JANUARY 2000 NUMBER 665 - Part I

Solar-Geophysical Data prompt reports

Data for November and December 1999
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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JANUARY 2000 NUMBER 665 - Part I

Solar-Geophysical Data prompt reports

Data for November and December 1999

International Standard Serial Number: 0038-0911
Library of Congress Catalog Number: 79-640375 //r81

NATIONAL GEOPHYSICAL DATA CENTER
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Boulder, Colorado

Subscription information is on the inside back cover.

SOLAR-GEOPHYSICAL DATA

Number 665

(Issued in Two Parts)

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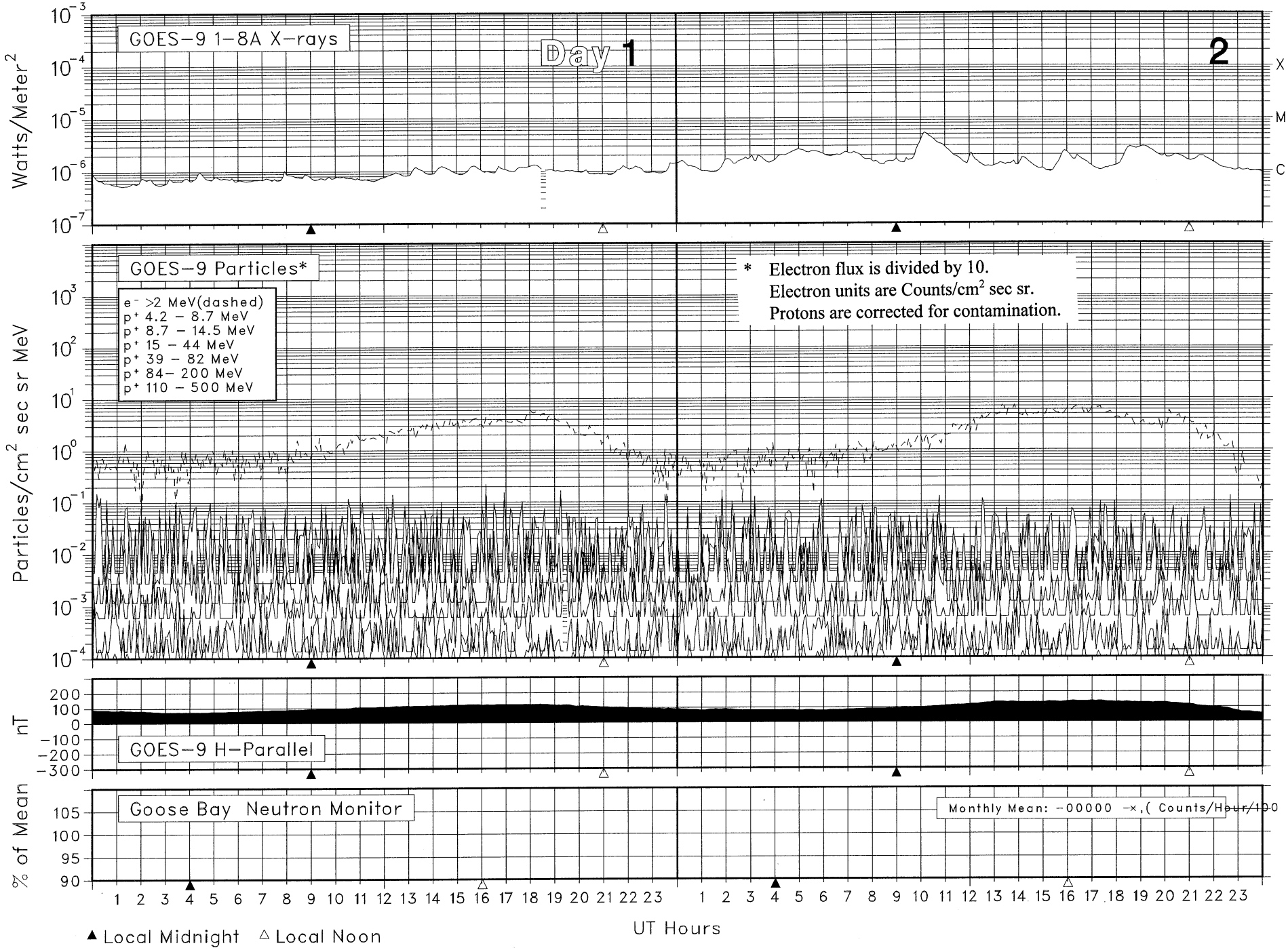
December 1999



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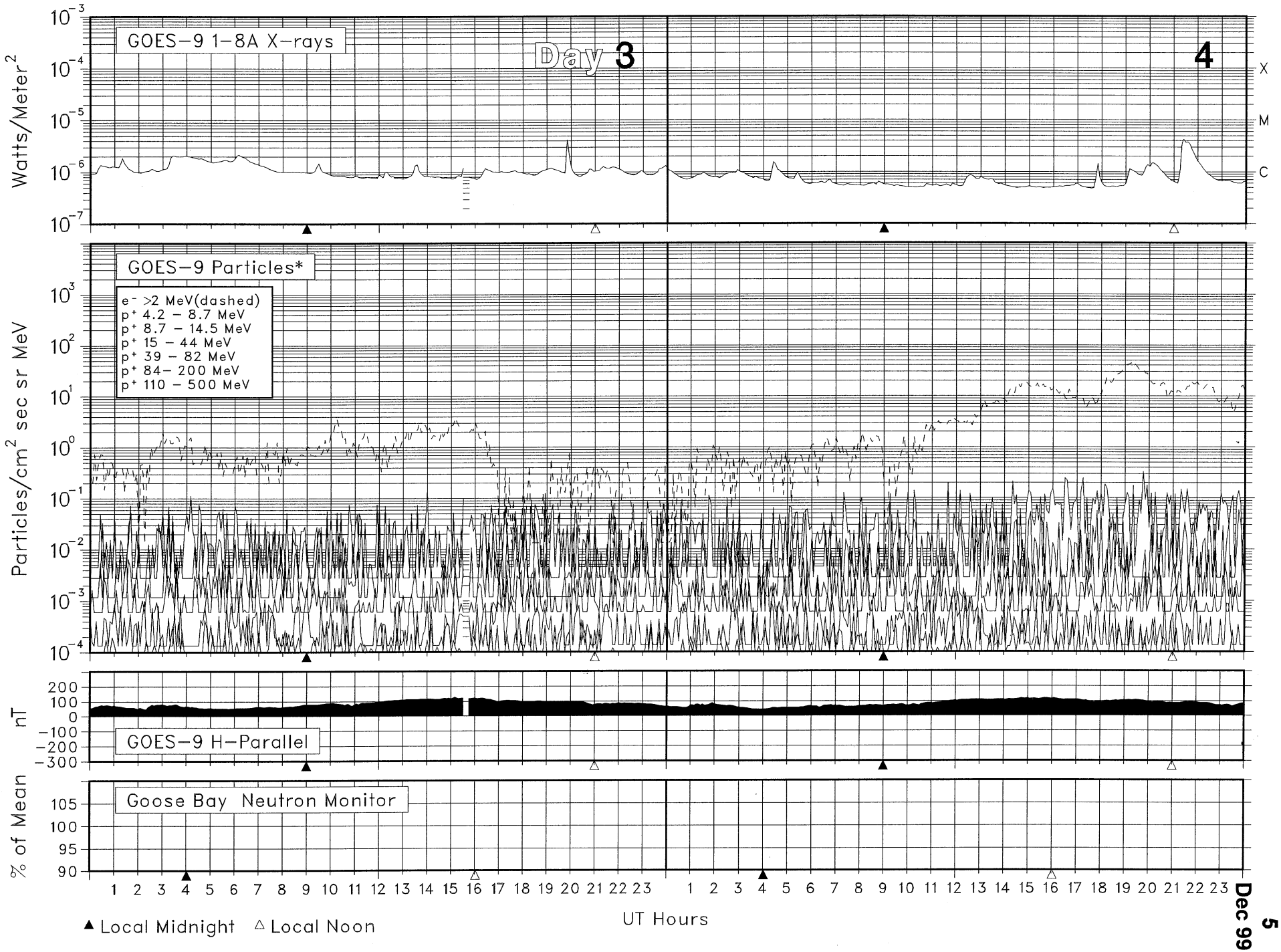
December 1999



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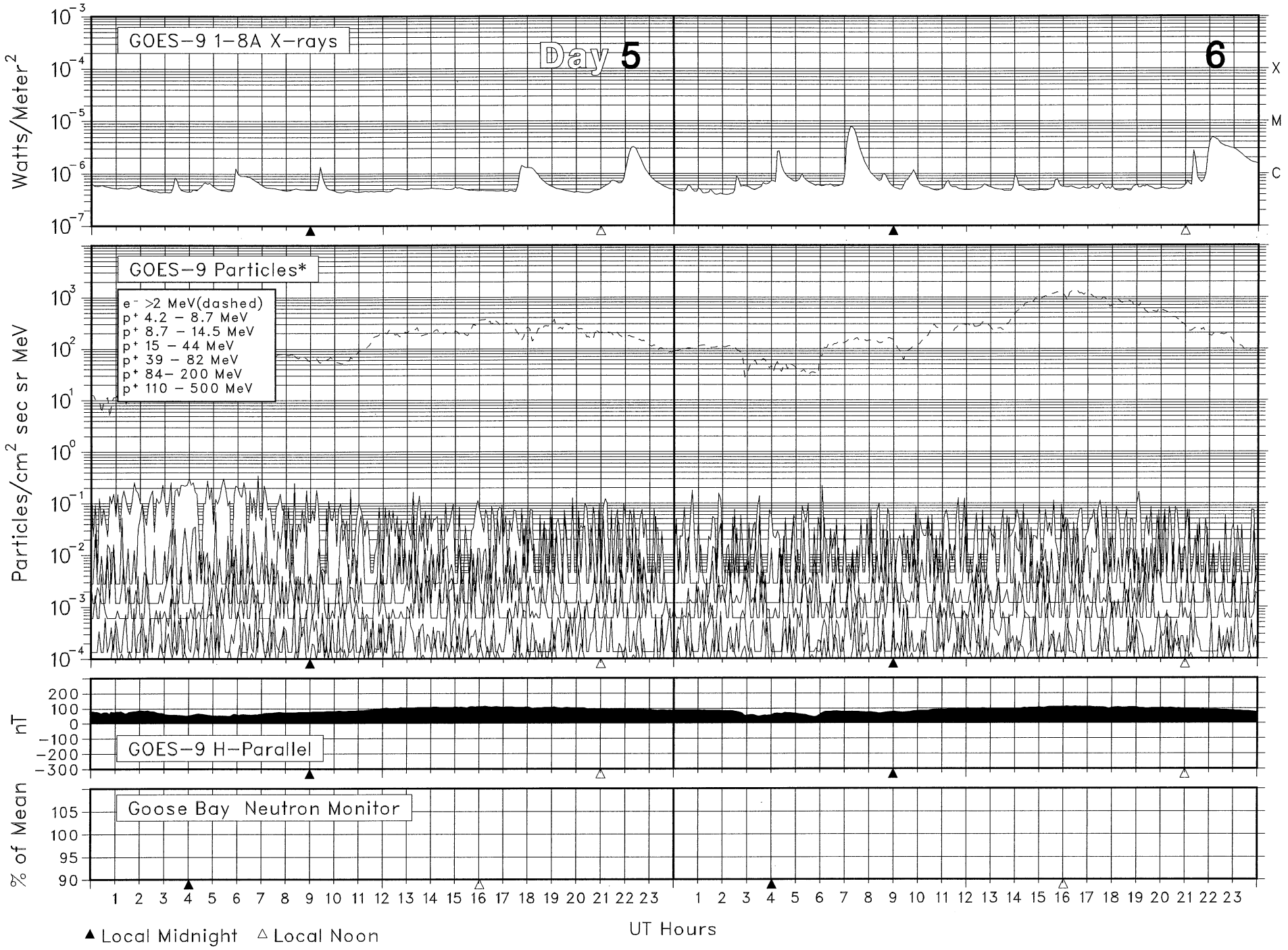

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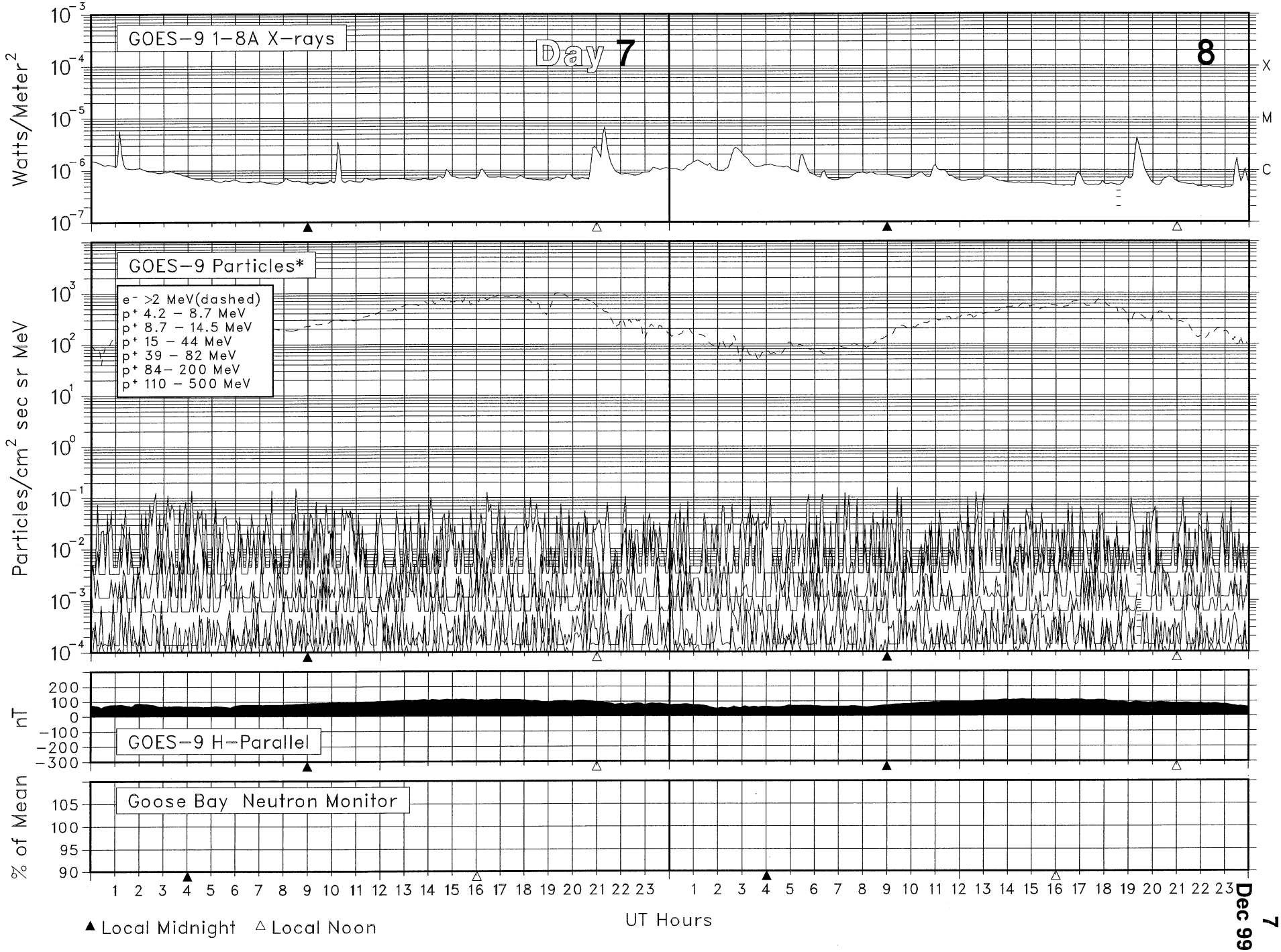

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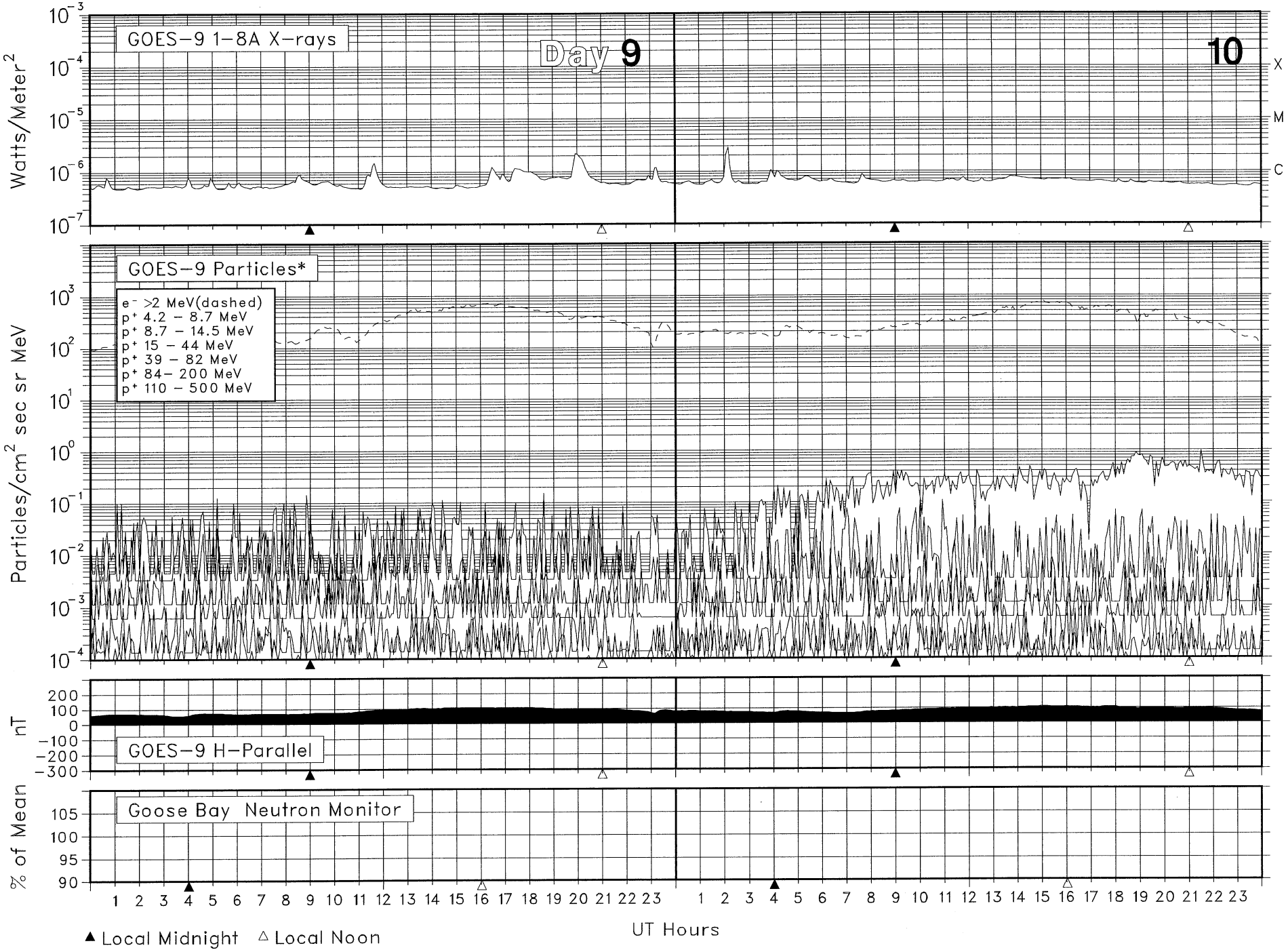

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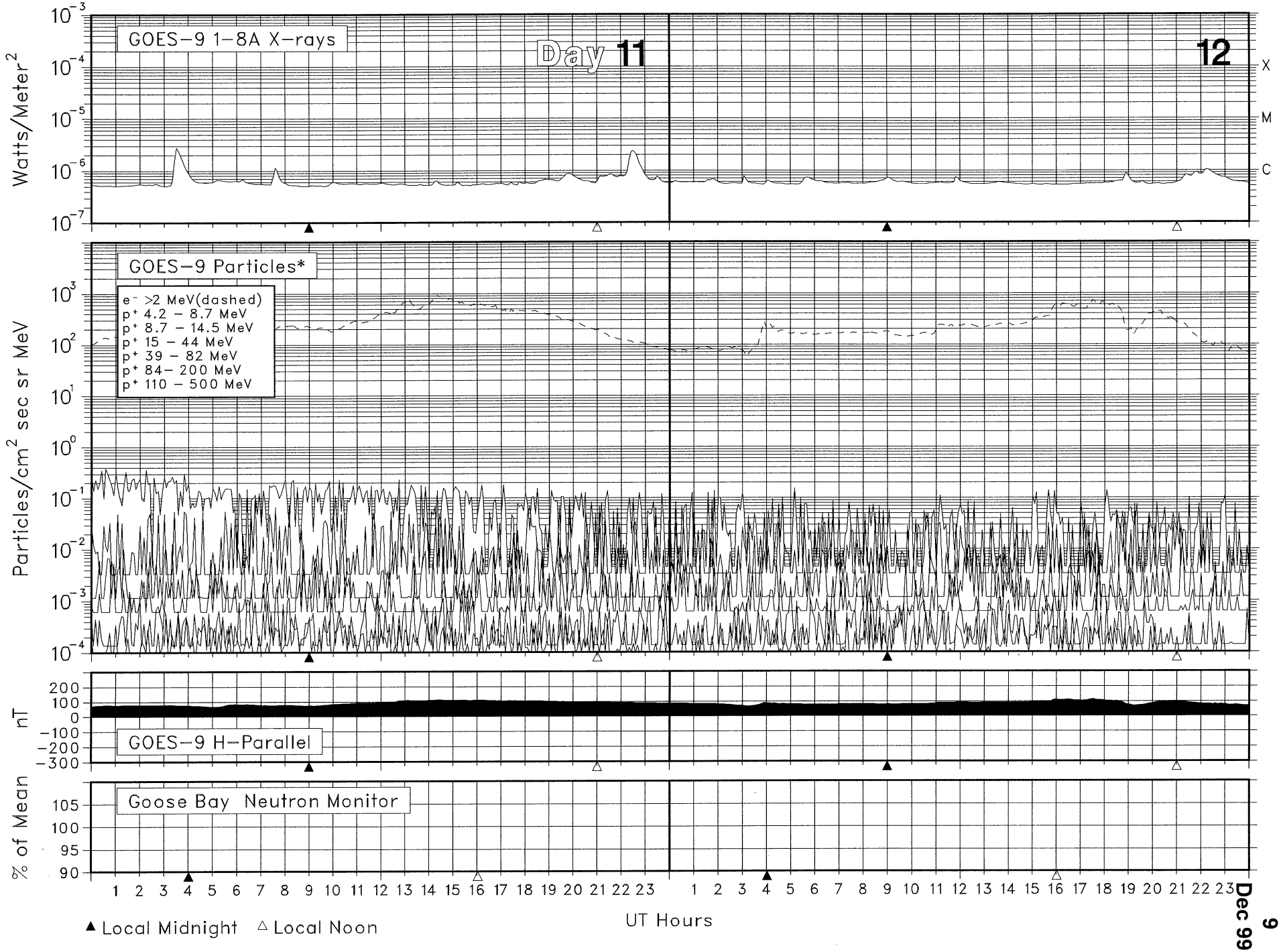

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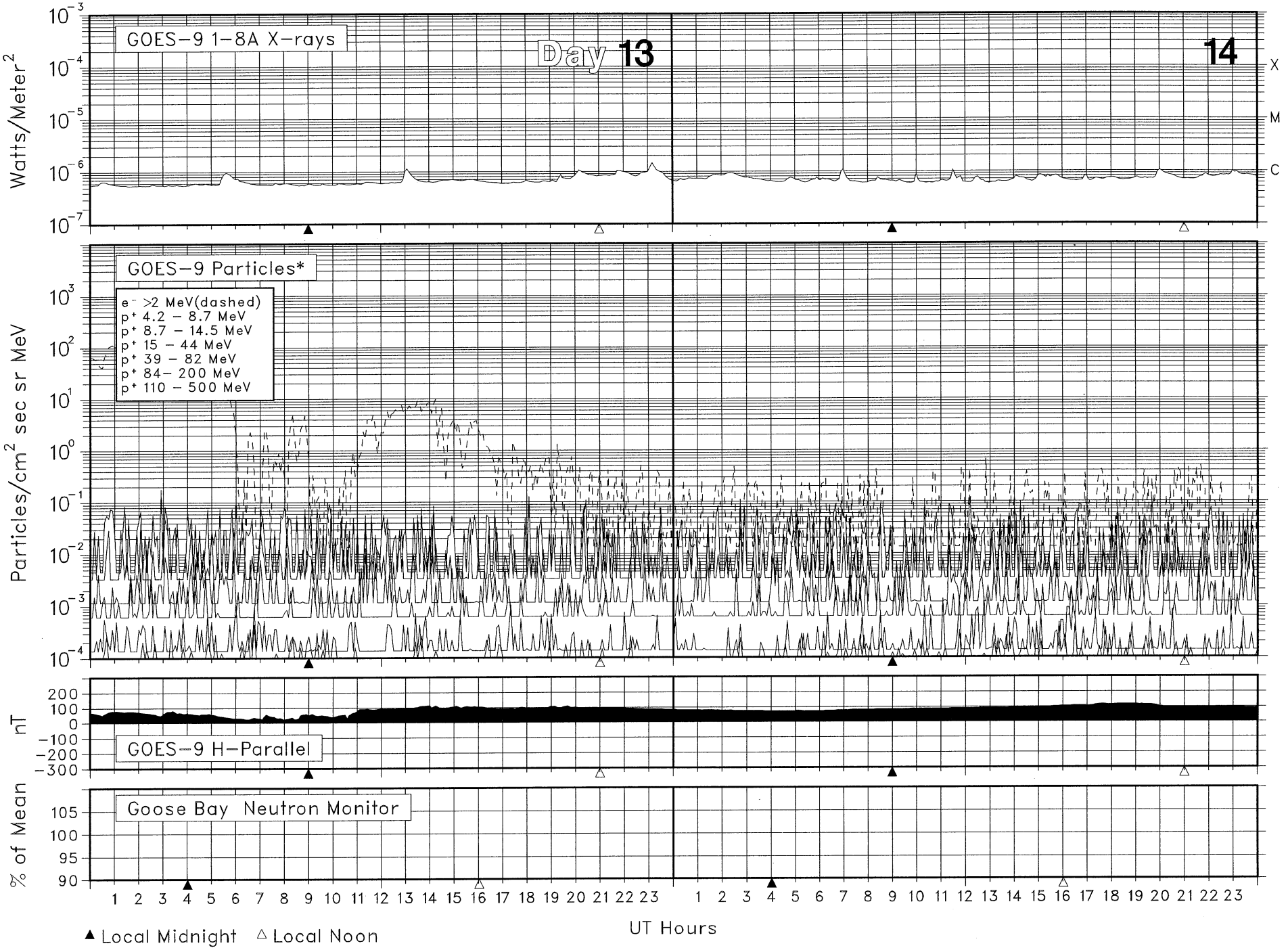

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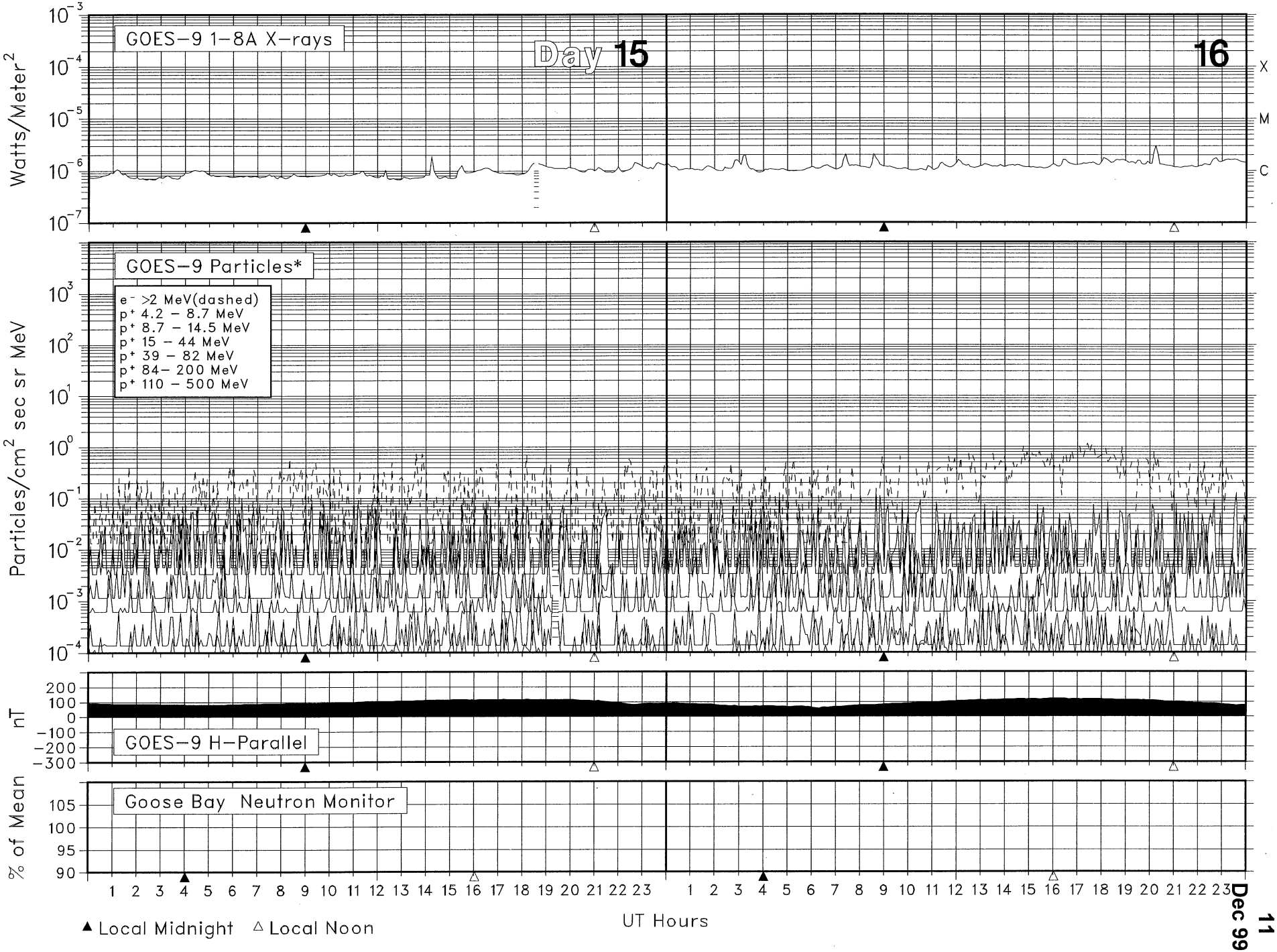

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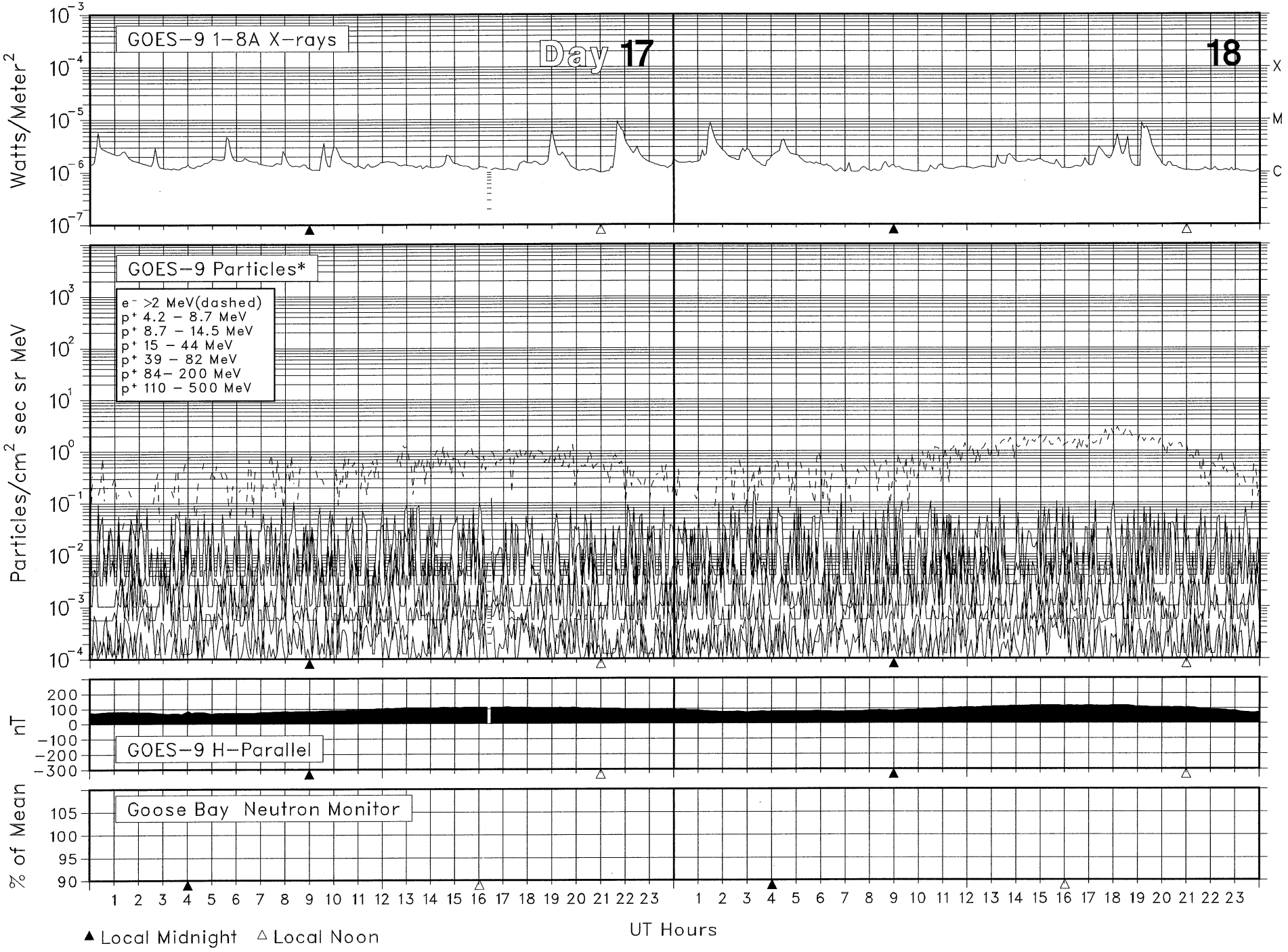

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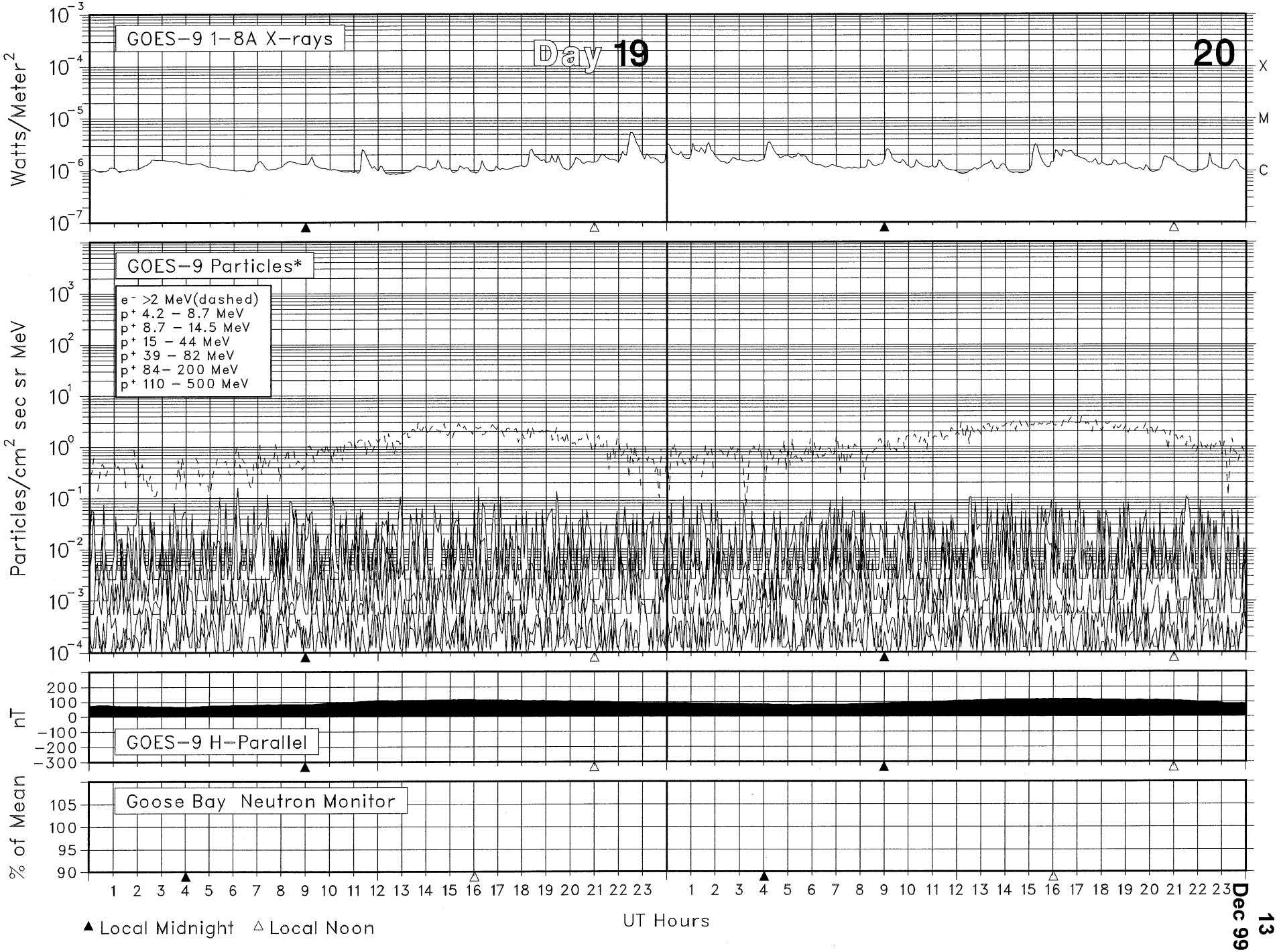

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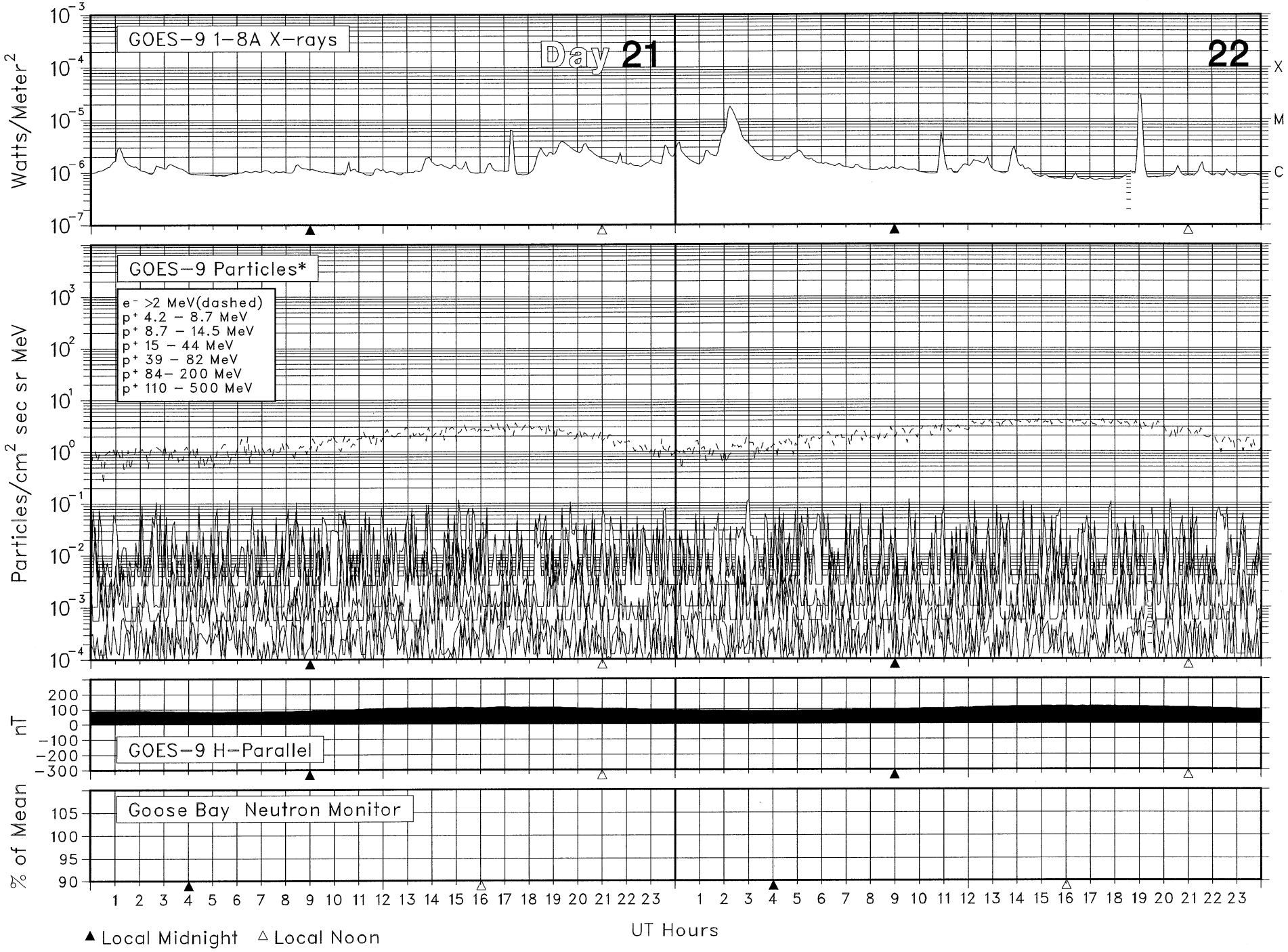

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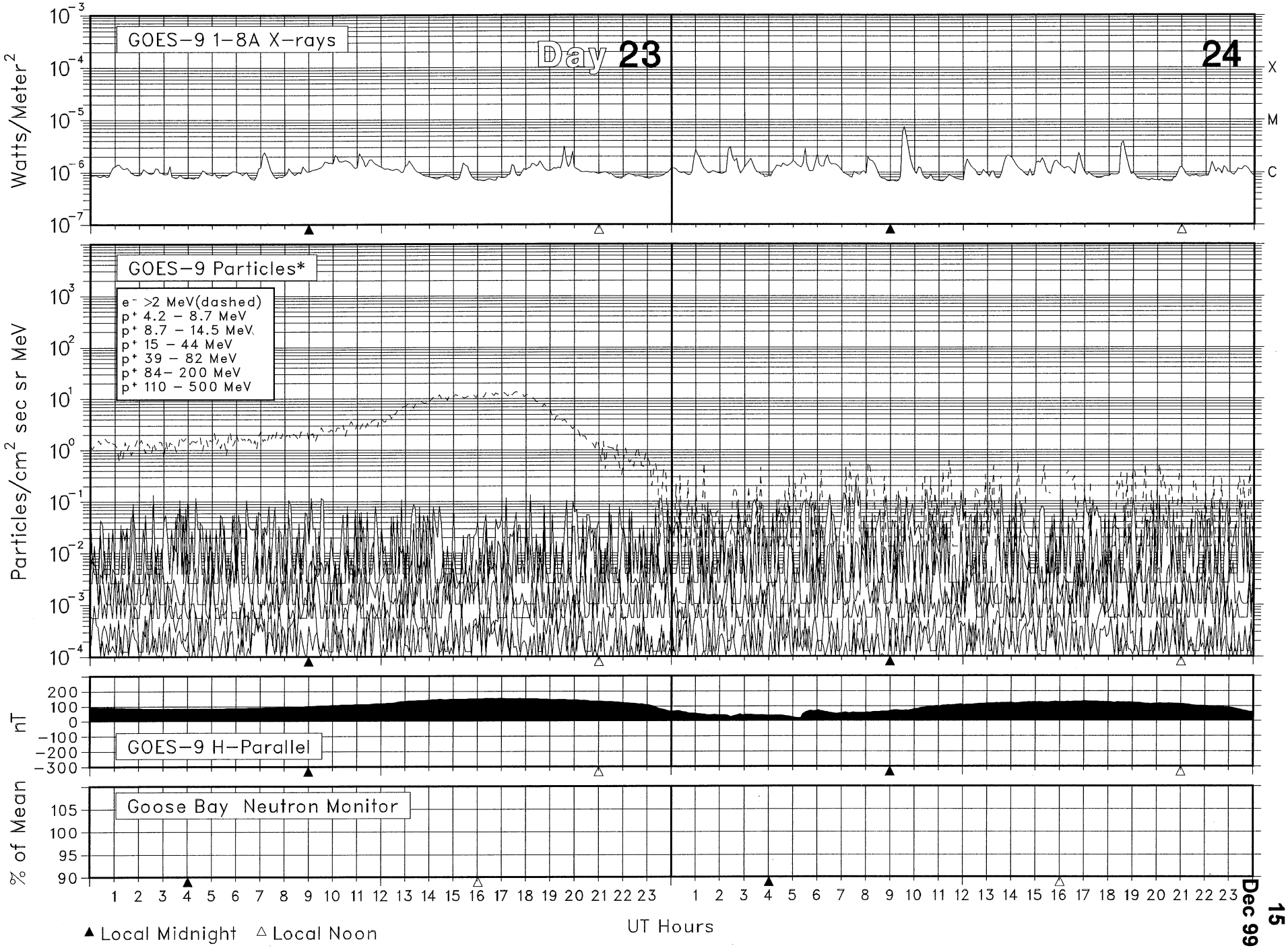

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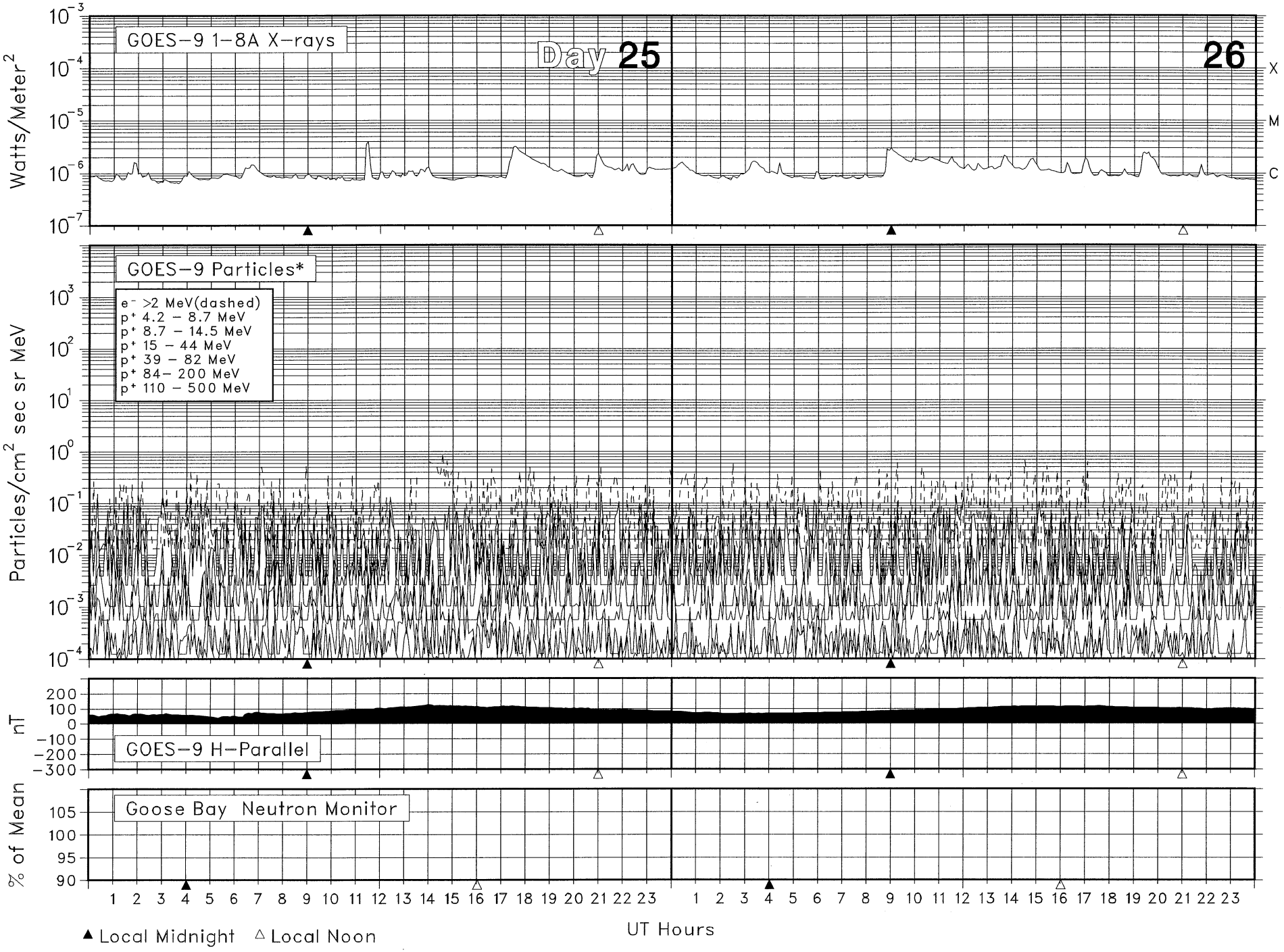

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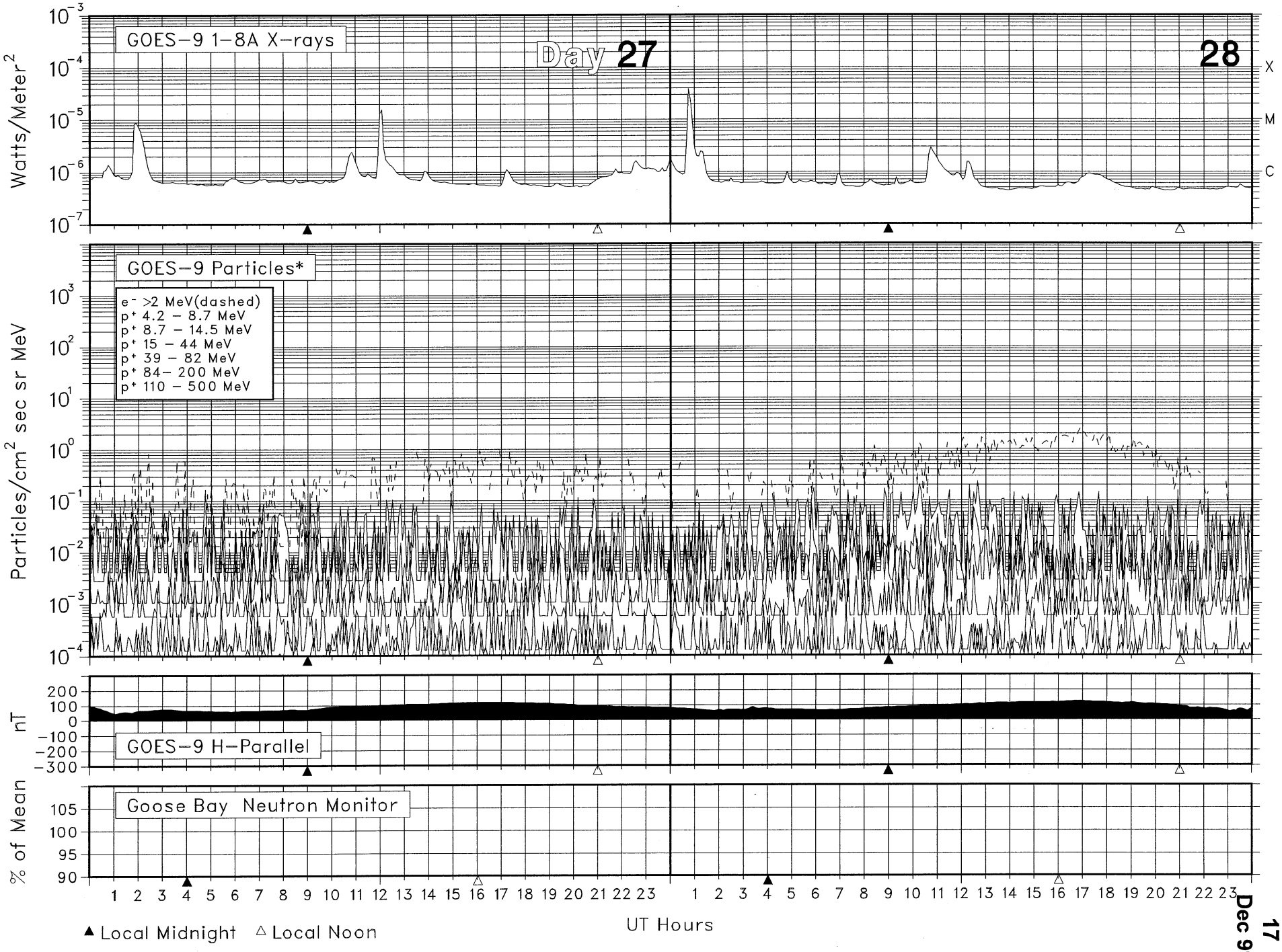

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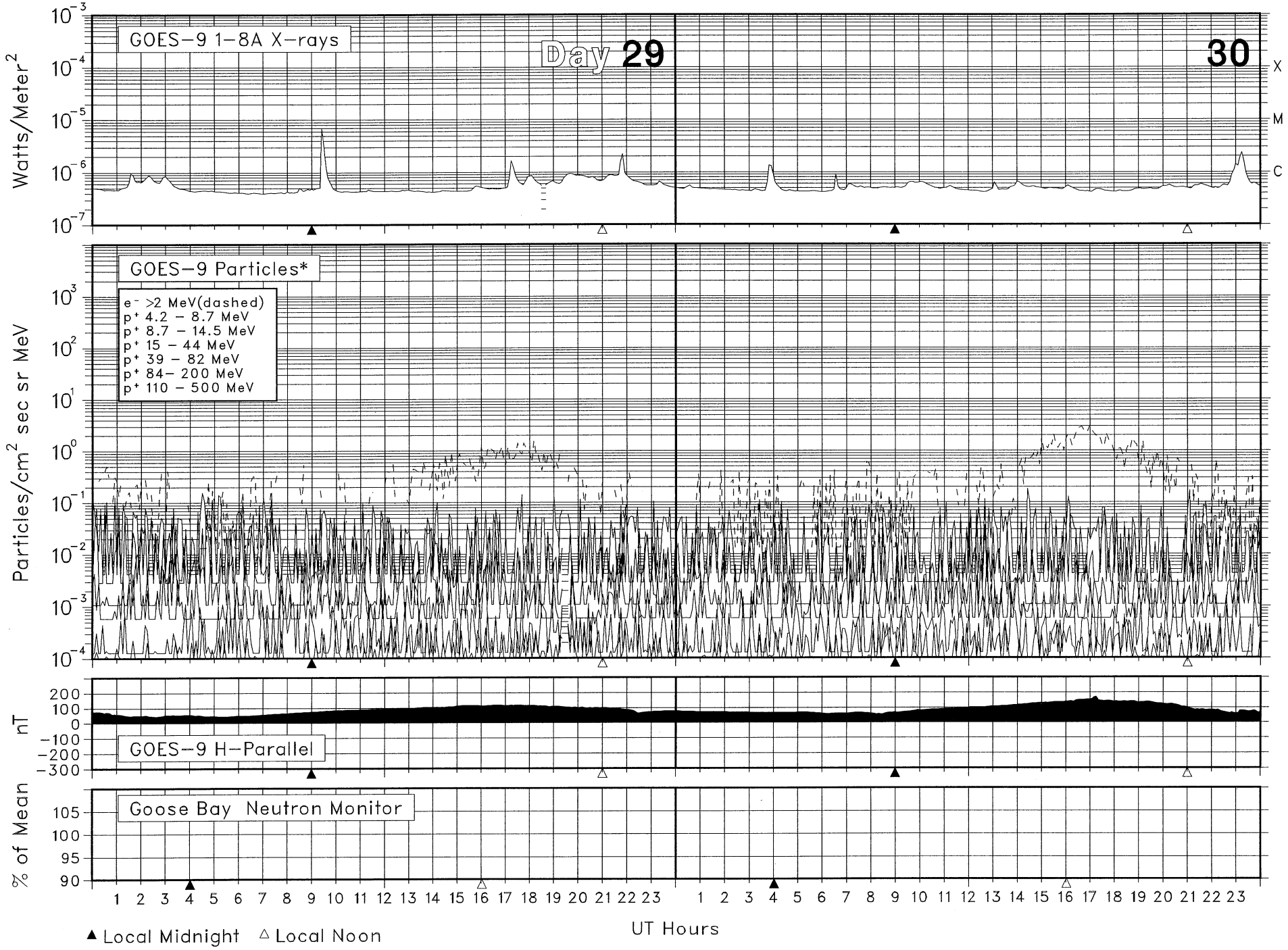

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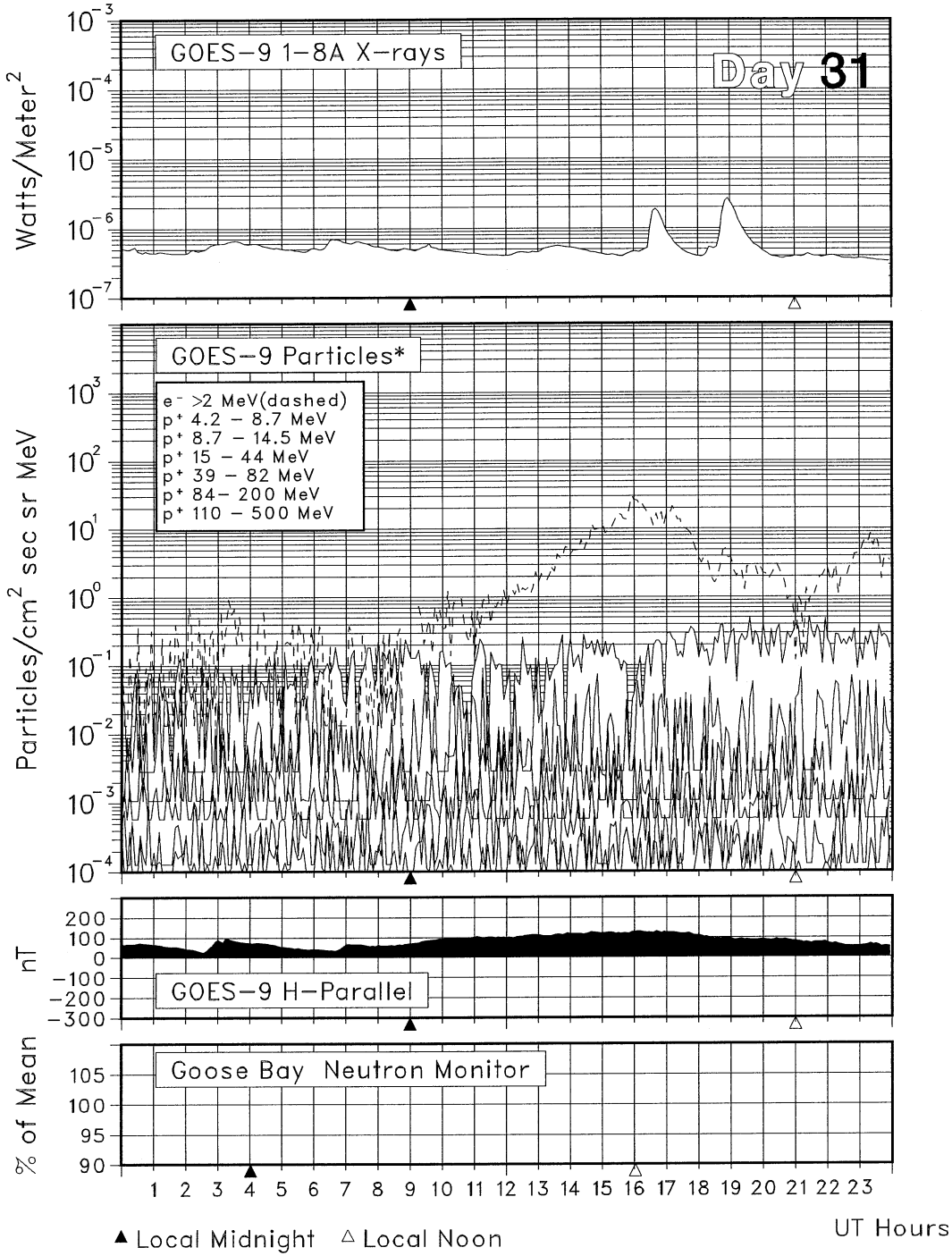


* Electron flux is divided by 10.
Electron units are Counts/cm^2 sec sr.
Protons are corrected for contamination.

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

DECEMBER 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
335	01	30	127	163	7	8778	S14	W62	2	0	0	01	E	SOL: Eruptive
						8780	S16	W26	0	0	0	01	Q	MAG: Quiet
						8781	S12	W03	0	0	0	01	Q	PRO: Quiet
						8782	N11	W41	8	0	0	01	E	
						8783	S16	W43	0	0	0	01	Q	
						8784	N30	E32	0	0	0	01	Q	
336	02	01	119	165	2	8778	S15	W78	0	0	0	02	Q	SOL: Active
						8780	S15	W39	0	0	0	02	Q	MAG: Quiet
						8781	S12	W16	0	0	0	02	Q	PRO: Quiet
						8782	N09	W53	4	0	0	02	E	
						8783	S16	W58	0	0	0	02	Q	
						8784	N30	E18	0	0	0	02	Q	
						8785	N14	E71	0	0	0	02	Q	
337	03	02	156	166	3	8778	S12	W91	0	0	0	03	Q	SOL: Eruptive
						8781	S12	W29	1	0	0	03	E	MAG: Quiet
						8782	N11	W68	8	0	0	03	E	PRO: Quiet
						8783	S16	W72	0	0	0	03	Q	
						8784	N30	E05	0	0	0	03	Q	
						8785	N14	E58	0	0	0	03	Q	
						8786	N22	W07	0	0	0	03	Q	
						8787	N14	E46	0	0	0	03	Q	
						8788	N13	E78	0	0	0	03	Q	
						8789	N29	W10	0	0	0	03	Q	
338	04	03	107	152	14	8781	S12	W42	0	0	0	04	E	SOL: Eruptive
						8782	N10	W83	1	0	0	04	E	MAG: Quiet
						8785	N13	E43	0	0	0	04	Q	PRO: Quiet
						8786	N22	W23	0	0	0	04	Q	
						8787	N11	E30	0	0	0	04	Q	
						8788	N10	E66	1	0	0	04	Q	
						8789	N29	W23	0	0	0	04	Q	
339	05	04	78	148	25	8781	S12	W58	0	0	0	05	Q	SOL: Eruptive
						8782	N11	W92	1	0	0	05	Q	MAG: Quiet
						8785	N13	E30	0	0	0	05	Q	PRO: Quiet
						8787	N12	E18	0	0	0	05	Q	
						8788	N10	E56	3	0	0	05	E	
340	06	05	78	143	22	8781	S13	W71	0	0	0	06	Q	SOL: Eruptive
						8785	N13	E18	0	0	0	06	Q	MAG: Active
						8787	N12	E03	0	0	0	06	Q	PRO: Quiet
						8788	N10	E43	1	0	0	06	E	
						8789	N29	W48	0	0	0	06	Q	
341	07	06	80	143	19	8781	S12	W88	0	0	0	07	Q	SOL: Eruptive
						8785	N13	E05	0	0	0	07	Q	MAG: Active
						8787	N11	W08	1	0	0	07	Q	PRO: Quiet
						8788	N09	E29	2	0	0	07	E	
						8790	N09	E47	4	0	0	07	Q	
342	08	07	76	153	14	8785	N14	W08	0	0	0	08	Q	SOL: Eruptive
						8787	N10	W20	0	0	0	08	Q	MAG: Active
						8788	N10	E16	2	0	0	08	E	PRO: Quiet
						8790	N10	E35	1	0	0	08	E	
						8791	S13	E68	2	1	0	08	Q	
343	09	08	93	150	13	8785	N14	W21	0	0	0	09	Q	SOL: Eruptive
						8787	N12	W32	0	0	0	09	Q	MAG: Active
						8788	N11	E04	0	0	0	09	E	PRO: Quiet
						8790	N11	E20	1	0	0	09	E	
						8791	S14	E53	0	0	0	09	E	
						8792	N17	E69	0	0	0	09	Q	
344	10	09	118	156	14	8785	N14	W35	1	0	0	10	Q	SOL: Eruptive
						8787	N13	W48	0	0	0	10	Q	MAG: Active

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

DECEMBER 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
						8788	N10	W10	0	0	0	10	E	PRO: Quiet
						8790	N11	E07	1	0	0	10	Q	
						8791	S14	E36	1	0	0	10	Q	
						8792	N16	E56	0	0	0	10	Q	
						8793	S16	E11	0	0	0	10	Q	
						8794	S15	E58	1	0	0	10	Q	
345	11	10	130	164	9	8785	N15	W48	0	0	0	11	Q	SOL: Eruptive
						8787	N13	W63	0	0	0	11	Q	MAG: Active
						8788	N11	W23	0	0	0	11	E	PRO: Quiet
						8790	N12	W07	1	0	0	11	Q	
						8791	S15	E22	0	0	0	11	Q	
						8792	N17	E43	1	0	0	11	Q	
						8793	S16	W04	0	0	0	11	Q	
						8794	S14	E44	1	0	0	11	Q	
						8795	S12	E06	0	0	0	11	Q	
346	12	11	134	159	8	8785	N16	W62	0	0	0	12	Q	SOL: Eruptive
						8787	N17	W72	0	0	0	12	Q	MAG: Quiet
						8788	N12	W37	0	0	0	12	E	PRO: Quiet
						8790	N13	W20	1	0	0	12	Q	
						8792	N16	E30	0	0	0	12	Q	
						8793	S16	W17	0	0	0	12	Q	
						8794	S15	E31	1	0	0	12	Q	
						8795	S12	W08	0	0	0	12	Q	
347	13	12	97	159	11	8785	N14	W73	0	0	0	13	Q	SOL: Eruptive
						8788	N10	W51	0	0	0	13	E	MAG: Quiet
						8790	N12	W35	0	0	0	13	Q	PRO: Quiet
						8792	N17	E16	1	0	0	13	Q	
						8793	S17	W33	0	0	0	13	Q	
						8794	S14	E19	0	0	0	13	Q	
						8795	S13	W21	0	0	0	13	Q	
348	14	13	147	166	26	8785	N16	W87	0	0	0	14	Q	SOL: Eruptive
						8788	N15	W65	2	0	0	14	E	MAG: Active
						8790	N12	W49	0	0	0	14	Q	PRO: Quiet
						8792	N17	E01	0	0	0	14	Q	
						8793	S17	W46	0	0	0	14	Q	
						8794	S13	E05	0	0	0	14	Q	
						8795	S13	W34	0	0	0	14	Q	
						8796	S27	W03	0	0	0	14	Q	
						8797	S35	E10	0	0	0	14	Q	
						8798	S14	E74	0	0	0	14	Q	
						8799	S08	E74	0	0	0	14	Q	
349	15	14	139	168	3	8788	N11	W75	0	0	0	15	Q	SOL: Eruptive
						8790	N15	W69	0	0	0	15	Q	MAG: Quiet
						8792	N16	W11	0	0	0	15	Q	PRO: Quiet
						8794	S13	W08	0	0	0	15	Q	
						8795	S14	W47	0	0	0	15	Q	
						8796	S27	W18	0	0	0	15	Q	
						8797	S34	W02	0	0	0	15	Q	
						8798	S13	E60	4	0	0	15	Q	
						8799	S09	E60	0	0	0	15	Q	
						8800	N11	E60	0	0	0	15	Q	
						8801	S23	W01	0	0	0	15	Q	
350	16	15	148	179	2	8788	N14	W86	0	0	0	16	Q	SOL: Eruptive
						8792	N20	W24	0	0	0	16	Q	MAG: Quiet
						8793	S16	W70	0	0	0	16	Q	PRO: Quiet
						8794	S14	W20	0	0	0	16	Q	
						8796	S26	W32	0	0	0	16	Q	
						8797	S33	W16	0	0	0	16	Q	
						8798	S14	E48	7	0	0	16	E	
						8799	S09	E47	0	0	0	16	Q	
						8800	N09	E47	0	0	0	16	Q	

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

DECEMBER 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
						8801	S22	W13	0	0	0	16	Q	
351	17	16	146	194	6	8794	S14	W27	1	0	0	17	E	SOL: Eruptive
						8796	S25	W45	0	0	0	17	Q	MAG: Quiet
						8797	S32	W29	0	0	0	17	Q	PRO: Quiet
						8798	S14	E34	5	0	0	17	E	
						8800	N09	E33	0	0	0	17	Q	
						8802	S23	E04	0	0	0	17	Q	
						8803	S14	E24	0	0	0	17	Q	
						8804	S18	E78	0	0	0	17	Q	
352	18	17	179	201	8	8794	S14	W40	0	0	0	18	Q	SOL: Eruptive
						8796	S25	W58	0	0	0	18	Q	MAG: Quiet
						8797	S33	W41	0	0	0	18	Q	PRO: Quiet
						8798	S13	E21	9	0	0	18	E	
						8800	N10	E18	0	0	0	18	Q	
						8803	S13	E10	1	0	0	18	E	
						8804	S17	E66	0	0	0	18	Q	
						8805	N18	W27	0	0	0	18	Q	
						8806	N18	E71	1	0	0	18	E	
353	19	18	190	206	4	8794	S16	W53	0	0	0	19	Q	SOL: Eruptive
						8797	S32	W57	0	0	0	19	Q	MAG: Quiet
						8798	S13	E07	5	0	0	19	Q	PRO: Quiet
						8800	N10	E04	0	0	0	19	Q	
						8803	S13	W02	0	0	0	19	Q	
						8804	S19	E54	0	0	0	19	Q	
						8805	N18	W41	0	0	0	19	Q	
						8806	N19	E62	15	1	0	19	E	
						8807	N11	E68	0	0	0	19	Q	
354	20	19	154	207	6	8797	S32	W65	0	0	0	20	Q	SOL: Eruptive
						8798	S13	W06	3	0	0	20	E	MAG: Quiet
						8803	S13	W16	0	0	0	20	Q	PRO: Quiet
						8804	S19	E43	0	0	0	20	Q	
						8806	N19	E50	6	0	0	20	E	
						8807	N11	E57	3	0	0	20	Q	
						8808	S19	E06	0	0	0	20	Q	
355	21	20	149	209	4	8798	S14	W21	4	0	0	21	E	SOL: Active
						8803	S13	W31	0	0	0	21	Q	MAG: Quiet
						8804	S20	E29	0	0	0	21	Q	PRO: Quiet
						8806	N19	E37	6	0	0	21	E	
						8807	N10	E44	2	0	0	21	Q	
						8808	S18	W08	0	0	0	21	Q	
356	22	21	129	217	3	8798	S13	W33	1	0	0	22	E	SOL: Eruptive
						8803	S13	W43	1	0	0	22	Q	MAG: Quiet
						8804	S18	E15	0	0	0	22	Q	PRO: Quiet
						8806	N19	E24	7	1	0	22	E	
						8807	N11	E29	1	0	0	22	Q	
357	23	22	130	202	0	8798	S13	W47	3	0	0	23	E	SOL: Active
						8803	S14	W57	3	0	0	23	Q	MAG: Quiet
						8804	S18	E02	0	0	0	23	Q	PRO: Quiet
						8806	N19	E12	6	1	0	23	E	
						8807	N10	E16	2	1	0	23	E	
358	24	23	112	198	2	8798	S14	W59	5	0	0	24	E	SOL: Active
						8803	S14	W69	5	0	0	24	E	MAG: Quiet
						8804	S18	W11	0	0	0	24	Q	PRO: Quiet
						8806	N19	W01	6	0	0	24	E	
						8807	N11	E02	0	0	0	24	Q	
						8808	S18	W47	2	0	0	24	Q	
359	25	24	149	182	10	8798	S13	W73	2	0	0	25	E	SOL: Active
						8803	S13	W80	0	0	0	25	Q	MAG: Quiet

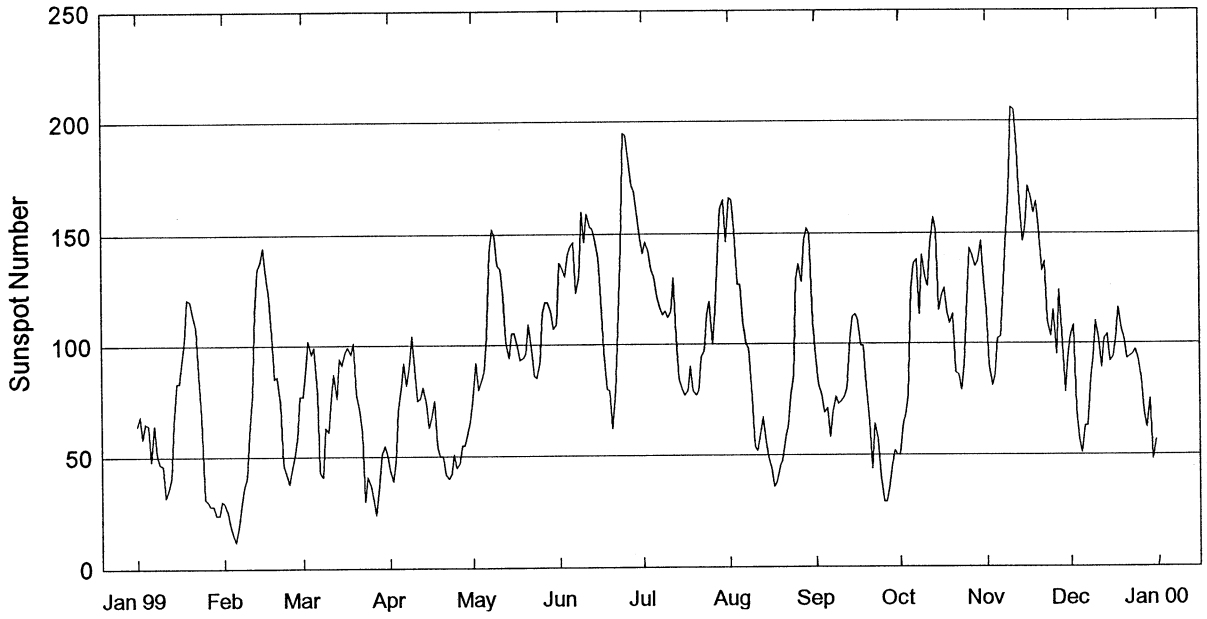
A L E R T P E R I O D S
The International Space Environment Service

DECEMBER 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
						8804	S18	W25	0	0	0	25	Q	PRO: Quiet
						8806	N20	W14	3	0	0	25	E	
						8807	N12	W11	3	0	0	25	Q	
						8809	N21	E67	0	0	0	25	Q	
						8810	N35	E75	0	0	0	25	Q	
360	26	25	141	178	14	8798	S13	W86	0	0	0	26	Q	SOL: Active
						8804	S17	W38	0	0	0	26	Q	MAG: Quiet
						8806	N20	W28	2	0	0	26	E	PRO: Quiet
						8807	N11	W23	1	0	0	26	Q	
						8809	N21	E54	0	0	0	26	Q	
						8810	N36	E64	2	0	0	26	Q	
						8811	S28	W16	0	0	0	26	Q	
361	27	26	125	177	1	8804	S17	W51	0	0	0	27	Q	SOL: Active
						8806	N21	W41	4	0	0	27	E	MAG: Quiet
						8807	N11	W37	0	0	0	27	Q	PRO: Quiet
						8809	N21	E41	0	0	0	27	Q	
						8810	N36	E54	2	0	0	27	Q	
						8811	S28	W29	0	0	0	27	Q	
362	28	27	109	162	5	8804	S18	W64	1	0	0	28	Q	SOL: Active
						8806	N20	W54	9	2	0	28	E	MAG: Quiet
						8809	N22	E27	0	0	0	28	Q	PRO: Quiet
						8810	N38	E44	0	0	0	28	Q	
363	29	28	77	150	8	8804	S17	W78	0	0	0	29	Q	SOL: Active
						8806	N19	W66	7	1	0	29	E	MAG: Quiet
						8809	N22	E15	0	0	0	29	Q	PRO: Quiet
						8810	N38	E32	2	0	0	29	E	
364	30	29	123	144	5	8804	S18	W91	0	0	0	30	Q	SOL: Active
						8806	N18	W83	3	0	0	30	Q	MAG: Quiet
						8809	N22	E02	0	0	0	30	Q	PRO: Quiet
						8810	N37	E19	0	0	0	30	E	
						8811	S30	W63	0	0	0	30	Q	
						8812	S28	W21	1	0	0	30	Q	
						8813	S15	E64	0	0	0	30	Q	
						8814	N11	E73	0	0	0	30	Q	
365	31	30	88	136	6	8806	N22	W96	0	0	0	31	Q	SOL: Eruptive
						8809	N24	W08	0	0	0	31	Q	MAG: Active
						8810	N37	E06	1	0	0	31	E	PRO: Quiet
						8812	S28	W35	0	0	0	31	Q	
						8813	S17	E50	0	0	0	31	Q	
						8814	N10	E60	0	0	0	31	Q	

STRATWARM ALERTS - NONE

International Relative Sunspot Numbers
Jan 1999 - Dec 1999

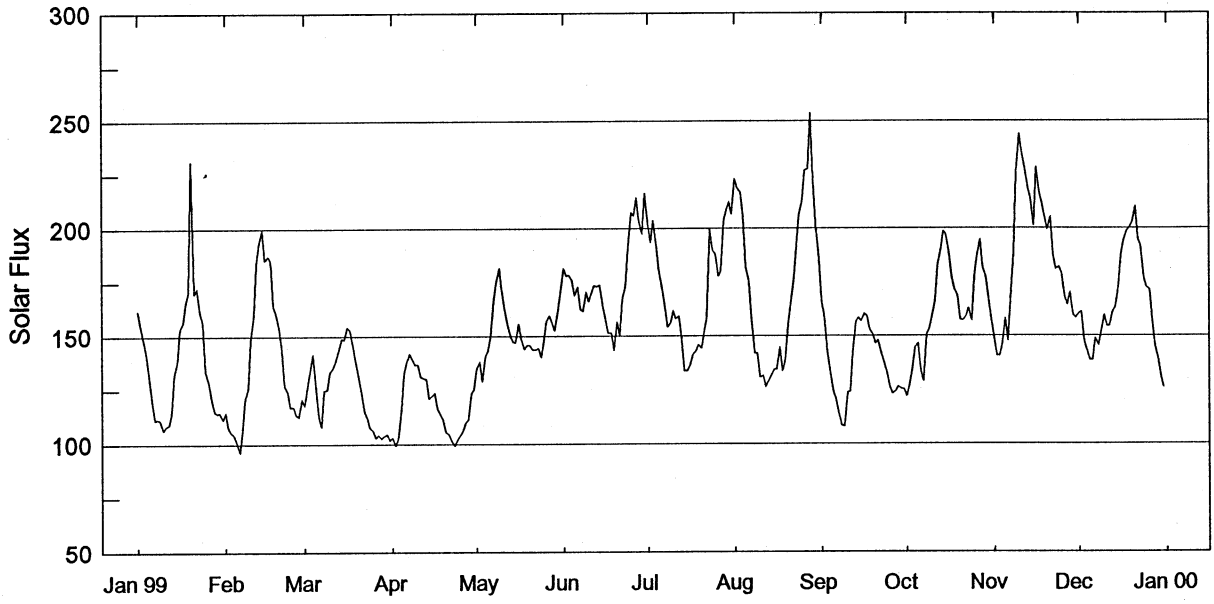


Day	Jan 99	Feb	Mar	Apr	May	Jun	Jul*	Aug*	Sep*	Oct*	Nov*	Dec*
1	64	29	77	44	76	137	141	166	94	50	115	103
2	68	25	88	39	92	135	146	165	82	64	90	108
3	58	19	102	48	80	131	142	151	77	68	81	70
4	65	15	96	71	84	140	134	127	69	77	86	57
5	64	12	99	81	88	144	130	127	71	124	102	51
6	48	19	79	92	104	146	122	110	58	136	103	63
7	64	28	43	82	142	123	117	100	69	138	123	63
8	51	36	41	89	152	131	113	98	76	113	146	84
9	47	41	63	104	149	160	115	76	73	140	169	94
10	46	60	61	90	136	146	112	54	74	130	206	110
11	32	78	76	75	134	159	115	52	76	126	205	101
12	35	115	87	76	122	153	130	60	80	145	188	89
13	41	134	76	81	101	152	103	67	102	157	164	102
14	65	138	94	74	94	147	84	57	112	151	146	104
15	83	144	91	63	105	139	80	49	113	115	153	92
16	83	133	97	67	105	120	77	44	111	122	171	94
17	93	122	99	75	99	97	79	36	99	125	166	102
18	102	105	96	55	93	80	90	38	99	114	159	116
19	121	85	101	50	94	79	79	45	81	109	164	106
20	120	86	78	50	96	62	77	48	65	113	152	102
21	114	74	71	42	109	79	79	58	44	87	133	93
22	108	47	61	40	98	106	94	63	64	86	137	94
23	87	42	30	42	86	144	97	76	57	79	110	95
24	68	38	41	51	85	195	113	86	41	90	103	97
25	31	44	37	45	92	194	119	129	29	120	115	93
26	30	51	31	47	114	182	100	136	29	143	95	84
27	28	59	24	55	119	172	115	128	35	140	124	69
28	28	77	37	55	119	169	144	147	46	135	105	62
29	24		51	61	115	160	161	152	52	137	78	75
30	24		55	66	107	148	165	150	50	146	93	48
31	30		51		109		146	109		129		57
Mean	62.0	66.3	68.8	63.7	106.4	137.7	113.5	93.7	70.9	116.4	132.7	86.4

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Jan 99 - Dec 99

Adjusted to 1 AU



Day	Jan 99	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	161.6	114.5	118.0	102.9	134.9*	181.2	202.0	222.9	165.8	121.9	148.4	160.4
2	154.8	107.7	127.6	99.4	137.9	178.1	193.4	218.8	159.3	126.6	140.6	160.9
3	149.4	105.8	134.6	102.7	129.2	178.5	203.5	216.9	141.7	134.7	140.8	147.5
4	142.0	104.3	141.6	116.0	141.1	175.9	191.9	206.0	133.5	144.4	145.1	143.3
5	132.0	100.9	125.4	132.7	143.3	168.8	180.0	182.1	123.8	146.2	157.8	138.6
6	121.6	96.6	112.6	137.6	149.5	172.9	173.5	175.3	120.4	133.5	147.4	138.6
7	111.3	106.5	108.3	141.7	166.4	162.4	163.7	157.6	114.1	129.2	170.8	148.8
8	111.7	121.1	125.0	139.5	175.1	161.3	154.1	141.7	108.4	150.9	188.4	145.6
9	111.0	125.9	125.3	136.7	181.7	170.3	155.9	141.9	108.0	152.8	225.5	151.5
10	106.7	148.4	133.6	136.9	172.8	166.0	161.5	130.8	123.7	160.0	243.6	159.5
11	108.2	159.3	135.3	131.3	162.6	169.8	157.8	131.4	124.1	166.0	235.0	154.3
12	109.1	183.6	138.5	130.7	156.3	173.2	159.2	126.4	142.6	182.9	227.1	154.4
13	114.7	193.4	142.7	130.3	150.5	173.0	148.3	129.8	156.5	190.1	219.1	161.0
14	132.4	199.6	148.7	121.0	147.3	173.5	133.9	131.5	158.2	198.7	214.2	163.1
15	138.0	185.5	148.4	122.7	146.8	163.5	133.8	134.5	156.6	197.1	201.1	173.1
16	153.4	187.3	154.1	123.8	155.6	157.6	136.4	134.4	159.9	187.8	228.2	187.9
17	156.2	185.3	152.9	116.6	148.6	151.3	141.3	144.5	159.1	176.8	216.3	194.4
18	165.4	164.2	146.7	113.8	143.8	151.2	142.8	133.9	153.0	171.4	212.9	198.9
19	170.3	160.5	138.1	110.9	145.8	143.3	145.8	138.0	150.6	168.2	205.1	200.3
20	231.3	153.6	131.6	105.8	145.9	156.5	144.1	155.2	146.2	157.4	199.5	202.4
21	169.7	144.0	123.1	104.4	143.7	150.3	152.1	165.0	147.9	157.0	205.0	210.1
22	172.3	127.0	115.0	101.4	143.7	166.9	157.8	176.7	141.5	158.8	187.2	195.1
23	160.8	124.3	112.2	99.3	144.2	173.0	199.9	191.7	137.8	162.8	180.9	191.9
24	156.8	117.3	107.6	102.0	140.4	191.1	190.1	206.4	132.4	157.1	181.9	176.5
25	133.9	117.1	106.4	103.8	146.8	207.5	188.0	212.9	126.1	177.2	179.0	172.5
26	129.1	113.4	103.1	105.8	156.6	206.1	177.8	226.9	123.3	187.1	167.7	171.2
27	121.6	112.9	104.1	110.0	159.3	214.3	179.9	227.7	124.4	194.8	164.5	156.4
28	115.2	120.7	102.7	111.3	156.2	203.2	203.9	253.4	126.5	181.5	170.1	145.4
29	114.2		103.8	123.9	152.7	197.7	208.6	222.5	125.3	177.2	159.5	139.0
30	114.5		104.4	125.3	161.1	216.5	212.2	201.9	125.1	167.0	158.3	131.2
31	111.5		101.7		170.1		206.7	186.1		158.1		125.8
Mean	138.1	138.6	124.9	118.0	151.9	175.2	171.0	175.0	137.2	163.7	187.4	164.5

NOTE: * 2300UT reading - hail on antenna at 2000UT.

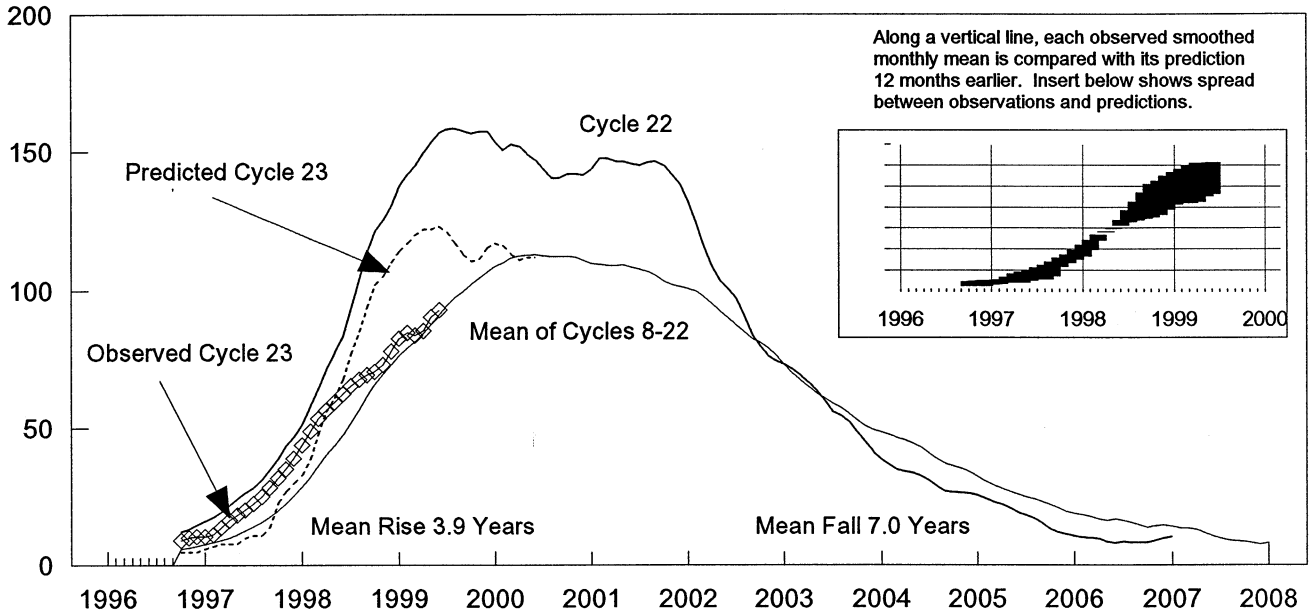
DAILY SOLAR INDICES
December 1999

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Pentic (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
1	335	3	103	N	165.0	486	301	201	160.4	156	119	64	47	25
2	336	4	108	O	165.5	489	293	201	160.9	148	119	64	45	24
3	337	5	70	T	151.8	497	283	193	147.5	142	114	56	45	18
4	338	6	57		147.5	468	272	176	143.3	136	107	62	46	19
5	339	7	51	A	142.7	487	264	170	138.6	134	109	64	45	20
				V										
6	340	8	63	A	142.8	--	264	174	138.6	132	110	60	48	21
7	341	9	63	I	153.3	465	276	178	148.8	138	116	65	47	18
8	342	10	84	L	150.1	500	275	180	145.6	143	118	65	49	20
9	343	11	94	A	156.2	501	278	188	151.5	140	123	69	49	51
10	344	12	110	B	164.4	480	282	192	159.5	151	131	73	48	19
				L										
11	345	13	101	E	159.1	482	293	188	154.3	149	132	68	45	17
12	346	14	89		159.2	500	284	188	154.4	145	131	--	51	19
13	347	15	102		166.1	502	290	195	161.0	155	137	75	61	88
14	348	16	104		168.4	496	293	198	163.1	155	134	78	53	20
15	349	17	92		178.7	482	299	208	173.1	161	137	74	48	18
16	350	18	94		194.0	511	313	237	187.9	177	142	78	50	19
17	351	19	102		200.7	520	323	243	194.4	187	145	75	50	19
18	352	20	116		205.5	530	340	248	198.9	195	150	73	52	23
19	353	21	106		206.9	506	324	242	200.3	189	149	76	53	23
20	354	22	102		209.2	503	337	250	202.4	197	155	72	49	22
21	355	23	93		217.2	513	336	259	210.1	193	147	82	79	86
22	356	24	94		201.7	513	339	256	195.1	192	144	75	55	25
23	357	25	95		198.4	513	326	234	191.9	178	135	72	59	47
24	358	26	97		182.4	518	323	224	176.5	172	130	74	69	35
25	359	27	93		178.4	505	331	230	172.5	176	128	69	60	42
26	360	1	84		177.0	513	305	215	171.2	162	122	74	77	36
27	361	2	69		161.7	507	291	193	156.4	147	116	65	49	19
28	362	3	62		150.4	500	294	190	145.4	140	108	61	37	18
29	363	4	75		143.7	495	281	181	139.0	131	105	63	48	18
30	364	5	48		135.6	485	269	169	131.2	127	101	61	49	18
31	365	6	57		130.1	--	--	--	125.8	--	--	--	--	--
MEAN			86.4		169.8	498	299	206	164.5	158	127	69	52	28

The International numbers shown above are preliminary values; the American numbers are not available.

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

Cycle 23 Smoothed Sunspot Numbers: Observed and Predicted



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

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1992	124	115	108	103	100	97	91	84	80	76	74	73	94
1993	71	69	67	64	60	56	55	52	48	45	41	38	56
1994	37	35	34	34	33	31	29	27	27	27	26	26	31
1995	24	23	22	21	19	18	17	15	13	12	11	11	17
1996	10	10	10	9	8*	9	8	8	8	9**	10	10	8
1997	11	11	14	17	18	20	23	25	28	32	35	39	23
1998	44	49	53	57	59	63	65	68	69	71	73	78	62
1999	83	85	84	85	90	93	96	99	101	103	106	108	94
							(5)	(10)	(14)	(17)	(19)	(22)	(7)
2000	109	110	111	111	112	112	112	113	112	112	111	111	111
	(24)	(26)	(28)	(29)	(31)	(31)	(31)	(32)	(33)	(34)	(36)	(37)	(31)

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

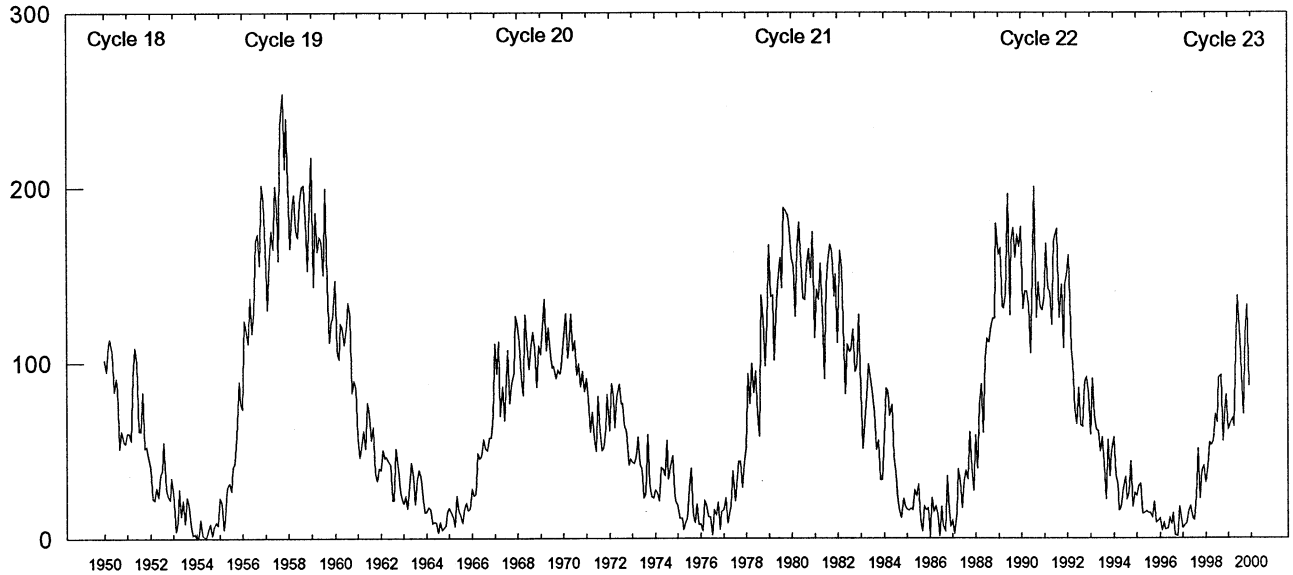
*** May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.**

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 1999 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 2000 prediction. There exists a 90% chance that in June 2000, the actual smoothed number will fall somewhere between 81 and 143.

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 1999



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4 m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2 M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	122.3
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2 m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9 M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6 m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4 M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4 m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.4
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	100.2
1989	161.3	165.1	131.4	130.6	138.5	196.2	126.9	168.9	176.7	159.4	173.0	165.5	157.6 M
1990	177.3	130.5	140.3	140.3	132.2	105.4	149.4	200.3	125.2	145.5	131.4	129.7	142.6
1991	136.9	167.5	141.9	140.0	121.3	169.7	173.7	176.3	125.3	144.1	108.2	144.4	145.7
1992	150.0	161.1	106.7	99.8	73.8	65.2	85.7	64.5	63.9	88.7	91.8	82.6	94.3
1993	59.3	91.0	69.8	62.2	61.3	49.8	57.9	42.2	22.4	56.4	35.6	48.9	54.6
1994	57.8	35.5	31.7	16.1	17.8	28.0	35.1	22.5	25.7	44.0	18.0	26.2	29.9
1995	24.2	29.9	31.1	14.0	14.5	15.6	14.5	14.3	11.8	21.1	9.0	10.0	17.5
1996	11.5	4.4	9.2	4.8	5.5	11.8	8.2	14.4	1.6	0.9	17.9	13.3	8.6 m
1997	5.7	7.6	8.7	15.5	18.5	12.7	10.4	24.4	51.3	22.8	39.0	41.2	21.5
1998	31.9	40.3	54.8	53.4	56.3	70.7	66.6	92.2	92.9	55.5	74.0	81.9	64.3
1999	62.0	66.3	68.8	63.7	106.4	137.7	113.5	93.7	70.9	116.4	132.7	86.4	93.2

Values are preliminary after Jun 99. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

DECEMBER 1999

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	Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	01	0522	0527	0621	N10	W44	8782	11	28.0	59	SF		4	E		49		
LEAR		0658	0703	0708	N10	W45	8782	11	28.0	10	SF		4	E		24		
GOES		0751	0757	0802	N10	W46	8782			11	SF	C 1.0						6.3E-04
LEAR		0755	0755	0802	N10	W46	8782	11	28.0	7	SF		4	E		31		F
HOLL		2252	2317	2323D	N08	W58	8782	11	27.7	31D	SF		3	E		41		
LEAR	02	0113	0114	0122	N10	W55	8782	11	28.0	9	SF		3	E		17		
LEAR		0143	0145	0149	N10	W55	8782	11	28.0	6	SF		3	E		21		
LEAR		0150	0238	0246	N10	W56	8782	11	28.0	56	SF		3	E		63		
LEAR		0250	0255	0258	N10	W56	8782	11	28.0	8	SF		3	E		23		
LEAR		0326	0326	0331	N10	W56	8782	11	28.0	5	SF		3	E		31		
LEAR		0336	0338	0341	N10	W57	8782	11	28.0	5	SF		3	E		21		
LEAR		0658	0709	0713	N10	W59	8782	11	27.9	15	SF		3	E		25		
LEAR		0900	0904	0911	N10	W60	8782	11	28.0	11	SF		3	E		33		H
GOES		0945	1012	1041						56		C 5.3						1.3E-02
SVTO		1052	1054	1102	S10	W25	8781	11	30.6	10	SF		3	E		16		
GOES		1200	1205	1212						12		C 2.3						1.5E-03
HOLL		2304	2304	2309	N12	E76		12	8.7	5	SF		3	E		18		
GOES	03	0116	0120	0123						7		C 2.1						7.6E-04
LEAR		0923	0926U	0932	N09	E89	8788	12	10.1	9	SF		3	E		30		
GOES		1330	1334	1338						8		C 1.5						6.9E-04
GOES		1528	1532	1534	N09	W78	8782			6	SF	C 1.4						4.1E-04
HOLL		1530	1534	1537	N09	W78	8782	11	27.9	7	SF		3	E		80		H
GOES		1948	1953	1955						7		C 6.3						1.5E-03
LEAR	04	0254	0256	0259	N10	W83	8782	11	28.0	5	SF		4	E		20		
GOES		0421	0427	0435						14		C 1.5						1.1E-03
GOES		1745	1750	1754						9		C 1.7						6.2E-04
HOLL		1906	1909	1912	N11	E57	8788	12	9.1	6	SF		3	E		16		
RAMY		1908	1909	1915	N10	E59	8788	12	9.2	7	SF		3	E		17		
HOLL		2005	2007	2016	N10	E57	8788	12	9.1	11	SF		3	E		28		
RAMY		2006	2007	2011	N09	E56	8788	12	9.0	5	SF		3	E		18		
GOES		2116	2127	2151	N10	E56	8788			35	1F	C 4.3						7.0E-03
HOLL		2118	2120	2143	N10	E56	8788	12	9.1	25	1F		3	E		125		
GOES	05	0323	0327	0331						8		B 9.2						3.8E-04
GOES		0551	0556	0606						15		C 1.3						9.1E-04
GOES		0920	0925	0930	N10	E55	8788			10	SF	C 1.5						6.5E-04
LEAR		0923	0923	0930	N10	E55	8788	12	9.5	7	SF		3	E		15		
GOES		1736	1748	1826						50		C 1.4						3.6E-03
GOES		2156	2221	2238						42		C 3.3						5.8E-03
GOES	06	0232	0236	0243	N11	E60				11	SF	B 9.5						5.2E-04
GOES		0412	0418	0424	N11	E60				12	SF	C 3.4						1.7E-03
GOES		0511	0516	0521						10		C 1.0						5.4E-04
GOES		0700	0718	0734	N10	E43	8788			34	2N	C 8.4						1.1E-02
GOES		0833	0838	0844						11		C 1.0						6.3E-04
GOES		0940	0951	0957						17		C 1.2						1.0E-03
GOES		1104	1114	1120						16		B 8.0						6.2E-04
GOES		1359	1403	1407						8		C 1.1						4.5E-04
GOES		2118	2123	2126						8		C 4.7						1.1E-03
GOES		2152	2208	2304	N11	E34	8788			72	SF	C 4.9						1.6E-02
HOLL		2219	2220	2231	N11	E34	8788	12	9.5	12	SF		3	E		34		F
GOES	07	0107	0112	0114						7		C 8.7						1.9E-03
LEAR		0202	0204	0208	N10	E28	8788	12	9.2	6	SF		3	E		17		
LEAR		0647	0648	0650	N10	E30	8788	12	9.5	3	SF		4	E		11		H
GOES		1011	1018	1022	S14	E74				11	SF	C 4.3						1.6E-03
SVTO		1014	1018	1025	S14	E74		12	13.0	11	SF		3	E		10		
LEAR		1014	1021	1025	S16	E74		12	13.0	11	SF		2	E		33		
GOES		1610	1614	1618	N15	E39	8790			8	SF	C 1.1						5.2E-04
HOLL		1612	1613	1618	N15	E39	8790	12	10.6	6	SF		3	E		43		
GOES		2044	2053	2112						28		C 2.9						3.8E-03
GOES		2115	2120	2123	S13	E66	8791			8	SN	M 1.0						3.1E-03
HOLL		2117	2119	2137	S13	E66	8791	12	12.9	20	SN		3	E		40		
GOES	08	0037	0113	0132						55		C 1.6						4.5E-03

Hα SOLAR FLARES

DECEMBER 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	08	0229	0246	0305	N10	E29	8790			36	SF	C 2.8						4.8E-03
LEAR		0232	0240	0317	N10	E29	8790	12	10.3	45	SF		3	E		46		F
GOES		0524	0529	0534	S16	E64	8791			10	SF	C 2.5						1.2E-03
LEAR		0531	0531	0542	S16	E64	8791	12	13.1	11	SF		3	E		23		
GOES		0620	0624	0628	N15	E30	8790			8	SF	C 1.1						4.6E-04
LEAR		0622	0624	0641	N15	E30	8790	12	10.5	19	SF		4	E		53		U
GOES		1649	1654	1703						14		C 1.0						6.9E-04
GOES		1911	1922	1930						19		C 4.3						3.1E-03
GOES		2324	2330	2335						11		C 1.9						9.1E-04
GOES		2345	2352	2356						11		C 1.1						6.1E-04
GOES	09	0038	0043	0047						9		B 8.6						4.0E-04
GOES		0454	0457	0501						7		B 8.8						3.2E-04
LEAR		0603	0603	0612	N15	W22	8785	12	7.6	9	SF		3	E		20		
LEAR		0935	0944	0958	N12	E13	8790	12	10.4	23	SF		2	E		13		
GOES		1117	1140	1147						30		C 1.6						1.9E-03
GOES		1620	1633	1648						28		C 1.2						1.6E-03
GOES		1655	1658	1701						6		C 1.1						3.4E-04
GOES		1717	1734	1826						69		C 1.1						4.2E-03
GOES		1949	1958	2017	S13	E69	8794			28	SF	C 2.2						3.1E-03
HOLL		1952	1953	2005	S13	E69	8794	12	15.0	13	SF		3	E		25		
HOLL		2014	2015	2021	S11	E40	8791	12	12.8	7	SF		3	E		17		
GOES		2309	2313	2319						10		C 1.3						7.0E-04
GOES	10	0203	0210	0214	N17	E58	8792			11	SF	C 3.7						1.6E-03
LEAR		0208	0210	0215	N17	E58	8792	12	14.5	7	SF		3	E		30		
GOES		0351	0356	0403						12		C 1.0						6.8E-04
GOES		0409	0414	0417						8		C 1.1						4.8E-04
LEAR		0516	0522	0530	N16	E05	8790	12	10.6	14	SF		3	E		19		F
LEAR		0737	0743	0751	S12	E63	8794	12	15.1	14	SF		3	E		26		
GOES	11	0322	0333	0345	N09	W12	8790			23	1F	C 2.8						2.8E-03
LEAR		0324	0329	0420	N09	W12	8790	12	10.2	56	1F		3	E		187		U
GOES		0730	0739	0745	S14	E51	8794			15	SF	C 1.1						8.8E-04
LEAR		0733	0740	0749	S14	E51	8794	12	15.2	16	SF		3	E		58		FH
GOES		1416	1419	1421						5		B 8.0						2.1E-04
GOES		2219	2231	2243						24		C 2.4						3.0E-03
GOES	12	0304	0307	0312						8		B 8.3						3.6E-04
LEAR		0534	0537	0541	N13	E27	8792	12	14.3	7	SF		3	E		17		
GOES	13	1302	1304	1307						5		C 1.1						3.3E-04
HOLL		1924	1924	1928	N16	W59	8788	12	9.3	4	SF		3	E		22		
GOES		2009	2010	2014						5		C 1.0						3.2E-04
HOLL		2145	2147	2150	N13	W60	8788	12	9.4	5	SF		3	E		31		
GOES	14	0655	0700	0705						10		C 1.1						6.0E-04
GOES		0957	1001	1005						8		B 9.6						3.9E-04
GOES		1127	1132	1137						10		C 1.0						5.7E-04
HOLL		1503	1504	1506	S13	E63	8798	12	19.4	3	SF		3	E		13		
HOLL		1649	1657	1713	S14	E63	8798	12	19.5	24	SF		3	E		38		
GOES		1657	1659	1702	S14	E63	8798			5	SF	C 1.1						2.7E-04
HOLL		1901	1907	1913	S14	E62	8798	12	19.5	12	SF		2	E		59		
HOLL		1923	1925	1928	S14	E62	8798	12	19.5	5	SF		2	E		26		
LEAR	15	0307	0318	0328	S15	E61	8798	12	19.7	21	SF		3	E		30		
GOES		1217	1221	1223						6		C 1.2						3.6E-04
GOES		1412	1417	1419	S15	E51	8798			7	SF	C 2.5						6.7E-04
RAMY		1415	1416	1439D	S15	E51	8798	12	19.4	24D	SF		3	E		44		
GOES		1520	1524	1527	S14	E52	8798			7	SF	C 1.3						4.7E-04
HOLL		1521	1530	1536	S14	E52	8798	12	19.6	15	SF		3	E		77		
RAMY		1529E	1530U	1534	S15	E50	8798	12	19.4	5D	SF		3	E		30		
HOLL		1622	1626	1639	S14	E53	8798	12	19.7	17	SF		3	E		19		
HOLL		1641	1644	1650	S14	E53	8798	12	19.7	9	SF		3	E		19		
HOLL		1702	1703	1706	S14	E53	8798	12	19.7	4	SF		3	E		11		
HOLL		1829	1831	1835	S14	E52	8798	12	19.7	6	SF		3	E		13		
LEAR	16	0249	0251	0306	S15	E49	8798	12	19.8	17	SF		4	E		17		

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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	Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	16	0309	0314	0318	S15	E48	8798			9	SF	C 2.5						1.1E-03
LEAR		0311	0313	0332	S15	E48	8798	12	19.8	21	SF		4	E		52		
GOES		0720	0724	0729	S13	E46	8798			9	SF	C 2.4						1.1E-03
LEAR		0723	0723	0734	S13	E46	8798	12	19.8	11	SF		4	E		13		F
GOES		0831	0836	0845	S15	W17	8794			14	SF	C 2.2						1.5E-03
LEAR		0833	0836	0851	S15	W17	8794	12	15.1	18	SF		3	E		44		F
LEAR		0838	0838	0844	S14	E46	8798	12	19.8	6	SF		3	E		12		F
HOLL		1715	1722	1748	S13	E37	8798	12	19.5	33	SF		3	E		16		
GOES		2010	2015	2019						9		C 3.5						1.5E-03
GOES	17	0013	0021	0024						11		C 7.0						2.7E-03
LEAR		0121	0127	0138	S13	E35	8798	12	19.7	17	SF		4	E		31		
GOES		0236	0241	0244	S13	E34	8798			8	SF	C 3.4						1.2E-03
LEAR		0238	0239	0252	S13	E34	8798	12	19.7	14	SF		4	E		39		F
LEAR		0344	0349	0355	S12	E30	8798	12	19.4	11	SF		3	E		23		
LEAR		0358	0403	0415	S11	E34	8798	12	19.7	17	SF		3	E		36		
LEAR		0526	0537	0603	S13	E31	8798	12	19.6	37	1N		3	E		113		F
GOES		0533	0539	0542	S13	E31	8798			9	1N	C 6.8						2.5E-03
LEAR		0738	0739	0747	S12	E28	8798	12	19.4	9	SF		3	E		19		F
GOES		0753	0757	0801						8		C 3.0						1.1E-03
GOES		0930	0935	0938	S13	E28	8798			8	1F	C 4.9						1.5E-03
LEAR		0932	0935	0946	S13	E28	8798	12	19.5	14	1F		3	E		109		F
GOES		0953	1004	1015						22		C 3.1						3.5E-03
GOES		1438	1444	1451						13		C 2.2						1.6E-03
GOES		1739	1750	1837	S15	E15	8803			58	SF	C 1.6						5.3E-03
HOLL		1749	1750	1759	S15	E15	8803	12	18.9	10	SF		3	E		15		
HOLL		1845	1845	1849	S14	E23	8798	12	19.5	4	SF		3	E		17		
GOES		1855	1900	1907	S12	E23	8798			12	1N	C 6.8						3.7E-03
HOLL		1856	1858	1925	S12	E23	8798	12	19.5	29	1N		3	E		167		
RAMY		1903E	1903	1919	S13	E20	8798	12	19.3	16D	SF		3	E		55		
GOES		2135	2141	2158						23		M 1.0						9.3E-03
LEAR		2205E	2206U	2214	N73	E19	8806	12	19.6	9D	SF		2	E		70		YF
GOES	18	0107	0112	0116						9		C 2.7						1.3E-03
LEAR		0120	0127	0144	N19	E82	8806	12	24.3	24	1F		4	E		243		F
GOES		0121	0129	0138	N19	E82	8806			17	1F	C 9.4						6.5E-03
LEAR		0249	0304	0314	S13	E18	8798	12	19.5	25	SF		4	E		65		F
LEAR		0343	0345	0357	N16	E70	8806	12	23.5	14	SF		3	E		38		
LEAR		0350	0405	0434	S08	E20	8798	12	19.6	44	SF		3	E		43		F
LEAR		0410	0430	0435	N18	E72	8806	12	23.6	25	SF		3	E		82		
GOES		0425	0429	0432	N18	E72	8806			7	SF	C 5.3						1.8E-03
GOES		0706	0710	0712						6		C 2.0						5.2E-04
LEAR		0744	0744	0747	N18	E70	8806	12	23.6	3	SF		3	E		15		
LEAR		0836	0841	0850	N18	E69	8806	12	23.6	14	SF		3	E		27		
GOES		1313	1318	1320	N20	E78	8806			7	SF	C 2.5						8.2E-04
RAMY		1317	1317	1324	N20	E78	8806	12	24.5	7	SF		3	E		22		H
GOES		1338	1344	1356	S14	E13	8798			18	SF	C 2.2						2.2E-03
RAMY		1344	1344	1353	S14	E13	8798	12	19.5	9	SF		3	E		21		
HOLL		1429E	1444U	1511	N20	E73	8806	12	24.2	42D	SF		2	E		21		
HOLL		1514	1519	1528	N20	E73	8806	12	24.2	14	SF		3	E		42		
HOLL		1535	1541	1606	N20	E73	8806	12	24.2	31	SF		3	E		71		
RAMY		1541	1543	1558	N19	E76	8806	12	24.4	17	SF		3	E		43		
HOLL		1629	1651	1655	N20	E73	8806	12	24.3	26	SF		3	E		21		
GOES		1647	1651	1654	N20	E73	8806			7	SF	C 1.9						7.4E-04
HOLL		1714	1726	1746	S11	E13	8798	12	19.7	32	1F		3	E		148		F
RAMY		1716	1724	1738	S10	E13	8798	12	19.7	22	SF		3	E		76		
GOES		1721	1725	1732	S11	E13	8798			11	1F	C 3.0						1.9E-03
HOLL		1806	1814	1824	N20	E70	8806	12	24.1	18	1N		3	E		139		
RAMY		1807	1810	1824	N18	E67	8806	12	23.8	17	SF		3	E		85		H
GOES		1809	1814	1816	N18	E67	8806			7	SF	C 5.8						2.1E-03
RAMY		1826	1834	1847	N19	E69	8806	12	24.0	21	SN		3	E		68		
HOLL		1830	1835	1845	N20	E69	8806	12	24.0	15	1N		3	E		104		
GOES		1830	1836	1838	N20	E69	8806			8	1N	C 5.7						1.9E-03
GOES		1909	1912	1915	N20	E69	8806			6	1N	M 1.5						3.1E-03
RAMY		1911	1912	1937	N19	E69	8806	12	24.1	26	SN		3	E		98		
HOLL		1911	1912	1948	N20	E69	8806	12	24.1	37	1N		3	E		115		
HOLL		1949	1954	1959	N21	E68	8806	12	24.0	10	SF		3	E		34		
HOLL		2017	2018	2028	S11	E10	8798	12	19.6	11	SF		3	E		27		

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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	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	18	2250	2251	2310	N20	E66	8806	12	24.0	20	SF		3	E		34		
LEAR	19	0100	0106	0113	N18	E60	8806	12	23.6	13	SF		3	E		21		
GOES		0911	0915	0918	N17	E63	8806			7	SF	C 2.1						7.4E-04
LEAR		0916	0917	0920	N17	E63	8806	12	24.2	4	SF		3	E		12		F
GOES		1117	1122	1134						17		C 2.7						2.2E-03
GOES		1616	1620	1623	N19	E58	8806			7	SF	C 1.8						5.9E-04
RAMY		1622	1622	1635	N19	E58	8806	12	24.1	13	SF		3	E		21		
GOES		1819	1824	1827						8		C 3.4						1.2E-03
GOES		1913	1916	1918	N19	E57	8806			5	SF	C 2.3						5.8E-04
RAMY		1915	1915	1925	N19	E57	8806	12	24.1	10	SF		3	E		23		
GOES		1927	1931	1935	S14	W68	8794			8	SF	C 2.1						8.8E-04
RAMY		1929	1929	1937	S14	W68	8794	12	14.7	8	SF		3	E		45		
HOLL		2001	2001	2005	N11	E61	8807	12	24.4	4	SF		3	E		17		
GOES		2012	2015	2018	S15	W03	8798			6	SF	C 2.0						6.3E-04
HOLL		2017	2018	2021	S15	W03	8798	12	19.6	4	SF		3	E		11		
HOLL		2118	2120	2133	N13	E60	8807	12	24.4	15	SF		3	E		11		
HOLL		2209	2210	2218	N19	E55	8806	12	24.1	9	SF		3	E		15		
HOLL		2213	2214	2219	S15	W67	8794	12	14.8	6	SF		3	E		17		
GOES		2223	2234	2245	N21	E52	8806			22	SF	C 5.6						5.9E-03
HOLL		2225	2228	2306	N21	E52	8806	12	23.9	41	SF		3	E		40		
HOLL		2231	2234	2241	S15	W04	8798	12	19.6	10	SF		3	E		20		
HOLL		2250	2251	2254	S15	W05	8798	12	19.6	4	SF		3	E		14		
GOES		2310	2313	2317	N09	E56	8807			7	SF	C 2.6						9.2E-04
HOLL		2312	2312	2319	N09	E56	8807	12	24.2	7	SF		3	E		37		
GOES		2358	2403	2412						14		C 4.0						2.5E-03
GOES	20	0102	0108	0110	S15	W06	8798			8	SF	C 4.8						1.4E-03
LEAR		0104	0108	0116	S15	W06	8798	12	19.6	12	SF		3	E		45		EH
LEAR		0126	0130	0133	N23	E52	8806	12	24.1	7	SF		3	E		42		FH
GOES		0140	0144	0147	N18	E47	8806			7	SF	C 4.6						1.5E-03
LEAR		0143	0144	0148	N18	E47	8806	12	23.6	5	SF		3	E		93		FE
LEAR		0154	0157	0201	N18	E55	8806	12	24.3	7	SF		3	E		42		H
LEAR		0206	0207	0210	N18	E52	8806	12	24.0	4	SF		3	E		19		
LEAR		0223	0224	0230	N18	E52	8806	12	24.0	7	SF		3	E		14		
LEAR		0242	0242	0257	S13	W17	8803	12	18.8	15	SF		3	E		34		F
GOES		0410	0413	0419	N18	E49	8806			9	SF	C 4.4						1.9E-03
LEAR		0413	0416	0420	N18	E49	8806	12	23.9	7	SF		3	E		30		
LEAR		0435	0437	0442	N18	E45	8806	12	23.6	7	SF		3	E		24		
LEAR		0816	0819	0829	N18	E43	8806	12	23.6	13	SF		3	E		41		
LEAR		0820	0823	0828	S13	W11	8798	12	19.5	8	SF		3	E		15		
LEAR		0856	0907	0931	N10	E54	8807	12	24.4	35	1F		3	E		162		F
GOES		0903	0908	0917	N10	E54	8807			14	1F	C 2.8						2.1E-03
GOES		1017	1020	1027						10		C 1.6						9.0E-04
RAMY		1325	1326	1331	N22	E45	8806	12	24.0	6	SF		3	E		40		
GOES		1507	1516	1526			8807			19		C 3.3						3.0E-03
HOLL		1509	1510	1518	S16	W16	8798	12	19.4	9	SF		3	E		20		
HOLL		1512	1520	1529	N10	E49	8807	12	24.3	17	SF		3	E		38		
RAMY		1513E	1513U	1527D	N10	E50	8807	12	24.4	14D	SF		2	E		32		
GOES		1602	1607	1617	N18	E44	8806			15	SF	C 2.5						2.0E-03
HOLL		1604	1606	1617	N18	E44	8806	12	24.0	13	SF		3	E		97		
HOLL		1924	1937	1954	N20	E42	8806	12	24.0	30	SF		3	E		30		
GOES		1950	1953	1956	N20	E42	8806			6	SF	C 1.5						4.8E-04
HOLL		1950	1953	2000	S12	W16	8798	12	19.6	10	SF		3	E		43		
HOLL		2027	2038	2058	S12	W18	8798	12	19.5	31	SF		3	E		83		
HOLL		2113	2116	2120	N20	E41	8806	12	24.0	7	SF		3	E		15		
GOES		2228	2232	2235	N20	E40	8806			7	SF	C 2.5						8.1E-04
HOLL		2230	2231	2240	N20	E40	8806	12	24.0	10	SF		3	E		82		
LEAR	21	0102	0108	0109	N18	E34	8806	12	23.6	7	SF		3	E		78		
GOES		0103	0109	0118	N18	E34	8806			15	SF	C 3.2						2.5E-03
GOES		0236	0255	0300	N10	E44	8807			24	SF	C						1.8E-03
LEAR		0239	0241	0246	N10	E44	8807	12	24.4	7	SF		4	E		44		
GOES		0302	0314	0331						29		C						2.3E-03
LEAR		0736	0738	0747	N18	E36	8806	12	24.0	11	SF		2	E		28		
GOES		0822	0830	0837	N19	E36	8806			15	SF	C						1.2E-03
LEAR		0830	0832	0849	N19	E36	8806	12	24.1	19	SF		2	E		21		
GOES		1031	1035	1038	S15	W26	8798			7	SF	C 2.0						6.3E-04

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
LEAR	21	1032E	1035U	1041	S15	W26	8798	12	19.5	9D	SF		2	E		20		F
HOLL		1522	1524	1541	N20	E32	8806	12	24.1	19	SF		3	E		57		
GOES		1712	1719	1722	N24	E34	8806			10	1N	M 1.1						3.6E-03
HOLL		1714	1719	1805	N24	E34	8806	12	24.3	51	1N		3	E		105		
RAMY		1854E	1854U	1907D	N22	E37	8806	12	24.6	13D	SF		2	E		36		H
GOES		2141	2146	2149						8		C 2.6						1.1E-03
GOES		2330	2338	2346	S13	W43	8803			16	SF	C 3.4						2.7E-03
LEAR		2332	2333	2342	S13	W43	8803	12	18.7	10	SF		3	E		43		F
LEAR		2358	2359	2408	N18	E21	8806	12	23.6	10	SF		3	E		59		
LEAR	22	0001	0009	0015	S13	W43	8803	12	18.7	14	SF		3	E		28		
GOES		0001	0010	0017	S13	W43	8803			16	SF	C 4.3						3.1E-03
GOES		0112	0119	0123	N10	E27	8807			11	SF	C 2.7						1.6E-03
LEAR		0112	0121	0133	N10	E27	8807	12	24.1	21	SF		3	E		29		F
LEAR		0147E	0155U	0300	N29	E29		12	24.3	73D	1F		3	E		193		UF
GOES		0150	0216	0232	N10	E30	8807			42	2B	M 1.8						2.7E-02
LEAR		0207	0213	0306	N10	E30	8807	12	24.3	59	2B		3	E		282		UF
LEAR		0236	0238	0250	N19	E26	8806	12	24.1	14	SF		3	E		76		FE
LEAR		0409	0411	0416	N18	E19	8806	12	23.6	7	SF		3	E		42		
LEAR		0428	0439	0533	N19	E18	8806	12	23.5	65	SF		4	E		44		F
LEAR		0445	0506	0520	S13	W46	8803	12	18.7	35	SF		4	E		54		F
LEAR		0501	0512	0527	S14	W39	8798	12	19.3	26	SF		4	E		30		F
LEAR		0642	0643	0659	N15	E18	8806	12	23.6	17	SF		3	E		23		
LEAR		0843	0843	0847	S14	W38	8798	12	19.5	4	SF		3	E		14		
GOES		1050	1056	1101						11		C 6.3						2.6E-03
RAMY		1222E	1416	1422	N31	E22	8806	12	24.2	120D	SF		3	E		20		F
GOES		1246	1249	1253						7		C 2.2						8.1E-04
GOES		1344	1354	1402	S15	W53	8803			18	SF	C 3.1						2.6E-03
RAMY		1350	1358	1412	S15	W53	8803	12	18.6	22	SF		2	E		87		
RAMY		1415	1416	1422	N24	E22	8806	12	24.3	7	SF		3	E		20		F
GOES		1852	1904	1908	N24	E19	8806			16	1B	M 5.3						1.8E-02
LEAR	23	0033	0033	0036	N23	E16	8806	12	24.2	3	SF		3	E		15		F
LEAR		0109	0112	0120	S13	W51	8798	12	19.2	11	SF		3	E		13		
LEAR		0126	0126	0133	S13	W51	8798	12	19.2	7	SF		3	E		13		
LEAR		0132	0132	0138	S18	W34	8808	12	20.5	6	SF		3	E		30		
GOES		0241	0244	0246						5		C 1.5						3.9E-04
GOES		0312	0315	0318	N24	E15	8806			6	SN	C 1.6						4.6E-04
LEAR		0314	0315	0325	N24	E15	8806	12	24.3	11	SN		3	E		48		FE
LEAR		0339	0340	0400	S14	W59	8803	12	18.7	21	SF		3	E		42		
LEAR		0420	0421	0426	N33	E17		12	24.5	6	SF		3	E		16		
LEAR		0432	0435	0454	S13	W59	8803	12	18.7	22	SF		4	E		30		
LEAR		0506	0507	0515	N20	E07	8806	12	23.7	9	SF		4	E		21		
LEAR		0546	0551	0558	N33	E15		12	24.4	12	SF		4	E		15		
LEAR		0627	0628	0634	N20	E06	8806	12	23.7	7	SF		4	E		15		
GOES		0702	0711	0719						17		C 2.5						2.1E-03
LEAR		0809	0810	0822	S13	W51	8798	12	19.5	13	SF		3	E		24		
LEAR		0842	0847	0900	S13	W51	8798	12	19.5	18	SF		4	E		34		
GOES		1005	1009	1011	N23	E11	8806			6	SF	C 2.9						8.3E-04
LEAR		1007	1008	1017	N23	E11	8806	12	24.3	10	SF		3	E		41		
GOES		1103	1107	1112						9		C 2.8						1.2E-03
HOLL		1521	1529	1533	S15	W58	8803	12	19.2	12	SF		3	E		21		
GOES		1724	1729	1733	S15	W58	8803			9	SF	C 1.5						7.5E-04
HOLL		1725	1729	1825	S15	W58	8803	12	19.3	60	SF		3	E		32		
HOLL		1726	1733	1739	S13	W55	8798	12	19.6	13	SF		3	E		16		
HOLL		1921	1923	1940	S15	W71	8803	12	18.4	19	SF		3	E		23		
GOES		1931	1937	1940	N24	E06	8806			9	SF	C 3.4						1.4E-03
HOLL		1933	1936	1946	N24	E06	8806	12	24.3	13	SF		3	E		62		
GOES		1952	1955	1957	S19	W45	8808			5	SF	C 3.7						8.1E-04
HOLL		1954	1955	2000	S19	W45	8808	12	20.4	6	SF		3	E		41		
LEAR		2358	2404	2422	N12	E01	8807	12	24.1	24	SF		3	E		21		F
GOES	24	0053	0102	0111						18		C 2.8						2.3E-03
GOES		0217	0224	0230						13		C 3.7						2.0E-03
LEAR		0409	0409	0417	N11	W01	8807	12	24.1	8	SF		3	E		20		
LEAR		0423	0431U	0442	N11	W01	8807	12	24.1	19	SF		3	E		30		
LEAR		0456	0501	0508	N11	W02	8807	12	24.0	12	SF		3	E		70		
GOES		0526	0533	0536	N20	W06	8806			10	SN	C 3.1						1.4E-03

Hα SOLAR FLARES

DECEMBER 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
LEAR	24	0530E	0532U	0538D	N20	W06	8806	12	23.8	8D	SN		3	E		86		
GOES		0556	0600	0604						8		C 2.6						9.8E-04
GOES		0621	0626	0629						8		C 2.3						9.7E-04
GOES		0803	0807	0822						19		C 2.1						2.0E-03
GOES		0928	0934	0943						15		C 8.4						5.1E-03
GOES		1204	1210	1223						19		C 1.9						1.7E-03
RAMY		1245	1252	1254	N15	W14	8806	12	23.5	9	SF		3	E		10		
GOES		1311	1314	1317						6		C 1.2						4.0E-04
GOES		1443	1446	1448						5		C 1.3						3.4E-04
GOES		1459	1504	1509						10		C 1.8						9.3E-04
GOES		1511	1516	1521						10		C 1.9						1.1E-03
GOES		1538	1549	1603	N20	W13	8806			25	SF	C 1.7						2.2E-03
GOES		1639	1647	1652	S15	W71	8798			13	SF	C 2.4						1.5E-03
RAMY		1642	1643	1651	S15	W71	8798	12	19.3	9	SF		3	E		12		
GOES		1827	1834	1842	S16	W73	8798			15	SF	C 4.4						2.8E-03
RAMY		1830	1831	1851	S16	W73	8798	12	19.2	21	SF		3	E		44		
GOES		2211	2216	2221						10		C 1.7						8.5E-04
GOES		2243	2247	2253						10		C 1.4						7.4E-04
GOES	25	0132	0135	0144						12		C 1.1						7.2E-04
GOES		0146	0155	0158						12		C 1.9						1.1E-03
GOES		0615	0627	0632						17		C 1.2						1.1E-03
GOES		0633	0643	0652						19		C 1.5						1.6E-03
LEAR		1005	1005	1009	N20	W22	8806	12	23.7	4	SF		3	E		18		
LEAR		1014	1015	1025	N37	E68	8810	12	30.9	11	SF		3	E		24		
GOES		1124	1129	1133						9		C 6.2						2.1E-03
GOES		1200	1204	1208						8		C 1.2						5.3E-04
RAMY		1718	1732	1811	N21	W28	8806	12	23.6	53	SF		3	E		87		
GOES		1719	1735	1803	N21	W28	8806			44	SF	C 3.3						6.7E-03
RAMY		1722	1722	1731	N38	E71	8810	12	31.5	9	SF		3	E		39		
GOES		2050	2100	2111	N09	W29	8807			21	SF	C 2.4						2.4E-03
RAMY		2052	2057	2121	N09	W29	8807	12	23.7	29	SF		3	E		77		
GOES		2207	2211	2213						6		C 1.6						5.4E-04
GOES		2220	2224	2230						10		C 1.6						9.0E-04
LEAR	26	0206	0207	0210	N20	W31	8806	12	23.7	4	SF		3	E		15		
GOES		0423	0427	0429	N19	W36	8806			6	SF	C 2.2						5.3E-04
LEAR		0426	0427	0431	N19	W36	8806	12	23.4	5	SF		3	E		50		
GOES		0554	0559	0602						8		C 1.2						5.2E-04
LEAR		0754	0756	0759	N36	E64	8810	12	31.5	5	SF		3	E		34		
GOES		0846	0902	0926	N36	E59	8810			40	SF	C 3.3						6.0E-03
LEAR		0901	0901	0908	N36	E59	8810	12	31.1	7	SF		4	E		30		
LEAR		0954	0956	1000	N22	W33	8806	12	23.9	6	SF		3	E		24		F
GOES		1126	1130	1135						9		C 2.2						1.1E-03
GOES		1336	1342	1350						14		C 2.3						1.7E-03
GOES		1613	1617	1621	N21	W26	8806			8	SF	C 1.7						7.1E-04
RAMY		1616	1619	1625	N21	W26	8806	12	24.7	9	SF		3	E		20		
GOES		1655	1702	1709						14		C 2.0						1.5E-03
GOES		1916	1924	1951						35		C 2.7						4.5E-03
GOES		2142	2146	2149						7		C 1.6						5.7E-04
GOES	27	0035	0039	0043						8		C 1.2						5.3E-04
GOES		0043	0047	0052	N24	W35	8806			9	SF	C 1.4						7.2E-04
LEAR		0048	0048	0051	N24	W35	8806	12	24.3	3	SF		3	E		22		
LEAR		0142	0143	0146	N23	W31	8806	12	24.7	4	SF		3	E		32		F
GOES		0146	0154	0209	N24	W36	8806			23	1N	M 1.0						9.5E-03
LEAR		0148	0150	0227	N24	W36	8806	12	24.3	39	1N		3	E		160		F
LEAR		0828	0832	0836	N20	W47	8806	12	23.7	8	SF		4	E		22		
LEAR		0947	0948	0952	N20	W48	8806	12	23.7	5	SF		3	E		21		
GOES		1038	1050	1102						24		C 2.5						2.8E-03
GOES		1154	1206	1209	N22	W42	8806			15	SN	M 2.0						9.1E-03
RAMY		1203	1205	1221	N22	W42	8806	12	24.3	18	SN		3	E		74		
GOES		1706	1716	1723	N25	W43	8806			17	SF	C 1.1						9.8E-04
HOLL		1708	1719	1734	N25	W43	8806	12	24.4	26	SF		3	E		43		F
RAMY		1715	1717	1731	N23	W42	8806	12	24.5	16	SF		3	E		18		
GOES		2142	2145	2148	N21	W54	8806			6	SF	C 1.2						4.1E-04
HOLL		2144	2144	2147	N21	W54	8806	12	23.8	3	SF		3	E		12		
HOLL		2159	2203	2206	S16	W62	8804	12	23.2	7	SF		3	E		10		

Hα SOLAR FLARES

DECEMBER 1999

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	Time (UT)	Area Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
GOES	27	2227	2236	2247	N20	W55	8806			20	SF	C 1.6						1.7E-03
HOLL		2229	2229	2244	N23	W62	8806	12	23.1	15	SF		3	E		33		
LEAR		2233	2236	2243	N20	W55	8806	12	23.7	10	SF		4	E		32		F
GOES		2356	2401	2406						10		C 1.8						1.0E-03
GOES	28	0039	0048	0052	N20	W56	8806			13	2B	M 4.5						1.8E-02
LEAR		0042	0044	0111	N20	W56	8806	12	23.7	29	2B		3	E		456		UH
GOES		0112	0120	0123						11		C 2.8						1.6E-03
GOES		0445	0451	0454	N23	W52	8806			9	SF	C 1.1						5.0E-04
LEAR		0447	0452	0503	N23	W52	8806	12	24.2	16	SF		4	E		73		F
LEAR		0647	0657	0707	N22	W53	8806	12	24.2	20	SF		3	E		94		FH
GOES		0653	0659	0703	N22	W53	8806			10	SF	C 1.0						5.2E-04
LEAR		0802	0804	0806	N19	W59	8806	12	23.8	4	SF		3	E		25		
GOES		0918	0921	0923	N37	E40	8810			5	SF	B 9.6						2.3E-04
LEAR		0921	0921	0928	N37	E40	8810	12	31.6	7	SF		3	E		46		
LEAR		0956	0958	1003	N19	W60	8806	12	23.8	7	SF		3	E		35		
GOES		1036	1045	1101	N21	W64	8806			25	SF	C 3.0						3.3E-03
LEAR		1041	1042U	1050	N21	W64	8806	12	23.5	9	SF		2	E		30		F
SVTO		1042	1043U	1044D	N19	W59	8806	12	23.9	2D	SF		2	E		19		F
GOES		1212	1218	1228	N24	W54	8806			16	SF	C 1.7						1.3E-03
SVTO		1214	1217	1226	N24	W54	8806	12	24.3	12	SF		3	E		48		F
HOLL		2140E	2141U	2204D	N39	E36	8810	12	31.8	24D	SF		2	E		40		
GOES	29	0131	0139	0145	N20	W70	8806			14	SF	B 9.8						7.3E-04
LEAR		0133	0138	0146	N20	W70	8806	12	23.7	13	SF		3	E		40		
LEAR		0902	0902	0907	S28	W14		12	28.3	5	SF		3	E		13		F
GOES		0922	0927	0931	N22	W66	8806			9	1B	C 8.8						2.6E-03
LEAR		0925	0926	0939	N22	W66	8806	12	24.3	14	1B		3	E		213		EH
SVTO		0928E	0929U	0938D	N25	W66	8806	12	24.3	10D	SF		1	E		29		
GOES		1710	1717	1723						13		C 1.7						1.0E-03
GOES		2144	2151	2153	N23	W72	8806			9	SF	C 2.9						1.1E-03
HOLL		2148	2152	2159	N23	W72	8806	12	24.4	11	SF		3	E		31		
GOES	30	0345	0354	0401						16		C 1.5						1.1E-03
GOES		0632	0636	0639	N37	E07	8810			7	SF	C 1.0						3.3E-04
LEAR		0634	0636	0643	N37	E07	8810	12	30.8	9	SF		3	E		55		
GOES		1305	1308	1311						6		B 8.4						2.3E-04
GOES		2247	2316	2322						35		C 2.4						3.0E-03
GOES	31	1628	1643	1656						28		C 1.9						2.6E-03
GOES		1840	1856	1912	N09	E64				32	SF	C 2.7						3.9E-03
RAMY		1846	1846	1911	N09	E64		01	5.6	25	SF		3	E		13		

"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.

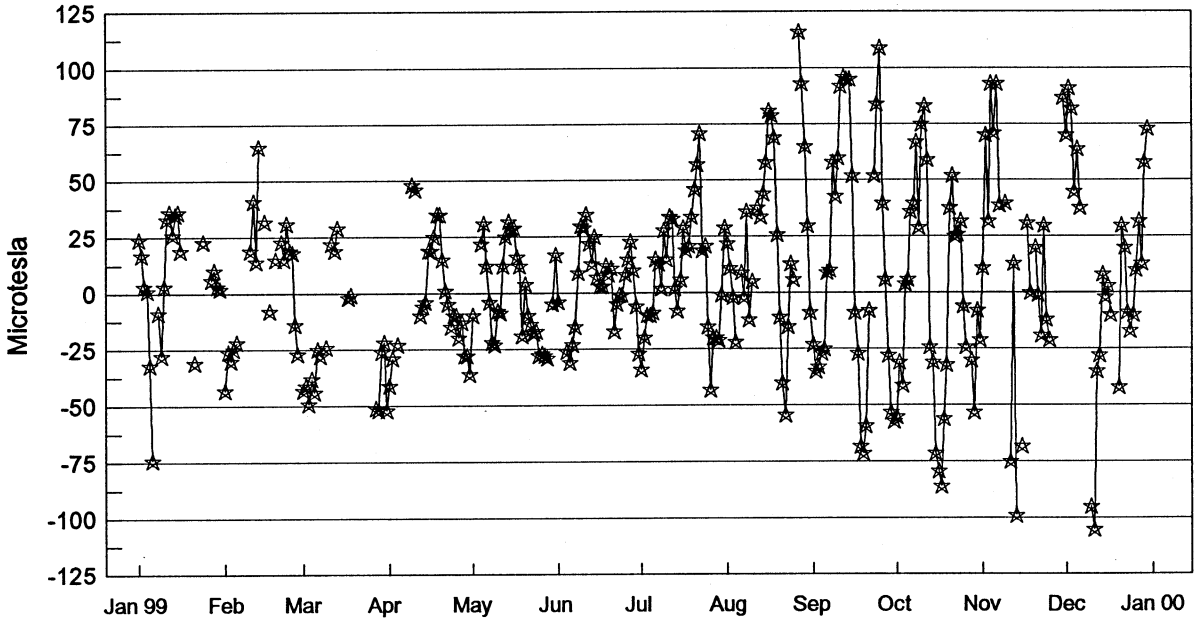
Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

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

SOLAR RADIO EMISSION
Selected Fixed Frequency Events
DECEMBER 1999

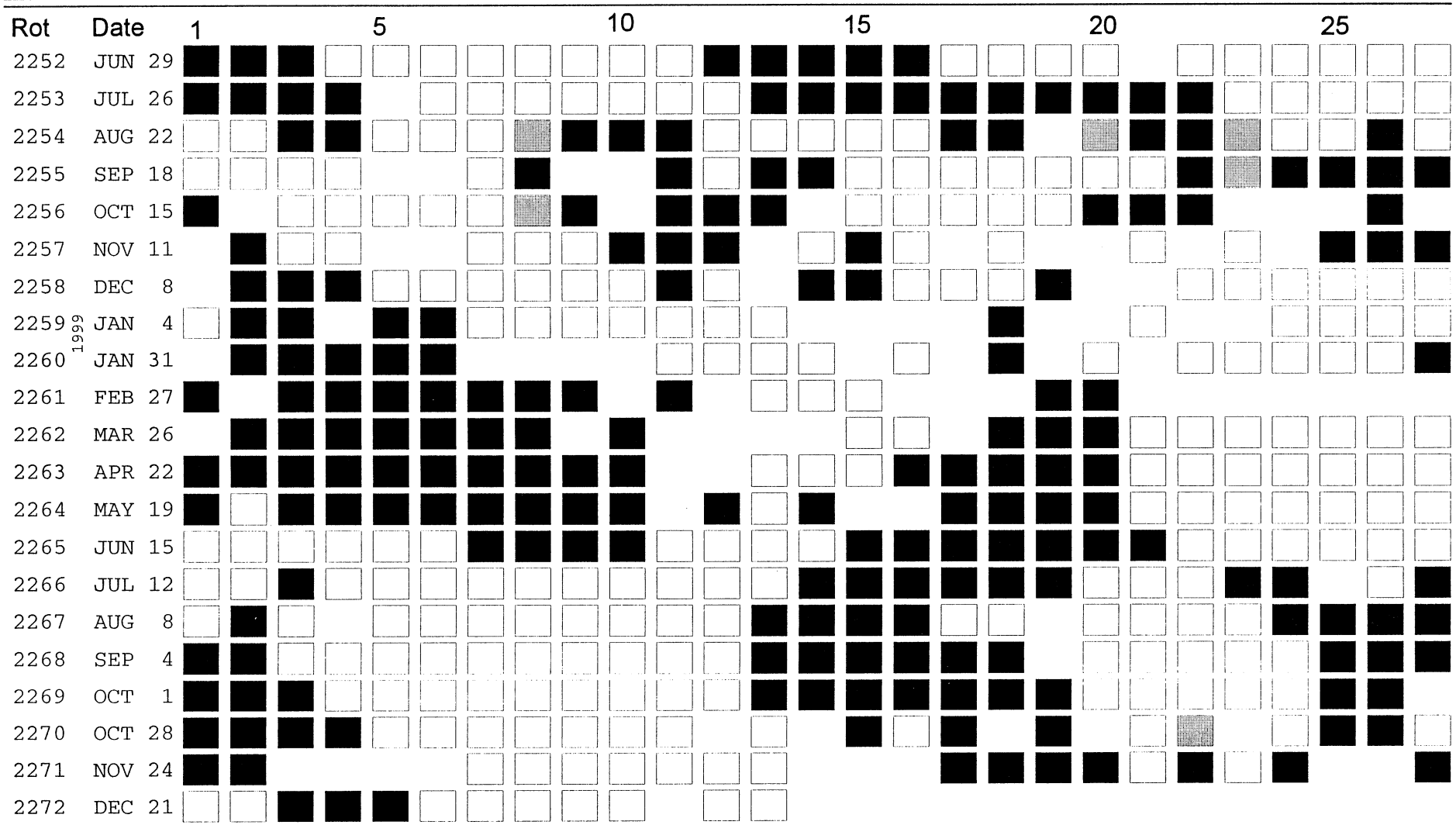
Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
02	2695	PALE	8	S	2000.0	2001.0	2.0	83.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	2001.0	2001.0	U	37.0			QL=4 ST=2 TYP=3
03	8800	PALE	8	S	1951.0	1951.0	U	75.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1951.0	1951.0	1.0	93.0			QL=2 ST=2 TYP=3
06	2695	SVTO	4	S/F	0703.0	0704.0	9.0	240.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	0704.0	0704.0	12.0	65.0			QL=2 ST=2 TYP=3
07	8800	PALE	8	S	2117.0	2118.0	2.0	100.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2117.0	2118.0	1.0	31.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	2136.0	2136.0	U	21.0			QL=4 ST=2 TYP=3
16	2695	LEAR	4	S/F	0736.0	0737.0	3.0	150.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	0736.0	0737.0	2.0	82.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0736.0	0737.0	1.0	63.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	0736.0	0737.0	9.0	140.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0959.0	0959.0	U	49.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2016.0	2016.0	1.0	27.0			QL=4 ST=2 TYP=3
17	8800	LEAR	4	S/F	0535.0	0536.0	9.0	92.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	0755.0	0755.0	1.0	54.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	0933.0	0933.0	1.0	84.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0933.0	0933.0	U	48.0			QL=2 ST=2 TYP=3
	2695	PALE	4	S/F	1856.0	1856.0	8.0	36.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1856.0	1856.0	U	30.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	2138.0	2138.0	1.0	31.0			QL=4 ST=2 TYP=3
18	2695	SGMR	8	S	1316.0	1316.0	2.0	53.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1316.0	1316.0	2.0	38.0			QL=4 ST=2 TYP=3
	8800	SVTO	46	C	1316.0	1316.0	U	28.0			QL=4 ST=2 TYP=8
	2695	SVTO	8	S	1316.0	1316.0	1.0	50.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1716.0	1717.0	1.0	50.0			QL=4 ST=3 TYP=3
	8800	PALE	8	S	1911.0	1912.0	1.0	150.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1911.0	1912.0	2.0	270.0			QL=4 ST=2 TYP=3
19	8800	SVTO	8	S	1119.0	1119.0	1.0	58.0			QL=4 ST=2 TYP=3
20	8800	LEAR	8	S	2230.0	2230.0	U	53.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	2230.0	2230.0	U	57.0			QL=4 ST=2 TYP=3
21	2695	SGMR	4	S/F	1715.0	1715.0	4.0	70.0			QL=4 ST=2 TYP=3
	8800	SGMR	4	S/F	1715.0	1715.0	4.0	390.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2143.0	2143.0	U	47.0			QL=4 ST=2 TYP=3
22	8800	LEAR	8	S	0827.0	0827.0	U	60.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	1053.0	1054.0	2.0	130.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	1053.0	1054.0	3.0	420.0			QL=4 ST=2 TYP=3
23	8800	PALE	8	S	1933.0	1933.0	1.0	180.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1933.0	1933.0	1.0	62.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1933.0	1933.0	1.0	280.0			QL=4 ST=2 TYP=3
24	8800	SGMR	8	S	1641.0	1641.0	2.0	94.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1830.0	1830.0	1.0	56.0			QL=4 ST=2 TYP=3
27	8800	LEAR	4	S/F	0148.0	0150.0	5.0	350.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0149.0	0150.0	3.0	120.0			QL=4 ST=2 TYP=3
	2695	SGMR	4	S/F	1719.0	1720.0	4.0	24.0			QL=4 ST=2 TYP=3
	8800	SGMR	4	S/F	1719.0	1720.0	5.0	12.0			QL=4 ST=2 TYP=3
28	2695	PALE	49	GB	0040.0	0044.0	8.0	1500.0			QL=4 ST=2 TYP=6
	8800	PALE	49	GB	0040.0	0043.0	8.0	4100.0			QL=4 ST=2 TYP=6
	2695	LEAR	48	C	0041.0	0044.0	13.0	1400.0			QL=4 ST=2 TYP=8
	8800	LEAR	48	C	0042.0	0043.0	13.0	4300.0			QL=4 ST=2 TYP=8
29	2695	LEAR	8	S	0925.0	0925.0	1.0	140.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	0925.0	0925.0	1.0	360.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	0925.0	0925.0	1.0	140.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0925.0	0925.0	1.0	390.0			QL=4 ST=2 TYP=3

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



Day	Jan 99	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	24	-43	-43	-41	-10	-4	-34	22	-23	-55	11	70
2	17	-26	-41	-29	---	---	-20	11	-35	-31	70	91
3	3	-30	-49	---	---	---	-10	-2	-33	-41	32	82
4	1	-25	-38	-23	22	-26	-10	-22	-27	4	93	45
5	-32	-22	-44	---	31	-31	-9	---	-25	6	71	64
6	-74	---	-25	---	12	-23	15	9	9	36	93	38
7	---	---	-28	---	-4	-15	13	-2	10	40	39	---
8	-9	---	---	---	-22	9	2	36	58	67	---	---
9	-28	---	-24	48	-23	30	28	-12	43	29	40	---
10	3	19	---	46	-8	29	15	5	60	75	---	-95
11	33	41	22	---	-9	35	34	---	92	83	-75	-105
12	36	14	19	-10	12	22	33	38	96	59	13	-35
13	26	65	29	-6	25	13	2	34	95	-24	-99	-28
14	35	---	---	-4	32	25	-8	44	95	-31	---	8
15	36	32	---	19	29	7	6	58	52	-71	-68	-2
16	19	---	---	19	29	3	29	81	-9	-79	---	3
17	---	-8	-2	25	16	3	19	79	-27	-86	31	-10
18	---	---	-1	35	12	12	21	69	-68	-56	0	---
19	---	15	---	35	-19	8	34	26	-71	-32	---	---
20	---	---	---	15	4	11	46	-11	-59	38	20	-42
21	-31	23	---	1	-10	-17	57	-40	-8	52	-1	30
22	---	15	---	-5	-14	-5	71	-54	---	25	-19	20
23	---	31	---	-15	-18	-1	19	-15	52	26	30	-9
24	23	19	---	-10	-17	-1	21	13	84	32	-12	-17
25	---	18	---	-10	-28	8	-15	6	109	-6	-21	-10
26	---	-14	---	-20	-27	15	-43	---	40	-24	---	10
27	6	-27	-51	-13	-28	23	-20	116	6	---	---	32
28	10	---	-52	-28	-29	10	-20	93	-28	-30	---	13
29	3		-26	-28	---	-6	-21	65	-53	-53	---	58
30	2		-22	-36	-5	-27	-1	30	-57	-8	87	73
31	---		-52		17		29	-9		-21		---

STANFORD MEAN SOLAR MAGNETIC FIELD

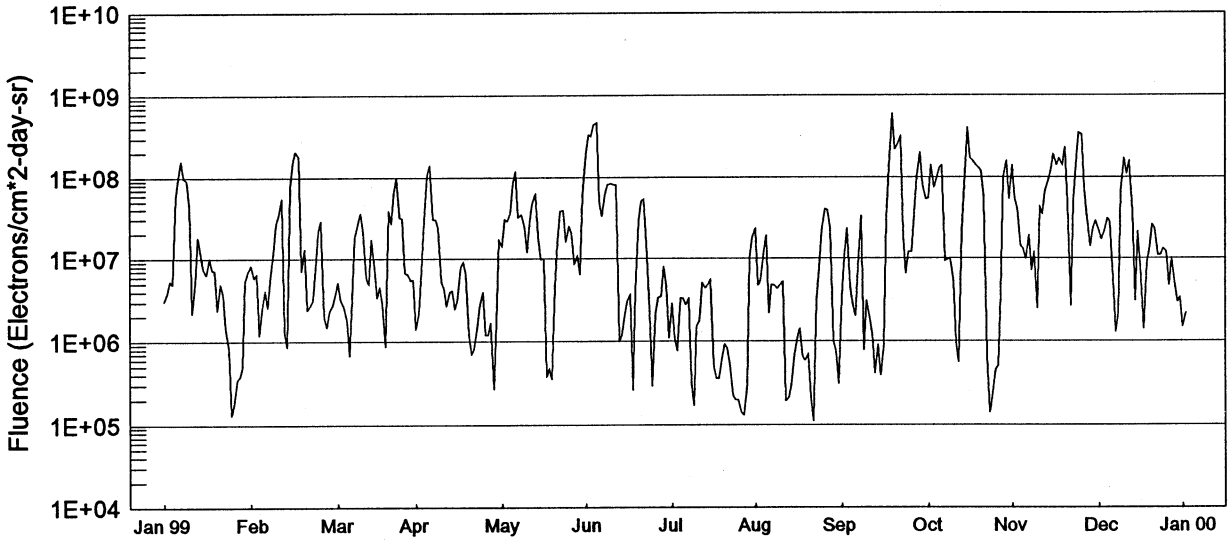


Mean Solar Magnetic Field Polarity: □ = field > 2 microT; ▒ = -2 microT ≤ field ≤ 2 microT

■ = 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 99 - Dec 99



Day	Jan 99	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	8.3E+06	5.2E+06	1.4E+06	1.4E+07	1.9E+08	2.9E+06	2.3E+07	3.4E+06	5.5E+07	1.4E+08	2.2E+07	1.5E+06
2	5.9E+06	3.2E+06	2.2E+06	3.0E+07	3.3E+08	1.1E+06	4.7E+06	1.1E+07	1.4E+08	5.4E+07	1.7E+07	2.2E+06
3	6.5E+06	2.7E+06	7.2E+06	2.9E+07	3.2E+08	7.7E+05	5.5E+06	2.3E+07	7.5E+07	4.1E+07	2.2E+07	7.3E+05
4	1.2E+06	1.8E+06	2.9E+07	3.6E+07	4.4E+08	3.3E+06	1.2E+07	4.5E+06	9.7E+07	1.4E+07	3.1E+07	6.6E+06
5	2.7E+06	6.8E+05	1.1E+08	8.3E+07	4.6E+08	3.3E+06	1.9E+07	2.8E+06	1.3E+08	1.3E+07	2.8E+07	1.1E+08
6	4.1E+06	3.4E+06	1.4E+08	1.2E+08	4.9E+07	2.8E+06	2.2E+06	2.0E+06	1.4E+08	9.9E+06	5.7E+06	3.0E+08
7	2.6E+06	1.8E+07	3.0E+07	3.2E+07	3.3E+07	3.3E+06	4.8E+06	1.1E+07	9.4E+06	1.9E+07	1.3E+06	3.4E+08
8	6.8E+06	2.7E+07	3.0E+07	3.5E+07	6.4E+07	3.2E+05	4.7E+06	3.3E+07	9.7E+06	7.2E+06	2.2E+06	2.3E+08
9	1.2E+07	3.6E+07	2.4E+07	2.5E+07	8.2E+07	1.7E+05	4.3E+06	7.8E+05	1.0E+07	1.2E+07	6.7E+07	2.6E+08
10	2.7E+07	2.2E+07	5.3E+06	1.2E+07	8.4E+07	1.5E+06	4.7E+06	3.1E+06	5.4E+06	2.5E+06	1.7E+08	2.9E+08
11	3.4E+07	5.9E+06	4.4E+06	2.8E+07	8.0E+07	1.8E+06	5.3E+06	1.9E+06	9.4E+05	4.3E+07	1.1E+08	2.6E+08
12	5.5E+07	4.9E+06	2.7E+06	4.8E+07	8.0E+07	5.1E+06	1.9E+05	1.2E+06	5.6E+05	3.5E+07	1.6E+08	2.0E+08
13	1.3E+06	1.7E+07	4.0E+06	6.3E+07	1.0E+06	4.4E+06	2.1E+05	4.1E+05	2.1E+07	6.8E+07	3.8E+07	2.1E+07
14	8.6E+05	7.8E+06	4.1E+06	1.9E+07	1.2E+06	4.8E+06	3.1E+05	9.1E+05	8.2E+07	9.0E+07	3.1E+06	8.7E+04
15	7.7E+07	3.4E+06	2.5E+06	9.8E+06	2.0E+06	5.6E+06	6.3E+05	3.9E+05	4.0E+08	1.2E+08	2.1E+07	1.3E+05
16	1.6E+08	4.6E+06	3.2E+06	1.0E+07	3.1E+06	5.0E+05	1.1E+06	8.8E+05	1.7E+08	1.9E+08	7.9E+06	2.7E+05
17	2.1E+08	2.9E+06	7.9E+06	3.8E+05	3.7E+06	3.6E+05	1.4E+06	3.0E+07	1.6E+08	1.4E+08	1.4E+06	4.4E+05
18	1.8E+08	8.7E+05	9.2E+06	4.8E+05	2.6E+05	3.6E+05	6.8E+05	1.3E+08	1.4E+08	1.7E+08	8.9E+06	7.9E+05
19	7.1E+06	3.9E+07	6.6E+06	3.5E+05	4.1E+06	6.5E+05	5.9E+05	5.9E+08	1.3E+08	1.4E+08	1.3E+07	9.9E+05
20	1.3E+07	2.7E+07	1.2E+06	4.5E+06	2.8E+07	9.2E+05	7.1E+05	2.2E+08	1.2E+08	2.3E+08	2.6E+07	1.3E+06
21	2.4E+06	6.3E+07	7.0E+05	1.6E+07	5.1E+07	8.2E+05	2.1E+05	2.5E+08	5.7E+07	4.7E+07	2.3E+07	1.5E+06
22	2.7E+06	1.0E+08	8.2E+05	3.8E+07	5.4E+07	5.3E+05	1.1E+05	3.2E+08	6.6E+05	2.7E+06	1.1E+07	2.1E+06
23	3.2E+06	3.2E+07	1.5E+06	3.9E+07	1.1E+07	2.2E+05	3.1E+06	1.9E+07	1.4E+05	5.1E+07	1.1E+07	3.5E+06
24	7.8E+06	3.1E+07	2.8E+06	1.6E+07	2.3E+06	2.0E+05	7.5E+06	6.5E+06	2.2E+05	1.4E+08	1.3E+07	9.7E+04
25	2.1E+07	6.8E+06	4.0E+06	2.5E+07	2.9E+05	2.0E+05	2.2E+07	1.2E+07	4.6E+05	3.5E+08	1.2E+07	1.0E+05
26	2.9E+07	6.4E+06	1.2E+06	2.0E+07	2.1E+06	1.4E+05	4.0E+07	1.2E+07	5.0E+05	3.3E+08	4.7E+06	1.0E+05
27	2.0E+06	5.5E+06	1.2E+06	8.5E+06	3.4E+06	1.3E+05	3.9E+07	3.5E+07	3.7E+06	7.2E+07	1.0E+07	2.1E+05
28	1.5E+06	5.6E+06	1.7E+06	1.1E+07	3.5E+06	3.0E+05	2.3E+07	1.0E+08	9.9E+07	3.2E+07	4.9E+06	6.7E+05
29	2.3E+06		2.7E+05	6.4E+06	8.0E+06	1.0E+07	9.8E+05	2.0E+08	1.6E+08	1.4E+07	3.0E+06	3.1E+05
30	2.8E+06		1.7E+06	6.0E+07	4.7E+06	1.8E+07	7.5E+05	8.2E+07	5.4E+07	2.3E+07	3.4E+06	4.4E+05
31	3.6E+06		1.7E+07		1.1E+06		3.1E+05	5.4E+07		2.9E+07		2.8E+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.

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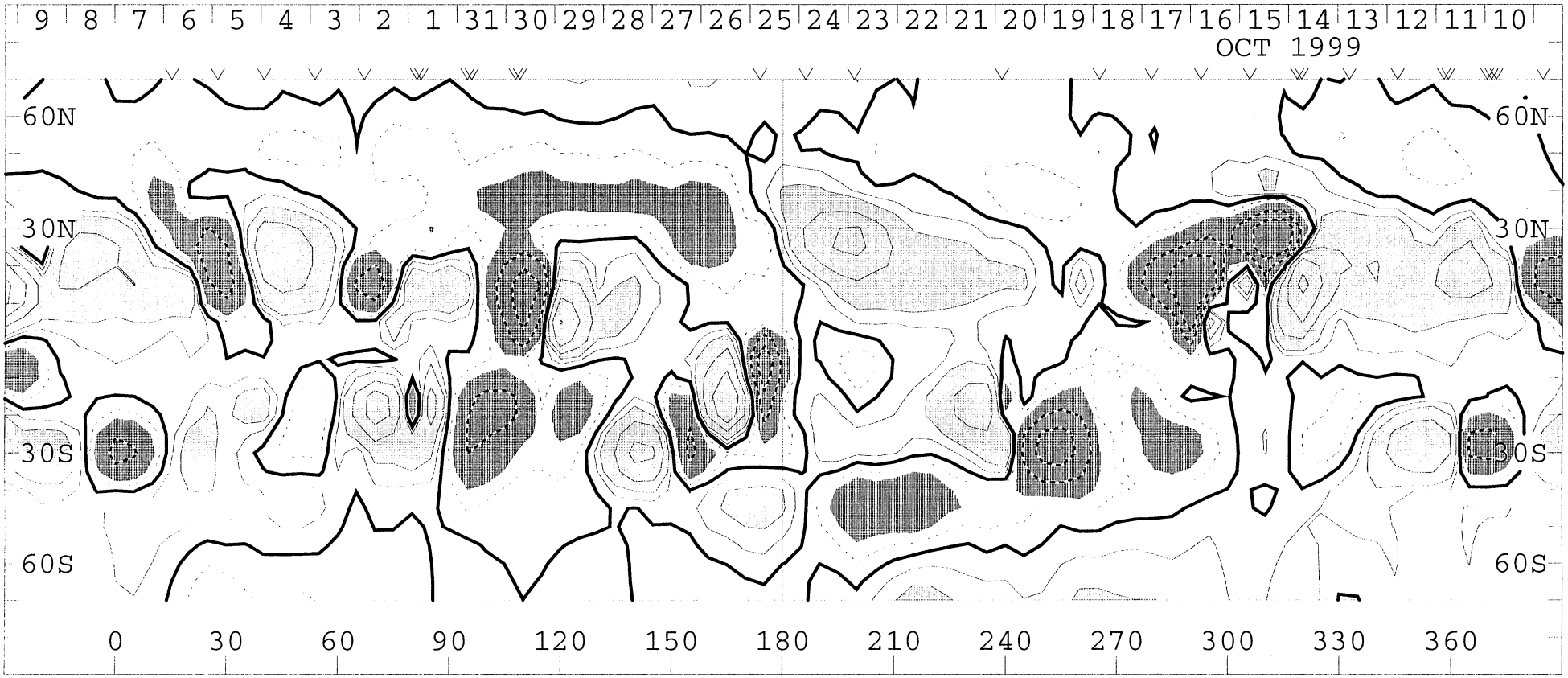
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1955
(11 October to 7 November 1999)

Wilcox Solar Observatory

Mean Field

WSO - Photospheric Magnetic Field 0, ±100, 200, 500, 1000, 2000 MicroTesla



Heliographic Longitude

1955

SOLAR MAGNETIC FIELD SYNOPTIC CHART

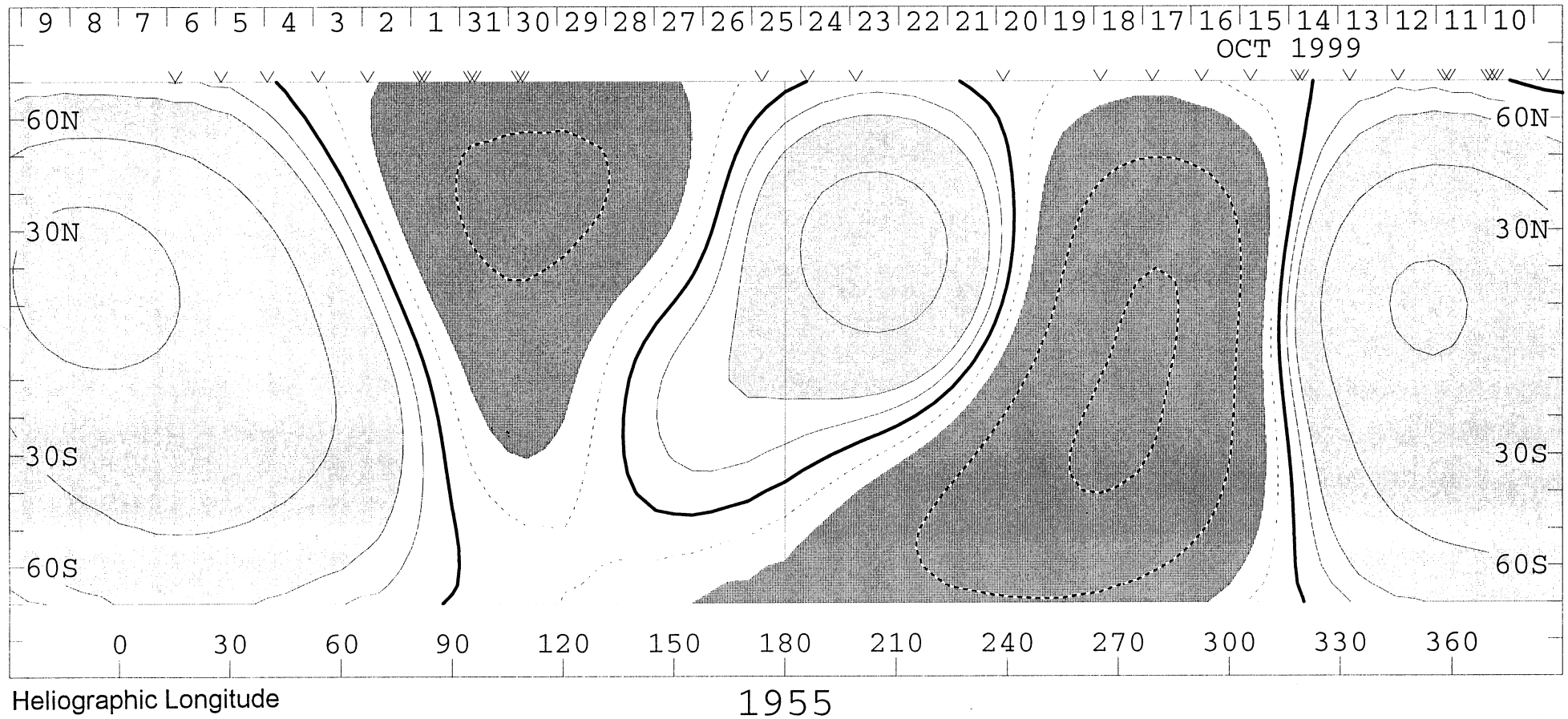
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1955

(11 October to 7 November 1999)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



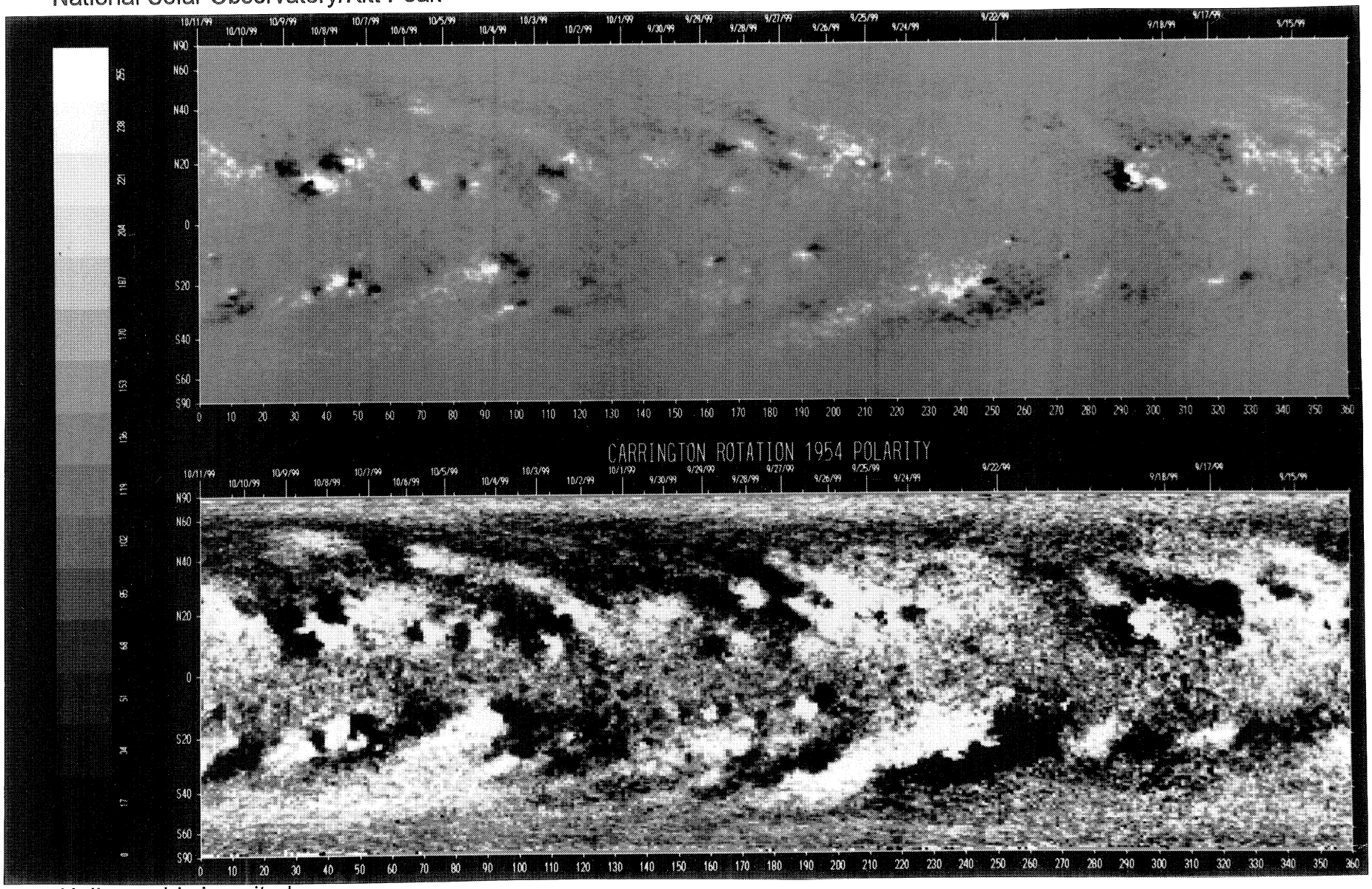
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1954

(14 September to 11 October 1999)

National Solar Observatory/Kitt Peak

Dates of Observation



Heliographic Longitude

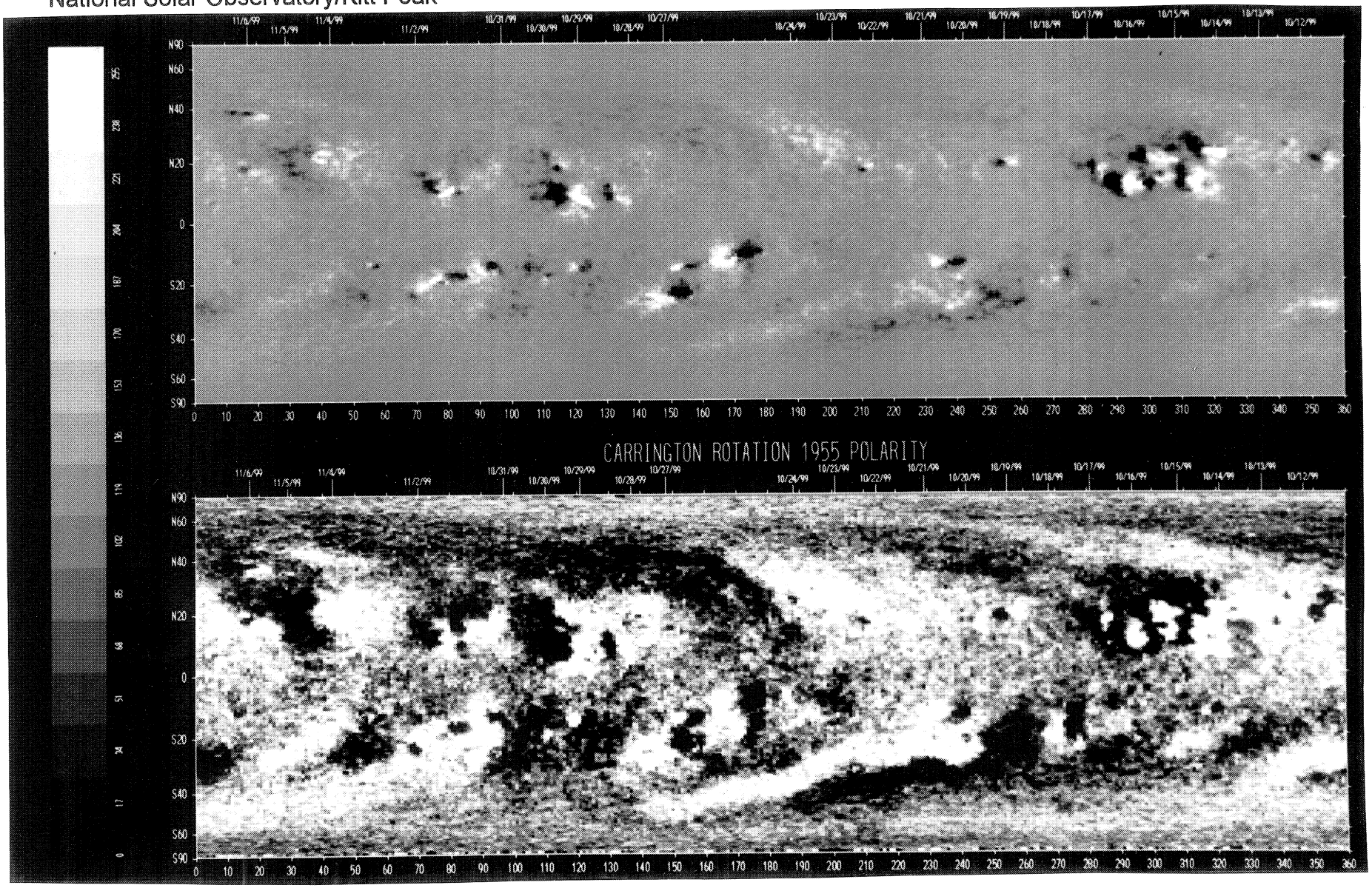
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1955

(11 October to 7 November 1999)

National Solar Observatory/Kitt Peak

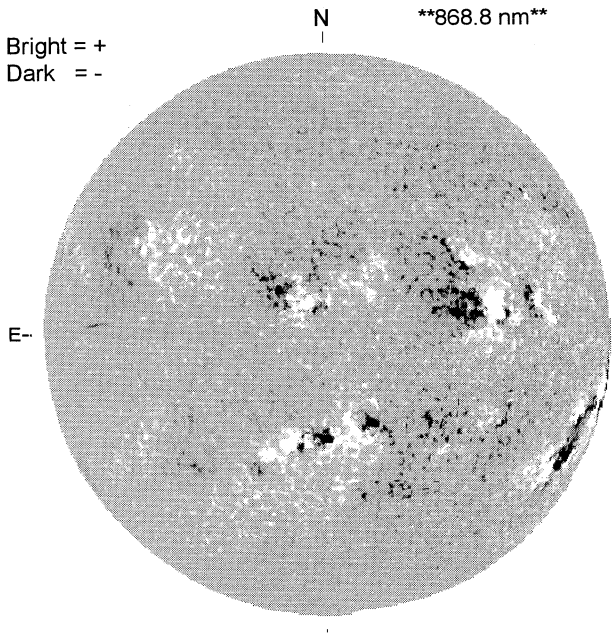
Dates of Observation



Heliographic Longitude

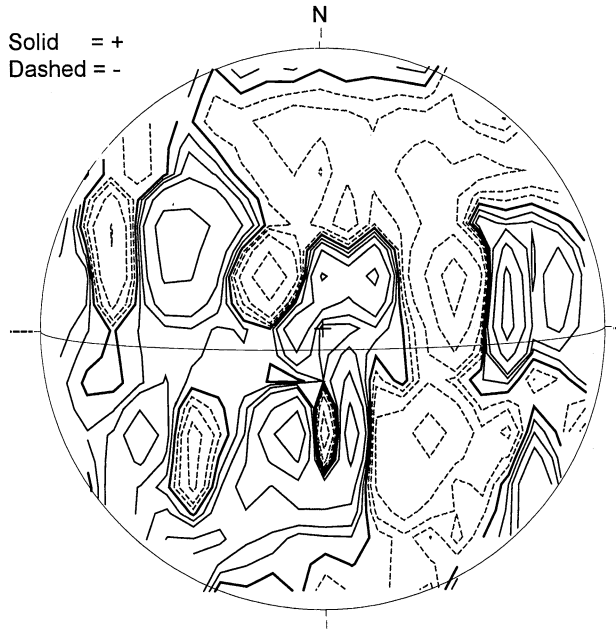
NOVEMBER 1, 1999 (P= 24.59, Bo = 4.42, Lo = 91.91)

KITT PEAK MAGNETOGRAM



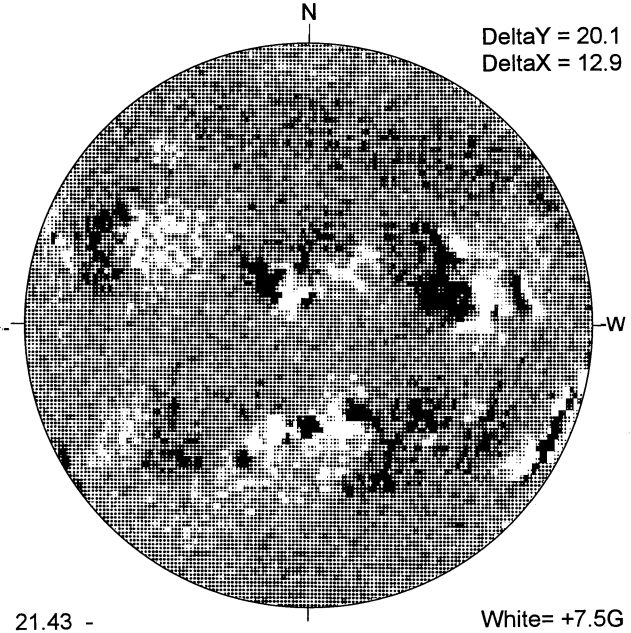
1725 UT

STANFORD MAGNETOGRAM



1945 UT

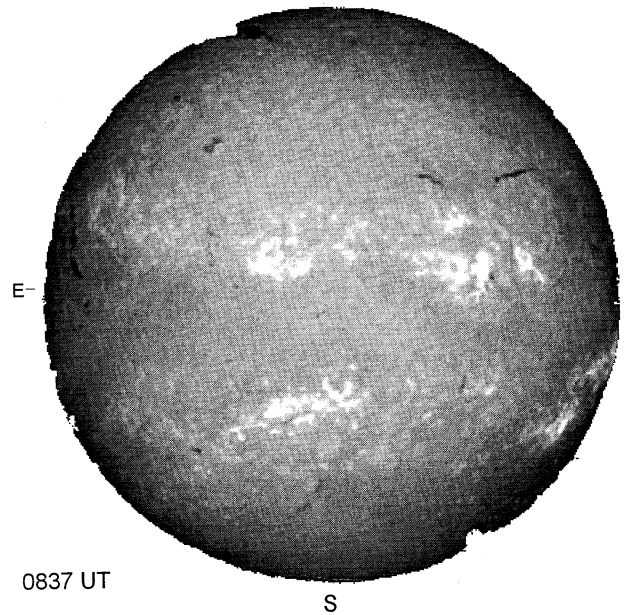
MT. WILSON MAGNETOGRAM



21.43 -
21.85 UT

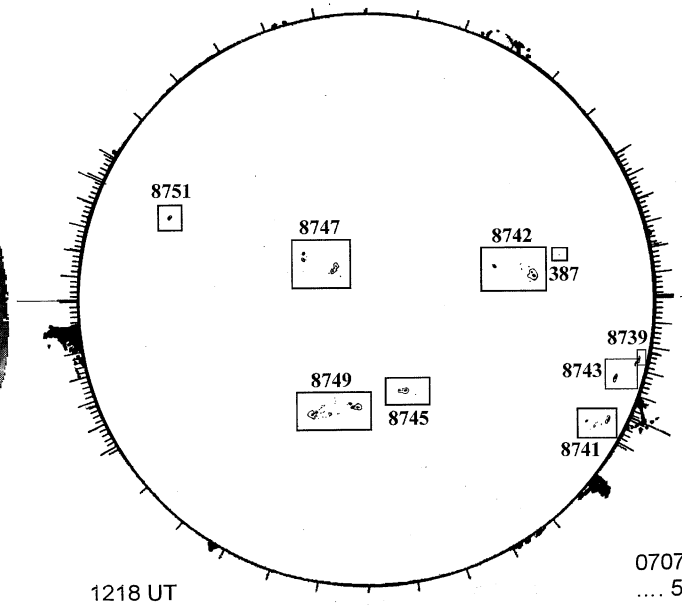
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



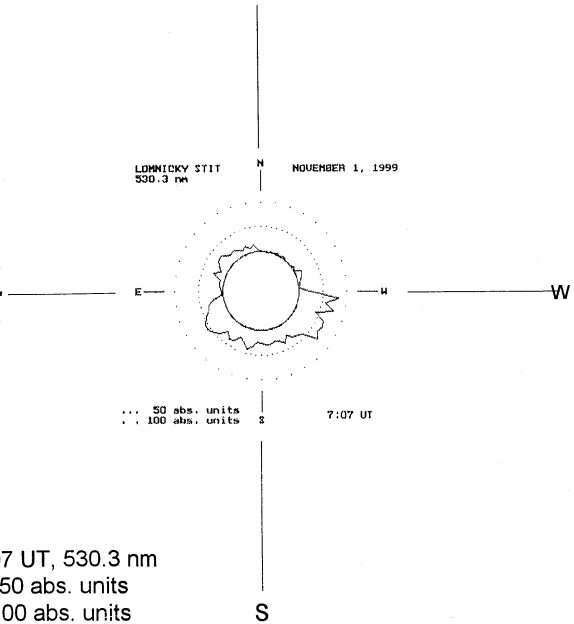
0837 UT

RAMEY SUNSPOT



1218 UT
0658 UT LOMN Prom S

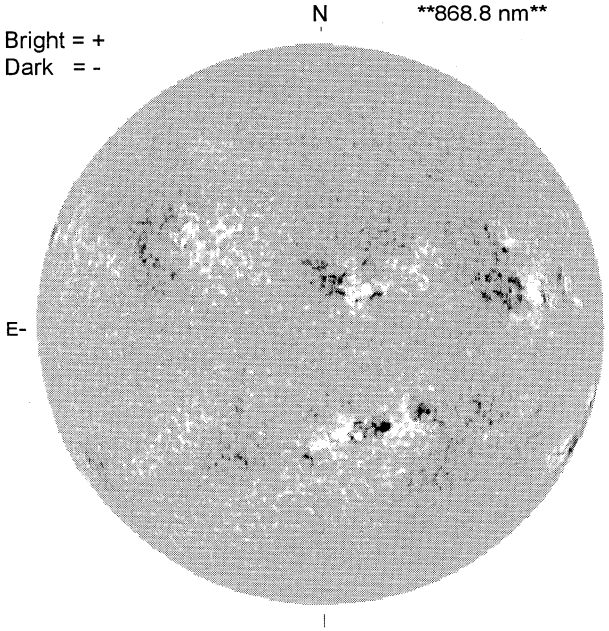
LOMNICKY PEAK CORONA (1.04 Radii)----



0707 UT, 530.3 nm
.... 50 abs. units
. . 100 abs. units

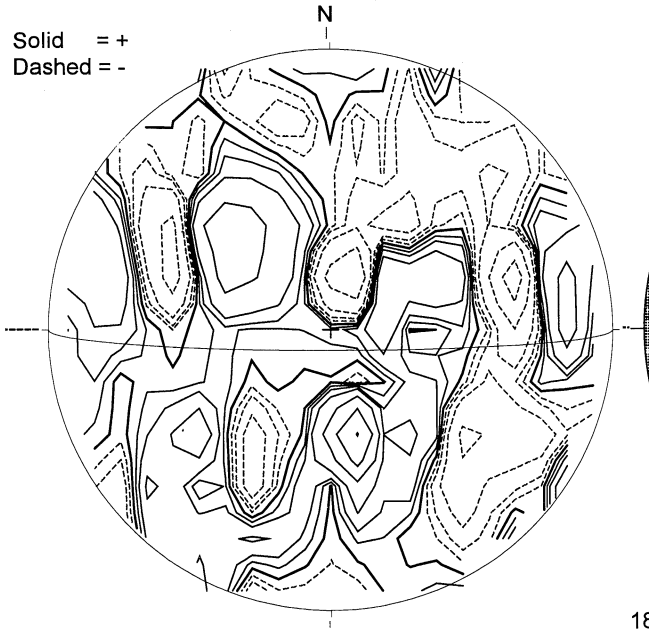
NOVEMBER 2, 1999 (P= 24.42, Bo = 4.32, Lo = 78.73)

KITT PEAK MAGNETOGRAM



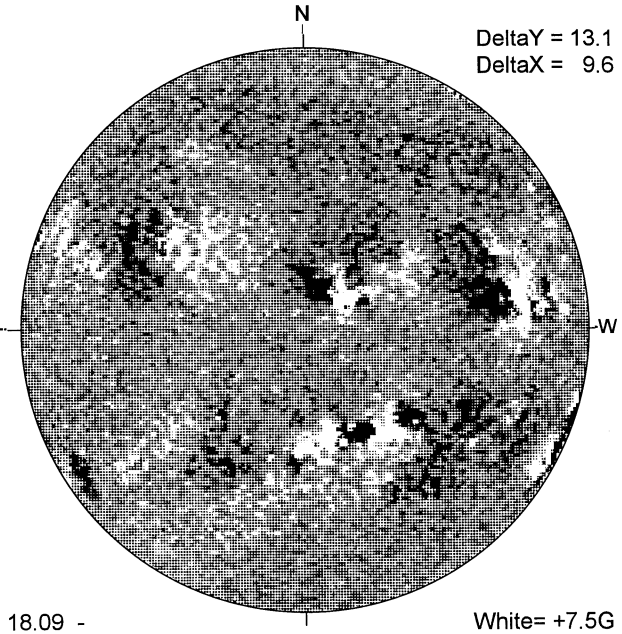
1634 UT

STANFORD MAGNETOGRAM



2126 UT

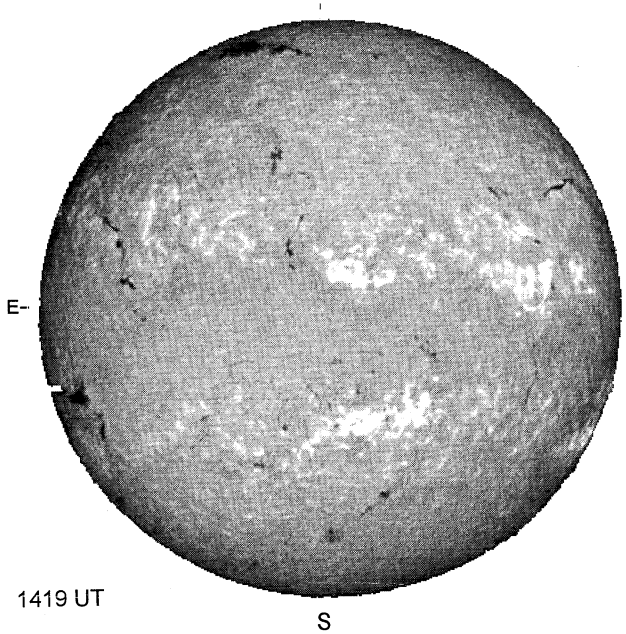
MT. WILSON MAGNETOGRAM



18.09 -
19.05 UT

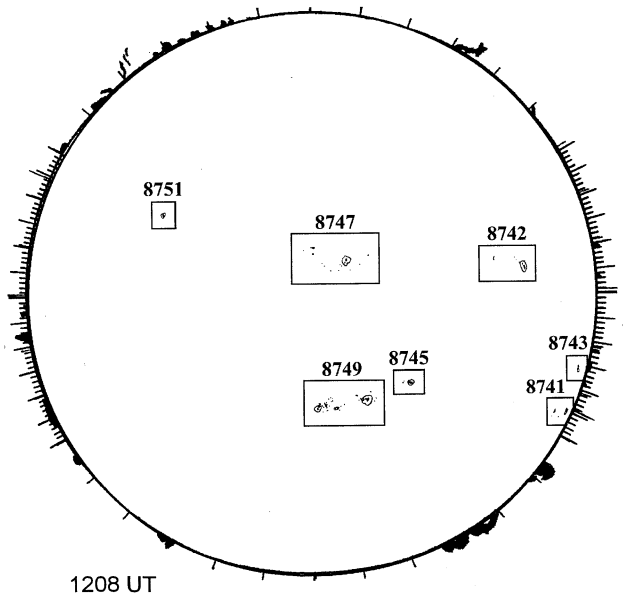
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



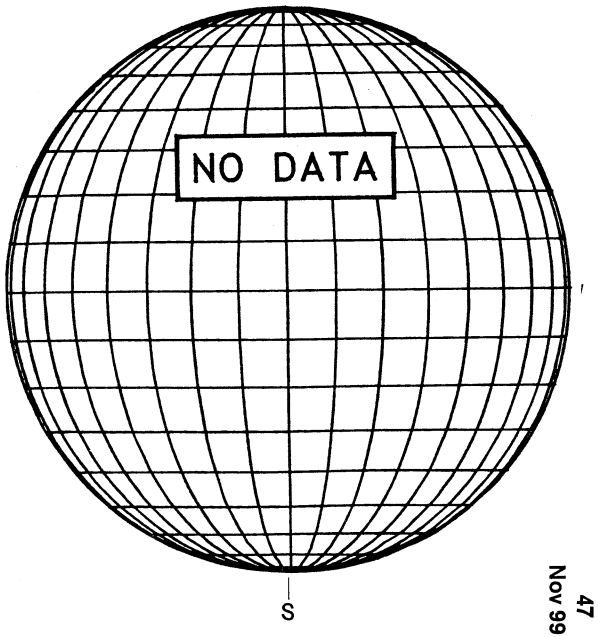
1419 UT

RAMEY SUNSPOT



1208 UT
0713 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

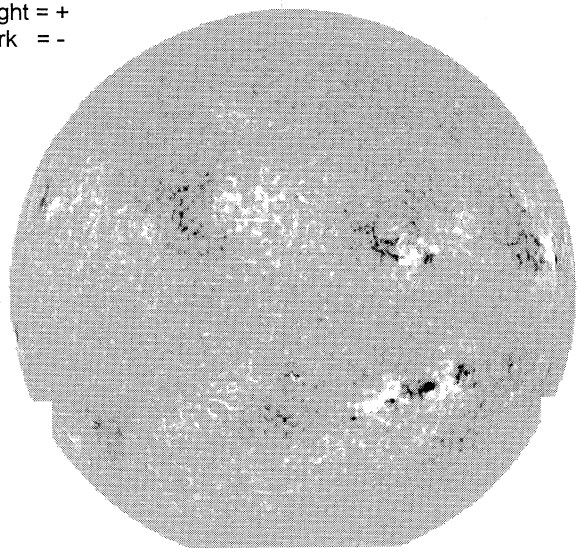


NOVEMBER 3, 1999 (P= 24.25, Bo = 4.22, Lo = 65.54)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E--

2309 UT

STANFORD MAGNETOGRAM

N

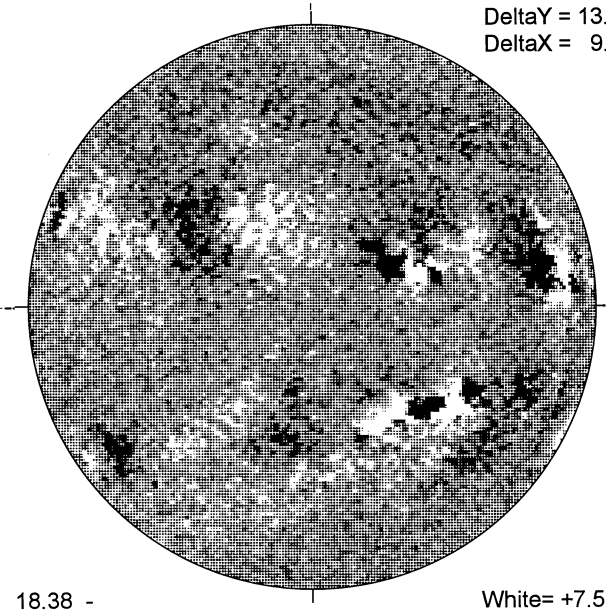
Solid = +
Dashed = -

2136 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

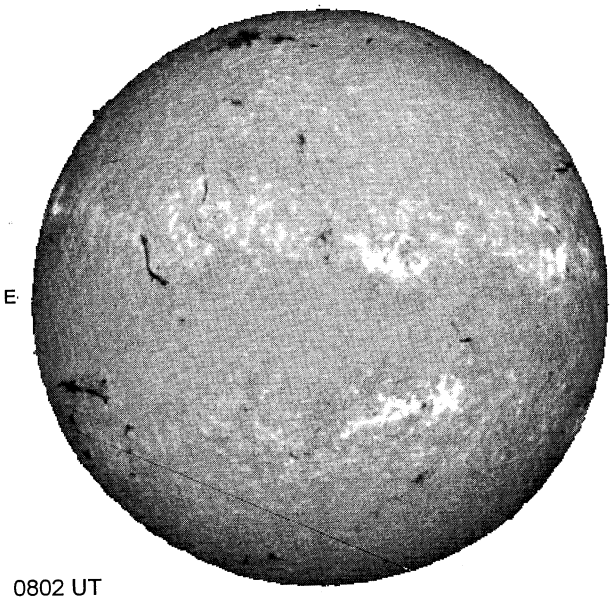


-W

18.38 -
19.34 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

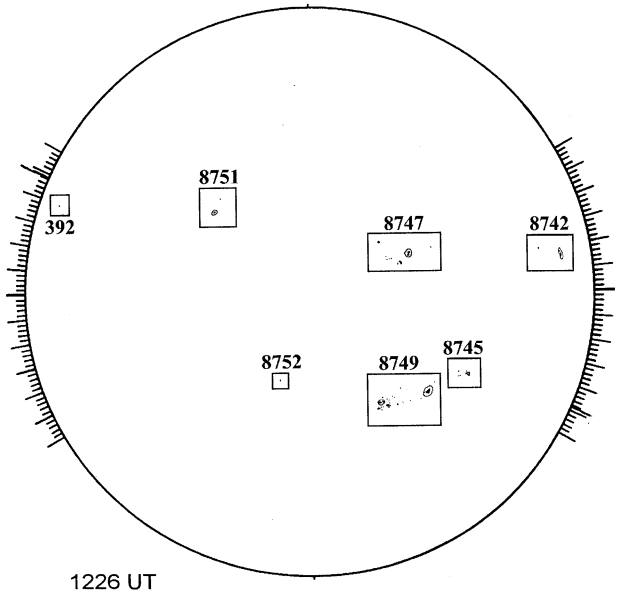


E

0802 UT

S

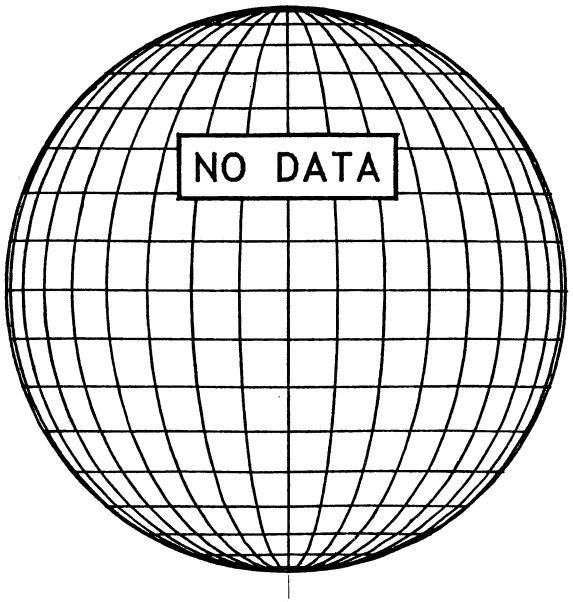
RAMEY SUNSPOT



1226 UT

S

LOMNICKY PEAK CORONA (1.04 Radii)----



S

NOVEMBER 4, 1999 (P= 24.06, Bo = 4.12, Lo = 52.35)

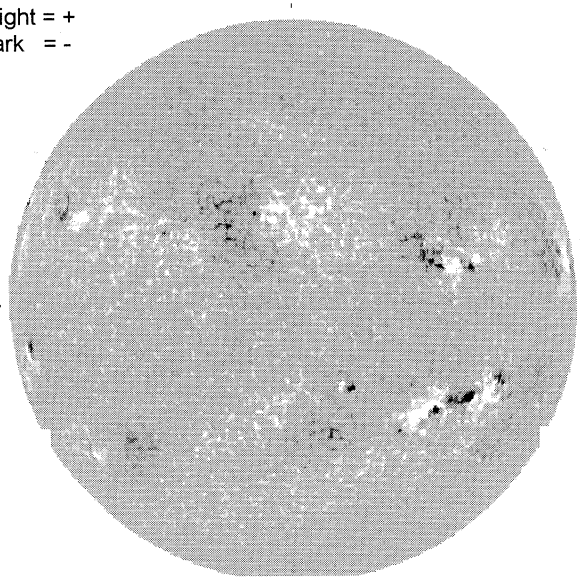
KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

E--

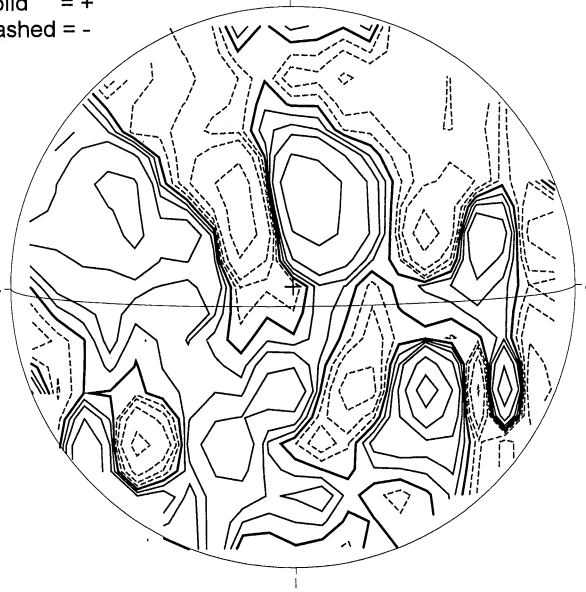


1731 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

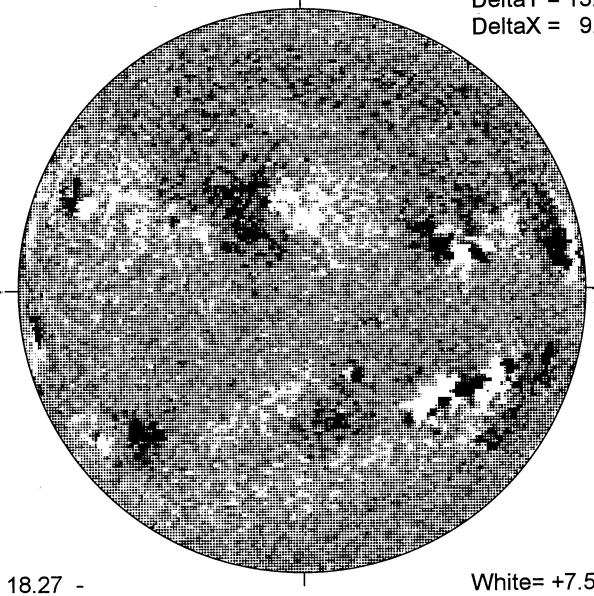


2237 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6



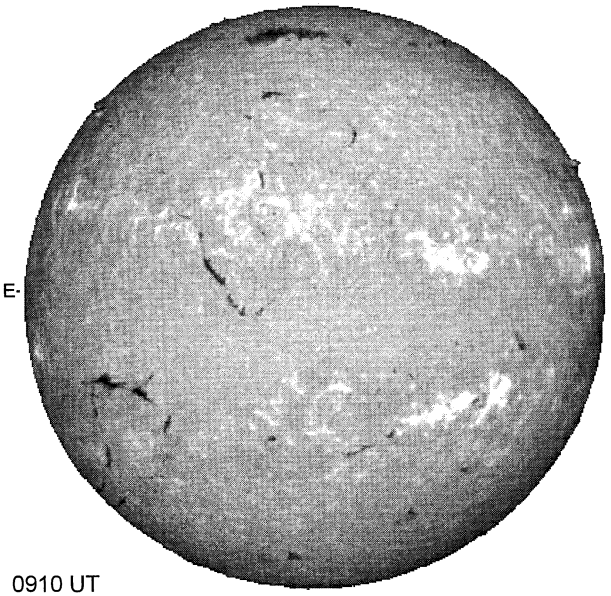
-W

18.27 -
19.23 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

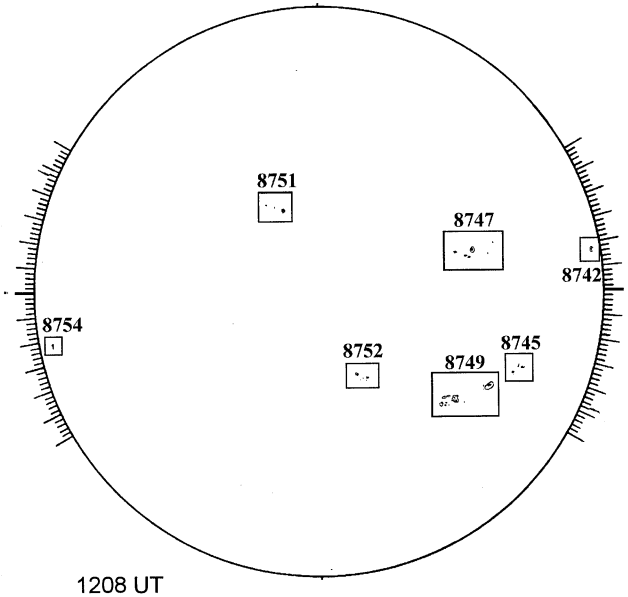
E-



0910 UT

S

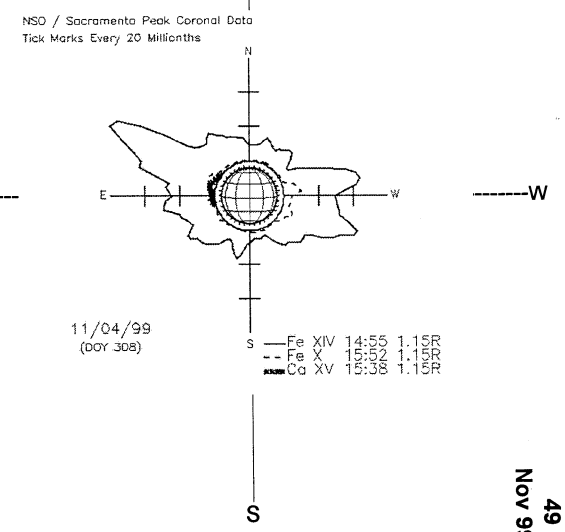
RAMEY SUNSPOT



1208 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



-------W

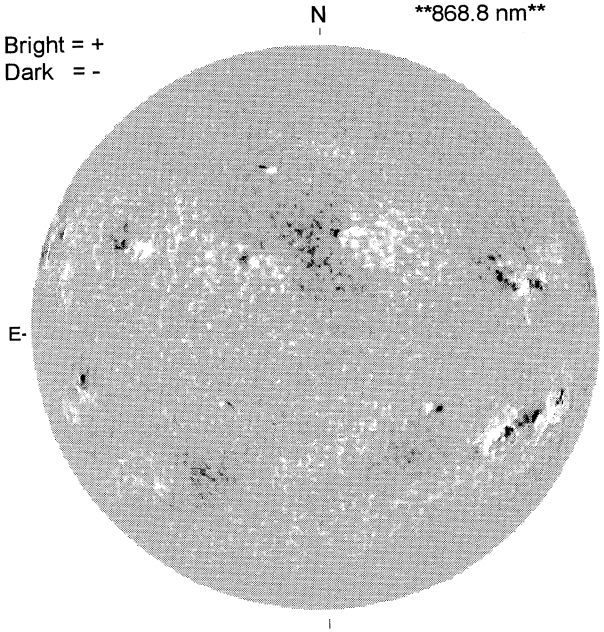
S

NOVEMBER 5, 1999 (P= 23.87, Bo = 4.01, Lo = 39.17)

KITT PEAK MAGNETOGRAM

868.8 nm

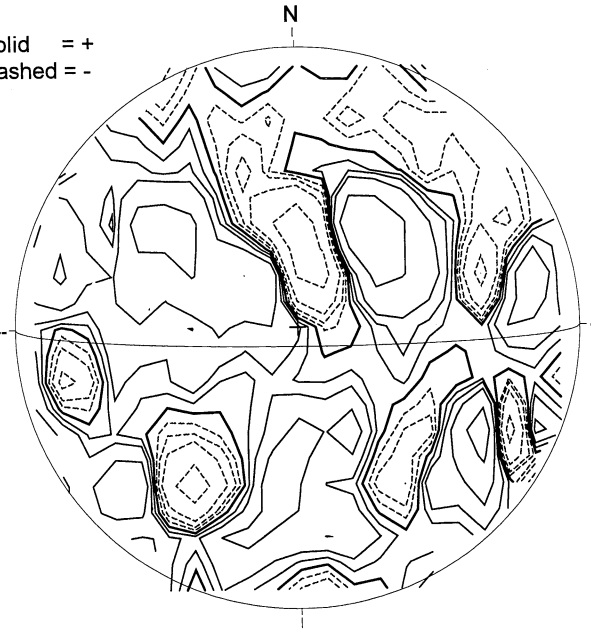
Bright = +
Dark = -



1748 UT

STANFORD MAGNETOGRAM

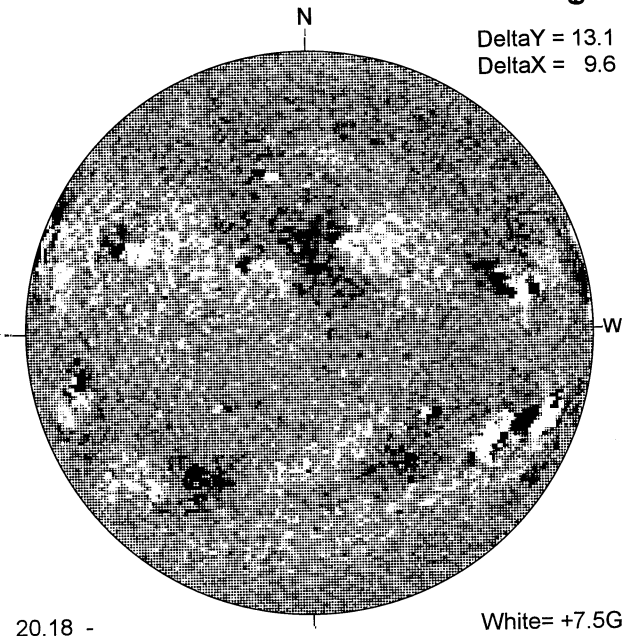
Solid = +
Dashed = -



2119 UT

MT. WILSON MAGNETOGRAM

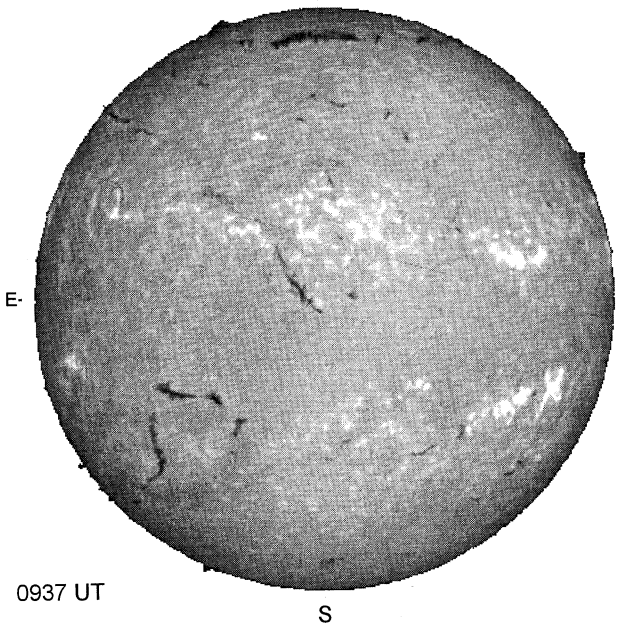
DeltaY = 13.1
DeltaX = 9.6



20.18 -
21.14 UT

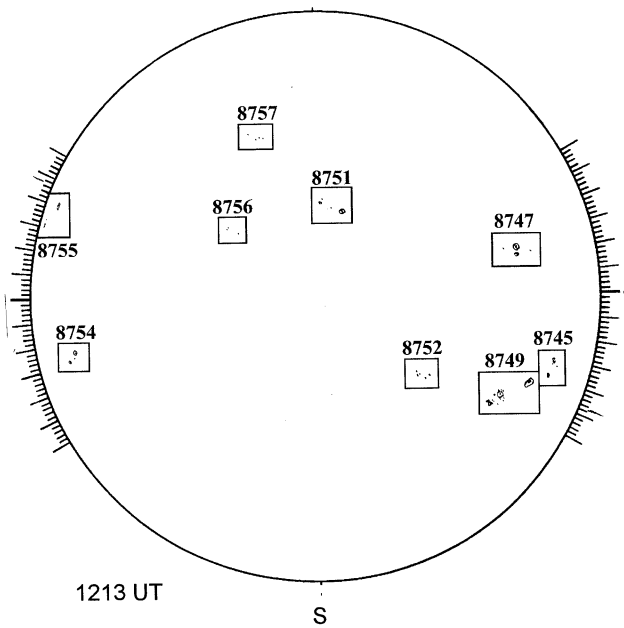
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



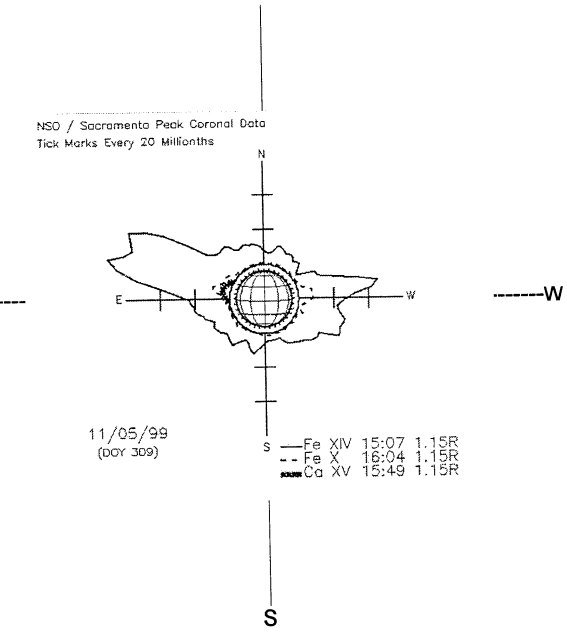
0937 UT

RAMEY SUNSPOT



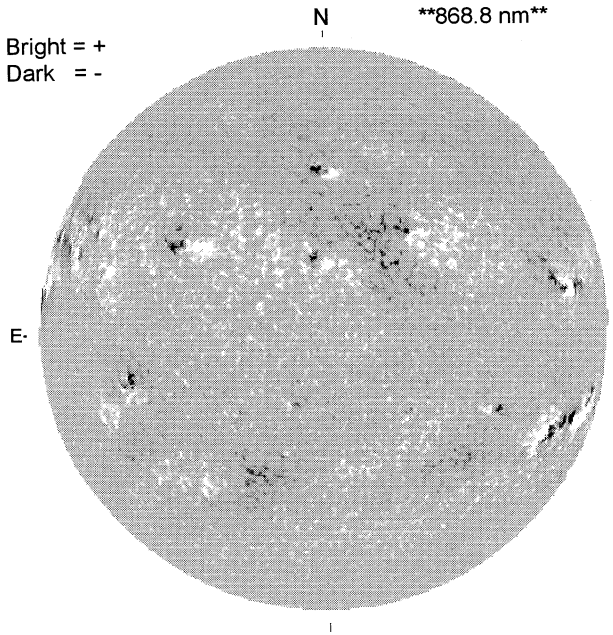
1213 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



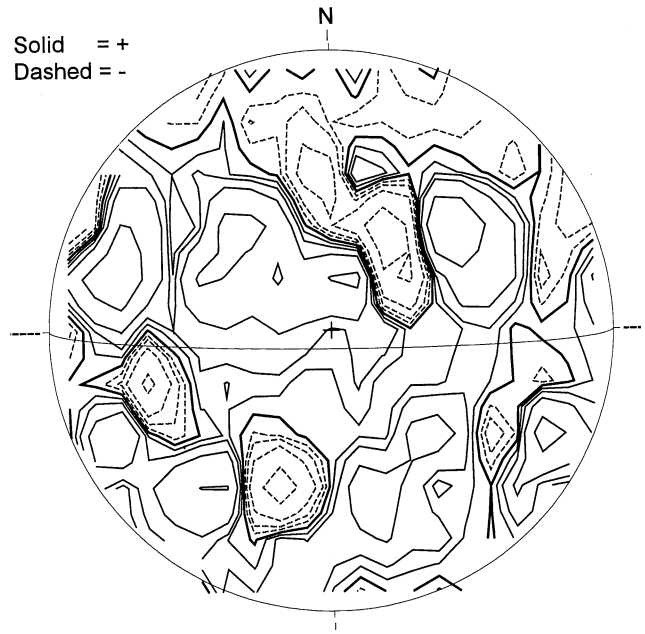
NOVEMBER 6, 1999 (P= 23.67, Bo = 3.90, Lo = 25.98)

KITT PEAK MAGNETOGRAM



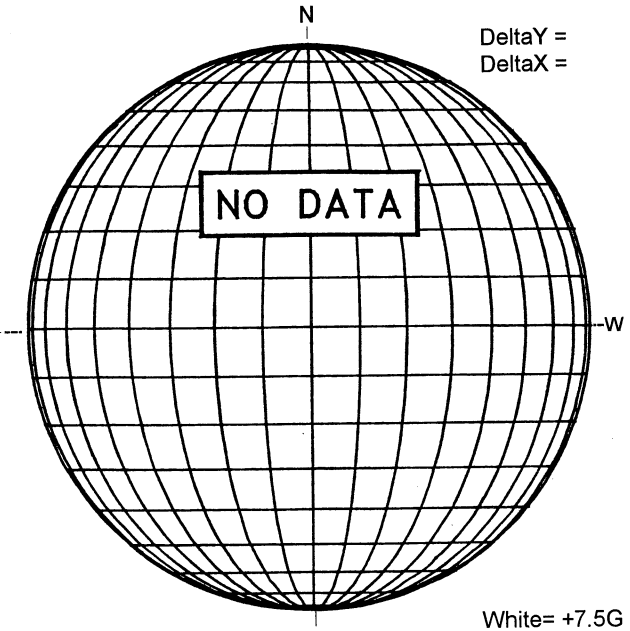
1702 UT

STANFORD MAGNETOGRAM

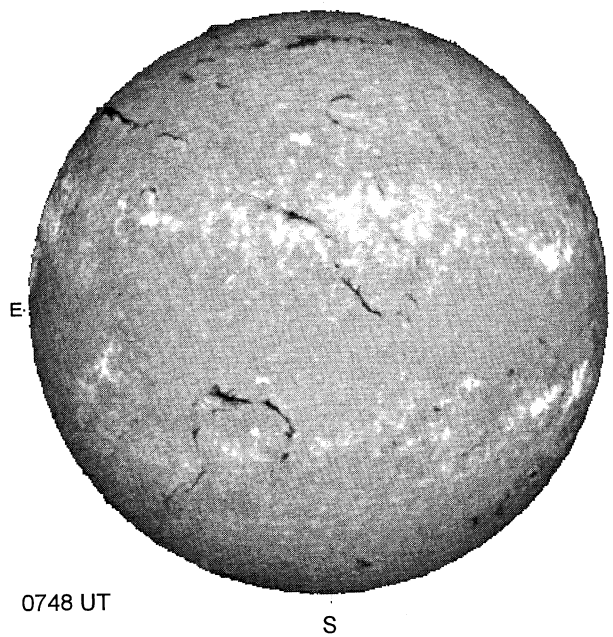


1953 UT

MT. WILSON MAGNETOGRAM

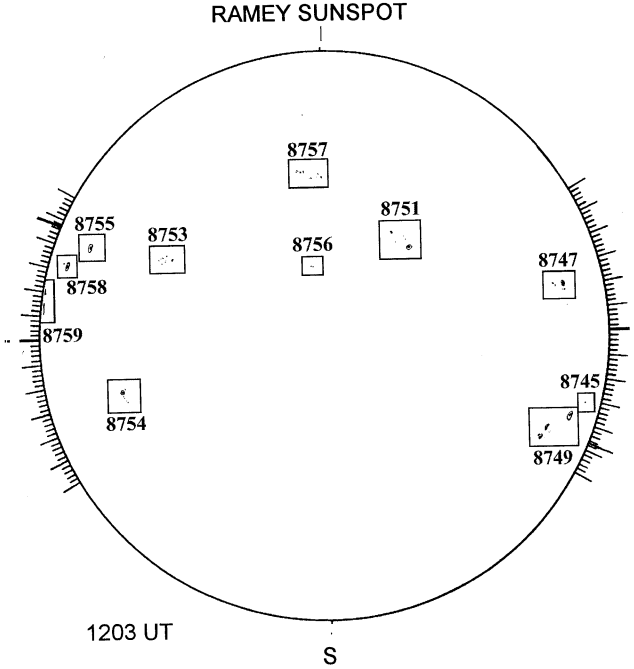


MEUDON H-ALPHA



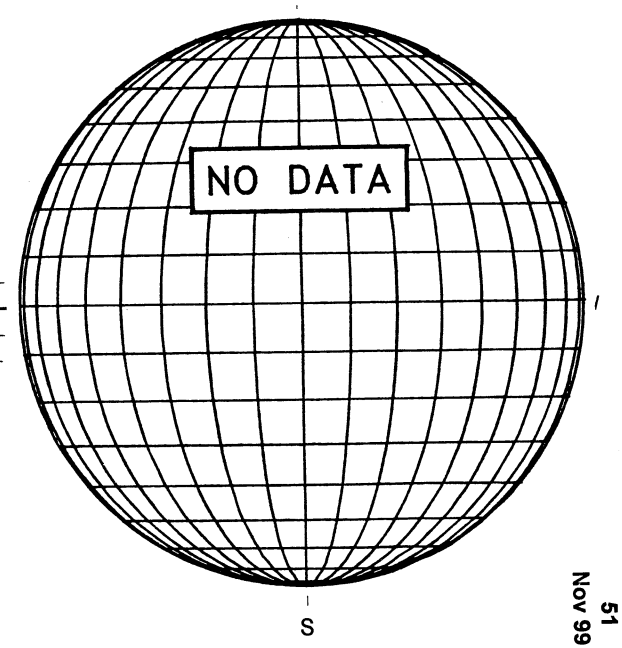
0748 UT

RAMEY SUNSPOT



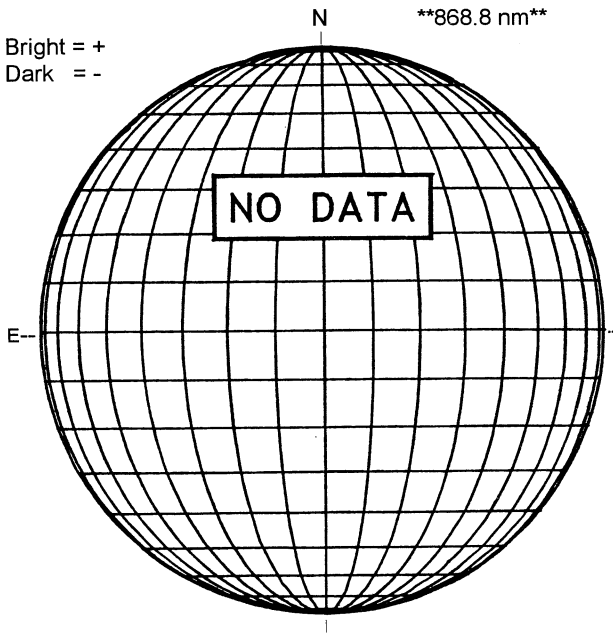
1203 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

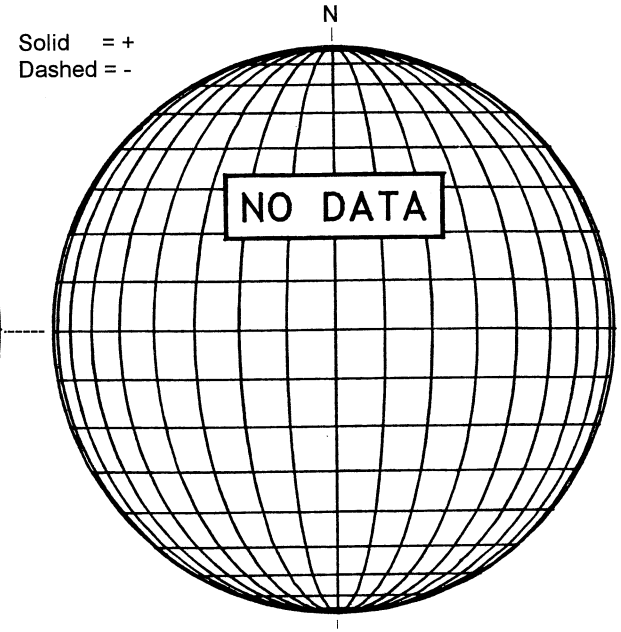


NOVEMBER 7, 1999 (P= 23.47, Bo = 3.80, Lo = 12.80)

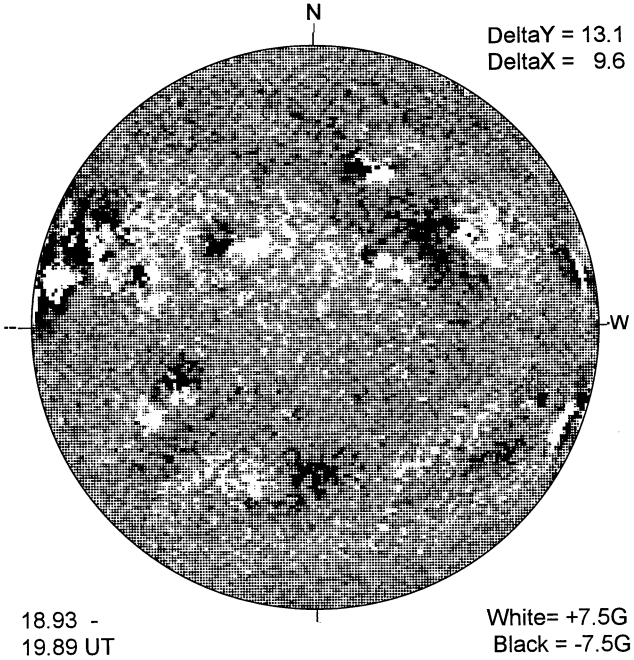
KITT PEAK MAGNETOGRAM



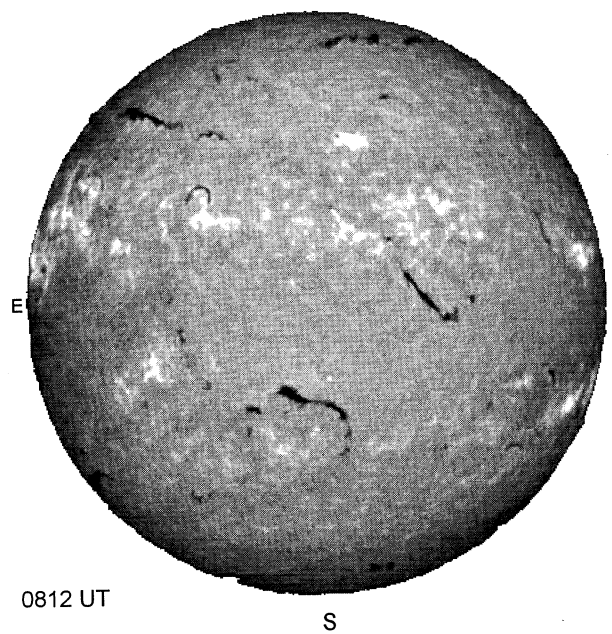
STANFORD MAGNETOGRAM



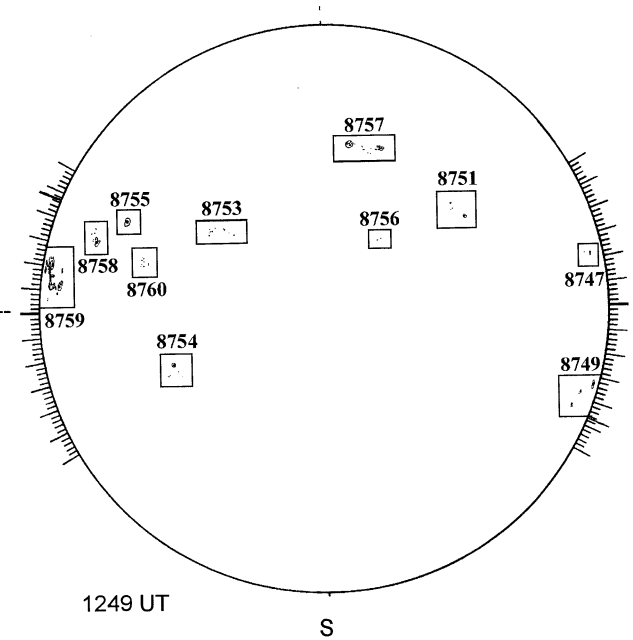
MT. WILSON MAGNETOGRAM



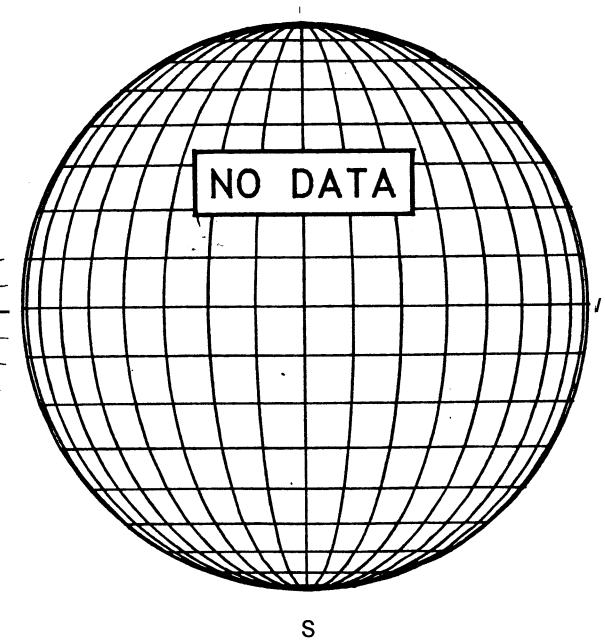
MEUDON H-ALPHA



RAMEY SUNSPOT

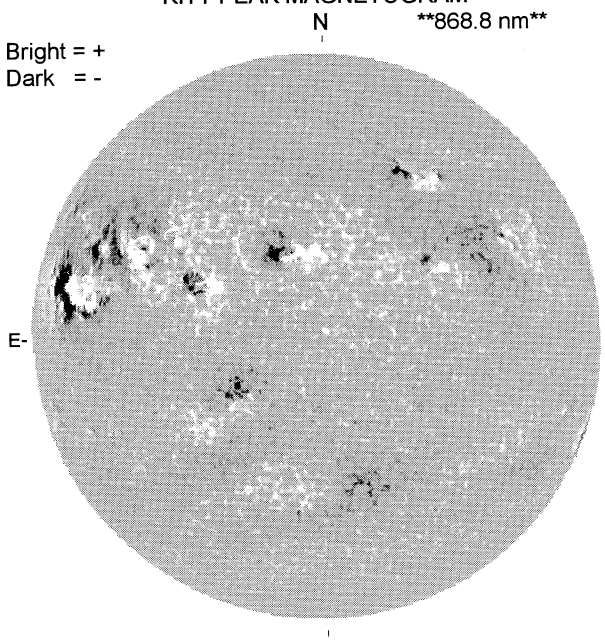


SACRAMENTO PEAK CORONA (1.15 Radii)----



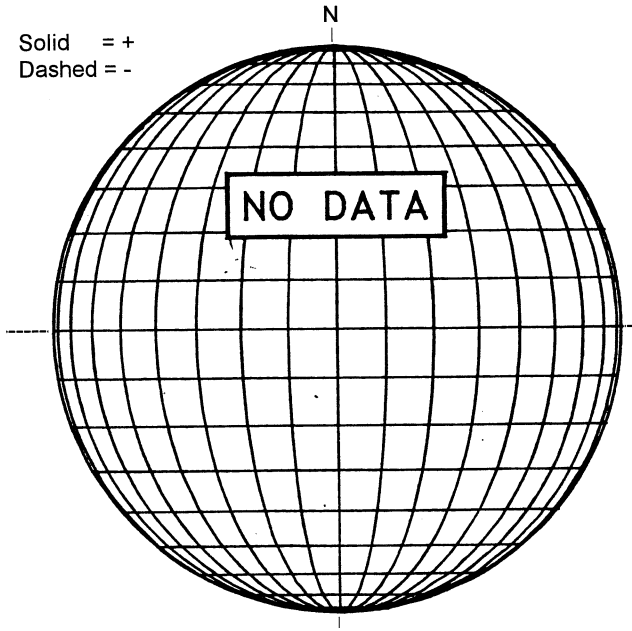
NOVEMBER 8, 1999 (P= 23.25, Bo = 3.69, Lo = 359.61)

KITT PEAK MAGNETOGRAM

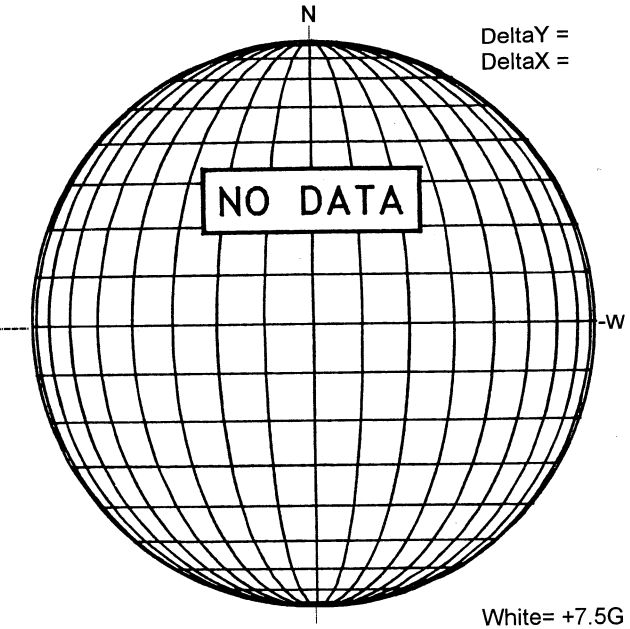


1643 UT

STANFORD MAGNETOGRAM

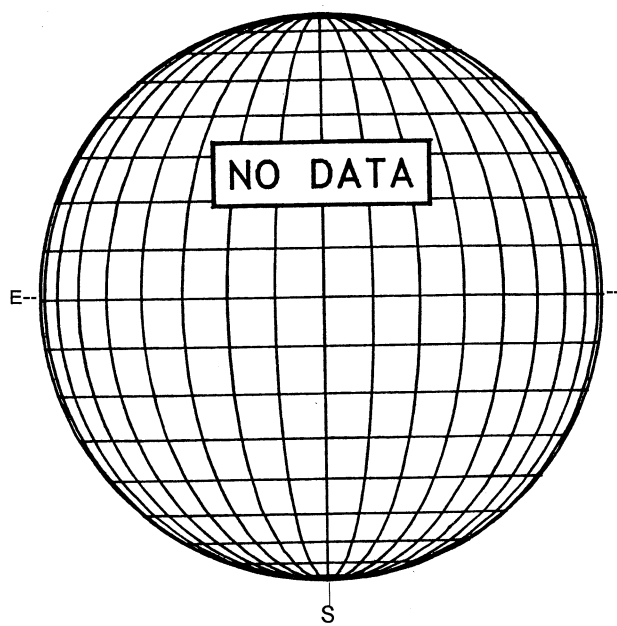


MT. WILSON MAGNETOGRAM

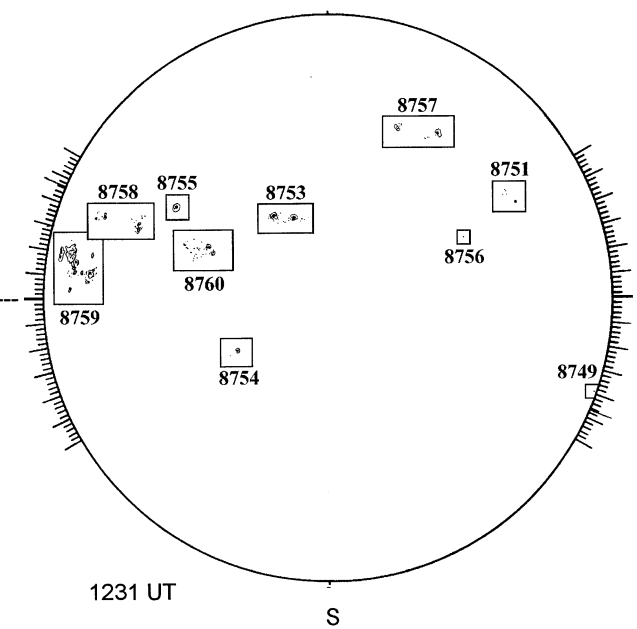


White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

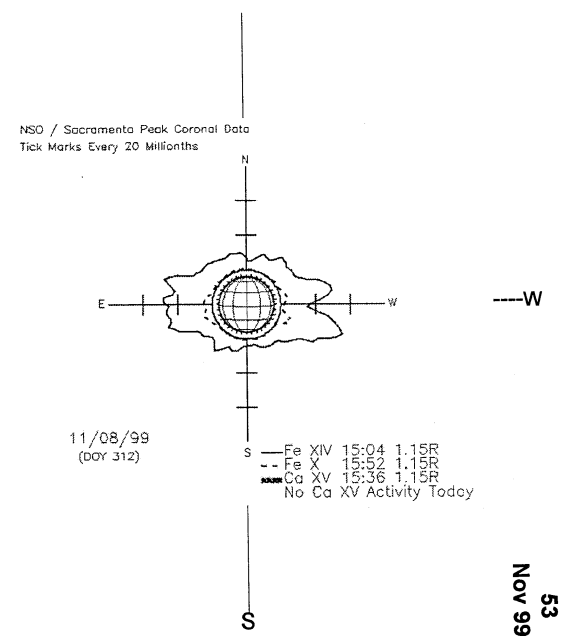


RAMEY SUNSPOT



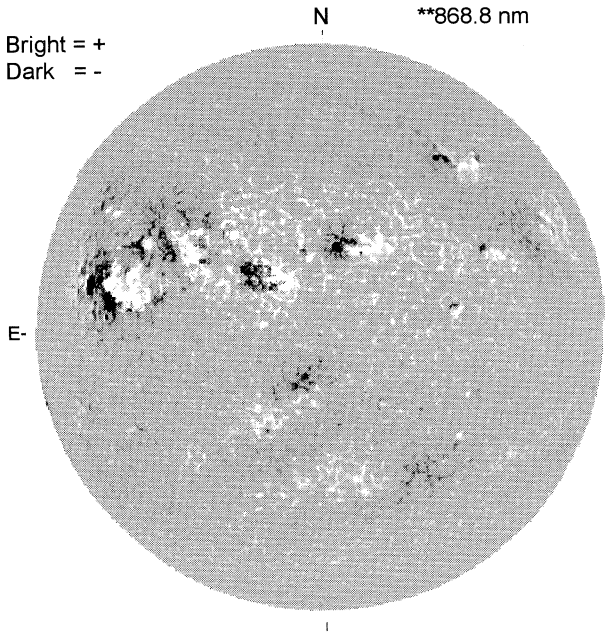
1231 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

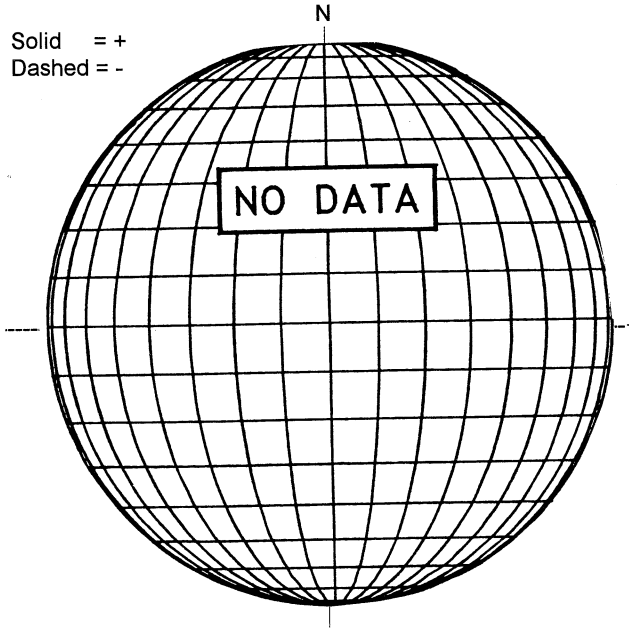


NOVEMBER 9, 1999 (P= 23.03, Bo = 3.58, Lo = 346.43)

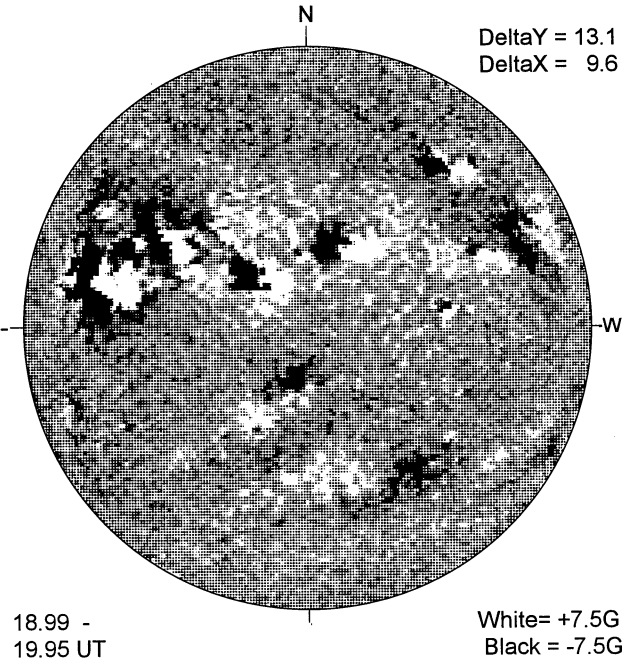
KITT PEAK MAGNETOGRAM



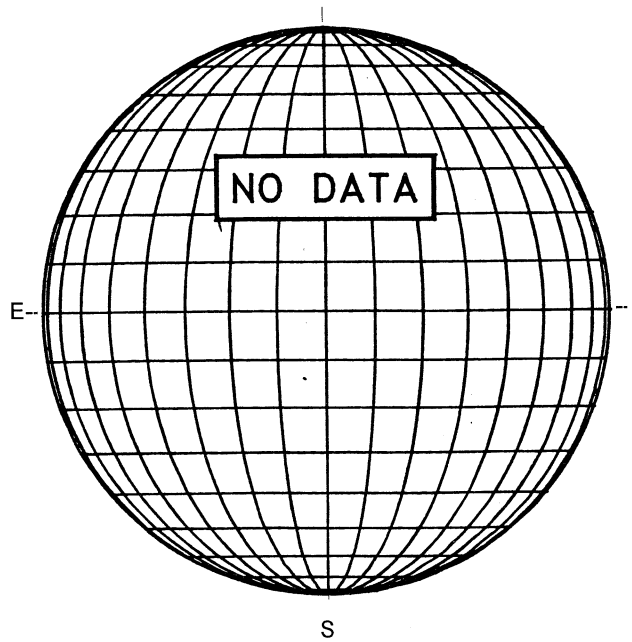
STANFORD MAGNETOGRAM



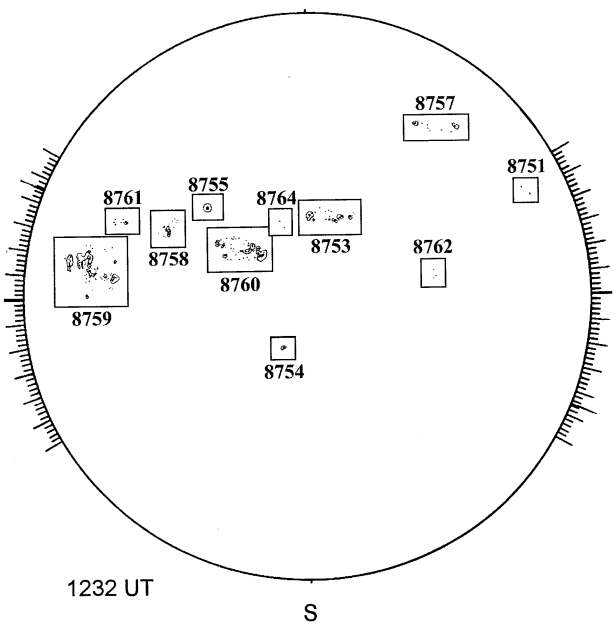
MT. WILSON MAGNETOGRAM



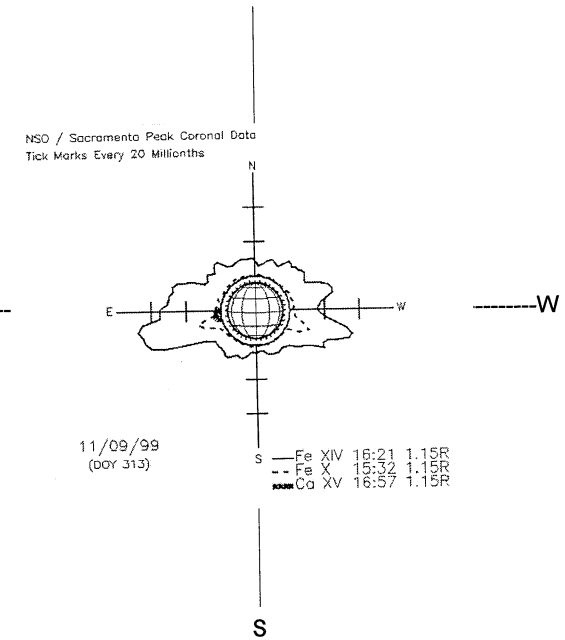
MEUDON H-ALPHA



RAMEY SUNSPOT

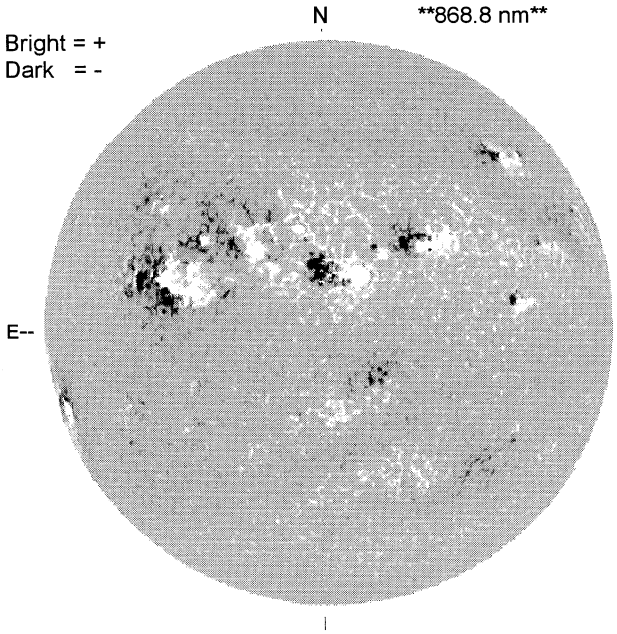


SACRAMENTO PEAK CORONA (1.15 Radii)----

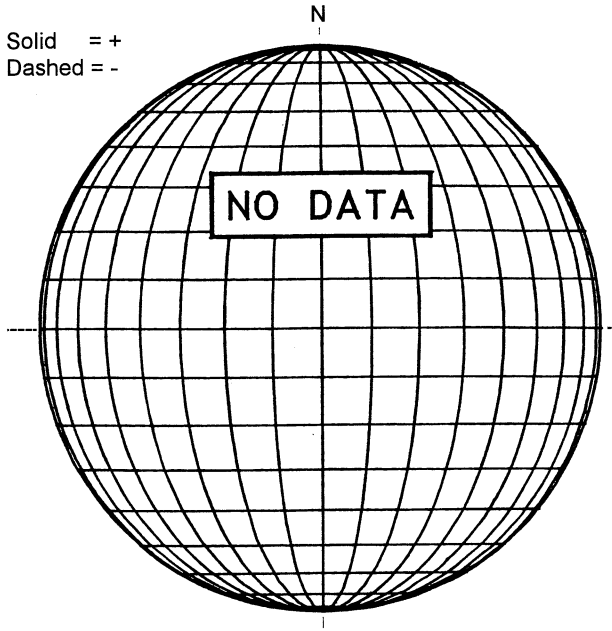


NOVEMBER 10, 1999 (P= 22.80, Bo = 3.47, Lo = 333.25)

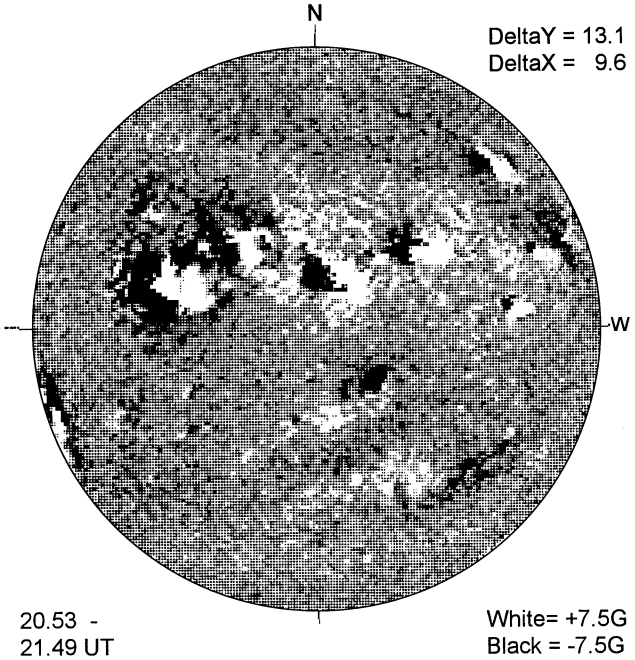
KITT PEAK MAGNETOGRAM



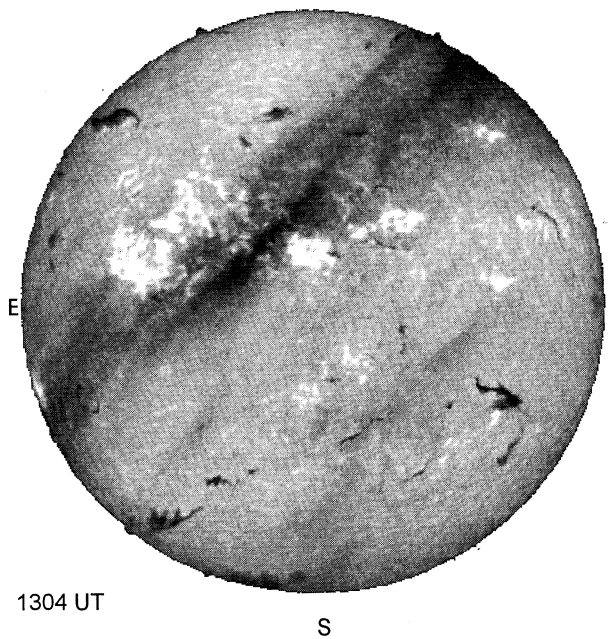
STANFORD MAGNETOGRAM



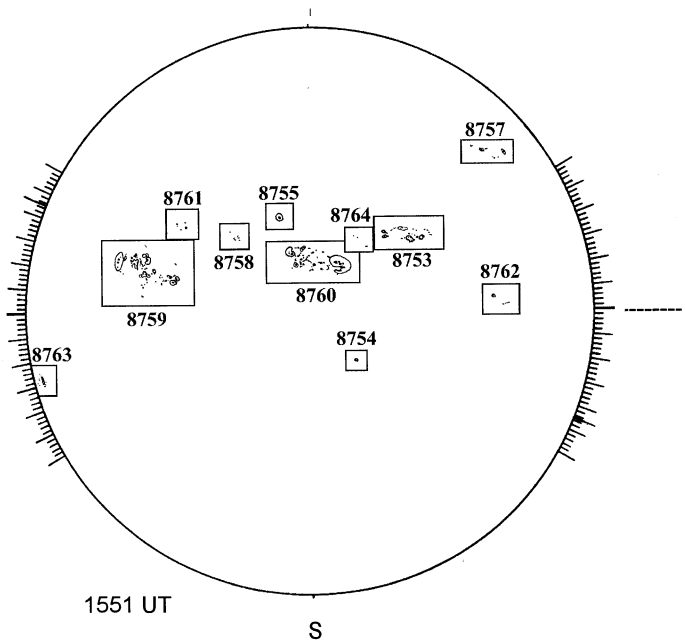
MT. WILSON MAGNETOGRAM



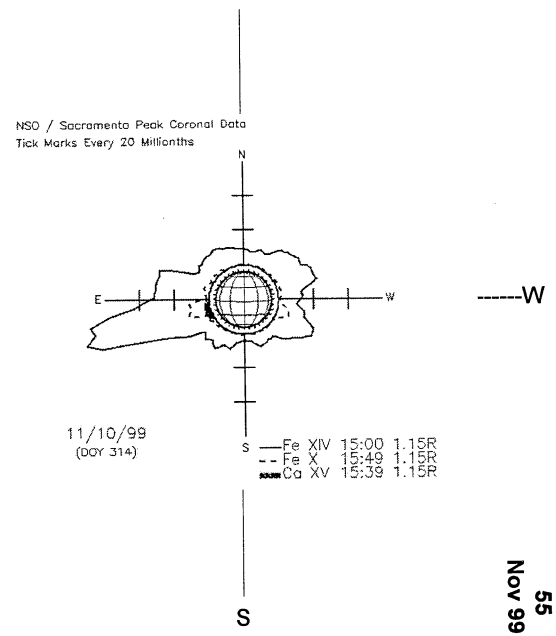
MEUDON H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



NOVEMBER 11, 1999 (P= 22.57, Bo = 3.36, Lo = 320.06)

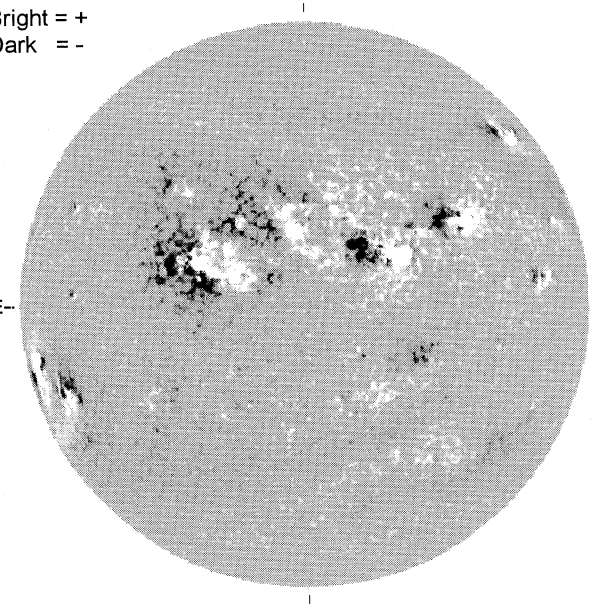
KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -

E--



1812 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

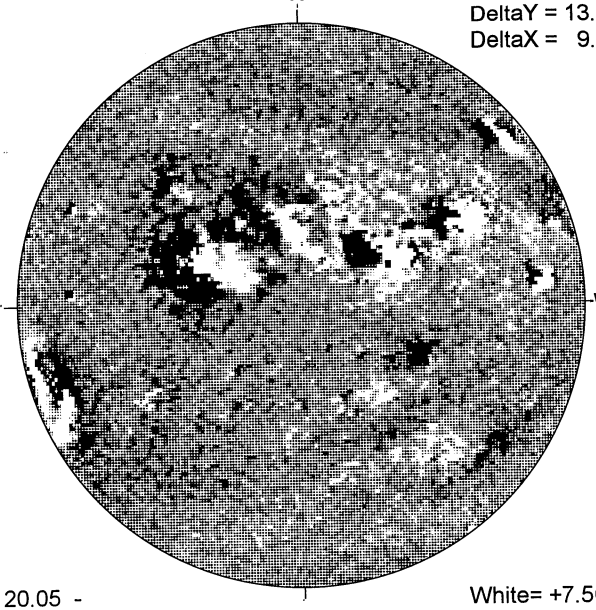
2312 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

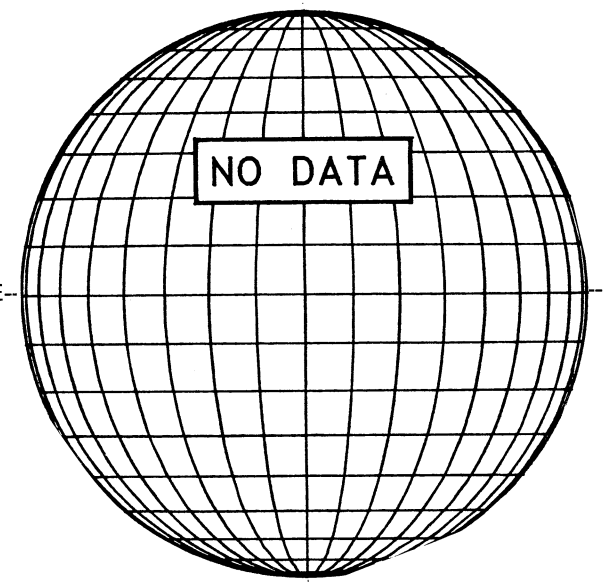
-W



20.05 -
21.01 UT

White= +7.5G
Black = -7.5G

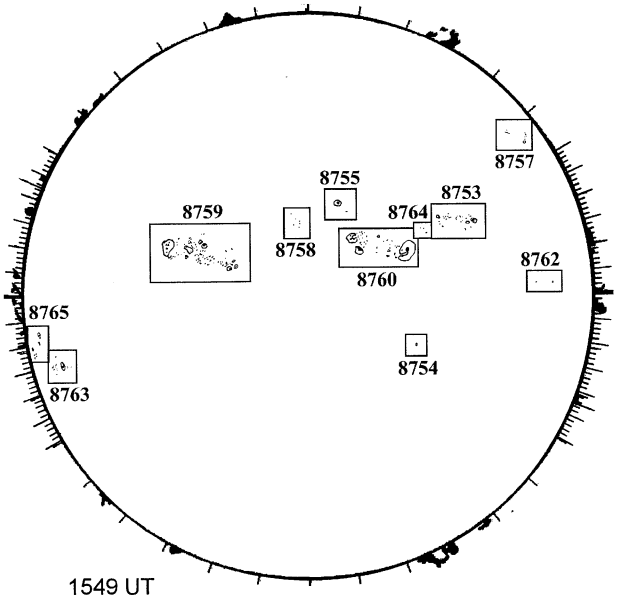
MEUDON H-ALPHA



E--

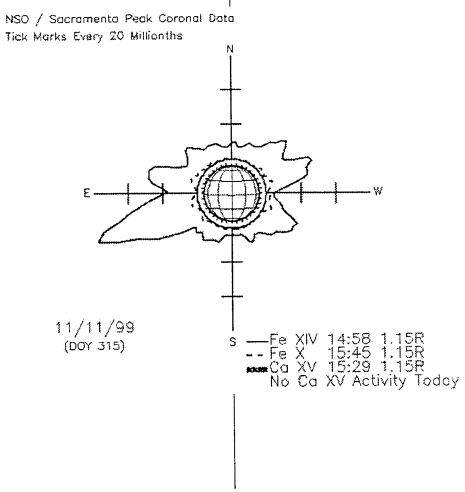
S

HOLLOMAN SUNSPOT



1549 UT
0935 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

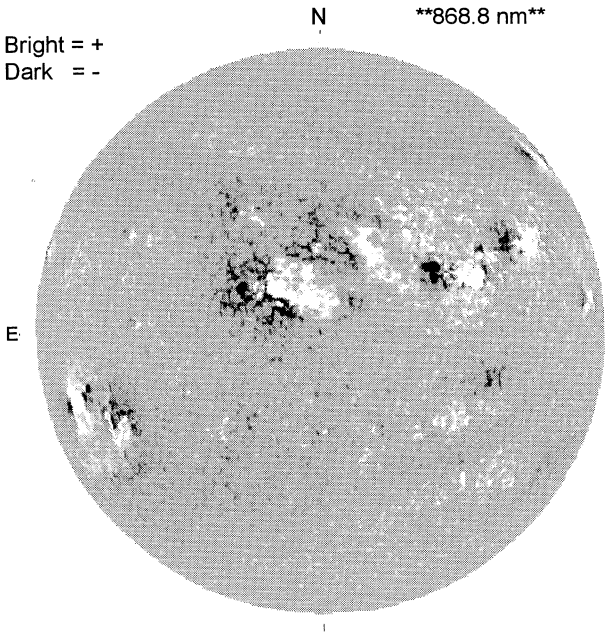


------W

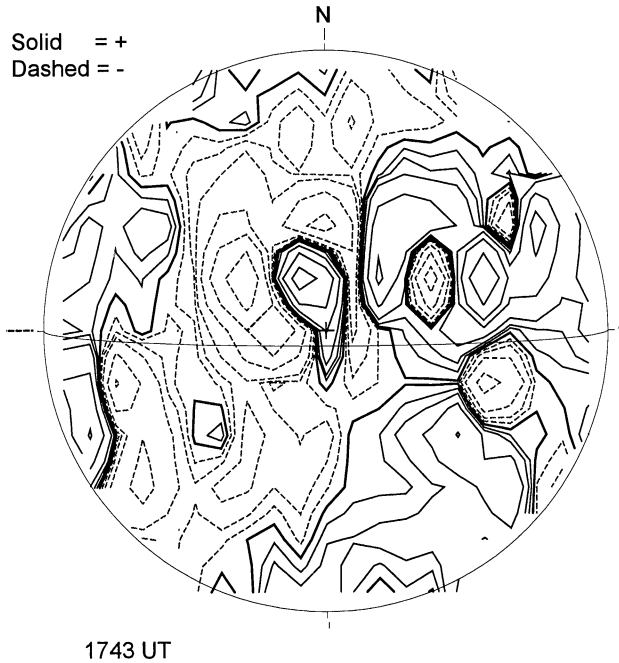
S

NOVEMBER 12, 1999 (P= 22.32, Bo = 3.24, Lo = 306.88)

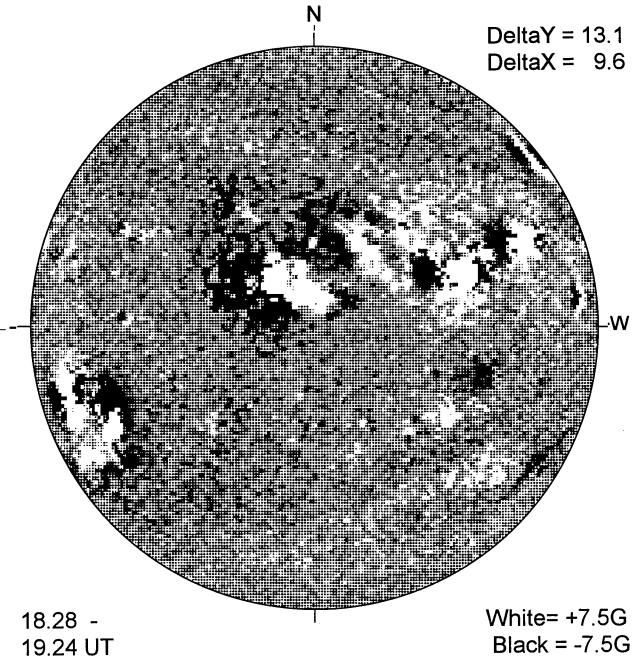
KITT PEAK MAGNETOGRAM



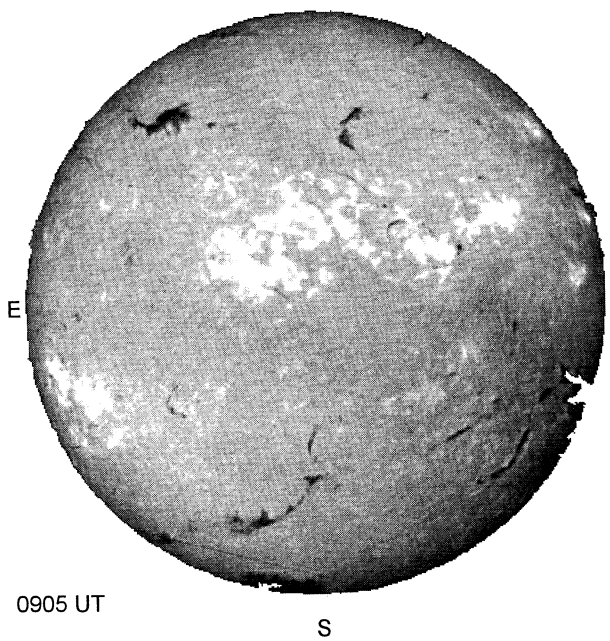
STANFORD MAGNETOGRAM



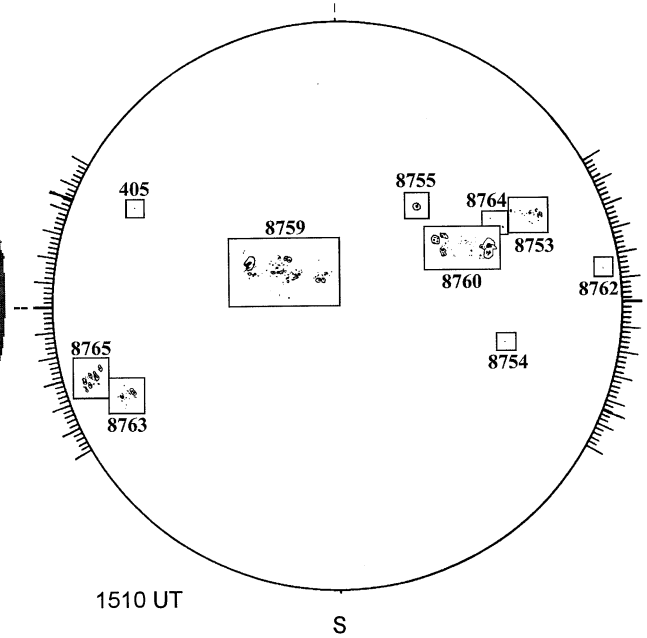
MT. WILSON MAGNETOGRAM



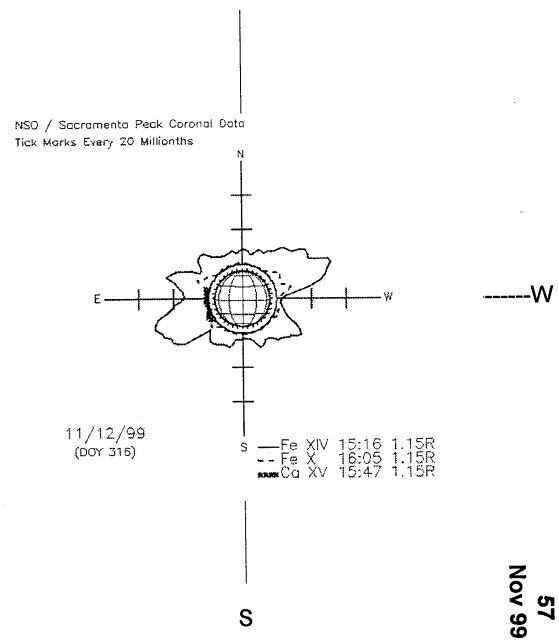
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

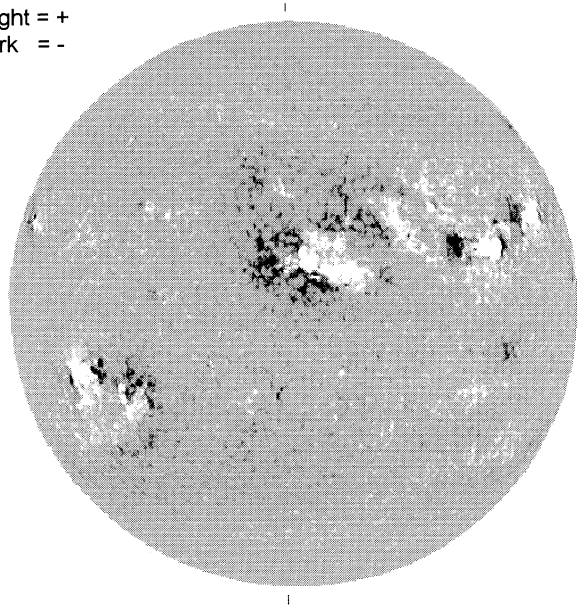


NOVEMBER 13, 1999 (P= 22.07, Bo = 3.13, Lo = 293.70)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



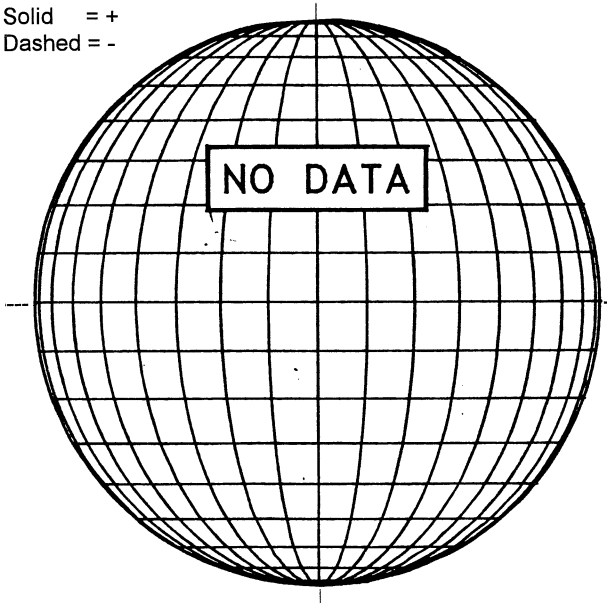
E--

1617 UT

STANFORD MAGNETOGRAM

N

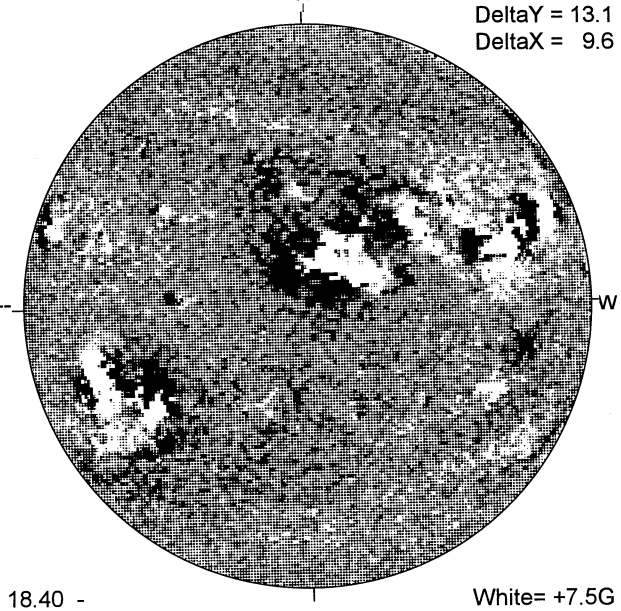
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

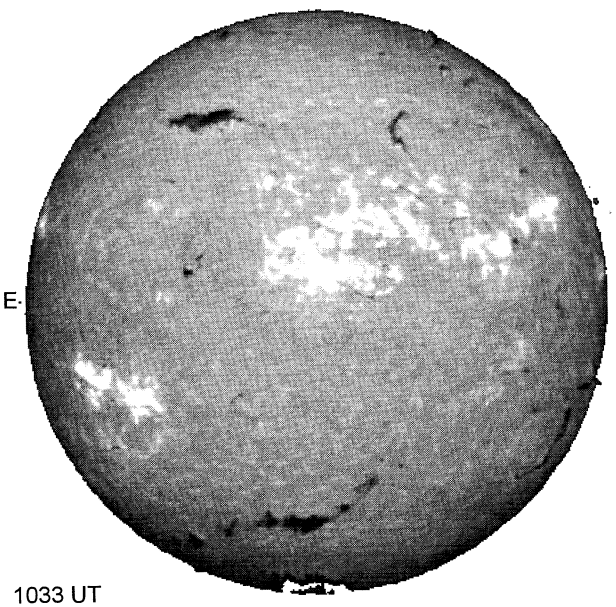


W

18.40 -
19.36 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

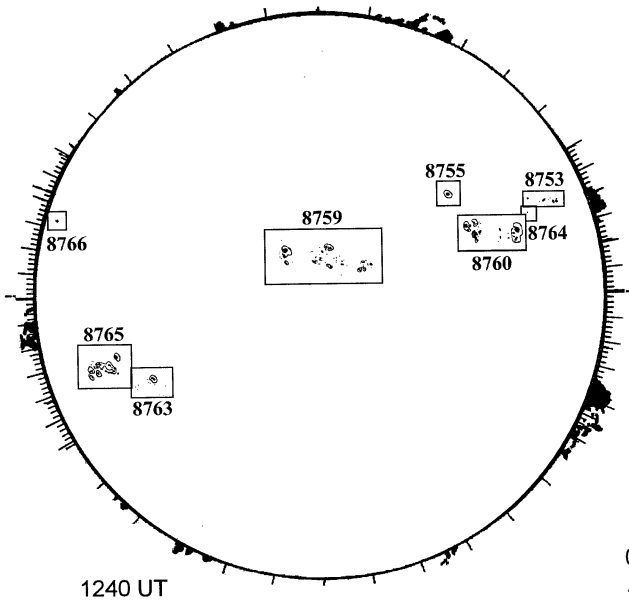


E-

1033 UT

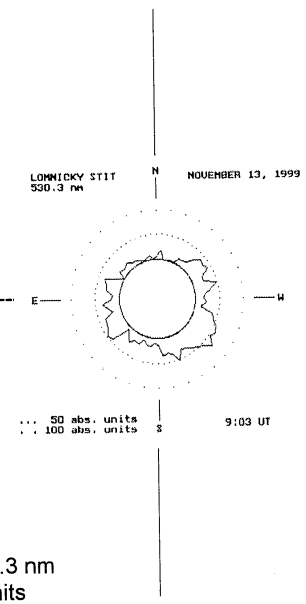
S

RAMEY SUNSPOT



1240 UT
0837 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



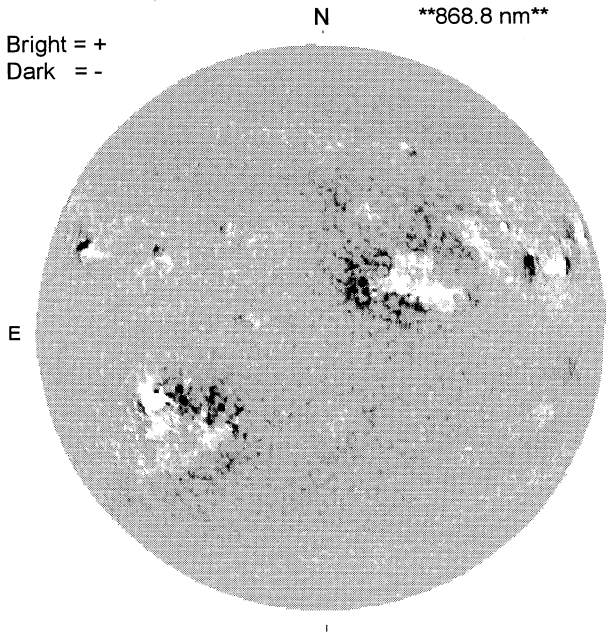
----------W

0903 UT, 530.3 nm
.... 50 abs. units
. . 100 abs. units

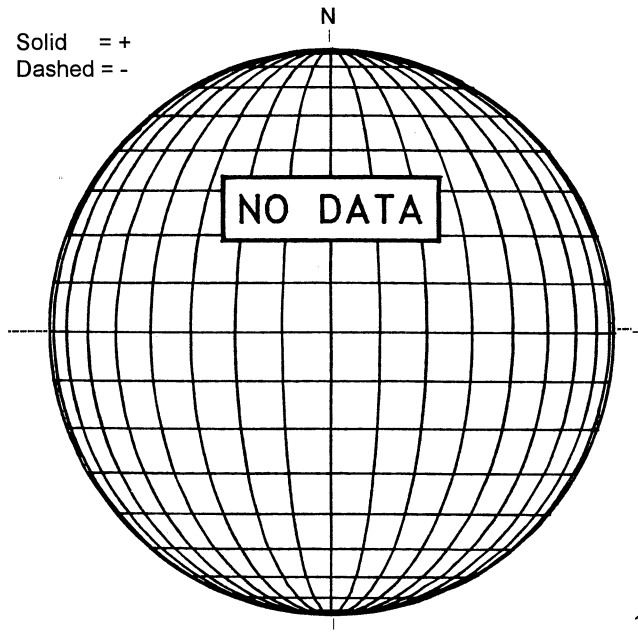
S

NOVEMBER 14, 1999 (P= 21.81, Bo = 3.01, Lo = 280.51)

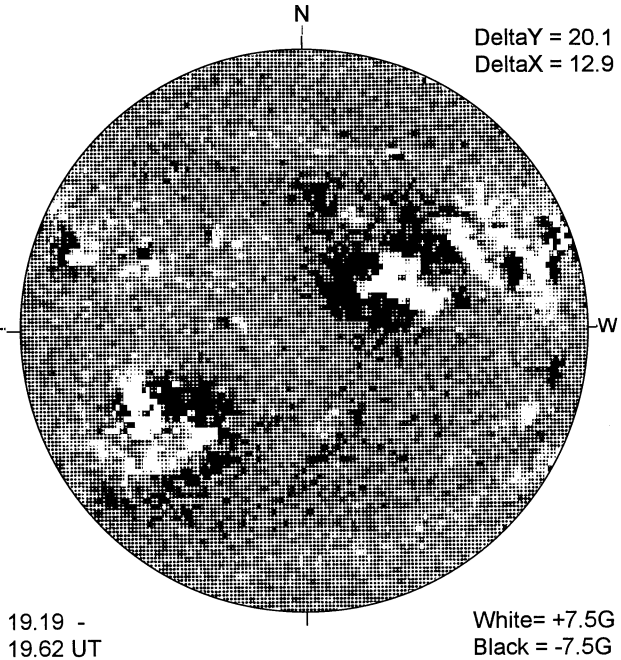
KITT PEAK MAGNETOGRAM



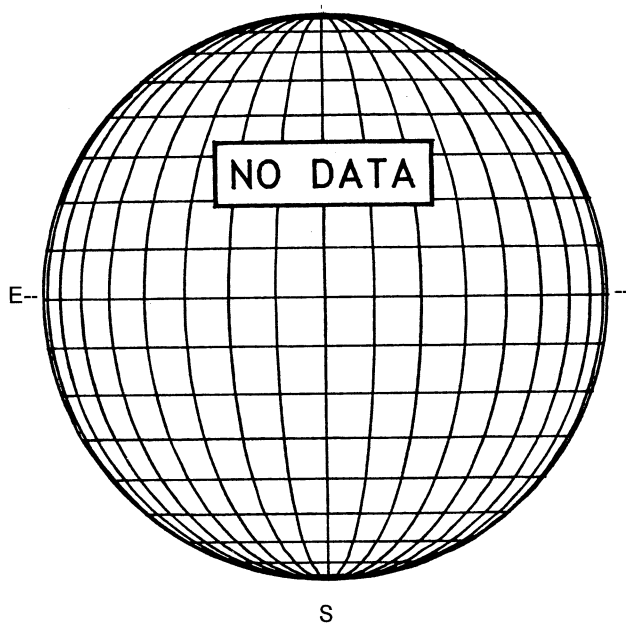
STANFORD MAGNETOGRAM



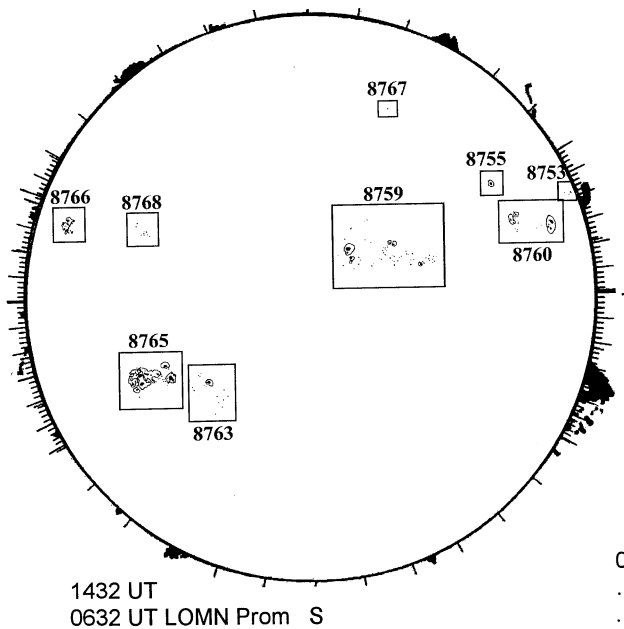
MT. WILSON MAGNETOGRAM



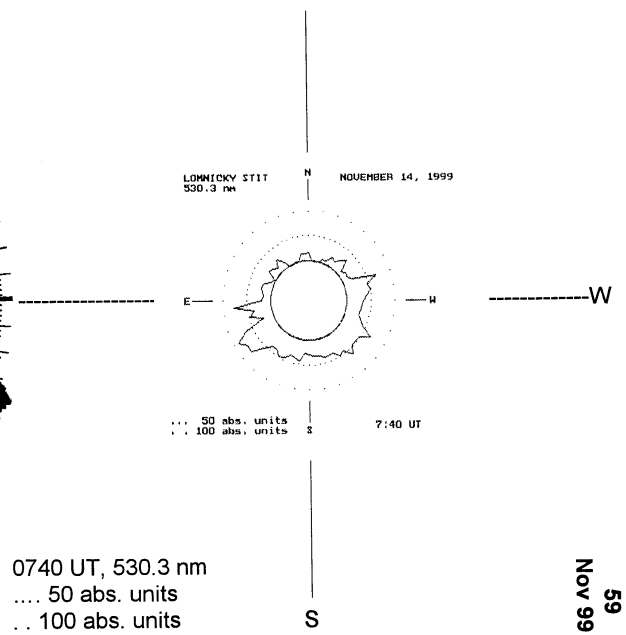
MEUDON H-ALPHA



RAMEY SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)----



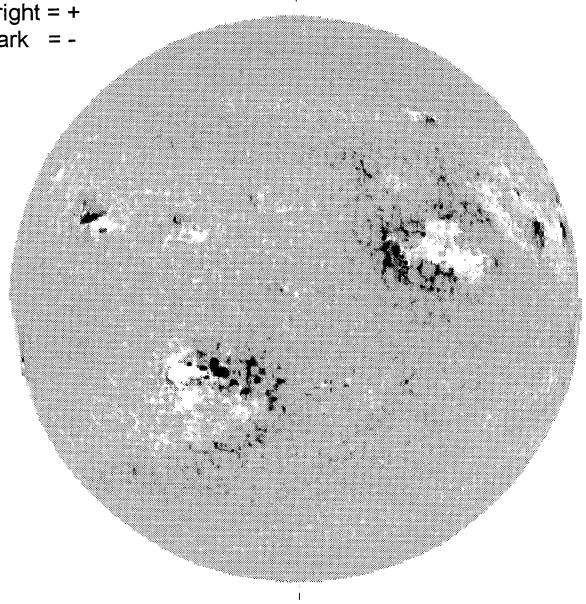
Nov 99

NOVEMBER 15, 1999 (P= 21.54, Bo = 2.90, Lo = 267.33)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



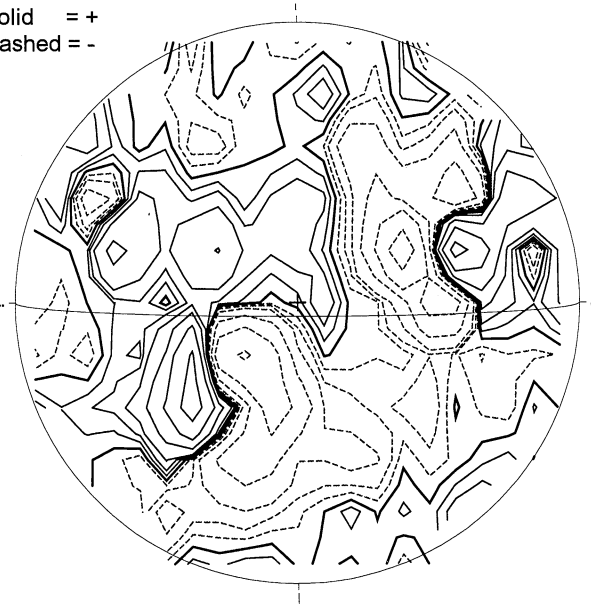
E

1623 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

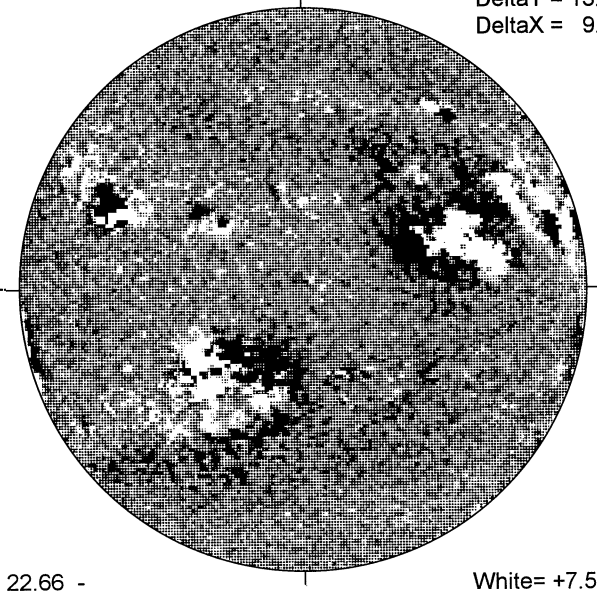


2102 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

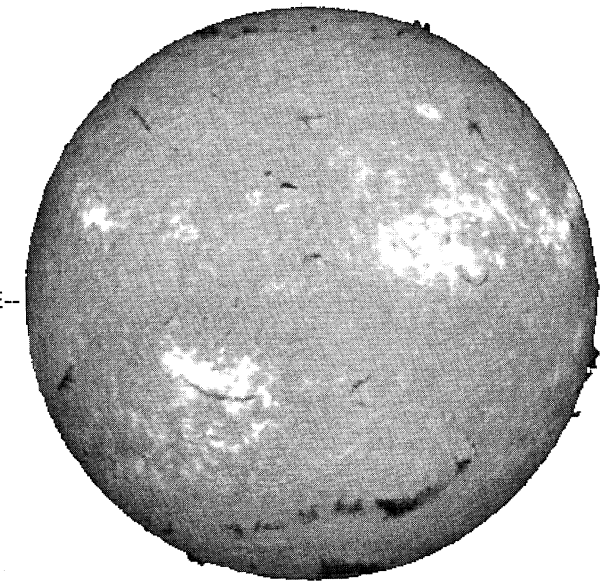


W

22.66 -
23.63 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

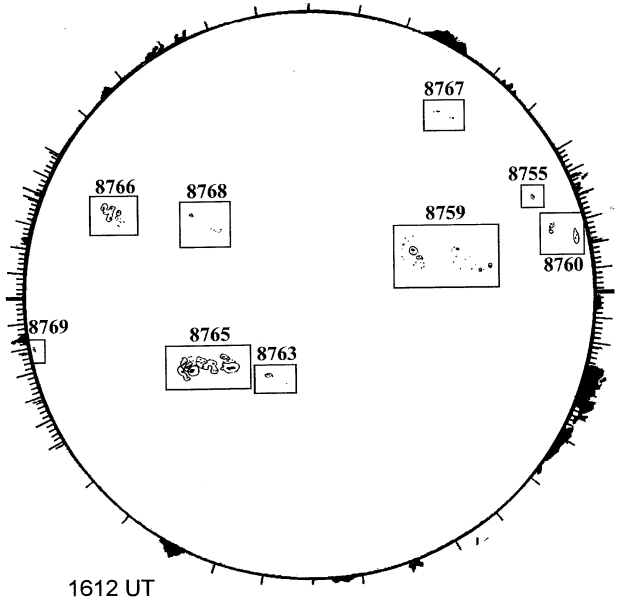


E

0906 UT

S

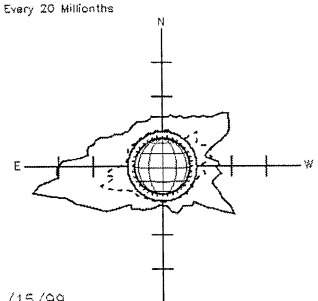
HOLLOMAN SUNSPOT



1612 UT
1312 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / Sacramento Peak Coronal Data
Tick Marks Every 20 Millionths



W

11/15/99
(DOY 319)

Fe XIV 15:27 1.15R
Fe X 16:23 1.15R
Ca XV 16:2 1.15R
No Ca XV Activity Today

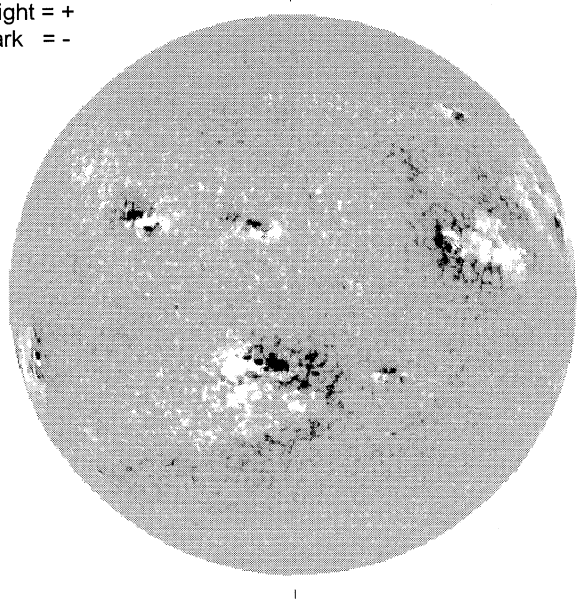
S

NOVEMBER 16, 1999 (P= 21.27, Bo = 2.78, Lo = 254.15)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



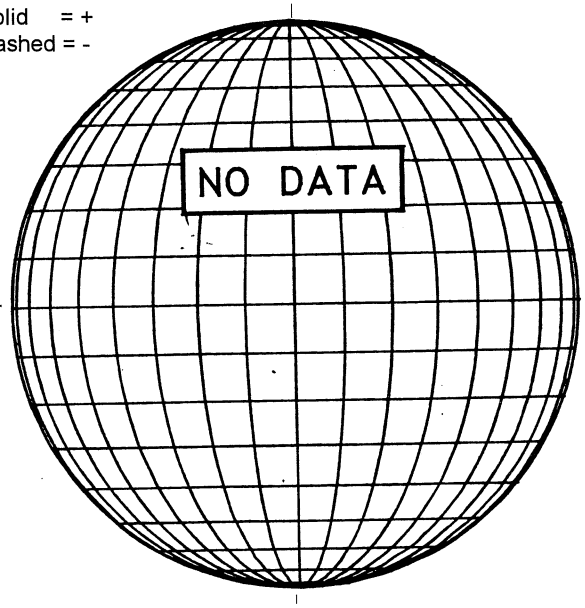
E

1614 UT

STANFORD MAGNETOGRAM

N

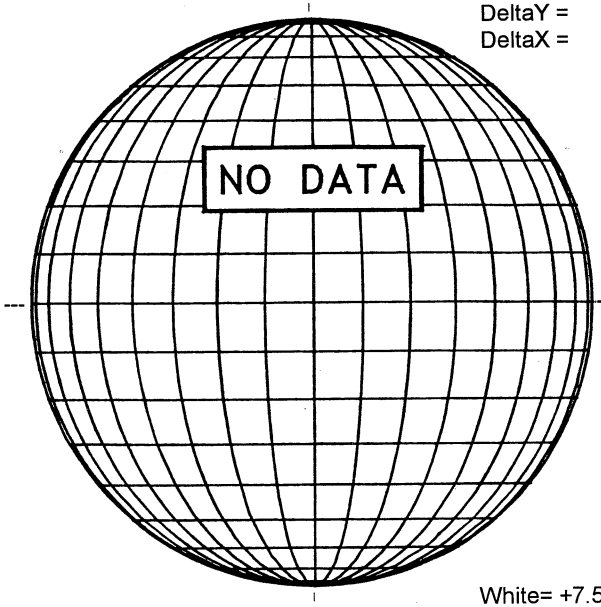
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

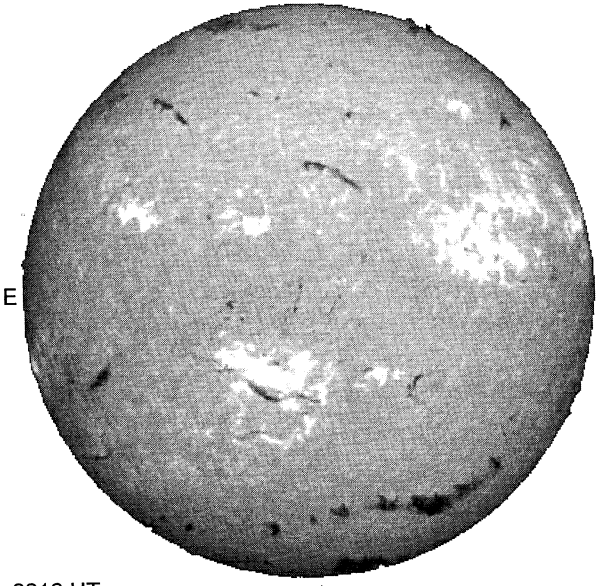
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

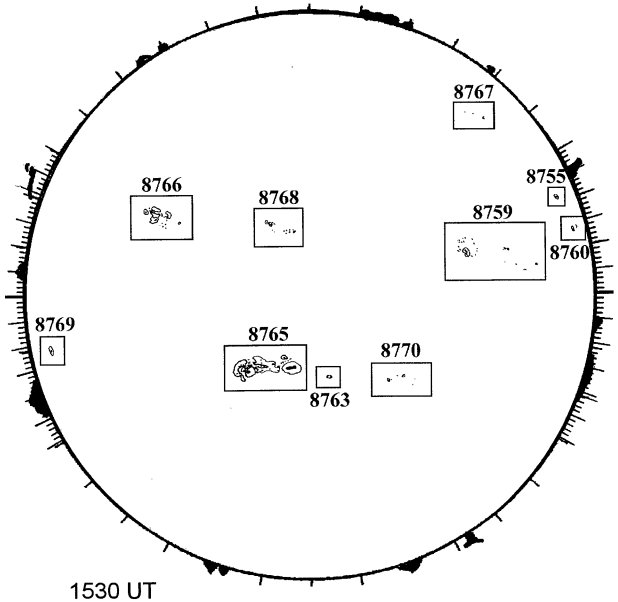


E

0816 UT

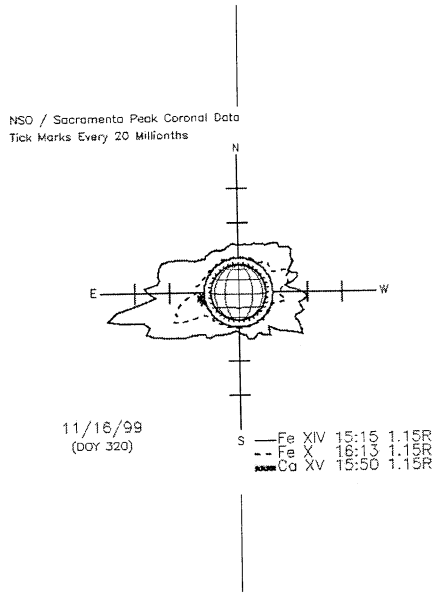
S

HOLLOMAN SUNSPOT



1530 UT
0709 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

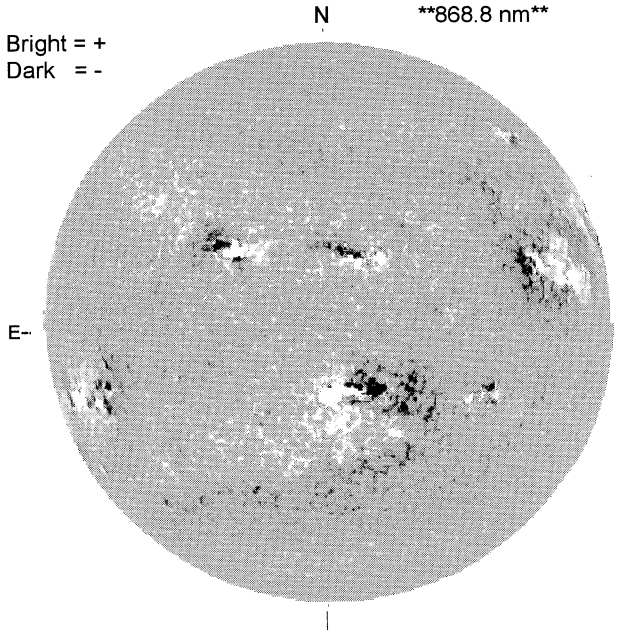


-----W

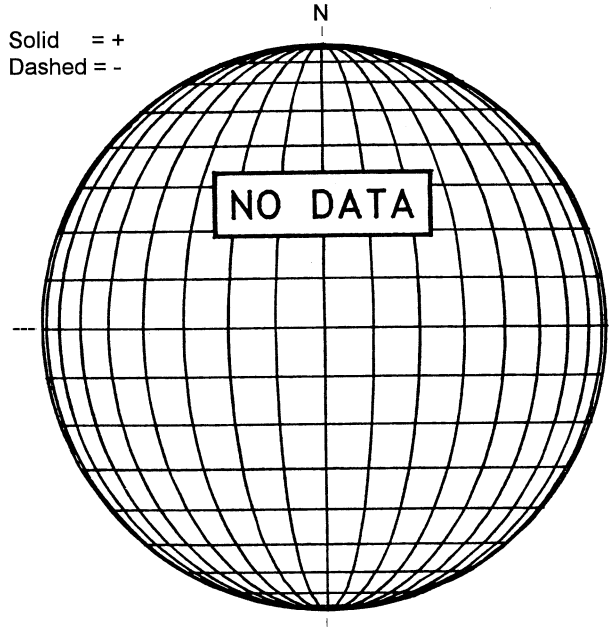
S

NOVEMBER 17, 1999 (P= 20.98, Bo = 2.66, Lo = 240.97)

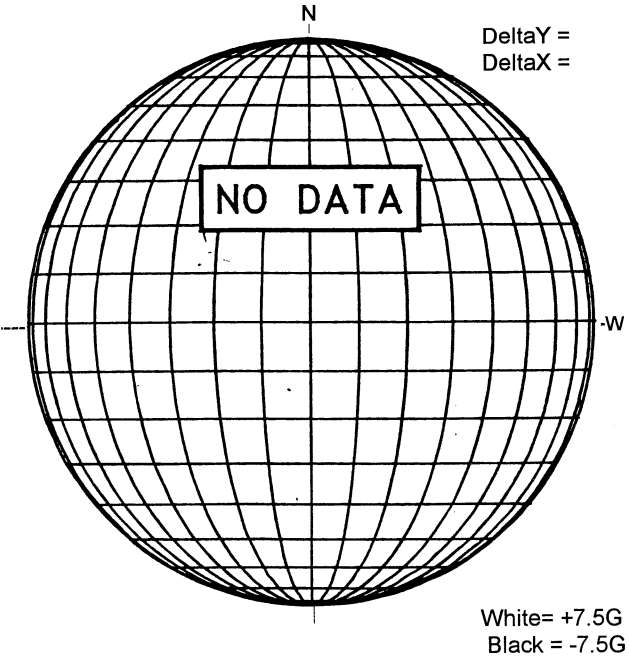
KITT PEAK MAGNETOGRAM



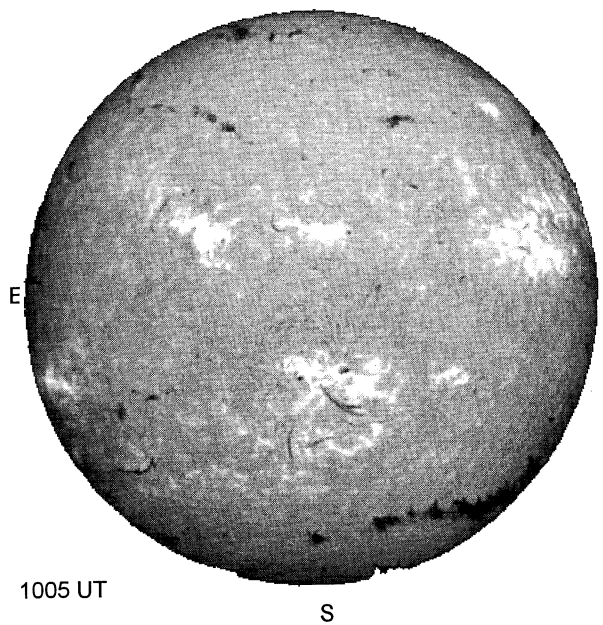
STANFORD MAGNETOGRAM



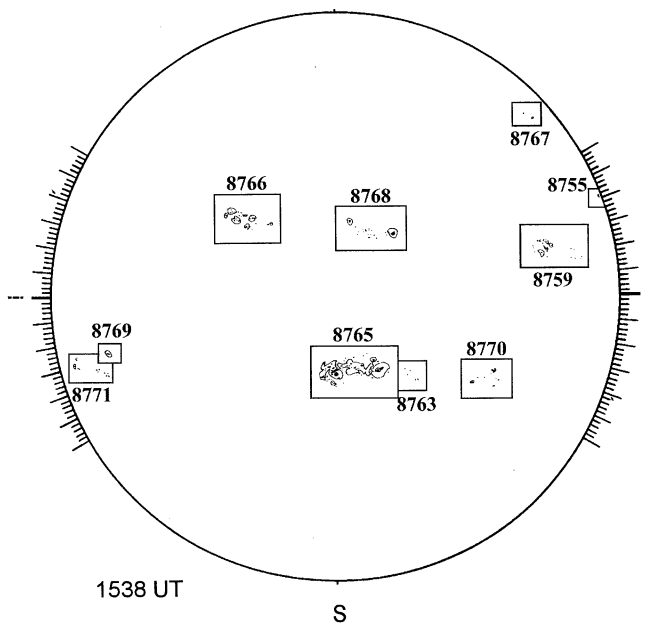
MT. WILSON MAGNETOGRAM



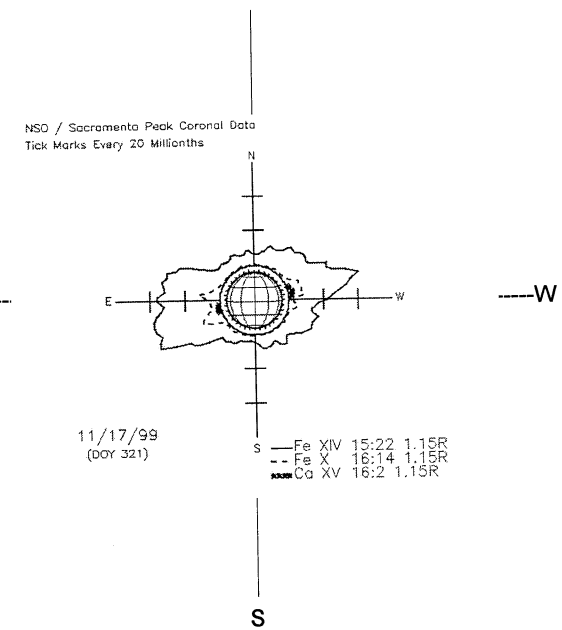
MEUDON H-ALPHA



HOLLOMAN SUNSPOT

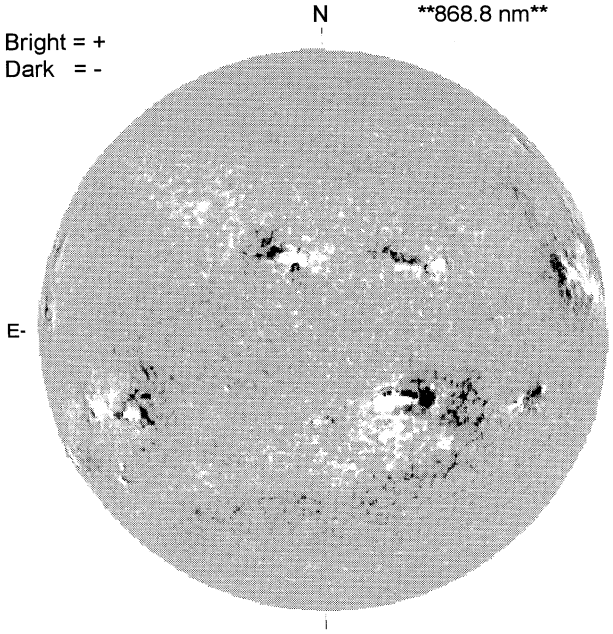


SACRAMENTO PEAK CORONA (1.15 Radii)----

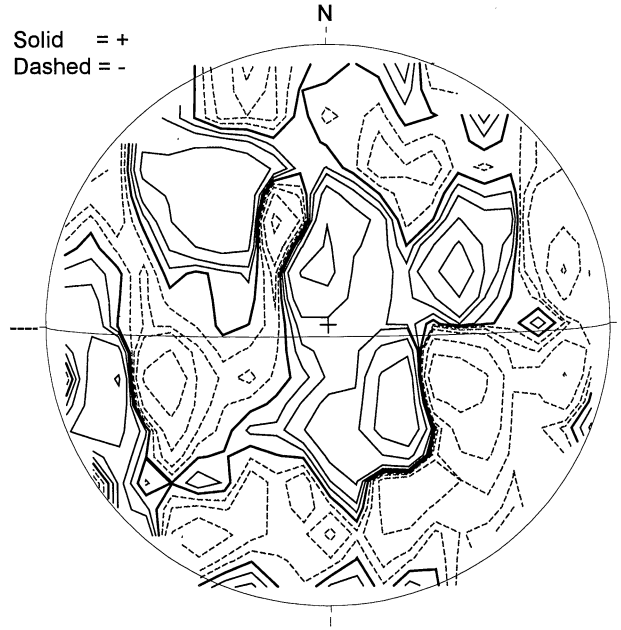


NOVEMBER 18, 1999 (P= 20.69, Bo = 2.54, Lo = 227.78)

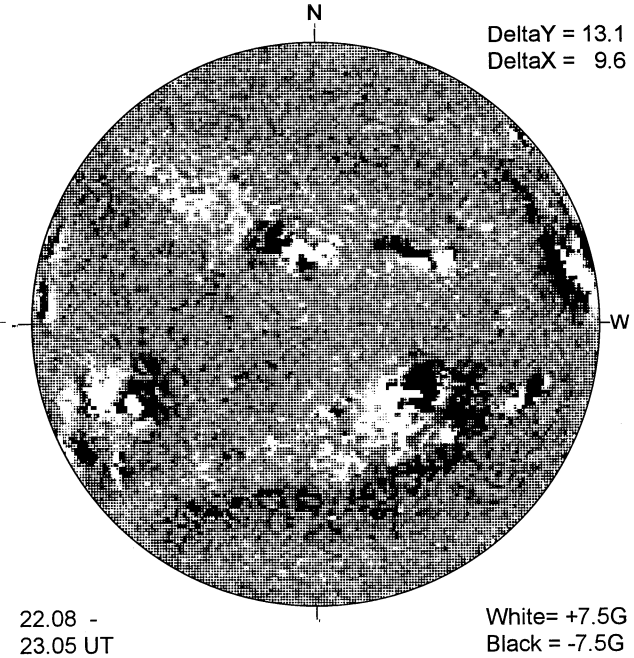
KITT PEAK MAGNETOGRAM



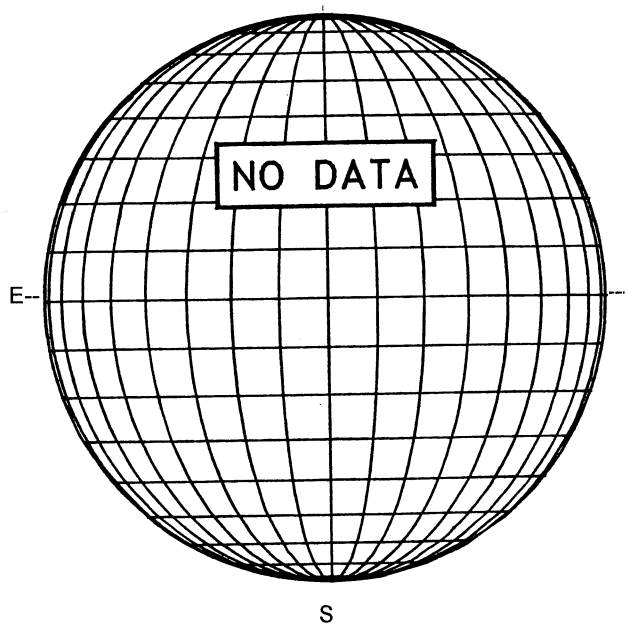
STANFORD MAGNETOGRAM



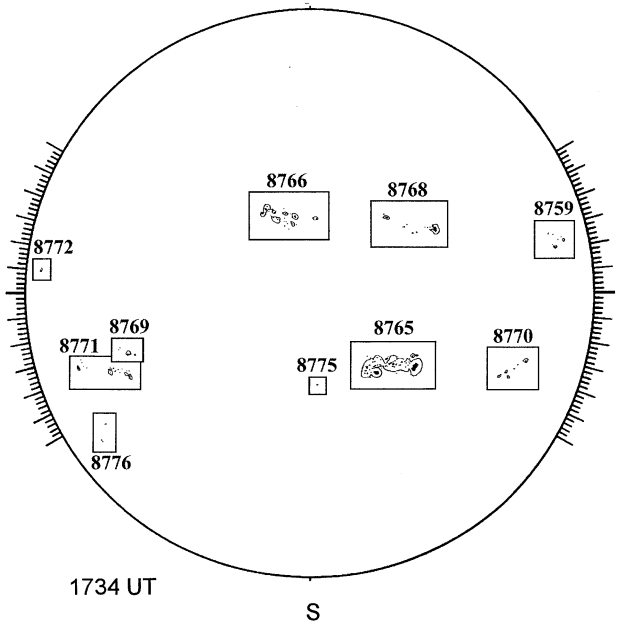
MT. WILSON MAGNETOGRAM



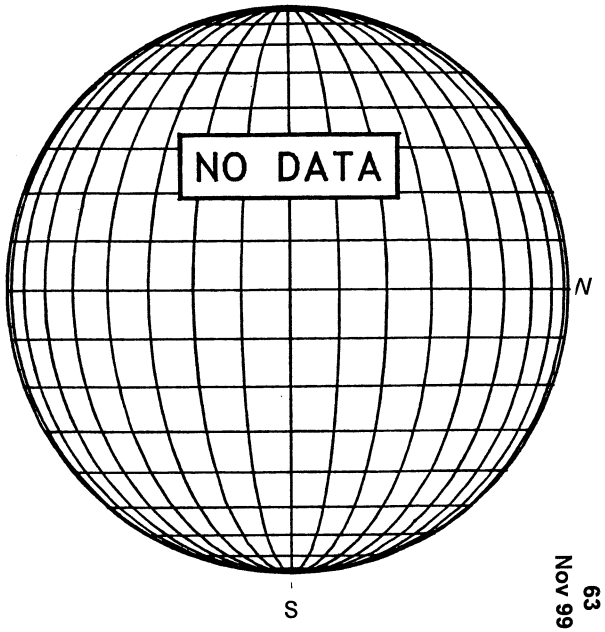
MEUDON H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



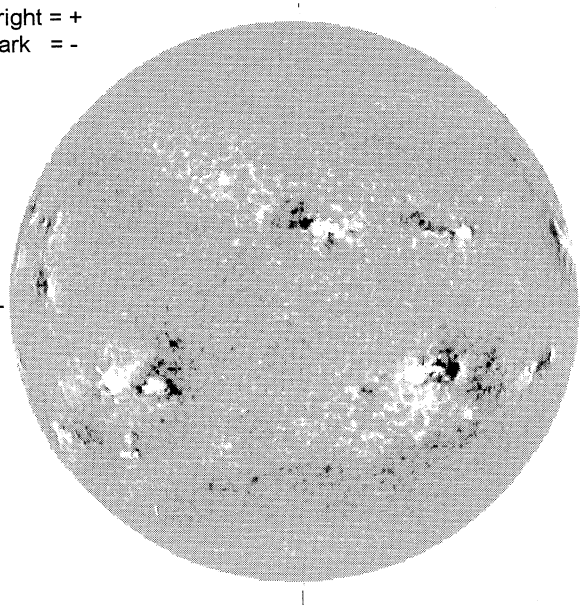
NOVEMBER 19, 1999 (P= 20.40, Bo = 2.42, Lo = 214.60)

KITT PEAK MAGNETOGRAM

N

868.8 nm

Bright = +
Dark = -



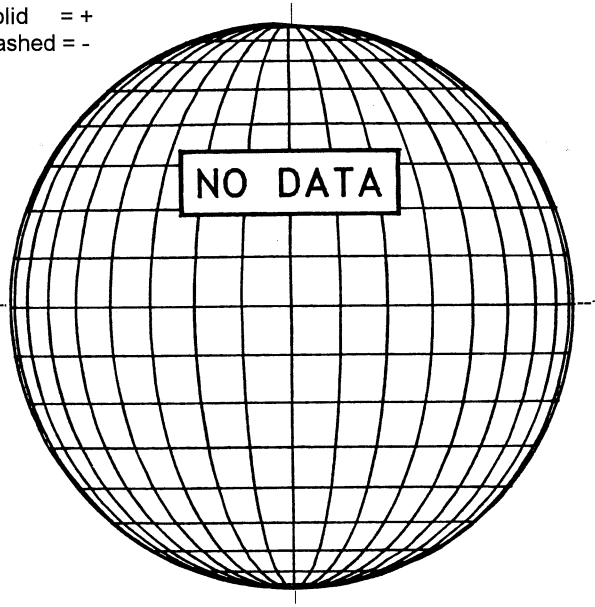
E-

1619 UT

STANFORD MAGNETOGRAM

N

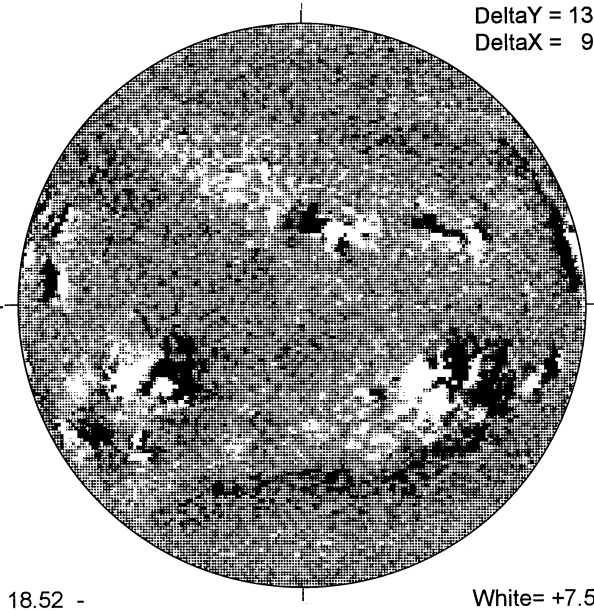
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6



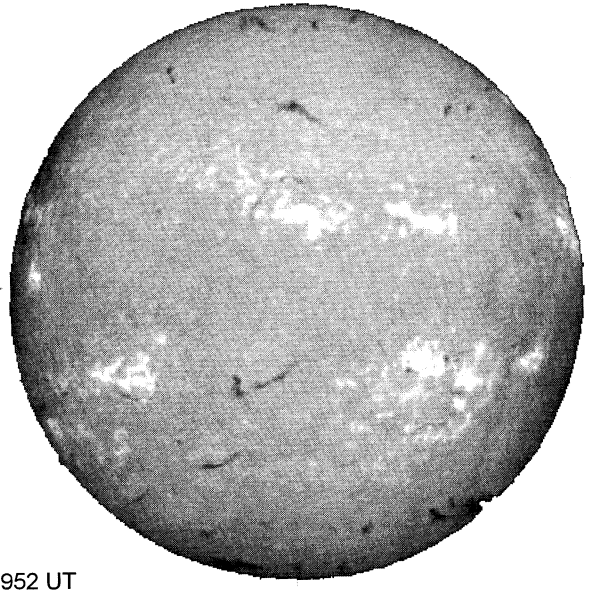
W

18.52 -
19.48 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

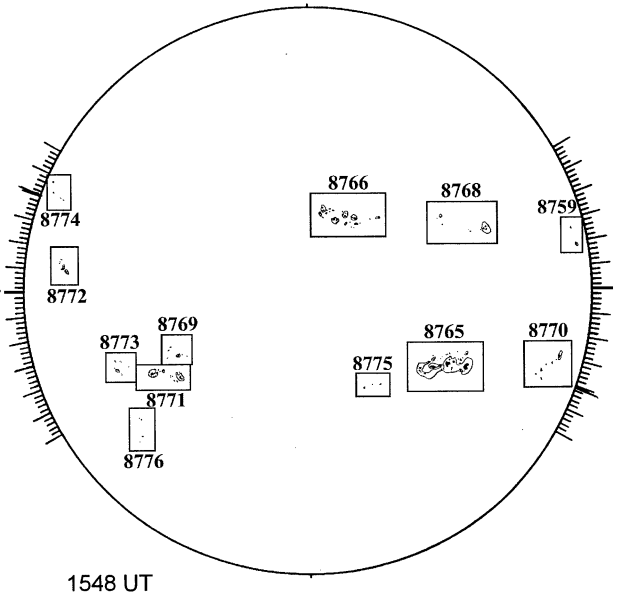
E-



0952 UT

S

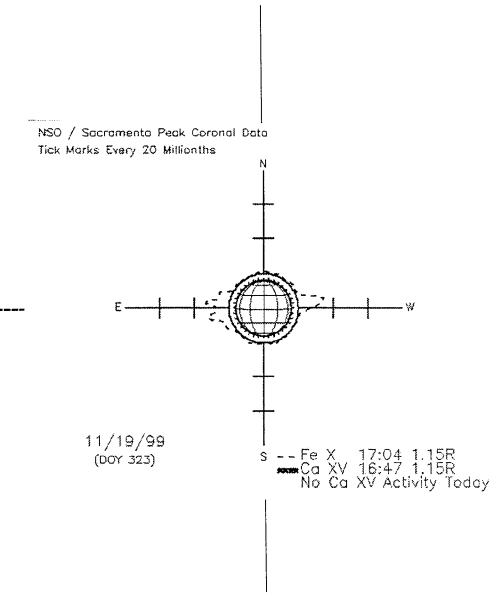
HOLLOMAN SUNSPOT



1548 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

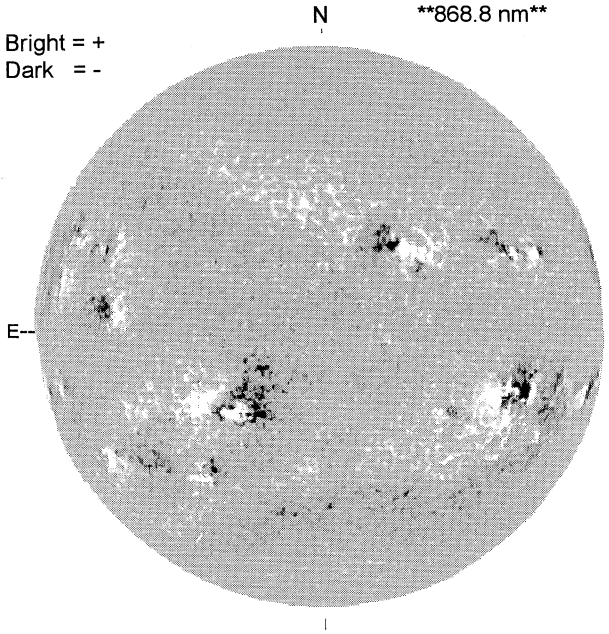


-----W

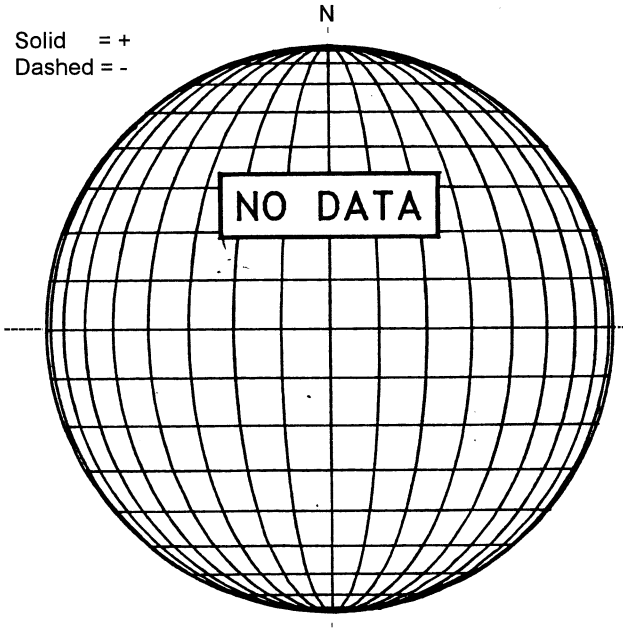
S

NOVEMBER 20, 1999 (P= 20.09, Bo = 2.30, Lo = 201.42)

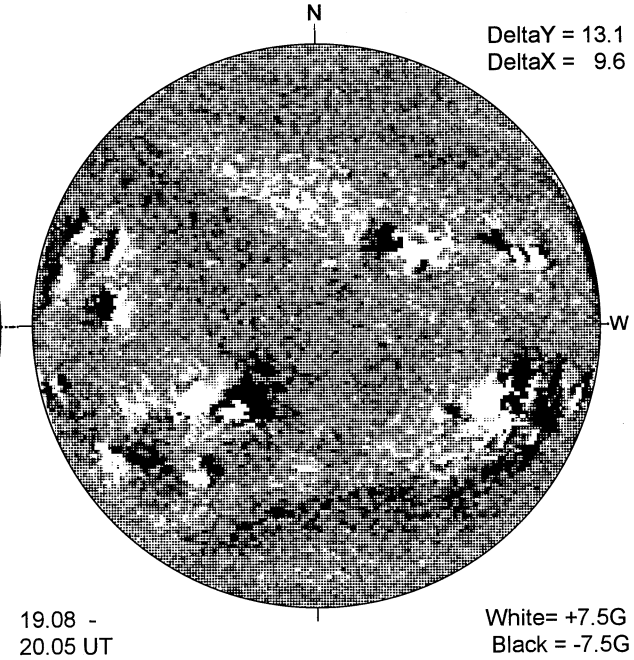
KITT PEAK MAGNETOGRAM



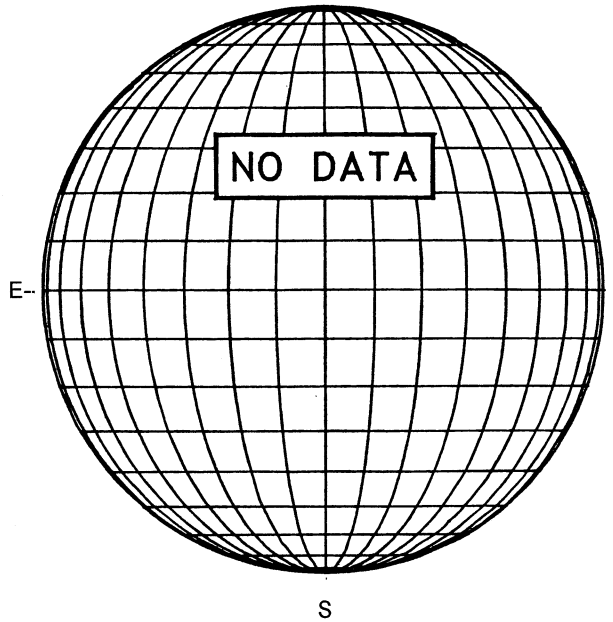
STANFORD MAGNETOGRAM



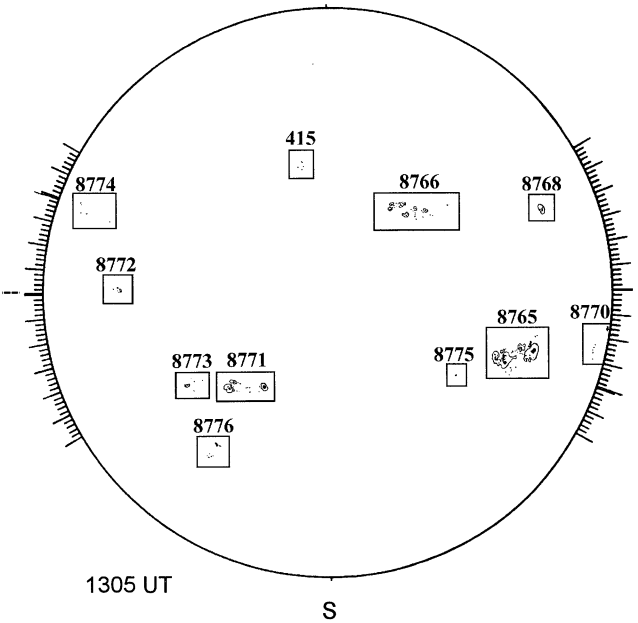
MT. WILSON MAGNETOGRAM



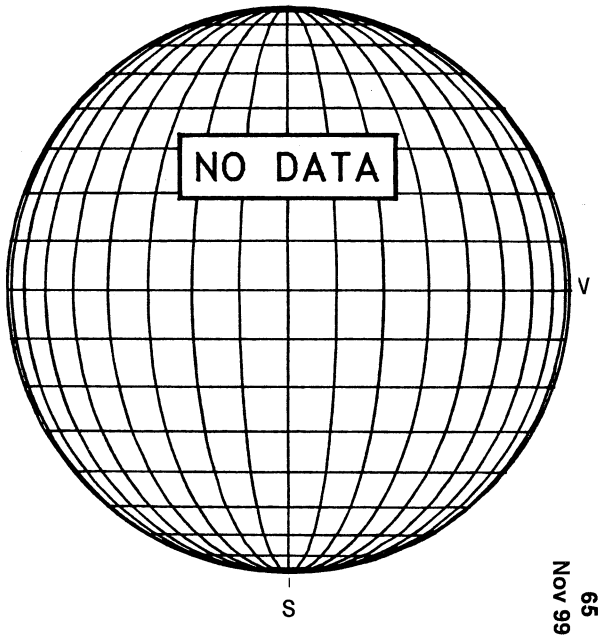
MEUDON H-ALPHA



RAMEY SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)----

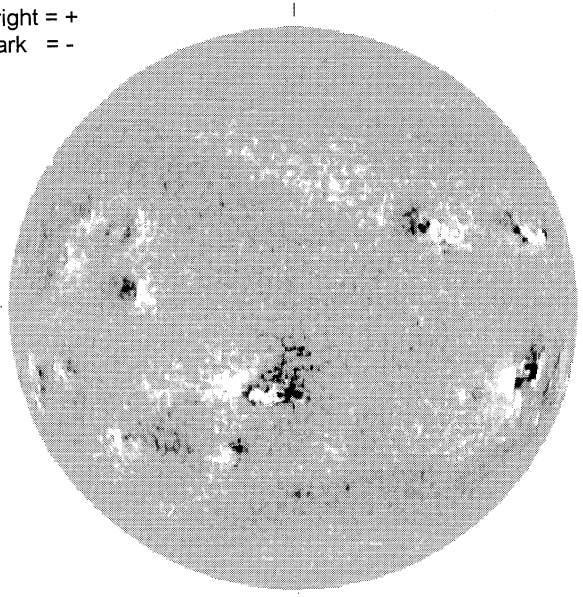


NOVEMBER 21, 1999 (P= 19.78, Bo = 2.18, Lo = 188.24)

KITT PEAK MAGNETOGRAM

868.8 nm

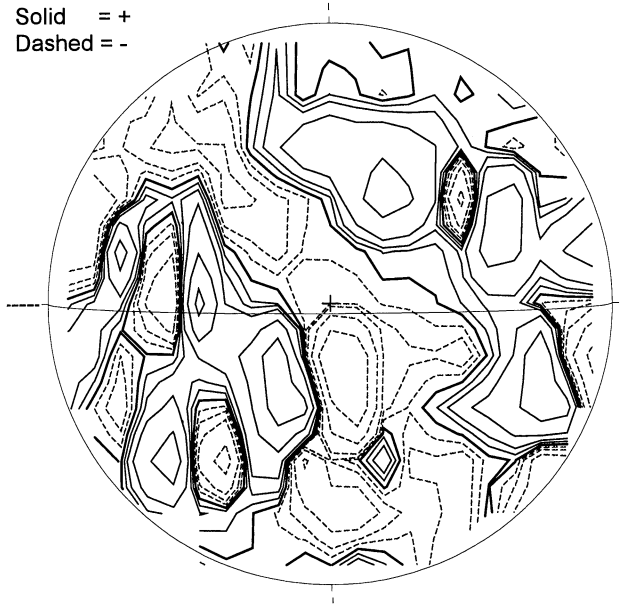
Bright = +
Dark = -



1613 UT

STANFORD MAGNETOGRAM

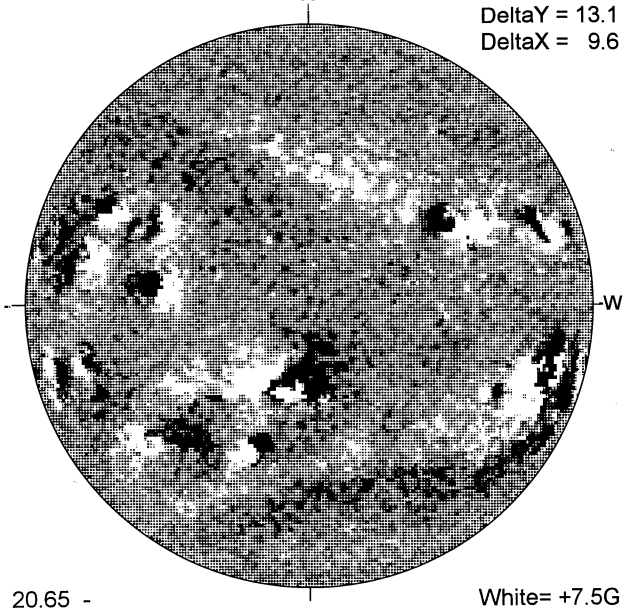
Solid = +
Dashed = -



2114 UT

MT. WILSON MAGNETOGRAM

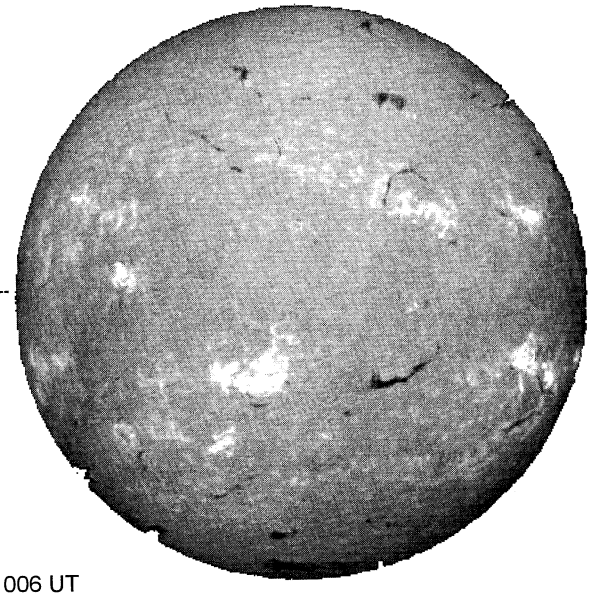
DeltaY = 13.1
DeltaX = 9.6



20.65 -
21.62 UT

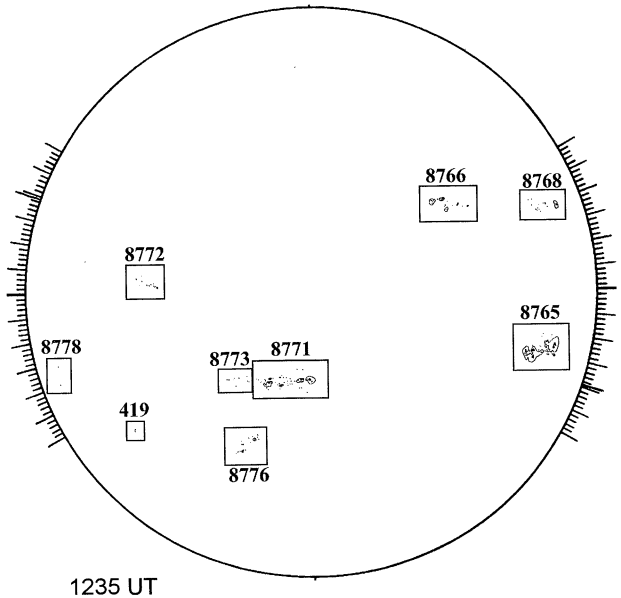
White= +7.5G
Black = -7.5G

MEUDON H-ALPHA



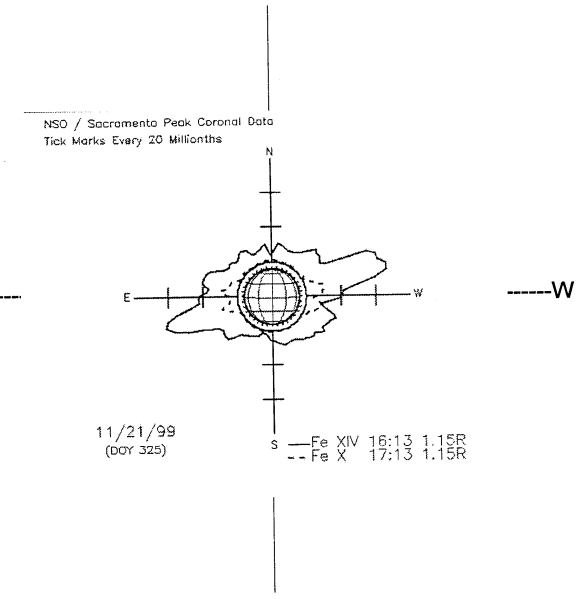
1006 UT

RAMEY SUNSPOT



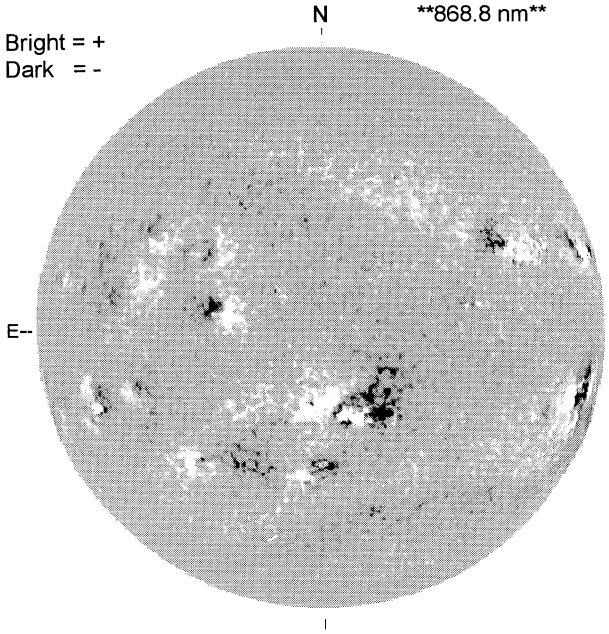
1235 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

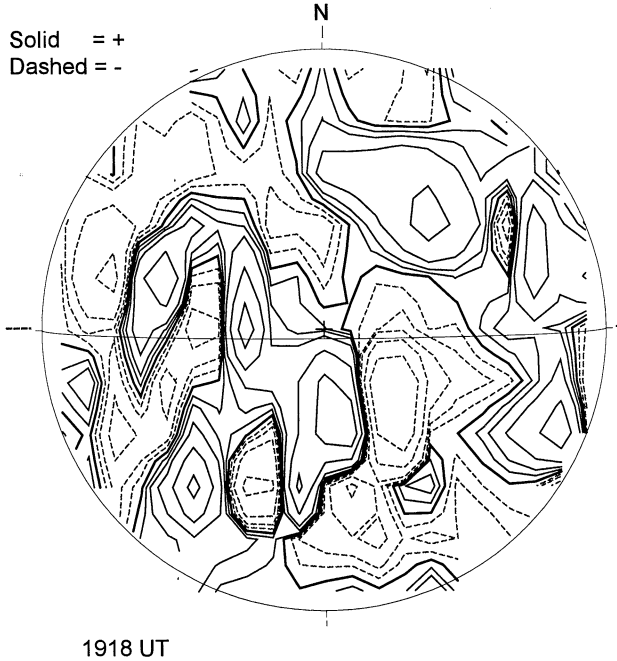


NOVEMBER 22, 1999 (P= 19.46, Bo = 2.06, Lo = 175.05)

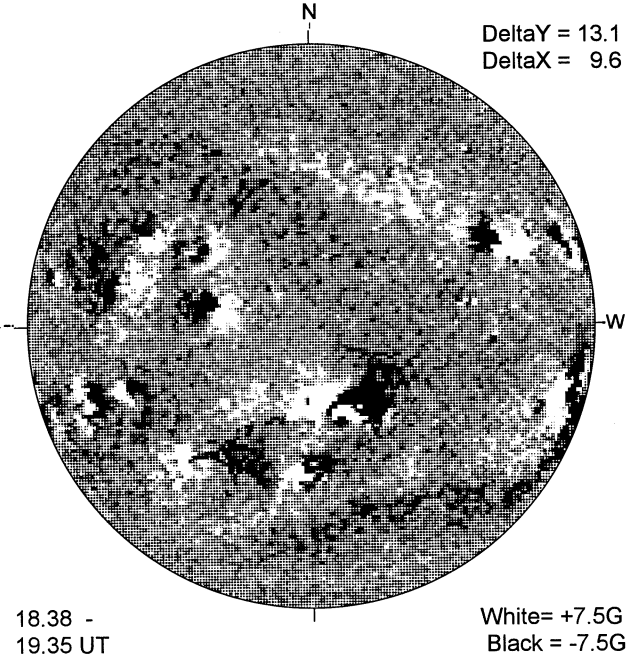
KITT PEAK MAGNETOGRAM



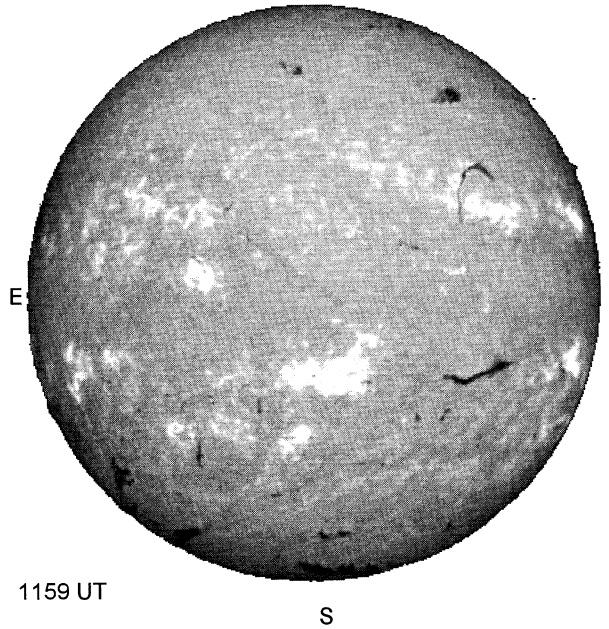
STANFORD MAGNETOGRAM



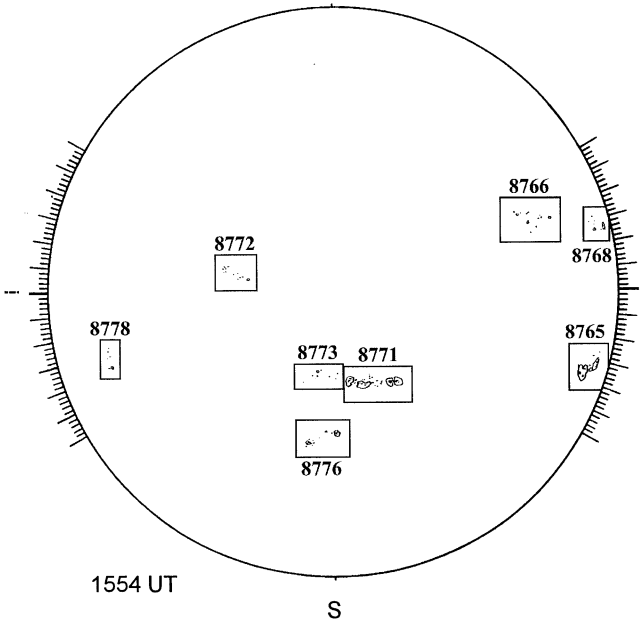
MT. WILSON MAGNETOGRAM



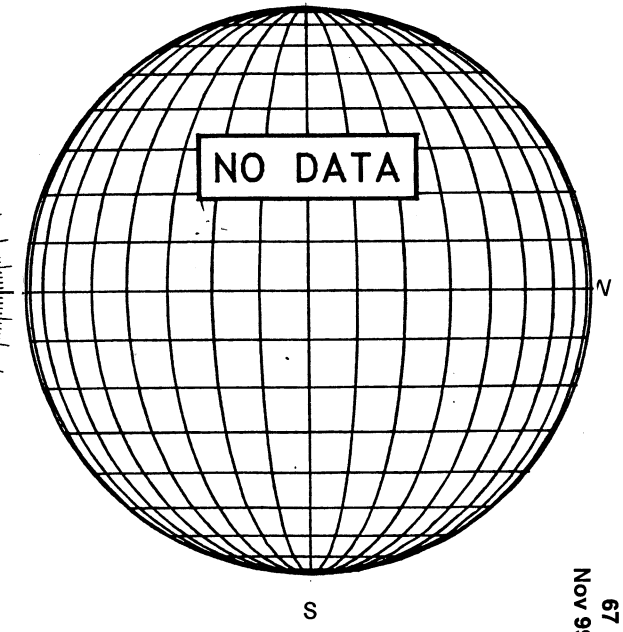
MEUDON H-ALPHA



HOLLOMAN SUNSPOT

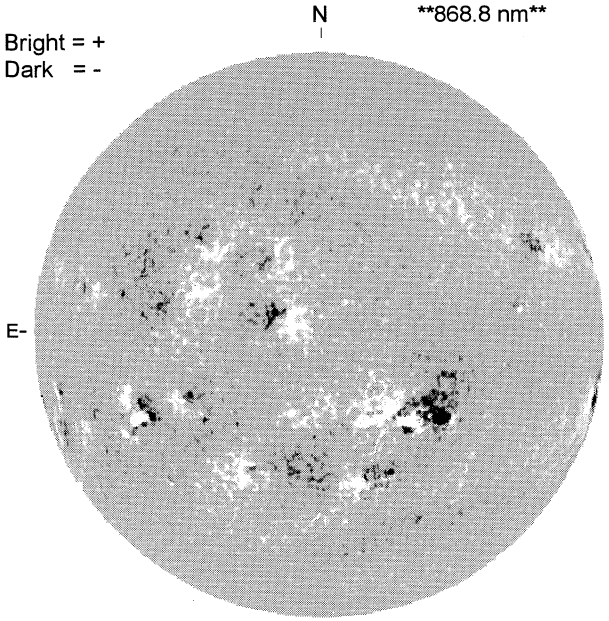


SACRAMENTO PEAK CORONA (1.15 Radii)----

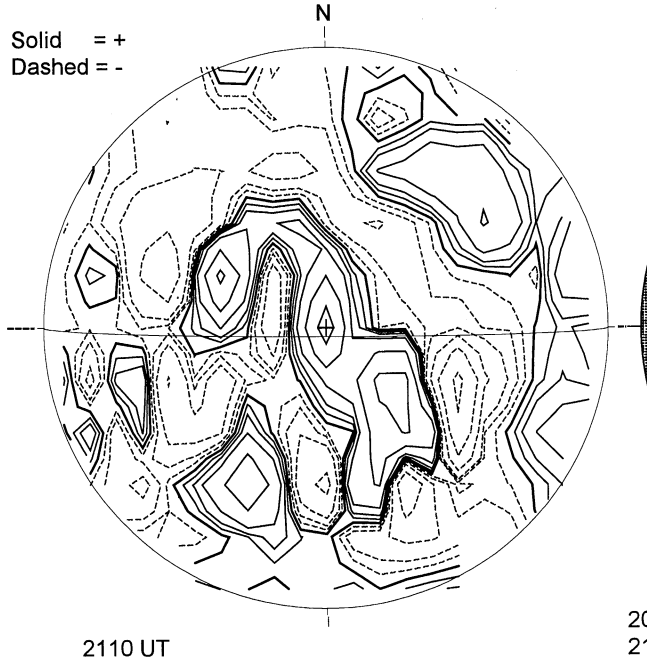


NOVEMBER 23, 1999 (P= 19.13, Bo = 1.94, Lo = 161.87)

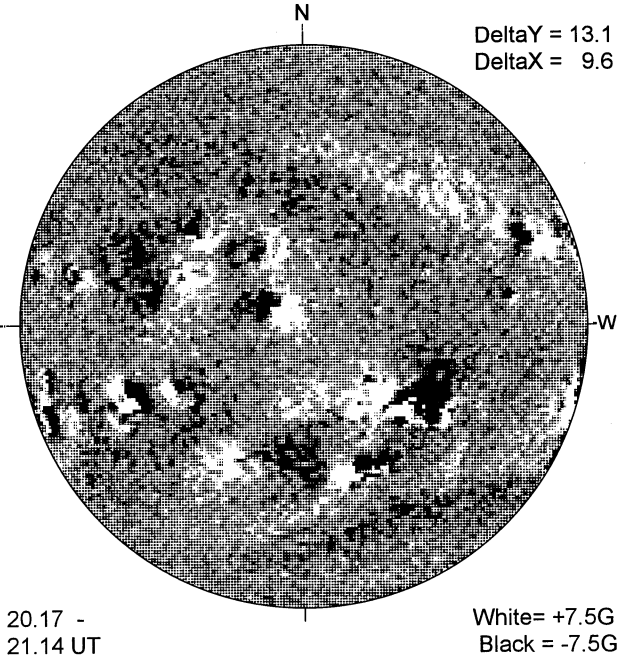
KITT PEAK MAGNETOGRAM



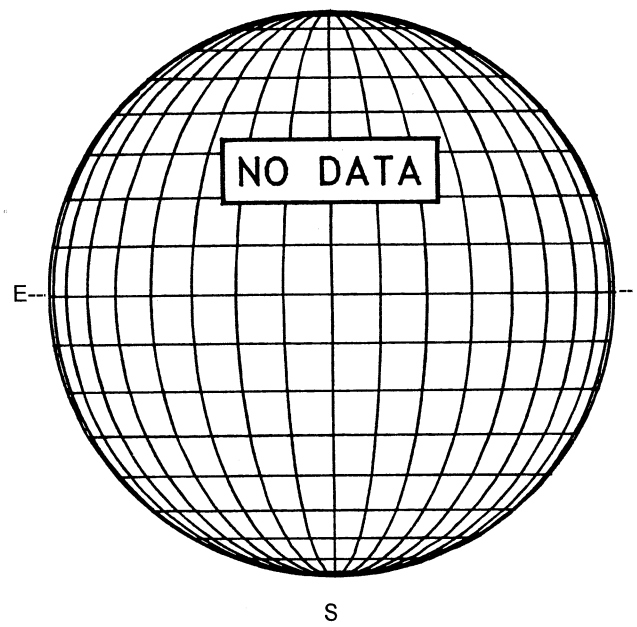
STANFORD MAGNETOGRAM



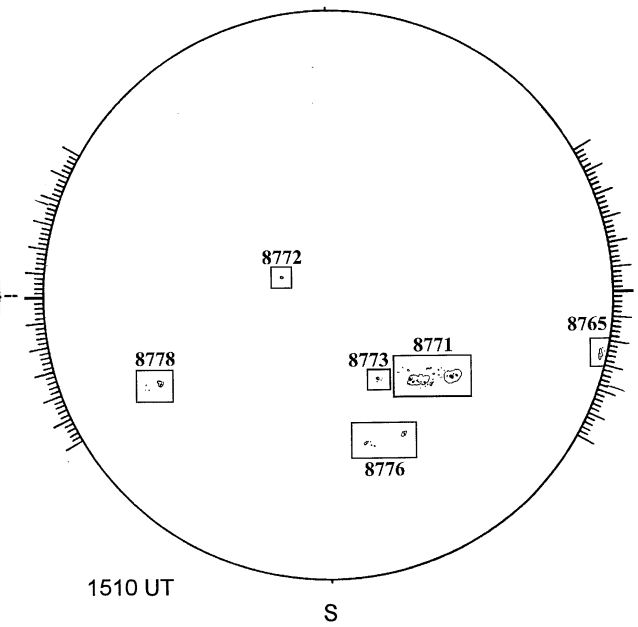
MT. WILSON MAGNETOGRAM



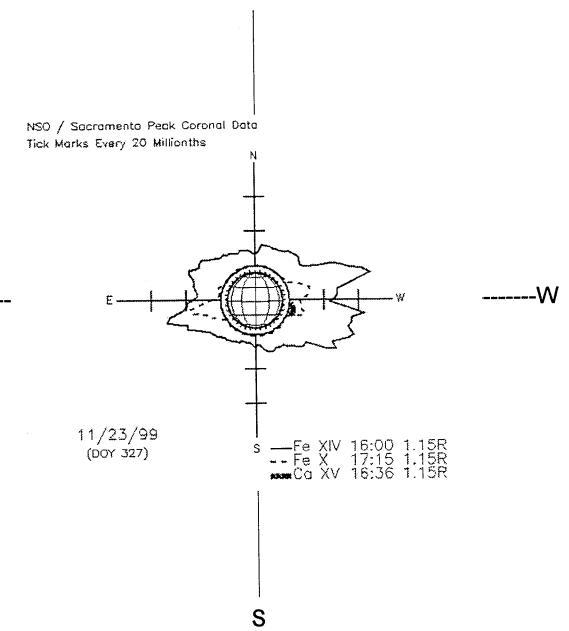
MEUDON H-ALPHA



RAMEY SUNSPOT

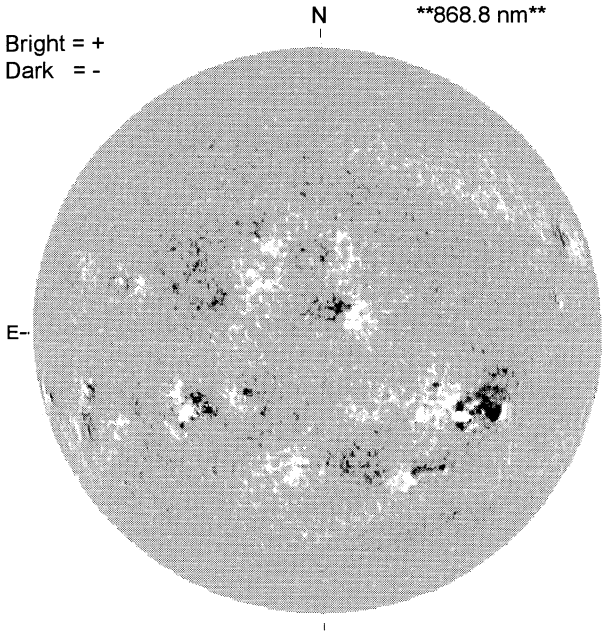


SACRAMENTO PEAK CORONA (1.15 Radii)----

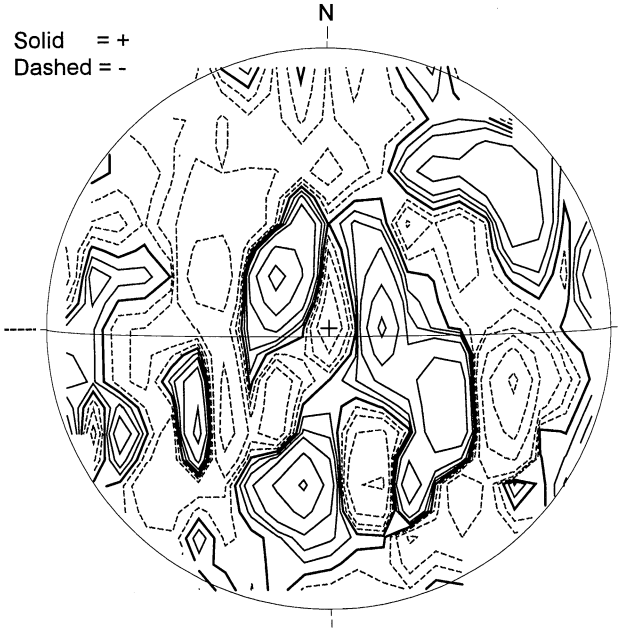


NOVEMBER 24, 1999 (P= 18.80, Bo = 1.81, Lo = 148.69)

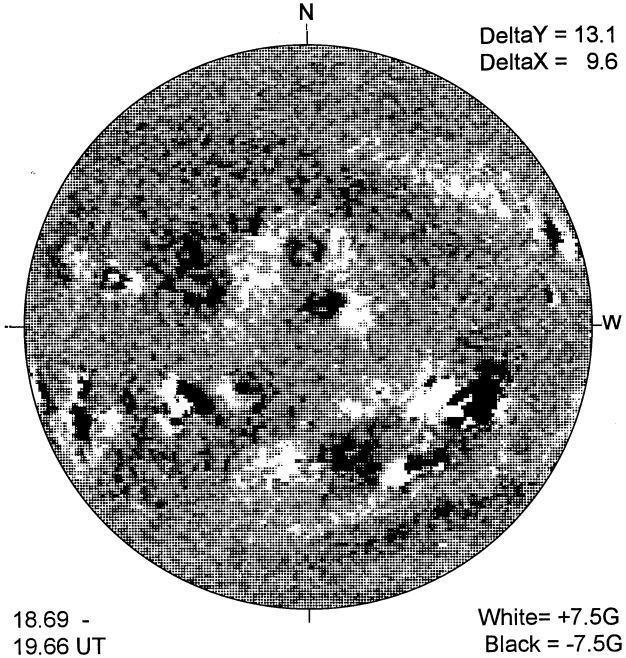
KITT PEAK MAGNETOGRAM



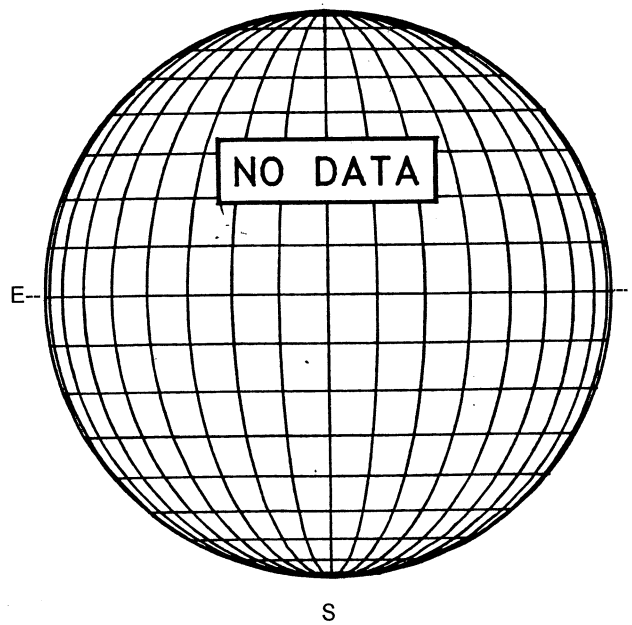
STANFORD MAGNETOGRAM



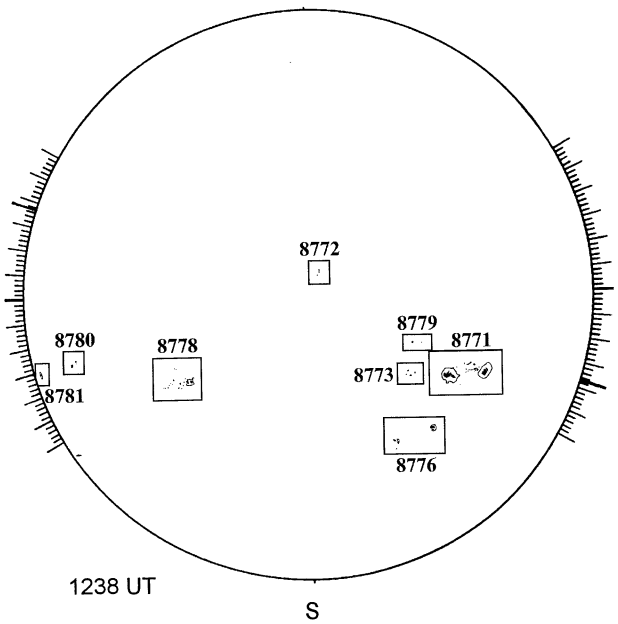
MT. WILSON MAGNETOGRAM



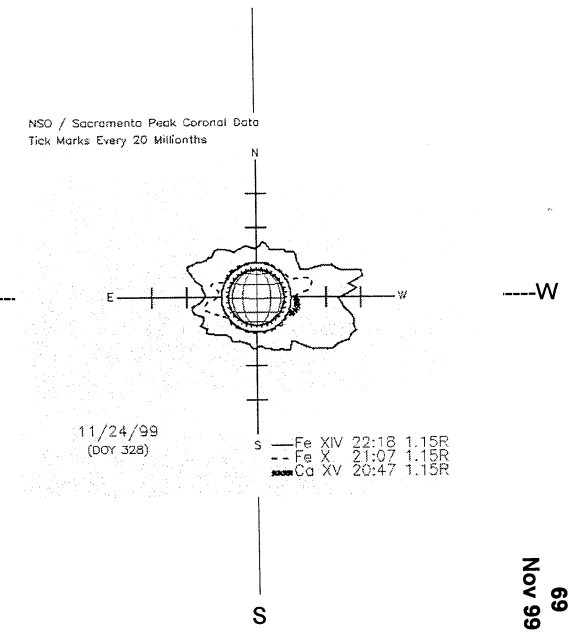
MEUDON H-ALPHA



RAMEY SUNSPOT

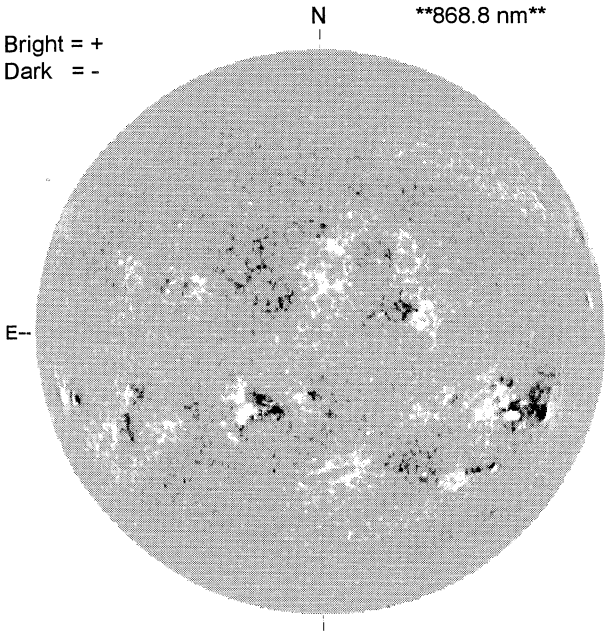


SACRAMENTO PEAK CORONA (1.15 Radii)----

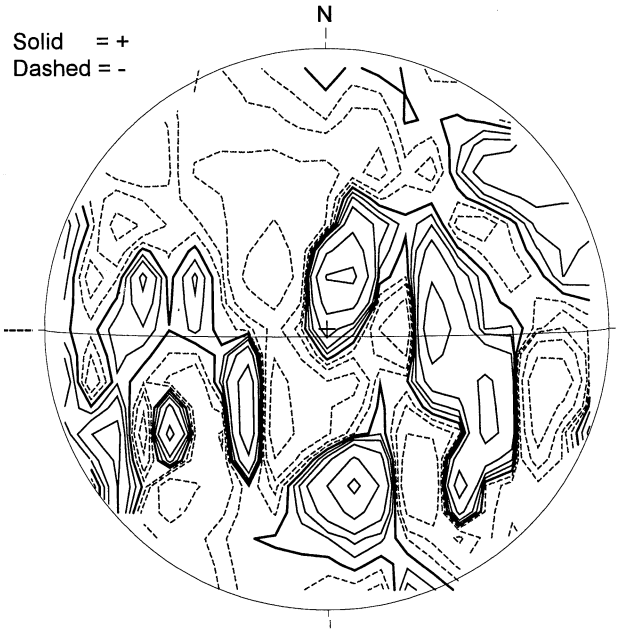


NOVEMBER 25, 1999 (P= 18.46, Bo = 1.69, Lo = 135.51)

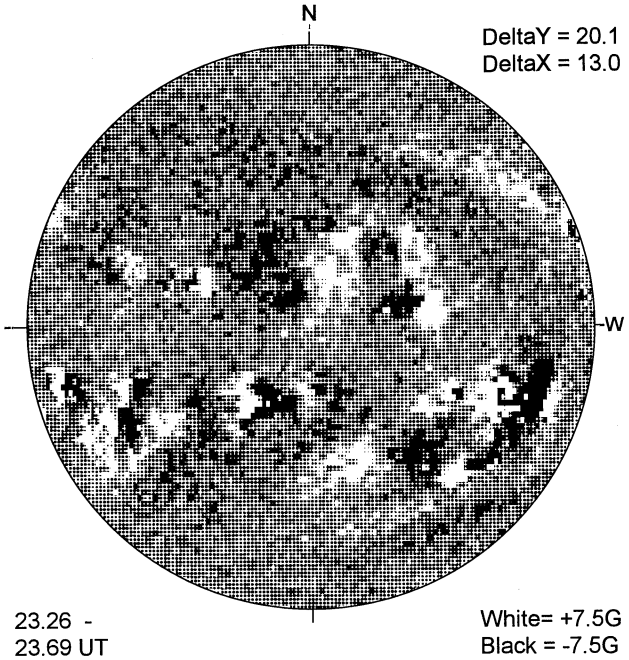
KITT PEAK MAGNETOGRAM



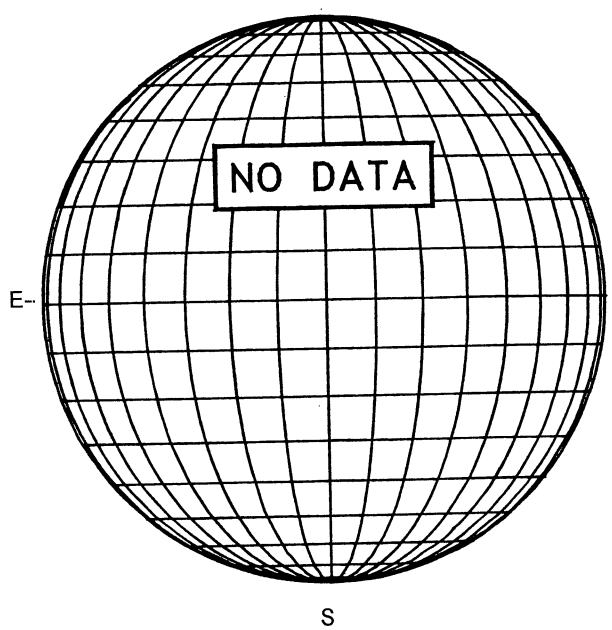
STANFORD MAGNETOGRAM



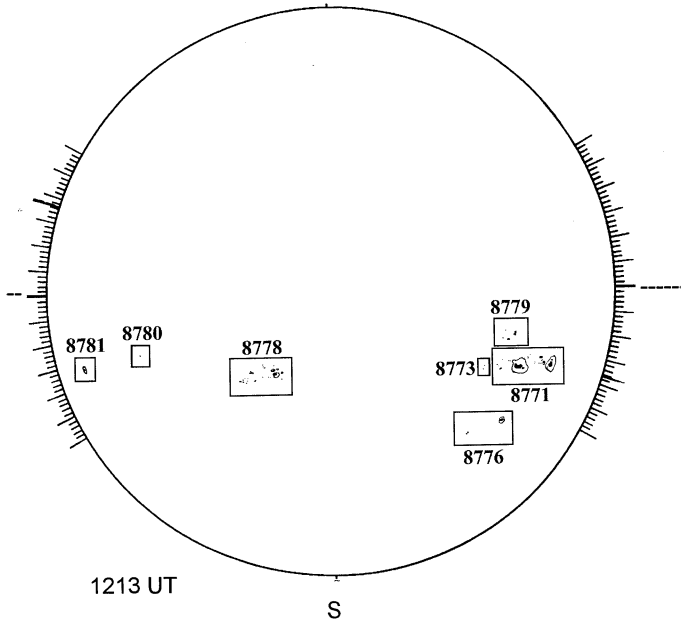
MT. WILSON MAGNETOGRAM



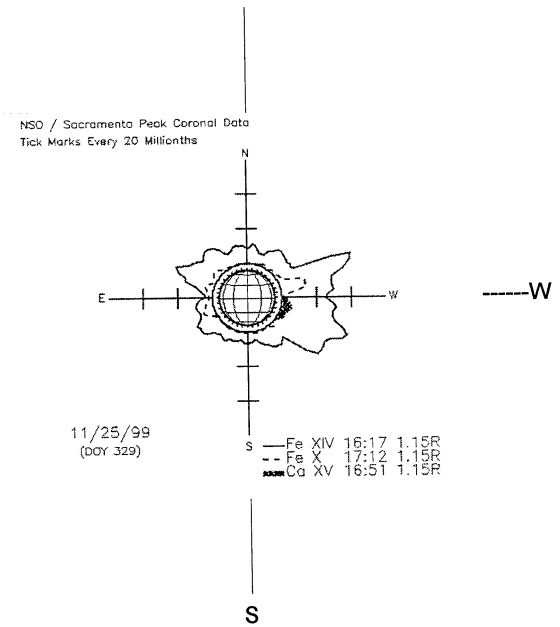
MEUDON H-ALPHA



RAMEY SUNSPOT

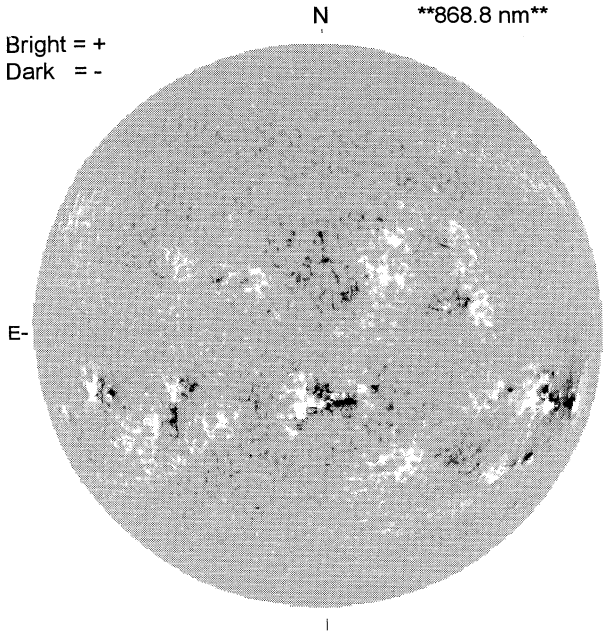


SACRAMENTO PEAK CORONA (1.15 Radii)----

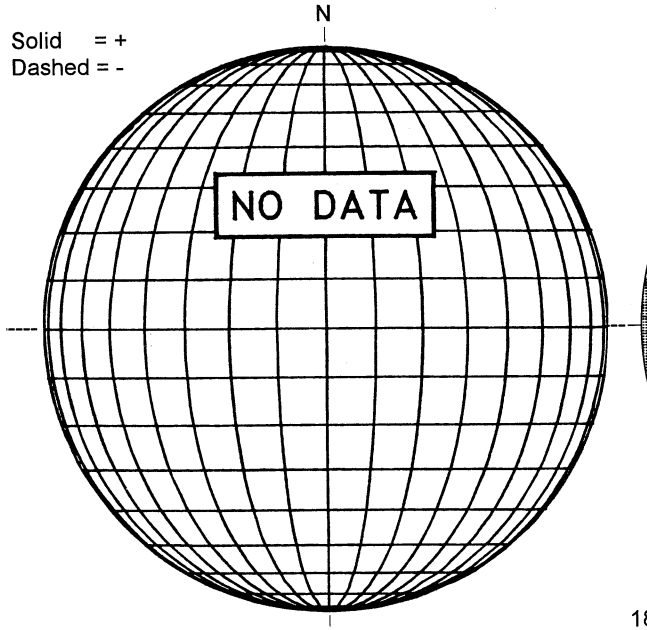


NOVEMBER 26, 1999 (P= 18.11, Bo = 1.57, Lo = 122.33)

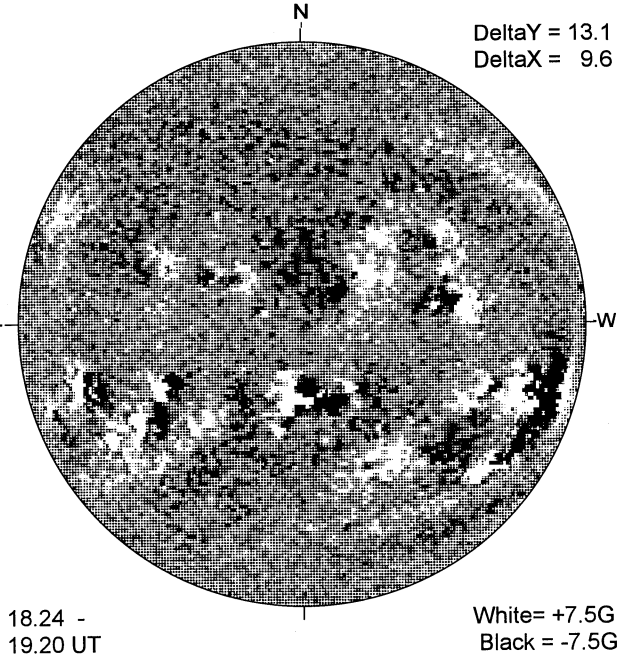
KITT PEAK MAGNETOGRAM



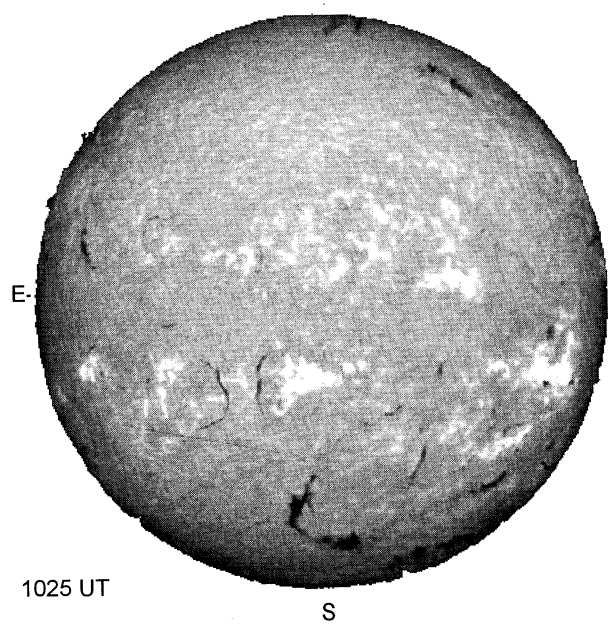
STANFORD MAGNETOGRAM



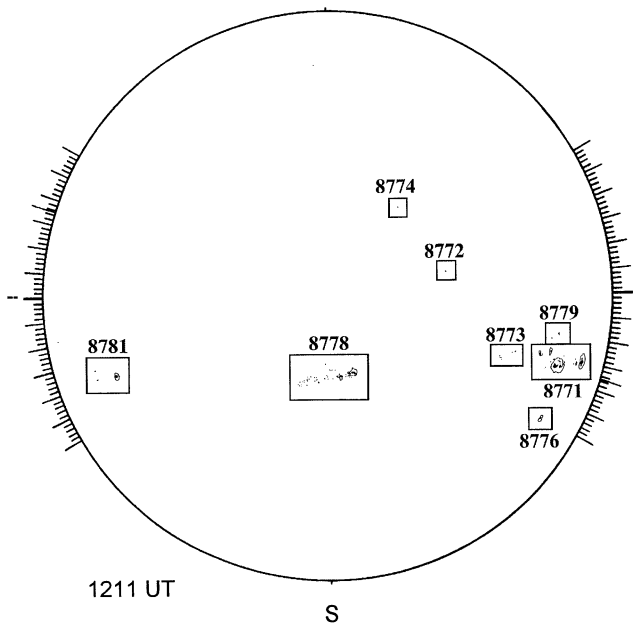
MT. WILSON MAGNETOGRAM



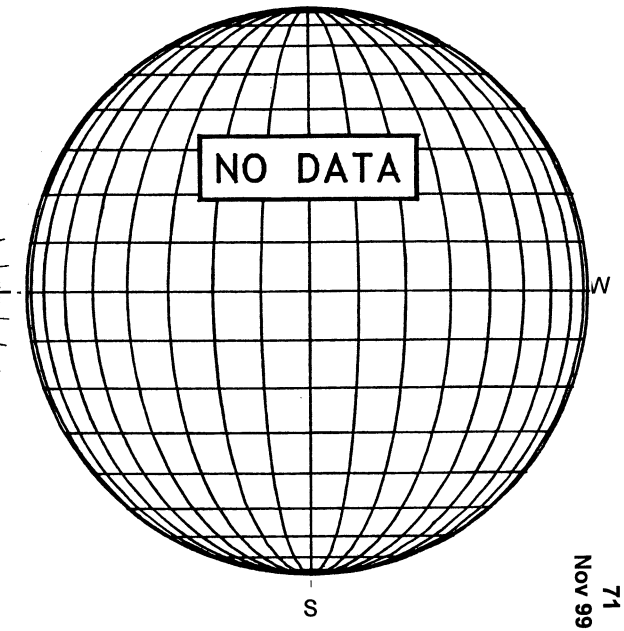
MEUDON H-ALPHA



RAMEY SUNSPOT



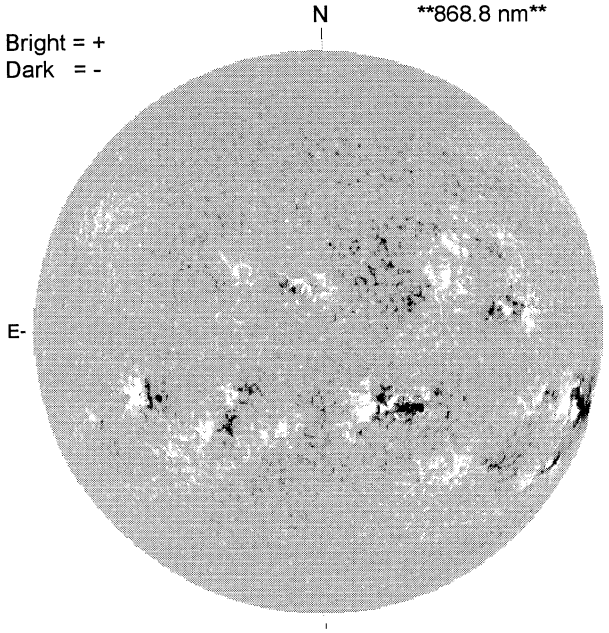
SACRAMENTO PEAK CORONA (1.15 Radii)----



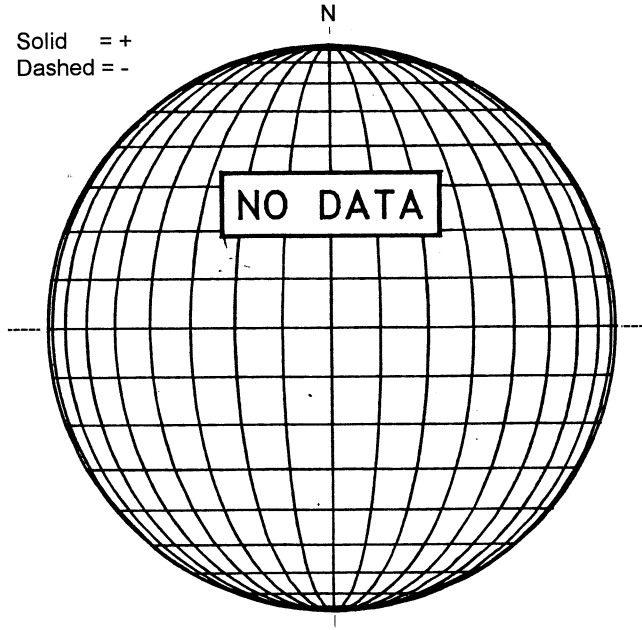
71
Nov 99

NOVEMBER 27, 1999 (P= 17.76, Bo = 1.44, Lo = 109.15)

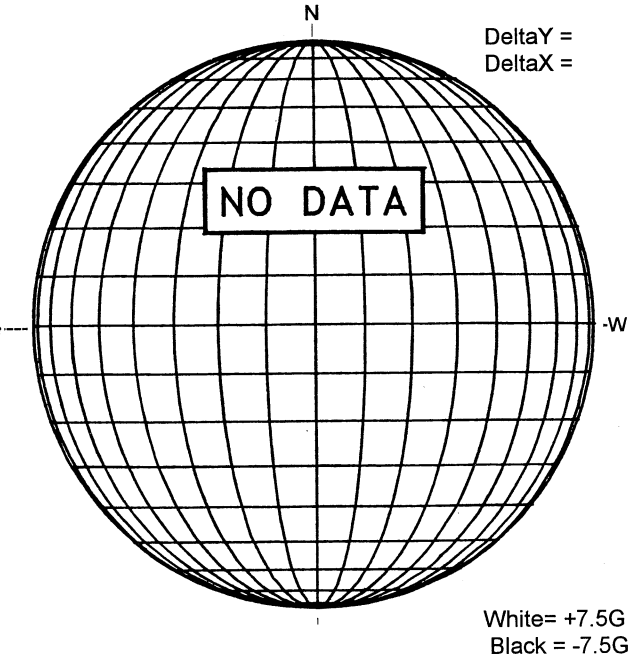
KITT PEAK MAGNETOGRAM



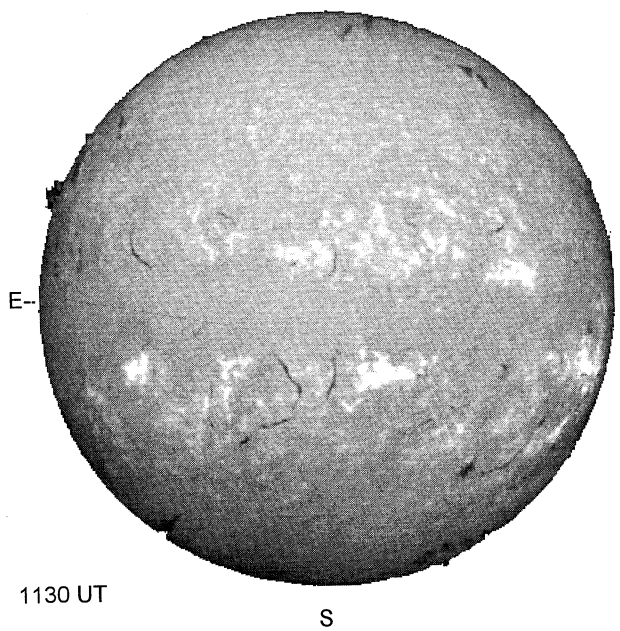
STANFORD MAGNETOGRAM



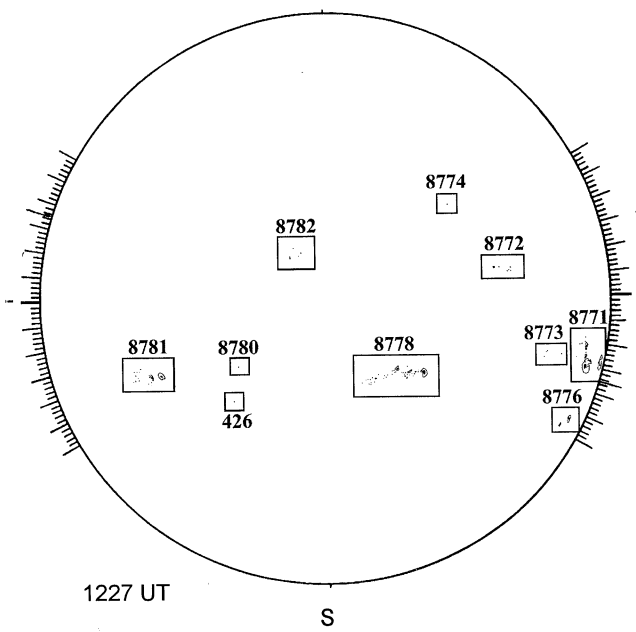
MT. WILSON MAGNETOGRAM



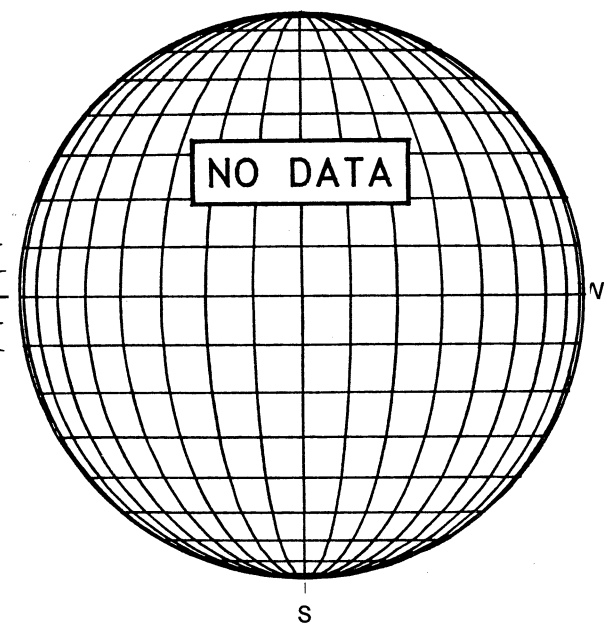
MEUDON H-ALPHA



RAMEY SUNSPOT

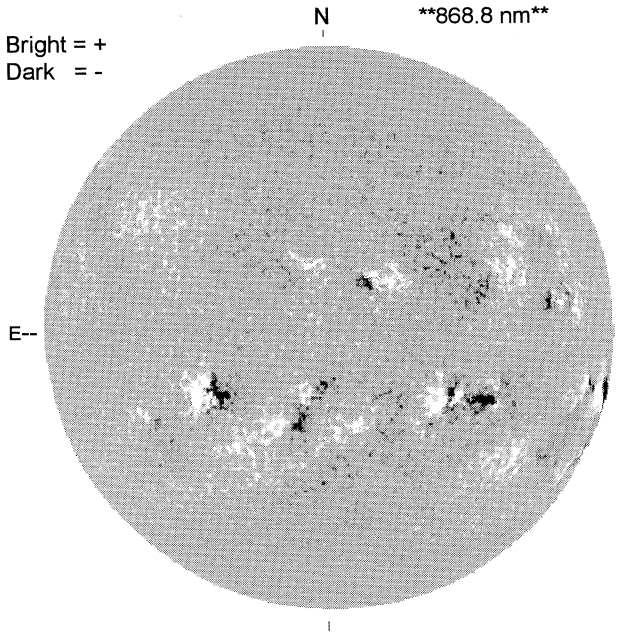


SACRAMENTO PEAK CORONA (1.15 Radii)----

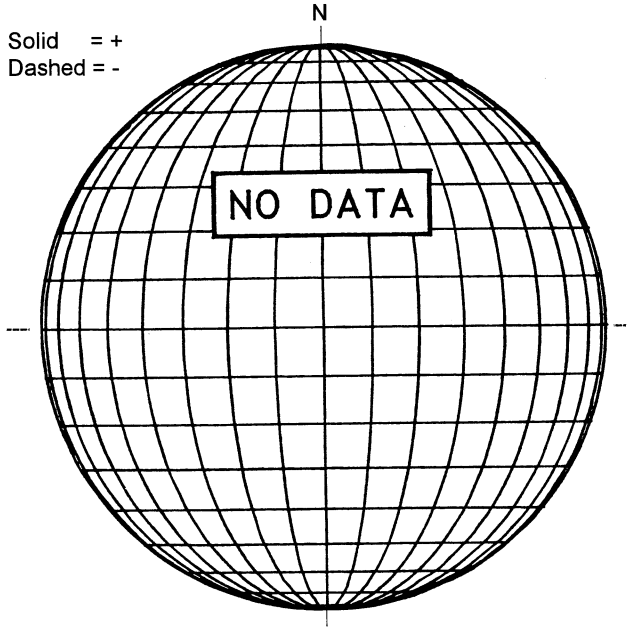


NOVEMBER 28, 1999 (P= 17.40, Bo = 1.32, Lo = 95.97)

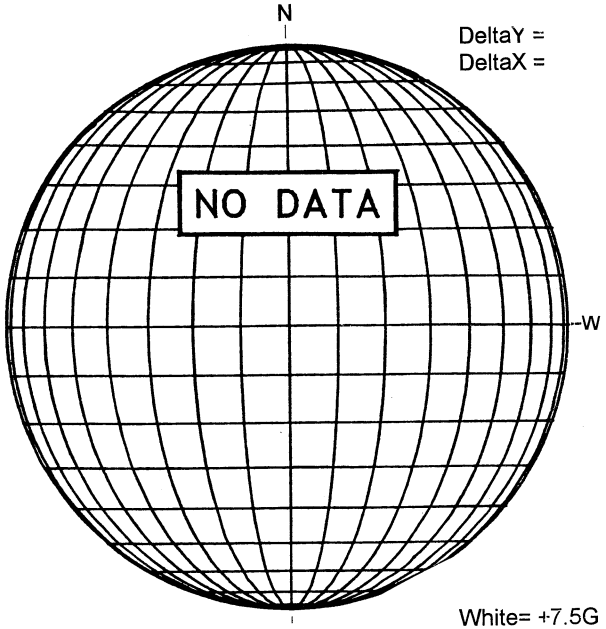
KITT PEAK MAGNETOGRAM



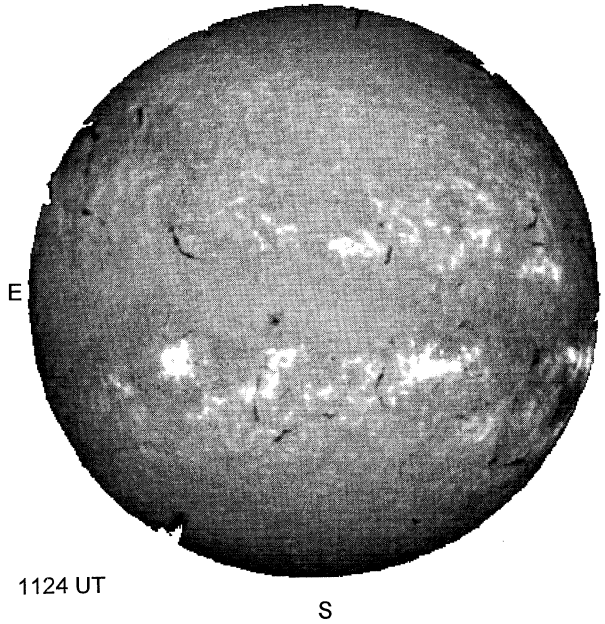
STANFORD MAGNETOGRAM



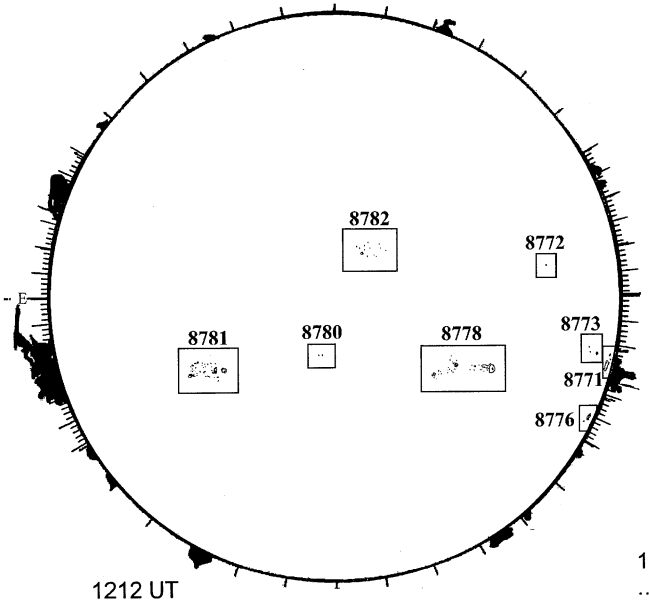
MT. WILSON MAGNETOGRAM



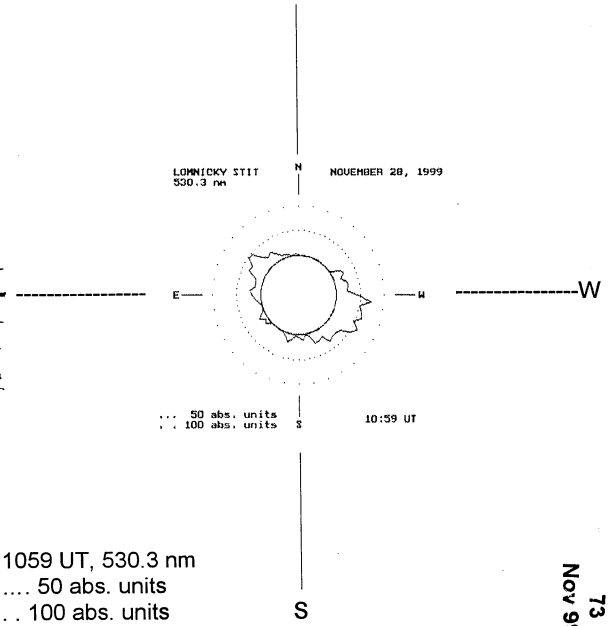
MEUDON H-ALPHA



RAMEY SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)

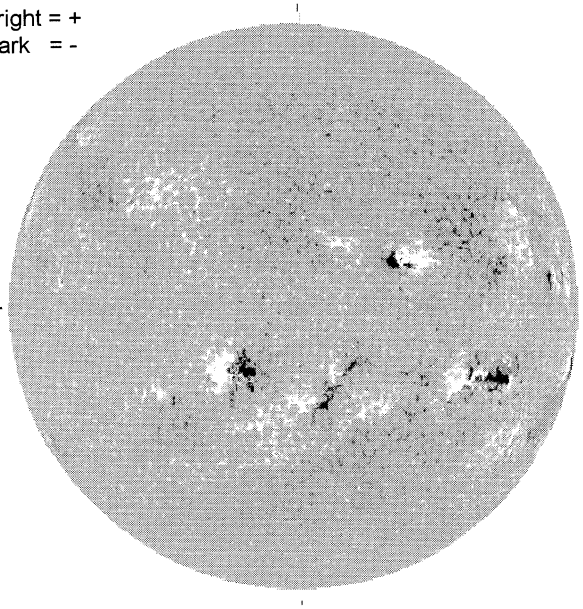


NOVEMBER 29, 1999 (P= 17.04, Bo = 1.19, Lo = 82.79)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



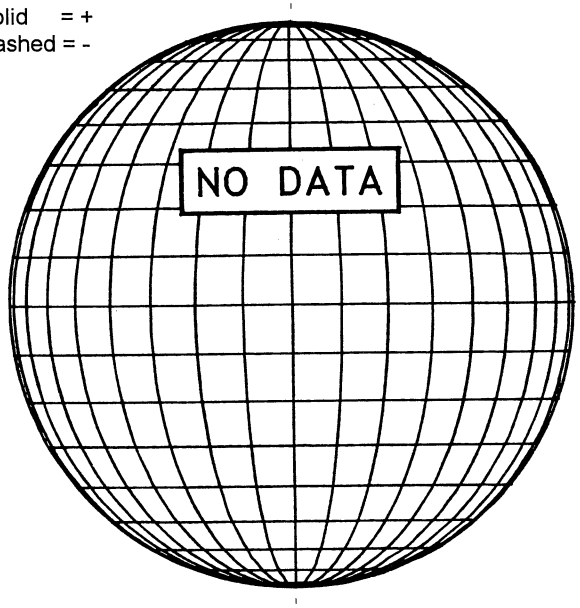
E-

1623 UT

STANFORD MAGNETOGRAM

N

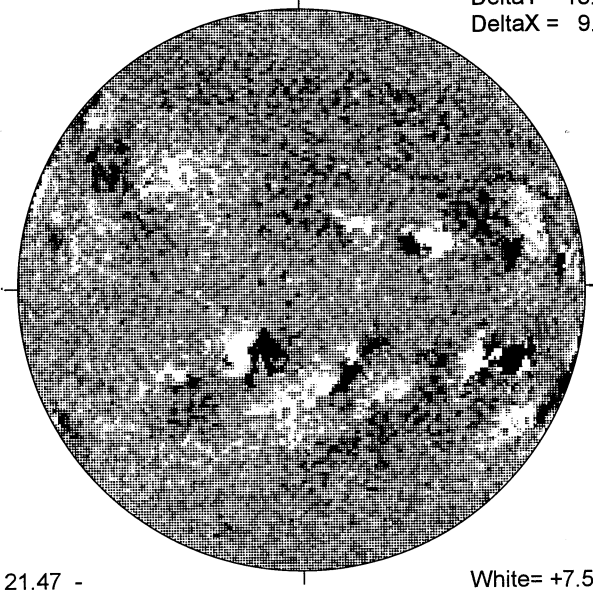
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

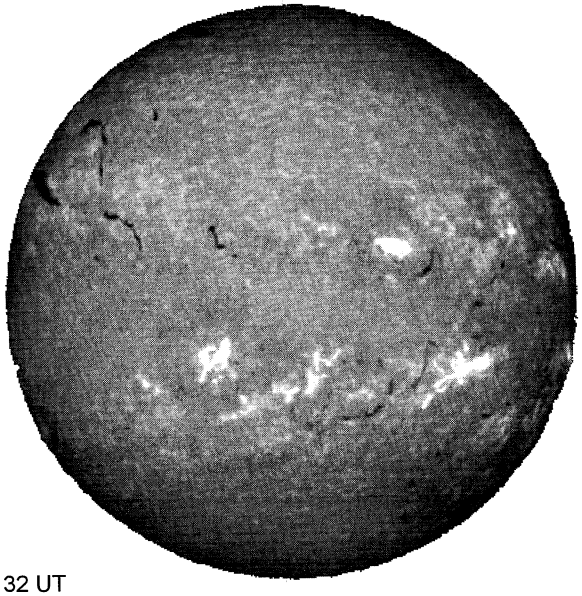


-W

21.47 -
22.44 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

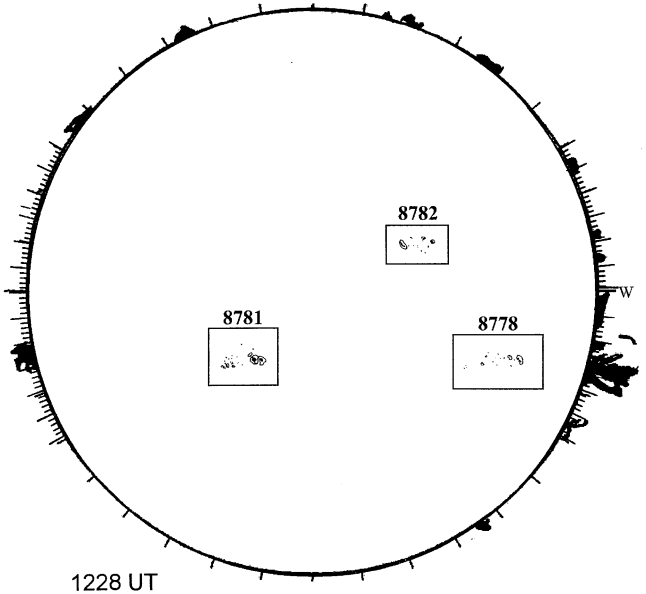


E--

1132 UT

S

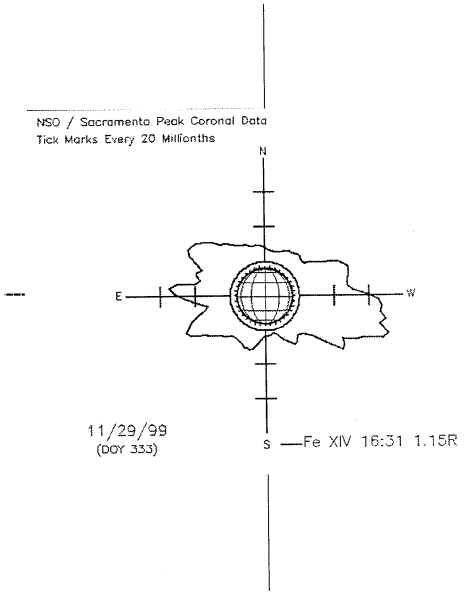
RAMEY SUNSPOT



W

1228 UT
0849 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

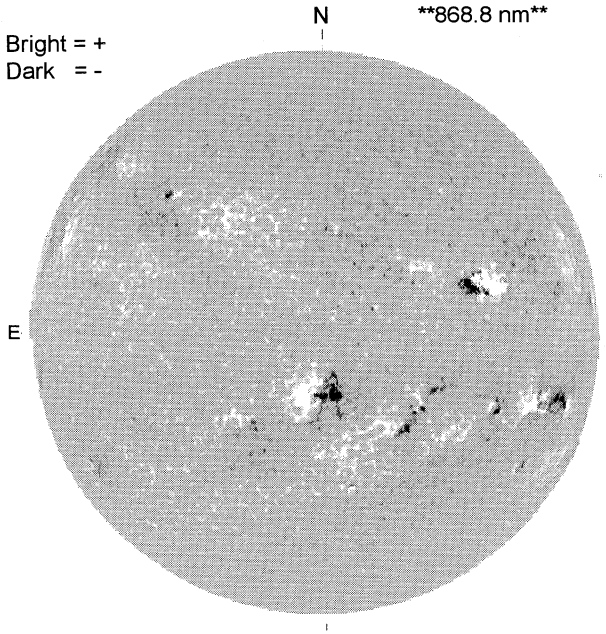


--------W

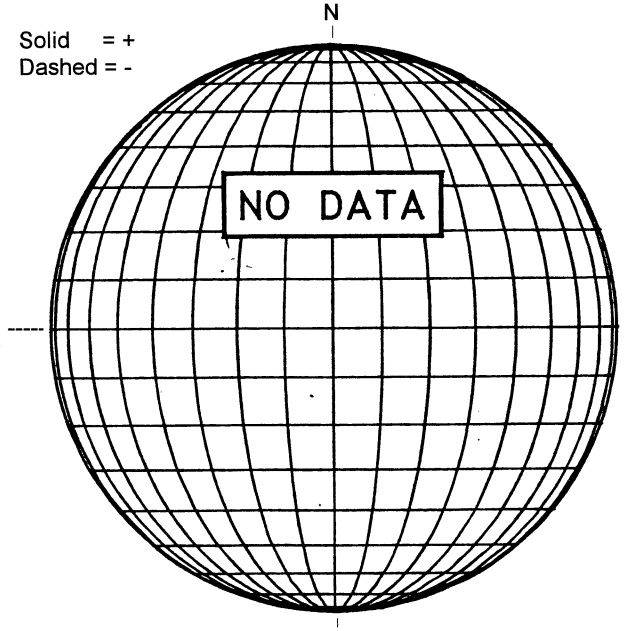
S

NOVEMBER 30, 1999 (P= 16.66, Bo = 1.06, Lo = 69.61)

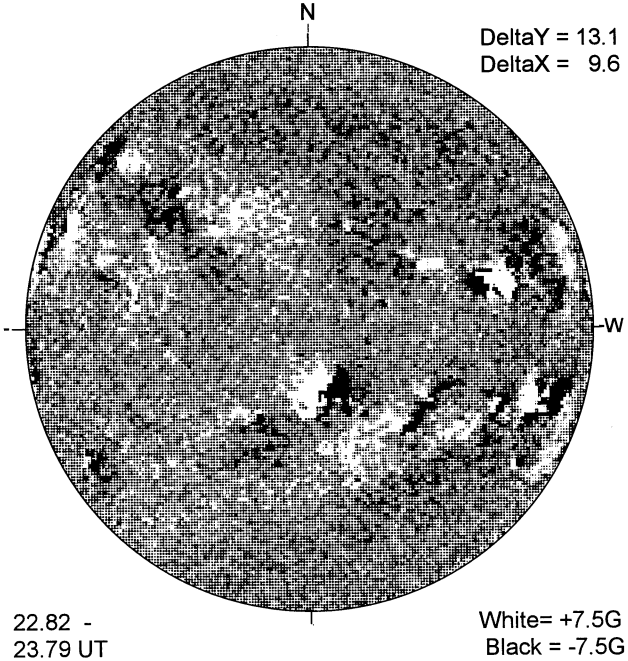
KITT PEAK MAGNETOGRAM



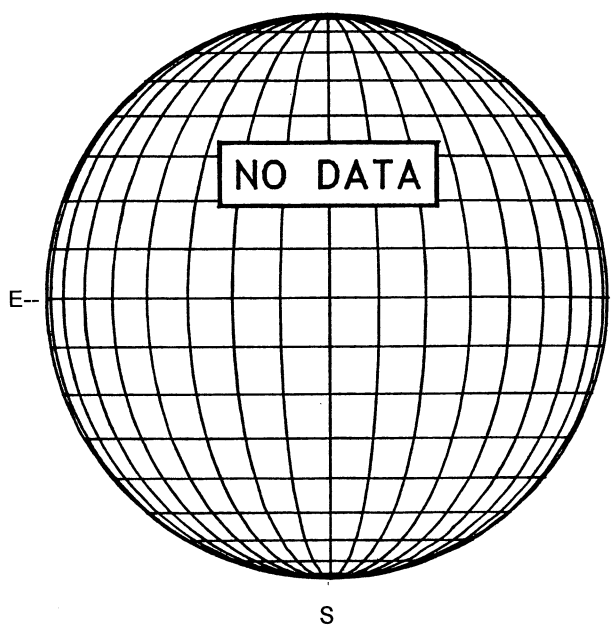
STANFORD MAGNETOGRAM



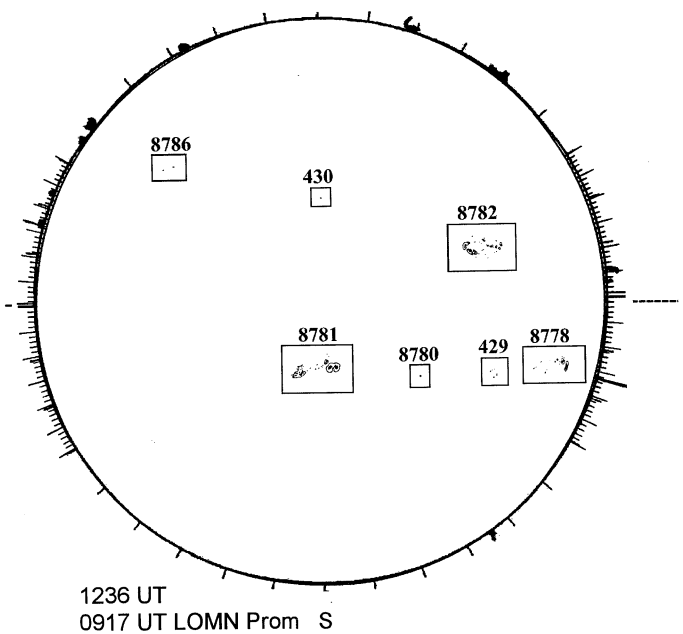
MT. WILSON MAGNETOGRAM



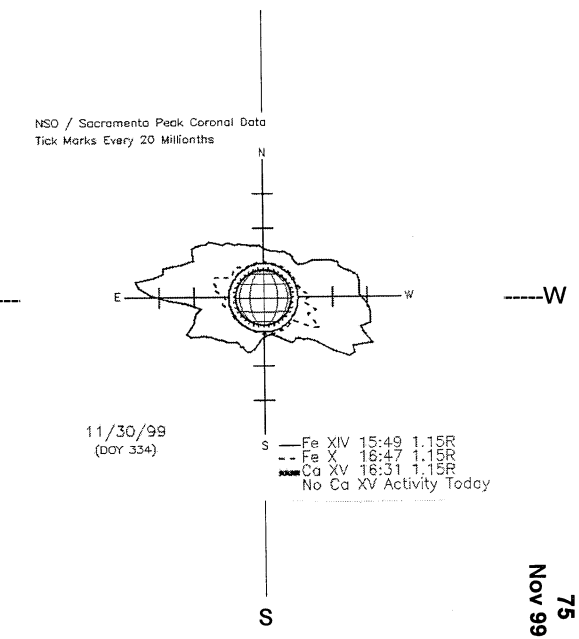
MEUDON H-ALPHA



RAMEY SUNSPOT

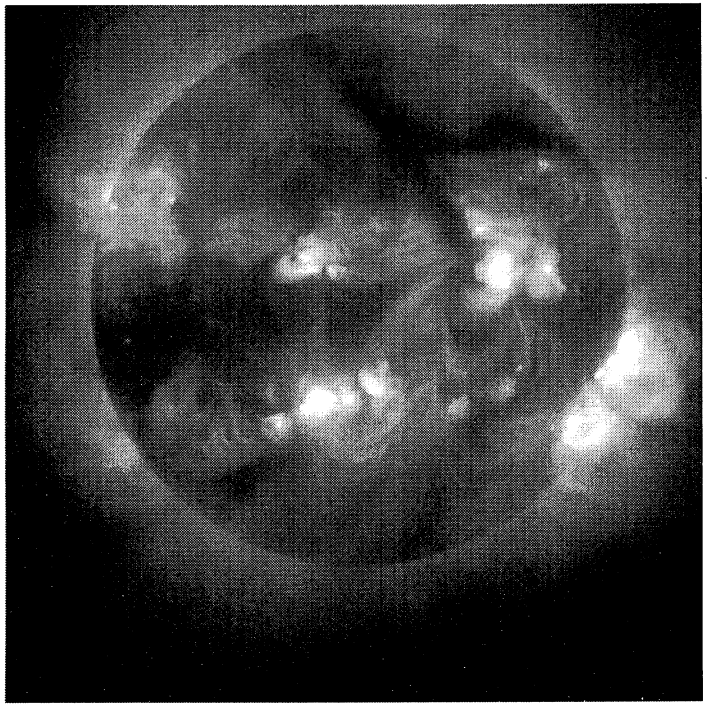


SACRAMENTO PEAK CORONA (1.15 Radii)----

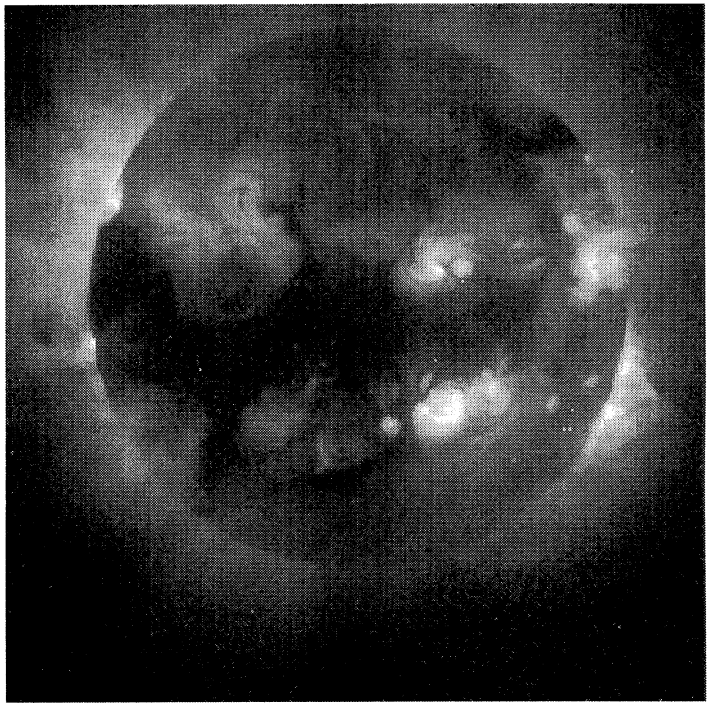


YOHKOH SOFT X-RAY TELESCOPE IMAGES

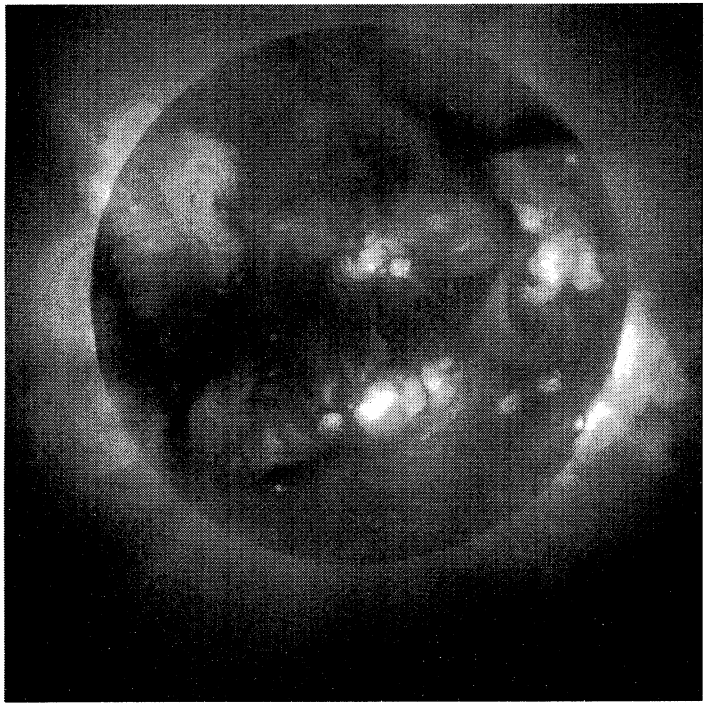
November 1999



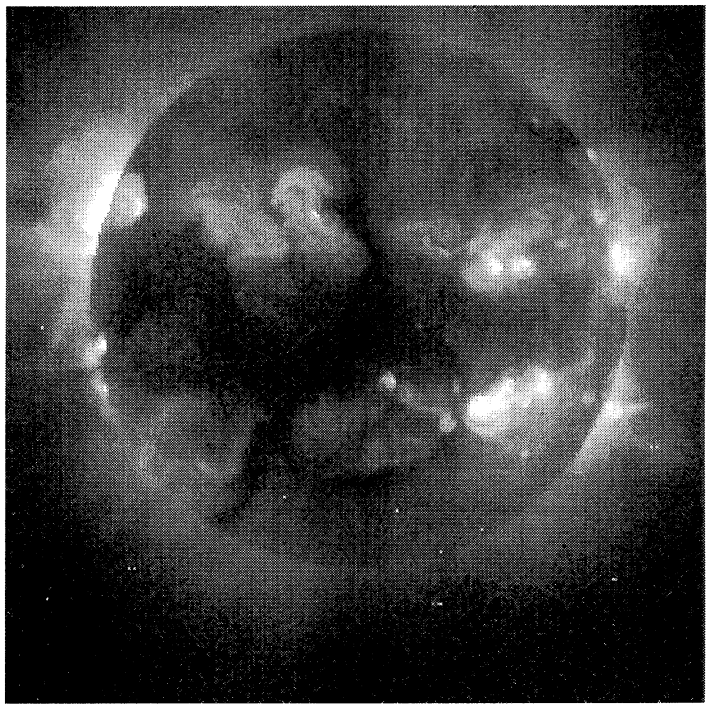
Day 1
11:54:25 UT



Day 3
11:53:41 UT



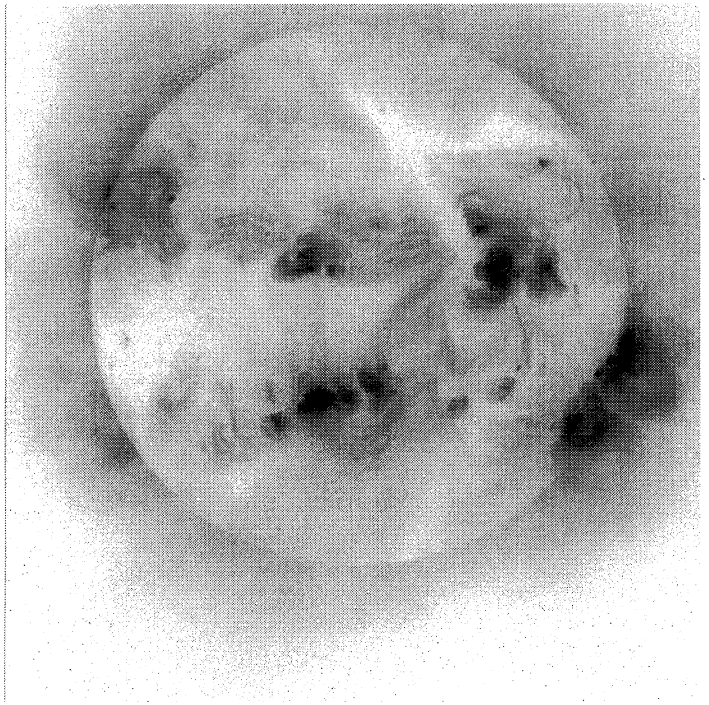
Day 2
11:58:53 UT



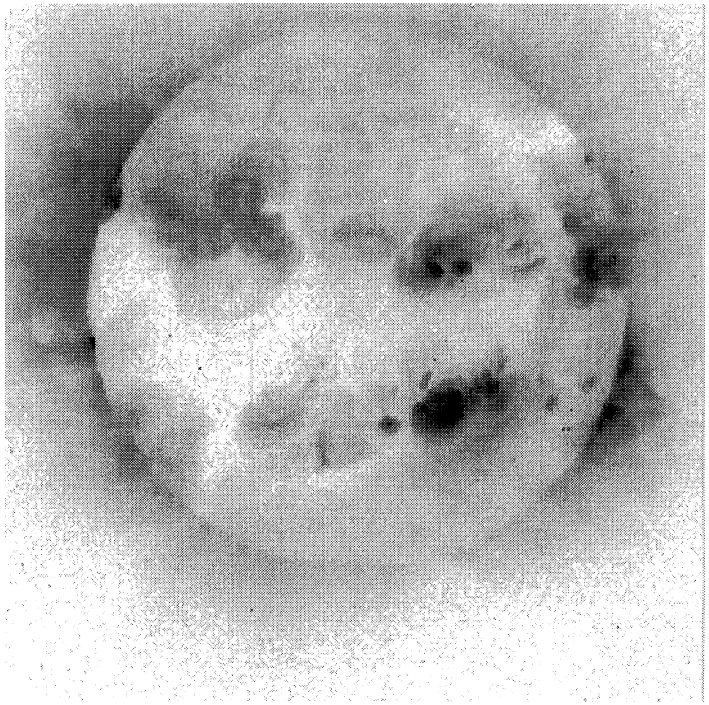
Day 4
12:07:17 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

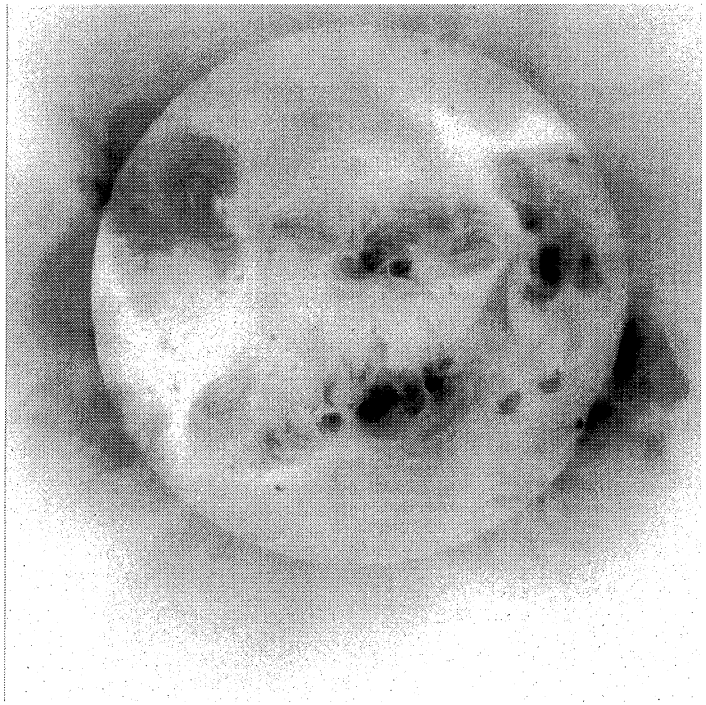
November 1999



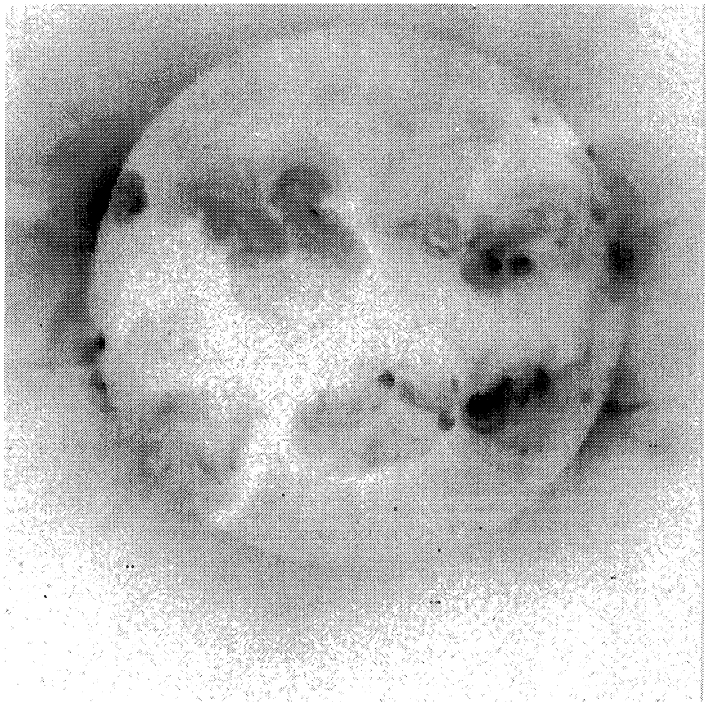
Day 1
11:54:25 UT



Day 3
11:53:41 UT



Day 2
11:58:53 UT



Day 4
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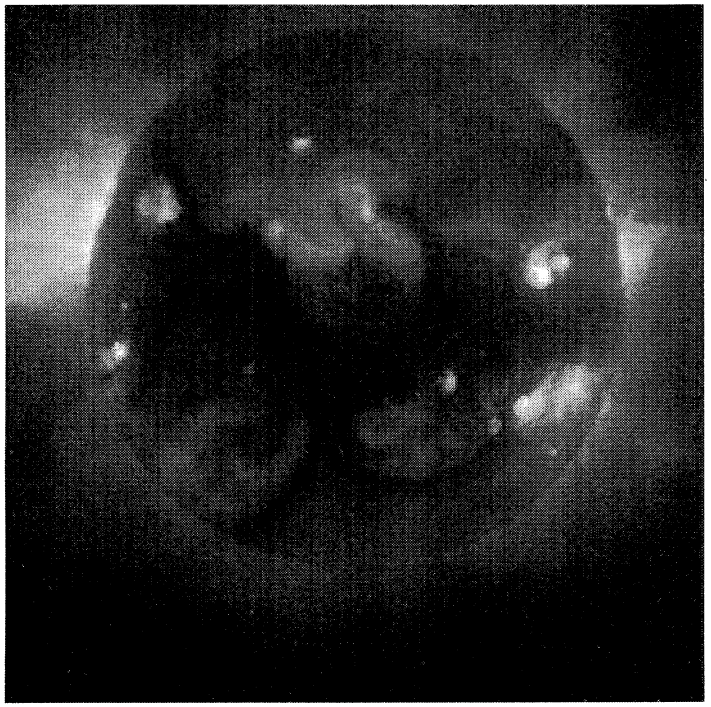
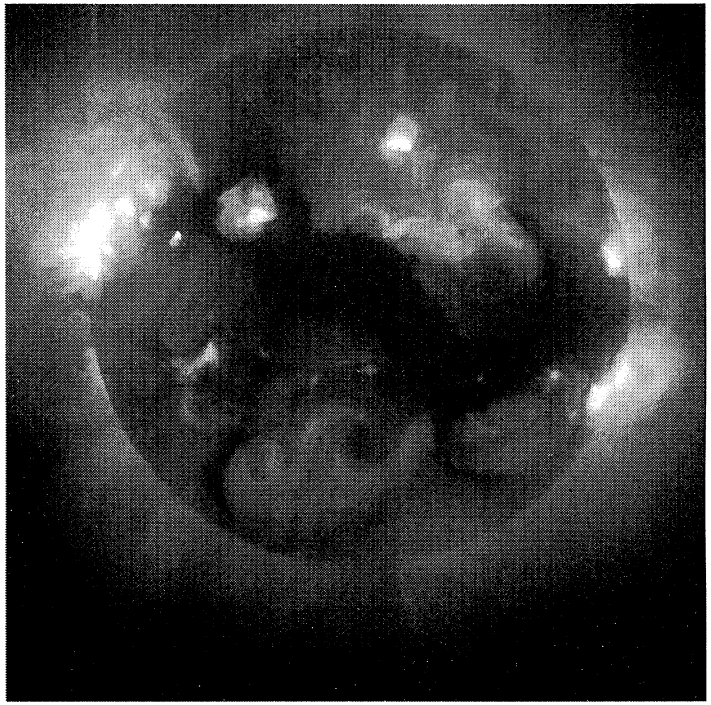
YOHKOH SOFT X-RAY TELESCOPE IMAGES

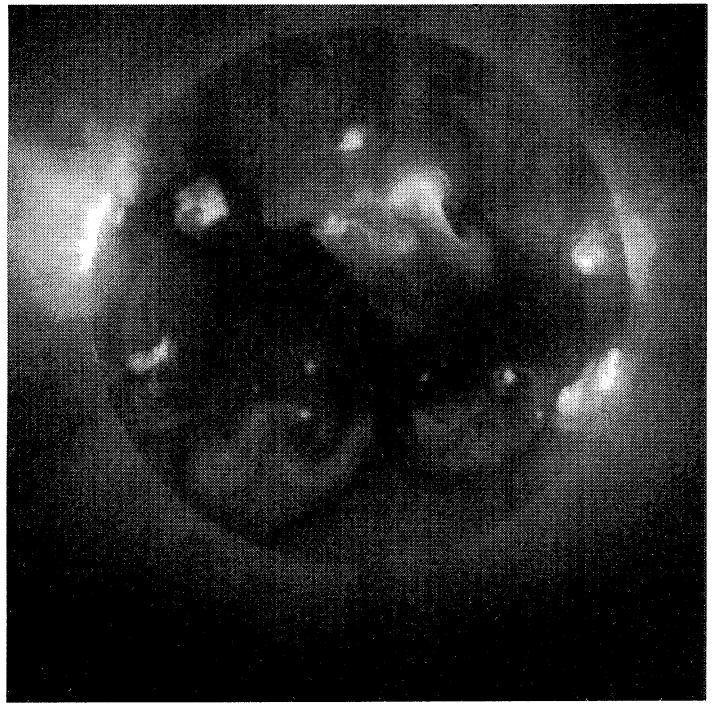
November 1999



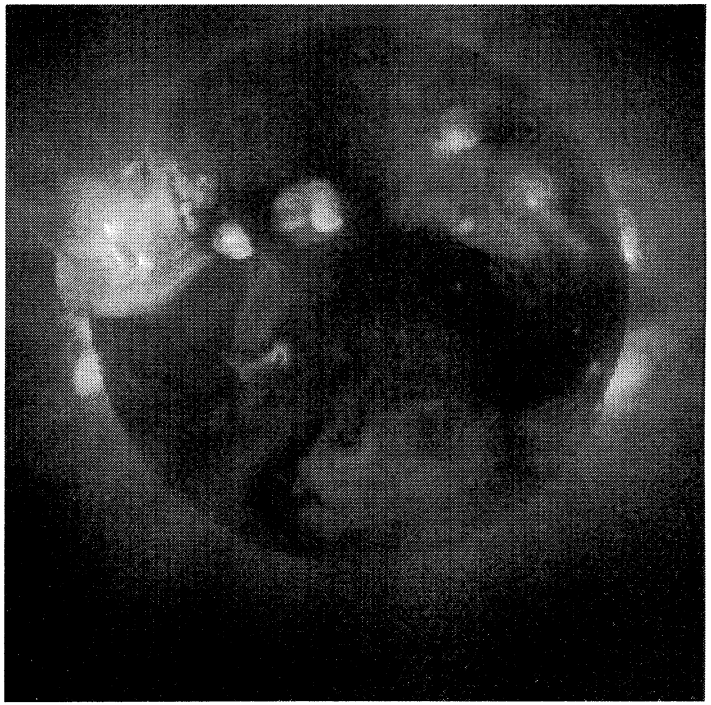
Day 5
11:55:48 UT



Day 7
09:48:58 UT



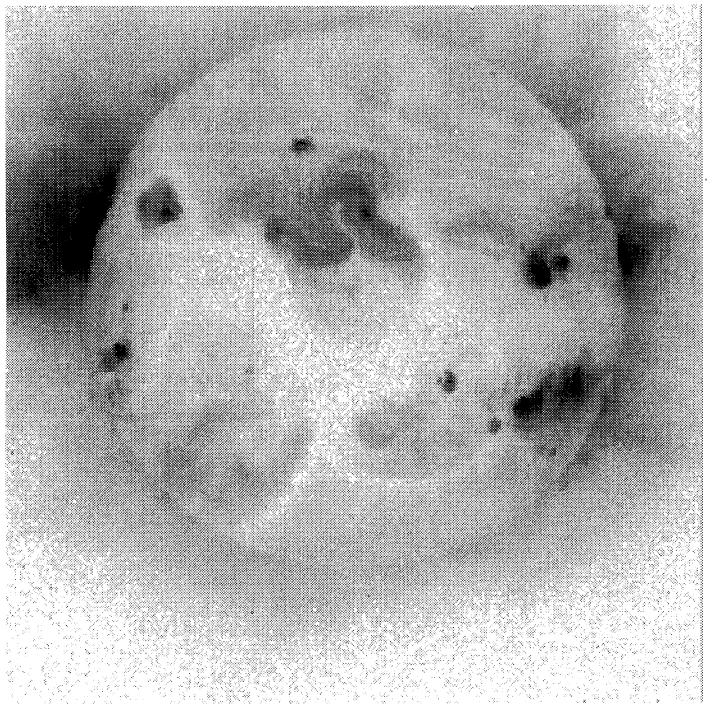
Day 6
11:19:00 UT



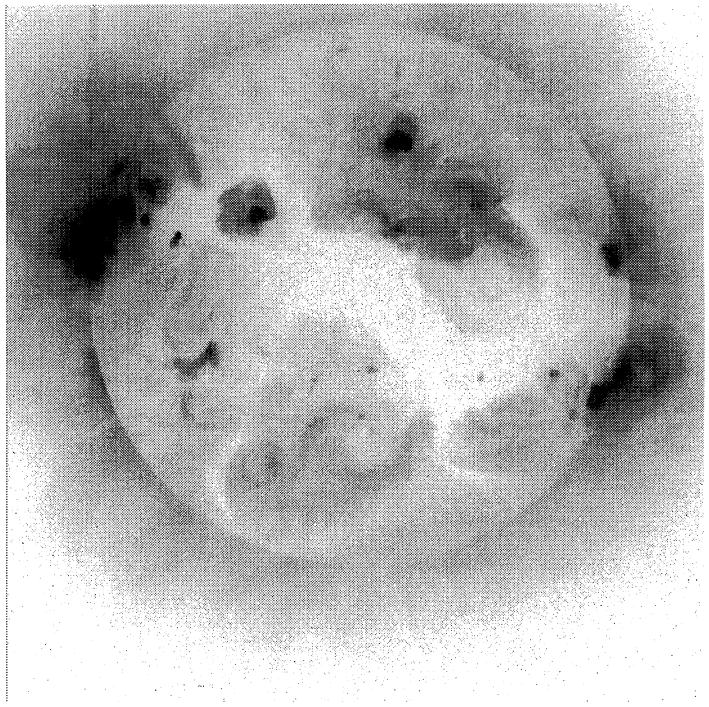
Day 8
14:28:04 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

November 1999



Day 5
11:55:48 UT



Day 7
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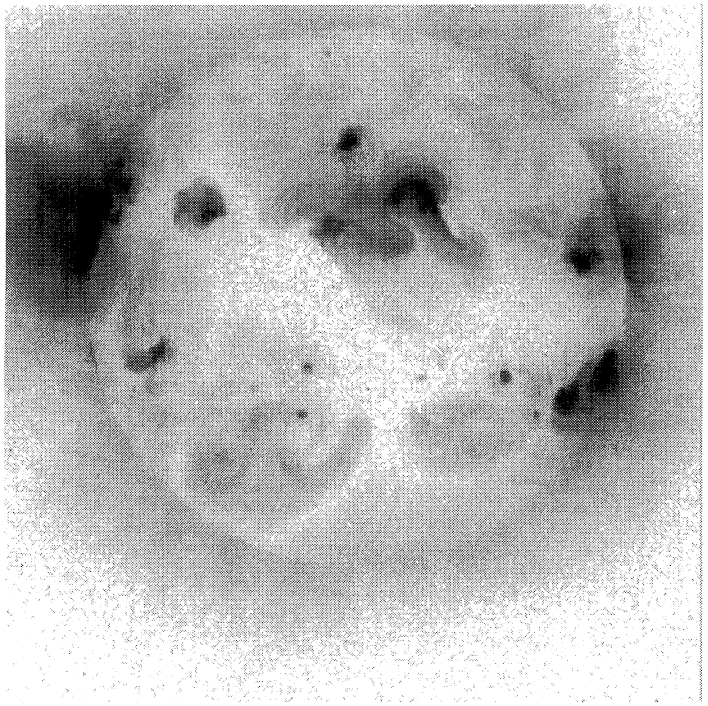
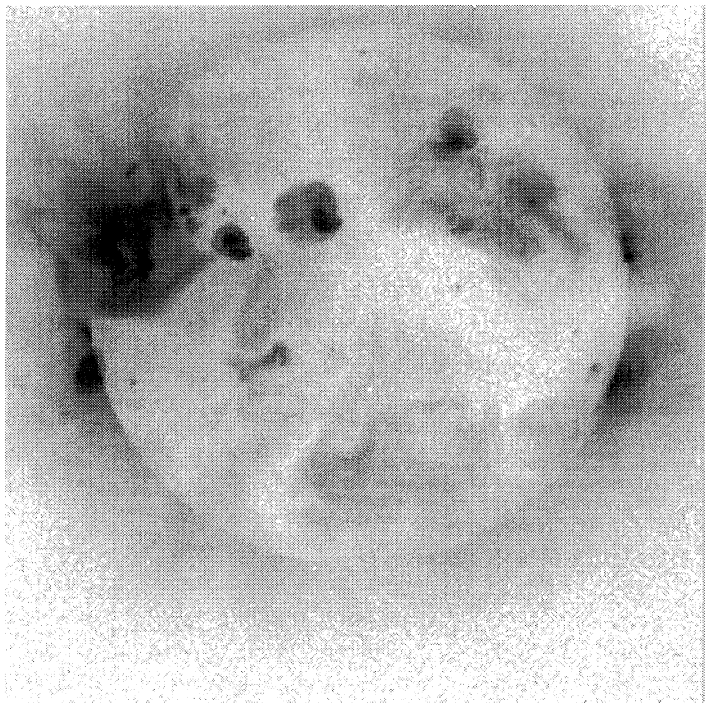


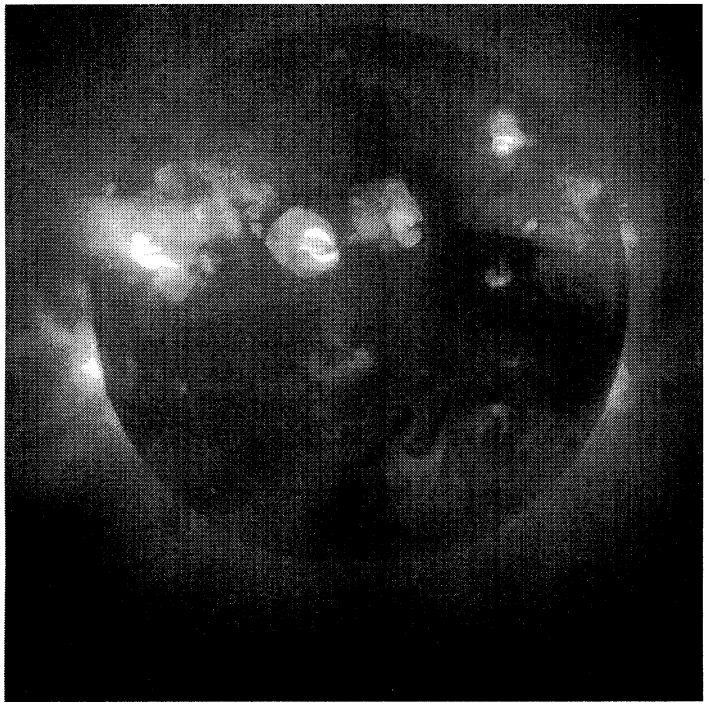
Day 6
11:19:00 UT



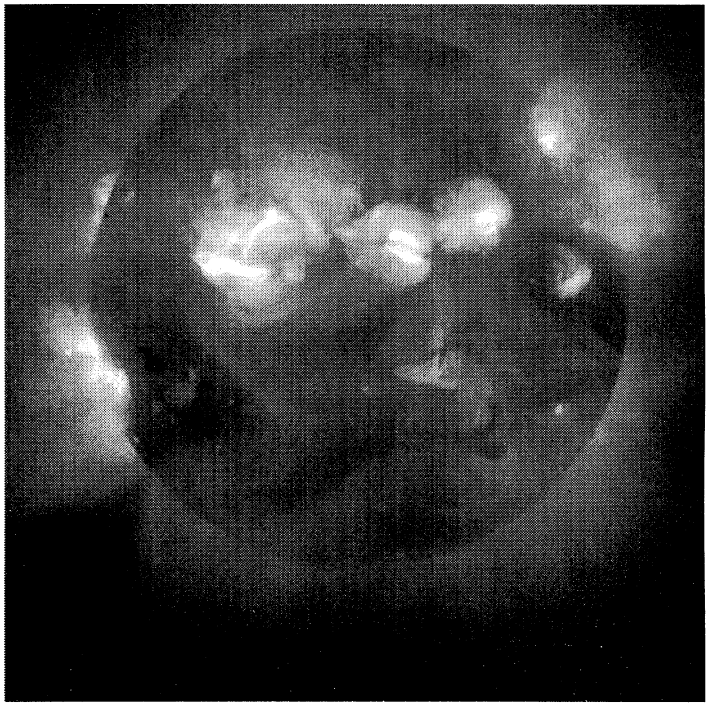
Day 8
14:28:04 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

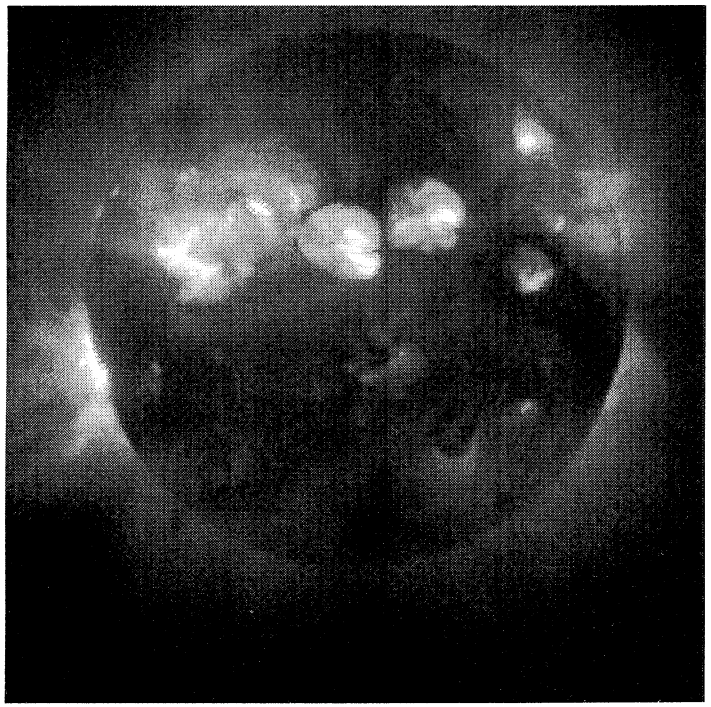
November 1999



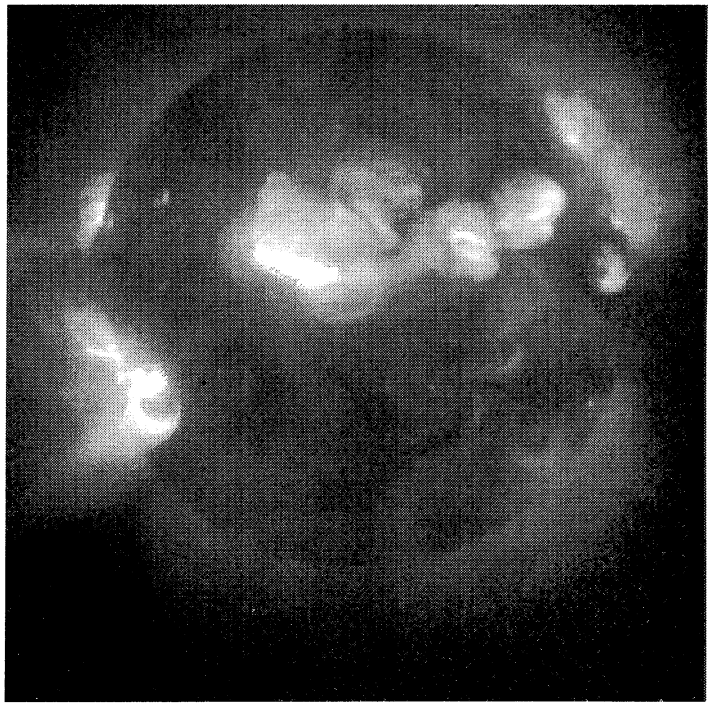
Day 9
21:22:17 UT



Day 11
09:02:59 UT



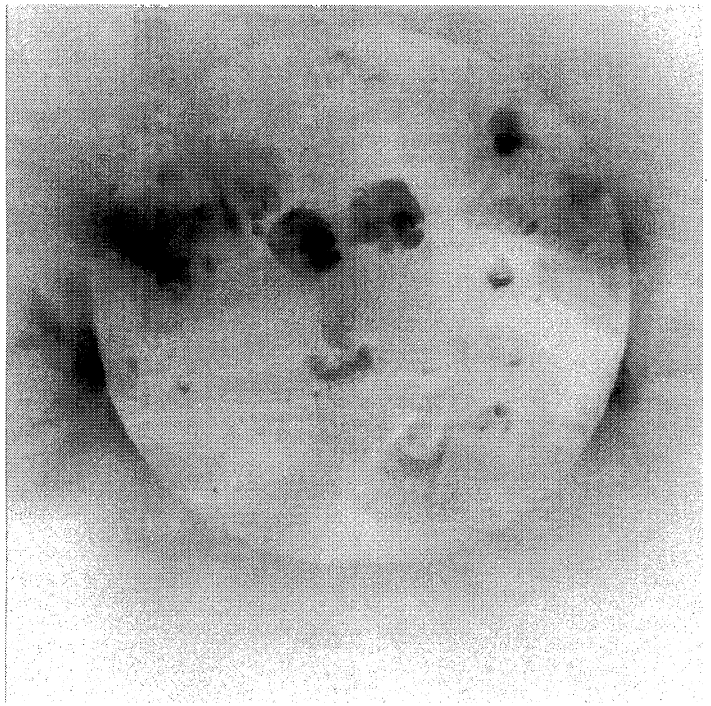
Day 10
13:47:31 UT



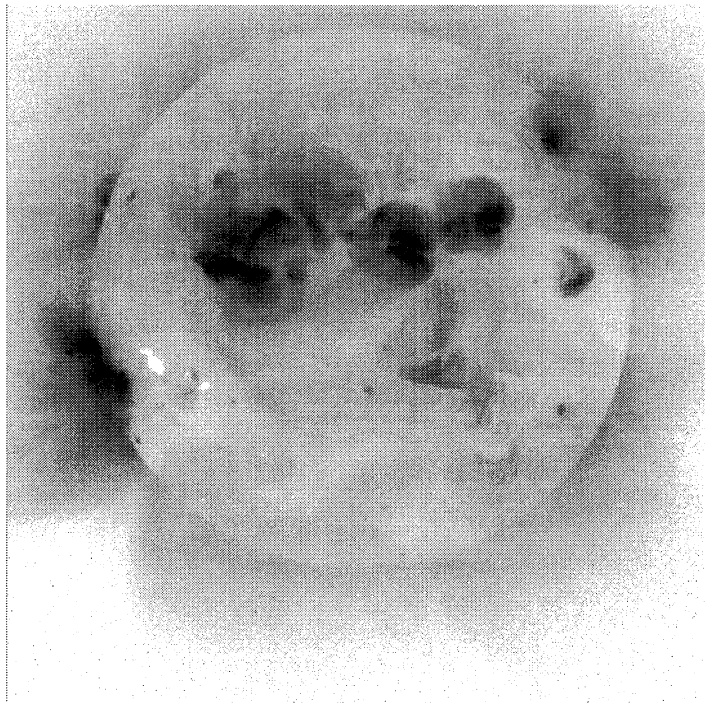
Day 12
10:55:09 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

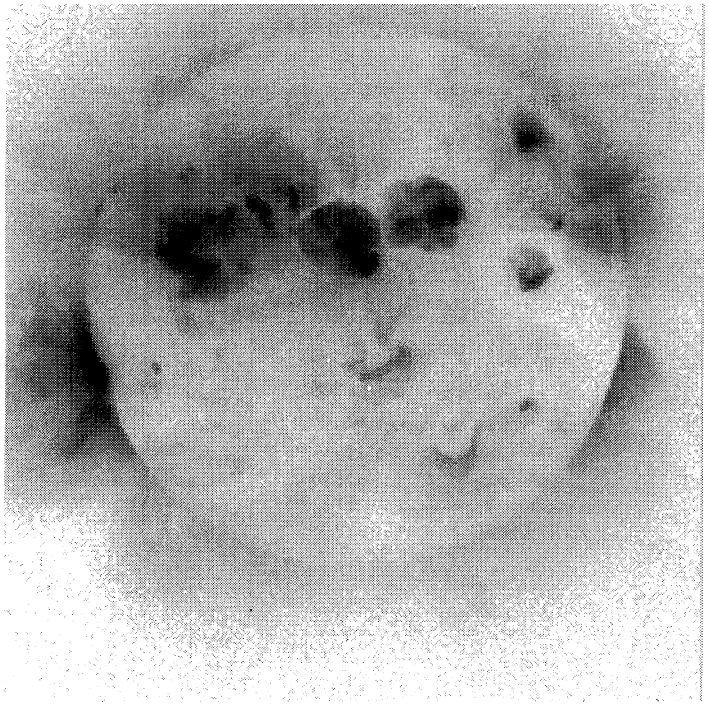
November 1999



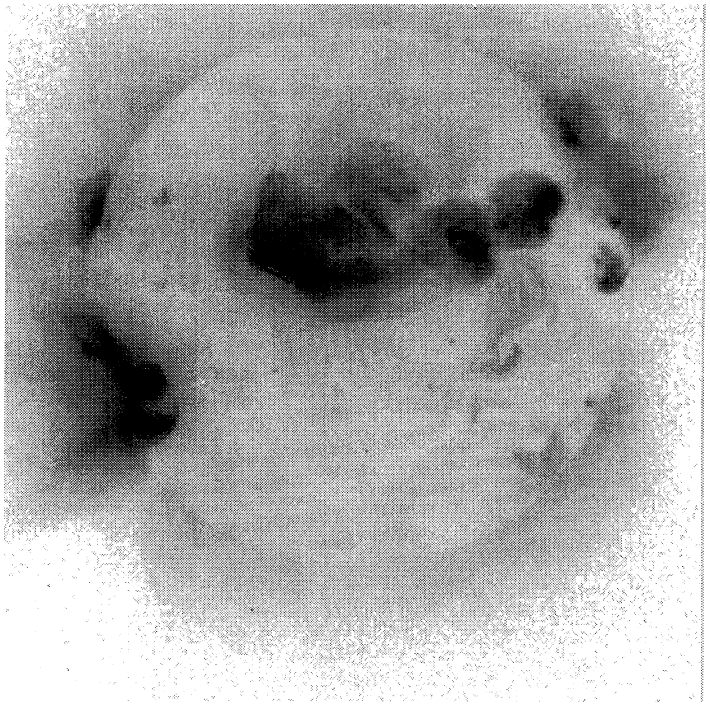
Day 9
21:22:17 UT



Day 11
09:02:59 UT



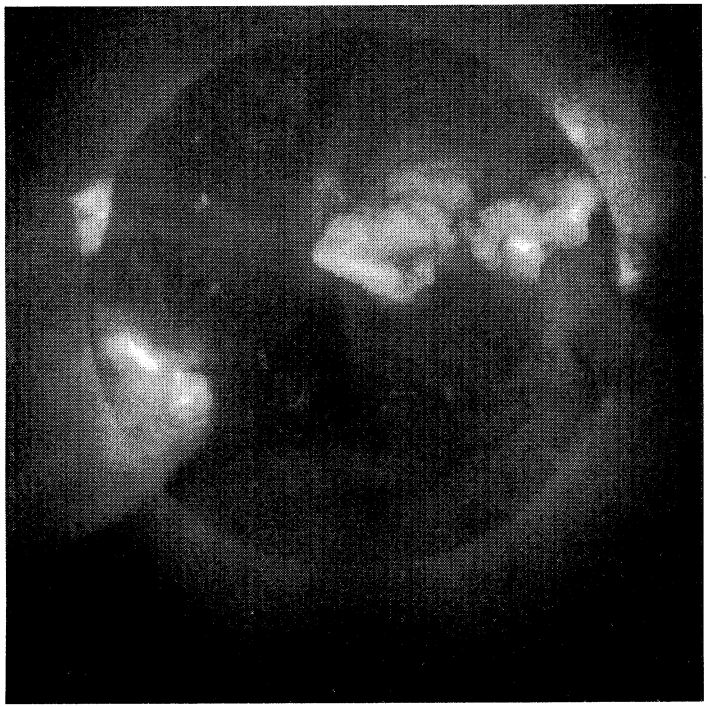
Day 10
13:47:31 UT



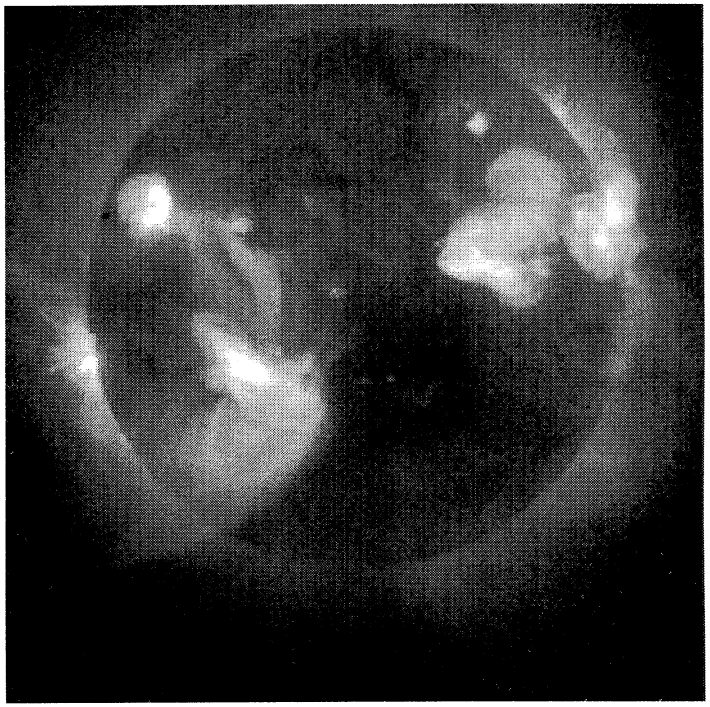
Day 12
10:55:09 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

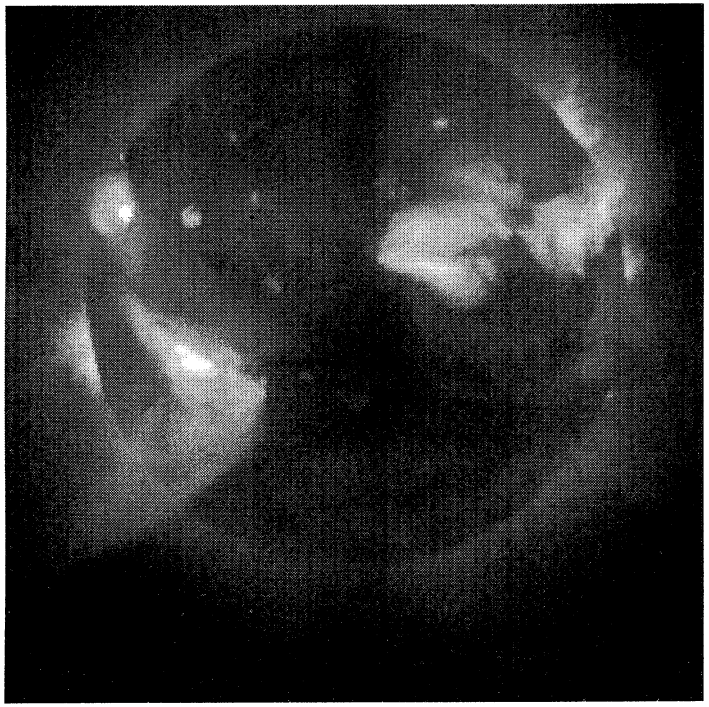
November 1999



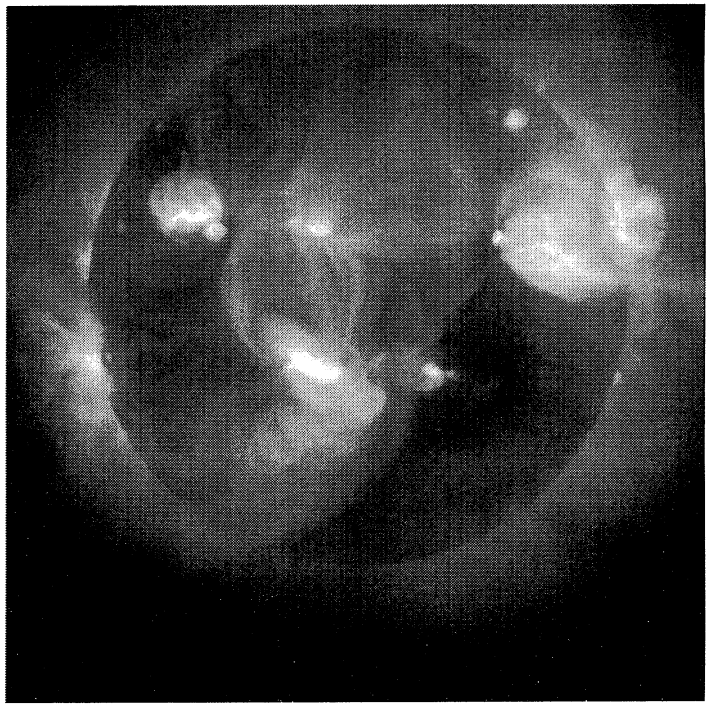
Day 13
12:01:07 UT



Day 15
11:38:46 UT



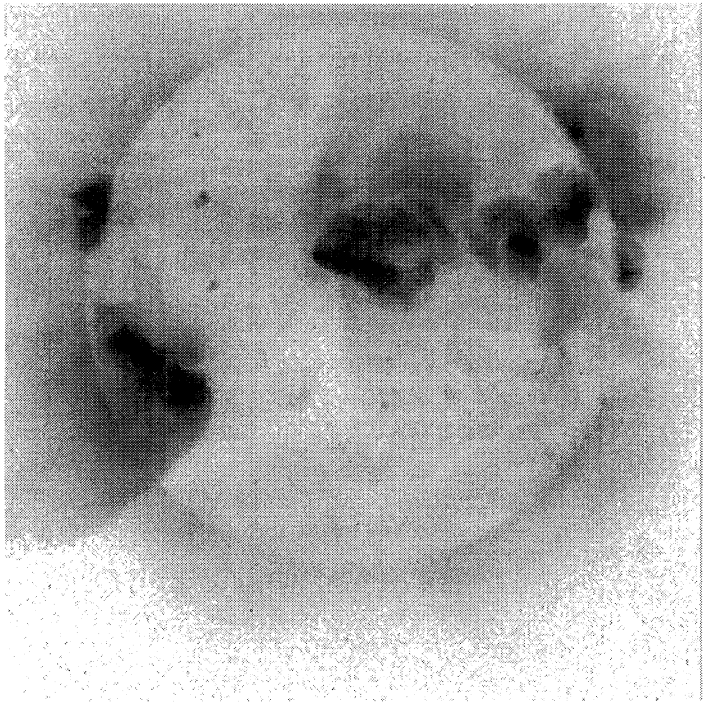
Day 14
12:21:23 UT



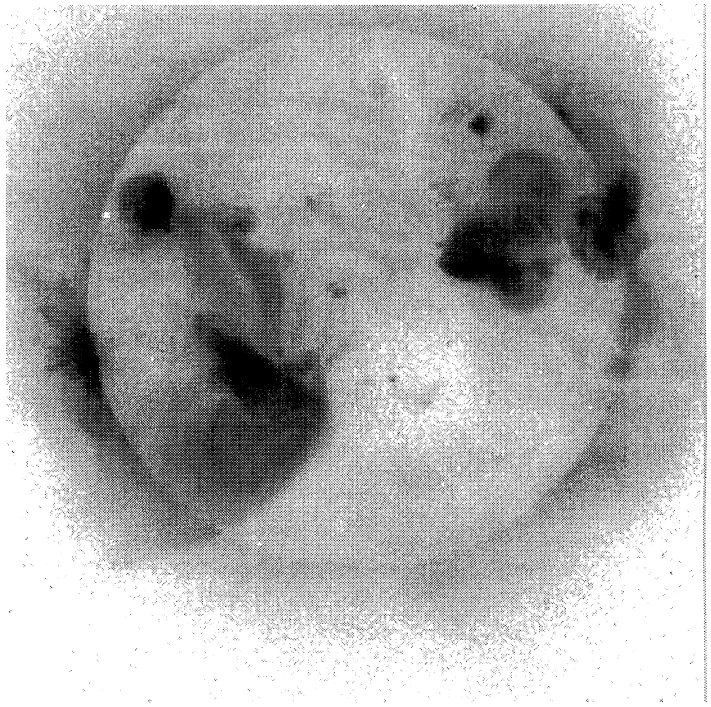
Day 16
12:37:52 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

November 1999



Day 13
12:01:07 UT



Day 15
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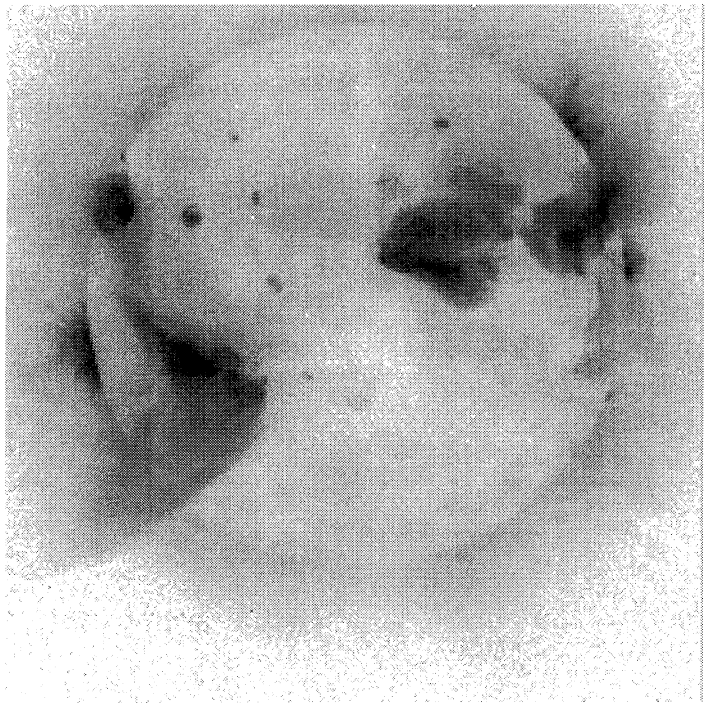
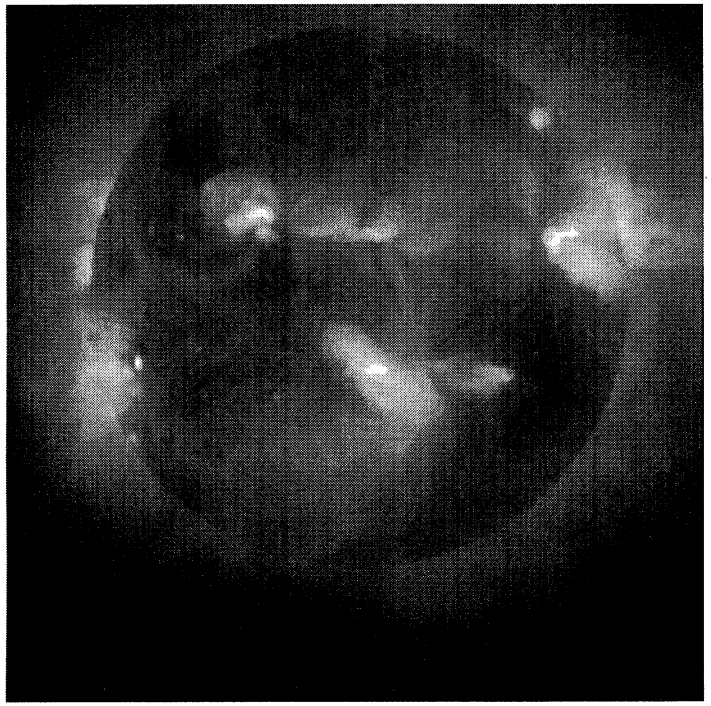


Day 14
12:21:23 UT

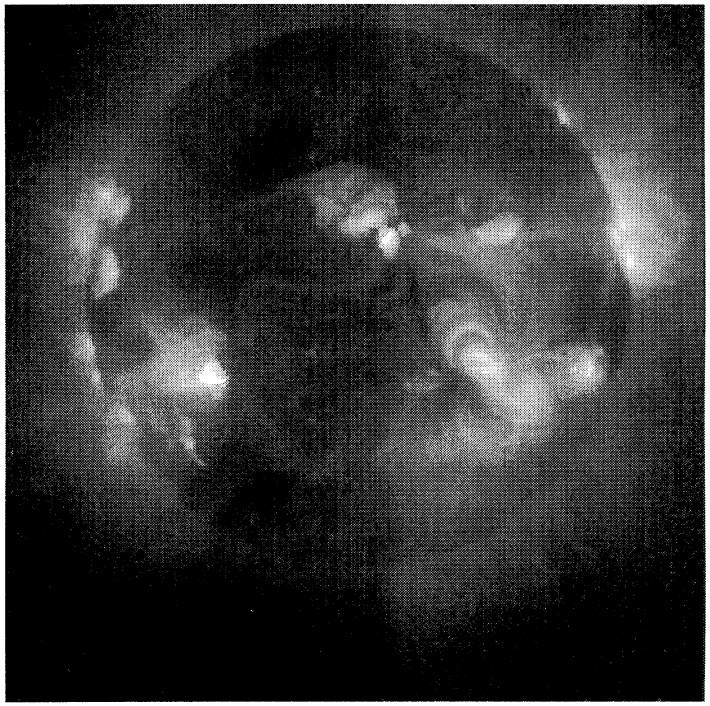
Day 16
12:37:52 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

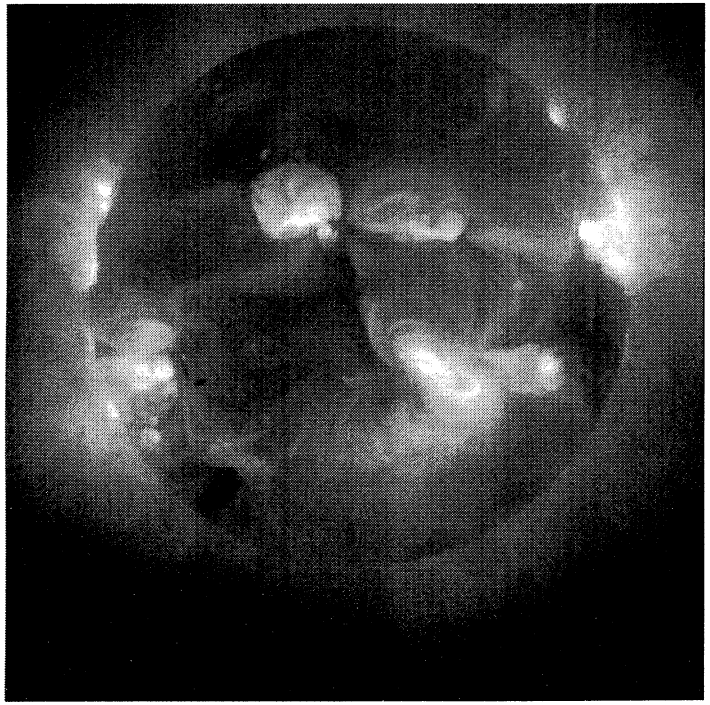
November 1999



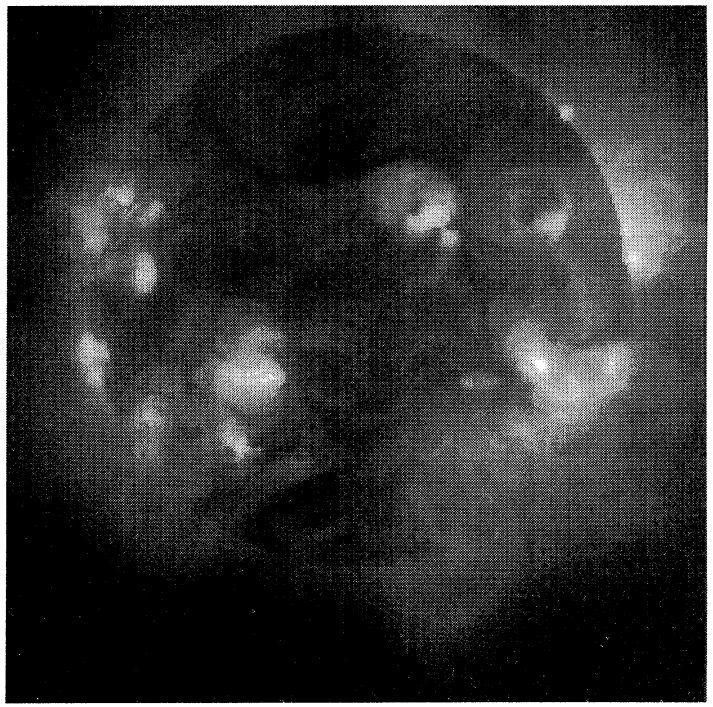
Day 17
11:58:28 UT



Day 19
12:20:50 UT



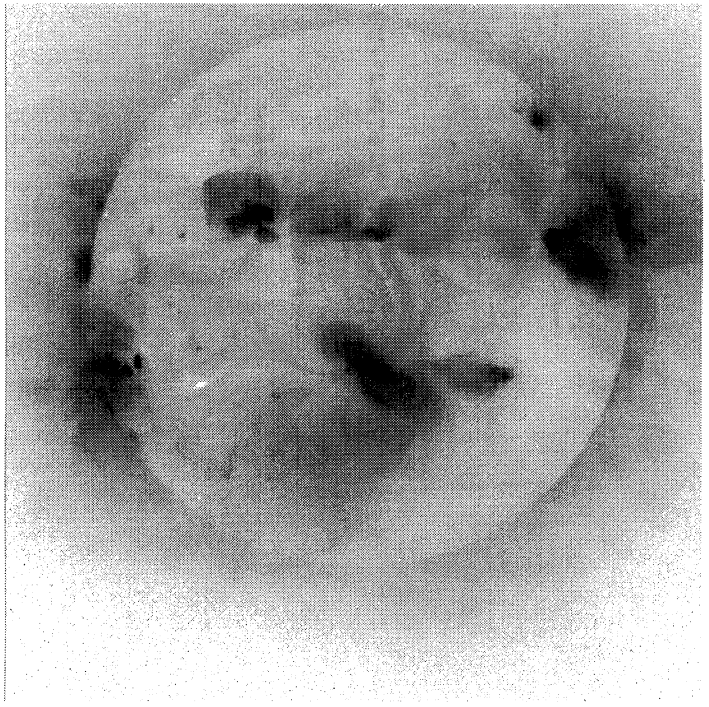
Day 18
12:07:34 UT



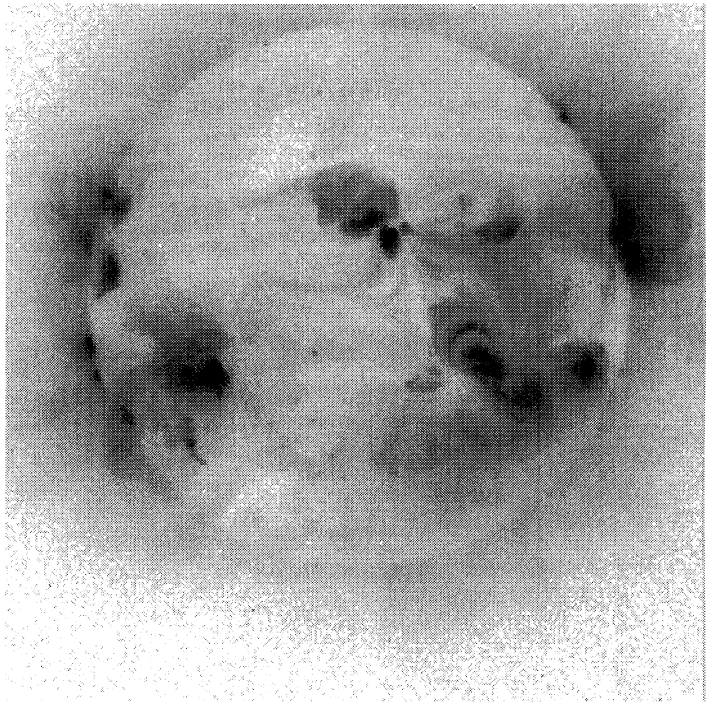
Day 20
11:54:15 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

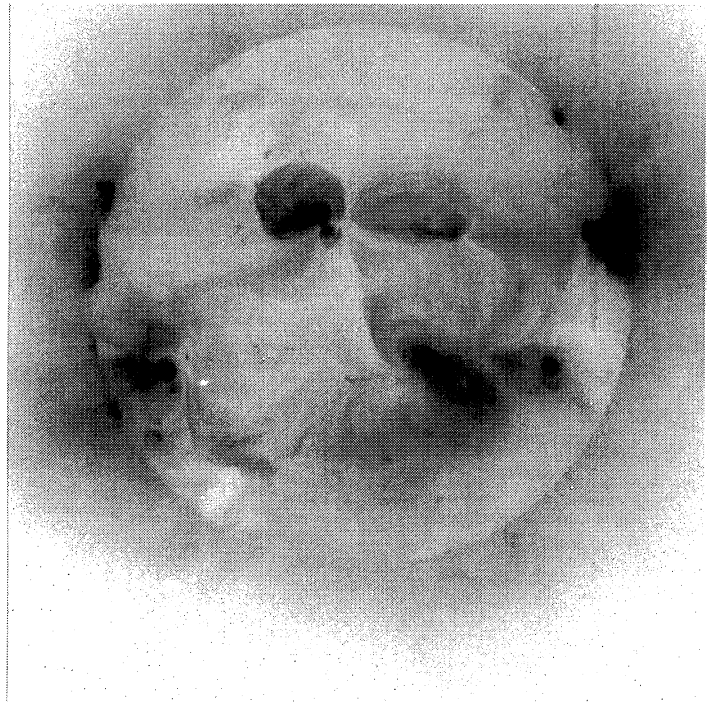
November 1999



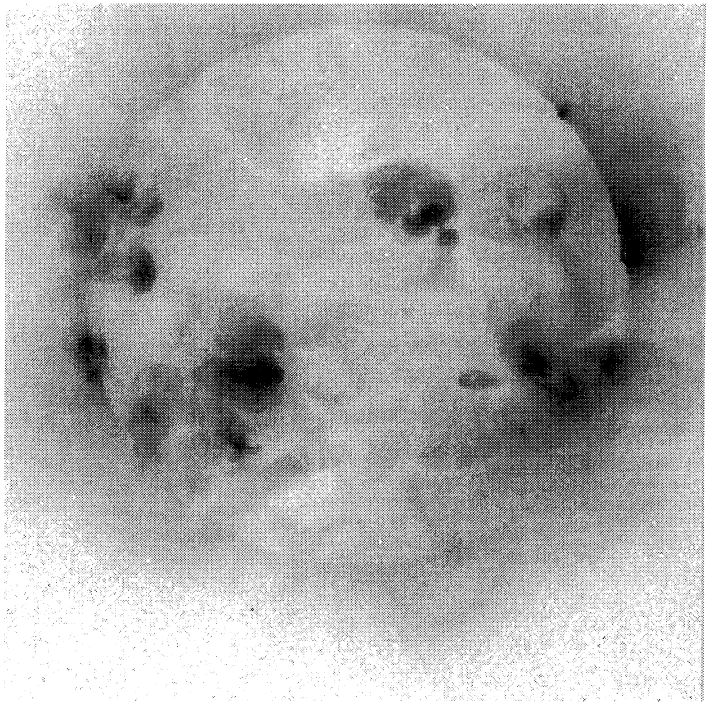
Day 17
11:58:28 UT



Day 19
12:20:50 UT



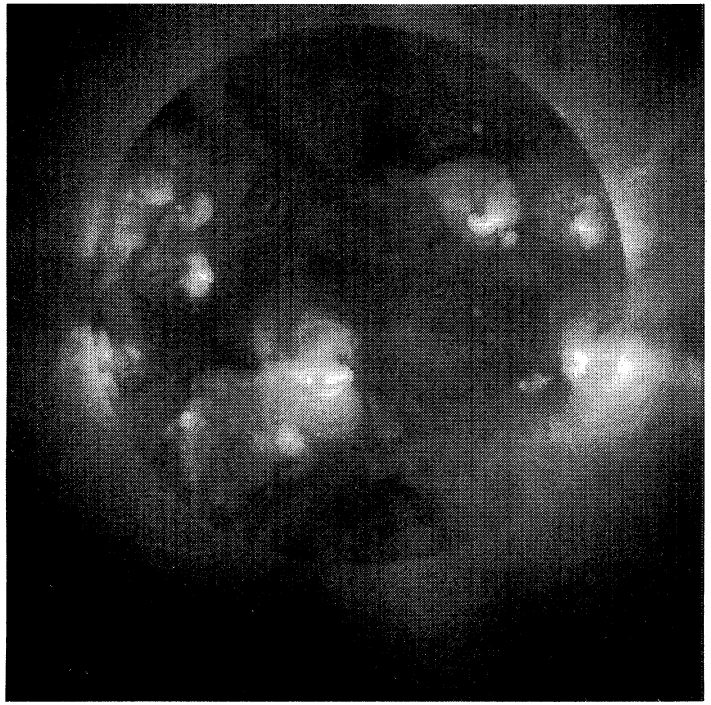
Day 18
12:07:34 UT



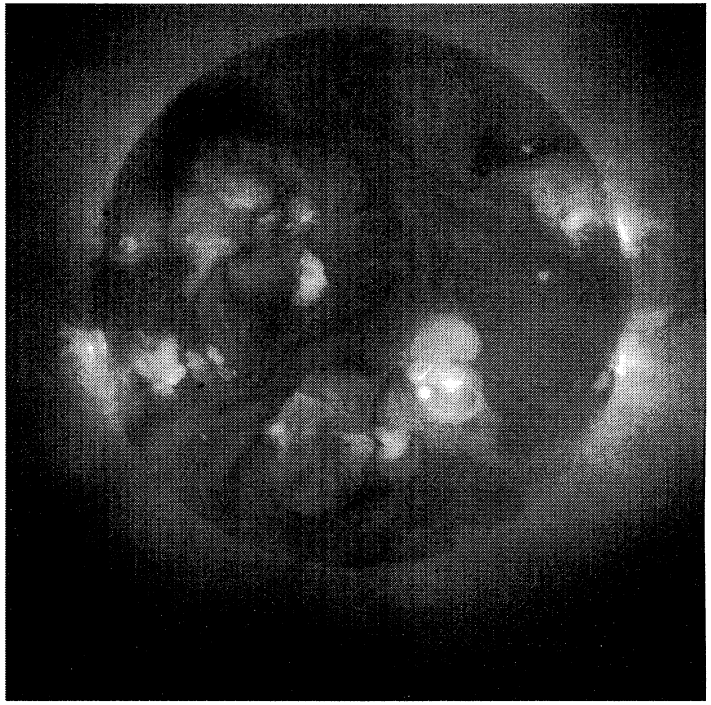
Day 20
11:54:15 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

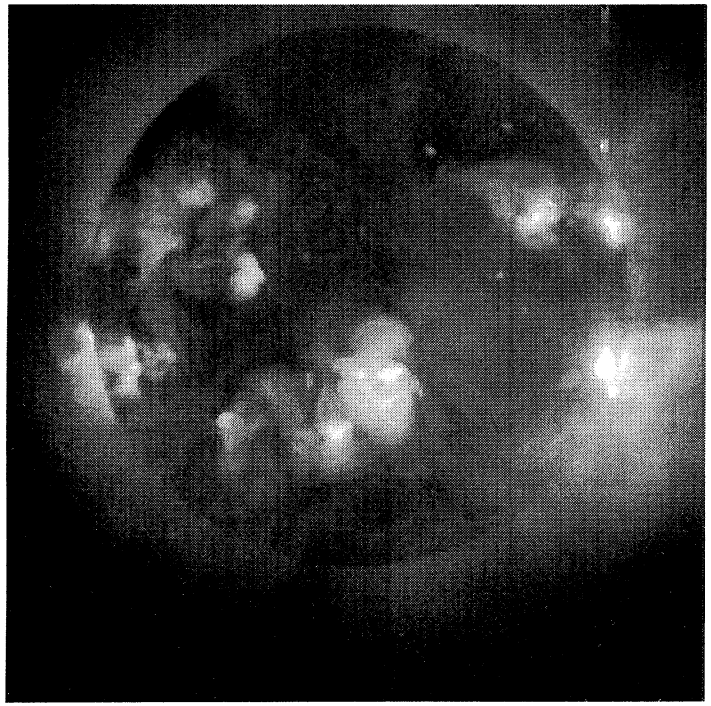
November 1999



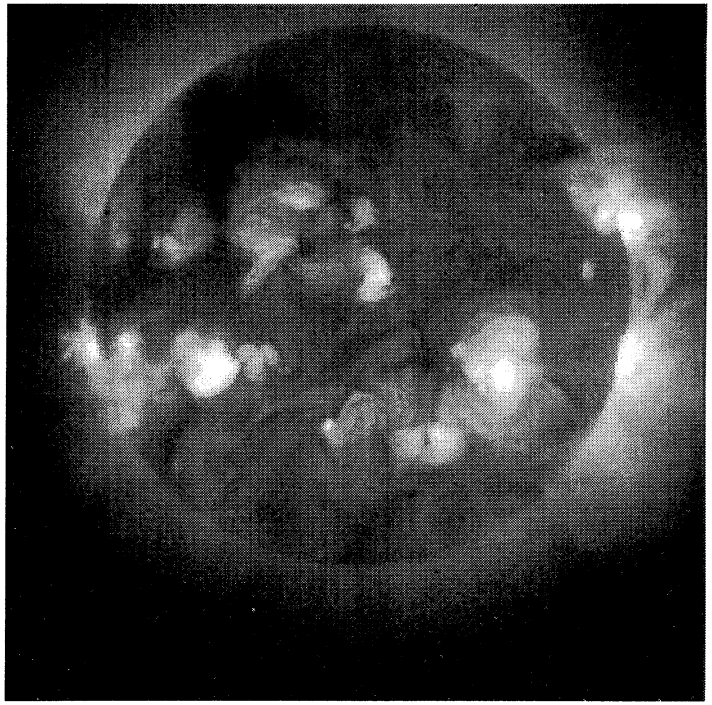
Day 21
15:22:25 UT



Day 23
12:26:07 UT



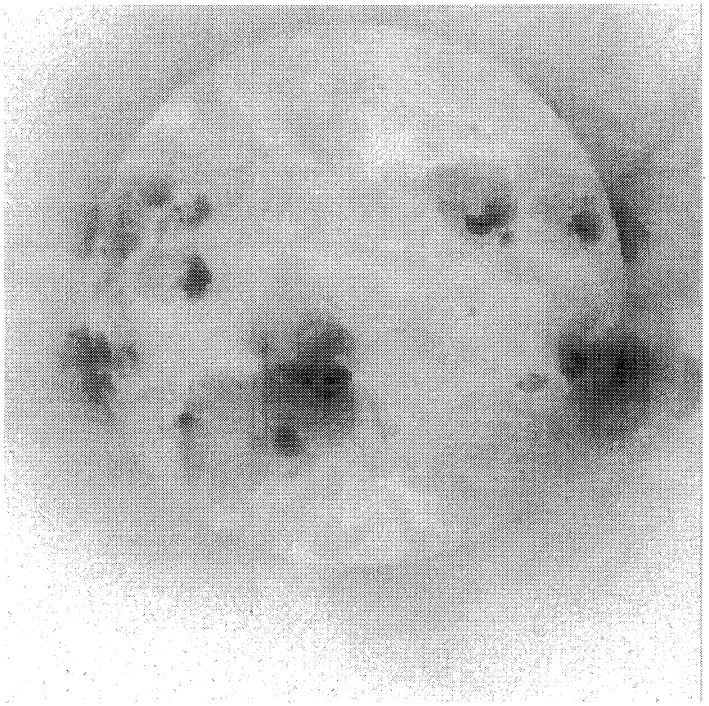
Day 22
12:14:53 UT



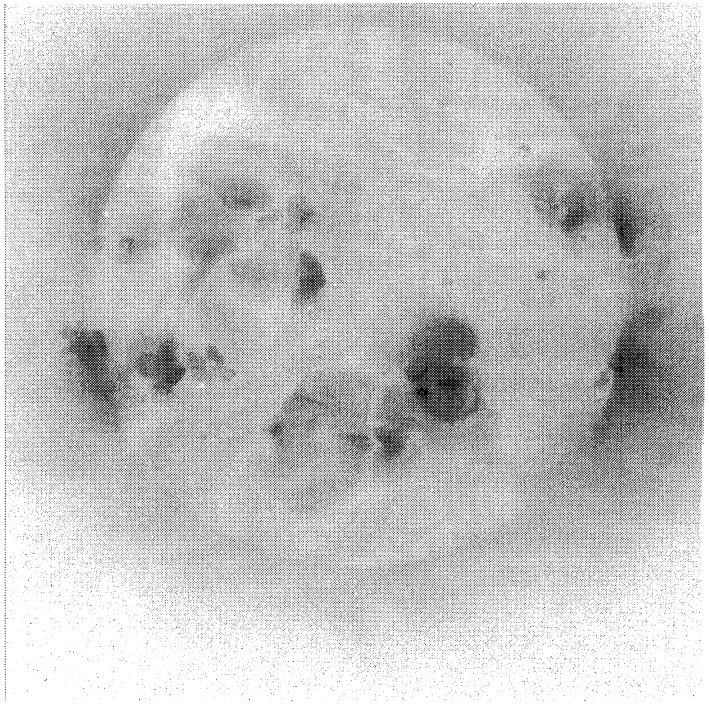
Day 24
11:49:07 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

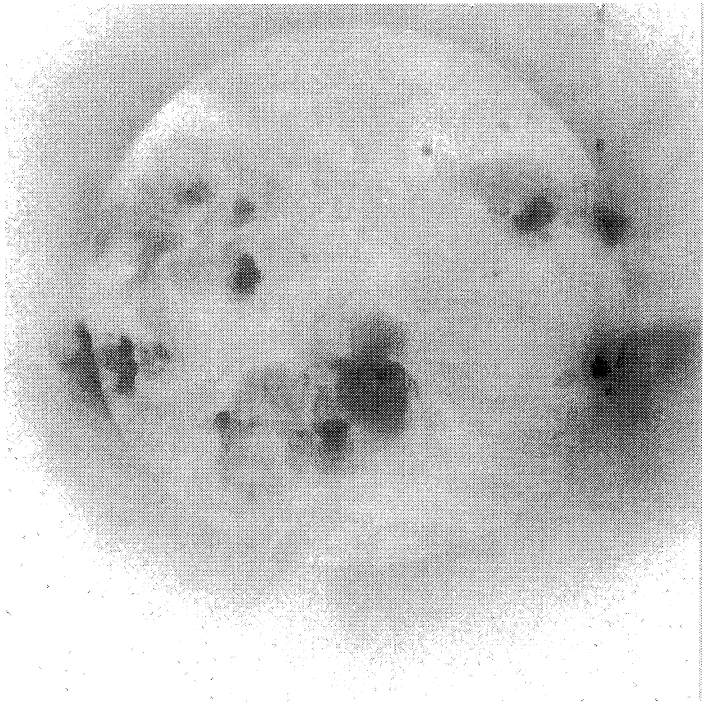
November 1999



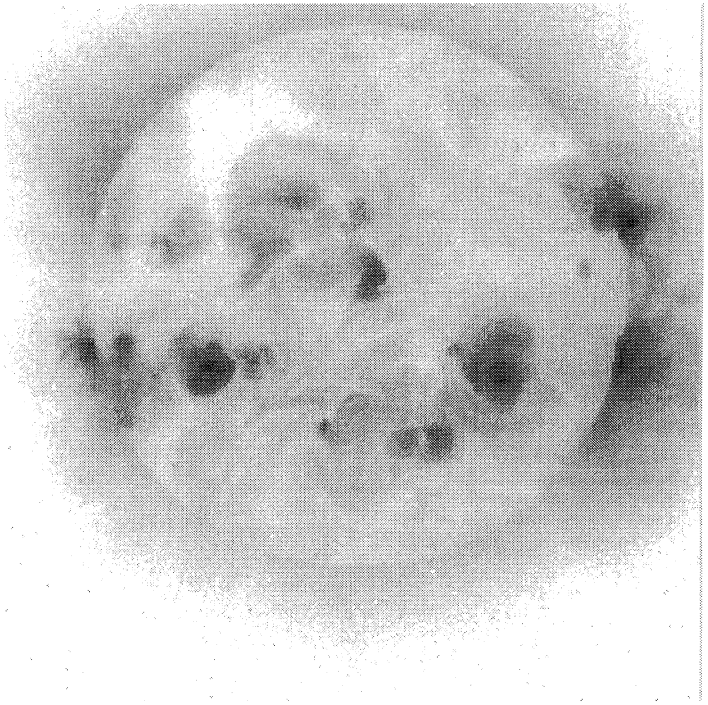
Day 21
15:22:25 UT



Day 23
12:26:07 UT



Day 22
12:14:53 UT



Day 24
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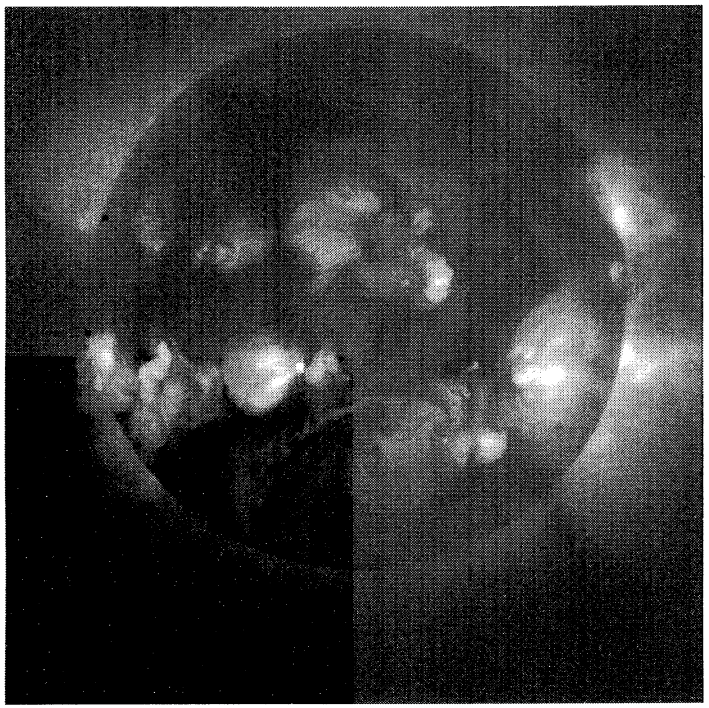
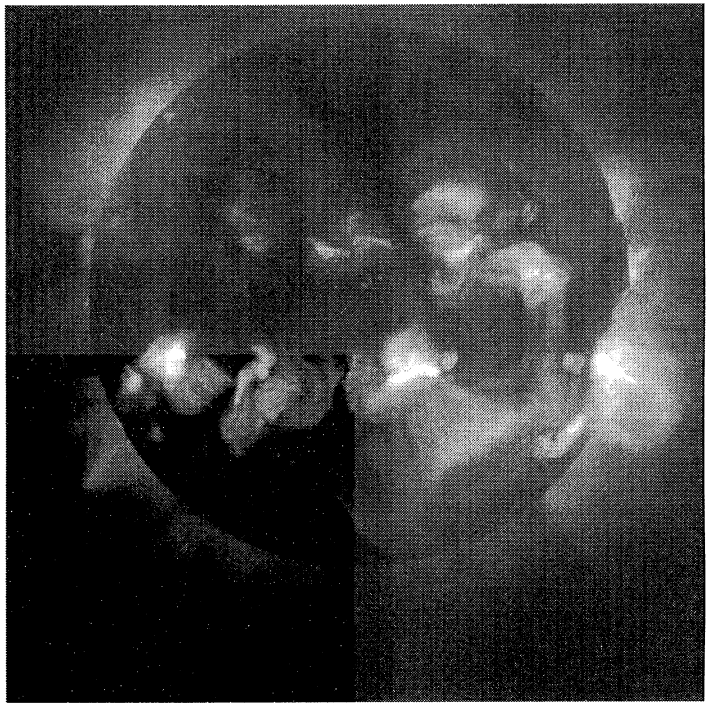
YOHKOH SOFT X-RAY TELESCOPE IMAGES

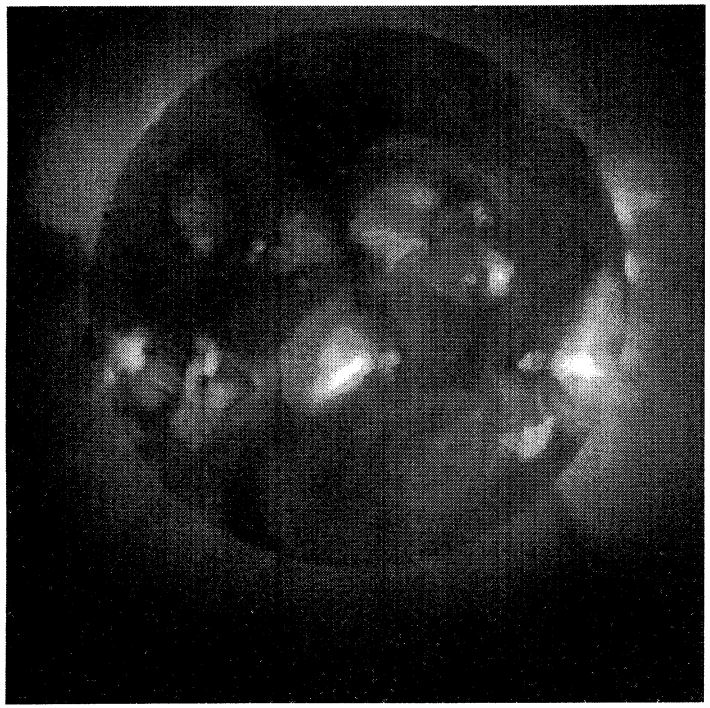
November 1999



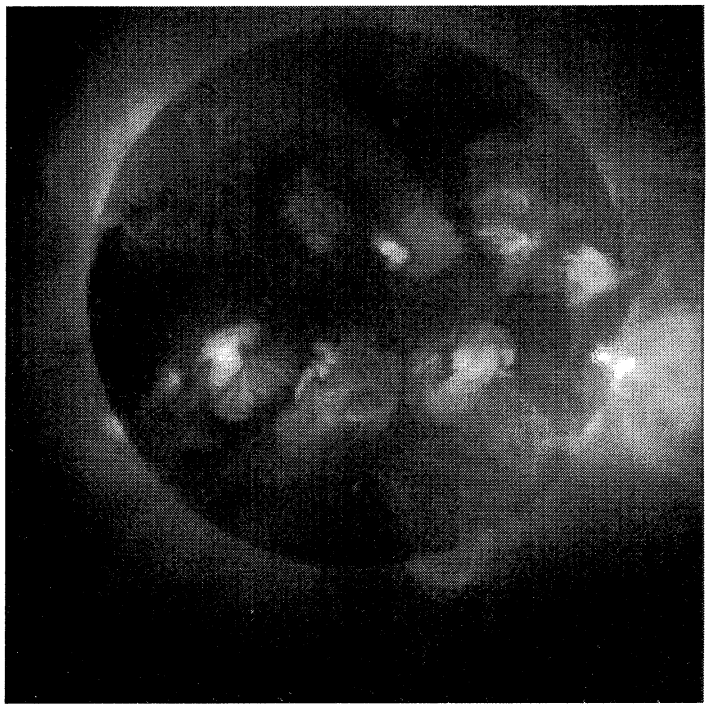
Day 25
11:59:54 UT



Day 27
10:44:22 UT



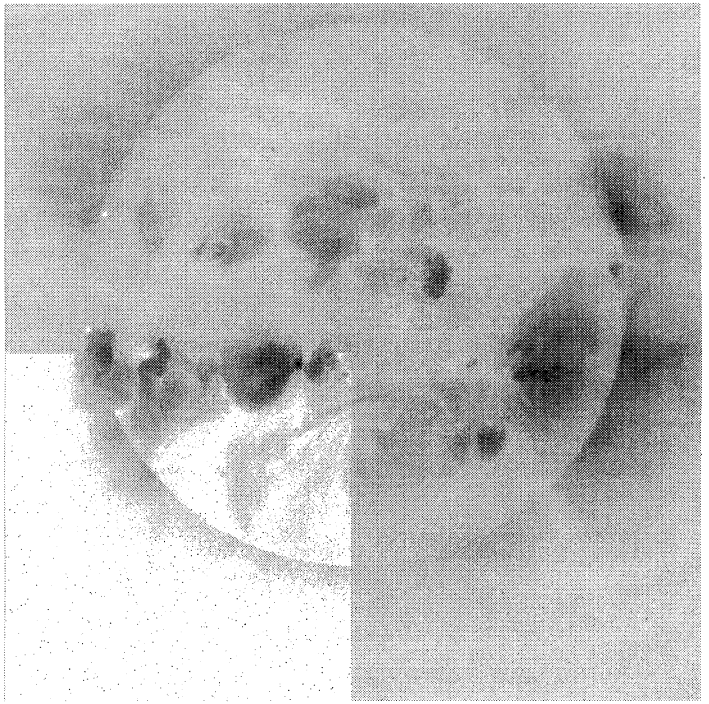
Day 26
11:56:32 UT



Day 28
12:32:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

November 1999



Day 25
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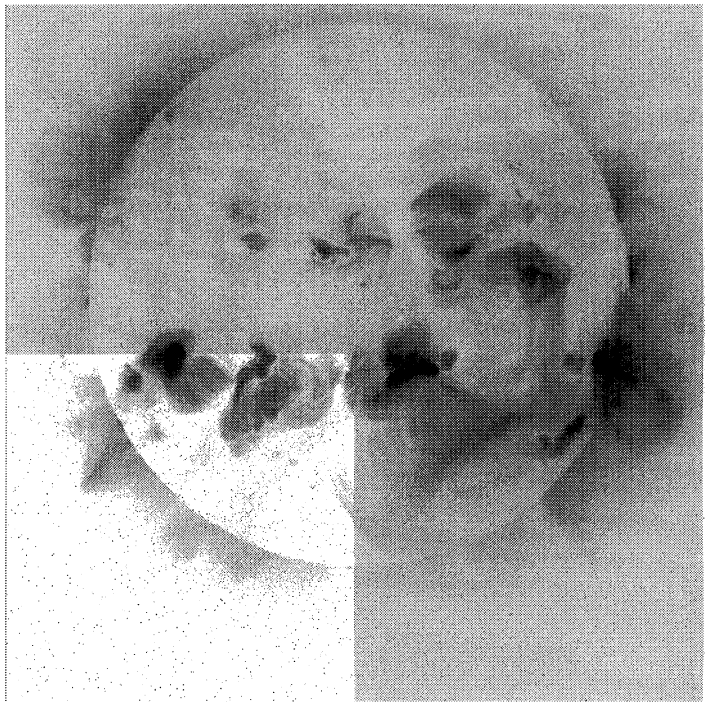
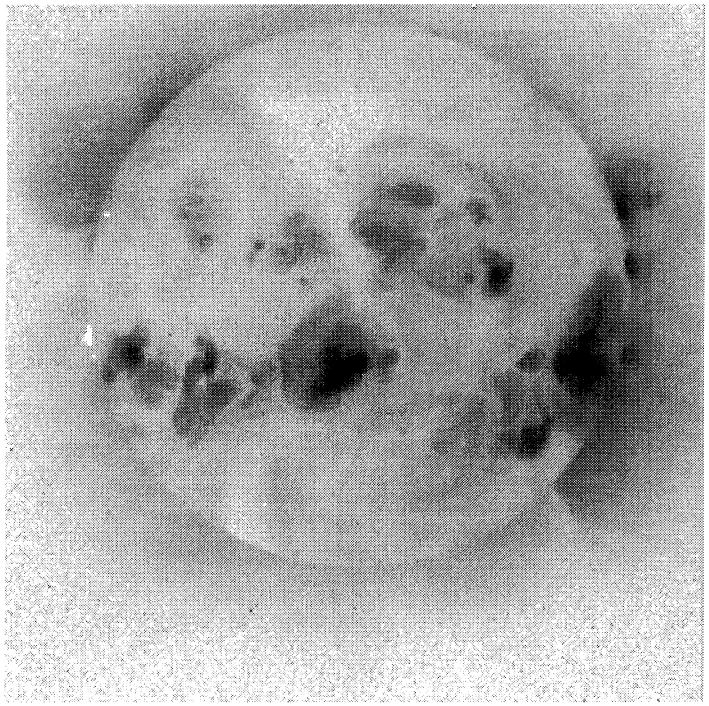
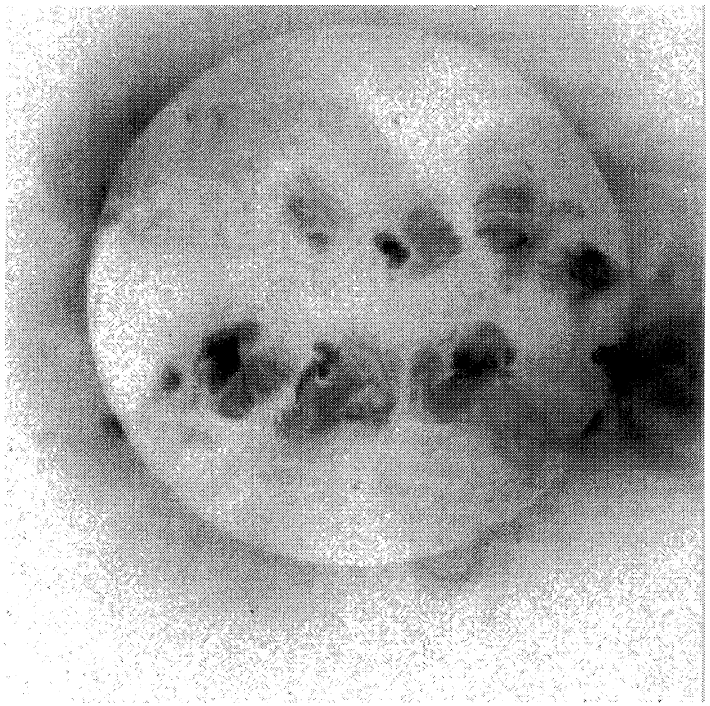


Day 27
10:44:22 UT



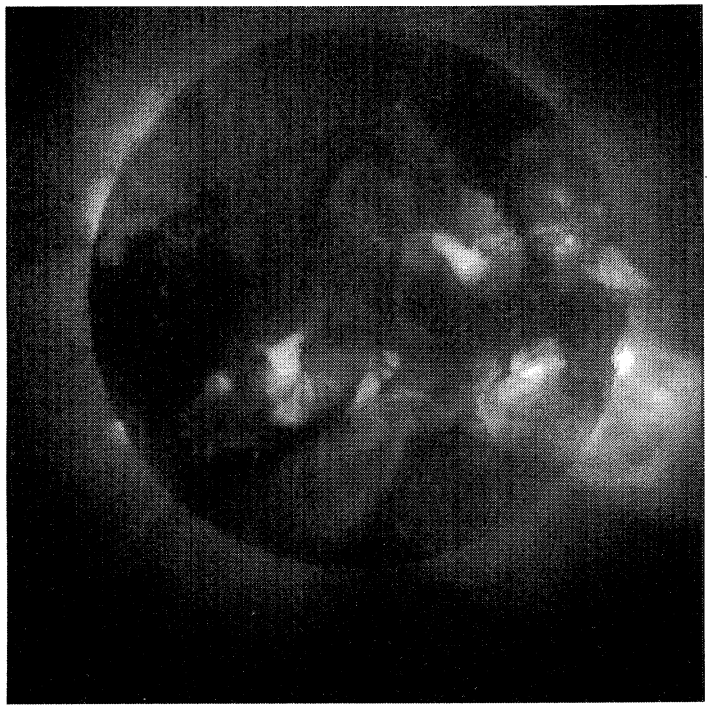
Day 26
11:56:32 UT



Day 28
12:32:32 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

November 1999



Day 29
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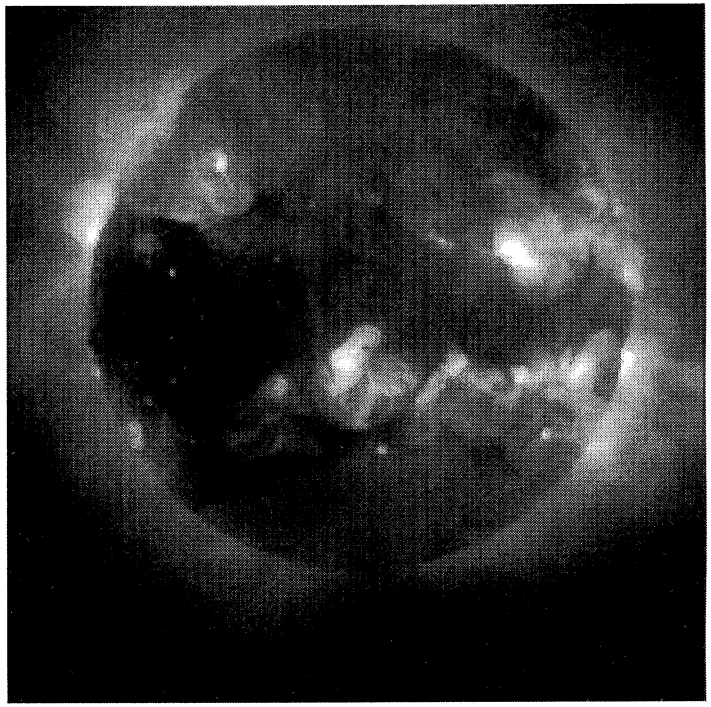

Day 30
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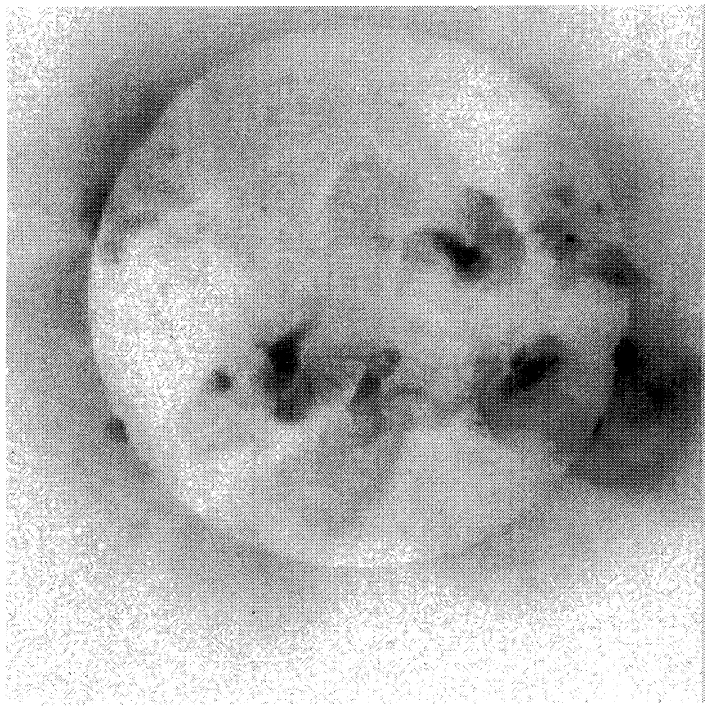

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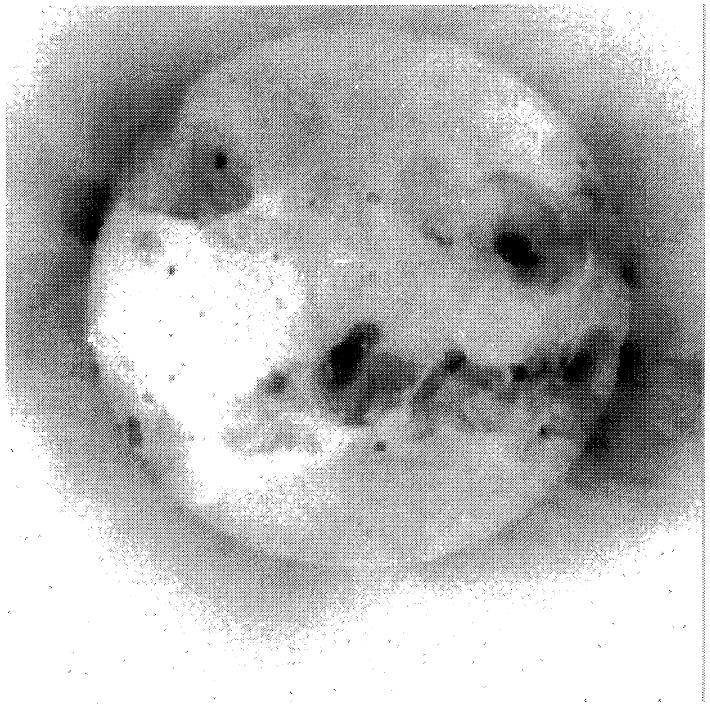

Day 30
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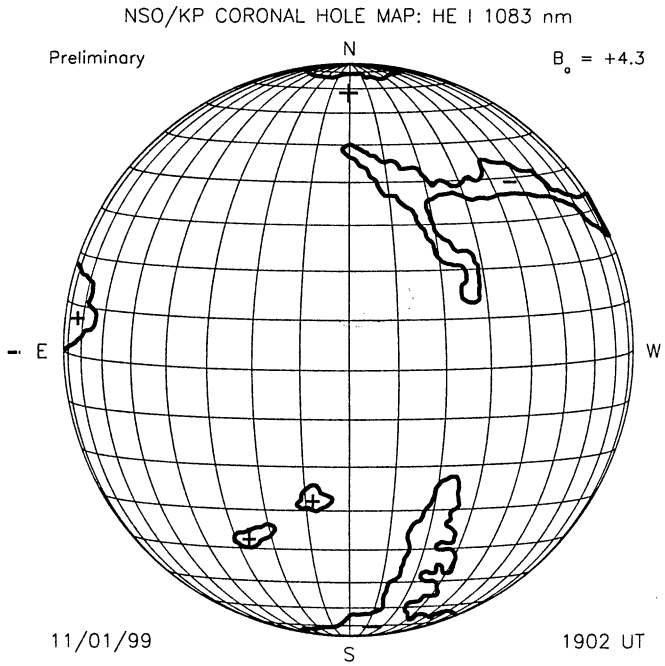
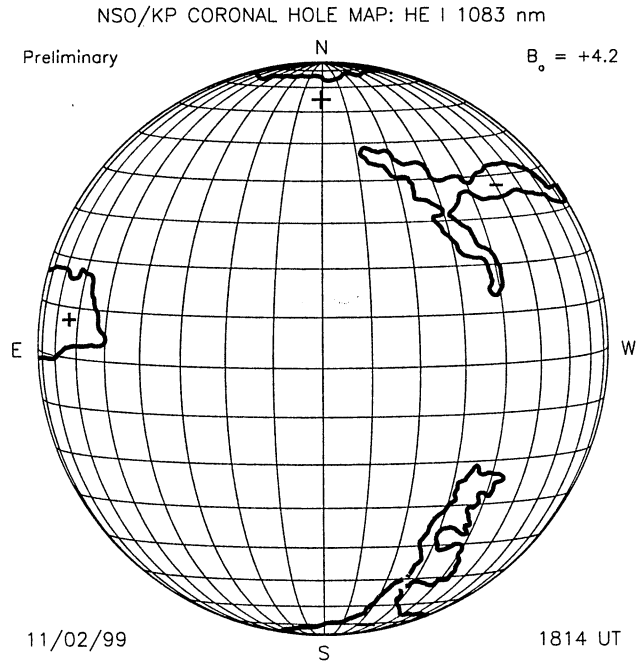
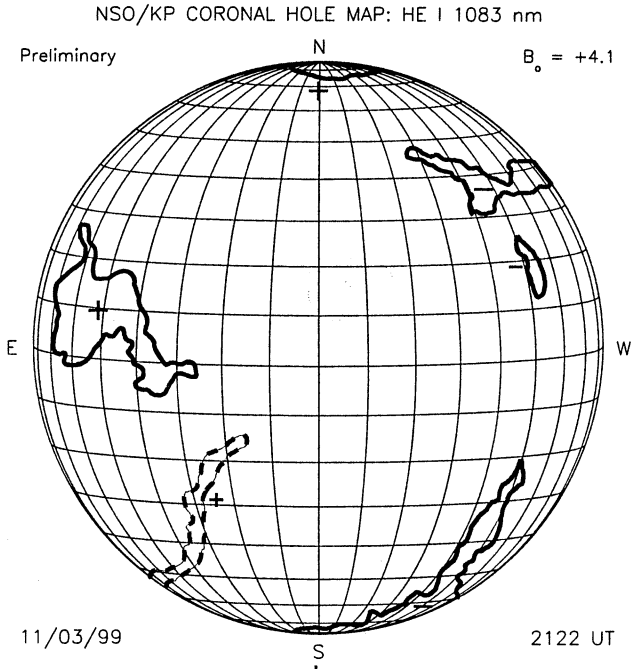
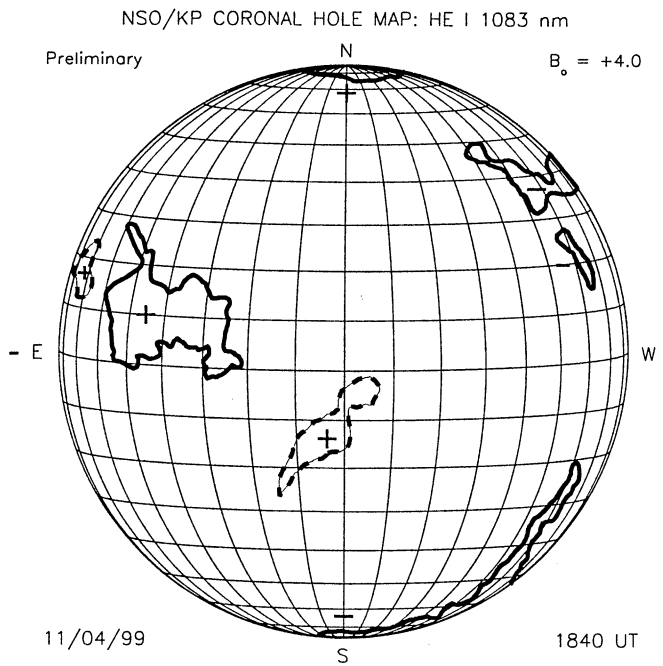
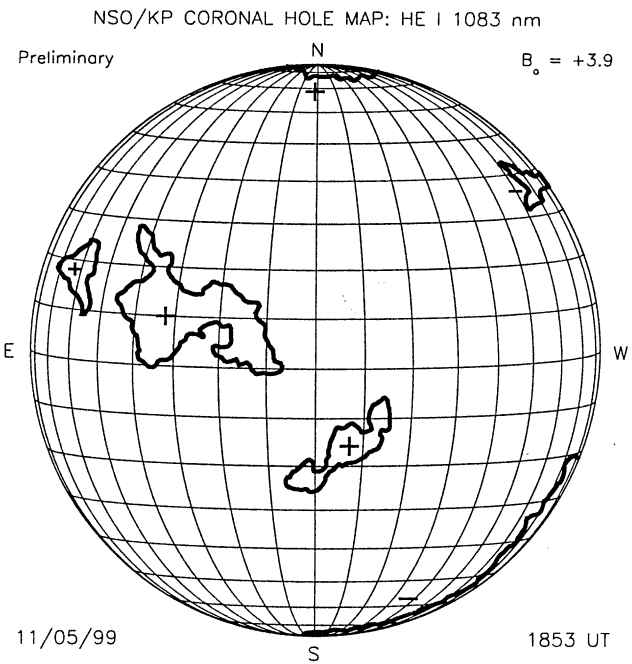
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
November 1999

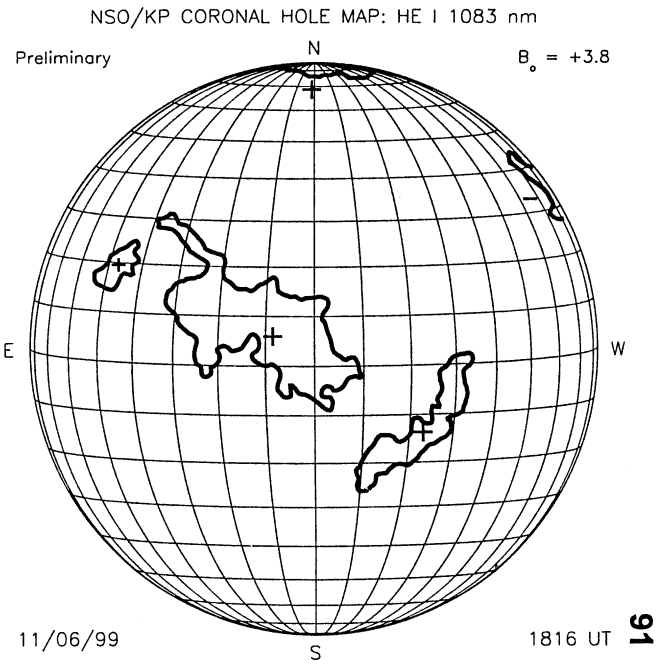












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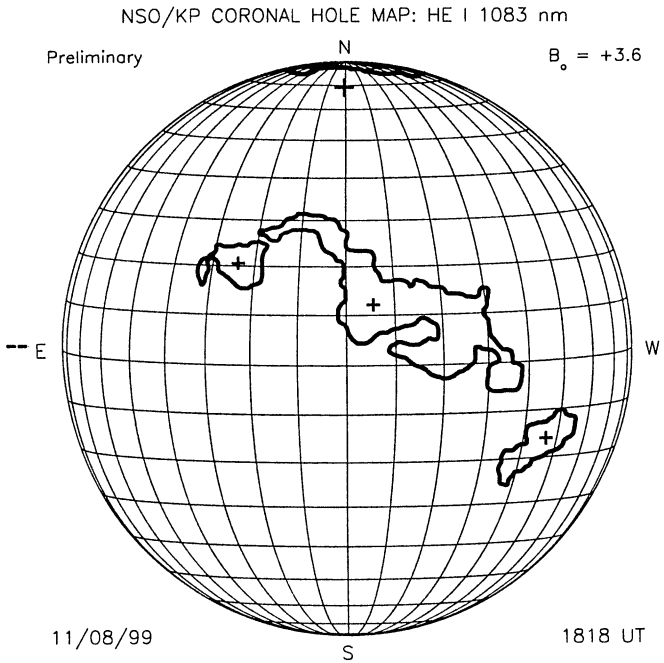

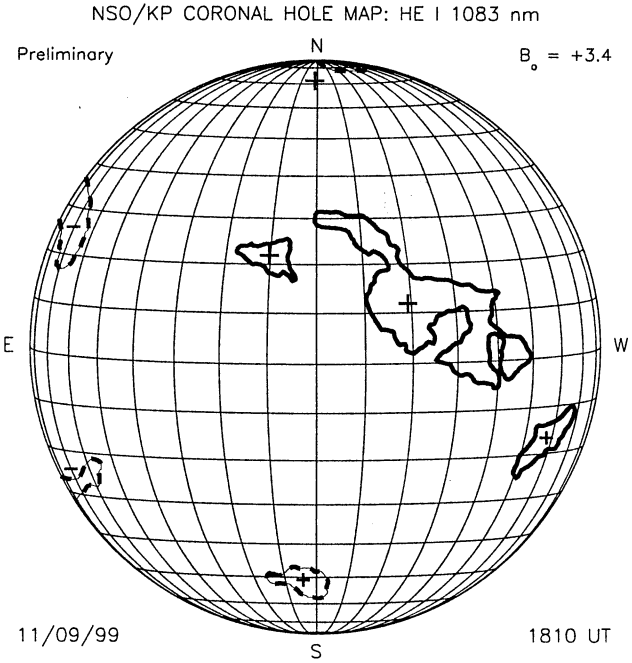

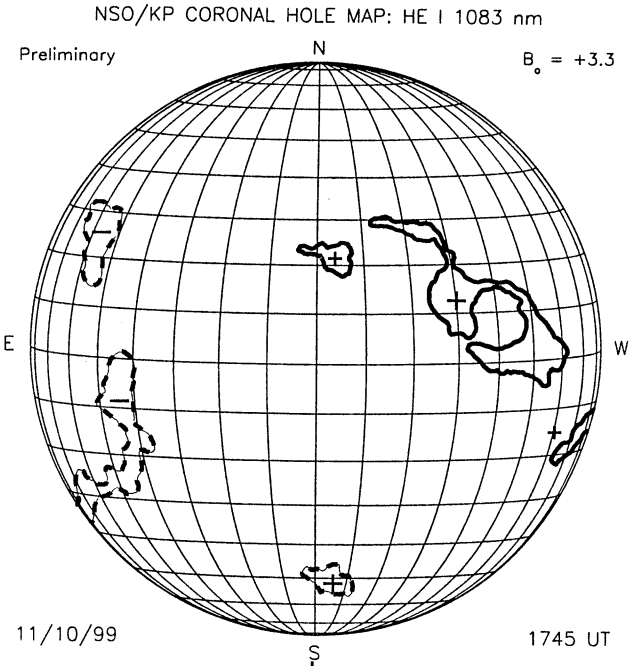

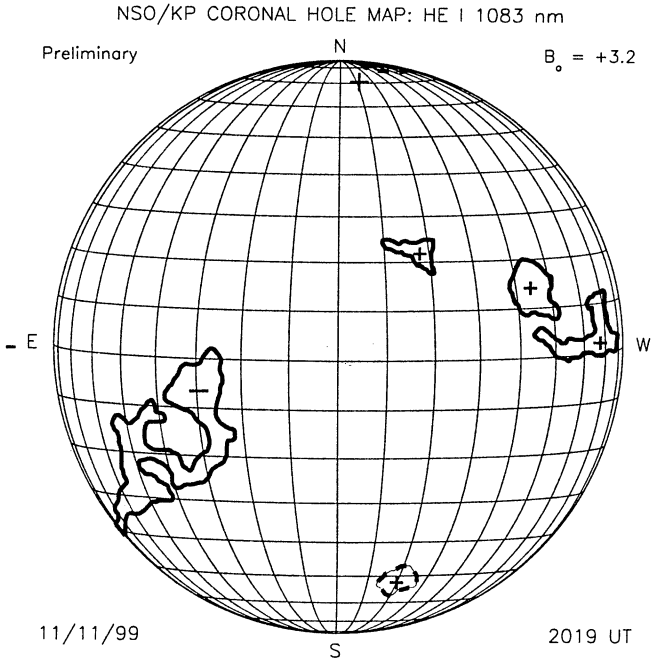

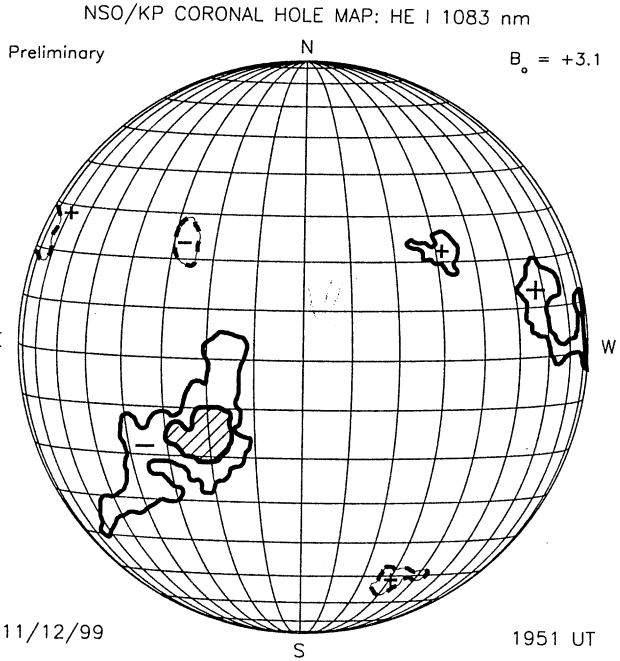

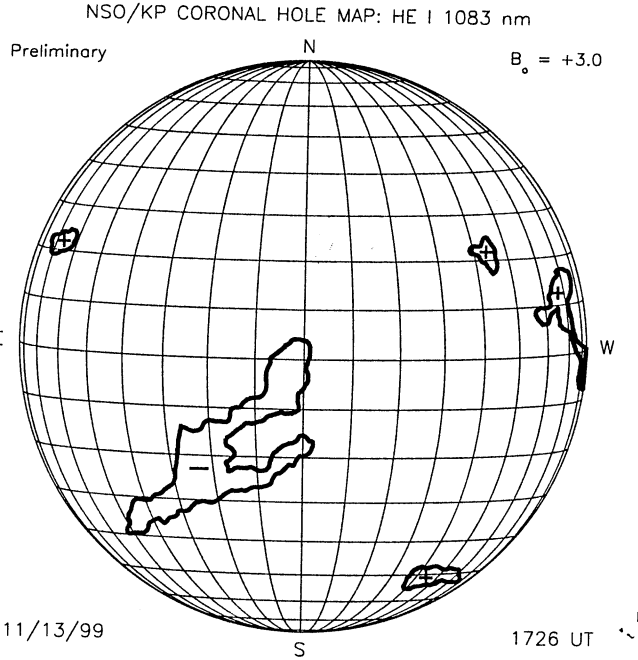

KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
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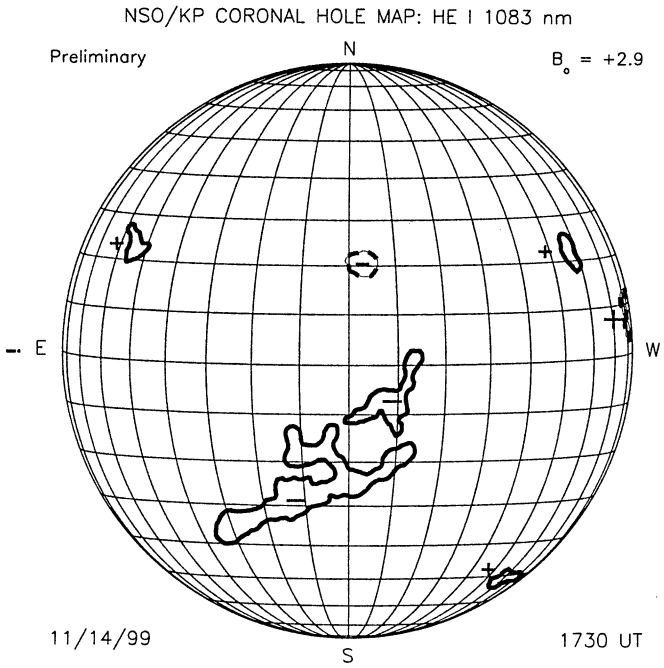

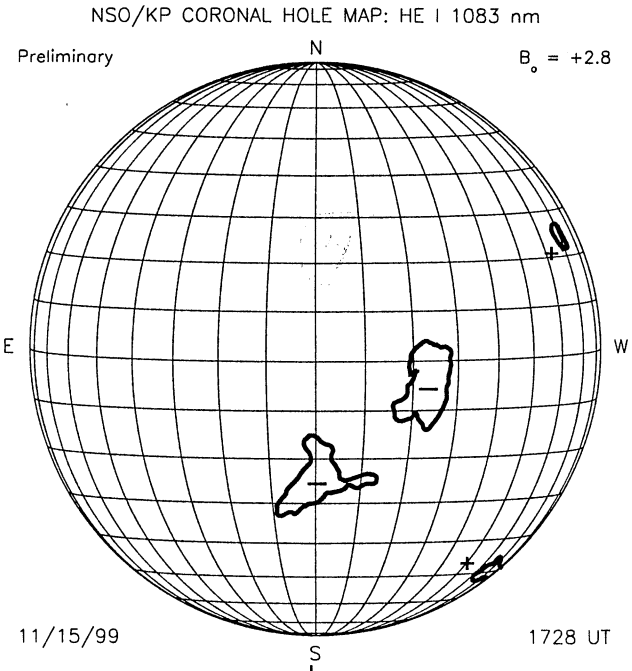

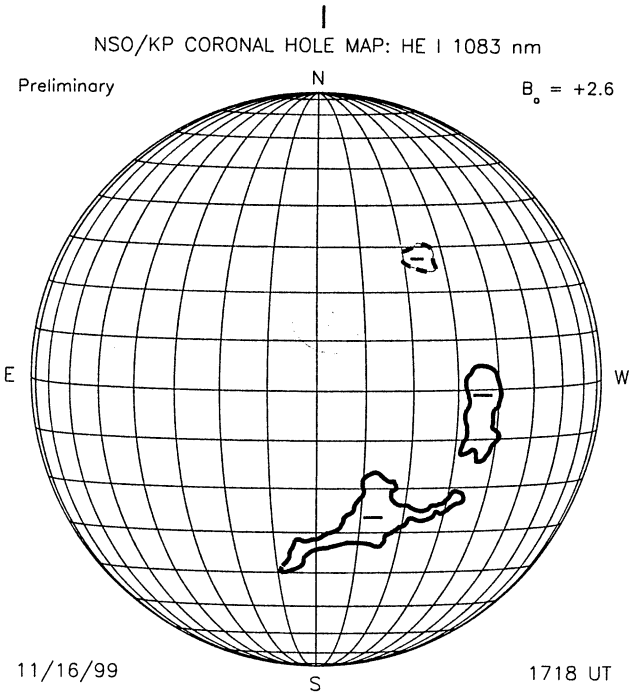

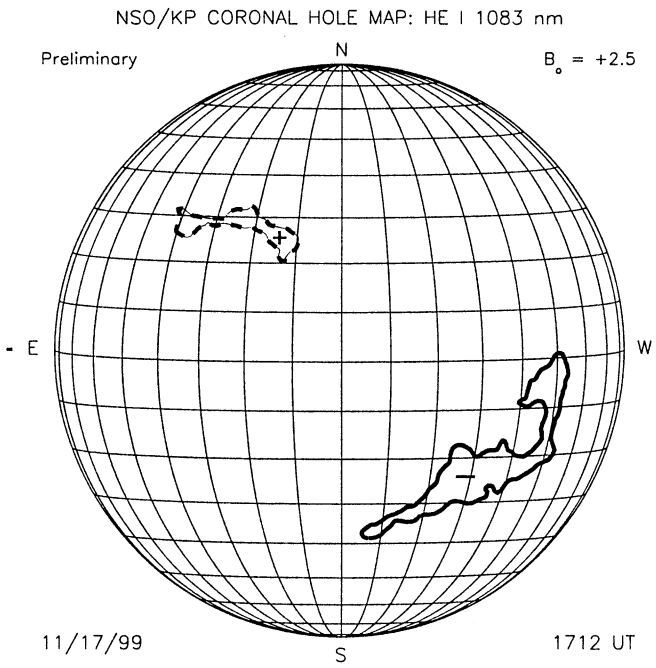

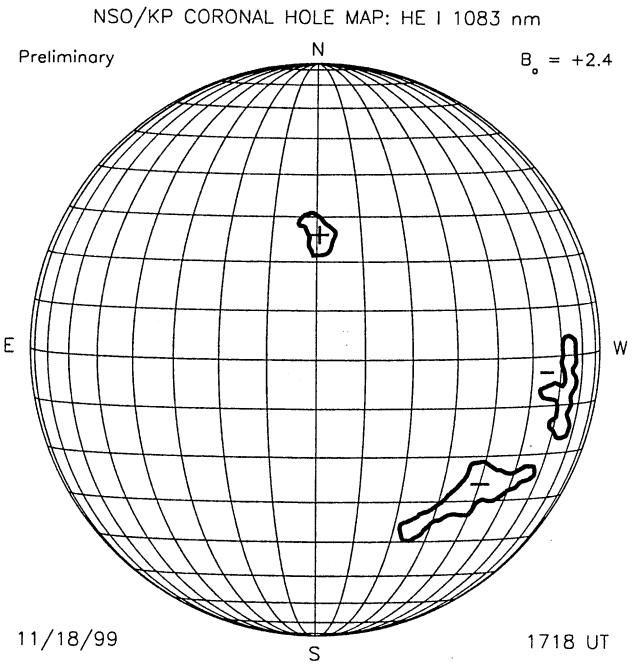

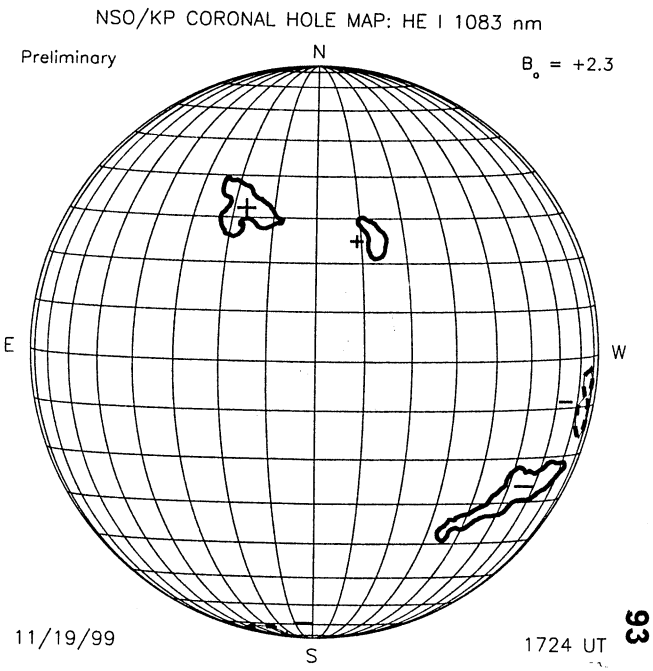

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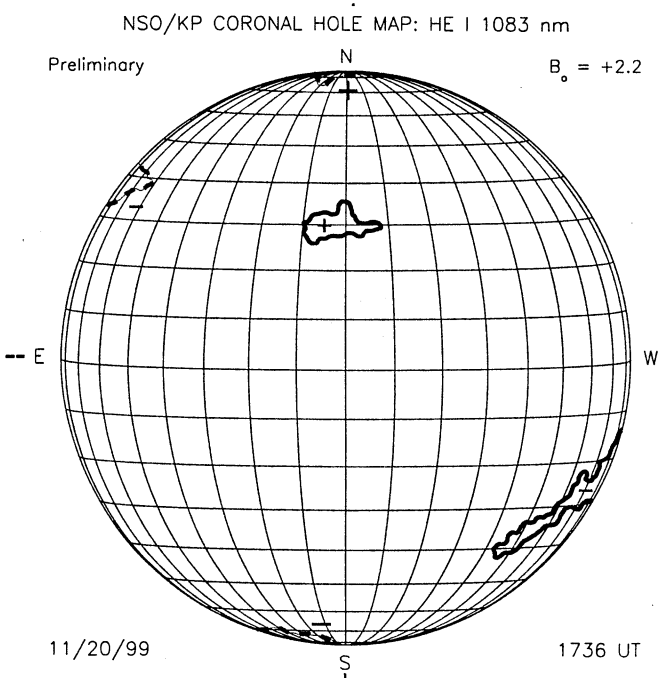

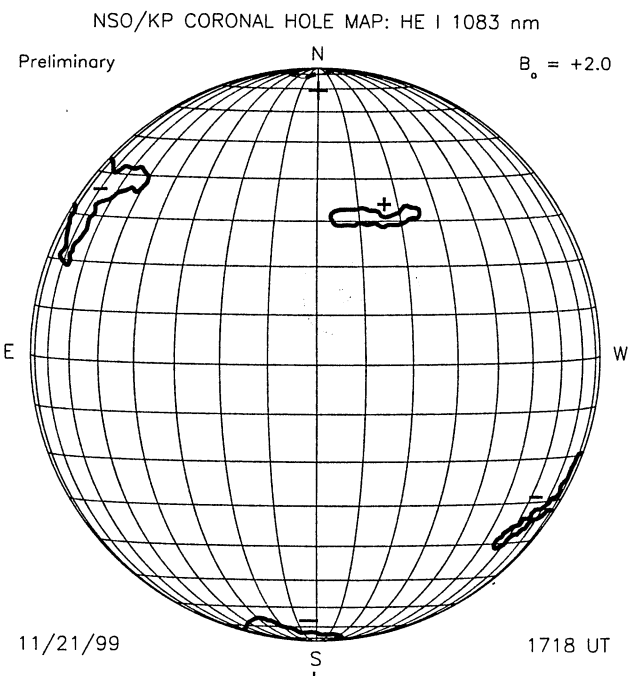

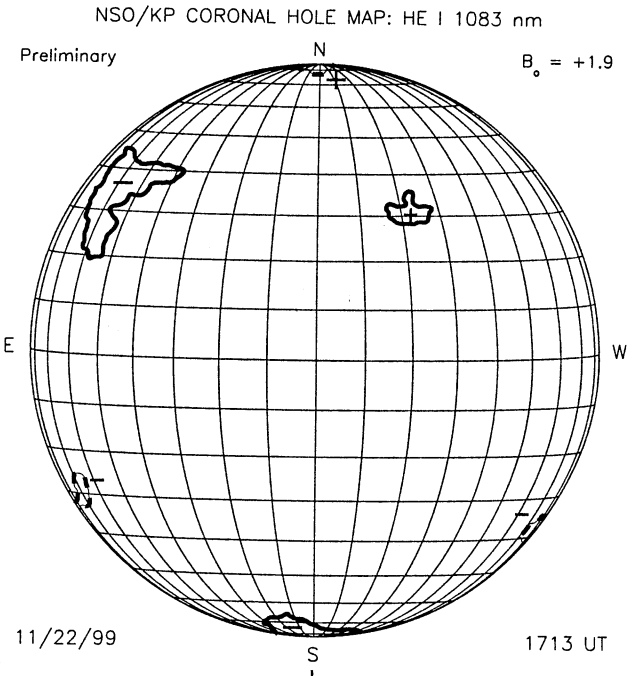

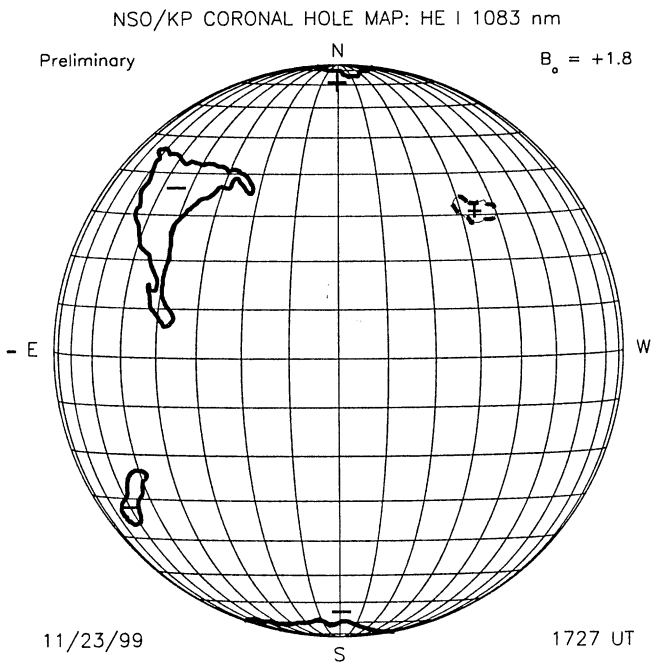

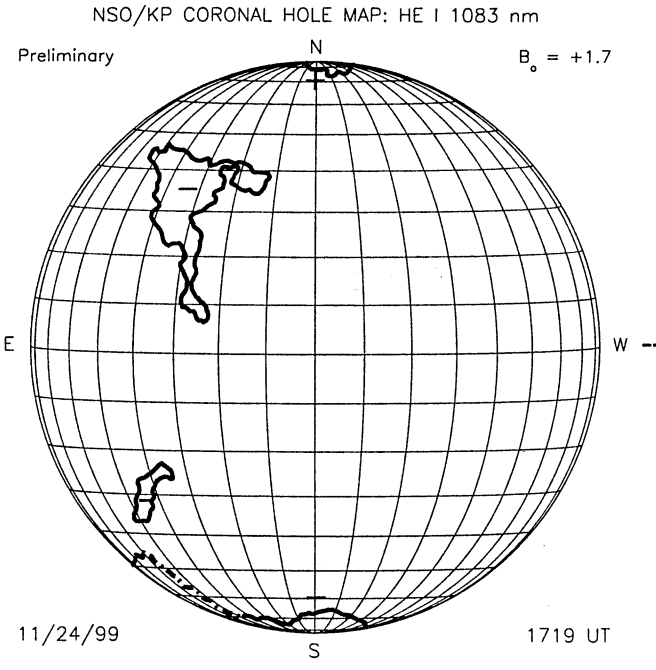

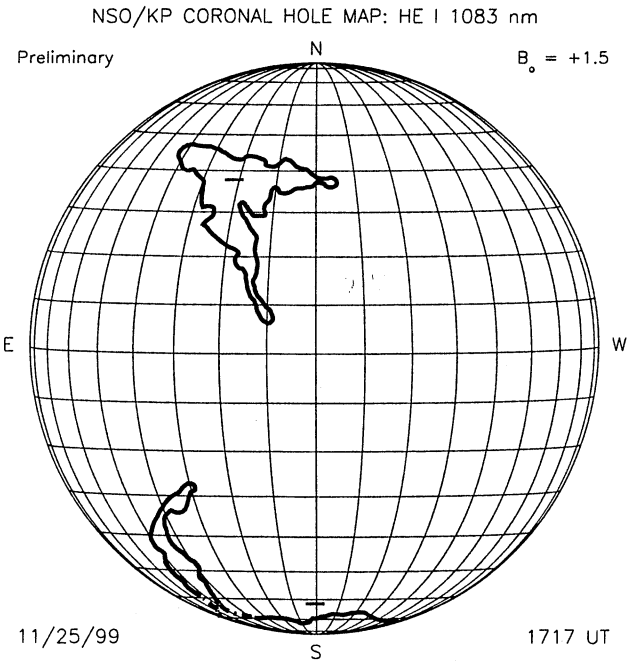

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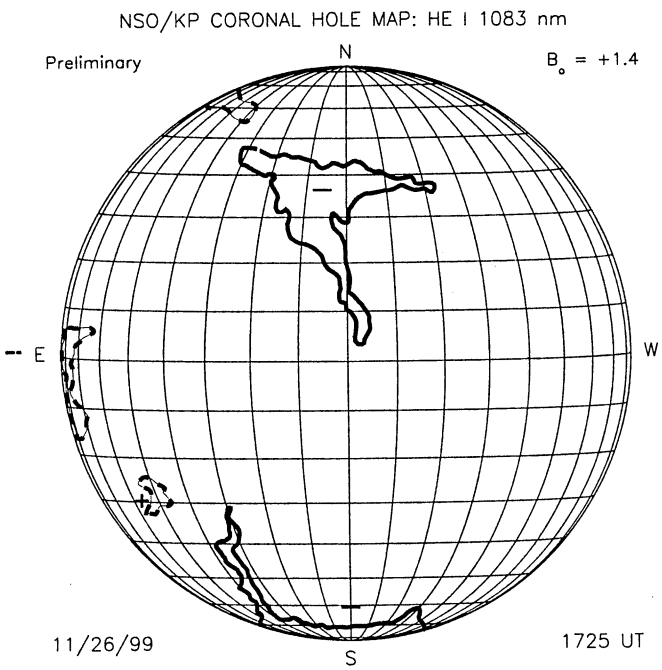
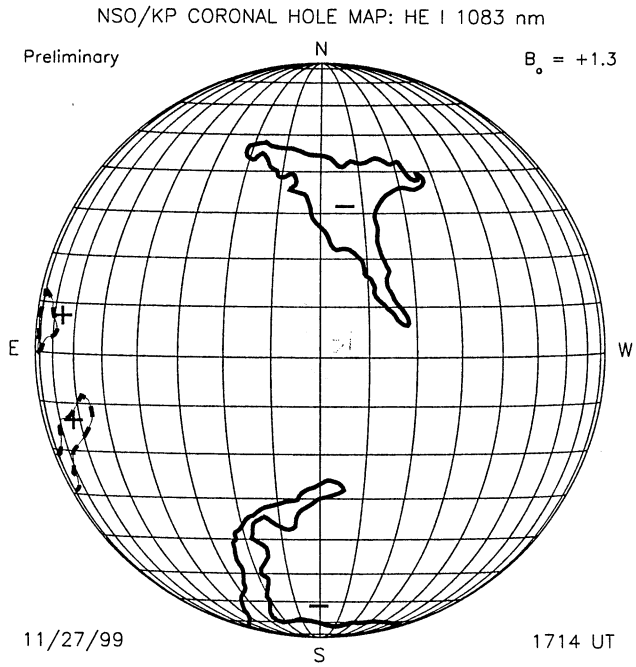
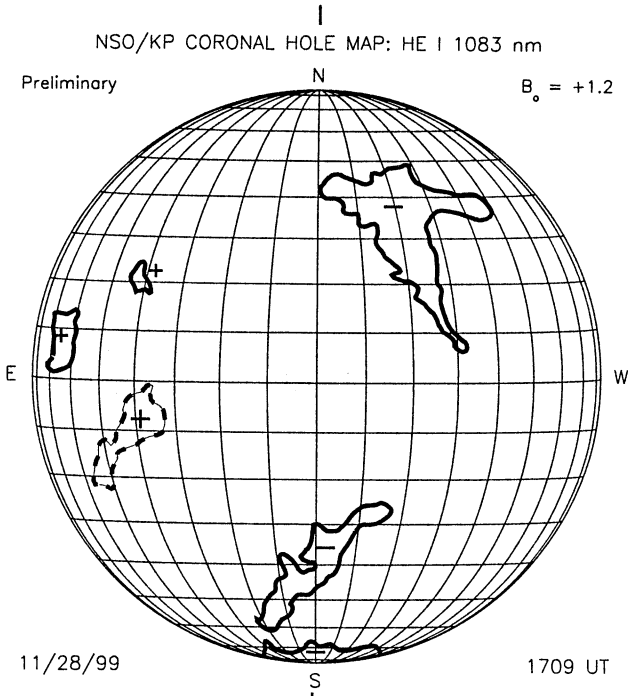
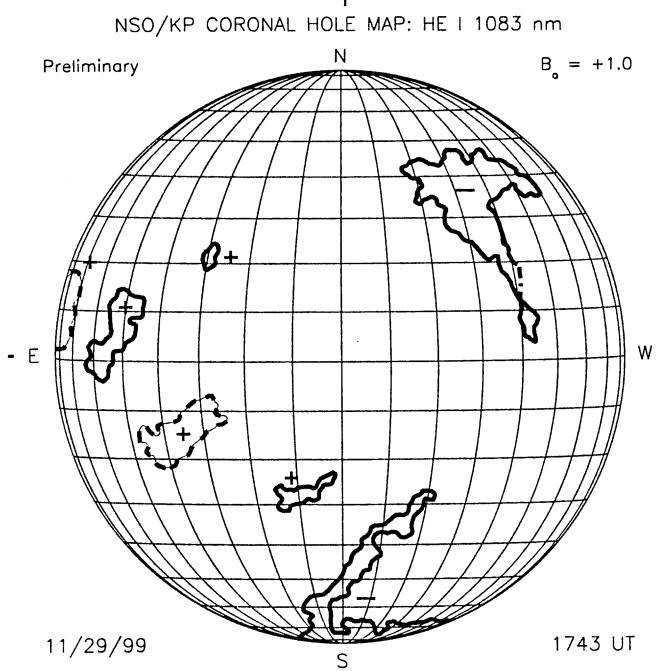
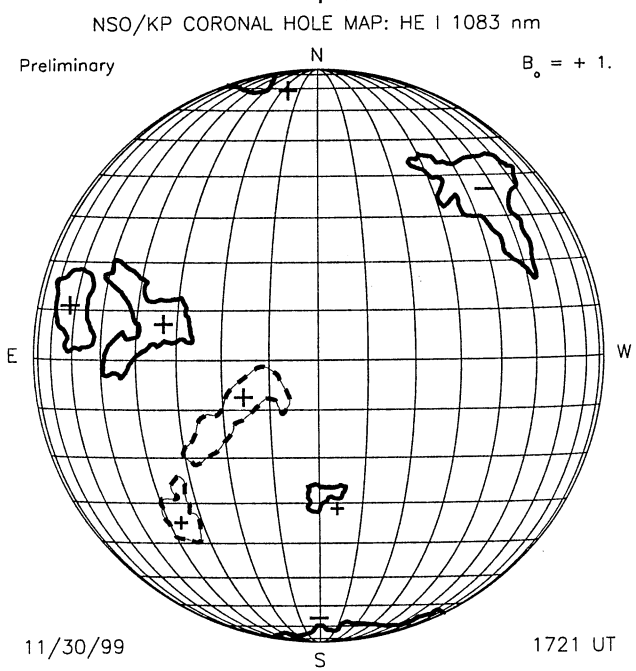
November 1999



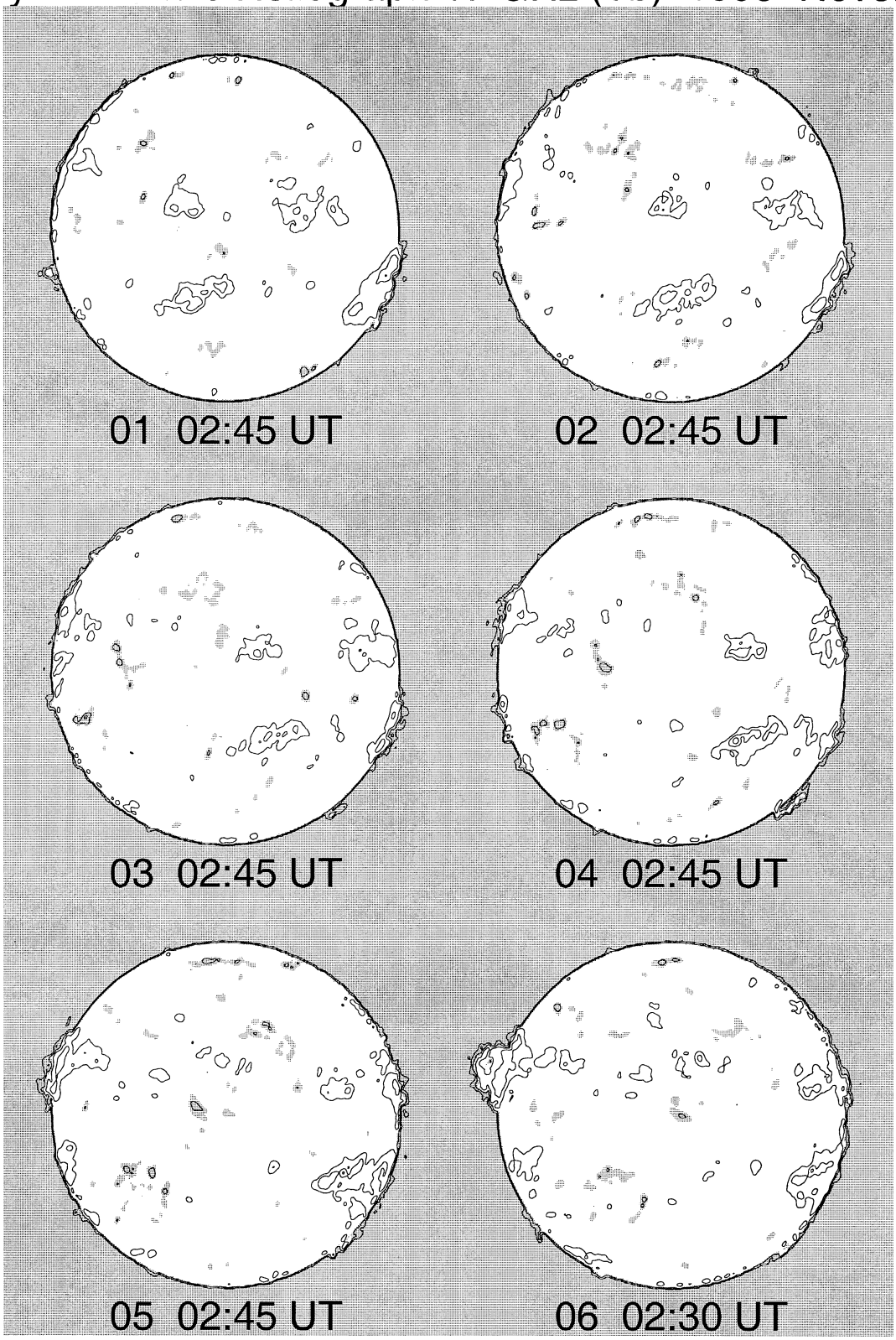






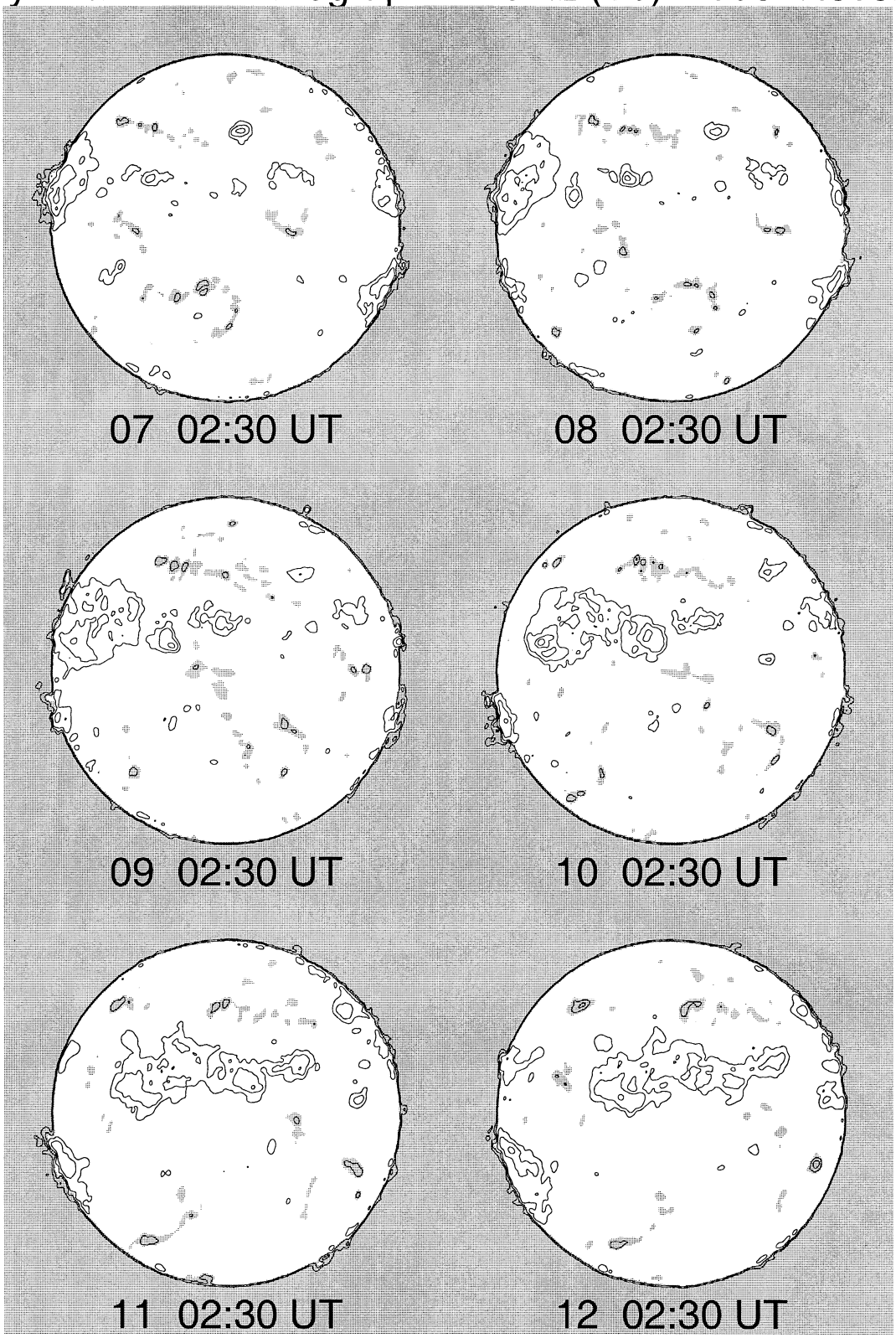


Nobeyama Radio Heliograph 17 GHz (Tb) 1999 November



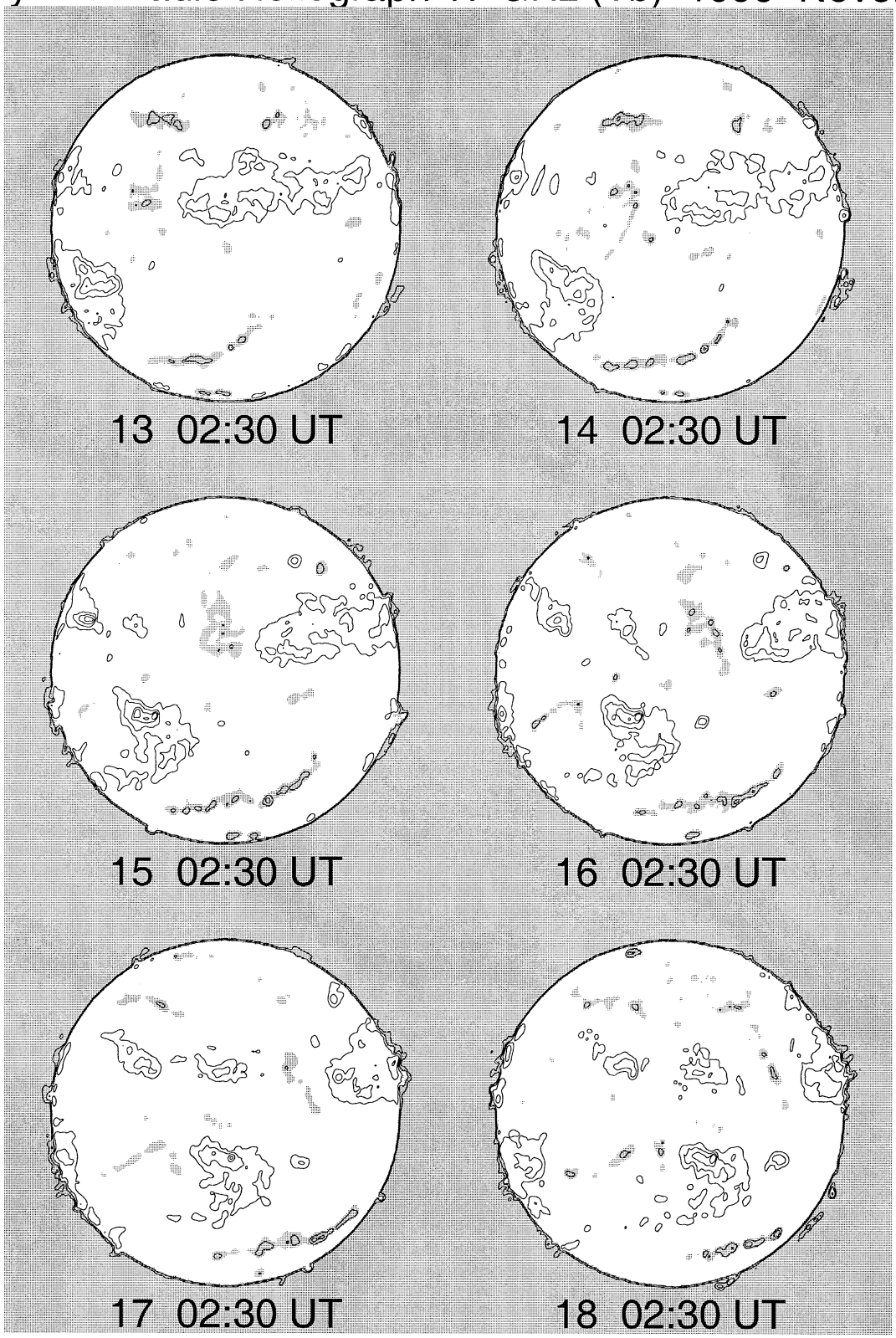
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 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) 1999 November



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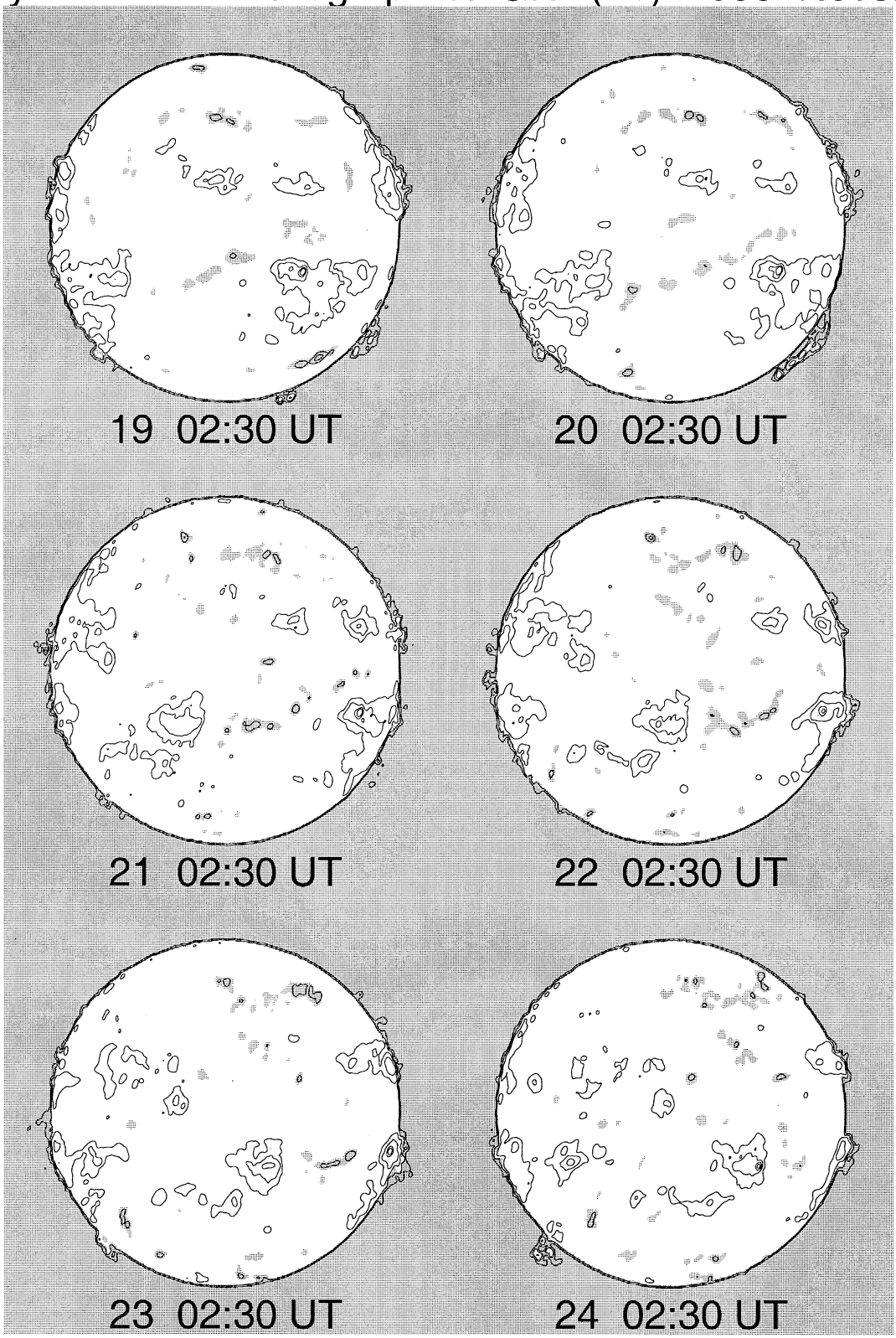
Nobeyama Radio Heliograph 17 GHz (Tb) 1999 November



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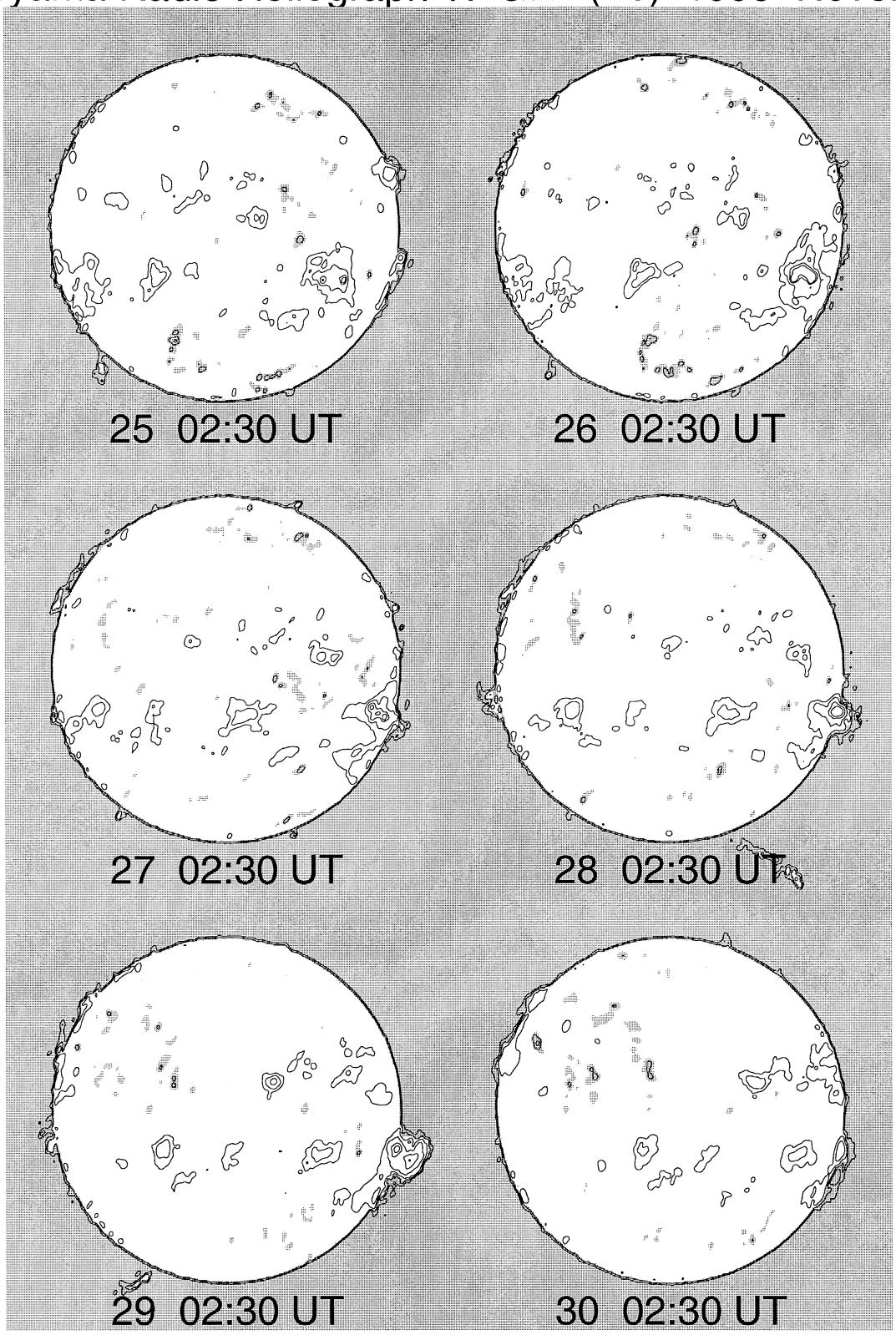

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Grey level Tb <= 9,500 K

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

NOVEMBER 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8745		LEAR	10	26	0032	S15	E77	10	31.8		A	HA	180	2	2	3
8745		KAND	10	26	0820	S13	E74	10	31.9			HA		3	3	4
8745		SVTO	10	26	1123	S14	E74	11	1.1		A	HS	120	1	2	2
8745		RAMY	10	26	1217	S16	E74	11	1.1		A	HS	80	2	2	3
8745	29396	MWIL	10	26	1445	S15	E71	11	1.0	4	(AP)					
8745		HOLL	10	26	1756	S11	E69	10	31.9		A	HA	180	2	2	3
8745		LEAR	10	27	0021	S14	E65	10	31.9		A	HA	150	2	4	3
8745		KAND	10	27	0610	S12	E62	10	31.9			HA		5	3	2
8745		SVTO	10	27	0847	S13	E64	11	1.2		A	HS	140	1	3	3
8745		RAMY	10	27	1245	S16	E60	11	1.1		A	HS	160	2	3	3
8745	29396	MWIL	10	27	1445	S14	E58	11	1.0	5	(AP)					
8745		HOLL	10	27	1907	S12	E57	11	1.1		A	HS	160	2	2	2
8745		VORO	10	27	2335	S14	E53	11	1.0			HAX	208	6		4
8745		LEAR	10	28	0005	S14	E53	11	1.0		B	CAO	180	9	5	4
8745		KAND	10	28	0630	S13	E50	11	1.0			CAO		3	5	2
8745		SVTO	10	28	0801	S14	E54	11	1.4		B	CAO	200	4	6	3
8745		RAMY	10	28	1247	S16	E48	11	1.2		B	CSO	170	6	6	3
8745	29396	MWIL	10	28	1600	S14	E46	11	1.1	4	(BP)					
8745		LEAR	10	29	0045	S14	E40	11	1.0		B	CAO	140	6	5	3
8745		KAND	10	29	0955	S14	E36	11	1.1			CAO		10	6	4
8745		RAMY	10	29	1210	S15	E34	11	1.1		B	CAO	120	7	7	4
8745	29396	MWIL	10	29	1500	S13	E31	11	1.0	4	(AP)					
8745		HOLL	10	29	1513	S13	E34	11	1.2		B	CAO	90	5	7	3
8745		KAND	10	30	1135	S14	E21	11	1.1			CAO		12	7	3
8745	29396	MWIL	10	30	1600	S15	E18	11	1.0	5	(BP)					
8745		VORO	10	30	2239	S14	E14	11	1.0			HAX	131	9		3
8745		LEAR	10	31	0055	S14	E13	11	1.0		B	CAO	70	7	5	2
8745		KAND	10	31	0810	S14	E10	11	1.1			CAO		4	6	3
8745		SVTO	10	31	0938	S15	E07	10	31.9		B	DAO	90	5	7	2
8745		RAMY	10	31	1215	S16	E05	10	31.9		B	CAO	80	6	4	4
8745	29396	MWIL	10	31	1500	S15	E05	11	1.0	5	(BP)					
8745		HOLL	10	31	1550	S13	E06	11	1.1		B	CSO	80	5	7	3
8745		VORO	10	31	2238	S14	E01	11	1.0			HAX	154	5		3
8745		LEAR	11	01	0002	S15	E01	11	1.1		B	CAO	80	9	6	4
8745		KAND	11	01	0900	S15	W05	11	1.0			CAO		7	5	4
8745		SVTO	11	01	0935	S15	W05	11	1.0		B	DAO	120	4	5	3
8745	29396	MWIL	11	01	1530	S15	W09	11	1.0	4	(BP)					
8745		HOLL	11	01	1604	S14	W08	11	1.1		A	HS	60	3	2	3
8745		VORO	11	01	2240	S14	W09	11	1.3			CAI	132	7	6	2
8745		LEAR	11	02	0210	S14	W15	10	31.9		B	CSO	50	4	4	2
8745		KAND	11	02	0920	S15	W18	11	1.0			CAO		2	3	3
8745		RAMY	11	02	1208	S14	W20	11	1.0		B	CSO	50	3	3	3
8745	29396	MWIL	11	02	1530	S15	W22	11	1.0	5	(AP)					
8745		HOLL	11	02	1904	S17	W22	11	1.1		B	CSO	60	4	4	3
8745		LEAR	11	02	2255	S14	W27	10	31.9		B	CAO	30	4	3	4
8745		VORO	11	02	2304	S15	W26	11	1.0			HAX	53	4		2
8745		KAND	11	03	0805	S15	W30	11	1.1			CAO		2	3	3
8745		RAMY	11	03	1226	S14	W34	10	31.9		A	HA	20	6	3	3
8745	29396	MWIL	11	03	1545	S15	W34	11	1.1	4	(AP)					
8745		HOLL	11	03	1623	S16	W34	11	1.1		B	CSO	30	4	3	4
8745		VORO	11	03	2251	S15	W39	11	1.0			AXX	22	3		2
8745		LEAR	11	04	0105	S13	W39	11	1.1		B	CSO	20	5	3	3
8745		KAND	11	04	0815	S16	W44	11	1.0			BXO		4	5	3
8745		RAMY	11	04	1208	S13	W46	11	1.0		B	DAO	40	5	4	4
8745	29396	MWIL	11	04	1530	S15	W46	11	1.2	4	(BP)					
8745		HOLL	11	04	1635	S17	W45	11	1.3		B	DAO	40	5	4	3
8745		VORO	11	04	2302	S15	W50	11	1.2			CAO	49	2	1	3
8745		LEAR	11	05	0200	S13	W52	11	1.1		B	CAO	50	5	5	3
8745		KAND	11	05	0840	S14	W55	11	1.2			BXO		5	4	3
8745		RAMY	11	05	1213	S13	W59	11	1.0		B	DSO	70	5	5	3
8745	29396	MWIL	11	05	1545	S14	W59	11	1.2	4	(B)					
8745		HOLL	11	05	1712	S16	W60	11	1.2		B	BXO	10	4	4	3
8745		VORO	11	05	2253	S15	W64	11	1.1			XI	33	8	1	3
8745		LEAR	11	06	0215	S13	W65	11	1.2		B	BXO	20	6	10	3
8745		RAMY	11	06	1203	S13	W70	11	1.2		A	AX		1		2
8745B		KAND	11	02	0920	N10	W09	11	1.7			BXO		3	3	3
8745B		KAND	11	04	0815	N10	W36	11	1.6			BXO		3	4	3
8745B		KAND	11	05	0840	N09	W48	11	1.7			AX		1	1	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)
NOVEMBER 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8747	29400	MWIL	10	27	1445	N11	E76	11	2.3	4	(AP)					
8747		HOLL	10	27	1907	N13	E75	11	2.4		B	BXO	10	2	4	2
8747		VORO	10	27	2335	N11	E72	11	2.4			AI	37	3	3	4
8747		LEAR	10	28	0005	N11	E70	11	2.3		B	CRO	50	5	1	4
8747		KAND	10	28	0630	N10	E70	11	2.5			BXO		5	5	2
8747		SVTO	10	28	0801	N11	E69	11	2.5		B	CAO	40	4	6	3
8747		RAMY	10	28	1247	N08	E64	11	2.3		B	DRO	40	4	6	3
8747	29400	MWIL	10	28	1600	N11	E62	11	2.3	4	B					
8747		LEAR	10	29	0045	N11	E57	11	2.3		B	DAO	90	7	5	3
8747		KAND	10	29	0955	N11	E51	11	2.2			DAI		13	7	4
8747		RAMY	10	29	1210	N10	E50	11	2.3		B	DAO	240	11	6	4
8747	29400	MWIL	10	29	1500	N12	E48	11	2.2	4	(B)					
8747		HOLL	10	29	1513	N12	E48	11	2.2		B	DAO	160	11	8	3
8747		KAND	10	30	1135	N11	E37	11	2.3			DAI		14	9	3
8747	29400	MWIL	10	30	1600	N11	E35	11	2.3	5	(BG)					
8747		VORO	10	30	2239	N12	E31	11	2.3			DAI	265	15	6	3
8747		LEAR	10	31	0055	N11	E29	11	2.2		B	DAO	140	9	8	2
8747		KAND	10	31	0810	N11	E25	11	2.2			DAO		7	8	3
8747		SVTO	10	31	0938	N12	E24	11	2.2		B	DAO	180	11	10	2
8747		RAMY	10	31	1215	N11	E23	11	2.2		B	DAO	190	14	8	4
8747	29400	MWIL	10	31	1500	N11	E22	11	2.3	5	(BG)					
8747		HOLL	10	31	1550	N12	E21	11	2.2		B	DSO	120	13	9	3
8747		VORO	10	31	2238	N12	E18	11	2.3			DAI	213	8	6	3
8747		LEAR	11	01	0002	N11	E16	11	2.2		B	DAO	100	13	8	4
8747		KAND	11	01	0900	N11	E12	11	2.3			DAO		8	9	4
8747		SVTO	11	01	0935	N12	E10	11	2.1		B	EAO	170	8	11	3
8747	29400	MWIL	11	01	1530	N12	E08	11	2.2	5	(BG)					
8747		HOLL	11	01	1604	N12	E07	11	2.2		BG	DAO	90	11	8	3
8747		VORO	11	01	2240	N12	E02	11	2.1			DAI	222	12	11	2
8747		LEAR	11	02	0210	N12	E00	11	2.1		B	EAO	60	9	12	2
8747		KAND	11	02	0920	N11	W02	11	2.2			CAO		7	8	3
8747		RAMY	11	02	1208	N12	W05	11	2.1		BG	CAO	110	15	13	3
8747	29410	MWIL	11	02	1530	N11	W12	11	1.7	4	(B)					
8747	29400	MWIL	11	02	1530	N12	W05	11	2.3	5	(BP)					
8747		HOLL	11	02	1904	N12	W08	11	2.2		BG	DSO	120	14	9	3
8747		LEAR	11	02	2255	N12	W10	11	2.2		B	DAO	60	15	11	4
8747		VORO	11	02	2304	N11	W10	11	2.2			DAI	165	6	7	2
8747		KAND	11	03	0805	N11	W14	11	2.3			DSO		4	8	3
8747		RAMY	11	03	1226	N12	W19	11	2.1		B	ESO	80	10	12	3
8747	29400	MWIL	11	03	1545	N11	W19	11	2.2	5	(BP)					
8747	29410	MWIL	11	03	1545	N11	W26	11	1.7	4	(BP)					
8747		HOLL	11	03	1623	N12	W21	11	2.1		B	ESO	100	11	12	4
8747		VORO	11	03	2251	N13	W21	11	2.4			CAI	133	5	10	2
8747		LEAR	11	04	0105	N12	W24	11	2.2		B	DSO	110	8	8	3
8747		KAND	11	04	0815	N11	W28	11	2.2			CAO		11	7	3
8747		RAMY	11	04	1208	N11	W34	11	1.9		B	DSO	70	6	10	4
8747	29400	MWIL	11	04	1530	N10	W34	11	2.1	5	(BG)					
8747	29410	MWIL	11	04	1530	N11	W40	11	1.6	4	(B)					
8747		HOLL	11	04	1635	N09	W37	11	1.9		B	CSO	90	8	11	3
8747		VORO	11	04	2302	N10	W39	11	2.0			DAI	156	7	9	3
8747		LEAR	11	05	0200	N12	W41	11	2.0		B	CSO	170	8	10	3
8747		KAND	11	05	0840	N10	W41	11	2.3			DAO		3	5	3
8747		RAMY	11	05	1213	N12	W46	11	2.0		B	DSO	100	4	7	3
8747	29410	MWIL	11	05	1545	N10	W52	11	1.7	4	(AF)					
8747	29400	MWIL	11	05	1545	N11	W47	11	2.1	5	(BP)					
8747		HOLL	11	05	1712	N09	W48	11	2.1		B	CSO	80	3	5	3
8747		VORO	11	05	2253	N10	W53	11	2.0			CAI	186	7	8	3
8747		LEAR	11	06	0215	N11	W53	11	2.1		B	DSO	120	5	6	3
8747		KAND	11	06	0900	N10	W55	11	2.2			CAO		7	5	3
8747		RAMY	11	06	1203	N11	W58	11	2.1		B	CSO	50	7	5	2
8747	29400	MWIL	11	06	1600	N11	W60	11	2.1	4	(BP)					
8747		HOLL	11	06	1628	N09	W59	11	2.2		B	CSO	30	5	6	3
8747		LEAR	11	07	0058	N12	W66	11	2.1		B	CAO	30	3	5	4
8747		KAND	11	07	0740	N09	W70	11	2.1			CSO		4	6	2
8747		RAMY	11	07	1249	N11	W73	11	2.0		B	CSO	20	3	6	4
8747	29401	MWIL	11	07	1530	N11	W74	11	2.1	5	(BP)					
8747		HOLL	11	07	2002	N09	W78	11	2.0		A	HS	20	1	1	1
8747		LEAR	11	08	0058	N12	W78	11	2.2		A	HA	30	1	2	3
8749		HOLL	10	29	1513	S19	E54	11	2.7		A	AX		1		3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8749		KAND	10	30	1135	S18	E36	11	2.2			BXO		6	6	3
8749	29405	MWIL	10	30	1600	S19	E34	11	2.3	3	(B)					
8749		VORO	10	30	2239	S18	E30	11	2.2			CSI	61	6	6	3
8749		LEAR	10	31	0055	S18	E27	11	2.1		B	DAO	40	13	7	2
8749		KAND	10	31	0810	S17	E25	11	2.2			DAO		5	9	3
8749		SVTO	10	31	0938	S18	E23	11	2.1		B	DSO	80	8	8	2
8749		RAMY	10	31	1215	S19	E20	11	2.0		B	DSO	60	19	9	4
8749	29405	MWIL	10	31	1500	S18	E20	11	2.1	5	(B)					
8749		HOLL	10	31	1550	S17	E20	11	2.2		B	DAO	60	17	9	3
8749		VORO	10	31	2238	S18	E16	11	2.2			DAI	296	13	8	3
8749		LEAR	11	01	0002	S19	E15	11	2.1		B	EAO	110	23	12	4
8749		KAND	11	01	0900	S19	E10	11	2.1			EAO		21	11	4
8749		SVTO	11	01	0935	S18	E08	11	2.0		B	EAO	250	20	11	3
8749	29405	MWIL	11	01	1530	S18	E07	11	2.2	4	(BG)					
8749		HOLL	11	01	1604	S18	E07	11	2.2		BG	EAI	120	25	12	3
8749		VORO	11	01	2240	S18	E02	11	2.1			DAI	469	19	10	2
8749		LEAR	11	02	0210	S18	E01	11	2.2		B	EAO	220	15	12	2
8749		KAND	11	02	0920	S19	W04	11	2.1			EAO		19	14	3
8749		RAMY	11	02	1208	S18	W06	11	2.0		BG	EAI	240	32	13	3
8749	29405	MWIL	11	02	1530	S18	W07	11	2.1	5	(D)					
8749		HOLL	11	02	1904	S18	W09	11	2.1		BG	ESO	180	30	13	3
8749		LEAR	11	02	2255	S18	W12	11	2.0		BG	EAO	190	28	13	4
8749		VORO	11	02	2304	S18	W11	11	2.1			DKI	369	8	11	2
8749		KAND	11	03	0805	S18	W17	11	2.0			ESO		7	13	3
8749		RAMY	11	03	1226	S17	W20	11	2.0		BG	ESO	220	26	13	3
8749	29405	MWIL	11	03	1545	S18	W20	11	2.1	5	(BG)					
8749		HOLL	11	03	1623	S18	W22	11	2.0		BG	ESO	200	26	13	4
8749		VORO	11	03	2251	S19	W24	11	2.1			DAI	329	13	11	2
8749		LEAR	11	04	0105	S19	W26	11	2.1		BG	EHO	240	17	13	3
8749		KAND	11	04	0815	S19	W31	11	2.0			EAO		14	15	3
8749		RAMY	11	04	1208	S17	W34	11	1.9		BG	EAO	250	13	13	4
8749	29405	MWIL	11	04	1530	S18	W34	11	2.0	5	(D)					
8749		HOLL	11	04	1635	S20	W35	11	2.0		BG	ESO	190	11	14	3
8749		VORO	11	04	2302	S19	W37	11	2.1			DKI	428	12	12	3
8749		LEAR	11	05	0200	S18	W40	11	2.0		BG	EKO	430	14	15	3
8749		KAND	11	05	0840	S18	W41	11	2.2			ESO		8	16	3
8749		RAMY	11	05	1213	S17	W45	11	2.1		B	EAO	250	14	12	3
8749	29405	MWIL	11	05	1545	S18	W47	11	2.1	4	(BG)					
8749		HOLL	11	05	1712	S20	W46	11	2.2		BG	ESO	180	16	13	3
8749		VORO	11	05	2253	S19	W51	11	2.1			DKI	333	14	11	3
8749		LEAR	11	06	0215	S17	W52	11	2.1		BG	FKO	450	14	16	3
8749		KAND	11	06	0900	S19	W58	11	1.9			ESO		13	14	3
8749		RAMY	11	06	1203	S18	W58	11	2.1		B	ESO	160	9	13	2
8749	29405	MWIL	11	06	1600	S18	W60	11	2.1	5	(BG)					
8749		HOLL	11	06	1628	S20	W60	11	2.1		BG	ESO	140	11	13	3
8749		LEAR	11	07	0058	S17	W64	11	2.2		BG	EAO	150	5	12	4
8749		KAND	11	07	0740	S19	W73	11	1.7			CSO		7	20	2
8749		RAMY	11	07	1249	S18	W71	11	2.1		B	ESO	120	5	15	4
8749	29405	MWIL	11	07	1530	S18	W71	11	2.2	5	(BP)					
8749		HOLL	11	07	2002	S18	W75	11	2.1		B	EAO	110	5	13	1
8749		LEAR	11	08	0058	S17	W75	11	2.3		A	HA	60	3	11	3
8749		RAMY	11	08	1231	S19	W86	11	1.9		A	AX		1		3
8749A		KAND	10	29	0955	S22	E58	11	2.9			AX		1		4
8749A		RAMY	10	29	1210	S23	E54	11	2.7		A	AX		1		4
8749A		KAND	10	30	1135	S21	E43	11	2.8			AX		1		3
8749A	29408	MWIL	10	31	1500	S23	E28	11	2.8	3	(AF)					
8749A	29408	MWIL	11	01	1530	S22	E14	11	2.7	3	(AF)					
8749A	29408	MWIL	11	03	1545	S23	W10	11	2.9	4	(B)					
8752		LEAR	11	02	2255	S14	E14	11	4.0		A	AX		1		4
8752		KAND	11	03	0805	S15	E10	11	4.1			AX		1		3
8752		RAMY	11	03	1226	S14	E06	11	4.0		A	AX		1		3
8752	29411	MWIL	11	03	1545	S14	E05	11	4.0	3	(AP)					
8752		HOLL	11	03	1623	S14	E06	11	4.1		A	AX		1		4
8752		LEAR	11	04	0105	S13	W02	11	3.9		A	AX		1		3
8752		KAND	11	04	0815	S14	W06	11	3.9			BXO		4	4	3
8752		RAMY	11	04	1208	S13	W08	11	3.9		B	DSO	20	5	3	4
8752	29411	MWIL	11	04	1530	S13	W10	11	3.9	4	(BP)					

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8752		HOLL	11	04	1635	S14	W11	11	3.8		B	BXO	10	4	4	3
8752		VORO	11	04	2302	S13	W14	11	3.9			BXI	24	4	3	3
8752		LEAR	11	05	0200	S12	W16	11	3.9		B	CAO	40	10	5	3
8752		KAND	11	05	0840	S13	W19	11	3.9			BXO		5	4	3
8752		RAMY	11	05	1213	S12	W22	11	3.8		B	BXO	20	5	4	3
8752	29411	MWIL	11	05	1545	S13	W24	11	3.8	4	(B)					
8752		HOLL	11	05	1712	S14	W23	11	4.0		B	BXO	10	5	4	3
8752		VORO	11	05	2253	S13	W28	11	3.8			BXO	9	2	3	3
8752		LEAR	11	06	0215	S13	W28	11	4.0		B	CRO	20	2	3	3
8752A		KAND	10	30	1135	S22	E63	11	4.3			AX		1	1	3
8752A	29406	MWIL	10	30	1600	S23	E60	11	4.3	3	(AP)					
8752B	29409	MWIL	10	31	1500	N21	E49	11	4.4	3	(AP)					
8752B	29417	MWIL	11	05	1545	N19	W16	11	4.4	3	(AF)					
8751		KAND	10	30	1135	N22	E74	11	5.2			HS		1	2	3
8751	29407	MWIL	10	30	1600	N21	E70	11	5.0	4	(AP)					
8751		VORO	10	30	2239	N22	E68	11	5.2			HAX	85	1		3
8751		LEAR	10	31	0055	N21	E66	11	5.1		A	HA	40	1	2	2
8751		KAND	10	31	0810	N21	E63	11	5.2			HS		1	2	3
8751		SVTO	10	31	0938	N22	E62	11	5.2		A	HS	40	1	1	2
8751		RAMY	10	31	1215	N19	E59	11	5.0		A	HS	30	1	1	4
8751	29407	MWIL	10	31	1500	N20	E58	11	5.1	4	(AP)					
8751		HOLL	10	31	1550	N23	E58	11	5.1		A	HS	40	1	1	3
8751		VORO	10	31	2238	N22	E55	11	5.2			HAX	53	1		3
8751		LEAR	11	01	0002	N20	E53	11	5.0		A	HS	20	1	1	4
8751		KAND	11	01	0900	N21	E50	11	5.2			HS		1	2	4
8751		SVTO	11	01	0935	N21	E48	11	5.1		A	HS	50	1	1	3
8751	29407	MWIL	11	01	1530	N21	E45	11	5.1	4	(AP)					
8751		HOLL	11	01	1604	N22	E44	11	5.0		A	HS	30	1	1	3
8751		VORO	11	01	2240	N22	E42	11	5.2			HAX	52	1		2
8751		LEAR	11	02	0210	N20	E40	11	5.1		A	HS	50	1	2	2
8751		KAND	11	02	0920	N20	E36	11	5.1			CSO		2	3	3
8751		RAMY	11	02	1208	N20	E34	11	5.1		A	HS	20	1	1	3
8751	29407	MWIL	11	02	1530	N21	E32	11	5.1	4	(AP)					
8751		HOLL	11	02	1904	N22	E29	11	5.0		A	HS	40	1	2	3
8751		LEAR	11	02	2255	N21	E28	11	5.1		A	HS	20	3	1	4
8751		VORO	11	02	2304	N21	E28	11	5.1			HAX	69	1		2
8751		KAND	11	03	0805	N20	E23	11	5.1			HS		1	1	3
8751		KAND	11	03	0805	N23	E22	11	5.0			AX		2	1	3
8751		RAMY	11	03	1226	N22	E20	11	5.0		A	HS	30	2	4	3
8751	29407	MWIL	11	03	1545	N22	E17	11	5.0	5	(AP)					
8751		HOLL	11	03	1623	N23	E17	11	5.0		A	HS	40	2	3	4
8751		VORO	11	03	2251	N22	E15	11	5.1			HAX	64	1		2
8751		LEAR	11	04	0105	N21	E13	11	5.0		A	HS	60	3	1	3
8751		KAND	11	04	0815	N21	E09	11	5.0			HS		1	1	3
8751		RAMY	11	04	1208	N21	E08	11	5.1		B	CSO	30	3	5	4
8751	29407	MWIL	11	04	1530	N21	E07	11	5.2	5	(BP)					
8751		HOLL	11	04	1635	N22	E06	11	5.1		B	CSO	40	3	5	3
8751		VORO	11	04	2302	N22	E04	11	5.3			DAI	75	3	5	3
8751		LEAR	11	05	0200	N21	E02	11	5.2		B	DSO	110	7	6	3
8751		KAND	11	05	0840	N20	W02	11	5.2			CAO		4	5	3
8751		RAMY	11	05	1213	N22	W03	11	5.3		B	DSO	50	4	6	3
8751	29407	MWIL	11	05	1545	N22	W05	11	5.3	5	(BP)					
8751		HOLL	11	05	1712	N22	W07	11	5.2		B	CSO	20	5	5	3
8751		VORO	11	05	2253	N23	W10	11	5.2			CAI	62	5	4	3
8751		LEAR	11	06	0215	N22	W11	11	5.2		B	DSO	80	16	7	3
8751		KAND	11	06	0900	N23	W15	11	5.2			CSO		3	5	3
8751		RAMY	11	06	1203	N23	W17	11	5.2		B	CSO	40	7	6	2
8751	29407	MWIL	11	06	1600	N22	W19	11	5.2	4	(BP)					
8751		HOLL	11	06	1628	N22	W20	11	5.1		B	CSO	40	2	5	3
8751		LEAR	11	07	0058	N23	W24	11	5.2		B	DAO	30	2	4	4
8751		KAND	11	07	0740	N22	W29	11	5.1			CSO		2	4	2
8751		RAMY	11	07	1249	N23	W30	11	5.2		B	CSO	20	4	5	4
8751	29407	MWIL	11	07	1530	N22	W32	11	5.2	5	(BP)					
8751		HOLL	11	07	2002	N22	W35	11	5.1		B	CSO	40	2	4	1
8751		LEAR	11	08	0058	N23	W37	11	5.2		B	DSO	30	4	3	3
8751		KAND	11	08	0845	N21	W42	11	5.1			BXO		3	3	4

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NOVEMBER 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8751		RAMY	11	08	1231	N24	W45	11	5.0		B	CRO	10	5	4	3
8751		HOLL	11	08	1559	N22	W46	11	5.1		B	CSO	20	3	4	4
8751		VORO	11	08	2304	N21	W49	11	5.2			BXO	27	2	3	3
8751		LEAR	11	09	0400	N22	W53	11	5.1		B	CSO	20	2	5	4
8751		RAMY	11	09	1232	N23	W58	11	5.0		B	BXO	10	2	4	4
8751	29407	MWIL	11	09	1600	N22	W58	11	5.2	4	(AP)					
8751		HOLL	11	09	1627	N21	W59	11	5.2		B	BXO	10	3	3	3
8751		VORO	11	09	2257	N21	W64	11	5.0			AXX	19	1		2
8751		LEAR	11	10	0130	N23	W66	11	5.0		B	BXO	20	2	1	4
8757A	29413	MWIL	11	04	1530	N23	E19	11	6.1	3	(AF)					
8757		VORO	11	01	2240	N41	E66	11	7.3			HAX	27	1		2
8757		KAND	11	05	0840	N38	E16	11	6.6			AX		2	1	3
8757		RAMY	11	05	1213	N38	E15	11	6.7		B	BXO	10	4	5	3
8757	29418	MWIL	11	05	1545	N38	E14	11	6.8	4	(B)					
8757		HOLL	11	05	1712	N38	E11	11	6.6		B	BXO	10	4	5	3
8757		VORO	11	05	2253	N39	E10	11	6.8			BXI	24	6	4	3
8757		LEAR	11	06	0215	N37	E09	11	6.8		B	CRO	20	7	7	3
8757		KAND	11	06	0900	N38	E04	11	6.7			BXO		13	6	3
8757		RAMY	11	06	1203	N39	E04	11	6.8		B	BXO	10	10	7	2
8757	29418	MWIL	11	06	1600	N38	W01	11	6.6	4	(B)					
8757		HOLL	11	06	1628	N38	W02	11	6.5		B	DSO	50	11	8	3
8757		LEAR	11	07	0058	N38	W04	11	6.7		B	DAO	120	15	8	4
8757		KAND	11	07	0740	N37	W10	11	6.5			DSI		15	9	2
8757		RAMY	11	07	1249	N38	W11	11	6.6		B	DAO	110	15	10	4
8757	29418	MWIL	11	07	1530	N38	W14	11	6.5	5	(B)					
8757		HOLL	11	07	2002	N38	W18	11	6.4		B	EAO	160	11	11	1
8757		LEAR	11	08	0058	N38	W18	11	6.6		B	EAO	110	9	11	3
8757		KAND	11	08	0845	N38	W23	11	6.5			EAO		7	13	4
8757		RAMY	11	08	1231	N39	W25	11	6.5		B	EAO	100	13	13	3
8757		HOLL	11	08	1559	N38	W27	11	6.5		B	ESO	70	10	12	4
8757		VORO	11	08	2304	N39	W30	11	6.5			DAI	176	10	12	3
8757		LEAR	11	09	0400	N39	W31	11	6.6		B	EAO	120	11	13	4
8757		RAMY	11	09	1232	N40	W38	11	6.4		B	FSO	70	10	16	4
8757	29418	MWIL	11	09	1600	N39	W38	11	6.6	5	(B)					
8757		HOLL	11	09	1627	N38	W39	11	6.5		B	ESO	80	7	12	3
8757		VORO	11	09	2257	N39	W42	11	6.5			DAI	155	5	12	2
8757		LEAR	11	10	0130	N39	W42	11	6.6		B	ESO	120	9	14	4
8757	29418	MWIL	11	10	1545	N38	W51	11	6.5	5	(B)					
8757		HOLL	11	10	1551	N37	W52	11	6.5		B	ESO	60	10	12	3
8757		VORO	11	11	0125	N38	W59	11	6.3			DAI	167	6	9	3
8757		LEAR	11	11	0200	N38	W55	11	6.6		B	ESO	200	8	12	3
8757		KAND	11	11	0725	N37	W61	11	6.4			EAO		6	13	4
8757		HOLL	11	11	1549	N36	W65	11	6.4		B	DSO	50	11	10	3
8757	29418	MWIL	11	11	1600	N38	W63	11	6.6	5	B					
8757		VORO	11	11	2252	N38	W67	11	6.5			DAI	148	5	6	3
8757		LEAR	11	12	0452	N38	W69	11	6.6		B	CAO	60	8	9	5
8757	29418	MWIL	11	12	1530	N38	W78	11	6.3	4	(B)					
8757		HOLL	11	12	1545	N33	W79	11	6.4		B	CAO	50	3	2	4
8756	29414	MWIL	11	04	1530	N17	E28	11	6.8	4	(BP)					
8756		LEAR	11	05	0200	N17	E23	11	6.8		A	AX	10	2	3	3
8756		RAMY	11	05	1213	N18	E17	11	6.8		B	BXO	10	3	3	3
8756	29414	MWIL	11	05	1545	N18	E16	11	6.9	4	(BF)					
8756		HOLL	11	05	1712	N18	E13	11	6.7		B	BXO	10	4	4	3
8756		VORO	11	05	2253	N19	E12	11	6.9			BXO	4	2	2	3
8756		LEAR	11	06	0215	N17	E10	11	6.8		B	BXO	10	6	4	3
8756		KAND	11	06	0900	N18	E05	11	6.7			BXO		4	4	3
8756		RAMY	11	06	1203	N18	E02	11	6.6		B	BXO		2	1	2
8756	29414	MWIL	11	06	1600	N18	E02	11	6.8	4	(B)					
8756		HOLL	11	06	1628	N18	E01	11	6.8		B	BXO	10	4	4	3
8756		RAMY	11	07	1249	N18	W12	11	6.6		B	BXO		2	1	4
8756	29414	MWIL	11	07	1530	N18	W15	11	6.5	4	(BP)					
8756		RAMY	11	08	1231	N16	W30	11	6.2		A	AX		1		3
8762		RAMY	11	09	1232	N07	W26	11	7.6		B	BXO		4	3	4
8762	29424	MWIL	11	09	1600	N07	W28	11	7.6	3	(B)					
8762		HOLL	11	09	1627	N07	W28	11	7.6		B	BXO	10	5	3	3

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8762		LEAR	11	10	0130	N08	W34	11	7.5		B	BXO	10	3	2	4
8762	29424	MWIL	11	10	1545	N07	W40	11	7.6	4	(B)					
8762		HOLL	11	10	1551	N04	W42	11	7.5		B	CSO	20	5	5	3
8762		VORO	11	11	0125	N07	W48	11	7.5			BXO	19	2	5	3
8762		LEAR	11	11	0200	N07	W47	11	7.6		B	CSO	60	3	5	3
8762		KAND	11	11	0725	N06	W52	11	7.4			BXO		2	7	4
8762		HOLL	11	11	1549	N04	W57	11	7.4		B	BXO	10	2	6	3
8762	29424	MWIL	11	11	1600	N07	W56	11	7.5	3	B					
8762		VORO	11	11	2252	N07	W63	11	7.2			AXX	23	1		3
8762		LEAR	11	12	0452	N07	W67	11	7.2		A	AX	10	1	1	5
8762		RAMY	11	12	1510	N08	W71	11	7.3		A	AX		1		3
8762	29424	MWIL	11	12	1530	N07	W72	11	7.2	4	(AP)					
8762		HOLL	11	12	1545	N04	W73	11	7.2		A	AX	10	1	1	4
8762A	29412	MWIL	11	03	1545	N11	E69	11	8.8	4	(BP)					
8762A		VORO	11	11	0125	N14	W26	11	9.1			AXX	2	1		3
8762A		VORO	11	11	2252	N15	W39	11	9.0			AXX	3	1		3
8753		RAMY	11	03	1226	N20	E69	11	8.8		A	AX		1		3
8753		HOLL	11	03	1623	N22	E67	11	8.8		A	AX		1		4
8753		KAND	11	06	0900	N20	E35	11	9.0			BXO		6	6	3
8753		RAMY	11	06	1203	N19	E36	11	9.2		B	BXO	10	9	4	2
8753	29420	MWIL	11	06	1600	N20	E33	11	9.2	3	(B)					
8753		HOLL	11	06	1628	N21	E32	11	9.1		B	CSO	20	6	6	3
8753		LEAR	11	07	0058	N19	E28	11	9.2		B	DAO	20	6	7	4
8753		KAND	11	07	0740	N20	E24	11	9.1			BXO		12	9	2
8753		RAMY	11	07	1249	N20	E22	11	9.2		B	BXO	10	13	7	4
8753	29420	MWIL	11	07	1530	N20	E20	11	9.2	4	(B)					
8753		HOLL	11	07	2002	N21	E18	11	9.2		B	CAO	40	13	7	1
8753		LEAR	11	08	0058	N20	E16	11	9.3		B	DAO	50	13	7	3
8753		KAND	11	08	0845	N20	E11	11	9.2			DAI		13	7	4
8753		RAMY	11	08	1231	N21	E08	11	9.1		B	DAO	110	21	8	3
8753		HOLL	11	08	1559	N21	E07	11	9.2		B	DAI	160	17	9	4
8753		VORO	11	08	2304	N20	E03	11	9.2			DAI	250	22	8	3
8753		LEAR	11	09	0400	N20	E01	11	9.2		B	DAO	190	32	10	4
8753		RAMY	11	09	1232	N21	W05	11	9.1		B	DAI	140	20	10	4
8753	29420	MWIL	11	09	1600	N20	W06	11	9.2	4	(B)					
8753		HOLL	11	09	1627	N21	W08	11	9.1		B	ESI	140	29	11	3
8753		VORO	11	09	2257	N20	W11	11	9.1			DAI	223	22	9	2
8753		LEAR	11	10	0130	N20	W12	11	9.1		B	EAI	210	52	11	4
8753	29420	MWIL	11	10	1545	N20	W20	11	9.1	4	(B)					
8753		HOLL	11	10	1551	N18	W21	11	9.1		B	EAC	190	28	11	3
8753		VORO	11	11	0125	N21	W26	11	9.1			DAI	229	25	11	3
8753		LEAR	11	11	0200	N19	W25	11	9.2		B	EAI	180	38	12	3
8753		KAND	11	11	0825	N19	W30	11	9.1			EAI		22	12	4
8753		HOLL	11	11	1549	N18	W34	11	9.1		B	EAO	110	41	11	3
8753	29420	MWIL	11	11	1600	N19	W32	11	9.2	4	B					
8753		VORO	11	11	2252	N20	W36	11	9.2			DAI	243	20	9	3
8753		LEAR	11	12	0452	N20	W40	11	9.1		B	EAO	80	28	12	5
8753		RAMY	11	12	1510	N20	W46	11	9.1		BG	DSO	60	20	9	3
8753	29420	MWIL	11	12	1530	N20	W46	11	9.1	4	(BG)					
8753		HOLL	11	12	1545	N18	W48	11	9.0		B	EAO	90	20	11	4
8753		VORO	11	12	2258	N20	W50	11	9.1			DAI	106	5	9	2
8753		LEAR	11	13	0315	N20	W53	11	9.1		B	EAO	60	11	12	3
8753		KAND	11	13	1055	N19	W60	11	8.9			CAO		3	6	3
8753		RAMY	11	13	1240	N21	W58	11	9.1		B	ESO	60	8	13	1
8753	29420	MWIL	11	13	1530	N20	W58	11	9.2	4	(BP)					
8753		HOLL	11	13	1802	N18	W60	11	9.2		B	CAO	50	4	11	3
8753		VORO	11	13	2307	N20	W63	11	9.1			BXI	56	4	10	2
8753		LEAR	11	14	0030	N22	W64	11	9.1		B	BXO	10	5	12	3
8753		RAMY	11	14	1432	N21	W69	11	9.3		B	BXO	10	3	6	3
8753	29420	MWIL	11	14	1530	N20	W76	11	8.8	4	(BP)					
8754		VORO	11	03	2251	S08	E83	11	10.2			HAX	74	1		2
8754		LEAR	11	04	0105	S08	E78	11	9.9		A	HA	60	1	2	3
8754		KAND	11	04	0815	S08	E78	11	10.2			HA		1	2	3
8754		RAMY	11	04	1208	S09	E71	11	9.8		A	HS	30	1	2	4
8754	29415	MWIL	11	04	1530	S08	E72	11	10.0	4	(AP)					
8754		HOLL	11	04	1635	S07	E71	11	10.0		A	HS	50	1	2	3

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8754		VORO	11	04	2302	S09	E70	11	10.2			HAX	70	2	2	3
8754		LEAR	11	05	0200	S11	E66	11	10.0		B	CSO	100	4	4	3
8754		KAND	11	05	0840	S09	E62	11	10.0			CAI		4	6	3
8754		RAMY	11	05	1213	S10	E60	11	10.0		B	DSO	60	3	3	3
8754	29415	MWIL	11	05	1545	S08	E57	11	9.9	4	(BP)					
8754		HOLL	11	05	1712	S08	E59	11	10.1		B	CSO	20	3	3	3
8754		VORO	11	05	2253	S08	E55	11	10.1			HAX	84	3	2	3
8754		LEAR	11	06	0215	S09	E54	11	10.1		B	CSO	100	3	4	3
8754		KAND	11	06	0900	S08	E49	11	10.0			CSO		3	2	3
8754		RAMY	11	06	1203	S09	E45	11	9.9		B	CSO	30	6	3	2
8754	29415	MWIL	11	06	1600	S08	E43	11	9.9	5	(BP)					
8754		HOLL	11	06	1628	S08	E45	11	10.0		B	CSO	40	5	3	3
8754		LEAR	11	07	0058	S09	E38	11	9.9		B	CSO	30	4	3	4
8754		KAND	11	07	0740	S08	E35	11	9.9			CSO		6	5	2
8754		RAMY	11	07	1249	S09	E32	11	9.9		B	CSO	30	5	4	4
8754	29415	MWIL	11	07	1530	S08	E30	11	9.9	5	(AP)					
8754		HOLL	11	07	2002	S06	E28	11	9.9		B	CSO	30	2	3	1
8754		LEAR	11	08	0058	S07	E26	11	10.0		B	CSO	20	2	3	3
8754		KAND	11	08	0845	S07	E23	11	10.1			CSO		2	3	4
8754		RAMY	11	08	1231	S07	E18	11	9.9		B	CSO	20	2	3	3
8754		HOLL	11	08	1559	S06	E18	11	10.0		A	HS	40	1	2	4
8754		VORO	11	08	2304	S07	E14	11	10.0			HAX	37	2		3
8754		LEAR	11	09	0400	S05	E11	11	10.0		A	HS	40	7	1	4
8754		RAMY	11	09	1232	S06	E05	11	9.9		A	HS	20	1	1	4
8754	29415	MWIL	11	09	1600	S06	E04	11	10.0	4	(AP)					
8754		HOLL	11	09	1627	S06	E04	11	10.0		A	HS	20	1	1	3
8754		VORO	11	09	2257	S06	E00	11	9.9			HAX	28	1		2
8754		LEAR	11	10	0130	S07	W02	11	9.9		A	HS	30	1	2	4
8754	29415	MWIL	11	10	1545	S07	W09	11	10.0	5	(AP)					
8754		HOLL	11	10	1551	S07	W09	11	10.0		A	HS	10	1	1	3
8754		VORO	11	11	0125	S06	W15	11	9.9			AXX	10	1		3
8754		LEAR	11	11	0200	S07	W15	11	9.9		A	HS	20	1	2	3
8754		KAND	11	11	0725	S07	W18	11	10.0			AX		1	1	4
8754		HOLL	11	11	1549	S08	W22	11	10.0		A	HS	10	1	1	3
8754	29415	MWIL	11	11	1600	S06	W23	11	9.9	4	(AP)					
8754		VORO	11	11	2252	S06	W26	11	10.0			AXX	5	1		3
8754		LEAR	11	12	0452	S06	W30	11	9.9		A	AX		1		5
8754		RAMY	11	12	1510	S06	W36	11	9.9		A	AX		1		3
8754	29415	MWIL	11	12	1530	S06	W36	11	9.9	4	(AP)					
8754		HOLL	11	12	1545	S08	W35	11	10.0		A	AX	10	1	1	4
8754		VORO	11	12	2258	S06	W40	11	10.0			AXX	6	1		2
8764		RAMY	11	09	1232	N18	E05	11	9.9		B	BXO		2	2	4
8764	29425	MWIL	11	09	1600	N18	E03	11	9.9	3	(B)					
8764		LEAR	11	10	0130	N17	W03	11	9.8		B	BXO	10	3	2	4
8764	29425	MWIL	11	10	1545	N18	W10	11	9.9	4	(B)					
8764		HOLL	11	10	1551	N17	W11	11	9.8		B	BXO	10	4	4	3
8764		VORO	11	11	0125	N18	W16	11	9.8			BXI	7	5	3	3
8764		LEAR	11	11	0200	N17	W16	11	9.9		B	CSO	20	5	5	3
8764		KAND	11	11	0725	N17	W19	11	9.9			AX		3	3	4
8764		HOLL	11	11	1549	N16	W25	11	9.8		B	BXO	10	3	3	3
8764	29425	MWIL	11	11	1600	N17	W24	11	9.8	3	AP					
8764		VORO	11	11	2252	N18	W28	11	9.8			AXX	15	2		3
8764		LEAR	11	12	0452	N17	W32	11	9.8		A	HR	10	1	1	5
8764		RAMY	11	12	1510	N19	W37	11	9.8		B	BXO	10	2	3	3
8764	29425	MWIL	11	12	1530	N18	W37	11	9.8	4	(B)					
8764		HOLL	11	12	1545	N17	W38	11	9.8		B	CAO	30	2	4	4
8764		VORO	11	12	2258	N18	W41	11	9.8			BXO	22	2	2	2
8764		LEAR	11	13	0315	N18	W44	11	9.8		B	CAO	20	3	5	3
8764		KAND	11	13	1055	N17	W49	11	9.7			AX		1		3
8764		RAMY	11	13	1240	N18	W51	11	9.6		A	AX		1		1
8764	29425	MWIL	11	13	1530	N17	W51	11	9.8	3	(B)					
8764		HOLL	11	13	1802	N17	W53	11	9.7		B	BXO	10	5	5	3
8760		VORO	11	05	2253	N15	E63	11	10.7			AXX	15	1		3
8760		LEAR	11	07	0058	N12	E48	11	10.6		A	AX		1		4
8760		RAMY	11	07	1249	N14	E40	11	10.5		B	BXO	10	10	3	4
8760	29422	MWIL	11	07	1530	N14	E38	11	10.5	4	(BG)					
8760		HOLL	11	07	2002	N15	E36	11	10.6		B	CAO	50	10	6	1

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NOVEMBER 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8760		LEAR	11	08	0058	N13	E34	11	10.6		B	DAO	60	11	6	3
8760		KAND	11	08	0845	N13	E30	11	10.6			DAI		14	8	4
8760		RAMY	11	08	1231	N14	E27	11	10.6		B	DAO	80	29	7	3
8760		HOLL	11	08	1559	N15	E26	11	10.6		B	DSO	110	32	8	4
8760		VORO	11	08	2304	N14	E22	11	10.6			DAI	168	27	8	3
8760		LEAR	11	09	0400	N14	E20	11	10.7		BG	DAI	200	59	10	4
8760		RAMY	11	09	1232	N14	E14	11	10.6		B	EAI	330	49	12	4
8760	29422	MWIL	11	09	1600	N14	E12	11	10.6	5	(B)					
8760		HOLL	11	09	1627	N15	E12	11	10.6		B	EAI	440	51	11	3
8760		VORO	11	09	2257	N14	E09	11	10.6			DKI	633	35	11	2
8760		LEAR	11	10	0130	N13	E08	11	10.7		BG	EKI	450	62	12	4
8760	29422	MWIL	11	10	1545	N14	W01	11	10.6	5	(BG)					
8760		HOLL	11	10	1551	N14	W01	11	10.6		B	EKC	620	57	13	3
8760		VORO	11	11	0125	N14	W06	11	10.6			DKI	938	40	12	3
8760		LEAR	11	11	0200	N13	W05	11	10.7		BG	EKI	600	58	15	3
8760		KAND	11	11	0725	N13	W10	11	10.5			EKI		39	15	4
8760		HOLL	11	11	1549	N13	W15	11	10.5		B	EKC	650	44	14	3
8760	29422	MWIL	11	11	1600	N13	W14	11	10.6	5	(BG)					
8760		VORO	11	11	2252	N15	W18	11	10.6			DKI	969	34	12	3
8760		LEAR	11	12	0452	N14	W21	11	10.6		BG	EKI	570	49	14	5
8760		RAMY	11	12	1510	N14	W27	11	10.6		B	FKO	640	49	16	3
8760	29422	MWIL	11	12	1530	N14	W28	11	10.5	5	(BG)					
8760		HOLL	11	12	1545	N13	W29	11	10.5		B	FKO	560	46	17	4
8760		VORO	11	12	2258	N15	W32	11	10.5			DKI	897	17	13	2
8760		LEAR	11	13	0315	N15	W34	11	10.6		BG	EKI	580	35	15	3
8760		KAND	11	13	1055	N14	W40	11	10.4			EKO		14	15	3
8760		RAMY	11	13	1240	N15	W39	11	10.6		B	FKI	630	29	16	1
8760	29422	MWIL	11	13	1530	N14	W39	11	10.7	5	(BG)					
8760		HOLL	11	13	1802	N13	W42	11	10.6		B	EKO	540	28	15	3
8760		VORO	11	13	2307	N15	W45	11	10.5			DKI	756	15	13	2
8760		LEAR	11	14	0030	N15	W45	11	10.6		B	EKO	390	18	15	3
8760		RAMY	11	14	1432	N16	W55	11	10.4		B	FHO	510	21	17	3
8760	29422	MWIL	11	14	1530	N15	W53	11	10.6	5	(B)					
8760		HOLL	11	14	1840	N14	W57	11	10.5		B	FKO	490	15	17	3
8760		VORO	11	14	2310	N15	W59	11	10.5			DKI	540	5	14	2
8760		LEAR	11	15	0050	N16	W57	11	10.7		B	FKO	470	12	16	4
8760		KAND	11	15	0825	N14	W65	11	10.4			EKO		5	15	4
8760	29422	MWIL	11	15	1600	N15	W67	11	10.6	5	(B)					
8760		HOLL	11	15	1612	N14	W69	11	10.5		B	FKO	330	8	18	2
8760		VORO	11	15	2300	N14	W70	11	10.7			DAI	275	6	13	2
8760		LEAR	11	16	0030	N16	W71	11	10.6		B	EKO	450	10	15	3
8760		HOLL	11	16	1530	N14	W76	11	10.9		B	CAO	80	5	5	3
8760	29422	MWIL	11	16	1530	N16	W76	11	10.9	4	(AF)					
8760		LEAR	11	17	0111	N17	W81	11	10.9		A	HA	60	1	2	3
8760A		LEAR	11	09	0400	S18	E20	11	10.7		A	AX	10	3	2	4
8755	29416	MWIL	11	04	1530	N21	E86	11	11.2	3	AP					
8755		HOLL	11	04	1635	N23	E85	11	11.2		A	HS	80	1	2	3
8755		VORO	11	04	2302	N22	E84	11	11.4			HAX	197	1		3
8755		LEAR	11	05	0200	N20	E81	11	11.3		A	HA	120	1	3	3
8755		KAND	11	05	0840	N21	E76	11	11.2			HS		1	2	3
8755		RAMY	11	05	1213	N17	E78	11	11.4		B	DAO	90	2	6	3
8755	29416	MWIL	11	05	1545	N22	E71	11	11.1	5	(AP)					
8755		HOLL	11	05	1712	N21	E75	11	11.5		B	DSO	150	4	10	3
8755		VORO	11	05	2253	N22	E69	11	11.2			HAX	165	1		3
8755		LEAR	11	06	0215	N18	E70	11	11.4		B	DAO	210	4	16	3
8755		KAND	11	06	0900	N22	E63	11	11.2			HS		1	2	3
8755		RAMY	11	06	1203	N21	E61	11	11.2		A	HS	80	1	2	2
8755	29416	MWIL	11	06	1600	N22	E58	11	11.1	5	(AP)					
8755		HOLL	11	06	1628	N23	E59	11	11.2		A	HS	80	1	1	3
8755		LEAR	11	07	0058	N21	E55	11	11.2		A	HA	100	1	3	4
8755		KAND	11	07	0740	N22	E50	11	11.2			HS		1	2	2
8755		RAMY	11	07	1249	N21	E47	11	11.1		A	HS	90	1	2	4
8755	29416	MWIL	11	07	1530	N22	E45	11	11.1	5	(AP)					
8755		HOLL	11	07	2002	N23	E43	11	11.1		A	HA	70	2	2	1
8755		LEAR	11	08	0058	N22	E41	11	11.2		A	HA	110	1	2	3
8755		KAND	11	08	0845	N22	E36	11	11.1			HS		1	3	4
8755		RAMY	11	08	1231	N23	E34	11	11.1		A	HS	90	2	2	3

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8755		HOLL	11	08	1559	N23	E33	11	11.2		A	HS	60	1	2	4
8755		VORO	11	08	2304	N23	E29	11	11.2			HHX	107	2		3
8755		LEAR	11	09	0400	N22	E27	11	11.2		A	HS	80	4	3	4
8755		RAMY	11	09	1232	N23	E22	11	11.2		A	HS	90	1	2	4
8755	29416	MWIL	11	09	1600	N22	E20	11	11.2	5	(AP)					
8755		HOLL	11	09	1627	N23	E19	11	11.1		A	HS	80	1	1	3
8755		VORO	11	09	2257	N23	E17	11	11.3			HSX	126	2		2
8755		LEAR	11	10	0130	N22	E16	11	11.3		A	HS	80	1	2	4
8755	29416	MWIL	11	10	1545	N22	E07	11	11.2	5	(BG)					
8755		HOLL	11	10	1551	N22	E07	11	11.2		A	HS	80	1	2	3
8755		VORO	11	11	0125	N23	E02	11	11.2			HSX	121	4		3
8755		LEAR	11	11	0200	N22	E01	11	11.2		B	CSO	150	5	4	3
8755		KAND	11	11	0725	N22	W02	11	11.1			CAO		3	4	4
8755		HOLL	11	11	1549	N22	W07	11	11.1		B	CSO	60	2	4	3
8755	29416	MWIL	11	11	1600	N22	W05	11	11.3	5	(BG)					
8755		VORO	11	11	2252	N23	W09	11	11.2			HAX	108	1		3
8755		LEAR	11	12	0452	N22	W12	11	11.3		A	HS	80	2	2	5
8755		RAMY	11	12	1510	N23	W18	11	11.2		A	HS	70	1	1	3
8755	29416	MWIL	11	12	1530	N23	W12	11	11.7	5	(AP)					
8755		HOLL	11	12	1545	N21	W19	11	11.2		A	HS	60	2	2	4
8755		VORO	11	12	2258	N23	W22	11	11.3			HAX	118	1		2
8755		LEAR	11	13	0315	N23	W25	11	11.2		A	HS	70	2	2	3
8755		KAND	11	13	1055	N22	W29	11	11.2			HS		1	2	3
8755		RAMY	11	13	1240	N23	W30	11	11.2		A	HS	80	1	2	1
8755	29416	MWIL	11	13	1530	N23	W31	11	11.2	5	(AP)					
8755		HOLL	11	13	1802	N22	W33	11	11.2		A	HS	60	1	2	3
8755		VORO	11	13	2307	N23	W35	11	11.3			HAX	103	1		2
8755		LEAR	11	14	0030	N23	W35	11	11.3		A	HS	80	1	2	3
8755		RAMY	11	14	1432	N25	W45	11	11.1		A	HS	60	1	2	3
8755	29416	MWIL	11	14	1530	N23	W44	11	11.2	5	(AP)					
8755		HOLL	11	14	1840	N22	W46	11	11.2		A	HS	60	1	2	3
8755		VORO	11	14	2310	N23	W48	11	11.3			HAX	119	1		2
8755		LEAR	11	15	0050	N24	W48	11	11.3		A	HS	90	1	2	4
8755		KAND	11	15	0825	N22	W55	11	11.1			HS		1	2	4
8755	29416	MWIL	11	15	1600	N23	W57	11	11.3	4	(AP)					
8755		HOLL	11	15	1612	N21	W58	11	11.2		A	HS	50	1	1	2
8755		VORO	11	15	2300	N23	W60	11	11.3			HAX	83	1		2
8755		LEAR	11	16	0030	N24	W60	11	11.4		A	HS	80	1	2	3
8755		HOLL	11	16	1530	N21	W69	11	11.3		A	HS	60	1	1	3
8755	29416	MWIL	11	16	1530	N23	W69	11	11.3	4	(AP)					
8755		VORO	11	16	2302	N23	W74	11	11.2			HAX	109	1		2
8755		LEAR	11	17	0111	N24	W76	11	11.2		A	HA	60	1	3	3
8755		HOLL	11	17	1538	N22	W84	11	11.2		A	HS	60	1	2	4
8758		KAND	11	05	0840	N17	E85	11	11.8			AX		1	1	3
8758	29419	MWIL	11	05	1545	N17	E79	11	11.6	4	(AP)					
8758		VORO	11	05	2253	N18	E77	11	11.8			HAX	220	2		3
8758		KAND	11	06	0900	N17	E72	11	11.8			HS		2	2	3
8758		RAMY	11	06	1203	N16	E71	11	11.9		B	CSO	90	2	6	2
8758	29419	MWIL	11	06	1600	N17	E67	11	11.7	5	(AP)					
8758		HOLL	11	06	1628	N20	E68	11	11.9		B	CSO	110	5	3	3
8758		LEAR	11	07	0058	N16	E65	11	12.0		B	CAO	80	3	5	4
8758		KAND	11	07	0740	N18	E60	11	11.9			CSI		7	5	2
8758		RAMY	11	07	1249	N18	E57	11	11.9		B	CAO	80	7	6	4
8758	29419	MWIL	11	07	1530	N17	E55	11	11.8	5	(BG)					
8758		HOLL	11	07	2002	N19	E52	11	11.8		B	CSO	50	15	4	1
8758		LEAR	11	08	0058	N18	E55	11	12.2		B	CAO	80	10	13	3
8758		KAND	11	08	0845	N19	E47	11	11.9			CAO		8	4	4
8758		RAMY	11	08	1231	N18	E50	11	12.3		B	FAO	90	21	16	3
8758		HOLL	11	08	1559	N19	E42	11	11.9		B	CAO	50	13	4	4
8758		VORO	11	08	2304	N19	E38	11	11.9			AI	90	13	1	3
8758		LEAR	11	09	0400	N18	E36	11	11.9		B	CSO	90	21	6	4
8758		RAMY	11	09	1232	N18	E30	11	11.8		B	CAO	50	14	6	4
8758	29419	MWIL	11	09	1600	N18	E29	11	11.9	5	(BP)					
8758		HOLL	11	09	1627	N19	E29	11	11.9		B	CAO	50	10	4	3
8758		VORO	11	09	2257	N19	E26	11	11.9			CAI	44	6	2	2
8758		LEAR	11	10	0130	N18	E25	11	12.0		B	DAO	60	12	4	4
8758	29419	MWIL	11	10	1545	N18	E17	11	11.9	4	(AP)					
8758		HOLL	11	10	1551	N19	E16	11	11.9		B	BXO	10	6	3	3

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8758		VORO	11	11	0125	N18	E11	11	11.9			AXX	11	7		3
8758		LEAR	11	11	0200	N18	E11	11	11.9		B	CSO	30	6	3	3
8758		KAND	11	11	0725	N18	E07	11	11.8			AX		8	4	4
8758		HOLL	11	11	1549	N18	E02	11	11.8		B	BXO	10	6	3	3
8758	29419	MWIL	11	11	1600	N18	E03	11	11.9	2	AP					
8758		VORO	11	11	2252	N18	E00	11	11.9			AXX	5	2		3
8758		LEAR	11	12	0452	N17	W05	11	11.8		A	AX		3	1	5
8758	29419	MWIL	11	12	1530	N17	W11	11	11.8	4	(AP)					
8758		HOLL	11	12	1545	N20	W04	11	12.3		B	BXO	10	5	7	4
8758		LEAR	11	13	0315	N18	W15	11	12.0		A	AX		1		3
8758	29419	MWIL	11	13	1530	N20	W25	11	11.7	3	(BG)					
8767		RAMY	11	14	1432	N44	W23	11	12.7		A	AX		1		3
8767	29432	MWIL	11	14	1530	N42	W24	11	12.7	4	(B)					
8767		HOLL	11	14	1840	N42	W29	11	12.4		B	CSO	20	5	4	3
8767		VORO	11	14	2310	N42	W29	11	12.6			CAI	61	3	4	2
8767		LEAR	11	15	0050	N42	W29	11	12.6		B	CSO	50	5	5	4
8767		KAND	11	15	0825	N42	W35	11	12.5			CAO		4	7	4
8767	29432	MWIL	11	15	1600	N42	W37	11	12.6	4	(B)					
8767		HOLL	11	15	1612	N42	W39	11	12.5		B	CSO	20	5	5	2
8767		VORO	11	15	2300	N43	W41	11	12.6			BXI	47	5	5	2
8767		LEAR	11	16	0030	N42	W42	11	12.6		B	CSO	30	7	8	3
8767		HOLL	11	16	1530	N41	W50	11	12.5		B	CSO	10	4	6	3
8767	29432	MWIL	11	16	1530	N43	W50	11	12.5	4	(B)					
8767		VORO	11	16	2302	N43	W55	11	12.4			BXI	51	4	4	2
8767		LEAR	11	17	0111	N43	W57	11	12.3		B	BXO	30	3	5	3
8767		HOLL	11	17	1538	N41	W63	11	12.5		B	CSO	20	2	4	4
8767	29432	MWIL	11	17	1745	N42	W64	11	12.5	3	B					
8767		VORO	11	18	0019	N42	W70	11	12.3			HRX	45	1		2
8767B		VORO	11	08	2304	N08	E53	11	12.9			DAI	186	12	3	3
8767B		VORO	11	09	2257	N09	E39	11	12.9			DAI	169	9	2	2
8767B		VORO	11	11	0125	N09	E26	11	13.0			HAX	157	12	3	3
8767B		VORO	11	11	2252	N09	E12	11	12.8			HAX	103	10		3
8767B		VORO	11	12	2258	N09	W02	11	12.8			HAX	113	6	2	2
8767B		VORO	11	13	2307	N09	W15	11	12.8			DAI	71	7	3	2
8767B		VORO	11	14	2310	N10	W27	11	12.9			DAI	108	11	5	2
8767B		VORO	11	15	2300	N09	W41	11	12.9			DAI	99	6	4	2
8767B		VORO	11	16	2302	N09	W56	11	12.7			BXI	34	3	5	2
8761		KAND	11	07	0740	N20	E80	11	13.4			EAI		13	13	2
8761	29423	MWIL	11	07	1530	N20	E70	11	13.0	4	(B)					
8761		HOLL	11	07	2002	N22	E66	11	12.9		B	BXO	10	2	3	1
8761		KAND	11	08	0845	N20	E60	11	12.9			CAO		3	5	4
8761		HOLL	11	08	1559	N22	E55	11	12.9		B	BXO	40	4	5	4
8761		VORO	11	08	2304	N20	E52	11	12.9			CAI	42	5	3	3
8761		LEAR	11	09	0400	N19	E50	11	13.0		B	DSO	80	10	5	4
8761		RAMY	11	09	1232	N19	E44	11	12.9		B	CRO	20	7	4	4
8761	29423	MWIL	11	09	1600	N20	E42	11	12.9	4	(B)					
8761		HOLL	11	09	1627	N21	E42	11	12.9		B	DAO	30	7	4	3
8761		VORO	11	09	2257	N21	E39	11	12.9			BXI	34	6	3	2
8761		LEAR	11	10	0130	N19	E37	11	12.9		B	CSO	30	11	4	4
8761	29423	MWIL	11	10	1545	N20	E29	11	12.9	4	(BF)					
8761		HOLL	11	10	1551	N21	E28	11	12.8		B	CSO	20	5	3	3
8761		VORO	11	11	0125	N20	E24	11	12.9			BXI	13	4	2	3
8761		LEAR	11	11	0200	N19	E23	11	12.8		B	CSO	20	2	3	3
8761		KAND	11	11	0725	N20	E22	11	13.0			AX		3	4	4
8761	29423	MWIL	11	11	1600	N20	E15	11	12.8	4	(AP)					
8761		VORO	11	11	2252	N20	E13	11	12.9			BXO	7	2	3	3
8761		LEAR	11	12	0452	N20	E09	11	12.9		B	BXO		3	4	5
8761	29423	MWIL	11	12	1530	N20	E03	11	12.9	4	(B)					
8761		LEAR	11	13	0315	N20	W04	11	12.8		B	BXO		2	3	3
8767A		HOLL	11	06	1628	N12	E80	11	12.7		B	CSO	120	3	5	3
8767A		VORO	11	08	2304	N12	E52	11	12.9			AXX	16	1		3
8767A		VORO	11	09	2257	N12	E38	11	12.8			AXX	12	1		2
8767A	29426	MWIL	11	10	1545	N08	E24	11	12.4	3	(B)					
8767A		VORO	11	11	0125	N12	E24	11	12.9			AXX	8	1		3
8767A		VORO	11	11	2252	N12	E13	11	12.9			AXX	7	1		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
8767A		VORO	11	12	2258	N13	W01	11	12.9			AXX	2	1		2
8759		RAMY	11	06	1203	N08	E86	11	13.0		B	DSO	100	2	5	2
8759	29421	MWIL	11	06	1600	N10	E80	11	12.7	3	AP					
8759		LEAR	11	07	0058	N08	E81	11	13.1		B	EAO	130	10	13	4
8759		RAMY	11	07	1249	N08	E77	11	13.3		BG	FKC	750	21	19	4
8759	29421	MWIL	11	07	1530	N10	E75	11	13.3	5	(BG)					
8759		HOLL	11	07	2002	N13	E71	11	13.2		BG	FKC	810	30	17	1
8759		LEAR	11	08	0058	N09	E69	11	13.2		BG	FKC	740	23	18	3
8759		KAND	11	08	0845	N10	E67	11	13.4			FKC		32	19	4
8759		RAMY	11	08	1231	N08	E64	11	13.3		BGD	FKC	860	47	22	3
8759		HOLL	11	08	1559	N13	E62	11	13.3		BG	FKC	920	32	17	4
8759		VORO	11	08	2304	N11	E62	11	13.6			DKI	1015	30	7	3
8759		LEAR	11	09	0400	N10	E56	11	13.4		BG	FKC	1260	82	20	4
8759		RAMY	11	09	1232	N09	E50	11	13.3		BGD	FKC	720	59	18	4
8759	29421	MWIL	11	09	1600	N10	E48	11	13.3	5	(BG)					
8759		HOLL	11	09	1627	N13	E50	11	13.4		BGD	FKC	720	57	19	3
8759		VORO	11	09	2257	N11	E49	11	13.6			DKI	947	32	10	2
8759		LEAR	11	10	0130	N08	E43	11	13.3		BG	FKC	1110	80	18	4
8759	29421	MWIL	11	10	1545	N10	E37	11	13.4	5	(D)					
8759		HOLL	11	10	1551	N12	E36	11	13.4		BGD	FKC	540	63	19	3
8759		VORO	11	11	0125	N11	E34	11	13.6			DKI	764	31	10	3
8759		LEAR	11	11	0200	N09	E30	11	13.3		BG	FKC	830	82	18	3
8759		KAND	11	11	0725	N10	E28	11	13.4			FKC		64	17	4
8759		HOLL	11	11	1549	N12	E23	11	13.4		BGD	FKC	420	78	18	3
8759	29421	MWIL	11	11	1600	N10	E23	11	13.4	5	(BP)					
8759		VORO	11	11	2252	N11	E22	11	13.6			DKI	718	48	10	3
8759		LEAR	11	12	0452	N10	E15	11	13.3		BG	FKC	330	94	18	5
8759		RAMY	11	12	1510	N10	E11	11	13.4		BG	FKC	420	69	18	3
8759	29421	MWIL	11	12	1530	N10	E11	11	13.5	5	(B)					
8759		HOLL	11	12	1545	N11	E10	11	13.4		BG	FKC	440	78	23	4
8759		VORO	11	12	2258	N11	E09	11	13.6			DHI	598	20	11	2
8759		LEAR	11	13	0315	N10	E04	11	13.4		BG	FAC	270	55	19	3
8759		KAND	11	13	1055	N10	W01	11	13.4			FAO		34	19	3
8759		RAMY	11	13	1240	N11	W01	11	13.4		BG	FAC	380	67	19	1
8759	29421	MWIL	11	13	1530	N10	W03	11	13.4	5	(D)					
8759		HOLL	11	13	1802	N10	W04	11	13.4		BG	FKC	420	78	21	3
8759		VORO	11	13	2307	N11	W05	11	13.6			DAI	402	25	12	2
8759		LEAR	11	14	0030	N10	W08	11	13.4		BG	FAI	240	49	22	3
8759		RAMY	11	14	1432	N13	W16	11	13.4		BG	FAO	270	67	22	3
8759	29421	MWIL	11	14	1530	N10	W15	11	13.5	5	(BG)					
8759		HOLL	11	14	1840	N11	W19	11	13.3		BG	FSI	300	52	22	3
8759		VORO	11	14	2310	N12	W17	11	13.7			DHI	341	11	10	2
8759		LEAR	11	15	0050	N11	W19	11	13.6		BG	FAI	320	51	21	4
8759		KAND	11	15	0825	N10	W26	11	13.4			FAO		20	23	4
8759	29421	MWIL	11	15	1600	N11	W28	11	13.6	5	(BG)					
8759		HOLL	11	15	1612	N11	W30	11	13.4		BG	FSC	170	31	21	2
8759		VORO	11	15	2300	N12	W30	11	13.7			DHI	316	17	10	2
8759		LEAR	11	16	0030	N12	W32	11	13.6		BG	FAI	280	40	22	3
8759		HOLL	11	16	1530	N11	W42	11	13.5		BG	FAC	110	27	21	3
8759	29421	MWIL	11	16	1530	N12	W39	11	13.7	5	(BG)					
8759		VORO	11	16	2302	N12	W43	11	13.7			DHI	226	15	12	2
8759		LEAR	11	17	0111	N14	W48	11	13.4		BG	FAO	210	25	25	3
8759		HOLL	11	17	1538	N11	W54	11	13.6		BG	CAO	150	23	17	4
8759	29421	MWIL	11	17	1745	N13	W50	11	14.0	4	BG					
8759		VORO	11	18	0019	N11	W60	11	13.5			DHI	239	9	19	2
8759		LEAR	11	18	0142	N14	W53	11	14.1		B	DAO	140	10	7	2
8759		SVTO	11	18	0715	N13	W57	11	14.0		B	DAO	170	7	6	3
8759	29421	MWIL	11	18	1515	N14	W61	11	14.0	4	(BF)					
8759		HOLL	11	18	1734	N12	W63	11	14.0		B	DSO	80	7	8	4
8759		LEAR	11	19	0130	N13	W68	11	13.9		B	DSO	50	6	7	3
8759		VORO	11	19	0520	N12	W69	11	14.0			HRX	39	1		2
8759		KAND	11	19	0750	N11	W67	11	14.3			HS		1	1	4
8759		SVTO	11	19	0758	N11	W73	11	13.8		A	HR	10	1	1	2
8759	29421	MWIL	11	19	1530	N13	W73	11	14.1	4	(B)					
8759		HOLL	11	19	1548	N12	W74	11	14.1		B	CAO	40	3	6	4
8759A		VORO	11	08	2304	N05	E60	11	13.4			HAX	36	1		3
8759A		VORO	11	09	2257	N05	E46	11	13.4			HAX	24	1		2

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8759A		VORO	11	11	0125	N05	E31	11	13.4			AXX	11	1		3
8759A		VORO	11	11	2252	N05	E20	11	13.4			AXX	6	1		3
8759B	29429	MWIL	11	12	1530	N29	E15	11	13.8	3	(AF)					
8770	29434	MWIL	11	15	1600	S14	W07	11	15.1	4	(BF)					
8770		VORO	11	15	2300	S14	W09	11	15.3			BXO	17	2	2	2
8770		LEAR	11	16	0030	S13	W11	11	15.2		B	DRO	40	2	4	3
8770	29434	MWIL	11	16	1530	S13	W18	11	15.3	5	(B)					
8770		HOLL	11	16	1530	S14	W19	11	15.2		B	DSO	40	7	6	3
8770		VORO	11	16	2302	S14	W23	11	15.2			BXO	56	4	4	2
8770		LEAR	11	17	0111	S13	W25	11	15.2		B	DSO	30	6	6	3
8770		HOLL	11	17	1538	S14	W33	11	15.1		B	DSO	60	9	7	4
8770	29434	MWIL	11	17	1745	S14	W34	11	15.2	5	B					
8770		VORO	11	18	0019	S13	W38	11	15.1			BXO	76	9	6	2
8770		LEAR	11	18	0142	S12	W39	11	15.1		B	DAO	60	10	8	2
8770		SVTO	11	18	0715	S13	W44	11	15.0		B	DAO	150	12	9	3
8770	29434	MWIL	11	18	1515	S12	W46	11	15.2	5	(B)					
8770		HOLL	11	18	1734	S14	W47	11	15.2		B	DAO	100	7	8	4
8770		LEAR	11	19	0130	S12	W52	11	15.1		B	DSO	130	10	10	3
8770		VORO	11	19	0520	S12	W55	11	15.1			CRO	125	7	7	2
8770		KAND	11	19	0750	S13	W55	11	15.2			EAO		6	11	4
8770		SVTO	11	19	0758	S13	W57	11	15.0		B	DSO	70	6	10	2
8770	29434	MWIL	11	19	1530	S12	W60	11	15.1	5	(BG)					
8770		HOLL	11	19	1548	S15	W61	11	15.0		B	DAO	80	7	10	4
8770		VORO	11	19	2345	S13	W66	11	15.0			CRO	158	4	6	2
8770		LEAR	11	20	0145	S13	W65	11	15.2		B	DSO	80	7	9	4
8770		RAMY	11	20	1305	S11	W77	11	14.7		B	CSO	40	6	13	3
8770	29434	MWIL	11	20	1530	S12	W75	11	15.0	4	(BG)					
8770		HOLL	11	20	1603	S15	W76	11	14.9		B	CSO	30	7	10	2
8763A		VORO	11	11	0125	N23	E58	11	15.5			BXO	8	2	2	3
8770A		HOLL	11	13	1802	N05	E26	11	15.7		A	AX		2	1	3
8763	29427	MWIL	11	10	1545	S15	E75	11	16.3	4	AP					
8763		HOLL	11	10	1551	S13	E78	11	16.5		B	CAO	120	11	7	3
8763		VORO	11	11	0125	S15	E73	11	16.6			DAI	335	8	4	3
8763		LEAR	11	11	0200	S15	E70	11	16.4		B	DAO	240	8	8	3
8763		KAND	11	11	0725	S15	E70	11	16.6			EAO		9	12	4
8763		HOLL	11	11	1549	S13	E64	11	16.5		B	DSO	90	14	10	3
8763	29427	MWIL	11	11	1600	S16	E64	11	16.5	4	BG					
8763		VORO	11	11	2252	S15	E59	11	16.4			DAI	234	13	8	3
8763		LEAR	11	12	0452	S16	E55	11	16.4		B	DAO	60	19	9	5
8763		RAMY	11	12	1510	S16	E51	11	16.5		B	DSO	100	17	7	3
8763	29427	MWIL	11	12	1530	S15	E50	11	16.4	5	(BG)					
8763		HOLL	11	12	1545	S13	E51	11	16.5		BG	DSO	140	13	9	4
8763		VORO	11	12	2258	S15	E47	11	16.5			CAI	149	10	5	2
8763		LEAR	11	13	0315	S14	E43	11	16.4		BG	CAO	60	15	9	3
8763		KAND	11	13	1055	S15	E39	11	16.4			CAO		8	8	3
8763		RAMY	11	13	1240	S16	E39	11	16.5		B	CSO	80	15	9	1
8763	29427	MWIL	11	13	1530	S15	E35	11	16.3	5	(BG)					
8763		HOLL	11	13	1802	S14	E34	11	16.3		B	CSO	80	18	7	3
8763		VORO	11	13	2307	S16	E31	11	16.3			HAX	151	6	2	2
8763		LEAR	11	14	0030	S16	E29	11	16.2		BG	CAO	70	9	6	3
8763		RAMY	11	14	1432	S16	E23	11	16.4		B	CSO	60	16	11	3
8763	29427	MWIL	11	14	1530	S14	E22	11	16.3	5	(BG)					
8763		HOLL	11	14	1840	S13	E21	11	16.4		B	CSO	70	7	7	3
8763		VORO	11	14	2310	S14	E16	11	16.2			CSO	77	2	3	2
8763		LEAR	11	15	0050	S14	E17	11	16.3		B	CSO	80	10	7	4
8763		KAND	11	15	0825	S13	E13	11	16.3			CAO		14	10	4
8763	29427	MWIL	11	15	1600	S14	E09	11	16.3	5	(AP)					
8763		HOLL	11	15	1612	S13	E07	11	16.2		B	CSO	40	2	5	2
8763		VORO	11	15	2300	S16	E04	11	16.3			CAI	71	8	2	2
8763		LEAR	11	16	0030	S13	E04	11	16.3		B	CSO	60	8	7	3
8763		HOLL	11	16	1530	S13	W03	11	16.4		A	HS	20	2	1	3
8763	29427	MWIL	11	16	1530	S13	W03	11	16.4	4	(AP)					
8763		VORO	11	16	2302	S14	W08	11	16.3			AXX	22	2		2
8763		LEAR	11	17	0111	S13	W09	11	16.4		A	HA	20	2	1	3

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8763		HOLL	11	17	1538	S13	W16	11	16.4		B	BXO	10	5	4	4
8763	29427	MWIL	11	17	1745	S13	W19	11	16.3	3	AP					
8763		VORO	11	18	0019	S14	W23	11	16.3			AXX	10	1		2
8763		LEAR	11	18	0142	S13	W23	11	16.3		B	BXO	10	2	1	2
8763	29427	MWIL	11	18	1515	S13	W30	11	16.4	4	(AP)					
8763		VORO	11	19	0520	S12	W37	11	16.4			AXX	11	1		2
8763	29427	MWIL	11	19	1530	S12	W43	11	16.4	3	(AP)					
8770B		RAMY	11	12	1510	N23	E50	11	16.5		A	AX		1		3
8763B		LEAR	11	11	0200	S09	E78	11	16.9		A	HA	90	4	2	3
8768		RAMY	11	14	1432	N16	E38	11	17.5		B	BXO	10	9	5	3
8768	29433	MWIL	11	14	1530	N18	E38	11	17.5	4	(B)					
8768		HOLL	11	14	1840	N18	E35	11	17.4		B	DSO	30	7	4	3
8768		LEAR	11	15	0050	N17	E32	11	17.5		B	DSO	40	7	6	4
8768		KAND	11	15	0825	N17	E28	11	17.5			BXO		6	7	4
8768	29433	MWIL	11	15	1600	N17	E24	11	17.5	4	(B)					
8768		HOLL	11	15	1612	N18	E23	11	17.4		B	CSO	20	7	7	2
8768		VORO	11	15	2300	N18	E20	11	17.5			DAI	69	6	8	2
8768		LEAR	11	16	0030	N17	E19	11	17.5		B	DAO	100	9	10	3
8768		HOLL	11	16	1530	N17	E07	11	17.2		B	DSO	70	15	7	3
8768	29433	MWIL	11	16	1530	N17	E09	11	17.3	5	(B)					
8768		VORO	11	16	2302	N17	E03	11	17.2			DAI	197	7	7	2
8768		LEAR	11	17	0111	N17	E02	11	17.2		B	DAO	170	15	8	3
8768		HOLL	11	17	1538	N17	W08	11	17.0		B	EAI	190	20	11	4
8768	29433	MWIL	11	17	1745	N17	W07	11	17.2	5	B					
8768		VORO	11	18	0019	N17	W12	11	17.1			DAI	185	6	10	2
8768		LEAR	11	18	0142	N17	W12	11	17.1		B	EAO	140	8	12	2
8768		SVTO	11	18	0715	N17	W15	11	17.2		B	ESO	220	10	13	3
8768	29433	MWIL	11	18	1515	N17	W19	11	17.2	5	(BG)					
8768		HOLL	11	18	1734	N16	W22	11	17.1		B	EAO	180	11	12	4
8768		LEAR	11	19	0130	N17	W26	11	17.1		B	EAO	160	10	13	3
8768		VORO	11	19	0520	N17	W28	11	17.1			DAI	154	5	10	2
8768		KAND	11	19	0750	N16	W30	11	17.0			EAO		8	13	4
8768		SVTO	11	19	0758	N17	W29	11	17.1		B	EAO	170	3	13	2
8768	29433	MWIL	11	19	1530	N16	W35	11	17.0	5	(B)					
8768		HOLL	11	19	1548	N15	W35	11	17.0		B	ESO	140	9	14	4
8768		VORO	11	19	2345	N17	W38	11	17.1			DAI	115	3	11	2
8768		LEAR	11	20	0145	N17	W38	11	17.2		B	ESO	160	6	13	4
8768		RAMY	11	20	1305	N18	W43	11	17.3		A	HS	100	2	2	3
8768	29433	MWIL	11	20	1530	N16	W48	11	17.0	5	(BP)					
8768		HOLL	11	20	1603	N15	W49	11	16.9		B	CSO	90	4	12	2
8768		VORO	11	20	2345	N15	W52	11	17.0			DAI	154	3	9	2
8768		LEAR	11	21	0030	N17	W51	11	17.1		B	ESO	70	4	11	3
8768		KAND	11	21	0955	N17	W60	11	16.8			CSO		7	11	3
8768		RAMY	11	21	1235	N18	W60	11	16.9		B	CSO	80	14	13	3
8768		HOLL	11	21	1521	N14	W62	11	16.9		B	CSO	90	8	10	3
8768	29433	MWIL	11	21	1630	N16	W62	11	17.0	5	(BP)					
8768		VORO	11	21	2350	N16	W66	11	17.0			DAO	183	3	9	2
8768		LEAR	11	22	0015	N17	W64	11	17.1		B	ESO	70	6	11	3
8768		KAND	11	22	0838	N14	W74	11	16.8			CSO		4	11	5
8768		HOLL	11	22	1554	N14	W75	11	17.0		B	EAO	140	8	12	2
8768	29433	MWIL	11	22	1600	N16	W75	11	17.0	4	(B)					
8768		LEAR	11	23	0110	N17	W77	11	17.2		B	CSO	60	4	4	2
8765		VORO	11	11	0125	S09	E85	11	17.4			HAX	194	2		3
8765		KAND	11	11	0725	S12	E81	11	17.4			EAO		4	13	4
8765		HOLL	11	11	1549	S10	E76	11	17.4		B	CAO	150	8	8	3
8765	29428	MWIL	11	11	1600	S13	E75	11	17.3	5	B					
8765		VORO	11	11	2252	S11	E73	11	17.4			DAI	691	8	3	3
8765		LEAR	11	12	0452	S13	E66	11	17.2		B	DAI	290	18	9	5
8765		RAMY	11	12	1510	S13	E64	11	17.5		B	DAC	360	16	10	3
8765	29428	MWIL	11	12	1530	S12	E63	11	17.4	5	(B)					
8765		HOLL	11	12	1545	S10	E64	11	17.5		BG	DAC	420	16	10	4
8765		VORO	11	12	2258	S12	E59	11	17.4			AI	942	10	8	2
8765		LEAR	11	13	0315	S12	E56	11	17.3		BG	DAC	430	13	10	3
8765		KAND	11	13	1055	S13	E54	11	17.5			EAC		12	12	3
8765		RAMY	11	13	1240	S12	E52	11	17.4		B	EAC	650	23	13	1

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8765	29428	MWIL	11	13	1530	S13	E49	11	17.3	5	(BG)					
8765		HOLL	11	13	1802	S12	E46	11	17.2		BG	EAC	600	36	11	3
8765		VORO	11	13	2307	S12	E45	11	17.3			AI	993	17	9	2
8765		LEAR	11	14	0030	S14	E44	11	17.3		BG	EAC	450	20	12	3
8765		RAMY	11	14	1432	S13	E36	11	17.3		B	EKC	830	41	12	3
8765	29428	MWIL	11	14	1530	S12	E36	11	17.3	5	(BG)					
8765		HOLL	11	14	1840	S12	E32	11	17.2		BG	EKC	790	29	13	3
8765		VORO	11	14	2310	S13	E31	11	17.3			DKI	1342	22	11	2
8765		LEAR	11	15	0050	S13	E31	11	17.4		BG	EKC	730	35	14	4
8765		KAND	11	15	0825	S12	E26	11	17.3			EKC		30	14	4
8765	29428	MWIL	11	15	1600	S12	E22	11	17.3	5	(D)					
8765		HOLL	11	15	1612	S12	E22	11	17.3		BG	EKC	990	33	14	2
8765		VORO	11	15	2300	S13	E19	11	17.4			FKI	1464	32	11	2
8765		LEAR	11	16	0030	S12	E18	11	17.4		BG	EKC	800	40	15	3
8765	29428	MWIL	11	16	1530	S11	E10	11	17.4	5	(D)					
8765		HOLL	11	16	1530	S12	E09	11	17.3		BG	EKC	1060	35	14	3
8765		VORO	11	16	2302	S13	E06	11	17.4			FKI	1620	27	11	2
8765		LEAR	11	17	0111	S12	E04	11	17.3		BGD	EKC	1180	38	15	3
8765		HOLL	11	17	1538	S12	W04	11	17.4		BGD	EKC	1200	44	15	4
8765	29428	MWIL	11	17	1745	S11	W04	11	17.4	5	BG					
8765		VORO	11	18	0019	S13	W08	11	17.4			FKI	1755	22	12	2
8765		LEAR	11	18	0142	S12	W08	11	17.5		BGD	EKC	1190	29	14	2
8765		SVTO	11	18	0715	S12	W12	11	17.4		BG	EKC	1300	29	15	3
8765	29428	MWIL	11	18	1515	S11	W15	11	17.5	6	(D)					
8765		HOLL	11	18	1734	S13	W17	11	17.4		BGD	EKC	1310	42	13	4
8765		LEAR	11	19	0130	S12	W22	11	17.4		BGD	EKC	1100	32	14	3
8765		VORO	11	19	0520	S13	W23	11	17.5			FKI	1687	23	11	2
8765		KAND	11	19	0750	S13	W25	11	17.4			EKC		34	14	4
8765		SVTO	11	19	0758	S12	W25	11	17.4		BG	EKC	1210	13	15	2
8765	29428	MWIL	11	19	1530	S12	W29	11	17.5	6	(D)					
8765		HOLL	11	19	1548	S13	W30	11	17.4		BGD	EKC	1100	40	13	4
8765		VORO	11	19	2345	S13	W34	11	17.4			FKI	1439	15	8	2
8765		LEAR	11	20	0145	S12	W33	11	17.6		BGD	EKC	1000	38	14	4
8765		RAMY	11	20	1305	S13	W43	11	17.3		BG	EKC	810	40	13	3
8765	29428	MWIL	11	20	1530	S13	W42	11	17.5	5	(D)					
8765		HOLL	11	20	1603	S13	W43	11	17.4		BGD	EKC	860	27	13	2
8765		VORO	11	20	2345	S13	W46	11	17.5			FKI	1467	11	11	2
8765		LEAR	11	21	0030	S12	W47	11	17.5		BGD	EKC	620	26	11	3
8765		KAND	11	21	0955	S14	W51	11	17.5			EKC		14	12	3
8765		RAMY	11	21	1235	S11	W55	11	17.4		BG	EKC	820	26	13	3
8765		HOLL	11	21	1521	S13	W55	11	17.5		BGD	EKC	920	24	12	3
8765	29428	MWIL	11	21	1630	S13	W56	11	17.5	5	(BG)					
8765		VORO	11	21	2350	S13	W59	11	17.5			DKI	966	21	10	2
8765		LEAR	11	22	0015	S12	W60	11	17.5		BGD	EKC	590	16	12	3
8765		KAND	11	22	0838	S15	W65	11	17.4			EKC		16	13	5
8765		HOLL	11	22	1554	S15	W68	11	17.5		BGD	EKC	910	10	11	2
8765	29428	MWIL	11	22	1600	S13	W67	11	17.6	5	(B)					
8765		VORO	11	22	2353	S12	W72	11	17.6			DKI	936	16	9	4
8765		LEAR	11	23	0110	S12	W73	11	17.5		BGD	EKC	330	9	11	2
8765		RAMY	11	23	1510	S13	W82	11	17.4		B	CSO	180	4	10	2
8765	29428	MWIL	11	23	1530	S13	W80	11	17.6	4	(AF)					
8765		LEAR	11	24	0102	S13	W86	11	17.5		A	HA	60	1	2	2
8765A	29430	MWIL	11	13	1530	S18	E50	11	17.4	3	(AF)					
8775	29437	MWIL	11	18	1515	S16	W01	11	18.5	4	(AP)					
8775		HOLL	11	18	1734	S17	W02	11	18.6		A	AX		1		4
8775		LEAR	11	19	0130	S17	W07	11	18.5		A	HS	10	1	1	3
8775		KAND	11	19	0750	S17	W09	11	18.6			CSO		2	3	4
8775		SVTO	11	19	0758	S16	W11	11	18.5		A	HR	10	1	1	2
8775	29437	MWIL	11	19	1530	S18	W14	11	18.6	4	(B)					
8775		HOLL	11	19	1548	S18	W13	11	18.7		B	BXO	20	3	4	4
8775		LEAR	11	20	0145	S16	W18	11	18.7		B	DSO	40	6	4	4
8775		RAMY	11	20	1305	S16	W27	11	18.5		A	AX		1		3
8775	29437	MWIL	11	20	1530	S16	W28	11	18.5	4	(AP)					
8775		HOLL	11	20	1603	S17	W27	11	18.6		A	AX		1		2
8766		LEAR	11	13	0315	N17	E77	11	19.0		A	AX		2	1	3
8766		KAND	11	13	1055	N17	E76	11	19.2			AX		1	1	3

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8766		RAMY	11	13	1240	N17	E76	11	19.3		A	HR	30	2	1	1
8766	29431	MWIL	11	13	1530	N17	E74	11	19.3	4	(BP)					
8766		HOLL	11	13	1802	N19	E72	11	19.2		B	DAO	70	5	6	3
8766		VORO	11	13	2307	N18	E70	11	19.3			HAX	332	3	3	2
8766		LEAR	11	14	0030	N17	E68	11	19.2		B	DAO	110	5	5	3
8766		RAMY	11	14	1432	N17	E63	11	19.4		B	DAO	260	12	7	3
8766	29431	MWIL	11	14	1530	N18	E62	11	19.4	5	(D)					
8766		HOLL	11	14	1840	N20	E60	11	19.4		B	DAO	260	11	7	3
8766		VORO	11	14	2310	N19	E57	11	19.3			HAX	338	8		2
8766		LEAR	11	15	0050	N16	E57	11	19.3		BD	DAI	240	11	8	4
8766		KAND	11	15	0825	N17	E51	11	19.2			DAI		15	8	4
8766	29431	MWIL	11	15	1600	N18	E49	11	19.4	5	(D)					
8766		HOLL	11	15	1612	N19	E47	11	19.3		BD	DKC	330	17	6	2
8766		VORO	11	15	2300	N18	E45	11	19.4			DAI	450	9	8	2
8766		LEAR	11	16	0030	N18	E44	11	19.4		G	EKC	400	22	11	3
8766	29431	MWIL	11	16	1530	N18	E35	11	19.3	5	(D)					
8766		HOLL	11	16	1530	N19	E33	11	19.2		BGD	DKC	260	18	10	3
8766		VORO	11	16	2302	N18	E30	11	19.2			DAI	382	13	9	2
8766		LEAR	11	17	0111	N17	E29	11	19.2		BG	EKI	380	21	11	3
8766		HOLL	11	17	1538	N19	E19	11	19.1		BG	EAC	350	26	12	4
8766	29431	MWIL	11	17	1745	N18	E20	11	19.3	5	D*					
8766		VORO	11	18	0019	N18	E15	11	19.1			DAI	261	14	10	2
8766		LEAR	11	18	0142	N17	E15	11	19.2		BG	EAI	240	16	12	2
8766		SVTO	11	18	0715	N18	E11	11	19.1		B	EAI	340	14	13	3
8766	29431	MWIL	11	18	1515	N18	E08	11	19.2	5	(D)					
8766		HOLL	11	18	1734	N18	E05	11	19.1		BG	EKC	290	26	12	4
8766		LEAR	11	19	0130	N18	E02	11	19.2		BG	EAI	280	23	13	3
8766		VORO	11	19	0520	N18	W02	11	19.1			DAI	230	12	12	2
8766		KAND	11	19	0750	N18	E00	11	19.3			EAC		19	13	4
8766		SVTO	11	19	0758	N17	W04	11	19.0		B	EAI	210	10	13	2
8766	29431	MWIL	11	19	1530	N17	W07	11	19.1	5	(D)					
8766		HOLL	11	19	1548	N17	W08	11	19.0		BG	EAI	250	35	13	4
8766		VORO	11	19	2345	N19	W10	11	19.2			DAI	249	12	7	2
8766		LEAR	11	20	0145	N18	W12	11	19.1		BG	EAI	270	27	14	4
8766		RAMY	11	20	1305	N18	W20	11	19.0		B	EAI	120	30	13	3
8766	29431	MWIL	11	20	1530	N17	W18	11	19.3	5	(D)					
8766		HOLL	11	20	1603	N17	W20	11	19.1		BG	DSC	110	20	9	2
8766		VORO	11	20	2345	N18	W23	11	19.2			DAI	227	8	8	2
8766		LEAR	11	21	0030	N18	W23	11	19.3		BG	DAI	160	14	10	3
8766		KAND	11	21	0955	N19	W28	11	19.3			DAO		20	9	3
8766		RAMY	11	21	1235	N19	W31	11	19.1		B	DAO	110	15	10	3
8766		HOLL	11	21	1521	N17	W32	11	19.2		B	DSO	80	13	9	3
8766	29431	MWIL	11	21	1630	N17	W32	11	19.2	5	(D)					
8766		VORO	11	21	2350	N18	W37	11	19.2			CAI	96	13	9	2
8766		LEAR	11	22	0015	N18	W36	11	19.3		B	DAO	100	12	10	3
8766		KAND	11	22	0838	N17	W41	11	19.2			CAO		10	12	5
8766		HOLL	11	22	1554	N16	W46	11	19.2		B	ESO	80	12	11	2
8766	29431	MWIL	11	22	1600	N18	W45	11	19.2	4	(BP)					
8766		LEAR	11	23	0110	N18	W51	11	19.2		B	ESO	40	11	12	2
8766	29431	MWIL	11	23	1530	N18	W56	11	19.4	4	(BF)					
8766		LEAR	11	24	0102	N18	W64	11	19.2		B	BXO	10	3	8	2
8775A	29450	MWIL	11	25	1530	N07	W70	11	20.4	3	(AP)					
8775A		LEAR	11	26	0110	N09	W79	11	20.1		A	AX		1	1	3
8775B		RAMY	11	20	1305	N28	E06	11	21.0		B	BXO		4	2	3
8771	29436	MWIL	11	16	1530	S16	E69	11	21.9	3	(B)					
8771		HOLL	11	17	1538	S13	E63	11	22.4		B	CSO	70	13	16	4
8771	29436	MWIL	11	17	1745	S15	E62	11	22.4	4	BF					
8771		LEAR	11	18	0142	S17	E57	11	22.4		B	EAO	80	7	15	2
8771		SVTO	11	18	0715	S14	E55	11	22.4		B	FAO	180	10	16	3
8771	29436	MWIL	11	18	1515	S15	E50	11	22.4	4	(BF)					
8771		HOLL	11	18	1734	S14	E48	11	22.3		B	FAO	170	19	17	4
8771		LEAR	11	19	0130	S16	E42	11	22.2		B	FAO	250	17	17	3
8771		KAND	11	19	0750	S16	E40	11	22.4			DAO		16	18	4
8771		SVTO	11	19	0758	S15	E35	11	22.0		B	DAO	110	4	8	2
8771	29436	MWIL	11	19	1530	S16	E36	11	22.4	5	(D)					
8771		HOLL	11	19	1548	S15	E32	11	22.1		BG	DAI	170	31	9	4

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8771		LEAR	11	20	0145	S16	E26	11	22.0		BG	DAI	200	18	10	4
8771		RAMY	11	20	1305	S17	E17	11	21.8		B	DAO	180	18	9	3
8771	29436	MWIL	11	20	1530	S16	E20	11	22.2	5	(D)					
8771		HOLL	11	20	1603	S16	E18	11	22.0		BG	DAI	180	22	10	2
8771		LEAR	11	21	0030	S16	E14	11	22.1		BGD	EAI	200	24	12	3
8771		KAND	11	21	0955	S16	E10	11	22.2			FAO		41	19	3
8771		RAMY	11	21	1235	S16	E05	11	21.9		BG	EAI	210	48	12	3
8771		HOLL	11	21	1521	S16	E05	11	22.0		BG	EAO	250	25	12	3
8771	29436	MWIL	11	21	1630	S16	E06	11	22.1	5	(D)					
8771		LEAR	11	22	0015	S16	E00	11	22.0		BGD	EAI	260	26	12	3
8771		KAND	11	22	0838	S17	W02	11	22.2			FAI		40	19	5
8771		HOLL	11	22	1554	S17	W05	11	22.3		BG	EAC	320	22	12	2
8771	29436	MWIL	11	22	1600	S16	W08	11	22.0	4	(BF)					
8771		LEAR	11	23	0110	S14	W14	11	22.0		BGD	EKC	530	25	14	2
8771		RAMY	11	23	1510	S15	W22	11	22.0		B	EKI	770	27	13	2
8771	29436	MWIL	11	23	1530	S16	W21	11	22.0	5	(BG)					
8771		LEAR	11	24	0102	S14	W28	11	21.9		BGD	EKC	490	23	11	2
8771		SVTO	11	24	0746	S17	W32	11	21.9		B	EKI	940	11	13	2
8771		KAND	11	24	1210	S16	W30	11	22.2			FKO		6	19	2
8771		RAMY	11	24	1238	S15	W35	11	21.9		BG	EKI	770	21	13	4
8771	29436	MWIL	11	24	1530	S15	W34	11	22.1	5	(BG)					
8771		HOLL	11	24	1602	S17	W35	11	22.0		BG	EKC	780	15	14	2
8771		LEAR	11	25	0115	S15	W40	11	22.0		BG	FKI	800	34	18	2
8771		SVTO	11	25	0737	S15	W41	11	22.2		B	FKI	950	19	18	3
8771		KAND	11	25	1100	S17	W45	11	22.0			FKO		11	18	3
8771		RAMY	11	25	1213	S14	W45	11	22.1		BG	FKI	840	22	17	3
8771	29436	MWIL	11	25	1530	S15	W48	11	22.0	5	(B)					
8771		HOLL	11	25	1533	S17	W48	11	22.0		BG	EKO	670	12	13	3
8771		LEAR	11	26	0110	S14	W51	11	22.2		BG	FKI	1040	19	18	3
8771		SVTO	11	26	0720	S15	W53	11	22.3		B	FKI	730	15	21	3
8771		RAMY	11	26	1211	S13	W58	11	22.1		BGD	FKI	690	18	20	3
8771		HOLL	11	26	1523	S16	W60	11	22.1		BG	FKC	510	15	17	2
8771	29436	MWIL	11	26	1530	S14	W57	11	22.3	5	(D)					
8771		LEAR	11	27	0005	S14	W64	11	22.2		BG	EKI	760	19	13	4
8771		SVTO	11	27	0723	S16	W71	11	21.9		B	EKO	710	8	15	3
8771		KAND	11	27	0755	S16	W70	11	22.0			FKO		10	18	3
8771		RAMY	11	27	1227	S12	W72	11	22.1		BG	FKI	660	16	16	3
8771		HOLL	11	27	1552	S17	W76	11	21.9		BG	FKC	590	13	17	4
8771	29436	MWIL	11	27	2230	S15	W75	11	22.2	5	(D)					
8771		LEAR	11	28	0025	S14	W75	11	22.3		BG	EKI	300	8	11	3
8771		KAND	11	28	0740	S15	W83	11	22.0			CSO		3	10	3
8771		RAMY	11	28	1212	S14	W85	11	22.1		B	EAO	150	5	11	4
8771		HOLL	11	28	1920	S18	W88	11	22.1		A	HA	80	1	2	3
8771		LEAR	11	29	0105	S14	W88	11	22.4		B	DAO	40	2	2	2
8769	29435	MWIL	11	15	1600	S12	E80	11	21.7	3	AP					
8769		HOLL	11	15	1612	S10	E80	11	21.7		A	HS	30	1	1	2
8769		VORO	11	15	2300	S11	E76	11	21.7			HAX	115	1		2
8769		LEAR	11	16	0030	S11	E77	11	21.8		A	HS	30	1	1	3
8769		HOLL	11	16	1530	S10	E68	11	21.7		A	HA	130	1	1	3
8769	29435	MWIL	11	16	1530	S11	E68	11	21.8	4	(AP)					
8769		VORO	11	16	2302	S11	E64	11	21.8			HAX	67	2		2
8769		LEAR	11	17	0111	S15	E68	11	22.2		B	FAO	170	4	18	3
8769		HOLL	11	17	1538	S10	E55	11	21.8		A	HS	110	1	2	4
8769	29435	MWIL	11	17	1745	S11	E53	11	21.7	4	AP					
8769		VORO	11	18	0019	S13	E53	11	22.0			HAX	161	7	6	2
8769		LEAR	11	18	0142	S12	E48	11	21.7		A	HA	60	2	2	2
8769		SVTO	11	18	0715	S10	E45	11	21.7		B	DSO	60	3	5	3
8769	29435	MWIL	11	18	1515	S11	E41	11	21.7	4	(AP)					
8769		HOLL	11	18	1734	S10	E41	11	21.8		B	CAO	80	4	5	4
8769		LEAR	11	19	0130	S11	E34	11	21.6		B	DAO	40	3	4	3
8769		VORO	11	19	0520	S13	E37	11	22.0			HAX	225	8	7	2
8769		KAND	11	19	0750	S12	E33	11	21.8			HS		5	5	4
8769		SVTO	11	19	0758	S11	E31	11	21.7		B	DSO	60	2	3	2
8769	29435	MWIL	11	19	1530	S12	E27	11	21.7	5	(AP)					
8769		HOLL	11	19	1548	S11	E28	11	21.8		B	CSO	30	7	4	4
8769		VORO	11	19	2345	S16	E27	11	22.0			HAX	250	7	7	2
8769		LEAR	11	20	0145	S12	E22	11	21.7		B	CSO	20	3	3	4
8769	29435	MWIL	11	20	1530	S11	E15	11	21.8	3	(AP)					

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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
8769		VORO	11	20	2345	S16	E14	11	22.0			HAX	322	10	9	2
8769		VORO	11	21	2350	S16	E01	11	22.1			DKI	418	18	10	2
8769		KAND	11	22	0838	S12	W08	11	21.7			AX		2	1	5
8769		VORO	11	22	2353	S16	W13	11	22.0			FKI	715	38	10	4
8769	29446	MWIL	11	23	1530	S11	W26	11	21.7	3	(AP)					
8769		VORO	11	25	0000	S17	W41	11	21.9			DKI	1166	7	10	2
8769		VORO	11	25	2343	S17	W53	11	22.0			DKI	1170	12	10	2
8769		VORO	11	26	2348	S16	W66	11	22.0			DKI	905	13	11	2
8769		VORO	11	27	2338	S13	W73	11	22.5			CAI	152	3	0	2
8769		VORO	11	27	2338	S16	W73	11	22.4			HKX	604	5		2
8777		HOLL	11	18	1734	S27	E45	11	22.2		B	BXO	10	3	5	4
8777		RAMY	11	23	1510	S27	W17	11	22.3		A	HS	30	1	1	2
8776	29438	MWIL	11	18	1515	S29	E54	11	22.9	4	(B)					
8776		KAND	11	19	0750	S26	E45	11	22.8			AX		1		4
8776		KAND	11	19	0750	S31	E50	11	23.3			AX		1		4
8776		SVTO	11	19	0758	S31	E49	11	23.2		A	AX	10	1	1	2
8776	29438	MWIL	11	19	1530	S26	E40	11	22.7	3	(AP)					
8776	29440	MWIL	11	19	1530	S31	E42	11	22.9	4	(B)					
8776		HOLL	11	19	1548	S28	E41	11	22.9		A	AX	10	4	5	4
8776		VORO	11	19	2345	S30	E38	11	23.0			HAX	32	2	2	2
8776		LEAR	11	20	0145	S31	E37	11	23.0		B	DSO	40	2	4	4
8776		RAMY	11	20	1305	S32	E28	11	22.8		B	CRO	20	8	5	3
8776	29440	MWIL	11	20	1530	S30	E28	11	22.8	4	(B)					
8776		HOLL	11	20	1603	S29	E29	11	22.9		B	CSO	20	5	4	2
8776		VORO	11	20	2345	S29	E25	11	22.9			HAX	64	4	4	2
8776		LEAR	11	21	0030	S30	E23	11	22.8		B	DSO	30	5	5	3
8776		KAND	11	21	0955	S30	E19	11	22.9			BXO		11	6	3
8776		RAMY	11	21	1235	S31	E15	11	22.7		B	DRO	30	16	7	3
8776		HOLL	11	21	1521	S29	E07	11	22.2		B	CSO	10	15	6	3
8776	29440	MWIL	11	21	1630	S30	E14	11	22.8	5	(B)					
8776		VORO	11	21	2350	S28	E10	11	22.8			DSI	74	13	5	2
8776		LEAR	11	22	0015	S30	E10	11	22.8		B	DAO	80	13	7	3
8776		KAND	11	22	0838	S29	E06	11	22.8			DSO		13	8	5
8776		HOLL	11	22	1554	S28	E05	11	23.0		B	DSO	90	10	8	2
8776	29440	MWIL	11	22	1600	S28	E01	11	22.7	4	(B)					
8776		LEAR	11	23	0110	S28	W04	11	22.7		B	DSO	50	6	8	2
8776		RAMY	11	23	1510	S28	W12	11	22.7		B	DSO	50	5	9	2
8776	29440	MWIL	11	23	1530	S28	W11	11	22.8	5	(BP)					
8776		LEAR	11	24	0102	S28	W17	11	22.7		B	ESO	80	5	11	2
8776		SVTO	11	24	0746	S29	W19	11	22.8		B	EAO	110	6	12	2
8776		KAND	11	24	1210	S29	W24	11	22.6			ESO		2	11	2
8776		RAMY	11	24	1238	S28	W25	11	22.6		B	DAO	70	9	10	4
8776	29440	MWIL	11	24	1530	S28	W24	11	22.8	4	(B)					
8776		HOLL	11	24	1602	S29	W23	11	22.9		B	EAO	60	2	11	2
8776		VORO	11	24	2353	S29	W29	11	22.7			DAO	70	2	9	4
8776		LEAR	11	25	0115	S27	W29	11	22.8		B	CSO	20	6	10	2
8776		SVTO	11	25	0737	S28	W34	11	22.7		B	DAO	70	2	10	3
8776		KAND	11	25	1100	S29	W36	11	22.6			CSO		3	12	3
8776		RAMY	11	25	1213	S28	W37	11	22.6		B	CSO	60	3	10	3
8776	29440	MWIL	11	25	1530	S28	W37	11	22.7	5	(BP)					
8776		HOLL	11	25	1533	S30	W37	11	22.7		B	CSO	30	3	10	3
8776		VORO	11	25	2343	S29	W42	11	22.7			CAO	111	2	9	2
8776		LEAR	11	26	0110	S27	W42	11	22.8		B	DSO	50	3	10	3
8776		SVTO	11	26	0720	S28	W50	11	22.4		A	HS	70	1	2	3
8776		RAMY	11	26	1211	S25	W56	11	22.2		A	HS	40	1	2	3
8776		HOLL	11	26	1523	S29	W53	11	22.5		B	CSO	30	2	5	2
8776	29440	MWIL	11	26	1530	S27	W53	11	22.5	5	(BP)					
8776		VORO	11	26	2348	S28	W58	11	22.4			CAI	119	6	4	2
8776		LEAR	11	27	0005	S26	W56	11	22.6		B	DSO	50	6	7	4
8776		SVTO	11	27	0723	S28	W65	11	22.2		B	CSO	120	2	7	3
8776		KAND	11	27	0755	S29	W66	11	22.1			HS		1	2	3
8776		RAMY	11	27	1227	S26	W68	11	22.2		B	DSO	70	2	5	3
8776		HOLL	11	27	1552	S29	W68	11	22.3		B	DAO	100	4	6	4
8776	29440	MWIL	11	27	2230	S27	W70	11	22.5	4	(B)					
8776		VORO	11	27	2338	S28	W71	11	22.4			CAO	136	2	4	2
8776		LEAR	11	28	0025	S26	W69	11	22.6		B	DSO	90	5	5	3
8776		KAND	11	28	0740	S28	W79	11	22.1			CAO		2	10	3

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8776		RAMY	11	28	1212	S26	W79	11	22.4		B	DAO	90	2	8	4
8773		VORO	11	16	2302	S14	E79	11	22.9			HRX	65	1		2
8773		VORO	11	18	0019	S14	E65	11	22.9			HRX	61	2		2
8773		VORO	11	19	0520	S14	E49	11	22.9			HRX	22	1		2
8773		HOLL	11	19	1548	S14	E43	11	22.9		B	CSO	30	9	4	4
8773		VORO	11	19	2345	S15	E40	11	23.0			HRX	31	1		2
8773		LEAR	11	20	0145	S16	E37	11	22.9		B	CSO	40	3	2	4
8773		RAMY	11	20	1305	S17	E29	11	22.7		B	CSO	20	7	4	3
8773		HOLL	11	20	1603	S14	E31	11	23.0		A	HS	10	2	1	2
8773		VORO	11	20	2345	S15	E26	11	22.9			HRX	24	1		2
8773		LEAR	11	21	0030	S15	E25	11	22.9		B	CSO	10	2	1	3
8773		RAMY	11	21	1235	S16	E16	11	22.7		B	BXO	10	10	5	3
8773		HOLL	11	21	1521	S14	E18	11	23.0		A	AX	30	3	2	3
8773		VORO	11	21	2350	S15	E11	11	22.8			BXI	32	6	7	2
8773		LEAR	11	22	0015	S15	E10	11	22.8		B	BXO	20	6	6	3
8773		HOLL	11	22	1554	S15	E03	11	22.9		B	CAO	20	9	8	2
8773		VORO	11	22	2353	S15	W03	11	22.8			BXI	14	11	5	4
8773		LEAR	11	23	0110	S15	W04	11	22.7		B	BXO	10	4	3	2
8773		RAMY	11	23	1510	S15	W10	11	22.9		B	CSO	10	4	3	2
8773		LEAR	11	24	0102	S15	W15	11	22.9		B	CSO	20	4	2	2
8773		SVTO	11	24	0746	S17	W18	11	22.9		B	CSO	10	2	2	2
8773		RAMY	11	24	1238	S14	W21	11	22.9		B	BXO	10	4	3	4
8773		HOLL	11	24	1602	S16	W22	11	23.0		B	BXO	10	7	3	2
8773		VORO	11	25	0000	S16	W28	11	22.9			CAI	45	3	5	2
8773		LEAR	11	25	0115	S15	W27	11	23.0		B	BXO	10	4	3	2
8773		SVTO	11	25	0737	S16	W30	11	23.0		A	HR	10	2	2	3
8773		RAMY	11	25	1213	S14	W34	11	22.9		A	AX		2	2	3
8773		HOLL	11	25	1533	S15	W33	11	23.1		B	BXO	20	5	10	3
8773		VORO	11	25	2343	S15	W43	11	22.7			BXI	31	3	2	2
8773		LEAR	11	26	0110	S14	W38	11	23.2		B	ESO	60	7	12	3
8773		SVTO	11	26	0720	S13	W36	11	23.6		B	DRO	20	3	4	3
8773		RAMY	11	26	1211	S11	W40	11	23.5		B	BXO	10	5	4	3
8773		HOLL	11	26	1523	S14	W41	11	23.5		B	BXO	10	3	6	2
8773	29451	MWIL	11	26	1530	S12	W41	11	23.5	4	(B)					
8773		VORO	11	26	2348	S13	W57	11	22.7			CAI	137	8	4	2
8773		LEAR	11	27	0005	S12	W49	11	23.3		B	ESO	50	4	13	4
8773		SVTO	11	27	0723	S13	W47	11	23.8		A	AX		1		3
8773		RAMY	11	27	1227	S11	W55	11	23.4		B	BXO	10	4	7	3
8773		HOLL	11	27	1552	S14	W52	11	23.7		A	AX		1		4
8773	29451	MWIL	11	27	2230	S12	W57	11	23.6	3	(BP)					
8773		LEAR	11	28	0025	S12	W59	11	23.6		B	BXO	20	3	6	3
8773		RAMY	11	28	1212	S11	W68	11	23.4		B	CSO	50	3	5	4
8773		HOLL	11	28	1920	S15	W65	11	23.9		B	BXO	10	4	7	3
8773		LEAR	11	29	0105	S11	W73	11	23.5		B	BXO	10	3	5	2
8779		KAND	11	24	1210	S09	W21	11	22.9			HR		1	1	2
8779		RAMY	11	24	1238	S08	W22	11	22.9		B	BXO	10	2	3	4
8779	29448	MWIL	11	24	1530	S09	W22	11	23.0	4	(BF)					
8779		HOLL	11	24	1602	S09	W23	11	22.9		A	HS	10	1	1	2
8779		VORO	11	25	0000	S10	W32	11	22.6			CAI	62	4	3	2
8779		LEAR	11	25	0115	S09	W30	11	22.8		B	CSO	40	4	7	2
8779		SVTO	11	25	0737	S09	W35	11	22.7		B	DAI	80	6	7	3
8779		KAND	11	25	1100	S10	W38	11	22.6			DAO		4	4	3
8779		RAMY	11	25	1213	S08	W39	11	22.6		B	CRO	20	7	4	3
8779	29448	MWIL	11	25	1530	S09	W40	11	22.6	4	(BP)					
8779		HOLL	11	25	1533	S11	W40	11	22.6		B	CSO	30	5	5	3
8779		VORO	11	25	2343	S10	W45	11	22.6			BXI	39	3	4	2
8779		LEAR	11	26	0110	S08	W45	11	22.7		B	DSO	30	4	5	3
8779		SVTO	11	26	0720	S09	W50	11	22.5		B	CRO	20	2	3	3
8779		RAMY	11	26	1211	S07	W54	11	22.5		B	BXO		2	3	3
8779		HOLL	11	26	1523	S11	W54	11	22.6		B	BXO	10	2	3	2
8779	29448	MWIL	11	26	1530	S09	W55	11	22.5	4	(B)					
8779		VORO	11	26	2348	S10	W59	11	22.5			BXO	19	2	3	2
8779		LEAR	11	27	0005	S10	W58	11	22.6		B	DRO	30	4	5	4
8779		SVTO	11	27	0723	S13	W61	11	22.7		B	CSO	50	2	5	3
8779		HOLL	11	27	1552	S13	W68	11	22.5		B	CSO	50	3	2	4
8779		LEAR	11	28	0025	S10	W71	11	22.7		A	HA	40	1	1	3
8773A		SVTO	11	24	0746	S10	W18	11	23.0		A	HS	20	1	1	2

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8779A		VORO	11	25	2343	S13	W31	11	23.6			BXO	20	2	2	2
8779A		VORO	11	26	2348	S13	W45	11	23.6			BXO	15	3	6	2
8779A		KAND	11	27	0755	S14	W48	11	23.7			AX		1	1	3
8779A		VORO	11	27	2338	S13	W58	11	23.6			BXO	23	2	6	2
8779A		KAND	11	28	0740	S13	W67	11	23.3			AX		2	3	3
8779A		VORO	11	28	2307	S13	W75	11	23.3			BXO	14	2	6	3
8772		SVTO	11	18	0715	N05	E82	11	24.4		B	CRO	10	2	10	3
8772	29439	MWIL	11	18	1515	N04	E73	11	24.1	4	(AP)					
8772		HOLL	11	18	1734	N05	E72	11	24.1		A	HA	30	1	1	4
8772		LEAR	11	19	0130	N04	E67	11	24.1		B	CSO	40	2	4	3
8772		VORO	11	19	0520	N04	E66	11	24.1			HAX	56	3		2
8772		KAND	11	19	0750	N04	E66	11	24.3			HA		3	4	4
8772		SVTO	11	19	0758	N04	E63	11	24.0		B	CSO	30	2	3	2
8772	29439	MWIL	11	19	1530	N04	E60	11	24.1	4	(BP)					
8772		HOLL	11	19	1548	N06	E59	11	24.1		B	DAO	100	13	4	4
8772		VORO	11	19	2345	N05	E56	11	24.2			HAX	75	2		2
8772		LEAR	11	20	0145	N04	E54	11	24.1		B	CSO	60	2	4	4
8772		RAMY	11	20	1305	N03	E47	11	24.0		B	CRO	10	5	3	3
8772	29439	MWIL	11	20	1530	N04	E46	11	24.1	4	(AP)					
8772		HOLL	11	20	1603	N06	E45	11	24.0		B	CSO	20	6	3	2
8772		VORO	11	20	2345	N05	E42	11	24.1			HAX	72	3		2
8772		LEAR	11	21	0030	N04	E41	11	24.1		B	DAO	30	5	2	3
8772		KAND	11	21	0955	N05	E38	11	24.2			BXO		16	6	3
8772		RAMY	11	21	1235	N03	E35	11	24.1		B	BXO	20	13	6	3
8772		HOLL	11	21	1521	N05	E33	11	24.1		B	CSO	20	7	6	3
8772	29439	MWIL	11	21	1630	N04	E33	11	24.1	4	(BP)					
8772		VORO	11	21	2350	N05	E30	11	24.2			BXI	53	5	5	2
8772		LEAR	11	22	0015	N04	E29	11	24.2		B	CSO	40	8	6	3
8772		KAND	11	22	0838	N05	E24	11	24.1			BXO		12	7	5
8772		HOLL	11	22	1554	N06	E20	11	24.1		B	CSO	30	12	7	2
8772	29439	MWIL	11	22	1600	N05	E21	11	24.2	4	(BP)					
8772		LEAR	11	23	0110	N05	E15	11	24.2		B	CSO	30	3	8	2
8772		RAMY	11	23	1510	N06	E09	11	24.3		A	HS	10	1	1	2
8772	29439	MWIL	11	23	1530	N06	E09	11	24.3	4	(AF)					
8772		LEAR	11	24	0102	N06	E04	11	24.3		A	HS	10	1	1	2
8772		SVTO	11	24	0746	N06	E01	11	24.4		B	CRO	10	2	1	2
8772		RAMY	11	24	1238	N06	W02	11	24.4		A	AX		3	2	4
8772	29439	MWIL	11	24	1530	N06	W04	11	24.3	3	(AF)					
8772		HOLL	11	24	1602	N06	W04	11	24.4		A	AX	10	3	1	2
8772		LEAR	11	25	0115	N07	W08	11	24.4		A	AX	10	4	2	2
8772		RAMY	11	26	1211	N06	W25	11	24.6		A	AX		1		3
8772		HOLL	11	26	1523	N05	W27	11	24.6		A	AX		1		2
8772	29439	MWIL	11	26	1530	N06	W26	11	24.7	4	(AP)					
8772		VORO	11	26	2348	N05	W32	11	24.6			AXX	9	1		2
8772		LEAR	11	27	0005	N05	W31	11	24.7		A	HS	10	1	1	4
8772		SVTO	11	27	0723	N05	W36	11	24.6		B	DSO	20	5	4	3
8772		KAND	11	27	0755	N04	W35	11	24.7			BXO		4	5	3
8772		RAMY	11	27	1227	N07	W39	11	24.6		B	BXO	10	6	5	3
8772		HOLL	11	27	1552	N04	W41	11	24.6		B	CSO	20	2	5	4
8772	29439	MWIL	11	27	2230	N05	W43	11	24.7	4	(B)					
8772		VORO	11	27	2338	N05	W44	11	24.7			CRO	33	2	4	2
8772		LEAR	11	28	0025	N06	W44	11	24.7		B	BXO	10	2	4	3
8772		KAND	11	28	0740	N04	W46	11	24.9			AX		1		3
8772		RAMY	11	28	1212	N07	W48	11	24.9		A	AX		1		4
8772B	29441	MWIL	11	19	1530	N18	E67	11	24.7	4	(B)					
8772B	29441	MWIL	11	20	1530	N18	E51	11	24.5	3	(B)					
8772A		KAND	11	21	0855	S26	E48	11	25.1			AX		1		3
8772A		RAMY	11	21	1235	S27	E44	11	24.9		A	AX		2	1	3
8772A		HOLL	11	21	1521	S24	E45	11	25.1		A	AX	10	2	1	3
8772A	29444	MWIL	11	21	1630	S26	E44	11	25.1	4	(AP)					
8772A		VORO	11	21	2350	S26	E41	11	25.2			AXX	10	2		2
8772A		LEAR	11	22	0015	S26	E40	11	25.1		A	AX	10	1	1	3
8772A		KAND	11	22	0838	S26	E37	11	25.2			AX		1		5
8774	29442	MWIL	11	19	1530	N21	E75	11	25.4	4	(B)					
8774		HOLL	11	19	1548	N22	E73	11	25.3		B	BXO	30	4	12	4

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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
8774		LEAR	11	20	0145	N21	E70	11	25.4		B	BXO	30	2	5	4
8774		RAMY	11	20	1305	N17	E59	11	25.0		B	BXO	10	5	16	3
8774	29442	MWIL	11	20	1530	N20	E60	11	25.2	4	(AP)					
8774		HOLL	11	20	1603	N21	E60	11	25.3		A	AX	10	1		2
8774		RAMY	11	26	1211	N20	W15	11	25.4		A	AX		1		3
8774	29452	MWIL	11	26	1530	N19	W17	11	25.3	4	(AP)					
8774		RAMY	11	27	1227	N20	W28	11	25.4		A	AX		1		3
8774A	29443	MWIL	11	19	1530	S12	E78	11	25.5	3	(AF)					
8778		KAND	11	21	0955	S13	E70	11	26.7			AX		1		3
8778		RAMY	11	21	1235	S16	E67	11	26.6		B	BXO		2	4	3
8778		HOLL	11	21	1521	S11	E66	11	26.6		A	AX	10	2	2	3
8778	29445	MWIL	11	21	1630	S14	E65	11	26.6	4	(AP)					
8778		VORO	11	21	2350	S12	E62	11	26.7			AXX	18	1		2
8778		LEAR	11	22	0015	S12	E60	11	26.5		A	AX		2		3
8778		KAND	11	22	0838	S14	E58	11	26.7			BXO		6	3	5
8778		HOLL	11	22	1554	S12	E53	11	26.6		B	CSO	30	6	3	2
8778	29445	MWIL	11	22	1600	S16	E53	11	26.7	4	(AP)					
8778		VORO	11	22	2353	S13	E52	11	26.9			CAI	85	12	5	4
8778		LEAR	11	23	0110	S15	E48	11	26.7		B	CSO	40	3	3	2
8778		RAMY	11	23	1510	S16	E40	11	26.7		B	CAO	40	4	4	2
8778	29445	MWIL	11	23	1530	S15	E40	11	26.7	5	(BP)					
8778		LEAR	11	24	0102	S15	E33	11	26.5		A	HS	50	2	3	2
8778		SVTO	11	24	0746	S13	E32	11	26.7		B	CAO	100	9	7	2
8778		KAND	11	24	1210	S15	E29	11	26.7			CSI		5	8	2
8778		RAMY	11	24	1238	S16	E29	11	26.7		B	CAO	80	19	8	4
8778	29445	MWIL	11	24	1530	S15	E27	11	26.7	5	(BG)					
8778		HOLL	11	24	1602	S14	E28	11	26.8		B	CSO	80	16	8	2
8778		VORO	11	25	0000	S16	E23	11	26.7			DAI	195	10	6	2
8778		LEAR	11	25	0115	S15	E23	11	26.8		B	DAO	110	33	9	2
8778		SVTO	11	25	0737	S14	E18	11	26.7		B	DAI	120	24	9	3
8778		KAND	11	25	1100	S15	E16	11	26.7			DAI		13	10	3
8778		RAMY	11	25	1213	S14	E15	11	26.6		B	DSO	80	27	10	3
8778	29445	MWIL	11	25	1530	S15	E14	11	26.7	4	(BP)					
8778		HOLL	11	25	1533	S14	E14	11	26.7		B	DSO	70	23	9	3
8778		VORO	11	25	2343	S16	E09	11	26.7			DAI	197	11	10	2
8778		LEAR	11	26	0110	S14	E08	11	26.6		B	EAO	170	28	11	3
8778		SVTO	11	26	0720	S13	E04	11	26.6		B	EAI	150	23	13	3
8778		RAMY	11	26	1211	S14	E00	11	26.5		BG	CAO	140	39	12	3
8778		HOLL	11	26	1523	S14	E01	11	26.7		B	EAI	90	26	13	2
8778	29445	MWIL	11	26	1530	S14	W00	11	26.6	5	(BG)					
8778		VORO	11	26	2348	S15	W05	11	26.6			DAI	232	26	13	2
8778		LEAR	11	27	0005	S15	W05	11	26.6		BG	EAI	200	42	13	4
8778		SVTO	11	27	0723	S14	W10	11	26.5		BG	EAI	210	20	15	3
8778		KAND	11	27	0755	S16	W11	11	26.5			EAI		30	15	3
8778		RAMY	11	27	1227	S14	W14	11	26.5		B	FAO	110	43	14	3
8778		HOLL	11	27	1552	S15	W15	11	26.5		BG	EAC	210	38	15	4
8778	29445	MWIL	11	27	2230	S14	W18	11	26.6	5	(BG)					
8778		VORO	11	27	2338	S15	W20	11	26.5			DAI	306	23	13	2
8778		LEAR	11	28	0025	S15	W19	11	26.6		BG	EKI	220	32	14	3
8778		KAND	11	28	0740	S15	W25	11	26.4			ESO		16	14	3
8778		RAMY	11	28	1212	S13	W27	11	26.5		BG	EAI	200	40	15	4
8778		HOLL	11	28	1920	S15	W33	11	26.3		BG	EAC	190	18	15	3
8778		VORO	11	28	2307	S15	W32	11	26.5			CAI	226	12	14	3
8778		LEAR	11	29	0105	S14	W34	11	26.5		BG	EAI	150	26	15	2
8778		KAND	11	29	0845	S15	W40	11	26.3			FAI		10	16	3
8778		RAMY	11	29	1228	S13	W42	11	26.3		B	FAO	160	20	16	4
8778		HOLL	11	29	1533	S16	W42	11	26.5		BG	FAC	180	14	16	3
8778	29445	MWIL	11	29	1630	S14	W43	11	26.4	5	(B)					
8778		VORO	11	29	2314	S13	W50	11	26.2			EAI	173	7	12	2
8778		LEAR	11	30	0050	S13	W49	11	26.3		B	EAI	150	12	12	3
8778		KAND	11	30	0713	S15	W53	11	26.3			EAO		11	15	3
8778		RAMY	11	30	1236	S13	W57	11	26.2		B	CSO	110	15	14	3
8778		HOLL	11	30	1535	S17	W57	11	26.3		B	CAO	140	13	15	3
8778		VORO	11	30	2322	S16	W63	11	26.2			DRI	136	6	12	3
8778	29445	MWIL	11	30	2359	S14	W53	11	27.0	5	B					
8778		LEAR	12	01	0250	S14	W65	11	26.3		B	CAO	180	12	13	2
8778		KAND	12	01	0925	S12	W75	11	25.8			HA		2	3	3

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8778		SVTO	12	01	1154	S16	W75	11	25.9		B	CAO	130	2	6	2
8778		VORO	12	01	2334	S16	W83	11	25.8			HAX	169	3		2
8778		LEAR	12	02	0015	S12	W78	11	26.2		B	CAO	180	5	10	3
8778		HOLL	12	02	1818	S13	W80	11	26.8		A	AX		1		3
8778A		HOLL	11	30	1535	S29	W51	11	26.6		A	AX	10	1		3
8778A	29456	MWIL	11	30	2359	S26	W56	11	26.6	3	X					
8778A	29456	MWIL	12	02	1530	S28	W79	11	26.6	3	(B)					
8778C	29454	MWIL	11	27	2230	N20	W17	11	26.6	3	(AF)					
8778D		VORO	12	01	2334	N10	W70	11	26.8			AXX	6	1		2
8778E	29445	MWIL	12	01	1545	S15	W65	11	26.8	4	(BP)					
8778B		RAMY	11	30	1236	S15	W38	11	27.6		B	BXO	10	6	3	3
8778B		HOLL	11	30	1535	S17	W38	11	27.8		B	CRO	20	3	3	3
8783		VORO	11	30	2322	S17	W46	11	27.5			HRX	26	1		3
8783		LEAR	12	01	0250	S15	W45	11	27.8		B	CRO	30	4	3	2
8783		KAND	12	01	0925	S17	W50	11	27.7			CRO		3	3	3
8783		SVTO	12	01	1154	S16	W54	11	27.5		B	CRO	20	2	2	2
8783		LEAR	12	02	0015	S14	W58	11	27.7		A	HS		1		3
8783		SVTO	12	02	0749	S17	W65	11	27.5		A	HR	10	1	1	3
8783		KAND	12	02	0820	S17	W65	11	27.5			HR		1	1	4
8783		HOLL	12	02	1818	S18	W69	11	27.6		A	AX		1		3
8782		VORO	11	22	2353	N10	E62	11	27.6			BXO	17	2	3	4
8782		LEAR	11	27	0005	N10	E15	11	28.1		A	AX		1		4
8782		SVTO	11	27	0723	N12	E10	11	28.1		B	CRO	10	3	2	3
8782		KAND	11	27	0755	N09	E10	11	28.1			BXO		4	3	3
8782		RAMY	11	27	1227	N11	E06	11	28.0		B	BXO	10	5	2	3
8782		HOLL	11	27	1552	N09	E04	11	28.0		B	CSO	30	5	4	4
8782	29455	MWIL	11	27	2230	N10	E01	11	28.0	3	(B)					
8782		VORO	11	27	2338	N11	W00	11	28.0			CAO	25	2	4	2
8782		LEAR	11	28	0025	N10	E01	11	28.1		B	BXO	10	2	1	3
8782		KAND	11	28	0740	N09	W03	11	28.1			AX		1		3
8782		RAMY	11	28	1212	N11	W08	11	27.9		B	CSO	20	12	6	4
8782		HOLL	11	28	1920	N09	W13	11	27.8		B	DSI	90	13	6	3
8782		VORO	11	28	2307	N11	W14	11	27.9			CRI	92	7	6	3
8782		LEAR	11	29	0105	N10	W15	11	27.9		B	DAO	70	18	8	2
8782		KAND	11	29	0845	N09	W20	11	27.9			DAO		9	8	3
8782		RAMY	11	29	1228	N11	W22	11	27.9		B	DAO	110	13	8	4
8782		HOLL	11	29	1533	N09	W23	11	27.9		B	DAO	90	20	8	3
8782	29455	MWIL	11	29	1630	N10	W24	11	27.9	5	(BG)					
8782		VORO	11	29	2314	N10	W29	11	27.8			CAI	187	6	6	2
8782		LEAR	11	30	0050	N11	W28	11	27.9		B	DAI	140	16	8	3
8782		KAND	11	30	0713	N10	W33	11	27.8			DAI		19	9	3
8782		RAMY	11	30	1236	N12	W36	11	27.8		B	DAO	200	28	10	3
8782		HOLL	11	30	1535	N09	W37	11	27.9		B	DAI	160	26	10	3
8782		VORO	11	30	2322	N10	W41	11	27.9			DAI	261	14	8	3
8782	29455	MWIL	11	30	2359	N11	W42	11	27.8	5	BG					
8782		LEAR	12	01	0250	N10	W42	11	28.1		B	EAI	230	24	11	2
8782		KAND	12	01	0925	N09	W48	11	27.9			EAO		12	13	3
8782		SVTO	12	01	1154	N08	W48	11	28.0		B	EAI	210	9	13	2
8782	29455	MWIL	12	01	1545	N10	W51	11	27.9	5	(BG)					
8782		VORO	12	01	2334	N10	W55	11	27.9			EAI	276	9	11	2
8782		LEAR	12	02	0015	N12	W55	11	28.0		B	FAI	480	16	20	3
8782		SVTO	12	02	0749	N10	W60	11	27.9		B	EAI	320	12	13	3
8782		KAND	12	02	0820	N09	W60	11	27.9			FAC		18	16	4
8782	29455	MWIL	12	02	1530	N10	W65	11	27.9	4	(BG)					
8782		HOLL	12	02	1818	N09	W66	11	27.9		B	EAI	290	17	13	3
8782		VORO	12	02	2322	N10	W69	11	27.9			EAI	353	7	11	2
8782		LEAR	12	03	0005	N12	W69	11	27.9		B	FAI	310	19	17	4
8782		KAND	12	03	0910	N10	W76	11	27.8			FAO		5	16	4
8782		HOLL	12	03	1600	N08	W80	11	27.8		B	EAO	300	10	15	3
8782	29455	MWIL	12	03	1600	N10	W73	11	28.3	4	(AF)					
8782		LEAR	12	04	0008	N11	W79	11	28.2		A	HA	120	1	2	3
8782		KAND	12	04	0730	N08	W87	11	27.9			HS		1	2	4

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8780		LEAR	11	23	0110	S11	E75	11	28.7		A	AX		1		2
8780	29447	MWIL	11	23	1530	S10	E68	11	28.7	4	(AF)					
8780		LEAR	11	24	0102	S11	E63	11	28.8		B	CAO	30	3	3	2
8780		SVTO	11	24	0746	S09	E61	11	28.9		B	DAO	40	2	3	2
8780		KAND	11	24	1210	S11	E59	11	28.9			CAO		2	3	2
8780		RAMY	11	24	1238	S12	E57	11	28.8		B	CSO	20	3	3	4
8780	29447	MWIL	11	24	1530	S11	E56	11	28.8	4	(BP)					
8780		HOLL	11	24	1602	S09	E55	11	28.8		B	BXO	20	3	3	2
8780		VORO	11	25	0000	S10	E51	11	28.8			AXX	17	1		2
8780		LEAR	11	25	0115	S11	E50	11	28.8		B	CSO	30	2	3	2
8780		SVTO	11	25	0737	S10	E47	11	28.8		A	HR		1		3
8780		RAMY	11	25	1213	S11	E43	11	28.7		A	AX		1		3
8780	29447	MWIL	11	25	1530	S10	E42	11	28.8	3	(AP)					
8780		VORO	11	25	2343	S12	E41	11	29.1			AXX	9	1		2
8780		RAMY	11	27	1227	S12	E18	11	28.9		A	AX		1		3
8780		HOLL	11	27	1552	S12	E18	11	29.0		A	AX		2	1	4
8780		RAMY	11	28	1212	S11	E03	11	28.7		A	AX	10	2	1	4
8780		KAND	11	30	0713	S16	W17	11	29.0			AX		3	2	3
8780		RAMY	11	30	1236	S15	W21	11	28.9		A	AX		1		3
8780		HOLL	11	30	1535	S16	W22	11	29.0		A	AX		1		3
8780	29457	MWIL	11	30	2359	S11	W29	11	28.8	2	X					
8780	29458	MWIL	11	30	2359	S14	W26	11	29.0	3	X					
8780		LEAR	12	01	0250	S15	W28	11	29.1		A	AX		1		2
8780A		VORO	11	26	2348	S18	E29	11	29.2			AXX	2	3		2
8780A		LEAR	11	27	0005	S19	E28	11	29.1		A	AX		1		4
8780A		KAND	11	27	0755	S19	E26	11	29.3			AX		2	1	3
8780A		RAMY	11	27	1227	S20	E20	11	29.0		A	AX		1		3
8780A		HOLL	11	27	1552	S18	E20	11	29.2		A	AX		3	1	4
8780A	29459	MWIL	11	30	2359	S18	W19	11	29.5	2	X					
8780B		LEAR	11	24	0102	S13	E79	11	30.0		A	HA	30	1	2	2
8780B		SVTO	11	24	0746	S11	E82	11	30.5		A	HA	60	1	6	2
8780B		RAMY	11	24	1238	S15	E78	11	30.4		A	HS	50	1	2	4
8780B		HOLL	11	24	1602	S12	E74	11	30.2		A	HA	40	1	2	2
8780B	29460	MWIL	11	30	2359	S17	W13	11	30.0	3	X					
8780C		LEAR	11	30	0050	N22	E06	11	30.5		A	AX		1		3
8780C		KAND	11	30	0713	N22	E02	11	30.4			AX		1		3
8780C		RAMY	11	30	1236	N22	E00	11	30.5		A	AX		1		3
8781		KAND	11	24	1210	S14	E76	11	30.2			HA		1	2	2
8781		KAND	11	24	1210	S14	E86	12	1.0			HA		1	2	2
8781	29449	MWIL	11	24	1530	S13	E75	11	30.3	4	(AP)					
8781		VORO	11	25	0000	S13	E71	11	30.3			HAX	63	1		2
8781		LEAR	11	25	0115	S14	E69	11	30.3		A	HA	60	1	3	2
8781		SVTO	11	25	0737	S13	E67	11	30.4		A	HS	100	1	2	3
8781		RAMY	11	25	1213	S14	E64	11	30.3		A	HS	40	1	2	3
8781	29449	MWIL	11	25	1530	S13	E64	11	30.5	4	(AP)					
8781		HOLL	11	25	1533	S11	E63	11	30.4		A	HS	80	1	1	3
8781		VORO	11	25	2343	S13	E58	11	30.4			HAX	100	1		2
8781		LEAR	11	26	0110	S13	E54	11	30.1		A	HS	60	2	3	3
8781		SVTO	11	26	0720	S13	E57	11	30.6		B	CSO	130	3	8	3
8781		RAMY	11	26	1211	S15	E54	11	30.6		B	CSO	80	3	8	3
8781		HOLL	11	26	1523	S11	E53	11	30.6		B	CSO	60	5	8	2
8781	29449	MWIL	11	26	1530	S12	E52	11	30.6	5	(BP)					
8781		VORO	11	26	2348	S12	E49	11	30.7			CAI	143	7	7	2
8781		LEAR	11	27	0005	S13	E48	11	30.6		B	CSO	80	15	10	4
8781		SVTO	11	27	0723	S12	E43	11	30.5		B	DSI	130	8	9	3
8781		KAND	11	27	0755	S13	E44	11	30.6			DAO		15	9	3
8781		RAMY	11	27	1227	S14	E40	11	30.5		B	DAO	80	16	8	3
8781		HOLL	11	27	1552	S12	E38	11	30.5		B	DSO	130	12	9	4
8781	29449	MWIL	11	27	2230	S13	E36	11	30.6	5	(BG)					
8781		VORO	11	27	2338	S13	E35	11	30.6			DAI	292	7	7	2
8781		LEAR	11	28	0025	S13	E35	11	30.6		B	DAO	130	21	9	3
8781		KAND	11	28	0740	S13	E31	11	30.6			DSI		16	9	3
8781		RAMY	11	28	1212	S14	E27	11	30.5		BG	DAI	180	39	9	4
8781		HOLL	11	28	1920	S12	E23	11	30.5		B	DAC	210	18	9	3
8781		VORO	11	28	2307	S13	E24	11	30.8			DAI	344	15	10	3

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8781		LEAR	11	29	0105	S13	E21	11	30.6		B	DAI	160	18	9	2
8781		KAND	11	29	0845	S13	E17	11	30.6			DKO		14	10	3
8781		RAMY	11	29	1228	S13	E14	11	30.6		B	DAI	260	22	9	4
8781		HOLL	11	29	1533	S12	E14	11	30.7		B	DAO	250	27	10	3
8781	29449	MWIL	11	29	1630	S13	E14	11	30.7	5	(B)					
8781		VORO	11	29	2314	S13	E09	11	30.6			DAI	437	9	7	2
8781		LEAR	11	30	0050	S13	E08	11	30.6		B	DAI	180	14	9	3
8781		KAND	11	30	0713	S13	E05	11	30.7			EAI		23	11	3
8781		RAMY	11	30	1236	S12	E02	11	30.7		B	DKO	340	26	10	3
8781		HOLL	11	30	1535	S12	E02	11	30.8		B	DAC	180	22	10	3
8781		VORO	11	30	2322	S13	W04	11	30.7			DKI	481	9	7	3
8781	29449	MWIL	11	30	2359	S13	W04	11	30.7	5	B					
8781		LEAR	12	01	0250	S13	W05	11	30.7		B	DAI	310	23	10	2
8781		KAND	12	01	0925	S13	W09	11	30.7			EAO		14	12	3
8781		SVTO	12	01	1154	S12	W10	11	30.7		B	DKI	190	8	10	2
8781	29449	MWIL	12	01	1545	S13	W13	11	30.7	4	(B)					
8781		VORO	12	01	2334	S13	W17	11	30.7			DKI	261	8	8	2
8781		LEAR	12	02	0015	S12	W17	11	30.7		B	DKI	350	20	10	3
8781		SVTO	12	02	0749	S13	W20	11	30.8		B	EAO	200	20	11	3
8781		KAND	12	02	0820	S13	W20	11	30.8			EAO		13	10	4
8781	29449	MWIL	12	02	1530	S13	W25	11	30.7	5	(B)					
8781		HOLL	12	02	1818	S12	W26	11	30.8		B	DAO	140	11	10	3
8781		VORO	12	02	2322	S13	W29	11	30.8			DKO	199	7	8	2
8781		LEAR	12	03	0005	S11	W29	11	30.8		B	DKO	230	16	10	4
8781		KAND	12	03	0910	S13	W35	11	30.7			DAO		7	10	4
8781	29449	MWIL	12	03	1600	S13	W38	11	30.8	5	(B)					
8781		HOLL	12	03	1600	S14	W38	11	30.8		B	ESO	140	8	11	3
8781		LEAR	12	04	0008	S11	W43	11	30.8		B	DAO	130	10	10	3
8781		KAND	12	04	0730	S13	W46	11	30.8			CAO		5	11	4
8781		SVTO	12	04	0813	S12	W53	11	30.3		A	HS	160	3	3	2
8781		RAMY	12	04	1222	S11	W51	11	30.7		B	CAO	160	6	10	2
8781	29449	MWIL	12	04	1545	S13	W54	11	30.6	5	(AP)					
8781		HOLL	12	04	1618	S14	W56	11	30.4		A	HS	170	4	2	4
8781		LEAR	12	05	0012	S12	W58	11	30.6		B	CAO	140	4	5	3
8781		VORO	12	05	0120	S13	W61	11	30.4			HSX	248	1		3
8781		KAND	12	05	0915	S13	W65	11	30.5			HS		2	4	3
8781		RAMY	12	05	1508	S11	W65	11	30.7		B	CAO	90	4	4	2
8781	29449	MWIL	12	05	1545	S13	W68	11	30.5	5	(AP)					
8781		HOLL	12	05	1551	S14	W68	11	30.5		A	HS	160	3	2	4
8781		VORO	12	05	2358	S13	W72	11	30.6			HSX	195	1		3
8781		LEAR	12	06	0127	S12	W73	11	30.6		B	CAO	60	2	2	3
8781		KAND	12	06	0730	S14	W80	11	30.3			HS		1	3	3
8781		RAMY	12	06	1225	S09	W84	11	30.2		B	CAO	60	2	8	3
8781		SVTO	12	06	1249	S12	W85	11	30.1		A	HS	60	1	4	2
8781	29449	MWIL	12	06	1600	S12	W84	11	30.3	4	(AP)					
8781		HOLL	12	06	1620	S15	W82	11	30.5		A	HR	30	1	1	2

Stations reporting:

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

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
01	1140	1150	1200	1	1					1	1142	C1.3	8749
02	0940	0950	0955	1-	1					1	0942	C1.4	8749
02	1257	1302	1348	1	1		1				No flare		
02	1315	1320	1330	1-	1					1	1316	C1.4	
03	1258	1305	1328	1	1		1				No flare		
03	1359	1405	1428	1	1		1				No flare		
04	0456	0502	0549	2+	1					1	0455	C7.9	8749
04	1021	1102U	1125	1	1		1				*		
05	0630	0640	0711	1+	3		1			1	0607	C3.3	
05	1710	1715	1745	2	3					2	1712	M1.2	8749
05	1752	1806	2032	3+	3					2	1804	M3.0	
06	0629	0638	0729	2-	3					2	0628	C4.6	
06	1049	1055	1113	1-	3		1			1	1056	C2.0	
06	1700	1703	1756	2+	3					3	1701	C5.0	
07	0435	0436	0452	1-	1					1	0433	C3.1	8749
07	0733	0735	0752	1	3					2	0732	C3.1	
07	1027	1029	1035	1-	1					1	1025	C1.8	
08	0600	0605	0630	1+	1					1	0555	C5.9	8749
08	1101	1123	1216	2-	3		1			1	1110	C4.6	8760
08	1253	1313	1356	1	1		1				1255	C3.2	8759
08	1607	1609	1630	1	1					1	1610	C4.6	8760
08	1659	1703	1715	1-	1					1	1703	C4.2	
08	1838	1846	1945	2+	1					1	1804	C8.5	8759
08	1936	1953	2047	2+	3					2	No flare		
09	0416	0420	0440	1	1					1	0413	C5.8	
09	0507	0508	0525	1-	1					1	0505	C2.6	
09	0528	0530	0554	1+	1					1	0526	C3.9	
09	0834	0837	0900	1+	1					1	0832	C4.3	
09	0852	0912	0924	1	1		1				0858		8751
09	1029	1043	1057	1	1		1				*		
09	1244	1256	1314	1	3		1			1	1244	C5.6	
09	1333	1343	1411	1	3		1			1	1332	C3.9	8759
09	1532	1534	1550	1-	3					3	1532	C4.4	
09	1553	1559	1617	1	5					4	1554	C4.3	8760
09	1619	1621	1643	1	3					3	1619	C4.6	
09	1739	1746	1842	2+	3					2	1739		8760
09	1940	1955	2045	2+	1					1	1942	M1.1	8759
10	0601	0604	0626	1	1					1	0600	C3.7	8759
10	0710	0713	0739	1+	3					2	0709	C4.9	8753
10	1544	1549	1612	1	5					4	1544	M1.5	8753
10	1549	1558	1623	1	5		1			2	1544	M1.5	8753
10	1943	1946	2020	2	1					1	1945	C9.6	
10	2130	2145	2205	2	1					1	2138		8759
11	0147	0150	0205	1-	1					1	0157	C3.8	8757
11	0320	0327	0350	1+	1					1	*		
11	0450	0453	0515	1	1					1	0455	C3.9	8763
11	0928	0940	1000	1+	3					2	0918	C3.3	
11	1039	1045	1104	1-	3		1			1	1038	C3.2	
11	1319	1325	1350	2+	5		2	1		4	1318	C5.8	
11	1441	1444	1444D	2	5		2	1		5	1439	C8.6	8759
12	0813	0820	0832	1	3					2	0822	C8.6	
12	0823	0830	0843	3	5		1	1		2	0822	C8.6	
12	0853	0909	0942	2	3					2	0854	M1.7	8759
12	0857	0933	1104	2	1		1				0854	M1.7	8759
12	0945	0953	1020	2	1					1	*		
12	1107	1113	1136	1	1		1				No flare		

* = no flare patrol.

NOVEMBER 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
12	1149	1157	1221	1	3		1			1	1150	M1.1	8759
12	1236	1246	1307	1	1		1				1238E		8759
12	1720	1724	1745	1	3					2	1617		8763
13	1033	1114	1140	1	1		1				*		
13	1240	1251	1311	1	3		1			1	1231	C3.1	8764
13	1326	1342	1438	1	1		1				*		
13	1515	1525	1530	1-	1					1	1517	C2.4	8759
13	1550	1606	1633	1+	3					2	1550	C6.6	8763
13	1916	1919	1932	1-	1					1	1914	C2.6	8765
14	0350	0352	0420	1+	1					1	0348	C5.0	8765
14	0435	0442	0455	1	1					1	0435	C3.6	8759
14	0615	0618	0628	1	1					1	0610		8765
14	0756	0801	0828	3	5		2	1		2	0754	M8.0	8763
14	0905	0930	0956	2-	3		1			2	0919	C6.3	
14	0953	1005U	1049	1	1		1				No flare		
14	1311	1313	1313D	2+	5		2	1		4	1309	C7.0	
14	1400	1406	1432	1+	5		1			1	1403E		8759
14	1419	1450	1530	2+	1					1	No flare		
14	1505	1517	1548	1	1		1				No flare		
14	1602	1608	1629	1	5		1			3	1603		8765
14	1624	1628	1651	1+	1					1	1620	M2.2	8765
14	1652	1706	1732	2	3					2	1654	M1.4	8759
14	1805	1808	1845	2-	3					4	1803	M2.8	
15	0758	0804	0821D	1	1					1	*		
15	0818	0830	0922	2+	5		2	1		2	0825	M2.9	8765
15	1022	1031	1056	1	1		1				1017E		8766
15	1104	1112	1146	1	1		1				*		
15	1306	1314	1337	1	3		1			1	1307	C4.6	
16	0235	0238	0335	2+	1					1	0236	M3.8	8766
16	0405	0407	0435	1+	1					1	0405	M3.0	8760
16	0724	0747	0819	2	3		1			1	0728		8765
16	0845	0852	0920	1	1		1				0852		8765
16	0908	0917	0950	2	1					1	0915	M1.0	8768
16	1000	1035	1050	2+	1					1	1003	C9.4	
16	1057	1153U	1226	2	1		1				*		
16	1240	1251U	1326	1	1		1				*		
16	1347	1407	1450	2+	5		1			3	1347	M1.4	8765
16	1515	1552	1625	2+	1					1	No flare		
16	1630	1645U	1730	2+	1					1	1627	C6.8	8765
17	0845	0847	0900	1-	1					1	0844	C3.2	8769
17	0951	0959	1025	3	5	1	2	1		2	0947	M7.4	8766
17	1013	1026	1049	1+	1					1	*		
17	1058	1112	1122	1	1		1				*		
17	1156	1158	1201	1	5					2	1147	C4.6	
17	1206	1216	1244	2-	3		1			1	1205	C5.7	
17	1255	1304	1322	1	1		1				*		
17	1328	1334	1422	1	1		1				1322	C7.8	
17	1600	1603	1620	1-	3					3	1557	C3.0	8765
17	1739	1743	1805	1+	3					4	1738	C9.2	8769
18	0145	0147	0202	1-	1					1	0142	M1.4	8771
18	0759	0805	0836	1+	3		1			2	0755	C7.5	8759
18	1900	1903	1926	1	3					3	1857	C8.3	8765
19	1045	1050	1100	1-	1					1	1047	C1.9	
19	1109	1117	1209	1	1		1				*		
19	1500	1505	1510	1-	1					1	1501	C1.9	8765
20	1142	1149	1203	1-	3					2	1143	C2.1	
20	1230	1235	1240	1-	1					1	1231	C1.8	
20	1920	1929	1947	1+	1					1	1922	C3.4	
21	0803	0806	0820	1	3					2	0801	C4.2	8765
21	0823	0828	0850	1+	3					2	0822	C6.0	8771

* = no flare patrol.

NOVEMBER 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
21	0853E	0857	0910	1-	1					1	0853		8765
21	1005	1009	1050	3	5		1	1		3	1003	M2.2	8765
21	1813	1818	1930	2+	3					3	1810	M3.4	8765
22	1213	1221	1246	3	5		2	1		3	1210	C8.9	8765
22	1333	1348U	1415	1	1		1				*		
23	1405	1410	1420	1-	1					1	1405	C1.8	
24	0921	0929	0936	3	5		2	1		3	0919	C7.2	
24	1030	1045	1105	2	1					1	1036	C1.9	
24	1208	1227	1301	3	5		2	1		2	1206	C9.6	
24	1928	1930	1943	1-	1					1	1902		8771
25	0645	0646	0715	1+	1					1	0641	C5.2	8778
25	0824	0825	0845	1	1					1	0822	C3.2	8778
25	1005	1030	1040	2	1					1	1008	C1.9	8778
25	1711	1714	1823	3-	3					2	1712	C7.4	8771
25	1859	1910	2000	2+	3					2	1859	M2.0	8771
26	0117	0120	0153	2	1					1	0110	M5.7	8771
26	0353	0400	0500	2+	1					1	0350	M1.9	8771
26	0700	0705	0730	1+	1					1	0657	C3.9	8778
26	0856	0909	0944	1+	3		1			2	0848	C5.0	8771
26	1341	1343	1438	3-	5	1	2	1		4	1338	M6.0	8778
27	0238	0245	0255D	1-	1					1	0236	M2.8	8771
27	0255E	0300	0400	2+	1					1	0236	M2.8	8771
27	0418	0420	0438	1	1					1	No flare		
27	0457	0500	0523	1+	1					1	0450	C9.9	8778
27	0545	0550	0615	1+	1					1	0543	M1.2	8771
27	0941	0947	0947D	1	1					1	No flare		
27	0950	1007	1034	1	3		1			2	0953	C3.0	
27	1104	1118	1143	1	3		1			1	1111	C2.8	8771
27	1135	1140	1245	2+	1					1	No flare		
27	1208	1213	1253	3	5	1	2	1		3	1205	X1.4	8771
28	0550	0555	0637	2	1					1	0549	M1.1	8771
28	1035	1040	1045	1-	1					1	1036	C2.7	
28	1152	1203	1215	2+	5		1	1		2	1150	C5.3	8771
28	1355	1400	1410	1-	1					1	1354	C4.1	
28	1802	1820	2025	3+	1					1	1800	M1.6	
29	0847	0854	0910	1	3					2	0845	C4.3	8778
29	1102	1106	1118	1-	3					2	1102	C3.2	
29	1411	1422	1434	2+	5		2	1		2	1409	M1.1	8773
30	0704	0707	0722	1-	1					1	0701	C1.8	8778
30	0828	0830	0858	1-	3					2	0827	C2.3	8782
30	1605	1607	1620	1-	1					1	1602	C1.8	8782
30	1737	1740	1755	1-	1					1	1736	C1.4	8782

* = no flare patrol.

OBSERVATORIES REPORTING FOR NOVEMBER 1999

Banning, California, USA	SES	Parma, Ohio, USA	SES
Cambridge, England, UK	SES	Rochester, New Hampshire, USA	SES
Edenvale, Rep of S. Africa	SES	Sofia, Bulgaria	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	Ziar nad Hronom, Slovakia	SEA
Nerja, Spain	SES	Zilina, Slovakia	SEA
Panska Ves, Czech Republic	SES, SEA, SWF		

Observations are not necessarily continuous.

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

NOVEMBER 1999

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
01			LEAR	0014.0	0016.0	III		3	30	80	
			PALE	0014.0	0016.0	III		2	25	55	
	0000	0747	HIRA	0014.8	0015.8	III	G	2	25X	270	
	0000	0750	CULG	0015.0	0017.0	III	G	2	18X	260	
			LEAR	0117.0	0117.0	III		1	30	62	
			LEAR	0136.0	0139.0	III		1	30	80	
			CULG	0137.0	0157.0	III	N	1	25	200	
			CULG	0152.0	0154.0	III	G	1	250	750	
			LEAR	0154.0	0156.0	III		1	30	68	
			LEAR	0156.0	0324.0	CONT		1	30	80	
			CULG	0157.0	0210.0	CONT		1	250	500	
			CULG	0157.0	0320.0	III	S	1	25	160	
			LEAR	0624.0	0638.0	III		1	30	60	
			CULG	0717.0	0718.0	III	G	1	28	160	
			LEAR	0717.0	0717.0	III		1	30	48	
			CULG	0742.0	0743.0	III	G	1	40	170	
			LEAR	0742.0	0742.0	III		1	50	80	
			SVTO	0821.0	0821.0	III		1	36	40	
			SVTO	1047.0	1047.0	III		2	35	85	
			SVTO	1114.0	1114.0	III		1	36	71	
	0707	1420	ONDR	1304.2	1307.4	DCIM	G	1	800X	2000X	
	1130	1500	BLEN	1307.4	1307.9	III	RS	2	1100	1850	
			SVTO	1357.0	1357.0	III		1	37U	80U	
			SVTO	1436.0	1454.0	III	N	2	37	84	
	2000	2400	CULG	2000.0E	2134.0	III	S	1	20	160	
	2055	2400	HIRA								
02			LEAR	0038.0	0038.0	III		1	30	80	
	0000	0750	CULG	0039.0	0039.0	III	B	1	20	90	
			CULG	0139.0	0144.0	III	G	1	20	90	
			LEAR	0143.0	0144.0	III		1	30	57	
			CULG	0246.0	0246.0	III	B	1	20	80	
			CULG	0306.0	0307.0	III	G	1	18	90	
			CULG	0331.0	0339.0	III	G	1	18	180	
			CULG	0400.0	0402.0	III	G	1	35	170	
			CULG	0404.0	0409.0	III	G	2	18	250	
	0000	0746	HIRA	0404.2	0408.8	III	G	2	25X	240	
			CULG	0419.0	0420.0	III	G	1	30	180	
			HIRA	0419.4	0420.0	III	G	1	50	170	
			LEAR	0451.0	0503.0	III	N	2	30	76	
			CULG	0452.0	0457.0	III	G	2	18	90	
			CULG	0503.0	0503.0	III	B	1	23	90	
			CULG	0559.0	0601.0	III	G	2	18X	300	
			LEAR	0559.0	0602.0	III		3	30	80	
			SVTO	0559.0	0617.0	III	N	3	35	85	
			HIRA	0559.2	0601.2	III	G	2	40	250	
			LEAR	0614.0	0617.0	III		3	30	80	
			CULG	0615.0	0616.0	III	G	3	18X	260	
			HIRA	0615.0	0616.0	III	B	3	30	280	
			CULG	0616.0	0618.0	V		2	20	90	
	0709	1416	ONDR								
			LEAR	0829.0	0830.0	III		2	30	70	
			SVTO	0829.0	0830.0	III		2	35	45	
			SVTO	1226.0	1229.0	V		2	35	73	
			SGMR	1227.0	1228.0	III		1	30	55	
			SGMR	1420.0	1421.0	III		2	30	45	
			SVTO	1420.0	1421.0	III		1	35	75	
	2056	2400	HIRA								
	2000	2400	CULG	2317.0	2317.0	III	B	1	20	90	
03	0000	0745	HIRA								
	0000	0750	CULG	0117.0	0121.0	III	G	1	20	90	
			LEAR	0120.0	0120.0	III		1	30	56	
			CULG	0159.0	0159.0	III	B	1	40	90	
	0711	1416	ONDR								
	0715	1655	BLEN	1051.0	1051.6	III	G	1	1000X	1800	
			SGMR	1534.0	1538.0	III		1	30	70	
	2000	2400	CULG	2241.0	2244.0	III	G	1	60	180	
	2057	2400	HIRA	2241.6	2244.2	III	G	1	120	240	

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04			PALE	0031.0	0039.0	III		2	25	75	
			LEAR	0054.0	0056.0	III		1	34	70	
	0000	0750	CULG	0055.0	0056.0	III	G	1	25	80	
			LEAR	0130.0	0132.0	III		2	30	80	
	0000	0744	HIRA	0130.8	0131.2	III	B	2	40	360	
			CULG	0131.0	0132.0	III	G	2	28	400	
			PALE	0131.0	0139.0	III		2	25	75	
			CULG	0138.0	0139.0	III	G	2	20	160	
			LEAR	0138.0	0139.0	III		2	30	80	
			HIRA	0138.4	0139.0	III	G	2	30	150	
			CULG	0253.0	0257.0	III	G	2	18X	180	
			LEAR	0253.0	0256.0	III		2	30	80	
			HIRA	0254.0	0254.6	III	G	2	25X	240	
			CULG	0329.0	0334.0	III	G	1	60	120	
			LEAR	0337.0	0340.0	III		2	30	80	
			HIRA	0337.8	0338.2	III	B	2	50	280	
			CULG	0338.0	0340.0	III	G	2	20	300	
			LEAR	0418.0	0509.0	CONT		1	30	80	
			LEAR	0500.0	0505.0	III		2	30	80	
			CULG	0501.0	0505.0	III	G	2	18	270	
			HIRA	0501.4	0505.2	III	G	1	30	260	
			CULG	0514.0	0515.0	III	G	1	20	70	
			LEAR	0653.0	0655.0	III		2	30	80	
			CULG	0654.0	0655.0	III	G	2	23	130	
			HIRA	0654.0	0654.2	III	B	1	40	140	
			SVTO	0654.0	0654.0	III		2	35	65	
	0714	1415	ONDR								
	0715	1655	BLEN								
			LEAR	0852.0	0852.0	III		1	30	65	
			SVTO	1130.0	1144.0	III	N	2	35U	73U	
			SGMR	1439.0	1439.0	III		1	30	56	
	2000	2400	CULG								
05	0000	0750	CULG								
	0232	0743	HIRA								
			SVTO	0608.0	0609.0	III		1	36	65	
	0705	1655	BLEN								
	0716	1410	ONDR								
			LEAR	0802.0	0803.0	III		1	30	63	
	2000	2400	CULG	2020.0	2020.0	III	B	1	30	90	
	2059	2400	HIRA								
			CULG	2110.0	2110.0	III	B	1	20	80	
06	0000	0742	HIRA								
	0000	0750	CULG								
			LEAR	0508.0	0514.0	III		1	30	80	
	0718	1409	ONDR								
	0735	1510	BLEN	1045.3	1059.8	DCIM	C	3	1000	2800X	
	2100	2400	HIRA								
	2000	2400	CULG	2314.0	2315.0	III	G	1	30	130	
			CULG	2353.0	2353.0	III	B	1	20	75	
			LEAR	2353.0	2353.0	III		1	30	80	
07	0000	0741	HIRA								
			LEAR	0632.0	0659.0	III	N	2	30	80	
	0000	0750	CULG	0632.0	0709.0	III	N	1	20	150	
	0720	1408	ONDR								
			CULG	0733.0	0734.0	III	G	1	30	80	
			LEAR	0733.0	0733.0	III		1	30	47	
	0735	1510	BLEN	0737.0	0744.5	DCIM	P	1	1300	2800X	
			PALE	1828.0	1835.0	III		1	25	75	
			SGMR	1831.0	1832.0	III		1	30	80	
			PALE	1933.0	1936.0	III		2	25	65	
			SGMR	1934.0	1936.0	III		1	30	50	
			PALE	1953.0	1954.0	III		1	25	75	
			SGMR	1953.0	1953.0	III		1	30	80	
	2000	2400	CULG	2000.0E	2011.0	III	N	1	20	160	
			PALE	2010.0	2011.0	III		1	25	40	
			CULG	2048.0	2151.0	III	N	1	20	90	

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07			PALE	2106.0	2106.0	III		1	25	45	
			PALE	2115.0	2116.0	III		1	25	45	
			PALE	2141.0	2323.0	III	N	2	25	60	
			CULG	2204.0	2215.0	III	G	2	18	150	
			LEAR	2204.0	2210.0	III		2	30	80	
	2101	2400	HIRA	2204.6	2210.2	III	G	2	30	50X	
			CULG	2223.0	2223.0	III	B	1	40	140	
			CULG	2255.0	2255.0	III	B	1	20	80	
			LEAR	2255.0	2255.0	III		1	30	80	
			CULG	2320.0	2324.0	III	G	1	18	90	
			LEAR	2320.0	2323.0	III		2	30	80	
08			LEAR	0008.0	0008.0	III		1	38	55	
			LEAR	0048.0	0051.0	III		1	30	80	
	0000	0750	CULG	0050.0	0051.0	III	G	1	20	300	
			CULG	0108.0	0109.0	III	G	2	18	90	
			LEAR	0108.0	0108.0	III		2	30	80	
			PALE	0108.0	0108.0	III		1	35	50	
			CULG	0152.0	0153.0	III	G	2	23	150	
			LEAR	0152.0	0153.0	III		2	30	80	
			LEAR	0157.0	0338.0	III	N	2	30	80	
			CULG	0225.0	0308.0	III	N	2	20	130	
			LEAR	0239.0	0240.0	III		3	30	80	
	0000	0740	HIRA	0239.6	0239.8	III	B	1	30	50X	
			CULG	0336.0	0420.0	III	N	1	25	180	
			LEAR	0411.0	0440.0	III	N	1	30	80	
			LEAR	0438.0	0440.0	III		3	30	80	
			CULG	0439.0	0440.0	III	G	2	20	140	
			HIRA	0439.0	0439.2	III	B	1	40	50X	
			CULG	0514.0	0516.0	III	G	1	30	140	
			LEAR	0514.0	0516.0	III		2	30	80	
			LEAR	0535.0	0537.0	III		2	30	80	
			CULG	0536.0	0537.0	III	G	2	30	140	
			CULG	0612.0	0615.0	III	G	1	20	150	
			LEAR	0612.0	0613.0	III		1	30	80	
			LEAR	0627.0	0629.0	III		1	30	64	
			LEAR	0658.0	0659.0	III		3	30	80	
			SVTO	0658.0	0717.0	III	N	2	35	85	
			CULG	0659.0	0700.0	III	G	2	23	150	
			CULG	0711.0	0711.0	III	B	1	35	90	
			LEAR	0711.0	0717.0	III		2	30	80	
			CULG	0714.0	0717.0	III	G	2	25	160	
	0735	1510	BLEN								
			SVTO	0918.0	1037.0	III	N	3	36	84	
			LEAR	0919.0	0932.0	III	N	2	30	80	
			SVTO	1109.0	1139.0	III	N	3	35	85	
	0722	1406	ONDR	1251.0	1259.4	DCIM	GG	1	800X	2000X	
			SGMR	1528.0	1529.0	III		1	30	55	
			SGMR	1544.0	1545.0	III		3	30	80	
			SGMR	1614.0	1615.0	III		3	30	80	
			CULG	2000.0E	2112.0	III	N	1	20	90	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	80	180	
	2102	2400	HIRA								
			CULG	2121.0	2229.0	III	S	1	35	150	
			CULG	2238.0	2302.0	III	GG	2	18	180	
			LEAR	2240.0	2256.0	CONT		2	30	80	
			CULG	2310.0	2345.0	III	N	1	23	100	
			LEAR	2325.0	2325.0	III		1	40	55	
			LEAR	2331.0	0143.0	CONT		2	30	80	
09	0000	0750	CULG	0000.0E	0750.0D	I	S	1	80	180	
			CULG	0003.0	0150.0	III	S	1	18	180	
			CULG	0145.0	0145.0	III	B	3	18X	180	
			LEAR	0146.0	0147.0	III		3	30	80	
	0000	0739	HIRA	0146.8	0147.0	III	B	2	30	50X	
			CULG	0224.0	0243.0	III	N	1	30	150	
			LEAR	0236.0	0238.0	III		1	30	47	
			LEAR	0506.0	0513.0	III		3	30	80	
			CULG	0507.0	0508.0	III	G	2	18X	180	

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09			HIRA	0507.0	0507.2	III	B	1	30	50X	
			CULG	0513.0	0515.0	III	G	1	18	80	
			CULG	0600.0	0604.0	III	G	1	20	150	
			LEAR	0602.0	0603.0	III		3	30	80	
			SVTO	0603.0	0636.0	III	N	3	35	85	
			LEAR	0612.0	0636.0	III	N	3	30	80	
			CULG	0613.0	0617.0	III	G	3	18	360	
			HIRA	0613.0	0613.2	III	B	3	30	50X	
			CULG	0634.0	0637.0	III	G	3	20	360	
			CULG	0639.0	0741.0	III	N	1	20	180	
			LEAR	0717.0	0941.0	III	N	3	30	80	
			CULG	0720.0	0724.0	III	G	3	18	180	
			SVTO	0720.0	0747.0	III	N	3	35	85	
			HIRA	0720.6	0721.6	III	G	2	40	50X	
			CULG	0748.0	0748.0	III	B	2	20	130	
			SVTO	0826.0	0829.0	V		3	35	85	
			ONDR	0826.1	0827.1	DCIM	GG	2	800X	1660	
	0724	1403	ONDR	0826.2	0826.3	DCIM	G	1	2000X	4305X	
	0730	0830	BLEN	0826.3	0827.5	III	GG,RS	3	1000X	2000	
			SVTO	0849.0	0950.0	III	N	3	35	85	
			ONDR	0849.4	0850.1	DCIM	GG	2	990	1650	
			ONDR	0904.3	0910.4	DCIM	GG	2	980	2000X	
			ONDR	0931.4	0941.1	DCIM	GG	2	800X	2000X	
			ONDR	0937.0	0941.0	DCIM	GG	2	2000X	4090	
			ONDR	1028.0	1053.3	DCIM	GG	1	1005	2000X	
			ONDR	1101.1	1112.5	DCIM	GG	2	1045	2000X	
			SVTO	1124.0	1220.0	CONT		1	59	71	
			SVTO	1125.0	1209.0	III	N	3	35	85	
			ONDR	1139.4	1211.2	DCIM	GG	1	955	2000X	
			SGMR	1209.0	1209.0	III		2	30	60	
			SVTO	1251.0	1356.0	III	N	3	35	85	
			SGMR	1252.0	1259.0	III		3	30	80	
			ONDR	1252.2	1258.4	DCIM	GG	2	800X	2000X	
			ONDR	1252.3	1257.5	DCIM	GG	2	2000X	4060	
			SGMR	1327.0	1328.0	III		3	30	80	
			ONDR	1334.0	1334.2	DCIM	GG	2	1105	1810	
			SGMR	1515.0	1516.0	III		3	30	80	
			CULG	2000.0E	2400.0D	III	S	1	20	100	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	80	170	
			CULG	2050.0	2052.0	III	G	3	18X	180	
	2103	2400	HIRA								
			SGMR	2120.0	2121.0	III		2	30	80	
			LEAR	2251.0	0934.0	CONT		2	30	80	
			CULG	2302.0	2302.0	III	B	2	20	140	
			LEAR	2302.0	2313.0	III	N	2	30	80	
			CULG	2313.0	2314.0	III	G	2	20	150	
10			CULG	0000.0E	0750.0D	III	S	1	20	150	
	0000	0750	CULG	0000.0E	0750.0D	I	S	1	100	170	
			CULG	0034.0	0036.0	III	G	3	18X	180	
			LEAR	0034.0	0036.0	III		3	30	80	
	0000	0738	HIRA	0034.4	0034.6	III	B	2	25X	50X	
			LEAR	0546.0	0546.0	III		2	30	80	
			CULG	0547.0	0547.0	III	B	2	18	480	
			SVTO	0652.0	0817.0	CONT		1	35	48	
	0726	1359	ONDR								
	0730	1500	BLEN								
			SVTO	0829.0	0831.0	III		2	35	85	
			SVTO	0923.0	0934.0	III	N	2	35	85	
			SVTO	1054.0	1100.0	III		2	35	85	
			SGMR	1306.0	1726.0	III	N	3	30	80	
			SVTO	1306.0	1306.0	III		2	35	85	
			SVTO	1402.0	1403.0	III		1	45U	84U	
			SGMR	1520.0	1525.0	III		3	30	80	
			SGMR	1547.0	1549.0	III		3	30	80	
			SGMR	1644.0	1645.0	III		2	30	80	
			PALE	1905.0	2216.0	III	N	1	25	75	
			SGMR	1915.0	1915.0	III		1	30	50	
			PALE	1958.0	2220.0	CONT		1	25	45	

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10			CULG	2000.0E	2400.0D	III	S	1	18	180	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	110	170	
			CULG	2053.0	2057.0	III	G	3	18	500	
			SGMR	2053.0	2054.0	III		1	30	70	
			LEAR	2211.0	2216.0	III		3	30	80	
			PALE	2211.0	2216.0	V		3	25	75	
	2104	2400	HIRA	2211.8	2215.8	III	G	3	25X	730	
			CULG	2212.0	2216.0	III	G	3	18X	750	
			LEAR	2242.0	0909.0	CONT		2	30	80	
			PALE	2353.0	0029.0	III	N	1	25	45	
11			CULG	0000.0E	0750.0D	III	N	1	18	170	
	0000	0750	CULG	0000.0E	0239.0	I	S	1	80	170	
			LEAR	0124.0	0130.0	III		3	30	80	
			CULG	0127.0	0130.0	III	G	3	18X	260	
			PALE	0127.0	0127.0	III		2	30	75	
	0000	0738	HIRA	0127.2	0127.6	III	B	3	25X	250	
			LEAR	0253.0	0254.0	III		3	30	80	
			HIRA	0253.6	0254.0	III	B	2	30	260	
			CULG	0254.0	0254.0	III	B	2	18X	280	
			LEAR	0355.0	0356.0	III		2	30	80	
			CULG	0356.0	0402.0	III	G	2	18X	750	
			HIRA	0356.0	0401.2	III	G	2	30	730	
			LEAR	0401.0	0401.0	III		3	30	80	
			CULG	0431.0	0436.0	III	G	2	18X	180	
			LEAR	0431.0	0436.0	III		3	30	80	
			HIRA	0431.4	0433.4	III	G	2	30	220	
			LEAR	0452.0	0453.0	III		3	30	80	
			HIRA	0452.8	0453.6	III	G	3	30	550	
			CULG	0453.0	0454.0	III	G	3	18X	750	
			CULG	0516.0	0518.0	III	G	2	50	340	
			HIRA	0516.0	0518.0	III	G	2	50	340	
			CULG	0638.0	0750.0D	I	S	1	110	170	
			SVTO	0646.0	1335.0	CONT		2	35	85	
	0728	1358	ONDR								
			SVTO	0854.0	0854.0	III		2	35	68	
			SGMR	1257.0	1535.0	III	N	2	30	80	
	0740	1450	BLEN	1441.0	1447.3	DCIM	C	3	1400	2800X	
			BLEN	1443.5	1443.7	III	GG,RS	2	1000X	1300	
			SGMR	1836.0	2018.0	III	N	2	30	80	
			PALE	1957.0	1957.0	III		1	25	50	
			CULG	2000.0E	2400.0D	III	N	1	18	180	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	120	180	
			PALE	2009.0	2128.0	CONT		1	25	45	
			CULG	2018.0	2023.0	III	G	2	23	140	
	2105	2400	HIRA								
			PALE	2117.0	2156.0	III	N	1	25	50	
			CULG	2127.0	2127.0	III	B	2	20	90	
			LEAR	2243.0	0545.0	CONT		2	30	80	
12			CULG	0000.0E	0333.0	III	N	1	18	170	
	0000	0745	CULG	0000.0E	0140.0	I	S	1	110	170	
			CULG	0140.0	0451.0	IV	FS	2	40	360	
	0000	0737	HIRA	0150.0	0440.0	IV		2	50	200	
			CULG	0451.0	0745.0D	I	S	1	100	180	
			CULG	0459.0	0459.0	III	B	1	23	90	
			LEAR	0556.0	0558.0	III		1	30	65	
			CULG	0557.0	0745.0D	III	N	1	25	100	
			LEAR	0650.0	0652.0	III		1	45	60	
			LEAR	0703.0	0704.0	III		2	30	70	
			SVTO	0703.0	0704.0	III		1	35	42	
	0731	1358	ONDR	0823.4	0834.2	DCIM	G	1	2245	4305X	
	0740	1450	BLEN	0824.0	0833.2	DCIM	P	3	1000X	2800X	
			ONDR	0907.0	0921.2	DCIM	GG	2	995	1685	
			ONDR	0912.4	0922.1	DCIM		1	2000X	4305X	
			SVTO	1141.0	1141.0	III		1	60	71	
			BLEN	1428.8	1430.0	III	GG	2	1000X	1900	
			SGMR	1636.0	1700.0	III	N	1	30	50	
	2106	2400	HIRA								

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
12	2000	2400	CULG	2144.0	2145.0	III	G	1	23	100	
			CULG	2217.0	2323.0	I	S	1	130	180	
13			LEAR	0051.0	0052.0	III		3	30	80	
	0000	0745	CULG	0051.0	0053.0	III	G	2	18X	180	
			PALE	0052.0	0052.0	III		1	30	60	
	0000	0736	HIRA	0052.0	0052.6	III	G	2	25X	230	
			CULG	0132.0	0137.0	III	G	2	18	180	
			LEAR	0132.0	0132.0	III		2	30	80	
			HIRA	0132.2	0132.4	III	B	1	40	130	
			LEAR	0136.0	0136.0	III		2	30	80	
			HIRA	0136.2	0136.4	III	B	1	40	130	
			LEAR	0157.0	0201.0	III		1	30	57	
			CULG	0159.0	0201.0	III	G	1	18	140	
			CULG	0209.0	0211.0	III	G	1	35	240	
			LEAR	0210.0	0219.0	III		1	35	70	
			CULG	0324.0	0402.0	III	N	1	18	90	
			CULG	0419.0	0422.0	III	G	3	18X	420	
			HIRA	0419.0	0420.6	III	G	3	25	330	
			LEAR	0419.0	0422.0	III		3	30	80	
			CULG	0433.0	0434.0	III	G	1	20	300	
			LEAR	0433.0	0433.0	III		2	30	72	
			HIRA	0433.2	0433.4	III	B	2	40	250	
			CULG	0503.0	0539.0	III	N	1	18	90	
			LEAR	0503.0	0640.0	III	N	2	30	80	
			CULG	0547.0	0553.0	III	G	1	20	500	
			CULG	0617.0	0618.0	III	G	1	30	300	
			CULG	0621.0	0745.0D	III	N	1	30	150	
			LEAR	0720.0	0721.0	III		1	30	60	
			SVTO	0720.0	0737.0	III	N	2	37U	64U	
	0733	1355	ONDR								
			LEAR	0737.0	0737.0	III		2	30	80	
	0740	1450	BLEN	0803.1	0803.9	DCIM	C	1	1000X	2800X	
			SVTO	0834.0	0834.0	III		2	35U	73U	
			LEAR	0854.0	0854.0	III		2	30	80	
			SVTO	1123.0	1123.0	III		2	57U	74U	
			SVTO	1434.0	1434.0	III		3	44U	66U	
			PALE	1924.0	1926.0	III		1	25	75	
	2000	2400	CULG	2000.0E	2051.0	III	N	1	20	90	
			CULG	2106.0	2109.0	III	G	1	20	180	
	2107	2400	HIRA								
			CULG	2130.0	2400.0D	III	N	1	20	160	
			LEAR	2314.0	2315.0	III		1	30	70	
			LEAR	2353.0	2358.0	III		1	30	80	
14	0000	0745	CULG	0000.0E	0101.0	III	N	1	20	160	
			LEAR	0043.0	0044.0	III		1	30	55	
			LEAR	0047.0	0056.0	III		1	30	60	
			LEAR	0153.0	0154.0	III		1	30	45	
			CULG	0154.0	0154.0	III	B	1	20	90	
			CULG	0216.0	0216.0	III	B	1	20	160	
			LEAR	0216.0	0216.0	III		2	30	80	
	0000	0736	HIRA	0216.2	0216.4	III	B	1	50	150	
			LEAR	0256.0	0257.0	III		1	30	80	
			HIRA	0256.8	0257.0	III	B	1	50	120	
			CULG	0257.0	0257.0	III	B	1	40	150	
			CULG	0307.0	0441.0	I	S	1	110	170	
			CULG	0318.0	0318.0	III	B	1	30	180	
			CULG	0435.0	0438.0	III	G	2	18X	180	
			LEAR	0435.0	0438.0	III		3	30	80	
			HIRA	0435.8	0437.8	III	G	1	30	200	
			CULG	0518.0	0521.0	III	G	1	20	260	
			LEAR	0518.0	0521.0	III		1	30	74	
			CULG	0532.0	0533.0	III	G	1	30	90	
			LEAR	0532.0	0533.0	III		2	30	80	
			HIRA	0533.0	0533.2	III	B	1	50	80	
			CULG	0630.0	0633.0	III	G	1	120	270	
			HIRA	0630.0	0632.4	III	G	1	120	250	
			CULG	0638.0	0745.0D	I	S	1	110	170	

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
14			CULG	0731.0	0734.0	III	G	1	25	100	
			LEAR	0751.0	0752.0	III		2	30	80	
			SVTO	0751.0	0751.0	III		2	35U	46U	
	0755	1450	BLEN	0755	0812.0	DCIM	P	1	1000X	2800X	
			ONDR	0756.2	0810.2	DCIM	G	2	800X	2000X	
	0735	1354	ONDR	0756.5	0804.0	DCIM	G	2	2000X	4305X	
			LEAR	0808.0	0816.0	III		1	50	80	
			SVTO	0837.0	0838.0	III		1	35	39	
			SVTO	1058.0	1100.0	III		2	45	85	
			SGMR	1748.0	1749.0	III		1	30	50	
	2000	2400	CULG	2023.0	2117.0	III	N	1	20	180	
	2108	2400	HIRA	2137.6	2137.8	III	B	1	50	150	
			CULG	2246.0	2335.0	I	S	1	110	180	
			LEAR	2304.0	2316.0	III	N	1	30	60	
			HIRA	2305.8	2306.0	III	B	1	50	230	
			HIRA	2313.2	2314.4	III	G	1	110	400	
15	0000	0750	CULG	0007.0	0009.0	III	G	2	50	270	
	0000	0735	HIRA	0007.4	0008.2	III	G	3	90	260	
			LEAR	0019.0	0953.0	CONT		2	30	80	
			CULG	0054.0	0055.0	III	G	1	30	160	
			LEAR	0133.0	0143.0	III		2	30	80	
			HIRA	0133.6	0133.8	III	B	2	40	180	
			CULG	0134.0	0134.0	III	B	2	18X	180	
			PALE	0137.0	0200.0	III	N	1	25	50	
			CULG	0143.0	0143.0	III	B	2	18X	180	
			HIRA	0143.0	0143.2	III	B	2	40	200	
			CULG	0201.0	0214.0	III	G	1	180	420	
			HIRA	0204.8	0205.0	III	B	1	160	330	
			HIRA	0212.0	0212.2	III	B	1	130	330	
			LEAR	0217.0	0223.0	V		2	30	80	
			CULG	0218.0	0225.0	III	GG	1	18X	420	
			HIRA	0218.4	0223.0	III	G	1	40	300	
			CULG	0254.0	0303.0	III	GG	1	18	180	
			HIRA	0254.0	0257.2	III	G	2	30	250	
			LEAR	0254.0	0303.0	V		2	30	80	
			HIRA	0301.2	0302.0	III	G	1	30	140	
			CULG	0445.0	0446.0	III	G	2	20	160	
			LEAR	0445.0	0939.0	III	N	2	30	80	
			HIRA	0445.2	0445.8	III	G	2	30	170	
			SVTO	0557.0	0705.0	III	N	2	35	85	
			SVTO	0651.0	1043.0	CONT		3	35	85	
			HIRA	0655.6	0657.4	III	G	1	50	100	
			HIRA	0701.4	0702.6	III	G	2	40	220	
	0741	1351	ONDR								
	0800	1455	BLEN	1016.8	1017.0	III	G	3	1000x	1250	
			SVTO	1145.0	1146.0	III		2	77	85	
			SGMR	1247.0	1248.0	III		1	30	50	
			SVTO	1247.0	1248.0	III		2	35	85	
			SGMR	1442.0	1443.0	III		2	30	80	
			SVTO	1442.0	1443.0	III		2	62	85	
			SGMR	1657.0	1657.0	III		1	30	55	
			SGMR	1740.0	1754.0	III	N	2	30	80	
			PALE	2001.0	2006.0	III		1	30	45	
	2000	2400	CULG	2002.0	2004.0	III	G	1	23	90	
			CULG	2026.0	2029.0	III	G	1	23	80	
			PALE	2027.0	2033.0	III		1	30	45	
			CULG	2125.0	2127.0	III	G	1	20	90	
			PALE	2125.0	2139.0	III		1	25	75	
			CULG	2137.0	2139.0	III	G	2	18	180	
	2109	2400	HIRA	2137.8	2138.0	III	B	2	30	180	
			CULG	2158.0	2240.0	III	N	1	20	170	
			HIRA	2207.4	2207.6	III	B	1	50	150	
			LEAR	2236.0	2239.0	III		1	30	47	
			PALE	2238.0	2239.0	III		1	25	40	
16			LEAR	0023.0	0043.0	III		2	30	80	
	0000	0745	CULG	0024.0	0024.0	III	B	1	30	80	
			CULG	0038.0	0043.0	III	G	1	18	180	

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OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
16	0000	0734	HIRA	0038.4	0039.4	III	G	1	30	210	
			PALE	0040.0	0041.0	III		1	25	40	
			CULG	0113.0	0118.0	III	G	1	20	170	
			LEAR	0113.0	0118.0	III		3	30	80	
			HIRA	0113.2	0117.8	III	G	1	30	150	
			LEAR	0137.0	0138.0	III		1	30	60	
			LEAR	0200.0	0216.0	III	N	2	30	80	
			CULG	0212.0	0214.0	III	G	1	25	180	
			HIRA	0212.0	0213.4	III	G	1	40	200	
			CULG	0237.0	0242.0	III	G	3	18X	850	
			PALE	0237.0	0241.0	III		3	25	75	
			HIRA	0237.4	0242.8	III	G	3	25X	330	
			CULG	0242.0	0245.0	III	G	1	20	180	
			CULG	0246.0	0256.0	II	FN	1	35	70	SWF
			CULG	0246.0	0256.0	II	SH	1	70	140	FLA ESS 450
			LEAR	0247.0	0256.0	II		3	30	80	ESS 0400
			HIRA	0247.4	0249.2	II	FN	1	50	70	ESS 600
			HIRA	0247.4	0251.6	II	SH	1	80	120	ESS 600
			LEAR	0257.0	0741.0	IV		2	30	80	
			CULG	0310.0	0321.0	III	N	1	30	150	
			CULG	0403.0	0405.0	III	G	1	30	90	
			CULG	0409.0	0415.0	III	G	2	18	180	
			HIRA	0410.0	0415.4	III	G	1	30	180	
			CULG	0431.0	0745.0D	III	N	1	30	150	
			CULG	0507.0	0518.0	II	FN	1	18X	45	
			CULG	0507.0	0520.0	II	SH	1	23	90	ESS 950
			LEAR	0507.0	0528.0	II		2	30	80	ESS 0900
			HIRA	0508.0	0520.0	II		1	40	80	ESS 500
			CULG	0516.0	0521.0	II	FN	1	18X	25	
			CULG	0516.0	0531.0	II	SH	2	20	50	ESS 650
			CULG	0522.0	0612.0	IV	FS	1	28	180	
			CULG	0604.0	0610.0	III	GG	1	18	1000	
	0739	1351	ONDR								
	0800	1455	BLEN								
			SVTO	1110.0	1133.0	III	N	2	48	84	
			SGMR	1358.0	2056.0	CONT		1	30	55	
	2000	2400	CULG	2000.0E	2245.0	III	N	1	20	150	
			CULG	2010.0	2015.0	III	GG	2	18	180	
			CULG	2045.0	2051.0	III	GG	2	18	180	
			CULG	2102.0	2110.0	III	GG	2	18	150	
			LEAR	2245.0	2245.0	III		1	30	75	
			PALE	2245.0	2245.0	III		1	25	50	
			CULG	2252.0	2302.0	III	GG	2	18X	180	
			LEAR	2252.0	2302.0	III	N	2	30	80	
			PALE	2253.0	2302.0	III		2	25	75	
	2110	2400	HIRA	2253.8	2254.0	III	B	1	40	170	
			HIRA	2259.8	2300.0	III	B	1	40	200	
			HIRA	2302.0	2302.2	III	B	1	40	120	
			LEAR	2320.0	1026.0	CONT		1	30	80	
17	0000	0745	CULG	0008.0	0008.0	III	B	1	110	180	
			CULG	0037.0	0151.0	III	N	1	23	160	
	0000	0733	HIRA	0037.2	0037.4	III	B	1	40	120	
			LEAR	0123.0	0124.0	III		2	30	80	
			HIRA	0123.8	0124.0	III	B	1	40	120	
			CULG	0331.0	0335.0	III	G	1	23	170	
			CULG	0339.0	0745.0D	I	S	1	110	170	
			CULG	0409.0	0409.0	III	B	1	20	90	
			CULG	0435.0	0745.0D	III	N	1	23	130	
			LEAR	0733.0	0736.0	III		2	30	80	
			LEAR	0809.0	0812.0	III		3	30	80	
			SVTO	0812.0	0812.0	III		2	37	85	
			LEAR	0951.0	0958.0	III		3	30	80	
			SVTO	0951.0	1403.0	IV		3	35	85	
	0741	1347	ONDR	0951.2	1000.1	DCIM	GG	2	800X	2000X	
	0800	1450	BLEN	0951.2	0959.9	DCIM	P	1	1000x	2700x	
			BLEN	0957.6	0958.5	DCIM	P	2	1000x	1350	
			LEAR	0959.0	1005.0	II		2	30	80	ESS 0900
			SVTO	1149.0	1151.0	III		2	36	83	

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17			SGMR	1435.0	2055.0	III	N	2	30	80	
			PALE	1931.0	1935.0	III		2	25	180	
			CULG	2000.0E	2400.0D	III	S	1	20	90	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	100	180	
			CULG	2020.0	2030.0	II	FN	1	30	80	
			CULG	2020.0	2031.0	II	SH	3	60	160	ESS 600
			PALE	2020.0	2029.0	II		1	39	170	
			PALE	2020.0	2029.0	II		1	39	170	ESS 0650
			PALE	2020.0	2034.0	II		1	25	180	
			PALE	2020.0	2034.0	II		1	39	170	
	2111	2400	HIRA								
			PALE	2119.0	2119.0	III		1	27	45	
			LEAR	2213.0	1026.0	CONT		2	30	80	
			LEAR	2320.0	2321.0	III		2	30	80	
			PALE	2320.0	2321.0	III		1	25	50	
			CULG	2321.0	2321.0	III	B	2	18	150	
18	0000	0733	HIRA								
			CULG	0000.0E	0745.0D	III	N	1	20	90	
	0000	0745	CULG	0000.0E	0745.0D	I	S	1	70	180	
			CULG	0134.0	0134.0	III	B	2	20	180	
	0747	1346	ONDR								
	0800	1450	BLEN								
			SGMR	1245.0	1249.0	V		1	30	55	
			SGMR	1307.0	2054.0	CONT		1	30	80	
			PALE	1735.0	2012.0	III	N	1	30U	112U	
			SGMR	1803.0	1804.0	III		2	30	80	
			CULG	2000.0E	2400.0D	III	S	1	20	90	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	80	160	
			CULG	2202.0	2202.0	III	B	2	18X	130	
			PALE	2202.0	2202.0	III		1	29	132	
	2112	2400	HIRA	2202.2	2202.4	III	B	1	40	130	
			PALE	2203.0	0332.0	III	N	1	25	180	
			CULG	2208.0	2219.0	III	GG	2	18X	180	
			HIRA	2208.4	2219.0	III	G	2	40	200	
			CULG	2234.0	2248.0	III	GG	2	20	700	
19			CULG	0000.0E	0745.0D	III	S	1	18	90	
	0000	0745	CULG	0000.0E	0745.0D	I	S	1	70	170	
			CULG	0414.0	0420.0	III	GG	3	18	240	
	0000	0732	HIRA	0414.4	0420.0	III	G	3	30	210	
	0746	1345	ONDR								
			SVTO	0754.0	0754.0	III		1	36	45	
	0800	1450	BLEN								
			SVTO	1031.0	1033.0	III		2	35	85	
			SGMR	1203.0	1838.0	CONT		1	30	80	
			PALE	1751.0	1754.0	III		1	30	126	
			SGMR	1751.0	1754.0	III		2	30	80	
			PALE	1915.0	1916.0	III		1	25	50	
			SGMR	1915.0	1916.0	III		1	30	50	
			CULG	2000.0E	2355.0	III	N	1	20	90	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	60	170	
	2113	2400	HIRA								
			LEAR	2202.0	1027.0	III	N	2	30	80	
			LEAR	2241.0	0931.0	CONT		2	30	80	
			LEAR	2343.0	0732.0	CONT		1	40	80	
20	0000	0732	HIRA								
	0000	0745	CULG	0000.0E	0745.0D	I	S	1	60	170	
			CULG	0113.0	0114.0	III	G	1	28	90	
			LEAR	0113.0	0114.0	III		2	30	80	
			LEAR	0142.0	0142.0	III		2	30	70	
			CULG	0242.0	0316.0	III	N	1	20	90	
			CULG	0459.0	0501.0	III	G	1	30	180	
			CULG	0528.0	0530.0	III	G	1	30	160	
			LEAR	0528.0	0529.0	III		2	30	80	
			LEAR	0700.0	0701.0	III		1	38	50	
			CULG	0701.0	0701.0	III	B	1	25	80	
	0748	1344	ONDR								

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20	0800	1445	BLEN								
			LEAR	0849.0	0853.0	V		2	30	80	
			SVTO	0849.0	0850.0	III		2	35	70	
			PALE	1737.0	1743.0	III		1	25	158	
			SGMR	1737.0	1742.0	V		2	30	80	
			PALE	2032.0	2034.0	III		2	28	87	
	2000	2400	CULG	2032.0	2034.0	III	G	2	20	280	
			CULG	2121.0	2124.0	III	G	2	18X	150	
			PALE	2121.0	2123.0	III		2	25	46	
			CULG	2140.0	2140.0	III	B	1	30	150	
			CULG	2150.0	2150.0	III	B	1	20	90	
			CULG	2229.0	2236.0	IV		2	250	860	SWF
	2114	2400	HIRA	2229.4	2236.2	III	G	2	200	900	
			CULG	2235.0	2259.0	II	SH	2	25	110	ESS 550
			LEAR	2239.0	2259.0	II		2	30	70	ESS 0700
			HIRA	2239.4	2248.0	II		2	30	70	
			CULG	2240.0	2249.0	II	FN	1	20	35	
			PALE	2242.0	2304.0	CONT		1	25	50	
			CULG	2248.0	2400.0D	IV	FS	1	25	190	
			CULG	2250.0	2250.0	III	B	1	20	30	
			CULG	2257.0	2257.0	III	B	1	20	70	
			LEAR	2321.0	0600.0	IV		1	30	80	
21	0000	0745	CULG	0000.0E	0745.0D	IV		1	25	90	
			CULG	0010.0	0012.0	III	G	2	35	180	
			LEAR	0010.0	0011.0	III		2	49	75	
			PALE	0010.0	0011.0	III		1	111	177	
	0000	0732	HIRA	0010.6	0011.6	III	G	2	80	200	
			CULG	0142.0	0303.0	I	S	1	110	170	
			CULG	0403.0	0745.0D	I	S	1	110	170	
			LEAR	0624.0	0917.0	CONT		1	30	80	
			CULG	0704.0	0704.0	III	B	1	30	70	
	0750	1340	ONDR	1005.2	1005.4	DCIM	G	2	800X	1165	
	0800	1445	BLEN	1005.2	1006.1	III		2	1100	2700x	
			SVTO	1046.0	1240.0	CONT		2	55U	70U	
	2000	2400	CULG	2000.0E	2244.0	III	S	1	20	170	
			PALE	2049.0	2049.0	III		1	25	59	
			CULG	2121.0	2124.0	III	G	1	50	340	
			CULG	2311.0	2311.0	III	B	1	25	90	
			CULG	2322.0	2324.0	III	G	3	20	520	
			LEAR	2323.0	2323.0	III		2	45	80	
			PALE	2323.0	2323.0	III		1	71	180	
	2115	2400	HIRA	2323.0	2323.6	III	G	2	50	300	
			CULG	2346.0	2354.0	III	GG	1	18	180	
			LEAR	2347.0	2354.0	III		2	30	80	
22			LEAR	0019.0	0021.0	III		2	38	80	
	0000	0745	CULG	0019.0	0020.0	III	G	1	35	170	
	0000	0731	HIRA	0019.8	0020.0	III	B	1	50	120	
			LEAR	0026.0	0155.0	CONT		1	30	55	
			CULG	0042.0	0106.0	III	N	1	20	90	
			LEAR	0257.0	0302.0	III		2	30	80	
			CULG	0258.0	0300.0	III	G	1	18	150	
			CULG	0540.0	0745.0D	III	N	1	18	180	
			LEAR	0544.0	0545.0	III		1	30	57	
			LEAR	0545.0	0736.0	CONT		1	30	57	
			LEAR	0604.0	0605.0	III		2	30	80	
	0752	1341	ONDR								
			LEAR	0842.0	0843.0	III		1	30	72	
			SVTO	0842.0	0843.0	III		2	38	48	
	0800	1445	BLEN	1213.4	1213.7	III	G	3	1440	1660	
	2000	2400	CULG	2007.0	2007.0	III	B	1	20	50	
			CULG	2015.0	2015.0	III	B	1	20	80	
	2116	2400	HIRA								
			CULG	2123.0	2130.0	III	GG	1	18	160	
			PALE	2123.0	2123.0	III		1	25	50	
			CULG	2335.0	2336.0	III	G	1	35	150	
			LEAR	2335.0	2335.0	III		1	40	55	
			PALE	2347.0	2349.0	III		1	25	87	

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23	0000	0745	CULG	0007.0	0007.0	III	B	1	100	200	
			CULG	0011.0	0014.0	III	G	1	18	120	
			LEAR	0011.0	0013.0	III		2	30	80	
			CULG	0602.0	0604.0	III	G	2	18	160	
			LEAR	0602.0	0603.0	III		3	30	80	
	0000	0731	HIRA	0602.2	0603.0	III	G	2	40	150	
			CULG	0715.0	0733.0	III	N	1	23	180	
			LEAR	0715.0	0716.0	III		1	30	80	
	0754	1339	ONDR								
			LEAR	0819.0	0819.0	III		1	47	70	
	0820	1445	BLEN								
			LEAR	0828.0	0829.0	III		3	30	80	
			SVTO	0828.0	0829.0	III		2	43	85	
			LEAR	0942.0	0943.0	III		1	30	71	
			SVTO	0942.0	0943.0	III		2	49	78	
			SGMR	1916.0	1917.0	II		1	30	80	ESS 9000
	2000	2400	CULG	2000.0E	2350.0	I	S	1	75	160	
	2117	2400	HIRA								
			CULG	2127.0	2127.0	III	B	1	20	90	
			CULG	2223.0	2400.0D	III	N	1	20	160	
			LEAR	2226.0	2229.0	III		1	30	55	
			LEAR	2302.0	0842.0	CONT		2	30	80	
24	0000	0745	CULG	0000.0E	0128.0	III	N	1	20	160	
			CULG	0004.0	0005.0	III	G	1	130	330	
	0000	0731	HIRA	0004.8	0005.4	III	G	1	130	320	
			LEAR	0036.0	0036.0	III		2	30	80	
			PALE	0036.0	0036.0	III		1	35	50	
			HIRA	0052.8	0053.0	III	B	2	120	260	
			CULG	0053.0	0053.0	III	B	1	130	300	
			CULG	0135.0	0200.0	III	GG	2	18	160	
			CULG	0156.0	0157.0	III	G	1	130	520	
			HIRA	0156.2	0157.4	III	G	1	120	500	
			CULG	0323.0	0403.0	III	N	1	25	90	
			CULG	0449.0	0450.0	III	G	3	30	350	
			HIRA	0449.0	0450.0	III	G	2	130	320	
			CULG	0455.0	0457.0	III	G	1	18	90	
			LEAR	0455.0	0457.0	III		2	30	80	
			HIRA	0455.8	0456.0	III	B	1	40	80	
			HIRA	0509.8	0510.0	III	B	1	50	240	
			CULG	0510.0	0510.0	III	B	1	40	160	
			CULG	0550.0	0745.0D	III	N	1	18	160	
			CULG	0623.0	0624.0	III	G	3	28	640	
			LEAR	0623.0	0624.0	III		3	30	80	
			SVTO	0623.0	0624.0	III		2	35	85	
			HIRA	0623.8	0624.2	III	B	3	50	420	
	0756	1340	ONDR								
	0820	1450	BLEN								
			SVTO	0841.0	0842.0	III		2	37	48	
			LEAR	1003.0	1009.0	III		2	30	80	
			SVTO	1003.0	1117.0	III	N	3	35	85	
			SVTO	1148.0	1303.0	III	N	2	36	85	
			SGMR	1334.0	1336.0	V		1	30	80	
			SVTO	1334.0	1336.0	V		2	36	85	
			SGMR	1343.0	1345.0	V		1	30	80	
			SGMR	1435.0	1436.0	III		1	30	80	
			SVTO	1435.0	1436.0	III		1	62	80	
			SGMR	1536.0	1604.0	III	N	1	30	80	
			PALE	1658.0	1747.0	III	N	1	25U	138U	
			SGMR	1702.0	1703.0	III		1	30	65	
			SGMR	1728.0	1738.0	III	N	1	30	80	
			PALE	1838.0	1851.0	V		1	28	178	
			SGMR	1844.0	1851.0	V		2	30	80	
			PALE	1907.0	1918.0	III		1	36U	46U	
	2000	2400	CULG	2000.0E	2048.0	III	N	1	20	90	
			PALE	2002.0	2003.0	III		1	25	180	
			CULG	2003.0	2005.0	III	G	3	20	180	
			SGMR	2003.0	2004.0	III		1	30	80	
			CULG	2037.0	2037.0	III	B	1	18	300	

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24			CULG	2051.0	2225.0	III	S	1	18	180	
			CULG	2154.0	2157.0	III	G	3	18	700	
			PALE	2154.0	2157.0	V		1	25	180	
	2118	2400	HIRA	2154.2	2156.6	III	G	3	25X	440	
			CULG	2157.0	2159.0	V		2	20	110	
			CULG	2240.0	2313.0	III	N	1	20	90	
			CULG	2254.0	2258.0	III	G	1	18	260	
			LEAR	2254.0	2257.0	III		1	30	80	
			PALE	2254.0	2256.0	III		1	25	40	
			HIRA	2254.4	2257.6	III	G	1	40	260	
			LEAR	2310.0	2312.0	III		1	30	68	
			CULG	2329.0	2332.0	III	G	2	18	400	
			LEAR	2329.0	2345.0	III	N	3	30	80	
			HIRA	2329.2	2332.8	III	G	2	50	400	
			PALE	2330.0	2331.0	III		1	27	42	
			CULG	2332.0	2334.0	V		2	20	90	
			CULG	2333.0	2344.0	II	SH	1	60	180	FLA ESS 500
			HIRA	2333.6	2338.2	II		1	80	160	
			CULG	2345.0	2345.0	III	B	1	18	180	
			HIRA	2345.4	2345.6	III	B	1	50	230	
			LEAR	2356.0	2359.0	III		3	30	80	
			CULG	2357.0	2359.0	III	G	2	18X	180	
			PALE	2357.0	2358.0	III		1	31	171	
			HIRA	2358.0	2358.2	III	B	2	40	230	
25	0000	0745	CULG	0047.0	0129.0	I	S	1	130	170	
			CULG	0052.0	0053.0	III	G	2	18X	300	
			LEAR	0052.0	0053.0	III		3	30	80	
			PALE	0052.0	0052.0	III		1	31	180	
	0000	0730	HIRA	0052.6	0052.8	III	B	2	40	240	
			CULG	0102.0	0305.0	III	N	2	20	180	
			LEAR	0107.0	0959.0	III	N	3	30	80	
			CULG	0134.0	0138.0	III	G	3	18X	400	
			HIRA	0134.0	0137.6	III	G	2	30	330	
			LEAR	0134.0	0138.0	III		3	30	80	
			PALE	0134.0	0137.0	III		1	25	180	
			HIRA	0218.0	0219.0	III	G	1	50	160	
			PALE	0232.0	0345.0	III	N	1	37	180	
			HIRA	0237.4	0237.6	III	B	1	50	240	
			HIRA	0258.4	0258.6	III	B	1	30	200	
			HIRA	0302.0	0302.6	III	G	1	50	200	
			HIRA	0341.6	0346.8	III	G	1	40	240	
			CULG	0342.0	0349.0	III	G	2	20	250	
			CULG	0416.0	0418.0	III	G	2	18X	240	
			LEAR	0416.0	0417.0	III		3	30	80	
			HIRA	0416.4	0416.6	III	B	1	40	240	
			CULG	0435.0	0435.0	III	B	1	30	150	
			CULG	0443.0	0448.0	III	G	1	18	400	
			HIRA	0444.4	0447.8	III	G	1	50	300	
			CULG	0507.0	0513.0	III	G	1	30	450	
			HIRA	0507.4	0511.6	III	G	1	50	420	
			CULG	0523.0	0523.0	III	B	1	30	450	
			CULG	0537.0	0606.0	III	N	1	20	170	
			HIRA	0544.6	0546.0	III	G	1	40	180	
			SVTO	0618.0	0647.0	III	N	2	35	85	
			HIRA	0618.8	0649.6	III	GG	3	50	400	
			CULG	0619.0	0650.0	III	N	2	20	330	
			CULG	0644.0	0646.0	III	G	3	18X	500	
			CULG	0719.0	0745.0D	III	N	1	20	170	
			SVTO	0732.0	0735.0	III		3	35	85	
			CULG	0733.0	0735.0	III	G	3	18X	550	
			SVTO	0755.0	0755.0	III		1	68	85	
	0758	1335	ONDR	0932.3	0933.3	DCIM	G	1	800X	1610	
			SVTO	0933.0	0933.0	III		2	35	75	
	0820	1450	BLEN	0947.5	0953.0	III	GG	2	1100	2700x	
			ONDR	0948.0	0952.3	DCIM	G	1	800X	2000X	
			SVTO	0953.0	1002.0	III		3	35	85	
			BLEN	1019.5	1021.5	III	G	3	1000	2700x	
			SVTO	1027.0	1058.0	III	N	2	38	85	

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25			SVTO	1142.0	1343.0	III	N	2	35	85	
			SGMR	1222.0	1223.0	III		3	30	80	
			SGMR	1250.0	1251.0	III		1	35	70	
			SGMR	1323.0	1343.0	III	N	1	30	80	
			SGMR	1507.0	1508.0	V		1	30	80	
			SGMR	1744.0	1745.0	III		1	30	80	
			PALE	1933.0	1935.0	III		2	25	140	
			SGMR	1933.0	1935.0	III		1	30	55	
			PALE	1959.0	2000.0	III		1	25	153	
			SGMR	1959.0	2000.0	III		1	30	55	
			CULG	2000.0E	2003.0	III	G	2	18	180	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	80	170	
			CULG	2027.0	2127.0	III	N	1	20	90	
			CULG	2036.0	2038.0	III	G	2	18	300	
			PALE	2037.0	2038.0	III		1	25	180	
			PALE	2109.0	2111.0	III		1	25	180	
			CULG	2110.0	2115.0	III	GG	2	18	180	
			CULG	2132.0	2145.0	III	GG	3	18	550	
			LEAR	2135.0	2140.0	III		1	30U	80U	
			PALE	2135.0	2144.0	III		1	25	180	
	2119	2400	HIRA	2135.6	2145.6	III	G	2	40	430	
			HIRA	2158.4	2159.0	III	B	1	50	130	
			CULG	2159.0	2203.0	III	G	1	23	170	
			CULG	2236.0	2237.0	III	G	2	18X	400	
			LEAR	2236.0	2238.0	III		3	30	80	
			PALE	2236.0	2237.0	III		1	25	180	
			HIRA	2236.8	2238.0	III	G	2	30	400	
			CULG	2247.0	2247.0	III	B	1	20	90	
			LEAR	2319.0	2323.0	III		3	30	80	
			PALE	2319.0	2323.0	III		1	28	180	
			CULG	2320.0	2324.0	III	G	3	18X	280	
			HIRA	2320.0	2323.2	III	G	2	25X	170	
			LEAR	2332.0	2333.0	III		3	30	80	
			CULG	2333.0	2333.0	III	B	3	18	500	
			HIRA	2333.0	2333.2	III	B	2	25X	500	
			PALE	2333.0	2333.0	III		1	25	180	
			CULG	2359.0	2400.0D	III	G	2	18	180	
			LEAR	2359.0	0012.0	III	N	3	30	80	
			PALE	2359.0	0011.0	III	N	1	25	180	
26			CULG	0000.0E	0005.0	III	G	2	18	180	
	0000	0745	CULG	0000.0E	0745.0D	I	S	1	70	170	
			CULG	0005.0	0006.0	III	G	3	18X	550	
	0000	0730	HIRA	0005.4	0006.0	III	G	3	25X	520	
			CULG	0011.0	0012.0	III	G	2	18	180	
			HIRA	0011.4	0011.6	III	B	1	25X	130	
			CULG	0104.0	0112.0	III	G	2	18X	260	
			LEAR	0104.0	0108.0	III		3	30	80	
			PALE	0104.0	0111.0	III		1	29	180	
			HIRA	0104.8	0105.0	III	B	1	40	220	
			LEAR	0110.0	0113.0	V		3	30	80	
			HIRA	0110.6	0110.8	III	B	1	25X	220	
			CULG	0120.0	0120.0	III	B	1	370	580	
			HIRA	0120.0	0120.2	III	B	2	350	550	
			CULG	0139.0	0141.0	III	G	1	18X	360	
			LEAR	0139.0	0141.0	III		3	30	80	
			PALE	0139.0	0140.0	III		1	25	180	
			HIRA	0139.2	0139.4	III	B	2	25X	260	
			LEAR	0208.0	0210.0	III		1	31	49	
			CULG	0209.0	0211.0	III	G	1	20	90	
			CULG	0226.0	0311.0	III	N	1	18	180	
			LEAR	0230.0	0230.0	III		1	30	65	
			LEAR	0249.0	0310.0	III	N	2	30	80	
			PALE	0249.0	0249.0	III		1	41	87	
			HIRA	0249.2	0249.4	III	B	1	40	160	
			PALE	0310.0	0310.0	III		1	40	144	
			HIRA	0310.4	0310.6	III	B	1	40	150	
			LEAR	0352.0	0417.0	III	N	2	30	80	
			CULG	0353.0	0353.0	III	B	1	25	90	

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26			CULG	0358.0	0358.0	III	B	1	30	140	
			CULG	0411.0	0411.0	III	B	1	130	230	
			CULG	0416.0	0416.0	III	B	2	18	180	
			HIRA	0416.2	0416.4	III	B	1	30	180	
			CULG	0504.0	0505.0	III	G	2	18	260	
			LEAR	0504.0	0505.0	III		2	30	80	
			HIRA	0504.6	0504.8	III	B	2	40	180	
			CULG	0530.0	0530.0	III	B	1	65	300	
			LEAR	0541.0	0542.0	III		1	30	55	
			CULG	0542.0	0608.0	III	N	1	30	80	
			CULG	0651.0	0726.0	III	N	1	20	80	
			LEAR	0651.0	0831.0	CONT		3	30	80	
			SVTO	0654.0	1501.0	CONT		2	35	85	
			HIRA	0658.8	0701.4	III	G	3	50	240	
			CULG	0659.0	0702.0	III	G	3	18	300	
			CULG	0708.0	0719.0	II	SH,H	1	40	180	ESS 800
			LEAR	0712.0	0719.0	II		2	40	67	ESS 0400
	0800	1334	ONDR								
			LEAR	0837.0	0843.0	III		2	30	80	
			LEAR	0924.0	0936.0	III	N	2	30	80	
			SVTO	0924.0	0935.0	III	N	2	35	76	
	0820	1450	BLEN	1341.7	1345.5	DCIM	P	1	1500	2700x	
			SGMR	1611.0	1635.0	III	N	2	30	80	
			PALE	1654.0	1731.0	III	N	1	25	66	
			PALE	1708.0	1731.0	III	N	1	25	66	
	2000	2400	CULG	2003.0	2017.0	III	N	1	20	80	
	2120	2400	HIRA								
			CULG	2238.0	2244.0	III	N	1	50	150	
27			LEAR	0246.0	0246.0	III		2	31	55	
	0000	0750	CULG	0247.0	0247.0	III	B	1	20	90	
			CULG	0313.0	0313.0	III	B	1	35	90	
			CULG	0340.0	0342.0	III	G	1	18	200	
			LEAR	0340.0	0345.0	III		2	30	80	
	0000	0729	HIRA	0340.4	0341.6	III	G	2	50	240	
			HIRA	0343.8	0344.0	III	B	1	25X	130	
			CULG	0345.0	0345.0	III	B	2	18	150	
			LEAR	0355.0	0357.0	III		2	30	78	
			CULG	0356.0	0357.0	III	G	1	18	150	
			HIRA	0356.0	0356.8	III	G	1	40	200	
			CULG	0452.0	0457.0	III	GG	3	18X	500	
			LEAR	0452.0	0508.0	III	N	3	30	80	
			HIRA	0452.2	0458.0	III	GG	3	30	400	
			CULG	0457.0	0506.0	III	GG	1	18	160	
			CULG	0502.0	0508.0	II	SH	2	50	110	ESS 750
			CULG	0503.0	0523.0	IV		1	40	240	
			HIRA	0547.0	0557.2	III	B	1	50	230	
			LEAR	0547.0	0547.0	III		2	43	80	
			HIRA	0617.4	0617.6	III	B	1	80	180	
			CULG	0738.0	0745.0	III	G	1	25	130	
			LEAR	0742.0	0744.0	III		2	30	80	
			LEAR	0820.0	0820.0	III		1	50	70	
			SVTO	1022.0	1023.0	III		1	38	85	
			SVTO	1051.0	1052.0	III		1	57	84	
	0815	1450	BLEN	1113.4	1114.2	DCIM	S	3	1000x	1400	
			SVTO	1125.0	1128.0	III		1	54	74	
	0802	1333	ONDR	1208.2	1216.3	DCIM	GG,SP	2	800X	2000X	
			BLEN	1209.0	1220.0	DCIM	P	1	1000x	2700x	
			SVTO	1215.0	1237.0	III	N	2	35	84	
			SGMR	1236.0	1237.0	III		1	30	55	
	2121	2400	HIRA								
			PALE	2122.0	2122.0	III		1	25	42	
	2000	2400	CULG	2123.0	2126.0	III	G	1	20	160	
			CULG	2303.0	2306.0	III	G	1	20	90	
			LEAR	2304.0	2304.0	III		1	30	60	
			PALE	2304.0	2304.0	III		1	25	45	
			LEAR	2344.0	2346.0	III		1	30	55	
			CULG	2345.0	2346.0	III	G	1	25	90	

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

NOVEMBER 1999

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
28			LEAR	0058.0	0058.0	III		1	40	80	
	0000	0750	CULG	0058.0	0058.0	III	B	1	40	90	
			CULG	0110.0	0110.0	III	B	1	20	80	
			LEAR	0110.0	0110.0	III		1	30	60	
			CULG	0125.0	0125.0	III	B	1	20	80	
			LEAR	0125.0	0125.0	III		2	30	60	
			CULG	0216.0	0216.0	III	B	1	18	90	
			LEAR	0216.0	0223.0	III		2	30	80	
			CULG	0223.0	0223.0	III	B	1	20	150	
			LEAR	0229.0	0229.0	III		1	30	45	
			CULG	0308.0	0556.0	I	S	1	70	150	
			LEAR	0344.0	0344.0	III		1	30	55	
			CULG	0349.0	0349.0	III	B	1	20	80	
			LEAR	0410.0	1033.0	CONT		1	65	80	
			CULG	0456.0	0456.0	III	B	1	20	80	
			LEAR	0456.0	0505.0	III		2	30	60	
			CULG	0505.0	0505.0	III	B	1	20	90	
			LEAR	0526.0	0527.0	III		3	30	80	
			CULG	0527.0	0527.0	III	B	2	23	150	
	0000	0729	HIRA	0527.0	0527.2	III	B	2	40	180	
			LEAR	0541.0	0544.0	III		3	30	80	
			CULG	0542.0	0544.0	III	G	2	20	160	
			HIRA	0542.2	0543.8	III	G	2	40	140	
			CULG	0647.0	0647.0	III	B	1	30	90	
	0804	1332	ONDR								
			LEAR	0900.0	0901.0	III		2	30	80	
			SVTO	0900.0	0901.0	III		2	35	83	
	0930	1450	BLEN								
			SVTO	1037.0	1037.0	III		2	40	78	
			SVTO	1131.0	1134.0	III		2	35	73	
			SVTO	1150.0	1150.0	III		2	35	74	
			SGMR	1234.0	1236.0	III		1	30	50	
			SVTO	1234.0	1236.0	V		2	35	83	
	2000	2400	CULG	2000.0E	2201.0	I	S	1	40	160	
			CULG	2048.0	2048.0	III	B	1	20	150	
			PALE	2048.0	2048.0	III		1	25	80	
			PALE	2054.0	2242.0	CONT		1	30	45	
	2122	2400	HIRA								
			LEAR	2138.0	0422.0	CONT		1	30	45	
29	0000	0728	HIRA								
			LEAR	0127.0	0128.0	III		1	30	55	
	0000	0750	CULG	0128.0	0128.0	III	B	1	23	90	
			CULG	0235.0	0235.0	III	B	1	30	65	
			CULG	0422.0	0422.0	III	B	1	18	90	
			LEAR	0422.0	0422.0	III		2	30	75	
			LEAR	0502.0	0502.0	III		1	30	53	
			CULG	0611.0	0611.0	III	B	1	40	140	
			LEAR	0648.0	0651.0	III		1	54	70	
	0806	1330	ONDR								
			SVTO	1402.0	1459.0	CONT		1	65U	85U	
			SGMR	1409.0	1800.0	CONT		1	30	80	
			PALE	1947.0	1947.0	III		1	25	60	
	2000	2400	CULG	2000.0E	2400.0D	I	S	1	60	170	
			CULG	2056.0	2233.0	III	S	1	20	90	
	2123	2400	HIRA								
			PALE	2127.0	2131.0	III		1	25	140	
			CULG	2310.0	2400.0D	III	S	1	30	90	
			LEAR	2315.0	0453.0	CONT		1	40	80	
			LEAR	2321.0	0453.0	III	N	2	35	80	
30	0000	0728	HIRA								
			CULG	0000.0E	0224.0	III	S	1	30	90	
	0000	0750	CULG	0000.0E	0401.0	I	S	1	60	160	
			PALE	0051.0	0222.0	III	N	1	28	49	
			CULG	0433.0	0453.0	III	N	1	25	80	
			CULG	0707.0	0750.0D	III	N	1	28	90	
	0808	1329	ONDR								
	0830	1450	BLEN								

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 1999

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
30			SVTO	1118.0	1134.0	III	N	2	35	85	
			SVTO	1220.0	1314.0	III	N	2	35	85	
			PALE	1854.0	1855.0	III		1	25	70	
			LEAR	2229.0	2230.0	III		1	30	71	
			PALE	2229.0	2229.0	III		1	28	59	
	2005	2400	CULG	2229.0	2230.0	III	G	1	18	170	
	2124	2400	HIRA	2229.4	2229.8	III	B	1	50	130	
			CULG	2236.0	2238.0	III	G	1	23	90	

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

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

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

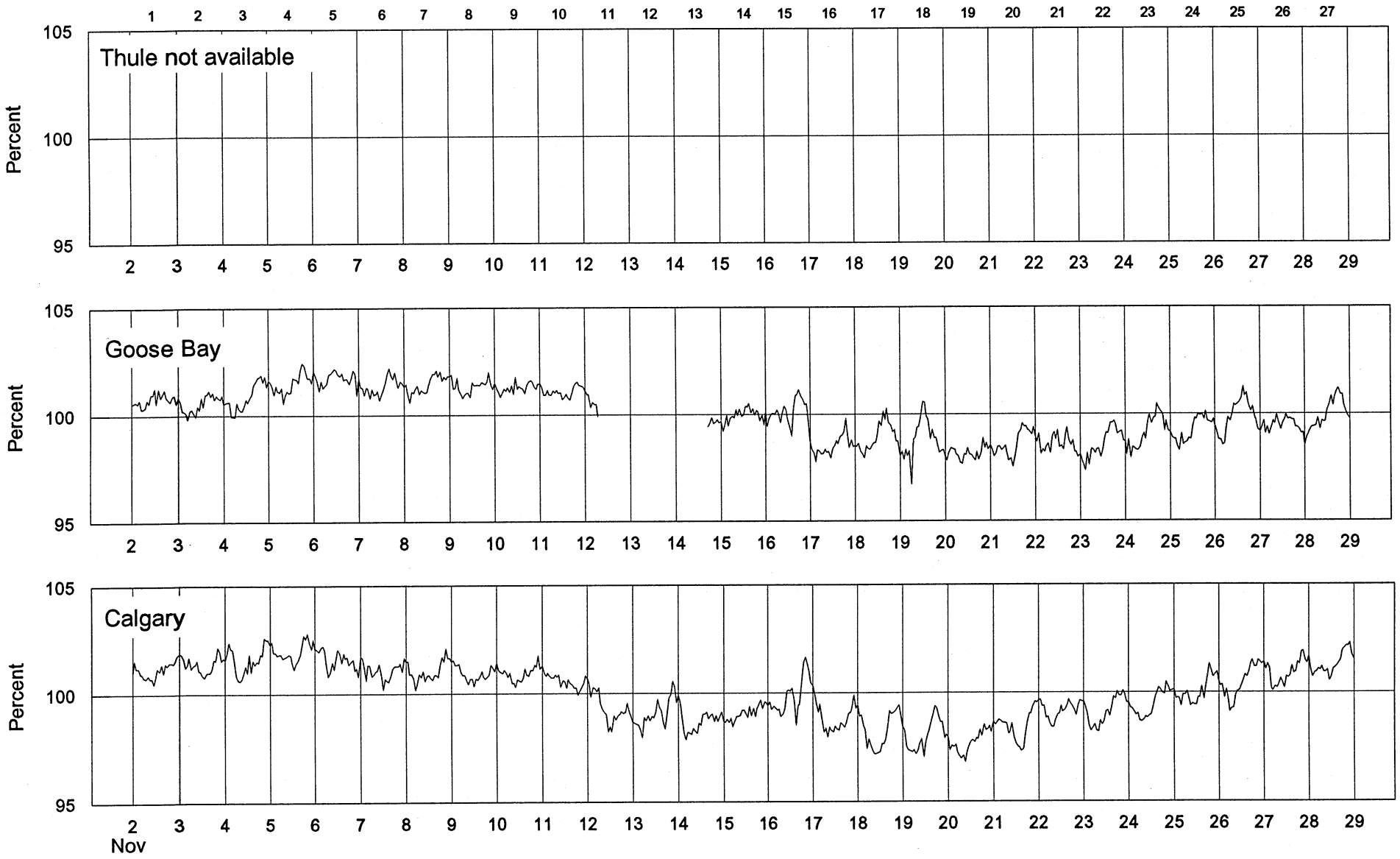
Stations Reporting:
- CULG = Culgoora
- IZMI = Izmiran
- LEAR = Learmonth
- ONDR = Ondrejov
- PALE = Palehua
- POTS = Potsdam
- SGMR = Sagamore Hill
- SVTO = San Vito
- BLEN = Bleien

COSMIC RAY INDICES
(Neutron Monitor)
November 1999

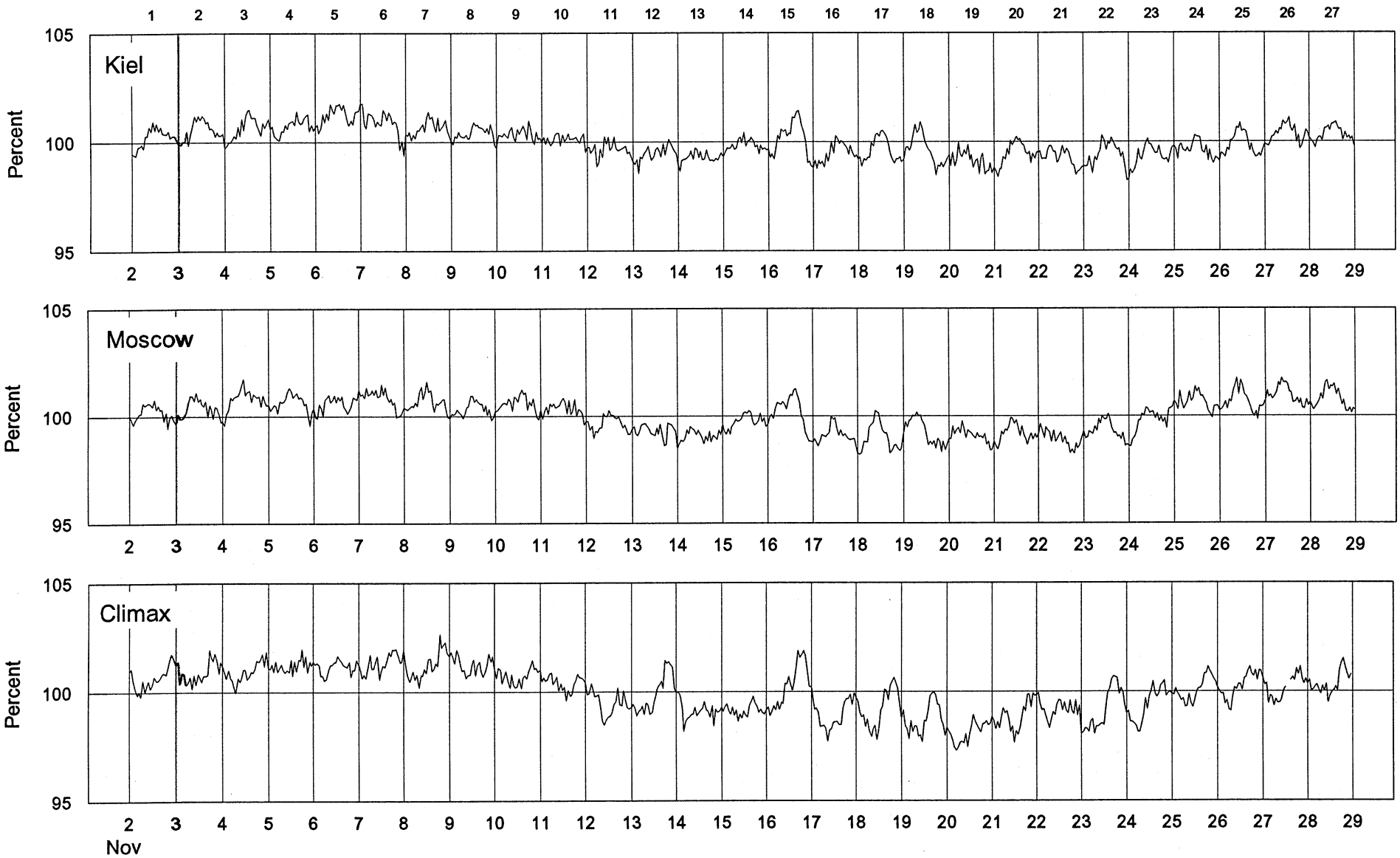
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	6763.7	3667.3	5753.0	8607.2	3865.4	1985.8	3521.2(12)
2	at time of	6796.0	3681.0	5793.8	8639.7	3893.6	1992.5	3518.0
3	publication	6783.4	3690.8	5813.3	8656.2	3905.5	1991.0	3516.0
4		6802.7	3697.0	5817.9	8692.7	3905.4	1987.5	3503.8
5		6846.1	3712.0	5823.0	8678.3	3916.0	1987.8	3512.7
6		6862.5	3698.0	5850.9	8672.7	3914.2	1990.6	3527.9
7		6837.8	3679.5	5833.2	8696.9	3920.0	1991.6	3527.0
8		6842.2	3678.2	5818.7	8682.8	3917.1	1991.6	3516.5
9		6837.1	3674.2	5804.7	8651.9	3917.8	1989.0	3515.0
10		6831.8	3674.3	5801.1	8674.2	3897.8	1982.3	3513.9
11		6820.0	3661.7	5787.8	8654.3	3885.6	1983.5	3517.5
12		6787.0(8)	3617.0	5761.5	8593.5	3850.0	1962.9	3504.6
13		---	3606.3	5750.7	8566.2	3865.1	1962.9	3514.9
14		6721.6(7)	3593.7	5739.7	8543.1	3835.2	1965.6	3496.8
15		6742.1	3606.3	5771.2	8601.8	3836.6	1966.2	3501.2
16		6756.5	3635.0	5792.3	8644.2	3878.8	1970.1	3523.3
17		6647.2	3599.0	5751.0	8546.8	3829.5	1947.8	3494.8
18		6674.0	3578.5	5759.0	8537.4	3840.0	1935.9	3491.5
19		6667.6	3569.8	5760.3	8559.8	3820.3	1938.9	3503.5
20		6622.1	3557.5	5732.1	8545.5	3796.2	1926.7	3483.5
21		6652.1	3583.7	5749.1	8553.3	3824.8	1928.0	3489.4
22		6653.1	3610.8	5740.0	8531.3	3838.6	1926.3	3489.4
23		6650.5	3609.0	5747.0	8567.1	3837.1	1921.1	3492.8
24		6689.1	3621.2	5743.7	8606.2	3846.4	1928.1	3501.0
25		6696.5	3643.0	5760.4	8680.9	3872.0	1938.5	3511.2
26		6738.6	3657.2	5772.5	8682.5	3879.5	1950.1	3506.3
27		6711.1	3673.7	5800.5	8707.9	3876.7	1946.9	3509.9
28		6743.4	3688.0	5801.0	8692.4	3883.5	1955.3	3515.3
29		6776.6	3683.7	5805.3	8672.9	3881.7	1951.6	3519.2
30		6786.7	3672.2	5778.0	8655.5	3875.7	1945.6	3514.1
31								
Mean		6749.6	3644.0	5780.4	8626.5	3870.2	1961.4	3508.1

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

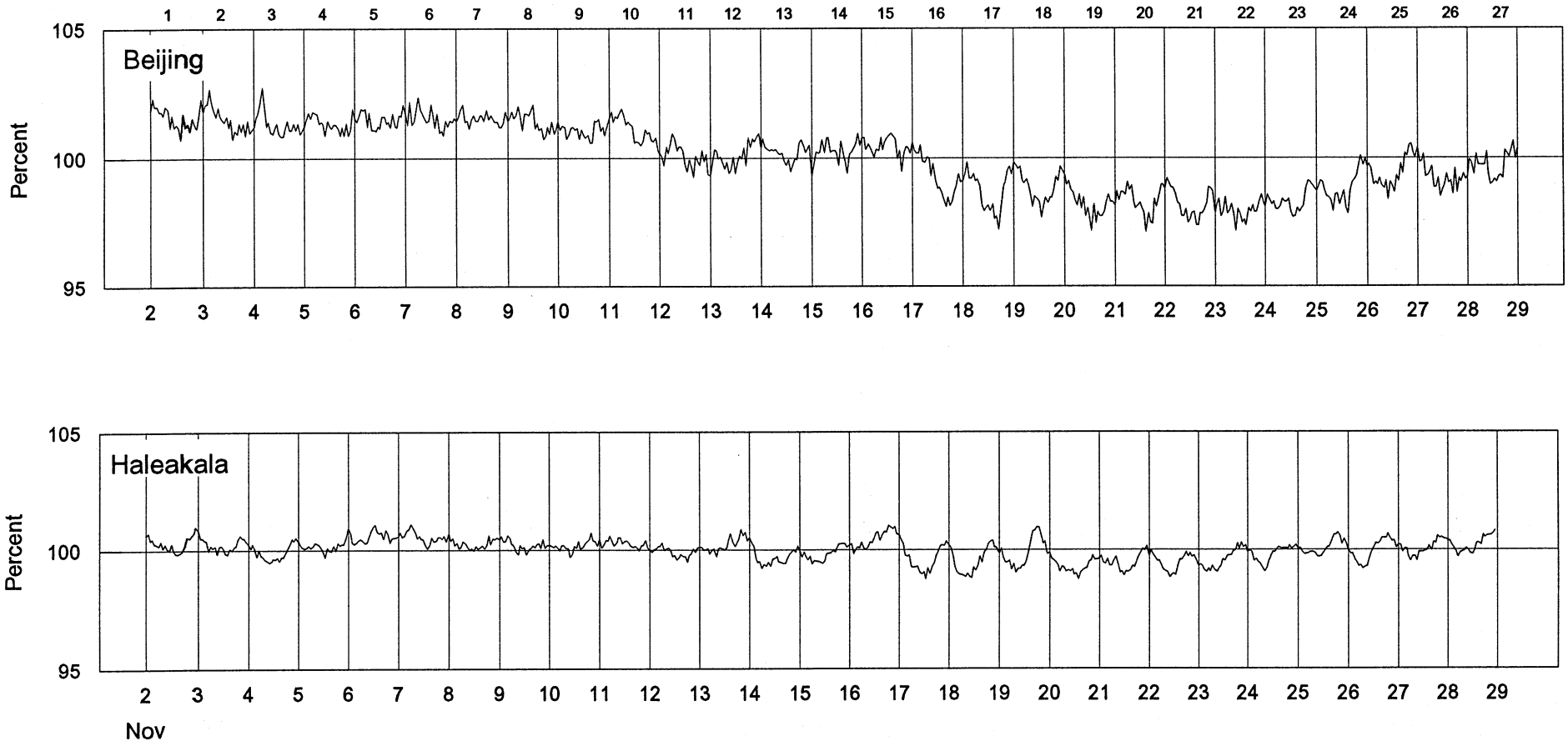
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2270 - Beginning 2 Nov 99



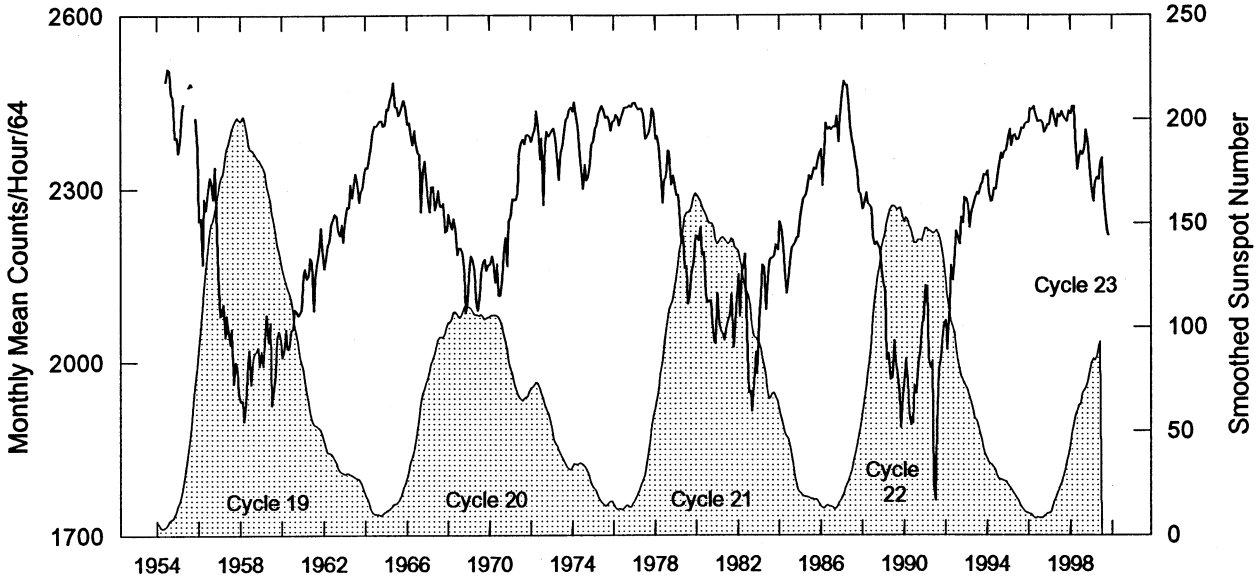
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2270 - Beginning 2 Nov 99



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2270 - Beginning 2 Nov 99



Mt. Washington Neutron Monitor Pressure-Corrected Values
Jan 1954 - Nov 1999



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	2438	2432	2443	2433	2435	2432	2435	2430
1998	2429	2442	2442	2388	2333	2356	2365	2358	2371	2401	2383	2338	2384
1999	2299	2278	2311	2319	2316	2343	2352	2295	2256	2225	2218		2101

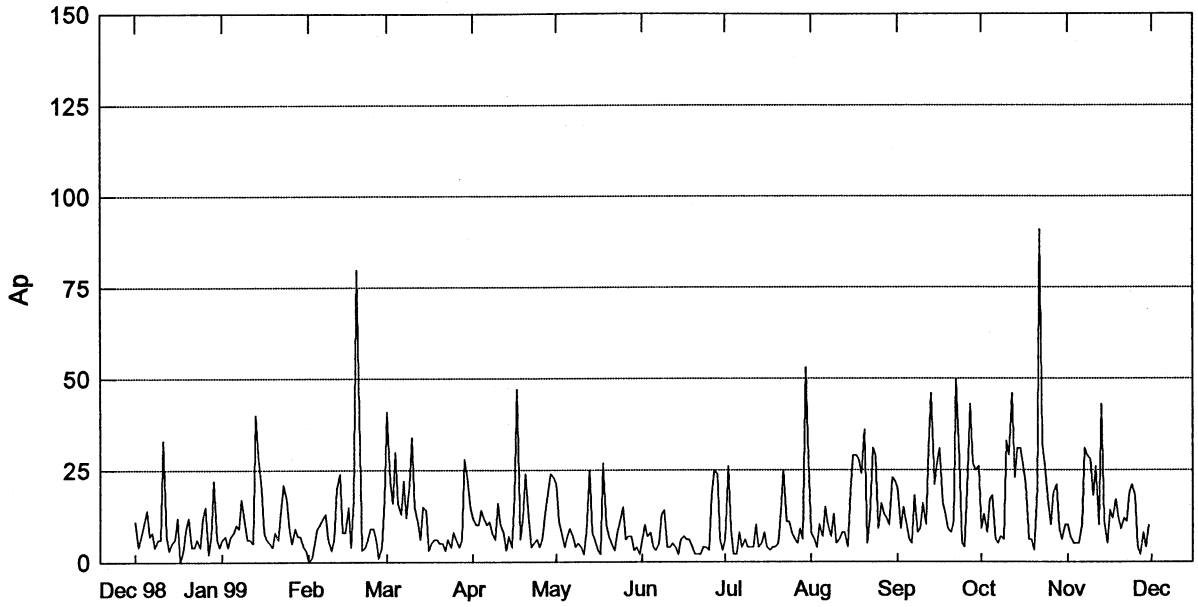
Multiply table entries by 64 to obtain hourly counting rate. Mt. Washington, NH: N44, W71, Alt=1909 m, Cutoff Rigidity=1.38GV.

Geomagnetic Activity Indices
November 1999

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	aa Provisional Am	N	S	M	
1		3-	2+	2	4-	2+	2-	2+	1+	18+	10	0.6	2+	2o	2+	4-	3-	2-	2+	2-	20	19	13	18	14	
2	Q8A	3-	2	2	2	1	1	1+	2	14	7	0.3	2+	2-	2o	2o	1+	1+	2o	2o	13	18	12	17	13	C
3	Q7K	3	0+	0+	1+	1	0+	2-	2	10	5	0.2	3-	0o	1-	1+	1o	0+	2-	2-	9	12	8	9	11	CC
4	Q5	2	2+	1	1-	1	1-	1-	1+	10-	5	0.2	2+	2o	1o	1-	1+	1+	1+	2o	11	12	9	11	10	CC
5	Q6K	1+	1-	0+	0+	0+	1-	2	3	9-	5	0.2	1o	1-	0o	0+	0+	1-	2+	3o	9	14	7	5	16	KK
6		3	1+	2-	2	2-	2+	4-	2-	17+	10	0.5	3-	1o	2-	2-	1+	3-	4-	1+	17	28	11	19	20	
7	D2	3+	4+	5-	4+	5	5	3-	3+	33-	31	1.3	3+	4+	4o	4+	5-	4+	3-	3+	54	50	46	48	49	
8	D3	4	4-	5-	4-	5-	4-	4+	4+	33	29	1.3	4-	3+	4-	4o	5-	4-	5-	4-	54	54	49	44	60	
9	D4	4-	5-	4-	4	4	4+	4	4+	33-	28	1.2	3+	4-	4-	4o	4+	3+	4-	4-	47	57	46	42	61	
10		3+	3+	2+	3+	3	3+	4-	4-	26	18	1.0	3-	3-	2-	3o	3-	3o	4-	3o	27	42	24	29	37	
11	D5	4-	5-	4	4	3+	3+	4	4	31	26	1.2	3+	4o	4-	4-	3o	3o	4o	4-	42	48	30	40	39	
12		3	2+	2+	2	2	2	3	3	20-	10	0.6	2+	2+	2o	2o	2+	2+	3+	3-	20	24	15	16	23	
13	D1	4+	4+	4-	3-	5	5	6+	5+	37-	43	1.5	4-	3o	3o	3-	5-	4o	6-	5o	60	69	51	31	89	
14		3-	2+	3-	2	3-	3-	3	3-	21-	11	0.7	3-	2o	3o	3-	3-	3-	3o	3-	24	23	22	21	24	
15	Q4	2+	1-	1+	1+	1+	1-	1	1	10-	5	0.2	2o	1-	2o	1+	2o	1+	2-	1+	11	7	16	14	9	C
16		1	1+	2	4-	4-	4+	3-	3-	21+	14	0.8	2-	2-	2o	4o	3+	4o	3o	3-	29	30	30	23	38	
17		2	2-	2+	3	3	3	3	3-	21-	12	0.7	2+	2-	2+	3-	3o	3o	3o	3o	25	28	20	20	28	
18		3	3	3+	3	3	3	4-	3+	25+	17	0.9	3o	2+	3o	3o	3o	3o	3+	4-	30	36	25	23	39	
19		3-	3+	2+	2-	2	2-	2+	4	20	12	0.7	3-	3o	3-	2+	2+	2-	3-	3+	23	21	27	23	25	
20	Q10A	3+	3-	2+	3-	1	1	1	2-	16-	9	0.5	3o	3-	3-	3-	1o	1+	1+	2-	17	15	16	20	10	
21		2+	3-	3+	2	1-	3-	3+	3	20	12	0.7	2-	2+	3+	2o	1+	3o	4-	3+	25	28	20	17	31	
22		4-	2	1+	4-	3+	2	1+	1	18+	11	0.6	4-	2+	1+	4-	3+	2-	1+	1+	23	22	20	26	16	
23		2	4	5-	3-	3-	2+	3-	4+	25+	19	1.0	2o	3o	4o	2+	2+	2o	3+	4o	29	39	26	30	35	
24		3+	3+	4	5	3	3	3	2+	27	21	1.1	3-	3o	4-	5-	3-	3o	3o	2+	35	40	28	38	29	
25		2	2+	3	5-	4-	3	3+	3	25	18	1.0	2+	2+	3-	5-	4-	3+	3+	3-	36	34	41	36	39	
26	Q2	1+	1	1	2-	2	0+	0	0	7+	4	0.1	2-	1o	1-	2-	2o	0+	0o	0+	7	6	8	7	6	C
27	Q1	0	0	0+	0+	1+	0+	0	1-	3	2	0.0	0o	0o	0o	1-	1+	1-	0o	1+	4	6	5	4	7	CC
28	Q9A	2	2	2+	2+	2-	2+	2	3-	17+	8	0.4	2+	2+	2+	3-	2+	3-	2+	3o	20	20	16	15	21	K
29	Q3	2+	1+	1-	2-	1	0	0+	1+	9-	4	0.1	2-	1o	1-	2-	1+	0o	1o	1+	7	7	7	8	6	C
30		2+	2+	2	3	3+	1	2+	3-	19	10	0.6	2o	2-	3-	4-	3o	2-	3-	2+	22	23	24	26	21	
Mean											14	0.67									25.0	27.8	22.4	25.1	

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	2o	2o	2+	4-	3-	1+	2+	2-	20	3-	2o	2+	4-	3-	2o	3-	2-	20	148.4	115	133	98	
2	2-	2-	2o	2o	1o	2-	2-	2o	12	3-	2o	2o	2o	1+	1+	2+	2o	15	140.6	90	100	90	
3	3-	0o	0+	1+	1+	0o	1+	2-	8	3-	0+	1-	1+	1o	1-	2+	2-	9	140.8	81	83	90	
4	2o	2+	1o	1-	1+	1+	1o	2-	10	3-	2-	1o	1-	1o	1+	1+	2o	11	145.1	86	99	95	
5	1+	1-	0o	0o	0+	1o	2-	3-	7	1o	1-	0+	0+	0o	1-	3-	3+	10	157.8	102	108	108	
6	3-	1-	1+	2-	2-	3-	3+	1+	17	3-	1+	2-	1+	1o	3-	4-	2-	17	147.4	103	125	97	
7	3o	4o	4o	4o	5-	5-	3-	3o	50	4-	4+	4o	4+	5o	4+	3o	4-	57	170.8	123	156	122	
8	3+	4-	4o	4o	5o	4-	4+	4-	55	4-	3o	3+	4o	5-	4o	5-	4-	52	188.4	146	168	141	
9	3+	4o	4-	4o	4+	3+	4-	4-	48	4-	4-	4-	4-	4o	3+	4-	4-	46	225.5	169	192	182	
10	3-	3-	2-	3o	3o	3o	3+	3+	28	2+	3-	2-	3-	3-	3o	4o	3o	27	243.6	206	218	201	
11	3+	4-	4o	4+	3o	3o	4-	3+	43	3+	4o	4-	3o	3-	3o	4o	4-	41	235.0	205	213	192	
12	2+	2o	2+	2o	2+	3-	4-	3o	22	2+	2+	2-	2o	2o	2o	3o	3-	18	227.1	188	186	183	
13	4-	3o	3+	3o	5-	4o	5+	5-	58	4-	3+	3-	3-	4+	4+	6-	5+	61	219.1	164	179	175	
14	2+	2o	3+	2+	3o	3o	3o	3-	25	3o	2o	3o	3-	3-	2+	3o	3-	23	214.2	146	161	169	
15	2-	0+	2o	1+	2+	1+	2o	1o	12	2+	1+	2+	1+	1+	1o	1+	1+	11	201.1	153	165	155	
16	1+	2-	2-	4o	3+	4+	3o	2+	30	2-	2o	2+	4-	3+	4o	3-	3-	28	228.2	171	175	184	
17	2-	2-	2+	3-	3o	3o	3o	3o	23	3-	2o	3-	3-	3+	3o	3o	3-	26	216.3	166	177	172	
18	3-	2+	3+	3+	3o	3o	4-	4-	32	3+	2o	3-	3-	3-	3o	3+	4-	29	212.9	159	183	168	
19	3-	3-	2+	3-	3-	2-	3-	3+	23	2+	3+	3-	2+	2-	1+	3-	3+	23	205.1	164	179	160	
20	3+	2+	3-	3-	1+	1+	1+	2-	18	3-	3-	2o	3-	1o	1o	2-	2o	16	199.5	152	169	153	
21	2o	3-	3+	2-	2-	3o	3+	3o	24	2-	2o	3o	2o	1-	3+	4o	3+	26	205.0	133	171	159	
22	4-	2+	1+	4-	3o	2-	1+	1o	21	4-	3-	1+	3+	3+	2-	1+	2-	24	187.2	137	135	140	
23	2-	3o	4o	3-	2+	2+	3o	4o	32	2o	3o	4-	2o	2o	2-	3+	4-	27	180.9	110	113	133	
24	2+	3+	4+	5-	3-	3o	3o	2o	37	3-	3-	3-	4+	3o	3o	3+	3-	32	181.9	103	102	134	
25	2-	2o	3-	4+	4-	3+	3+	2+	32	3-	3-	3o	5o	4o	3o	3+	3o	39	179.0	115	100	131	
26	1+	1-	0+	2-	2+	0+	0o	0+	7	2o	1+	1-	1+	2-	0o	0o	0+	6	167.7	95	100	119	
27	0o	0o	0o	0+	1+	1-	0o	1o	3	0+	0+	0o	1-	1+	0+	0o	2-	4	164.5	124	113	116	
28	2-	2-	2+	3-	2+	3o	2o	2+	19	3-	3-	2o	3-	2o	3-	2+	3+	22	170.1	105	108	122	
29	2-	1o	1-	2-	1+	0o	1-	1o	6	2-	1+	1o	2-	1o	0o	1o	2-	8	159.5	78	81	110	
30	2-	1+	2+	3+	3o	1+	3-	2+	20	3-	2+	3-	4-	3o	2-	2+	3-	23	158.3	93	97	109	
Mean									24.7									25.0	187.4	132.7	143.0	140.4	

Daily Average Indices Ap
Dec 1998 - Nov 1999

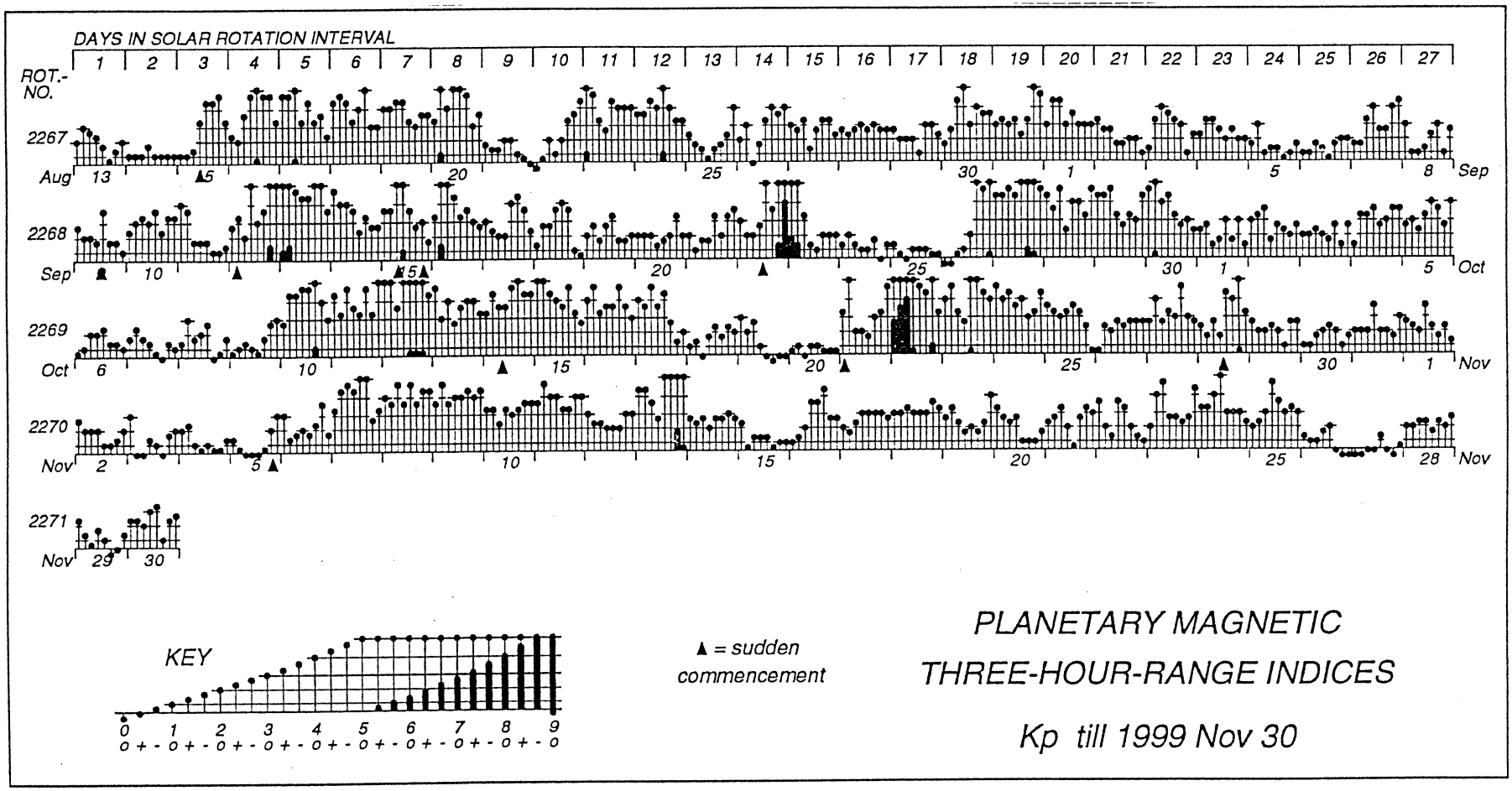


Day	Dec 98	Jan 99	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	11	6	0	41	12	21	6	6	8	20	9	10
2	4	7	1	22	10	11	10	26	6	9	13	7
3	7	4	5	16	10	8	7	9	4	15	8	5
4	10	7	9	30	14	4	8	2	10	11	17	5
5	14	8	10	16	12	7	4	2	7	6	18	5
6	7	10	12	13	10	9	3	8	15	5	6	10
7	8	9	13	22	11	7	5	4	10	18	5	31
8	4	17	6	12	8	4	13	6	7	8	7	29
9	6	11	3	21	6	5	14	4	13	9	6	28
10	6	6	6	34	16	4	4	4	5	16	33	18
11	33	6	20	15	10	2	4	4	6	10	29	26
12	7	5	24	11	8	8	5	10	8	31	46	10
13	3	40	8	6	3	25	4	4	8	46	23	43
14	5	29	8	15	7	8	2	5	4	21	31	11
15	6	20	15	14	4	6	6	8	19	27	31	5
16	12	8	4	3	18	3	7	4	29	31	26	14
17	0	6	17	5	47	2	6	3	29	16	21	12
18	3	5	80	6	6	27	6	4	28	13	6	17
19	9	4	40	6	12	10	4	4	24	9	6	12
20	12	8	3	5	24	7	2	5	36	8	3	9
21	4	6	4	5	12	5	2	14	5	11	20	12
22	4	14	6	3	4	3	2	25	12	50	91	11
23	6	21	9	6	5	8	4	11	31	28	32	19
24	4	17	9	4	6	11	4	11	29	5	26	21
25	12	9	6	8	4	15	3	8	9	4	16	18
26	15	5	1	6	6	6	18	6	16	20	10	4
27	2	9	4	4	14	7	25	5	13	43	19	2
28	7	7	17	6	19	7	24	9	12	27	21	8
29	22	7		28	24	3	6	6	10	25	9	4
30	6	4		22	23	4	3	53	23	26	6	10
31	4	3		15		2		28	22		10	
Mean	8	10	12	14	12	8	7	10	15	19	19	14

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

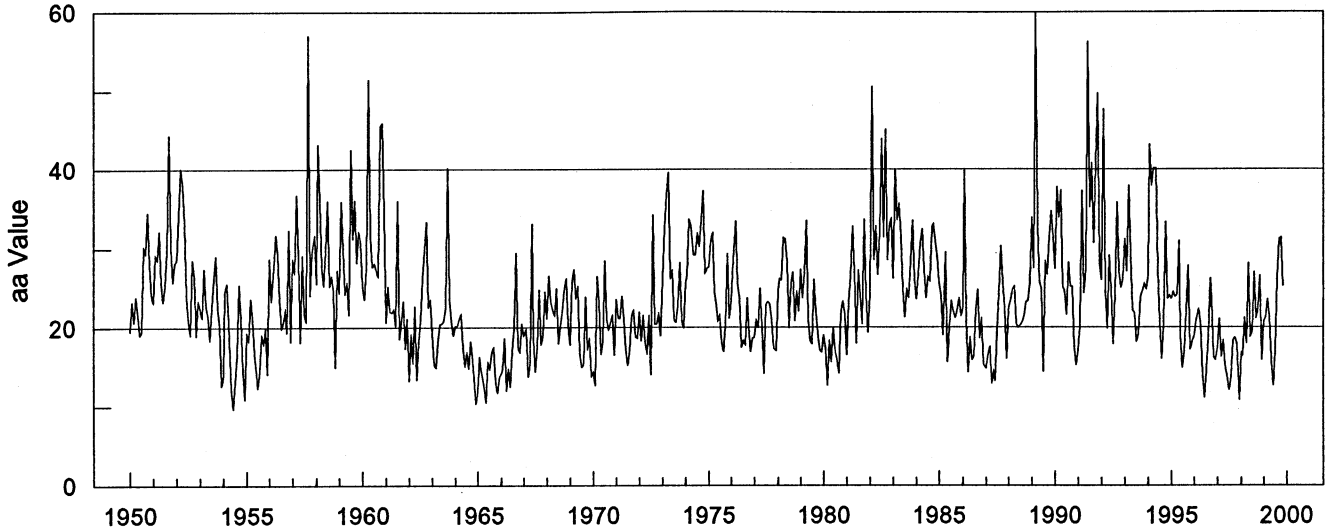
GeoForschungsZentraum Potsdam

Kp through November 30, 1999



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

Monthly Mean aa Index Jan 1950 - Nov 1999



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9	14.4	28.4	26.7	31.4	34.7	31.4	31.0
1990	27.4	37.8	33.9	37.4	25.1	24.6	21.6	28.2	25.1	25.1	17.4	15.2	26.6
1991	17.2	20.1	37.3	24.3	27.3	56.2	35.2	40.8	30.7	44.1	49.7	28.0	34.2
1992	25.9	47.7	24.5	19.8	29.1	24.8	17.9	24.1	35.8	27.0	25.0	26.1	27.3
1993	31.2	27.1	37.9	29.2	22.1	21.8	18.2	19.2	23.8	24.6	25.5	24.8	25.5
1994	26.5	43.2	37.9	40.2	40.2	27.2	20.6	16.0	20.2	33.3	23.6	24.1	29.4
1995	23.6	24.5	23.8	24.2	30.9	19.1	14.9	17.0	22.2	27.9	17.2	18.2	22.0
1996	18.8	20.8	22.3	20.5	14.0	11.1	14.7	18.8	26.2	23.5	16.3	15.9	18.6
1997	17.4	21.0	16.3	18.4	15.1	13.7	12.1	13.7	18.4	18.7	18.0	10.8	16.1
1998	16.8	16.4	21.2	18.0	28.1	18.8	19.3	27.0	21.1	22.4	26.5	15.9	21.0
1999	20.8	21.3	23.5	21.3	15.8	12.7	16.9	26.2	31.2	31.3	25.1		22.4

PLANETARY GEOMAGNETIC ACTIVITY

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

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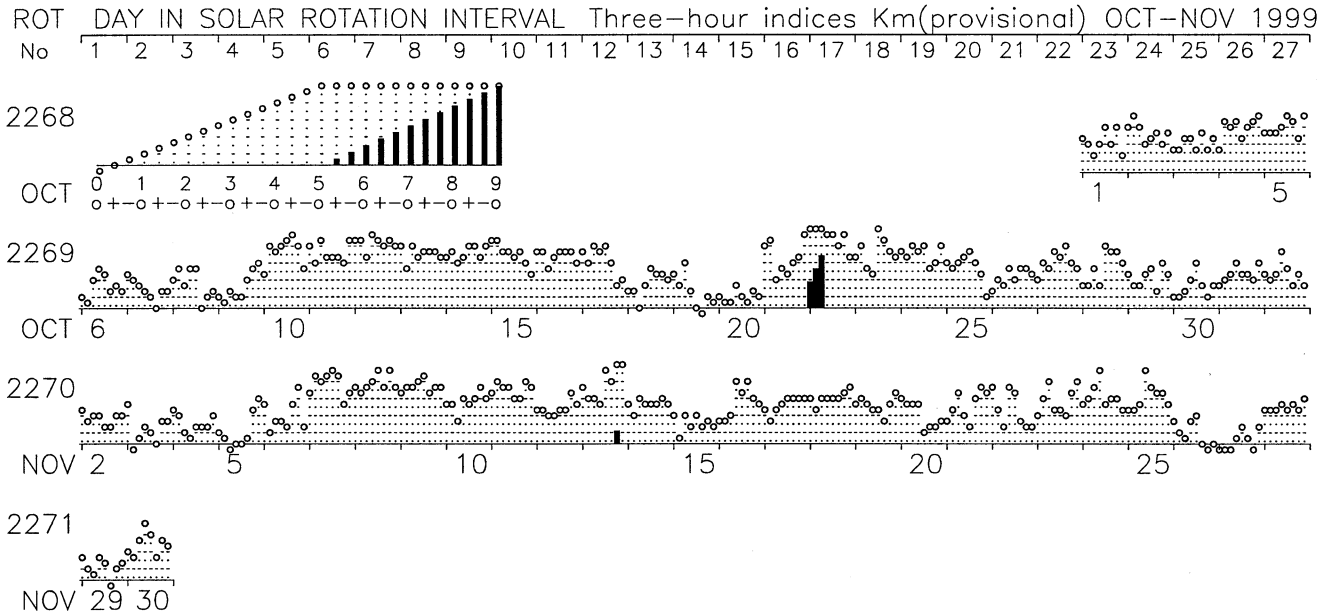
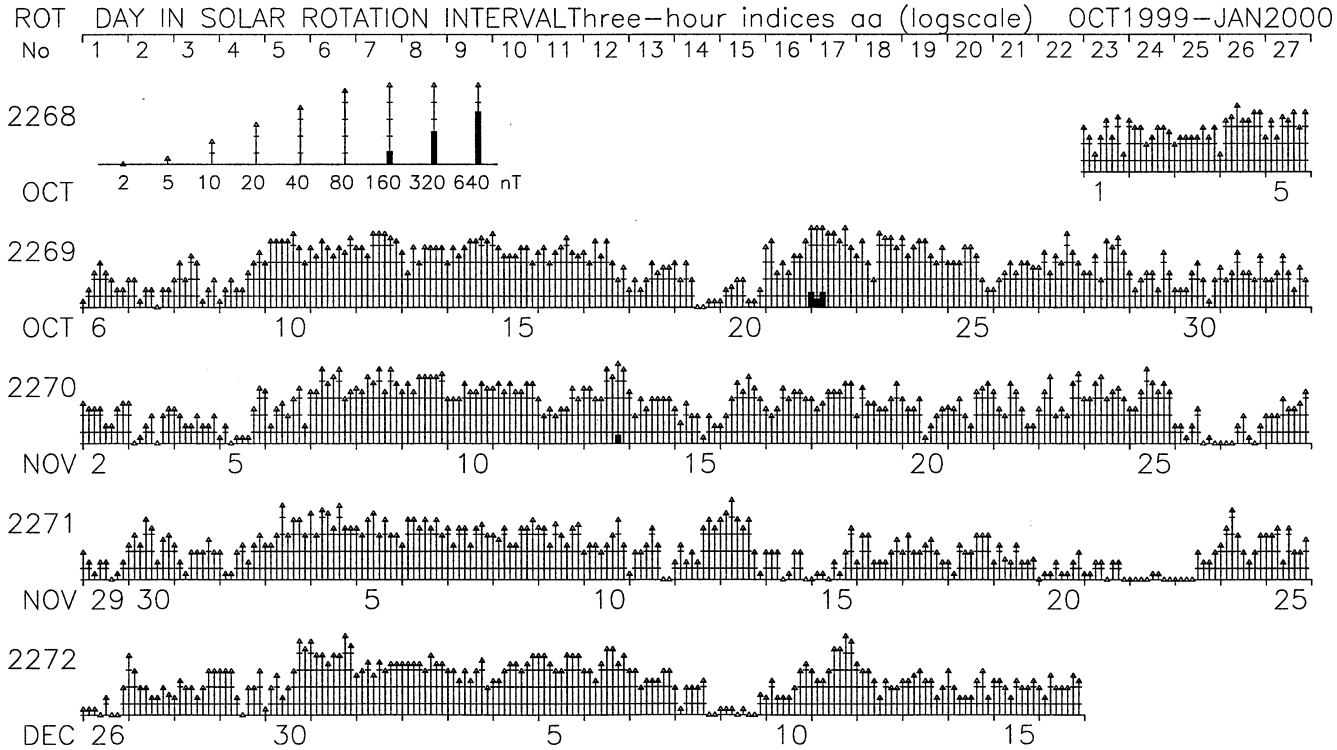


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.



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

WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY
HOURLY EQUATORIAL DST VALUES(PROVISIONAL)
NOVEMBER 1999

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

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-7	-8	-4	-4	-8	-10	-11	-13	-17	-28	-31	-19	-16	-12	-14	-17	-13	-12	-12	-11	-8	-6	-9	-13
2	-14	-10	-11	-12	-14	-17	-17	-20	-23	-21	-14	-8	-6	-5	-6	-9	-12	-11	-9	-6	-10	-9	-13	-20
3	-12	-10	-12	-15	-17	-19	-17	-15	-14	-8	-3	1	1	1	0	-3	-2	-2	-3	-3	-3	-3	0	1
4	2	-1	-2	-3	-5	-6	-3	0	-2	0	1	5	8	10	10	9	7	6	4	3	3	4	-1	-3
5	-2	6	10	11	11	10	8	5	3	2	1	5	6	10	8	4	3	0	-1	3	9	10	4	-1
6	-11	-4	-3	-2	-1	0	3	2	0	0	0	-2	-1	0	-1	-1	7	7	-6	-3	3	8	3	4
7	4	-11	-9	-3	-4	-31	-50	-48	-44	-34	-27	-41	-64	-63	-71	-77	-65	-59	-61	-62	-56	-49	-41	-38
8	-52	-49	-44	-40	-42	-44	-37	-43	-43	-42	-41	-46	-60	-81	-79	-62	-47	-46	-54	-45	-50	-50	-50	-48
9	-47	-45	-43	-44	-53	-53	-49	-44	-47	-54	-55	-61	-57	-43	-39	-44	-46	-40	-32	-28	-30	-32	-34	-33
10	-31	-31	-29	-30	-25	-23	-22	-20	-19	-18	-15	-16	-21	-20	-25	-23	-23	-20	-24	-22	-17	-17	-20	-22
11	-23	-20	-23	-26	-36	-49	-53	-48	-47	-51	-52	-50	-47	-41	-37	-36	-38	-42	-46	-41	-33	-39	-38	-37
12	-37	-35	-34	-34	-34	-33	-32	-32	-29	-26	-26	-30	-29	-28	-28	-26	-28	-28	-29	-26	-27	-30	-37	-43
13	-46	-45	-48	-53	-54	-62	-63	-64	-65	-56	-53	-55	-45	-57	-66	-77	-64	-69	-71	-90	-97	-90	-100	-90
14	-85	-81	-78	-70	-69	-70	-68	-63	-59	-63	-62	-61	-62	-60	-53	-54	-53	-49	-43	-42	-44	-44	-42	-36
15	-35	-33	-30	-27	-27	-28	-27	-28	-30	-31	-28	-27	-28	-27	-27	-28	-24	-21	-22	-19	-14	-13	-15	-15
16	-16	-14	-14	-14	-17	-19	-21	-20	-14	-12	-19	-34	-58	-74	-81	-86	-85	-68	-56	-47	-43	-36	-31	-30
17	-26	-31	-29	-24	-26	-27	-23	-30	-36	-31	-28	-23	-31	-25	-24	-25	-22	-24	-29	-33	-36	-35	-38	-41
18	-40	-35	-34	-32	-28	-29	-41	-46	-34	-33	-29	-24	-27	-31	-32	-30	-25	-23	-19	-18	-22	-21	-24	-26
19	-30	-37	-40	-34	-31	-34	-35	-34	-29	-27	-28	-30	-30	-33	-36	-36	-33	-32	-31	-32	-32	-27	-27	-26
20	-23	-22	-20	-17	-16	-20	-16	-14	-13	-18	-12	-11	-11	-11	-14	-13	-13	-12	-9	-5	-5	-3	-5	-1
21	-5	-8	-8	-8	-13	-17	-23	-20	-21	-23	-15	-11	-12	-9	-8	-5	-1	5	-5	-7	-12	-2	-3	-5
22	2	1	-1	8	-4	-13	-14	-17	-18	-17	-10	-28	-20	-25	-24	-21	-25	-26	-22	-13	-8	-5	-4	-2
23	-2	0	1	0	-1	-10	-20	-22	-29	-27	-26	-28	-32	-34	-36	-35	-34	-35	-38	-36	-26	-26	-38	-30
24	-25	-29	-32	-30	-29	-27	-24	-21	-32	-52	-44	-28	-25	-29	-28	-27	-17	-17	-15	-8	0	0	-2	-1
25	-5	-5	-5	-11	-17	-13	-14	-15	-8	-5	0	-21	-13	-6	-12	-7	-11	-12	-16	-18	-17	-18	-18	-18
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28	10	10	7	4	5	-1	1	-4	-13	-16	-9	-1	-1	1	1	3	4	-4	-9	-7	-9	-9	-8	-7
29	-5	-4	-8	-7	-7	-8	-9	-7	-3	1	2	2	3	4	4	3	2	2	2	3	5	5	5	6
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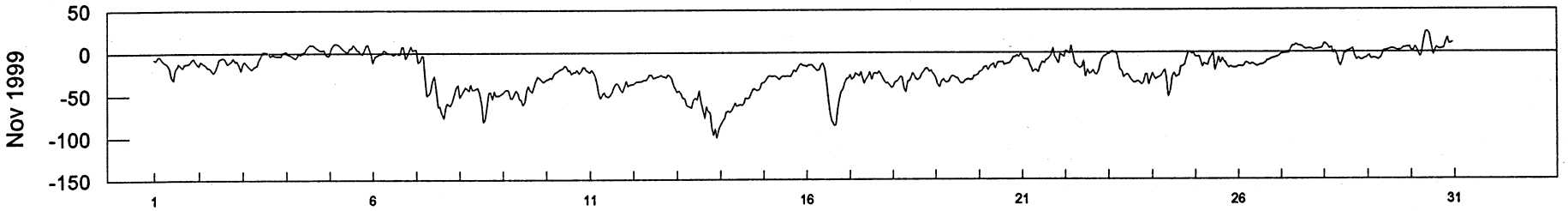
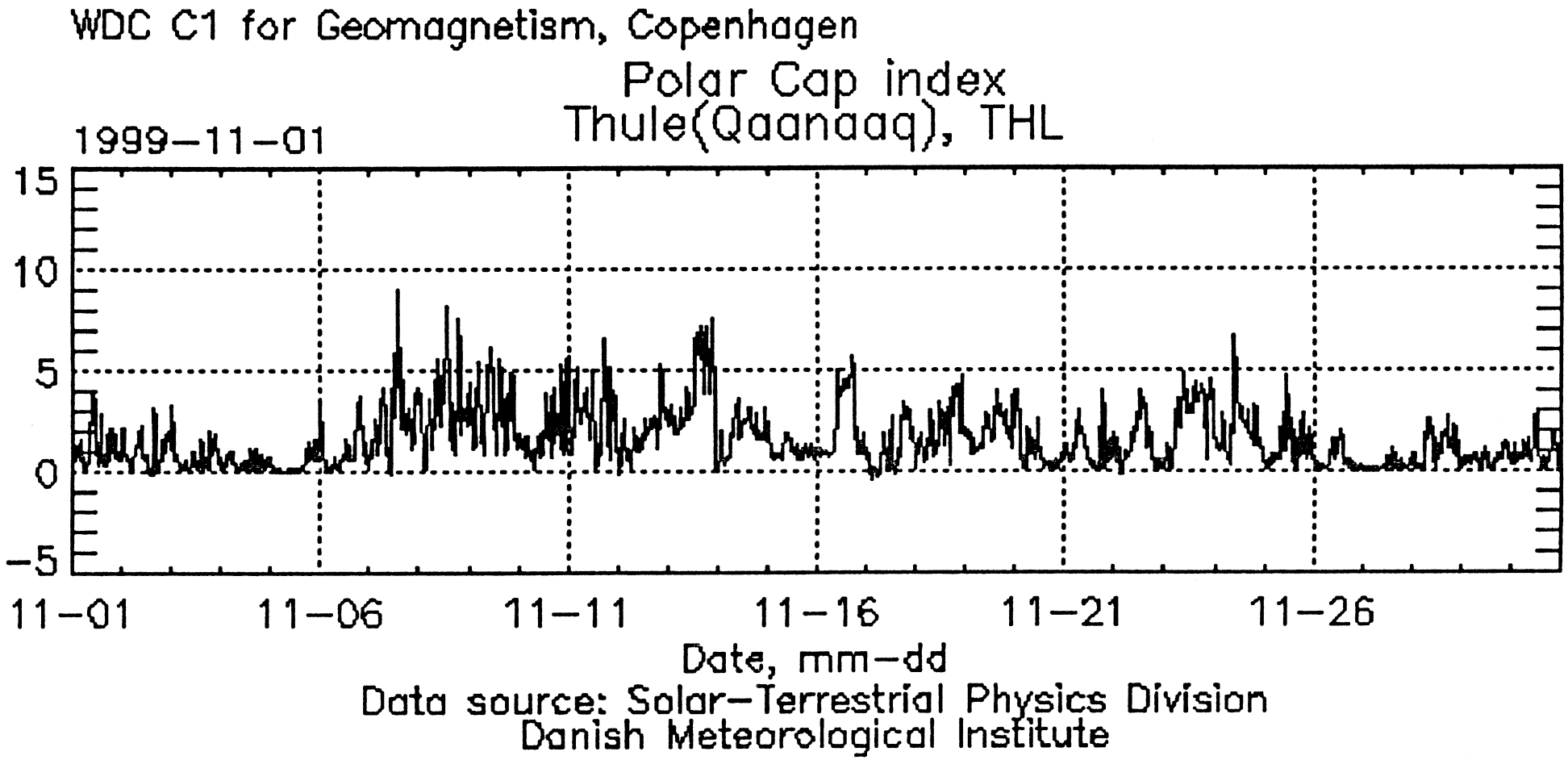
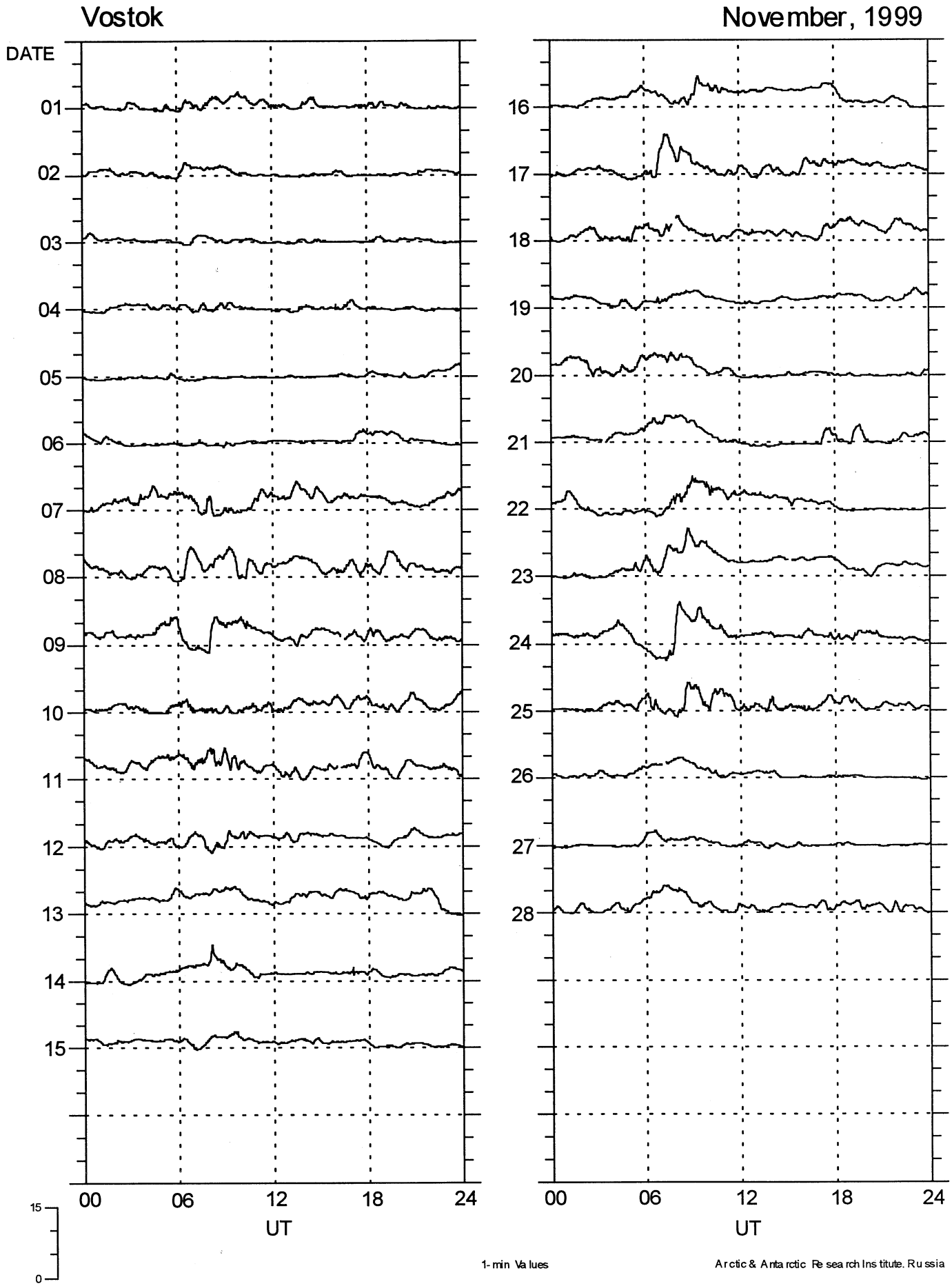



WDC C1 for Geomagnetism, Copenhagen
Polar Cap index
Thule(Qaanaaq), THL
1999-11-01
15
10
5
0
-5
11-01
11-06
11-11
11-16
11-21
11-26
Date, mm-dd
Data source: Solar-Terrestrial Physics Division
Danish Meteorological Institute

PC-INDEX


Vostok
November, 1999
DATE
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0
1-min Values
Arctic & Antarctic Research Institute, Russia

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

NOVEMBER 1999

Sta	Geomag Lat	Commencement Day	Commencement Time (UT)	Type	SC Amplitudes D (Min)	SC Amplitudes H (Gamma)	SC Amplitudes Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	Ranges H (Gamma)	Ranges Z (Gamma)	End Day	End Hour (UT)
KRC	16.4N	06	2213	..	..	..	..	07(6)	6	6	139	62	08	04
UJJ	13.6N	06	1600	..	..	..	..		-	3	133	48	07	23
NGP	11.3N	06	1600	..	..	..	..		-	4	169	47	07	23
ABG	09.4N	06	1600	..	..	..	..	07(4,6)	6	3	169	56	07	23
HYB	07.6N	06	1600	..	..	..	..	07(5,6) 08(5)	6	4	191	46	09	24
PND	02.0N	06	1600	..	..	..	..		-	3	223	80	07	23
TIR	00.6S	06	1600	..	..	..	..		-	2	293	96	07	23
ETT	00.7S	07	0000	..	..	..	..		-	--	282	73	09	23
KRC	16.4N	08	0450	..	..	..	..	08(6)	6	5	140	59	09	21
UJJ	13.6N	08	0900	..	..	..	..		-	3	111	25	09	23
NGP	11.3N	08	0900	..	..	..	..		-	2	135	20	09	23
ABG	09.4N	08	0900	..	..	..	..	08(5,6,7) 09(5)	5	2	137	28	09	23
PND	02.0N	08	0900	..	..	..	..		-	2	150	61	09	23
TIR	00.6S	08	0900	..	..	..	..		-	3	191	80	09	23
ETT	00.7S	11	0000	..	..	..	..		-	--	134	50	12	15
UJJ	13.6N	12	1900	..	..	..	..		-	4	107	15	14	24
NGP	11.3N	12	1900	..	..	..	..		-	4	134	13	14	24
ABG	09.4N	12	1900	..	..	..	..	13(5)	6	4	127	25	14	24
PND	02.0N	12	1900	..	..	..	..		-	4	123	69	14	24
TIR	00.6S	12	1900	..	..	..	..		-	4	176	86	14	24
ETT	00.7S	12	2300	..	..	..	..		-	--	166	66	14	19
KRC	16.4N	13	1114	SC	- 2.0	28	17	13(8)	7	6	115	78	14	17
HYB	07.6N	13	0500	..	..	..	..	13(5,6,7)	5	3	130	20	14	20
HER	33.6S	13	12--	..	..	..	..	13(7)	5	40	59	106	13	23
KRC	16.4N	16	0602	..	..	..	..	16(4,5,6)	5	5	127	69	17	07
UJJ	13.6N	16	0800	..	..	..	..		-	4	132	19	17	23
NGP	11.3N	16	0800	..	..	..	..		-	3	168	28	17	23
ABG	09.4N	16	0800	..	..	..	..	16(4,5,6)	5	4	165	34	17	23
HYB	07.6N	16	0000	..	..	..	..	16(5,6)	6	4	179	32	17	23
PND	02.0N	16	0800	..	..	..	..		-	2	183	69	17	23
TIR	00.6S	16	0800	..	..	..	..		-	2	233	85	17	23
ETT	00.7S	16	0000	..	..	..	..		-	--	225	71	17	22
HYB	07.6N	21	1400	..	..	..	..	21(7) 22(4)	4	3	96	28	23	10
HYB	07.6N	23	1800	..	..	..	..	24(3) 25(4)	5	3	97	27	25	24
ETT	00.7S	23	1900	..	..	..	..		-	--	132	67	25	23
KRC	16.4N	24	0346	..	..	..	..	24(4)	6	4	92	70	25	19
UJJ	13.6N	24	0700	..	..	..	..		-	3	98	18	25	23
NGP	11.3N	24	0700	..	..	..	..		-	3	111	26	25	23
ABG	09.4N	24	0700	..	..	..	..	22(4,5) 25(4)	5	3	93	29	25	23
PND	02.0N	24	0700	..	..	..	..		-	3	103	66	25	23
TIR	00.6S	24	0700	..	..	..	..		-	3	142	94	25	23
HER	33.6S	25	06--	..	..	..	..	25(4)	5	35	73	98	25	23

Stations:

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

Stations reporting no storms observed: BJI

Because the Trivandrum Observatory closed down on 28.10.99, the data of Tirunelveli (TIR) Observatory is added as a substitute station.

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

NOVEMBER 1999

Storm Sudden Commencements (SSC)

Day	Time	Quality: Station Group*
05	2010	C: NGK BDV GCK EBR*

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
02	0927-0936	NGK
04	0108-0124	NAG
06	0854-0909	NGK BDV
14	0756-0806	GNA
16	0237-0310	KNY+
16	0408-0420	MMB+ KAK+
18	0948-1017	NAG
26	0118-0210	MMB+ KAK+ KNY+
26	1341-1400	BDV+ HER
27	1208-1222	NGK BDV+ NAG HER
30	1038-1049	NGK
30	1226-1245	NAG

REPORTING OBSERVATORIES (up to the 2nd of January 2000):
SOD NUR NGK BDV CLF HRB NAG GCK MMB EBR COI BJI SPT KAK KNY QUE LNP HYB 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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