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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
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Solar-Geophysical Data prompt reports

Data for November, December 1998 and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 653

(Issued in Two Parts)

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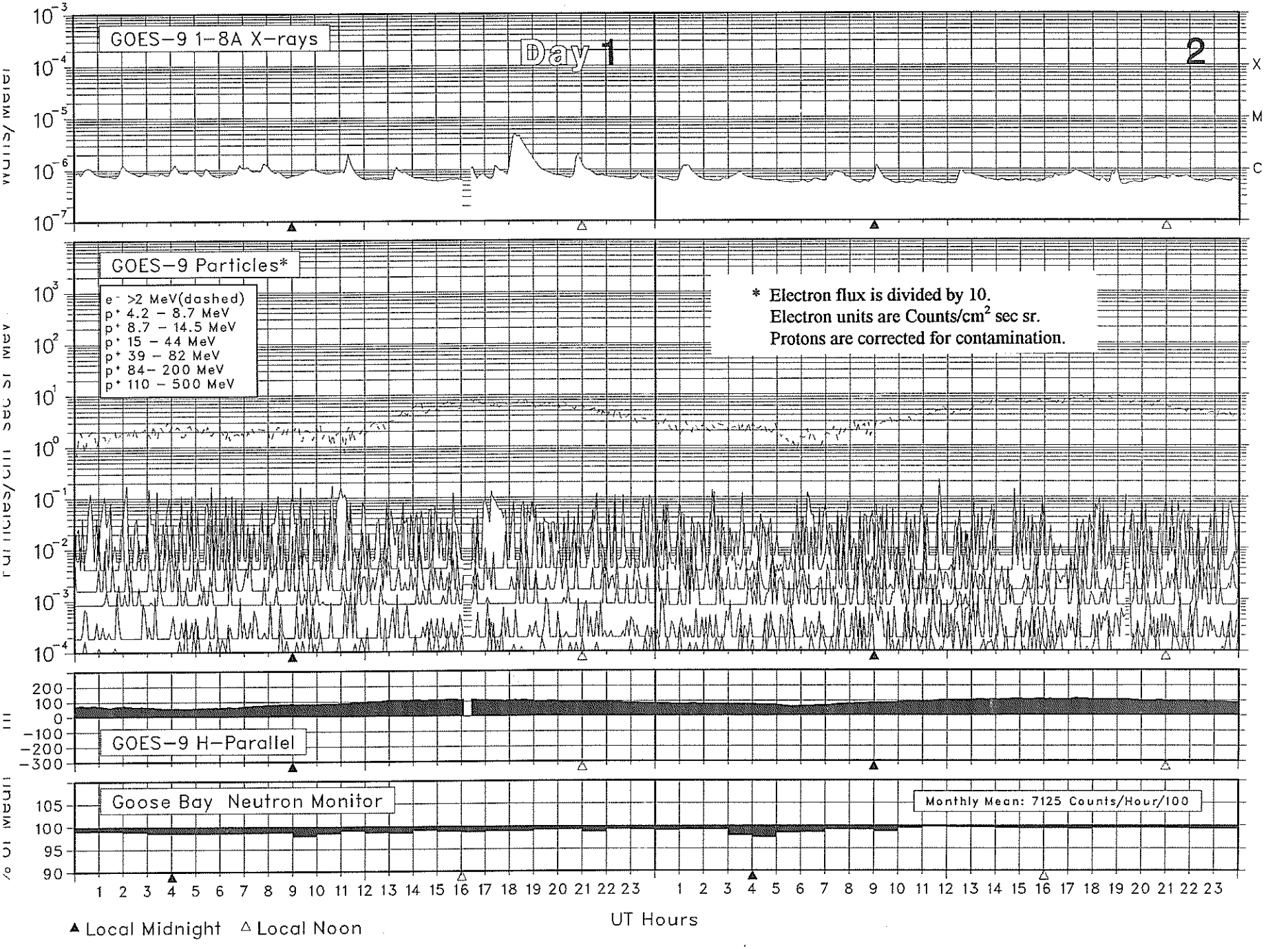

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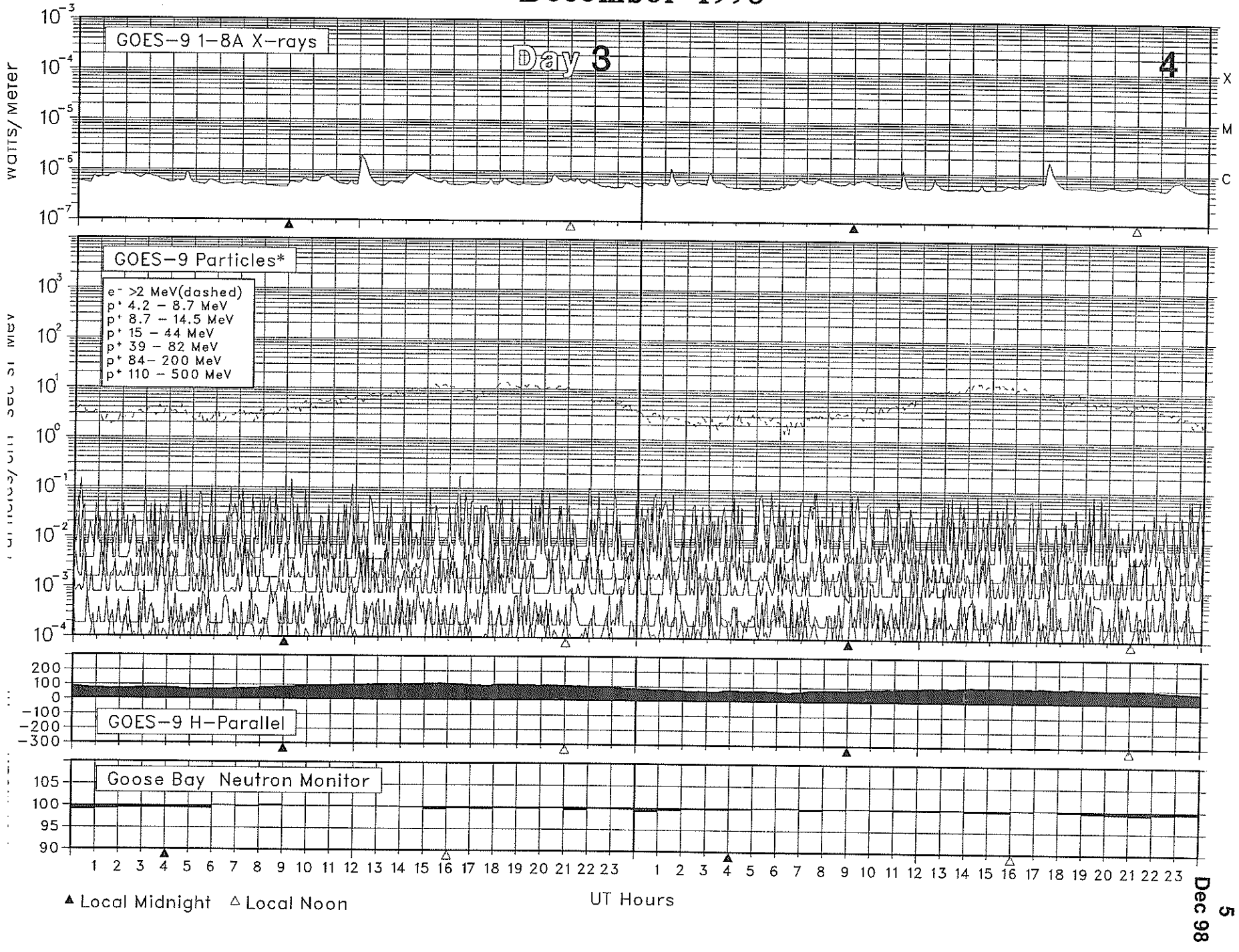

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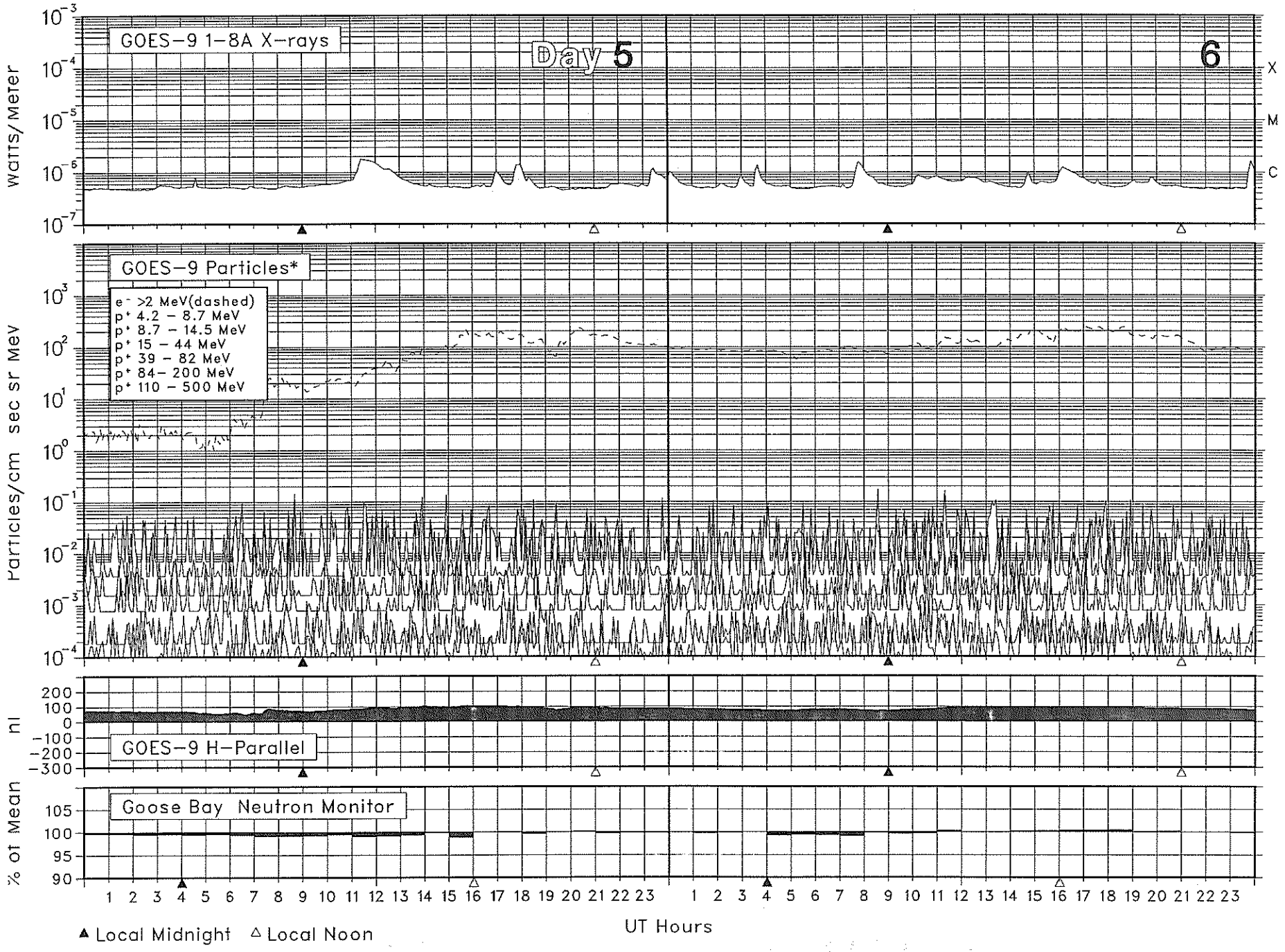

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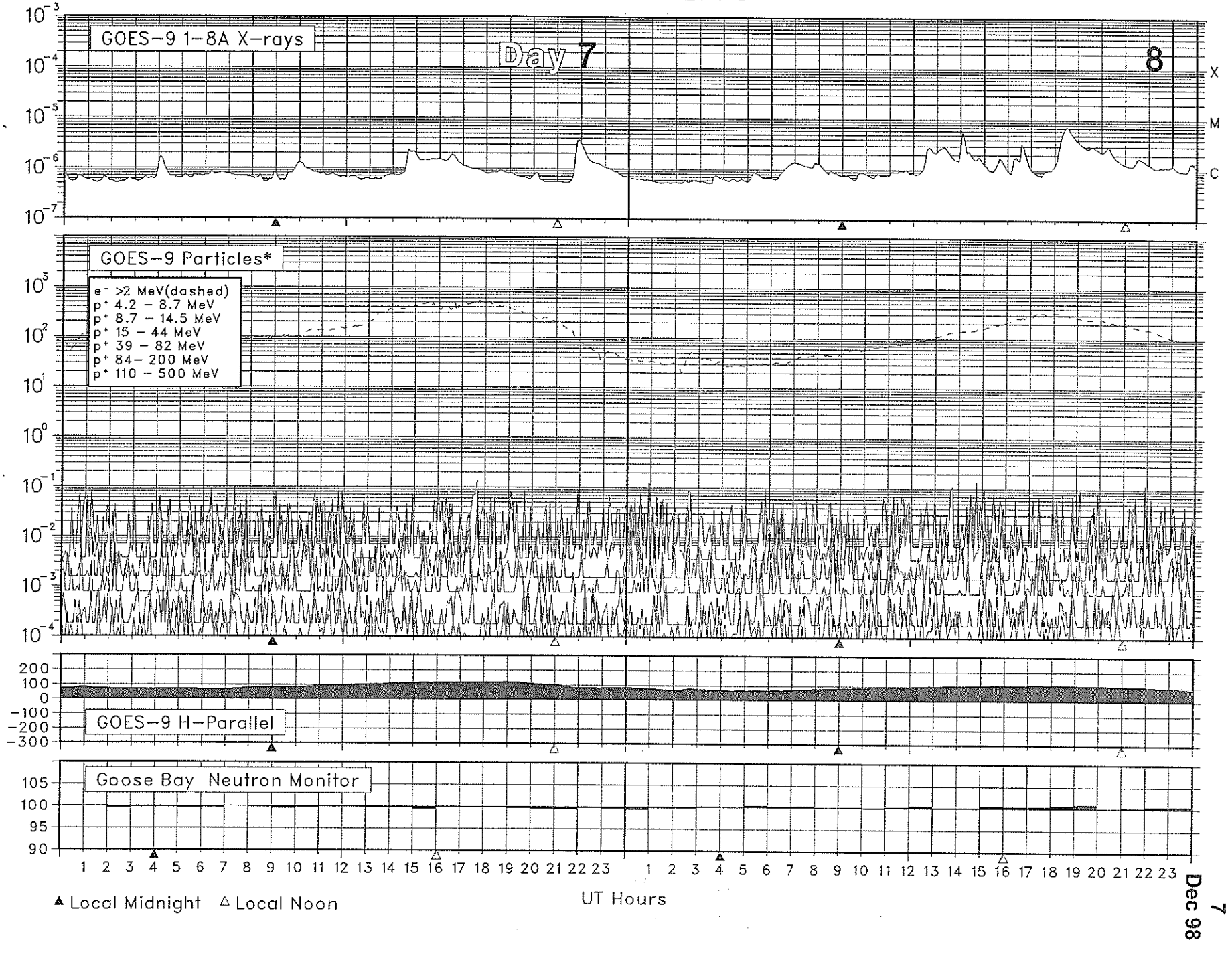

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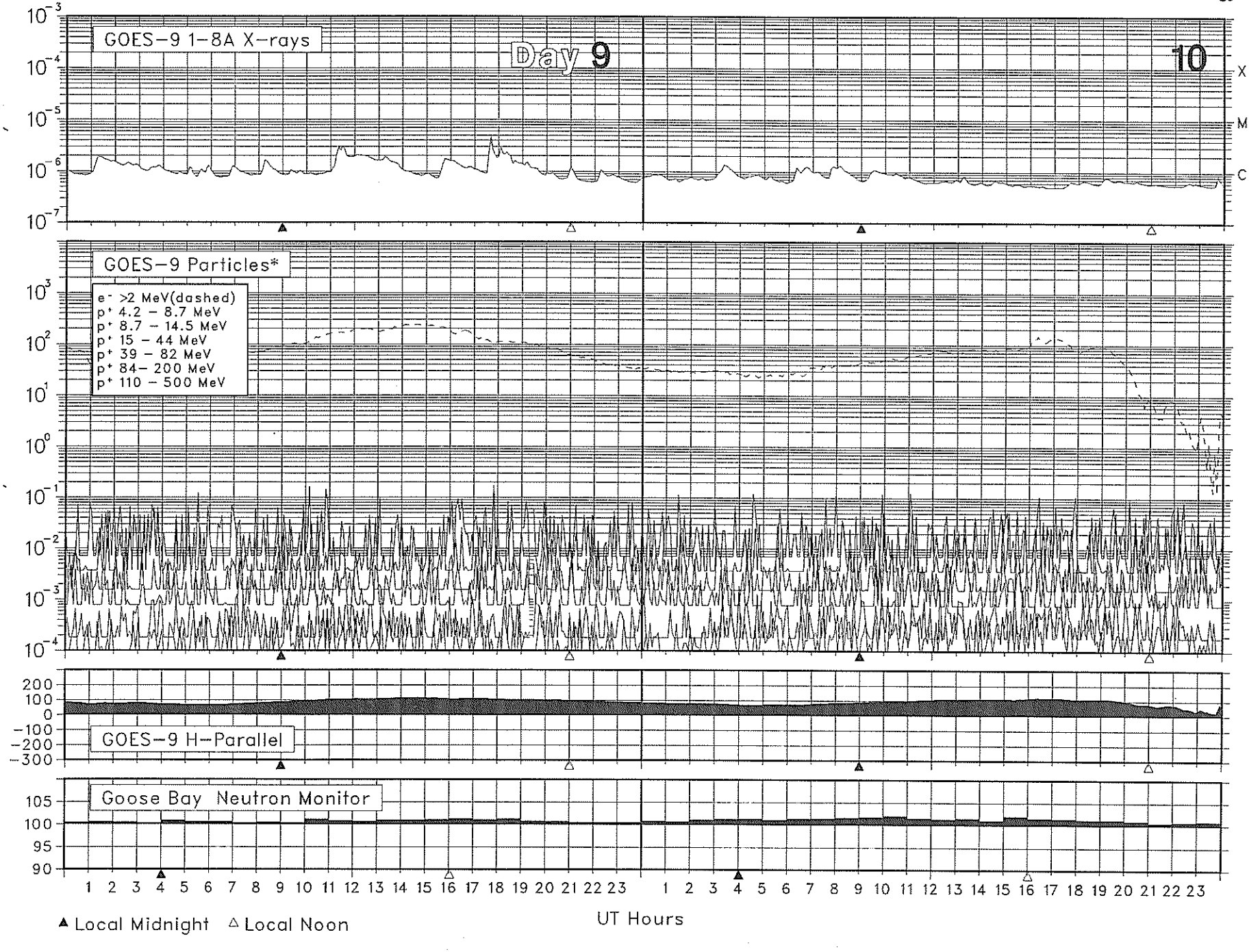

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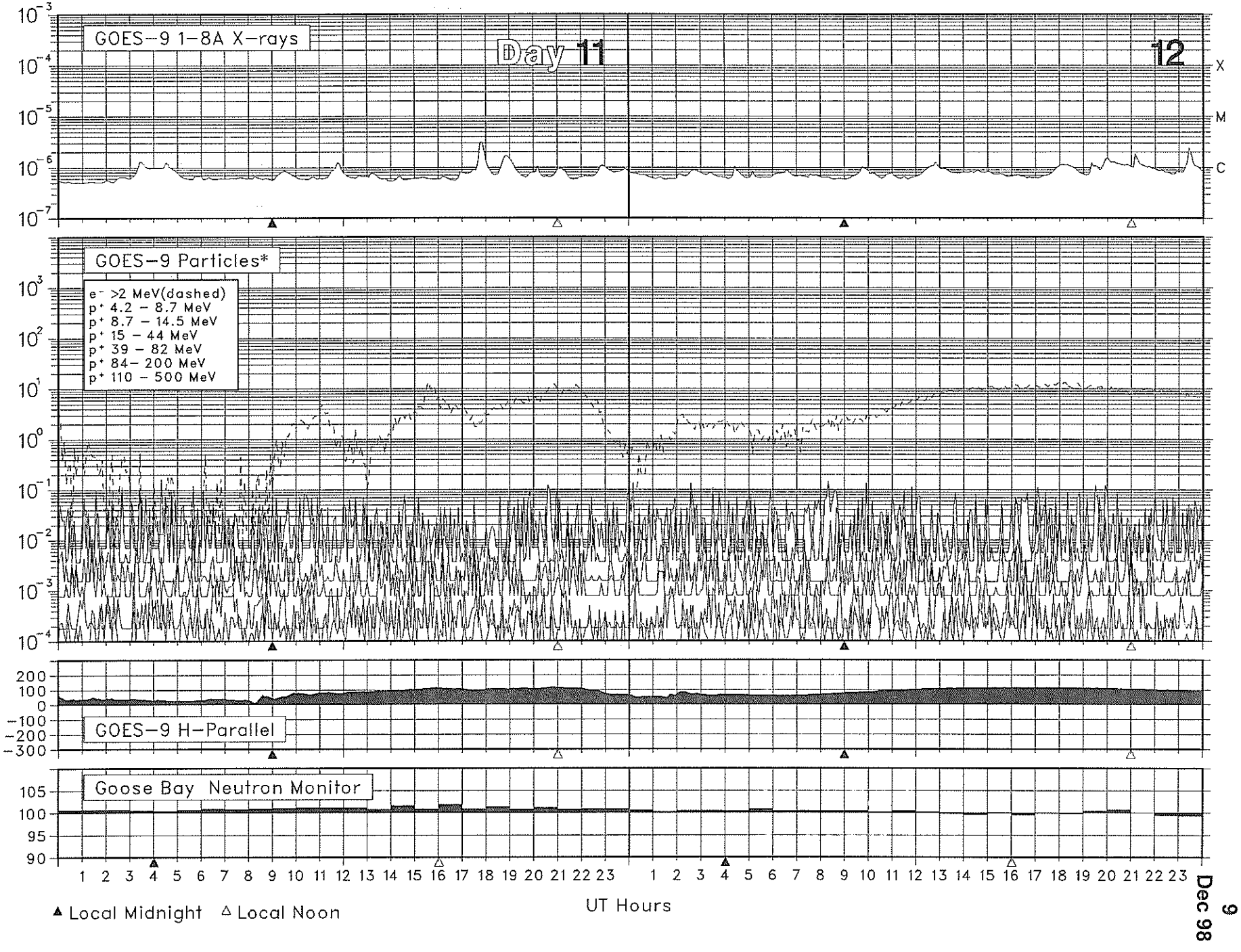

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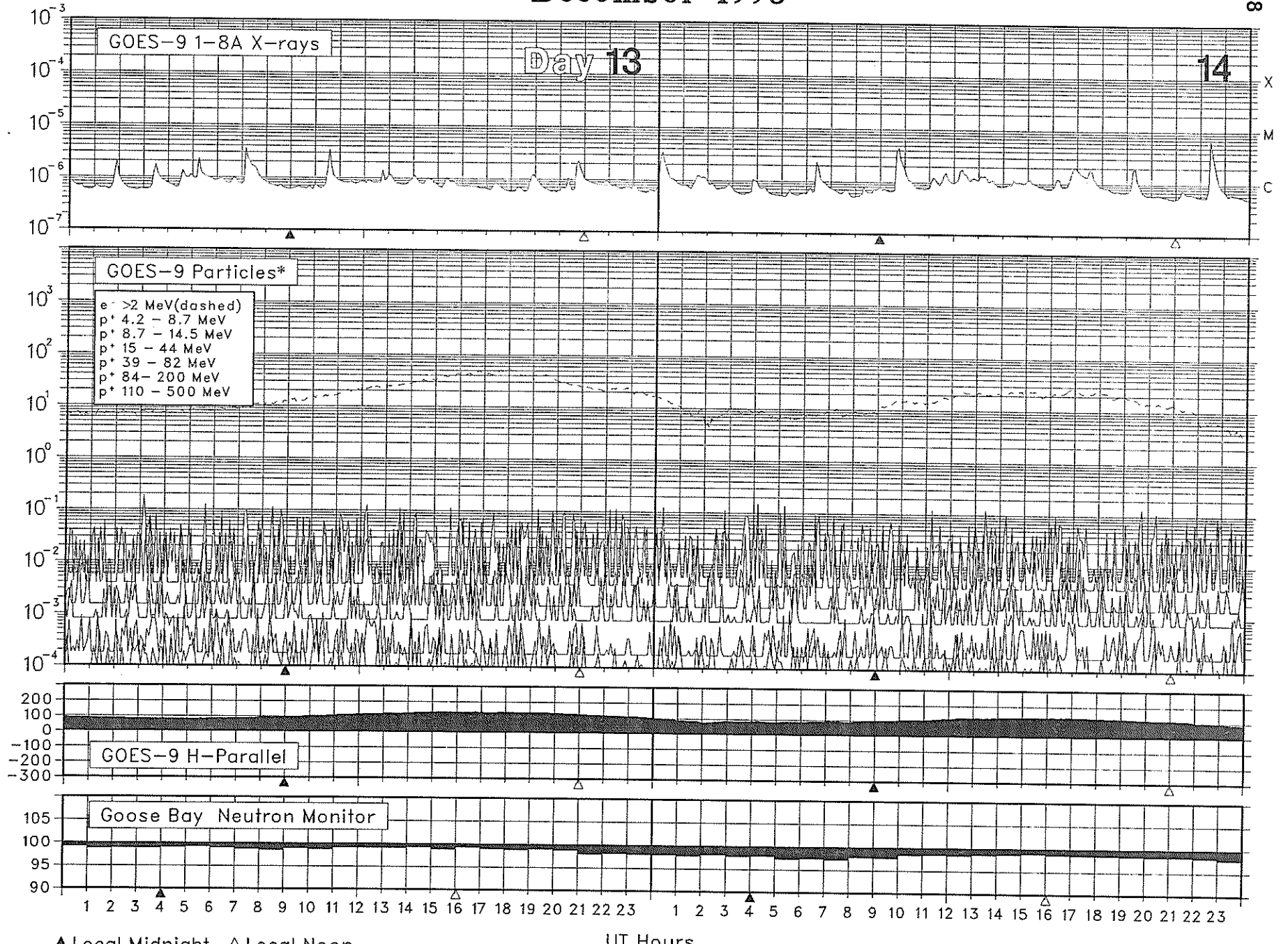

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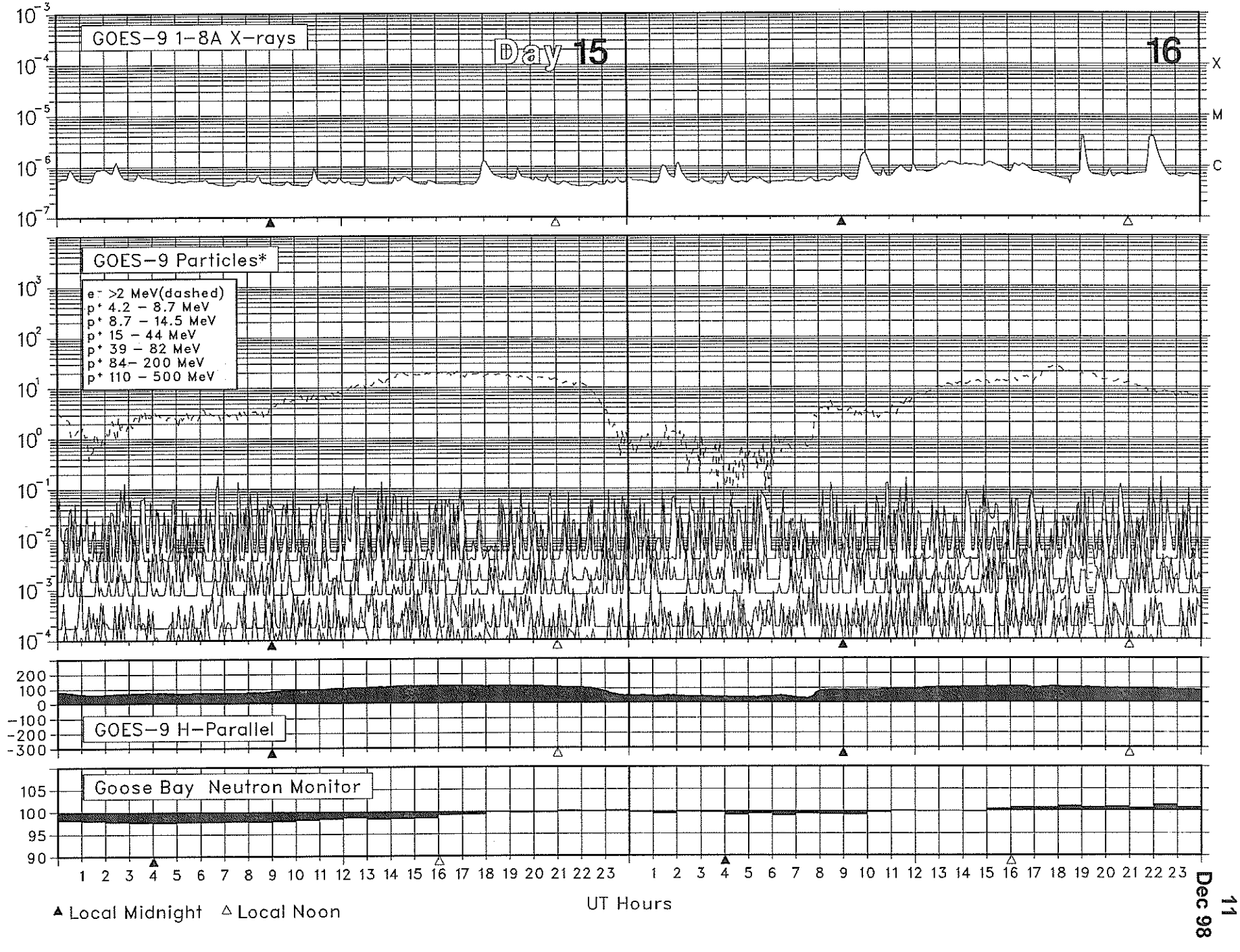

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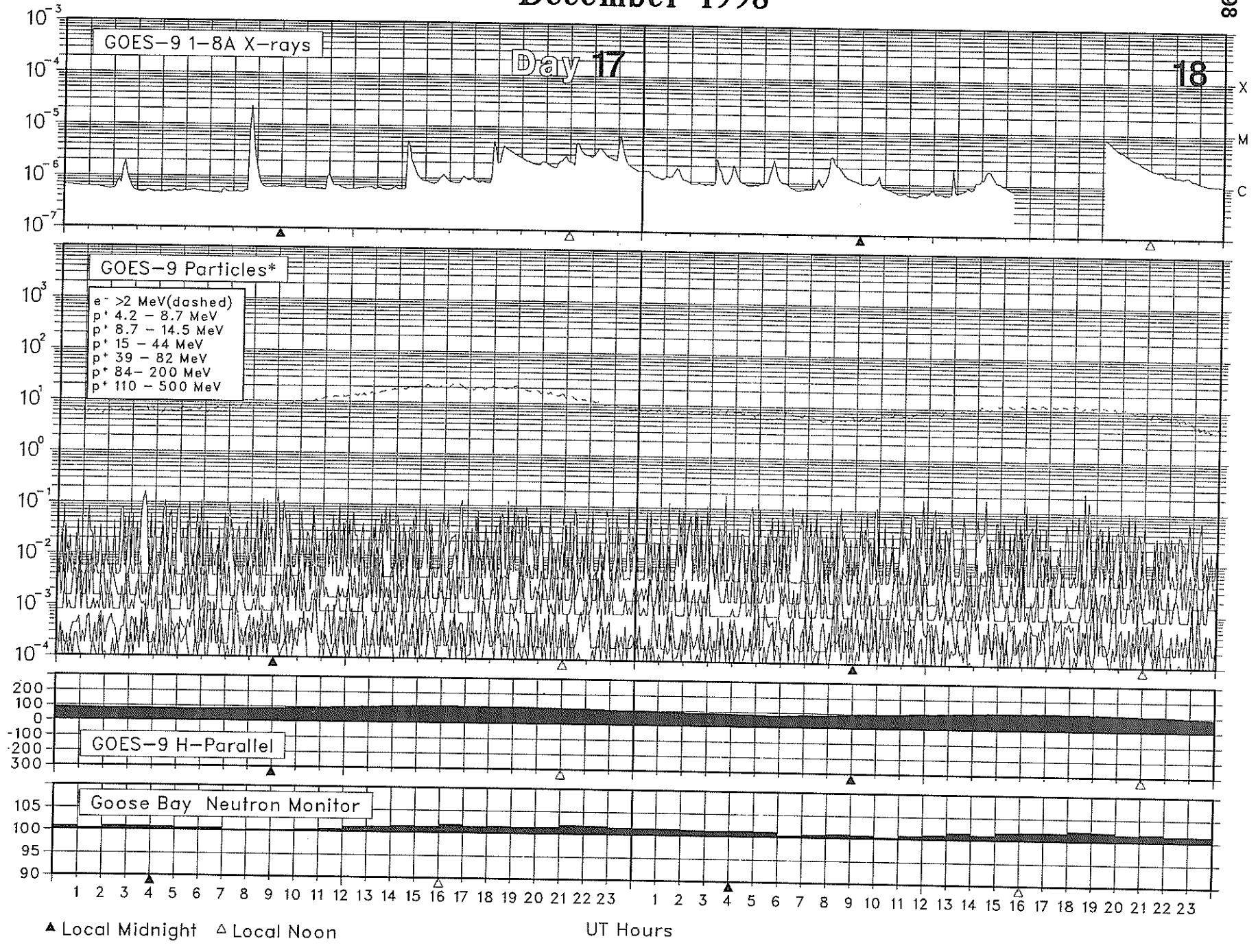

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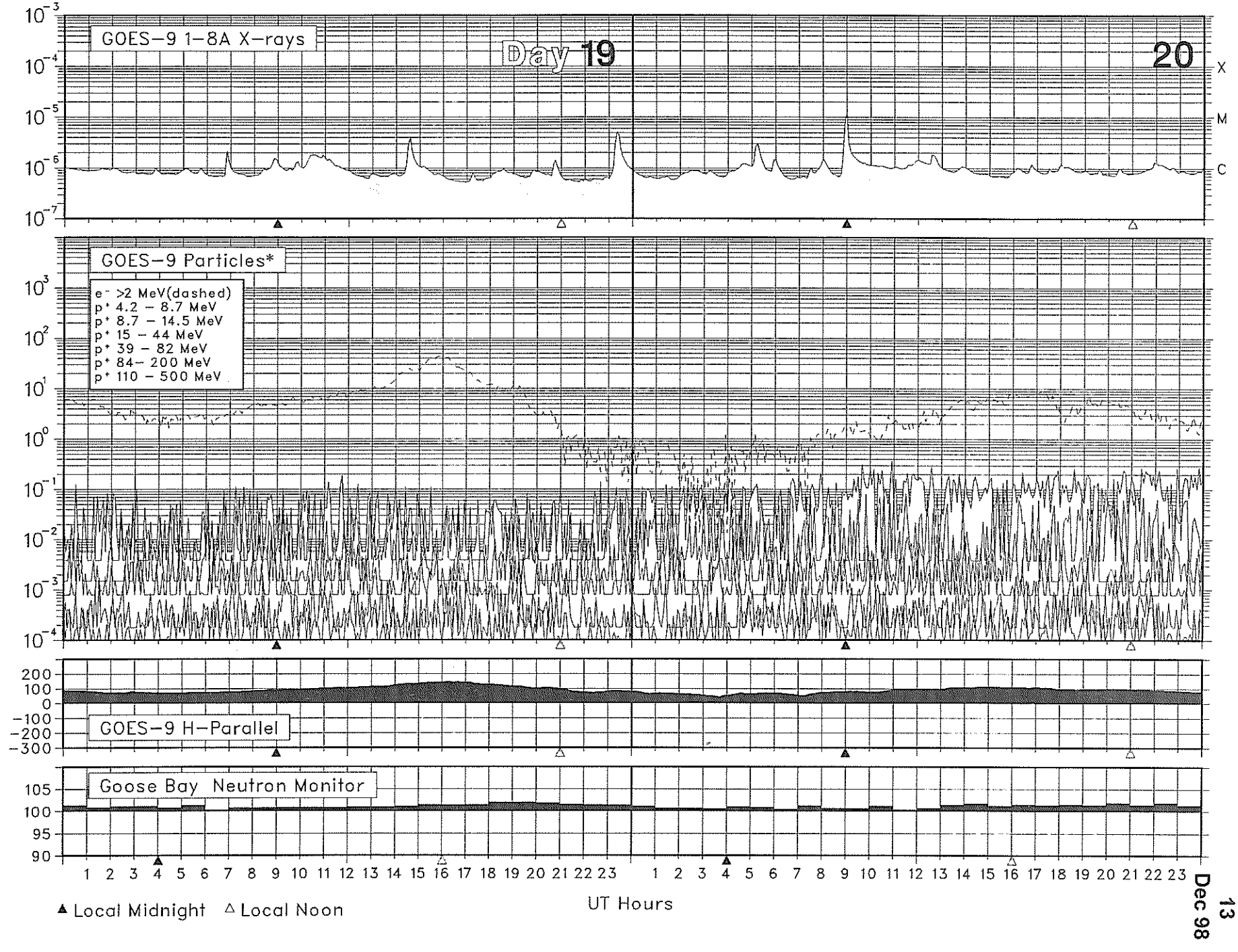

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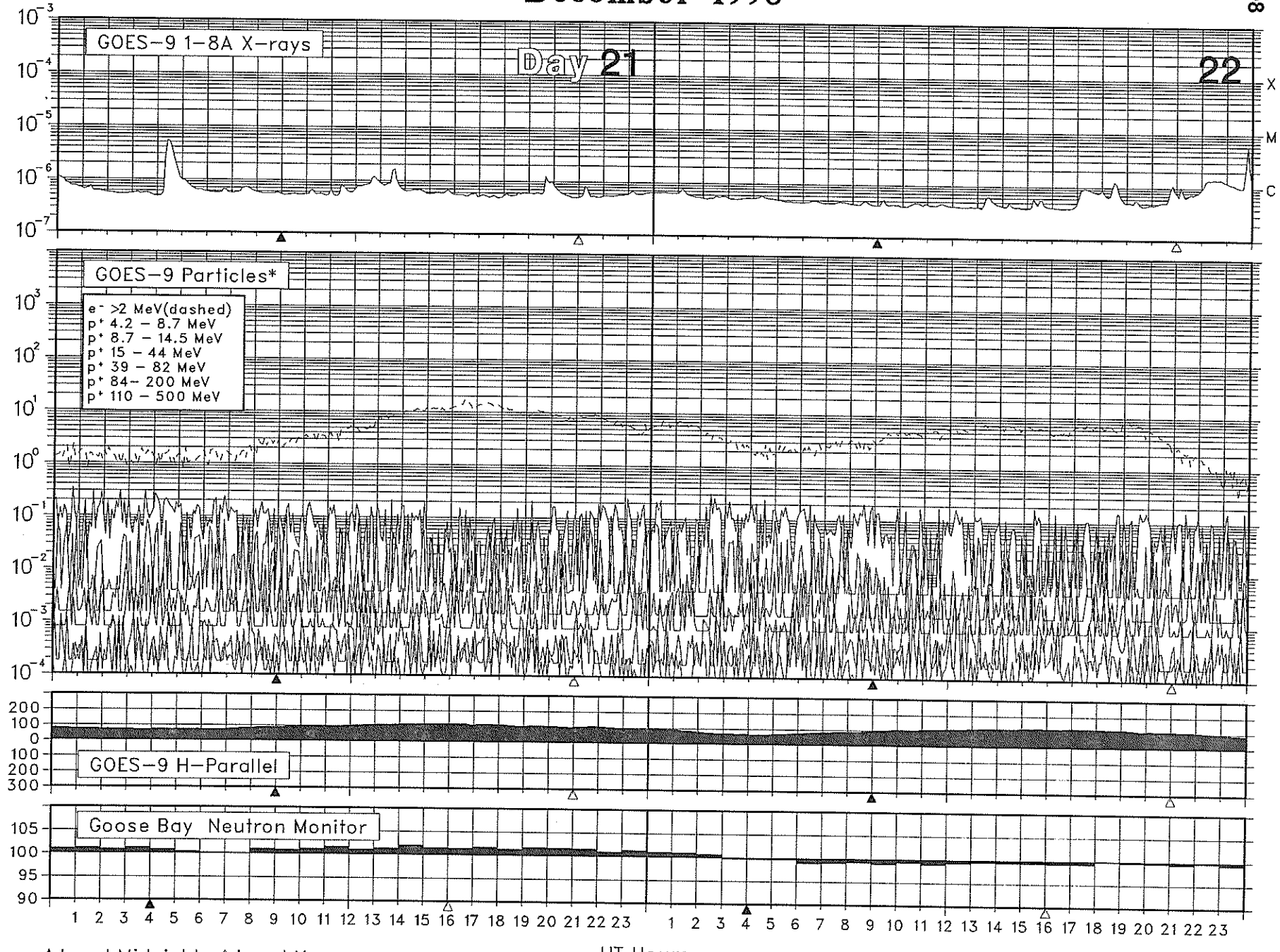

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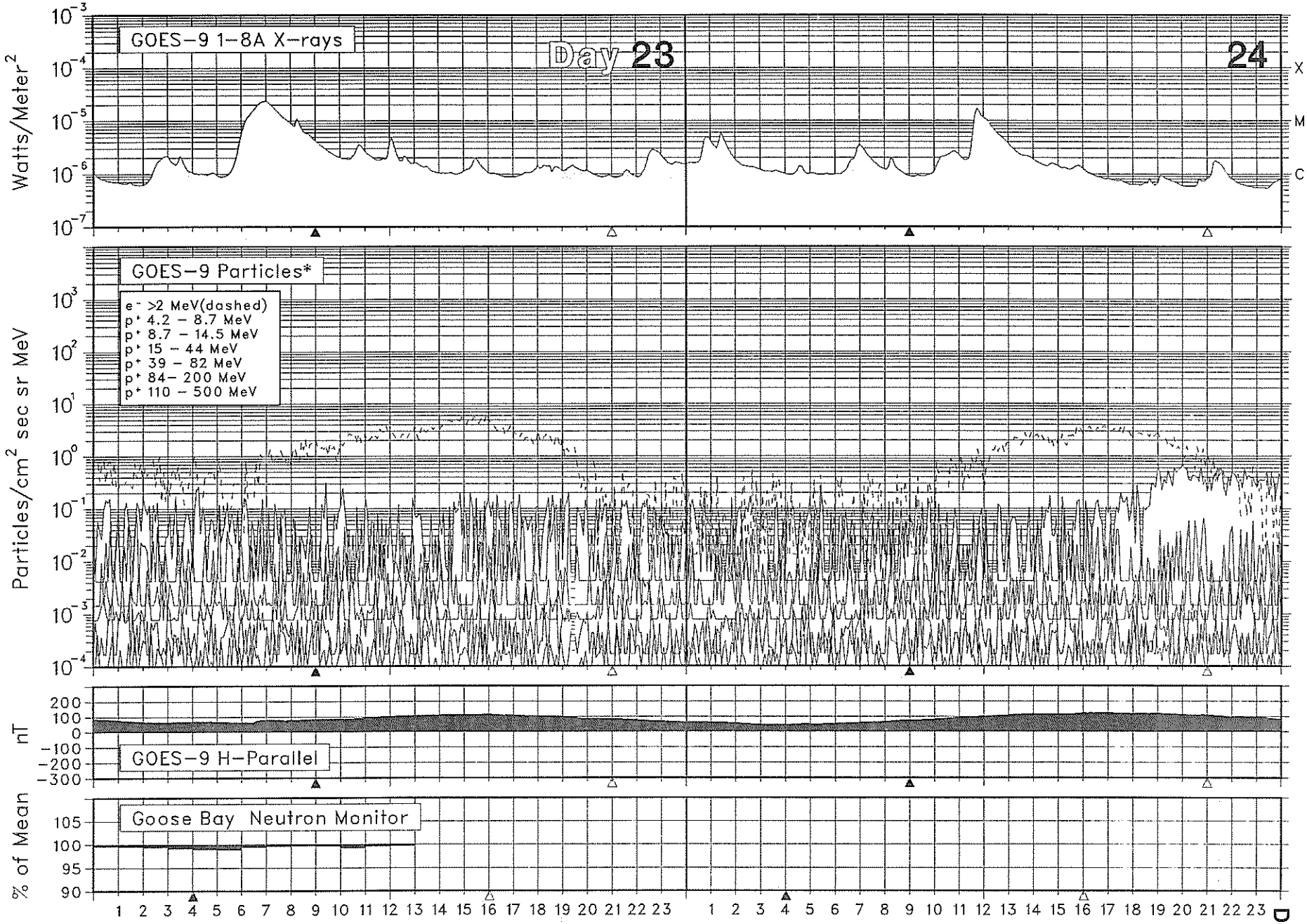

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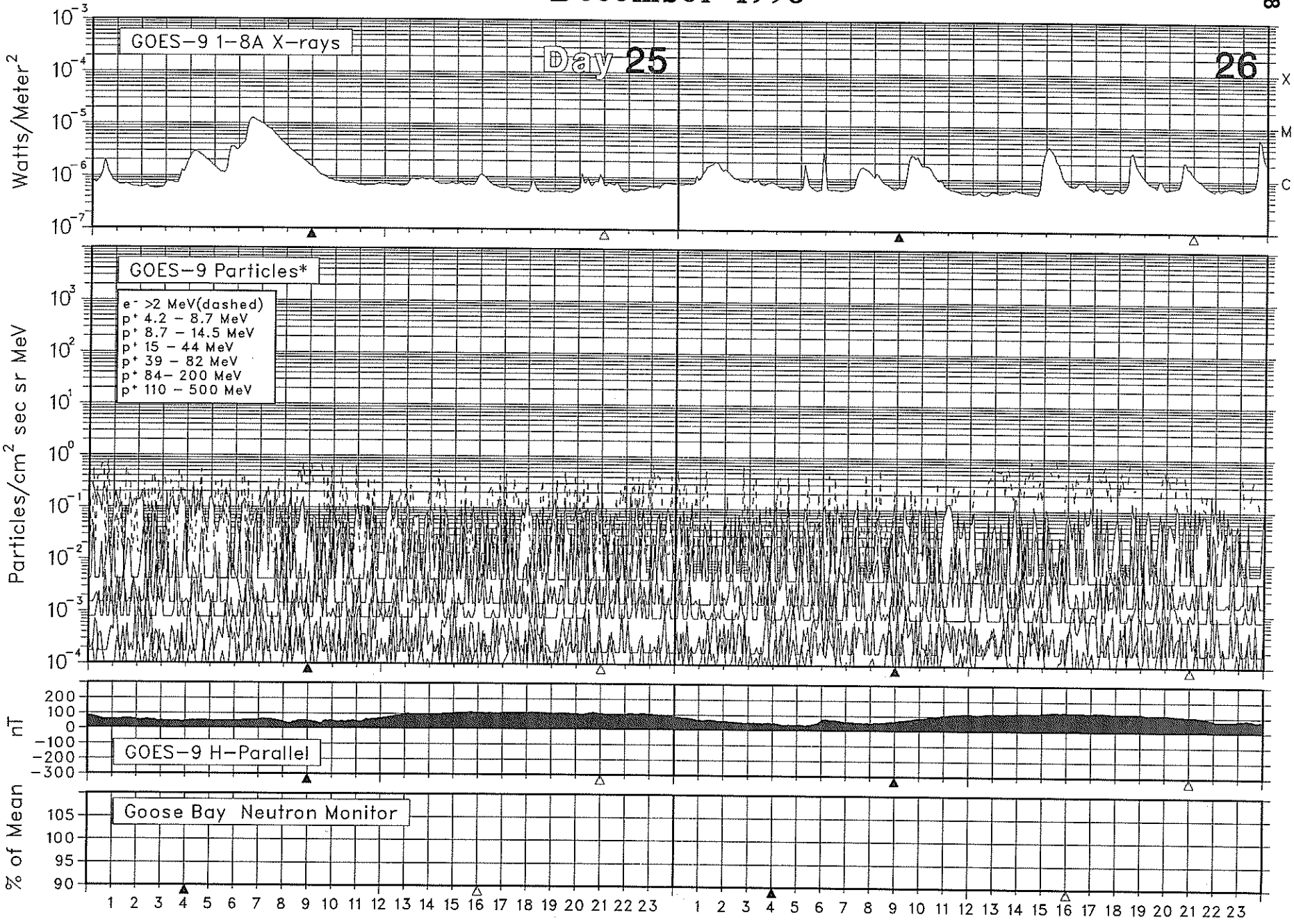

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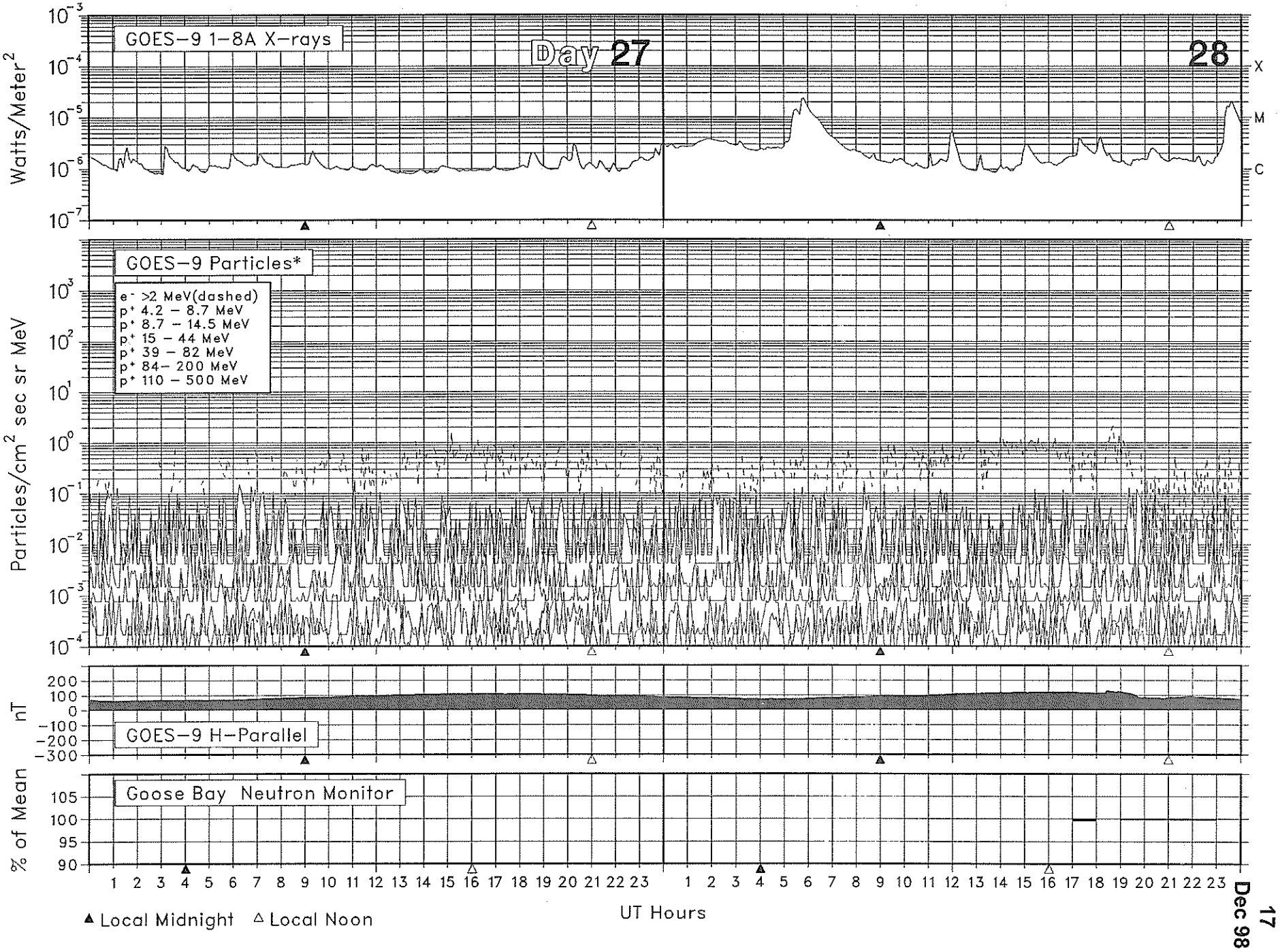

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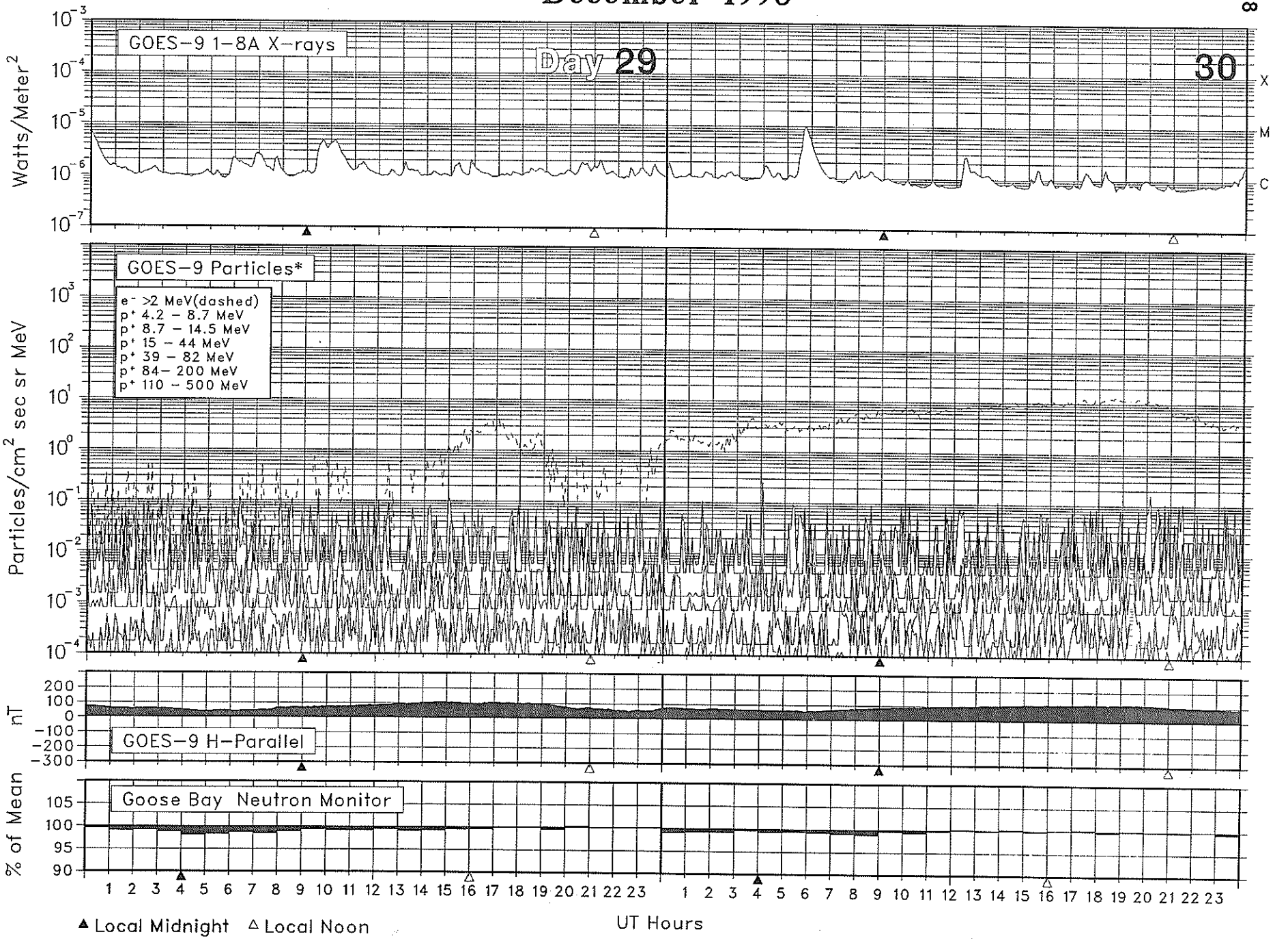

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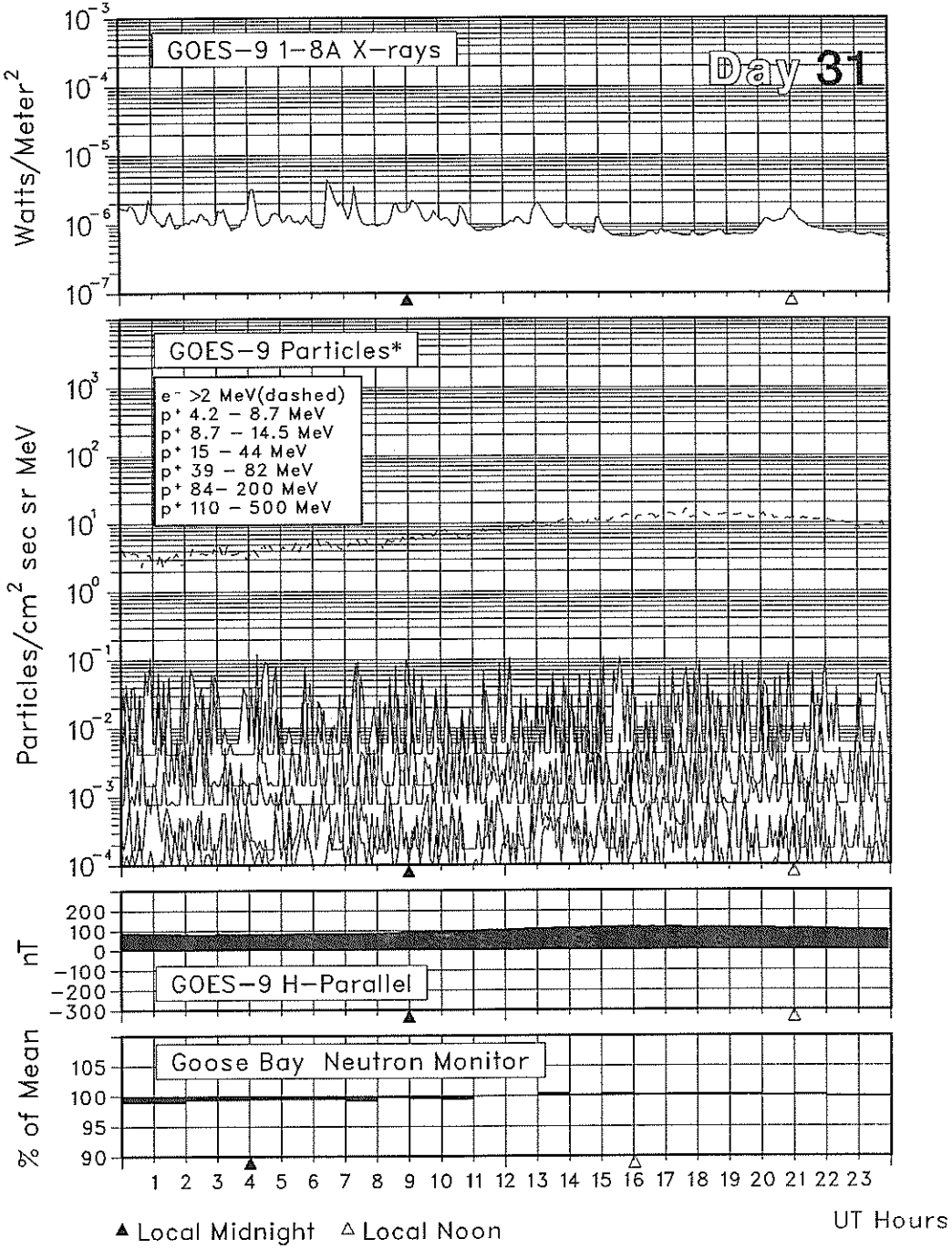
December 1998



* 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

DECEMBER 1998

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			
335	01	30	186	163	12	S18	W16	0	0	0	01	Q	SOL: Eruptive
						N22	E11	4	0	0	01	E	MAG: Quiet
						N28	W95	2	0	0	01	Q	PRO: Quiet
						N15	E64	2	0	0	01	Q	
						N18	W05	0	0	0	01	Q	
						N30	E23	0	0	0	01	Q	
						S18	E08	0	0	0	01	Q	
						N12	E27	0	0	0	01	Q	
336	02	01	153	163	8	S17	W31	0	0	0	02	Q	SOL: Eruptive
						N20	W01	4	0	0	02	E	MAG: Quiet
						N14	E46	2	0	0	02	E	PRO: Quiet
						N18	W15	0	0	0	02	Q	
						N24	E09	0	0	0	02	Q	
						S18	W07	0	0	0	02	Q	
						N12	E16	0	0	0	02	Q	
						N17	E64	2	0	0	02	Q	
337	03	02	144	152	4	S16	W45	0	0	0	03	Q	SOL: Eruptive
						N20	W17	5	0	0	03	E	MAG: Quiet
						N15	E32	0	0	0	03	E	PRO: Quiet
						N18	W28	0	0	0	03	Q	
						N26	W04	0	0	0	03	Q	
						S18	W21	0	0	0	03	Q	
						N12	E01	0	0	0	03	Q	
						N18	E53	2	0	0	03	Q	
338	04	03	136	153	7	S15	W64	0	0	0	04	Q	SOL: Eruptive
						N18	W27	1	0	0	04	E	MAG: Quiet
						N14	E19	1	0	0	04	E	PRO: Quiet
						N18	W40	0	0	0	04	Q	
						N29	W22	0	0	0	04	Q	
						N12	W13	1	0	0	04	Q	
						N18	E39	2	0	0	04	E	
						N20	E50	0	0	0	04	Q	
339	05	04	109	148	9	S15	W78	0	0	0	05	Q	SOL: Eruptive
						N20	W40	0	0	0	05	E	MAG: Active
						N14	E06	0	0	0	05	Q	PRO: Quiet
						N18	W52	0	0	0	05	Q	
						N10	W26	0	0	0	05	Q	
						N16	E26	1	0	0	05	E	
						N19	E38	0	0	0	05	Q	
340	06	05	91	142	13	S16	W97	1	0	0	06	Q	SOL: Eruptive
						N19	W49	0	0	0	06	Q	MAG: Quiet
						N15	W08	0	0	0	06	Q	PRO: Quiet
						N17	W60	0	0	0	06	Q	
						N11	W40	0	0	0	06	Q	
						N16	E10	0	0	0	06	E	
						N19	E26	0	0	0	06	Q	
341	07	06	106	142	8	N20	W59	0	0	0	07	Q	SOL: Eruptive
						N16	W24	1	0	0	07	Q	MAG: Quiet
						N18	W72	1	0	0	07	Q	PRO: Quiet
						N16	W02	2	0	0	07	E	
						N19	E15	0	0	0	07	Q	
						S22	E02	0	0	0	07	E	
						S16	E64	0	0	0	07	Q	
342	08	07	143	153	6	N19	W78	0	0	0	08	Q	SOL: Eruptive
						N16	W36	0	0	0	08	Q	MAG: Quiet
						N20	W86	0	0	0	08	Q	PRO: Quiet
						N29	W66	0	0	0	08	Q	
						N17	W17	4	0	0	08	E	
						N20	W02	0	0	0	08	Q	
						S23	W12	1	0	0	08	E	

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

DECEMBER 1998

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			
						S16	E49	4	0	0	08	Q	
						S27	E71	0	0	0	08	Q	
343	09	08	158	162	3	N20	W79	1	0	0	09	Q	SOL: Eruptive
						N16	W50	0	0	0	09	Q	MAG: Quiet
						N29	W80	1	0	0	09	Q	PRO: Quiet
						N17	W31	0	0	0	09	Q	
						N20	W15	0	0	0	09	Q	
						S24	W25	5	0	0	09	E	
						S15	E35	4	0	0	09	E	
						S27	E62	0	0	0	09	Q	
						S17	E07	1	0	0	09	Q	
344	10	09	132	154	3	N16	W63	0	0	0	10	Q	SOL: Eruptive
						N29	W92	2	0	0	10	Q	MAG: Quiet
						N16	W45	2	0	0	10	E	PRO: Quiet
						N20	W28	0	0	0	10	Q	
						S23	W38	0	0	0	10	E	
						S15	E21	4	0	0	10	E	
						S28	E48	1	0	0	10	Q	
						S17	W07	0	0	0	10	Q	
345	11	10	145	134	5	N16	W76	0	0	0	11	Q	SOL: Eruptive
						N17	W56	0	0	0	11	E	MAG: Quiet
						N21	W41	0	0	0	11	Q	PRO: Quiet
						S22	W51	3	0	0	11	E	
						S15	E06	2	0	0	11	E	
						S27	E28	0	0	0	11	Q	
						S17	W20	0	0	0	11	Q	
						S18	E27	2	0	0	11	Q	
						S29	E43	0	0	0	11	Q	
346	12	11	166	143	22	N16	W89	0	0	0	12	Q	SOL: Eruptive
						N16	W71	0	0	0	12	Q	MAG: Quiet
						N20	W54	0	0	0	12	Q	PRO: Quiet
						S22	W66	3	0	0	12	E	
						S14	W08	3	0	0	12	E	
						S28	E16	0	0	0	12	Q	
						S16	W33	0	0	0	12	Q	
						S18	E15	5	0	0	12	E	
						S29	E27	2	0	0	12	Q	
						N23	E77	0	0	0	12	Q	
						S28	E64	0	0	0	12	Q	
347	13	12	142	147	6	N17	W81	0	0	0	13	Q	SOL: Eruptive
						N20	W66	0	0	0	13	Q	MAG: Quiet
						S22	W77	3	0	0	13	Q	PRO: Quiet
						S28	E02	0	0	0	13	Q	
						S18	E01	6	0	0	13	E	
						S29	E13	6	0	0	13	E	
						N23	E61	0	0	0	13	Q	
						S29	E52	1	0	0	13	Q	
348	14	13	152	144	1	N17	W93	0	0	0	14	Q	SOL: Eruptive
						N20	W80	0	0	0	14	Q	MAG: Quiet
						S24	W86	1	0	0	14	Q	PRO: Quiet
						S26	W09	0	0	0	14	Q	
						S18	W13	8	0	0	14	E	
						S28	E01	1	0	0	14	E	
						N24	E48	0	0	0	14	Q	
						S28	E39	1	0	0	14	Q	
						S15	W26	0	0	0	14	Q	
349	15	14	113	144	5	S28	W22	0	0	0	15	Q	SOL: Eruptive
						S19	W28	9	0	0	15	E	MAG: Quiet
						S29	W10	0	0	0	15	E	PRO: Quiet
						N26	E37	0	0	0	15	Q	

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

DECEMBER 1998

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			
						S30	E28	0	0	0	15	Q	
						S17	W36	0	0	0	15	Q	
350	16	15	108	142	5	S27	W35	0	0	0	16	Q	SOL: Eruptive
						S18	W40	4	0	0	16	E	MAG: Quiet
						S28	W25	1	0	0	16	E	PRO: Quiet
						N25	E22	0	0	0	16	Q	
						S29	E14	0	0	0	16	Q	
						S15	W53	0	0	0	16	Q	
						N18	E13	0	0	0	16	Q	
351	17	16	118	141	9	S27	W48	0	0	0	17	Q	SOL: Eruptive
						S17	W53	3	0	0	17	E	MAG: Quiet
						S27	W38	3	0	0	17	E	PRO: Quiet
						N23	E09	1	0	0	17	Q	
						S28	E00	0	0	0	17	Q	
						S15	W67	0	0	0	17	Q	
						N21	E49	0	0	0	17	Q	
352	18	17	93	146	0	S26	W59	0	0	0	18	Q	SOL: Eruptive
						S17	W65	3	0	0	18	E	MAG: Quiet
						S28	W50	8	1	0	18	E	PRO: Quiet
						N24	W04	0	0	0	18	Q	
						N25	E34	0	0	0	18	Q	
						N19	E72	8	0	0	18	E	
353	19	18	76	155	2	S17	W79	0	0	0	19	E	SOL: Active
						S26	W63	3	0	0	19	E	MAG: Quiet
						N24	W17	0	0	0	19	Q	PRO: Quiet
						N19	E61	15	1	0	19	E	
354	20	19	88	138	3	S18	W91	0	0	0	20	Q	SOL: Active
						S28	W75	1	0	0	20	E	MAG: Quiet
						N24	W29	0	0	0	20	Q	PRO: Quiet
						N27	E13	0	0	0	20	Q	
						N20	E49	3	0	0	20	E	
355	21	20	98	135	11	S28	W87	0	0	0	21	E	SOL: Active
						N24	W42	2	0	0	21	Q	MAG: Active
						N26	E02	0	0	0	21	Q	PRO: Quiet
						N20	E36	3	1	0	21	E	
						N19	E68	3	0	0	21	Q	
						N22	W64	0	0	0	21	Q	
						S23	E43	0	0	0	21	Q	
356	22	21	72	135	2	N24	W55	0	0	0	22	Q	SOL: Eruptive
						N20	E23	2	0	0	22	E	MAG: Active
						N18	E58	4	0	0	22	E	PRO: Quiet
						N23	W75	0	0	0	22	Q	
357	23	22	56	129	3	N20	E11	2	0	0	23	E	SOL: Eruptive
						N19	E45	2	0	0	23	Q	MAG: Quiet
						N23	W86	0	0	0	23	Q	PRO: Quiet
358	24	23	78	140	5	N22	W02	0	0	0	24	E	SOL: Eruptive
						N20	E31	0	0	0	24	Q	MAG: Quiet
						N28	E25	1	0	0	24	Q	PRO: Quiet
						N18	E64	0	0	0	24	Q	
						N29	E80	1	0	0	24	E	
359	25	24	93	139	4	N23	W12	0	0	0	25	Q	SOL: Active
						N20	E20	4	0	0	25	Q	MAG: Quiet
						N28	E14	0	0	0	25	Q	PRO: Quiet
						N18	E52	0	0	0	25	Q	
						N27	E64	4	1	0	25	E	
						S23	E75	0	0	0	25	Q	

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

DECEMBER 1998

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			
360	26	25	84	144	9	N19	E05	0	0	0	26	Q	SOL: Eruptive
						N27	E00	1	0	0	26	Q	MAG: Quiet
						N17	E40	0	0	0	26	Q	PRO: Quiet
						N27	E52	5	1	0	26	E	
						S26	E68	0	0	0	26	E	
361	27	26	100	145	16	N20	W40	1	0	0	27	Q	SOL: Active
						N21	W10	1	0	0	27	Q	MAG: Quiet
						N27	W14	4	0	0	27	Q	PRO: Quiet
						N20	E24	0	0	0	27	Q	
						N26	E40	10	0	0	27	E	
						S23	E51	1	0	0	27	E	
362	28	27	156	167	1	N16	W49	0	0	0	28	Q	SOL: Active
						N19	W22	1	0	0	28	Q	MAG: Quiet
						N27	W27	3	0	0	28	E	PRO: Quiet
						N20	E12	0	0	0	28	Q	
						N27	E26	7	0	0	28	E	
						S23	E38	2	0	0	28	Q	
						N23	W28	1	0	0	28	Q	
363	29	28	177	184	3	N19	W33	1	1	0	29	Q	SOL: Active
						N26	W40	14	3	0	29	E	MAG: Quiet
						N18	W01	0	0	0	29	Q	PRO: Quiet
						N26	E13	7	1	0	29	E	
						S23	E26	3	0	0	29	Q	
						N22	W44	0	0	0	29	Q	
						S21	E10	0	0	0	29	Q	
364	30	29	136	183	11	N18	W47	0	0	0	30	Q	SOL: Active
						N26	W52	5	0	0	30	E	MAG: Quiet
						N26	E00	20	0	0	30	E	PRO: Quiet
						S23	E13	1	0	0	30	Q	
						N22	W57	0	0	0	30	Q	
365	31	30	186	179	3	N18	W60	0	0	0	31	Q	SOL: Active
						N26	W65	0	0	0	31	E	MAG: Quiet
						N19	W17	0	0	0	31	Q	PRO: Quiet
						N26	W14	14	1	0	31	E	
						S23	W01	0	0	0	31	Q	
						N21	W72	0	0	0	31	Q	
						S26	E51	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)

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

DECEMBER 1998

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

STRATWARM ALERTS

12/07/98 03:30:00 GEOALERT WWA341 STRATWARM ALERT/SUNDAY/STRATWARM EXISTS.
AN INTENSE WARMING EXISTS OVER EAST ASIA, LEADING TO A TEMPERATURE INCREASE OF MORE THAN 35 DEGREES CELSIUS DURING A WEEK NORTH OF THE SEA OF OKHOTSK AT 10HPA. WARM AIR SPREADING NORTHEASTWARD. AT THE SAME TIME THERE IS A STRONG AND COLD VORTEX OVER THE EUROPEAN/WESTSIBERIAN ARCTIC.

12/08/98 03:30:00 GEOALERT WWA342 STRATWARM ALERT/MONDAY/STRATWARM EXISTS.
THE INTENSE WARMING, CENTERED OVER NORTHEAST SIBERIA TODAY, CONTINUES WITH WARM AIR SPREADING NORTHEASTWARDS. THE SECOND WARM REGION OVER MONGOLIA EXTENDS NORTHWEST AND WESTWARDS.

12/09/98 03:30:00 GEOALERT WWA343 STRATWARM ALERT/TUESDAY/STRATWARM EXISTS.
THE WARMING OVER NORTHEAST SIBERIA CONTINUES AND THE SECOND WARMING OVER MONGOLIA INTENSIFIES.

12/10/98 03:30:00 GEOALERT WWA344 STRATWARM ALERT/WEDNESDAY/STRATWARM EXISTS.
THE WARMING OVER NORTHEAST SIBERIA IS WEAKENING BUT THE WARMING OVER MONGOLIA, SOUTH AND SOUTHEAST OF SIBERIA, IS INTENSIFYING. WARM AIR IS SPREADING NORTHEASTWARDS.

12/11/98 03:30:00 GEOALERT WWA345 STRATWARM ALERT/THURSDAY/STRATWARM EXISTS.
AN INTENSE WARMING CONTINUES OVER EAST SIBERIA AND MONGOLIA.

12/15/98 03:30:00 GEOALERT WWA349 STRATWARM ALERT/MONDAY/STRATWARM EXISTS.
A STRONG WARMING CONTINUES OVER SIBERIA IN THE UPPER AND MIDDLE STRATOSPHERE,AND A CANADIAN WARMING PERSISTS IN THE LOWER STRATOSPHERE.

12/16/98 03:30:00 GEOALERT WWA350 STRATWARM ALERT/TUESDAY/STRATWARM EXISTS.
THE STRONG WARMING CONTINUES OVER SIBERIA AND EXPANDS OVER POLAR REGION AND CANADIAN ARCTIC IN THE UPPER AND MIDDLE STRATOSPHERE. THE CANADIAN WARMING PERSISTS IN THE LOWER STRATOSPHERE.

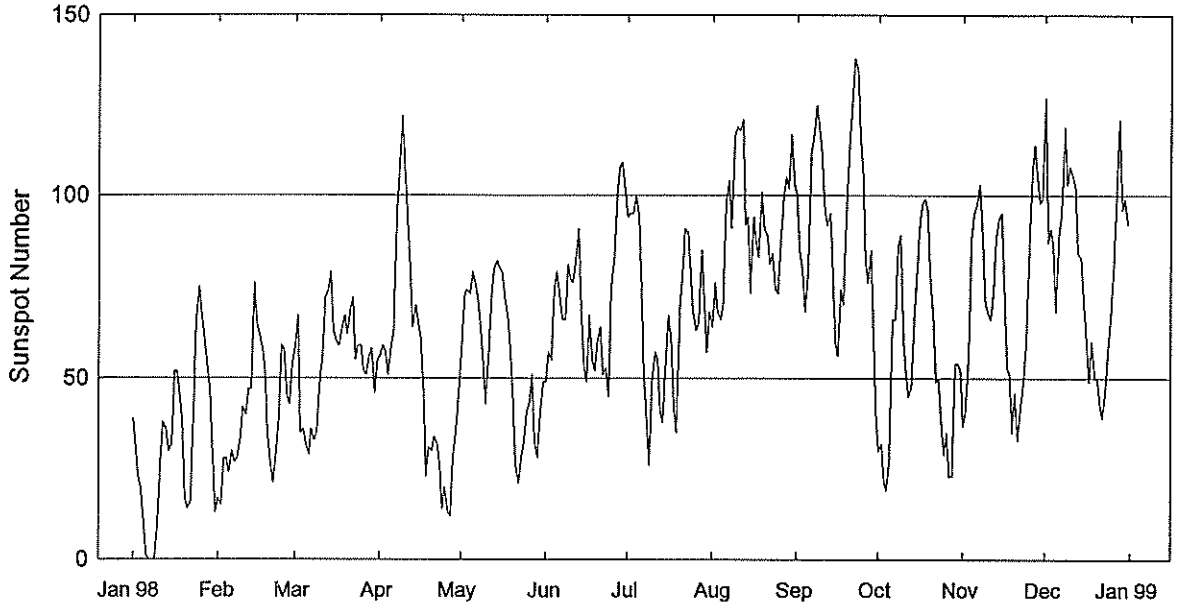
12/17/98 03:30:00 GEOALERT WWA351 STRATWARM ALERT EXISTS STRATWARM WEDNESDAY
A VERY STRONG WARMING CONTINUES OVER SIBERIA, ALASKA AND THE SIBERIAN/CANADIAN ARCTIC. TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE AT 50HPA AND ABOVE UNTIL THE UPPER MOST STRATOSPHERIC LEVELS. MEAN ZONAL WIND AT 60N DECREASING.

12/18/98 03:30:00 GEOALERT WWA352 STRATWARM ALERT/THURSDAY/STRATWARM EXISTS.
MAJOR WARMING EXISTS. A STRONG ANTICYCLONE AND A VERY INTENSE WARMING OVER THE SIBERIAN/CANADIAN ARCTIC DOMINATE THE POLAR REGION AND DISPLACE THE VORTEX CENTRE TO THE CENTRAL URAL AREA. MEAN ZONAL WIND AT 60N IS FROM EAST AT 10HPA AND ABOVE IN THE UPPER STRATOSPHERE AND THE TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE IN THE WHOLE STRATOSPHERE.

12/22/98 03:30:00 GEOALERT WWA356 STRATWARM ALERT/MONDAY/STRATWARM EXISTS.
MAJOR WARMING EXISTS. THE MAIN ANTICYCLONE IS LOCATED OVER NORWEGIAN SEA AND THE SECOND OVER BERING SEA. THE WARM AIR MOVES SOUTHWARDS TO BARENTS SEA AND CENTRAL SIBERIAN PLATEAU, FURTHER SLIGHTLY WEAKENING. THE TWO CENTRES OF THE VORTEX EXIST OVER SIBERIA AND HUDSON BAY, TODAY. MEAN ZONAL WIND AT 60 N IS FURTHER FROM EAST AT 10 HPA. TEMPERATURE GRADIENT REVERSED BETWEEN 60 N AND THE POLE IN THE LOWER AND MIDDLE STRATOSPHERE.

12/23/98 03:30:00 GEOALERT WWA357 STRATWARM ALERT/TUESDAY/STRATWARM EXISTS.
THE INTENSE WARMING,CENTRED OVER NORTH SIBERIA AND THE ADJACENT ARCTIC CONTINUOUSLY WEAKENING. THE ANTICYCLONE BETWEEN GREENLAND AND NORWAY WEAKENING TOO. MEAN ZONAL WIND AT 60N IS NO LONGER FROM EAST AND THE TEMPERATURE GRADIENT REVERSED BETWEEN 60N AND THE POLE ONLY STILL IN THE MIDDLE STRATOSPHERE. END OF THIS GEOALERT.

International Relative Sunspot Numbers
Jan 1998 - Dec 1998

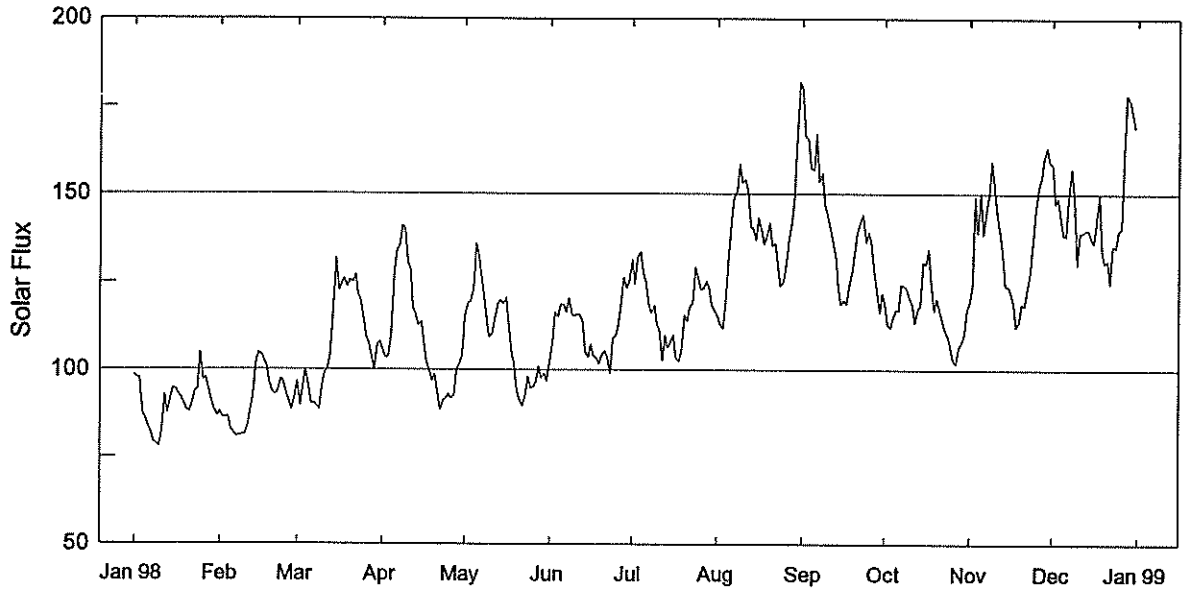


Day	Jan 98	Feb	Mar	Apr	May	Jun	Jul*	Aug*	Sep*	Oct*	Nov*	Dec*
1	39	17	59	56	57	49	94	64	100	30	37	127
2	31	15	67	59	73	57	95	76	85	32	41	87
3	23	28	35	57	74	55	95	68	79	22	56	91
4	20	28	36	51	73	74	100	66	68	19	88	86
5	10	22	32	59	79	79	94	70	80	28	95	68
6	1	30	29	63	76	72	74	98	112	66	98	89
7	0	27	36	93	71	66	51	104	116	66	103	95
8	0	28	33	106	63	66	38	91	125	86	92	119
9	0	33	35	122	54	81	26	117	119	89	71	103
10	10	42	50	108	43	77	49	119	112	60	68	108
11	27	40	56	96	58	76	57	118	96	51	66	105
12	38	47	72	80	73	83	55	121	92	45	73	102
13	36	47	74	64	80	91	41	92	95	48	88	84
14	30	76	79	70	82	69	38	94	78	66	94	83
15	32	65	63	65	80	53	55	73	60	77	95	72
16	52	62	60	61	79	49	67	94	56	93	76	60
17	52	58	59	46	71	67	59	87	74	98	53	49
18	46	52	64	23	67	55	42	83	70	99	51	60
19	39	35	67	31	56	52	35	101	93	96	35	50
20	17	28	62	30	43	60	69	91	114	76	46	50
21	14	21	69	34	26	64	78	89	125	68	33	43
22	16	28	72	32	21	51	91	81	138	49	41	39
23	40	39	55	26	28	53	90	84	135	50	47	47
24	66	59	59	14	32	45	79	74	117	39	59	58
25	75	58	59	20	41	75	68	73	105	29	80	66
26	67	45	52	13	43	83	63	87	82	35	106	81
27	61	43	51	12	51	100	65	100	76	23	114	100
28	53	54	56	28	33	108	85	105	85	23	106	121
29	47		58	36	28	109	74	102	60	54	98	96
30	28		46	46	40	101	57	117	41	54	99	99
31	13		55		49		68	103		52		92
Mean	31.9	40.3	54.8	53.4	56.3	70.7	66.2	91.7	92.9	55.6	73.6	81.6

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Jan 98 - Dec 98

Adjusted to 1 AU



Day	Jan 98	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	98.3	88.1	96.5	105.6	115.1	103.0	131.1	115.4	180.2	119.1	119.5	158.2
2	97.6	86.5	89.9*	103.4	118.8	107.7	124.4	112.9	166.3	112.9	124.1	147.4
3	97.7	86.3	95.0	103.6	119.3	116.4	131.9	111.7	165.5	112.0	149.3	148.7
4	87.7	86.6	100.0	110.2	123.2	115.0	133.5	119.2	157.3	114.9	139.0	144.0
5	86.3	83.1	95.1	126.4	135.7	118.4	127.6	130.5	156.8	117.1	150.1	138.3
6	84.1	81.8	90.3	133.7	132.4	118.5	125.2	142.2	167.1	116.9	138.4	138.1
7	82.1	80.8	90.5	135.5	125.6	116.4	118.5	149.1	153.5	124.1	145.8	148.7
8	79.5	81.3	89.9	141.0	120.2	120.5	116.2	150.9	155.8	123.8	149.9	157.1
9	78.9	81.5	88.7	140.2	112.8	115.7	118.2	158.3	147.4	123.2	159.3	149.3
10	78.0	81.5	95.0	130.2	109.3	115.3	112.9	153.3	143.6	120.3	150.8	129.8
11	82.0	84.0	99.4	128.8	110.2	115.8	111.3	154.1	140.4	118.5	144.1	138.8
12	92.7	88.3	100.3	117.6	114.4	115.7	102.6	150.9	136.6	113.4	138.7	138.9
13	87.5	92.3	103.7	115.5	119.1	113.9	109.7	140.4	132.3	117.5	132.6	139.7
14	90.8	102.3	118.2	112.6	119.8	105.1	106.3	140.6	123.3	118.4	123.8	139.9
15	94.6	104.7	131.6	113.5	118.6	103.6	108.2	136.8	118.6	130.4	123.7	137.2
16	94.4	104.2	122.6	107.2	120.4	107.3	109.7	143.3	119.9	130.1	121.8	136.1
17	92.8	102.4	124.3	102.1	113.0	103.9	103.6	139.7	118.6	134.4	118.0	141.5
18	92.0	100.9	125.9	99.4	104.6	103.3	102.4	135.8	123.7	125.0	112.2	149.8
19	90.5	96.3	123.5	96.7	101.5	101.8	105.2	137.9	128.0	116.8	113.7	133.6
20	88.5	93.6	125.5	98.7	94.1	104.4	115.4	141.9	133.3	120.2	118.6	130.4
21	88.0	92.8	124.9	92.9	91.2	105.4	113.9	135.2	139.4	117.2	118.3	130.9
22	90.1	93.5	126.8	88.5	89.6	103.8	117.8	135.9	142.1	113.8	123.0	124.6
23	93.9	97.3	121.3	91.3	92.6	98.9	119.1	129.3	144.1	111.4	126.7	135.2
24	94.5	96.6	119.9	91.7	98.0	108.8	129.2	123.9	136.2	109.6	136.7	134.9
25	105.0	92.9	114.4	93.0	94.7	109.7	125.5	124.8	139.2	106.3	145.6	139.6
26	96.9	90.9	109.5	91.8	94.9	112.8	122.8	129.6	136.2	102.8	152.3	140.2
27	97.7	88.6	107.7	92.6	96.6	119.1	123.2	137.8	128.0	101.8	154.7	161.4
28	93.7	92.3	103.6	99.8	101.1	126.1	125.1	142.0	123.0	106.4	160.4	178.3
29	90.9		100.0	102.0	97.6	123.3	123.1	149.4	116.3	108.0	163.2	176.8
30	88.4		107.2	104.1	98.8	125.0	118.3	166.4	121.8	109.9	158.9	173.1
31	86.8		107.9		96.8		117.2	181.8		117.0		168.8
Mean	90.4	91.1	108.0	109.0	109.0	111.8	117.7	139.4	139.8	116.6	137.1	145.5

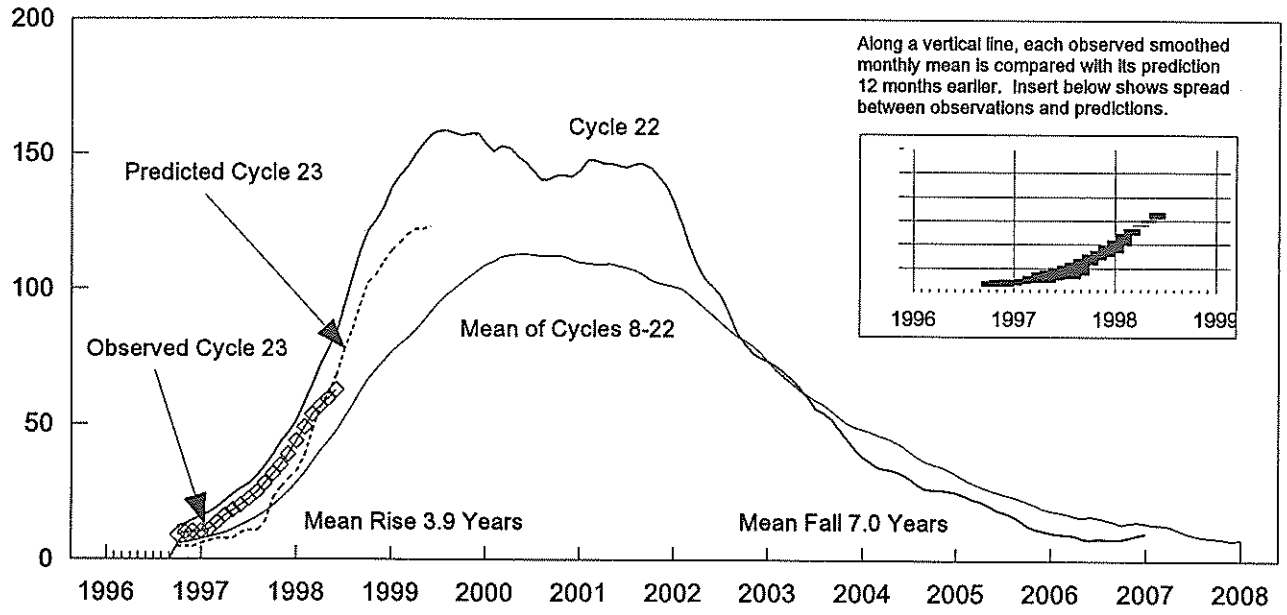
NOTE: *=1700UT reading, snow on antenna at 2000UT.

DAILY SOLAR INDICES
December 1998

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — LEAR (15400)	LEAR (8800)	LEAR (4995)	Pentic (2800)	LEAR (2695)	LEAR (1415)	LEAR (610)	LEAR (410)	LEAR (245)
1	335	16	127	100	162.7	542	265	185	158.2	158	125	80	53	26
2	336	17	87	99	151.7	549	265	183	147.4	158	124	81	53	23
3	337	18	91	92	153.1	548	268	179	148.7	146	124	80	51	23
4	338	19	86	93	148.2	544	262	174	144.0	154	118	72	46	23
5	339	20	68	75	142.4	535	252	172	138.3	140	116	--	--	24
6	340	21	89	88	142.3	--	--	166	138.1	138	108	--	--	13
7	341	22	95	114	153.2	553	261	175	148.7	141	109	74	50	23
8	342	23	119	128	162.0	546	258	183	157.1	145	107	74	51	24
9	343	24	103	120	153.9	542	232	181	149.3	153	112	74	55	25
10	344	25	108	117	133.8	548	261	182	129.8	143	107	72	48	21
11	345	26	105	105	143.1	544	255	173	138.8	137	101	71	50	23
12	346	27	102	112	143.3	546	257	174	138.9	137	102	72	48	24
13	347	1	84	101	144.2	531	243	168	139.7	133	101	73	52	--
14	348	2	83	90	144.4	562	235	167	139.9	132	102	71	56	72
15	349	3	72	73	141.6	538	256	167	137.2	132	103	73	51	29
16	350	4	60	61	140.5	547	261	168	136.1	134	103	71	48	22
17	351	5	49	64	146.1	574	262	168	141.5	135	103	72	49	24
18	352	6	60	61	154.7	575	269	171	149.8	136	106	72	47	24
19	353	7	50	53	138.0	--	268	170	133.6	134	103	73	49	25
20	354	8	50	53	134.7	553	271	166	130.4	132	102	75	50	24
21	355	9	43	47	135.3	510	252	158	130.9	124	102	65	42	20
22	356	10	39	38	128.8	536	271	160	124.6	129	104	72	48	23
23	357	11	47	44	139.8	576	276	165	135.2	130	110	81	53	26
24	358	12	58	60	139.4	560	266	167	134.9	136	111	78	50	23
25	359	13	66	72	144.4	558	262	170	139.6	138	111	74	50	24
26	360	14	81	93	144.9	--	287	180	140.2	146	117	--	53	24
27	361	15	100	107	166.8	550	293	193	161.4	144	117	77	51	23
28	362	16	121	122	184.4	568	306	217	178.3	171	130	79	49	19
29	363	17	96	99	182.8	560	319	225	176.8	170	125	83	53	23
30	364	18	99	102	179.0	553	325	235	173.1	171	124	83	54	22
31	365	19	92	97	174.6	584	284	209	168.8	164	120	75	51	22
MEAN			81.6	86.4	150.1	551	268	179	145.5	143	111	74	50	24

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

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	62	69	75	82	87	92	97	69
							(2)	(5)	(7)	(9)	(12)	(15)	(3)
1999	101	105	109	114	118	123	126	129	131	134	137	139	122
	(17)	(18)	(17)	(16)	(15)	(16)	(20)	(23)	(26)	(29)	(32)	(34)	(21)
2000	140	140	141	141	140	139	138	138	137	135	133	132	138
	(37)	(39)	(41)	(43)	(43)	(42)	(41)	(41)	(42)	(42)	(43)	(43)	(41)

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

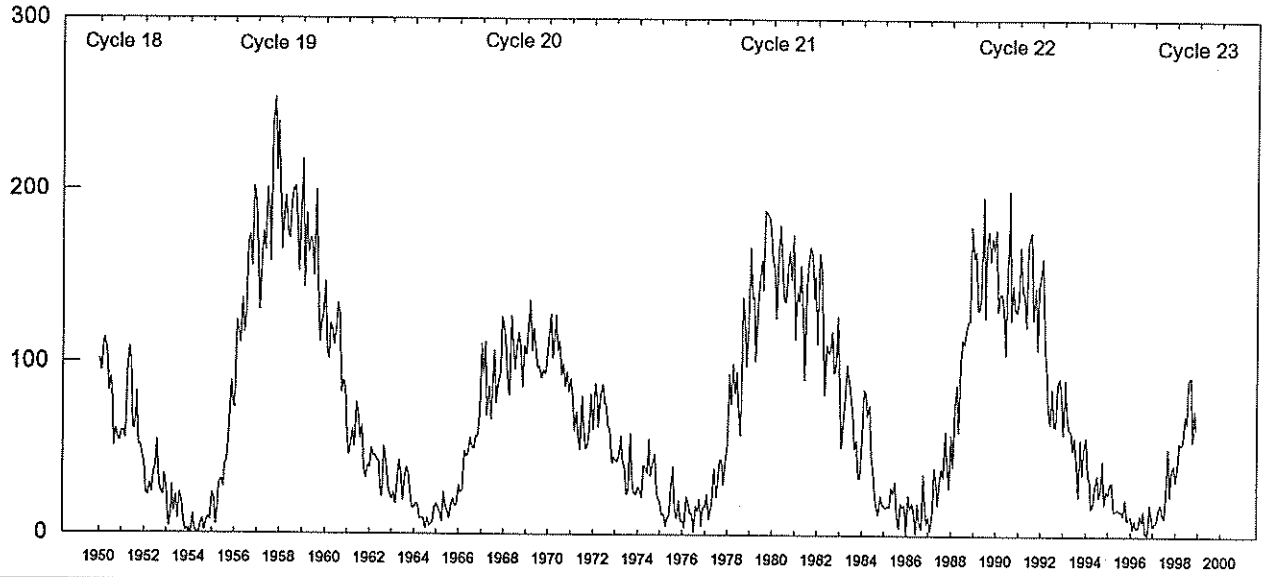
*** May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.**

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 Jun 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 June 1999 prediction. There exists a 90% chance that in June 1999, the actual smoothed number will fall somewhere between 107 and 139.

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 - Dec 1998



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	66.2	91.7	92.9	55.6	73.6	62.4	62.5	

Values are preliminary after Jun 98. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

DECEMBER 1998

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
LEAR	01	0409	0411	0416	S23	W44	8392	11	27.9	7	SF		3	E		37		
GOES		0522	0528	0538	N22	E14	8395			16	SF	C 1.0						9.5E-04
LEAR		0526	0529	0532	N22	E14	8395	12	2.3	6	SF		3	E		16		
GOES		0646	0650	0655	N22	E13	8395			9	SF	C 1.2						6.2E-04
LEAR		0649	0649	0654	N22	E13	8395	12	2.3	5	SF		3	E		26		
GOES		1116	1122	1127	N22	E09				11	SF	C 2.1						1.1E-03
SVTO		1120E	1120U	1132D	N22	E09	8395	12	2.2	12D	SF		2	E		26		F
GOES		1315	1321	1331						16		C 1.1						9.7E-04
GOES		1620	1626	1630	N15	E58	8397			10	SF	C 1.3						6.6E-04
HOLL		1622	1623	1632	N15	E58	8397	12	6.1	10	SF		3	E		58		
RAMY		1624	1624	1718	N15	E57	8397	12	6.0	54	SF		3	E		36		F
HOLL		1632	1633	1637	N16	E57	8397	12	6.0	5	SF		3	E		39		
GOES		1721	1727	1742						21		C 1.2						1.3E-03
GOES		1800	1816	1841	N21	W01	8402			41	1F	C 5.0						9.0E-03
RAMY		1802	1803	1816	N22	E68	8402	12	7.0	14	SF		3	E		32		
HOLL		1807	1809	1854	N21	W01	8395	12	1.7	47	1F		3	E		137		UF
HOLL		1810	1812	1821	N17	E67	8402	12	6.8	11	SF		3	E		15		
HOLL		1822	1824	1850	N18	E68	8402	12	6.9	28	SF		3	E		67		
GOES		2043	2050	2100						17		C 2.0						1.7E-03
GOES	02	0100	0111	0128	N23	W05	8395			28	SF	C 1.2						1.8E-03
LEAR		0110	0114	0119	N23	W05	8395	12	1.7	9	SF		3	E		25		F
LEAR		0722	0728	0752	N21	W05	8395	12	1.9	30	SF		3	E		17		
LEAR		0755	0756	0805	N21	W10	8395	12	1.6	10	SF		3	E		12		
GOES		0905	0909	0912	N17	E59	8402			7	SF	C 1.3						4.9E-04
LEAR		0906	0910	0918	N17	E59	8402	12	6.9	12	SF		3	E		62		
GOES		1227	1236	1305						38		B 9.6						1.9E-03
RAMY		1521E	1521U	1528D	N16	W14	8395	12	1.6	7D	SF		3	E		37		
RAMY		1624	1625	1638	N19	E53	8402	12	6.7	14	SF		3	E		53		
RAMY		1702	1704	1724	N16	W14	8395	12	1.6	22	SF		3	E		16		H
GOES		1844	1849	1851						7		C 1.1						3.8E-04
GOES	03	0434	0438	0444	N14	E34	8397			10	SF	C 1.0						5.4E-04
LEAR		0439	0440	0443	N14	E34	8397	12	5.8	4	SF		3	E		16		F
GOES		1159	1207	1220	N19	W25	8395			21	SF	C 2.0						1.9E-03
RAMY		1204	1205	1237	N19	W25	8395	12	1.6	33	SF		2	E		79		F
HOLL		2019	2019	2025	N12	W15	8401	12	2.7	6	SF		3	E		42		
HOLL		2115	2119	2125	N14	E43	8402	12	7.1	10	SF		3	E		29		
HOLL		2211	2219	2235	N20	E38	8402	12	6.8	24	SF		3	E		34		
GOES	04	0111	0116	0120						9		C 1.3						5.4E-04
GOES		0249	0253	0300						11		C 1.0						6.0E-04
GOES		1102	1106	1110	N15	E25	8402			8	SF	C 1.3						4.7E-04
SVTO		1105	1106	1115	N15	E25	8402	12	6.3	10	SF		3	E		40		
GOES		1223	1227	1230						7		B 8.5						3.1E-04
GOES		1709	1716	1724	N27	W24	8399			15	SF	C 1.8						1.3E-03
RAMY		1714E	1715U	1737	N27	W24	8399	12	2.8	23D	SF		2	E		54		
GOES	05	0433	0437	0439						6		C 1.0						2.8E-04
GOES		1743	1754	1807	S19	W78	8393			24	SF	C 1.5						1.8E-03
HOLL		1745	1747	1757	N31	W38	8399	12	2.7	12	SF		3	E		21		
HOLL		1801	1803	1806	S19	W78	8393	11	29.9	5	SF		3	E		23		
HOLL		1819	1820	1832	N29	W41	8399	12	2.5	13	SF		3	E		12		
GOES		2317	2324	2335						18		C 1.2						1.1E-03
GOES	06	0004	0008	0013						9		C 1.2						5.5E-04
GOES		0255	0300	0306						11		B 9.3						5.5E-04
GOES		0333	0339	0345						12		C 1.6						8.3E-04
GOES		0738	0750	0804						26		C 1.6						2.0E-03
GOES		1440	1446	1452	N19	E02	8402			12	SF	C 1.0						6.3E-04
HOLL		1442	1442	1446	N19	E02	8402	12	6.8	4	SF		3	E		16		
HOLL		1446	1448	1501	N19	E01	8402	12	6.7	15	SF		3	E		25		
HOLL		1515	1516	1518	N22	W60	8398	12	2.0	3	SF		3	E		14		
GOES		1600	1612	1635	S16	E68	8397			35	SF	C 1.2						2.3E-03
HOLL		1601	1610	1631	S16	E68		12	11.8	30	SF		3	E		77		
HOLL		1617	1622	1650	N15	W16	8397	12	5.5	33	SF		3	E		19		
RAMY		1903	1905	1914D	N14	E01	8402	12	6.9	11D	SF		3	E		34		
HOLL		1904	1906	1909	N14	E01	8402	12	6.9	5	SF		3	E		20		

Hα SOLAR FLARES

DECEMBER 1998

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	06	2343	2352	2401						18		C 1.6						1.4E-03
GOES	07	0357	0408	0416	N16	W08	8402			19	SF	C 1.7						1.6E-03
LEAR		0400	0409	0434	N16	W08	8402	12	6.5	34	SF		3	E		94		F
GOES		0614	0617	0620	S16	E58	8405			6	SF	B 8.9						3.0E-04
LEAR		0616	0616	0620	S16	E58	8405	12	11.7	4	SF		3	E		15		
GOES		0853	0858	0903	N17	W08	8402			10	SF	B 9.0						4.8E-04
LEAR		0855	0856	0901	N17	W08	8402	12	6.8	6	SF		3	E		20		
SVTO		0902E	0902U	0908	N18	W11	8402	12	6.5	6D	SF		3	E		13		F
LEAR		0902	0903	0907	N17	W08	8402	12	6.8	5	SF		3	E		41		
GOES		0946	1001	1014	N17	W09	8402			28	SF	C 1.3						2.0E-03
LEAR		0949	0950	0955	N17	W09	8402	12	6.7	6	SF		3	E		16		
LEAR		0953	0956	1001	S23	W03	8404	12	7.2	8	SF		2	E		13		
GOES		1434	1442	1506						32		C 2.3						3.8E-03
HOLL		1537	1538	1543	S16	E55	8405	12	11.8	6	SF		3	E		22		
GOES		1629	1633	1643	S13	E53	8405			14	SF	C 1.9						1.5E-03
HOLL		1632	1634	1643	S13	E53	8405	12	11.7	11	SF		3	E		13		
GOES		2143	2154	2210	S15	E51	8405			27	SF	C 3.9						4.6E-03
HOLL		2146	2150	2217	S15	E51	8405	12	11.8	31	SF		3	E		95		
LEAR	08	0751	0753	0758	S21	W21	8404	12	6.7	7	SF		3	E		14		
LEAR		0804	0805	0808	S17	E15		12	9.5	4	SF		3	E		11		
SVTO		1122	1132	1137	S15	E38	8405	12	11.3	15	SF		2	E		14		
GOES		1230	1321	1336	S25	W18	8404			66	SF	C 2.9						9.8E-03
SVTO		1232	1233	1324	S25	W18	8404	12	7.1	52	SF		3	E		33		F
GOES		1400	1407	1413	S14	E40	8405			13	SF	C 5.7						3.4E-03
RAMY		1403E	1403U	1431D	S14	E40	8405	12	11.6	28D	SF		2	E		29		HT
GOES		1527	1541	1551			8404			24		C 1.8						2.1E-03
RAMY		1528	1833	1940D	S23	W24	8404	12	6.8	252D	1F		3	E		120		FT
GOES		1613	1618	1631						18		C 2.0						1.8E-03
GOES		1632	1638	1645						13		C 3.5						2.2E-03
HOLL		1808	1851	1924	S24	W27	8404	12	6.7	76	1F		3	E		135		
HOLL		1931	1936	1940	S23	W23	8404	12	7.0	9	SF		3	E		35		
RAMY		1940	1940	1956	S14	E38	8405	12	11.7	16	SF		3	E		22		
HOLL		1940	1944	1947	S23	W23	8404	12	7.0	7	SF		3	E		14		
RAMY		2012	2012	2044	N27	W75	8399	12	3.0	32	SF		3	E		12		
GOES		2015	2017	2025	N27	W75	8404			10	SF	C 3.1						1.7E-03
HOLL		2128	2144	2210	S14	E37	8405	12	11.7	42	SF		3	E		20		
GOES		2129	2135	2152	S14	E37	8405			23	SF	C 1.8						2.3E-03
LEAR		2233	2236	2240	N29	W75	8395	12	3.0	7	SF		3	E		16		
GOES	09	0107	0122	0204	S14	E38	8405			57	SF	C 1.9						5.6E-03
LEAR		0124	0126	0131	S14	E38	8405	12	11.9	7	SF		3	E		18		
LEAR		0328	0330	0335	N23	W81	8395	12	2.9	7	SF		3	E		21		
LEAR		0416	0416	0419	N28	W77	8395	12	3.1	3	SF		3	E		10		
GOES		0503	0511	0514	N17	W34	8402			11	SF	C 1.2						7.4E-04
LEAR		0507	0508	0520	N17	W34	8402	12	6.6	13	SF		3	E		31		E
GOES		0550	0554	0558						8		C 1.4						6.2E-04
GOES		0644	0655	0710						26		C 1.2						1.7E-03
GOES		0812	0817	0828	S14	E30	8405			16	SF	C 1.6						1.5E-03
LEAR		0815	0816	0836	S14	E30	8405	12	11.6	21	SF		3	E		46		E
SVTO		1050	1056	1059	N28	W85	8399	12	2.8	9	SF		3	E		22		
GOES		1114	1132	1140						26		C 3.1						4.2E-03
SVTO		1147	1147	1150	N33	W82	8399	12	3.0	3	SF		3	E		23		
GOES		1158	1206	1228	S15	E29	8405			30	SF	C 2.1						3.7E-03
SVTO		1206	1211U	1227D	S15	E29	8405	12	11.7	21D	SF		3	E		19		F
GOES		1534	1547	1552	N19	W40	8402			18	SF	C 1.8						1.5E-03
HOLL		1536	1546	1603	N19	W40	8402	12	6.6	27	SF		3	E		64		F
GOES		1734	1740	1745	S14	E26				11	1N	C 5.9						2.3E-03
HOLL		1737	1741	1843	S14	E26	8405	12	11.7	66	1N		3	E		148		
GOES		1801	1806	1810						9		C 3.2						1.4E-03
GOES		2210	2216	2227	S19	E40	8406			17	SF	C 1.1						9.8E-04
HOLL		2210E	2217	2231	S19	E40	8406	12	13.0	21D	SF		3	E		37		
LEAR		2220	2222	2230	S25	E48	8406	12	13.6	10	SF		2	E		22		E
LEAR	10	0318	0323	0329	S16	E25	8405	12	12.0	11	SF		3	E		16		E
GOES		0617	0621	0627						10		C 1.2						6.8E-04
GOES		0743	0808	0819	S19	E34	8408			36	SF	C 1.4						2.7E-03

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
SVTO	10	0805	0815	0820	S19	E34	8408	12	12.9	15	SF		3	E		12		
SVTO		0821	0824	0826	S19	E34	8408	12	12.9	5	SF		3	E		13		
RAMY		1550	1556	1600	S23	W45	8404	12	7.2	10	SF		3	E		17		
RAMY		1739	1742	1746	S24	W47	8404	12	7.1	7	SF		4	E		18		
RAMY		1906	1909	1930	S15	E14	8405	12	11.8	24	SF		3	E		11		
GOES		2343	2348	2351	S22	W51	8404			8	SF	B 9.3						3.8E-04
LEAR		2348	2349	2353	S22	W51	8404	12	7.1	5	SF		3	E		27		
GOES	11	0318	0326	0336			8404			18		C 1.3						1.2E-03
LEAR		0324	0325	0330	S34	E40	8409	12	14.3	6	SF		3	E		16		
LEAR		0325	0326	0331	S23	W54	8404	12	7.0	6	SF		3	E		16		
LEAR		0333	0334	0343	S23	W54	8404	12	7.0	10	SF		3	E		19		
GOES		0428	0431	0440	S17	E07	8405			12	SF	C 1.2						8.6E-04
LEAR		0429	0431	0448	S17	E07	8405	12	11.7	19	SF		3	E		48		F
LEAR		0542	0601	0614	S22	W55	8404	12	7.0	32	SF		3	E		46		
LEAR		0719	0721	0723	S15	E05	8405	12	11.7	4	SF		3	E		11		
LEAR		0912	0917	0935	S15	E04	8405	12	11.7	23	SF		2	E		38		F
LEAR		0927	0927	0936	S21	E22	8408	12	13.1	9	SF		2	E		11		F
LEAR		0955	0956	0958	S19	E19	8408	12	12.9	3	SF		2	E		17		
GOES		1141	1149	1156	S17	E20	8408			15	SF	C 1.3						1.0E-03
RAMY		1147E	1148U	1203D	S17	E20	8408	12	13.0	16D	SF		2	E		34		F
SVTO		1157E	1216U	1222D	S20	E20	8408	12	13.0	25D	SF		3	E		22		F
RAMY		1653	1656	1706	S19	E16	8408	12	12.9	13	SF		3	E		29		
HOLL		1653	1656	1707	S19	E15	8408	12	12.8	14	SF		3	E		32		F
HOLL		1657	1657	1715	S30	E30	8409	12	14.1	18	SF		3	E		10		
RAMY		1658	1658	1715	S29	E32	8409	12	14.2	17	SF		3	E		12		
RAMY		1729	1752	1819	S19	E17	8408	12	13.0	50	SF		3	E		67		F
GOES		1739	1749	1758	S19	E17	8408			19	SF	C 3.4						2.8E-03
HOLL		1740	1747	1815	S18	E14	8408	12	12.8	35	SF		3	E		72		F
GOES		2007	2011	2014	S29	E29	8409			7	SF	C 1.1						4.2E-04
HOLL		2009	2010	2015	S29	E29	8409	12	14.1	6	SF		3	E		15		
RAMY		2009	2010	2018	S29	E31	8409	12	14.3	9	SF		3	E		23		F
LEAR	12	0205	0208	0216	S20	E13	8408	12	13.1	11	SF		3	E		20		H
LEAR		0237	0239	0245	S20	E12	8408	12	13.0	8	SF		3	E		20		H
LEAR		0246	0248	0255	S20	E12	8408	12	13.0	9	SF		3	E		17		
LEAR		0353	0409	0415	S16	W09	8405	12	11.5	22	SF		3	E		27		H
LEAR		0418	0420	0425	S26	E20	8409	12	13.7	7	SF		3	E		21		
GOES		0422	0428	0431	S20	E12	8409			9	SF	C 1.1						5.1E-04
LEAR		0425	0429	0439	S20	E12	8408	12	13.1	14	SF		3	E		37		
GOES		0509	0513	0515	S28	E21	8409			6	SF	C 1.0						3.0E-04
LEAR		0511	0513	0519	S28	E21	8409	12	13.8	8	SF		3	E		41		
LEAR		0611	0616	0622	S28	E20	8409	12	13.8	11	SF		3	E		10		
LEAR		0626	0632	0636	S27	E20	8409	12	13.8	10	SF		3	E		16		E
LEAR		0701	0703	0710	S30	E62	8411	12	17.2	9	SF		3	E		15		
LEAR		0737	0738	0743	S26	E19	8409	12	13.8	6	SF		3	E		21		
LEAR		0943	0943	0946	S17	E07	8408	12	12.9	3	SF		2	E		11		
LEAR		0947	0952	1004	S17	W12	8405	12	11.5	17	SF		2	E		75		
GOES		1248	1251	1253	S29	E26	8409			5	SF	C 1.3						3.7E-04
RAMY		1250E	1250U	1254D	S29	E26	8409	12	14.6	4D	SF		3	E		18		
RAMY		1459	1500	1505D	S22	W74	8404	12	6.9	6D	SF		3	E		24		
RAMY		1603	1603	1613	S18	E04	8408	12	13.0	10	SF		3	E		11		
GOES		1918	1922	1926	S20	W69	8404			8	SF	C 1.3						5.5E-04
HOLL		1920	1922	1927	S20	W69	8404	12	7.5	7	SF		3	E		37		
GOES		2108	2112	2114						6		C 2.5						6.3E-04
HOLL		2304	2311	2321	S19	W70	8404	12	7.6	17	SF		3	E		29		
LEAR		2312	2312	2319	S22	W73	8404	12	7.3	7	SF		3	E		16		
GOES		2317	2320	2322	S22	W73	8404			5	SF	C 1.6						4.0E-04
GOES		2323	2328	2332	S16	W18				9	1F	C 3.0						1.2E-03
LEAR		2325	2327	2341	S16	W18	8405	12	11.6	16	1F		3	E		101		
HOLL		2325	2328	2339	S15	W18	8405	12	11.6	14	1F		3	E		123		
GOES	13	0148	0156	0158			8409			10		C 2.7						9.2E-04
LEAR		0149	0150	0153	S18	E01	8408	12	13.1	4	SF		3	E		18		
LEAR		0153	0156	0159	S21	W80	8404	12	6.9	6	SF		3	E		99		
LEAR		0155	0200	0206	S28	E16	8409	12	14.3	11	SF		3	E		23		
GOES		0323	0331	0337						14		C 1.8						1.2E-03
GOES		0430	0436	0445	S16	W04	8408			15	SF	C 1.4						1.0E-03

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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
LEAR	13	0432	0436	0450	S16	W04	8408	12	12.9	18	SF		3	E		44		
GOES		0512	0516	0518						6		C 3.0						7.3E-04
GOES		0707	0712	0715	S22	W85				8	SF	C 5.5						1.3E-03
LEAR		0711	0711	0719	S22	W85	8404	12	6.8	8	SF		3	E		90		
SVTO		0946	0946	0950	S29	E49	8411	12	17.2	4	SF		3	E		12		F
GOES		1030	1035	1041	S19	W04	8408			11	SF	C 3.7						1.7E-03
SVTO		1032	1034	1057	S19	W04	8408	12	13.1	25	SF		3	E		50		FE
SVTO		1245	1246	1256	S19	W06	8408	12	13.1	11	SF		3	E		26		
SVTO		1354	1358	1402	S19	W06	8408	12	13.1	8	SF		3	E		12		
RAMY		1532E	1532U	1556D	S16	W10	8408	12	12.9	24D	SF		3	E		25		
HOLL		1817	1821	1828	S16	W12	8408	12	12.8	11	SF		3	E		15		F
GOES		1845	1855	1908						23		C 1.2						1.5E-03
GOES		2018	2022	2025						7		C 1.2						4.3E-04
GOES		2037	2043	2052	S18	W10	8408			15	SF	C 2.8						1.7E-03
HOLL		2042	2049	2103	S18	W10	8408	12	13.1	21	SF		3	E		48		
GOES	14	0001	0010	0012	S19	W12	8408			11	SN	C 7.0						1.7E-03
LEAR		0007	0010	0029	S19	W12	8408	12	13.1	22	SN		3	E		94		
LEAR		0152	0153	0201	S16	W14	8408	12	13.0	9	SF		3	E		31		
GOES		0348	0353	0357	S20	W15				9	1F	C 1.2						5.4E-04
LEAR		0358	0400	0407	S20	W15	8408	12	13.0	9	1F		3	E		100		
GOES		0516	0520	0525						9		B 7.3						3.6E-04
GOES		0624	0628	0631						7		C 3.6						9.6E-04
SVTO		0734	0735	0739	S19	W17	8408	12	13.0	5	SF		3	E		16		F
LEAR		0743	0743	0746	S20	W17	8408	12	13.0	3	SF		3	E		12		
SVTO		0847	0847	0854	S19	W16	8408	12	13.1	7	SF		3	E		12		
GOES		0938	0944	0948	S19	W19	8408			10	SN	C 7.3						2.3E-03
LEAR		0941	0943	1007	S18	W20	8408	12	12.9	26	SF		2	E		61		F
SVTO		0941	0944	1008	S19	W19	8408	12	12.9	27	SN		3	E		53		F
GOES		1106	1110	1120						14		C 1.3						9.9E-04
GOES		1136	1140	1143						7		C 1.7						6.5E-04
GOES		1214	1218	1225						11		C 1.9						1.1E-03
RAMY		1425	1425	1430	S19	W20	8408	12	13.1	5	SF		3	E		11		
HOLL		1654	1655	1703	S18	W24	8408	12	12.9	9	SF		3	E		11		F
GOES		1727	1734	1738						11		C 1.9						1.1E-03
GOES		1913	1919	1923						10		C 2.6						1.1E-03
GOES	15	0224E	0231U	0238D						14D		C 1.3						
SVTO		0737	0738	0742	S17	W31	8408	12	13.0	5	SF		3	E		19		
LEAR		0738	0738	0742	S20	W30	8408	12	13.0	4	SF		3	E		19		
LEAR		0825	0829	0835	S20	W30	8408	12	13.0	10	SF		3	E		13		
GOES		0826	0829	0833	S20	W30	8408			7	SF	B 7.3						2.8E-04
SVTO		0828	0828	0837	S19	W30	8408	12	13.1	9	SF		3	E		11		F
GOES		1047	1053	1057	S28	W15	8409			10	SF	C 1.0						5.1E-04
SVTO		1052E	1052U	1055	S28	W15	8409	12	14.3	3D	SF		3	E		17		F
SVTO		1309E	1310U	1323	N24	E49		12	19.3	14D	SF		3	E		44		F
GOES		1414	1417	1420						6		B 7.0						2.2E-04
GOES		1752	1801	1815						23		C 1.3						1.6E-03
GOES		1923	1928	1931						8		C 1.0						4.3E-04
HOLL		1925	1926	1934	S19	W37	8408	12	13.0	9	SF		3	E		38		
RAMY		1930	1930	1945	S18	W38	8408	12	12.9	15	SF		3	E		45		
GOES		2037	2041	2045	S18	W36				8	SF	B 7.5						3.1E-04
RAMY		2040E	2041U	2049D	S18	W36	8408	12	13.1	9D	SF		2	E		14		
GOES		2332	2336	2339						7		B 6.4						2.4E-04
GOES	16	0123	0133	0144	N21	E21	8410			21	SF	C 1.0						1.2E-03
LEAR		0133	0133	0141	N21	E21	8410	12	17.7	8	SF		3	E		20		F
GOES		0203	0209	0213	S19	W40				10	SF	C 1.5						6.7E-04
LEAR		0208	0209	0217	S19	W40	8408	12	13.0	9	SF		3	E		28		
GOES		0944	1001	1012						28		C 1.8						2.5E-03
GOES		1043	1047	1050	S25	W33				7	SF	C 1.0						3.7E-04
SVTO		1045	1047	1057	S25	W33	8409	12	13.9	12	SF		3	E		52		
GOES		1158	1203	1206	S28	W28	8409			8	SF	C 1.2						5.2E-04
SVTO		1200	1203	1209	S28	W28	8409	12	14.3	9	SF		3	E		15		
RAMY		1612	1613	1630D	S18	W50	8408	12	12.9	18D	SF		3	E		16		
HOLL		1614	1614	1632	S17	W50	8408	12	12.9	18	SF		3	E		16		
GOES		1902	1909	1914	S28	W40	8409			12	SN	C 5.4						2.4E-03
HOLL		1905	1908	1923	S28	W39	8409	12	13.7	18	SF		3	E		32		

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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
RAMY	16	1905	1910	1925	S28	W40	8409	12	13.7	20	SN		4	E		36		
GOES		2012	2015	2019						7		C 1.0						3.7E-04
GOES		2149	2200	2215	S18	W53				26	1F	C 4.0						4.8E-03
HOLL		2153	2201	2227	S18	W53	8408	12	12.9	34	1F		3	E		111		
GOES	17	0210	0215	0220	S16	W55	8408			10	SF	B 9.2						4.9E-04
LEAR		0213	0216	0219	S16	W55	8408	12	12.9	6	SF		3	E		10		F
GOES		0224	0230	0235	S17	W54				11	SF	C 2.2						1.1E-03
LEAR		0226	0229	0241	S17	W54	8408	12	13.0	15	SF		3	E		74		
GOES		0740	0745	0749	S27	W46				9	1N	M 3.2						9.1E-03
SVTO		0742	0747	0812	S28	W38	8409	12	14.3	30	1B		3	E		141		
LEAR		0743	0746	0804	S27	W46	8409	12	13.7	21	1N		3	E		116		
GOES		1054	1059	1105	S28	W50				11	SF	C 1.4						7.1E-04
SVTO		1101	1101	1105	S28	W50	8409	12	13.5	4	SF		3	E		11		
RAMY		1124E	1125U	1131D	S29	W47	8409	12	13.8	7D	SF		2	E		28		
RAMY		1240	1241	1244	S30	W48	8409	12	13.7	4	SF		3	E		14		
SVTO		1240	1241	1245	S29	W50	8409	12	13.6	5	SF		3	E		11		
RAMY		1339	1344	1348	N19	E78		12	23.5	9	SF		3	E		63		H
GOES		1412	1418	1422	S28	W51				10	SN	C 7.2						2.5E-03
HOLL		1415E	1415U	1442	S26	W45	8409	12	14.1	27D	SF		2	E		71		
RAMY		1416	1416	1442	S28	W51	8409	12	13.6	26	SN		3	E		85		F
RAMY		1425	1425	1428	N19	E78		12	23.5	3	SF		3	E		14		
RAMY		1459	1501	1504	S29	W50	8409	12	13.7	5	SF		3	E		18		
RAMY		1548	1549	1551	S30	W46	8409	12	14.0	3	SF		3	E		26		
HOLL		1716	1717	1722	N19	E79	8415	12	23.7	6	SF		3	E		24		
HOLL		1739	1751	1802	N17	E70	8415	12	23.0	23	1F		3	E		119		
RAMY		1740	1751	1759D	N19	E76	8415	12	23.5	19D	1N		3	E		109		
GOES		1746	1753	1757	N17	E70				11	1F	C 6.4						2.6E-03
HOLL		1808	1840	1911	S16	W66	8408	12	12.7	63	SF		3	E		62		
GOES		1809	1815	1837	S16	W66	8408			28	SF	C 4.5						6.2E-03
HOLL		1812	1813	1828	S28	W53	8409	12	13.6	16	SF		3	E		31		
HOLL		1841	1843	1849	N19	E75	8415	12	23.5	8	SF		3	E		30		
HOLL		1900	1902	1914	N19	E75	8415	12	23.5	14	SF		3	E		26		
HOLL		1956	1957	2005	N19	E75	8415	12	23.5	9	SF		3	E		47		
HOLL		2043	2055	2102	N19	E73	8415	12	23.4	19	SF		3	E		43		
GOES		2112	2119	2127						15		C 5.9						3.9E-03
HOLL		2246	2246	2251	N19	E72	8415	12	23.4	5	SF		3	E		22		
HOLL		2253	2301	2315	N19	E71	8415	12	23.4	22	1F		3	E		123		
LEAR		2254E	2302U	2315	N17	E72	8415	12	23.4	21D	1F		1	E		136		
GOES		2258	2306	2310	N19	E71	8415			12	1F	C 8.3						3.9E-03
LEAR	18	0127	0127	0130	S31	W54	8409	12	13.8	3	SF		3	E		20		
LEAR		0302	0305	0315	N18	E71	8415	12	23.5	13	SF		3	E		67		
GOES		0302	0307	0311	N18	E71	8415			9	SF	C 3.1						1.2E-03
GOES		0343	0348	0351	N18	E69	8415			8	SF	C 2.5						9.7E-04
LEAR		0344	0346	0400	N18	E69	8415	12	23.4	16	SF		3	E		68		
LEAR		0354	0357	0402	S27	W64	8406	12	13.2	8	SF		3	E		15		
LEAR		0450	0453	0500	N19	E69	8415	12	23.5	10	SF		3	E		15		
GOES		0514	0527	0530	N18	E69	8415			16	SF	C 3.4						1.9E-03
LEAR		0527	0527	0529	N18	E69	8415	12	23.5	2	SF		3	E		13		
GOES		0712	0716	0720						8		C 1.3						5.7E-04
GOES		0742	0750	0758	N19	E73	8415			16	SF	C 3.4						2.8E-03
SVTO		0748	0751	0759	N19	E73	8415	12	23.9	11	SF		3	E		19		F
SVTO		0804	0806	0812	N19	E69	8415	12	23.6	8	SF		3	E		21		
LEAR		0805	0806	0810	N19	E67	8415	12	23.4	5	SF		3	E		28		
LEAR		0937	0939	0943	N19	E68	8415	12	23.6	6	SF		3	E		28		
GOES		0942	0945	0948	S30	W57	8409			6	SF	C 1.6						5.0E-04
SVTO		0944	0945	0952	S30	W57	8409	12	13.9	8	SF		3	E		30		F
GOES		1247	1252	1254	S29	W66	8409			7	SF	C 2.9						6.7E-04
SVTO		1251	1252	1256	S28	W68	8409	12	13.2	5	SF		3	E		20		
RAMY		1251	1253	1257	S29	W66	8409	12	13.4	6	SF		4	E		15		H
SVTO		1333	1338	1342	N18	E67	8415	12	23.7	9	SF		3	E		17		
SVTO		1344	1345	1401	N18	E66	8415	12	23.6	17	SF		2	E		25		F
RAMY		1346	1346	1350	N19	E67	8415	12	23.7	4	SF		4	E		21		
RAMY		1532	1535	1545	N20	E63	8415	12	23.5	13	SF		3	E		22		
HOLL		1533	1535	1544	N19	E64	8415	12	23.5	11	SF		3	E		29		
GOES		1533	1537	1540	N20	E63	8415			7	SF	C 1.3						5.2E-04
GOES		1559	1605	1613	N19	E65	8415			14	SF	C 2.0						1.4E-03

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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
RAMY	18	1601	1601	1616	N19	E66	8415	12	23.7	15	SF		3	E		22		
HOLL		1601	1611	1616	N19	E65	8415	12	23.6	15	SF		3	E		21		
GOES		1713	1722	1727			8415			14		M 8.0						3.5E-02
RAMY		1714	1726	1951	N29	E33		12	21.3	157	1F		3	E		167		U
HOLL		1717	1722	1845	N19	E64	8415	12	23.6	88	2N		3	E		451		F
RAMY		1718	1720	1755D	N21	E69	8415	12	24.0	37D	2B		3	E		368		UH
HOLL		1720	1726	2010	N28	E35	8414	12	21.4	170	1F		3	E		163		U
HOLL		2028	2029	2032	N20	E60	8415	12	23.4	4	SF		3	E		13		
RAMY		2028	2029	2033	N19	E60	8415	12	23.4	5	SF		3	E		16		
HOLL		2118	2119	2123	N20	E68	8415	12	24.1	5	SF		3	E		15		
HOLL		2150	2151	2155	N20	E67	8415	12	24.0	5	SF		3	E		18		
HOLL		2228	2232	2240	N20	E66	8415	12	24.0	12	SF		3	E		11		
HOLL		2233	2235	2237	N23	W16	8410	12	17.7	4	SF		3	E		11		
SVTO	19	0949	0950	0952	S27	W84	8406	12	12.9	3	SF		3	E		17		
SVTO		1004	1005	1009	S30	W75	8409	12	13.5	5	SF		3	E		26		
SVTO		1425	1428	1428D	N19	E54	8415	12	23.7	3D	SF		3	E		24		
RAMY		1426E	1440U	1454D	N20	E55	8415	12	23.8	28D	SF		3	E		40		
RAMY		1835	1835	1838	N19	E57	8415	12	24.1	3	SF		3	E		17		
LEAR		2315	2325	2332	N20	E50	8415	12	23.8	17	SF		3	E		21		
LEAR	20	0415	0417	0439	N24	W33	8410	12	17.6	24	SF		3	E		25		
LEAR		0442	0447	0454	N24	W33	8410	12	17.6	12	SF		3	E		17		
GOES		0507	0514	0521	N20	E44	8415			14	SF	C 3.4						2.2E-03
LEAR		0511	0525	0535	N20	E44	8415	12	23.6	24	SF		3	E		14		
GOES		0552	0600	0607	N18	E44	8415			15	SF	C 1.5						1.2E-03
LEAR		0557	0557	0607	N18	E44	8415	12	23.6	10	SF		4	E		16		F
GOES		0725	0730	0736						11		C 1.1						6.2E-04
SVTO		0846	0858	0921D	N20	E45	8415	12	23.8	35D	1N		3	E		151		
LEAR		0849	0859	0916	N21	E46	8415	12	23.9	27	1N		3	E		105		
GOES		0849	0900	0903	N21	E46	8415			14	1N	M 1.8						6.2E-03
GOES		1234	1238	1243						9		C 2.2						1.0E-03
RAMY		1854	1854	1857	N18	E73	8416	12	26.3	3	SF		3	E		11		
RAMY		2027	2028	2036	N18	E83	8416	12	27.2	9	SF		3	E		23		
HOLL		2028	2028	2033	N20	E89	8416	12	27.7	5	SF		3	E		25		
HOLL		2157	2158	2204	N20	E89	8416	12	27.7	7	SF		3	E		34		
GOES	21	0417	0429	0440						23		C 5.6						5.4E-03
GOES		1057	1100	1103						6		B 7.7						2.4E-04
GOES		1122	1127	1138						16		B 8.5						7.3E-04
GOES		1328	1334	1338	N19	E63	8416			10	SF	C 2.0						9.3E-04
RAMY		1333	1333	1343	N19	E63	8416	12	26.4	10	SF		3	E		37		
RAMY		1533	1543	1552	N20	E61	8416	12	26.3	19	SF		3	E		17		
RAMY		1621	1624	1626	N20	E61	8416	12	26.3	5	SF		3	E		10		
RAMY		1836E	1837U	1850D	N20	E62	8416	12	26.5	14D	SF		2	E		28		
GOES		1937	1941	1948	N21	E26	8415			11	SF	C 1.4						7.1E-04
HOLL		1942E	1942U	2015D	N21	E26	8415	12	23.8	33D	SF		3	E		32		
GOES		2114	2118	2122						8		B 9.4						4.0E-04
RAMY		2123E	2125U	2127D	N18	E20	8415	12	23.4	4D	SF		2	E		12		
LEAR	22	0912	0915	0920	N16	E48	8416	12	26.0	8	SF		3	E		14		F
GOES		1512	1517	1522						10		B 6.2						3.2E-04
GOES		1530	1534	1537	N18	E11	8415			7	SF	B 6.9						2.5E-04
RAMY		1532	1533	1538	N18	E11	8415	12	23.5	6	SF		3	E		27		
HOLL		1533	1533	1536	N19	E11	8415	12	23.5	3	SF		3	E		14		
GOES		1705	1720	1807						62		B 8.9						2.9E-03
GOES		1822	1833	1845	N19	E58	8416			23	SF	C 1.2						1.4E-03
RAMY		1825	1834	1843	N19	E58	8416	12	27.2	18	SF		3	E		22		
RAMY		2046	2111U	2120D	N18	E08	8415	12	23.5	34D	SN		2	E		42		
HOLL		2048	2050	2106	N19	E08	8415	12	23.5	18	SF		3	E		42		
GOES		2109	2113	2115	N19	E10	8415			6	SF	C 1.3						3.7E-04
HOLL		2111	2114	2119	N19	E10	8415	12	23.6	8	SF		3	E		32		
GOES		2345	2351	2355						10		C 6.9						2.5E-03
GOES	23	0205	0250	0322	N26	W23				77	SF	C 2.2						6.9E-03
LEAR		0230	0231	0252	N26	W23	8414	12	21.3	22	SF		3	E		28		F
LEAR		0308	0309	0314	N26	W23	8414	12	21.3	6	SF		3	E		19		F
GOES		0326	0332	0350						24		C 2.2						2.5E-03

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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
GOES	23	0513	0659	0743						150		M 2.3						1.1E-01
GOES		0813	0816	0821						8		M 1.1						5.0E-03
GOES		1157	1206	1213						16		C 5.0						3.8E-03
HOLL		1800	1800	1813	N28	E86		12	30.5	13	SF		3	E		21		
RAMY		1812E	1812U	1841D	N19	E36	8416	12	26.5	29D	SF		2	E		28		FS
RAMY		2000	2002	2007	N26	E30	8419	12	26.2	7	SF		3	E		20		H
GOES	24	0040	0054	0107						27		C 5.0						7.0E-03
GOES		0120	0127	0134	N19	E32				14	SF	C 6.2						4.4E-03
LEAR		0122	0126	0156	N19	E32	8416	12	26.5	34	SF		3	E		73		F
LEAR		0437	0441	0444	N17	E31	8416	12	26.5	7	SF		4	E		13		
LEAR		0813	0822	0831	N17	E29	8416	12	26.5	18	SF		4	E		17		
LEAR		0820	0823	0826	N28	E73	8421	12	30.0	6	SF		4	E		14		
GOES		1129	1145	1214			8421			45		M 1.7						3.0E-02
SVTO		1140	1148U	1229D	N29	E79	8421	12	30.7	49D	SF		3	E		68		
RAMY		1143E	1147U	1213D	N28	E73	8421	12	30.2	30D	SF		3	E		69		
GOES		1840	1843	1845						5		B 9.8						2.6E-04
HOLL		1904	1910	1922	N17	E22	8416	12	26.5	18	SF		3	E		26		
RAMY		1911E	1911U	1925	N17	E22	8416	12	26.5	14D	SF		3	E		39		
GOES		2037	2120	2145	N28	E62				68	1F	C 1.8						4.7E-03
HOLL		2048	2122	2216	N28	E62	8421	12	29.7	88	1F		3	E		166		
GOES	25	0028	0033	0037	N28	E60				9	SF	C 2.2						1.0E-03
LEAR		0031	0031	0040	N28	E60	8421	12	29.7	9	SF		3	E		13		
GOES		0337	0414	0449						72		C 2.9						9.1E-03
GOES		0531	0634	0727	N30	E66	8421			116	SF	M 1.2						5.0E-02
LEAR		0541	0541	0546	N29	E58	8421	12	29.8	5	SF		3	E		17		
LEAR		0614	0630	0705	N30	E66	8421	12	30.4	51	SF		3	E		70		
GOES		1801	1806	1811	N30	E58	8421			10	SF	C 1.0						5.2E-04
HOLL		1803	1804	1809	N30	E58	8421	12	30.3	6	SF		3	E		14		
RAMY		1833	1833	1836	N25	E01	8419	12	25.8	3	SF		3	E		13		
GOES		2003	2007	2010	N29	E57				7	SF	C 1.3						4.5E-04
HOLL		2005	2006	2013	N29	E57	8421	12	30.3	8	SF		3	E		15		
GOES		2017	2020	2023						6		C 1.1						3.5E-04
GOES		2048	2052	2056	N29	E59	8421			8	SF	C 1.2						5.2E-04
HOLL		2050	2051	2058	N29	E59	8421	12	30.5	8	SF		3	E		26		
GOES	26	0044	0047	0049						5		C 1.3						3.3E-04
GOES		0054	0138	0222	N29	E56	8421			88	SF	C 2.0						7.8E-03
LEAR		0137	0137	0149	N29	E56	8421	12	30.4	12	SF		3	E		15		E
LEAR		0337	0337	0341	N29	E54	8421	12	30.4	4	SF		4	E		14		
GOES		0507	0512	0515	N28	E52	8421			8	SF	C 2.4						7.4E-04
LEAR		0510	0511	0520	N28	E52	8421	12	30.3	10	SF		4	E		41		E
GOES		0555	0559	0601	S21	E64	8422			6	SF	C 7.8						1.2E-03
LEAR		0558	0558	0602	S21	E64	8422	12	31.1	4	SF		4	E		38		
GOES		0707	0731	0803						56		C 1.7						4.3E-03
GOES		0919	0934	0955	N27	E53	8421			36	SF	C 2.9						5.2E-03
LEAR		0922	0924	0929	N27	E53	8421	12	30.5	7	SF		3	E		22		F
RAMY		1447	1457	1559	N25	E46	8421	12	30.2	72	1F		3	E		102		FE
GOES		1447	1507	1524	N25	E46	8421			37	1F	C 4.4						7.0E-03
HOLL		1449	1456	1541	N27	E48	8421	12	30.3	52	SF		3	E		74		F
HOLL		1619	1619	1623	N32	E53	8421	12	30.9	4	SF		3	E		17		F
HOLL		1628	1634	1645	N27	W08	8419	12	26.1	17	SF		3	E		19		
RAMY		1634	1635	1639	N26	E42	8421	12	29.9	5	SF		3	E		11		
RAMY		1634	1635	1652	N26	W08	8419	12	26.1	18	SF		3	E		49		
RAMY		1705	1710	1716	N28	E44	8421	12	30.1	11	SF		3	E		15		
RAMY		1711	1713	1718	N20	W36	8415	12	24.0	7	SF		3	E		28		
HOLL		1712	1713	1716	N21	W36	8415	12	23.9	4	SF		3	E		17		
RAMY		1721	1721	1727	N21	W09	8416	12	26.0	6	SF		3	E		13		
GOES		1821	1830	1840	N26	W10	8419			19	SF	C 3.5						3.0E-03
HOLL		1823	1827	1853	N26	W10	8419	12	26.0	30	SF		3	E		61		
RAMY		1824	1825	1854	N25	W09	8419	12	26.1	30	SF		3	E		42		
RAMY		1920	1920	1931	N27	E47	8421	12	30.5	11	SF		3	E		10		
HOLL		1921	1924	1930	N28	E47	8421	12	30.5	9	SF		3	E		18		
RAMY		1935	1939	1952	N27	E46	8421	12	30.4	17	SF		3	E		21		
HOLL		1936	1940	1948	N28	E46	8421	12	30.4	12	SF		3	E		20		
RAMY		2030	2030	2033	N18	W39	8415	12	23.9	3	SF		3	E		10		
GOES		2030	2039	2048	N27	W10				18	SF	C 2.4						2.0E-03

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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	26	2031	2040	2119	N27	W10	8419	12	26.1	48	SF		3	E		40		
RAMY		2033	2037	2102D	N25	W10	8419	12	26.1	29D	SF		3	E		51		
GOES		2336	2344	2349	N26	W11				13	SF	C 7.8						3.8E-03
LEAR		2338	2344	2403	N26	W11	8419	12	26.1	25	SF		4	E		67		F
GOES	27	0114	0119	0124	N26	W11	8419			10	SF	C 2.0						9.7E-04
LEAR		0117	0117	0124	N26	W11	8419	12	26.2	7	SF		4	E		33		F
GOES		0129	0135	0140	N26	W14	8419			11	SF	C 3.0						1.5E-03
LEAR		0131	0134	0140	N26	W14	8419	12	26.0	9	SF		4	E		31		E
GOES		0307	0312	0321	N26	E37	8421			14	SF	C 3.3						1.9E-03
LEAR		0310	0312	0322	N26	E37	8421	12	30.0	12	SF		4	E		59		FE
LEAR		0420	0421	0430	N26	W15	8419	12	26.0	10	SF		4	E		15		E
LEAR		0459	0507	0510	N28	E37	8421	12	30.1	11	SF		4	E		15		F
LEAR		0522	0524	0527	N28	E37	8421	12	30.1	5	SF		4	E		15		F
GOES		0552	0559	0608	N28	E37	8421			16	SF	C 2.2						1.7E-03
LEAR		0555	0556	0601	N28	E37	8421	12	30.1	6	SF		4	E		25		F
LEAR		0650	0652	0700	N26	E38	8421	12	30.2	10	SF		4	E		15		
GOES		0703	0708	0715						12		C 2.2						1.3E-03
GOES		0915	0921	0927	N28	E35	8421			12	SF	C 2.3						1.5E-03
LEAR		0916	0920	0936	N28	E35	8421	12	30.1	20	SF		4	E		22		FE
RAMY		1542	1542	1546	S24	E39	8422	12	30.7	4	SF		3	E		12		
RAMY		1759	1801U	1805D	N15	W90		12	20.9	6D	SF		3	E		38		
RAMY		1808	1810	1815	S25	E38	8422	12	30.7	7	SF		3	E		25		S
GOES		1824	1836	1846						22		C 2.0						2.4E-03
GOES		2012	2019	2024	N30	E33				12	SF	C 3.4						1.9E-03
HOLL		2015	2018	2033	N30	E33	8421	12	30.4	18	SF		3	E		47		
GOES		2117	2123	2129						12		C 1.4						9.5E-04
GOES		2150	2155	2201	N21	W19	8416			11	SF	C 1.4						7.9E-04
HOLL		2153	2153	2157	N21	W19	8416	12	26.4	4	SF		3	E		21		
GOES		2338	2342	2346	N21	W30	8423			8	SF	C 2.7						1.1E-03
LEAR		2340	2342	2346	N21	W30	8423	12	25.7	6	SF		3	E		19		
GOES		2353	2359	2410	N18	W19				17	SF	C 3.6						3.0E-03
LEAR		2355	2358	2419	N18	W19	8416	12	26.5	24	SF		3	E		41		
LEAR	28	0047	0054	0103	N25	W24	8419	12	26.2	16	SF		3	E		11		
LEAR		0056	0059	0101	N27	E25	8421	12	30.0	5	SF		3	E		11		F
LEAR		0233	0317	0328	N25	W26	8419	12	26.1	55	SF		3	E		20		
LEAR		0357	0403	0438	N25	W26	8419	12	26.1	41	SF		4	E		21		F
LEAR		0446	0506	0520	N25	W27	8419	12	26.1	34	SF		4	E		17		
GOES		0515	0531	0544	N28	E26	8416			29	SF	M 1.4						1.9E-02
LEAR		0516	0521	0633	N28	E26	8421	12	30.2	77	SF		4	E		62		EH
LEAR		0536	0548	0623	N25	W27	8419	12	26.1	47	1B		4	E		118		ZE
GOES		0545	0548	0559	N25	W27				14	1B	M 3.1						1.9E-02
LEAR		0547	0547	0620	N22	W27	8416	12	26.2	33	SF		4	E		69		E
LEAR		0618	0626	0659	S22	E31	8422	12	30.6	41	SF		4	E		65		E
LEAR		0635	0637	0640	N27	E24	8421	12	30.1	5	SF		4	E		11		
GOES		0841	0845	0847	N24	W30	8419			6	SF	C 2.5						7.5E-04
SVTO		0842	0845	0851	N24	W30	8419	12	26.0	9	SF		3	E		24		F
LEAR		0843	0845	0850	N24	W30	8419	12	26.0	7	SF		4	E		21		
LEAR		0935	0937	0949	N25	W32	8419	12	25.9	14	SF		3	E		13		E
SVTO		0949	0950U	0955D	N23	W29	8419	12	26.2	6D	SF		3	E		35		
SVTO		1021	1030	1040	N25	W30	8419	12	26.1	19	SF		3	E		24		F
GOES		1102	1106	1108						6		C 2.8						7.0E-04
RAMY		1149E	1157	1221	N26	W35	8419	12	25.8	32D	SF		3	E		75		
GOES		1152	1200	1208	N26	W35				16	SF	C 5.7						4.3E-03
GOES		1305	1310	1313	N24	W33	8419			8	SF	C 2.3						8.1E-04
SVTO		1312	1313	1315	N24	W33	8419	12	26.0	3	SF		3	E		13		F
SVTO		1359	1402U	1406D	N26	E21	8421	12	30.2	7D	SF		3	E		19		
GOES		1454	1505	1520	S20	E27	8422			26	SF	C 3.1						4.0E-03
RAMY		1515	1517	1539	S20	E27	8422	12	30.7	24	SF		3	E		31		
RAMY		1525	1527	1544	N27	E17	8421	12	30.0	19	SF		3	E		40		
GOES		1713	1718	1724	N24	W34				11	1F	C 5.0						2.4E-03
RAMY		1715	1718	1741D	N23	W34	8419	12	26.1	26D	1N		3	E		106		H
HOLL		1716	1718	1743	N24	W34	8419	12	26.1	27	1F		3	E		115		F
GOES		1804	1811	1814	N25	W33	8419			10	SF	C 4.9						2.4E-03
HOLL		1811	1813	1833	N25	W33	8419	12	26.2	22	SF		3	E		26		
RAMY		1815	1815	1823	N24	W34	8419	12	26.1	8	SF		3	E		32		
HOLL		2149	2150	2155	N26	E13	8421	12	29.9	6	SF		3	E		22		

Hα SOLAR FLARES

DECEMBER 1998

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	28	2211	2214	2224	N26	W41	8419	12	25.7	13	SF		3	E		24		
HOLL		2235	2328	2356D	N26	E12	8421	12	29.9	81D	1F		3	E		175		
LEAR		2301	2323	2435	N27	E14	8421	12	30.0	94	1F		3	E		139		
GOES		2315	2322	2333	N27	E14	8421			18	1F	M 1.7						1.2E-02
HOLL		2324	2335	2356D	N24	W36	8419	12	26.2	32D	1F		3	E		148		
GOES		2333	2338	2351	N24	W36				18	1F	M 2.1						1.9E-02
LEAR	29	0044	0044	0048	N27	E14	8421	12	30.1	4	SF		3	E		25		
LEAR		0059	0102	0105	N27	E14	8421	12	30.1	6	SF		3	E		15		
LEAR		0120	0124	0133	N24	E11	8421	12	29.9	13	SF		3	E		23		
LEAR		0218	0221	0223	N25	W38	8419	12	26.1	5	SF		3	E		20		F
LEAR		0231	0233	0236	N25	E09	8421	12	29.8	5	SF		3	E		11		F
GOES		0549	0601	0624			8421			35		C 2.2						4.0E-03
LEAR		0552	0552	0607	N27	W42	8419	12	26.0	15	SF		4	E		17		
LEAR		0552	0554	0600	N24	E07	8421	12	29.8	8	SF		4	E		24		E
LEAR		0601	0605	0607	N24	E07	8421	12	29.8	6	SF		4	E		15		
LEAR		0608	0610	0613	N25	E09	8421	12	29.9	5	SF		4	E		16		
LEAR		0619	0624	0627	N26	E10	8421	12	30.0	8	SF		4	E		17		E
GOES		0739	0744	0750	N26	E10	8421			11	SF	C 2.6						1.4E-03
LEAR		0741	0743	0751	N26	E10	8421	12	30.1	10	SF		4	E		28		E
SVTO		0741	0743	0752	N26	E10	8421	12	30.1	11	SF		3	E		26		F
SVTO		0828	0939	1042	N24	E05	8421	12	29.7	134	SF		3	E		99		F
SVTO		0834	0838	0852	N26	W43	8419	12	26.0	18	SF		3	E		29		
SVTO		0855	0904	0911	N27	W45	8419	12	25.9	16	SF		3	E		18		
GOES		0923	0941	0953	N27	E13	8421			30	SF	C 5.1						6.7E-03
LEAR		0926	0929	1006	N27	E13	8421	12	30.4	40	SF		2	E		51		
LEAR		1006	1010	1013	N27	E09	8421	12	30.1	7	SF		2	E		32		
SVTO		1010	1014	1018	N26	W41	8419	12	26.2	8	SF		3	E		30		
LEAR		1012	1014	1017	N25	W41	8419	12	26.2	5	SF		2	E		25		E
LEAR		1014	1016	1018	N28	E11	8421	12	30.3	4	SF		2	E		16		
SVTO		1056	1109	1119D	N24	E04	8421	12	29.8	23D	SF		3	E		15		
SVTO		1107	1113U	1142D	S20	E17	8422	12	30.8	35D	SF		3	E		38		F
SVTO		1210	1216	1219	N24	E07	8421	12	30.0	9	SF		3	E		11		
SVTO		1222	1231	1300	N24	E06	8421	12	30.0	38	SF		3	E		55		
GOES		1302	1306	1310	N24	E06				8	SF	C 2.0						8.2E-04
SVTO		1303E	1305	1331D	N24	E06	8421	12	30.0	28D	SF		3	E		83		
GOES		1506	1510	1516	N27	E08	8421			10	SF	C 1.6						8.6E-04
HOLL		1509	1509	1515	N27	E08	8421	12	30.2	6	SF		2	E		13		
GOES		1516	1552	1556	N27	E06				40	SF	C 2.4						9.1E-04
HOLL		1518	1552	1641	N27	E06	8421	12	30.1	83	SF		3	E		63		
HOLL		1647	1719	1736	N25	E01	8421	12	29.8	49	SF		3	E		35		
HOLL		1824	1824	1836	N27	E05	8421	12	30.1	12	SF		3	E		36		
HOLL		1952	2028	2042	N25	E01	8421	12	29.9	50	SF		3	E		38		
GOES		2026	2030	2033	N25	E01				7	SF	C 2.0						8.0E-04
HOLL		2059	2118	2129	N27	E02	8421	12	30.0	30	SF		3	E		44		
GOES		2228	2233	2238	N29	E04	8421			10	SF	C 1.6						8.5E-04
HOLL		2231	2232	2237	N29	E04	8421	12	30.2	6	SF		3	E		20		
HOLL		2255	2257	2304	N28	E06	8421	12	30.4	9	SF		3	E		42		
GOES		2326	2330	2333	N26	E00	8421			7	SF	C 2.0						7.5E-04
LEAR		2329	2331	2333	N26	E00	8421	12	30.0	4	SF		3	E		23		
GOES	30	0003	0007	0012						9		C 2.1						9.4E-04
GOES		0135	0139	0142	N27	E01	8421			7	SF	C 1.5						5.7E-04
LEAR		0138	0138	0145	N27	E01	8421	12	30.1	7	SF		3	E		13		
LEAR		0149	0150	0155	N24	W06	8421	12	29.6	6	SF		3	E		24		
LEAR		0238	0240	0245	N27	W01	8421	12	30.0	7	SF		3	E		24		
GOES		0526	0546	0600			8421			34		M 1.0						1.2E-02
LEAR		0528	0530	0532	N27	W01	8421	12	30.1	4	SF		3	E		22		
GOES		0528	0531	0534	N27	W01	8421			6	SF	C 2.9						8.5E-04
LEAR		0532	0539	0630	N28	E03	8421	12	30.5	58	SF		3	E		97		FE
GOES		0741	0744	0748						7		C 1.4						5.3E-04
LEAR		0750	0751	0754	N26	W03	8421	12	30.1	4	SF		3	E		39		
SVTO		0750	0751	0756	N27	W02	8421	12	30.2	6	SF		3	E		37		F
SVTO		0824	0829	0838	N27	W02	8421	12	30.2	14	SF		3	E		24		
GOES		0826	0829	0832	N27	W02	8421			6	SF	C 1.6						5.4E-04
LEAR		0828	0829	0831	N27	W03	8421	12	30.1	3	SF		3	E		10		
LEAR		0940	0940	0944	N27	W04	8421	12	30.1	4	SF		2	E		22		
LEAR		1016	1017	1020	N27	W04	8421	12	30.1	4	SF		2	E		20		

Hα S O L A R F L A R E S

DECEMBER 1998

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	30	1214	1224	1232	N27	W05				18	SF	C 3.0						2.4E-03
RAMY		1218	1225	1256	N27	W05	8421	12	30.1	38	SF		3	E		29		
GOES		1503	1507	1510	N24	W12	8421			7	SF	C 1.3						4.3E-04
RAMY		1507	1508	1512	N24	W12	8421	12	29.7	5	SF		3	E		17		
RAMY		1515	1520	1547D	N24	W10	8421	12	29.9	32D	SF		3	E		24		
GOES		1517	1520	1528	N24	W10	8421			11	SF	C 1.9						5.3E-04
GOES		1550	1554	1557						7		C 1.3						4.7E-04
GOES		1804	1810	1815	N28	W06				11	SF	C 1.7						9.3E-04
HOLL		1807	1807	1856	N28	W06	8421	12	30.3	49	SF		3	E		23		F
RAMY		1807E	1808U	1809D	N26	W11	8421	12	29.9	2D	SF		3	E		42		F
HOLL		2058	2100	2102	N26	W12	8421	12	29.9	4	SF		3	E		10		
GOES		2344	2423	2432						48		C 2.1						4.7E-03
GOES	31	0051	0055	0059	N27	W12	8421			8	1F	C 2.8						9.7E-04
LEAR		0054	0055	0104D	N27	W12	8421	12	30.1	10D	1F		3	E		125		
GOES		0126	0136	0140	N27	W12	8421			14	SF	C 1.6						1.1E-03
LEAR		0132	0138	0148	N27	W12	8421	12	30.1	16	SF		3	E		25		
GOES		0303	0315	0320						17		C 1.8						1.6E-03
GOES		0349	0353	0358						9		C 1.3						6.3E-04
GOES		0401	0412	0415	N28	W11				14	SF	C 3.4						2.4E-03
LEAR		0412E	0414U	0416D	N28	W11	8421	12	30.3	4D	SF		3	E		72		
GOES		0445	0449	0502						17		C 1.6						1.5E-03
GOES		0516	0519	0521						5		C 1.6						4.4E-04
GOES		0626	0632	0642						16		C 4.9						3.3E-03
GOES		0717	0720	0725	N25	W19	8421			8	SF	C 4.1						1.5E-03
SVTO		0719	0719	0725	N25	W19	8421	12	29.8	6	SF		2	E		17		F
SVTO		0834	0839	0849D	N27	W21	8421	12	29.7	15D	SF		3	E		73		F
GOES		0836	0839	0843	N27	W21	8421			7	SF	C 2.3						8.8E-04
GOES		0906	0911	0922						16		C 2.2						2.0E-03
LEAR		0936	0939	0944	N27	W16	8421	12	30.1	8	SF		2	E		13		F
SVTO		0949	0949	1006	N28	W22	8421	12	29.7	17	SF		3	E		21		
LEAR		0949	0950	1003	N25	W21	8421	12	29.8	14	SF		2	E		19		
LEAR		1015	1015	1019	N27	W17	8421	12	30.1	4	SF		2	E		17		
GOES		1036	1041	1051						15		C 1.9						1.4E-03
SVTO		1153	1157	1201	N27	W24	8421	12	29.6	8	SF		3	E		12		
GOES		1254	1308	1318						24		C 2.0						2.6E-03
GOES		1454	1459	1505						11		C 1.4						8.1E-04
RAMY		1633	1633	1650	N29	W21	8421	12	30.0	17	SF		3	E		13		
RAMY		1756	1757	1802	N27	W32	8421	12	29.2	6	SF		3	E		19		

"Remarks"

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

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

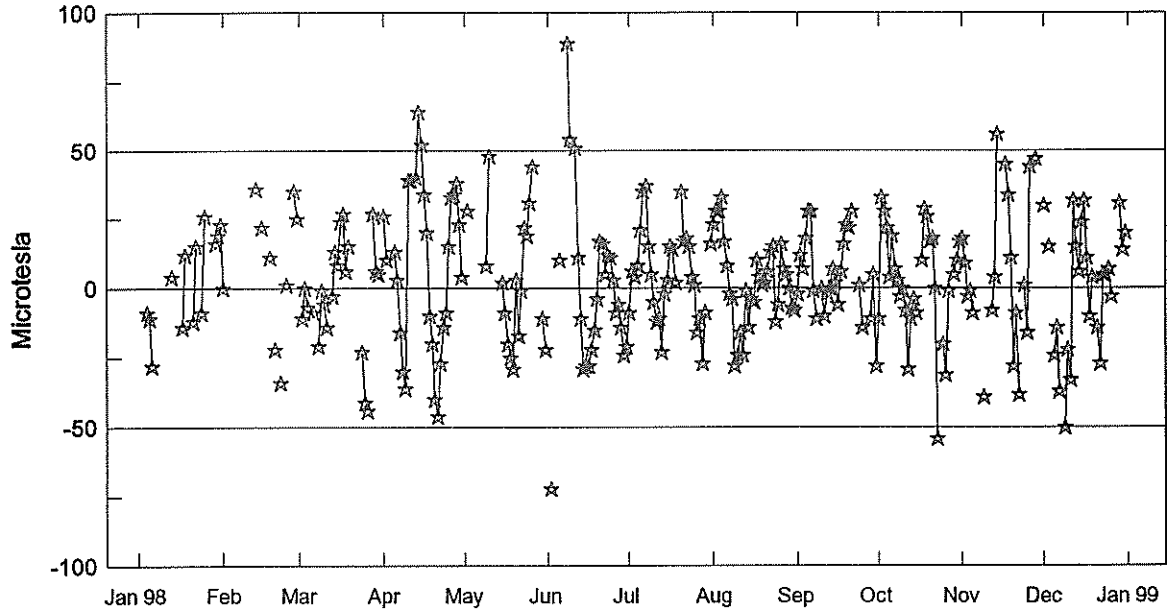
NOTE: Beginning July 1997, the times of all GOES X-ray events are now included in this table.

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

DECEMBER 1998

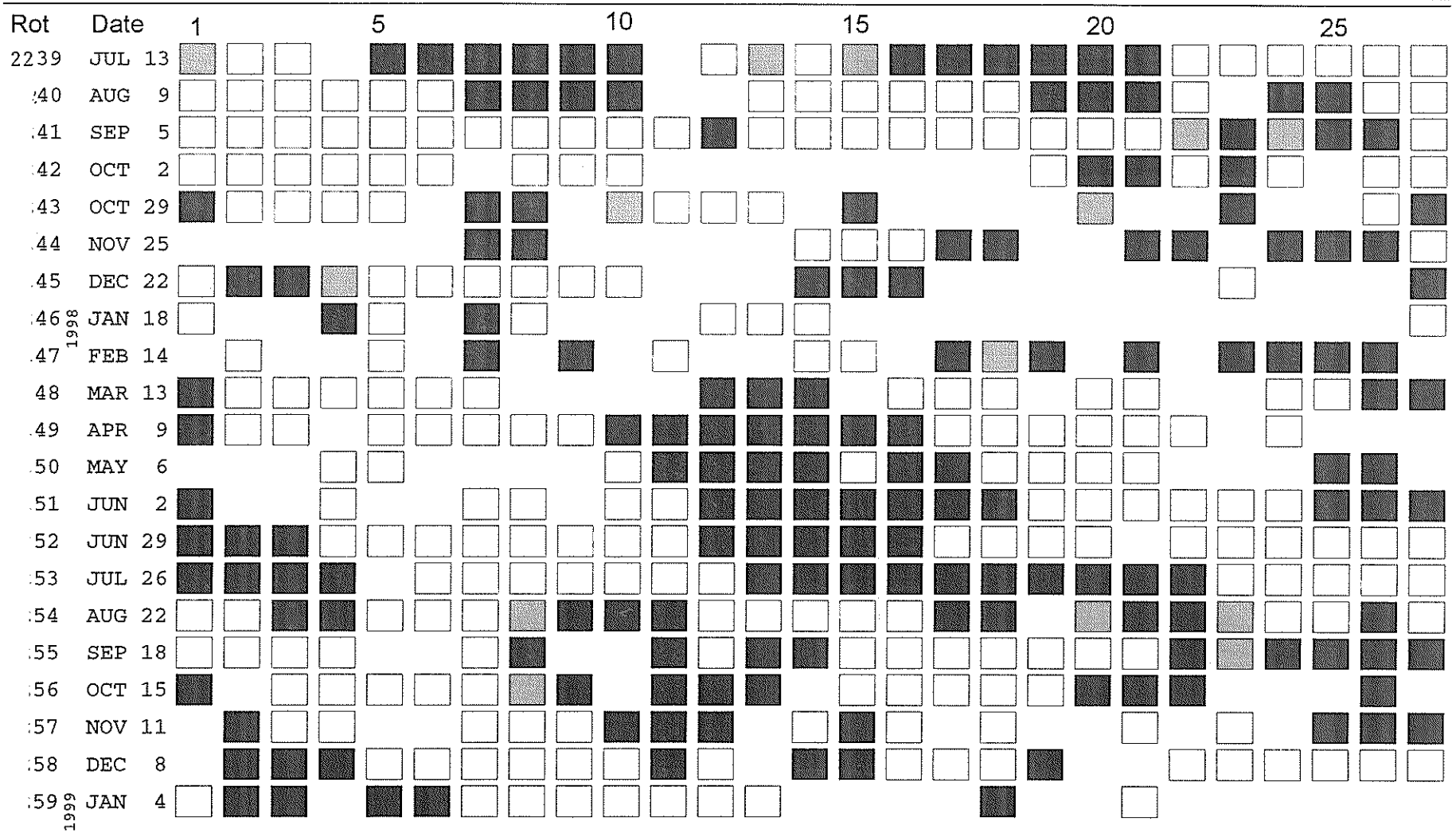
Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	2695	PALE	4	S/F	1806.0	1807.0	3.0	190.0			QL=4 ST=2 TYP=3
	2695	SGMR	4	S/F	1806.0	1807.0	4.0	200.0			QL=4 ST=2 TYP=3
13	2695	LEAR	8	S	0515.0	0515.0	1.0	99.0			QL=4 ST=3 TYP=3
	8800	LEAR	8	S	0515.0	0515.0	U	52.0			QL=4 ST=3 TYP=3
14	8800	PALE	8	S	2224.0	2224.0	1.0	92.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2224.0	2224.0	1.0	83.0			QL=4 ST=2 TYP=3
16	8800	SGMR	8	S	1908.0	1909.0	2.0	35.0			QL=4 ST=2 TYP=3
17	2695	LEAR	4	S/F	0742.0	0743.0	4.0	230.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0742.0	0743.0	6.0	120.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	0742.0	0743.0	7.0	150.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	0742.0	0743.0	4.0	200.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1415.0	1415.0	2.0	96.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1415.0	1416.0	2.0	88.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1415.0	1416.0	2.0	92.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	1415.0	1415.0	1.0	85.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1750.0	1750.0	2.0	25.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1750.0	1750.0	2.0	31.0			QL=4 ST=2 TYP=3
18	8800	LEAR	4	S/F	0304.0	0305.0	3.0	29.0			QL=4 ST=2 TYP=3
	2695	SGMR	49	GB	1717.0	1718.0	68.0	880.0			QL=4 ST=2 TYP=6
	8800	SGMR	49	GB	1717.0	1718.0	71.0	1300.0			QL=4 ST=2 TYP=6
20	8800	LEAR	8	S	0852.0	0853.0	2.0	12.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0852.0	0857.0	5.0	17.0			QL=4 ST=2 TYP=3
	2695	SVTO	46	C	0853.0	0857.0	4.0	28.0			QL=4 ST=2 TYP=8
	8800	LEAR	4	S/F	0855.0	0857.0	4.0	13.0			QL=4 ST=2 TYP=3
	2695	LEAR	8	S	0856.0	0857.0	1.0	25.0			QL=4 ST=2 TYP=3
23	8800	LEAR	8	S	0326.0	0326.0	1.0	68.0			QL=4 ST=2 TYP=3
24	2695	PALE	8	S	0122.0	0122.0	U	25.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	1140.0	1140.0	1.0	32.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1140.0	1140.0	1.0	79.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1150.0	1150.0	1.0	47.0			QL=4 ST=2 TYP=3
26	2695	LEAR	8	S	0047.0	0047.0	U	36.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	2342.0	2343.0	1.0	23.0			QL=4 ST=2 TYP=3
28	2695	LEAR	4	S/F	0515.0	0524.0	10.0	330.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0516.0	0524.0	9.0	360.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0545.0	0547.0	8.0	180.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0546.0	0547.0	7.0	110.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1717.0	1717.0	U	32.0			QL=4 ST=2 TYP=3
	2695	SGMR	4	S/F	1806.0	1806.0	6.0	23.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	2318.0	2322.0	41.0	100.0			QL=4 ST=2 TYP=3
	2695	LEAR	8	S	2322.0	2322.0	1.0	26.0			QL=4 ST=2 TYP=3
29	2695	LEAR	8	S	1011.0	1011.0	U	39.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	1011.0	1011.0	U	39.0			QL=4 ST=2 TYP=3
30	8800	LEAR	8	S	0004.0	0004.0	1.0	65.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1806.0	1807.0	2.0	24.0			QL=4 ST=2 TYP=3
31	8800	LEAR	4	S/F	0628.0	0629.0	9.0	330.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	0718.0	0718.0	1.0	140.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0718.0	0718.0	2.0	160.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	1038.0	1039.0	1.0	58.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1038.0	1038.0	1.0	75.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1455.0	1456.0	2.0	93.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1455.0	1456.0	1.0	60.0			QL=2 ST=2 TYP=3
	2695	SGMR	8	S	1456.0	1456.0	1.0	32.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	1456.0	1456.0	U	29.0			QL=2 ST=2 TYP=3

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



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

STANFORD MEAN SOLAR MAGNETIC FIELD

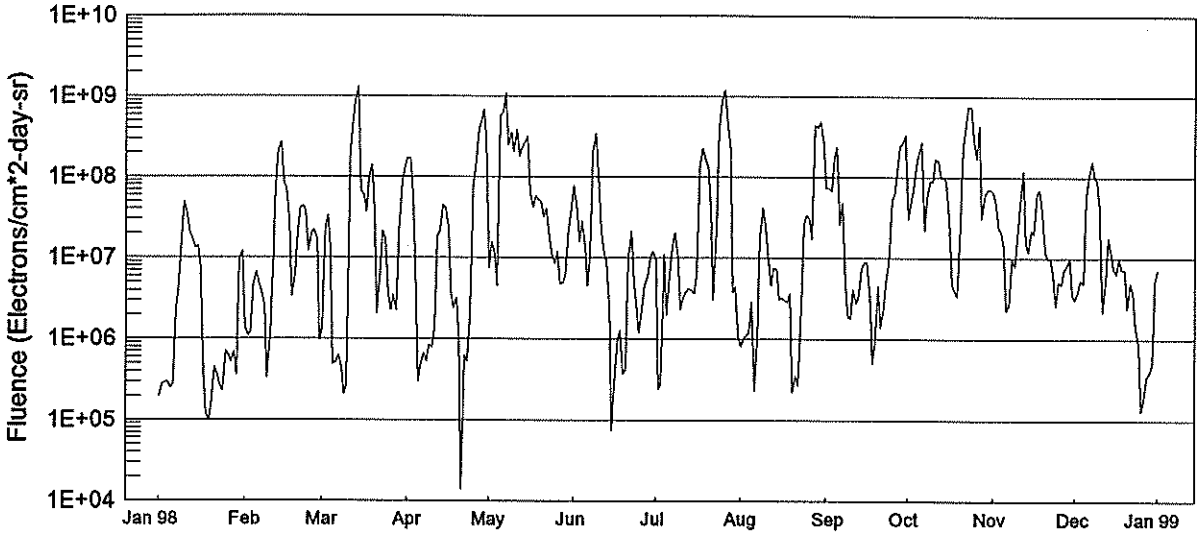


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

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

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

GOES Daily Electron Fluence
Jan 98 - Dec 98



Day	Jan 98	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2.0E+05	1.4E+06	1.3E+06	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
2	2.8E+05	1.1E+06	2.3E+07	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
3	2.9E+05	1.2E+06	3.3E+07	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
4	3.0E+05	4.6E+06	1.3E+07	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
5	2.5E+05	6.6E+06	4.9E+05	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
6	2.8E+05	4.9E+06	5.2E+05	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
7	2.2E+06	3.9E+06	6.3E+05	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
8	4.0E+06	2.6E+06	4.5E+05	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
9	1.7E+07	3.3E+05	2.1E+05	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
10	4.9E+07	1.1E+06	2.7E+05	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
11	3.4E+07	6.9E+06	1.8E+08	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
12	2.0E+07	7.6E+07	4.4E+08	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
13	1.7E+07	2.1E+08	8.5E+08	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
14	1.3E+07	2.7E+08	1.3E+09	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
15	1.4E+07	8.5E+07	6.7E+07	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
16	7.5E+06	7.4E+07	6.1E+07	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
17	3.7E+05	2.7E+07	3.7E+07	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
18	1.2E+05	3.3E+06	1.0E+08	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
19	9.7E+04	6.2E+06	1.4E+08	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
20	1.8E+05	1.9E+07	3.8E+07	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
21	4.5E+05	4.1E+07	2.1E+06	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
22	3.6E+05	4.3E+07	6.6E+06	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
23	2.6E+05	3.6E+07	2.1E+07	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
24	2.3E+05	1.2E+07	1.7E+07	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
25	7.1E+05	2.0E+07	3.6E+06	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
26	6.5E+05	2.2E+07	2.3E+06	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
27	5.2E+05	1.7E+07	3.5E+06	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
28	6.9E+05	9.7E+05	2.3E+06	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
29	3.6E+05		2.2E+07	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
30	1.0E+07		8.3E+07	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
31	1.2E+07		1.3E+08		4.1E+07		1.1E+06	2.7E+08		7.2E+07		7.1E+06

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

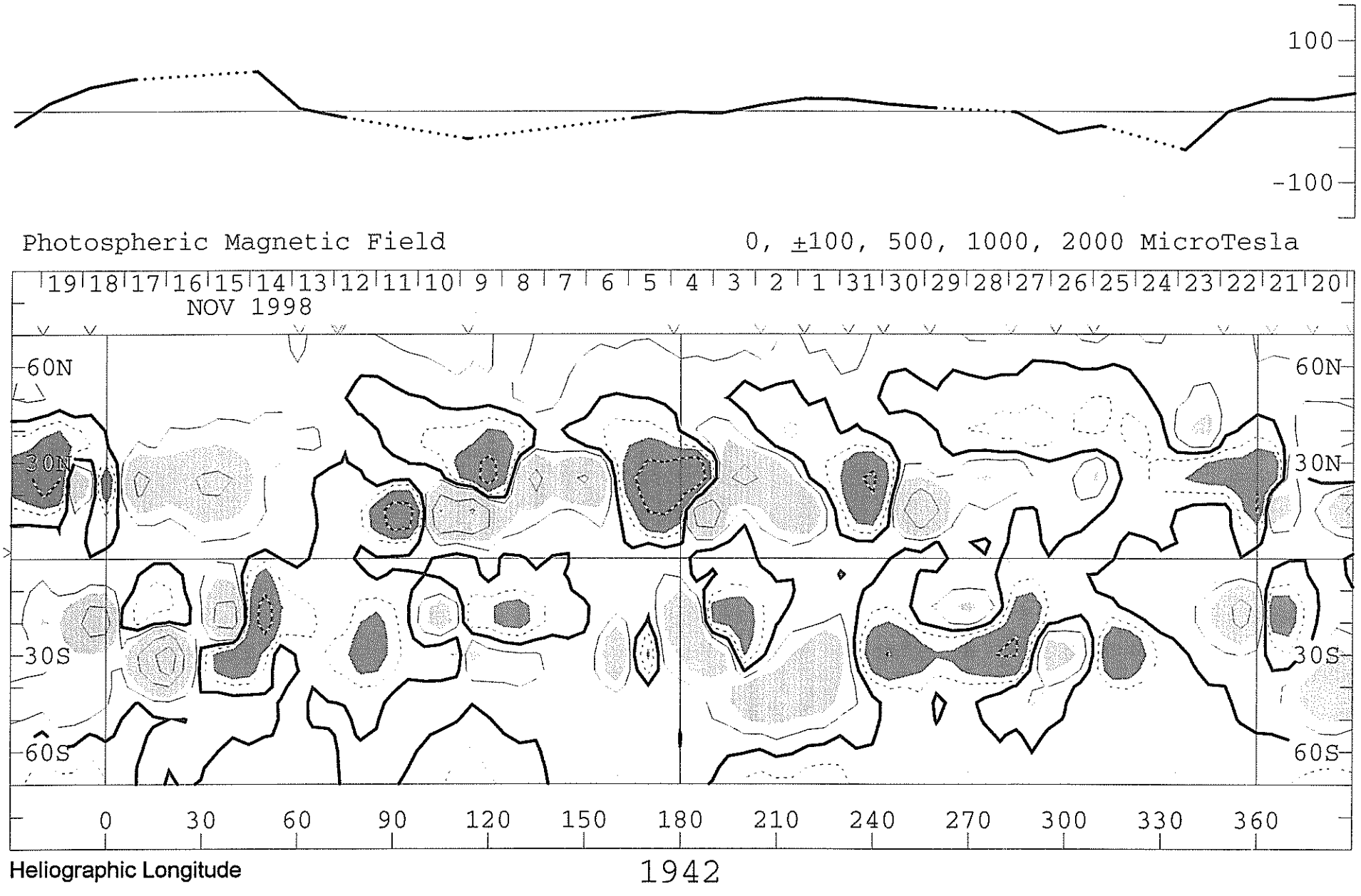
DATA FOR NOVEMBER 1998

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1942

(22 October to 18 November 1998)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

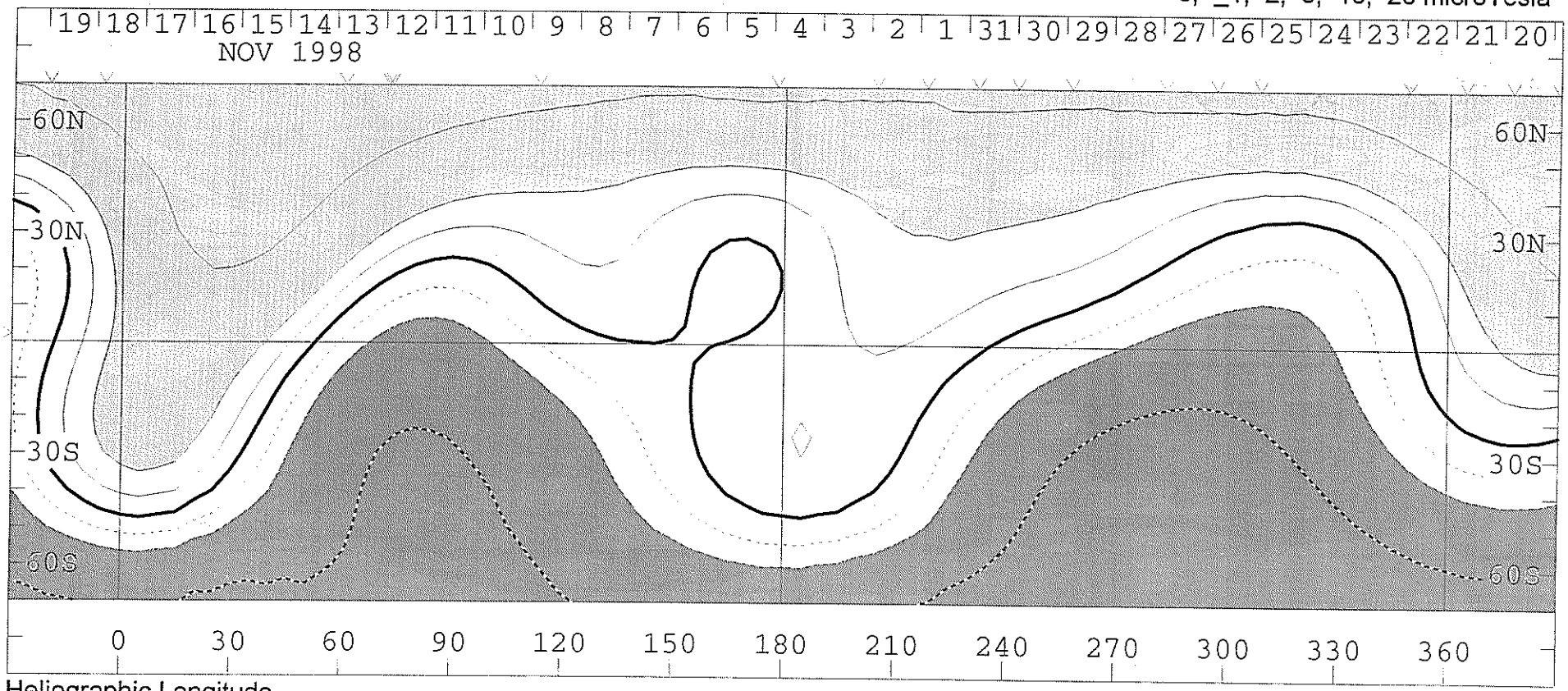
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1942

(22 October to 18 November 1998)

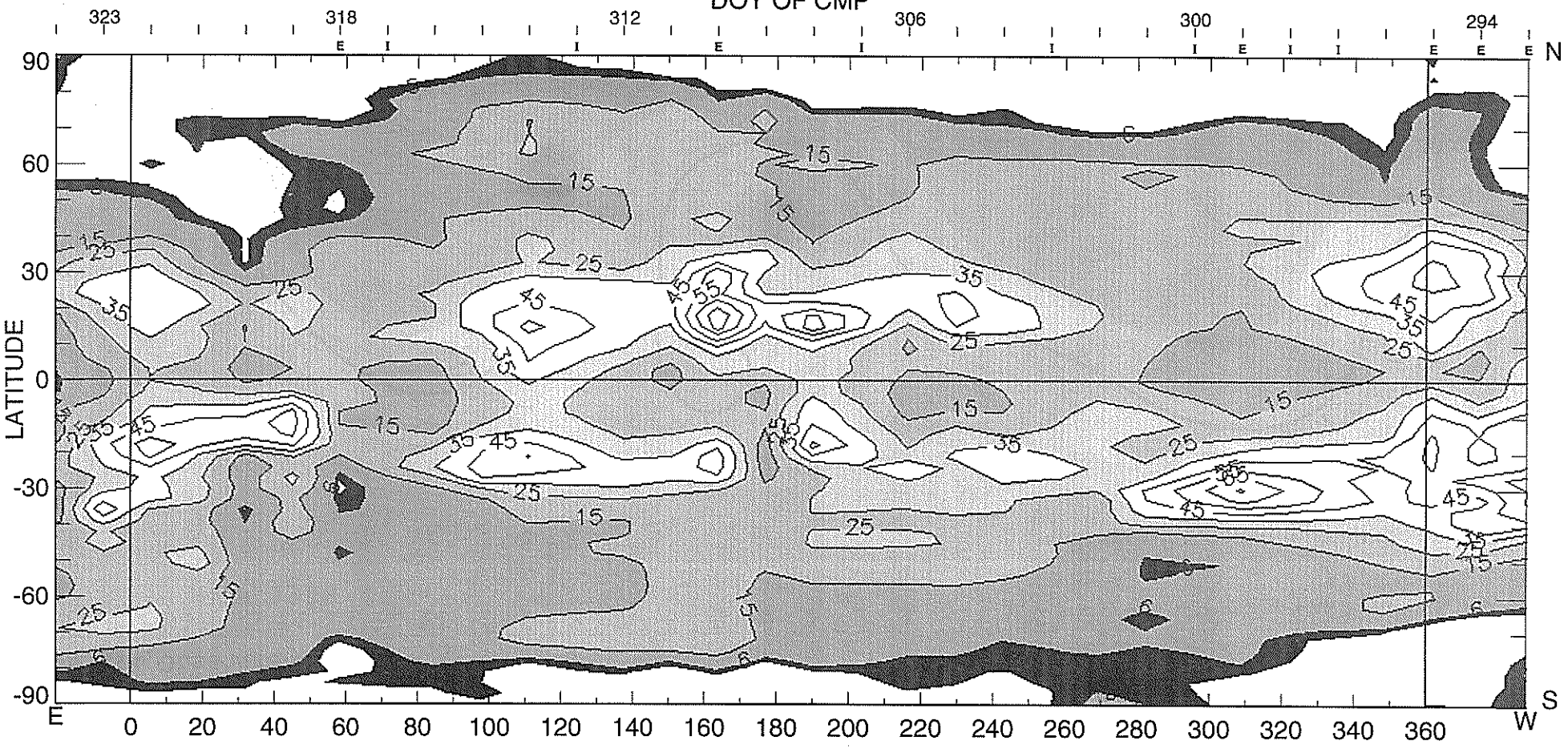
Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



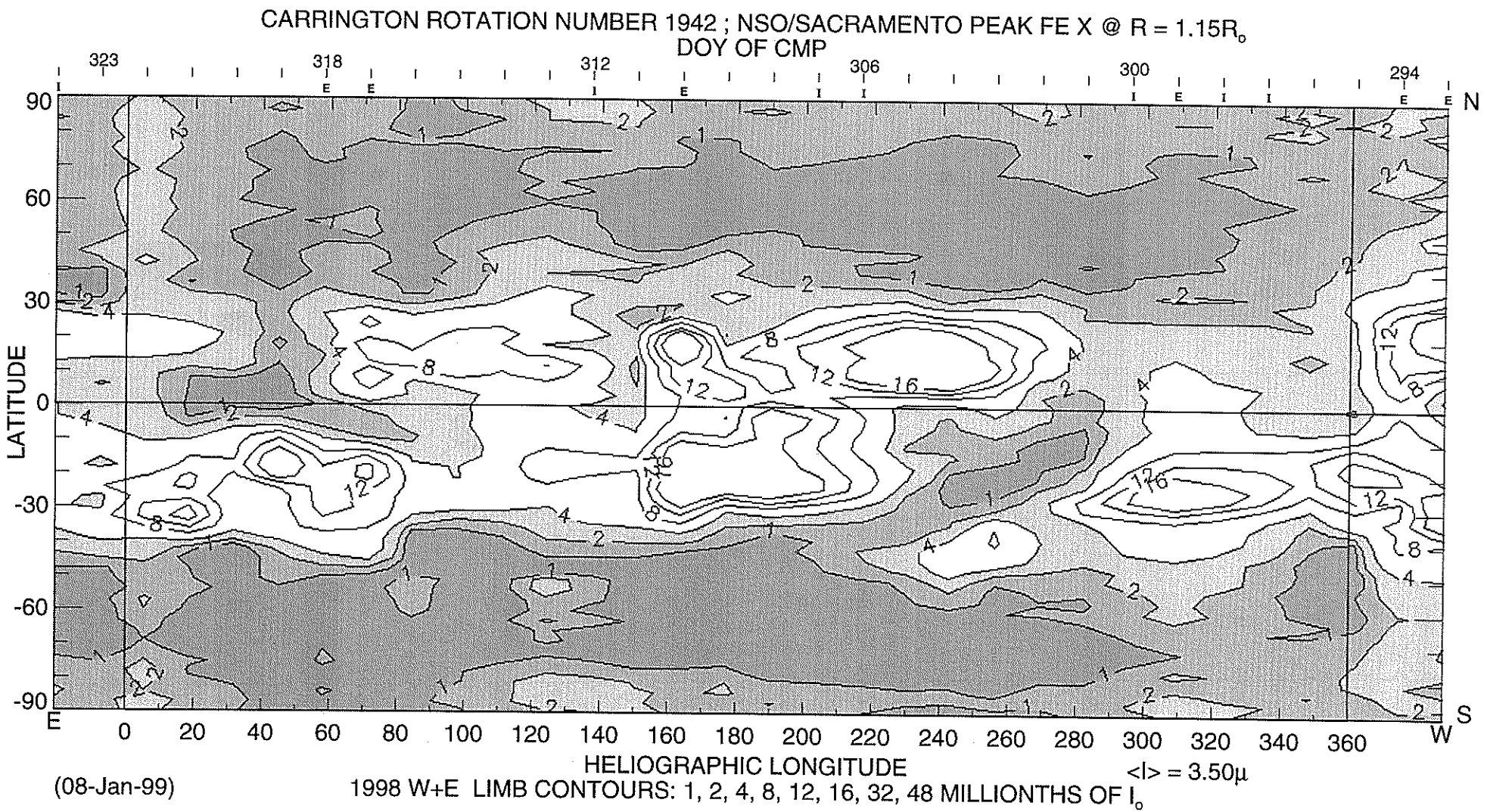
Nov 98

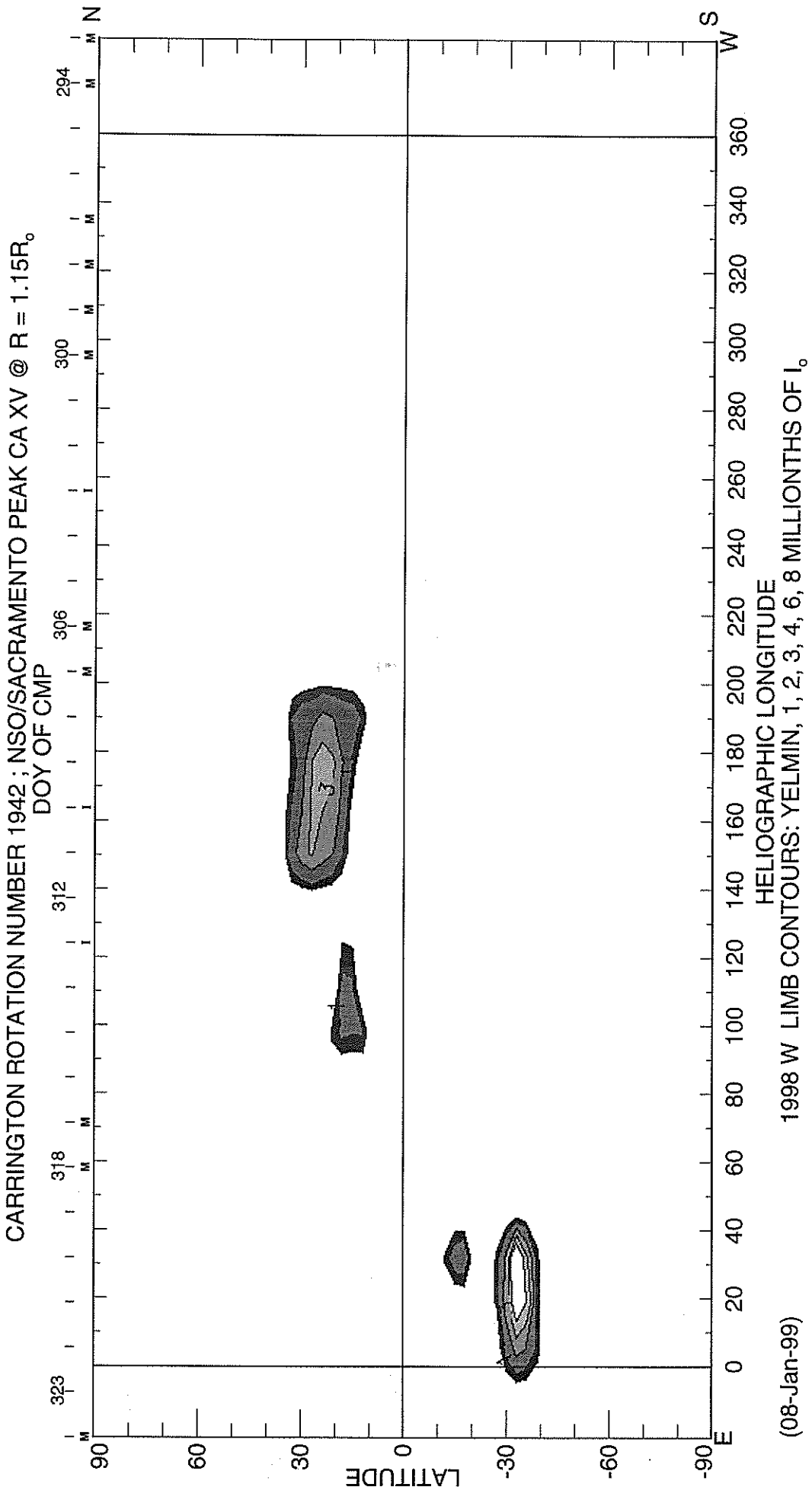
CARRINGTON ROTATION NUMBER 1942 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



(08-Jan-99) 1998 W+E LIMB CONTOURS: 4, 6, 15, 25, 35, 45, 55, 65, 75, 85, 95 MILLIONTHS OF I_o

CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK


CARRINGTON ROTATION NUMBER 1942 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R$_o$
DOY OF CMP
323
318
312
306
300
294
90
60
30
0
-30
-60
-90
LATITUDE
N
S
E
W
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360
HELIOGRAPHIC LONGITUDE
(08-Jan-99)
<I> = 3.50μ
1998 W+E LIMB CONTOURS: 1, 2, 4, 8, 12, 16, 32, 48 MILLIONTHS OF I$_o$


CARRINGTON ROTATION NUMBER 1942 ; NSO/SACRAMENTO PEAK CA XV @ R = 1.15R$_o$
DOY OF CMP
323
318
312
306
300
294
N
S
W
E
LATITUDE
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
HELIOGRAPHIC LONGITUDE
1998 W LIMB CONTOURS: YELMIN, 1, 2, 3, 4, 6, 8 MILLIONTHS OF I$_o$
(08-Jan-99)

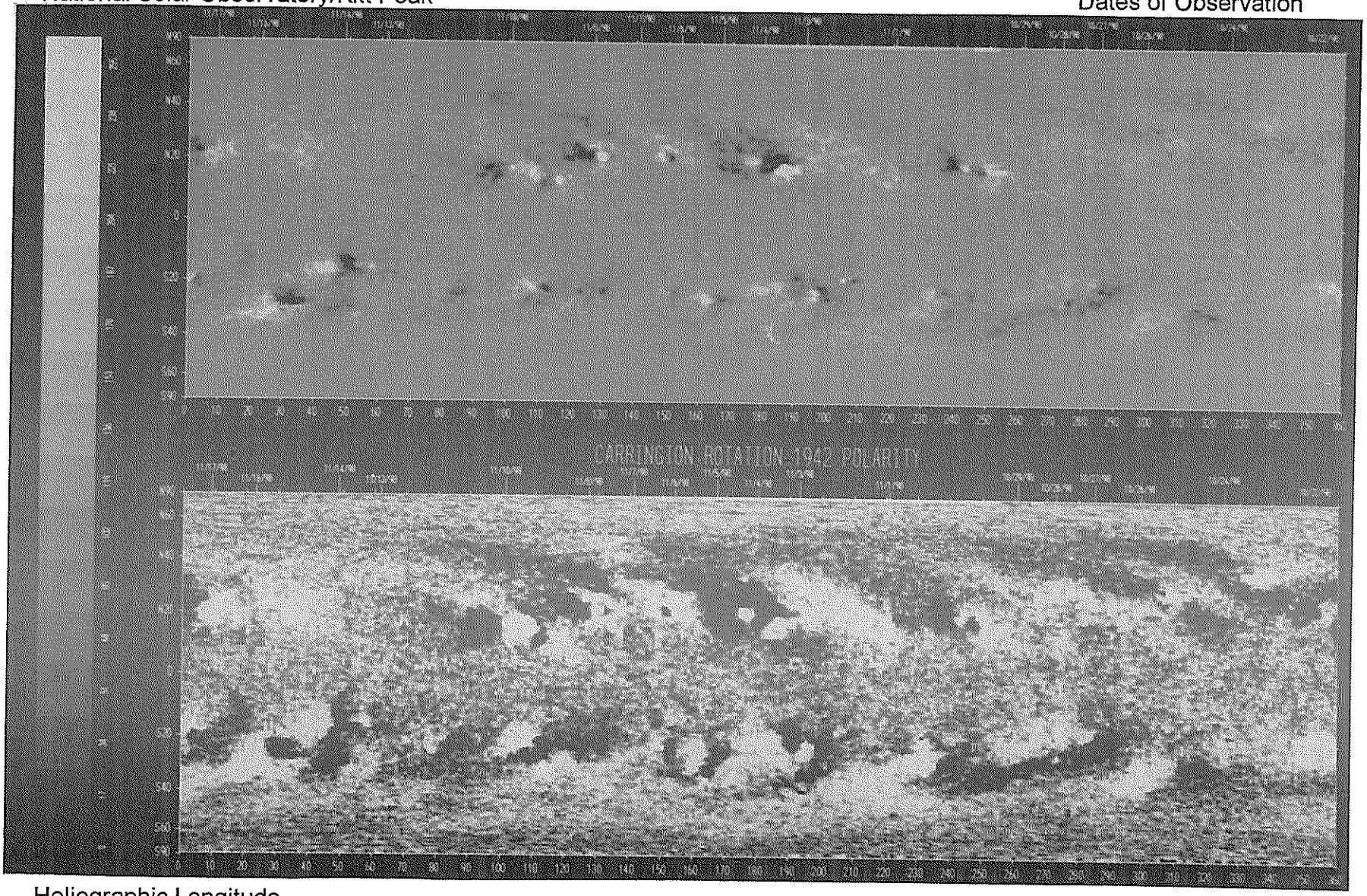
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1942

(22 October to 18 November 1998)

National Solar Observatory/Kitt Peak

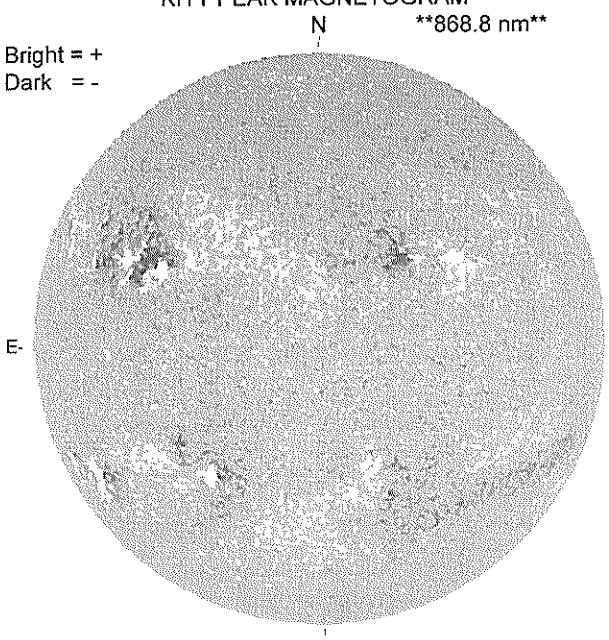
Dates of Observation



Heliographic Longitude

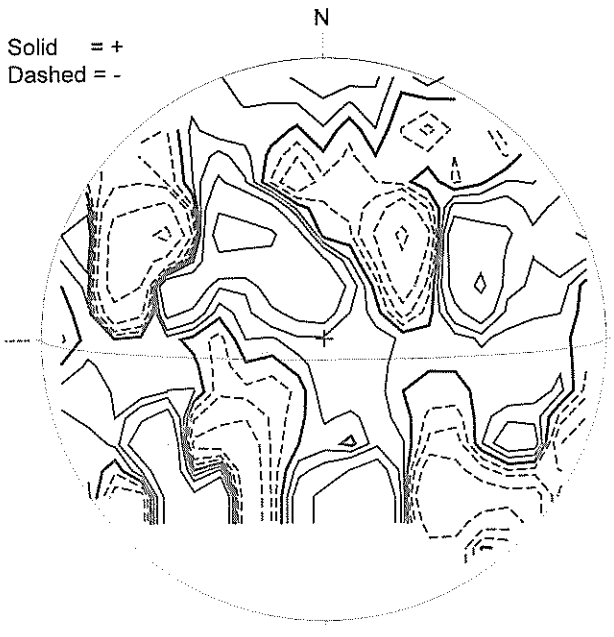
NOVEMBER 1, 1998 (P= + 24.55 , Bo = + 4.40 , Lo = 229.49)

KITT PEAK MAGNETOGRAM



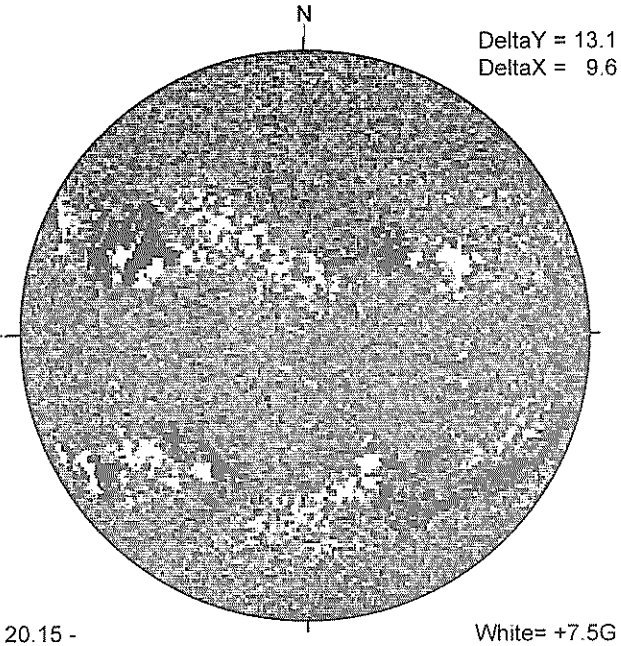
1444 UT

STANFORD MAGNETOGRAM



2006 UT

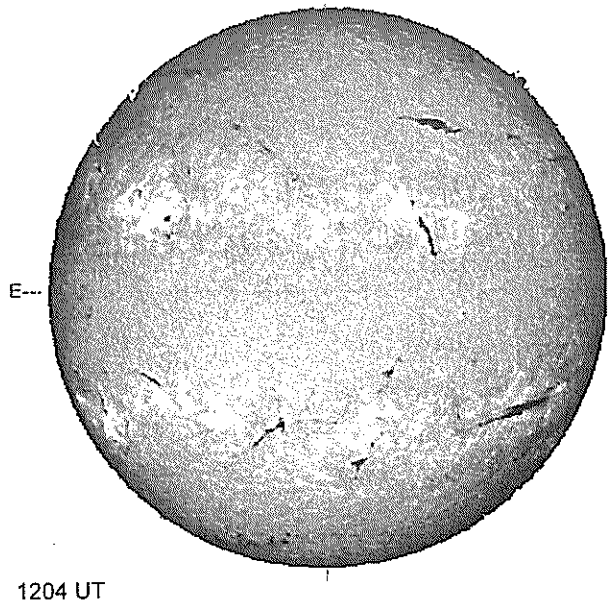
MT. WILSON MAGNETOGRAM



20.15 -
21.11 UT

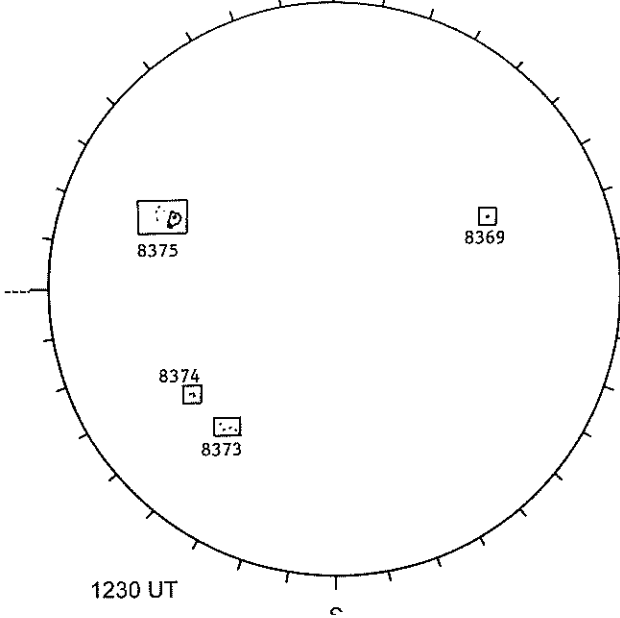
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



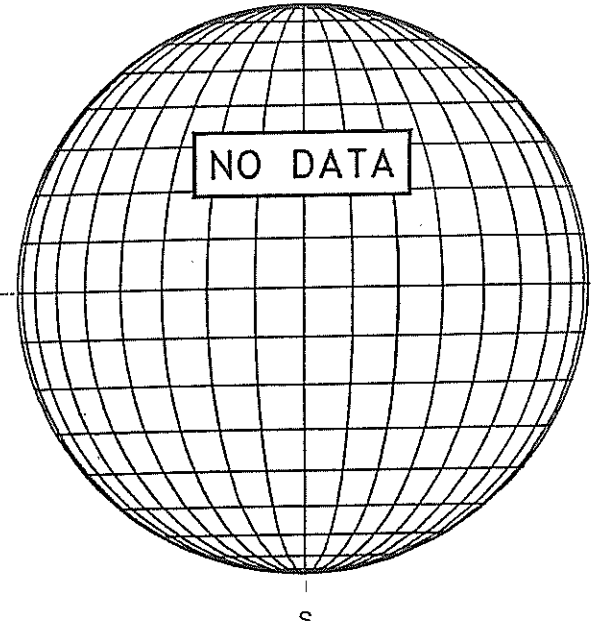
1204 UT

RAMEY SUNSPOT



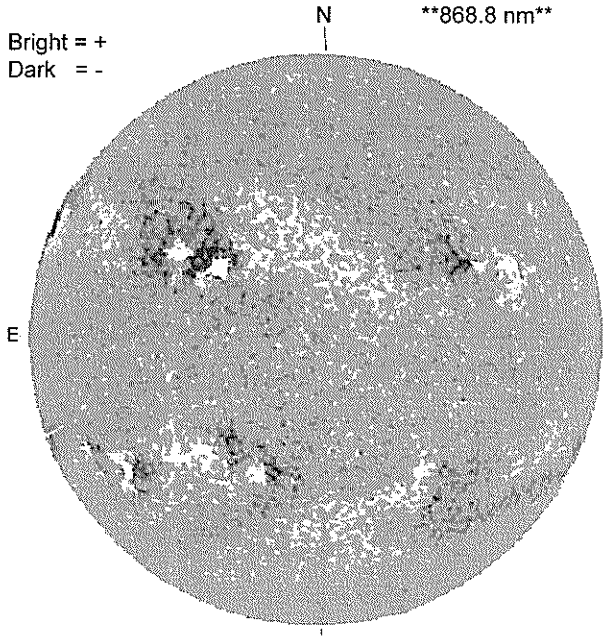
1230 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



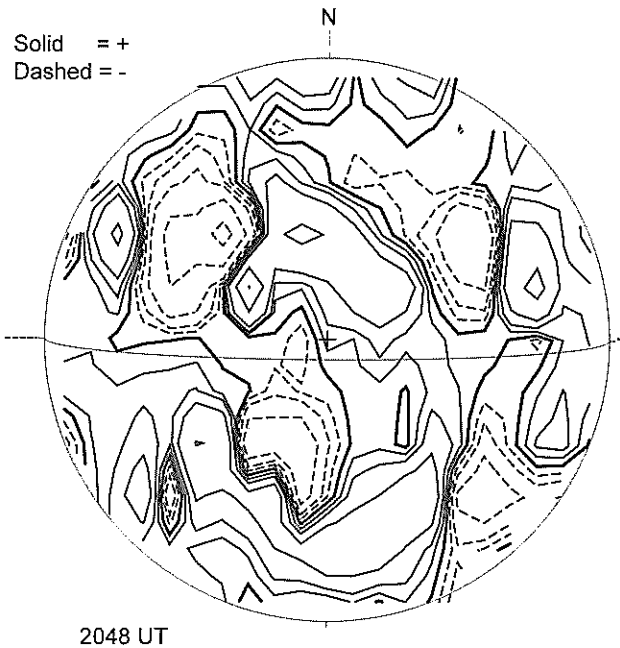
NOVEMBER 2, 1998 (P= + 24.38 , Bo = + 4.29 , Lo = 216.30)

KITT PEAK MAGNETOGRAM



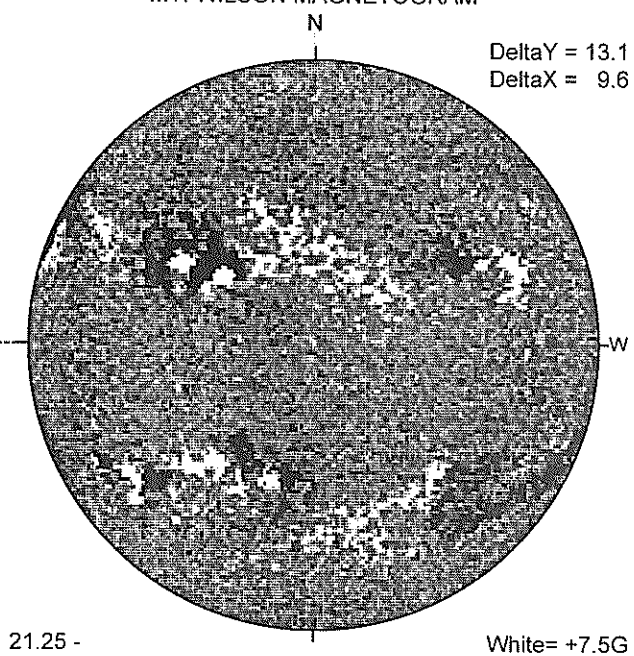
1649 UT

STANFORD MAGNETOGRAM



2048 UT

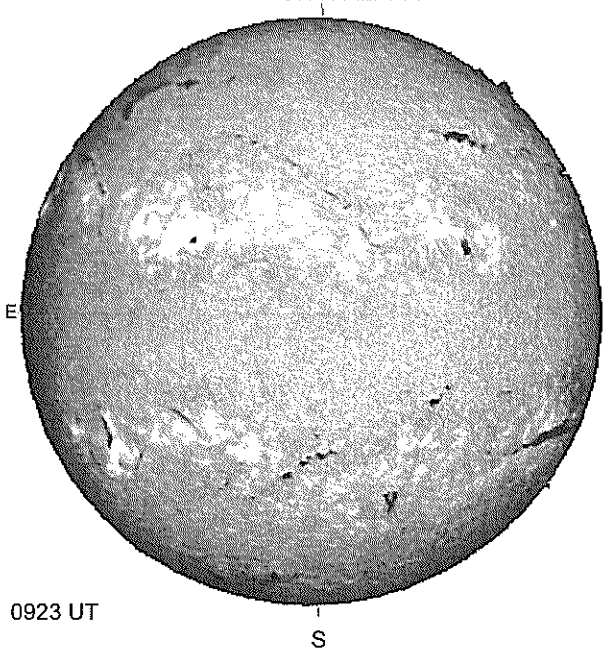
MT. WILSON MAGNETOGRAM



21.25 -
22.21 UT

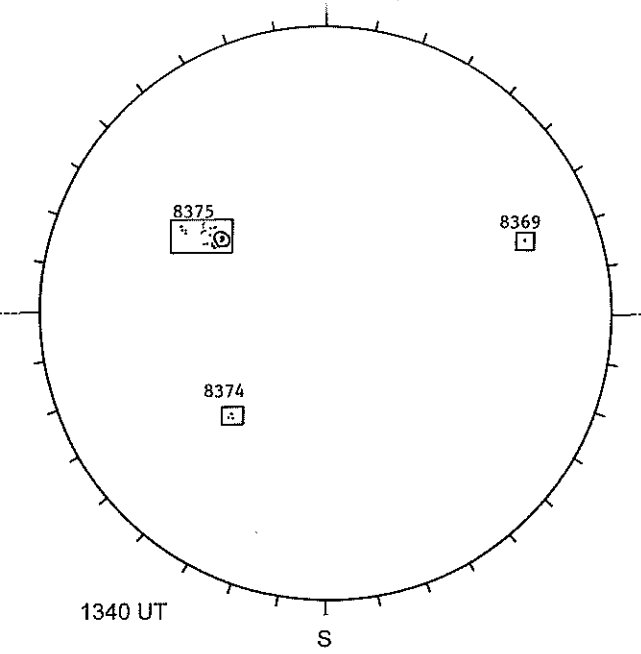
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



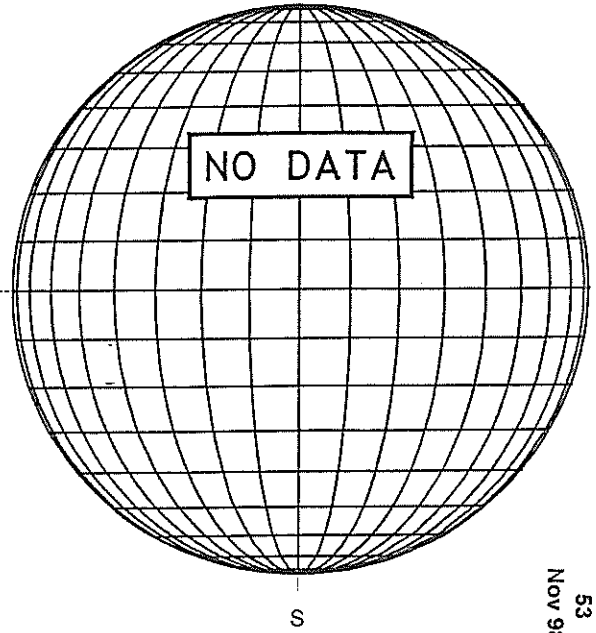
0923 UT

RAMEY SUNSPOT



1340 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

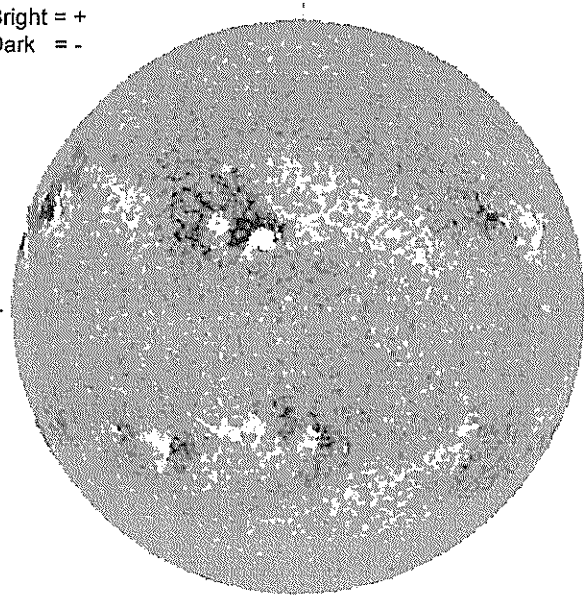


NOVEMBER 3, 1998 (P = + 24.20 , Bo = + 4.19 , Lo = 203.11)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



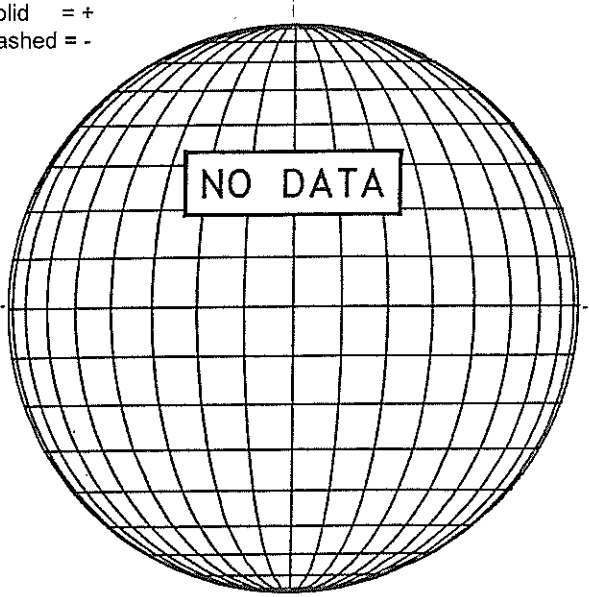
E

1825 UT

STANFORD MAGNETOGRAM

N

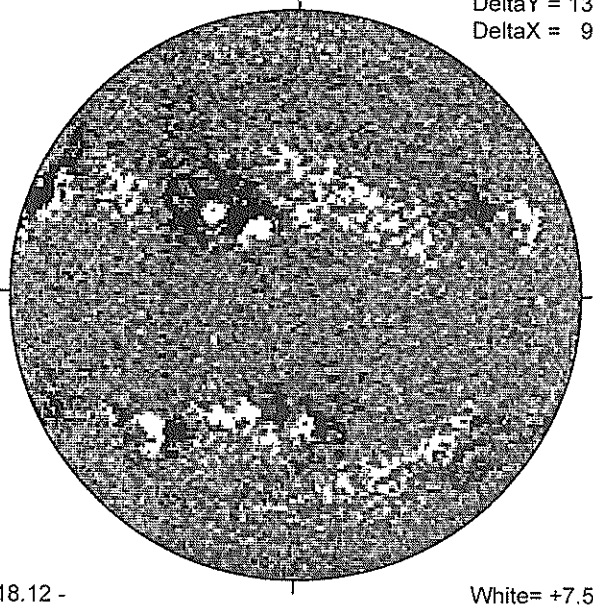
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

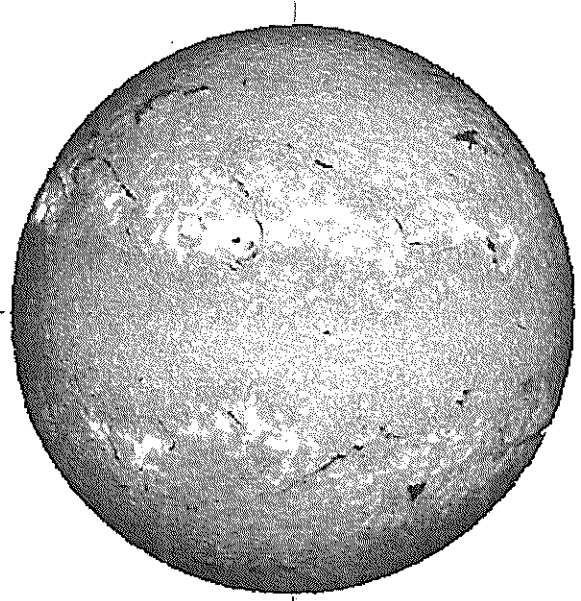


W

18.12 -
19.08 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

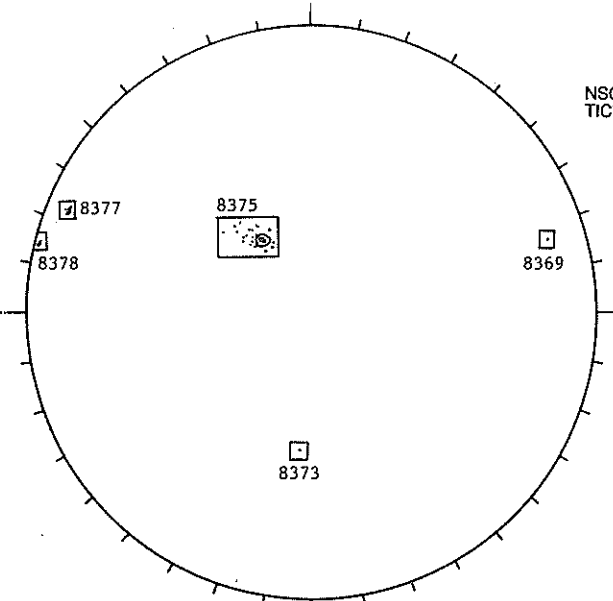


E

0851 UT

S

RAMEY SUNSPOT

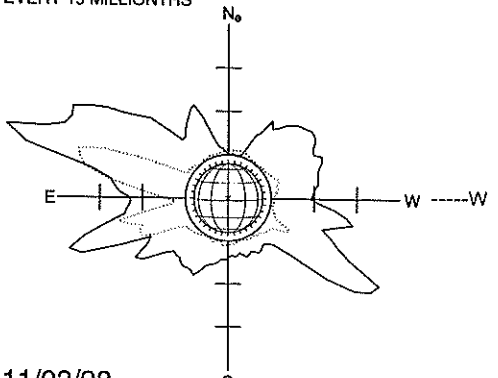


1213 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



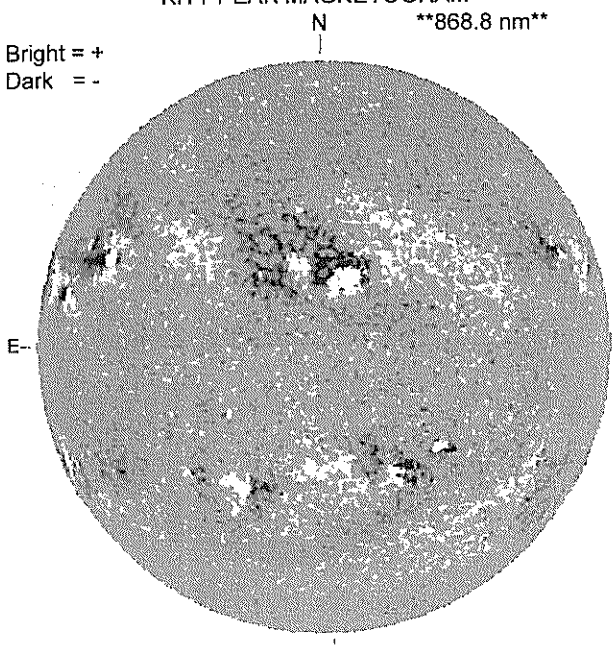
11/03/98
(DOY 307)

FE XIV 15:33 UT 1.15 $R_\odot$
FE X 16:23 UT 1.15 $R_\odot$
xxxxx CA XV 16:06 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

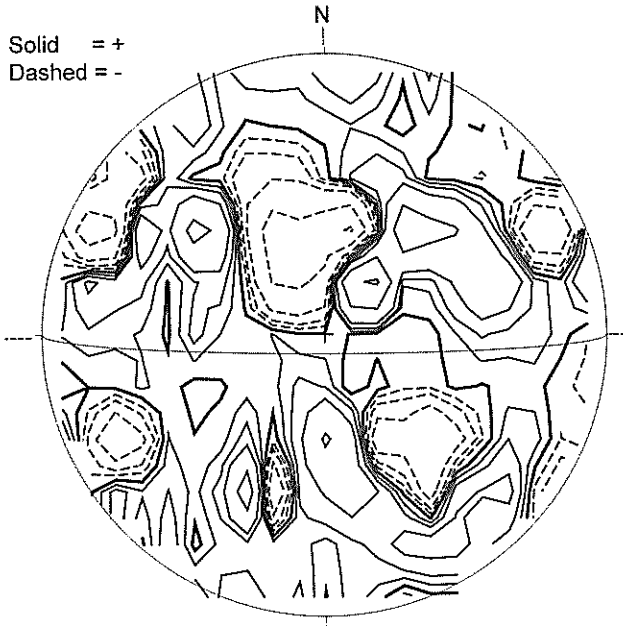
NOVEMBER 4, 1998 (P = + 24.02 , Bo = + 4.09 , Lo = 189.93)

KITT PEAK MAGNETOGRAM



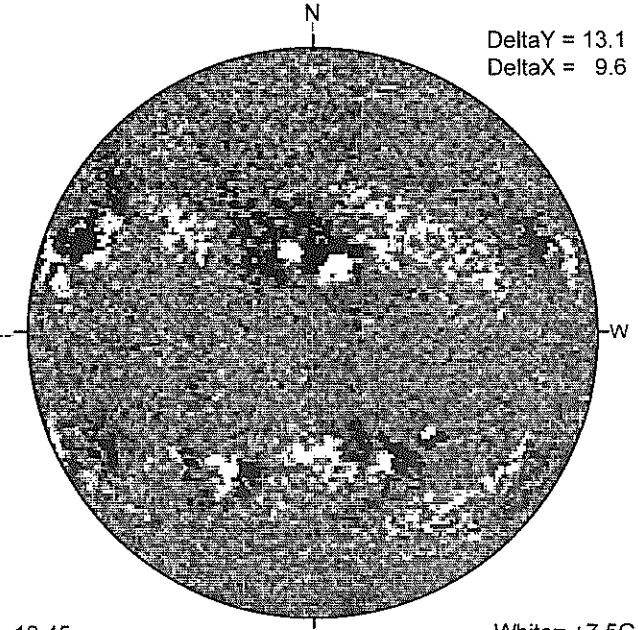
1720 UT

STANFORD MAGNETOGRAM



2218 UT

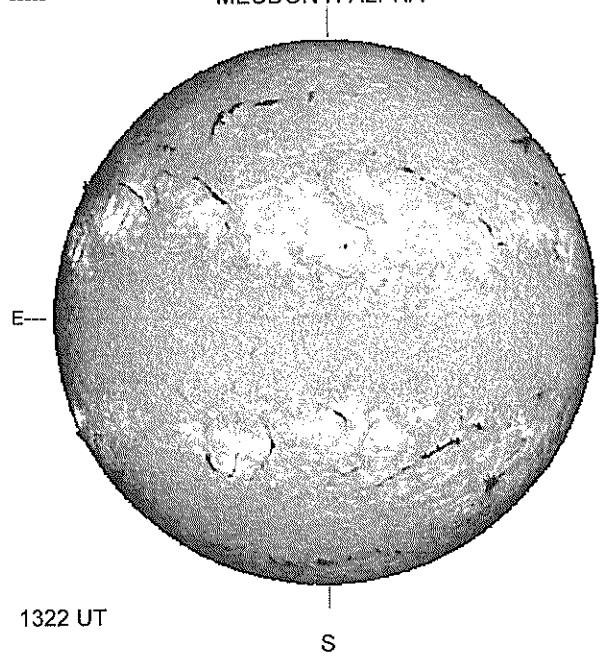
MT. WILSON MAGNETOGRAM



18.45 - 19.41 UT

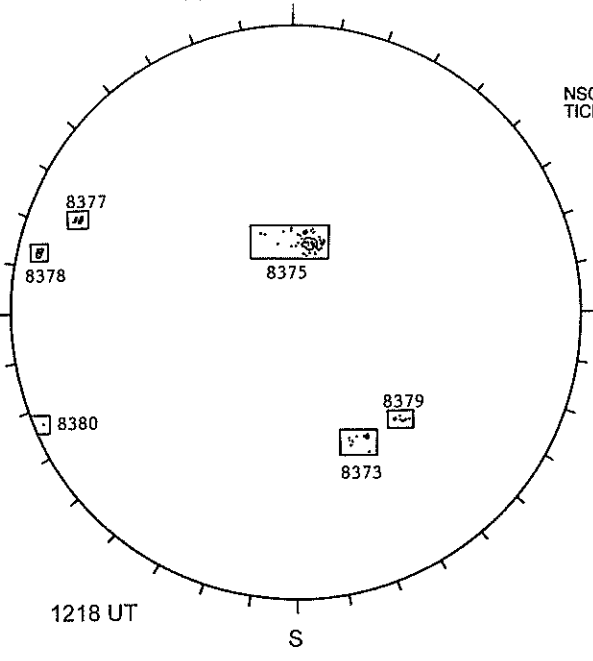
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



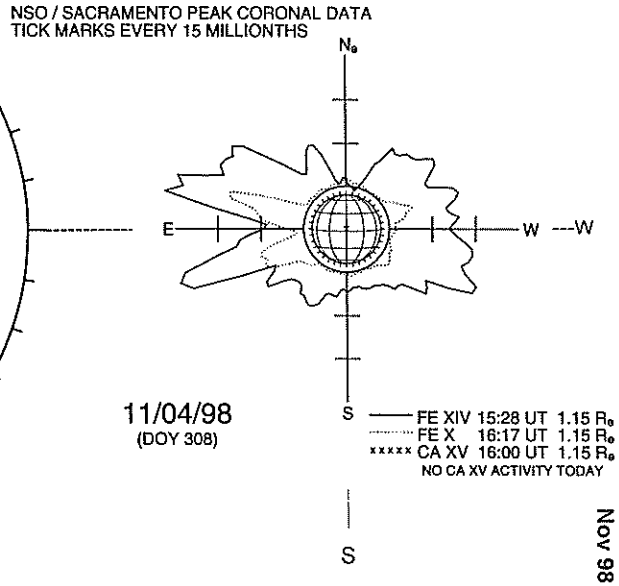
1322 UT

RAMEY SUNSPOT



1218 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



55
Nov 98

NOVEMBER 5, 1998 (P= + 23.83 , Bo = + 3.98 , Lo = 176.74)

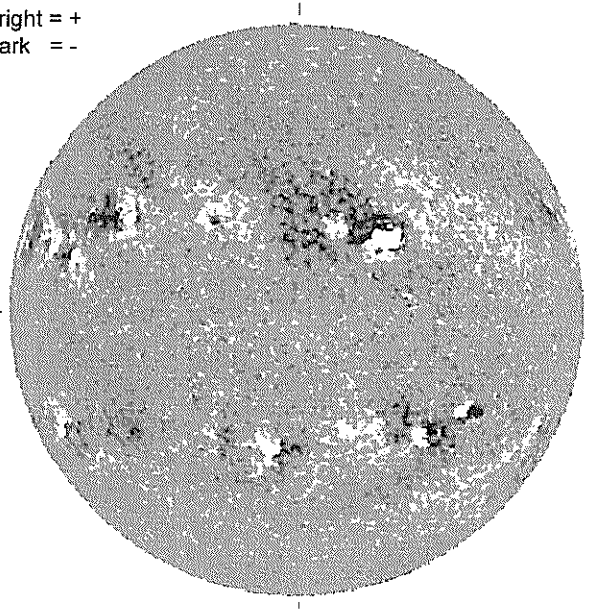
Nov 98 56

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



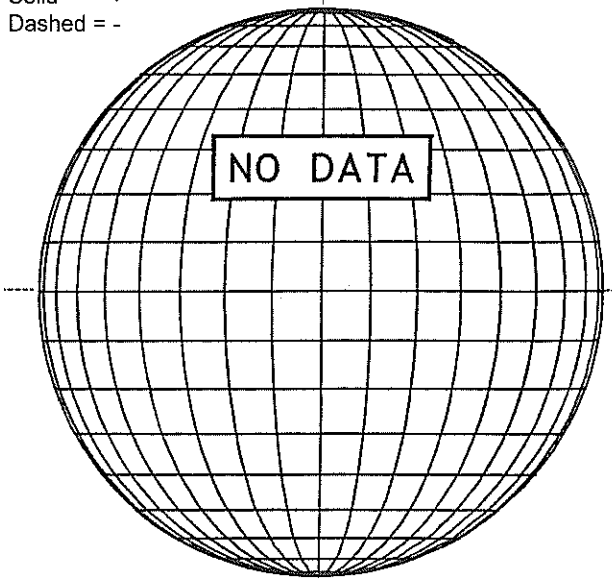
E-

1728 UT

STANFORD MAGNETOGRAM

N

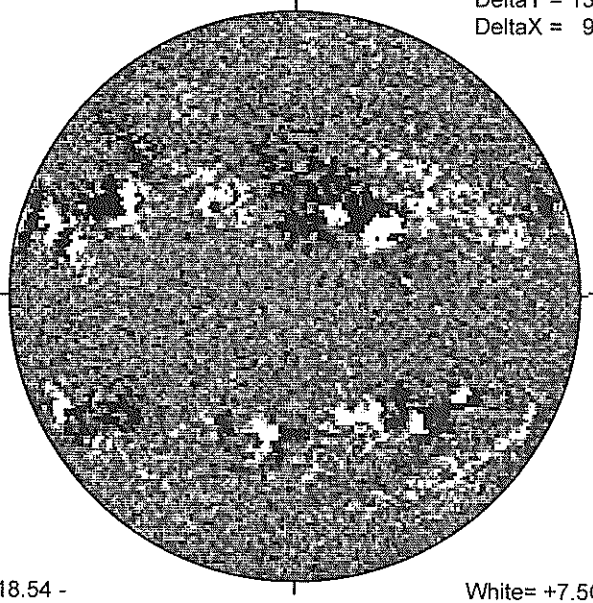
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

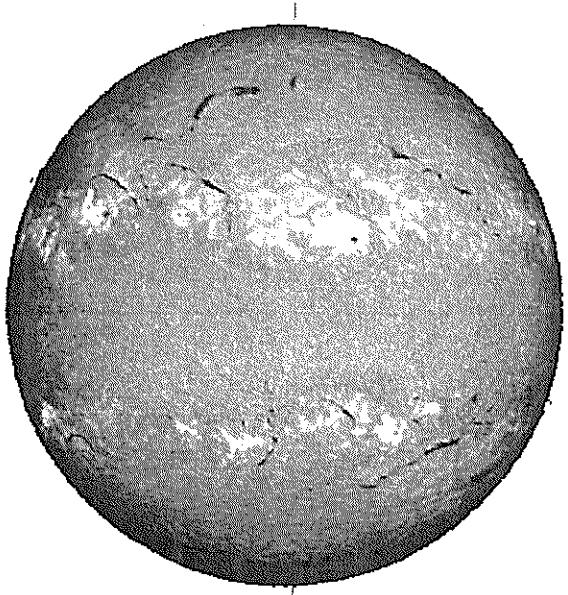


-W

18.54 -
19.53 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

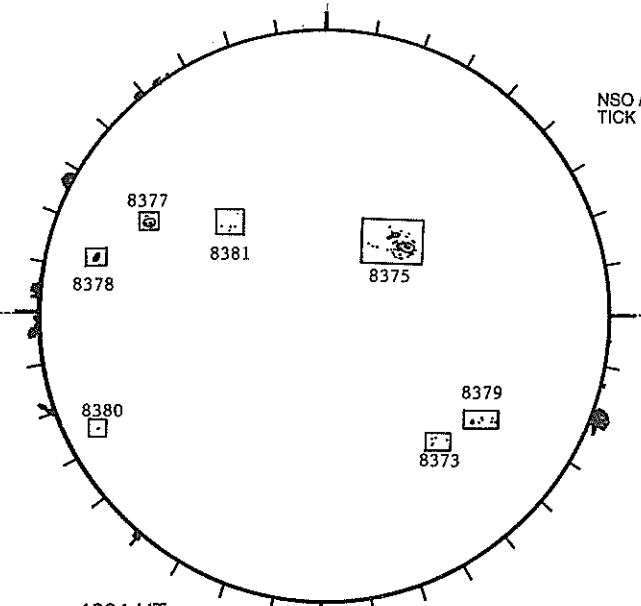


E-

0756 UT

S

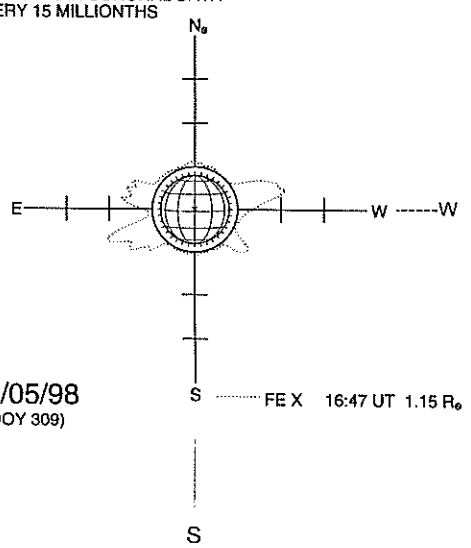
RAMEY SUNSPOT



1221 UT
1432 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/05/98
(DOY 309)

FE X 16:47 UT 1.15 $R_\odot$

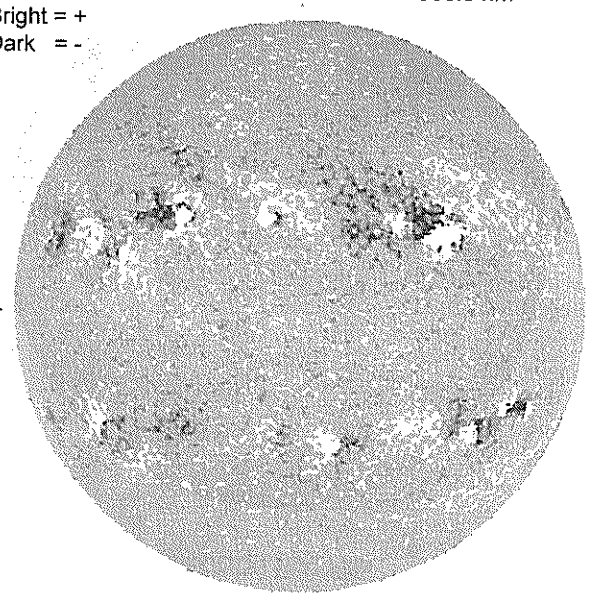
S

NOVEMBER 6, 1998 (P= + 23.63 , Bo = + 3.88 , Lo = 163.56)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



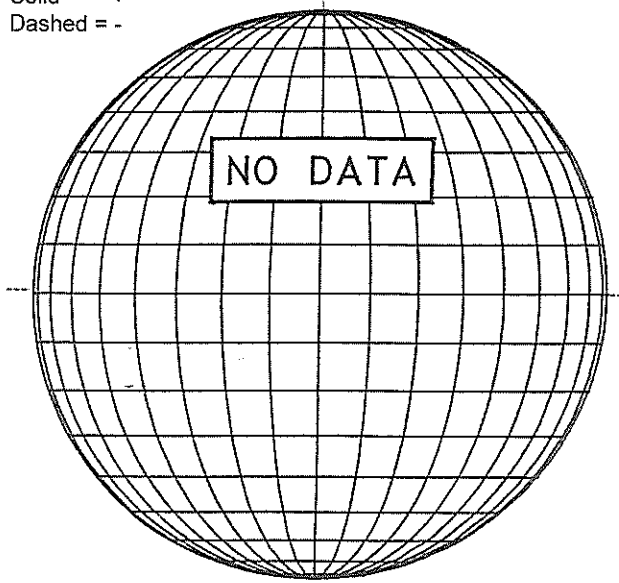
E-

1704 UT

STANFORD MAGNETOGRAM

N

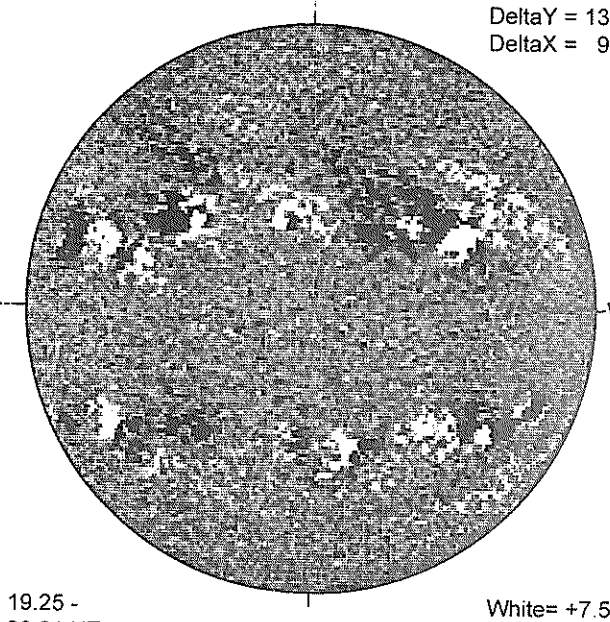
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

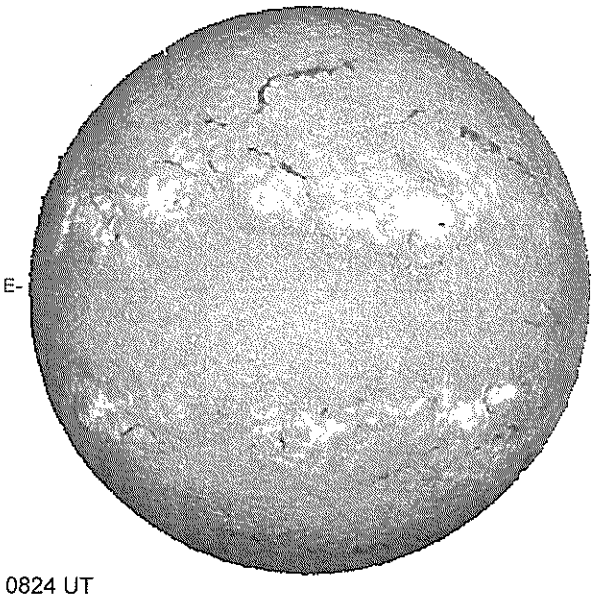


-W

19.25 -
20.21 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

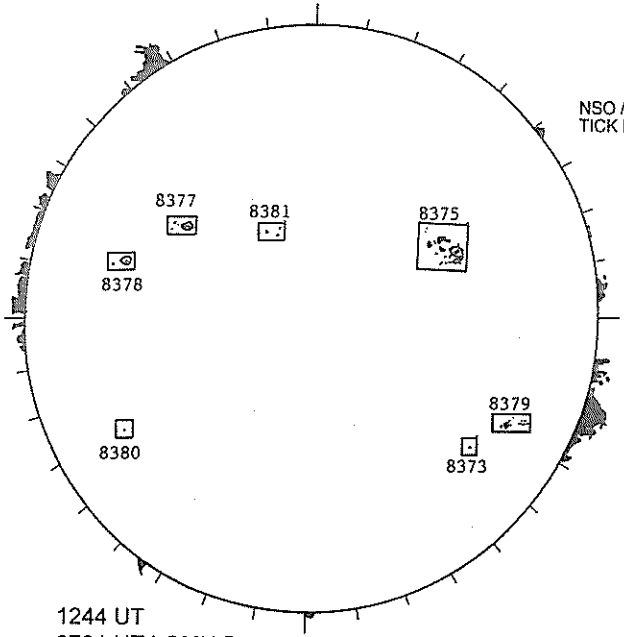


E-

0824 UT

S

RAMEY SUNSPOT

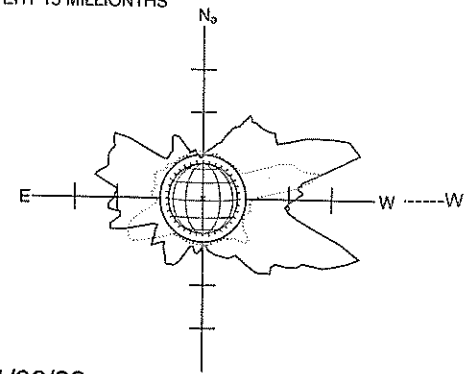


1244 UT
0731 UT LOMN Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/06/98
(DOY 310)

FE XIV 15:35 UT 1.15 $R_\odot$
FE X 16:30 UT 1.15 $R_\odot$
xxxxx CA XV 16:08 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

57
Nov 98

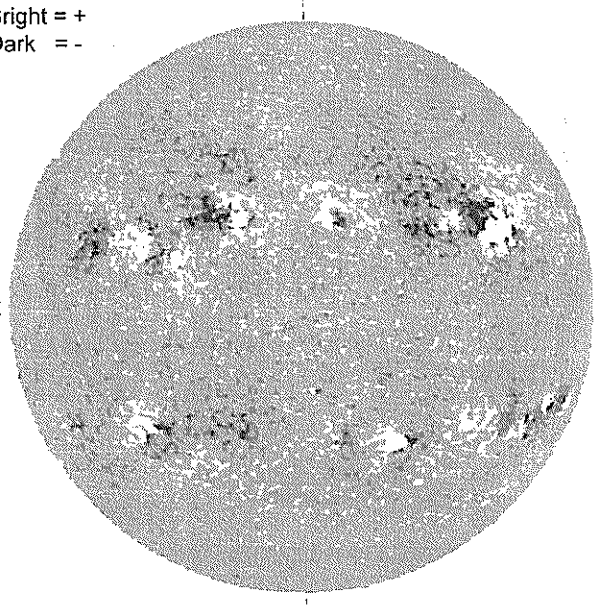
NOVEMBER 7, 1998 (P= + 23.42 , Bo = + 3.77 , Lo = 150.37)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



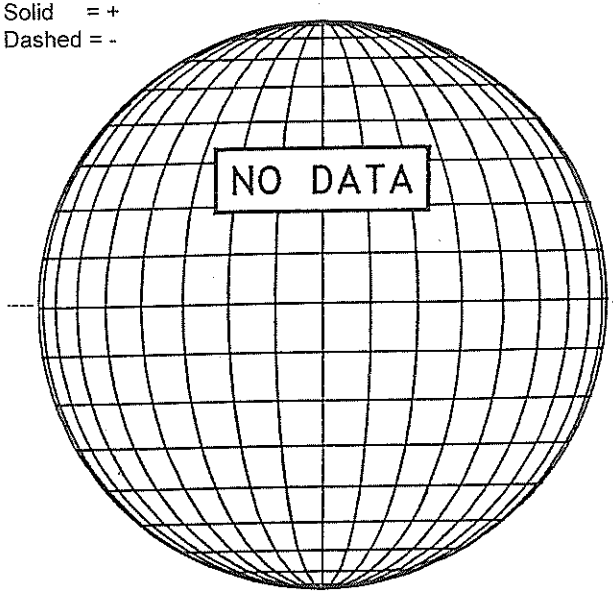
E

1635 UT

STANFORD MAGNETOGRAM

N

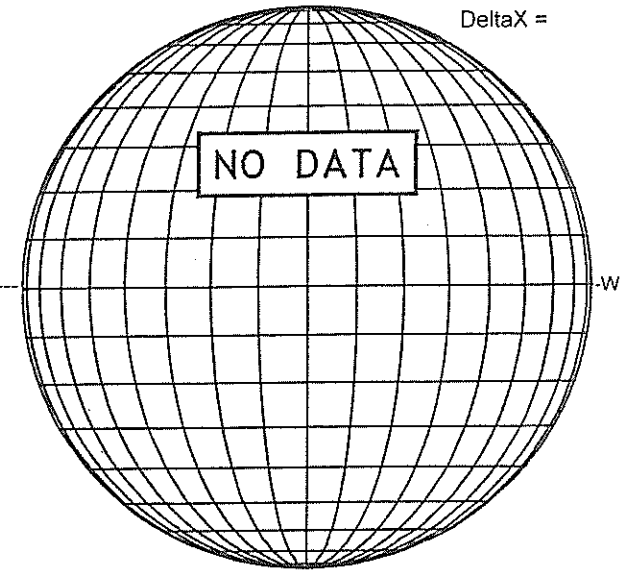
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

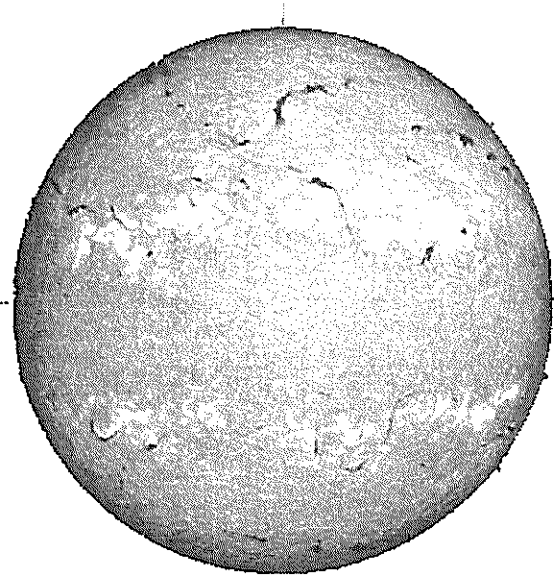
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

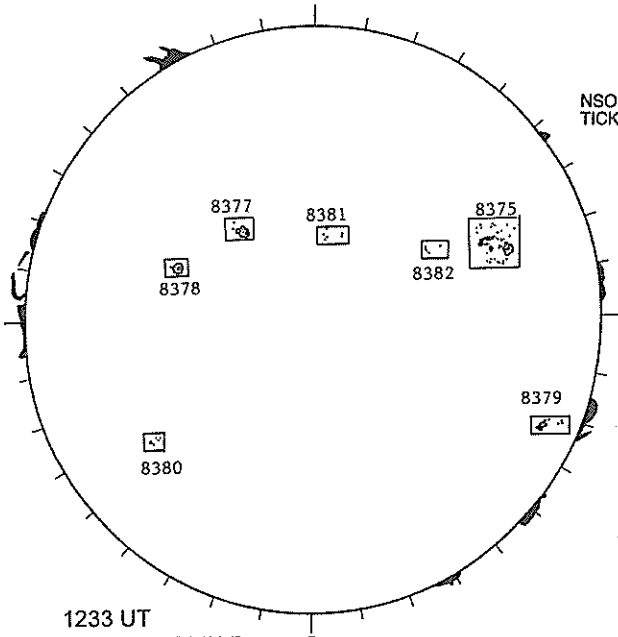


E

1047 UT

S

RAMEY SUNSPOT

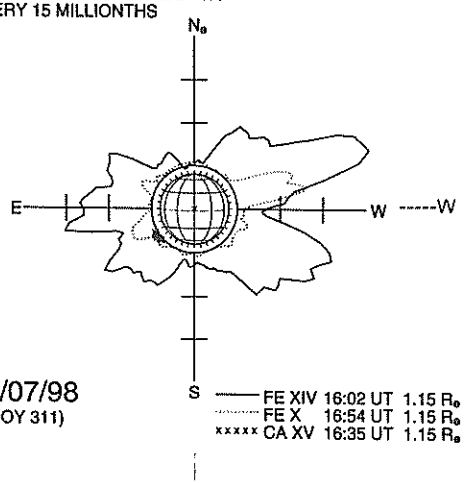


1233 UT
1124 UT LOMN Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/07/98
(DOY 311)

FE XIV 16:02 UT 1.15 R
FE X 16:54 UT 1.15 R
CA XV 16:35 UT 1.15 R

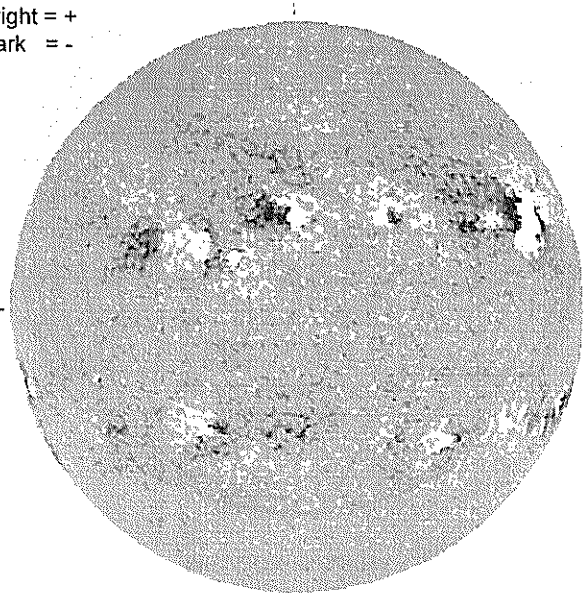
S

NOVEMBER 8, 1998 (P= + 23.20 , Bo = + 3.66 , Lo = 137.19)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



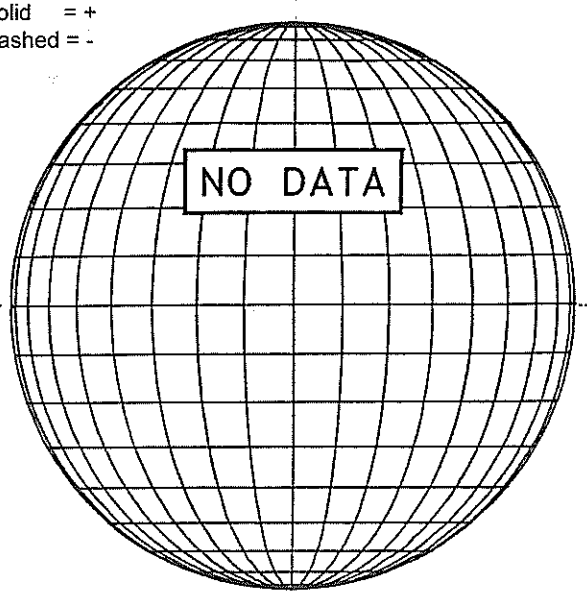
E--

1750 UT

STANFORD MAGNETOGRAM

N

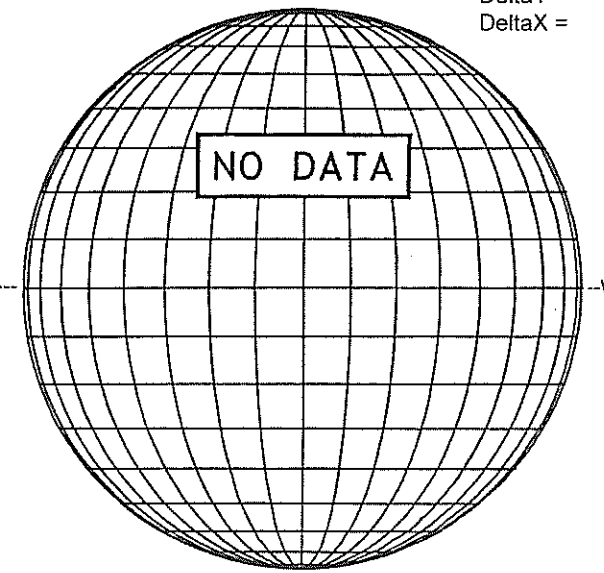
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

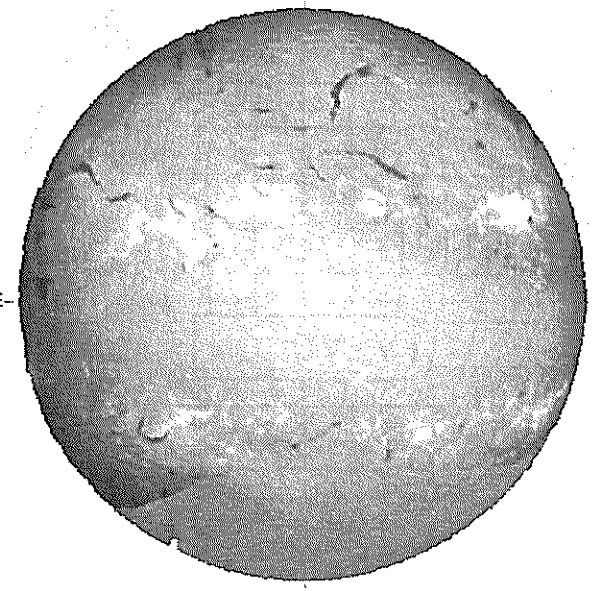
DeltaY =
DeltaX =



--W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

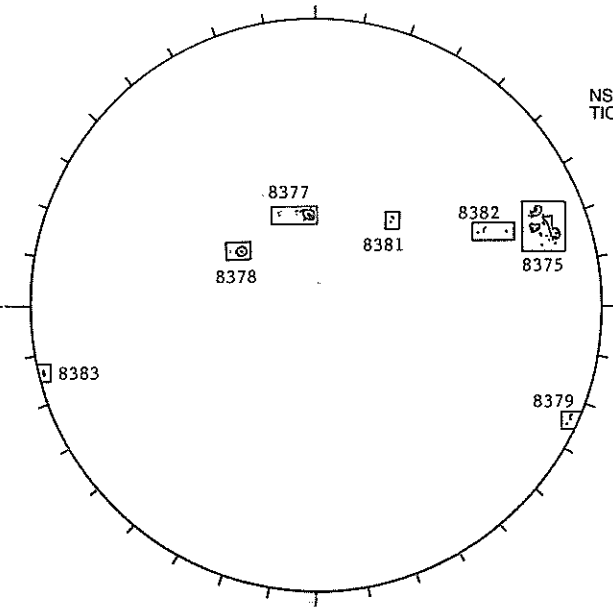


E--

0850 UT

S

RAMEY SUNSPOT

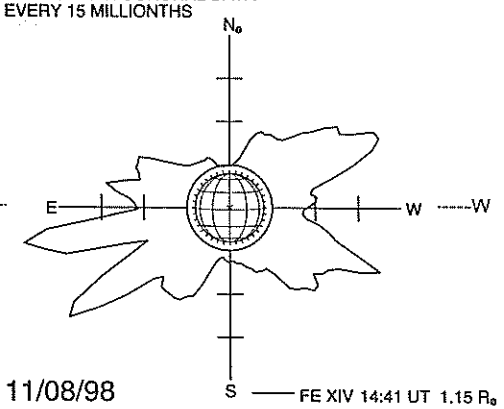


1315 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/08/98
(DOY 312)

FE XIV 14:41 UT 1.15 R₀

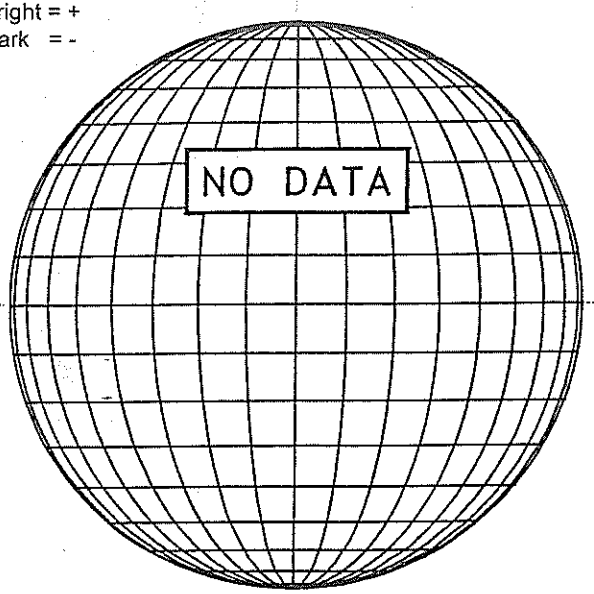
S

NOVEMBER 9, 1998 (P= + 22.98 , Bo = + 3.55 , Lo = 124.00)

KITT PEAK MAGNETOGRAM

N **868.8 nm

Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

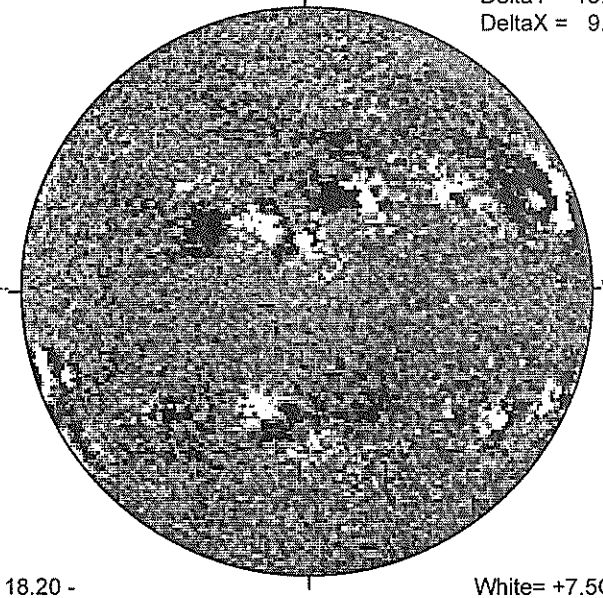
Solid = +
Dashed = -

1918 UT

MT. WILSON MAGNETOGRAM

N

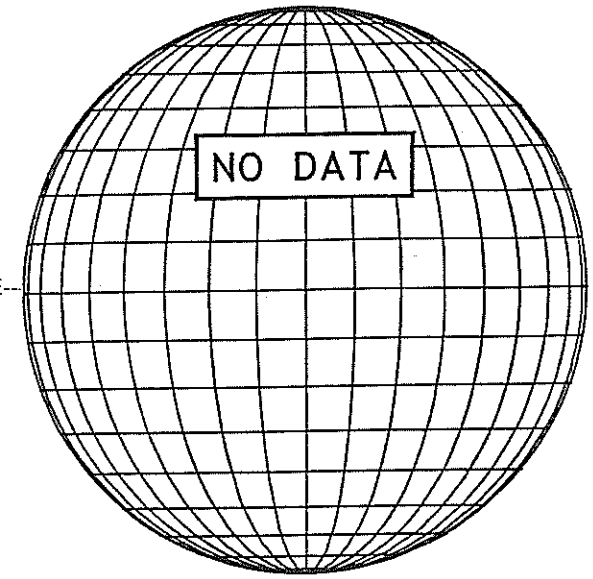
DeltaY = 13.1
DeltaX = 9.6



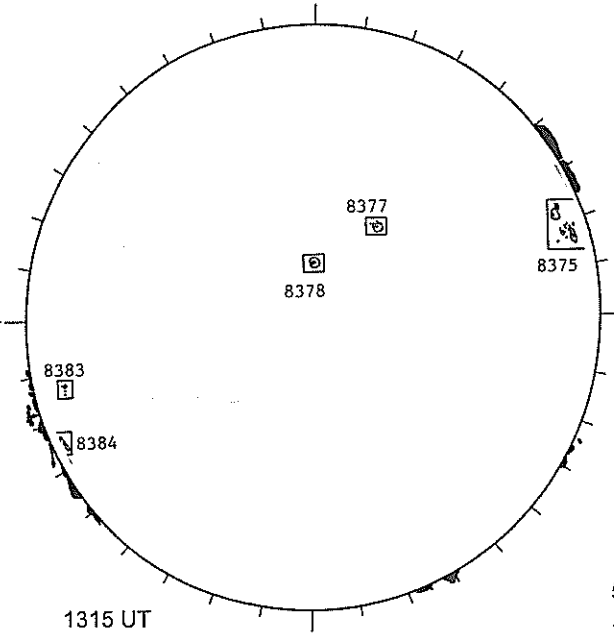
18.20 -
19.16 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



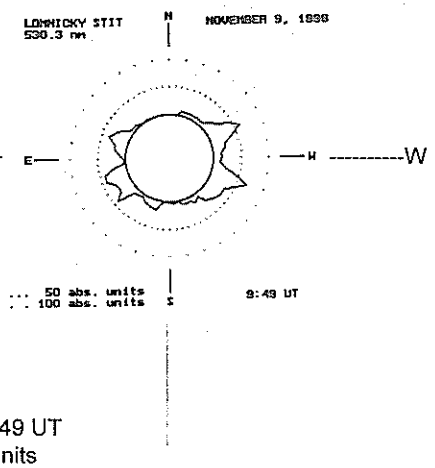
RAMEY SUNSPOT



1315 UT
0647 UT LOMN Prom

S

LOMNICKY PEAK CORONA (1.04 Radii)---



530.3 nm, 0949 UT
..... 50 abs. units
. . 100 abs. units

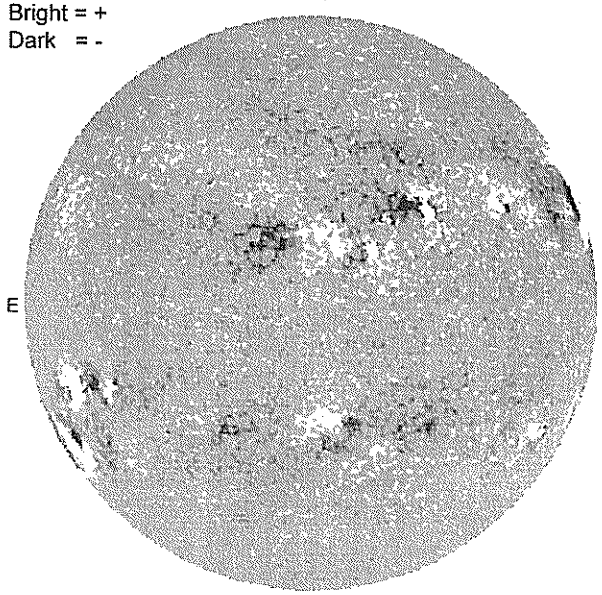
S

NOVEMBER 10, 1998 (P= + 22.75 , Bo = + 3.44 , Lo = 110.82)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



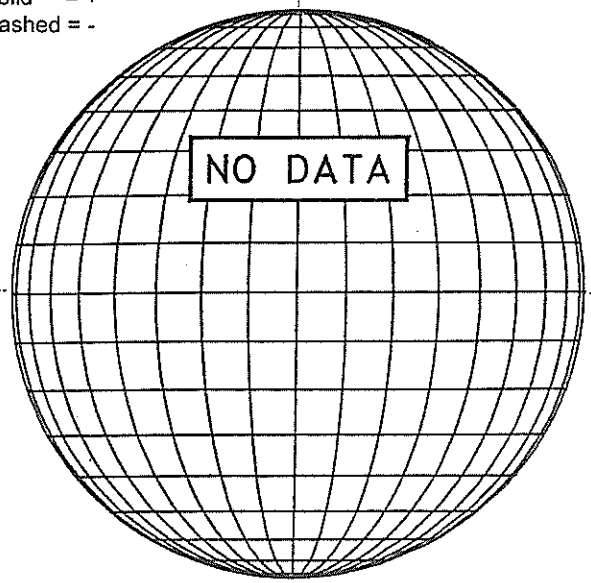
E

1734 UT

STANFORD MAGNETOGRAM

N

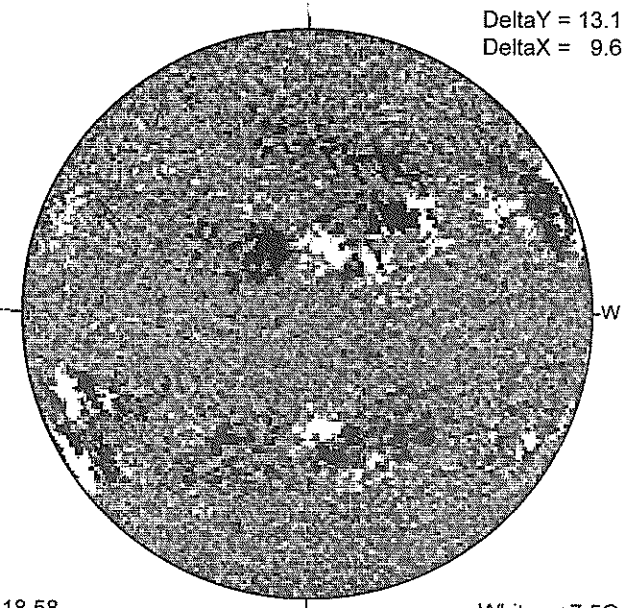
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

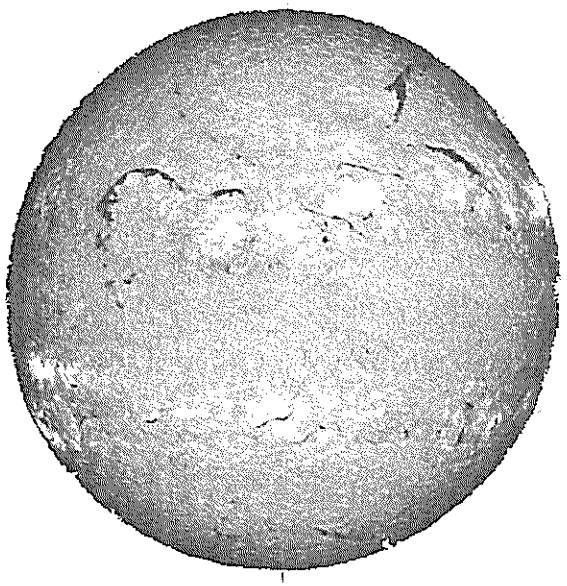


W

18.58 -
19.54 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

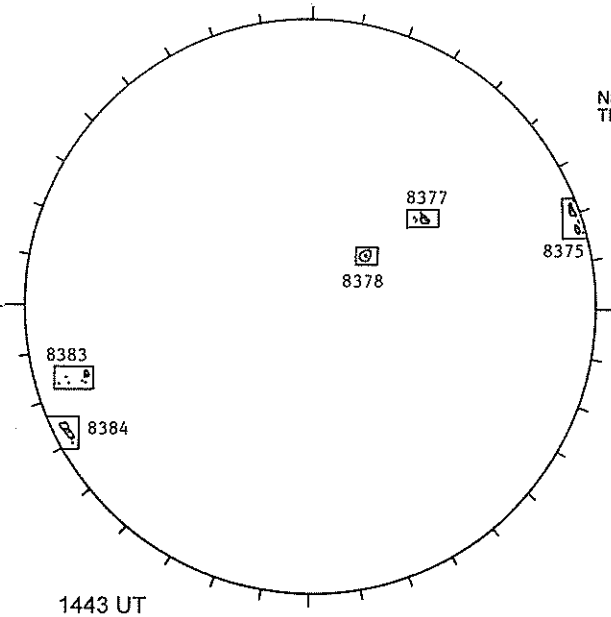


E

1027 UT

S

RAMEY SUNSPOT

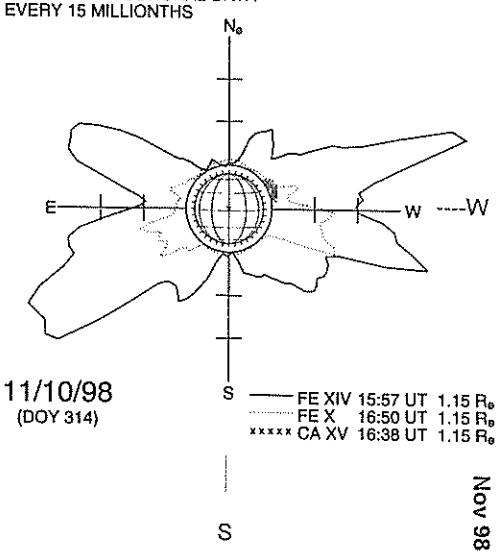


1443 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/10/98
(DOY 314)

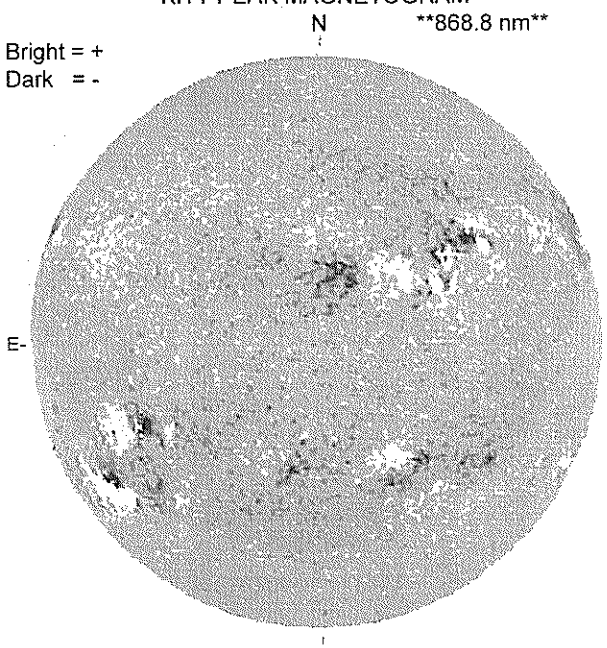
FE XIV 15:57 UT 1.15 R
FE X 16:50 UT 1.15 R
CA XV 16:38 UT 1.15 R

S

61
Nov 98

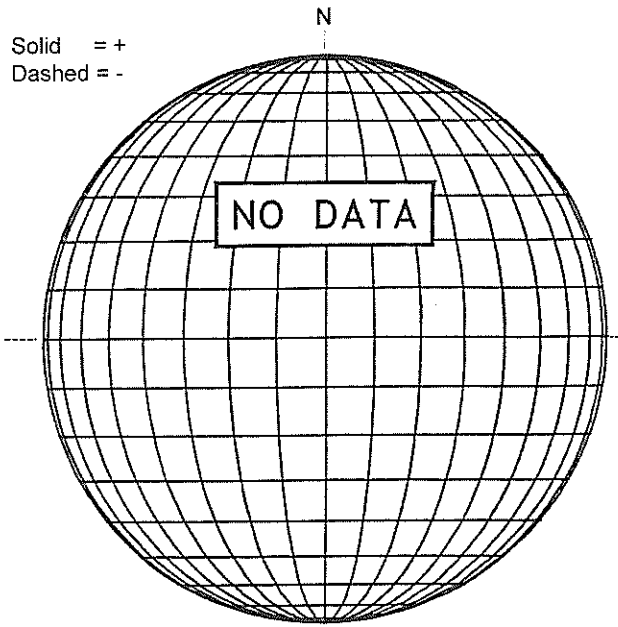
NOVEMBER 11, 1998 (P= + 22.51 , Bo = + 3.33 , Lo = 97.63)

KITT PEAK MAGNETOGRAM

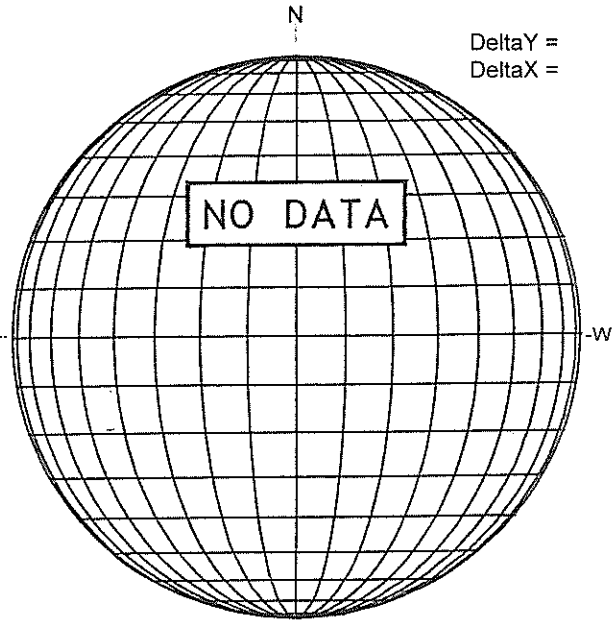


1742 UT

STANFORD MAGNETOGRAM

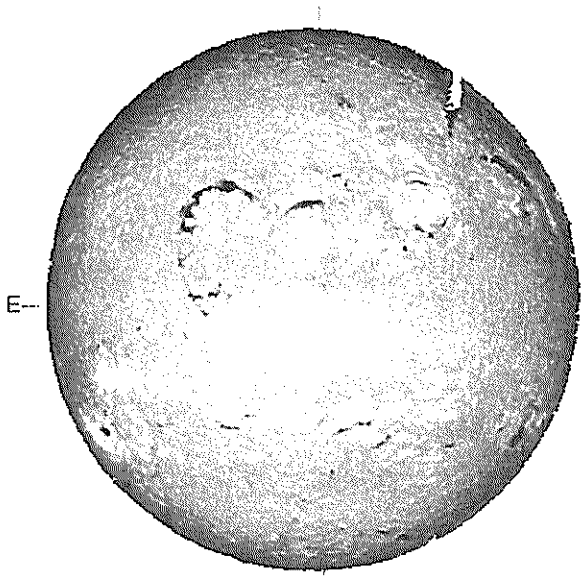


MT. WILSON MAGNETOGRAM



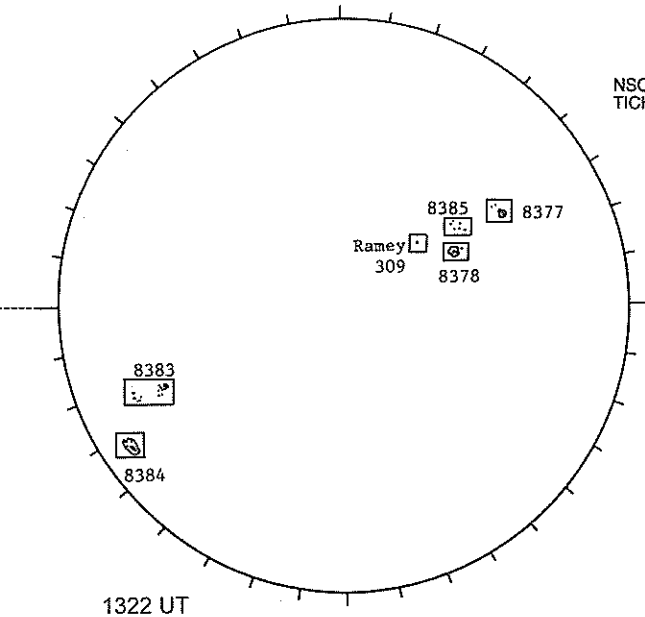
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



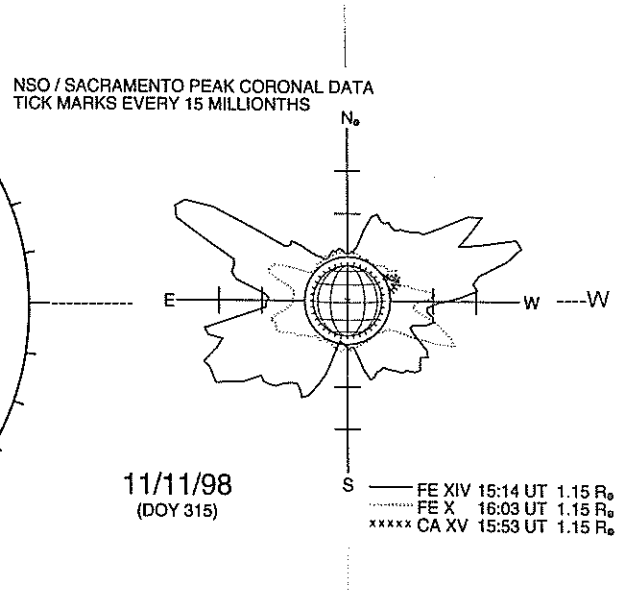
0758 UT

RAMEY SUNSPOT



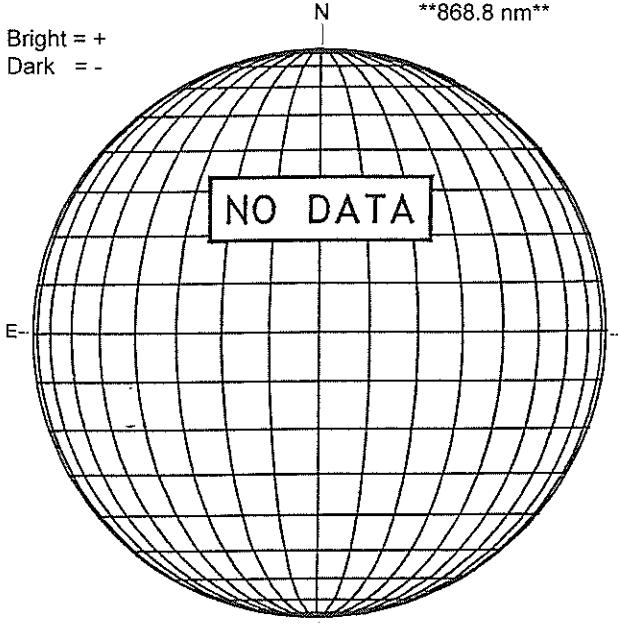
1322 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

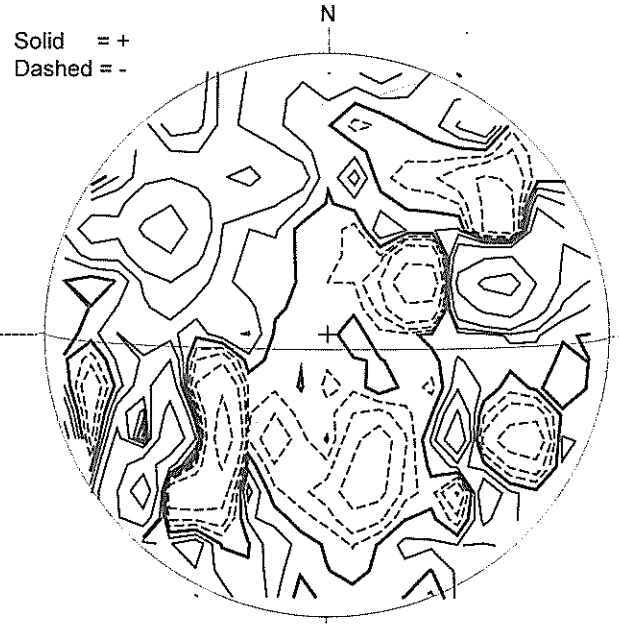


NOVEMBER 12, 1998 (P= + 22.26 , Bo = + 3.21 , Lo = 84.45)

KITT PEAK MAGNETOGRAM

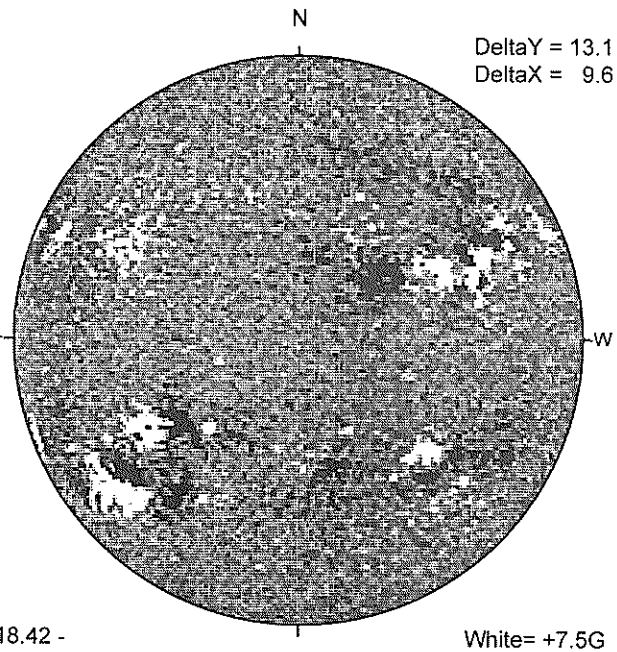


STANFORD MAGNETOGRAM



2026 UT

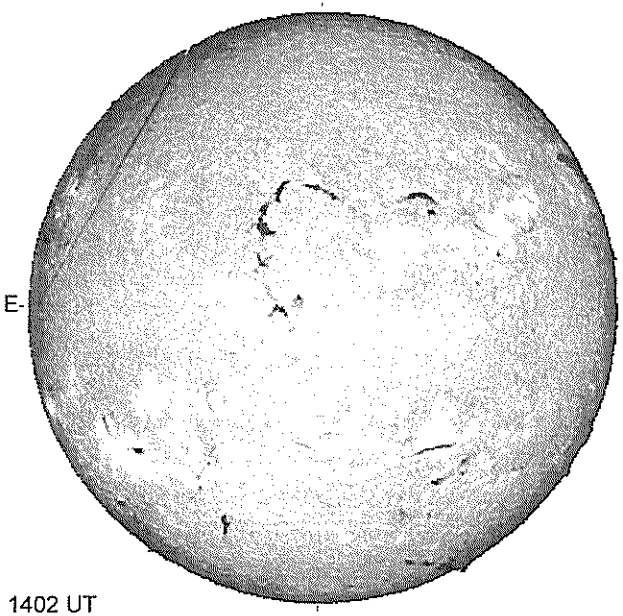
MT. WILSON MAGNETOGRAM



18.42 -
19.38 UT

White= +7.5G
Black = -7.5G

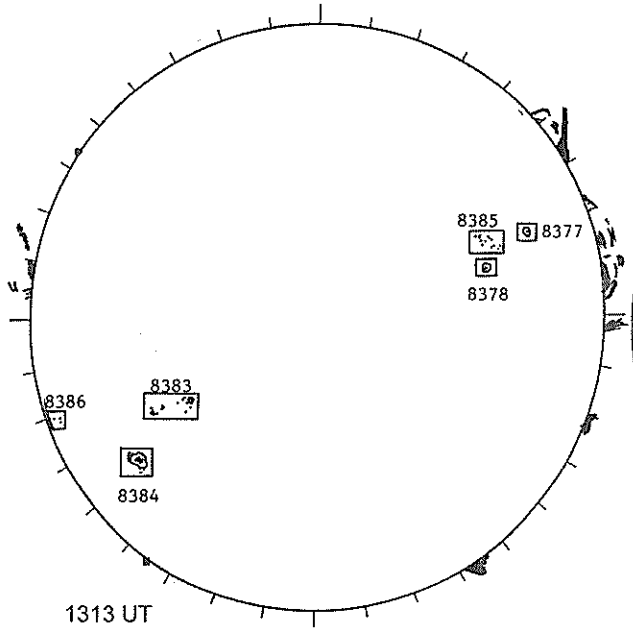
---- MEUDON H-ALPHA



1402 UT

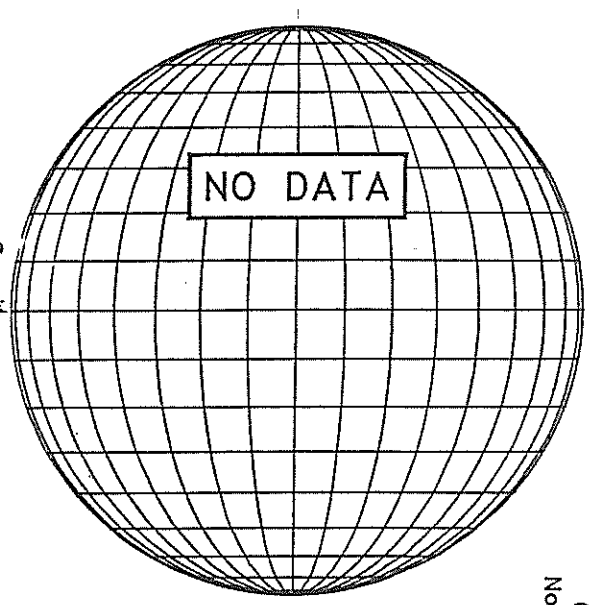
S

RAMEY SUNSPOT



1313 UT
0640 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

63
Nov 98

NOVEMBER 13, 1998 (P= + 22.01 , Bo = + 3.10 , Lo = 71.26)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

E

1659 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

1930 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

W

18.88 -
19.85 UT

White= +7.5G
Black = -7.5G

---- SACRAMENTO PEAK H-ALPHA

NO DATA

E

S

RAMEY SUNSPOT

8388
8377
8385
8378
8383
8386
8384

1900 UT
0735 UT LOMN Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS

N_e

E

W -----W

S

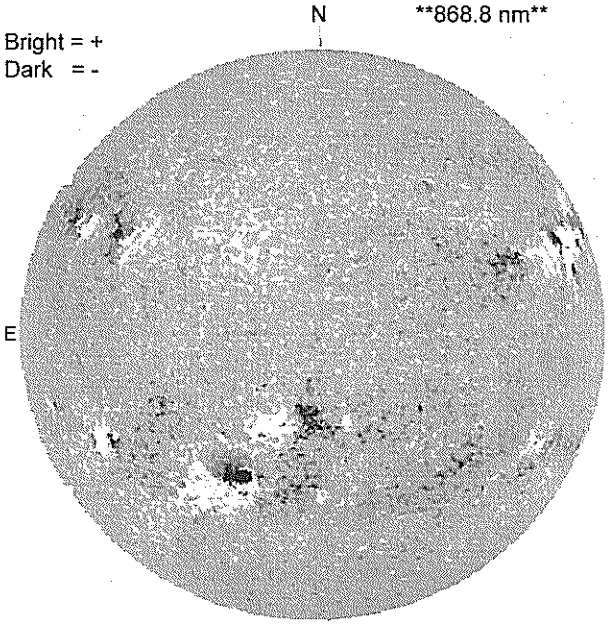
11/13/98
(DOY 317)

FE XIV 15:01 UT 1.15 R_e
FE X 15:56 UT 1.15 R_e
xxxxx CA XV 15:38 UT 1.15 R_e

S

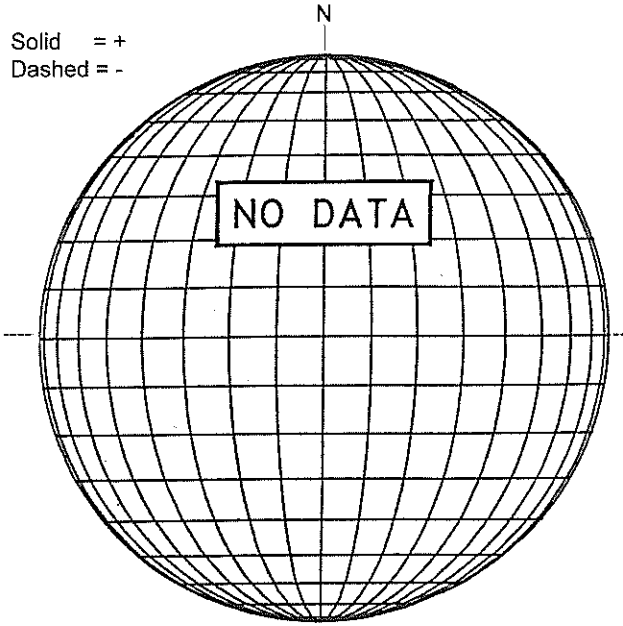
NOVEMBER 14, 1998 (P= + 21.75 , Bo = + 2.98 , Lo= 58.08)

KITT PEAK MAGNETOGRAM

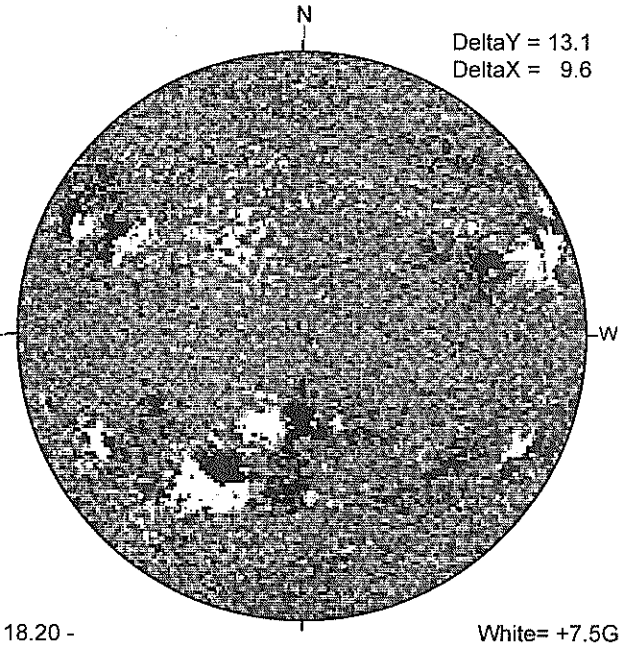


1616 UT

STANFORD MAGNETOGRAM



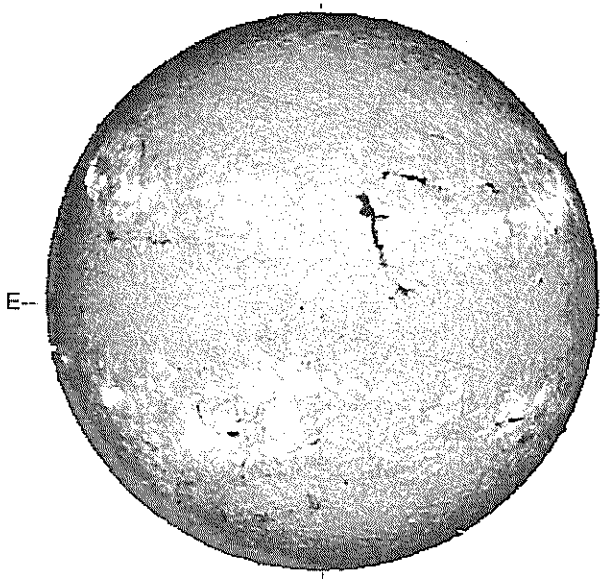
MT. WILSON MAGNETOGRAM



18.20 -
19.17 UT

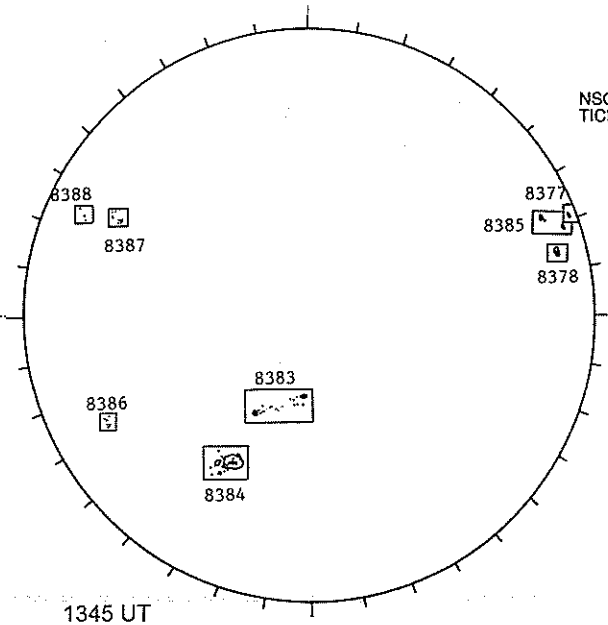
White= +7.5G
Black = -7.5G

---- MEUDON H-ALPHA



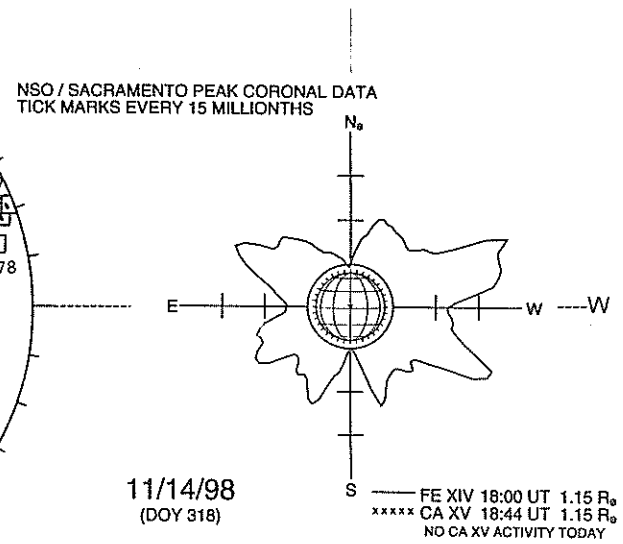
0806 UT

RAMEY SUNSPOT



1345 UT

SACRAMENTO PEAK CORONA (1.15 Radii)--



11/14/98
(DOY 318)

FE XIV 18:00 UT 1.15 $R_\odot$
xxxxx CA XV 18:44 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

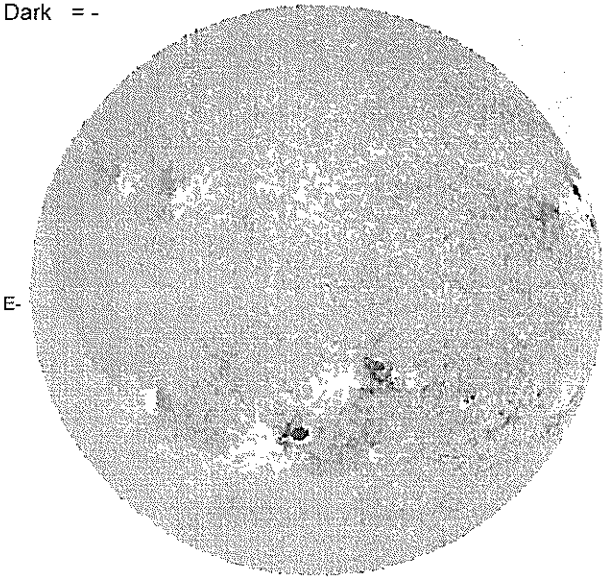
65
Nov 98

NOVEMBER 15, 1998 (P= + 21.48 , Bo = + 2.87 , Lo = 44.90)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



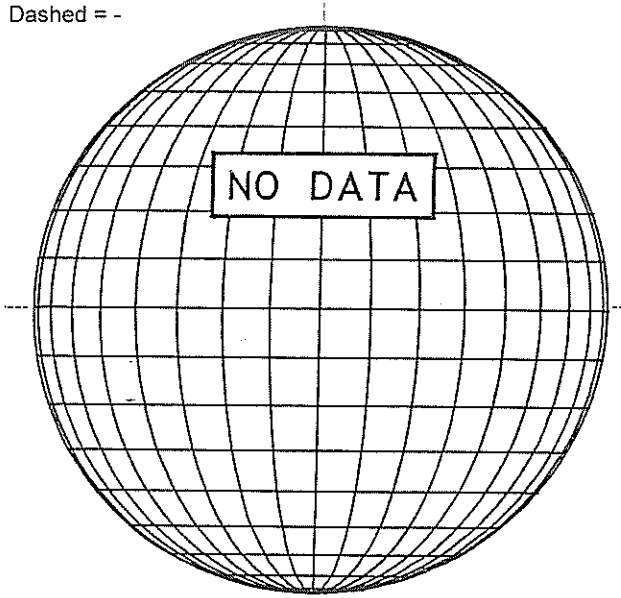
E-

1621 UT

STANFORD MAGNETOGRAM

N

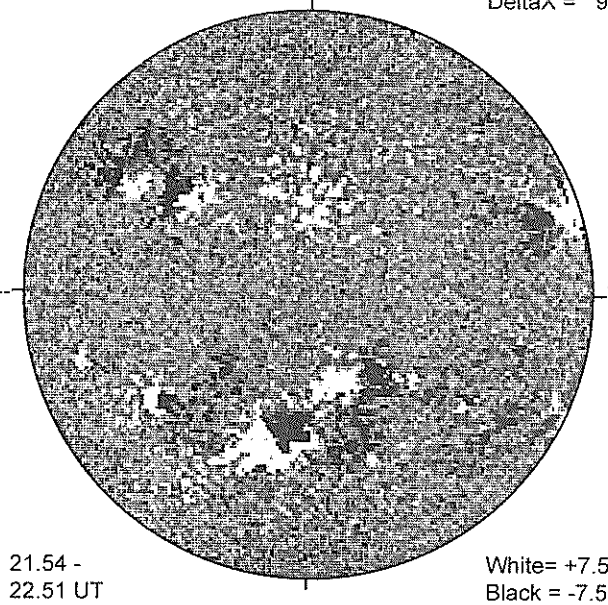
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

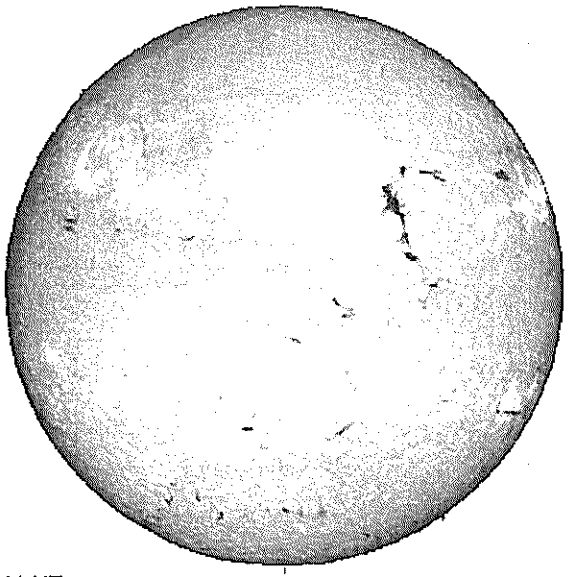


W

21.54 -
22.51 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

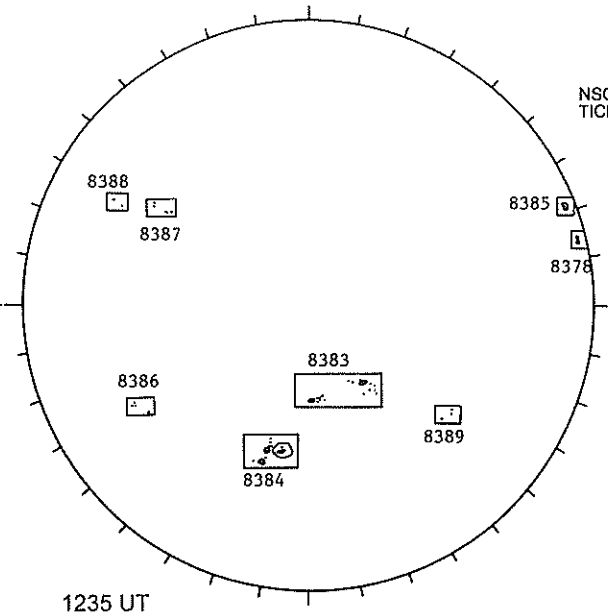


E--

0841 UT

S

RAMEY SUNSPOT

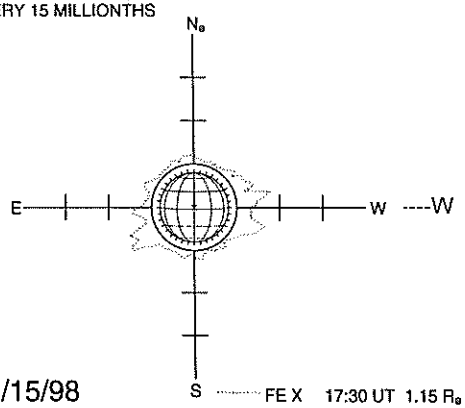


1235 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



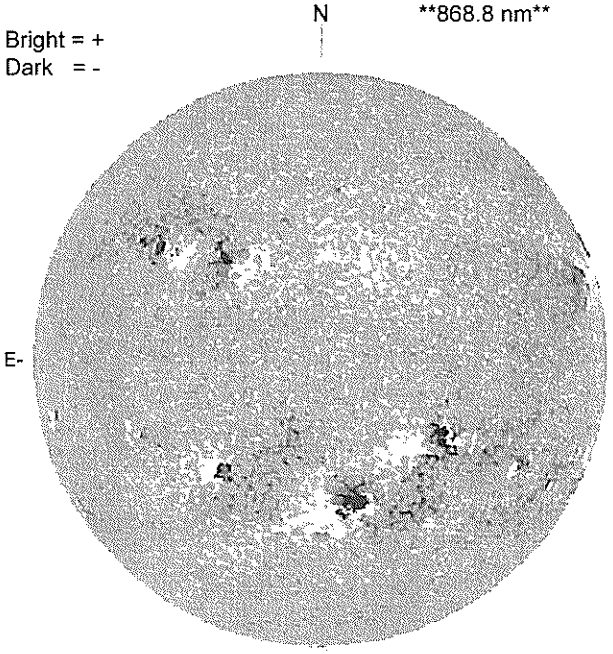
11/15/98
(DOY 319)

FE X 17:30 UT 1.15 R_s

S

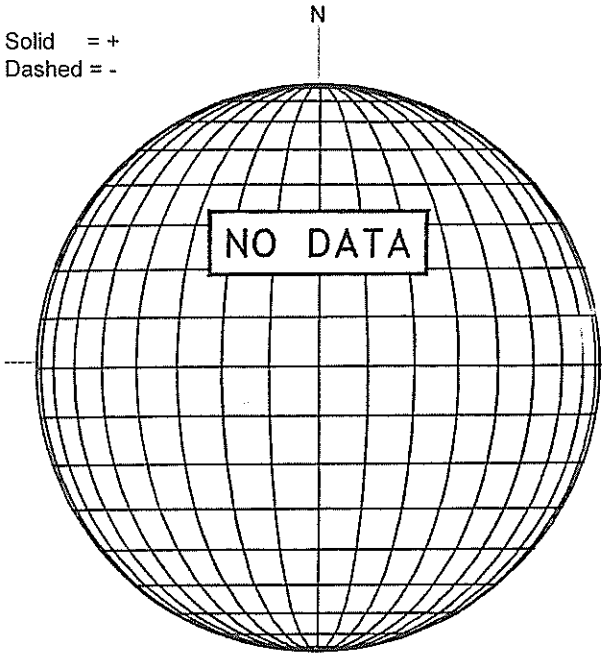
NOVEMBER 16, 1998 (P = + 21.20 , Bo = + 2.75 , Lo = 31.72)

KITT PEAK MAGNETOGRAM

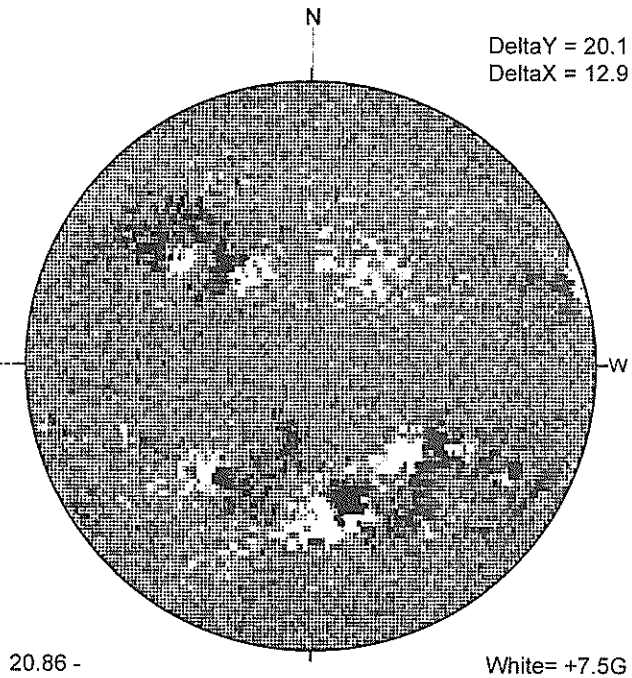


1612 UT

STANFORD MAGNETOGRAM



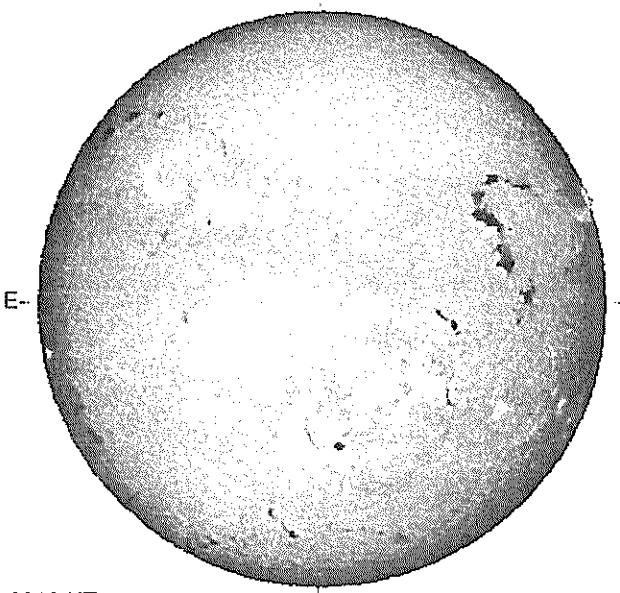
MT. WILSON MAGNETOGRAM



20.86 -
21.28 UT

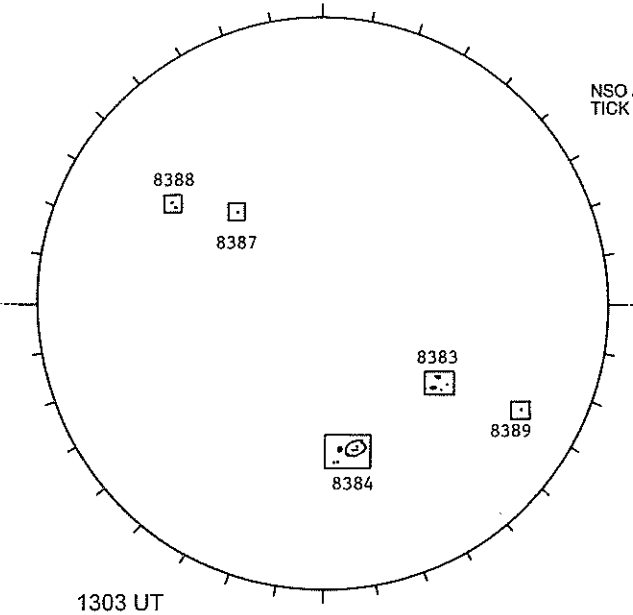
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



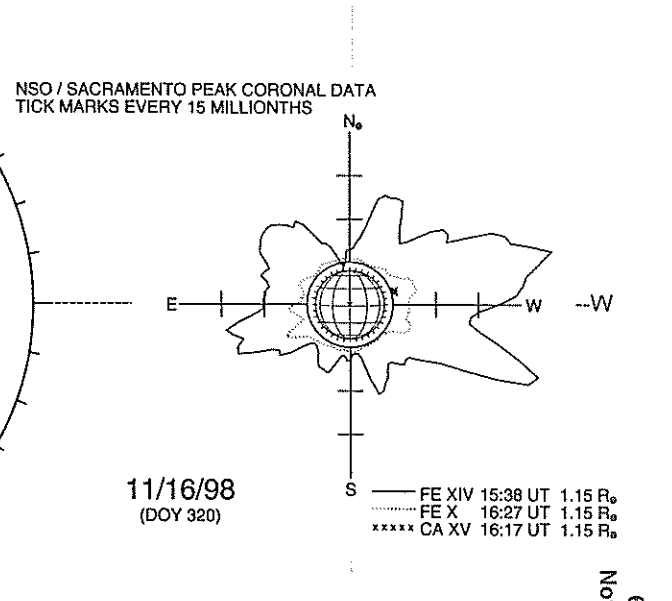
0812 UT

RAMEY SUNSPOT



1303 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



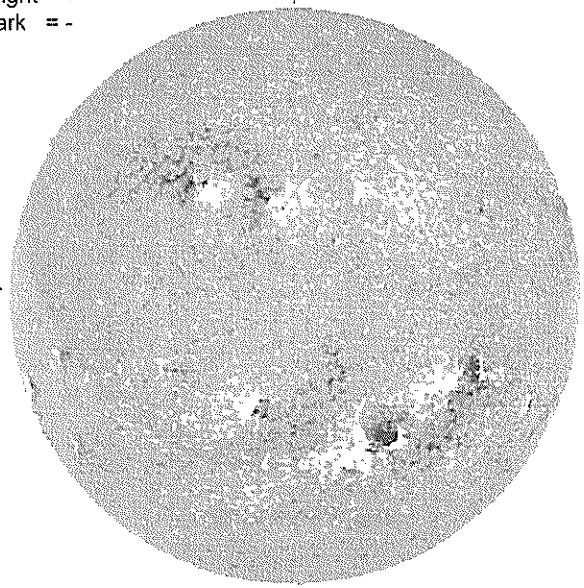
67 Nov 98

NOVEMBER 17, 1998 (P= + 20.91 , Bo = + 2.63 , Lo = 18.53)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



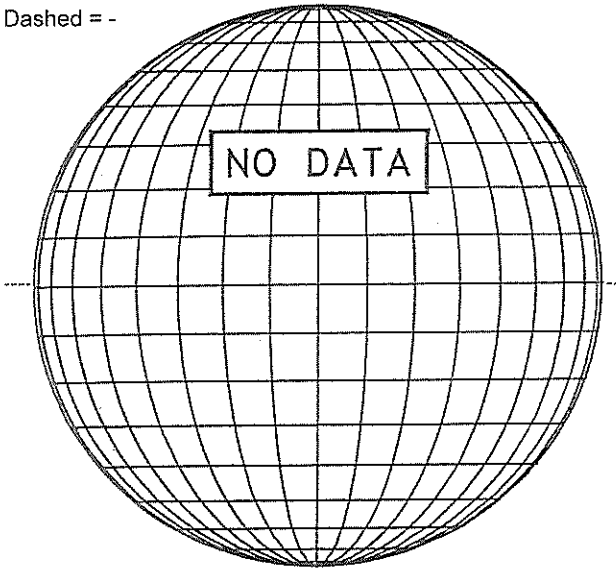
E--

1747 UT

STANFORD MAGNETOGRAM

N

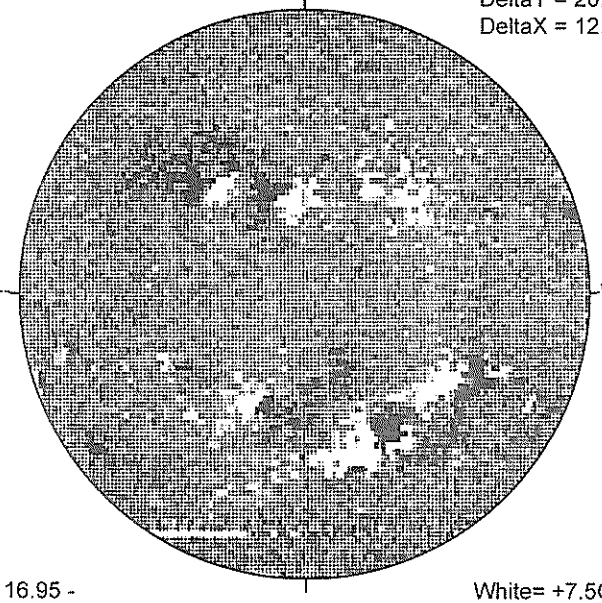
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 20.1
DeltaX = 12.9

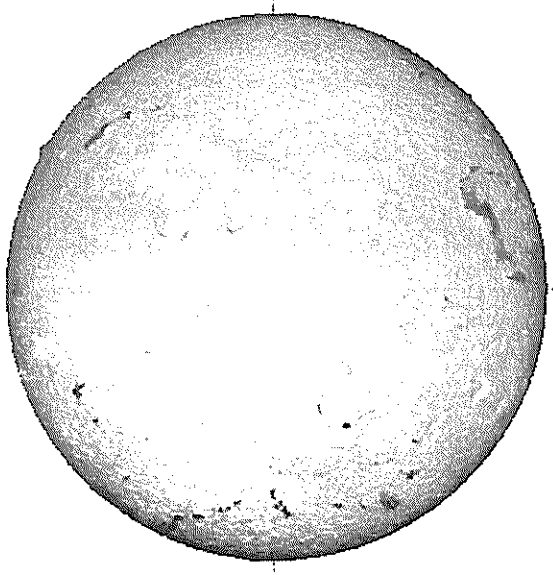


W

16.95 -
17.37 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

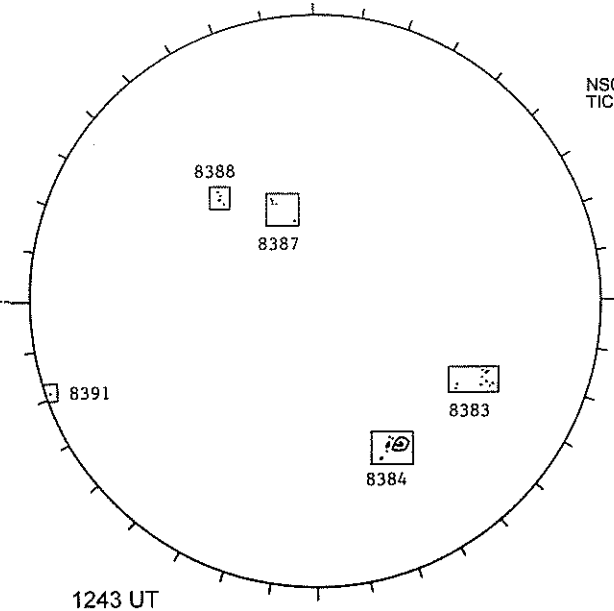


E----

0852 UT

S

RAMEY SUNSPOT

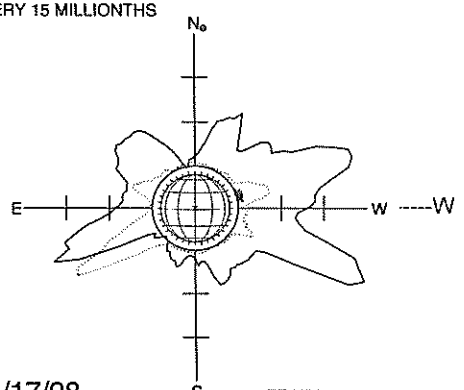


1243 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



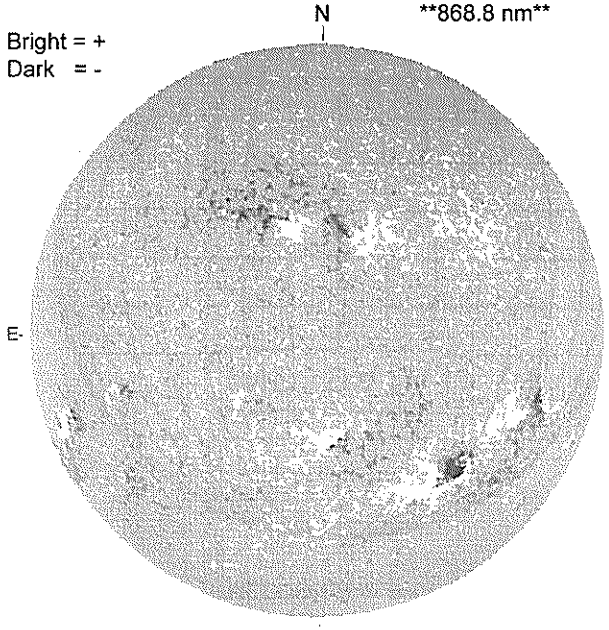
11/17/98
(DOY 321)

FE XIV 15:36 UT 1.15 R
FE X 16:28 UT 1.15 R
CA XV 16:09 UT 1.15 R

S

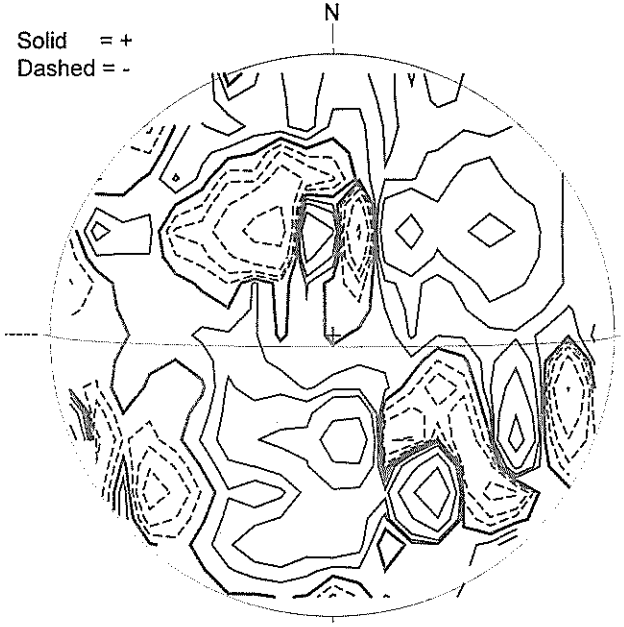
NOVEMBER 18, 1998 (P= + 20.62 , Bo = + 2.51 , Lo = 5.35)

KITT PEAK MAGNETOGRAM



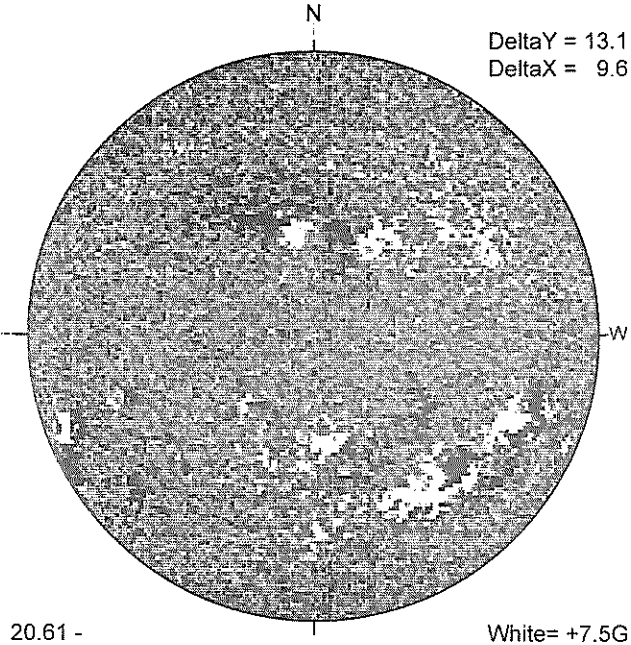
1646 UT

STANFORD MAGNETOGRAM



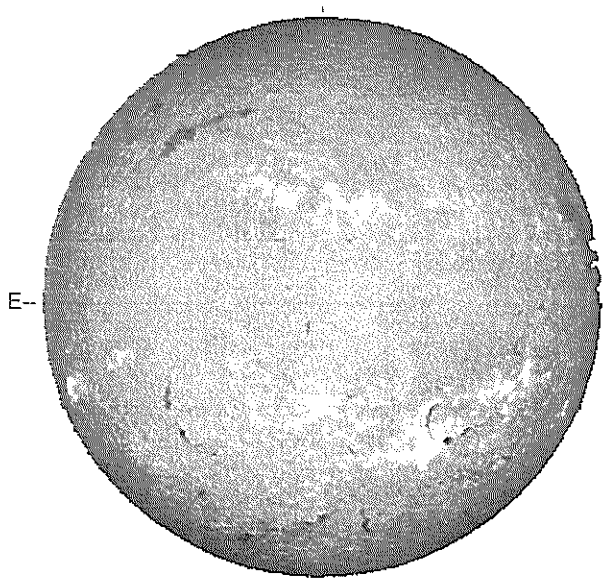
1938 UT

MT. WILSON MAGNETOGRAM



20.61 -
21.57 UT

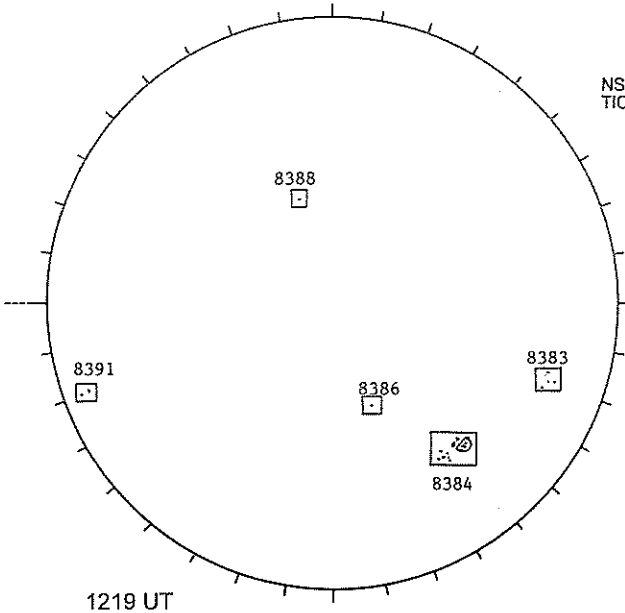
MEUDON H-ALPHA



1225 UT

S

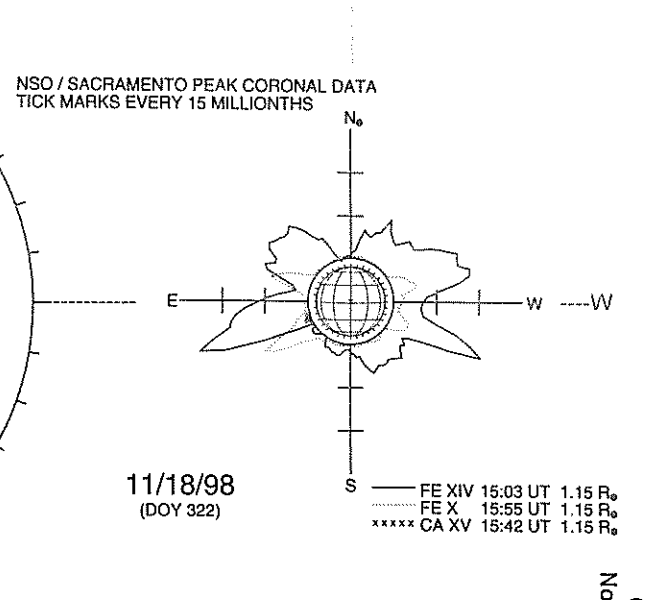
RAMEY SUNSPOT



1219 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

Nov 98 69

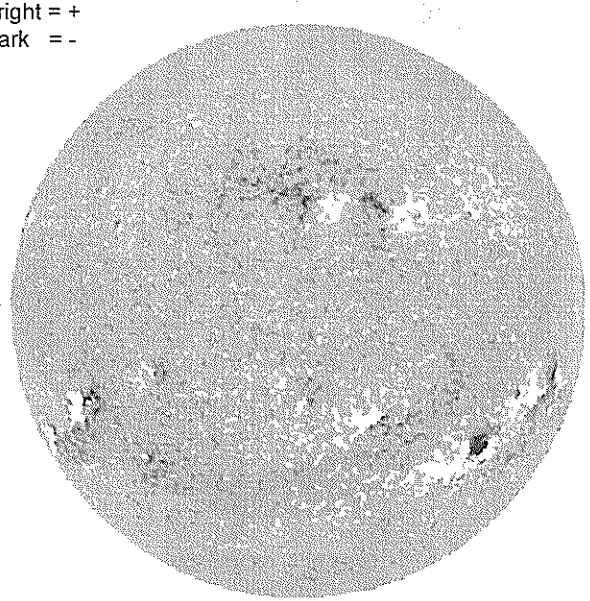
NOVEMBER 19, 1998 (P= + 20.32 , Bo = + 2.39 , Lo = 352.17)

Nov 98 70

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



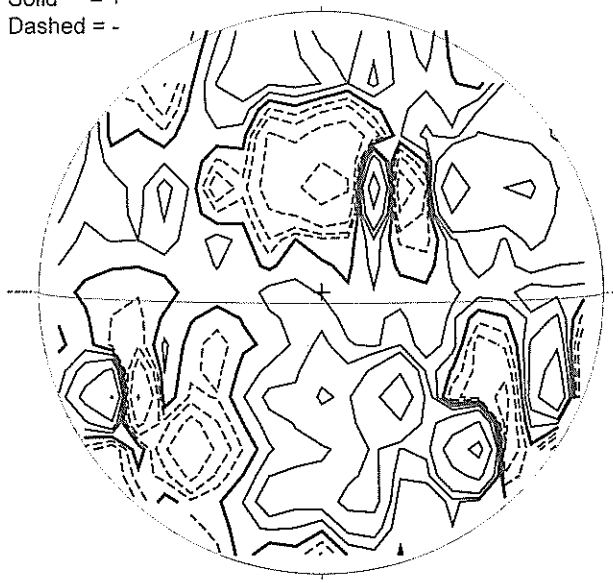
E-

1611 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

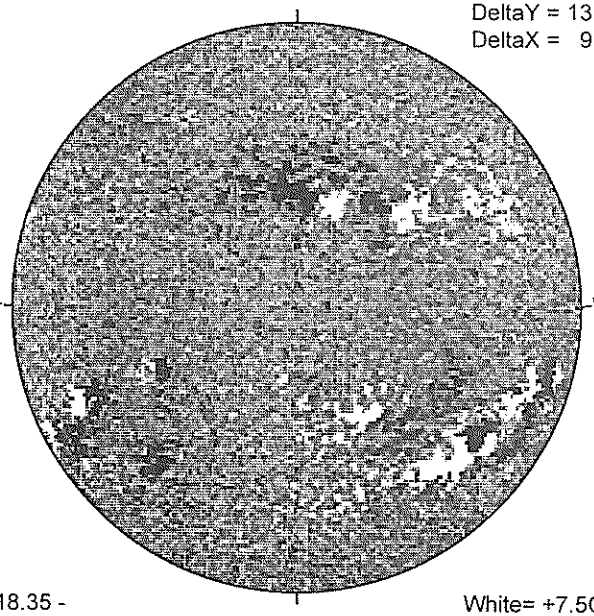


2241 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

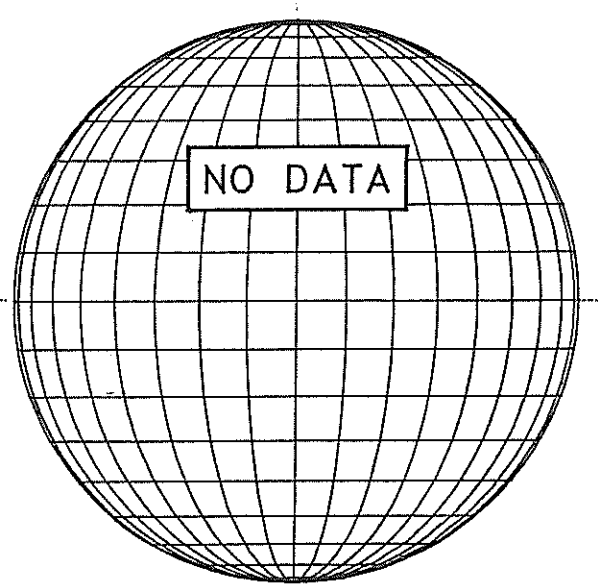


-W

18.35 -
19.32 UT

White= +7.5G
Black = -7.5G

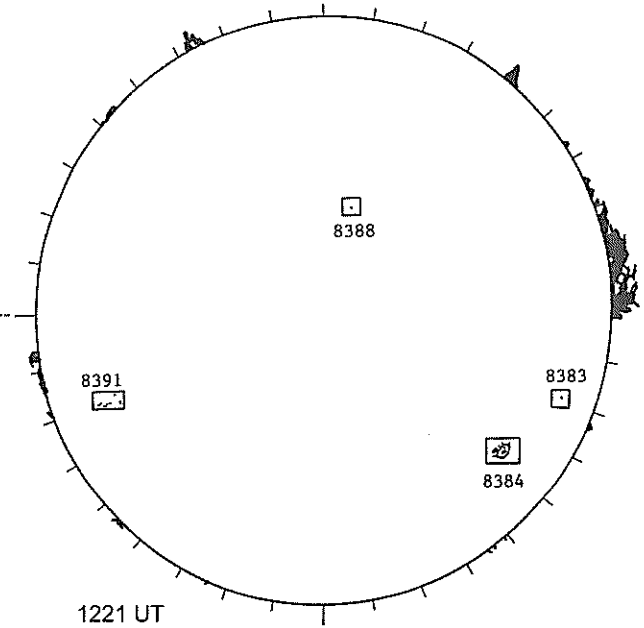
---- MEUDON H-ALPHA



E-

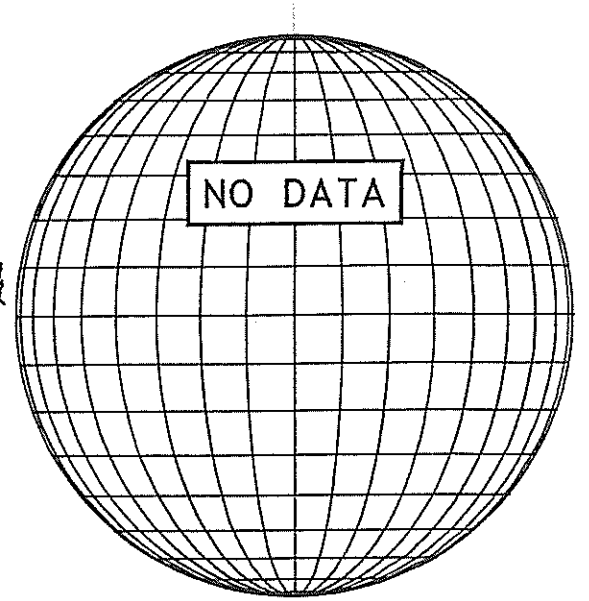
S

RAMEY SUNSPOT



1221 UT
0727 UT LOMN Prom S

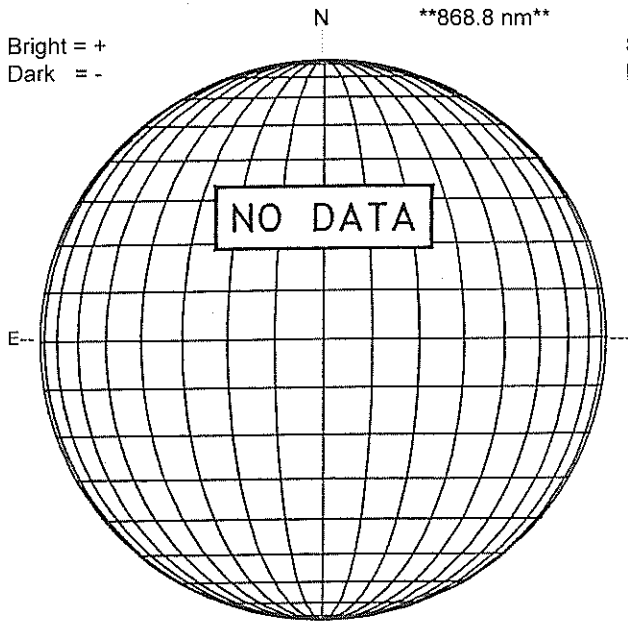
SACRAMENTO PEAK CORONA (1.15 Radii)----



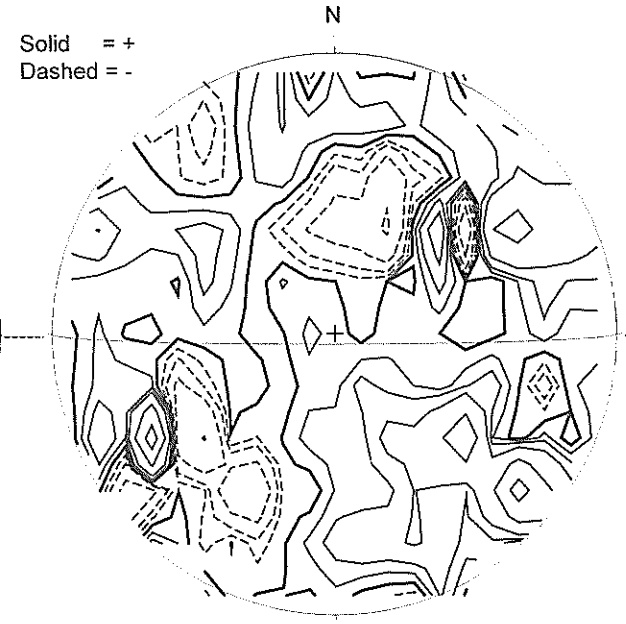
S

NOVEMBER 20, 1998 (P= + 20.02 , Bo = + 2.27 , Lo = 338.99)

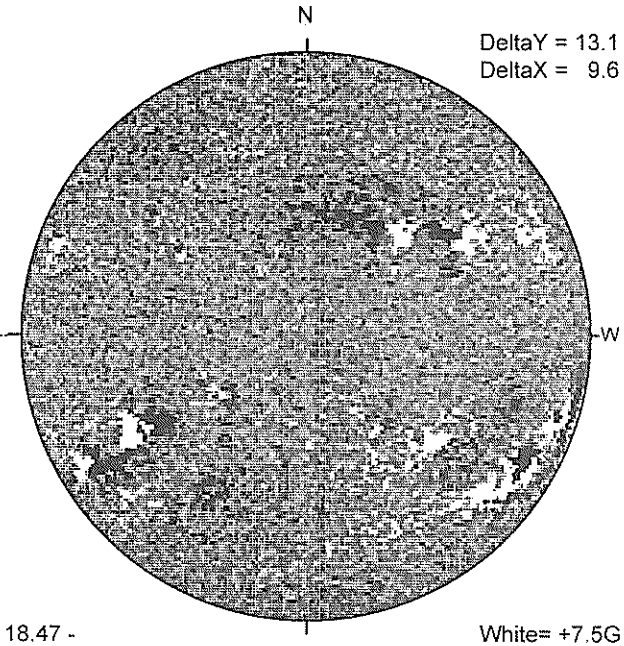
KITT PEAK MAGNETOGRAM



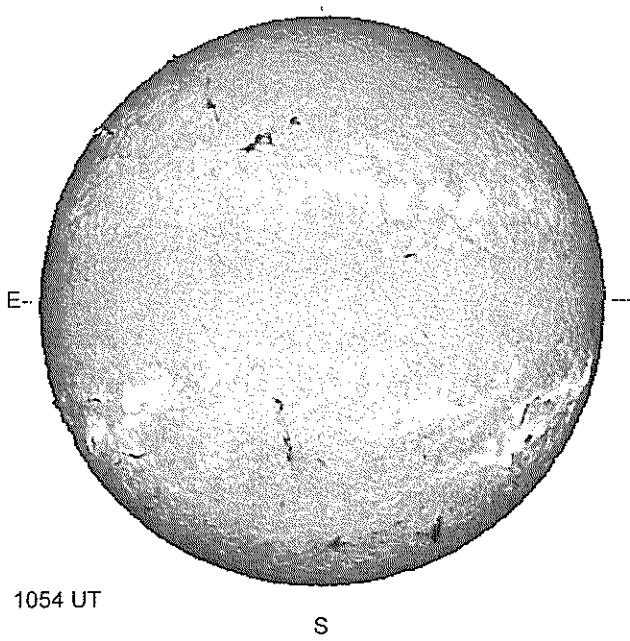
STANFORD MAGNETOGRAM



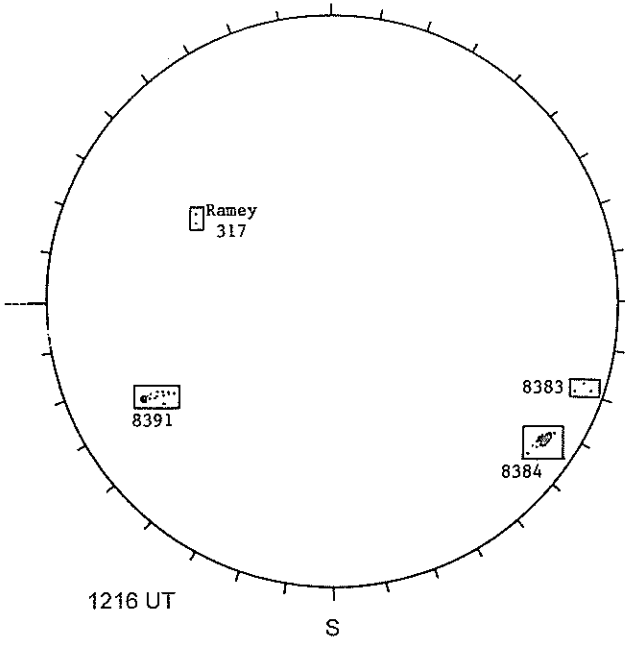
MT. WILSON MAGNETOGRAM



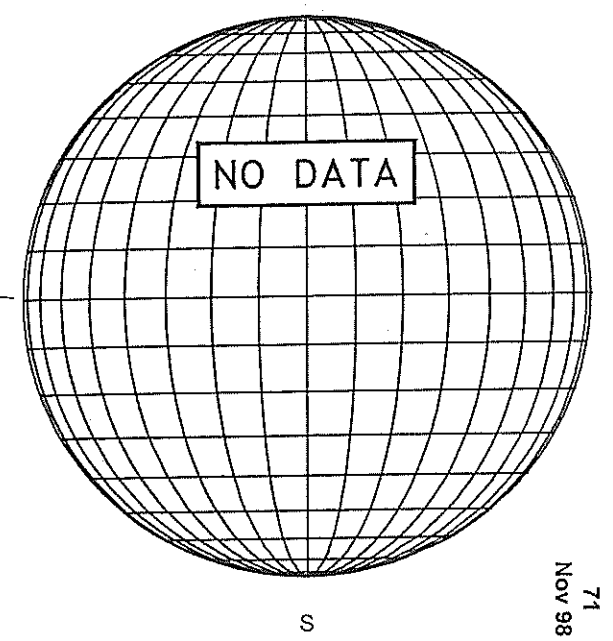
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



71
Nov 98

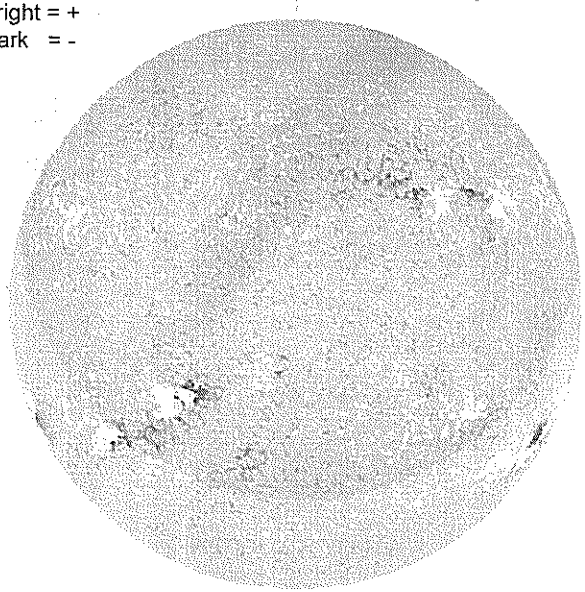
NOVEMBER 21, 1998 (P= + 19.70 , Bo = + 2.15 , Lo = 325.81)

72
Nov 98

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



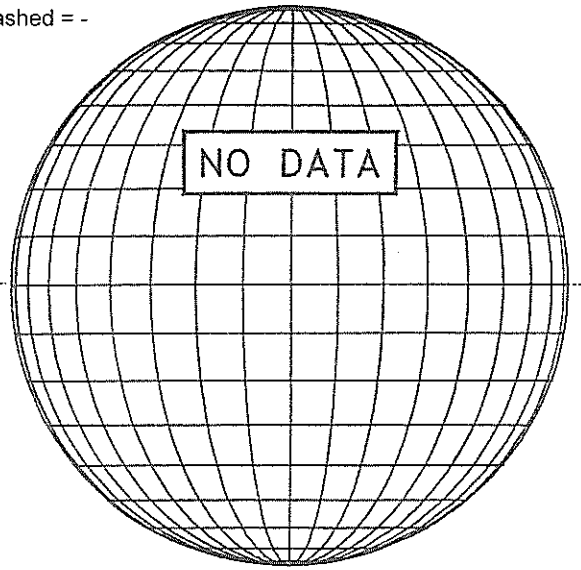
E-

1600 UT

STANFORD MAGNETOGRAM

N

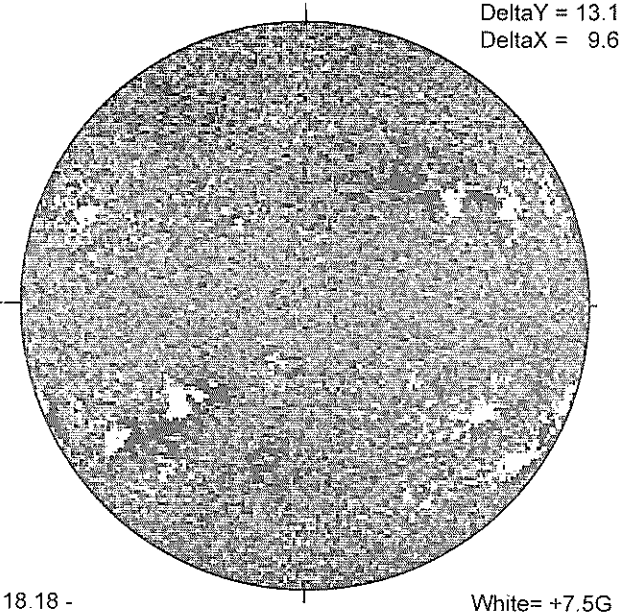
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

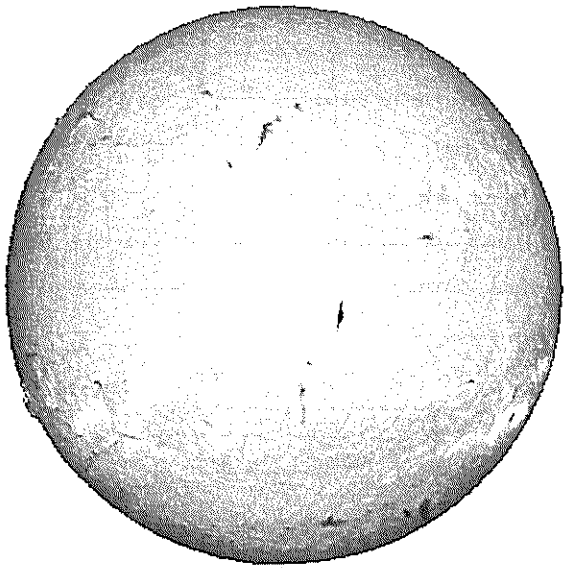
DeltaY = 13.1
DeltaX = 9.6



18.18 -
19.14 UT

White= +7.5G
Black = -7.5G

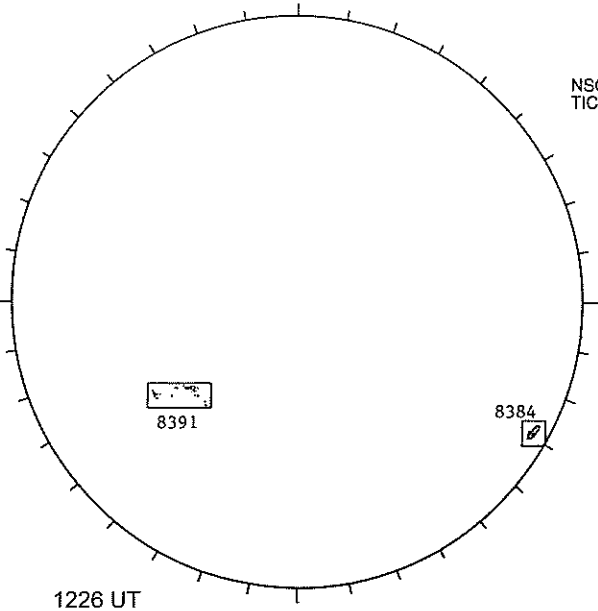
MEUDON H-ALPHA



E---

0821 UT

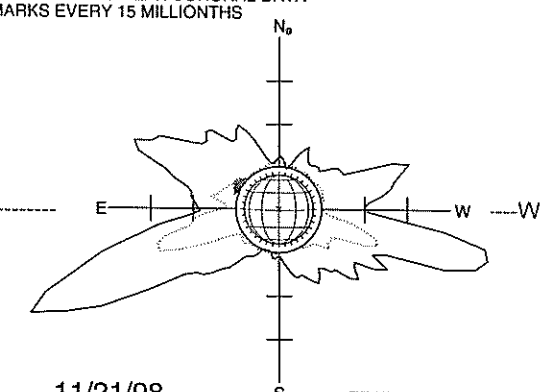
RAMEY SUNSPOT



1226 UT

SACRAMENTO PEAK CORONA (1.15 Radii)---

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/21/98
(DOY 325)

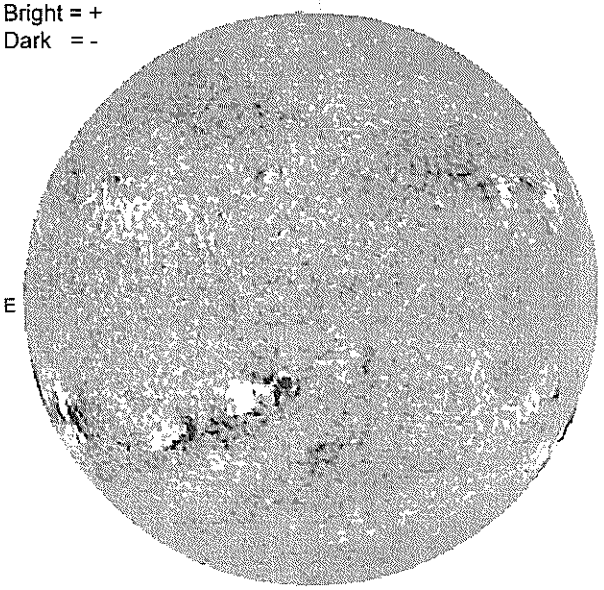
FE XIV 15:52 UT 1.15 R
FE X 16:49 UT 1.15 R
CA XV 16:36 UT 1.15 R

NOVEMBER 22, 1998 (P= + 19.38 , Bo = + 2.03 , Lo = 312.63)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



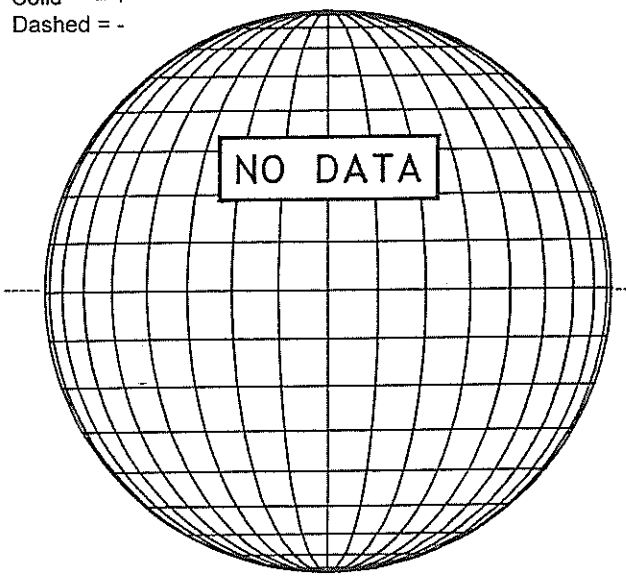
E

1728 UT

STANFORD MAGNETOGRAM

N

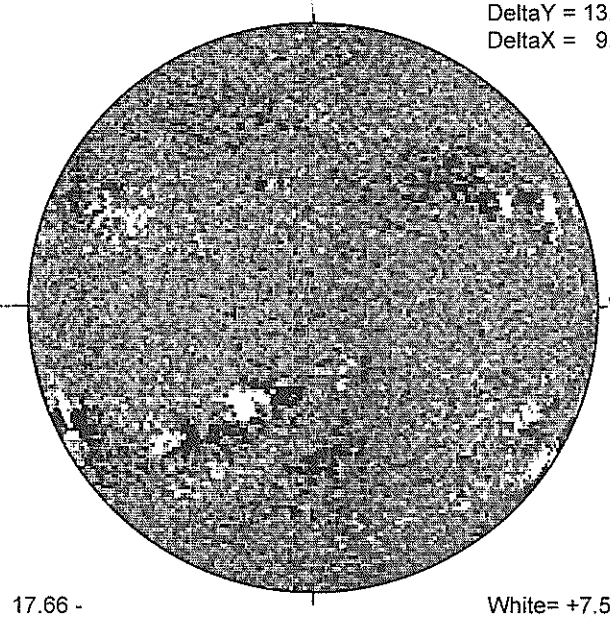
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

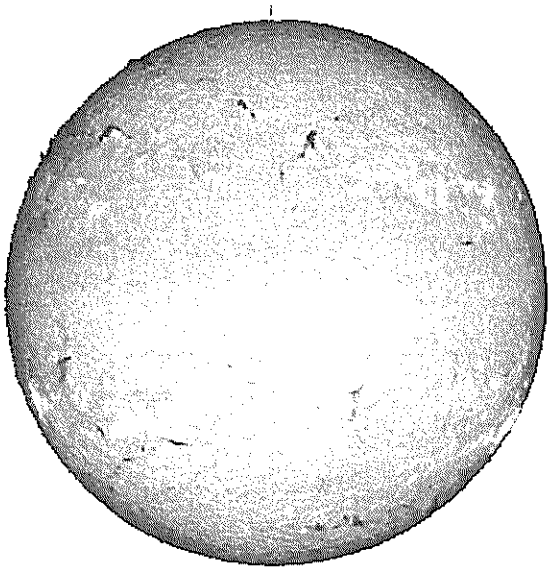


W

17.66 -
18.63 UT

White= +7.5G
Black = -7.5G

---- MEUDON H-ALPHA

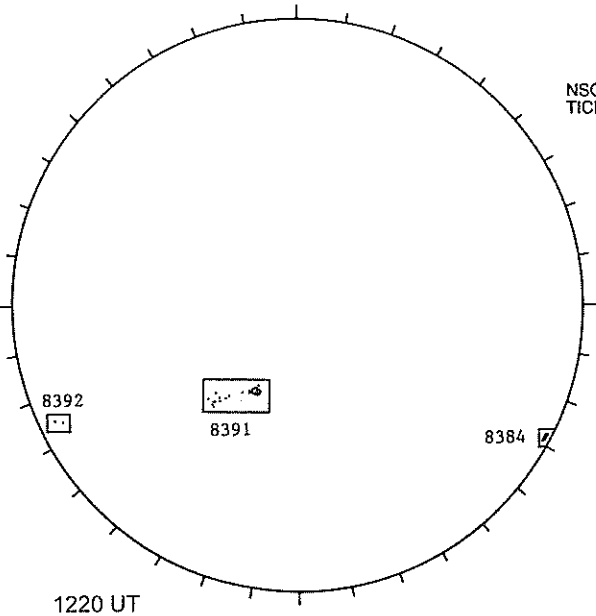


E---

0901 UT

S

RAMEY SUNSPOT

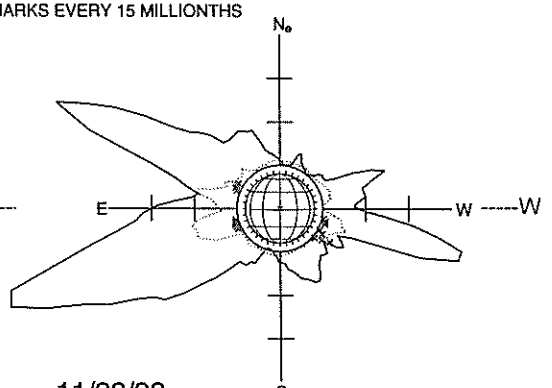


1220 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)---

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/22/98
(DOY 326)

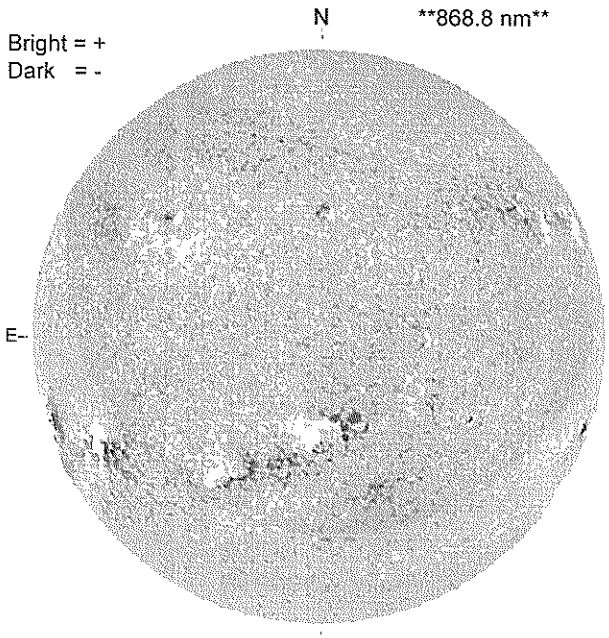
FE XIV 15:30 UT 1.15 $R_\odot$
FE X 16:21 UT 1.15 $R_\odot$
CA XV 16:03 UT 1.15 $R_\odot$

S

73
Nov 98

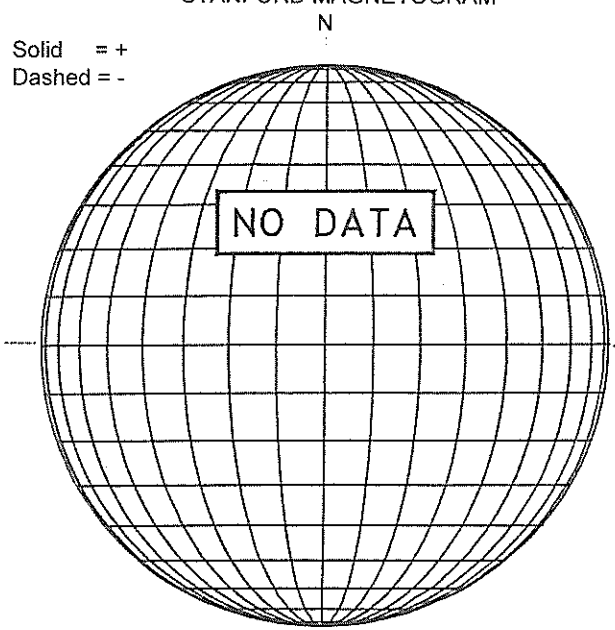
NOVEMBER 23, 1998 (P= + 19.05 , Bo = + 1.90 , Lo = 299.45)

KITT PEAK MAGNETOGRAM

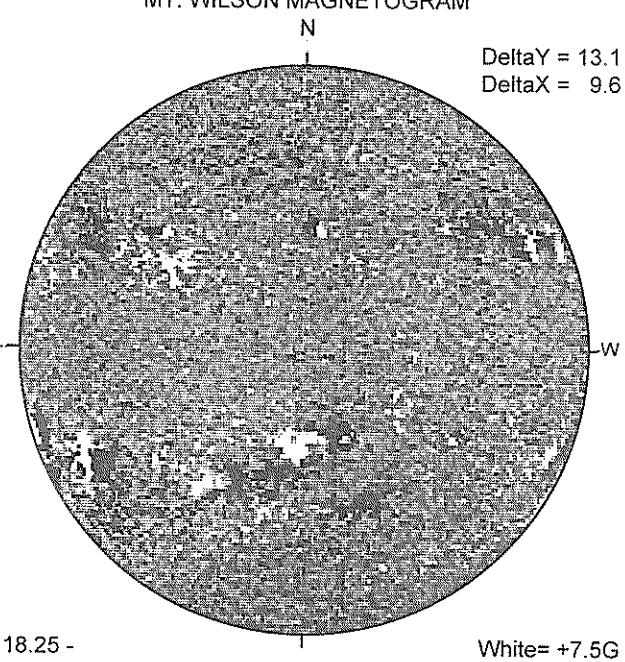


1608 UT

STANFORD MAGNETOGRAM



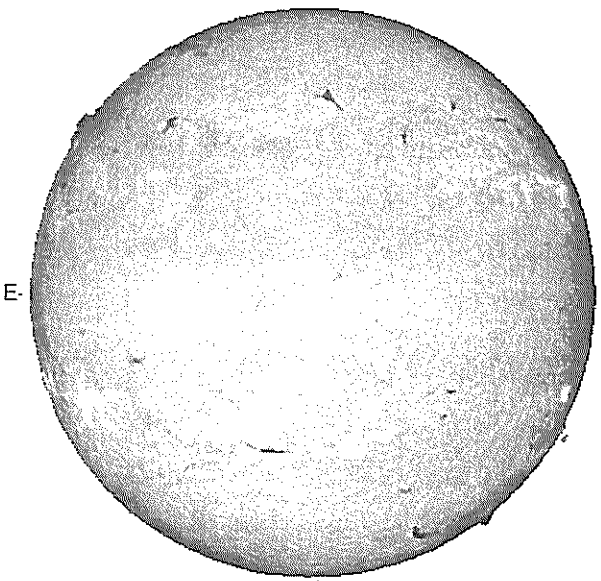
MT. WILSON MAGNETOGRAM



18.25 -
19.22 UT

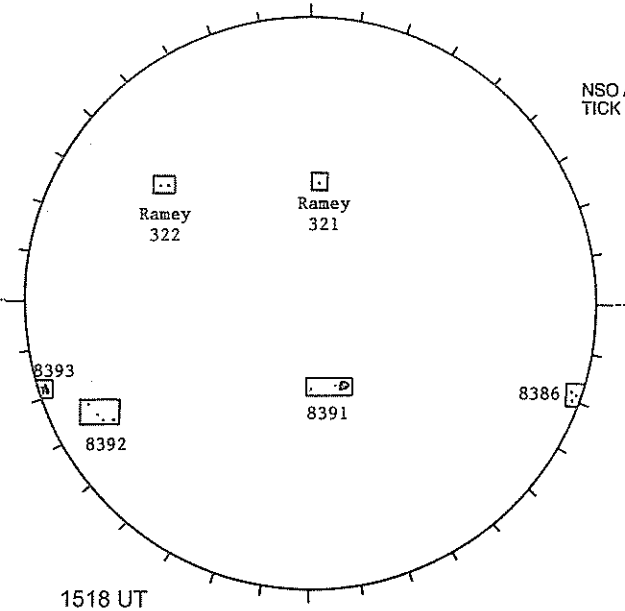
White= +7.5G
Black = -7.5G

MENDON H-ALPHA



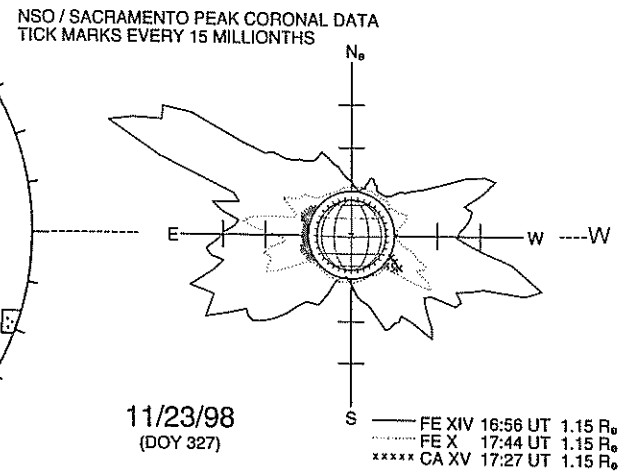
0847 UT

RAMEY SUNSPOT



1518 UT

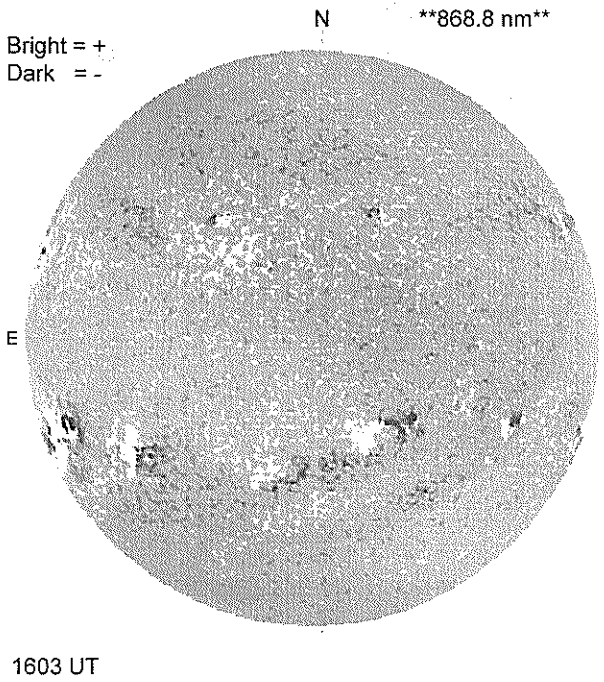
SACRAMENTO PEAK CORONA (1.15 Radii)---



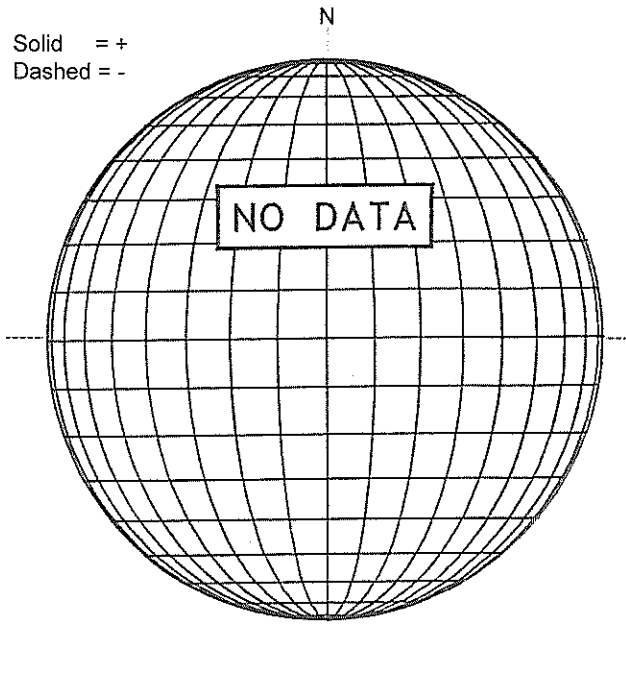
S

NOVEMBER 24, 1998 (P= + 18.72 , Bo = + 1.78 , Lo = 286.27)

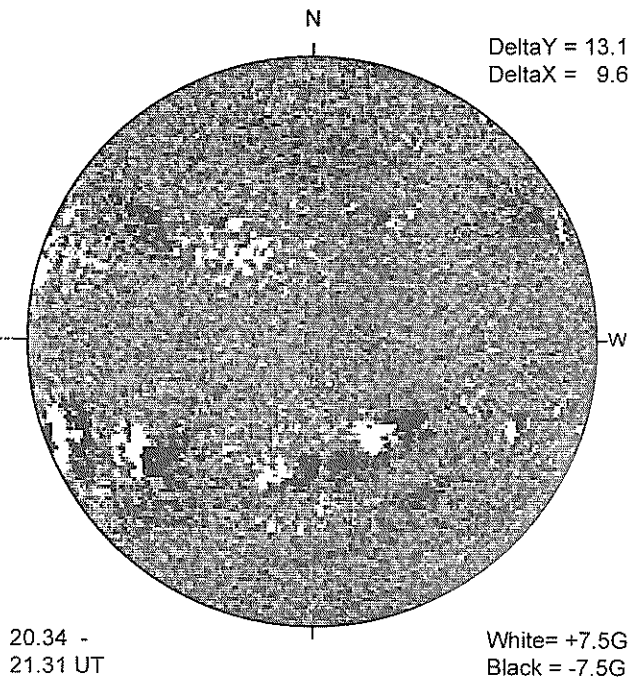
KITT PEAK MAGNETOGRAM



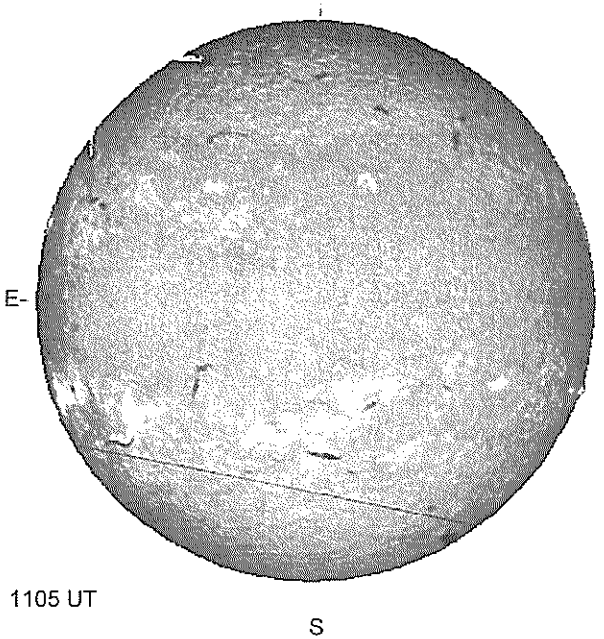
STANFORD MAGNETOGRAM



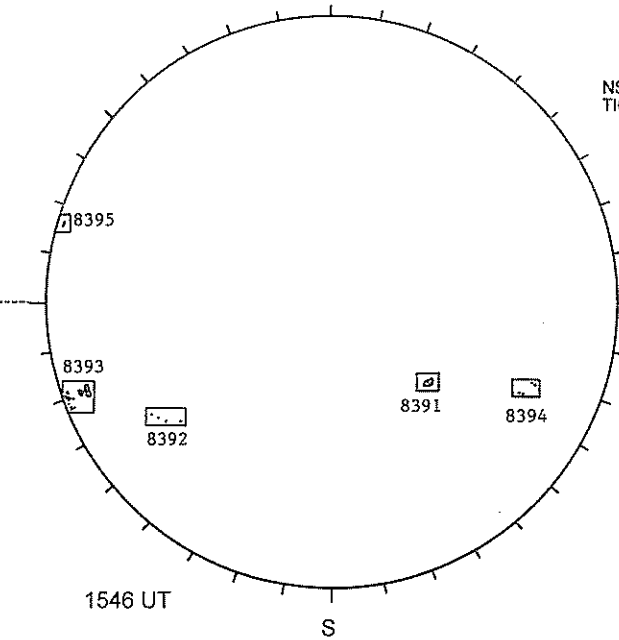
MT. WILSON MAGNETOGRAM



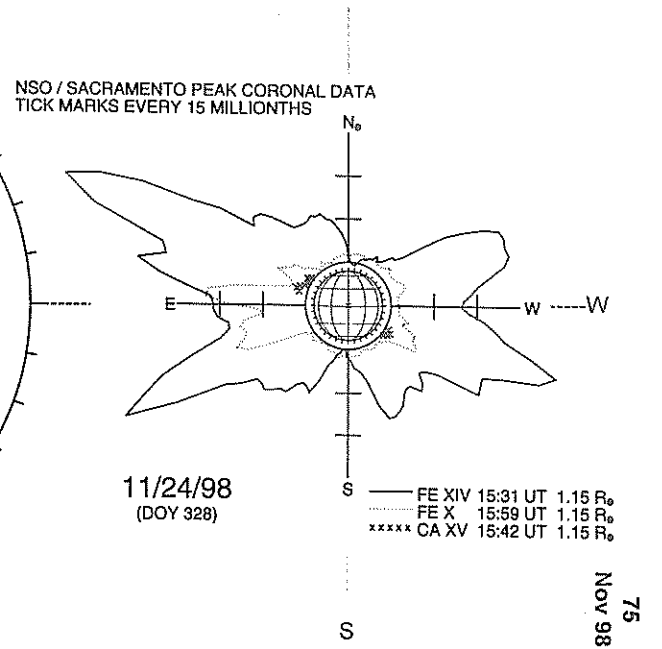
MEUDON H-ALPHA



RAMEY SUNSPOT



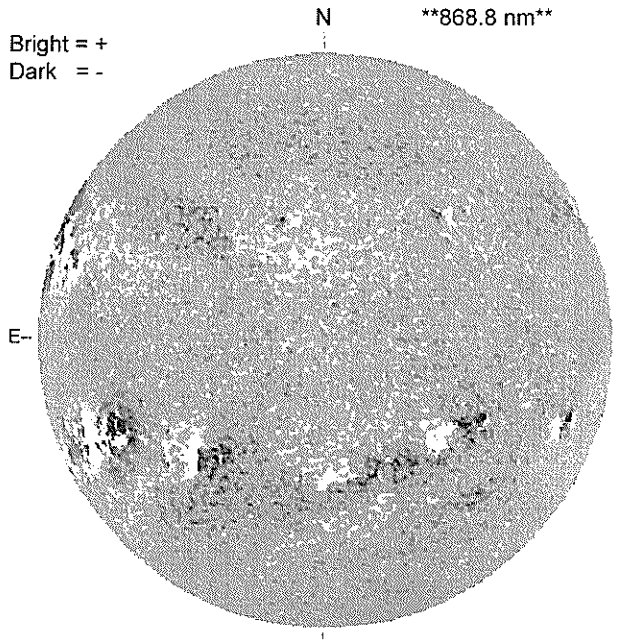
SACRAMENTO PEAK CORONA (1.15 Radii)



75
Nov 98

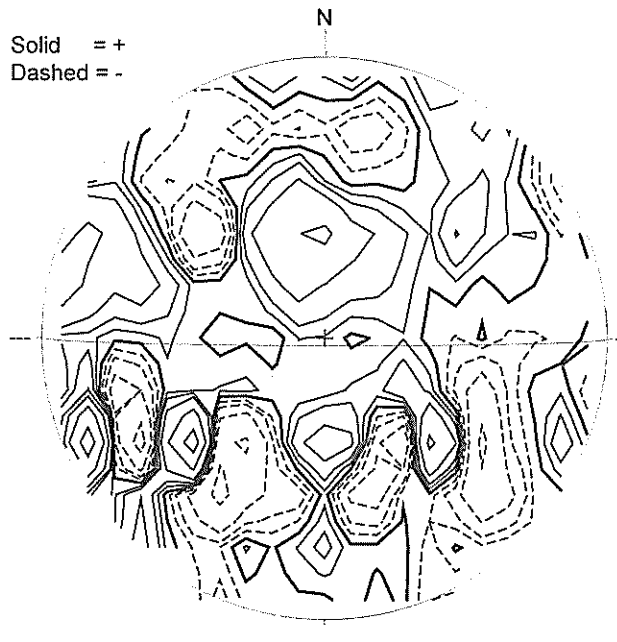
NOVEMBER 25, 1998 (P= + 18.38 , Bo = + 1.66 , Lo = 273.08)

KITT PEAK MAGNETOGRAM



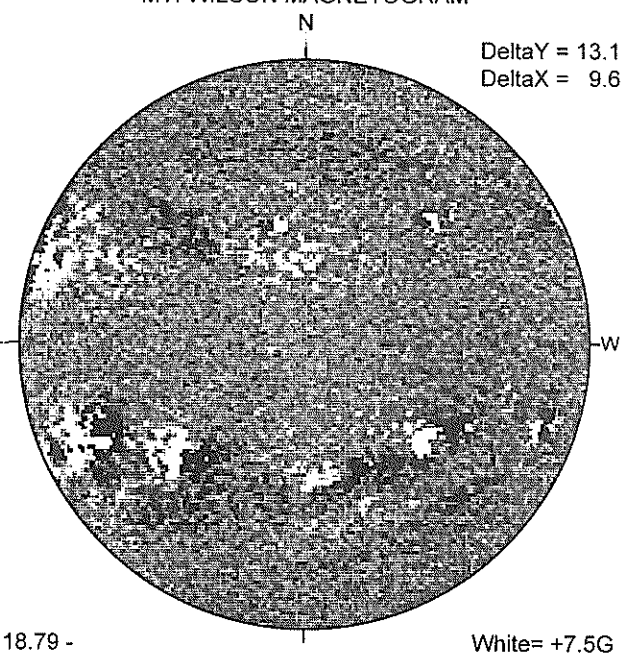
1600 UT

STANFORD MAGNETOGRAM



1810 UT

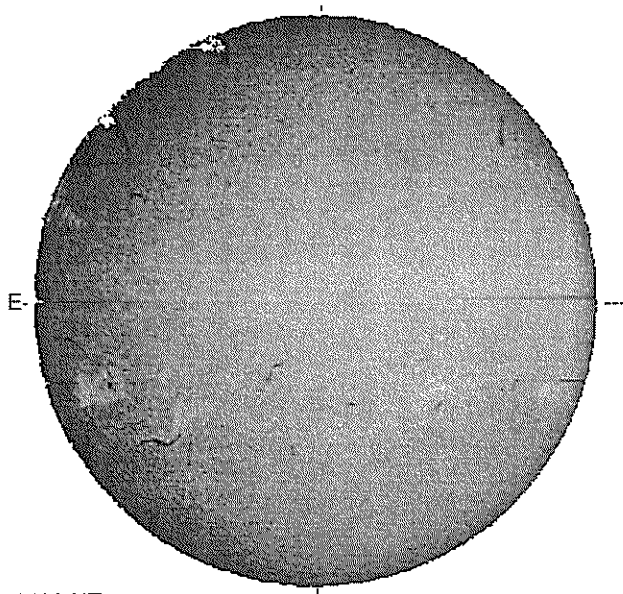
MT. WILSON MAGNETOGRAM



18.79 -
19.76 UT

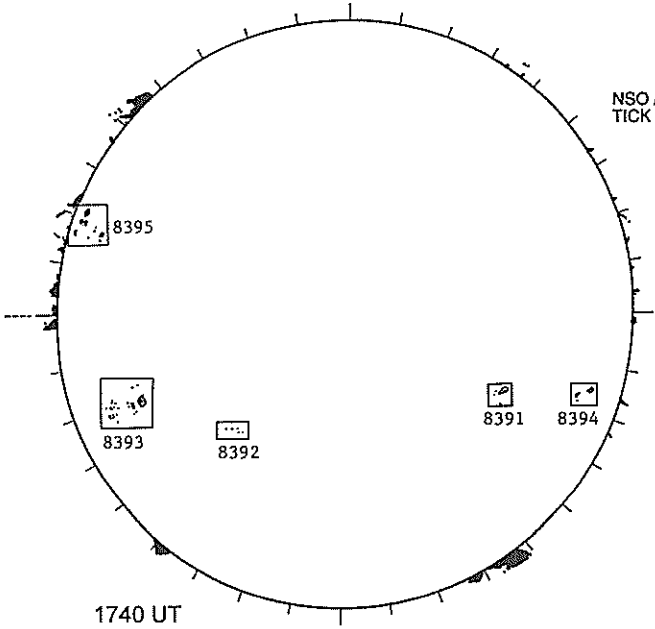
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



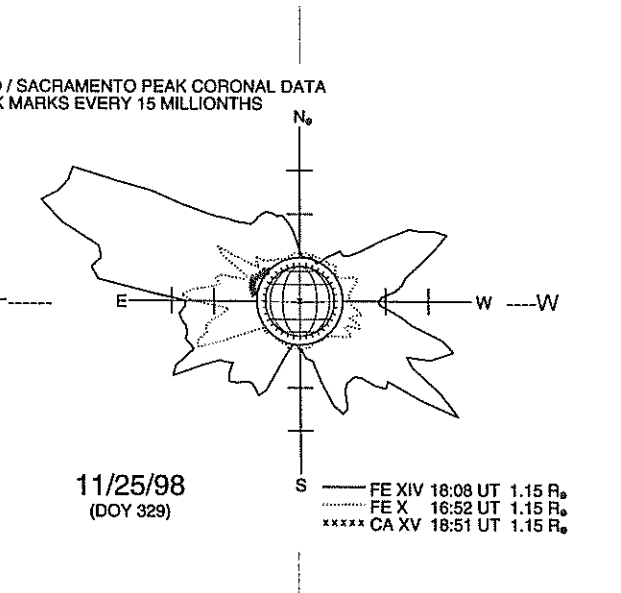
1522 UT

RAMEY SUNSPOT



1740 UT
0832 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



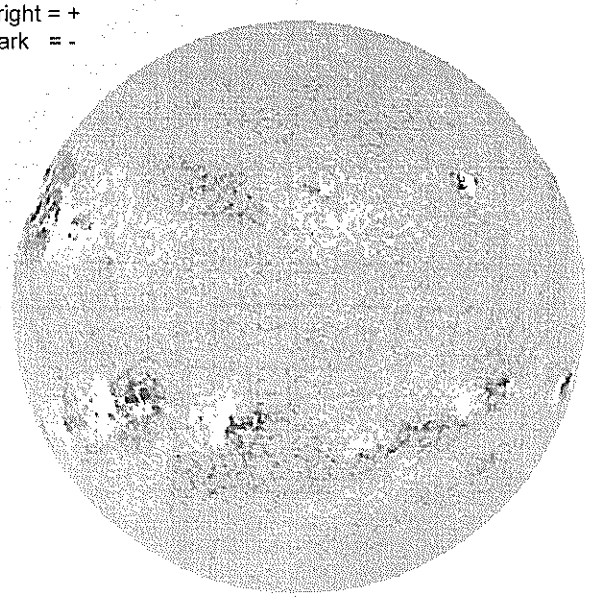
S

NOVEMBER 26, 1998 (P= + 18.03 , Bo = + 1.53 , Lo = 259.90)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



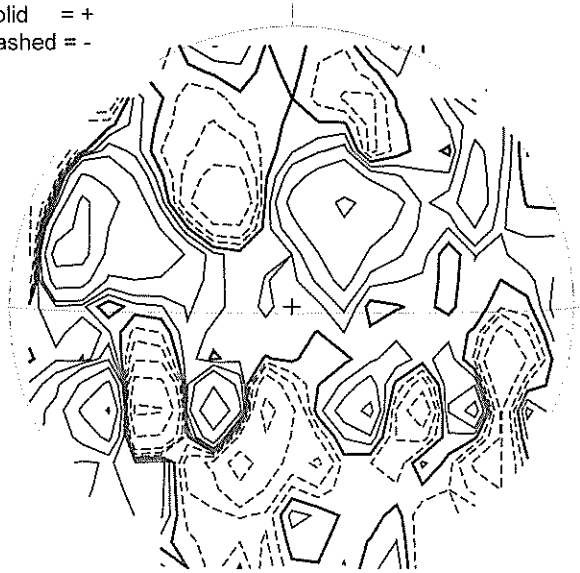
E-

1555 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

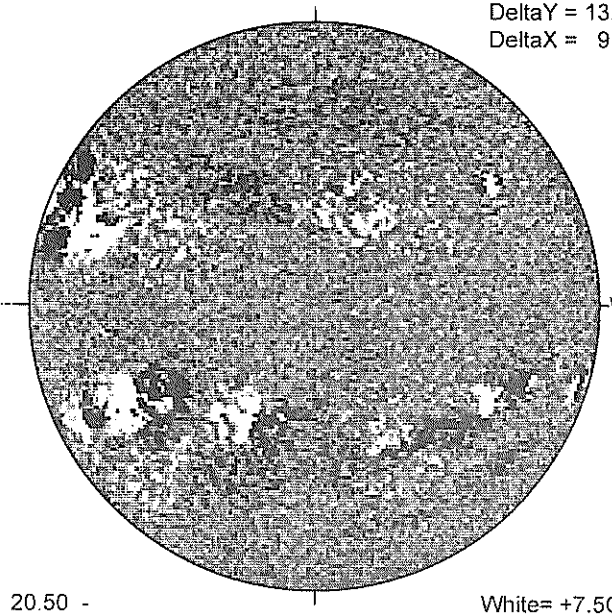


1941 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

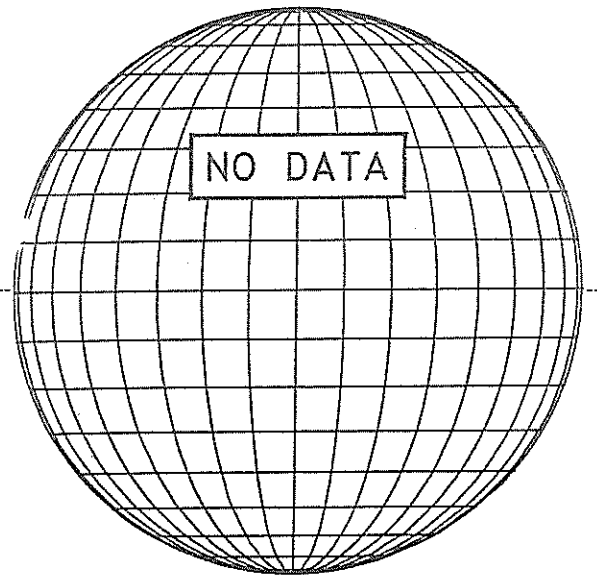


-W

20.50 -
21.47 UT

White= +7.5G
Black = -7.5G

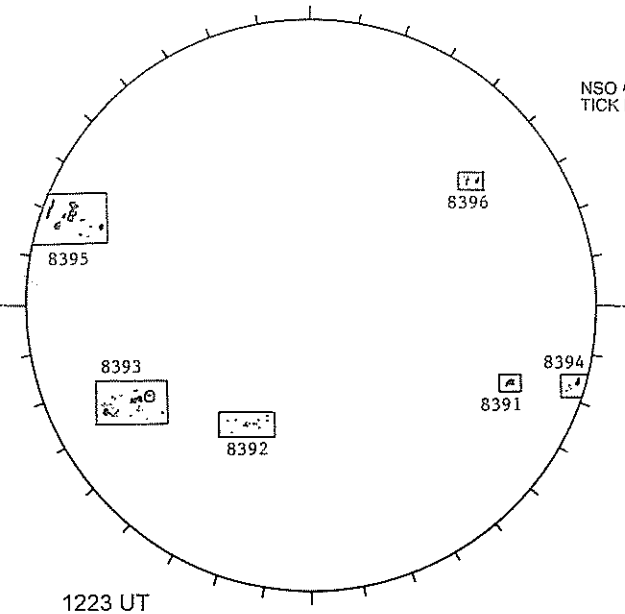
MEUDON H-ALPHA



E-

S

RAMEY SUNSPOT

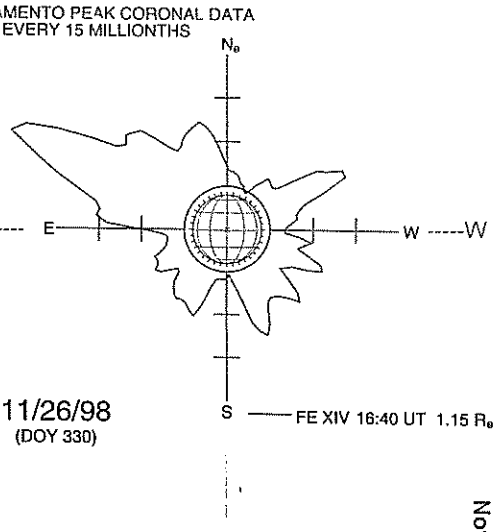


1223 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/26/98
(DOY 330)

FE XIV 16:40 UT 1.15 $R_\odot$

S

77
Nov 98

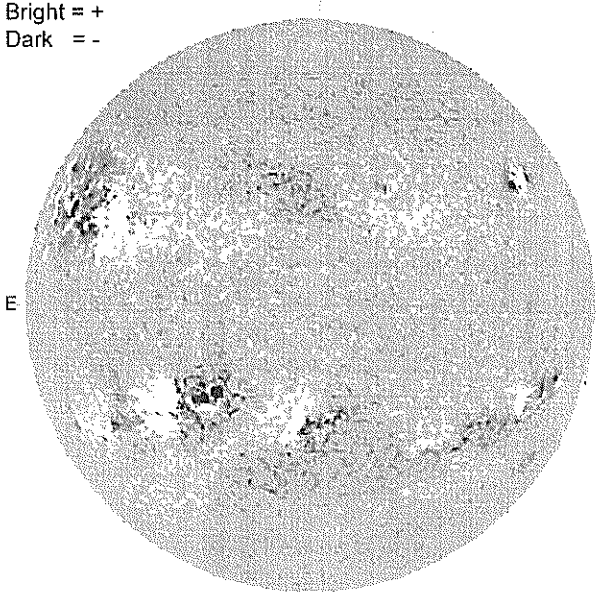
NOVEMBER 27, 1998 (P= + 17.67 , Bo = + 1.41 , Lo = 246.72)

Nov 98
78

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



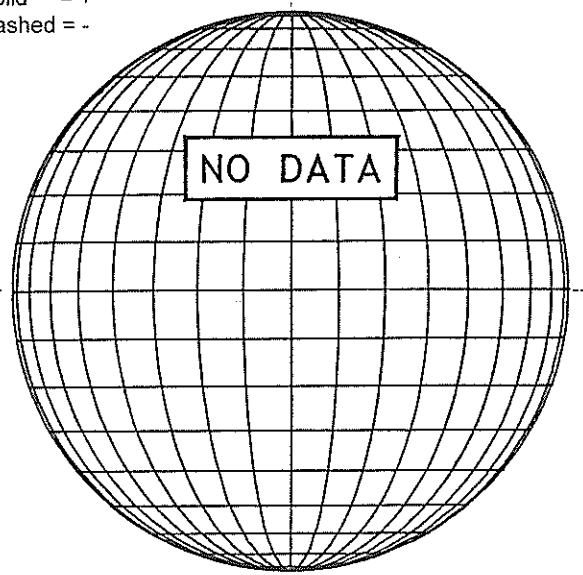
E

1644 UT

STANFORD MAGNETOGRAM

N

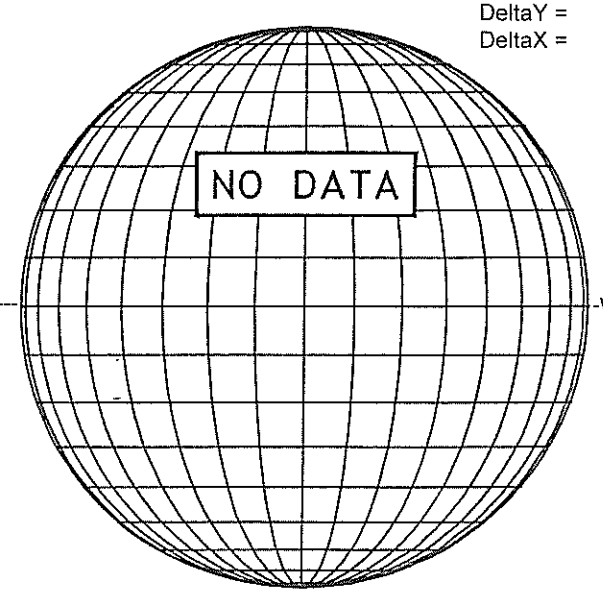
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

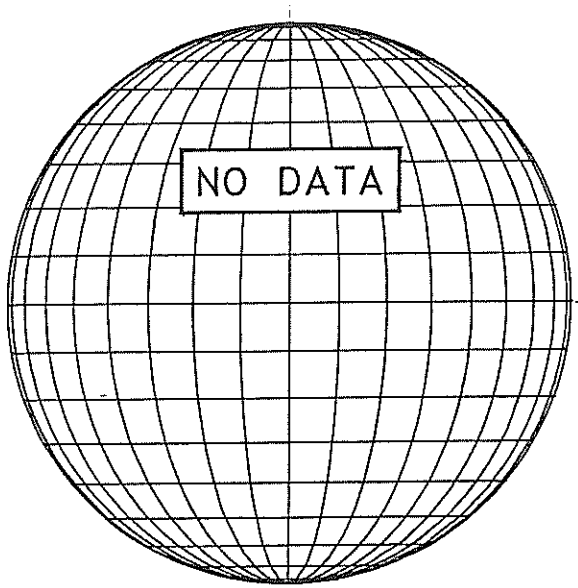
DeltaY =
DeltaX =



W

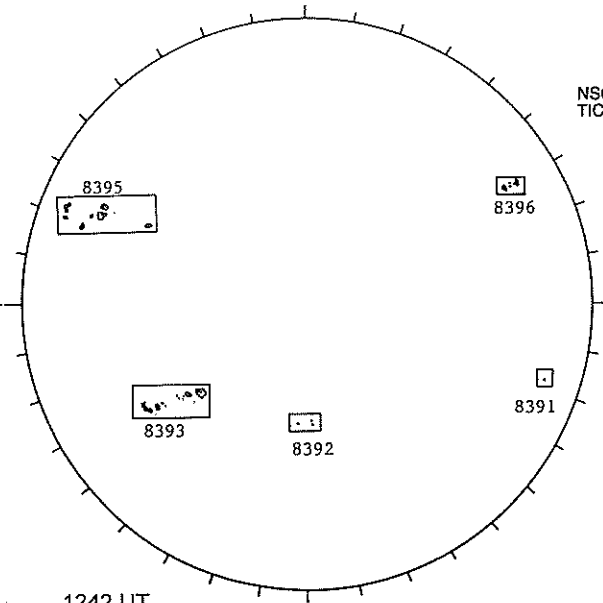
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



E

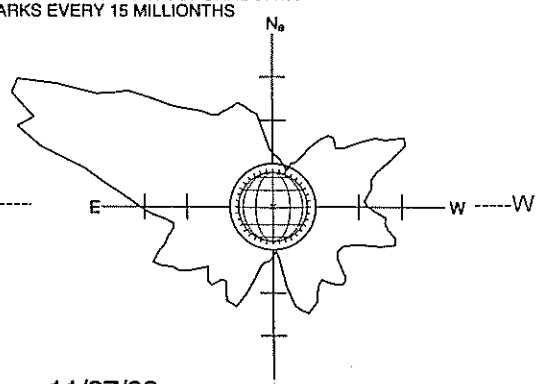
RAMEY SUNSPOT



1242 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



11/27/98
(DOY 331)

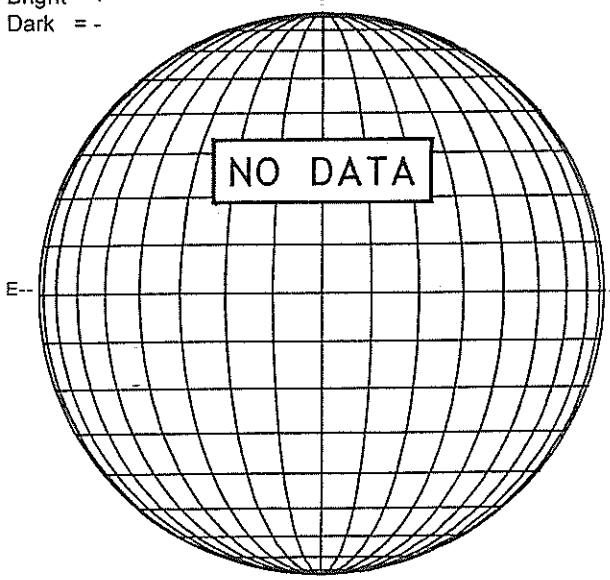
FE XIV 16:11 UT 1.15 R

NOVEMBER 28, 1998 (P= + 17.31 , Bo = + 1.28 , Lo = 233.54)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

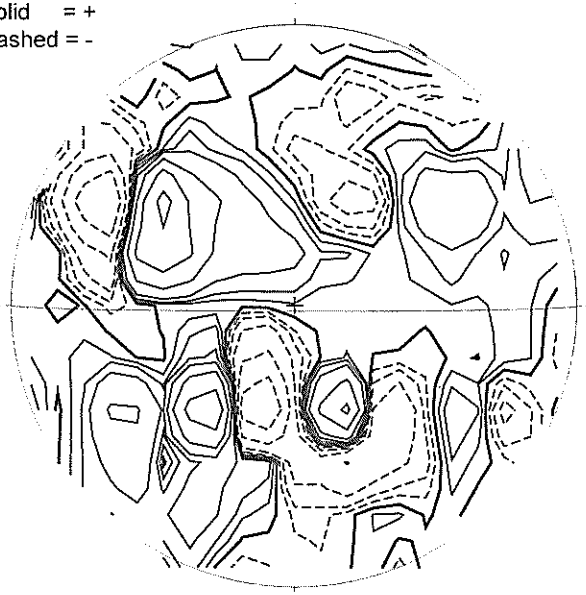


E--

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

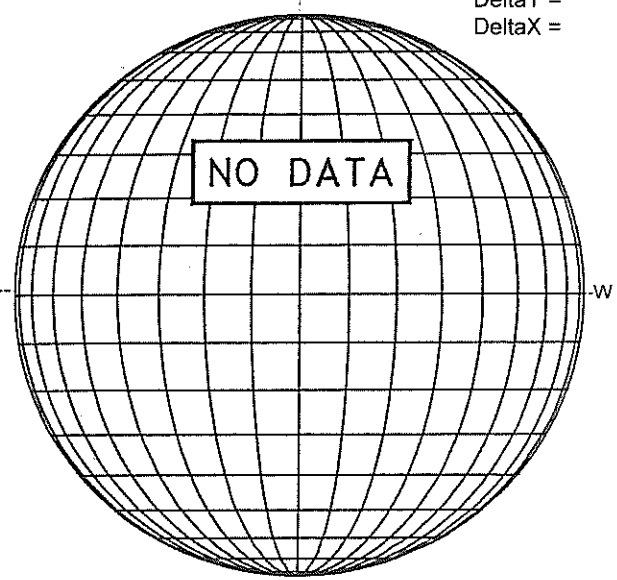


1915 UT

MT. WILSON MAGNETOGRAM

N

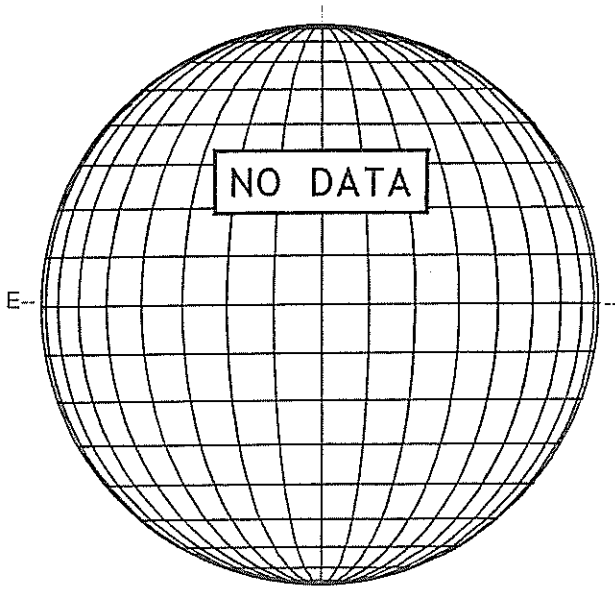
DeltaY =
DeltaX =



-W

White= +7.5G
Black = -7.5G

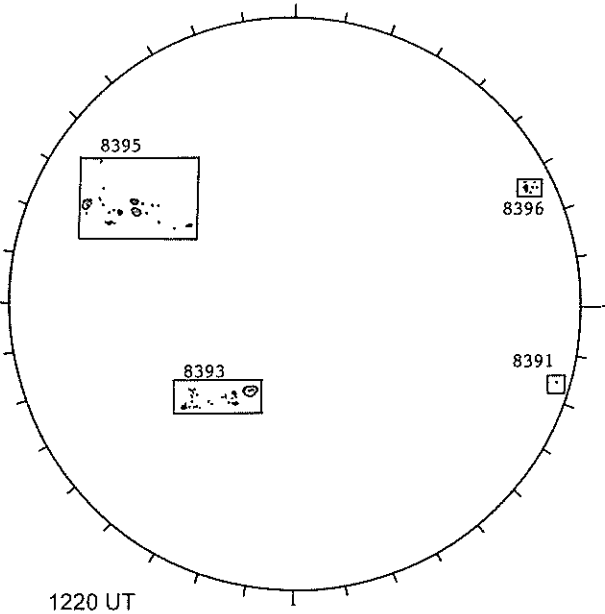
---- SACRAMENTO PEAK H-ALPHA



E--

S

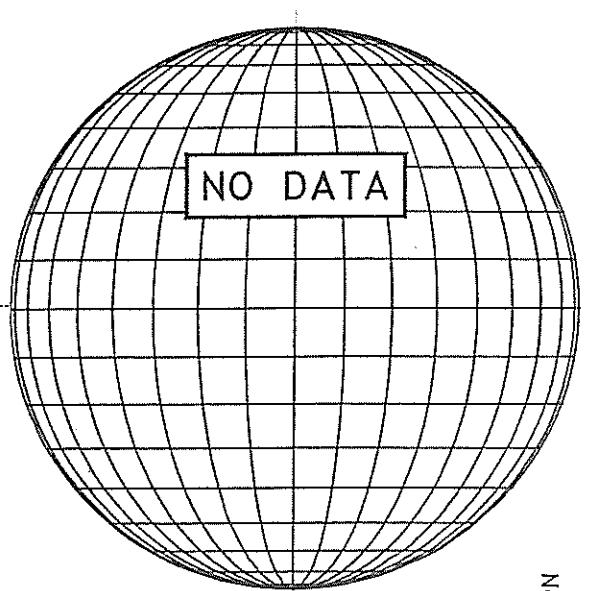
RAMEY SUNSPOT



1220 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



S

Nov 98

79

NOVEMBER 29, 1998 (P= + 16.95 , Bo = + 1.16 , Lo = 220.36)

Nov 98 80

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

NO DATA

E--

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

NO DATA

MT. WILSON MAGNETOGRAM

N

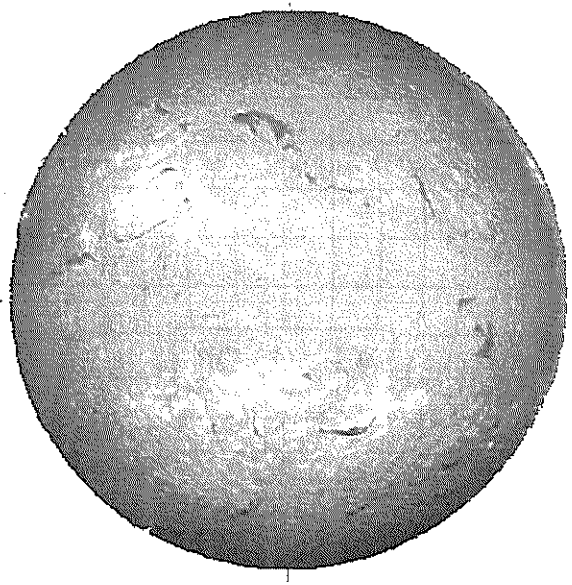
DeltaY = 13.1
DeltaX = 9.6

-W

22.08 -
23.06 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

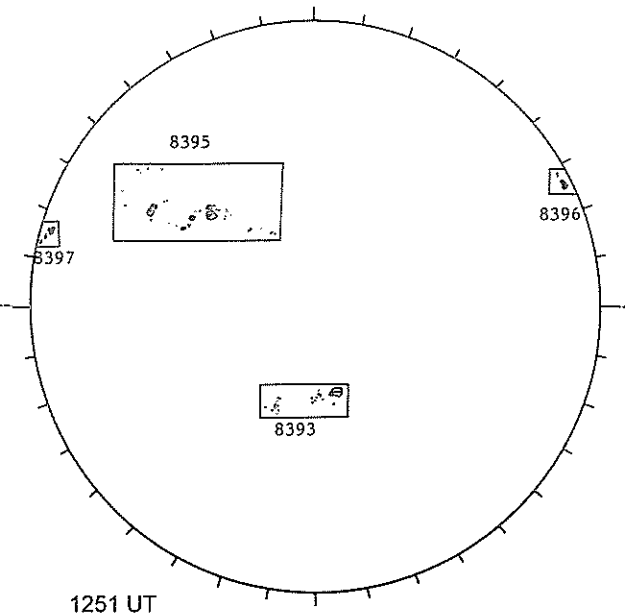


E--

1248 UT

S

RAMEY SUNSPOT



1251 UT

S

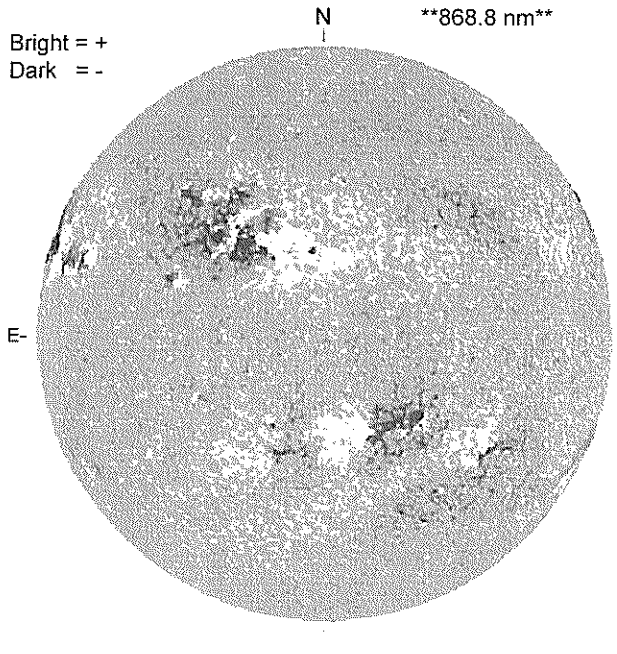
SACRAMENTO PEAK CORONA (1.15 Radii)----

NO DATA

S

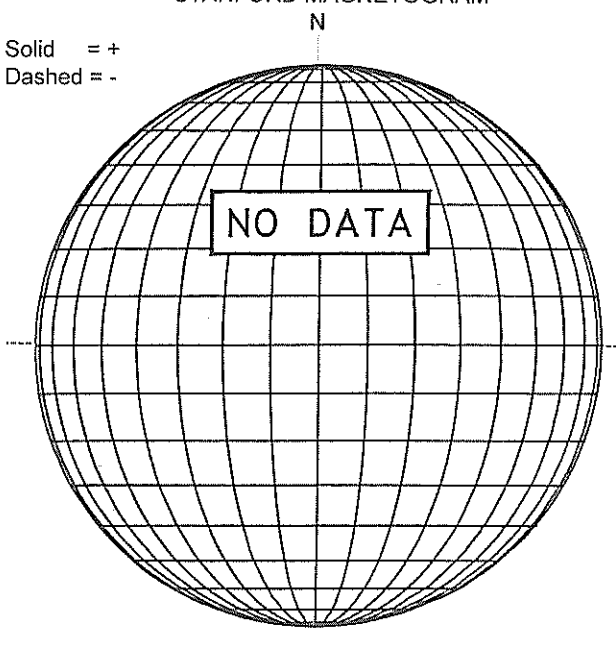
NOVEMBER 30, 1998 (P= + 16.57 , Bo = + 1.03 , Lo = 207.19)

KITT PEAK MAGNETOGRAM

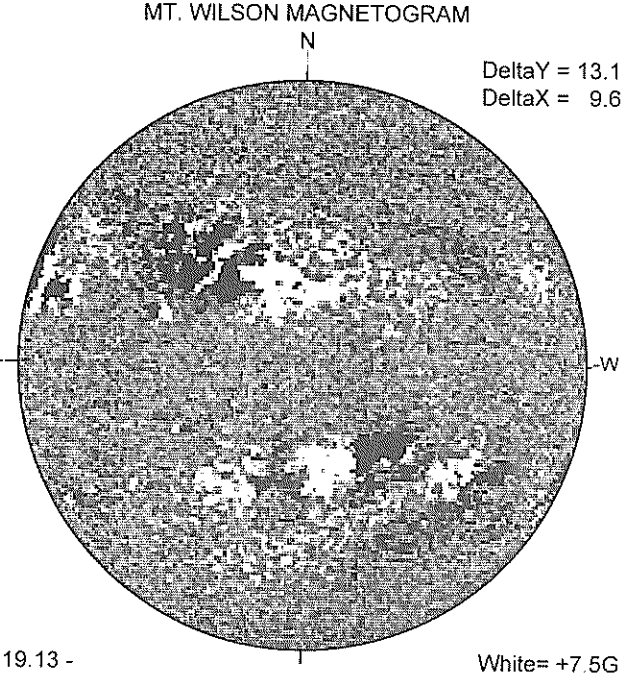


1555 UT

STANFORD MAGNETOGRAM



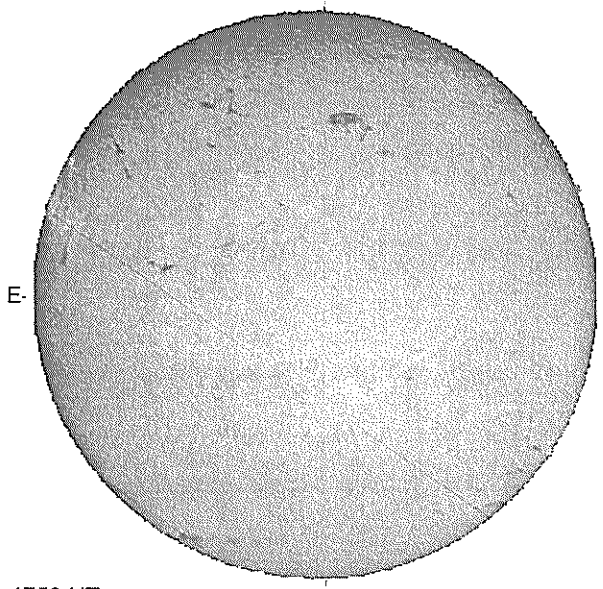
MT. WILSON MAGNETOGRAM



19.13 -
20.10 UT

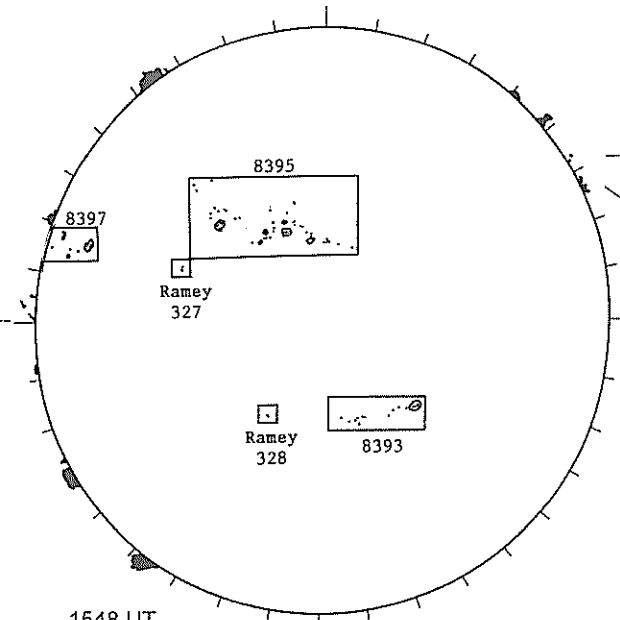
White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA



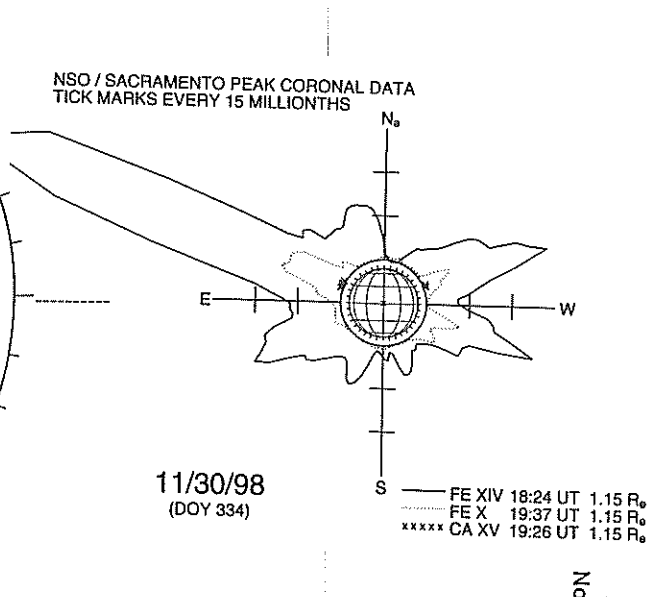
1753 UT

RAMEY SUNSPOT



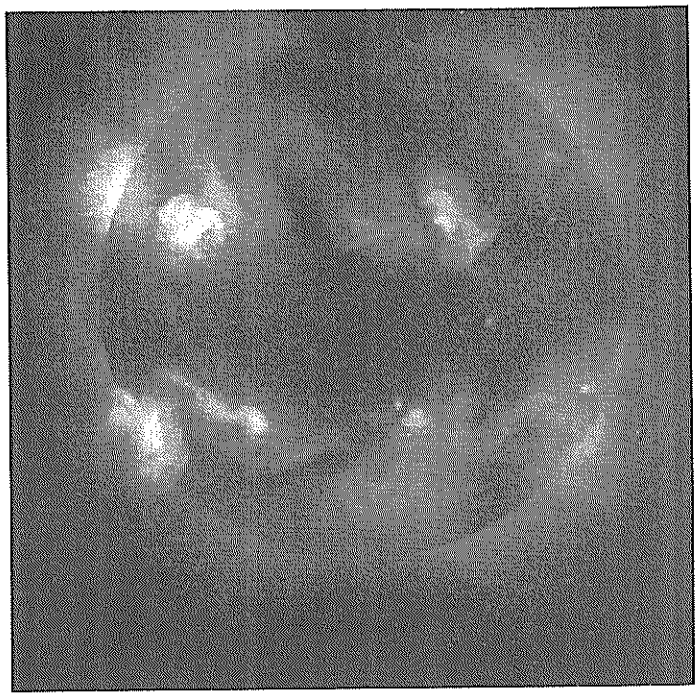
1548 UT
1052 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)----

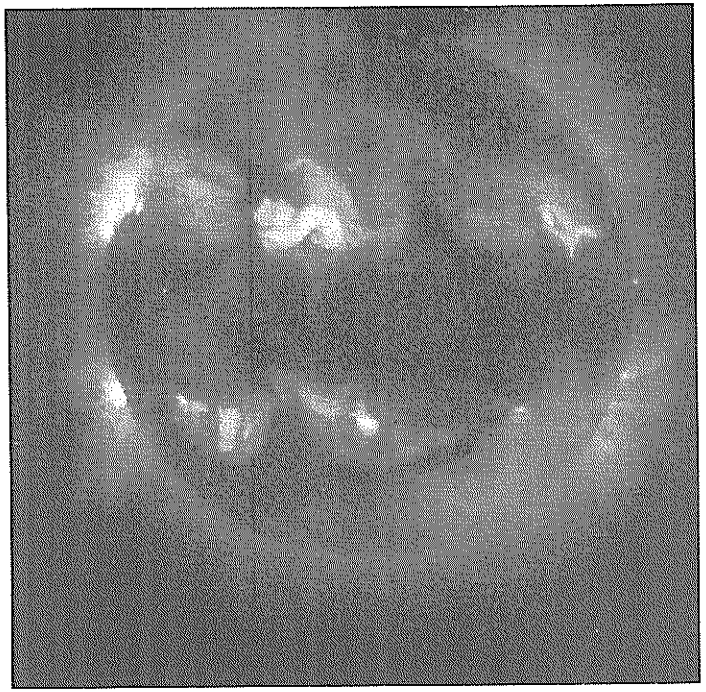


YOHKOH SOFT X-RAY TELESCOPE IMAGES

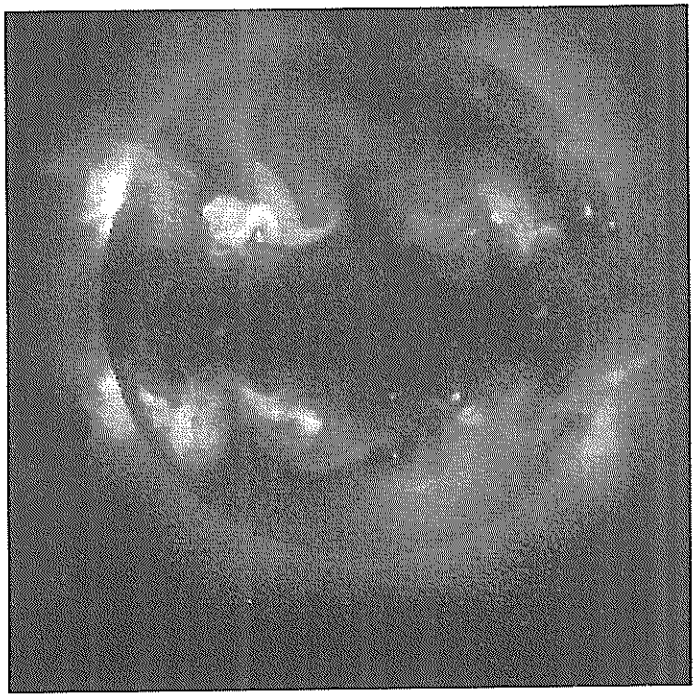
November
1998



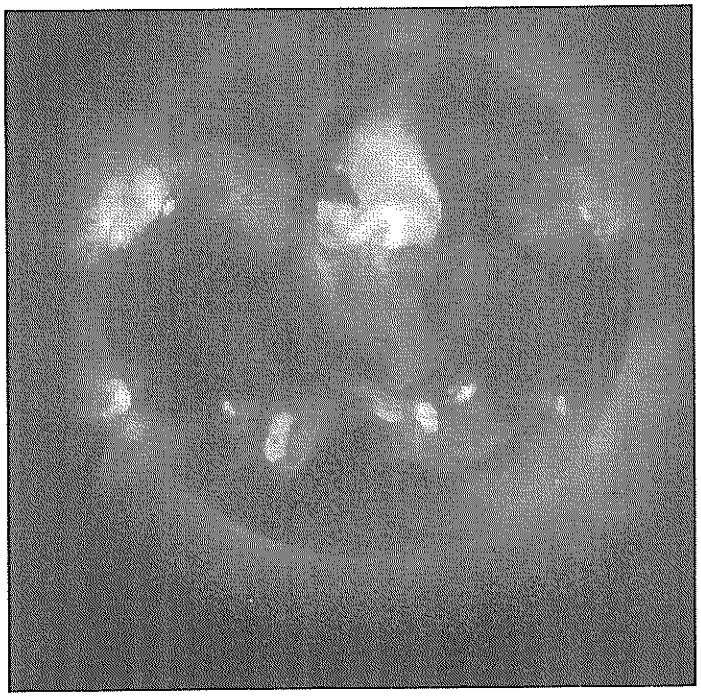
Day 1
12:14:42 UT



Day 3
10:23:13 UT



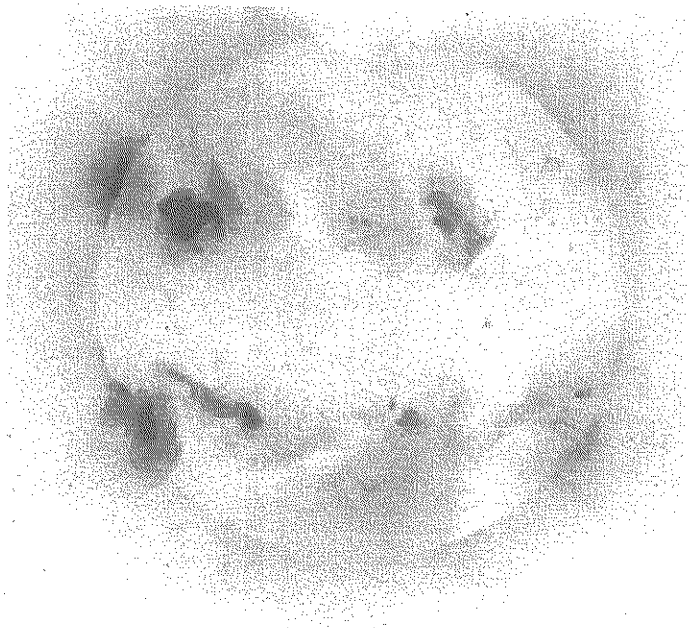
Day 2
11:46:25 UT



Day 4
12:20:17 UT

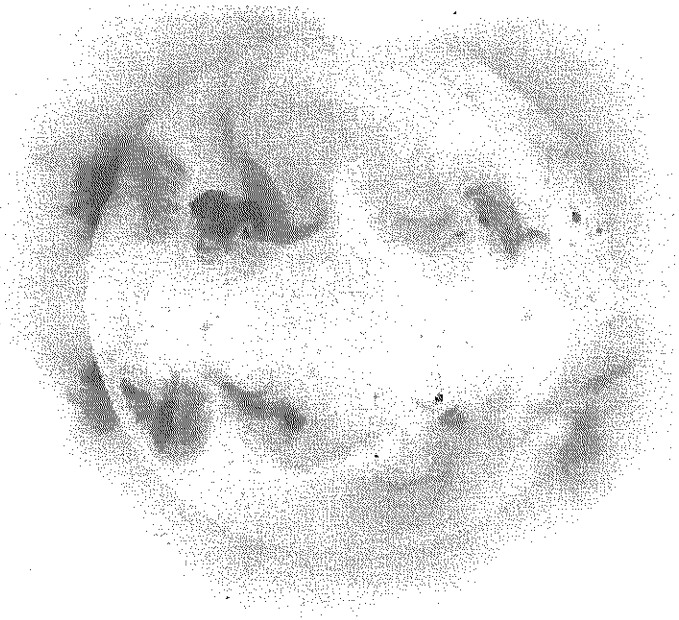
YOHKOH SOFT X-RAY TELESCOPE IMAGES

November 1998

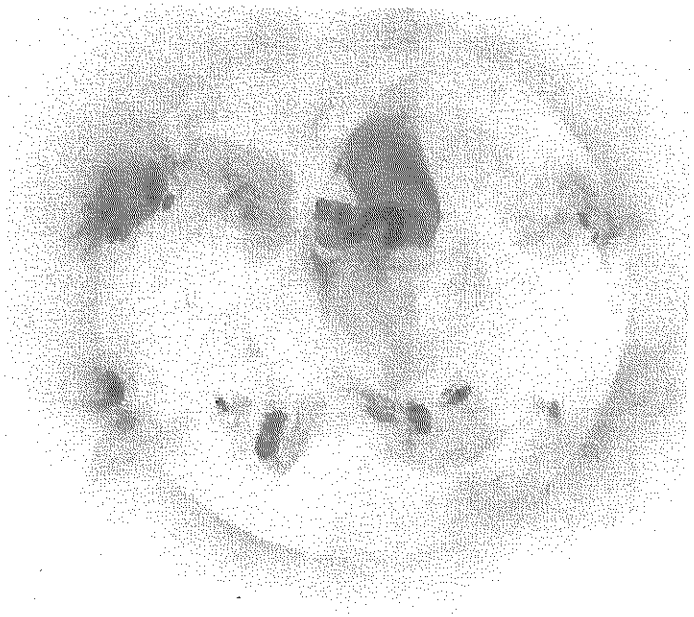


Day 1
12:14:42 UT

Day 3
10:23:13 UT



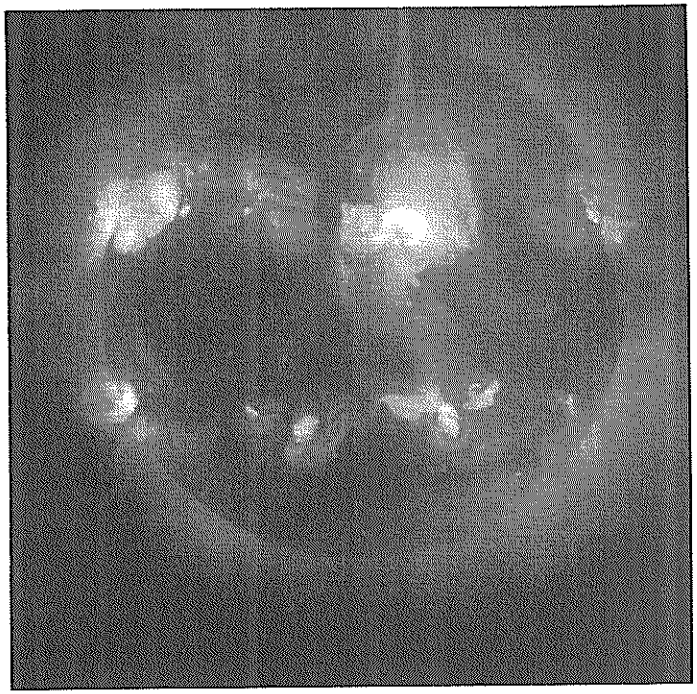
Day 2
11:46:25 UT



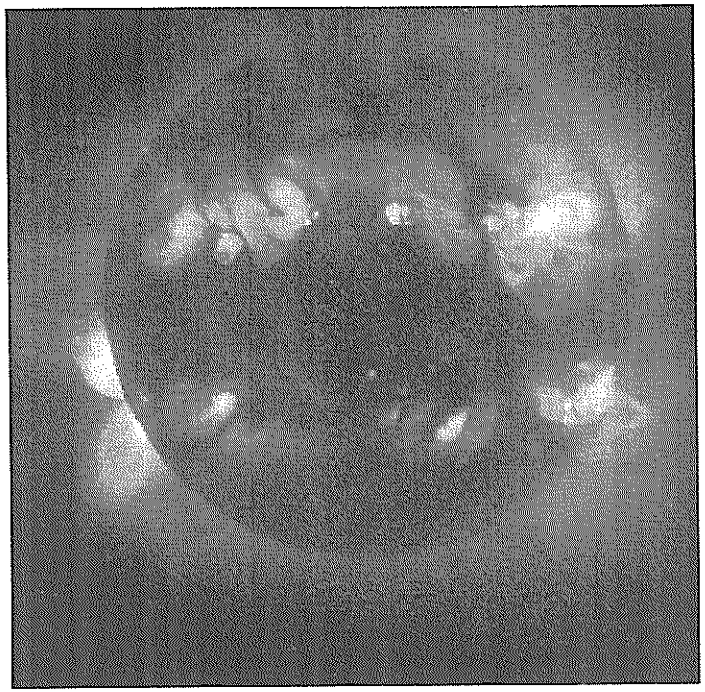
Day 4
12:20:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

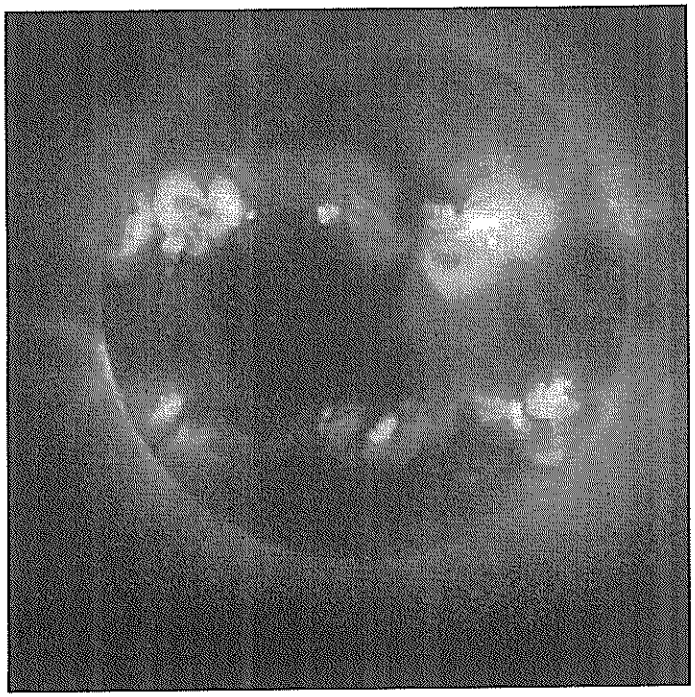
November
1998



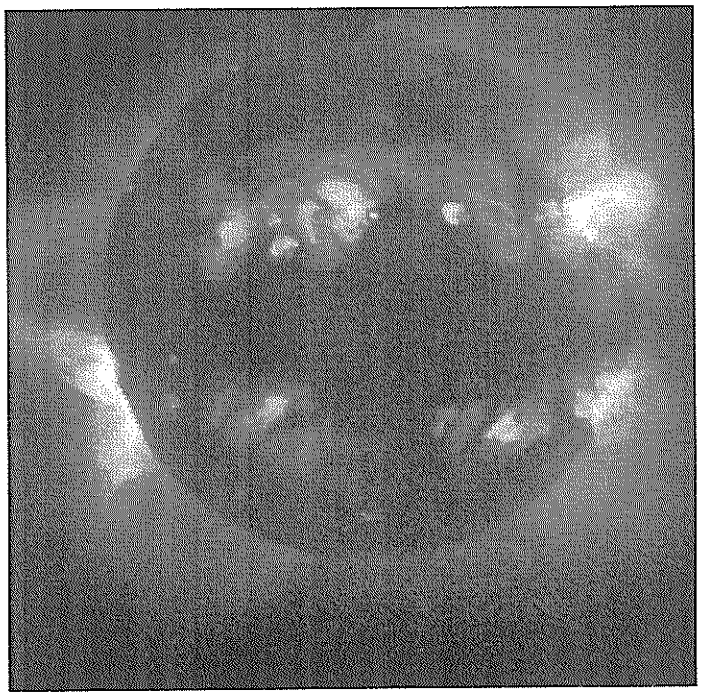
Day 5
00:21:07 UT



Day 7
14:23:44 UT



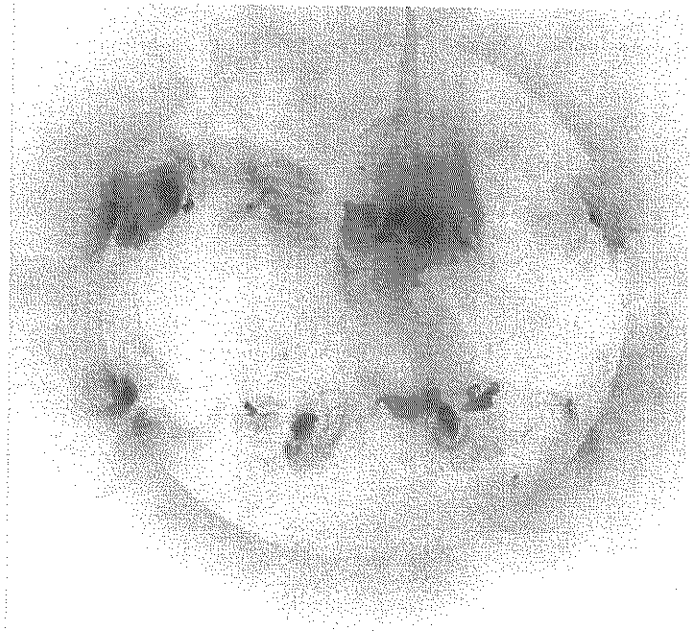
Day 6
10:54:41 UT



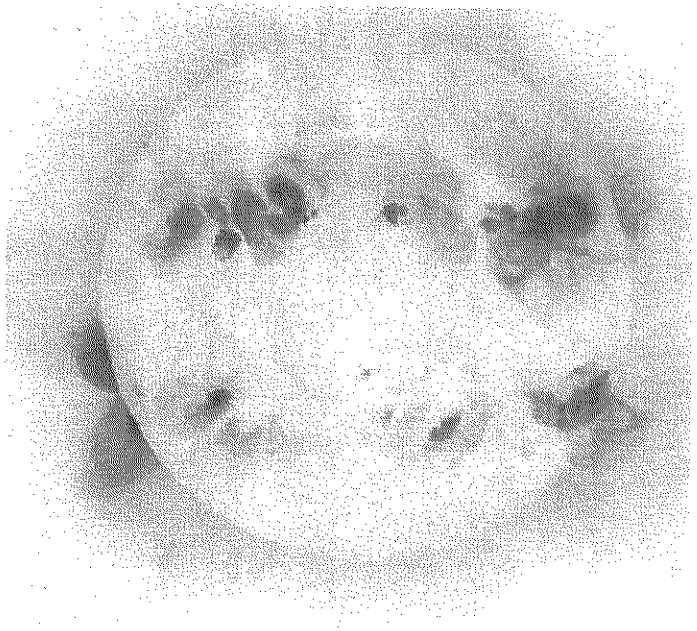
Day 8
00:05:20 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

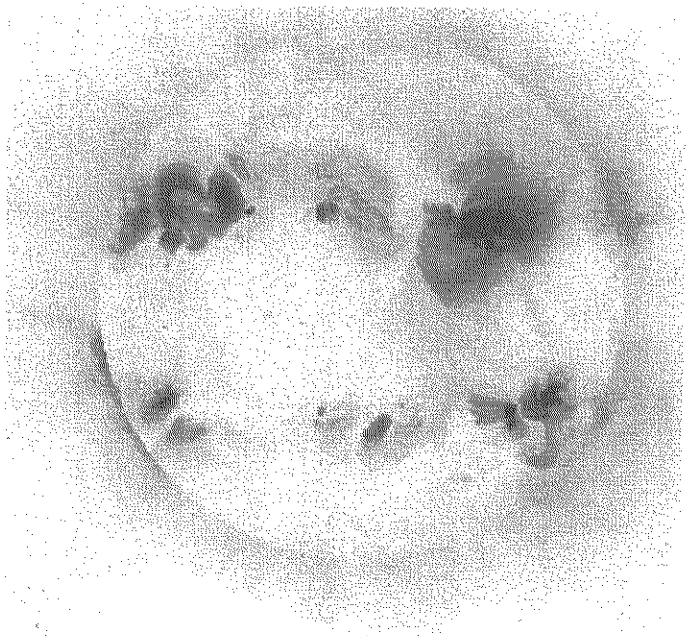
November 1998



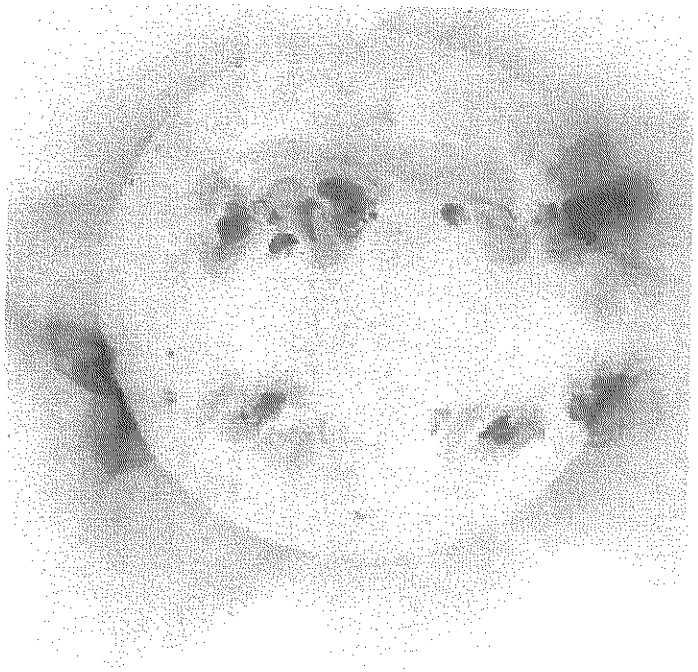
Day 5
00:21:07 UT



Day 7
14:23:44 UT



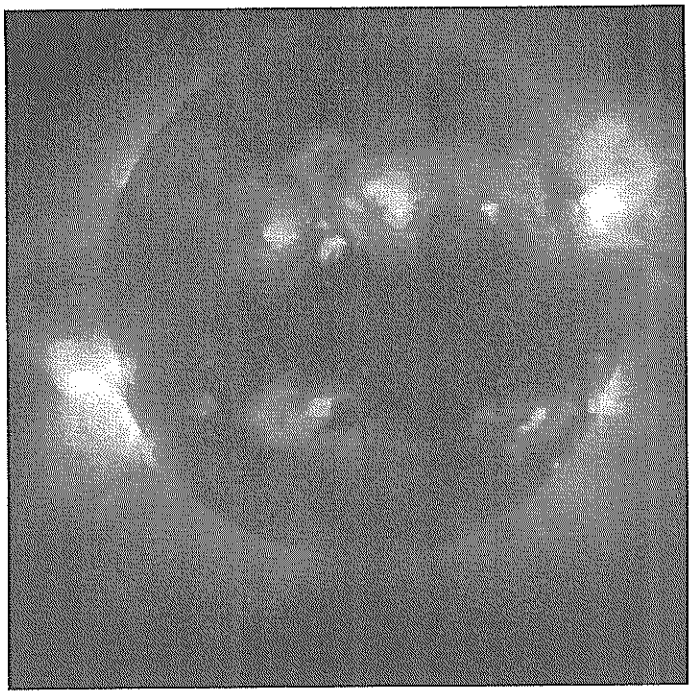
Day 6
10:54:41 UT



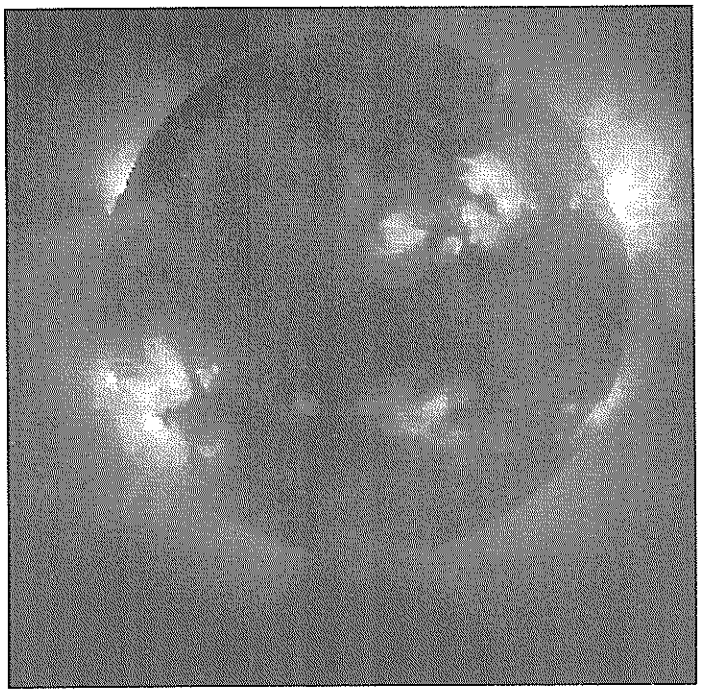
Day 8
00:05:20 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

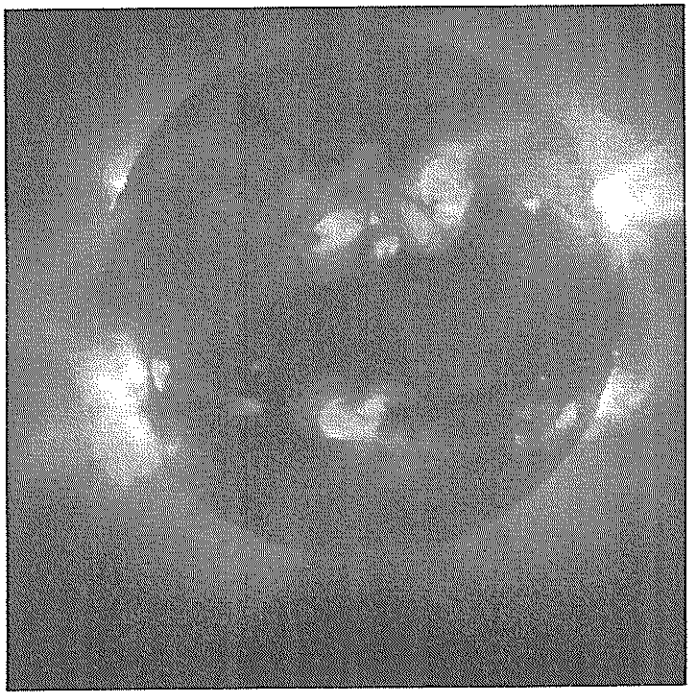
November
1998



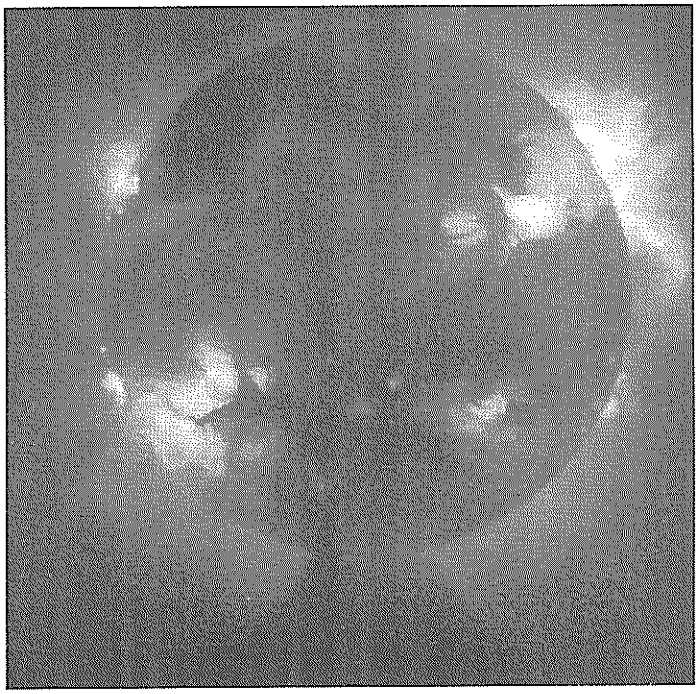
Day 9
14:44:00 UT



Day 11
10:41:20 UT



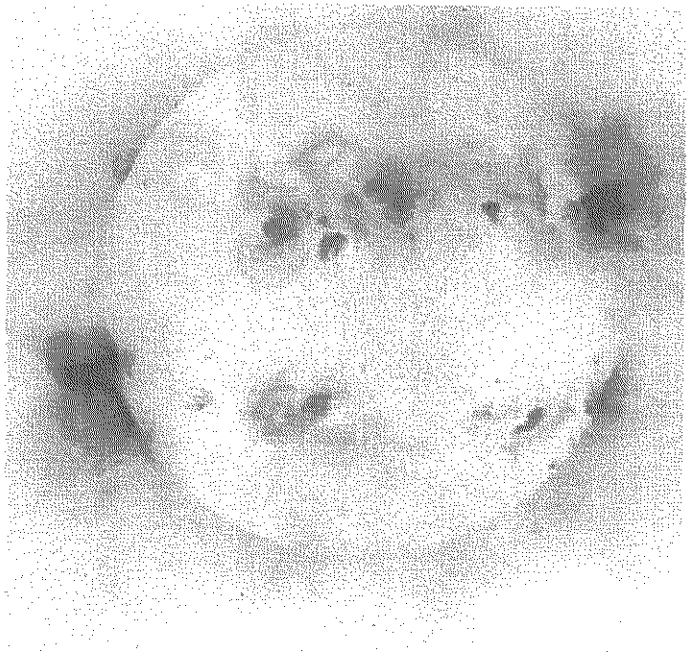
Day 10
12:03:28 UT



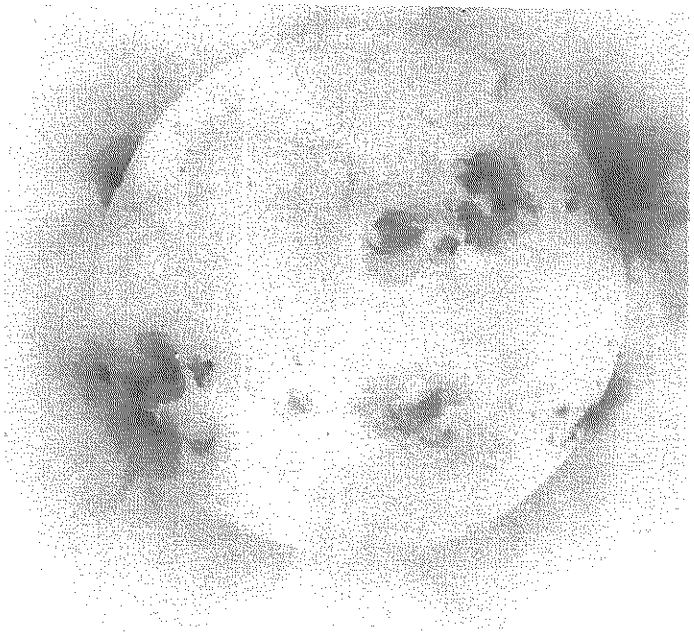
Day 12
11:53:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

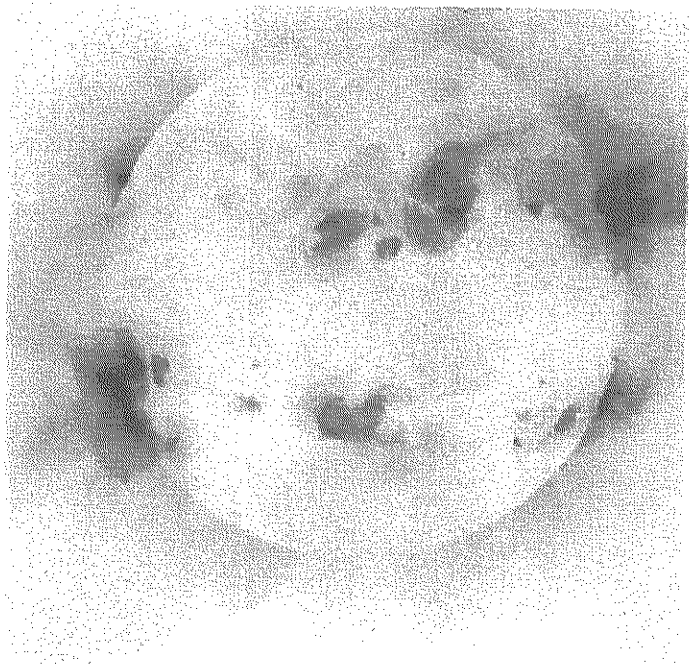
November 1998



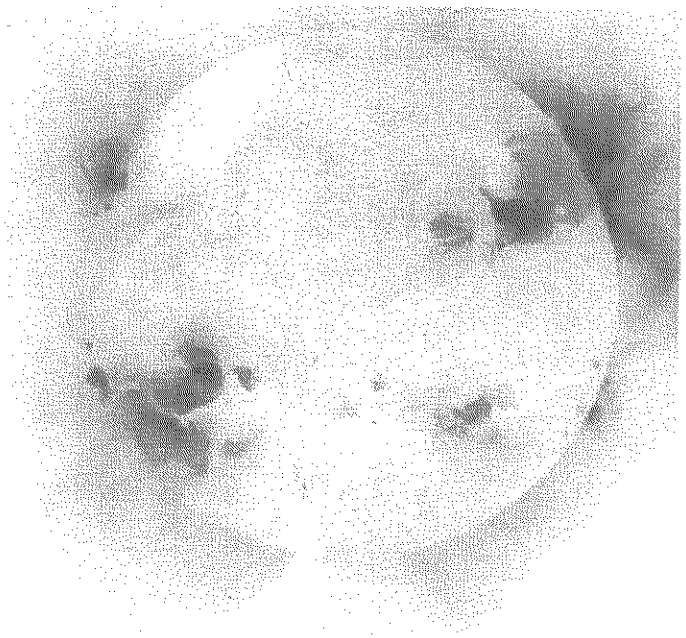
Day 9
14:44:00 UT



Day 11
10:41:20 UT



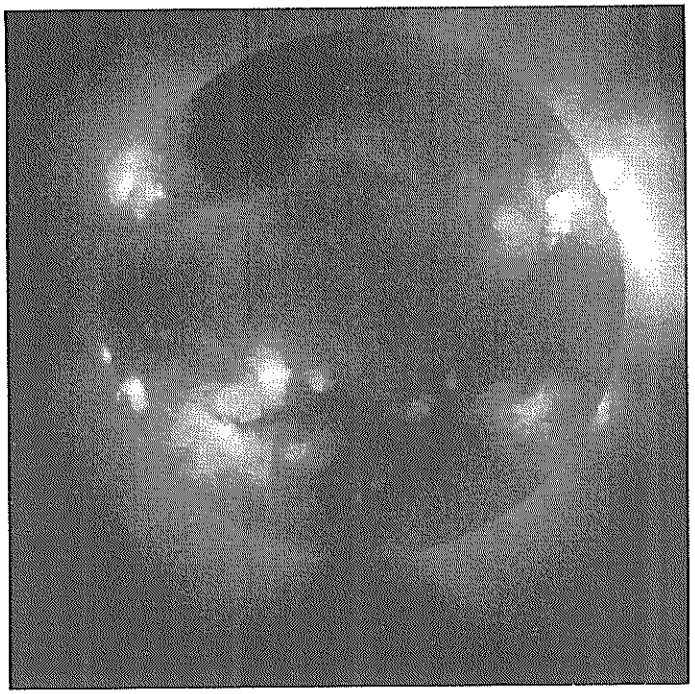
Day 10
12:03:28 UT



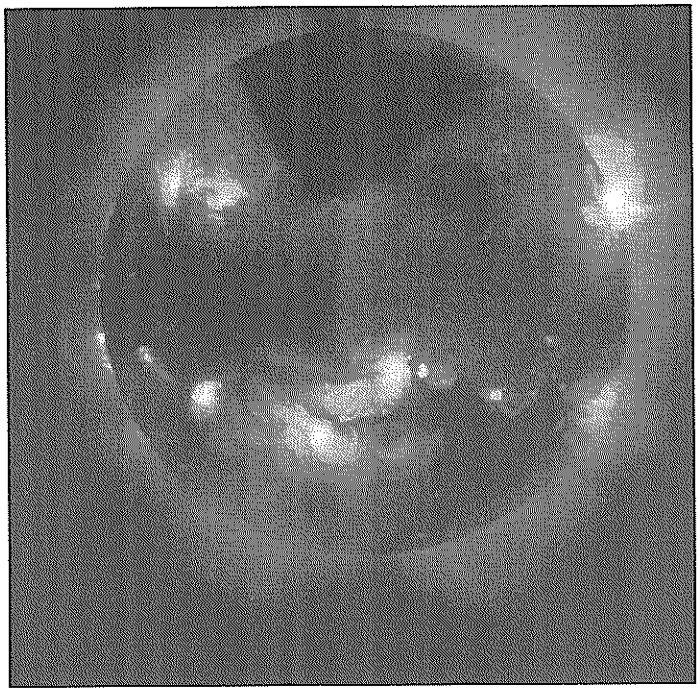
Day 12
11:53:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

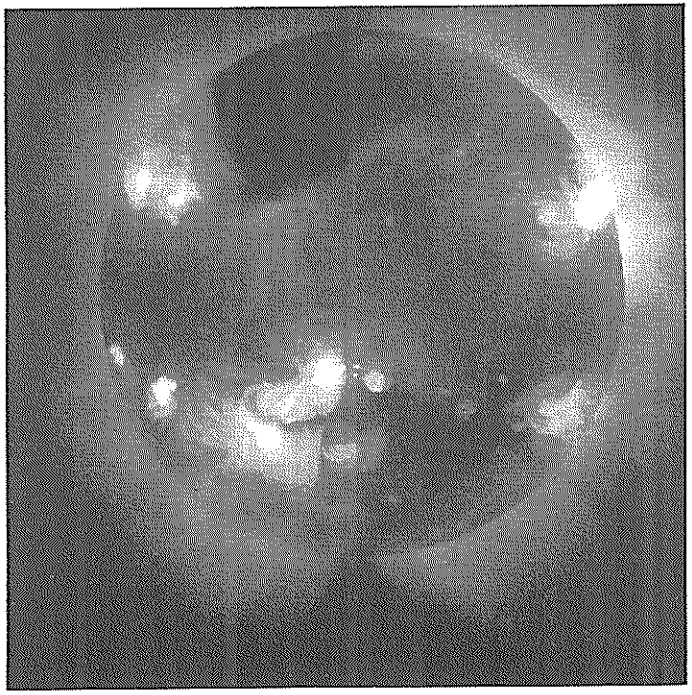
November
1998



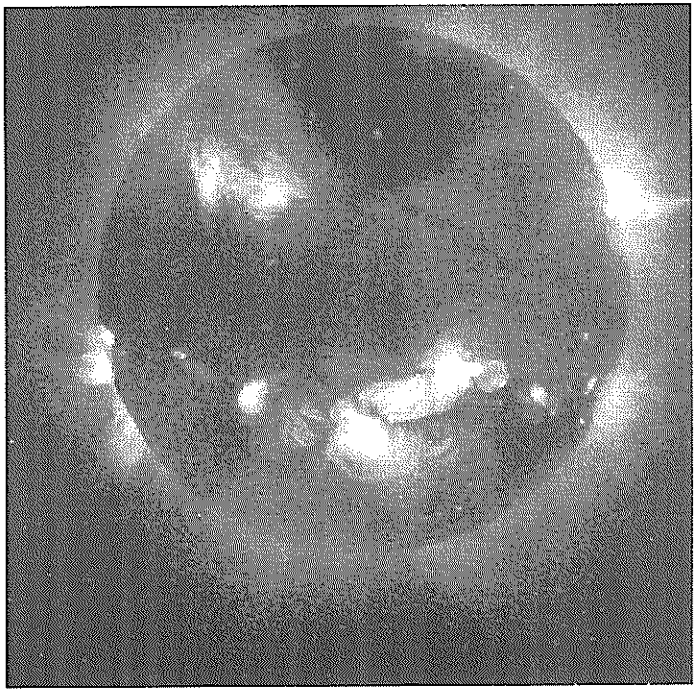
Day 13
12:21:20 UT



Day 15
11:56:51 UT



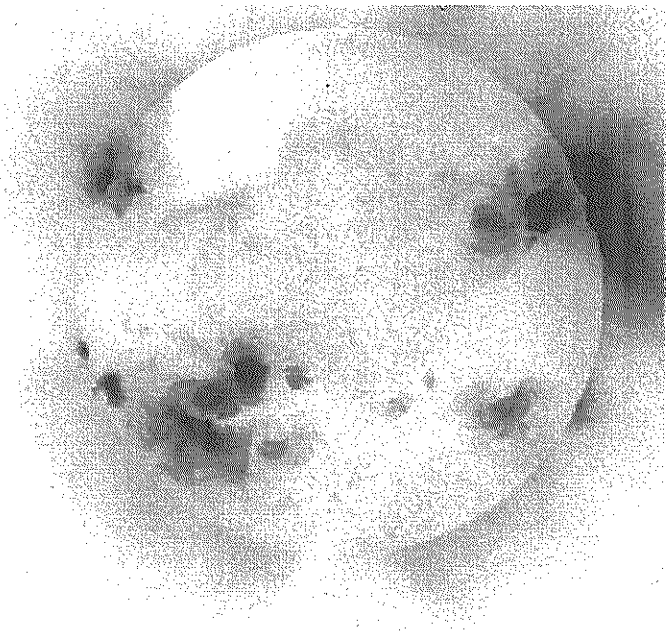
Day 14
12:36:31 UT



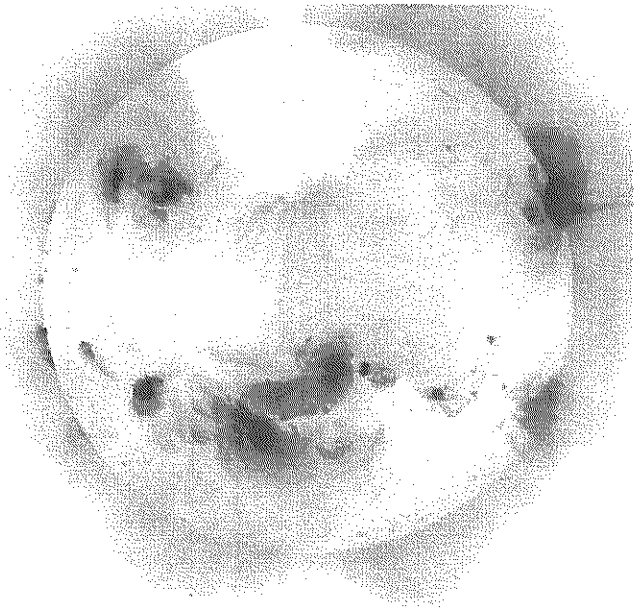
Day 16
12:09:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

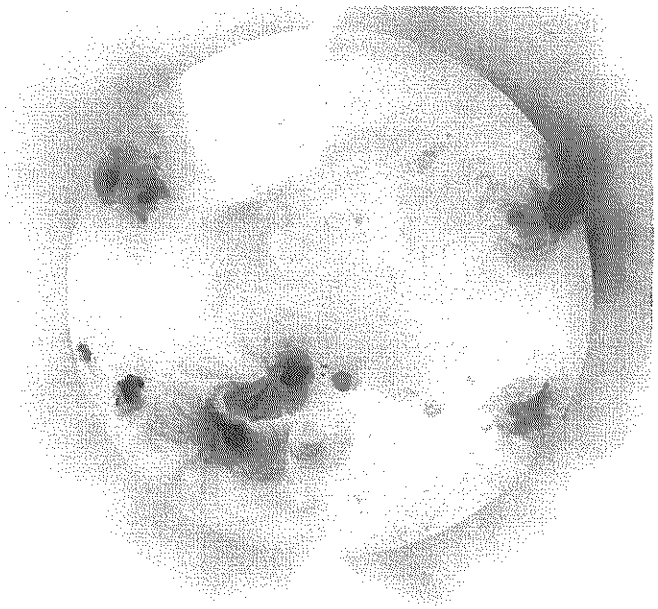
November 1998



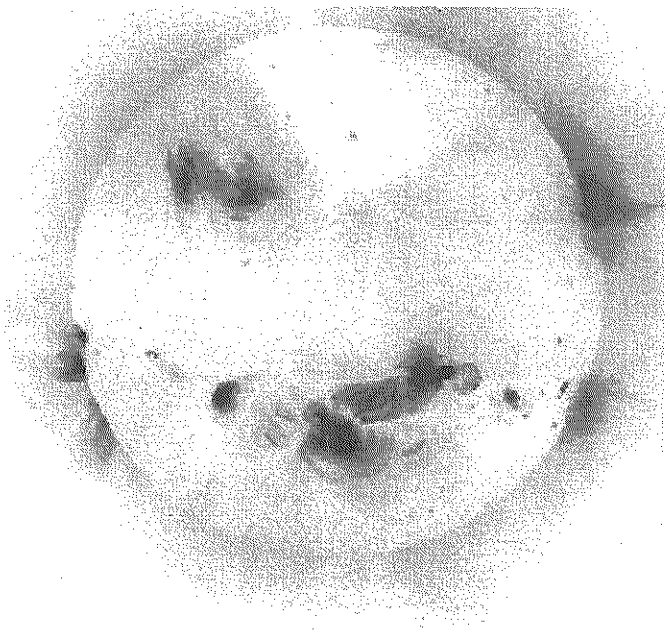
Day 13
12:21:20 UT



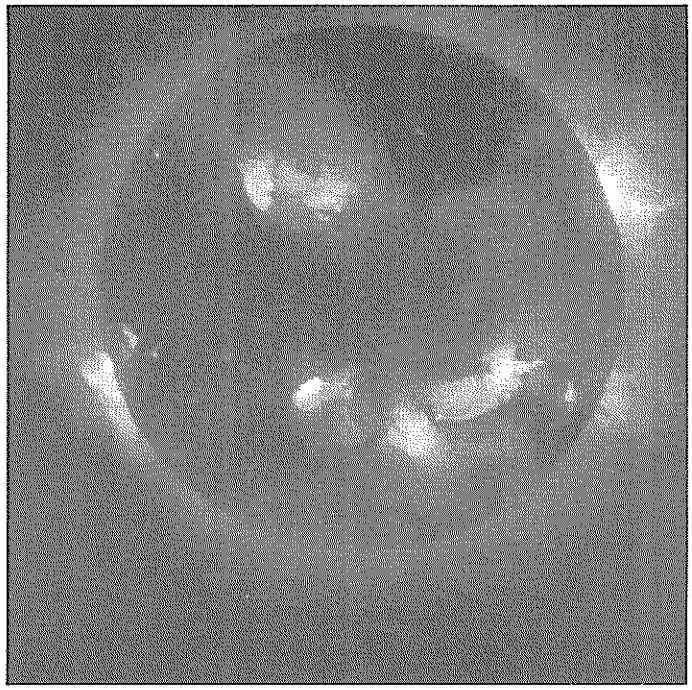
Day 15
11:56:51 UT



Day 14
12:36:31 UT



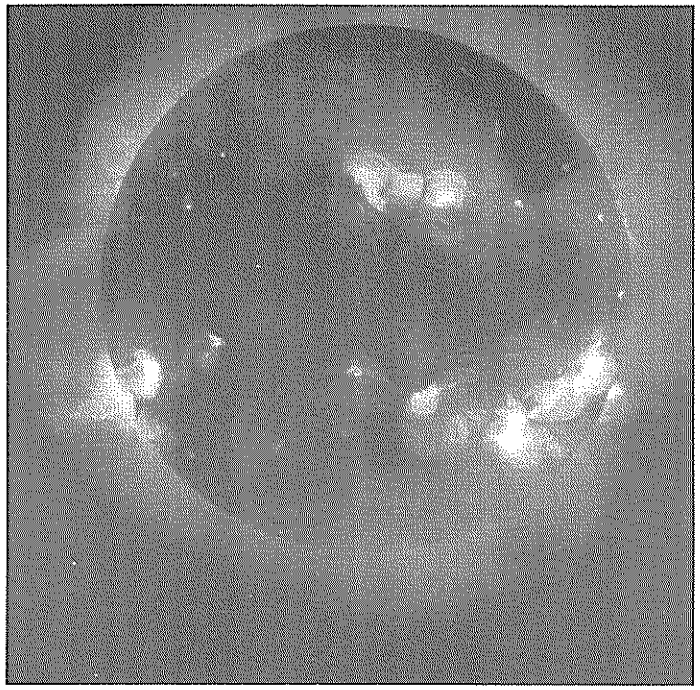
Day 16
12:09:25 UT



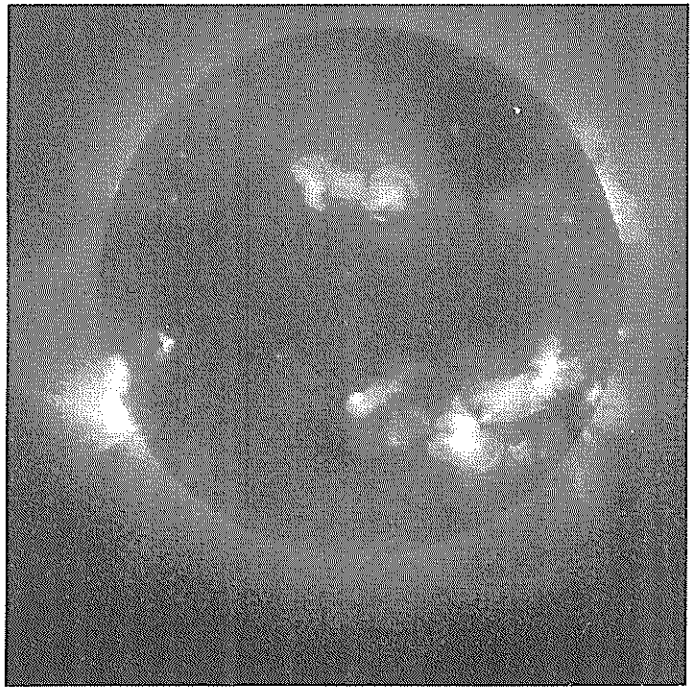
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

November
1998

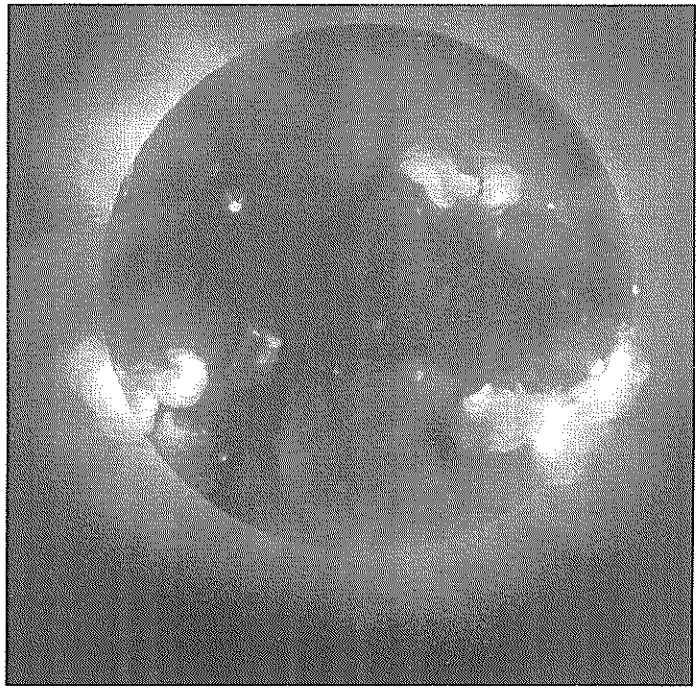
Day 17
11:51:27 UT



Day 19
12:03:32 UT



Day 18
12:03:27 UT

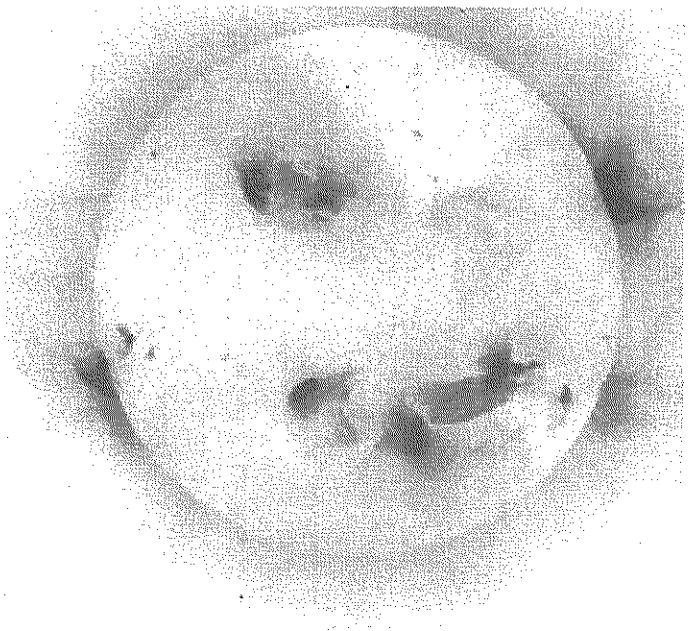


Day 20
11:32:00 UT

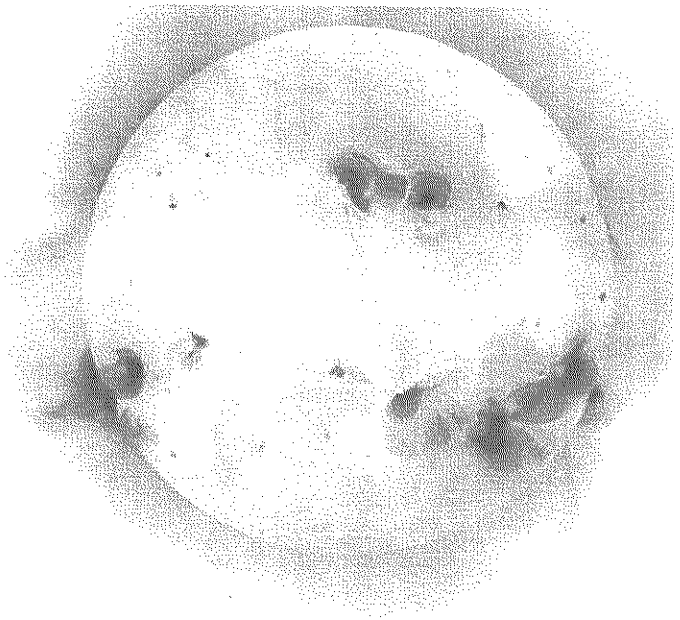
90
Nov 98

YOHKOH SOFT X-RAY TELESCOPE IMAGES

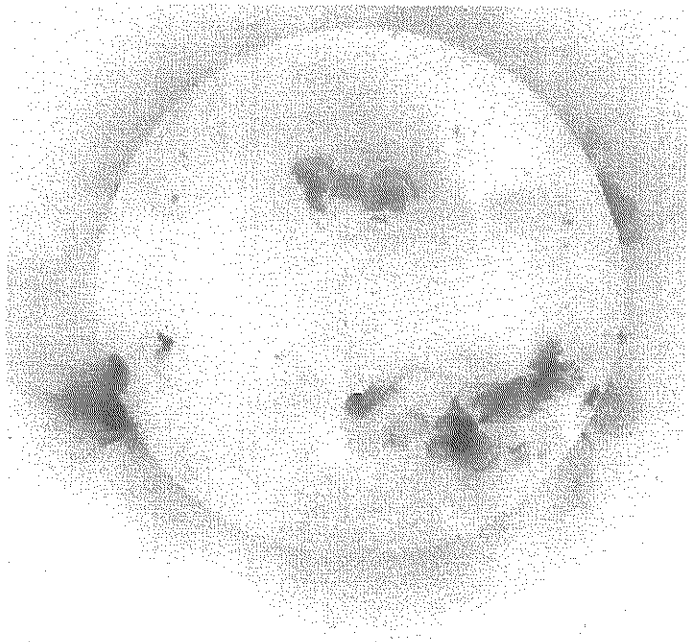
November
1998



Day 17
11:51:27 UT



Day 19
12:03:32 UT

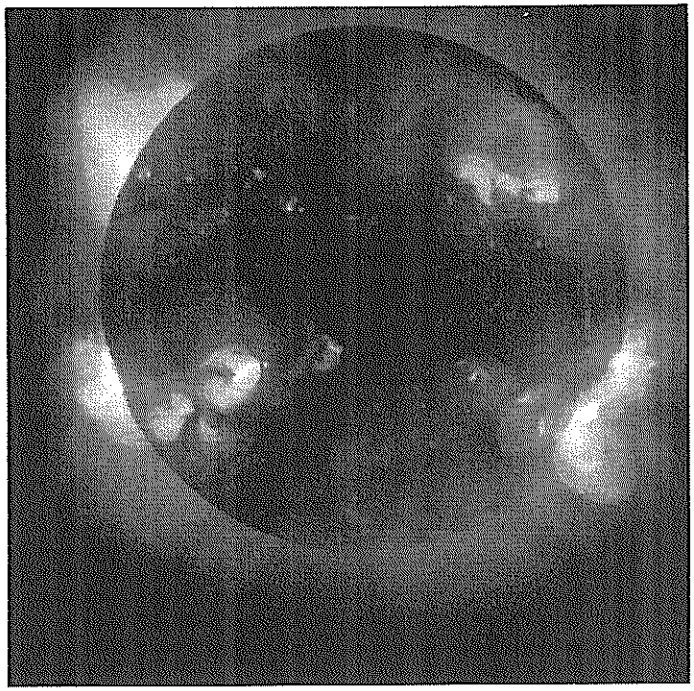


Day 18
12:03:27 UT

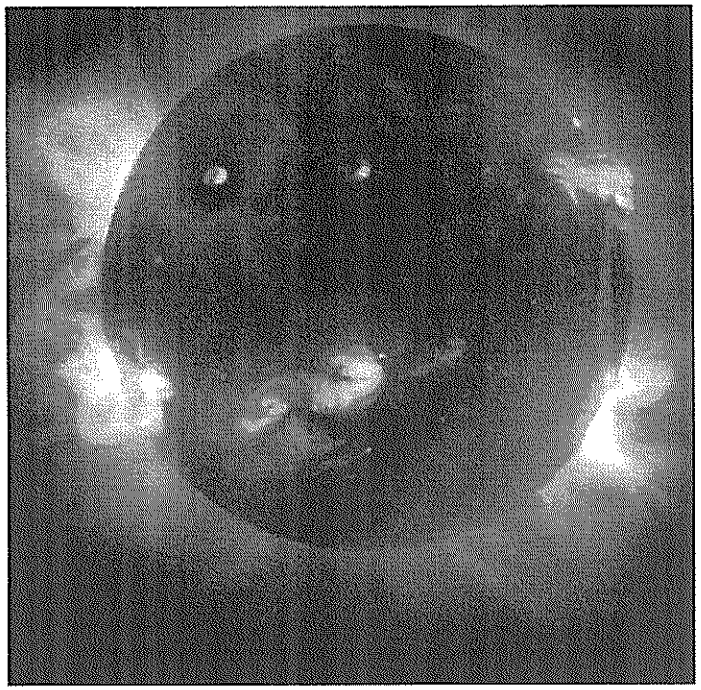
Day 20
11:32:00 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

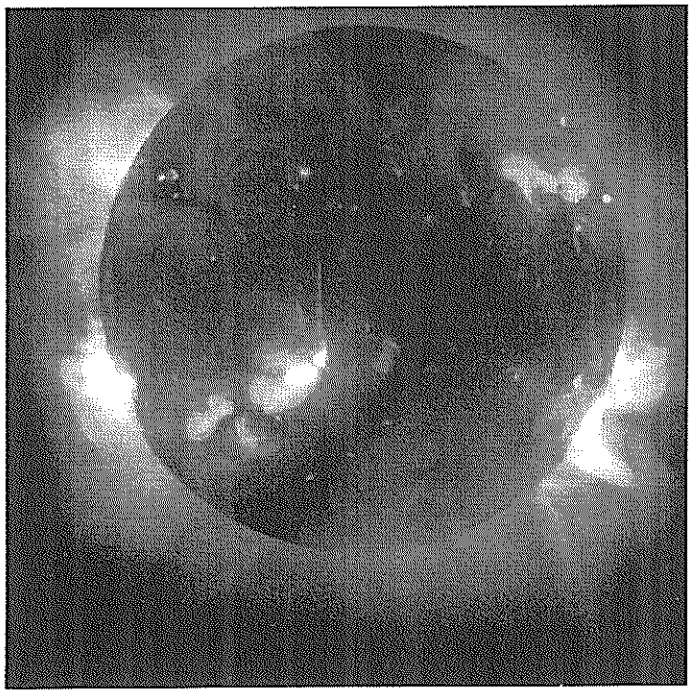
November
1998



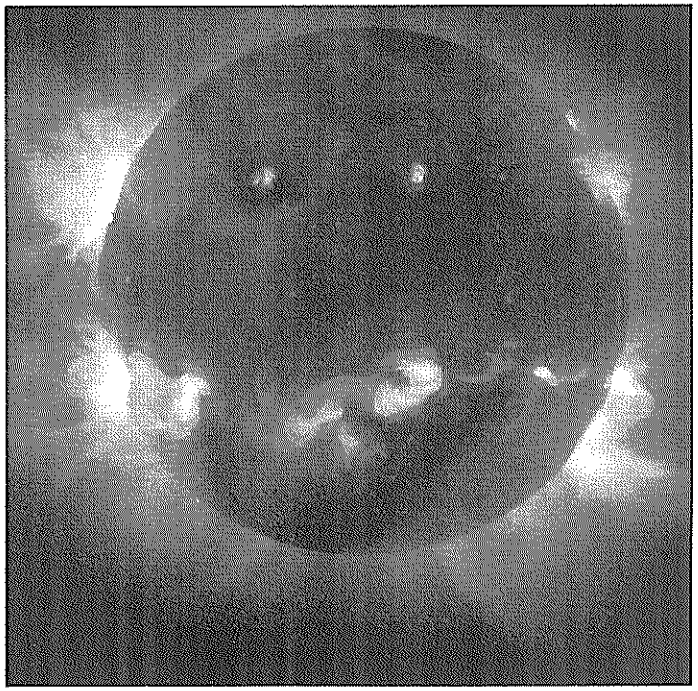
Day 21
11:53:50 UT



Day 23
10:41:08 UT



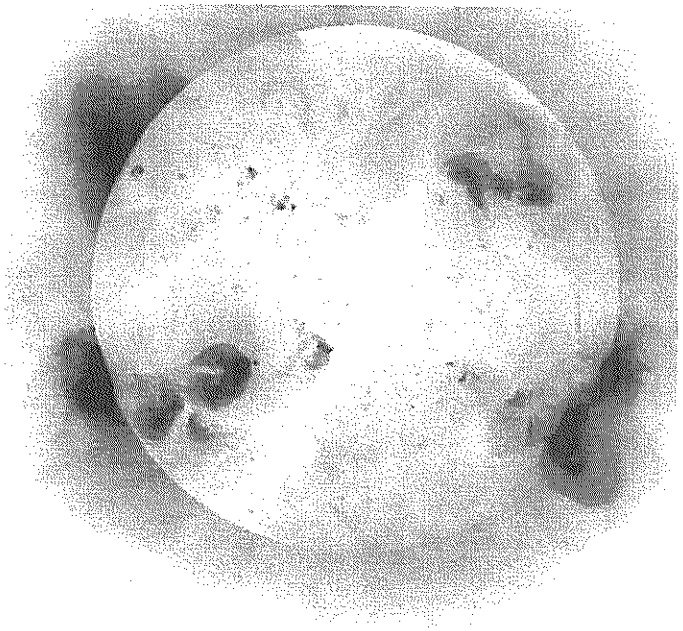
Day 22
11:58:20 UT



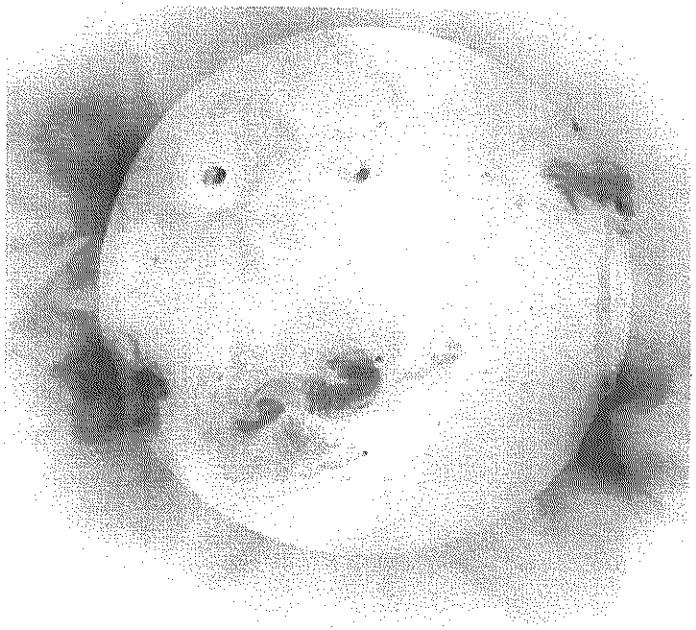
Day 24
10:48:43 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

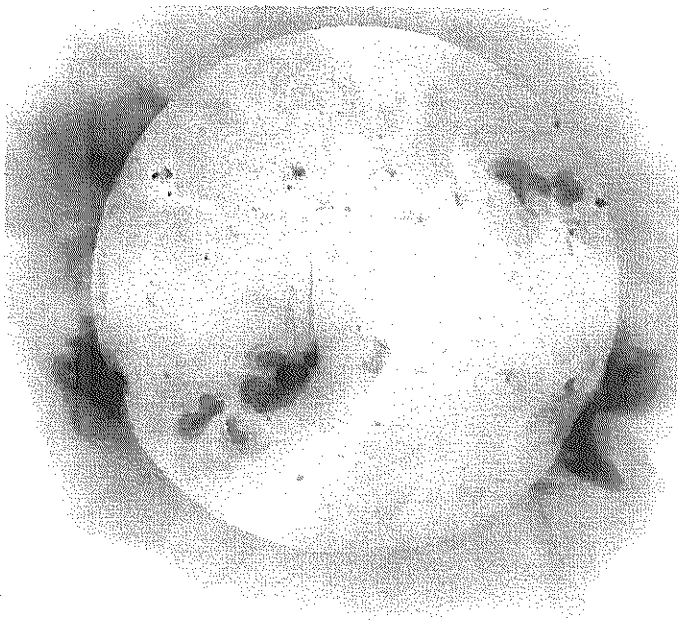
November 1998



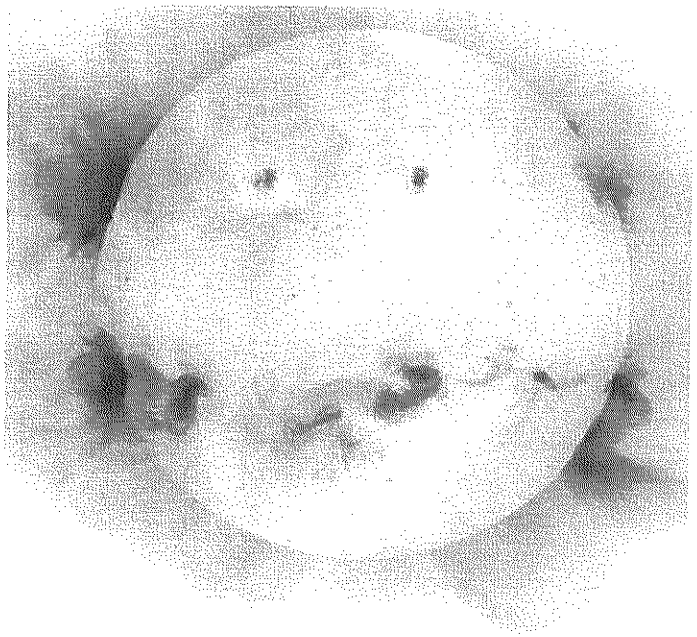
Day 21
11:53:50 UT



Day 23
10:41:08 UT



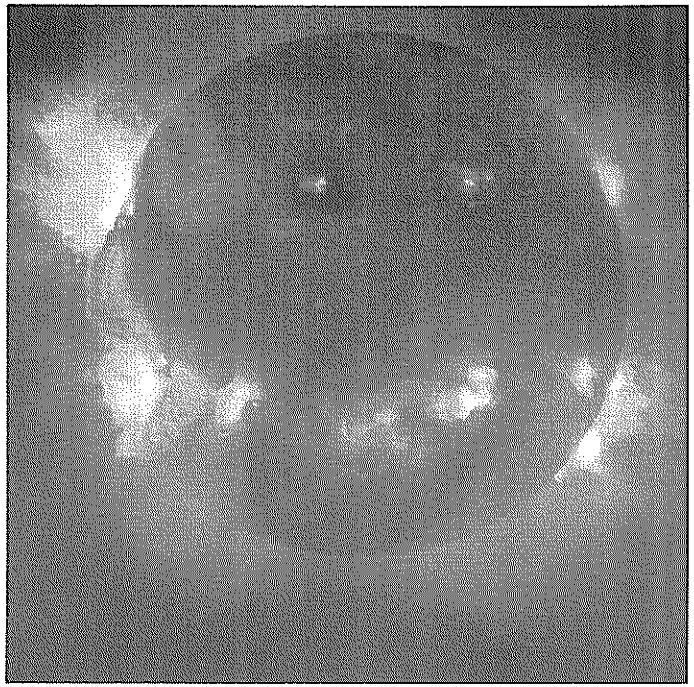
Day 22
11:58:20 UT



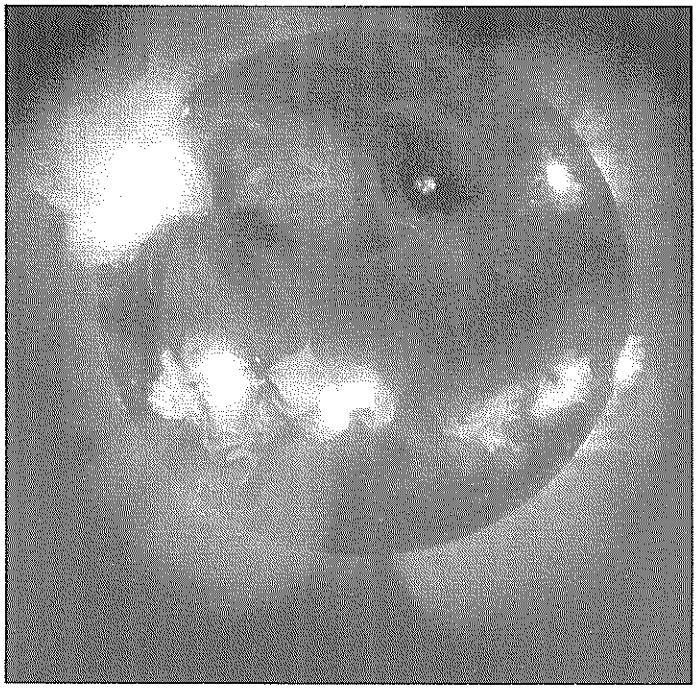
Day 24
10:48:43 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

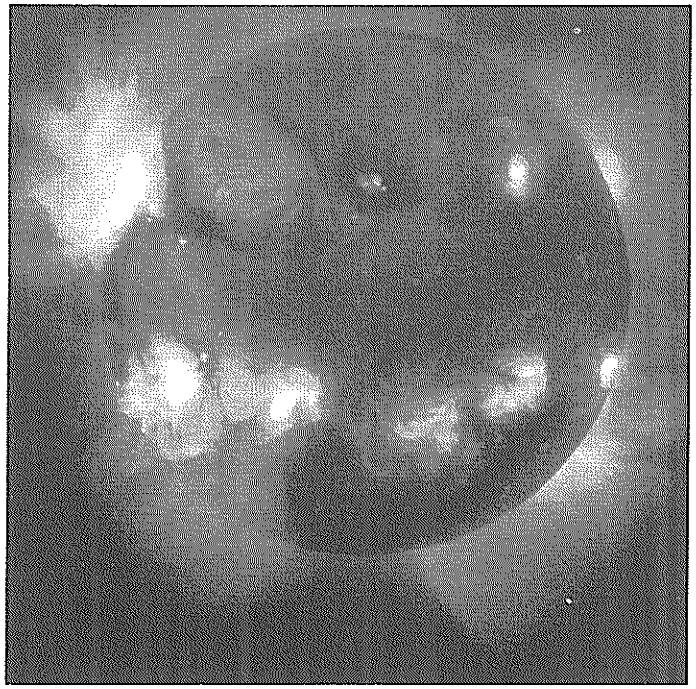
November
1998



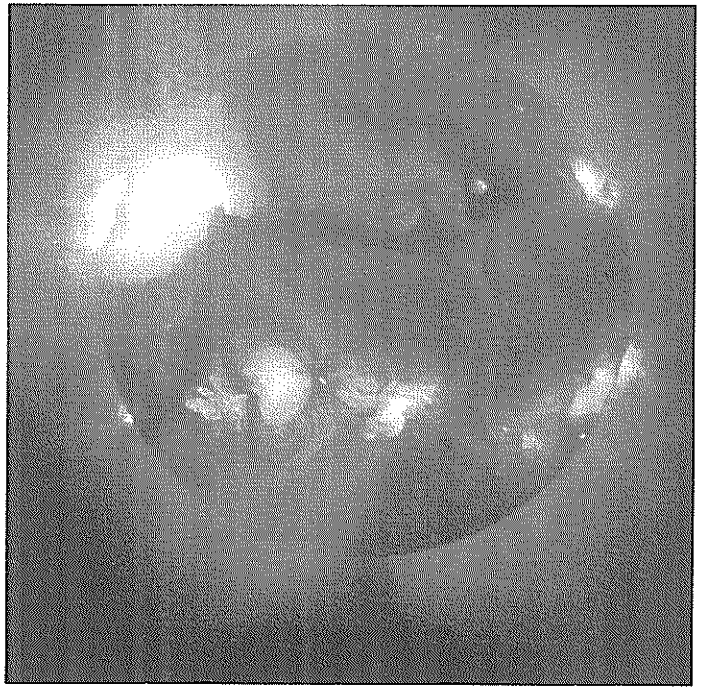
Day 25
12:14:41 UT



Day 27
11:44:07 UT



Day 26
12:18:27 UT

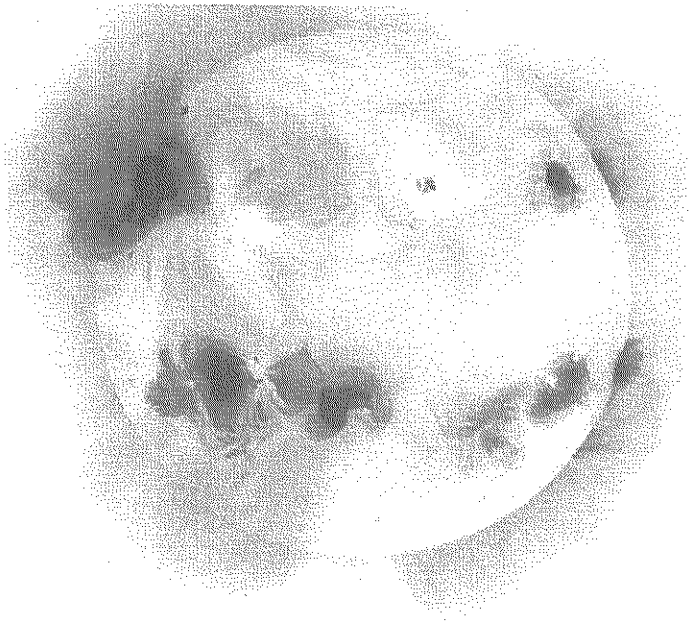


Day 28
12:00:57 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

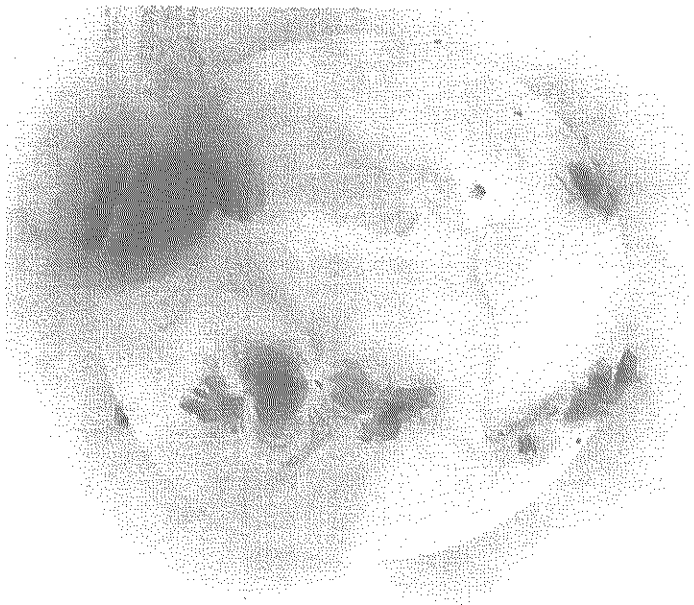
November 1998

Day 25
12:14:41 UT



Day 27
11:44:07 UT

Day 26
12:18:27 UT

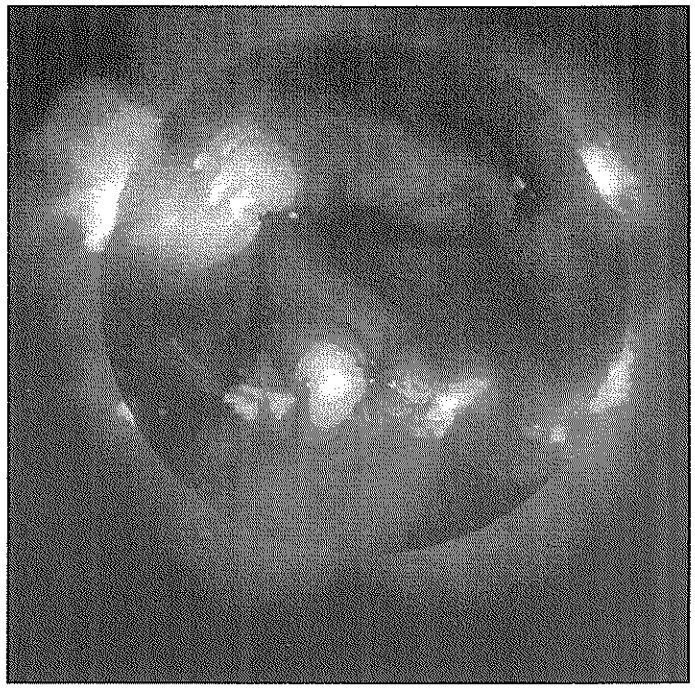


Day 28
12:00:57 UT

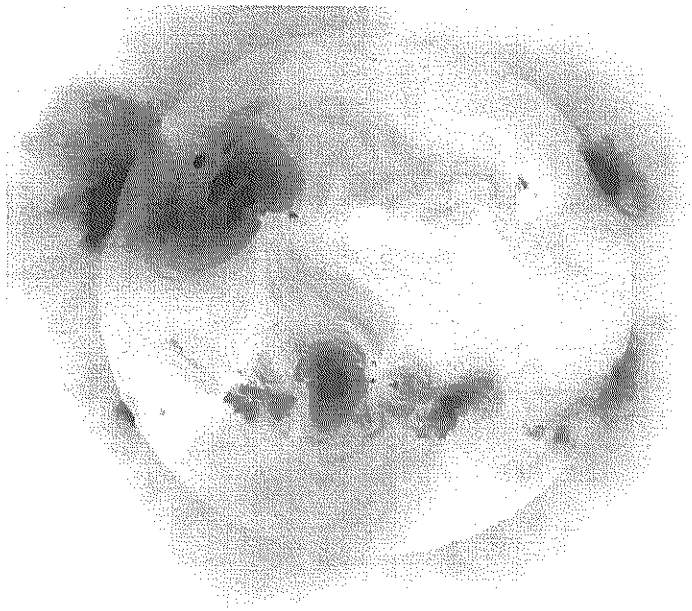
95
Nov 98

YOHKOH SOFT X-RAY TELESCOPE IMAGES

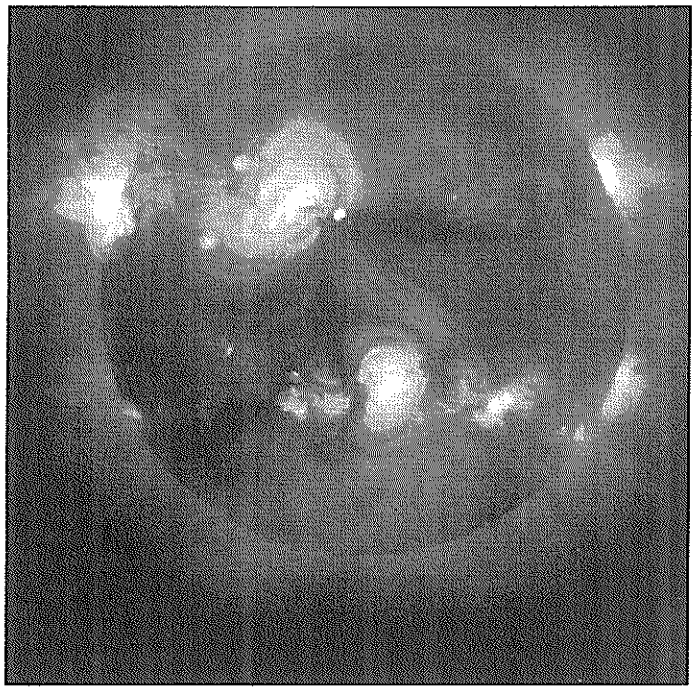
November
1998



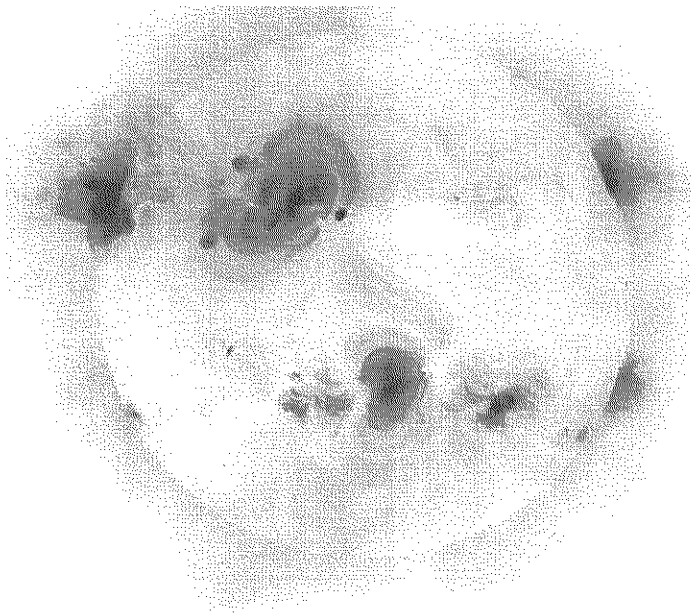
Day 29
11:28:18 UT



Day 29
11:28:18 UT

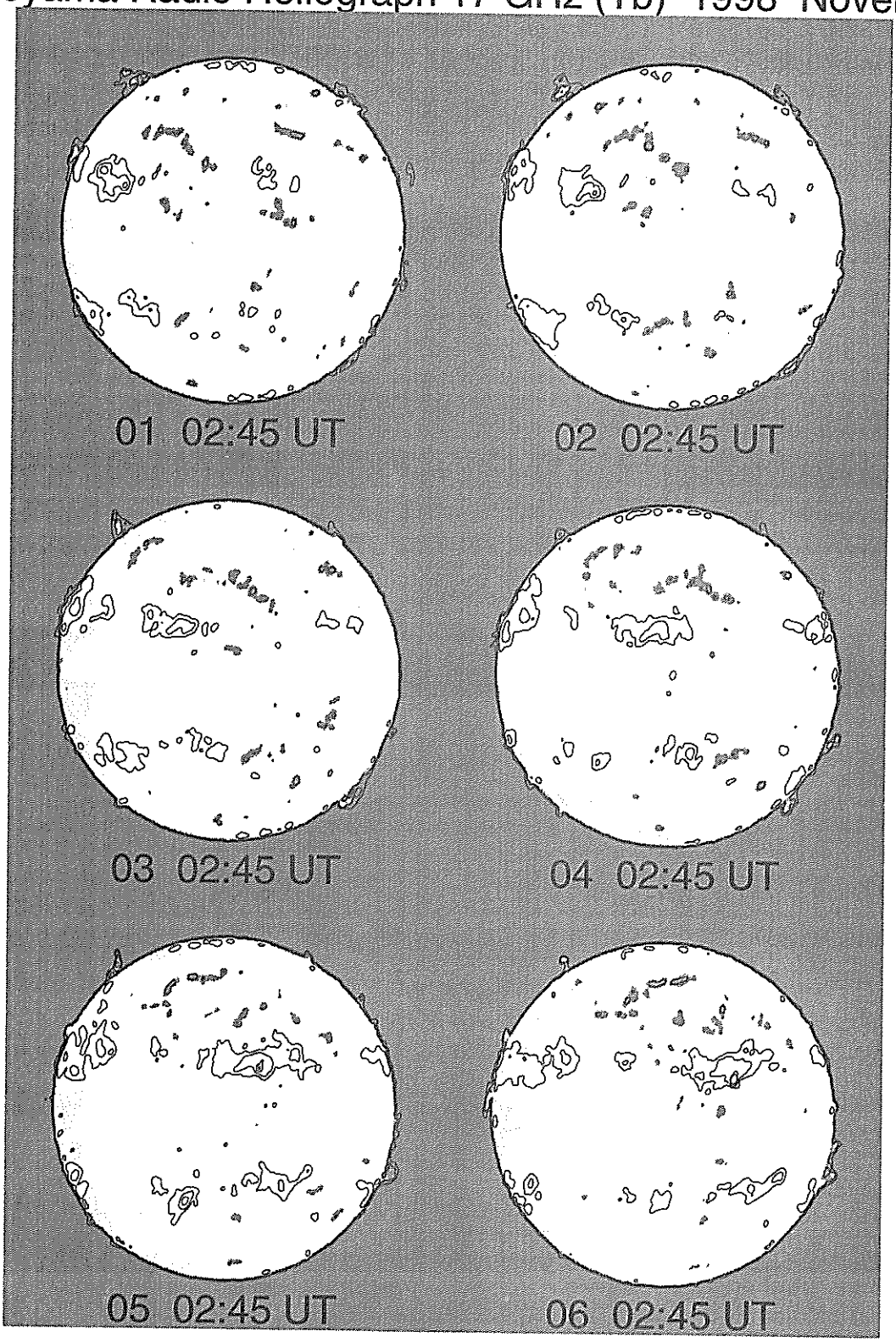


Day 30
09:15:50 UT



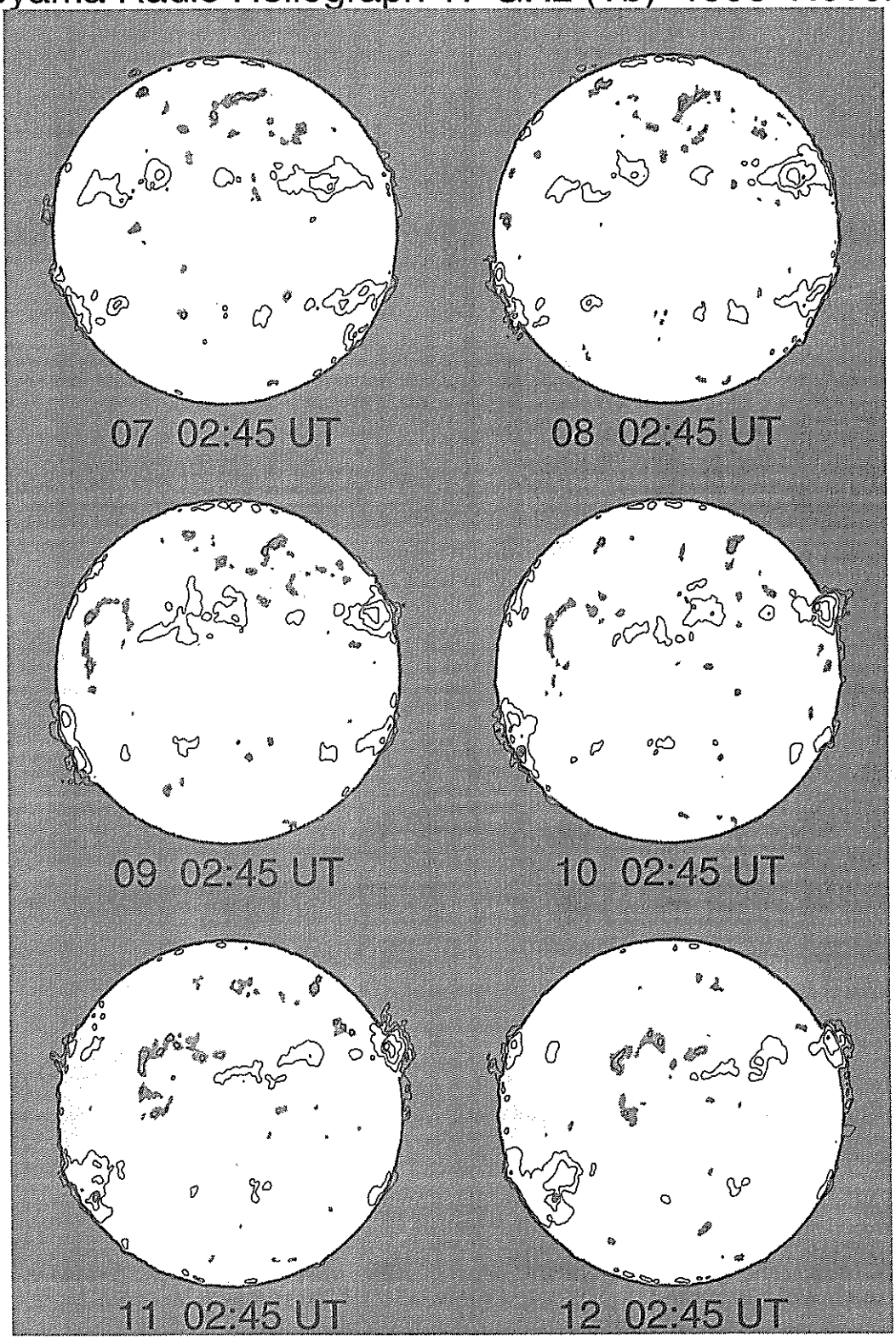
Day 30
09:15:50 UT

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 November



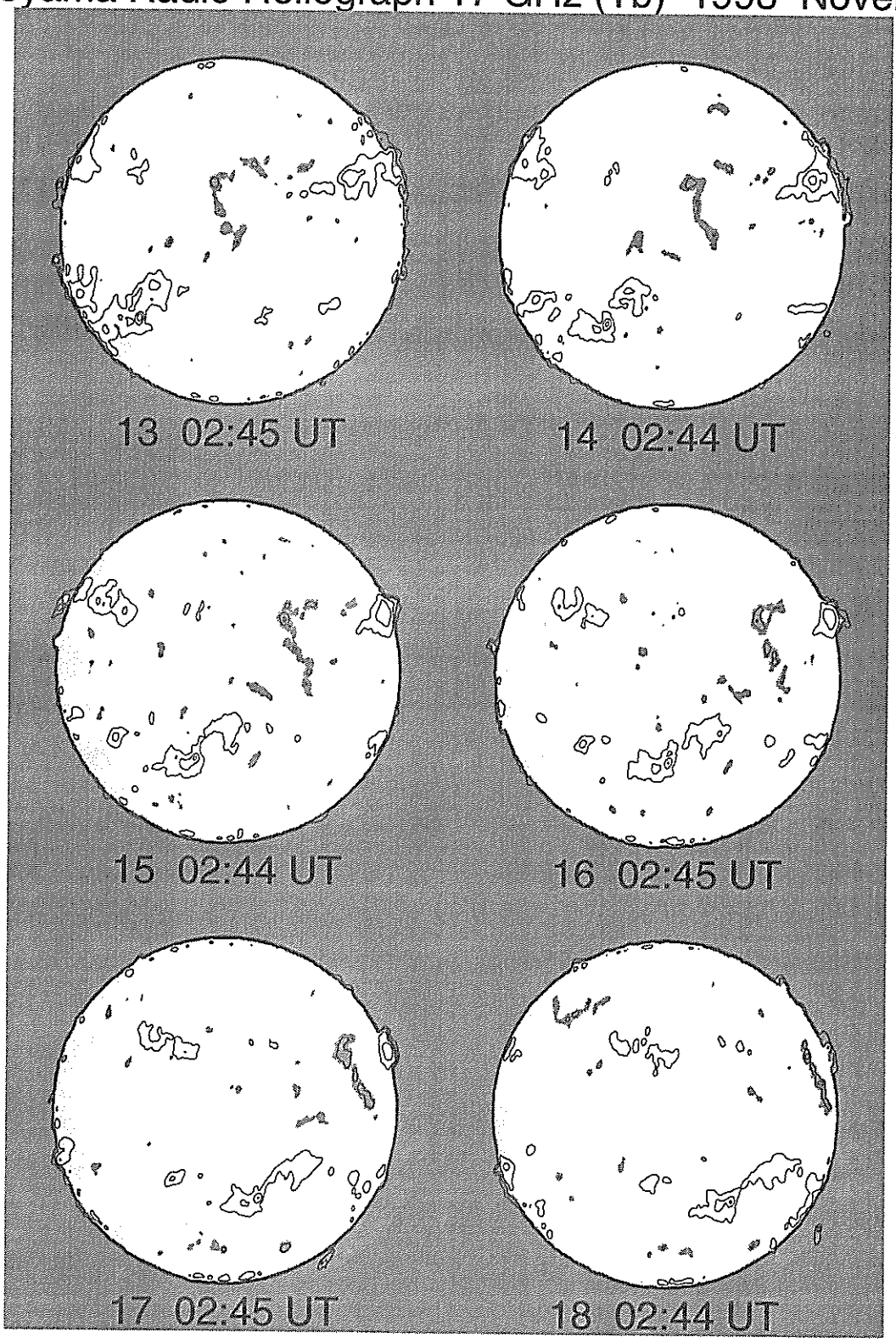
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 November



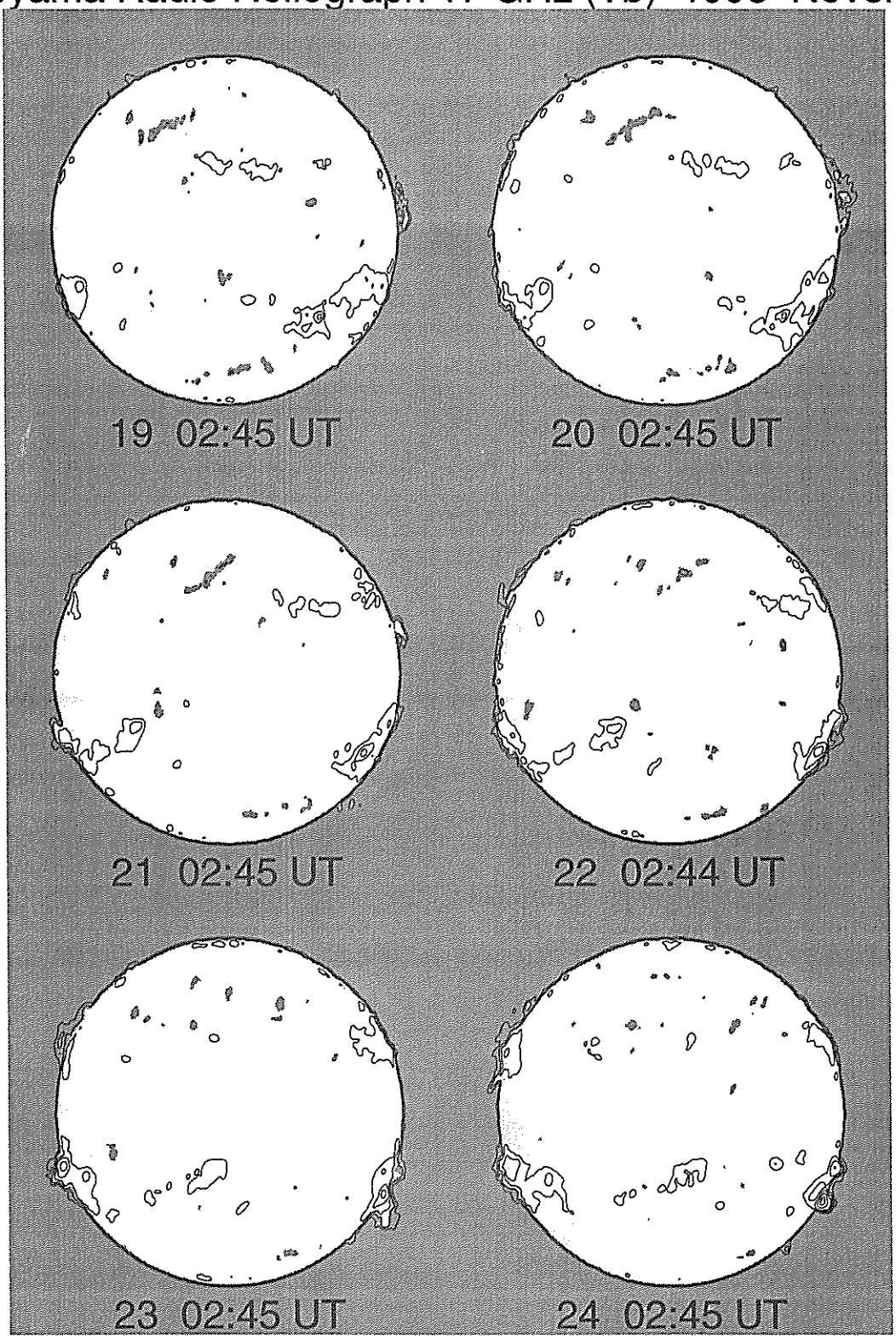
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 November



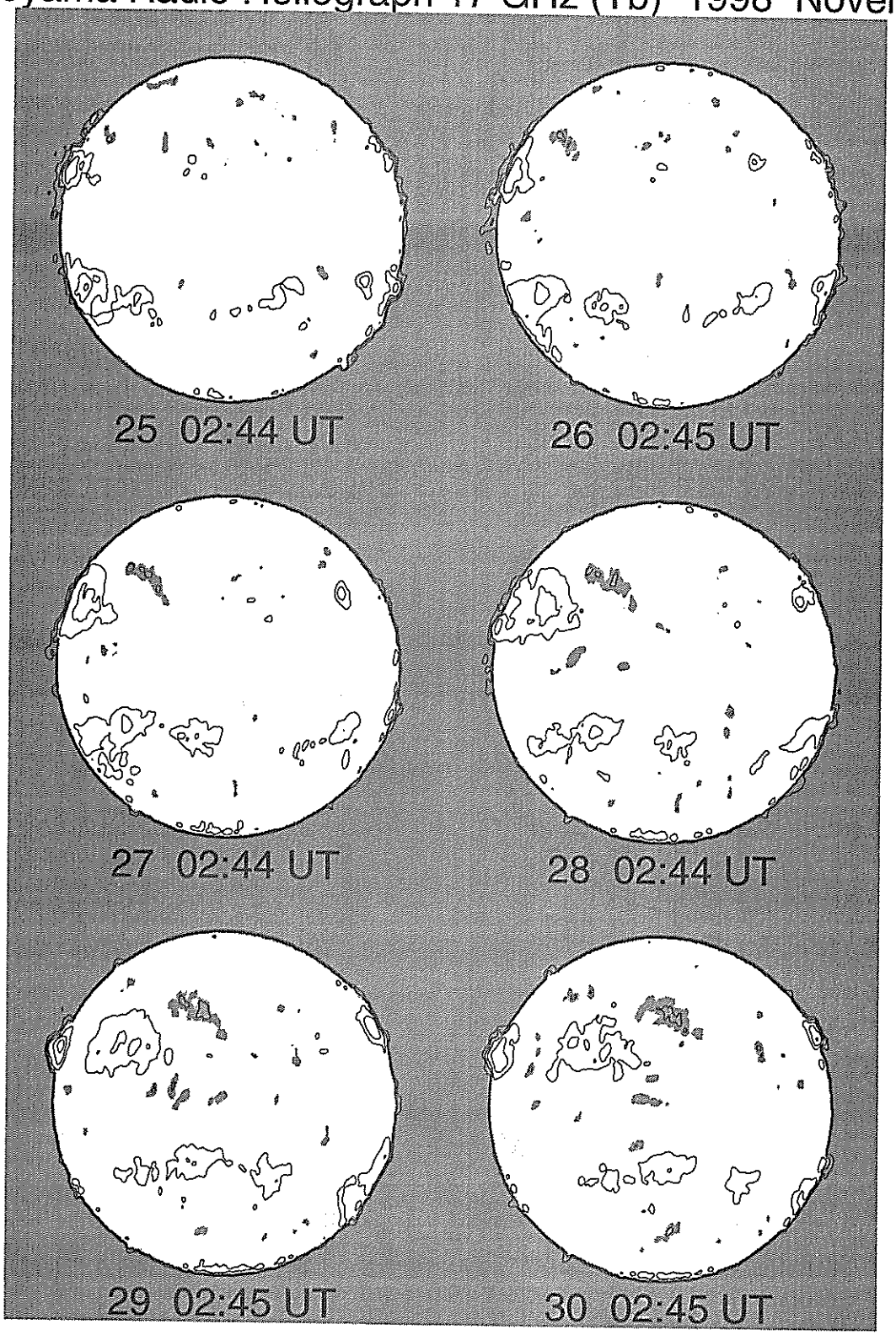
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 November



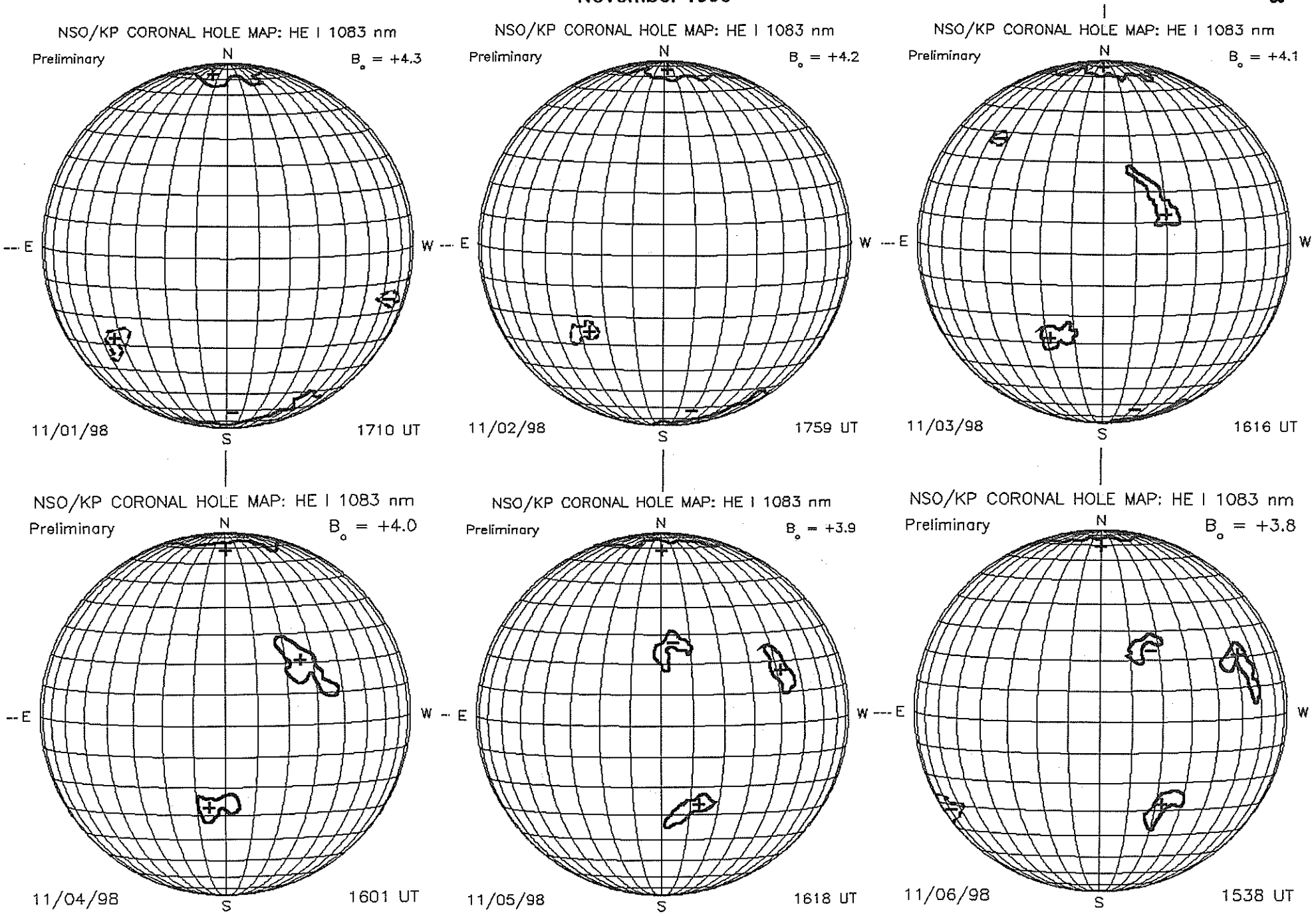
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 November

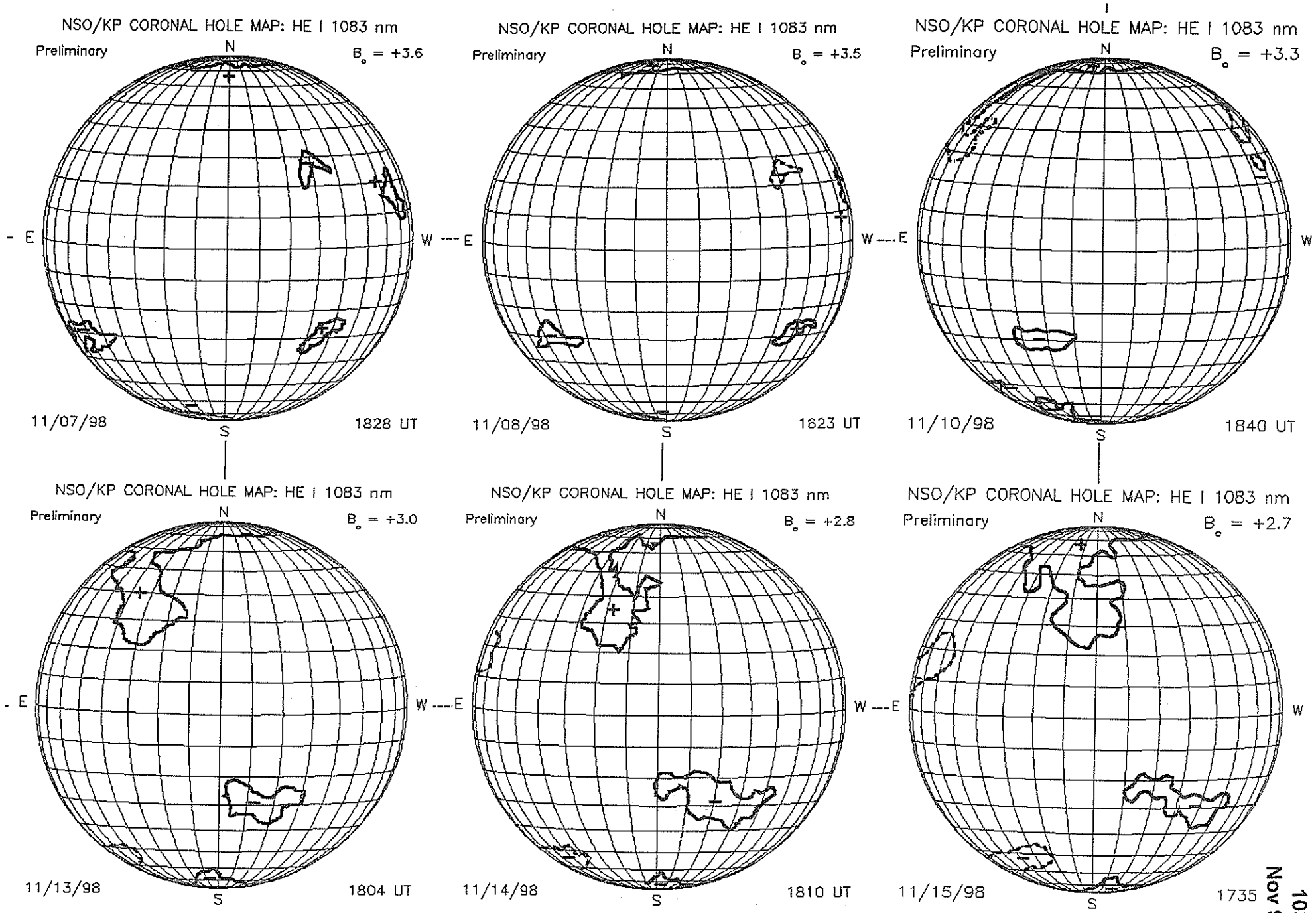


Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
November 1998

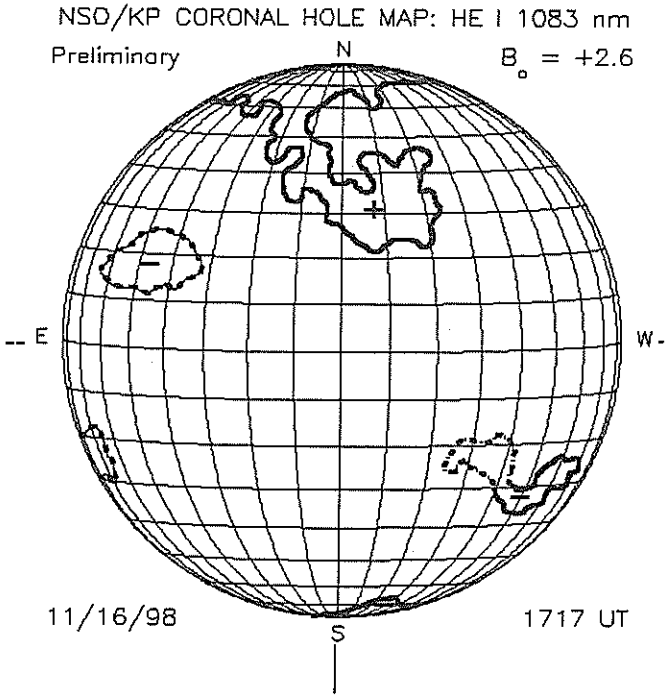


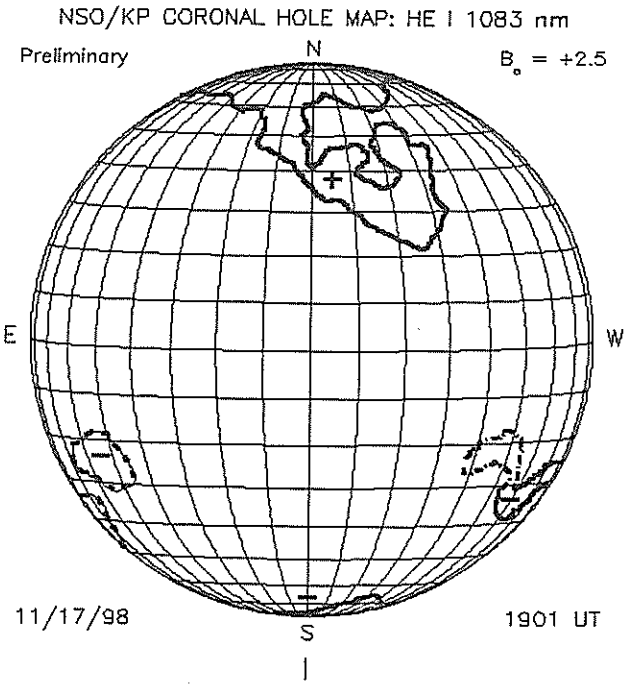
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
November 1998

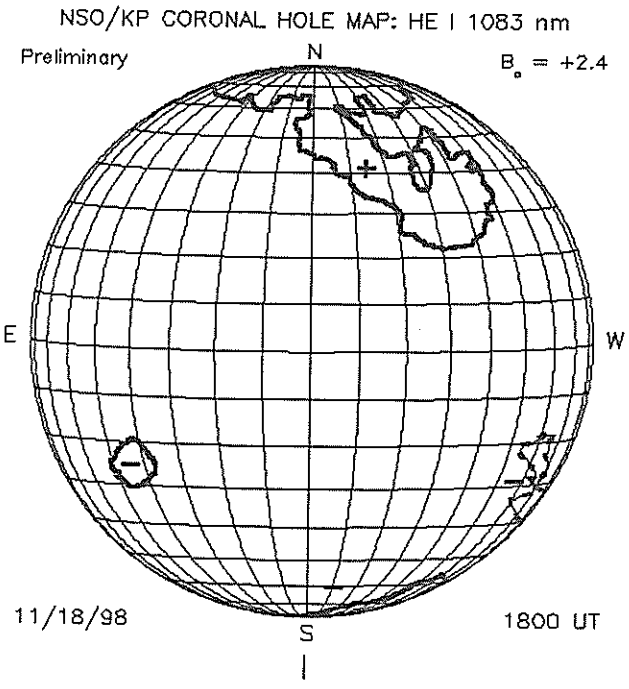


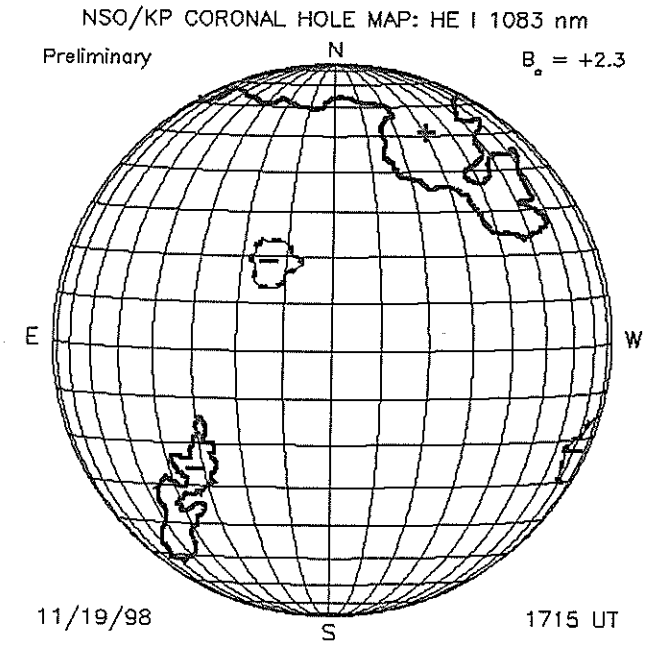
Nov 98 103

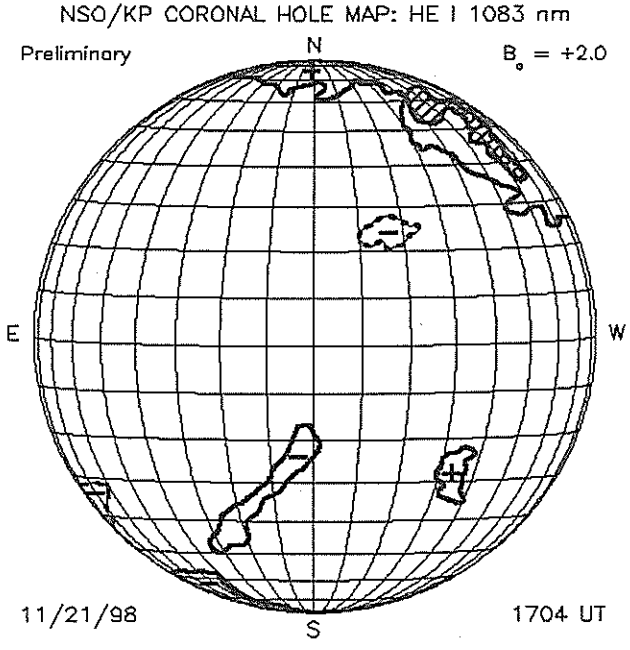
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
November 1998

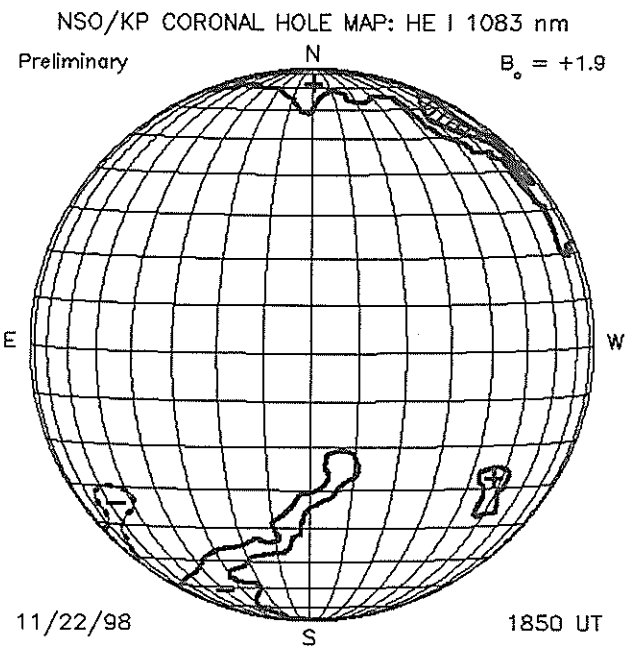




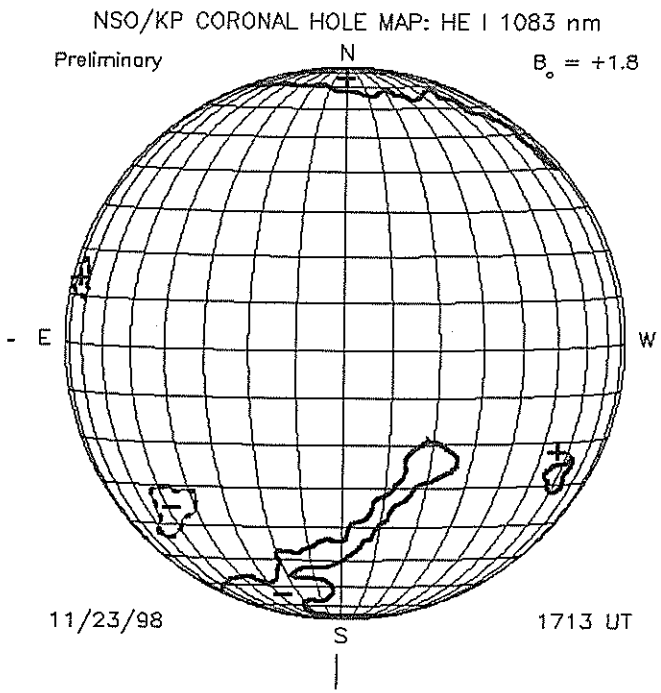


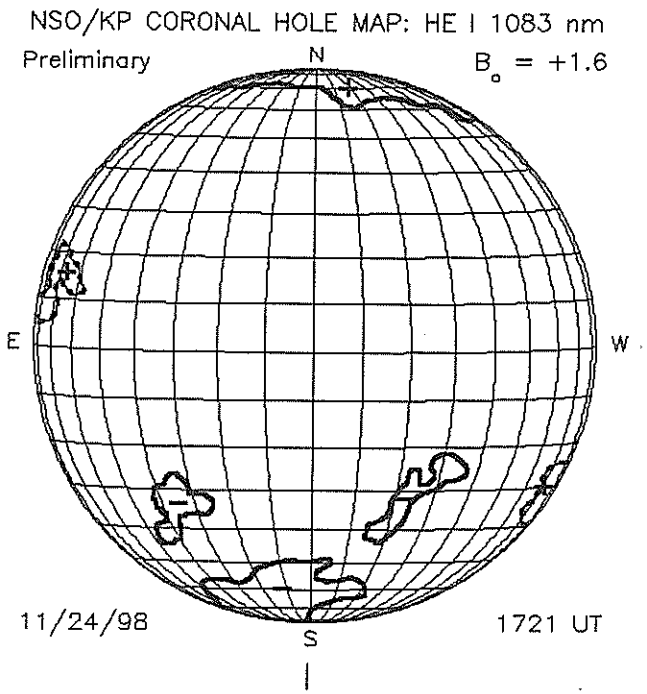


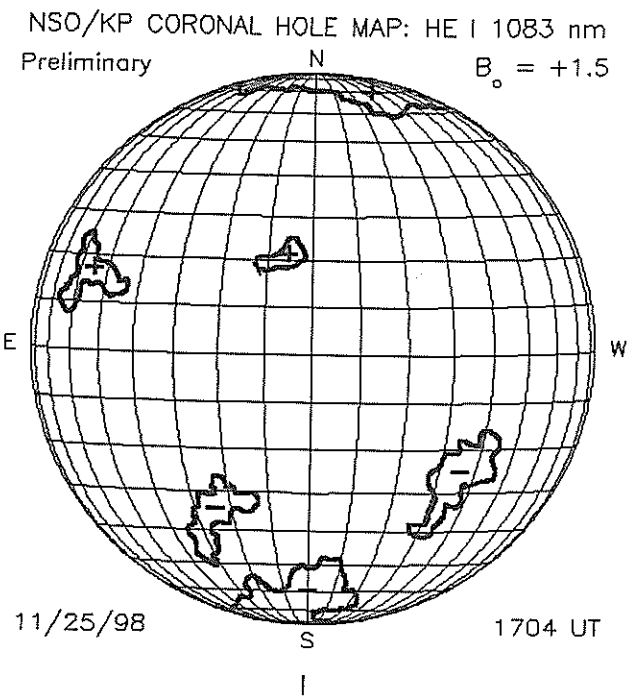


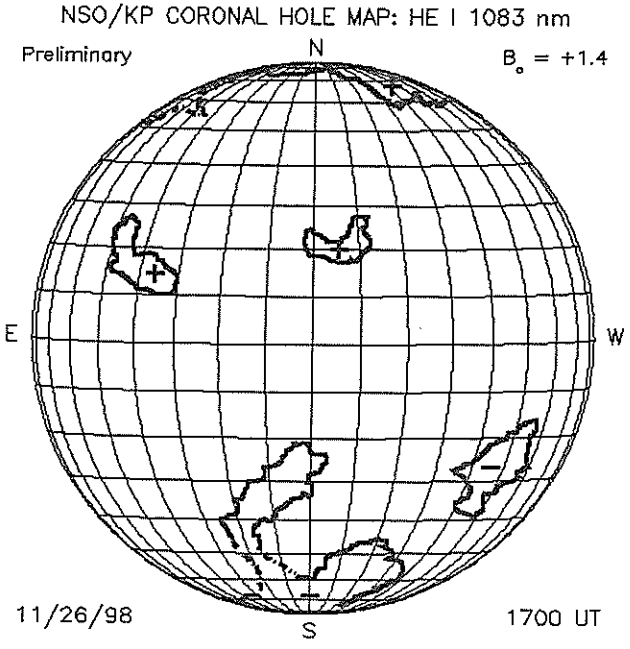


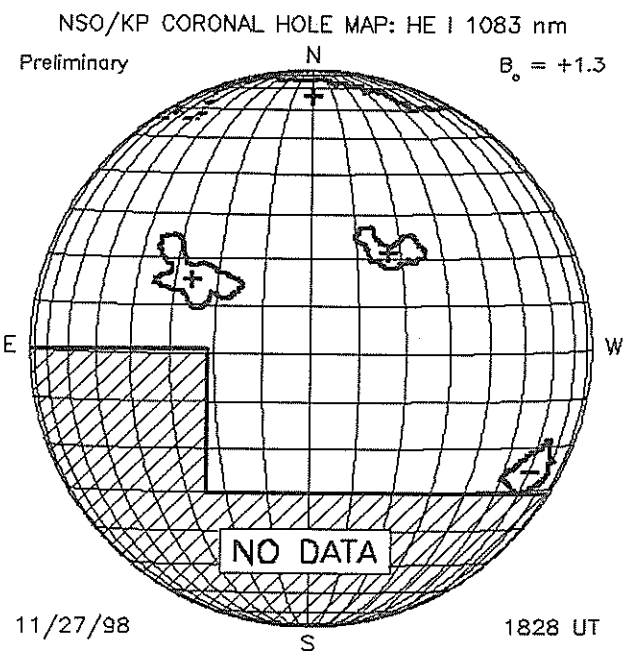
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
November 1998

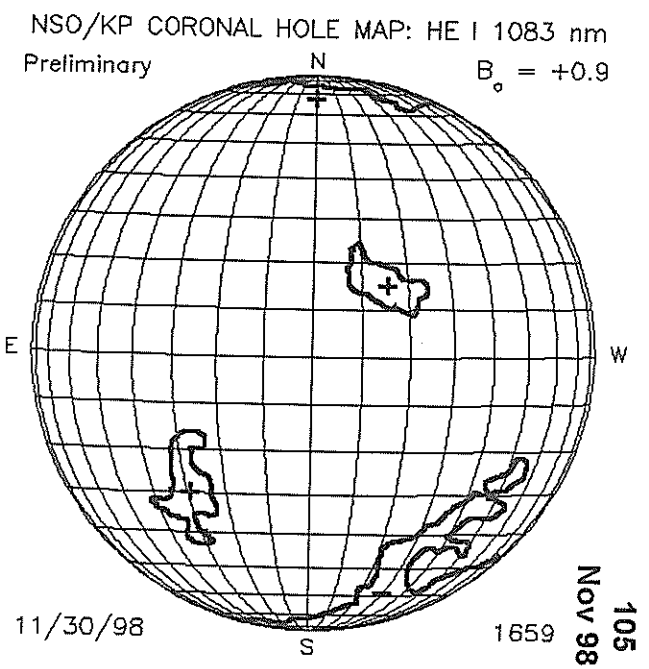












SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 1998

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
8379		LEAR	11	04	0040	S17	W16	11	2.8		B	BXO	10	3	3	4
8379		TACH	11	04	0512	S17	W18	11	2.8			BRO	11	3	3	3
8379		KAND	11	04	0930	S18	W21	11	2.8			CSO		9	4	4
8379		RAMY	11	04	1218	S18	W23	11	2.8		B	CRO	20	8	4	3
8379	28869	MWIL	11	04	1500	S18	W24	11	2.8	5	(B)					
8379		HOLL	11	04	1530	S18	W23	11	2.9		B	CSO	40	6	3	3
8379		LEAR	11	05	0035	S17	W29	11	2.8		B	CSO	40	6	5	4
8379		KAND	11	05	0820	S18	W34	11	2.7			CRO		7	7	3
8379		RAMY	11	05	1221	S18	W37	11	2.7		B	CSO	20	7	6	3
8379	28869	MWIL	11	05	1500	S18	W38	11	2.7	4	(B)					
8379		HOLL	11	05	1555	S19	W37	11	2.8		B	DSO	80	11	6	3
8379		VORO	11	05	2319	S16	W45	11	2.5			CAI	69	4	12	3
8379		LEAR	11	06	0105	S17	W43	11	2.8		B	DAI	50	10	8	3
8379		TACH	11	06	0510	S17	W46	11	2.7			BRO	56	9	5	3
8379		KAND	11	06	0840	S19	W50	11	2.5			CAI		7	11	3
8379		RAMY	11	06	1244	S18	W49	11	2.8		B	CAO	30	15	9	3
8379		SVTO	11	06	1414	S18	W51	11	2.7		B	CAI	120	13	9	2
8379	28869	MWIL	11	06	1515	S18	W51	11	2.7	5	(BF)					
8379		LEAR	11	07	0013	S17	W56	11	2.7		B	DAO	100	10	10	3
8379		VORO	11	07	0323	S19	W58	11	2.7			HAX	195	3	7	3
8379		TACH	11	07	0436	S18	W59	11	2.7			BRO	48	7	8	2
8379		KAND	11	07	0750	S20	W62	11	2.6			CAO		7	11	3
8379		RAMY	11	07	1233	S20	W63	11	2.7		B	CAO	100	9	11	4
8379	28869	MWIL	11	07	1530	S18	W64	11	2.8	4	(BF)					
8379		HOLL	11	07	1550	S18	W69	11	2.4		B	CAO	60	5	12	4
8379		VORO	11	07	2334	S20	W65	11	3.0			HAX	183	2		3
8379		LEAR	11	08	0028	S17	W71	11	2.6		B	DAO	300	5	10	3
8379		TACH	11	08	0500	S18	W72	11	2.7			CRO	51	2	10	4
8379		RAMY	11	08	1315	S22	W74	11	2.9		B	CAO	60	4	5	3
8379		HOLL	11	08	1512	S19	W72	11	3.1		A	HS	30	1	1	3
8379		VORO	11	08	2300	S20	W72	11	3.4			HAX	119	2		3
8379		LEAR	11	09	0032	S17	W79	11	3.0		A	HA	30	3	2	4
8379		SVTO	11	09	0740	S20	W87	11	2.7		A	HR	30	1	2	3
8373		HOLL	10	28	1830	S23	E72	11	3.3		A	AX	10	1		3
8373		VORO	10	28	2255	S24	E71	11	3.4			HRX	108	3		3
8373		TACH	10	29	0436	S24	E66	11	3.3			AXX	10	1	1	3
8373		LEAR	10	29	0527	S25	E65	11	3.3		A	AX	10	1	1	2
8373		SVTO	10	29	0710	S25	E67	11	3.5		A	AX	10	1		2
8373		KAND	10	29	0900	S24	E64	11	3.3			AX		3	2	5
8373		HOLL	10	29	1456	S23	E62	11	3.4		A	AX	20	3	2	4
8373		RAMY	10	29	1825	S23	E62	11	3.5		B	BXO	10	2	2	2
8373		LEAR	10	30	0052	S24	E55	11	3.3		B	DAO	40	3	3	4
8373		TACH	10	30	0528	S25	E50	11	3.1			AR	5	2	2	4
8373		KAND	10	30	0730	S24	E52	11	3.3			BXO		3	2	2
8373		SVTO	10	30	0730	S24	E53	11	3.4		B	DRO	20	2	2	3
8373		RAMY	10	30	1442	S24	E47	11	3.2		A	AX	10	2	3	4
8373		HOLL	10	30	1455	S23	E47	11	3.2		B	BXO	20	2	2	2
8373	28861	MWIL	10	30	1530	S24	E50	11	3.5	4	(BP)					
8373		LEAR	10	31	0049	S24	E40	11	3.1		B	CRO	30	3	3	3
8373		VORO	10	31	0116	S24	E41	11	3.2			AXX	35	3		3
8373		TACH	10	31	0556	S23	E39	11	3.2			BXO	8	2	6	4
8373		SVTO	10	31	0920	S25	E39	11	3.4		B	BXO	10	4	8	3
8373		RAMY	10	31	1210	S25	E36	11	3.3		B	BXO	10	3	8	4
8373	28861	MWIL	10	31	1500	S25	E35	11	3.3	3	(B)					
8373		HOLL	10	31	1656	S22	E31	11	3.1		B	BXO	20	3	3	3
8373		LEAR	11	01	0018	S26	E33	11	3.6		A	AX		2	2	3
8373		KAND	11	01	0945	S24	E27	11	3.5			BXO		3	2	5
8373		RAMY	11	01	1230	S25	E25	11	3.4		B	BXO	10	4	4	3
8373	28860	MWIL	11	01	1500	S25	E24	11	3.5	3	(BF)					
8373		LEAR	11	02	0050	S24	E16	11	3.3		B	BXO	10	3	4	4
8373	28860	MWIL	11	02	1500	S24	E11	11	3.5	3	(B)					
8373		HOLL	11	02	1525	S25	E13	11	3.6		A	AX	10	1	1	3
8373		SVTO	11	03	0710	S25	E03	11	3.5		B	CSO	40	3	4	3
8373		RAMY	11	03	1213	S25	E02	11	3.7		A	AX		1		4
8373	28860	MWIL	11	03	1515	S23	W02	11	3.5	3	(B)					
8373		HOLL	11	03	1520	S24	W01	11	3.6		B	BXO	20	3	4	4
8373		LEAR	11	04	0040	S22	W08	11	3.4		B	DSO	30	12	5	4
8373		VORO	11	04	0342	S22	W09	11	3.5			BXI	47	5	3	3

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

NOVEMBER 1998

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
8373		TACH	11 04 0512	S22 W10	11 3.4			BRO	15	8	3	3
8373		KAND	11 04 0930	S21 W10	11 3.6			BXO		13	10	4
8373		RAMY	11 04 1218	S23 W14	11 3.4		B	CAO	30	11	6	3
8373	28860	MWIL	11 04 1500	S22 W15	11 3.5	4	(B)					
8373		HOLL	11 04 1530	S22 W16	11 3.4		B	DSO	100	9	4	3
8373		VORO	11 04 2312	S20 W22	11 3.3			CAI	157	7	9	3
8373		LEAR	11 05 0035	S21 W20	11 3.5		B	CAO	20	13	5	4
8373		KAND	11 05 0820	S21 W24	11 3.5			BXO		7	4	3
8373		RAMY	11 05 1221	S22 W27	11 3.4		B	BXO	10	8	4	3
8373	28860	MWIL	11 05 1500	S22 W28	11 3.5	4	(BF)					
8373		HOLL	11 05 1555	S23 W26	11 3.6		B	CSO	60	6	5	3
8373		VORO	11 05 2319	S23 W32	11 3.5			DAI	202	7	4	3
8373		LEAR	11 06 0105	S21 W34	11 3.4		B	BXO	20	7	5	3
8373		RAMY	11 06 1244	S23 W38	11 3.6		A	AX		1		3
8373		TACH	11 09 0530	S18 W79	11 3.2			AXX	5	1	1	5
8374		TACH	10 29 0436	S18 E73	11 3.7			AXX	3	1	1	3
8374		LEAR	10 29 0527	S18 E75	11 3.9		A	HA	60	1	1	2
8374		SVTO	10 29 0710	S19 E79	11 4.3		A	HA	60	1	3	2
8374		KAND	10 29 0900	S18 E74	11 4.0			AX		3	3	5
8374		HOLL	10 29 1456	S17 E71	11 4.0		A	HS	50	1	2	4
8374		RAMY	10 29 1825	S16 E73	11 4.3		A	HS	30	1	2	2
8374		LEAR	10 30 0052	S18 E65	11 4.0		A	HA	30	3	2	4
8374		TACH	10 30 0528	S19 E62	11 3.9			AXX	15	1	1	4
8374		KAND	10 30 0730	S18 E62	11 4.0			HA		2	2	2
8374		SVTO	10 30 0730	S18 E64	11 4.2		A	HS	70	2	2	3
8374		RAMY	10 30 1442	S18 E58	11 4.0		A	HS	40	1	2	4
8374		HOLL	10 30 1455	S16 E58	11 4.0		A	HS	40	1	2	2
8374	28862	MWIL	10 30 1530	S18 E56	11 3.9	4	(AP)					
8374		LEAR	10 31 0049	S18 E50	11 3.8		B	CAO	30	3	2	3
8374		VORO	10 31 0116	S17 E53	11 4.1			HAX	43	1		3
8374		TACH	10 31 0556	S16 E49	11 4.0			AXX	25	1	2	4
8374		SVTO	10 31 0920	S18 E46	11 3.9		B	BXO	10	4	5	3
8374		RAMY	10 31 1210	S18 E45	11 3.9		A	AX	10	3	2	4
8374	28862	MWIL	10 31 1500	S18 E44	11 4.0	3	(AP)					
8374		HOLL	10 31 1656	S17 E43	11 4.0		A	BXO	20	2	3	3
8374		VORO	10 31 2239	S17 E40	11 4.0			AXX	13	1		3
8374		KAND	11 01 0945	S18 E34	11 4.0			AX		3	2	5
8374		RAMY	11 01 1230	S18 E31	11 3.9		A	AX	10	3	1	3
8374	28861	MWIL	11 01 1500	S18 E30	11 3.9	3	(AP)					
8374		RAMY	11 02 1340	S20 E17	11 3.9		A	AX	10	3	2	4
8374	28861	MWIL	11 03 1515	S17 E04	11 3.9	3	(AP)					
8374	28861	MWIL	11 04 1500	S17 W09	11 3.9	4	(AP)					
8374A		LEAR	11 01 0018	S29 E38	11 4.0		A	HR	10	2	2	3
8375B		TACH	11 08 0500	S21 W53	11 4.1			DAI	233	1	4	4
8375		HOLL	10 28 1830	N18 E89	11 4.5		A	HH	140	1	3	3
8375		VORO	10 28 2255	N18 E86	11 4.5			HAX	270	1		3
8375		TACH	10 29 0436	N18 E77	11 4.0			HSX	70	1	3	3
8375		LEAR	10 29 0527	N16 E78	11 4.1		A	HA	120	1	1	2
8375		SVTO	10 29 0710	N17 E80	11 4.4		A	HK	210	2	4	2
8375		KAND	10 29 0900	N18 E80	11 4.5			HS		2	3	5
8375		HOLL	10 29 1456	N19 E77	11 4.5		BG	CHO	210	3	5	4
8375		RAMY	10 29 1825	N20 E76	11 4.6		B	CSO	160	3	11	2
8375		LEAR	10 30 0052	N16 E70	11 4.3		B	CKO	170	4	11	4
8375		TACH	10 30 0528	N17 E67	11 4.3			HSX	150	1	4	4
8375		KAND	10 30 0730	N17 E68	11 4.5			CHO		4	6	2
8375		SVTO	10 30 0730	N18 E67	11 4.4		B	CHO	240	7	8	3
8375		RAMY	10 30 1442	N17 E65	11 4.5		B	CHO	330	5	9	4
8375		HOLL	10 30 1455	N19 E61	11 4.3		B	CHO	190	5	5	2
8375	28863	MWIL	10 30 1530	N18 E61	11 4.3	4	(AP)					
8375		LEAR	10 31 0049	N16 E57	11 4.3		B	CKO	170	5	10	3
8375		VORO	10 31 0116	N18 E57	11 4.4			HKX	346	1		3
8375		TACH	10 31 0556	N19 E53	11 4.3			HSX	200	1	4	4
8375		SVTO	10 31 0920	N17 E54	11 4.5		B	CKO	240	5	8	3
8375		RAMY	10 31 1210	N17 E51	11 4.4		B	CKO	310	8	9	4
8375	28863	MWIL	10 31 1500	N18 E48	11 4.3	5	(BP)					

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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
8375		HOLL	10 31 1656	N19 E48	11 4.4		B	CHO	280	7	6	3
8375		VORO	10 31 2239	N18 E45	11 4.4			HKX	368	2		3
8375		LEAR	11 01 0018	N15 E45	11 4.4		B	CKO	240	7	9	3
8375		TACH	11 01 0506	N17 E36	11 3.9			AXX	1	1	1	3
8375		TACH	11 01 0506	N18 E41	11 4.3			HAX	251	4	4	3
8375		SVTO	11 01 0716	N17 E42	11 4.5		B	CHO	290	3	6	2
8375		KAND	11 01 0945	N18 E39	11 4.4			CAO		6	5	5
8375		RAMY	11 01 1230	N18 E38	11 4.4		B	CAO	320	7	7	3
8375	28862	MWIL	11 01 1500	N18 E35	11 4.3	5	(BP)					
8375		LEAR	11 02 0050	N18 E32	11 4.5		B	CHO	140	13	8	4
8375		TACH	11 02 0516	N18 E27	11 4.3			HSX	363	6	6	3
8375		VORO	11 02 0545	N19 E28	11 4.4			HKX	399	5		2
8375		SVTO	11 02 1215	N19 E26	11 4.5		B	CKO	410	21	9	3
8375		KAND	11 02 1245	N18 E25	11 4.4			CSO		8	6	3
8375		RAMY	11 02 1340	N20 E25	11 4.5		B	CSO	300	24	12	4
8375	28862	MWIL	11 02 1500	N18 E22	11 4.3	6	(BG)					
8375		HOLL	11 02 1525	N18 E24	11 4.5		B	CSO	320	12	6	3
8375		VORO	11 02 2316	N18 E18	11 4.3			HKX	432	7		2
8375		LEAR	11 03 0030	N18 E19	11 4.5		B	CHO	230	17	7	3
8375		TACH	11 03 0416	N19 E19	11 4.6			CAI	445	10	10	2
8375		SVTO	11 03 0710	N19 E17	11 4.6		BG	EKI	390	21	13	3
8375		KAND	11 03 0725	N18 E13	11 4.3			CKO		9	5	3
8375		RAMY	11 03 1213	N19 E12	11 4.4		BG	CSO	290	29	12	4
8375	28862	MWIL	11 03 1515	N18 E09	11 4.3	6	(BG)					
8375		HOLL	11 03 1520	N18 E10	11 4.4		B	CHO	310	20	7	4
8375		LEAR	11 04 0040	N18 E06	11 4.5		BG	CSI	170	31	12	4
8375		VORO	11 04 0342	N18 E02	11 4.3			HKX	453	7		3
8375		TACH	11 04 0512	N19 E03	11 4.4			CAI	368	17	7	3
8375		KAND	11 04 0930	N18 W01	11 4.3			CAO		29	7	4
8375		RAMY	11 04 1218	N18 E01	11 4.6		BG	EAI	330	30	14	3
8375	28862	MWIL	11 04 1500	N18 W04	11 4.3	6	(BG)					
8375		HOLL	11 04 1530	N18 W06	11 4.2		B	DKI	390	23	8	3
8375		VORO	11 04 2312	N19 W09	11 4.3			HKX	559	18		3
8375		LEAR	11 05 0035	N18 W08	11 4.4		BG	DKI	240	38	9	4
8375		KAND	11 05 0820	N18 W15	11 4.2			DKI		32	7	3
8375		RAMY	11 05 1221	N18 W15	11 4.4		BG	EAI	290	44	11	3
8375	28862	MWIL	11 05 1500	N18 W18	11 4.2	5	(D)					
8375		HOLL	11 05 1555	N18 W17	11 4.4		BG	DKC	450	38	8	3
8375		VORO	11 05 2319	N19 W23	11 4.2			DKI	663	32	4	3
8375		LEAR	11 06 0105	N19 W22	11 4.4		BG	DAC	330	40	10	3
8375		TACH	11 06 0510	N21 W24	11 4.4			DAI	486	2	6	3
8375		KAND	11 06 0840	N17 W29	11 4.1			DAO		27	9	3
8375		RAMY	11 06 1244	N18 W29	11 4.3		BG	EKI	370	45	12	3
8375		SVTO	11 06 1414	N18 W33	11 4.1		B	EKI	420	28	14	2
8375	28862	MWIL	11 06 1515	N18 W32	11 4.2	5	(D)					
8375		LEAR	11 07 0013	N18 W36	11 4.3		BG	EAI	210	33	12	3
8375		VORO	11 07 0323	N18 W37	11 4.3			DKI	517	20	7	3
8375		TACH	11 07 0436	N19 W37	11 4.4			DAI	500	2	8	2
8375		KAND	11 07 0750	N18 W40	11 4.3			DAI		20	10	3
8375		RAMY	11 07 1233	N18 W43	11 4.2		BG	EKI	360	55	11	4
8375	28862	MWIL	11 07 1530	N18 W45	11 4.2	5	(D)					
8375		HOLL	11 07 1550	N19 W45	11 4.2		BG	DSC	360	31	10	4
8375		VORO	11 07 2334	N20 W48	11 4.3			DKI	799	22	7	3
8375		LEAR	11 08 0028	N18 W49	11 4.3		BGD	EKI	380	37	12	3
8375		TACH	11 08 0500	N21 W53	11 4.1			BRO	73	2	5	4
8375		RAMY	11 08 1315	N19 W57	11 4.2		B	EKI	1290	33	14	3
8375		HOLL	11 08 1512	N19 W58	11 4.2		BG	DKC	480	33	10	3
8375		VORO	11 08 2300	N21 W63	11 4.1			DKI	1181	7	4	3
8375		LEAR	11 09 0032	N22 W63	11 4.2		BG	EKC	420	31	13	4
8375		TACH	11 09 0530	N22 W64	11 4.3			DAI	561	12	8	5
8375		SVTO	11 09 0740	N20 W68	11 4.1		B	FHI	1100	25	16	3
8375		KAND	11 09 0800	N21 W66	11 4.3			DAI		26	10	3
8375		RAMY	11 09 1315	N19 W70	11 4.2		B	EKI	710	18	13	1
8375	28862	MWIL	11 09 1530	N21 W68	11 4.4	5	(B)					
8375		HOLL	11 09 1655	N21 W70	11 4.3		BG	DKC	750	8	9	1
8375		VORO	11 09 2259	N20 W74	11 4.3			DKI	1050	4	9	3
8375		LEAR	11 10 0112	N22 W76	11 4.2		BG	EKI	640	26	13	3
8375		TACH	11 10 0539	N20 W82	11 4.0			EAI	760	17	14	3
8375		RAMY	11 10 1443	N19 W80	11 4.5		B	EKI	510	7	14	3

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8375	28862	MWIL	11 10 1515	N21 W81	11 4.4	5	(AF)					
8375		HOLL	11 10 1705	N22 W81	11 4.5		BG	DKC	660	6	8	4
8375		VORO	11 11 2318	N23 W89	11 5.1			HAX	222	1		3
8375A	28865	MWIL	10 31 1500	N14 E53	11 4.6	4	(AP)					
8382	28872	MWIL	11 06 1515	N18 W15	11 5.5	4	(AF)					
8382		LEAR	11 07 0013	N18 W18	11 5.6		A	AX		1		3
8382		VORO	11 07 0323	N22 W18	11 5.7			AXX	31	5		3
8382		TACH	11 07 0436	N19 W21	11 5.6			AR	8	5	2	2
8382		KAND	11 07 0750	N18 W24	11 5.5			BXO		4	4	3
8382		RAMY	11 07 1233	N18 W27	11 5.5		B	BXO	10	5	4	4
8382	28872	MWIL	11 07 1530	N19 W28	11 5.5	4	(B)					
8382		HOLL	11 07 1550	N19 W28	11 5.5		B	BXO	20	6	5	4
8382		LEAR	11 08 0028	N18 W34	11 5.4		B	CRO	10	4	6	3
8382		RAMY	11 08 1315	N18 W40	11 5.5		B	BXO	20	5	7	3
8382A		KAND	11 07 0750	S26 W15	11 6.2			AX		1		3
8381		RAMY	11 05 1221	N22 E21	11 7.1		B	BXO		5	4	3
8381	28871	MWIL	11 05 1500	N21 E20	11 7.1	4	(B)					
8381		HOLL	11 05 1555	N21 E20	11 7.2		B	BXO	20	5	3	3
8381		VORO	11 05 2319	N24 E25	11 7.9			AXX	24	3		3
8381		LEAR	11 06 0105	N21 E14	11 7.1		B	CAO	10	5	3	3
8381		TACH	11 06 0510	N22 E12	11 7.1			CAO	302	3	3	3
8381		KAND	11 06 0840	N21 E10	11 7.1			DSO		2	4	3
8381		RAMY	11 06 1244	N21 E08	11 7.1		B	BXO	10	3	3	3
8381		SVTO	11 06 1414	N21 E06	11 7.0		B	BXO	10	3	4	2
8381	28871	MWIL	11 06 1515	N21 E07	11 7.2	4	(B)					
8381		LEAR	11 07 0013	N21 E02	11 7.2		B	BXO	10	2	3	3
8381		VORO	11 07 0323	N25 E08	11 7.8			BXO	16	2	3	3
8381		TACH	11 07 0436	N18 E00	11 7.2			BRO	6	2	4	2
8381		KAND	11 07 0750	N21 W02	11 7.2			BXO		4	5	3
8381		RAMY	11 07 1233	N22 W05	11 7.1		B	BXO	10	6	4	4
8381	28871	MWIL	11 07 1530	N22 W06	11 7.2	4	(B)					
8381		HOLL	11 07 1550	N22 W07	11 7.1		B	BXO	20	5	4	4
8381		VORO	11 07 2334	N21 W12	11 7.1			AXX	18	4		3
8381		LEAR	11 08 0028	N21 W11	11 7.2		B	BXO	10	2	4	3
8381		RAMY	11 08 1315	N22 W17	11 7.2		A	AX	10	3	1	3
8381		HOLL	11 08 1512	N22 W19	11 7.2		B	CSO	20	3	3	3
8377		VORO	11 02 0545	N22 E86	11 8.8			HAX	102	1		2
8377		SVTO	11 02 1215	N21 E82	11 8.8		A	HS	30	2	2	3
8377		KAND	11 02 1245	N21 E83	11 8.9			HA		1	2	3
8377	28866	MWIL	11 02 1500	N22 E78	11 8.6	4	(AP)					
8377		HOLL	11 02 1525	N22 E78	11 8.6		A	AX	50	1	1	3
8377		VORO	11 02 2316	N22 E76	11 8.8			HAX	224	1		2
8377		LEAR	11 03 0030	N21 E73	11 8.6		A	HA	60	2	2	3
8377		TACH	11 03 0416	N22 E74	11 8.9			HSX	50	1	3	2
8377		SVTO	11 03 0710	N21 E73	11 8.9		B	CSO	140	3	4	3
8377		KAND	11 03 0725	N22 E71	11 8.8			HS		1	2	3
8377		RAMY	11 03 1213	N22 E69	11 8.8		B	CAO	90	4	3	4
8377	28866	MWIL	11 03 1515	N21 E66	11 8.7	4	(B)					
8377		HOLL	11 03 1520	N22 E68	11 8.9		B	CSO	170	4	4	4
8377		LEAR	11 04 0040	N21 E61	11 8.7		B	CAO	50	6	5	4
8377		VORO	11 04 0342	N22 E60	11 8.8			HAX	117	2		3
8377		TACH	11 04 0512	N23 E60	11 8.8			HH	50	2	2	3
8377		KAND	11 04 0930	N22 E57	11 8.8			CAO		5	3	4
8377		RAMY	11 04 1218	N22 E55	11 8.7		B	DAO	100	7	3	3
8377	28866	MWIL	11 04 1500	N22 E54	11 8.8	5	(BP)					
8377		HOLL	11 04 1530	N22 E53	11 8.7		A	HA	140	4	2	3
8377		VORO	11 04 2312	N23 E52	11 9.0			HAX	208	3		3
8377		LEAR	11 05 0035	N21 E49	11 8.8		B	CAO	110	8	5	4
8377		KAND	11 05 0820	N21 E44	11 8.7			CAO		6	4	3
8377		RAMY	11 05 1221	N22 E42	11 8.7		A	HA	170	4	3	3
8377	28866	MWIL	11 05 1500	N21 E40	11 8.7	5	(BP)					
8377		HOLL	11 05 1555	N21 E40	11 8.7		B	CAO	30	3	2	3
8377		VORO	11 05 2319	N22 E37	11 8.8			HAX	237	2		3
8377		LEAR	11 06 0105	N21 E36	11 8.8		B	CAO	120	8	4	3

S U N S P O T G R O U P S
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8377		TACH	11	06	0510	N22	E32	11	8.7			HSX	120	1	2	3
8377		KAND	11	06	0840	N22	E30	11	8.7			HS		3	3	3
8377		RAMY	11	06	1244	N22	E29	11	8.7		B	CAO	150	8	5	3
8377		SVTO	11	06	1414	N22	E29	11	8.8		B	CAO	200	4	5	2
8377	28866	MWIL	11	06	1515	N22	E27	11	8.7	5	(BG)					
8377		LEAR	11	07	0013	N21	E22	11	8.7		B	CAO	110	5	4	3
8377		VORO	11	07	0323	N22	E21	11	8.7			HKX	230	3		3
8377		TACH	11	07	0436	N26	E19	11	8.7			HHX	330	3	3	2
8377		KAND	11	07	0750	N22	E18	11	8.7			CKO		7	5	3
8377		RAMY	11	07	1233	N23	E15	11	8.7		B	CAO	170	7	3	4
8377	28866	MWIL	11	07	1530	N22	E14	11	8.7	5	(BP)					
8377		HOLL	11	07	1550	N23	E15	11	8.8		B	CSO	160	5	5	4
8377		VORO	11	07	2334	N22	E10	11	8.7			HKX	274	7		3
8377		LEAR	11	08	0028	N22	E12	11	8.9		B	CAO	120	13	8	3
8377		TACH	11	08	0500	N22	E06	11	8.7			HSX	300	2	3	4
8377		RAMY	11	08	1315	N23	E05	11	8.9		B	CSO	190	20	8	3
8377		HOLL	11	08	1512	N23	E03	11	8.9		B	CSO	160	6	7	3
8377		VORO	11	08	2300	N22	W03	11	8.7			HKX	239	3		3
8377		LEAR	11	09	0032	N23	W02	11	8.9		B	CAO	80	10	8	4
8377		TACH	11	09	0530	N22	W03	11	9.0			CAO	255	4	6	5
8377		SVTO	11	09	0740	N23	W06	11	8.8		B	CAO	200	16	8	3
8377		KAND	11	09	0800	N22	W08	11	8.7			CAO		4	4	3
8377		RAMY	11	09	1315	N21	W13	11	8.5		B	CAO	120	3	3	1
8377	28866	MWIL	11	09	1530	N21	W12	11	8.7	5	(AP)					
8377		HOLL	11	09	1655	N22	W12	11	8.8		A	HH	110	3	4	1
8377		VORO	11	09	2259	N22	W17	11	8.6			HAX	86	1		3
8377		LEAR	11	10	0112	N23	W17	11	8.7		B	CAO	100	9	5	3
8377		TACH	11	10	0539	N22	W20	11	8.7			HHX	304	6	3	3
8377		RAMY	11	10	1443	N21	W26	11	8.6		B	CSO	110	7	4	3
8377	28866	MWIL	11	10	1515	N21	W24	11	8.8	5	(BP)					
8377		HOLL	11	10	1705	N22	W25	11	8.8		B	CSO	100	10	6	4
8377		VORO	11	10	2359	N22	W29	11	8.8			HAX	181	2		3
8377		KAND	11	11	1005	N22	W36	11	8.6			CSO		4	3	4
8377		RAMY	11	11	1322	N22	W37	11	8.7		B	CAO	110	5	4	3
8377		HOLL	11	11	1508	N22	W38	11	8.7		B	CSO	100	4	3	3
8377		VORO	11	11	2318	N22	W43	11	8.7			HAX	134	1		3
8377		LEAR	11	12	0023	N22	W42	11	8.8		B	CSO	110	5	4	4
8377		KAND	11	12	0820	N22	W48	11	8.6			CAO		3	5	4
8377		SVTO	11	12	1125	N22	W49	11	8.7		A	HS	100	1	2	1
8377	28866	MWIL	11	12	1530	N22	W52	11	8.6	4	(AP)					
8377		LEAR	11	13	0020	N23	W55	11	8.8		A	HS	70	1	1	3
8377		KAND	11	13	0720	N22	W60	11	8.7			HS		1	2	3
8377	28866	MWIL	11	13	1515	N22	W64	11	8.7	4	(AP)					
8377		HOLL	11	13	1549	N22	W65	11	8.7		A	HA	30	1	2	4
8377		RAMY	11	13	1900	N21	W67	11	8.6		A	HS	70	1	2	2
8377		LEAR	11	14	0020	N23	W69	11	8.7		A	HS	60	1	1	3
8377		RAMY	11	14	1345	N22	W79	11	8.5		A	HS	30	1	2	4
8377		HOLL	11	14	1515	N21	W73	11	9.0		B	DSO	240	3	8	4
8377	28866	MWIL	11	14	1530	N22	W77	11	8.7	4	(AP)					
8377		LEAR	11	15	0022	N22	W80	11	8.9		A	AX		1		3
8380		VORO	11	04	0342	S21	E67	11	9.3			AXX	28	1		3
8380	28870	MWIL	11	04	1500	S21	E69	11	9.9	4	(AP)					
8380		LEAR	11	05	0035	S22	E62	11	9.8		A	AX	10	1	1	4
8380		KAND	11	05	0820	S21	E60	11	9.9			AX		1		3
8380		RAMY	11	05	1221	S21	E57	11	9.9		A	AX		1		3
8380	28870	MWIL	11	05	1500	S21	E56	11	9.9	4	(AP)					
8380		HOLL	11	05	1555	S20	E55	11	9.9		A	AX	10	1	1	3
8380		VORO	11	05	2319	S20	E52	11	9.9			AXX	16	1		3
8380		LEAR	11	06	0105	S22	E49	11	9.8		A	AX		1		3
8380		TACH	11	06	0510	S21	E48	11	9.9			AXX	3	1	1	3
8380		KAND	11	06	0840	S22	E44	11	9.7			AX		1	1	3
8380		RAMY	11	06	1244	S21	E44	11	9.9		A	AX		1		3
8380	28870	MWIL	11	06	1515	S21	E43	11	9.9	3	(AP)					
8380		VORO	11	07	0323	S21	E29	11	9.4			AXX	17	2		3
8380		TACH	11	07	0436	S20	E41	11	10.3			AXX	2	1	1	2
8380		KAND	11	07	0750	S22	E38	11	10.2			BXO		4	3	3
8380		RAMY	11	07	1233	S21	E36	11	10.3		B	BXO	10	7	3	4
8380	28870	MWIL	11	07	1530	S22	E34	11	10.2	4	(B)					

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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
8380		HOLL	11 07	1550	S22 E34	11 10.3		A	AX	10	3	2	4
8378		RAMY	11 03	1213	N14 E82	11 9.7		A	HA	50	1	4	4
8378	28865	MWIL	11 03	1515	N14 E80	11 9.7	5	(AP)					
8378		HOLL	11 03	1520	N14 E78	11 9.5		A	HS	120	1	2	4
8378		LEAR	11 04	0040	N13 E75	11 9.7		A	HA	60	1	3	4
8378		VORO	11 04	0342	N14 E76	11 9.9			HAX	228	1		3
8378		TACH	11 04	0512	N15 E76	11 10.0			HSX	60	1	2	3
8378		KAND	11 04	0930	N14 E72	11 9.8			HS		1	3	4
8378		RAMY	11 04	1218	N14 E68	11 9.6		A	HA	170	4	2	3
8378	28868	MWIL	11 04	1500	N14 E67	11 9.7	5	(AP)					
8378		HOLL	11 04	1530	N14 E67	11 9.7		A	HS	140	1	2	3
8378		VORO	11 04	2312	N15 E66	11 10.0			HAX	192	1		3
8378		LEAR	11 05	0035	N13 E62	11 9.7		A	HS	120	1	2	4
8378		KAND	11 05	0820	N14 E59	11 9.8			HA		1	2	3
8378		RAMY	11 05	1221	N14 E56	11 9.7		A	HS	100	1	2	3
8378	28868	MWIL	11 05	1500	N14 E54	11 9.7	5	(AP)					
8378		HOLL	11 05	1555	N14 E53	11 9.7		A	HS	30	1	2	3
8378		VORO	11 05	2319	N14 E50	11 9.7			HHX	226	1		3
8378		LEAR	11 06	0105	N13 E48	11 9.7		A	HS	120	1	2	3
8378		TACH	11 06	0510	N14 E46	11 9.7			AR	8	3	2	3
8378		KAND	11 06	0840	N14 E44	11 9.7			HS		1	2	3
8378		RAMY	11 06	1244	N14 E43	11 9.8		B	CSO	130	2	5	3
8378		SVTO	11 06	1414	N13 E41	11 9.7		A	HS	140	1	2	2
8378	28868	MWIL	11 06	1515	N14 E41	11 9.7	5	(BP)					
8378		LEAR	11 07	0013	N13 E35	11 9.6		A	HS	90	1	2	3
8378		VORO	11 07	0323	N14 E35	11 9.8			HHX	195	1		3
8378		TACH	11 07	0436	N14 E33	11 9.7			HSX	200	1	3	2
8378		KAND	11 07	0750	N13 E31	11 9.7			HA		1	2	3
8378		RAMY	11 07	1233	N15 E29	11 9.7		A	HS	160	2	3	4
8378	28868	MWIL	11 07	1530	N14 E28	11 9.8	5	(AP)					
8378		HOLL	11 07	1550	N13 E28	11 9.8		A	HS	140	2	3	4
8378		VORO	11 07	2334	N14 E23	11 9.7			HHX	249	2		3
8378		LEAR	11 08	0028	N13 E22	11 9.7		A	HS	110	6	3	3
8378		TACH	11 08	0500	N14 E19	11 9.6			HSX	200	1	3	4
8378		RAMY	11 08	1315	N15 E16	11 9.8		A	HS	160	3	4	3
8378		HOLL	11 08	1512	N15 E12	11 9.5		B	CSO	140	2	4	3
8378		VORO	11 08	2300	N14 E11	11 9.8			HHX	187	1		3
8378		LEAR	11 09	0032	N14 E09	11 9.7		A	HS	150	1	3	4
8378		TACH	11 09	0530	N14 E07	11 9.7			HSX	400	1	3	5
8378		SVTO	11 09	0740	N14 E05	11 9.7		A	HS	200	1	3	3
8378		KAND	11 09	0800	N14 E06	11 9.8			HA		1	2	3
8378		RAMY	11 09	1315	N14 E00	11 9.5		A	HS	150	1	2	1
8378	28868	MWIL	11 09	1530	N13 E01	11 9.7	5	(AP)					
8378		HOLL	11 09	1655	N13 E02	11 9.8		A	HH	150	1	3	1
8378		VORO	11 09	2259	N14 W03	11 9.7			HAX	122	1		3
8378		LEAR	11 10	0112	N14 W04	11 9.7		A	HS	130	1	3	3
8378		TACH	11 10	0539	N13 W07	11 9.7			HHX	450	1	3	3
8378		RAMY	11 10	1443	N13 W12	11 9.7		A	HS	170	1	2	3
8378	28868	MWIL	11 10	1515	N14 W12	11 9.7	5	(AP)					
8378		HOLL	11 10	1705	N14 W12	11 9.8		A	HS	90	1	2	4
8378		KAND	11 11	1005	N14 W23	11 9.7			CAO		2	4	4
8378		RAMY	11 11	1322	N14 W25	11 9.7		B	CSO	150	2	3	3
8378		HOLL	11 11	1508	N15 W22	11 10.0		B	CSO	130	3	9	3
8378		VORO	11 11	2318	N14 W26	11 10.0			HAX	163	1		3
8378		LEAR	11 12	0023	N14 W30	11 9.7		A	HS	120	1	3	4
8378		KAND	11 12	0820	N15 W34	11 9.8			HA		1	2	4
8378		SVTO	11 12	1125	N15 W37	11 9.7		A	HS	110	1	2	1
8378	28868	MWIL	11 12	1530	N15 W38	11 9.8	4	(AP)					
8378		VORO	11 12	2359	N14 W46	11 9.5			HAX	150	1		3
8378		LEAR	11 13	0020	N16 W42	11 9.8		A	HS	140	1	2	3
8378		KAND	11 13	0720	N15 W47	11 9.7			HS		1	2	3
8378	28868	MWIL	11 13	1515	N15 W51	11 9.8	5	(AP)					
8378		HOLL	11 13	1549	N14 W52	11 9.7		A	HS	110	1	2	4
8378		RAMY	11 13	1900	N14 W53	11 9.8		A	HS	90	1	2	2
8378		LEAR	11 14	0020	N16 W56	11 9.8		A	HS	70	2	2	3
8378		TACH	11 14	0426	N15 W59	11 9.7			HSX	150	1	2	3
8378		RAMY	11 14	1345	N15 W65	11 9.6		A	HS	110	1	2	4
8378		HOLL	11 14	1515	N13 W64	11 9.8		A	HS	180	1	2	4

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8378	28868	MWIL	11	14	1530	N15	W64	11	9.8	5	(AP)					
8378		LEAR	11	15	0022	N15	W68	11	9.9		A	HS	50	1	2	3
8378		VORO	11	15	0025	N14	W72	11	9.6			HAX	288	3		2
8378		TACH	11	15	0452	N15	W73	11	9.7			HSX	50	1	2	4
8378	28868	MWIL	11	15	1530	N15	W77	11	9.8	4	(AP)					
8385		KAND	11	11	1005	N19	W24	11	9.6			BXO		2	3	4
8385		RAMY	11	11	1322	N19	W25	11	9.6		B	BXO		6	4	3
8385		HOLL	11	11	1508	N19	W27	11	9.6		B	BXO	10	6	5	3
8385		LEAR	11	12	0023	N19	W32	11	9.6		B	BXO	10	8	7	4
8385		KAND	11	12	0820	N20	W36	11	9.6			BXO		10	6	4
8385		SVTO	11	12	1125	N19	W39	11	9.5		B	CAO	30	6	5	1
8385	28876	MWIL	11	12	1530	N20	W40	11	9.6	3	(B)					
8385		LEAR	11	13	0020	N21	W43	11	9.7		B	DSO	50	15	9	3
8385		KAND	11	13	0720	N20	W49	11	9.5			CSO		7	9	3
8385	28876	MWIL	11	13	1515	N20	W53	11	9.6	4	(BG)					
8385		HOLL	11	13	1549	N19	W56	11	9.4		B	ESO	150	14	12	4
8385		RAMY	11	13	1900	N20	W56	11	9.5		B	DAO	50	10	10	2
8385		VORO	11	13	2310	N20	W61	11	9.3			DAI	270	9	15	2
8385		LEAR	11	14	0020	N22	W58	11	9.5		B	DSO	110	7	10	3
8385		TACH	11	14	0426	N22	W63	11	9.3			DAO	140	3	20	3
8385		RAMY	11	14	1345	N19	W65	11	9.6		B	EAO	140	8	13	4
8385		HOLL	11	14	1515	N21	W62	11	9.9		B	DAO	80	3	5	4
8385	28876	MWIL	11	14	1530	N21	W65	11	9.7	4	(B)					
8385		LEAR	11	15	0022	N21	W69	11	9.7		B	ESO	90	3	12	3
8385		VORO	11	15	0025	N21	W70	11	9.6			HAX	127	1		2
8385		TACH	11	15	0452	N21	W72	11	9.7			HSX	100	3	2	4
8385	28876	MWIL	11	15	1530	N22	W75	11	9.9	4	(AF)					
8385		TACH	11	16	0535	N23	W81	11	10.0			HRX	20	1	1	4
8385A		RAMY	11	04	1218	S21	E71	11	9.9		A	AX		1		3
8385A		HOLL	11	04	1530	S20	E68	11	9.8		A	AX	20	1	1	3
8385B		SVTO	11	03	0710	N24	E89	11	10.2		A	A	90	1	4	3
8385C	28875	MWIL	11	10	1515	N16	W00	11	10.6	4	(AP)					
8385C		KAND	11	11	1005	N16	W14	11	10.3			AX		2	1	4
8385C		RAMY	11	11	1322	N16	W16	11	10.3		A	AX		1		3
8383A	28880	MWIL	11	15	1530	S19	W34	11	13.0	4	(B)					
8383A		TACH	11	16	0535	S19	W43	11	12.9			AXX	5	1	1	4
8383A		KAND	11	16	1250	S20	W45	11	13.1			BXO		5	6	3
8383A	28880	MWIL	11	16	1530	S20	W47	11	13.0	4	(B)					
8383C	28882	MWIL	11	17	1530	N19	W42	11	14.4	3	(B)					
8383		RAMY	11	08	1315	S13	E80	11	14.6		A	BR	50	1	5	3
8383		HOLL	11	08	1512	S14	E80	11	14.7		A	HS	30	1	2	3
8383		VORO	11	08	2300	S14	E75	11	14.6			HAX	101	1		3
8383		LEAR	11	09	0032	S16	E72	11	14.5		B	CAO	30	4	4	4
8383		TACH	11	09	0530	S17	E75	11	14.9			HSX	50	1	1	5
8383		SVTO	11	09	0740	S15	E72	11	14.8		B	DSO	200	5	5	3
8383		KAND	11	09	0800	S14	E72	11	14.8			CAO		5	5	3
8383		RAMY	11	09	1315	S13	E67	11	14.6		B	CSO	40	5	3	1
8383	28873	MWIL	11	09	1530	S14	E65	11	14.5	4	(AP)					
8383		HOLL	11	09	1655	S16	E64	11	14.5		A	HS	50	1	2	1
8383		VORO	11	09	2259	S14	E61	11	14.6			HAX	87	1		3
8383		LEAR	11	10	0112	S15	E61	11	14.7		B	CSO	80	3	3	3
8383		TACH	11	10	0539	S14	E58	11	14.6			HSX	107	3	2	3
8383		RAMY	11	10	1443	S13	E59	11	15.1		B	CSO	60	8	13	3
8383	28873	MWIL	11	10	1515	S14	E53	11	14.6	4	(BP)					
8383		HOLL	11	10	1705	S16	E56	11	14.9		B	CRO	60	10	12	4
8383		VORO	11	10	2359	S13	E50	11	14.8			HAX	75	2		3
8383		KAND	11	11	1005	S15	E46	11	14.9			CAO		7	11	4
8383		RAMY	11	11	1322	S15	E45	11	15.0		B	CSO	60	14	10	3
8383		HOLL	11	11	1508	S15	E44	11	15.0		B	CAO	80	13	11	3
8383		VORO	11	11	2318	S15	E40	11	15.0			CAO	155	2	8	3
8383		LEAR	11	12	0023	S16	E39	11	15.0		B	EAO	100	18	11	4
8383		KAND	11	12	0820	S15	E36	11	15.1			EAO		11	11	4

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8383		SVTO	11 12	1125	S17 E32	11 14.9		B	ESO	70	8	11	1
8383	28873	MWIL	11 12	1530	S15 E31	11 15.0	4	(B)					
8383		LEAR	11 13	0020	S16 E26	11 15.0		B	ESO	80	12	11	3
8383		KAND	11 13	0720	S15 E22	11 15.0			ESO		12	12	3
8383	28873	MWIL	11 13	1515	S15 E19	11 15.1	5	(B)					
8383		HOLL	11 13	1549	S16 E18	11 15.0		B	ESO	100	8	12	4
8383		RAMY	11 13	1900	S15 E17	11 15.1		B	ESO	80	8	11	2
8383		VORO	11 13	2310	S15 E15	11 15.1			DAI	153	4	10	2
8383		LEAR	11 14	0020	S16 E14	11 15.1		B	ESO	120	7	11	3
8383		TACH	11 14	0426	S13 E11	11 15.0			DAO	96	5	10	3
8383		RAMY	11 14	1345	S15 E06	11 15.0		B	ESO	120	23	12	4
8383		HOLL	11 14	1515	S15 E07	11 15.2		B	ESO	100	10	12	4
8383	28873	MWIL	11 14	1530	S14 E05	11 15.0	5	(B)					
8383		LEAR	11 15	0022	S15 E01	11 15.1		B	ESO	80	10	13	3
8383		VORO	11 15	0025	S15 E01	11 15.1			CAI	161	4	11	2
8383		TACH	11 15	0452	S14 W02	11 15.0			CAO	95	6	11	4
8383	28873	MWIL	11 15	1530	S14 W08	11 15.0	5	(BG)					
8383		TACH	11 16	0535	S13 W19	11 14.8			AR	45	5	1	4
8383		KAND	11 16	1250	S14 W24	11 14.7			DAO		11	4	3
8383	28873	MWIL	11 16	1530	S14 W21	11 15.0	4	(BG)					
8383		VORO	11 16	2315	S15 W30	11 14.7			CAI	136	5	1	2
8383		KAND	11 17	0815	S13 W35	11 14.7			CSO		8	6	5
8383	28873	MWIL	11 17	1530	S13 W39	11 14.7	4	(BG)					
8383		VORO	11 17	2315	S14 W45	11 14.6			BXI	57	5	4	3
8383		TACH	11 18	0654	S13 W48	11 14.7			BRO	40	4	3	2
8383		KAND	11 18	1150	S14 W51	11 14.6			AX		2	1	3
8383	28873	MWIL	11 18	1530	S14 W53	11 14.6	4	(BF)					
8383		VORO	11 18	2315	S13 W57	11 14.7			AXX	26	1		3
8383		TACH	11 19	0430	S12 W60	11 14.7			AXX	5	1	1	3
8383	28884	MWIL	11 19	1545	S17 W61	11 15.0	4	(AP)					
8383B		TACH	11 20	0533	S16 W61	11 15.6			BRO	18	3	8	4
8383B	28885	MWIL	11 20	1515	S16 W65	11 15.7	4	(BP)					
8384		RAMY	11 09	1315	S26 E84	11 16.1		A	HH	170	1	3	1
8384	28874	MWIL	11 09	1530	S27 E80	11 15.9	3	(AP)					
8384		HOLL	11 09	1655	S28 E77	11 15.7		A	HS	120	1	2	1
8384		VORO	11 09	2259	S27 E75	11 15.8			HAX	316	1		3
8384		LEAR	11 10	0112	S27 E75	11 15.9		A	HH	160	1	3	3
8384		TACH	11 10	0539	S28 E74	11 16.0			HHX	350	2	3	3
8384		RAMY	11 10	1443	S26 E70	11 16.0		B	CKO	420	3	6	3
8384	28874	MWIL	11 10	1515	S27 E68	11 15.9	5	(AP)					
8384		HOLL	11 10	1705	S28 E68	11 16.0		A	HK	440	3	4	4
8384		VORO	11 10	2359	S27 E67	11 16.2			HKX	379	1		3
8384		KAND	11 11	1005	S27 E62	11 16.2			HK		5	6	4
8384		RAMY	11 11	1322	S27 E58	11 16.1		A	HK	560	4	6	3
8384		HOLL	11 11	1508	S27 E56	11 16.0		A	HK	660	3	5	3
8384		VORO	11 11	2318	S27 E52	11 16.0			HKX	764	1		3
8384		LEAR	11 12	0023	S28 E51	11 16.0		B	CKO	440	5	7	4
8384		KAND	11 12	0820	S28 E47	11 16.0			DKO		5	6	4
8384		SVTO	11 12	1125	S27 E45	11 16.0		A	HK	600	3	9	1
8384	28874	MWIL	11 12	1530	S27 E43	11 16.0	5	(AP)					
8384		LEAR	11 13	0020	S28 E39	11 16.1		B	CHO	560	7	6	3
8384		KAND	11 13	0720	S28 E35	11 16.0			DKO		3	6	3
8384	28874	MWIL	11 13	1515	S28 E30	11 16.0	6	(D)					
8384		HOLL	11 13	1549	S27 E32	11 16.1		B	CHO	410	8	9	4
8384		RAMY	11 13	1900	S27 E29	11 16.0		B	DKO	540	3	6	2
8384		VORO	11 13	2310	S27 E26	11 16.0			HKX	687	3		2
8384		LEAR	11 14	0020	S28 E25	11 16.0		B	CHO	470	5	9	3
8384		TACH	11 14	0426	S28 E26	11 16.2			CAO	902	5	6	3
8384		RAMY	11 14	1345	S28 E20	11 16.1		B	DKO	570	18	9	4
8384		HOLL	11 14	1515	S27 E19	11 16.1		B	DHO	500	11	7	4
8384	28874	MWIL	11 14	1530	S28 E18	11 16.0	5	(BG)					
8384		LEAR	11 15	0022	S28 E14	11 16.1		B	DHO	480	8	9	3
8384		VORO	11 15	0025	S28 E12	11 15.9			HKX	422	7		2
8384		TACH	11 15	0452	S28 E12	11 16.1			HAX	582	5	5	4
8384	28874	MWIL	11 15	1530	S28 E06	11 16.1	5	(BP)					
8384		TACH	11 16	0535	S28 W01	11 16.1			CAX	671	5	6	4
8384		KAND	11 16	1250	S28 W05	11 16.1			DKO		11	9	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
8384	28874	MWIL	11	16	1530	S28	W06	11	16.2	5	(D)					
8384		VORO	11	16	2315	S29	W10	11	16.2			DKI	625	7	5	2
8384		KAND	11	17	0815	S28	W16	11	16.1			DKO		10	8	5
8384	28874	MWIL	11	17	1530	S28	W21	11	16.0	5	(BP)					
8384		VORO	11	17	2315	S29	W24	11	16.1			DKI	629	6	4	3
8384		TACH	11	18	0654	S28	W26	11	16.2			CAI	607	11	5	2
8384		KAND	11	18	1150	S28	W29	11	16.2			DHO		11	9	3
8384	28874	MWIL	11	18	1530	S28	W32	11	16.1	5	(BG)					
8384		VORO	11	18	2315	S30	W35	11	16.2			DKI	578	7	5	3
8384		TACH	11	19	0430	S27	W41	11	16.0			HA	690	8	3	3
8384		KAND	11	19	0715	S28	W41	11	16.1			HK		3	6	3
8384	28874	MWIL	11	19	1545	S28	W45	11	16.1	5	(AP)					
8384		VORO	11	19	2325	S28	W50	11	16.1			HKX	499	6		3
8384		TACH	11	20	0533	S27	W53	11	16.1			HA	602	5	4	4
8384	28874	MWIL	11	20	1515	S27	W58	11	16.1	5	(BG)					
8384		VORO	11	21	0010	S28	W64	11	16.0			HKX	547	3		3
8384		TACH	11	21	0608	S26	W65	11	16.2			HA	215	2	3	3
8384	28874	MWIL	11	21	1515	S27	W70	11	16.2	5	(AP)					
8384		VORO	11	21	2335	S28	W76	11	16.0			HAX	339	1		2
8384		LEAR	11	22	0005	S25	W74	11	16.3		B	CKO	330	6	8	4
8384		TACH	11	22	0456	S28	W79	11	16.0			HSX	100	2	4	4
8384	28874	MWIL	11	22	1515	S27	W81	11	16.3	4	AP					
8388		LEAR	11	14	0020	N20	E53	11	18.1		A	AX		1		3
8388		TACH	11	14	0426	N22	E51	11	18.1			AR	3	1	1	3
8388		RAMY	11	14	1345	N23	E46	11	18.1		B	CSO	30	7	5	4
8388		HOLL	11	14	1515	N23	E47	11	18.2		B	CSO	40	4	4	4
8388	28879	MWIL	11	14	1530	N22	E46	11	18.2	4	(B)					
8388		LEAR	11	15	0022	N21	E42	11	18.2		B	CSO	30	4	6	3
8388		TACH	11	15	0452	N22	E37	11	18.0			AR	2	2	2	4
8388	28879	MWIL	11	15	1530	N22	E33	11	18.2	4	(BP)					
8388		TACH	11	16	0535	N22	E25	11	18.1			BXO	6	3	4	4
8388		KAND	11	16	1250	N21	E18	11	17.9			AX		2		3
8388	28879	MWIL	11	16	1530	N22	E20	11	18.2	4	(B)					
8388	28879	MWIL	11	17	1530	N21	E06	11	18.1	4	(B)					
8386	28877	MWIL	11	12	1530	S21	E73	11	18.2	3	AP					
8386		LEAR	11	13	0020	S21	E71	11	18.4		B	BXO		2	5	3
8386		KAND	11	13	0720	S21	E65	11	18.3			AX		3	1	3
8386	28877	MWIL	11	13	1515	S21	E60	11	18.2	4	(AP)					
8386		HOLL	11	13	1549	S20	E60	11	18.2		A	AX	20	3	2	4
8386		RAMY	11	13	1900	S20	E58	11	18.2		A	AX		1		2
8386		VORO	11	13	2310	S20	E57	11	18.3			AXX	27	2		2
8386		LEAR	11	14	0020	S22	E56	11	18.3		A	HS	40	1	1	3
8386		TACH	11	14	0426	S20	E53	11	18.2			AXX	11	2	2	3
8386		RAMY	11	14	1345	S20	E48	11	18.2		B	BXO	30	3	3	4
8386		HOLL	11	14	1515	S18	E48	11	18.3		B	BXO	40	5	3	4
8386	28877	MWIL	11	14	1530	S21	E48	11	18.3	4	(BP)					
8386		LEAR	11	15	0022	S21	E43	11	18.3		A	HS	20	1	1	3
8386		TACH	11	15	0452	S19	E40	11	18.2			AXX	2	2	1	4
8386	28877	MWIL	11	15	1530	S19	E36	11	18.4	3	(B)					
8386		VORO	11	22	2327	S19	W67	11	17.9			BXO	17	2	4	3
8386		LEAR	11	23	0015	S17	W67	11	17.9		B	BXO	10	2	5	4
8386	28889	MWIL	11	23	1515	S18	W75	11	17.9	4	(B)					
8387	28878	MWIL	11	13	1515	N23	E73	11	19.3	3	(AP)					
8387		HOLL	11	13	1549	N24	E72	11	19.2		A	AX	10	1	1	4
8387		RAMY	11	13	1900	N24	E69	11	19.1		A	AX		1		2
8387		LEAR	11	14	0020	N22	E68	11	19.2		A	AX		1		3
8387		TACH	11	14	0426	N24	E67	11	19.4			AXX	8	3	1	3
8387		RAMY	11	14	1345	N23	E58	11	19.0		B	BXO	10	3	4	4
8387		HOLL	11	14	1515	N23	E58	11	19.1		B	BXO	20	2	3	4
8387	28878	MWIL	11	14	1530	N23	E59	11	19.2	4	(AP)					
8387		LEAR	11	15	0022	N22	E55	11	19.2		A	HS	20	1	1	3
8387		TACH	11	15	0452	N24	E53	11	19.3			AXX	1	1	1	4
8387	28878	MWIL	11	15	1530	N23	E47	11	19.3	3	(AP)					
8387		TACH	11	16	0535	N24	E39	11	19.2			AR	12	2	1	4
8387		KAND	11	16	1250	N23	E35	11	19.2			CRO		3	2	3
8387	28878	MWIL	11	16	1530	N23	E34	11	19.3	5	(AP)					

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8387		KAND	11 17 0815	N24 E25	11 19.3			CRO		5	4	5
8387	28878	MWIL	11 17 1530	N24 E21	11 19.3	4	(BP)					
8387		VORO	11 17 2315	N25 E16	11 19.2			BXI	35	4	1	3
8387		TACH	11 18 0654	N23 E12	11 19.2			AR	15	2	1	2
8387		KAND	11 18 1150	N23 E08	11 19.1			AX		1		3
8387	28878	MWIL	11 18 1530	N23 E07	11 19.2	4	(AP)					
8387		TACH	11 19 0430	N24 W01	11 19.1			AXX	10	1	1	3
8387	28878	MWIL	11 19 1545	N24 W05	11 19.3	3	(AP)					
8394		VORO	11 23 2345	S16 W38	11 21.1			BXI	31	3	2	3
8394		LEAR	11 24 0028	S15 W37	11 21.2		B	BXO	40	6	4	4
8394		TACH	11 24 0557	S16 W41	11 21.1			BAO	48	5	2	3
8394		KAND	11 24 0855	S16 W42	11 21.2			DSO		4	5	4
8394		SVTO	11 24 1142	S17 W44	11 21.1		B	CSO	30	3	4	2
8394	28892	MWIL	11 24 1515	S16 W46	11 21.1	4	(B)					
8394		RAMY	11 24 1546	S16 W47	11 21.1		B	BXO	10	4	4	2
8394		HOLL	11 24 1628	S17 W46	11 21.2		B	CSO	30	4	4	2
8394		VORO	11 24 2318	S16 W51	11 21.1			CAI	86	4	4	2
8394		LEAR	11 25 0040	S14 W50	11 21.2		B	BXO	60	5	6	3
8394		TACH	11 25 0457	S16 W53	11 21.2			CAI	166	8	4	3
8394		SVTO	11 25 0832	S15 W55	11 21.2		B	CSO	120	8	8	3
8394	28892	MWIL	11 25 1515	S15 W58	11 21.2	5	(D)					
8394		HOLL	11 25 1610	S15 W61	11 21.0		B	CAO	100	8	8	4
8394		RAMY	11 25 1740	S15 W61	11 21.1		B	DAO	110	5	8	3
8394		LEAR	11 26 0100	S14 W64	11 21.2		B	CSO	120	6	7	3
8394		TACH	11 26 0516	S15 W67	11 21.1			CRO	27	3	3	2
8394		KAND	11 26 0825	S15 W73	11 20.8			HS		1	2	2
8394		SVTO	11 26 0845	S15 W75	11 20.7		A	AX	10	1		3
8394		RAMY	11 26 1223	S16 W73	11 21.0		B	CSO	40	4	8	3
8394	28892	MWIL	11 26 1600	S15 W72	11 21.2	4	(B)					
8394		LEAR	11 27 0018	S14 W75	11 21.3		B	BXO	10	2	8	4
8394C	28881	MWIL	11 16 1530	S11 E70	11 21.9	3	(AP)					
8394A		TACH	11 20 0533	N19 E34	11 22.8			AR	12	2	1	4
8394A	28886	MWIL	11 20 1515	N18 E29	11 22.8	4	(B)					
8394A		TACH	11 27 0619	N19 W57	11 22.9			DAI	340	8	7	3
8394B		TACH	11 24 0557	S09 W15	11 23.1			HSX	170	4	2	3
8391		VORO	11 17 2315	S17 E72	11 23.4			HAX	38	1		3
8391		TACH	11 18 0654	S18 E69	11 23.5			AXX	25	1	1	2
8391		KAND	11 18 1150	S18 E67	11 23.6			CRO		2	5	3
8391	28883	MWIL	11 18 1530	S17 E65	11 23.6	4	(BP)					
8391		VORO	11 18 2315	S16 E58	11 23.4			HAX	22	1		3
8391		TACH	11 19 0430	S18 E57	11 23.5			BRO	86	4	4	3
8391		KAND	11 19 0715	S17 E56	11 23.5			CRO		5	8	3
8391	28883	MWIL	11 19 1545	S17 E52	11 23.6	4	(BP)					
8391		VORO	11 19 2325	S16 E47	11 23.5			CAI	110	8	8	3
8391		TACH	11 20 0533	S16 E43	11 23.5			CAI	98	13	8	4
8391	28883	MWIL	11 20 1515	S17 E39	11 23.6	4	(B)					
8391		VORO	11 21 0010	S16 E33	11 23.5			CAI	122	14	10	3
8391		TACH	11 21 0608	S17 E31	11 23.6			BRI	59	8	8	3
8391	28883	MWIL	11 21 1515	S17 E25	11 23.5	5	(BG)					
8391		VORO	11 21 2335	S16 E21	11 23.6			CAI	127	12	10	2
8391		LEAR	11 22 0005	S18 E20	11 23.5		B	CAO	50	18	11	4
8391		TACH	11 22 0456	S16 E18	11 23.6			CRO	87	9	9	4
8391	28883	MWIL	11 22 1515	S16 E10	11 23.4	5	(BP)					
8391		VORO	11 22 2327	S17 E07	11 23.5			CAO	196	7	10	3
8391		LEAR	11 23 0015	S18 E07	11 23.5		B	CAO	100	8	12	4
8391		TACH	11 23 0654	S14 W01	11 23.2			HSX	180	4	2	3
8391	28883	MWIL	11 23 1515	S15 W05	11 23.2	4	(BP)					
8391		HOLL	11 23 1536	S15 W04	11 23.3		B	CSO	10	8	8	4
8391		VORO	11 23 2345	S16 W08	11 23.4			CAI	201	9	7	3
8391		LEAR	11 24 0028	S14 W12	11 23.1		A	HS	100	4	2	4
8391		KAND	11 24 0855	S14 W17	11 23.1			HA		3	3	4
8391		SVTO	11 24 1142	S15 W18	11 23.1		A	HS	120	4	3	2
8391	28883	MWIL	11 24 1515	S15 W20	11 23.1	4	(AP)					
8391		RAMY	11 24 1546	S14 W22	11 23.0		A	HS	100	4	2	2

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8391		HOLL	11 24 1628	S15 W21	11 23.1		A	HS	80	1	2	2
8391		VORO	11 24 2318	S15 W25	11 23.1			HAX	127	2		2
8391		LEAR	11 25 0040	S14 W26	11 23.1		A	HS	90	2	3	3
8391		TACH	11 25 0457	S15 W28	11 23.1			HSX	300	3	2	3
8391		SVTO	11 25 0832	S14 W29	11 23.2		A	HS	70	3	2	3
8391	28883	MWIL	11 25 1515	S14 W33	11 23.1	5	(AP)					
8391		HOLL	11 25 1610	S14 W35	11 23.0		A	HA	50	4	2	4
8391		RAMY	11 25 1740	S14 W35	11 23.1		B	CAO	60	5	3	3
8391		VORO	11 25 2356	S15 W39	11 23.0			HAX	109	1		2
8391		LEAR	11 26 0100	S14 W39	11 23.1		A	HS	70	3	2	3
8391		TACH	11 26 0516	S14 W42	11 23.0			HSX	50	1	2	2
8391		KAND	11 26 0825	S14 W44	11 23.0			HA		1	2	2
8391		SVTO	11 26 0845	S15 W45	11 22.9		A	HA	30	1	1	3
8391		RAMY	11 26 1223	S15 W47	11 22.9		A	HA	40	3	2	3
8391	28883	MWIL	11 26 1600	S14 W47	11 23.1	4	(AP)					
8391		LEAR	11 27 0018	S14 W52	11 23.1		A	HS	30	1	1	4
8391		TACH	11 27 0619	S21 W56	11 23.0			HSX	50	1	1	3
8391		SVTO	11 27 0710	S14 W57	11 23.0		A	HS	20	1	1	3
8391		RAMY	11 27 1242	S16 W60	11 23.0		A	AX	10	1		2
8391	28883	MWIL	11 27 1530	S14 W60	11 23.1	4	(AP)					
8391		HOLL	11 27 1617	S16 W62	11 23.0		A	HS	40	1	1	3
8391		VORO	11 27 2354	S15 W67	11 22.9			HAX	73	1		3
8391		LEAR	11 28 0025	S14 W64	11 23.2		A	AX	10	1	1	3
8391		RAMY	11 28 1220	S16 W72	11 23.0		A	AX		1		3
8396	28890	MWIL	11 23 1515	N27 W02	11 23.5	4	(AP)					
8396		HOLL	11 23 1536	N27 W03	11 23.4		A	AX	100	2	1	4
8396		LEAR	11 24 0028	N27 W07	11 23.5		A	AX		1	1	4
8396	28890	MWIL	11 25 1515	N28 W27	11 23.5	4	(AF)					
8396		VORO	11 25 2356	N28 W32	11 23.5			BXI	31	3	3	2
8396		LEAR	11 26 0100	N29 W32	11 23.5		B	CRO	20	6	5	3
8396		TACH	11 26 0516	N27 W35	11 23.5			BRO	25	5	3	2
8396		KAND	11 26 0825	N27 W38	11 23.4			CRO		3	5	2
8396		SVTO	11 26 0845	N27 W38	11 23.4		B	BXO	20	3	4	3
8396		RAMY	11 26 1223	N27 W40	11 23.4		B	CRO	40	8	4	3
8396	28890	MWIL	11 26 1600	N27 W40	11 23.5	5	(B)					
8396		LEAR	11 27 0018	N27 W45	11 23.5		B	DAO	60	9	6	4
8396		TACH	11 27 0619	N25 W49	11 23.5			DAI	181	6	5	3
8396		SVTO	11 27 0710	N26 W50	11 23.4		B	DAO	80	6	6	3
8396		RAMY	11 27 1242	N25 W53	11 23.4		B	DAO	90	5	7	2
8396	28890	MWIL	11 27 1530	N27 W54	11 23.4	4	(B)					
8396		HOLL	11 27 1617	N26 W56	11 23.3		B	DSO	110	6	7	3
8396		VORO	11 27 2354	N26 W59	11 23.4			DAI	208	3	6	3
8396		LEAR	11 28 0025	N27 W57	11 23.6		B	CSO	80	3	7	3
8396		RAMY	11 28 1220	N25 W66	11 23.4		B	CAO	90	6	8	3
8396		HOLL	11 28 1645	N26 W68	11 23.4		B	CSO	50	6	8	1
8396		LEAR	11 29 0044	N27 W73	11 23.3		B	CSO	90	7	9	3
8396		VORO	11 29 0425	N26 W76	11 23.3			DKI	432	8	8	3
8396		SVTO	11 29 0825	N27 W75	11 23.5		B	DAO	170	5	7	3
8396		RAMY	11 29 1251	N27 W77	11 23.5		B	DAO	150	9	5	5
8396	28890	MWIL	11 29 1530	N26 W80	11 23.4	4	B					
8396		LEAR	11 30 0040	N28 W83	11 23.5		B	BXO	10	3	6	3
8396		VORO	11 30 0050	N25 W83	11 23.6			HAX	133	1		2
8396A	28888	MWIL	11 22 1515	N26 E48	11 26.4	3	(AP)					
8396A		TACH	11 23 0654	N26 E39	11 26.3			AXX	10	1	1	3
8396A	28888	MWIL	11 23 1515	N26 E35	11 26.3	3	(B)					
8396A		HOLL	11 23 1536	N26 E34	11 26.3		B	BXO	20	2	3	4
8396A		VORO	11 23 2345	N26 E29	11 26.2			AXX	8	1		3
8396A		LEAR	11 24 0028	N26 E29	11 26.3		A	AX		1	1	4
8396A		TACH	11 24 0557	N27 E26	11 26.3			AXX	5	1	1	3
8396A		KAND	11 24 0855	N26 E24	11 26.2			AX		1	1	4
8396A	28888	MWIL	11 24 1515	N26 E21	11 26.3	3	(AP)					
8392		VORO	11 21 0010	S22 E86	11 27.6			HAX	101	1		3
8392	28887	MWIL	11 21 1515	S23 E78	11 27.6	4	(AP)					
8392		LEAR	11 22 0005	S23 E70	11 27.4		B	CAO	30	2	4	4
8392		TACH	11 22 0456	S22 E72	11 27.7			AXX	10	1	1	4
8392	28887	MWIL	11 22 1515	S22 E63	11 27.5	4	(AP)					

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

NOVEMBER 1998

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
8392		VORO	11 22 2327	S22 E60	11 27.6			CAO	43	2	4	3
8392		LEAR	11 23 0015	S24 E58	11 27.5		B	CAO	30	3	5	4
8392		TACH	11 23 0654	S21 E56	11 27.6			AR	30	2	4	3
8392	28887	MWIL	11 23 1515	S22 E53	11 27.7	4	(BP)					
8392		HOLL	11 23 1536	S20 E54	11 27.8		B	CSO	40	5	7	4
8392		VORO	11 23 2345	S22 E46	11 27.5			CAI	41	3	4	3
8392		LEAR	11 24 0028	S23 E45	11 27.5		B	BXO	30	3	6	4
8392		TACH	11 24 0557	S22 E42	11 27.5			AR	41	4	4	3
8392		KAND	11 24 0855	S22 E42	11 27.6			CSO		5	8	4
8392		SVTO	11 24 1142	S22 E44	11 27.9		B	CSO	20	4	4	2
8392	28887	MWIL	11 24 1515	S22 E39	11 27.6	4	(AP)					
8392		RAMY	11 24 1546	S23 E39	11 27.7		B	BXO	10	4	7	2
8392		HOLL	11 24 1628	S23 E36	11 27.5		B	CSO	30	2	4	2
8392		VORO	11 24 2318	S23 E33	11 27.5			CAO	47	2	4	2
8392		LEAR	11 25 0040	S23 E32	11 27.5		B	BXO	20	2	4	3
8392		TACH	11 25 0457	S23 E31	11 27.6			BRO	56	5	9	3
8392		SVTO	11 25 0832	S23 E27	11 27.4		B	CRO	10	2	4	3
8392	28887	MWIL	11 25 1515	S22 E26	11 27.6	4	(BG)					
8392		HOLL	11 25 1610	S22 E26	11 27.7		B	CRO	30	9	9	4
8392		RAMY	11 25 1740	S23 E24	11 27.6		B	BXO	20	5	4	3
8392		VORO	11 25 2356	S23 E20	11 27.5			HSX	57	5		2
8392		LEAR	11 26 0100	S23 E19	11 27.5		B	CRO	20	8	4	3
8392		TACH	11 26 0516	S22 E14	11 27.3			BRO	40	4	1	2
8392		KAND	11 26 0825	S22 E15	11 27.5			BXI		9	8	2
8392		SVTO	11 26 0845	S23 E16	11 27.6		B	BXO	20	6	7	3
8392		RAMY	11 26 1223	S24 E14	11 27.6		B	BXO	20	14	9	3
8392	28887	MWIL	11 26 1600	S22 E12	11 27.6	4	(G)					
8392		LEAR	11 27 0018	S21 E07	11 27.5		B	BXO	10	8	7	4
8392		TACH	11 27 0619	S22 E04	11 27.6			BRO	37	4	2	3
8392		SVTO	11 27 0710	S23 E03	11 27.5		B	CRO	10	5	4	3
8392		RAMY	11 27 1242	S23 E01	11 27.6		B	BXO	10	3	3	2
8392	28887	MWIL	11 27 1530	S23 W01	11 27.6	4	(BP)					
8392		HOLL	11 27 1617	S24 E01	11 27.7		B	CSO	20	4	6	3
8392		VORO	11 27 2354	S22 W07	11 27.4			HAX	22	1		3
8392		LEAR	11 28 0025	S22 W08	11 27.4		B	BXO	20	2	3	3
8392	28887	MWIL	11 29 1530	S24 W24	11 27.8	3	(B)					
8392A		LEAR	12 03 0016	N19 W69	11 27.8		A	AX	10	2	1	3
8392B	28903	MWIL	12 02 1530	N19 W52	11 28.8	4	(AP)					
8392B		VORO	12 02 2326	N18 W58	11 28.6			HAX	36	1		3
8392B		HOLL	12 03 1523	N19 W68	11 28.5		A	AX	10	1		3
8392B	28903	MWIL	12 03 1530	N19 W66	11 28.7	4	(B)					
8392B		LEAR	12 04 0052	N18 W70	11 28.8		A	AX		1		2
8392C		LEAR	12 03 0016	N19 W49	11 29.4		A	AX	10	2	1	3
8393		LEAR	11 23 0015	S18 E83	11 29.3		A	HS	60	1	6	4
8393		TACH	11 23 0654	S15 E80	11 29.3			HSX	35	1	2	3
8393	28891	MWIL	11 23 1515	S17 E77	11 29.5	5	(AP)					
8393		HOLL	11 23 1536	S17 E75	11 29.3		B	DSO	210	2	5	4
8393		VORO	11 23 2345	S16 E75	11 29.7			DKI	727	4	3	3
8393		LEAR	11 24 0028	S18 E73	11 29.6		B	DAO	270	2	8	4
8393		TACH	11 24 0557	S19 E73	11 29.8			DAI	312	7	10	3
8393		KAND	11 24 0855	S18 E74	11 30.0			FAO		10	16	4
8393		SVTO	11 24 1142	S18 E71	11 29.9		B	FSO	370	9	19	2
8393	28891	MWIL	11 24 1515	S17 E65	11 29.6	5	(B)					
8393		RAMY	11 24 1546	S19 E72	11 30.1		B	FHI	440	12	19	2
8393		HOLL	11 24 1628	S20 E70	11 30.0		B	FSC	60	16	18	2
8393		VORO	11 24 2318	S18 E67	11 30.1			DKI	780	6	13	2
8393		LEAR	11 25 0040	S19 E62	11 29.7		B	CSO	350	14	13	3
8393		TACH	11 25 0457	S20 E62	11 29.9			DAI	742	24	14	3
8393		SVTO	11 25 0832	S18 E58	11 29.8		B	FSO	480	22	20	3
8393	28891	MWIL	11 25 1515	S17 E54	11 29.7	5	(BG)					
8393		HOLL	11 25 1610	S19 E55	11 29.9		B	FKI	520	41	18	4
8393		RAMY	11 25 1740	S19 E52	11 29.7		B	FHO	340	29	15	3
8393		VORO	11 25 2356	S19 E53	11 30.0			DKI	810	15	13	2
8393		LEAR	11 26 0100	S19 E50	11 29.8		BG	FHO	440	35	16	3
8393		TACH	11 26 0516	S18 E47	11 29.8			DAI	437	10	12	2

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
8393		KAND	11 26 0825	S17 E45	11 29.8			FSO		12	16	2
8393		SVTO	11 26 0845	S19 E46	11 29.9		B	FHO	480	17	17	3
8393		RAMY	11 26 1223	S19 E44	11 29.9		B	FSO	350	42	16	3
8393	28891	MWIL	11 26 1600	S18 E40	11 29.7	5	(BG)					
8393		LEAR	11 27 0018	S19 E37	11 29.8		BG	FAC	330	35	17	4
8393		TACH	11 27 0619	S18 E33	11 29.8			CAI	454	22	13	3
8393		SVTO	11 27 0710	S19 E33	11 29.8		BG	FSI	230	23	16	3
8393		RAMY	11 27 1242	S19 E29	11 29.7		B	FAO	300	19	16	2
8393	28891	MWIL	11 27 1530	S19 E26	11 29.6	5	(BG)					
8393		HOLL	11 27 1617	S19 E29	11 29.9		B	FSO	350	30	17	3
8393		VORO	11 27 2354	S19 E24	11 29.8			DKI	539	22	15	3
8393		LEAR	11 28 0025	S19 E24	11 29.8		BG	ESC	280	22	15	3
8393		RAMY	11 28 1220	S18 E17	11 29.8		BG	FSO	300	32	16	3
8393		HOLL	11 28 1645	S18 E15	11 29.8		BG	FSO	320	17	16	1
8393		LEAR	11 29 0044	S18 E08	11 29.6		B	CSO	280	26	15	3
8393		VORO	11 29 0425	S18 E08	11 29.8			DKI	397	44	14	3
8393		SVTO	11 29 0825	S19 E04	11 29.6		B	FAO	380	31	18	3
8393		RAMY	11 29 1251	S18 E03	11 29.8		B	CAO	210	33	17	5
8393	28891	MWIL	11 29 1530	S18 W02	11 29.5	5	(BG)					
8393		LEAR	11 30 0040	S18 W03	11 29.8		B	CAO	170	24	18	3
8393		VORO	11 30 0050	S17 W08	11 29.4			CAI	326	6	6	2
8393	28891	MWIL	11 30 1530	S18 W15	11 29.5	5	(BP)					
8393		RAMY	11 30 1548	S18 W12	11 29.7		B	CSO	130	17	17	3
8393		HOLL	11 30 1630	S19 W12	11 29.8		B	CSO	140	13	16	3
8393		VORO	11 30 2323	S19 W18	11 29.6			CAI	281	6	12	2
8393		LEAR	12 01 0010	S16 W18	11 29.7		B	CAO	170	13	14	3
8393		TACH	12 01 0551	S17 W22	11 29.7			CAI	305	7	12	3
8393		SVTO	12 01 1008	S18 W25	11 29.6		B	EAO	170	16	15	3
8393		RAMY	12 01 1415	S16 W26	11 29.7		B	CSO	110	10	14	3
8393		HOLL	12 01 1540	S18 W28	11 29.6		B	CSO	160	12	12	3
8393	28891	MWIL	12 01 1545	S17 W30	11 29.5	5	(BP)					
8393		VORO	12 01 2344	S17 W28	11 30.0			CAI	138	2	2	3
8393		LEAR	12 02 0008	S16 W33	11 29.6		B	CAO	90	6	13	3
8393		KAND	12 02 0800	S16 W41	11 29.3			HS		1	2	2
8393		RAMY	12 02 1317	S17 W39	11 29.7		B	CSO	100	4	13	3
8393	28891	MWIL	12 02 1530	S15 W46	11 29.3	4	(AP)					
8393		VORO	12 02 2326	S16 W52	11 29.1			HAX	177	1		3
8393		LEAR	12 03 0016	S15 W51	11 29.2		A	HS	120	1	2	3
8393		HOLL	12 03 1523	S15 W60	11 29.2		A	HS	50	2	2	3
8393	28891	MWIL	12 03 1530	S16 W59	11 29.3	5	(AP)					
8393		LEAR	12 04 0052	S14 W65	11 29.2		A	HS	90	1	2	2
8393		KAND	12 04 0820	S15 W69	11 29.2			HS		1	2	4
8393	28891	MWIL	12 04 1530	S16 W72	11 29.3	4	(AP)					
8393		HOLL	12 04 1630	S16 W74	11 29.2		A	HA	60	1	2	3
8393		RAMY	12 04 1800	S16 W75	11 29.2		A	HS	40	1	1	1
8393		VORO	12 05 0118	S15 W80	11 29.1			HAX	158	1		3
8393		TACH	12 05 0634	S16 W77	11 29.5			CSO	35	2	6	3
8393		SVTO	12 05 0742	S16 W89	11 28.7		A	HS	10	1	1	3
8398	28893	MWIL	11 24 1515	N17 E78	11 30.6	4	(AP)					
8398		TACH	11 25 0457	N16 E70	11 30.5			HR	50	1	1	3
8398	28893	MWIL	11 25 1515	N17 E64	11 30.5	4	(BP)					
8398		VORO	11 25 2356	N17 E60	11 30.5			HAX	53	1		2
8398		TACH	11 26 0516	N16 E59	11 30.7			BRO	30	2	8	2
8398		KAND	11 26 0825	N20 E65	12 1.3			FAO		6	31	2
8398	28893	MWIL	11 26 1600	N17 E52	11 30.6	5	(BP)					
8398		TACH	11 27 0619	N17 E40	11 30.3			HXX	50	1	1	3
8398	28893	MWIL	11 27 1530	N16 E37	11 30.4	5	(AP)					
8398		VORO	11 27 2354	N17 E32	11 30.4			CAO	51	2	4	3
8398		VORO	11 29 0425	N17 E16	11 30.4			CAO	35	3	4	3
8398	28893	MWIL	11 29 1530	N16 E12	11 30.5	4	(BP)					
8398		VORO	11 30 0050	N16 E05	11 30.4			BXI	31	4	4	2
8398	28893	MWIL	11 30 1530	N17 E01	11 30.7	5	(BG)					
8398		HOLL	11 30 1630	N18 W01	11 30.6		B	CAO	60	12	7	3
8398		VORO	11 30 2323	N16 W05	11 30.6			BXI	19	3	3	2
8398		LEAR	12 01 0010	N18 W04	11 30.7		B	CAO	60	9	7	3
8398		TACH	12 01 0551	N18 W06	11 30.8			CAO	120	2	4	3
8398		SVTO	12 01 1008	N18 W07	11 30.9		B	DSO	80	9	6	3
8398		RAMY	12 01 1415	N19 W09	11 30.9		B	CAO	50	6	5	3

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NOVEMBER 1998

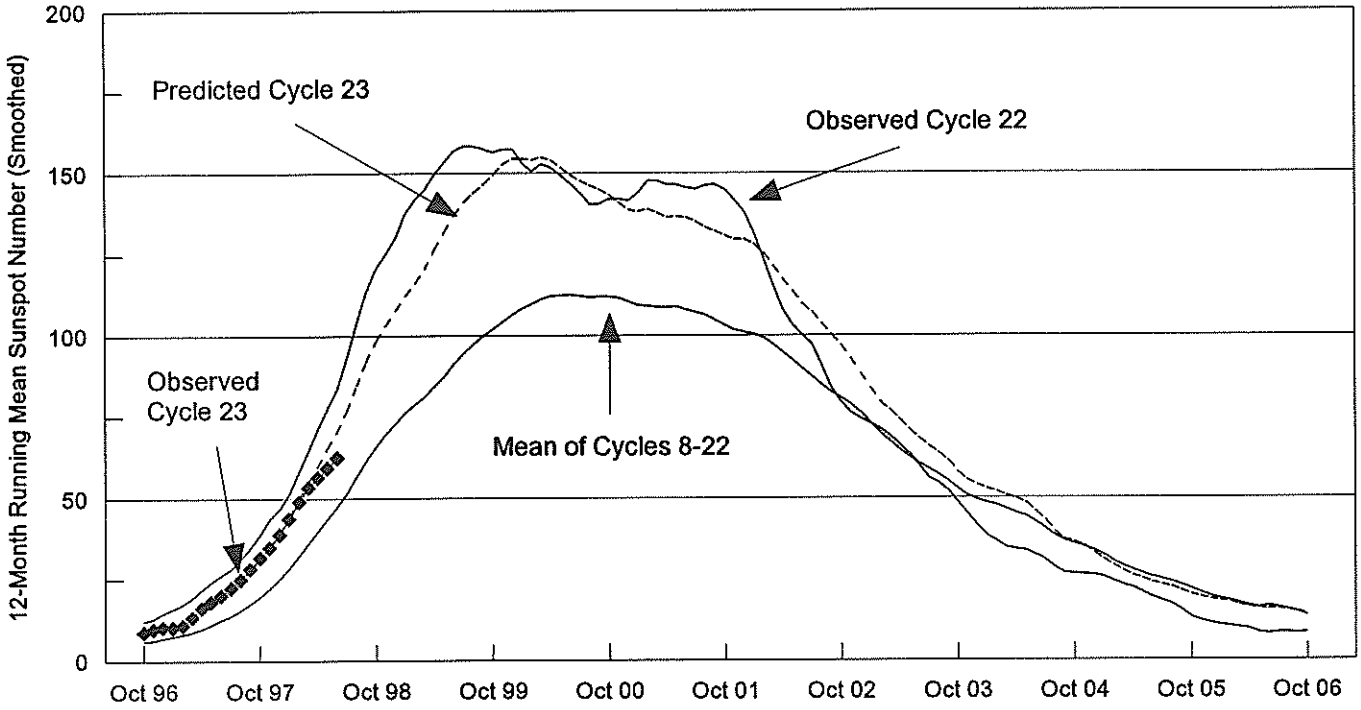
NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8398		HOLL	12 01 1540	N18 W12	11 30.7		B	CAO	90	7	9	3
8398	28893	MWIL	12 01 1545	N17 W12	11 30.7	4	(D)					
8398		VORO	12 01 2344	N18 W23	11 30.2			AXX	18	1		3
8398		LEAR	12 02 0008	N18 W17	11 30.7		B	CAO	20	12	11	3
8398		KAND	12 02 0800	N19 W13	12 1.3			EAO		6	11	2
8398		RAMY	12 02 1317	N18 W22	11 30.9		B	CAO	20	7	4	3
8398	28893	MWIL	12 02 1530	N18 W22	12 1.0	4	(AP)					
8398		LEAR	12 03 0016	N19 W28	11 30.9		B	BXO	20	7	4	3
8398		HOLL	12 03 1523	N18 W35	12 1.0		A	AX	20	2	2	3
8398	28893	MWIL	12 03 1530	N17 W35	12 1.0	4	(BF)					
8398		LEAR	12 04 0052	N18 W40	12 1.0		B	BXO	10	5	5	2
8398		KAND	12 04 0820	N18 W38	12 1.4			CAO		9	7	4
8398	28893	MWIL	12 04 1530	N17 W48	12 1.0	3	(AF)					
8398		HOLL	12 04 1630	N18 W48	12 1.0		B	BXO	10	3	3	3
8398		RAMY	12 04 1800	N18 W50	11 30.9		B	BXO	10	3	4	1
8398		HOLL	12 05 1610	N17 W56	12 1.4		B	CSO	160	2	4	3
8398		KAND	12 06 1045	N19 W66	12 1.4			HS		1	2	4
8398		HOLL	12 06 1540	N18 W68	12 1.5		A	HS	200	1	3	4
8398		LEAR	12 07 0340	N20 W75	12 1.4		A	HA	80	1	2	2

Stations reporting:

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

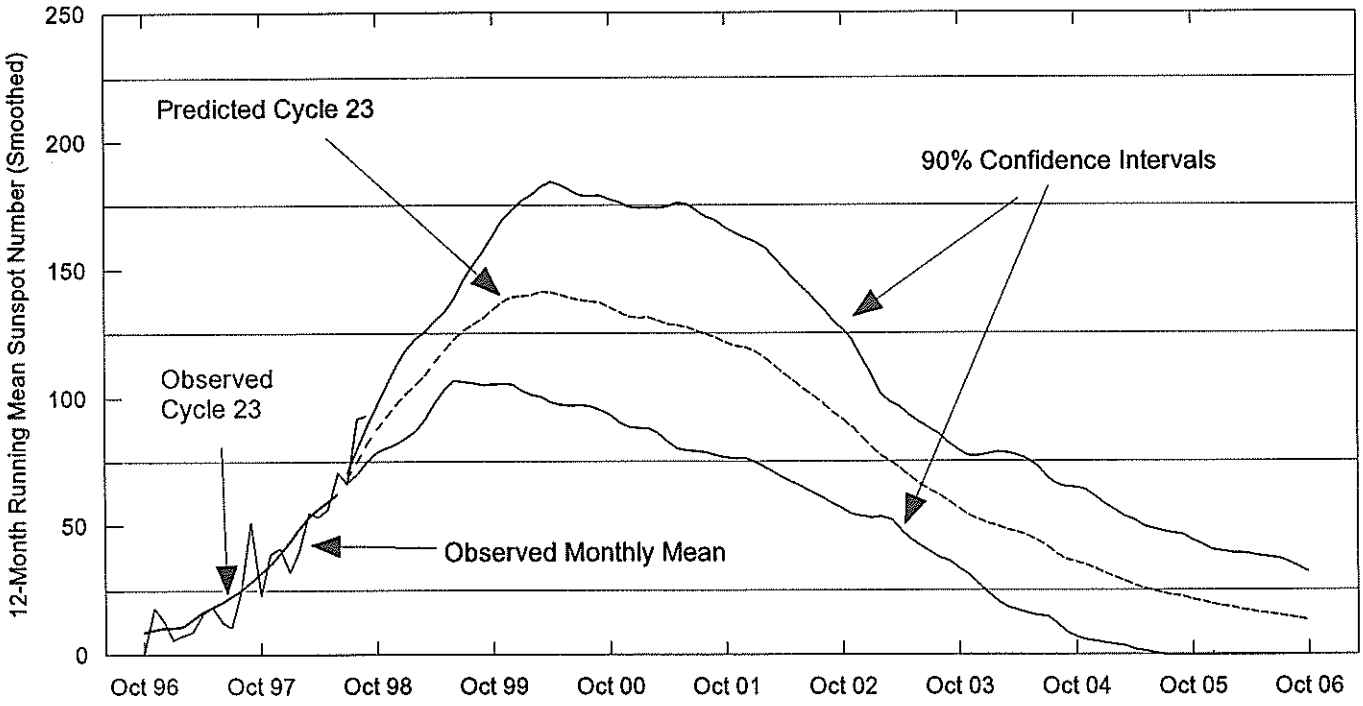
Predicted Cycle 23 Compared With Historical Data

Based On August 1997 Observed Value



Updated Prediction for Cycle 23

Based on June 1998 Observed Value



NOVEMBER 1998

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	1205	1226	1258	1	1		1				1147	B6.6	8375
01	1306	1321	1345	1	1		1				1381	B5.2	8373
02	1147	1150	1230	1	1		1				No flare		
02	1352	1408	1430	1	1		1				1355	C4.4	
03	1911	1923	2033	3-	3					3	1911	M1.0	
04	0404	0406	0415	1-	1					1	No flare		
04	0623	0650	0839	2	1		1				0615		8375
04	0714	0719	0745	1+	1					1	0713	C1.6	8375
04	0850	0905	0915	1	1					1	0849	C1.7	8375
04	1035	1045	1050	1-	1					1	1036	C2.0	
04	1229	1242	1509	1	1		1				1225	C5.0	8375
04	1543	1549	1604	1	5					2	1542	C2.4	8375
05	0451	0455	0522	1+	1					1	0454	C7.7	8375
05	0607	0610	0633	1	1					1	0609	C2.7	8375
05	0803	0806	0825	1	3					2	0801	C2.5	8375
05	1038	1116U	1222	1	1		1				1050	C1.0	8375
05	1332	1336	1420	2-	5		1			5	1330	M1.5	8375
05	1821	1824	1925	2	3					4	1831E	M8.4	8375
05	1941	1947	2111	2+	3					5	1900	M8.4	8375
05	2209	2215	2230	1	1					1	2215E		8375
06	0433	0435	0452D	1-	1					1	0434	C1.1	8375
06	0452E	0455	0515	1	1					1	0453	C1.4	8375
06	0707	0710	0732	1	1					1	0709	C1.6	
06	0752	0755	0815	1	1					1	0755	C2.4	8375
06	0829	0832	0844	1-	3					3	0828	C3.5	8375
06	0848	0849	0902	1-	3					2	0849	C3.0	8375
06	0908	0911	0927	1-	3					2	0907	C4.2	8375
06	1106	1110	1117	1-	3					2	1105	C2.3	8375
06	1159	1207	1228	1-	3		1			2	1201	C6.4	8375
06	1345	1440	1440U	2+	1					1	1347	C1.2	
06	1508	1511	1552	2-	5		1			7	1507	M1.7	8375
06	1848	1850	1904	1-	3					2	1847	C3.1	8375
06	1950	1958	2010	1	1					1	1952	C1.6	8375
06	2208	2211	2253	2	1					1	2205	C9.4	8375
07	0921	0944	0959	1-	3					3	0941	C2.3	
07	1103	1107	1140	2-	3	1	2			2	1102	M2.4	
07	1445	1450	1455	1-	1					1	1446	C1.1	
07	1749	1759	1857	2+	3					2	1742	C5.3	
08	1056	1110	1132	2-	3					2	1055	C5.9	
08	1535	1549	1635	2+	5					4	1539	C6.0	8375
08	1706	1710	1756	2	3					5	1704	M2.7	8375
08	2002	2006	2039	1+	3					2	2001	C4.8	8375
08	2246	2257	2331	2	3					2	2237	M1.1	8375
09	2113	2116	2138	1	3					2	2111	C4.9	
10	0653	0655	0715	1	1					1	0649	C3.3	8375
10	1330	1332	1345	1-	1					1	1328	C3.5	8375
10	1532	1538	1613	1+	5					4	1527	C6.7	8375
10	1542	1547	1625	2	1					1	1540	M1.8	8375
10	1725	1730	1750	1	1					1	1724	C3.5	
10	1752	1755	1815	1	1					1	1751	C3.3	
10	1815	1822	1907	2+	1					1	1817	C3.7	8375
10	2045	2051	2139	2	3					2	2043	C8.1	8375
11	0406	0408	0444	2-	1					1	0402	M1.0	
11	0453E	0455	0520	1+	1					1	0450	C2.6	
11	0644	0648	0707	1	1					1	0639	C3.8	
11	0710E	0712	0730	1	1					1	0705	C2.5	8375
11	0737	0740	0802	1	1					1	0733	C3.5	
11	0902	0911	0940	1	1		1				No flare		

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1998

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
11	0952	0956	1026	1+	3		1			2	0950	C4.2	8375
11	1012	1015	1019	1+	5	1	2	1		2	1010	M1.1	
11	1200	1205	1215	1-	1					1	1203	C1.9	
12	0528	0530	0600	1+	1					1	0528	M1.0	8385
12	0950	1135	1300	3+	1					1	0950	C3.0	
12	1218	1220	1255	2	1					1	*		
12	1515	1520	1530	1-	1					1	1514	C2.1	
12	2149	2150	2215	1+	1					1	2155		8385
13	2058	2101	2137	2	1					1	2055	C5.1	
13	2119	2120	2140	1	1					1	*		
13	2140	2144	2215	2	1					1	*		
14	1427	1430	1500	2	1					1	1436	C1.6	8383
15	0833	0840	0933	1	1		1				No flare		
15	1258	1314	1400	2-	5		1			2	1258	C1.2	
16	1200	1205	1220	1	1					1	1159	C2.9	
16	1545	1610	1632	2+	1					1	No flare		
16	2012	2014	2100	2	3					2	2009	C7.9	
16	2150	2156	2243	2+	3					2	2144	C4.9	
16	2311	2317	2357	2	3					2	2307	C4.5	
18	1045	1055	1110	1	1					1	1044	C1.0	
18	1236	1252	1343	1	1		1				No flare		
20	1520	1524	1550	1+	1					1	1517	C2.5	
21	0637	0640	0656	1	1					1	0634	C2.2	
21	1020	1030	1053	1	1		1				*		
21	1125	1135	1145	1	1					1	1125	C1.1	
21	1613	1618	1639	1	5					2	1548	C3.0	
22	0634	0640	0739	2+	3		1			1	0630	X3.7	
22	0913	0938	0951	2	1		1				*		
22	0956	1006	1036	1	3		1			1	1002	C1.6	
22	1144	1147	1157	1	1		1				No flare		
22	1217	1227	1304	2	3		1			3	1215	C8.8	
22	1240E	1305	1400	2+	1					1	No flare		
22	1420	1427	1438	1-	5					2	1421	C1.6	
22	1440	1444	1459	1-	5					5	1439	C2.5	
22	1609	1614	1735	3-	3					3	1610	X2.5	
22	1615	1627	1727	2+	5					4	1610	X2.5	
22	1830	1836	1926	2	3					5	1828	M1.0	
22	2141	2212	2311	3-	3					3	2140	M1.8	
23	0634	0645	0742	2+	3		1			1	0628	X2.2	8384
23	0829	0836	0856	1	1		1				No flare		
23	1030	1036	1054	1-	3		1			2	1028	C3.8	
23	1103	1107	1116	2	5	1	2	1		3	1059	M3.1	
24	0210	0216	0300	2+	1					1	0207	X1.0	
24	0842	0850	0912	1+	3					2	0848	C3.4	
24	1025	1030	1035	1-	1					1	1026	C2.3	
24	1235	1240	1245	1-	1					1	1233	C2.3	
24	2212	2217	2247	2-	3					2	2209	C8.4	8395
25	0555	0600	0623	1+	1					1	0550	C2.7	8395
25	1318	1323	1336	1-	5					6	1317	C4.5	
25	1359	1404	1426	1+	5		1			6	1358	C6.4	
25	2050	2102	2145	2+	1					1	2051	C2.9	
26	1007	1020U	1114	1	1		1				1026	C4.0	8395
26	1026	1037	1047	1	3					2	1026	C4.0	8395
26	1320	1330	1340	1	1					1	1319	C1.6	
26	1656	1730	1815	2+	1					1	1710	C1.2	

* = no flare patrol.

NOVEMBER 1998

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
27	0722	0737	0824	2+	1					1	0721	M1.6	
27	1050	1059	1110	1	3					2	1048	C2.6	8395
27	1515	1540	1615	2+	1					1	No flare		
27	1550	1555	1600	1-	1					1	1549	C1.2	
27	1824	1827	1840	1-	1					1	1818	C2.4	8395
28	0535	0544	0707	3-	1					1	0454	X3.3	
28	1524	1530	1550	1+	1					1	No flare		
28	1722	1727	1830	2+	3					2	1723	C5.1	
28	1814	1817	1840	1	1					1	1824E		8395
28	1845	1850	1925	2	1					1	1824E		8395
29	0540	0545	0620	2	1					1	No flare		
29	0635	0638	0654	1-	1					1	0626	C2.8	
29	1125	1130	1140	1-	1					1	1124	C1.6	
30	1015	1017	1030	1-	1					1	1012	C3.7	

* = no flare patrol.

OBSERVATORIES REPORTING FOR NOVEMBER 1998

Banning, California, USA	SES	Nerja, Spain	SES
Cambridge, England, UK	SES	Panska Ves, Czech Republic	SES, SEA, SWF
Columbia City, Indiana, USA	SES	Perth, Australia	SES
Edenvale, Rep of S. Africa	SES	Rochester, New Hampshire, USA	SES
Houston, Texas, USA	SES	Sun City Center, FL, USA	SES
Hudson, Ohio, USA	SES	Tucson, Arizona, USA	SES
Koniz, Switzerland	SES	Upice, Czech Republic	SEA
Marlboro, Massachusetts, USA	SES		

Observations are not necessarily continuous.

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 1998

OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
01 0000	0730	CULG								
0000	0748	HIRA								
0708	1420	ONDR								
0703	1420	POTS	1022.6	1022.7	III	B	1	110U	160	
		POTS	1122.3	1124.3	III	G	2	110U	225	
		POTS	1232.0	1232.6	III	G	3	40X	225	
		SVTO	1232.0	1232.0	III		1	53U	66U	
		POTS	1233	1411	I	S	1	130	170U	
2020	2400	CULG	2150.0	2151.0	III	G	1	20	100	
		CULG	2344.0	2346.0	III	G	3	18X	200	
		LEAR	2344.0	2346.0	III		3	30	80	
		PALE	2344.0	2346.0	V		2	25	75	
2055	2400	HIRA	2344.7	2345.7	III	G	3	25X	50X	
02 0000	0747	HIRA								
0702	1418	POTS	0708	1418 U	I	S	2	110U	350	
		LEAR	0715.0	0717.0	III		2	30	80	
		SVTO	0715.0	0717.0	III		2	35	73	
		POTS	0715.5	0716.7	III	G	2	40X	275	
0000	0740	CULG	0716.0	0717.0	III	G	2	23	110	
		POTS	0722.8	0722.9	III	B	2	120	170U	
		POTS	0748.7	0750.5	UNCLF		2	40X	225	
		LEAR	0749.0	0750.0	III		2	30	80	
		SVTO	0749.0	0751.0	III		2	35	76	
		POTS	0827.0	0827.2	III	B	1	110U	170U	
		POTS	0924.9	0925.1	III	G,U	2	200U	375	
		POTS	0925.2	0925.6	III	G,U	2	120	170U	
		POTS	1036.5	1038.7	III	G	2	40X	170U	
		POTS	1226.3	1226.4	III	B	1	110U	170U	
		POTS	1348.1	1349.1	III	G	2	40X	225	
		POTS	1355.8	1418 U	IV	P	3	40X	800X	
		SGMR	1356.0	1402.0	V		2	30	80	
		SVTO	1356.0	1359.0	V		2	35	85	
0710	1418	ONDR	1357.0	1412.1	DCIM		2	2000X	4375X	
		POTS	1358.7	1359.4	II	UE	3	50	90U	
		SGMR	1404.0	1409.0	III		2	30	60	
		POTS	1413.1	1414.1	III	GG	3	40X	170U	
		SGMR	1448.0	1449.0	III		1	30	80	
2020	2400	CULG	2025.0	2026.0	III	G	2	35	100	
2056	2400	HIRA								
03 0000	0746	HIRA								
		LEAR	0013.0	0019.0	III		2	30	80	
		PALE	0014.0	0015.0	III		1	49	54	
		LEAR	0125.0	0125.0	III		1	30	60	
0712	1415	ONDR								
0707	1405	POTS	0720.9	0721.1	III	B,RS	2	120	160	
		POTS	0817	0858	I	S,W	1	110U	275	
		POTS	0817.2	0817.3	III	B	1	110U	225	
		POTS	0819.9	0820.1	III	B	1	110U	225	
		POTS	1350	1405	I	S,W	1	155	170U	
2057	2400	HIRA								
2020	2400	CULG	2134.0	2137.0	III	G	1	28	280	
		CULG	2329.0	2330.0	III	B	1	27	170	
04 0000	0745	HIRA								
		POTS	0702 E	1420 U	I	S,C,DC	3	40X	400	
		POTS	0702 E	1420 U	III	N	1	110U	170U	
		POTS	0702 E	1420 U	III	N	2	40X	90U	
0702	1420	POTS	0702 E	1420 U	III	N	1	40X	90U	
		POTS	0719.5	0724.3	III	GG	2	40X	300	
		LEAR	0721.0	0722.0	III		1	30	65	
0000	0740	CULG	0721.0	0723.0	III	G	1	23	120	
		CULG	0736.0	0737.0	III	G	1	170	310	
		POTS	0736.2	0736.9	III	G	2	110U	160	
		LEAR	0817.0	0915.0	CONT		1	30	80	
		POTS	0817.6	0818.5	III	G	2	40X	300	
		POTS	0843.4	0845.4	III	G	3	40X	250	
		SVTO	0924.0	1027.0	CONT		2	64	85	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 1998

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
04		POTS	1000.9	1004.3	III	G	2	200U	650	
		POTS	1106.9	1107.2	III	G	2	200U	350	
		SVTO	1119.0	1132.0	III	N	3	35	85	
		POTS	1119.5	1132.4	III	GG,C	3	40X	350	
		SGMR	1129.0	1130.0	III		1	35U	60U	
		SVTO	1132.0	1200.0	CONT		2	60	85	
		POTS	1204.5	1205.2	III	GG	3	50	650	
0714	1412	ONDR	1229.4	1232.4	DCIM	G	1	2060	4365	
		POTS	1232.6	1235.1	III	G	3	40X	150	
		SGMR	1234.0	1235.0	III		1	30	60	
		POTS	1247.7	1250.3	III	G	3	50	350	
		POTS	1316.6	1317.2	III	G,RS	3	40X	360	
		POTS	1353.0	1353.2	III	G	3	110U	350	
		SGMR	1414.0	1420.0	III		1	30	55	
		SGMR	1522.0	1522.0	III		1	30	80	
		SGMR	1547.0	1549.0	V		2	30	80	
		SGMR	1622.0	1625.0	V		1	30	80	
		SGMR	1647.0	1649.0	V		2	30	80	
		SGMR	1722.0	1725.0	V		1	30	80	
2020	2400	CULG	2020.0E	2400.0D	III	S	1	20	90	
		PALE	2035.0	2336.0	III		1	25	40	
		CULG	2047.0	2048.0	III	G	2	30	180	
		PALE	2047.0	2049.0	III		1	25	50	
		CULG	2053.0	2400.0D	I	S	1	110	170	
		PALE	2146.0	2148.0	III		2	25	55	
		CULG	2147.0	2148.0	III	G	2	20	540	
2058	2400	HIRA	2147.0	2148.1	III	G	1	30	50X	
		LEAR	2247.0	2248.0	III		1	30	67	
		PALE	2247.0	2247.0	III		1	31	35	
		PALE	2249.0	0102.0	CONT		1	25	34	
		LEAR	2252.0	1019.0	CONT		1	30	67	
		LEAR	2351.0	2351.0	III		2	30	64	
05		CULG	0000.0E	0100.0	I	S	1	110	170	
0000	0740	CULG	0000.0E	0125.0	III	S	1	20	90	
		CULG	0048.0	0048.0	III	B	1	65	880	
		LEAR	0050.0	0102.0	III		3	30	80	
		PALE	0050.0	0102.0	III	N	3	25	75	
		CULG	0051.0	0053.0	III	G	3	18X	360	
0000	0744	HIRA	0051.0	0052.3	III	G	3	25X	50X	
		CULG	0102.0	0103.0	III	G	2	18X	180	
		CULG	0126.0	0126.0	III	B	3	18X	180	
		CULG	0126.0	0740.0D	III	S	1	20	180	
		LEAR	0126.0	0126.0	III		3	30	80	
		PALE	0126.0	0203.0	III	N	3	25	75	
		HIRA	0126.2	0126.4	III	B	1	25X	50X	
		CULG	0140.0	0142.0	III	G	2	18X	180	
		LEAR	0140.0	0141.0	III		3	30	80	
		HIRA	0141.0	0141.1	III	B	1	25X	50X	
		LEAR	0147.0	0149.0	V		3	30	80	
		HIRA	0147.8	0148.3	III	B	3	25X	50X	
		CULG	0148.0	0149.0	III	G	3	18X	180	
		CULG	0202.0	0203.0	III	G	3	18X	180	
		LEAR	0202.0	0640.0	III	N	3	30	80	
		HIRA	0203.1	0203.3	III	B	2	25X	50X	
		CULG	0255.0	0306.0	III	GG	3	18X	750	
		PALE	0255.0	0303.0	III		3	25	75	
		HIRA	0255.7	0256.0	III	B	1	25X	50X	
		HIRA	0259.0	0300.0	III	G	3	25X	50X	
		HIRA	0301.5	0303.4	III	G	3	25X	50X	
		CULG	0409.0	0419.0	III	GG	3	18X	350	
		HIRA	0409.3	0413.3	III	G	2	25X	50X	
		CULG	0446.0	0500.0	III	GG	3	18X	230	
		HIRA	0446.5	0448.0	III	G	2	30	50X	
		HIRA	0452.3	0453.1	III	G	3	30	50X	
		HIRA	0457.3	0459.1	III	G	3	30	50X	
		CULG	0538.0	0539.0	III	G	2	18X	220	
		SVTO	0538.0	0538.0	III		2	35U	61U	
		HIRA	0538.5	0538.6	III	B	1	40	50X	

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

NOVEMBER 1998

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
05		CULG	0554.0	0557.0	III	G	2	18X	250	
		SVTO	0554.0	0554.0	III		2	36	61	
		HIRA	0554.2	0554.4	III	B	1	40	50X	
		CULG	0614.0	0616.0	III	G	3	18X	800	
		SVTO	0614.0	0629.0	III	N	3	35	85	
		HIRA	0614.7	0615.5	III	G	3	30	50X	
		CULG	0628.0	0629.0	III	G	3	18X	600	
		SVTO	0645.0	0645.0	III		2	36	45	
		POTS	0702 E	1420 U	III	N	1	40X	90U	
		POTS	0702 E	1420 U	III	N	1	110U	170U	
		POTS	0702 E	1420 U	III	N	2	40X	90U	
	0702 1420	POTS	0702 E	1420 U	I	S,C,DC	3	40X	400	
		POTS	0704	1420 U	III	N	2	110U	170U	
		SVTO	0709.0	0928.0	CONT		2	35	45	
		CULG	0721.0	0721.0	III	B	2	20	160	
		LEAR	0721.0	0721.0	III		3	30	80	
		SVTO	0721.0	0721.0	III		2	35	82	
		POTS	0721.1	0721.3	III	G	3	40X	170U	
		POTS	0721.3	0721.6	V		3	40X	50	
		LEAR	0758.0	0804.0	III		3	30	80	
		SVTO	0758.0	0937.0	III	N	3	35	85	
		POTS	0758.2	0802.0	III	G	3	40X	325	
	0716 1412	ONDR	0803.0	0808.2	DCIM	GG,SP	3	800X	1505	
		POTS	0803.1	0803.6	III	G	3	40X	400	
		POTS	0805.6	0806.1	DCIM		2	300	800X	
		LEAR	0824.0	1019.0	III	N	2	30	80	
		POTS	0828.6	0840.1	III	GG	3	40X	750	
		SVTO	0839.0	0840.0	III		3	35	85	
		ONDR	0839.1	0847.4	DCIM	GG,SP	3	800X	1200	
		POTS	0840.1	0840.8	V		3	40X	60	
		POTS	0844.6	0845.5	DCIM		2	350	800X	
		ONDR	0900.4	0901.3	DCIM	GG,SP	3	800X	1320	
		POTS	0908.3	0908.6	III	G	3	40X	170U	
		POTS	0918.2	0918.6	III	B	3	40X	170U	
		ONDR	0919.1	0921.5	DCIM	GG,SP	3	800X	2000X	
		POTS	0931.6	0932.0	III	G	3	40X	275	
		LEAR	0950.0	1000.0	III		3	30	80	
		SVTO	0950.0	1001.0	III	N	3	35	85	
		POTS	0950.6	1001.9	III	GG,C,RS	3	40X	450	
		POTS	0951.2	0952.1	V		3	40X	65	
		ONDR	0956.4	0959.0	DCIM	GG	2	800X	1280	
		POTS	1008.6	1012.5	DCIM		2	400	800X	
		SVTO	1016.0	1043.0	III	N	3	35	85	
		POTS	1016.6	1017.1	III	G	3	40X	275	
		POTS	1038.2	1039.6	DCIM		2	400	700	
		POTS	1042.2	1155.3	III	GG,C	3	40X	500	
		SVTO	1051.0	1136.0	III	N	3	35	85	
		POTS	1058.0	1058.6	III	G	3	40X	170U	
		ONDR	1108.3	1109.4	DCIM	G	1	2070	4365X	
		POTS	1108.3	1114.4	III	GG,C	3	40X	250	
		POTS	1134.9	1152.1	III	GG,C	3	40X	800X	
		SGMR	1135.0	1149.0	III	N	3	30	80	
		SVTO	1137.0	1150.0	III	N	3	35	85	
		POTS	1138.0	1139.0	V		3	40X	65	
		POTS	1146.1	1147.1	V		3	40X	65	
		POTS	1236.0	1236.4	III	B	3	40X	170U	
		SGMR	1236.0	1236.0	III		1	30	60	
		SVTO	1236.0	1314.0	III	N	3	35	85	
		POTS	1251.5	1251.7	DCIM		2	550	680	
		POTS	1255.0	1316.2	III	GG,C	3	40X	550	
		SGMR	1255.0	1602.0	III	N	3	30	80	
		POTS	1331.1	1340.9	III	GG	3	40X	800X	
		SVTO	1332.0	1341.0	V		3	35	85	
		SGMR	1334.0	1341.0	V		3	30	80	
		ONDR	1334.2	1335.1	DCIM	G	2	2000X	4365X	
		ONDR	1334.4	1335.5	DCIM	G	2	800X	2000Y	
		POTS	1335.3	1337.2U	V		3	40X	70	
		SVTO	1359.0	1401.0	III		3	35	85	
		POTS	1359.1	1405.4	III	G	3	40X	600	

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

NOVEMBER 1998

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
05		SVTO	1441.0	1442.0	III		2	36	82	
		SGMR	1735.0	1743.0	V		2	30	80	
		PALE	1740.0	1744.0	III		1	25	60	
		PALE	1823.0	1832.0	III		3	25	75	
		SGMR	1823.0	2108.0	III	N	3	30	80	
		PALE	1846.0	2314.0	III	N	2	25	70	
		SGMR	1950.0	1954.0	II		1	30	80	ESS 1000
		PALE	1951.0	1957.0	II		2	25	75	ESS 0900
		PALE	2010.0	0337.0	CONT		1	25	55	
	2015	CULG	2015.0E	2142.0	IV		2	25	300	
		CULG	2017.0	2037.0	III	N	2	18X	180	
		CULG	2103.0	2126.0	III	N	1	18X	150	
		CULG	2150.0	2314.0	III	N	1	18X	180	
		LEAR	2219.0	2252.0	III	N	2	30	80	
		CULG	2220.0	2221.0	III	G	2	18X	180	
	2059	HIRA	2220.0	2220.5	III	G	1	25X	50X	
		CULG	2311.0	2315.0	III	GG	2	20	270	
		LEAR	2311.0	0100.0	III	N	2	30	80	
		LEAR	2322.0	0658.0	CONT		1	30	75	
		CULG	2348.0	2350.0	III	G	1	20	90	
		CULG	2359.0	2359.0	III	B	1	20	90	
06		PALE	0006.0	0016.0	III		2	25	55	
	0000 0740	CULG	0007.0	0008.0	III	G	2	18X	170	
	0000 0506	HIRA	0007.1	0007.3	III	B	1	25X	50X	
		CULG	0015.0	0016.0	III	G	2	18X	170	
		HIRA	0015.6	0015.9	III	B	1	25X	50X	
		CULG	0034.0	0036.0	III	G	1	20	150	
		CULG	0044.0	0048.0	III	G	1	18	100	
		CULG	0159.0	0200.0	III	G	2	18X	130	
		LEAR	0159.0	0159.0	III		3	30	80	
		PALE	0159.0	0159.0	III		1	25	75	
		LEAR	0238.0	0252.0	III	N	3	30	80	
		PALE	0238.0	0243.0	III		2	25	75	
		HIRA	0238.8	0239.3	III	G	2	25X	50X	
		CULG	0239.0	0243.0	III	GG	3	18X	300	
		HIRA	0241.5	0243.1	III	G	3	25X	50X	
		CULG	0250.0	0253.0	III	G	2	20	180	
		CULG	0305.0	0640.0	I	S	1	60	140	
		CULG	0317.0	0338.0	III	N	1	23	150	
		CULG	0436.0	0438.0	III	G	1	20	90	
		CULG	0451.0	0456.0	III	G	2	18X	140	
		CULG	0516.0	0534.0	III	N	1	20	180	
		CULG	0641.0	0705.0	III	N	2	18	180	
		LEAR	0641.0	0650.0	III		3	30	80	
		SVTO	0641.0	0704.0	III	N	2	35	85	
		LEAR	0658.0	0704.0	III		2	30	80	
	0702 1102	POTS	0702 E	1102 U	I	S,C,DC	2	110U	400	
		POTS	0704.1	0704.5	III	G	2	40X	90U	
		POTS	0715.9	0716.2	III	G	2	110U	225	
		LEAR	0747.0	1020.0	CONT		1	30	60	
		POTS	0747.1	0747.5	III	G	1	40X	65	
		LEAR	0802.0	0803.0	III		2	30	80	
		SVTO	0802.0	0824.0	III	N	2	35	85	
		POTS	0802.2	0803.2	III	GG	3	40X	400	
		LEAR	0817.0	0841.0	III	N	3	30	80	
		POTS	0817.3	0841.9	III	GG,C,P	3	40X	400	
		POTS	0829.1	0832.1U	DCIM		2	350	800X	
		SVTO	0830.0	0841.0	III	N	3	35	85	
	0718 1409	ONDR	0830.4	0831.2	DCIM	G	2	2000X	4365X	
		ONDR	0830.5	0831.2	DCIM	G	2	800X	2000X	
		SVTO	0903.0	0938.0	III	N	3	35	85	
		POTS	0903.2	0918.6	III	GG,C,U	3	40X	800X	
		LEAR	0908.0	0913.0	III		3	30	80	
		ONDR	0909.5	0910.0	DCIM		2	800X	2000X	
		ONDR	0909.5	0910.1	DCIM	G	2	2000X	4365X	
		POTS	0925.7	0938.1	III	GG	3	40X	500	
		SVTO	1027.0	1031.0	III		1	35	85	
		POTS	1027.1	1032.8	III	G	3	40X	275	

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

NOVEMBER 1998

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
06		SVTO	1106.0	1110.0	III		3	35	85	
		SVTO	1106.0	1110.0	V		3	35	85	
		ONDR	1107.1	1110.3	DCIM	GG	2	800X	1985	
		SVTO	1203.0	1215.0	III	N	3	35	85	
		SGMR	1204.0	1215.0	III	N	3	30	80	
		ONDR	1204.1	1204.3	DCIM	G	2	2000X	4365X	
		ONDR	1204.1	1205.5	DCIM	G	2	800X	2000X	
		SGMR	1302.0	1316.0	III	N	2	30	80	
		SVTO	1311.0	1437.0	III	N	3	35	85	
		SVTO	1510.0	1511.0	V		3	40	85	
		PALE	1754.0	1754.0	III		1	30	55	
		SGMR	1754.0	1755.0	III		2	30	60	
		PALE	1835.0	1919.0	III	N	2	25	75	
		PALE	1955.0	1955.0	III		1	25	45	
		PALE	2100.0	2103.0	V		1	25	75	
	2015 2400	CULG	2101.0	2103.0	III	G	3	18X	240	
		PALE	2107.0	2107.0	III		1	25	60	
		CULG	2108.0	2108.0	III	B	2	20	180	
		PALE	2126.0	2237.0	III	N	3	25	75	
	2100 2400	HIRA	2126.8	2127.5	III	G	1	30	50X	
		CULG	2127.0	2129.0	III	G	2	18X	130	
		CULG	2146.0	2205.0	III	N	2	18X	180	
		CULG	2207.0	2210.0	III	G	3	18X	1000	
		LEAR	2207.0	2214.0	III		3	30	80	
		HIRA	2207.8	2208.8	III	G	3	25X	50X	
		CULG	2212.0	2213.0	III	G	2	18	150	
		CULG	2212.0	2216.0	II	FN,H	3	30	80	
		CULG	2212.0	2216.0	II	SH,H	2	60	170	ESS 1000
		CULG	2229.0	2310.0	III	N	1	20	180	
		LEAR	2237.0	2237.0	III		1	30	80	
		CULG	2318.0	2318.0	III	B	2	18X	270	
		LEAR	2318.0	2318.0	III		3	30	80	
		PALE	2318.0	2318.0	III		2	25	75	
		HIRA	2318.1	2318.3	III	B	1	25X	50X	
		LEAR	2328.0	2332.0	III		3	30	80	
		PALE	2328.0	2332.0	V		3	25	75	
		CULG	2329.0	2332.0	III	G	3	18X	1000	
		HIRA	2329.1	2330.3	III	G	3	25X	50X	
		CULG	2333.0	2334.0	III	G	1	140	600	
		LEAR	2339.0	2352.0	II		1	30	80	ESS 1200
		PALE	2339.0	2341.0	II		1	37	51	ESS 0800
		CULG	2340.0	2344.0	II	FN	1	30	50	
		CULG	2340.0	2347.0	II	SH	2	45	100	ESS 550
		CULG	2359.0	2359.0	III	B	2	30	230	
		LEAR	2359.0	0006.0	III		2	30	80	
		PALE	2359.0	0006.0	III		1	30	60	
07	0000 0740	CULG	0001.0	0006.0	III	G	2	18	180	
		LEAR	0108.0	0112.0	III		3	30	80	
		CULG	0109.0	0109.0	III	G	1	20	90	
		PALE	0110.0	0112.0	III		3	25	75	
		CULG	0111.0	0112.0	III	G	3	18X	180	
	0000 0742	HIRA	0111.0	0111.5	III	B	3	25X	50X	
		CULG	0139.0	0140.0	III	G	3	20	250	
		LEAR	0139.0	0140.0	III		3	30	80	
		PALE	0139.0	0139.0	III		1	35	70	
		HIRA	0139.3	0139.5	III	B	1	30	50X	
		CULG	0158.0	0159.0	III	B	3	18	300	
		LEAR	0158.0	0159.0	III		3	30	80	
		PALE	0158.0	0158.0	III		2	35	70	
		HIRA	0158.1	0158.3	III	B	1	30	50X	
		CULG	0237.0	0314.0	III	N	1	20	180	
		LEAR	0237.0	0237.0	III		2	30	80	
		CULG	0245.0	0247.0	III	G	2	18	520	
		LEAR	0245.0	0247.0	V		3	30	80	
		LEAR	0249.0	0250.0	III		2	30	80	
		LEAR	0308.0	0310.0	III		3	30	80	
		HIRA	0309.6	0309.8	III	B	1	25X	50X	
		CULG	0310.0	0310.0	III	B	2	18X	140	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 1998

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
07		LEAR	0515.0	0838.0	III	N	3	30	80	
		CULG	0517.0	0740.0D	III	N	2	18	200	
		CULG	0545.0	0548.0	III	G	3	18X	180	
		LEAR	0545.0	0548.0	III		3	30	80	
		HIRA	0545.2	0547.8	III	G	1	40	50X	
		CULG	0600.0	0740.0D	I	S	1	80	160	
		SVTO	0609.0	0712.0	III	N	2	35	85	
		CULG	0653.0	0654.0	III	G	3	18X	240	
	0720	ONDR	0944.0	0945.3	DCIM	G	1	2665	4375X	
		ONDR	1104.3	1106.3	DCIM	G	2	2000X	4375X	
		ONDR	1104.4	1107.3	DCIM	G	2	800X	2000X	
		ONDR	1214.4	1216.0	DCIM	GG,SP	3	800X	1040	
		ONDR	1215.5	1216.1	DCIM	G	1	2265	4375X	
		SGMR	1405.0	1416.0	III	N	2	30	55	
		SGMR	1656.0	1657.0	V		2	30	80	
		SGMR	1730.0	1902.0	III	N	2	30	80	
		PALE	1738.0	1739.0	III		1	27	55	
		PALE	1752.0	1758.0	III		2	25	65	
		PALE	1853.0	1903.0	III		2	27	55	
		PALE	1959.0	1959.0	III		1	27	45	
	2015	CULG	2023.0	2358.0	III	N	2	18X	300	
		PALE	2025.0	2026.0	III		2	27	55	
		PALE	2042.0	2043.0	III		2	27	45	
		PALE	2058.0	2158.0	III	N	3	25	75	
		CULG	2122.0	2124.0	III	G	3	18X	600	
		CULG	2124.0	2126.0	V		1	18	90	
		PALE	2254.0	2254.0	III		1	25	50	
		LEAR	2255.0	2255.0	III		2	30	80	
		LEAR	2315.0	2324.0	III		2	30	80	
		LEAR	2330.0	2335.0	III		2	30	80	
		PALE	2334.0	2342.0	III		2	25	75	
		CULG	2341.0	2342.0	III	G	3	18X	200	
		LEAR	2341.0	2342.0	III		3	30	80	
		LEAR	2348.0	2348.0	III		1	35	55	
		LEAR	2358.0	2358.0	III		3	30	80	
08	0000	CULG	0005.0	0052.0	III	N	1	20	180	
		LEAR	0009.0	0012.0	III		1	30	65	
		CULG	0019.0	0022.0	III	G	2	18X	400	
		LEAR	0019.0	0022.0	III		3	30	80	
		PALE	0021.0	0021.0	III		1	25	50	
		LEAR	0034.0	0035.0	III		2	30	80	
		LEAR	0051.0	0051.0	III		1	30	60	
		CULG	0148.0	0152.0	III	G	3	18X	620	
		LEAR	0148.0	0159.0	III	N	3	30	80	
		PALE	0148.0	0151.0	III		1	25	75	
		CULG	0155.0	0253.0	III	N	1	20	180	
		LEAR	0219.0	0230.0	III	N	2	30	80	
		LEAR	0250.0	0258.0	III		2	30	80	
		CULG	0336.0	0338.0	III	G	1	20	90	
		LEAR	0336.0	0345.0	III		2	30	80	
		CULG	0343.0	0345.0	III	G	3	18X	500	
		LEAR	0443.0	0444.0	III		1	35	63	
		LEAR	0451.0	0452.0	III		3	30	80	
		CULG	0452.0	0452.0	III	B	2	18X	500	
		LEAR	0616.0	0617.0	III		1	30	65	
		LEAR	0629.0	0636.0	III		2	30	65	
		CULG	0630.0	0635.0	III	G	1	18	440	
		SVTO	0632.0	0634.0	III		2	35	50	
		CULG	0649.0	0649.0	III	B	1	20	120	
		LEAR	0649.0	0649.0	III		2	30	80	
		SVTO	0649.0	0649.0	III		1	61	74	
		LEAR	1014.0	1014.0	III		2	30	65	
		ONDR	1208.2	1211.1	DCIM		1	800X	2000X	
	0722	ONDR	1208.2	1208.3	DCIM		1	2000X	4375X	
		SGMR	1250.0	1250.0	III		1	30	80	
		SGMR	1253.0	1255.0	III		1	30	80	
		SGMR	1312.0	1319.0	V		2	30	80	
		ONDR	1318.0	1321.2	DCIM	G	1	800	1985	

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

NOVEMBER 1998

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
08			ONDR	1319.2	1321.0	DCIM	G	1	2000X	4375X	
			SGMR	1337.0	1443.0	III	N	2	30	80	
			SGMR	1610.0	1612.0	V		3	30	80	
			PALE	1729.0	1729.0	III		1	29	55	
			PALE	1936.0	1944.0	III		2	27	55	
			SGMR	1936.0	1937.0	III		1	30	57	
			LEAR	2202.0	2204.0	III		1	30	50	
			PALE	2202.0	2206.0	III		2	25	50	
	2015	2400	CULG	2203.0	2206.0	III	G	2	18X	420	
			CULG	2338.0	2339.0	III	G	1	55	160	
			LEAR	2348.0	2350.0	III		2	30	80	
			CULG	2349.0	2351.0	III	G	2	18X	180	
	2251	2400	HIRA	2349.0	2350.0	III	G	1	25X	50X	
			PALE	2358.0	2358.0	III		1	25	75	
09	0000	0710	HIRA								
			LEAR	0140.0	0140.0	III		1	39	66	
	0000	0740	CULG	0140.0	0140.0	III	B	1	20	90	
			LEAR	0200.0	0206.0	III		1	30	61	
			CULG	0206.0	0207.0	III	G	1	20	90	
			LEAR	0238.0	0239.0	III		2	30	80	
			CULG	0239.0	0239.0	III	B	2	20	180	
			LEAR	0352.0	0352.0	III		1	30	52	
			CULG	0455.0	0457.0	III	G	1	20	250	
			LEAR	0455.0	0457.0	III		2	30	80	
			CULG	0553.0	0555.0	III	G	1	20	180	
			LEAR	0553.0	0555.0	III		2	30	80	
			LEAR	0636.0	0637.0	III		1	30	58	
			CULG	0637.0	0637.0	III	G	1	25	90	
	0718	0858	POTS	0718 E	0858 U	I	S,C	2	110U	300	
	0725	1404	ONDR								
			POTS	0744.3	0744.4	III	B	2	110U	160	
			POTS	0758.5	0803.9	III	G	2	40X	325	
			LEAR	0801.0	0803.0	III		2	30	80	
			POTS	0802.2	0802.7	II	UE	2	40X	70	
			POTS	0804.6	0804.8	III	B	2	40X	325	
			LEAR	0818.0	0818.0	III		1	30	50	
			POTS	0818.3	0819.4	III	G	2	40X	170U	
			POTS	0916 E	1414 U	III	N	1	40X	90U	
			POTS	0916 E	1414 U	III	N	1	110U	170U	
	0916	1414	POTS	0916 E	1414 U	I	S,C	2	110U	400	
			POTS	0939.9	0940.0	III	B	2	110U	170U	
			SVTO	0940.0	1024.0	CONT		2	54	85	
			SVTO	1017.0	1018.0	III		2	35	76	
			POTS	1018.3	1018.5	DCIM		2	375	550	
			POTS	1018.4	1018.8	III	G	2	40X	170U	
			POTS	1158.0	1158.2	DCIM		2	200U	325	
			SGMR	1620.0	1635.0	III	N	1	30	75	
			PALE	1835.0	1836.0	III		2	25U	70U	
			SGMR	1835.0	1837.0	V		2	30	80	
			PALE	1913.0	1914.0	III		1	25	45	
			SGMR	1943.0	1944.0	III		1	30	50	
	2015	2400	CULG	2015.0	2230.0	CONT		1	30	150	
			CULG	2024.0	2025.0	III	G	1	20	90	
	2103	2400	HIRA								
			CULG	2107.0	2113.0	III	G	1	18	180	
			PALE	2348.0	2350.0	III		2	25	55	
10	0000	0739	HIRA								
			LEAR	0224.0	0225.0	III		3	30	80	
	0000	0740	CULG	0225.0	0225.0	III	G	2	18X	180	
			CULG	0440.0	0443.0	III	G	1	20	90	
			LEAR	0626.0	0631.0	III		2	30	80	
			CULG	0627.0	0627.0	III	B	2	18	530	
			CULG	0631.0	0632.0	III	G	2	18X	130	
	0702	0837	POTS	0702 E	0837 U	I	S	2	110U	450	
			POTS	0707.2	0707.7	DCIM		2	700	800X	
			CULG	0710.0	0711.0	III	G	2	18X	800	
			LEAR	0710.0	0711.0	III		2	30	80	

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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
10			POTS	0710.2	0711.1	III	G	3	40X	400X	
			POTS	0710.5	0710.9	DCIM		2	400	800X	
			POTS	0748.5	0748.6	DCIM		1	500	650	
			LEAR	0749.0	0750.0	III		2	30	80	
			POTS	0749.6	0750.4	III	G	3	40X	450	
			POTS	0750.6	0750.8	DCIM		1	400	675	
			LEAR	0808.0	0808.0	III		1	38	54	
			POTS	0815.4	0819.2	III	G	2	40X	650	
			ONDR	0925.5	0934.4	DCIM	GG	1	885	2000X	
	0654	1401	ONDR	0930.1	0931.0	DCIM		1	2000X	4385	
	1225	1307	POTS	1225 E	1307 U	I	S	2	110U	400	
	1322	1420	POTS	1322 E	1420 U	I	S	2	110U	400	
			POTS	1322.7	1322.8	DCIM		1	670	720	
			ONDR	1337.4	1343.5	DCIM	GG	2	1010	1975	
			POTS	1342.2	1343.8	DCIM		2	325	650	
	2015	2400	CULG	2138.0	2400.0D	CONT		1	60	160	
			CULG	2218.0	2221.0	III	G	2	18X	280	
	2104	2400	HIRA	2218.2	2218.4	III	B	1	25X	50X	
11	0000	0738	HIRA								
	0000	0740	CULG	0000.0E	0016.0	CONT		1	60	160	
			CULG	0400.0	0400.0	III	B	1	40	110	
			CULG	0424.0	0425.0	III	G	1	23	90	
			LEAR	0424.0	0431.0	III		2	30	75	
			CULG	0428.0	0428.0	III	B	1	100	400	
			CULG	0431.0	0432.0	III	G	1	18	130	
			CULG	0715.0	0718.0	III	G	1	20	70	
			ONDR	0947.0	0947.5	DCIM	G	1	800X	2000X	
	0729	1359	ONDR	0947.0	0947.3	DCIM		1	2000X	4400X	
	1312	1401	POTS	1331	1401 U	I	S	1	130	250	
			POTS	1332.1	1332.8	III	G	1	140	170U	
			POTS	1333.6	1333.8	DCIM		2	400	500	
			POTS	1339.5	1339.6	III	B	1	130	160	
			SGMR	1347.0	1348.0	III		1	30	45	
			SGMR	1502.0	1504.0	III		2	30	80	
			LEAR	2320.0	2328.0	III		3	30	80	
			PALE	2320.0	2328.0	III		2	25	70	
	2015	2400	CULG	2321.0	2328.0	III	G	2	18	180	
	2105	2400	HIRA	2325.0	2325.2	III	B	2	25X	50X	
12	0000	0740	CULG	0125.0	0125.0	III	B	1	60	90	
			CULG	0154.0	0154.0	III	B	1	30	90	
			LEAR	0227.0	0228.0	III		3	30	80	
			PALE	0227.0	0228.0	III		1	25	75	
			CULG	0228.0	0228.0	III	B	3	18X	600	
	0000	0738	HIRA	0228.1	0228.3	III	B	1	25X	50X	
			CULG	0239.0	0239.0	III	B	1	60	90	
			LEAR	0301.0	0301.0	III		1	30	46	
			LEAR	0353.0	0354.0	III		1	30	60	
			CULG	0354.0	0357.0	III	G	1	23	90	
	0724	1401	POTS	0724 E	1401 U	I	S,C	2	70	400	
	0731	1356	ONDR								
			POTS	0743.7	0744.3	III	G	2	110U	160	
			POTS	0816.7	0816.8	III	B	1	110U	170U	
			POTS	0844.3	0844.4	III	B	2	110U	155	
			POTS	0932.3	0932.4	III	B	2	120	135	
			POTS	0955.4	0955.5	III	B	2	110U	145	
			POTS	1029.7	1030.1	DCIM		2	250	575	
	2106	2400	HIRA								
	2015	2400	CULG	2156.0	2252.0	III	N	1	20	180	
			CULG	2242.0	2245.0	III	G	2	20	340	
			LEAR	2242.0	2244.0	III		1	30	80	
13	0000	0737	HIRA								
			LEAR	0007.0	0009.0	III		1	40	66	
	0000	0740	CULG	0008.0	0009.0	III	G	1	30	80	
			LEAR	0140.0	0305.0	III	N	2	30	80	
			LEAR	0140.0	0505.0	III	N	2	30	80	
			CULG	0141.0	0141.0	III	B	1	30	80	

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13		CULG	0147.0	0147.0	III	B	1	30	80	
		CULG	0224.0	0224.0	III	B	2	18X	140	
		LEAR	0235.0	0236.0	III		3	30	80	
		CULG	0236.0	0237.0	III	G	2	18	180	
		LEAR	0404.0	0631.0	CONT		1	30	80	
		CULG	0627.0	0650.0	III	N	1	20	160	
		LEAR	0627.0	0631.0	III		2	30	80	
		SVTO	0627.0	0631.0	III		1	35	50	
		LEAR	0641.0	0649.0	III		2	30	80	
		LEAR	0651.0	0701.0	III		3	30	80	
		CULG	0652.0	0655.0	III	G	2	18	90	
		SVTO	0652.0	0655.0	III		2	35	76	
		LEAR	0823.0	0823.0	III		1	45	66	
		SGMR	1256.0	1256.0	III		1	30	50	
		SVTO	1256.0	1256.0	III		1	35	83	
0733	1355	ONDR	1341.2	1342.5	DCIM		1	2000X	4255	
		ONDR	1341.3	1342.5	DCIM	G	1	1045	2000X	
		PALE	2042.0	2042.0	III		1	28	45	
2015	2400	CULG	2042.0	2042.0	III	B	1	18	70	
2107	2400	HIRA								
		CULG	2113.0	2116.0	III	G	2	18X	80	
		PALE	2113.0	2114.0	III		1	25	46	
14 0000	0736	HIRA								
		LEAR	0442.0	0446.0	III		1	30	54	
0000	0740	CULG	0442.0	0447.0	III	G	1	20	160	
		LEAR	0501.0	0536.0	IV		3	30	80	
		CULG	0502.0	0506.0	III	G	2	18X	230	
		CULG	0506.0	0524.0	II	SH	3	35	160	ESS 650
		CULG	0506.0	0528.0	II	FN	3	18X	70	
		CULG	0555.0	0555.0	III	B	1	18	80	
		CULG	0611.0	0611.0	III	B	1	18	90	
		CULG	0627.0	0633.0	III	G	2	18X	160	
		LEAR	0627.0	0632.0	III		3	30	80	
		LEAR	0656.0	0724.0	III	N	2	30	80	
		CULG	0657.0	0733.0	III	N	1	18	120	
0724	1401	POTS	0728.7	0729.1	III	G	2	40X	160	
		POTS	0733.5	0733.8	III	G	2	40X	170U	
0735	1354	ONDR								
		POTS	0752.3	0752.8	III	G	2	110U	145	
		POTS	0803.6	0803.8	III	G	2	110U	325	
		POTS	0817.5	0818.4	III	G	2	110U	170U	
		LEAR	0828.0	0837.0	III		2	30	80	
		POTS	0828.6	0837.3	III	GG	3	40X	300	
		POTS	0846	1340	III	N	1	110U	170U	
		LEAR	0850.0	0856.0	III		1	40	70	
		POTS	0850.1	0856.2	III	G	2	40X	170U	
		POTS	0945.0	0945.1	III	B	2	110U	140	
		POTS	0955.2	0956.3	III	G	2	40X	170U	
		POTS	1011.6	1012.2	III	G	2	40X	170U	
		POTS	1014.1	1014.2	III	B	2	40X	65	
		POTS	1022.6	1022.9	III	G,P,C	2	40X	150	
		SVTO	1033.0	1034.0	III		1	35	73	
		POTS	1033.2	1037.9	III	GG	2	40X	220	
		POTS	1249.4	1249.6	III	B	2	40X	170U	
		POTS	1259.8	1259.9	III	B	2	110U	220	
		SGMR	1309.0	1310.0	III		1	30	48	
		POTS	1309.7	1310.3	III	G	2	40X	170U	
		SGMR	1921.0	1921.0	III		1	30	60	
		PALE	2038.0	2041.0	III		1	30	45	
		SGMR	2038.0	2039.0	III		1	30	45	
2015	2400	CULG	2039.0	2041.0	III	G	2	18X	160	
2108	2400	HIRA								
		CULG	2238.0	2238.0	III	B	1	20	130	
		LEAR	2238.0	2238.0	III		1	36	54	
15 0000	0736	HIRA								
0000	0740	CULG	0000.0	0001.0	III	G	2	18X	180	
		LEAR	0149.0	0149.0	III		1	30	45	

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15		LEAR	0214.0	0215.0	III		1	30	38	
		LEAR	0423.0	0424.0	III		2	30	80	
		CULG	0424.0	0425.0	III	G	1	18X	120	
		POTS	0724 E	1308	III	N	1	110U	170U	
		POTS	0724 E	1401 U	III	N	1	40X	90U	
0724	1401	POTS	0724 E	1401 U	I	S	1	110U	400	
		POTS	0729.2	0729.9	III	G	2	110U	135	
		POTS	0732.3	0732.4	III	B	2	40X	60	
0737	1350	ONDR								
		POTS	0813.4	0813.6	III	G	2	110U	170U	
		POTS	1011.7	1011.8	III	B	2	110U	160	
2015	2400	CULG	2031.0	2039.0	III	G	1	20	70	
2109	2400	HIRA								
16 0000	0735	HIRA								
0000	0740	CULG	0020.0	0020.0	III	B	1	30	90	
		CULG	0040.0	0041.0	III	G	2	18X	70	
		CULG	0304.0	0306.0	III	G	2	25	200	
		CULG	0359.0	0429.0	III	N	2	20	200	
		CULG	0512.0	0514.0	III	G	2	18	150	
0656	1352	POTS	0659	1347	I	S	2	110U	400	
		POTS	0710	1352 U	III	N	1	110U	170U	
		POTS	0800.2	0800.8	III	G	3	40X	220	
		POTS	0824.8	0825.1	III	G	2	40X	220	
		POTS	0825.3	0825.7	III	G	2	40X	160	
		POTS	0831.6	0831.8	III	B	2	110U	275	
		POTS	0905	1347	III	N	2	110U	170U	
		POTS	1019.1	1019.3	III	B	2	40X	60	
		POTS	1036.5	1039.4	III	GG,C	3	40X	160	
		POTS	1056.7	1057.3	III	G,C	2	110U	300	
		POTS	1117.3	1118.3	III	GG	3	40X	170U	
		POTS	1125.8	1128.0	III	G	3	40X	220	
		POTS	1202.0	1204.5	III	G	3	40X	200U	
		ONDR	1202.1	1203.4	DCIM	G	1	830	2000X	
0740	1349	ONDR	1202.3	1203.4	DCIM		1	2000X	4375X	
		POTS	1202.5	1202.6	UNCLF		1	675	725	
		POTS	1203.0U	1204.2	V		3	40X	70	
		POTS	1233.2	1235.8	III	G	3	40X	170U	
		ONDR	1234.0	1235.2	DCIM	GG	2	800X	2000X	
		POTS	1234.0	1234.9	DCIM		1	400	750	
		ONDR	1234.1	1234.4	DCIM		1	2000X	4375X	
		POTS	1236.9	1238.0	III	GG	2	40X	170U	
		ONDR	1319.3	1321.5	DCIM	G	1	800X	2000X	
		ONDR	1319.3	1321.5	DCIM	G	1	2000X	4375X	
		POTS	1319.5	1323.2	III	GG,C	3	40X	550	
		POTS	1319.6	1321.9	DCIM		1	400	800X	
		POTS	1325.3	1327.3	III	G	3	40X	350	
2110	2400	HIRA	2138.8	2139.6	III	G	2	25X	50X	
2015	2400	CULG	2147.0	2152.0	III	GG	2	18X	270	
		CULG	2154.0	2154.0	III	G	1	20	90	
		CULG	2158.0	2208.0	II	SH	2	55	90	ESS 400
		CULG	2200.0	2204.0	II	FN	1	28	45	
		CULG	2222.0	2229.0	III	GG	1	20	260	
17 0000	0734	HIRA								
0000	0740	CULG	0221.0	0222.0	III	G	1	28	240	
		CULG	0441.0	0441.0	III	B	1	60	180	
		CULG	0456.0	0503.0	III	G	1	20	180	
		POTS	0724 E	1329	III	N	2	110U	170U	
		POTS	0724 E	1401 U	III	N	1	110U	170U	
0724	1401	POTS	0724 E	1401 U	I	S	2	110U	300	
		POTS	0740.9	0741.4	III	G	3	85	220	
0742	1348	ONDR								
		POTS	0758.2	0758.8	III	G	2	40X	250	
		POTS	1122.3	1123.2	III	G	2	40X	65	
		POTS	1205.0	1206.1	III	G	3	40X	170U	
		POTS	1303.7	1304.1	III	G	2	40X	170U	
		POTS	1305.4	1306.9	III	GG	2	40X	170U	
2015	2400	CULG								

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17										
2111	2317	HIRA								
18										
0000	0745	CULG								
0724	1403	POTS	0726	1403 U	I	S	2	110U	350	
0744	1347	ONDR								
		POTS	0804	1210	III	N	1	110U	170U	
		POTS	0837.4	0843.8	III	GG	2	40X	450	
		POTS	0848	1315	III	N	2	110U	170U	
		POTS	0937.0	0937.4	III	G	2	110U	170U	
		POTS	1010.0	1016.2	UNCLF		1	225	325	
		POTS	1054.5	1055.5	III	G	3	40X	325	
		POTS	1128.5	1128.6	III	G	2	110U	170U	
		POTS	1212.0	1213.6	III	G	3	40X	325	
		POTS	1216.6	1216.9	II	SH	2	220	270	
		POTS	1216.7	1216.9	II	F	2	135	150	
		POTS	1220.1	1221.9	II	UE	2	120	170U	
		POTS	1354.5	1355.2	UNCLF		2	40X	325	
2015	2400	CULG	2040.0	2042.0	III	G	2	18X	100	
2112	2400	HIRA								
		CULG	2155.0	2156.0	III	G	1	25	90	
		CULG	2250.0	2250.0	III	B	1	60	180	
19										
0000	0745	CULG	0048.0	0050.0	III	G	1	20	180	
		CULG	0139.0	0139.0	III	B	1	30	90	
0217	0733	HIRA								
		CULG	0224.0	0231.0	III	G	1	18	180	
		CULG	0315.0	0315.0	III	B	1	23	60	
		CULG	0340.0	0344.0	III	G	1	20	90	
		CULG	0415.0	0415.0	III	B	1	30	90	
		CULG	0506.0	0510.0	III	B	1	20	90	
		CULG	0616.0	0616.0	III	B	1	25	45	
		CULG	0654.0	0655.0	III	G	1	25	45	
0724	1403	POTS	0732	1403 U	I	S	1	150	400	
		POTS	0735.7	0735.8	III	B	2	110U	145	
0746	1346	ONDR								
		POTS	0757.2	0757.3	III	B	2	110U	170U	
		POTS	0814.9	0815.9	III	G	2	40X	160	
		POTS	0823.8	0825.3	III	G	2	40X	375	
		POTS	0844.5	0844.8	III	B	2	40X	120	
		POTS	0855.2	0858.0	III	G	2	40X	170U	
		POTS	0924.1	0924.5	UNCLF		2	40X	60	
		POTS	0945.1	0945.2	III	B	2	110U	160	
		POTS	0951.6	0951.8	III	B	2	110U	150	
		POTS	1109.2	1109.3	III	B	1	130	170U	
		POTS	1204.9	1205.0	III	B	1	120	170U	
		POTS	1306.9	1307.1	III	B	1	110U	400	
		POTS	1327.6	1335.6	III	G	3	40X	325	
		POTS	1348.5	1348.6	III	B	1	110U	160	
2015	2400	CULG	2038.0	2038.0	III	B	1	25	100	
2113	2400	HIRA								
		CULG	2131.0	2131.0	III	B	1	60	100	
		CULG	2253.0	2253.0	III	B	1	30	90	
		CULG	2300.0	2301.0	III	G	1	60	180	
20										
0000	0733	HIRA								
0000	0745	CULG	0003.0	0004.0	III	G	1	35	180	
		CULG	0010.0	0011.0	III	G	1	60	180	
		CULG	0018.0	0035.0	II	SH	2	40	130	ESS 400
		CULG	0257.0	0257.0	III	B	1	20	80	
		CULG	0421.0	0421.0	III	B	1	23	60	
		CULG	0547.0	0547.0	III	B	1	60	180	
		CULG	0606.0	0745.0D	I	S	1	60	140	
		CULG	0650.0	0650.0	III	B	1	23	70	
		CULG	0713.0	0714.0	III	G	3	18X	180	
0724	1402	POTS	0724 E	1402 U	I	S,C	2	40X	400	
0748	1343	ONDR								
		POTS	0812.5	0817.4	III	G	2	40X	90U	
		POTS	0857.0	0903.2	III	G	3	40X	170U	
		POTS	0902.1	0902.3	DCIM		2	325	450	

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20		POTS	0912.6	0913.2	III	G	2	40X	65	
		POTS	0922.1	0922.5	III	G	2	40X	75	
		POTS	0955.9	0956.3	III	B	2	40X	135	
		POTS	1003.7	1010.7	III	GG	3	40X	550	
		POTS	1017.3	1017.7	DCIM		2	380	680	
		POTS	1017.3	1018.2	III	G	3	40X	360	
		POTS	1046.1	1046.8	III	G	3	40X	250	
		POTS	1047.6	1048.3	III	G	3	40X	300	
		POTS	1141.9	1142.2	DCIM		2	260	400	
		POTS	1155.7	1156.9	DCIM		2	350	430	
		POTS	1235.1	1243.6	III	GG	3	40X	275	
		POTS	1309.4	1309.5	III	B	2	110U	145	
		POTS	1349.4	1349.6	III	G	2	270	340	
	2015 2400	CULG	2015.0E	2146.0	CONT		1	60	260	
	2114 2400	HIRA								
		CULG	2154.0	2154.0	III	B	2	50	90	
		CULG	2336.0	2340.0	III	G	1	28	90	
		CULG	2356.0	2357.0	III	G	1	60	90	
21	0000 0732	HIRA								
	0000 0745	CULG	0036.0	0036.0	III	B	1	18	90	
		CULG	0043.0	0045.0	III	G	1	18X	150	
		CULG	0055.0	0056.0	III	G	3	30	180	
		CULG	0448.0	0449.0	III	G	1	23	100	
		CULG	0636.0	0639.0	III	G	3	20	150	
		CULG	0649.0	0650.0	III	G	1	23	130	
	0738 1356	POTS	0738 E	1356 U	I	S	1	110U	400	
		POTS	0756.5	0756.7	III	G	1	160	325	
		POTS	0800.0	0808.4	III	GG,UG,C	3	40X	450	
		POTS	0809.7	0814.2	III	GG	2	65	450	
		POTS	0831.3	0831.8	III	G	1	200U	400	
		POTS	0835.5	0835.7	III	G	1	200U	275	
		POTS	0855	1356 U	III	N	1	110U	170U	
		POTS	0858.4	0859.2	III	G	2	40X	150	
		POTS	0924.1	0924.6	III	G	2	110U	275	
		POTS	0939.0	0939.9	DCIM		1	200U	400	
		POTS	1000.3	1000.6	III	G	2	40X	170U	
	0750 1340	ONDR	1013.4	1014.5	DCIM		1	2520	3385	
		POTS	1058.7	1100.0	III	G,U	2	110U	240	
		POTS	1126.7	1127.5	DCIM		2	240	500	
		POTS	1144.6	1148.0	III	GG	3	40X	400	
		POTS	1233.8	1238.1	DCIM		2	200U	400	
		POTS	1334.5	1334.7	III	G,U	2	135	220	
	2015 2400	CULG	2043.0	2043.0	III	B	1	40	130	
		CULG	2047.0	2050.0	III	G	2	20	180	
	2115 2400	HIRA								
		CULG	2319.0	2319.0	III	B	1	30	80	
22	0000 0745	CULG	0025.0	0026.0	III	B	2	20	80	
	0000 0732	HIRA	0025.5	0025.7	III	B	1	25X	50X	
		CULG	0130.0	0132.0	III	G	1	40	140	
		HIRA	0134.9	0135.0	III	B	1	30	50X	
		CULG	0135.0	0136.0	III	G	2	25	180	
		CULG	0216.0	0216.0	III	B	1	23	50	
		CULG	0302.0	0340.0	III	N	1	20	180	
		CULG	0407.0	0409.0	III	G	2	20	130	
		HIRA	0408.0	0408.5	III	B	1	30	50X	
		CULG	0524.0	0525.0	III	G	3	35	150	
		CULG	0624.0	0624.0	III	B	1	55	130	
		CULG	0638.0	0706.0	II	SH	3	30U	420	SWF ESS 750
		CULG	0639.0	0650.0U	II	FN	3	25U	170	
	0738 1356	POTS	0738 E	1356 U	I	S,C,DC	2	110U	400	
		POTS	0748	1356 U	III	N	1	110U	170U	
	0752 1340	ONDR								
		POTS	0753.7	0754.0	III	G	2	110U	170U	
		POTS	0754.2	0754.5	III	B	2	40X	65	
		POTS	0816.1	0817.9	III	G	3	40X	150	
		POTS	0831.4	0833.9	III	G	3	110U	170U	
		POTS	0851.5	0854.9	III	G,C	3	40X	250	

S O L A R R A D I O E M I S S I O N
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NOVEMBER 1998

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
22			POTS	0858.9	0903.5	III	G	2	40X	170U	
			POTS	0911.9	0914.6	III	G	3	40X	350	
			POTS	0917.6	0918.6	III	G	2	110U	275	
			POTS	0939.1	0939.4	III	G	2	40X	90U	
			POTS	1006.3	1007.6	III	G	3	40X	170U	
			POTS	1024.0	1024.5	III	G	2	110U	275	
			POTS	1031.3	1039.6	III	GG,RS	2	40X	400	
			POTS	1047.1	1048.7	III	G	2	110U	300	
			POTS	1112.3	1113.3	III	G	3	40X	220	
			POTS	1144.7	1144.9	III	G	2	110U	170U	
			POTS	1153.2	1154.1	III	G	2	40X	150	
			POTS	1214.7	1215.4	III	G	3	110U	270	
			POTS	1256.4	1300.3	III	GG,U	3	40X	300	
			POTS	1331.1	1332.2	III	G	3	110U	300	
			POTS	1349.8	1350.3	III	G	3	90U	250	
			PALE	2022.0	2219.0	III	N	2	25	55	
	2015	2400	CULG	2023.0	2023.0	III	B	1	20	90	
			CULG	2040.0	2045.0	III	G	2	18X	200	
			CULG	2050.0	2050.0	III	B	1	25	40	
			CULG	2117.0	2119.0	III	G	2	18X	180	
	2116	2400	HIRA	2117.8	2118.8	III	G	1	30	50X	
			CULG	2219.0	2219.0	III	B	1	30	120	
			CULG	2300.0	2301.0	III	G	2	30	240	
			LEAR	2300.0	2301.0	III		2	30	80	
			PALE	2300.0	2300.0	III		1	25	50	
23	0000	0731	HIRA								
			LEAR	0152.0	0201.0	III		2	30	80	
	0000	0750	CULG	0153.0	0154.0	III	G	2	35	180	
			LEAR	0204.0	0204.0	III		1	33	55	
			LEAR	0333.0	0335.0	III		2	30	80	
			CULG	0334.0	0336.0	III	G	2	20	170	
			LEAR	0429.0	0439.0	III		1	46	80	
			LEAR	0515.0	0515.0	III		1	41	80	
			LEAR	0530.0	0535.0	III		1	30	80	
			LEAR	0617.0	0618.0	III		1	30	69	
			LEAR	0625.0	0625.0	III		1	34	69	
			CULG	0637.0	0638.0	UNCLF		1	400	600	
			SVTO	0657.0	0917.0	IV		1	35	85	
			CULG	0659.0	0700.0	III	G	1	25	90	
			LEAR	0659.0	0701.0	III		2	30	80	
			LEAR	0701.0	0826.0	IV		2	30	80	
	0738	1356	POTS	0738 E	1356 U	I	S,C,DC	2	110U	400	
			POTS	0744	1328	III	N	2	110U	170U	
			POTS	0744	1356 U	III	N	1	110U	170U	
			POTS	0746.9	0750.2U	IV	P	3	40X	575U	
			CULG	0747.0	0749.0	III	G	3	23	200	
			LEAR	0747.0	0749.0	III		3	30	80	
			SVTO	0747.0	0749.0	V		3	35	85	
			POTS	0751.0	0755.5	III	GG	3	40X	450	
			POTS	0821.6	0821.8	III	B	3	40X	225	
			ONDR	1053.0	1116.0	DCIM	GG	3	800X	2000X	
			POTS	1054	1228	IV	P	3	40X	800X	
	0754	1338	ONDR	1054.4	1127.2	DCIM	GG	3	2000X	4375X	
			SVTO	1104.0	1117.0	II		3	35	85	ESS 1400
			POTS	1104.9	1107.5U	II	F,H	3	40X	50	
			POTS	1105.4	1117.5U	II	SH,H	3	40X	90U	
			POTS	1106.2	1108.6U	II	SH,H	2	110U	140	
			ONDR	1116.0	1154.2	DCIM	GG,FS	3	800X	2000X	
			SVTO	1117.0	1231.0	IV		2	35	85	
			ONDR	1128.0	1153.3	DCIM	GG	2	2000X	4375X	
			ONDR	1154.2	1202.4	DCIM	G,FS	3	800X	2000X	
			ONDR	1212.1	1225.4	DCIM	GG	2	800X	2000X	
			ONDR	1212.2	1225.1	DCIM	G	2	2000X	4375X	
			POTS	1213.3	1213.5	III	B	2	130	170U	
			POTS	1224.5	1226.6	III	G,C	3	40X	325	
			SVTO	1225.0	1225.0	III		3	35	76	
			POTS	1325.4	1328.9	III	GG,C,U	3	40X	325	
			PALE	1916.0	1917.0	III		1	25	45	

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NOVEMBER 1998

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
23			SGMR	1916.0	1916.0	III		1	30	45	
			SGMR	1917.0	1917.0	III		1	30	45	
	2020	2400	CULG	2055.0	2055.0	III	B	1	65	180	
			CULG	2103.0	2104.0	III	G	3	50	240	
	2117	2400	HIRA								
			LEAR	2324.0	2324.0	III		1	30	54	
			PALE	2324.0	2324.0	III		1	29	37	
			LEAR	2333.0	2336.0	III		1	30	67	
			PALE	2333.0	2336.0	III		1	32	41	
24			LEAR	0007.0	0007.0	III		1	30	55	
			LEAR	0215.0	0223.0	III		2	30	80	
	0000	0750	CULG	0215.0	0216.0	III	G	3	18X	270	
	0000	0731	HIRA	0215.7	0215.9	III	B	1	25X	50X	
			CULG	0217.0	0222.0	II	SH,H	2	60	150	SWF ESS 1000
			CULG	0218.0	0220.0	II	FN,H	2	35	60	
			PALE	0218.0	0219.0	III		1	40	55	
			LEAR	0223.0	0241.0	II		2	30	80	ESS 0400
			CULG	0224.0	0231.0	II	SH	3	50	90	ESS 400
			CULG	0225.0	0229.0	II	FN	1	30	45	
			CULG	0230.0	0240.0	II	UE	1	30	130	
			LEAR	0322.0	0323.0	III		1	30	49	
			LEAR	0407.0	0409.0	III		2	30	80	
			CULG	0408.0	0410.0	III	G	1	18	180	
			LEAR	0435.0	0435.0	III		1	30	50	
			LEAR	0505.0	0508.0	III		2	30	75	
			CULG	0506.0	0506.0	III	B	1	20	80	
			CULG	0604.0	0630.0	III	N	1	20	180	
			LEAR	0610.0	0622.0	III		2	30	80	
			CULG	0710.0	0740.0	III	N	1	20	130	
			LEAR	0740.0	0740.0	III		1	40	60	
	0738	1355	POTS	0740.1	0740.7	III	G	2	40X	170U	
			POTS	0743	1355 U	I	S	1	110U	400	
			POTS	0751	1318	III	N	1	110U	170U	
			LEAR	0755.0	0755.0	III		1	35	70	
			POTS	0755.6	0755.7	III	G	1	40X	90U	
	0756	1337	ONDR								
			POTS	0801.4	0805.4	III	G	2	110U	170U	
			LEAR	0821.0	0821.0	III		1	45	60	
			POTS	0821.2	0829.7	III	GG	3	40X	325	
			LEAR	0825.0	0825.0	III		1	45	60	
			POTS	0831.8	0832.1	III	G	2	40X	170U	
			LEAR	0842.0	0847.0	III		3	30	80	
			SVTO	0842.0	0847.0	V		2	35	85	
			POTS	0842.3	0848.4	III	GG,C	3	40X	375	
			POTS	0925.8	0927.3	III	G	2	40X	170U	
			LEAR	0926.0	0927.0	III		2	30	80	
			SVTO	0926.0	0927.0	III		2	36	81	
			POTS	0940.4	0940.8	III	G	2	40X	170U	
			POTS	0947.1	0947.4	III	G	2	40X	160	
			POTS	0949.0	1006.6	III	GG,C	3	40X	350	
			LEAR	0951.0	0952.0	III		2	30	80	
			SVTO	0951.0	1006.0	III	N	2	35	85	
			POTS	1101.2	1101.4	III	B	1	40X	70	
			POTS	1122.7	1122.9	DCIM		2	450	520	
			POTS	1156.5	1157.8	III	G	2	110U	170U	
			POTS	1211.5	1211.6	III	B	2	110U	150	
			POTS	1225.4	1237.6	III	GG,C,RS	3	40X	700	
			SGMR	1234.0	1234.0	III		1	30	80	
			SVTO	1234.0	1234.0	III		3	35	85	
			POTS	1247.2	1259.5	III	GG	2	40X	170U	
			POTS	1305.8	1306.0	III	B	2	40X	170U	
			SGMR	1320.0	1321.0	V		3	30	80	
			SVTO	1320.0	1321.0	III		2	36	84	
			POTS	1320.6	1321.1	III	G	3	40X	140	
			POTS	1335.0	1335.2	III	B	2	110U	250	
			POTS	1340.1	1340.4	DCIM		1	225	400	
			SVTO	1420.0	1420.0	III		2	65	85	
			SGMR	1525.0	1527.0	III		1	30	80	

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NOVEMBER 1998

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
24		SGMR	1855.0	1913.0	III	N	2	30	80	
		PALE	1913.0	1913.0	III		1	27	56	
2020	2400	CULG	2034.0	2034.0	III	B	2	20	170	
		CULG	2102.0	2102.0	III	B	1	20	75	
2118	2400	HIRA								
		CULG	2207.0	2208.0	III	G	1	300	550	
		CULG	2212.0	2215.0	III	G	2	20	500	
		PALE	2212.0	2214.0	III		1	27	45	
		CULG	2216.0	2226.0	II	FN	3	30U	120	
		CULG	2216.0	2230.0	II	SH	2	60	250	ESS 600
		LEAR	2216.0	2224.0	II		1	39	80	ESS 0800
		CULG	2235.0	2235.0	III	B	1	60	95	
		CULG	2239.0	2239.0	III	B	1	60	100	
		CULG	2340.0	2341.0	III	G	1	100	280	
25	0000 0730	HIRA								
		LEAR	0127.0	0127.0	III		2	30	59	
		PALE	0127.0	0127.0	III		1	30	45	
		LEAR	0200.0	0207.0	III		2	30	70	
0000	0750	CULG	0201.0	0201.0	III	B	1	18	45	
		LEAR	0354.0	0354.0	III		2	30	61	
		LEAR	0505.0	0506.0	III		1	30	47	
		CULG	0514.0	0516.0	III	G	1	20	100	
		LEAR	0514.0	0516.0	III		2	30	80	
		CULG	0533.0	0536.0	III	G	2	60	300	
		LEAR	0533.0	0535.0	III		3	30	80	
		LEAR	0634.0	0652.0	III		2	30	80	
		CULG	0642.0	0642.0	III	B	1	20	100	
		CULG	0652.0	0652.0	III	G	1	23	250	
		LEAR	0733.0	0737.0	III		2	30	80	
		CULG	0734.0	0737.0	III	G	1	20	100	
0738	1356	POTS	0738 E	1356 U	I	S	2	110U	400	
		POTS	0809.4	0809.7	III	G	2	75	170U	
		LEAR	0817.0	0818.0	III		2	30	71	
		SVTO	0817.0	0818.0	III		1	35	49	
		POTS	0817.2	0818.3	III	G	2	40X	170U	
		POTS	0823	1012	III	N	1	40X	90U	
		POTS	0823	1330	III	N	1	110U	170U	
		POTS	0824.5	0824.8	III	B	2	40X	140	
		POTS	0830.1	0830.4	III	G	2	110U	225	
		LEAR	0849.0	0850.0	III		2	30	71	
		SVTO	0849.0	0903.0	III	N	1	36	70	
		POTS	0849.8	0850.0	III	B	2	40X	90U	
		POTS	0852.2	0853.9	III	GG	2	40X	170U	
		POTS	0903.7	0903.9	III	G	2	40X	160	
		POTS	0940.5	0941.0	DCIM		2	225	310	
		POTS	0940.7	0940.8	III	B,RS	2	120	160	
		POTS	0949.7	0951.5	DCIM		2	260	400	
		POTS	0953.4	0953.6	III	G	2	110U	170U	
		POTS	0959.0	0959.9	DCIM		2	200U	550	
0758	1335	ONDR	0959.1	0959.4	DCIM	G	1	800X	1965	
		POTS	1001.6	1006.2	III	GG	3	40X	225	
		SVTO	1002.0	1005.0	III		3	35	85	
		LEAR	1004.0	1004.0	III		2	30	80	
		POTS	1012.3	1012.7	III	G	2	40X	150	
		POTS	1023.3	1023.5	III	B	2	110U	145	
		POTS	1029.5	1030.1	DCIM	U	2	220	450	
		POTS	1033.4	1034.0	III	G	2	40X	250	
		POTS	1046.0	1046.1	III	B	2	110U	160	
		POTS	1050.5	1100.3	DCIM		2	200U	550	
		POTS	1106.4	1108.1	III	G	2	110U	250	
		POTS	1151.2	1151.5	III	B	2	40X	160	
		POTS	1211.4	1211.6	DCIM		1	250	400	
		SVTO	1212.0	1213.0	III		2	36	73	
		POTS	1212.1	1213.1	III	G	2	40X	170U	
		POTS	1336.1	1336.8	DCIM		2	200U	375	
		SGMR	1408.0	1414.0	II		2	50	80	ESS 1000
		SVTO	1408.0	1412.0	II		2	60	85	ESS 0600
		SGMR	1513.0	1514.0	III		1	30	80	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 1998

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
25			SGMR	1813.0	1815.0	III		1	30	60	
	2020	2400	CULG	2156.0	2156.0	III	B	1	30	100	
			PALE	2213.0	2214.0	III		2	25	70	
	2119	2400	HIRA	2213.6	2213.7	III	B	1	25X	50X	
			CULG	2214.0	2215.0	III	G	2	18X	150	
			LEAR	2214.0	2214.0	III		2	30	80	
			PALE	2324.0	2326.0	III		2	25	70	
			CULG	2325.0	2327.0	III	G	3	18X	130	
			LEAR	2325.0	2326.0	III		3	30	80	
			HIRA	2325.9	2326.1	III	B	1	25X	50X	
26	0000	0730	HIRA								
			LEAR	0019.0	0022.0	III		2	30	56	
	0000	0750	CULG	0019.0	0023.0	III	G	1	20	130	
			LEAR	0129.0	0129.0	III		1	30	67	
			LEAR	0213.0	0213.0	III		1	30	69	
			LEAR	0253.0	0256.0	III		2	30	80	
			CULG	0254.0	0256.0	III	G	1	20	140	
			LEAR	0312.0	0312.0	III		2	30	80	
			CULG	0330.0	0331.0	III	G	1	20	90	
			LEAR	0330.0	0331.0	III		1	30	65	
			CULG	0345.0	0401.0	CONT		1	30	80	
			LEAR	0346.0	0402.0	CONT		1	30	80	
			CULG	0411.0	0415.0	III	G	1	20	90	
			LEAR	0411.0	0414.0	III		2	30	80	
			CULG	0717.0	0718.0	III	B	1	23	90	
	0738	1354	POTS	0738 E	1354 U	I	S	1	80	400	
			POTS	0752.9	0758.1	III	G	2	40X	170U	
			POTS	0942.5	0947.0	DCIM		2	200U	450	
	0800	1334	ONDR	0944.0	0944.4	DCIM		1	1005	2000X	
			POTS	0946.8	0947.1	UNCLF		2	130	150	
			POTS	0953.2	0953.4	III	G	2	110U	170U	
			SGMR	1016.0	1020.0	III		1	30	80	
			POTS	1028.1	1030.0	DCIM		2	250	550	
			POTS	1028.4	1029.1	III	G	2	110U	170U	
			POTS	1036.7	1036.9	III	G	2	110U	170U	
			POTS	1039.1	1040.0	III	G	2	110U	170U	
			POTS	1043.6	1044.7U	II	SH	1	110U	120	
			POTS	1043.7	1045.3	II	F	1	48	60	
			POTS	1119.5	1124.3	III	GG	2	40X	220	
			POTS	1224.8	1226.1	III	GG,C	3	40X	325	
			SVTO	1225.0	1225.0	III		2	35	85	
			SGMR	1616.0	1620.0	III		1	30	80	
			SGMR	1643.0	1650.0	V		1	30	80	
	2020	2400	CULG	2026.0	2057.0	III	N	1	18	80	
	2120	2400	HIRA								
			PALE	2253.0	2355.0	III		2	25	50	
			CULG	2315.0	2316.0	III	G	1	20	90	
			LEAR	2316.0	2317.0	III		1	36	62	
			CULG	2356.0	2356.0	III	B	1	20	90	
			LEAR	2356.0	2356.0	III		1	30	80	
27	0000	0730	HIRA								
			LEAR	0055.0	0055.0	III		1	30	71	
			LEAR	0724.0	0732.0	III		2	30	80	
	0000	0750	CULG	0724.0	0747.0	III	N	1	20	300	
			SVTO	0725.0	0730.0	III		2	35U	85U	
			CULG	0730.0	0745.0	II	FN	3	25	70	
			LEAR	0732.0	0757.0	II		2	30	80	ESS 0700
			SVTO	0732.0	0751.0	II		2	35	85	ESS 0500
			CULG	0733.0	0745.0	II	SH	3	55	130	ESS 500
			CULG	0735.0	0750.0D	IV		1	180	470	
			CULG	0740.0	0742.0	II	FN	2	30	55	
			CULG	0741.0	0742.0	II	SH	2	60	110	ESS 1800
			CULG	0745.0	0750.0D	II	FN	1	30	55	
			CULG	0745.0	0750.0D	II	SH	1	60	110	ESS 650
	0802	1333	ONDR								
	0829	1355	POTS	0829 E	1355 U	I	S,C,DC	2	70	320	
			POTS	0838.6	0839.4	III	G	2	110U	170U	

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

NOVEMBER 1998

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
27			POTS	1121.8	1122.0	III	B	2	110U	170U	
			POTS	1229.9	1232.3	DCIM		2	400	675	
	2121	2400	HIRA								
28	0000	0729	HIRA								
			LEAR	0319.0	0319.0	III		2	30	80	
			LEAR	0554.0	0605.0	II		1	30	57	ESS 0700
			LEAR	0624.0	0637.0	IV		1	30	52	
			LEAR	0712.0	1033.0	IV		/	30	65	
	0739	1355	POTS	0739 E	1355 U	I	S,C,DC	2	40X	350	
	0804	1331	ONDR								
			SVTO	0814.0	1029.0	CONT		1	35	85	
			POTS	0833.4	0849.9U	II	UE	1	40X	70	
			POTS	0846.3U	0849.1	UNCLF		2	40X	90U	
			POTS	1033.9	1034.0	DCIM		1	360	500	
	2020	2400	CULG								
	2122	2400	HIRA								
29	0000	0729	HIRA								
	0000	0750	CULG								
	0738	1355	POTS	0743	1355 U	I	S	2	110U	350	
	0806	1330	ONDR								
			POTS	0831.3	0834.1	DCIM		2	200U	340	
			LEAR	0832.0	0832.0	III		1	30	80	
			POTS	0832.1	0832.8	III	B	2	40X	170U	
			POTS	1035.4	1036.0	III	G	2	110U	270	
			POTS	1042.6	1042.7	DCIM		1	375	500	
			POTS	1249.1	1249.4	III	G	2	40X	145	
			POTS	1309.7	1309.8	III	B	1	40X	90U	
			POTS	1351.9	1352.3	III	G	2	40X	70	
			POTS	1352.6	1353.2	III	G	2	40X	400	
			SGMR	1408.0	1411.0	III		1	30	80	
			SVTO	1411.0	1411.0	III		1	61	79	
			SGMR	1610.0	1610.0	III		1	30	80	
			PALE	2046.0	2047.0	III		3	25	70	
	2020	2400	CULG	2046.0	2047.0	III	G	3	18X	300	
	2123	2400	HIRA								
			LEAR	2252.0	2255.0	III		1	30	67	
			CULG	2253.0	2255.0	III	G	1	20	130	
			LEAR	2330.0	0856.0	CONT		1	30	72	
			CULG	2346.0	2349.0	III	G	1	25	120	
30	0000	0750	CULG	0022.0	0026.0	III	G	1	18	130	
	0000	0729	HIRA	0022.5	0023.9	III	G	1	25X	110	
			HIRA	0025.5	0025.7	III	B	1	25X	150	
			CULG	0050.0	0051.0	III	G	1	25	90	
			LEAR	0050.0	0051.0	III		2	30	80	
			LEAR	0141.0	0143.0	III		3	30	80	
			CULG	0142.0	0144.0	III	G	2	18X	140	
			HIRA	0142.3	0143.4	III	G	1	25X	200	
			CULG	0537.0	0540.0	III	G	1	30	90	
			CULG	0647.0	0651.0	III	G	1	25	130	
	0807	1354	POTS	0807 E	1354 U	I	S,C,DC	2	110U	300	
	0808	1330	ONDR								
			POTS	0825.0	0828	UNCLF		2	45	65	
			SVTO	1411.0	1411.0	III		1	61	79	
	2020	2400	CULG								
	2124	2400	HIRA								

SOLAR RADIO NOISE STORM AT 164 MHZ FROM NANCAY RADIOHELIOGRAPH

NOVEMBER 1998

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
04/11/98	+0.33	+0.31	V	8H04 E	15H03 D
04/11/98	+0.62	+0.11	IV	8H04 E	15H03 D
05/11/98	+0.76	-0.03	III	8H04 E	15H03 D
06/11/98	+0.78	-0.11	III	8H17 E	15H04 D
07/11/98	-0.20	+0.20	I	8H21 E	15H03 D
08/11/98	-0.40	+0.28	I	9H45	15H03 D
08/11/98	+1.22	+0.51	I	11H32	15H03 D
09/11/98	-0.25	-0.03	I	13H20 E	15H04 D
10/11/98	+0.59	+0.40	III	8H05 E	15H04 D
10/11/98	+1.71	+0.37	III	8H05 E	15H04 D
11/11/98	+0.71	+0.28	I	8H05 E	15H04 D
12/11/98	+0.81	+0.17	III	8H05 E	15H04 D
12/11/98	+1.61	+0.17	III	11H20	15H04 D
14/11/98	+0.20	-0.47	I	8H05 E	15H04 D
14/11/98	+1.27	+0.43	I	8H05 E	15H04 D
16/11/98	+0.33	-0.45	II	8H51 E	15H04 D
16/11/98	+0.78	-0.28	II	10H30	15H04 D
17/11/98	+0.62	-0.62	III	8H09 E	15H05 D
18/11/98	+0.81	-0.62	I	9H16 E	15H05 D
19/11/98	+0.68	-0.67	I	9H01 E	15H05 D
20/11/98	+0.96	-0.79	III	8H06 E	15H05 D
21/11/98	+1.18	-0.37	I	8H07 E	10H50 D
23/11/98	-1.36	-0.56	III	8H17 E	15H07 D
27/11/98	-0.40	-0.53	III	8H08 E	15H07 D
28/11/98	-0.71	+0.16	III	8H09 E	15H08 D
29/11/98	-0.91	-0.02	I	8H09 E	15H08 D
29/11/98	+1.01	+0.47	III	8H09 E	15H08 D
30/11/98	+1.22	+0.84	III	9H26 E	15H09 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 NANCAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANCAY RADIOHELIOGRAPH

NOVEMBER 1998

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
04/11/98	+0.23	+0.06	III	8H04 E	15H03 D
05/11/98	-0.88	+0.02	II	8H04 E	15H03 D
05/11/98	+0.64	+0.02	I	8H04 E	15H03 D
06/11/98	-0.42	+0.11	I	8H17 E	15H04 D
06/11/98	+0.76	+0.08	I	8H17 E	15H04 D
06/11/98	+0.95	-0.50	I	8H17 E	15H04 D
07/11/98	-0.29	+0.19	II	8H21 E	15H03 D
07/11/98	-0.14	+0.29	II	8H21 E	15H03 D
08/11/98	-0.28	+0.09	I	8H04 E	15H03 D
08/11/98	+0.00	+0.22	I	8H04 E	15H03 D
08/11/98	+0.98	+0.28	I	8H04 E	15H03 D
08/11/98	+1.18	+0.43	I	8H04 E	15H03 D
09/11/98	-0.16	+0.05	I	13H20 E	15H04 D
09/11/98	+1.19	+0.31	II	13H20 E	15H04 D
10/11/98	+0.03	-0.05	I	8H05 E	15H04 D
10/11/98	+0.39	+0.17	I	8H05 E	15H04 D
10/11/98	+1.29	+0.23	I	8H05 E	15H04 D
11/11/98	+0.42	+0.16	I	8H05 E	15H04 D
11/11/98	+0.74	+0.36	I	13H50	15H04 D
12/11/98	+0.78	+0.31	I	9H14	15H04 D
12/11/98	+1.36	+0.28	I	12h30	15H04 D
13/11/98	+0.91	+0.28	I	8H07	15H04 D
14/11/98	-0.22	-0.57	I	8H05 E	15H04 D
14/11/98	+1.19	+0.34	I	8H05 E	15H04 D
15/11/98	+0.08	-0.51	II	8H05 E	15H04 D
16/11/98	+0.31	-0.50	III	8H51 E	15H04 D
17/11/98	+0.43	-0.56	III	8H09 E	15H05 D
18/11/98	+0.74	-0.62	III	9H16 E	15H05 D
19/11/98	+0.91	-0.57	I	9H01 E	15H05 D
20/11/98	+0.99	-0.54	III	8H06 E	15H05 D
21/11/98	+0.99	-0.40	I	8H07 E	10H50 D
21/11/98	+1.05	-0.59	I	8H07 E	10H50 D
23/11/98	-1.24	-0.42	II	8H17 E	15H07 D
23/11/98	-0.93	-0.64	II	8H17 E	15H07 D
24/11/98	+0.31	-0.48	I	8H07 E	14H06 D
26/11/98	-0.81	-0.60	II	8H08 E	15H07 D
26/11/98	-0.47	-0.65	I	13H00	15H07 D
27/11/98	-0.23	-0.48	III	8H08 E	15H07 D
27/11/98	+0.85	+0.50	II	12H40	15H07 D
28/11/98	-0.67	+0.20	I	8H09 E	14H00
28/11/98	+0.95	+0.37	II	8H09 E	15H08 D
29/11/98	-1.02	+0.50	I	8H09 E	9H59 D
29/11/98	+1.01	+0.47	II	8H09 E	15H08 D
30/11/98	+1.18	+0.20	I	9H26 E	15H09 D

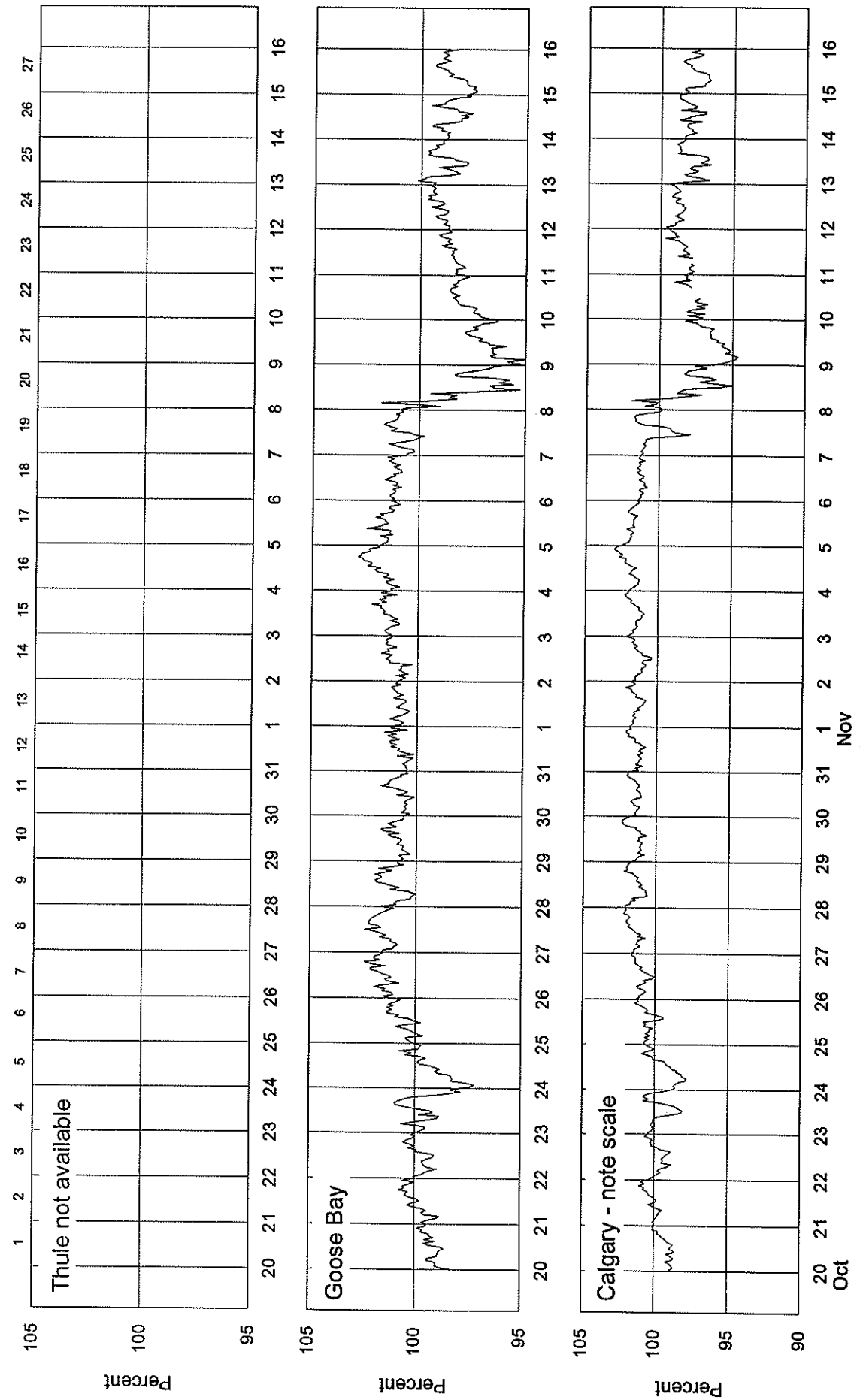
NO DATA: 22 NOVEMBER 1998
OTHERS DAYS: NO DETECTABLE NOISE STORM

COSMIC RAY INDICES
(Neutron Monitor)
NOVEMBER 1998

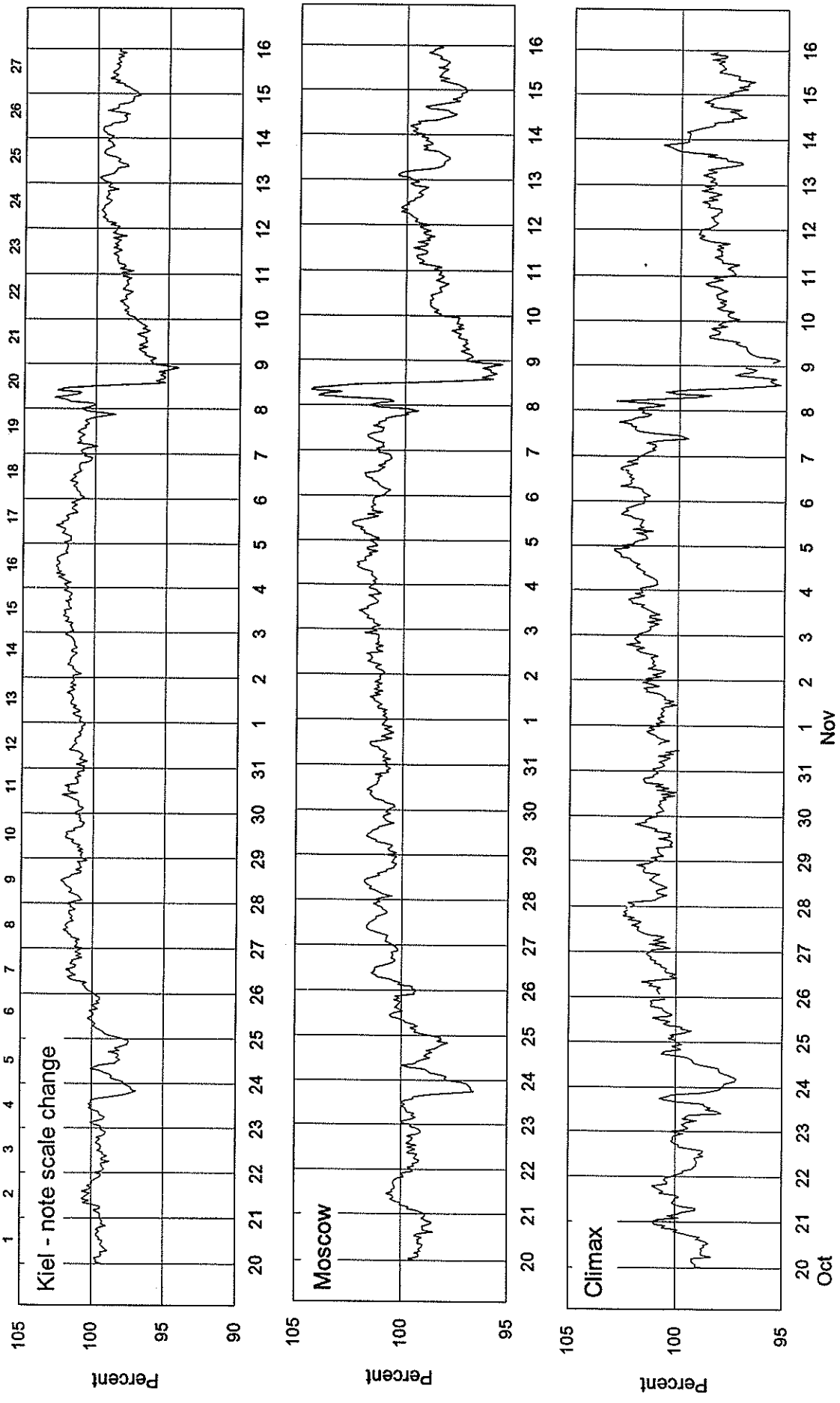
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	7298.7	3965.3	6295.2	9266.0	4234.8	2026.1	3583.8
2	at time of	7315.6	3956.2	6303.0	9281.0	4258.8	2026.8	3588.6
3	publication	7340.8	3970.3	6323.7	9301.7	4263.7	2027.2	3591.8
4		7375.2	3986.8	6350.2	9314.2	4279.1	2032.5	3604.1
5		7348.0	3979.5	6326.9	9318.2	4282.6	2034.2	3601.6
6		7322.1	3955.7	6279.4	9267.4	4287.5	2020.2	3595.4
7		7296.5	3930.3	6247.7	9253.7	4260.5	2010.1	3581.5
8		7092.1	3837.0	6125.2	9125.9	4139.2	2000.9	3555.4
9		7000.1	3753.5	6000.8	8918.0	4087.4	1982.5	3535.7
10		7085.5	3818.0(19)	6079.6	9027.7	4118.1	1987.1	3542.6
11		7127.0	3845.7(22)	6115.0	9080.8	4122.6	1990.2	3545.1
12		7172.3	3863.5	6162.6	9129.1	4138.0	1989.9	3550.1
13		7164.4	3827.8	6148.4	9071.9	4149.0	1990.3	3560.2
14		7136.4	3832.0	6120.6	9028.8	4136.4	1981.1	3550.6
15		7123.6	3814.0	6111.1	9000.7	4103.7	1978.7	3530.8
16		7143.8	3834.0	6129.9	9074.0	4120.8	1978.8	3542.4
17		7200.4	3881.3	6169.0	9141.4	4172.6	1990.5	3555.6
18		7250.5	3908.0	6213.1	9195.1	4197.0	1998.3	3556.8
19		7284.0	3923.7	6241.4	9201.2	4208.4	1998.4	3564.0
20		7267.7	3909.0	6216.7	9165.0	4195.7	1990.0	3558.3(48)
21		7280.0	3922.8	6214.0	9151.5	4212.8	1989.6	3562.2
22		7287.3	3935.7	6241.8	9169.8	4204.2	1988.2	3566.7
23		7305.4	3950.5	6246.6	9166.5	4207.6	1994.5	3580.5
24		7256.3	3938.0	6225.8	9168.3	4207.1	1994.7	3586.4
25		7239.5	3917.3	6214.4	9168.1	4185.9	1984.1	3577.3
26		7153.2	3871.2	6157.9	9070.6	4111.5	1973.2	3551.1
27		7091.4	3841.7	6126.4	8998.4	4089.7	1968.2	3546.2
28		7044.5	3836.2	6088.3	8948.7	4074.4	1971.3	3539.8
29		7091.0	3851.5	6109.7	8992.3	4101.9	1965.1	3546.5
30		7078.9	3836.8	6103.3	9003.2	4078.5	1966.5	3529.6
31								
Mean		7205.7	3889.8	6220.5	9196.1	4212.0	1986.1	3566.6

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours, and for Haleakala, whenever the sum of all three sections falls below 60 hours.

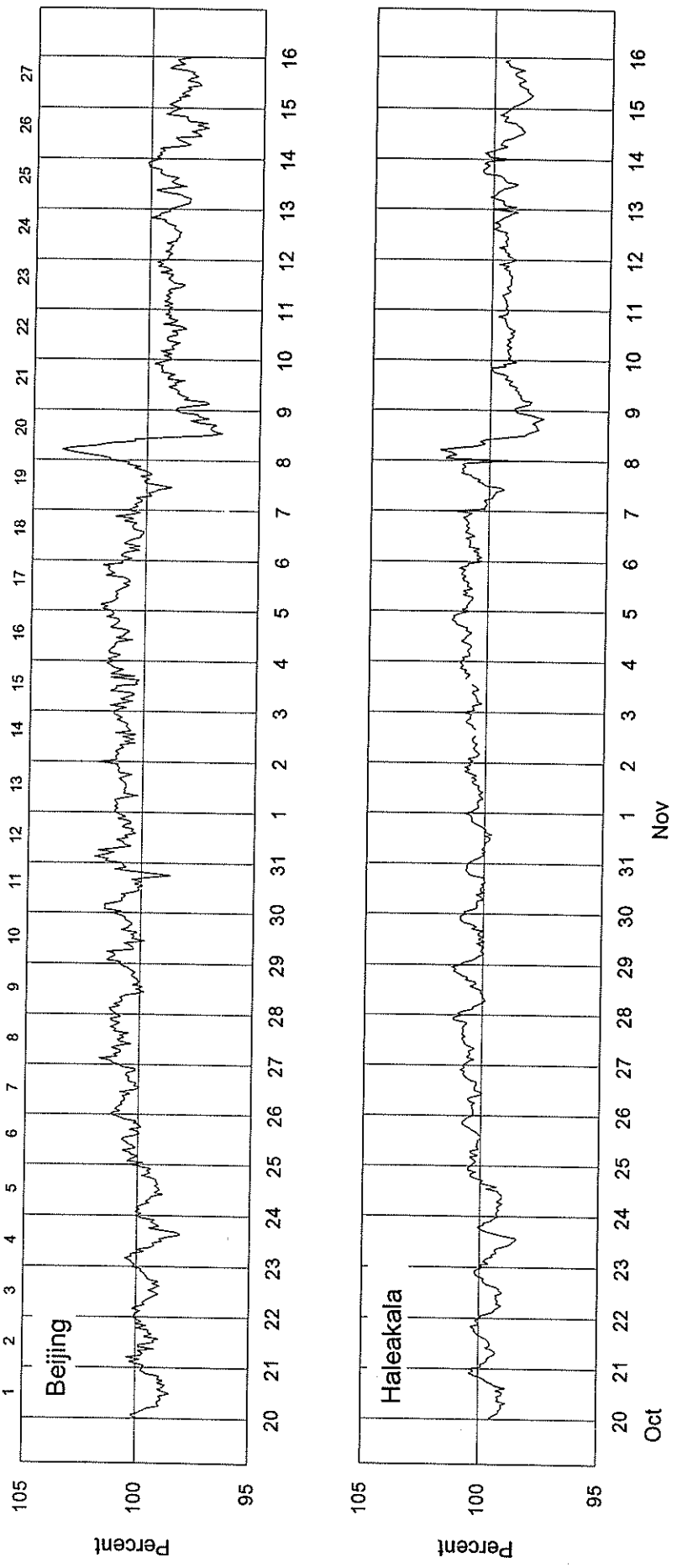
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2256 - Beginning 20 Oct 98



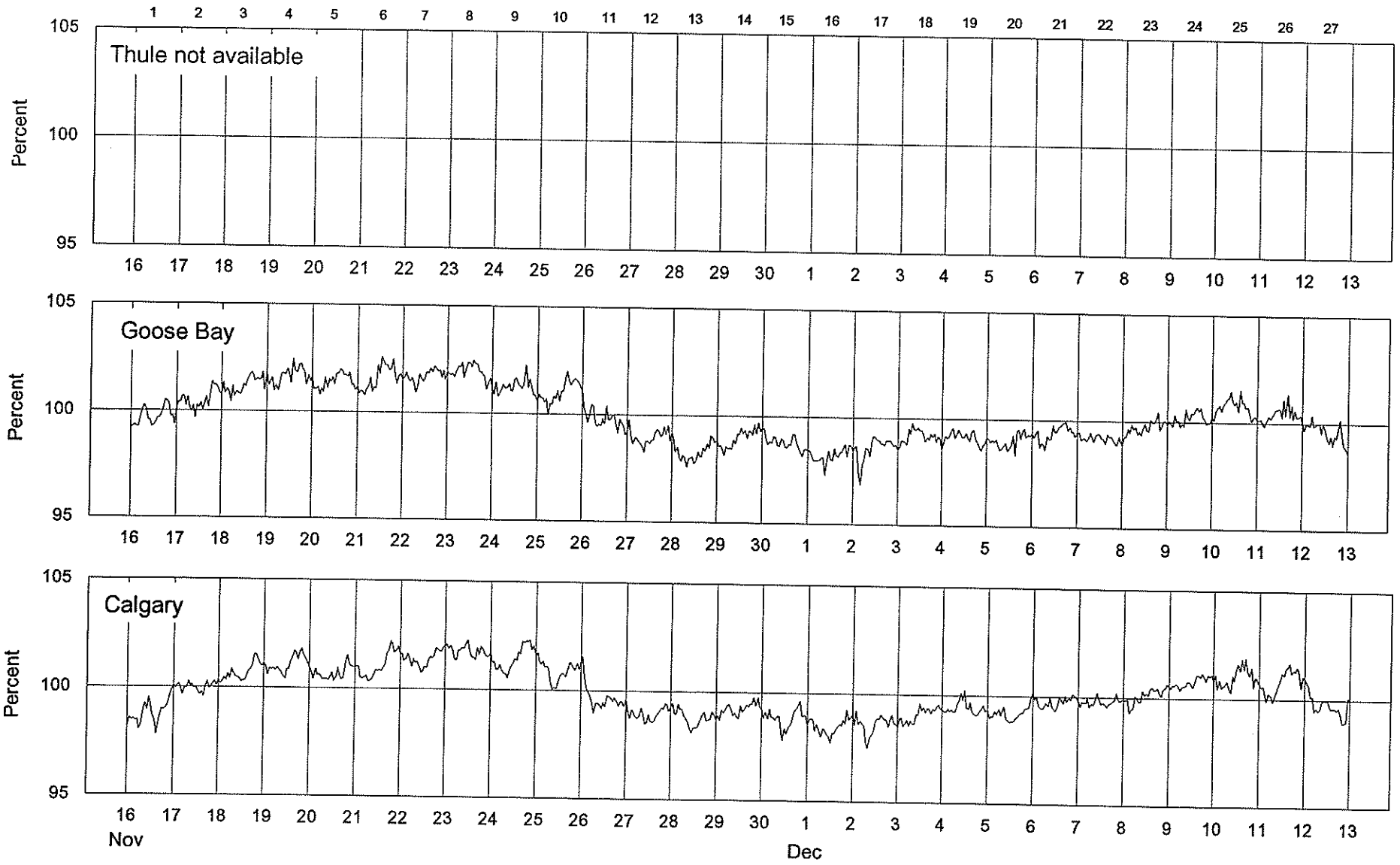
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2256 - Beginning 20 Oct 98



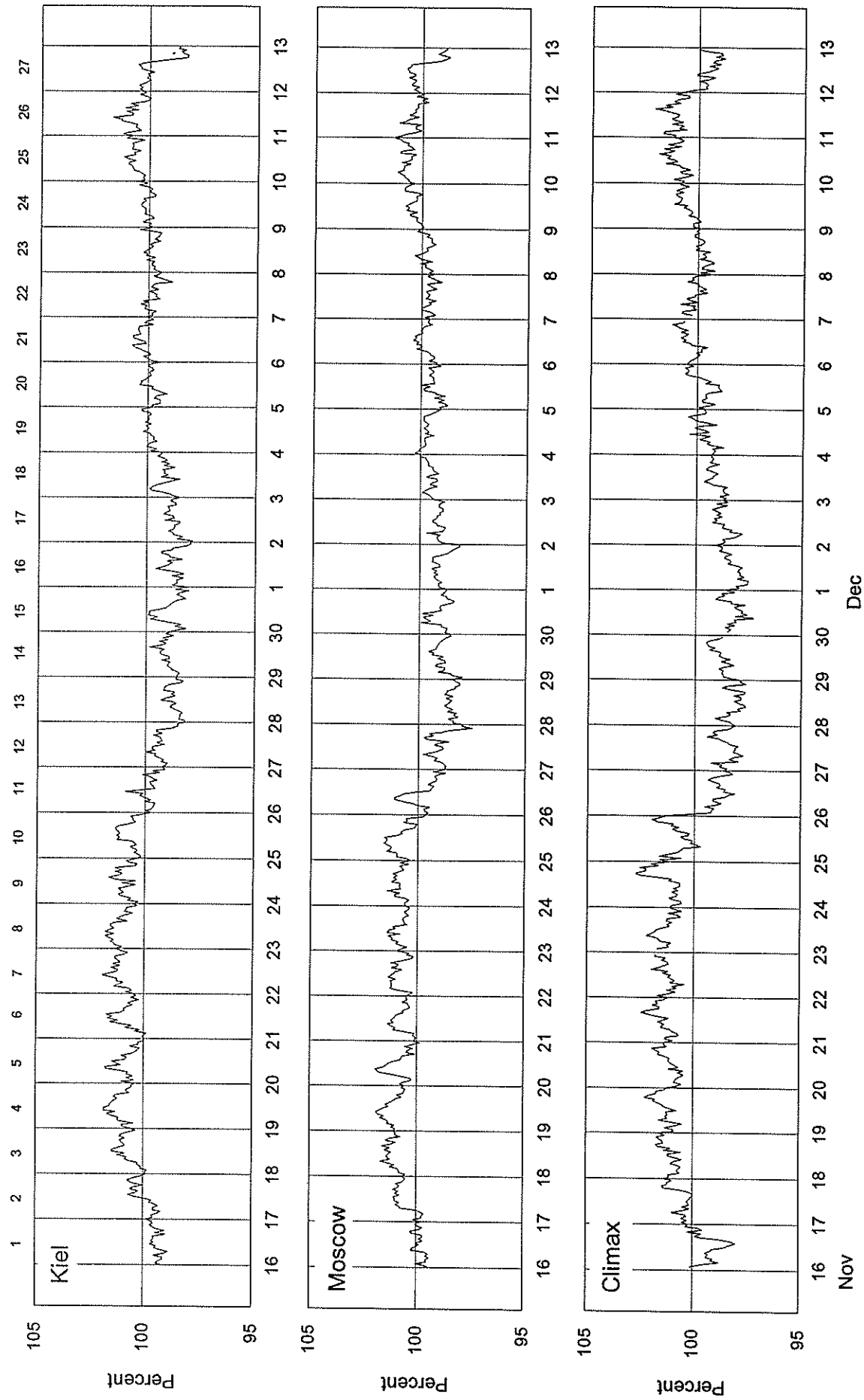
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2256 - Beginning 20 Oct 98



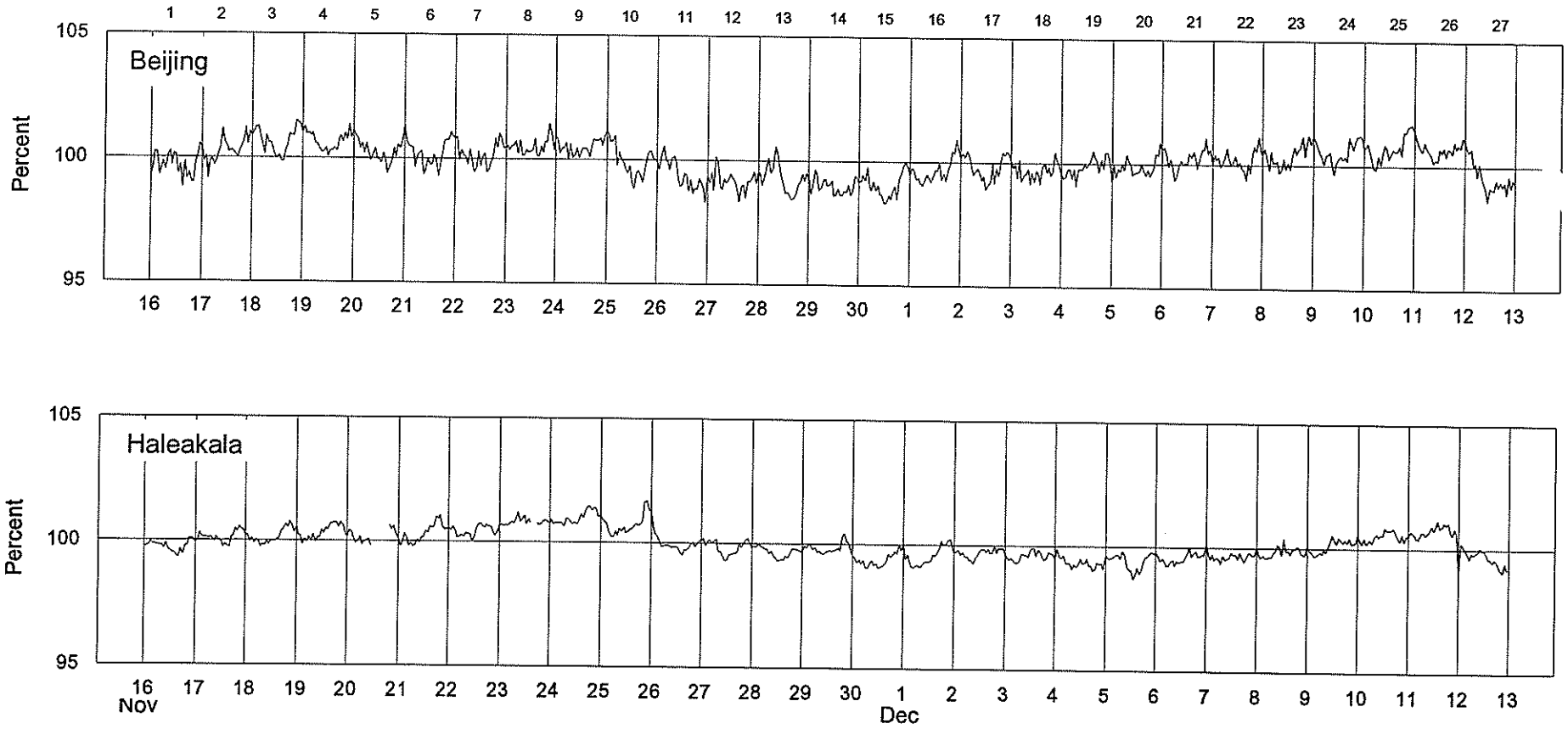
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2257 - Beginning 16 Nov 98



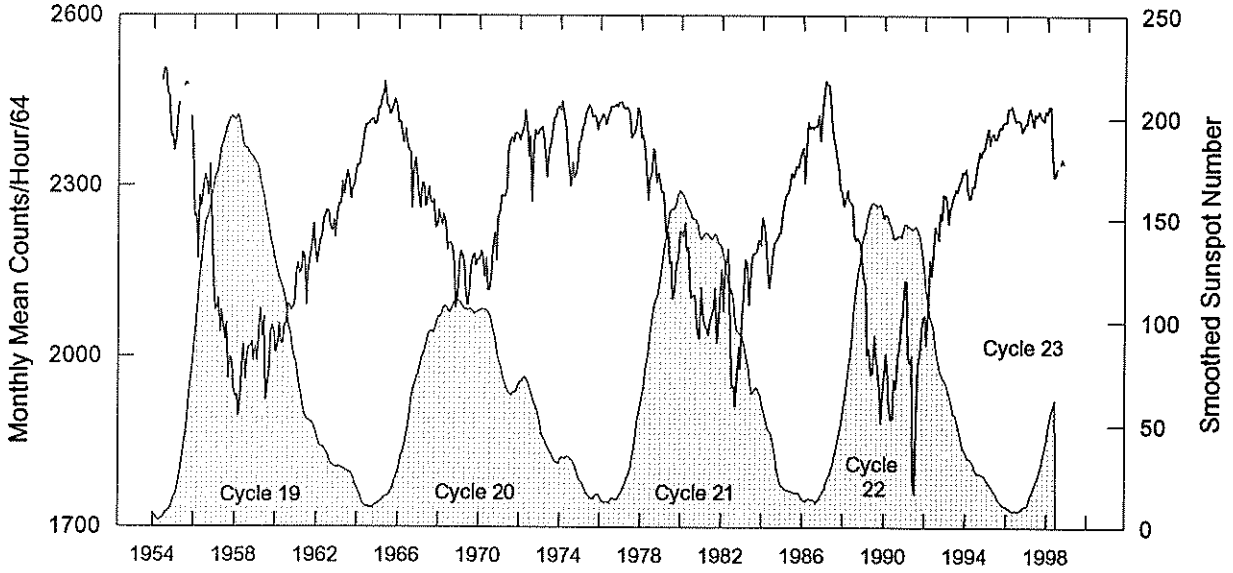
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2257 - Beginning 16 Nov 98



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2257 - Beginning 16 Nov 98



Mt. Washington Neutron Monitor Pressure-Corrected Values
Jan 1954 - Nov 1998



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1954	--	--	--	--	--	2485	2508	2505	2465	2459	2388	2389	2457
1955	2361	2382	2434	2448	--	--	2475	2483	2477	--	2422	2372	2428
1956	2245	2250	2170	2283	2264	2295	2320	2313	2282	2337	2261	2152	2264
1957	2081	2082	2101	2042	2081	2054	2029	2058	1961	2000	1990	1943	2035
1958	1932	1932	1896	1927	2000	2021	1960	2004	2015	2017	2025	1992	1977
1959	2018	1992	2054	2082	2034	2068	1923	1950	1979	2043	2053	2040	2020
1960	2007	2019	2057	2024	2022	2055	2057	2092	2089	2081	2085	2091	2057
1961	2153	2162	2145	2151	2181	2175	2090	2147	2173	2194	2233	2197	2167
1962	2162	2183	2202	2210	2243	2247	2257	2253	2229	2220	2239	2209	2221
1963	2247	2269	2268	2307	2285	2313	2327	2310	2277	2295	2301	2329	2294
1964	2338	2337	2357	2372	2399	2409	2407	2413	2417	2417	2409	2409	2390
1965	2439	2436	2453	2465	2484	2443	2441	2427	2433	2445	2452	2442	2447
1966	2412	2415	2396	2375	2401	2379	2362	2359	2260	2329	2349	2323	2363
1967	2280	2261	2305	2304	2263	2279	2298	2271	2270	2276	2226	2228	2272
1968	2257	2242	2231	2250	2234	2186	2199	2199	2190	2157	2086	2106	2195
1969	2167	2184	2176	2159	2110	2090	2115	2155	2174	2179	2159	2169	2153
1970	2170	2185	2176	2138	2172	2117	2117	2146	2189	2217	2167	2245	2170
1971	2252	2284	2284	2281	2294	2360	2379	2386	2377	2392	2393	2391	2339
1972	2381	2394	2405	2434	2407	2350	2388	2272	2377	2399	2390	2397	2383
1973	2402	2404	2383	2345	2315	2363	2376	2393	2420	2423	2436	2441	2392
1974	2432	2449	2426	2405	2360	2335	2300	2341	2315	2320	2342	2377	2367
1975	2381	2405	2408	2428	2437	2443	2435	2422	2425	2421	2400	2417	2419
1976	2417	2427	2423	2409	2422	2431	2439	2440	2440	2444	2441	2447	2432
1977	2449	2442	2438	2438	2439	2427	2386	2390	2395	2411	2438	2431	2424
1978	2386	2391	2372	2342	2275	2314	2320	2366	2364	2307	2323	2312	2339
1979	2290	2290	2262	2207	2219	2162	2167	2101	2116	2159	2173	2220	2197
1980	2220	2211	2234	2185	2191	2118	2104	2107	2107	2067	2035	2031	2134
1981	2120	2067	2053	2048	2037	2061	2075	2080	2118	2025	2047	2112	2070
1982	2152	2078	2158	2163	2187	2051	1947	1950	1913	1962	2017	1979	2046
1983	2071	2118	2169	2165	2091	2129	2175	2181	2182	2186	2204	2195	2155
1984	2244	2232	2199	2161	2119	2144	2171	2199	2203	2207	2217	2216	2193
1985	2250	2272	2283	2289	2300	2323	2316	2324	2337	2333	2345	2362	2311
1986	2368	2305	2366	2413	2402	2407	2401	2408	2405	2425	2380	2423	2392
1987	2460	2486	2480	2480	2442	2406	2383	2373	2347	2330	2294	2291	2398
1988	2264	2276	2294	2294	2271	2266	2215	2203	2208	2203	2195	2164	2238
1989	2137	2124	2003	2015	1970	1971	2037	2002	1979	1942	1885	1937	2000
1990	1975	2005	1967	1909	1890	1893	1959	1944	1997	2018	2067	2070	1975
1991	2132	2132	2005	1988	2001	1787	1759	1888	1988	2005	2036	2068	1982
1992	2072	2020	2096	2168	2142	2190	2227	2217	2204	2252	2240	2285	2176
1993	2283	2272	2233	2261	2272	2282	2294	2289	2304	2312	2325	2323	2288
1994	2331	2294	2279	2279	2301	2298	2319	2341	2362	2351	2364	2366	2324
1995	2388	2402	2374	2391	2393	2385	2385	2391	2406	2403	2411	2414	2395
1996	2415	2439	2436	2442	2427	2417	2416	2417	2414	2397	2402	2412	2419
1997	2410	2434	2437	2419	2407	2428	2423	2433	2423	2418	2415	2435	2423
1998	2429	2442	2442	2372	2317	2317	2332	No data	2340	2348	2329		2152

Multiply table entries by 64 to obtain hourly counting rate. Mt. Washington, NH: N44, W71, Alt=1909 m, Cutoff Rigidity=1.38GV.
NOTE: Sunspot numbers are preliminary after Jun 97.

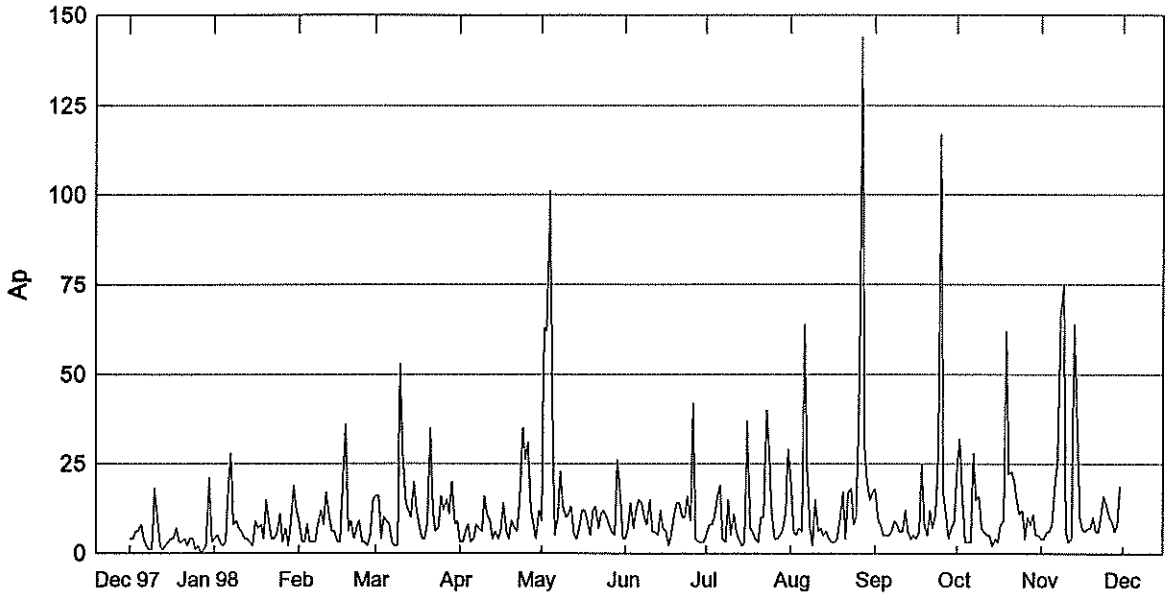
Geomagnetic Activity Indices

November 1998

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M	
1	Q3	2-	1+	0+	1-	0	1-	2-	1-	7	4	0.1	1+	1o	1o	1-	0+	1-	2-	1+	7	10	3	7	6	CC
2	Q4	2+	1+	0	0+	1	0+	2+	1	9-	4	0.2	2-	1+	0o	0+	1+	1-	3-	1+	9	14	7	10	12	CC
3	Q9	1+	2-	1-	2-	1-	2	2+	2+	13-	6	0.3	1+	1+	1-	2o	1-	2+	2o	3-	12	16	13	12	17	
4	Q5	3-	1-	1+	2-	1	2-	1+	1	11+	6	0.3	2+	0+	2-	2-	1+	2o	1+	1+	11	15	11	15	11	C
5		2	1-	1+	2-	3-	3	2	2+	16-	8	0.4	1+	1o	1+	2o	3-	3+	2+	2+	16	20	18	11	27	
6		3-	3+	4+	3	3+	4-	3+	4-	27+	20	1.0	2+	3-	4o	3o	3+	3+	3+	3+	35	34	38	29	44	
7	D5	3-	3-	3	4	5	5	4	3+	30-	26	1.2	2+	2o	3-	3o	5-	4+	4o	3+	42	46	46	27	65	
8	D2	6	8-	7+	5-	4	3+	3-	3+	39	66	1.7	5o	7-	7-	4+	4o	3o	3o	4-	91	73	64	103	33	
9	D1	5-	6-	7-	6+	6	5+	7-	5-	46	75	1.8	4+	5+	5+	6o	5+	5-	6-	4+	103	93	85	95	84	
10	Q1OK	4-	2+	1+	2-	1-	1-	0+	0	11-	6	0.3	3o	2+	1+	2+	1-	1+	0+	0o	11	14	8	17	4	K
11	Q1	0	0	0+	1+	1-	0+	1-	2-	5	3	0.0	0+	0+	0+	2-	1o	0+	1o	2-	6	8	7	8	7	CC
12	Q2	1-	1-	1+	0+	1-	0+	1	2-	7-	4	0.1	0+	1-	1+	1-	1-	1-	1+	2-	6	9	9	8	10	C
13	D3	6	6-	6-	5	4+	6-	6	6-	44	64	1.7	5+	5-	5o	5o	4+	5o	5+	5o	94	95	83	91	88	
14	D4	5+	6-	4+	6-	5+	4-	4-	2+	36	41	1.5	4+	5-	4o	5+	5o	3+	3+	2+	63	68	55	72	51	
15		2-	1	1	2+	3	2+	3+	3	18-	10	0.6	1o	1+	1o	3-	3o	2+	3+	3-	19	24	20	11	32	
16		2+	2+	2-	2-	1+	2-	1+	3-	15	7	0.4	2o	2-	1+	2-	1+	2o	1+	3-	13	16	9	11	14	C
17	Q6K	3	2+	2	1-	1-	1	0+	0+	10+	6	0.3	2+	2o	2+	1o	1o	1+	0+	1-	10	12	11	17	6	C
18		2	2+	2+	2	2+	1+	2	2-	16	7	0.4	2-	2-	2+	2+	2o	2o	2-	2-	14	15	17	19	13	
19		3-	2	2-	2	2	2+	1+	1	15	7	0.4	2o	2-	2o	2+	2+	3-	2o	2-	16	15	17	19	13	
20		1-	2	2+	3-	2	1	3+	3+	17+	10	0.5	2-	2o	2o	3o	3-	2-	3o	3-	19	24	15	15	25	
21	Q8	2	2	1+	1+	2-	2+	1	1+	13	6	0.3	1+	2-	1+	2o	2-	2+	1o	1+	12	13	10	9	14	C
22	Q7	2+	2+	2+	1+	1	2-	1	0+	12+	6	0.3	1+	2-	2+	2-	2-	2o	1+	1-	12	12	8	12	8	CC
23		3-	2+	2-	2	3	3-	2+	3+	20	11	0.6	2o	2-	2-	2+	3o	3o	3-	3o	21	30	20	17	33	
24		2+	3	2	3-	3+	4	4	3-	24	16	0.9	2o	3o	2-	3-	3+	4-	4-	2+	29	33	32	23	42	
25		2	3	2+	2	2-	4-	4-	3	21+	13	0.7	1+	2+	2o	2o	2-	3+	3o	3-	21	28	21	20	30	
26		2+	2	3	3	2	3+	2	1+	19	10	0.6	2o	2-	3-	3o	2+	3-	2+	2o	20	19	23	22	20	
27		3	3	2	2	2+	3-	1-	1-	16+	9	0.5	3-	3-	1+	3-	2o	3-	1o	1o	16	19	19	22	16	
28		2+	3	1-	0+	1-	2+	2-	1+	12+	6	0.3	2-	2+	2-	1-	1o	2+	2-	1+	12	14	18	18	15	
29		2+	2+	1+	2-	1+	0+	4-	2	15	8	0.4	2o	2-	1+	2-	2-	1o	3+	2-	14	20	8	11	17	
30		0+	4	4-	3	2-	3+	4+	4+	25-	19	1.0	1-	3o	3o	4-	1+	3+	4+	4o	34	42	41	32	52	
Mean											16	0.63									26.3	28.5	24.6	26.5		

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	1+	1o	1-	0+	0+	1-	2-	1o	6	1+	1o	1o	1+	0+	1-	2-	1+	7	119.5	37	34	67	
2	2-	1+	0o	0o	2-	0+	3-	1+	8	2-	2-	0o	0+	1-	1-	3-	2-	9	124.1	41	30	72	
3	1o	1o	0+	2-	1-	2+	2+	2+	11	2-	1+	1o	2o	1o	2o	2o	3-	13	149.3	56	50	99	
4	2+	0+	2-	2-	1o	2+	2-	1o	11	3-	1-	2-	2-	1+	1+	1+	1+	11	139.0	88	74	88	
5	1+	1o	2-	2o	3-	3+	2o	2o	17	2-	1o	1o	2o	2+	3o	2+	2+	16	150.1	95	89	100	
6	3-	3-	4+	3+	3+	3+	4-	4-	39	2+	3-	4-	3o	3+	3o	3+	3o	32	138.4	98	83	87	
7	2o	2+	3-	3o	5o	5-	4o	3+	44	2+	2o	3-	3o	5-	4+	4+	3o	40	145.8	103	89	95	
8	5o	7-	7o	5-	4+	3o	3o	3+	98	5-	7-	6+	4o	3o	3o	3+	4o	84	149.9	92	79	100	
9	4o	6-	6-	6+	6-	5-	5+	4o	106	4+	5+	5+	6-	5o	4+	6-	5-	100	159.3	71	68	110	
10	3o	2+	1+	2+	1o	1+	0+	0o	12	3-	2o	2-	2o	1-	1+	0+	0+	11	150.8	68	67	101	
11	0o	0o	0o	2-	1o	0o	0+	1+	4	1-	1-	1-	2-	1-	0+	1+	2-	7	144.1	66	60	94	
12	0+	0+	1o	0+	1-	1-	1o	1+	5	0+	1o	2-	1o	1-	1-	2-	2o	8	138.7	73	65	88	
13	5+	5o	5o	5o	4o	5o	5o	5-	90	5+	4+	5-	5+	5-	5+	6-	5+	98	132.6	88	80	81	
14	4o	5o	4+	5+	5-	4-	3+	2+	64	5-	4+	4o	5o	5+	3+	4-	3-	63	123.8	94	93	72	
15	1o	1o	1o	2+	3+	2o	3o	3-	18	1+	1+	1+	3-	3-	2+	4-	3-	20	123.7	95	89	72	
16	2+	2o	1+	2o	1+	2+	1+	3-	15	2-	1+	1+	1+	1+	2o	1+	3-	12	121.8	76	53	70	
17	2+	2-	2-	0+	1-	1+	0o	1-	8	2+	2+	3-	1+	1+	1+	1-	1o	13	118.0	53	49	65	
18	2-	2o	2+	2-	2+	2o	2-	2-	14	2o	2-	2+	2+	2o	2-	2o	2o	15	112.2	51	36	59	
19	2+	1o	1+	3-	2+	3-	2-	1+	15	2-	2o	3-	2o	2+	2+	2+	2+	18	113.7	35	34	61	
20	2-	2o	2+	3o	3-	2-	3o	3o	22	1+	2o	1+	3o	2+	2o	3-	2o	17	118.6	46	45	66	
21	1+	2o	1+	2+	2o	3-	1-	1+	13	2-	2-	1+	2-	2-	2+	1+	2-	12	118.3	33	39	66	
22	1+	2o	2+	2-	2-	2-	1+	0+	11	2-	2-	2o	2-	2-	2o	1+	1o	12	123.0	41	37	71	
23	2+	2-	2-	2+	3o	3o	2+	3+	22	2-	2-	2-	2o	3o	3o	3-	3o	20	126.7	47	51	75	
24	2-	3-	2-	3-	3o	4o	4o	2+	28	3-	3o	2o	3-	3+	3+	4-	3-	29	136.7	59	61	86	
25	2-	2+	2o	2-	2-	4-	3o	3-	22	1+	2+	2+	2o	2-	3o	3-	3o	19	145.6	80	86	95	
26	2o	2-	3-	3+	2+	3o	2+	1+	21	2+	2o	3-	3-	2+	3-	2+	2+	19	152.3	106	112	102	
27	3-	3o	2-	2+	2+	3-	1-	0+	16	3-	2+	1+	3-	2o	3-	1+	1+	17	154.7	114	112	105	
28	2-	2+	1o	0o	1o	2+	2-	1o	10	2o	3-	2+	1+	1o	2+	2-	2-	14	160.4	106	105	111	
29	2o	1+	0+	2-	1+	1-	3+	2-	13	2-	2-	2-	2o	2-	1+	3+	2-	15	163.2	98	103	114	
30	0o	3+	3o	3o	1+	3o	4o	4-	29	1o	3o	3o	4+	2-	3+	5-	4+	39	158.9	99	92	110	
Mean									26.4									26.3	137.1	73.6	68.8	86.1	

Daily Average Indices Ap
Dec 1997 - Nov 1998

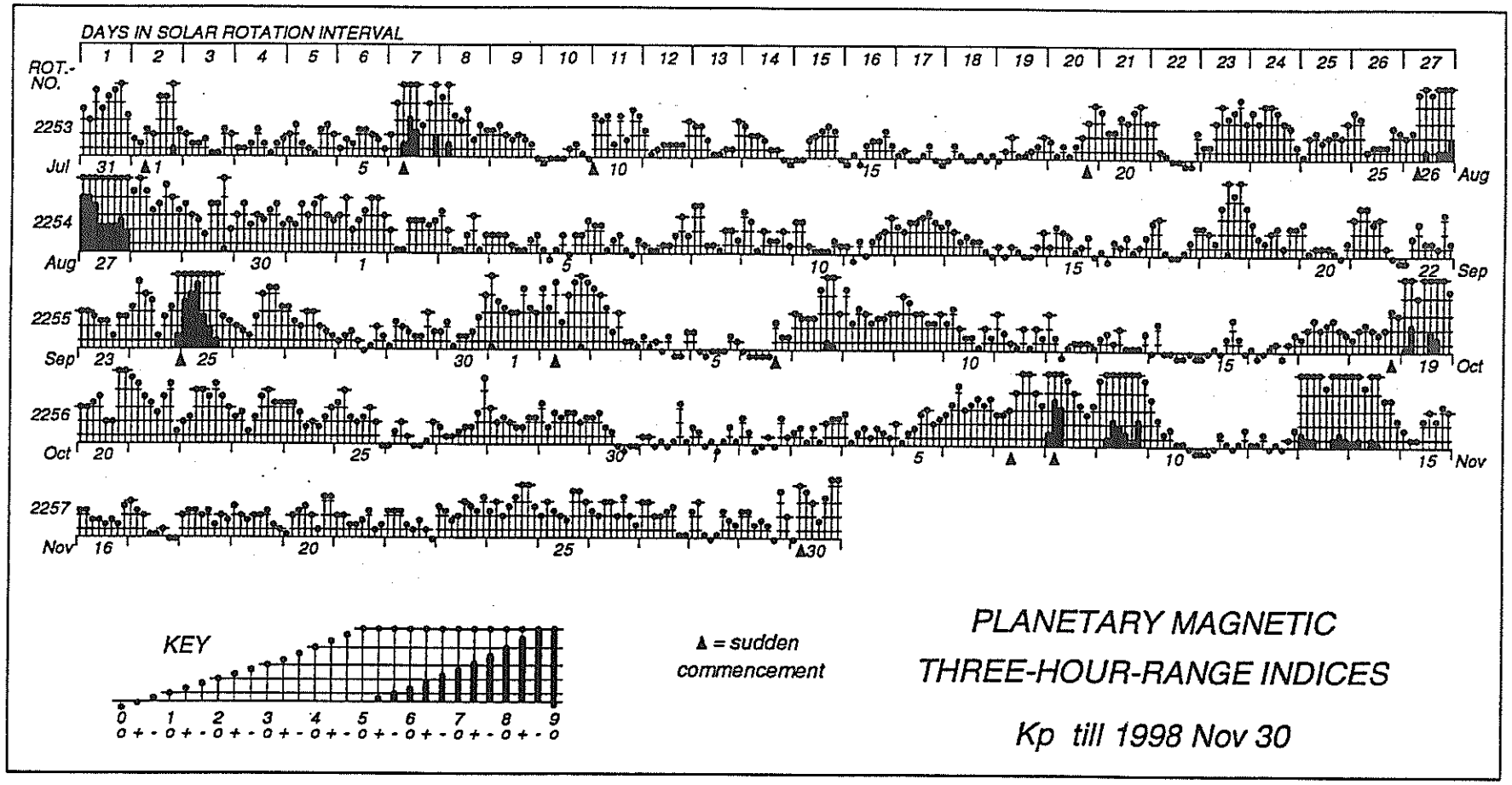


Day	Dec 97	Jan 98	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	4	4	9	16	3	9	4	5	21	18	24	4
2	4	5	3	16	3	63	7	8	6	9	32	4
3	6	3	3	4	6	62	14	8	5	8	14	6
4	6	2	8	10	8	101	7	10	7	5	3	6
5	8	3	3	9	3	42	12	16	6	5	3	8
6	4	18	3	8	4	5	15	19	64	5	3	20
7	2	28	3	3	8	10	14	4	24	6	28	26
8	1	8	8	2	7	23	10	3	7	9	15	66
9	1	9	12	2	6	13	8	15	2	8	16	75
10	18	7	8	53	16	10	15	5	15	6	7	6
11	11	6	17	28	11	11	6	11	6	6	6	3
12	2	4	10	14	9	13	6	6	7	12	5	4
13	1	4	6	12	4	5	5	4	5	6	5	64
14	2	3	6	10	6	4	12	2	6	4	2	41
15	3	2	3	20	4	7	7	3	4	5	4	10
16	4	9	3	12	6	12	6	37	3	4	3	7
17	4	7	18	8	14	12	2	7	3	6	8	6
18	7	8	36	4	6	9	5	6	4	25	9	7
19	3	4	6	4	4	5	11	4	9	8	62	7
20	3	15	9	8	9	12	14	3	17	5	22	10
21	4	8	4	35	7	13	14	10	4	12	23	6
22	2	4	7	12	6	7	10	10	17	7	20	6
23	4	4	9	6	15	11	10	40	18	11	15	11
24	4	6	3	7	35	12	16	28	8	28	11	16
25	1	11	3	16	26	10	9	11	10	117	12	13
26	2	3	2	12	31	8	42	4	49	17	4	10
27	0	7	5	15	12	6	4	4	144	10	10	9
28	1	2	15	11	8	5	3	5	30	4	8	6
29	2	8		20	4	26	3	6	20	7	11	8
30	21	19		8	12	18	3	11	15	9	5	19
31	3	12		9		4	4	29	17		5	
Mean	4	8	8	13	10	18	10	11	18	13	13	16

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

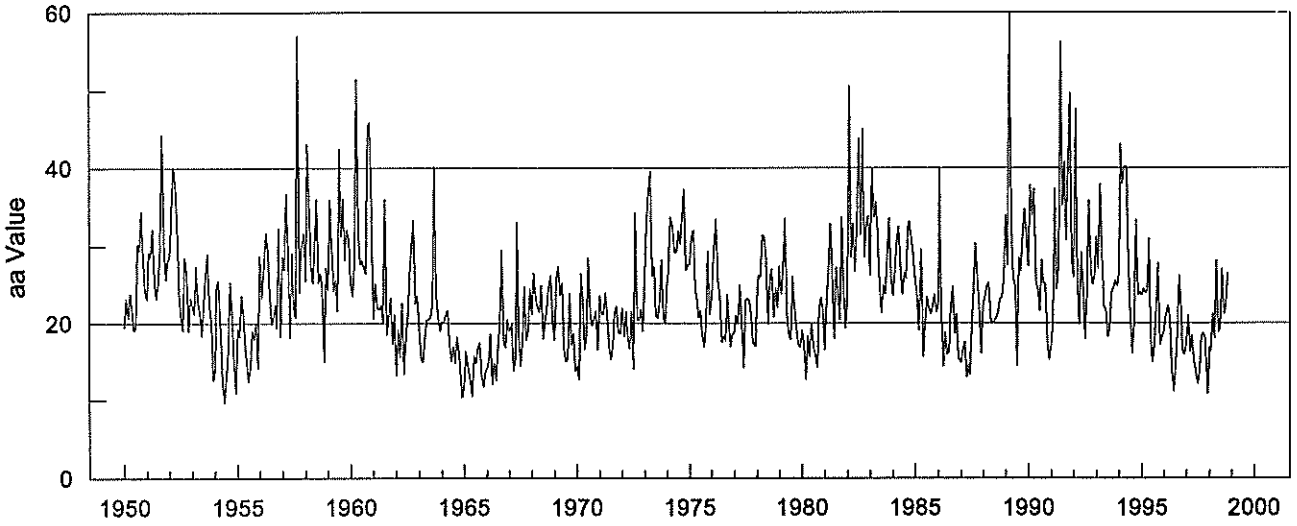
GeoForschungsZentraum Potsdam

Kp through November 30, 1998



Merry Christmas and a happy New Year! GFZ, Adolf-Schmidt-Observatorium Niemegk

Monthly Mean aa Index Jan 1950 - Nov 1998



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		21.4

PLANETARY GEOMAGNETIC ACTIVITY

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

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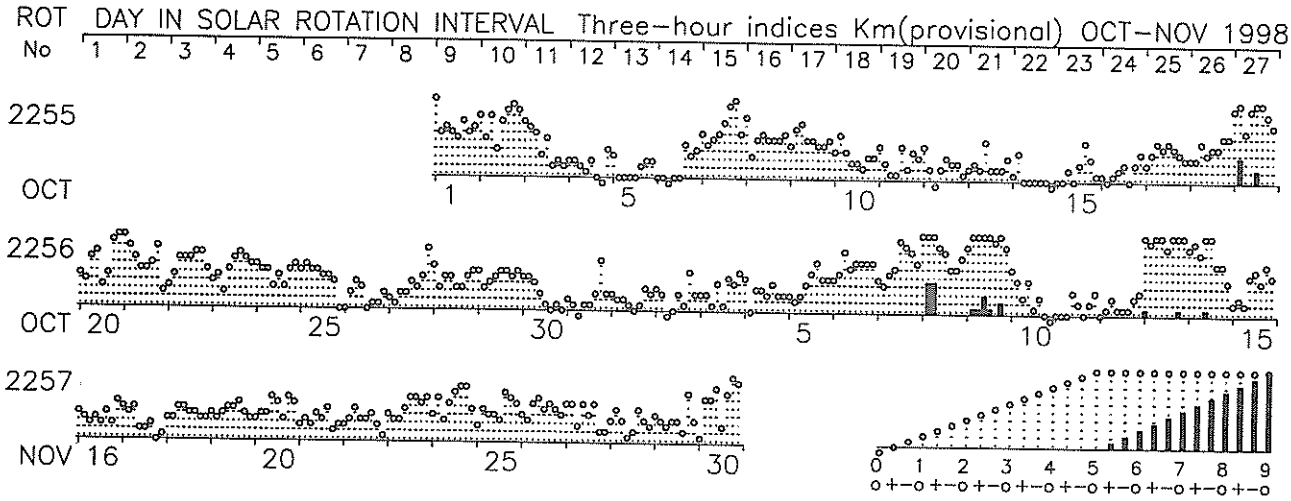
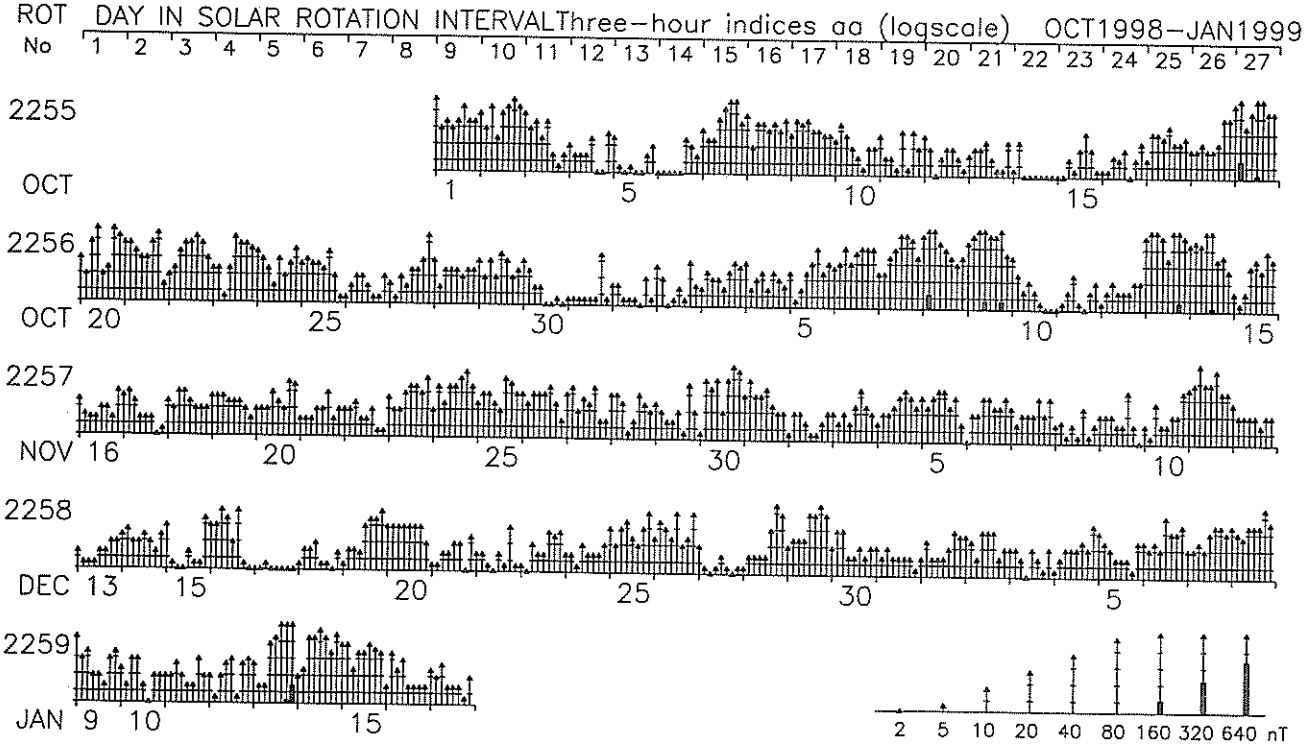


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.



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

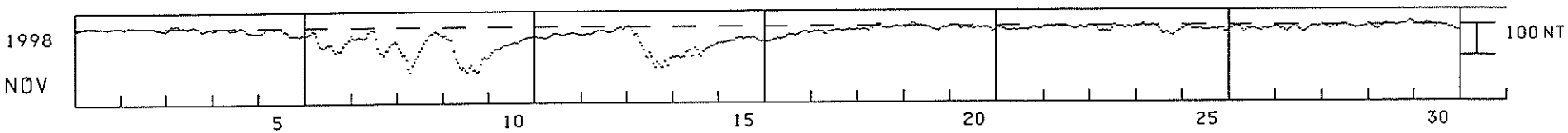
WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

NOVEMBER 1998

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-7	-6	-3	-1	2	2	4	1	2	1	0	0	-1	0	-1	-2	-3	-2	0	0	1	2	2	1
2	-2	-3	-1	4	4	3	3	1	3	1	1	0	1	2	1	2	2	0	-3	-5	-5	-7	-7	-8
3	-5	3	9	6	8	9	5	2	5	0	-4	-1	2	5	4	0	-2	-9	-13	-8	-6	-3	-4	-8
4	-6	-5	-1	-1	-1	-2	0	-4	-9	-7	-9	-7	-4	-1	2	-2	-6	-12	-15	-16	-17	-18	-19	-19
5	-18	-16	-10	-5	-3	-4	-4	-7	-3	-3	-2	-6	-12	-12	-16	-26	-27	-27	-27	-27	-29	-26	-25	-24
6	-26	-22	-19	-13	-14	-26	-45	-61	-67	-67	-62	-56	-58	-57	-72	-82	-77	-78	-76	-61	-49	-49	-40	-25
7	-34	-38	-36	-33	-35	-36	-36	-31	-17	-9	-9	-12	-35	-67	-81	-84	-92	-77	-76	-61	-54	-52	-48	-53
8	-68	-80	-92	-92	-107	-136	-148	-125	-113	-102	-94	-79	-66	-51	-42	-39	-26	-22	-22	-16	-16	-21	-27	-30
9	-27	-38	-39	-42	-40	-78	-103	-115	-130	-139	-132	-140	-148	-132	-126	-140	-141	-147	-145	-122	-103	-98	-104	-100
10	-91	-83	-75	-72	-73	-72	-67	-62	-60	-61	-58	-54	-52	-51	-52	-47	-44	-41	-39	-36	-35	-36	-33	-32
11	-33	-35	-36	-36	-38	-37	-35	-33	-28	-24	-22	-23	-25	-27	-27	-25	-22	-23	-21	-21	-23	-23	-26	-25
12	-27	-26	-24	-23	-25	-22	-19	-15	-14	-14	-14	-14	-15	-18	-19	-18	-16	-10	-6	-3	-4	-8	-3	-1
13	3	-3	-14	-26	-24	-32	-52	-63	-77	-99	-101	-85	-98	-122	-132	-115	-124	-132	-133	-114	-127	-129	-103	-99
14	-100	-97	-99	-102	-100	-98	-84	-81	-76	-97	-95	-70	-77	-92	-97	-82	-76	-72	-69	-63	-64	-62	-56	-53
15	-52	-53	-53	-51	-49	-48	-45	-45	-39	-38	-35	-38	-41	-38	-35	-36	-38	-34	-35	-41	-46	-50	-48	-43
16	-49	-50	-48	-44	-42	-40	-38	-41	-39	-38	-34	-29	-25	-25	-27	-31	-27	-24	-21	-17	-17	-18	-22	-19
17	-19	-15	-17	-15	-17	-17	-24	-25	-18	-18	-16	-15	-13	-12	-13	-16	-14	-14	-12	-11	-12	-14	-12	-11
18	-12	-12	-11	-10	-12	-15	-6	-8	-2	7	7	5	-5	-5	-7	-7	-7	-6	-4	-1	-2	-3	-4	-1
19	-5	-3	4	8	8	7	4	-1	3	-1	-3	-3	-4	-6	-11	-12	-14	-16	-12	-6	-5	-6	-5	0
20	1	3	2	2	-5	-9	-7	-6	-6	-8	-7	-10	-8	-6	-6	-7	-6	-5	-5	-5	-11	-19	-16	-9
21	-5	-7	-8	-10	-14	-14	-15	-16	-12	-15	-15	-12	-12	-13	-12	-14	-10	-10	-6	-5	-8	-10	-9	-6
22	-6	-4	-4	-3	-5	-6	-1	-3	-4	-6	-5	-5	-3	-5	-9	-12	-11	-8	-4	-5	-9	-9	-2	0
23	0	-2	-5	-11	-17	-19	-17	-19	-17	-20	-19	-11	1	-3	-4	-4	-4	-9	-8	-4	-5	-9	-4	-2
24	-6	-2	4	6	-5	-4	-3	-2	3	-2	-6	-13	-20	-27	-25	-22	-25	-30	-32	-29	-24	-21	-18	-13
25	-10	-6	-2	-3	-12	-13	-12	-14	-10	-12	-16	-15	-16	-16	-13	-12	-13	-16	-11	-9	-11	-20	-20	-18
26	-12	-10	-6	-4	-5	-7	-16	-22	-18	-11	-14	-12	-11	-12	-16	-17	-19	-13	-11	-14	-12	-10	-9	-6
27	-5	-9	-14	-10	-17	-21	-16	-12	-5	-4	-8	-14	-15	-20	-20	-18	-12	-7	-4	-3	-3	-6	-3	1
28	0	-5	-7	-11	-11	-6	-2	-7	-1	1	2	1	0	-4	-5	-6	-9	-10	-8	-7	-6	-5	-3	3
29	1	-5	-8	-12	-14	-12	-6	-3	3	7	1	0	2	-1	-3	-1	1	3	3	4	9	13	11	9
30	3	1	1	3	-3	7	8	6	5	1	-10	-3	0	-1	-2	-3	-4	-8	-10	-9	-14	-18	-17	-10



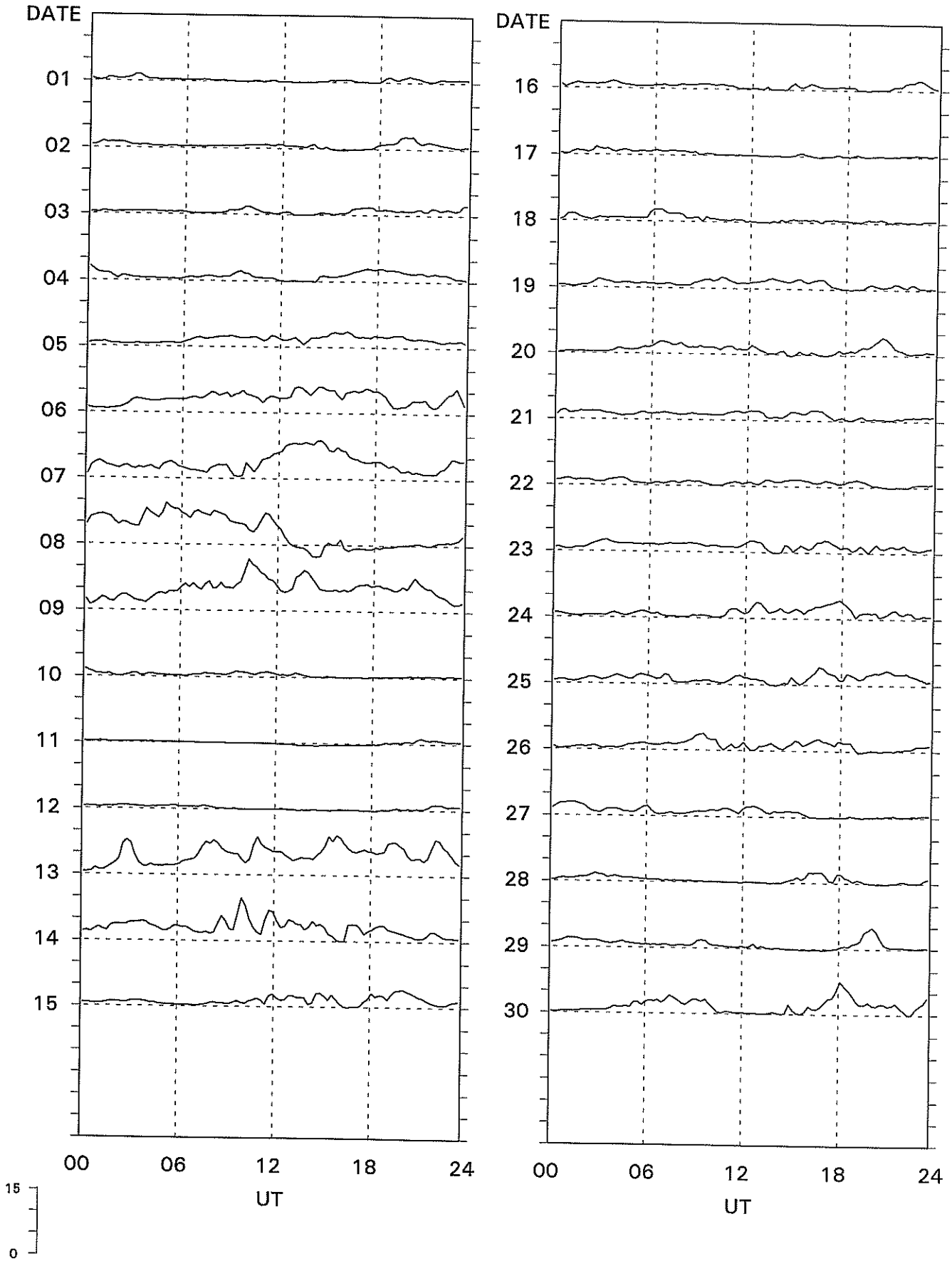
Note: The baselines for the observatories were adjusted for secular change for the Provisional Dst values for November 1998.

PC-INDEX

157
Nov 98

Thule

November, 1998



Preliminary Values.

15-min. Values.

Danish Meteorological Institute

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

NOVEMBER 1998

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
HYB	07.6N	05	0900	..	..	..	..	06(3,7)	5	2	126	21	07	01
KRC	16.4N	06	1555	..	..	..	..	07(5)	6	6	183	64	08	01
AMS	46.8S	06	09--	..	..	..	..	08(3)	7	35	250	239	10	13
CZT	51.5S	06	09--	..	..	..	..	08(2,3)	7	36	223	179	10	14
DRV	75.2S	06	09--	..	..	..	..	09(1) 10(1)	6	1034	1005	691	10	15
BJI	28.8N	07	0815	SC	0.6	7	0	08(3)	6	13	215	52	10	12
UJJ	13.6N	07	0814	SC	--	10	- 3		-	7	158	26	08	16
NGP	11.3N	07	0814	SC	--	14	- 2		-	7	189	25	08	16
ABG	09.4N	07	0814	SC	- 0.2	17	- 3	07(5)	6	7	185	40	08	16
HYB	07.6N	07	0816	SC	- 0.2	13	- 1	07(5,6)	6	3	182	18	07	22
PND	02.0N	07	0814	SC	--	16	--		-	-	193	--	08	16
TRD	01.1N	07	0814	SC	0.2	25	- 25		-	6	233	175	08	16
ETT	00.7S	07	0816	SC	- 0.1	21	13		-	--	--	--	--	--
HER	33.6S	07	07--	..	..	..	..	09(7)	6	50	187	142	10	05
PAF	57.2S	07	0815	SC	- 0.9	13.6	5.1	08(3) 09(5,7)	8	172	1381	545	10	18
KRC	16.4N	08	0616	..	..	..	..	08(2) 09(2,3,7)	6	8	202	65	10	07
HYB	07.6N	08	0452	SC*	0.5	24	7	09(4)	7	7	221	26	09	22
HYB	07.6N	08	1331	SC	- 0.2	14	- 2		-	-	--	--	09	22
ETT	00.7S	08	0452	SC	1.3	103	53		-	--	256	96	10	09
UJJ	13.6N	09	0100	..	..	..	..		-	5	191	23	09	24
NGP	11.3N	09	0100	..	..	..	..		-	7	212	24	09	24
ABG	09.4N	09	0100	..	..	..	..	09(3,7)	6	5	211	29	09	24
PND	02.0N	09	0100	..	..	..	..		-	-	233	--	09	24
TRD	01.1N	09	0100	..	..	..	..		-	5	272	128	09	24
BJI	28.8N	12	17--	..	..	..	..	14(4)	6	13	170	33	14	22
HYB	07.6N	12	1700	..	..	..	..	13(4,5,7,8) 14(4)	6	6	220	24	14	20
ETT	00.7S	12	1700	..	..	..	..		-	--	254	112	14	23
AMS	46.8S	12	18--	..	..	..	..	13(5,7,8)	6	42	157	147	15	00
CZT	51.5S	12	20--	..	..	..	..	13(6,7,8) 14(5)	6	39	159	201	15	00
PAF	57.2S	12	20--	..	..	..	..	13(6)	9	182	1361	568	17	12
DRV	75.2S	12	20--	..	..	..	..	13(1)	6	840	776	755	16	12
KRC	16.4N	13	0205	SC	- 3	24	17	13(3,7,8) 14(4)	6	10	203	74	15	06
UJJ	13.6N	13	0100	..	..	..	..		-	7	183	30	14	19
NGP	11.3N	13	0100	..	..	..	..		-	5	218	22	14	19
ABG	09.4N	13	0100	..	..	..	..	13(3,7,8) 14(4)	6	6	213	41	14	19
PND	02.0N	13	0100	..	..	..	..		-	10	220	93	14	19
TRD	01.1N	13	0100	..	..	..	..		-	4	263	155	14	19
HER	33.6S	13	00--	..	..	..	..	13(7,8) 14(1,4,5)	5	44	211	156	14	23
DRV	75.2S	23	12--	..	..	..	..	26(1)	7	866	663	920	27	12
AMS	46.8S	29	19--	..	..	..	..	30(7)	5	20	117	56	01	23
CZT	51.5S	29	18--	..	..	..	..	30(7)	5	25	102	71	01	22
DRV	75.2S	29	18--	..	..	..	..	30(7)	7	820	410	820	02	13
UJJ	13.6N	30	0506	SC	- 0.4	23	- 5		-	-	--	--	01	17
NGP	11.3N	30	0506	SC	0.2	24	- 3		-	-	--	--	01	17
ABG	09.4N	30	0506	SC	- 0.4	20	- 4	29(7) 30(2,3,4,6,7)	4	4	131	28	01	17
HYB	07.6N	30	0507	SC	- 0.3	23	- 2	30(2,3,4,7) 01(2,3,4)	4	4	136	22	01	21
PND	02.0N	30	0506	SC	- 0.3	28	17		-	-	--	--	01	17
TRD	01.1N	30	0506	SC	- 0.2	47	- 51		-	-	--	--	01	17
ETT	00.7S	30	0507	SC	0.1	43	25		-	--	--	--	--	--
PAF	57.2S	30	0507	SC	- 3.7	20.8	- 7.8	30(7,8) 01(1)	5	45	243	127	01	22

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)

NOVEMBER 1998

Storm Sudden Commencements (SSC)

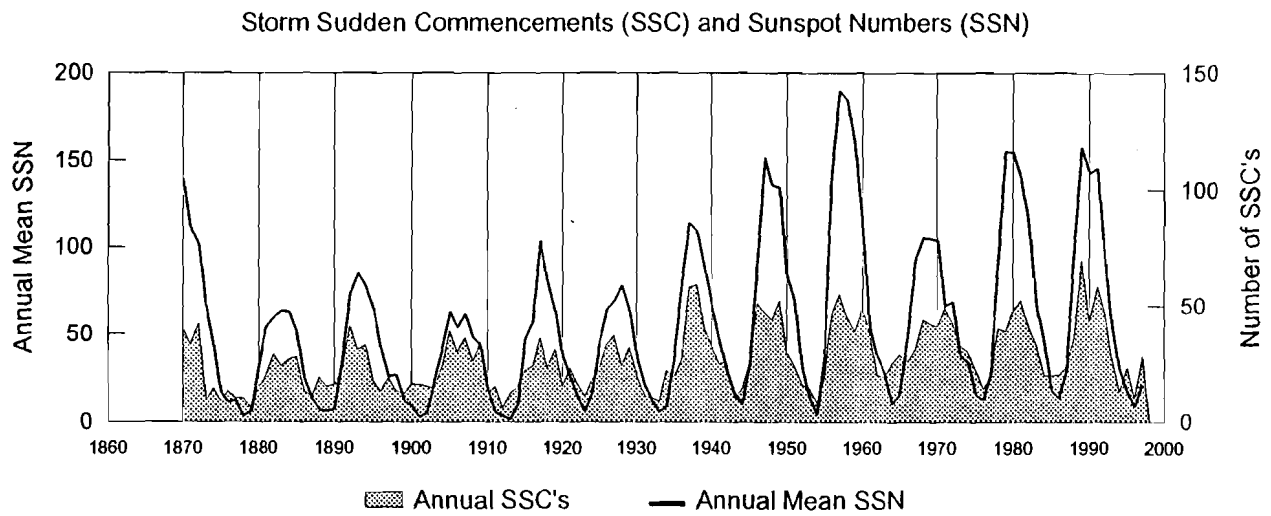
Day	Time	Quality: Station Group*
07	0815	A: WNG* CLF* HRB* BJI
		B: NAG* QUE GNA CNB*
		C: NUR* NGK* BDV* GCK* MMB* COI SPT* KAK* HTY* KNY*
08	0451	A: WNG* COI GNA* CNB
		C: NGK
13	0143	B: CLF HRB COI
		C: GCK QUE
		si: EBR
30	0507	A: WNG* CLF HRB* NAG* COI BJI SPT* TEN
		B: BDV* GCK* QUE CNB
		C: NGK* EBR*

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
01	1113-1119	BDV
12	0526-0550	KNY+
18	0850-0908	TEN
22	0633-0710	KAK+ KNY+ GNA+ CNB+
23	0635-0721	KAK+ KNY+ GNA+ CNB+
28	0536-0635	BJI KAK+ KNY+ GNA+ CNB+

REPORTING OBSERVATORIES (up to the 4th of January 1999):
SOD NUR WNG NGK BDV CLF HRB NAG GCK MMB EBR COI BJI SPT KAK HTY KNY QUE TEN 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 (+).



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WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

The ICSU Panel on WDCs has recommended that it would be appropriate courtesy to acknowledge in publications that data were obtained from the originating station or investigator through the intermediary of the WDCs. The following statement is suggested:

"Data used in this study were provided by WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder Colorado 80303, USA."