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Data for February, March 1999 and Late Data

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Number 656

(Issued in Two Parts)

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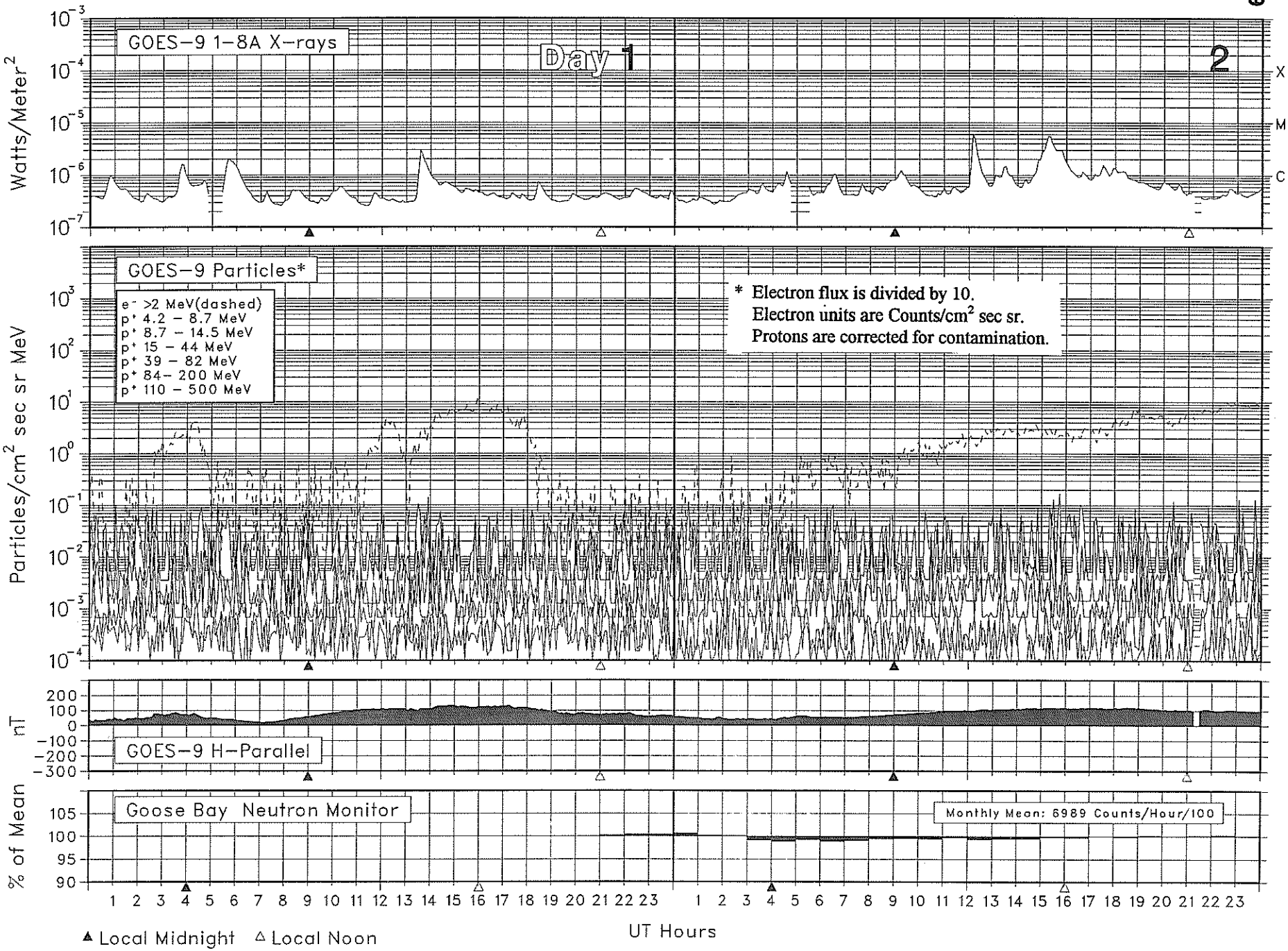

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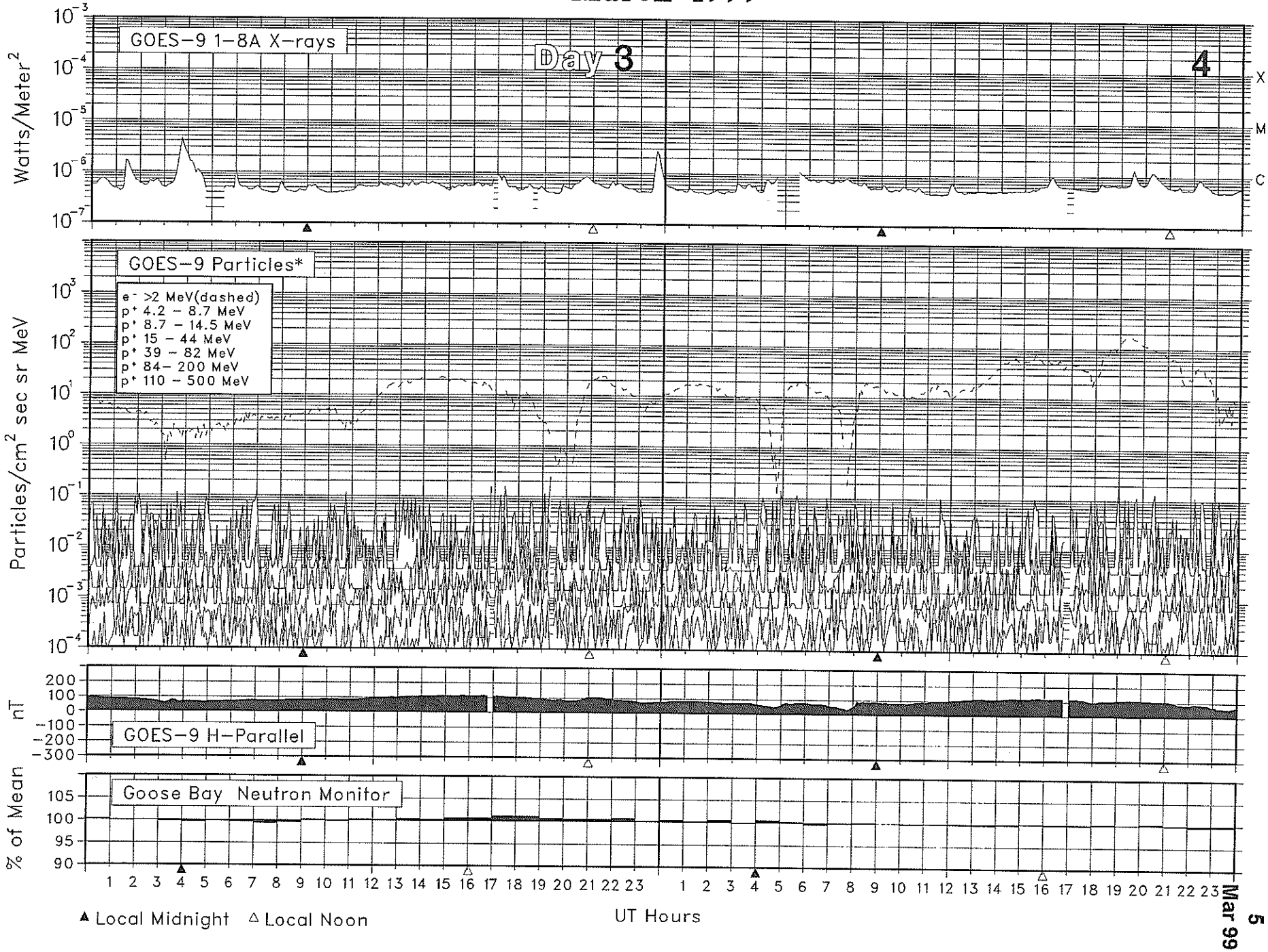

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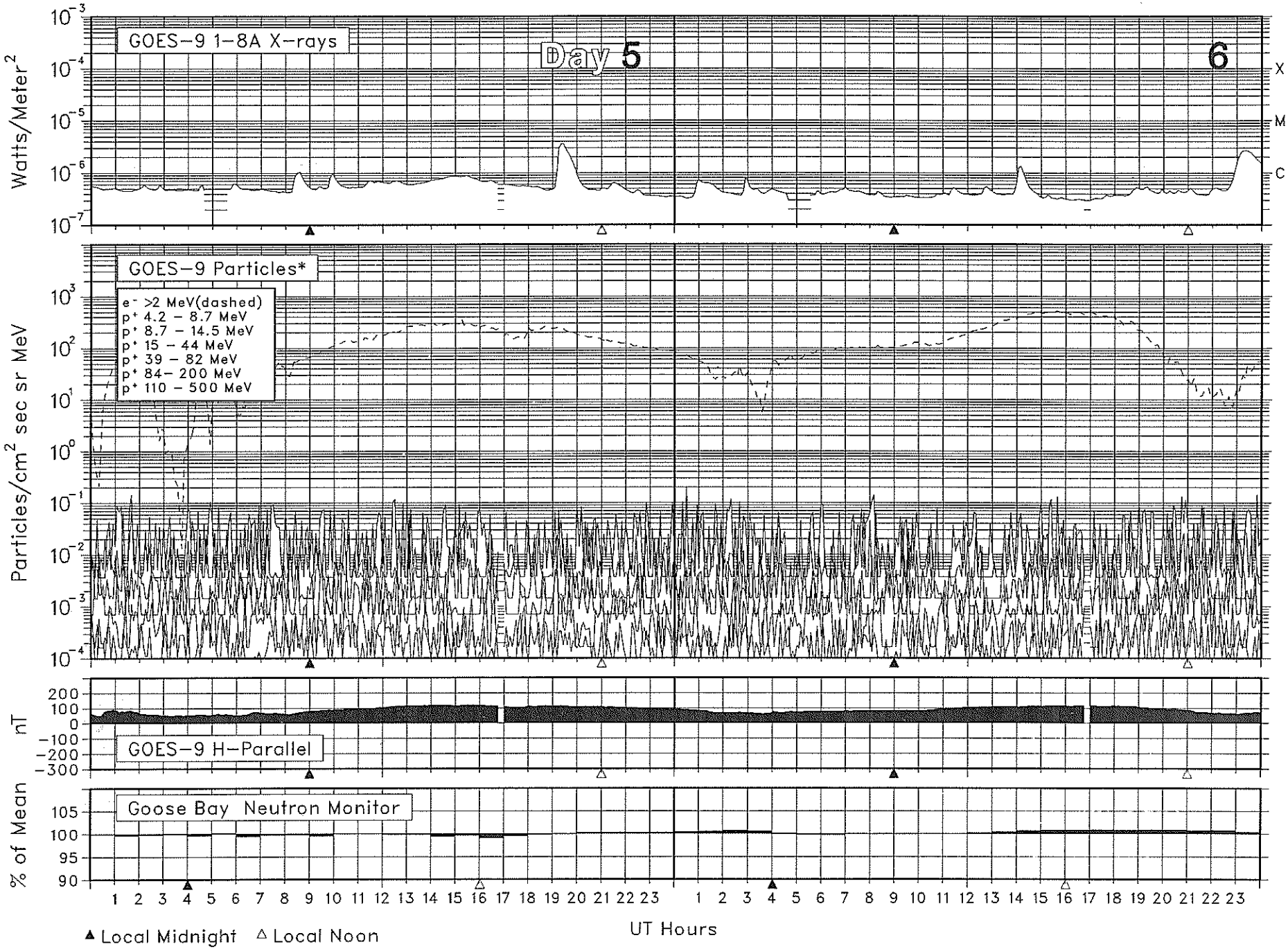

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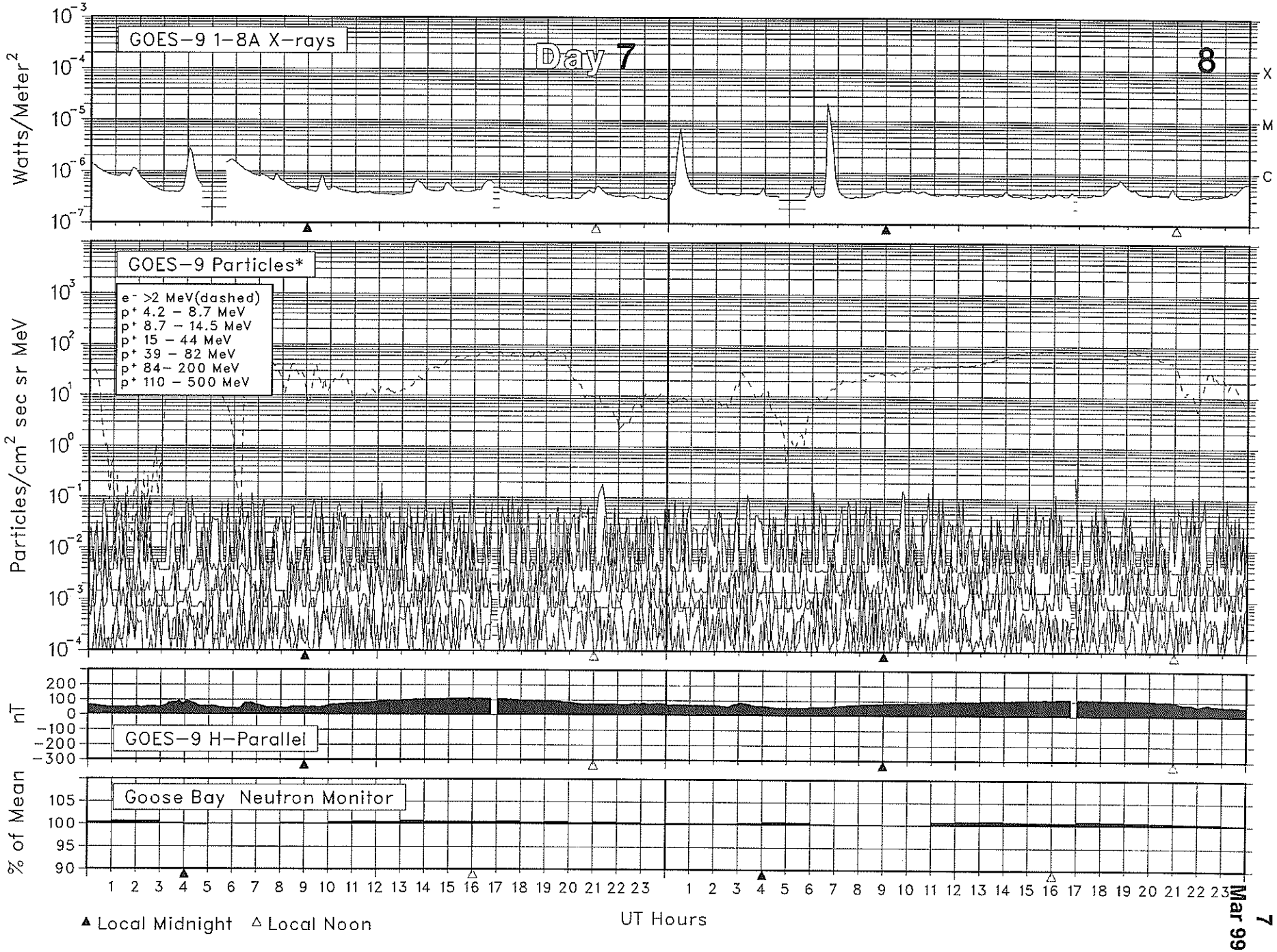

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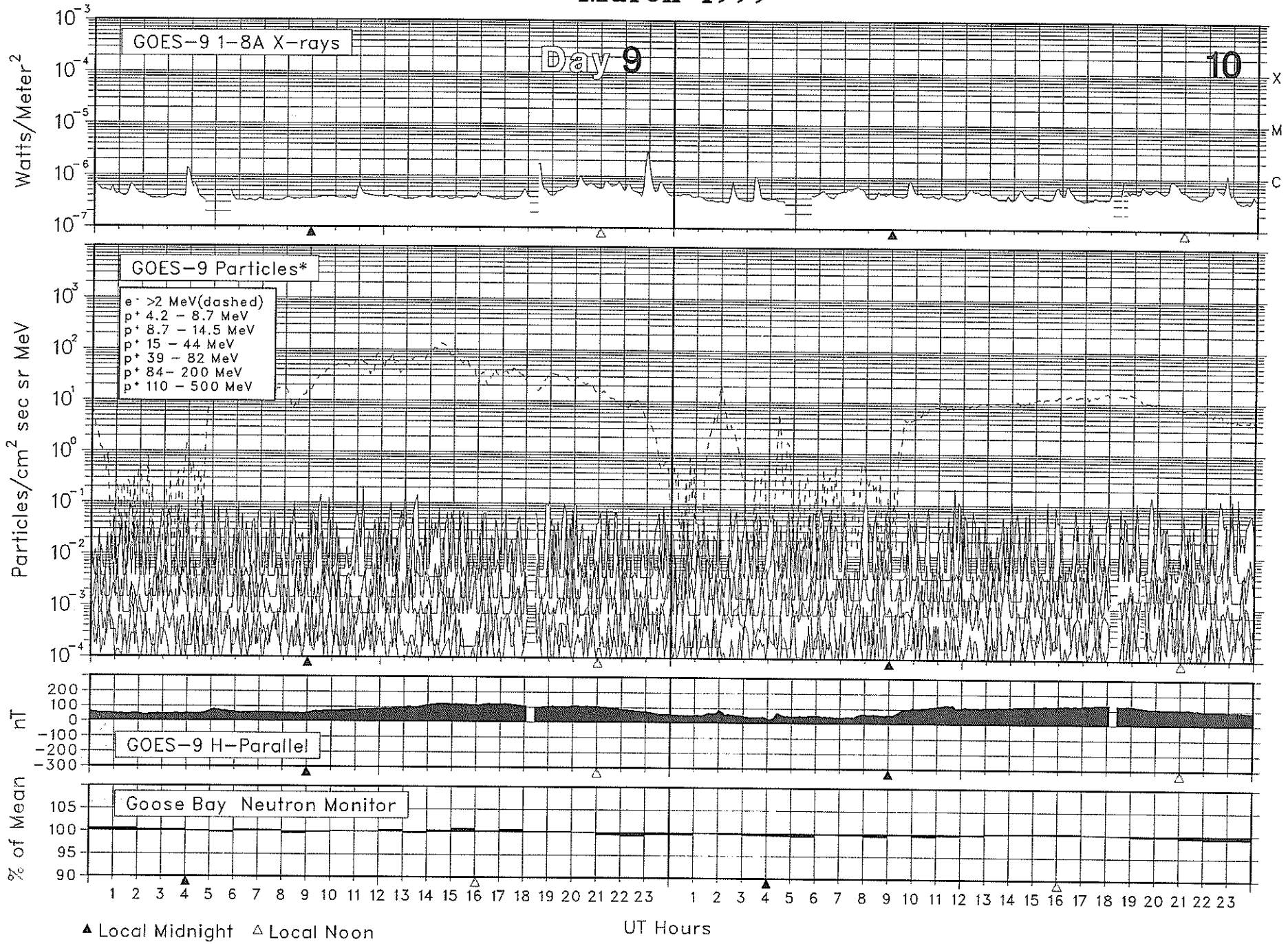

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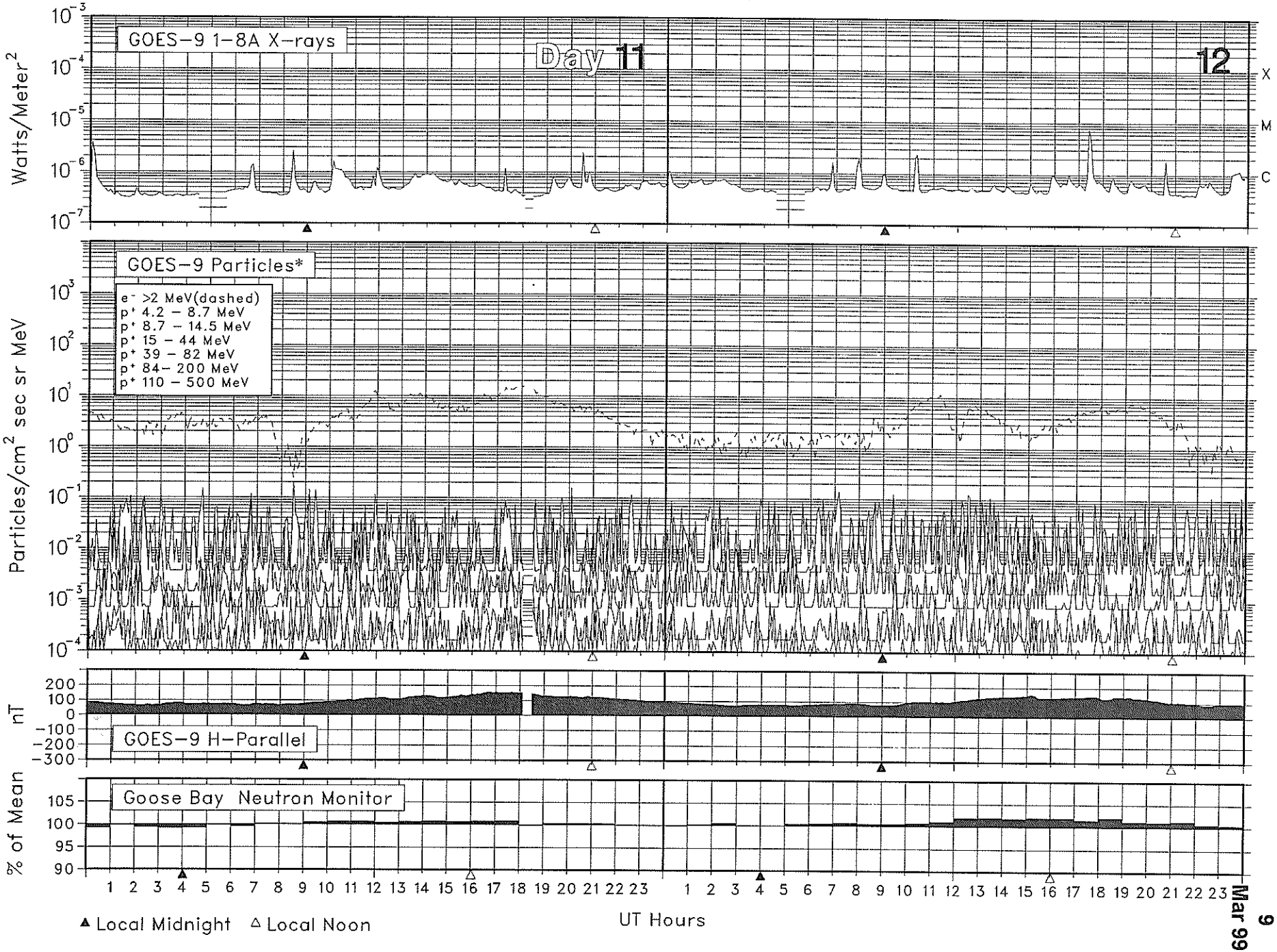

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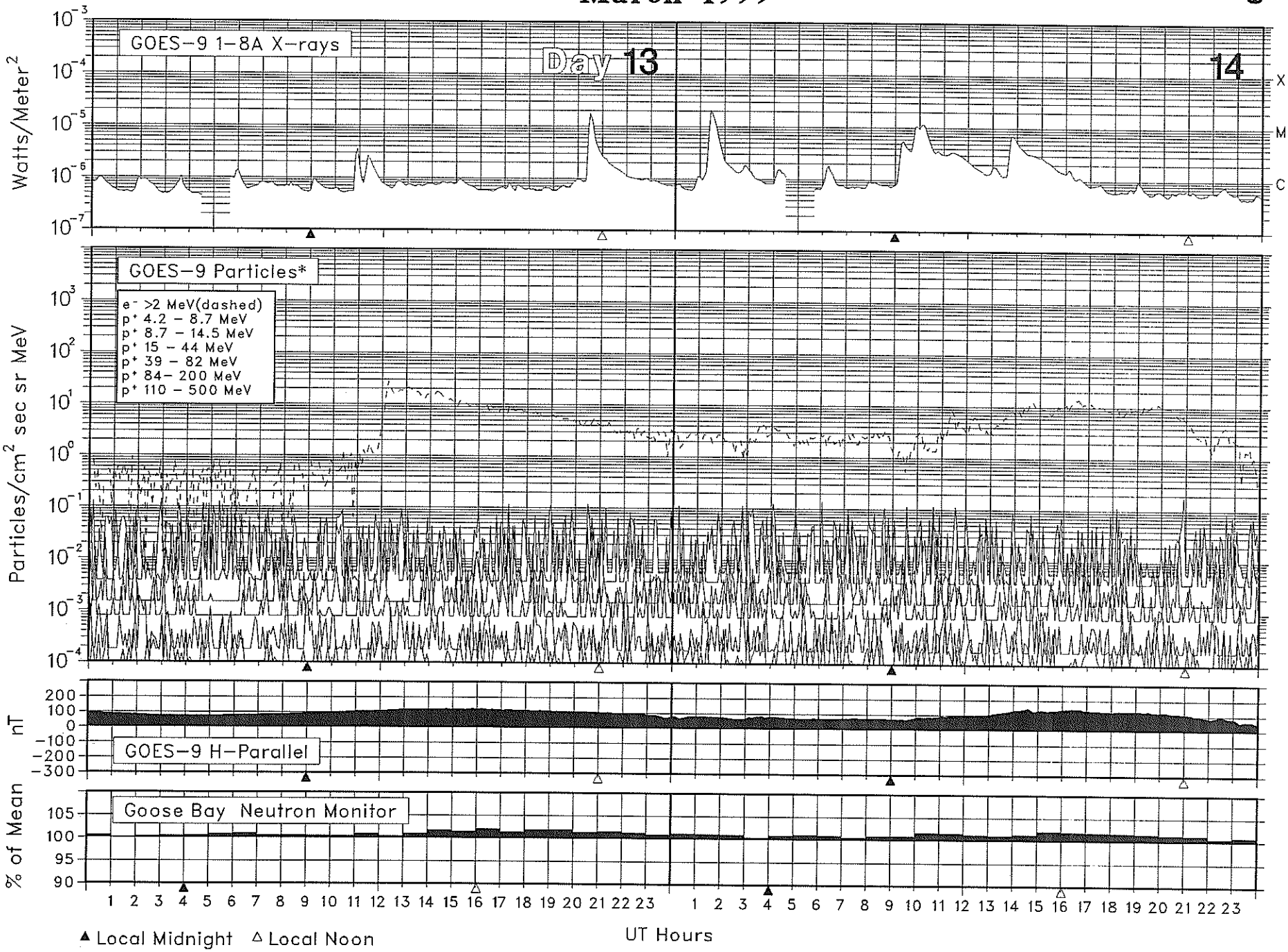

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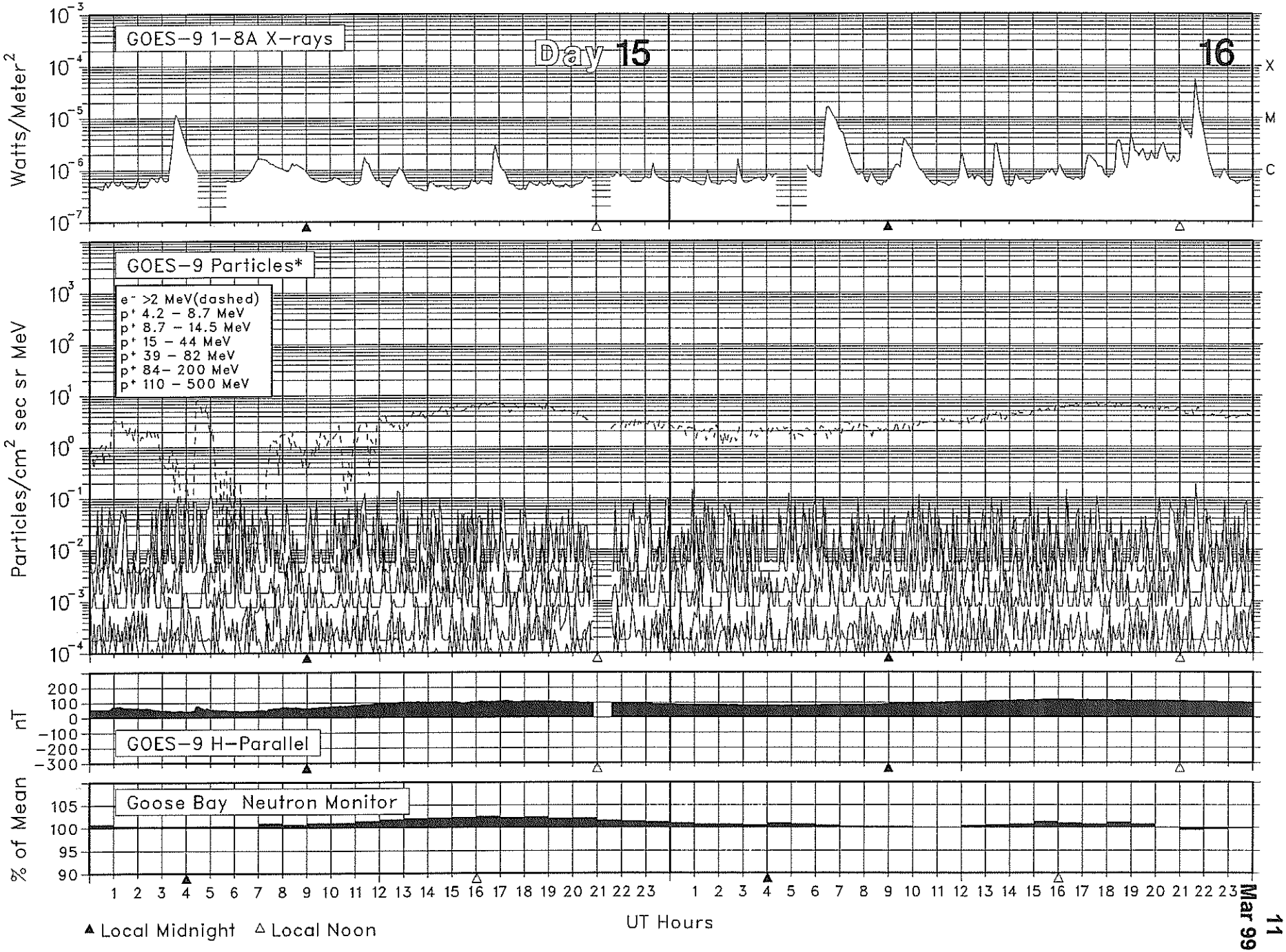

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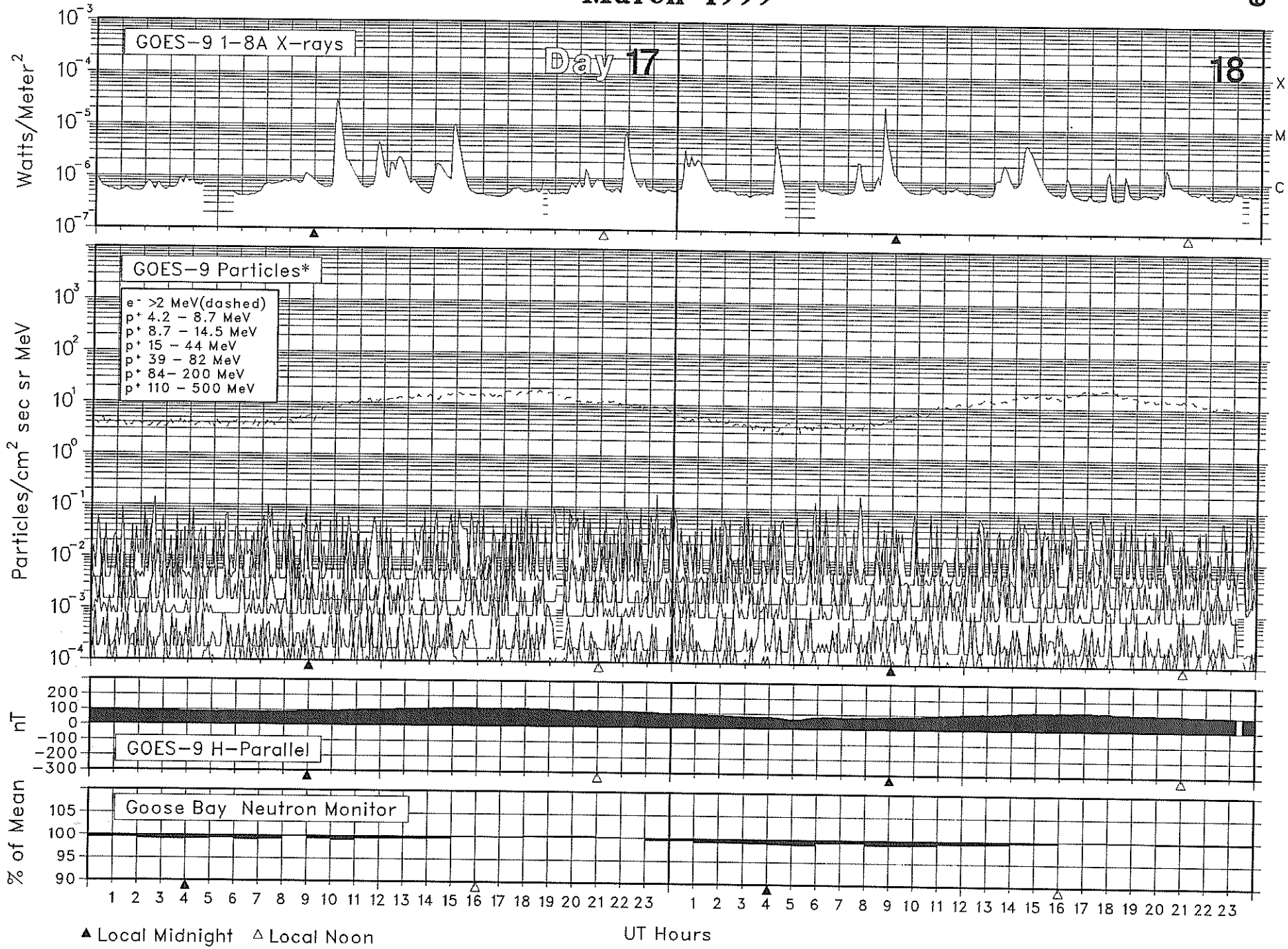

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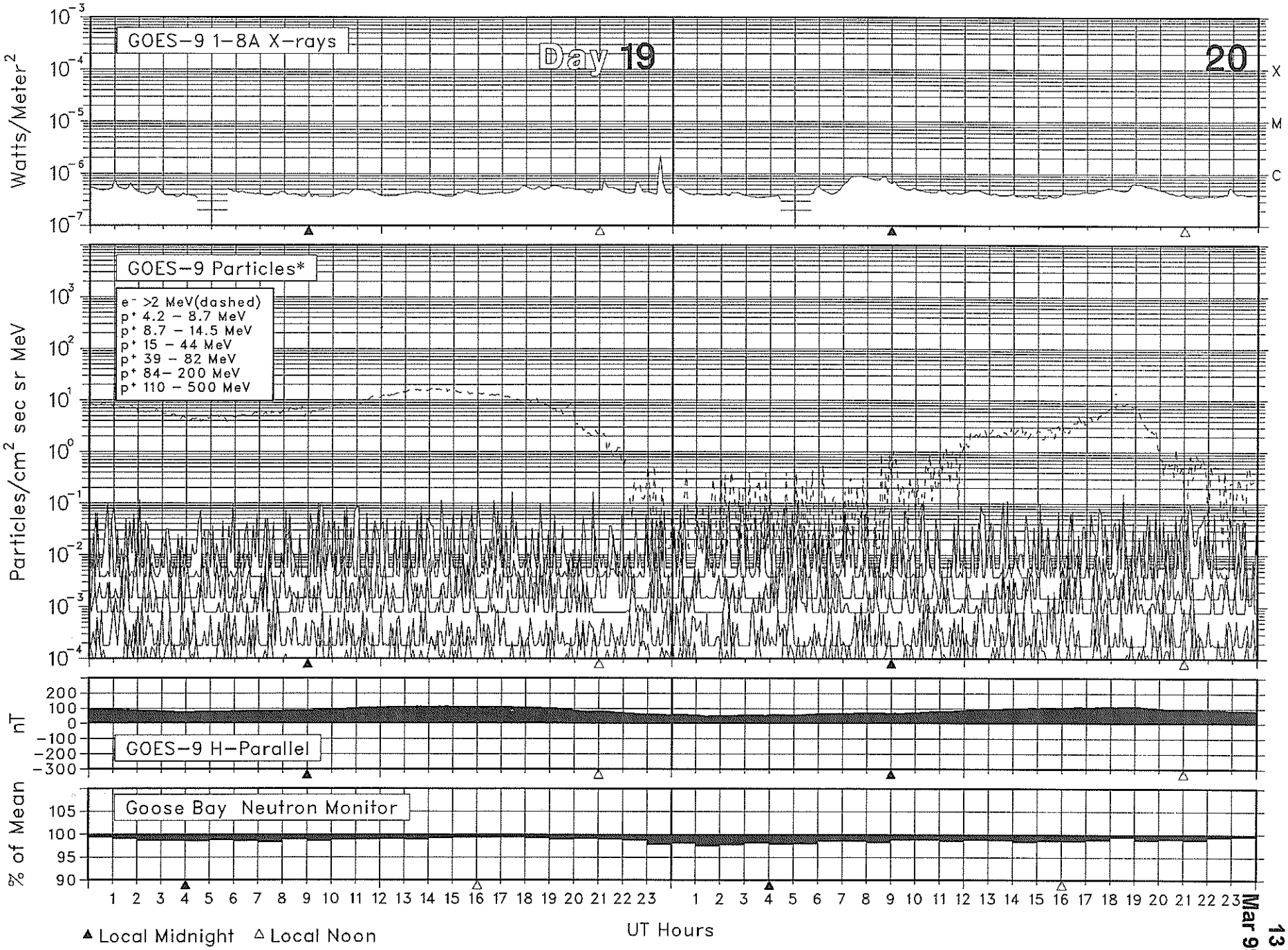

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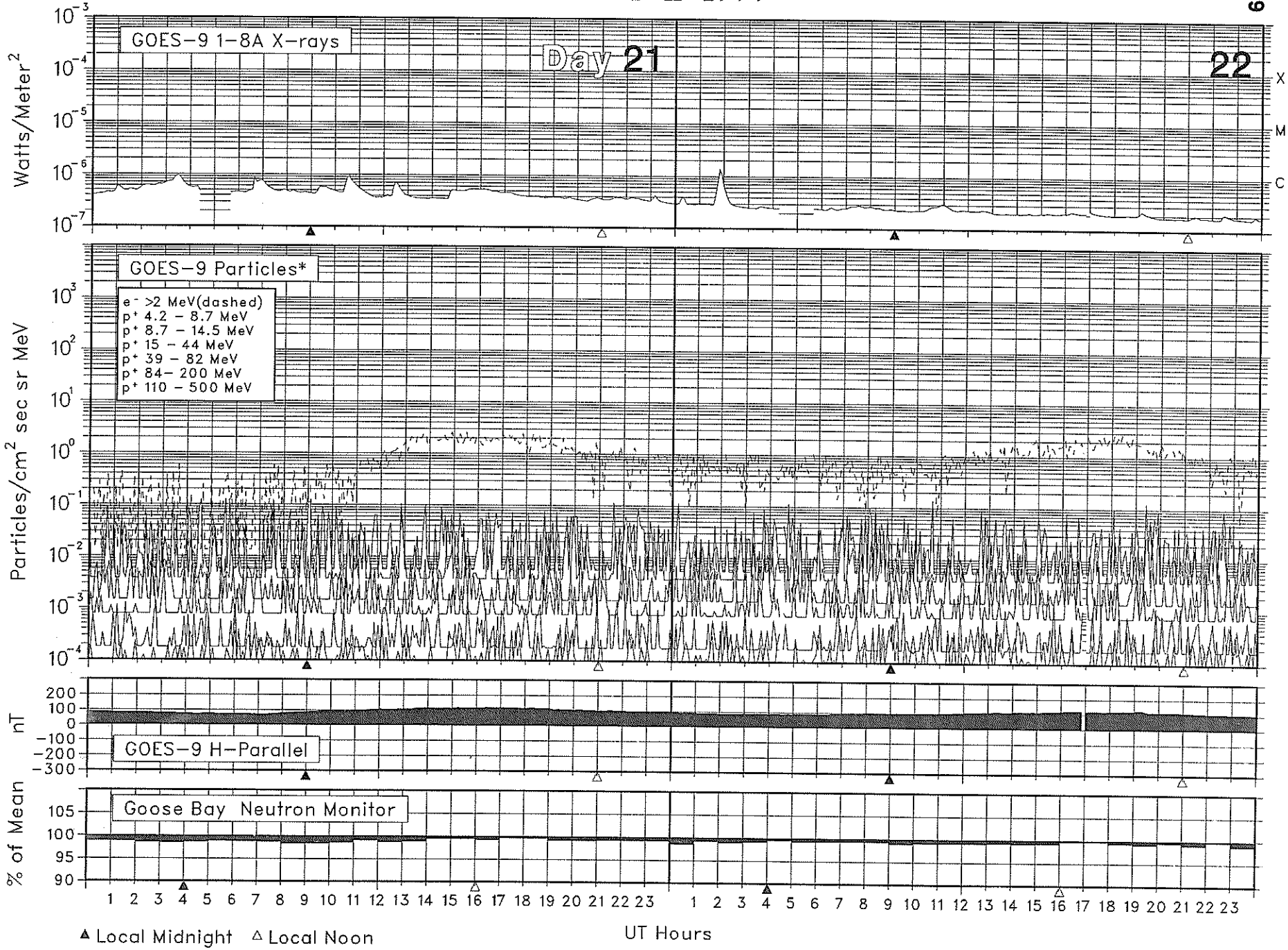

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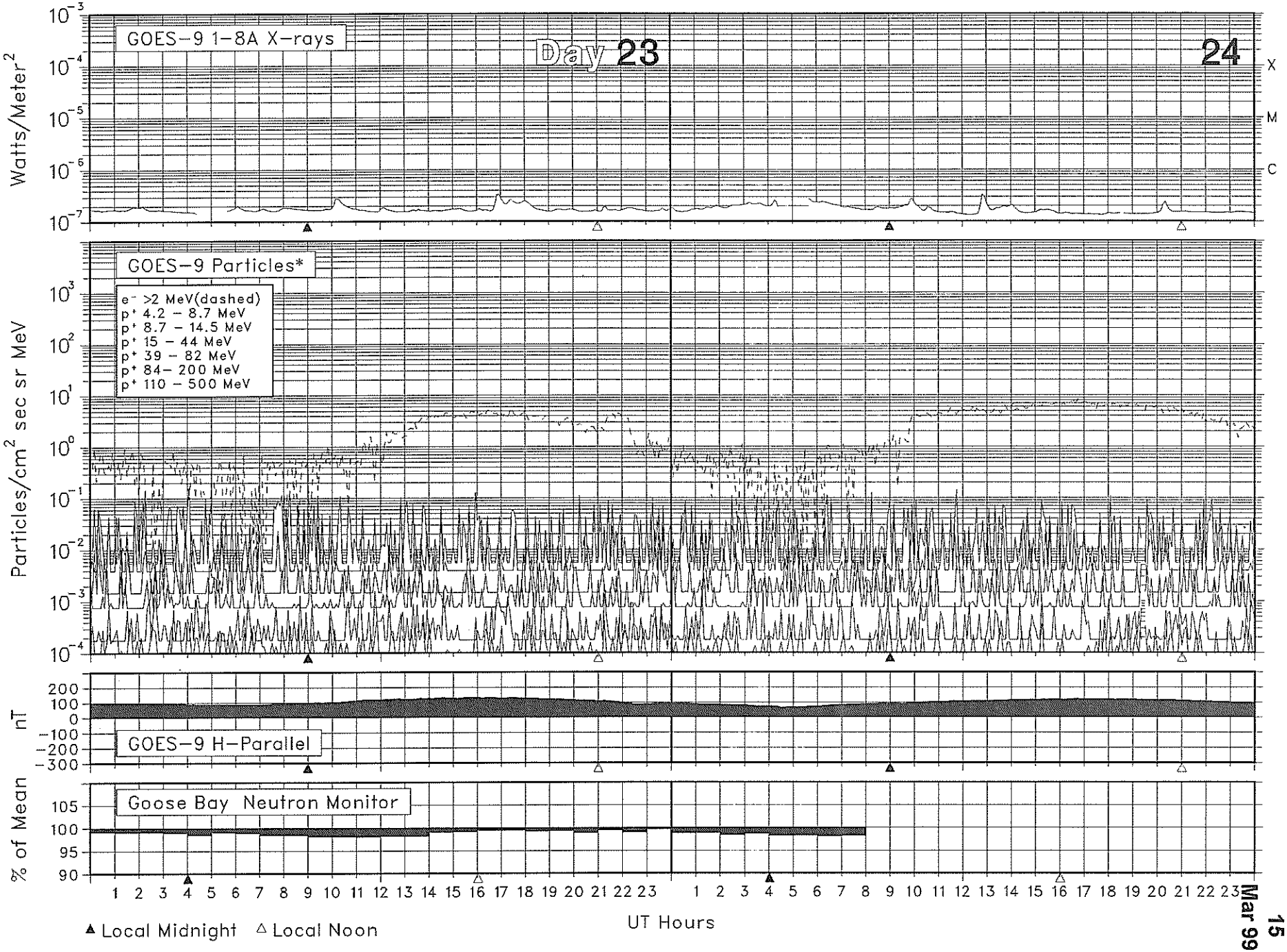

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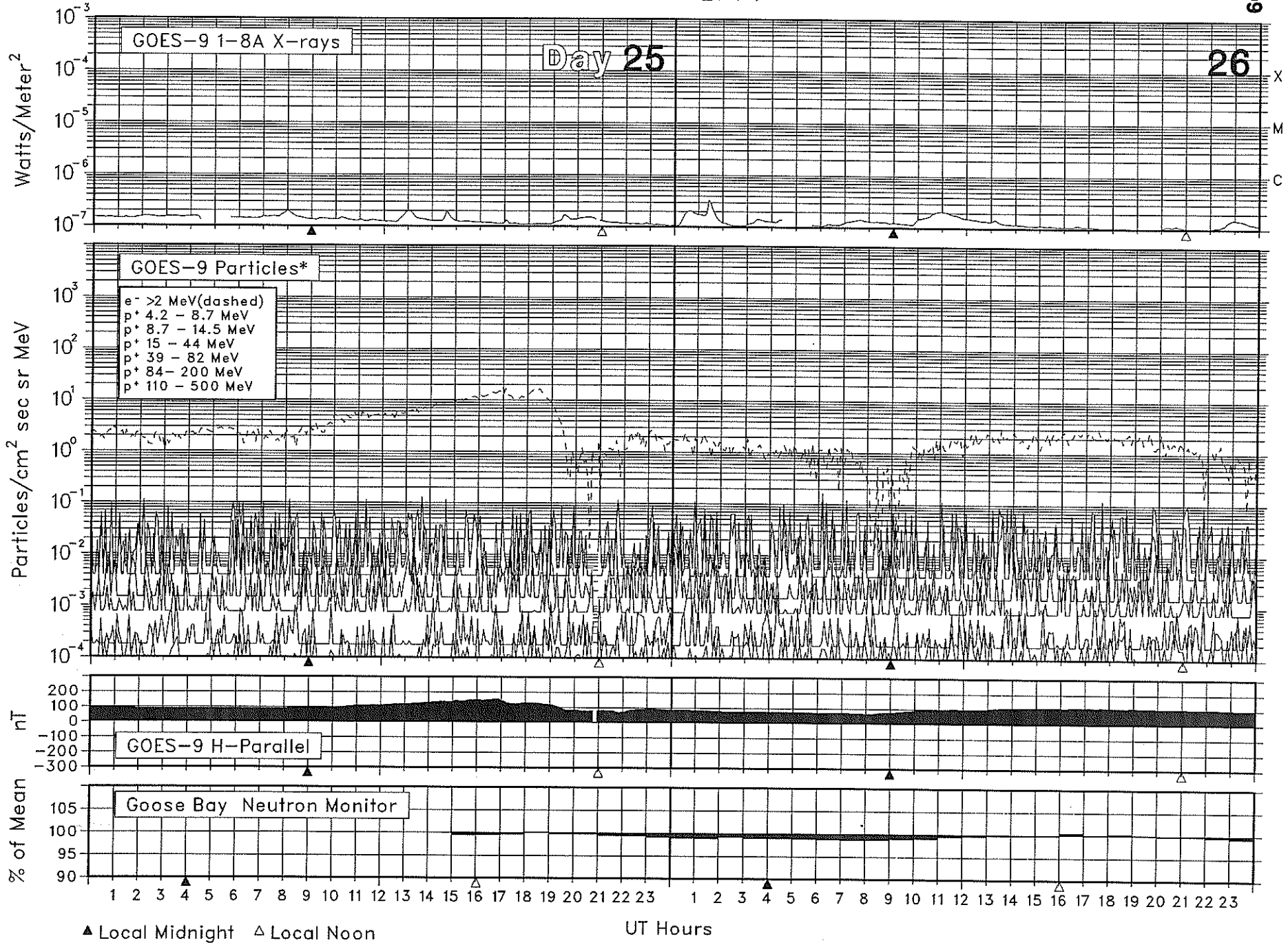

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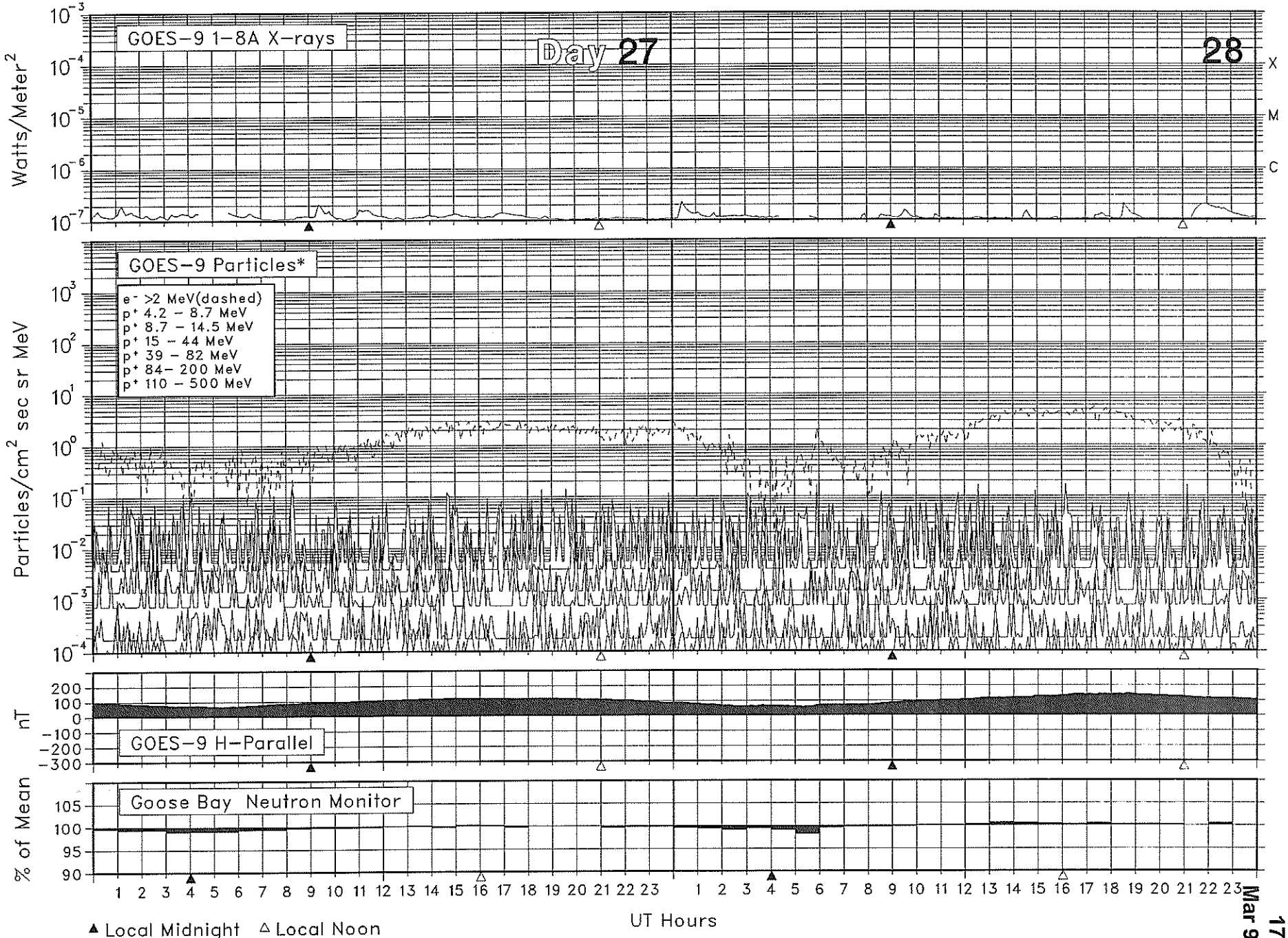

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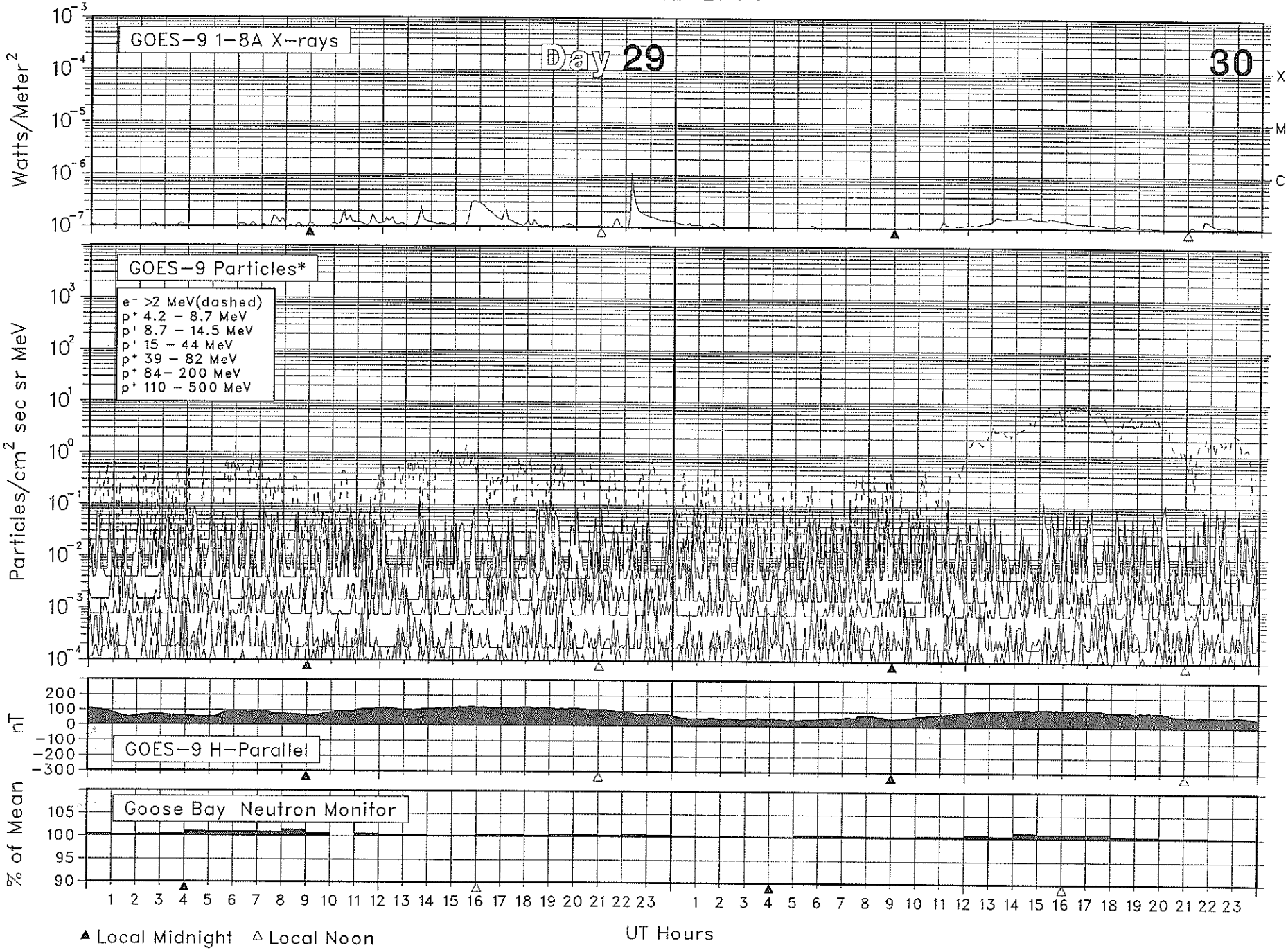

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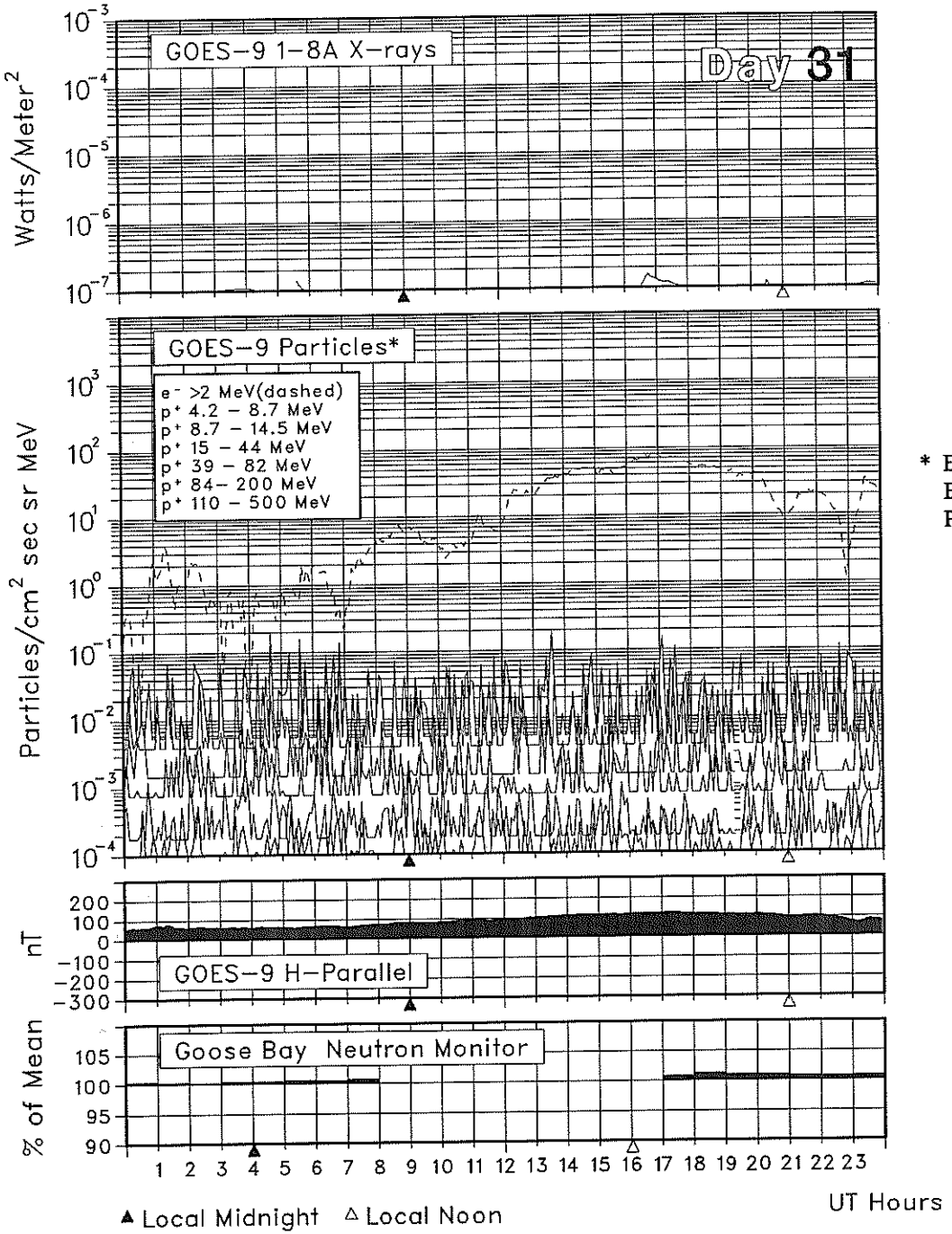


* Electron flux is divided by 10.
Electron units are Counts/cm^2 sec sr.
Protons are corrected for contamination.

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

MARCH 1999

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			
060	01	28	145	123	10	S23	W10	0	0	0	01	Q	SOL: Eruptive
						N29	W12	8	1	0	01	E	MAG: Active
						N30	E11	0	0	0	01	Q	PRO: Quiet
						N16	W21	0	0	0	01	Q	
						S24	W52	0	0	0	01	Q	
						N32	E29	1	0	0	01	Q	
						N20	E19	1	0	0	01	Q	
						S25	E77	0	0	0	01	Q	
061	02	01	127	120	27	N28	W27	4	0	0	02	E	SOL: Active
						N30	E01	0	0	0	02	Q	MAG: Active
						N32	E15	3	0	0	02	E	PRO: Quiet
						N19	E07	0	0	0	02	Q	
						S26	E64	0	0	0	02	Q	
						S15	W08	0	0	0	02	Q	
062	03	02	143	130	16	N28	W39	4	0	0	03	E	SOL: Active
						N31	W09	2	0	0	03	Q	MAG: Quiet
						N31	E02	8	0	0	03	E	PRO: Quiet
						N18	W10	5	0	0	03	E	
						S26	E53	0	0	0	03	Q	
						S14	W26	0	0	0	03	Q	
						S14	W18	0	0	0	03	Q	
						N25	E66	0	0	0	03	Q	
063	04	03	148	137	10	N29	W53	10	0	0	04	E	SOL: Active
						N31	W11	0	0	0	04	E	MAG: Quiet
						N18	W23	12	0	0	04	E	PRO: Quiet
						S26	E40	0	0	0	04	Q	
						S15	W40	0	0	0	04	Q	
						S14	W32	0	0	0	04	Q	
						N25	E51	0	0	0	04	Q	
						S18	W15	0	0	0	04	Q	
064	05	04	144	144	17	N28	W64	0	0	0	05	E	SOL: Eruptive
						N32	W23	2	0	0	05	E	MAG: Active
						N18	W35	0	0	0	05	E	PRO: Quiet
						S32	E28	1	0	0	05	Q	
						S16	W52	0	0	0	05	Q	
						S14	W45	0	0	0	05	Q	
						N25	E39	0	0	0	05	Q	
						S18	W28	0	0	0	05	Q	
065	06	05	135	128	18	N28	W83	0	0	0	06	E	SOL: Eruptive
						N31	W37	0	0	0	06	E	MAG: Active
						N18	W49	0	0	0	06	E	PRO: Quiet
						S26	E15	2	0	0	06	E	
						S15	W66	1	0	0	06	Q	
						S13	W60	0	0	0	06	Q	
						N26	E26	0	0	0	06	Q	
066	07	06	136	114	10	N30	W51	2	0	0	07	E	SOL: Eruptive
						N17	W62	0	0	0	07	E	MAG: Quiet
						S29	E01	2	0	0	07	E	PRO: Quiet
						S15	W80	1	0	0	07	Q	
						S13	W75	0	0	0	07	Q	
						N25	E10	0	0	0	07	Q	
						S26	E64	0	0	0	07	Q	
						S18	W05	0	0	0	07	Q	
067	08	07	93	110	22	N17	W74	0	0	0	08	Q	SOL: Eruptive
						S25	W10	1	0	0	08	E	MAG: Quiet
						N26	E00	0	0	0	08	Q	PRO: Quiet
						S27	E54	0	0	0	08	Q	
						S17	W20	0	0	0	08	Q	
068	09	08	107	127	13	N18	W91	0	0	0	09	Q	SOL: Eruptive

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

MARCH 1999

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			
						S27	W18	0	0	0	09	E	MAG: Quiet
						S31	E49	0	0	0	09	Q	PRO: Quiet
						S18	W33	0	0	0	09	Q	
						S22	E76	1	1	0	09	E	
						N22	E66	1	0	0	09	Q	
						S25	W12	0	0	0	09	Q	
069	10	09	89	127	26	S28	W33	0	0	0	10	Q	SOL: Eruptive
						S18	W48	1	0	0	10	Q	MAG: Active
						S24	E64	5	0	0	10	Q	PRO: Quiet
						N22	E53	1	0	0	10	Q	
						S26	W27	0	0	0	10	Q	
070	11	10	88	135	29	S28	W46	2	0	0	11	Q	SOL: Eruptive
						S18	W61	2	0	0	11	Q	MAG: Active
						S23	E54	1	0	0	11	E	PRO: Quiet
						N22	E40	3	0	0	11	Q	
						S25	W40	0	0	0	11	Q	
071	12	11	95	137	12	S29	W58	1	0	0	12	Q	SOL: Eruptive
						S19	W74	7	0	0	12	E	MAG: Quiet
						S23	E41	0	0	0	12	Q	PRO: Quiet
						N22	E27	2	0	0	12	E	
						N17	E63	13	0	0	12	E	
072	13	12	98	140	10	S30	W68	0	0	0	13	Q	SOL: Eruptive
						S21	W85	0	0	0	13	Q	MAG: Quiet
						S22	E30	0	0	0	13	Q	PRO: Quiet
						N23	E13	6	0	0	13	E	
						N17	E51	18	0	0	13	E	
073	14	13	107	144	4	S28	W82	0	0	0	14	Q	SOL: Eruptive
						S23	E18	0	0	0	14	Q	MAG: Quiet
						N23	E00	3	0	0	14	E	PRO: Quiet
						N17	E39	15	1	0	14	E	
074	15	14	131	150	13	S28	W94	0	0	0	15	Q	SOL: Eruptive
						S24	E05	0	0	0	15	Q	MAG: Quiet
						N23	W12	10	0	0	15	E	PRO: Quiet
						N16	E25	3	2	0	15	E	
						S27	E37	0	0	0	15	Q	
075	16	15	126	150	13	S23	W08	0	0	0	16	Q	SOL: Active
						N23	W25	9	0	0	16	E	MAG: Active
						N16	E11	4	1	0	16	E	PRO: Quiet
						S26	E22	0	0	0	16	Q	
076	17	16	134	156	3	S23	W21	0	0	0	17	Q	SOL: Active
						N23	W38	14	3	0	17	E	MAG: Active
						N17	W01	5	0	0	17	E	PRO: Quiet
						S26	E09	0	0	0	17	Q	
						N13	W27	0	0	0	17	Q	
077	18	17	131	155	5	S23	W34	0	0	0	18	Q	SOL: Active
						N24	W52	11	2	0	18	E	MAG: Quiet
						N17	W15	1	0	0	18	E	PRO: Quiet
						S26	W04	0	0	0	18	Q	
						N14	W41	0	0	0	18	Q	
						S20	E66	0	0	0	18	Q	
078	19	18	127	148	7	S23	W46	0	0	0	19	Q	SOL: Active
						N24	W64	5	0	0	19	E	MAG: Quiet
						N17	W25	0	0	0	19	Q	PRO: Quiet
						S26	W17	0	0	0	19	Q	
						S19	E54	0	0	0	19	Q	
						N19	W09	0	0	0	19	Q	

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

MARCH 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
079	20	19	157	139	3	S23	W59	0	0	0	20	Q	SOL: Eruptive
						N22	W79	0	0	0	20	E	MAG: Quiet
						N16	W45	0	0	0	20	Q	PRO: Quiet
						S27	W30	0	0	0	20	Q	
						S19	E40	0	0	0	20	Q	
						S27	W46	0	0	0	20	Q	
						N19	W22	2	0	0	20	Q	
						S22	E15	0	0	0	20	Q	
						S21	E62	0	0	0	20	Q	
						S11	W03	0	0	0	20	Q	
080	21	20	119	133	6	S25	W71	0	0	0	21	Q	SOL: Eruptive
						N17	W59	0	0	0	21	Q	MAG: Quiet
						S26	W44	0	0	0	21	Q	PRO: Quiet
						S19	E27	0	0	0	21	Q	
						N20	W36	0	0	0	21	Q	
						S23	E02	0	0	0	21	Q	
						S21	E47	0	0	0	21	Q	
						S09	W18	0	0	0	21	Q	
081	22	21	97	124	4	N17	W72	0	0	0	22	Q	SOL: Eruptive
						S26	W58	0	0	0	22	Q	MAG: Quiet
						S18	E10	0	0	0	22	Q	PRO: Quiet
						N20	W50	0	0	0	22	Q	
						S24	W12	0	0	0	22	Q	
						S21	E33	0	0	0	22	Q	
						S11	W32	0	0	0	22	Q	
082	23	22	101	116	3	N16	W86	0	0	0	23	Q	SOL: Eruptive
						S26	W72	0	0	0	23	Q	MAG: Quiet
						S17	W02	0	0	0	23	Q	PRO: Quiet
						N19	W62	0	0	0	23	Q	
						S23	W24	0	0	0	23	Q	
						S21	E23	0	0	0	23	Q	
						S10	W44	0	0	0	23	Q	
						N30	E60	0	0	0	23	Q	
083	24	23	33	113	6	S12	W59	0	0	0	24	Q	SOL: Quiet
						N30	E49	0	0	0	24	Q	MAG: Quiet
						N18	E67	0	0	0	24	Q	PRO: Quiet
084	25	24	52	108	3	S11	W72	0	0	0	25	Q	SOL: Quiet
						N28	E37	0	0	0	25	Q	MAG: Quiet
						N17	E54	0	0	0	25	Q	PRO: Quiet
						N23	W39	0	0	0	25	Q	
085	26	25	48	107	6	S11	W89	0	0	0	26	Q	SOL: Quiet
						N29	E25	0	0	0	26	Q	MAG: Quiet
						N17	E42	0	0	0	26	Q	PRO: Quiet
						N22	W50	0	0	0	26	Q	
086	27	26	33	104	6	N30	E12	0	0	0	27	Q	SOL: Quiet
						N18	E29	0	0	0	27	Q	MAG: Quiet
						N23	W62	0	0	0	27	Q	PRO: Quiet
087	28	27	45	105	3	N29	W01	0	0	0	28	Q	SOL: Quiet
						N18	E16	0	0	0	28	Q	MAG: Quiet
						N16	E02	0	0	0	28	Q	PRO: Quiet
						N28	E66	0	0	0	28	Q	
088	29	28	65	103	8	S22	W51	0	0	0	29	Q	SOL: Quiet
						N29	W13	0	0	0	29	Q	MAG: Quiet
						N18	E03	0	0	0	29	Q	PRO: Quiet
						N29	E55	0	0	0	29	Q	
						S25	E71	0	0	0	29	Q	
089	30	29	63	104	22	N30	W26	0	0	0	30	Q	SOL: Quiet

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

MARCH 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
						N18	W10	0	0	0	30	Q	MAG: Active
						N28	E42	0	0	0	30	Q	PRO: Quiet
						S27	E65	3	0	0	30	Q	
						S23	W17	0	0	0	30	Q	
090	31	30	72	105	18	N29	W38	0	0	0	31	Q	SOL: Quiet
						N18	W22	0	0	0	31	Q	MAG: Quiet
						N27	E29	0	0	0	31	Q	PRO: Quiet
						S27	E45	0	0	0	31	E	
						S22	W31	0	0	0	31	Q	
						S28	E61	0	0	0	31	Q	

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

Magnetic (MAG) Geoadvice

'Quiet'		
'Active'	conditions expected	(A>= 20 or K =4)
'Minor'	storm expected	(A>= 30 or K =5)
'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 > 10 MeV)
'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

03/01/99 03:30:00 GEOALERT WWA060 STRATWARM ALERT/SUNDAY/STRATWARM EXISTS.
FINAL WARMING CONTINUES. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE THROUGHOUT THE STRATOSPHERE, AND MEAN ZONAL WIND AT 60N FROM THE EAST AT 10 HPA AND ABOVE.

03/02/99 03:30:00 GEOALERT WWA061 STRATWARM ALERT/MONDAY/STRATWARM EXISTS.
FINAL WARMING CONTINUES. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE THROUGHOUT THE STRATOSPHERE.MEAN ZONAL WIND AT 60N CONTINOUSLY WEAKENING IN THE LOWER STRATOSPHERE AND REACHED EASTERLY DIRECTION AT 10HPA AND ABOVE.

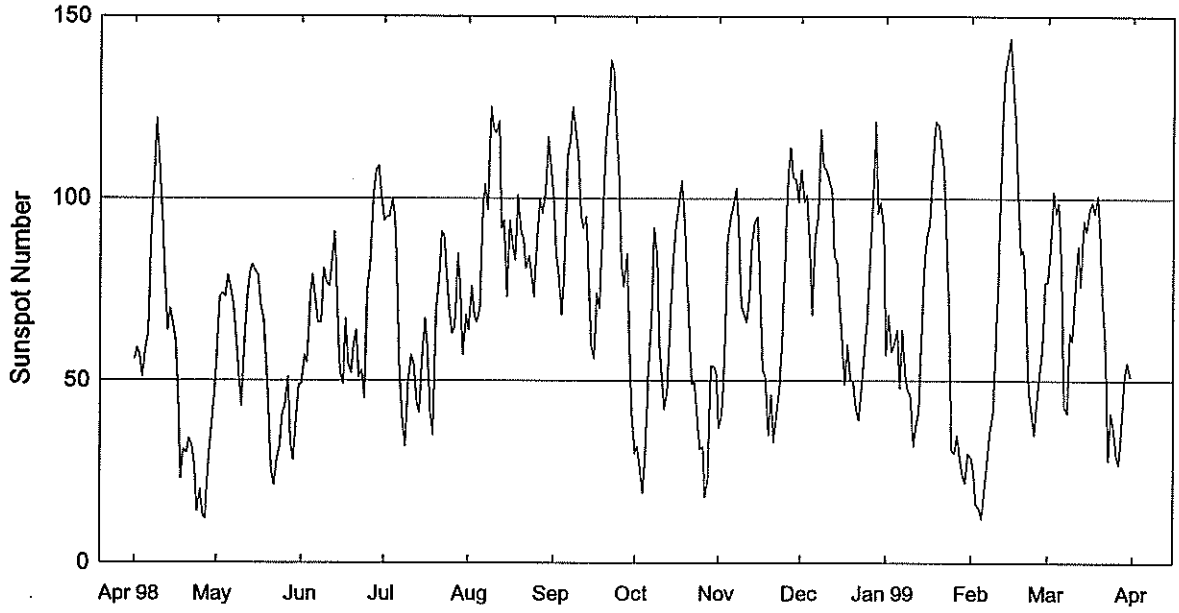
03/03/99 03:30:00 GEOALERT WWA062 STRATWARM ALERT EXISTS STRATWARM TUESDAY
NONE

03/04/99 03:30:00 GEOALERT WWA063 STRATWARM ALERT/WEDNESDAY/STRATWARM EXISTS.
FINAL WARMING CONTINUES. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE THROUGHOUT THE STRATOSPHERE.MEAN ZONAL WIND AT 60N CONTINUOUSLY WEAKENING IN THE LOWER STRATOSPHERE AND HAS REACHED EASTERLY DIRECTION IN THE MIDDLE AND UPPER STRATOSPHERE.

03/05/99 03:30:00 GEOALERT WWA064 STRATWARM ALERT/THURSDAY/STRATWARM EXISTS.
FINAL WARMING CONTINUES. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE IN THE LOWER AND MIDDLE STRATOSPHERE.MEAN ZONAL WIND AT 60N CONTINUOUSLY WEAKENING IN THE LOWER STRATOSPHERE AND HAS REACHED EASTERLY DIRECTION AT 30 HPA AND ABOVE IN THE MIDDLE AND UPPER STRATOSPHERE.

03/06/99 03:30:00 GEOALERT WWA065 STRATWARM ALERT/FRIDAY/STRATWARM EXISTS.
FINAL WARMING CONTINUES. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE IN THE LOWER AND MIDDLE STRATOSPHERE, AND MEAN ZONAL WIND AT 60N FROM THE EAST AT 30 AND 10 HPA. TRANSMISSION TO SUMMER CONDITIONS WILL PROCEED WITHIN THE NEXT WEEKS.
END OF GEOALERT MESSAGES OF THIS WINTER SEASON.

International Relative Sunspot Numbers
Apr 1998 - Mar 1999

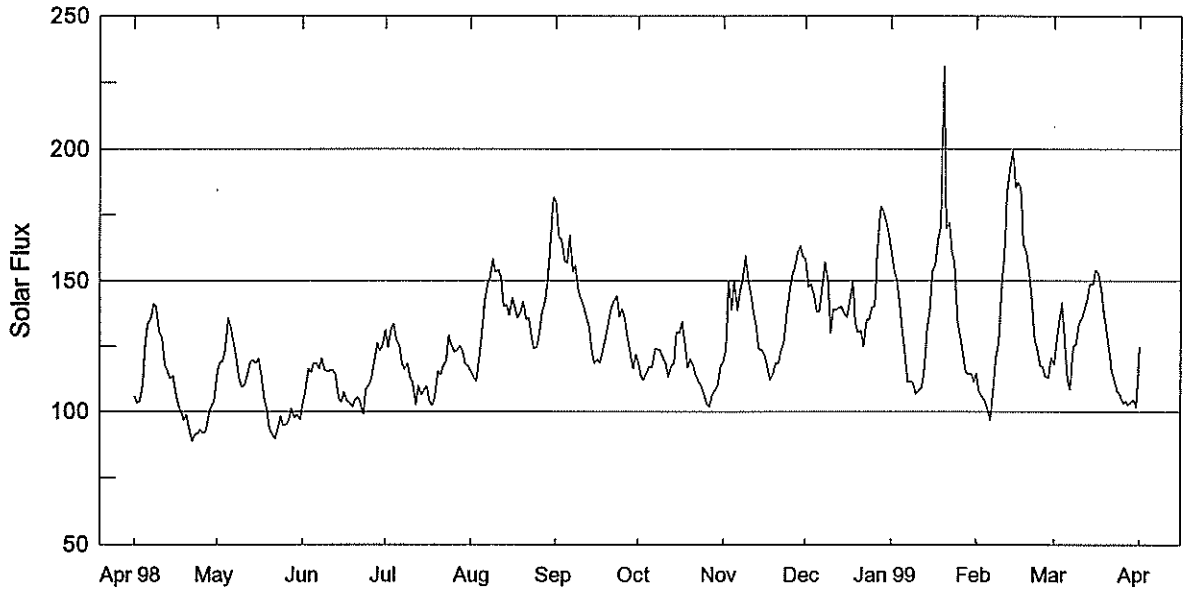


Day	Apr 98	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99*	Feb*	Mar*
1	56	57	49	94	64	100	30	37	108	57	29	77
2	59	73	57	95	76	85	32	41	99	68	25	88
3	57	74	55	95	68	79	25	56	101	58	16	102
4	51	73	74	100	66	68	19	88	86	60	15	96
5	59	79	79	94	70	80	30	95	68	64	12	99
6	63	76	72	74	98	112	54	98	89	48	19	79
7	93	71	66	51	104	116	66	103	95	64	28	43
8	106	63	66	38	97	125	92	92	119	51	36	41
9	122	54	81	32	125	119	84	71	109	47	41	63
10	108	43	77	49	119	112	60	68	108	46	60	61
11	96	58	76	57	118	96	51	66	105	32	78	76
12	80	73	83	55	121	92	42	73	102	38	115	87
13	64	80	91	44	92	95	48	88	84	41	134	76
14	70	82	69	41	94	78	66	94	83	65	138	94
15	65	80	53	55	73	60	84	95	72	83	144	91
16	61	79	49	67	94	56	93	76	60	90	133	97
17	46	71	67	59	87	74	98	53	49	93	122	99
18	23	67	55	42	83	70	105	51	60	111	105	96
19	31	56	52	35	101	93	96	35	50	121	85	101
20	30	43	60	69	91	114	81	46	50	120	86	88
21	34	26	64	78	89	125	63	33	43	114	74	71
22	32	21	51	91	81	138	49	41	39	108	47	61
23	26	28	53	90	84	135	50	47	47	87	42	28
24	14	32	45	79	79	117	39	59	58	68	35	41
25	20	41	75	68	73	105	31	85	66	31	44	37
26	13	43	83	63	87	82	32	106	81	30	51	29
27	12	51	100	65	100	76	18	114	100	35	59	27
28	28	33	108	85	96	85	23	106	121	28	77	37
29	36	28	109	74	102	60	54	105	96	24		51
30	46	40	101	57	117	41	54	99	99	22		55
31		49		68	109		52		92	30		51
Mean	53.4	56.3	70.7	66.6	92.2	92.9	55.5	74.0	81.9	62.4	66.1	69.1

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Apr 98 - Mar 99

Adjusted to 1 AU



Day	Apr 98	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar
1	105.6	115.1	103.0	131.1	115.4	180.2	119.1	119.5	158.2	161.6	114.5	118.0
2	103.4	118.8	107.7	124.4	112.9	166.3	112.9	124.1	147.4	154.8	107.7	127.6
3	103.6	119.3	116.4	131.9	111.7	165.5	112.0	149.3	148.7	149.4	105.8	134.6
4	110.2	123.2	115.0	133.5	119.2	157.3	114.9	139.0	144.0	142.0	104.3	141.6
5	126.4	135.7	118.4	127.6	130.5	156.8	117.1	150.1	138.3	132.0	100.9	125.4
6	133.7	132.4	118.5	125.2	142.2	167.1	116.9	138.4	138.1	121.6	96.6	112.6
7	135.5	125.6	116.4	118.5	149.1	153.5	124.1	145.8	148.7	111.3	106.5	108.3
8	141.0	120.2	120.5	116.2	150.9	155.8	123.8	149.9	157.1	111.7	121.1	125.0
9	140.2	112.8	115.7	118.2	158.3	147.4	123.2	159.3	149.3	111.0	125.9	125.3
10	130.2	109.3	115.3	112.9	153.3	143.6	120.3	150.8	129.8	106.7	148.4	133.6
11	128.8	110.2	115.8	111.3	154.1	140.4	118.5	144.1	138.8	108.2	159.3	135.3
12	117.6	114.4	115.7	102.6	150.9	136.6	113.4	138.7	138.9	109.1	183.6	138.5
13	115.5	119.1	113.9	109.7	140.4	132.3	117.5	132.6	139.7	114.7	193.4	142.7
14	112.6	119.8	105.1	106.3	140.6	123.3	118.4	123.8	139.9	132.4	199.6	148.7
15	113.5	118.6	103.6	108.2	136.8	118.6	130.4	123.7	137.2	138.0	185.5	148.4
16	107.2	120.4	107.3	109.7	143.3	119.9	130.1	121.8	136.1	153.4	187.3	154.1
17	102.1	113.0	103.9	103.6	139.7	118.6	134.4	118.0	141.5	156.2	185.3	152.9
18	99.4	104.6	103.3	102.4	135.8	123.7	125.0	112.2	149.8	165.4	164.2	146.7
19	96.7	101.5	101.8	105.2	137.9	128.0	116.8	113.7	133.6	170.3	160.5	138.1
20	98.7	94.1	104.4	115.4	141.9	133.3	120.2	118.6	130.4	231.3	153.6	131.6
21	92.9	91.2	105.4	113.9	135.2	139.4	117.2	118.3	130.9	169.7	144.0	123.1
22	88.5	89.6	103.8	117.8	135.9	142.1	113.8	123.0	124.6	172.3	127.0	115.0
23	91.3	92.6	98.9	119.1	129.3	144.1	111.4	126.7	135.2	160.8	124.3	112.2
24	91.7	98.0	108.8	129.2	123.9	136.2	109.6	136.7	134.9	156.8	117.3	107.6
25	93.0	94.7	109.7	125.5	124.8	139.2	106.3	145.6	139.6	133.9	117.1	106.4
26	91.8	94.9	112.8	122.8	129.6	136.2	102.8	152.3	140.2	129.1	113.4	103.1
27	92.6	96.6	119.1	123.2	137.8	128.0	101.8	154.7	161.4	121.6	112.9	104.1
28	99.8	101.1	126.1	125.1	142.0	123.0	106.4	160.4	178.3	115.2	120.7	102.7
29	102.0	97.6	123.3	123.1	149.4	116.3	108.0	163.2	176.8	114.2		103.8
30	104.1	98.8	125.0	118.3	166.4	121.8	109.9	158.9	173.1	114.5		104.4
31		96.8		117.2	181.8		117.0		168.8	111.5		101.7
Mean	109.0	109.0	111.8	117.7	139.4	139.8	116.6	137.1	145.5	138.1	138.6	124.9

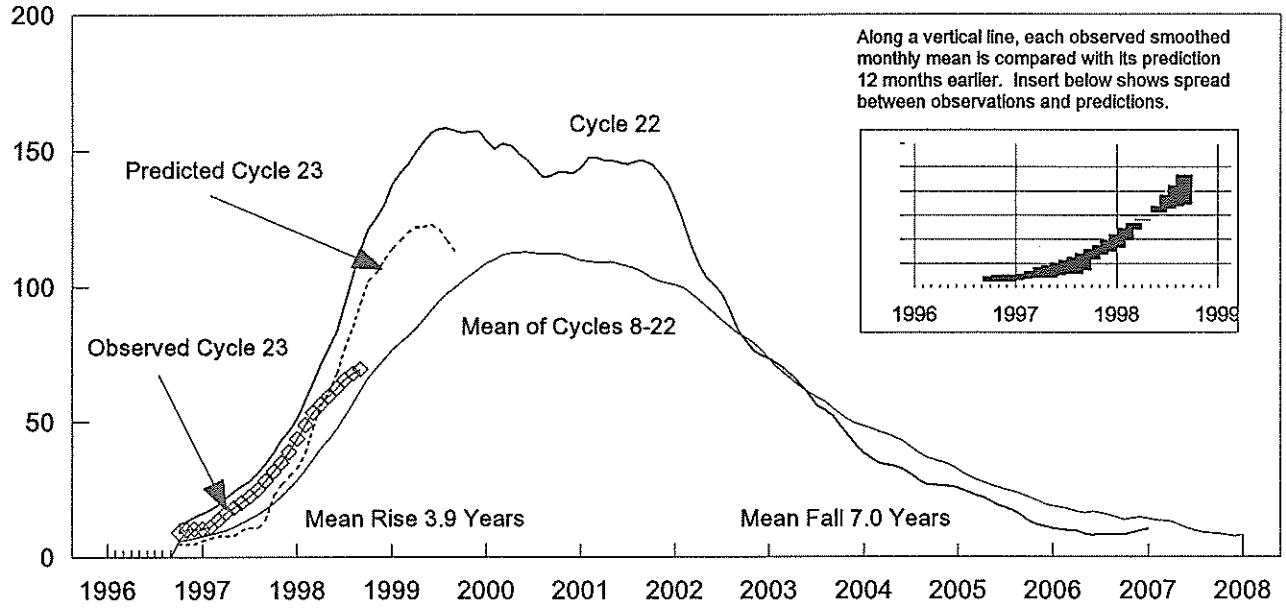
DAILY SOLAR INDICES
March 1999

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Pentic (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
1	60	25	77	74	120.2	508	309	163	118.0	113	89	53	36	16
2	61	26	88	99	129.9	511	320	175	127.6	124	96	56	45	27
3	62	27	102	101	137.0	517	331	174	134.6	127	98	56	45	37
4	63	1	96	101	144.1	516	268	180	141.6	131	102	60	49	44
5	64	2	99	92	127.5	515	265	177	125.4	124	101	58	43	29
6	65	3	79	65	114.4	506	260	167	112.6	120	95	58	42	20
7	66	4	43	44	110.0	501	--	144	108.3	126	96	59	42	19
8	67	5	41	49	126.9	514	261	163	125.0	119	95	59	39	18
9	68	6	63	66	127.1	515	254	167	125.3	123	97	59	41	18
10	69	7	61	64	135.4	512	263	172	133.6	124	101	60	39	19
11	70	8	76	67	137.0	500	315	176	135.3	128	106	60	42	21
12	71	9	87	73	140.3	501	255	165	138.5	126	101	56	45	37
13	72	10	76	84	144.4	514	277	185	142.7	136	114	64	43	21
14	73	11	94	86	150.4	512	277	184	148.7	146	119	68	44	24
15	74	12	91	79	150.1	--	--	165	148.4	153	108	--	44	23
16	75	13	97	97	155.7	525	300	196	154.1	144	114	67	45	38
17	76	14	99	99	154.5	520	285	188	152.9	145	114	65	43	46
18	77	15	96	91	148.1	511	253	182	146.7	142	110	61	40	21
19	78	16	101	91	139.3	--	263	178	138.1	135	108	63	55	46
20	79	17	88	76	132.7	518	270	169	131.6	122	102	61	40	20
21	80	18	71	80	124.0	513	270	168	123.1	120	98	60	40	17
22	81	19	61	37	115.9	511	274	155	115.0	110	91	56	38	17
23	82	20	28	32	112.9	509	214	154	112.2	106	88	58	39	17
24	83	21	41	37	108.2	481	250	149	107.6	103	84	56	37	15
25	84	22	37	34	107.0	--	--	--	106.4	--	--	--	--	--
26	85	23	29	29	103.6	502	263	145	103.1	98	82	53	37	16
27	86	24	27	25	104.5	505	272	148	104.1	99	82	56	37	17
28	87	25	37	37	103.0	477	239	141	102.7	94	80	51	38	17
29	88	26	51	53	104.2	503	263	148	103.8	97	83	54	40	20
30	89	27	55	52	104.7	490	265	146	104.4	97	83	53	36	18
31	90	1	51	51	101.9	501	273	148	101.7	99	81	51	36	16
MEAN			69.1	66.6	126.3	507	271	165	124.9	121	97	58	41	23

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

NOTE: Radio flux values are from Sagamore Hill, Masssachusetts, USA.

Cycle 23 Smoothed Sunspot Numbers: Observed and Predicted



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

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1992	124	115	108	103	100	97	91	84	80	76	74	73	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	15	13	12	11	11	17
1996	10	10	10	9	8*	9	8	8	8	9**	10	10	8
1997	11	11	14	17	18	20	23	25	28	32	35	39	23
1998	44	49	53	57	59	63	65	68	69	75	79	83	64
										(3)	(6)	(9)	(2)
1999	87	90	93	98	102	106	109	111	113	116	119	121	105
	(11)	(12)	(12)	(12)	(13)	(15)	(19)	(24)	(27)	(31)	(34)	(36)	(21)
2000	122	122	124	124	124	123	123	123	123	122	121	120	123
	(38)	(40)	(41)	(42)	(42)	(41)	(40)	(40)	(41)	(40)	(41)	(41)	(41)

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

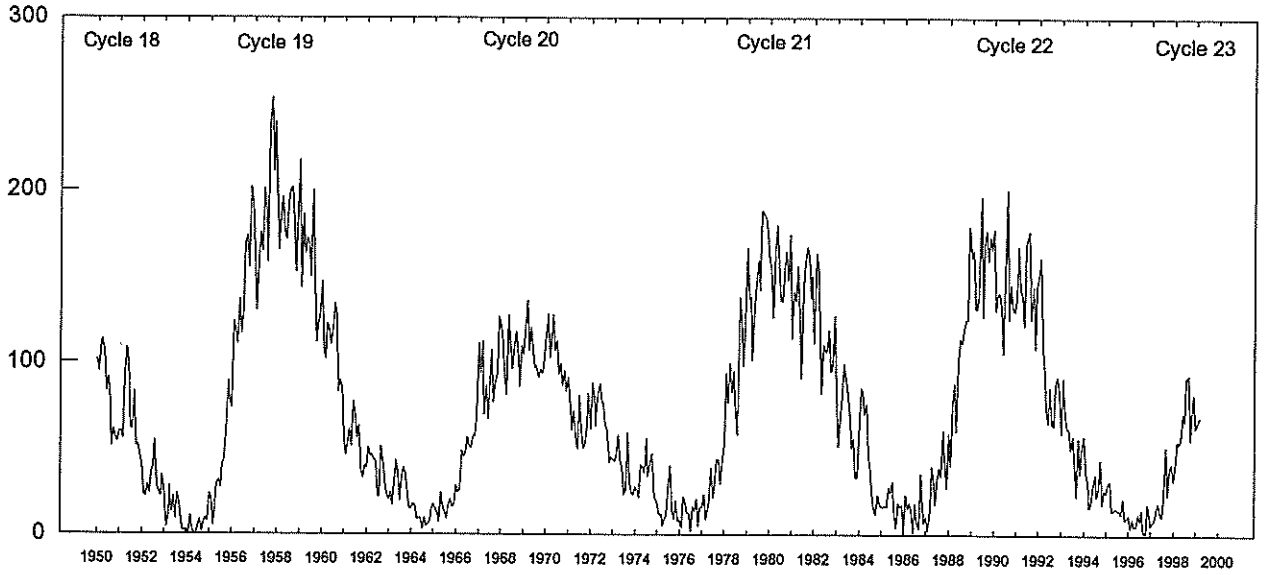
*** May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.**

Observed and Predicted Numbers. For the end of Cycle 22, and the rise and decline of Cycle 23, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Dec 1998 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 September 1999 prediction. There exists a 90% chance that in September 1999, the actual smoothed number will fall somewhere between 86 and 140.

Points to Ponder. The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 15 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the consensus minimum value of 8.8 that occurred in October 1996.

Note: Please visit http://www.sec.noaa.gov for solar minimum and Cycle 23 discussions.

Mean Monthly Sunspot Numbers
Jan 1950 - Mar 1999



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	21.1	9.0	10.0	17.5	
1996	11.5	4.4	9.2	4.8	5.5	11.8	8.2	14.4	1.6	0.9	17.9	13.3	8.6	m
1997	5.7	7.6	8.7	15.5	18.5	12.7	10.4	24.4	51.3	22.8	39.0	41.2	21.5	
1998	31.9	40.3	54.8	53.4	56.3	70.7	66.6	92.2	92.9	55.5	74.0	81.9	64.2	
1999	62.4	66.1	69.1										65.9	

Values are preliminary after Dec 98. 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

MARCH 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	01	0035	0052	0104						29		C 1.0						1.3E-03
GOES		0337	0345	0355	N29	W13	8471			18	SF	C 1.7						1.4E-03
LEAR		0341	0345	0352	N29	W13	8471	02	28.1	11	SF		3	E		38		
GOES		0528	0542	0605	N28	W17	8471			37	SF	C 2.0						3.5E-03
LEAR		0532	0535	0541	N28	W17	8471	02	28.0	9	SF		3	E		44		F
LEAR		0541	0542	0550	N28	W17	8471	02	28.0	9	SF		3	E		30		F
GOES		1329	1337	1348	N28	W19	8471			19	SF	C 3.1						2.4E-03
RAMY		1332	1335	1354	N28	W19	8471	02	28.1	22	SF		3	E		44		
HOLL		1434	1437	1452	N30	E21	8475	03	3.2	18	SF		3	E		14		
RAMY		1443	1443	1449	N30	E20	8475	03	3.2	6	SF		3	E		10		
HOLL		1722	1724	1731	N31	E19	8475	03	3.2	9	SF		3	E		19		
HOLL		1744	1749	1757	N31	E19	8475	03	3.2	13	SF		3	E		20		
GOES		1821	1827	1837						16		B 7.7						6.2E-04
GOES		2348	2353	2358						10		B 5.5						2.9E-04
GOES	02	0331	0335	0339						8		B 7.7						3.3E-04
GOES		0431	0435	0439						8		C 1.3						5.1E-04
GOES		0529	0532	0535						6		B 6.5						2.1E-04
LEAR		0635	0635	0639	N29	W27	8471	02	28.1	4	SF		4	E		11		
LEAR		0909	0916	0953	N17	W02	8476	03	2.2	44	SF		4	E		40		
LEAR		0926	0928	0933	N29	W06	8472	03	1.9	7	SF		4	E		14		
GOES		1056	1100	1102						6		B 6.9						2.0E-04
GOES		1204	1212	1220	N31	E11				16	SN	C 6.3						3.9E-03
RAMY		1209	1210	1234	N31	E11	8475	03	3.4	25	SN		3	E		85		
RAMY		1242	1242	1255	N17	W03	8476	03	2.3	13	SF		3	E		14		
GOES		1322	1330	1335	N17	W03	8476			13	SF	C 1.6						1.1E-03
RAMY		1324	1331	1343	N17	W03	8476	03	2.3	19	SF		3	E		36		
RAMY		1332	1333	1337	N30	W04	8472	03	2.2	5	SF		3	E		10		
RAMY		1345	1345	1354	N29	W32	8471	02	28.1	9	SF		3	E		32		
RAMY		1415	1417	1426	N29	E08	8475	03	3.2	11	SF		3	E		18		
HOLL		1419	1420	1427	N30	E09	8475	03	3.3	8	SF		3	E		21		
HOLL		1419	1530	1545	N17	W04	8476	03	2.3	86	SF		3	E		54		
RAMY		1434	1446	1503	N31	E08	8475	03	3.2	29	SF		3	E		44		
HOLL		1435	1512	1546	N30	E08	8475	03	3.2	71	SF		3	E		61		
HOLL		1447	1450	1547	N29	W34	8471	02	28.0	60	SF		3	E		50		F
GOES		1447	1519	1530	N28	W37	8471			43	1F	C 6.2						9.0E-03
RAMY		1450	1517	1552	N28	W37	8471	02	27.8	62	1F		3	E		100		F
RAMY		1504	1512	1525	N31	E09	8475	03	3.3	21	SF		3	E		54		
RAMY		1526	1534	1543	N30	E07	8475	03	3.2	17	SF		3	E		33		
RAMY		1549	1550	1557	N30	E07	8475	03	3.2	8	SF		3	E		36		
HOLL		1550	1550	1556	N31	E08	8475	03	3.3	6	SF		3	E		23		
HOLL		1638	1640	1646	N28	W38	8471	02	27.8	8	SF		3	E		15		
RAMY		1638	1641	1647	N27	W38	8471	02	27.8	9	SF		3	E		26		
RAMY		1708	1734	1753	N32	E08	8475	03	3.3	45	SF		3	E		41		
HOLL		1712	1712	1717	N31	E08	8475	03	3.3	5	SF		3	E		15		
HOLL		1754	1754	1805	N18	W06	8476	03	2.3	11	SF		3	E		12		
RAMY		1756	1757	1758	N29	E05	8475	03	3.1	2	SF		3	E		10		
HOLL		1819	1820	1826	N29	W36	8471	02	28.0	7	SF		3	E		19		
HOLL		2035	2036	2044	N30	E06	8475	03	3.3	9	SF		3	E		10		
GOES		2237	2240	2245						8		B 6.1						2.6E-04
GOES	03	0122	0128	0137	N27	W40	8471			15	SF	C 2.0						1.3E-03
LEAR		0125	0126	0139	N27	W40	8471	02	28.0	14	SF		3	E		29		F
GOES		0331	0345	0356	N27	W41	8471			25	SF	C 4.5						4.0E-03
LEAR		0334	0334	0340	N27	W41	8471	02	28.0	6	SF		3	E		23		
LEAR		0342	0343	0359	N27	W41	8471	02	28.0	17	SF		3	E		45		F
LEAR		0458	0459	0506	N16	W13	8476	03	2.2	8	SF		4	E		20		
GOES		0558	0602	0604	N16	W16	8476			6	SF	C 1.5						3.6E-04
LEAR		0601	0602	0611	N16	W16	8476	03	2.0	10	SF		4	E		32		
GOES		0747	0750	0752	N18	W13	8476			5	SF	B 7.6						1.6E-04
LEAR		0750	0751	0753	N18	W13	8476	03	2.3	3	SF		4	E		26		
GOES		0753	0757	0800						7		B 7.1						2.6E-04
RAMY		1322	1324	1331	N28	W50	8471	02	27.7	9	SF		3	E		29		
GOES		1322	1325	1327	N28	W50	8471			5	SF	B 8.1						2.2E-04
RAMY		1348	1348	1354	N28	W50	8471	02	27.8	6	SF		3	E		21		
HOLL		1413	1414	1420	N17	W17	8476	03	2.3	7	SF		3	E		25		
HOLL		1526	1527	1546	N17	W17	8476	03	2.3	20	SF		3	E		17		
RAMY		1528	1529	1546	N17	W17	8476	03	2.3	18	SF		3	E		30		

Hα SOLAR FLARES

MARCH 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	03	1536	1537	1546	N28	W51	8471	02	27.8	10	SF		3	E		19		
RAMY		1536	1537	1547	N28	W51	8471	02	27.8	11	SF		3	E		19		
HOLL		1601	1608	1625D	N29	W51	8471	02	27.8	24D	SF		3	E		18		
HOLL		1605	1609	1624D	N17	W17	8476	03	2.4	19D	SF		3	E		15		
RAMY		1608	1609	1618	N17	W18	8476	03	2.3	10	SF		3	E		16		
HOLL		1632	1632	1637	N28	W43	8471	02	28.3	5	SF		3	E		15		
GOES		1649	1654	1705	N18	W18	8476			16	SF	C 1.1						9.3E-04
HOLL		1652	1652	1703	N18	W18	8476	03	2.3	11	SF		3	E		39		
GOES		1713	1716	1719						6		B 9.6						3.1E-04
RAMY		1731	1731	1734	N17	W19	8476	03	2.3	3	SF		3	E		16		
HOLL		1819	1820	1826	N29	W36	8471	02	28.9	7	SF		3	E		19		
RAMY		1834	1835	1842	N17	W21	8476	03	2.2	8	SF		3	E		13		
HOLL		1847	1855	1904	N18	W19	8476	03	2.3	17	SF		3	E		25		
RAMY		1848	1850	1855	N28	W52	8471	02	27.8	7	SF		3	E		30		
GOES		1944	1947	1949						5		B 6.9						1.7E-04
HOLL		2018	2020	2040	N17	W21	8476	03	2.2	22	SF		3	E		40		
HOLL		2041	2045	2053	N17	W21	8476	03	2.3	12	SF		3	E		20		
GOES		2333	2343	2350	N33	W04	8475			17	1F	C 3.0						2.0E-03
LEAR		2336	2342	2342D	N32	W05	8475	03	3.6	6D	SF		3	E		88		
HOLL		2336	2343	2404	N33	W04	8475	03	3.7	28	1F		3	E		160		
GOES	04	0258	0303	0312						14		B 7.3						5.4E-04
GOES		0507	0514	0523	N32	W09				16	SF	C 3.3						0.0E+00
LEAR		0510	0514	0529	N32	W09	8475	03	3.5	19	SF		4	E		69		F
GOES		1559	1609	1615	S25	E30	8477			16	SF	C 1.0						8.5E-04
RAMY		1602	1609	1623	S25	E30	8477	03	7.0	21	SF		3	E		37		
RAMY		1808	1808	1814	N31	W16	8475	03	3.5	6	SF		3	E		25		
GOES		1926	1931	1937						11		C 1.4						7.8E-04
GOES		2013	2018	2025						12		C 1.2						8.3E-04
GOES	05	0506	0510	0516						10		B 8.0						4.0E-04
GOES		0819	0836	0846						27		C 1.0						1.5E-03
GOES		0949	0956	1005						16		B 9.8						8.5E-04
RAMY		1727	1728	1736	S25	E18	8477	03	7.1	9	SF		4	E		13		
RAMY		1834	1837	1844	S15	W66	8478	02	28.8	10	SF		4	E		14		
GOES		1909	1925	1944	S25	E16				35	1N	C 3.7						5.8E-03
RAMY		1910	1916	2023D	S25	E16	8477	03	7.0	73D	1N		4	E		131		F
HOLL		1910	1917	2008	S25	E14	8477	03	6.9	58	1F		3	E		142		
GOES	06	0051	0100	0141						50		B 7.4						1.9E-03
GOES		0251	0258	0305						14		B 8.1						5.6E-04
RAMY		1241	1241	1246	N30	W39	8475	03	3.5	5	SF		4	E		11		
GOES		1401	1410	1418						17		C 1.4						1.2E-03
RAMY		1916	1917	1920	S17	W79	8478	02	28.8	4	SF		4	E		13		
RAMY		1956	1956	2009	S29	E07	8477	03	7.4	13	SF		4	E		11		
RAMY		2105	2111	2118	S29	E06	8477	03	7.3	13	SF		4	E		20		
GOES		2305	2323	2354	N30	W46	8475			49	SF	C 2.7						6.9E-03
LEAR		2309	2326	2351	N30	W46	8475	03	3.3	42	SF		3	E		47		E
GOES	07	0354	0408	0415	S24	W03	8477			21	SF	C 2.9						2.5E-03
LEAR		0356	0407	0427	S24	W03	8477	03	6.9	31	SF		3	E		70		E
GOES	08	0008	0031	0036						28		C 7.9						4.9E-03
GOES		0352	0355	0358						6		B 5.8						1.9E-04
GOES		0553	0559	0602						9		B 6.2						2.9E-04
GOES		0630	0637	0643	S24	E93	8484			13	SF	M 2.6						1.0E-02
LEAR		0635	0635	0650	S24	E93		03	15.4	15	SF		3	E		57		
RAMY		1540	1542	1546	N22	E71		03	14.1	6	SF		3	E		30		
HOLL		1541	1542	1546	N22	E73		03	14.3	5	SF		3	E		21		
HOLL	09	0002	0005	0016	S19	W30	8483	03	6.7	14	SF		3	E		43		
GOES		0043	0046	0048						5		B 7.1						1.8E-04
GOES		0347	0353	0359						12		C 1.6						8.4E-04
GOES		0410	0413	0415						5		B 8.3						2.1E-04
GOES		0533	0537	0540						7		B 8.9						2.6E-04
GOES		1054	1059	1106						12		B 7.0						4.2E-04
RAMY		1735	1737U	1826D	S25	E69	8484	03	15.1	51D	SF		3	E		11		
HOLL		1744	1826	1841	S26	E71	8484	03	15.2	57	1F		3	E		150		

Hα S O L A R F L A R E S

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	09	1815	1818	1825	N20	E57	8485	03	14.1	10	SF		3	E		15		
GOES		1823	1830	1834			8485			11		C 2.0						9.7E-04
HOLL		1843	1847	1855	S24	E69	8484	03	15.1	12	SF		3	E		50		H
GOES		2004	2010	2015	S24	E68	8484			11	SF	C 1.1						6.2E-04
HOLL		2007	2010	2030	S24	E68	8484	03	15.1	23	SF		3	E		56		
HOLL		2140	2147	2159	S24	E68	8484	03	15.1	19	SF		3	E		32		
GOES		2245	2257	2303	S24	E66	8484			18	1F	C 3.2						2.1E-03
HOLL		2247	2254	2322	S24	E66	8484	03	15.0	35	1F		3	E		120		ZF
LEAR		2300E	2302U	2312	S25	E62	8484	03	14.8	12D	SF		3	E		13		
GOES		2323	2327	2335						12		B 8.5						5.4E-04
GOES	10	0220	0225	0231	N23	E55				11	SF	B 8.7						4.4E-04
LEAR		0225	0226U	0310D	N23	E55	8485	03	14.3	45D	SF		3	E		27		
GOES		0317	0324	0327						10		C 1.6						5.5E-04
GOES		0501	0506	0510	N20	E50				9	SF	B 7.9						3.3E-04
LEAR		0504	0506	0511	N20	E50	8485	03	14.0	7	SF		3	E		25		
GOES		0938	0943	0950						12		C 1.0						5.7E-04
GOES		1345	1348	1350						5		B 5.1						1.4E-04
HOLL		1421	1422	1426	N22	E49	8485	03	14.4	5	SF		3	E		29		
GOES		1541	1553	1555	N22	E45	8485			14	SF	B 9.1						5.2E-04
RAMY		1544	1546	1555	N22	E45	8485	03	14.1	11	SF		3	E		31		
GOES		1610	1614	1618	S29	W43	8477			8	SF	B 8.6						3.5E-04
RAMY		1612	1613	1630	S29	W43	8477	03	7.3	18	SF		3	E		23		F
GOES		1828	1833	1835						7		C 1.1						3.6E-04
RAMY		1917	1917	1933	S30	W45	8477	03	7.3	16	SF		3	E		21		
GOES		2024	2028	2040	N23	E45	8485			16	SF	B 9.5						8.2E-04
RAMY		2027	2029	2040D	N23	E45	8485	03	14.3	13D	SF		3	E		25		
RAMY		2031	2031	2036	S25	E55	8484	03	15.1	5	SF		3	E		27		F
GOES		2211	2215	2221						10		B 8.6						4.5E-04
GOES		2243	2247	2249	S17	W64	8483			6	SF	C 1.4						4.0E-04
HOLL		2246	2247	2253	S17	W64	8483	03	6.1	7	SF		3	E		18		
GOES		2348	2352	2355	S17	W63	8483			7	SF	B 5.2						1.9E-04
HOLL		2351	2354	2358	S17	W63	8483	03	6.2	7	SF		3	E		10		
GOES	11	0004	0009	0011	S17	W63	8483			7	SF	C 8.7						1.6E-03
HOLL		0005	0009	0016	S17	W63	8483	03	6.2	11	SF		3	E		86		H
LEAR		0007	0008	0013	S20	W63	8483	03	6.2	6	SF		4	E		40		
HOLL		0019	0021	0035	S18	W64	8483	03	6.1	16	SF		3	E		41		H
GOES		0155	0158	0200						5		B 5.8						1.5E-04
LEAR		0634	0644	0649	N16	E76		03	17.0	15	SF		3	E		50		F
GOES		0638	0646	0648	N16	E76				10	SF	C 1.7						7.9E-04
LEAR		0746	0748	0751	N16	E74		03	16.9	5	SF		4	E		16		
LEAR		0819	0824	0833	N16	E74		03	16.9	14	SF		3	E		28		F
GOES		0821	0825	0827	N16	E74	8487			6	SF	C 5.0						8.4E-04
LEAR		0824	0825	0829	S20	W70	8483	03	6.0	5	SF		3	E		30		F
GOES		0911	0922	0925						14		B 7.2						5.1E-04
LEAR		0926	0936	0948D	N17	E71		03	16.8	22D	SF		3	E		49		F
GOES		1002	1006	1009						7		C 2.0						6.1E-04
RAMY		1123E	1125U	1135D	N20	E33	8485	03	14.0	12D	SF		2	E		18		
GOES		1142	1147	1151						9		B 9.3						3.9E-04
GOES		1154	1157	1159	N15	E71	8487			5	SF	C 2.0						3.7E-04
RAMY		1158	1159	1204	N15	E71		03	16.9	6	SF		3	E		97		H
RAMY		1207	1207	1214	N20	E33	8485	03	14.0	7	SF		3	E		23		
RAMY		1312	1324	1335	N14	E71		03	16.9	23	SF		3	E		70		FH
RAMY		1414	1414	1430	N14	E71		03	16.9	16	SF		3	E		11		H
RAMY		1503	1503	1508	N14	E70		03	16.9	5	SF		3	E		30		H
RAMY		1532	1533	1538	S20	W68	8483	03	6.4	6	SF		3	E		16		
RAMY		1544	1545	1548	N14	E70		03	16.9	4	SF		3	E		18		
RAMY		1620	1620	1626	S30	W57	8477	03	7.2	6	SF		3	E		11		
RAMY		1658	1659	1710	S20	W71	8483	03	6.3	12	SF		4	E		25		
GOES		1714	1717	1719	S18	W70	8483			5	SN	C 2.8						3.7E-04
RAMY		1716	1717	1722	S18	W70	8483	03	6.4	6	SN		4	E		91		H
GOES		1914	1918	1921	N17	E68				7	SF	B 8.8						3.4E-04
HOLL		1915	1918	1924	N17	E68		03	17.0	9	SF		3	E		27		
RAMY		1959E	2001	2003	S19	W77	8483	03	5.9	4D	SF		3	E		10		H
GOES		2030	2034	2036	N16	E64	8487			6	SF	C 6.1						8.0E-04
HOLL		2032	2033	2037	N16	E64	8487	03	16.7	5	SF		3	E		86		
GOES		2041	2046	2048						7		C 1.4						3.9E-04

Hα SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	11	2255	2257	2303	N17	E63	8487	03	16.7	8	SF		3	E		17		
HOLL		2333	2336	2346	N16	E63	8487	03	16.7	13	SF		3	E		35		
LEAR		2336	2336	2339	N15	E63	8487	03	16.7	3	SF		3	E		17		
HOLL		2355E	2404	2413	N19	E25	8485	03	13.9	18D	SF		2	E		36		
GOES	12	0003	0007	0009	N20	E24	8485			6	SF	C 1.3						3.7E-04
LEAR		0005	0007	0013	N20	E24	8485	03	13.8	8	SF		3	E		17		
LEAR		0009	0010	0016	N15	E66	8487	03	17.0	7	SF		3	E		24		
GOES		0053	0056	0058						5		B 8.4						2.2E-04
LEAR		0643	0650	0654	N15	E59	8487	03	16.7	11	SF		3	E		28		H
GOES		0646	0651	0653	N15	E59	8487			7	SF	C 2.3						5.9E-04
LEAR		0740	0754	0801	N15	E58	8487	03	16.7	21	SF		3	E		35		EH
GOES		0747	0752	0754	N15	E58	8487			7	SF	C 1.8						4.6E-04
GOES		0755	0758	0801						6		C 2.6						7.5E-04
LEAR		0853	0856	0903	N15	E57	8487	03	16.7	10	SN		3	E		70		EH
GOES		0853	0856	0904	N15	E57	8487			11	SN	C 1.0						6.2E-04
LEAR		0930	0931	0935	N15	E55	8487	03	16.5	5	SF		3	E		36		
RAMY		1235	1237	1241	N14	E57	8487	03	16.8	6	SF		3	E		35		
RAMY		1322	1325	1328	N14	E55	8487	03	16.7	6	SF		3	E		16		
GOES		1326	1329	1331	N19	E16	8487			5	SF	B 7.7						1.9E-04
RAMY		1328	1329	1332	N19	E16	8485	03	13.8	4	SF		3	E		17		
RAMY		1333	1335	1336	N14	E57	8487	03	16.9	3	SF		3	E		14		
RAMY		1423	1429	1438	N14	E56	8487	03	16.8	15	SF		3	E		18		
HOLL		1429	1429	1452	N15	E56	8487	03	16.8	23	SF		3	E		35		
RAMY		1439	1441	1442	N14	E55	8487	03	16.8	3	SF		3	E		19		
RAMY		1443	1443	1446	N14	E55	8487	03	16.8	3	SF		3	E		16		
HOLL		1457	1540	1551	N14	E55	8487	03	16.8	54	SF		3	E		24		
GOES		1459	1503	1505	N14	E55				6	SF	B 8.1						2.4E-04
RAMY		1539	1539	1542	N14	E56	8487	03	16.9	3	SF		3	E		14		
RAMY		1543	1543	1546	N14	E55	8487	03	16.8	3	SF		3	E		12		
HOLL		1548	1553	1616	N21	E19	8485	03	14.1	28	SF		3	E		54		
GOES		1548	1555	1607	N21	E19	8485			19	SF	C 1.0						9.8E-04
RAMY		1550	1553	1615	N21	E19	8485	03	14.1	25	SF		4	E		35		
GOES		1633	1637	1639	N19	E15	8485			6	SF	C 1.1						3.4E-04
RAMY		1634	1636	1639	N19	E15	8485	03	13.8	5	SF		4	E		17		
HOLL		1634	1636	1640	N19	E14	8485	03	13.7	6	SF		3	E		27		
HOLL		1718	1728	1749	N14	E54	8487	03	16.8	31	2N		3	E		288		F
RAMY		1719	1727	1743	N14	E55	8487	03	16.9	24	1B		4	E		228		H
GOES		1720	1726	1732	N14	E55	8487			12	1B	C 9.4						3.7E-03
HOLL		1751	1752	1757	N19	E14	8485	03	13.8	6	SF		3	E		16		
RAMY		1752	1752	1759	N19	E14	8485	03	13.8	7	SF		4	E		18		
GOES		1820	1824	1830	N19	E13	8485			10	SF	C 1.0						5.0E-04
RAMY		1822	1827	1831	N19	E13	8485	03	13.7	9	SF		4	E		17		
HOLL		1839	1841	1844	N16	E53	8487	03	16.8	5	SF		3	E		18		
HOLL		1939	1940	1949	N17	E52	8487	03	16.8	10	SF		3	E		52		
RAMY		1939	1946	1950	N15	E53	8487	03	16.8	11	SF		3	E		28		
GOES		2033	2038	2040	N13	E52	8487			7	1B	C 3.2						6.5E-04
RAMY		2037	2037	2047	N13	E52	8487	03	16.8	10	1B		3	E		121		
HOLL		2039E	2039U	2040D	N17	E51	8487	03	16.7	1D	1F		2	E		101		
GOES		2155	2227	2233	N14	E53	8485			38	SF	B 8.6						1.5E-03
RAMY		2156E	2158U	2206	N13	E54	8487	03	17.0	10D	SF		2	E		15		
HOLL		2157	2159	2208	N14	E53	8487	03	16.9	11	SF		3	E		26		F
HOLL		2227	2227	2231	N19	E11	8485	03	13.8	4	SF		3	E		25		
GOES		2317	2341	2346	N17	E51	8487			29	SF	C 1.3						1.8E-03
HOLL		2321	2321	2330	N16	E50	8487	03	16.8	9	SF		3	E		54		
LEAR		2321	2326	2335	N16	E50	8487	03	16.8	14	SF		3	E		11		
LEAR		2338	2340	2402	N17	E51	8487	03	16.9	24	SF		4	E		30		F
HOLL		2339	2342U	2344D	N16	E50	8487	03	16.8	5D	SF		2	E		39		
GOES	13	0151	0155	0204						13		C 1.0						7.0E-04
GOES		0337	0343	0345	N15	E49	8487			8	SF	C 1.1						4.8E-04
LEAR		0338	0339	0343	N15	E49	8487	03	16.9	5	SF		3	E		20		
LEAR		0428	0430	0439	N17	E48	8487	03	16.8	11	SF		3	E		19		
GOES		0459	0502	0504	N15	E47	8487			5	SF	C 1.1						2.4E-04
LEAR		0501	0502	0505	N15	E47	8487	03	16.8	4	SF		3	E		16		
GOES		0506	0516	0530	N17	E50	8487			24	SF	C 2.7						2.7E-03
LEAR		0510	0525	0535	N17	E50	8487	03	17.0	25	SF		3	E		46		F
LEAR		0536	0545	0551	N17	E48	8487	03	16.9	15	SF		3	E		15		F

Hα S O L A R F L A R E S

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	13	0551	0557	0613	N17	E48	8487	03	16.9	22	SF		3	E		17		F
GOES		0904	0909	0913						9		C 1.1						5.0E-04
GOES		1048	1054	1100						12		C 4.3						2.0E-03
GOES		1114	1122	1134	N15	E47				20	SF	C 2.7						2.5E-03
RAMY		1120E	1121U	1137D	N15	E47	8487	03	17.0	17D	SF		2	E		31		
HOLL		1420	1424	1429	N17	E43	8487	03	16.9	9	SF		3	E		19		F
HOLL		1430	1435	1439	N17	E43	8487	03	16.9	9	SF		3	E		26		
HOLL		1519	1522	1527	N17	E42	8487	03	16.8	8	SF		3	E		13		F
HOLL		1537	1541	1551	N17	E42	8487	03	16.8	14	SF		3	E		21		F
RAMY		1634	1637	1643	N22	E02	8485	03	13.8	9	SF		3	E		11		F
RAMY		1655	1712	1722	N22	E02	8485	03	13.8	27	SF		3	E		28		
HOLL		1657	1712	1719	N23	E02	8485	03	13.9	22	SF		3	E		24		F
HOLL		1731	1734	1739	N16	E42	8487	03	16.9	8	SF		3	E		26		F
RAMY		1732	1734	1738	N15	E43	8487	03	17.0	6	SF		3	E		15		
RAMY		1853	1854	1913	N24	E01	8485	03	13.9	20	SF		3	E		20		
RAMY		1951	1951	1958	N15	E39	8487	03	16.8	7	SF		3	E		25		
HOLL		1959	2002	2007	N17	E40	8487	03	16.9	8	SF		3	E		12		F
HOLL		2018	2018	2023	N17	E39	8487	03	16.8	5	SF		3	E		16		F
GOES		2022	2034	2039	N17	E39	8487			17	SF	M 1.9						1.2E-02
HOLL		2023	2037	2112	N17	E41	8487	03	17.0	49	1N		3	E		141		
RAMY		2024	2028	2122D	N14	E40	8487	03	16.9	58D	1N		3	E		107		E
LEAR	14	0113	0113	0118	N21	W01	8485	03	14.0	5	SF		4	E		15		E
GOES		0119	0127	0140	N15	E39				21	1N	M 2.1						1.8E-02
LEAR		0122	0125	0156	N15	E39	8487	03	17.0	34	1N		4	E		101		ZF
LEAR		0156	0158	0201	N23	W01	8485	03	14.0	5	SF		4	E		12		
LEAR		0216	0216	0226	N21	E00	8485	03	14.1	10	SF		4	E		21		
LEAR		0248	0250	0302	N24	W03	8485	03	13.9	14	SF		4	E		27		E
GOES		0406	0415	0429	N21	W03	8485			23	SF	C 1.5						1.9E-03
LEAR		0407	0412	0426	N21	W03	8485	03	13.9	19	SF		4	E		25		E
LEAR		0427	0439	0443	N24	W02	8485	03	14.0	16	SF		3	E		10		
GOES		0607	0615	0623	N25	W05	8485			16	SF	C 1.9						1.5E-03
LEAR		0608	0610	0623	N25	W05	8485	03	13.9	15	SF		4	E		28		E
GOES		0908	1010	1025	N16	E34	8487			77	SF	M 1.1						3.2E-02
LEAR		0910	0916	1023D	N16	E34	8487	03	17.0	73D	SF		3	E		83		E
RAMY		1258	1301	1310	N22	W08	8485	03	13.9	12	SF		3	E		16		
HOLL		1336E	1336U	1450	N17	E29	8487	03	16.8	74D	SN		3	E		89		F
GOES		1338	1350	1411	N15	E30	8487			33	SN	C 7.5						1.1E-02
RAMY		1342	1345	1418	N15	E30	8487	03	16.8	36	SN		3	E		83		
HOLL		1458	1501	1508	N21	W11	8485	03	13.8	10	SF		3	E		22		
HOLL		1555	1555	1601	N21	W09	8485	03	14.0	6	SF		3	E		10		
HOLL		1606	1607	1619	N21	W11	8485	03	13.8	13	SF		3	E		36		
RAMY		1607	1608	1617	N21	W11	8485	03	13.8	10	SF		3	E		22		
GOES	15	0038	0041	0043						5		B 7.4						1.8E-04
GOES		0157	0201	0203						6		B 8.2						2.5E-04
GOES		0317	0336	0350	N16	E26				33	1N	M 1.1						1.3E-02
LEAR		0322	0335	0410	N16	E26	8487	03	17.1	48	1N		3	E		176		UF
LEAR		0338	0340	0342	N22	W17	8485	03	13.8	4	SF		3	E		13		
LEAR		0348	0351	0359	N22	W16	8485	03	13.9	11	SF		3	E		45		F
GOES		0621	0701	0744						83		C 1.6						6.2E-03
LEAR		0705	0705	0725	N17	E19	8487	03	16.7	20	SF		3	E		10		
GOES		0822	0825	0827	N19	W20	8485			5	SF	C 1.6						4.1E-04
LEAR		0823	0825	0829	N19	W20	8485	03	13.8	6	SF		3	E		26		
LEAR		0834	0835	0839	N23	W18	8485	03	14.0	5	SF		3	E		12		
RAMY		1118E	1124U	1144	N22	W20	8485	03	13.9	26D	SF		3	E		30		F
GOES		1118	1126	1131	N22	W20				13	SF	C 2.1						1.1E-03
GOES		1231	1253	1302						31		C 1.3						1.6E-03
GOES		1404	1409	1421						17		B 6.4						5.7E-04
HOLL		1514	1514	1520	N23	W23	8485	03	13.9	6	SF		3	E		11		
GOES		1549	1553	1557						8		B 7.1						3.1E-04
GOES		1644	1649	1657	N21	W24	8485			13	1F	C 3.3						1.8E-03
HOLL		1647	1647	1703	N23	W22	8485	03	14.0	16	SF		3	E		88		
RAMY		1647	1647	1704	N21	W24	8485	03	13.8	17	1F		3	E		117		FE
HOLL		1750	1752	1755	N23	W25	8485	03	13.8	5	SF		3	E		13		
RAMY		1816	1818	1821	N15	E14	8487	03	16.8	5	SF		3	E		12		
RAMY		1840	1841	1848	N15	E15	8487	03	16.9	8	SF		3	E		12		
RAMY		1913	1916	1918	N15	E14	8487	03	16.9	5	SF		3	E		10		

Hα SOLAR FLARES

MARCH 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	15	2122	2125	2127						5		C 1.7						3.9E-04
GOES		2316	2321	2323	N19	W28	8485			7	SF	C 2.0						4.9E-04
LEAR		2320	2322	2325	N19	W28	8485	03	13.8	5	SF		3	E		52		
GOES	16	0028	0031	0033						5		B 9.2						2.2E-04
GOES		0132	0136	0138						6		C 1.2						3.2E-04
GOES		0249	0252	0255						6		C 2.2						5.4E-04
GOES		0439	0443	0446						7		C 1.8						6.5E-04
GOES		0618	0635	0656	N22	W31				38	1F	M 1.6						2.4E-02
LEAR		0626	0628	0726	N22	W31	8485	03	13.9	60	1F		3	E		169		F
LEAR		0819	0823	0828	N15	E10	8487	03	17.1	9	SF		3	E		13		F
GOES		0848	0851	0853						5		B 6.8						1.7E-04
GOES		0932	0942	0959	N23	W28	8485			27	SF	C 4.1						4.8E-03
LEAR		0936	0942	1002	N23	W28	8485	03	14.2	26	SF		2	E		38		
GOES		1158	1204	1210						12		C 2.3						1.2E-03
GOES		1227	1230	1232						5		B 9.3						2.5E-04
GOES		1321	1329	1337	N21	W33	8485			16	SF	C 3.7						2.4E-03
RAMY		1324	1328	1346	N21	W33	8485	03	14.0	22	SF		3	E		35		
GOES		1411	1416	1427	N21	W34	8485			16	SF	B 8.1						6.9E-04
RAMY		1417	1419	1437	N21	W34	8485	03	14.0	20	SF		3	E		24		
RAMY		1431	1433	1442	N15	E06	8487	03	17.0	11	SF		3	E		28		F
HOLL		1456	1456	1506	N23	W34	8485	03	14.0	10	SF		3	E		21		
HOLL		1547	1550	1554	N17	E03	8487	03	16.9	7	SF		3	E		25		
RAMY		1548	1549	1553	N17	E03	8487	03	16.9	5	SF		3	E		22		
GOES		1600	1608	1611	N25	W42	8485			11	SF	C 1.4						7.4E-04
RAMY		1608	1608	1612	N25	W42	8485	03	13.4	4	SF		3	E		29		FH
RAMY		1647	1648	1654	N17	E03	8487	03	16.9	7	SF		3	E		17		
RAMY		1653	1658	1708	N24	W39	8485	03	13.7	15	SF		3	E		14		
RAMY		1708	1711	1727	N21	W36	8485	03	13.9	19	SF		3	E		42		FH
GOES		1708	1718	1736	N21	W36	8485			28	SF	C 2.0						2.7E-03
HOLL		1711	1712	1719	N22	W37	8485	03	13.9	8	SF		3	E		32		
RAMY		1746	1754	1758	N16	E02	8487	03	16.9	12	SF		3	E		12		
HOLL		1749	1753	1756	N18	E02	8487	03	16.9	7	SF		3	E		15		
GOES		1822	1829	1839	N22	W37	8485			17	SF	C 4.6						3.2E-03
RAMY		1824	1902	2039D	N22	W37	8485	03	13.9	135D	SF		3	E		67		FH
HOLL		1827	1837	1845	N22	W37	8485	03	13.9	18	SF		3	E		14		
GOES		1857	1902	1909	N22	W38				12	SF	C 5.0						2.7E-03
HOLL		1859	1916	1936	N22	W38	8485	03	13.9	37	SF		3	E		74		
GOES		1925	1930	1934						9		C 2.7						1.3E-03
GOES		1947	1951	1957						10		C 2.4						1.3E-03
GOES		2007	2021	2027	N20	W40	8485			20	SF	C 3.4						3.2E-03
HOLL		2010	2012	2033	N20	W40	8485	03	13.8	23	SF		3	E		28		
GOES		2042	2045	2050						8		C 1.9						8.2E-04
RAMY		2051E	2052U	2059	N22	W38	8485	03	13.9	8D	SF		3	E		53		F
GOES		2101	2107	2114	N23	W36				13	1N	M 1.1						5.4E-03
RAMY		2102	2110	2132D	N23	W36	8485	03	14.1	30D	1N		3	E		165		UF
HOLL		2104	2144	2221	N23	W39	8485	03	13.9	77	2N		3	E		268		
GOES		2134	2141	2146	N23	W39				12	2N	M 6.2						2.5E-02
GOES		2245	2251	2257						12		C 1.1						7.0E-04
GOES		2358	2402	2408						10		C 1.0						5.4E-04
GOES	17	0339	0342	0345	N22	W47	8485			6	SF	C 1.1						3.4E-04
LEAR		0342	0342	0347	N22	W47	8485	03	13.5	5	SF		4	E		11		
GOES		0356	0359	0402	N22	W41	8485			6	SF	C 1.0						3.2E-04
LEAR		0358	0359	0405	N22	W41	8485	03	14.0	7	SF		4	E		19		F
LEAR		0426	0427	0430	N22	W41	8485	03	14.0	4	SF		3	E		22		
GOES		0453	0506	0519	N22	W41	8485			26	SF	C 1.3						1.8E-03
LEAR		0456	0456	0503	N22	W41	8485	03	14.0	7	SF		3	E		24		
GOES		0835	0840	0853						18		C 1.1						1.2E-03
GOES		0950	0956	1005	N23	W44				15	1F	M 3.2						2.0E-02
SVTO		1007	1022	1041	N23	W45	8485	03	13.9	34	2N		3	E		507		
SVTO		1035	1037	1059	N16	W07	8487	03	16.9	24	SF		2	E		32		
GOES		1130	1143	1150	N25	W43				20	SF	C 4.8						3.7E-03
SVTO		1134	1144	1207	N25	W43	8485	03	14.1	33	SF		3	E		61		F
RAMY		1142	1143	1207	N22	W46	8485	03	13.9	25	SF		3	E		23		F
GOES		1207	1214	1219	N23	W44	8485			12	SF	C 2.2						1.3E-03
RAMY		1210	1212	1233	N23	W44	8485	03	14.1	23	SF		3	E		31		
SVTO		1210	1212	1249	N23	W46	8485	03	14.0	39	SF		3	E		36		F

Hα SOLAR FLARES

MARCH 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	17	1224	1229	1242	N24	W44	8485			18	SF	C 2.5						2.4E-03
RAMY		1234	1236	1252	N24	W44	8485	03	14.1	18	SF		3	E		11		
RAMY		1357	1405	1417	N25	W50	8485	03	13.7	20	SF		3	E		40		
GOES		1359	1406	1423	N25	W50	8485			24	SF	C 1.8						2.3E-03
RAMY		1422	1430	1432	N21	W49	8485	03	13.8	10	SF		4	E		11		F
GOES		1442	1449	1458	N23	W46	8485			16	SN	M 1.2						7.7E-03
RAMY		1445	1446	1526	N23	W46	8485	03	14.1	41	SN		4	E		92		F
GOES		1828	1832	1835						7		B 9.7						3.7E-04
GOES		2011	2018	2023						12		C 1.6						9.1E-04
GOES		2037	2040	2100	N22	W50	8485			23	SF	C 1.0						1.3E-03
RAMY		2041E	2041U	2050	N22	W50	8485	03	14.0	9D	SF		2	E		17		
GOES		2145	2156	2200						15		C 9.5						4.8E-03
GOES		2236	2241	2243						7		C 1.2						4.3E-04
GOES	18	0016	0021	0026						10		C 4.0						1.6E-03
GOES		0032	0036	0039						7		C 3.1						1.1E-03
GOES		0047	0052	0107						20		C 2.4						2.5E-03
GOES		0358	0404	0413						15		C 5.2						3.3E-03
GOES		0519	0525	0528						9		C 3.0						1.0E-03
GOES		0718	0728	0733						15		C 3.1						1.6E-03
GOES		0810	0815	0818						8		C 1.5						5.7E-04
GOES		0825	0831	0835						10		M 3.3						9.2E-03
RAMY		1258	1320	1339	N26	W70	8485	03	13.1	41	1F		4	E		120		H
GOES		1304	1327	1338	N26	W70	8485			34	1F	C 2.1						3.0E-03
GOES		1408	1422	1438	N27	W74	8485			30	1N	C 5.3						6.8E-03
RAMY		1411	1415	1441	N27	W74	8485	03	12.8	30	1N		4	E		170		FH
RAMY		1557	1558	1623	N24	W58	8485	03	14.2	26	SF		3	E		13		
GOES		1559	1603	1607	N24	W58	8485			8	SF	C 1.6						5.9E-04
GOES		1738	1745	1749	N23	W62	8485			11	SF	C 2.0						9.0E-04
RAMY		1741	1744	1756	N23	W62	8485	03	13.9	15	SF		3	E		57		
GOES		1822	1827	1832	N24	W62	8485			10	SF	C 1.5						6.7E-04
RAMY		1825	1829	1849	N24	W62	8485	03	14.0	24	SF		3	E		48		
GOES		2002	2006	2015						13		C 2.0						1.2E-03
GOES	19	0057	0101	0103						6		B 9.4						2.7E-04
GOES		0245	0248	0250						5		B 7.0						1.8E-04
GOES		0856	0900	0902						6		B 5.5						1.7E-04
HOLL		2009	2010	2014	S12	W02		03	19.7	5	SF		3	E		20		
GOES		2110	2112	2114	N20	W21	8493			4	SF	C 1.1						1.9E-04
HOLL		2112	2112	2116	N20	W21	8493	03	18.3	4	SF		3	E		19		
RAMY		2112	2113	2125	N20	W22	8493	03	18.2	13	SF		3	E		25		
GOES		2228	2233	2239						11		B 8.0						4.3E-04
GOES		2325	2330	2332	N20	W22	8493			7	SF	C 4.9						9.2E-04
HOLL		2328	2330	2336	N20	W22	8493	03	18.3	8	SF		3	E		81		
LEAR	21	0357	0403	0438	N25	W26	8419	03	19.1	41	SF		4	E		21		F
GOES		0638	0642	0645						7		C 1.0						3.4E-04
GOES		1025	1036	1046						21		B 9.9						1.0E-03
GOES		1224	1230	1241						17		B 7.4						6.6E-04
GOES	22	0138	0152	0159						21		C 1.4						1.1E-03
LEAR		0233	0317	0328	N25	W26	8419	03	20.1	55	SF		3	E		20		
LEAR		0446	0506	0520	N25	W27	8419	03	20.1	34	SF		4	E		17		
GOES	23	1007	1017	1024						17		B 2.8						2.7E-04
GOES		1646	1658	1704						18		B 3.5						3.2E-04
GOES		2116	2119	2123						7		B 2.2						8.4E-05
GOES	24	0951	0955	1001						10		B 2.9						1.6E-04
GOES		1245	1252	1300						15		B 3.4						2.5E-04
SVTO	25	0706E	0711	0729	N26	W84	8493	03	18.8	23D	SF		3	E		26		H
RAMY		1438	1440	1450	S25	W62	8494	03	20.8	12	SF		3	E		12		
GOES	26	0121	0128	0135						14		B 3.5						2.4E-04
RAMY	27	1107E	1107U	1124D	N26	E75		04	2.3	17D	SF		3	E		20		
GOES	28	0020	0026	0037						17		B 2.3						2.0E-04

Hα SOLAR FLARES

MARCH 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	28	0142	0145	0147						5		B 1.7						4.3E-05
GOES		1833	1837	1843						10		B 2.3						1.1E-04
GOES		2123	2148	2236						73		B 2.0						7.7E-04
GOES	29	0725	0731	0745						20		B 1.6						1.7E-04
GOES		1020	1025	1029						9		B 2.3						1.0E-04
GOES		1036	1040	1043						7		B 1.8						6.8E-05
RAMY		1208	1213	1216	S27	E68	8502	04	3.8	8	SF		4	E		28		FH
GOES		1330	1336	1340						10		B 2.7						1.2E-04
GOES		1534	1549	1620						46		B 3.1						7.5E-04
GOES		1700	1705	1707	S29	E66	8502			7	SF	B 3.1						9.3E-05
RAMY		1702	1704	1708	S29	E66	8502	04	3.9	6	SF		3	E		18		
GOES		2212	2216	2219	S27	E64	8502			7	SF	C 1.4						3.6E-04
HOLL		2214	2216	2220	S27	E64	8502	04	3.9	6	SF		3	E		26		
GOES	30	0509	0513	0516						7		B 3.3						8.7E-05
GOES		0710	0713	0716						6		B 1.1						3.5E-05
GOES		1056	1100	1104						8		B 1.6						6.6E-05
GOES		2139	2144	2154						15		B 1.5						1.3E-04
GOES	31	0519	0524	0529						10		B 4.3						1.9E-04
GOES		2027	2030	2033						6		B 1.3						4.2E-05

"Remarks"

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

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

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

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

MARCH 1999

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
02	8800	SGMR	4 S/F	1208.0	1209.0	3.0	240.0			QL=4 ST=2 TYP=3
	2695	SGMR	4 S/F	1208.0	1209.0	3.0	44.0			QL=4 ST=2 TYP=3
03	2695	LEAR	8 S	2337.0	2337.0	U	28.0			QL=4 ST=2 TYP=3
08	8800	LEAR	49 GB	0634.0	0635.0	2.0	590.0			QL=4 ST=2 TYP=6
	2695	LEAR	8 S	0634.0	0635.0	2.0	64.0			QL=4 ST=2 TYP=3
12	2695	SVTO	8 S	1017.0	1017.0	U	13.0			QL=4 ST=2 TYP=3
	8800	SVTO	49 GB	1126.0	1127.0	2.0	5900.0			QL=4 ST=2 TYP=6
	2695	SGMR	8 S	2037.0	2037.0	U	13.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	2037.0	2037.0	U	18.0			QL=4 ST=3 TYP=3
13	2695	SGMR	48 C	2026.0	2032.0	8.0	68.0			QL=4 ST=2 TYP=8
	8800	PALE	4 S/F	2028.0	2029.0	7.0	37.0			QL=4 ST=2 TYP=3
	2695	PALE	4 S/F	2028.0	2032.0	7.0	55.0			QL=4 ST=2 TYP=3
	8800	SGMR	4 S/F	2031.0	2032.0	3.0	34.0			QL=4 ST=2 TYP=3
14	8800	LEAR	8 S	0123.0	0124.0	2.0	47.0			QL=4 ST=2 TYP=3
	2695	LEAR	8 S	0123.0	0125.0	2.0	140.0			QL=4 ST=2 TYP=3
	2695	PALE	8 S	0124.0	0125.0	1.0	110.0			QL=4 ST=2 TYP=3
	2695	PALE	4 S/F	0128.0	0129.0	3.0	110.0			QL=4 ST=2 TYP=3
16	8800	SGMR	8 S	1201.0	1201.0	1.0	65.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1201.0	1201.0	1.0	64.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1323.0	1324.0	2.0	70.0			QL=4 ST=3 TYP=3
	8800	SGMR	8 S	1324.0	1324.0	1.0	76.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	2104.0	2105.0	1.0	140.0			QL=4 ST=2 TYP=3
	2695	SGMR	8 S	2104.0	2105.0	1.0	51.0			QL=4 ST=2 TYP=3
	8800	SGMR	49 GB	2137.0	2138.0	10.0	1500.0			QL=4 ST=2 TYP=6
	2695	SGMR	8 S	2138.0	2139.0	2.0	80.0			QL=4 ST=2 TYP=3
17	8800	LEAR	49 GB	0952.0	0953.0	3.0	820.0			QL=4 ST=2 TYP=6
	2695	LEAR	4 S/F	0952.0	0954.0	3.0	98.0			QL=4 ST=2 TYP=3
	2695	SVTO	4 S/F	0952.0	0954.0	3.0	86.0			QL=4 ST=2 TYP=3
	8800	SVTO	49 GB	0952.0	0953.0	14.0	1000.0			QL=4 ST=2 TYP=6
	8800	SGMR	8 S	1227.0	1227.0	U	66.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1227.0	1227.0	U	44.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1445.0	1445.0	2.0	150.0			QL=4 ST=2 TYP=3
18	8800	SVTO	4 S/F	0828.0	0829.0	5.0	270.0			QL=4 ST=2 TYP=3
	2695	LEAR	8 S	0829.0	0829.0	U	22.0			QL=4 ST=2 TYP=3
	8800	LEAR	8 S	0829.0	0829.0	1.0	210.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	1414.0	1414.0	2.0	34.0			QL=4 ST=2 TYP=3
	2695	SGMR	8 S	1415.0	1415.0	1.0	33.0			QL=4 ST=2 TYP=3
19	8800	SGMR	8 S	1307.0	1308.0	1.0	420.0			QL=4 ST=2 TYP=3
21	2695	LEAR	4 S/F	0515.0	0524.0	10.0	330.0			QL=4 ST=2 TYP=3

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

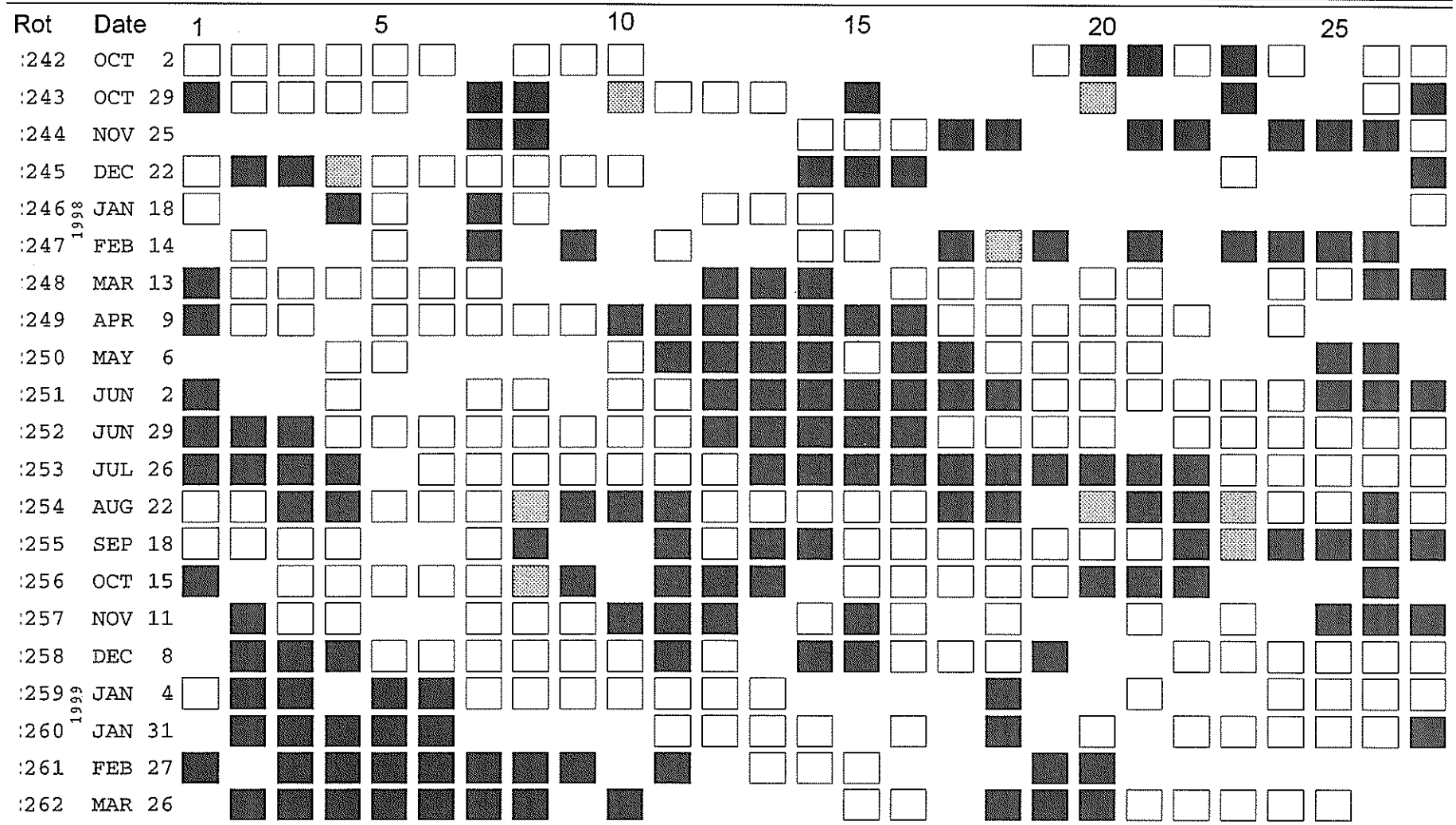
Explanation of Type Code:

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

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD

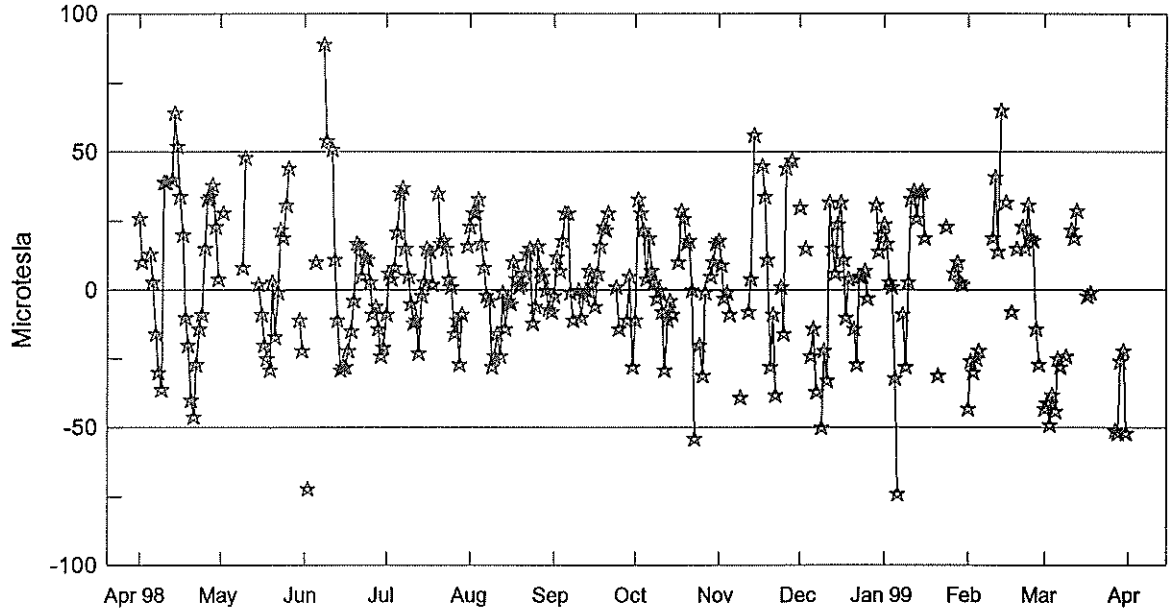


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

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

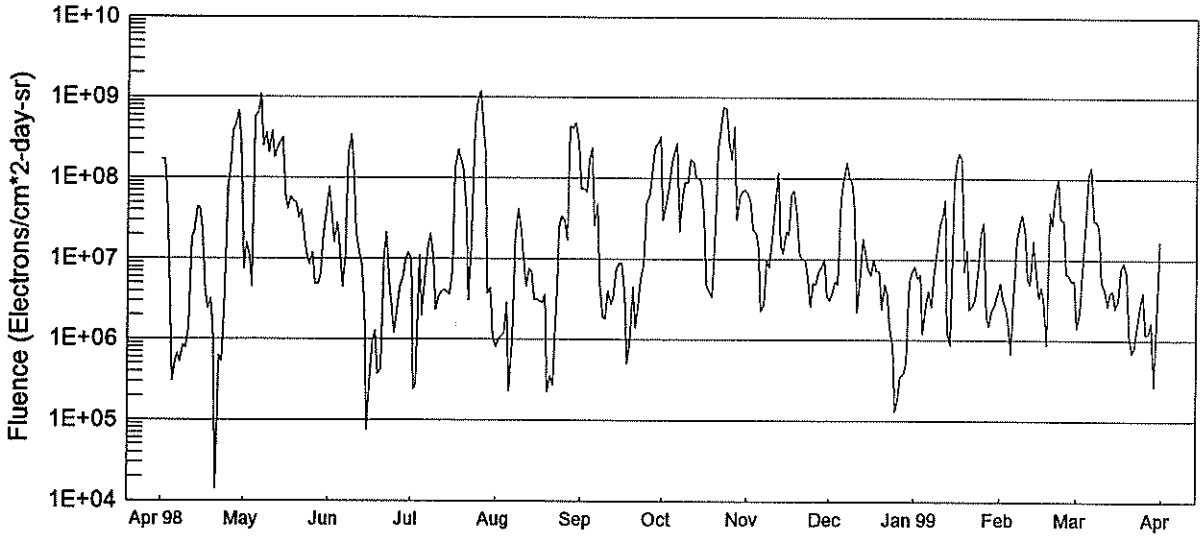
Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

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



Day	Apr 98	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar
1	26	28	---	-9	23	-2	-11	18	30	24	-43	-43
2	10	---	-72	6	28	12	33	9	---	17	-26	-41
3	---	---	---	4	28	7	28	-3	15	3	-30	-49
4	---	---	---	8	33	18	22	-1	---	1	-25	-38
5	13	---	10	21	17	28	4	-9	-24	-32	-22	-44
6	3	---	---	35	8	28	19	---	-14	-74	---	-25
7	-16	---	---	37	-2	-1	7	---	-37	---	---	-28
8	-30	---	89	15	-4	-11	3	---	---	-9	---	---
9	-36	8	54	5	-28	---	-3	-39	-50	-28	---	-24
10	39	48	---	-5	-24	0	0	---	-22	3	19	---
11	39	---	51	-12	-16	-10	-8	---	-33	33	41	22
12	---	---	11	-11	-24	-2	-29	-8	32	36	14	19
13	40	---	-11	-23	-1	0	-11	4	15	26	65	29
14	64	---	-29	-2	-14	7	-4	56	6	35	---	---
15	52	2	-28	3	-4	2	-9	---	24	36	32	---
16	34	-9	-28	15	-5	-6	---	---	32	19	---	---
17	20	-20	-22	14	10	6	10	45	11	---	-8	-2
18	-10	-25	-15	2	4	16	29	34	-10	---	---	-1
19	-20	-29	-4	---	1	23	26	11	4	---	15	---
20	-40	3	17	35	2	22	17	-28	---	---	---	---
21	-46	-17	16	17	6	28	18	-9	-14	-31	23	---
22	-27	-1	5	18	13	---	0	-38	-27	---	15	---
23	-14	22	12	15	15	---	-54	---	5	---	31	---
24	-9	19	11	4	-12	1	---	1	5	23	19	---
25	15	31	3	1	-6	-14	-20	-16	7	---	18	---
26	33	44	-9	-16	16	---	-31	44	-3	---	-14	---
27	34	---	-6	-11	7	---	-1	---	---	6	-27	-51
28	38	---	-14	-27	5	-11	---	47	---	10	---	-52
29	23	---	-24	-9	0	5	5	---	31	3		-26
30	4	-11	-21	---	-7	-28	10	---	14	2		-22
31		-22		16	-8		17		20	---		-52

GOES Daily Electron Fluence
Arp 98 - Mar 99



Day	Apr 98	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar
1	1.7E+08	7.6E+06	7.8E+07	9.6E+06	8.1E+05	7.4E+07	3.0E+07	6.6E+07	3.1E+06	8.3E+06	5.2E+06	1.4E+06
2	1.7E+08	1.6E+07	3.9E+07	2.4E+05	1.0E+06	7.4E+07	4.8E+07	5.1E+07	3.9E+06	5.9E+06	3.2E+06	2.2E+06
3	6.2E+07	1.1E+07	1.6E+07	2.8E+05	1.1E+06	6.8E+07	7.0E+07	2.3E+07	5.4E+06	6.5E+06	2.7E+06	7.2E+06
4	7.3E+06	4.5E+06	2.8E+07	1.1E+07	1.2E+06	1.7E+08	1.5E+08	2.1E+07	4.9E+06	1.2E+06	1.8E+06	2.9E+07
5	3.0E+05	5.7E+08	1.4E+07	2.0E+06	2.9E+06	2.4E+08	2.1E+08	1.4E+07	5.8E+07	2.7E+06	6.8E+05	1.1E+08
6	4.9E+05	6.4E+08	4.5E+06	6.5E+06	2.3E+05	2.6E+07	2.7E+08	2.3E+06	1.0E+08	4.1E+06	3.4E+06	1.4E+08
7	6.7E+05	1.1E+09	1.1E+07	1.3E+07	9.5E+05	4.8E+07	2.2E+07	2.7E+06	1.6E+08	2.6E+06	1.8E+07	3.0E+07
8	5.3E+05	2.5E+08	2.0E+08	2.0E+07	1.8E+07	4.9E+06	5.8E+07	9.9E+06	1.0E+08	6.8E+06	2.7E+07	3.0E+07
9	8.5E+05	3.6E+08	3.5E+08	1.0E+07	4.2E+07	1.9E+06	9.0E+07	8.0E+06	9.1E+07	1.2E+07	3.6E+07	2.4E+07
10	7.8E+05	2.1E+08	1.1E+08	2.3E+06	2.5E+07	1.8E+06	8.9E+07	1.9E+07	4.3E+07	2.7E+07	2.2E+07	5.3E+06
11	1.4E+06	3.9E+08	2.1E+07	3.2E+06	1.1E+07	4.1E+06	1.7E+08	4.5E+07	2.2E+06	3.4E+07	5.9E+06	4.4E+06
12	1.8E+07	1.8E+08	1.2E+07	3.8E+06	4.6E+06	2.8E+06	1.6E+08	1.2E+08	5.1E+06	5.5E+07	4.9E+06	2.7E+06
13	2.1E+07	2.3E+08	9.0E+06	4.2E+06	7.5E+06	3.4E+06	1.0E+08	1.5E+07	1.8E+07	1.3E+06	1.7E+07	4.0E+06
14	4.4E+07	2.7E+08	2.6E+06	3.9E+06	7.2E+06	7.6E+06	1.0E+08	1.2E+07	1.2E+07	8.6E+05	7.8E+06	4.1E+06
15	4.2E+07	3.2E+08	7.5E+04	3.6E+06	3.1E+06	8.9E+06	9.2E+07	2.2E+07	7.5E+06	7.7E+07	3.4E+06	2.5E+06
16	2.3E+07	6.5E+07	2.7E+05	6.6E+06	3.2E+06	8.9E+06	3.1E+07	2.0E+07	6.4E+06	1.6E+08	4.6E+06	3.2E+06
17	3.9E+06	4.2E+07	9.6E+05	1.3E+08	3.0E+06	3.5E+06	4.7E+06	6.4E+07	1.0E+07	2.1E+08	2.9E+06	7.9E+06
18	2.4E+06	5.9E+07	1.3E+06	2.3E+08	2.9E+06	5.0E+05	4.0E+06	7.0E+07	7.3E+06	1.8E+08	8.7E+05	9.2E+06
19	3.2E+06	5.3E+07	3.7E+05	1.7E+08	3.6E+06	9.0E+05	3.4E+06	3.7E+07	7.2E+06	7.1E+06	3.9E+07	6.6E+06
20	1.0E+06	4.9E+07	4.2E+05	1.3E+08	2.2E+05	4.5E+06	1.5E+07	1.2E+07	2.4E+06	1.3E+07	2.7E+07	1.2E+06
21	1.4E+04	3.2E+07	1.0E+07	4.0E+07	3.5E+05	1.4E+06	2.3E+08	9.8E+06	4.9E+06	2.4E+06	6.3E+07	7.0E+05
22	6.3E+05	4.0E+07	2.1E+07	3.0E+06	2.7E+05	2.5E+06	4.2E+08	1.0E+07	3.8E+06	2.7E+06	1.0E+08	8.2E+05
23	5.3E+05	1.8E+07	5.2E+06	2.1E+07	2.5E+06	5.6E+06	7.5E+08	6.6E+06	1.4E+06	3.2E+06	3.2E+07	1.5E+06
24	2.2E+06	1.1E+07	2.7E+06	4.1E+08	2.6E+07	8.7E+06	7.4E+08	2.6E+06	8.5E+05	7.8E+06	3.1E+07	2.8E+06
25	7.8E+07	8.5E+06	1.2E+06	8.5E+08	3.4E+07	5.2E+07	3.0E+08	5.1E+06	1.3E+05	2.1E+07	6.8E+06	4.0E+06
26	1.3E+08	1.2E+07	2.4E+06	1.2E+09	3.0E+07	6.2E+07	1.7E+08	4.8E+06	1.8E+05	2.9E+07	6.4E+06	1.2E+06
27	3.8E+08	4.8E+06	4.6E+06	4.9E+08	1.7E+07	1.2E+08	4.4E+08	7.3E+06	3.5E+05	2.0E+06	5.5E+06	1.2E+06
28	4.9E+08	4.9E+06	6.0E+06	2.2E+08	4.4E+08	2.4E+08	3.1E+07	8.0E+06	3.8E+05	1.5E+06	5.6E+06	1.7E+06
29	6.9E+08	6.5E+06	1.0E+07	3.8E+06	4.2E+08	2.7E+08	6.1E+07	1.0E+07	5.0E+05	2.3E+06		2.7E+05
30	2.7E+08	2.0E+07	1.2E+07	4.4E+06	4.9E+08	3.3E+08	6.9E+07	3.5E+06	5.4E+06	2.8E+06		1.7E+06
31		4.1E+07		1.1E+06	2.7E+08		7.2E+07		7.1E+06	3.6E+06		1.7E+07

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.
NOTE: GOES9 data began April, 1996 and ended on 26 July, 1998. GOES8 is primary satellite as of 27 July, 1998.

CONTENTS

Prompt Reports Number 656 Part I

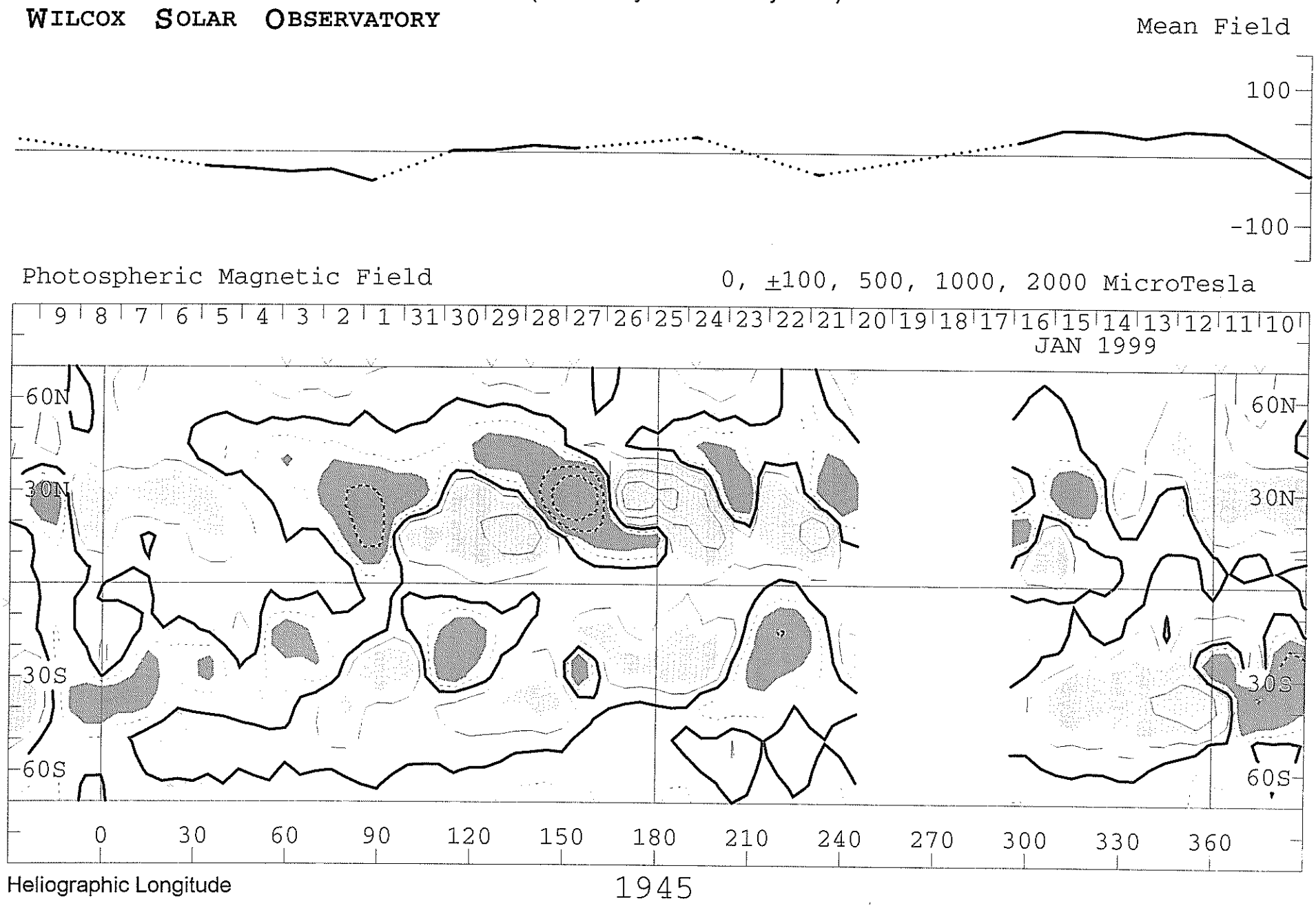
DATA FOR FEBRUARY 1999

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1945

(12 January to 8 February 1999)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

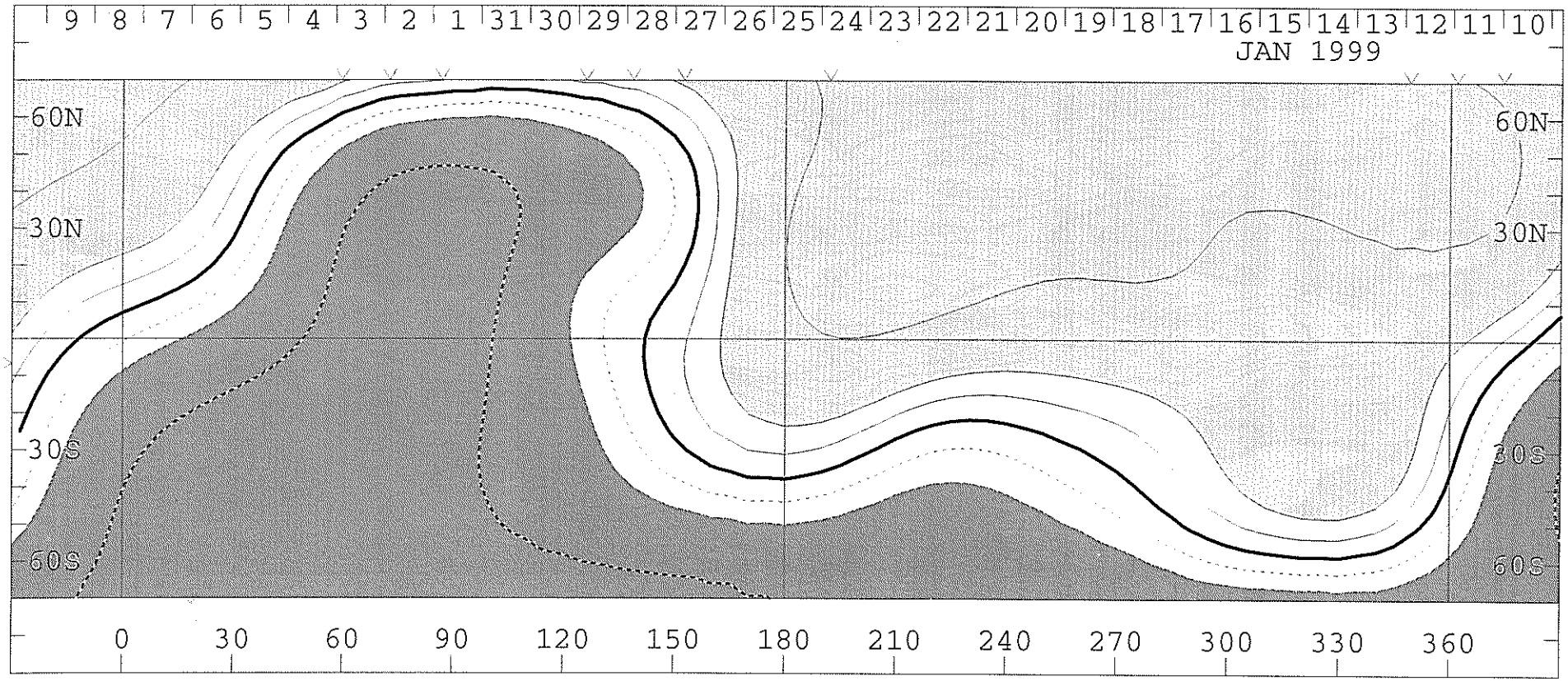
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1945

(12 January to 8 February 1999)

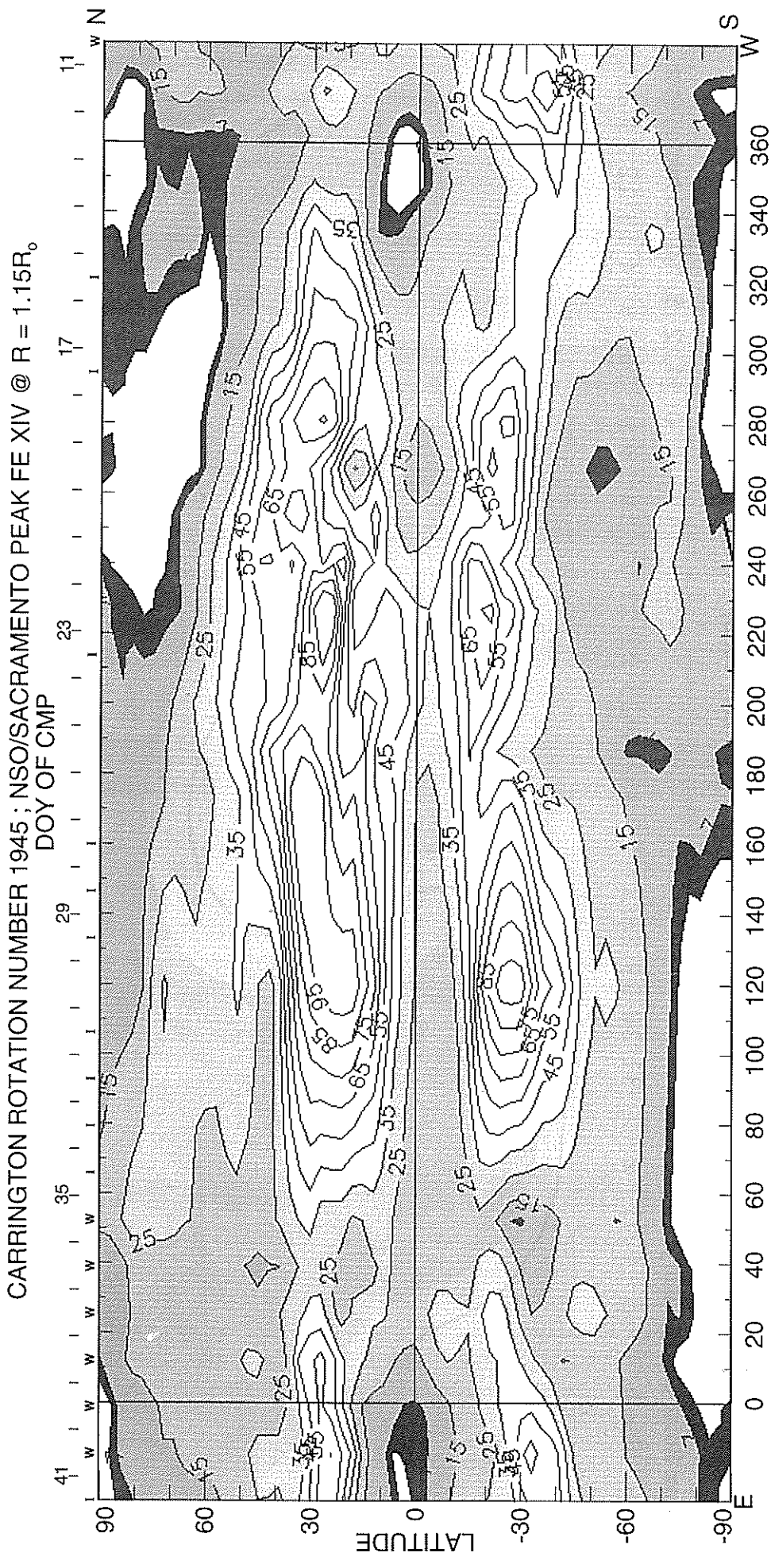
Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla

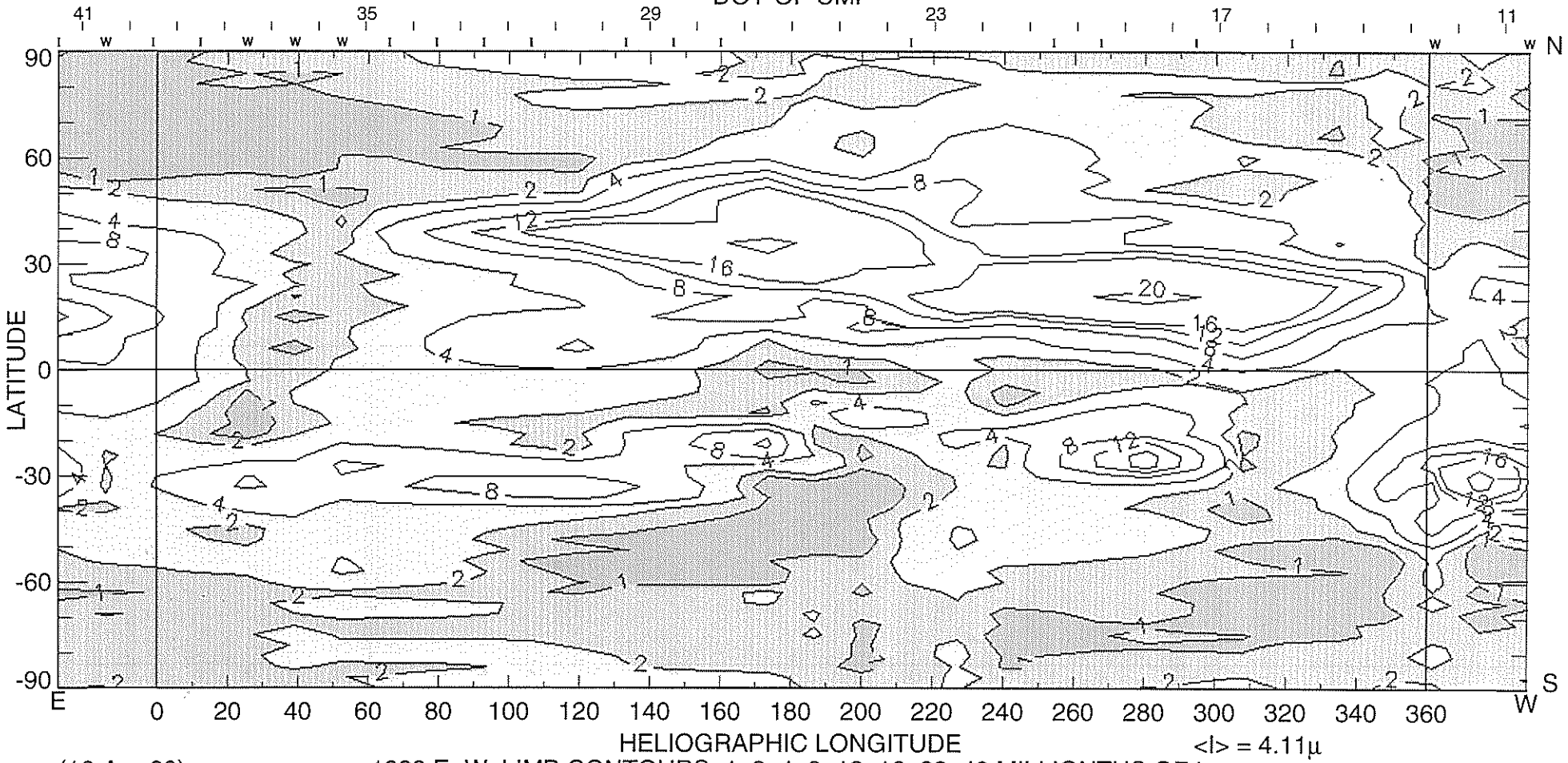


Heliographic Longitude

1945

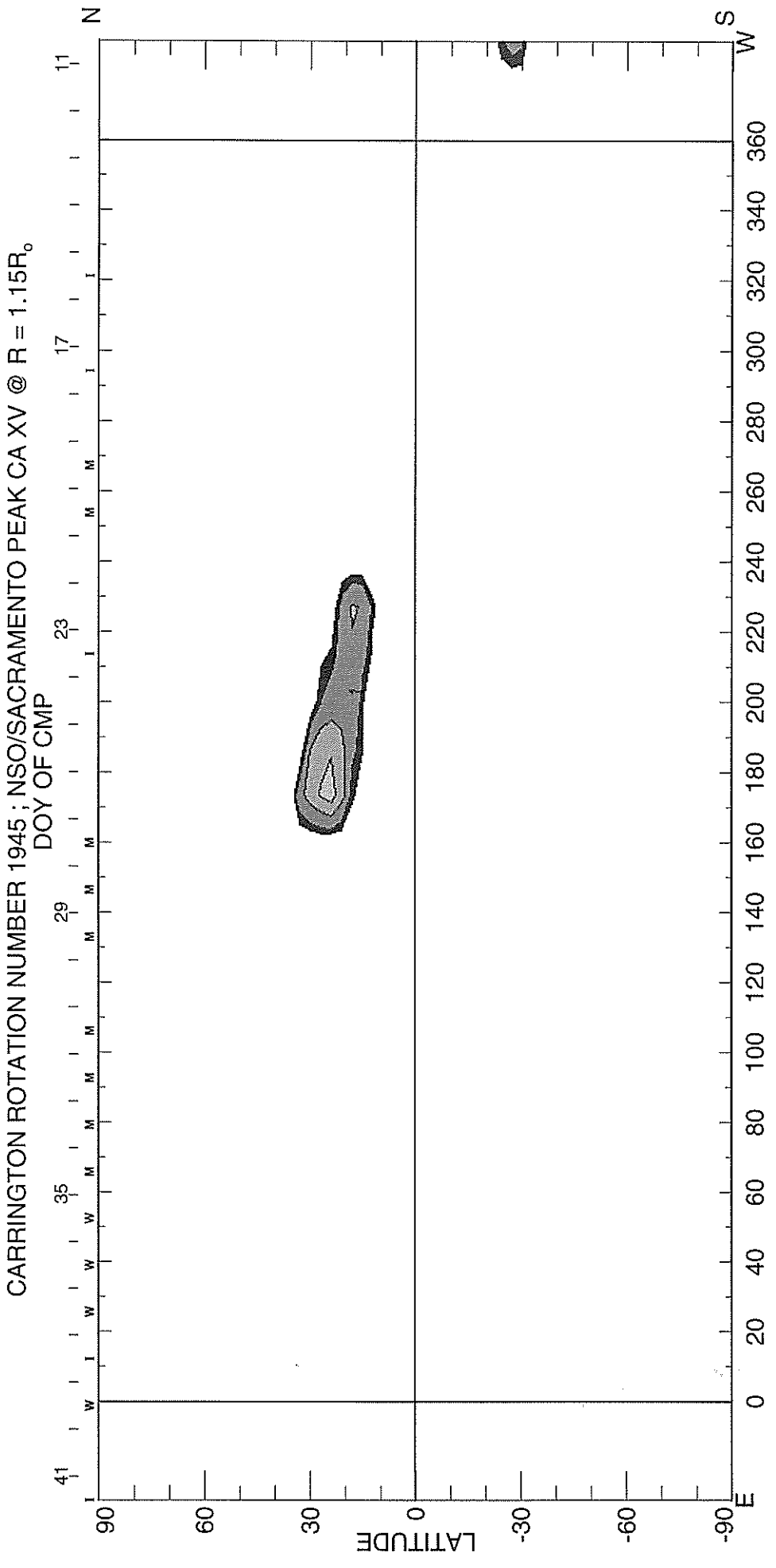

CARRINGTON ROTATION NUMBER 1945 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R$_o$
DOY OF CMP
HELIOGRAPHIC LONGITUDE
LATITUDE
1999 E+W LIMB CONTOURS: 5, 7, 15, 25, 35, 45, 55, 65, 75, 85, 95 MILLIONTHS OF I$_o$
<I> = 26.65μ
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK
(16-Apr-99)

CARRINGTON ROTATION NUMBER 1945 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



(16-Apr-99)

1999 E+W LIMB CONTOURS: 1, 2, 4, 8, 12, 16, 32, 48 MILLIONTHS OF I_o


CARRINGTON ROTATION NUMBER 1945 ; NSO/SACRAMENTO PEAK CA XV @ R = 1.15R$_o$
DOY OF CMP
HELIOGRAPHIC LONGITUDE
1999 E+W LIMB CONTOURS: YELMIN, 1, 2, 3, 4, 6, 8 MILLIONTHS OF I$_o$
(26-Mar-99)
LATITUDE
N
S
E
W
90
60
30
0
-30
-60
-90
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360
11 17 23 29 35 41

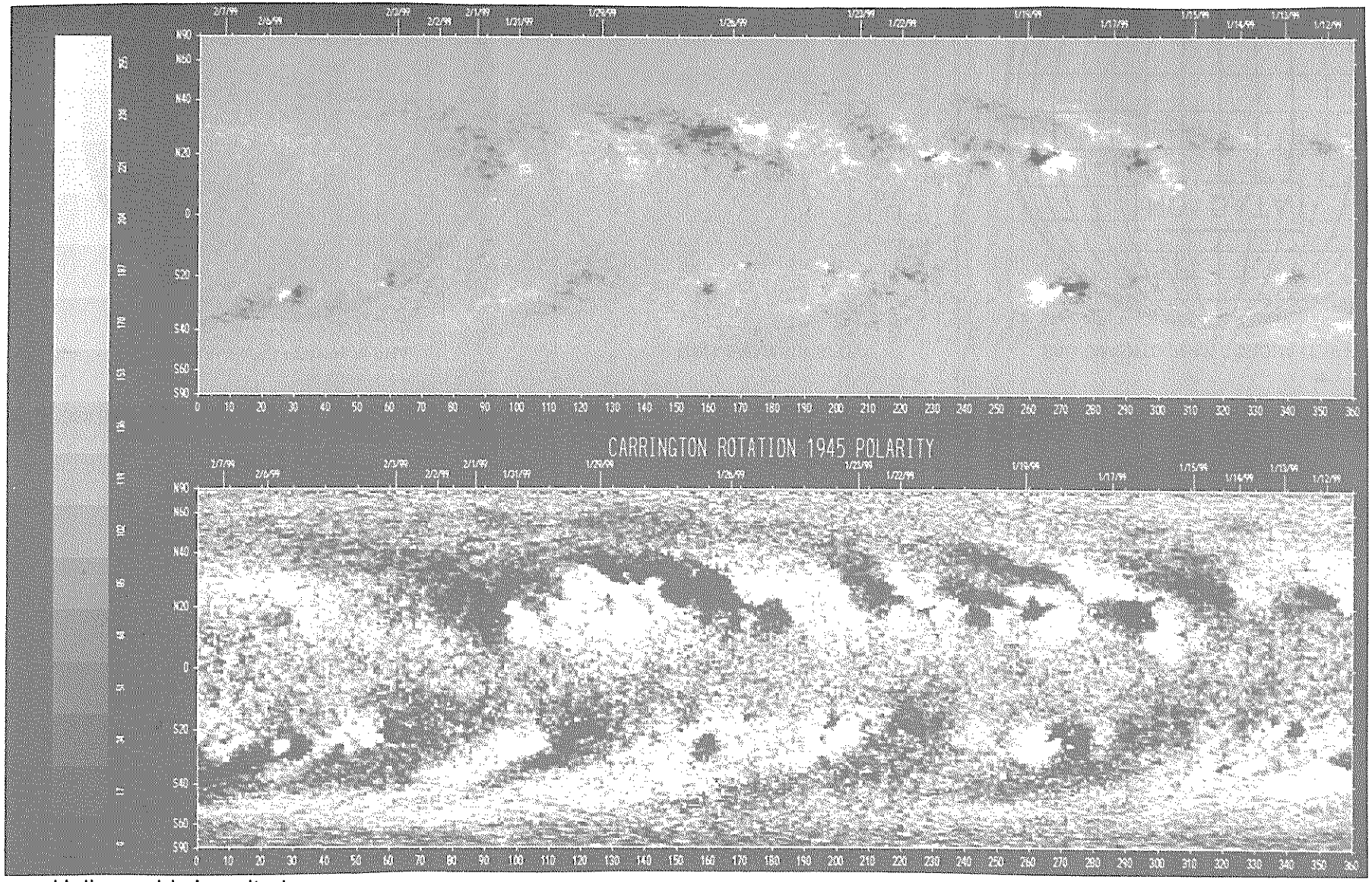
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1945

(12 January to 8 February 1999)

National Solar Observatory/Kitt Peak

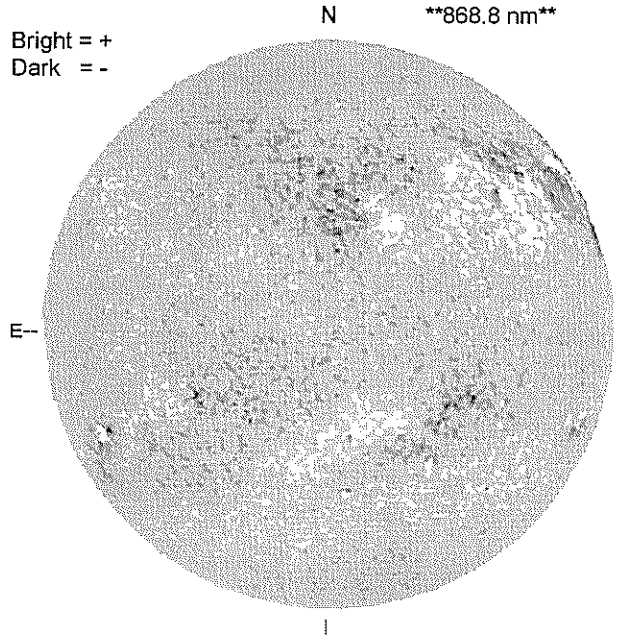
Dates of Observation



Heliographic Longitude

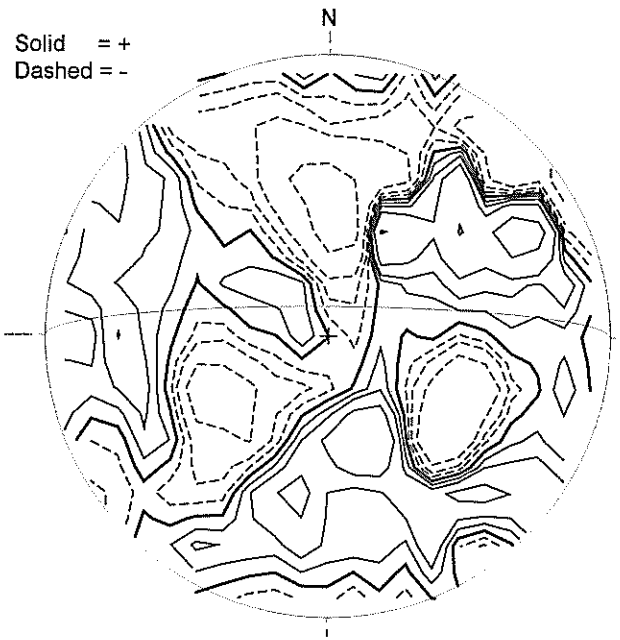
FEBRUARY 1, 1999 (P= -12.00, Bo = -6.00, Lo = 97.38)

KITT PEAK MAGNETOGRAM



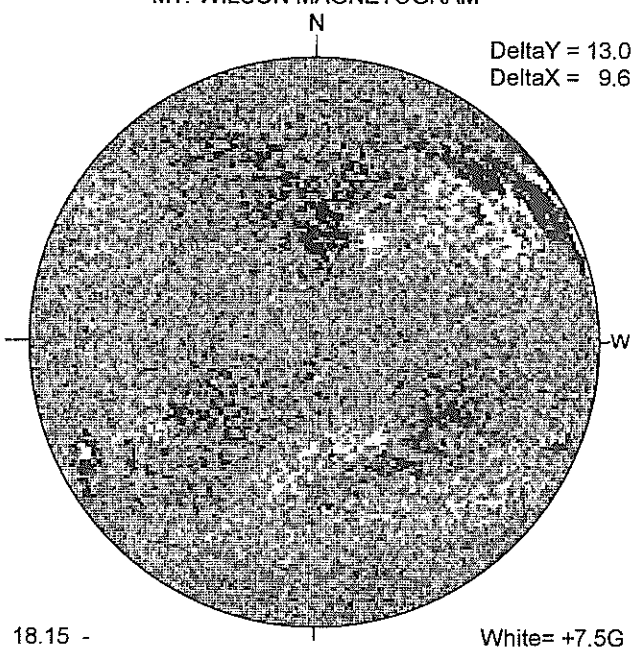
1834 UT

STANFORD MAGNETOGRAM



1921 UT

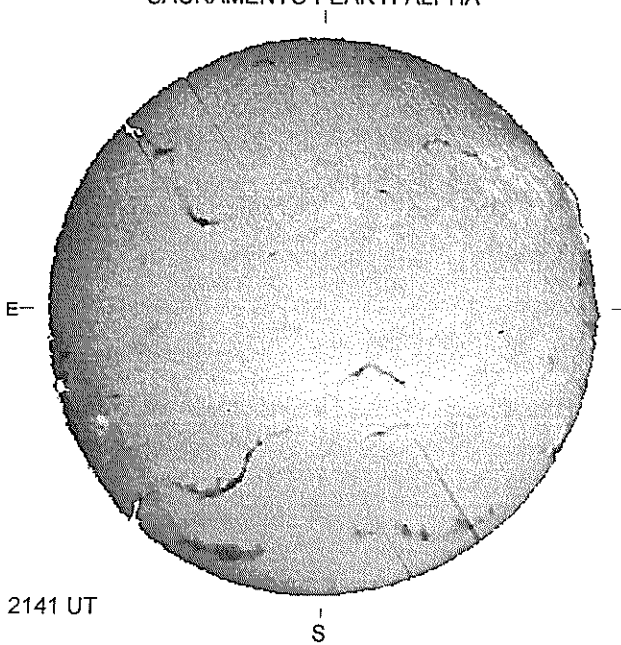
MT. WILSON MAGNETOGRAM



18.15 - 19.13 UT

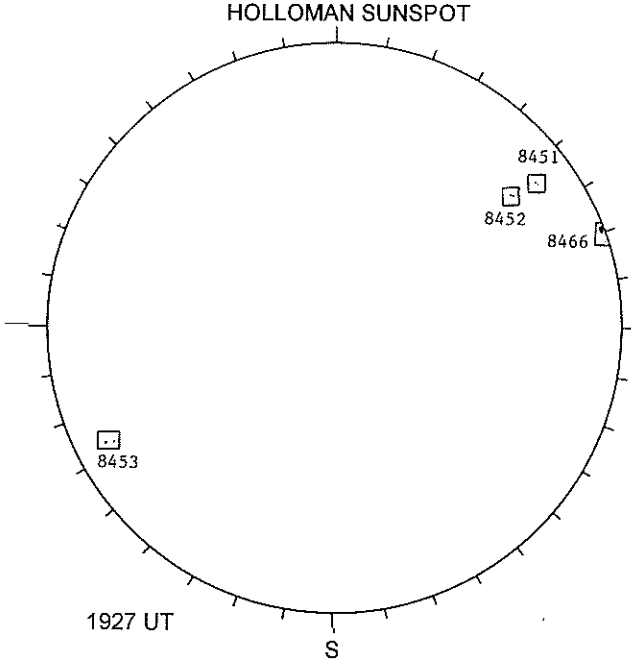
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



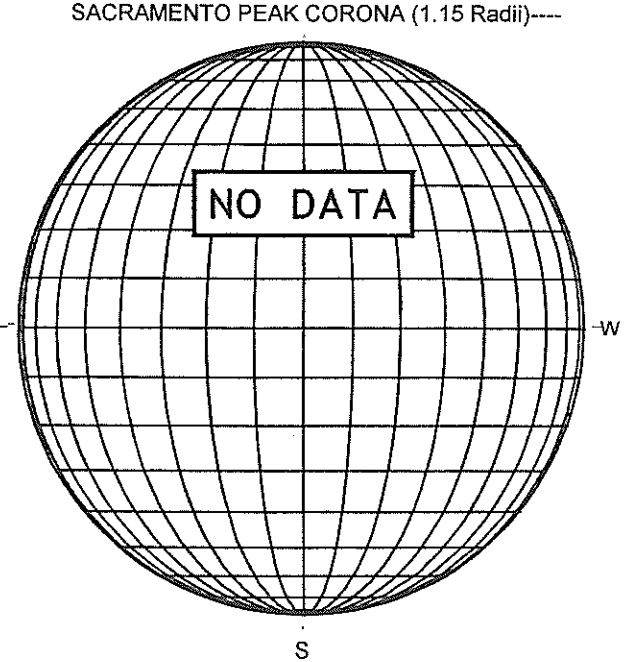
2141 UT

HOLLOMAN SUNSPOT



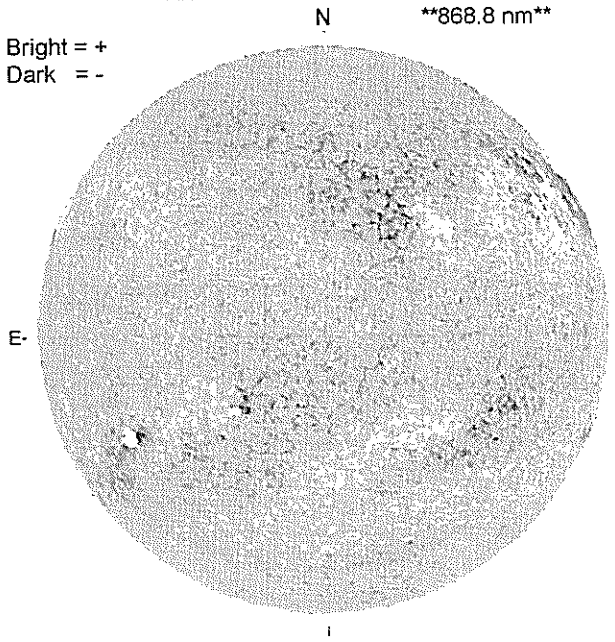
1927 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



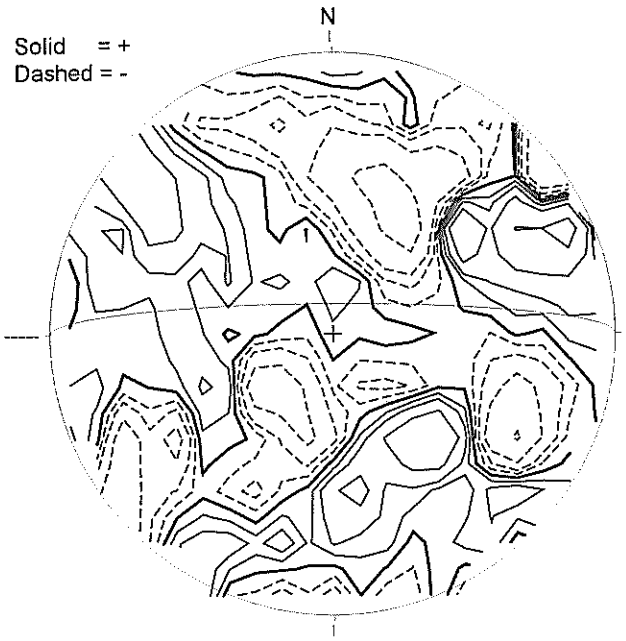
FEBRUARY 2, 1999 (P= -12.41, Bo = -6.07, Lo = 84.21)

KITT PEAK MAGNETOGRAM



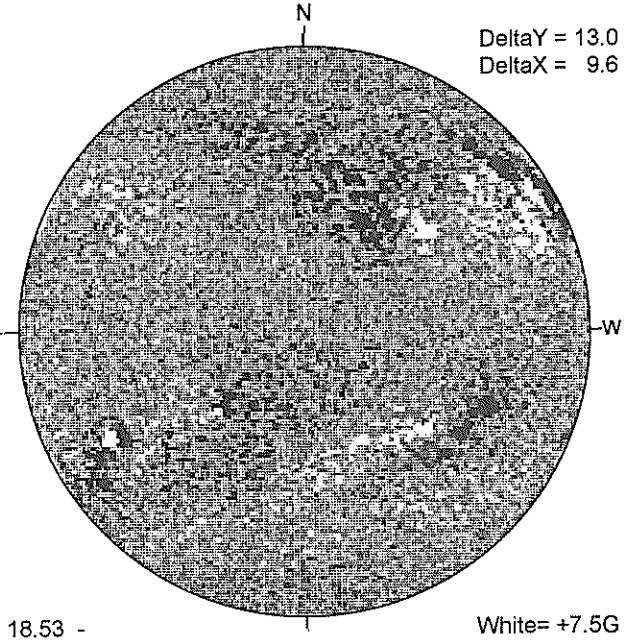
1702 UT

STANFORD MAGNETOGRAM



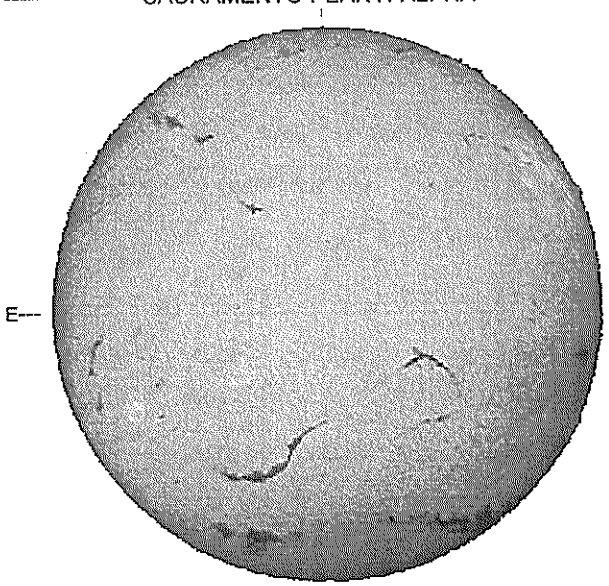
2112 UT

MT. WILSON MAGNETOGRAM



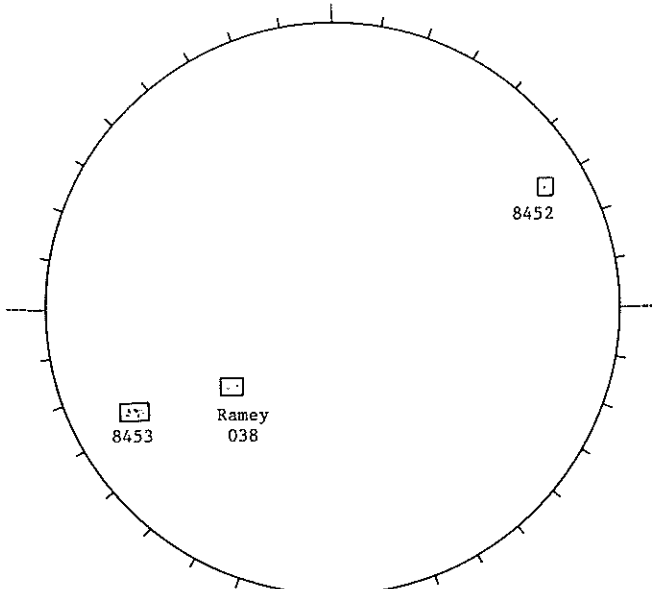
18.53 -
19.50 UT

SACRAMENTO PEAK H-ALPHA



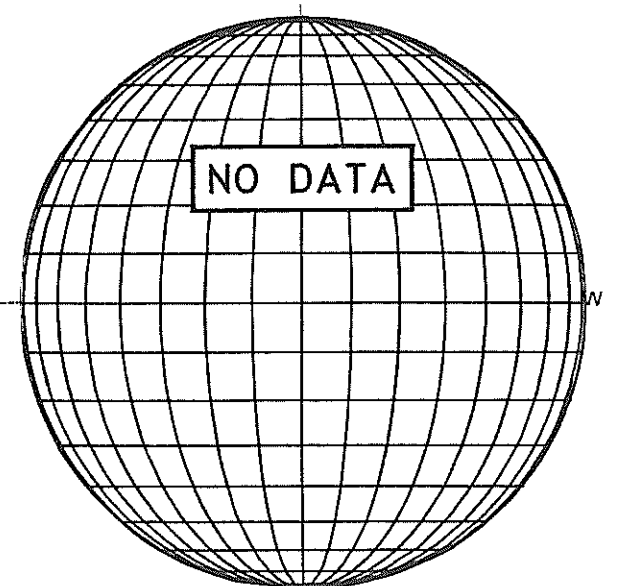
1522 UT

RAMEY SUNSPOT



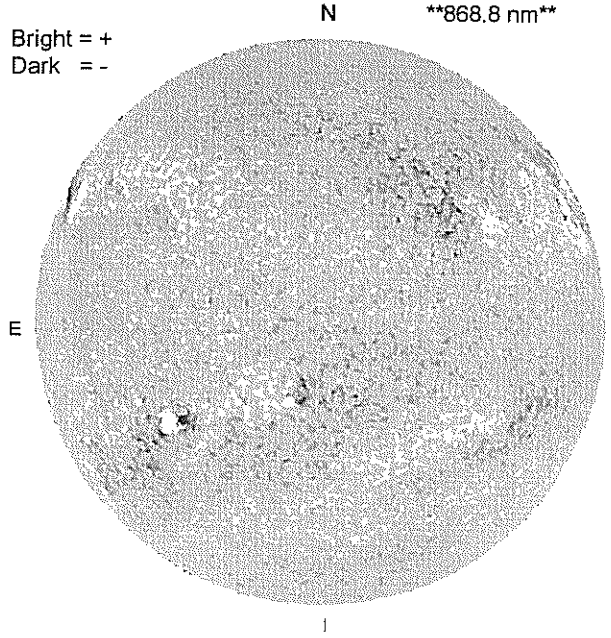
1303 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



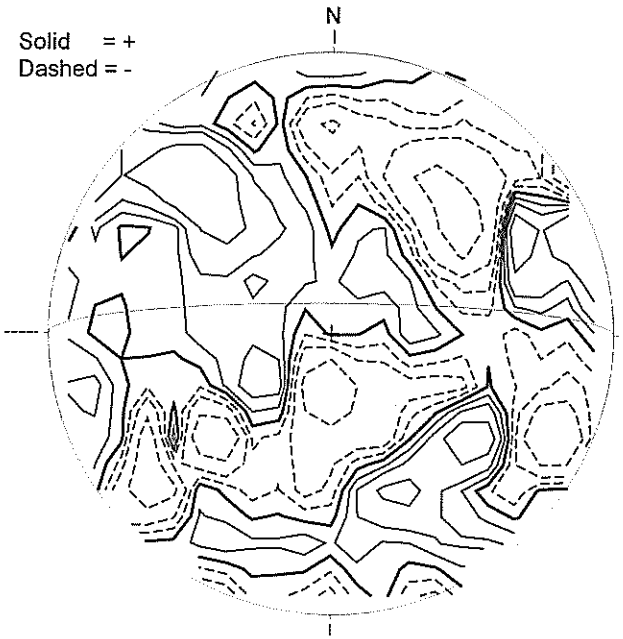
FEBRUARY 3, 1999 (P= -12.81, Bo = -6.14, Lo = 71.04)

KITT PEAK MAGNETOGRAM



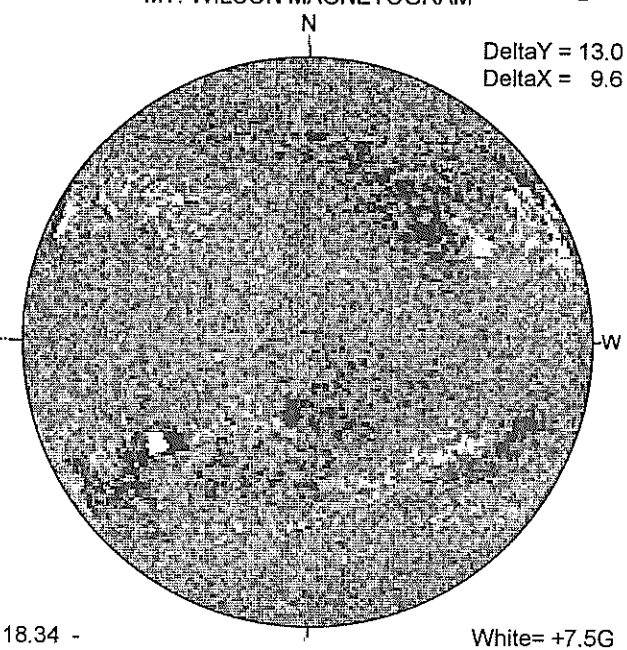
1704 UT

STANFORD MAGNETOGRAM



2053 UT

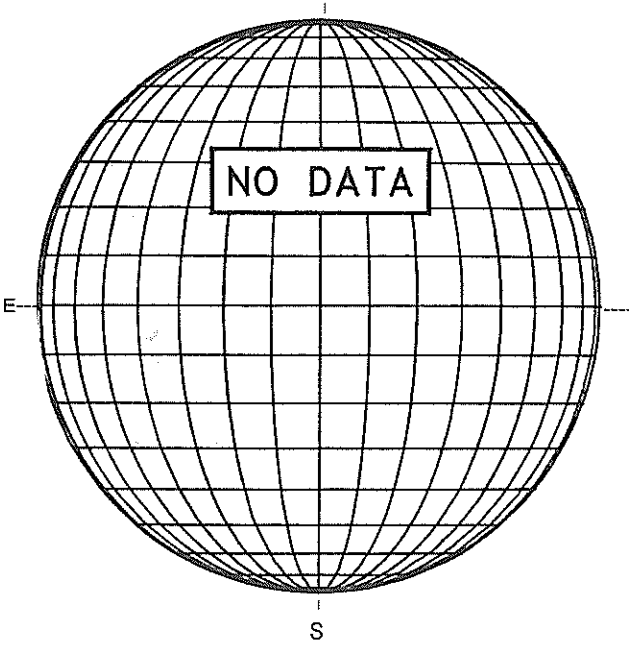
MT. WILSON MAGNETOGRAM



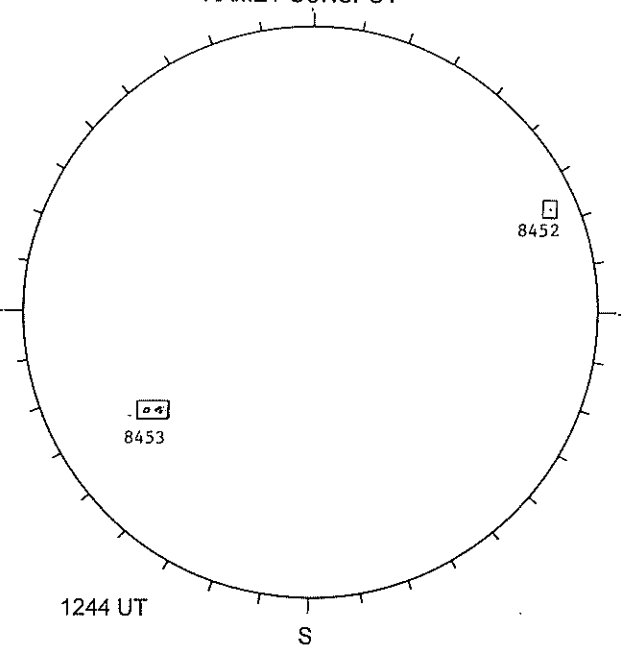
18.34 -
19.31 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

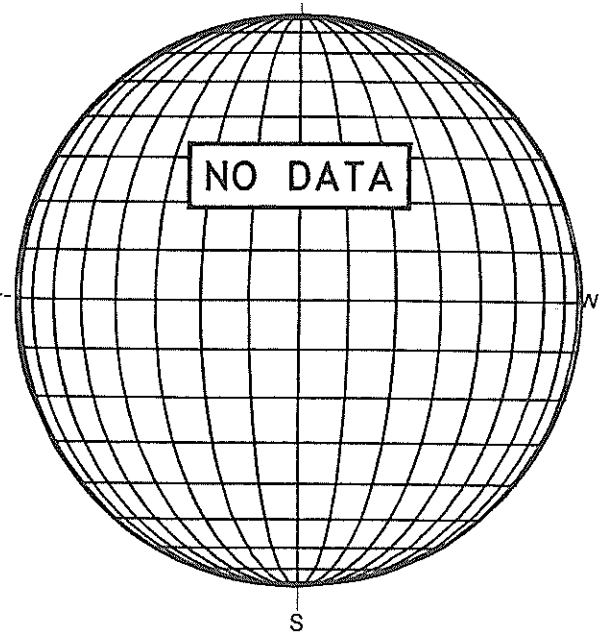


RAMEY SUNSPOT



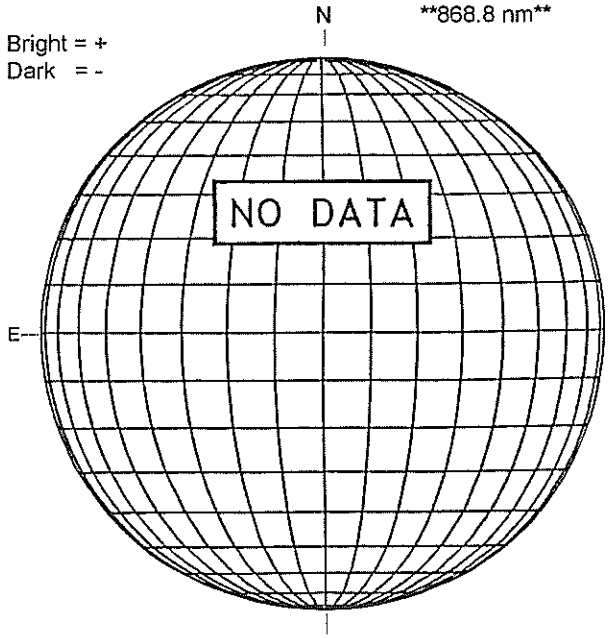
1244 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

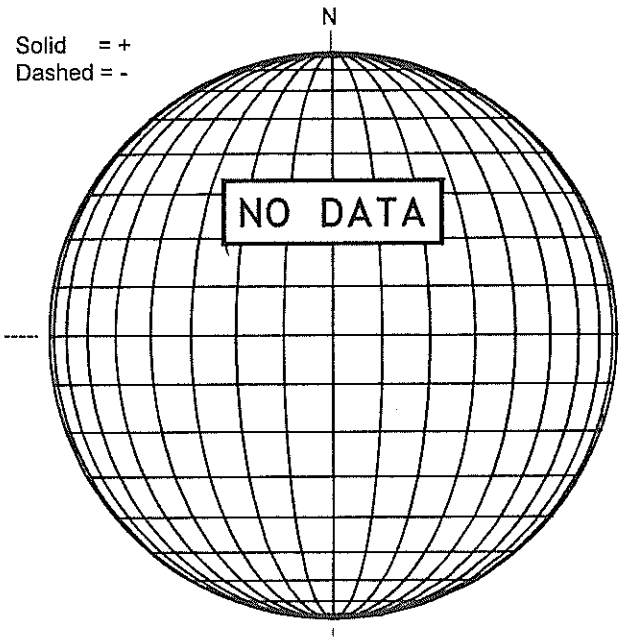


FEBRUARY 4, 1999 (P= -13.21, Bo = -6.21, Lo = 57.88)

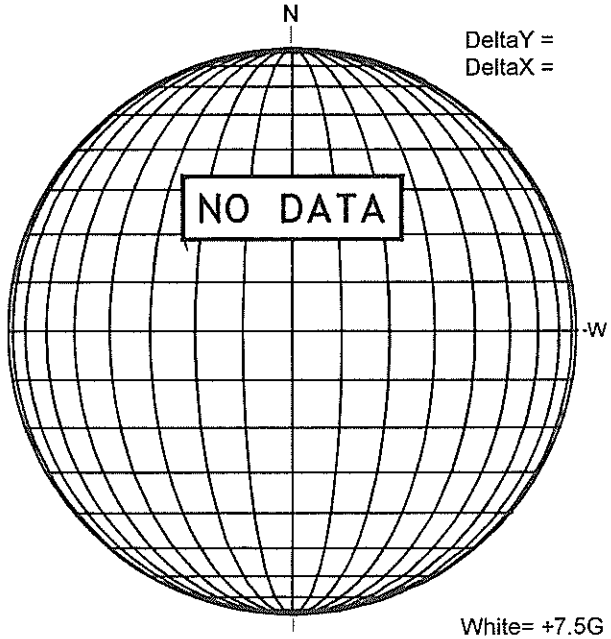
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

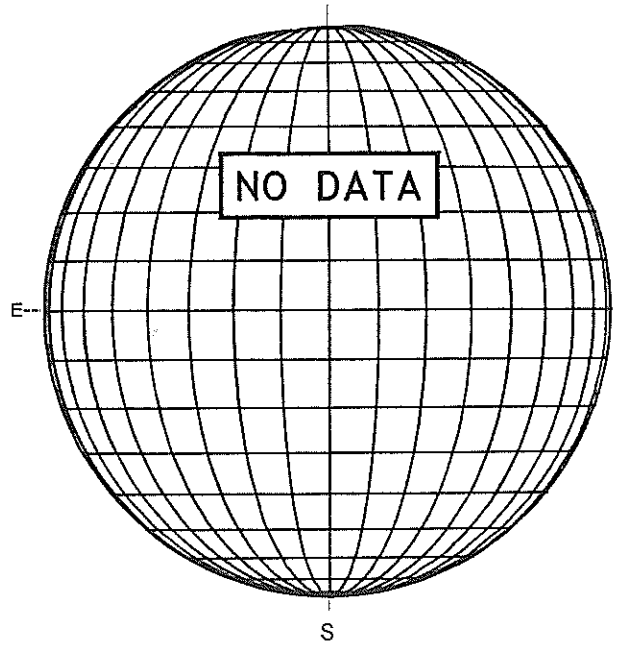


MT. WILSON MAGNETOGRAM

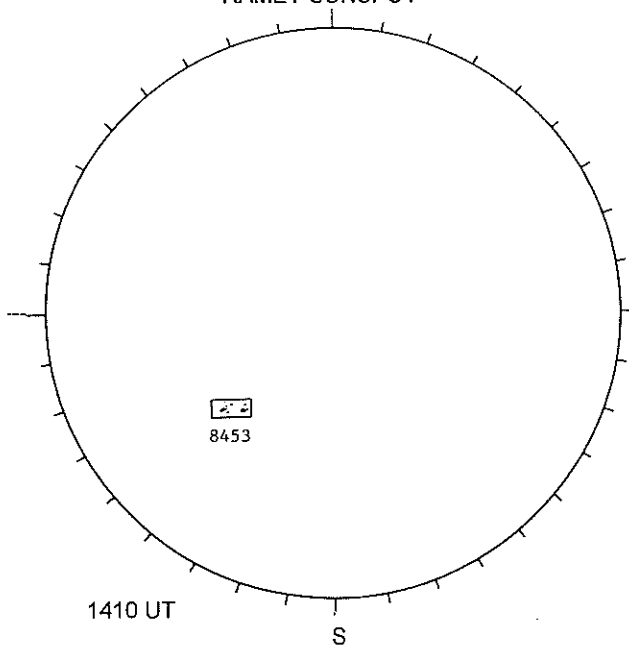


White= +7.5G
Black = -7.5G

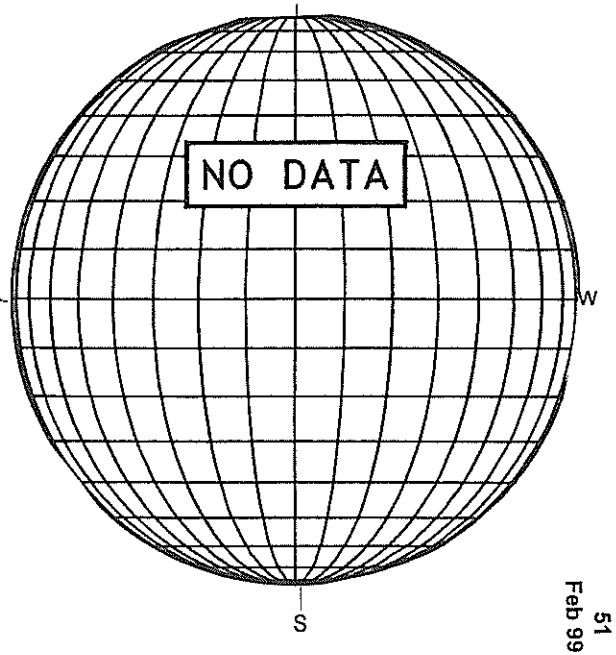
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



FEBRUARY 5, 1999 (P= -13.60, Bo = -6.27, Lo = 44.71)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

NO DATA

E

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

NO DATA

MT. WILSON MAGNETOGRAM

N

DeltaY =
DeltaX =

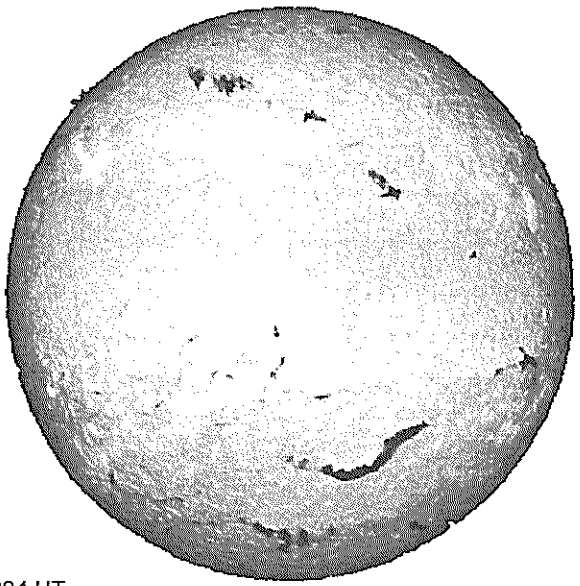
NO DATA

W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

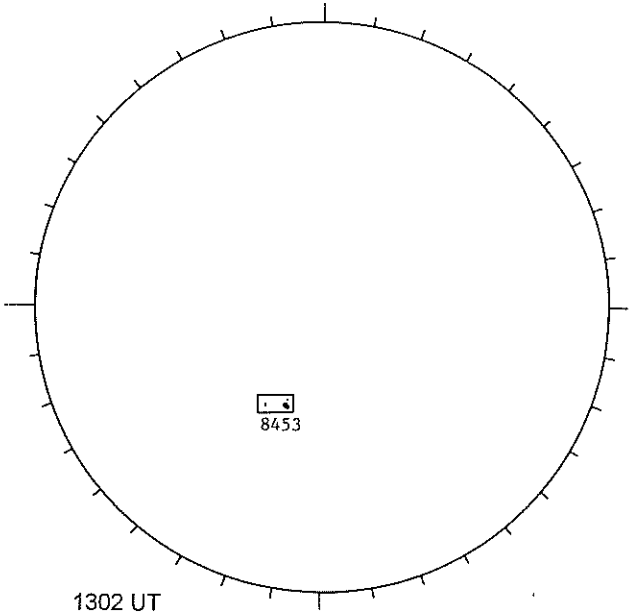
E



0904 UT

S

RAMEY SUNSPOT



1302 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

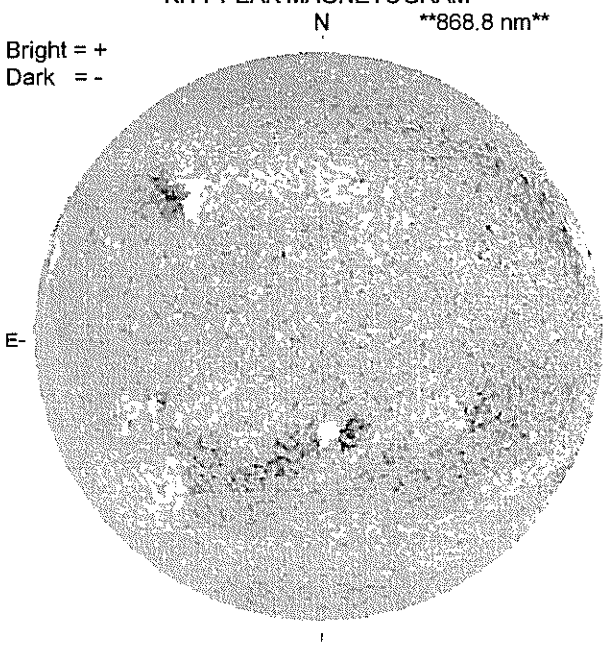
NO DATA

W

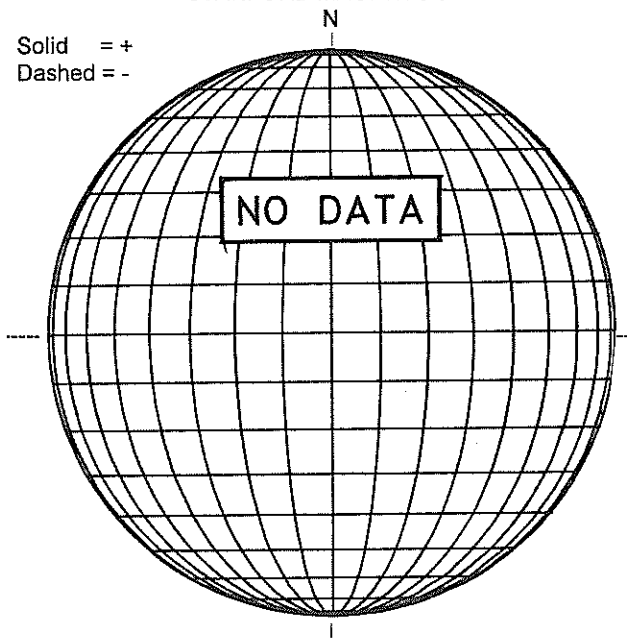
S

FEBRUARY 6, 1999 (P= -13.99, Bo = -6.34 Lo = 31.54)

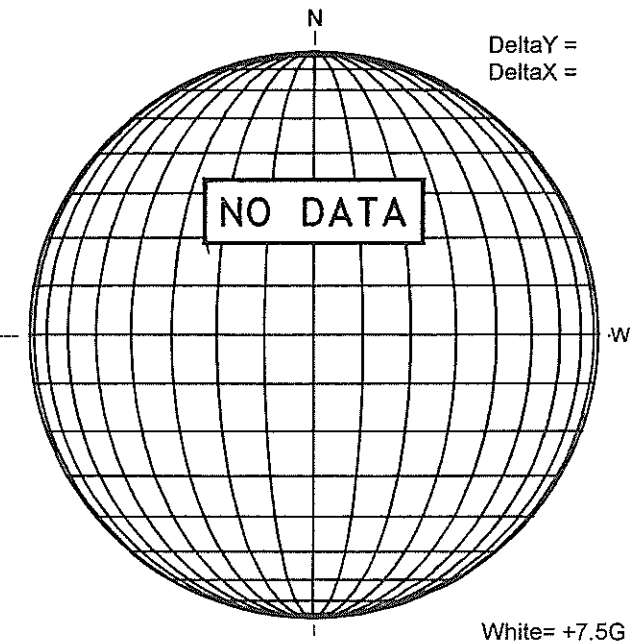
KITT PEAK MAGNETOGRAM



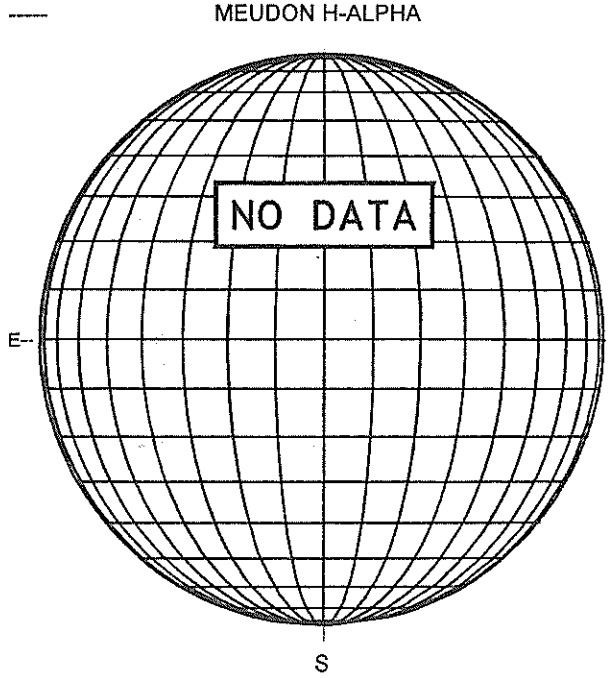
STANFORD MAGNETOGRAM



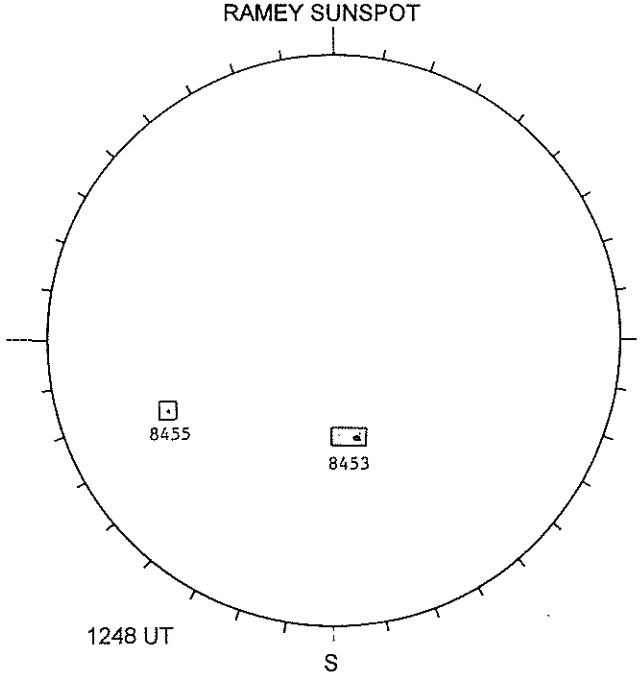
MT. WILSON MAGNETOGRAM



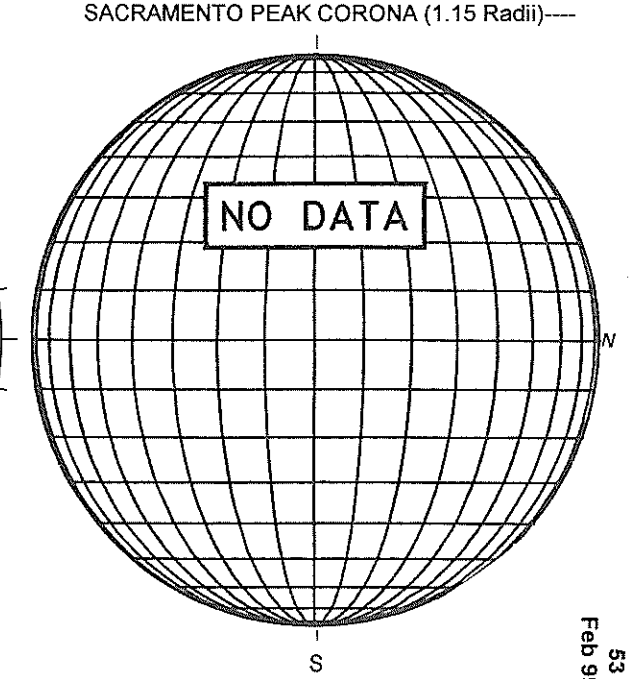
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----

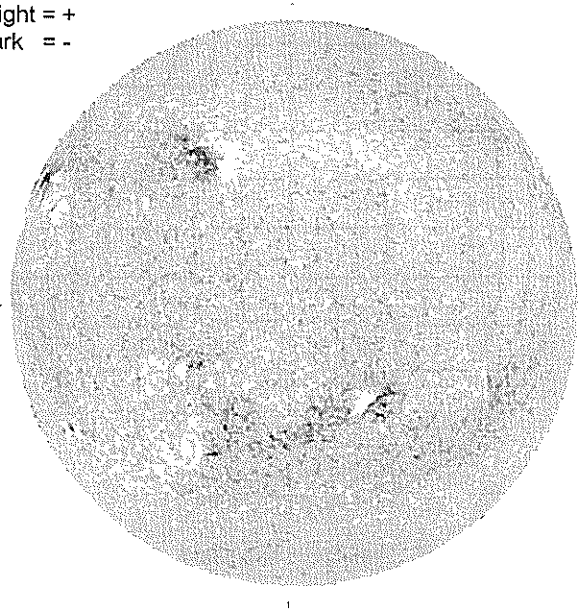


FEBRUARY 7, 1999 (P= -14.37, Bo = -6.40 Lo = 18.38)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



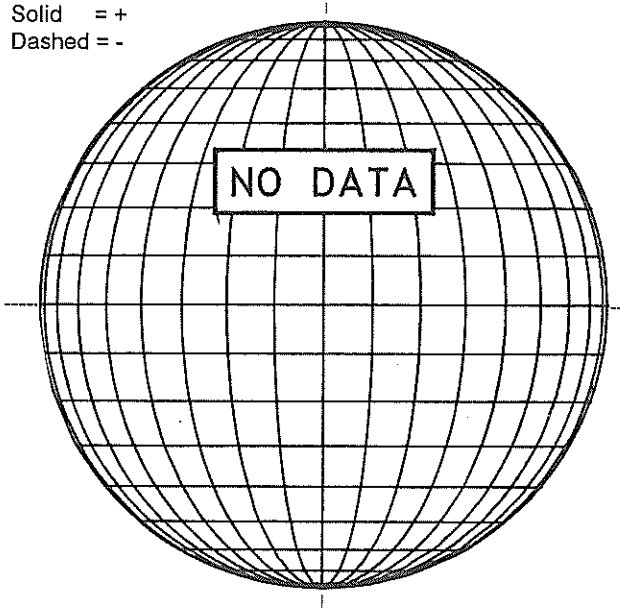
E--

1900 UT

STANFORD MAGNETOGRAM

N

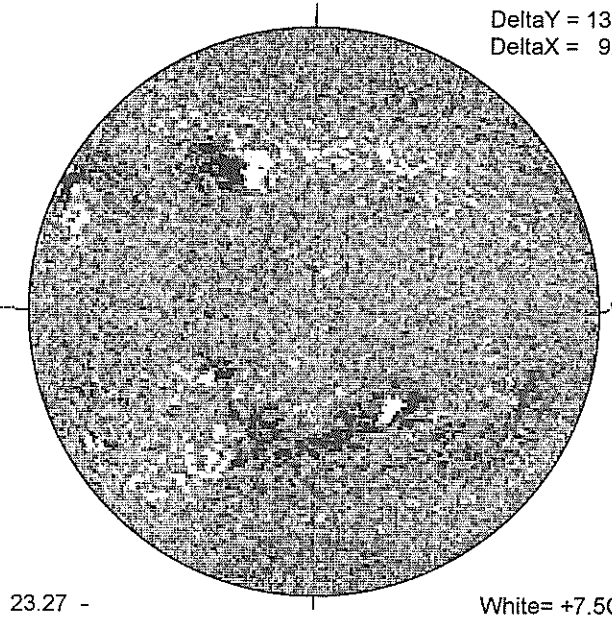
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

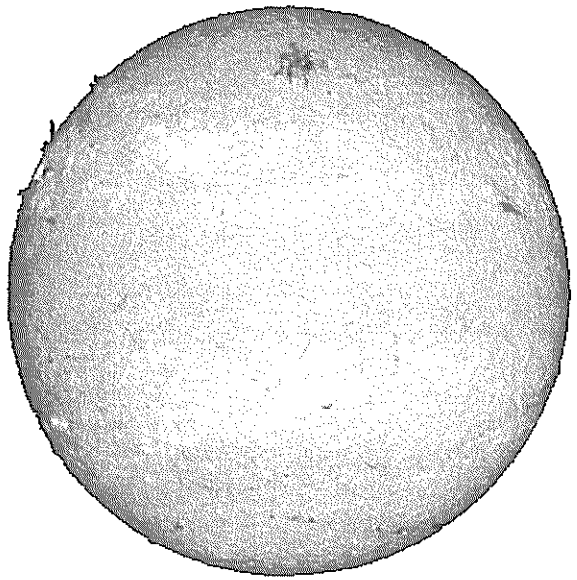


W

23.27 -
24.25 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

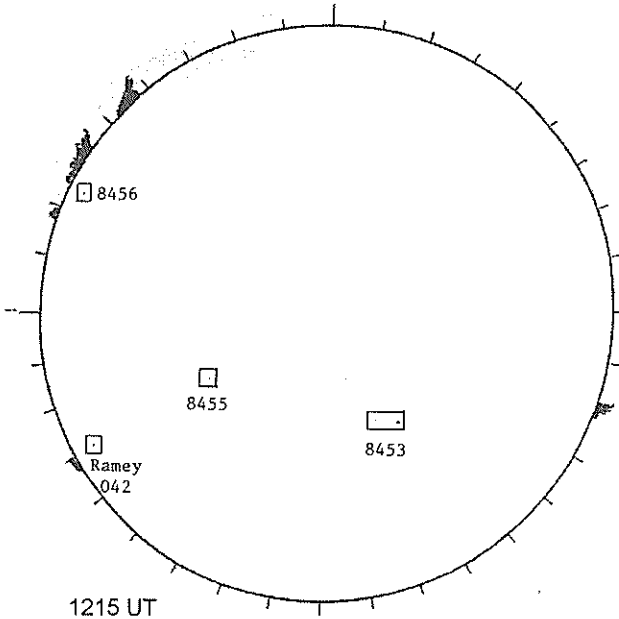


E---

0858 UT

S

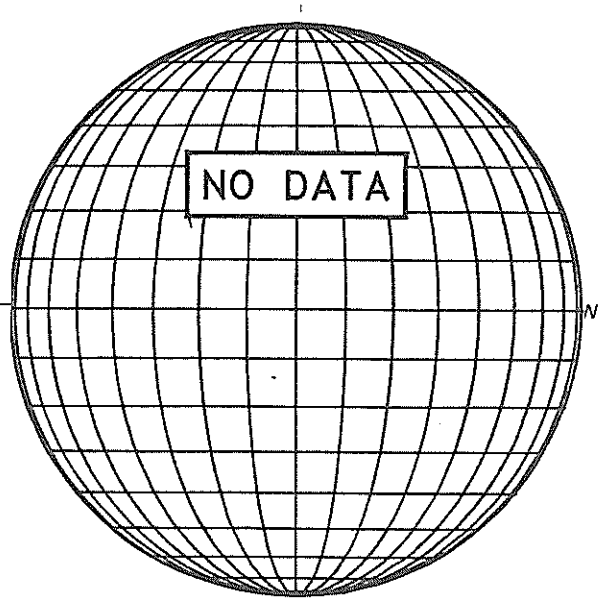
RAMEY SUNSPOT



1215 UT
1104 UT LOMN Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

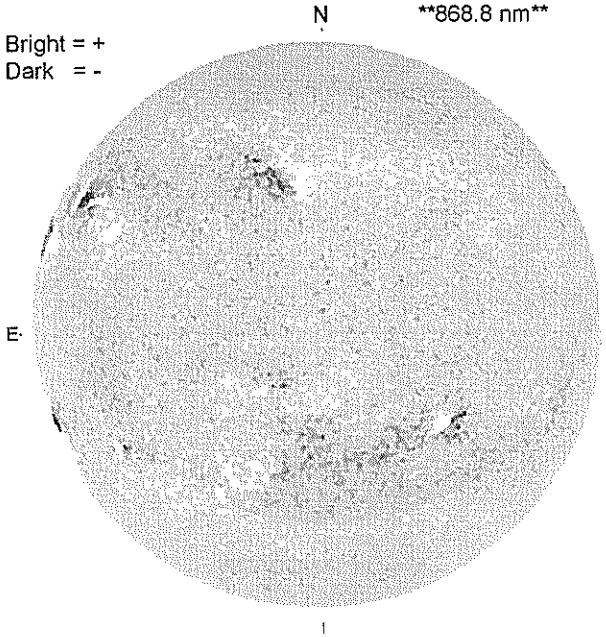


W

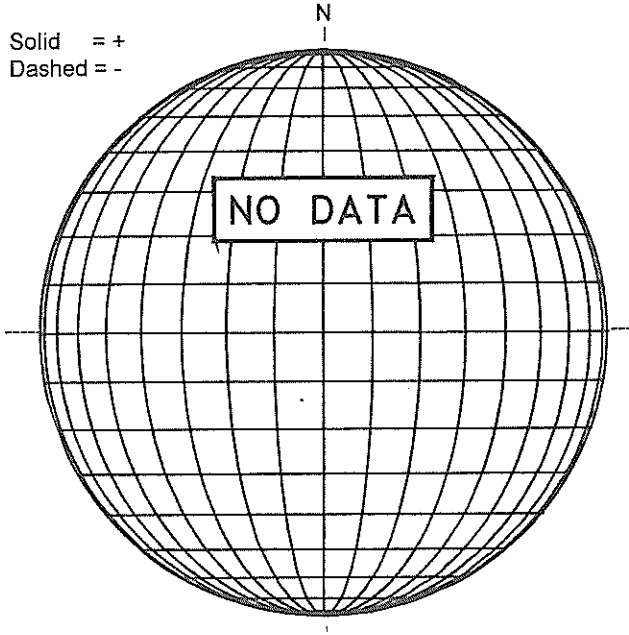
S

FEBRUARY 8, 1999 (P= -14.75, Bo = -6.46, Lo = 5.21)

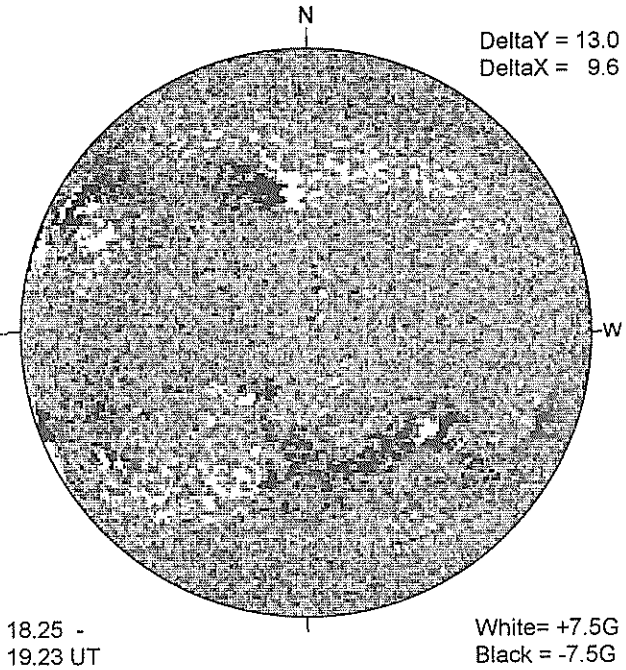
KITT PEAK MAGNETOGRAM



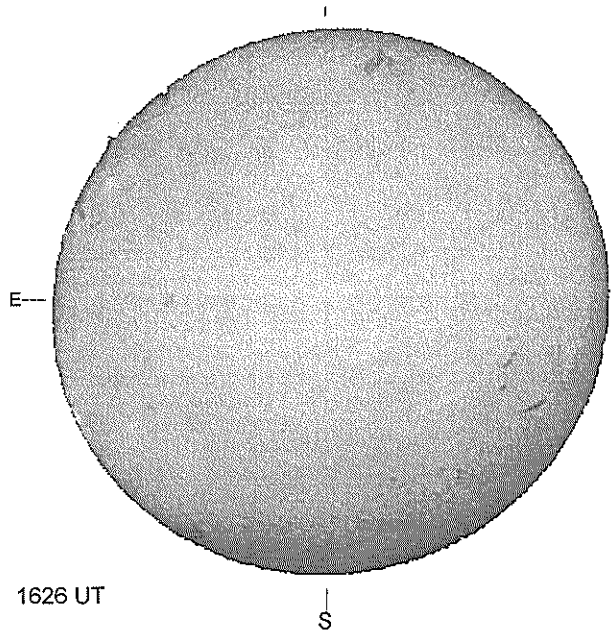
STANFORD MAGNETOGRAM



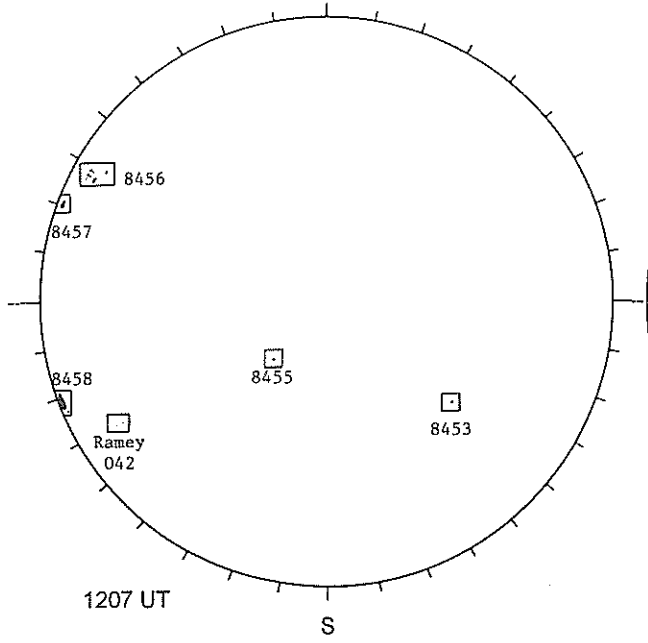
MT. WILSON MAGNETOGRAM



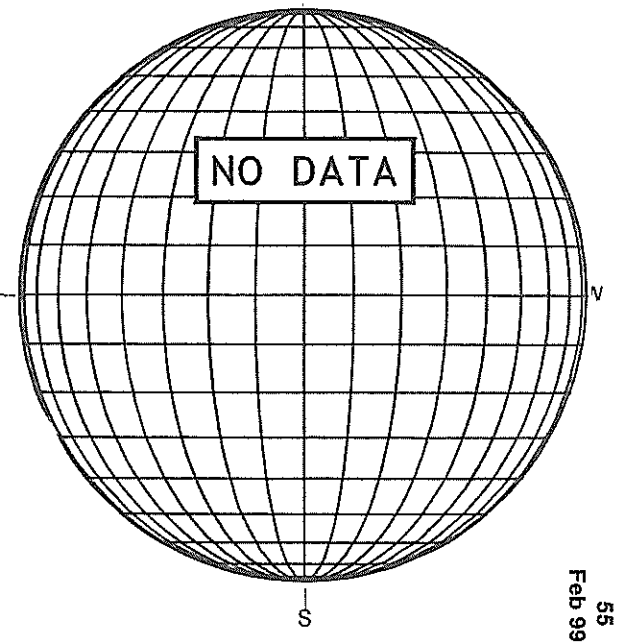
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



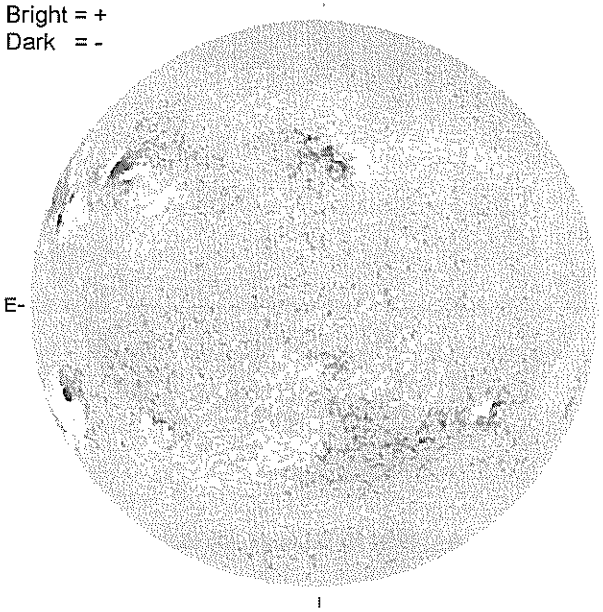
55
Feb 99

FEBRUARY 9, 1999 (P= -15.13, Bo = -6.51, Lo = 352.04)

KITT PEAK MAGNETOGRAM

N **868.8 nm

Bright = +
Dark = -



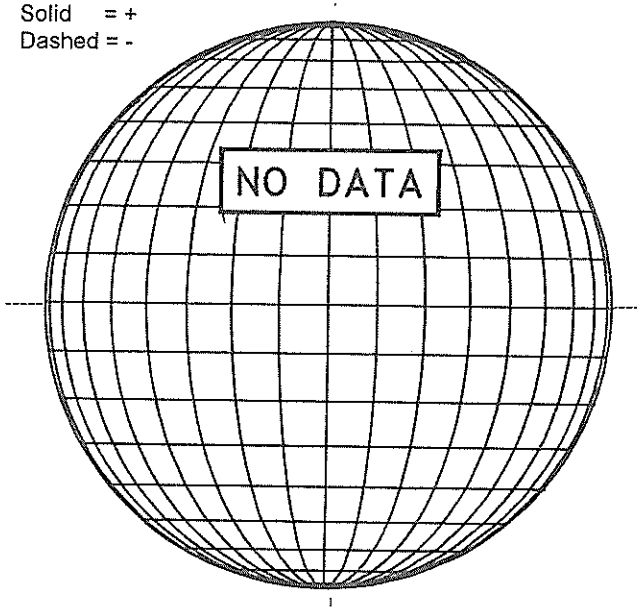
E-

1711 UT

STANFORD MAGNETOGRAM

N

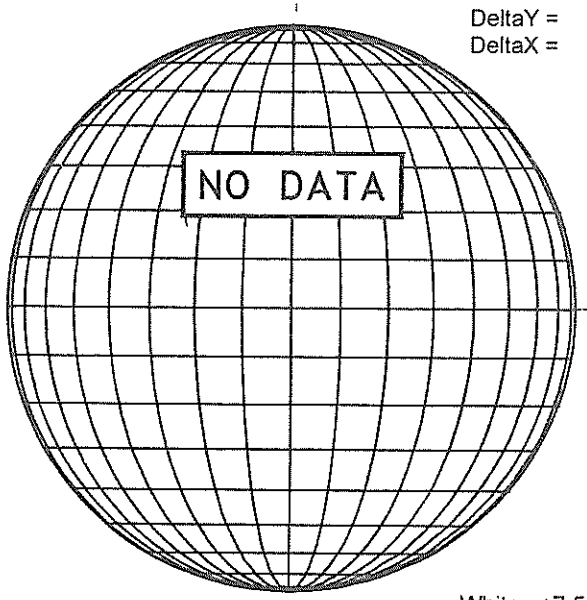
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

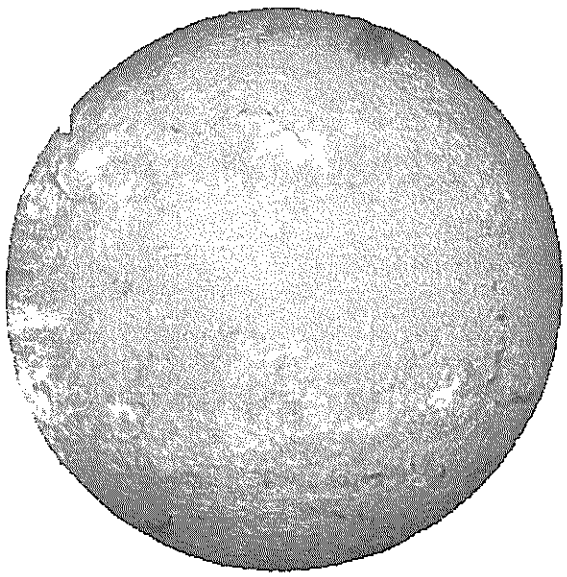
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

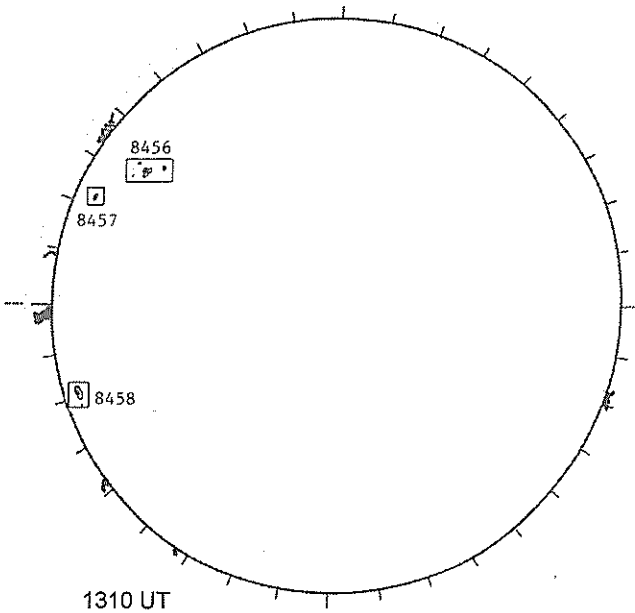


E--

1311 UT

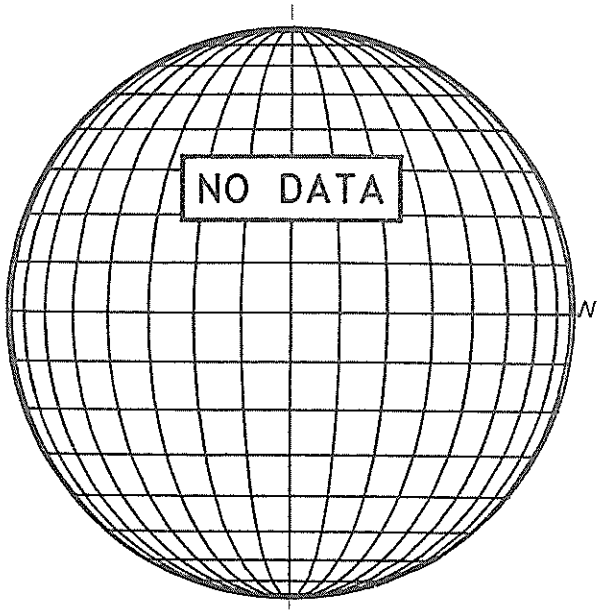
S

RAMEY SUNSPOT



1310 UT
0747 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



W

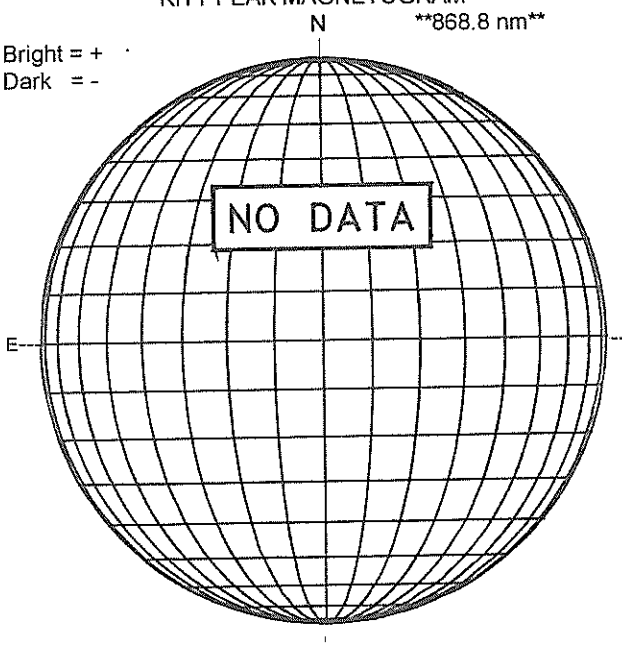
S

FEBRUARY 10, 1999 (P= -15.49, Bo = -6.57, Lo = 338.88)

KITT PEAK MAGNETOGRAM

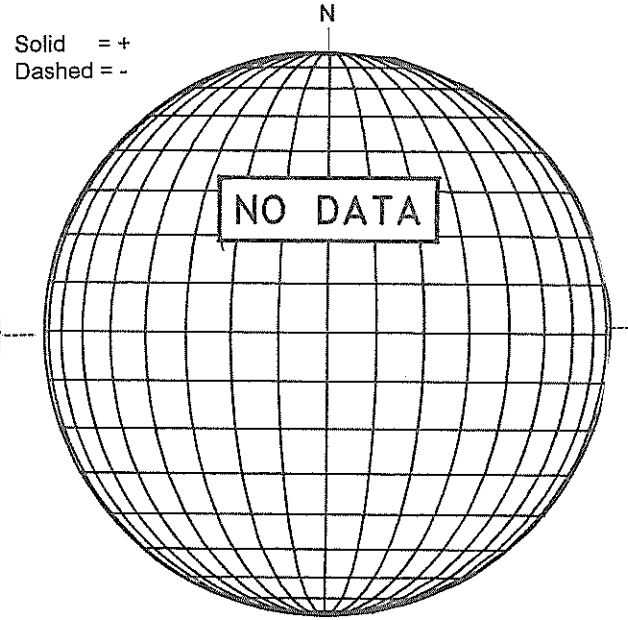
868.8 nm

Bright = +
Dark = -



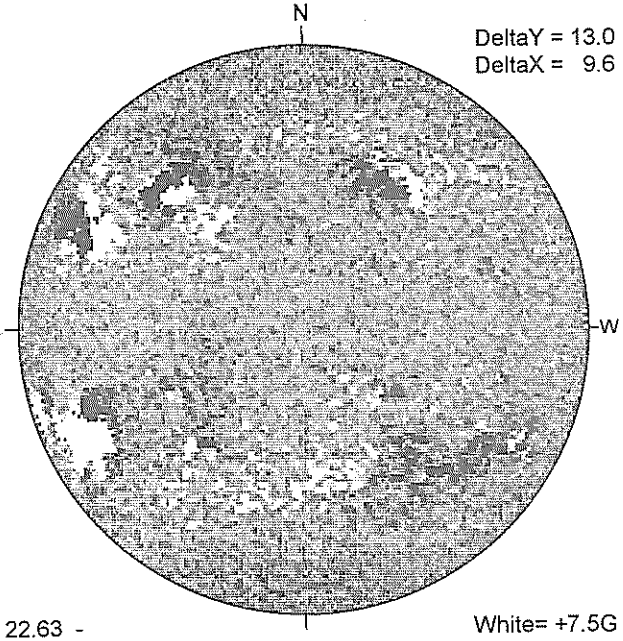
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

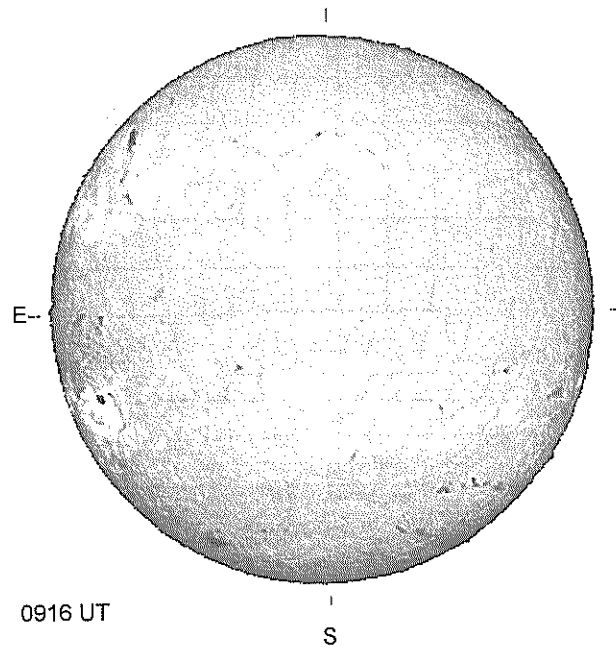
DeltaY = 13.0
DeltaX = 9.6



22.63 -
23.60 UT

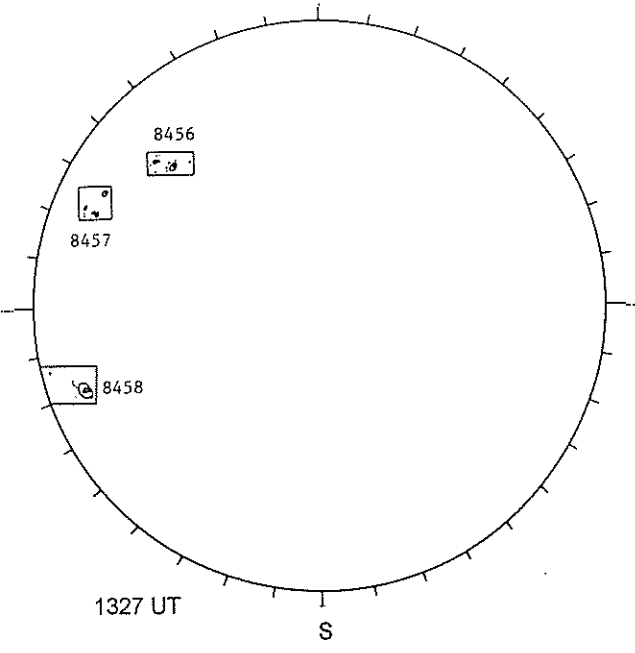
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



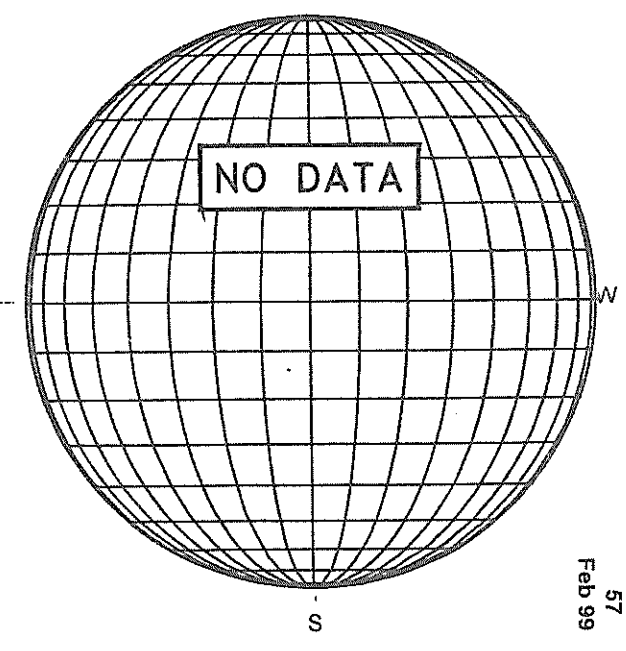
0916 UT

RAMEY SUNSPOT



1327 UT

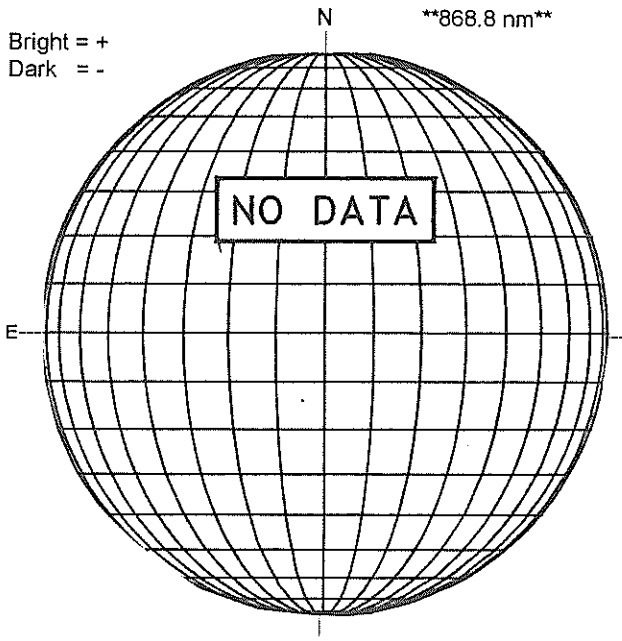
SACRAMENTO PEAK CORONA (1.15 Radii)----



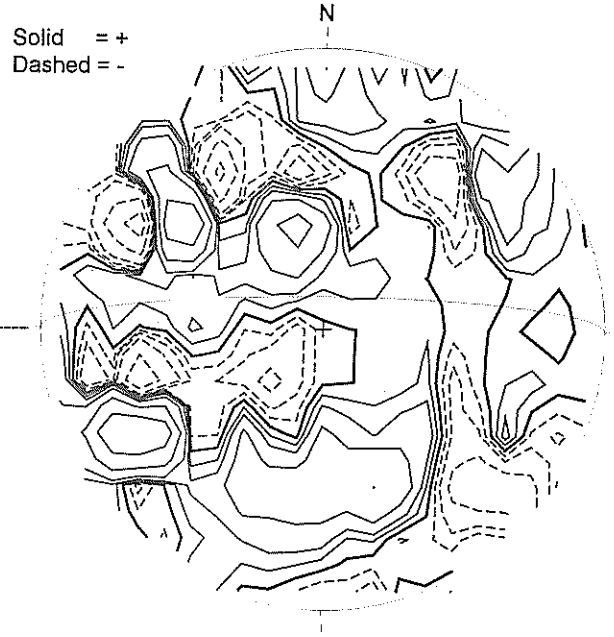
57
Feb 99

FEBRUARY 11, 1999 (P= -15.86 Bo = -6.62, Lo = 325.71)

KITT PEAK MAGNETOGRAM

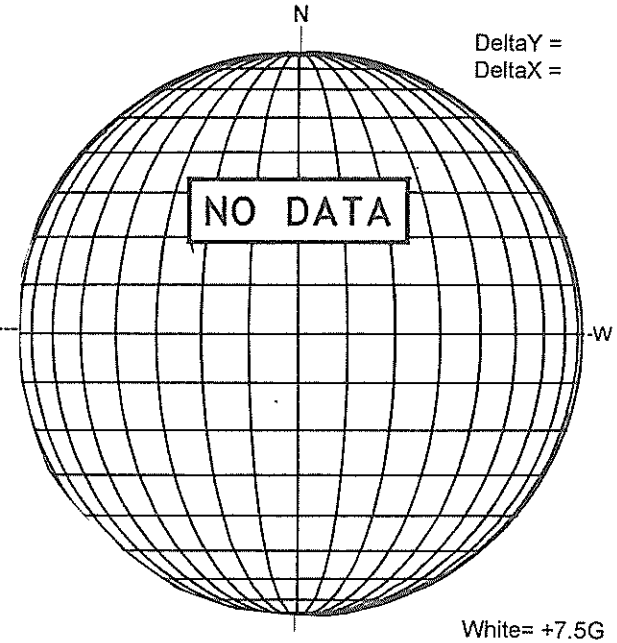


STANFORD MAGNETOGRAM



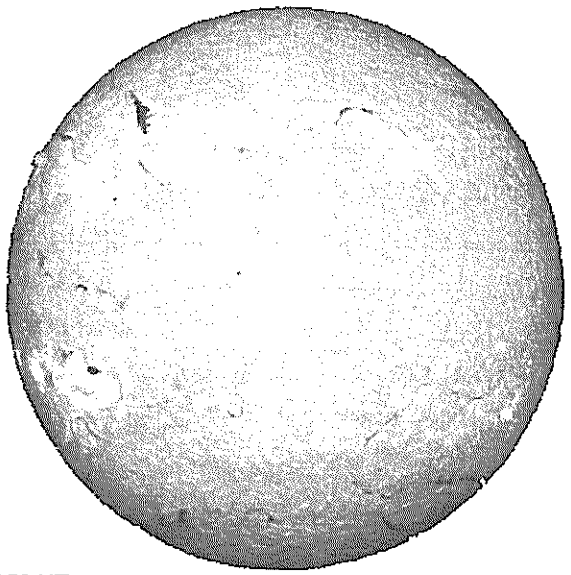
2102 UT

MT. WILSON MAGNETOGRAM



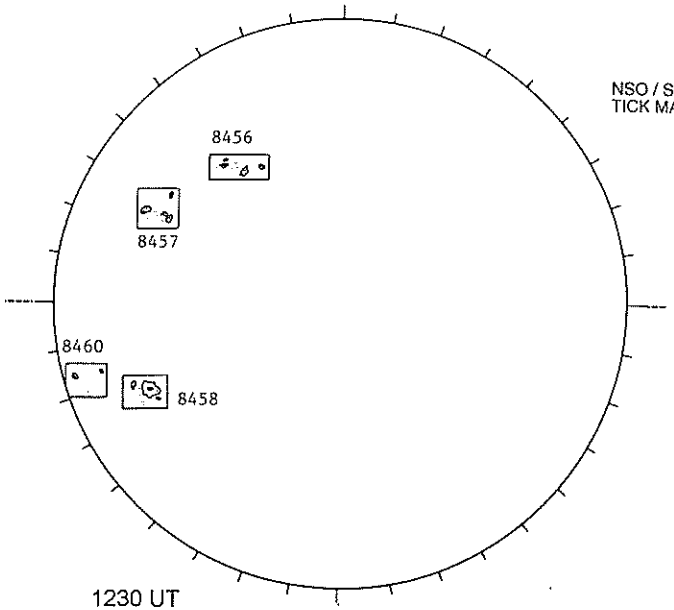
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



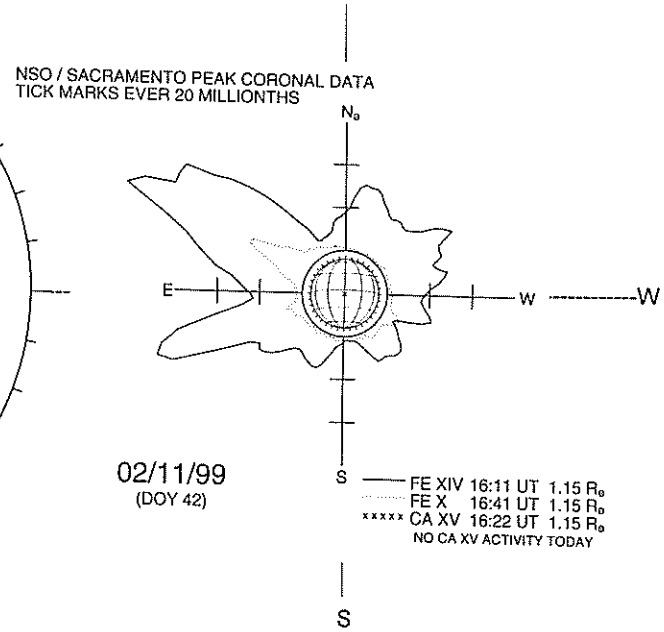
1158 UT

RAMEY SUNSPOT



1230 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

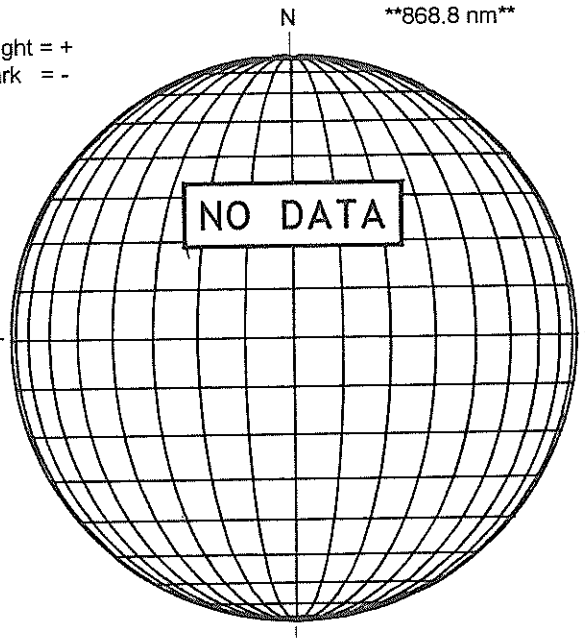


FEBRUARY 12, 1999 (P= -16.21, Bo = -6.67, Lo = 312.54)

KITT PEAK MAGNETOGRAM

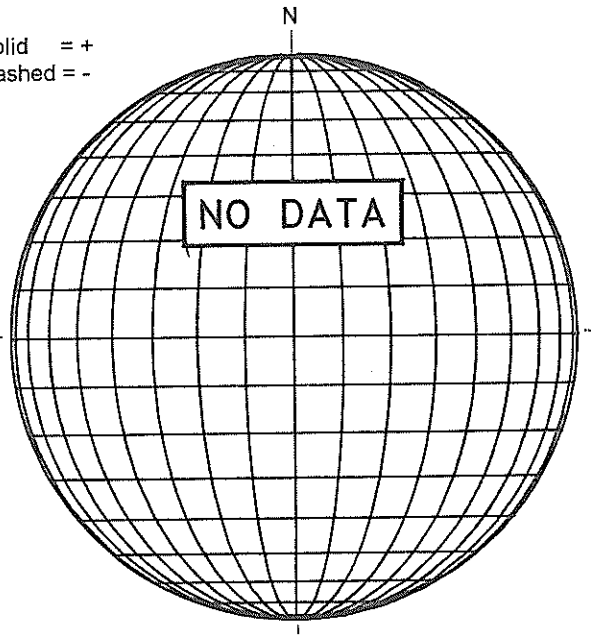
868.8 nm

Bright = +
Dark = -



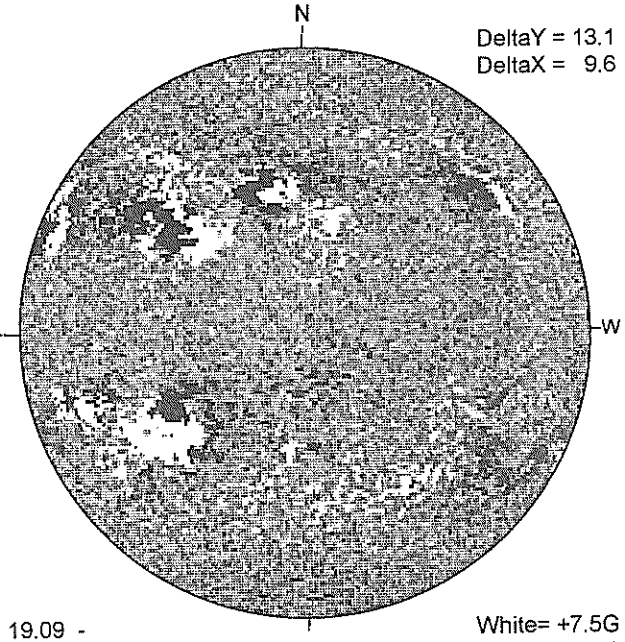
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

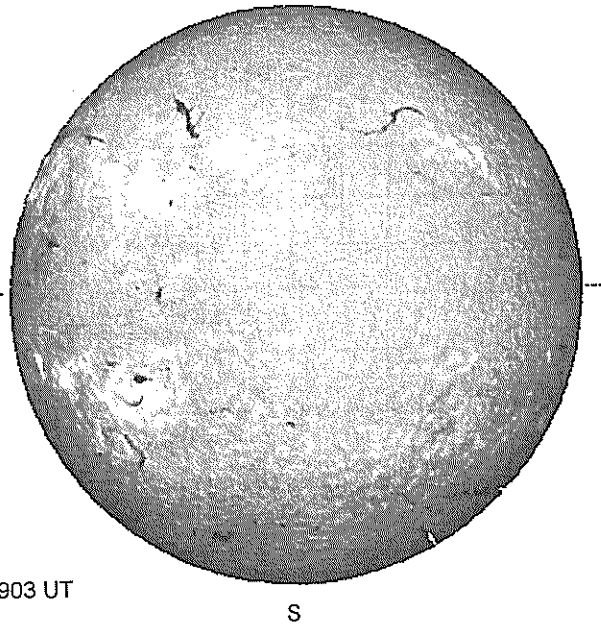
DeltaY = 13.1
DeltaX = 9.6



19.09 -
20.06 UT

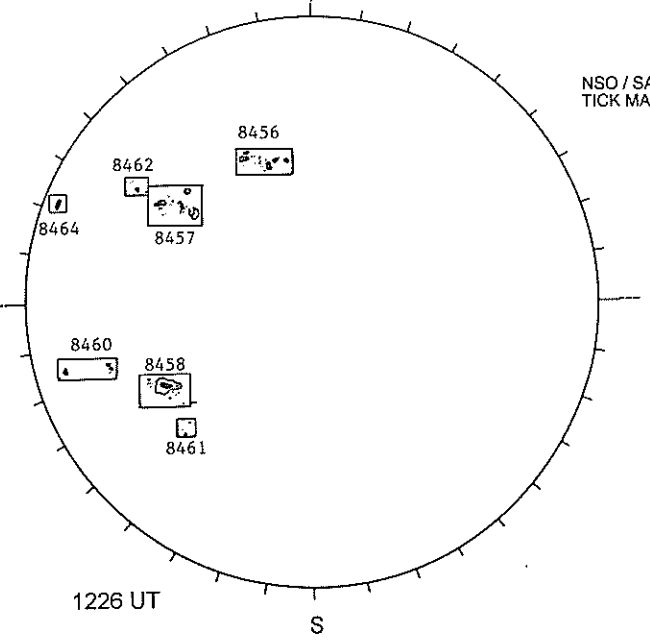
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



0903 UT

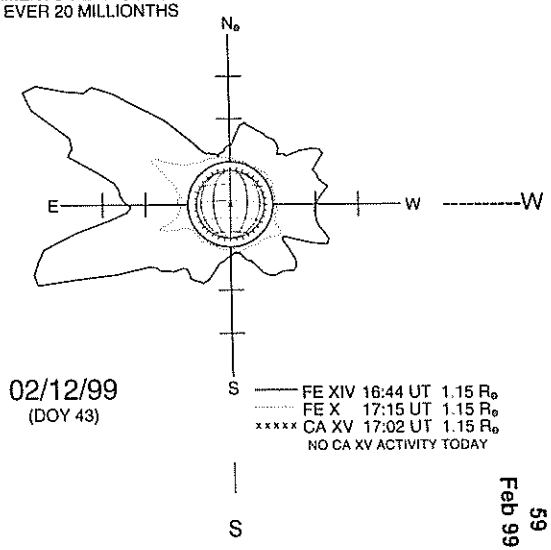
RAMEY SUNSPOT



1226 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVER 20 MILLIONTHS



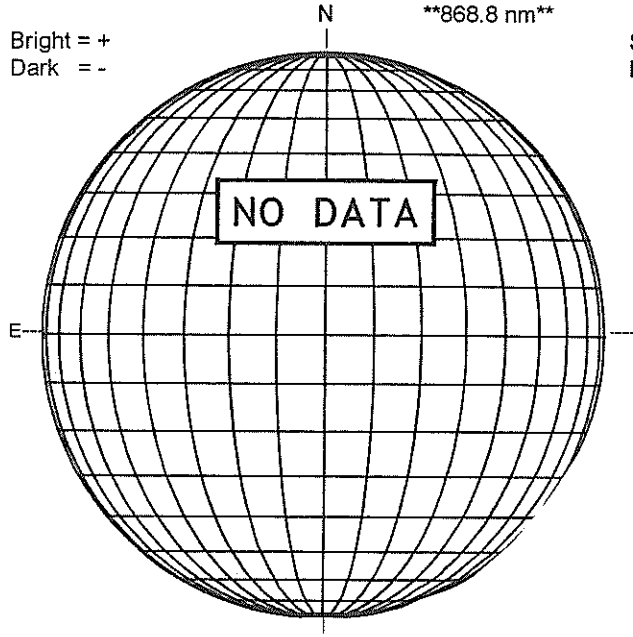
02/12/99
(DOY 43)

FE XIV 16:44 UT 1.15 R
FE X 17:15 UT 1.15 R
CA XV 17:02 UT 1.15 R
NO CA XV ACTIVITY TODAY

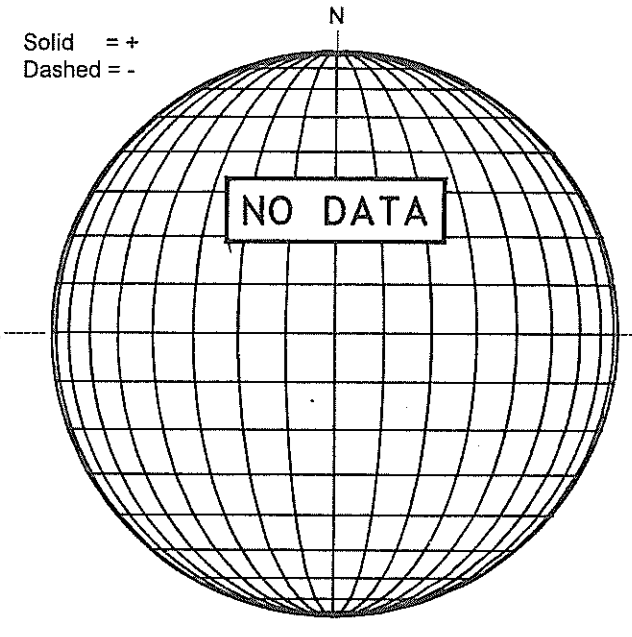
59
Feb 99

FEBRUARY 13, 1999 (P= -16.57, Bo = -6.72, Lo = 299.37)

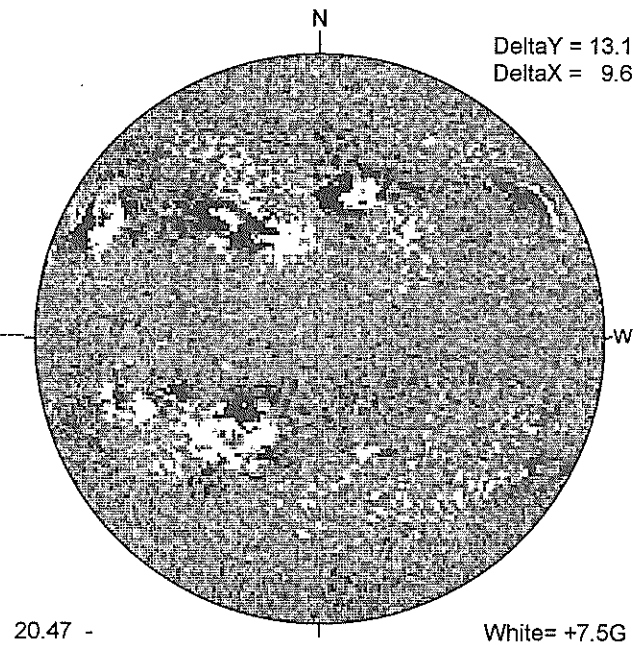
KITT PEAK MAGNETOGRAM



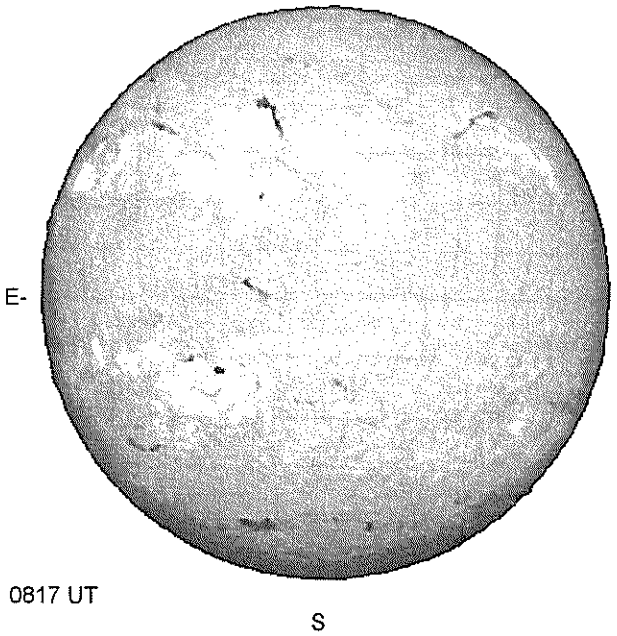
STANFORD MAGNETOGRAM



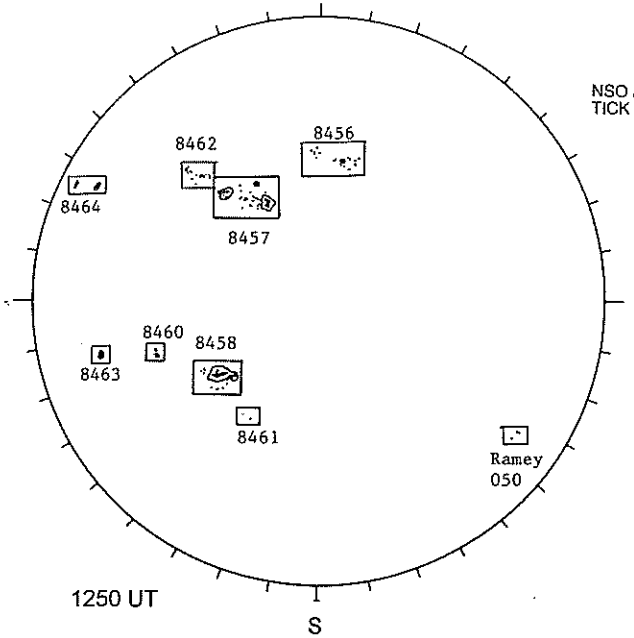
MT. WILSON MAGNETOGRAM



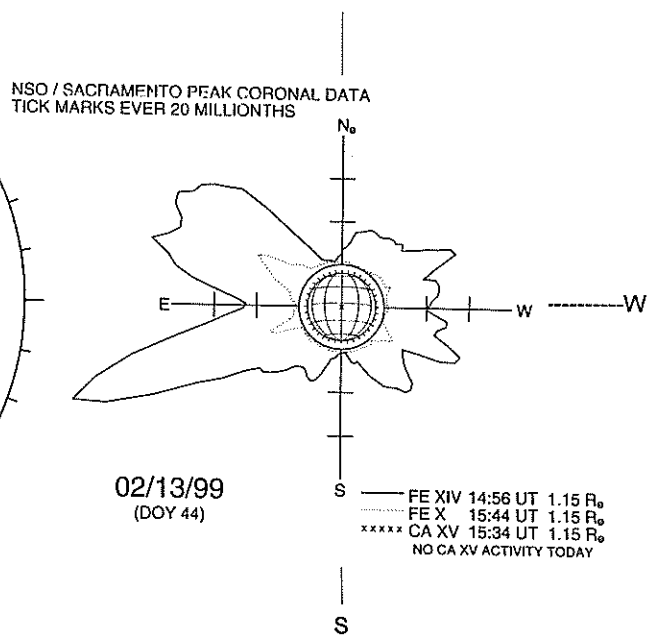
MEUDON H-ALPHA



RAMEY SUNSPOT

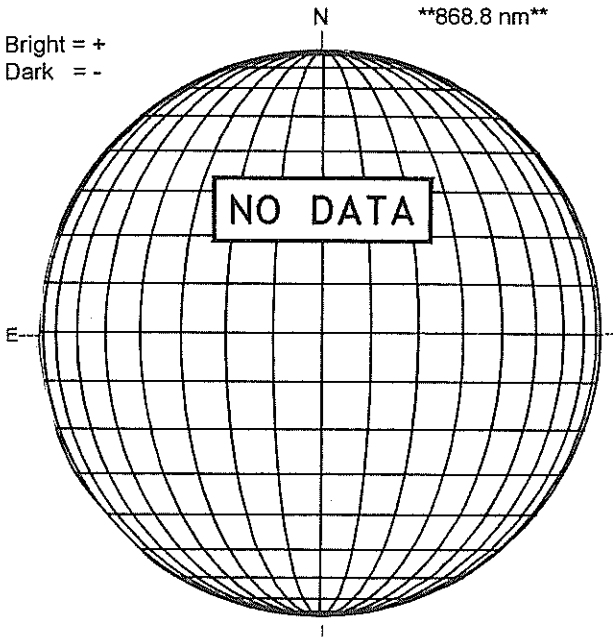


SACRAMENTO PEAK CORONA (1.15 Radii)

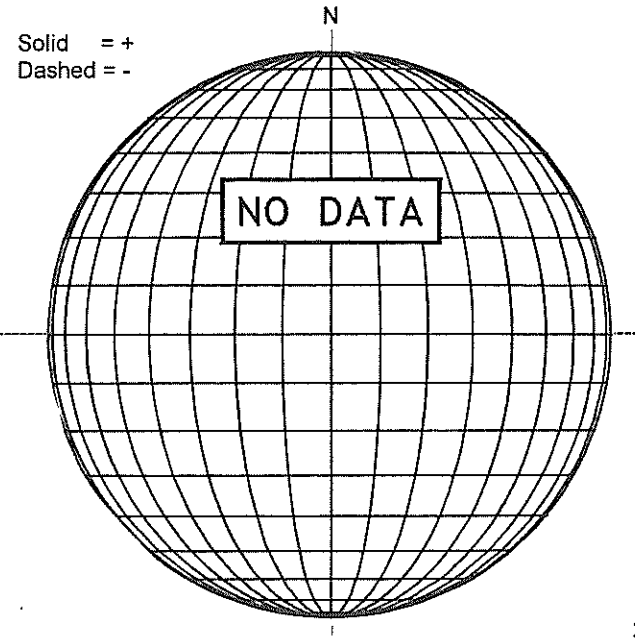


FEBRUARY 14, 1999 (P= -16.91, Bo = -6.77, Lo = 286.21)

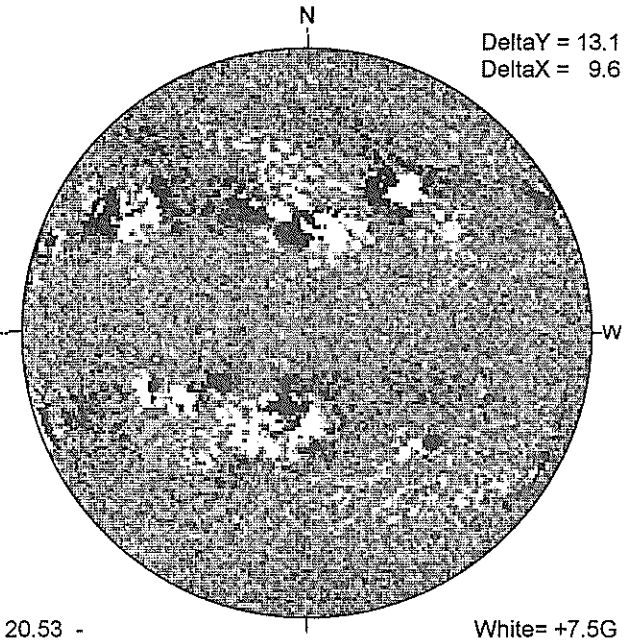
KITT PEAK MAGNETOGRAM



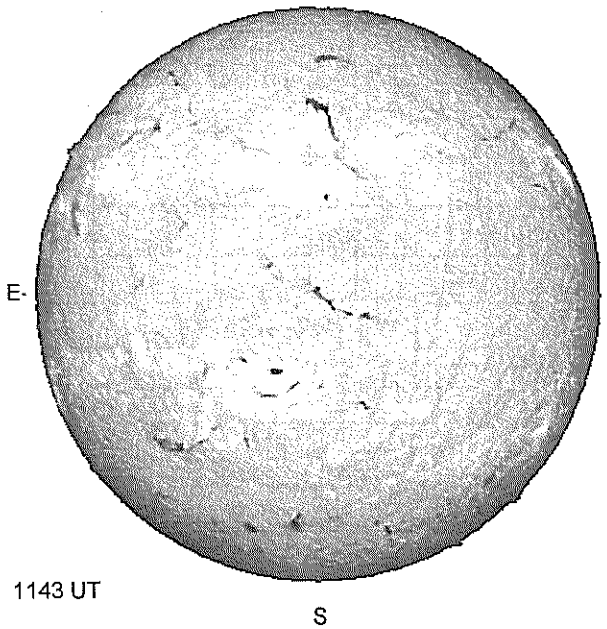
STANFORD MAGNETOGRAM



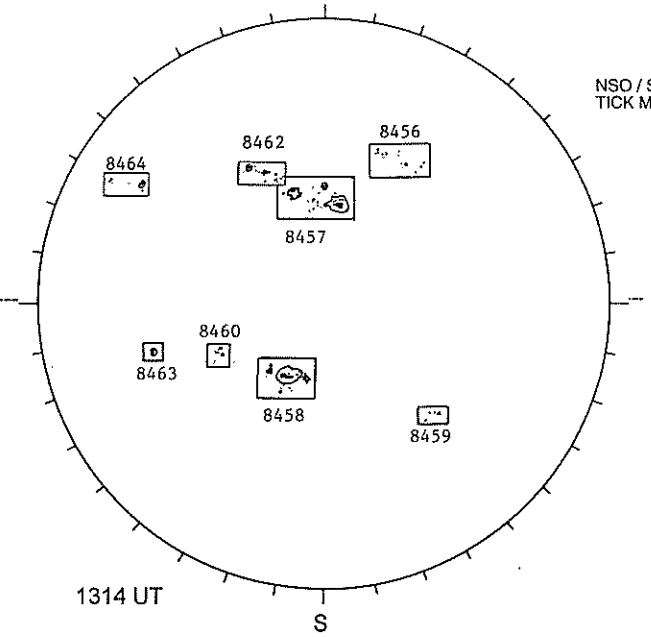
MT. WILSON MAGNETOGRAM



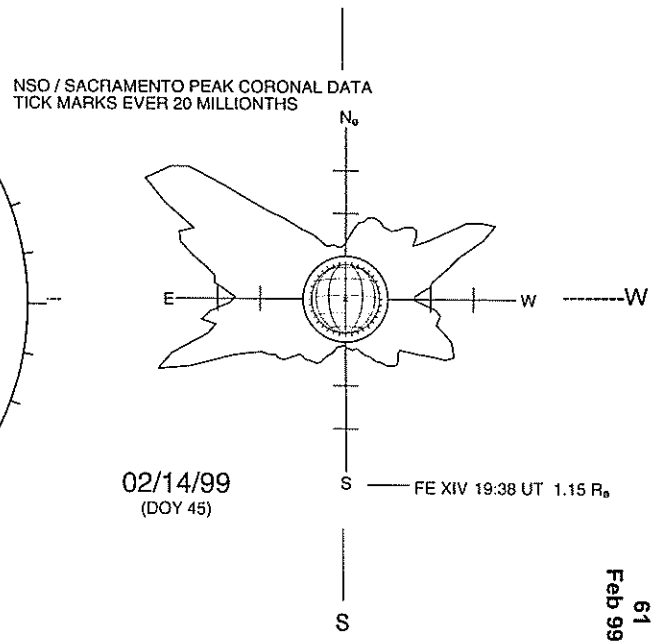
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



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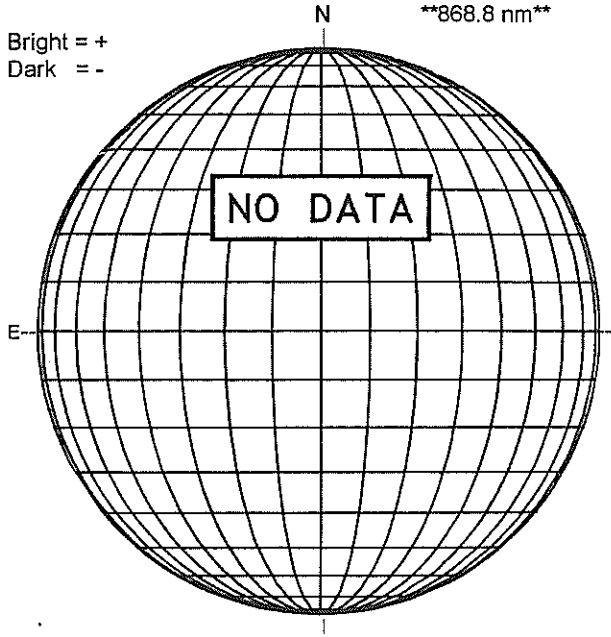
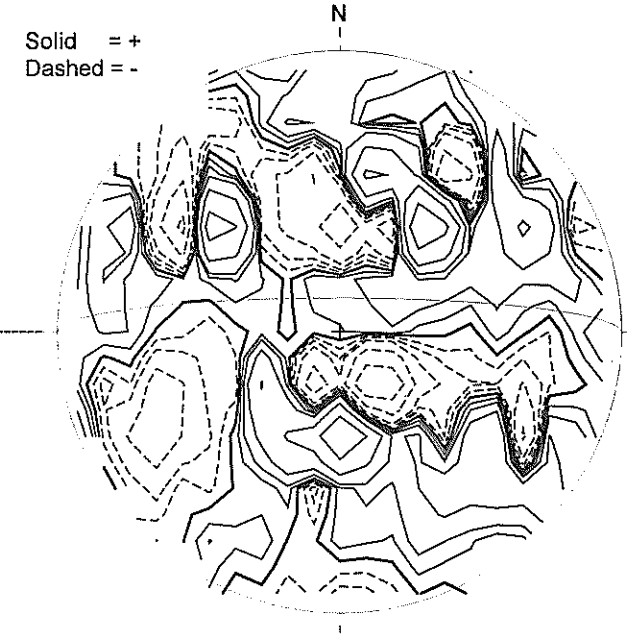
Feb 99

FEBRUARY 15, 1999 (P= -17.26, Bo = -6.81, Lo = 273.04)

KITT PEAK MAGNETOGRAM

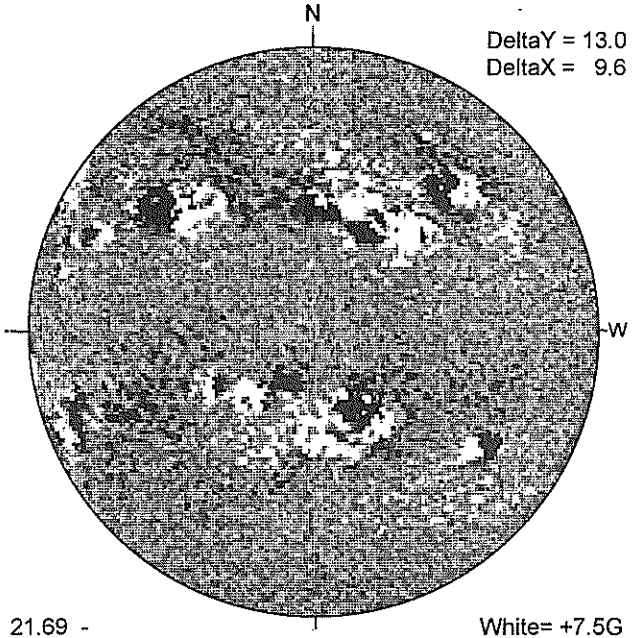


STANFORD MAGNETOGRAM



1901 UT

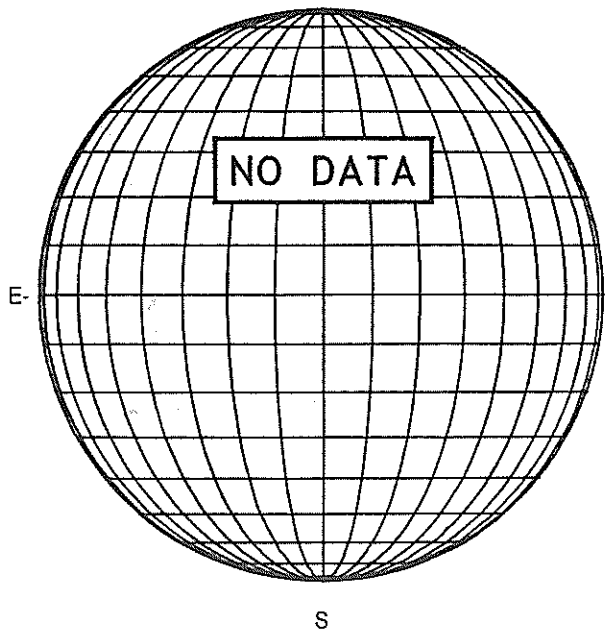
MT. WILSON MAGNETOGRAM



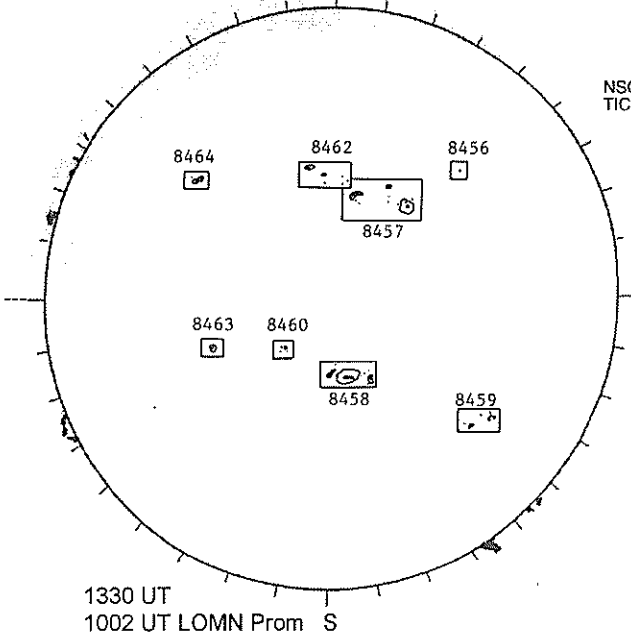
21.69 -
22.65 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

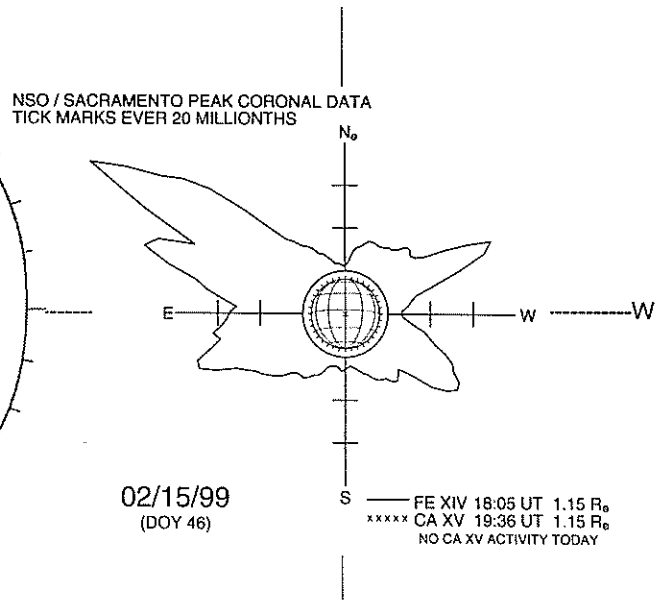


RAMEY SUNSPOT



1330 UT
1002 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



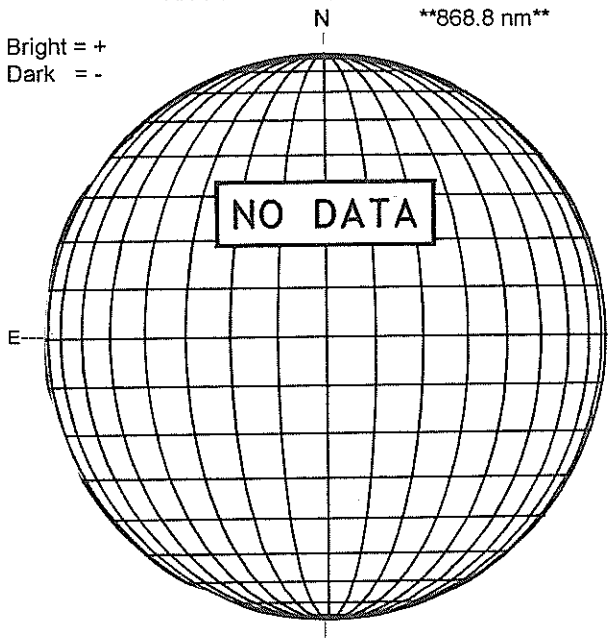
02/15/99
(DOY 46)

FE XIV 18:05 UT 1.15 $R_\odot$
xxxxx CA XV 19:36 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

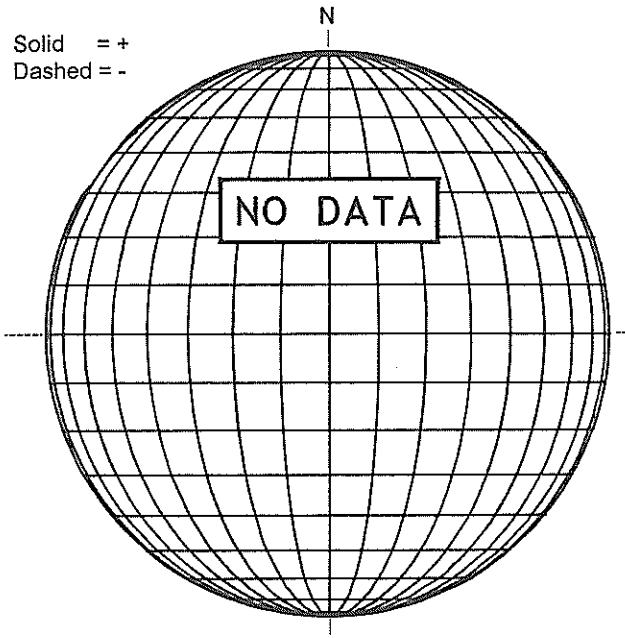
S

FEBRUARY 16, 1999 (P= -17.59, Bo = -6.86, Lo = 259.87)

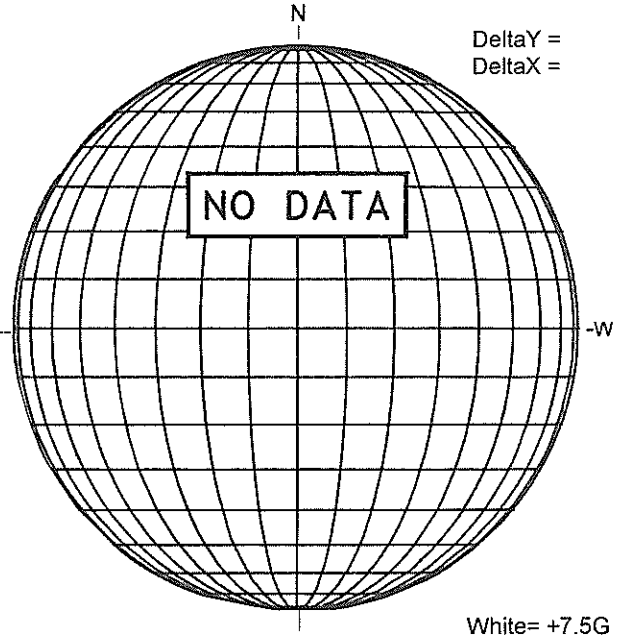
KITT PEAK MAGNETOGRAM



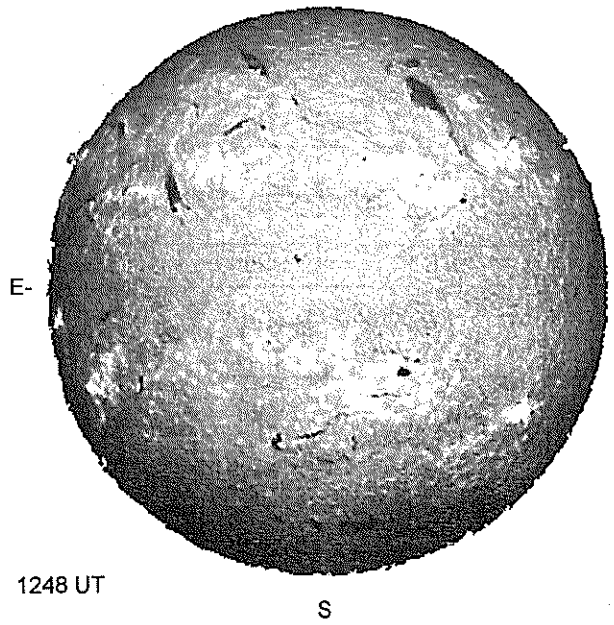
STANFORD MAGNETOGRAM



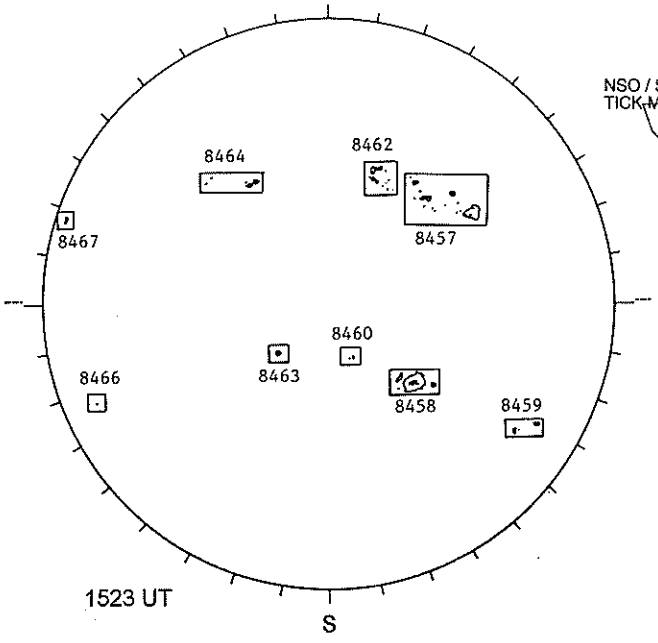
MT. WILSON MAGNETOGRAM



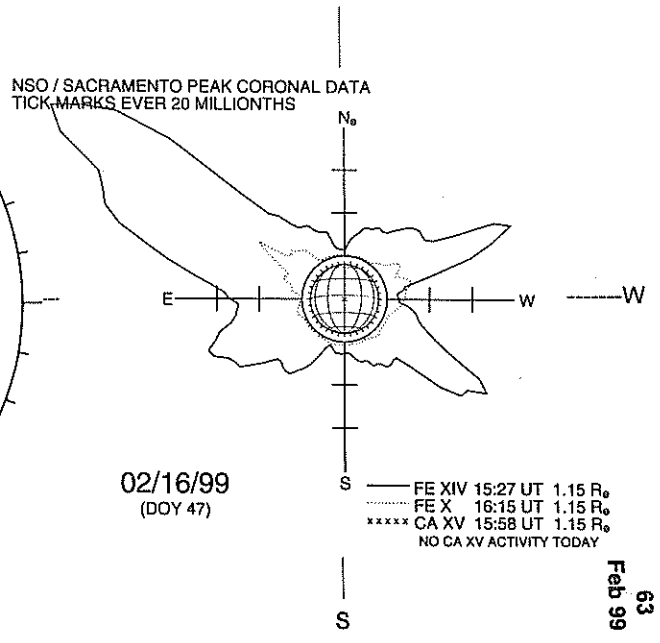
MEUDON H-ALPHA



RAMEY SUNSPOT

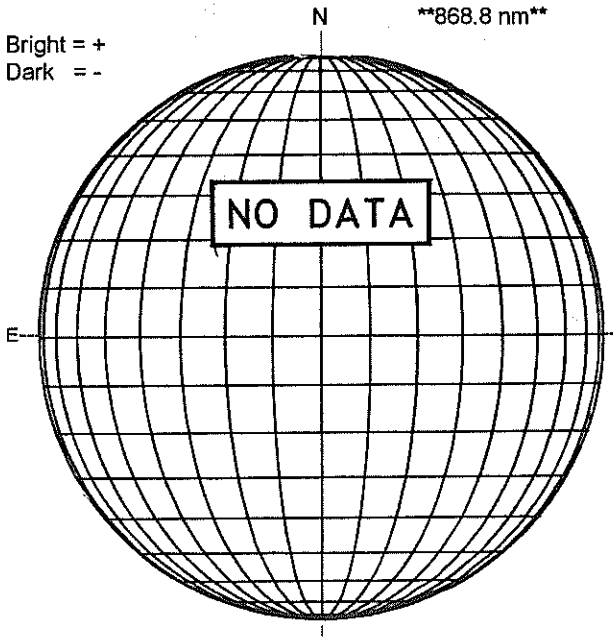


SACRAMENTO PEAK CORONA (1.15 Radii)----

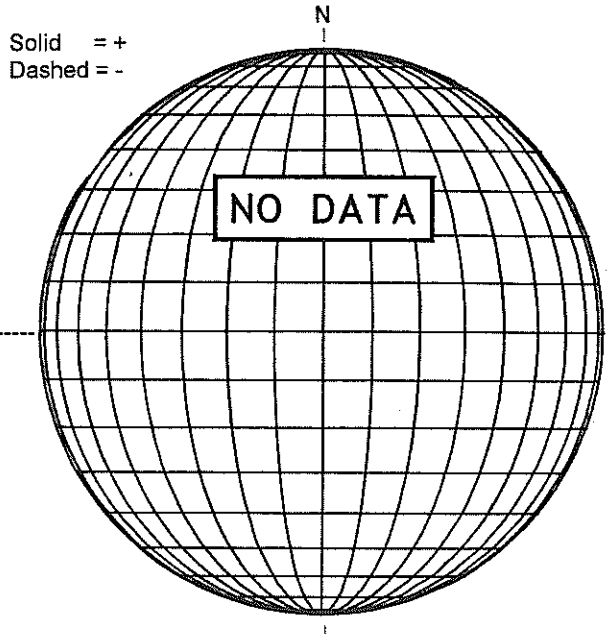


FEBRUARY 17, 1999 (P= -17.92, Bo = -6.90, Lo = 246.70)

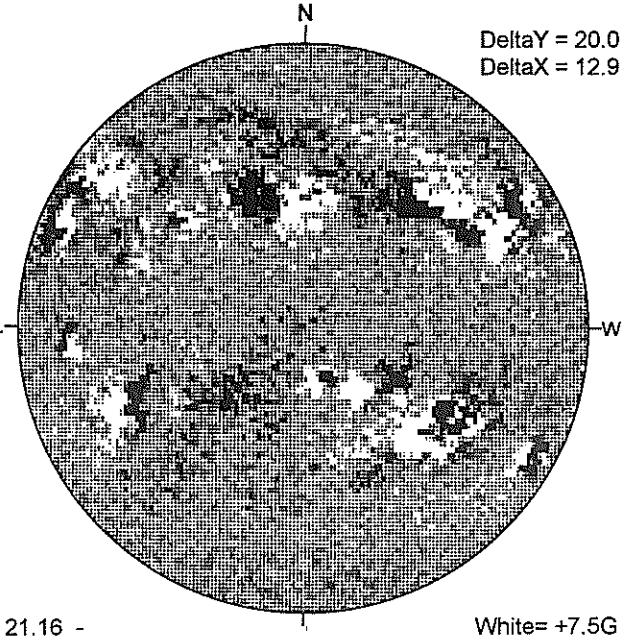
KITT PEAK MAGNETOGRAM



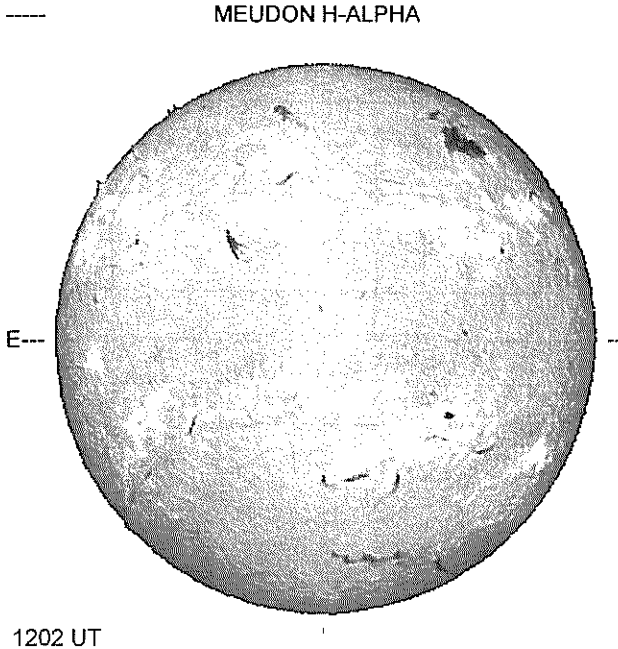
STANFORD MAGNETOGRAM



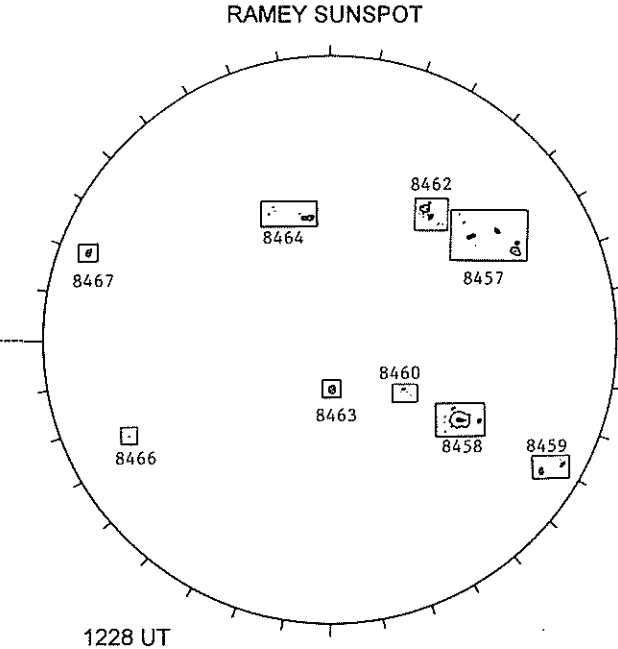
MT. WILSON MAGNETOGRAM



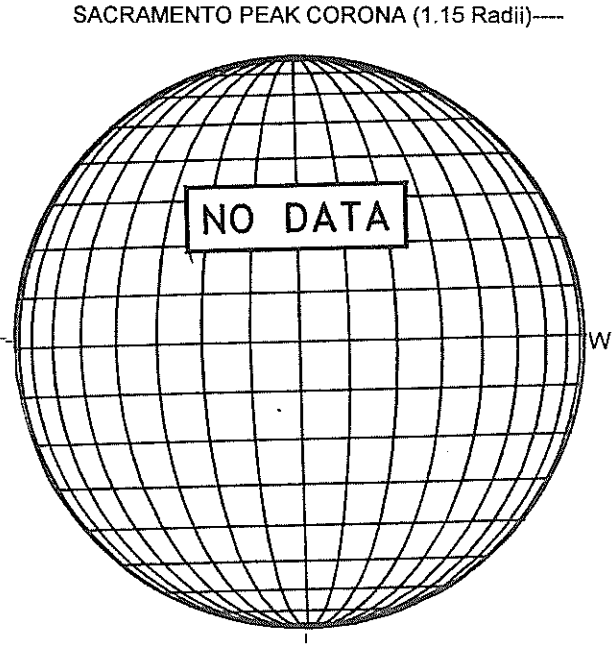
MEUDON H-ALPHA



RAMEY SUNSPOT

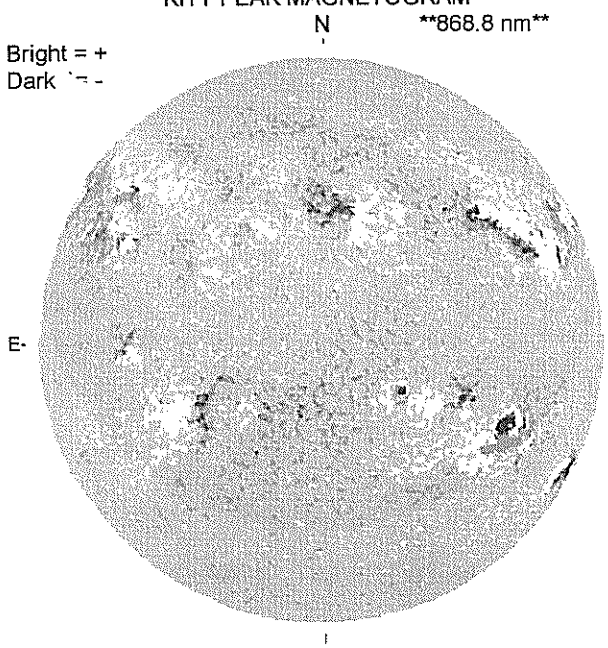


SACRAMENTO PEAK CORONA (1.15 Radii)



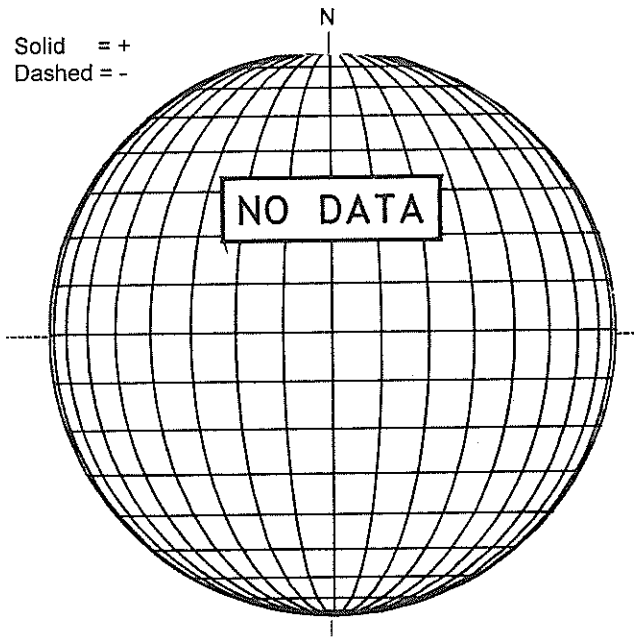
FEBRUARY 18, 1999 (P= -18.25, Bo = -6.94, Lo = 233.54)

KITT PEAK MAGNETOGRAM

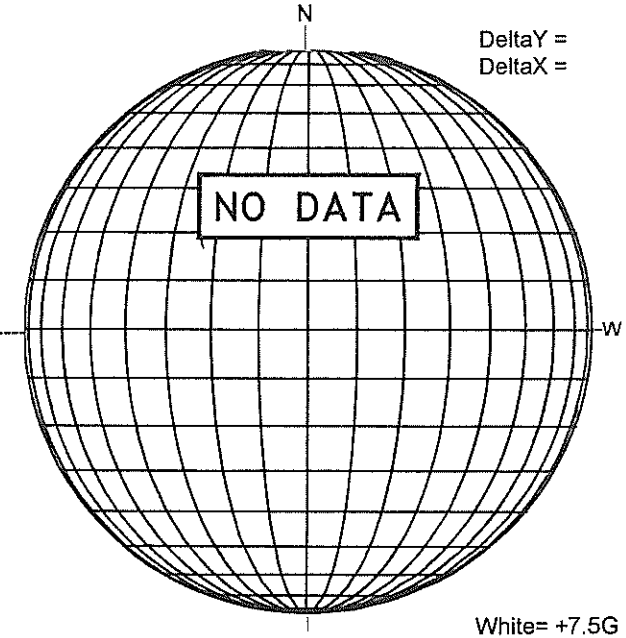


1749 UT

STANFORD MAGNETOGRAM

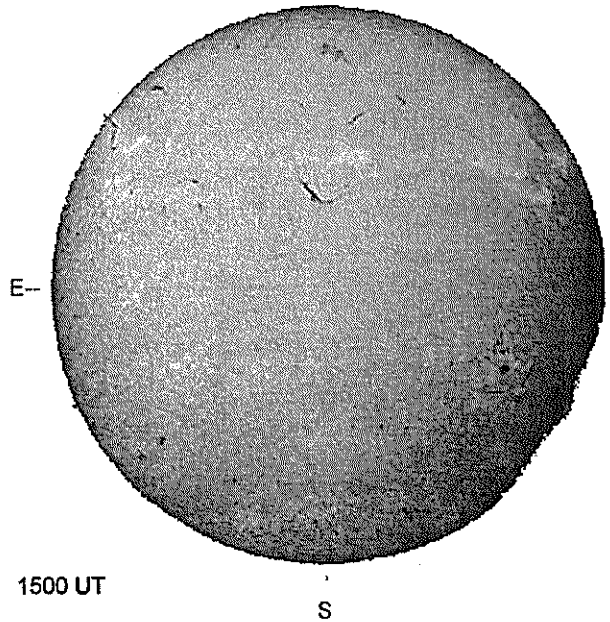


MT. WILSON MAGNETOGRAM



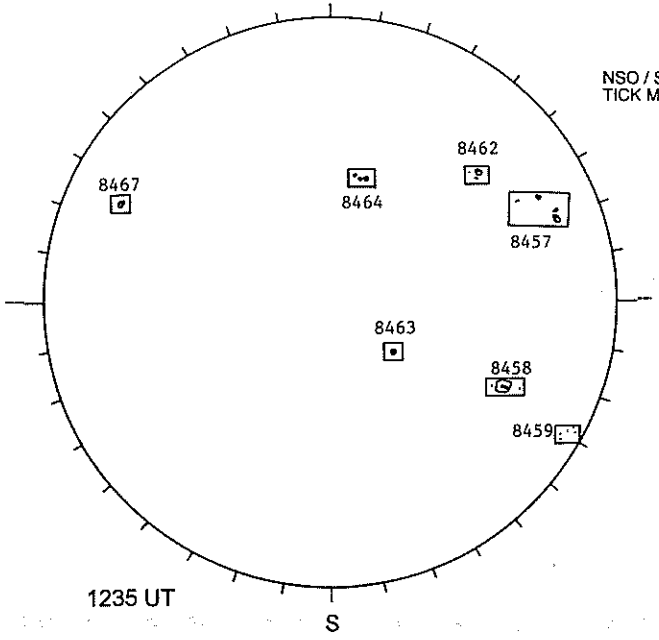
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



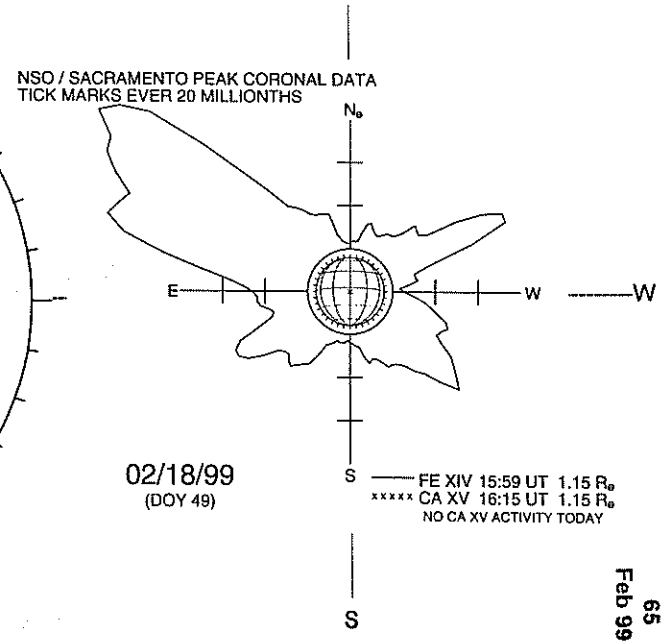
1500 UT

RAMEY SUNSPOT



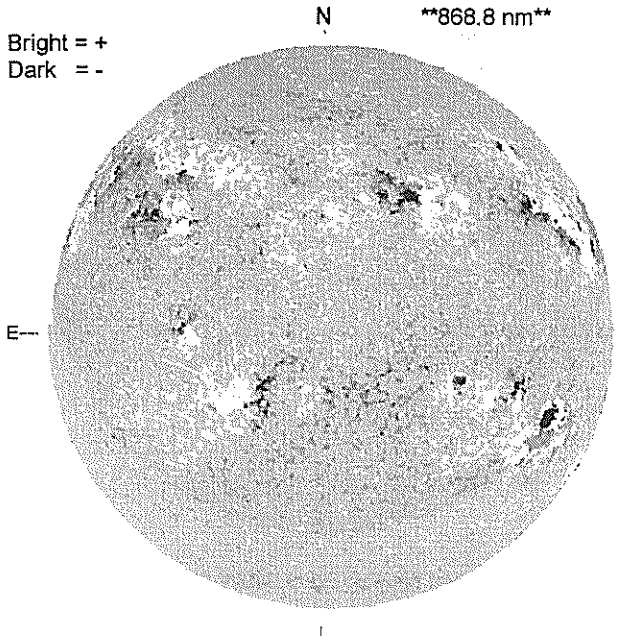
1235 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



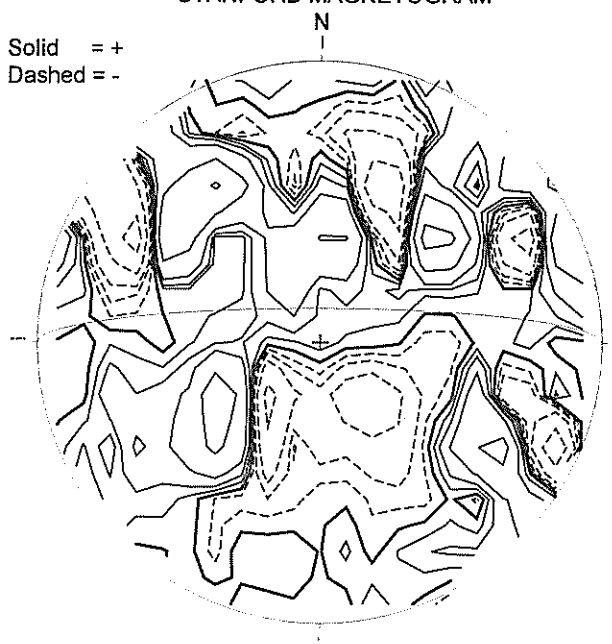
FEBRUARY 19, 1999 (P= -18.56, Bo = -6.97, Lo = 220.37)

KITT PEAK MAGNETOGRAM



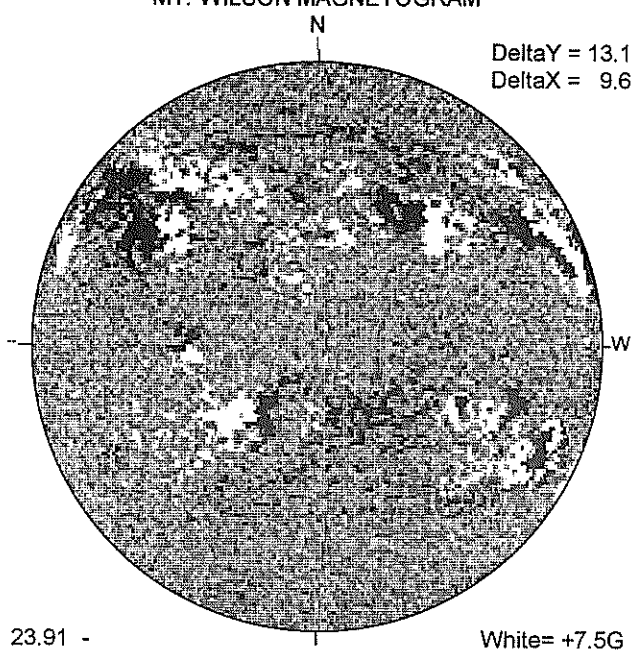
1516 UT

STANFORD MAGNETOGRAM



1935 UT

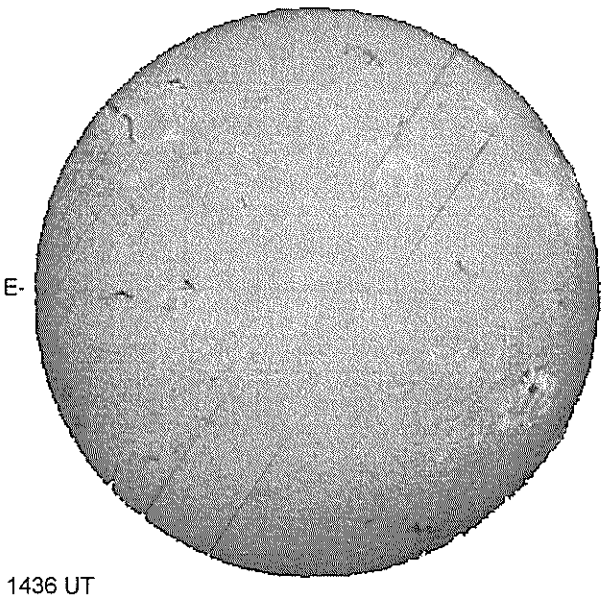
MT. WILSON MAGNETOGRAM



23.91 -
24.88 UT

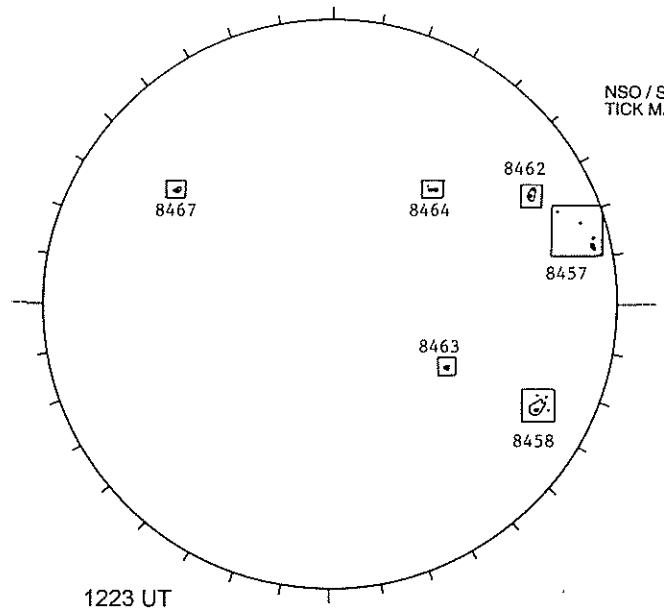
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



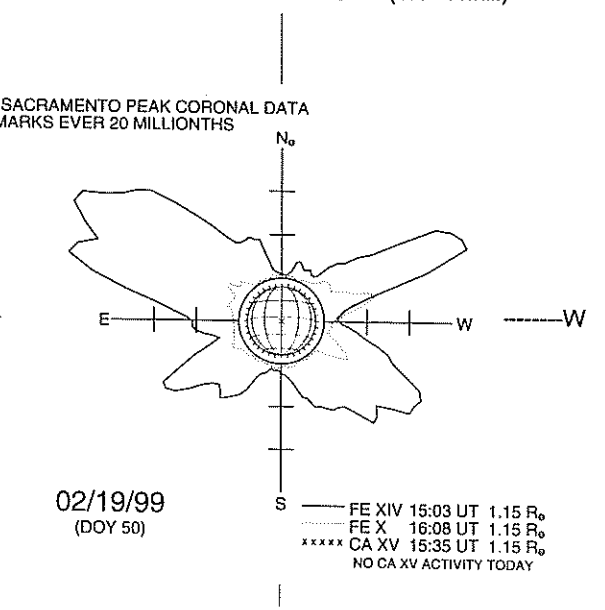
1436 UT

RAMEY SUNSPOT



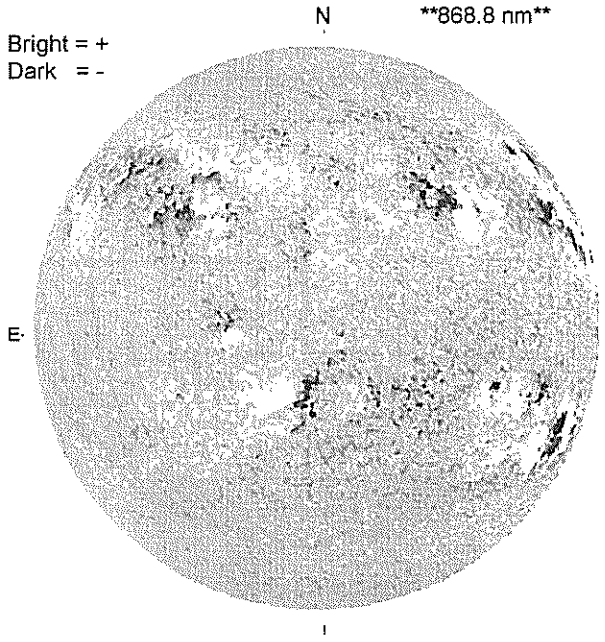
1223 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

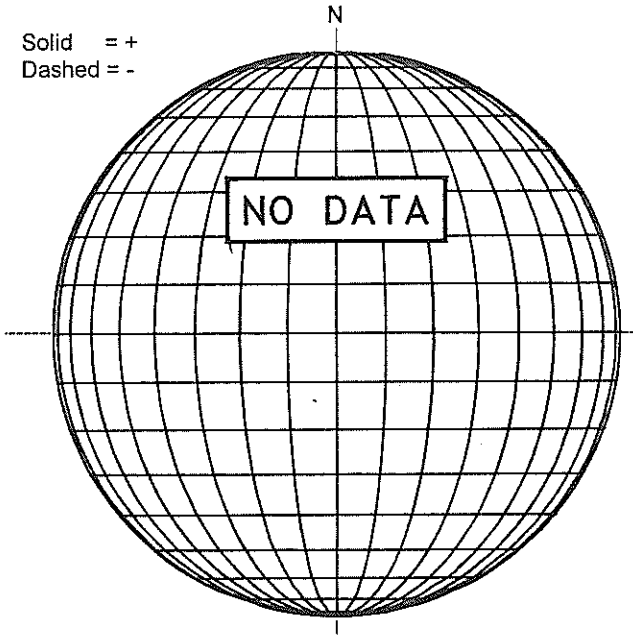


FEBRUARY 20, 1999 (P= -18.88, Bo = -7.01, Lo = 207.20)

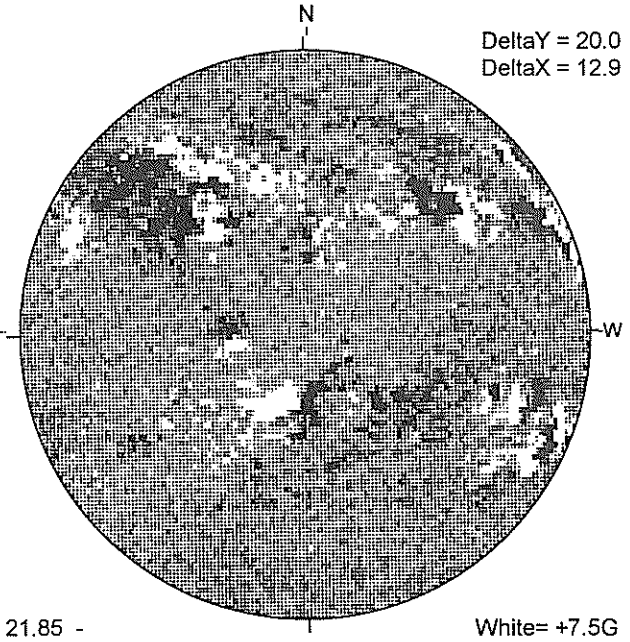
KITT PEAK MAGNETOGRAM



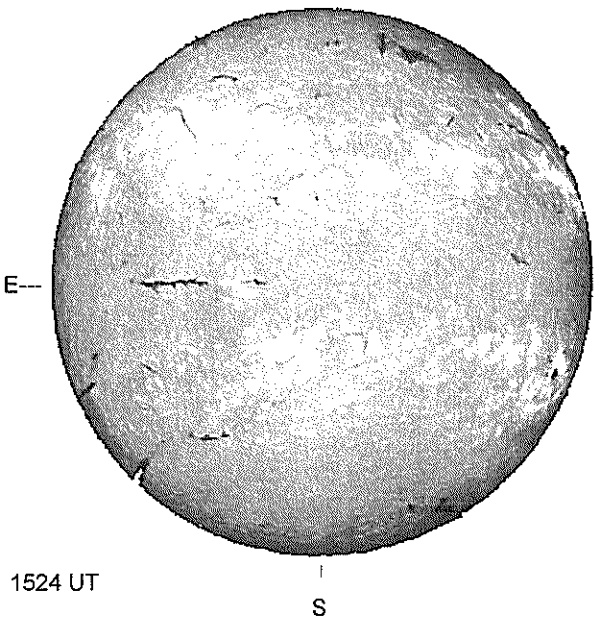
STANFORD MAGNETOGRAM



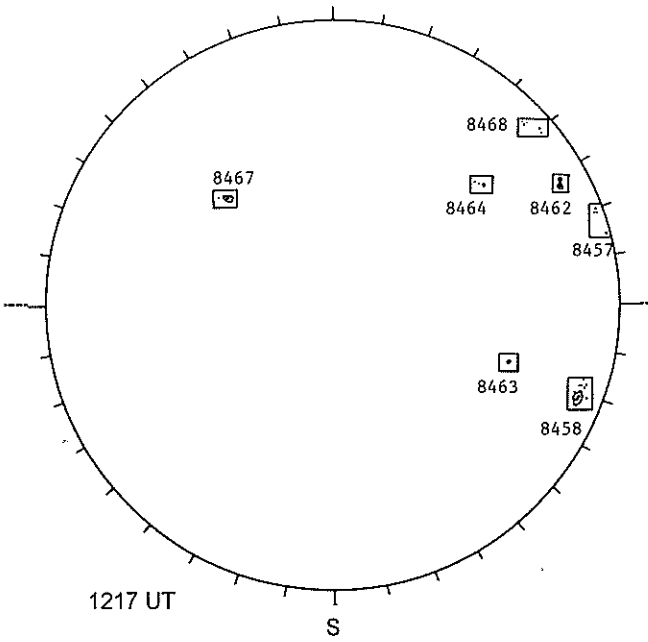
MT. WILSON MAGNETOGRAM



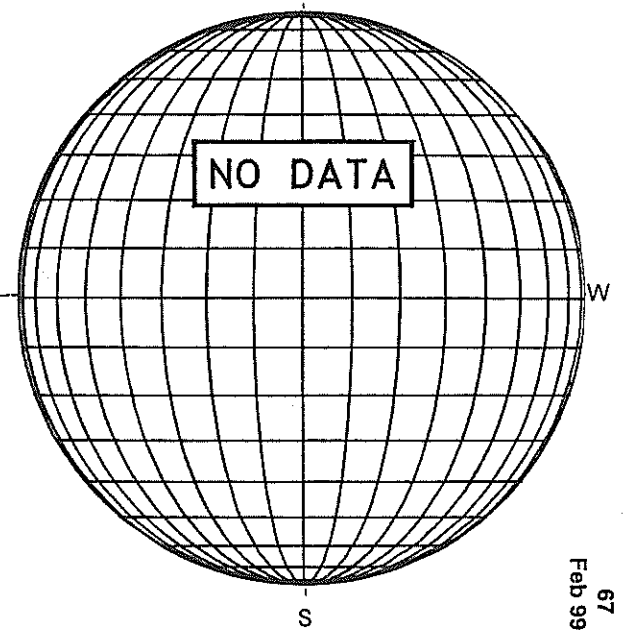
MEUDON H-ALPHA



RAMEY SUNSPOT



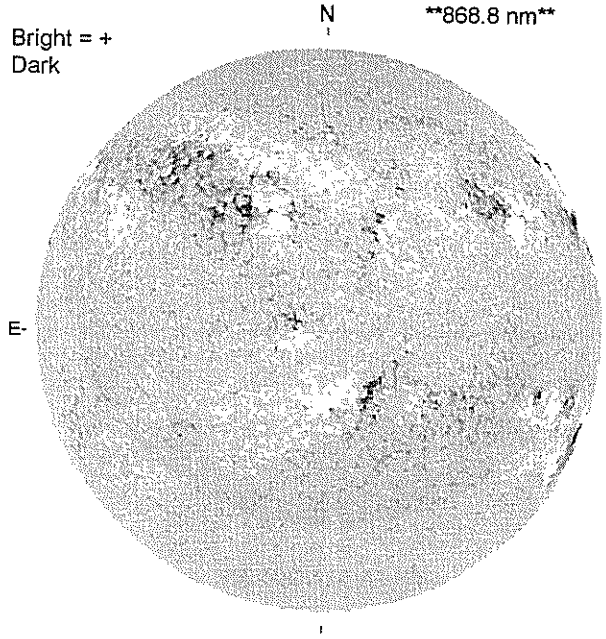
SACRAMENTO PEAK CORONA (1.15 Radii)



67
Feb 99

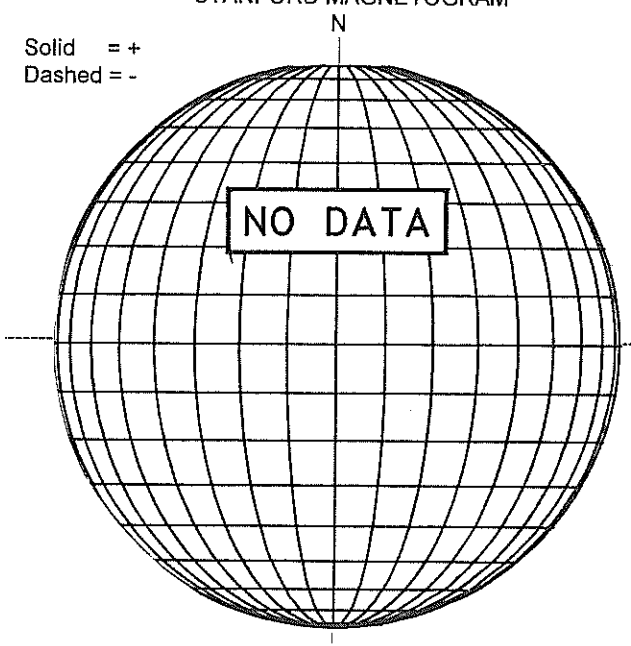
FEBRUARY 21, 1999 (P= -19.18, Bo = -7.04, Lo = 194.03)

KITT PEAK MAGNETOGRAM

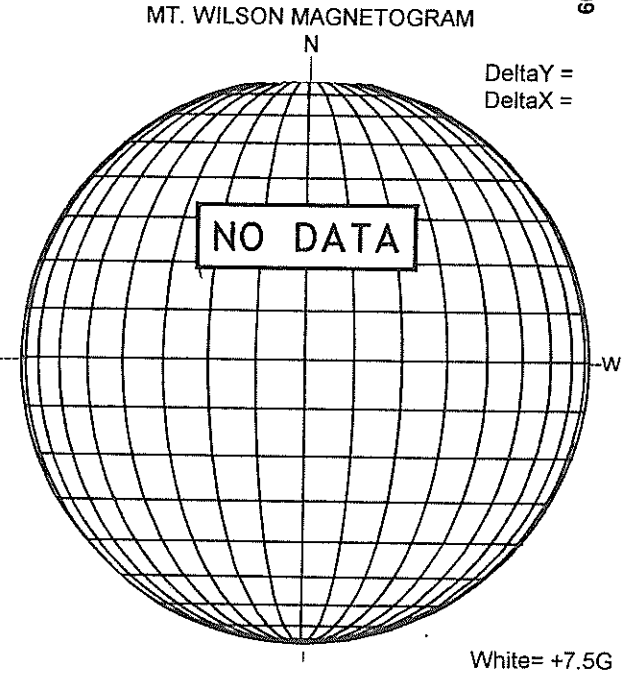


1526 UT

STANFORD MAGNETOGRAM

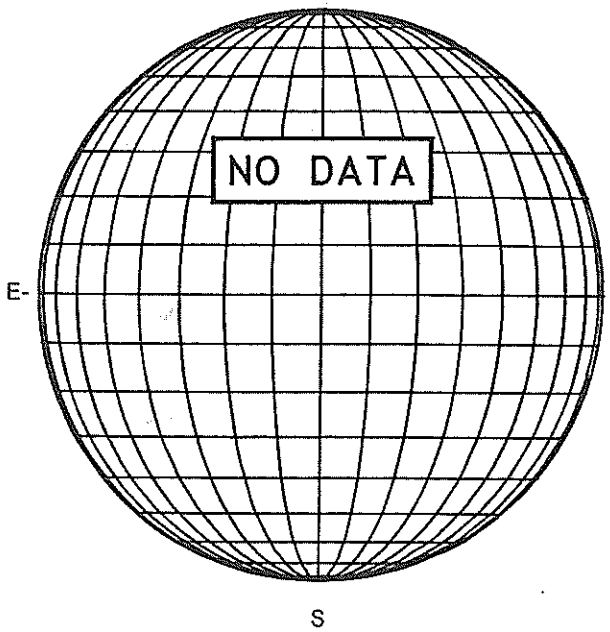


MT. WILSON MAGNETOGRAM

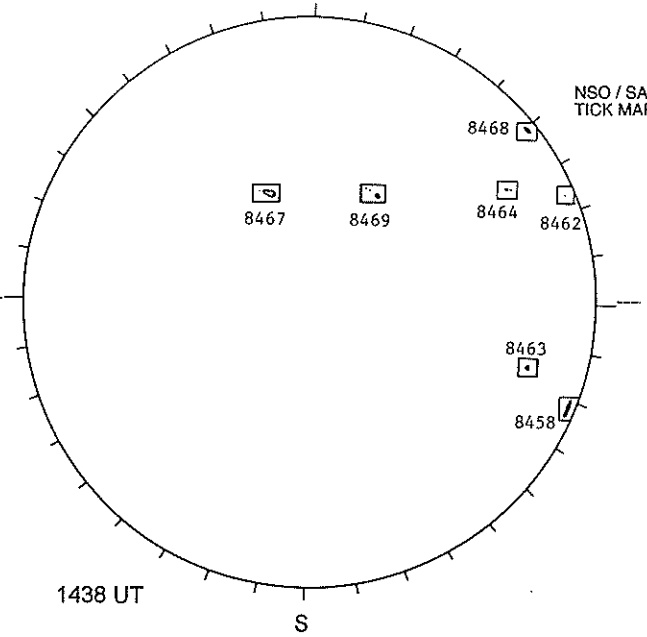


White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

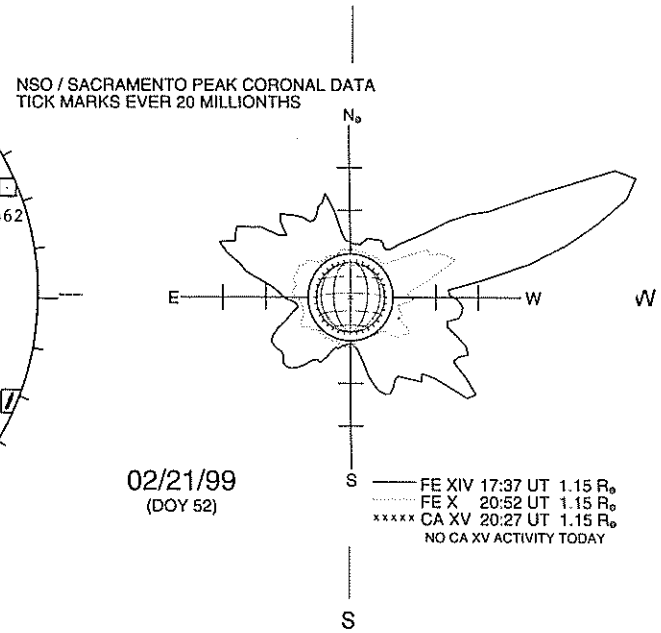


RAMEY SUNSPOT



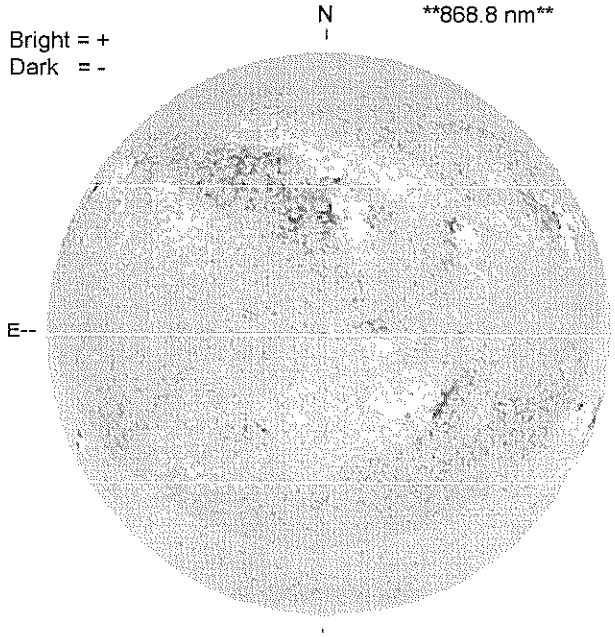
1438 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



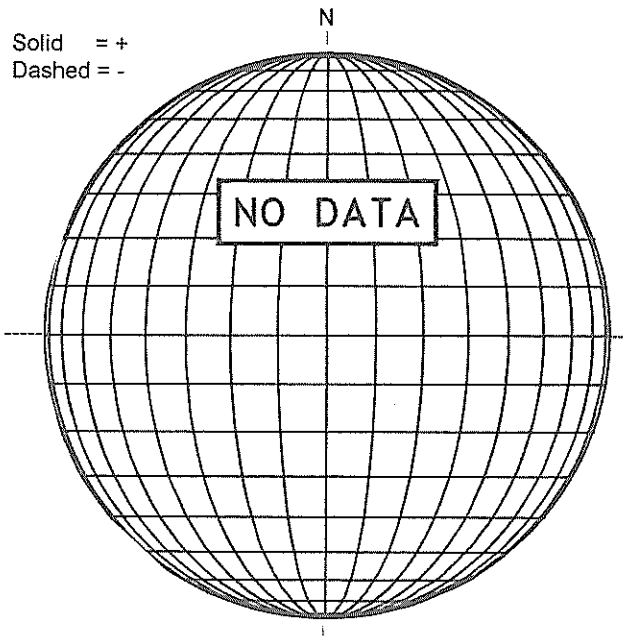
FEBRUARY 22, 1999 (P= -19.49, Bo = -7.07, Lo = 180.86)

KITT PEAK MAGNETOGRAM

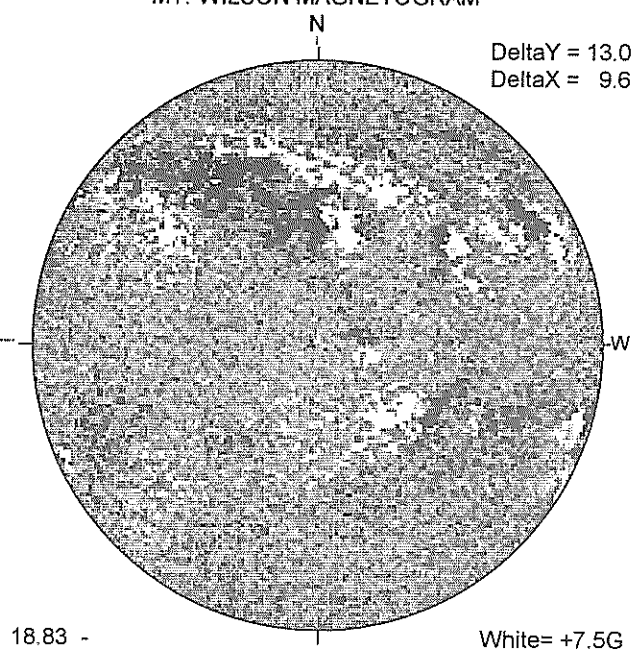


1836 UT

STANFORD MAGNETOGRAM



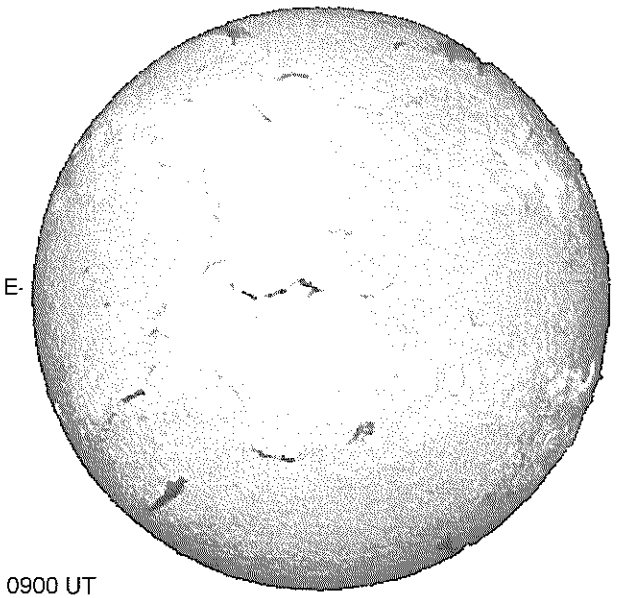
MT. WILSON MAGNETOGRAM



18.83 -
19.80 UT

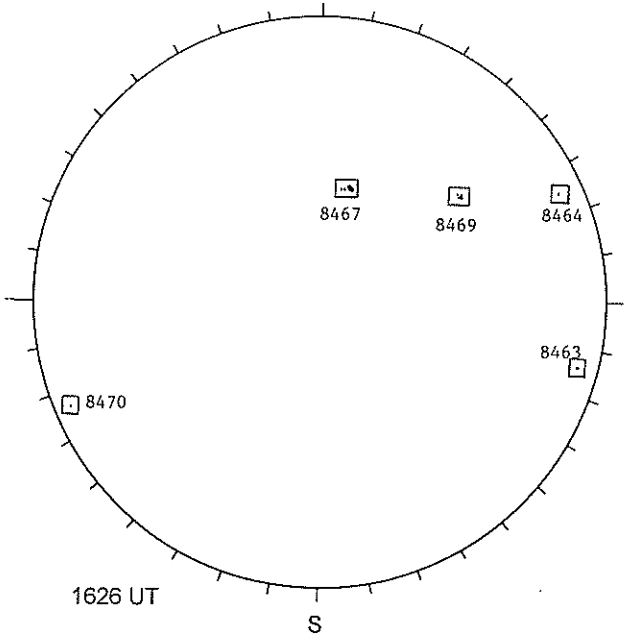
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



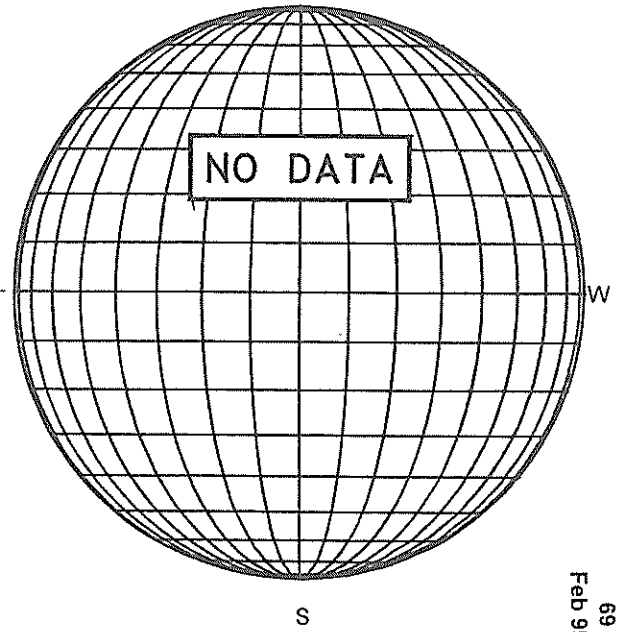
0900 UT

RAMEY SUNSPOT



1626 UT

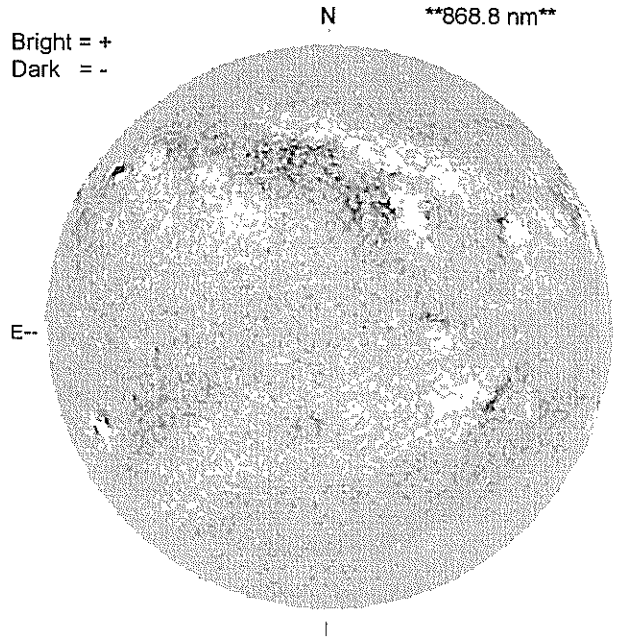
LOMNICKY PEAK CORONA (1.04 Radii)----



Feb 99

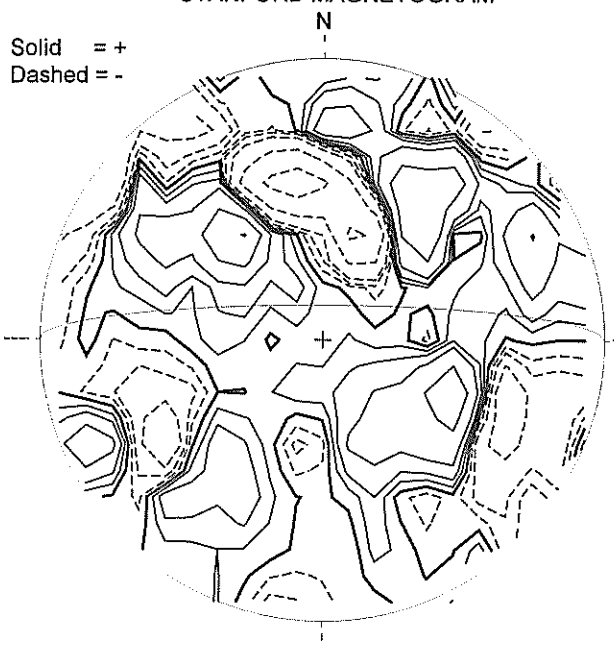
FEBRUARY 23, 1999 (P= -19.78, Bo = -7.09, Lo = 167.69)

KITT PEAK MAGNETOGRAM



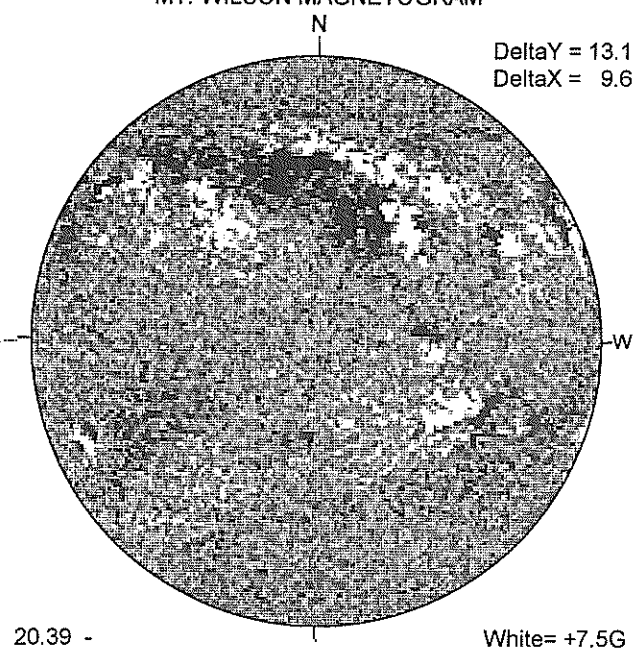
1741 UT

STANFORD MAGNETOGRAM



1911 UT

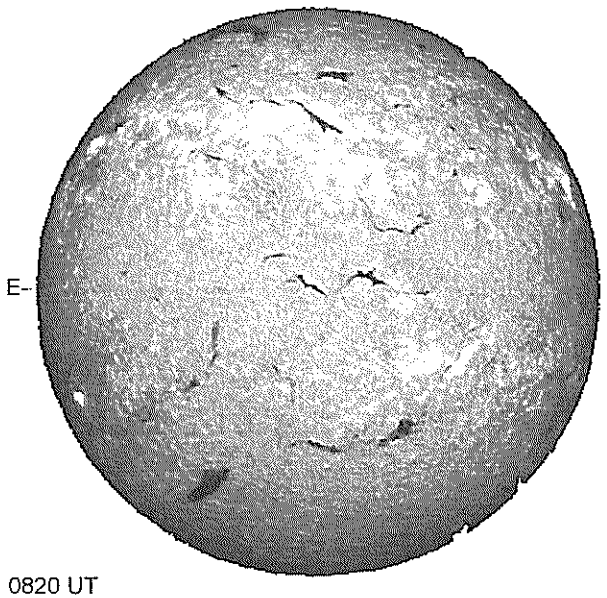
MT. WILSON MAGNETOGRAM



20.39 -
21.36 UT

White= +7.5G
Black = -7.5G

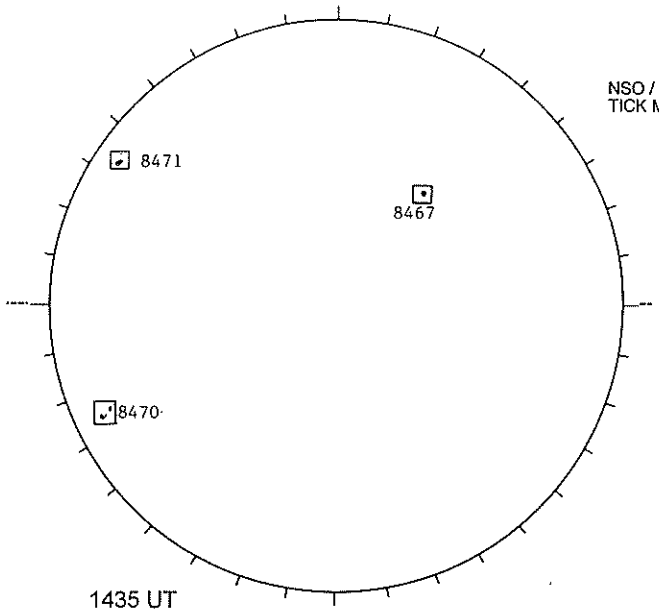
MEUDON H-ALPHA



0820 UT

S

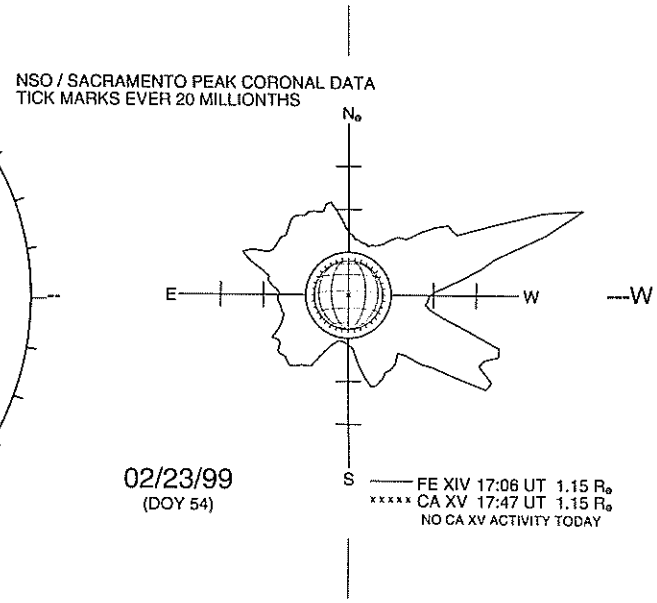
RAMEY SUNSPOT



1435 UT

S

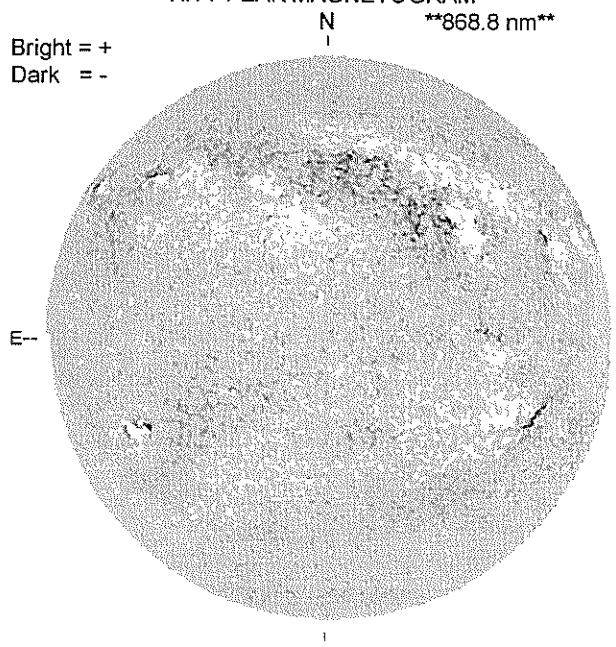
SACRAMENTO PEAK CORONA (1.15 Radii)



S

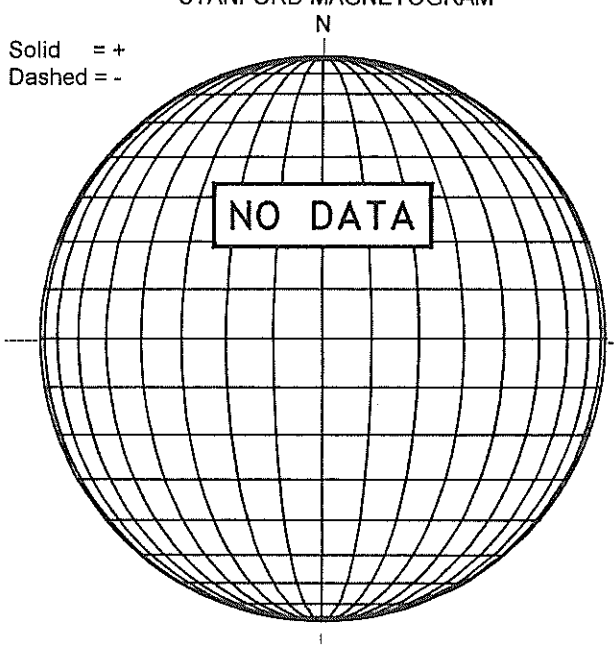
FEBRUARY 24, 1999 (P= -20.07, Bo = -7.12, Lo = 154.52)

KITT PEAK MAGNETOGRAM

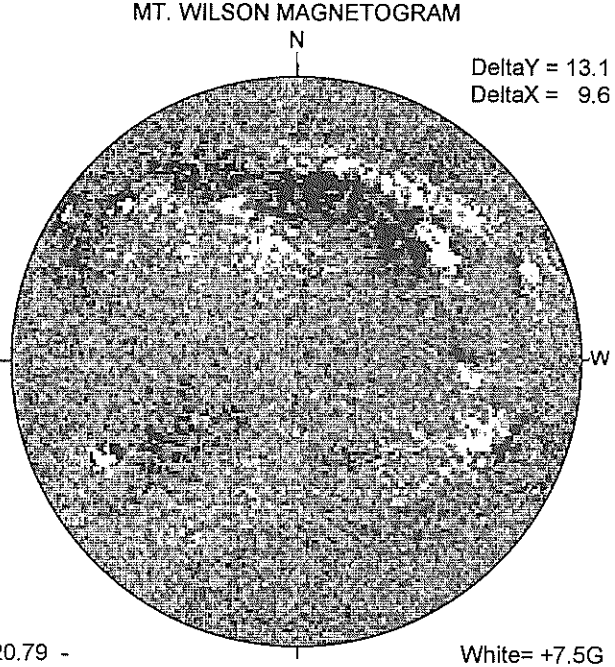


1736 UT

STANFORD MAGNETOGRAM



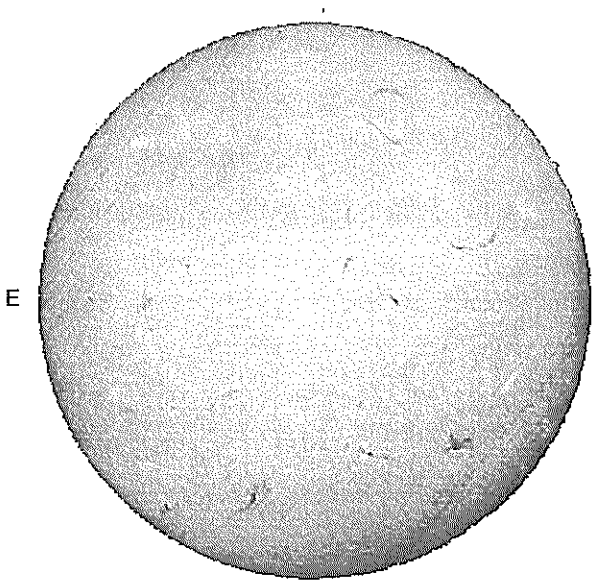
MT. WILSON MAGNETOGRAM



20.79 -
21.76 UT

White= +7.5G
Black = -7.5G

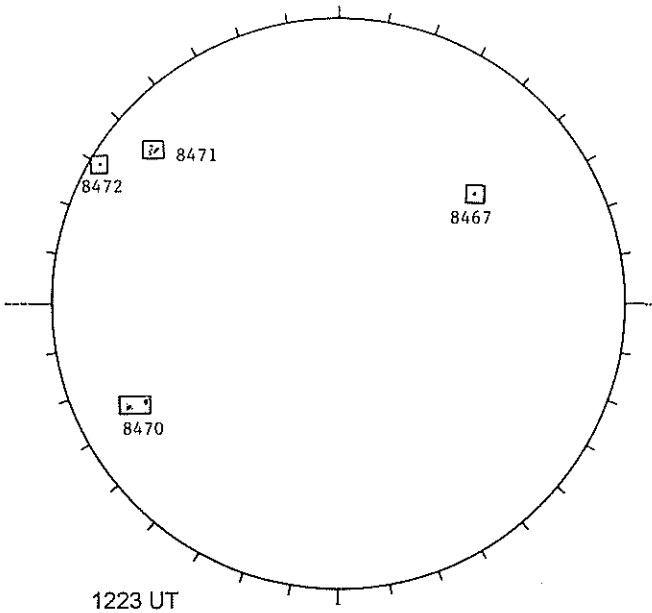
----- SACRAMENTO PEAK H-ALPHA



1457 UT

S

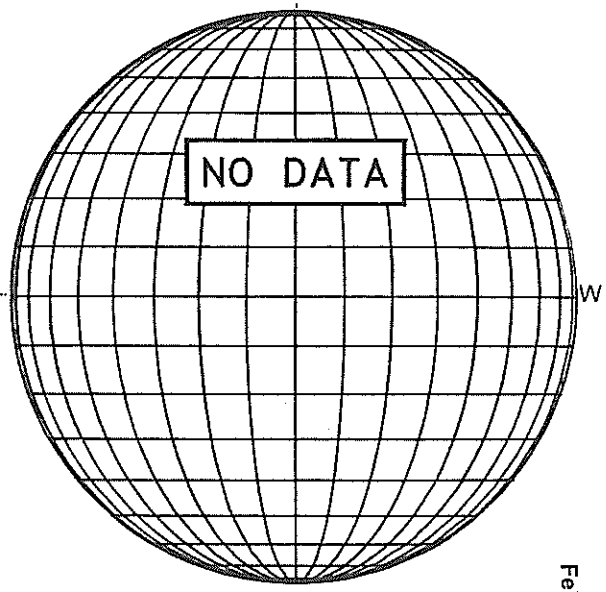
RAMEY SUNSPOT



1223 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

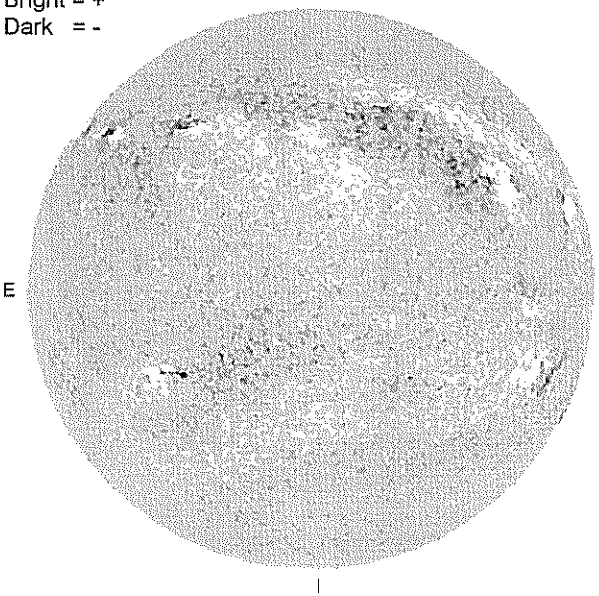
71
Feb 99

FEBRUARY 25, 1999 (P= -20.35, Bo = -7.14, Lo = 141.35)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



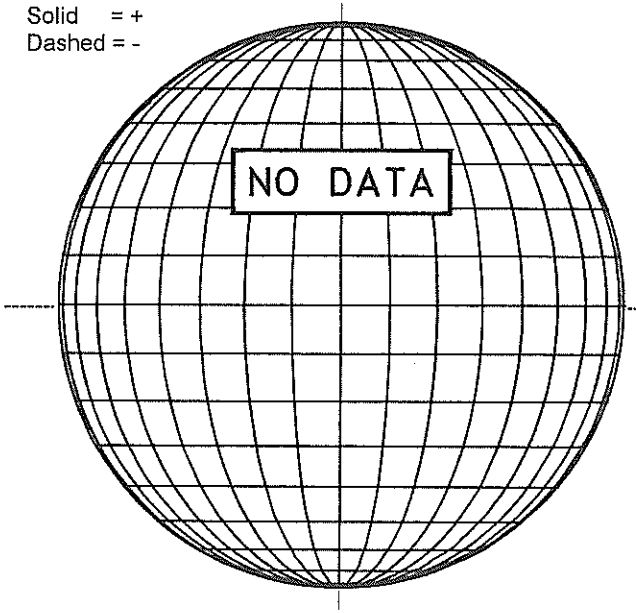
E

1937 UT

STANFORD MAGNETOGRAM

N

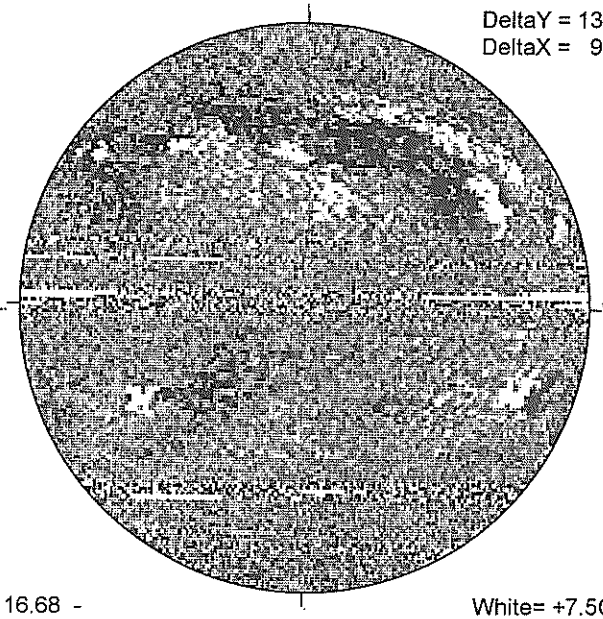
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.0
DeltaX = 9.6

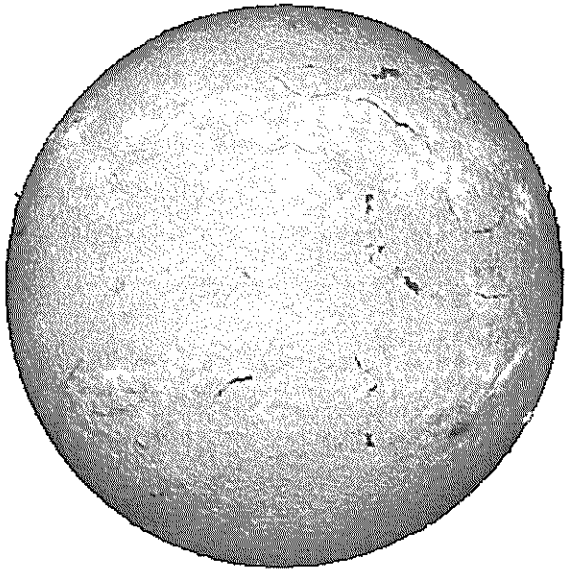


W

16.68 -
17.65 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

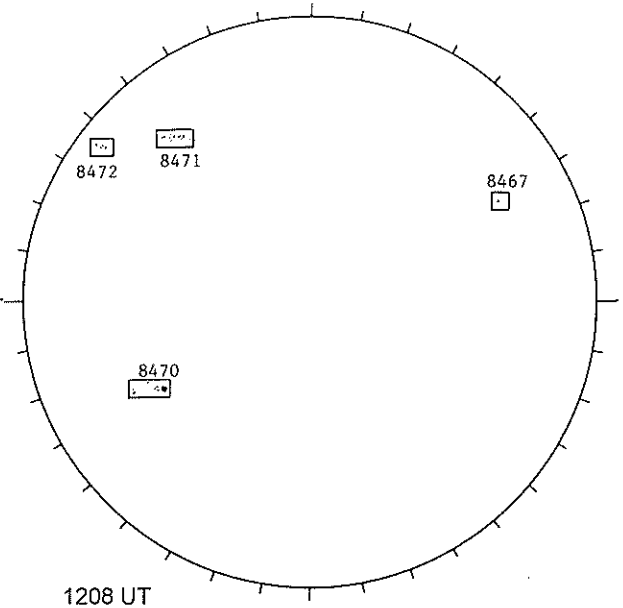


E--

0900 UT

S

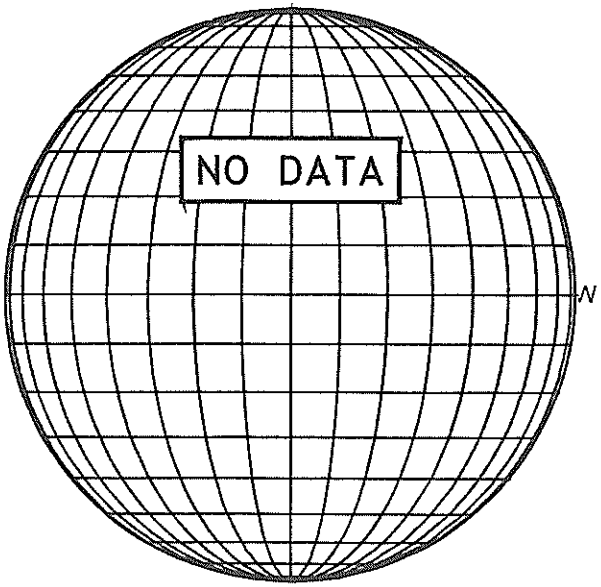
RAMEY SUNSPOT



1208 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

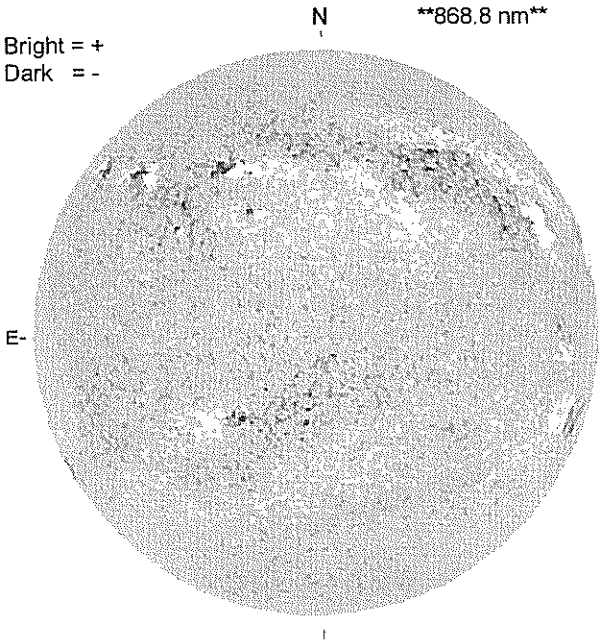


W

S

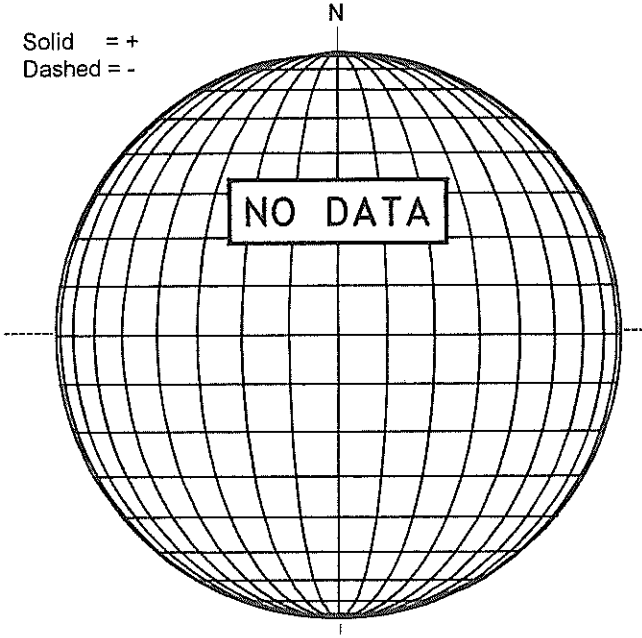
FEBRUARY 26, 1999 (P= -20.63, Bo = -7.16, Lo = 128.18)

KITT PEAK MAGNETOGRAM

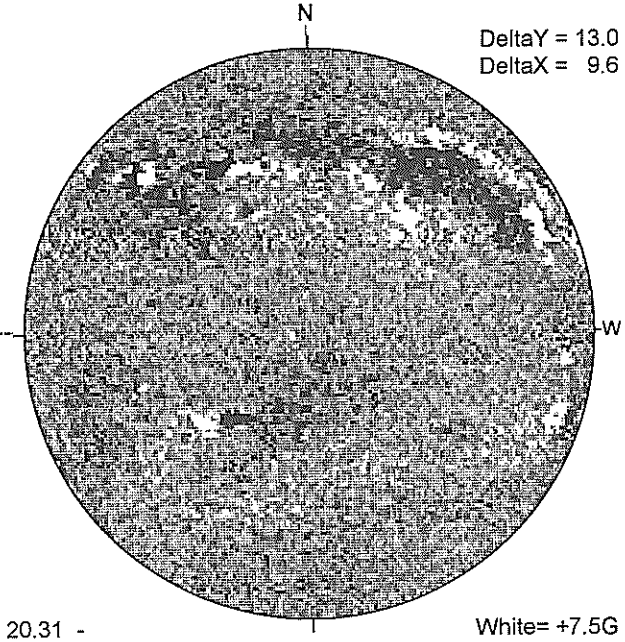


1745 UT

STANFORD MAGNETOGRAM



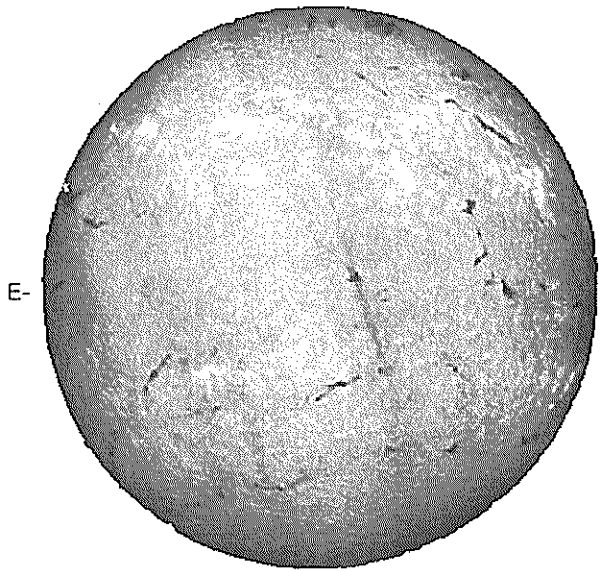
MT. WILSON MAGNETOGRAM



20.31 -
21.52 UT

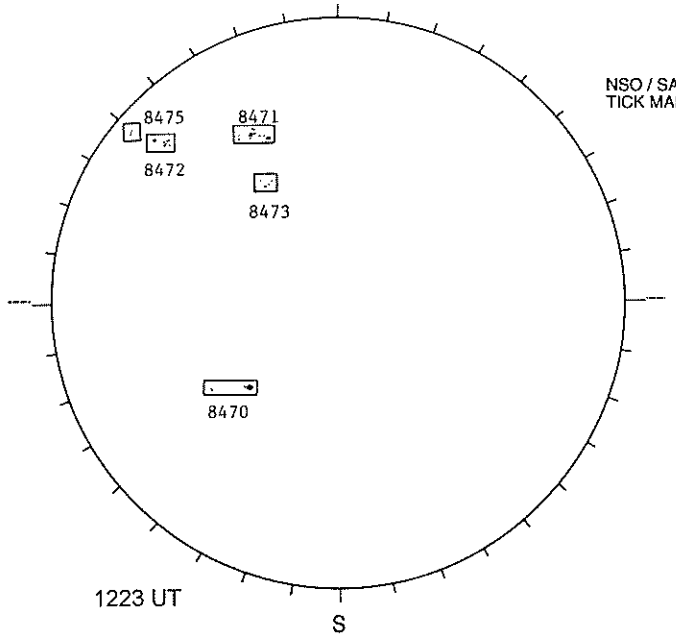
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



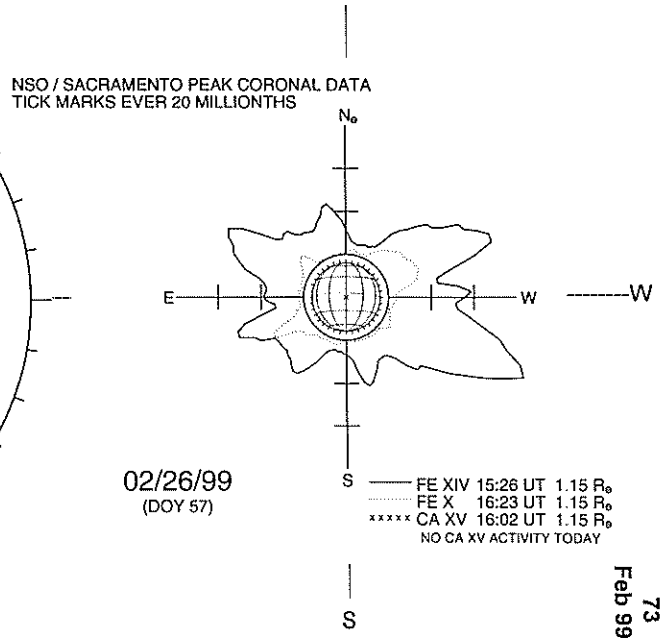
1318 UT

RAMEY SUNSPOT



1223 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



02/26/99
(DOY 57)

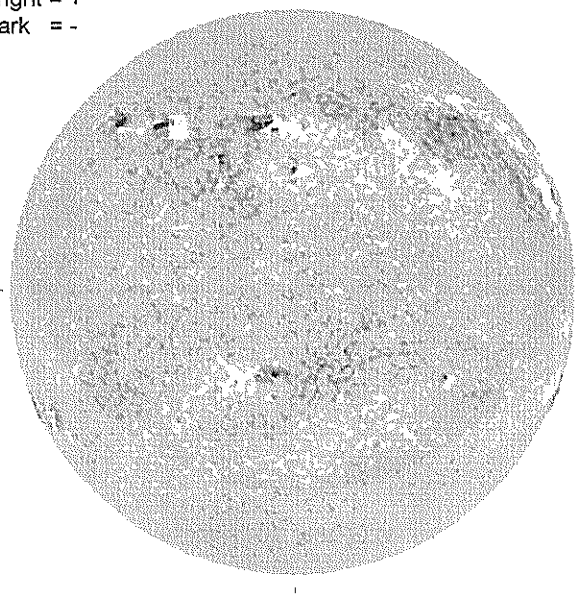
73
Feb 99

FEBRUARY 27, 1999 (P= -20.90, Bo = -7.18, Lo = 115.01)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



1822 UT

STANFORD MAGNETOGRAM

N

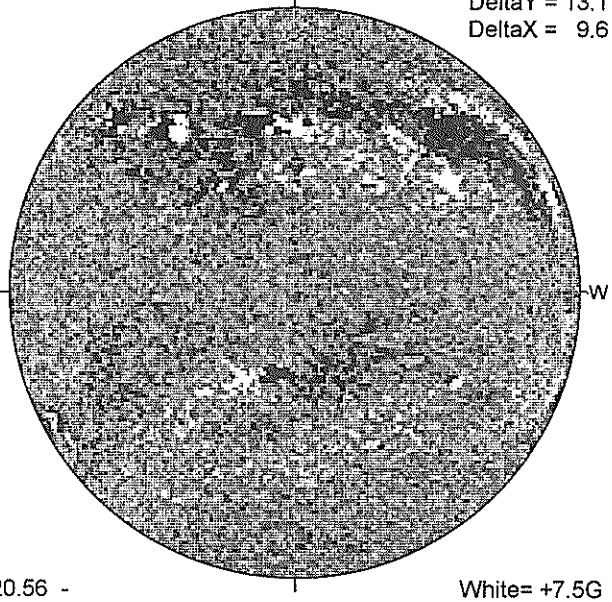
Solid = +
Dashed = -

2256 UT

MT. WILSON MAGNETOGRAM

N

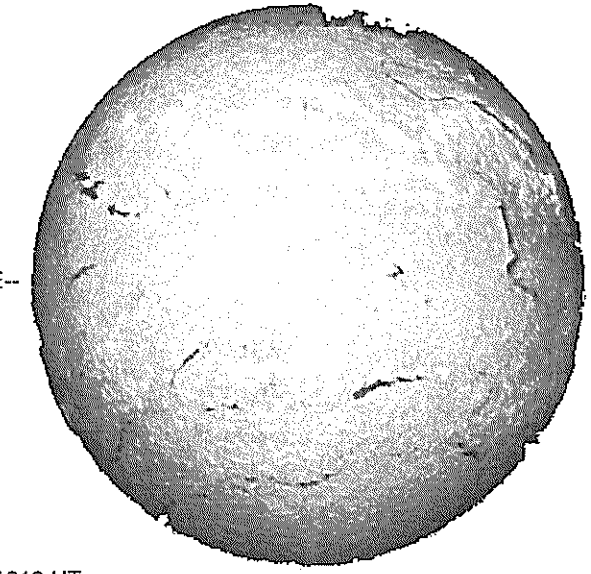
DeltaY = 13.1
DeltaX = 9.6



20.56 -
21.53 UT

White= +7.5G
Black = -7.5G

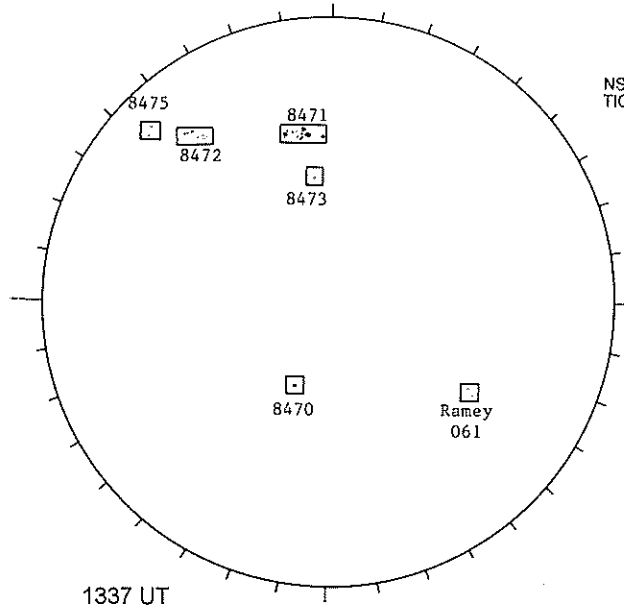
MEUDON H-ALPHA



1013 UT

S

RAMEY SUNSPOT

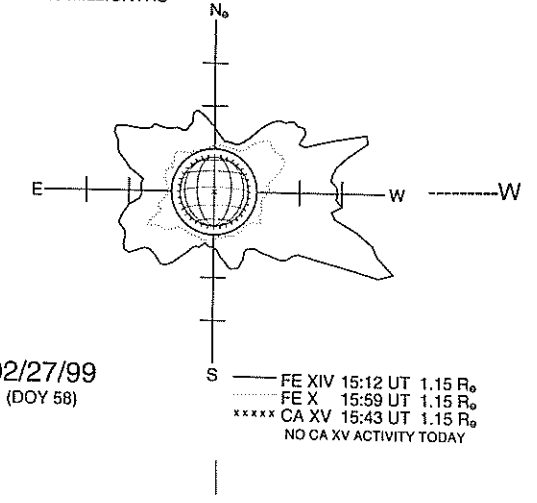


1337 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVER 20 MILLIONTHS



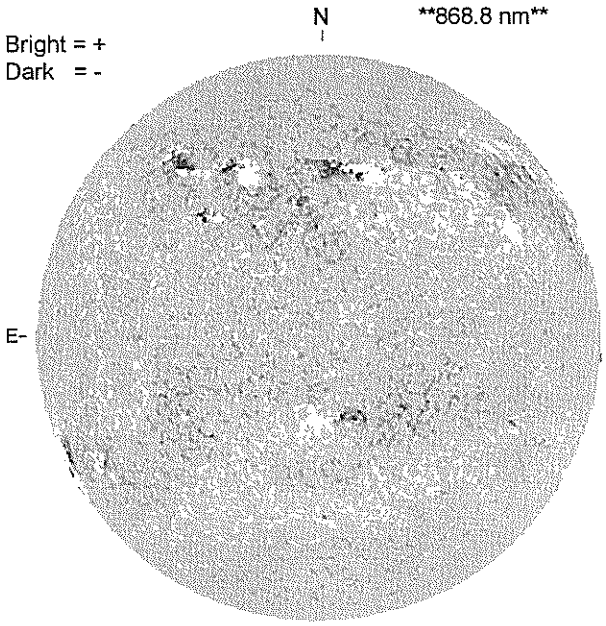
02/27/99
(DOY 58)

FE XIV 15:12 UT 1.15 $R_\odot$
FE X 15:59 UT 1.15 $R_\odot$
CA XV 15:43 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

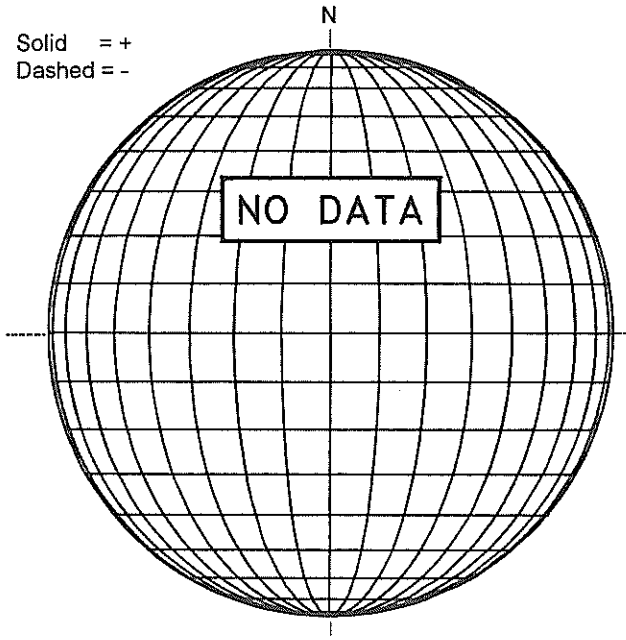
FEBRUARY 28, 1999 (P= -21.16, Bo = -7.20, Lo = 101.84)

KITT PEAK MAGNETOGRAM

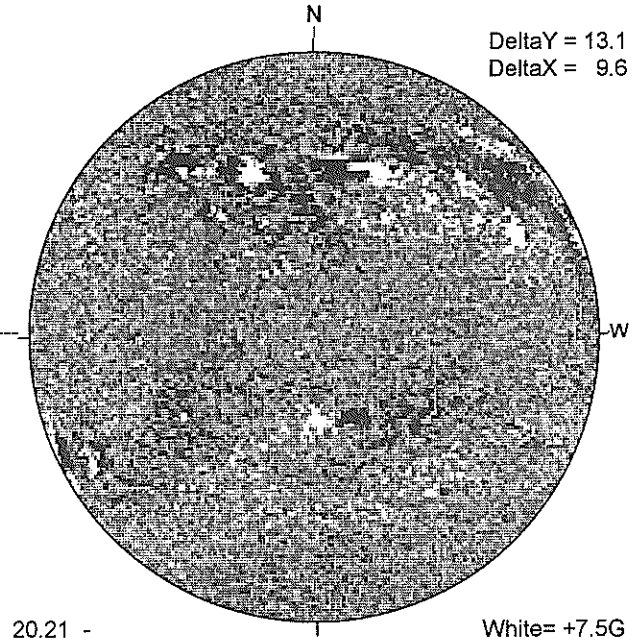


1619 UT

STANFORD MAGNETOGRAM



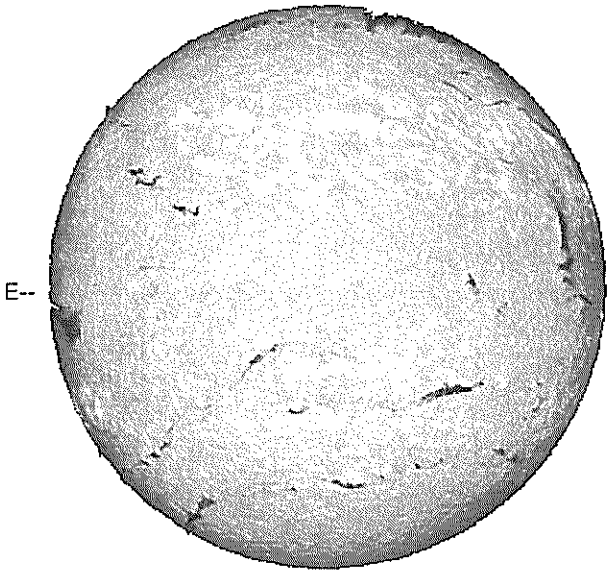
MT. WILSON MAGNETOGRAM



20.21 -
21.18 UT

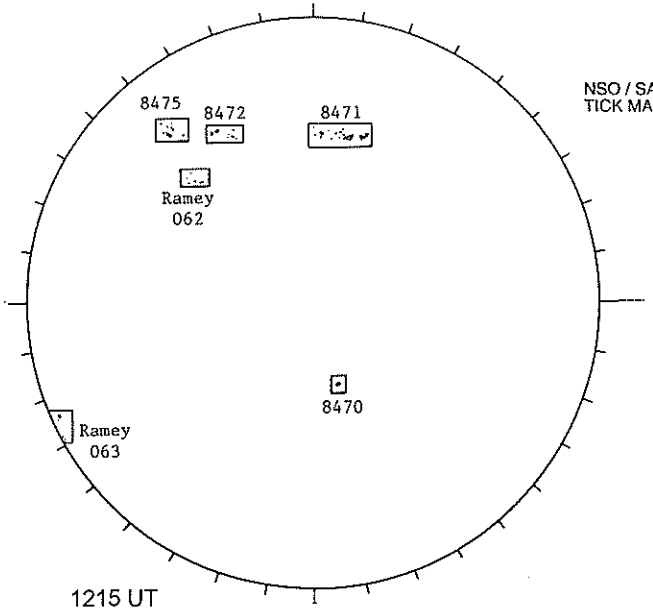
White= +7.5G
Black = -7.5G

----- MEUDON H-ALPHA



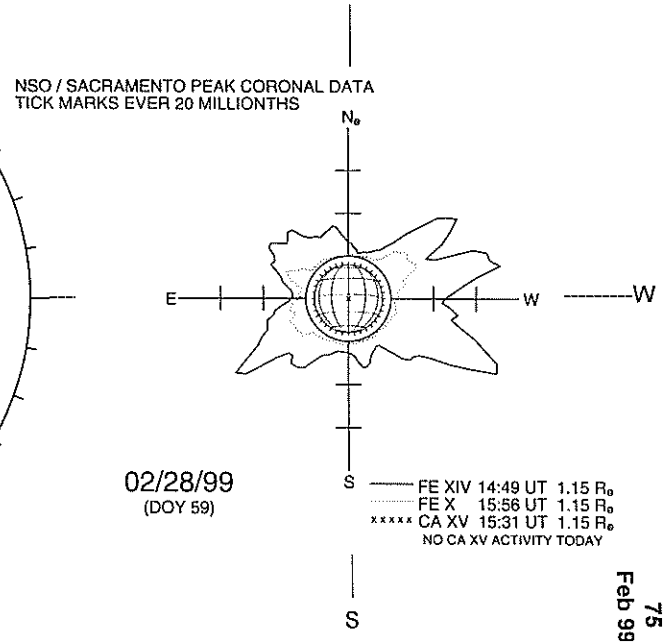
0823 UT

RAMEY SUNSPOT



1215 UT

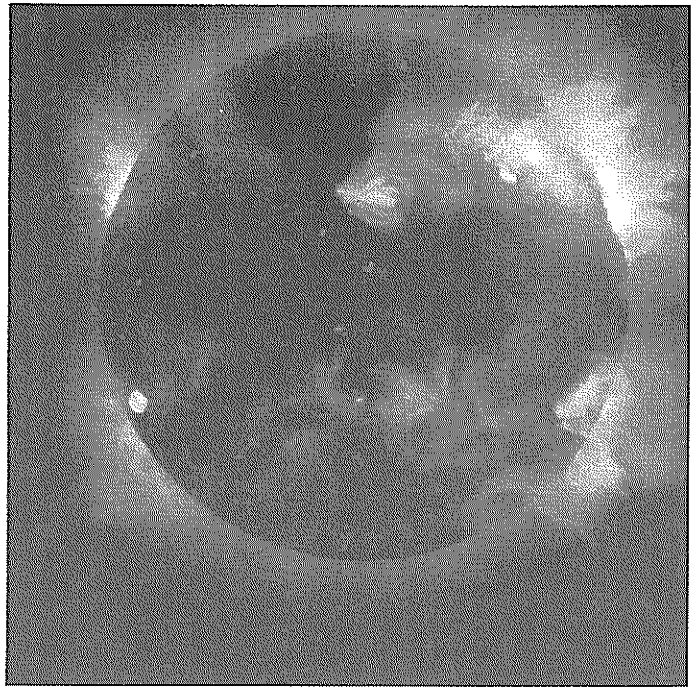
SACRAMENTO PEAK CORONA (1.15 Radii)----



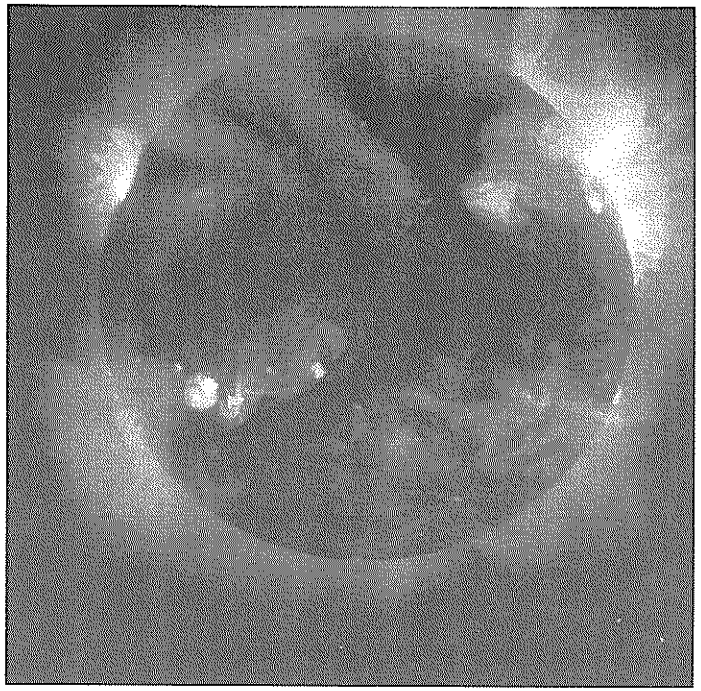
75
Feb 99

YOHKOH SOFT X-RAY TELESCOPE IMAGES

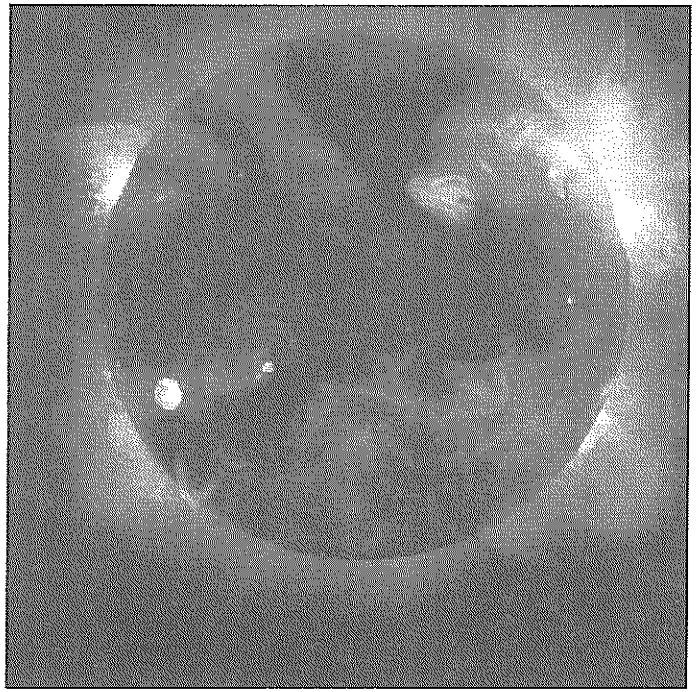
February
1999



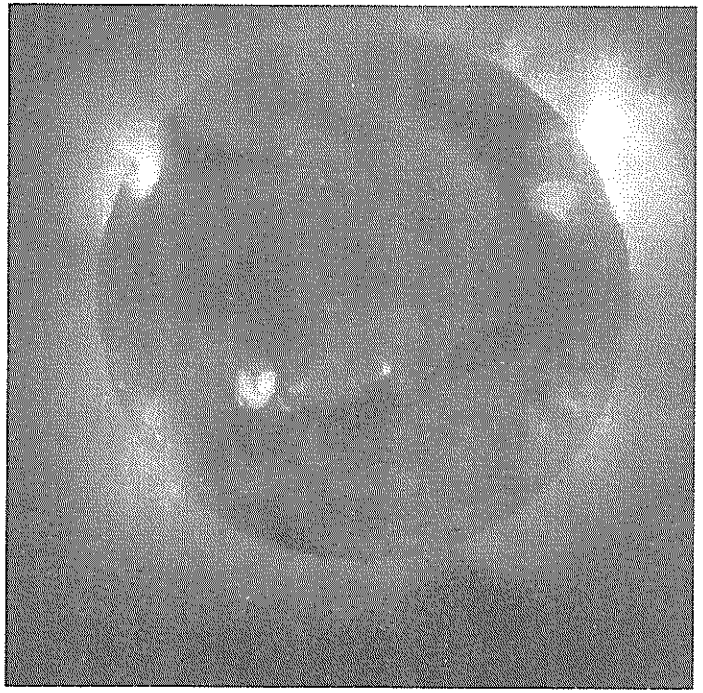
Day 1
08:23:15 UT



Day 3
08:52:40 UT



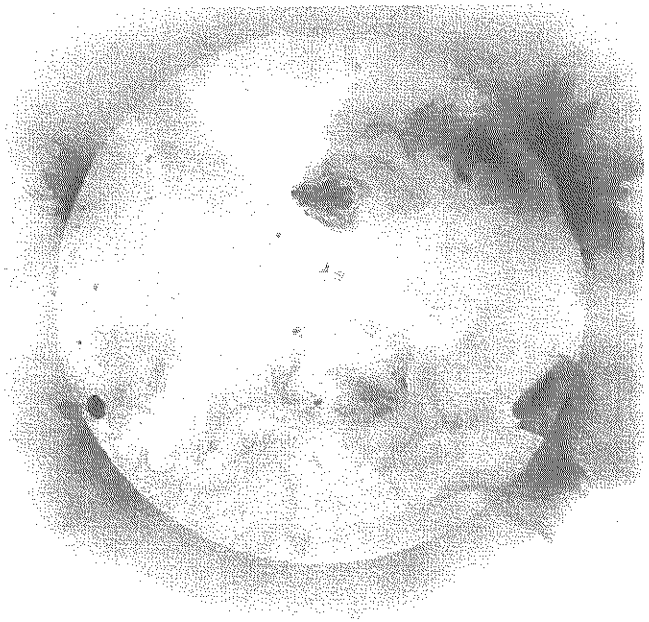
Day 2
11:51:06 UT



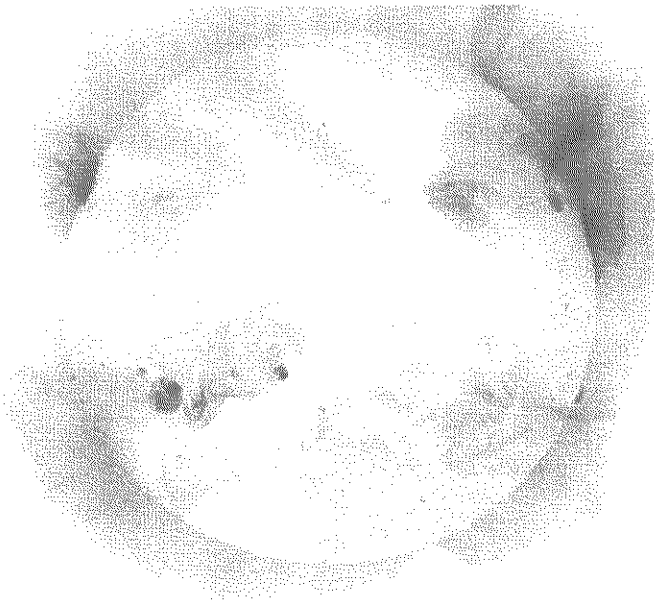
Day 4
14:45:02 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

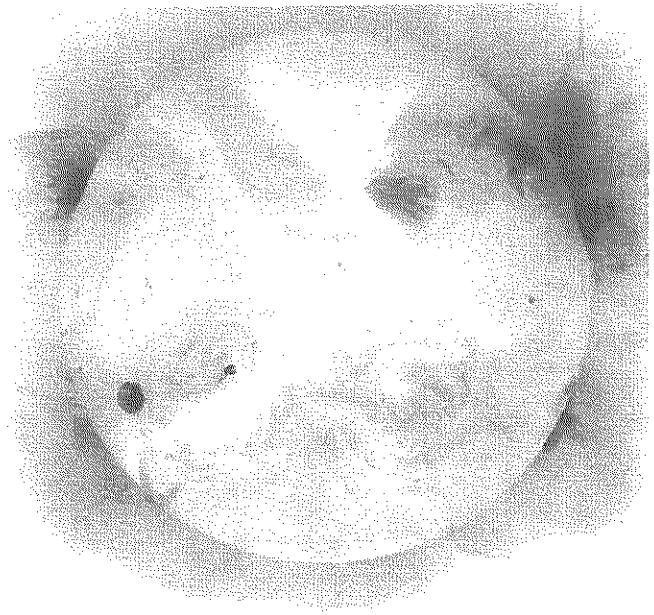
February 1999



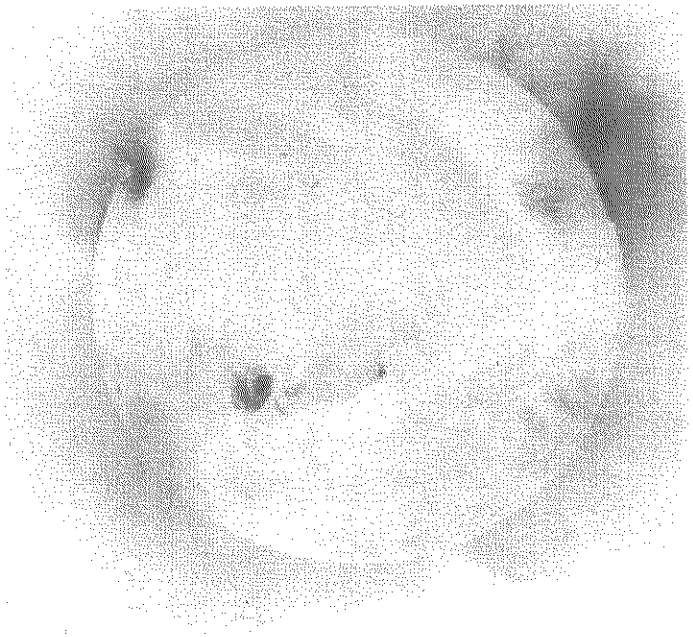
Day 1
08:23:15 UT



Day 3
08:52:40 UT



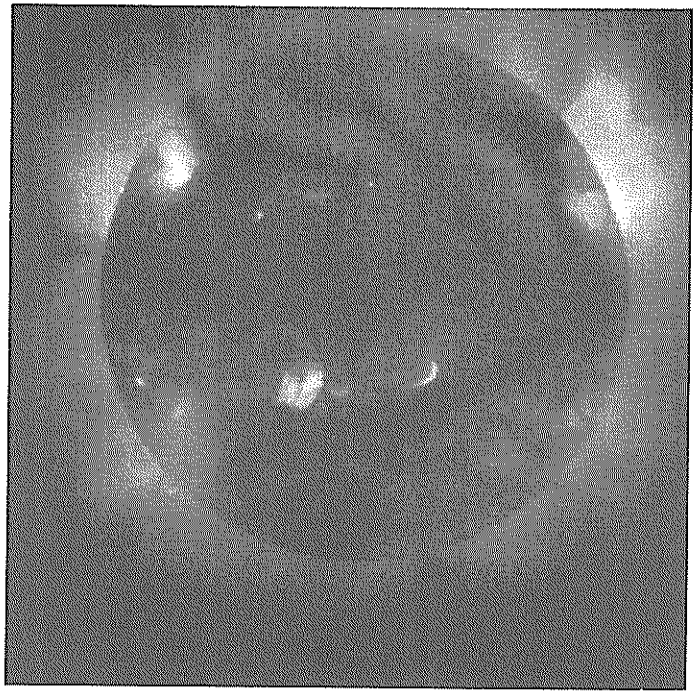
Day 2
11:51:06 UT



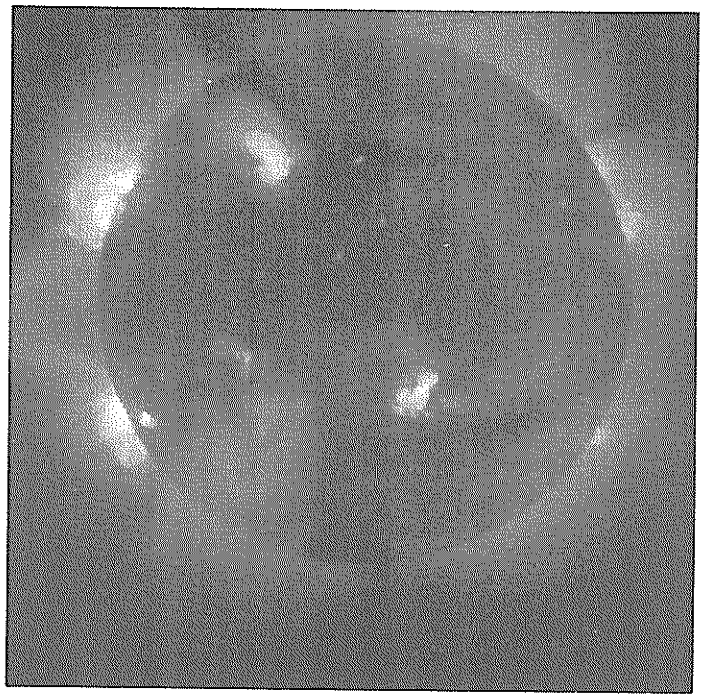
Day 4
14:45:02 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

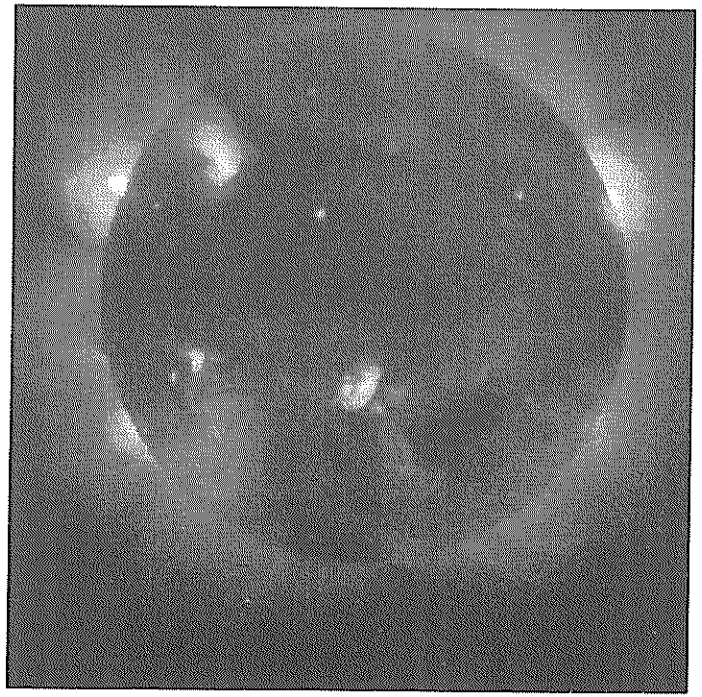
February
1999



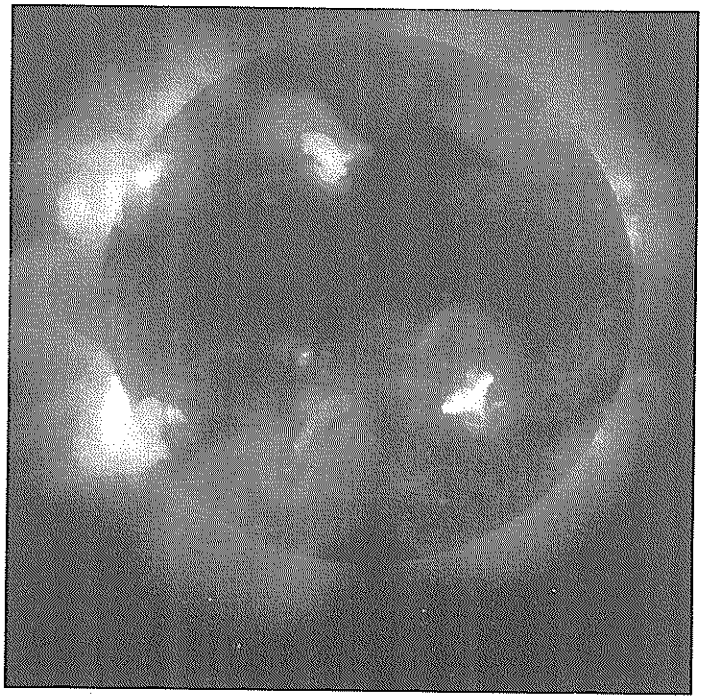
Day 5
10:33:34 UT



Day 7
12:19:09 UT



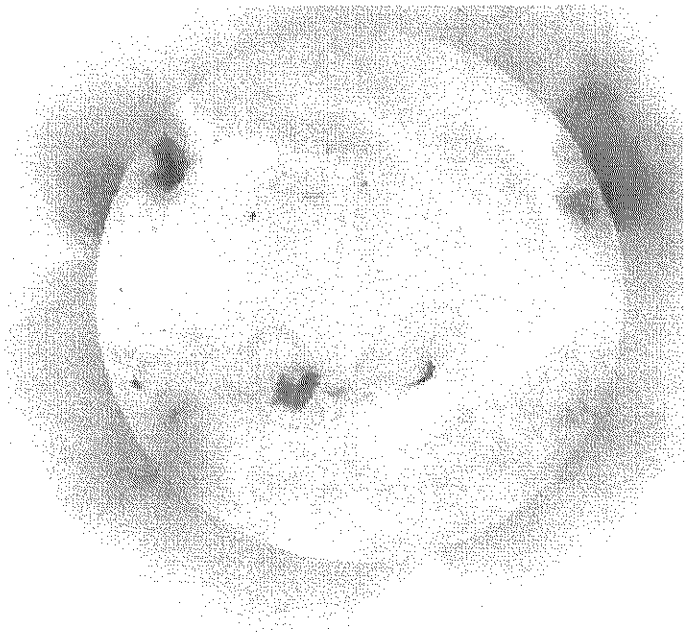
Day 6
12:05:02 UT



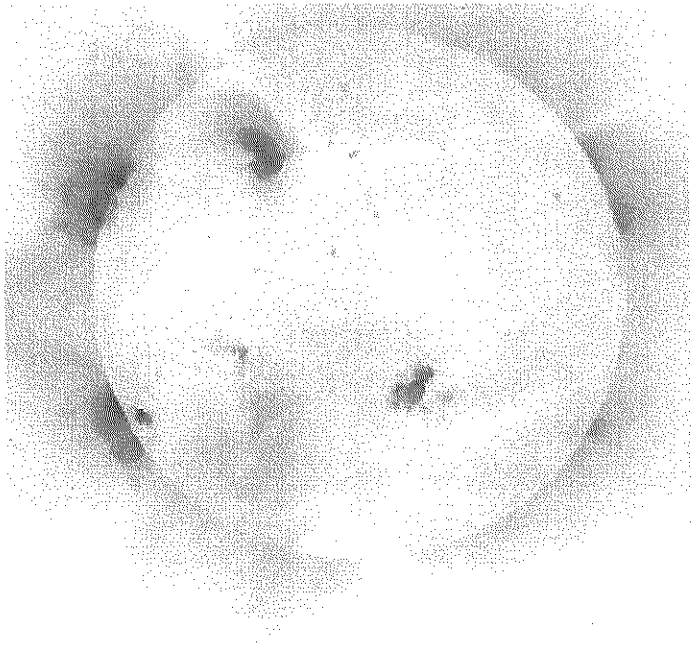
Day 8
11:41:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

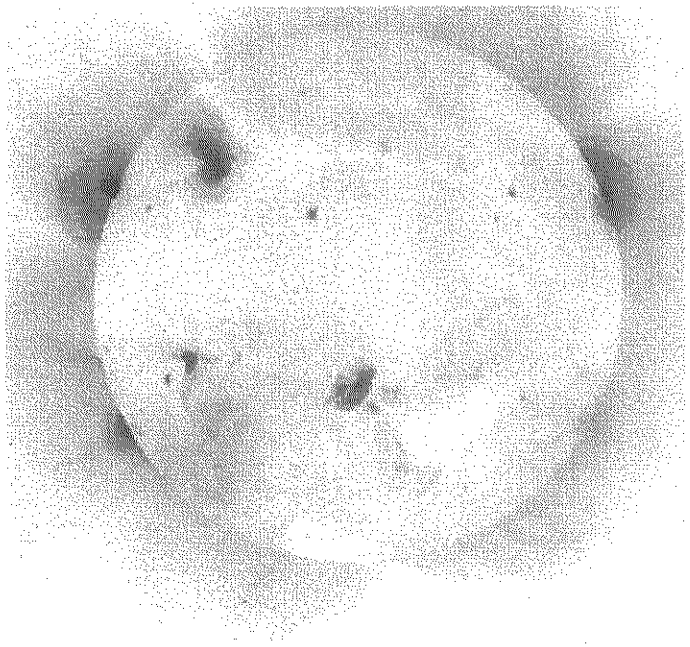
February 1999



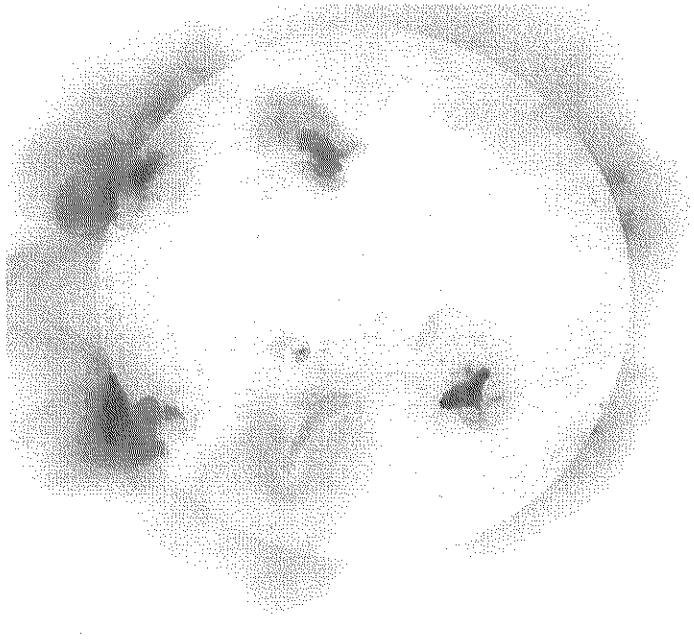
Day 5
10:33:34 UT



Day 7
12:19:09 UT



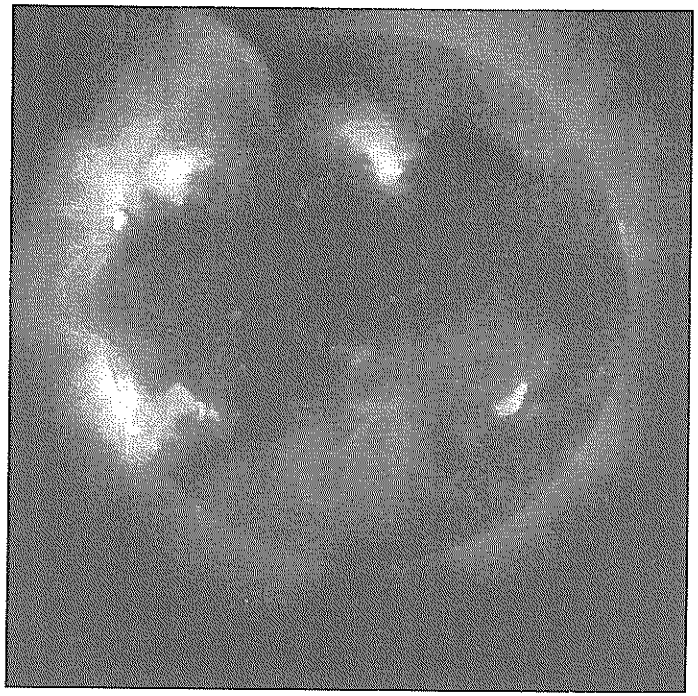
Day 6
12:05:02 UT



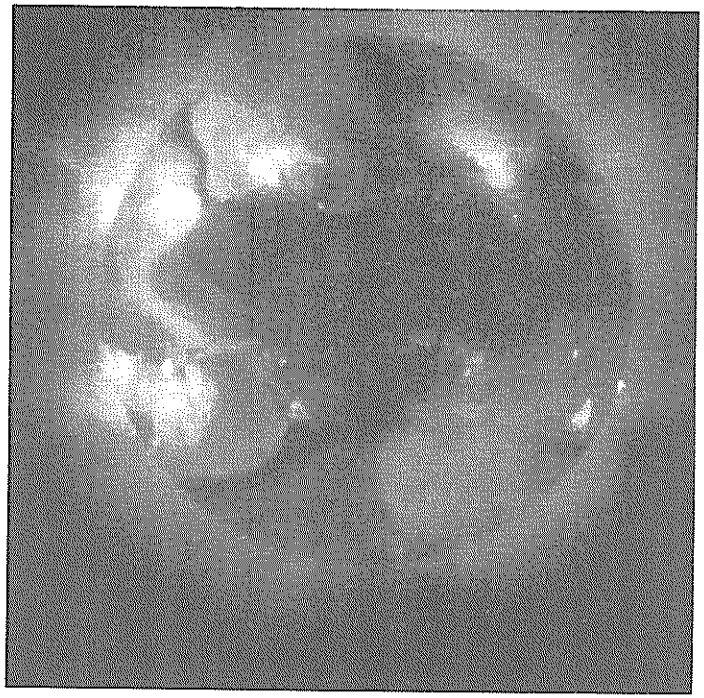
Day 8
11:41:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

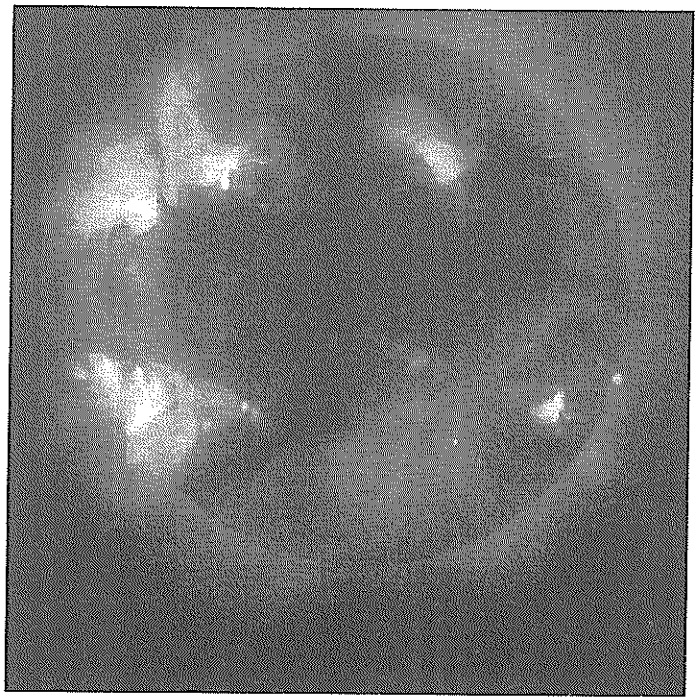
February
1999



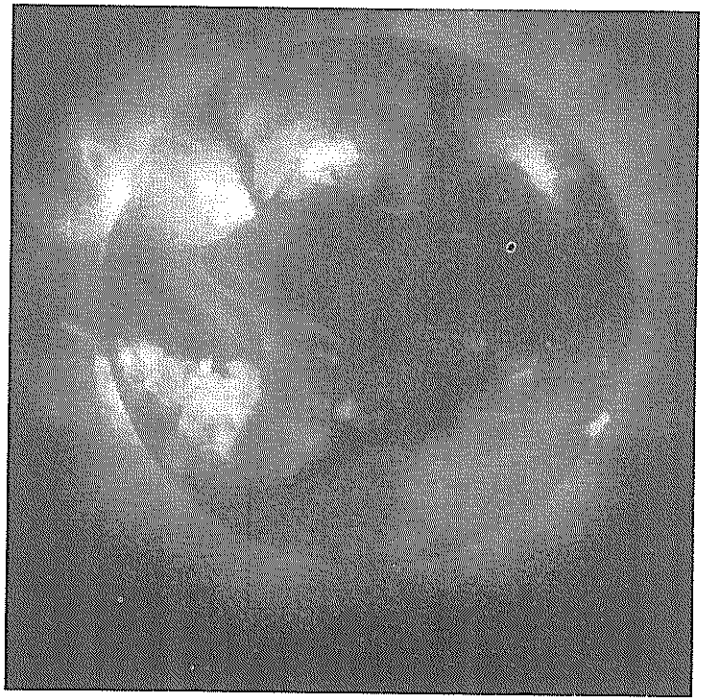
Day 9
11:58:53 UT



Day 11
11:57:49 UT



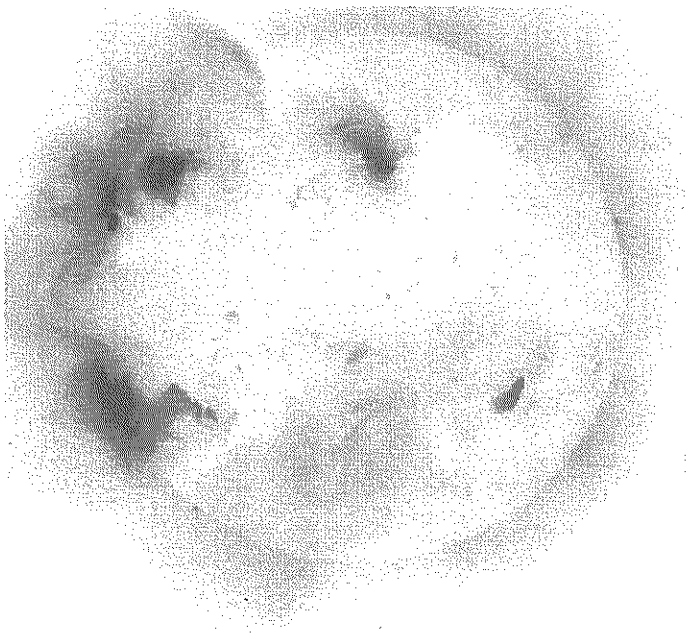
Day 10
11:59:25 UT



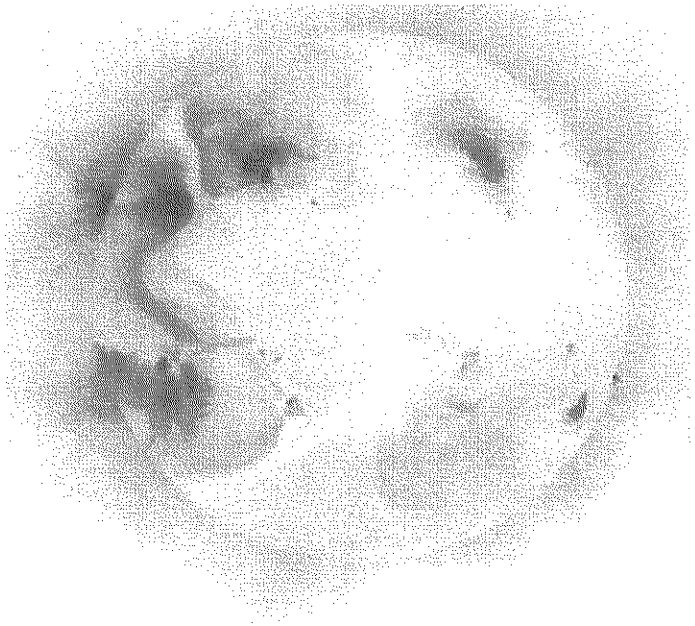
Day 12
10:39:56 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

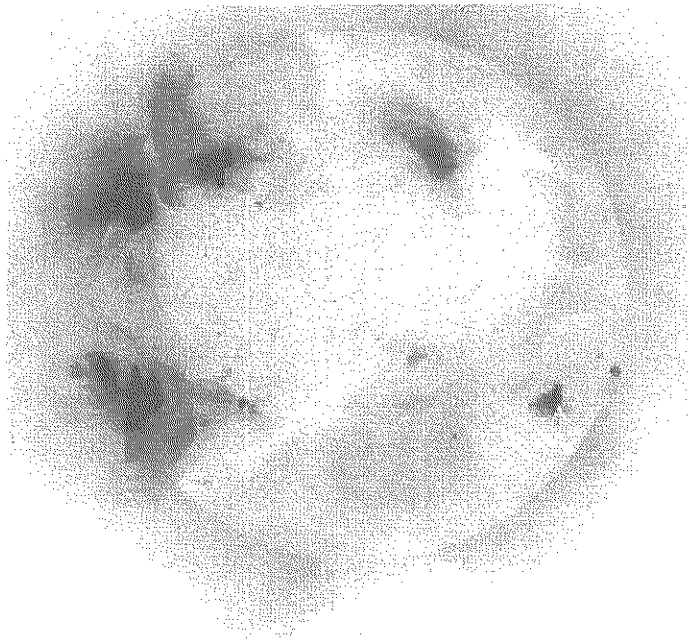
February 1999



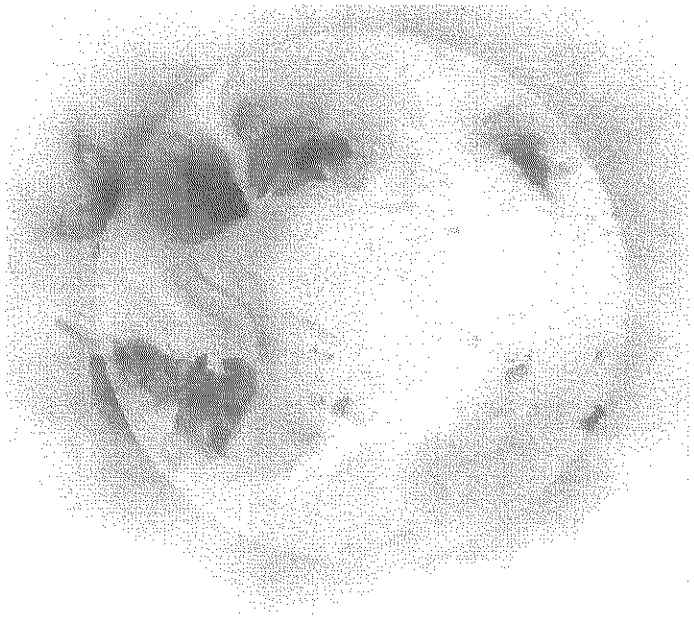
Day 9
11:58:53 UT



Day 11
11:57:49 UT



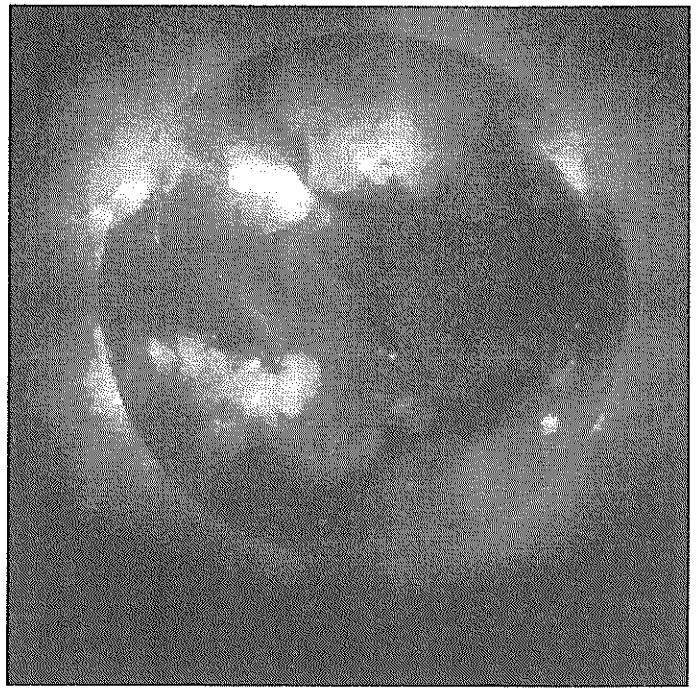
Day 10
11:59:25 UT



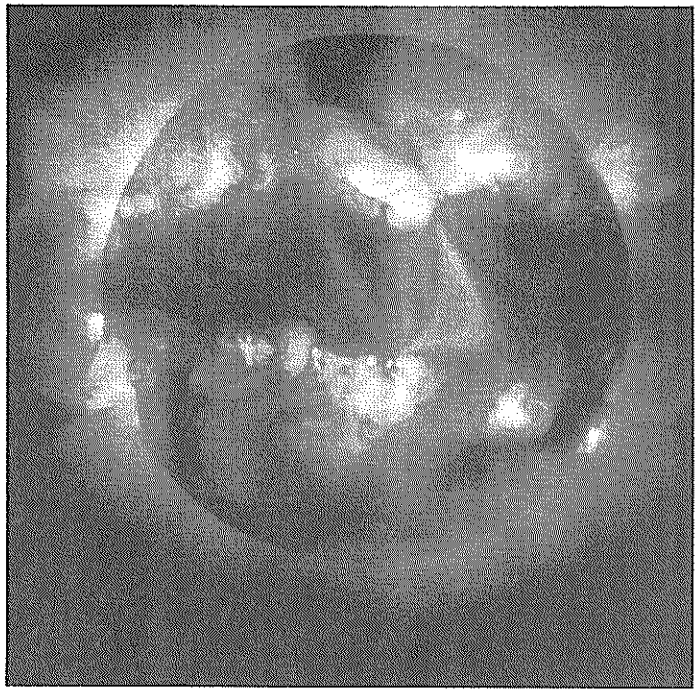
Day 12
10:39:56 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

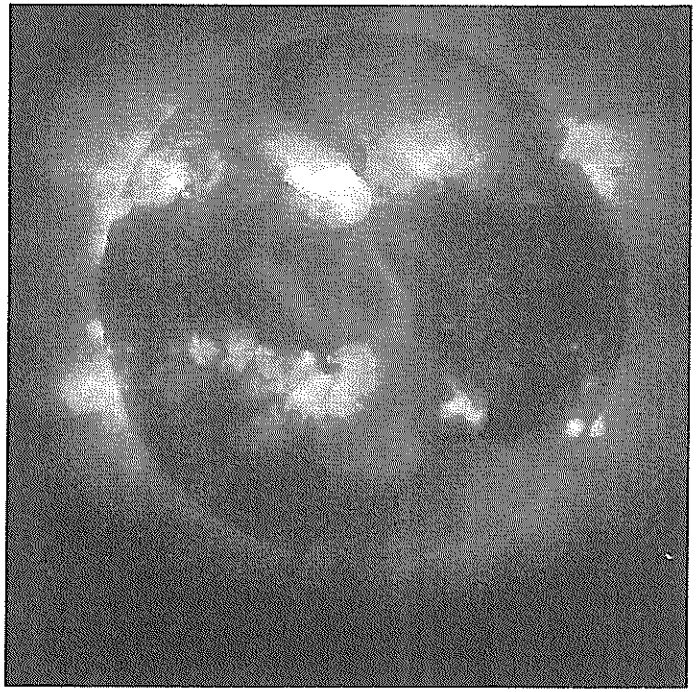
February
1999



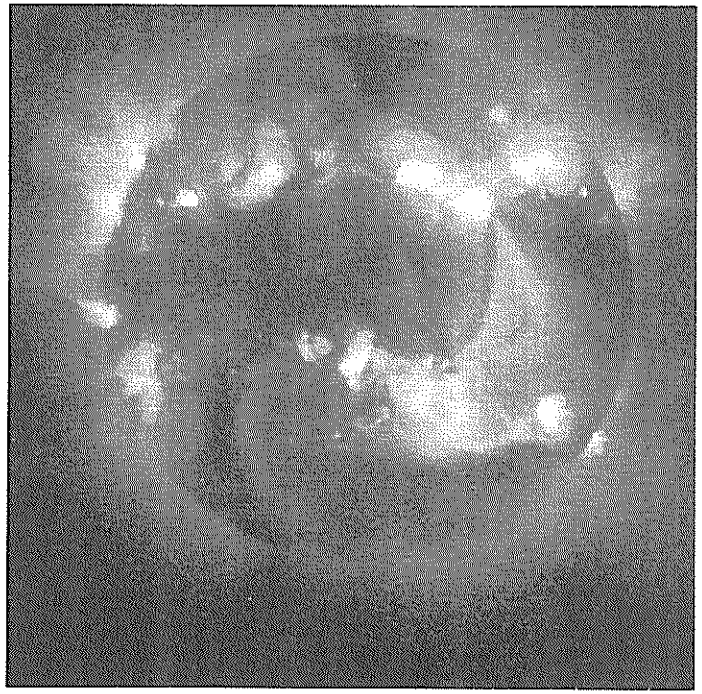
Day 13
12:26:04 UT



Day 15
11:57:22 UT



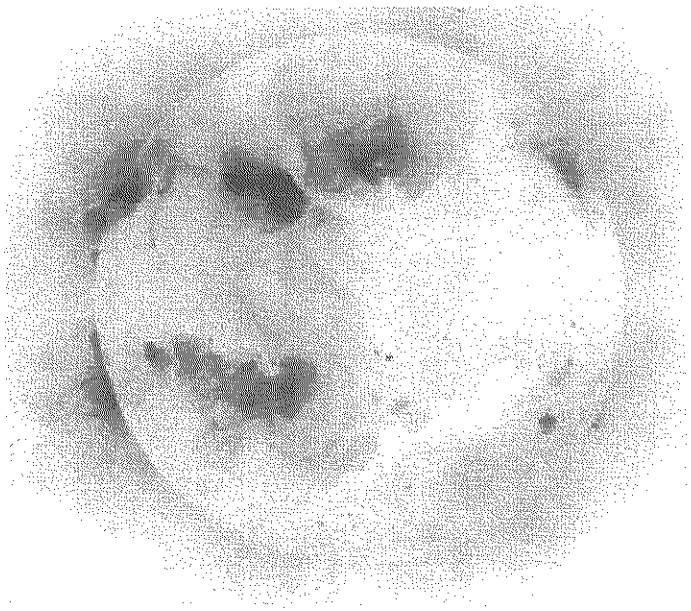
Day 14
11:41:48 UT



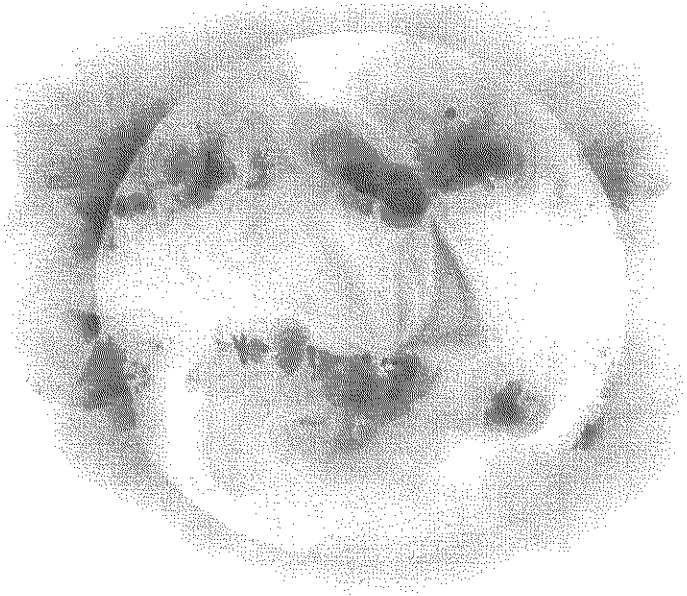
Day 16
11:51:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

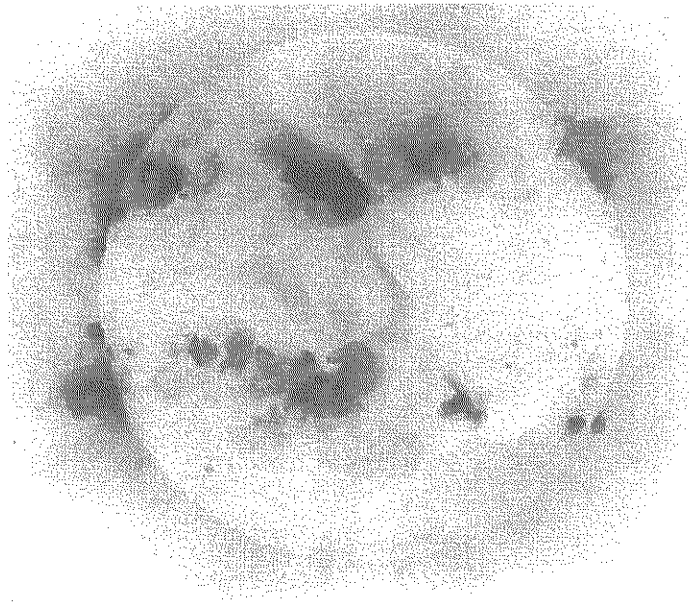
February 1999



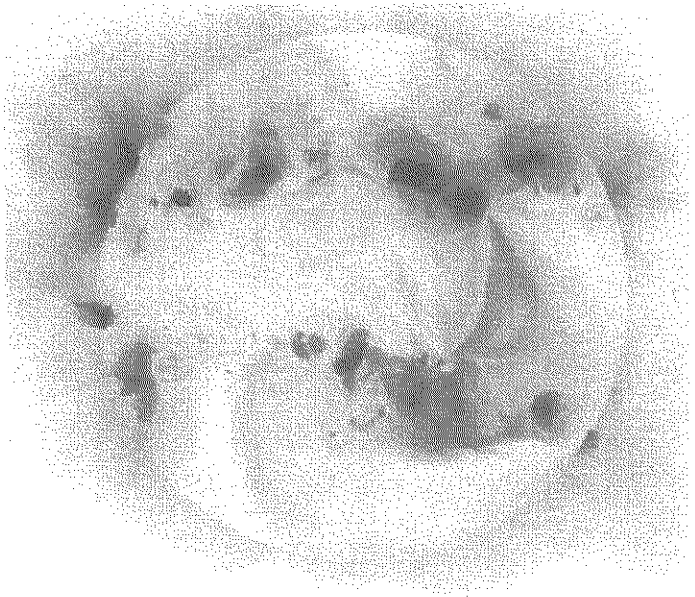
Day 13
12:26:04 UT



Day 15
11:57:22 UT



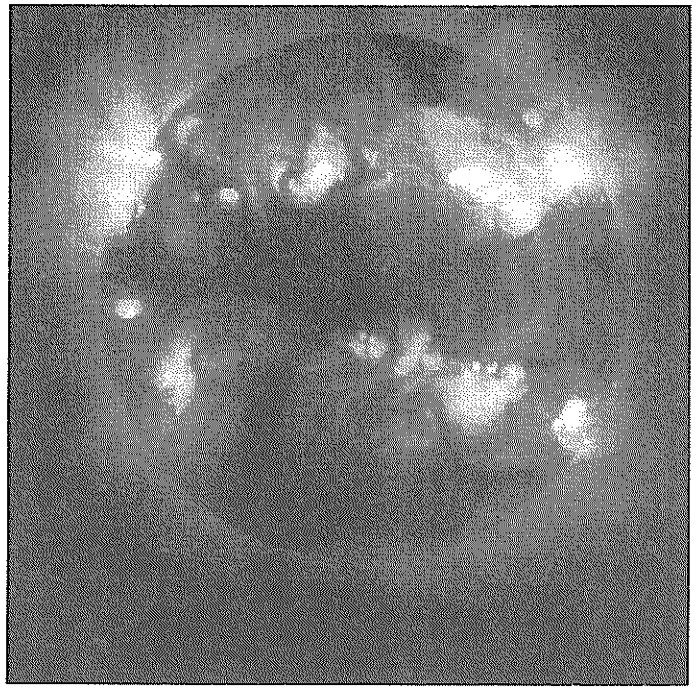
Day 14
11:41:48 UT



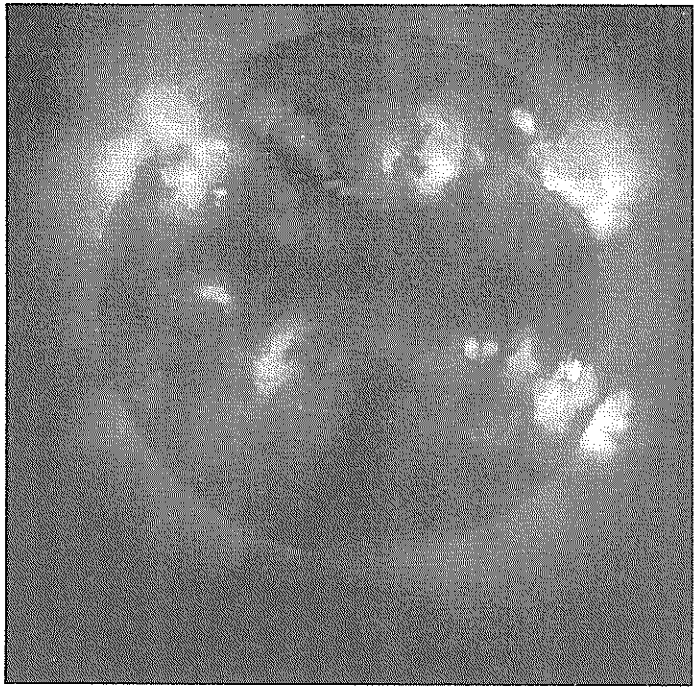
Day 16
11:51:24 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

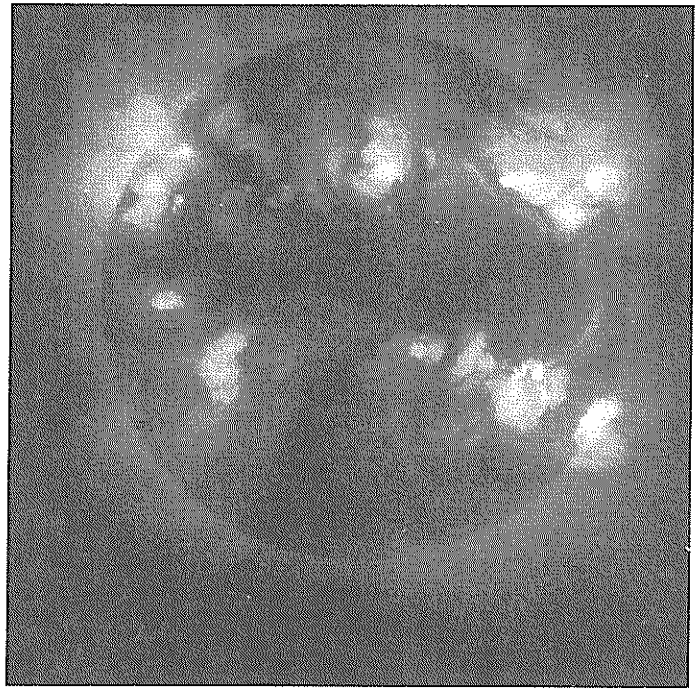
February
1999



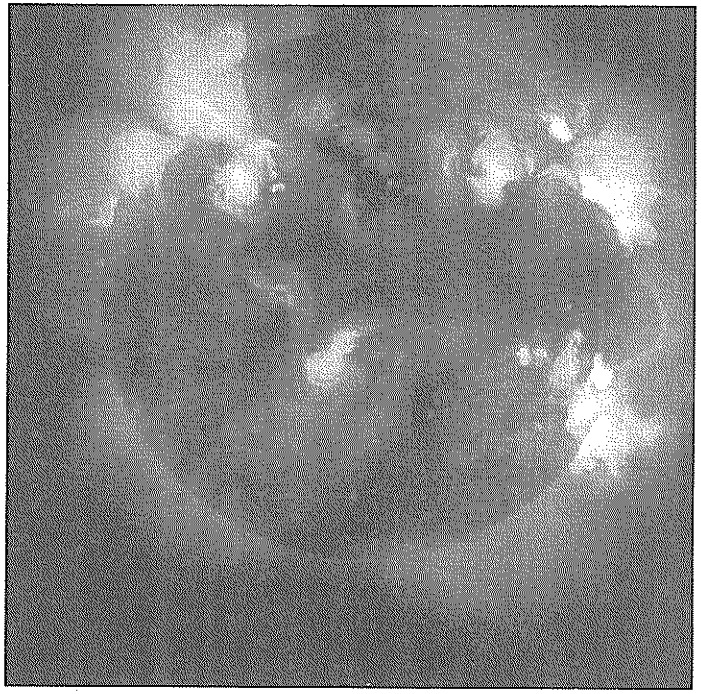
Day 17
11:52:11 UT



Day 19
12:16:59 UT



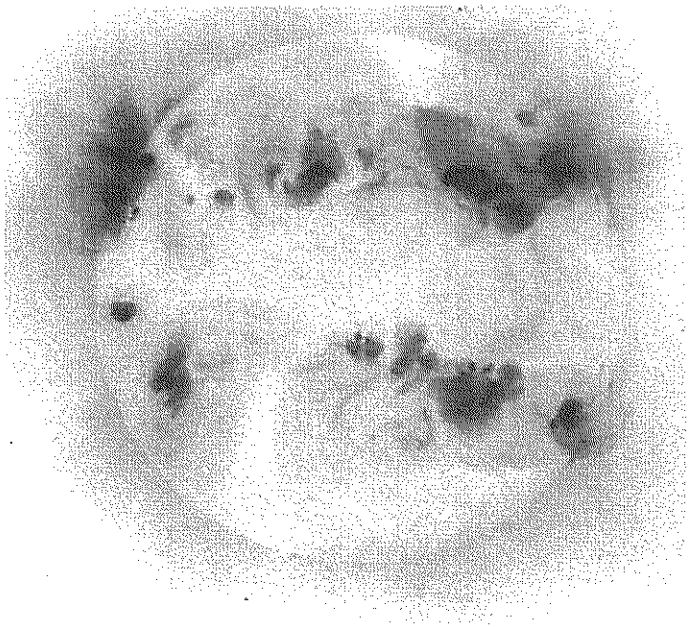
Day 18
12:04:59 UT



Day 20
11:45:37 UT

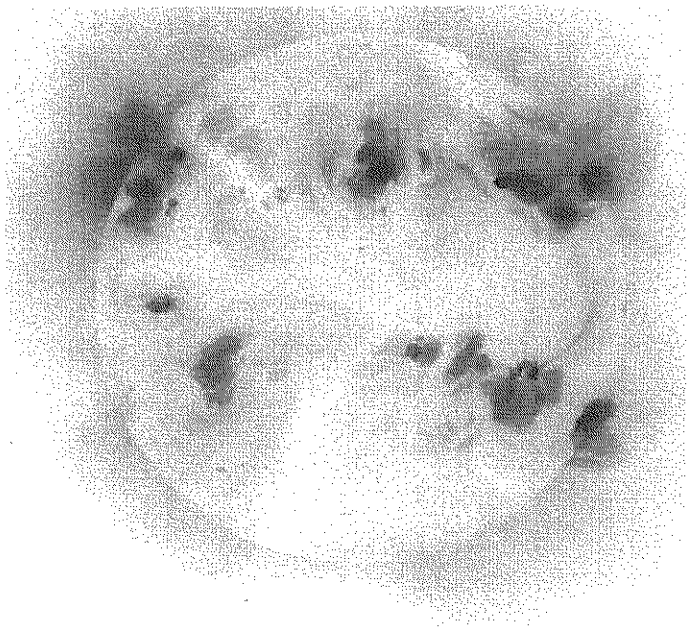
YOHKOH SOFT X-RAY TELESCOPE IMAGES

February 1999

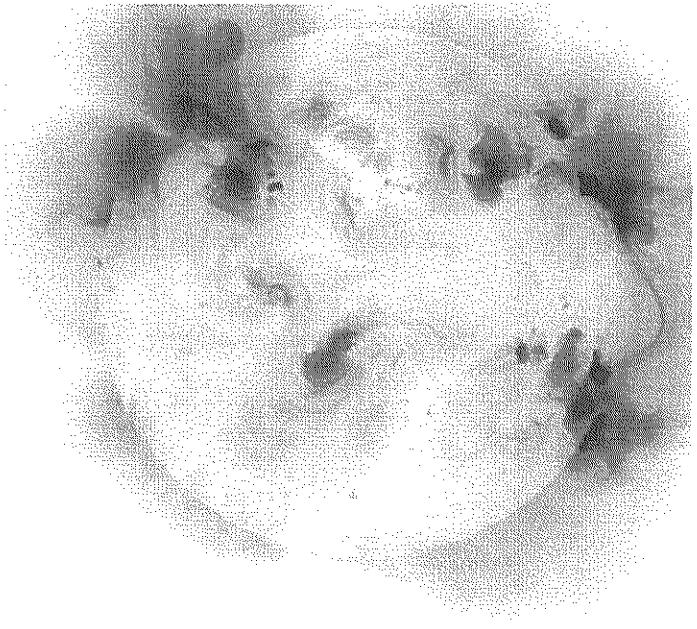


Day 17
11:52:11 UT

Day 19
12:16:59 UT



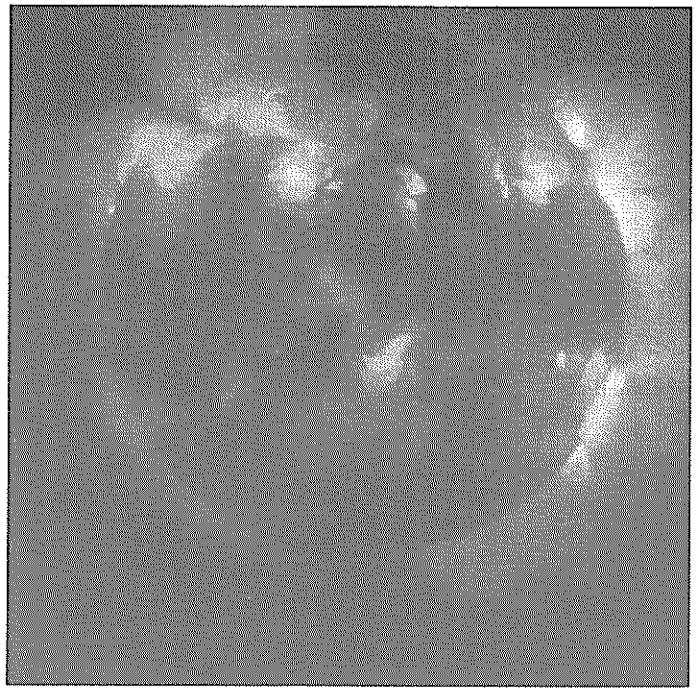
Day 18
12:04:59 UT



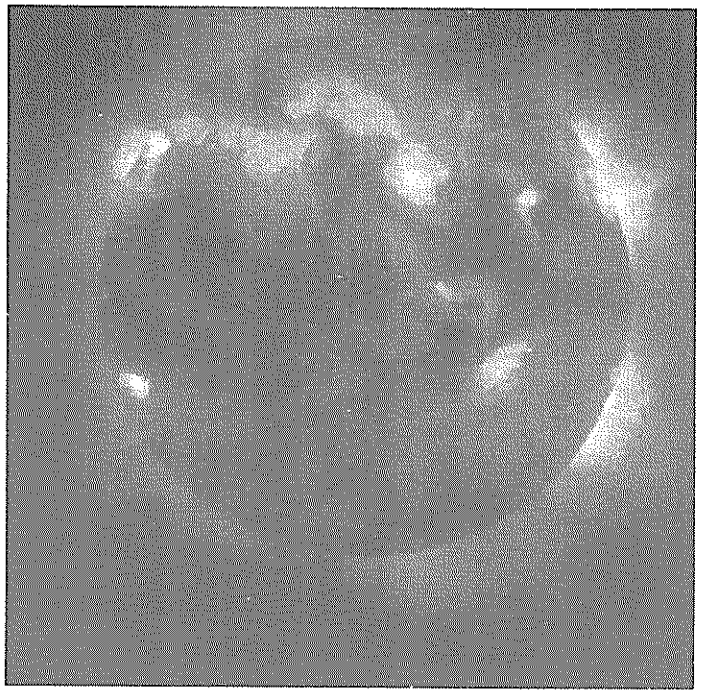
Day 20
11:45:37 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

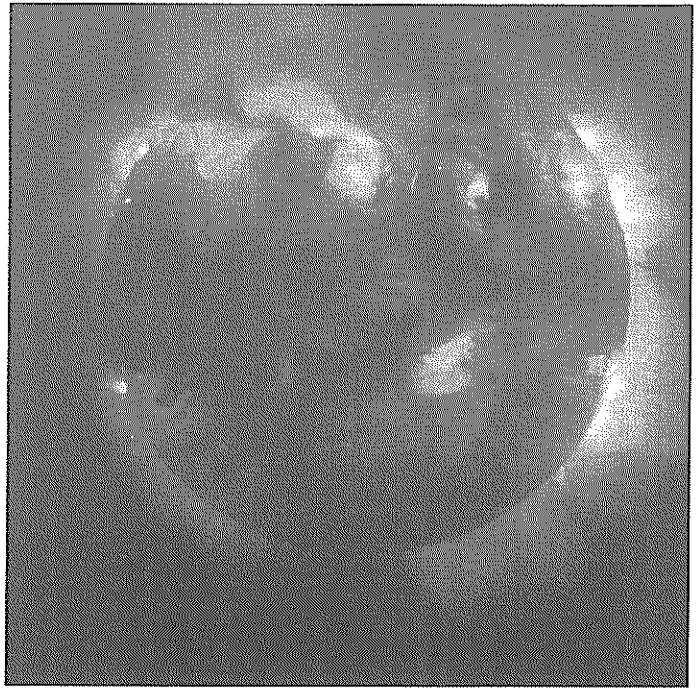
February
1999



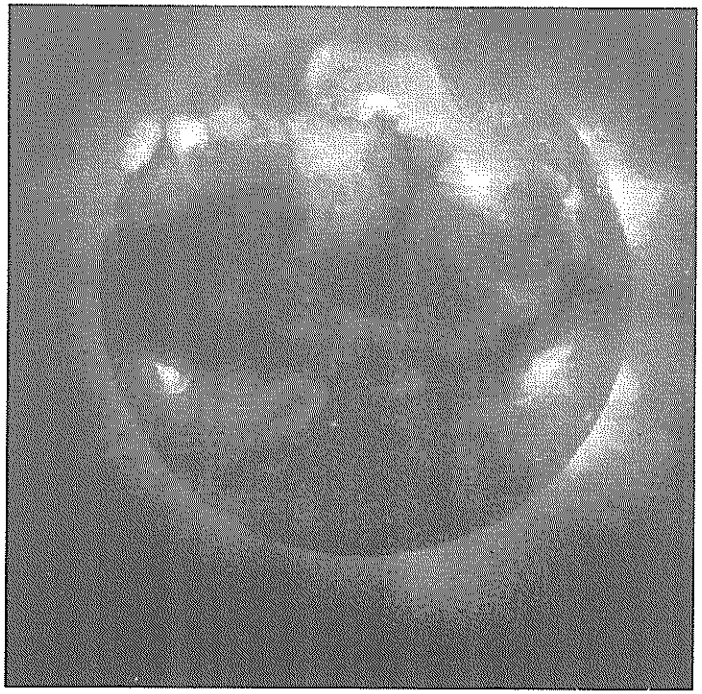
Day 21
11:43:23 UT



Day 23
11:58:02 UT



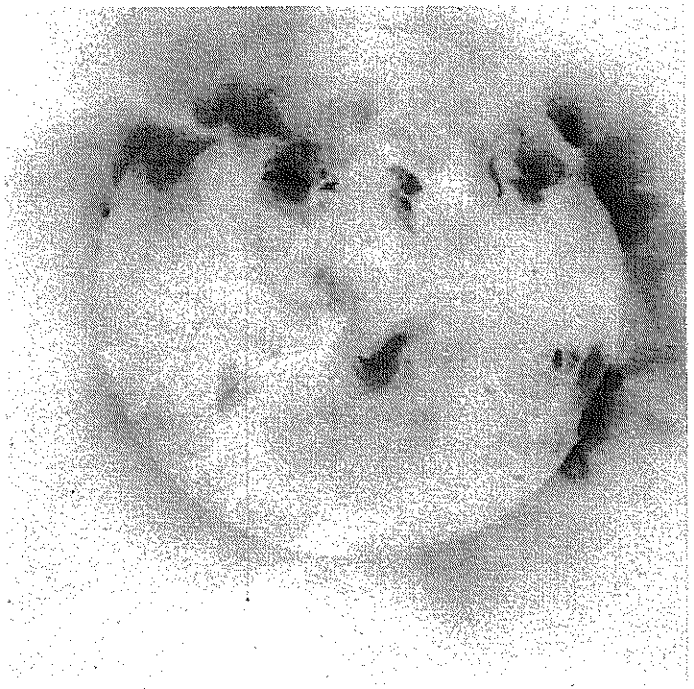
Day 22
11:52:44 UT



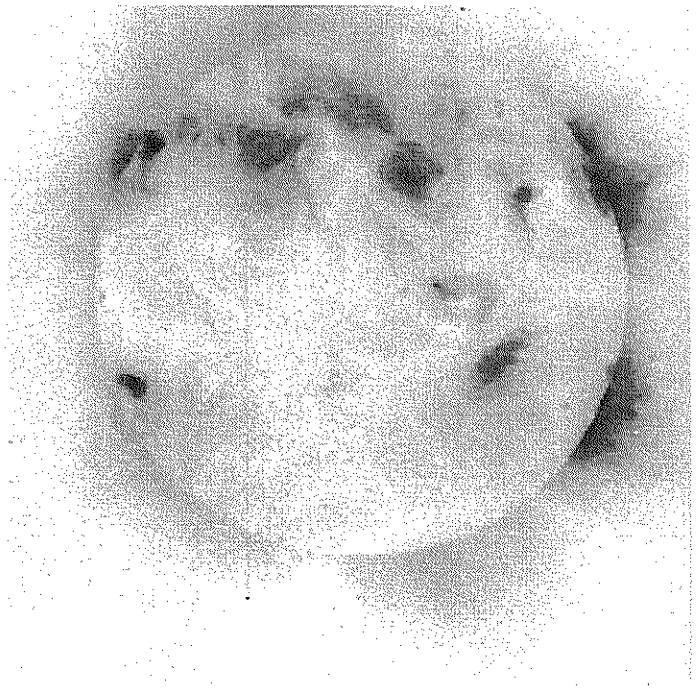
Day 24
12:24:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

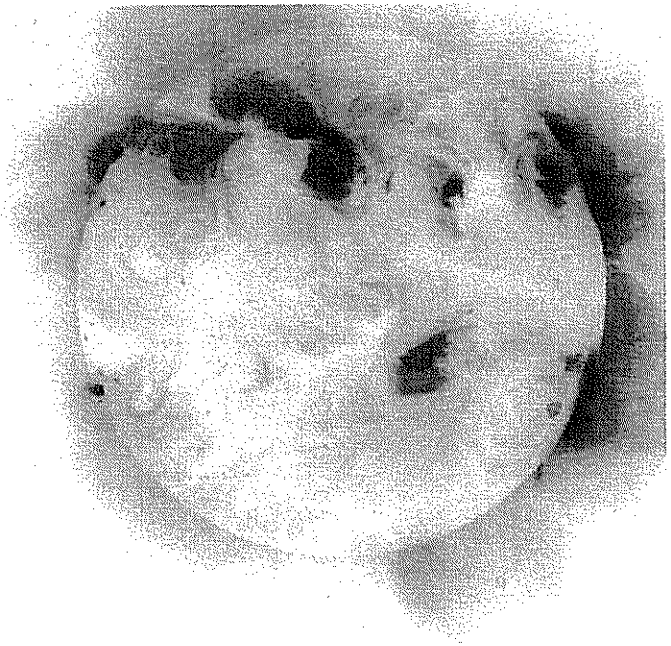
February 1999



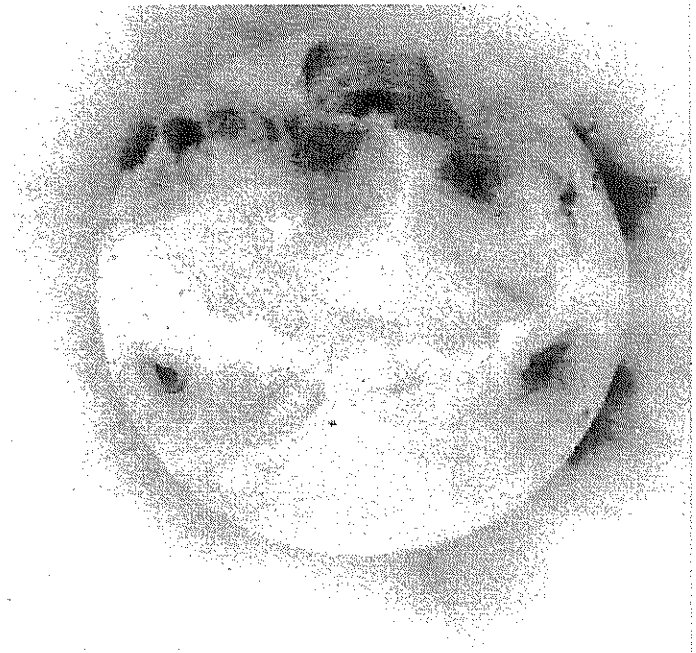
Day 21
11:43:23 UT



Day 23
11:58:02 UT



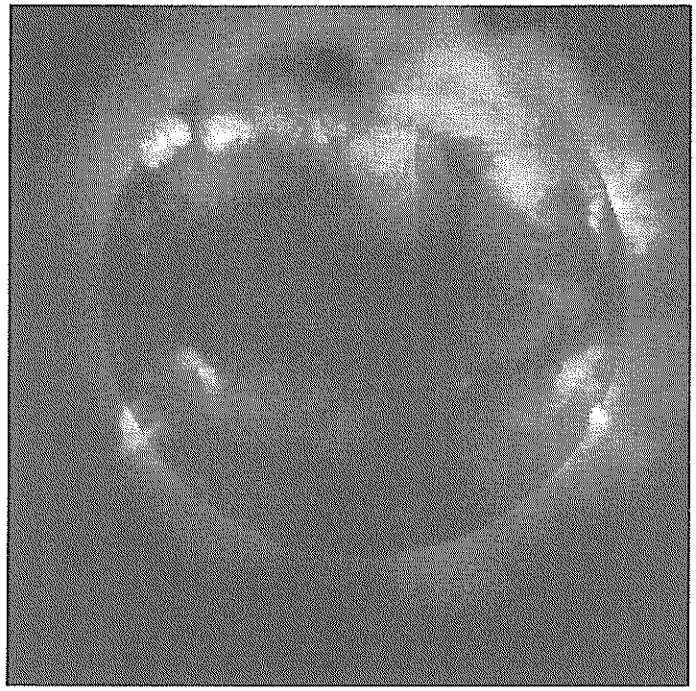
Day 22
11:52:44 UT



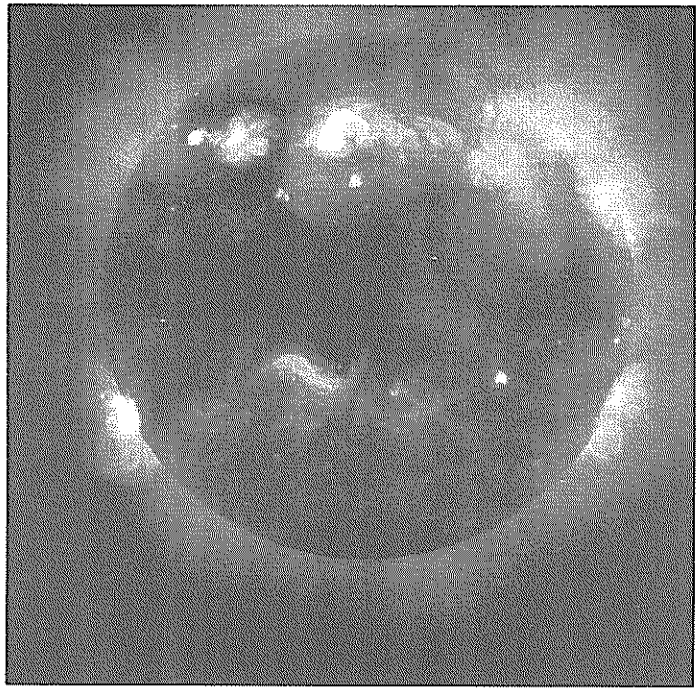
Day 24
12:24:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

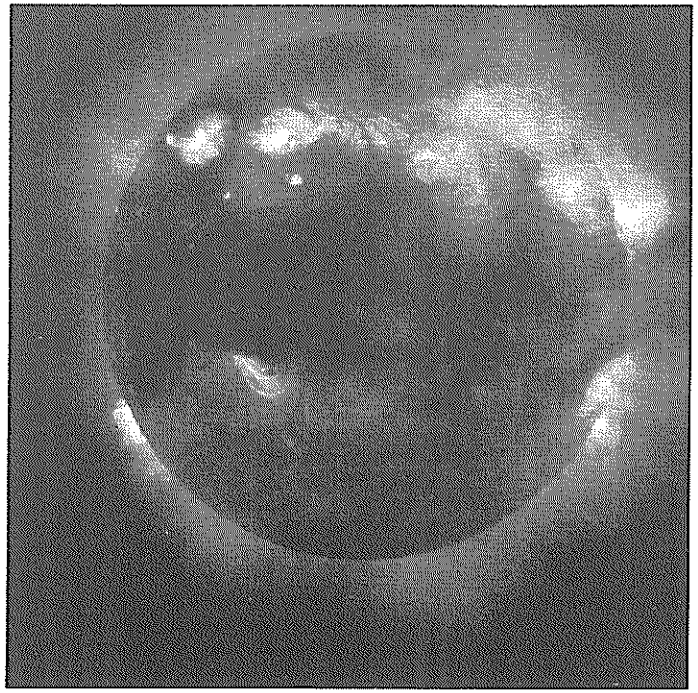
February
1999



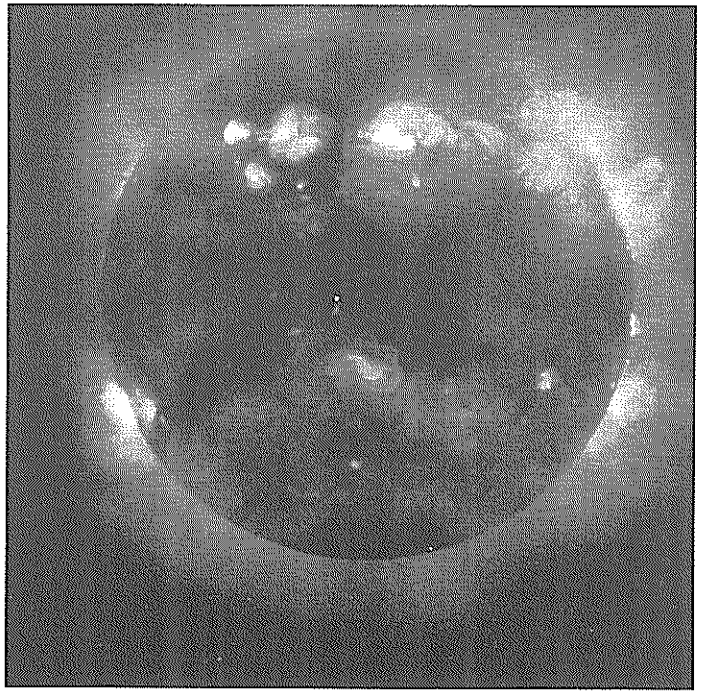
Day 25
09:33:38 UT



Day 27
11:55:23 UT



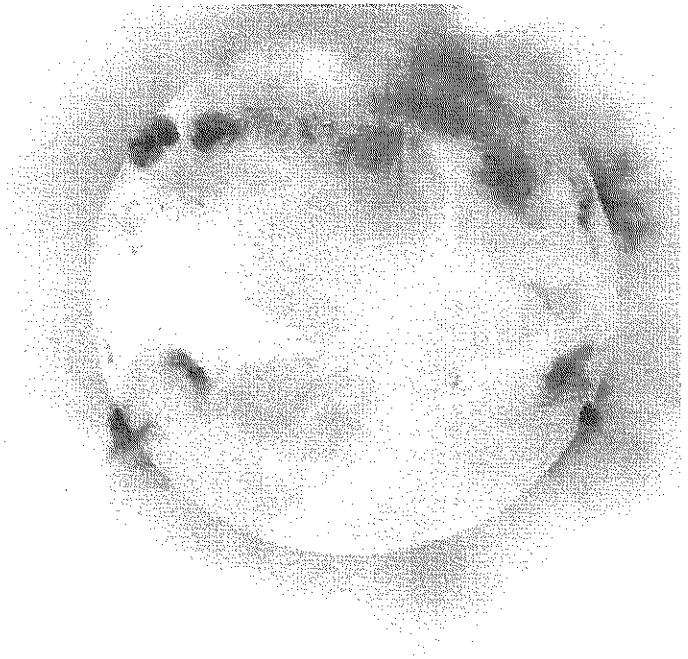
Day 26
11:37:06 UT



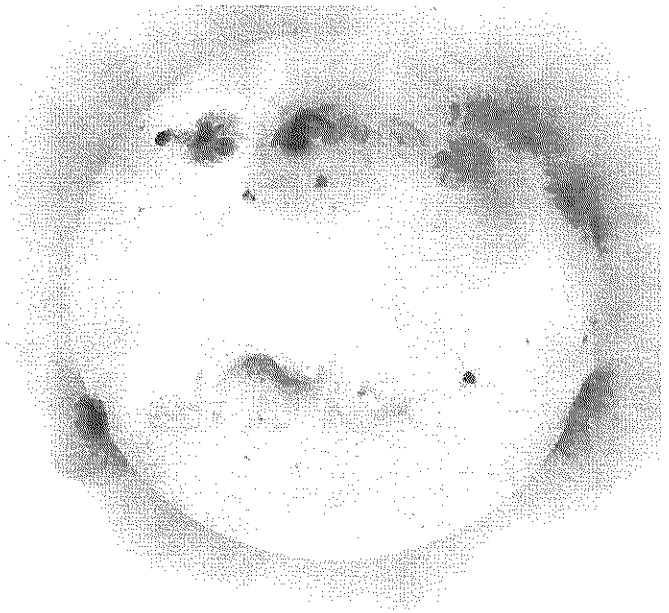
Day 28
12:04:27 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

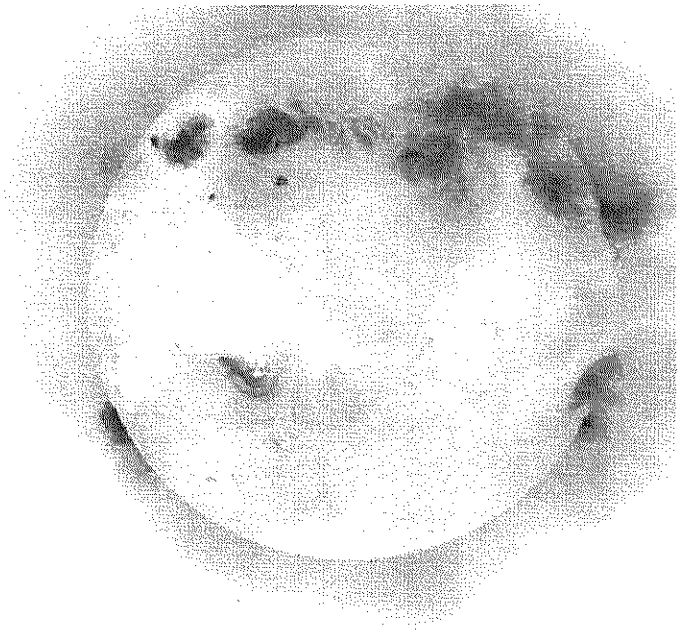
February 1999



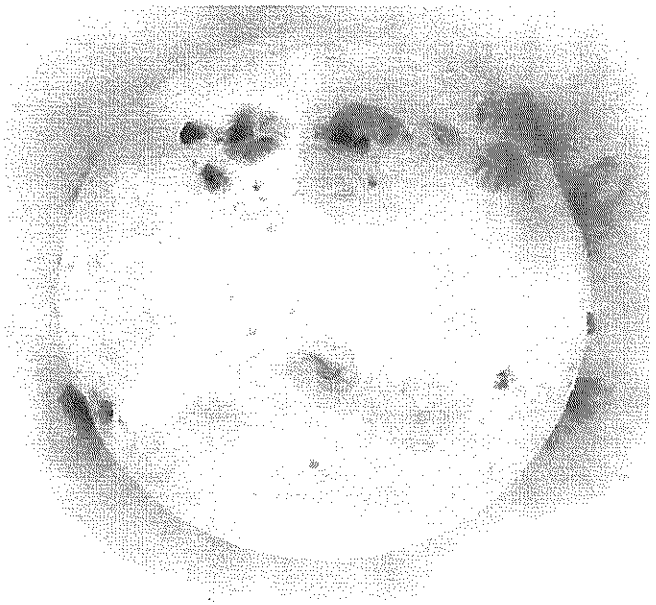
Day 25
09:33:38 UT



Day 27
11:55:23 UT

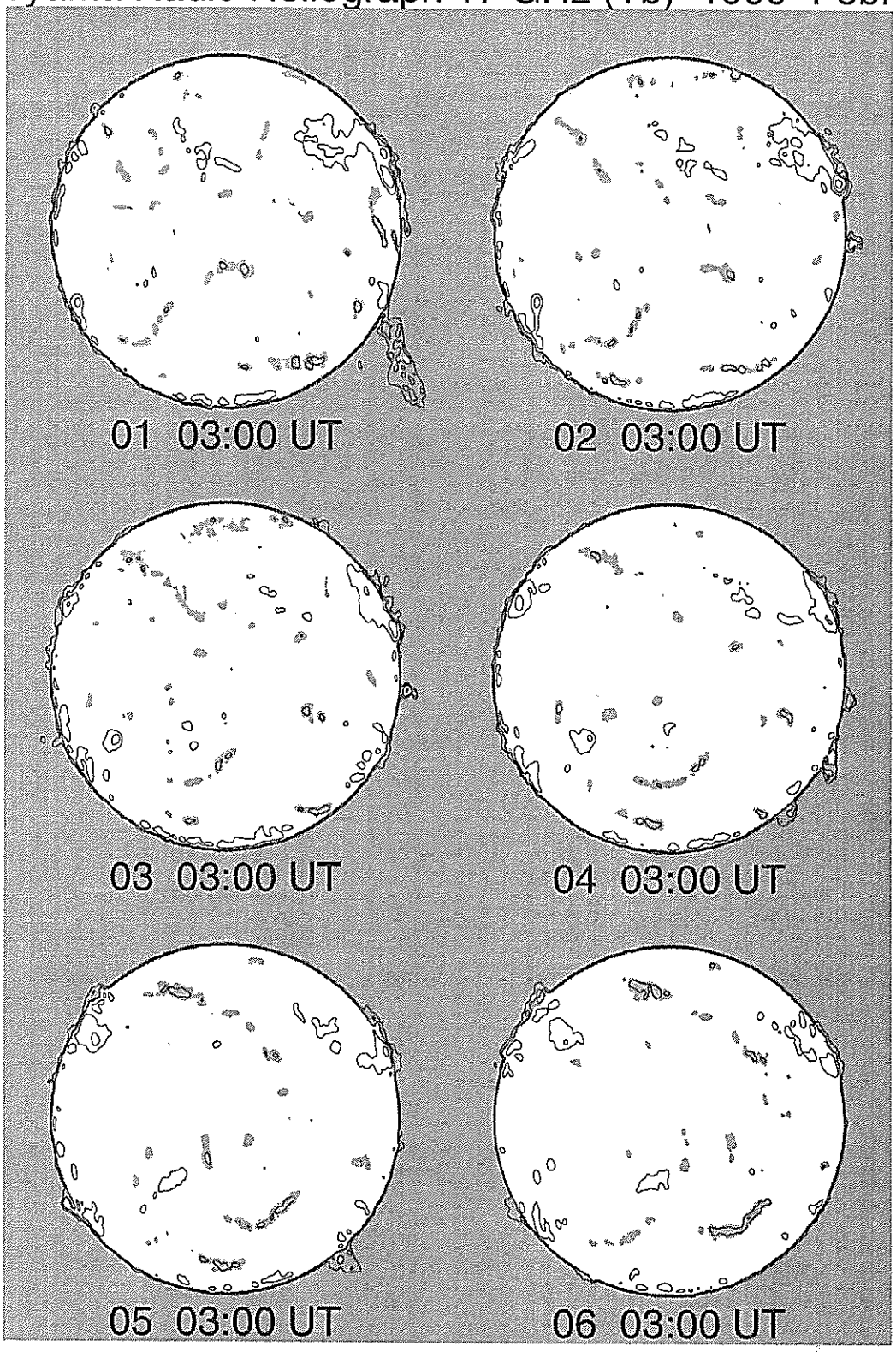


Day 26
11:37:06 UT



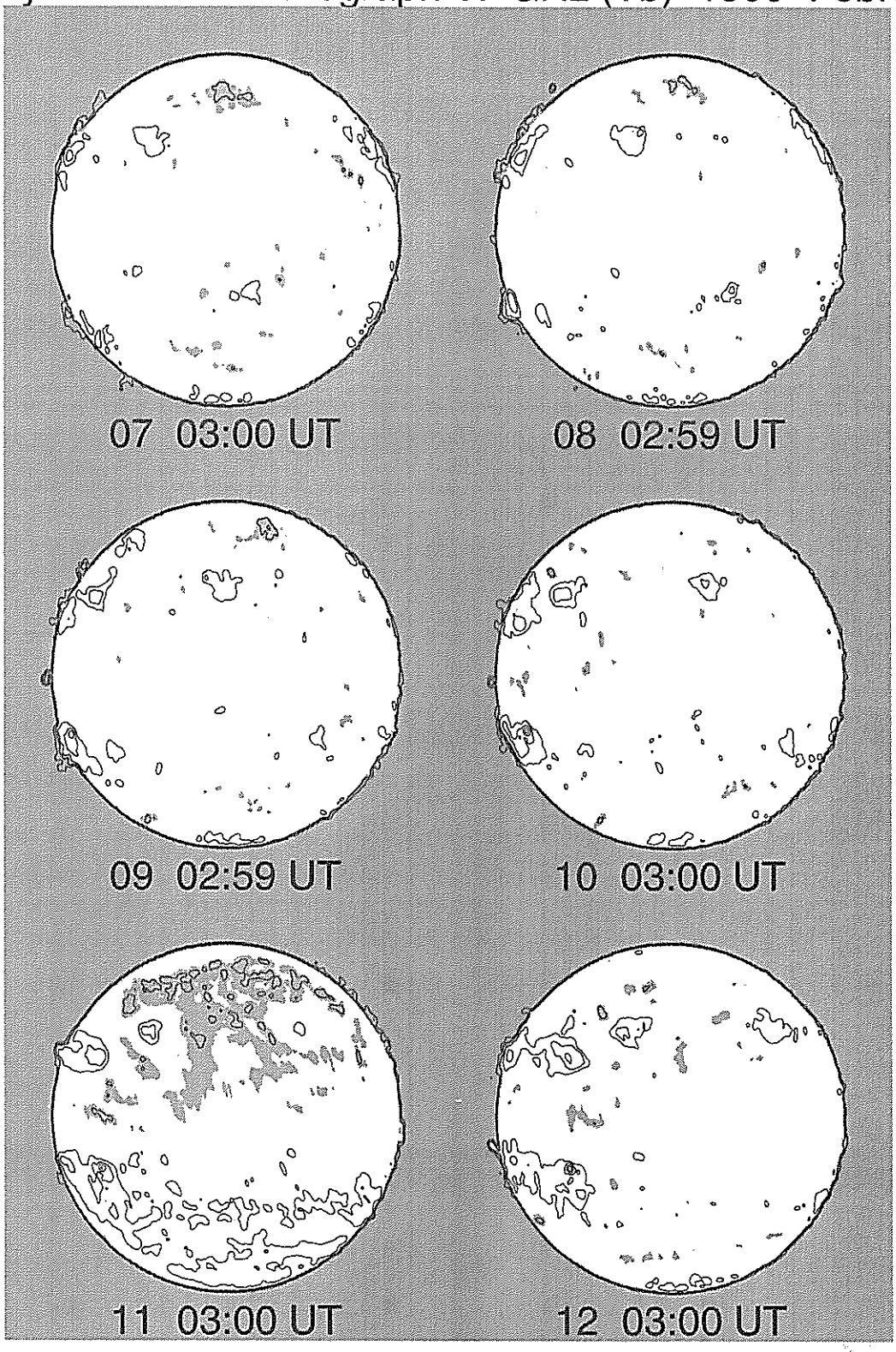
Day 28
12:04:27 UT

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 February



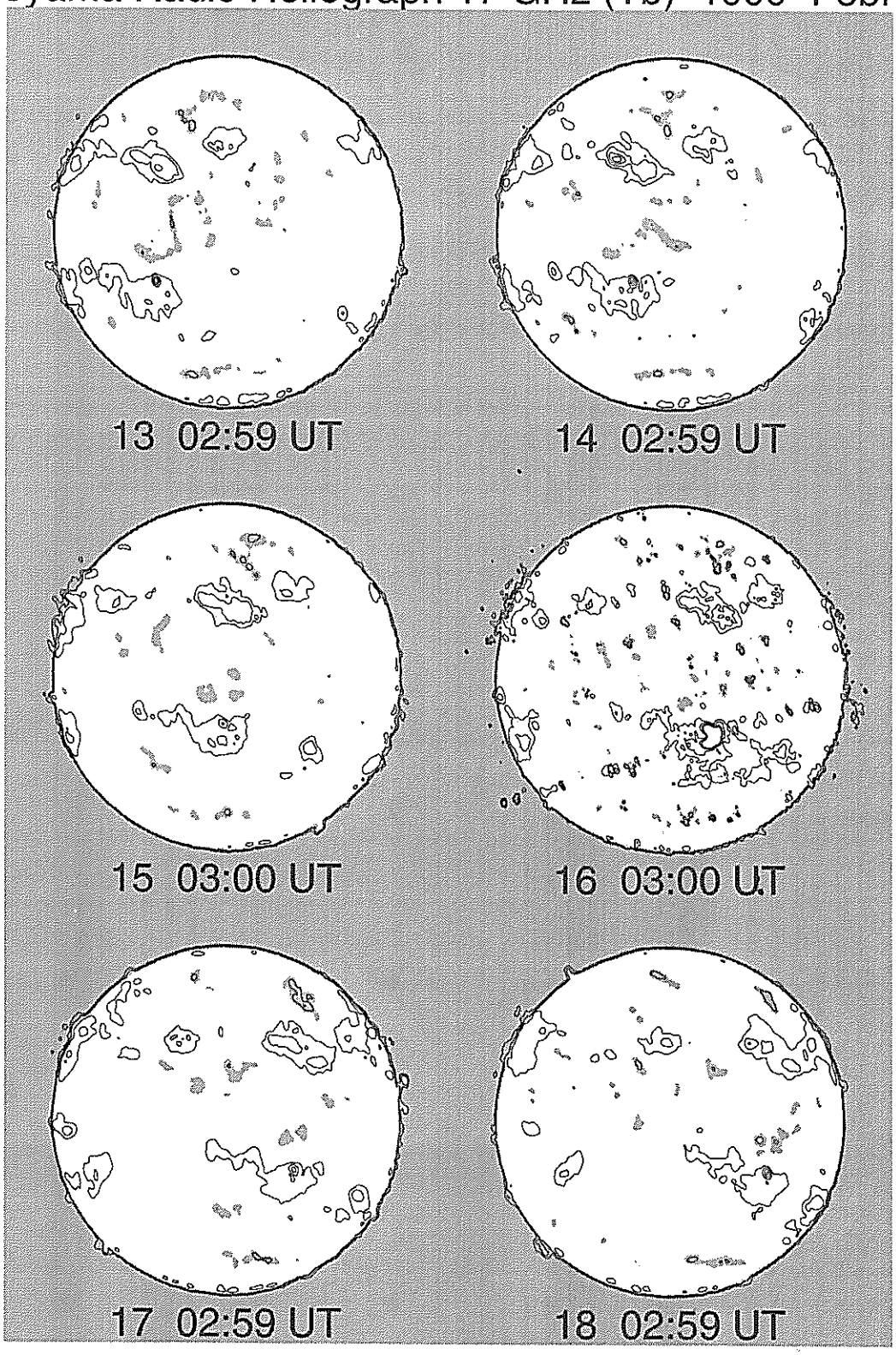
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 February



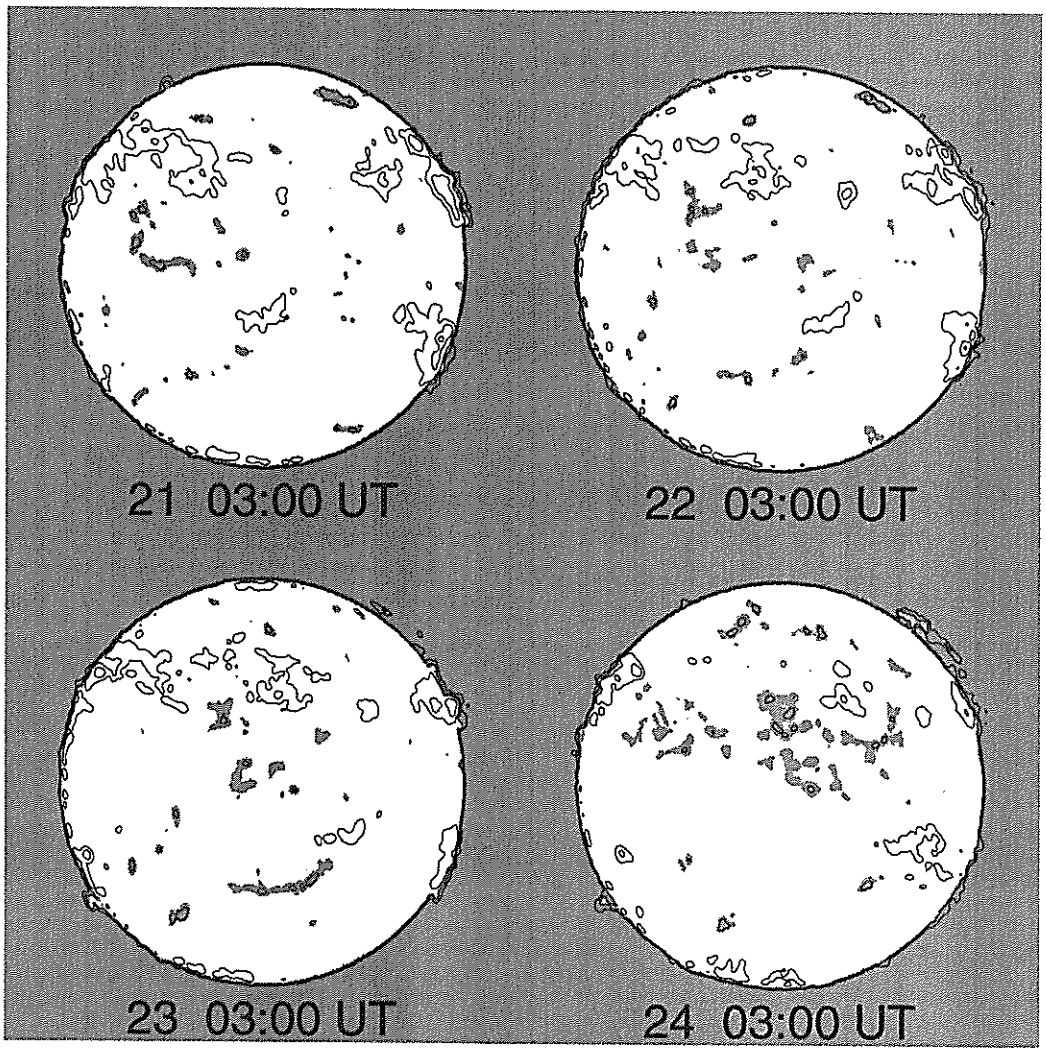
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 February



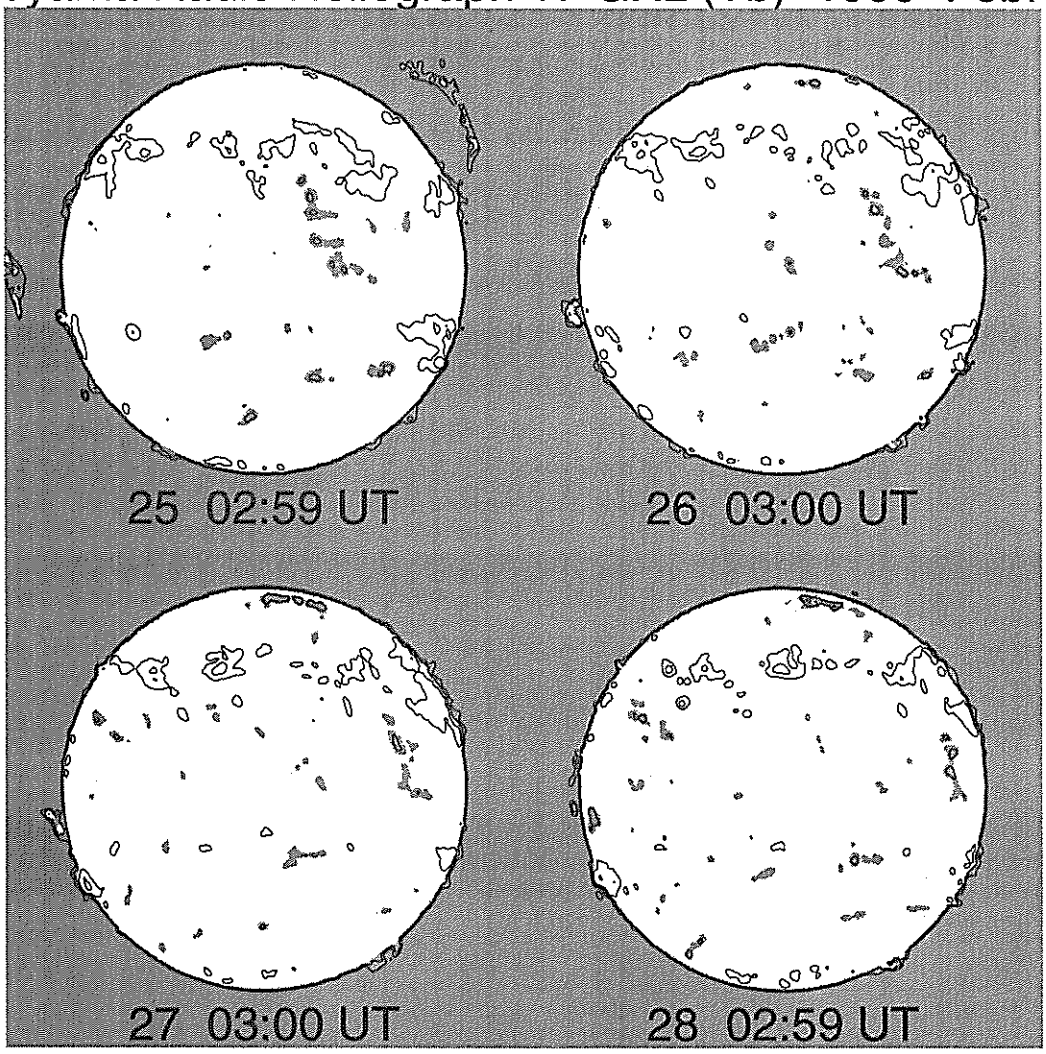
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 February



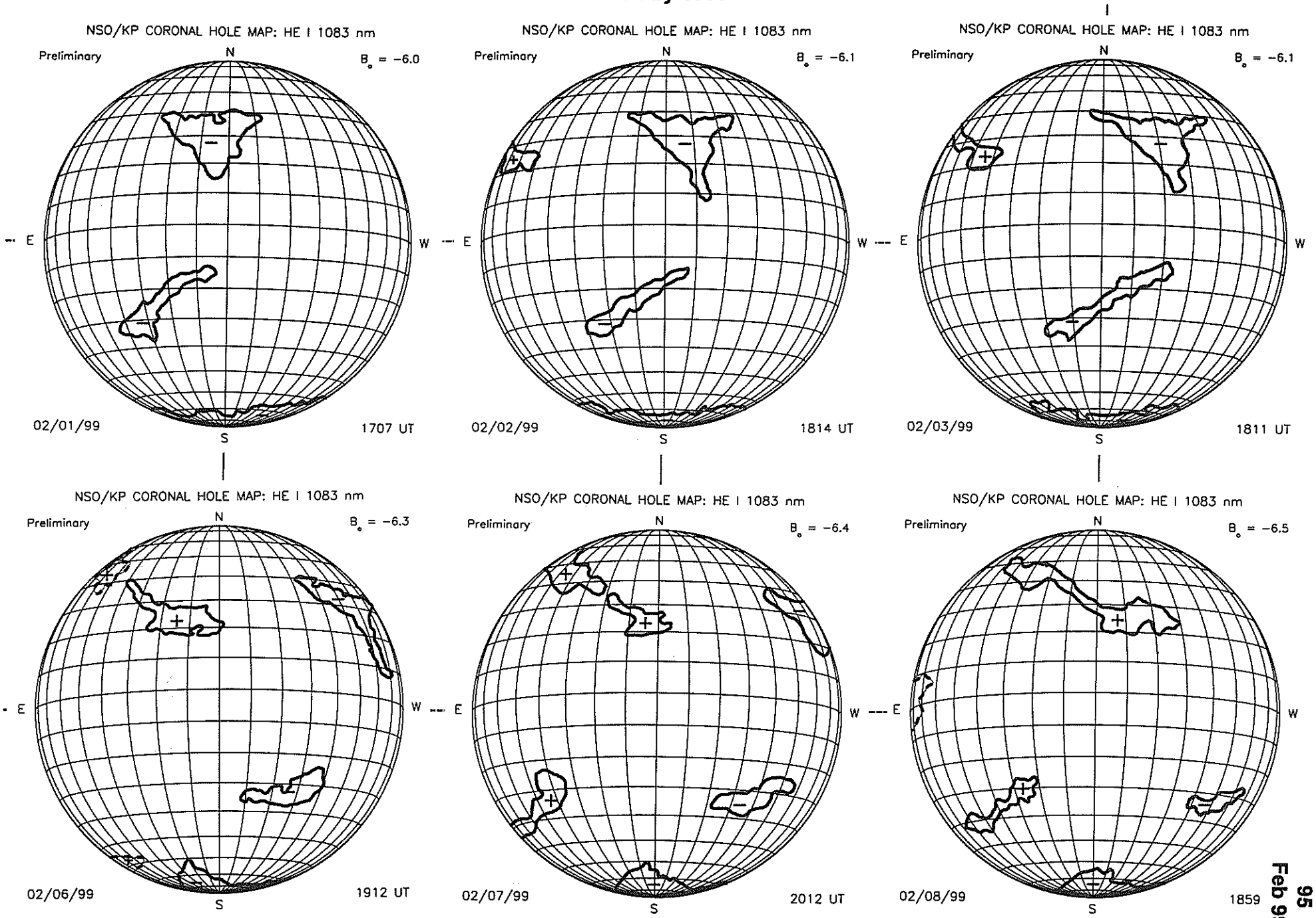
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 February

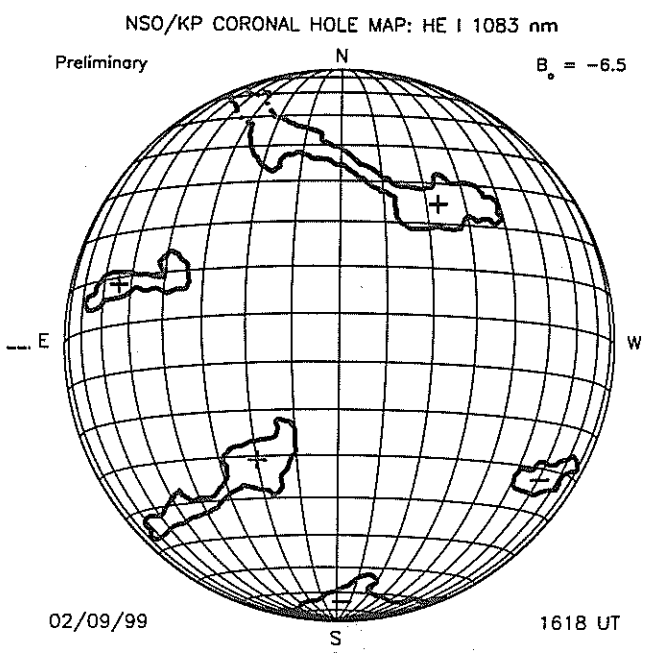


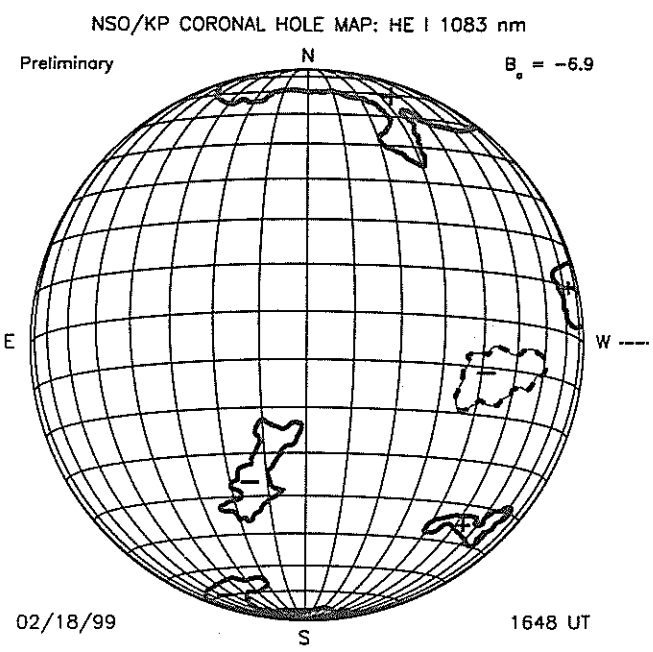
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

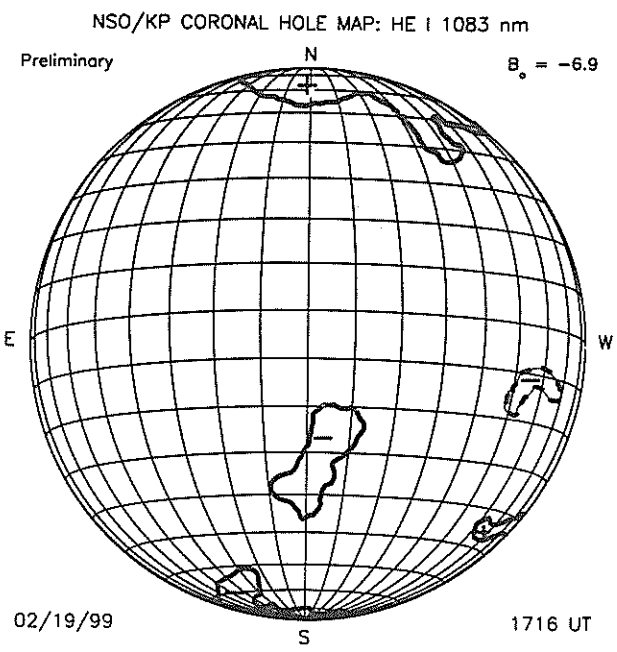
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
February 1999

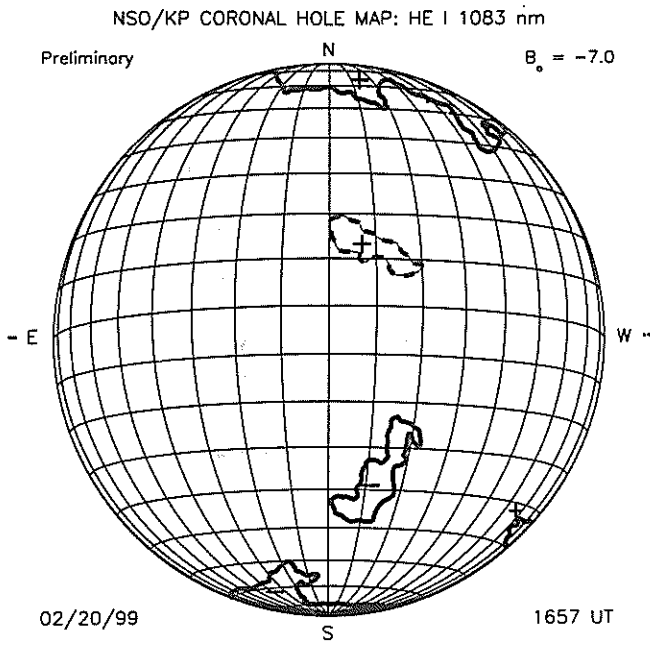


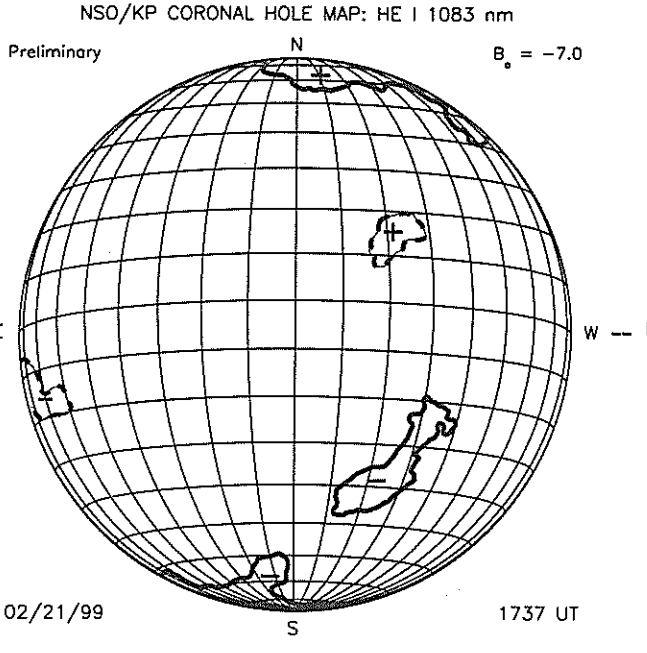
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
February 1999

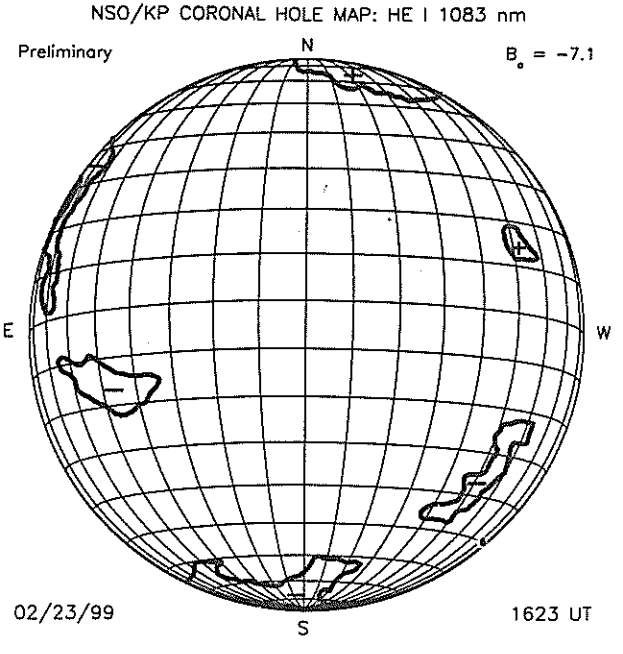




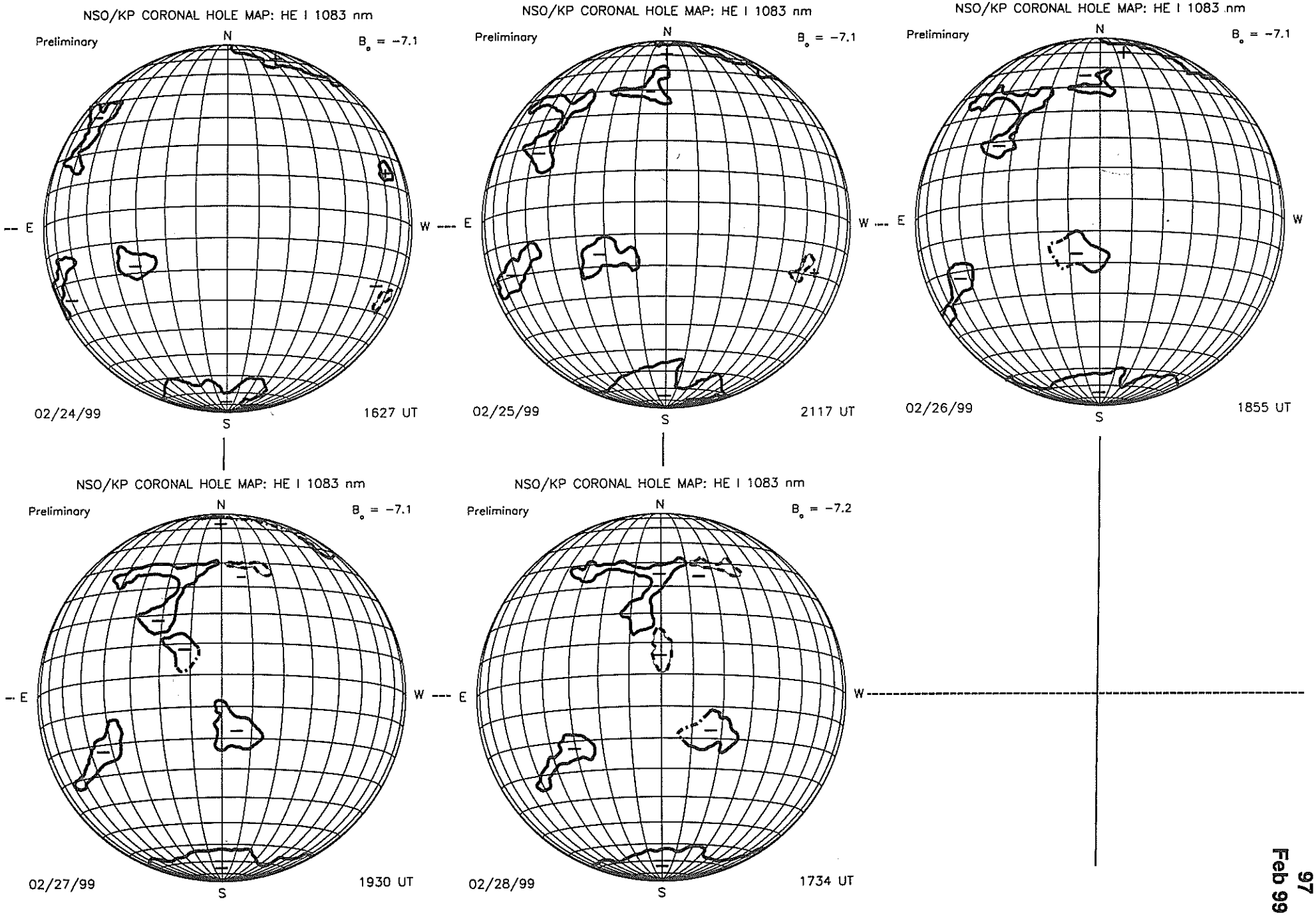








KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
February 1999



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Feb 99

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

FEBRUARY 1999

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
8454		RAMY	02	02	1303	S22	E22	02	4.2		B	BXO	10	2	3	3
8454	28977	MWIL	02	02	1545	S22	E20	02	4.2	4	(B)					
8454		HOLL	02	02	1557	S22	E19	02	4.1		B	CRO	20	3	3	2
8454		LEAR	02	03	0035	S22	E16	02	4.2		B	CRO	10	2	2	3
8454		TACH	02	03	0532	S21	E13	02	4.2			RXO	3	2	3	2
8454A		LEAR	02	01	0107	S25	E56	02	5.4		B	BXO	20	5	7	3
8453		TACH	02	01	0518	S27	E68	02	6.5			AR	11	2	3	3
8453	28976	MWIL	02	01	1600	S26	E61	02	6.4	4	(BP)					
8453		HOLL	02	01	1927	S27	E60	02	6.5		B	BXO	10	2	4	2
8453		TACH	02	02	0600	S26	E51	02	6.2			AR	16	7	4	2
8453		RAMY	02	02	1303	S25	E50	02	6.4		B	BXO	20	16	7	3
8453	28976	MWIL	02	02	1545	S26	E49	02	6.5	4	(B)					
8453		HOLL	02	02	1557	S27	E47	02	6.3		B	BXO	20	10	7	2
8453		LEAR	02	03	0035	S26	E44	02	6.4		B	DAO	40	5	6	3
8453		TACH	02	03	0532	S25	E42	02	6.5			BRO	96	6	7	2
8453		KAND	02	03	0905	S27	E40	02	6.5			DAO		13	8	3
8453		SVTO	02	03	1050	S25	E39	02	6.5		B	DSO	160	12	6	3
8453		RAMY	02	03	1244	S25	E36	02	6.3		B	DAO	60	9	6	3
8453	28976	MWIL	02	03	1530	S25	E36	02	6.4	5	(B)					
8453		HOLL	02	03	1612	S26	E36	02	6.5		B	DAO	60	8	6	3
8453		LEAR	02	04	0015	S25	E30	02	6.3		B	DAO	100	11	6	3
8453		SVTO	02	04	1045	S26	E29	02	6.7		B	CAO	60	8	7	3
8453		RAMY	02	04	1410	S25	E22	02	6.3		B	DAO	40	11	6	2
8453		HOLL	02	04	1546	S26	E23	02	6.4		B	CSO	500	10	6	3
8453		KAND	02	05	0705	S26	E13	02	6.3			CSO		3	5	3
8453		SVTO	02	05	0730	S25	E13	02	6.3		B	BXO	10	3	6	3
8453		RAMY	02	05	1302	S26	E10	02	6.3		B	CSO	20	6	5	3
8453		HOLL	02	05	1852	S26	E07	02	6.3		B	CAO	30	5	4	2
8453		LEAR	02	06	0150	S25	E01	02	6.1		B	CSO	40	4	2	3
8453		SVTO	02	06	0811	S26	E00	02	6.3		B	CAO	60	7	4	3
8453		RAMY	02	06	1248	S26	W04	02	6.2		B	CAO	20	4	5	4
8453	28976	MWIL	02	06	1530	S26	W06	02	6.2	4	(AP)					
8453		HOLL	02	06	1602	S27	W07	02	6.1		B	CSO	20	3	3	2
8453		LEAR	02	07	0214	S26	W09	02	6.4		B	CAO	40	6	7	5
8453		SVTO	02	07	0847	S24	W15	02	6.2		A	AX	10	3	2	3
8453		RAMY	02	07	1215	S26	W15	02	6.3		B	CRO	10	4	4	3
8453		HOLL	02	07	1551	S26	W17	02	6.3		B	CSO	20	2	6	4
8453	28976	MWIL	02	07	1600	S26	W19	02	6.2	4	(BP)					
8453		LEAR	02	08	0050	S26	W24	02	6.2		B	CAO	20	2	1	3
8453		KAND	02	08	0755	S26	W29	02	6.1			HA		1	2	3
8453		SVTO	02	08	1000	S25	W27	02	6.3		B	CRO	20	2	3	3
8453		RAMY	02	08	1207	S26	W29	02	6.2		A	AX		1		3
8453	28976	MWIL	02	08	1600	S26	W32	02	6.2	4	(BP)					
8453		HOLL	02	08	1604	S25	W32	02	6.2		A	AX	20	2	2	4
8453		TACH	02	10	0610	S28	W52	02	6.2			AR	20	2	1	3
8453A		LEAR	02	13	0325	S33	W48	02	9.3		B	BXO		2	2	5
8453A		RAMY	02	13	1250	S33	W55	02	9.2		B	BXO	10	3	5	3
8453A	28991	MWIL	02	13	1600	S31	W58	02	9.1	3	(BP)					
8453A		LEAR	02	14	0005	S32	W63	02	9.0		A	AX		1		4
8455		SVTO	02	06	0811	S18	E42	02	9.5		A	HR	10	3	1	3
8455		RAMY	02	06	1248	S19	E38	02	9.4		A	HR	10	1	1	4
8455	28979	MWIL	02	06	1530	S19	E37	02	9.5	4	(BP)					
8455		HOLL	02	06	1602	S19	E38	02	9.6		B	CRO	20	2	4	2
8455		LEAR	02	07	0214	S18	E30	02	9.4		B	BXO	10	3	5	5
8455		SVTO	02	07	0847	S18	E26	02	9.3		A	AX		1		3
8455		RAMY	02	07	1215	S18	E24	02	9.3		A	AX		1		3
8455		HOLL	02	07	1551	S19	E23	02	9.4		A	AX		1		4
8455	28980	MWIL	02	07	1600	S18	E23	02	9.4	4	(AP)					
8455		LEAR	02	08	0050	S18	E17	02	9.3		B	BXO	10	3	1	3
8455		KAND	02	08	0755	S18	E18	02	9.7			AX		1	1	3
8455		SVTO	02	08	1000	S18	E13	02	9.4		A	AX	10	1		3
8455		RAMY	02	08	1207	S18	E11	02	9.3		A	AX		1		3
8455	28980	MWIL	02	08	1600	S18	E09	02	9.3	3	(AP)					
8455		HOLL	02	08	1604	S18	E08	02	9.3		A	AX	10	1		4

S U N S P O T G R O U P S
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FEBRUARY 1999

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
8459		RAMY	02	07	1215	S29	E65	02	12.6		A	AX		1		3
8459		RAMY	02	08	1207	S29	E56	02	12.9		B	BXO		2	4	3
8459	28982	MWIL	02	08	1600	S30	E50	02	12.6	3	(B)					
8459		HOLL	02	08	1604	S29	E51	02	12.7		A	AX		1		4
8459		RAMY	02	14	1314	S30	W26	02	12.5		B	BXO	100	7	4	3
8459	28992	MWIL	02	14	1530	S29	W27	02	12.5	5	(BP)					
8459		HOLL	02	14	1716	S31	W27	02	12.6		B	DRO	40	5	5	3
8459		LEAR	02	15	0320	S29	W31	02	12.7		B	DRO	70	7	7	2
8459		TACH	02	15	0528	S30	W33	02	12.6			CRI	218	10	6	3
8459		KAND	02	15	1015	S30	W37	02	12.5			DAO		11	9	3
8459		RAMY	02	15	1330	S28	W38	02	12.6		B	BXO	100	7	7	1
8459	28992	MWIL	02	15	1600	S29	W40	02	12.5	5	(B)					
8459		HOLL	02	15	1614	S31	W40	02	12.5		B	DSO	90	10	10	3
8459		TACH	02	16	0535	S29	W47	02	12.5			CRO	80	5	6	3
8459		KAND	02	16	0740	S30	W50	02	12.4			EAO		10	11	3
8459		LEAR	02	16	0920	S29	W51	02	12.4		B	DAO	100	10	9	3
8459		RAMY	02	16	1523	S29	W52	02	12.6		B	DAO	60	4	7	2
8459		HOLL	02	16	1550	S31	W52	02	12.5		B	DAO	120	5	9	2
8459		KAND	02	17	0800	S30	W63	02	12.4			CAO		6	12	3
8459		RAMY	02	17	1228	S29	W64	02	12.5		B	DAO	120	4	10	2
8459	28992	MWIL	02	17	1545	S30	W65	02	12.5	4	(B)					
8459		HOLL	02	17	2206	S31	W67	02	12.6		B	DSO	180	9	11	1
8459		LEAR	02	18	0025	S28	W68	02	12.7		B	EAO	150	8	11	4
8459		TACH	02	18	0600	S30	W71	02	12.7			DRO	141	8	4	3
8459		KAND	02	18	0850	S30	W74	02	12.5			EAO		7	16	3
8459		RAMY	02	18	1235	S29	W71	02	12.9		B	DAO	80	5	9	3
8459		HOLL	02	18	1558	S30	W79	02	12.4		B	BXO	110	5	4	3
8459	28992	MWIL	02	18	1900	S29	W79	02	12.6	4	(B)					
8459		LEAR	02	19	0006	S28	W81	02	12.7		B	DAO	130	9	10	5
8459A		HOLL	02	09	1638	S30	E43	02	13.1		A	AX		2		4
8456		LEAR	02	07	0214	N22	E74	02	12.8		A	HA	30	1	1	5
8456		SVTO	02	07	0847	N24	E75	02	13.2		A	AX		1		3
8456		RAMY	02	07	1215	N24	E70	02	12.9		A	AX	10	1		3
8456		HOLL	02	07	1551	N22	E69	02	13.0		A	AX		1		4
8456	28981	MWIL	02	07	1600	N23	E69	02	13.0	4	(AP)					
8456		LEAR	02	08	0050	N22	E65	02	13.0		B	BXO	30	5	8	3
8456		KAND	02	08	0755	N23	E64	02	13.3			EAO		4	12	3
8456		SVTO	02	08	1000	N24	E64	02	13.4		B	DAO	120	6	10	3
8456		RAMY	02	08	1207	N24	E62	02	13.3		B	DSO	80	7	10	3
8456	28981	MWIL	02	08	1600	N23	E59	02	13.2	4	(B)					
8456		HOLL	02	08	1604	N23	E60	02	13.3		B	CSO	80	11	10	4
8456		LEAR	02	09	0615	N24	E50	02	13.1		B	EAO	160	10	12	3
8456		SVTO	02	09	0701	N23	E50	02	13.1		B	ESO	100	6	11	3
8456		KAND	02	09	1145	N23	E49	02	13.3			EAO		7	11	3
8456		RAMY	02	09	1310	N25	E48	02	13.3		B	ESO	80	7	11	3
8456		HOLL	02	09	1638	N23	E46	02	13.2		B	ESO	190	13	11	4
8456		LEAR	02	10	0040	N23	E42	02	13.3		B	EAI	240	11	11	3
8456		TACH	02	10	0610	N23	E39	02	13.3			DAI	301	12	10	3
8456		KAND	02	10	0900	N23	E40	02	13.4			EAI		8	11	3
8456		RAMY	02	10	1327	N27	E35	02	13.3		B	ESO	100	15	12	3
8456		HOLL	02	10	1800	N23	E33	02	13.3		B	ESI	220	12	12	2
8456	28981	MWIL	02	10	2345	N23	E29	02	13.2	5	(BP)					
8456		LEAR	02	11	0025	N23	E27	02	13.1		B	ESI	250	22	11	3
8456		TACH	02	11	0505	N23	E27	02	13.3			DAI	314	12	9	3
8456		KAND	02	11	0745	N23	E25	02	13.2			EAI		14	12	5
8456		RAMY	02	11	1230	N23	E22	02	13.2		BG	EAO	190	12	12	3
8456		HOLL	02	11	1541	N23	E20	02	13.2		BG	EAI	200	13	11	2
8456	28981	MWIL	02	11	1745	N23	E20	02	13.3	5	(BP)					
8456		LEAR	02	12	0155	N23	E15	02	13.2		BG	EAI	240	28	12	3
8456		RAMY	02	12	1226	N23	E10	02	13.3		BG	EAO	130	23	11	3
8456		KAND	02	12	1345	N23	E10	02	13.3			EAI		9	11	3
8456	28981	MWIL	02	12	1530	N23	E09	02	13.3	4	(B)					
8456		HOLL	02	12	1530	N24	E08	02	13.3		B	EAO	150	30	11	3
8456		LEAR	02	13	0325	N23	E02	02	13.3		BG	EAI	70	30	12	5
8456		RAMY	02	13	1250	N23	W03	02	13.3		B	ESO	50	28	11	3
8456	28981	MWIL	02	13	1600	N23	W05	02	13.3	4	(B)					
8456		HOLL	02	13	1654	N22	W05	02	13.3		B	ESO	60	23	11	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8456		LEAR	02 14	0005	N24 W10	02 13.2		B	CAO	40	18	11	4
8456		RAMY	02 14	1314	N23 W16	02 13.3		B	CRO	20	16	10	3
8456	28981	MWIL	02 14	1530	N24 W17	02 13.3	4	(B)					
8456		HOLL	02 14	1716	N22 W18	02 13.3		B	CSO	30	8	10	3
8456		LEAR	02 15	0320	N23 W25	02 13.2		B	CSO	40	5	11	2
8456		TACH	02 15	0528	N24 W24	02 13.4			BRO	35	4	11	3
8456		KAND	02 15	1015	N23 W25	02 13.5			CRO		6	9	3
8456		RAMY	02 15	1330	N22 W27	02 13.5		A	AX		1	1	1
8456	28981	MWIL	02 15	1600	N24 W29	02 13.4	4	(B)					
8456		HOLL	02 15	1614	N22 W35	02 13.0		B	AXO	30	3	4	3
8456		TACH	02 16	0535	N24 W36	02 13.4			BRO	15	2	5	3
8456		LEAR	02 16	0920	N22 W41	02 13.2		B	BXO	30	4	11	3
8456		LEAR	02 18	0025	N25 W63	02 13.1		A	HA	40	2	1	4
8456		TACH	02 18	0600	N25 W59	02 13.7			AXX	10	1	1	3
8456A		HOLL	02 15	1614	N37 W28	02 13.4		B	BXO	20	2	2	3
8457		SVTO	02 08	1000	N19 E80	02 14.5		A	HS	90	1	2	3
8457		RAMY	02 08	1207	N19 E78	02 14.4		A	HS	100	1	1	3
8457	28983	MWIL	02 08	1600	N18 E78	02 14.6	4	(AP)					
8457		HOLL	02 08	1604	N17 E78	02 14.6		A	HS	40	1	2	4
8457		LEAR	02 09	0615	N18 E67	02 14.4		A	HA	50	1	2	3
8457		SVTO	02 09	0701	N19 E68	02 14.5		A	HS	50	1	2	3
8457		KAND	02 09	1145	N18 E67	02 14.6			HS		1	2	3
8457		RAMY	02 09	1310	N21 E65	02 14.5		A	HS	80	1	2	3
8457		HOLL	02 09	1638	N16 E65	02 14.6		B	CSO	90	3	7	4
8457		LEAR	02 10	0040	N17 E57	02 14.3		B	DAO	160	9	8	3
8457		TACH	02 10	0610	N16 E59	02 14.7			DAO	170	9	7	3
8457		KAND	02 10	0900	N16 E59	02 14.8			DAO		8	9	3
8457		RAMY	02 10	1327	N18 E54	02 14.7		B	DSO	120	7	10	3
8457		HOLL	02 10	1800	N17 E52	02 14.7		B	DAO	270	9	8	2
8457	28985	MWIL	02 10	2345	N14 E50	02 14.8	5	(B)					
8457	28983	MWIL	02 10	2345	N17 E47	02 14.6	5	(AP)					
8457		LEAR	02 11	0025	N16 E47	02 14.6		B	EAO	300	20	11	3
8457		TACH	02 11	0505	N15 E47	02 14.8			DAI	309	9	7	3
8457		KAND	02 11	0745	N15 E45	02 14.7			DSO		13	9	5
8457		RAMY	02 11	1230	N15 E42	02 14.7		B	DAO	290	14	10	3
8457		HOLL	02 11	1541	N17 E42	02 14.8		B	ESI	290	12	14	2
8457	28985	MWIL	02 11	1745	N14 E40	02 14.8	5	(B)					
8457	28983	MWIL	02 11	1745	N17 E37	02 14.5	5	(AP)					
8457		LEAR	02 12	0155	N16 E36	02 14.8		BG	FAI	280	27	18	3
8457		RAMY	02 12	1226	N14 E29	02 14.7		B	EAO	380	21	11	3
8457		KAND	02 12	1345	N13 E28	02 14.7			EKC		16	11	3
8457	28985	MWIL	02 12	1530	N14 E27	02 14.7	5	(BG)					
8457		HOLL	02 12	1530	N15 E26	02 14.6		BG	EKI	400	31	11	3
8457	28983	MWIL	02 12	1530	N17 E25	02 14.5	5	(AP)					
8457		LEAR	02 13	0325	N15 E20	02 14.6		BG	EKC	670	35	13	5
8457		RAMY	02 13	1250	N15 E16	02 14.7		BG	EKO	700	36	13	3
8457	28985	MWIL	02 13	1600	N14 E14	02 14.7	5	(BG)					
8457		HOLL	02 13	1654	N15 E14	02 14.8		BG	EKI	590	38	13	3
8457		LEAR	02 14	0005	N15 E08	02 14.6		BG	EKI	650	35	13	4
8457		RAMY	02 14	1314	N15 E03	02 14.8		BG	EKO	730	26	14	3
8457	28985	MWIL	02 14	1530	N15 E01	02 14.7	5	(BG)					
8457		HOLL	02 14	1716	N14 E01	02 14.8		BG	EKC	610	33	13	3
8457		LEAR	02 15	0320	N15 W07	02 14.6		BG	EKI	630	22	13	2
8457		TACH	02 15	0528	N15 W07	02 14.7			DHI	1460	14	10	3
8457		KAND	02 15	1015	N15 W10	02 14.7			EKO		15	15	3
8457		RAMY	02 15	1330	N17 W10	02 14.8		BG	EKO	520	17	15	1
8457	28985	MWIL	02 15	1600	N15 W13	02 14.7	5	(BP)					
8457		HOLL	02 15	1614	N15 W15	02 14.5		BG	EHI	890	19	15	3
8457		TACH	02 16	0535	N16 W19	02 14.8			DHI	1152	13	10	3
8457		KAND	02 16	0740	N13 W21	02 14.7			EKO		20	15	3
8457		LEAR	02 16	0920	N14 W24	02 14.6		BG	FKI	620	31	16	3
8457		RAMY	02 16	1523	N14 W24	02 14.8		B	EKO	450	18	15	2
8457		HOLL	02 16	1550	N15 W25	02 14.8		BG	EHI	540	20	15	2
8457		KAND	02 17	0800	N15 W35	02 14.7			EKO		12	15	3
8457		RAMY	02 17	1228	N15 W36	02 14.8		BG	EAO	350	9	13	2
8457	28985	MWIL	02 17	1545	N14 W39	02 14.7	5	(BP)					
8457		HOLL	02 17	2206	N15 W43	02 14.7		B	EKO	290	10	15	1

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8457		LEAR	02 18 0025	N15 W42	02 14.8		BG	EAI	280	13	15	4
8457		TACH	02 18 0600	N15 W50	02 14.5			DAO	425	8	5	3
8457		KAND	02 18 0850	N15 W50	02 14.6			EKO		4	11	3
8457		RAMY	02 18 1235	N15 W50	02 14.7		BG	EHO	240	6	11	3
8457		HOLL	02 18 1558	N15 W52	02 14.7		B	ESO	250	4	12	3
8457	28985	MWIL	02 18 1900	N17 W58	02 14.4	4	(AP)					
8457		LEAR	02 19 0006	N16 W56	02 14.7		B	FAO	200	13	17	5
8457		TACH	02 19 0612	N16 W63	02 14.5			DAO	135	3	5	3
8457		RAMY	02 19 1223	N13 W60	02 15.0		B	EAO	140	5	15	3
8457		HOLL	02 19 1625	N15 W69	02 14.5		B	DSO	240	3	8	3
8457	28985	MWIL	02 19 1900	N18 W67	02 14.7	4	(BP)					
8457		LEAR	02 20 0004	N15 W68	02 14.8		B	CAO	220	5	18	4
8457		KAND	02 20 0740	N15 W80	02 14.3			DAO		4	10	3
8457		RAMY	02 20 1217	N16 W78	02 14.6		B	BXO	30	4	5	3
8457		HOLL	02 20 1515	N15 W78	02 14.7		A	AX	20	1	1	2
8457	28985	MWIL	02 20 1600	N17 W79	02 14.7	3	(AP)					
8458		SVTO	02 08 1000	S23 E85	02 15.0		A	HS	180	1	6	3
8458		RAMY	02 08 1207	S22 E81	02 14.7		A	HH	30	2	4	3
8458	28984	MWIL	02 08 1600	S22 E84	02 15.1	4	(BP)					
8458		HOLL	02 08 1604	S24 E80	02 14.8		A	HH	180	3	6	4
8458		LEAR	02 09 0615	S22 E72	02 14.8		A	HK	300	1	7	3
8458		SVTO	02 09 0701	S22 E75	02 15.0		B	CKO	390	3	5	3
8458		KAND	02 09 1145	S22 E73	02 15.1			CHO		4	14	3
8458		RAMY	02 09 1310	S20 E72	02 15.0		B	CHO	330	2	4	3
8458		HOLL	02 09 1638	S24 E69	02 15.0		A	HH	290	5	6	4
8458		LEAR	02 10 0040	S22 E64	02 14.9		B	DKC	450	8	7	3
8458		TACH	02 10 0610	S21 E66	02 15.3			CAI	831	7	5	3
8458		KAND	02 10 0900	S22 E64	02 15.3			CKO		6	8	3
8458		HOLL	02 10 1800	S20 E58	02 15.2		B	DHO	640	4	7	2
8458	28984	MWIL	02 10 2345	S22 E54	02 15.1	5	(D)					
8458		LEAR	02 11 0025	S22 E53	02 15.1		B	DKI	630	12	8	3
8458		TACH	02 11 0505	S21 E53	02 15.3			CHO	1025	3	5	3
8458		KAND	02 11 0745	S22 E50	02 15.2			DKO		10	8	5
8458		RAMY	02 11 1230	S23 E47	02 15.1		B	DKO	700	11	8	3
8458		HOLL	02 11 1541	S20 E47	02 15.2		B	DKO	640	2	7	2
8458	28984	MWIL	02 11 1745	S22 E45	02 15.2	5	(D)					
8458		LEAR	02 12 0155	S22 E41	02 15.2		BGD	DKO	610	11	8	3
8458		RAMY	02 12 1226	S24 E34	02 15.1		B	DKO	630	14	10	3
8458		KAND	02 12 1345	S23 E33	02 15.1			DKO		4	7	3
8458	28984	MWIL	02 12 1530	S22 E32	02 15.1	5	(BG)					
8458		HOLL	02 12 1530	S22 E33	02 15.2		BG	DKI	700	17	9	3
8458		LEAR	02 13 0325	S22 E27	02 15.2		BG	DKI	530	13	8	5
8458		RAMY	02 13 1250	S22 E22	02 15.2		BG	DKO	590	18	8	3
8458	28984	MWIL	02 13 1600	S22 E19	02 15.1	5	(D)					
8458		HOLL	02 13 1654	S22 E20	02 15.2		BG	DKO	580	20	9	3
8458		LEAR	02 14 0005	S22 E15	02 15.1		B	DKO	480	31	10	4
8458		RAMY	02 14 1314	S22 E09	02 15.2		B	DKO	700	23	12	3
8458	28984	MWIL	02 14 1530	S22 E07	02 15.2	5	(D)					
8458		HOLL	02 14 1716	S23 E06	02 15.2		B	EKI	630	34	11	3
8458		LEAR	02 15 0320	S22 E01	02 15.2		B	DKC	680	27	10	2
8458		TACH	02 15 0528	S21 W01	02 15.1			DH	1188	27	8	3
8458		KAND	02 15 1015	S22 W03	02 15.2			EKC		25	11	3
8458		RAMY	02 15 1330	S22 W05	02 15.2		B	EKO	470	13	11	1
8458	28984	MWIL	02 15 1600	S22 W06	02 15.2	6	(BG)					
8458		HOLL	02 15 1614	S22 W05	02 15.3		B	EHC	790	27	13	3
8458		TACH	02 16 0535	S22 W15	02 15.1			CHO	973	5	6	3
8458		KAND	02 16 0740	S22 W15	02 15.2			EKO		10	12	3
8458		LEAR	02 16 0920	S22 W17	02 15.1		B	EKI	650	20	11	3
8458		RAMY	02 16 1523	S22 W18	02 15.2		B	DKO	630	8	9	2
8458		HOLL	02 16 1550	S22 W18	02 15.3		B	DKI	540	8	9	2
8458		KAND	02 17 0800	S23 W28	02 15.2			DKO		10	9	3
8458		RAMY	02 17 1228	S23 W30	02 15.2		B	DKO	630	6	9	2
8458	28984	MWIL	02 17 1545	S22 W32	02 15.2	5	(BG)					
8458		HOLL	02 17 2206	S23 W34	02 15.3		B	DKO	490	12	9	1
8458		LEAR	02 18 0025	S22 W35	02 15.3		BG	DHO	620	9	10	4
8458		TACH	02 18 0600	S22 W41	02 15.1			CHO	1025	4	5	3
8458		KAND	02 18 0850	S22 W40	02 15.3			EKO		6	11	3
8458		RAMY	02 18 1235	S23 W42	02 15.3		B	DHO	500	3	8	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8458		HOLL	02 18	1558	S22 W45	02 15.2		B	DKO	630	6	8	3
8458	28984	MWIL	02 18	1900	S22 W49	02 15.0	5	(AP)					
8458		LEAR	02 19	0006	S22 W48	02 15.3		B	DKO	630	10	10	5
8458		TACH	02 19	0612	S22 W51	02 15.3			HK	912	5	6	3
8458		RAMY	02 19	1223	S25 W55	02 15.2		B	DKO	600	5	9	3
8458		HOLL	02 19	1625	S23 W58	02 15.2		B	CKO	570	8	8	3
8458	28984	MWIL	02 19	1900	S22 W58	02 15.3	5	(BP)					
8458		LEAR	02 20	0004	S22 W61	02 15.3		B	DKO	680	8	10	4
8458		KAND	02 20	0740	S23 W62	02 15.5			CHO		8	12	3
8458		RAMY	02 20	1217	S21 W68	02 15.3		B	CAO	460	9	7	3
8458		HOLL	02 20	1515	S24 W70	02 15.2		B	EKO	480	11	11	2
8458	28984	MWIL	02 20	1600	S22 W69	02 15.4	5	(BP)					
8458		LEAR	02 21	0025	S22 W73	02 15.4		B	DKO	520	7	8	4
8458		KAND	02 21	0700	S22 W78	02 15.3			HH		3	6	2
8458		RAMY	02 21	1438	S21 W80	02 15.5		A	HK	360	1	8	2
8458		HOLL	02 21	1615	S25 W85	02 15.1		A	HH	360	1	9	3
8458		LEAR	02 22	0025	S22 W85	02 15.5		A	HK	300	1	8	4
8461		RAMY	02 12	1226	S32 E32	02 15.0		B	CSO	10	3	3	3
8461		KAND	02 12	1345	S32 E31	02 15.0			BXO		2	3	3
8461		HOLL	02 12	1530	S31 E31	02 15.1		B	BXO	10	4	3	3
8461	28989	MWIL	02 12	1530	S32 E30	02 15.0	7	(B)					
8461		RAMY	02 13	1250	S31 E16	02 14.8		B	BXO		2	3	3
8461	28989	MWIL	02 13	1600	S31 E15	02 14.8	3	(AP)					
8461		LEAR	02 14	0005	S29 E12	02 14.9		A	AX		1		4
8461		KAND	02 15	1015	S29 W03	02 15.2			AX		2	1	3
8458A		RAMY	02 10	1327	S15 E64	02 15.4		B	FHO	280	8	17	3
8458B		KAND	02 20	0740	N34 W60	02 15.5			BXO		5	6	3
8462		RAMY	02 12	1226	N19 E40	02 15.6		B	CAO	20	4	4	3
8462		KAND	02 12	1345	N19 E37	02 15.4			BXO		2	4	3
8462	28990	MWIL	02 12	1530	N20 E39	02 15.6	4	(BF)					
8462		HOLL	02 12	1530	N21 E38	02 15.5		B	BXO	30	10	5	3
8462		LEAR	02 13	0325	N21 E31	02 15.5		B	DAO	40	17	6	5
8462		RAMY	02 13	1250	N21 E28	02 15.7		B	DRO	30	17	7	3
8462	28990	MWIL	02 13	1600	N20 E26	02 15.6	4	(B)					
8462		HOLL	02 13	1654	N21 E26	02 15.7		B	DSO	90	15	8	3
8462		LEAR	02 14	0005	N20 E19	02 15.4		B	DAO	60	24	8	4
8462		RAMY	02 14	1314	N20 E12	02 15.5		B	DAO	100	21	8	3
8462	28990	MWIL	02 14	1530	N19 E13	02 15.6	5	(D)					
8462		HOLL	02 14	1716	N19 E12	02 15.6		B	DSO	80	17	8	3
8462		LEAR	02 15	0320	N19 E05	02 15.5		B	DAI	120	17	9	2
8462		TACH	02 15	0528	N23 E05	02 15.6			DHI	299	14	7	3
8462		KAND	02 15	1015	N20 E01	02 15.5			EAO		15	11	3
8462		RAMY	02 15	1330	N20 E01	02 15.6		B	DAO	100	8	10	1
8462	28990	MWIL	02 15	1600	N20 W00	02 15.7	5	(D)					
8462		HOLL	02 15	1614	N18 W03	02 15.4		B	DSO	240	20	10	3
8462		TACH	02 16	0535	N20 W08	02 15.6			DAI	258	8	8	3
8462		KAND	02 16	0740	N18 W10	02 15.5			CAO		14	11	3
8462		LEAR	02 16	0920	N19 W14	02 15.3		B	EAO	140	17	12	3
8462		RAMY	02 16	1523	N18 W13	02 15.6		B	DAO	120	15	5	2
8462		HOLL	02 16	1550	N18 W15	02 15.5		B	ESO	210	13	11	2
8462		KAND	02 17	0800	N19 W23	02 15.6			CAO		14	11	3
8462		RAMY	02 17	1228	N20 W21	02 15.9		B	DAO	190	11	6	2
8462	28990	MWIL	02 17	1545	N20 W26	02 15.7	5	(D)					
8462		HOLL	02 17	2206	N20 W27	02 15.8		B	CSO	130	6	7	1
8462		LEAR	02 18	0025	N19 W28	02 15.9		B	CAO	140	9	8	4
8462		TACH	02 18	0600	N20 W31	02 15.9			HAO	256	7	2	3
8462		KAND	02 18	0850	N21 W32	02 15.9			HK		6	4	3
8462		RAMY	02 18	1235	N22 W35	02 15.8		B	DSO	160	5	4	3
8462		HOLL	02 18	1558	N21 W36	02 15.9		B	DAO	200	4	4	3
8462	28990	MWIL	02 18	1900	N23 W38	02 15.9	5	(D)					
8462		LEAR	02 19	0006	N21 W40	02 15.9		B	DAO	170	10	4	5
8462		TACH	02 19	0612	N20 W47	02 15.7			CAO	137	5	7	3
8462		RAMY	02 19	1223	N19 W49	02 15.8		B	DAO	120	2	3	3
8462		HOLL	02 19	1625	N20 W52	02 15.7		B	CSO	200	3	10	3
8462	28990	MWIL	02 19	1900	N22 W48	02 16.1	5	(D)					

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation 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
8462		LEAR	02 20 0004	N21 W52	02 16.0		B	CAO	180	7	6	4
8462		KAND	02 20 0740	N21 W60	02 15.7			DAO		4	2	3
8462		RAMY	02 20 1217	N22 W60	02 15.9		A	HA	110	1	3	3
8462		HOLL	02 20 1515	N20 W61	02 16.0		B	DSO	60	2	3	2
8462	28990	MWIL	02 20 1600	N21 W61	02 16.0	4	(AF)					
8462		LEAR	02 21 0025	N21 W65	02 16.0		B	CAO	150	3	3	4
8462		KAND	02 21 0700	N21 W72	02 15.8			HS		1	2	2
8462		RAMY	02 21 1438	N21 W72	02 16.1		A	AX		1		2
8462		HOLL	02 21 1615	N19 W78	02 15.7		A	AX	10	1	1	3
8462		LEAR	02 22 0025	N21 W78	02 16.0		A	HS	60	1	3	4
8468		HOLL	02 19 1625	N34 W49	02 15.8		B	CSO	40	4	6	3
8468	28995	MWIL	02 19 1900	N36 W50	02 15.8	4	(B)					
8468		LEAR	02 20 0004	N35 W52	02 15.8		B	BXO	50	12	9	4
8468		RAMY	02 20 1217	N35 W60	02 15.7		B	BXO	50	5	8	3
8468		HOLL	02 20 1515	N33 W62	02 15.7		B	CSO	50	4	10	2
8468	28995	MWIL	02 20 1600	N35 W61	02 15.8	4	(B)					
8468		LEAR	02 21 0025	N35 W63	02 16.0		B	CSO	70	8	9	4
8468		KAND	02 21 0700	N35 W70	02 15.7			CAO		5	8	2
8468		RAMY	02 21 1438	N36 W69	02 16.1		A	HA	90	1	2	2
8468		HOLL	02 21 1615	N34 W72	02 15.9		B	CSO	60	2	4	3
8468		LEAR	02 22 0025	N35 W75	02 16.0		A	HS	90	1	6	4
8460		TACH	02 10 0610	S18 E82	02 16.5			HSX	25	1	1	3
8460		KAND	02 10 0900	S17 E80	02 16.4			HS		1	1	3
8460		HOLL	02 10 1800	S17 E73	02 16.3		A	HS	50	1	2	2
8460	28986	MWIL	02 10 2345	S17 E70	02 16.3	4	(AP)					
8460		LEAR	02 11 0025	S18 E71	02 16.4		B	EAO	90	2	12	3
8460		TACH	02 11 0505	S18 E68	02 16.4			HSX	45	1	2	3
8460		KAND	02 11 0745	S17 E66	02 16.3			HS		1	2	5
8460		RAMY	02 11 1230	S18 E67	02 16.6		B	ESO	100	3	15	3
8460		HOLL	02 11 1541	S15 E68	02 16.8		B	FSO	100	5	17	2
8460	28986	MWIL	02 11 1745	S17 E60	02 16.3	4	(AP)					
8460		LEAR	02 12 0155	S16 E61	02 16.7		B	FAO	120	4	16	3
8460		RAMY	02 12 1226	S17 E56	02 16.8		B	FSO	80	5	17	3
8460		KAND	02 12 1345	S17 E59	02 17.0			HS		2	2	3
8460		HOLL	02 12 1530	S16 E56	02 16.9		B	FSO	80	5	16	3
8460	28986	MWIL	02 12 1530	S17 E47	02 16.2	4	(AP)					
8460		LEAR	02 13 0325	S17 E43	02 16.4		A	HA	30	5	3	5
8460		RAMY	02 13 1250	S16 E36	02 16.3		A	HS	20	4	3	3
8460	28986	MWIL	02 13 1600	S17 E33	02 16.2	4	(AP)					
8460		HOLL	02 13 1654	S16 E34	02 16.3		A	HS	40	4	2	3
8460		LEAR	02 14 0005	S16 E29	02 16.2		A	HS	30	6	2	4
8460		RAMY	02 14 1314	S17 E22	02 16.2		B	CSO	30	9	4	3
8460	28986	MWIL	02 14 1530	S17 E21	02 16.2	5	(BP)					
8460		HOLL	02 14 1716	S18 E21	02 16.3		B	CSO	30	8	3	3
8460		LEAR	02 15 0320	S17 E14	02 16.2		B	CSO	40	7	3	2
8460		TACH	02 15 0528	S17 E13	02 16.2			ARX	47	5	2	3
8460		KAND	02 15 1015	S17 E11	02 16.3			CRO		4	3	3
8460		RAMY	02 15 1330	S17 E11	02 16.4		B	CSO	30	4	3	1
8460	28986	MWIL	02 15 1600	S17 E08	02 16.3	4	(AP)					
8460		HOLL	02 15 1614	S17 E08	02 16.3		B	CRO	80	4	3	3
8460		TACH	02 16 0535	S17 E01	02 16.3			AXX	31	4	2	3
8460		KAND	02 16 0740	S18 W01	02 16.2			CSO		3	3	3
8460		LEAR	02 16 0920	S18 W03	02 16.2		B	CSO	20	3	2	3
8460		RAMY	02 16 1523	S17 W05	02 16.3		A	AX	10	3	2	2
8460		HOLL	02 16 1550	S18 W04	02 16.3		B	CSO	30	4	3	2
8460		KAND	02 17 0800	S18 W14	02 16.3			BXO		5	2	3
8460		RAMY	02 17 1228	S17 W16	02 16.3		B	DAO	20	4	4	2
8460	28986	MWIL	02 17 1545	S17 W18	02 16.3	4	(AP)					
8460		HOLL	02 17 2206	S17 W21	02 16.3		B	BXO	10	2	2	1
8460		LEAR	02 18 0025	S17 W22	02 16.3		B	BXO	10	5	3	4
8460		TACH	02 18 0600	S17 W24	02 16.4			AXX	6	3	2	3
8460		HOLL	02 18 1558	S17 W32	02 16.2		A	AX	10	2	2	3
8460	28996	MWIL	02 19 1900	S16 W45	02 16.4	3	(B)					
8460	28996	MWIL	02 20 1600	S19 W50	02 16.8	3	(X)					
8463	28987	MWIL	02 10 2345	S17 E85	02 17.4	3	(AP)					
8463		TACH	02 11 0505	S19 E87	02 17.8			HSX	20	1	1	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

FEBRUARY 1999

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
8463		KAND	02 11	0745	S16 E80	02 17.4			HS		1	2	5
8463	28987	MWIL	02 11	1745	S16 E76	02 17.5	4	(AP)					
8463		KAND	02 12	1345	S16 E65	02 17.5			HS		1	2	3
8463	28987	MWIL	02 12	1530	S16 E63	02 17.4	5	(AP)					
8463		LEAR	02 13	0325	S14 E55	02 17.3		A	HS	70	1	2	5
8463		RAMY	02 13	1250	S15 E52	02 17.5		A	HS	60	1	2	3
8463	28987	MWIL	02 13	1600	S16 E49	02 17.4	5	(AP)					
8463		HOLL	02 13	1654	S15 E50	02 17.5		A	HS	90	1	2	3
8463		LEAR	02 14	0005	S16 E44	02 17.3		A	HS	60	1	3	4
8463		RAMY	02 14	1314	S16 E38	02 17.4		A	HS	500	1	1	3
8463	28987	MWIL	02 14	1530	S16 E37	02 17.4	5	(AP)					
8463		HOLL	02 14	1716	S16 E37	02 17.5		A	HS	60	1	1	3
8463		LEAR	02 15	0320	S16 E30	02 17.4		A	HS	60	1	2	2
8463		TACH	02 15	0528	S16 E28	02 17.3			HSX	200	1	2	3
8463		KAND	02 15	1015	S17 E27	02 17.5			HS		1	3	3
8463		RAMY	02 15	1330	S16 E25	02 17.4		A	HS	80	1	1	1
8463	28987	MWIL	02 15	1600	S16 E24	02 17.5	5	(AP)					
8463		HOLL	02 15	1614	S16 E24	02 17.5		A	HS	90	2	3	3
8463		TACH	02 16	0535	S16 E16	02 17.4			HSX	110	1	2	3
8463		KAND	02 16	0740	S17 E14	02 17.4			HS		1	2	3
8463		LEAR	02 16	0920	S17 E13	02 17.4		A	HS	90	1	2	3
8463		RAMY	02 16	1523	S17 E11	02 17.5		A	HS	40	1	1	2
8463		HOLL	02 16	1550	S16 E11	02 17.5		A	HS	80	1	2	2
8463		KAND	02 17	0800	S17 E01	02 17.4			HS		2	3	3
8463		RAMY	02 17	1228	S17 W01	02 17.4		A	HS	80	1	2	2
8463	28987	MWIL	02 17	1545	S16 W02	02 17.5	5	(AP)					
8463		HOLL	02 17	2206	S17 W07	02 17.4		A	HS	60	1	1	1
8463		LEAR	02 18	0025	S16 W07	02 17.5		A	HS	80	1	2	4
8463		TACH	02 18	0600	S17 W10	02 17.5			HSX	100	1	2	3
8463		KAND	02 18	0850	S17 W12	02 17.4			HS		1	2	3
8463		RAMY	02 18	1235	S17 W13	02 17.5		A	HS	20	1	1	3
8463		HOLL	02 18	1558	S17 W16	02 17.4		A	HS	40	1	2	3
8463	28987	MWIL	02 18	1900	S16 W18	02 17.4	4	(AP)					
8463		LEAR	02 19	0006	S17 W21	02 17.4		A	HS	60	1	2	5
8463		TACH	02 19	0612	S16 W23	02 17.5			HSX	65	1	2	3
8463		RAMY	02 19	1223	S19 W26	02 17.5		A	HS	60	1	1	3
8463		HOLL	02 19	1625	S17 W29	02 17.5		A	HS	20	1	1	3
8463	28987	MWIL	02 19	1900	S17 W28	02 17.7	4	(AP)					
8463		LEAR	02 20	0004	S17 W33	02 17.5		B	CSO	50	5	3	4
8463		KAND	02 20	0740	S18 W38	02 17.4			HS		1	2	3
8463		RAMY	02 20	1217	S17 W40	02 17.5		A	HS	20	1	1	3
8463		HOLL	02 20	1515	S18 W42	02 17.4		A	HS	30	1	2	2
8463	28987	MWIL	02 20	1600	S17 W41	02 17.5	4	(AP)					
8463		LEAR	02 21	0025	S17 W46	02 17.5		A	HS	40	1	1	4
8463		KAND	02 21	0700	S17 W50	02 17.5			HS		1	2	2
8463		RAMY	02 21	1438	S17 W54	02 17.5		A	HS	30	1	2	2
8463		HOLL	02 21	1615	S18 W55	02 17.5		B	CSO	40	2	13	3
8463		LEAR	02 22	0025	S17 W61	02 17.4		B	DSO	50	2	12	4
8463		KAND	02 22	0850	S17 W65	02 17.4			HR		1	1	3
8463	28987	MWIL	02 22	1545	S17 W67	02 17.6	4	(AP)					
8463		RAMY	02 22	1626	S16 W69	02 17.4		A	HR	10	1	1	1
8463		HOLL	02 22	1734	S18 W68	02 17.5		A	AX	10	1		2
8463	28987	MWIL	02 23	1530	S16 W84	02 17.3	3	(AP)					
8464	28988	MWIL	02 11	1745	N17 E84	02 18.1	3	(AP)					
8464		LEAR	02 12	0155	N18 E72	02 17.6		A	HA	60	1	2	3
8464		RAMY	02 12	1226	N18 E68	02 17.7		A	HS	70	1	2	3
8464		KAND	02 12	1345	N19 E68	02 17.8			HS		1	2	3
8464	28988	MWIL	02 12	1530	N19 E72	02 18.1	5	(B)					
8464		HOLL	02 12	1530	N20 E73	02 18.2		B	EAO	70	2	13	3
8464		LEAR	02 13	0325	N22 E65	02 18.1		B	ESO	210	3	13	5
8464		RAMY	02 13	1250	N21 E61	02 18.2		B	ESO	70	4	11	3
8464	28988	MWIL	02 13	1600	N19 E60	02 18.2	5	(BP)					
8464		HOLL	02 13	1654	N20 E60	02 18.3		B	EAO	160	5	14	3
8464		LEAR	02 14	0005	N20 E53	02 18.0		B	EAO	100	7	13	4
8464		RAMY	02 14	1314	N20 E47	02 18.1		B	CSO	100	8	12	3
8464	28988	MWIL	02 14	1530	N20 E46	02 18.2	5	(BG)					
8464		HOLL	02 14	1716	N20 E46	02 18.2		B	CSO	70	6	12	3
8464		LEAR	02 15	0320	N19 E40	02 18.2		B	CSO	80	5	12	2

S U N S P O T G R O U P S
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FEBRUARY 1999

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
8464		TACH	02 15 0528	N19 E39	02 18.2			CRO	150	3	12	3
8464		KAND	02 15 1015	N19 E35	02 18.1			CAO		5	11	3
8464		RAMY	02 15 1330	N20 E30	02 17.8		B	DSO	80	3	3	1
8464	28988	MWIL	02 15 1600	N20 E33	02 18.2	4	(BP)					
8464		HOLL	02 15 1614	N20 E33	02 18.2		B	CSO	120	7	13	3
8464		TACH	02 16 0535	N18 E22	02 17.9			HR	80	2	2	3
8464		KAND	02 16 0740	N18 E24	02 18.1			CSO		4	11	3
8464		LEAR	02 16 0920	N19 E19	02 17.8		B	CSO	100	6	6	3
8464		RAMY	02 16 1523	N19 E22	02 18.3		B	ESO	30	6	11	2
8464		HOLL	02 16 1550	N19 E21	02 18.3		B	CSO	100	8	12	2
8464		KAND	02 17 0800	N17 E08	02 17.9			CAO		3	4	3
8464		RAMY	02 17 1228	N20 E09	02 18.2		B	DSO	70	6	10	2
8464	28988	MWIL	02 17 1545	N19 E04	02 18.0	5	(AP)					
8464		HOLL	02 17 2206	N19 E01	02 18.0		B	CSO	60	8	6	1
8464		LEAR	02 18 0025	N18 W02	02 17.9		B	CSO	70	13	6	4
8464		TACH	02 18 0600	N19 E01	02 18.3			CAI	107	9	12	3
8464		KAND	02 18 0850	N19 W06	02 17.9			DSO		4	6	3
8464		RAMY	02 18 1235	N19 W07	02 18.0		B	DSO	30	4	4	3
8464		HOLL	02 18 1558	N19 W08	02 18.0		B	CSO	70	6	6	3
8464	28988	MWIL	02 18 1900	N20 W11	02 17.9	4	(AP)					
8464		LEAR	02 19 0006	N19 W12	02 18.1		B	CSO	60	9	7	5
8464		TACH	02 19 0612	N20 W15	02 18.1			CRO	58	5	5	3
8464		RAMY	02 19 1223	N18 W22	02 17.8		B	DSO	60	3	3	3
8464		HOLL	02 19 1625	N18 W23	02 17.9		B	CSO	30	3	4	3
8464	28988	MWIL	02 19 1900	N19 W22	02 18.1	4	(AP)					
8464		LEAR	02 20 0004	N18 W27	02 17.9		A	HS	50	3	4	4
8464		KAND	02 20 0740	N19 W32	02 17.9			CRO		3	4	3
8464		RAMY	02 20 1217	N19 W33	02 18.0		B	CSO	20	3	3	3
8464		HOLL	02 20 1515	N18 W36	02 17.9		B	DSO	20	2	3	2
8464	28988	MWIL	02 20 1600	N19 W35	02 18.0	4	(AP)					
8464		LEAR	02 21 0025	N18 W40	02 18.0		B	CSO	30	3	3	4
8464		KAND	02 21 0700	N18 W44	02 17.9			AX		5	3	2
8464		RAMY	02 21 1438	N19 W47	02 18.0		B	CSO	20	2	3	2
8464		HOLL	02 21 1615	N18 W50	02 17.9		B	BXO	10	4	3	3
8464		LEAR	02 22 0025	N18 W53	02 18.0		B	CSO	20	3	3	4
8464		KAND	02 22 0850	N18 W58	02 17.9			AX		1		3
8464	28988	MWIL	02 22 1545	N19 W61	02 18.0	4	(AP)					
8464		RAMY	02 22 1626	N19 W61	02 18.0		A	AX		1		1
8464		HOLL	02 22 1734	N17 W62	02 18.0		A	AX		1		2
8469		LEAR	02 21 0025	N14 W06	02 20.6		A	AX	20	3	2	4
8469		KAND	02 21 0700	N15 W09	02 20.6			BXO		4	3	2
8469		RAMY	02 21 1438	N16 W12	02 20.7		B	CAO	20	3	3	2
8469		HOLL	02 21 1615	N16 W15	02 20.5		B	DSO	40	5	4	3
8469		LEAR	02 22 0025	N15 W18	02 20.6		B	CSO	50	10	5	4
8469		KAND	02 22 0850	N15 W24	02 20.5			CSO		4	6	3
8469	28999	MWIL	02 22 1545	N15 W30	02 20.4	4	(AP)					
8469		RAMY	02 22 1626	N16 W30	02 20.4		B	CRO	30	3	2	1
8469		HOLL	02 22 1734	N15 W31	02 20.4		A	AX	20	6	2	2
8469		TACH	02 23 0515	N16 W38	02 20.3			AXX	20	1	1	3
8469	28999	MWIL	02 23 1530	N15 W45	02 20.2	4	(AP)					
8466A	28997	MWIL	02 20 1600	S19 E02	02 20.8	2	(X)					
8466		KAND	02 15 1015	S24 E78	02 21.4			AX		1		3
8466	28993	MWIL	02 15 1600	S24 E75	02 21.5	2	(X)					
8466		HOLL	02 15 1614	S22 E73	02 21.3		A	AX		1	1	3
8466		KAND	02 16 0740	S24 E66	02 21.4			AX		1		3
8466		RAMY	02 16 1523	S24 E62	02 21.4		A	AX		1		2
8466		HOLL	02 16 1550	S22 E63	02 21.5		A	AX		1		2
8466		KAND	02 17 0800	S24 E54	02 21.5			AX		1		3
8466		RAMY	02 17 1228	S24 E50	02 21.4		A	AX		1		2
8466	28993	MWIL	02 17 1545	S23 E49	02 21.4	4	(AF)					
8466		LEAR	02 18 0025	S24 E44	02 21.4		A	AX		1		4
8466		KAND	02 18 0850	S24 E39	02 21.4			AX		1		3
8466	28993	MWIL	02 18 1900	S22 E32	02 21.2	3	(AP)					
8466		LEAR	02 19 0006	S22 E33	02 21.5		B	BXO	10	2	1	5
8466	28993	MWIL	02 19 1900	S23 E17	02 21.1	3	(B)					
8466		LEAR	02 20 0004	S22 E18	02 21.4		B	BXO		2	1	4

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FEBRUARY 1999

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
8466		KAND	02 20	0740	S22 E14	02 21.4			AX		1		3
8466	28993	MWIL	02 20	1600	S22 E11	02 21.5	3	(AF)					
8466		LEAR	02 21	0025	S22 W01	02 20.9		A	AX	10	3	2	4
8466		KAND	02 21	0700	S21 W04	02 21.0			AX		2	1	2
8466		HOLL	02 21	1615	S22 W11	02 20.8		B	BXO	10	2	3	3
8466		LEAR	02 22	0025	S21 W13	02 21.0		B	BXO	10	6	4	4
8467		KAND	02 16	0740	N15 E80	02 22.4			HS		1	2	3
8467		LEAR	02 16	0920	N16 E69	02 21.6		A	HA	80	1	1	3
8467		RAMY	02 16	1523	N15 E70	02 21.9		A	HS	40	1	2	2
8467		HOLL	02 16	1550	N18 E75	02 22.4		A	HS	60	1	1	2
8467		KAND	02 17	0800	N15 E65	02 22.2			HS		1	3	3
8467		RAMY	02 17	1228	N15 E61	02 22.1		A	HS	80	1	2	2
8467	28994	MWIL	02 17	1545	N16 E60	02 22.2	5	(AP)					
8467		HOLL	02 17	2206	N17 E58	02 22.3		A	HS	80	1	1	1
8467		LEAR	02 18	0025	N15 E55	02 22.2		A	HA	120	2	2	4
8467		TACH	02 18	0600	N16 E52	02 22.2			HSX	160	1	2	3
8467		KAND	02 18	0850	N16 E52	02 22.3			HS		2	4	3
8467		RAMY	02 18	1235	N17 E49	02 22.2		A	HS	30	1	2	3
8467		HOLL	02 18	1558	N16 E47	02 22.2		A	HS	110	2	2	3
8467	28994	MWIL	02 18	1900	N16 E46	02 22.3	5	(AP)					
8467		LEAR	02 19	0006	N15 E43	02 22.2		A	HS	140	4	4	5
8467		TACH	02 19	0612	N16 E38	02 22.1			HA	152	2	3	3
8467		RAMY	02 19	1223	N18 E34	02 22.1		A	HS	80	1	2	3
8467		HOLL	02 19	1625	N16 E33	02 22.2		A	HS	80	1	2	3
8467	28994	MWIL	02 19	1900	N16 E35	02 22.4	5	(AP)					
8467		LEAR	02 20	0004	N16 E28	02 22.1		A	HS	130	5	3	4
8467		KAND	02 20	0740	N15 E23	02 22.1			HA		4	2	3
8467		RAMY	02 20	1217	N16 E23	02 22.2		B	CAO	100	2	3	3
8467		HOLL	02 20	1515	N17 E21	02 22.2		A	HA	50	4	3	2
8467	28994	MWIL	02 20	1600	N16 E21	02 22.2	4	(AP)					
8467		LEAR	02 21	0025	N16 E15	02 22.1		B	CAO	80	5	2	4
8467		KAND	02 21	0700	N15 E13	02 22.3			HS		4	2	2
8467		RAMY	02 21	1438	N16 E09	02 22.3		B	CAO	90	3	3	2
8467		HOLL	02 21	1615	N16 E06	02 22.1		B	CSO	60	5	3	3
8467		LEAR	02 22	0025	N16 E02	02 22.2		B	CSO	70	5	3	4
8467		KAND	02 22	0850	N15 W02	02 22.2			CSO		4	3	3
8467	28994	MWIL	02 22	1545	N16 W06	02 22.2	5	(AP)					
8467		RAMY	02 22	1626	N17 W05	02 22.3		B	CSO	30	3	3	1
8467		HOLL	02 22	1734	N16 W07	02 22.2		B	CSO	50	7	3	2
8467		TACH	02 23	0515	N16 W15	02 22.1			HAX	101	4	2	3
8467		KAND	02 23	0810	N16 W16	02 22.1			HA		1	2	2
8467		RAMY	02 23	1435	N17 W18	02 22.2		A	HA	20	1	2	3
8467	28994	MWIL	02 23	1530	N16 W16	02 22.4	5	(AP)					
8467		HOLL	02 23	1609	N16 W19	02 22.2		A	HS	40	2	2	2
8467		LEAR	02 24	0655	N16 W29	02 22.1		A	HX	20	1	1	2
8467		RAMY	02 24	1223	N17 W30	02 22.2		A	AX	10	4	1	3
8467		KAND	02 24	1300	N16 W33	02 22.0			HS		1	2	1
8467	28994	MWIL	02 24	1530	N16 W32	02 22.2	4	(AP)					
8467		HOLL	02 24	1538	N16 W32	02 22.2		A	HS	20	1	2	3
8467		LEAR	02 25	0005	N15 W36	02 22.3		A	AX		3	1	4
8467		TACH	02 25	0536	N17 W39	02 22.3			AXX	25	1	1	2
8467		KAND	02 25	0725	N16 W41	02 22.2			AX		2	1	3
8467		RAMY	02 25	1208	N15 W43	02 22.2		A	AX		1		4
8467	28994	MWIL	02 25	1530	N16 W45	02 22.2	4	(AP)					
8467B	29000	MWIL	02 23	1530	N20 W15	02 22.5	4	(BP)					
8467B	29000	MWIL	02 24	1530	N17 W25	02 22.7	4	(BF)					
8474A	29001	MWIL	02 23	1530	N26 W13	02 22.6	4	(AF)					
8466B	28998	MWIL	02 20	1600	S21 E30	02 23.0	2	(X)					
8467A		LEAR	02 22	0025	N16 E14	02 23.1		B	BXO	10	3	5	4
8474		KAND	02 27	0720	S24 W30	02 25.0			BXO		2	3	4
8474		RAMY	02 27	1337	S24 W33	02 25.0		A	AX	10	2	2	3
8474	29006	MWIL	02 27	1545	S24 W35	02 24.9	4	(B)					
8474		HOLL	02 27	1650	S24 W35	02 25.0		B	BXO	10	2	3	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8474		LEAR	02 28 0010	S24 W39	02 25.0		B	BXO	10	2	2	5
8471A		KAND	03 04 1215	N30 W70	02 27.1			HA		1	3	2
8473		TACH	02 26 0516	N18 E18	02 27.6			AXX	10	1	1	3
8473		RAMY	02 26 1223	N18 E15	02 27.6		B	BXO		4	3	3
8473	29005	MWIL	02 26 1545	N19 E15	02 27.8	4	(BP)					
8473		HOLL	02 26 1724	N18 E13	02 27.7		B	BXO	10	2	3	3
8473		LEAR	02 27 0125	N18 E06	02 27.5		B	BXO	10	2	2	4
8473		RAMY	02 27 1337	N19 E03	02 27.8		A	AX		1		3
8473	29005	MWIL	02 27 1545	N19 E01	02 27.7	3	(B)					
8473		LEAR	02 28 0010	N16 W08	02 27.4		B	BXO		2	2	5
8470		RAMY	02 22 1626	S24 E74	02 28.4		A	AX		1		1
8470		HOLL	02 22 1734	S22 E76	02 28.6		B	BXO	20	4	5	2
8470		TACH	02 23 0515	S24 E68	02 28.5			DRO	130	4	5	3
8470		KAND	02 23 0810	S23 E69	02 28.6			CSO		6	6	2
8470		RAMY	02 23 1435	S26 E64	02 28.6		B	DAO	80	3	7	3
8470	29003	MWIL	02 23 1530	S24 E64	02 28.6	5	(B)					
8470		HOLL	02 23 1609	S22 E63	02 28.5		B	DSO	110	4	6	2
8470		LEAR	02 24 0655	S22 E52	02 28.3		B	DAO	70	2	7	2
8470		RAMY	02 24 1223	S25 E50	02 28.4		B	DSO	50	5	8	3
8470		KAND	02 24 1300	S24 E50	02 28.4			DSO		3	8	1
8470	29003	MWIL	02 24 1530	S24 E50	02 28.5	5	(B)					
8470		HOLL	02 24 1538	S23 E50	02 28.5		B	DSO	60	6	5	3
8470		LEAR	02 25 0005	S23 E44	02 28.4		B	DAO	440	8	9	4
8470		TACH	02 25 0536	S24 E41	02 28.4			CSO	80	2	8	2
8470		KAND	02 25 0725	S24 E41	02 28.5			CSO		9	10	3
8470		RAMY	02 25 1208	S23 E38	02 28.4		B	CSO	40	9	10	4
8470	29003	MWIL	02 25 1530	S24 E37	02 28.5	5	(BP)					
8470		TACH	02 26 0516	S24 E29	02 28.5			CAO	94	5	10	3
8470		RAMY	02 26 1223	S24 E25	02 28.4		B	DSO	30	5	10	3
8470	29003	MWIL	02 26 1545	S24 E23	02 28.4	4	(B)					
8470		HOLL	02 26 1724	S23 E22	02 28.4		B	CSO	40	2	10	3
8470		LEAR	02 27 0125	S23 E18	02 28.4		B	CSO	40	5	11	4
8470		TACH	02 27 0606	S23 E10	02 28.0			HSX	50	1	1	3
8470		KAND	02 27 0720	S24 E10	02 28.1			HS		1	2	4
8470		RAMY	02 27 1337	S24 E07	02 28.1		A	HS	10	1	1	3
8470	29003	MWIL	02 27 1545	S24 E11	02 28.5	5	(BP)					
8470		HOLL	02 27 1650	S23 E06	02 28.2		A	HS	20	1	1	3
8470		LEAR	02 28 0010	S23 E05	02 28.4		B	CSO	30	5	10	5
8470		TACH	02 28 0612	S23 W03	02 28.0			AR	10	2	2	4
8470		KAND	02 28 0825	S24 W03	02 28.1			AX		2	1	5
8470		RAMY	02 28 1215	S23 W05	02 28.1		A	HS	10	1	1	4
8470	29003	MWIL	02 28 1545	S24 W07	02 28.1	4	(AP)					
8470		HOLL	02 28 1603	S23 W07	02 28.1		A	HS	10	1	1	3
8471	29002	MWIL	02 22 1545	N29 E72	02 28.3	3	(AP)					
8471		HOLL	02 22 1734	N30 E70	02 28.2		A	AX	10	2	1	2
8471		VORO	02 22 2320	N29 E68	02 28.3			HAX	43	1		3
8471		TACH	02 23 0515	N30 E62	02 28.1			HR	117	4	5	3
8471		KAND	02 23 0810	N30 E65	02 28.4			DAO		3	5	2
8471		RAMY	02 23 1435	N28 E59	02 28.2		B	DAO	60	3	2	3
8471	29002	MWIL	02 23 1530	N29 E59	02 28.3	5	(B)					
8471		HOLL	02 23 1609	N30 E60	02 28.4		B	CAO	90	5	3	2
8471		VORO	02 23 2343	N30 E56	02 28.4			DAI	180	5	3	2
8471		LEAR	02 24 0655	N30 E48	02 28.1		B	DAO	60	4	2	2
8471		RAMY	02 24 1223	N28 E47	02 28.2		B	CSO	30	9	4	3
8471		KAND	02 24 1300	N30 E45	02 28.1			CSO		2	3	1
8471	29002	MWIL	02 24 1530	N30 E46	02 28.3	5	(B)					
8471		HOLL	02 24 1538	N29 E45	02 28.2		B	CSO	70	9	3	3
8471		LEAR	02 25 0005	N30 E38	02 28.0		B	CAO	20	7	5	4
8471		VORO	02 25 0027	N29 E41	02 28.2			DAI	99	6	4	3
8471		TACH	02 25 0536	N29 E39	02 28.3			BSI	65	4	7	2
8471		KAND	02 25 0725	N29 E36	02 28.1			CAO		7	6	3
8471		RAMY	02 25 1208	N29 E33	02 28.1		B	BXO	10	14	9	4
8471	29002	MWIL	02 25 1530	N30 E33	02 28.2	4	(BP)					
8471		VORO	02 26 0515	N29 E24	02 28.1			BXI	64	11	6	2
8471		TACH	02 26 0516	N28 E24	02 28.1			BRI	67	13	6	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

FEBRUARY 1999

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
8471		RAMY	02	26	1223	N29	E20	02	28.1		B	DSO	50	13	8	3
8471	29002	MWIL	02	26	1545	N29	E19	02	28.1	4	(BP)					
8471		HOLL	02	26	1724	N28	E18	02	28.1		B	CRO	60	17	9	3
8471		VORO	02	27	0025	N29	E13	02	28.0			BXI	69	7	8	2
8471		LEAR	02	27	0125	N29	E13	02	28.1		B	CRO	60	15	9	4
8471		TACH	02	27	0606	N28	E11	02	28.1			BSI	90	5	8	3
8471		KAND	02	27	0720	N29	E10	02	28.1			CRO		8	9	4
8471		RAMY	02	27	1337	N29	E06	02	28.0		B	DSO	80	13	9	3
8471	29002	MWIL	02	27	1545	N29	E06	02	28.1	5	(B)					
8471		HOLL	02	27	1650	N29	E04	02	28.0		B	DSO	90	13	10	3
8471		LEAR	02	28	0010	N29	E00	02	28.0		B	EAI	120	32	12	5
8471		VORO	02	28	0025	N29	W01	02	27.9			DAI	182	13	10	2
8471		TACH	02	28	0612	N28	W04	02	27.9			CAI	145	11	10	4
8471		KAND	02	28	0825	N28	W05	02	27.9			EAO		23	11	5
8471		RAMY	02	28	1215	N29	W06	02	28.0		B	EAO	140	22	12	4
8471	29002	MWIL	02	28	1545	N29	W08	02	28.0	5	(D)					
8471		HOLL	02	28	1603	N29	W08	02	28.0		B	CAO	100	21	12	3
8471		KAND	03	01	0830	N28	W19	02	28.0			EAI		21	13	4
8471		RAMY	03	01	1228	N29	W20	02	28.0		B	EAO	100	36	13	4
8471		HOLL	03	01	1550	N28	W25	02	27.8		B	ESO	90	26	13	4
8471	29002	MWIL	03	01	1600	N29	W22	02	28.0	5	(BG)					
8471		LEAR	03	02	0045	N28	W27	02	28.0		B	EAO	130	24	12	3
8471		TACH	03	02	0548	N29	W28	02	28.0			CAI	228	13	12	3
8471		KAND	03	02	0700	N29	W30	02	28.0			ESO		9	15	4
8471		RAMY	03	02	1240	N28	W33	02	28.0		B	EAO	190	20	14	3
8471	29002	MWIL	03	02	1545	N29	W35	02	28.0	5	(BG)					
8471		HOLL	03	02	1610	N29	W35	02	28.0		B	EAI	170	14	13	3
8471		LEAR	03	03	0021	N28	W39	02	28.0		B	EAO	180	16	14	4
8471		VORO	03	03	0026	N29	W40	02	28.0			DKI	280	16	12	3
8471		KAND	03	03	0830	N29	W44	02	28.0			CAO		9	14	4
8471		RAMY	03	03	1346	N29	W48	02	27.9		B	CAO	180	7	9	3
8471	29002	MWIL	03	03	1545	N29	W50	02	27.8	5	(BP)					
8471		HOLL	03	03	1634	N29	W50	02	27.9		B	CSO	130	9	15	3
8471		VORO	03	03	2330	N28	W56	02	27.7			CAI	322	5	6	2
8471		LEAR	03	04	0025	N28	W52	02	28.0		B	CAO	200	9	11	3
8471		RAMY	03	04	1308	N29	W60	02	27.9		B	CSO	150	2	10	3
8471		LEAR	03	05	0015	N28	W70	02	27.6		A	HA	150	1	2	3
8471		KAND	03	05	0930	N28	W75	02	27.6			HS		1	2	3
8471		RAMY	03	05	1247	N28	W78	02	27.5		A	HS	90	2	2	4
8471	29003	MWIL	03	05	1600	N28	W73	02	28.0	3	AP					
8471		HOLL	03	05	1635	N27	W77	02	27.8		A	AX	60	1	1	3
8471B		VORO	02	25	0027	N16	E50	02	28.8			AXX	19	2		3
8471B		LEAR	02	27	0125	N16	E24	02	28.9		A	AX	10	1	1	4

Stations reporting:

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

FEBRUARY 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
01	0736	0740	0836	1	1		1				*		
01	0837	0841	0856	1	5		3	1		1	0832	C3.8	8446
01	1258	1313	1328	1	3		2				*		
02	1005	1009	1027	1	1		1				No flare		
02	1322	1340	1354	1	1		1				No flare		
04	0630	0635	0642	1-	1					1	0624	C5.1	
04	0642	0700	0745	2+	1					1	0624	C5.1	
08	0845	0850	0920	2	1					1	0846	C1.0	
08	1605	1615	1620	1-	1					1	1609	C1.6	8456
09	0500	0505	0530	1+	1					1	0454	C2.3	
10	0826	0840	0855	1	1		1				No flare		
10	0907	0915	0936	1	5		1			2	0913	C1.9	
12	0710	0712	0723	1-	1					1	*		
12	0725	0728	0745	1	1					1	0723	C2.1	
12	0752	0800	0909	2	1		1				0816	C3.0	
12	0815	0822	0904	2	3		1			1	0816	C3.0	
12	0944	0950	0959	1+	5		1	1		1	0952	C1.7	
12	1044	1049	1057	1-	5					2	1044	C2.0	
12	1127	1130	1145	1	1		1				*		
12	1232	1257	1340	2-	3		2				1242		
12	1341	1359	1458	2+	5		2			2	1340	C7.7	
12	1523	1530	1553	1+	5		2			2	1520	C5.7	8457
13	0717	0727	0800	2	1					1	0714	C2.6	
13	1210	1215	1245	2	1					1	1210	C2.6	8462
13	1522	1528	1538	1-	1					1	1507		8458
13	1610	1615	1653	2-	5		1			5	1607	C9.4	8456
14	0653	0657	0712	1	1					1	0650	C1.7	8456
14	0931	0935	0952	1	5					2	0930	C2.4	
14	1019	1045	1143	2+	5		2			2	0959	M1.0	8457
14	1413	1422	1438	2	5		3	1		3	1411	C5.3	8458
15	0921	0928	0948	3-	5		3	1		1	0918	C7.3	8462
15	1630	1641	1715	2	1					1	1618	C4.0	8462
15	1837	1839	1900	1	1					1	1831	C2.4	8464
15	1906	1907	1928	1	1					1	1900	C4.2	8457
16	0008	0016	0040	1+	1					1	0001		8462
16	0407	0410	0437	1+	1					1	0404	M1.5	
16	1016	1024	1140	1	1		1				*		
16	1209U	1310	1500U	1	1		1				*		
16	1702	1710	1850	3	1					1	1657		8462
16	1734	1742	1819	2	3					2	1731	C6.8	8462
16	1924	1934	2007	2	1					1	No flare		
16	2120	2124	2157	2	1					1	2116	C5.3	8462
17	0934	1017	1034	2	1		1				No flare		
17	2027	2031	2107	2-	1					2	2021	C6.0	
18	1014	1015	1023	1-	1					1	1009	C2.1	
18	1220	1235	1245	1	1					1	1219	C2.0	8462
18	1715	1718	1730	1-	1					1	1713	C2.0	
19	0806	0815	0843	1	3		2				No flare		
19	1621	1625	1641	1-	3					3	1615	C3.8	8458
20	0403	0407	0438	2	1					1	0400	C8.2	8458
20	0635	0648	0728	1	1		1				0642	C2.0	
20	1514	1522	1545	1+	5		2			5	1511	C4.2	8458

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

FEBRUARY 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
21	0939	0945	1001	2-	5	1	3	1		1	0938	C8.6	
21	1107	1125	1214	1	1		1				*		
21	1218	1309	1309	1	1		1				*		
21	1311	1332	1412	1	5	1	3			1	1303	M1.3	8462
21	2215	2221	2230	1-	1					1	2202	C1.6	
21	2240	2246	2306	1+	1					1	*		
22	1242	1301	1342	1+	5		2			1	1230	C3.8	
22	1334	1344	1430	1	1		1				*		
22	1403	1415U	1438	1	1		1				*		
22	1444	1450	1509	1	1		1				No flare		
22	1511	1520U	1535	1	1		1				No flare		
25	1017	1036	1052	1	5		2			2	1020	C1.1	
25	1120U	1128U	1215U	2	1		1				No flare		
25	1751	1756	1815	1	1					1	1753	C1.2	8470
26	0833	0854	0920	1	3		2				*		
26	1034	1047	1132	1	1		1				No flare		
27	0855	0857	0915	1	1					1	0851	C1.0	8471
27	1207	1211	1253	1+	3		2				1200	C2.1	8471
27	1305	1315	1336	1	1		1				No flare		
27	1507	1511	1541	1	1		1				No flare		
28	1635	1635U	1635D	2	5		2	1		6	1631	M6.6	8471
28	1921	1930	1950	1+	3					3	1914	C2.0	8471
28	2120	2124	2143D	1	1					1	2116		8471
28	2138	2146	2213	1+	3					3	2134	C2.2	8471

* = no flare patrol.

OBSERVATORIES REPORTING FOR FEBRUARY 1999

Banning, California, USA	SES	Perth, Australia	SES
Cambridge, England, UK	SES	Rimavska Sobota, Slovakia	SEA
Columbia City, Indiana, USA	SES	Sun City Center, FL, USA	SES
Edenvale, Rep of S. Africa	SES	Tucson, Arizona, USA	SES
Houston, Texas, USA	SES	Upice, Czech Republic	SEA
Hudson, Ohio, USA	SES	Vlasim, Czech Republic	SEA
Koniz, Switzerland	SES	Ziar nad Hronom, Slovakia	SEA
Panska Ves, Czech Republic	SES, SEA, SWF	Zilina, Slovakia	SEA

Observations are not necessarily continuous.

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

FEBRUARY 1999

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
01	0000	0809	HIRA								
	0000	0815	CULG								
			ONDR	0836.2	0839.1	DCIM	G	2	1130	2000X	
	0757	1432	ONDR	0836.2	0838.4	DCIM	G	2	2000X	4355	
	0714	1200	IZMI	1053.1	1053.3	III	B	2	45X	120	
	0734	1450	POTS	1053.2	1053.7	III	B	2	40X	120	
	0747	1205	IZMI	1053.3	1053.4	V		2	45X	60	
			POTS	1103	1105	I	S,W	1	200U	270	
	2040	2400	CULG	2128.0	2128.0	III	B	1	65	100	
	2133	2400	HIRA								
02	0000	0810	HIRA								
	0000	0815	CULG	0008.0	0008.0	III	B	1	65	160	
			CULG	0154.0	0156.0	III	G	1	20	70	
	0755	1434	ONDR								
	0650	1200	IZMI	0853.1	0853.3	III	B	2	45	145	
	0734	1450	POTS	0853.1	0853.4	III	B	2	40X	160	
			POTS	1233.8	1234.5	III	G	2	40X	150	
	2040	2400	CULG								
	2132	2400	HIRA								
03	0000	0811	HIRA								
	0000	0815	CULG								
	0753	1435	ONDR								
	0734	1450	POTS	0838	0840	I	S	2	110U	125	
			POTS	0913.5	0914.3	III	G,U	3	65	225	
	0700	1200	IZMI	0913.6	0914.1	III	G	2	65	230	
			POTS	1221	1231	I	S,W	1	130	160	
	2040	2400	CULG								
	2131	2400	HIRA								
04	0000	0812	HIRA								
	0000	0815	CULG								
	0751	1438	ONDR								
	0734	1450	POTS	1031	1303	I	S,W	1	110U	170U	
			POTS	1147.5	1148.1	III	G	2	40X	350	
	0703	1200	IZMI	1147.5	1147.9	III	G	2	55	230	
	2040	2400	CULG								
	2130	2400	HIRA								
05	0000	0813	HIRA								
	0000	0815	CULG								
	0700	1200	IZMI								
	0734	0843	POTS	0734 E	0843 U	I	S,W	1	200U	250	
	0749	1440	ONDR								
			POTS	0806.8	0807.1	UNCLF		1	140	170U	
	2040	2400	CULG								
	2129	2400	HIRA								
06	0000	0814	HIRA								
	0000	0815	CULG	0000.0	0001.0	III	G	1	20	100	
			CULG	0521.0	0525.0	III	G	1	23	90	
	0747	1441	ONDR								
	0650	1200	IZMI	0938.0U	1200.0D	I	S	1	200	270X	
	2040	2400	CULG	2049.0	2053.0	III	G	1	20	90	
	2128	2400	HIRA								
07	0000	0815	CULG								
	0000	0815	HIRA								
	0702	1200	IZMI	0702.0U	1200.0D	I	S	1	190	270X	
	0745	1443	ONDR								
	2040	2400	CULG								
	2128	2400	HIRA								
08	0000	0816	HIRA								
	0000	0815	CULG	0232.0	0232.0	III	B	1	23	90	
			CULG	0626.0	0627.0	III	G	1	30	150	
			CULG	0705.0	0815.0D	III	S	1	20	180	
	0700	1200	IZMI	0735.0U	1000.0U	I	S	2	45	270X	

SOLAR RADIO EMISSION
Spectral Observations

FEBRUARY 1999

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
08	0743	1447	ONDR								
			IZMI	1000.0U	1200.0D	I	S	2	45	270X	
	2127	2400	HIRA								
09	0000	0817	HIRA								
	0704	1200	IZMI	0704.0E	1200.0D	I	N	1	105	270X	
	0734	1450	POTS	0734 E	1450 E	I	S,C	1	110U	400	
	0741	1448	ONDR								
			POTS	0858.2	0911.0	III	G	2	110U	170U	
			IZMI	0907.2	0907.3	III	B	2	120	160	
			POTS	0944.4	0944.5	III	B	2	110U	130	
			POTS	1011.8	1013.2	III	G	1	110U	130	
			POTS	1132.5	1132.6	III	G	2	110U	135	
			POTS	1216.1	1216.2	III	B	1	110U	150	
			POTS	1239.5	1239.8	III	G	2	110U	170U	
			POTS	1251.0	1252.5	III	G	2	135	170	
			POTS	1424.4	1424.5	III	B	1	110U	150	
	2040	2400	CULG	2107.0	2110.0	III	G	1	20	45	
	2126	2400	HIRA								
10	0000	0815	CULG	0151.0	0154.0	III	G	1	20	80	
	0000	0818	HIRA	0151.0	0151.2	III	B	1	25X	70	
			CULG	0338.0	0339.0	III	B	2	18X	80	
			HIRA	0338.4	0338.6	III	B	1	25X	80	
	0650	1200	IZMI	0650.0E	1200.0D	I	S	1	105	270X	
			IZMI	0716.2	0716.3	III	B	1	80	120	
	0734	1450	POTS	0734 E	1450 U	I	S,C,DC	2	110U	400	
	0739	1449	ONDR								
			POTS	0841.8	0842.1	III	B	2	110U	170U	
			POTS	1048	1450 U	III	N	1	110U	170U	
			IZMI	1049.2	1049.4	III	B,RS	1	95	125	
			IZMI	1150.2	1150.3	III	B	2	45X	165	
			POTS	1150.2	1150.4	III	B	3	40X	170U	
			IZMI	1150.3	1150.6	V		2	45	70	
			POTS	1150.4	1150.8	V		3	40X	60	
			POTS	1222.8	1223.9	III	B	2	110U	220	
			POTS	1311.2	1312.7	III	G	2	110U	170U	
			POTS	1426.9	1427.1	III	B	2	40X	130	
	2040	2400	CULG	2040.0E	2145.0	III	S	1	20	180	
	2125	2400	HIRA								
			CULG	2354.0	2354.0	III	B	1	40	90	
11	0000	0819	HIRA								
	0700	1200	IZMI	0700.0E	1200.0D	I	N	1	105	270X	
	0711	1507	POTS	0711 E	1507 U	I	S,C	2	110U	350	
	0737	1454	ONDR								
			IZMI	0800.6	0804.2	III	GG	2	45X	150	
	0000	0815	CULG	0801.0	0804.0	III	G	1	25	140	
			POTS	0801.2	0808.1	III	GG,RS	2	40X	320	
			IZMI	0806.9	1016.2U	III	N	1	45X	90	
			POTS	0841	1417	III	N	1	110U	170U	
			POTS	1108.2	1108.3	UNCLF		1	220	300	
			POTS	1139.9	1140.3	III	G	2	110U	160	
	2040	2400	CULG	2121.0	2121.0	III	B	1	20	40	
	2124	2400	HIRA								
12	0000	0815	CULG	0322.0	0345.0	IV		3	130	460	
	0000	0820	HIRA	0322.0	0343.0	IV		3	130	500	
			CULG	0325.0	0329.0	II	SH	1	100	170	
			CULG	0325.0	0330.0	II	FN,H	2	50	90	
			HIRA	0325.6	0329.0	II	FN	2	50	80	ESS 400
			HIRA	0325.6	0329.0	II	SH	2	100	130	ESS 400
			CULG	0340.0	0342.0	III	G	1	20	120	
			CULG	0413.0	0416.0	III	G	1	20	80	
			CULG	0625.0	0625.0	III	B	1	30	100	
	0700	1200	IZMI	0700.0E	1200.0D	I	N	1	45	270	
			IZMI	0704.0U	1200.0D	III	N	1	45X	135	
	0713	1510	POTS	0713 E	1510 U	I	S,C,DC	2	55	350	
			IZMI	0717.7	0718.2	III	G	2	45X	270	

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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
12			POTS	0717.9	0718.2	III	G	3	40X	250	
			CULG	0718.0	0722.0	III	G	1	20	260	
			HIRA	0718.0	0718.2	III	B	1	50	240	
			CULG	0745.0	0815.0D	III	N	1	20	80	
			POTS	0822.7	0822.8	III	B	2	110U	160	
			ONDR	1006.0	1007.1	DCIM	G	1	1390	2000X	
	0734	1455	ONDR	1006.0	1007.4	DCIM	GG	2	2000X	4130	
			IZMI	1006.7	1008.1	III	G	2	45X	130	
			POTS	1007.0	1008.2	III	G	2	40X	65	
			POTS	1103.7	1104.7	III	G	3	110U	300	
			IZMI	1104.1	1104.6	III	G	1	95	270X	
			POTS	1204.7	1204.8	III	B	2	110U	170U	
			POTS	1328.8	1329.1	III	B	2	110U	270	
			POTS	1335.0	1339.4	DCIM	P	2	200U	550	
			POTS	1404.7	1404.8	III	B	2	110U	170U	
			ONDR	1425.4	1426.3	DCIM	GG,SP	3	800	1230	
	2040	2400	CULG	2250.0	2332.0	III	N	1	60	170	
	2123	2400	HIRA	2331.4	2331.6	III	B	1	70	260	
13	0000	0815	CULG	0059.0	0244.0	III	N	1	18	140	
	0000	0821	HIRA	0141.2	0141.4	III	B	1	25X	120	
			CULG	0326.0	0350.0	III	N	1	18X	180	
			HIRA	0333.8	0337.6	III	G	1	25X	170	
			HIRA	0348.6	0349.0	III	B	1	50	130	
			CULG	0433.0	0519.0	III	N	1	18X	180	
			CULG	0531.0	0538.0	III	G	2	18	160	
			HIRA	0533.0	0535.0	III	G	2	50	140	
			CULG	0556.0	0625.0	III	N	1	20	90	
			CULG	0635.0	0815.0D	III	N	1	20	90	
			IZMI	0658.4	0658.5	III	B	1	45	90	
			IZMI	0659.1	0959.2	III	B, HARM	1	50	90	
	0700	1200	IZMI	0700.0E	1200.0D	I	S	1	45	270X	
	0713	1510	POTS	0713 E	1510 U	I	S,C,DC	2	60	500	
			IZMI	0721.6	1200.0D	III	N	1	45X	90	
			POTS	0722	1501	III	N	1	40X	70	
			IZMI	0751.3	0751.7	III	G	2	45X	135	
			POTS	0751.4	0751.7	III	G	2	40X	300	
			IZMI	0807.6	0808.0	III	G	2	45X	105	
			POTS	0823.9	0832.3	III	GG,RS	3	40X	250	
			IZMI	0828.0	0828.3	III	G	2	45X	225	
			IZMI	0829.5	0830.0	III	G	2	45X	240	
			IZMI	0831.6	0832.2	III	G	2	45X	220	
			POTS	0831.7	0832.2	DCIM	P	2	350U	550	
	0732	1458	ONDR	0852.1	0852.5	DCIM		1	2675	4365X	
			POTS	0901.8	0903.6	DCIM		2	300U	650	
			IZMI	0903.2	0903.6	III	G	2	60	270X	
			POTS	0903.3	0904.6	III	G	3	110U	800X	
			POTS	0906.4	0906.6	III	B	2	40X	70	
			IZMI	1026.1	1028.6	I	GG,DC	2	105	125	
			POTS	1104.5	1104.6	III	B	2	40X	90U	
			IZMI	1158.7	1158.9	III	B	2	45X	135	
			POTS	1158.7	1159.0	III	B	3	40X	140	
			POTS	1230.3	1236.0	III	G	2	40X	90U	
			POTS	1313.5	1338.3	III	GG	2	40X	90U	
			POTS	1411.7	1418.1	III	G	3	40X	300U	
			POTS	1415.6	1418.1	DCIM		2	300U	650	
			POTS	1427.2	1427.3	DCIM		2	250	620	
			CULG	2040.0E	2210.0U	III	S	1	20	90	
	2040	2400	CULG	2040.0E	2400.0D	I	S	1	60	130	
			CULG	2229.0	2230.0	III	G	2	18X	90	
	2122	2400	HIRA	2229.6	2230.0	III	B	1	25X	70	
			CULG	2335.0	2338.0	III	G	2	18X	150	
			HIRA	2335.6	2337.6	III	G	1	25X	120	
14	0000	0815	CULG	0000.0E	0510.0	I	S	1	60	150	
			CULG	0001.0	0002.0	III	G	1	20	90	
			CULG	0108.0	0432.0	III	N	1	20	160	
			CULG	0213.0	0214.0	III	G	2	50	280	
	0000	0822	HIRA	0214.0	0214.2	III	B	2	50	240	

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14			HIRA	0309.4	0309.6	III	B	1	25X	130	
			CULG	0510.0	0510.0	III	B	1	23	90	
			CULG	0545.0	0548.0	III	G	2	60	250	
			HIRA	0545.8	0546.0	III	B	1	100	210	
			CULG	0552.0	0815.0D	III	N	1	35	150	
			IZMI	0650.0E	1200.0D	III	N	1	45X	120	
	0650	1200	IZMI	0650.0E	1035.0U	I	S	1	85	260	
			IZMI	0653.5	0654.3	III	G	2	45X	165	
			CULG	0654.0	0654.0	III	G	2	18X	150	
			POTS	0713 E	1510 U	III	N	1	110U	170U	
	0713	1510	POTS	0713 E	1035	I	S,C,DC	2	80	400	
			POTS	0741.0	0741.2	III	G	2	110U	170U	
			IZMI	0751.7	0752.8	III	G	2	45X	230	
			POTS	0751.7	0752.7	III	G	3	40X	170U	
			IZMI	0754.3	0754.5	III	G,HARM	2	45X	170	
			POTS	0754.3	0754.5	III	G	3	40X	250	
			IZMI	0802.0	0805.7	III	GG	2	45X	260	
			POTS	0802.0	0803.1	III	G	3	40X	250	
			POTS	0805.1	0805.3	III	G	1	40X	90U	
			POTS	0810.2	0811.4	III	G,U	3	110U	275	
			POTS	0827.3	0830.9	III	G	2	40X	170U	
			IZMI	0830.5	0830.9	III	G	2	45X	145	
			IZMI	0845.9	0846.4	III	G	2	45X	165	
			POTS	0845.9	0846.6	III	G	3	40X	170U	
			POTS	0919.3	0920.8	III	G	2	40X	170U	
			POTS	0926.0	0926.1	III	B	2	110U	170U	
			IZMI	0942.7	0942.8	III	B,HARM	1	50	135	
			POTS	0942.7	0942.8	III	B	2	40X	160	
			IZMI	1002.6	1005.7	III	GG	2	45X	175	
			POTS	1002.7	1010.0	III	GG,U	3	40X	300	
			ONDR	1007.2	1025.1	DCIM	GG	2	800X	1490	
			IZMI	1009.6	1009.9	III	G	2	45	165	
			POTS	1011.5	1011.6	III	B	2	40X	70	
			POTS	1011.7	1012.5	DCIM		2	450	650	
			POTS	1021.6	1021.7	III	B	2	110U	160	
			POTS	1021.8	1022.1	III	G	2	40X	90U	
			ONDR	1025.2	1051.4	DCIM	GG	2	800X	2000X	
			POTS	1030	1510 U	IV		3	40X	800X	
	0730	1500	ONDR	1034.0	1045.1	DCIM		2	2000X	4385X	
			IZMI	1035.0U	1200.0D	I	S	2	45X	270X	
			IZMI	1040.0U	1200.0D	CONT		2	45X	270X	
			POTS	1045.6	1055 U	II	F,H	2	40X	80	
			POTS	1050.1	1052.7	II	SH,H	3	110U	170U	
			ONDR	1051.5	1115.0	DCIM	GG	2	800X	2000X	
			ONDR	1115.2	1149.4	DCIM	GG,SP	2	800X	2000X	
			ONDR	1207.2	1230.3	DCIM	GG	3	800X	2000X	
			ONDR	1208.3	1216.1	DCIM	G	2	2000X	2870	
			ONDR	1248.3	1311.5	DCIM	GG	3	800X	1850	
			ONDR	1330.2	1349.5	DCIM	G	2	800X	1250	
			ONDR	1409.0	1422.0	DCIM		1	2000X	4385X	
			ONDR	1409.2	1422.4	DCIM	G,SP	2	800X	2000X	
			CULG	2040.0E	2400.0D	III	S	1	20	160	
	2040	2400	CULG	2040.0E	2400.0D	I	S	2	40	120	
			CULG	2113.0	2113.0	III	B	2	18X	120	
	2121	2400	HIRA	2348.8	2349.0	III	B	1	25X	220	
			CULG	2349.0	2349.0	III	B	2	18	240	
15			CULG	0000.0E	0815.0D	III	S	1	20	160	
	0000	0815	CULG	0000.0E	0815.0D	I	S	2	60	130	
			CULG	0212.0	0213.0	III	G	2	18X	240	
	0000	0823	HIRA	0213.0	0213.2	III	B	2	30	220	
			HIRA	0449.8	0450.0	III	B	1	30	200	
			HIRA	0625.8	0626.2	III	B	2	30	180	
			CULG	0626.0	0627.0	III	G	3	18X	170	
			HIRA	0649.6	0649.8	III	B	1	25X	140	
			CULG	0650.0	0650.0	III	B	3	18X	150	
			IZMI	0710.0E	1200.0D	CONT		1	45X	270X	
	0710	1200	IZMI	0710.0E	1200.0D	I	S	2	45X	270X	
			POTS	0713 E	1510 U	I	S	1	200U	400	

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15	0713	1510	POTS	0713 E	1510 U	IV		3	40X	170U	
			POTS	0714.5	0718.3	II	UE	3	40X	90U	
			POTS	0728.0E	0732.5	UNCLF		3	40X	70	
			POTS	0745.8E	0752	UNCLF		3	40X	65	
			IZMI	0756.6	0756.7	III	G	2	45X	230	
			POTS	0756.6	0756.8	III	G	3	40X	350	
			POTS	0818 E	0827.5	UNCLF		3	40X	90U	
			IZMI	0823.0	0823.5	III	G	2	95	180	
			POTS	0823.1	0824.2	III	G	3	40X	170U	
			IZMI	0823.6	0824.2	III	G	2	45X	190	
			IZMI	0855.3	0900.4	I	GG,DC	2	55	135	
			POTS	0900.0	0903.3U	UNCLF		3	40X	65	
	0728	1501	ONDR	0921.1	0922.2	DCIM		1	1180	2000X	
			ONDR	1003.4	1004.1	DCIM		1	1395X	2000X	
			IZMI	1018.2	1018.4	III	G	2	200	270X	
			POTS	1018.2	1018.4	III	G	2	200U	350	
			IZMI	1117.5	1117.9	III	G	2	75	260	
			POTS	1117.6	1118.1	III	G	3	40X	275	
			POTS	1430.4	1433.6	III	G	2	200U	280	
			POTS	1447 U	1505	III	G,P	2	40X	90U	
	2040	2400	CULG	2040.0E	2210.0	III	S	1	20	80	
	2119	2400	HIRA								
			CULG	2230.0	2230.0	III	B	1	18	80	
			CULG	2307.0	2309.0	III	G	1	20	100	
			CULG	2328.0	2328.0	III	B	1	20	100	
16	0000	0815	CULG	0123.0	0230.0	III	N	1	20	80	
			CULG	0255.0	0258.0	III	G	1	120	380	
			CULG	0256.0	0311.0	II	FN,H	2	18	100	SWF FLA
	0000	0824	HIRA	0256.6	0307.0	II	FN	2	30	90	ESS 750
			CULG	0257.0	0311.0	II	SH,H	2	30	180	ESS 750
			HIRA	0257.0	0307.0	II	SH	2	100	120	ESS 750
			CULG	0303.0	0815.0D	IV	FS	3	20	340	
			CULG	0317.0	0319.0	UNCLF		2	20	50	
			IZMI	0701.0E	1200.0D	CONT		2	45X	270X	
			IZMI	0701.0U	1200.0D	III	N	1	45X	270X	
	0701	1200	IZMI	0701.0E	1200.0D	I	S	2	45X	270X	
			POTS	0713 E	1510 U	III	N	1	40X	90U	
			POTS	0713 E	1510 U	III	N	1	110U	170U	
	0713	1510	POTS	0713 E	1510 U	I	S,C,DC	3	40X	500	
			POTS	0737.7	0738.3	DCIM		1	250U	375	
			ONDR	0739.2	0740.4	DCIM		1	800X	1030	
			POTS	0804.3	0804.4	DCIM		2	250U	375	
			POTS	0819	0825	II	UE	3	40X	65	
			POTS	0843	0851	II	UE	3	40X	70	
			POTS	0909.4	0911.5	III	GG	3	40X	300	
			IZMI	0910.1	0911.1	III	GG	2	45X	270	
			IZMI	0910.4	0911.4	V	G	2	50	165	
			POTS	0924.6	0928.9	DCIM		2	200U	400	
			IZMI	0924.7	0924.9	III	G	1	200	270X	
			IZMI	0927.3	0928.1	III	GG	1	190	270X	
			POTS	1010.4	1010.7	III	G	2	225	375	
			POTS	1012.6	1012.8	III	G	1	250	360	
			IZMI	1033.3	1033.6	III	GG	2	110	270X	
			POTS	1033.3	1033.7	III	G	3	110U	300	
			POTS	1105.3	1117.4	III	GG	2	75	800X	
			IZMI	1115.8	1116.5	III	GG	2	75	270X	
			POTS	1140.2	1154.6	III	GG	2	110U	375	
			IZMI	1147.2	1147.3	III	G	2	150	270X	
			IZMI	1148.2	1148.4	III	G	2	150	270X	
			POTS	1231.6	1241.9	III	GG	3	40X	750	
	0726	1503	ONDR	1318.2	1324.3	DCIM	G	2	2000X	4375X	
			POTS	1318.8	1319.6	III	G,C	3	40X	700	
			ONDR	1319.1	1319.3	DCIM		1	965	1245	
			POTS	1336.1	1336.4	III	G	3	80	300	
			POTS	1351.6	1352.2	III	G,C	3	40X	380	
			POTS	1458.4	1503.3	III	GG	3	40X	800X	
			ONDR	1459.1	1501.0	DCIM	GG	2	800X	1920	
	2040	2400	CULG	2040.0E	2400.0D	III	S	1	20	140	

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16		CULG	2119.0	2122.0	III	G	3	18X	450	
		CULG	2120.0	2124.0	V		2	20	160	
		CULG	2126.0	2131.0	II	FN	3	40	90	
		CULG	2126.0	2131.0	II	SH	2	85	180	ESS 700
		HIRA	2126.0	2129.0	II	SH	2	100	170	ESS 750
2118	2400	HIRA	2126.0	2128.0	II	FN	1	50	80	ESS 750
		CULG	2309.0	2309.0	III	B	2	20	140	
		HIRA	2309.4	2309.6	III	B	1	25X	150	
		CULG	2322.0	2323.0	III	G	3	18X	400	
		HIRA	2322.2	2322.8	III	B	3	25X	400	
17 0000	0815	CULG	0000.0E	0233.0	III	S	1	20	240	
0000	0825	HIRA	0057.6	0058.0	III	B	1	200	400	
		CULG	0058.0	0101.0	III	G	3	18X	460	
		HIRA	0059.2	0059.4	III	B	3	25X	1000	
		CULG	0227.0	0227.0	III	B	2	20	260	
		HIRA	0227.2	0227.4	III	B	2	25X	210	
		HIRA	0232.2	0232.4	III	B	1	30	210	
		HIRA	0318.8	0319.0	III	B	1	25X	200	
		CULG	0319.0	0319.0	III	B	2	20	180	
		CULG	0430.0	0815.0D	I	S	1	200	300	
		CULG	0431.0	0433.0	III	G	1	200	380	
		CULG	0442.0	0815.0D	III	S	1	20	120	
		CULG	0444.0	0444.0	III	B	1	100	260	
		CULG	0617.0	0618.0	III	G	1	40	400	
		IZMI	0700.0E	1200.0D	III	N	1	45X	190U	
0700	1200	IZMI	0700.0E	1200.0D	I	S	2	85U	270X	
		POTS	0713 E	1510 U	III	N	1	40X	90U	
		POTS	0713 E	1510 U	III	N	1	110U	170U	
0713	1510	POTS	0713 E	1510 U	I	S,C,DC	2	40X	400	
		POTS	0713.6	0713.7	III	B	2	65	170U	
		IZMI	0746.7	0746.8	III	G	1	90U	270X	
		POTS	0746.7	0752.0	III	G	2	110U	170U	
		POTS	0757.3	0757.4	III	B	2	110U	170U	
		IZMI	0801.6	0801.7	III	G	1	85	270X	
		IZMI	0835.2	0835.5	III	G	2	45	245	
		POTS	0835.2	0837.0	III	G	3	40X	275	
		IZMI	0836.6	0837.3	III	G	3	45X	270	
		IZMI	0836.7	0837.0	V	G	2	45	125	
		POTS	0845.6	0852.2	III	G,U	3	110U	250	
		IZMI	0848.3	0848.9	III	G	2	95	245	
		POTS	0859.5	0909.4	III	GG	2	40X	170U	
		IZMI	0859.7	0900.5	III	GG	2	45X	245	
		IZMI	0904.3	0904.5	III	G	2	45	210	
		POTS	0929.2	0931.2	III	G,U	2	40X	170U	
		POTS	1003.7	1003.8	III	G,U	2	240	420	
		IZMI	1017.6	1018.6	III	GG	2	55	165	
		POTS	1017.6	1018.6	III	GG	3	40X	170U	
		POTS	1051.6	1052.2	III	G	2	110U	170U	
		POTS	1059.9	1108.8	III	G	2	110U	170U	
0724	1506	ONDR	1110.4	1111.1	DCIM		1	965	1215	
		IZMI	1158.8	1159.6	III	GG,RS	2	55	270X	
		POTS	1158.9	1159.8	III	GG	3	110U	375	
		POTS	1230.2	1237.7	III	GG,U	3	65	275	
		ONDR	1307.3	1307.4	DCIM		2	825	1360	
		CULG	2040.0E	2400.0D	III	S	1	20	100	
2040	2400	CULG	2040.0E	2140.0	I	S	1	200	300	
		CULG	2119.0	2120.0	III	G	2	40	160	
		CULG	2256.0	2257.0	III	G	2	18X	180	
2117	2400	HIRA	2256.6	2256.8	III	B	1	25X	230	
18 0000	0815	CULG	0000.0E	0815.0D	III	N	1	20	100	
0000	0826	HIRA	0233.4	0233.8	III	B	1	80	180	
		HIRA	0421.6	0421.8	III	B	1	50	180	
		HIRA	0531.4	0531.6	III	B	1	50	210	
		IZMI	0640.0E	1200.0D	I	S	2	160U	270X	
0640	1200	IZMI	0640.0E	1200.0D	III	N	1	45X	160U	
		IZMI	0644.3	0644.9	III	G	2	45X	150	
		HIRA	0644.4	0644.8	III	B	1	50	150	

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OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
18		CULG	0645.0	0645.0	III	B	1	30	150	
		CULG	0651.0	0651.0	III	B	1	30	150	
		IZMI	0651.1	0651.9	III	G	2	45X	210	
		HIRA	0651.4	0651.6	III	B	1	60	200	
		POTS	0713 E	1510 U	III	N	1	40X	90U	
		POTS	0713 E	1510 U	III	N	1	110U	170U	
0713	1510	POTS	0713 E	1510 U	I	S,C,DC,P	2	110U	400	
		POTS	0714.7	0717.8	III	GG	2	110U	170U	
		IZMI	0715.7	0716.8	III	GG	2	45X	270X	
		POTS	0724.1	0726.6	III	G	2	110U	170U	
		POTS	0747.6	0748.1	III	G	2	40X	170U	
		IZMI	0801.4	0801.6	III	G	2	45X	150	
		POTS	0801.4	0801.7	III	B	2	40X	165	
		POTS	0817.3	0830.1	III	GG	3	40X	360	
		POTS	0821.0	0823.3	DCIM		2	500	650	
		ONDR	0821.2	0822.3	DCIM	GG	2	800X	2000X	
		IZMI	0821.3	0824.7	III	GG	1	45X	270X	
		IZMI	0825.0	0825.4	III	G,HARM	2	60	270X	
		IZMI	0825.5	0826.0	III	G	2	50	270X	
		IZMI	0825.9	0826.5	V	G,HARM	2	45X	160	
		IZMI	0827.2	0828.6	III	GG	2	45X	270X	
		IZMI	0827.9	0828.7	V	G	2	45X	135	
		IZMI	0904.0	0904.3	III	G	2	50	140	
		POTS	0904.0	0904.3	III	G	2	55	170U	
		IZMI	0914.9	0915.3	III	G	2	45X	270X	
		POTS	0914.9	0915.3	III	G	3	40X	350	
		POTS	0919.0	0919.1	III	B	2	110U	170U	
		POTS	0923.9	0927.8	III	GG	2	40X	170U	
		IZMI	0927.1	0927.7	III	GG	2	45X	130	
		POTS	0935.5	0936.7	III	G	2	40X	170U	
		POTS	1008.3	1010.2	DCIM	U	2	250U	800X	
		POTS	1009.1	1011.7	III	GG,C	3	40X	400	
		ONDR	1009.2	1010.3	DCIM		1	800X	1040	
		IZMI	1009.6	1010.7	III	GG	2	45X	260	
		IZMI	1009.7	1010.7	CONT		2	45	70	
		POTS	1018.4	1029.1	III	G,RS	3	40X	600	
		POTS	1020.4	1029.6	DCIM		2	320U	650	
		ONDR	1025.2	1032.2	DCIM		1	800X	2000X	
0721	1508	ONDR	1025.2	1029.4	DCIM	G	1	2000X	4375X	
		POTS	1046.5	1048.1	DCIM		2	280	540	
		IZMI	1056.4	1056.5	III	B	2	50	150	
		POTS	1056.4	1056.6	III	B	2	40X	160	
		IZMI	1108.4	1109.8	III	GG,HARM	2	45X	270X	
		POTS	1108.5	1116.1	III	GG	3	40X	370	
		IZMI	1115.5	1116.2	III	G	2	55	220	
		POTS	1119.9	1120.4	III	G	2	40X	170U	
		IZMI	1125.4	1126.4	III	G	2	45	160	
		POTS	1125.4	1126.4	III	GG	2	40X	170U	
		POTS	1131.1	1132.0	III	G	2	110U	225	
		IZMI	1150.7	1151.0	III	G	2	55	180	
		POTS	1150.8	1151.0	III	G	2	55	170U	
		POTS	1203.0	1203.6	III	G	3	40X	220	
		POTS	1204.3	1204.7	III	G,U	3	110U	220	
		POTS	1212.4	1212.6	III	G	2	110U	220	
		POTS	1222.7	1222.9	III	G	2	110U	170U	
		POTS	1233.8	1245.4	III	G	3	40X	400U	
		POTS	1233.9	1245.3	DCIM		2	250U	800X	
		ONDR	1244.2	1246.5	DCIM		1	800X	1910	
		POTS	1314.9	1315.1	III	G	2	110U	250	
		POTS	1322.8	1333.1	III	G	3	40X	320	
		POTS	1339.4	1339.8	III	G	2	40X	170U	
		POTS	1351.2	1351.9	UNCLF		3	110U	400	
		POTS	1402.5	1411.1	DCIM		2	250U	800X	
		POTS	1402.6	1411.9	III	GG,C	3	40X	400U	
		ONDR	1408.2	1411.0	DCIM	G	2	800X	2000X	
		POTS	1434.2	1434.8	III	G	3	40X	400	
2040	2400	CULG	2040.0E	2040.0	III	N	1	20	150	
		CULG	2219.0	2220.0	III	G	3	18X	180	
		CULG	2233.0	2240.0	III	G	1	20	150	

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OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
18			CULG	2247.0	2249.0	III	G	3	18X	220	
			CULG	2343.0	2344.0	III	G	2	30	180	
	2330	2400	HIRA	2343.2	2343.6	III	B	1	30	180	
			HIRA	2356.6	2356.8	III	B	1	90	250	
			CULG	2357.0	2357.0	III	B	1	20	270	
19	0000	0815	CULG	0003.0	0004.0	III	G	2	30	150	
	0000	0827	HIRA	0003.2	0003.4	III	B	2	30	160	
			CULG	0045.0	0046.0	III	G	3	23	260	
			HIRA	0045.4	0045.8	III	B	2	25X	220	
			CULG	0131.0	0144.0	III	N	1	20	120	
			CULG	0210.0	0408.0	III	N	1	20	150	
			HIRA	0210.4	0211.0	III	G	1	30	180	
			CULG	0239.0	0241.0	III	G	3	18X	270	
			HIRA	0239.6	0240.0	III	B	3	25X	250	
			CULG	0304.0	0304.0	III	B	1	200	500	
			HIRA	0304.2	0304.4	III	B	1	170	520	
			CULG	0322.0	0322.0	III	B	2	30	260	
			HIRA	0322.4	0322.6	III	B	1	40	230	
			CULG	0524.0	0549.0	III	N	1	20	140	
			CULG	0634.0	0636.0	III	G	1	20	100	
			CULG	0700.0	0742.0	III	N	1	20	140	
	0708	1200	IZMI	0713.8	0714.1	III	B,U	2	50	150	
	0719	1508	ONDR								
			IZMI	0719.8	0720.1	III	G	1	45X	160	
			IZMI	0725.7	0725.8	III	B	1	90	245	
			IZMI	0727.0U	1200.0D	III	N	1	45X	130	
			IZMI	0741.9	0742.2	III	G	2	45X	270X	
	0747	1510	POTS	0747 E	1510 U	I	S,C,DC	2	110U	400	
			IZMI	0759.5	0759.7	III	B	1	45	145	
			POTS	0759.5	0803.7	III	G	2	110U	300	
			POTS	0807 E	1510 U	III	N	1	110U	170U	
			IZMI	0817.8	0817.9	III	B	1	50	150	
			POTS	0817.8	0818.0	III	B	2	110U	170U	
			IZMI	0833.3	0833.5	III	B	1	50	170	
			POTS	0833.3	0833.4	III	B	2	55	170U	
			IZMI	0841.8	0842.0	III	B	2	45X	140	
			POTS	0841.8	0842.1	III	B	2	40X	170U	
			IZMI	0907.0U	1200.0D	I	N	1	190	270	
			IZMI	0910.7	0910.9	III	B	1	45	135	
			POTS	0910.7	0910.9	III	G	2	40X	150	
			IZMI	0931.4	0932.1	III	G,HARM	2	50	175	
			POTS	0931.5	0931.9	III	G	2	110U	170U	
			POTS	0937.1	0937.2	DCIM	U	2	275	450	
			IZMI	0945.7	0946.6	III	G	2	45	150	
			POTS	0945.9	1000.9	III	GG	2	40X	275	
			IZMI	0950.5	0950.7	III	G,HARM	2	55	245	
			IZMI	0959.6	1000.3	III	G	2	95	270	
			POTS	1011.2	1011.3	III	B	2	110U	170U	
			POTS	1024.7	1026.7	III	G	3	40X	275	
			IZMI	1024.8	1026.0	III	GG	2	45X	220	
			IZMI	1031.6	1031.8	III	G	2	200	270X	
			POTS	1031.7	1031.9	III	G	2	140	325	
			POTS	1052.6	1052.7	III	B	2	110U	170U	
			IZMI	1122.7	1122.8	III	B	1	80	170	
			POTS	1122.7	1132.6	III	G	2	110U	275	
			POTS	1124.1	1128.9	DCIM		2	250	600	
			IZMI	1132.5	1133.1	III	G	1	45X	270X	
			IZMI	1137.3	1138.3	III	GG	2	45X	220	
			POTS	1137.3	1139.3	III	G	3	40X	220	
			IZMI	1137.4	1137.6	V	B	2	45X	80	
			POTS	1159.9	1200.2	III	B	2	40X	225	
			POTS	1205.1	1209.3	III	G	2	40X	275	
			POTS	1213.7	1213.9	III	B	2	40X	150	
			POTS	1221.3	1221.6	III	G	2	110U	250	
			POTS	1251.3	1251.4	III	B	2	80	170U	
			POTS	1252.2	1252.6	III	B	2	40X	150	
			POTS	1345.0	1346.7	III	G	2	110U	170U	
			POTS	1423.6	1423.8	III	B	3	50	300	

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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
19			POTS	1436.6	1443.5	III	GG,C	3	40X	350	
			POTS	1443.7	1443.8	DCIM	U	2	400	500	
	2040	2400	CULG	2042.0	2110.0	III	N	1	20	50	
	2115	2400	HIRA								
			CULG	2314.0	2314.0	III	B	1	30	100	
			CULG	2329.0	2329.0	III	B	1	30	100	
20	0000	0815	CULG	0104.0	0109.0	III	G	1	25	250	
	0000	0828	HIRA	0104.0	0104.4	III	B	1	30	220	
			CULG	0158.0	0204.0	III	G	1	20	100	
			CULG	0401.0	0408.0	III	G	3	18X	270	
			HIRA	0402.6	0405.0	III	G	3	25X	300	
			CULG	0412.0	0414.0	III	G	1	20	300	
			HIRA	0413.0	0413.2	III	B	1	50	260	
			CULG	0417.0	0424.0	II	FN	2	23	60	
			CULG	0417.0	0430.0	II	SH	3	35	100	ESS 550
			HIRA	0417.0	0419.0	II	FN	1	30	50	ESS 600
			HIRA	0417.0	0422.0	II	SH	3	50	100	ESS 600
			CULG	0425.0	0815.0D	IV		1	50	250	
			CULG	0555.0	0559.0	III	G	1	20	90	
			CULG	0637.0	0750.0	III	N	1	30	180	
			IZMI	0655.0E	1200.0D	III	N	1	45X	130U	
	0655	1200	IZMI	0655.0E	1200.0D	I	S,C	2	45X	270X	
			POTS	0713 E	1510 U	III	N	1	110U	170U	
	0713	1510	POTS	0713 E	1510 U	I	S,C,DC	3	110U	400	
	0717	1512	ONDR								
			IZMI	0736.7	0737.0	III	G,HARM	2	50	270X	
			POTS	0736.8	0737.0	III	B	3	50	300	
			POTS	0803	1510 U	III	N	1	40X	90U	
			IZMI	0810.0	0810.3	III	G	1	200	270X	
			POTS	0810.0	0810.5	DCIM		2	200U	350	
			POTS	0908.9	0909.1	III	B	2	40X	170U	
			POTS	0913.9	0914.1	DCIM		2	240	400	
			IZMI	0926.3	0926.8	III	G	2	45	145	
			POTS	0926.3	0933.2	III	GG	3	40X	220	
			IZMI	0931.2	0932.5	III	GG	2	45X	180	
			POTS	0939.8	0942.7	III	GG,C	2	40X	220	
			IZMI	0940.0	0942.4	III	GG	1	45X	180	
			IZMI	0951.7	0953.0	III	GG	2	90	270X	
			POTS	0951.7	0955.3	III	G,C,U	3	40X	450	
			POTS	0953.9	0955.0	DCIM		2	200U	450	
			IZMI	0954.1	0955.1	III	G	2	80	270X	
			IZMI	1048.7	1049.0	III	G	2	45X	245	
			POTS	1048.7U	1049.2	III	B	2	40X	130U	
			IZMI	1114.1	1118.0	I	GG,DC	2	205	265	
			IZMI	1144.2	1145.5	III	G	2	45X	160	
			POTS	1144.2	1145.6	III	G	2	40X	170U	
			POTS	1201.1	1201.3	III	G,UG	3	125	280	
			POTS	1306.4	1312.4	III	G	2	110U	300	
			POTS	1347.4	1347.6	III	G	2	40X	170U	
			POTS	1410.9	1412.7	DCIM		2	200U	550	
			POTS	1411.1	1418.4	III	GG,U	3	40X	250U	
			POTS	1436.1	1436.2	III	B	2	110U	140	
			POTS	1440.4	1440.7	III	B	2	110U	170U	
	2040	2400	CULG	2109.0	2109.0	III	G	1	20	50	
			CULG	2122.0	2131.0	III	G	2	18X	130	
	2114	2400	HIRA	2124.0	2124.2	III	B	1	25X	200	
			CULG	2151.0	2156.0	III	G	1	20	40	
			CULG	2247.0	2310.0	III	N	1	18	120	
			HIRA	2308.4	2309.0	III	G	1	25X	140	
21	0000	0829	HIRA								
	0000	0815	CULG	0020.0	0023.0	III	G	1	18X	100	
	0653	1530	POTS	0653 E	1530 U	I	S,C,DC	2	110U	400	
			POTS	0653.9	0654.8	III	G	2	110U	145	
			POTS	0705	1530 U	III	N	1	110U	170U	
	0727	1202	IZMI	0807.0U	1202.0D	I	N	1	105	260	
			POTS	0823.6	0823.8	UNCLF		2	130	225	
			ONDR	0940.3	0950.1	DCIM	G	1	800X	1420	

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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
21	0715	1513	ONDR	0940.5	0949.4	DCIM		1	2000X	4375X	
			POTS	0940.6	0946.9	DCIM		2	200U	600	
			IZMI	0941.0	0943.4	III	GG	2	45X	160	
			POTS	0941.0	0948.3	III	GG,C	3	40X	140	
			IZMI	0941.9	0944.1	V	G	2	45X	140	
			IZMI	0945.2	0947.9	III	G	2	45X	245	
			IZMI	0945.4	0948.7	CONT		2	45	140	
			IZMI	0949.3	0949.7	III	G	2	45X	125	
			POTS	0957.8	1014 U	II	SH,H	3	40X	140	
			IZMI	0958.3	1011.9	II	HARM	2	45X	125	
			POTS	0959.5	1002.1U	II	F	3	40X	50	
			IZMI	1046.8	1049.1	III	G	2	45X	90	
			POTS	1046.8	1047.2	III	B	2	40X	65	
			IZMI	1050.0U	1202.0D	III	N	1	45X	90	
			POTS	1139.6	1139.7	III	B	2	110U	170U	
			POTS	1157.6	1204.2	III	GG,C	2	40X	225	
			IZMI	1157.7	1202.0D	III	GG	2	45X	170	
			POTS	1247.1	1247.2	III	G	2	110U	350	
			ONDR	1306.0	1309.5	DCIM		1	2000X	4375X	
			POTS	1309.7	1309.8	DCIM		1	700	800X	
			POTS	1311.2	1316.1	III	G	2	75	350U	
			POTS	1424.1	1424.3	III	B	2	110U	325	
	2040	2400	CULG								
	2112	2400	HIRA								
22	0000	0830	HIRA								
	0000	0815	CULG	0307.0	0307.0	III	B	1	35	110	
			CULG	0429.0	0429.0	III	B	1	23	50	
			CULG	0528.0	0529.0	III	G	1	40	80	
	0652	1530	POTS	0652 E	1530 U	I	S	1	110U	450	
	0712	1516	ONDR								
			POTS	0729.4	0729.5	III	B	2	110U	160	
	0647	1200	IZMI	0729.4	0729.6	III	B	1	50	150	
			IZMI	0737.8	0737.9	III	B	2	45X	70	
			CULG	0740.0	0746.0	III	G	1	20	100	
			IZMI	0740.4	0740.8	III	G	2	45X	170	
			POTS	0740.4	0740.6	III	B	2	40X	160	
			IZMI	0743.4	0743.5	III	B	1	45	70	
			IZMI	0745.0U	1200.0D	I	N	1	130U	270X	
			IZMI	0745.3	0745.7	III	G,RS	2	45X	95	
			POTS	0745.3	0745.6	III	G	2	40X	130	
			POTS	0752.6	0752.7	III	B	1	140	170U	
			IZMI	0821.1	0821.4	III	G,RS	2	45	160	
			POTS	0821.1	0821.3	III	B	2	40X	170U	
			POTS	0837.2	0837.4	III	G	1	40X	170U	
			POTS	0907.9	0916.1	III	G	3	40X	170U	
			IZMI	0908.0	0908.5	III	G	1	45X	85	
			IZMI	0914.2	0916.0	III	G	2	45X	175	
			IZMI	0914.4	0915.8	V		2	45X	95	
			POTS	0914.7	0915.7	V		3	40X	65	
			POTS	1140.6	1140.8	III	G	2	40X	150	
			POTS	1158.2	1158.5	III	B	1	40X	150	
			POTS	1355.2	1356.5	III	G	3	40X	170U	
			POTS	1355.6	1356.3	V		3	40X	65	
	2040	2400	CULG								
	2111	2400	HIRA								
23	0000	0815	CULG	0106.0	0109.0	III	G	1	20	90	
			CULG	0323.0	0324.0	III	G	2	23	100	
	0000	0831	HIRA	0328.2	0328.4	III	B	2	25X	130	
			CULG	0555.0	0557.0	III	G	1	20	70	
			CULG	0642.0	0642.0	III	B	1	30	100	
			HIRA	0642.2	0642.4	III	B	1	50	130	
	0652	1530	POTS	0652 E	1530 U	I	S	1	110U	170U	
			CULG	0657.0	0657.0	III	B	1	23	80	
			POTS	0657.3	0657.6	III	B	2	40X	130	
	0710	1518	ONDR								
			IZMI	0731.1	0737.7	III	G	1	45X	90	
			POTS	0732.9	0733.7	III	G	3	40X	170U	

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

FEBRUARY 1999

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	FREQUENCY Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
23	0700	1200	IZMI	0732.9	0734.4	III	GG	2	45X	175	
			CULG	0733.0	0735.0	III	G	3	25	120	
			HIRA	0733.2	0733.4	III	B	2	50	150	
			IZMI	0733.2	0734.2	V	G	2	45	85	
			POTS	0733.4	0734.2	V		3	40X	55	
			CULG	0737.0	0744.0	III	G	1	35	70	
			IZMI	0742.7	0743.6	III	G	1	45	95	
			POTS	0742.8	0742.9	III	B	1	110U	165	
			IZMI	1009.9	1010.3	III	G	2	45	175	
			POTS	1009.9	1017.7	III	GG	3	40X	275	
			IZMI	1010.0U	1200.0D	I	N	1	240U	270X	
			IZMI	1012.9	1013.2	III	G	2	45X	245	
			IZMI	1016.1	1018.9	III	G	2	45X	245	
			IZMI	1016.7	1018.2	V	G	2	45X	140	
			POTS	1017.1U	1018.4	V		3	40X	55	
			POTS	1124.5	1125.0	III	B	1	40X	150	
			POTS	1300.0	1300.4	III	G	2	40X	220	
			POTS	1310.7	1311.4	III	G	3	40X	260	
			POTS	1311.1	1311.7	V		3	40X	60	
			POTS	1402.5	1403.4	III	G	2	40X	170U	
	2040	2400	CULG	2104.0	2104.0	III	B	1	25	40	
	2110	2400	HIRA								
24	0000	0815	CULG	0033.0	0036.0	III	G	1	18	80	
			CULG	0054.0	0055.0	III	G	2	20	130	
	0000	0832	HIRA	0054.0	0054.4	III	B	3	25X	220	
			CULG	0147.0	0147.0	III	B	1	30	80	
			CULG	0151.0	0203.0	II	FN	3	18X	45	
			HIRA	0151.6	0203.0	II	SH	3	40	100	ESS 700
			CULG	0152.0	0211.0	II	SH	3	25	90	ESS 700
			HIRA	0154.0	0159.0	II	FN	1	25X	40	ESS 700
	0656	1200	IZMI								
	0708	1519	ONDR								
	0652	1530	POTS	0808	1530 U	I	S,W	1	140	300	
	2040	2400	CULG	2132.0	2133.0	III	G	2	23	180	
	2109	2400	HIRA	2132.8	2133.0	III	B	2	30	130	
25	0000	0815	CULG								
	0000	0833	HIRA								
	0650	1200	IZMI								
	0706	1523	ONDR								
	0652	1530	POTS	0910.9	0912.0	III	G	1	110U	170U	
			POTS	1301.9	1302.0	III	B	1	110U	145	
	2040	2400	CULG								
	2107	2400	HIRA								
26	0000	0815	CULG	0040.0	0040.0	III	B	1	20	100	
			CULG	0459.0	0459.0	III	B	2	35	170	
	0000	0834	HIRA	0459.0	0459.2	III	B	1	40	240	
			CULG	0533.0	0533.0	III	B	1	60	160	
			HIRA	0629.8	0630.0	III	B	1	50	220	
			CULG	0630.0	0630.0	III	B	1	60	180	
	0703	1524	ONDR								
	0652	1530	POTS	0817.8	0819.2	III	GG,C	3	40X	375	
	0650	1200	IZMI	0817.9	0818.8	III	GG	2	45X	270X	
			IZMI	0818.0	0818.4	V	G	2	45	135	
			HIRA	0818.2	0818.4	III	B	2	30	270	
			POTS	0818.2	0818.9	V		3	40X	55	
			POTS	0820.4	0825.4	III	G	3	40X	275	
			IZMI	0824.7	0824.8	III	G	2	45	245	
			IZMI	0824.7	0825.0	V	HARM	2	45	135	
			IZMI	0942.2	0942.3	III	B	1	45	140	
			POTS	0942.2	0942.5	III	G	2	40X	170U	
			POTS	0955.1	0956.1	III	G	1	110U	160	
			POTS	1135.6	1135.7	III	B	1	110U	170U	
			POTS	1154.4	1210.1	III	GG	3	40X	350	
			IZMI	1155.0	1200.0D	III	N	1	45X	150	
			POTS	1317.1	1318.0	III	G	2	40X	250	
			POTS	1334.9	1339.8	III	G	2	110U	250	

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

FEBRUARY 1999

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
26			POTS	1351.2	1353.4	III	G	3	40X	270	
	2040	2400	CULG	2056.0	2056.0	III	B	1	30	90	
	2106	2400	HIRA								
			CULG	2240.0	2339.0	III	N	1	20	180	
27	0000	0815	CULG	0011.0	0029.0	III	N	1	20	160	
	0000	0835	HIRA	0021.8	0022.0	III	B	1	30	100	
			CULG	0215.0	0216.0	III	G	1	20	40	
			CULG	0530.0	0531.0	III	G	2	18	240	
			HIRA	0530.6	0531.0	III	B	2	25X	250	
	0700	1200	IZMI								
	0701	1525	ONDR								
	0652	1530	POTS	1200.9	1201.0	III	B	2	110U	160	
			POTS	1323.9	1325.2	III	G	2	40X	170U	
	2040	2400	CULG								
	2105	2400	HIRA								
28	0000	0815	CULG								
	0000	0836	HIRA								
	0659	1528	ONDR								
	0700	1200	IZMI								
	0652	1530	POTS	1015.2	1017.9	III	G	1	110U	170U	
			POTS	1443.5	1444.4	III	G	3	40X	170U	
			POTS	1444.1	1444.5	V		3	40X	55	
			POTS	1503.1	1503.2	III	B	1	110U	145	
	2040	2400	CULG								
	2104	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:
BLEN = Bleien, 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 NANCAY RADIOHELIOGRAPH

FEBRUARY 1999

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
07/02/99	-1.07	-0.71	III	8H35 E	15H34 D
08/02/99	-1.18	-0.43	V	8H43 E	15H34 D
09/02/99	-1.16	-0.60	II	8H41 E	15H34 D
11/02/99	-0.76	-0.45	I	8H39 E	15H34 D
11/02/99	-0.68	+0.17	I	11H46	15H34 D
13/02/99	-0.05	+0.36	IV	9H54 E	15H34 D
14/02/99	+0.12	+0.54	III	8H43 E	11H30 D
14/02/99	+0.29	+0.43	III	8H43 E	11H30 D
15/02/99	+0.42	+0.53	IV	8H39 E	15H34 D
16/02/99	+0.47	-0.26	IV	8H46 E	15H34 D
16/02/99	+0.62	+0.42	IV	8H46 E	15H34 D
17/02/99	+0.14	+0.53	II	8H49 E	15H34 D
17/02/99	+0.42	-0.16	II	8H49 E	15H34 D
17/02/99	+1.09	-0.26	I	8H49 E	15H34 D
18/02/99	+0.17	+0.51	II	8H35 E	15H34 D
18/02/99	+0.68	-0.22	II	8H35 E	15H34 D
19/02/99	+1.04	+0.05	I	8H45 E	15H34 D
20/02/99	+1.09	-0.37	III	8H43 E	15H34 D
20/02/99	+1.21	-0.48	III	8H43 E	10H50
22/02/99	+0.59	+0.48	I	9H20 E	15H34 D

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

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

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

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANCAY RADIOHELIOGRAPH

FEBRUARY 1999

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
06/02/99	-1.10	-0.70	I	11H30	15H34 D
07/02/99	-1.09	-0.64	III	8H35 E	15H34 D
08/02/99	-1.07	-0.54	IV	8H43 E	15H34 D
09/02/99	-0.99	-0.65	III	8H41 E	15H34 D
10/02/99	-0.78	-0.48	III	8H43 E	15H34 D
11/02/99	-0.59	-0.45	I	8H39 E	15H34 D
11/02/99	-0.57	+0.14	I	10H05	15H34 D
13/02/99	-0.34	-0.23	III	9H54 E	15H34 D
13/02/99	-0.03	+0.33	III	9H54 E	15H34 D
14/02/99	-0.14	-0.14	II	8H43 E	11H28 D
14/02/99	+0.14	+0.36	II	8H43 E	11H28 D
14/02/99	+0.26	+0.33	II	8H43 E	11H28 D
14/02/99	-0.26	+0.37	V	10H50	11H28 D
15/02/99	+0.14	-0.14	III	8H39 E	15H34 D
15/02/99	+0.45	+0.45	III	8H39 E	15H34 D
15/02/99	+0.59	+0.34	III	8H39 E	15H34 D
16/02/99	+0.43	-0.23	III	8H46 E	15H34 D
16/02/99	+0.76	+0.28	II	8H46 E	15H34 D
17/02/99	+0.43	-0.14	IV	8H49 E	15H34 D
18/02/99	+0.73	-0.19	IV	8H35 E	15H34 D
19/02/99	+0.84	-0.23	I	8H45 E	15H34 D
19/02/99	+1.24	+0.31	I	8H45 E	15H34 D
20/02/99	+1.09	- 0.33	III	8H43 E	15H34 D
20/02/99	+1.13	-0.36	III	8H43 E	10H30
22/02/99	+0.59	+0.48	I	9H20 E	14H30
22/02/99	+1.15	-0.42	I	9H20 E	14H30
23/02/99	-0.87	-0.43	I	8H34 E	15H33 D
23/02/99	+1.19	-0.53	II	8H34 E	15H33 D
24/02/99	-0.74	-0.45	I	8H34 E	15H33 D

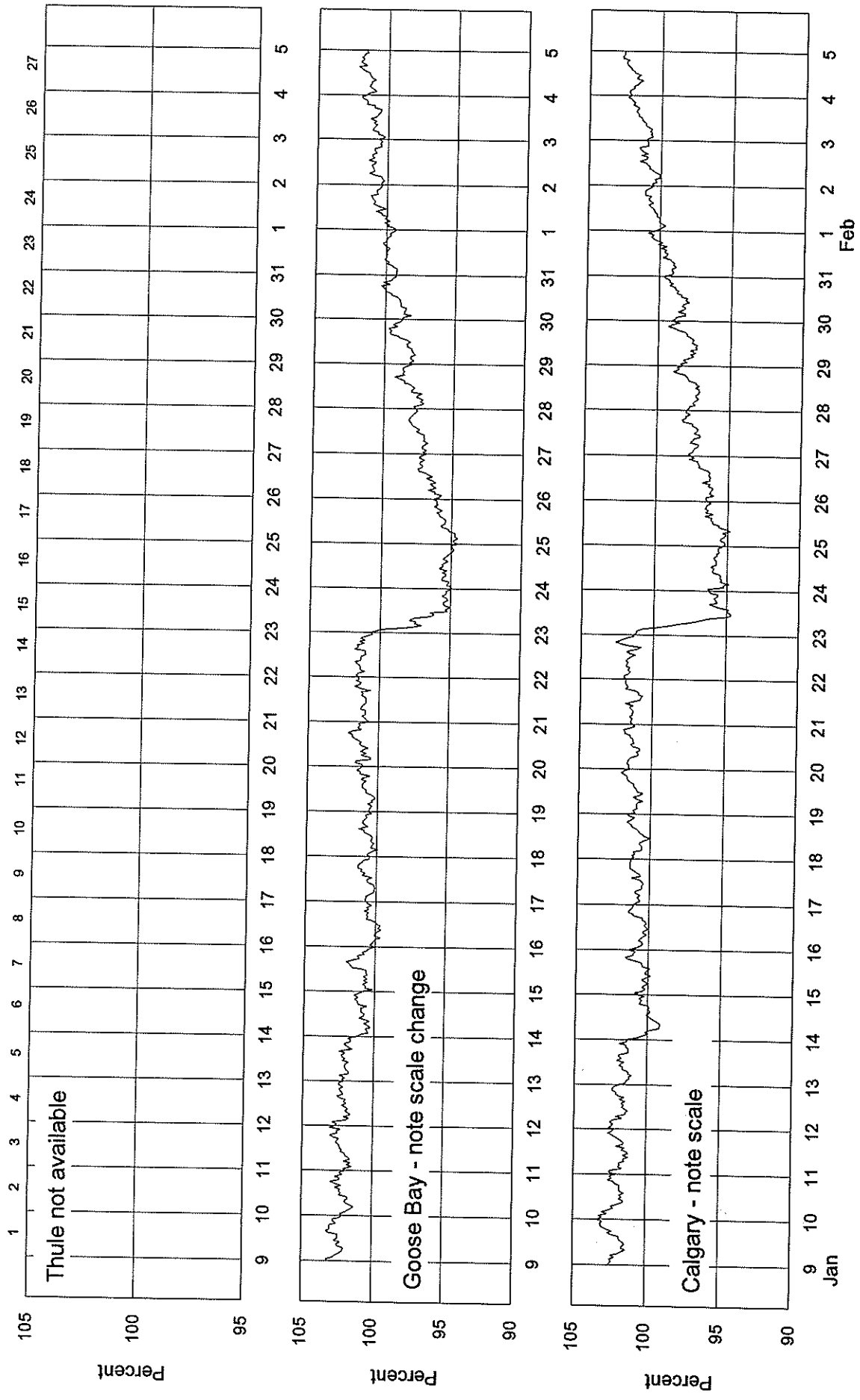
NO DATA: 12, 21, 26, 27 FEBRUARY 1999
OTHERS DAYS: NO DETECTABLE NOISE STORM

COSMIC RAY INDICES
(Neutron Monitor)
FEBRUARY 1999

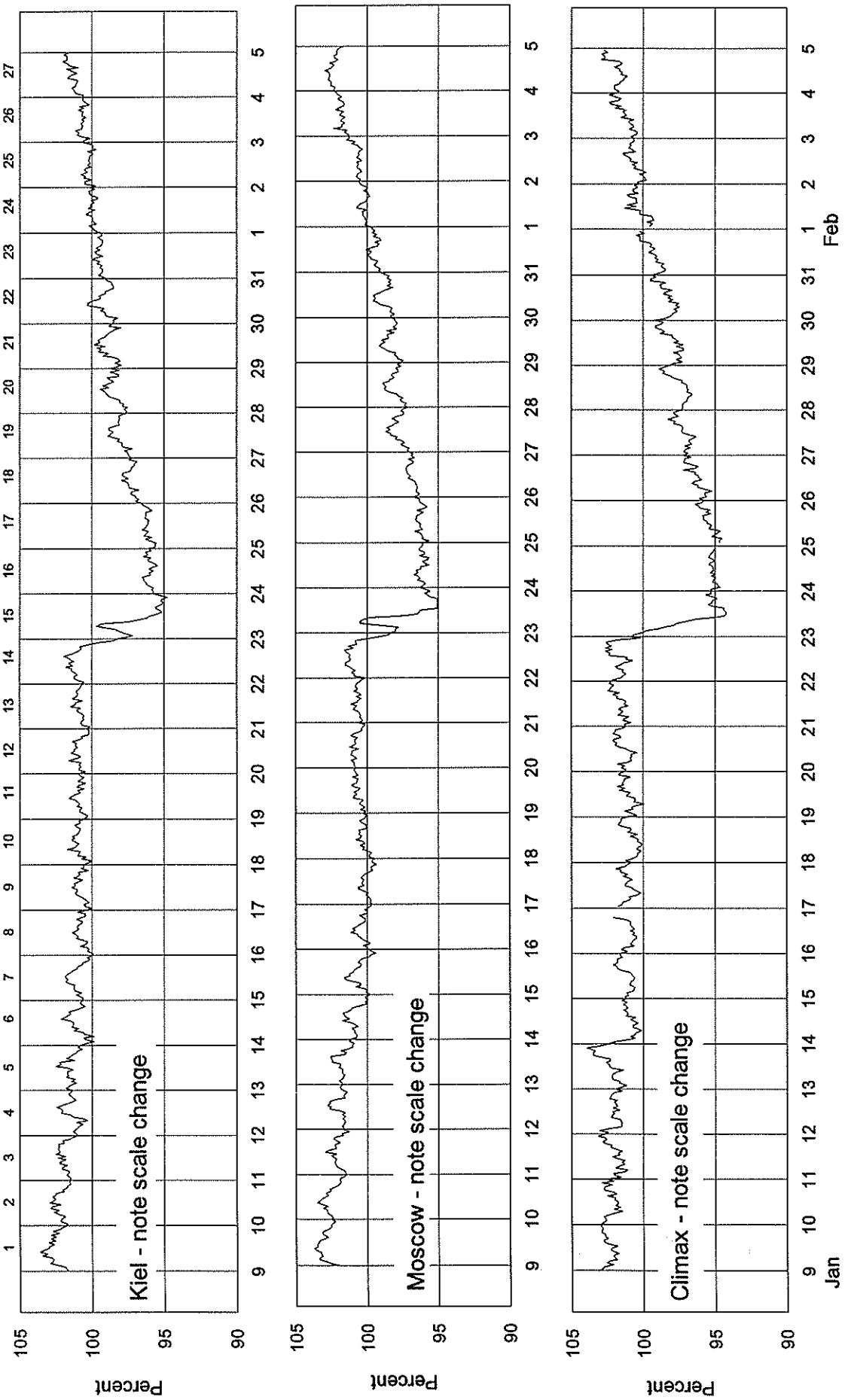
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	7004.5	3817.5	6005.8	8866.9	4048.3	1964.3	3502.5
2	at time of	7033.1	3831.2	6020.9	8912.0	4059.9	1976.5	3512.8
3	publication	7044.5	3852.3	6047.9	9009.9	4088.2	1974.2	3506.5
4		7082.7	3880.8	6090.4	9066.2	4114.8	1971.6	3498.7
5		7084.3	3886.5	6139.5	9036.8	4128.9	1969.4	3512.8
6		7088.9	3882.2	6165.3	9053.4	4129.5	1969.8	3522.1
7		7088.9	3894.3	6202.6	9075.7	4133.8	1972.3	3538.8
8		7124.7	3912.3	6222.0	9110.2	4148.3	1972.5	3542.1
9		7127.2	3918.7	6225.6	9107.6	4151.3	1971.8	3544.2
10		7155.8	3930.8	6215.5	9084.2	4169.6	1970.4	3554.2
11		7130.8	3911.5	6187.9	9022.2	4149.5	1979.4	3552.8
12		6953.5	3823.3	6057.6	8832.0	4043.5	1954.4	3505.9
13		6912.7	3803.3	6018.5	8800.2	4014.2	1942.0	3504.2
14		6938.0	3797.2	6018.0	8802.0	4012.1	1940.2	3500.0
15		6856.8	3762.7 (17)	5937.2	8688.0	3969.8	1947.0	3483.7
16		6851.2	3758.8 (7)	5945.5	8687.5	3955.8	1946.3	3484.9
17		6820.5	3710.0	5930.4	8628.9	3944.2	1948.2	3480.4
18		6552.5	3586.2	5731.7	8391.7	3816.9	1937.6	3422.0
19		6644.4	3616.3	5768.5	8460.7	3855.7	1948.1	3456.0
20		6762.2	3690.2	5853.1	8595.1	3903.1	1957.0	3462.3
21		6835.2	3724.5	5935.7	8699.5	3934.3	1959.1	3472.8
22		6938.8	3775.5	6046.9	8838.1	4003.0	1961.6	3488.2
23		6946.4	3792.3	6040.8	8825.2	4020.0	1965.1	3507.3
24		6954.8	3791.5	6038.8	8852.6	4025.7	1962.4	3510.4
25		6981.0	3807.5	6029.6	8887.0	4044.1	1960.8	3517.1
26		7002.2	3828.0	6042.5	8948.0	4056.8	1963.8	3525.7
27		7057.2	3851.7	6091.2	8997.0	4088.9	1973.7	3530.7
28		7072.0	3857.7	6111.8	9008.6	4097.6	1973.7	3545.2
29								
30								
31								
Mean		6965.9	3810.5	6040.0	8867.4	4039.6	1961.9	3506.4

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.

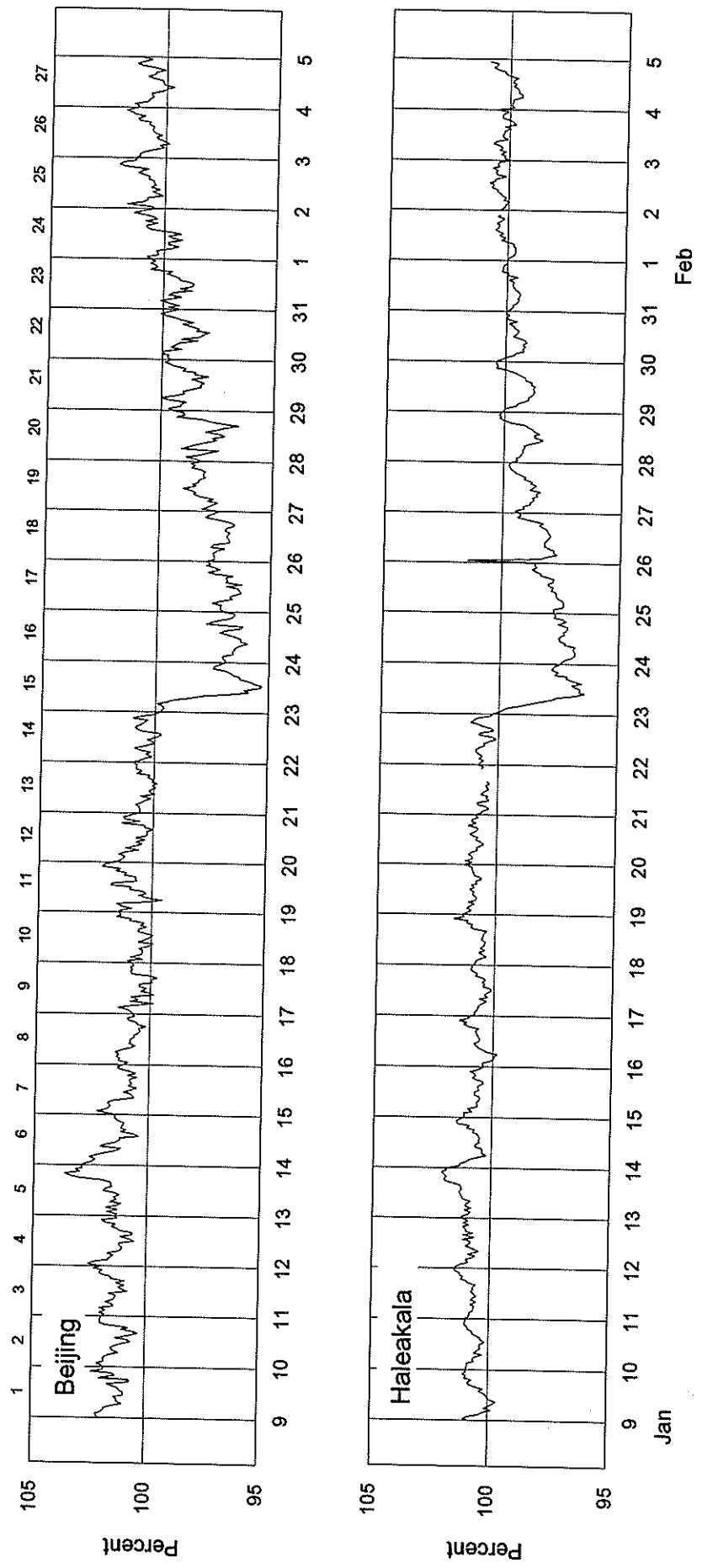
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2259 - Beginning 9 Jan 99



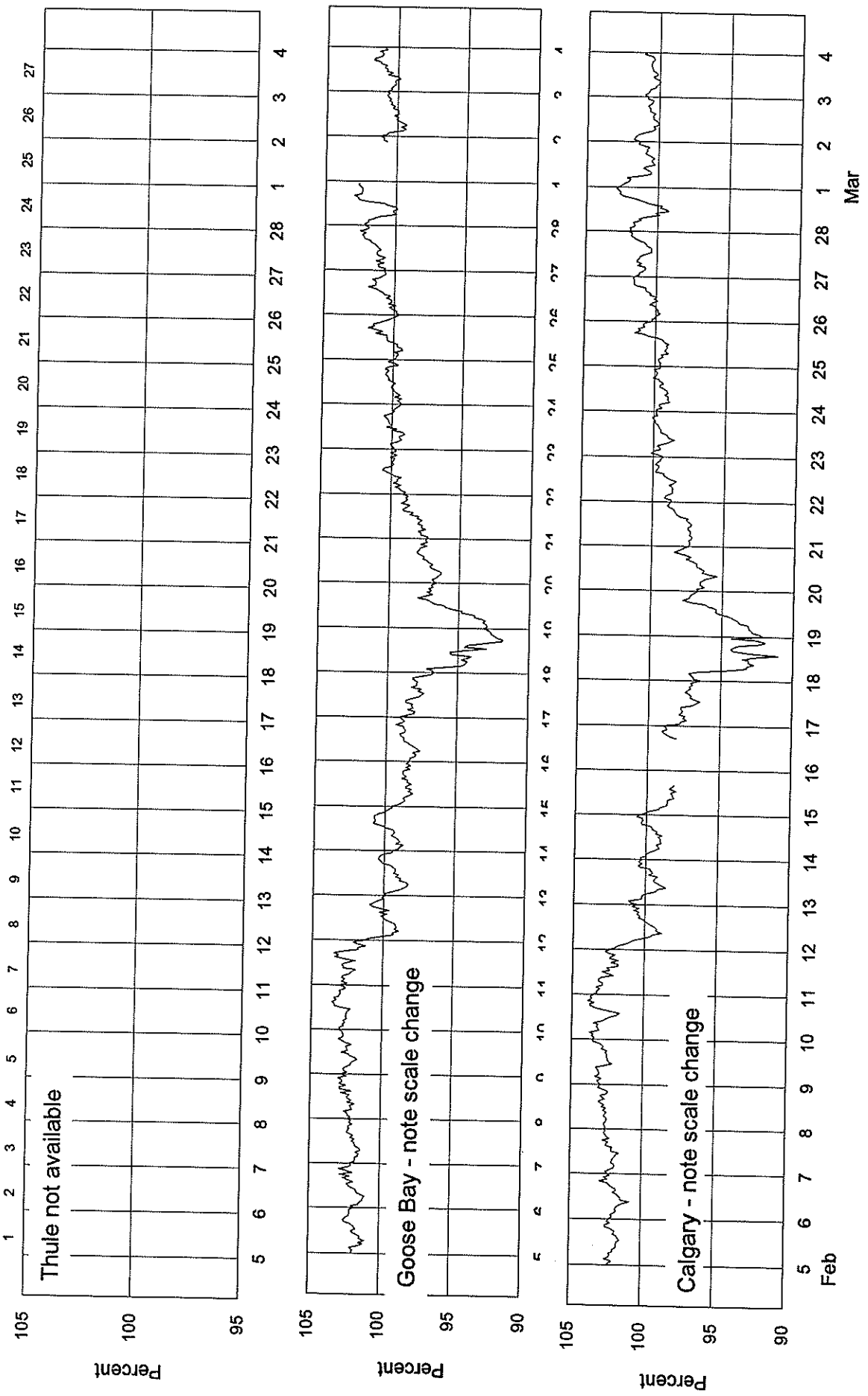
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2259 - Beginning 9 Jan 99



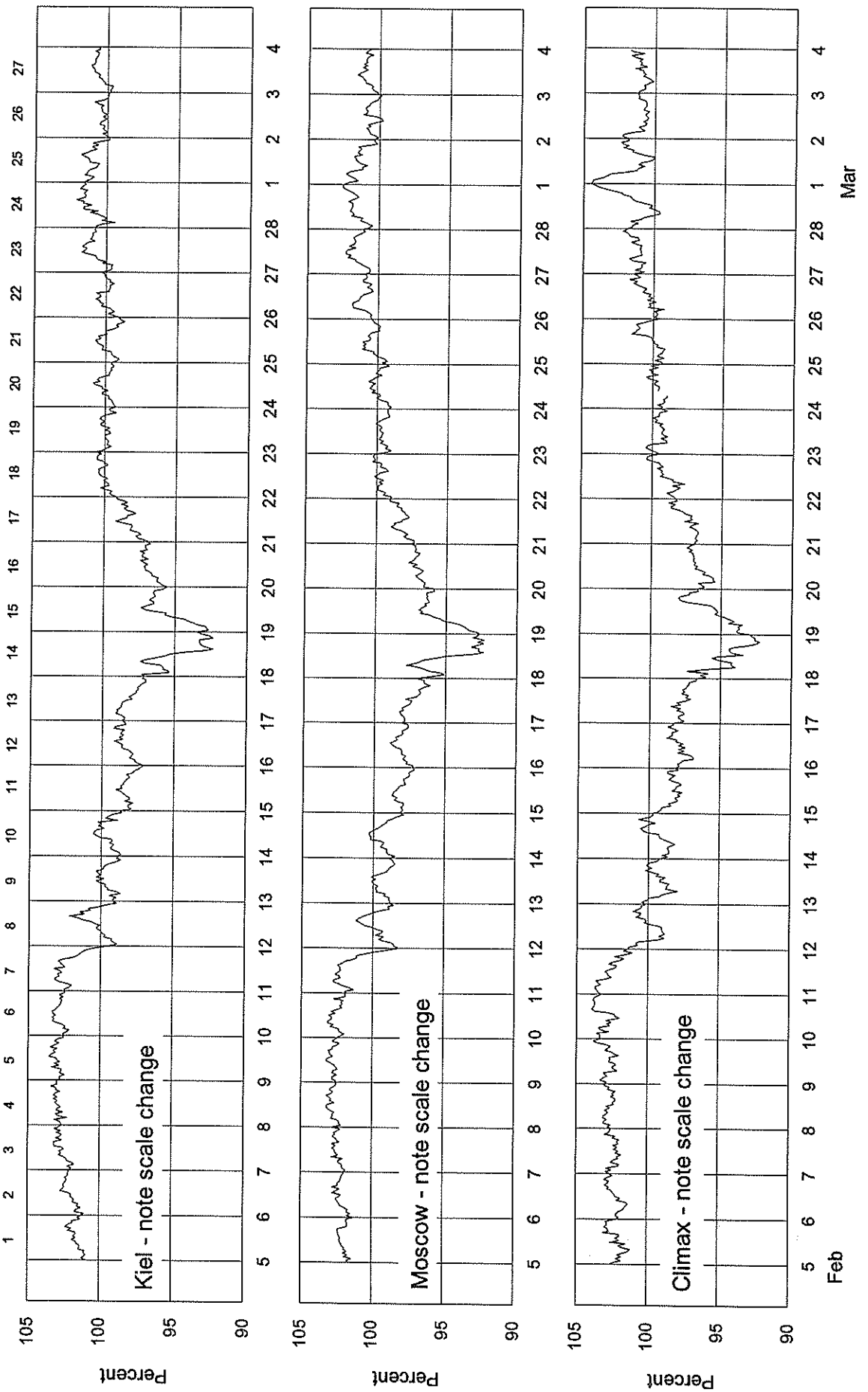
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2259 - Beginning 9 Jan 99



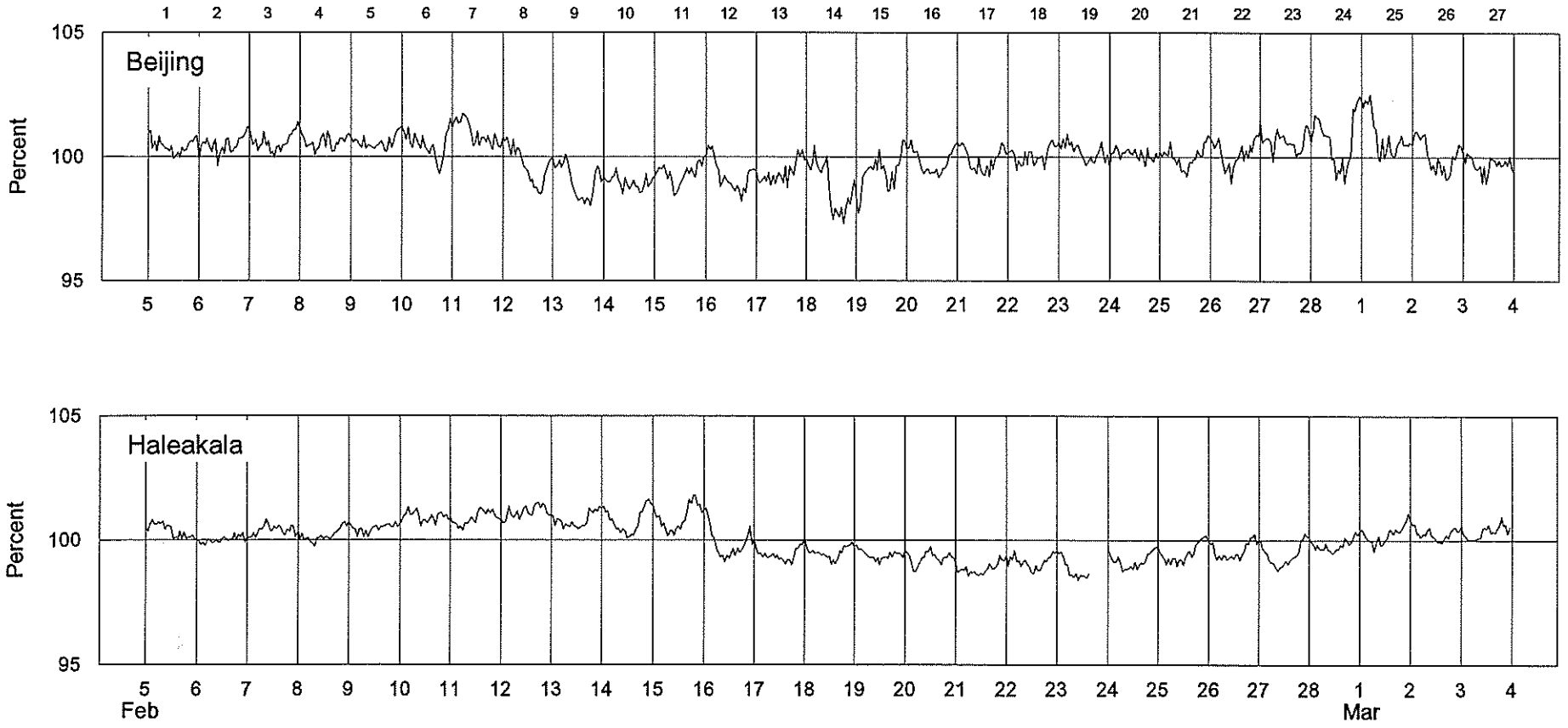
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2260 - Beginning 4 Feb 99



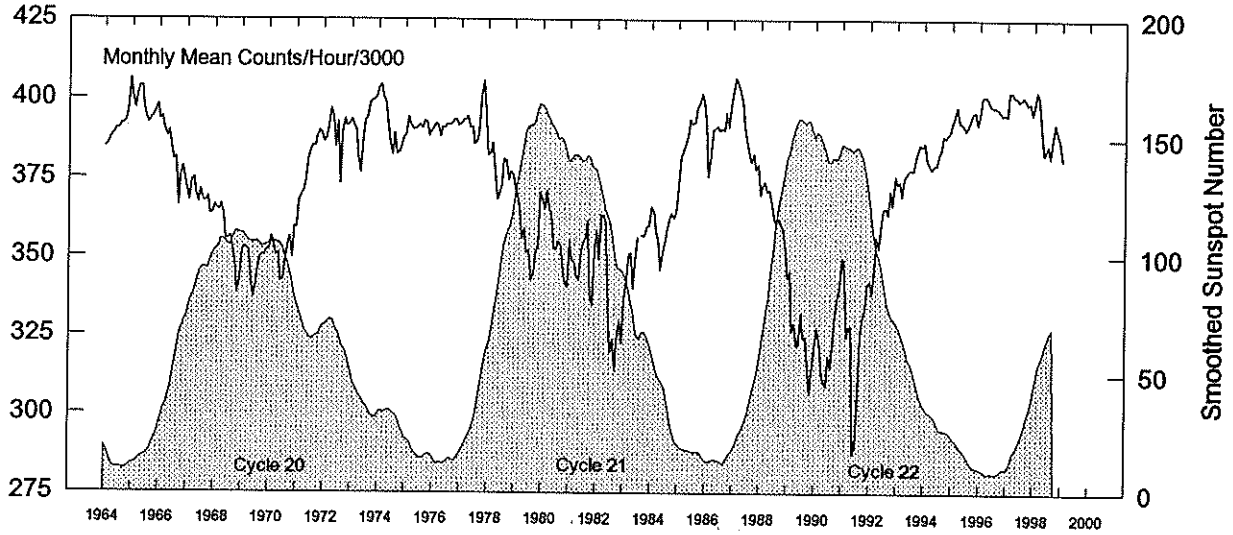
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2260 - Beginning 4 Feb 99



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2260 - Beginning 4 Feb 99



Calgary Neutron Monitor Pressure-Corrected Values
Jan 1964 - Feb 1999



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1964	3847	3852	3872	3883	3892	3905	3905	3921	3920	3926	3966	4064	3913
1965	4006	3968	4007	4040	4040	3967	3935	3923	3938	3942	3960	3980	3976
1966	3935	3943	3906	3881	3899	3844	3807	3814	3663	3758	3785	3750	3832
1967	3710	3678	3741	3750	3697	3671	3713	3679	3675	3691	3638	3639	3690
1968	3663	3653	3647	3665	3632	3561	3556	3567	3529	3482	3386	3420	3563
1969	3515	3531	3529	3520	3417	3370	3408	3464	3500	3507	3506	3524	3483
1970	3523	3565	3548	3505	3512	3424	3426	3477	3543	3564	3497	3596	3515
1971	3593	3678	3693	3712	3737	3813	3832	3853	3851	3883	3899	3893	3786
1972	3865	3875	3924	3969	3942	3847	3926	3731	3895	3935	3912	3920	3895
1973	3935	3919	3903	3819	3768	3875	3926	3944	3986	3995	3997	4008	3923
1974	4036	4043	4005	3988	3906	3861	3822	3890	3827	3831	3850	3881	3912
1975	3883	3943	3914	3905	3904	3910	3918	3907	3929	3927	3884	3897	3910
1976	3908	3923	3915	3881	387	3909	3921	3918	3920	3936	3935	3916	3916
1977	3919	3933	3933	3943	3911	3911	3857	3865	3895	4010	4055	3961	3933
1978	3823	3826	3860	3773	3681	3697	3730	3811	3808	3744	3772	3764	3774
1979	3726	3696	3647	3559	3592	3516	3521	3427	3447	3519	3528	3705	3573
1980	3681	3652	3711	3649	3643	3527	3525	3550	3540	3471	3414	3403	3564
1981	3550	3491	3483	3440	3426	3522	3546	3560	3615	3374	3348	3520	3490
1982	3586	3492	3634	3632	3608	3344	3196	3239	3137	3257	3296	3225	3387
1983	3364	3421	3510	3515	3399	3487	3563	No Data	3571	3569	3597	3599	3509
1984	3661	3646	3586	3551	3460	3515	3551	3593	3623	3641	3623	3652	3592
1985	3723	3821	3834	3858	3888	3936	3921	3929	3971	3987	4017	3997	3907
1986	3923	3755	3814	3905	3906	3915	3902	3907	3902	3958	3912	3974	3898
1987	4025	4068	4047	4028	3993	3914	3866	3822	3802	3827	3779	3796	3914
1988	3698	3729	3739	3709	3714	3682	3621	3608	3624	3603	3590	3520	3653
1989	3436	3454	3263	3290	3216	3222	3321	3224	3246	3164	3063	3152	3254
1990	3227	3272	3232	3129	3099	3089	3188	3147	3237	3317	3375	3401	3226
1991	3496	3489	3244	3279	3280	2873	2896	3078	3253	3311	3330	3412	3245
1992	3425	3382	3463	3566	3528	3593	3655	3655	3636	3711	3665	3758	3586
1993	3730	3741	3693	3753	3765	3775	3780	3775	3815	3836	3859	3852	3781
1994	3864	3807	3798	3779	3793	3793	3822	3841	3885	3878	3891	3896	3837
1995	3929	3945	3919	3929	3927	3917	3902	3919	3940	3956	3963	3920	3931
1996	3960	4008	4012	4010	3993	3983	3976	3976	3970	3960	3953	3955	3980
1997	3947	4023	4024	4014	4007	3998	4001	4010	3999	3985	3990	3955	3996
1998	3982	4025	4013	3910	3827	3839	3857	3817	3876	3925	3890	3875	3903
1999	3816	3811											3814

Multiply table entries by 300 to obtain hourly counting rate. Calgary, Canada: N51 W114, Alt=1128m, Cutoff Rigidity=1.09GV.

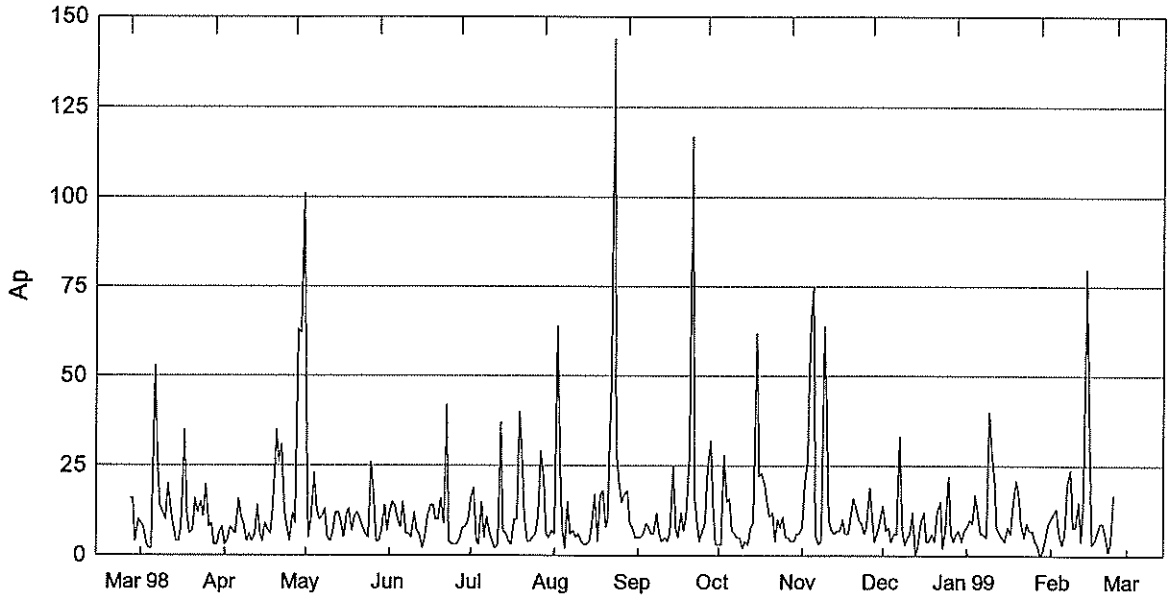
Geomagnetic Activity Indices

February 1999

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	aa Provisional Am	N	S	M	
1	Q1	0	0	0	0+	0	0	0	0	0+	0	0.0	0o	0+	0o	0+	0+	0o	0+	0+	2	3	2	2	3 CC
2	Q2	0	0+	0	0	0	0	0+	1	2-	1	0.0	0+	0+	0o	0o	0o	0o	1-	1o	2	3	4	3	4 CC
3	Q9	1+	0+	1	1	2	2-	2-	2+	11+	5	0.2	1o	1-	1+	1+	2+	2o	2+	2+	12	11	11	8	15 CC
4		1	2	1	2	3-	3	3	2	17-	9	0.5	1o	1+	1+	2+	2+	3-	3+	2+	17	20	19	12	27
5		3-	2	1	2	3-	3-	3	2	18	10	0.5	3-	2-	1+	2+	3o	3o	3+	2-	20	21	22	14	29
6		2-	3	3-	3-	2+	4-	3	2	21	12	0.7	2-	3-	3-	3-	3-	4-	3o	2+	25	25	23	17	31
7		2	3-	3	3+	3-	3+	2-	3	22-	13	0.7	2-	2o	3-	3+	3-	3+	2-	3-	23	23	20	21	22
8		2	2	1+	2-	2	1	2-	1-	12+	6	0.3	2-	1+	2-	2-	2-	2-	2-	1o	11	12	8	11	9 CK
9	Q4	2-	1+	1-	0	0+	1-	1-	1-	6	3	0.1	1+	1+	0+	0+	1-	1o	1+	1-	6	6	7	6	7 CC
10	Q10	1	1	2	0+	1-	2-	2+	2+	11+	6	0.2	1o	1o	2-	0+	1o	2+	3-	2+	11	15	10	10	15 C
11	D4	4-	3-	3	3	4	4	4	3	27+	20	1.0	3+	2o	3o	3o	4o	4-	4o	3+	39	39	40	30	49
12	D3	4-	4-	4+	4	3+	4+	4	2+	30-	24	1.1	3+	3o	4o	4-	3o	4o	4-	2+	40	50	45	51	44
13		2	3-	3-	2	1	1	2	2	15+	8	0.4	2-	2+	2+	3-	1+	1+	2o	2-	14	16	11	17	10 C
14		1-	0+	2-	2	3	3	2-	2	14+	8	0.4	1+	1-	2-	3-	3o	3+	2o	3-	19	15	14	8	22
15		4	4-	3-	3	3	2+	3-	2	23+	15	0.8	3+	3o	3-	3-	3-	3-	3-	2o	25	29	23	29	23
16	Q6	2	1-	1	2-	1	0+	0+	1-	8-	4	0.1	2o	1+	1+	2-	1+	0+	1-	1o	9	8	11	13	7 C
17	D5*	1-	3-	4-	5	4	2	2-	2+	22	17	0.9	1+	2o	3o	4+	4o	3-	2+	2+	29	25	27	29	24
18	D1	5-	6	7-	7-	7-	5+	6	5	47	80	1.8	4+	6-	6-	7-	6o	5o	6-	5-	125	99	99	100	98
19	D2	6-	5+	5	4+	5+	4	4-	3-	36	40	1.4	4+	4+	4+	5o	5o	4-	3o	3o	59	54	56	63	47
20	Q5	0+	0	0+	0	1-	1	2+	1+	6	3	0.1	0+	1-	0+	0o	1-	1+	2+	2-	7	10	6	4	12 C
21	Q8	0	1-	0+	0+	0+	1	1+	3-	7-	4	0.1	0+	1-	0o	0+	0+	2-	2o	3-	8	7	10	6	11 CC
22		2+	1+	2	1+	1-	0+	2	2+	12+	6	0.3	2o	2-	3-	2-	1o	1-	2o	2+	13	14	14	16	12
23		2-	2+	3	2-	2+	3+	1+	0+	16	9	0.5	2-	2+	3o	2+	3-	3o	1+	1o	18	20	20	18	22
24		1-	2-	2	3	3+	3	2	1	17-	9	0.5	1-	1+	2+	3o	3+	3o	2-	2-	19	18	23	18	23
25		1-	4-	1	2-	1-	2+	1	0	11	6	0.3	1+	3+	1o	2+	1+	3-	1+	0+	14	11	11	14	8 KK
26	Q3	0	0+	0	0	1	1-	0	0	2	1	0.0	0o	0+	1-	0o	1+	1o	0o	0+	3	4	5	4	5 CC
27	Q7	1	0+	2-	2-	1	1-	1	1	8+	4	0.1	1o	1-	2+	2-	1+	1+	1+	1o	9	9	9	11	8 CC
28		0	1-	2	1	3-	4	4	5+	20-	17	0.9	0o	1o	2+	2-	3o	4o	4o	5o	34	35	38	10	63
Mean											12	0.50									21.9	21.6	21.1		21.3

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	0o	0o	0o	0o	0+	0o	0o	0o	1	0o	1-	0+	1-	0+	0o	1-	0+	3	114.5	29	32	62	
2	0o	0+	0o	0o	0o	0o	0+	1-	2	1-	0+	0o	0+	0o	0o	1o	1+	3	107.7	25	23	54	
3	1o	0+	1+	2o	2+	2-	2-	2o	12	1o	1o	1+	1o	2+	2o	2+	2+	13	105.8	16	21	52	
4	1-	1+	1o	2-	2+	3o	3o	2o	16	1+	1+	2-	2+	2+	3-	3+	2+	18	104.3	15	19	51	
5	2+	2-	1o	2+	3-	3o	3o	2-	19	3-	2-	2-	2o	3o	3o	3+	2-	22	100.9	12	14	47	
6	1+	3o	3o	3o	3o	4-	3o	2o	27	2-	2o	2o	2+	3-	4-	3+	3-	23	96.6	19	20	42	
7	1+	2o	3-	4-	3o	4-	2-	2+	24	2-	2-	3-	3o	3-	3o	2o	3-	22	106.5	28	28	53	
8	1+	1+	1+	2-	2o	2-	1+	1o	10	2o	2-	2o	2o	2-	2-	2o	1+	13	121.1	36	49	69	
9	1o	1o	0o	0o	1-	1-	1+	0+	4	2-	2-	1-	1-	1-	1o	1+	1o	8	125.9	41	45	74	
10	1-	0+	2-	0o	1o	2+	2+	2-	10	1o	1+	2o	1-	1-	2o	3o	3-	13	148.4	60	66	98	
11	3+	2+	3-	3-	4+	4o	4o	3+	39	3+	2o	3o	4-	4-	4-	4+	3+	39	159.3	78	80	110	
12	3+	3-	4-	4o	3o	5-	4o	2+	41	4-	3+	4o	4-	3o	3+	4-	3-	40	183.6	115	114	136	
13	1+	2o	3-	3-	2-	1o	2-	2-	14	2-	3-	2o	2+	1o	1+	2+	2o	15	193.4	134	130	147	
14	1o	0+	2o	3o	3o	3+	2-	2+	20	1+	1+	1+	2+	3-	3+	2+	3-	19	199.6	138	144	154	
15	3+	3o	2+	3-	3o	3-	3-	2o	25	3+	3o	3-	3-	3-	3-	3-	2-	26	185.5	144	133	138	
16	2-	1-	1o	2-	1o	0+	0o	1o	7	2o	2-	2-	2o	1+	0+	1+	1+	11	187.3	133	137	140	
17	1-	2o	3o	5-	4o	3o	2-	2o	30	2-	2o	3o	4o	4-	3-	3-	2+	28	185.3	122	127	138	
18	4o	6-	6-	7-	6o	5-	5+	4+	116	4+	5+	6-	7-	6+	5+	6-	5-	133	164.2	105	100	115	
19	5-	4+	5-	5o	5-	4-	3+	3-	60	4-	4+	4o	5-	5o	4-	3-	3o	58	160.5	85	87	111	
20	0o	0+	0o	0o	1o	2-	2+	2-	7	1o	1o	1-	0o	0+	1+	2+	2-	7	153.6	86	82	104	
21	0o	0+	0o	0o	0+	2-	1+	3-	7	1-	1-	0o	0+	0+	2o	2+	3-	9	144.0	74	78	94	
22	2o	1+	2+	1+	1o	1-	2-	2+	12	2o	2-	3o	2o	1-	1-	2o	2o	13	127.0	47	48	75	
23	1+	2+	3-	3-	3-	3o	2-	1-	18	2-	3-	3o	2+	2+	3o	1+	1+	19	124.3	42	38	72	
24	1-	1+	3-	3o	3+	3o	2-	1+	19	1o	1+	2o	3o	3o	3o	2-	2+	19	117.3	35	38	65	
25	1-	3+	1-	3-	1+	3-	1+	0+	13	2-	3+	1+	2-	1o	3-	1+	0+	14	117.1	44	45	64	
26	0o	0o	0+	0o	1+	1o	0o	0+	2	0o	1-	1o	0+	1+	1o	0o	0+	4	113.4	51	45	60	
27	1-	0+	2+	2-	1+	1+	1+	1+	9	1+	1o	2o	2-	1+	1o	1+	1o	9	112.9	59	58	60	
28	0o	1-	2o	2+	3o	4+	4o	5-	33	0+	1+	2+	1+	3o	4o	4o	5+	37	120.7	77	73	68	
Mean									21.3									22.8	138.6	66.1	67.0	87.7	

Daily Average Indices Ap
Mar 1998 - Feb 1999

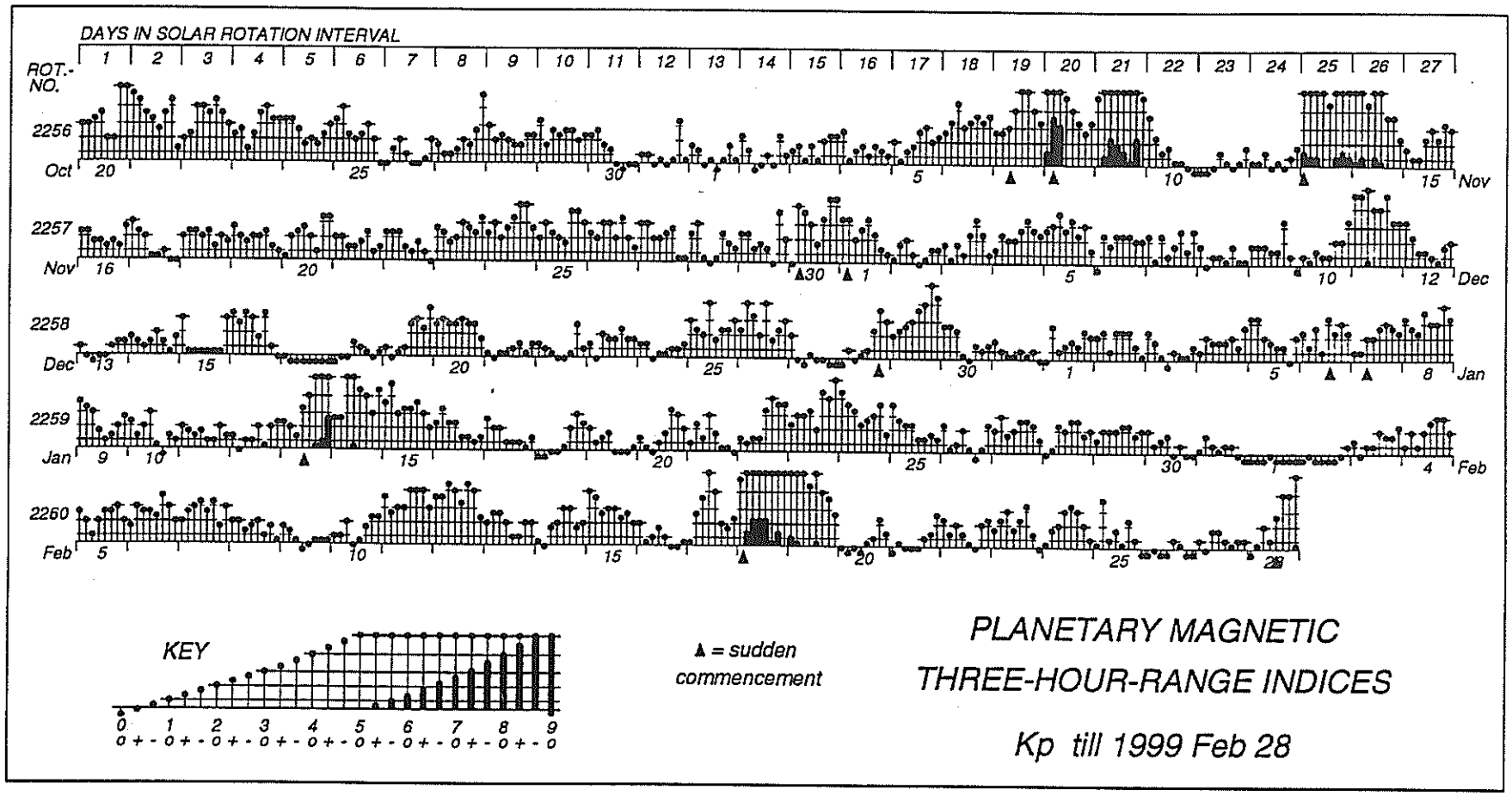


Day	Mar 98	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb
1	16	3	9	4	5	21	18	24	4	11	6	0
2	16	3	63	7	8	6	9	32	4	4	7	1
3	4	6	62	14	8	5	8	14	6	7	4	5
4	10	8	101	7	10	7	5	3	6	10	7	9
5	9	3	42	12	16	6	5	3	8	14	8	10
6	8	4	5	15	19	64	5	3	20	7	10	12
7	3	8	10	14	4	24	6	28	26	8	9	13
8	2	7	23	10	3	7	9	15	66	4	17	6
9	2	6	13	8	15	2	8	16	75	6	11	3
10	53	16	10	15	5	15	6	7	6	6	6	6
11	28	11	11	6	11	6	6	6	3	33	6	20
12	14	9	13	6	6	7	12	5	4	7	5	24
13	12	4	5	5	4	5	6	5	64	3	40	8
14	10	6	4	12	2	6	4	2	41	5	29	8
15	20	4	7	7	3	4	5	4	10	6	20	15
16	12	6	12	6	37	3	4	3	7	12	8	4
17	8	14	12	2	7	3	6	8	6	0	6	17
18	4	6	9	5	6	4	25	9	7	3	5	80
19	4	4	5	11	4	9	8	62	7	9	4	40
20	8	9	12	14	3	17	5	22	10	12	8	3
21	35	7	13	14	10	4	12	23	6	4	6	4
22	12	6	7	10	10	17	7	20	6	4	14	6
23	6	15	11	10	40	18	11	15	11	6	21	9
24	7	35	12	16	28	8	28	11	16	4	17	9
25	16	26	10	9	11	10	117	12	13	12	9	6
26	12	31	8	42	4	49	17	4	10	15	5	1
27	15	12	6	4	4	144	10	10	9	2	9	4
28	11	8	5	3	5	30	4	8	6	7	7	17
29	20	4	26	3	6	20	7	11	8	22	7	
30	8	12	18	3	11	15	9	5	19	6	4	
31	9		4	4	29	17		5		4	3	
Mean	13	10	18	10	11	18	13	13	16	8	10	12

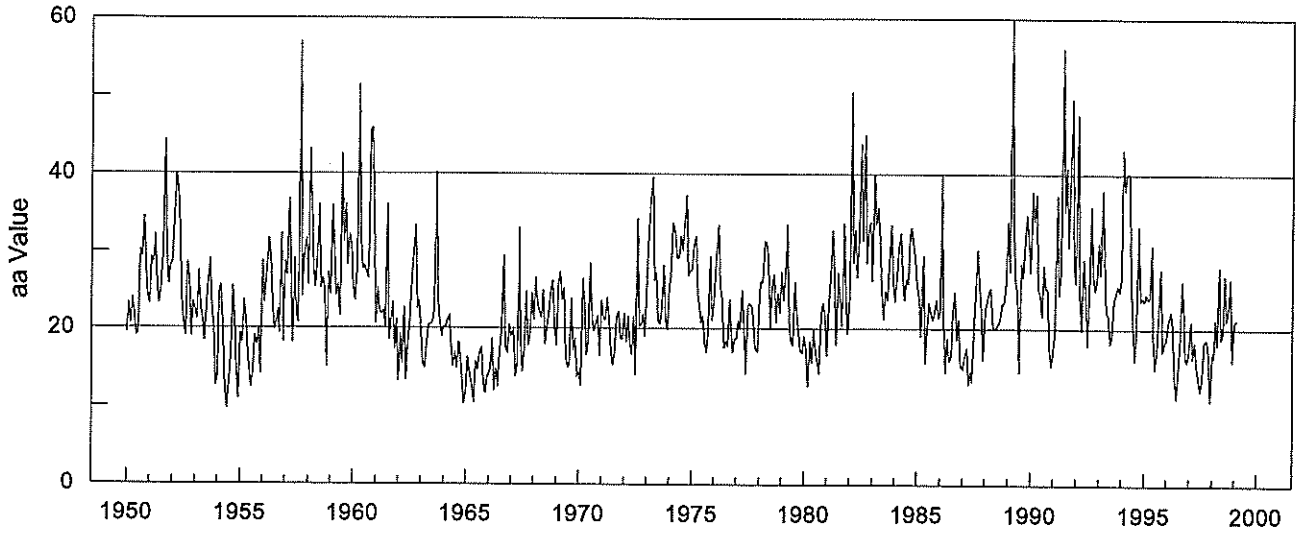
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

GeoForschungsZentraum Potsdam

Kp through February 28, 1999



Monthly Mean aa Index Jan 1950 - Feb 1999

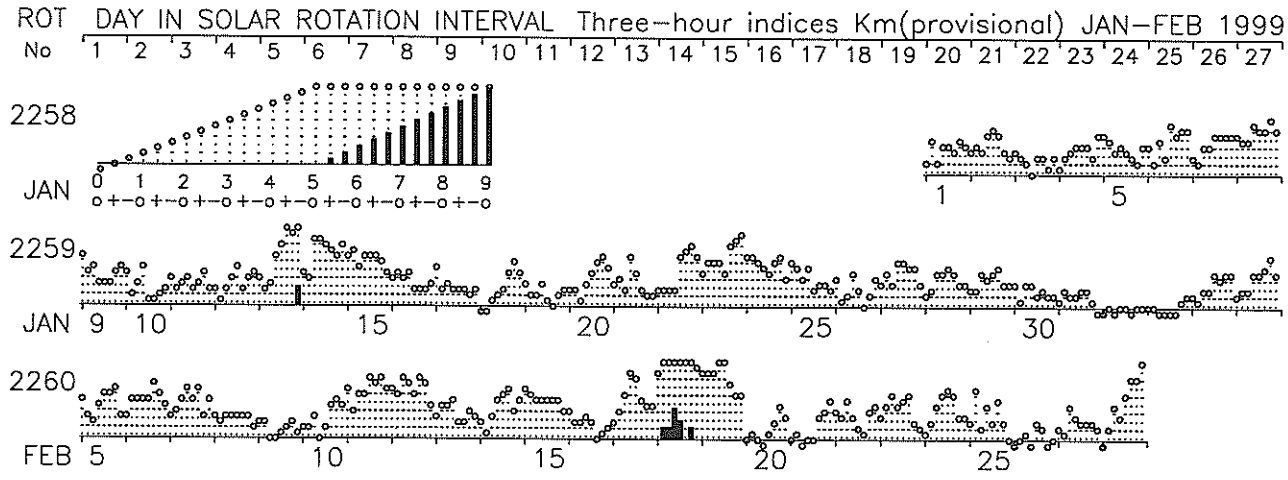


Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9	14.4	28.4	26.7	31.4	34.7	31.4	31.0
1990	27.4	37.8	33.9	37.4	25.1	24.6	21.6	28.2	25.1	25.1	17.4	15.2	26.6
1991	17.2	20.1	37.3	24.3	27.3	56.2	35.2	40.8	30.7	44.1	49.7	28.0	34.2
1992	25.9	47.7	24.5	19.8	29.1	24.8	17.9	24.1	35.8	27.0	25.0	26.1	27.3
1993	31.2	27.1	37.9	29.2	22.1	21.8	18.2	19.2	23.8	24.6	25.5	24.8	25.5
1994	26.5	43.2	37.9	40.2	40.2	27.2	20.6	16.0	20.2	33.3	23.6	24.1	29.4
1995	23.6	24.5	23.8	24.2	30.9	19.1	14.9	17.0	22.2	27.9	17.2	18.2	22.0
1996	18.8	20.8	22.3	20.5	14.0	11.1	14.7	18.8	26.2	23.5	16.3	15.9	18.6
1997	17.4	21.0	16.3	18.4	15.1	13.7	12.1	13.7	18.4	18.7	18.0	10.8	16.1
1998	16.8	16.4	21.2	18.0	28.1	18.8	19.3	27.0	21.1	22.4	26.5	15.9	21.0
1999	20.8	21.3											21.1

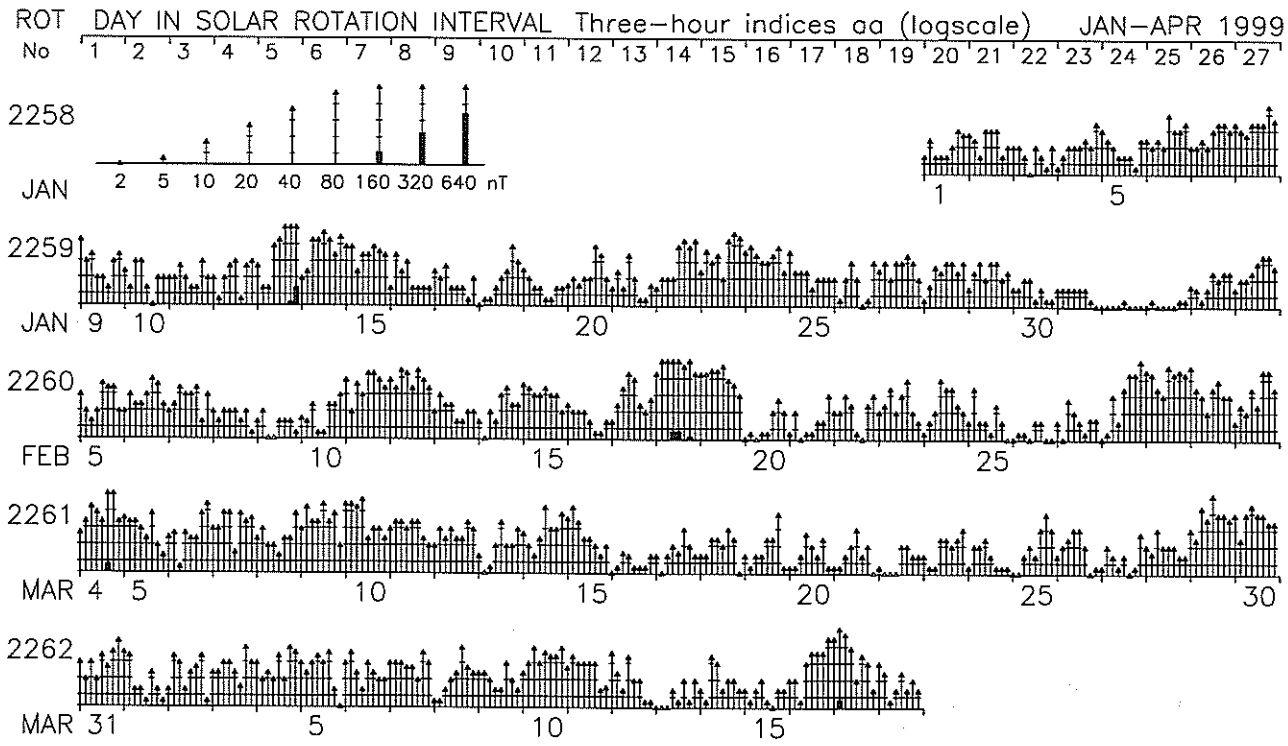
PLANETARY GEOMAGNETIC ACTIVITY

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

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



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



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

WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

FEBRUARY 1999

Unit=nT, Time=number of the hour in UT day

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	1	3	5	1	1	3	0	-2	-1	-1	2	3	4	4	2	0	-1	-4	-2	1	2	2	6
2	9	9	6	5	4	4	7	10	13	13	11	10	10	12	13	12	11	12	11	13	12	11	11	9
3	10	11	17	18	16	21	28	28	22	19	19	18	15	9	2	-1	-6	-6	-6	-8	-5	-5	-3	-4
4	-2	0	2	-1	-5	-3	-1	0	9	10	11	8	10	11	6	-2	4	-1	-15	-26	-32	-20	-15	-17
5	-13	-12	-9	-5	-7	-7	-7	-12	-13	-19	-21	-21	-19	-10	-10	-13	-18	-30	-37	-26	-14	-11	-11	-10
6	-4	-2	0	-6	-8	-11	-1	-1	-5	-8	-10	-9	-10	-19	-25	-20	-35	-34	-30	-23	-17	-16	-16	-16
7	-17	-15	-13	-13	-14	-14	-12	-16	-15	-12	-17	-10	-11	-20	-21	-19	-12	-16	-22	-20	-16	-14	-14	-13
8	-12	-9	-8	-10	-13	-13	-10	-10	-6	-8	-14	-11	-9	-10	-10	-9	-12	-12	-11	-9	-3	-1	2	1
9	-2	-5	-2	-1	-1	-4	-5	-1	-1	-2	0	1	3	4	4	1	-2	-2	-4	-2	-4	-6	-8	-9
10	-7	-6	-7	-8	-9	-10	-7	-9	-5	0	4	7	7	7	5	6	8	4	-2	-2	-3	-10	-13	-12
11	-11	-10	-8	-5	-3	-8	-11	-16	-15	-5	0	3	0	-2	-2	0	2	6	11	4	-15	-1	12	12
12	10	5	5	-2	-6	-9	-7	-17	-31	-25	-22	-19	-20	-23	-27	-28	-27	-24	-29	-27	-24	-20	-19	-15
13	-12	-9	-7	-5	-6	-5	-8	-10	-12	-13	-11	-10	-8	-7	-8	-8	-9	-9	-10	-8	-5	-10	-8	-5
14	0	3	5	8	6	4	3	-1	2	-3	-11	-14	-18	-20	-22	-22	-17	-14	-13	-10	-9	-5	-4	0
15	-1	-4	-1	3	-5	-6	-6	-7	-2	-3	-7	-7	-5	0	-4	-3	-3	-6	-7	-6	-3	-5	-6	-6
16	-4	-4	0	2	0	1	1	0	-1	-3	-8	-7	-5	-1	-1	-1	-2	-2	-3	-1	0	2	6	8
17	10	8	10	6	2	2	2	12	7	-15	-33	-27	-37	-38	-33	-29	-29	-28	-31	-31	-28	-29	-29	-27
18	-25	-22	-9	10	-37	-51	-54	-74	-109	-130	-132	-108	-102	-106	-134	-112	-119	-122	-109	-100	-100	-90	-100	-93
19	-89	-99	-88	-92	-90	-90	-92	-80	-84	-86	-75	-83	-79	-80	-80	-64	-59	-62	-61	-56	-51	-50	-52	-55
20	-54	-52	-51	-50	-48	-44	-43	-44	-42	-39	-37	-36	-35	-36	-35	-35	-36	-33	-31	-32	-34	-34	-34	-32
21	-32	-32	-31	-30	-31	-28	-25	-25	-26	-26	-26	-23	-19	-14	-12	-13	-17	-16	-17	-19	-18	-17	-13	3
22	-1	-1	-4	-3	1	0	6	-4	-3	-3	-7	-8	-8	-6	-4	-6	-7	-7	-10	-11	-16	-24	-30	-30
23	-27	-23	-20	-19	-28	-29	-19	-18	-18	-23	-18	-16	-17	-15	-12	-16	-18	-15	-13	-12	-9	-9	-10	-13
24	-14	-14	-9	-6	-3	1	3	-1	-4	0	-2	-12	-23	-25	-17	-21	-29	-27	-21	-15	-9	-11	-15	-14
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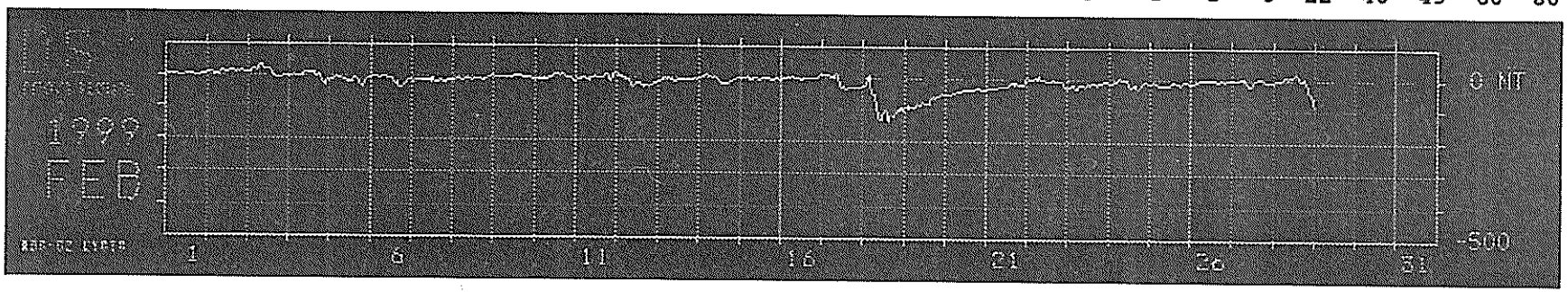
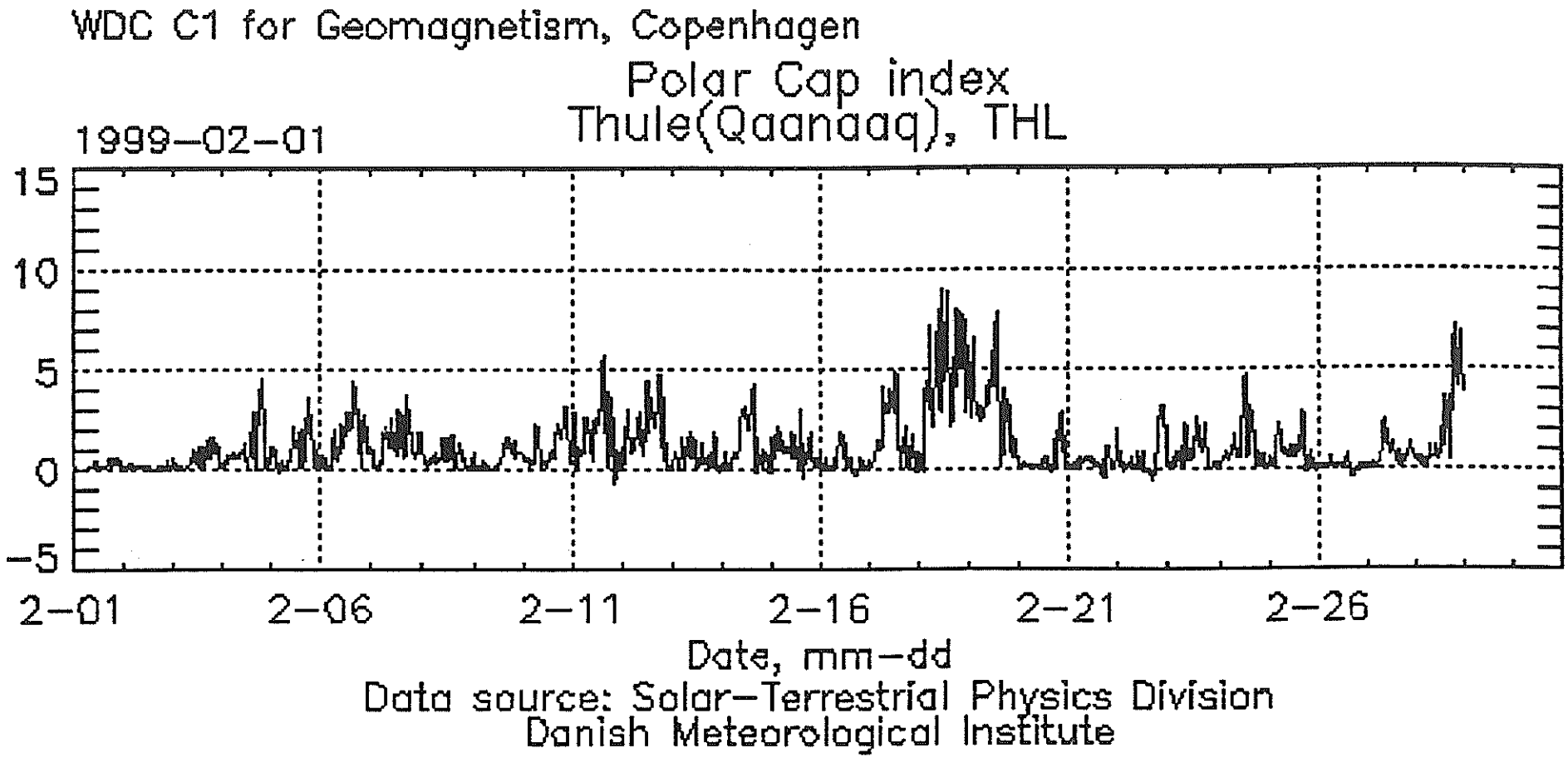
26	-13	-12	-9	-8	-5	-2	-3	-3	-3	-4	-4	-4	-4	-4	-6	-7	-5	-5	-7	-5	-4	-3	-3	-4
27	-4	-1	-2	-2	1	4	2	-6	-12	-21	-19	-13	-5	0	5	5	1	-2	-6	-6	-6	-7	-7	-8
28	-5	-4	-3	-3	-2	2	9	10	5	7	7	13	20	12	6	-4	-3	3	-9	-22	-40	-49	-60	-80




WDC C1 for Geomagnetism, Copenhagen
Polar Cap index
Thule(Qaanaaq), THL
1999-02-01
15
10
5
0
-5
2-01
2-06
2-11
2-16
2-21
2-26
Date, mm-dd
Data source: Solar-Terrestrial Physics Division
Danish Meteorological Institute

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

FEBRUARY 1999

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	Ranges K	D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
UJJ	13.6N	04	1100	..	..	..	..		-	3	67	14	07	18
NGP	11.3N	04	1100	..	..	..	..		-	2	99	20	07	18
ABG	09.4N	04	1100	..	..	..	..	04(7)05(6,7)06(5,6,7)	4	2	82	25	07	18
PND	02.0N	04	1100	..	..	..	..		-	2	81	42	07	18
TRD	01.1S	04	1100	..	..	..	..		-	2	119	62	07	18
UJJ	13.6N	10	2100	..	..	..	..		-	4	75	13	12	22
NGP	11.3N	10	2100	..	..	..	..		-	4	97	17	12	22
ABG	09.4N	10	2100	..	..	..	..	11(5,6,7,8) 12(2,3)	4	4	87	19	12	22
HYB	07.6N	10	1500	..	..	..	..	11(6,7) 12(3,6,7)	4	3	91	18	12	22
PND	02.0N	10	2100	..	..	..	..		-	4	94	66	12	22
TRD	01.1S	10	2100	..	..	..	..		-	4	126	79	12	22
KRC	16.4N	11	1415	..	..	..	..	11(7) 12(3)	5	7	85	30	13	06
ETT	00.7S	11	0300	..	..	..	..		-	--	120	37	12	22
HER	33.6S	11	00--	..	..	..	..	11(7)	5	29	86	90	12	22
ETT	00.7S	14	0100	..	..	..	..		-	--	161	58	15	22
KRC	16.4N	16	2211	..	..	..	..	17(3,4,5)	5	3	149	48	18	02
BJI	28.8N	17	0709	SC	0.9	13	0	17(4)	5	5	101	16	17	22
UJJ	13.6N	17	0707	SC	--	17	- 3		-	2	142	16	17	22
NGP	11.3N	17	0707	SC	0.2	14	- 3		-	3	163	13	17	22
ABG	09.4N	17	0707	SC	- 0.2	13	- 2	17(5) 18 (1,3,8)	5	2	158	17	17	22
HYB	07.6N	17	0708	SC	0	14	- 1		-	--	--	--	--	--
PND	02.0N	17	0707	SC	- 0.1	17	11		-	3	160	46	17	22
ETT	00.7S	17	0708	SC	0.2	25	18		-	--	--	--	--	--
TRD	01.1S	17	0707	SC	--	42	- 38		-	2	207	115	17	22
BJI	28.8N	18	0245	SC	0.8	32	1	18(3)	7	16	275	52	19	24
KRC	16.4N	18	0204	SC	- 3	51	25	18(2,3,4,5,7)	6	8	223	81	20	07
UJJ	13.6N	18	0246	SC	- 1.3	46	- 7		-	6	232	28	19	20
NGP	11.3N	18	0246	SC	- 0.6	35	5		-	5	269	18	19	20
ABG	09.4N	18	0246	SC	- 1.3	31	- 14	18(4,5,7)	6	7	259	33	19	20
HYB	07.6N	18	0247	SC	- 1.1	33	- 3	19(4)	7	7	286	22	19	23
PND	02.0N	18	0246	SC	- 0.9	52	41		-	6	85	107	19	20
ETT	00.7S	18	0248	SC	- 0.3	61	31		-	--	334	106	19	24
TRD	01.1S	18	0246	SC	- 0.8	51	- 48		-	6	279	172	19	20
HER	33.6S	18	0246	SC	5 *	36	31	18(4,5)	6	36	184	134	19	19
HYB	07.6N	21	2240	SC	- 0.4	18	- 1		-	--	--	--	--	--
ETT	00.7S	21	2241	SC	- 0.4	15	12		-	--	129	37	23	19
HYB	07.6N	28	0549	SC	0	9	- 1	28(4,7,8) 01(5,6,8)	5	4	196	26	02	22
ETT	00.7S	28	0548	SC	0	12	7		-	--	--	--	--	--

Stations:

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

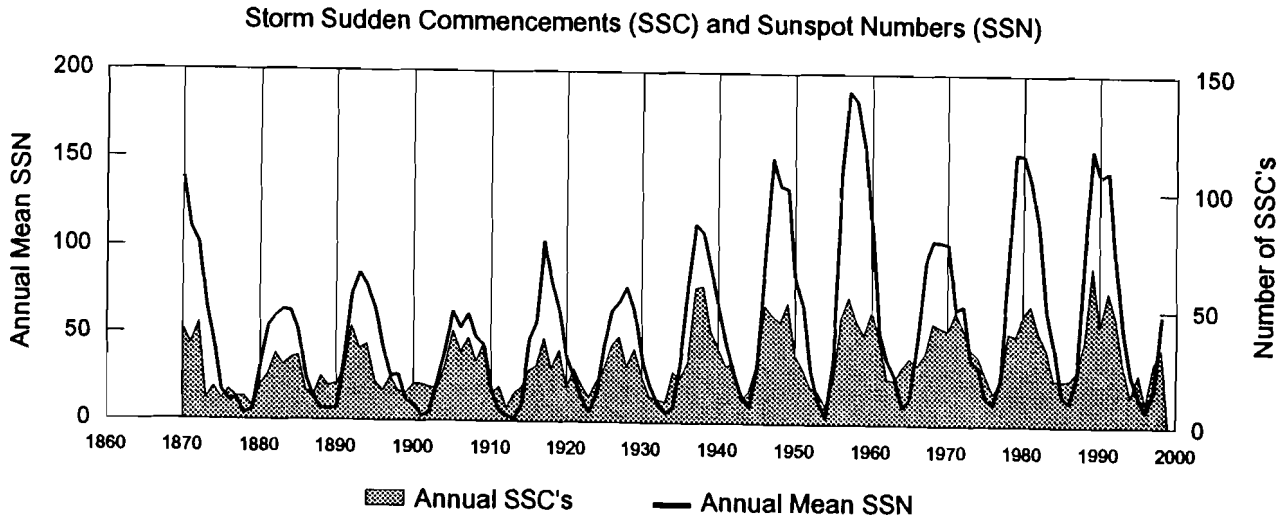
MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS (PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

FEBRUARY 1999

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
17	0709	B: COI* ETT	09	0352-0400	HYB
		C: BDV NAG* MMB* KAK KNY LNP HYB GNA* CNB*	09	0450-0500	HYB
			23	0745-0756	NAG
18	0246	A: SOD* NUR* WNG* NGK* NGK* HRB NAG* GCK* COI* SPT* KAK* KNY* QUE LNP HYB ETT GNA* HER			
		B: BDV* EBR* CNB*			
		C: MMB*			
28	1352	A: CLF*			
		B: HRB			
		C: WNG NGK BDV COI*			

REPORTING OBSERVATORIES (up to the 5th of April 1999):
SOD NUR WNG NGK BDV CLF HRB NAG GCK MMB EBR COI SPT KAK KNY QUE LNP HYB ETT GNA HER CNB

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



☆U.S. GOVERNMENT PRINTING OFFICE:1999-773-002/29025

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."