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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
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FEBRUARY 1997 NUMBER 630 - Part I

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Data for December 1996, January 1997 and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 630

(Issued in Two Parts)

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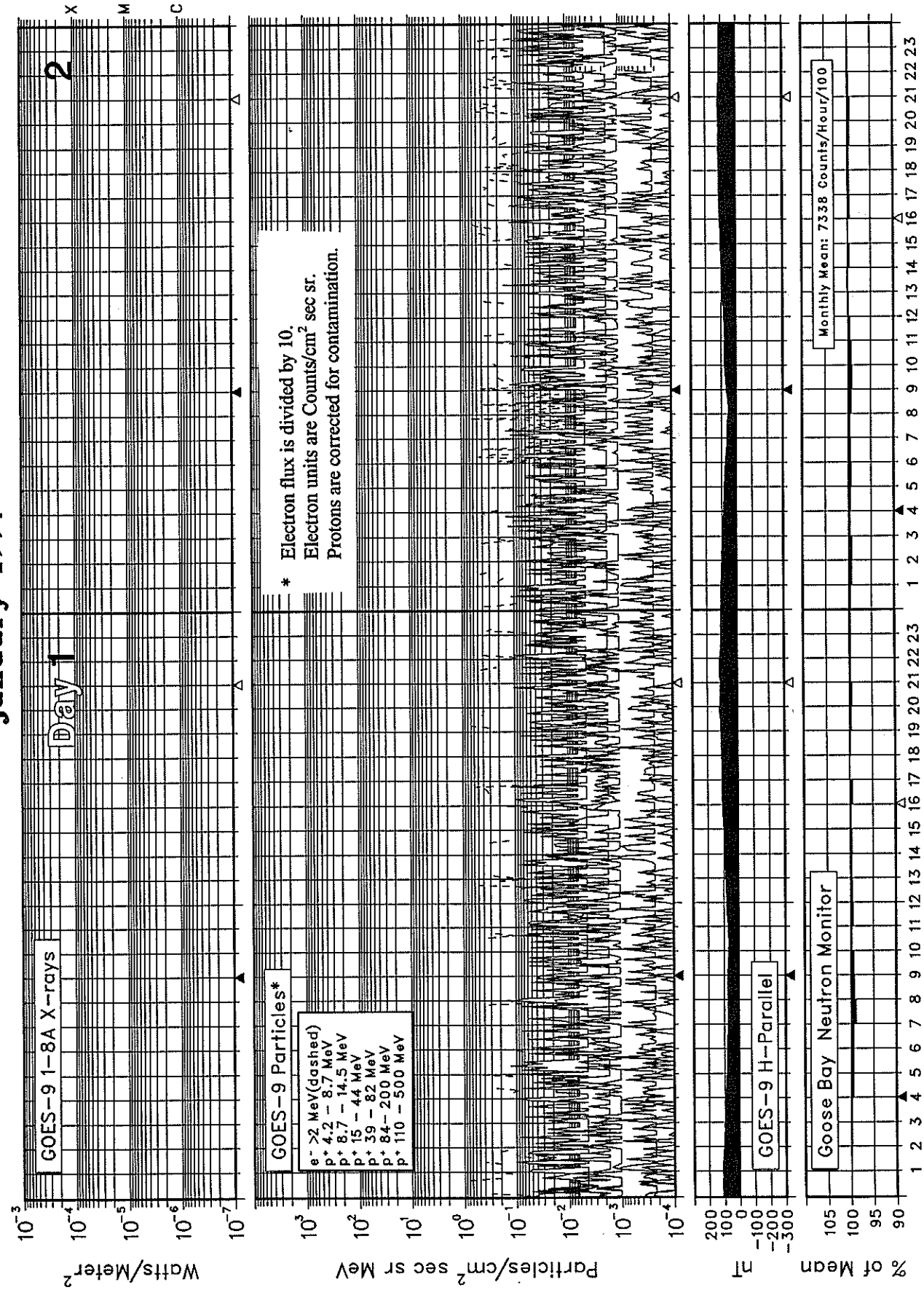

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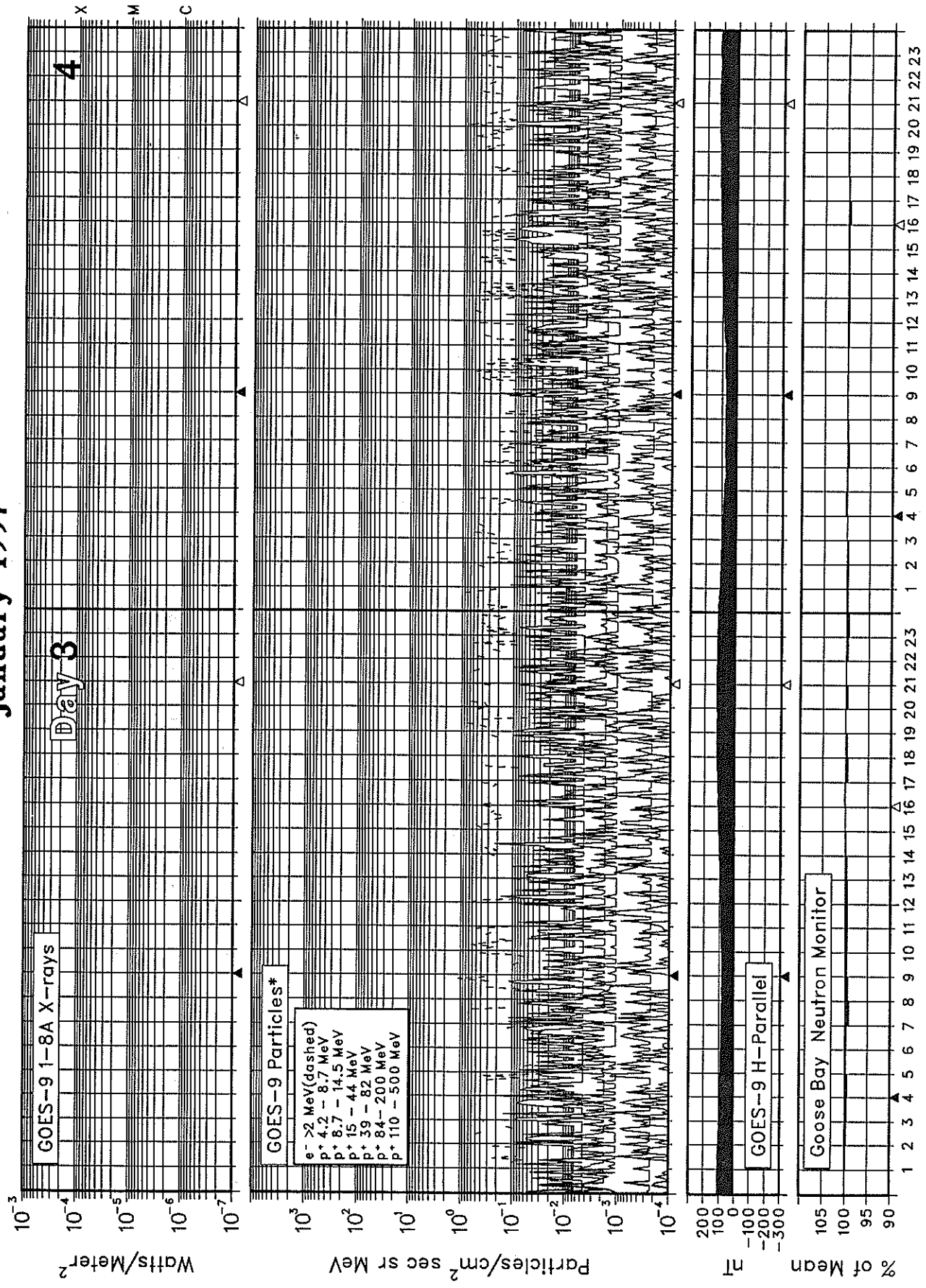
January 1997



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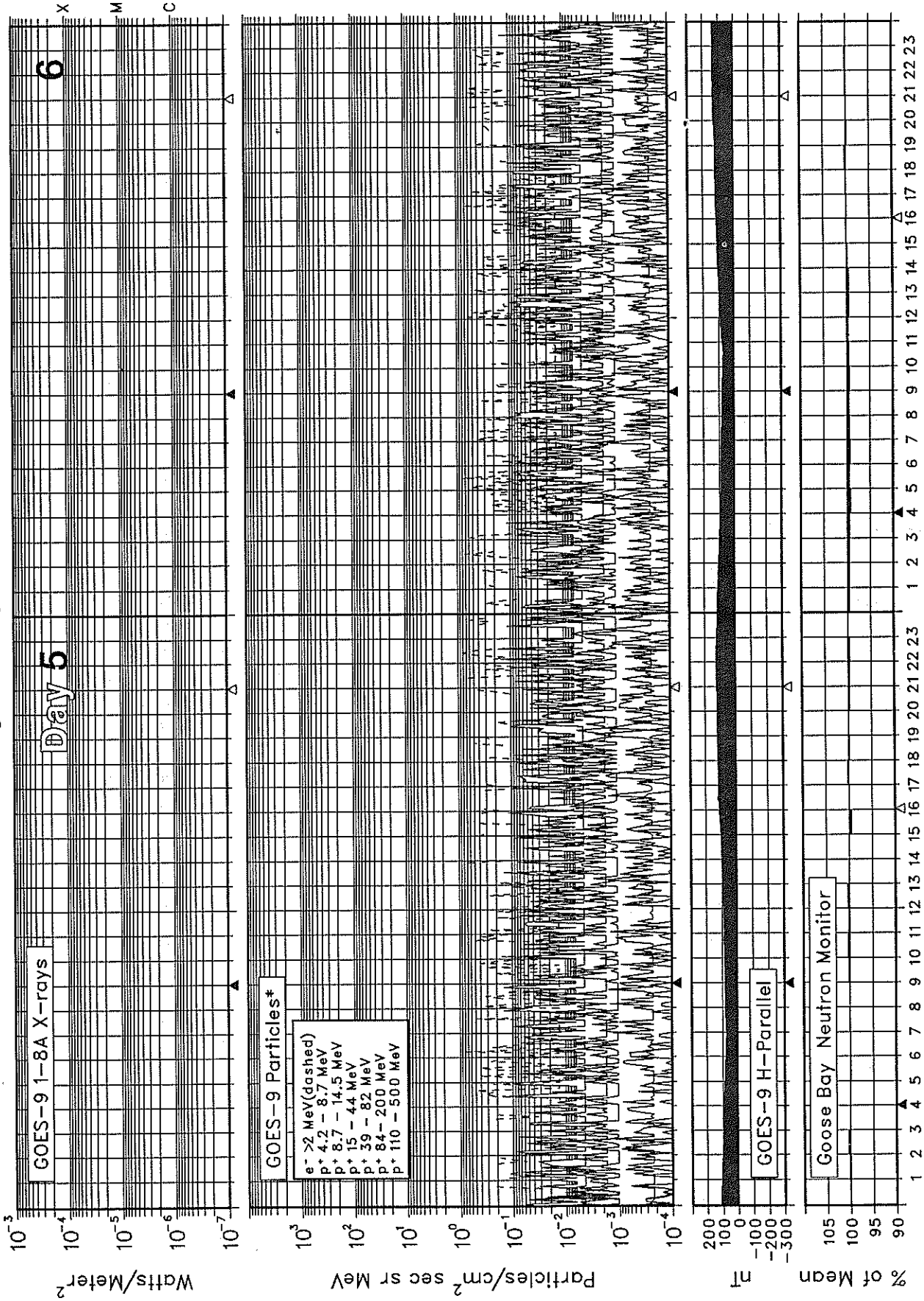

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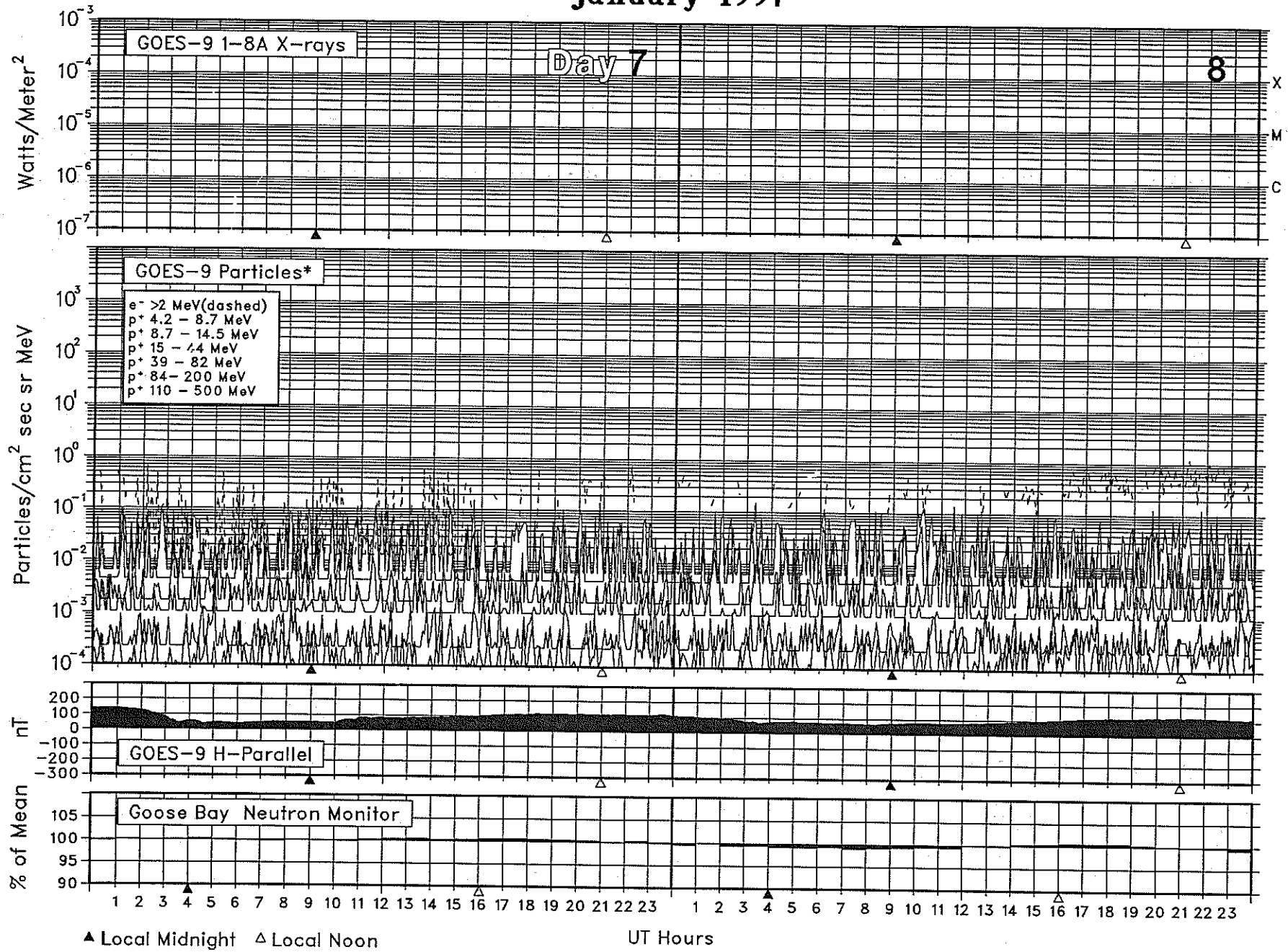

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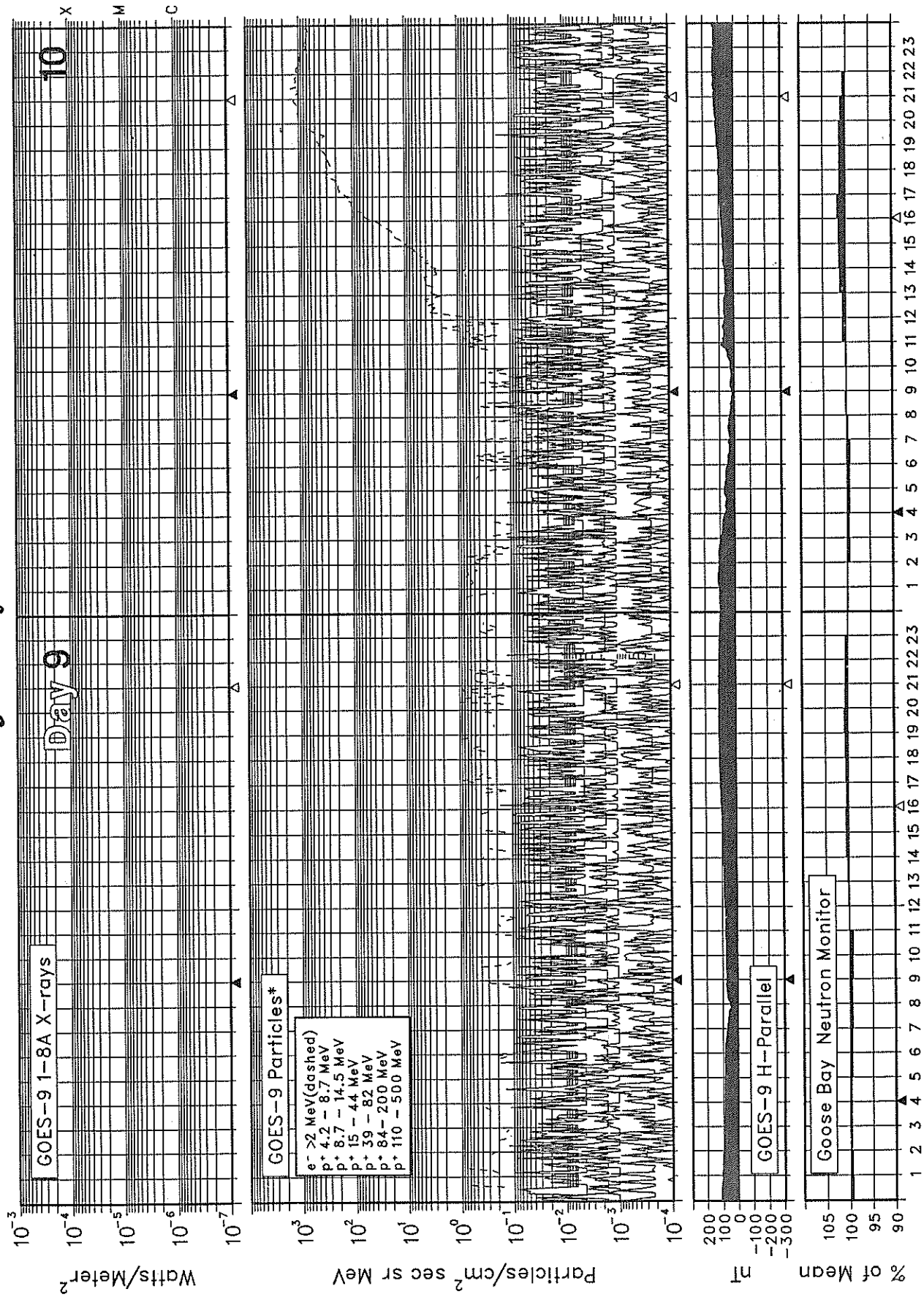
SOLAR-TERRESTRIAL ENVIRONMENT

January 1997



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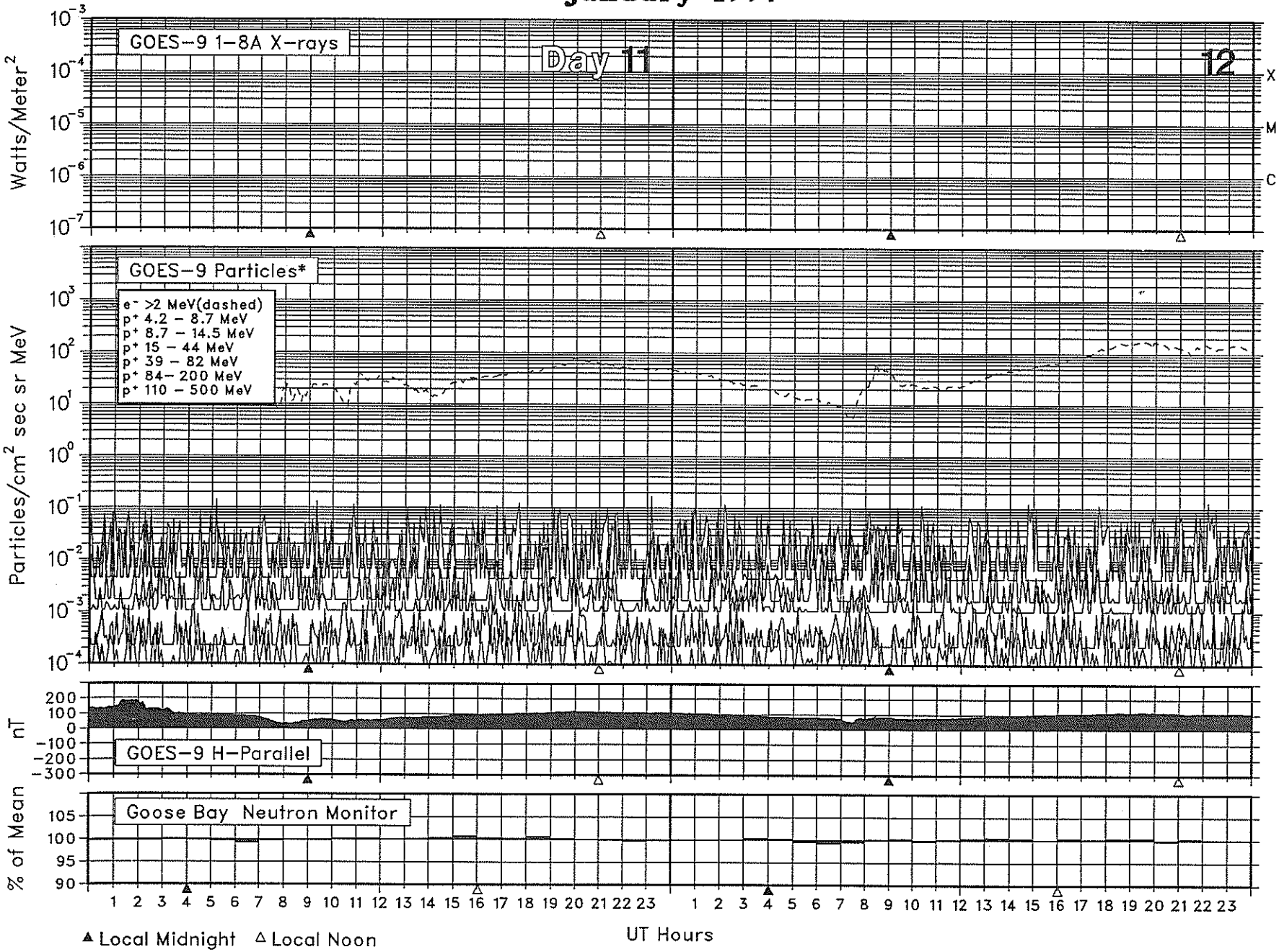
January 1997



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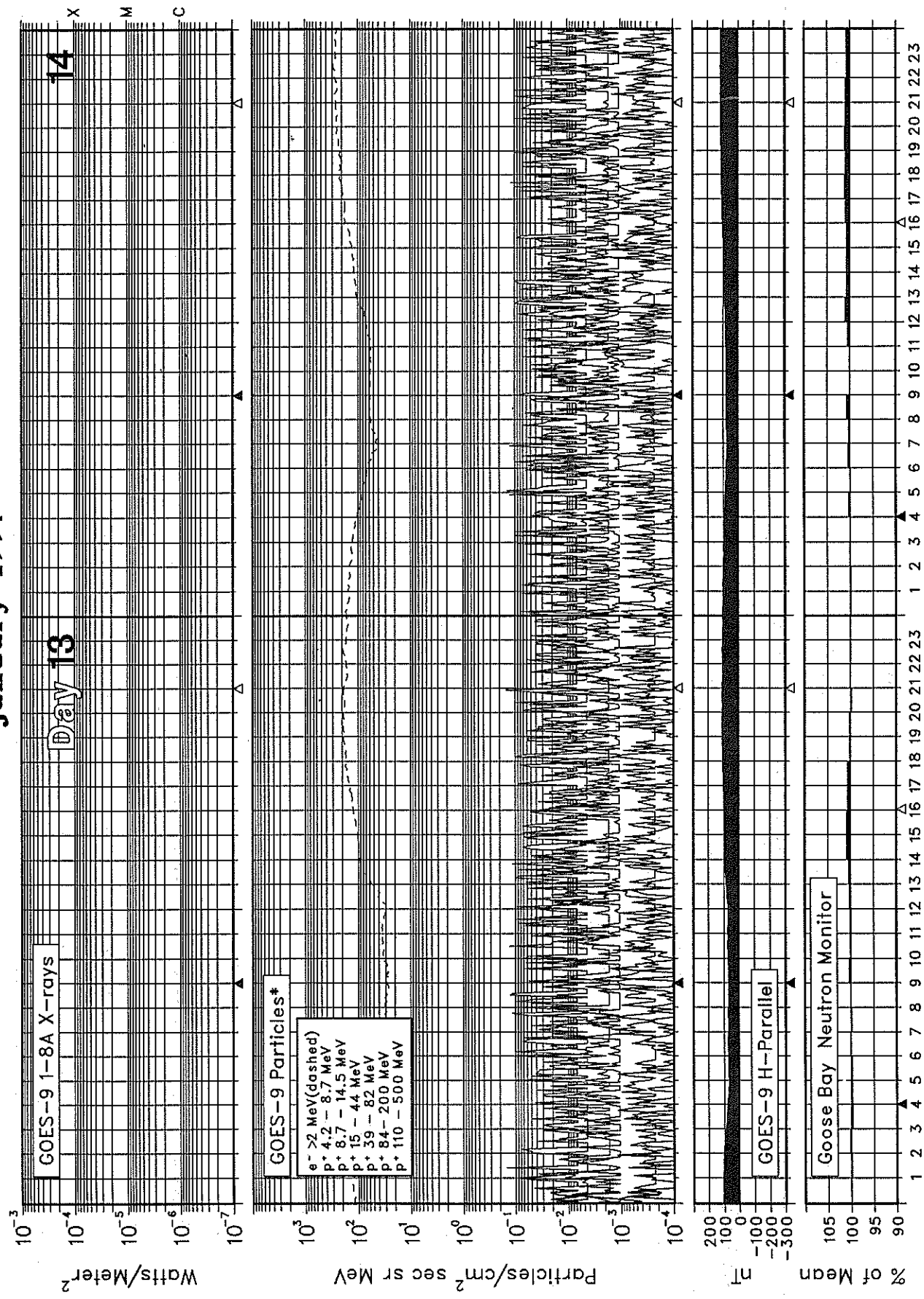

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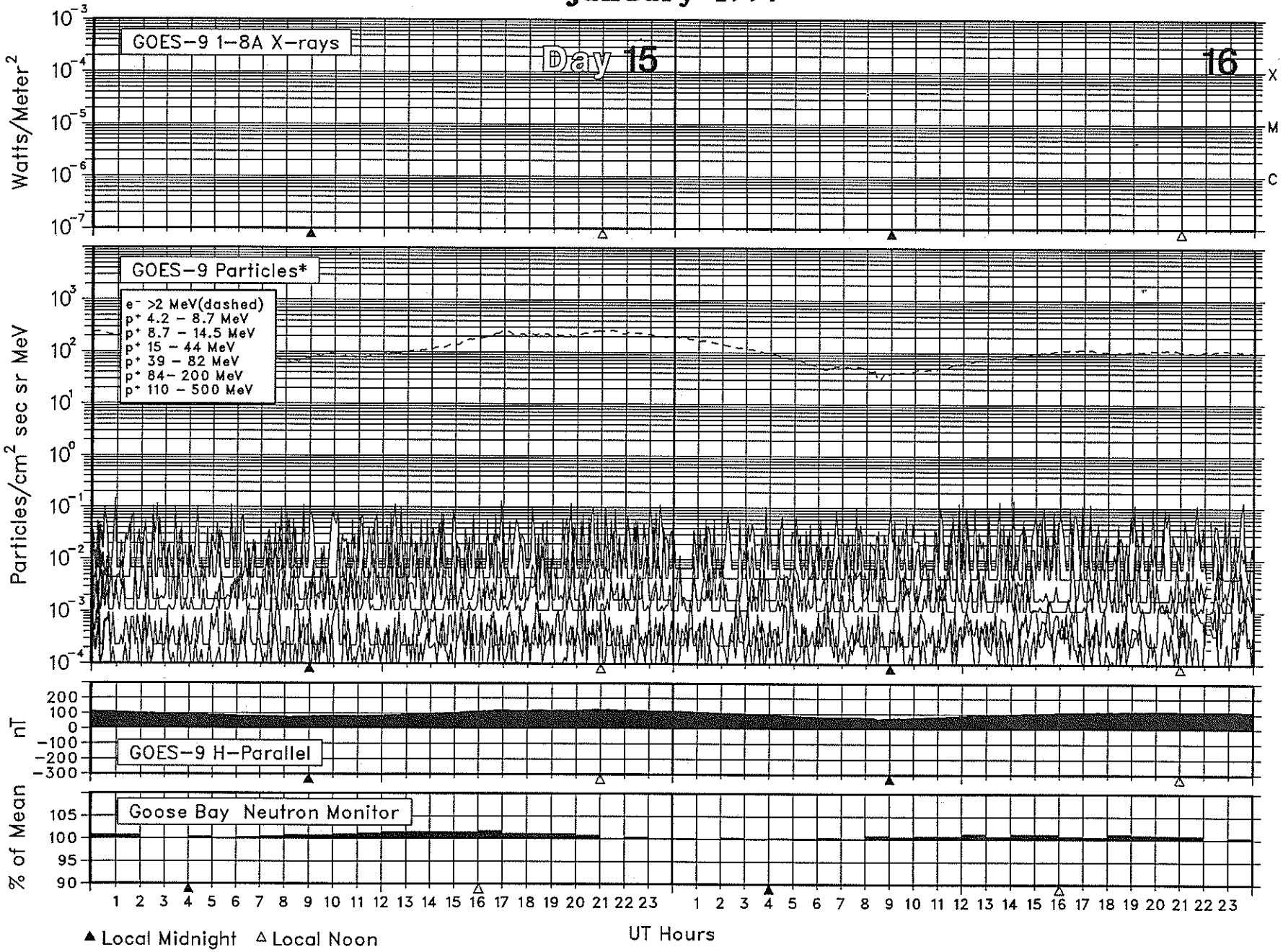
January 1997



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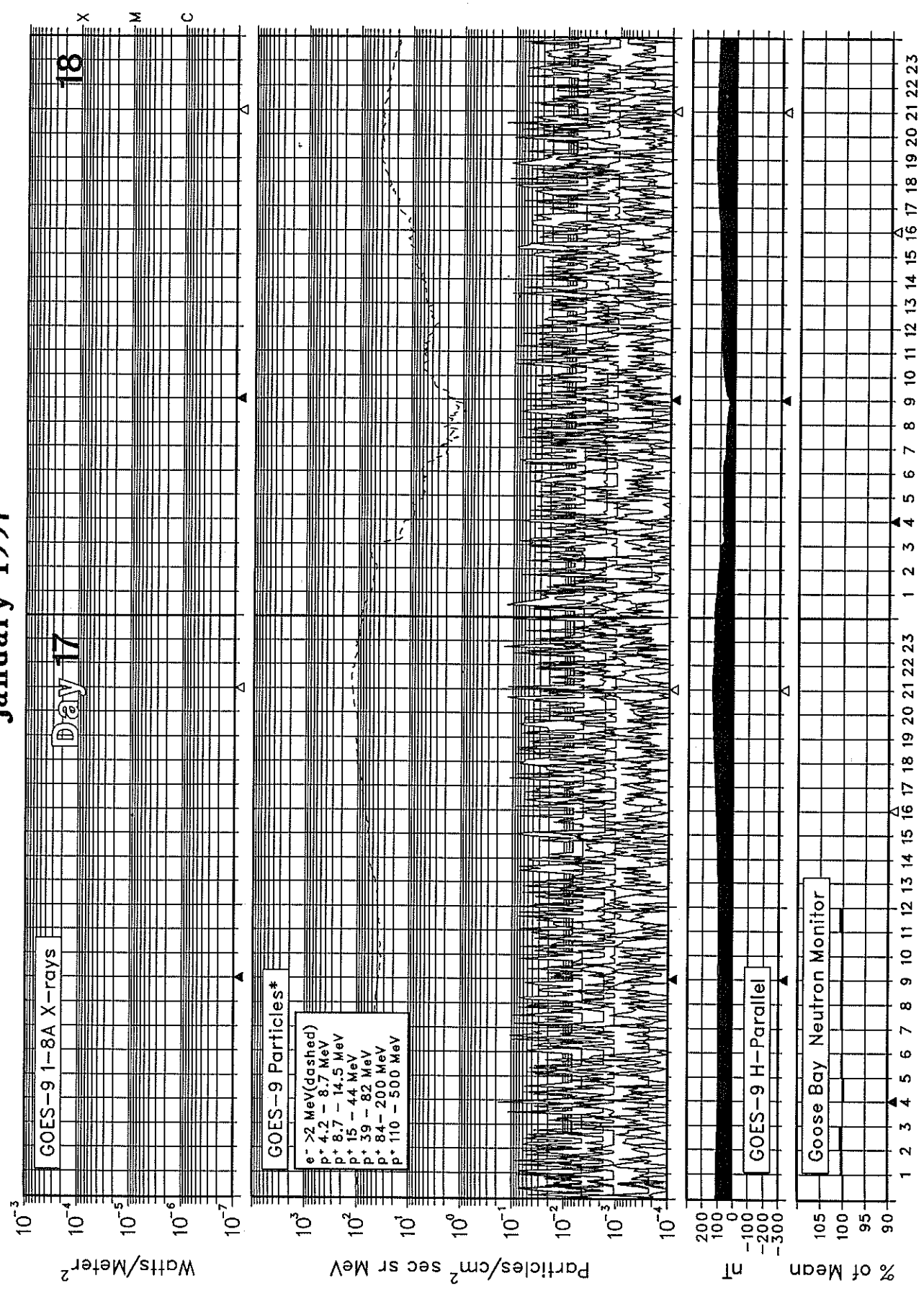

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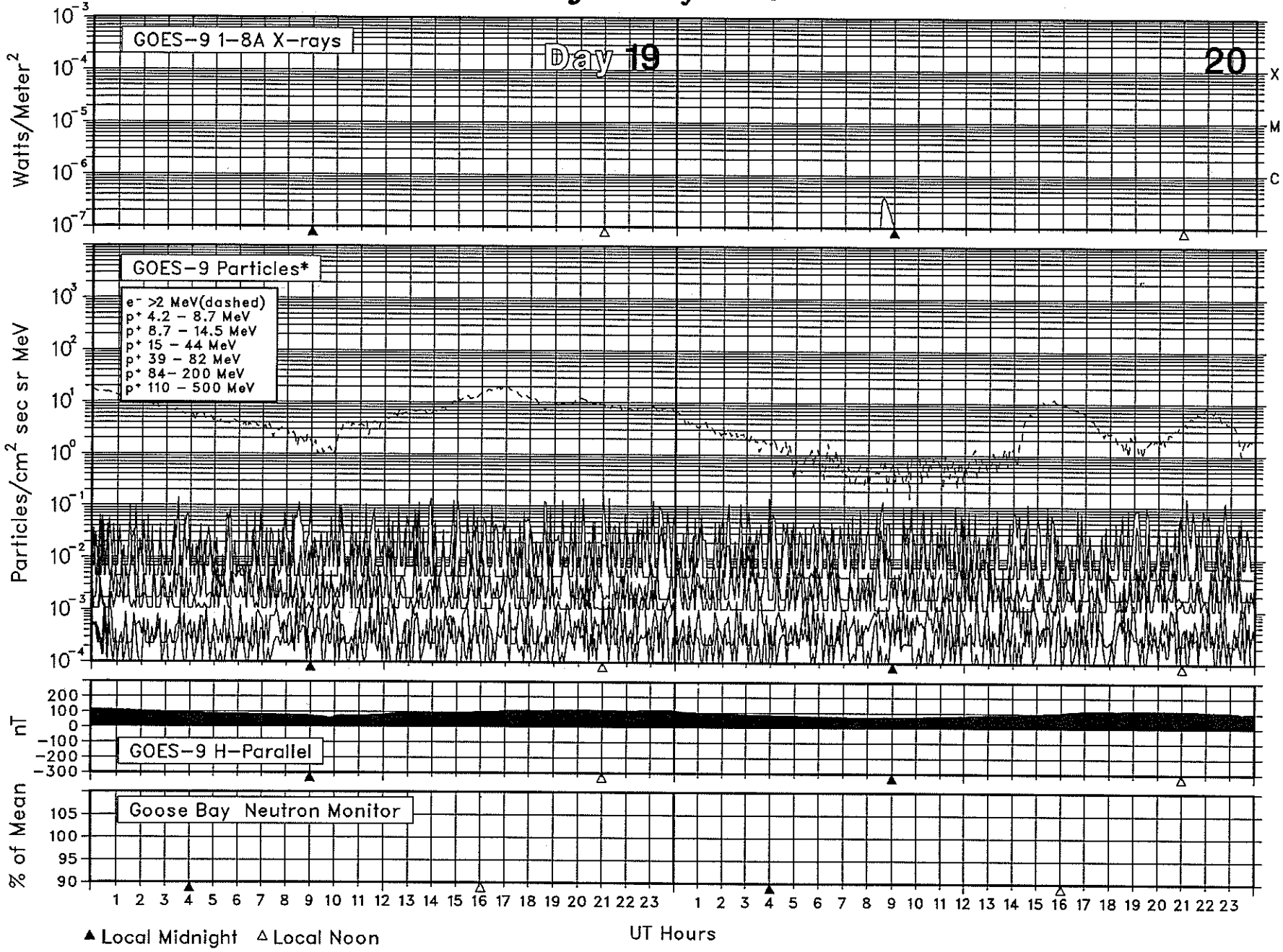
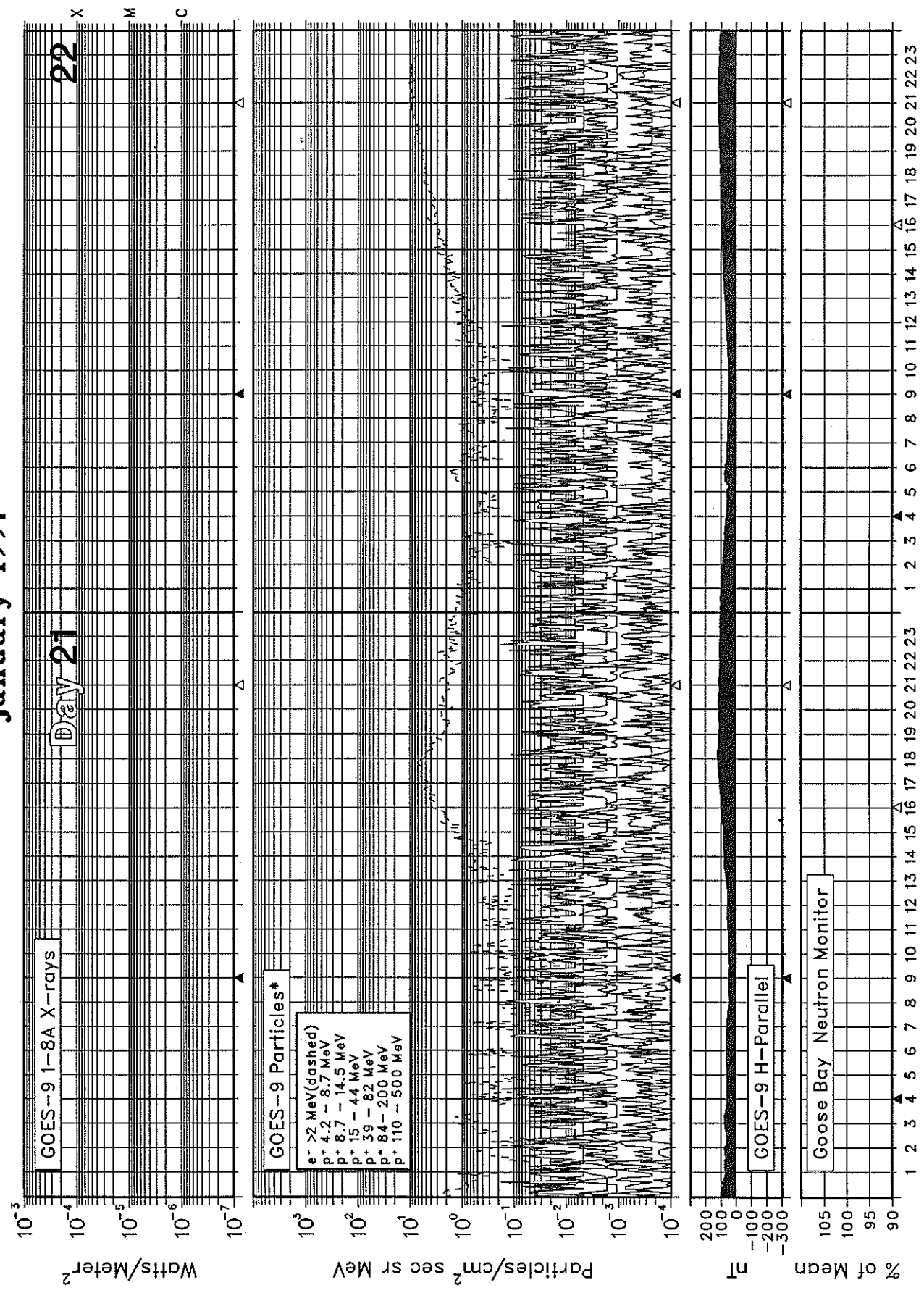
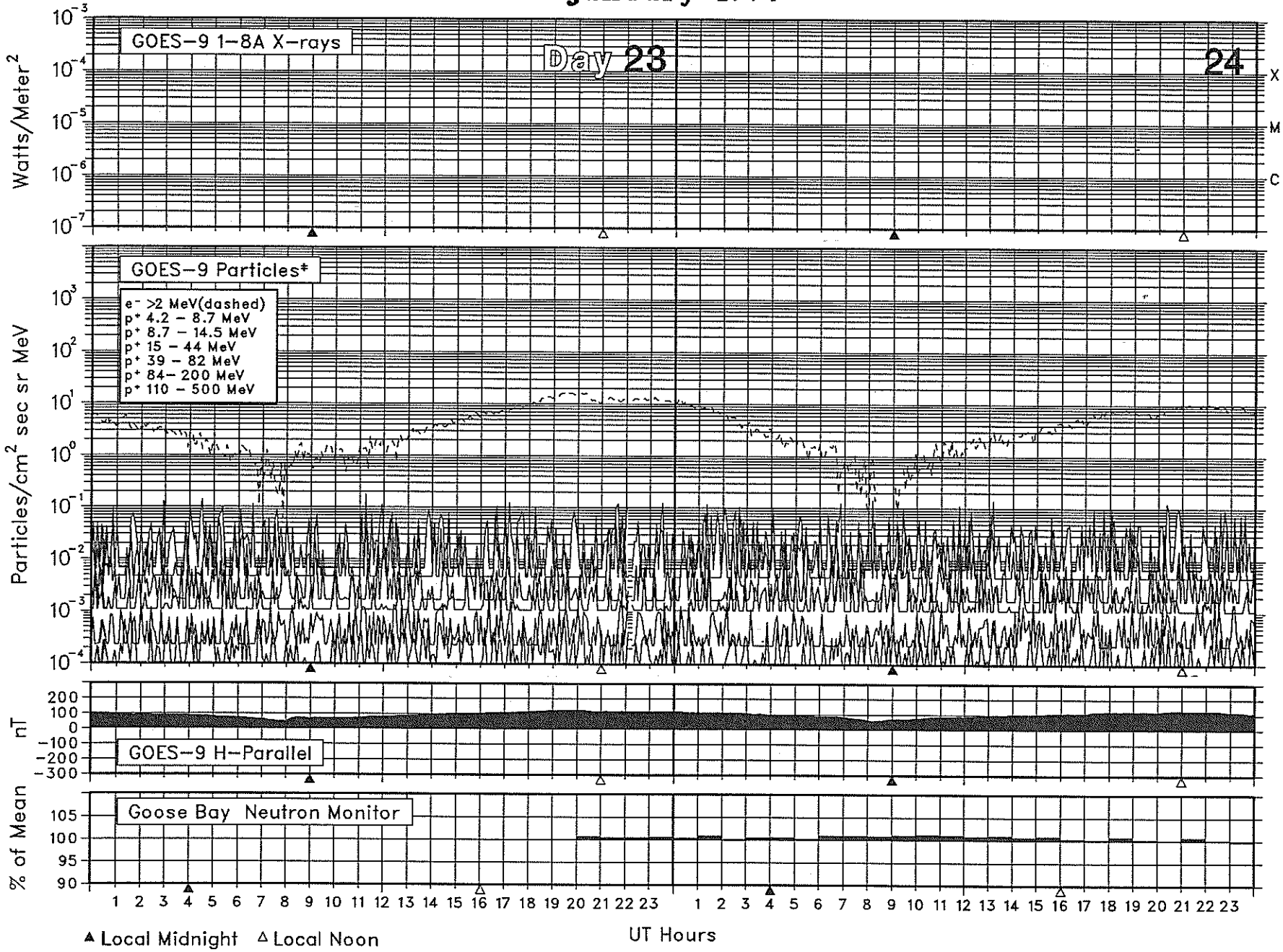



SOLAR-TERRESTRIAL ENVIRONMENT
January 1997
Day 21
22
GOES-9 1-8A X-rays
X
M
C
Watts/Meter²
GOES-9 Particles*
e⁻ >2 MeV(dashed)
p⁺ 4.2 - 8.7 MeV
p⁺ 8.7 - 14.5 MeV
p⁺ 15 - 44 MeV
p⁺ 39 - 82 MeV
p⁺ 84 - 200 MeV
p⁺ 110 - 500 MeV
Particles/cm² sec sr MeV
GOES-9 H-Parallel
nT
Goose Bay Neutron Monitor
% of Mean
UT Hours
▲ Local Midnight △ Local Noon

SOLAR-TERRESTRIAL ENVIRONMENT

January 1997



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Jan 97

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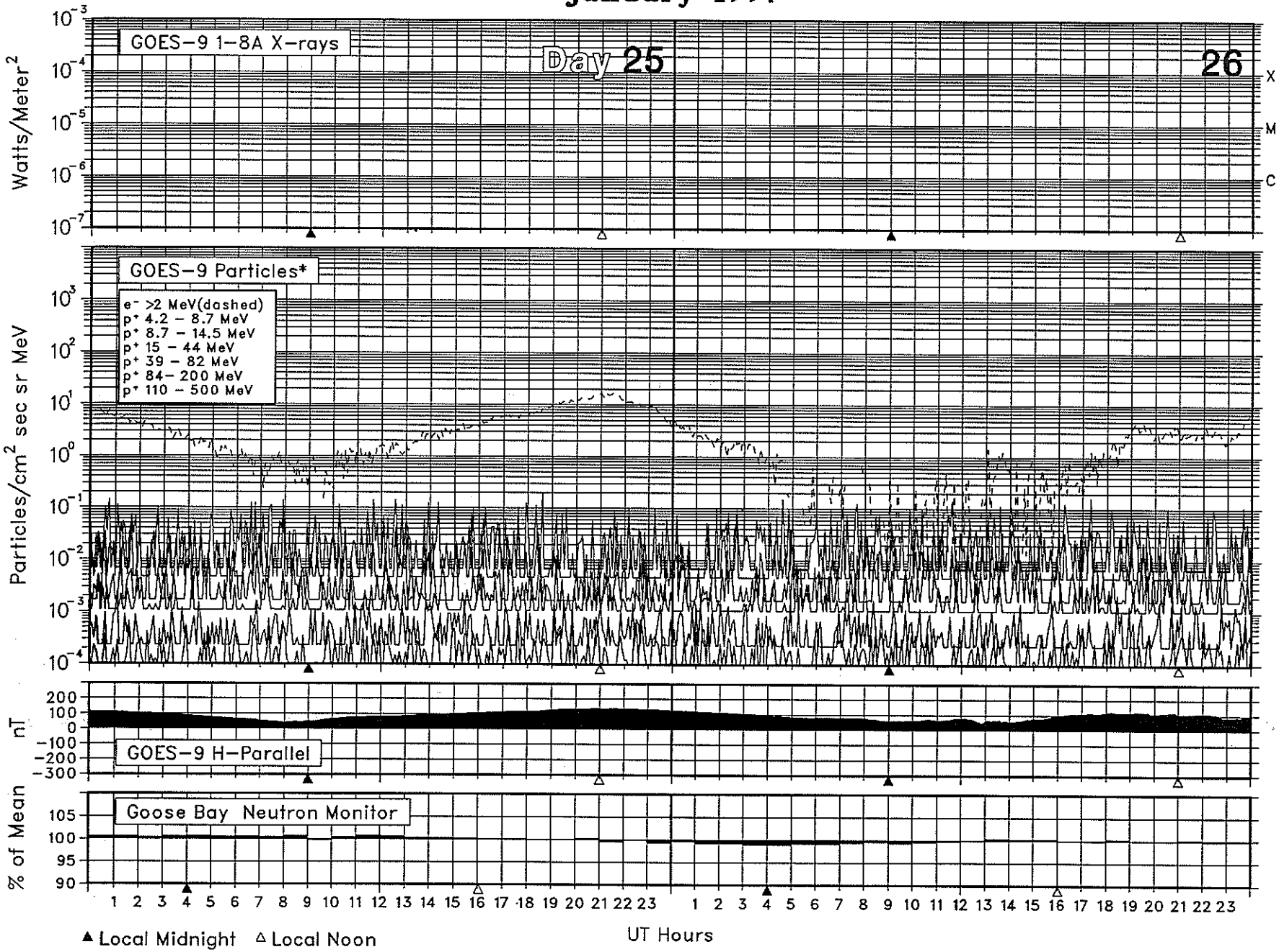

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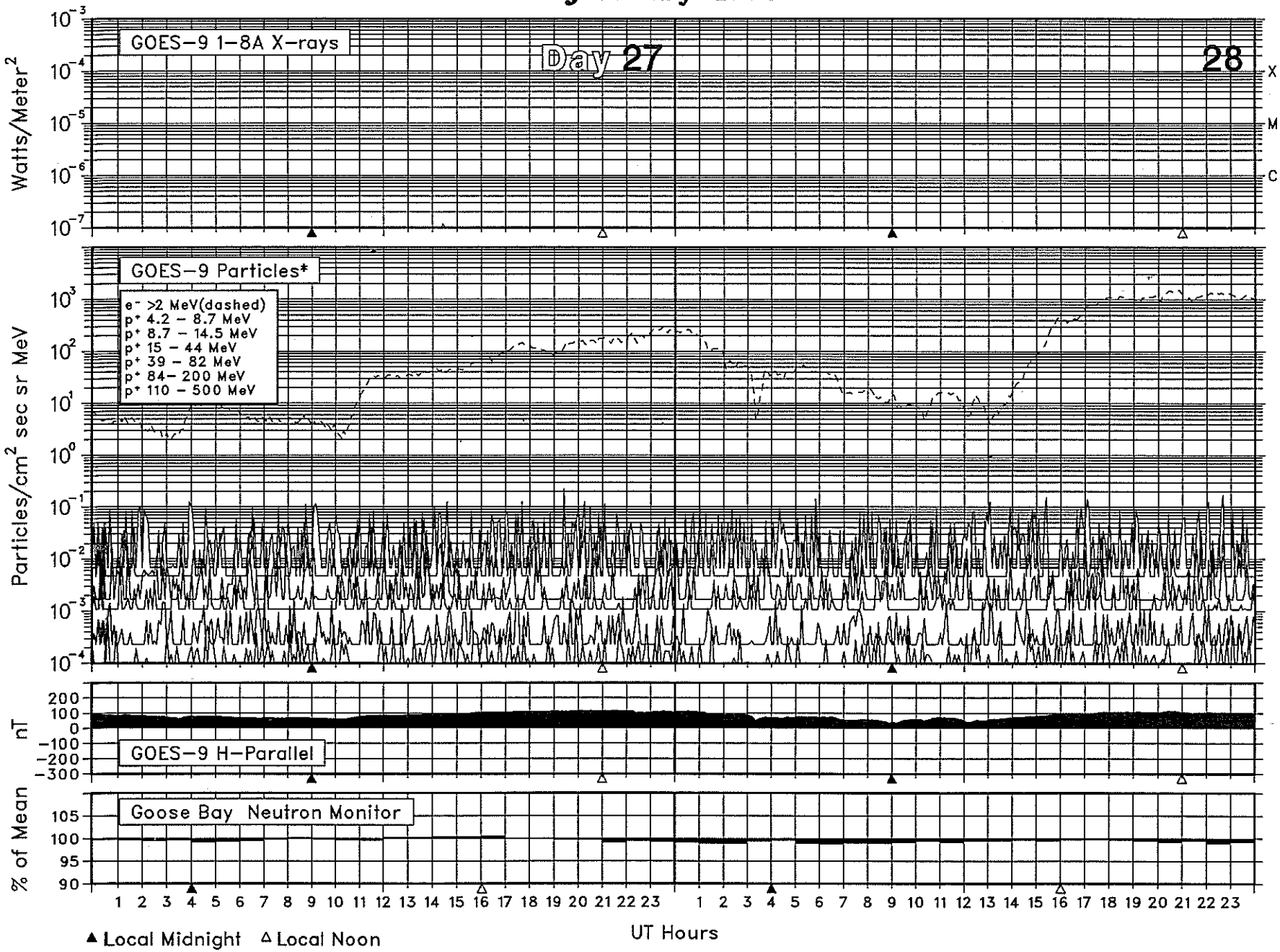

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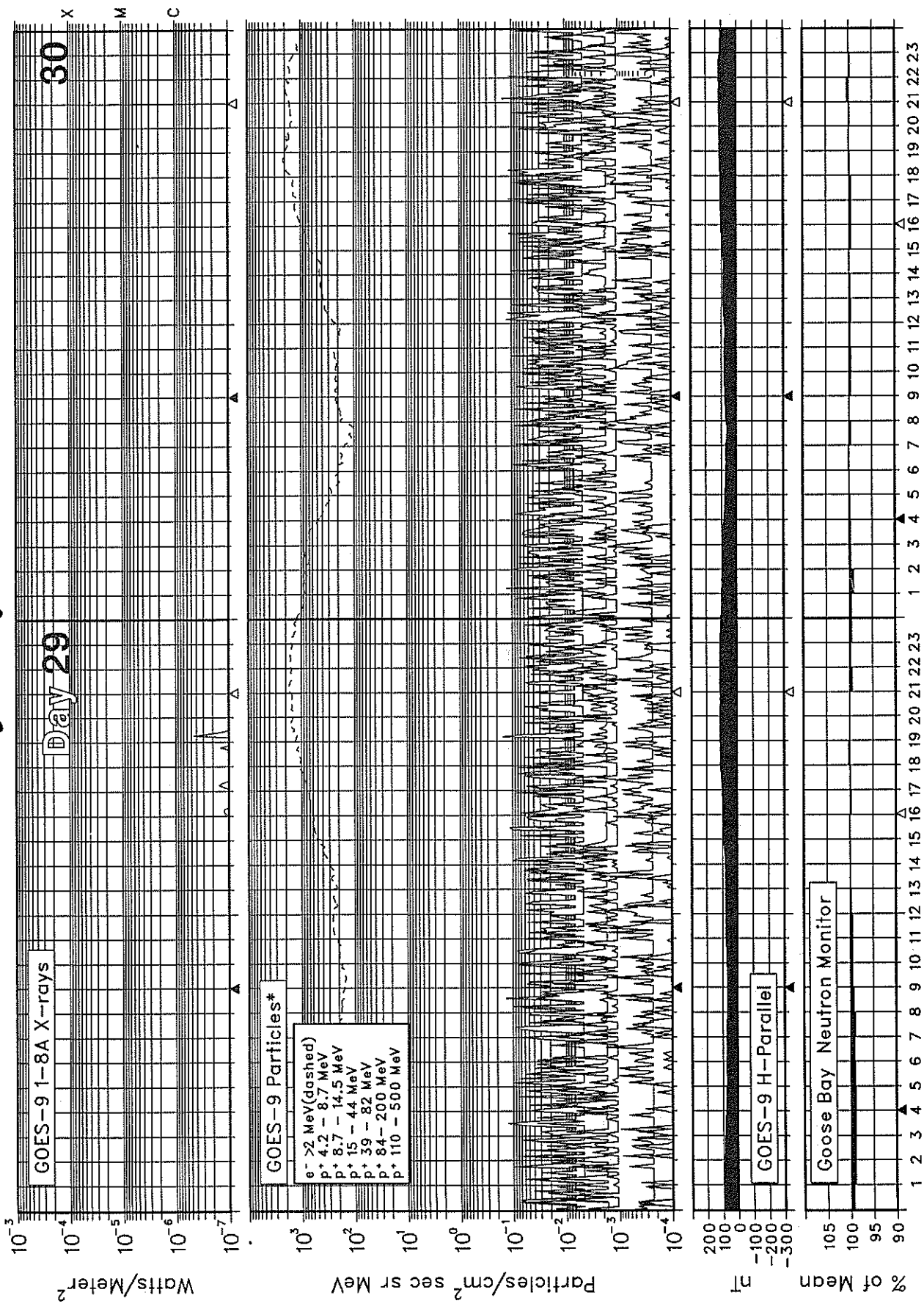
January 1997



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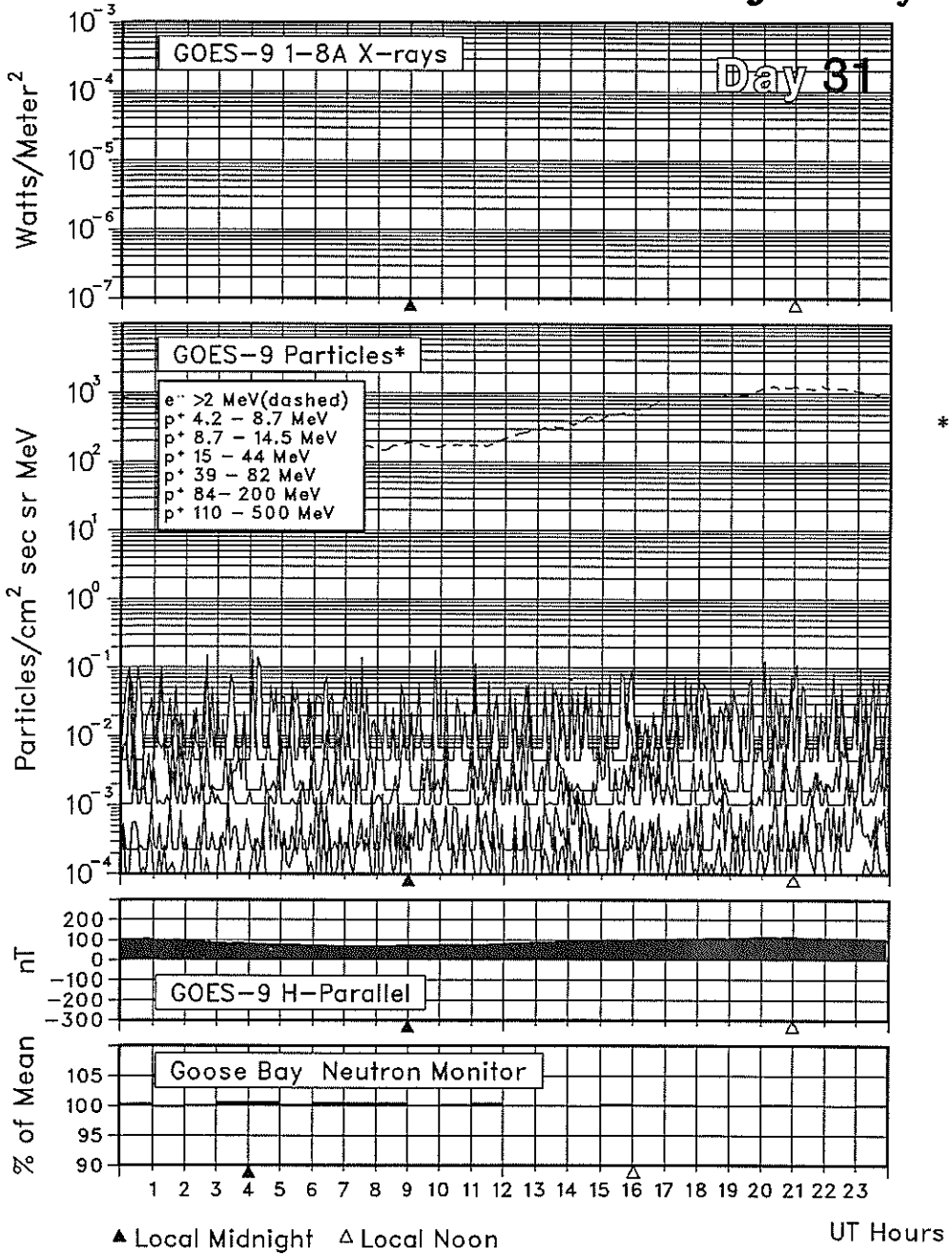
January 1997



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

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

JANUARY 1997

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
001	01	31	0	72	3			0	0	0	01		SOL: Quiet
								0	0	0	01		MAG: Quiet
								0	0	0	01		PRO: Quiet
002	02	01	0	72	1			0	0	0	02		SOL: Quiet
								0	0	0	02		MAG: Quiet
								0	0	0	02		PRO: Quiet
003	03	02	0	72	4			0	0	0	03		SOL: Quiet
								0	0	0	03		MAG: Quiet
								0	0	0	03		PRO: Quiet
004	04	03	0	73	2			0	0	0	04		SOL: Quiet
								0	0	0	04		MAG: Quiet
								0	0	0	04		PRO: Quiet
005	05	04	13	74	2	S02	W05	0	0	0	05	Q	SOL: Quiet
								0	0	0	05		MAG: Quiet
								0	0	0	05		PRO: Quiet
006	06	05	15	74	3			0	0	0	06		SOL: Quiet
								0	0	0	06		MAG: Quiet
								0	0	0	06		PRO: Quiet
007	07	06	15	73	0	S04	W32	0	0	0	07	Q	SOL: Quiet
								0	0	0	07		MAG: Quiet
								0	0	0	07		PRO: Quiet
008	08	07	12	73	9	S05	W44	1	0	0	08	Q	SOL: Quiet
								0	0	0	08		MAG: Quiet
								0	0	0	08		PRO: Quiet
009	09	08	0	74	5			0	0	0	09		SOL: Quiet
								0	0	0	09		MAG: Quiet
								0	0	0	09		PRO: Quiet
010	10	09	12	74	4	N38	W48	0	0	0	10	Q	SOL: Quiet
								0	0	0	10		MAG: Quiet
								0	0	0	10		PRO: Quiet
011	11	10	13	75	24	N38	W61	0	0	0	11	Q	SOL: Quiet
								0	0	0	11		MAG: Quiet
								0	0	0	11		PRO: Quiet
012	12	11	12	74	12	N34	W74	0	0	0	12	Q	SOL: Quiet
								0	0	0	12		MAG: Quiet
								0	0	0	12		PRO: Quiet
013	13	12	0	75	7			0	0	0	13		SOL: Quiet
								0	0	0	13		MAG: Quiet
								0	0	0	13		PRO: Quiet
014	14	13	0	75	4			0	0	0	14		SOL: Quiet
								0	0	0	14		MAG: Quiet
								0	0	0	14		PRO: Quiet
015	15	14	0	75	2			0	0	0	15		SOL: Quiet
								0	0	0	15		MAG: Quiet
								0	0	0	15		PRO: Quiet
016	16	15	14	76	5			0	0	0	16		SOL: Quiet
								0	0	0	16		MAG: Quiet
								0	0	0	16		PRO: Quiet
017	17	16	16	75	1			0	0	0	17		SOL: Quiet
								0	0	0	17		MAG: Quiet
								0	0	0	17		PRO: Quiet

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

JANUARY 1997

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
018	18	17	12	74	1	S06	W04	0	0	0	18	Q	SOL: Quiet
								0	0	0	18		MAG: Quiet
								0	0	0	18		PRO: Quiet
019	19	18	34	75	4	S06	W17	0	0	0	19	Q	SOL: Quiet
						N27	E11	0	0	0	19	Q	MAG: Quiet
						S32	E64	0	0	0	19	Q	PRO: Quiet
020	20	19	0	75	3			0	0	0	20		SOL: Quiet
								0	0	0	20		MAG: Quiet
								0	0	0	20		PRO: Quiet
021	21	20	0	77	5			0	0	0	21		SOL: Quiet
								0	0	0	21		MAG: Quiet
								0	0	0	21		PRO: Quiet
022	22	21	0	74	9			0	0	0	22		SOL: Quiet
								0	0	0	22		MAG: Quiet
								0	0	0	22		PRO: Quiet
023	23	22	0	73	5			0	0	0	23		SOL: Quiet
								0	0	0	23		MAG: Quiet
								0	0	0	23		PRO: Quiet
024	24	23	0	73	4			0	0	0	24		SOL: Quiet
								0	0	0	24		MAG: Quiet
								0	0	0	24		PRO: Quiet
025	25	24	12	74	2			0	0	0	25		SOL: Quiet
								0	0	0	25		MAG: Quiet
								0	0	0	25		PRO: Quiet
026	26	25	11	73	3	S12	E45	0	0	0	26	Q	SOL: Quiet
								0	0	0	26		MAG: Quiet
								0	0	0	26		PRO: Quiet
027	27	26	12	74	12	S14	E35	0	0	0	27	Q	SOL: Quiet
								0	0	0	27		MAG: Active
								0	0	0	27		PRO: Quiet
028	28	27	11	74	12	S16	E24	0	0	0	28	Q	SOL: Quiet
								0	0	0	28		MAG: Quiet
								0	0	0	28		PRO: Quiet
029	29	28	11	73	18	S15	E09	0	0	0	29	Q	SOL: Quiet
								0	0	0	29		MAG: Quiet
								0	0	0	29		PRO: Quiet
030	30	29	16	75	6	N07	E33	1	0	0	30	Q	SOL: Quiet
								0	0	0	30		MAG: Quiet
								0	0	0	30		PRO: Quiet
031	31	30	15	74	9	N03	E20	0	0	0	31	Q	SOL: Quiet
								0	0	0	31		MAG: Quiet
								0	0	0	31		PRO: Quiet

(1) Region Forecast and Flare (SOL) Advice
- Q = Quiet (<50% probability of C-class flares)
- E = Eruptive (C-class flares expected, probability >=50%)
- A = Active (M-class flares expected, probability >=50%)
- M = Major (X-class flares expected, probability >=50%)
- P = Proton (Proton flares expected, probability >=50%)
- W = Warning (activity levels are expected to increase, but no numerical forecast given)
- / = No forecast available

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

JANUARY 1997

Magnetic (MAG) Geoadvice

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

Proton (PRO) Geoadvice

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

STRATWARM ALERTS

01/01/97 03:30:00 GEOALERT WWA001 STRATWARM ALERT/TUESDAY/STRATWARM EXISTS.
INTENSIFYING WARMING OVER THE SOUTHEAST PART OF CANADA, SPREADING NORTHEASTWARDS TODAY.

01/02/97 03:30:00 GEOALERT WWA002 STRATWARM ALERT/WEDNESDAY/STRATWARM EXISTS.
WARMING OVER THE EAST COAST OF NORTHERN AMERICA CONTINUES, SPREADING TOWARDS THE ATLANTIC OCEAN.

01/03/97 03:30:00 GEOALERT WWA003 STRATWARM ALERT/THURSDAY/STRATWARM EXISTS.
A LARGE WARM REGION COVERS THE ATLANTIC OCEAN, REACHING FROM THE EAST COAST OF NORTHERN AMERICA TO THE WEST COAST OF EUROPE.

01/04/97 03:30:00 GEOALERT WWA004 STRATWARM ALLERT/FRIDAY/STRATWARM EXISTS.
THE WARM REGION OVER THE ATLANTIC OCEAN FURTHER MOVES EASTWARDS. INFLUENCING WESTERN AND CENTRAL EUROPE.

01/05/97 03:30:00 GEOALERT WWA005 STRATWARM ALERT/SATURDAY/STRATWARM EXISTS.
THE WARM REGION OVER THE ATLANTIC OCEAN AND WESTERN EUROPE AND THE WARMING OVER THE ALEUTIAN AREA CONTINUES.

01/06/97 03:30:00 GEOALERT WWA006 STRATWARM ALERT/SUNDAY/STRATWARM EXISTS.
THE WARM AIR OVER THE ATLANTIC OCEAN AND WESTERN EUROPE IS MOVING SLIGHTLY SOUTHEASTWARDS, WHILE THE WARM AIR OVER THE ALEUTIAN AREA IS SPREADING NORTHWARDS TODAY.

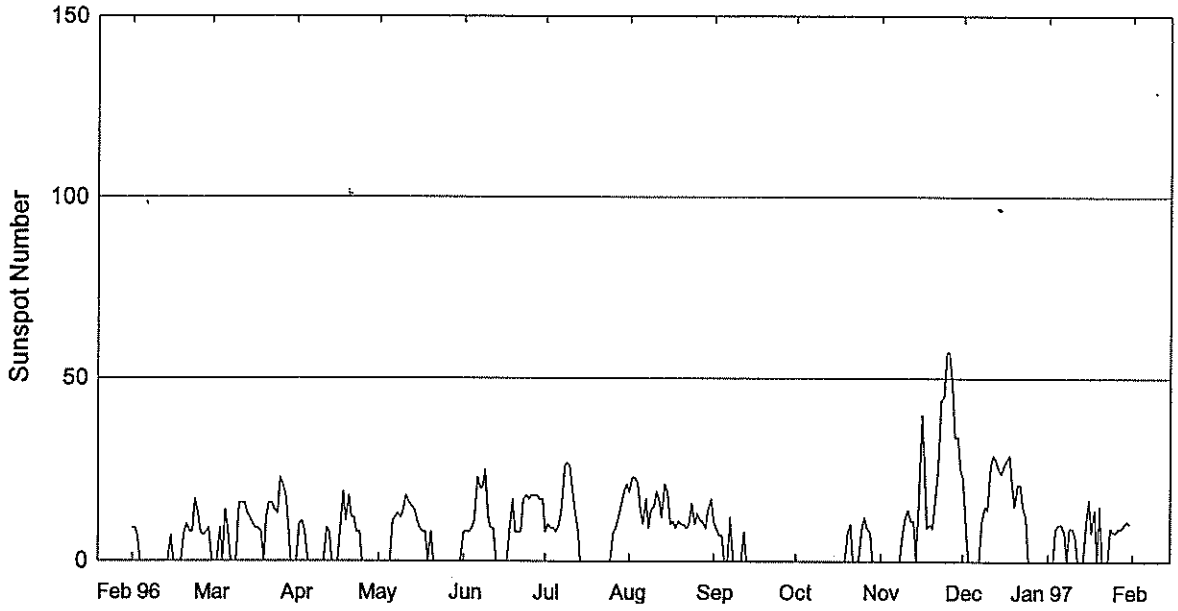
01/07/97 03:30:00 GEOALERT WWA007 STRATWARM ALERT/MONDAY/STRATWARM EXISTS.
THE TWO WARM REGIONS OVER THE MEDITERRANEAN AND OVER THE ALEUTIAN AREA CONTINUE.

01/08/97 03:30:00 GEOALERT WWA008 STRATWARM ALERT/TUESDAY/STRATWARM EXISTS.
THE WARM AIR OVER THE MEDITERRANEAN AREA MOVES FURTHER EASTWARD, WHILE THE WARM AIR OVER THE ALEUTIAN AREA MOVES WESTWARD.

01/09/97 03:30:00 GEOALERT WWA009 NO STRATWARM REPORT RECEIVED TODAY.

01/10/97 03:30:00 GEOALERT WWA010 STRATWARM ALERT/THURSDAY/STRATWARM NIL.
GEOALERT HAS ENDED.

International Relative Sunspot Numbers
Feb 1996 - Jan 1997

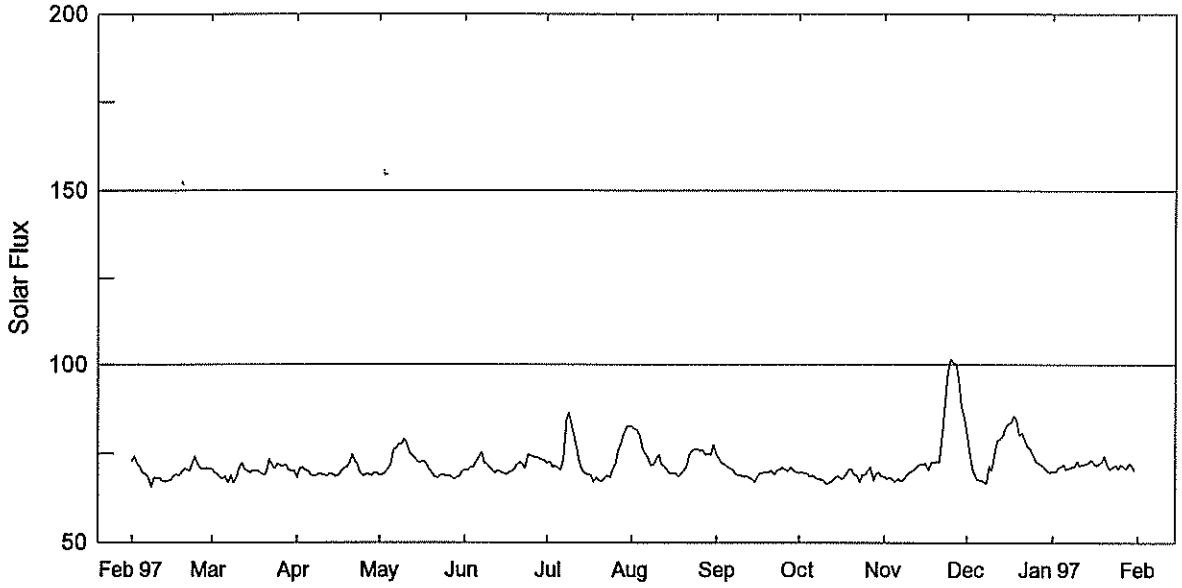


Day	Feb 96	Mar	Apr	May	Jun	Jul*	Aug*	Sep*	Oct*	Nov*	Dec*	Jan 97*
1	9	0	0	0	8	8	19	11	0	0	23	0
2	9	0	10	0	8	10	23	9	0	0	12	0
3	7	0	11	0	8	9	23	7	0	0	0	0
4	0	9	8	0	9	9	21	7	0	0	0	9
5	0	0	0	0	11	8	14	0	0	0	0	10
6	0	14	0	11	23	10	10	0	0	0	0	10
7	0	9	0	12	20	14	17	12	0	0	0	8
8	0	0	0	13	20	26	9	0	0	0	11	0
9	0	0	0	12	25	27	14	0	0	8	15	9
10	0	0	0	14	12	26	15	0	0	12	14	9
11	0	16	0	18	9	20	19	0	0	14	26	7
12	0	16	9	16	9	13	17	8	0	11	29	0
13	0	16	8	15	0	9	12	0	0	11	28	0
14	0	13	0	14	0	0	21	0	0	0	25	0
15	7	12	0	11	0	0	19	0	0	20	24	11
16	0	10	0	9	0	0	10	0	0	40	26	17
17	0	9	10	8	0	0	11	0	0	27	28	8
18	0	9	19	8	10	0	9	0	0	9	29	14
19	0	8	11	0	17	0	11	0	0	10	21	0
20	8	0	18	8	8	0	10	0	8	9	15	15
21	10	12	12	0	8	0	10	0	10	18	21	0
22	8	16	12	0	8	0	9	0	0	26	21	0
23	8	16	8	0	17	0	10	0	0	44	15	0
24	17	14	8	0	18	0	16	0	0	45	12	9
25	13	13	0	0	17	0	10	0	9	57	0	8
26	8	23	0	0	18	8	13	0	12	57	0	8
27	7	21	0	0	18	9	11	0	9	48	0	9
28	8	18	0	0	18	12	11	0	8	34	0	9
29	9	10	0	0	17	15	9	0	0	34	0	10
30		0	0	0	17	19	14	0	0	25	0	11
31		0		0		21	17		0		0	10
Mean	4.4	9.2	4.8	5.5	11.8	8.8	14.0	1.8	1.8	18.6	12.7	6.5

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Feb 1996 - Jan 97

Adjusted to 1 AU



Day	Feb 96	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 97
1	72.9	70.6	68.1	68.9	70.4	72.4	82.8	74.8	69.6	68.5	80.8	70.0
2	74.2	69.8	70.6	69.0	70.2	72.8	81.9	73.6	69.8	67.9	75.7	69.7
3	71.9	69.0	71.1	69.5	71.2	71.3	81.6	72.4	69.6	68.3	70.7	70.8
4	71.4	68.1	70.2	70.6	71.2	71.5	79.9	72.0	69.4	67.8	68.6	71.4
5	69.4	68.0	70.0	72.0	72.8	71.0	76.2	71.4	68.5	67.1	67.6	71.9
6	69.2	68.4	68.8	76.0	73.8	70.5	75.1	70.8	68.8	68.0	67.6	70.6
7	68.2	66.8	68.6	76.3	75.4	74.3	73.7	70.5	68.2	67.3	67.1	70.9
8	65.7	68.8	68.6	77.5	72.4	84.3	71.7	69.2	67.7	67.8	66.6	71.3
9	68.1	66.6	69.3	77.7	72.0	86.5	72.1	68.8	67.7	68.9	71.5	71.3
10	68.0	68.2	69.1	79.1	71.1	82.5	73.6	68.9	67.4	69.6	70.2	72.9
11	68.2	70.9	68.8	78.0	70.2	79.6	74.8	68.5	66.4	70.0	75.2	71.6
12	67.3	72.4	68.7	75.1	69.5	76.2	72.0	68.6	66.9	70.7	78.6	72.1
13	67.0	70.5	69.3	74.3	70.3	72.5	71.4	68.1	67.3	71.5	79.2	72.1
14	67.2	70.0	69.1	73.4	69.8	70.0	70.5	67.9	68.2	72.1	80.0	72.4
15	67.4	69.6	68.5	72.5	69.5	69.3	69.3	67.1	68.6	71.9	82.3	73.3
16	68.5	70.3	68.8	72.6	69.0	69.1	69.3	68.7	68.1	72.2	83.5	72.4
17	69.0	70.0	69.9	72.9	69.6	69.0	69.5	69.6	68.0	70.4	83.6	71.7
18	68.6	70.0	70.8	72.0	69.9	67.0	68.4	69.6	69.0	72.4	85.6	72.2
19	69.4	69.4	71.2	70.4	70.7	68.3	69.3	69.8	70.4	72.6	84.6	72.9
20	70.6	68.8	72.3	69.6	71.9	67.5	70.1	69.7	70.6	72.7	80.3	74.3
21	70.4	69.9	74.8	68.5	72.6	67.2	71.3	70.3	69.0	72.6	80.9	71.8
22	70.1	73.4	73.2	68.1	72.0	68.2	74.5	69.1	69.1	80.6	78.9	70.7
23	72.3	71.6	71.9	68.9	70.9	68.9	75.8	70.4	67.1	88.7	76.9	71.1
24	74.1	70.9	69.5	69.0	74.7	68.3	76.2	70.4	69.1	97.3	76.4	71.9
25	71.8	72.1	68.7	68.7	74.3	70.4	76.3	71.2	69.1	101.7	74.7	70.9
26	70.9	71.6	69.1	68.7	74.2	72.4	75.8	70.4	70.3	100.8	73.0	71.9
27	70.7	71.6	69.2	68.4	73.8	75.6	75.9	70.1	71.2	100.0	72.2	71.3
28	70.8	71.7	68.6	67.8	73.8	77.8	74.7	71.2	67.5	95.4	71.8	70.8
29	70.9	70.3	69.5	68.3	73.3	80.3	75.0	70.3	69.4	88.5	71.4	72.4
30		70.1	69.6	68.4	73.1	82.3	74.7	69.7	69.7	85.1	70.1	71.5
31		70.0		69.9		82.7	77.6		68.6		69.8	70.3
Mean	69.8	70.0	69.9	71.7	71.8	73.5	74.2	70.1	68.7	76.9	75.3	71.6

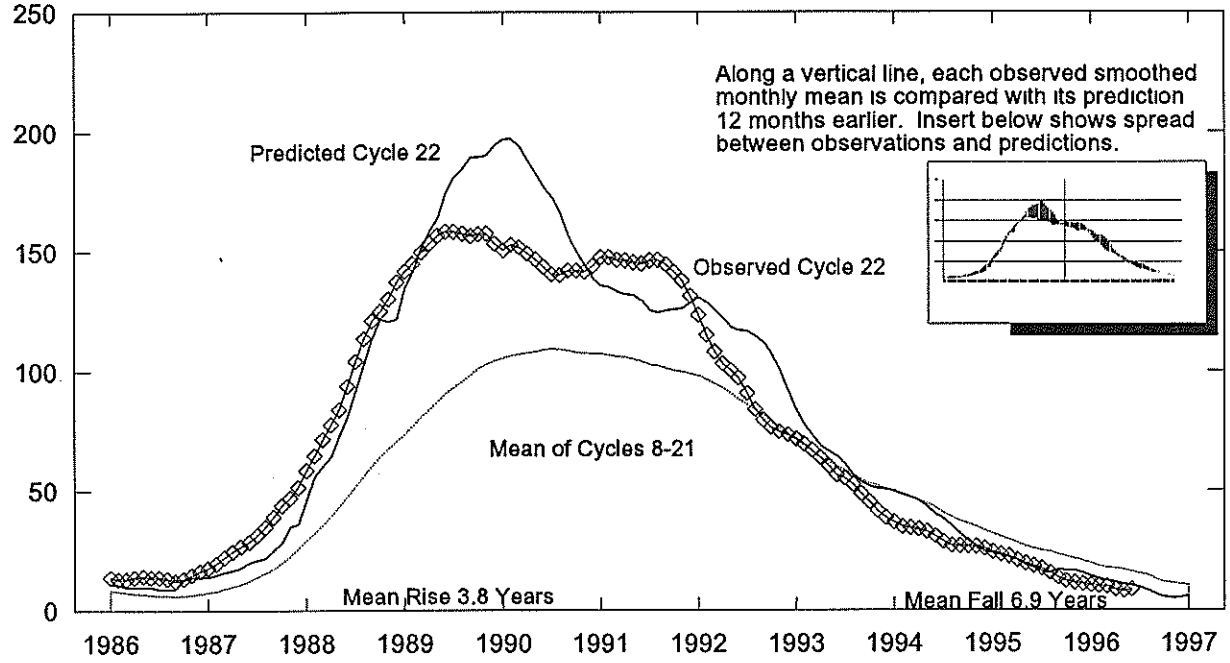
DAILY SOLAR INDICES

January 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	1	19	0	0	72.4	518	161	117	70.0	71	48	32	21	9
2	2	20	0	0	72.1	450	178	116	69.7	69	48	33	23	11
3	3	21	0	0	73.3	500	197	119	70.8	71	49	30	21	10
4	4	22	9	8	73.8	528	203	119	71.4	74	50	33	21	8
5	5	23	10	9	74.4	527	206	121	71.9	72	51	36	25	11
6	6	24	10	10	73.1	519	206	120	70.6	72	51	36	25	11
7	7	25	8	7	73.3	511	188	116	70.9	69	50	34	25	11
8	8	26	0	0	73.8	516	205	119	71.3	72	50	35	24	10
9	9	27	9	8	73.7	516	204	120	71.3	71	51	35	23	9
10	10	1	9	8	75.4	514	198	118	72.9	72	50	35	25	12
11	11	2	7	7	74.0	518	207	119	71.6	73	50	35	25	10
12	12	3	0	0	74.5	513	207	120	72.1	72	51	36	25	10
13	13	4	0	0	74.6	513	205	119	72.1	71	50	36	25	8
14	14	5	0	0	74.9	547	210	121	72.4	74	52	37	26	9
15	15	6	11	8	75.8	516	206	121	73.3	73	52	37	26	11
16	16	7	17	16	74.8	520	207	120	72.4	73	51	37	29	10
17	17	8	8	8	74.1	526	202	120	71.7	73	51	37	27	9
18	18	9	14	12	74.6	514	202	120	72.2	71	51	34	23	8
19	19	10	0	0	75.3	517	208	120	72.9	70	52	37	25	10
20	20	11	15	4	76.8	518	207	121	74.3	71	52	38	26	10
21	21	12	0	0	74.1	514	196	118	71.8	68	52	37	25	9
22	22	13	0	0	73.0	497	205	119	70.7	65	50	36	24	8
23	23	14	0	0	73.4	512	164	114	71.1	65	48	34	23	8
24	24	15	9	7	74.2	503	192	117	71.9	64	49	33	24	10
25	25	16	8	7	73.1	502	200	117	70.9	64	49	33	23	10
26	26	17	8	7	74.1	482	125	103	71.9	61	48	33	23	10
27	27	18	9	8	73.5	555	176	133	71.3	63	48	32	24	37
28	28	19	9	8	72.9	486	157	121	70.8	57	48	34	23	9
29	29	20	10	9	74.6	498	151	114	72.4	71	48	35	24	9
30	30	21	11	10	73.6	503	156	123	71.5	71	50	35	24	9
31	31	22	10	8	72.4	506	155	123	70.3	71	49	34	24	10
MEAN			6.5	5.5	74.0	511	189	118	71.6	69	49	34	24	10

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	7	8	7	6	9
( )								(3)	(4)	(5)	(5)	(5)	(2)
1997	7	7	8	8	9	10	11	11	12	13	14	16	11
( )	(5)	(6)	(7)	(8)	(9)	(11)	(13)	(15)	(16)	(17)	(19)	(22)	(12)

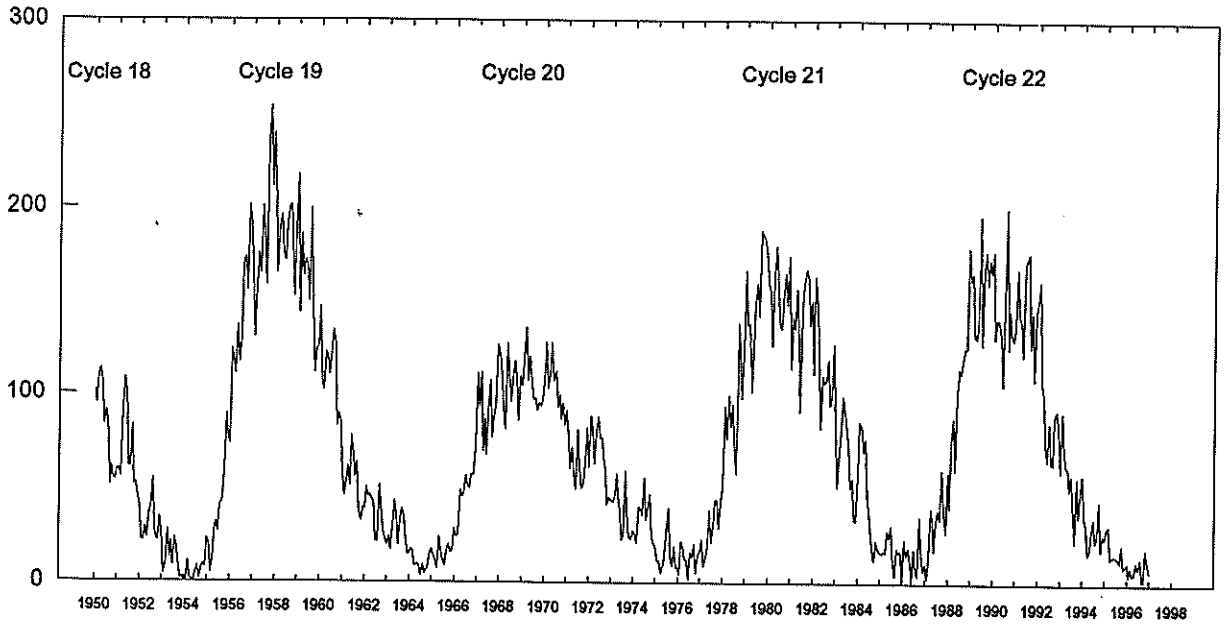
Solar Cycle 22 | Min, Max, and Predictions

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 July 1997 prediction. There exists a 90% chance that in July 1997, the actual smoothed number will fall somewhere between 0 and 24.

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 - Jan 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	8.8	14.0	1.8	1.8	18.6	12.7	8.7	
1997	6.5												6.5	

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

Hα S O L A R F L A R E S

JANUARY 1997

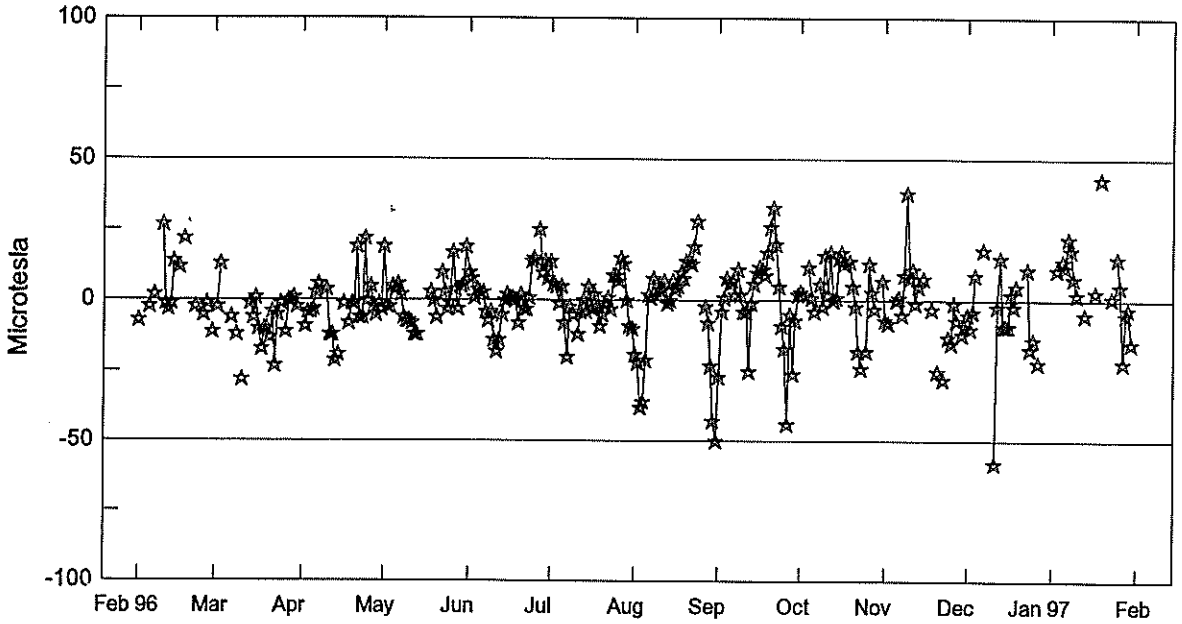
Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	05	1331	1445	1610						159		A	6.0						
SVTO	07	0840	0840	0845	S01	W38	8009	01	4.5	5	SF	A	7.0	3	E		14		F
GOES	16	1602	1605	1611						9		B	1.1						
GOES		2213	2213	2213						9		A	5.0						
GOES	19	0954	0957	1012						18		A	8.1						
SVTO		1054	1055	1100	S06	W22	8011	01	17.8	6	SF			3	E		23		F
LEAR	20	0831	0833	0847	S04	W35	8011	01	17.7	16	SF	B	4.5	3	E		24		U
GOES	27	1421	1425	1430						9		B	1.3						
RAMY	29	1518	1518	1524	N02	E42		02	1.8	6	SF	B	1.0	3	E		11		
GOES		1841	1847	1853						12		B	1.2						
RAMY		1918E	1918U	1930	N02	E40	8015	02	1.8	12D	SF	B	5.8	2	E		19		

"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

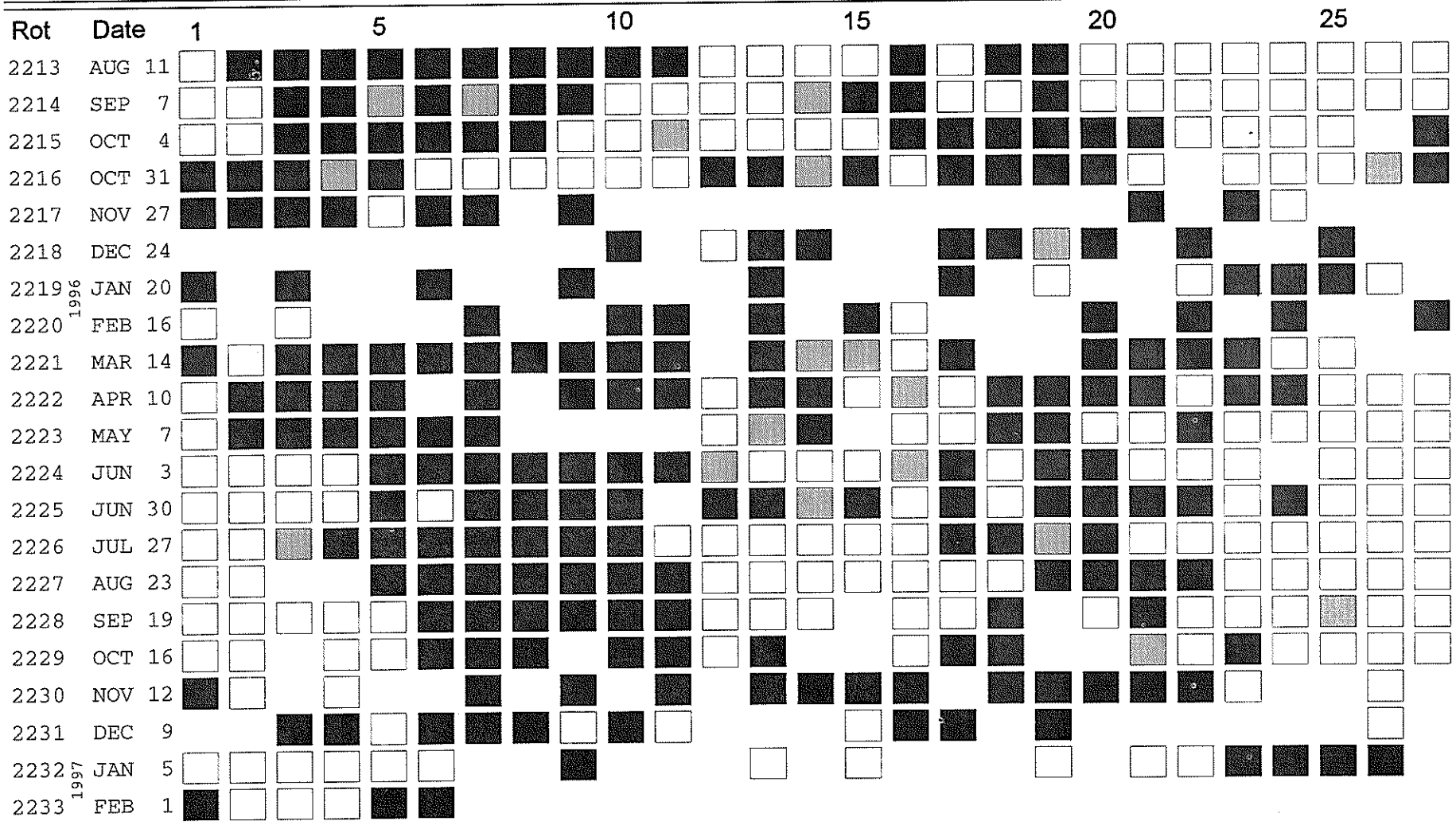
Stanford Mean Solar Magnetic Field (Microtesla)
"Sun-As-A-Star"



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

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

STANFORD MEAN SOLAR MAGNETIC FIELD

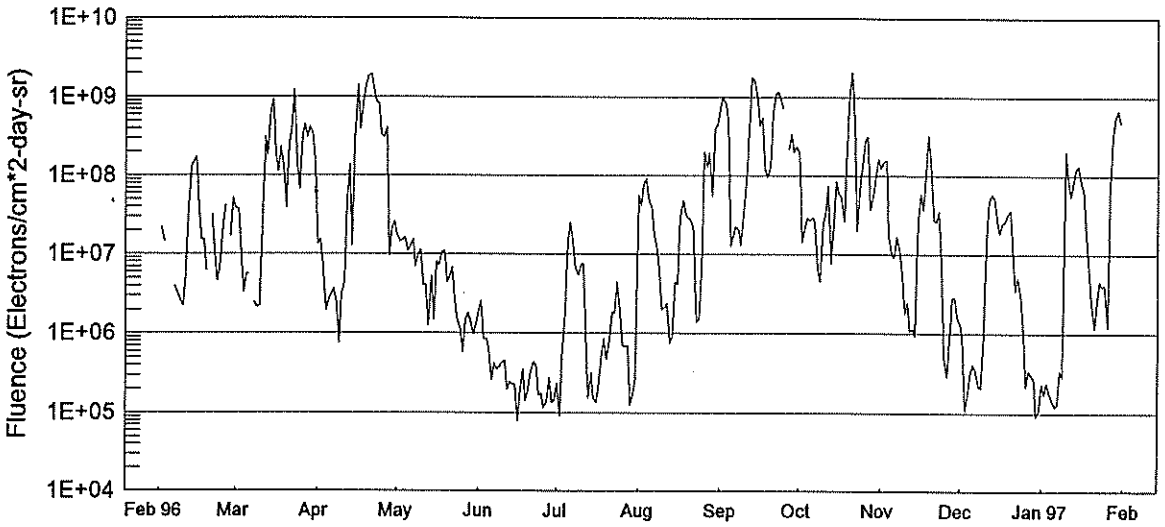


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

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

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

GOES Daily Electron Fluence
Feb 96 - Jan 97



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

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 630 Part I

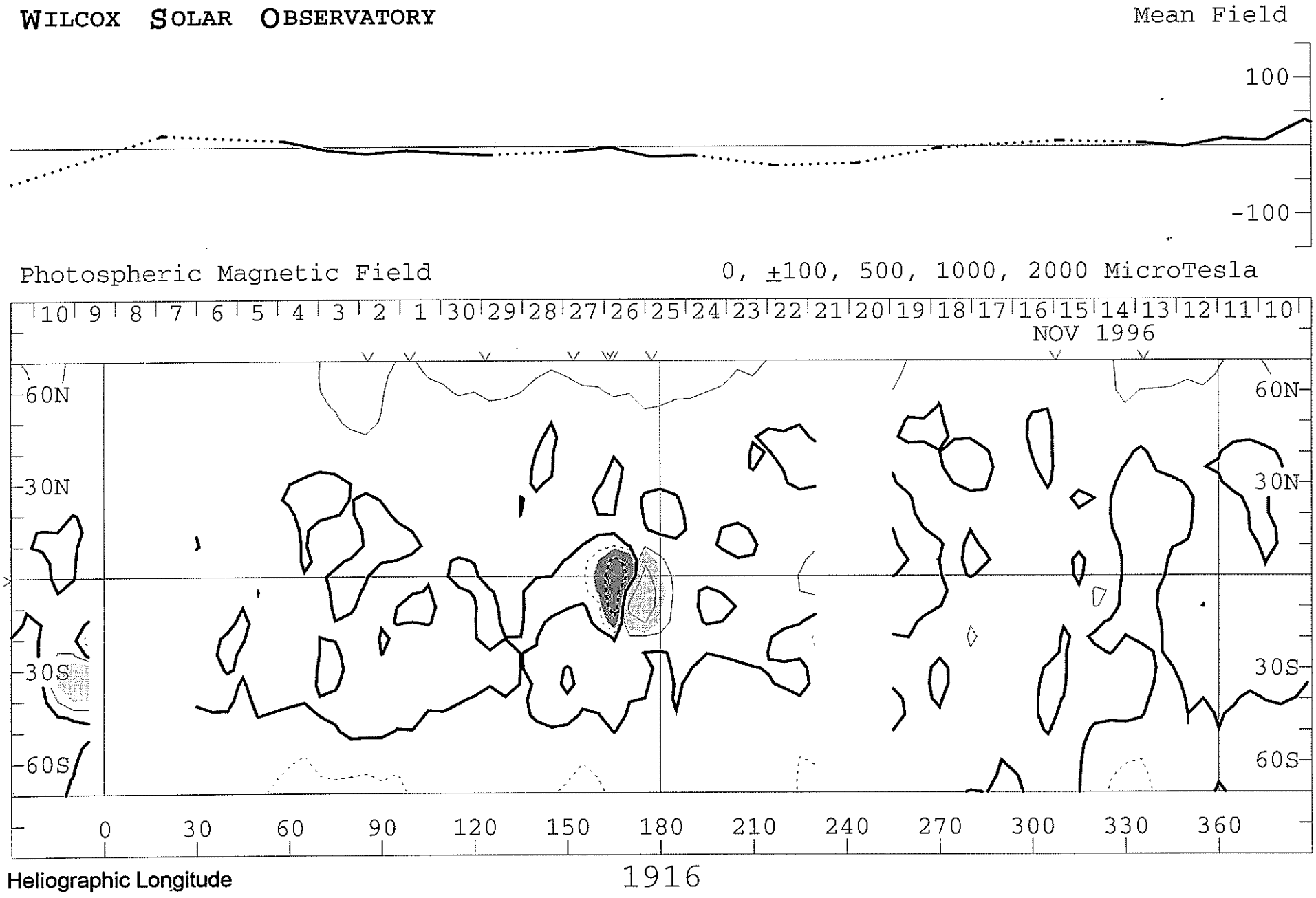
DATA FOR DECEMBER 1996

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1916

(11 November to 9 December 1996)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

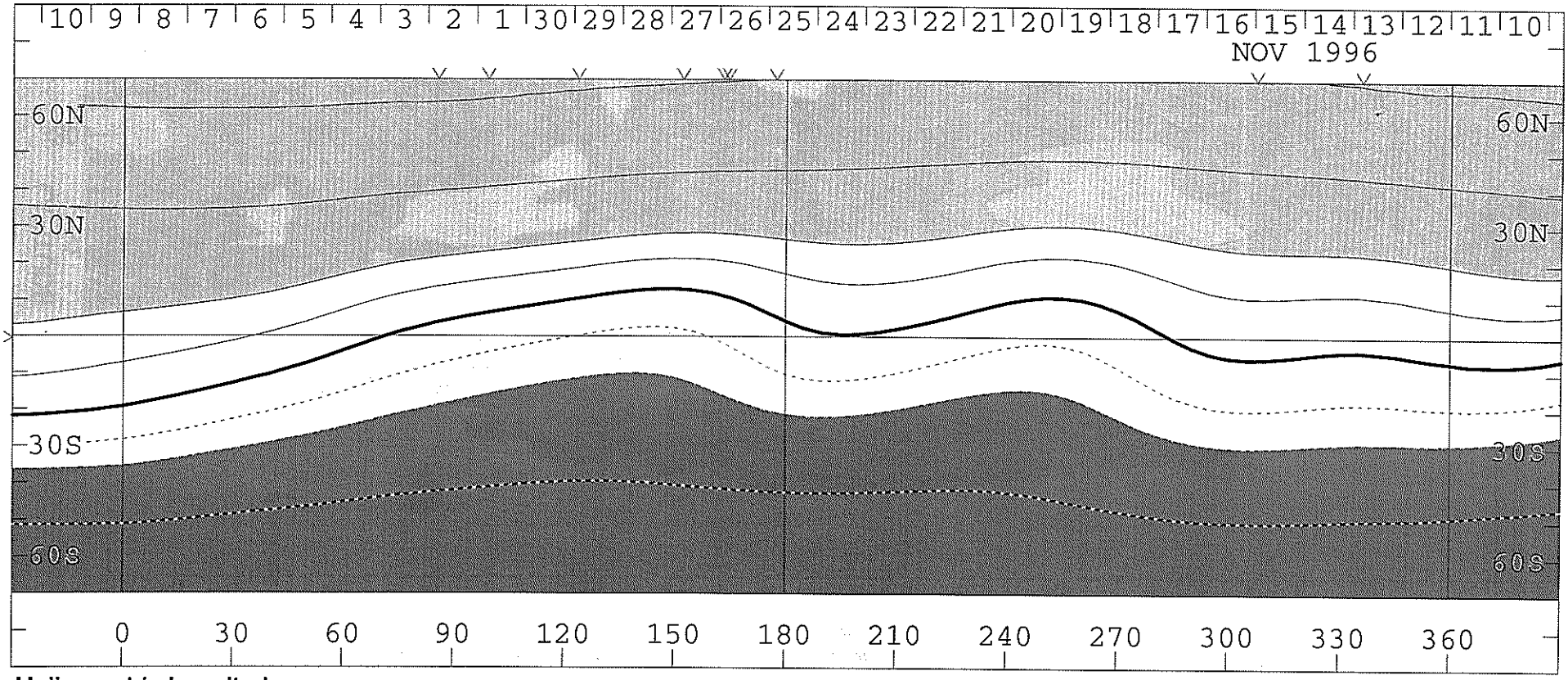
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1916

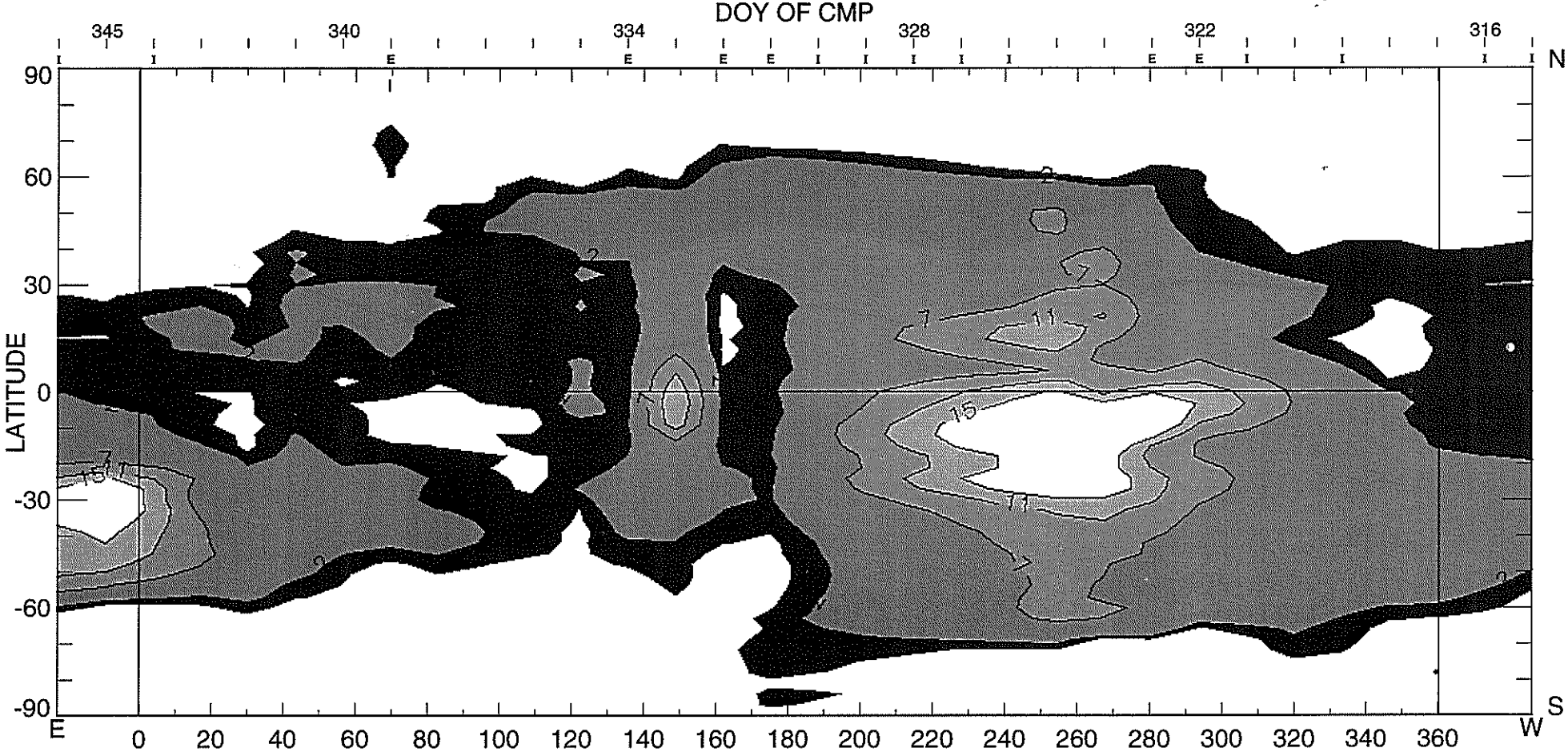
(11 November to 9 December 1996)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



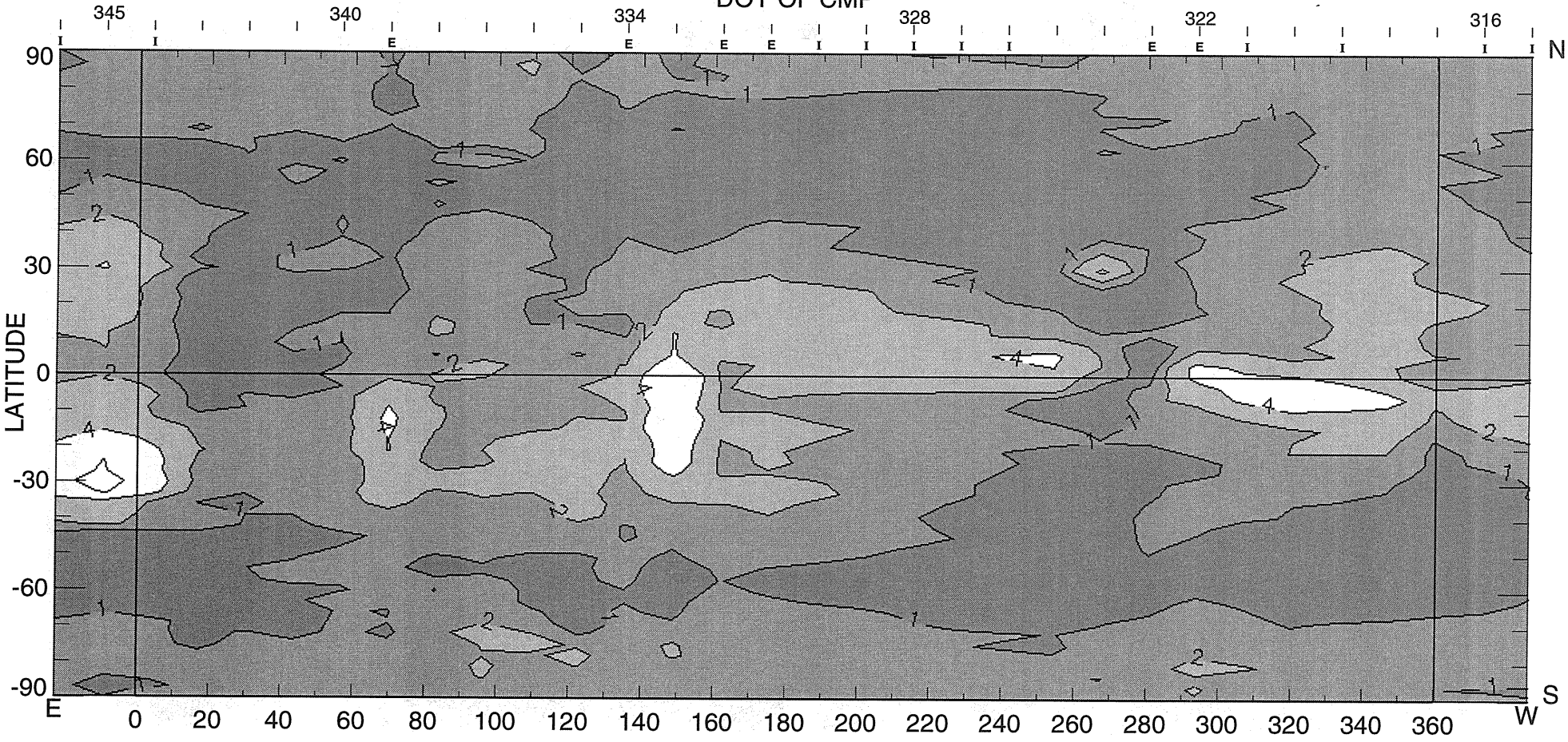
CARRINGTON ROTATION NUMBER 1916 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



(28-Jan-97)

1996 W+E LIMB CONTOURS: 1, 2, 7, 11, 15, 25, 35, 45 MILLIONTHS OF I_o
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

CARRINGTON ROTATION NUMBER 1916 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



(28-Jan-97)

<I> = 1.39μ

1996 W+E LIMB CONTOURS: 1, 2, 4, 8, 16, 32, 48 MILLIONTHS OF I_o

NOTE: No Ca XV emission observed at Sacramento Peak for rotation 1916.

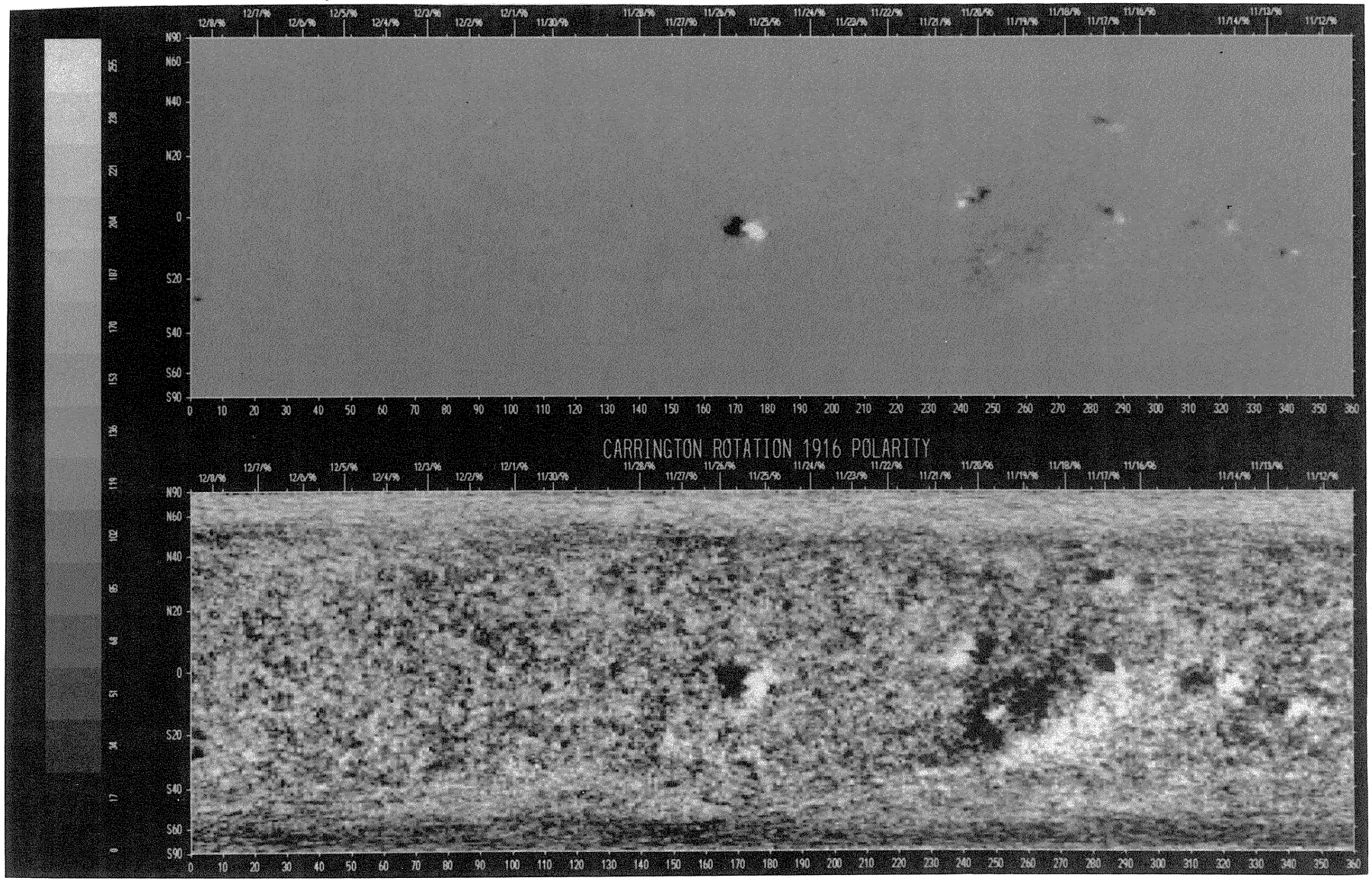
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1916

(11 November to 9 December 1996)

National Solar Observatory/Kitt Peak

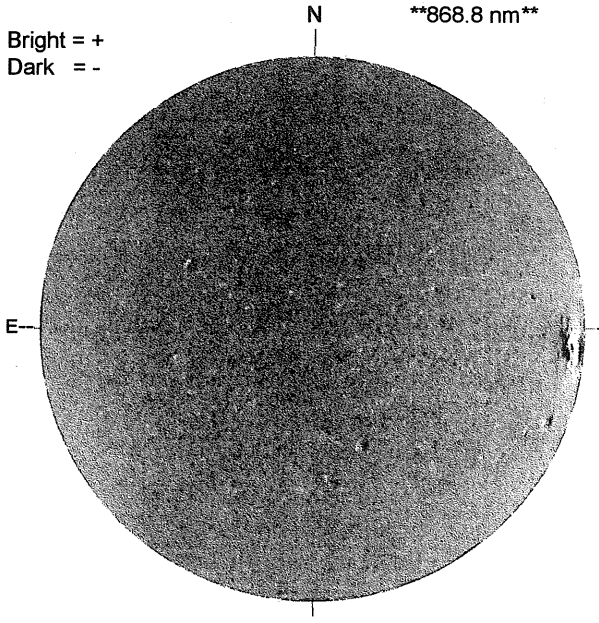
Dates of Observation



Heliographic Longitude

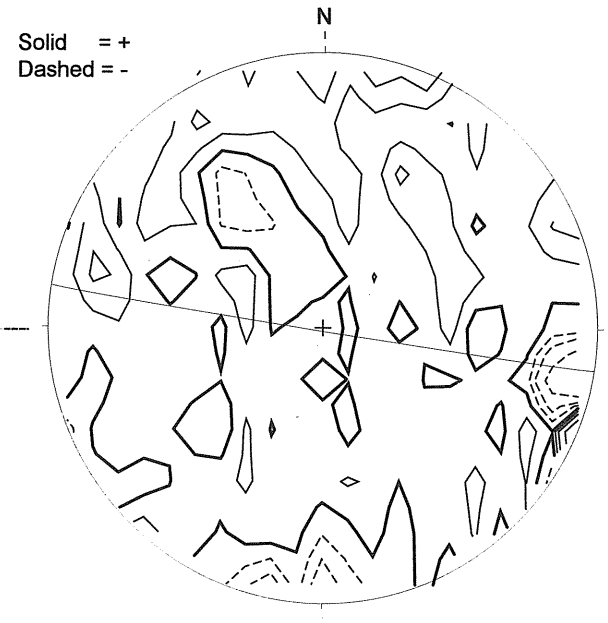
DECEMBER 1, 1996 (P= 15.99 , Bo = 0.84 , Lo = 109.15)

KITT PEAK MAGNETOGRAM



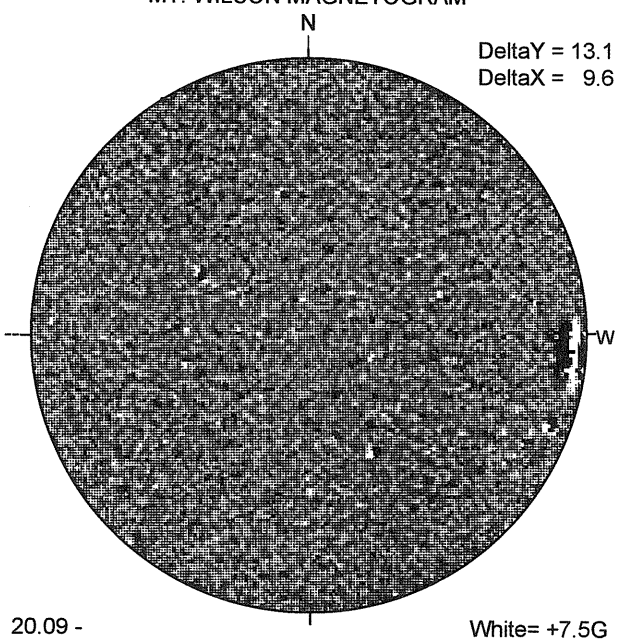
1532 UT

STANFORD MAGNETOGRAM



1817 UT

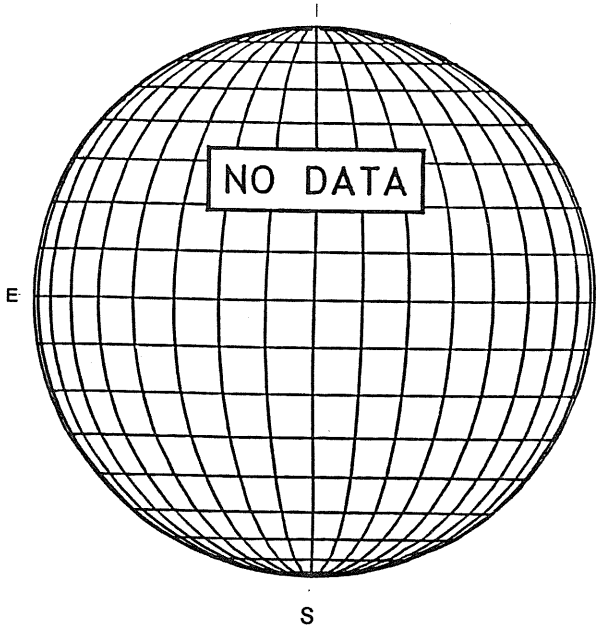
MT. WILSON MAGNETOGRAM



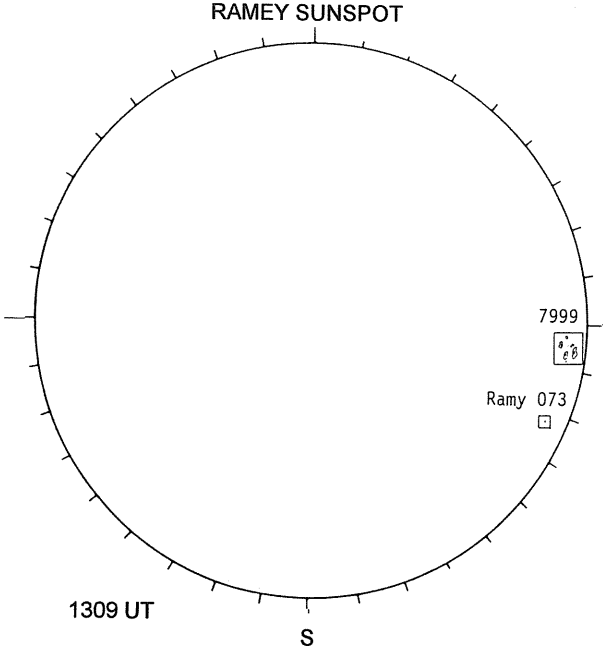
20.09 -
21.06 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

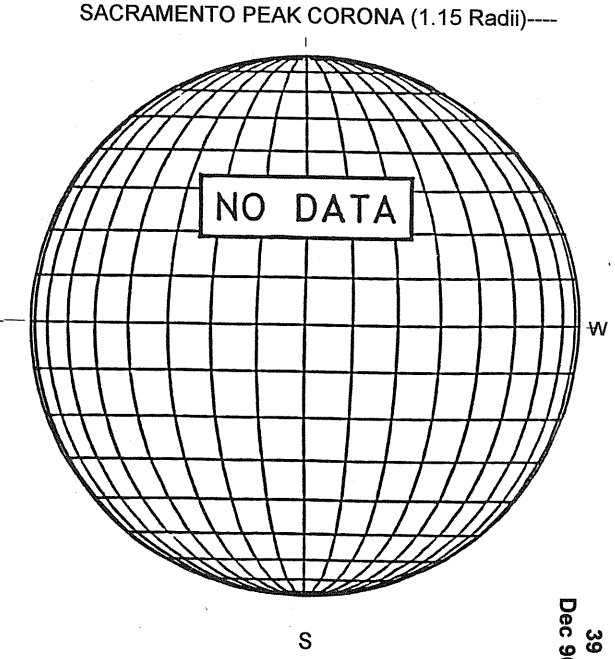


RAMEY SUNSPOT



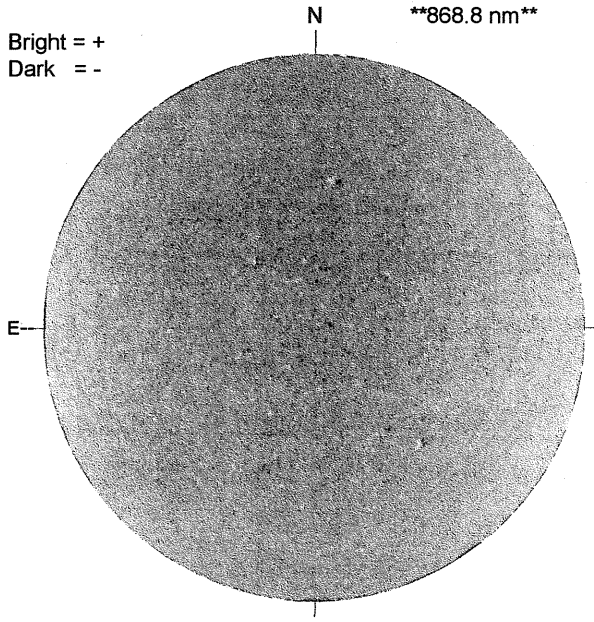
1309 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



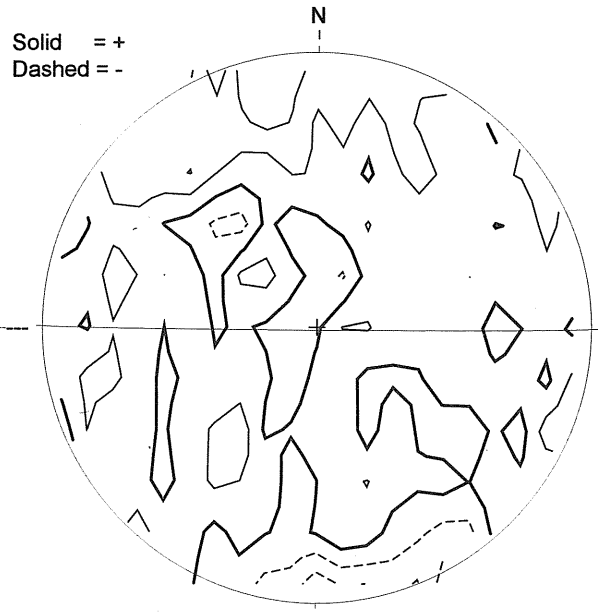
DECEMBER 2, 1996 (P= 15.60 , Bo = 0.71, Lo = 95.97)

KITT PEAK MAGNETOGRAM



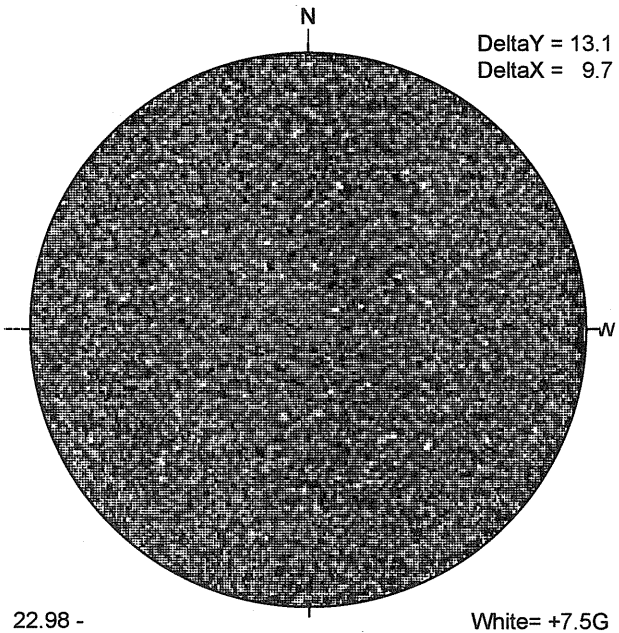
1611 UT

STANFORD MAGNETOGRAM



1855 UT

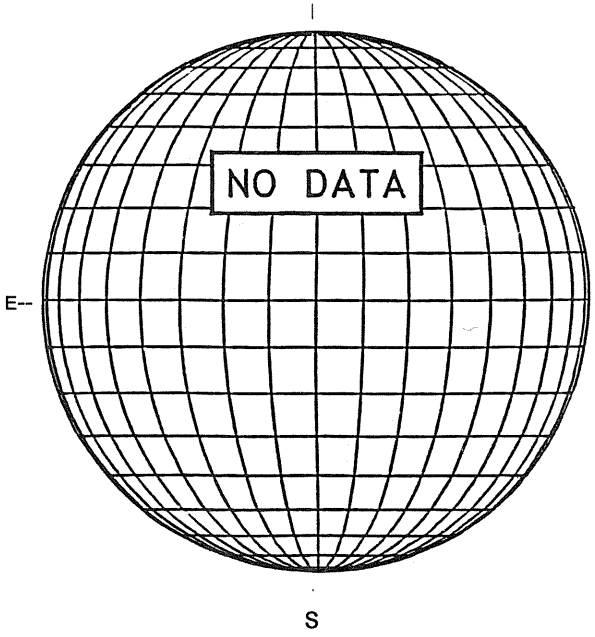
MT. WILSON MAGNETOGRAM



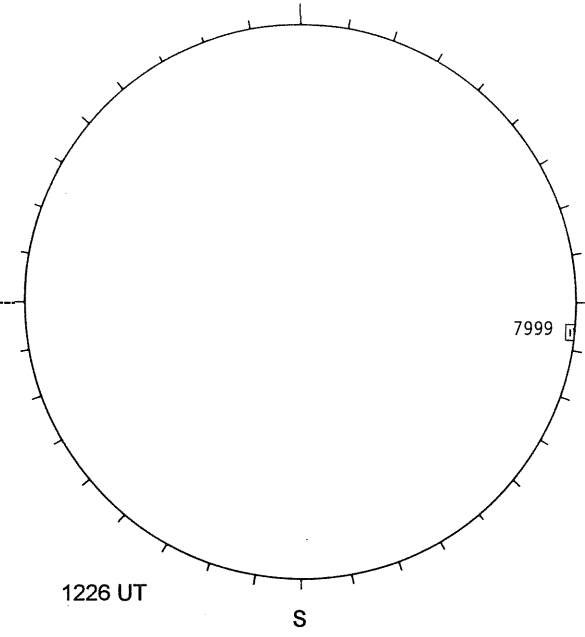
22.98 -
23.96 UT

White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA

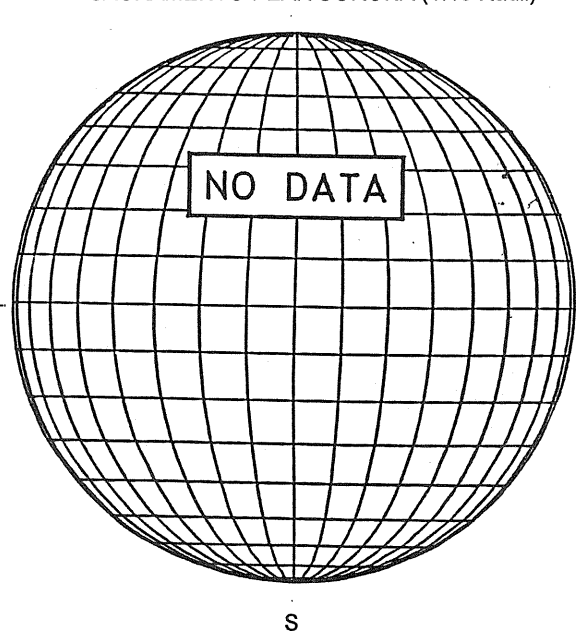


RAMEY SUNSPOT



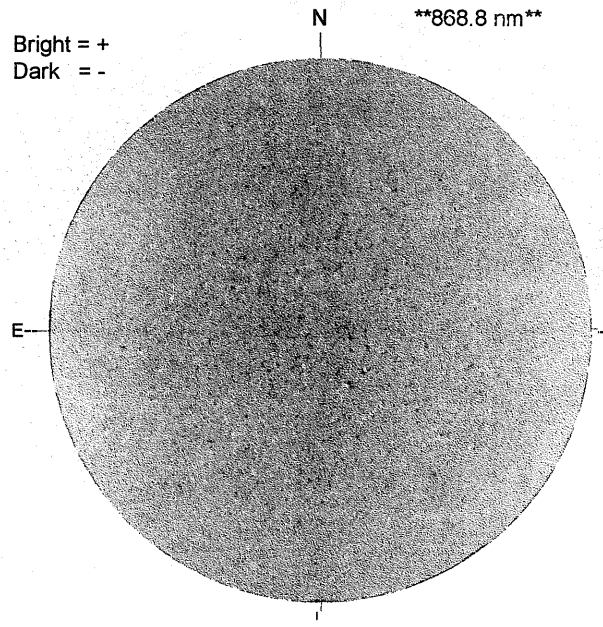
1226 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

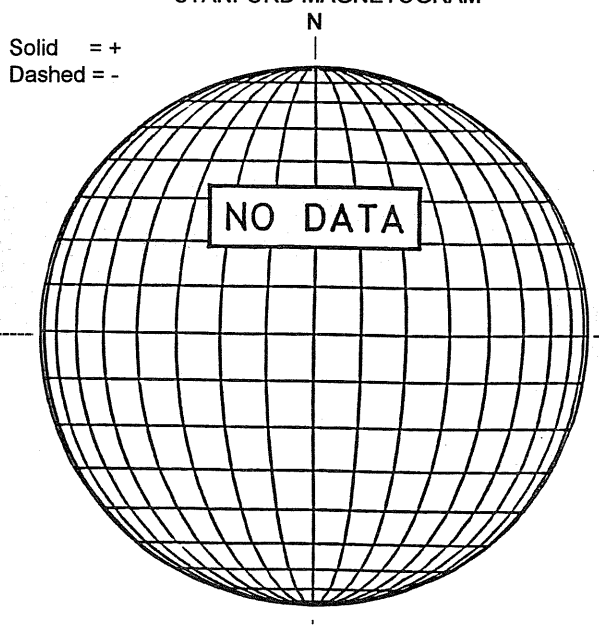


DECEMBER 3, 1996 (P= 15.20 , Bo = 0.58 , Lo = 82.79)

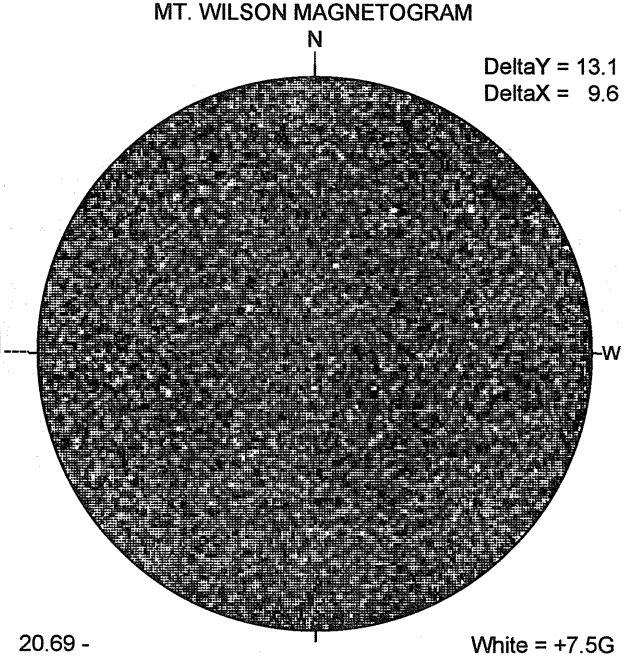
KITT PEAK MAGNETOGRAM



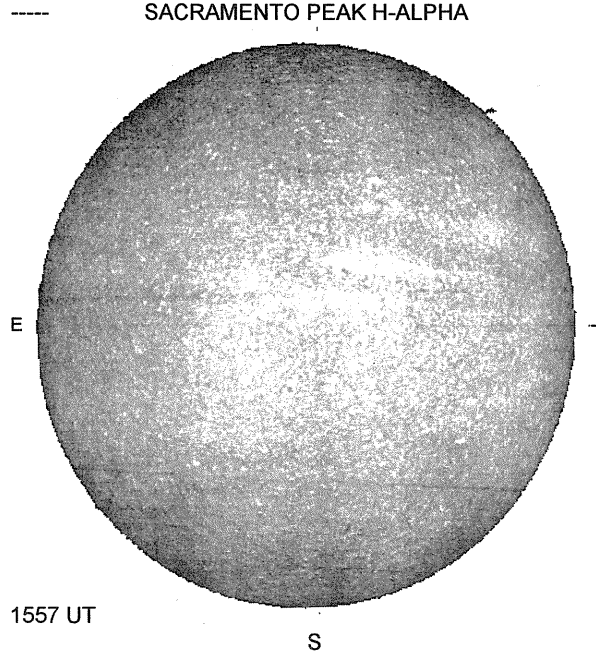
STANFORD MAGNETOGRAM



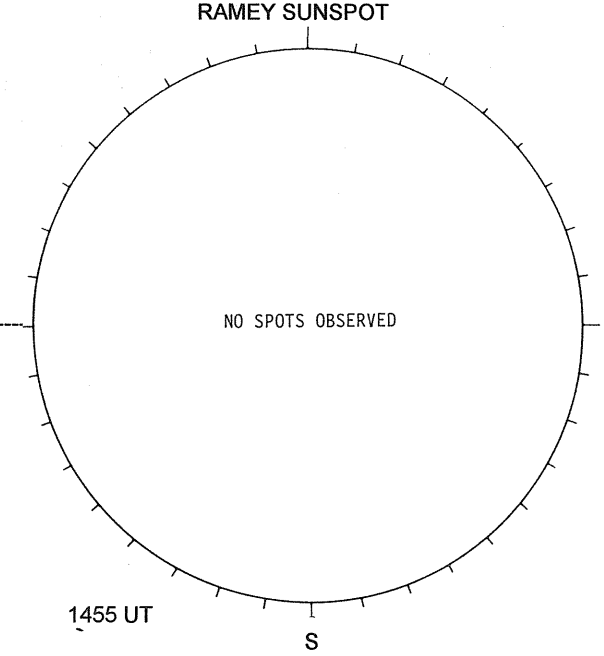
MT. WILSON MAGNETOGRAM



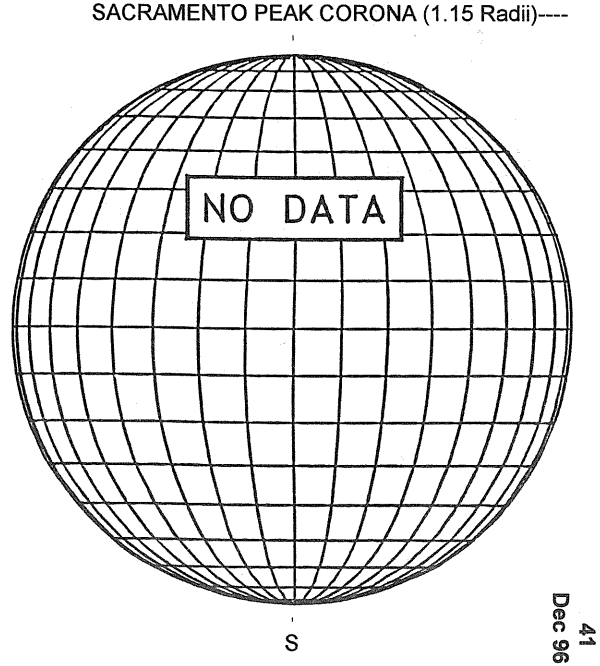
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



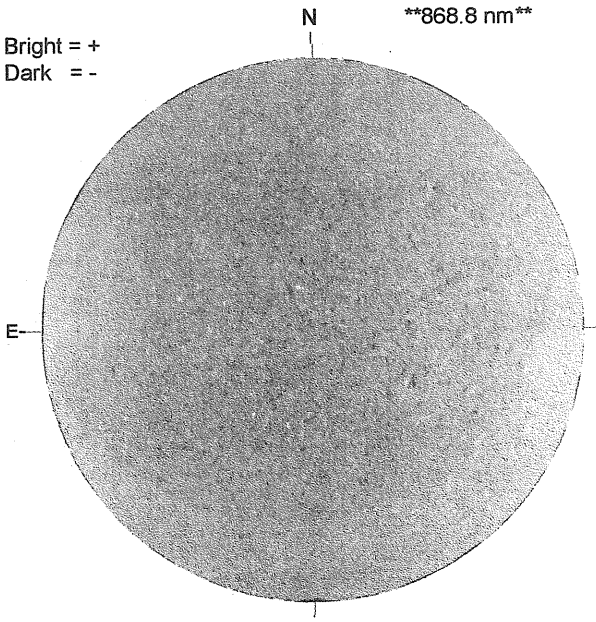
SACRAMENTO PEAK CORONA (1.15 Radii)----



41
Dec 96

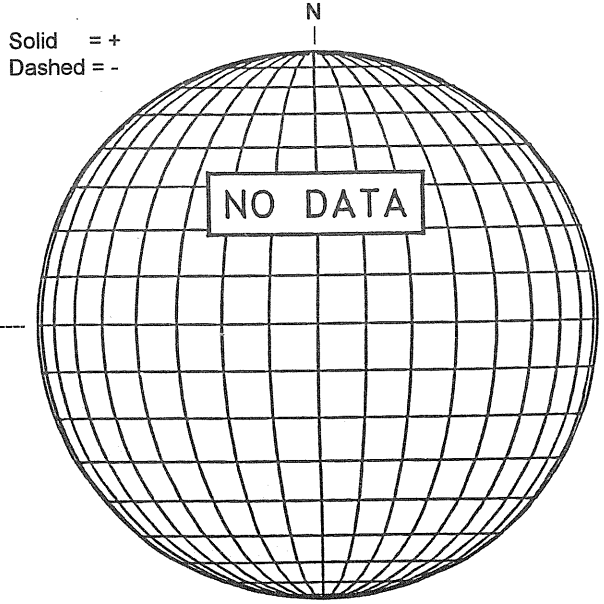
DECEMBER 4, 1996 (P= 14.80 , Bo = 0.46 Lo = 69.61)

KITT PEAK MAGNETOGRAM

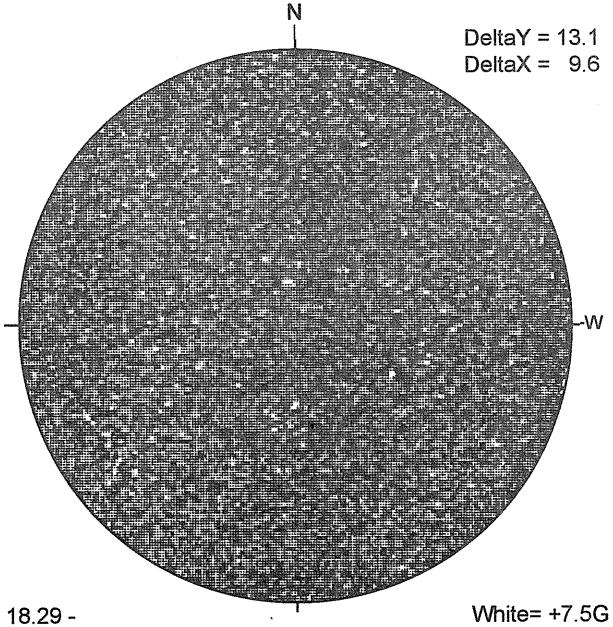


1604 UT

STANFORD MAGNETOGRAM



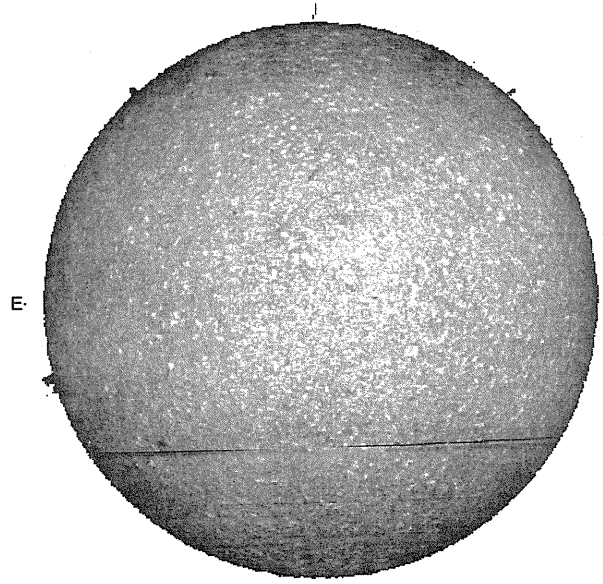
MT. WILSON MAGNETOGRAM



18.29 -
19.26 UT

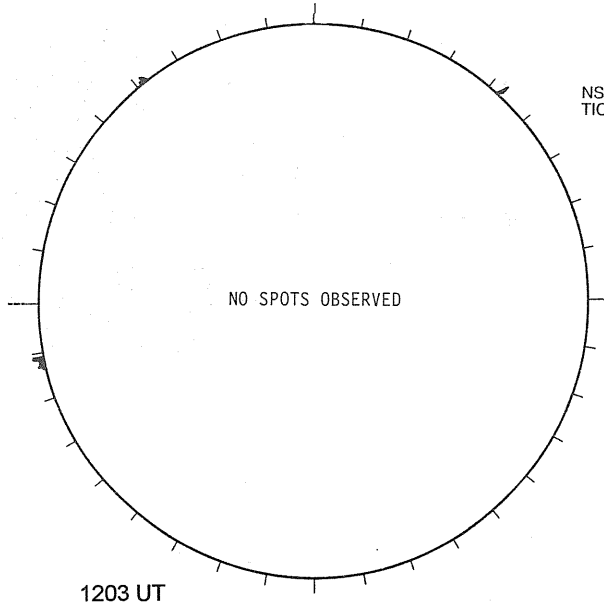
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



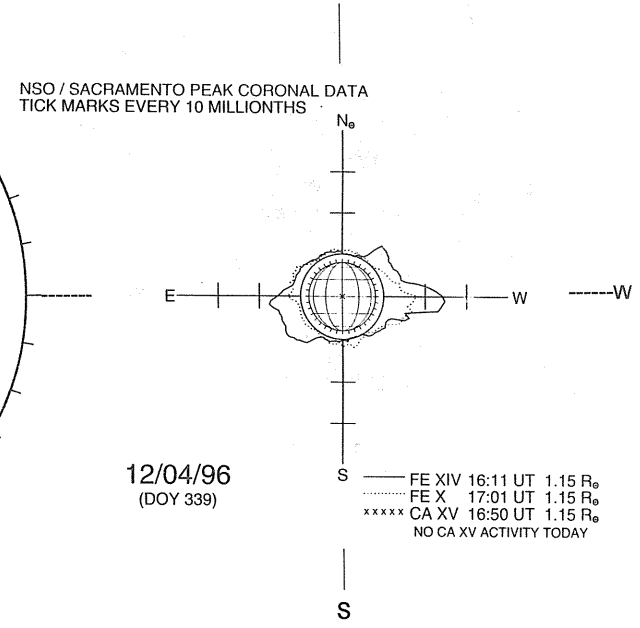
1538 UT

RAMEY SUNSPOT



1203 UT
0755 UT LOMN Prom S

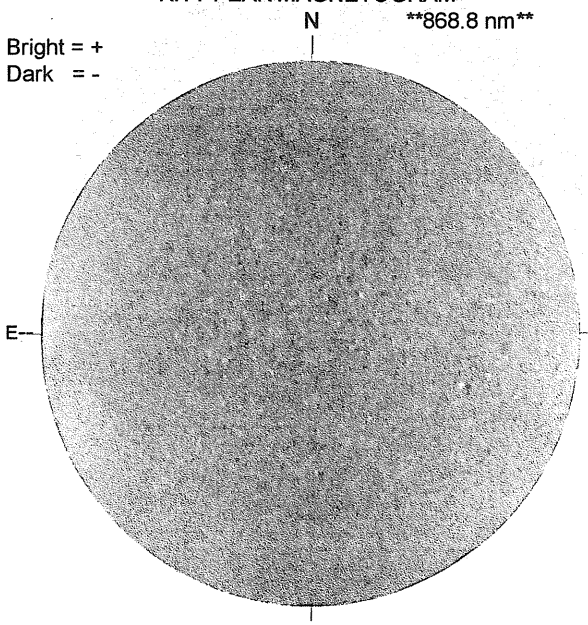
SACRAMENTO PEAK CORONA (1.15 Radii)----



12/04/96
(DOY 339)

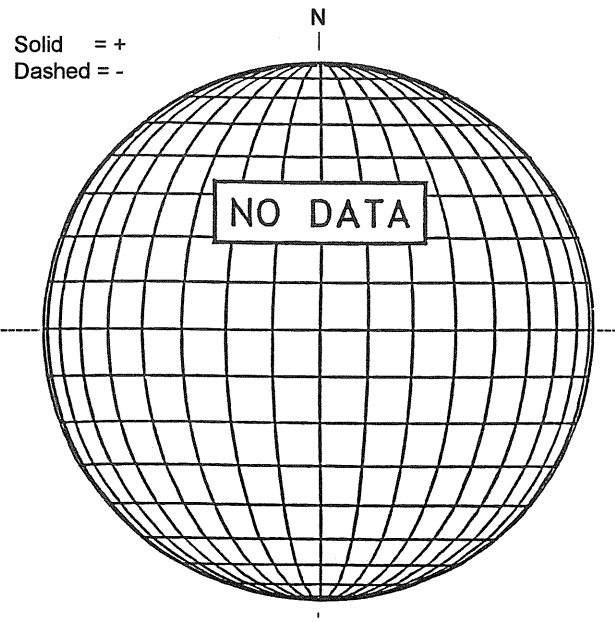
DECEMBER 5, 1996 (P= 14.40 , Bo = 0.33 , Lo = 56.43)

KITT PEAK MAGNETOGRAM

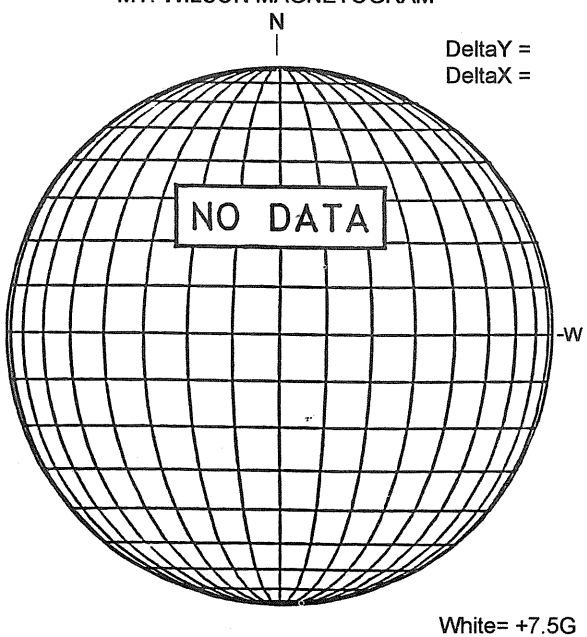


1559 UT

STANFORD MAGNETOGRAM

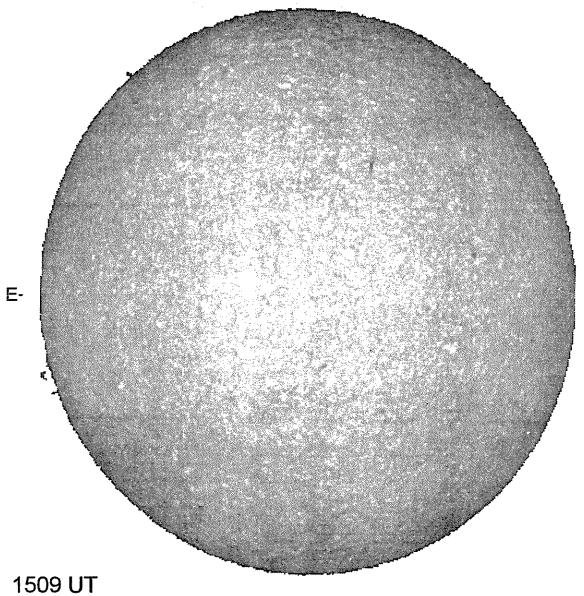


MT. WILSON MAGNETOGRAM



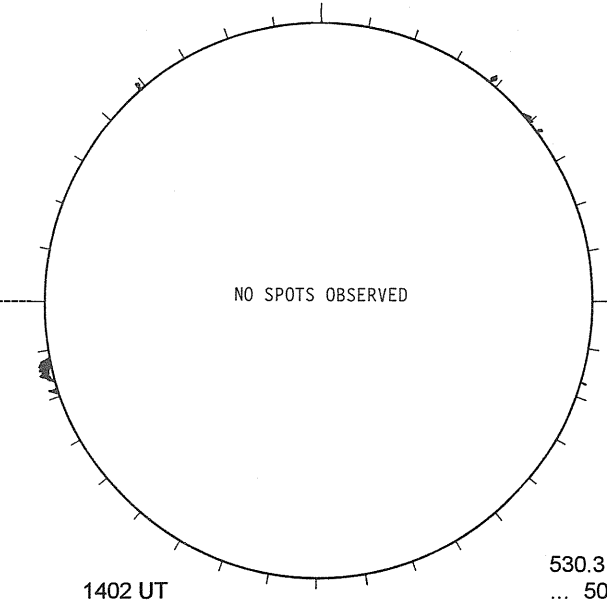
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



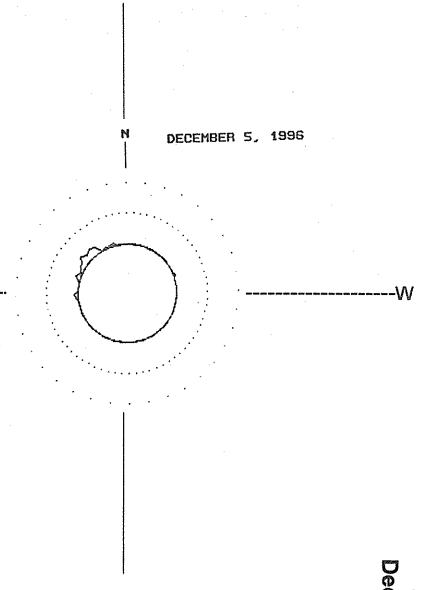
1509 UT

RAMEY SUNSPOT



1402 UT
0722 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



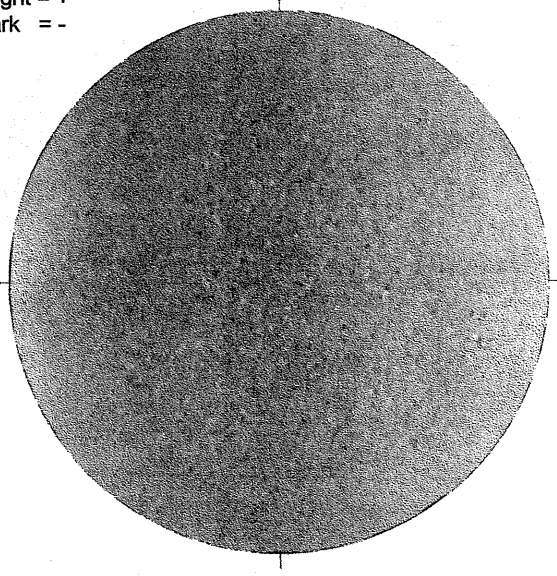
530.3 nm, 0739 UT
... 50 abs. units
. . 100 abs. units

DECEMBER 6, 1996 (P= 13.99 , Bo = 0.20 , Lo = 43.26)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



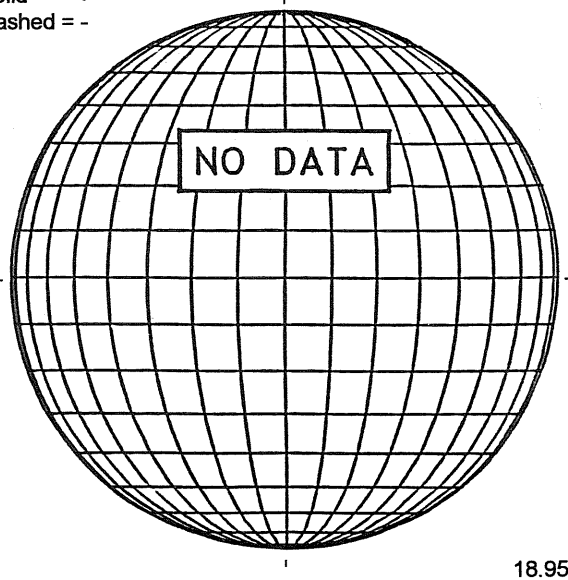
E

1555 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

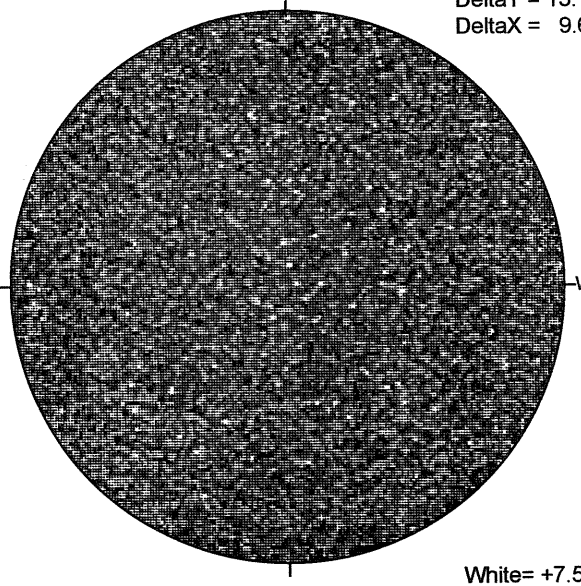


18.95 -
19.92 UT

MT. WILSON MAGNETOGRAM

N

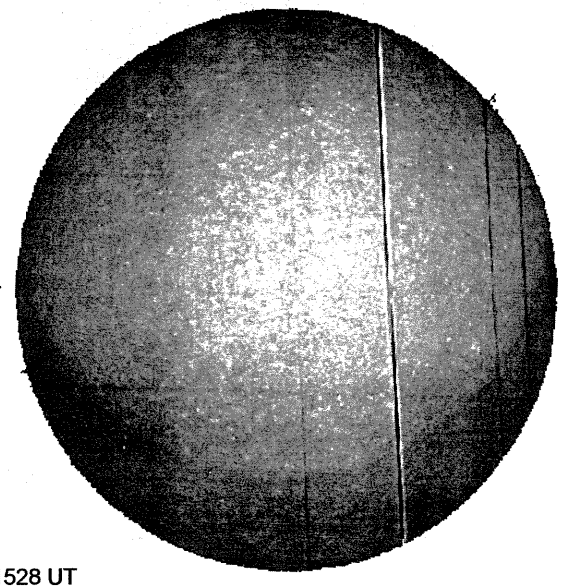
DeltaY = 13.1
DeltaX = 9.6



W

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

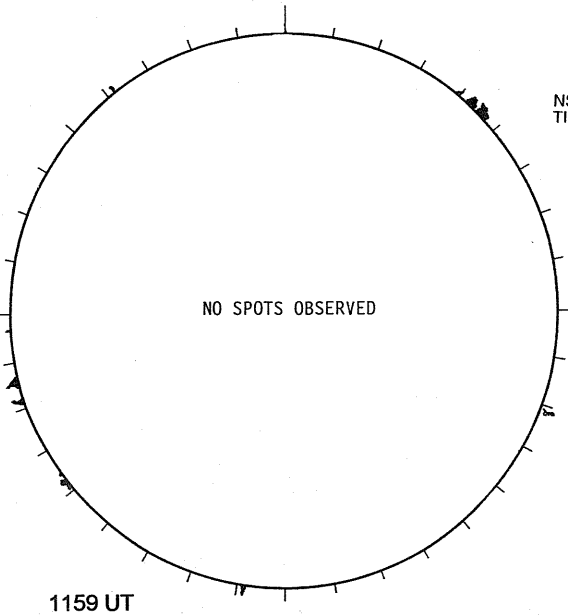


E

1528 UT

S

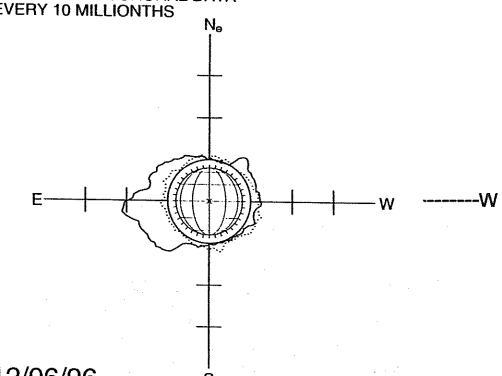
RAMEY SUNSPOT



1159 UT
0857 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



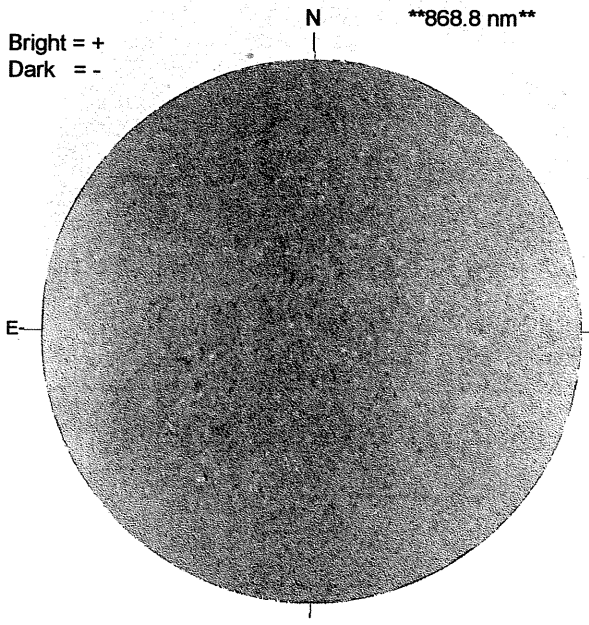
12/06/96
(DOY 341)

FE XIV 16:01 UT 1.15 R_e
FE X 16:52 UT 1.15 R_e
CA XV 16:34 UT 1.15 R_e
NO CA XV ACTIVITY TODAY

S

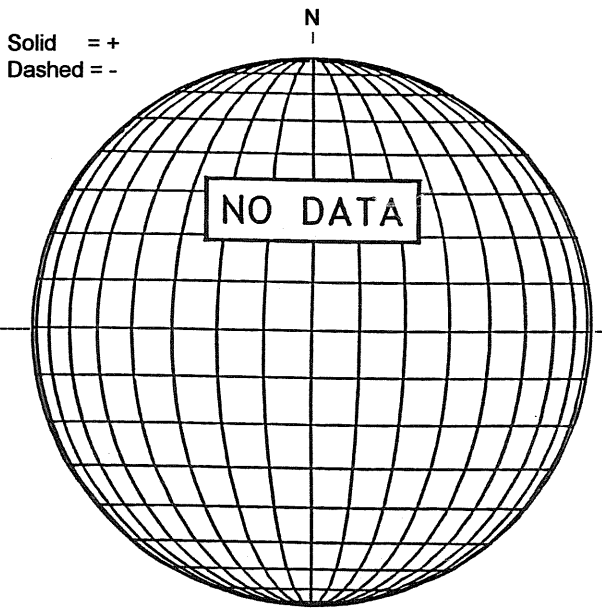
DECEMBER 7, 1996 (P= 13.57 , Bo = 0.07 Lo = 30.08)

KITT PEAK MAGNETOGRAM

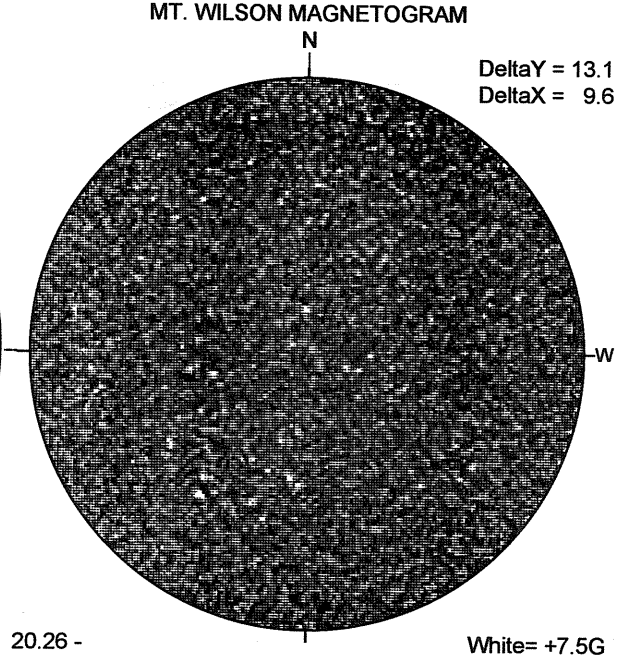


1630 UT

STANFORD MAGNETOGRAM



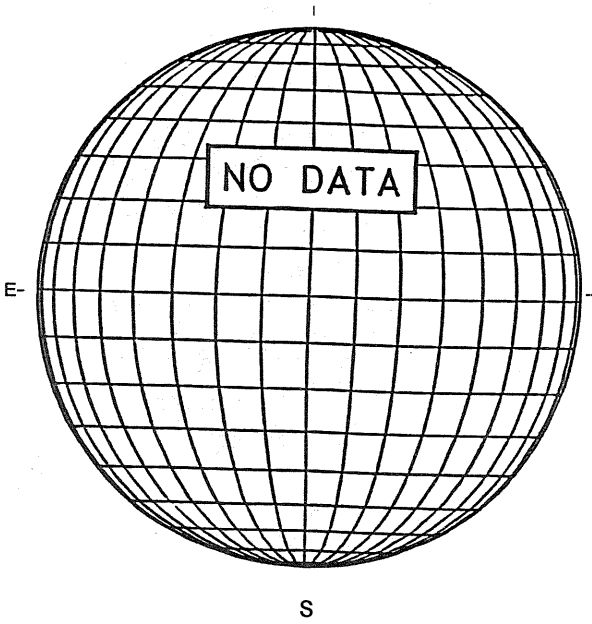
MT. WILSON MAGNETOGRAM



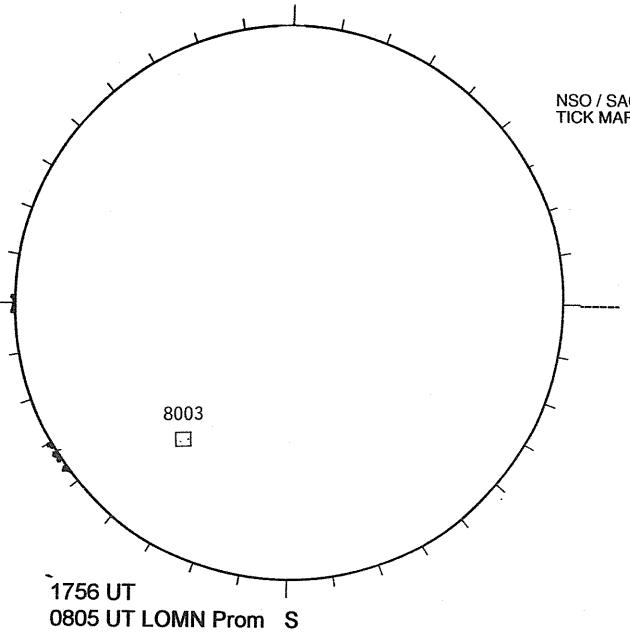
20.26 -
21.24 UT

White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA

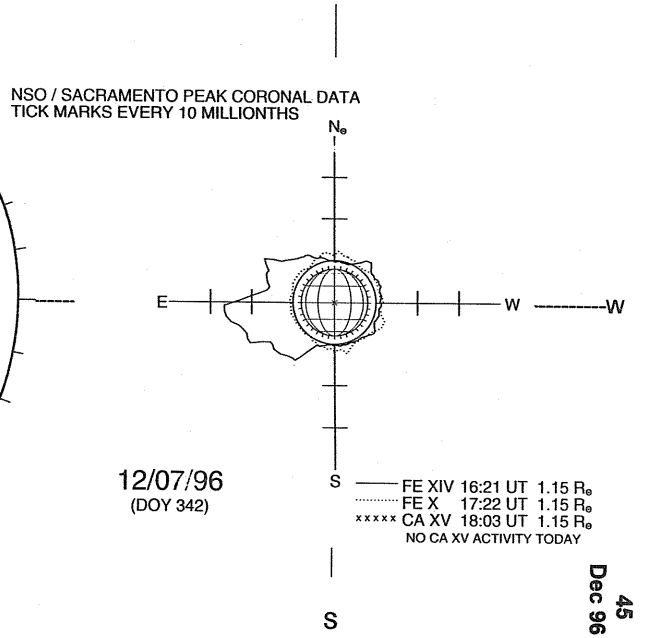


RAMEY SUNSPOT



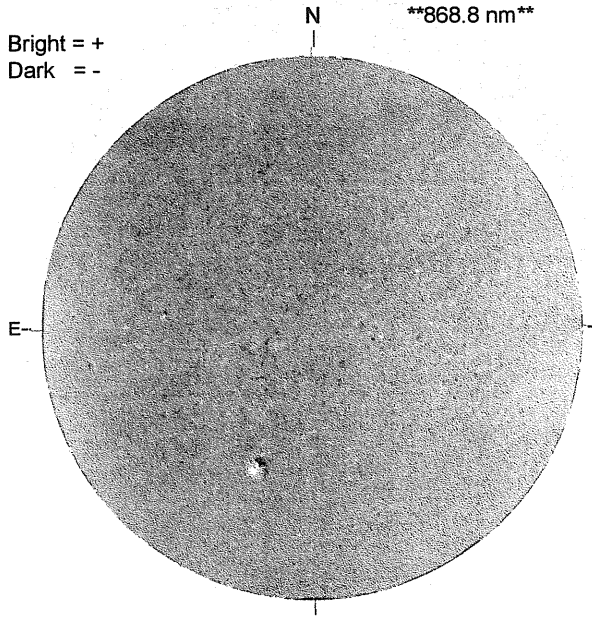
1756 UT
0805 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



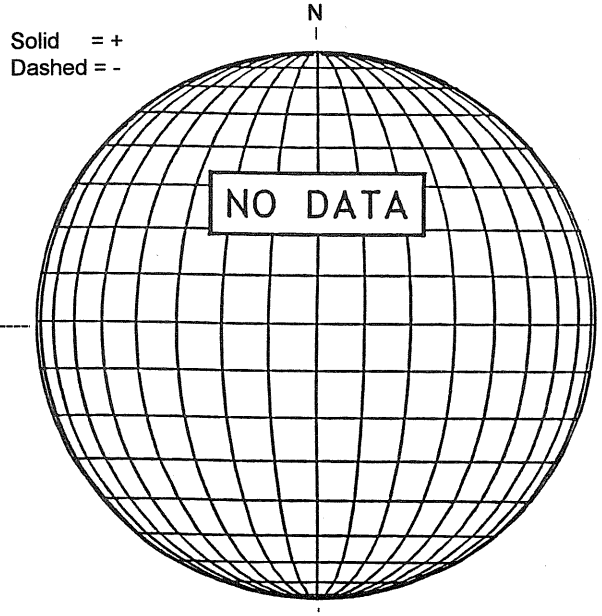
DECEMBER 8, 1996 (P= 13.15 , Bo = - 0.05 , Lo = 16.90)

KITT PEAK MAGNETOGRAM

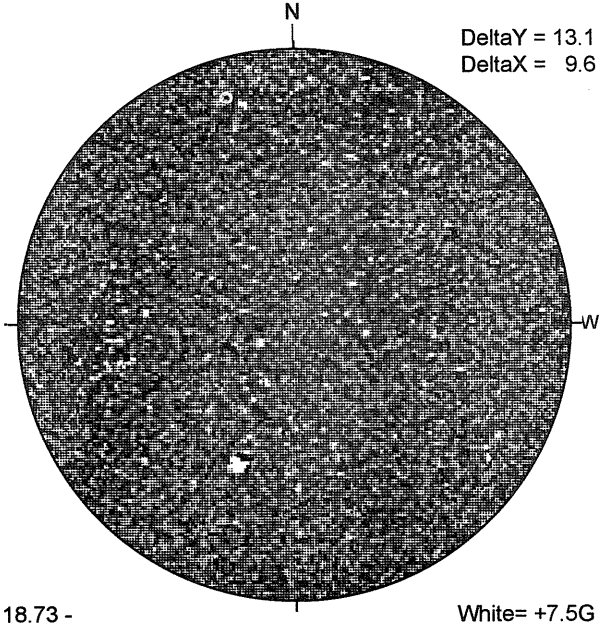


1711 UT

STANFORD MAGNETOGRAM



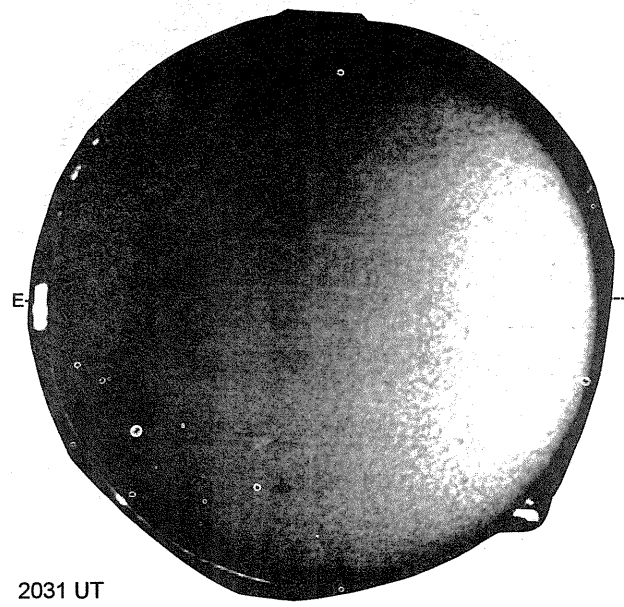
MT. WILSON MAGNETOGRAM



18.73 -
19.71 UT

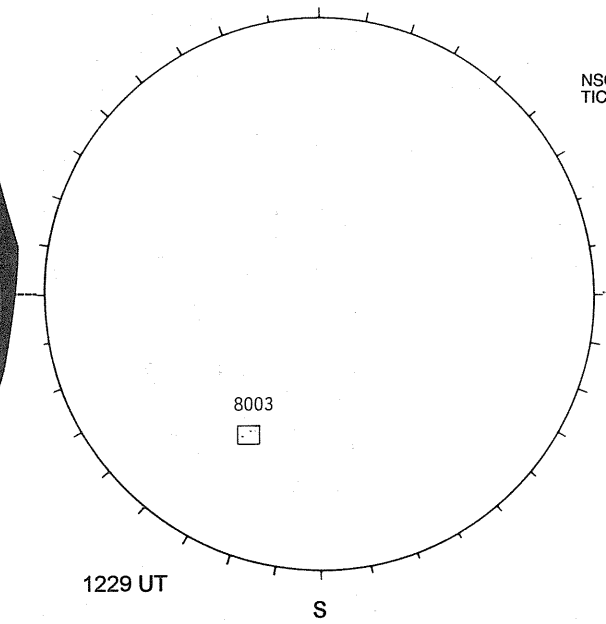
White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA



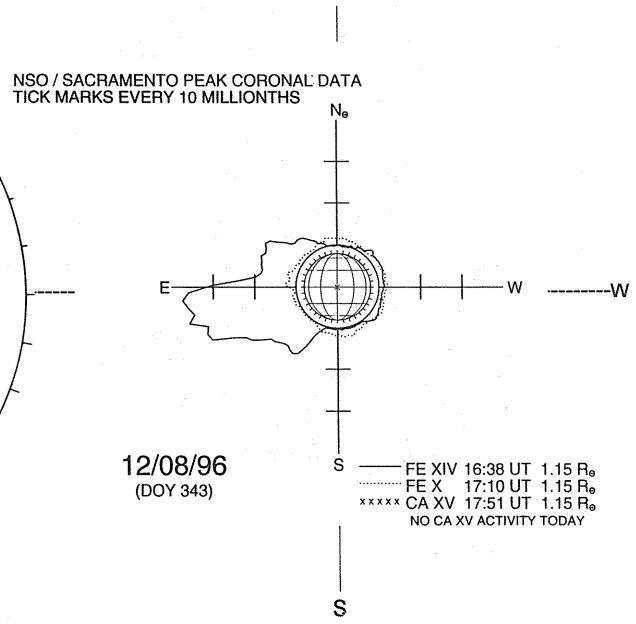
2031 UT
2055 UT Prom

RAMEY SUNSPOT



1229 UT

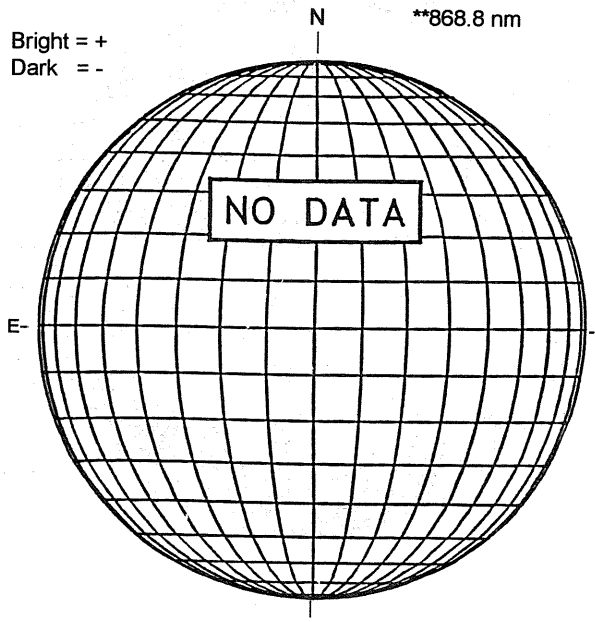
SACRAMENTO PEAK CORONA (1.15 Radii)----



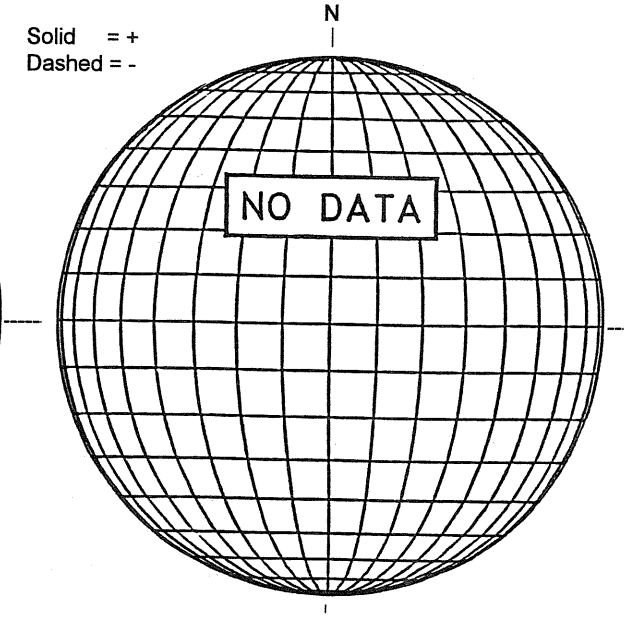
12/08/96
(DOY 343)

DECEMBER 9, 1996 (P= 12.72 Bo = - 0.18, Lo = 3.73)

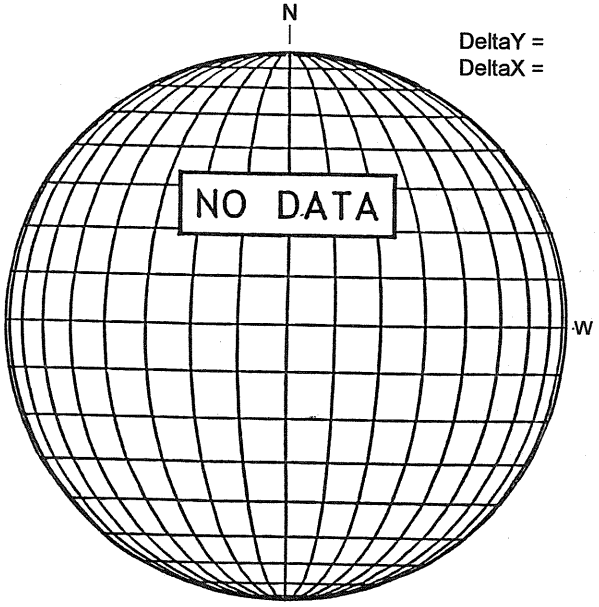
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

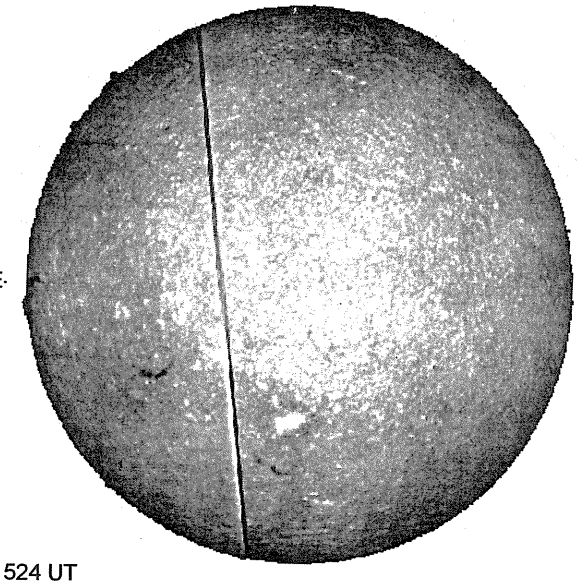


MT. WILSON MAGNETOGRAM



White= +7.5G
Black = -7.5G

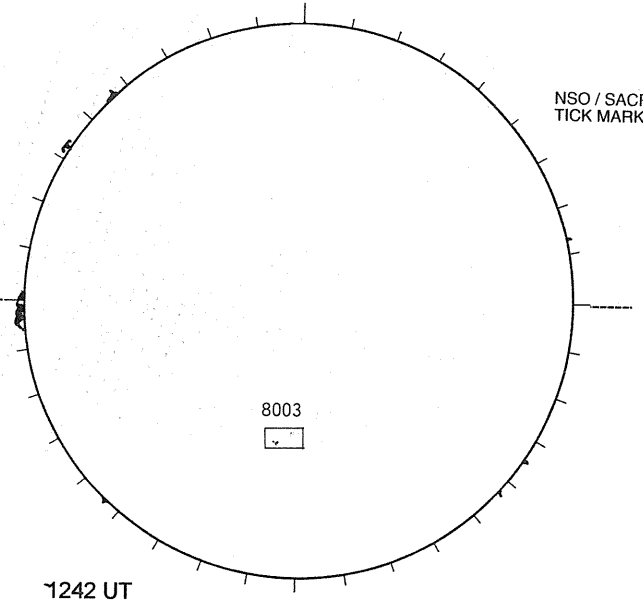
SACRAMENTO PEAK H-ALPHA



1524 UT

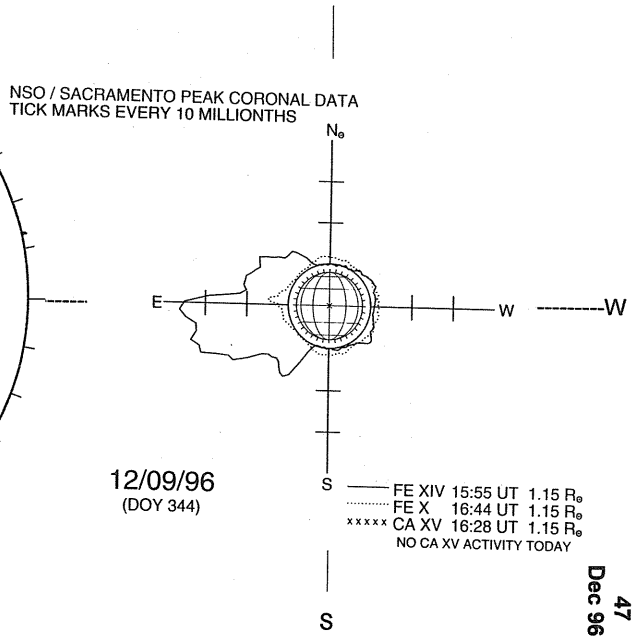
S

RAMEY SUNSPOT



1242 UT
0744 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

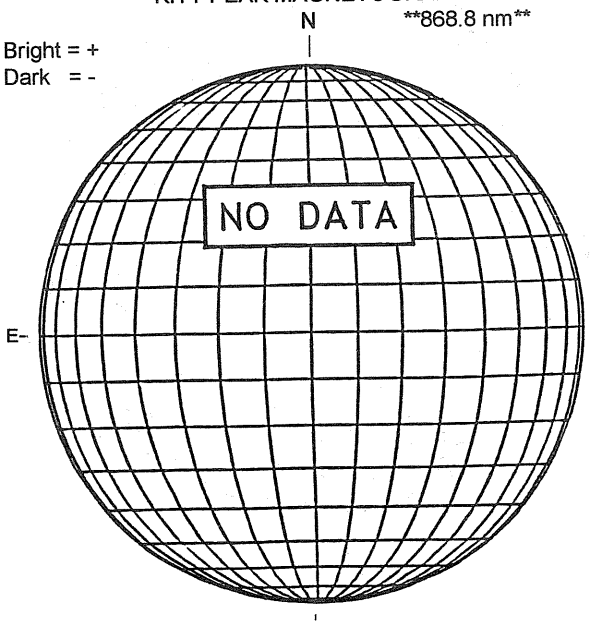
47
Dec 96

DECEMBER 10, 1996 (P= 12.29 , Bo = - 0.31 Lo = 350.55)

KITT PEAK MAGNETOGRAM

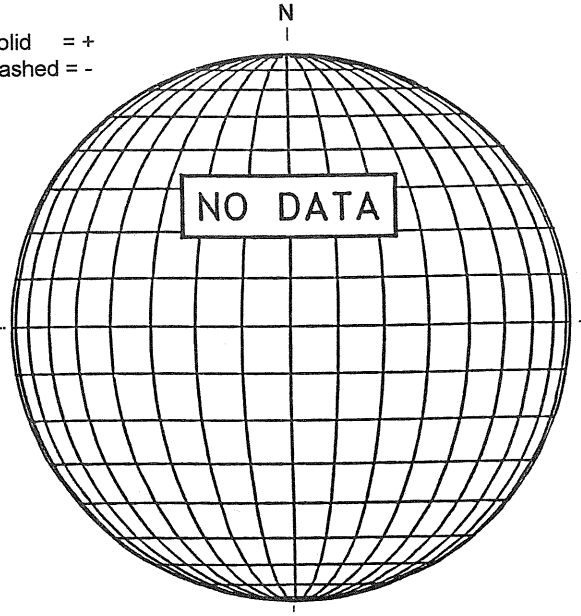
868.8 nm

Bright = +
Dark = -



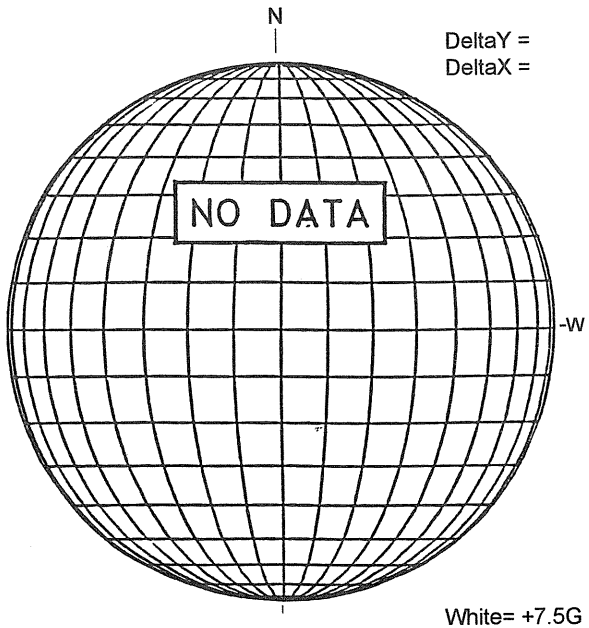
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



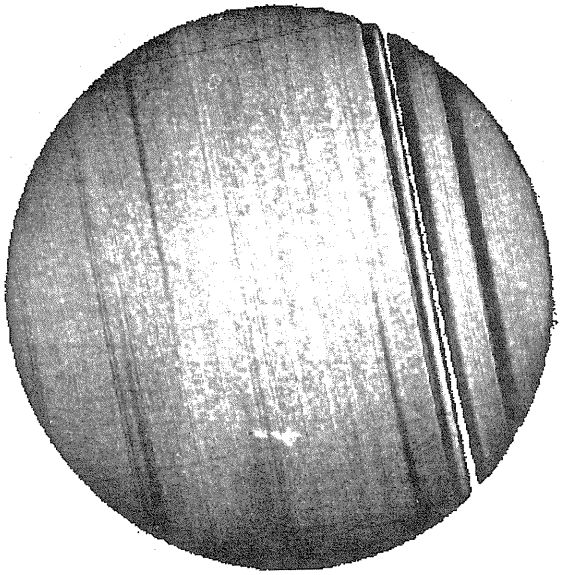
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



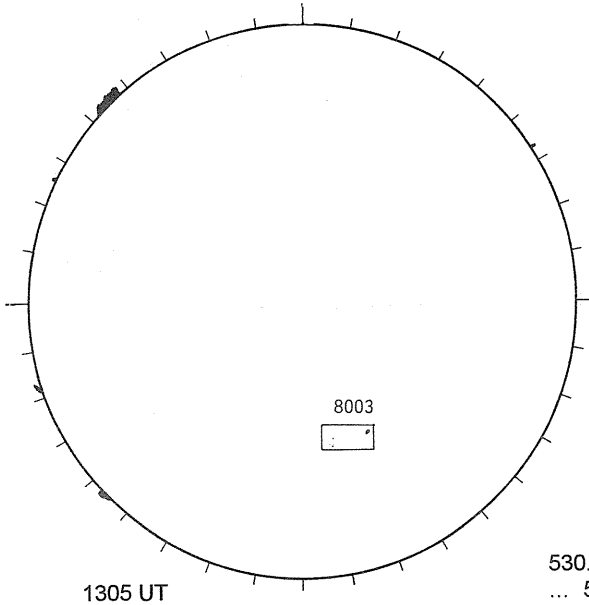
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



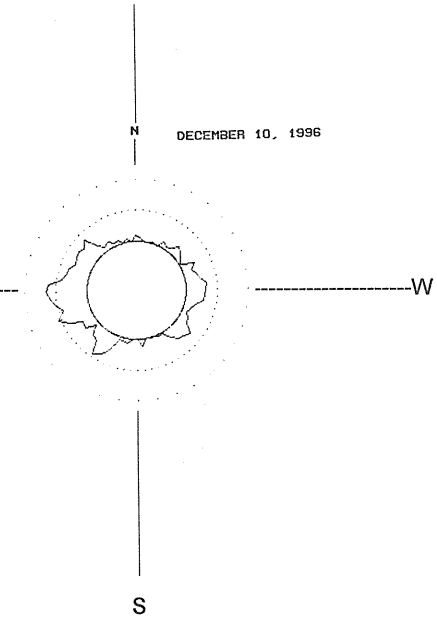
1511 UT

RAMEY SUNSPOT



1305 UT
0718 UT LOMN Prom S

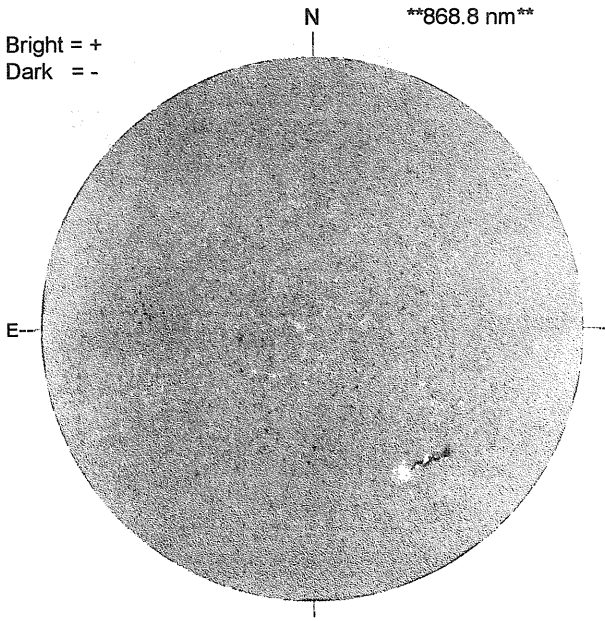
LOMNICKY PEAK CORONA (1.04 Radii)----



530.3 nm, 07.35 UT
... 50 abs. units
. . 100 abs. units

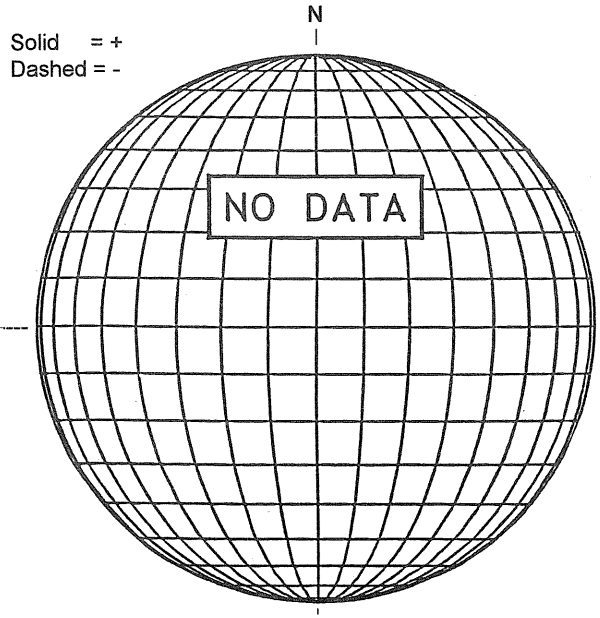
DECEMBER 11, 1996 (P= 11.85, Bo = - 0.44, Lo = 337.38)

KITT PEAK MAGNETOGRAM

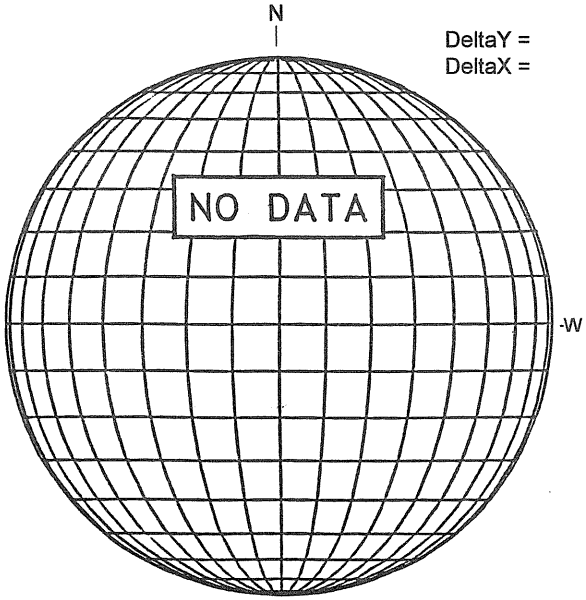


1526 UT

STANFORD MAGNETOGRAM

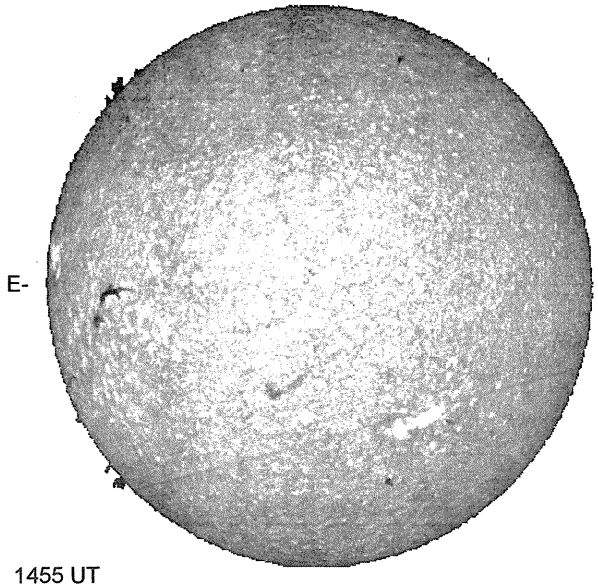


MT. WILSON MAGNETOGRAM



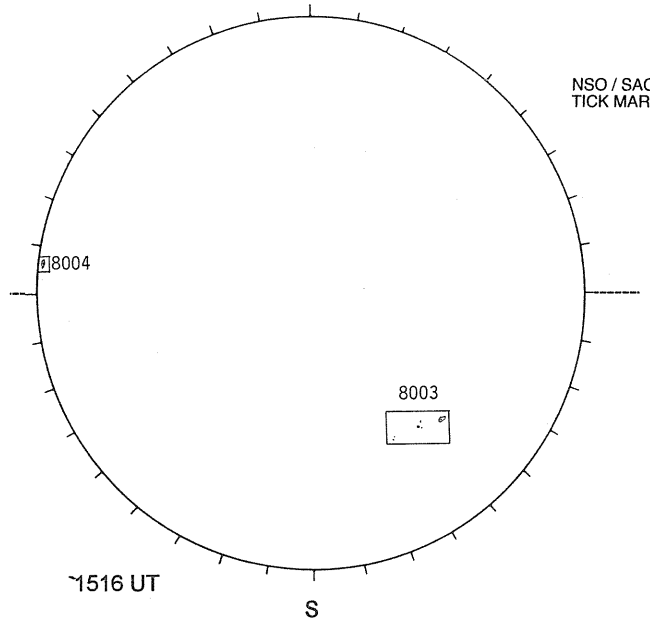
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



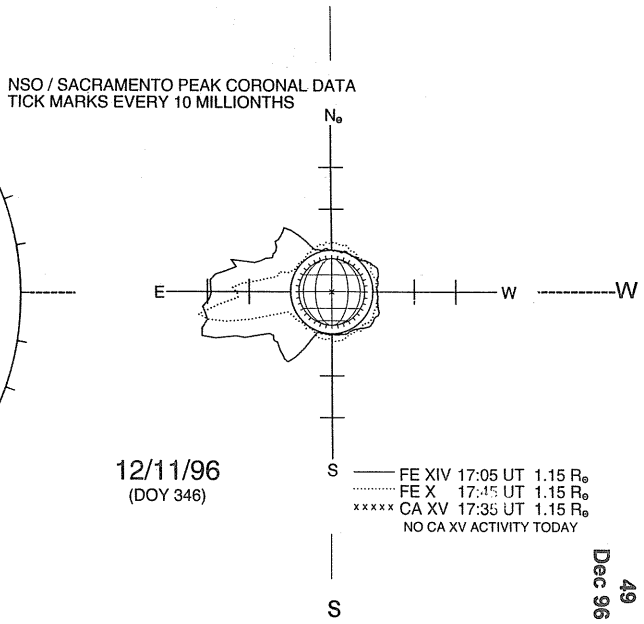
1455 UT

HOLLOMAN SUNSPOT



1516 UT

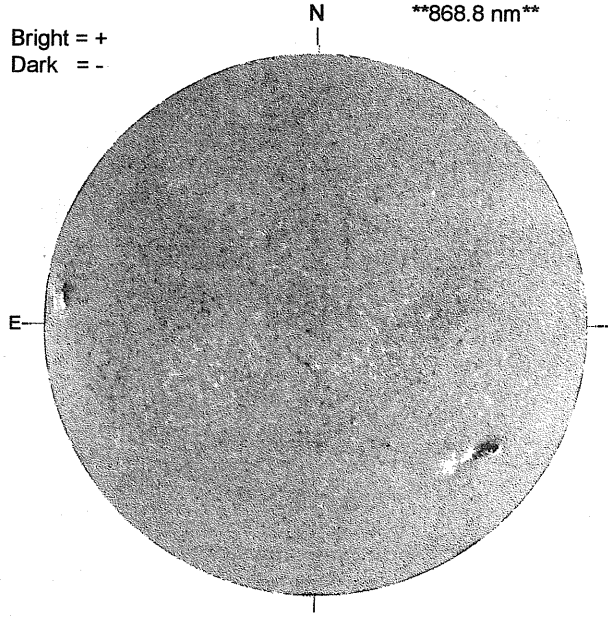
SACRAMENTO PEAK CORONA (1.15 Radii)----



DECEMBER 12, 1996 (P= 11.41, Bo = - 0.57, Lo = 324.20)

KITT PEAK MAGNETOGRAM

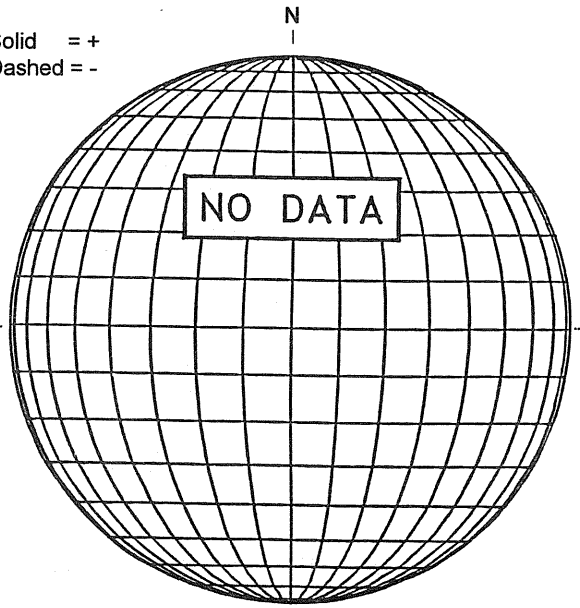
Bright = +
Dark = -



1522 UT

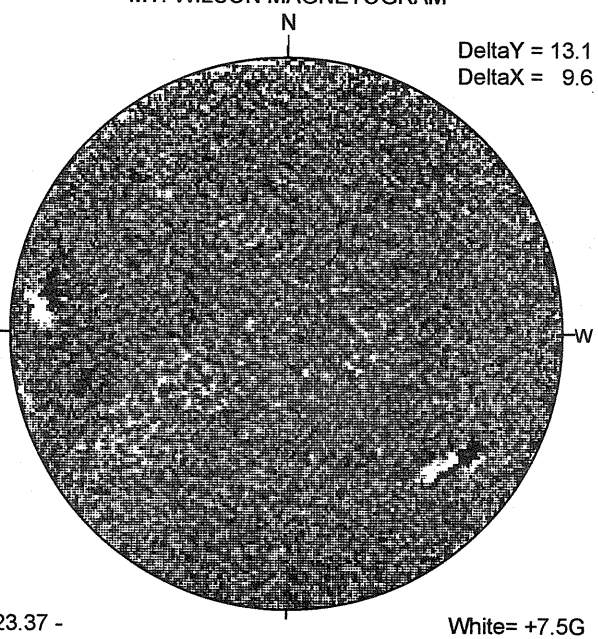
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

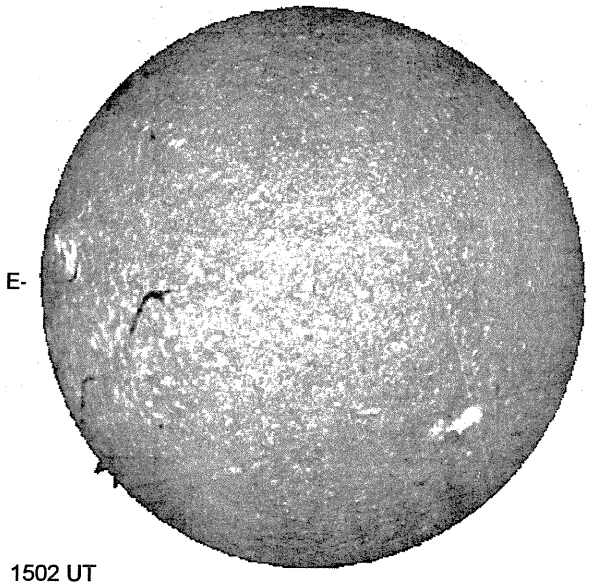
DeltaY = 13.1
DeltaX = 9.6



23.37 -
24.34 UT

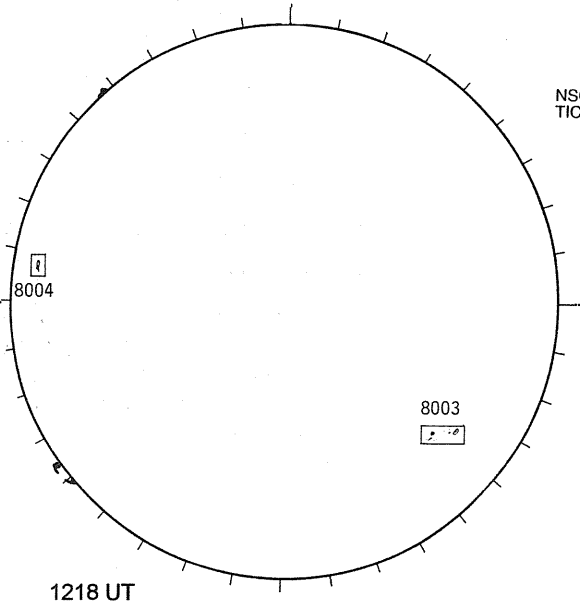
White= +7.5G
Black = -7.5G

---- SACRAMENTO PEAK H-ALPHA



1502 UT

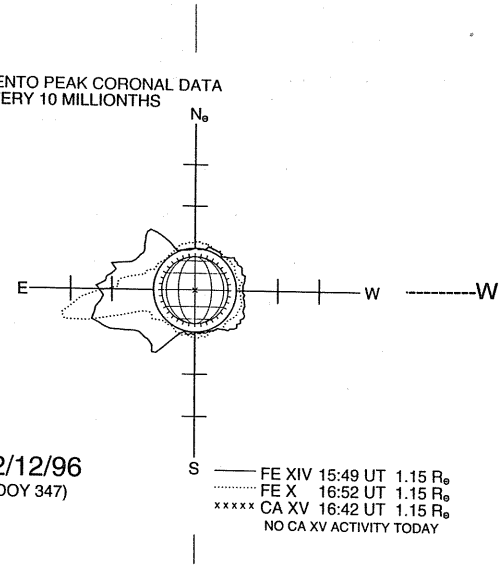
RAMEY SUNSPOT



1218 UT
0733 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



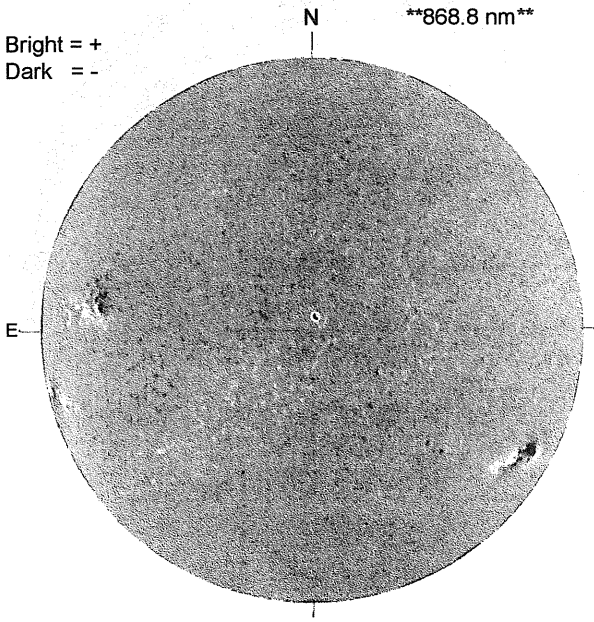
12/12/96
(DOY 347)

FE XIV 15:49 UT 1.15 $R_\odot$
FE X 16:52 UT 1.15 $R_\odot$
xxxxx CA XV 16:42 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

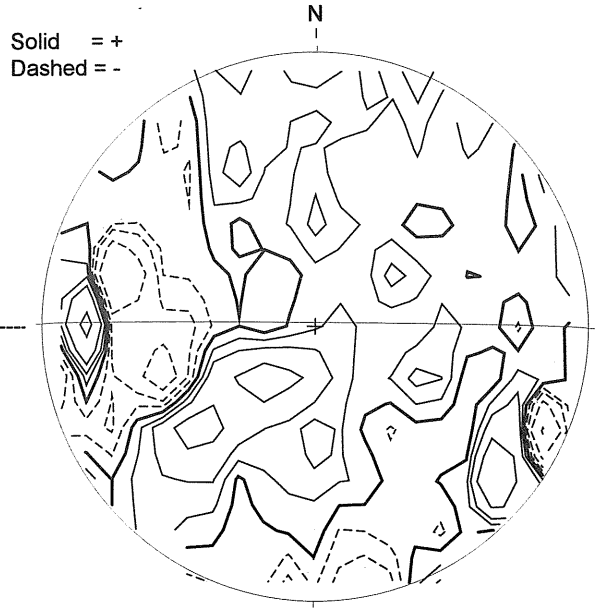
DECEMBER 13, 1996 (P= 10.97, Bo = - 0.69, Lo = 311.02)

KITT PEAK MAGNETOGRAM



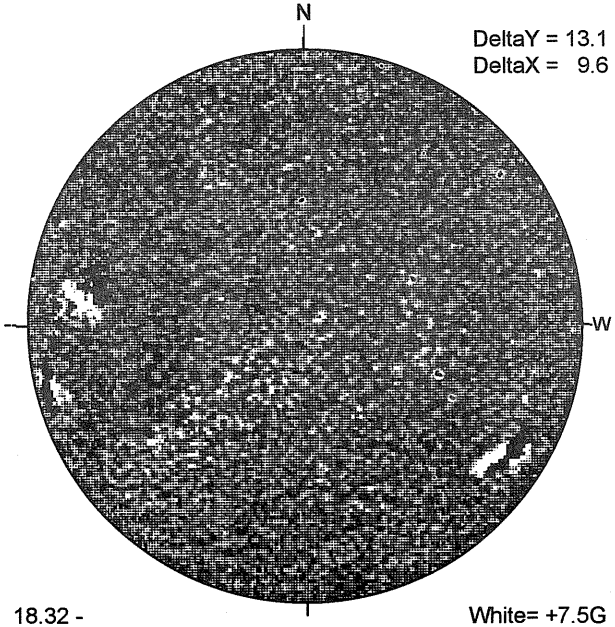
1537 UT

STANFORD MAGNETOGRAM



2008 UT

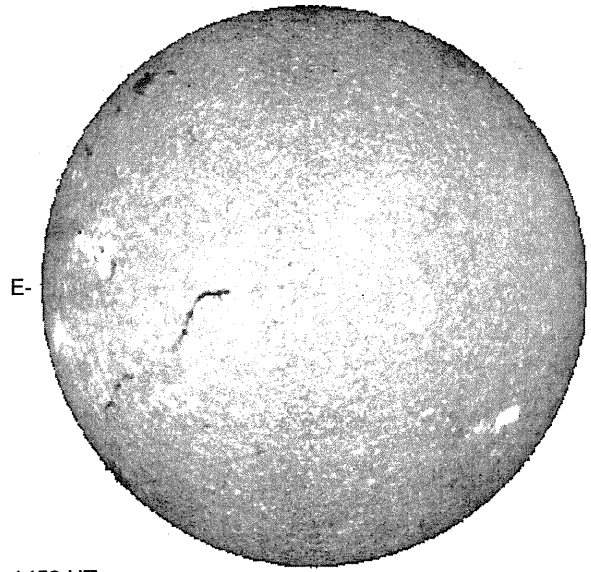
MT. WILSON MAGNETOGRAM



18.32 - 19.29 UT

White= +7.5G
Black = -7.5G

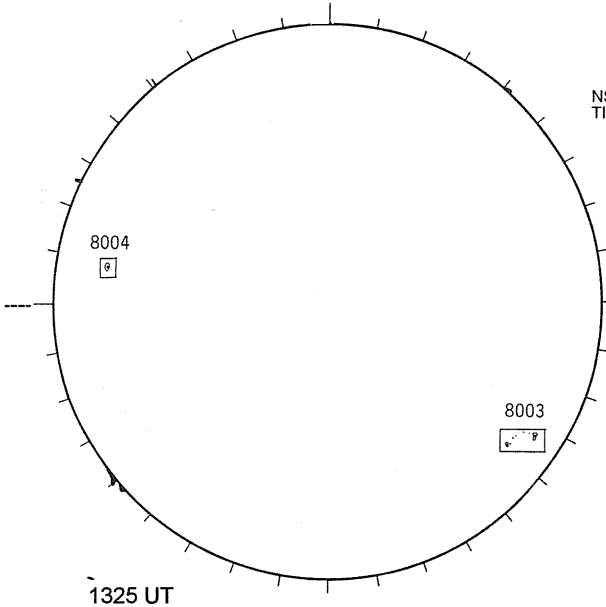
SACRAMENTO PEAK H-ALPHA



1459 UT

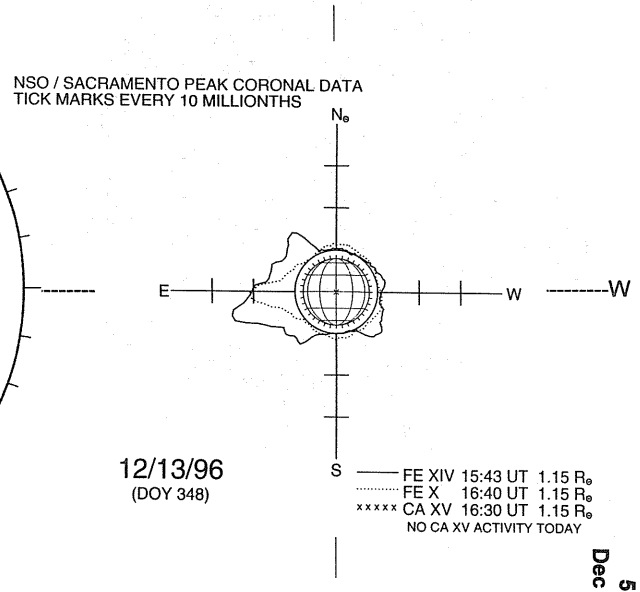
S

RAMEY SUNSPOT



1325 UT
0807 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



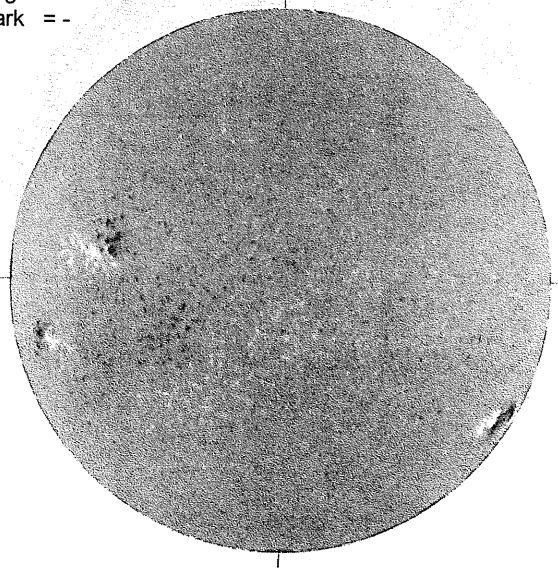
S

DECEMBER 14, 1996 (P= 10.52, Bo = - 0.82, Lo= 297.85)

KITT PEAK MAGNETOGRAM

868.8 nm

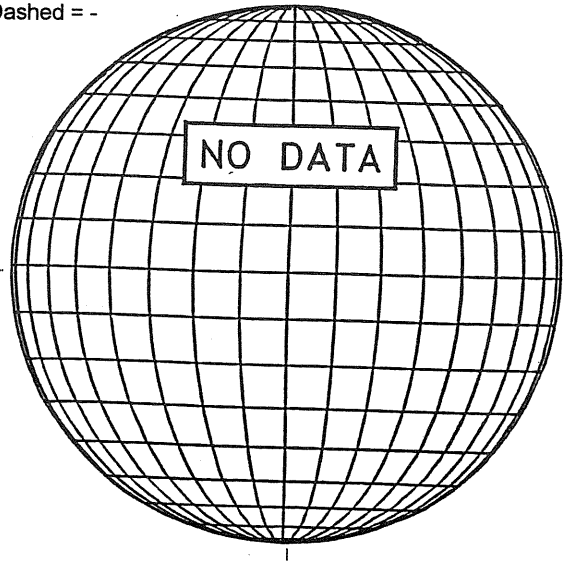
Bright = +
Dark = -



1558 UT

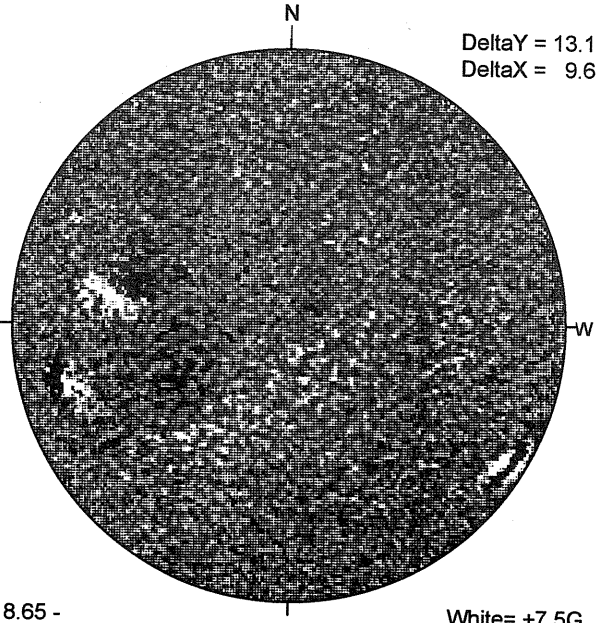
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

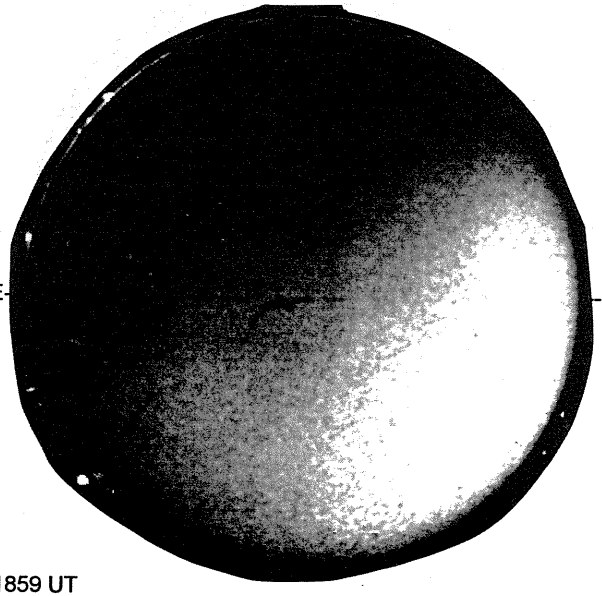
DeltaY = 13.1
DeltaX = 9.6



18.65 -
19.63 UT

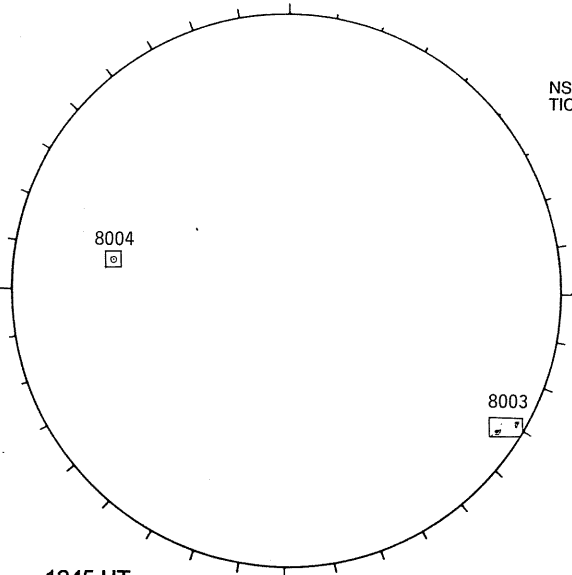
White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA



1859 UT
1908 UT Prom

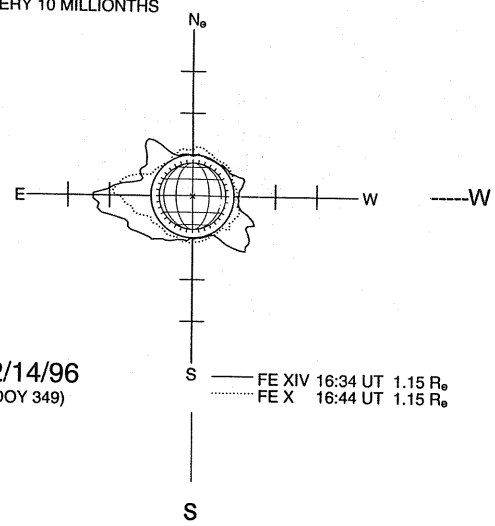
RAMEY SUNSPOT



1245 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS

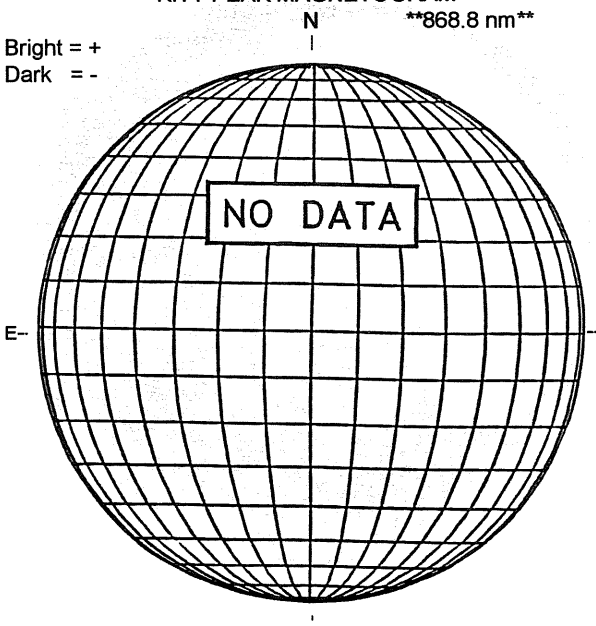


12/14/96
(DOY 349)

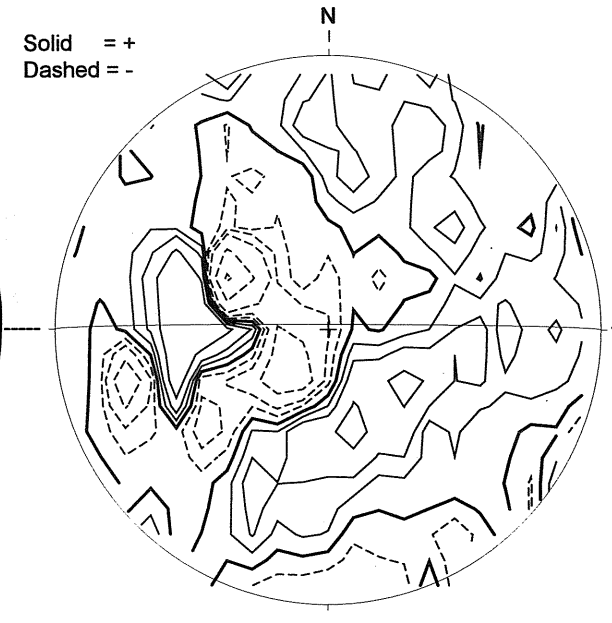
FE XIV 16:34 UT 1.15 $R_\odot$
FE X 16:44 UT 1.15 $R_\odot$

DECEMBER 15, 1996 (P= 10.07, Bo = - 0.95, Lo = 284.68)

KITT PEAK MAGNETOGRAM

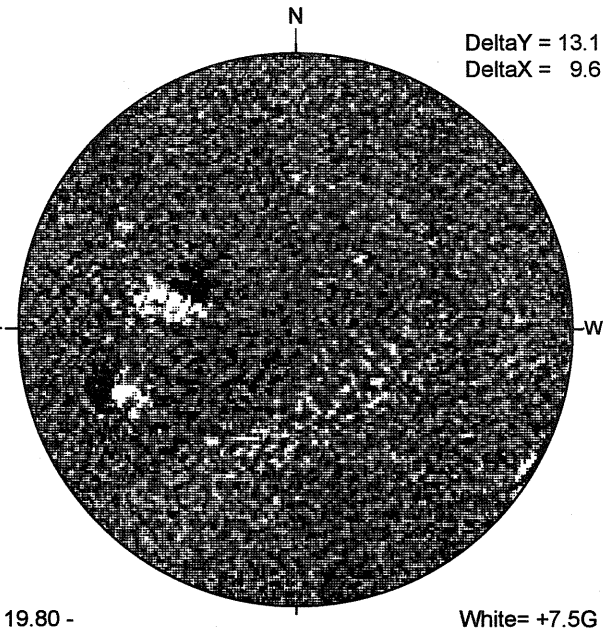


STANFORD MAGNETOGRAM



2141 UT

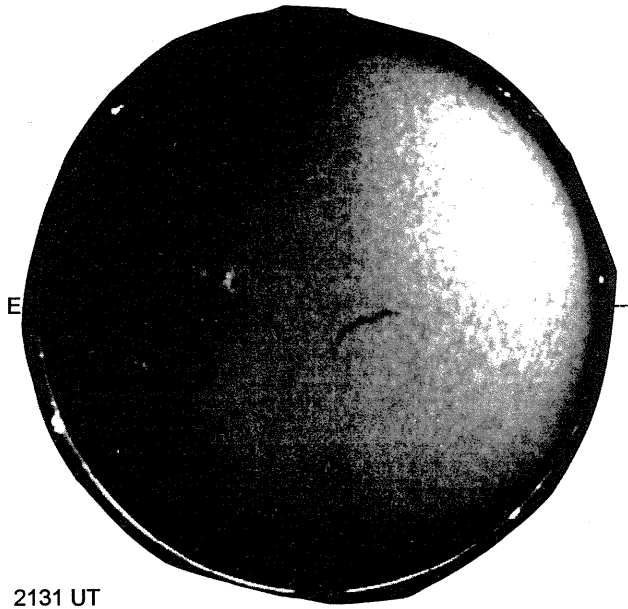
MT. WILSON MAGNETOGRAM



19.80 -
20.77 UT

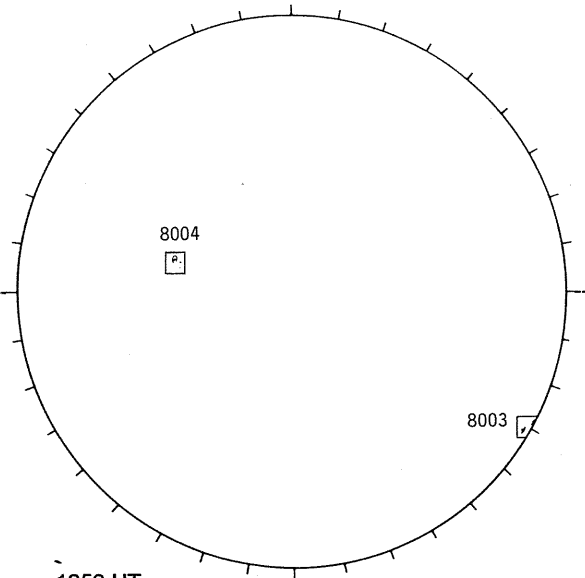
White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA



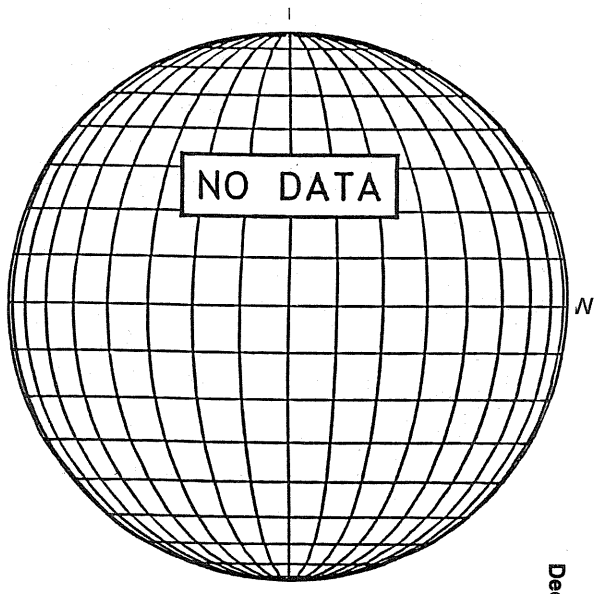
2131 UT
2140 UT Prom

RAMEY SUNSPOT



1253 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



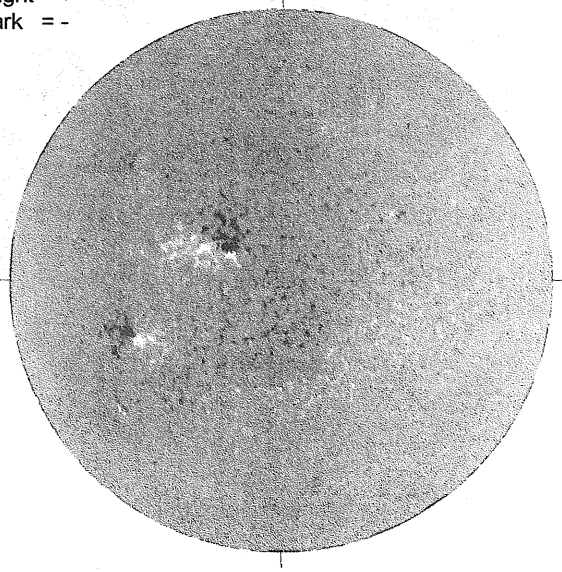
53
Dec 96

DECEMBER 16, 1996 (P= 9.61, Bo = - 1.08, Lo = 271.50)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

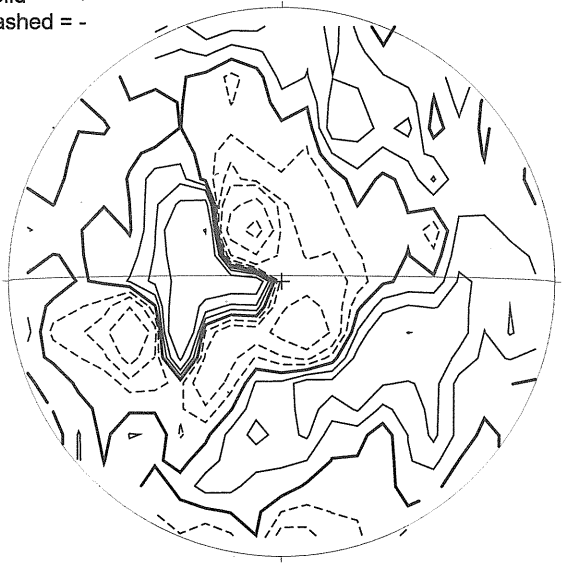


1535 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

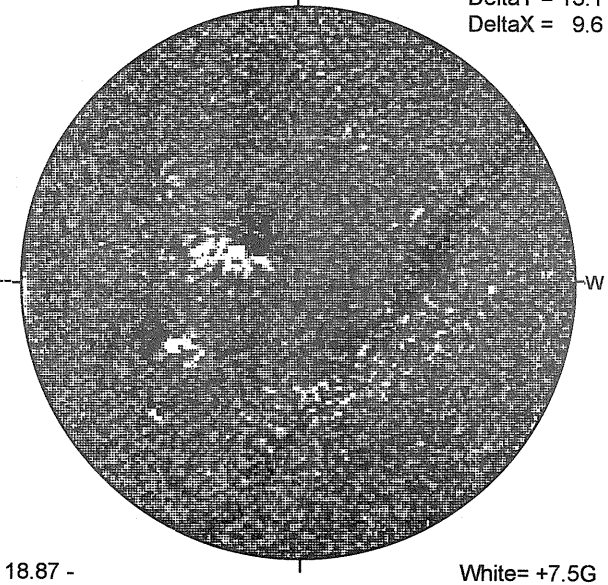


2123 UT

MT. WILSON MAGNETOGRAM

N

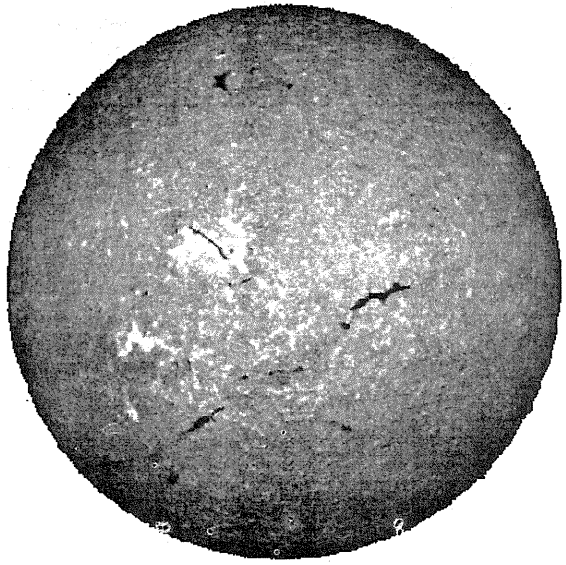
DeltaY = 13.1
DeltaX = 9.6



18.87 -
19.85 UT

White= +7.5G
Black = -7.5G

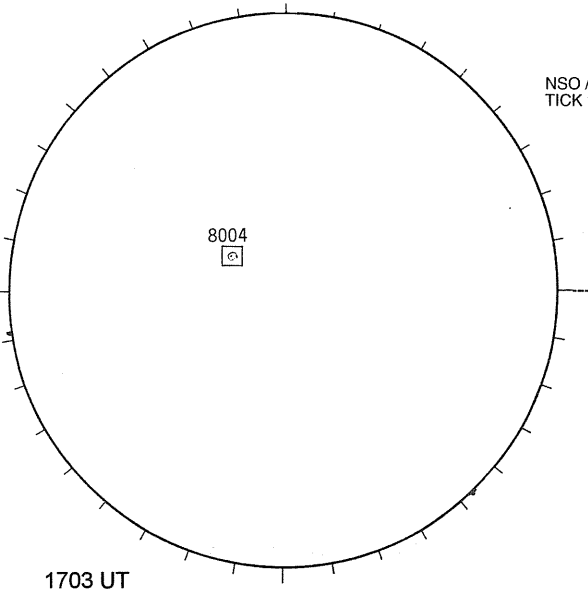
----- SACRAMENTO PEAK LOA H-ALPHA



1527 UT

S

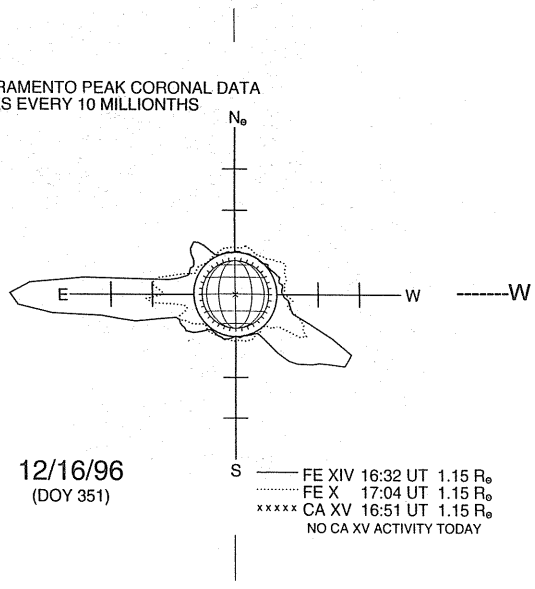
RAMEY SUNSPOT



1703 UT
0857 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



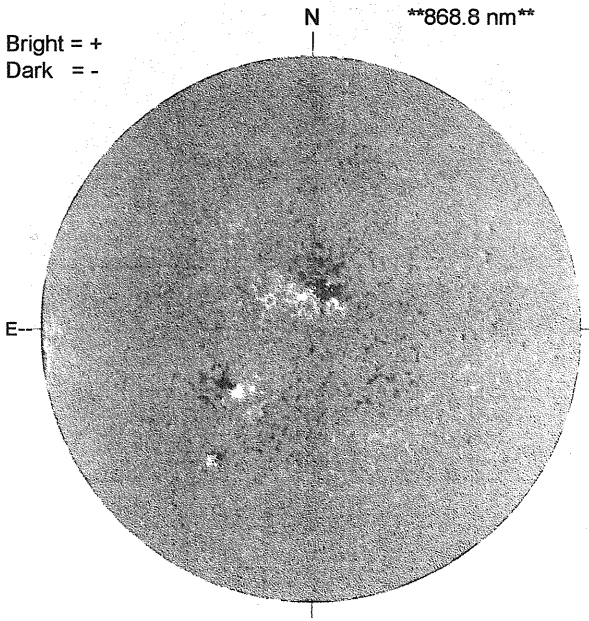
12/16/96
(DOY 351)

FE XIV 16:32 UT 1.15 R⊕
FE X 17:04 UT 1.15 R⊕
xxxxx CA XV 16:51 UT 1.15 R⊕
NO CA XV ACTIVITY TODAY

S

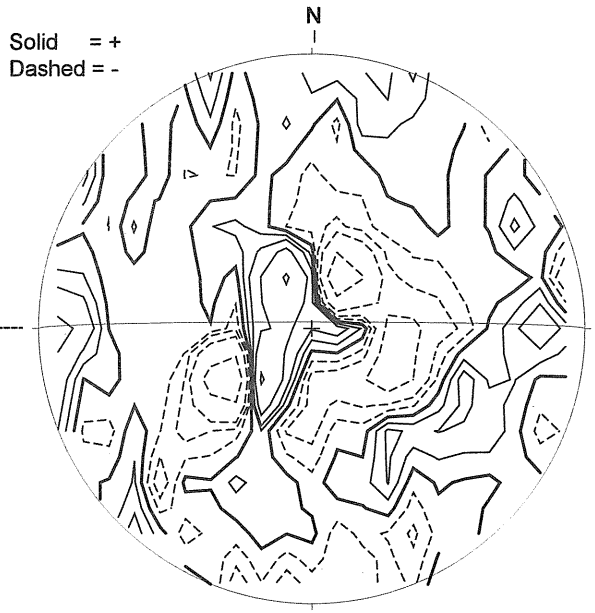
DECEMBER 17, 1996 (P= 9.15, Bo = - 1.20, Lo = 258.33)

KITT PEAK MAGNETOGRAM



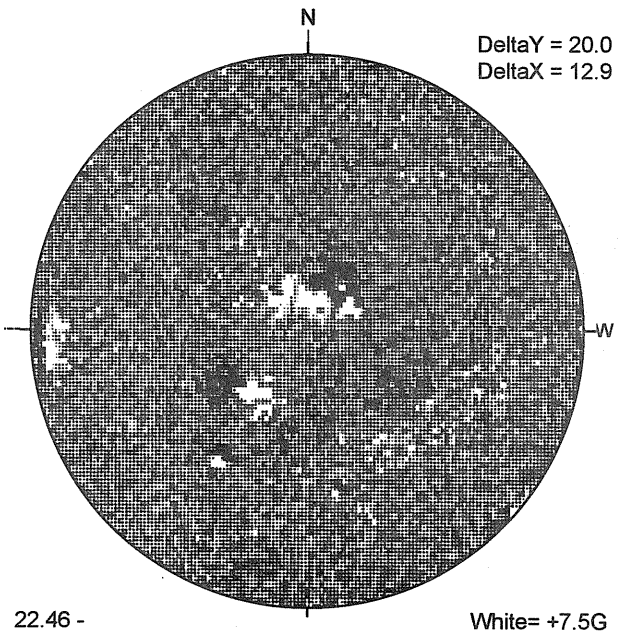
1521 UT

STANFORD MAGNETOGRAM



2338 UT

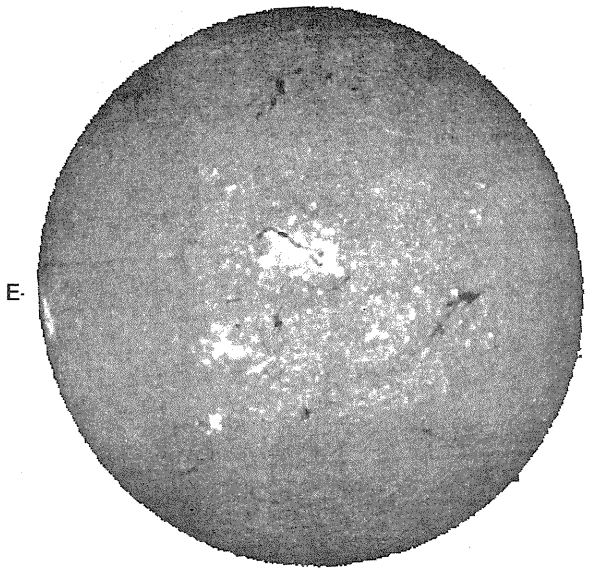
MT. WILSON MAGNETOGRAM



22.46 -
22.89 UT

White= +7.5G
Black = -7.5G

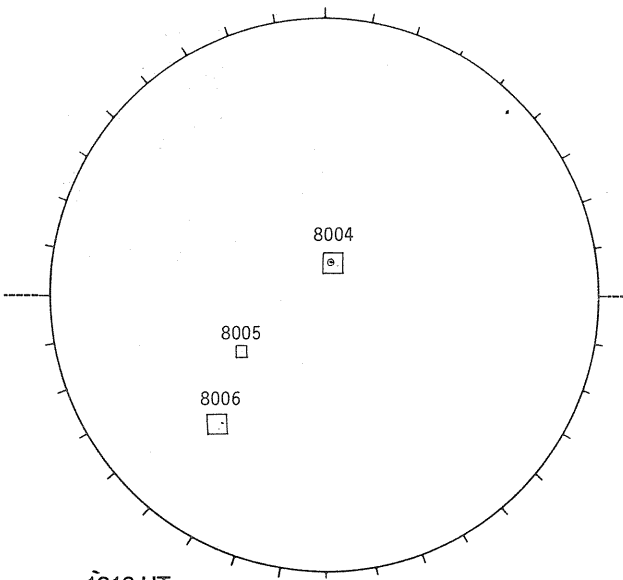
SACRAMENTO PEAK H-ALPHA



1456 UT

S

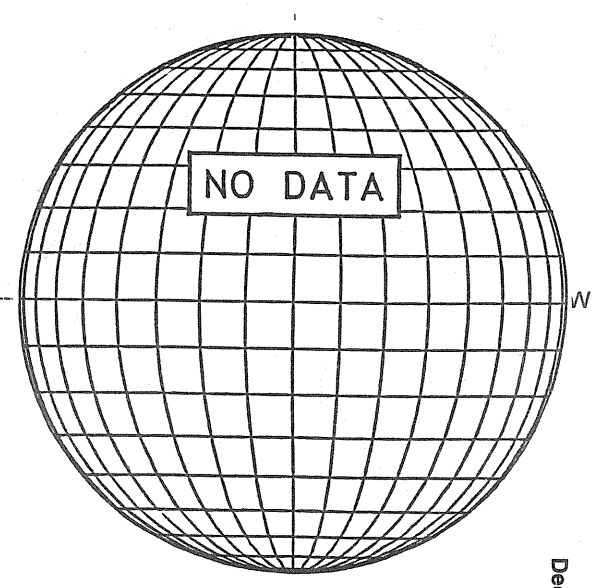
RAMEY SUNSPOT



1216 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



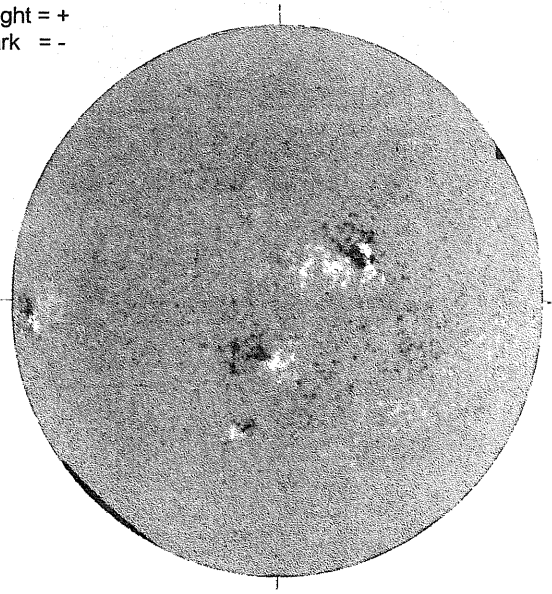
S

55
Dec 96

DECEMBER 18, 1996 (P= 8.69, Bo = - 1.33, Lo = 245.15)

KITT PEAK MAGNETOGRAM

N
868.8 nm
Bright = +
Dark = -
E



1855 UT

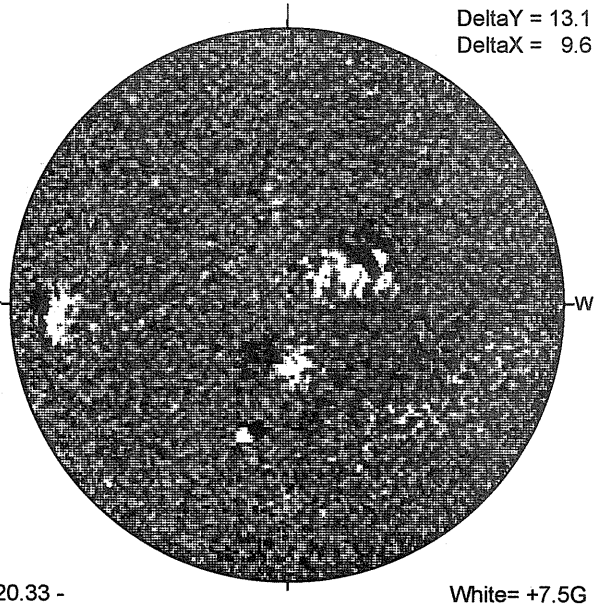
STANFORD MAGNETOGRAM

N
Solid = +
Dashed = -

2209 UT

MT. WILSON MAGNETOGRAM

N
DeltaY = 13.1
DeltaX = 9.6
W

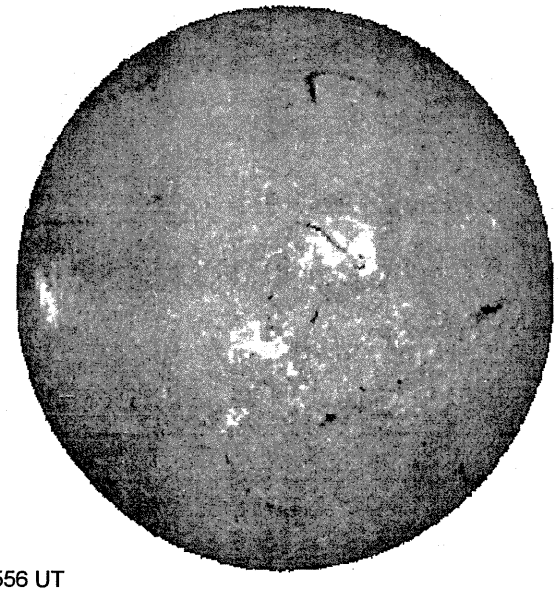


20.33 -
21.31 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

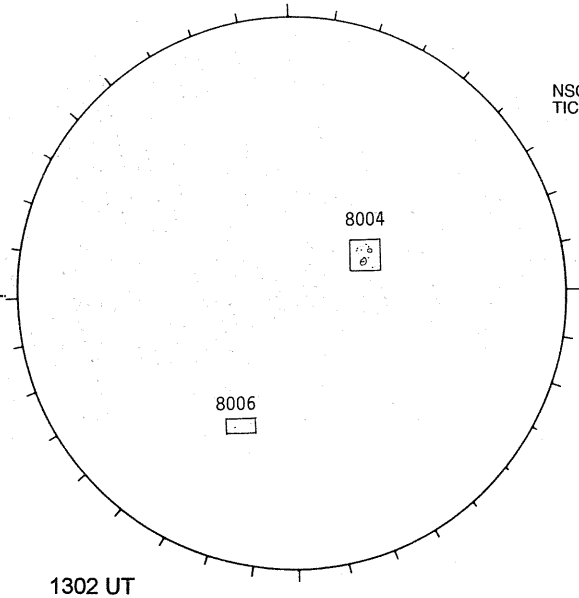
E



1556 UT

S

RAMEY SUNSPOT

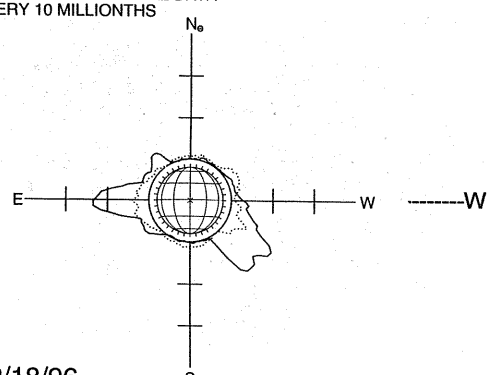


1302 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



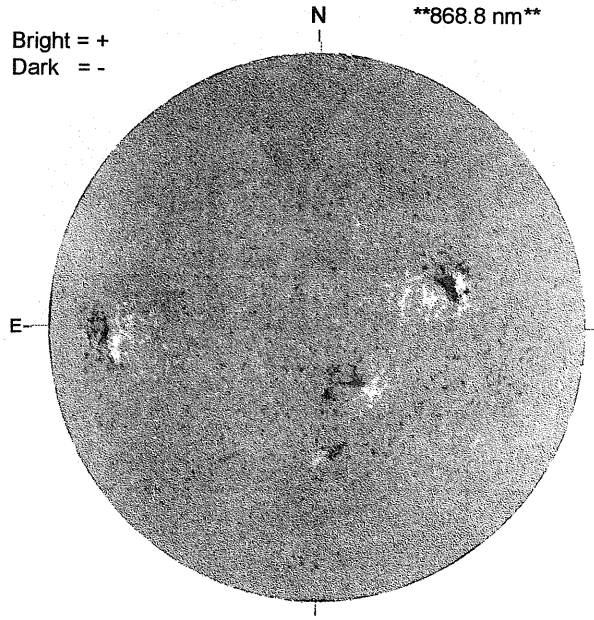
12/18/96
(DOY 353)

FE XIV 16:49 UT 1.15 R_e
FE X 17:21 UT 1.15 R_e
xxxxx CA XV 17:09 UT 1.15 R_e
NO CA XV ACTIVITY TODAY

S

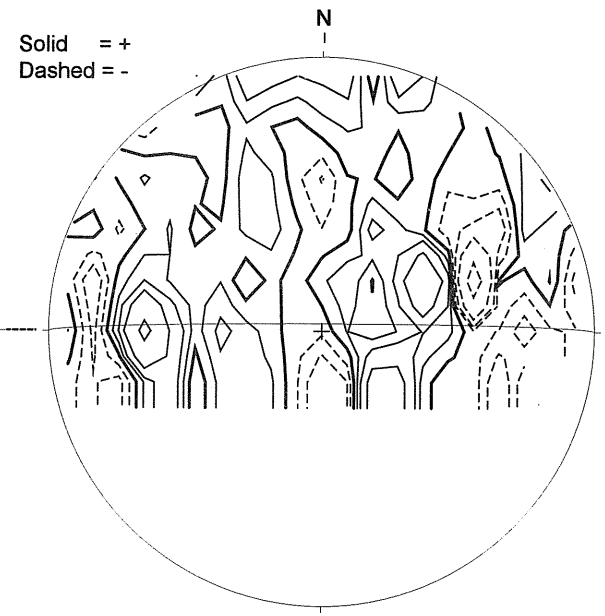
DECEMBER 19, 1996 (P= 8.23, Bo = - 1.45, Lo = 231.98)

KITT PEAK MAGNETOGRAM



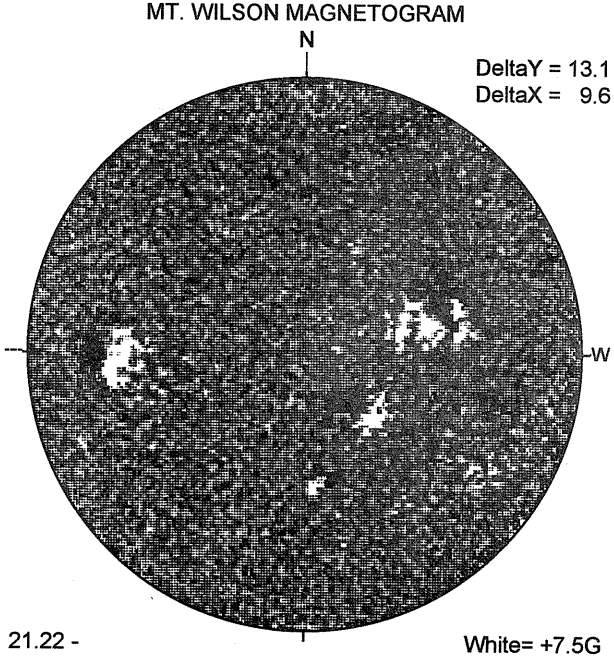
1552 UT

STANFORD MAGNETOGRAM



2314 UT

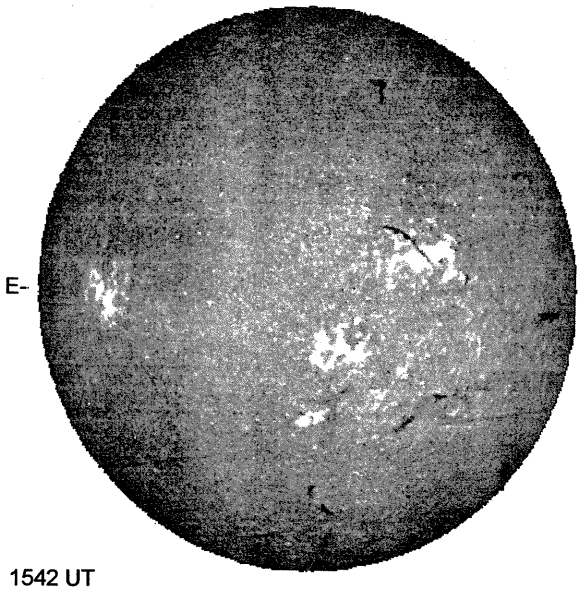
MT. WILSON MAGNETOGRAM



21.22 -
22.19 UT

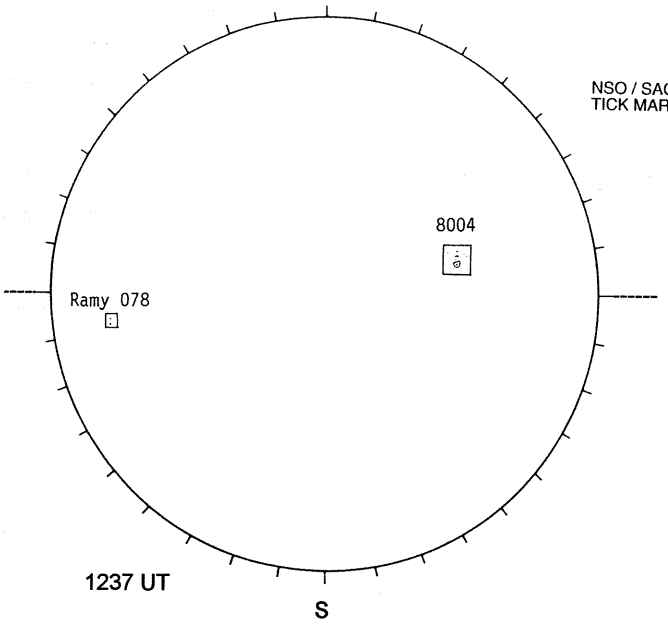
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



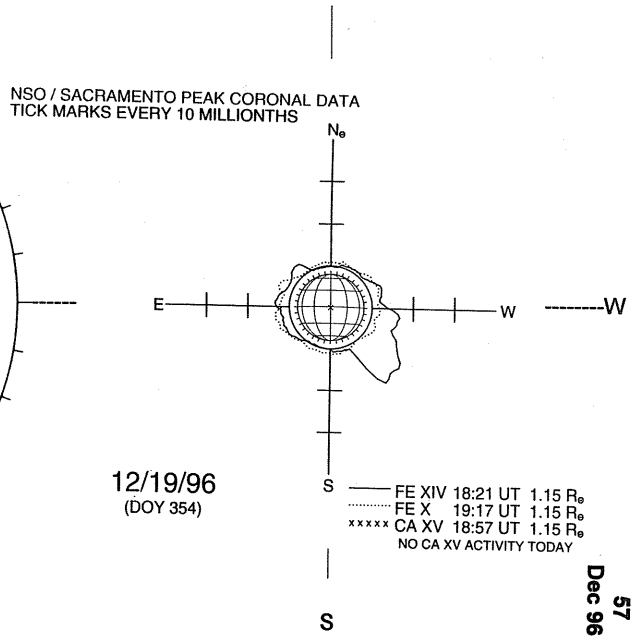
1542 UT

RAMEY SUNSPOT



1237 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



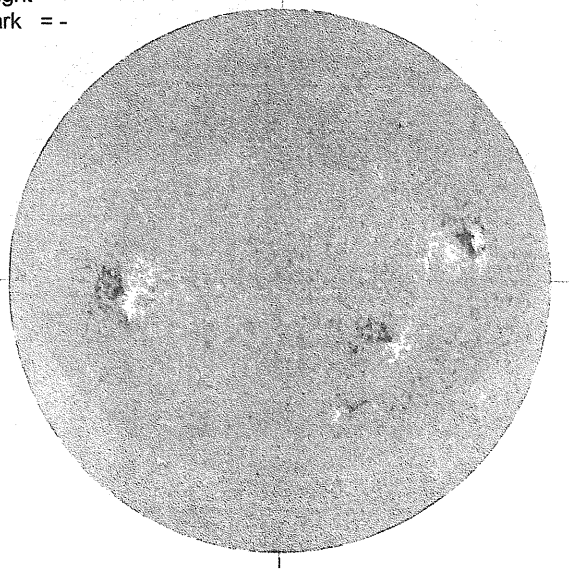
DECEMBER 20, 1996 (P= 7.76, Bo = - 1.58, Lo = 218.80)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



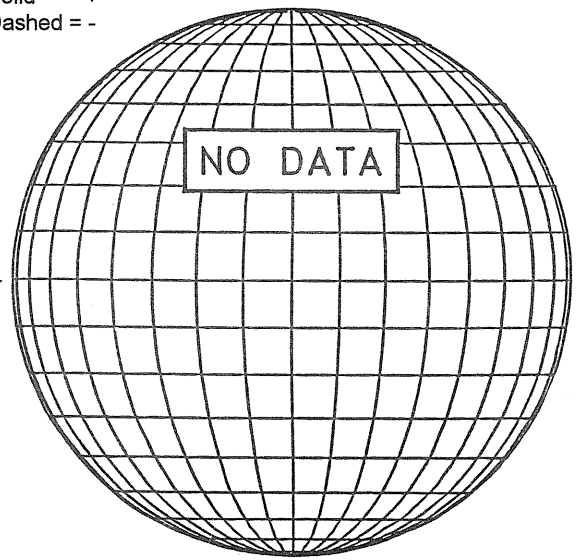
E--

1610 UT

STANFORD MAGNETOGRAM

N

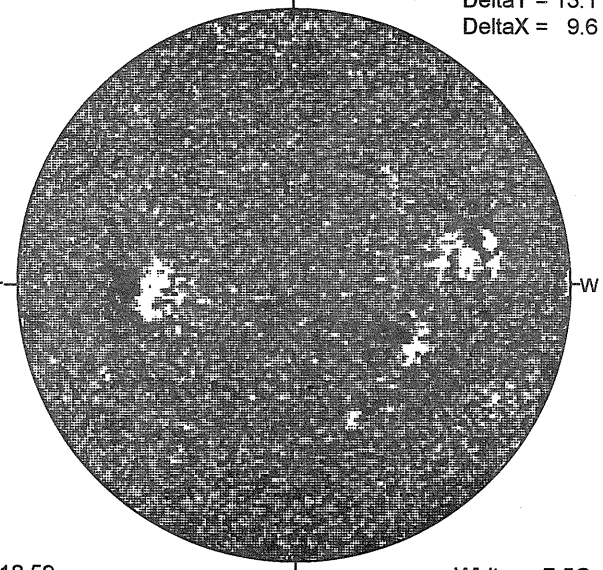
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

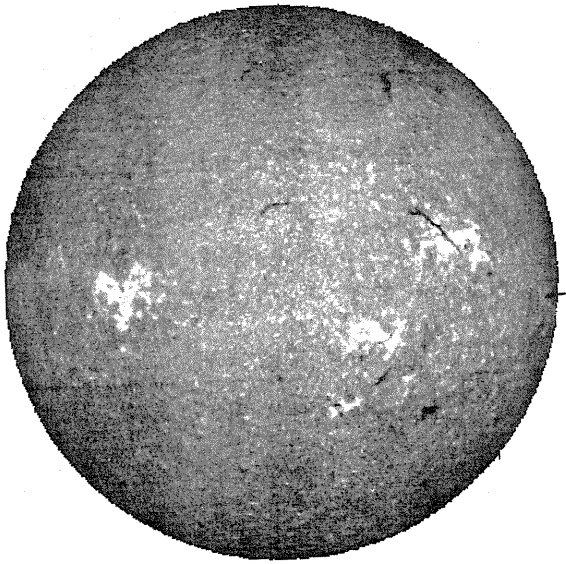


W

18.59 -
19.56 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

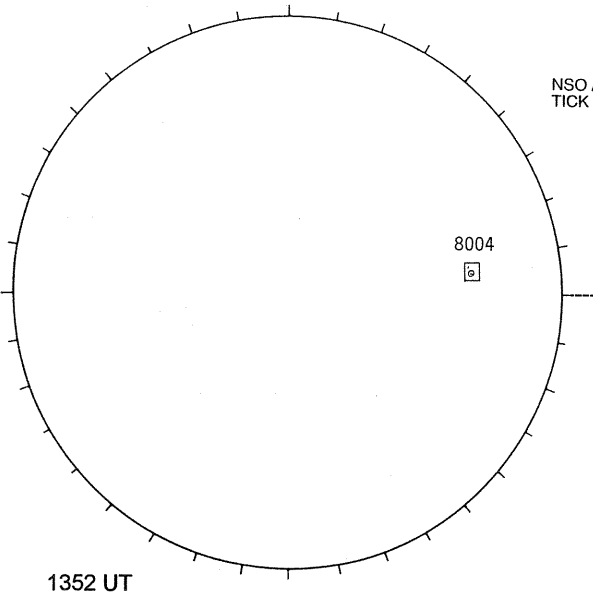


E-

1535 UT

S

RAMEY SUNSPOT

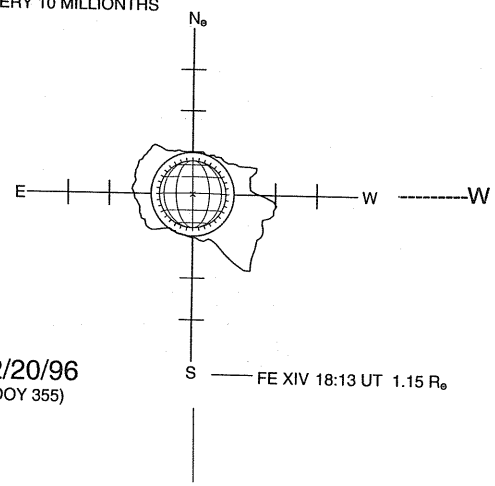


1352 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



12/20/96
(DOY 355)

FE XIV 18:13 UT 1.15 $R_\odot$

S

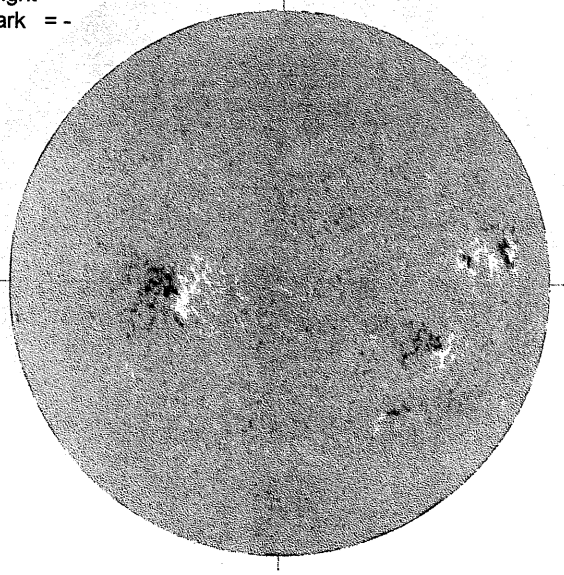
DECEMBER 21, 1996 (P= 7.29, Bo = - 1.70, Lo = 205.63)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



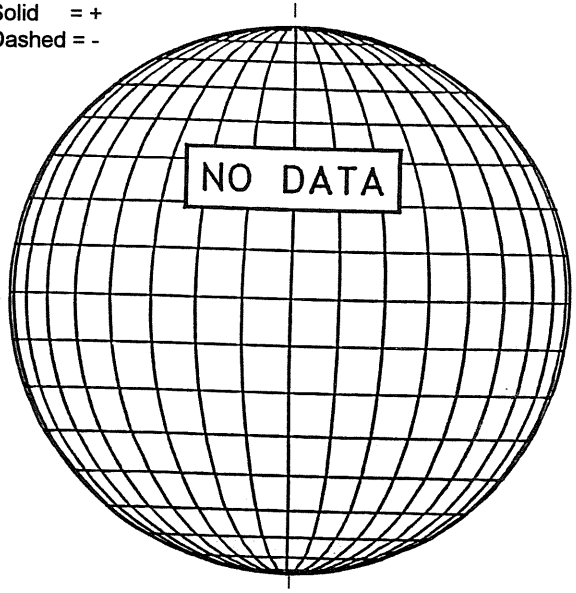
E

1642 UT

STANFORD MAGNETOGRAM

N

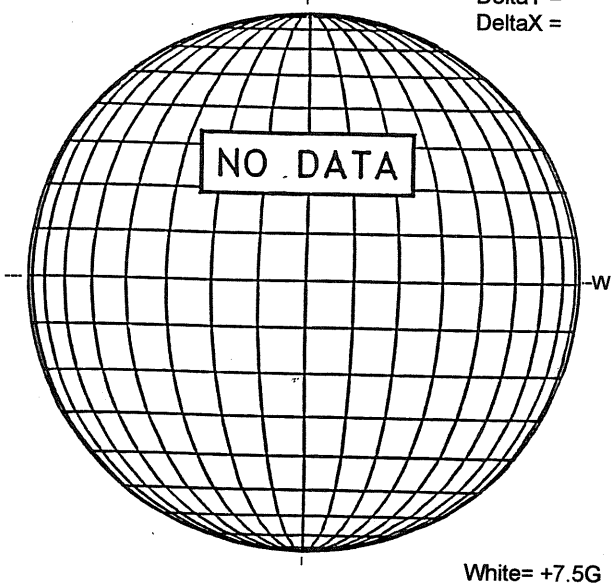
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

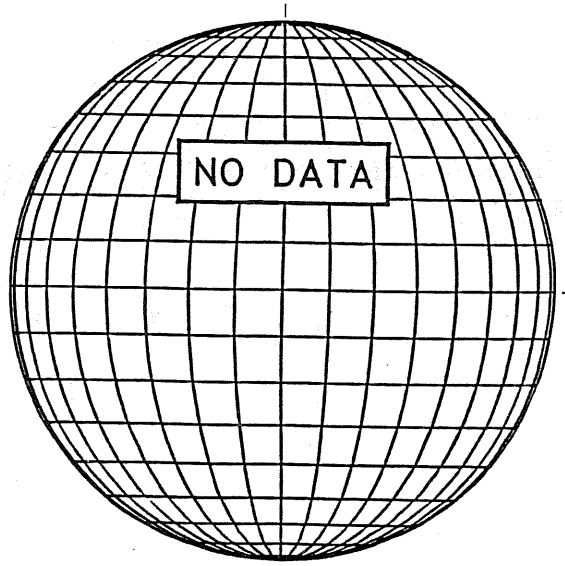
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

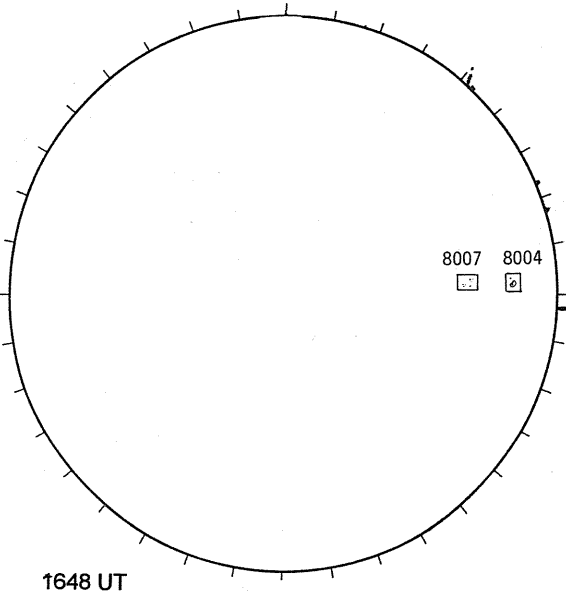
SACRAMENTO PEAK H-ALPHA



E

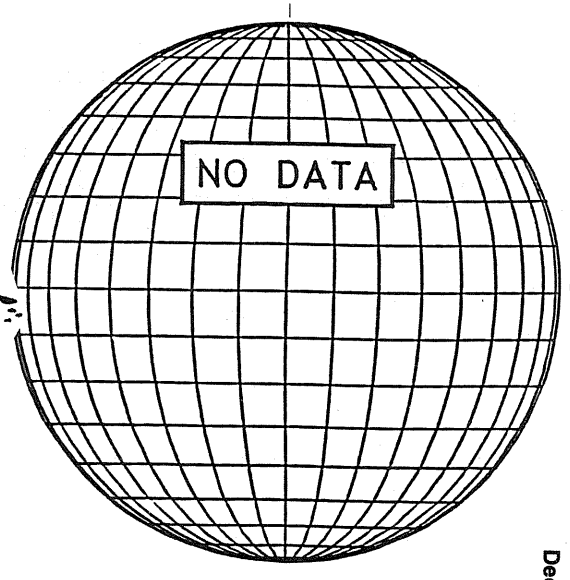
S

RAMEY SUNSPOT



1648 UT
1311 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)



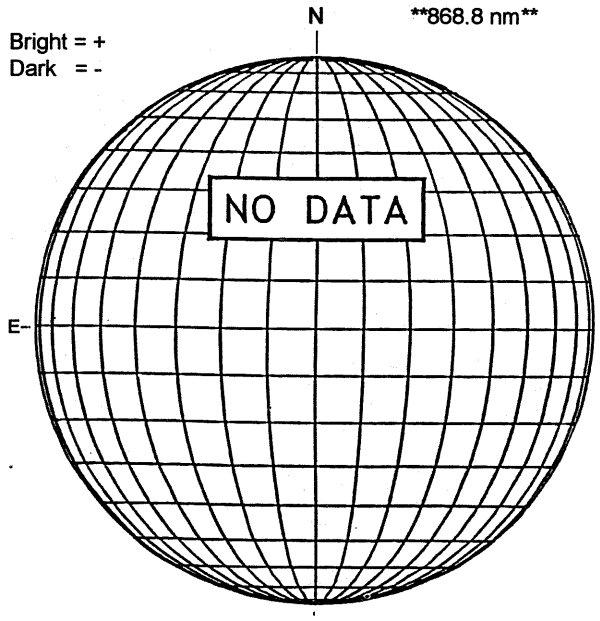
W

S

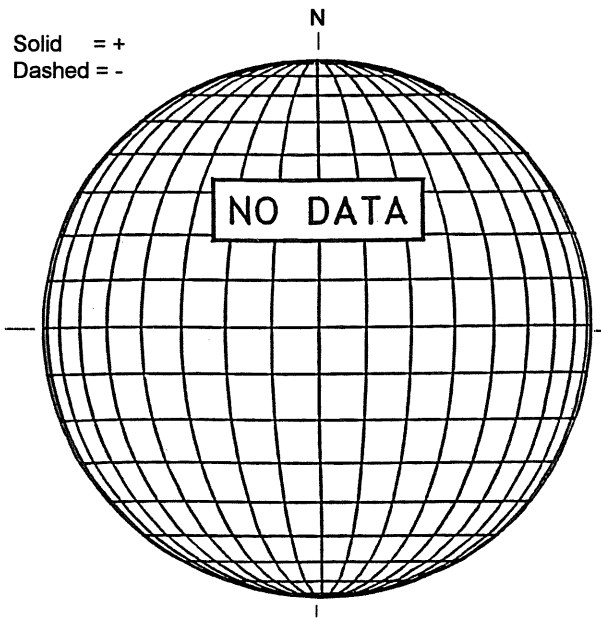
59
Dec 96

DECEMBER 22, 1996 (P= 6.82, Bo = - 1.83, Lo = 192.46)

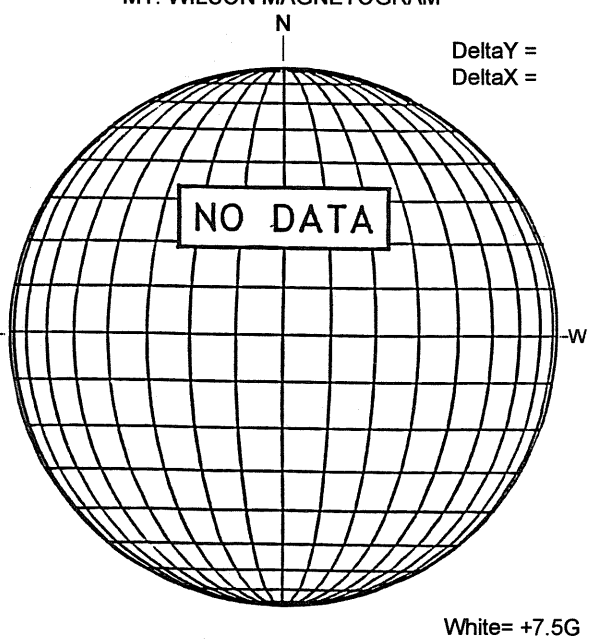
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

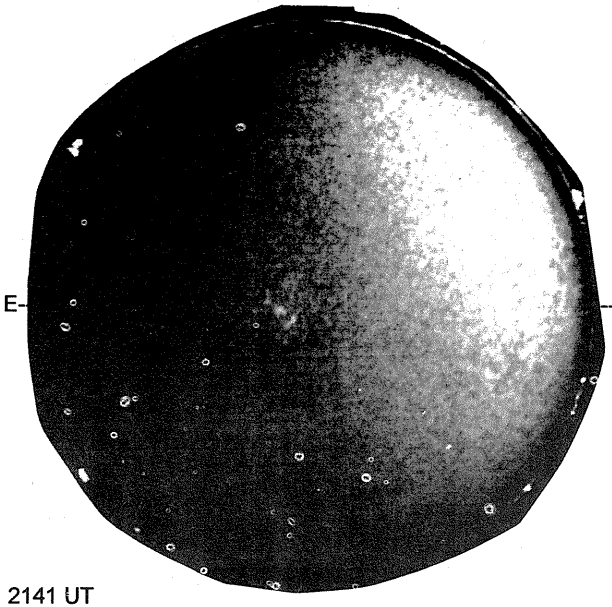


MT. WILSON MAGNETOGRAM



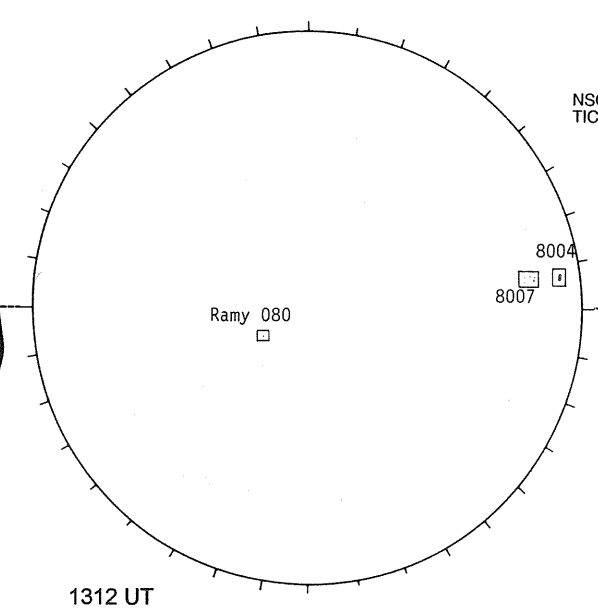
White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA



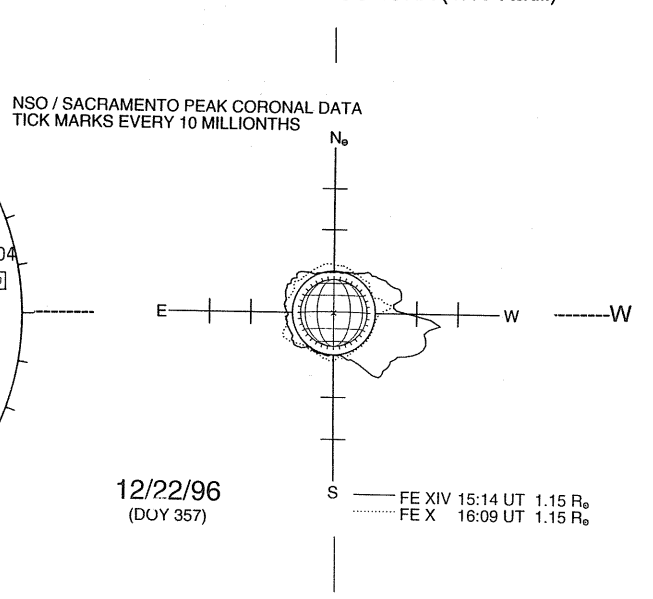
2141 UT
1920 UT Prom

RAMEY SUNSPOT



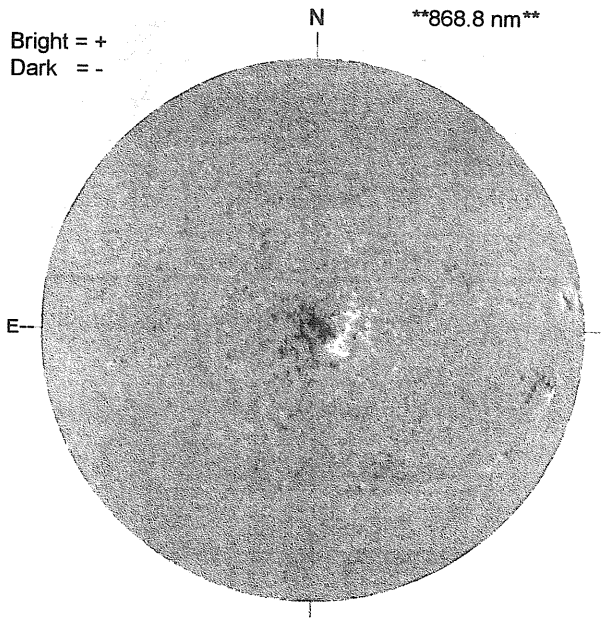
1312 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



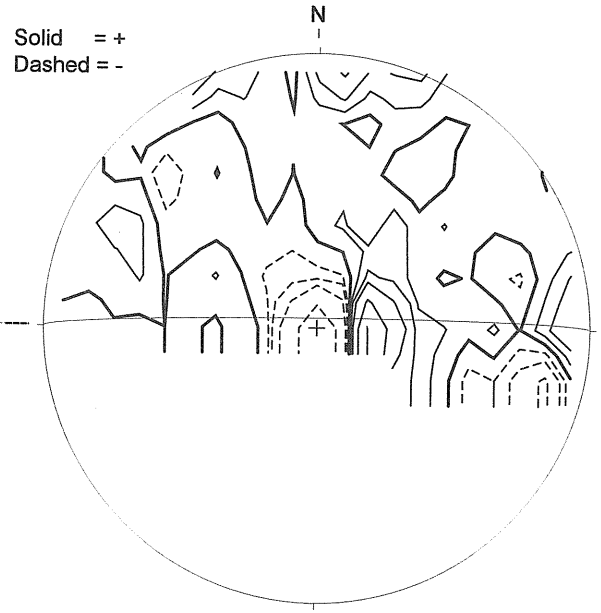
DECEMBER 23, 1996 (P= 6.34, Bo = - 1.95, Lo = 179.28)

KITT PEAK MAGNETOGRAM



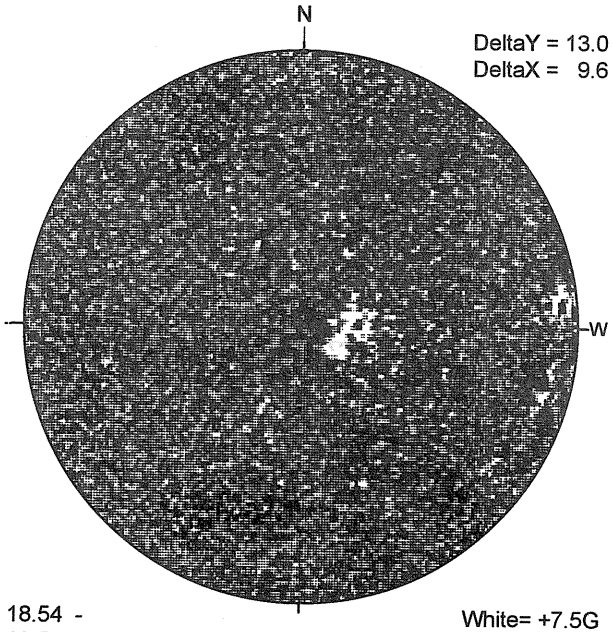
1638 UT

STANFORD MAGNETOGRAM



2020 UT

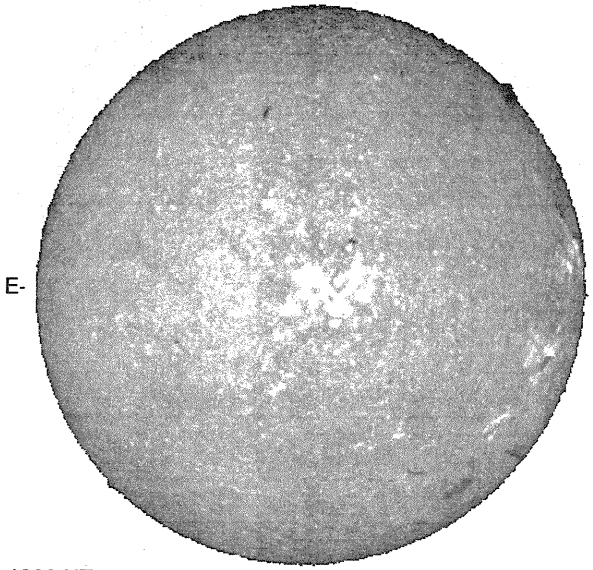
MT. WILSON MAGNETOGRAM



18.54 -
19.52 UT

White= +7.5G
Black = -7.5G

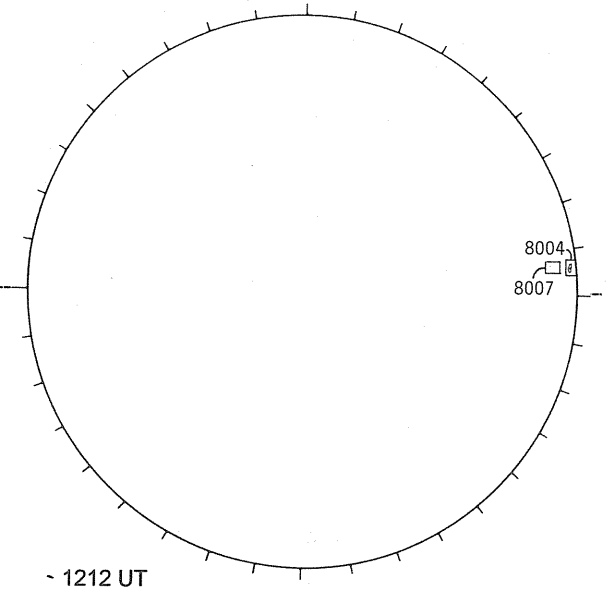
SACRAMENTO PEAK H-ALPHA



1803 UT

S

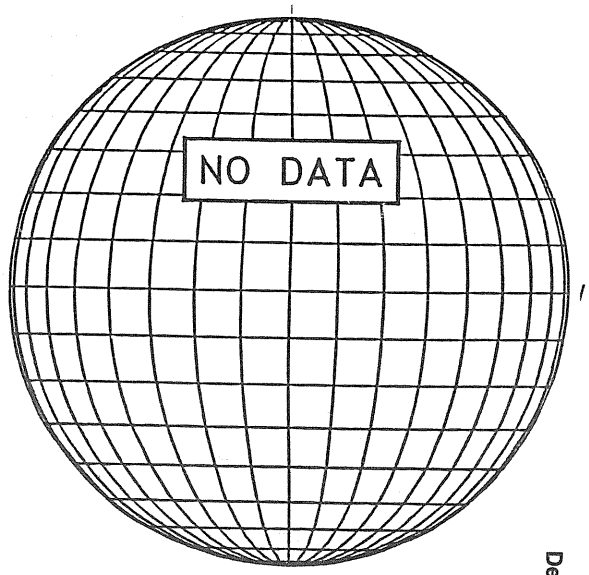
RAMEY SUNSPOT



- 1212 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

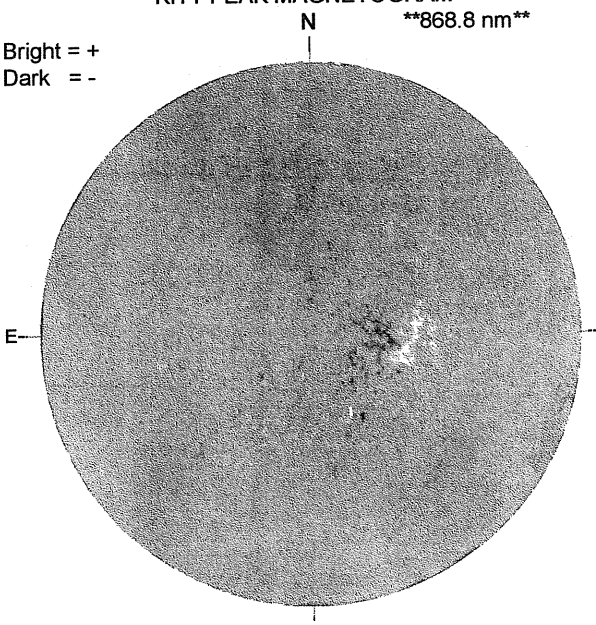


S

61
Dec 96

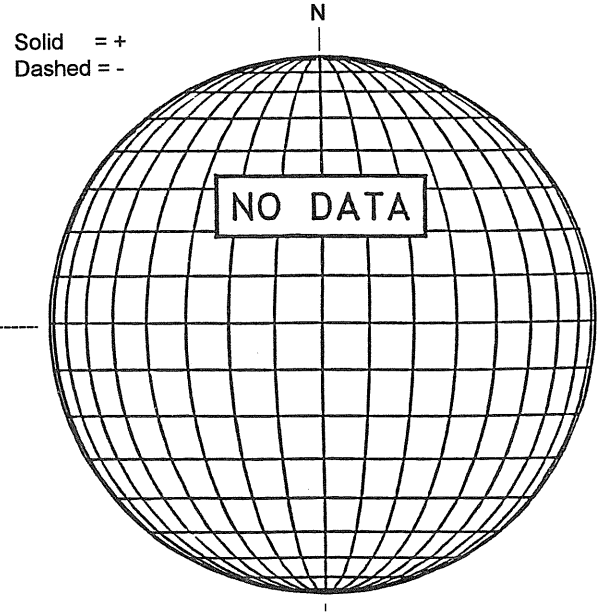
DECEMBER 24, 1996 (P= 5.87, Bo = - 2.08 Lo = 166.11)

KITT PEAK MAGNETOGRAM

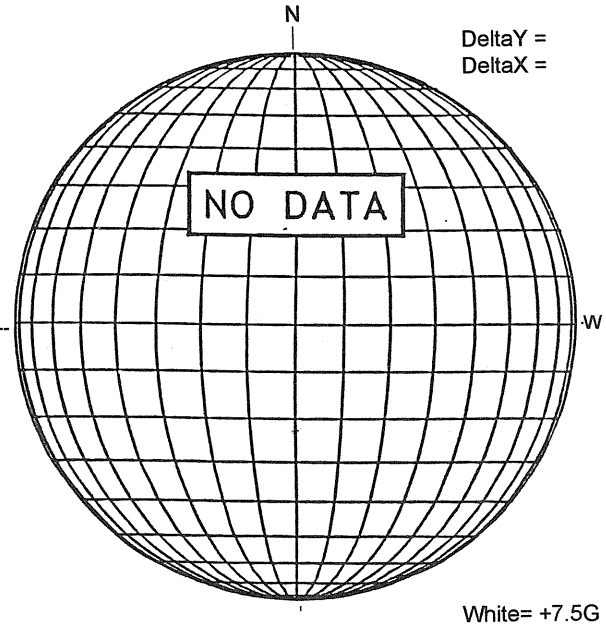


1640 UT

STANFORD MAGNETOGRAM

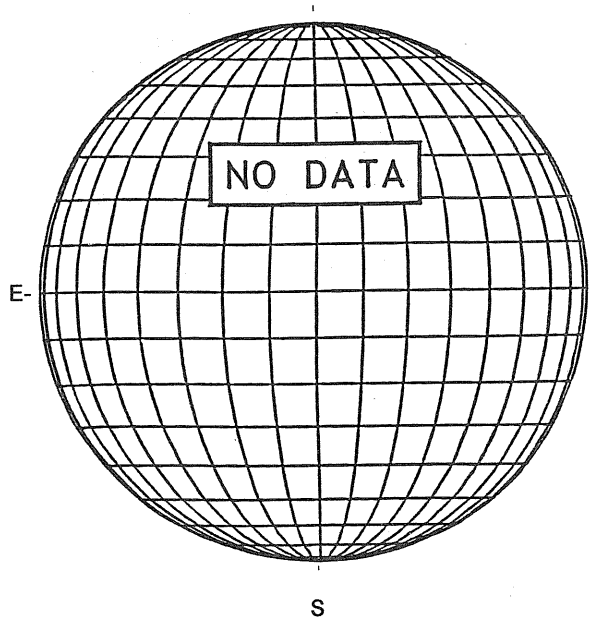


MT. WILSON MAGNETOGRAM

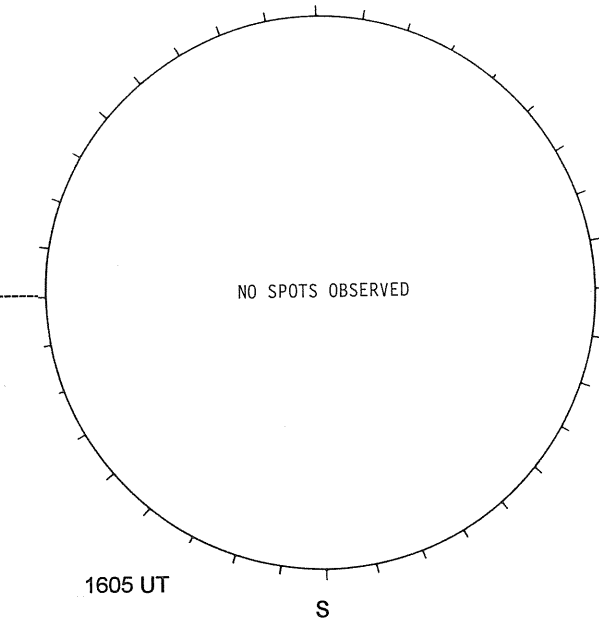


White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

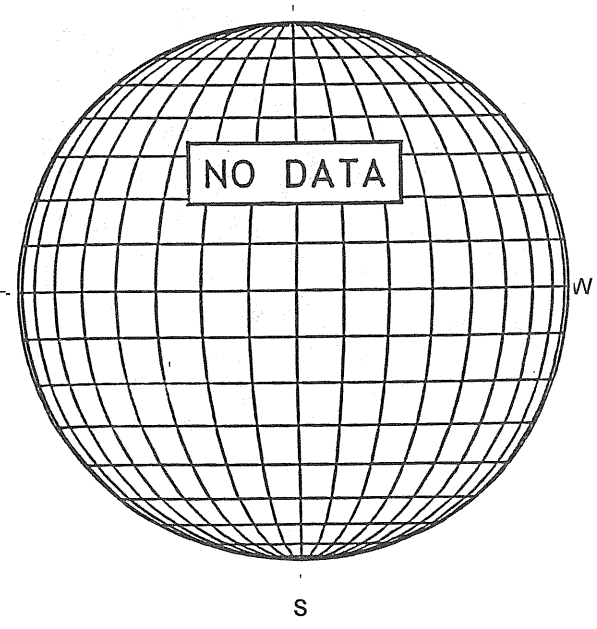


RAMEY SUNSPOT



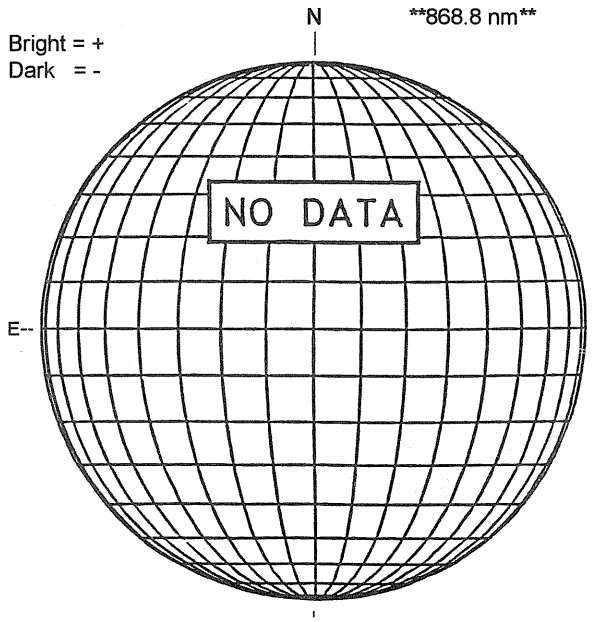
1605 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

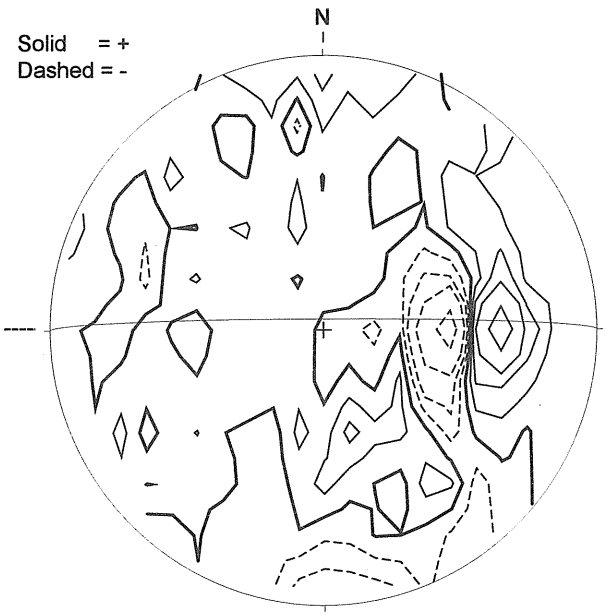


DECEMBER 25, 1996 (P= 5.39, Bo = - 2.20, Lo = 152.94)

KITT PEAK MAGNETOGRAM

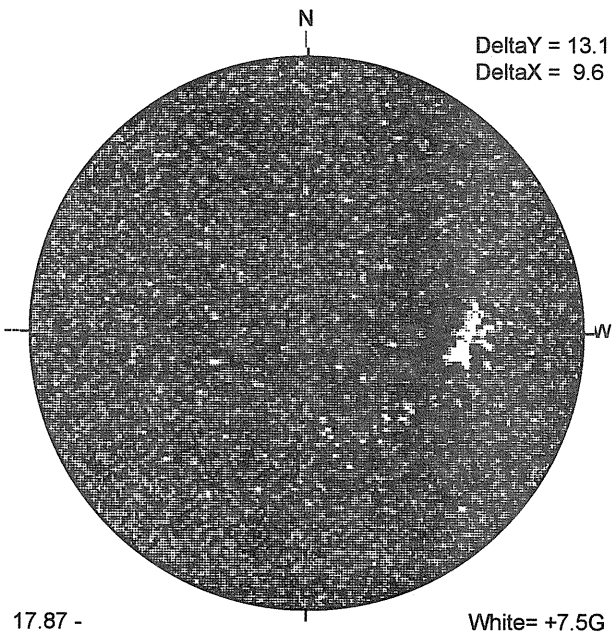


STANFORD MAGNETOGRAM



1844 UT

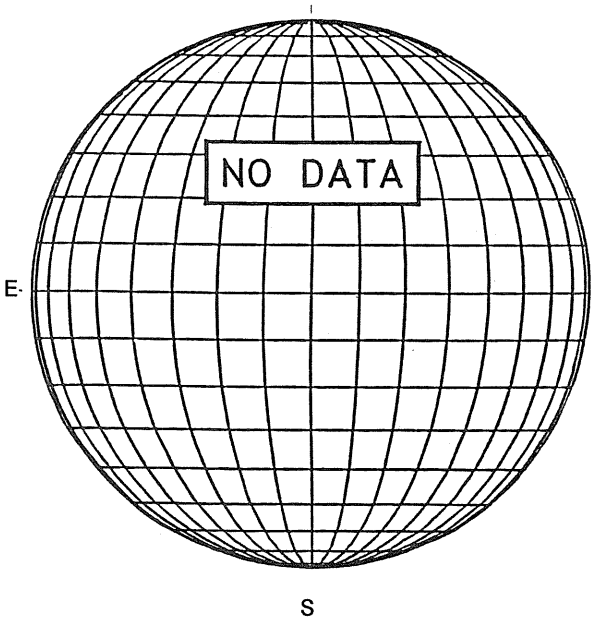
MT. WILSON MAGNETOGRAM



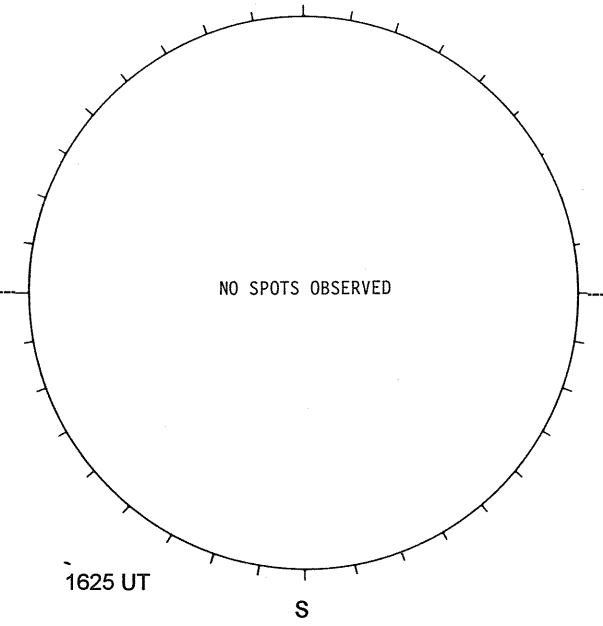
17.87 - 18.83 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

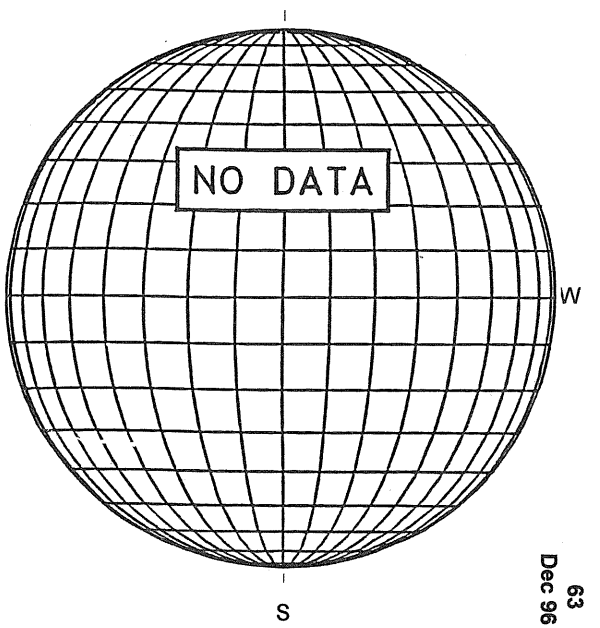


RAMEY SUNSPOT



1625 UT

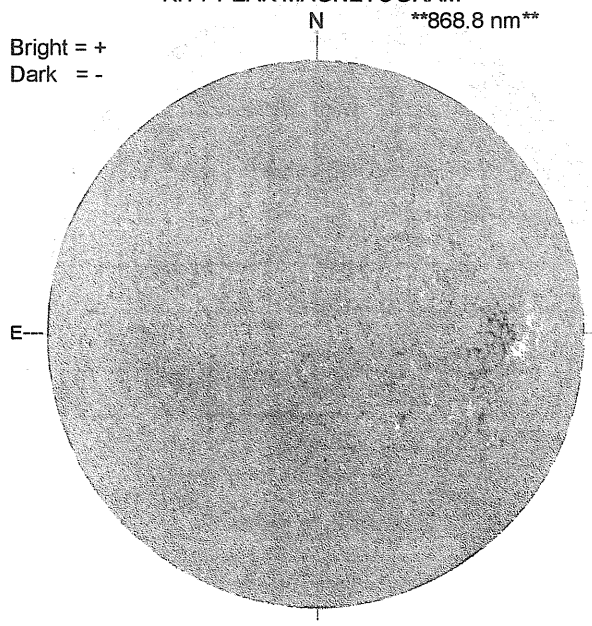
SACRAMENTO PEAK CORONA (1.15 Radii)----



63
Dec 96

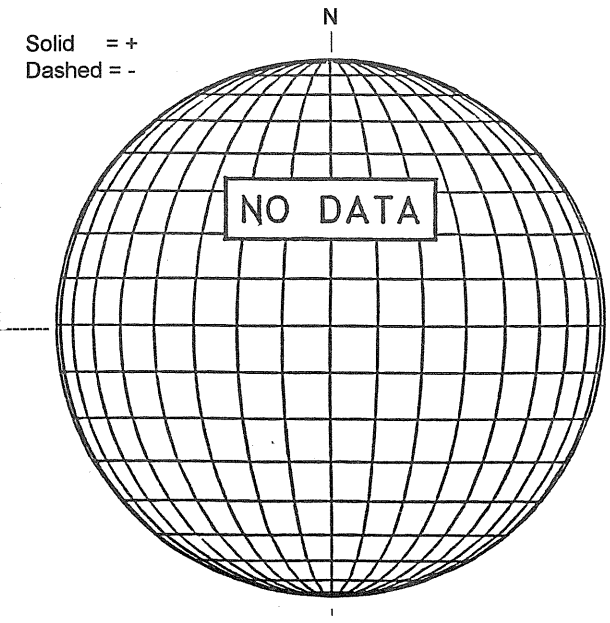
DECEMBER 26, 1996 (P= 4.91, Bo = - 2.32, Lo = 139.77)

KITT PEAK MAGNETOGRAM

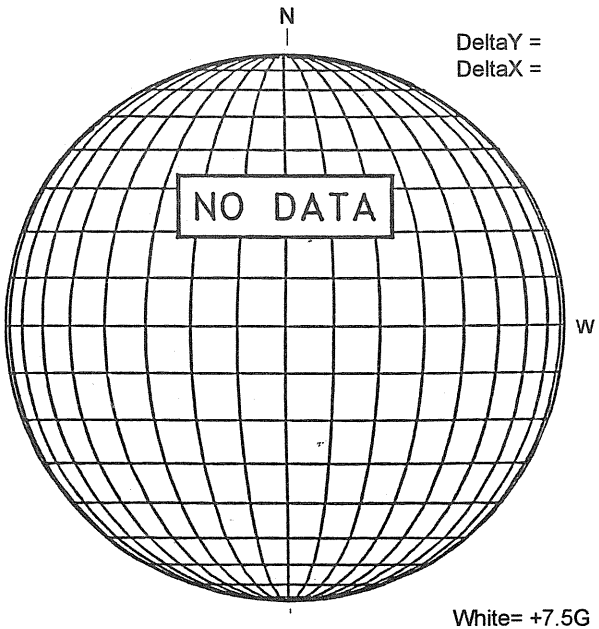


1557 UT

STANFORD MAGNETOGRAM

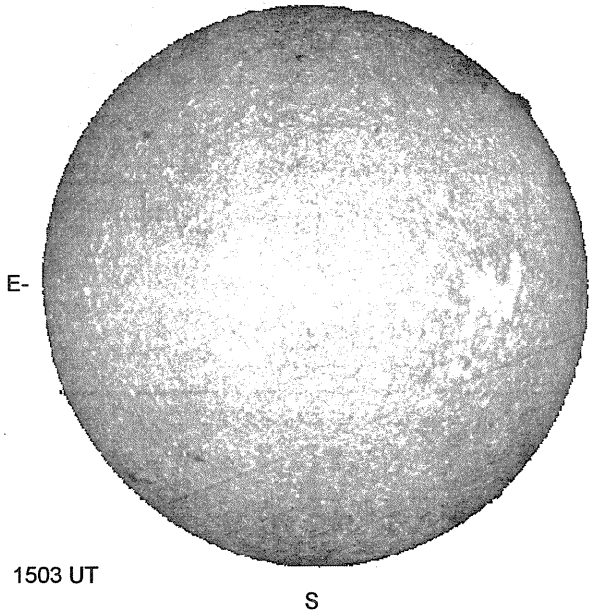


MT. WILSON MAGNETOGRAM



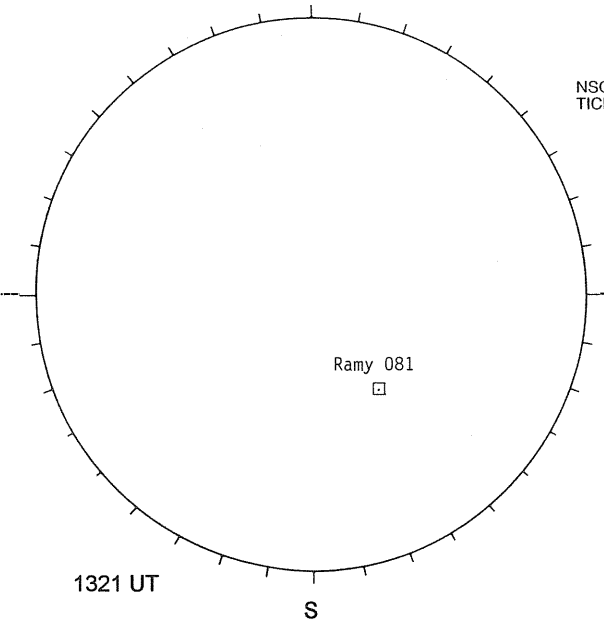
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



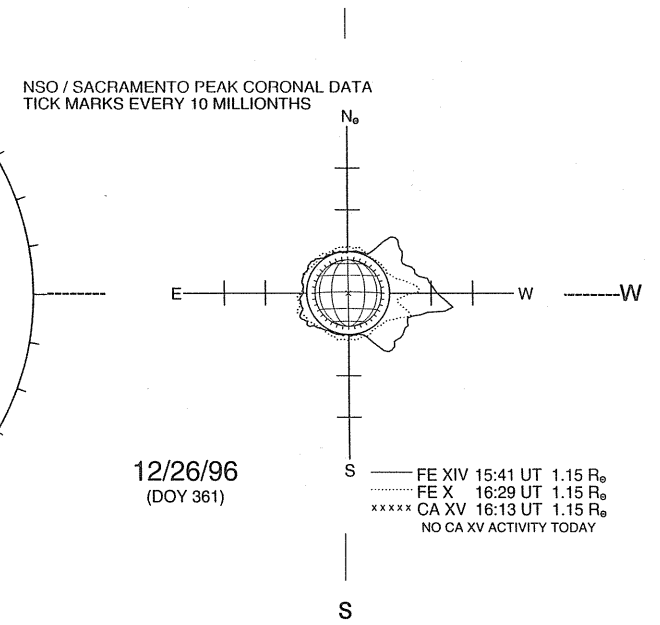
1503 UT

RAMEY SUNSPOT



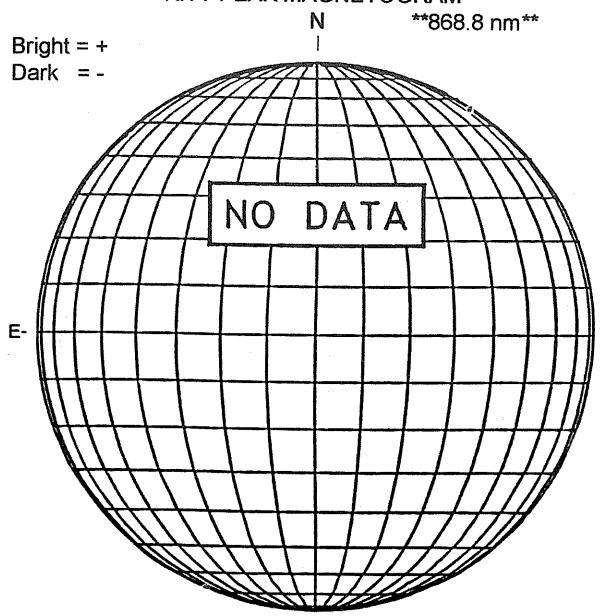
1321 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

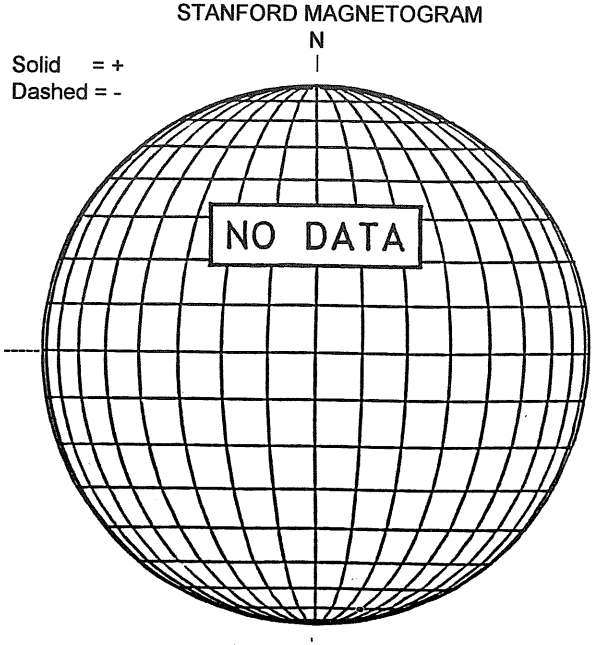


DECEMBER 27, 1996 (P= 4.43, Bo = - 2.44, Lo = 126.59)

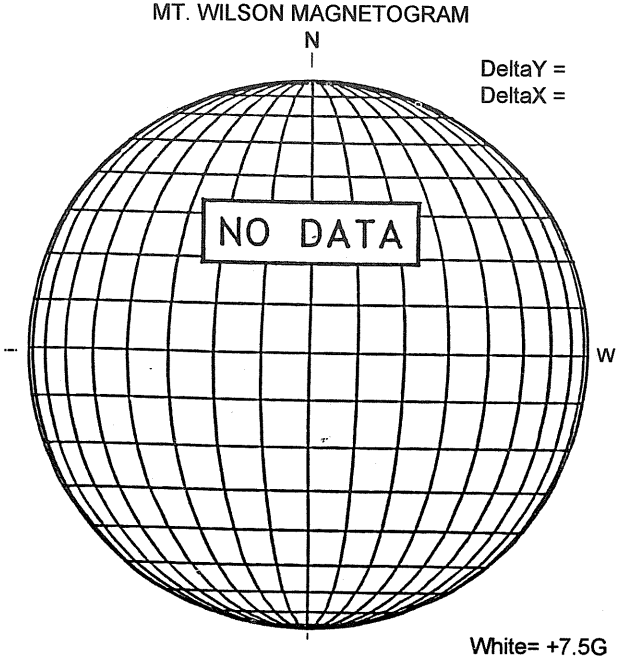
KITT PEAK MAGNETOGRAM



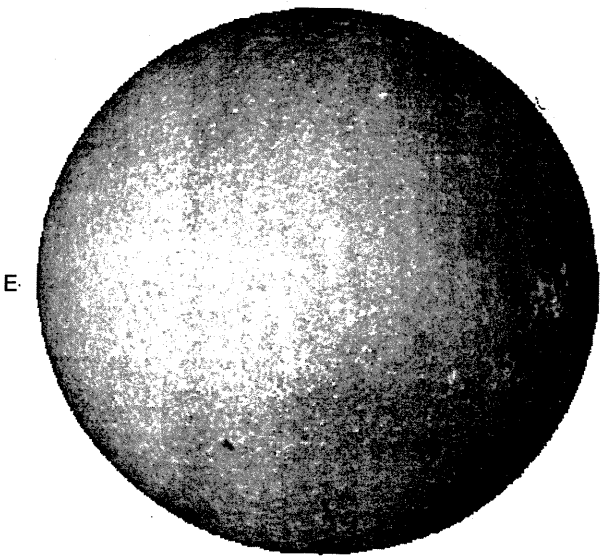
STANFORD MAGNETOGRAM



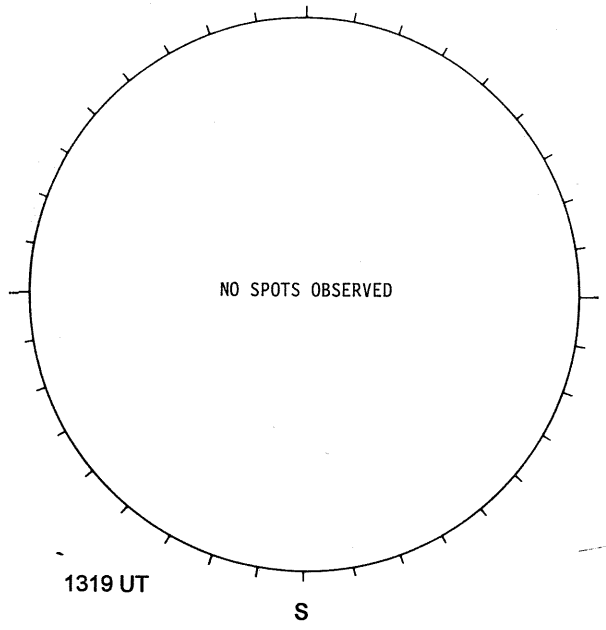
MT. WILSON MAGNETOGRAM



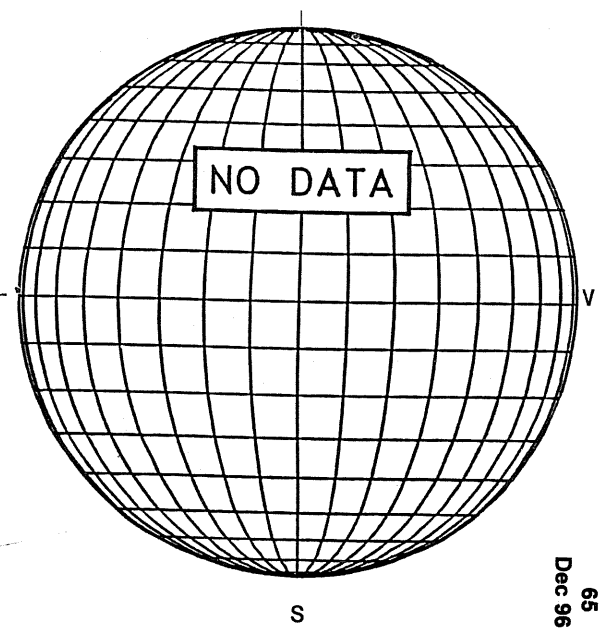
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



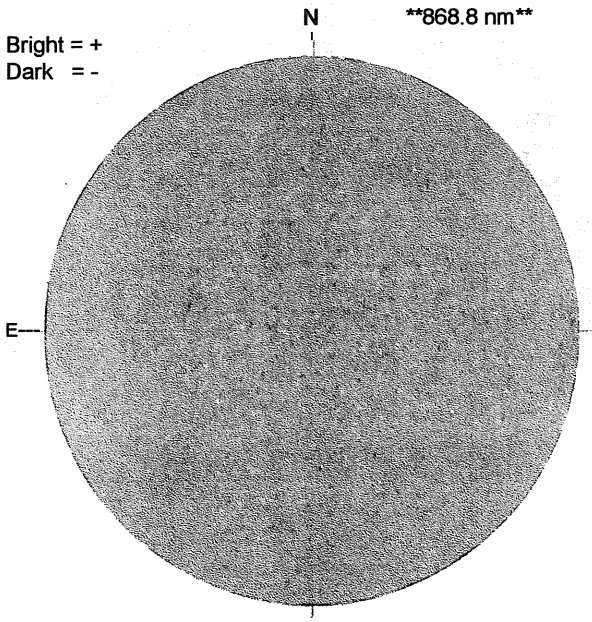
LOMNICKY PEAK CORONA (1.04 Radii)----



65
Dec 96

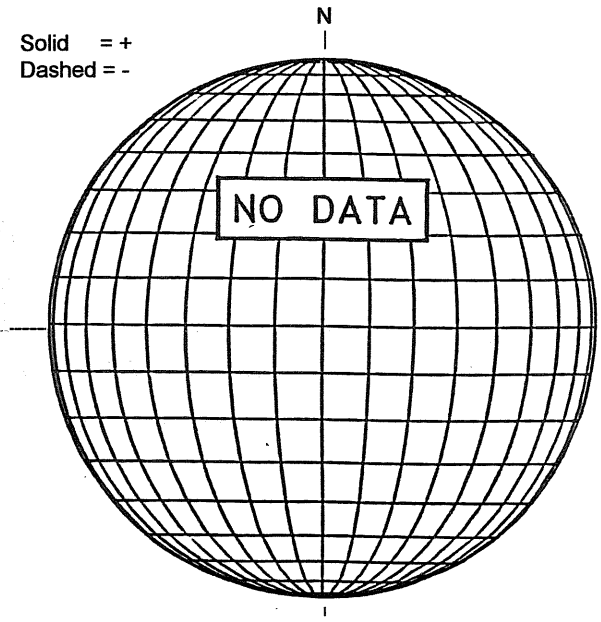
DECEMBER 28, 1996 (P= 3.94, Bo = - 2.56, Lo = 113.42)

KITT PEAK MAGNETOGRAM

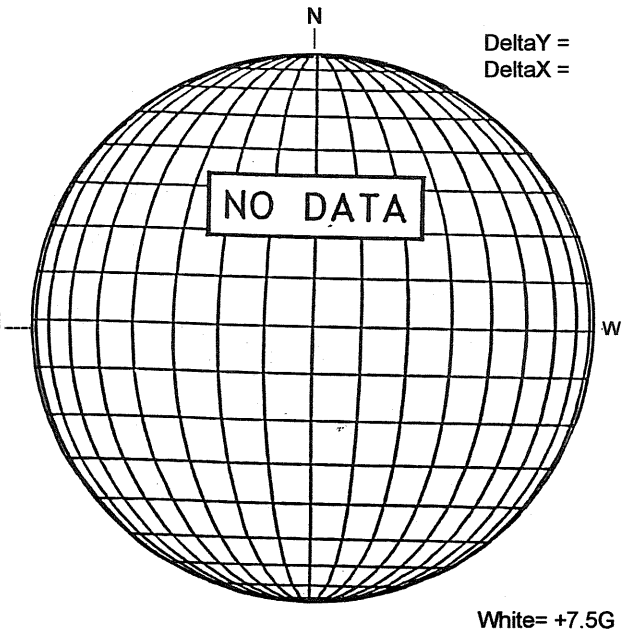


1630 UT

STANFORD MAGNETOGRAM

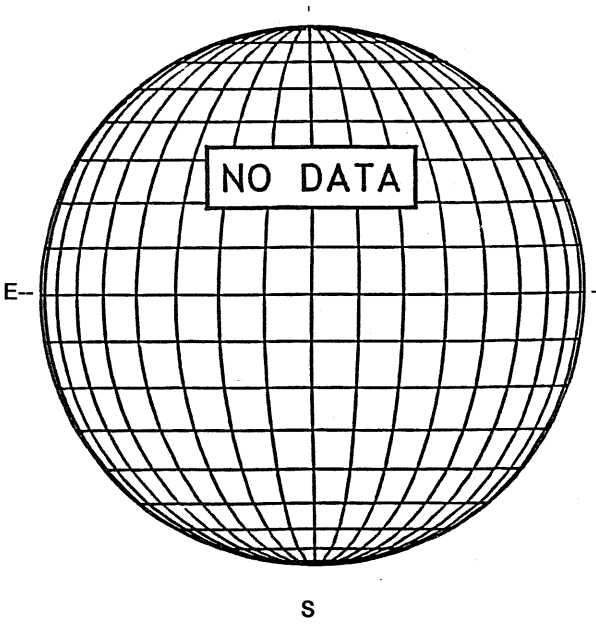


MT. WILSON MAGNETOGRAM

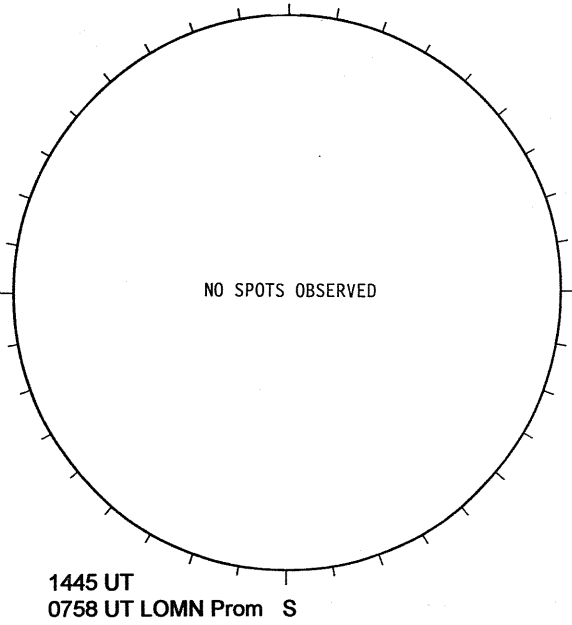


White= +7.5G
Black = -7.5G

---- MAUNA LOA H-ALPHA

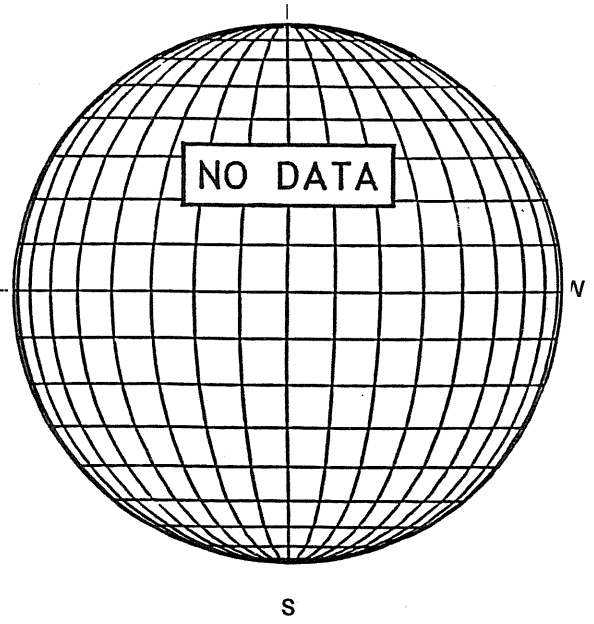


RAMEY SUNSPOT



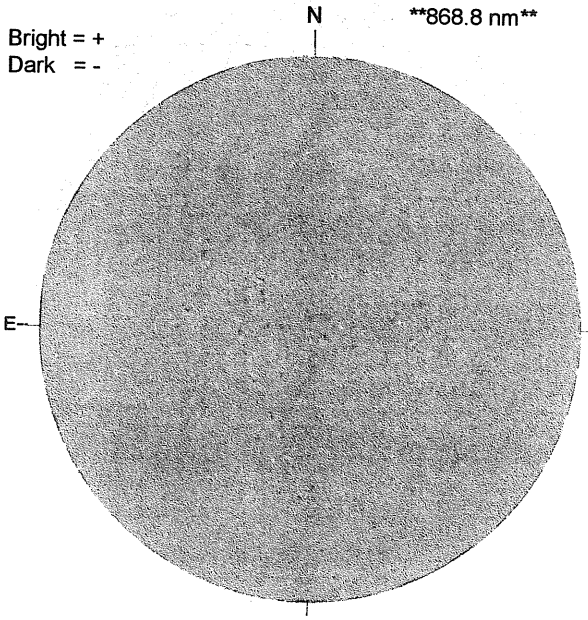
1445 UT
0758 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)----



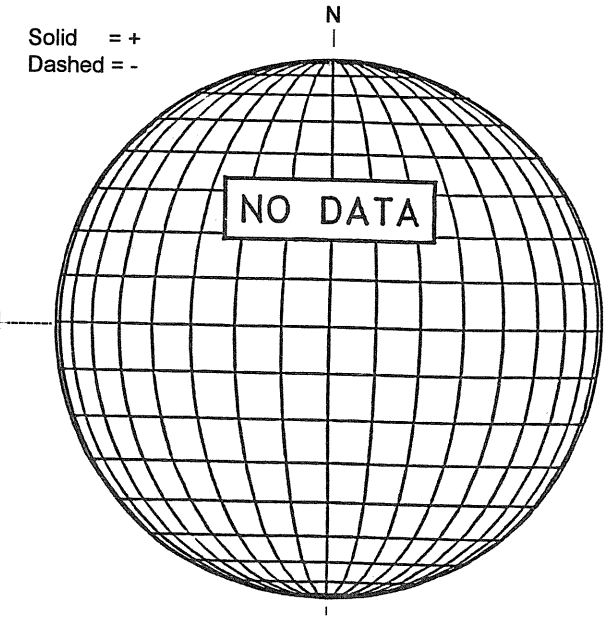
DECEMBER 29, 1996 (P= 3.46, Bo = - 2.68, Lo = 100.25)

KITT PEAK MAGNETOGRAM

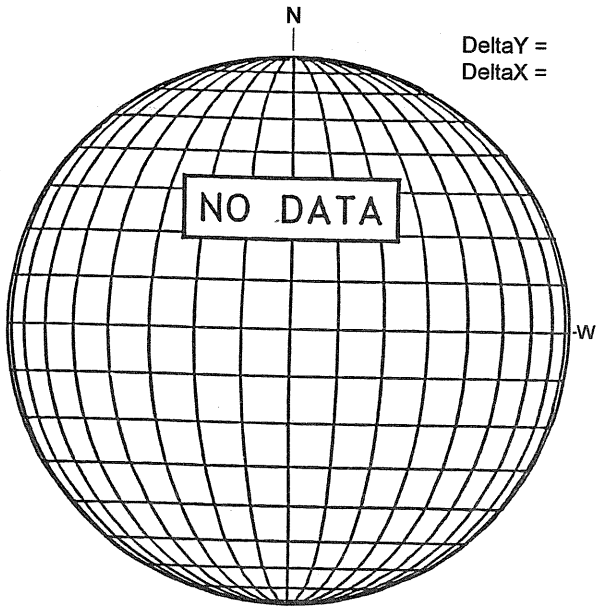


1558 UT

STANFORD MAGNETOGRAM

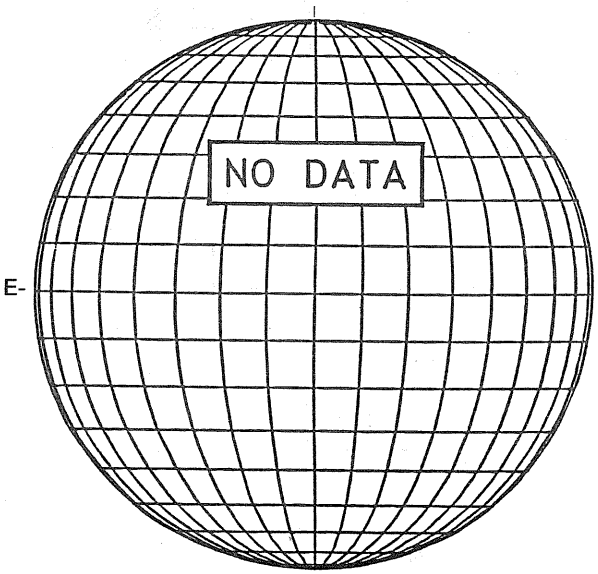


MT. WILSON MAGNETOGRAM

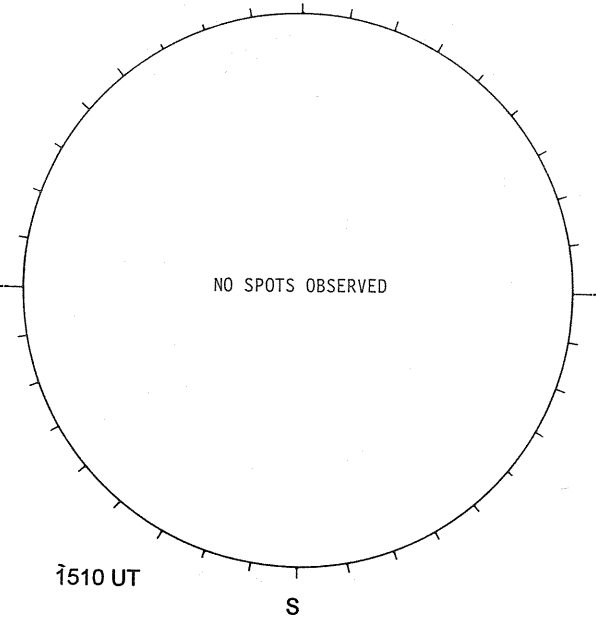


White= +7.5G
Black = -7.5G

MAUNA LOA H-ALPHA

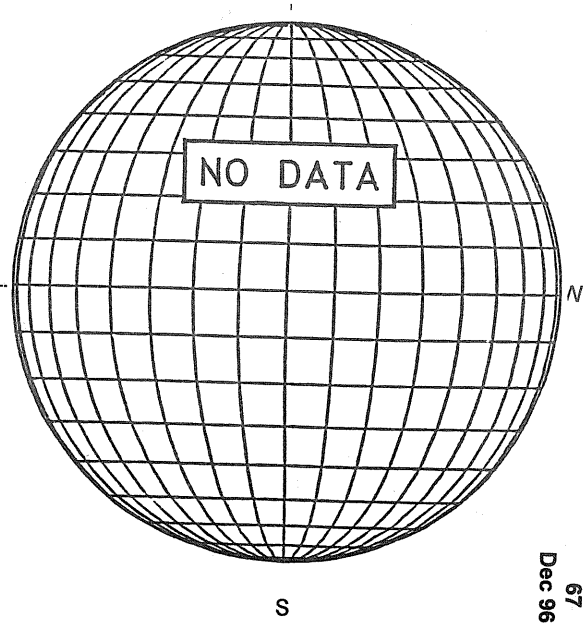


RAMEY SUNSPOT



1510 UT

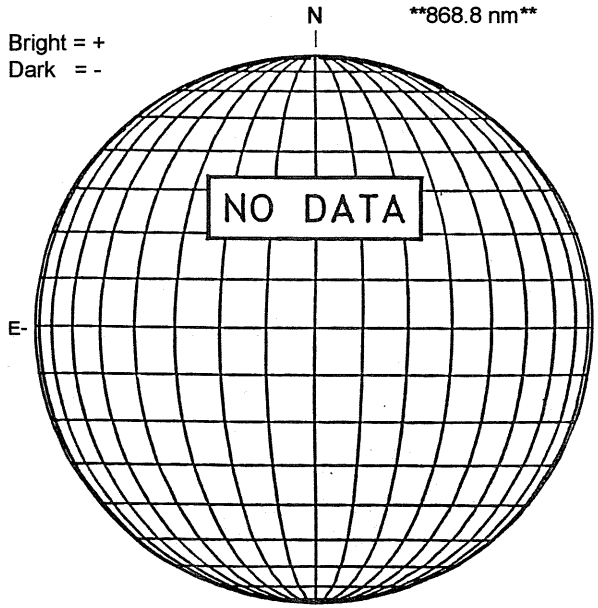
LOMNICKY PEAK CORONA (1.04 Radii)----



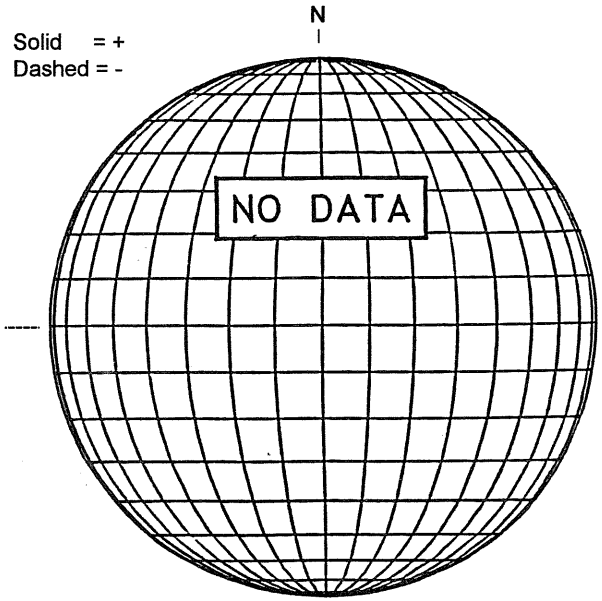
Dec 96 67

DECEMBER 30, 1996 (P= 2.98, Bo = - 2.80, Lo = 87.08)

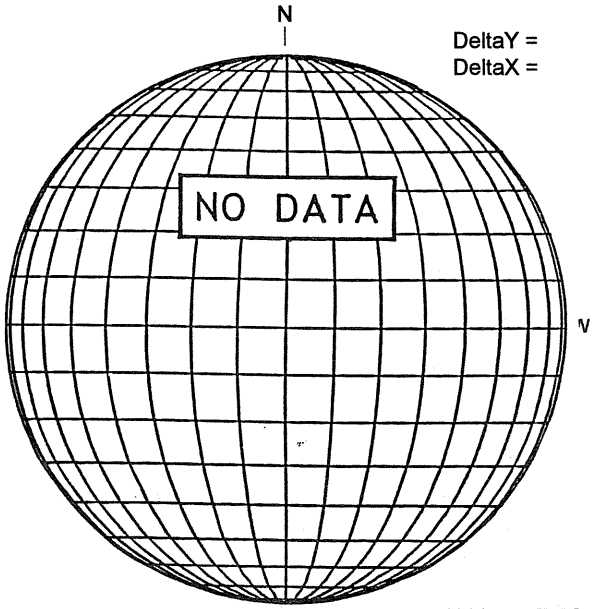
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

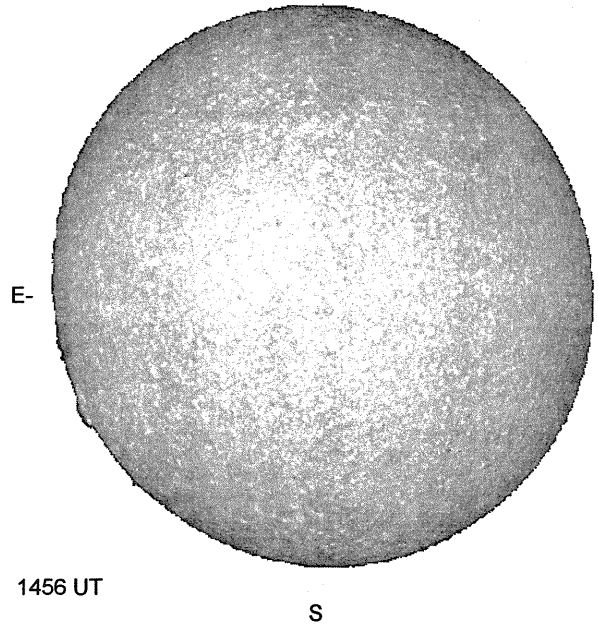


MT. WILSON MAGNETOGRAM

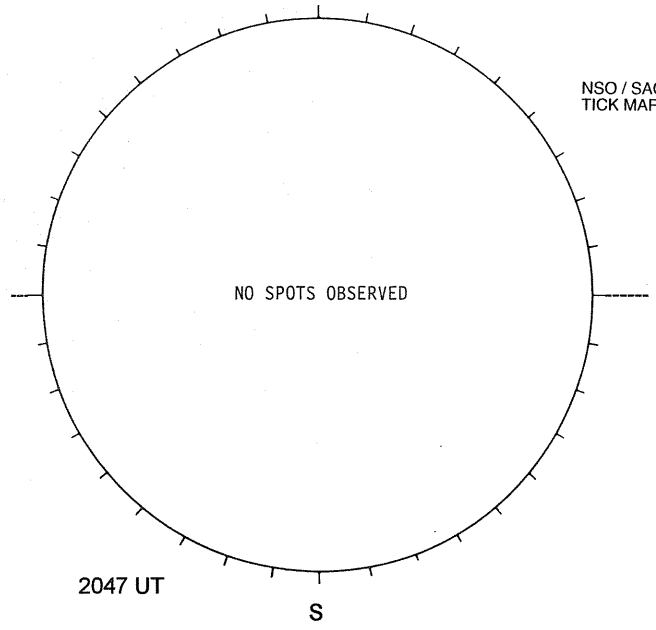


White= +7.5G
Black = -7.5G

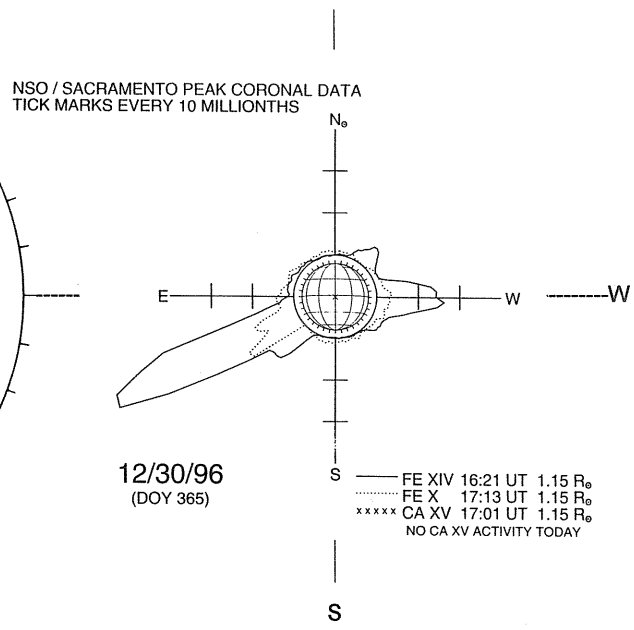
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----

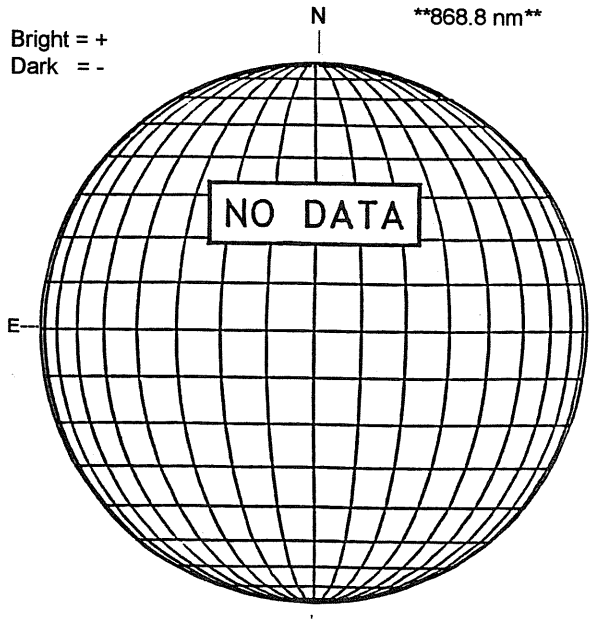


DECEMBER 31, 1996 (P= 2.49, Bo = - 2.92, Lo = 73.91)

KITT PEAK MAGNETOGRAM

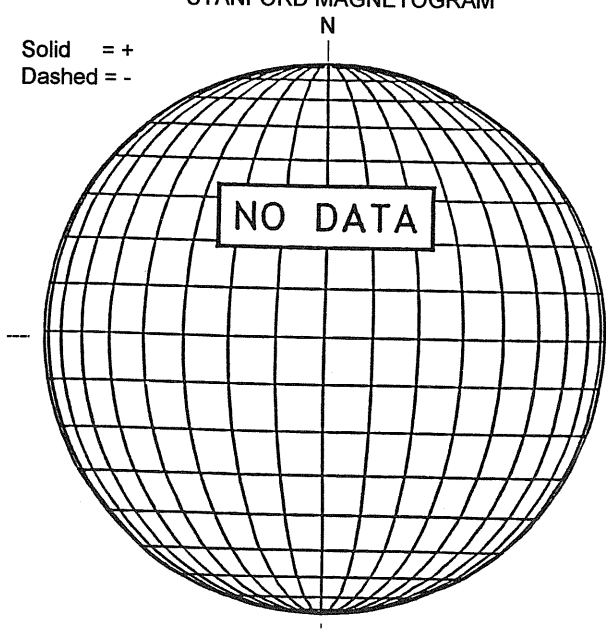
868.8 nm

Bright = +
Dark = -



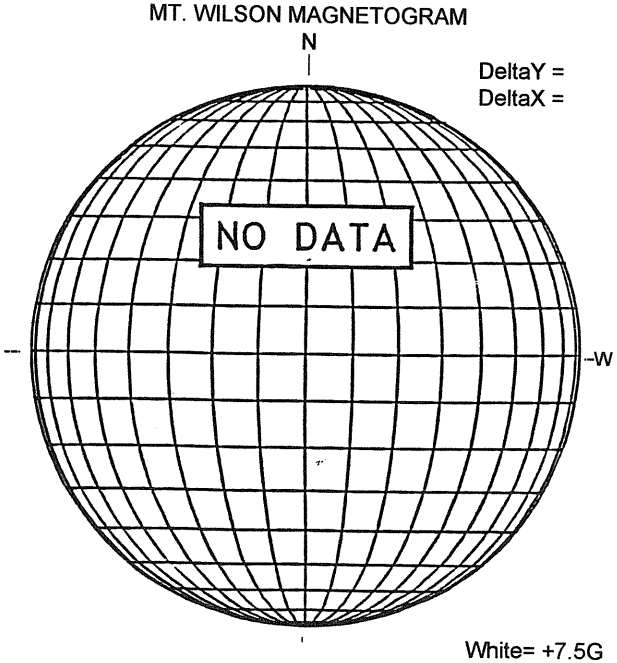
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



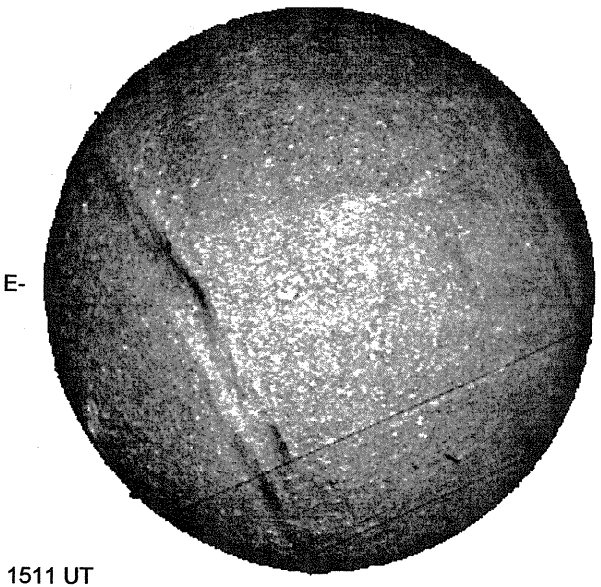
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



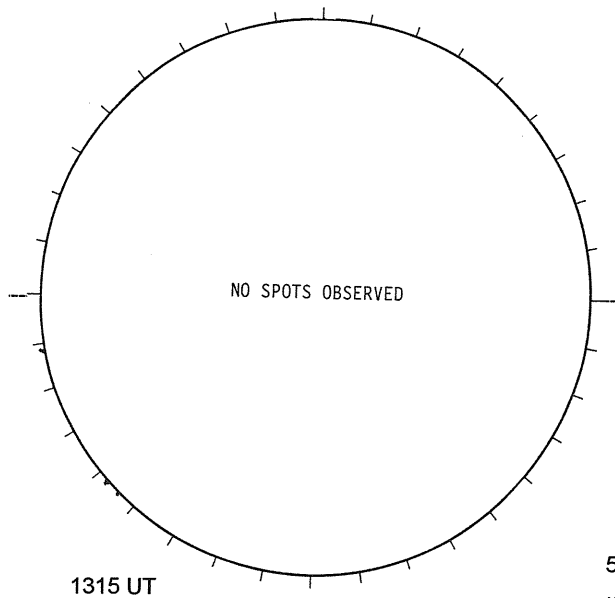
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



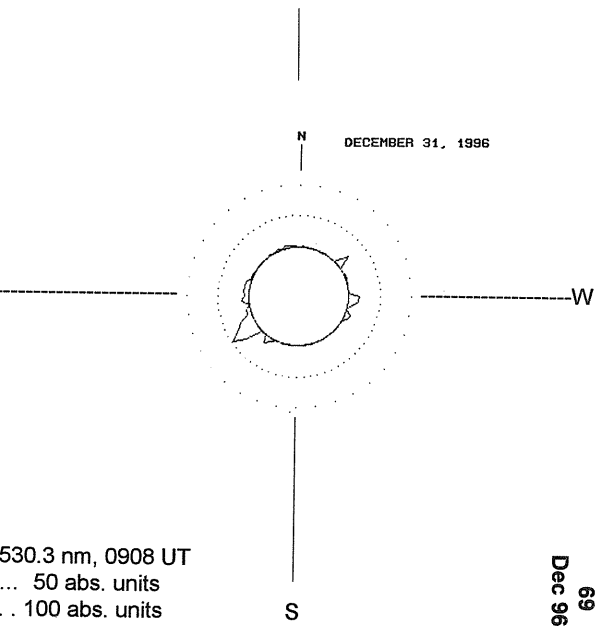
1511 UT

RAMEY SUNSPOT



1315 UT
0843 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)



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

YOHKOH SOFT X-RAY TELESCOPE IMAGES

December
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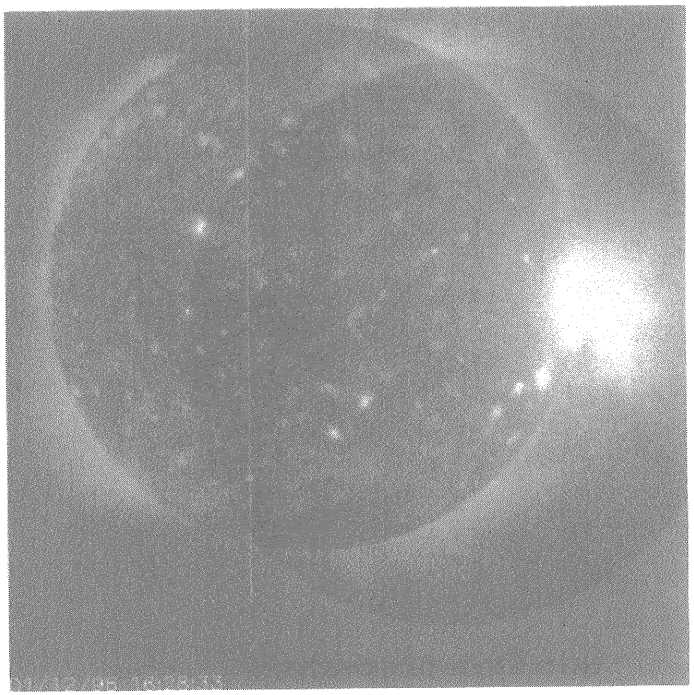
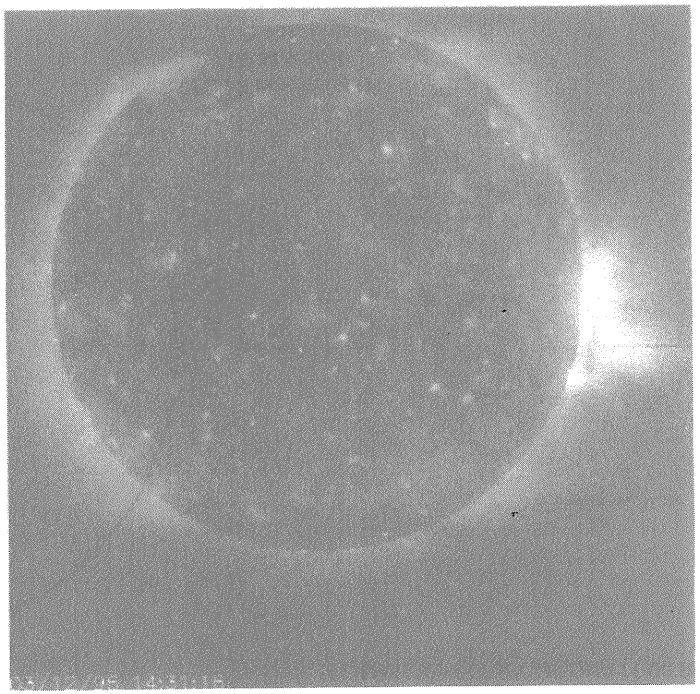
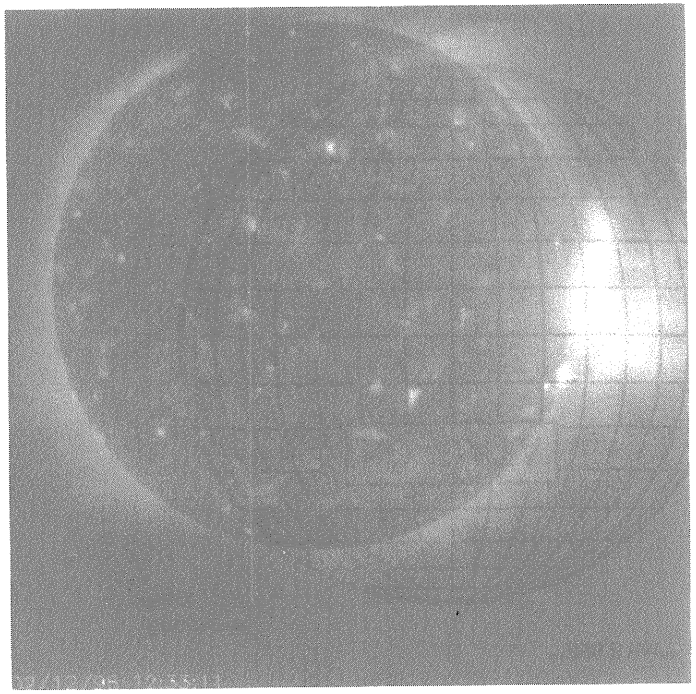


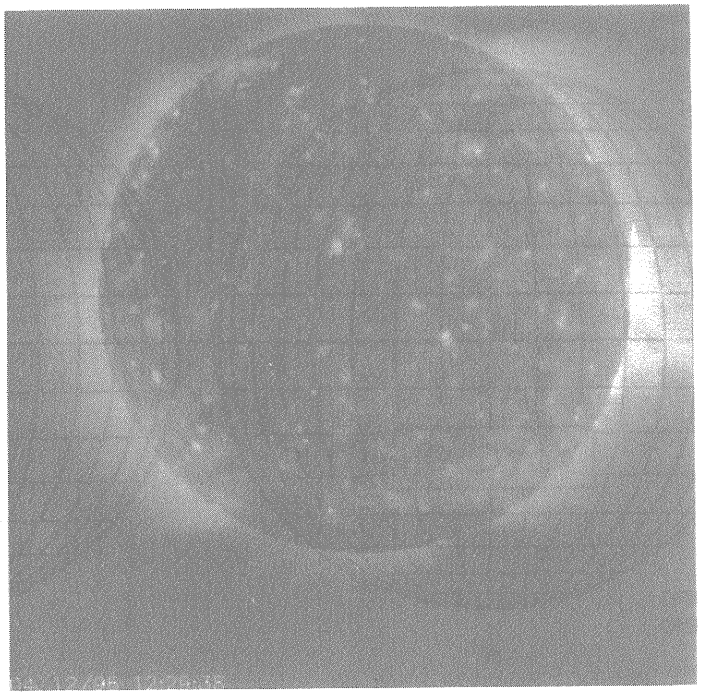
Day 1
16:28:33 UT



Day 3
14:31:16 UT



Day 2
12:33:11 UT



Day 4
12:29:38 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

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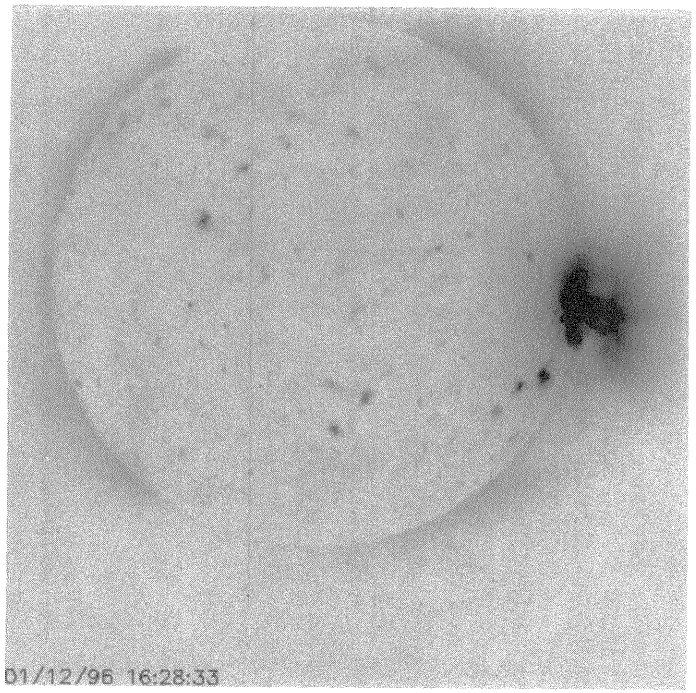
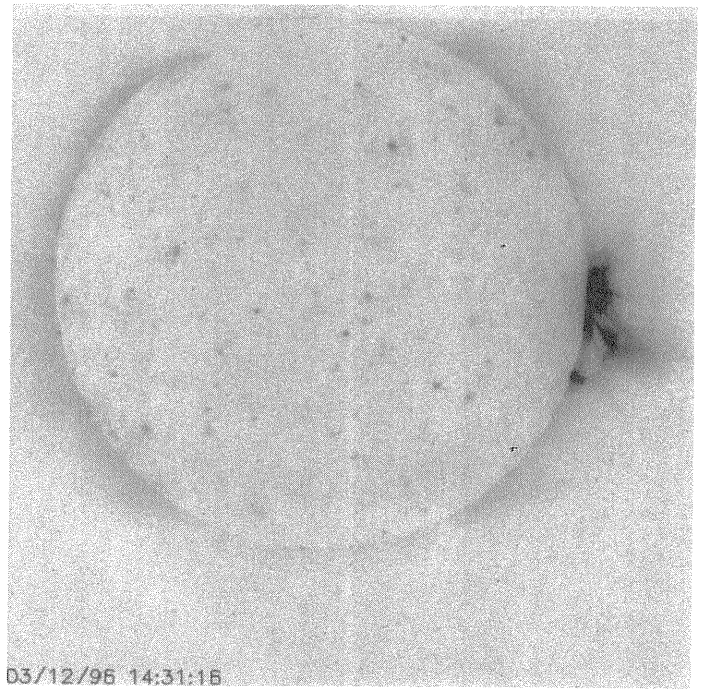
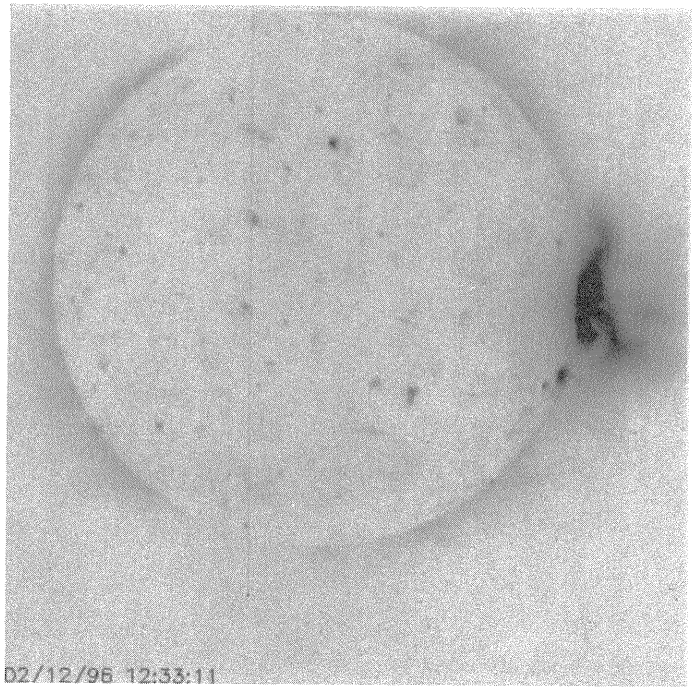


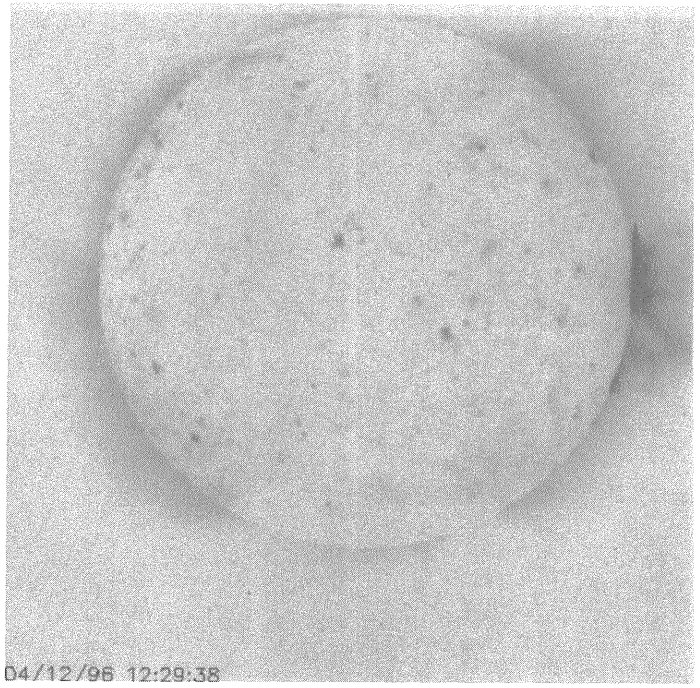
Day 1
16:28:33 UT



Day 3
14:31:16 UT



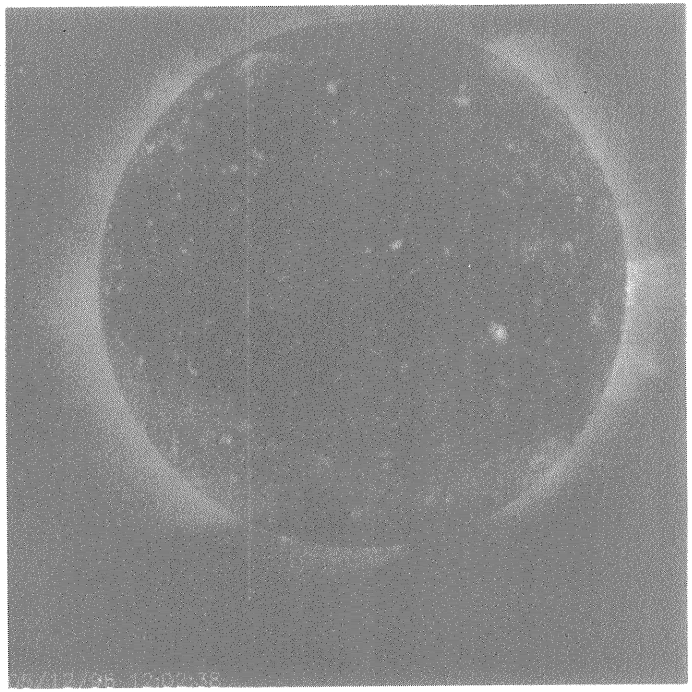
Day 2
12:33:11 UT



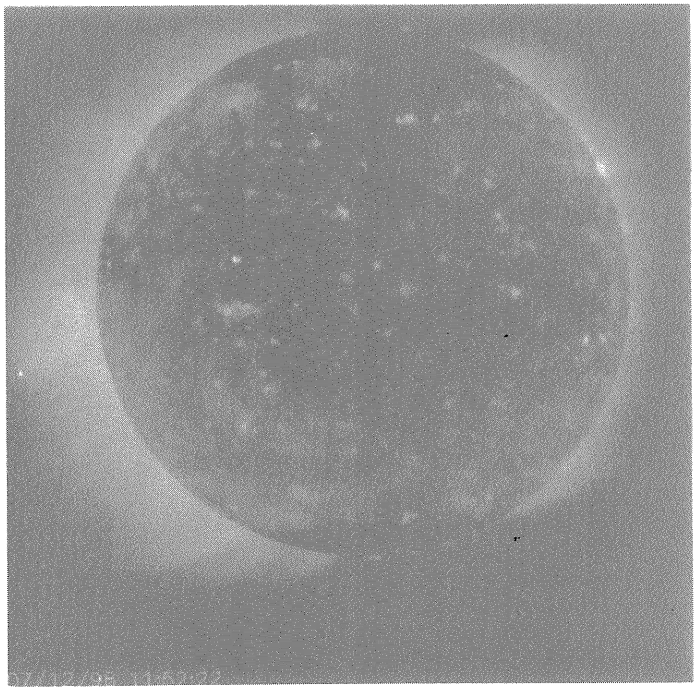
Day 4
12:29:38 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

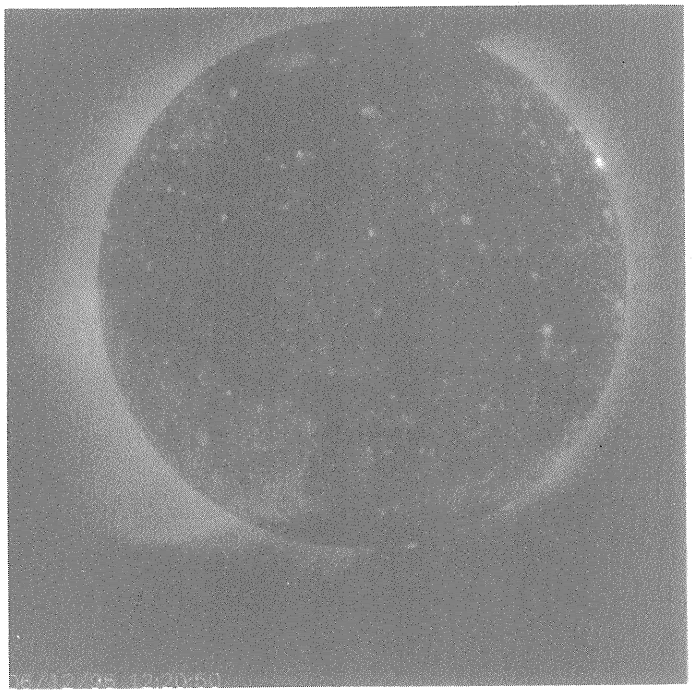
December
1996



Day 5
12:02:38 UT



Day 7
11:52:22 UT



Day 6
12:20:50 UT

Day 8
12:09:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

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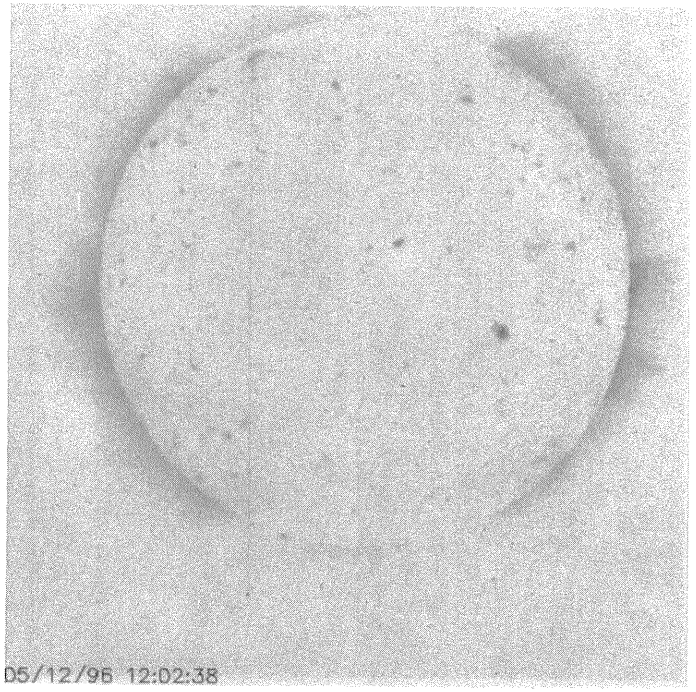
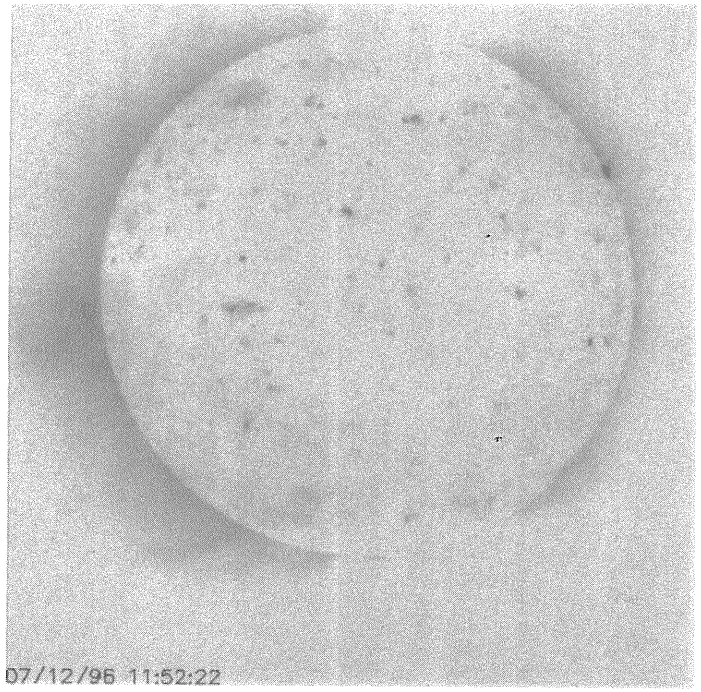
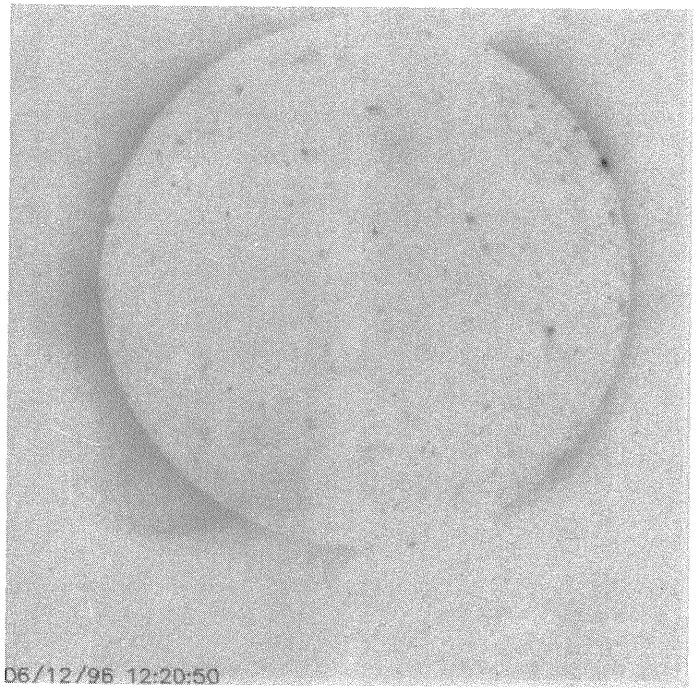


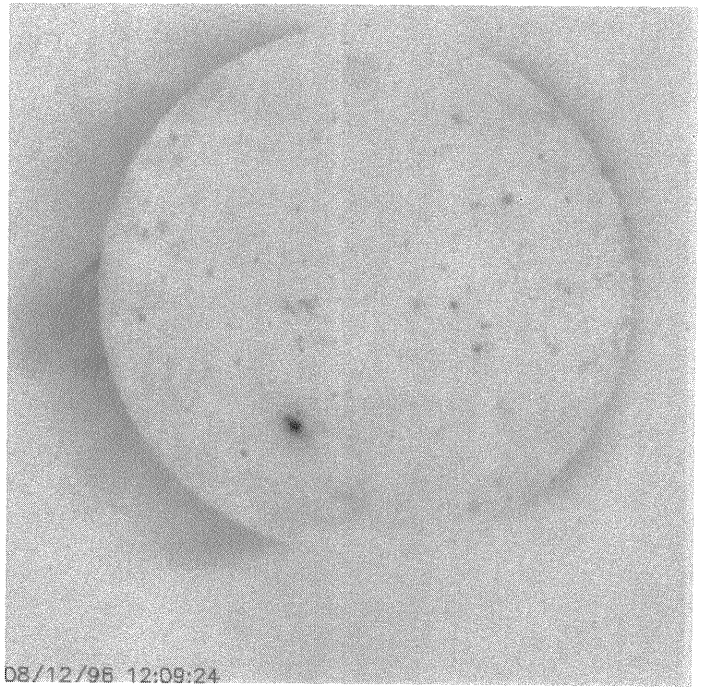
Day 5
12:02:38 UT



Day 7
11:52:22 UT



Day 6
12:20:50 UT

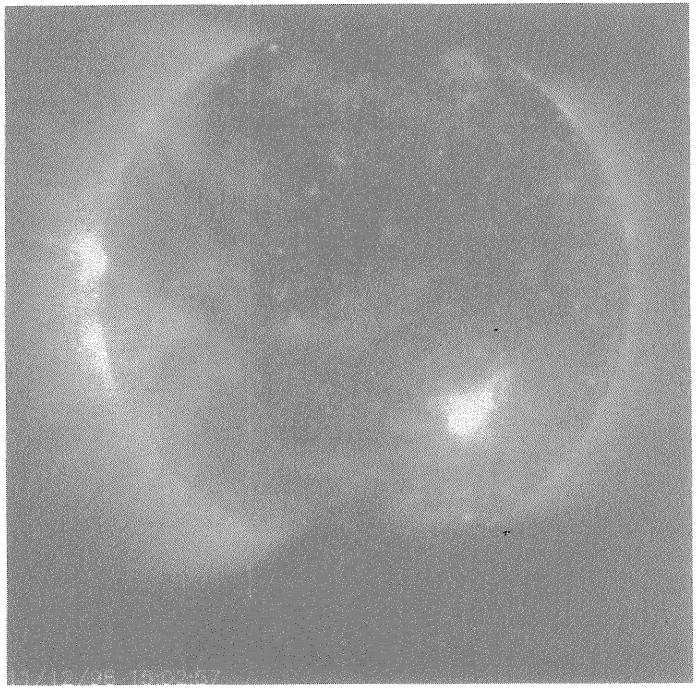


Day 8
12:09:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

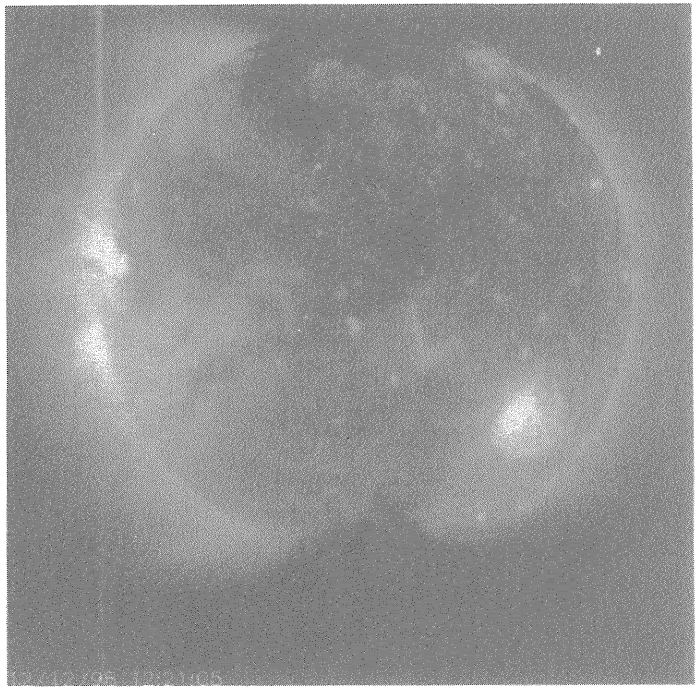
December
1996

Day 9
11:35:33 UT



Day 11
15:02:57 UT

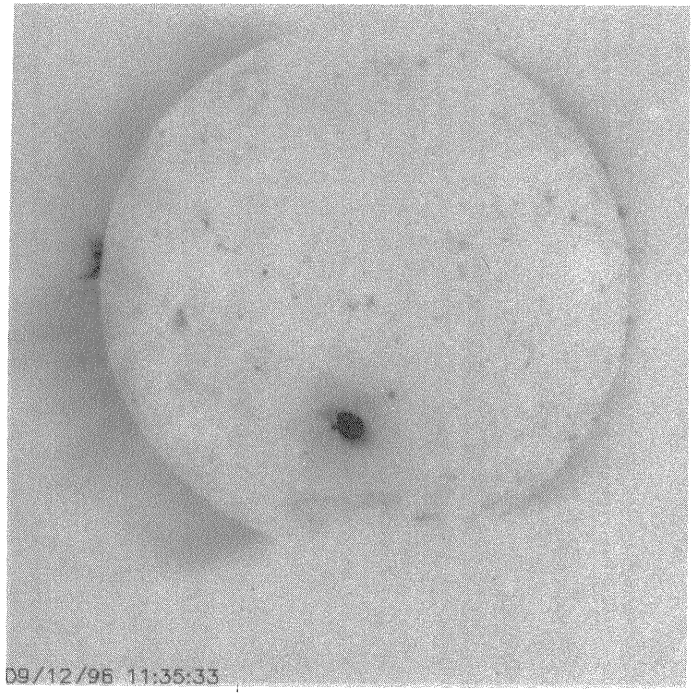
Day 10
11:57:55 UT



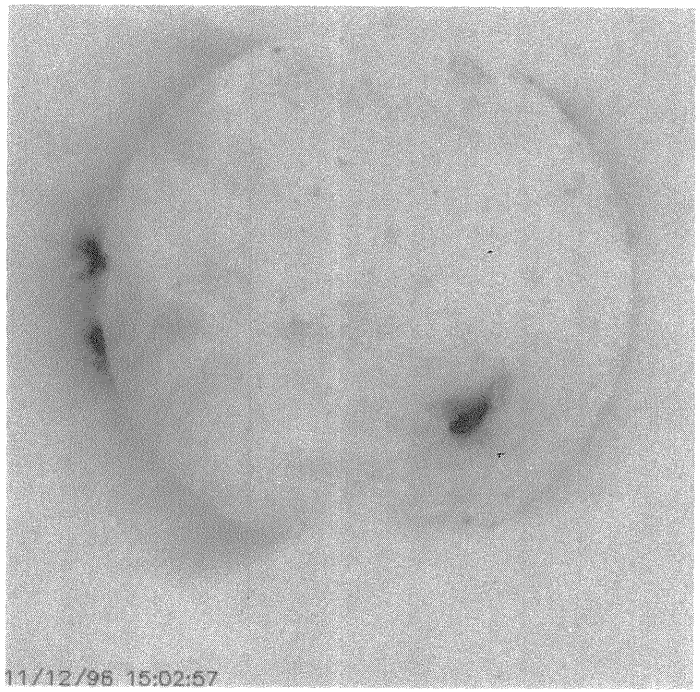
Day 12
12:21:05 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

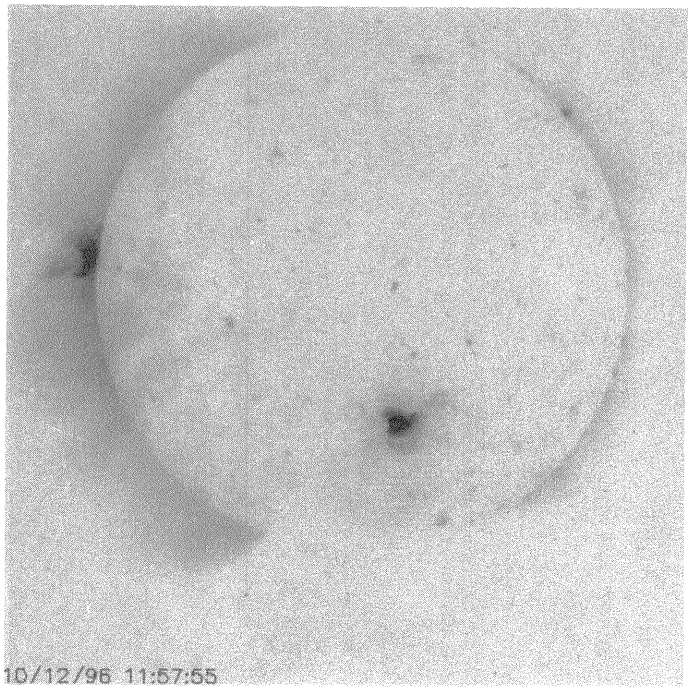
December 1996



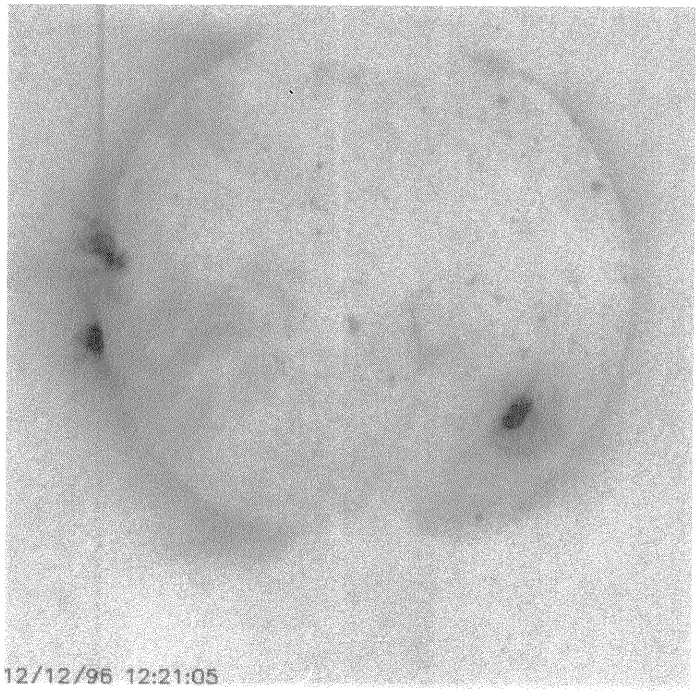
Day 9
11:35:33 UT



Day 11
15:02:57 UT



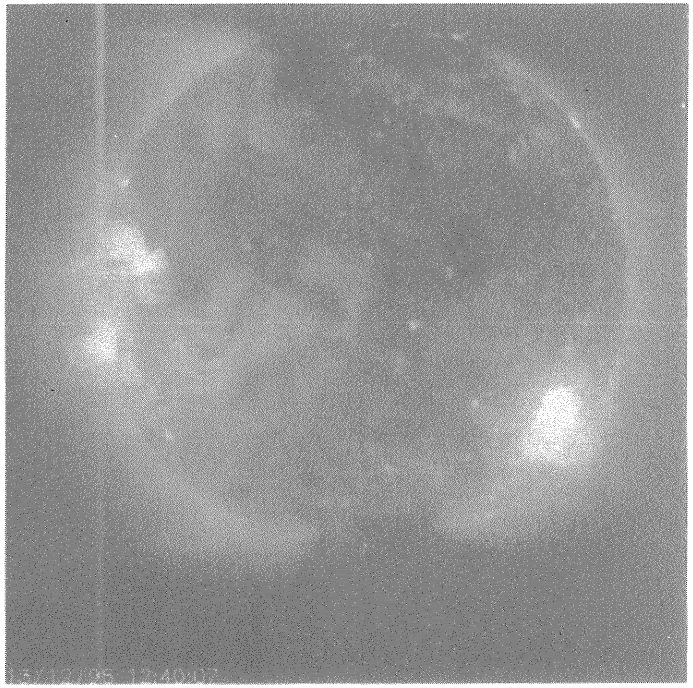
Day 10
11:57:55 UT



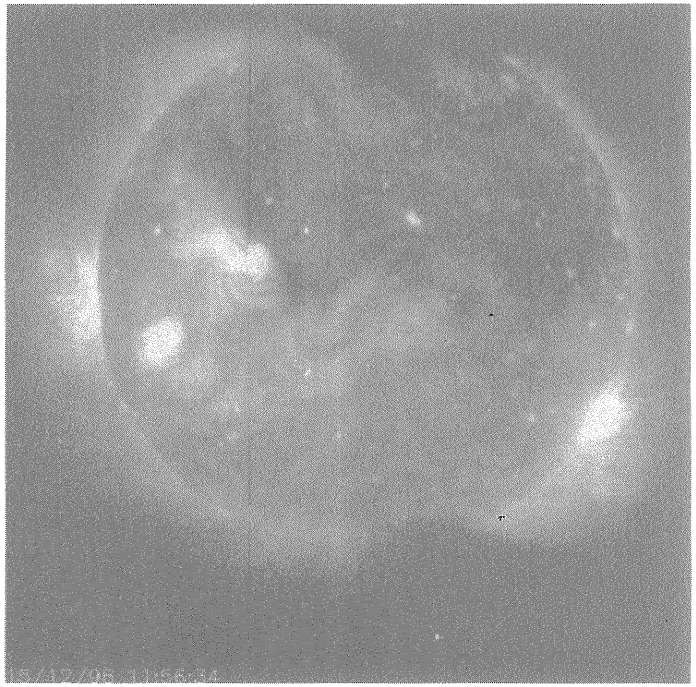
Day 12
12:21:05 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

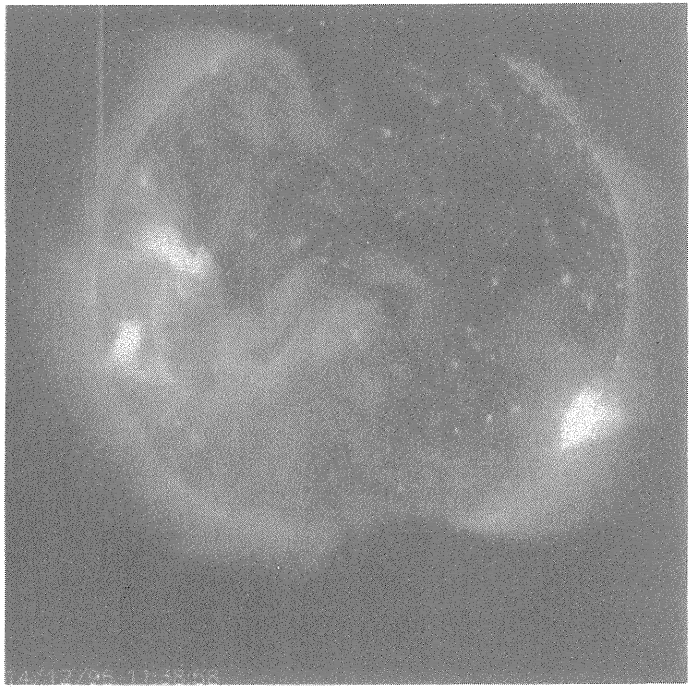
December
1996



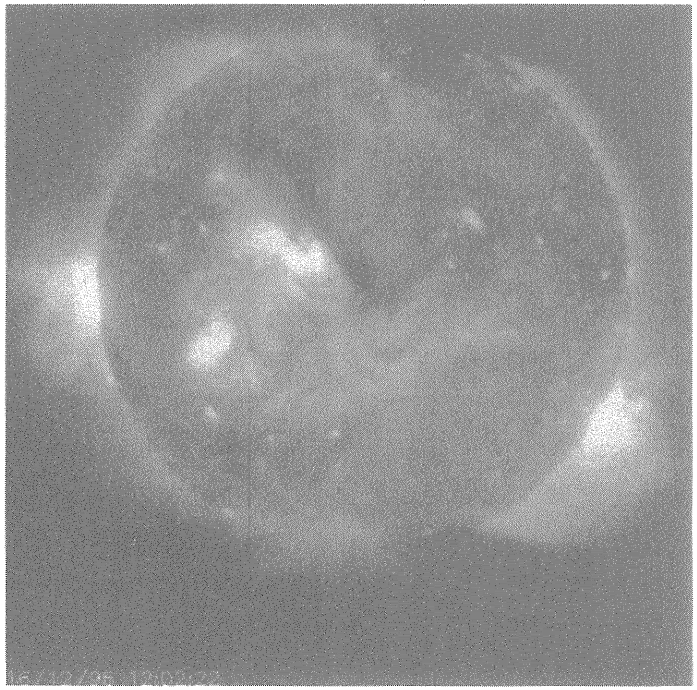
Day 13
12:40:07 UT



Day 15
11:56:34 UT



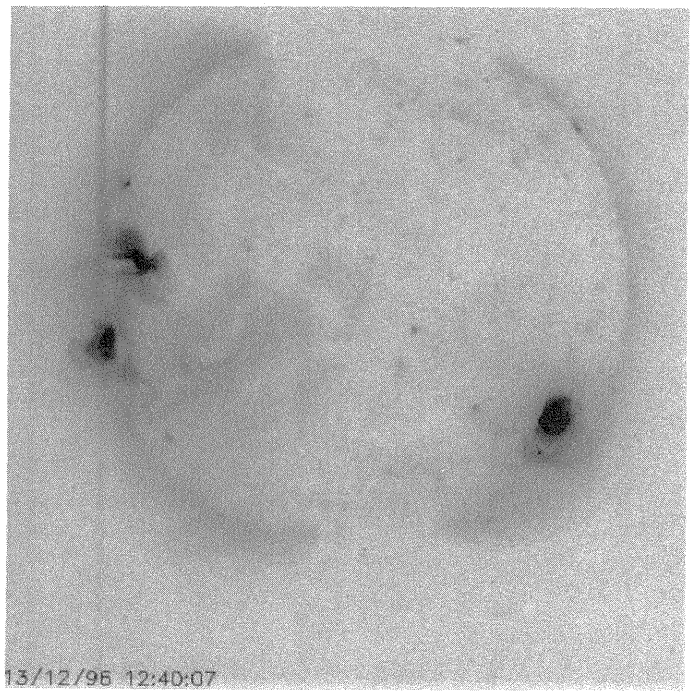
Day 14
11:38:58 UT



Day 16
12:02:22 UT

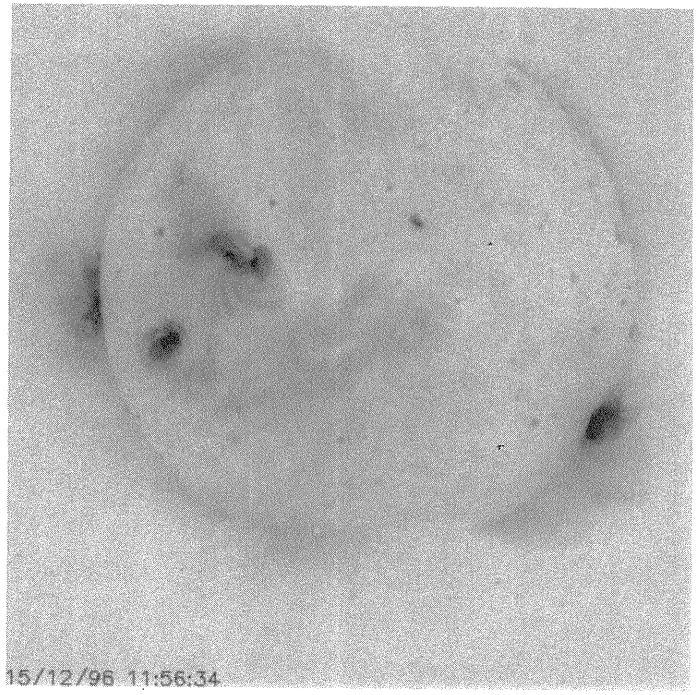
YOHKOH SOFT X-RAY TELESCOPE IMAGES

December 1996

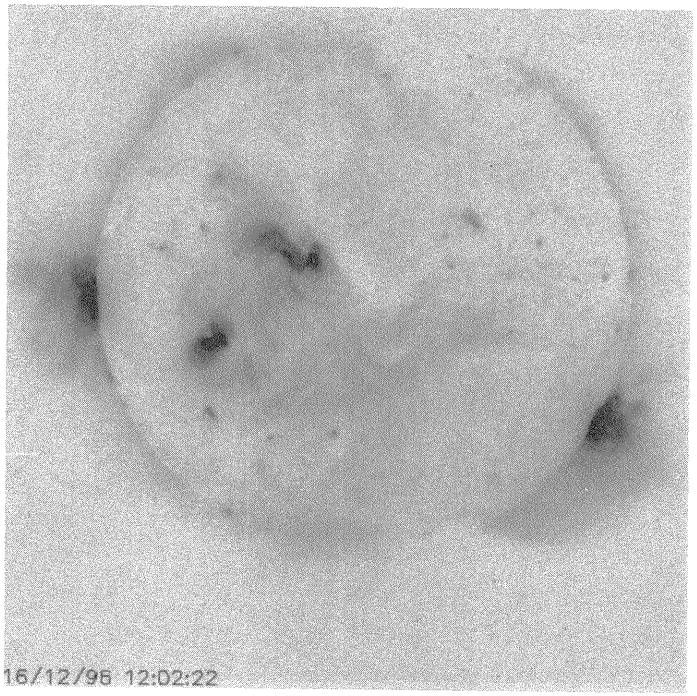


Day 13
12:40:07 UT

Day 14
11:38:58 UT



Day 15
11:56:34 UT

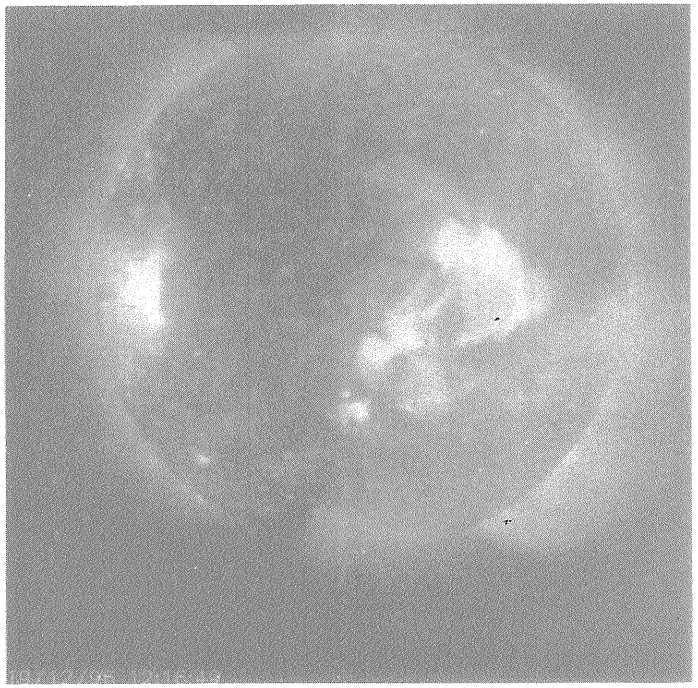


Day 16
12:02:22 UT

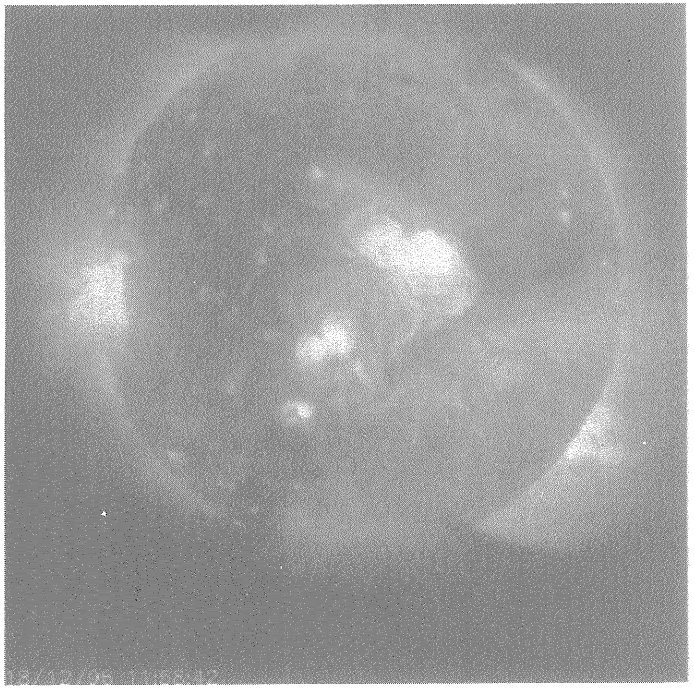
YOHKOH SOFT X-RAY TELESCOPE IMAGES

December
1996

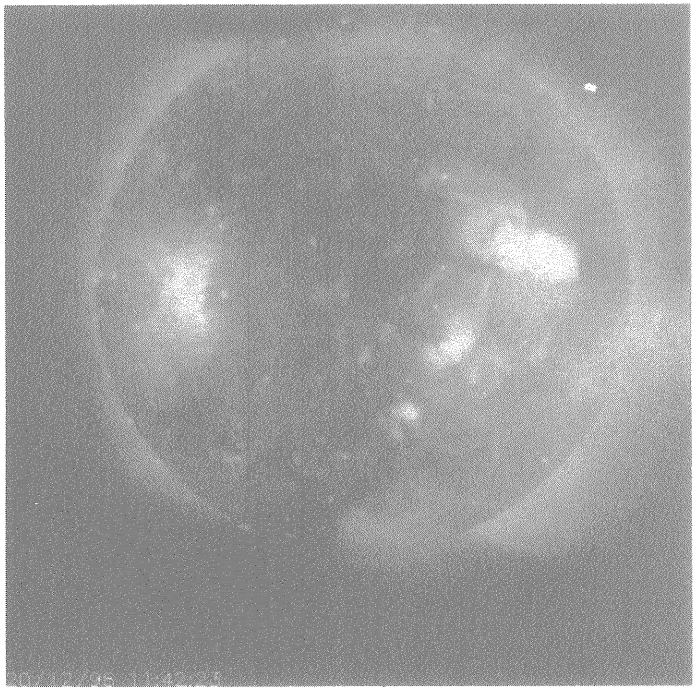
Day 17
12:22:58 UT



Day 19
12:16:49 UT



Day 18
11:58:42 UT



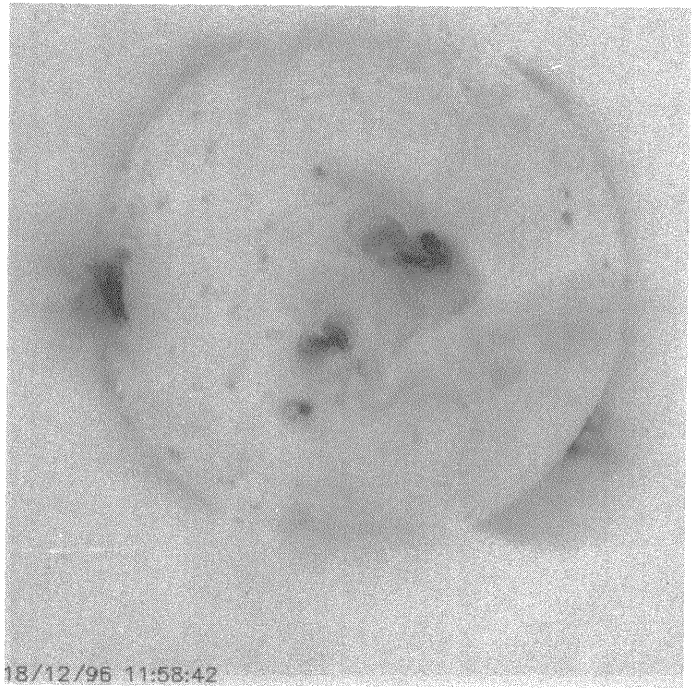
Day 20
11:42:23 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

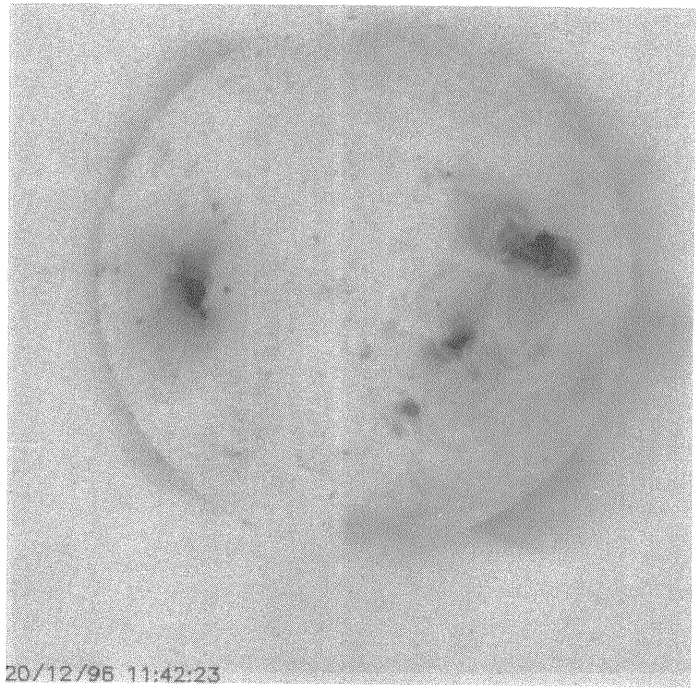
December 1996

Day 17
12:22:58 UT

Day 19
12:16:49 UT



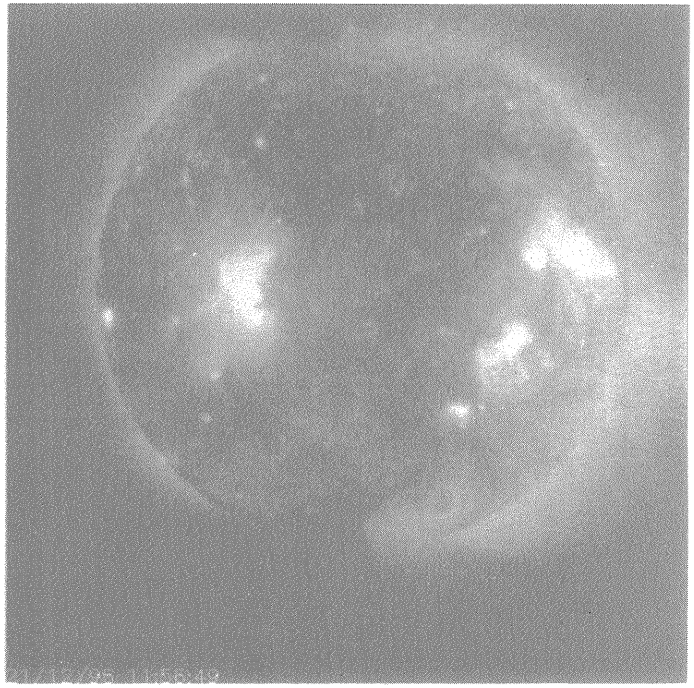
Day 18
11:58:42 UT



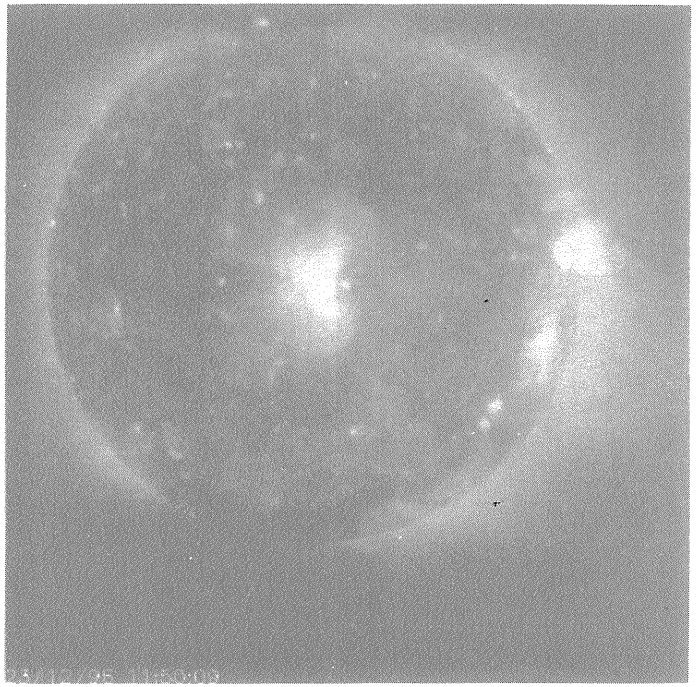
Day 20
11:42:23 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

December
1996

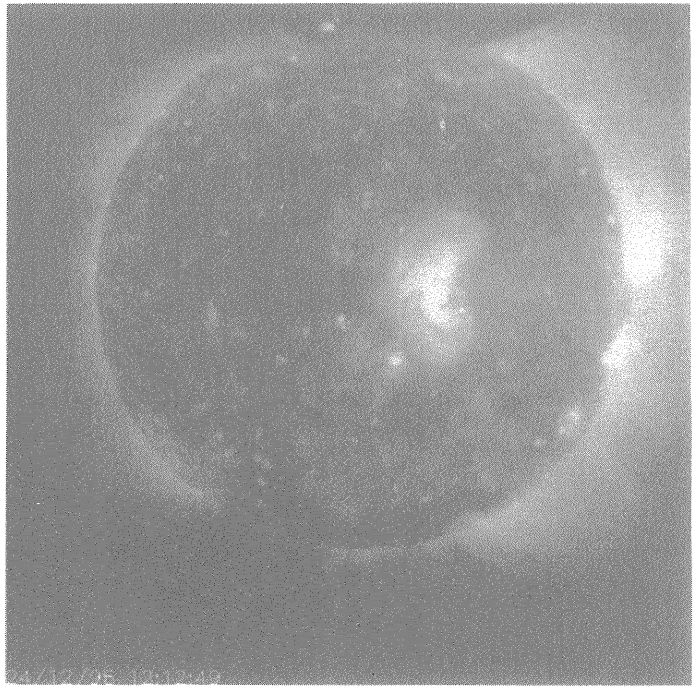


Day 21
11:56:49 UT



Day 23
11:50:09 UT

Day 22
12:13:37 UT

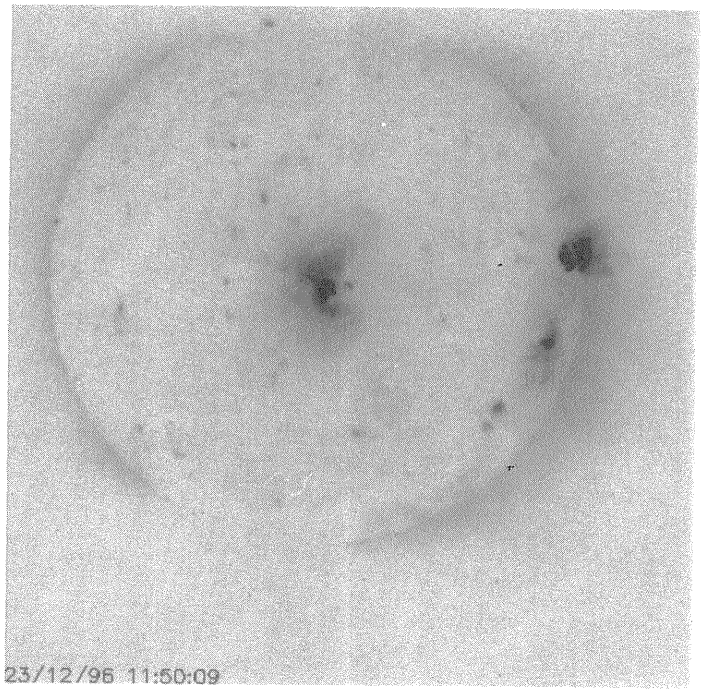


Day 24
12:12:49 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

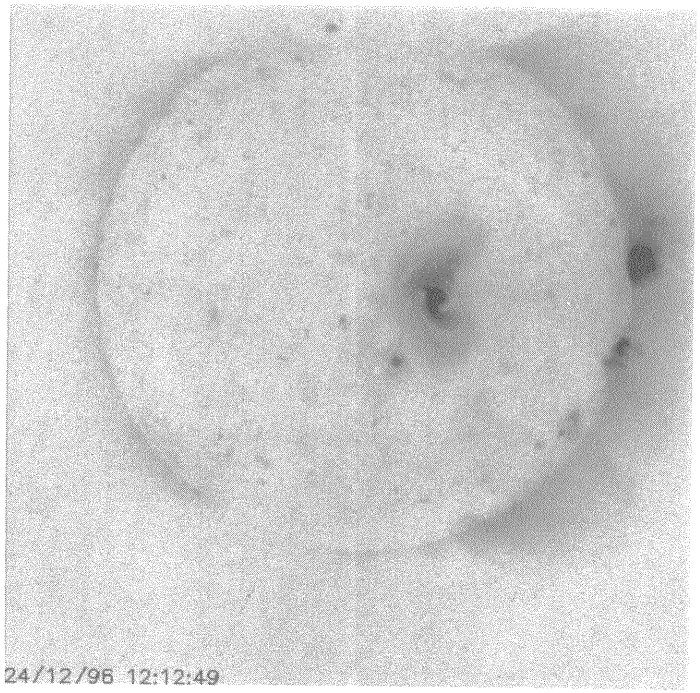
December 1996

Day 21
11:56:49 UT



Day 23
11:50:09 UT

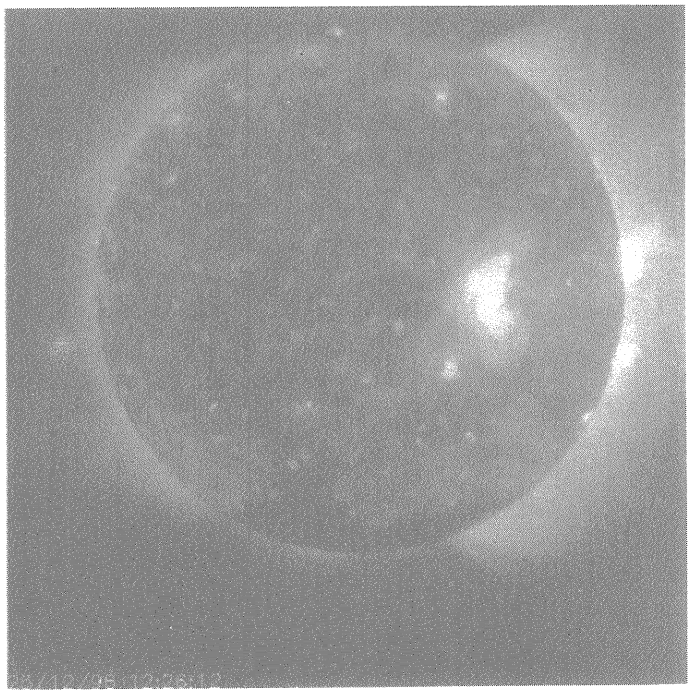
Day 22
12:13:37 UT



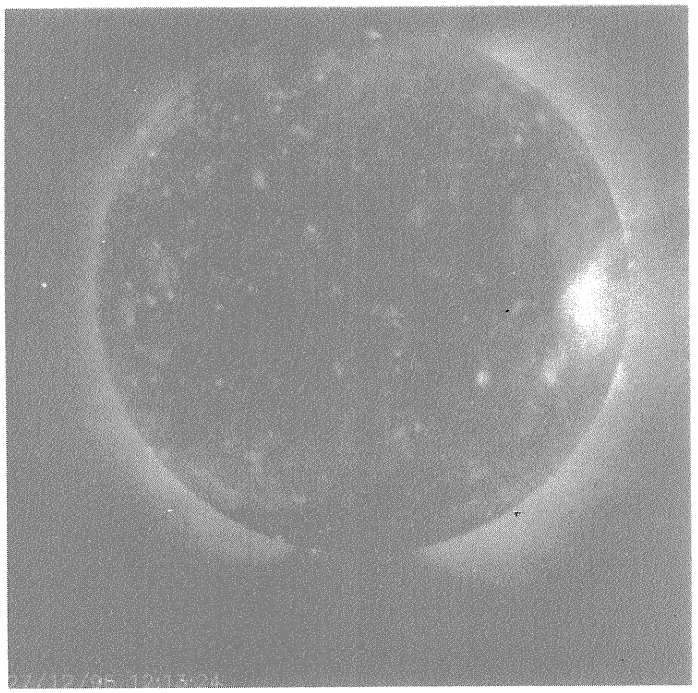
Day 24
12:12:49 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

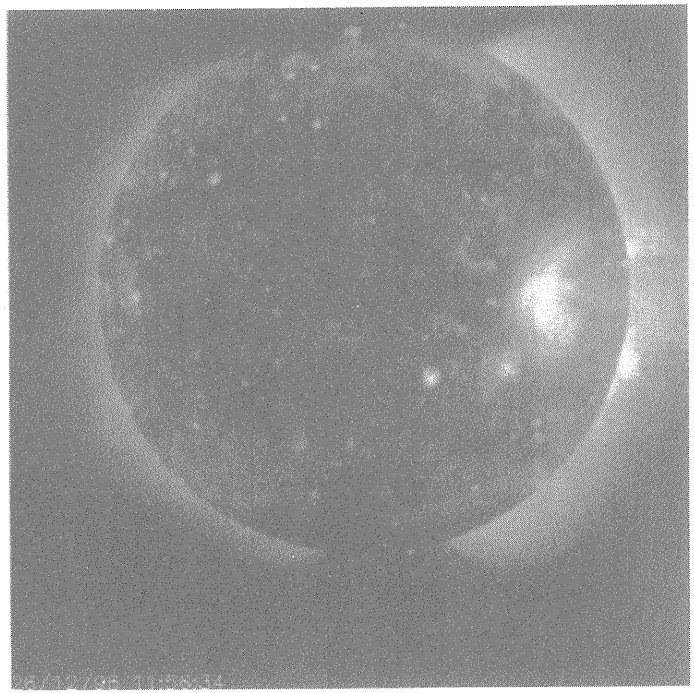
December
1996



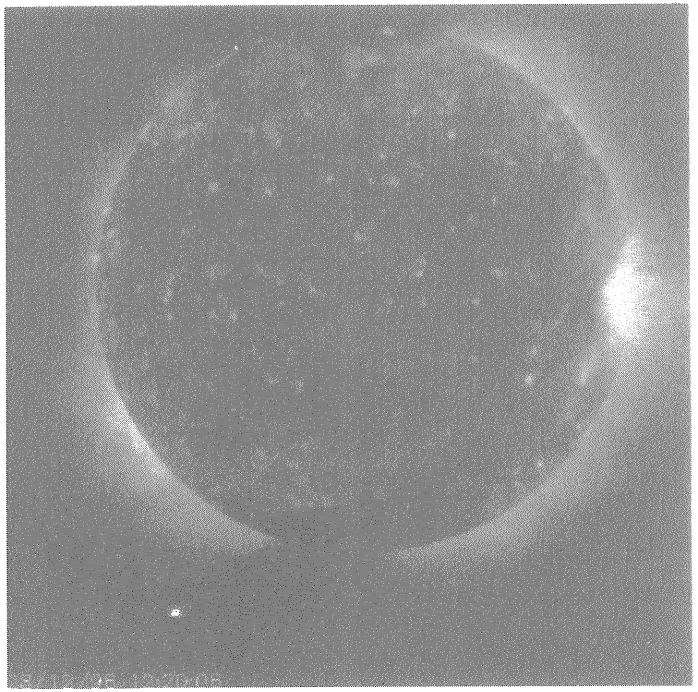
Day 25
12:26:12 UT



Day 27
12:13:24 UT



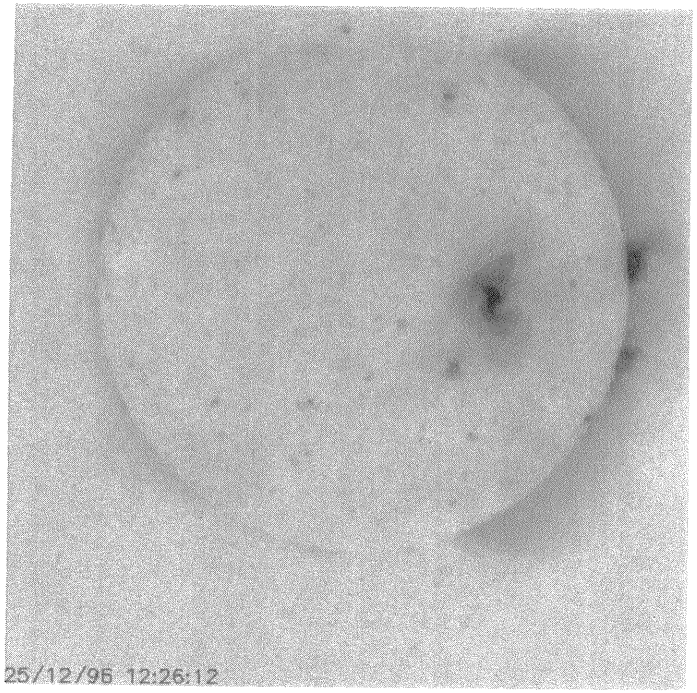
Day 26
11:56:34 UT



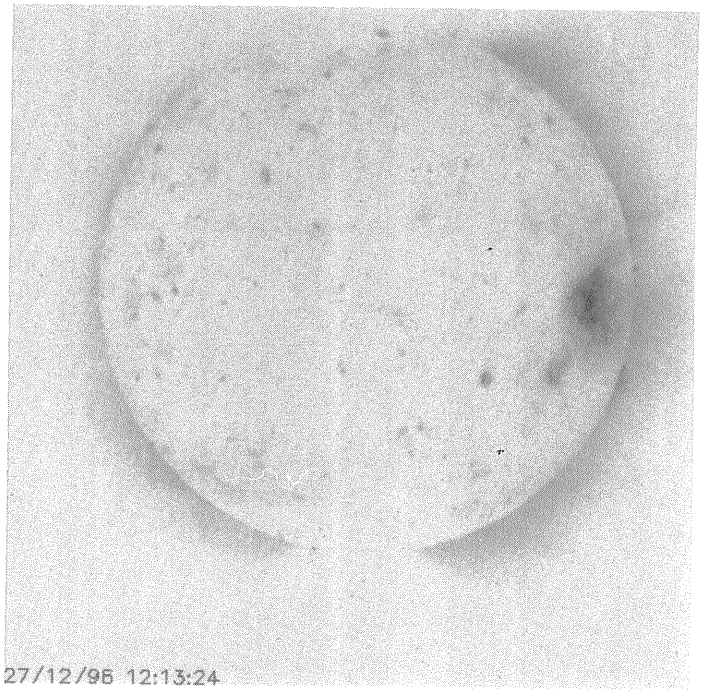
Day 28
12:20:06 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

December 1996

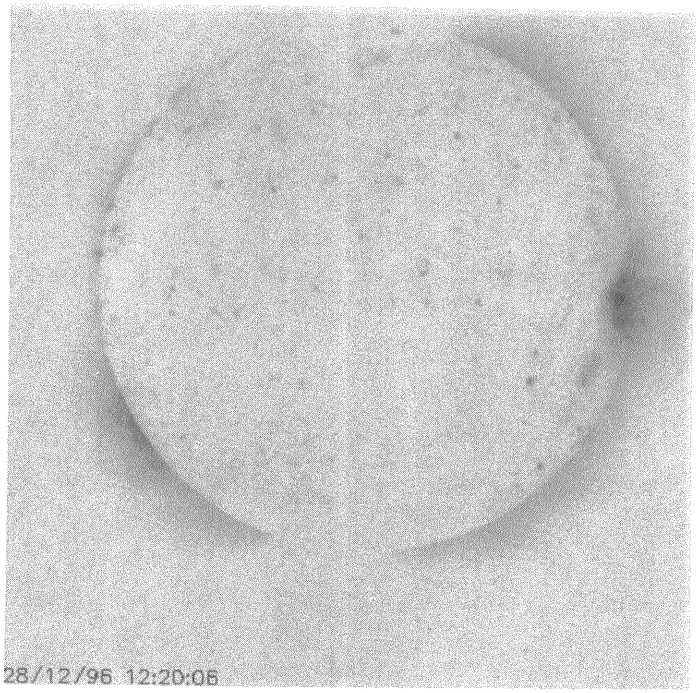


Day 25
12:26:12 UT



Day 27
12:13:24 UT

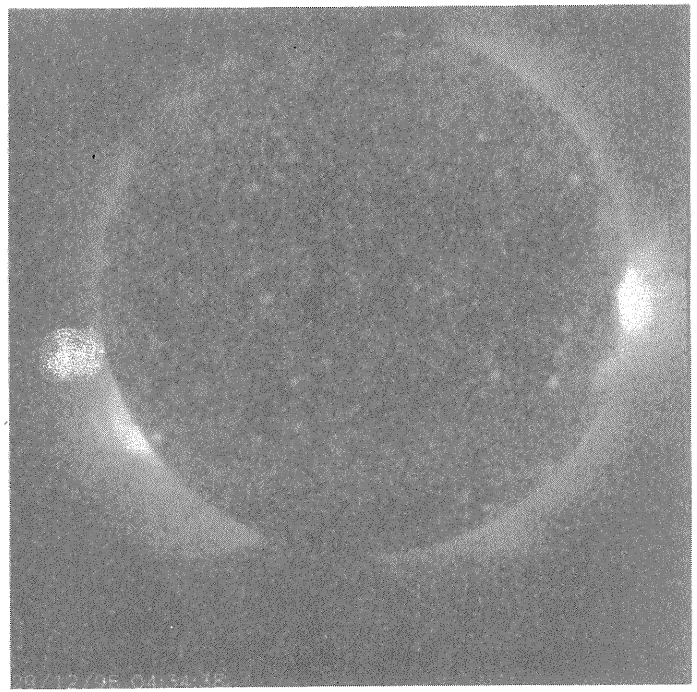
Day 26
11:56:34 UT



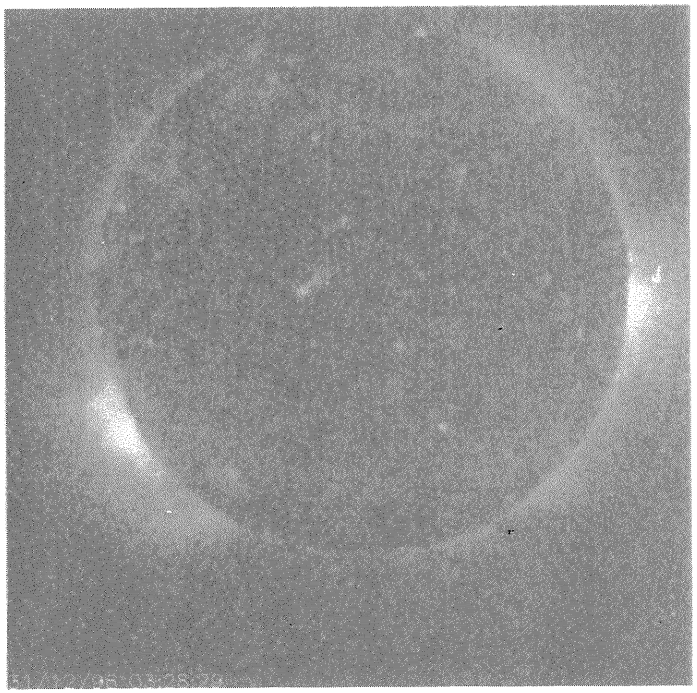
Day 28
12:20:06 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

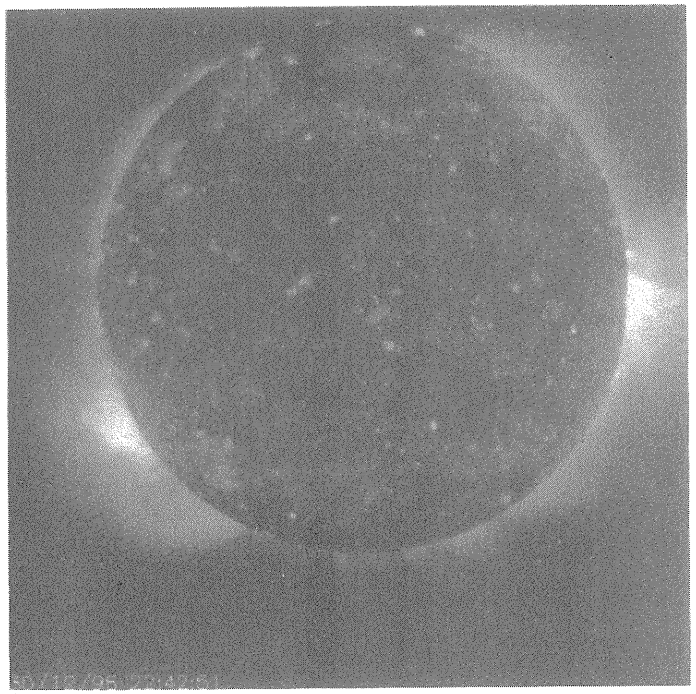
December
1996



Day 29
04:34:38 UT



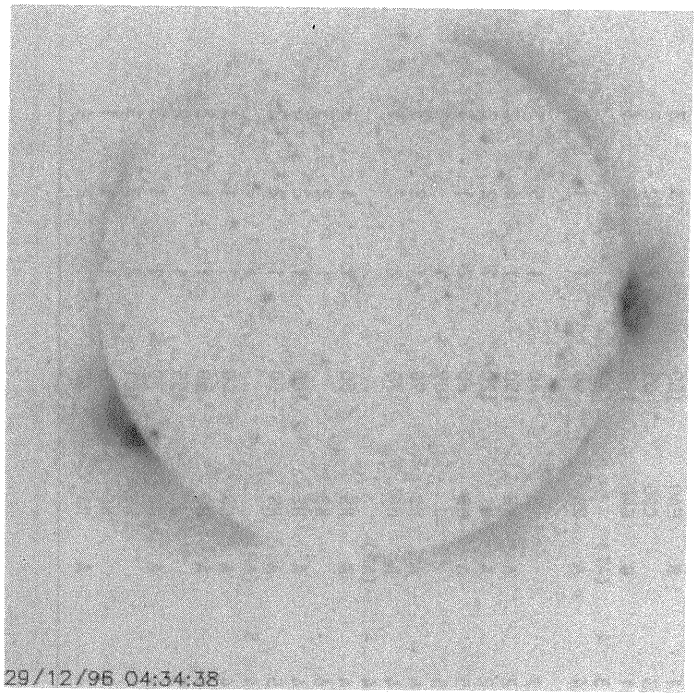
Day 31
03:28:29 UT



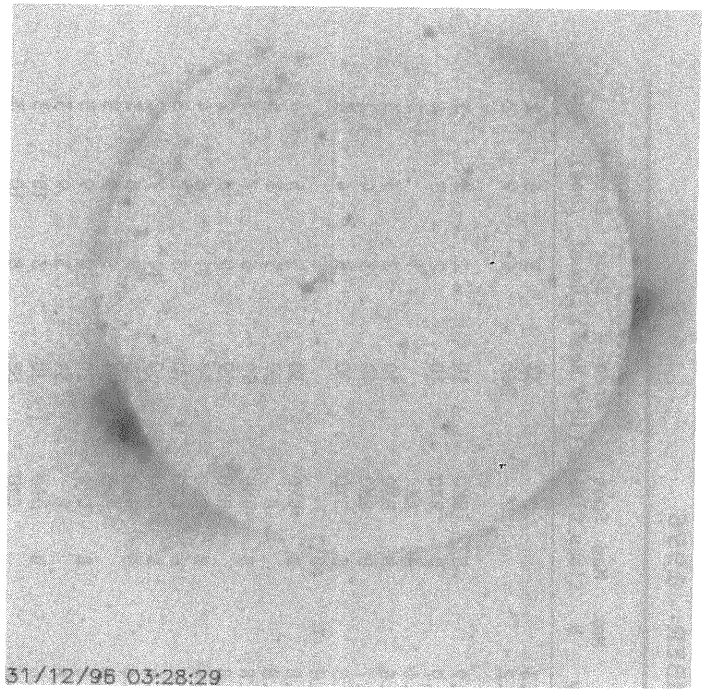
Day 30
22:42:51 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

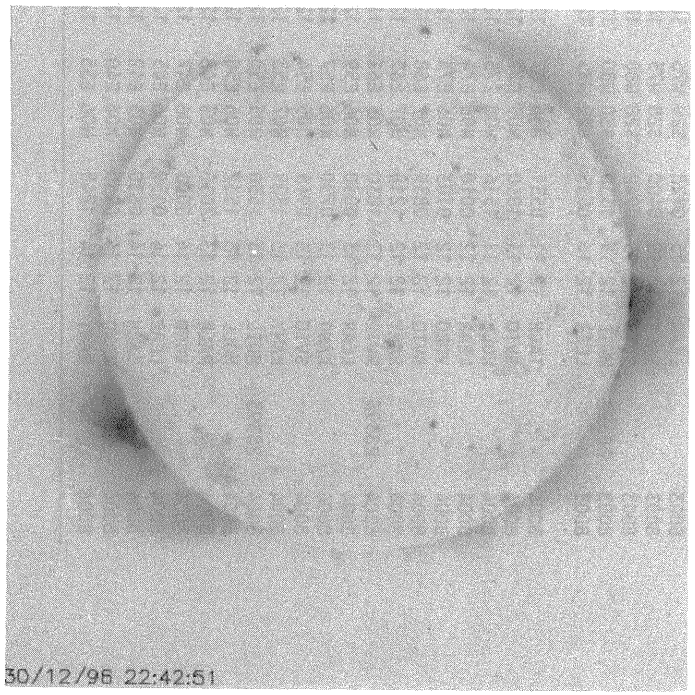
December 1996



Day 29
04:34:38 UT



Day 31
03:28:29 UT



Day 30
22:42:51 UT

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1996

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
7999C		VORO	12	12	0103	S28	W35	12	9.3			C	63	3	6	2
7999C		VORO	12	14	0006	S29	W61	12	9.2			D	268	6	9	2
8003		RAMY	12	07	1756	S29	E27	12	9.9		B	BXO	10	2	3	3
8003		HOLL	12	07	1924	S32	E27	12	9.9		B	BXO	10	2	3	4
8003		PALE	12	07	1940	S32	E23	12	9.6		A	AX		1		2
8003		LEAR	12	08	0140	S31	E22	12	9.8		B	BXO	10	2	3	3
8003		SVTO	12	08	0725	S29	E18	12	9.7		B	BXO	10	3	4	3
8003		RAMY	12	08	1229	S30	E17	12	9.8		B	BXO	20	5	4	4
8003	28392	MWIL	12	08	1545	S30	E15	12	9.8	4	(B)					
8003		HOLL	12	08	1712	S30	E14	12	9.8		B	BXO	30	5	5	4
8003		VORO	12	09	0027	S30	E10	12	9.8			A	39	5	3	3
8003		LEAR	12	09	0507	S30	E07	12	9.8		B	BXO	50	5	7	3
8003		TACH	12	09	0622	S29	E07	12	9.8			BXO	59	9	3	2
8003		RAMY	12	09	1242	S30	E03	12	9.8		B	CRO	20	11	6	4
8003		HOLL	12	09	1550	S29	E01	12	9.7		B	CAO	70	8	7	3
8003		PALE	12	09	1829	S29	W03	12	9.5		B	CAO	60	11	7	2
8003		LEAR	12	10	0110	S29	W05	12	9.6		B	BXO	50	5	8	3
8003		TACH	12	10	0453	S28	W08	12	9.6			BRO	51	5	9	3
8003		RAMY	12	10	1305	S29	W12	12	9.6		B	CRO	20	10	9	3
8003		VORO	12	11	0002	S30	W18	12	9.6			B	31	3	9	3
8003		LEAR	12	11	0010	S28	W18	12	9.6		B	DSO	20	3	10	3
8003		TACH	12	11	0531	S28	W21	12	9.6			CRO	88	8	10	3
8003		SVTO	12	11	1050	S29	W24	12	9.6		B	EAO	90	3	14	2
8003		KAND	12	11	1300	S29	W25	12	9.6			CSO		3	13	1
8003		HOLL	12	11	1516	S28	W26	12	9.6		B	CAO	160	16	11	2
8003		LEAR	12	12	0010	S29	W31	12	9.6		B	ESO	90	10	12	4
8003		SVTO	12	12	0835	S28	W37	12	9.5		B	DSO	130	7	10	3
8003		RAMY	12	12	1218	S28	W40	12	9.4		B	DSO	80	14	10	3
8003	28392	MWIL	12	12	1830	S28	W44	12	9.3	4	(B)					
8003		LEAR	12	13	0010	S28	W47	12	9.3		B	DSO	140	11	10	3
8003		KAND	12	13	0730	S29	W51	12	9.3			EAO		9	12	3
8003		SVTO	12	13	0945	S28	W52	12	9.3		B	ESI	140	9	12	3
8003		RAMY	12	13	1325	S29	W54	12	9.3		BG	EAO	80	8	12	2
8003	28392	MWIL	12	13	1530	S28	W56	12	9.3	5	(B)					
8003		HOLL	12	13	1537	S28	W58	12	9.1		B	ESO	200	13	11	3
8003		PALE	12	13	2010	S26	W59	12	9.2		B	EAO	130	9	11	2
8003		LEAR	12	14	0159	S28	W61	12	9.3		B	ESI	220	10	12	3
8003		TACH	12	14	0630	S27	W63	12	9.4			DSI	152	8	10	3
8003		KAND	12	14	0950	S30	W66	12	9.2			EAO		7	12	1
8003		RAMY	12	14	1245	S29	W67	12	9.3		B	EAO	140	9	13	4
8003		HOLL	12	14	1555	S29	W71	12	9.1		B	DAO	140	8	10	3
8003	28392	MWIL	12	14	1600	S28	W69	12	9.3	4	(B)					
8003		LEAR	12	15	0128	S29	W76	12	9.1		B	EAO	180	2	13	3
8003		TACH	12	15	0400	S28	W75	12	9.3			CSO	65	2	12	2
8003		SVTO	12	15	0942	S28	W80	12	9.1		B	EAO	170	2	12	3
8003	28392	MWIL	12	15	1530	S30	W80	12	9.3	4	(AF)					
8003		LEAR	12	16	0055	S29	W85	12	9.4		A	HA	40	1	1	3
8004		TACH	12	11	0531	N06	E87	12	17.7			AX	40	1	5	3
8004		SVTO	12	11	1050	N05	E77	12	17.2		A	HH	150	1	4	2
8004		HOLL	12	11	1516	N08	E75	12	17.2		A	HS	120	1	2	2
8004		LEAR	12	12	0010	N06	E74	12	17.5		A	HS	60	2	1	4
8004		VORO	12	12	0103	N06	E73	12	17.5			J	109	1		2
8004		SVTO	12	12	0835	N07	E68	12	17.4		A	HS	90	1	2	3
8004		RAMY	12	12	1218	N07	E65	12	17.4		A	HA	70	2	2	3
8004	28393	MWIL	12	12	1830	N05	E62	12	17.4	4	(AP)					
8004		LEAR	12	13	0010	N06	E59	12	17.4		A	HS	80	1	1	3
8004		KAND	12	13	0730	N06	E57	12	17.6			HS		1	2	3
8004		SVTO	12	13	0945	N05	E54	12	17.4		A	HS	100	1	2	3
8004		RAMY	12	13	1325	N07	E53	12	17.5		A	HS	50	1	2	2
8004	28393	MWIL	12	13	1530	N05	E50	12	17.4	5	(AP)					
8004		HOLL	12	13	1537	N06	E50	12	17.4		A	HS	40	1	1	3
8004		PALE	12	13	2010	N03	E48	12	17.4		A	HS	50	1	1	2
8004		VORO	12	14	0006	N06	E47	12	17.5			J	155	1		2
8004		LEAR	12	14	0159	N06	E45	12	17.4		A	HS	70	1	1	3
8004		TACH	12	14	0630	N05	E42	12	17.4			HSX	101	2	2	3
8004		KAND	12	14	0950	N06	E40	12	17.4			HS		1	1	1
8004		RAMY	12	14	1245	N06	E38	12	17.4		A	HS	40	1	2	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1996

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
8004		HOLL	12 14 1555	N06 E37	12 17.4		A	HS	50	1	2	3
8004	28393	MWIL	12 14 1600	N05 E37	12 17.4	5	(AP)					
8004		LEAR	12 15 0128	N06 E32	12 17.4		A	HS	90	1	1	3
8004		TACH	12 15 0400	N06 E29	12 17.3			HSX	100	1	2	2
8004		SVTO	12 15 0942	N05 E27	12 17.4		B	CSO	70	3	2	3
8004	28393	MWIL	12 15 1530	N05 E24	12 17.4	5	(AP)					
8004		LEAR	12 16 0055	N06 E18	12 17.4		B	CSO	50	8	4	3
8004		KAND	12 16 0850	N05 E14	12 17.4			CSO		6	3	4
8004		SVTO	12 16 0925	N05 E14	12 17.4		B	CSO	90	5	5	3
8004	28393	MWIL	12 16 1440	N06 E11	12 17.4	5	(BG)					
8004		HOLL	12 16 1702	N07 E09	12 17.4		A	HS	60	5	3	3
8004		RAMY	12 16 1703	N06 E11	12 17.5		A	HS	50	2	2	2
8004		PALE	12 16 1855	N06 E09	12 17.5		B	CAO	40	4	3	3
8004		LEAR	12 17 0007	N06 E05	12 17.4		BG	CSO	30	4	3	3
8004		TACH	12 17 0551	N06 E02	12 17.4			HAX	203	4	3	2
8004		KAND	12 17 0850	N05 E01	12 17.4			CSO		2	3	3
8004		SVTO	12 17 1015	N06 E00	12 17.4		B	CSO	90	2	3	2
8004		RAMY	12 17 1216	N06 W02	12 17.4		A	HS	50	2	3	3
8004	28393	MWIL	12 17 1430	N06 W03	12 17.4	5	(BG)					
8004		HOLL	12 17 1725	N08 W04	12 17.4		B	CSO	120	5	4	2
8004		PALE	12 17 1920	N07 W05	12 17.4		B	CSO	100	5	4	3
8004		VORO	12 17 2345	N07 W07	12 17.5			D	150	7	3	3
8004		KAND	12 18 0825	N07 W11	12 17.5			DSO		8	6	3
8004		RAMY	12 18 1302	N06 W15	12 17.4		BG	DSO	70	11	5	2
8004	28393	MWIL	12 18 1430	N06 W16	12 17.4	5	(B)					
8004		HOLL	12 18 1710	N08 W17	12 17.4		BG	DSO	320	14	5	3
8004		PALE	12 18 2225	N08 W20	12 17.4		B	DAO	100	10	6	3
8004		VORO	12 18 2344	N06 W21	12 17.4			D	175	13	4	3
8004		LEAR	12 19 0311	N07 W23	12 17.4		BG	CSI	90	16	6	4
8004		TACH	12 19 0604	N06 W25	12 17.4			CSI	300	10	4	3
8004		KAND	12 19 0840	N07 W25	12 17.5			DSI		20	6	2
8004		SVTO	12 19 1005	N07 W27	12 17.4		BG	CSO	110	14	6	2
8004		RAMY	12 19 1237	N05 W29	12 17.3		B	DSO	90	11	6	3
8004	28393	MWIL	12 19 1430	N06 W28	12 17.5	5	(BG)					
8004		HOLL	12 19 1715	N07 W31	12 17.4		BG	CSO	160	15	6	3
8004		PALE	12 19 2238	N08 W36	12 17.2		B	CSO	100	7	6	2
8004		LEAR	12 20 0113	N08 W36	12 17.3		BG	CSO	50	15	6	4
8004		TACH	12 20 0500	N06 W37	12 17.4			HAX	225	3	2	3
8004		KAND	12 20 0915	N05 W39	12 17.5			HS		4	2	3
8004		RAMY	12 20 1352	N03 W42	12 17.4		A	HS	30	2	3	3
8004	28393	MWIL	12 20 1530	N06 W42	12 17.5	5	(BF)					
8004		HOLL	12 20 1620	N06 W43	12 17.5		A	HS	80	3	2	3
8004		VORO	12 21 0022	N06 W47	12 17.5			J	103	2		3
8004		LEAR	12 21 0217	N07 W48	12 17.5		BG	CSO	70	2	3	3
8004		TACH	12 21 0534	N05 W51	12 17.4			HSX	105	2	3	3
8004		KAND	12 21 0725	N04 W51	12 17.5			HS		1	2	3
8004		SVTO	12 21 0900	N06 W52	12 17.5		BG	CSO	70	2	2	3
8004	28393	MWIL	12 21 1545	N05 W55	12 17.5	5	(AP)					
8004		RAMY	12 21 1648	N02 W55	12 17.6		A	HS	40	2	2	2
8004		LEAR	12 22 0146	N06 W60	12 17.6		BG	CSO	60	1	1	3
8004		TACH	12 22 0548	N06 W63	12 17.5			HSX	40	1	2	3
8004		SVTO	12 22 1135	N07 W67	12 17.5		BG	CSO	80	1	3	2
8004		RAMY	12 22 1312	N06 W67	12 17.5		A	HS	40	1	1	4
8004		HOLL	12 22 1635	N05 W68	12 17.6		A	HS	60	1	2	2
8004		VORO	12 22 2335	N05 W72	12 17.6			J	60	1		3
8004		LEAR	12 23 0100	N05 W73	12 17.6		A	HS	30	1	1	3
8004		KAND	12 23 0750	N04 W82	12 17.2			HS		1	2	1
8004		RAMY	12 23 1212	N06 W79	12 17.6		A	HS	50	1	1	4
8004		SVTO	12 23 1300	N06 W80	12 17.5		A	HS	60	1	2	1
8004	28393	MWIL	12 23 1545	N05 W80	12 17.7	4	AP					
8004		HOLL	12 23 1725	N09 W80	12 17.7		A	HS	40	1	1	2
8005		LEAR	12 16 0055	S13 E39	12 19.0		A	AX		1	1	3
8005		KAND	12 16 0850	S13 E35	12 19.0			BXO		4	3	4
8005	28394	MWIL	12 16 1440	S13 E28	12 18.7	4	(AP)					
8005		KAND	12 17 0850	S13 E19	12 18.8			BXO		2	3	3
8005		RAMY	12 17 1216	S13 E17	12 18.8		A	AX		1		3
8005	28394	MWIL	12 17 1430	S12 E16	12 18.8	3	(AP)					

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1996

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
8007		TACH	12	21	0534	N05	W36	12	18.5			AX	15	3	1	3
8007		KAND	12	21	0725	N03	W32	12	18.9			BXO		2	2	3
8007		SVTO	12	21	0900	N04	W38	12	18.5		B	CRO	30	5	5	3
8007	28396	MWIL	12	21	1545	N04	W42	12	18.5	3	(B)					
8007		RAMY	12	21	1648	N00	W41	12	18.6		B	BXO	20	7	3	2
8007		LEAR	12	22	0146	N05	W47	12	18.5		B	BXO	10	4	3	3
8007		TACH	12	22	0548	N05	W50	12	18.5			BXO	11	4	3	3
8007		SVTO	12	22	1135	N05	W53	12	18.5		B	BXO	30	4	5	2
8007		RAMY	12	22	1312	N04	W54	12	18.5		B	BXO	10	6	4	4
8007		HOLL	12	22	1635	N04	W55	12	18.6		B	BXO	20	5	7	2
8007		LEAR	12	23	0100	N05	W63	12	18.3		B	BXO	10	3	3	3
8007		RAMY	12	23	1212	N05	W67	12	18.5		B	BXO	10	3	4	4
8006		KAND	12	17	0850	S28	E29	12	19.6			CSO		2	3	3
8006		SVTO	12	17	1015	S28	E28	12	19.6		B	BXO		2	3	2
8006		RAMY	12	17	1216	S28	E26	12	19.5		B	BXO	10	5	3	3
8006	28395	MWIL	12	17	1430	S28	E24	12	19.5	4	(B)					
8006		HOLL	12	17	1725	S27	E23	12	19.5		B	CRO	50	3	4	2
8006		PALE	12	17	1920	S30	E22	12	19.5		B	BXO	20	3	4	3
8006		VORO	12	17	2345	S29	E20	12	19.5			C	30	3	3	3
8006		KAND	12	18	0825	S29	E15	12	19.5			BXO		3	5	3
8006		RAMY	12	18	1302	S29	E12	12	19.5		B	BXO	10	2	4	2
8006	28395	MWIL	12	18	1430	S28	E09	12	19.3	3	(AP)					
8006		HOLL	12	18	1710	S28	E09	12	19.4		A	AX	20	1	1	3
8006		PALE	12	18	2225	S28	E04	12	19.2		A	AX		1		3
8007A		KAND	12	19	0840	S06	E54	12	23.4			AX		1		2
8007A		SVTO	12	19	1005	S07	E52	12	23.3		A	AX		1		2
8007A		RAMY	12	19	1237	S07	E51	12	23.3		A	AX		1		3
8007A		RAMY	12	22	1312	S08	E08	12	23.1		A	AX		1		4
8008		LEAR	12	24	0255	S18	W03	12	23.9		A	AX		1	1	4
8008A		RAMY	12	26	1321	S22	W16	12	25.3		A	AX		1		3

Stations reporting:

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

DECEMBER 1996

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	LF-SES	Flare (UT)	X-ray Class	NOAA Region
01	1041	1052	1144	1	1		1				*		
01	2022	2029	2034	1-	3				1	1	2021	C1.6	7999
01	2049	2056	2141	1-	3				2	3	2049	C5.2	7999
02	0133	0140	0205	1-	1				1		0132	C1.6	
02	0856	0910U	0932	1	1		1				0858		7999
02	1303	1306	1338	1	1		1				1316	B5.8	
02	1317	1322	1330	1-	1					1	1316	B5.8	
02	1400	1402	1422	1	1					1	1358	B3.4	
02	1425	1436	1515	1-	3		1		2	2	1423	C2.7	7999
03	1052	1103	1130	1	1		1				No flare		
04	1025	1045	1118	1	1		1				No flare		
09	0836	0848	0908	1	1		1				No flare		
09	1034	1037	1056	1	1		1				*		
09	1338	1349	1408	1	1		1				1348		8003
10	1430	1430	1440	1-	1					2	1430	B1.3	8003
11	0120	0128	0200	1-	1				1		0118	B8.8	
11	0859	0901	1017	1	1		1				No flare		
11	0941	0942	0947	1-	1					1	0941	B1.3	
11	1433	1438	1443	1-	1					1	1432	B1.8	
11	1815	1820	1851	2-	3					5	1813	C1.1	
12	1039	1112	1200	1	1		1				No flare		
12	1305	1312	1342	1	1		1				1257	B7.6	8003
12	1409	1420	1446	1	3		2				No flare		
15	0843	0848	0956	1	1		1				No flare		
15	1108	1137	1201	1	1		1				No flare		
16	1114	1126	1202	1	1		1				No flare		
16	1226	1231	1256	1-	3		1		2	2	1222	C2.9	
19	0750	0755	0810	1	1		1				*		
19	1107	1112	1202	1	1		1				*		
19	1308	1317	1356	1	1		1				No flare		
19	1526	1600	1615	1-	3				2	1	1538	C2.3	8005
19	1621	1719	1835	1-	3				2		1538	C2.3	8005
20	0824	0832	0856	1	1		1				*		
20	1812	1818	1832	1-	1					1	1811	B1.4	
22	1426	1432	1516	1	1		1				No flare		
22	1614	1616	1628	1	1		1				No flare		
24	0754	0759U	0821	1	1		1				No flare		
24	0900	0927	0941	1	1		1				No flare		
24	0952	1007U	1024	1	1		1				No flare		
24	1115	1131	1232	1	1		1				*		
24	1258	1317	1337	1	3		1			2	1303	C2.1	
26	0845	0848	0919	1	1		1				No flare		
26	0921	0928	0949	1	1		1				No flare		
26	0954	1005U	1028	1	1		1				No flare		
28	1023	1030U	1115	1	1		1				No flare		
29	0817	0856	1029	1	1		1				*		
29	1139	1144	1230	1	1		1				*		
30	1148	1155	1344	1	1		1				No flare		

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1996

OBSERVATORIES REPORTING FOR DECEMBER 1996

Brazilian Antarctic Station	SPA	Koniz, Switzerland	SES
Cambridge, England, UK	SES	LaCrescenta, California, USA	SES
Cranford, New Jersey, USA	SES	Lintong, People's Rep of China	SPA
Crystal Lake, Illinois, USA	SES	Nerja, Spain	SES
Dodgeville, Wisconsin, USA	SES	Rimavska Sobota, Slovakia	SEA
Edenvale, Rep of S. Africa	SES	Rochester, New Hampshire, USA	SES
Fort Wayne, Indiana, USA	SES	Sofia, Bulgaria	SES
Gettysburg, Pennsylvania, USA	SES	Spring Green, Wisconsin, USA	SES
Hiraiso, Japan	SWF	Tucson, Arizona, USA	SES
Houston, Texas, USA	SES	Upice, Czech Republic	SEA
Hudson, Ohio, USA	SES	Wellington, Ohio, USA	SES
Indianapolis, Indiana, USA	SES	Windsor Locks, Connecticut, USA	SES
Itapetinga, Brazil	SPA	Zilina, Slovakia	SEA

Observations are not necessarily continuous.

SOLAR RADIO EMISSION
Spectral Observations

DECEMBER 1996

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
01	0000	0750	CULG	0000.0E	0102.0	IV	FS	2	40U	130	
			LEAR	0204.0	0206.0	III		2	30	80	
			CULG	0205.0	0207.0	III	G	2	20U	160	
			PALE	0205.0	0206.0	III		2	30	51	
			CULG	0244.0	0244.0	III	B	2	60	170	
			LEAR	0302.0	0302.0	III		2	30	73	
			CULG	0332.0	0332.0	III	B	1	20U	160	
			LEAR	0332.0	0332.0	III		1	30	73	
			LEAR	0332.0	0332.0	III		2	30	73	
			CULG	0559.0	0559.0	III	B	1	25	160	
	0700	1200	IZMI	0700.0E	1200.0D	I	N	1	85U	180U	
			CULG	0704.0	0704.0	III	B	1	20U	90	
	0752	1353	POTS	0752 E	1353 U	I	S,C,DC	2	110U	250	
	0815	1327	ONDR								
			POTS	0850.7	0850.9	III	G	2	110U	170U	
	0700	1200	IZMI	0857.0	0857.3	III	G	2	45X	135	
			POTS	0857.1	0857.3	III	G	3	40X	170U	
			POTS	0859.2	0859.6	III	G	3	110U	170U	
	0700	1200	IZMI	0859.2	0859.5	III	G	2	45U	125	
			POTS	0932.6	0936.9	III	GG	2	40X	250	
	0700	1200	IZMI	0932.6	0934.8	III	GG	2	45X	160	
	0700	1200	IZMI	0936.8	0937.0	III	B	2	45X	90	
			POTS	1026.8	1027.3	III	G	2	40X	160	
	0700	1200	IZMI	1026.9	1027.1	III	G	1	45	110	
			POTS	1057.6	1057.7	III	B	2	110U	145	
			POTS	1100.2	1100.7	III	G	3	110U	150	
	0700	1200	IZMI	1100.6	1101.5	III	G	1	45X	145	
	0700	1200	IZMI	1103.3	1103.4	III	B	1	45U	120	
			POTS	1140.1	1140.3	III	G	3	40X	170U	
	0700	1200	IZMI	1140.1	1140.4	III	G, HARM	3	45X	150	
			POTS	1140.2	1140.5	V		2	40X	50	
			POTS	1214.5	1214.6	III	G	2	40X	170U	
			POTS	1218.9	1219.3	III	B	2	40X	90U	
	2033	2400	CULG								
02	0000	0751	CULG								
	0044	0728	HIRA								
	0752	1350	POTS	0752 E	1350 U	I	S	1	110U	400	
	0817	1326	ONDR								
			POTS	0835.2	0835.3	III	B	2	110U	150	
			POTS	1021.4	1021.5	III	G	2	110U	170U	
			POTS	1114.4	1115.4	III	G	3	40X	170U	
	0700	1200	IZMI	1114.8	1115.4	III	G	3	45X	180U	
	2131	2400	HIRA								
03	0000	0728	HIRA								
	0500	0751	CULG								
	0700	1200	IZMI								
	0814	1326	ONDR								
	0752	1350	POTS	0925.7	0926.3	III	G	1	140	350	
	2132	2400	HIRA								
04	0000	0728	HIRA								
	0752	1350	POTS								
	0816	1325	ONDR								
	0700	1200	IZMI	1133.3	1133.8	III	G	1	80U	135	
	2332	2400	HIRA								
05	0000	0728	HIRA								
	0700	1200	IZMI								
	0752	1350	POTS								
	0818	1324	ONDR								
	2133	2400	HIRA								
06	0000	0728	HIRA								
	0700	1200	IZMI								
	0819	1322	ONDR								
	1247	1350	POTS								
	2134	2400	HIRA								

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

DECEMBER 1996

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	EVENT Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
07	0000	0728	HIRA								
	0040	0750	CULG								
	0700	1200	IZMI								
	0752	1352	POTS								
	0821	1323	ONDR								
			LEAR	0923.0	0923.0	III		2	30	80	
	2035	2400	CULG								
	2135	2400	HIRA								
08	0000	0350	CULG								
	0000	0728	HIRA								
	0700	1200	IZMI								
	0752	1352	POTS								
	0822	1321	ONDR								
	2135	2400	HIRA								
09	0000	0728	HIRA								
	0000	0754	CULG								
	0700	1200	IZMI								
	0828	1322	ONDR								
	0752	1352	POTS	1038	1352 U	I	S,W	1	130	300	
			POTS	1106.6	1107.0	DCIM		1	400	650	
			POTS	1148.4	1148.8	DCIM		2	275	500	
	2036	2400	CULG								
	2136	2400	HIRA								
10	0000	0729	HIRA								
	0000	0755	CULG								
	0700	1200	IZMI								
	0752	1352	POTS	0802	1352 U	I	S,W	1	120	350	
	0825	1321	ONDR								
			POTS	0932.3	0932.4	DCIM		2	650	800X	
			POTS	1122.6	1123.0	DCIM		2	325	400	
			POTS	1124.1	1124.2	III	B	2	110U	250	
			POTS	1202.1	1202.3	III	G	3	130	300	
			POTS	1249.0	1249.2	DCIM		1	300	450	
	2036	2400	CULG	2054.0	2054.0	III	B	1	70	250	
			CULG	2103.0	2103.0	III	B	1	57X	250	
	2137	2400	HIRA	2238.9	2239.4	III	B	1	100	400	
			CULG	2240.0	2240.0	III	B	1	100	400	
			HIRA	2241.0	2241.1	III	B	1	100	600	
11	0000	0755	CULG								
	0000	0729	HIRA	0122.9	0123.1	III	B	1	100	400	
	0700	1200	IZMI								
	0800	1348	POTS	0800 E	1348 U	I	S,C,DC	2	110U	400	
	0826	1319	ONDR								
			POTS	1220.2	1220.7	III	G	3	110U	400	
			POTS	1243.5	1243.9	III	G	3	120	250	
			POTS	1249.8	1249.9	III	G	2	120	170U	
			POTS	1326.0	1326.5	III	G	2	110U	170U	
			SGMR	1508.0	1508.0	III		1	45	80	
			SGMR	2000.0	2004.0	III		1	30	52	
			PALE	2102.0	2110.0	III		1	25	55	
	2138	2400	HIRA								
			LEAR	2318.0	2318.0	III		1	60	70	
	2037	2400	CULG	2318.0	2318.0	III	B	1	57X	110	
12	0000	0755	CULG								
	0000	0729	HIRA	0040.8	0040.9	III	B	1	50	500	
			HIRA	0201.1	0201.3	III	B	1	50	500	
	0700	1200	IZMI								
	0828	1321	ONDR								
	2038	2400	CULG								
	2138	2400	HIRA								
13	0000	0729	HIRA								
	0000	0755	CULG								
	0700	1200	IZMI								

SOLAR RADIO EMISSION
Spectral Observations

DECEMBER 1996

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
13	0800	1348	POTS	0800 E	1348 U	I	S,C,DC	2	120	325	
	0829	1319	ONDR								
	2038	2400	CULG								
	2139	2400	HIRA								
14	0000	0730	HIRA								
	0000	0755	CULG								
	0700	1200	IZMI								
	0800	1348	POTS	0800 E	1348 U	I	S,C,DC	2	110U	250	
	0830	1320	ONDR								
	2038	2400	CULG								
	2140	2400	HIRA								
15	0000	0730	HIRA								
	0000	0757	CULG								
	0700	1200	IZMI								
	0800	1348	POTS	0800 E	1348 U	I	S	1	110U	375	
	0831	1320	ONDR								
	2039	2400	CULG								
	2141	2400	HIRA								
16	0000	0731	HIRA								
	0000	0758	CULG								
	0700	1200	IZMI								
	0800	1348	POTS	0800 E	1348 U	I	S,W	1	110U	250	
	0832	1321	ONDR								
	2039	2400	CULG								
	2141	2400	HIRA								
17	0000	0731	HIRA								
	0000	0757	CULG								
	0700	1200	IZMI								
	0833	1319	ONDR								
	0800	1348	POTS	1053.0	1053.1	III	B	2	225	450	
			POTS	1117.5	1117.6	III	B	2	200U	250	
	2039	2400	CULG								
	2142	2400	HIRA								
18	0000	0200	CULG								
	0000	0731	HIRA								
			LEAR	0009.0	0010.0	III		1	40	60	
			PALE	0009.0	0015.0	III		1	25	45	
			LEAR	0015.0	0016.0	III		1	30	55	
	0233	0758	CULG								
	0800	1348	POTS	0800 E	1348 U	I	S	1	110U	400	
	0833	1320	ONDR								
			POTS	1118.6	1118.8	III	G	3	40X	275	
	0700	1200	IZMI	1118.6	1118.8	III	G	2	48	270X	
			SGMR	1738.0	1740.0	III		1	30	72	
	2039	2400	CULG								
	2143	2400	HIRA								
19			LEAR	0019.0	0019.0	III		1	30	60	
	0000	0758	CULG	0118.0	0120.0	III	G	1	57X	140	
			CULG	0159.0	0159.0	III	G	1	57X	145	
			LEAR	0159.0	0159.0	III		3	30	80	
			PALE	0159.0	0159.0	III		2	25	51	
	0000	0731	HIRA	0159.1	0159.2	III	B	1	25X	230	
			LEAR	0206.0	0208.0	III		2	30	70	
			CULG	0207.0	0207.0	III	B	1	57X	120	
			PALE	0207.0	0207.0	III		1	25	43	
			HIRA	0207.6	0207.7	III	B	1	25X	260	
			LEAR	0210.0	0212.0	III		2	30	70	
			LEAR	0211.0	0211.0	III		1	30	50	
			LEAR	0215.0	0215.0	III		1	30	50	
	0800	1348	POTS	0800 E	1348 U	I	S,C	2	110U	400	
			POTS	0819.2	0819.3	III	B	1	110U	150	
	0834	1320	ONDR								
			POTS	0854.5	0854.9	III	G	1	110U	160	

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

DECEMBER 1996

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
19	0700	1200	IZMI	0928.9	0939.2	I	N	1	90	148	
			POTS	0941.2	0941.3	III	B	1	110U	150	
	0700	1200	IZMI	0942.0	0942.4	III	G	2	95	175	
			POTS	0942.1	0942.4	III	G	3	110U	170U	
	0700	1200	IZMI	1128.7	1149.6U	I	N	1	120	175	
	2143	2400	HIRA								
20	0000	0732	HIRA								
	0000	0800	CULG								
	0655	1200	IZMI	0655.0E	1200.0D	I	N	1	105	165	
	0800	1348	POTS	0800 E	1348 U	I	S,C,DC	2	110U	170U	
	0835	1321	ONDR								
	2041	2400	CULG								
	2144	2400	HIRA								
21	0000	0732	HIRA								
	0000	0800	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0835	1321	ONDR								
	2042	2400	CULG								
	2144	2400	HIRA								
22	0000	0733	HIRA								
	0000	0800	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0836	1322	ONDR								
	2043	2400	CULG								
	2145	2400	HIRA								
23	0000	0734	HIRA								
	0000	0801	CULG								
	0700	1200	IZMI								
	0836	1323	ONDR								
	0800	1348	POTS	1044.4	1045.6	III	G,UG	2	60	250	
			POTS	1320	1322	I	S,W	1	130	150	
	2043	2400	CULG								
	2145	2400	HIRA								
24	0000	0734	HIRA								
	0000	0801	CULG								
	0700	1200	IZMI								
			POTS	1223	1225.5	II	FH,H	3	45	60	
	0837	1323	ONDR	1301.5	1311.5	III	G	1	2000X	4440X	
	0800	1348	POTS	1303.1	1309	III	GG,U	2	110U	250	
			POTS	1309.2	1316.5	II	SH,H	3	60	170U	
			POTS	1310.0	1314	II	FH,H	3	40X	75	
			SGMR	1310.0	1329.0	II		1	30	57	ESS 0800
			POTS	1318.8	1322	II	FH,H	3	40X	70	
	2043	2400	CULG								
	2146	2400	HIRA								
25	0000	0735	HIRA								
	0000	0801	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0837	1323	ONDR								
	2044	2400	CULG								
	2146	2400	HIRA								
26	0000	0735	HIRA								
	0000	0802	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0837	1323	ONDR								
	2044	2400	CULG								
	2146	2400	HIRA								

SOLAR RADIO EMISSION
Spectral Observations

DECEMBER 1996

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
27	0000	0736	HIRA								
	0000	0802	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0837	1326	ONDR								
	2044	2400	CULG								
	2147	2400	HIRA								
28	0000	0736	HIRA								
	0000	0802	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0837	1327	ONDR								
	2044	2400	CULG								
	2147	2400	HIRA								
29	0000	0737	HIRA								
	0000	0802	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0841	1327	ONDR								
	2044	2400	CULG								
	2147	2400	HIRA								
30	0000	0200	CULG								
	0000	0738	HIRA								
	0515	0805	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0837	1330	ONDR								
	2047	2400	CULG								
	2148	2400	HIRA								
31	0000	0739	HIRA								
	0000	0805	CULG								
	0700	1200	IZMI								
	0800	1348	POTS								
	0836	1330	ONDR								
	2047	2400	CULG								
	2148	2400	HIRA								

Event Remarks:

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

Frequency qualifiers:

- X = Extends beyond instrument range
- U = Uncertain frequency

Remarks:

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

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

SOLAR RADIO NOISE STORM AT 164 MHZ
FROM NANÇAY RADIOHELIOGRAPH
DECEMBER 1996

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/12/96	+0.96	-0.93	1	E	D
09/12/96	+0.12	-0.52	1	9H50	13h55
11/12/96	+0.80	-1.13	1	E	D
12/12/96	+0.58	-0.98	1	E	11H55
13/12/96	+0.99	-0.74	1	E	D
14/12/96	+1.13	-0.75	1	9H20	13H20
18/12/96	+0.44	-0.19	1	E	D
19/12/96	+0.66	+0.08	1	E	D
20/12/96	+1.13	-0.23	1	E	D

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANÇAY RADIOHELIOGRAPH
DECEMBER 1996

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
09/12/96	-0.06	-0.67	1	9H50	13H55
11/12/96	+0.58	-0.61	1	E	D
13/12/96	+0.98	-0.61	1	E	D
18/12/96	+0.58	-0.10	1	13h30	D

02,03,07,08,16,25 DECEMBER : 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 IMP4> 300 SFU

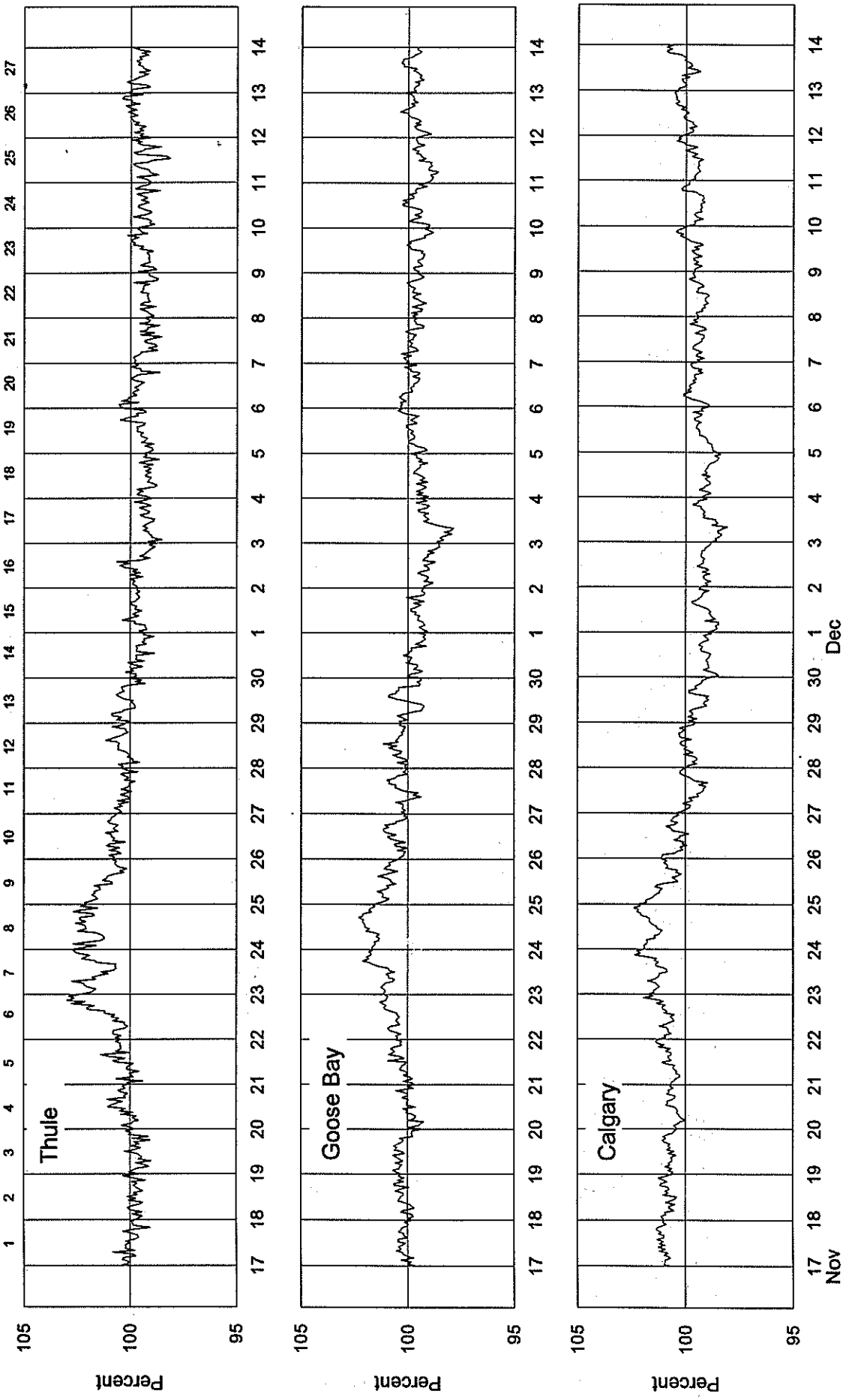
[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANÇAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

COSMIC RAY INDICES
(Neutron Monitor)
DECEMBER 1996

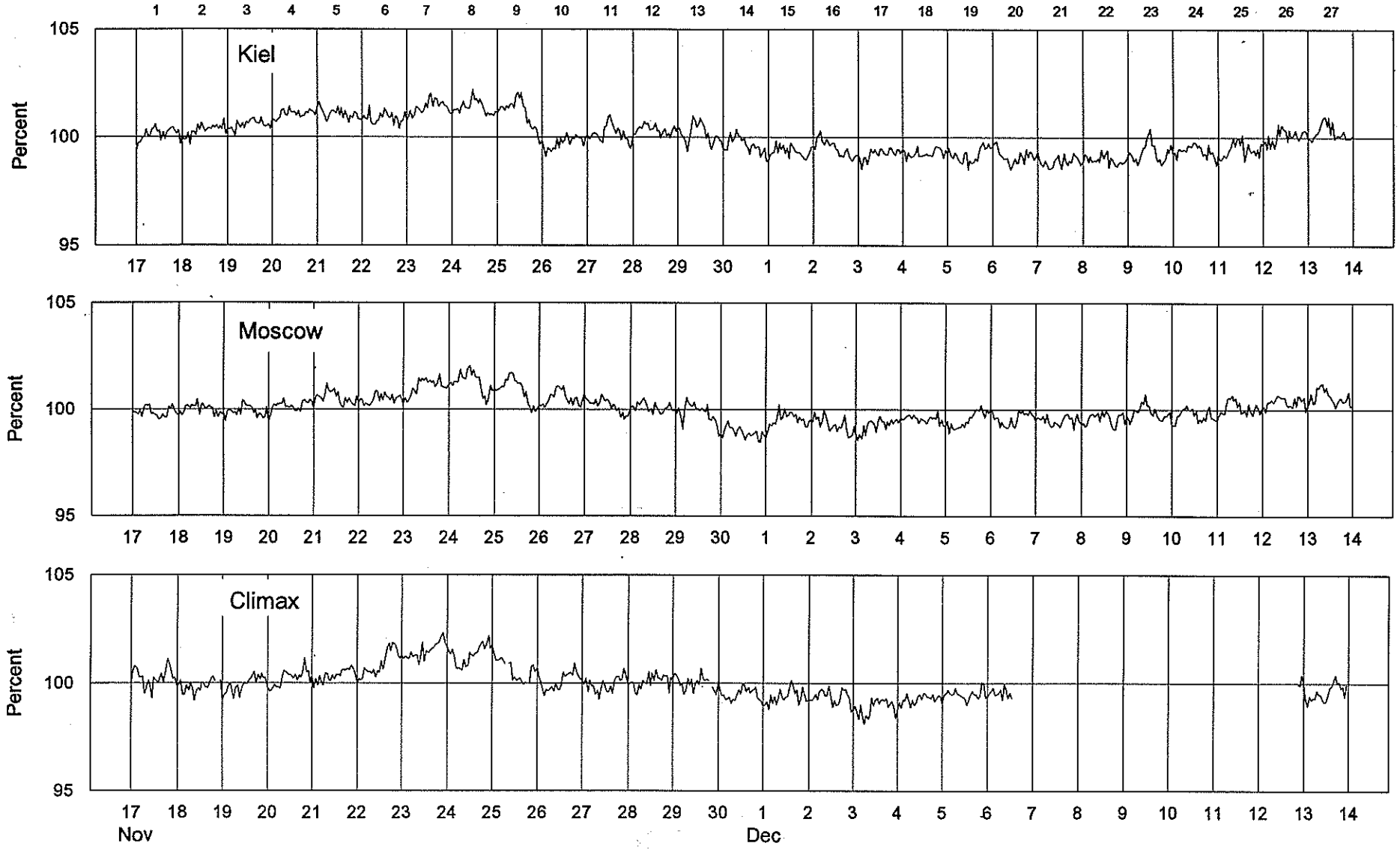
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	4496	7282.1	3908.8	6254.5	9175.6	4172.2	2026.1	3531.7
2	4495	7251.0	3913.0	6265.0	9156.1	4171.3	2014.5	3551.9
3	4473	7233.7	3902.5	6247.5	9149.2	4150.5	2012.5	3553.5
4	4475	7278.2	3905.8	6250.3	9179.7	4166.6	2023.0	3558.7
5	4486	7305.7	3916.3	6245.5	9175.7	4174.9	2029.9	3558.0
6	4502	7316.0	3931.3	6241.7	9182.0	4179.8 (28)	2026.5	3561.0
7	4477	7308.9	3924.2	6227.1	9174.2	---	2019.2	3547.2
8	4475	7292.5	3921.0	6231.5	9181.7	---	2017.0	3558.0
9	4484	7282.5	3935.8	6253.0	9208.5	---	2018.9	3566.5
10	4480	7294.3	3929.2	6257.6	9195.2	---	2022.8	3572.8
11	4478	7263.4	3934.8	6261.5	9226.8	---	2019.0	3568.1
12	4501	7297.6	3950.7	6300.0	9253.9	4202.7 (6)	2024.3	3571.7
13	4491	7301.3	3952.0	6311.5	9275.0	4181.6	2024.8	3562.2
14	4493	7298.6	3954.8	6303.2	9273.9	4180.9	2031.4	3543.0
15	4501	7317.5	3958.8	6318.2	9285.0	4204.4	2031.3	3538.8
16	4515	7328.5	3976.3	6316.0	9306.6	4219.1	2034.5	3549.6
17	4532	7333.5	3991.3	6322.1	9293.3 (23)	4231.3	2043.2	3565.8
18	4539	7363.6	3996.2	6342.3	9296.9	4249.1	2039.5	3572.3
19	4568	7380.6	4001.0	6354.8	9309.5	4254.2	2038.0	3575.4
20	4568	7391.0	4009.3	6358.8	9298.7	4239.0	2033.9	3575.5
21	4568	7427.3	4019.8	6346.9	9272.1	4233.8	2039.6	3575.3
22	4552	7387.1	4016.0	6346.5	9282.3	4255.6	2044.9	3574.5
23	4544	7409.0	4018.0	6374.2	9299.6	4256.2	2039.1	3556.6
24	4514	7359.4	3997.7	6334.0	9259.5	4206.2	2032.6	3525.9
25	4531	7348.3	3987.0	6324.7	9259.6	4209.4	2025.0	3539.8
26	4530	7342.1	3970.8	6279.9	9218.5	4199.2	2017.5	3534.9
27	4503	7315.2	3951.5	6281.2	9189.7	4175.0	2022.0	---
28	4506	7311.4	3951.0	6279.1	9161.9	4173.7	2022.7	3534.9 (36)
29	4504	7306.3	3945.3	6302.2	9162.3	4169.7	2026.4	3537.2
30	4504	7302.3	3917.7	6305.8	9186.3	4162.8	2018.5	3538.5
31	4482	7316.8	3905.5	6287.0	9157.2 (23)	4150.2	2020.7	3525.0
Mean	4509	7320.8	3954.6	6294.3	9227.3	4199.0	2027.1	3520.9

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.

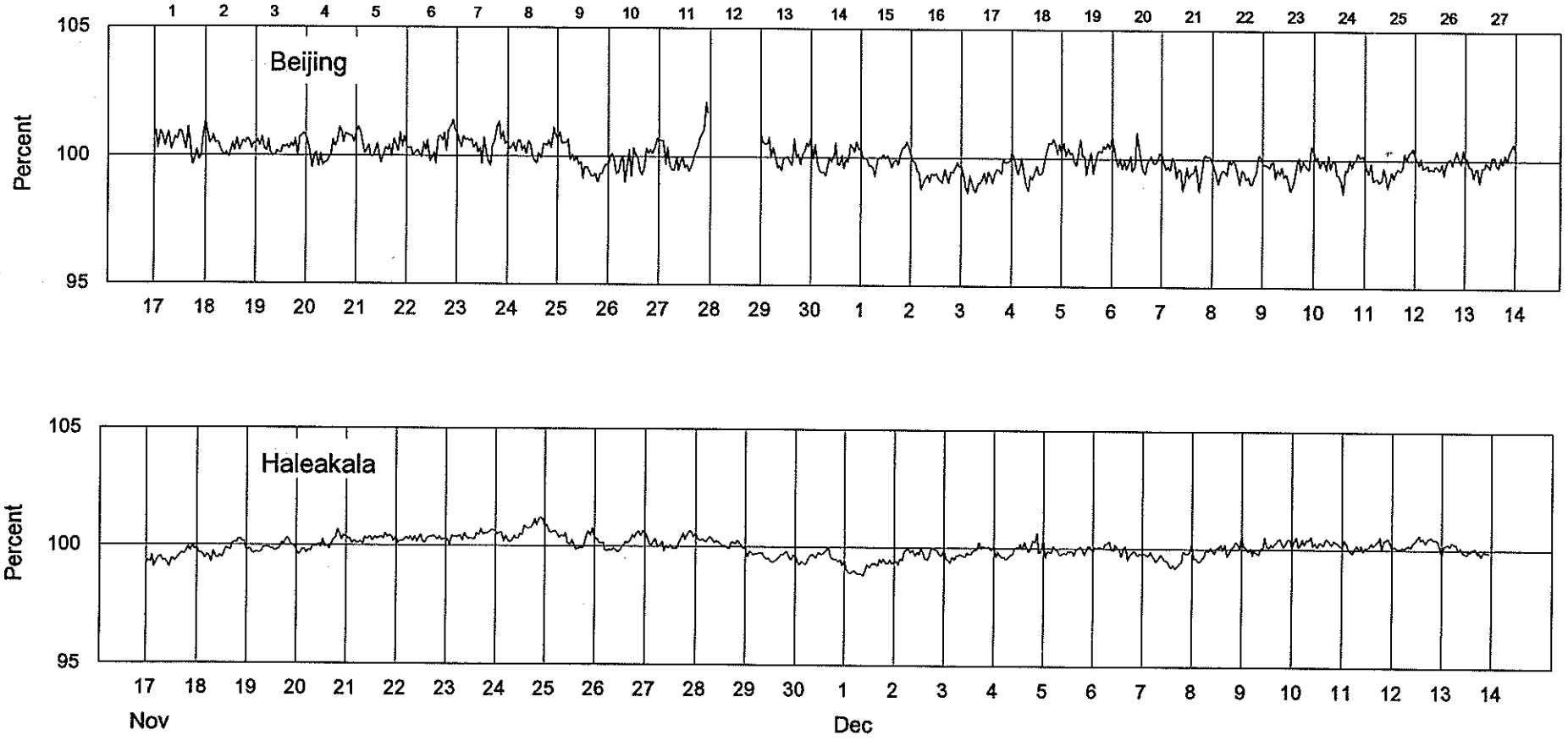
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2230 - Beginning 17 Nov 96



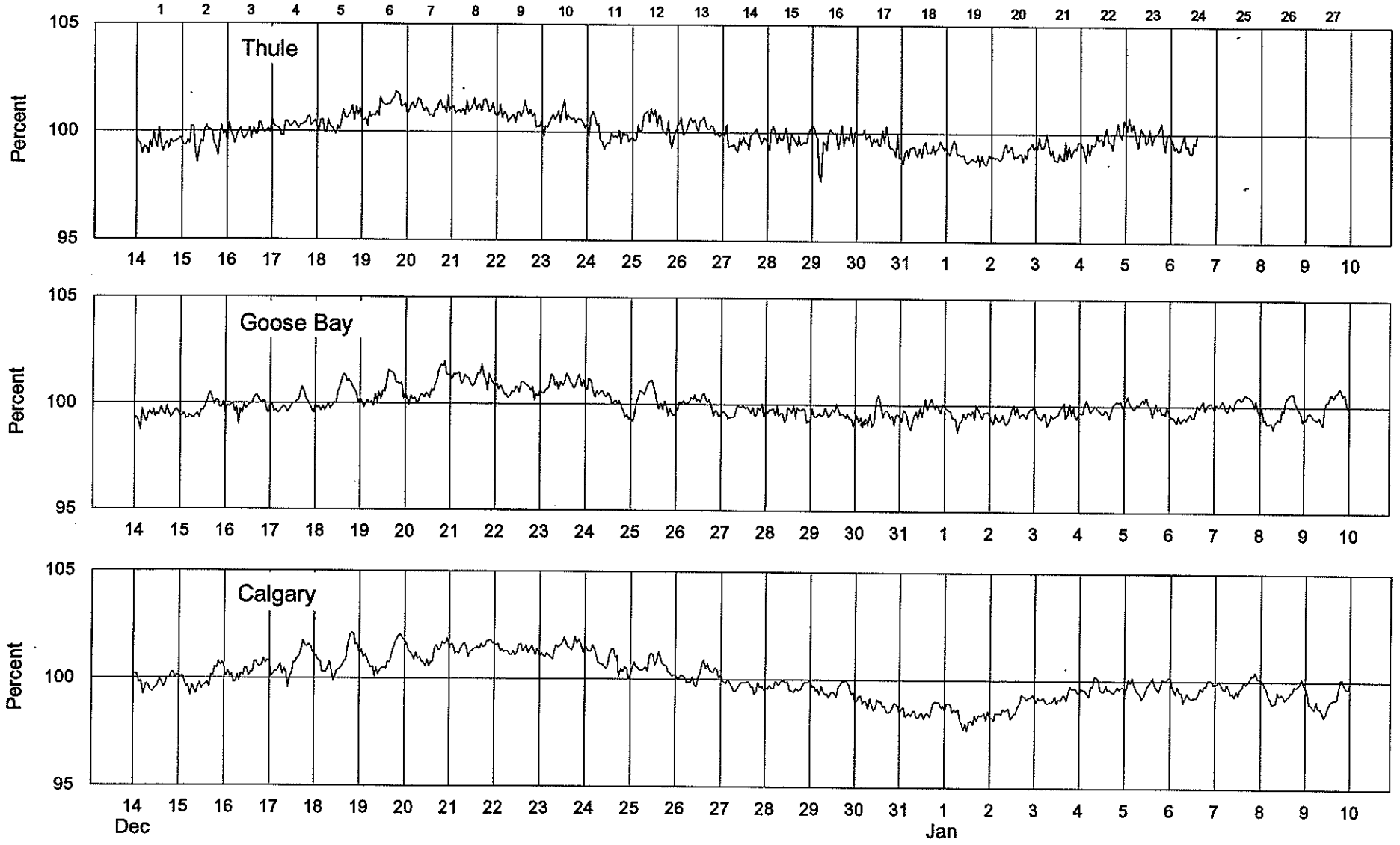
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2230 - Beginning 17 Nov 96



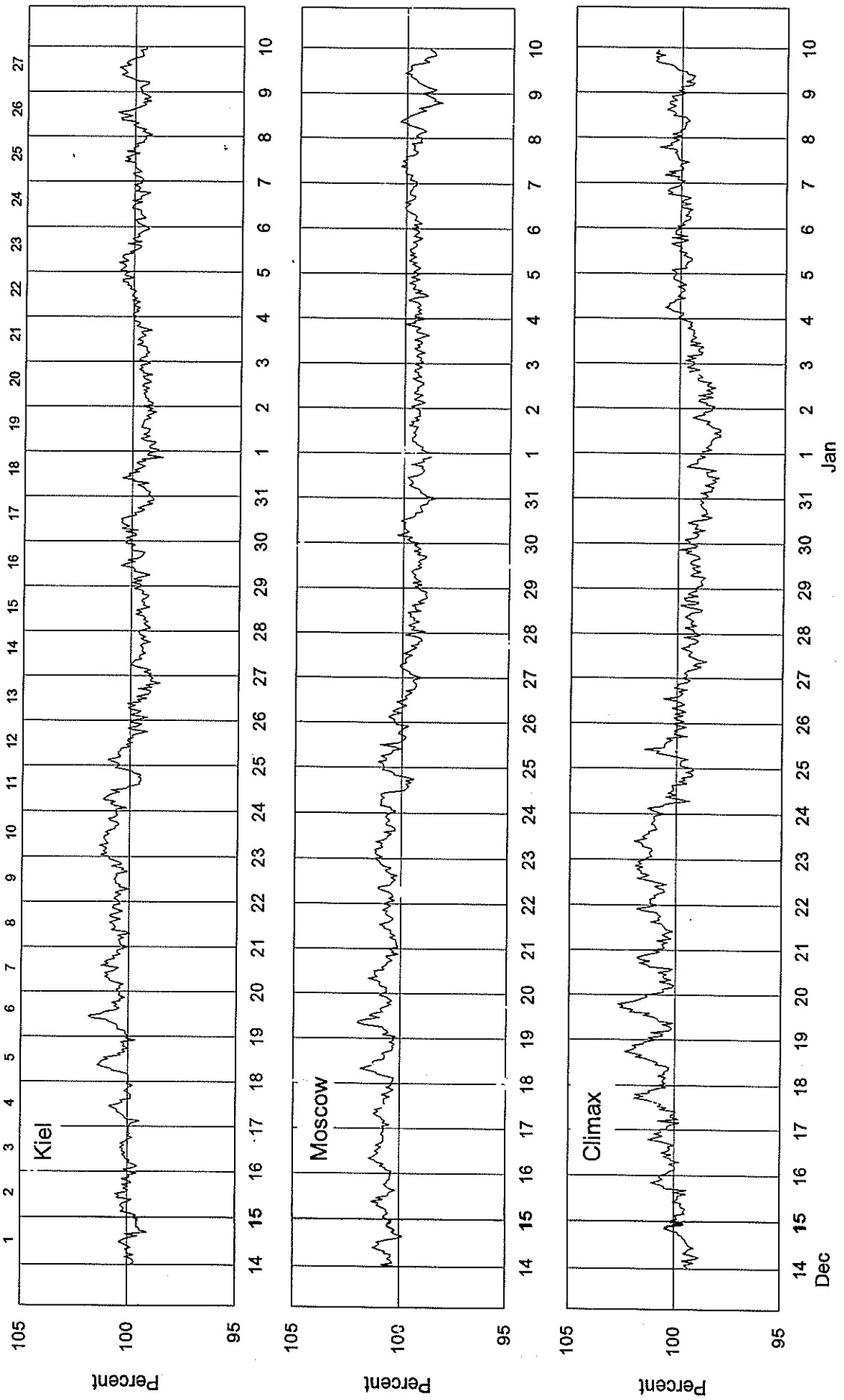
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2230 - Beginning 17 Nov 96



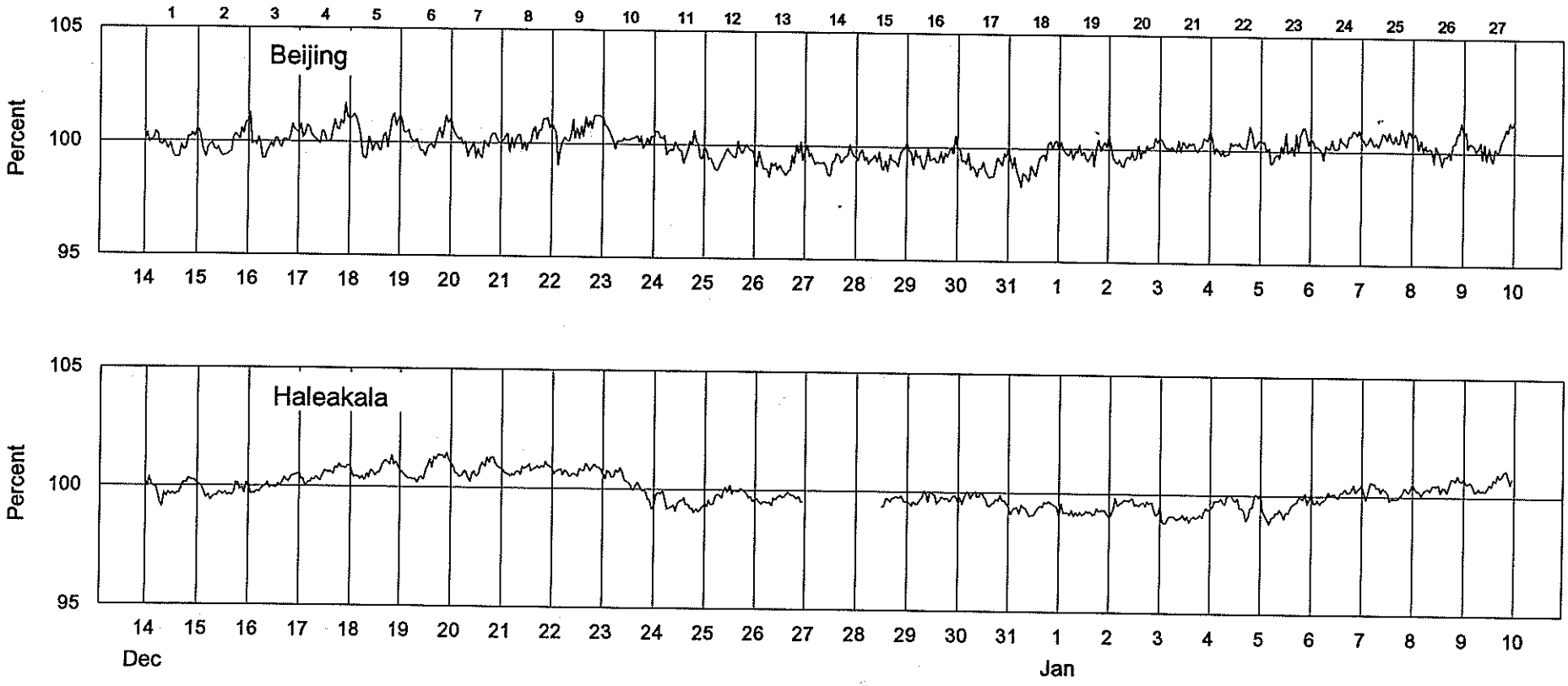
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2231 - Beginning 14 Dec 96



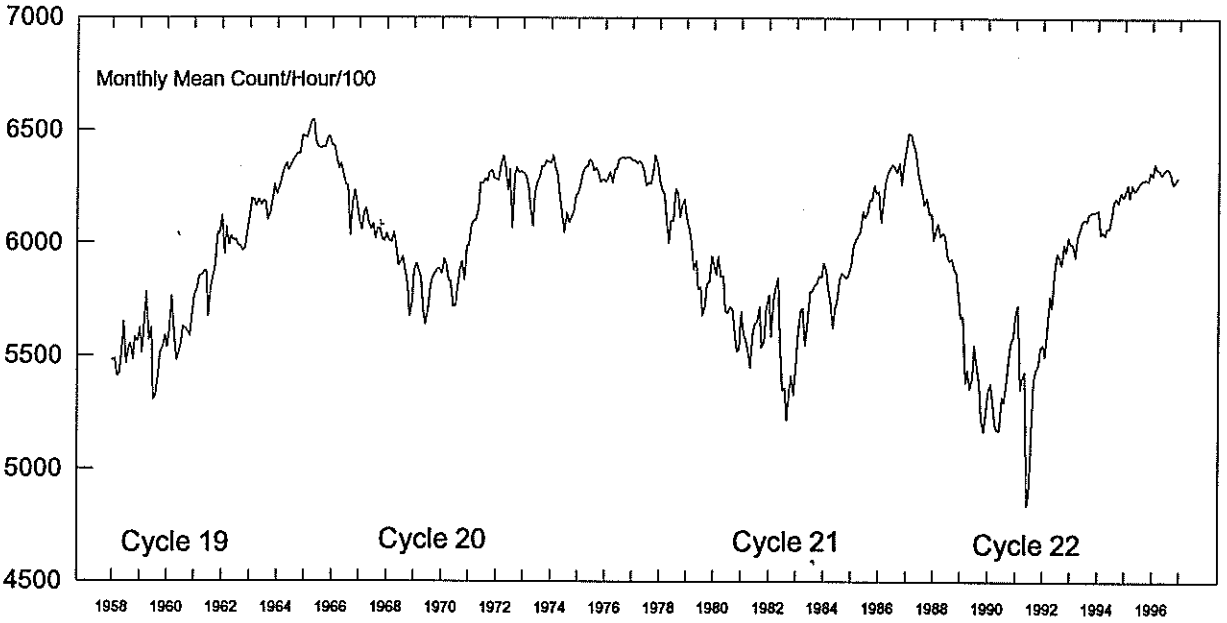
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2231 - Beginning 14 Dec 96



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2231 - Beginning 14 Dec 96



Kiel Neutron Monitor Pressure-Corrected Values
Jan 1958 - Dec 1996



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

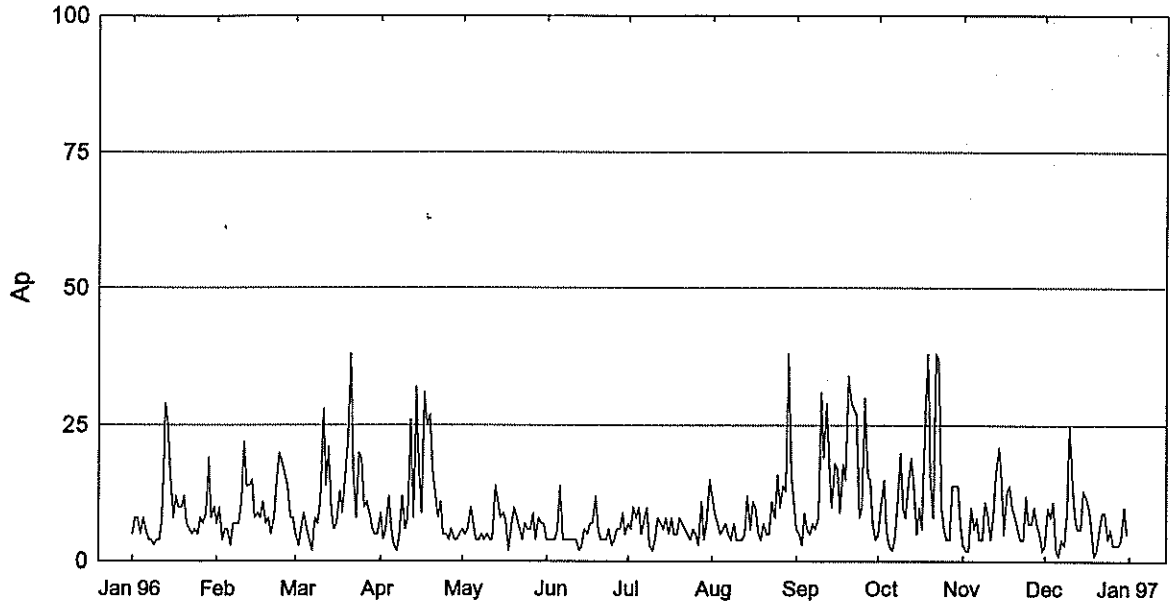
Multiply table entries by 100 to obtain hourly counting rate. Kiel, Germany: N54, E10, Alt= 54 m, Cutoff Rigidity= 2.32GV.

Geomagnetic Activity Indices
December 1996

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	aa Provisional Am	N	S	M	
1	Q5	1-	1-	0	1-	1-	1+	0+	1	5+	3	0.1	1o	1-	1-	1+	1+	2-	0+	1+	7	8	8	7	9 CC
2		1-	2+	1-	2-	1-	4	4-	2+	16	10	0.6	1o	2-	1-	2+	1+	4-	4-	2+	20	30	21	11	39
3		3	3-	1	2	2	2	1+	2-	16-	8	0.4	3o	2+	1+	2o	2o	2o	1+	2o	15	17	20	20	17
4	D5*	2	2	1	1+	3-	4-	3	3	19-	11	0.6	2o	2o	2-	2+	3-	3+	3-	3-	22	22	28	17	33
5	Q4	1-	0	1-	1-	1-	0	0+	0+	3+	2	0.0	1o	1-	1o	1-	1o	0o	0+	1-	5	5	9	8	7 CK
6	Q2	0	0	0	0	0+	0+	1-	1-	2	1	0.0	0o	0o	0o	0o	1-	1-	1+	1+	3	4	5	2	7 CC
7		0+	1	2	1	0+	1	2	1+	9	4	0.2	1-	1o	2+	2-	1o	2-	2+	1+	11	10	17	15	12 CC
8	Q6	0+	1-	1	1	0+	1	1-	1	6	3	0.1	1-	1o	1+	1o	1-	1+	1o	1+	7	8	10	10	8 CC
9		0	0	0+	1-	1	2	2+	5	11+	9	0.5	0+	0+	1o	1o	1+	2o	2+	5-	17	19	25	6	39
10	D1	5	3	5-	4	4-	4-	3+	3-	30	25	1.2	4+	3-	4o	4-	3o	3+	3+	2+	40	52	36	52	36
11	D2*	4	2+	3	3+	2+	2	3	3-	23-	14	0.8	3+	2o	3o	3+	2+	2o	3o	3-	25	30	23	31	22
12		1+	3-	3-	2+	2	3-	2	1	17-	8	0.5	2-	2o	2+	3-	2o	2o	2-	1+	15	18	13	17	14
13		2-	2+	2+	1	1+	2-	1	0+	12-	6	0.3	1+	2o	2o	1+	2-	2-	1o	1-	10	12	15	16	11 K
14		0	0	2-	2	3-	1+	3-	2+	13-	6	0.3	0o	0o	2-	2o	3-	1+	3-	2+	13	15	14	10	19
15	D3*	3-	3-	2-	2+	3	3	4-	3	22	13	0.8	2o	2+	2-	3o	2+	3+	4-	3o	25	31	22	19	35
16	D4*	3+	2+	3-	3	2	2	2+	3	21-	12	0.7	3-	2o	2+	3o	2o	2o	2+	3o	20	24	16	21	19
17		3-	3	3	2+	1+	3	2+	1	19-	10	0.6	2o	2+	3-	2+	2-	3-	3-	1+	18	21	23	21	23
18		1+	2+	2	1	1-	2+	1+	1	12	6	0.3	1+	2o	2-	1o	1o	2+	2-	1+	11	13	12	13	12 CK
19	Q1	1-	0	0	0	0	0	0	1-	1+	1	0.0	0+	0+	0o	0o	0o	0o	0+	0+	1	4	2	3	3 CC
20	Q3	0	0+	1-	0+	0	1-	0+	0+	3-	2	0.0	0o	1-	1-	1-	0o	1o	1-	0+	4	4	6	4	6 CC
21		0	2-	1	1+	1	3-	2	2+	12	6	0.3	1-	2-	2-	2-	2-	3-	2+	2+	14	17	16	12	21 K
22		2-	1-	0+	1	3-	3-	2+	4-	15	9	0.5	2-	1o	1-	1o	3-	3-	2+	3+	16	23	14	8	29
23		4-	4-	2+	2-	1	2-	0+	0	14+	9	0.5	3o	3-	2+	2+	2-	2o	1o	0+	16	15	16	21	10
24	Q10	1	2-	0+	1-	1-	2	1-	1-	8-	4	0.1	1+	2+	1+	1o	1+	3-	1o	1+	12	9	17	13	13 CK
25		1+	2	2	2-	2	1	1-	1+	12	6	0.2	2-	1+	2o	3-	3o	2-	1-	1+	15	13	19	18	14 K
26	Q8	1-	0+	0+	1-	1-	1-	1	2-	6	3	0.1	1o	0+	0+	1o	1o	1o	1+	2o	7	7	10	6	12 CC
27	Q9	2	1	0	0+	0+	1	1-	1	6+	3	0.1	2-	1+	0+	1-	1o	1+	1o	1+	7	8	11	10	9 CC
28	Q7	1	0+	1-	2-	1-	1-	0+	0+	6-	3	0.1	1o	0+	1+	2o	1+	1+	0+	1-	7	8	11	12	7 CC
29		1-	0+	1-	0+	0+	1-	1+	3	7+	4	0.2	1-	1-	1-	1o	0+	1-	1+	3-	7	13	8	7	15 K
30		3+	3-	2	2+	3-	2-	1-	2+	18-	10	0.5	3o	2+	2+	2+	3o	2o	1+	2o	19	22	25	25	22
31		2-	2+	1	1	1-	1	2	2-	11+	5	0.2	1+	2o	2-	1+	1+	1+	2o	2o	11	14	11	12	13 C
Mean											7	0.35									13.5	16.1	15.7	15.9	

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	1-	1-	1-	1+	1+	2+	0+	1-	7	1+	1o	1o	1+	1o	1+	0+	1+	7	80.8	23	23	25	
2	1o	2-	1-	2+	1+	4o	4-	2+	21	1+	2-	1-	2+	1o	4-	3+	2+	19	75.7	12	11	20	
3	3o	2o	1+	2o	2-	2o	1+	2-	14	3o	2+	2-	2o	2+	2o	2-	2+	17	70.7	0	0	14	
4	2-	2-	2-	2o	3-	4-	3-	3o	22	2+	2+	2-	2+	3-	3o	3-	3-	21	68.6	0	0	12	
5	1-	0+	1-	1-	1+	0o	0o	0+	4	1o	1o	1+	1-	1o	0o	1-	1+	6	67.6	0	0	11	
6	0o	0o	0o	0o	1-	1-	1o	1o	3	0o	0o	0o	0o	1-	1-	1+	1+	4	67.6	0	0	11	
7	1-	1-	2-	1+	1o	2-	2o	1+	9	1-	1+	3-	2+	1o	2-	2+	1+	13	67.1	0	3	10	
8	0+	1-	1o	1o	1-	1+	1o	1o	6	1o	1o	1+	1o	1-	2-	1-	1+	8	66.6	11	15	10	
9	0+	0o	1-	1-	2-	2-	2o	5-	15	1-	0+	1+	1o	1o	2o	3-	5-	19	71.5	15	20	15	
10	4+	2+	5-	4-	3+	4o	3+	3-	43	4+	3-	4-	4-	3-	3o	3+	2+	36	70.2	14	15	14	
11	4-	2-	3+	3+	3-	2o	3o	3-	28	3o	2o	3-	3+	2o	2+	3-	2+	22	75.2	26	23	19	
12	2-	2o	3-	3-	2o	2o	2-	1+	16	1+	2o	2o	3-	2-	2o	2-	1+	14	78.6	29	24	23	
13	1+	2-	2o	1o	2-	2-	1+	0+	10	2-	2o	2+	1+	2-	1+	1o	1o	11	79.2	28	26	24	
14	0o	0o	1+	3-	3o	1+	3-	2+	14	0o	0+	2-	2-	2+	1+	2+	2+	12	80.0	25	26	24	
15	2+	2o	2o	3o	3-	3o	4-	3o	25	2-	2+	2-	3-	2+	3+	4-	3-	24	82.3	24	25	27	
16	3o	2o	2+	3+	2o	2o	2+	3o	23	2+	2+	2o	3-	2o	2-	2+	3-	18	83.5	26	17	28	
17	2+	2+	2+	3-	2-	3o	3-	1+	18	2-	3-	3-	2+	2o	2+	3-	2-	17	83.6	28	24	28	
18	1+	2o	2-	1o	1o	3-	1+	1+	11	2-	2o	1+	1o	1o	2-	2-	1o	10	85.6	29	24	30	
19	0+	0o	0o	0o	0o	0o	0o	0+	1	0+	0+	0o	0o	0o	0o	0+	1-	2	84.6	21	17	29	
20	0o	1-	1-	1-	0o	1-	0+	0o	3	0o	1-	1-	0+	0+	1+	1o	1-	4	80.3	15	12	25	
21	0o	1+	1+	2-	2-	3-	2o	2+	13	1+	2-	2o	2o	2o	3-	2+	2+	16	80.9	21	25	25	
22	2-	1-	0o	1o	3-	3o	3-	3+	18	2-	1o	1o	1o	3-	2o	2o	3o	15	78.9	21	20	23	
23	3+	3o	2o	2+	2-	2+	1+	0o	18	3-	3-	3-	2+	2-	2o	1-	1-	15	76.9	15	15	21	
24	1o	2-	1o	1o	1o	3-	1o	1+	10	2o	3-	1+	1o	2o	3-	1+	2-	14	76.4	12	8	21	
25	2-	1+	3-	3o	3o	1+	1o	1o	16	2-	1+	2-	2+	3o	2-	1-	2-	14	74.7	0	0	19	
26	0+	1-	0o	1o	1o	1o	1+	1+	6	1+	0+	1-	1o	1o	1+	2-	2+	9	73.0	0	0	17	
27	1+	1+	0o	1-	1-	2-	0+	1o	6	2-	1+	1-	1o	1o	1o	1+	2-	9	72.2	0	0	16	
28	1o	1-	1+	2+	1+	1+	0+	0+	8	1o	0+	1+	2o	1o	1o	0+	1o	7	71.8	0	0	16	
29	0+	0o	0+	1-	0+	1o	1+	3-	7	1o	1o	1o	1o	0+	1-	1+	2+	8	71.4	0	0	15	
30	3o	2o	2o	2o	3-	2-	2-	2+	18	3o	2+	2+	3-	3+	2o	1+	2o	20	70.1	0	0	14	
31	1+	2o	1+	1o	2-	1+	2+	2-	12	1o	2o	2-	1+	1o	1o	2-	2+	11	69.8	0	0	13	
Mean									13.7									13.6	75.3	12.7	12.0	19.3	

Daily Average Indices Ap
Jan 1996 - Dec 1996

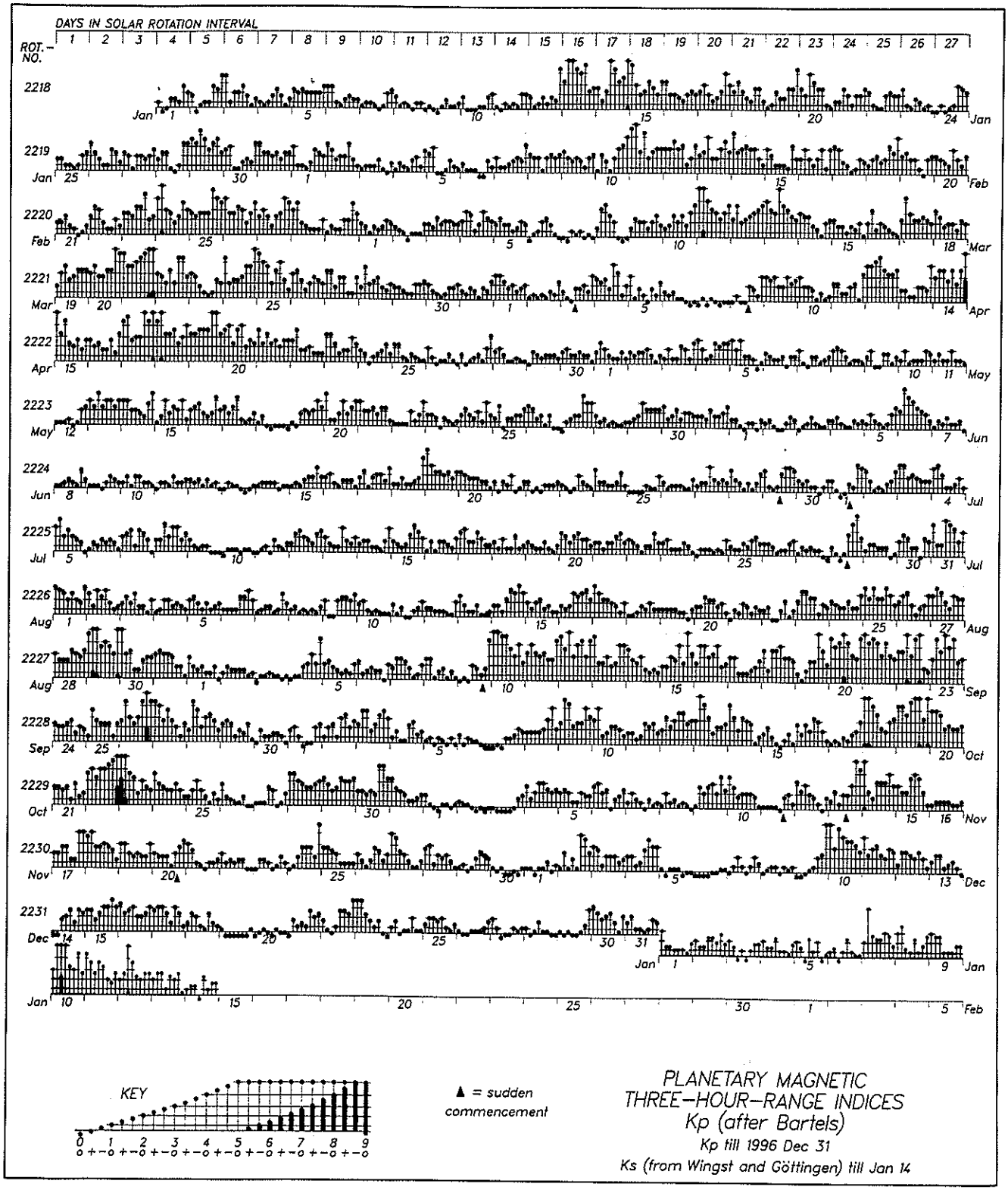


Day	Jan 96	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	5	7	5	9	6	4	7	12	6	5	3	3
2	8	10	3	4	5	4	6	9	5	10	2	10
3	8	4	6	6	6	4	10	7	3	15	2	8
4	5	6	9	12	10	4	8	5	9	6	10	11
5	8	6	6	6	7	6	10	6	6	3	6	2
6	6	3	4	3	4	14	5	7	5	2	8	1
7	4	7	2	2	4	4	8	5	7	4	4	4
8	4	7	8	5	5	4	10	4	6	10	4	3
9	3	7	7	12	4	4	3	7	8	20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

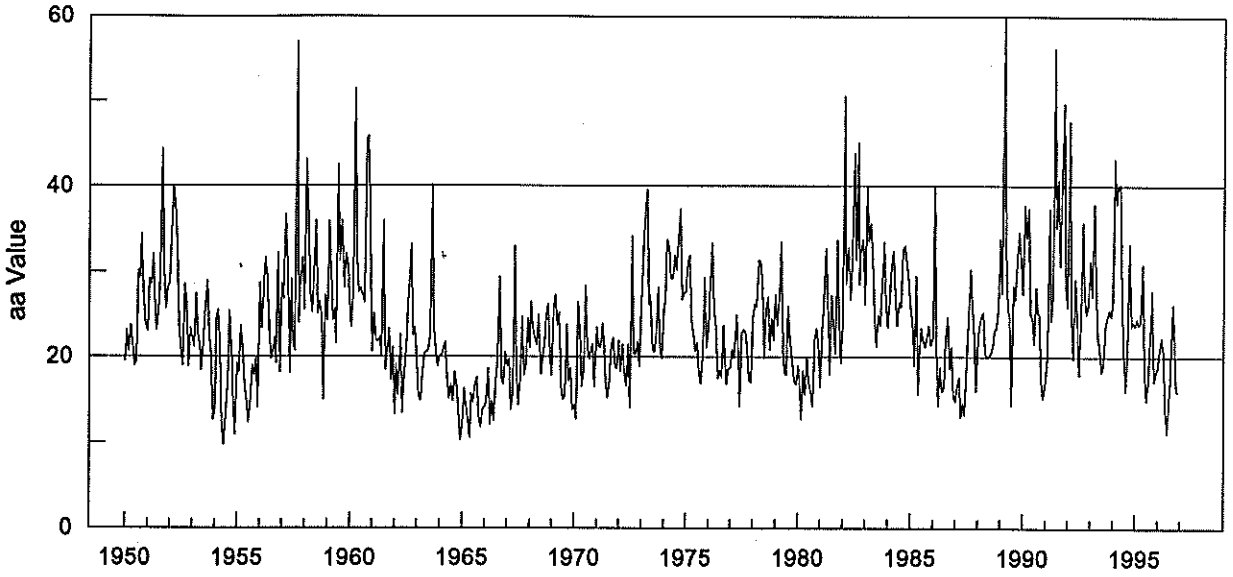
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Gottingen

Kp through December 31, 1996



Monthly Mean aa Index Jan 1950 - Dec 1996



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

PLANETARY GEOMAGNETIC ACTIVITY - MUSICAL DIAGRAM OF aa 1996

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

PLANETARY GEOMAGNETIC ACTIVITY

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

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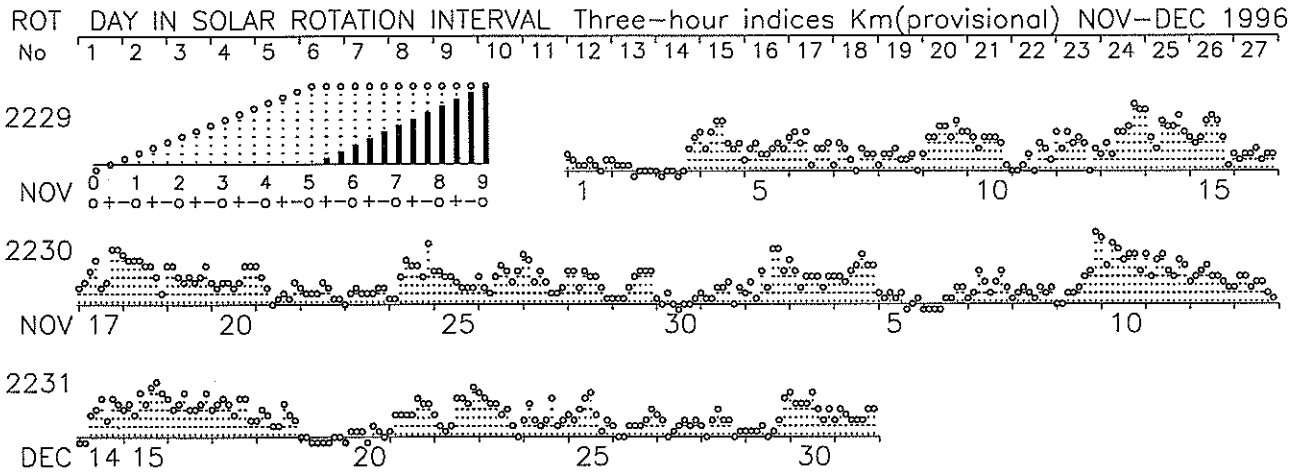

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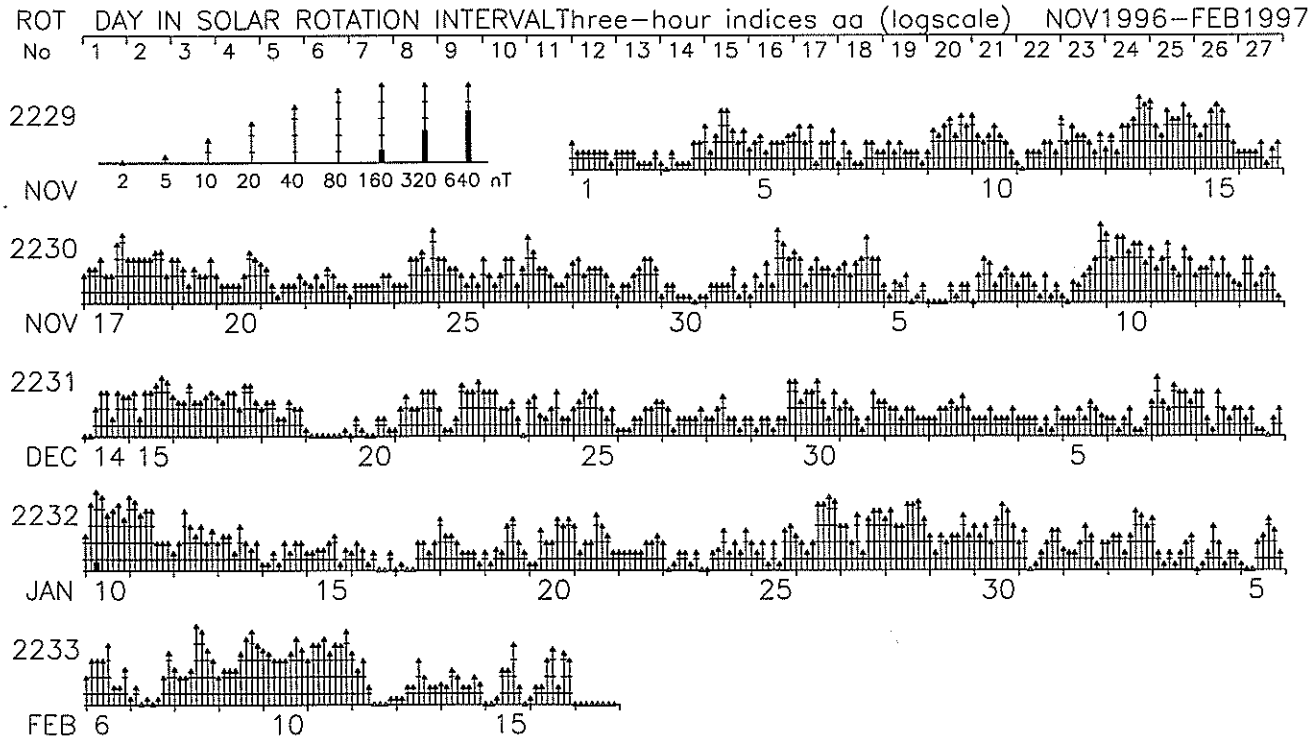
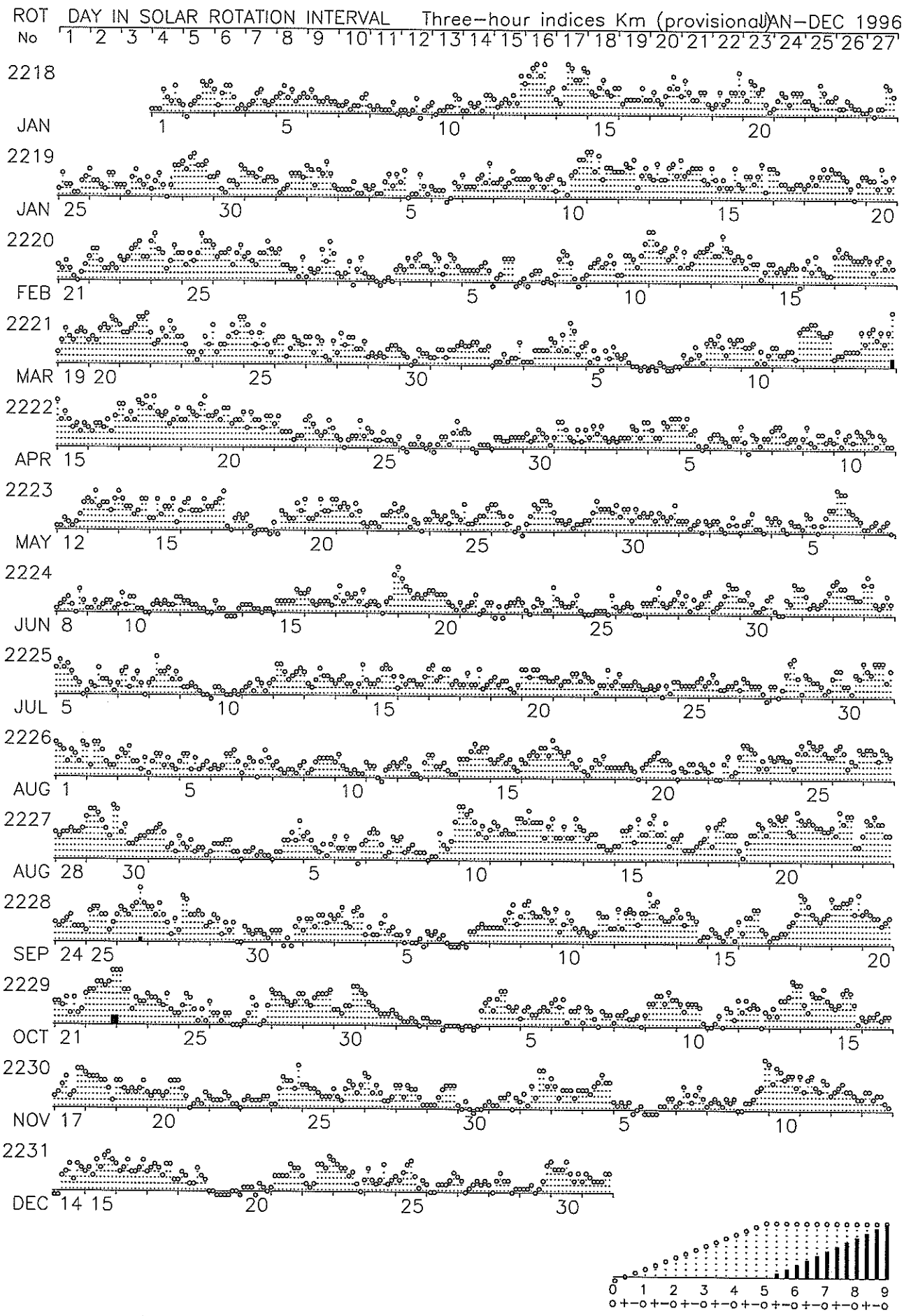


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

PLANETARY GEOMAGNETIC ACTIVITY - MUSICAL DIAGRAM OF Km 1996



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

112
Dec 96

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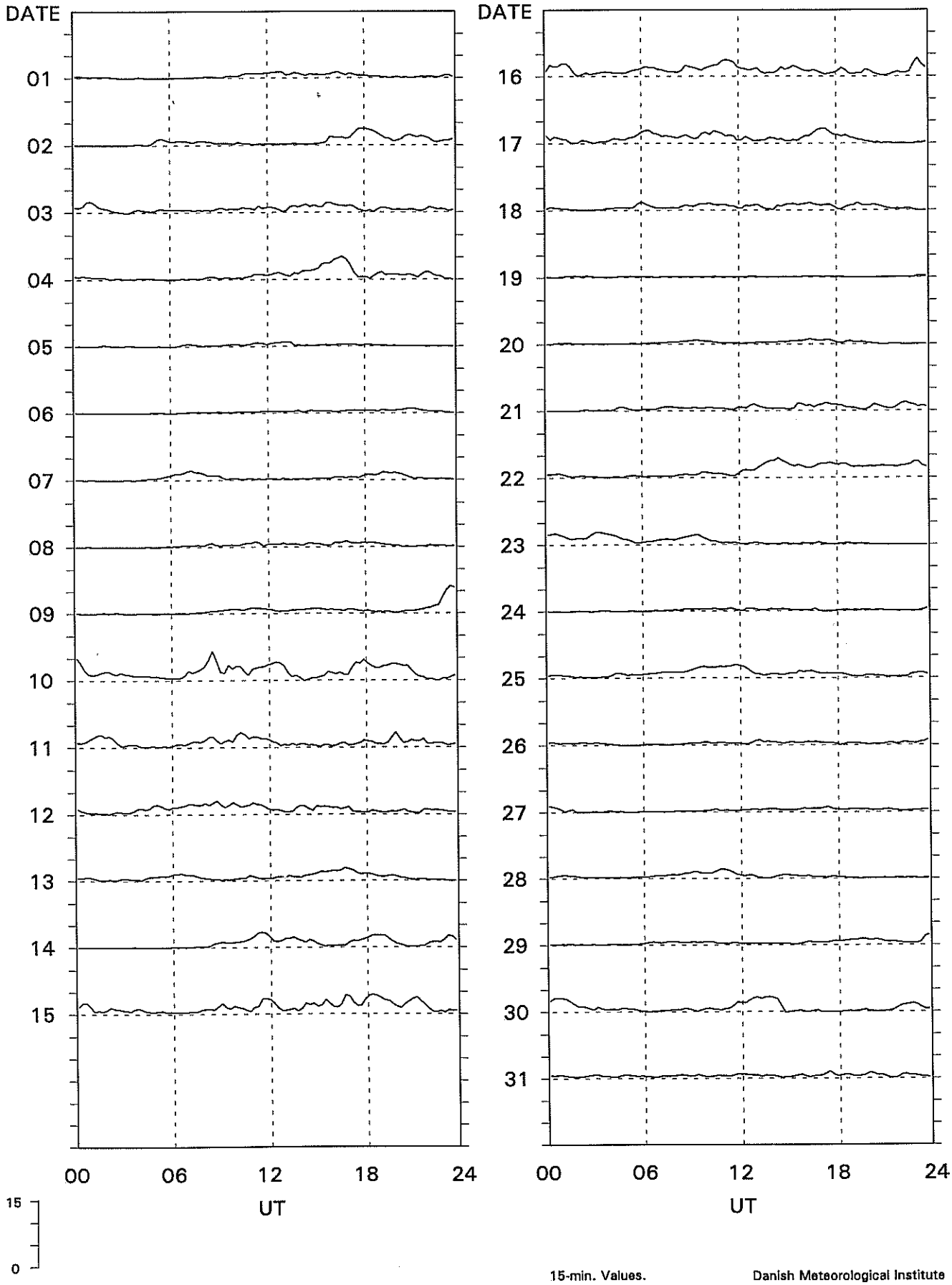
Thule

December, 1996



15-min. Values.

Danish Meteorological Institute

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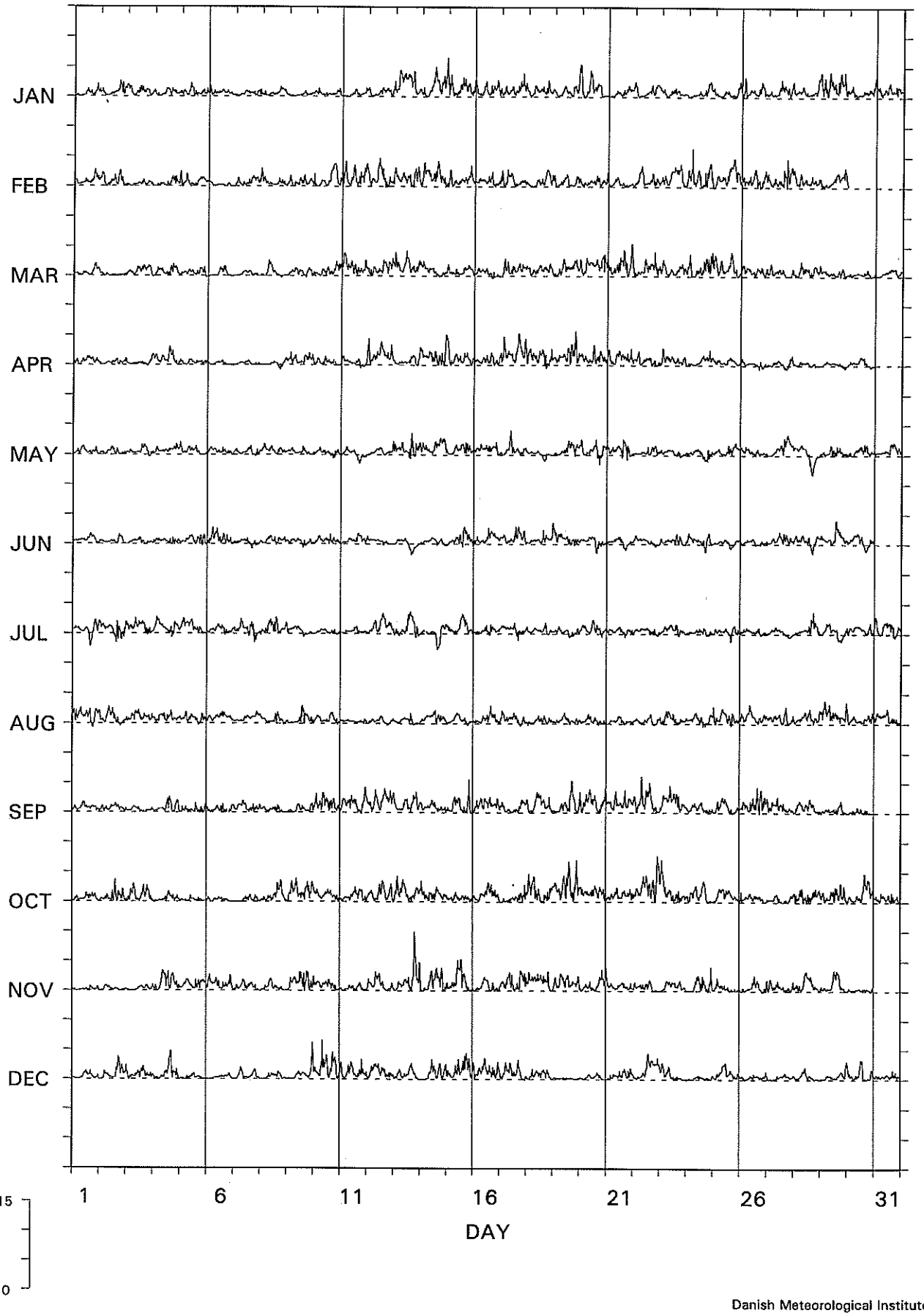
Thule

1996



Danish Meteorological Institute

WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

DECEMBER 1996

UNIT=NT U.T.

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0	6	9	11	6	4	4	9	8	2	-3	-10	-9	-6	-3	-3	-1	2	3	4	5	5	4	1
2	-3	-2	-1	1	-1	0	-1	0	1	1	12	12	8	9	17	26	26	12	-8	-9	-11	-10	-10	-7
3	-8	-16	-13	-12	-16	-14	-18	-18	-15	-16	-17	-11	-14	-16	-16	-17	-18	-16	-17	-16	-16	-13	-10	-4
4	-3	-2	-5	-6	-7	-11	-7	-4	0	3	3	0	-9	-13	-12	-17	-18	-15	-17	-17	-13	-16	-12	-7
5	-4	-3	-6	-7	-8	-6	-7	-10	-9	-10	-9	-8	-8	-9	-10	-9	-8	-7	-7	-10	-11	-11	-10	-9
6	-11	-12	-10	-8	-8	-9	-8	-8	-8	-8	-9	-10	-11	-9	-7	-6	-7	-2	-2	-4	-7	-2	1	4
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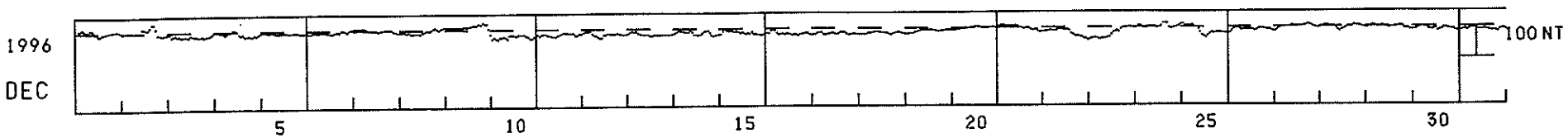

PRINCIPAL MAGNETIC STORMS

DECEMBER 1996

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
KRC	16.4N	02	1003	SC	- 0.7	25	17	02(6)	5	4	74	23	03	08
UJJ	13.6N	02	0959	SC	--	--	--		-	3	56	13	03	22
NGP	11.3N	02	0959	SC	..	..	..		-	3	68	20	03	22
ABG	09.4N	02	0959	SC	- 0.2	14	- 2	02(6)	5	2	59	16	03	22
HYB	07.6N	02	1500	..	..	..	..	02(6,7)	4	3	57	15	04	23
PND	02.0N	02	0959	SC	..	15	5		-	2	60	27	03	22
ETT	00.7S	02	0959	SC	- 0.2	15	14		-	--	64	27	04	22
TRD	01.1S	02	0959	SC	--	--	--		-	3	61	43	03	22
DRV	75.2S	02	18--	..	..	..	..	04(1)	6	596	507	641	05	08
KRC	16.4N	09	2031	..	...	..	..	09(8) 10(3)	5	7	91	32	11	02
UJJ	13.6N	09	1800	..	..	..	..		-	4	61	16	12	21
NGP	11.3N	09	1800	..	..	..	..		-	5	59	18	12	21
ABG	09.4N	09	1800	..	..	..	..	09(8) 10(3,4,5) 15(6)	4	4	65	22	12	21
HYB	07.6N	09	0700	..	..	..	..	09(8) 10(5)	4	5	81	18	11	23
PND	02.0N	09	1800	..	..	..	..		-	4	74	46	12	21
ETT	00.7S	09	0700	..	..	..	..		-	--	71	40	11	21
TRD	01.1S	09	1800	..	..	..	..		-	4	98	49	12	21
CZT	51.5S	09	21--	..	..	..	..	09(8)	5	18	120	30	12	00
DRV	75.2S	09	22--	..	..	..	..	09(8) 10(1)	5	460	560	420	13	07
HYB	07.6N	14	0800	..	..	..	..	14(7)	4	3	68	16	16	24
AMS	46.8S	14	0824	SC	1	7	2	15(7)	5	13	80	50	17	21
CZT	51.5S	14	0825	SC	--	- 2	- 3	15(7)	4	15	100	30	17	21
PAF	57.2S	14	0825	SC	2.9	10.9	1.3	15(7)	5	26	129	69	17	21
DRV	75.2S	14	08--	..	..	..	..	16(1)	6	540	520	500	18	08
UJJ	13.6N	22	1200	..	..	..	..		-	2	45	10	23	19
NGP	11.3N	22	1200	..	..	..	..		-	2	51	19	23	19
ABG	09.4N	22	1200	..	..	..	..	22(5,8)	-	2	45	12	23	19
PND	02.0N	22	1200	..	..	..	..		-	2	46	34	23	19
TRD	01.1S	22	1200	..	..	..	..		-	2	51	37	23	19
UJJ	13.6N	24	1600	..	..	..	..		-	2	55	10	25	20
NGP	11.3N	24	1600	..	..	..	..		-	3	70	10	25	20
ABG	09.4N	24	1600	..	..	..	..		-	3	70	19	25	20
PND	02.0N	24	1600	..	..	..	..		-	3	77	25	25	20
TRD	01.1S	24	1600	..	..	..	..		-	2	102	38	25	20

Stations:

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

Stations reporting no storms observed: BJI FRD

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

DECEMBER 1996

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
02	1001	A: HRB* BJI B: NUR EBR TEN CNB C: BDV* CLF GCK* SPT QUE LNP	23	1645-1706	BDV CLF (ssc: BDV CLF)
14	0825	B: WNG DOU PAF C: CLF AMS CZT			

REPORTING OBSERVATORIES (up to the 7th of February 1997):
SOD DOB NUR WNG NGK DOU BDV CLF HRB NAG GCK MMB EBR COI BJI SPT FRD KAK HTY KNY QUE TEN LNP HER CNB AMS CZT PAF DRV

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: 1997-574-767/65032

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."