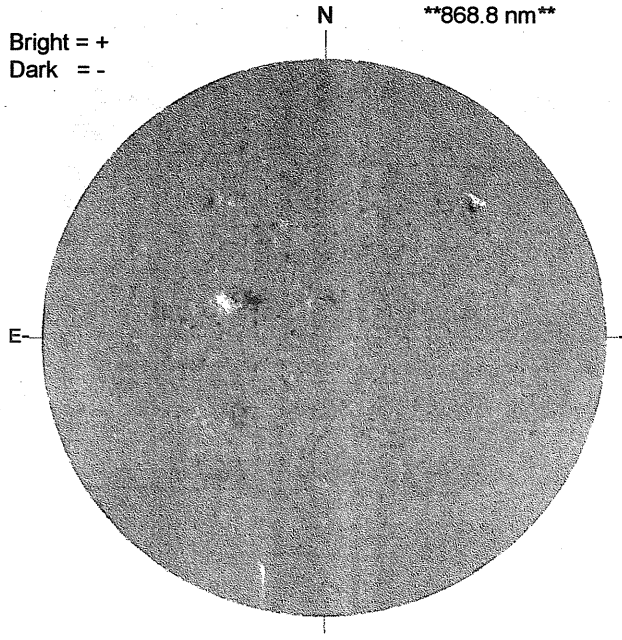


S

May 97

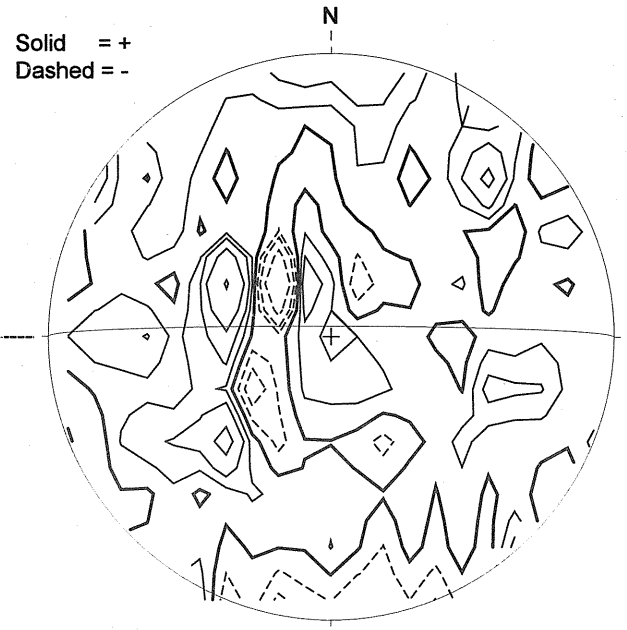
MAY 19, 1997 (P= - 19.83, Bo = - 2.20, Lo = 41.04)

KITT PEAK MAGNETOGRAM



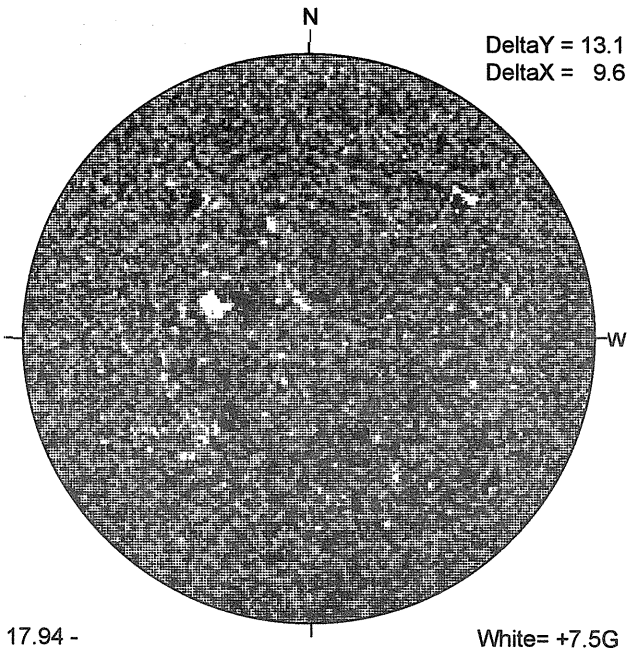
1521 UT

STANFORD MAGNETOGRAM



1935 UT

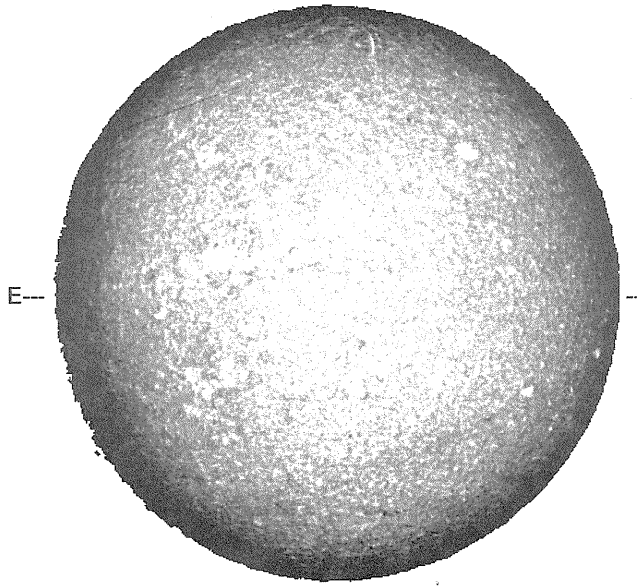
MT. WILSON MAGNETOGRAM



17.94 -
18.87 UT

White= +7.5G
Black = -7.5G

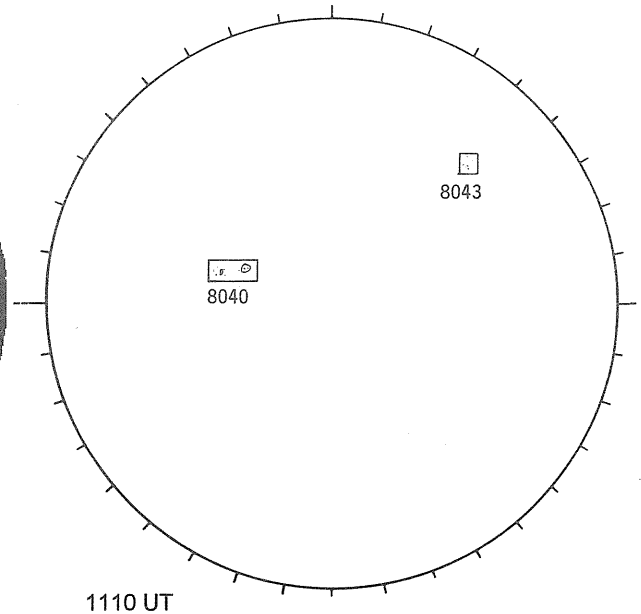
----- MEUDON H-ALPHA



0603 UT

S

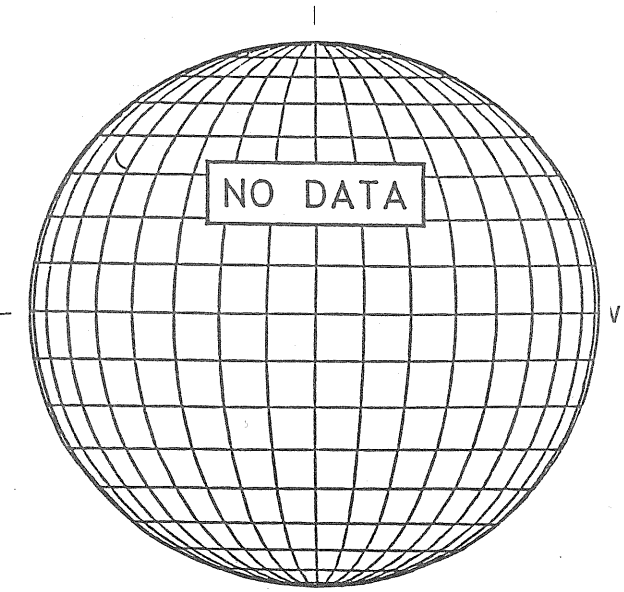
RAMEY SUNSPOT



1110 UT

S

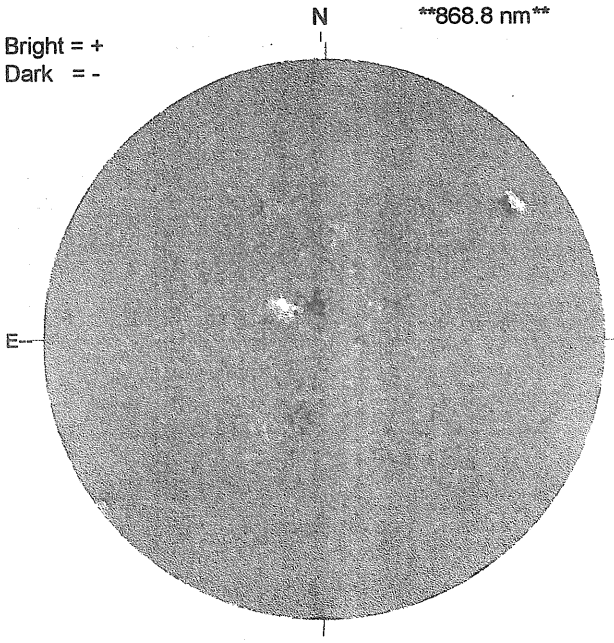
SACRAMENTO PEAK CORONA (1.15 Radii)----



S

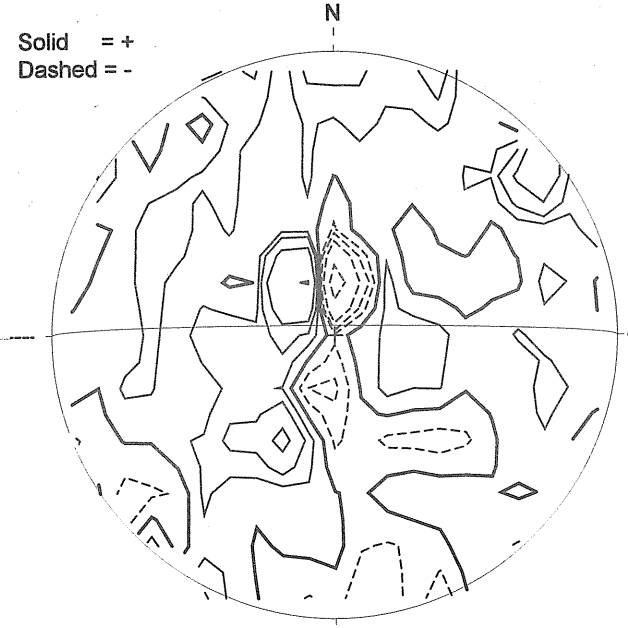
MAY 20, 1997 (P= - 19.52, Bo = - 2.08, Lo = 27.81)

KITT PEAK MAGNETOGRAM



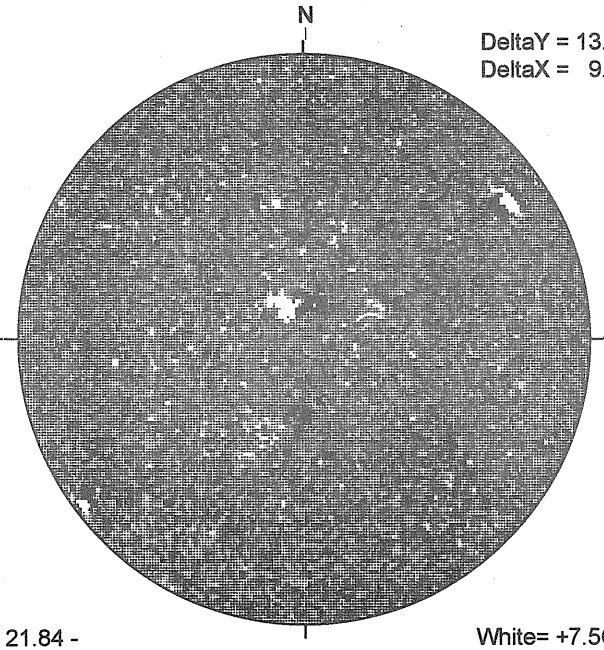
1457 UT

STANFORD MAGNETOGRAM



1858 UT

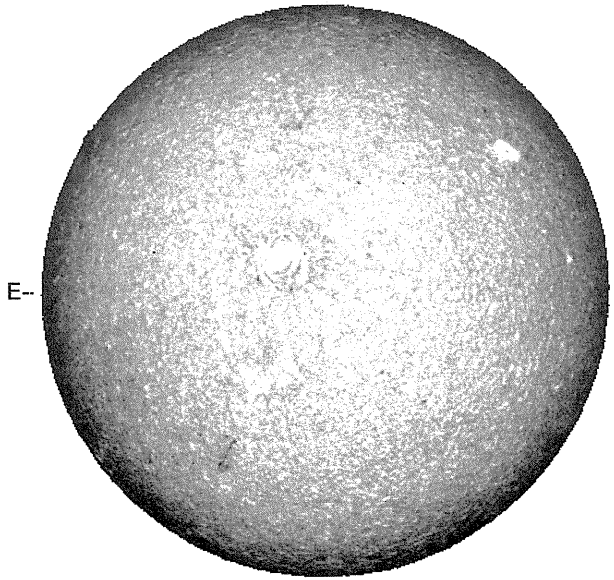
MT. WILSON MAGNETOGRAM



21.84 -
22.80 UT

White= +7.5G
Black = -7.5G

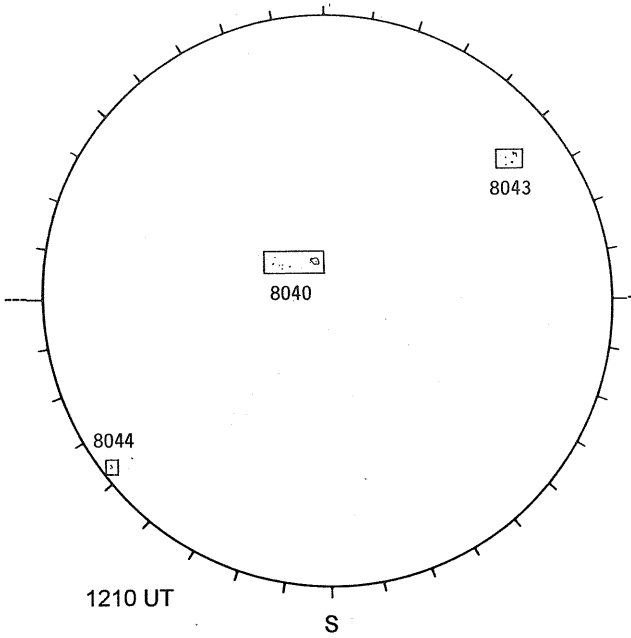
MEUDON H-ALPHA



0844 UT

S

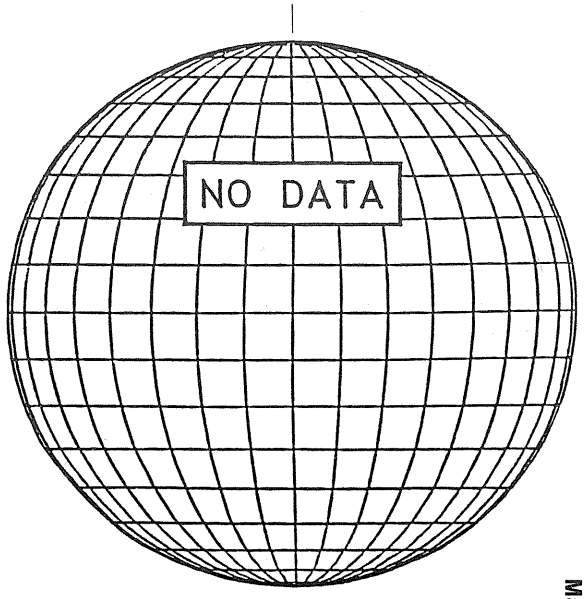
RAMEY SUNSPOT



1210 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

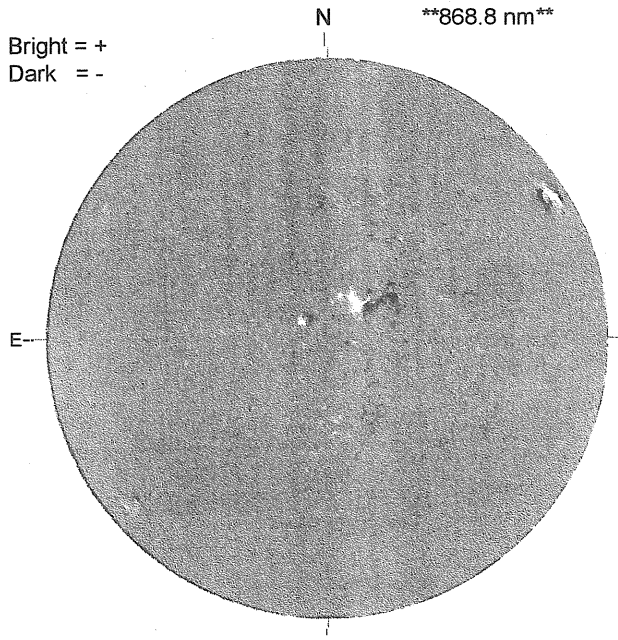


S

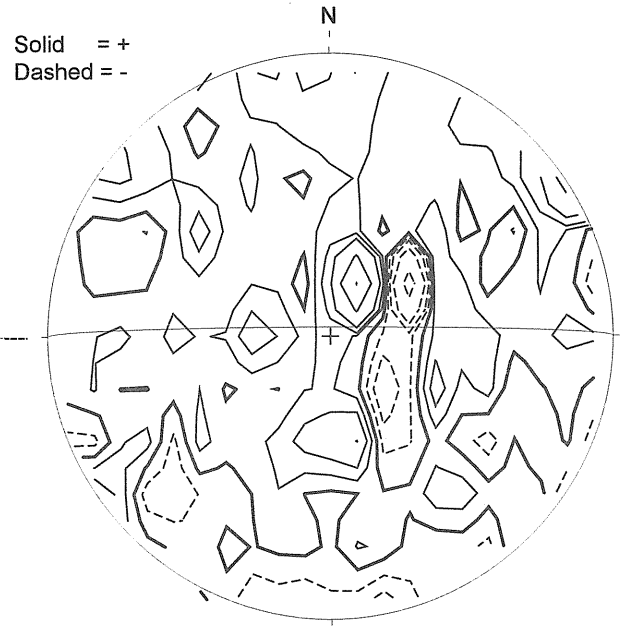
61
May 97

MAY 21, 1997 (P= - 19.21, Bo = - 1.96, Lo = 14.58)

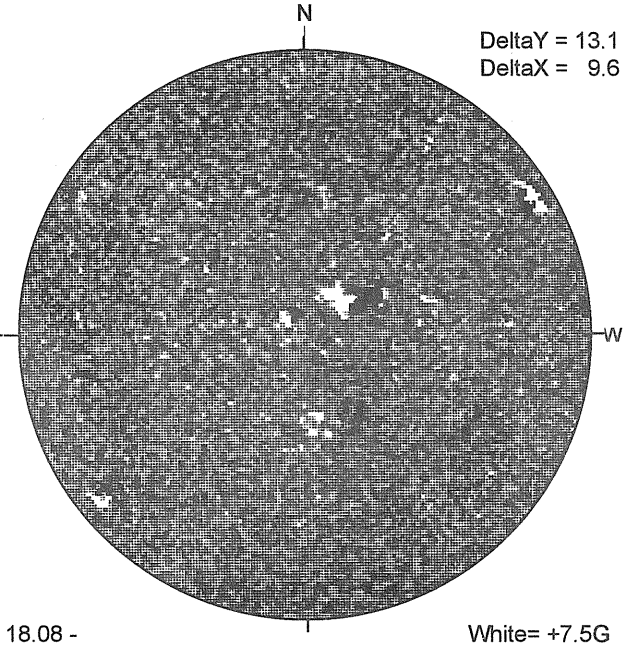
KITT PEAK MAGNETOGRAM



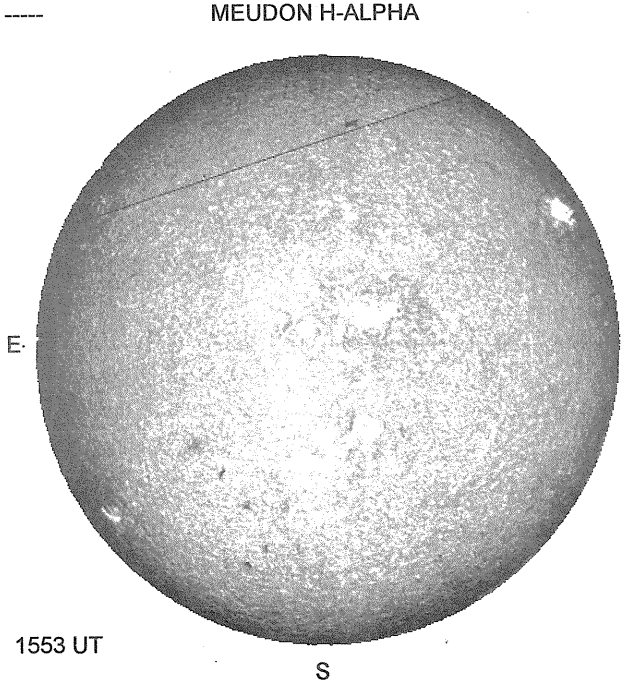
STANFORD MAGNETOGRAM



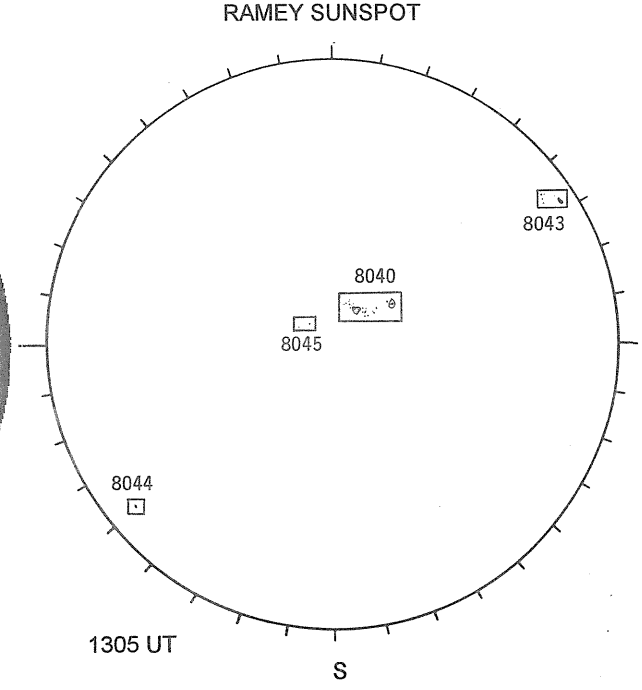
MT. WILSON MAGNETOGRAM



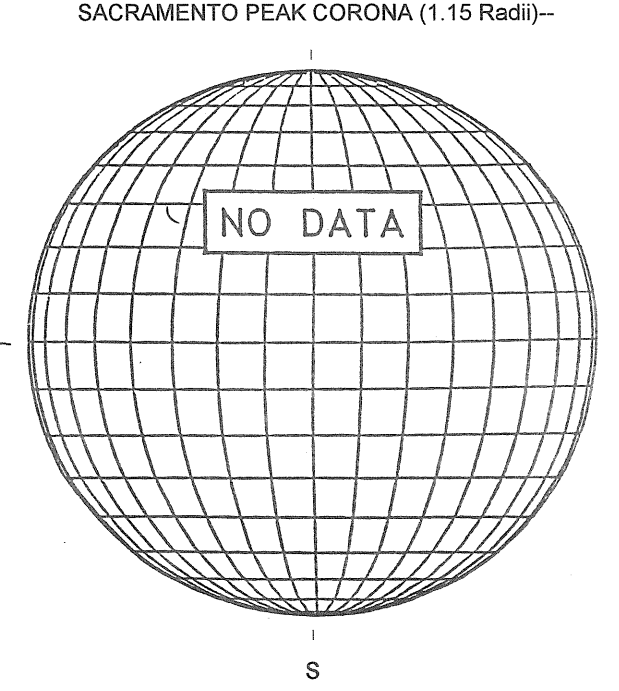
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)--

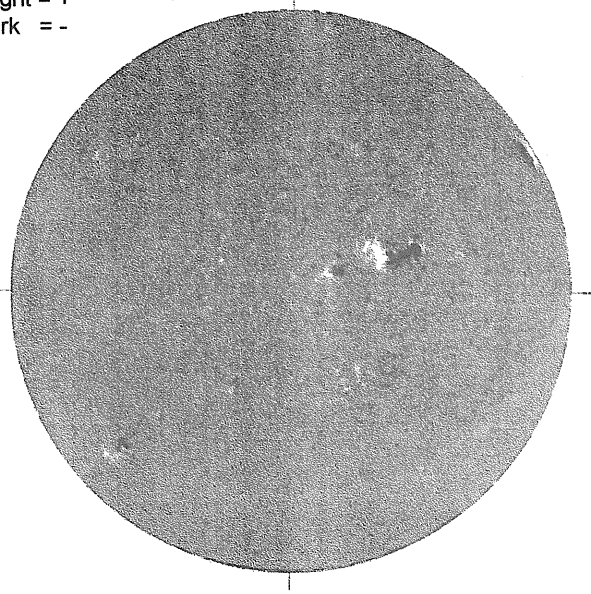


MAY 22, 1997 (P= - 18.90, Bo = - 1.85, Lo = 1.35)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



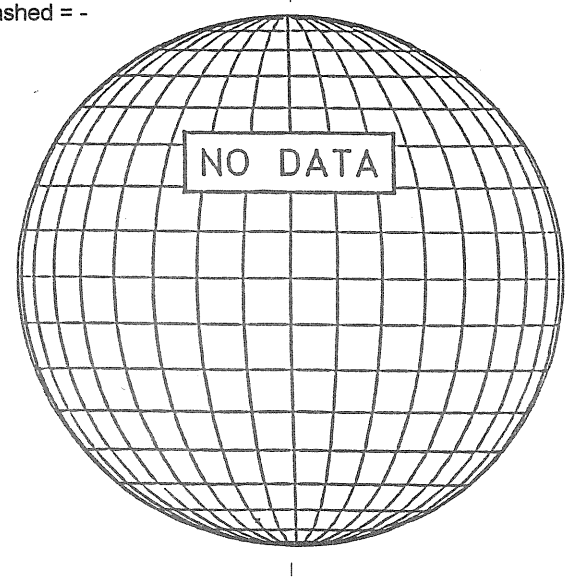
E--

1356 UT

STANFORD MAGNETOGRAM

N

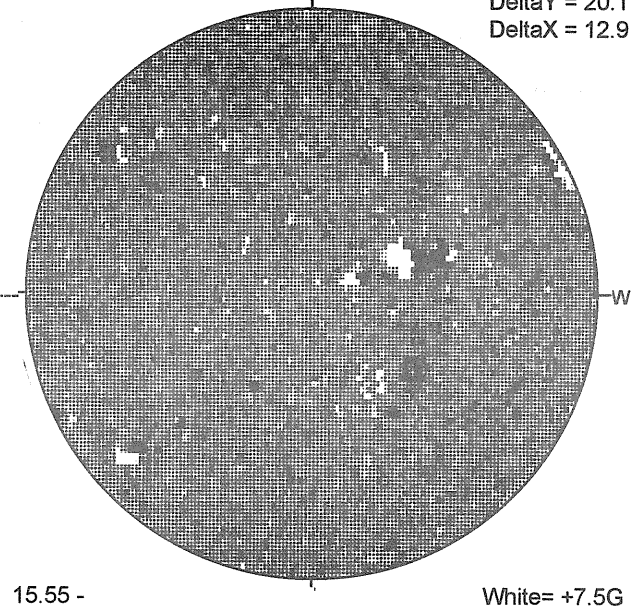
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 20.1
DeltaX = 12.9

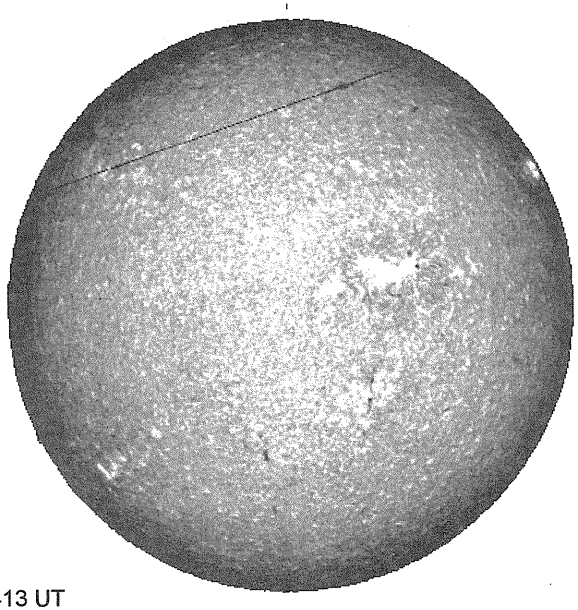


W

15.55 -
15.96 UT

White= +7.5G
Black = -7.5G

---- MEUDON H-ALPHA

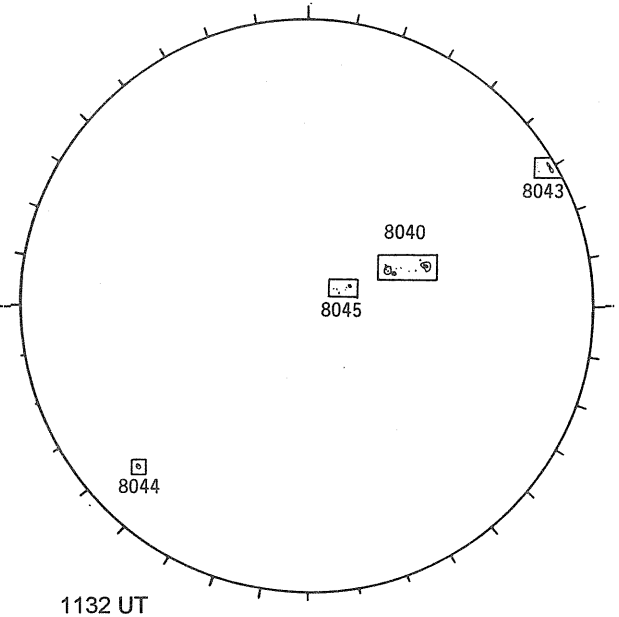


E--

1413 UT

S

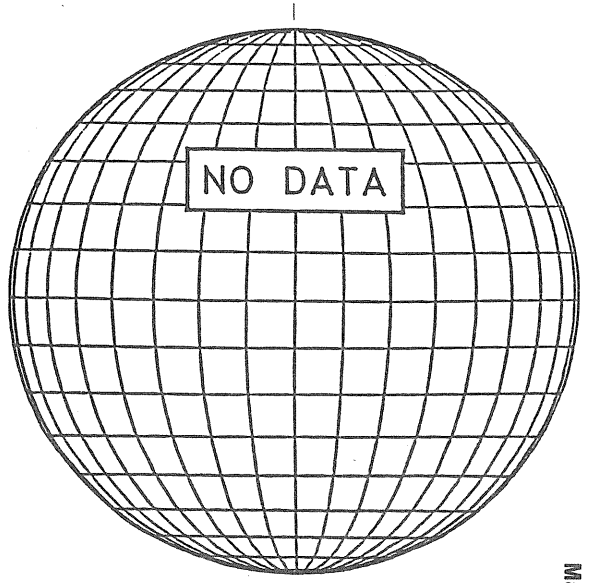
RAMEY SUNSPOT



1132 UT

S

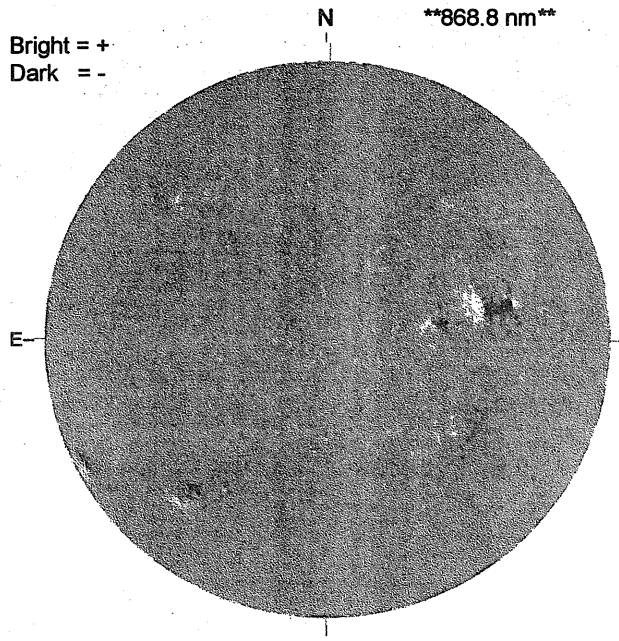
SACRAMENTO PEAK CORONA (1.15 Radii)----



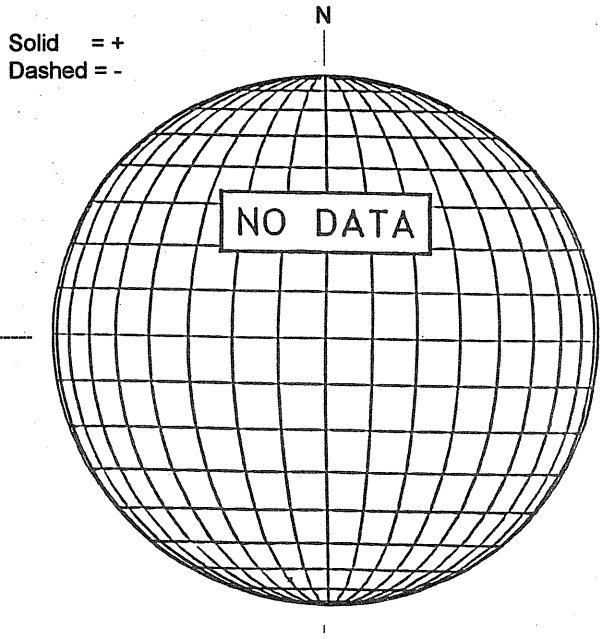
S

MAY 23, 1997 (P= - 18.58, Bo = - 1.73, Lo = 348.12)

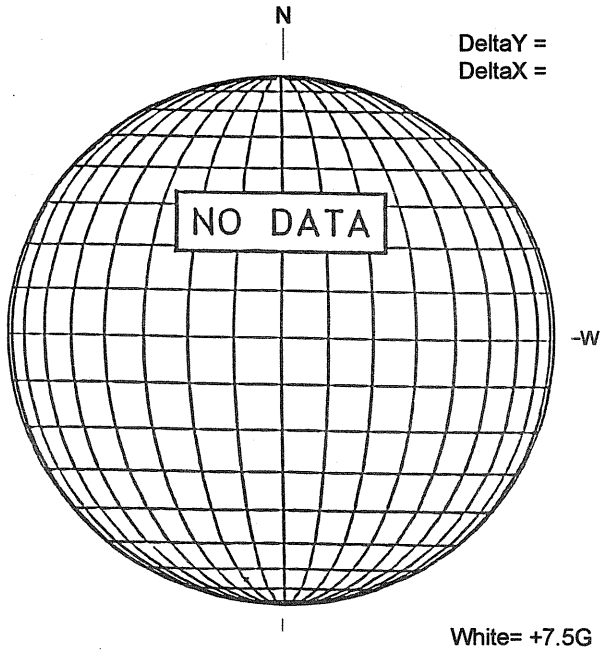
KITT PEAK MAGNETOGRAM



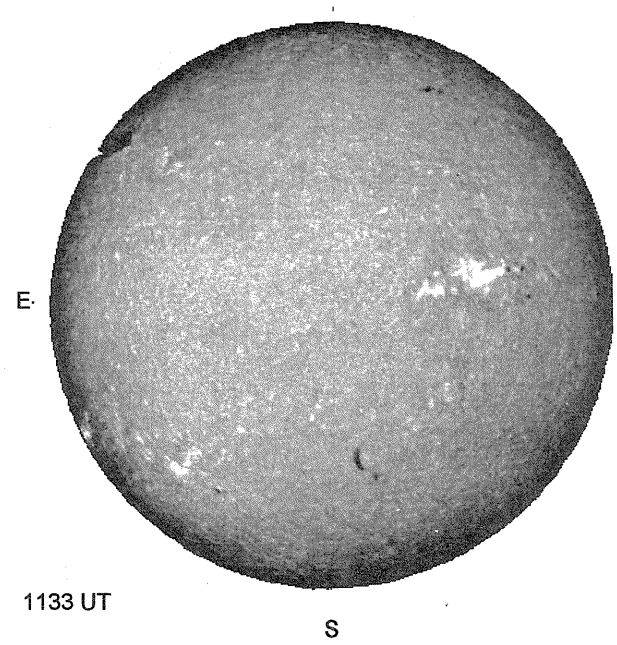
STANFORD MAGNETOGRAM



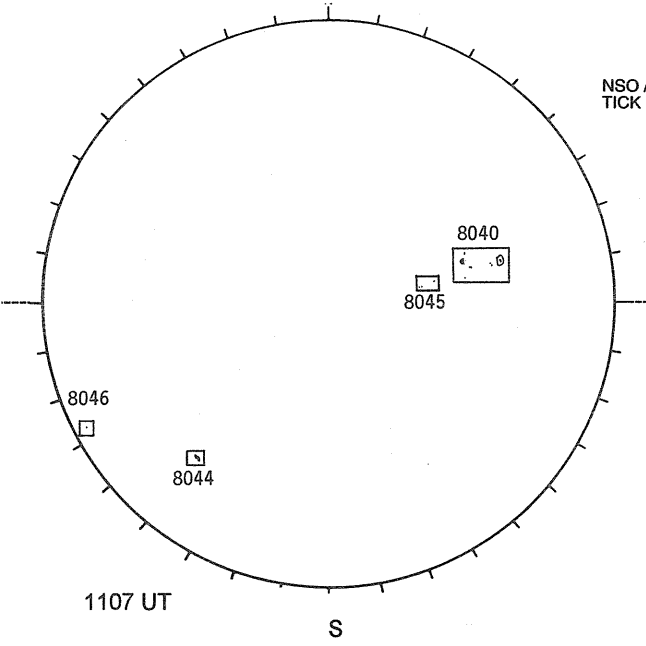
MT. WILSON MAGNETOGRAM



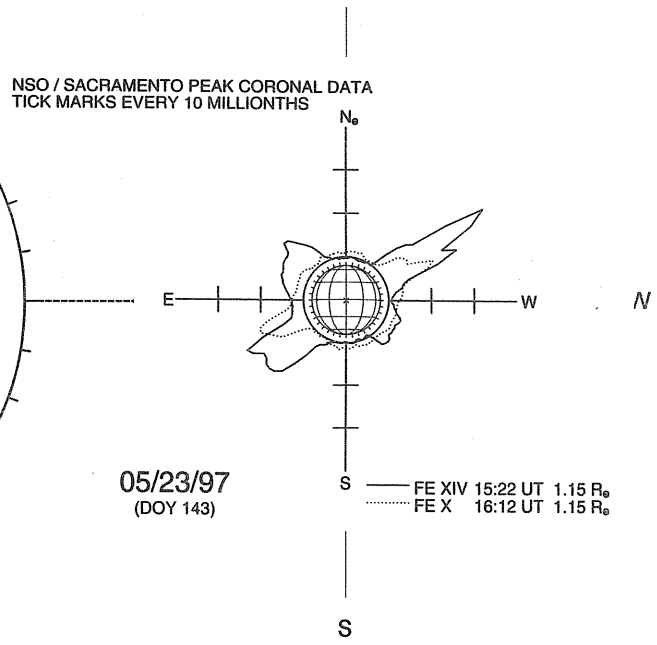
MEUDON H-ALPHA



RAMEY SUNSPOT

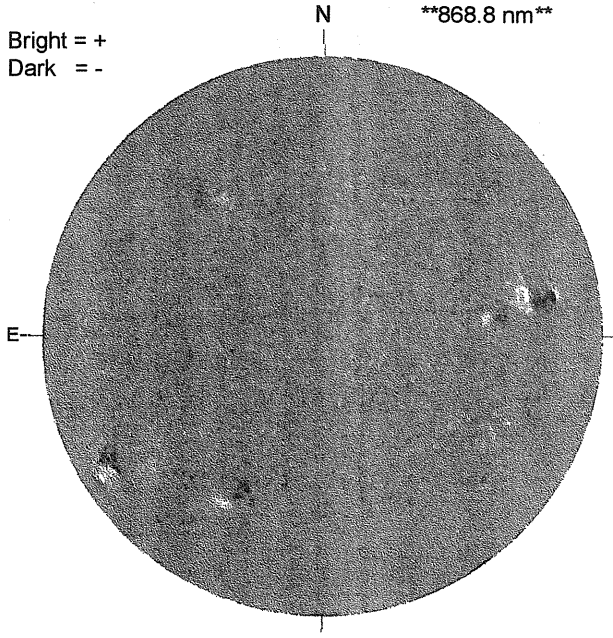


SACRAMENTO PEAK CORONA (1.15 Radii)----

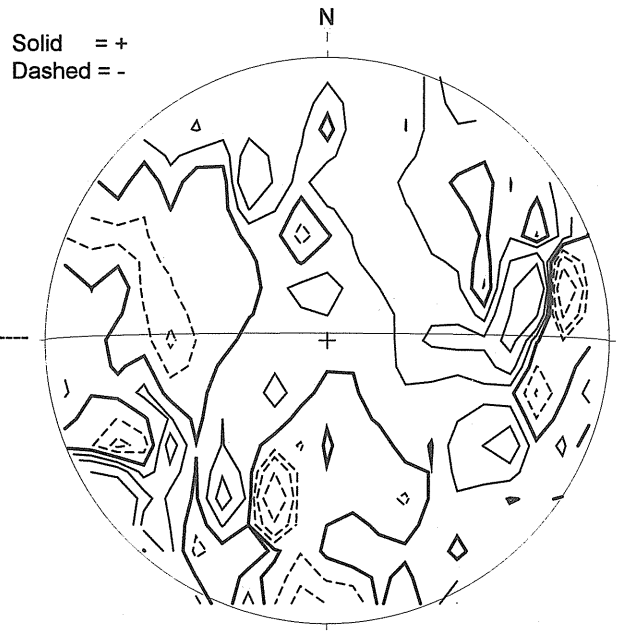


MAY 24, 1997 (P= - 18.25, Bo = - 1.61 Lo = 334.89)

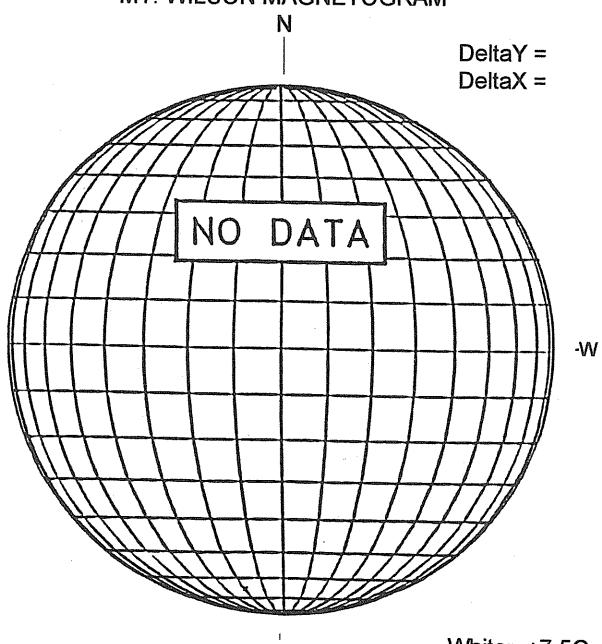
KITT PEAK MAGNETOGRAM



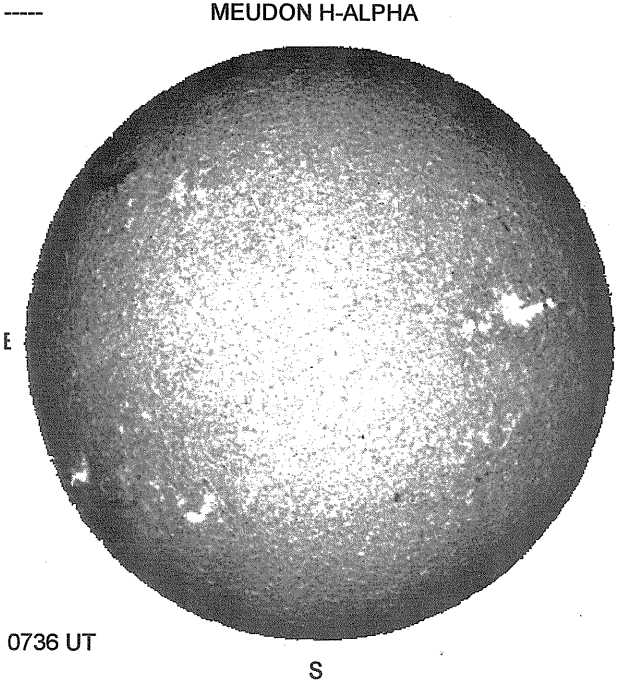
STANFORD MAGNETOGRAM



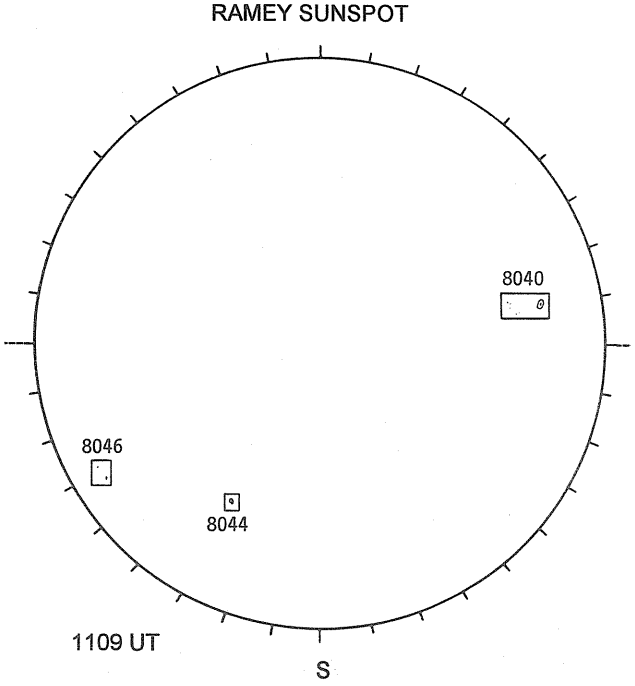
MT. WILSON MAGNETOGRAM



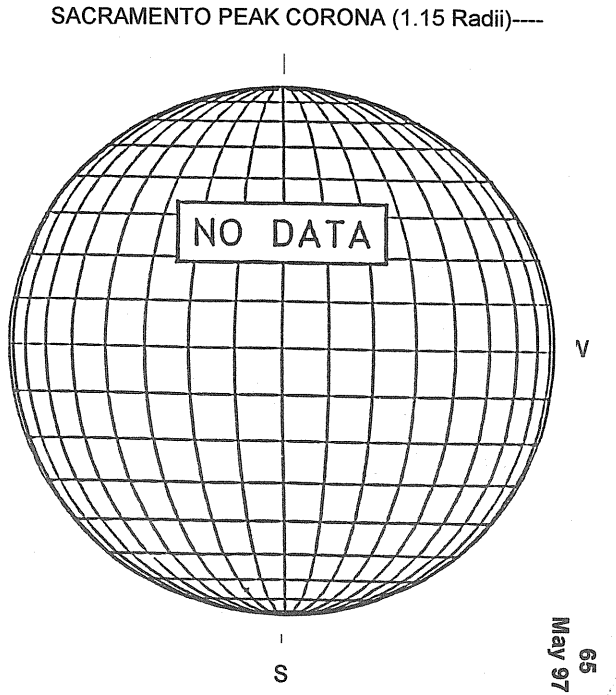
MEUDON H-ALPHA



RAMEY SUNSPOT

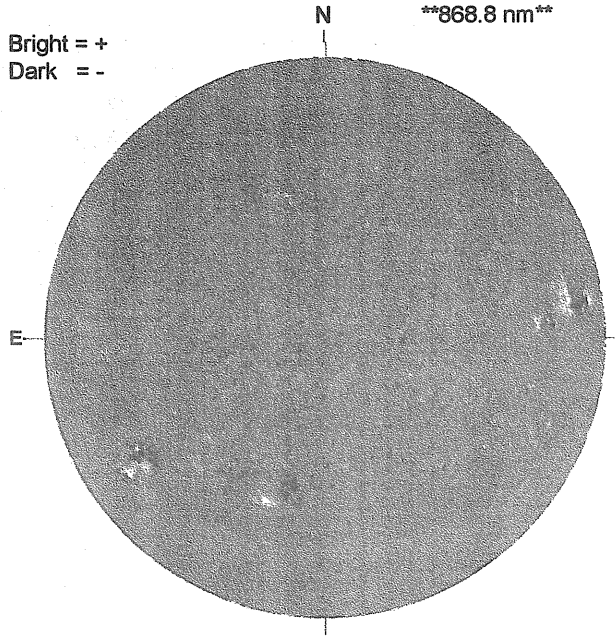


SACRAMENTO PEAK CORONA (1.15 Radii)----



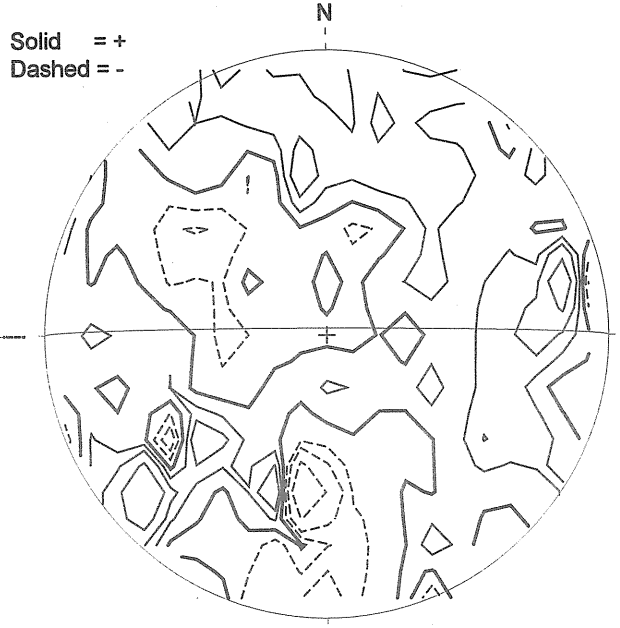
MAY 25, 1997 (P= - 17.92, Bo = - 1.49, Lo = 321.66)

KITT PEAK MAGNETOGRAM



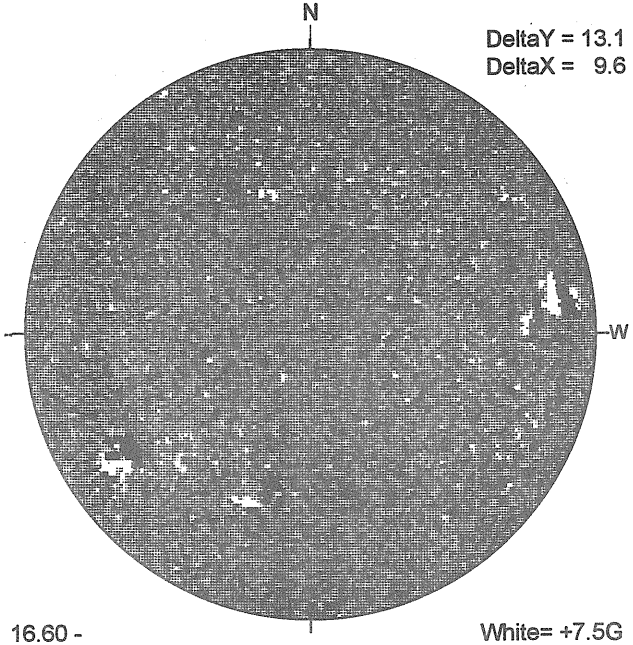
1448 UT

STANFORD MAGNETOGRAM



2004 UT

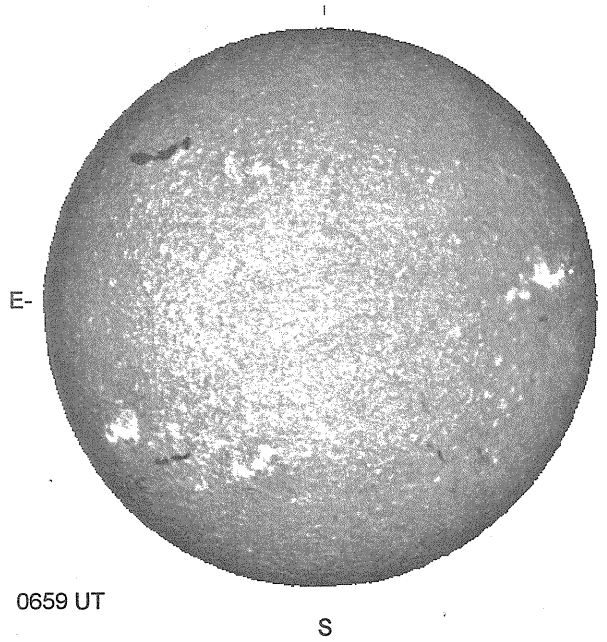
MT. WILSON MAGNETOGRAM



16.60 -
17.52 UT

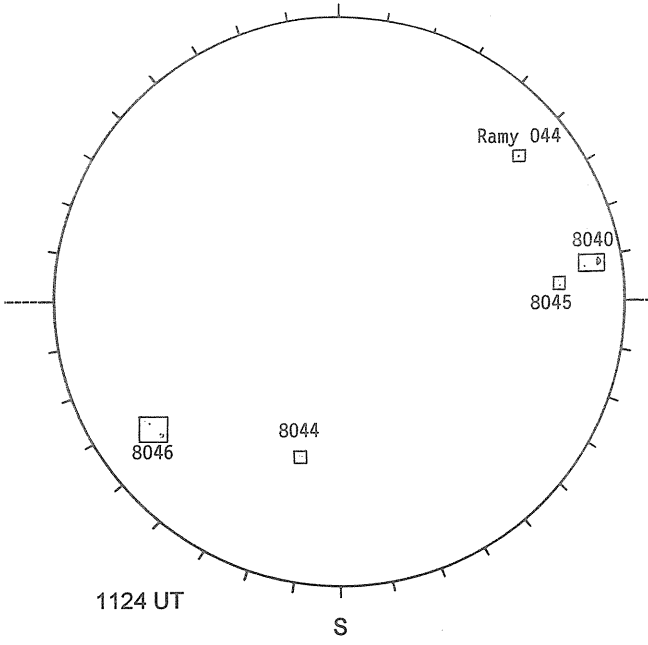
White= +7.5G
Black = -7.5G

----- MEUDON H-ALPHA



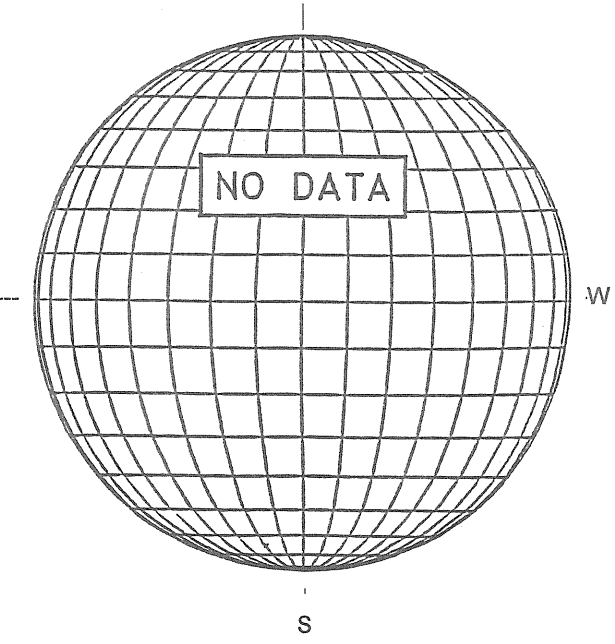
0659 UT

RAMEY SUNSPOT



1124 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

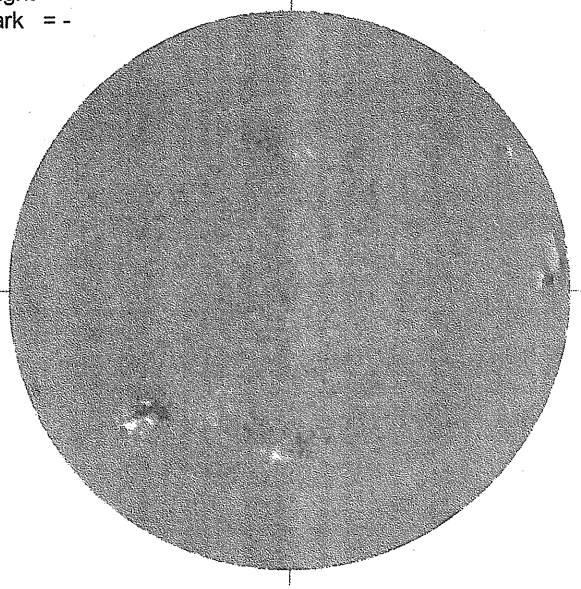


MAY 26, 1997 (P= - 17.58, Bo = - 1.37, Lo = 308.43)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



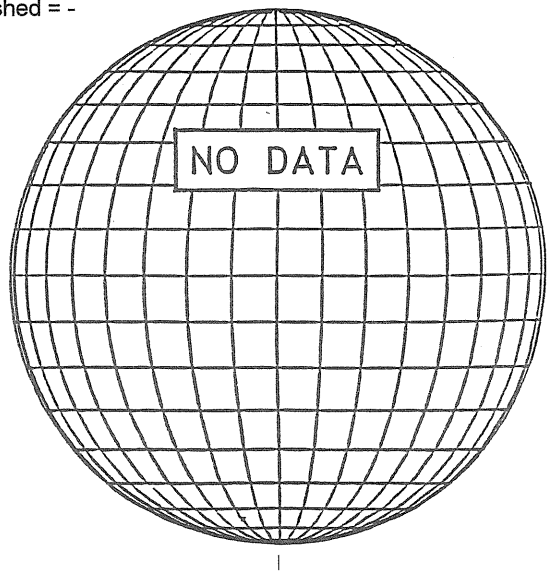
E-

1611 UT

STANFORD MAGNETOGRAM

N

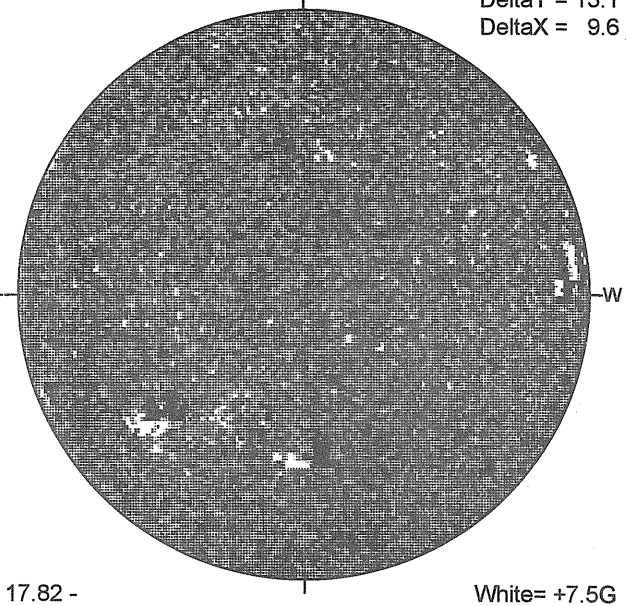
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

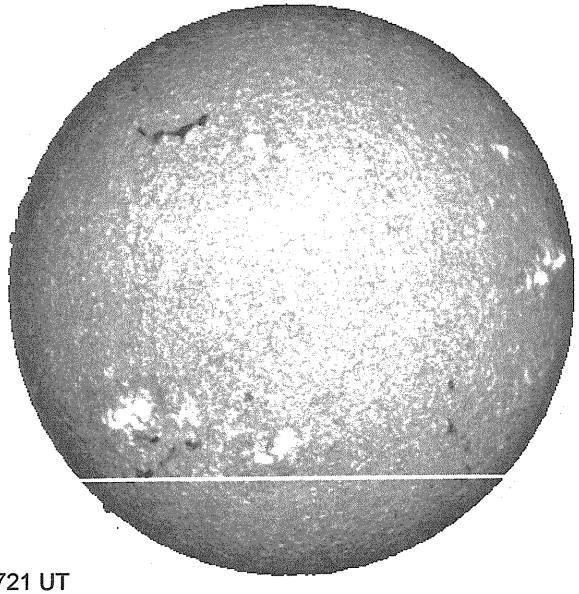


-W

17.82 -
18.75 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

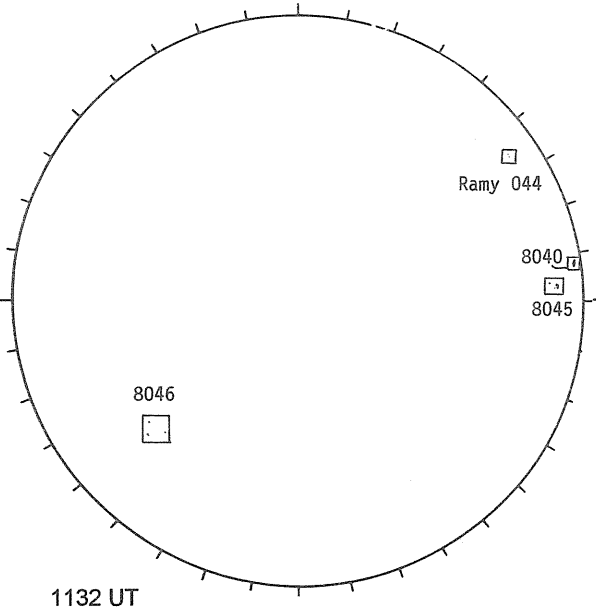


E-

0721 UT

S

RAMEY SUNSPOT



1132 UT

S

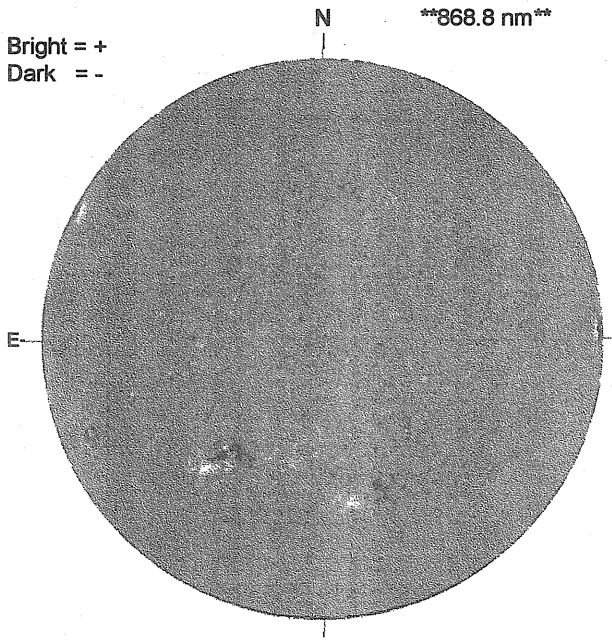
SACRAMENTO PEAK CORONA (1.15 Radii)----

W

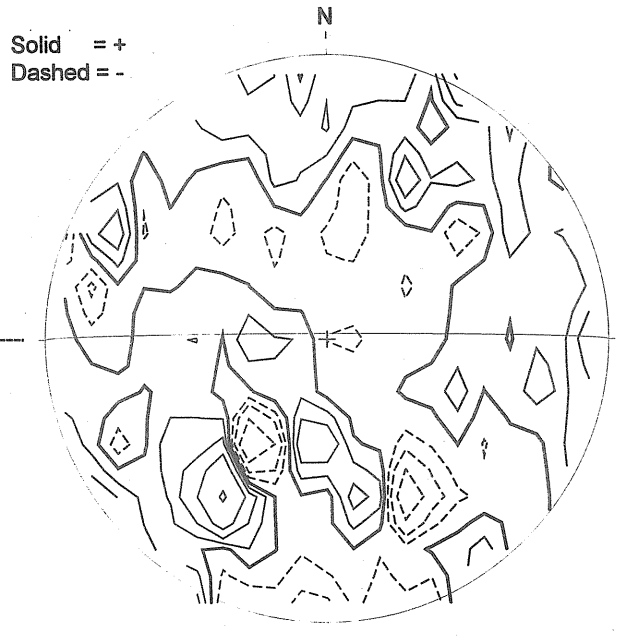
S

MAY 27, 1997 (P= - 17.24, Bo = - 1.25, Lo = 295.19)

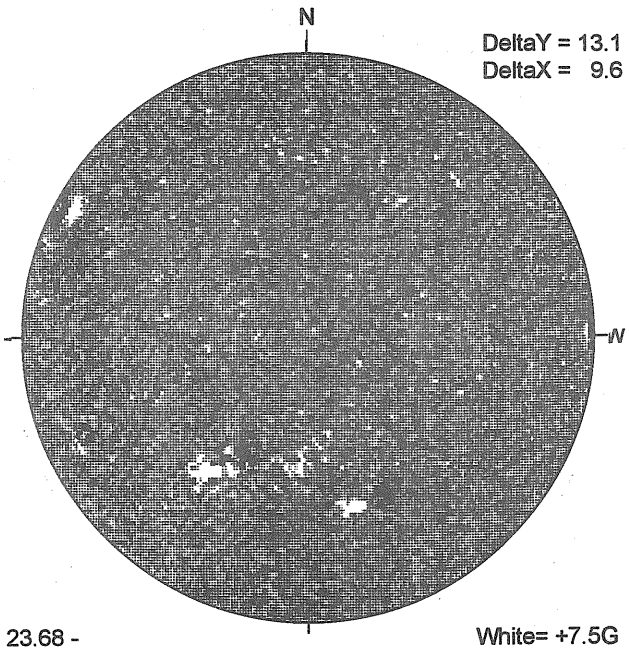
KITT PEAK MAGNETOGRAM



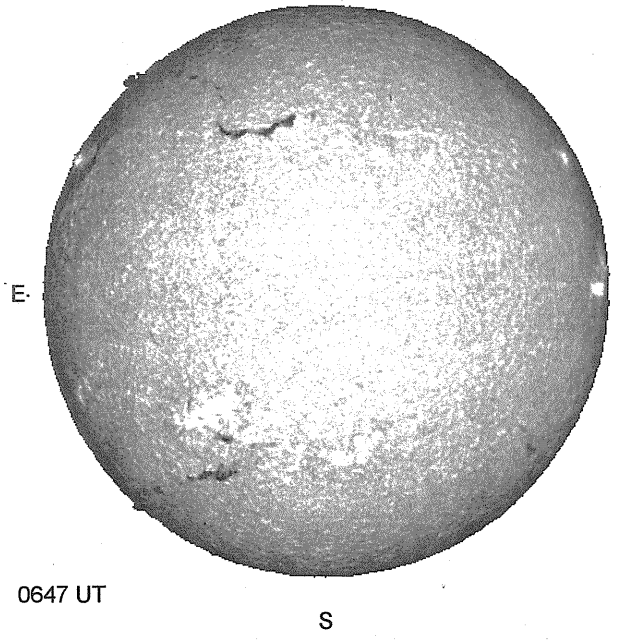
STANFORD MAGNETOGRAM



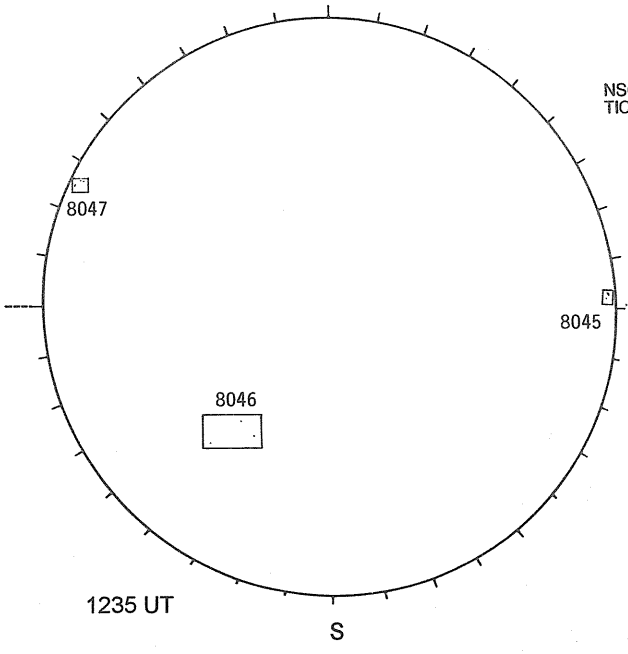
MT. WILSON MAGNETOGRAM



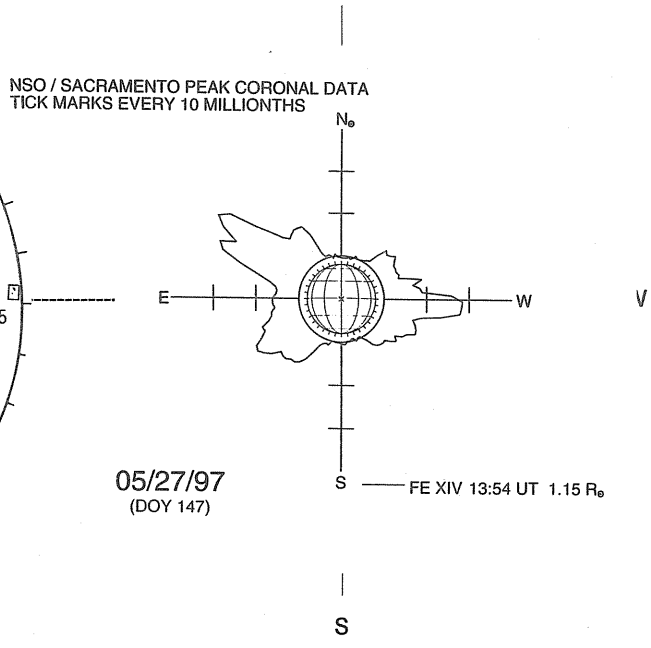
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



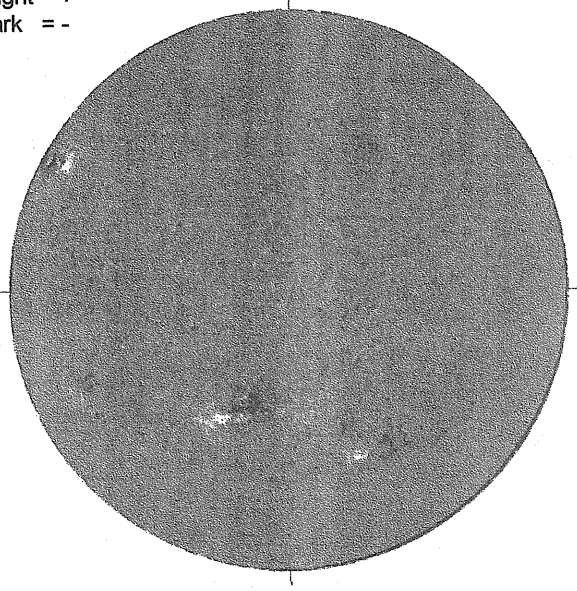
MAY 28, 1997 (P= - 16.89, Bo = - 1.13, Lo = 281.96)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



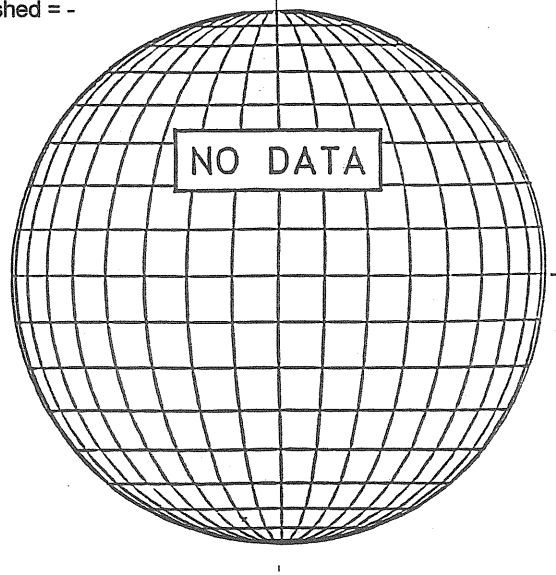
E

1414 UT

STANFORD MAGNETOGRAM

N

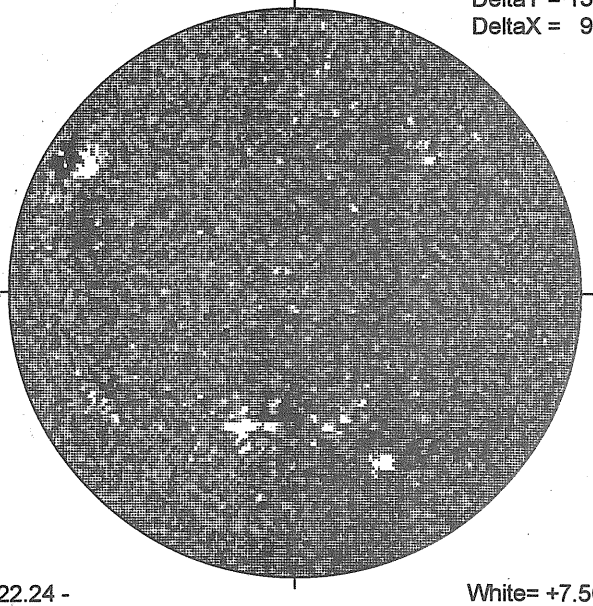
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

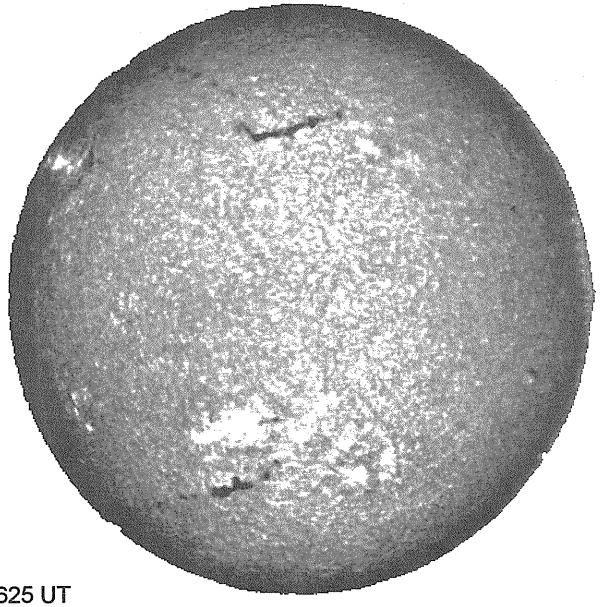


W

22.24 -
23.17 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

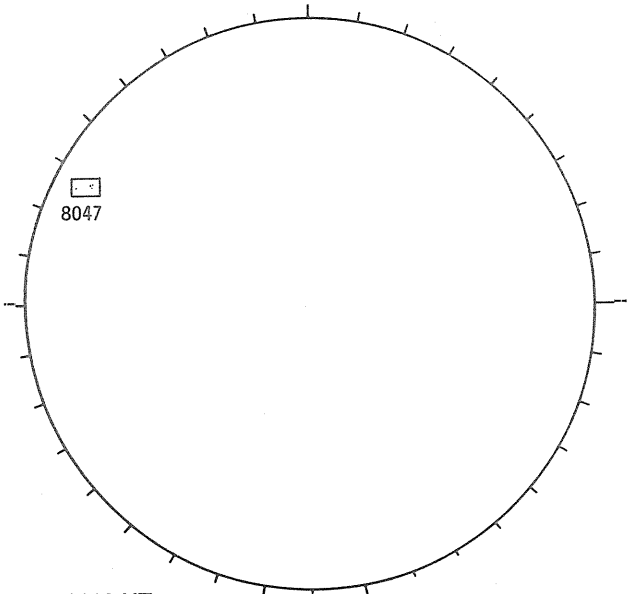


E-

0625 UT

S

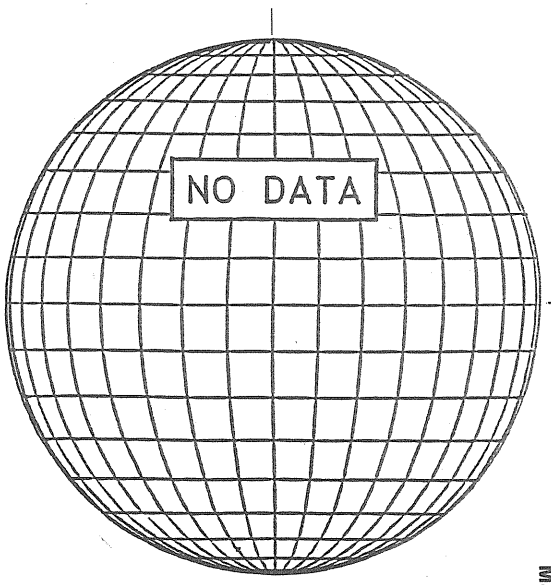
RAMEY SUNSPOT



1116 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



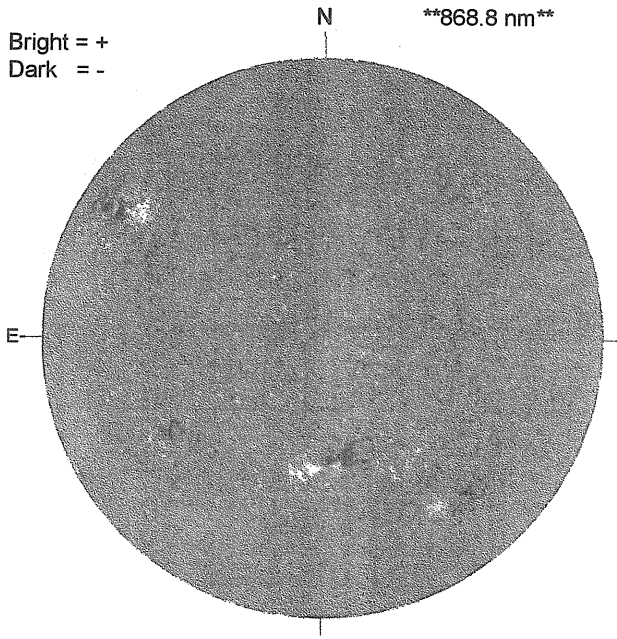
-W

S

99
May 97

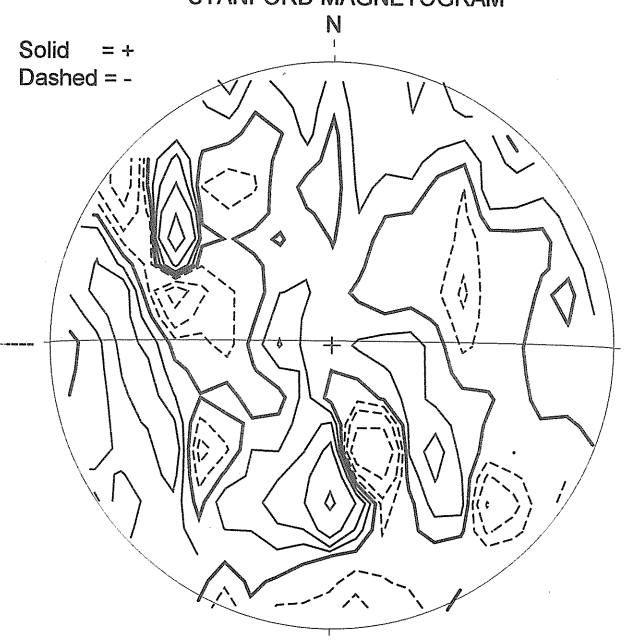
MAY 29, 1997 (P= - 16.53, Bo = - 1.01, Lo = 268.73)

KITT PEAK MAGNETOGRAM



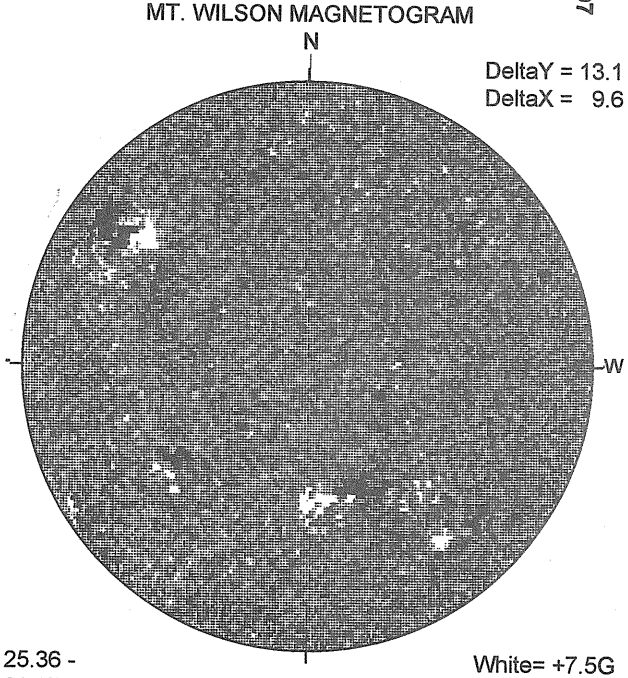
1447 UT

STANFORD MAGNETOGRAM



1956 UT

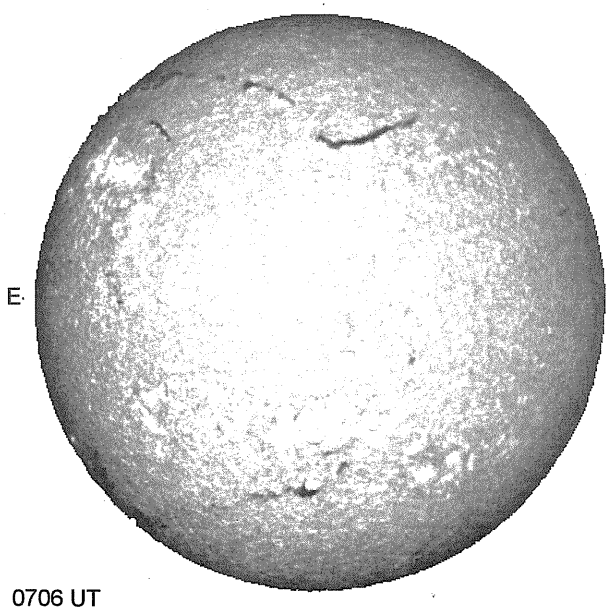
MT. WILSON MAGNETOGRAM



25.36 -
26.27 UT

White= +7.5G
Black = -7.5G

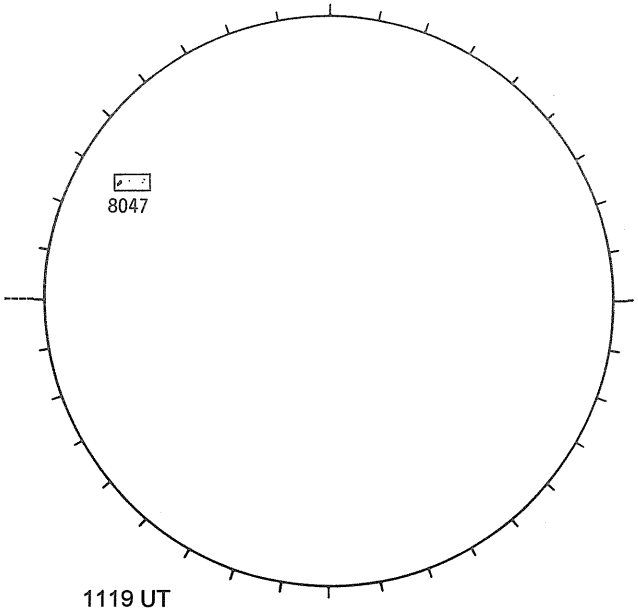
MEUDON H-ALPHA



0706 UT

S

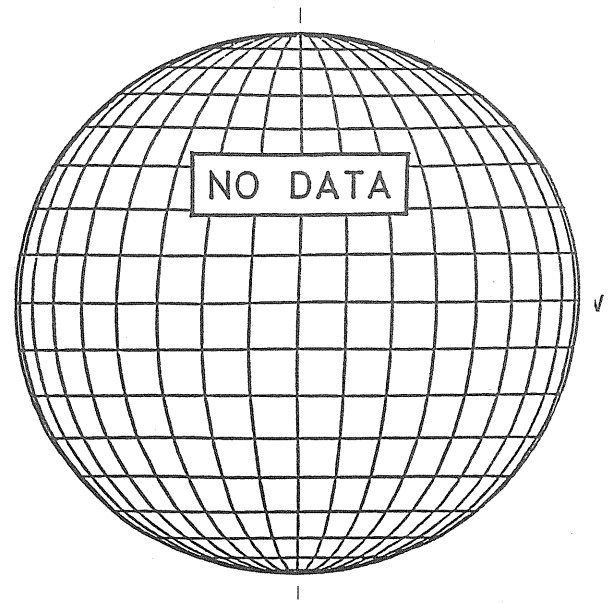
RAMEY SUNSPOT



1119 UT

S

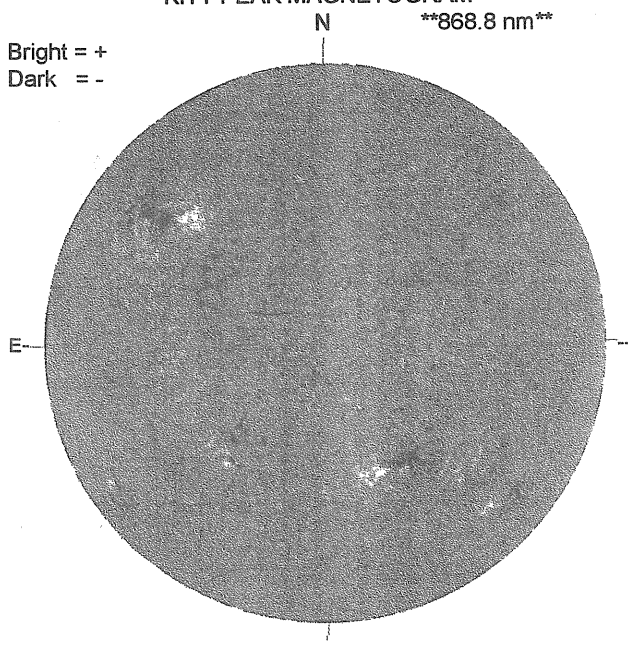
SACRAMENTO PEAK CORONA (1.15 Radii)



S

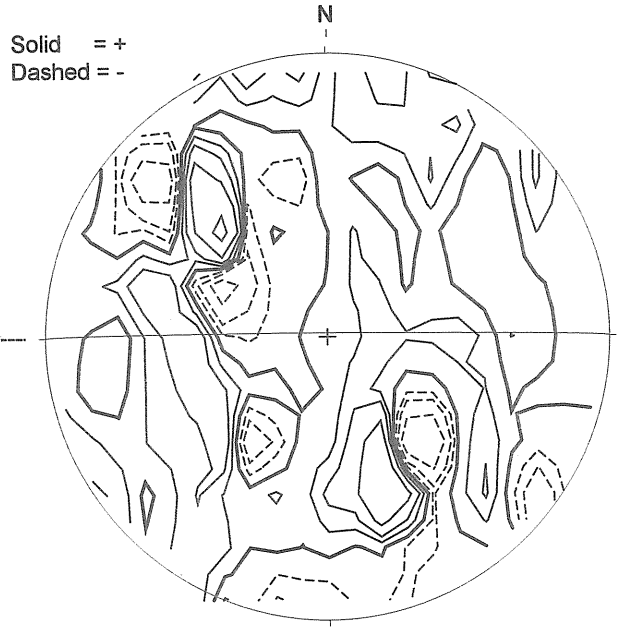
MAY 30, 1997 (P= - 16.17, Bo = - 0.89, Lo = 255.50)

KITT PEAK MAGNETOGRAM



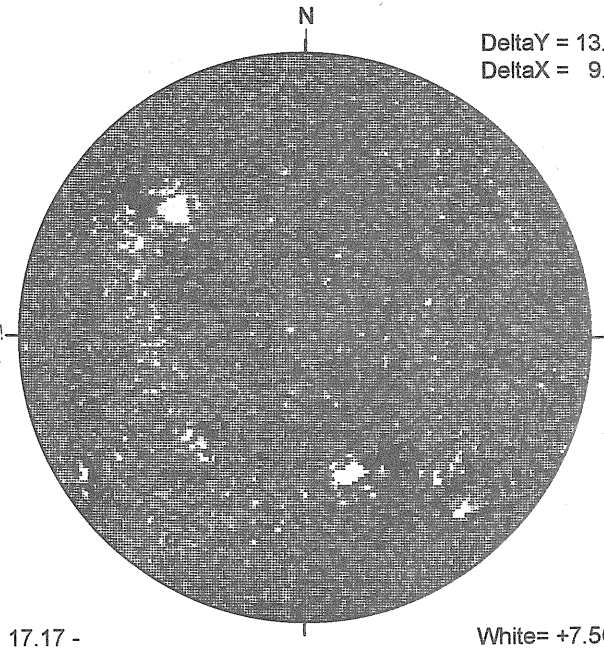
1452 UT

STANFORD MAGNETOGRAM



2050 UT

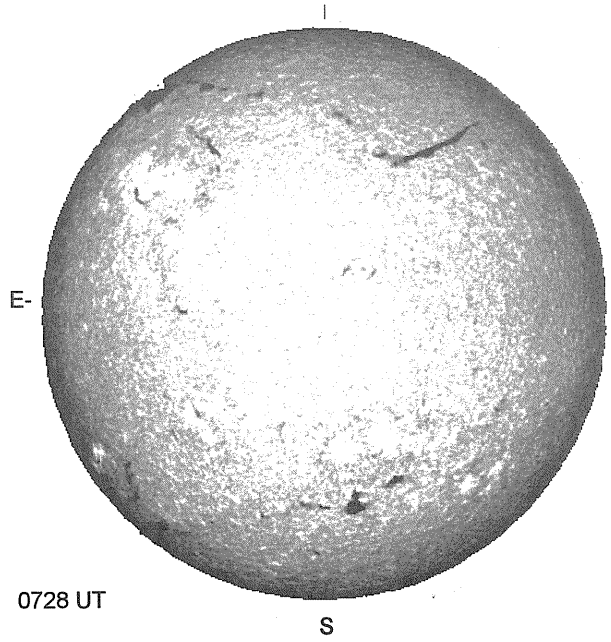
MT. WILSON MAGNETOGRAM



17.17 -
18.10 UT

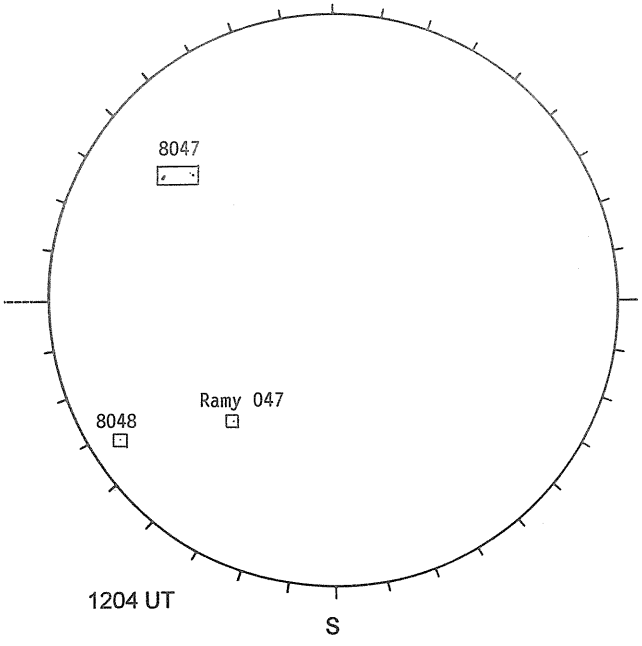
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



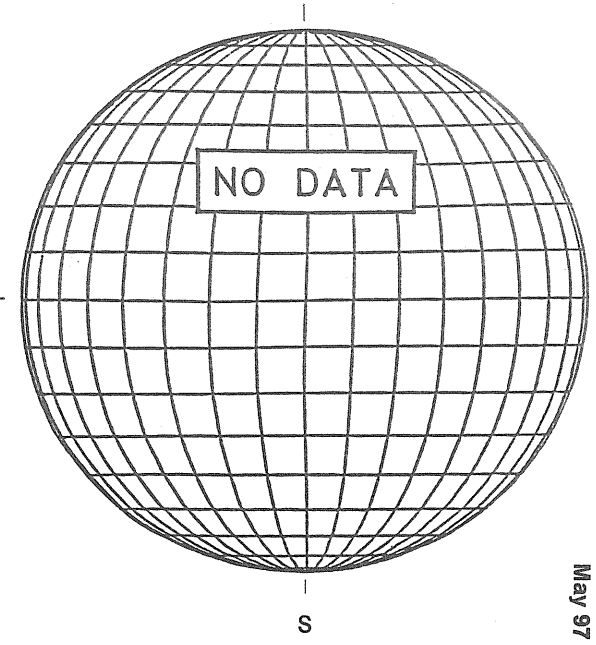
0728 UT

RAMEY SUNSPOT



1204 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



71
May 97

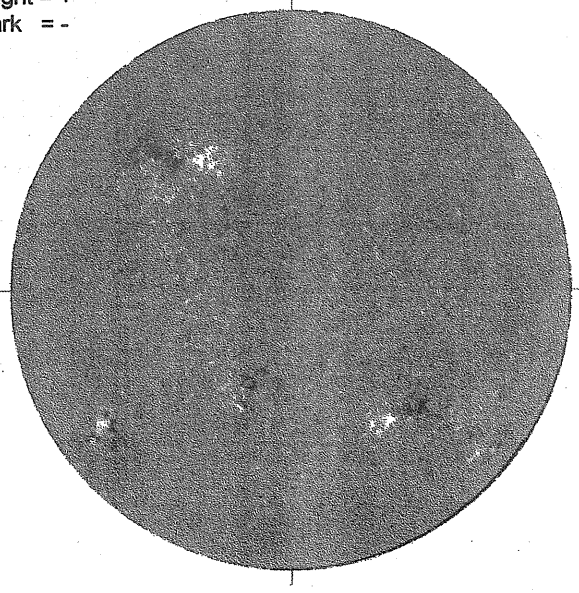
MAY 31, 1997 (P= - 15.81, Bo = - 0.77, Lo = 242.26)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



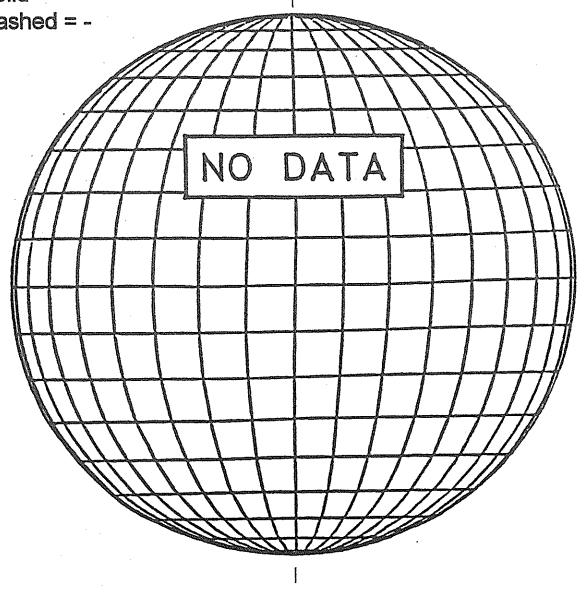
E

1423 UT

STANFORD MAGNETOGRAM

N

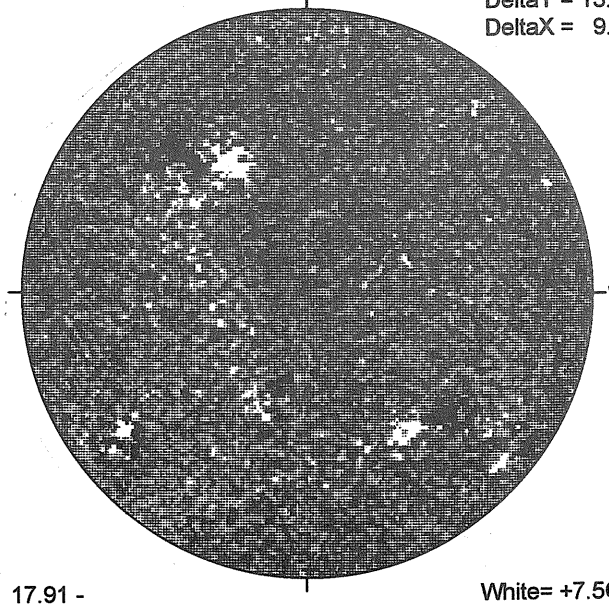
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

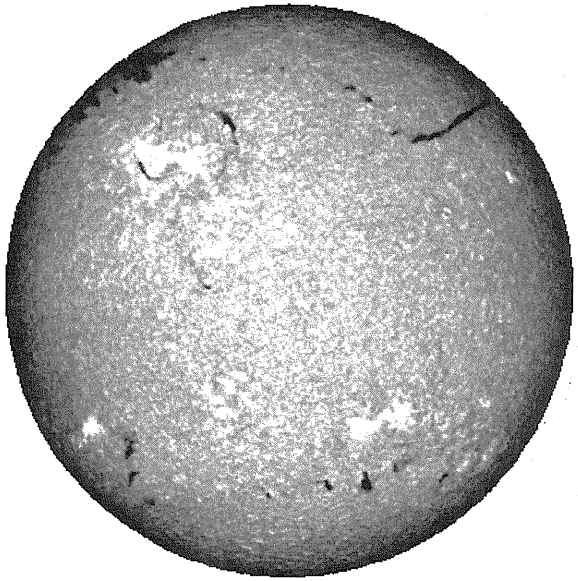


W

17.91 -
18.83 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

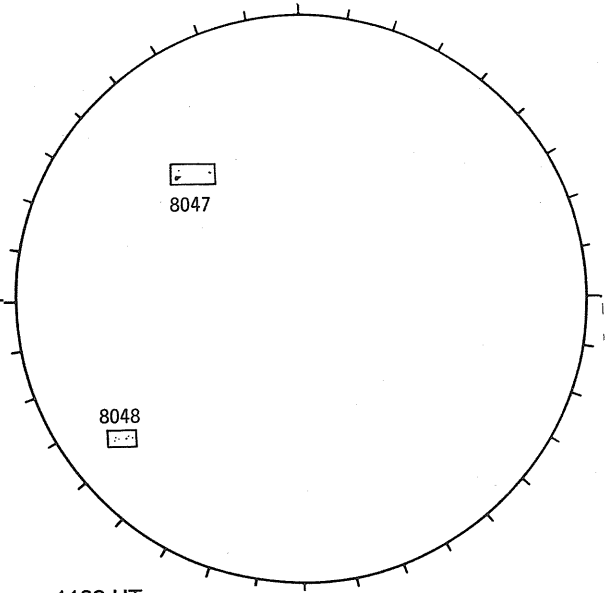


E

0641 UT

S

RAMEY SUNSPOT



1109 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

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 b 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 obatain 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

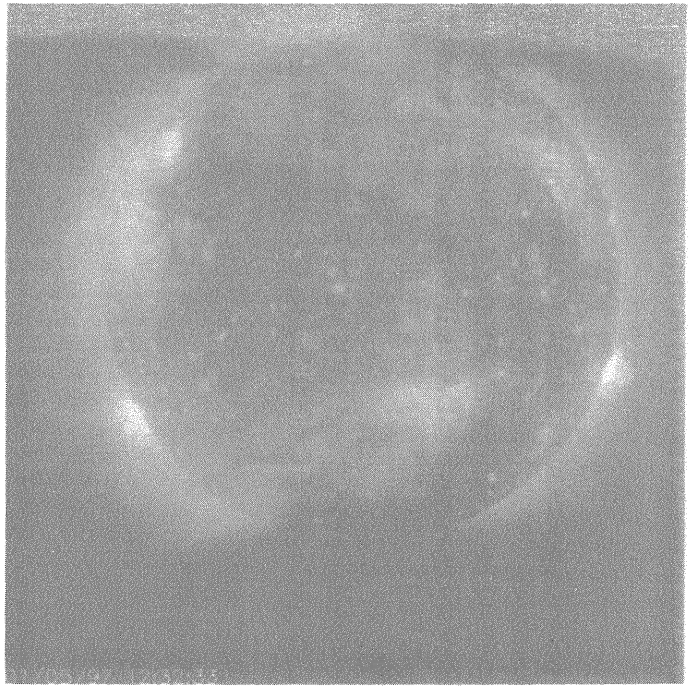
The NASA Goddard Solar Data Analysis Center (SDAC) nodes most familiar to the community will be undergoing some major changes in August and September, 1993. Nodes NEWMAX (newmax.gsfc.nasa.gov) and ISIS (isis.gsfc.nasa.gov) are being retired, and their functions combined on a single server, which will 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.)

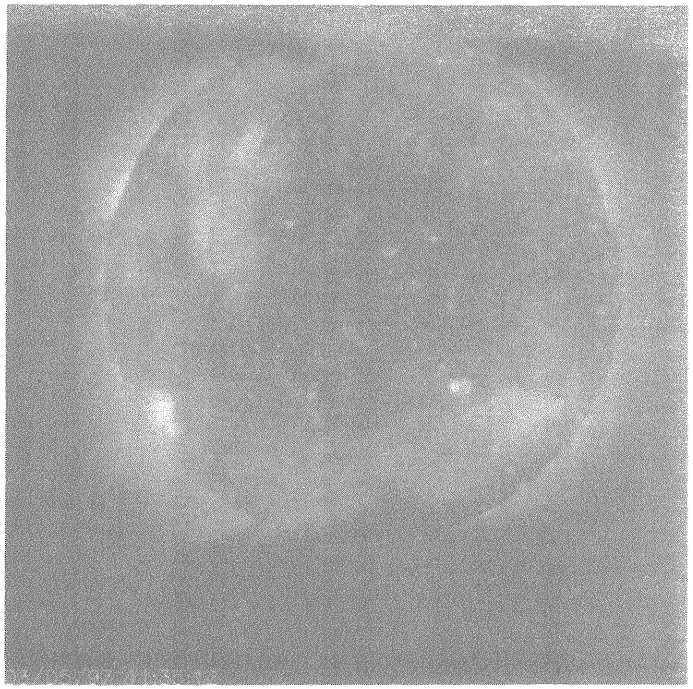
Received Aug. 10, 1993 from gurman@uvsp.gsfc.nasa.gov
--Joe Gurman

YOHKOH SOFT X-RAY TELESCOPE IMAGES

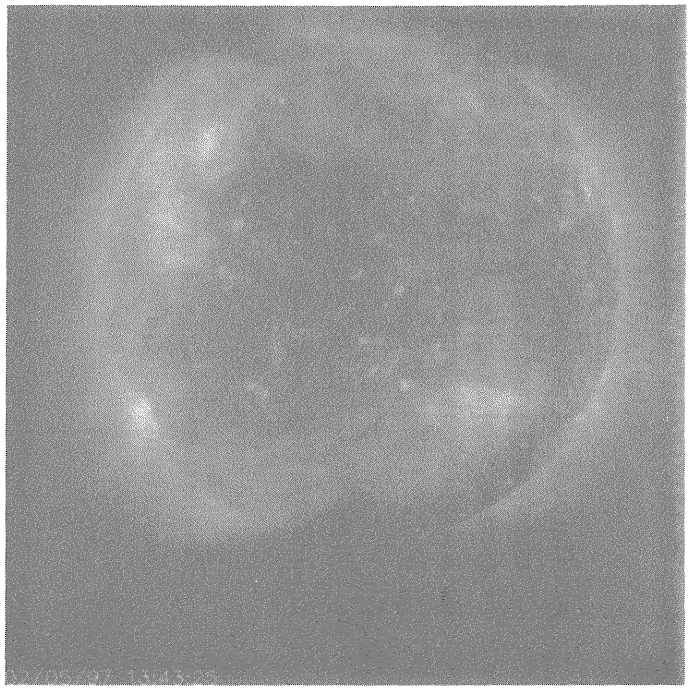
May
1997



Day 1
12:32:33 UT



Day 3
11:35:12 UT



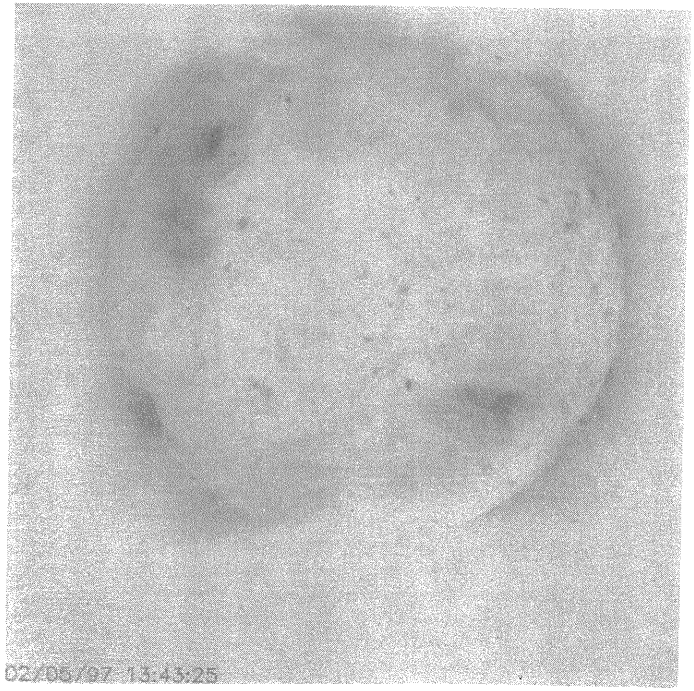
Day 2
13:43:25 UT

Day 4
11:46:46 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

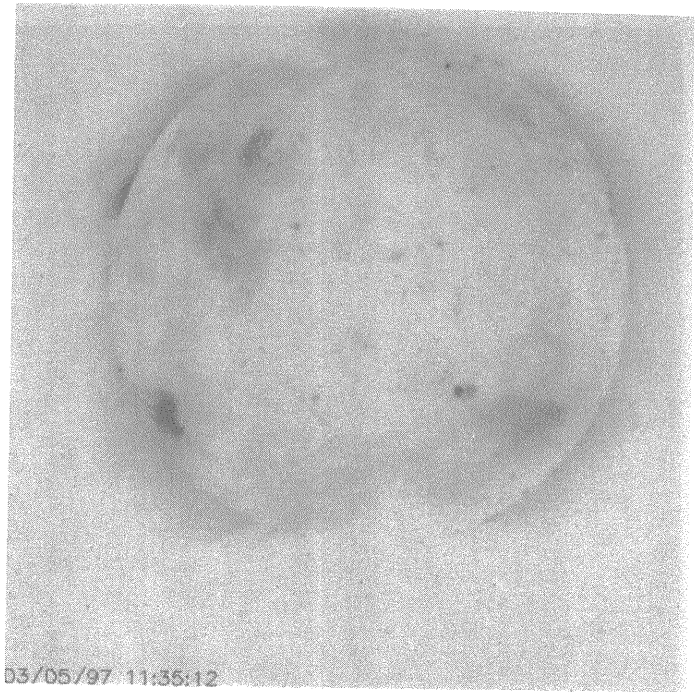
May
1997

Day 1
12:32:33 UT

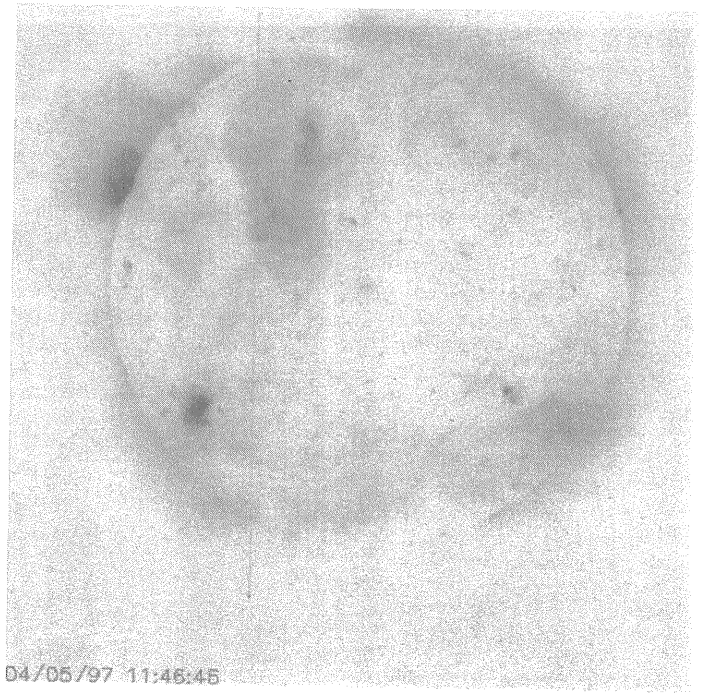


Day 2
13:43:25 UT

Day 3
11:35:12 UT

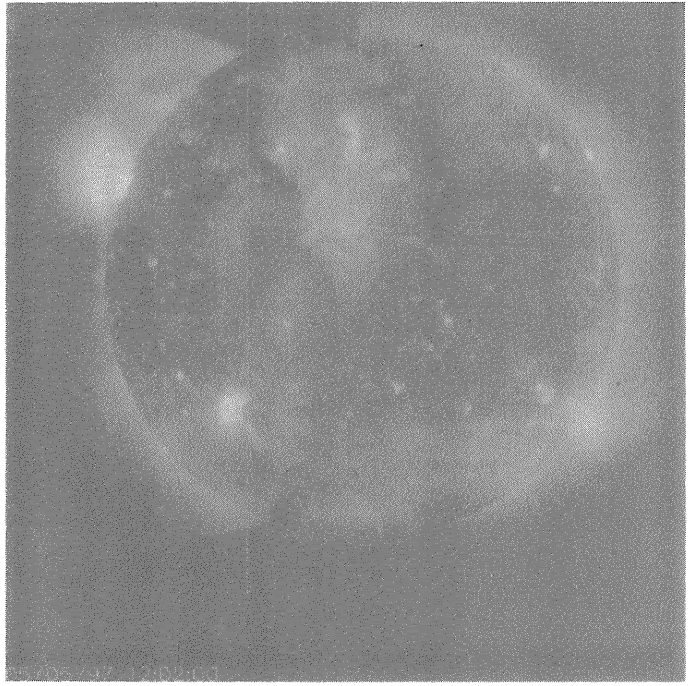


Day 4
11:46:46 UT

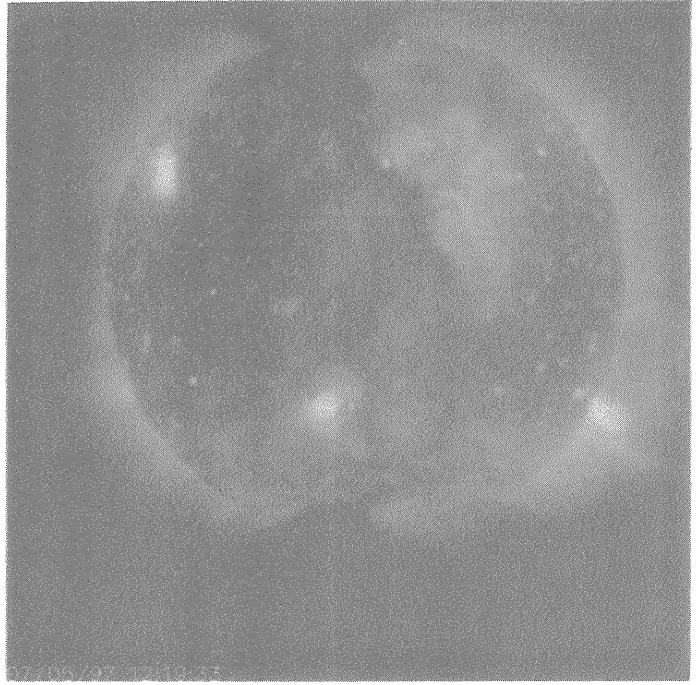


YOHKOH SOFT X-RAY TELESCOPE IMAGES

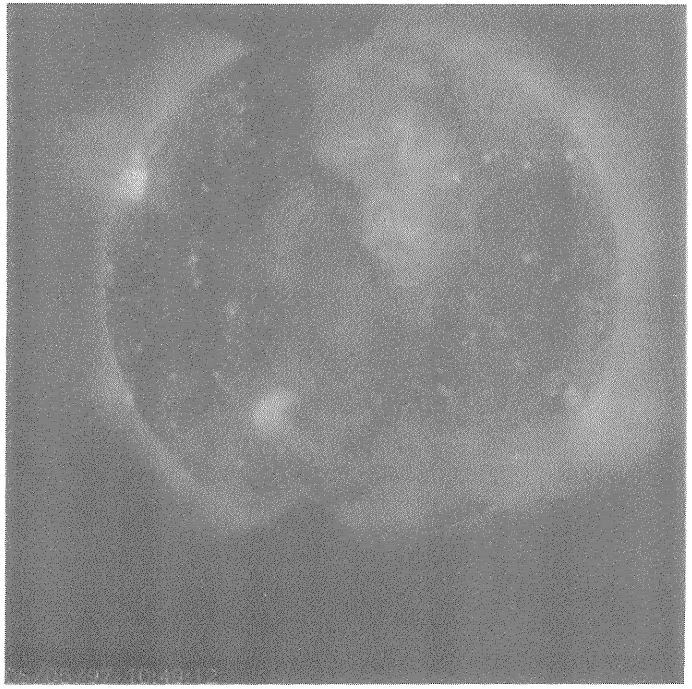
May
1997



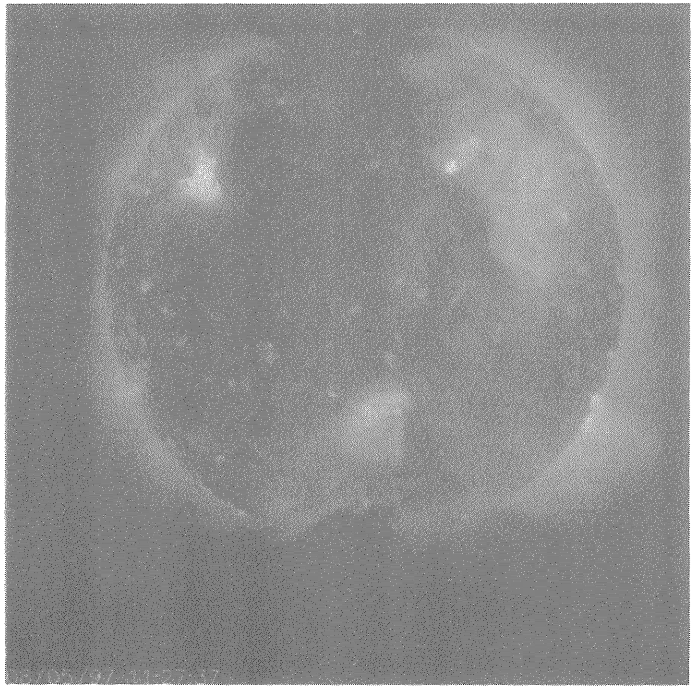
Day 5
12:02:00 UT



Day 7
12:19:33 UT



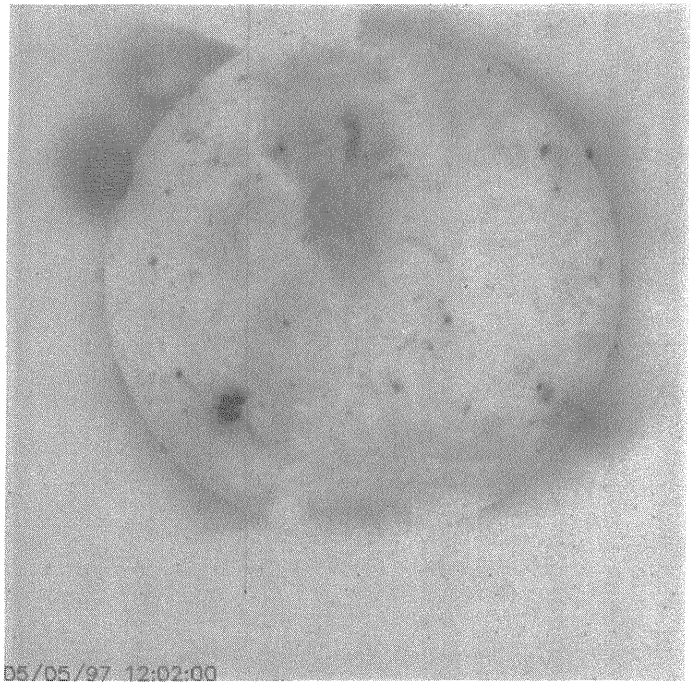
Day 6
10:49:12 UT



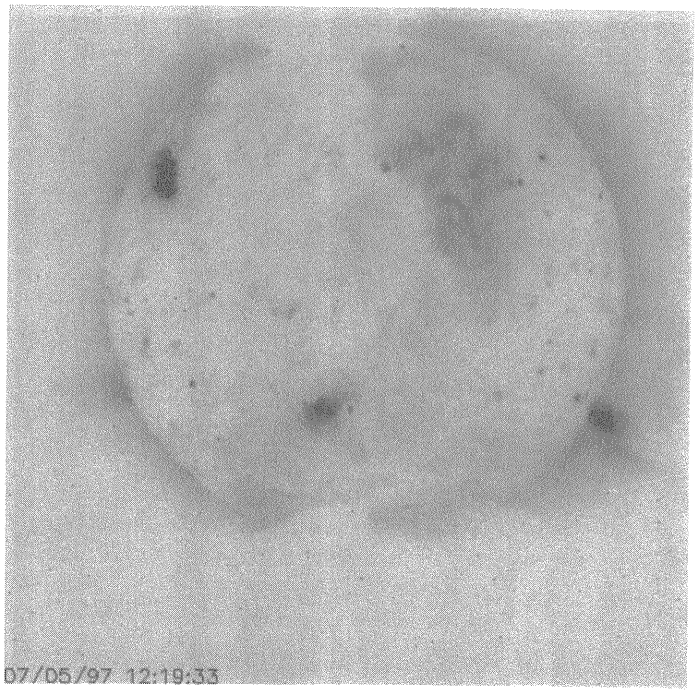
Day 8
11:27:37 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

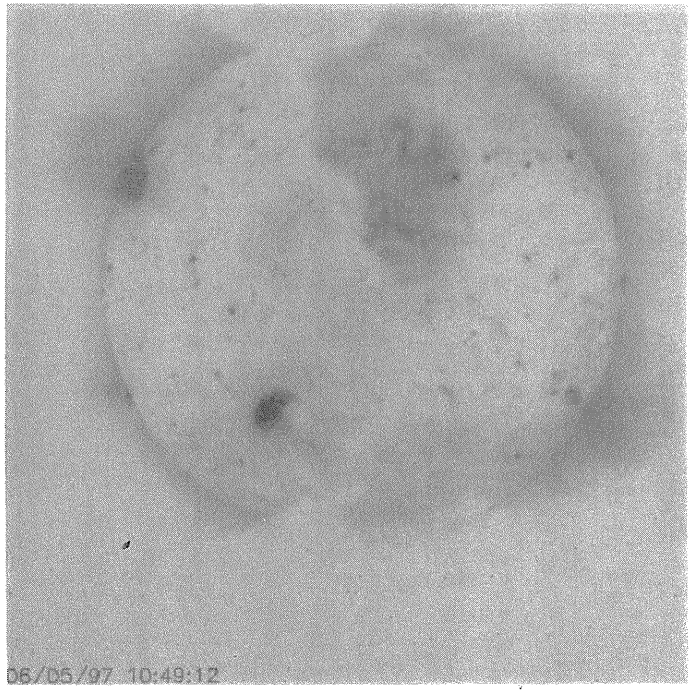
May
1997



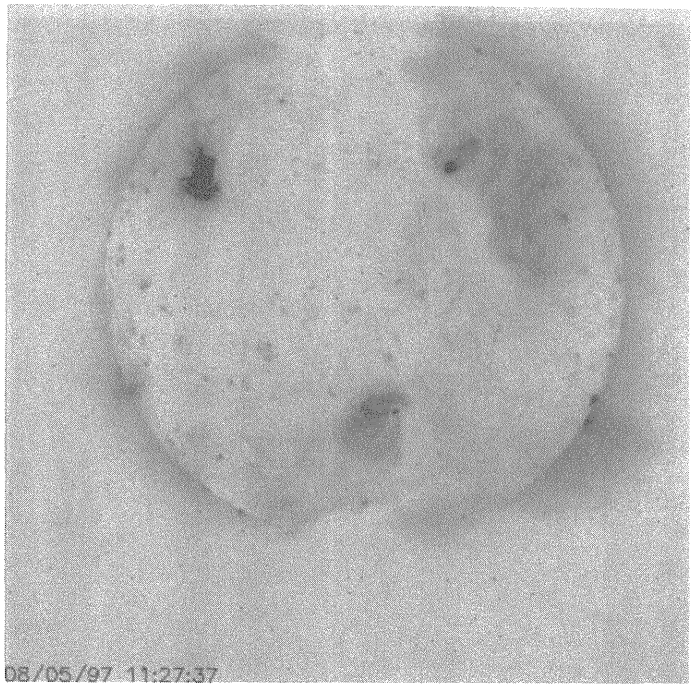
Day 5
12:02:00 UT



Day 7
12:19:33 UT



Day 6
10:49:12 UT

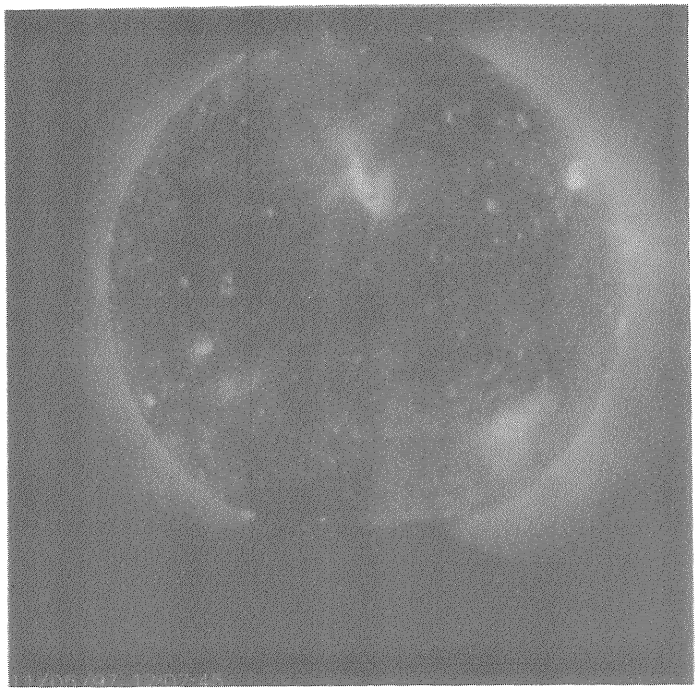


Day 8
11:27:37 UT

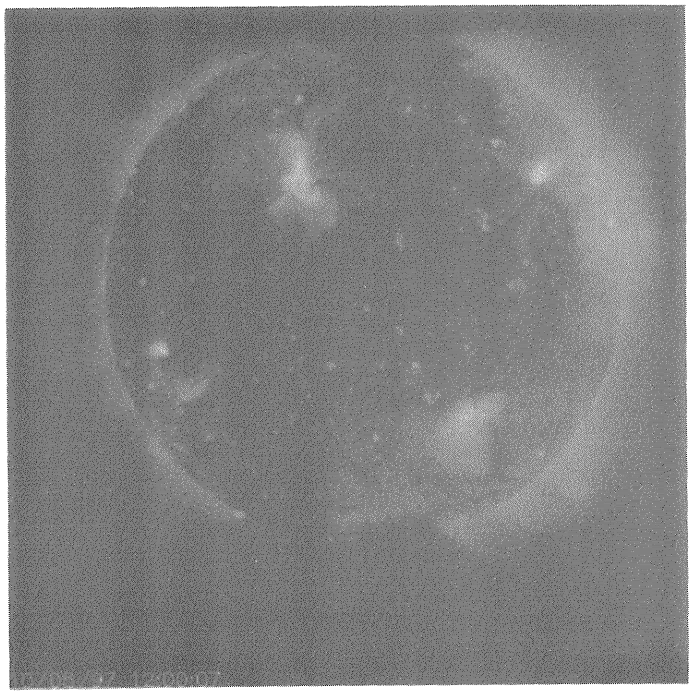
YOHKOH SOFT X-RAY TELESCOPE IMAGES

May
1997

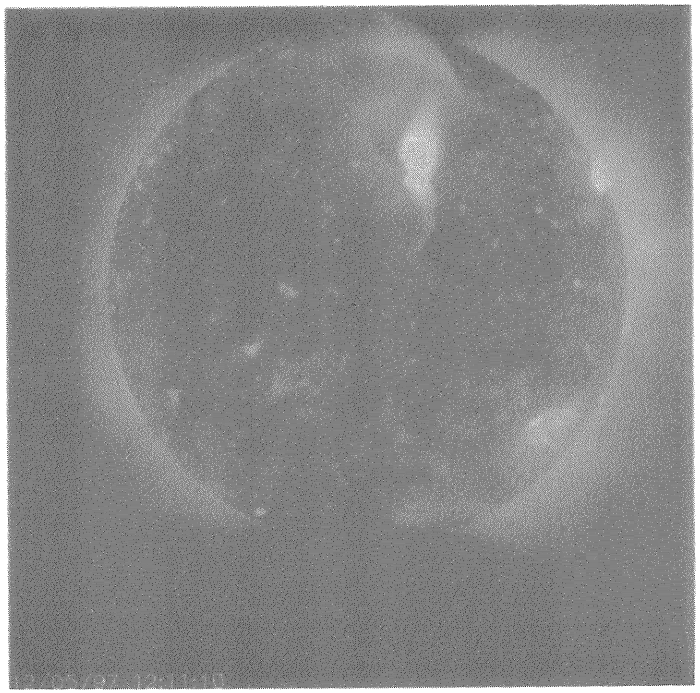
Day 9
11:45:05 UT



Day 11
12:07:45 UT



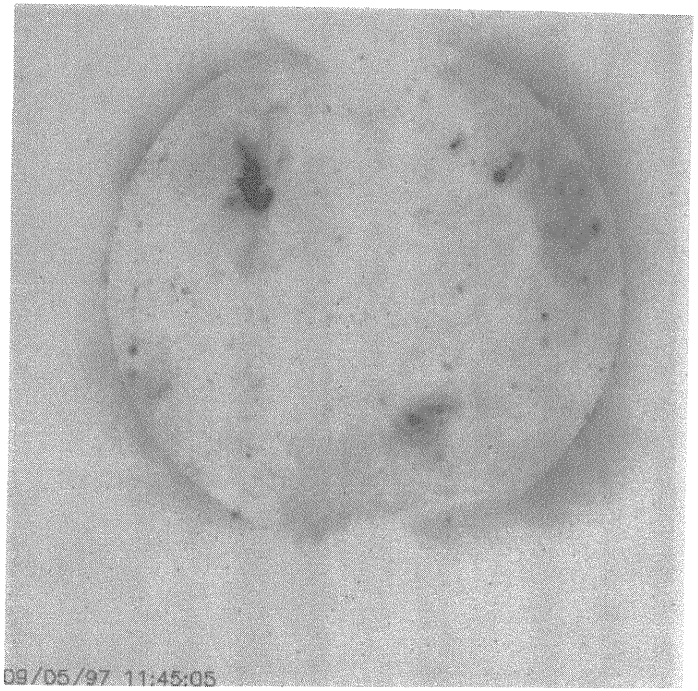
Day 10
12:00:07 UT



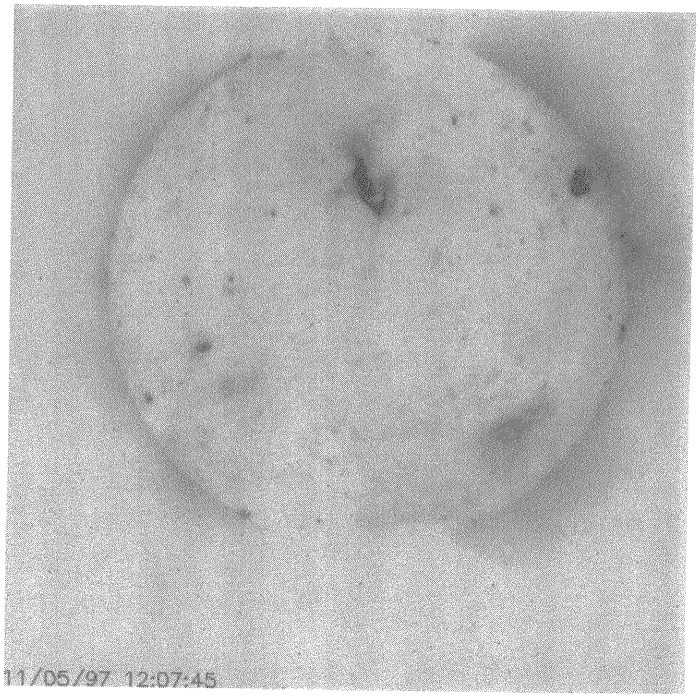
Day 12
12:11:10 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

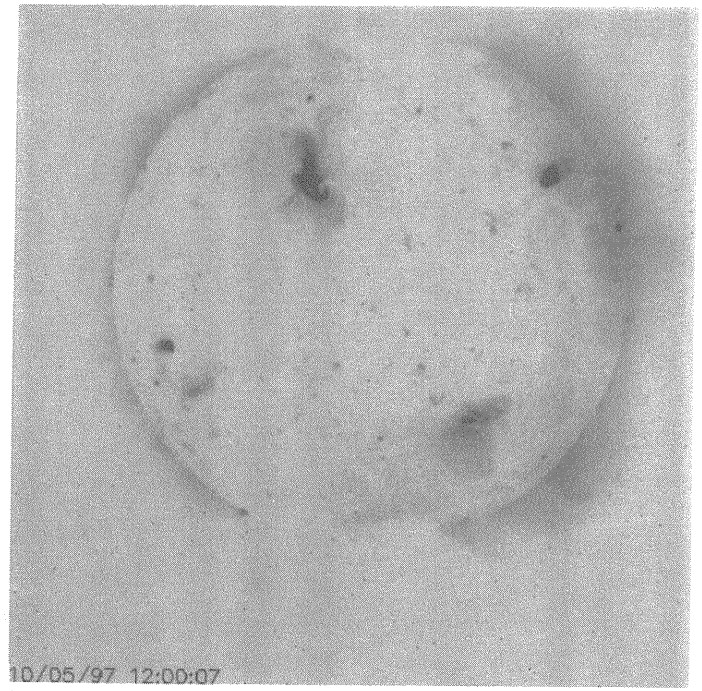
May
1997



Day 9
11:45:05 UT



Day 11
12:07:45 UT

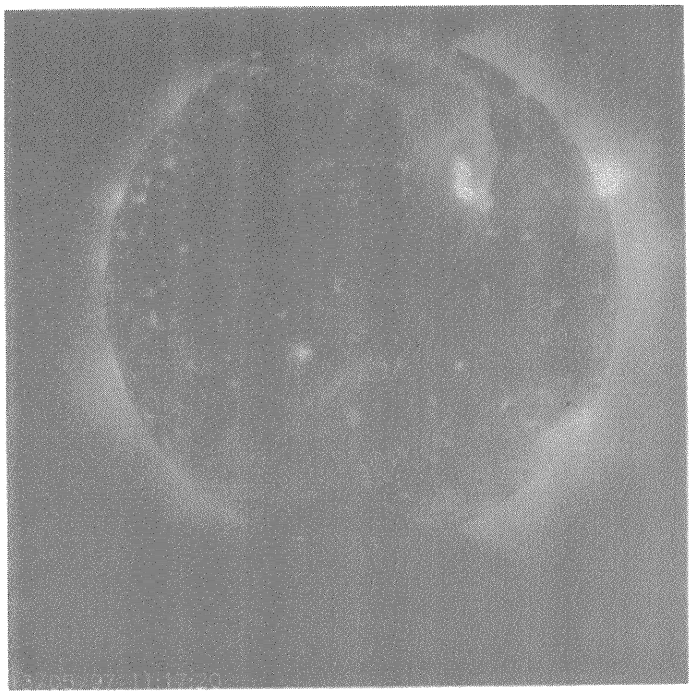


Day 10
12:00:07 UT

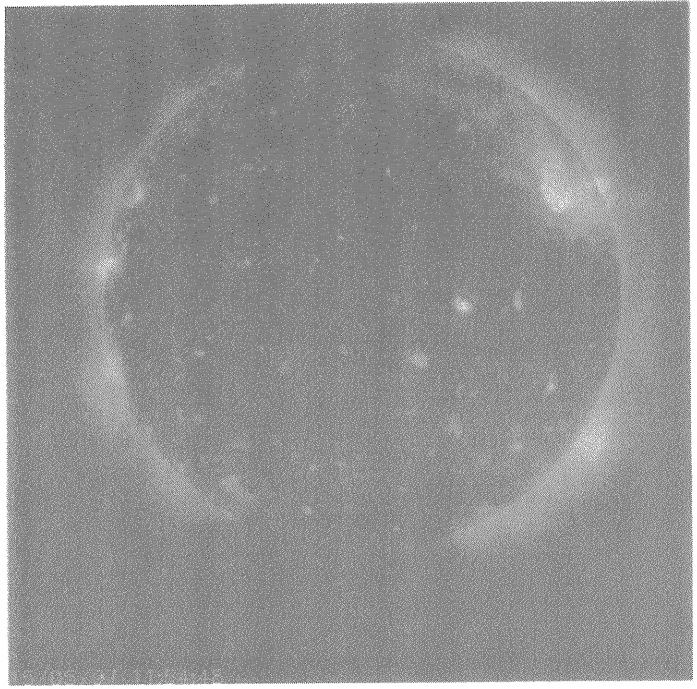
Day 12
12:11:10 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

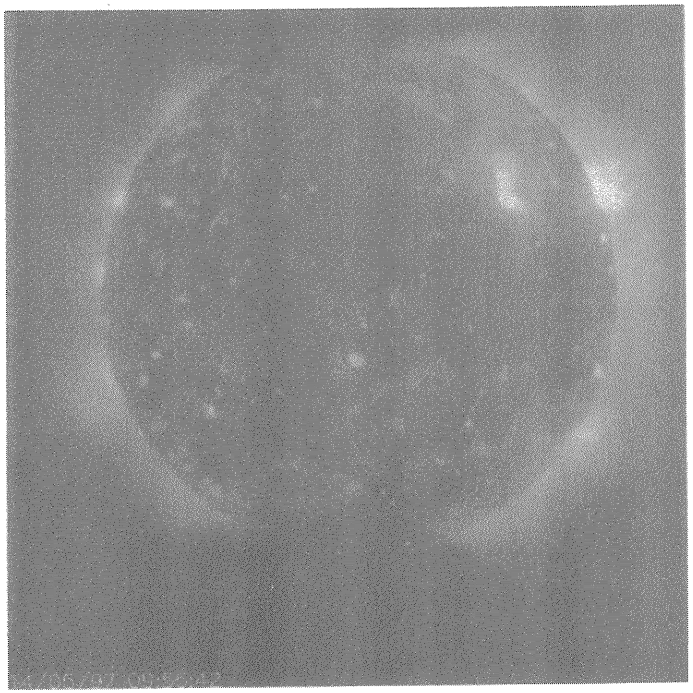
May
1997



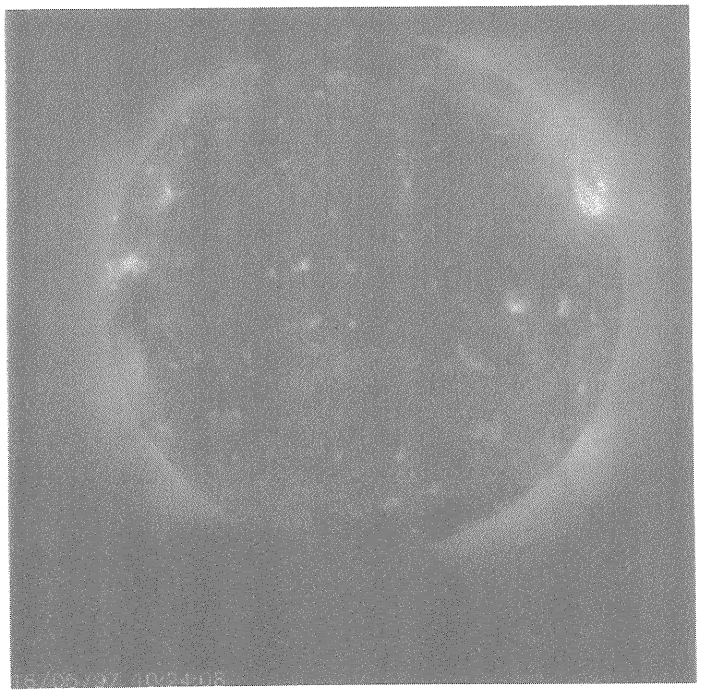
Day 13
11:17:20 UT



Day 15
11:54:48 UT



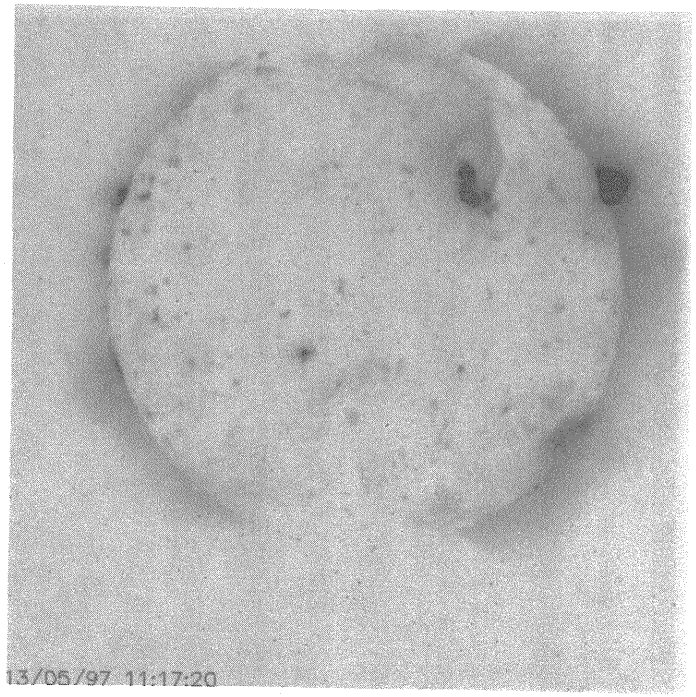
Day 14
09:55:42 UT



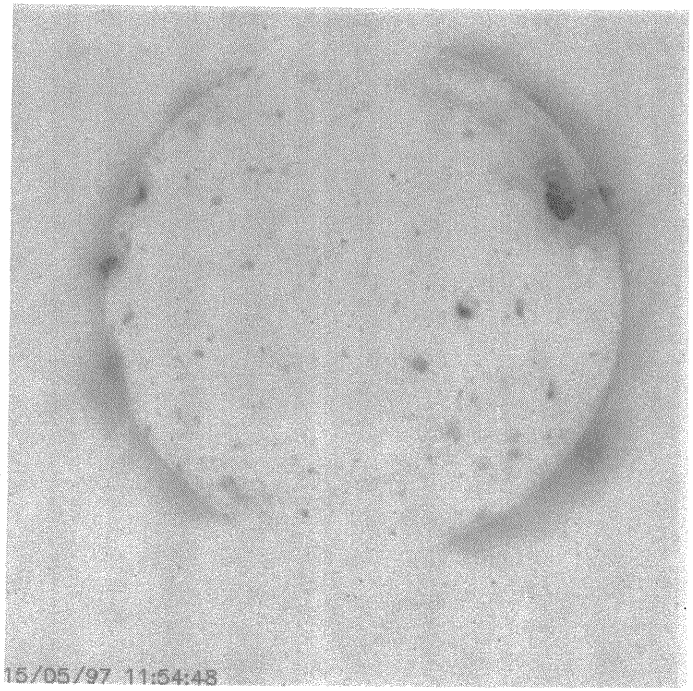
Day 16
10:24:08 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

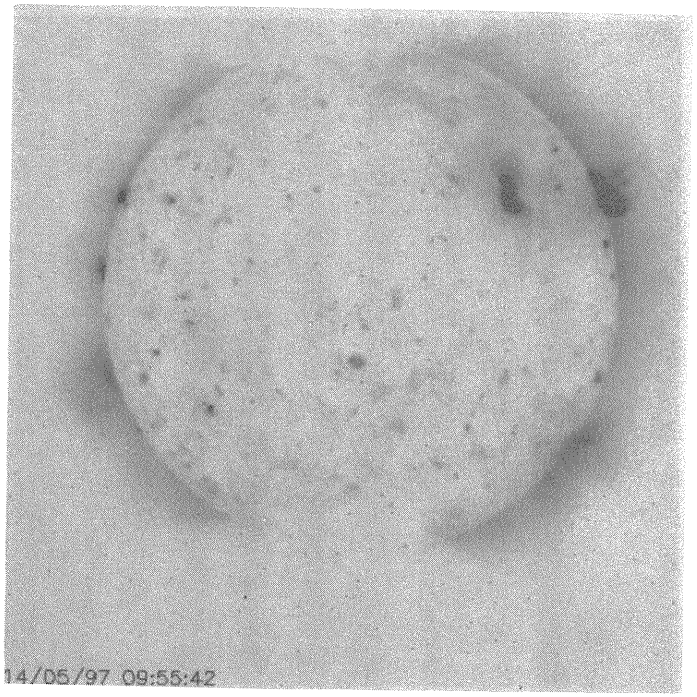
May
1997



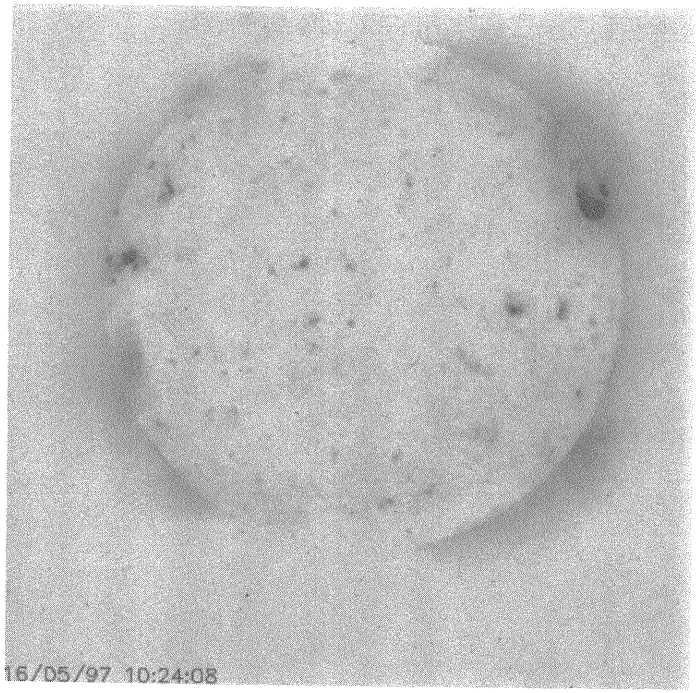
Day 13
11:17:20 UT



Day 15
11:54:48 UT



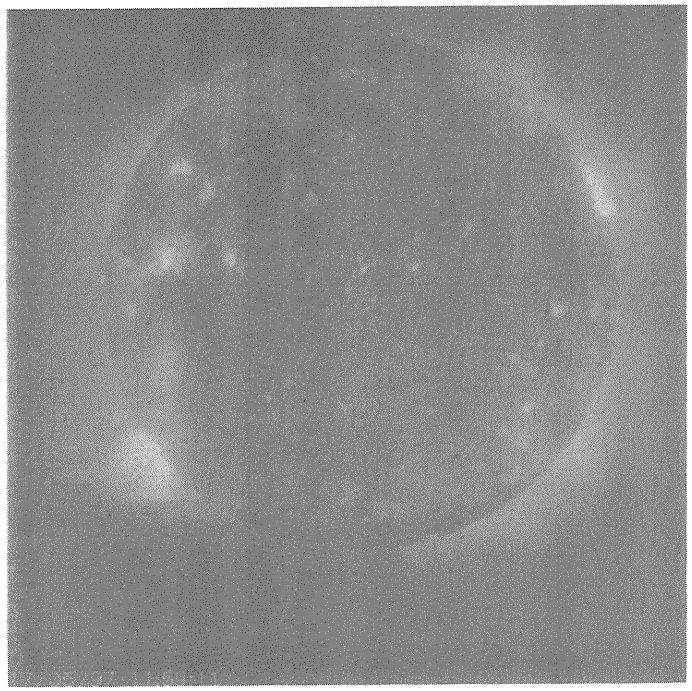
Day 14
09:55:42 UT



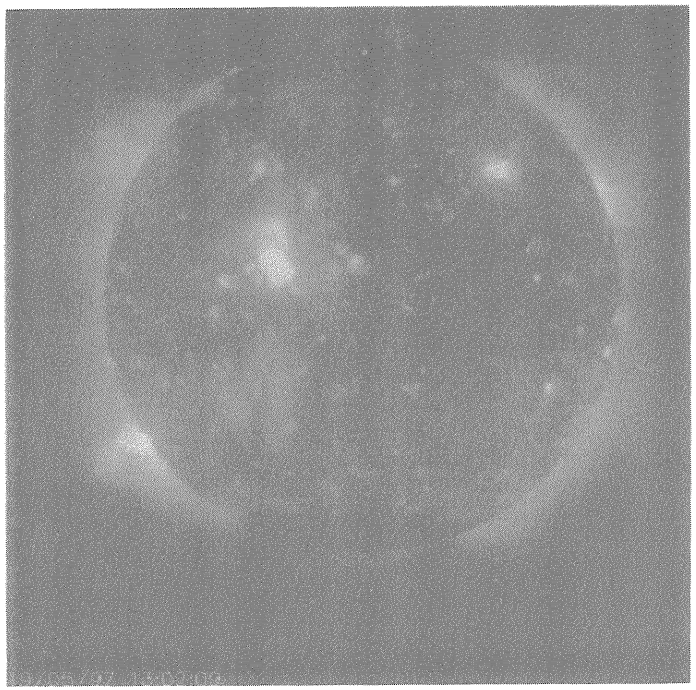
Day 16
10:24:08 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

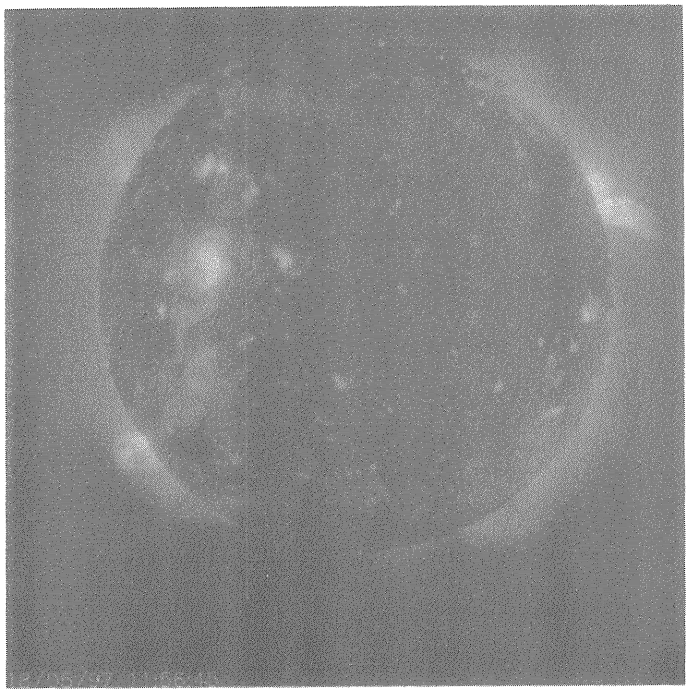
May
1997



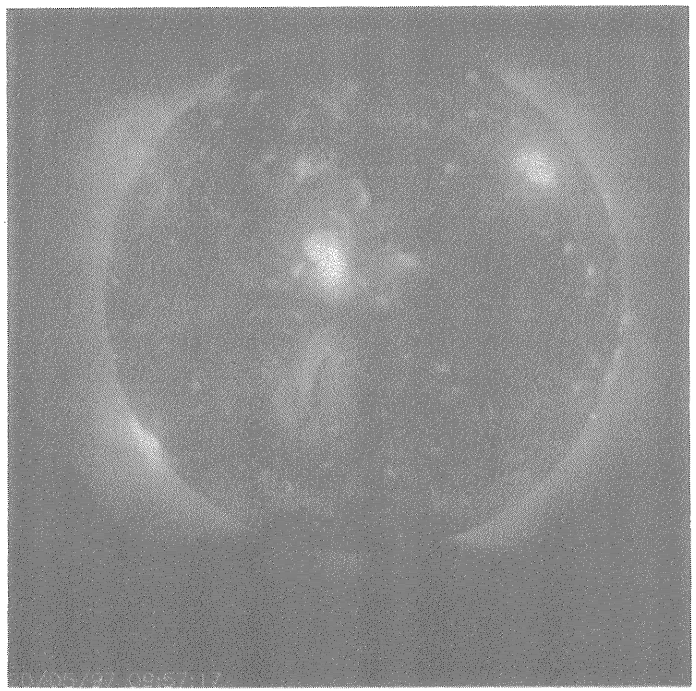
Day 17
11:59:11 UT



Day 19
13:02:09 UT



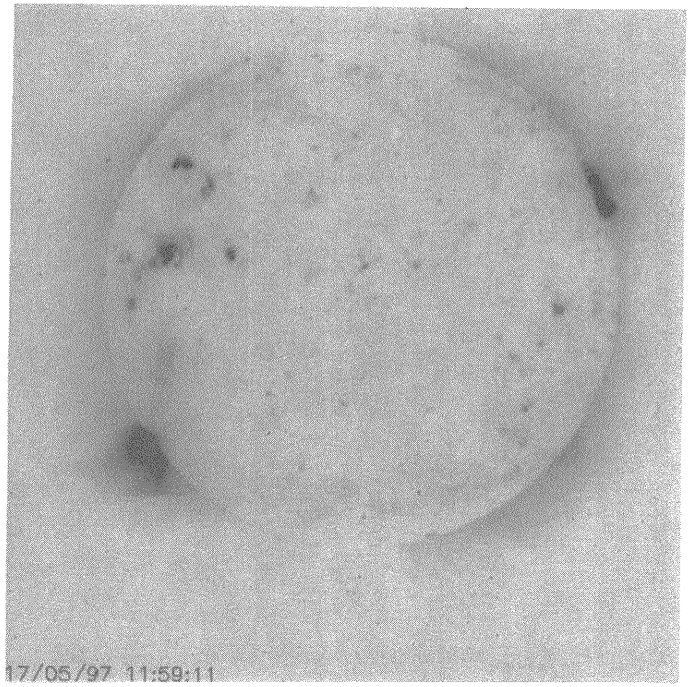
Day 18
11:56:45 UT



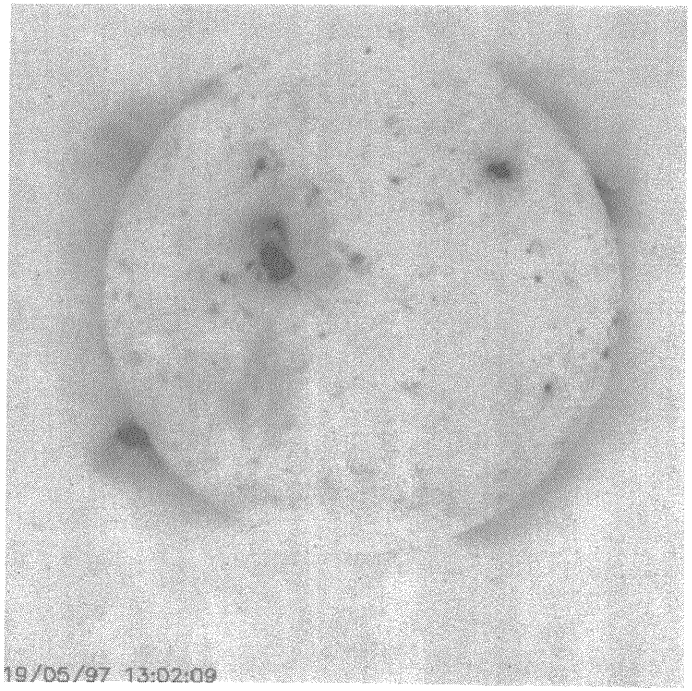
Day 20
09:57:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

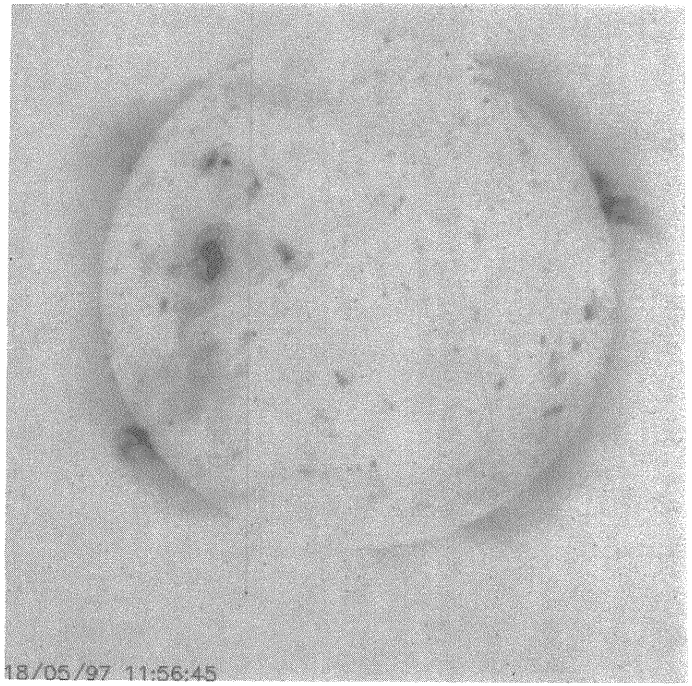
May
1997



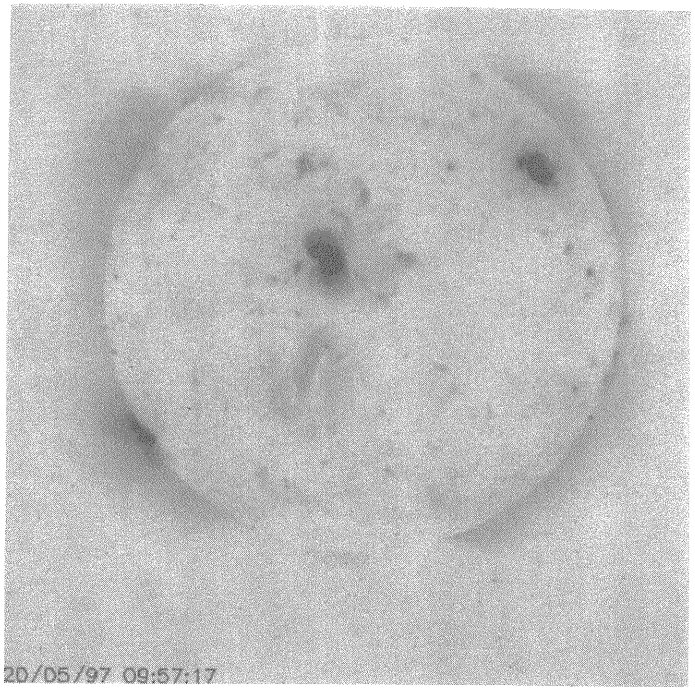
Day 17
11:59:11 UT



Day 19
13:02:09 UT



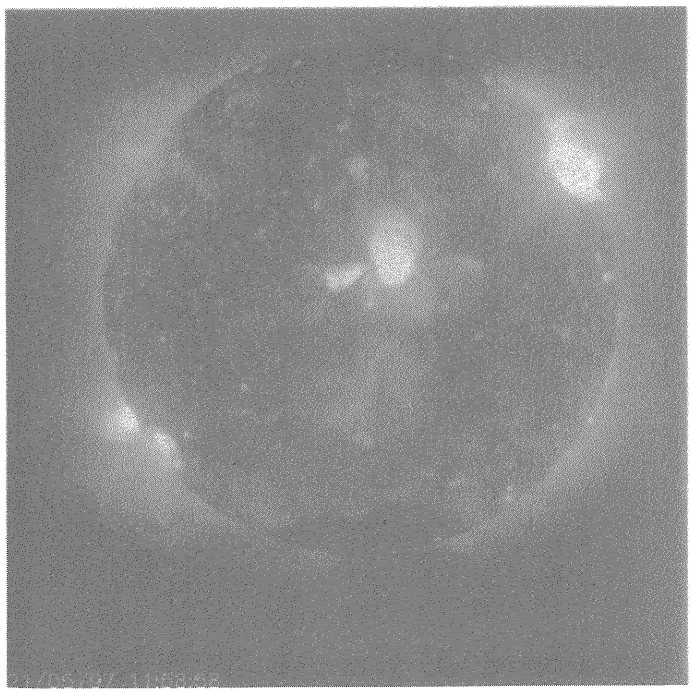
Day 18
11:56:45 UT



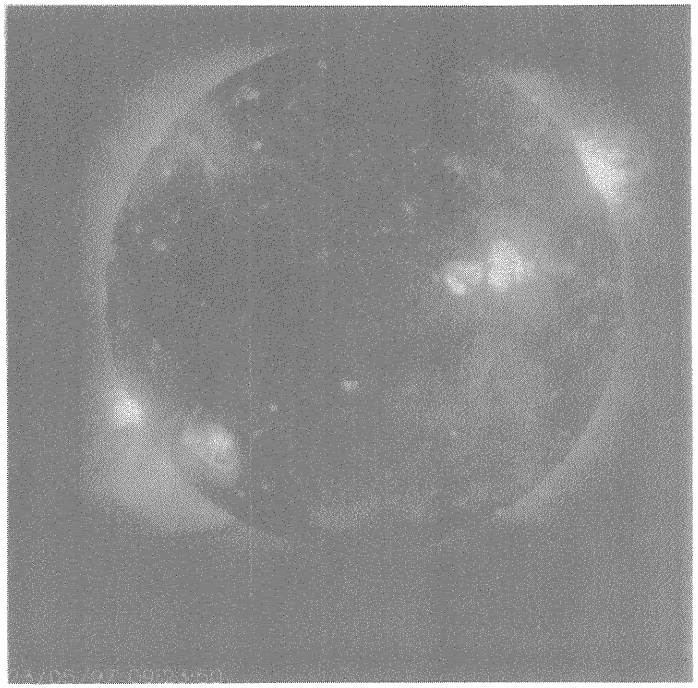
Day 20
09:57:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

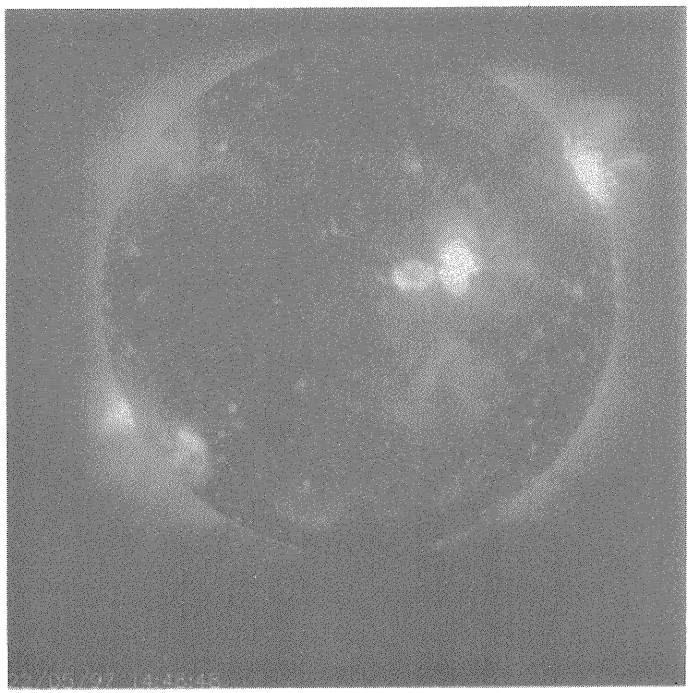
May
1997



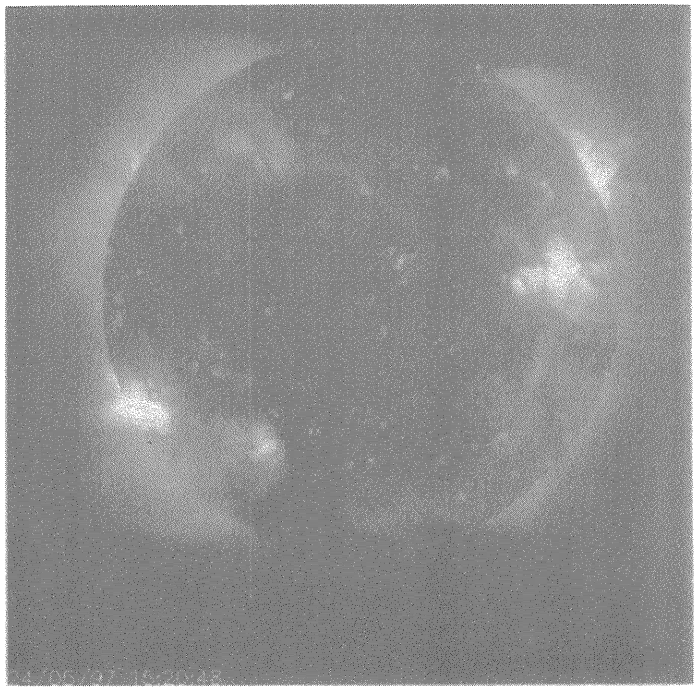
Day 21
11:58:58 UT



Day 23
09:23:50 UT



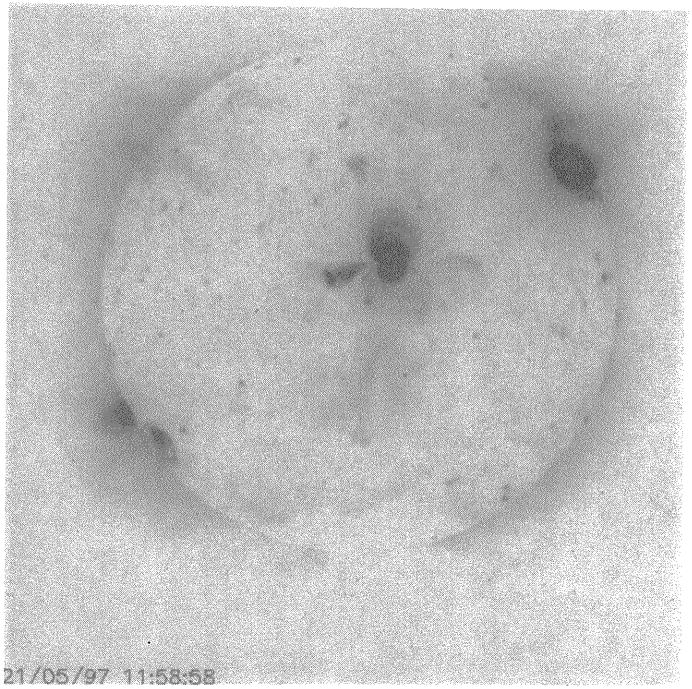
Day 22
14:48:48 UT



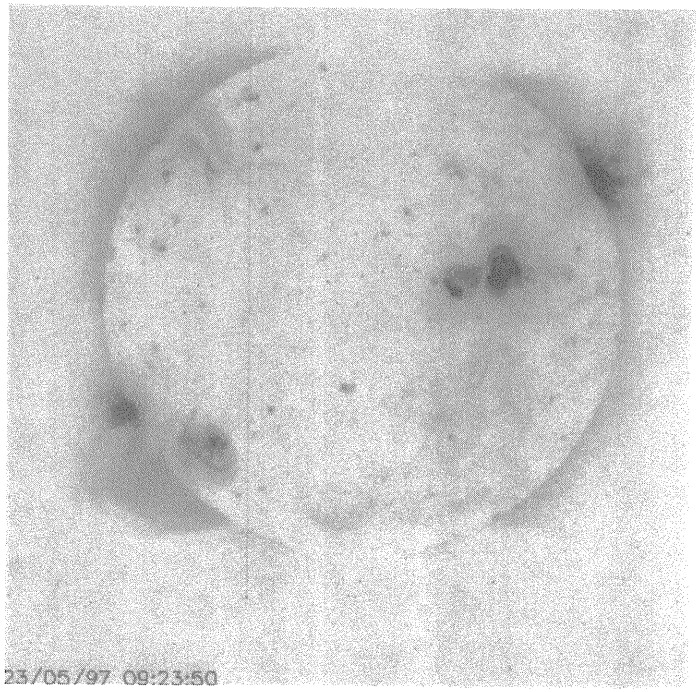
Day 24
15:20:48 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

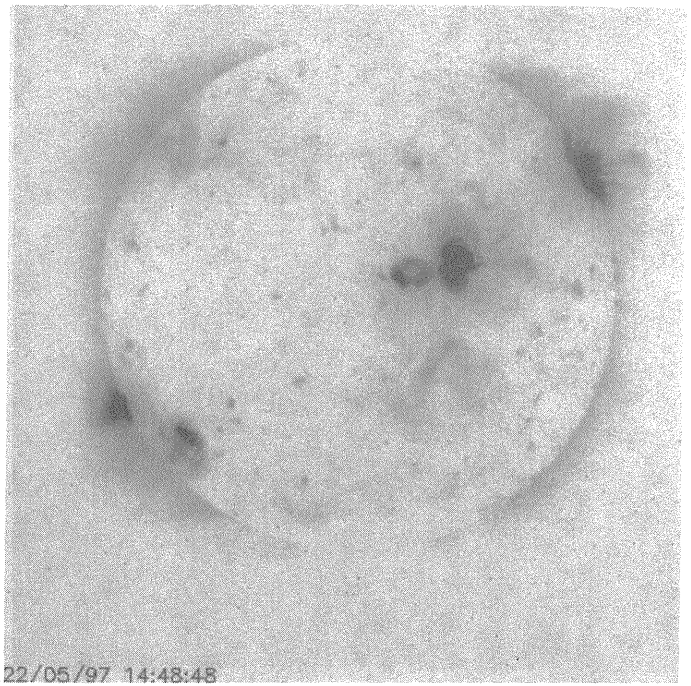
May
1997



Day 21
11:58:58 UT



Day 23
09:23:50 UT

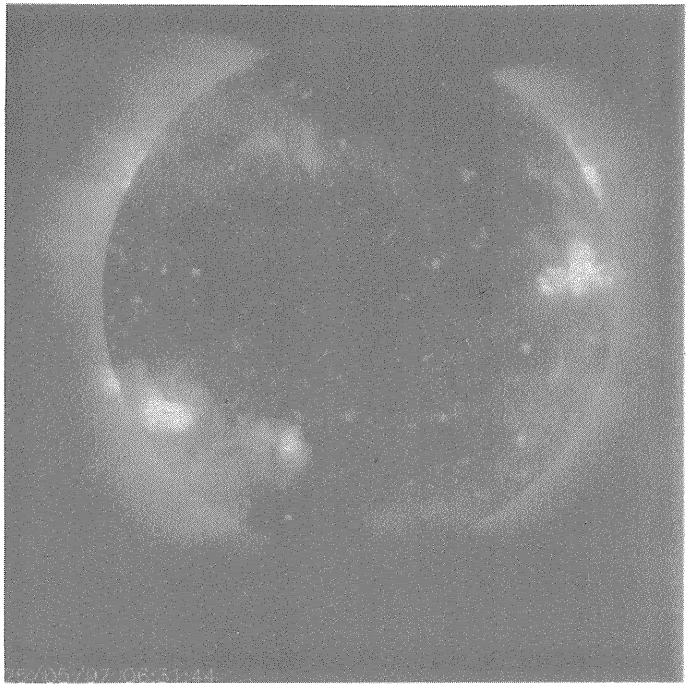


Day 22
14:48:48 UT

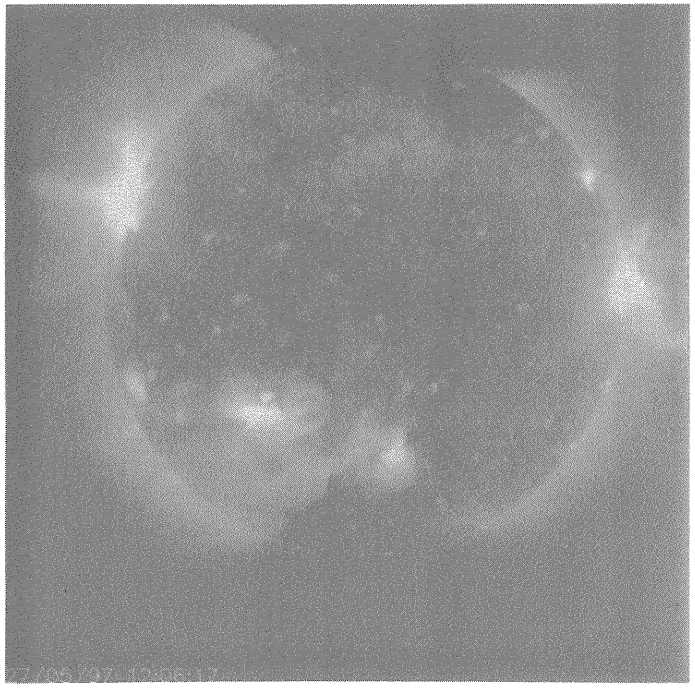
Day 24
15:20:48 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

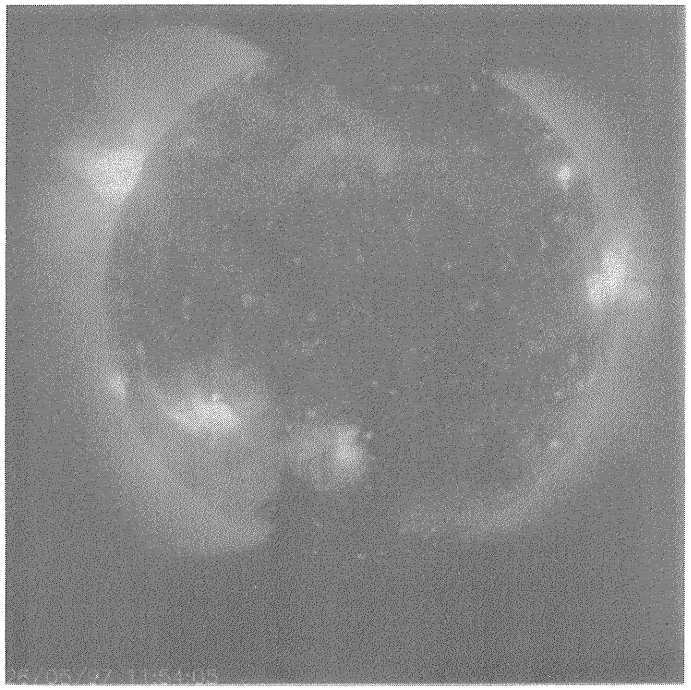
May
1997



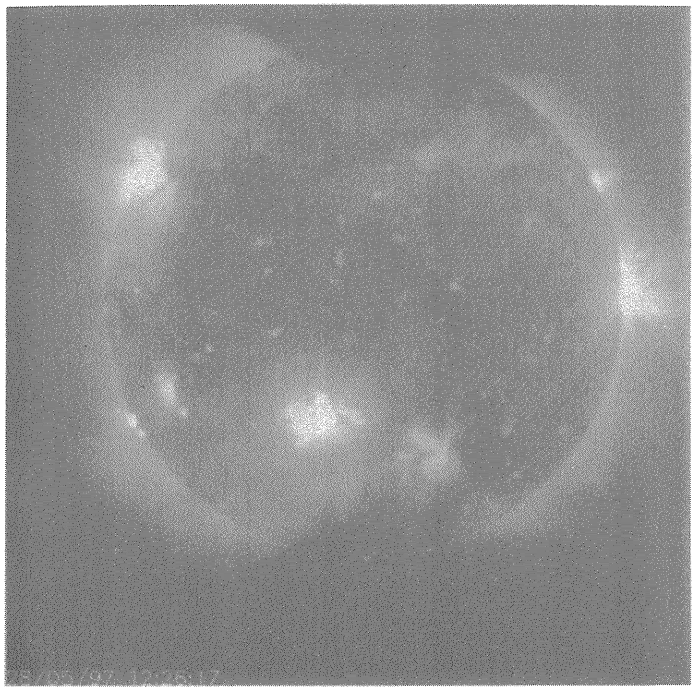
Day 25
06:31:44 UT



Day 27
12:06:17 UT



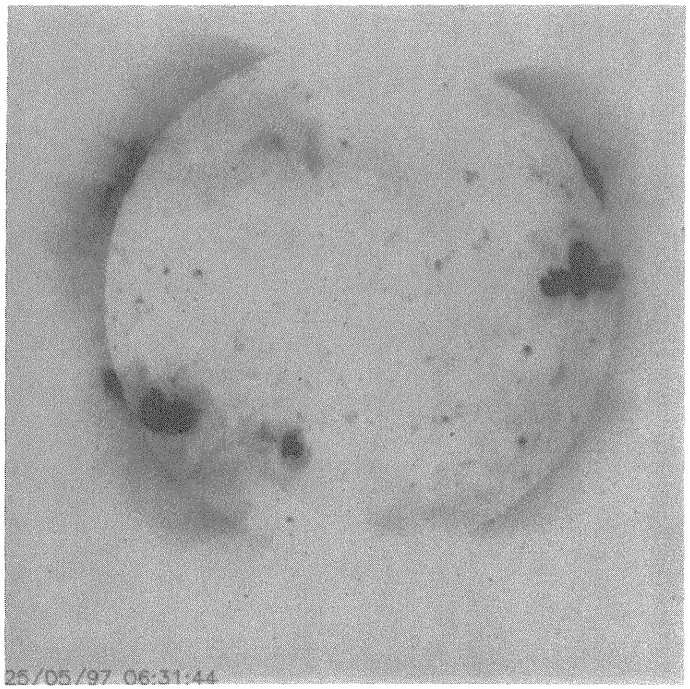
Day 26
11:54:05 UT



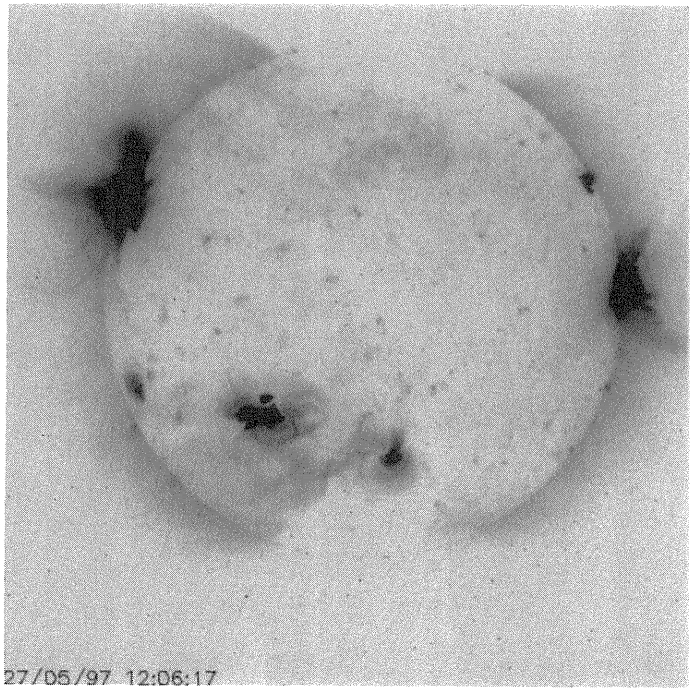
Day 28
12:26:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

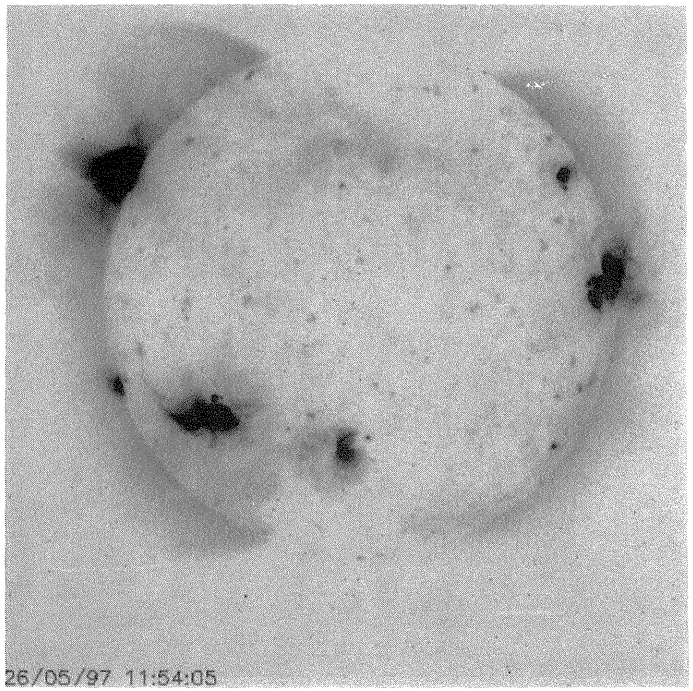
May
1997



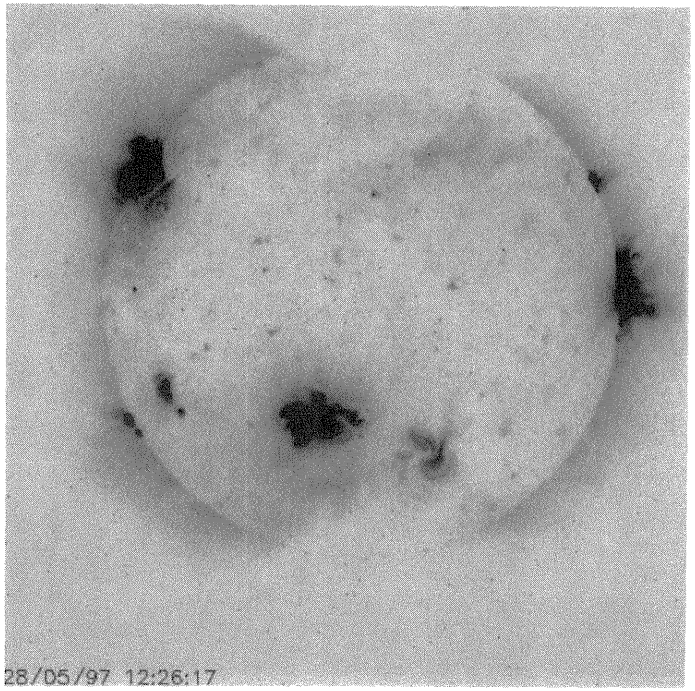
Day 25
06:31:44 UT



Day 27
12:06:17 UT



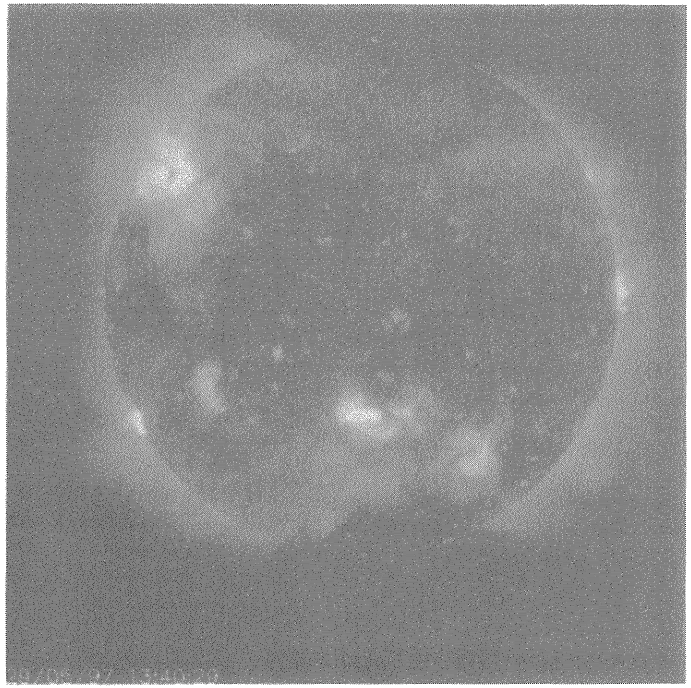
Day 26
11:54:05 UT



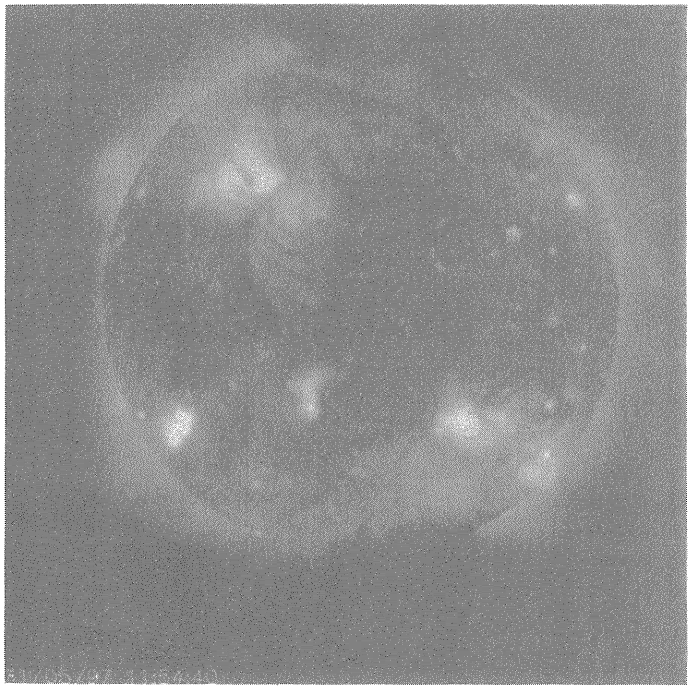
Day 28
12:26:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

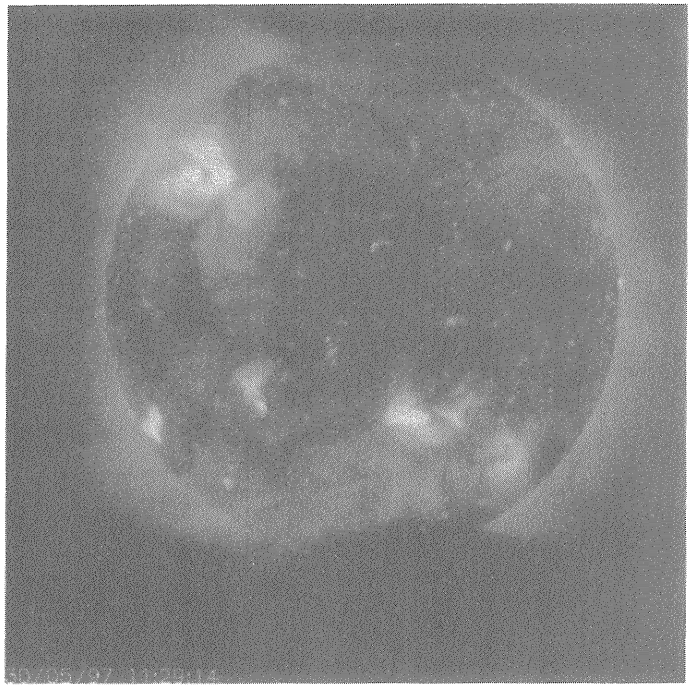
May
1997



Day 29
13:40:29 UT



Day 31
11:54:40 UT

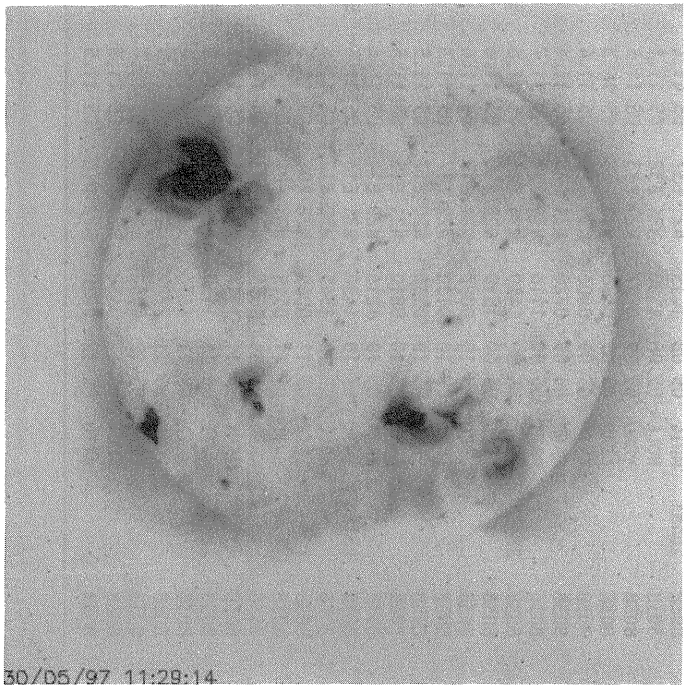


Day 30
11:29:14 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

May
1997

Day 29
13:40:29 UT



Day 30
11:29:14 UT

Day 31
11:54:40 UT

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

MAY 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
8037		HOLL	05	03	1852	S26	W28	05	1.6		B	BXO	10	3	3	3
8037	28429	MWIL	05	03	2100	S26	W29	05	1.6	3	(B)					
8037		SVTO	05	04	0815	S25	W35	05	1.6		A	AX		2	1	4
8037		RAMY	05	04	1115	S25	W36	05	1.7		A	AX		1		3
8037	28429	MWIL	05	04	1430	S27	W37	05	1.7	3	(AF)					
8037A	28430	MWIL	05	05	1430	S28	W10	05	4.8	3	(AF)					
8039		RAMY	05	08	1136	N25	W18	05	7.1		A	AX		1		3
8039	28432	MWIL	05	08	1415	N24	W22	05	6.9	4	(B)					
8039		HOLL	05	08	1520	N21	W19	05	7.2		B	BXO	10	2	2	3
8039		VORO	05	10	0003	N24	W35	05	7.3			AXX	33	3		2
8039		SVTO	05	10	0530	N23	W42	05	7.0		B	BXO	10	3	3	4
8039		KAND	05	10	0810	N22	W44	05	6.9			AX		1		4
8039		RAMY	05	10	1216	N24	W46	05	6.9		A	AX		1		3
8039	28432	MWIL	05	10	1430	N22	W49	05	6.8	4	(AP)					
8039		HOLL	05	10	1545	N22	W49	05	6.9		A	AX	10	1		3
8039		LEAR	05	11	0045	N21	W56	05	6.7		A	AX		2	3	3
8039		SVTO	05	11	0515	N25	W54	05	7.0		B	CRO	20	5	4	4
8039		RAMY	05	11	1117	N24	W58	05	7.0		B	BXO	10	3	5	4
8039	28432	MWIL	05	11	1430	N23	W63	05	6.7	4	(AP)					
8039		HOLL	05	11	1636	N22	W63	05	6.8		A	AX	10	1		2
8038		KAND	05	05	0555	N21	E83	05	11.6			HS		1	1	3
8038		SVTO	05	05	0815	N19	E78	05	11.3		A	HS	180	1	4	4
8038		RAMY	05	05	1117	N19	E80	05	11.6		A	HS	60	1	1	3
8038	28431	MWIL	05	05	1430	N21	E76	05	11.4	5	AP					
8038		HOLL	05	05	1454	N20	E74	05	11.3		A	HS	110	1	2	4
8038		VORO	05	05	2339	N20	E70	05	11.3			HAX	91	1		3
8038		LEAR	05	06	0010	N24	E70	05	11.4		A	HK	60	1	2	3
8038		KAND	05	06	0710	N20	E68	05	11.5			HS		1	2	4
8038		SVTO	05	06	1023	N21	E64	05	11.3		A	HA	100	1	2	3
8038		RAMY	05	06	1155	N19	E66	05	11.5		A	HS	90	1	2	4
8038	28431	MWIL	05	06	1430	N21	E62	05	11.3	5	(AP)					
8038		HOLL	05	06	1450	N20	E62	05	11.4		A	HS	90	1	2	3
8038		KAND	05	07	0700	N20	E55	05	11.5			HA		1	2	1
8038		SVTO	05	07	1033	N19	E52	05	11.4		A	HS	100	1	2	2
8038		RAMY	05	07	1220	N19	E52	05	11.5		A	HS	40	1	2	3
8038	28431	MWIL	05	07	1415	N20	E49	05	11.3	5	(AP)					
8038		HOLL	05	07	1445	N22	E48	05	11.3		A	HS	90	1	2	3
8038		TACH	05	08	0408	N21	E42	05	11.4			HSX	120	1	2	3
8038		SVTO	05	08	0705	N20	E41	05	11.4		A	HS	50	1	2	2
8038		RAMY	05	08	1136	N19	E38	05	11.4		A	HS	70	1	2	3
8038	28431	MWIL	05	08	1415	N21	E37	05	11.4	5	(AP)					
8038		HOLL	05	08	1520	N24	E32	05	11.1		A	HS	100	1	2	3
8038		VORO	05	09	0027	N21	E33	05	11.5			HSX	123	1		3
8038		LEAR	05	09	0330	N23	E28	05	11.3		A	HX	100	1	2	3
8038		SVTO	05	09	0606	N19	E28	05	11.4		A	HS	90	2	2	4
8038		KAND	05	09	0720	N21	E28	05	11.4			HA		3	2	3
8038		RAMY	05	09	1116	N19	E29	05	11.7		B	CSO	80	3	5	4
8038	28431	MWIL	05	09	1430	N21	E26	05	11.6	5	(BP)					
8038		HOLL	05	09	1519	N22	E26	05	11.6		B	CSO	90	4	6	4
8038		VORO	05	10	0003	N21	E19	05	11.4			HSX	60	1		2
8038		LEAR	05	10	0100	N22	E17	05	11.3		A	HX	80	1	2	2
8038		SVTO	05	10	0530	N20	E17	05	11.5		A	HA	70	3	2	4
8038		KAND	05	10	0810	N21	E15	05	11.5			HA		2	2	4
8038		RAMY	05	10	1216	N20	E14	05	11.6		A	HS	80	2	2	3
8038	28431	MWIL	05	10	1430	N21	E13	05	11.6	5	(BP)					
8038		HOLL	05	10	1545	N22	E12	05	11.6		B	CSO	80	3	4	3
8038		LEAR	05	11	0045	N22	E04	05	11.3		A	HS	80	2	3	3
8038		SVTO	05	11	0515	N21	E04	05	11.5		A	HS	80	3	2	4
8038		KAND	05	11	0635	N20	E03	05	11.5			HA		2	2	3
8038		RAMY	05	11	1117	N21	E01	05	11.5		A	HS	80	1	2	4
8038	28431	MWIL	05	11	1430	N21	W01	05	11.5	5	(AP)					
8038		HOLL	05	11	1636	N21	W04	05	11.4		A	HS	70	2	2	2
8038		VORO	05	11	2207	N21	W06	05	11.5			HAX	88	2		3
8038		LEAR	05	12	0032	N21	W08	05	11.4		A	HS	80	3	2	3
8038		TACH	05	12	0630	N22	W10	05	11.5			HA	200	2	2	3
8038		SVTO	05	12	0728	N22	W10	05	11.5		A	HS	700	2	2	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

MAY 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
8038		KAND	05	12	0740	N21	W11	05	11.5			HA		2	2	3
8038		RAMY	05	12	1210	N21	W12	05	11.6		A	HS	40	1	2	4
8038	28431	MWIL	05	12	1430	N21	W15	05	11.4	4	(AP)					
8038		HOLL	05	12	1630	N21	W16	05	11.5		A	HS	60	2	1	3
8038		VORO	05	12	2208	N21	W18	05	11.5			HRX	40	1		2
8038		LEAR	05	13	0212	N19	W21	05	11.5		B	CSO	70	3	2	3
8038		SVTO	05	13	0655	N21	W22	05	11.6		B	CSO	60	3	3	3
8038		TACH	05	13	0844	N19	W22	05	11.7			CSO	166	3	2	3
8038		KAND	05	13	0845	N20	W25	05	11.4			CAO		3	2	4
8038		RAMY	05	13	1145	N20	W24	05	11.6		B	DSO	50	7	3	3
8038		HOLL	05	13	1430	N20	W26	05	11.6		B	DSO	80	6	3	3
8038	28431	MWIL	05	13	1430	N20	W27	05	11.5	5	(BF)					
8038		LEAR	05	14	0050	N18	W34	05	11.4		B	CSO	70	8	3	3
8038		TACH	05	14	0554	N21	W35	05	11.6			CAO	113	5	2	3
8038		SVTO	05	14	0602	N21	W34	05	11.6		B	CAO	80	5	4	3
8038		KAND	05	14	0630	N20	W35	05	11.6			CSO		6	3	1
8038		RAMY	05	14	1205	N21	W37	05	11.7		B	CSO	40	7	4	3
8038		HOLL	05	14	1430	N20	W40	05	11.5		B	DSO	80	7	4	3
8038	28431	MWIL	05	14	1430	N20	W40	05	11.5	4	(BF)					
8038		LEAR	05	15	0500	N18	W50	05	11.4		B	CAO	60	5	3	2
8038		SVTO	05	15	0520	N20	W46	05	11.7		B	CAO	50	6	5	3
8038		KAND	05	15	0720	N19	W50	05	11.5			CAO		2	3	2
8038		RAMY	05	15	1159	N22	W52	05	11.5		B	CSO	50	6	5	4
8038	28431	MWIL	05	15	1430	N20	W53	05	11.5	4	(BF)					
8038		HOLL	05	15	1449	N18	W53	05	11.6		B	CAO	50	3	4	2
8038		LEAR	05	16	0445	N18	W63	05	11.4		B	CRO	30	6	3	4
8038		SVTO	05	16	0625	N22	W60	05	11.6		A	AX	10	3	2	3
8038		KAND	05	16	1120	N21	W63	05	11.6			AX		2	1	1
8038		RAMY	05	16	1228	N22	W61	05	11.8		B	CSO	20	4	2	4
8038	28431	MWIL	05	16	1430	N21	W65	05	11.6	3	(AP)					
8038		HOLL	05	16	1550	N21	W67	05	11.5		A	AX	40	3	2	3
8038		SVTO	05	17	0700	N25	W75	05	11.5		A	AX		1		4
8038		KAND	05	17	0950	N22	W76	05	11.6			AX		1		4
8038		RAMY	05	17	1207	N23	W73	05	11.9		B	BXO	10	2	2	3
8038A		RAMY	05	15	1159	S10	W23	05	13.8		A	AX		1		4
8038A	28434	MWIL	05	18	1430	S12	W62	05	13.9	3	(AF)					
8043		LEAR	05	19	0120	N28	W30	05	16.7		B	BXO	10	4	2	3
8043		TACH	05	19	0430	N28	W28	05	17.0			BXO	9	4	2	3
8043		SVTO	05	19	0705	N29	W29	05	17.0		B	BXO	20	6	4	3
8043		KAND	05	19	0745	N28	W32	05	16.8			BXO		6	4	2
8043		RAMY	05	19	1110	N28	W32	05	17.0		B	BXO	20	7	4	4
8043	28436	MWIL	05	19	1430	N28	W36	05	16.8	4	(B)					
8043		HOLL	05	19	1630	N28	W37	05	16.8		B	BXO	40	7	3	3
8043		LEAR	05	20	0005	N26	W43	05	16.7		B	BXO	20	11	7	3
8043		SVTO	05	20	0500	N29	W40	05	17.1		B	CRO	50	9	4	3
8043		TACH	05	20	0508	N28	W43	05	16.8			BXO	20	6	4	4
8043		KAND	05	20	0740	N27	W44	05	16.9			CAO		5	6	3
8043		RAMY	05	20	1210	N28	W47	05	16.8		B	CRO	50	9	5	3
8043	28436	MWIL	05	20	1430	N28	W50	05	16.7	4	(B)					
8043		HOLL	05	20	1715	N28	W49	05	16.9		B	CAO	50	7	4	3
8043		VORO	05	20	2328	N27	W56	05	16.6			CAO	59	2	6	2
8043		LEAR	05	21	0010	N27	W52	05	16.9		B	CAO	100	11	8	3
8043		TACH	05	21	0546	N29	W58	05	16.7			CAI	74	7	6	4
8043		KAND	05	21	0555	N27	W59	05	16.6			CAO		7	10	4
8043		SVTO	05	21	0905	N28	W60	05	16.7		B	CAO	90	10	8	3
8043		RAMY	05	21	1305	N30	W63	05	16.6		B	CSO	50	7	10	3
8043	28436	MWIL	05	21	1430	N27	W64	05	16.6	4	(BP)					
8043		HOLL	05	21	1838	N28	W65	05	16.7		B	CSO	110	10	10	2
8043		VORO	05	22	0009	N27	W73	05	16.3			HAX	140	1		2
8043		LEAR	05	22	0120	N24	W70	05	16.6		B	CH	80	3	7	3
8043		TACH	05	22	0349	N28	W69	05	16.8			CRO	78	4	10	4
8043		KAND	05	22	0620	N27	W70	05	16.8			CAO		7	12	3
8043		SVTO	05	22	1042	N28	W80	05	16.2		A	AX	30	1	1	2
8043		RAMY	05	22	1132	N28	W79	05	16.3		B	CSO	80	5	8	4
8043	28436	MWIL	05	22	1430	N27	W79	05	16.4	4	(BP)					
8043		HOLL	05	22	1506	N28	W80	05	16.4		B	HS	20	2	1	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
8041		RAMY	05 17 1207	N04 E30	05 19.7		B	BXO		2	2	3
8041		HOLL	05 17 1435	N04 E28	05 19.7		B	BXO	20	2	3	3
8041		LEAR	05 18 0258	N08 E19	05 19.5		A	AX		1		/
8041		SVTO	05 18 0845	N05 E18	05 19.7		A	AX		1		3
8041		RAMY	05 18 1118	N05 E15	05 19.6		A	AX		1		4
8041		HOLL	05 18 1414	N05 E14	05 19.6		A	AX		1		3
8041	28435	MWIL	05 18 1430	N06 E13	05 19.6	4	(AP)					
8040		LEAR	05 16 0445	N05 E67	05 21.2		A	AX	10	2	2	4
8040		SVTO	05 16 0625	N04 E65	05 21.1		B	BXO	10	2	1	3
8040		KAND	05 16 1120	N05 E63	05 21.2			BXO		2	3	1
8040		RAMY	05 16 1228	N04 E61	05 21.1		B	BXO	10	2	3	4
8040	28433	MWIL	05 16 1430	N05 E61	05 21.2	4	(B)					
8040		HOLL	05 16 1550	N04 E60	05 21.1		B	BXO	10	2	3	3
8040		SVTO	05 17 0700	N03 E49	05 20.9		A	AX		1		4
8040		KAND	05 17 0950	N05 E49	05 21.1			AX		2	1	4
8040		RAMY	05 17 1207	N03 E47	05 21.0		B	BXO	10	3	3	3
8040		HOLL	05 17 1435	N04 E46	05 21.0		B	BXO	20	3	3	3
8040		LEAR	05 18 0258	N06 E38	05 21.0		B	CSO	60	9	6	/
8040		VORO	05 18 0332	N05 E40	05 21.1			BXO	32	2	6	2
8040		TACH	05 18 0526	N05 E38	05 21.1			CAO	92	6	5	3
8040		SVTO	05 18 0845	N03 E35	05 21.0		B	CAO	50	12	6	3
8040		KAND	05 18 1000	N05 E35	05 21.0			DAO		15	6	2
8040		RAMY	05 18 1118	N04 E35	05 21.1		B	CRO	40	11	6	4
8040		HOLL	05 18 1414	N05 E33	05 21.1		B	DSI	80	14	7	3
8040	28433	MWIL	05 18 1430	N05 E32	05 21.0	5	(B)					
8040		LEAR	05 19 0120	N07 E25	05 20.9		B	CSO	60	12	7	3
8040		TACH	05 19 0430	N05 E24	05 21.0			CSO	175	5	5	3
8040		SVTO	05 19 0705	N04 E23	05 21.0		B	DAO	100	14	7	3
8040		KAND	05 19 0745	N05 E22	05 21.0			CAO		15	8	2
8040		RAMY	05 19 1110	N04 E21	05 21.0		B	DSO	100	14	8	4
8040	28433	MWIL	05 19 1430	N05 E18	05 20.9	5	(BP)					
8040		HOLL	05 19 1630	N05 E16	05 20.9		B	DSO	190	15	8	3
8040		LEAR	05 20 0005	N05 E12	05 20.9		B	CSI	90	23	9	3
8040		SVTO	05 20 0500	N06 E11	05 21.0		B	DAI	100	10	9	3
8040		TACH	05 20 0508	N06 E12	05 21.1			CAI	305	7	9	4
8040		KAND	05 20 0740	N05 E09	05 21.0			DAO		7	9	3
8040		RAMY	05 20 1210	N05 E06	05 20.9		B	DAO	90	11	9	3
8040	28433	MWIL	05 20 1430	N05 E05	05 21.0	5	(BP)					
8040		HOLL	05 20 1715	N05 E04	05 21.0		B	DAO	160	13	10	3
8040		VORO	05 20 2328	N05 E00	05 21.0			DAI	140	4	8	2
8040		LEAR	05 21 0010	N07 W01	05 20.9		B	DAI	130	26	10	3
8040		TACH	05 21 0546	N06 W04	05 20.9			DAI	420	16	7	4
8040		KAND	05 21 0555	N05 W05	05 20.9			DAO		19	10	4
8040		SVTO	05 21 0905	N06 W05	05 21.0		B	DAI	110	28	10	3
8040		RAMY	05 21 1305	N05 W07	05 21.0		B	ESO	130	26	11	3
8040	28433	MWIL	05 21 1430	N05 W09	05 20.9	5	(D)					
8040		HOLL	05 21 1838	N06 W12	05 20.9		B	DSI	190	23	10	2
8040		VORO	05 22 0009	N06 W18	05 20.6			DAI	130	2	3	2
8040		LEAR	05 22 0120	N04 W15	05 20.9		B	EA	190	12	12	3
8040		TACH	05 22 0349	N06 W17	05 20.9			DSI	251	15	8	4
8040		KAND	05 22 0620	N05 W19	05 20.8			DSI		14	10	3
8040		SVTO	05 22 1042	N05 W20	05 20.9		B	CSO	90	15	10	2
8040		RAMY	05 22 1132	N05 W21	05 20.9		B	DAO	150	24	10	4
8040	28433	MWIL	05 22 1430	N05 W23	05 20.9	5	(BP)					
8040		HOLL	05 22 1506	N06 W23	05 20.9		B	DSI	140	15	10	3
8040		LEAR	05 23 0030	N08 W29	05 20.8		B	EAI	150	9	11	4
8040		TACH	05 23 0455	N06 W30	05 20.9			DSI	252	8	10	3
8040		SVTO	05 23 0730	N06 W33	05 20.8		B	ESO	180	13	11	3
8040		KAND	05 23 0910	N05 W34	05 20.8			EAO		5	11	3
8040		RAMY	05 23 1107	N06 W33	05 21.0		B	DSO	100	24	10	3
8040		HOLL	05 23 1446	N07 W35	05 21.0		B	DSO	120	10	10	3
8040	28433	MWIL	05 23 1515	N04 W38	05 20.8	5	(BP)					
8040		VORO	05 23 2211	N06 W40	05 20.9			DAO	143	2	9	3
8040		LEAR	05 24 0015	N05 W41	05 20.9		B	DSO	130	8	10	4
8040		TACH	05 24 0408	N08 W42	05 21.0			CSO	161	6	11	3
8040		SVTO	05 24 0605	N06 W45	05 20.9		B	CSO	110	7	11	3
8040		KAND	05 24 0705	N06 W45	05 20.9			CSO		3	11	3
8040		RAMY	05 24 1109	N07 W46	05 21.0		B	CSO	90	8	10	4

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8040	28433	MWIL	05	24	1515	N05	W55	05	20.5	5	(AP)					
8040		HOLL	05	24	1645	N07	W52	05	20.8		B	CSO	90	5	10	3
8040		TACH	05	25	0549	N06	W62	05	20.6			HSX	100	1	4	3
8040		KAND	05	25	0955	N06	W63	05	20.7			HA		2	3	3
8040		RAMY	05	25	1124	N08	W62	05	20.8		B	CSO	90	2	8	5
8040	28433	MWIL	05	25	1430	N05	W68	05	20.5	4	(AP)					
8040		HOLL	05	25	1450	N07	W68	05	20.5		A	HS	110	1	1	3
8040		VORO	05	25	2230	N06	W72	05	20.5			HAX	110	1		2
8040		LEAR	05	26	0154	N03	W74	05	20.5		A	HA	50	1	1	3
8040		TACH	05	26	0600	N06	W77	05	20.5			HX	45	1	3	3
8040		KAND	05	26	0600	N06	W78	05	20.4			HS		1	2	3
8040		SVTO	05	26	0730	N08	W78	05	20.5		B	HR	30	1	1	3
8040		RAMY	05	26	1132	N08	W79	05	20.5		A	HS	60	1	1	4
8040	28433	MWIL	05	26	1545	N06	W82	05	20.5	4	(AP)					
8040A		HOLL	05	17	1435	N25	E51	05	21.5		A	AX	10	1		3
8040A		RAMY	05	25	1124	N29	W46	05	21.9		A	AX		1		5
8040A		HOLL	05	25	1450	N29	W49	05	21.8		A	AX	10	1	1	3
8040A		VORO	05	25	2230	N29	W53	05	21.8			AXX	8	1		2
8040A		LEAR	05	26	0154	N26	W56	05	21.7		A	AX	20	1		3
8040A		KAND	05	26	0600	N29	W57	05	21.8			AX		1		3
8040A		TACH	05	26	0600	N30	W57	05	21.8			AX	20	1	1	3
8040A		SVTO	05	26	0730	N30	W58	05	21.7		A	AX	10	1	1	3
8040A		RAMY	05	26	1132	N31	W59	05	21.8		A	AX	10	2	1	4
8040A	28440	MWIL	05	26	1545	N29	W63	05	21.7	4	(AP)					
8040A		LEAR	05	27	0610	N30	W69	05	21.8		A	AX		1		3
8040A		SVTO	05	27	0700	N28	W70	05	21.8		A	AX	10	1	1	2
8045		KAND	05	21	0555	N02	E10	05	22.0			AX		1		4
8045		SVTO	05	21	0905	N03	E07	05	21.9		A	AX		2	2	3
8045		RAMY	05	21	1305	N02	E06	05	22.0		B	BXO		2	2	3
8045	28438	MWIL	05	21	1430	N02	E05	05	22.0	4	(B)					
8045		HOLL	05	21	1838	N02	E03	05	22.0		B	BXO	20	5	3	2
8045		LEAR	05	22	0120	N01	W02	05	21.9		B	CS	30	4	3	3
8045		TACH	05	22	0349	N02	W03	05	21.9			BXO	13	4	3	4
8045		KAND	05	22	0620	N01	W04	05	22.0			CAO		3	3	3
8045		SVTO	05	22	1042	N02	W08	05	21.8		A	AX	20	1	1	2
8045		RAMY	05	22	1132	N02	W07	05	21.9		B	CRO	20	6	4	4
8045	28438	MWIL	05	22	1430	N01	W09	05	21.9	4	(B)					
8045		HOLL	05	22	1506	N02	W09	05	21.9		B	BXO	20	6	4	3
8045		LEAR	05	23	0030	N05	W16	05	21.8		A	HA	20	1	5	4
8045		TACH	05	23	0455	N02	W18	05	21.9			BXO	20	2	3	3
8045		SVTO	05	23	0730	N03	W20	05	21.8		B	BXO		2	3	3
8045		KAND	05	23	0910	N02	W22	05	21.7			AX		1		3
8045		RAMY	05	23	1107	N02	W20	05	22.0		B	BXO	10	2	3	3
8045		HOLL	05	23	1446	N02	W24	05	21.8		B	BXO	20	2	3	3
8045	28438	MWIL	05	23	1515	N01	W26	05	21.7	4	(AF)					
8045		VORO	05	23	2211	N02	W30	05	21.7			AXX	9	1		3
8045		LEAR	05	24	0015	N01	W30	05	21.8		B	BXO	10	2	3	4
8045		TACH	05	24	0408	N02	W32	05	21.8			AX	3	1	1	3
8045		RAMY	05	25	1124	N03	W50	05	21.7		B	BXO	10	2	2	5
8045	28438	MWIL	05	25	1430	N02	W52	05	21.7	4	(B					
8045		HOLL	05	25	1450	N02	W52	05	21.7		A	AX	10	1	1	3
8045		VORO	05	25	2230	N00	W58	05	21.6			AXX	8	1		2
8045		LEAR	05	26	0154	N02	W60	05	21.6		A	AX	10	1		3
8045		TACH	05	26	0600	N01	W62	05	21.6			AX	5	1	2	2
8045		KAND	05	26	0600	N02	W62	05	21.6			BXO		2	5	3
8045		SVTO	05	26	0730	N04	W63	05	21.6		B	BXO	20	2	6	3
8045		RAMY	05	26	1132	N03	W63	05	21.8		B	CRO	40	4	5	4
8045	28438	MWIL	05	26	1545	N02	W66	05	21.7	4	(B)					
8045		VORO	05	26	2150	N01	W71	05	21.6			BXO	32	3	6	2
8045		TACH	05	27	0510	N01	W72	05	21.8			AR	40	2	1	2
8045		LEAR	05	27	0610	N02	W75	05	21.6		B	BXO	20	6	7	3
8045		SVTO	05	27	0700	N03	W75	05	21.7		B	BXO	20	5	8	2
8045		RAMY	05	27	1235	N03	W77	05	21.8		B	CRO	20	4	4	3
8045		HOLL	05	27	1439	N02	W83	05	21.4		B	BXO	20	2	6	3
8045	28438	MWIL	05	27	1445	N02	W77	05	21.9	4	(B)					
8044	28437	MWIL	05	19	1430	S35	E85	05	26.4	4	AP					

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8044		HOLL	05 19 1630	S35 E81	05 26.2		A	AX	30	1	1	3
8044		LEAR	05 20 0005	S32 E75	05 25.9		A	AX		1		3
8044		SVTO	05 20 0500	S34 E73	05 26.0		A	HS	30	1	2	3
8044		KAND	05 20 0740	S35 E75	05 26.3			AX		1	1	3
8044		RAMY	05 20 1210	S36 E74	05 26.4		A	HS	20	2	4	3
8044	28437	MWIL	05 20 1430	S35 E71	05 26.3	4	(AP)					
8044		HOLL	05 20 1715	S36 E69	05 26.2		A	AX	30	2	1	3
8044		LEAR	05 21 0010	S31 E68	05 26.4		A	HA	30	1	1	3
8044		TACH	05 21 0546	S33 E63	05 26.2			AR	20	1	2	4
8044		KAND	05 21 0555	S34 E63	05 26.3			HA		2	2	4
8044		SVTO	05 21 0905	S34 E60	05 26.2		A	HS	40	1	2	3
8044		RAMY	05 21 1305	S37 E58	05 26.2		A	HS	10	1	2	3
8044	28437	MWIL	05 21 1430	S34 E59	05 26.3	4	(AP)					
8044		HOLL	05 21 1838	S36 E57	05 26.3		A	AX	10	2	1	2
8044		LEAR	05 22 0120	S31 E55	05 26.4		A	HH	20	1	1	3
8044		TACH	05 22 0349	S33 E53	05 26.4			HSX	25	1	1	4
8044		KAND	05 22 0620	S34 E51	05 26.3			HS		1	2	3
8044		RAMY	05 22 1132	S35 E46	05 26.2		A	HS	20	1	1	4
8044	28437	MWIL	05 22 1430	S35 E47	05 26.4	5	(AP)					
8044		HOLL	05 22 1506	S36 E46	05 26.3		A	HR	10	2	1	3
8044		SVTO	05 22 2005	S35 E43	05 26.3		B	BXO	10	5	3	2
8044		LEAR	05 23 0030	S33 E41	05 26.3		B	BXO	20	3	1	4
8044		TACH	05 23 0455	S34 E39	05 26.3			HSX	40	1	1	3
8044		SVTO	05 23 0730	S35 E37	05 26.3		A	HS	30	1	2	3
8044		KAND	05 23 0910	S35 E37	05 26.3			HA		1	1	3
8044		RAMY	05 23 1107	S35 E34	05 26.2		A	HS	20	1	1	3
8044		HOLL	05 23 1446	S36 E33	05 26.3		A	HS	30	1	1	3
8044	28437	MWIL	05 23 1515	S33 E35	05 26.4	4	(AP)					
8044		VORO	05 23 2211	S34 E30	05 26.3			HAX	25	1		3
8044		LEAR	05 24 0015	S33 E31	05 26.5		A	HS	20	1	1	4
8044		TACH	05 24 0408	S32 E27	05 26.3			AR	30	1	1	3
8044		SVTO	05 24 0605	S35 E25	05 26.2		A	HS	20	1	2	3
8044		KAND	05 24 0705	S35 E26	05 26.4			HA		2	1	3
8044		RAMY	05 24 1109	S35 E22	05 26.2		A	HS	10	2	1	4
8044	28437	MWIL	05 24 1515	S34 E21	05 26.3	4	(AP)					
8044		HOLL	05 24 1645	S36 E20	05 26.3		A	HS	20	1	1	3
8044		TACH	05 25 0549	S33 E14	05 26.3			AX	5	1	1	3
8044		KAND	05 25 0955	S33 E11	05 26.3			HA		1	1	3
8044		RAMY	05 25 1124	S34 E10	05 26.3		A	AX	10	4	1	5
8044	28437	MWIL	05 25 1430	S34 E09	05 26.3	3	(AP)					
8044		HOLL	05 25 1450	S33 E09	05 26.3		A	AX	10	1	1	3
8046		SVTO	05 23 0730	S26 E76	05 29.2		A	AX		1	2	3
8046		KAND	05 23 0910	S26 E76	05 29.3			CRO		2	6	3
8046		RAMY	05 23 1107	S27 E72	05 29.1		A	AX	10	1		3
8046		HOLL	05 23 1446	S26 E74	05 29.4		A	AX	20	1	1	3
8046	28439	MWIL	05 23 1515	S23 E74	05 29.3	3	AP					
8046		VORO	05 23 2211	S25 E69	05 29.3			HAX	23	1		3
8046		LEAR	05 24 0015	S22 E68	05 29.2		A	AX	10	1	1	4
8046		TACH	05 24 0408	S27 E66	05 29.3			OX	3	1	1	3
8046		SVTO	05 24 0605	S27 E63	05 29.2		B	BXO	10	2	5	3
8046		KAND	05 24 0705	S26 E65	05 29.3			BXO		2	3	3
8046		RAMY	05 24 1109	S27 E60	05 29.1		B	BXO	10	2	3	4
8046	28439	MWIL	05 24 1515	S26 E59	05 29.2	4	(AP)					
8046		HOLL	05 24 1645	S26 E58	05 29.2		A	AX	30	2	4	3
8046		TACH	05 25 0549	S25 E51	05 29.2			BXO	15	2	4	3
8046		KAND	05 25 0955	S26 E49	05 29.2			BXO		2	3	3
8046		RAMY	05 25 1124	S28 E48	05 29.2		A	AX	20	3	7	5
8046	28439	MWIL	05 25 1430	S26 E46	05 29.2	4	(AP)					
8046		HOLL	05 25 1450	S26 E44	05 29.0		B	BXO	20	2	4	3
8046		VORO	05 25 2230	S26 E42	05 29.2			BXI	26	4	3	2
8046		LEAR	05 26 0154	S23 E41	05 29.2		B	BXO	20	2	3	3
8046		TACH	05 26 0600	S26 E38	05 29.2			BXO	5	2	5	3
8046		KAND	05 26 0600	S27 E38	05 29.2			BXO		4	4	3
8046		SVTO	05 26 0730	S27 E35	05 29.0		B	BXO	20	3	5	3
8046		RAMY	05 26 1132	S27 E35	05 29.2		B	BXO	20	4	5	4
8046	28439	MWIL	05 26 1545	S26 E32	05 29.1	4	(AP)					
8046		VORO	05 26 2150	S27 E27	05 29.0			AXX	9	1		2
8046		TACH	05 27 0510	S26 E23	05 29.0			AX	20	1	1	2

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

MAY 1997

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
8046		LEAR	05	27	0610	S25	E23	05	29.0		B	BXO	10	5	5	3
8046		SVTO	05	27	0700	S27	E23	05	29.1		B	BXO	20	6	7	2
8046		RAMY	05	27	1235	S27	E23	05	29.3		B	BXO	10	3	12	3
8046		KAND	05	27	1330	S27	E17	05	28.9			AX		1		2
8046		HOLL	05	27	1439	S27	E17	05	28.9		A	AX	10	1		3
8046	28439	MWIL	05	27	1445	S26	E18	05	29.0	4	(AP)					
8046	28439	MWIL	05	28	1430	S27	E03	05	28.8	4	(AP)					
8046		HOLL	05	28	1839	S27	E01	05	28.8		A	AX	10	1		3
8046		TACH	05	29	0406	S26	W04	05	28.9			AX	5	1	1	4
8046		SVTO	05	29	0505	S26	W06	05	28.7		A	AX		1		3
8046	28439	MWIL	05	29	1430	S27	W10	05	28.8	3	(AP)					
8046A		VORO	06	01	0728	N28	W38	05	29.4			BXO	22	4	4	2
8046B	28441	MWIL	05	27	1445	S28	E29	05	29.9	3	(AF)					
8046C		LEAR	05	26	0154	N26	E56	05	30.4		A	AX	20	1		3
8046D		VORO	06	01	0728	S30	W09	05	31.6			AXX	16	1		2

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

MAY 1997

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	LF- SPA	SES	Flare (UT)	X-ray Class	NOAA Region
04	0914	1033	1108	1	1		1			No flare		
04	1406	1413	1447	1	1		1			No flare		
06	1342	1400	1509	2	1		1			1405	B1.2	8038
07	1445	1450	1520	1	1		1			No flare		
08	0702	0717	0750	1	1		1			*		
08	1611	1613	1711	1	1		1			No flare		
09	0748	0803	0830	1	1		1			No flare		
09	0858	0946	0958	1	1		1			No flare		
10	1205	1225	1231	1	1		2			No flare		
10	1704	1718U	1758	1	1		1			No flare		
11	1401	1412	1437	1	1		1			No flare		
12	0452	0500	0530	1-	1			1		0445	C1.3	8038
12	0736	0747	0849	1	1		1			No flare		
12	1159	1255	1502	1	1		1			No flare		
13	1104	1155	1236	1	1		1			No flare		
13	1505	1513	1546	1	1		1			No flare		
16	0758	0813	0824	1	3		2			No flare		
17	1602	1615	1650	1	1		1			No flare		
19	0657	0714	0733	1	3		2			No flare		
20	2158	2210	2330	1+	1			1		2145	C4.2	
21	0610	0628	0710	1-	1			1		0607	C2.7	8040
21	2010	2020	2130	1+	5			2		2008E	M1.3	8040
22	1508	1527U	1555	1	1		1			No flare		
22	1653	1658	1726	1	1		1			No flare		
23	1455	1500	1544	1	1		1			No flare		
25	0951	1007	1144	1	1		1			No flare		
25	1342	1357	1452	1	1		1			1353	B4.8	8046
25	1456	1520	1602	1	1		1			1425	B6.5	
26	1714	1717	1754	1	1		1			No flare		
27	0940	0951	1026	1-	5		1	1		0939	C4.6	8045
27	1305	1344	1357	1	1		1			1321	B8.4	8045
27	1611	1630U	1717	1	1		1			1553	C1.0	
28	0835	0900U	0959	1	1		1			No flare		
30	1622	1624	1647	1	1		1			No flare		
31	1137	1155	1230	1	1		1			1201	B1.7	
31	1618	1648	1714	1	1		1			*		

* = no flare patrol.

OBSERVATORIES REPORTING FOR MAY 1997

Brazilian Antarctic Station	SPA	Rimavska Sobota, Slovakia	SEA
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

Observations are not necessarily continuous.

SOLAR RADIO EMISSION
Spectral Observations

MAY 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	0931	HIRA								
	0456	1707	ONDR								
	0600	1200	IZMI								
	0414	1732	POTS	0615.0	0615.1	UNCLF		1	120	160	
	1942	2400	HIRA								
02	0000	0932	HIRA								
	0447	1706	ONDR								
	0600	1200	IZMI								
	0414	1732	POTS	1352.3	1352.5	III	B	2	40X	170U	
	1941	2400	HIRA								
03	0000	0933	HIRA								
	0414	1732	POTS	0436.2	0436.3	UNCLF		1	120	140	
	0446	1708	ONDR								
	0600	1200	IZMI								
	1940	2400	HIRA								
04	0000	0934	HIRA								
	0444	1708	ONDR								
	0414	1732	POTS	0856.4	0857.1	III	G,C,RS	2	110U	170U	
	0600	1200	IZMI	0856.4	0856.8	III	G	1	70	150	
			POTS	1038.5	1042.1	III	GG,RS,	2	110U	170U	
			POTS	1248.6	1248.7	III	B	2	110U	155	
			POTS	1322.4	1322.9	III	G	1	110U	160	
	1939	2400	HIRA								
05	0000	0934	HIRA								
	0443	1712	ONDR								
	0414	1732	POTS	0749.7	0750.1	III	G	2	40X	170U	
	0600	1200	IZMI	0749.7	0749.9	III	G	1	55	145	
			POTS	0926.7	0927.6	I	S	2	110U	120	
	1938	2400	HIRA								
06	0000	0935	HIRA								
	0441	1712	ONDR								
	0414	1732	POTS	0452.9	0953.0	III	B	1	110U	150	
	0600	1200	IZMI								
	1937	2400	HIRA								
07	0000	0936	HIRA								
	0440	1713	ONDR								
	0414	1732	POTS	0622.1	0622.2	UNCLF		1	120	160	
			POTS	0712.0	0714.5	III	GG	2	40X	300	
	0605	1104	IZMI	0714.1	0714.4	III	G	2	45	85U	
	1936	2400	HIRA								
08	0000	0937	HIRA								
	0439	1716	ONDR								
	0740	1200	IZMI	0932.2	0932.4	III	B	1	50	85	
			IZMI	0949.2	0949.4	III	B	1	45X	90	
	1935	2400	HIRA								
09	0000	0938	HIRA								
	0437	1717	ONDR								
	0600	1200	IZMI								
	0609	1013	POTS								
	1934	2400	HIRA								
10	0000	0939	HIRA								
	0436	1717	ONDR								
			LEAR	0648.0	0649.0	III		1	30	48	
			SVTO	0649.0	0649.0	III		2	36U	81U	
	0600	1200	IZMI	0649.0	0649.3	III	G	2	45	175	
	1933	2400	HIRA								
11	0000	0940	HIRA								
	0435	1718	ONDR								
	0600	1200	IZMI								

SOLAR RADIO EMISSION
Spectral Observations

MAY 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
11	1932	2400	HIRA								
12	0356	1322	POTS	0445	1749 U	I	S,C	2	40X	400	
			POTS	0448	0533	IV	FS	2	170U	800X	
	0000	0941	HIRA	0448.1	0452.7	III	G	1	200	1200	
			POTS	0448.8	0449.1	III	G	2	200U	300	
			POTS	0450.3	0450.4	III	B,RS	3	200U	350	
			POTS	0451.0	0451.3	III	G,RS	2	140	350	
			POTS	0453.3	0453.4	III	B,RS	2	200U	350	
			LEAR	0454.0	0503.0	II		2	30	80	ESS 2500
			POTS	0454.0	0455.3	II	F,H	3	40X	60	
			SVTO	0454.0	0510.0	II		3	35	85	ESS 3500
			POTS	0454.1	0456.3	II	SH	3	40X	80	
			HIRA	0454.2	0555.6	II		1	60	90	ESS 700
			HIRA	0457.2	0508.8	II		2	35	80	ESS 670
			POTS	0457.6	0512	II	UE	3	40X	80	
			HIRA	0501.6	0513.9	IV		2	140	400	
			LEAR	0503.0	0605.0	IV		2	30	50	
			ONDR	0507.4	0514.5	DCIM	G	2	1000X	1470	
	0433	1721	ONDR	0507.5	0513.0	DCIM	G	1	815	930	
			HIRA	0507.8	0518.9	III	G	1	300	1200	
			SVTO	0510.0	0604.0	IV		2	35	85	
			POTS	0555.7	0555.9	UNCLF		2	40X	50	
			IZMI	0622.0U	1200.0D	I	N	1	45X	160U	
	0610	1200	IZMI	0622.0U	1200.0D	III	N	1	45X	160U	
			SVTO	0624.0	1520.0	CONT		3	35	85	
			POTS	1233.8	1234.1	III	G	1	40X	90U	
			POTS	1243.0	1243.1	III	B	2	40X	90U	
			POTS	1259.0	1259.3	III	G	2	40X	80	
	1352	1749	POTS	1356.3	1356.4	III	B	1	40X	80	
			POTS	1425.5	1425.6	III	G	2	40X	90U	
			POTS	1517.3	1517.4	III	B	2	40X	80	
			POTS	1733.2	1733.7	III	G	2	40X	90U	
	1931	2400	HIRA								
13	0000	0941	HIRA								
	0356	1749	POTS	0356 E	0539	I	S	1	110U	170U	
	0432	1721	ONDR								
	0600	1200	IZMI								
	1931	2400	HIRA								
14	0000	0942	HIRA								
	0431	1724	ONDR								
	0805	1200	IZMI								
	0356	1727	POTS	1218.4	1218.8	III	G	2	110U	170U	
			POTS	1253.9	1255.4	I	S	1	110U	170U	
	1930	2400	HIRA								
15	0000	0943	HIRA								
	0430	1723	ONDR								
	0600	1200	IZMI								
	1333	1729	POTS								
	1929	2400	HIRA								
16	0000	0944	HIRA								
	0429	1726	ONDR								
	0600	1200	IZMI								
	0356	1748	POTS	0634.6	0634.9	III	G	1	110U	170U	
			POTS	1052.4	1054.2	III	G,U	1	110U	170U	
			POTS	1136	1305	I	S,W	1	110U	170U	
			SVTO	1255.0	1326.0	CONT		3	35U	60U	
			POTS	1431.5	1431.6	III	B	2	40X	90U	
	1928	2400	HIRA								
17	0000	0945	HIRA								
	0356	1748	POTS								
	0428	1727	ONDR								
	0600	1200	IZMI								
	1927	2400	HIRA								

SOLAR RADIO EMISSION
Spectral Observations

MAY 1997

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
18	0000	0946	HIRA								
	0426	1726	ONDR								
	0600	1200	IZMI								
	0356	1748	POTS	0608.9	0609.2	III	B	1	40X	170U	
	1926	2400	HIRA								
19	0000	0947	HIRA								
	0425	1729	ONDR								
	0356	1748	POTS	0533.7	0534.0	III	G	2	40X	150	
	0600	1200	IZMI								
			POTS	1018.4	1018.5	III	B	1	110U	150	
	1926	2400	HIRA								
20	0000	0947	HIRA								
			LEAR	0215.0	0216.0	III		1	30	49	
			PALE	0215.0	0216.0	III		1	25	55	
	0424	1729	ONDR								
	0356	1748	POTS	0536	0710	I	S,W	1	200U	350	
	0600	1200	IZMI								
			POTS	1006	1140	I	S,W	1	300	375	
	1925	2400	HIRA								
21	0345	1801	POTS	0345 E	1801 U	I	S,C	2	110U	400	
			POTS	0356.0	0357.0	III	G	2	40X	90U	
			POTS	0358.2	0358.4	III	B	3	40X	170U	
			POTS	0443.0	0443.3	UNCLF		2	50	60	
			POTS	0450.6	0450.8	III	B	2	50	170U	
			POTS	0619.7	0624.2	DCIM		2	350	800X	
	0625	1200	IZMI	0620.0U	0837.0	I	S	1	80U	165U	
			ONDR	0623.0	0624.1	DCIM	G	1	1000	1780	
	0000	0948	HIRA	0623.0	0623.6	III	G	1	500	900	
	0423	1728	ONDR	0623.0	0623.4	DCIM	G	1	800X	995	
			POTS	0746.6	0746.8	III	G	2	40X	60	
			IZMI	0746.7	0746.8	III	B	1	45	90	
			IZMI	0824.4	0824.7	III	B	1	45X	90	
			POTS	0824.4	0824.8	III	B	1	40X	60	
			IZMI	0912.4	0912.5	III	G	2	45	90	
			SVTO	0913.0	0918.0	III		3	35	80	
			IZMI	0913.8	0914.3	III	G	2	45	95	
			POTS	0913.9	0921.7	III	G	3	40X	140	
			LEAR	0917.0	0918.0	III		2	30	80	
			IZMI	0917.9	0918.2	III	G	2	45X	140	
			SVTO	0921.0	0921.0	III		1	35U	65U	
			SVTO	1012.0	1013.0	III		3	35U	79U	
			IZMI	1013.8	1014.2	III	G	3	45X	145	
			POTS	1013.9	1021.3	III	GG	3	40X	170U	
			IZMI	1016.3	1016.5	III	B	1	60	75	
			SVTO	1018.0	1020.0	III		2	35U	80U	
			SVTO	1018.0	1020.0	III		2	36U	80U	
			IZMI	1018.9	1021.2	III	G	2	45	160	
			SGMR	1030.0	1030.0	III		2	30	70	
			SVTO	1030.0	1030.0	III		3	35U	80U	
			IZMI	1030.1	1031.2	III	G	3	45	140	
			POTS	1030.1	1031.7	III	G	3	40X	170U	
			IZMI	1030.2	1030.4	V		2	50	65	
			POTS	1030.2	1030.6	V		3	40X	65	
			IZMI	1114.6	1114.8	III	B	1	45	70	
			POTS	1114.7	1114.9	III	G	2	40X	65	
			POTS	1115.8	1116.2	III	G	1	40X	60	
			SGMR	1156.0	1157.0	III		1	30	55	
			SVTO	1156.0	1202.0	III		2	36	61	
			POTS	1156.8	1202.6	III	G	3	40X	170U	
			IZMI	1156.9	1157.4U	III	G	2	45	125	
			SGMR	1202.0	1202.0	III		1	30	57	
			POTS	1257.0	1257.5	III	G	3	40X	150	
			SGMR	1257.0	1257.0	III		2	30	65	
			SVTO	1257.0	1257.0	III		3	35	67	
			SGMR	1557.0	1558.0	V		2	30	80	
			POTS	1558.0	1558.2	III	G	3	40X	250	

SOLAR RADIO EMISSION
Spectral Observations

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	FREQUENCY Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
21			SVTO	1558.0	1558.0	III		3	35	82	
			POTS	1558.2	1558.5	V		3	40X	65	
			SGMR	1616.0	1623.0	V		2	30	69	
			SVTO	1616.0	1622.0	III		3	36U	74U	
			POTS	1616.7	1623.5	III	GG	3	40X	170U	
			PALE	1621.0	1621.0	III		1	26	52	
	1925	2400	HIRA	2009.5	2015.6	III	G	1	150	1500	
			PALE	2010.0	2027.0	II		3	25	75	ESS 2500
			SGMR	2010.0	2025.0	II		2	30	80	ESS 3500
			HIRA	2011.9	2022.2	II	FN	3	25X	70	ESS 730
			HIRA	2011.9	2023.6	II	SH	3	30	140	ESS 700
			SGMR	2025.0	2229.0	IV		1	30	80	
			PALE	2027.0	0023.0	IV		2	25	75	
			HIRA	2048.0	2058.7	IV		2	40	800	
22	0000	0949	HIRA								
	0345	1801	POTS	0345 E	1801 U	I	S,C	1	110U	350	
	0423	1732	ONDR								
	0600	1200	IZMI								
			POTS	1216.6	1216.8	III	G,RS	2	110U	275	
			SGMR	1514.0	1514.0	III		1	30	58	
	1924	2400	HIRA								
23	0000	0950	HIRA								
	0345	1801	POTS	0345 E	1801 U	I	S,W	1	120	400	
	0422	1733	ONDR								
			POTS	0422.1	0423.2	III	GG	2	110U	375	
	0600	1200	IZMI								
	1924	2400	HIRA								
			PALE	1950.0	1951.0	III		1	25	53	
			SGMR	1951.0	1951.0	III		1	30	60	
24	0000	0950	HIRA								
	0345	1801	POTS	0407	0843	I	S,W	1	130	400	
	0421	1733	ONDR								
	0600	1150	IZMI								
			POTS	0934.7	0934.9	III	B	1	110U	250	
			POTS	1340.1	1340.2	III	B	1	110U	170U	
	1923	2400	HIRA								
25	0000	0951	HIRA								
	0420	1735	ONDR								
	0345	1801	POTS	0453	1446	I	S,W	1	120	350	
	0600	1200	IZMI								
			POTS	1407.0	1407.4	III	G,RS,C	1	110U	160	
			POTS	1417.1	1418.6	III	G	2	40X	90U	
			SGMR	1418.0	1418.0	V		1	30	57	
			SVTO	1418.0	1418.0	III		2	35	59	
			POTS	1423.9	1438.6	III	G	2	40X	90U	
	1922	2400	HIRA								
			PALE	2042.0	2047.0	V		1	25	52	
			PALE	2052.0	2056.0	III		1	25	52	
26	0000	0952	HIRA								
	0345	0513	POTS								
	0419	1735	ONDR								
			SVTO	0822.0	0822.0	III		2	35	63	
	0600	1200	IZMI	0822.3	0822.4	III	B	1	45	90	
			IZMI	1128.6	1128.7	III	G	1	55	85	
			SGMR	1205.0	1212.0	III		1	30	56	
			SVTO	1206.0	1211.0	III		2	35U	63U	
			SGMR	1416.0	1417.0	III		1	30	55	
			SVTO	1416.0	1417.0	III		2	37	60	
			SGMR	1438.0	1439.0	III		1	30	60	
			SVTO	1439.0	1440.0	III		2	35	62	
			PALE	1656.0	1656.0	III		2	25	55	
			SGMR	1656.0	1656.0	V		2	30	70	
			SVTO	1656.0	1656.0	III		2	36	65	
			PALE	1852.0	1859.0	III		1	25	54	

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

MAY 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
26			SGMR	1852.0	1859.0	III		1	30	70	
	1922	2400	HIRA								
27	0000	0953	HIRA								
	0345	0736	POTS								
	0600	1200	IZMI	0922.4	0922.8	III	G	1	50	95	
			SVTO	0924.0	0926.0	V		2	35	85	
			SVTO	0954.0	0956.0	V		2	35	85	
			SGMR	0955.0	0957.0	V		1	30	68	
	0931	1803	POTS	0955.0	0957.0	DCIM		2	200X	700	
	0418	1736	ONDR	0955.5	0957.7	DCIM	G	1	2000X	4440X	
			IZMI	0955.7	0956.1	III	G	2	45X	160	
			IZMI	0956.1	0956.2	III	B	1	220	260	
			IZMI	0956.1	0957.3	V		2	45X	150	
			POTS	1116.8	1117.3	I	S	2	200X	300	
	1921	2400	HIRA								
28	0000	0953	HIRA								
	0425	1737	ONDR								
	0600	1200	IZMI								
			SGMR	1218.0	1229.0	V		1	30	55	
			SVTO	1218.0	1229.0	III	N	3	35	59	
	0345	1801	POTS	1218.1	1220.8	III	G	2	40X	300	
			POTS	1225.2	1225.4	III	B	1	110U	170U	
			POTS	1229.0	1230.0	UNCLF		3	40X	50	
			PALE	1728.0	1729.0	III		1	45	54	
			SGMR	1728.0	1728.0	III		1	30	60	
			POTS	1728.6	1728.9	III	G	2	40X	130	
	1921	2400	HIRA								
29			PALE	0033.0	0035.0	III		2	28	65	
			LEAR	0034.0	0035.0	III		2	30	52	
	0000	0954	HIRA	0034.3	0034.4	III	B	1	25X	250	
	0417	1739	ONDR								
	0345	1801	POTS	0502	1801 U	I	S,W	1	120	275	
			POTS	0612.6	0613.9	III	G	2	40X	60	
			SVTO	0804.0	0816.0	III	N	3	35U	74U	
			LEAR	0811.0	0811.0	III		1	30	45	
			POTS	0811.2	0816.1	III	GG,RS	2	40X	170U	
			POTS	0811.7	0816.8	DCIM		2	200U	400	
	0605	1200	IZMI	0812.0	0812.1	III	B	2	45X	85	
			IZMI	0815.2	0816.2	III	GG	2	45	145	
			POTS	0949.1	0949.2	III	B	1	40X	160	
			SVTO	0952.0	0956.0	III		2	35U	76U	
			IZMI	0952.2	0952.3	III	B	2	45X	85	
			POTS	0952.2	0956.3	III	G	3	40X	325	
			IZMI	0954.8	0954.9	III	B	2	45	85	
			IZMI	0955.7	0956.0	III	B	2	45	85	
			POTS	1322.7	1323.1	III	G	1	40X	170U	
			POTS	1331.3	1331.6	III	G	1	40X	275	
	1920	2400	HIRA								
30	0000	0955	HIRA								
	0345	1801	POTS								
	0416	1739	ONDR								
	1920	2400	HIRA								
31	0000	0955	HIRA								
	0345	1801	POTS								
	0416	1741	ONDR								
	1919	2400	HIRA								

SOLAR RADIO NOISE STORM AT 164 MHZ
FROM NANÇAY RADIOHELIOGRAPH

MAY 1997

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
21/05/97	+1.08	+0.64	1	E	D
22/05/97	+0.35	+0.16	1	E	D
22/05/97	+0.70	+0.16	1	E	D
22/05/97	+1.14	+0.64	1	E	D
23/05/97	+1.34	+0.54	1	E	D
25/05/97	-0.85	-0.64	1	E	D

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANÇAY RADIOHELIOGRAPH

MAY 1997

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
20/05/97	+0.06	+0.21	1	E	D
21/05/97	+0.33	+0.24	1	E	D
21/07/97	+0.98	+0.24	2	E	D
22/05/97	+0.22	+0.10	1	E	D
23/05/97	+0.81	+0.10	1	E	D
25/05/97	+0.82	-0.43	1	E	D

NO DATA
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

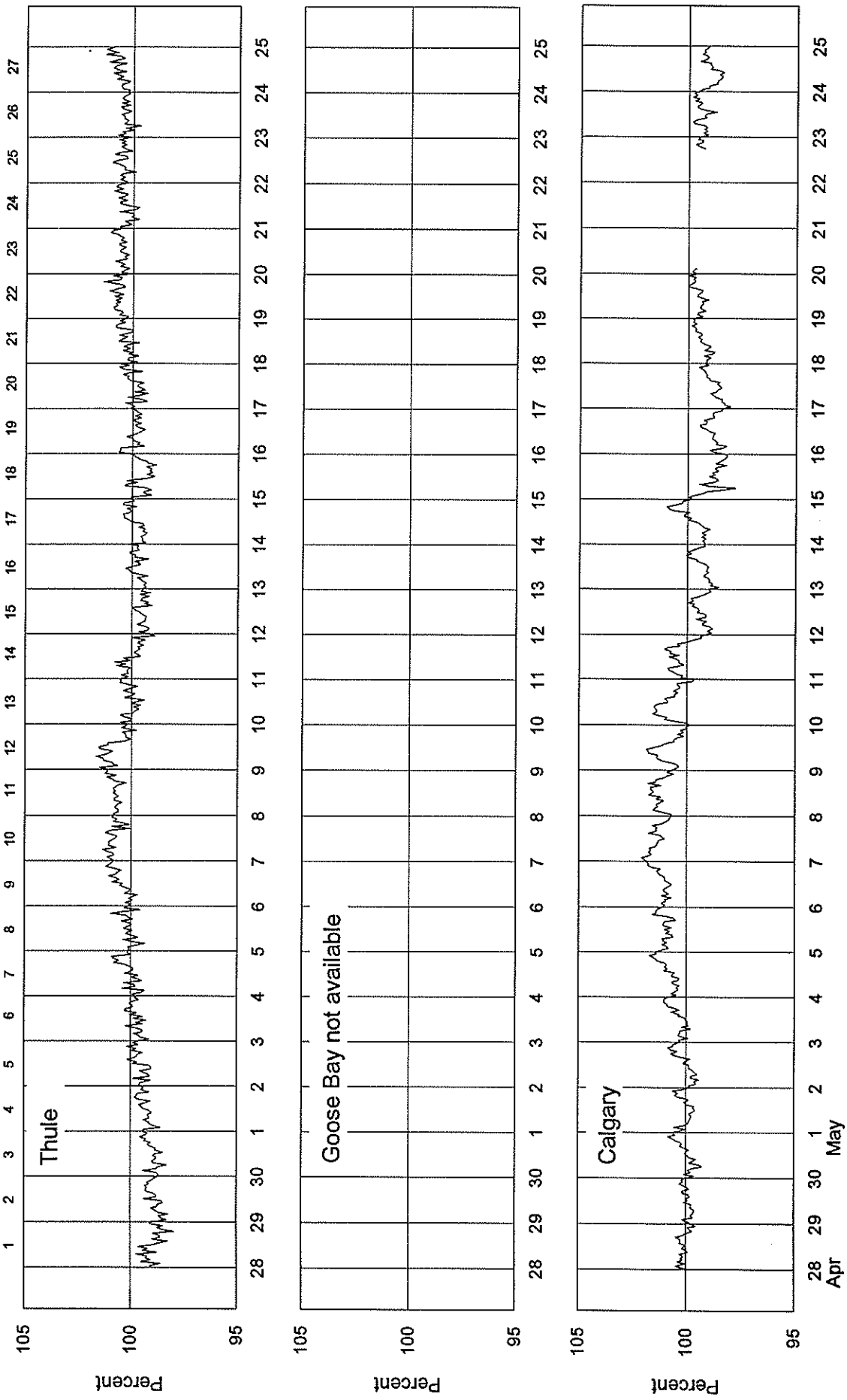
[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANÇAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

COSMIC RAY INDICES
(Neutron Monitor)
MAY 1997

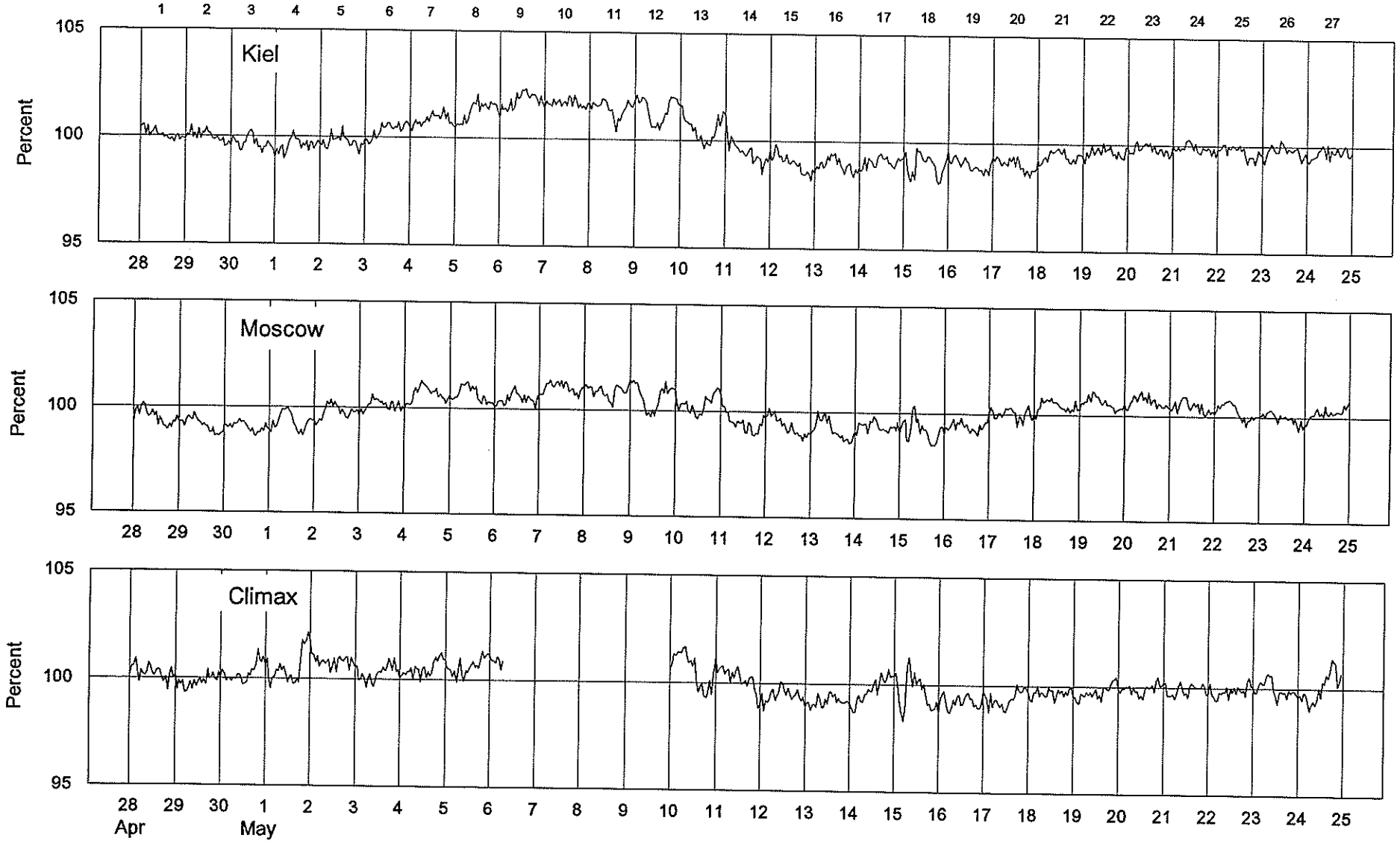
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	4503	No data	4018.5	6302.7	9253.4	4286.7	1983.9	3583.2
2	4515	at time of	4018.3	6313.8	9299.2	4304.5	1990.2	3592.8
3	4523	publication	4031.5	6348.5	9330.0	4281.5	1987.4	3593.8
4	4537	---	4049.3	6381.2	9380.6	4288.5	1993.0	3599.9
5	4538	---	4057.0	6408.5	9382.6	4293.8	1989.1	3602.5
6	4555	---	4061.2	6441.5	9364.2	4309.4 (16)	1995.0	3591.2
7	4573	---	4074.5	6434.8	9415.3	---	1999.5	3588.1
8	4569	---	4068.2	6420.3	9402.3	---	2015.6	3586.8
9	4572	---	4049.7	6419.0	9385.5	---	2010.4	3586.0
10	4537	---	4048.0	6364.3	9353.0	4292.8	2002.6	3583.8
11	4533	---	4031.3	6298.5	9274.5	4281.0	1997.9	3576.0
12	4509	---	3989.8	6265.2	9260.1	4244.6	1986.0	3568.2
13	4521	---	3988.0	6260.7	9244.4	4232.2	1984.3	3565.2
14	4528	---	4006.8	6270.6	9261.1	4258.0	1988.2	3571.7
15	4512	---	3969.0	6262.7	9247.7	4255.6	2002.9	3578.5
16	4529	---	3970.7	6265.6	9264.6	4235.3	1993.6	3574.5
17	4531	---	3967.8	6267.2	9323.7	4241.5	1987.7	3564.0
18	4548	---	3990.5	6292.7	9360.3	4255.8	1986.4	3558.0
19	4566	---	3998.7	6306.2	9376.0	4256.8	1984.8	3563.8
20	4558	---	4004.7 (4)	6317.6	9383.0	4264.5	1985.8	3570.8
21	4551	---	---	6322.0	9363.4	4265.6	1982.1	3563.1
22	4556	---	3995.3 (6)	6312.9	9344.8	4262.3	1978.1	3552.2
23	4550	---	3993.8	6315.5	9318.9	4268.0	1979.9	3543.2
24	4565	---	3976.2	6310.4	9339.8	4270.2	1979.1	3547.7
25	4576	---	3980.0	6307.2	9366.7	4289.7	1977.6	3564.8
26	4556	---	3961.2	6282.7	9335.3	4264.2	1973.4	3562.0
27	4555	---	3958.0	6314.2	9390.5	4279.2	1990.8	3572.6
28	4564	---	3971.3	6292.7	9382.4	4262.0	1992.6	3573.1
29	4572	---	3978.3	6295.3	9381.2	4256.2	1992.0	3572.8
30	4579	---	3999.5	6307.3	9372.9	4259.4	1982.7	3581.8
31	4597	---	4003.0	6326.3	9374.2	4269.2	1994.7	3589.3
Mean	4548	---	4007.0	6323.5	9339.7	4267.9	1989.9	3549.1

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.

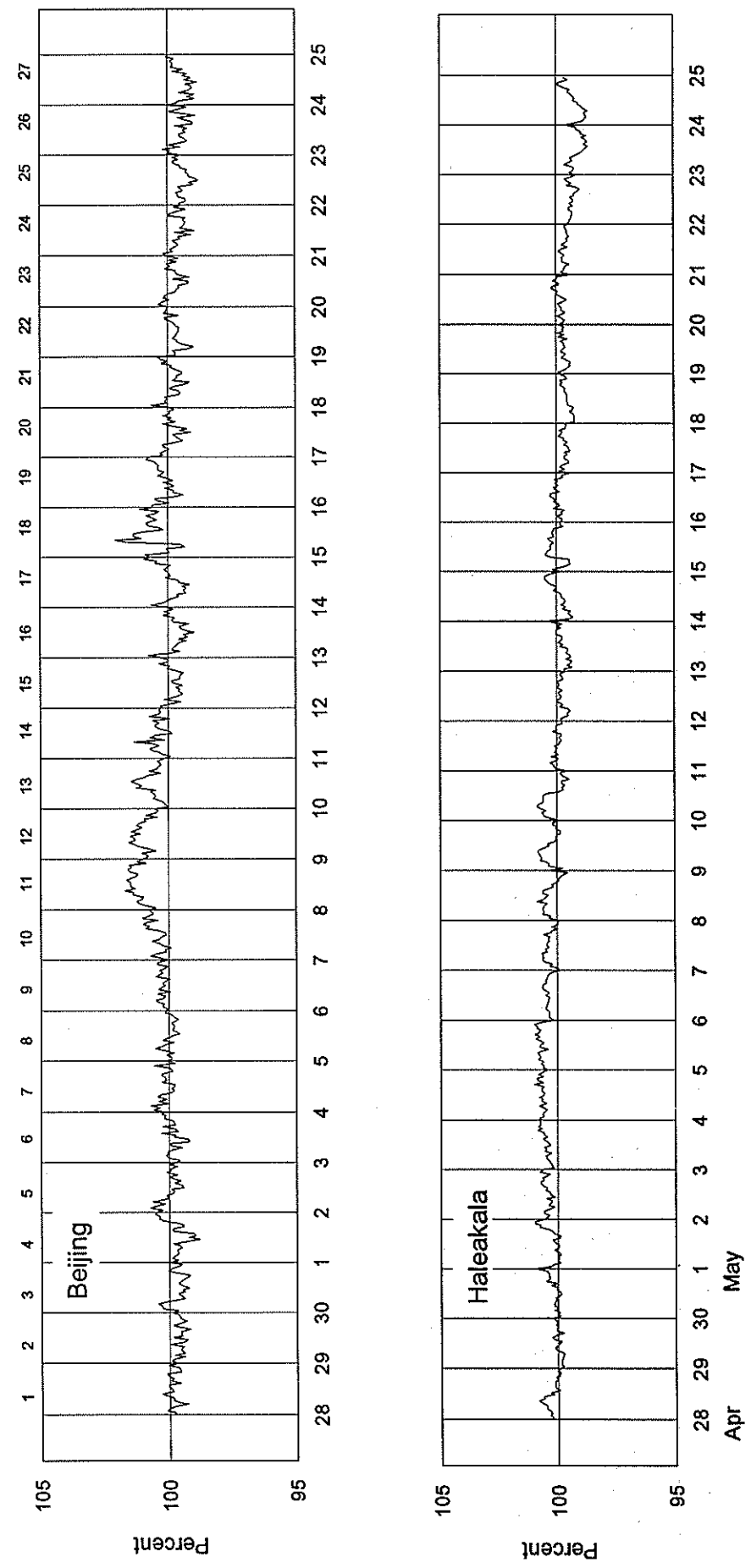
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2236 - Beginning 28 Apr 97



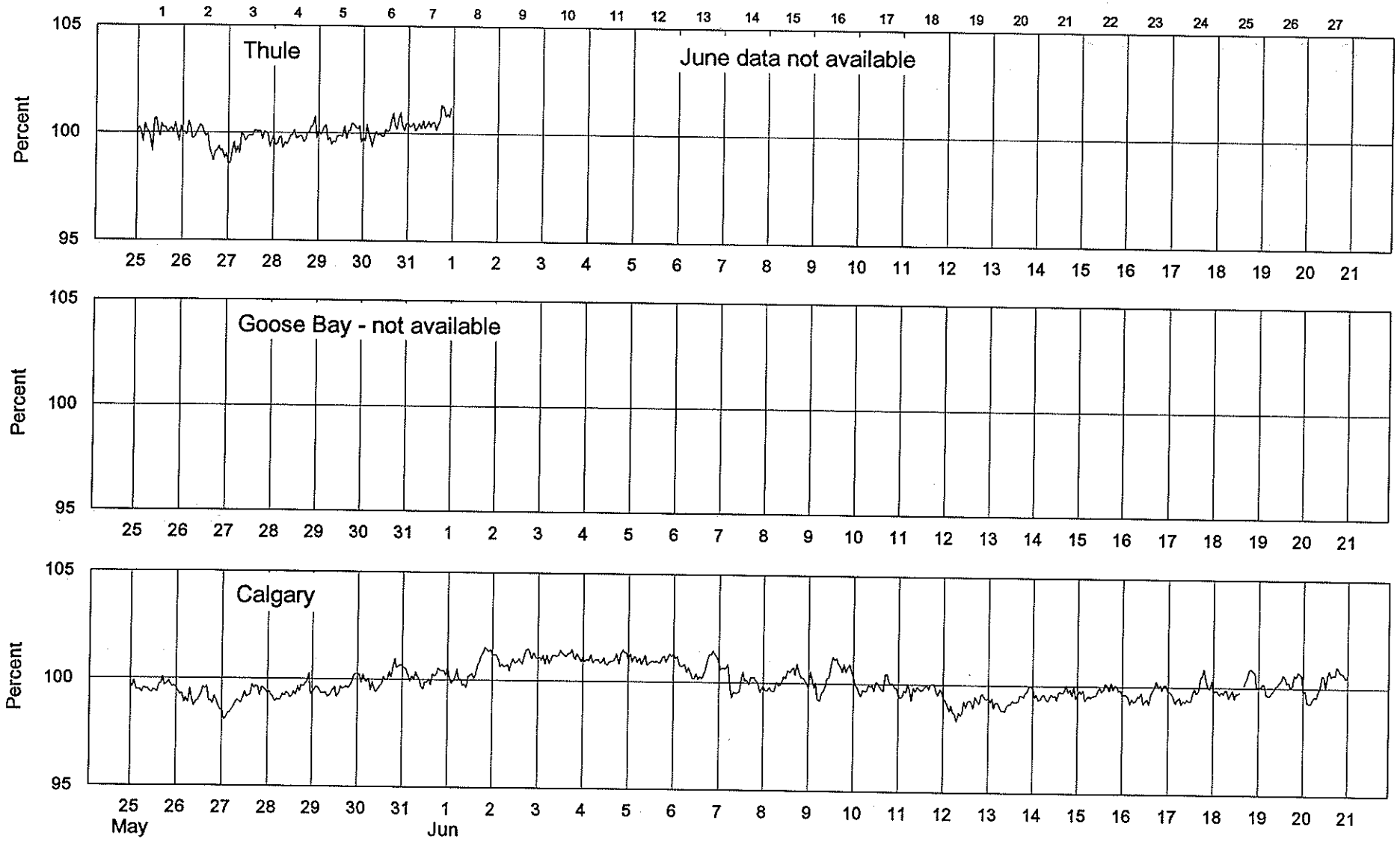
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2236 - Beginning 28 Apr 97



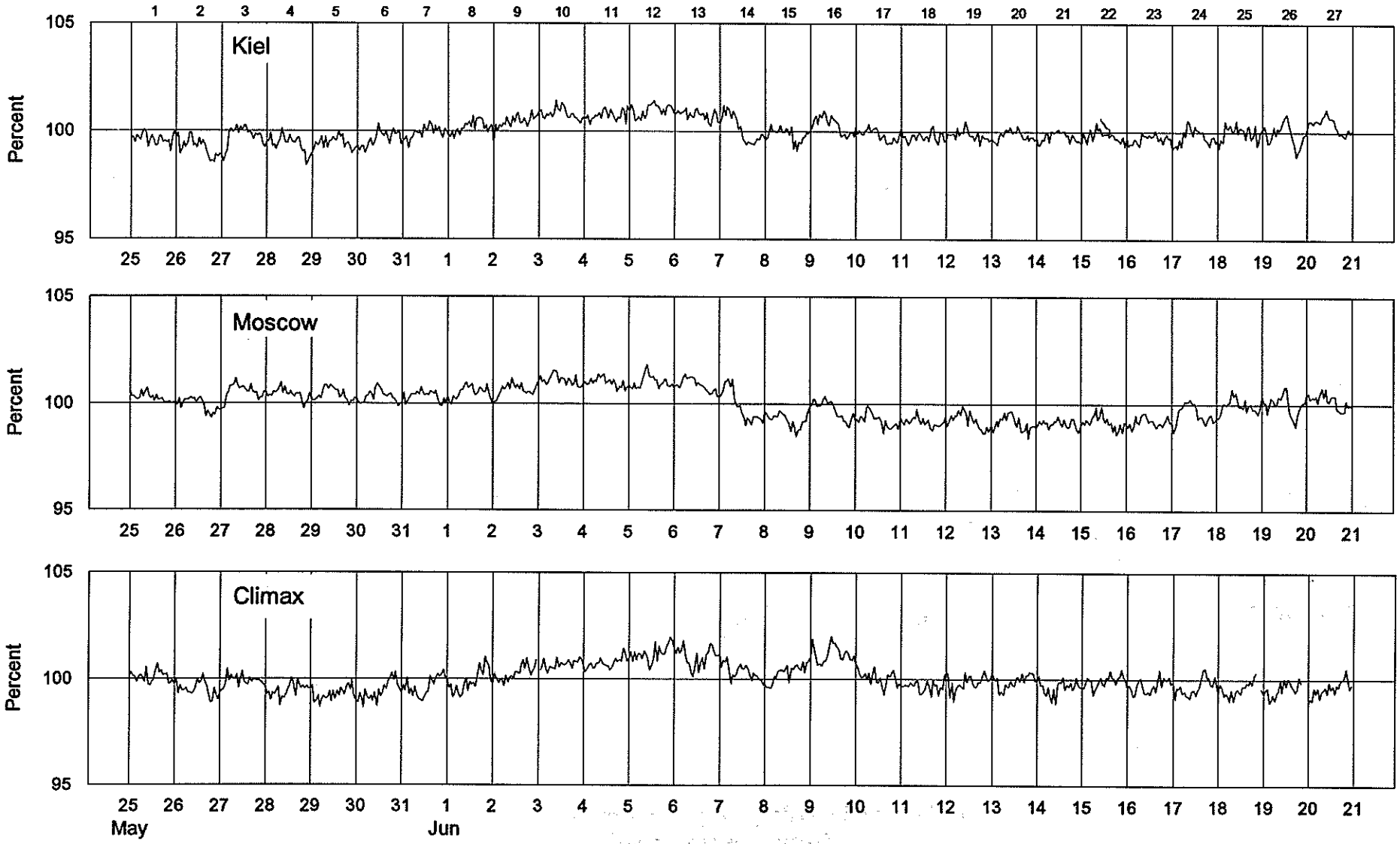
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2236 - Beginning 28 Apr 97



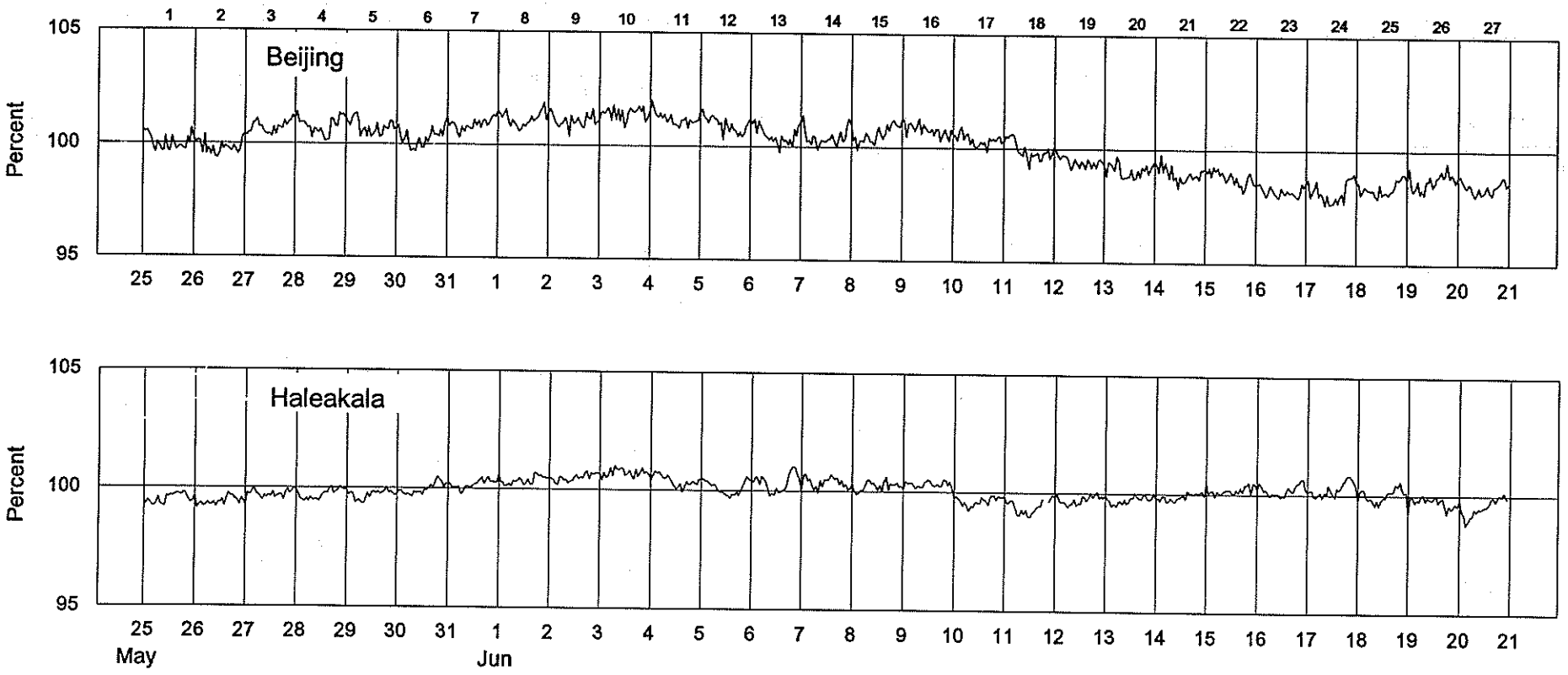
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2237 - Beginning 25 May 97



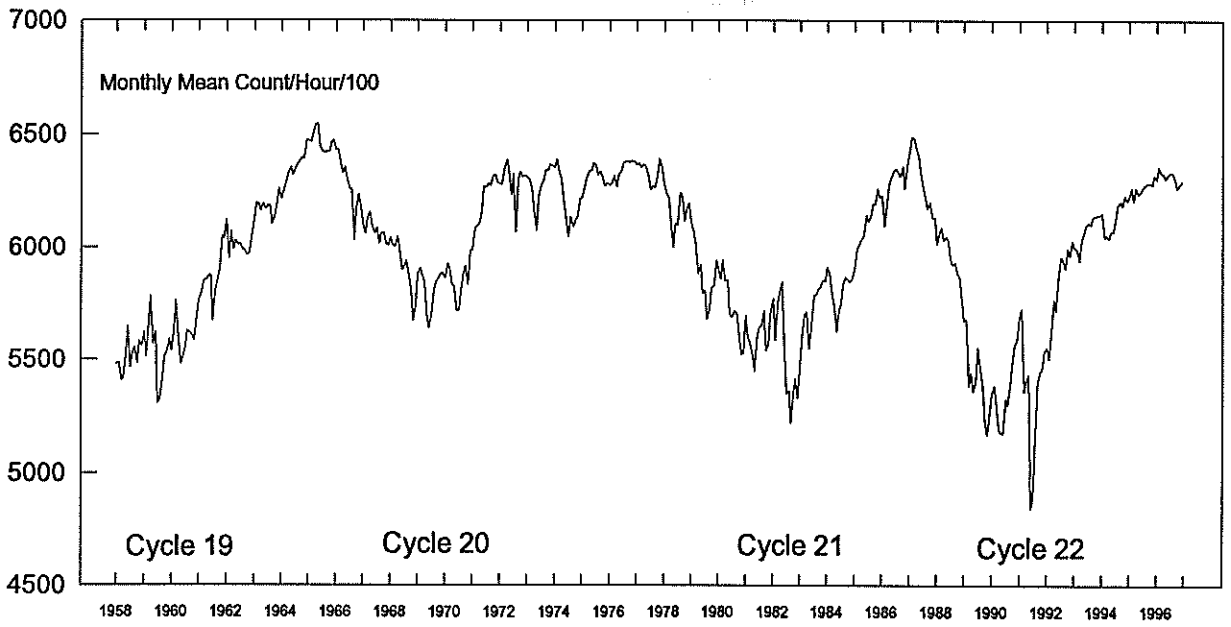
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2237 - Beginning 25 May 97



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



Kiel Neutron Monitor Pressure-Corrected Values
Jan 1958 - May 1997



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1958	5481	5488	5409	5417	5523	5651	5466	5538	5553	5485	5584	5561	5513
1959	5623	5515	5659	5783	5569	5625	5307	5328	5420	5518	5536	5593	5540
1960	5539	5628	5764	5596	5480	5509	5557	5628	5620	5607	5586	5692	5601
1961	5766	5793	5853	5856	5872	5874	5672	5804	5859	5898	6046	6041	5861
1962	6122	5949	6072	5989	6030	6010	6013	5991	5982	5963	5971	6052	6012
1963	6125	6197	6191	6163	6194	6168	6185	6182	6103	6133	6197	6260	6175
1964	6215	6253	6287	6331	6355	6321	6347	6366	6383	6399	6393	6475	6344
1965	6474	6469	6506	6542	6545	6451	6424	6420	6423	6424	6467	6475	6468
1966	6433	6432	6375	6330	6353	6300	6258	6258	6033	6168	6236	6172	6279
1967	6101	6061	6139	6155	6088	6061	6086	6016	6064	6063	6014	6009	6071
1968	6041	6011	6001	6048	5997	5901	5910	5937	5878	5805	5673	5739	5912
1969	5876	5909	5872	5845	5686	5640	5700	5812	5843	5864	5879	5887	5818
1970	5863	5928	5906	5830	5831	5716	5719	5803	5885	5915	5832	5985	5851
1971	5985	6081	6094	6103	6151	6268	6265	6286	6275	6314	6322	6288	6203
1972	6281	6278	6351	6387	6344	6232	6328	6065	6306	6334	6313	6318	6295
1973	6309	6298	6250	6155	6074	6220	6271	6296	6341	6340	6365	6360	6273
1974	6353	6391	6331	6308	6201	6139	6047	6132	6090	6113	6139	6215	6205
1975	6217	6267	6308	6334	6341	6370	6363	6320	6334	6313	6272	6286	6310
1976	6275	6281	6314	6269	6325	6331	6370	6380	6379	6375	6383	6380	6339
1977	6366	6371	6355	6366	6357	6322	6254	6272	6263	6317	6391	6355	6332
1978	6271	6242	6215	6113	5998	6101	6095	6241	6232	6117	6167	6193	6165
1979	6104	6063	6006	5883	5923	5794	5806	5682	5723	5820	5827	5942	5881
1980	5905	5862	5942	5850	5854	5702	5690	5717	5704	5611	5522	5528	5741
1981	5697	5600	5569	5517	5447	5600	5642	5650	5717	5539	5564	5702	5604
1982	5772	5586	5755	5799	5848	5582	5347	5362	5217	5349	5414	5329	5530
1983	5481	5606	5702	5711	5549	5659	5787	5785	5814	5820	5852	5849	5718
1984	5911	5880	5799	5740	5622	5706	5753	5837	5867	5856	5844	5864	5807
1985	5911	5986	6016	6038	6049	6142	6114	6135	6193	6192	6260	6220	6105
1986	6229	6093	6176	6280	6308	6336	6350	6331	6315	6356	6259	6359	6283
1987	6429	6489	6484	6443	6410	6319	6273	6217	6171	6198	6131	6131	6308
1988	6013	6064	6085	6030	6047	6033	5945	5922	5931	5880	5872	5761	5965
1989	5673	5678	5385	5441	5360	5407	5552	5460	5378	5228	5167	5241	5414
1990	5348	5381	5313	5197	5177	5173	5324	5297	5382	5471	5563	5584	5351
1991	5696	5726	5355	5405	5431	4841	4882	5162	5390	5443	5466	5540	5361
1992	5553	5500	5624	5766	5713	5869	5956	5942	5905	5994	5960	6024	5817
1993	5996	5992	5937	6026	6061	6094	6108	6099	6129	6137	6142	6141	6072
1994	6150	6042	6052	6067	6070	6068	6129	6189	6203	6183	6226	6209	6132
1995	6225	6260	6205	6260	6234	6250	6267	6279	6281	6285	6279	6319	6262
1996	6301	6354	6330	6324	6306	6325	6332	6331	6303	6262	6277	6294	6312
1997	6313	6337	6313	6314	6324								6320

Multiply table entries by 100 to obtain hourly counting rate. Kiel, Germany: N54, E10, Alt= 54 m, Cutoff Rigidity= 2.32GV.

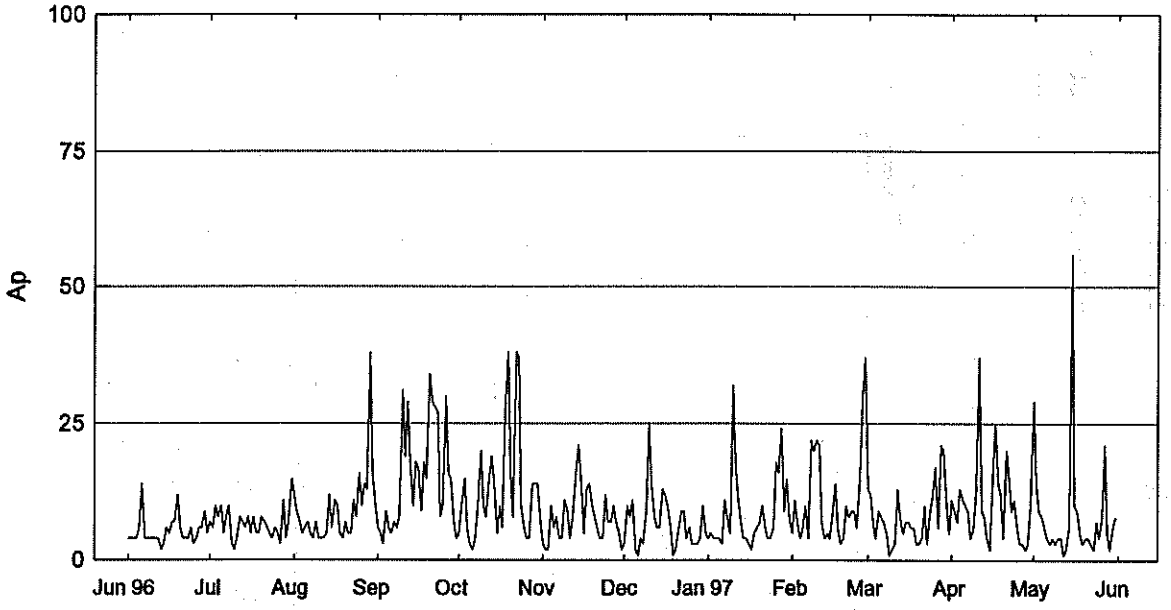
Geomagnetic Activity Indices

May 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	Am	aa Provisional N	S	M	
1	D2	3+	1+	2-	1	3+	5-	5	6+	27-	29	1.3	4-	1+	2+	2+	3o	4o	5-	5+	45	55	43	21	77	
2	D4*	5	3-	3-	2-	3-	2+	1+	3-	21	14	0.8	4o	3-	3-	2+	3-	3-	2-	3o	27	30	21	30	22	
3		2	2-	2-	1+	3-	3-	3	2-	17-	9	0.5	2-	2+	2o	2o	3-	3o	3-	2o	19	18	20	11	27	
4		2+	2+	2-	1	1+	2	3	2-	15+	8	0.4	2o	2+	2-	1+	1o	2o	3-	2-	14	14	11	11	14	C
5		3	2	1	1+	1+	1	1+	2-	13-	6	0.3	3o	2o	1+	1+	1+	1o	1+	2-	13	14	9	13	10	CC
6		1+	1-	1	1-	1+	1+	1-	1-	8-	4	0.1	2-	1-	1o	1+	2-	2-	1o	1+	9	9	11	8	12	CC
7	Q8	1	1-	1+	0	0+	0+	1-	2-	6	3	0.1	1o	1-	1+	0o	0o	0+	0+	2-	4	7	4	4	6	CC
8	Q10	1+	1	0+	1-	1-	1	1-	2-	7+	4	0.1	1+	1-	1-	1+	0+	1o	1o	2-	7	8	6	6	9	CC
9	Q7	1+	1+	1+	1-	1-	0+	0+	0+	6+	3	0.1	1+	2-	2o	2-	0+	1-	0+	1-	8	6	8	7	7	CC
10		1+	1+	1+	1-	1+	1-	1-	1+	9-	4	0.1	1+	2-	2o	1o	1+	1-	1-	1+	9	8	9	8	9	CC
11		2+	2-	2-	2-	1+	0+	0	0	9	4	0.1	2+	2-	3-	2-	1+	0+	0+	0+	10	10	8	13	5	CC
12	Q1	0	1-	0	0	0+	0+	0	0	1+	1	0.0	0o	1-	0+	0o	1-	0+	0+	0o	2	4	3	4	3	CC
13	Q2	1-	0+	0+	0+	0+	0	1-	0+	3	2	0.0	0+	0+	0+	0+	0+	0o	0+	0+	2	4	2	3	4	CC
14		1-	0	0	1-	1	3-	3-	3-	10+	6	0.3	1-	0o	0+	1-	1o	3-	2+	2+	10	15	9	4	20	K
15	D1	4	3+	7-	7-	6+	5+	3	3	38+	56	1.6	4-	3+	6+	6o	5+	4+	3-	3o	80	66	94	105	55	
16	D5*	2	2+	2	1+	4-	3+	1	3-	18+	10	0.6	2+	3-	2+	2-	3+	3+	1+	3+	24	28	21	16	33	
17		4-	3-	0+	2+	2-	1+	2+	2+	17-	9	0.5	3+	3o	0+	2+	2-	1+	2-	3-	18	21	16	20	17	
18		1	1+	1+	1-	1+	1	1+	2	10	5	0.2	1+	2-	2-	1o	2-	2-	1+	2+	11	13	9	9	13	CC
19	Q5	1-	1-	1-	1-	1-	1-	0+	0+	5-	3	0.0	1o	1-	1-	1o	1o	1o	0+	0+	5	6	3	4	5	CC
20		1	1+	2	1-	1-	1	0+	0+	7+	4	0.1	1o	1+	2+	1+	1+	1+	0o	0o	8	8	10	11	7	CC
21	Q9	0	1-	1	1	1	1	1+	1	7	4	0.1	0o	1o	1+	1+	1o	1o	2-	1o	7	9	7	7	9	CC
22	Q6	1	0+	0	0+	0+	1+	1	1+	6-	3	0.1	1-	1-	0+	0+	0+	1+	1-	1+	5	8	6	5	9	CC
23	Q3	0	0+	1-	1-	1-	1-	1-	1-	4+	2	0.0	0o	0+	1o	1-	0+	0+	0+	0+	3	4	5	5	4	CC
24		1+	1	1+	2	2+	2	2+	2	14+	7	0.3	1o	1-	1+	2o	2+	2o	3-	2o	13	17	12	11	18	C
25		2-	2	1+	1-	1	1+	1	0+	9+	4	0.2	2-	3-	1+	1-	1o	1o	1+	0+	9	8	7	8	7	CC
26		0+	0+	0	1+	3-	3-	3	3+	14-	8	0.4	0+	0+	0o	2o	3-	3-	3o	3o	16	19	15	6	28	
27	D3	4	6	4	2	2	1+	1+	2+	23	21	1.1	4-	5o	4+	3-	2o	2-	2o	3-	36	35	30	46	19	
28		2-	1	1+	2	2+	1-	0+	1-	10	5	0.2	3-	3+	3+	2+	2+	1-	1-	1+	19	10	10	10	10	CC
29	Q4	1-	0+	0+	0+	0+	0+	0+	1+	4	2	0.0	1o	1o	0+	0+	0+	0+	0+	1+	4	7	4	4	6	CC
30		1	1-	1	1-	2	2	2	3-	12	6	0.3	1o	1o	1o	1-	2+	2+	2-	3-	12	17	9	5	21	KC
31		2	1+	1-	1+	2	3-	3-	3-	15+	8	0.4	2+	2+	1-	1+	2-	3o	3-	3-	18	20	18	11	26	
Mean											8	0.33									15.1	16.1	14.2	15.1		

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	3o	1+	2+	2o	3o	4+	5-	5+	44	4+	2-	2+	3-	3-	4-	5-	5+	48	73.4	0	0	17	
2	4+	2+	3-	2-	3-	2+	2-	3o	26	4o	3o	3-	2+	3o	3-	1+	3-	27	73.3	0	1	17	
3	2o	2o	2-	2-	3-	3+	2+	2o	19	2-	2+	2+	2+	3-	3-	3o	2-	19	72.3	0	1	16	
4	2o	2+	2-	1o	1o	2o	3-	2-	13	2+	2o	2-	2-	1o	2-	3o	2-	15	72.1	8	1	16	
5	3o	2-	1+	1+	2-	1+	1+	2-	12	3o	2+	1+	1+	1+	1o	2-	2-	14	73.6	9	8	17	
6	1+	1-	1o	1o	1+	2-	1o	1+	8	2+	1o	1+	1+	2o	2o	1+	1o	11	73.4	8	10	17	
7	1-	1-	1+	0o	0o	1-	1-	2-	5	1o	1-	1+	0o	0o	0o	0o	2-	4	73.3	8	11	17	
8	1o	1-	0o	1+	1-	1+	1o	1+	6	2-	1o	1+	2-	0+	0+	1-	2-	8	73.3	10	11	17	
9	1+	1+	2-	2-	1-	0+	0o	1o	7	2-	2o	2o	1+	0+	1-	1o	0+	9	73.0	9	12	17	
10	1-	2-	2-	1-	2-	1-	1-	2-	9	1+	1+	2o	1o	1+	1o	1o	1o	9	74.6*	17	16	19	
11	2+	2-	3-	2-	2-	0o	0+	1-	11	2+	2o	2+	2o	1o	0+	0+	0o	10	73.8	16	14	18	
12	0o	1-	0+	0o	1-	1-	0o	0+	3	0+	1o	0o	0o	0+	0o	0+	0o	2	73.7	10	12	18	
13	1-	0+	0+	0+	0+	0o	1-	1-	4	0o	0o	0o	0+	0o	0o	0o	0o	1	75.4	12	15	19	
14	0+	0+	0+	1+	1+	3-	3-	2+	11	1o	0o	0o	0o	0+	2+	2o	2o	7	75.1	13	16	19	
15	4-	3o	6o	5+	6-	4o	3o	3o	76	4-	3+	6+	6+	5o	4+	2+	3-	83	74.7	11	14	19	
16	2+	3-	3-	2o	3+	3o	1+	3-	23	3-	2+	2o	1o	3+	3+	1o	4-	24	73.9	17	21	18	
17	3+	3-	0+	2o	2-	2-	2o	2+	16	4-	3o	1-	2+	2-	1+	2-	3-	20	74.4	20	17	18	
18	1+	2-	2-	1+	2-	2-	2-	2+	12	1+	1+	1+	1o	1+	1+	1+	2+	10	75.8	21	23	20	
19	1o	1-	1-	1+	1+	1o	0+	1-	6	1o	1-	0+	0+	0+	1o	0+	0o	3	76.0	27	28	20	
20	1o	1+	3-	1o	1+	2-	0+	0o	9	1o	2-	2o	2o	1+	1+	0o	0o	8	81.1	39	45	26	
21	0o	1o	1o	1+	1+	2-	2-	1+	8	0o	1-	1+	1o	1-	0+	1+	1-	5	86.9	52	67	32	
22	1o	1-	0+	0+	0+	2-	1o	2-	7	0+	1-	0o	0o	0o	0+	0+	1+	3	83.0	48	56	28	
23	0+	0+	1+	1-	1-	0+	1-	1o	4	0o	0+	1o	0+	0+	0+	0o	0o	2	78.1	40	43	22	
24	1+	1-	2-	2-	3-	2+	2+	2-	14	1o	0+	1+	2+	2-	2-	3-	2+	13	78.9	30	35	23	
25	2-	2+	1o	1o	1+	1+	1+	1-	10	2o	3-	1+	0+	0+	0+	1o	0o	8	80.1	29	34	25	
26	1-	1-	0+	2+	3o	3-	3+	3o	18	0+	0+	0o	2-	3-	3-	2+	3o	13	82.0#	35	36	27	
27	3+	5o	3+	2+	2o	2-	2-	2+	30	4o	5o	5-	3-	2o	2-	2o	3o	41	80.4	23	24	25	
28	1+	1+	2-	2-	2o	1o	1-	1o	10	4-	4+	4+	3-	2+	0+	0+	2-	28	79.5	17	14	24	
29	1o	1o	0+	1-	0+	0+	0+	2-	5	1o	1-	0+	0+	0+	0o	0+	1o	3	77.6	14	17	22	
30	1-	1-	1+	1-	3-	3-	2-	3-	13	1o	1+	1-	0+	2o	2-	1+	3o	11	77.2	12	17	21	
31	2o	3-	1o	1+	2o	3+	3-	3o	19	3-	2o	1-	2-	1+	3o	3-	3-	17	74.5	19	17	18	
Mean									14.8									15.4	76.3	18.5	20.5	20.4	

Daily Average Indices Ap
Jun 1996 - May 1997

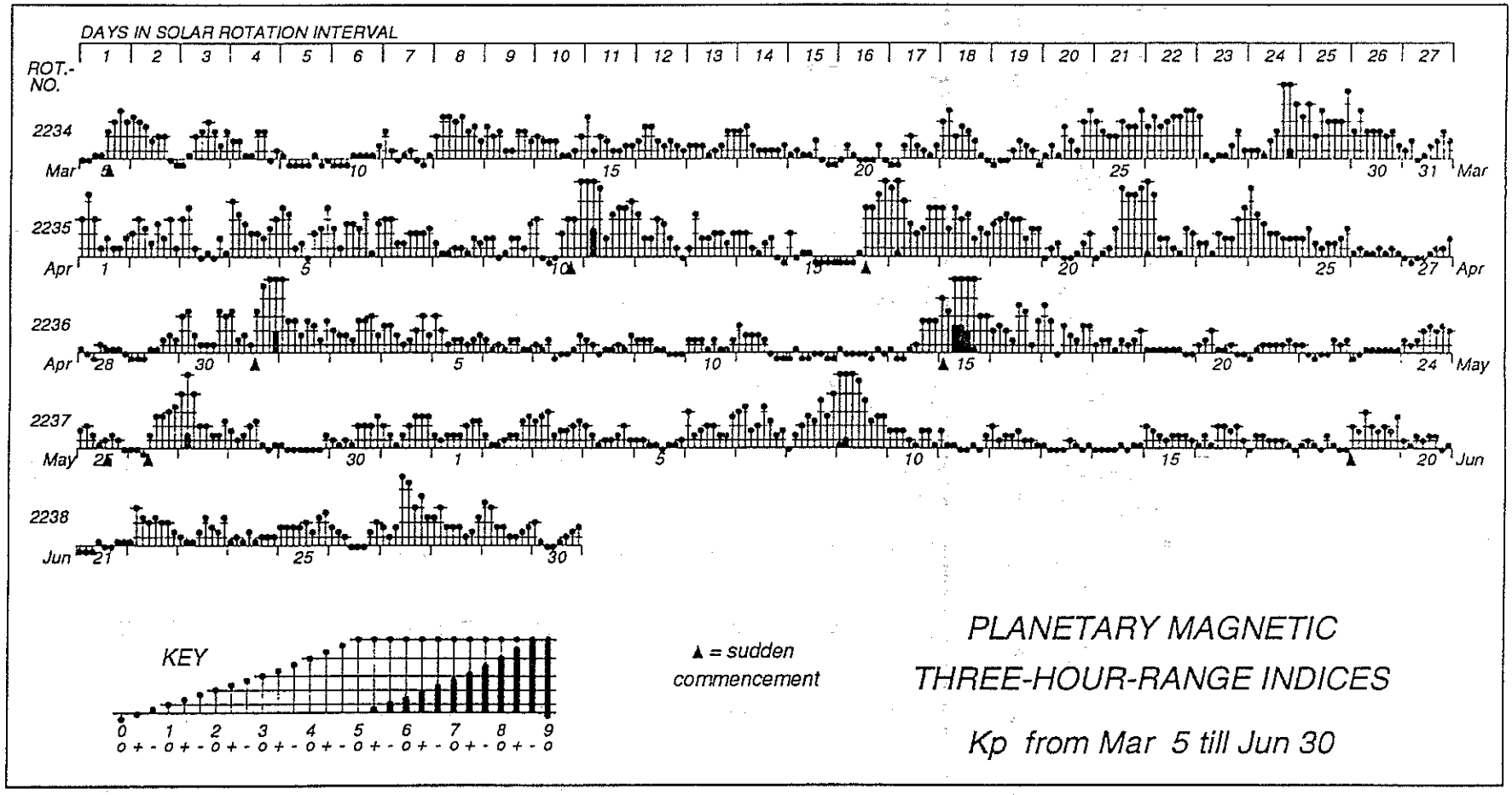


Day	Jun 96	Jul	Aug	Sep	Oct	Nov	Dec	Jan 97	Feb	Mar	Apr	May
1	4	7	12	6	5	3	3	4	5	13	11	29
2	4	6	9	5	10	2	10	5	11	12	9	14
3	4	10	7	3	15	2	8	4	7	7	7	9
4	4	8	5	9	6	10	11	4	4	4	13	8
5	6	10	6	6	3	6	2	4	6	9	11	6
6	14	5	7	5	2	8	1	3	10	8	10	4
7	4	8	5	7	4	4	4	11	4	7	9	3
8	4	10	4	6	10	4	3	8	22	5	4	4
9	4	3	7	8	20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

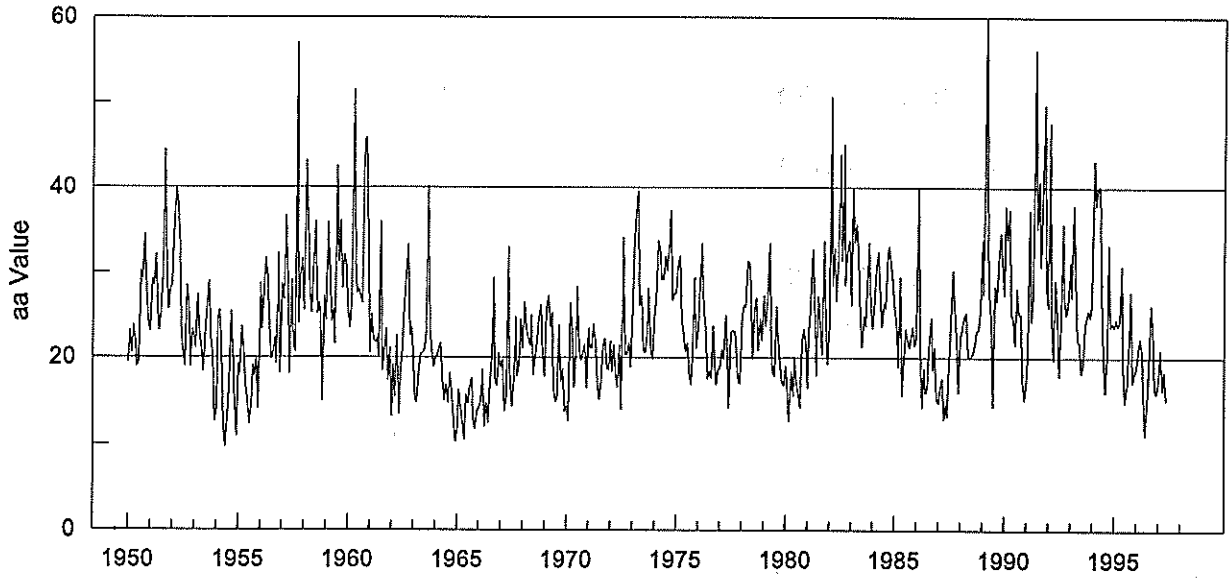
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Gottingen

Kp through May 31, 1997



Monthly Mean aa Index Jan 1950 - May 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								17.6

PLANETARY GEOMAGNETIC ACTIVITY

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

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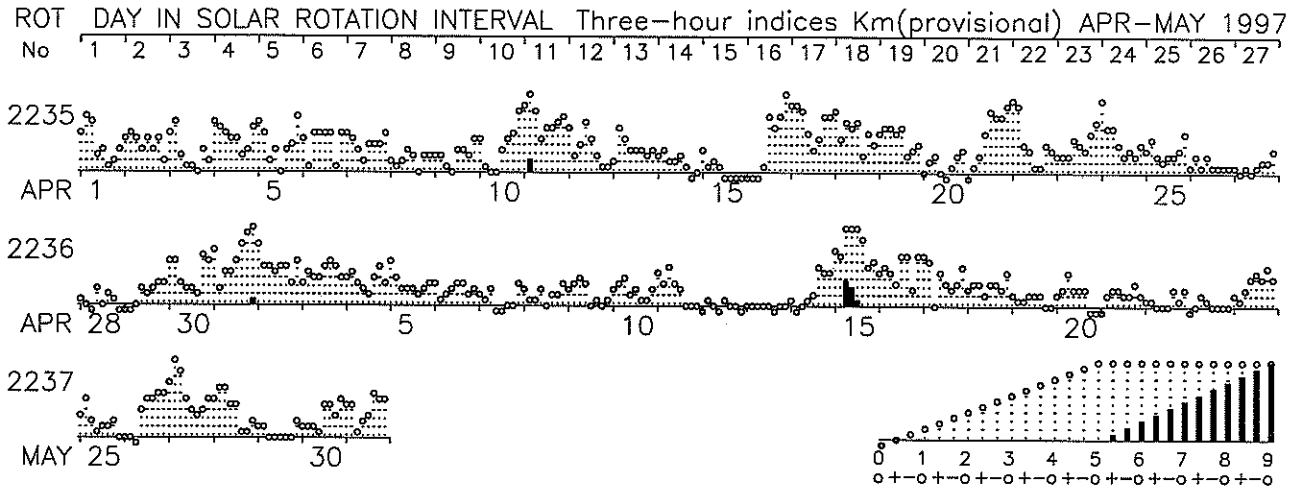
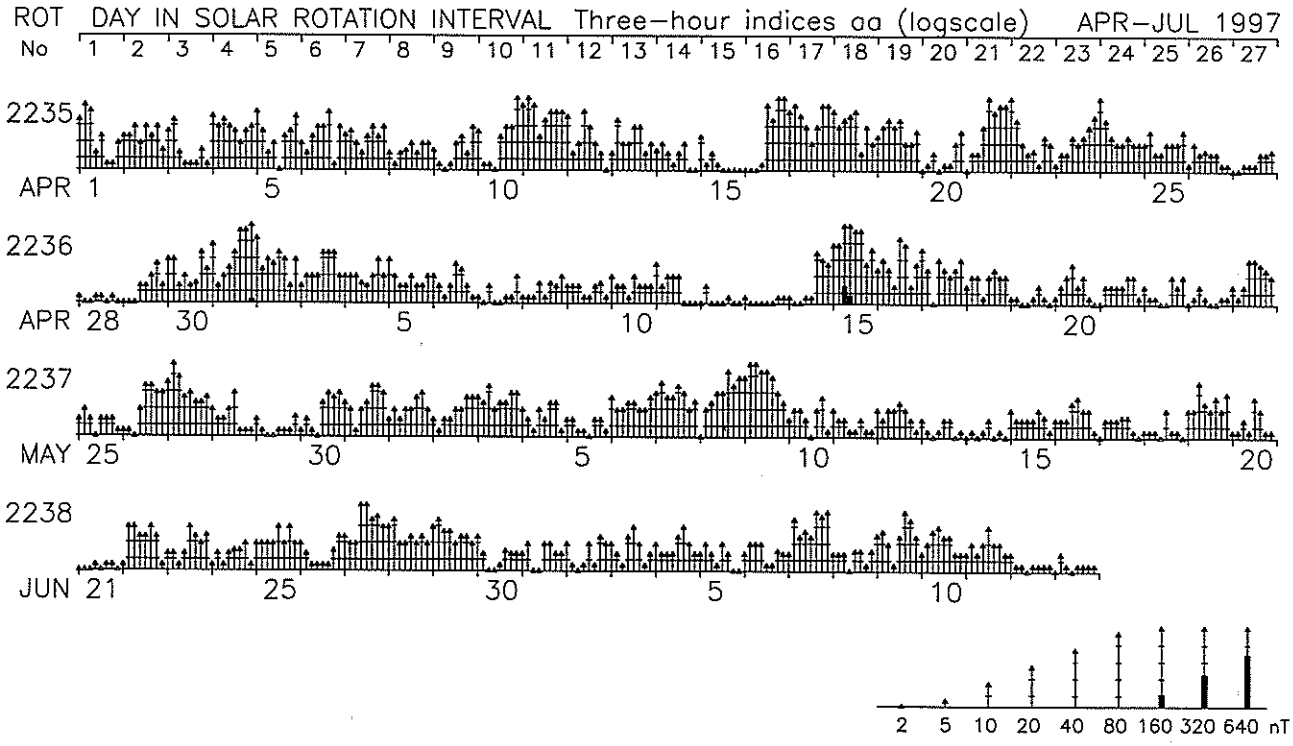


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.



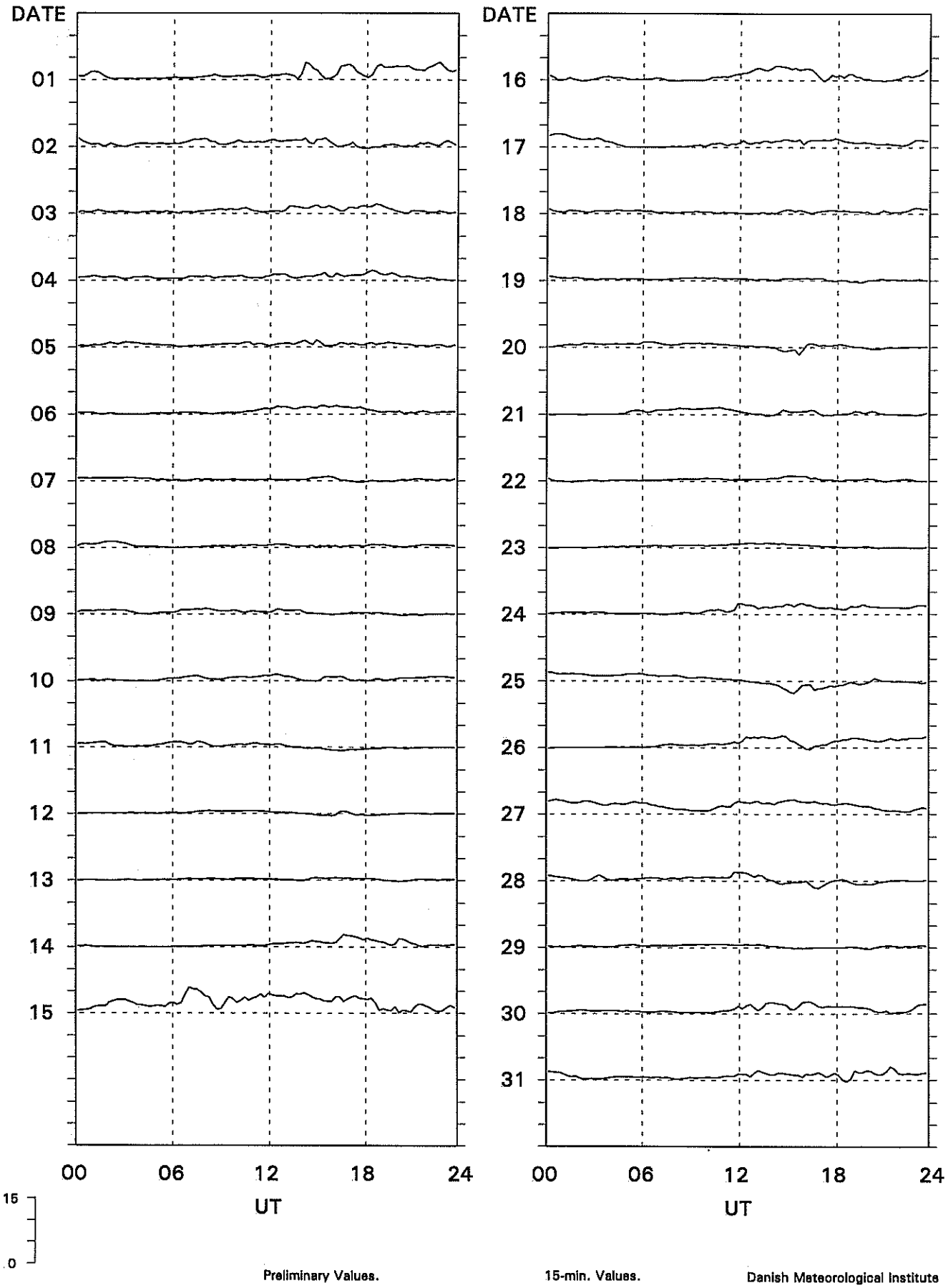
Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

118
May 97

PC-INDEX

Thule

May, 1997



Preliminary Values.

15-min. Values.

Danish Meteorological Institute

WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

MAY 1997

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-22	-17	-14	-12	-11	-7	-9	-18	-17	-16	-13	-11	-6	5	7	-3	2	-15	-16	-31	-46	-54	-51	-56
2	-59	-55	-53	-54	-52	-52	-48	-46	-38	-32	-32	-31	-29	-30	-27	-24	-27	-26	-27	-27	-25	-21	-21	-21
3	-19	-19	-20	-20	-22	-21	-20	-21	-21	-26	-28	-26	-19	-16	-23	-26	-29	-27	-28	-29	-28	-25	-22	-22
4	-21	-21	-21	-23	-20	-20	-23	-24	-19	-17	-16	-15	-14	-18	-17	-17	-18	-22	-22	-23	-24	-22	-15	-12
5	-11	-12	-6	-7	-11	-11	-11	-11	-15	-17	-18	-21	-17	-15	-15	-17	-16	-16	-16	-18	-19	-18	-15	-14
6	-13	-10	-8	-6	-5	-8	-8	-10	-8	-8	-10	-14	-15	-16	-14	-14	-14	-17	-22	-21	-20	-18	-18	-17
7	-18	-18	-16	-12	-11	-11	-11	-10	-7	-6	-6	-6	-5	-2	0	0	-3	-5	-4	-3	-1	-4	-6	-7
8	-6	-6	-4	-4	-2	-1	-1	-5	-7	-11	-11	-9	-6	-5	-3	-2	-4	-3	-2	-3	-2	0	2	0
9	-1	0	-2	-7	-6	-4	-5	-12	-14	-13	-11	-8	-9	-10	-11	-10	-8	-8	-11	-11	-11	-9	-5	-5
10	-4	-3	-2	0	3	1	-6	-7	-3	0	0	-2	-6	-11	-10	-7	-7	-7	-5	-5	-2	1	-3	-8
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16	-35	-21	-21	-31	-38	-35	-30	-35	-38	-39	-35	-32	-32	-42	-59	-59	-58	-50	-46	-42	-38	-35	-34	-35
17	-27	-24	-36	-41	-46	-49	-47	-47	-43	-35	-32	-34	-29	-31	-30	-32	-32	-36	-36	-34	-33	-29	-26	-25
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29	-12	-10	-10	-11	-10	-10	-9	-9	-8	-8	-7	-7	-7	-8	-8	-8	-7	-6	-4	-3	-4	-5	-5	-2
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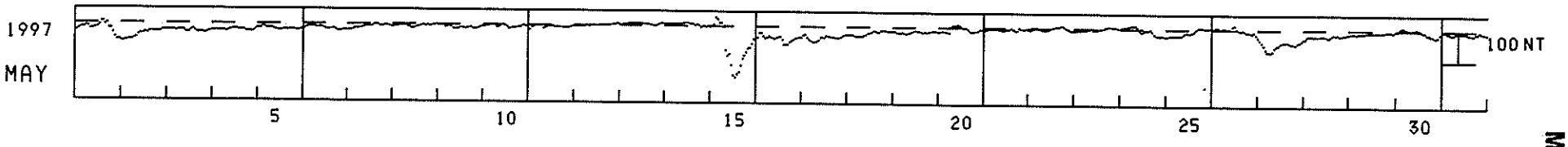

P R I N C I P A L M A G N E T I C S T O R M S

MAY 1997

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	Ranges D K (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
FRD	49.4N	01	12--	..	..	..	..	01(8) 02(1)	5	21	128	61	03	06
UJJ	13.6N	01	0800	..	..	..	..		-	5	60	23	02	22
NGP	11.3N	01	0800	..	..	..	..		-	5	84	26	02	22
ABG	09.4N	01	0800	..	..	..	..	01(6,7)	4	5	61	38	02	22
HYB	07.6N	01	1242	SC	0.2	15	- 1	01(6,7,8)	4	5	70	27	04	22
PND	02.0N	01	0800	..	..	..	..		-	5	63	47	02	22
ETT	00.7S	01	1241	SC	- 0.1	16	11		-	--	103	38	02	22
TRD	01.1S	01	0800	..	..	..	..		-	4	105	46	02	22
HER	33.6S	01	12--	..	..	..	..	01(8)	5	22	72	85	02	01
AMS	46.8S	01	13--	..	..	..	..	01(8)	5	23	65	45	02	05
CZT	51.5S	01	13--	..	..	..	..	01(8)	5	23	96	90	02	06
PAF	57.2S	01	1243	SC	2.4	5.5	0.9	01(8)	7	60	320	142	02	18
FRD	49.4N	15	0159	SC	2.5	40	6	15(4)	6	34	168	81	17	06
BJI	28.8N	15	0158	SC	2.0	28	0	15(3)	7	19	205	44	15	24
KRC	16.4N	15	0100	SC	1.0	40	18	15(3,4)	7	7	272	71	16	07
UJJ	13.6N	15	0158	SC	0.2	35	- 7		-	6	225	48	17	17
NGP	11.3N	15	0158	SC	0.5	34	- 2		-	7	269	55	17	17
ABG	09.4N	15	0158	SC	- 0.2	30	- 1	15(3,6)	6	6	--	61	17	17
HYB	07.6N	15	0201	SC	0.4	33	- 3	15(3,4,5)	7	7	283	30	16	21
PND	02.0N	15	0158	SC	0.4	34	25		-	5	292	111	17	17
ETT	00.7S	15	0200	SC	0.3	34	29		-	--	332	118	17	17
TRD	01.1S	15	0158	SC	0.4	38	- 48		-	3	346	162	17	17
HER	33.6S	15	0200	SC	3	21	20	15(3,4)	5	28	191	118	16	04
AMS	46.8S	15	0158	SC	4	10	- 11	15(3,4,5)	5	25	182	133	15	22
CZT	51.5S	15	0158	SC	4	12	- 5	15(3,5)	5	31	164	122	15	22
PAF	57.2S	15	0158	SC*	6.2*	12.7	4.8	15(4,5)	7	55	317	125	16	09
HYB	07.6N	20	0559	SC	- 0.1	21	- 2		-	--	--	--	--	--
ETT	00.7S	20	0559	SC	- 0.2	34	20		-	--	--	--	--	--
NGP	11.3N	26	0900	..	..	..	..		-	5	82	19	27	23
ABG	09.4N	26	0900	..	..	..	..	26(8) 27(2) 31(6)	4	5	68	34	27	23
HYB	07.6N	26	0958	SC	- 0.2	6	- 1	26(8) 27(2,3)	4	5	71	19	27	23
PND	02.0N	26	0900	..	..	..	..		-	4	86	43	27	23
ETT	00.7S	26	0957	SC	- 0.1	9	9		-	--	92	38	27	18
TRD	01.1S	26	0900	..	..	..	..		-	3	121	48	27	23

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

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

MAY 1997

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
01	1243	A: HRB BJI TEN	02	0803-0812	BDV
		B: WNG DOU NAG SPT* HYB ETT			
		C: NGK BDV CLF GCK MMB EBR* COI KAK HTY KNY QUE LNP			
15	0159	A: WNG DOU HRB NAG GCK EBR* COI* BJI SPT* HTY QUE TEN LNP HYB ETT HER			
		B: SOD* NUR NGK BDV* CLF MMB FRD KAK KNY			
20	0601	A: COI BJI ETT			
		B: SOD* SPT TEN LNP HYB			
		C: EBR			
25	1434	B: WNG DOU HRB			
		C: NGK BDV BJI			
26	0957	A: BJI			
		B: WNG HRB TEN			
		C: NGK BDV LNP HYB ETT			

REPORTING OBSERVATORIES (up to the 3rd of July 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

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: 1997-573-001/29003

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."