AUGUST 2003 NUMBER 708 - Part I

Solar-Geophysical Data prompt reports

Data for June and July 2003
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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AUGUST 2003 NUMBER 708 - Part I

Solar-Geophysical Data prompt reports

Data for June and July 2003

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SOLAR-GEOPHYSICAL DATA

Number 708

(Issued in Two Parts)

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July 2003

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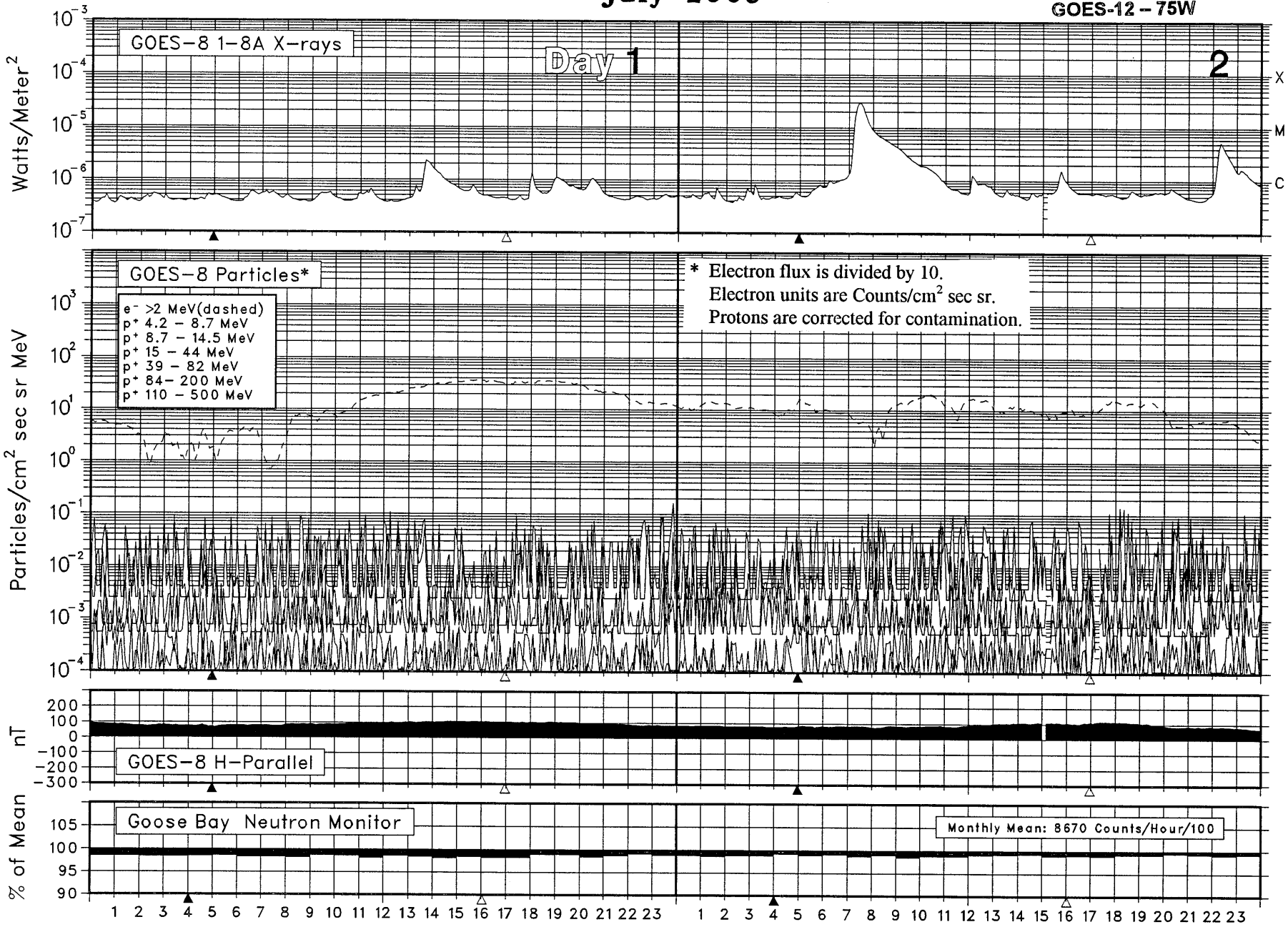
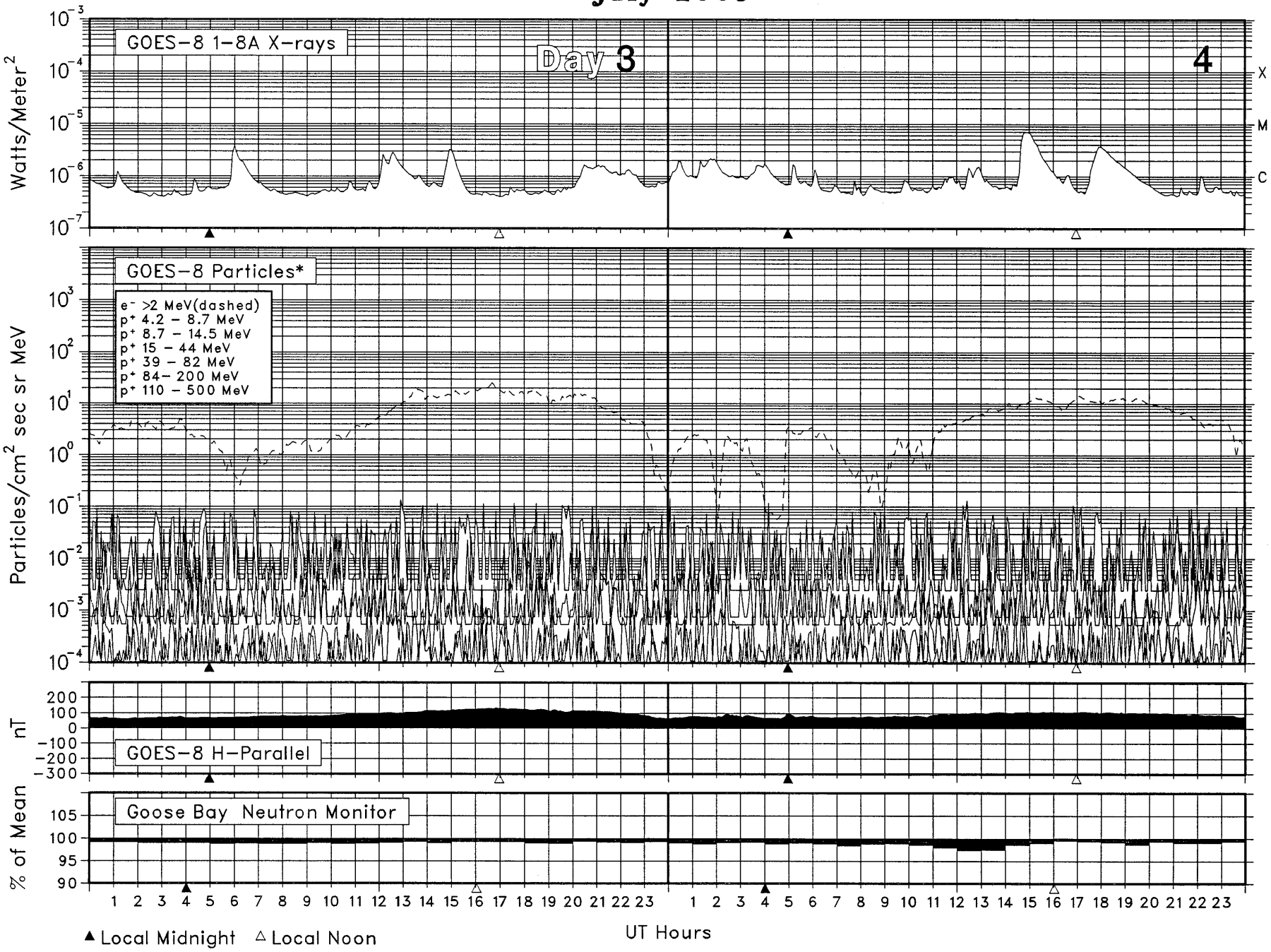
GOES-11 – 113W
GOES-12 – 75W

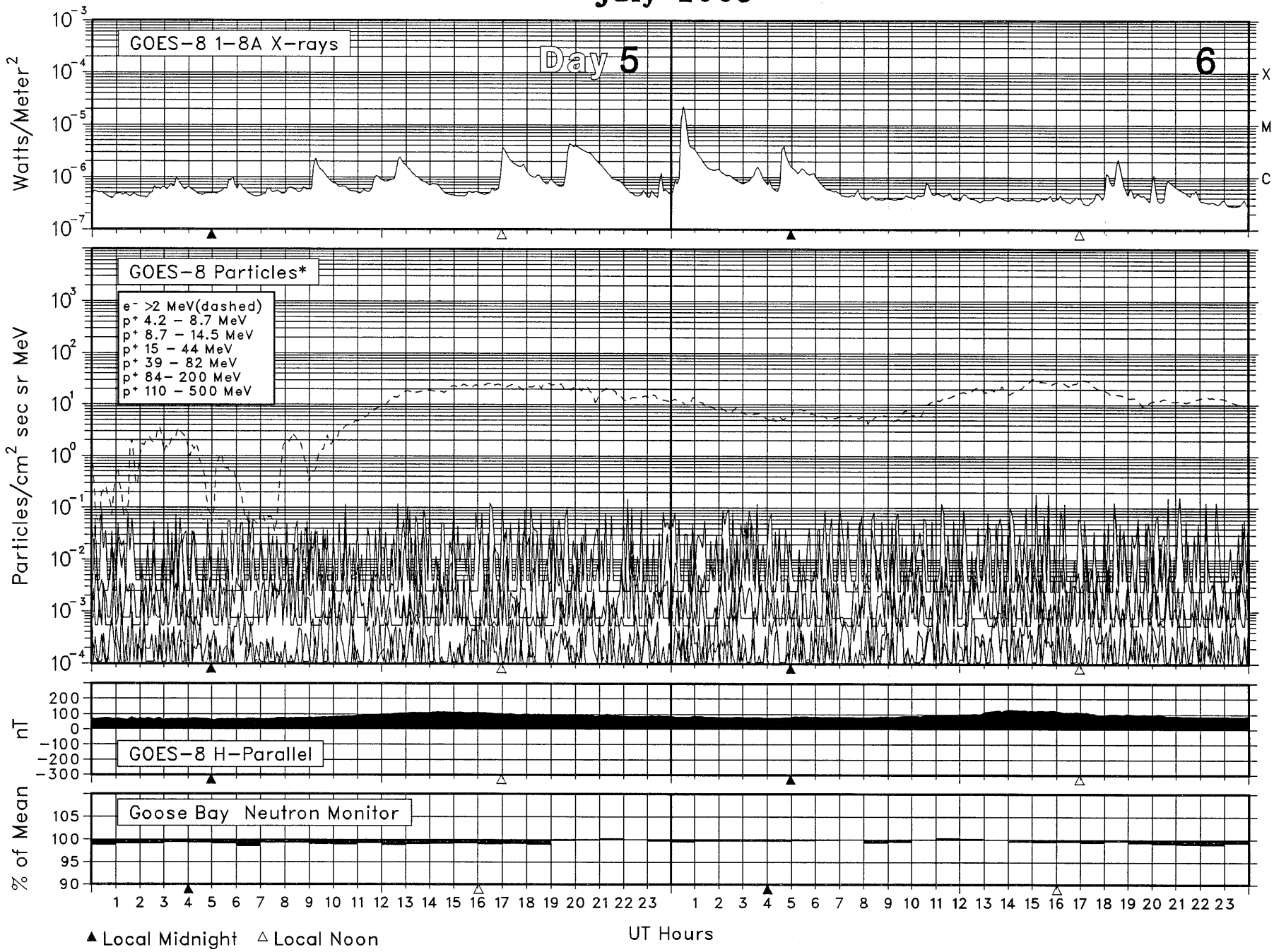


GOES-12 data replace GOES-8 X-rays, electrons and magnetometer data after May 2003.
GOES 11 protons replace GOES-8 protons after June 19, 2003.

SOLAR-TERRESTRIAL ENVIRONMENT
July 2003



SOLAR-TERRESTRIAL ENVIRONMENT
July 2003



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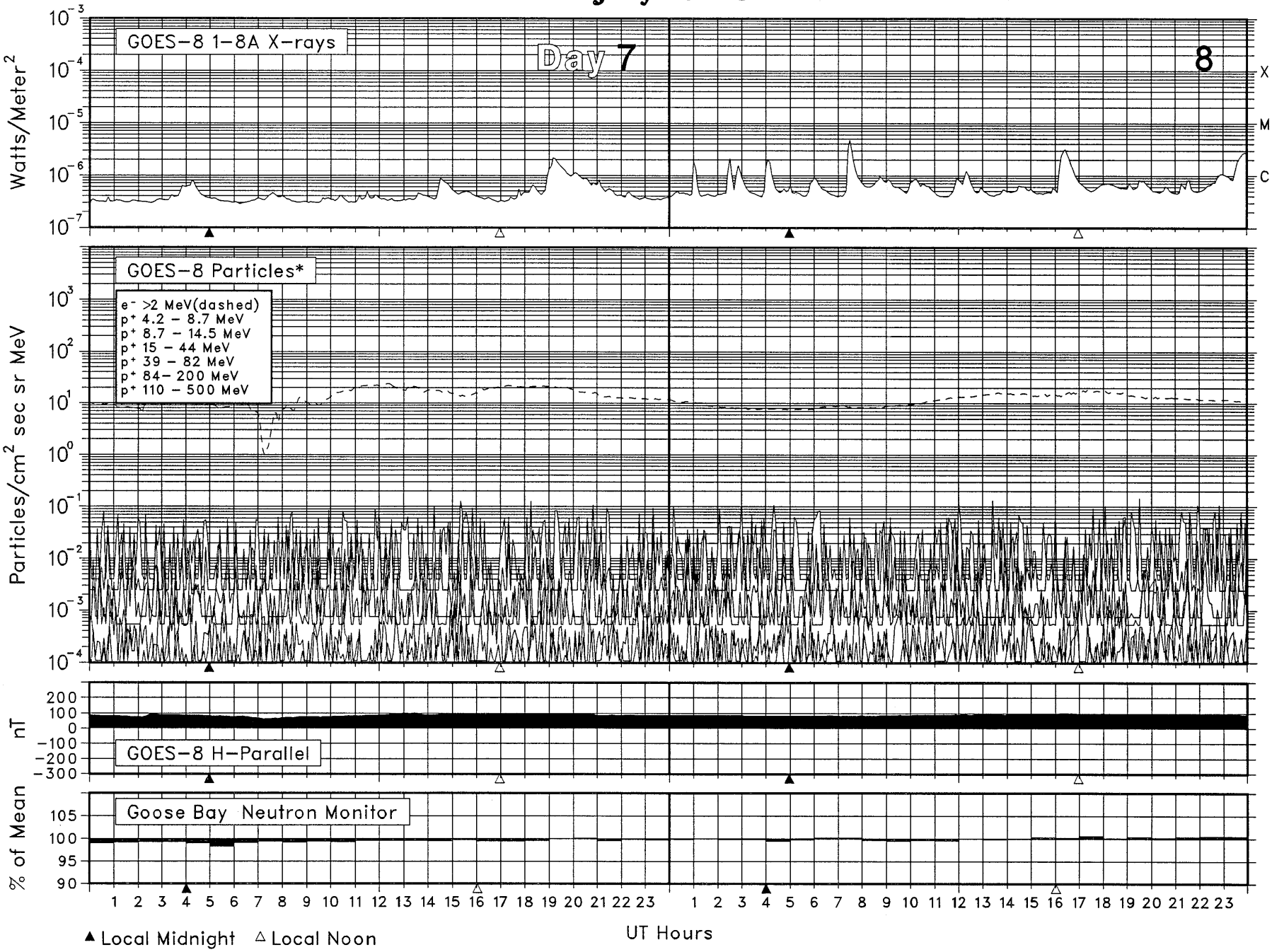
July 2003



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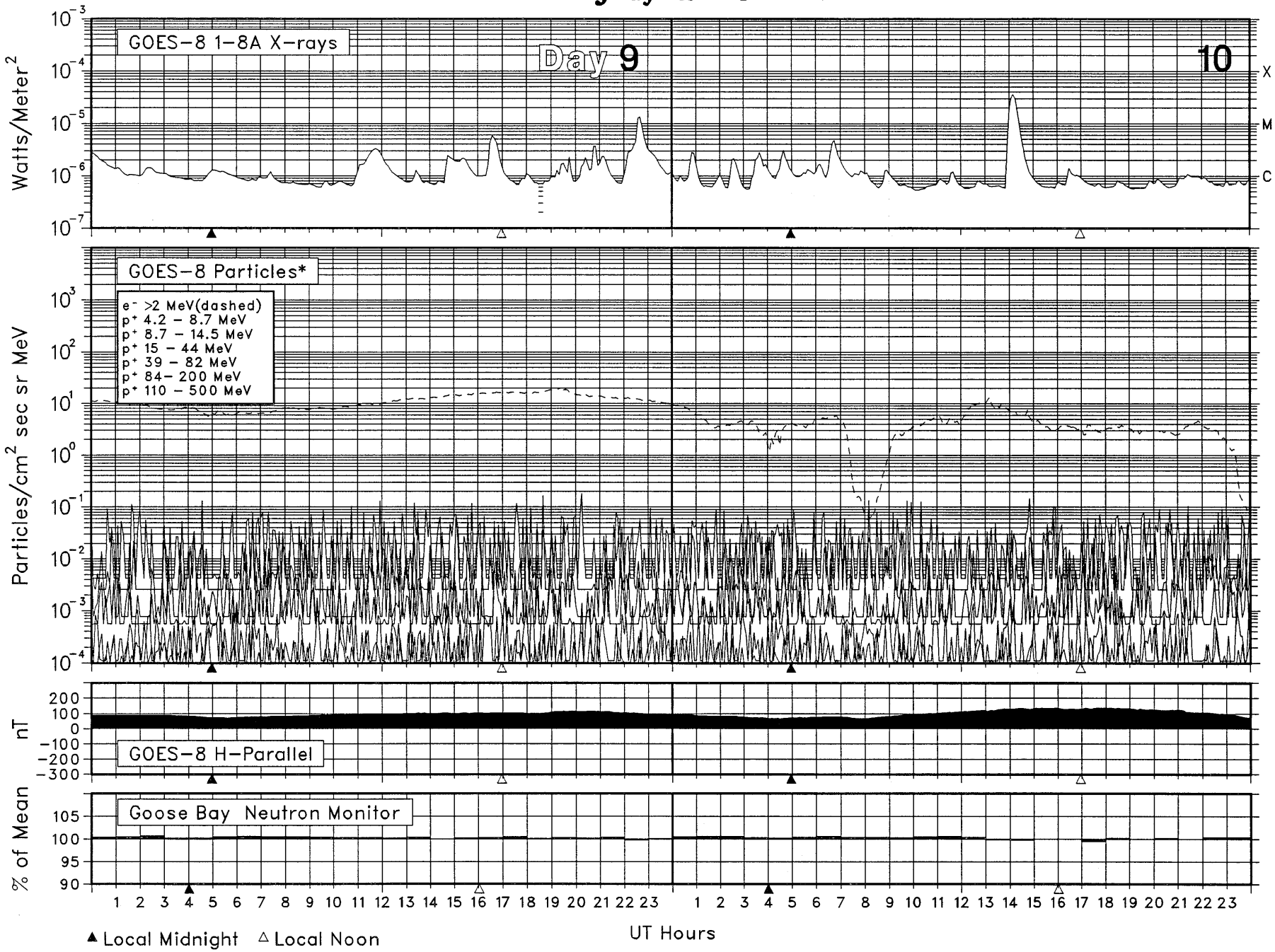
July 2003



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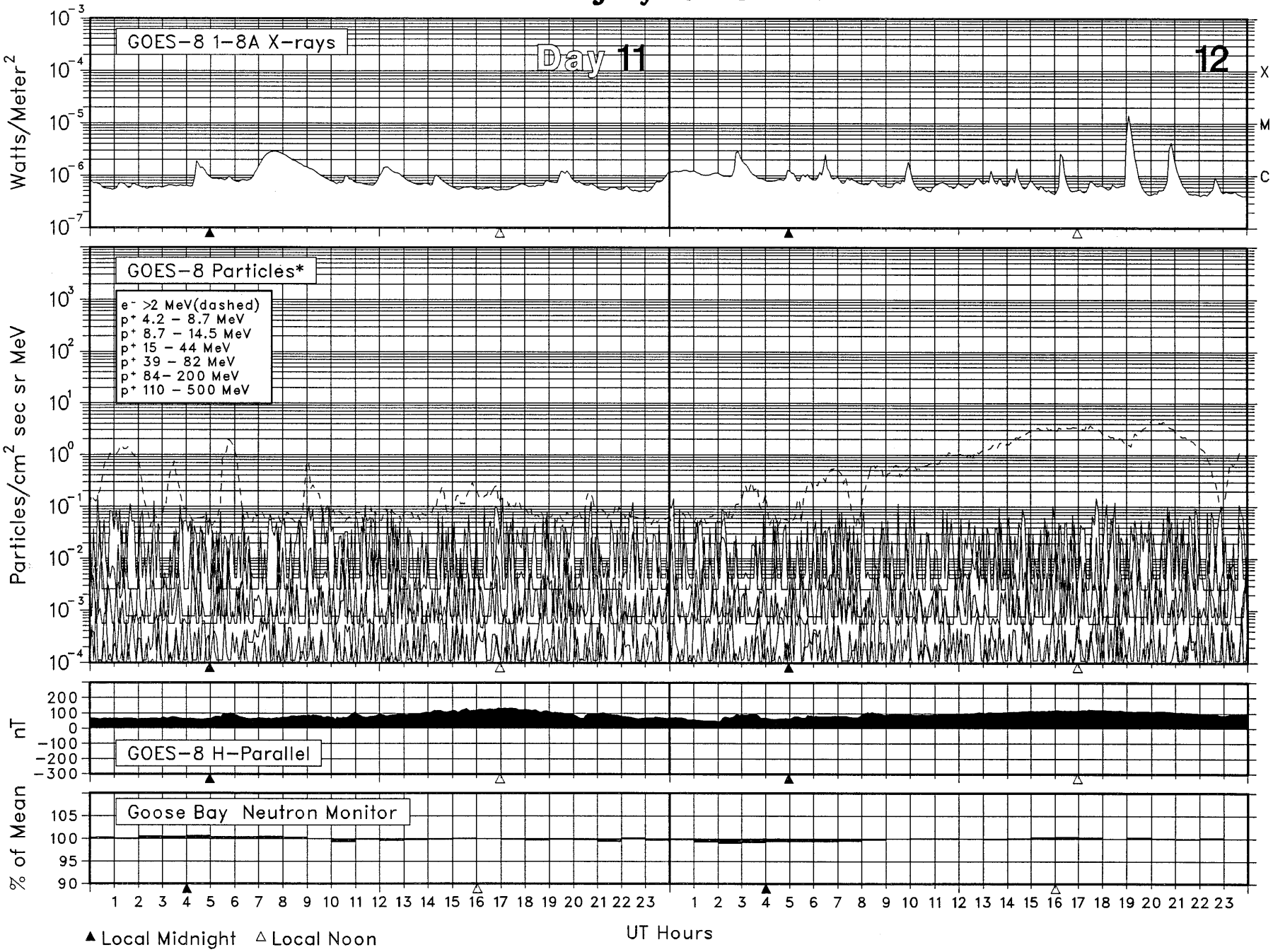
July 2003



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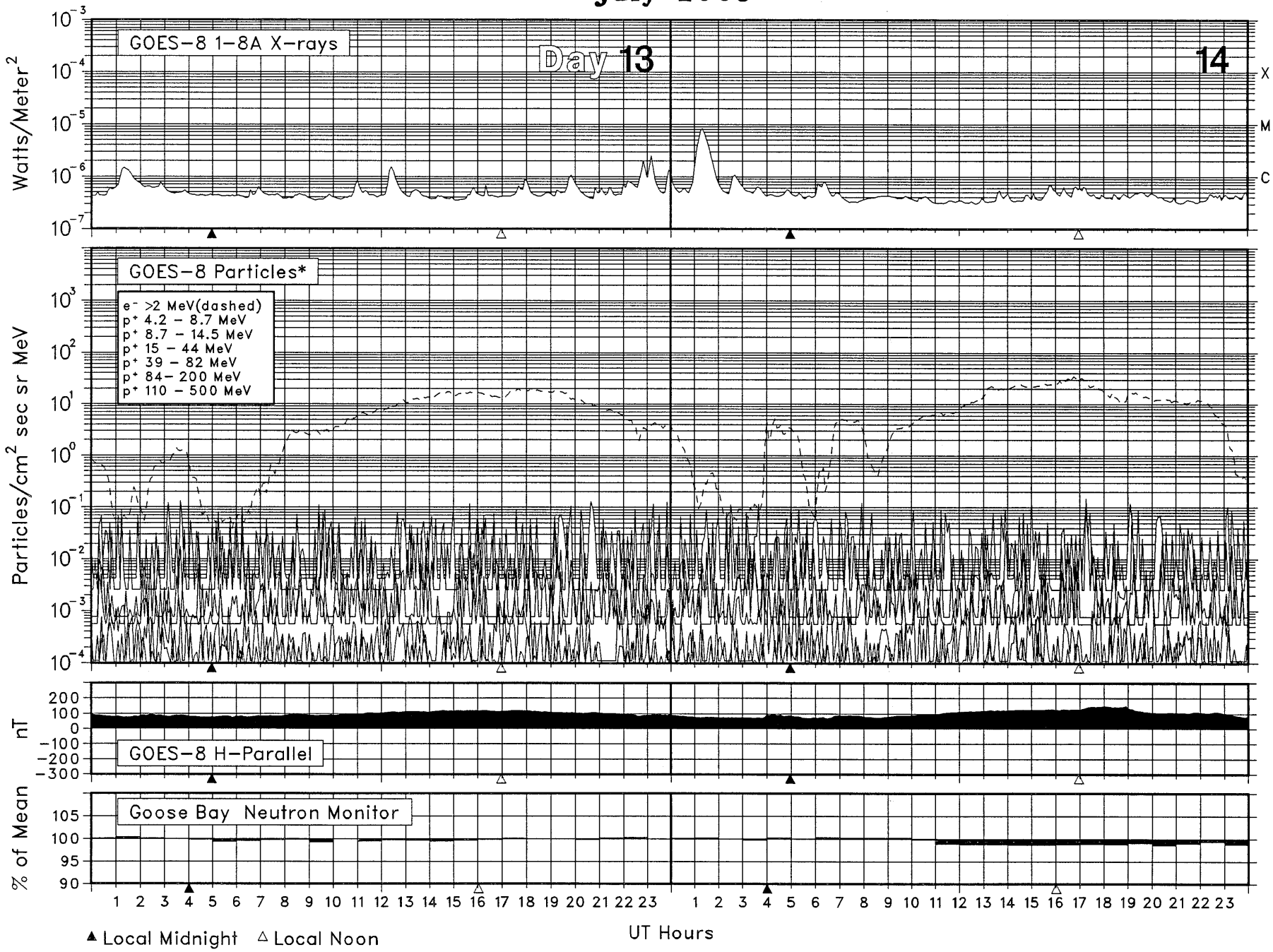
July 2003



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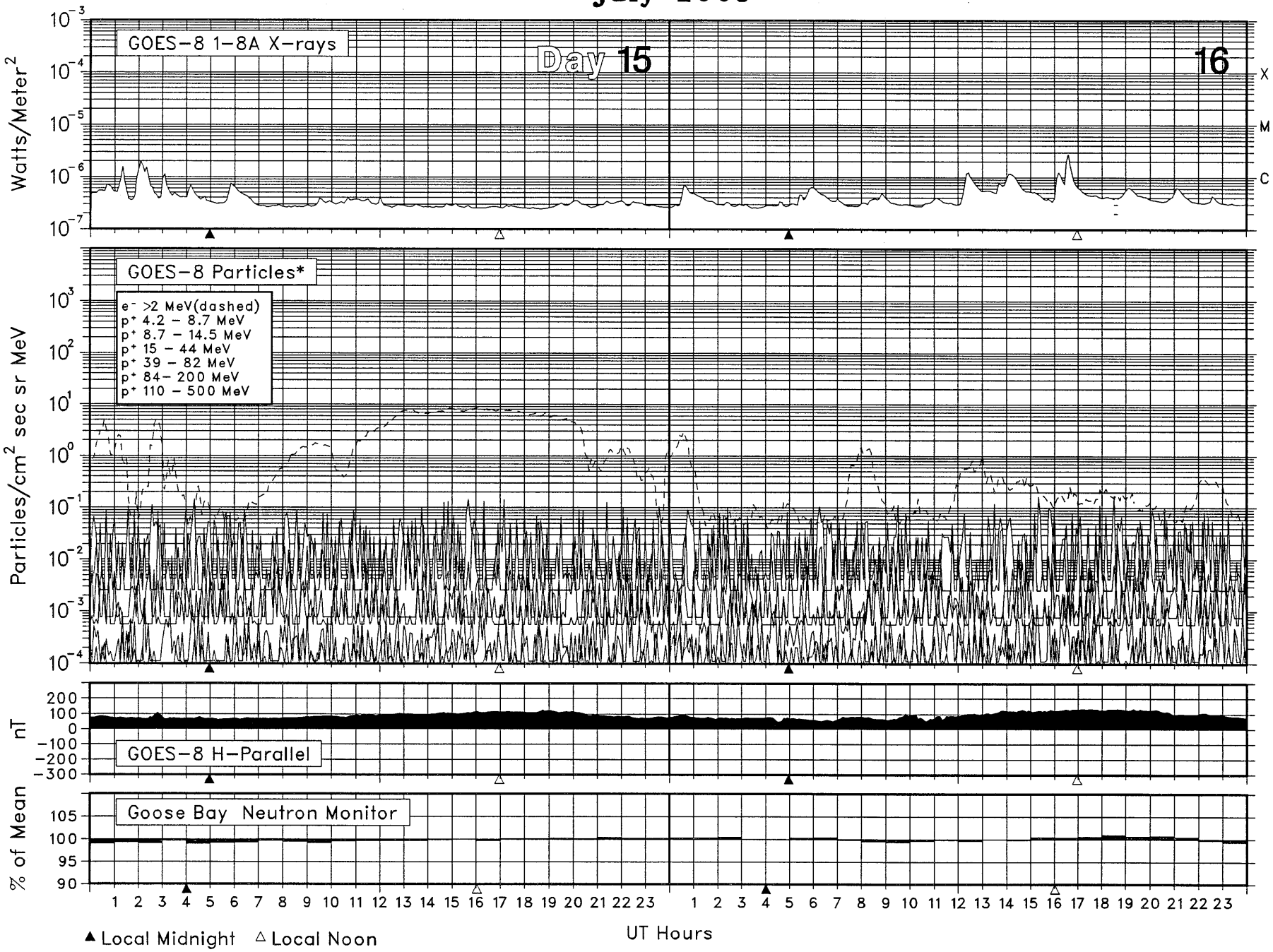

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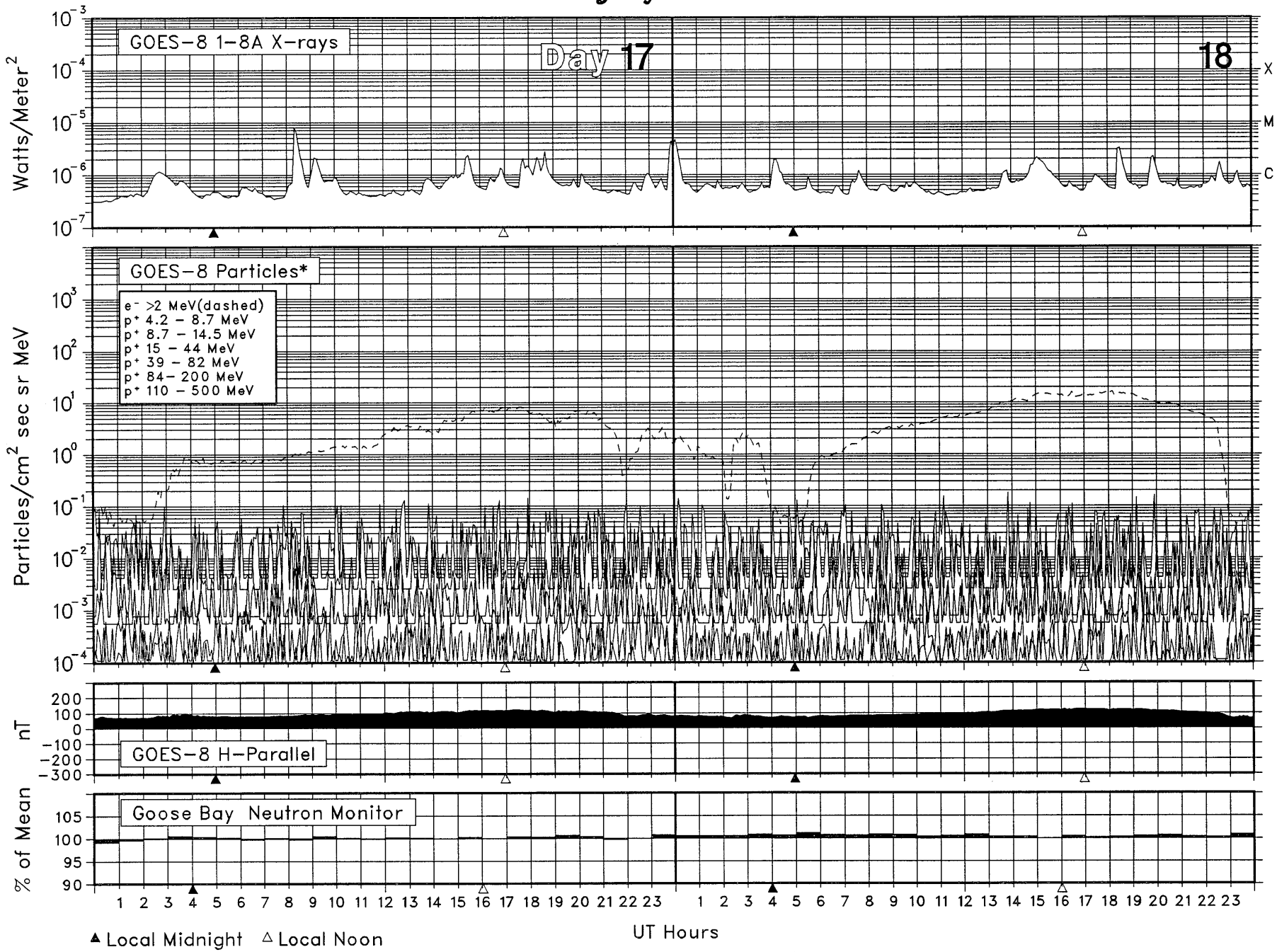
July 2003



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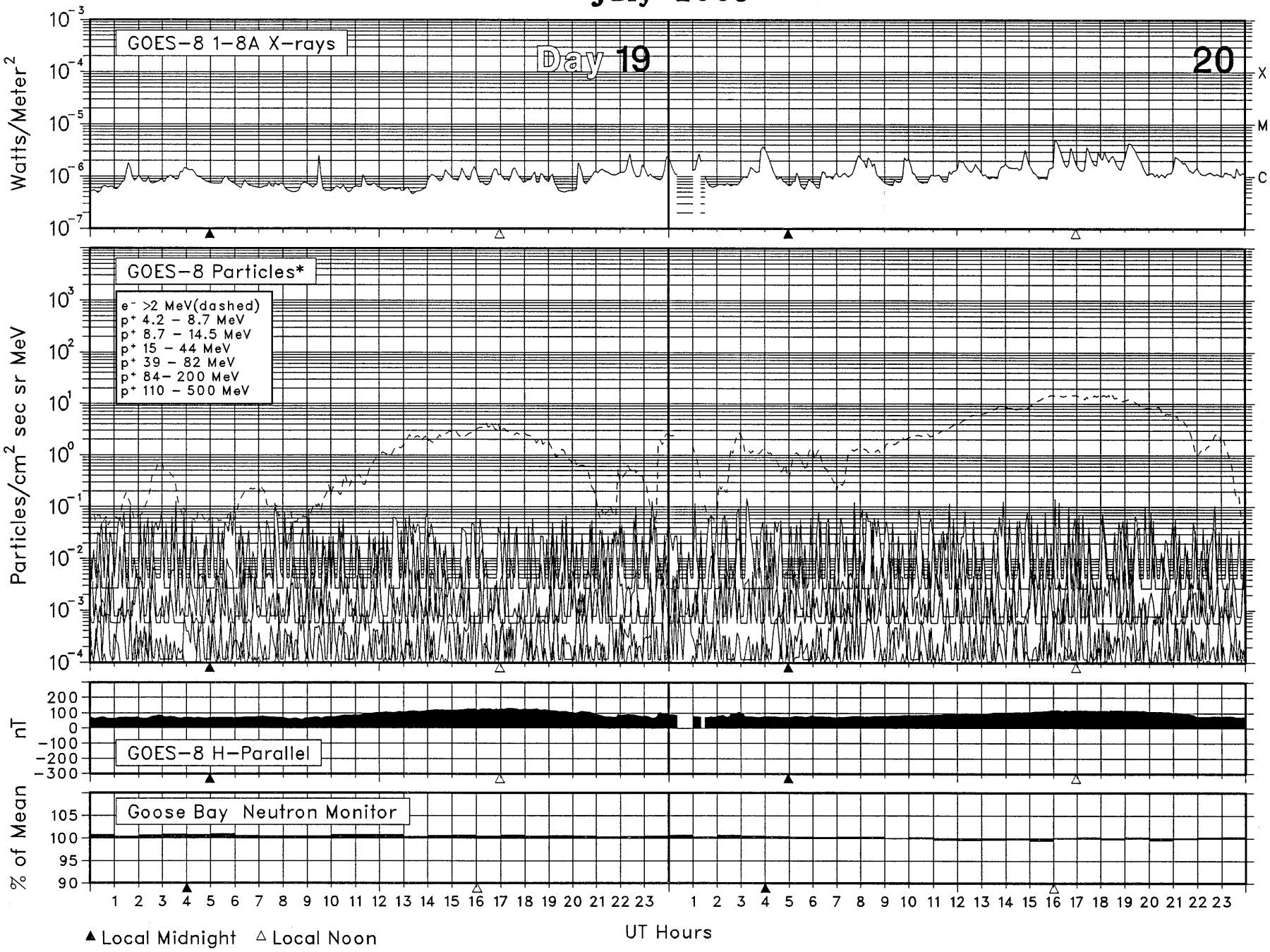
July 2003



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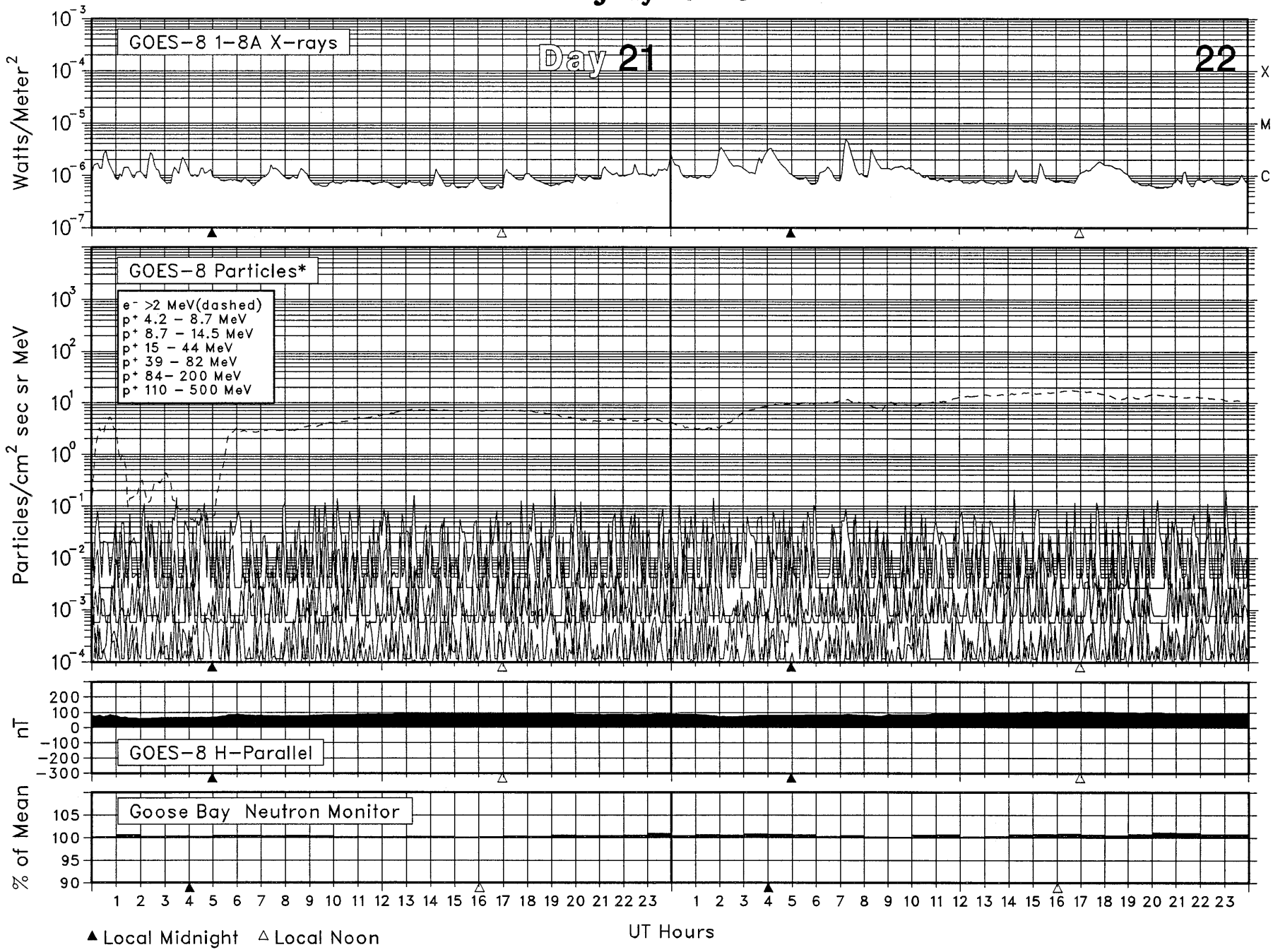

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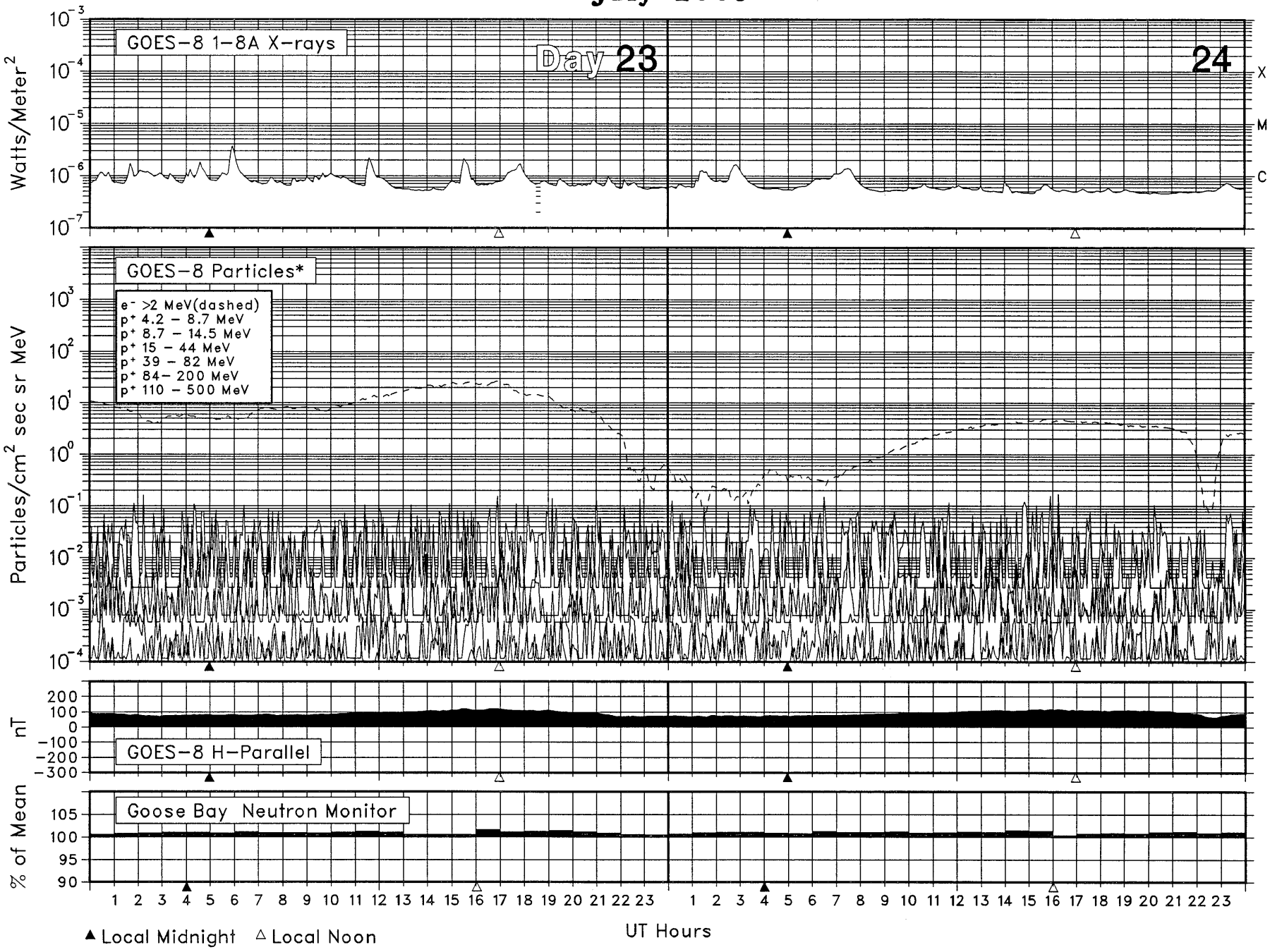

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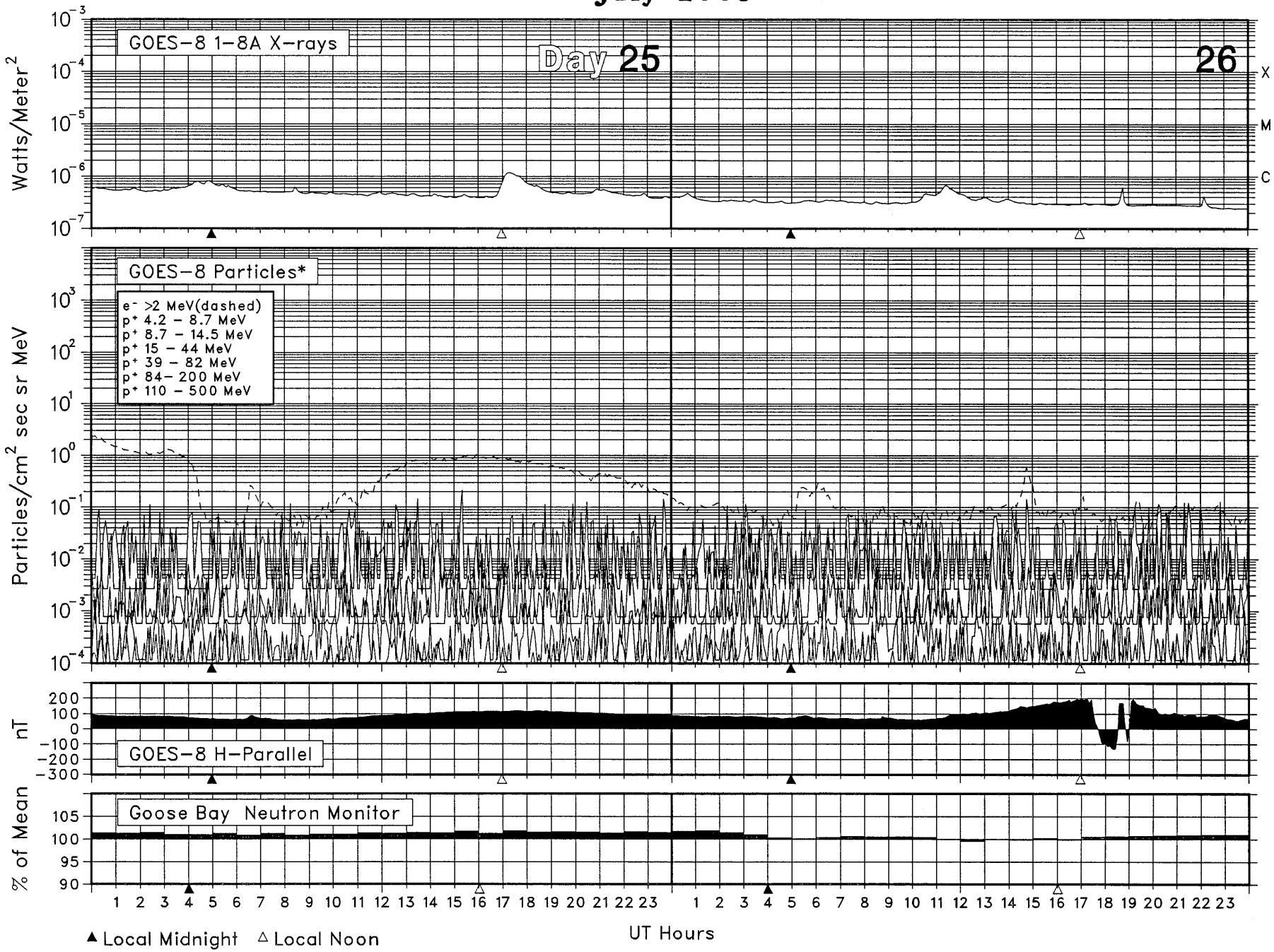

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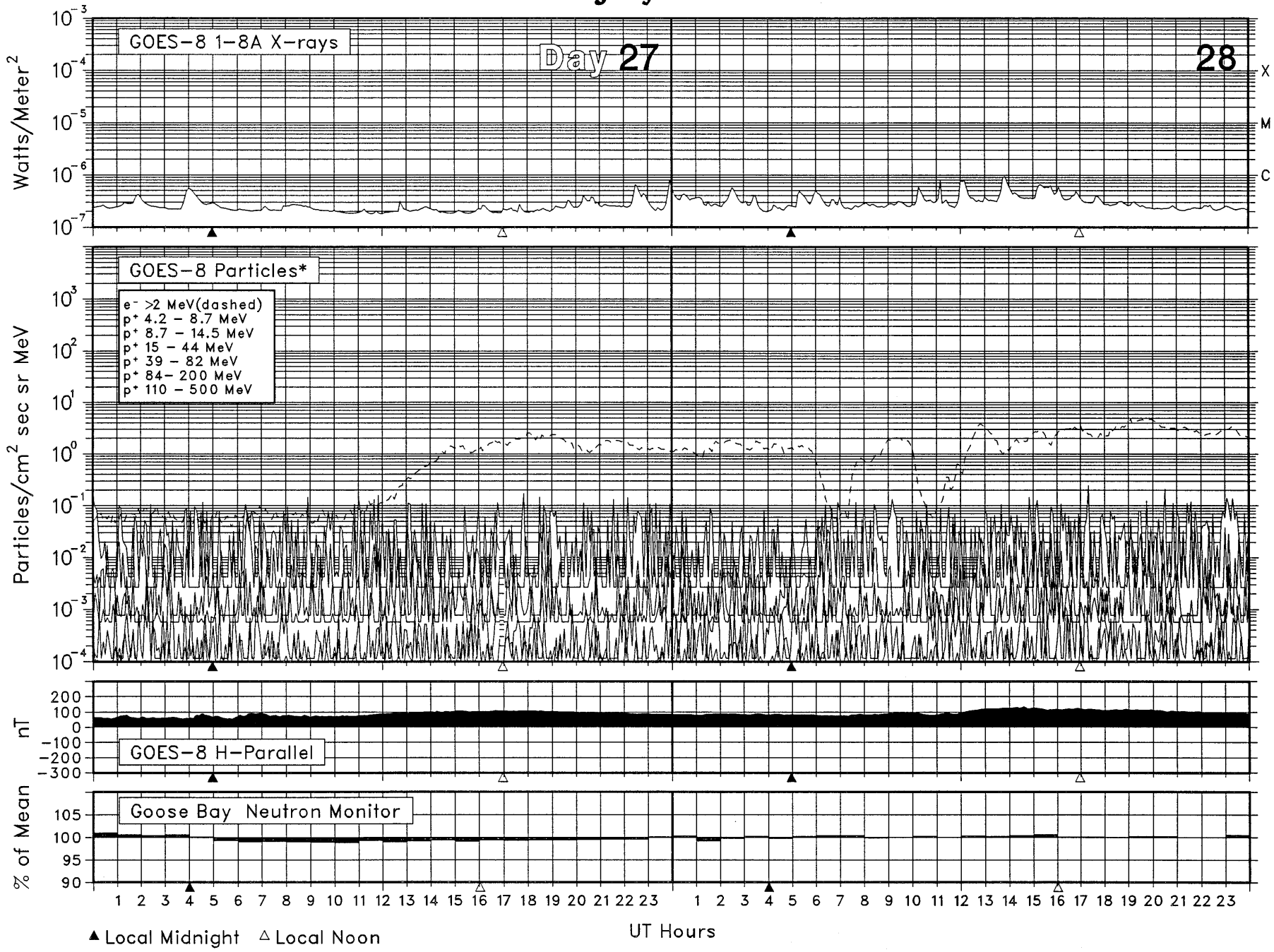

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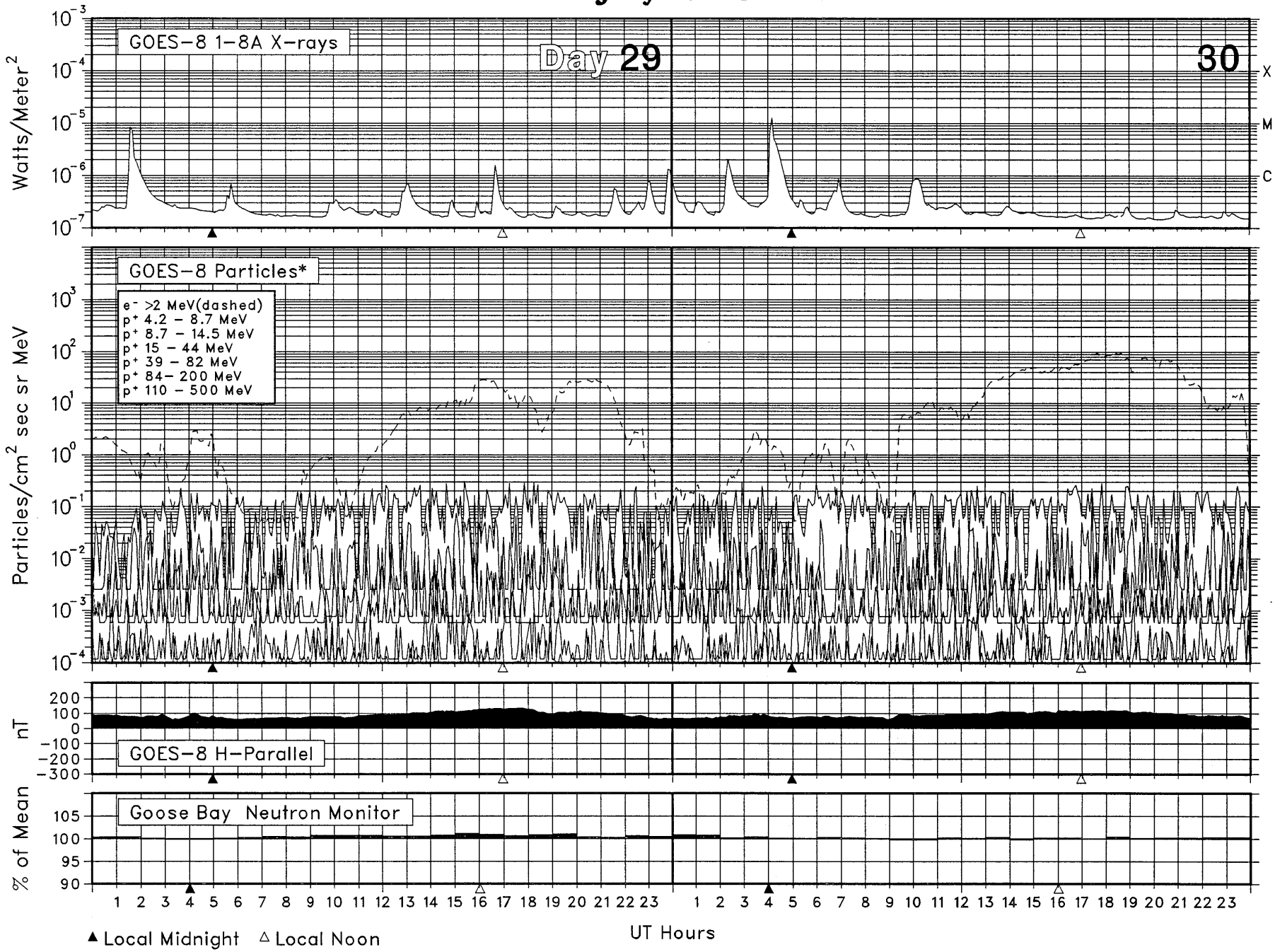

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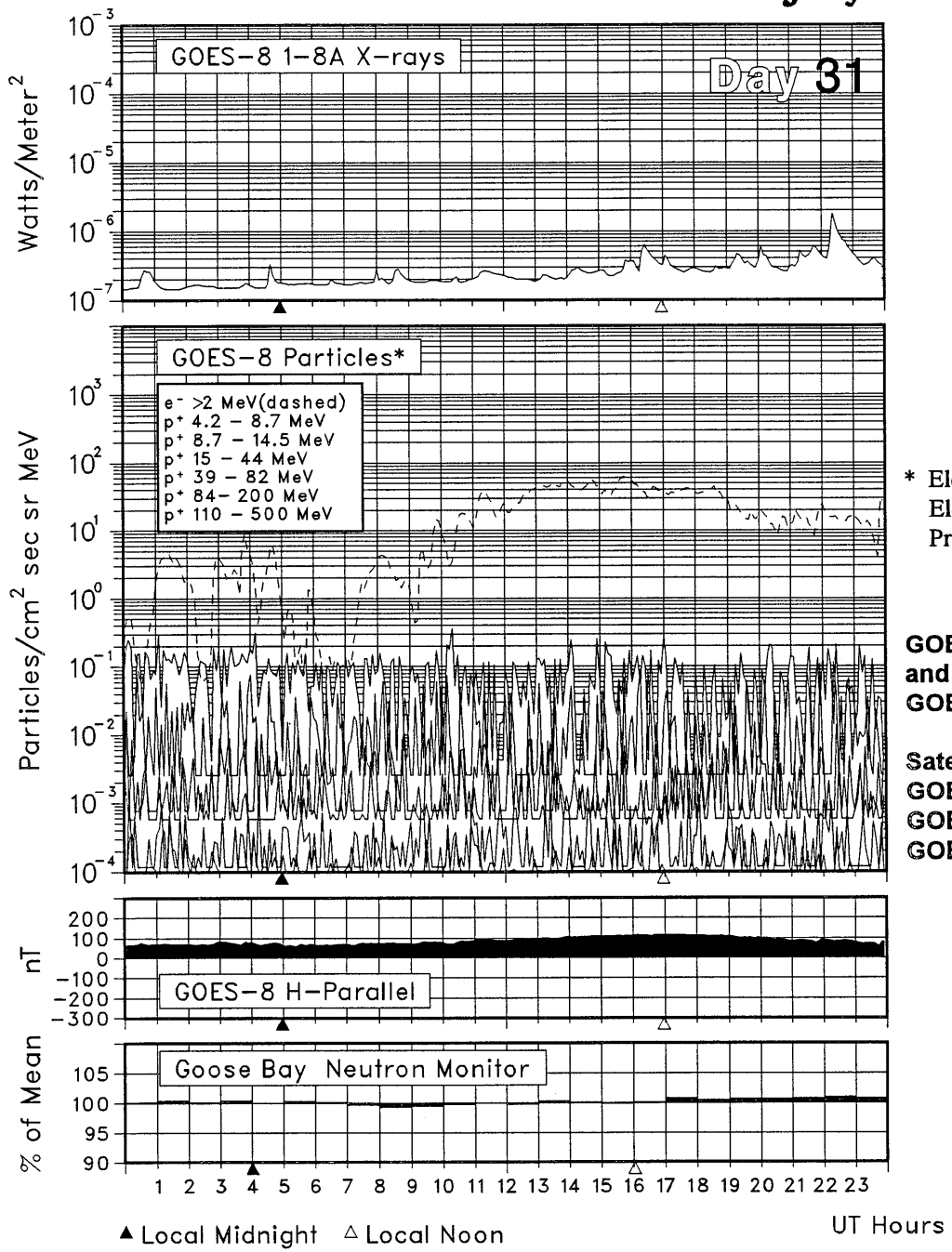


* Electron flux is divided by 10.
Electron units are Counts/cm^2 sec sr.
Protons are corrected for contamination.

GOES-12 data replace GOES-8 X-rays, electrons and magnetometer data after May 2003.
GOES 11 protons replace GOES-8 protons after June 19, 2003.

Satellite positions:
GOES-8 – 75W
GOES-11 – 113W
GOES-12 – 75W

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

JULY 2003

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)
182	01	30	159	128	24	387	N15	W92	0	0	0	01	Q	SOL: Eruptive
						390	N18	W30	0	0	0	01	Q	MAG: Active
						392	N06	W09	0	0	0	01	Q	PRO: Quiet
						394	N08	W34	0	0	0	01	Q	
						395	N12	E11	0	0	0	01	Q	
						396	S06	W54	4	0	0	01	E	
						397	N11	E40	2	0	0	01	E	
						398	N04	E66	0	0	0	01	Q	
						399	N15	E52	1	0	0	01	Q	
183	02	01	138	131	15	390	N16	W43	0	0	0	02	Q	SOL: Eruptive
						392	N06	W26	0	0	0	02	Q	MAG: Active
						394	N08	W49	0	0	0	02	Q	PRO: Quiet
						395	N11	W04	0	0	0	02	Q	
						396	S05	W69	0	0	0	02	Q	
						397	N12	E26	1	0	0	02	E	
						398	N04	E52	0	0	0	02	Q	
						399	N16	E40	0	0	0	02	Q	
						400	N05	E69	0	0	0	02	Q	
184	03	02	153	135	13	390	N15	W56	0	0	0	03	Q	SOL: Eruptive
						392	N04	W35	0	0	0	03	Q	MAG: Active
						394	N07	W62	0	0	0	03	Q	PRO: Quiet
						395	N09	W17	0	0	0	03	Q	
						396	S05	W83	0	0	0	03	Q	
						397	N10	E13	2	1	0	03	E	
						398	N02	E40	0	0	0	03	Q	
						399	N16	E27	0	0	0	03	Q	
						400	N04	E58	2	0	0	03	Q	
185	04	03	147	132	17	390	N15	W70	0	0	0	04	Q	SOL: Eruptive
						392	N04	W50	0	0	0	04	Q	MAG: Active
						395	N10	W31	0	0	0	04	Q	PRO: Quiet
						397	N12	E00	8	0	0	04	E	
						398	N03	E29	0	0	0	04	Q	
						399	N14	E16	0	0	0	04	Q	
						400	N05	E44	3	0	0	04	E	
186	05	04	130	140	23	390	N17	W85	0	0	0	05	Q	SOL: Eruptive
						397	N12	W14	7	0	0	05	E	MAG: Active
						398	N02	E16	0	0	0	05	Q	PRO: Quiet
						399	N14	W01	0	0	0	05	Q	
						400	N05	E31	1	0	0	05	Q	
187	06	05	88	142	21	397	N11	W26	4	0	0	06	E	SOL: Eruptive
						398	N03	E03	0	0	0	06	Q	MAG: Active
						400	N05	E18	1	0	0	06	E	PRO: Quiet
188	07	06	114	130	12	397	N11	W39	5	0	0	07	A	SOL: Active
						398	N03	W14	0	0	0	07	A	MAG: Active
						400	N05	E03	3	1	0	07	A	PRO: Quiet
						401	S10	E66	0	0	0	07	A	
189	08	07	140	133	17	397	N12	W52	1	0	0	08	A	SOL: Active
						400	N05	W10	0	0	0	08	A	MAG: Active
						401	S10	E52	0	0	0	08	A	PRO: Quiet
						402	S12	W44	0	0	0	08	A	
						403	S18	E54	0	0	0	08	A	
						404	S10	E64	0	0	0	08	A	
190	09	08	149	131	5	397	N12	W65	4	0	0	09	E	SOL: Eruptive
						400	N05	W23	1	0	0	09	E	MAG: Quiet
						401	S10	E37	0	0	0	09	Q	PRO: Quiet
						402	S12	W58	3	0	0	09	Q	
						403	S17	E39	0	0	0	09	Q	
						404	S10	E51	0	0	0	09	Q	

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

JULY 2003

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)
191	10	09	125	126	5	397	N14	W76	1	0	0	10	E	SOL: Eruptive
						400	N05	W37	3	1	0	10	Q	MAG: Quiet
						401	S09	E22	1	0	0	10	Q	PRO: Quiet
						402	S12	W70	2	0	0	10	Q	
						403	S17	E26	0	0	0	10	Q	
						404	S10	E37	0	0	0	10	Q	
192	11	10	137	123	11	397	N12	W87	1	1	0	11	E	SOL: Eruptive
						400	N06	W51	1	0	0	11	E	MAG: Quiet
						401	S09	E09	2	0	0	11	Q	PRO: Quiet
						402	S12	W82	0	0	0	11	Q	
						403	S16	E13	0	0	0	11	Q	
						404	S10	E22	0	0	0	11	Q	
193	12	11	127	122	40	400	N06	W65	0	0	0	12	E	SOL: Eruptive
						401	S09	W05	0	0	0	12	E	MAG: Active
						402	S12	W96	0	0	0	12	Q	PRO: Quiet
						403	S16	W00	0	0	0	12	Q	
						404	S10	E08	0	0	0	12	Q	
						405	S10	E66	0	0	0	12	Q	
						406	S19	W11	0	0	0	12	Q	
						407	N09	E31	0	0	0	12	Q	
194	13	12	102	122	36	400	N05	W78	0	0	0	13	Q	SOL: Eruptive
						401	S10	W17	0	0	0	13	Q	MAG: Active
						404	S09	W06	0	0	0	13	Q	PRO: Quiet
						405	S10	E52	0	0	0	13	Q	
						406	S18	W24	0	0	0	13	Q	
						407	N10	E19	0	0	0	13	Q	
195	14	13	137	127	18	401	S10	W31	0	0	0	14	E	SOL: Eruptive
						404	S08	W20	1	0	0	14	Q	MAG: Active
						405	S11	E41	0	0	0	14	Q	PRO: Quiet
						406	S18	W38	0	0	0	14	Q	
						407	N10	E03	0	0	0	14	Q	
						408	N13	E23	1	0	0	14	Q	
						409	N16	E66	3	0	0	14	E	
						410	S13	E63	0	0	0	14	Q	
196	15	14	159	127	19	401	S09	W45	0	0	0	15	Q	SOL: Eruptive
						404	S08	W34	0	0	0	15	Q	MAG: Active
						405	S11	E28	0	0	0	15	Q	PRO: Quiet
						406	S18	W51	0	0	0	15	Q	
						407	N09	W12	0	0	0	15	Q	
						408	N13	E08	0	0	0	15	Q	
						409	N15	E55	4	0	0	15	E	
						410	S13	E49	0	0	0	15	Q	
197	16	15	154	126	27	401	S10	W57	0	0	0	16	Q	SOL: Eruptive
						404	S11	W41	0	0	0	16	Q	MAG: Active
						405	S11	E13	0	0	0	16	Q	PRO: Quiet
						406	S18	W66	0	0	0	16	Q	
						407	N09	W24	0	0	0	16	Q	
						408	N13	W04	0	0	0	16	Q	
						409	N15	E41	0	0	0	16	E	
						410	S12	E38	0	0	0	16	Q	
						411	N16	E62	0	0	0	16	Q	
198	17	16	164	133	41	401	S09	W73	0	0	0	17	Q	SOL: Eruptive
						405	S11	E01	0	0	0	17	Q	MAG: Active
						406	S17	W78	0	0	0	17	Q	PRO: Quiet
						407	N10	W36	0	0	0	17	Q	
						408	N14	W17	0	0	0	17	Q	
						409	N16	E30	0	0	0	17	E	
						410	S12	E28	3	0	0	17	E	
						411	N15	E53	0	0	0	17	Q	
						412	N16	E19	0	0	0	17	Q	

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

JULY 2003

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)
						413	N18	E49	0	0	0	17	Q	
199	18	17	189	139	26	401	S09	W90	0	0	0	18	Q	SOL: Eruptive
						405	S10	W16	0	0	0	18	Q	MAG: Active
						408	N12	W31	0	0	0	18	Q	PRO: Quiet
						409	N15	E18	0	0	0	18	E	
						410	S12	E12	4	0	0	18	E	
						411	N14	E38	0	0	0	18	Q	
						412	N16	E05	2	0	0	18	E	
						413	N18	E35	0	0	0	18	Q	
						414	S02	E71	0	0	0	18	Q	
200	19	18	193	140	16	405	S10	W29	0	0	0	19	Q	SOL: Eruptive
						408	N13	W45	0	0	0	19	Q	MAG: Quiet
						409	N15	E05	0	0	0	19	Q	PRO: Quiet
						410	S11	W01	7	0	0	19	E	
						411	N14	E26	0	0	0	19	Q	
						412	N17	W06	5	0	0	19	E	
						413	N20	E22	0	0	0	19	Q	
						414	S02	E58	0	0	0	19	Q	
201	20	19	178	146	27	405	S10	W43	0	0	0	20	Q	SOL: Eruptive
						409	N15	W08	0	0	0	20	Q	MAG: Active
						410	S12	W13	5	0	0	20	E	PRO: Quiet
						411	N15	E13	0	0	0	20	Q	
						412	N16	W20	1	0	0	20	E	
						413	N18	E09	0	0	0	20	Q	
						414	S01	E45	0	0	0	20	Q	
						415	N13	E30	2	0	0	20	Q	
202	21	20	224	157	21	405	S11	W57	0	0	0	21	Q	SOL: Eruptive
						409	N15	W22	0	0	0	21	Q	MAG: Active
						410	S12	W26	14	0	0	21	E	PRO: Quiet
						411	N17	W03	0	0	0	21	Q	
						412	N16	W34	0	0	0	21	E	
						413	N17	W03	0	0	0	21	Q	
						414	S02	E32	0	0	0	21	Q	
						415	N13	E16	1	0	0	21	Q	
						416	S09	W42	0	0	0	21	Q	
						417	S22	W36	2	0	0	21	Q	
						418	S05	W08	0	0	0	21	Q	
203	22	21	219	156	13	405	S12	W72	0	0	0	22	Q	SOL: Eruptive
						409	N15	W37	1	0	0	22	Q	MAG: Quiet
						410	S12	W40	7	0	0	22	E	PRO: Quiet
						411	N15	W15	0	0	0	22	Q	
						412	N15	W47	0	0	0	22	E	
						413	N20	W19	0	0	0	22	Q	
						414	S03	E19	0	0	0	22	Q	
						415	N12	E02	0	0	0	22	Q	
						416	S07	W58	0	0	0	22	Q	
						417	S21	W49	3	0	0	22	E	
						418	S06	W23	0	0	0	22	Q	
204	23	22	200	153	11	405	S09	W84	0	0	0	23	Q	SOL: Eruptive
						409	N16	W48	1	0	0	23	Q	MAG: Quiet
						410	S13	W53	0	0	0	23	E	PRO: Quiet
						411	N14	W27	0	0	0	23	Q	
						412	N16	W59	1	0	0	23	Q	
						413	N20	W32	0	0	0	23	Q	
						414	S03	E05	0	0	0	23	Q	
						415	N12	W11	0	0	0	23	Q	
						416	S07	W68	0	0	0	23	Q	
						417	S21	W64	9	0	0	23	E	
						418	S05	W37	0	0	0	23	Q	
205	24	23	164	144	14	409	N15	W61	1	0	0	24	Q	SOL: Eruptive

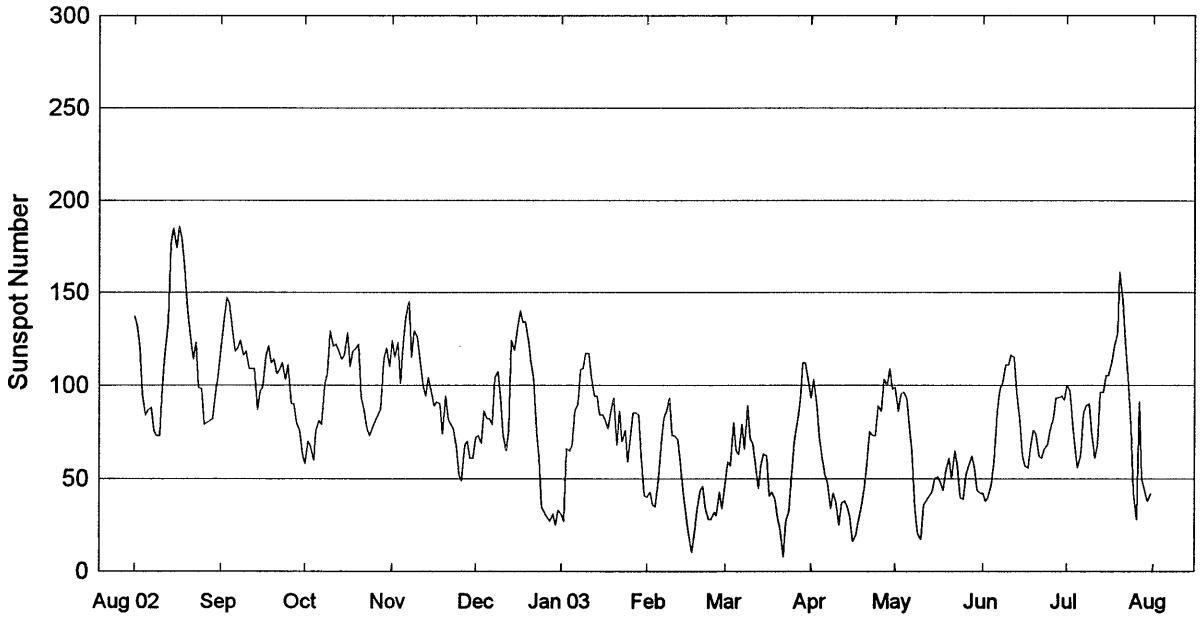
A L E R T P E R I O D S
The International Space Environment Service

JULY 2003

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)
						410	S13	W66	0	0	0	24	E	MAG: Quiet
						411	N14	W40	0	0	0	24	Q	PRO: Quiet
						412	N16	W73	0	0	0	24	Q	
						414	S03	W08	0	0	0	24	Q	
						415	N12	W26	0	0	0	24	Q	
						416	S07	W82	0	0	0	24	Q	
						417	S22	W76	6	0	0	24	E	
						418	S05	W51	0	0	0	24	Q	
						419	N10	E62	0	0	0	24	Q	
206	25	24	134	125	9	409	N14	W76	0	0	0	25	Q	SOL: Eruptive
						410	S13	W79	0	0	0	25	E	MAG: Quiet
						411	N13	W54	0	0	0	25	Q	PRO: Quiet
						412	N15	W85	0	0	0	25	Q	
						414	S04	W20	0	0	0	25	Q	
						415	N11	W39	0	0	0	25	Q	
						417	S22	W91	0	0	0	25	Q	
						418	S05	W64	0	0	0	25	Q	
						419	N11	E50	0	0	0	25	Q	
						420	N11	E79	0	0	0	25	Q	
207	26	25	94	112	10	409	N16	W88	0	0	0	26	Q	SOL: Eruptive
						410	S13	W91	0	0	0	26	Q	MAG: Quiet
						411	N14	W67	0	0	0	26	Q	PRO: Quiet
						412	N17	W96	0	0	0	26	Q	
						414	S04	W34	0	0	0	26	Q	
						415	N13	W50	0	0	0	26	Q	
						419	N10	E35	0	0	0	26	Q	
						420	N10	E64	0	0	0	26	Q	
208	27	26	52	103	26	411	N14	W81	0	0	0	27	Q	SOL: Eruptive
						414	S04	W49	0	0	0	27	Q	MAG: Quiet
						419	N11	E22	0	0	0	27	Q	PRO: Quiet
						420	N11	E51	0	0	0	27	Q	
209	28	27	60	102	22	414	S04	W62	0	0	0	28	Q	SOL: Eruptive
						419	N11	E09	0	0	0	28	Q	MAG: Active
						420	N11	E38	0	0	0	28	Q	PRO: Quiet
						421	S08	E77	0	0	0	28	Q	
						422	N14	W27	0	0	0	28	Q	
210	29	28	56	103	18	414	S04	W76	0	0	0	29	Q	SOL: Eruptive
						420	N11	E24	0	0	0	29	Q	MAG: Active
						421	S08	E67	0	0	0	29	E	PRO: Quiet
						422	N14	W41	3	0	0	29	E	
211	30	29	63	100	45	414	S04	W91	0	0	0	30	Q	SOL: Eruptive
						420	N11	E11	0	0	0	30	Q	MAG: Active
						421	S08	E54	2	1	0	30	E	PRO: Quiet
						422	N14	W54	0	0	0	30	E	
212	31	30	63	99	27	419	N11	W29	0	0	0	31	Q	SOL: Eruptive
						420	N11	W02	0	0	0	31	Q	MAG: Active
						421	S08	E41	0	0	0	31	E	PRO: Quiet
						422	N14	W67	0	0	0	31	E	

STRATWARM ALERTS - NONE

International Relative Sunspot Numbers
Aug 2002 - Jul 2003

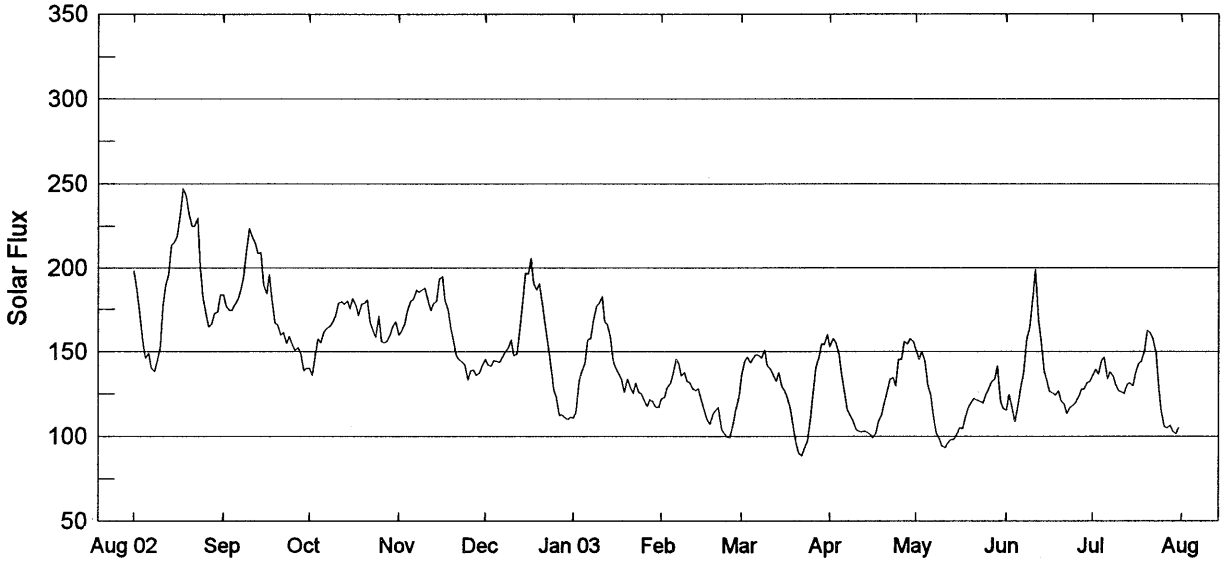


Day	Aug 02	Sep	Oct	Nov	Dec	Jan 03	Feb	Mar	Apr*	May*	Jun*	Jul*
1	137	120	58	124	72	31	40	48	93	99	42	100
2	132	136	70	115	66	27	43	59	103	86	38	97
3	121	147	67	123	64	66	36	57	90	95	40	80
4	95	144	60	107	80	65	35	80	72	96	47	67
5	84	132	76	122	82	68	50	65	60	93	59	56
6	87	118	81	137	82	86	68	63	52	78	86	63
7	88	120	79	145	79	90	82	79	48	65	98	85
8	76	124	101	115	98	108	87	66	34	33	101	89
9	73	116	106	129	107	109	93	89	42	20	111	90
10	73	118	129	126	94	117	73	71	38	17	111	74
11	99	109	121	114	74	117	73	69	25	36	116	61
12	117	109	122	100	65	104	71	56	37	38	115	68
13	134	109	119	94	75	94	59	45	38	41	96	96
14	177	87	114	104	124	94	45	58	35	43	81	96
15	185	97	116	102	119	84	31	63	29	50	63	105
16	174	99	128	89	129	84	20	62	16	51	57	105
17	186	116	110	91	140	81	10	41	19	48	56	112
18	179	121	118	83	134	77	20	43	27	44	68	121
19	164	112	120	74	134	87	33	39	34	54	76	128
20	140	114	122	94	124	93	44	29	45	61	74	161
21	127	106	93	82	112	68	46	23	58	50	62	146
22	114	108	88	79	104	86	34	8	75	65	61	123
23	123	112	77	77	75	70	28	27	73	57	66	100
24	99	103	73	67	57	76	28	33	73	40	68	78
25	98	111	77	56	35	59	32	52	89	39	76	43
26	79	90	81	49	32	72	30	70	86	52	82	28
27	80	90	84	68	29	85	43	81	103	57	93	91
28	81	80	87	70	27	85	34	91	100	62	93	50
29	82	76	114	61	31	84		112	109	56	94	43
30	97	64	120	61	29	62		112	98	44	92	38
31	106		110		33	41		102		42		42
Mean	116.4	109.6	97.5	95.5	80.8	79.7	46.0	61.1	60.0	55.2	77.4	85.0

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Aug 2002 - Jul 2003

Adjusted to 1 AU



Day	Aug 02	Sep	Oct	Nov	Dec	Jan 03	Feb	Mar	Apr	May	Jun	Jul
1	198.3	183.8	140.1	159.7	145.5	111.2	122.1	135.6	152.8	151.0	115.5	135.6
2	185.7	176.9	136.0	162.1	142.0	114.4	123.0	144.7	157.3	145.3#	124.8	139.3
3	172.7	174.4	146.1	166.5	141.8	133.1	128.7	146.5	155.7	150.1	117.8	136.7
4	155.3	174.2	157.6	174.4	144.5	138.2	131.0	143.6	148.8#	144.4	108.7	144.8
5	146.0	178.1	155.1	180.0	144.4	143.2	136.2	146.2	137.5	131.1	117.0	146.7
6	148.8	180.9	161.6	181.2	143.9	156.8	145.4	147.9	126.1	124.1	129.4	134.0
7	140.1	185.6	163.5	186.4	146.6	157.8	143.3	147.6	115.9	112.2	137.2	137.8
8	138.3	194.4	165.1	185.5	149.8	168.0	135.4	146.2	112.6	102.8	158.0	135.7
9	144.0	209.0	166.8	187.0	151.6	176.9	137.6	150.6	109.7	98.9	163.1	130.2
10	152.4	223.5	171.4	187.7	156.5	178.7	132.6	141.7	104.1	94.5	182.0	126.9
11	176.9	219.0	178.7	181.0	147.7	182.6	131.4	139.7	103.0	93.4	198.9	126.1
12	188.8	215.1	179.7	174.6	148.4	167.7	128.2	136.2	102.6	95.8	168.6	125.5
13	196.8	208.6	178.3	178.6	161.8	166.2	127.3	132.5	103.0	98.1	155.8	130.7
14	213.5	209.2	180.2	180.2	180.1	158.6	128.1	137.3	102.6	98.3	137.7	131.4
15	215.7	189.9	175.7	193.2	196.6	145.0	120.6	129.3	101.1	101.4	132.8	129.9
16	219.1	184.5	181.4	194.8	196.5	139.9	115.7	127.2	99.2	104.9	126.5	137.5
17	232.3	195.9	177.7	180.5	205.8	137.1	109.4	123.1#	101.8	104.7	125.8	143.2
18	246.9	178.4	171.3	174.8	190.6	133.0	107.4	117.3	108.7	111.5	124.3	144.3
19	242.6	166.7	178.1	164.3	186.7	126.1	113.6	107.2	113.1	117.4	126.8	150.8
20	232.8	165.8	178.7	155.3	190.3	133.7	115.7	96.6	119.7	120.0	120.8	162.4
21	225.0	159.8	180.8	147.2	177.9	129.4	117.0	90.3	127.0	122.2	118.8	160.7
22	225.1	161.1	167.7	145.5	166.4	125.4	104.3	88.3	133.8	121.3	113.9	157.4
23	229.5	154.8	161.9	143.8	153.7	131.6	101.8	92.4	134.3	120.9	117.2	148.7
24	199.8	158.9	158.5	142.5	142.5	125.8	99.9	97.3	129.8	119.8	118.3	129.2
25	182.4	154.2	170.9	133.2	127.6	124.9	99.5	108.2	145.3	124.3	120.2	115.1
26	172.2	150.6	156.1	138.5	123.2	121.2	107.2	126.6	145.5	128.4	122.9	105.9
27	164.7	152.2	155.2	138.8	112.7	117.7	115.4	140.5	156.1	132.3	128.1	104.9
28	166.4	149.1	156.3	136.0	113.1	121.8	122.6	146.4	154.3	133.7	128.1	106.6
29	172.6	138.6	159.4	137.5	111.0	120.7		154.6	157.4	141.6	131.6	103.0
30	173.5#	140.1	165.3	142.1	110.1	117.6		154.2	155.8	120.4	132.5	101.7
31	183.7		167.7		111.3	116.9		159.8		116.3		105.2
Mean	188.4	177.8	165.9	165.1	152.3	139.4	121.4	130.8	127.2	118.7	133.4	131.9

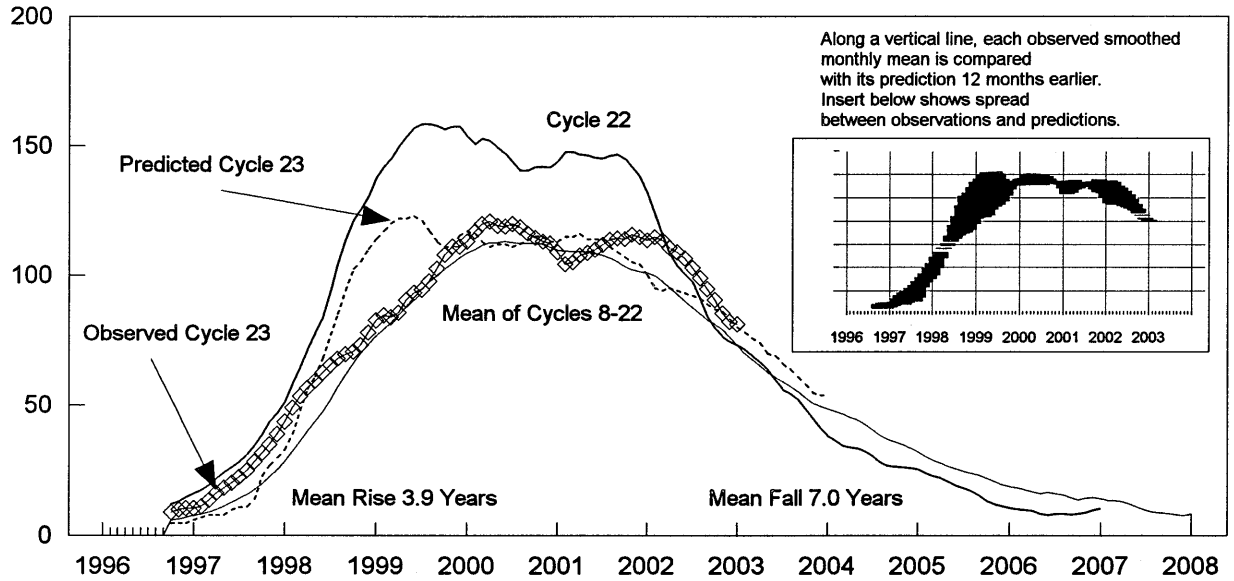
NOTE: # 1700 or1800UT reading - burst in progress (IP) at 2000UT.

DAILY SOLAR INDICES
July 2003

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	SGMR (15400)	SGMR (8800)	SGMR (4995)	Penticton (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
						-----Solar Flux Adjusted to 1 Astronomical Unit-------								
1	182	15	100	102	131.1	559	262	179	135.6	127	84	42	34	37
2	183	16	97	86	134.8	560	278	185	139.3	133	88	45	33	26
3	184	17	80	75	132.2	562	278	184	136.7	134	85	47	31	19
4	185	18	67	70	140.0	538	280	191	144.8	129	84	47	47	31
5	186	19	56	58	141.9	543	266	190	146.7	140	87	46	62	---
6	187	20	63	65	129.6	551	271	182	134.0	125	85	44	32	33
7	188	21	85	83	133.3	546	271	176	137.8	123	83	45	37	38
8	189	22	89	96	131.3	547	264	176	135.7	126	85	44	31	13
9	190	23	90	90	126.0	530	268	175	130.2	127	91	46	34	15
10	191	24	74	73	122.8	563	276	175	126.9	124	82	48	34	13
11	192	25	61	64	122.0	529	264	176	126.1	120	83	45	35	14
12	193	26	68	68	121.5	558	265	167	125.5	121	84	49	35	18
13	194	27	96	100	126.5	554	264	168	130.7	122	84	47	33	12
14	195	1	96	102	127.2	535	257	189	131.4	121	82	45	32	9
15	196	2	105	107	125.8	554	270	176	129.9	118	83	46	33	12
16	197	3	105	99	133.1	521	273	183	137.5	132	85	47	33	11
17	198	4	112	111	138.7	544	270	180	143.2	137	88	47	36	19
18	199	5	121	119	139.7	533	262	176	144.3	138	95	47	36	23
19	200	6	128	135	146.0	553	267	194	150.8	147	95	46	34	30
20	201	7	161	162	157.3	564	282	213	162.4	163	97	50	40	34
21	202	8	146	143	155.6	546	284	210	160.7	155	96	50	48	37
22	203	9	123	116	152.5	468	257	206	157.4	153	95	43	37	45
23	204	10	100	100	144.1	542	276	200	148.7	141	91	47	35	33
24	205	11	78	76	125.2	537	267	177	129.2	122	83	46	33	20
25	206	12	43	39	111.6	544	247	159	115.1	114	74	43	33	26
26	207	13	28	28	102.6	540	244	151	105.9	98	70	40	29	13
27	208	14	91	30	101.7	526	235	141	104.9	98	70	39	28	10
28	209	15	50	49	103.4	540	255	153	106.6	101	72	44	32	12
29	210	16	43	46	99.9	538	241	143	103.0	99	68	42	29	10
30	211	17	38	44	98.7	535	235	140	101.7	99	70	43	30	10
31	212	18	42	43	102.1	535	245	143	105.2	99	72	44	31	10
MEAN			85.0	83.2	127.7	541	263	176	131.9	125	83	45	35	24

NOTE: Radio flux values are from Sagamore Hill, Massachusetts, 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
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	94	98	102	108	111	111	95
2000	113	117	120	120.8+	119	119	120	119	116	115	113	112	107
2001	109	104	105	108	109	110	112	114	114	114	115	115	111
2002	114	115	113	111	109	106	103	99	95	91	85	82	102
2003	81	78	75	73	70	67	65	63	61	58	56	55	67
		(2)	(4)	(6)	(8)	(9)	(10)	(11)	(13)	(15)	(16)	(18)	(10)
2004	54	53	52	51	50	48	45	43	41	40	39	37	46
	(20)	(21)	(21)	(21)	(22)	(22)	(22)	(23)	(24)	(25)	(25)	(25)	(23)

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

* May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum

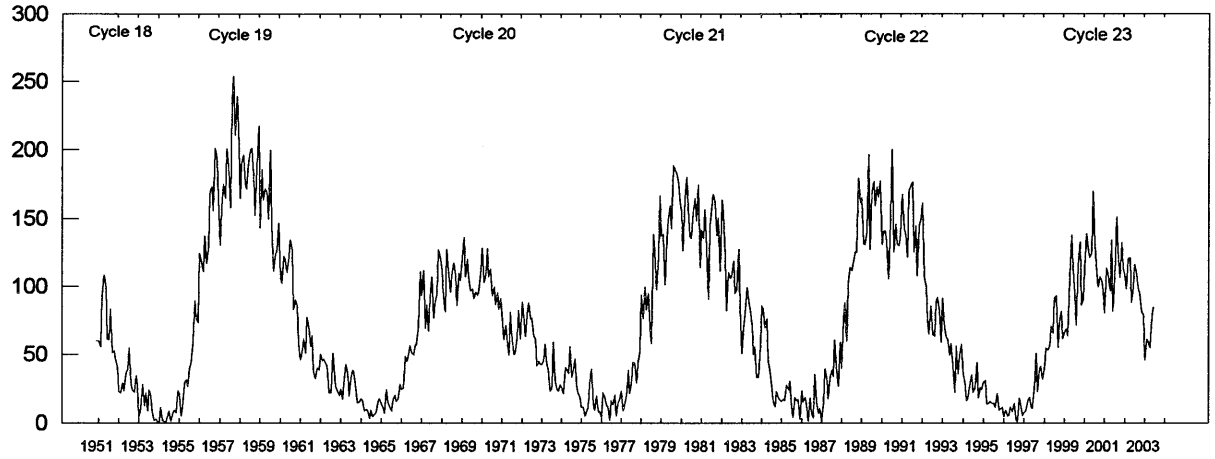
+ April 2000 marks Cycle 23 maximum.

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 Mar 2003 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 January 2004 prediction. There exists a 90% chance that in January 2004, the actual smoothed number will fall somewhere between 34 and 74.

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 1951 - Jul 2003



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	
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	71.5	116.7	133.2	84.6	93.2	
2000	90.1	112.9	138.5	125.5	121.6	124.9	170.1	130.5	109.7	99.4	106.8	104.4	119.6	M
2001	95.6	80.6	113.5	107.7	96.6	134.0	81.8	106.4	150.7	125.5	106.5	132.2	111.0	
2002	114.1	107.4	98.4	120.7	120.8	88.3	99.9	116.4	109.3	97.5	95.5	80.8	104.0	
2003	79.5	46.2	61.5	60.0	55.2	77.4	85.0						66.4	

Values are preliminary after Mar 03. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

JULY 2003

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
GOES	01	1314	1318	1320						6		B 8.4						2.6E-04
GOES		1333	1343	1403	N09	E23	10397			30	SF	C 2.3						3.3E-03
HOLL		1336	1339	1407	N09	E23	10397	07	3.3	31	SF		3	E		30		F
GOES		1754	1802	1806			10397			12		C 1.4						7.8E-04
GOES		1840	1902	1929			10397			49		C 1.1						2.6E-03
GOES		2010	2029	2045			10397			35		C 1.0						1.8E-03
GOES	02	0133	0138	0142	N03	E72	10400			9	SF	B 8.0						3.6E-04
LEAR		0136	0138	0142	N03	E72	10400	07	7.4	6	SF		3	E		42		
GOES		0246	0251	0305	N10	E35	10397			19	SF	B 7.2						7.1E-04
LEAR		0249	0250	0302	N10	E35	10397	07	4.7	13	SF		3	E		19		
GOES		0309	0312	0316						7		B 9.7						3.4E-04
GOES		0706	0728	0746	N13	E25	10397			40	1F	M 3.0						4.7E-02
LEAR		0709	0714	0816	N13	E34	10397	07	4.9	67	1N		1	E		200		F
SVTO		0711	0714	0806	N13	E25	10397	07	4.2	55	1F		3	E		120		F
GOES		1202	1208	1218						16		C 1.3						1.0E-03
GOES		1537	1546	1552	N02	E62	10400			15	SF	C 1.6						1.1E-03
SVTO		1540	1540	1549	N02	E62	10400	07	7.3	9	SF		3	E		21		
GOES		2206	2222	2240			10400			34		C 5.4						7.2E-03
GOES	03	0106	0113	0117	N03	E58	10400			11	SF	C 1.2						7.1E-04
LEAR		0108	0109	0120	N03	E58	10400	07	7.4	12	SF		3	E		31		
GOES		0418	0423	0427	N14	E18	10397			9	SF	B 9.9						4.4E-04
LEAR		0420	0422	0435	N14	E18	10397	07	4.5	15	SF		3	E		42		
SVTO		0422	0423	0428	N14	E11	10397	07	4.0	6	SF		3	E		18		
LEAR		0449	0449	0455	N09	E01	10397	07	3.3	6	SF		3	E		14		
LEAR		0457	0458	0502	N02	E59	10400	07	7.6	5	SF		3	E		44		
GOES		0551	0602	0611	N13	E23	10397			20	SF	C 3.8						3.2E-03
LEAR		0555	0600	0614	N13	E23	10397	07	5.0	19	SF		3	E		37		UF
SVTO		0559	0600	0609	N14	E15	10397	07	4.4	10	SF		3	E		13		F
GOES		1205	1212	1222	N15	E05	10397			17	SF	C 2.7						2.1E-03
SVTO		1207	1211	1225	N15	E05	10397	07	3.9	18	SF		3	E		75		F
GOES		1228	1236	1244	N15	E11	10397			16	SF	C 2.8						2.4E-03
SVTO		1229	1231	1238	N15	E11	10397	07	4.3	9	SF		3	E		15		
HOLL		1340	1341	1351	N13	E10	10397	07	4.3	11	SF		3	E		25		F
HOLL		1446	1456	1520	N04	E51	10400	07	7.4	34	SF		3	E		48		F
GOES		1449	1458	1509	N04	E51	10400			20	SF	C 3.3						3.3E-03
SVTO		1452	1456	1504	N05	E51	10400	07	7.4	12	SF		3	E		32		
GOES		1723	1727	1733			10397			10		B 6.4						3.4E-04
HOLL		2103	2107	2112	N09	W08	10397	07	3.3	9	SF		3	E		21		
HOLL		2213	2219	2237	N13	E06	10397	07	4.4	24	SF		3	E		29		F
LEAR	04	0007	0028	0056	N13	E09	10397	07	4.7	49	SF		4	E		79		F
HOLL		0009	0029	0053	N09	W10	10397	07	3.2	44	SF		3	E		29		
GOES		0116	0121	0128						12		C 2.0						1.2E-03
LEAR		0400	0401	0413	N09	W12	10397	07	3.3	13	SF		3	E		28		F
GOES		0507	0513	0519						12		C 1.9						1.1E-03
LEAR		0539	0548	0552	N09	W13	10397	07	3.2	13	SF		3	E		10		F
GOES		0602	0609	0613	N13	E05	10397			11	SF	C 1.4						7.7E-04
LEAR		0604	0609	0621	N13	E05	10397	07	4.6	17	SF		3	E		94		F
GOES		0743	0746	0749	N09	W14	10397			6	SF	C 1.0						2.7E-04
LEAR		0745	0746	0753D	N09	W14	10397	07	3.3	8D	SF		3	E		20		
GOES		0945	0949	0953						8		C 1.0						3.8E-04
GOES		1127	1130	1136						9		B 9.8						4.7E-04
GOES		1139	1143	1156						17		C 1.0						9.9E-04
GOES		1223	1232	1239						16		C 1.6						1.1E-03
SVTO		1231E	1232U	1236D	N09	W16	10397	07	3.4	5D	SF		2	E		46		F
GOES		1243	1256	1306	N14	W10	10397			23	SF	C 1.1						1.8E-03
SVTO		1255E	1255U	1309	N14	W10	10397	07	3.8	14D	SF		3	E		34		
GOES		1420	1423	1427	N09	W16	10397			7	SF	B 8.1						3.1E-04
HOLL		1435	1442	1553	N05	E32	10400	07	7.0	78	1F		3	E		190		FU
GOES		1435	1455	1520	N05	E32	10400			45	1F	C 7.1						1.5E-02
SVTO		1438	1503U	1554	N06	E30	10400	07	6.8	76	1F		3	E		169		F
GOES		1733	1800	1831	N09	W19	10397			58	SF	C 3.8						9.7E-03
HOLL		1737	1738	1742	N09	W19	10397	07	3.3	5	SF		3	E		12		F
HOLL		1745	1753	1814	N09	W20	10397	07	3.2	29	SF		3	E		15		
GOES		2118	2121	2124						6		B 6.7						2.2E-04
GOES		2208	2213	2218						10		C 1.2						5.9E-04

Hα SOLAR FLARES

JULY 2003

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Opt	Imp Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
GOES	04	2340	2343	2345						5		B 6.6						1.6E-04
GOES	05	0327	0331	0337			10397			10		C 1.0						5.4E-04
GOES		0539	0544	0548			10397			9		C 1.0						4.7E-04
GOES		0550	0553	0555			10397			5		C 1.1						3.0E-04
GOES		0907	0915	0927	N13	W17	10397			20	SF	C 2.3						2.0E-03
SVTO		0911	0913	0924	N13	W17	10397	07	4.1	13	SF		3	E		21		F
GOES		1236	1245	1255	N13	W20	10397			19	SF	C 2.5						2.3E-03
SVTO		1239	1246	1249	N13	W20	10397	07	4.0	10	SF		3	E		15		
GOES		1655	1702	1718	N14	W22	10397			23	SF	C 3.9						3.8E-03
HOLL		1657	1700	1721	N14	W22	10397	07	4.0	24	SF		3	E		64		F
SVTO		1700	1702	1712	N12	W23	10397	07	4.0	12	SF		3	E		44		F
GOES		1935	1946	2044	N11	W26	10397			69	SF	C 4.4						1.4E-02
HOLL		1940	1944	2018	N11	W26	10397	07	3.9	38	SF		3	E		50		FH
GOES		2330	2335	2338	N05	E20	10400			8	SF	C 1.7						5.4E-04
HOLL		2333	2333	2339	N05	E20	10400	07	7.5	6	SF		3	E		10		F
GOES	06	0006	0032	0040	N04	E18	10400			34	SF	M 2.3						1.7E-02
HOLL		0009	0011	0019	N04	E18	10400	07	7.3	10	SF		3	E		20		
HOLL		0023	0025	0025D	N05	E18	10400	07	7.4	2D	SF		3	E		92		
LEAR		0059E	0100	0122D	N05	E25	10400	07	7.9	23D	SF		3	E		33		F
LEAR		0332	0338	0345	N05	E24	10400	07	7.9	13	SF		3	E		17		F
GOES		0405	0408	0410			10400			5		C 1.0						2.7E-04
GOES		0431	0440	0449	N12	W30	10397			18	SF	C 4.4						3.1E-03
SVTO		0434	0437	0450	N12	W30	10397	07	3.9	16	SF		3	E		97		
GOES		1033	1039	1044			10397			11		B 8.9						4.8E-04
GOES		1801	1808	1817	N15	W31	10397			16	SF	C 1.2						9.2E-04
HOLL		1806	1812	1819	N15	W31	10397	07	4.4	13	SF		3	E		18		F
GOES		1828	1835	1843	N15	W32	10397			15	SF	C 2.3						1.6E-03
HOLL		1830	1832	1850	N15	W32	10397	07	4.3	20	SF		3	E		40		F
GOES		1904	1908	1912						8		B 6.6						2.9E-04
GOES		1959	2004	2009	N12	W35	10397			10	SF	C 1.3						5.6E-04
HOLL		2003	2003	2011	N12	W35	10397	07	4.2	8	SF		3	E		17		F
GOES		2032	2042	2105	N17	W31	10397			33	SF	B 9.0						1.4E-03
HOLL		2036	2036	2043	N17	W31	10397	07	4.5	7	SF		3	E		14		
GOES	07	1127	1130	1133			10397			6		B 5.7						1.7E-04
GOES		1424	1433	1454			10397			30		B 8.7						1.3E-03
GOES		1742	1746	1749			10397			7		B 6.2						2.1E-04
GOES		1852	1914	1936	N16	W42	10397			44	SF	C 2.3						4.2E-03
HOLL		1908	1910	1921	N16	W42	10397	07	4.6	13	SF		3	E		13		FH
GOES		2102	2105	2108			10400			6		B 9.4						2.9E-04
GOES	08	0057	0103	0108			10397			11		C 2.1						9.5E-04
HOLL		0101	0102	0106	N12	W60	10397	07	3.5	5	SF		3	E		28		FH
LEAR		0101	0102	0107	N13	W66	10397	07	3.1	6	SF		4	E		30		F
GOES		0224	0230	0236	N13	W66	10397			12	SF	C 2.3						1.1E-03
LEAR		0228	0228	0231	N13	W66	10397	07	3.1	3	SF		3	E		50		F
GOES		0244	0251	0301			10400			17		C 1.5						1.2E-03
GOES		0356	0408	0415			10397			19		C 2.0						1.8E-03
GOES		0458	0501	0503						5		B 7.7						1.9E-04
GOES		0550	0602	0610	S11	W48	10402			20	SF	B 9.5						9.9E-04
LEAR		0551	0557	0623	S11	W48	10402	07	4.6	32	SF		3	E		31		F
SVTO		0554E	0602U	0614D	S10	W50	10402	07	4.5	20D	SF		3	E		13		
GOES		0721	0730	0737	S11	W48	10402			16	1F	C 5.2						3.1E-03
LEAR		0724	0727	0743	S11	W48	10402	07	4.7	19	1F		3	E		100		F
SVTO		0724	0729	0748	S10	W49	10402	07	4.6	24	SF		3	E		85		
GOES		1150	1157	1209						19		B 9.3						9.2E-04
HOLL		1355	1356	1401	S12	W53	10402	07	4.6	6	SF		3	E		17		
GOES		1554	1557	1601	S13	W51	10402			7	SF	B 6.5						2.4E-04
HOLL		1557	1557	1601	S13	W51	10402	07	4.8	4	SF		3	E		14		
SVTO		1559	1559	1603	S10	W54	10402	07	4.6	4	SF		3	E		10		
GOES		1607	1626	1640	S12	W52	10402			33	SF	C 3.2						4.6E-03
SVTO		1612	1614	1638	S10	W54	10402	07	4.6	26	SF		3	E		43		F
HOLL		1612	1629	1641	S12	W52	10402	07	4.7	29	SF		3	E		16		UF
HOLL		1621	1621	1624	N05	W16	10400	07	7.5	3	SF		3	E		11		
GOES		1905	1908	1911						6		B 8.2						2.6E-04
GOES		2112	2117	2126			10400			14		B 7.1						5.3E-04

Hα SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	08	2130	2135	2138			10400			8		C 1.0						4.1E-04
HOLL		2342	2344	2346	N16	W58	10397	07	4.6	4	SF		3	E		12		F
HOLL		2349	2350	2354	N16	W58	10397	07	4.6	5	SF		3	E		16		F
LEAR	09	0638	0639	0642	S11	W59	10402	07	4.8	4	SF		3	E		15		F
SVTO		1126	1133	1135	N03	W36	10400	07	6.8	9	SF		3	E		11		
GOES		1439	1446	1538	S11	W68	10402			59	SF	C 2.4						7.1E-03
HOLL		1441	1443	1503	S12	W65	10402	07	4.7	22	SF		3	E		33		F
SVTO		1443	1446	1456	S11	W68	10402	07	4.5	13	SF		3	E		26		
HOLL		1521	1521	1536	N05	W28	10400	07	7.5	15	SF		3	E		10		F
GOES		1624	1637	1651	N12	W82	10397			27	SF	C 5.8						6.9E-03
HOLL		1629	1629	1633	N12	W82	10397	07	3.5	4	SF		3	E		17		
SVTO		1629	1630	1632	N14	W86	10397	07	3.2	3	SF		3	E		18		
GOES		1912	1918	1921			10397			9		C 1.3						6.7E-04
GOES		1924	1930	1938			10397			14		C 1.8						1.4E-03
GOES		1942	1947	1950			10397			8		C 2.6						9.3E-04
GOES		2011	2027	2033			10397			22		C 2.5						2.3E-03
GOES		2042	2050	2053			10397			11		C 5.4						2.3E-03
HOLL		2102	2108	2126	S08	E26	10401	07	11.8	24	SF		3	E		18		F
GOES		2159	2238	2245			10397			46		M 2.0						1.4E-02
HOLL		2209	2210	2218	N05	W35	10400	07	7.3	9	SF		3	E		13		F
HOLL		2222	2224	2510D	N04	W38	10400	07	7.1	168D	SF		3	E		52		T
HOLL		2238	2242	2511D	N14	W75	10397	07	4.3	153D	SF		3	E		37		T
GOES	10	0044	0051	0101			10397			17		C 2.8						2.4E-03
GOES		0225	0234	0246			10397			21		C 2.1						2.2E-03
GOES		0319	0342	0350	N06	W42	10400			31	SF	C 2.9						3.4E-03
LEAR		0321	0322	0335	N06	W42	10400	07	7.0	14	SF		3	E		95		F
GOES		0434	0441	0447						13		C 3.1						2.0E-03
GOES		0630	0645	0653						23		C 5.2						4.6E-03
GOES		0847	0854	0907			10397			20		C 1.3						1.4E-03
GOES		1133	1140	1146			10397			13		C 1.2						8.8E-04
GOES		1354	1412	1423			10397			29		M 3.6						4.1E-02
HOLL		1425	1425	1430	N13	W91	10397	07	3.7	5	SF		3	E		31		
GOES		1625	1630	1640			10397			15		C 1.4						1.1E-03
HOLL		1744	1746	1748	S10	E12	10401	07	11.6	4	SF		3	E		18		H
GOES		2354	2357	2358	S10	E13	10401			4	SF	B 8.8						1.9E-04
LEAR		2356	2357	2357D	S10	E13	10401	07	12.0	1D	SF		3	E		17		F
GOES	11	0420	0427	0446			10397			26		C 1.9						2.3E-03
GOES		0636	0739	0838			10401			122		C 2.9						1.5E-02
GOES		1032	1039	1042	N16	W90	10397			10	SF	C 1.1						5.7E-04
SVTO		1036	1037	1039	N16	W90	10397	07	4.6	3	SF		3	E		88		H
GOES		1147	1214	1251			10397			64		C 1.5						4.4E-03
GOES	12	0242	0248	0259						17		C 3.1						2.6E-03
GOES		0626	0630	0634						8		C 2.9						1.0E-03
GOES		0949	0957	1002						13		C 1.9						1.2E-03
GOES		1319	1322	1326						7		C 1.4						5.0E-04
GOES		1341	1344	1346						5		C 1.2						3.0E-04
GOES		1424	1428	1431						7		C 1.5						5.3E-04
GOES		1612	1616	1624	N16	E90				12	SF	C 2.9						1.5E-03
HOLL		1616	1617	1624	N16	E90		07	19.5	8	SF		3	E		26		
GOES		1857	1906	1913	N16	E79				16	SF	M 1.4						8.2E-03
HOLL		1904	1911	1920	N16	E79		07	18.8	16	SF		3	E		95		F
GOES		2042	2050	2058	N15	E91				16	SF	C 4.6						3.1E-03
HOLL		2047	2048	2052	N15	E91		07	19.7	5	SF		3	E		21		
GOES		2238	2242	2247						9		C 1.0						4.6E-04
GOES	13	0102	0120	0142	S11	W01	10404			40	SF	C 1.4						2.8E-03
LEAR		0121	0125	0130	S11	W01	10404	07	13.0	9	SF		3	E		39		U
GOES		0633	0636	0640			10409			7		B 5.8						2.2E-04
GOES		1052	1100	1103			10409			11		C 1.0						4.9E-04
GOES		1215	1226	1236			10409			21		C 1.5						1.5E-03
GOES		1617	1621	1624	N16	E68	10409			7	SF	B 7.8						2.5E-04
HOLL		1620	1620	1627	N22	E68	10409	07	18.9	7	SF		3	E		34		F
SVTO		1620	1621	1626	N16	E65	10409	07	18.6	6	SF		3	E		20		
GOES		1738	1741	1745						7		B 7.0						2.7E-04

Hα SOLAR FLARES

JULY 2003

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
GOES	13	1752	1756	1805						13		B 9.0						6.3E-04
GOES		1914	1918	1923						9		B 5.9						2.9E-04
GOES		1936	1950	2000			10409			24		C 1.1						1.2E-03
GOES		2048	2051	2053						5		B 7.8						1.7E-04
GOES		2159	2203	2206						7		B 8.6						2.9E-04
GOES		2208	2212	2221	N15	E75	10409			13	SF	B 9.0						6.1E-04
HOLL		2211	2213	2220	N15	E75	10409	07	19.6	9	SF		3	E		19		H
GOES		2240	2252	2256			10409			16		C 2.2						1.4E-03
GOES		2305	2310	2314	N16	E73	10409			9	SF	C 2.9						1.1E-03
HOLL		2308	2310	2314	N16	E73	10409	07	19.5	6	SF		3	E		43		
GOES		2348	2401U	2404	N14	E22	10408			16	SF	C 1.4						1.1E-03
HOLL		2351	2356	2413	N14	E22	10408	07	15.6	22	SF		3	E		47		F
LEAR		2355	2355	2402	N14	E31	10408	07	16.3	7	SF		3	E		13		F
GOES	14	0058	0120	0134			10409			36		C 8.7						1.1E-02
GOES		0230	0240	0253			10409			23		C 1.0						1.3E-03
GOES		0602	0608	0615			10409			13		B 7.8						5.2E-04
GOES		1503	1506	1509	N18	E56	10409			6	SF	B 5.5						1.7E-04
HOLL		1506	1507	1509	N18	E56	10409	07	18.9	3	SF		3	E		11		H
GOES		1616	1620	1625			10409			9		B 6.3						3.1E-04
GOES		1644	1649	1657						13		B 7.3						4.8E-04
HOLL		1711	1712	1723	N18	E55	10409	07	18.9	12	SF		3	E		18		F
HOLL		2054	2057	2102	N16	E62	10409	07	19.6	8	SF		3	E		17		FH
GOES		2301	2304	2306	N16	E63	10409			5	SF	B 6.3						1.5E-04
HOLL		2304	2304	2309	N16	E63	10409	07	19.7	5	SF		3	E		27		
GOES	15	0038	0042	0053						15		B 7.6						6.1E-04
GOES		0110	0122	0126			10409			16		C 1.6						1.0E-03
GOES		0151	0207	0218			10409			27		C 2.0						2.2E-03
GOES		0218	0221	0224			10409			6		C 1.6						5.2E-04
GOES		0259	0304	0308			10409			9		C 1.6						5.6E-04
GOES		0405	0410	0418						13		B 6.9						4.8E-04
GOES		0546	0553	0605						19		B 7.6						7.6E-04
GOES		0927	0930	0941						14		B 3.9						3.1E-04
GOES		1159	1202	1205						6		B 4.4						1.4E-04
GOES	16	0029	0039	0053						24		B 7.0						8.4E-04
GOES		0523	0530	0534						11		B 5.4						2.9E-04
GOES		1215	1223	1236	S15	E29	10410			21	SF	C 1.3						1.3E-03
SVTO		1220	1223	1240	S15	E29	10410	07	18.7	20	SF		3	E		27		F
GOES		1338	1343	1353	S11	E31	10410			15	SF	B 8.1						6.5E-04
HOLL		1342	1344	1402	S11	E31	10410	07	18.9	20	SF		3	E		17		F
GOES		1355	1408	1425			10406			30		C 1.2						1.8E-03
GOES		1601	1610	1624	S11	E30	10410			23	SF	C 1.2						1.3E-03
HOLL		1604	1609	1625	S11	E30	10410	07	18.9	21	SF		3	E		31		F
GOES		1628	1635	1642			10410			14		C 2.9						1.8E-03
GOES	17	0211	0246	0308						57		C 1.1						3.0E-03
GOES		0817	0823	0829	N15	E21	10412			12	1N	C 9.8						4.5E-03
LEAR		0819	0821	0857	N15	E21	10412	07	18.9	38	1N		3	E		149		FE
GOES		0858	0914	0923			10410			25		C 2.3						2.4E-03
GOES		1338	1350	1407						29		B 8.8						1.3E-03
GOES		1521	1529	1537	S14	E15	10410			16	SF	C 2.6						1.9E-03
HOLL		1530E	1530U	1545	S14	E15	10410	07	18.8	15D	SF		3	E		29		F
GOES		1620	1628	1635						15		B 9.1						7.2E-04
GOES		1649	1654	1658	S12	E18	10410			9	SF	C 1.4						7.2E-04
HOLL		1651	1651	1700	S12	E18	10410	07	19.0	9	SF		3	E		16		F
GOES		1739	1744	1748	S12	E18	10410			9	SF	C 2.8						9.9E-04
HOLL		1742	1743	1755	S12	E18	10410	07	19.1	13	SF		3	E		32		F
HOLL		1753	1818	1834	N16	E10	10412	07	18.5	41	SF		3	E		47		FH
GOES		1814	1822	1829	N16	E10	10412			15	SF	C 2.2						1.6E-03
GOES		1836	1840	1843	S12	E17	10410			7	SF	C 3.8						1.1E-03
HOLL		1838	1840	1849	S12	E17	10410	07	19.0	11	SF		3	E		48		F
GOES		2010	2013	2017						7		C 1.3						4.6E-04
GOES		2215	2224	2230						15		B 8.2						5.9E-04
GOES		2348	2356	2401	S11	E13	10410			13	1N	C 5.1						2.5E-03
LEAR		2352	2409	2434	S11	E13	10410	07	19.0	42	1N		3	E		173		FE
GOES	18	0002	0005	0010	S10	E15	10410			8	SF	C 5.4						2.1E-03

Hα SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Opt	Imp Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
HOLL	18	0010E	0010U	0037	S10	E15	10410	07	19.1	27D	SF		3	E		67		FH
GOES		0148	0152	0155						7		B 9.2						3.0E-04
GOES		0246	0251	0258						12		B 7.2						4.8E-04
GOES		0404	0419	0426	S11	E11	10410			22	SF	C 2.0						2.1E-03
LEAR		0408	0418	0423	S11	E11	10410	07	19.0	15	SF		3	E		30		F
GOES		0533	0537	0541	N14	E02	10412			8	SF	B 9.9						3.9E-04
SVTO		0535	0536	0543	N16	E02	10412	07	18.4	8	SF		3	E		24		
LEAR		0535	0536	0546	N14	E02	10412	07	18.4	11	SF		3	E		48		
GOES		0721	0725	0734	S11	E09	10410			13	SF	B 8.0						5.7E-04
SVTO		0722	0723	0727	S11	E09	10410	07	19.0	5	SF		3	E		18		
GOES		0735	0742	0748	S12	E09	10410			13	SF	C 1.2						8.0E-04
LEAR		0738	0740	0748	S12	E09	10410	07	19.0	10	SF		3	E		16		
SVTO		0738	0740	0758	S15	E05	10410	07	18.7	20	SF		3	E		29		F
GOES		1335	1350	1354			10412			19		C 1.3						1.2E-03
HOLL		1337	1338	1342	S14	E06	10410	07	19.0	5	SF		3	E		22		F
HOLL		1349	1350	1356	N16	E02	10412	07	18.7	7	SF		3	E		13		F
HOLL		1447	1450	1518	S13	E05	10410	07	19.0	31	SF		3	E		23		F
HOLL		1523	1523	1527	N16	W02	10412	07	18.5	4	SF		3	E		12		
GOES		1823	1828	1835	S12	E04	10410			12	SF	C 4.8						2.1E-03
HOLL		1826	1827	1843	S12	E04	10410	07	19.1	17	SF		3	E		56		F
GOES		1943	1954	2003	N14	W06	10412			20	SF	C 2.4						2.0E-03
HOLL		1951	1953	2009	N14	W06	10412	07	18.4	18	SF		3	E		16		F
GOES		2052	2055	2058						6		B 9.8						3.0E-04
GOES		2233	2243	2247	N16	W05	10412			14	SF	C 1.8						1.1E-03
HOLL		2236	2242	2249	N16	W05	10412	07	18.6	13	SF		3	E		16		
GOES		2321	2324	2328						7		C 1.4						4.9E-04
LEAR	19	0130	0134	0156	N14	W09	10412	07	18.4	26	SF		3	E		36		F
GOES		0131	0136	0142	N14	W09	10412			11	SF	C 1.8						1.1E-03
LEAR		0320	0321	0326	S12	E00	10410	07	19.1	6	SF		3	E		22		F
GOES		0928	0931	0933	S12	W06	10410			5	1F	C 3.4						7.2E-04
SVTO		0930	0930	0938	S12	W06	10410	07	18.9	8	1F		3	E		107		
GOES		1117	1123	1127						10		C 1.1						5.7E-04
GOES		1442	1446	1452						10		C 1.4						7.6E-04
GOES		1520	1525	1532	S14	W07	10410			12	SF	C 1.4						9.2E-04
HOLL		1523	1525	1531	S14	W07	10410	07	19.1	8	SF		3	E		10		F
HOLL		1552	1554	1555	S11	W09	10410	07	19.0	3	SF		3	E		11		
GOES		1730	1734	1738	N13	E33	10415			8	SF	C 1.7						7.1E-04
HOLL		1733	1733	1738	N13	E33		07	22.2	5	SF		3	E		10		
GOES		1823	1826	1828						5		C 1.3						3.6E-04
GOES		1839	1842	1849						10		C 1.2						6.6E-04
GOES		1906	1909	1912						6		C 1.3						4.3E-04
GOES		2012	2018	2022	S11	W13	10410			10	SF	C 2.4						9.3E-04
HOLL		2016	2018	2032	S11	W13	10410	07	18.9	16	SF		3	E		23		FH
GOES		2219	2225	2230						11		C 3.0						1.5E-03
GOES		2253	2258	2304						11		C 1.7						1.0E-03
GOES		2353	2401U	2405	N12	E30	10415			12	SF	C 2.7						1.7E-03
LEAR		2358	2401U	2409	N12	E30	10415	07	22.2	11	SF		2	E		21		F
LEAR	20	0009	0010	0013	S11	W13	10410	07	19.0	4	SF		2	E		19		F
LEAR		0026	0029	0046	S11	W13	10410	07	19.0	20	SF		2	E		33		F
GOES		0026	0030	0034	S11	W13	10410			8	SF	C 1.8						7.7E-04
LEAR		0057	0116	0129	S11	W13	10410	07	19.1	32	SF		2	E		50		F
GOES		0109	0115	0122	S11	W13	10410			13	SF	C 2.8						1.8E-03
LEAR		0338	0339	0351	N12	E28	10415	07	22.3	13	SF		2	E		12		
GOES		0348	0356	0410	S12	W15	10410			22	SF	C 3.9						4.2E-03
LEAR		0349	0351	0416	S12	W15	10410	07	19.0	27	SF		2	E		87		F
GOES		0436	0439	0443						7		C 1.1						4.2E-04
GOES		0518	0523	0526						8		C 1.2						5.4E-04
GOES		0546	0550	0602						16		B 9.0						7.9E-04
GOES		0619	0625	0635						16		C 1.4						1.1E-03
GOES		0819	0823	0828						9		C 2.5						1.2E-03
GOES		0833	0836	0838	S22	W27	10417			5	SF	C 2.0						5.7E-04
LEAR		0835	0836	0840	S22	W27		07	18.3	5	SF		2	E		18		F
GOES		0945	1002	1008						23		C 2.4						2.6E-03
GOES		1152	1155	1157						5		C 1.7						4.4E-04
GOES		1200	1206	1223						23		C 2.1						2.5E-03
HOLL		1401	1401	1408	S12	W21	10410	07	19.0	7	SF		3	E		35		F

Hα SOLAR FLARES

JULY 2003

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
HOLL	20	1414	1414	1422	S12	W21	10410	07	19.0	8	SF		3	E		13		
SVTO		1448	1451	1456	S12	W22	10410	07	18.9	8	SF		3	E		28		
GOES		1448	1452	1454	S12	W22	10410			6	SF	C 3.7						1.1E-03
GOES		1549	1554	1557	S12	W33	10410			8	SF	C 1.8						7.0E-04
HOLL		1553	1554	1557	S12	W33	10410	07	18.2	4	SF		3	E		16		
SVTO		1553	1554	1557	S12	W23	10410	07	18.9	4	SF		3	E		17		
GOES		1601	1608	1619	S11	W22	10410			18	SF	C 5.6						4.3E-03
HOLL		1605	1611	1627	S11	W22	10410	07	19.0	22	SF		3	E		37		F
SVTO		1606	1612	1620	S12	W23	10410	07	18.9	14	SF		3	E		24		F
GOES		1641	1647	1653	S12	W23	10410			12	SF	C 3.7						2.1E-03
HOLL		1645	1646	1656	S12	W23	10410	07	19.0	11	SF		3	E		32		F
GOES		1722	1726	1736	S11	W22	10410			14	SF	C 3.9						2.5E-03
SVTO		1725	1726	1730	S12	W23	10410	07	19.0	5	SF		2	E		37		
HOLL		1725	1726	1744	S11	W22	10410	07	19.1	19	SF		3	E		32		F
GOES		1753	1758	1801	S11	W24	10410			8	SF	C 3.6						1.3E-03
HOLL		1756	1758	1803	S11	W24	10410	07	18.9	7	SF		3	E		46		
GOES		1806	1811	1817						11		C 3.1						1.8E-03
HOLL		1858	1911	1934	S11	W24	10410	07	19.0	36	SF		3	E		26		F
GOES		1904	1911	1925	S11	W24	10410			21	SF	C 4.4						4.9E-03
HOLL		1906	1910	1921	S21	W34	10417	07	18.2	15	SF		3	E		19		
GOES		2103	2108	2114	S11	W27	10410			11	SF	C 2.7						1.5E-03
HOLL		2106	2108	2115	S11	W27	10410	07	18.8	9	SF		3	E		19		
GOES		2337	2341	2344						7		C 1.6						5.6E-04
HOLL	21	0004	0007	0010	S22	W37	10417	07	18.1	6	SF		3	E		13		
GOES		0004	0008	0021	S22	W37	10417			17	SF	C 1.8						1.7E-03
LEAR		0005	0005	0021	S22	W36	10417	07	18.2	16	SF		2	E		25		F
GOES		0028	0035	0041	S11	W27	10410			13	SF	C 3.2						2.0E-03
HOLL		0031	0033	0055	S11	W27	10410	07	19.0	24	SF		3	E		24		
LEAR		0031	0034	0057	S12	W26	10410	07	19.1	26	SF		2	E		60		F
LEAR		0057	0059	0105	S12	W26	10410	07	19.1	8	SF		2	E		19		F
GOES		0109	0112	0115						6		C 1.2						3.9E-04
GOES		0118	0124	0137						19		C 1.5						1.6E-03
GOES		0150	0155	0158						8		C 1.3						5.6E-04
GOES		0219	0228	0234	S12	W30	10410			15	SF	C 3.3						2.0E-03
LEAR		0227	0227	0232	S12	W30	10410	07	18.8	5	SF		3	E		16		F
GOES		0319	0328	0336						17		C 1.4						1.3E-03
GOES		0339	0347	0353						14		C 2.3						1.6E-03
SVTO		0454	0454	0500	S12	W29	10410	07	19.0	6	SF		3	E		12		
SVTO		0722	0727	0734	S12	W31	10410	07	19.0	12	SF		3	E		26		
GOES		0724	0727	0731	S12	W31	10410			7	SF	C 1.7						6.5E-04
GOES		0736	0739	0741						5		C 1.7						4.4E-04
SVTO		1000	1001	1005	S12	W33	10410	07	18.9	5	SF		3	E		17		
HOLL		1359E	1359U	1403	S12	W45	10410	07	18.2	4D	SF		3	E		14		
GOES		1411	1417	1424						13		C 1.3						8.9E-04
GOES		1702	1709	1729	S21	W43	10417			27	SF	C 1.3						1.7E-03
SVTO		1705	1708	1713	S21	W43	10417	07	18.4	8	SF		3	E		26		
GOES		2000	2003	2013						13		C 1.1						7.7E-04
GOES		2109	2115	2125						16		C 1.5						1.3E-03
HOLL		2200E	2211U	2215	S21	W47	10417	07	18.3	15D	SF		3	E		61		F
GOES		2230	2233	2235	N15	W37	10409			5	SF	C 2.0						5.0E-04
HOLL		2231	2232	2237	N15	W37	10409	07	19.1	6	SF		3	E		44		
GOES		2356	2402	2407	S21	W49	10417			11	SF	C 2.8						1.5E-03
LEAR		2357	2451	2540	S21	W56	10417	07	17.7	103	SF		3	E		43		T
HOLL		2359	2401	2430	S21	W49	10417	07	18.2	31	SF		3	E		35		
GOES	22	0157	0206	0218	N17	W54	10412			21	SF	C 3.5						3.7E-03
LEAR		0158	0206	0243	N17	W54	10412	07	18.0	45	SF		3	E		59		
GOES		0335	0340	0343	S22	W52	10417			8	SF	C 2.8						9.9E-04
LEAR		0338	0338	0345	S22	W52	10417	07	18.1	7	SF		3	E		27		
GOES		0345	0410	0420						35		C 3.5						5.6E-03
GOES		0605	0632	0649			10417			44		C 1.5						3.1E-03
SVTO		0612	0613	0616	S20	W55	10417	07	18.0	4	SF		3	E		28		
SVTO		0625	0625	0635	S19	W52	10417	07	18.3	10	SF		3	E		27		
GOES		0706	0718	0730	S21	W53	10417			24	1F	C 5.2						5.1E-03
LEAR		0709	0715	0747	S21	W53	10417	07	18.2	38	1F		3	E		125		F
SVTO		0710	0718	0740	S20	W56	10417	07	18.0	30	1F		3	E		147		F
GOES		0816	0820	0830	S21	W54	10417			14	SF	C 3.6						2.2E-03

Hα SOLAR FLARES

JULY 2003

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	22	0818	0819	0837	S21	W54	10417	07	18.2	19	SF		3	E		67		FH
SVTO		0819	0822	0828	S19	W56	10417	07	18.1	9	SF		3	E		94		F
HOLL		1322	1333	1337	S22	W59	10417	07	18.0	15	SF		3	E		30		F
GOES		1415	1420	1426	S22	W58	10417			11	SF	C 1.3						7.5E-04
HOLL		1418	1419	1430	S22	W58	10417	07	18.1	12	SF		3	E		19		F
GOES		1515	1523	1530	S22	W58	10417			15	SF	C 1.7						1.3E-03
HOLL		1518	1523	1535	S22	W58	10417	07	18.2	17	SF		3	E		35		F
SVTO		1519	1522	1526	S21	W57	10417	07	18.3	7	SF		3	E		11		
GOES		1650	1750	1834	N21	W46	10409			104	SF	C 1.8						8.8E-03
HOLL		1743	1746	1751	N21	W46	10409	07	19.2	8	SF		3	E		14		F
GOES		2119	2124	2128	S21	W63	10417			9	SF	C 1.5						6.3E-04
HOLL		2123	2125	2129	S21	W63	10417	07	18.1	6	SF		3	E		24		
HOLL	23	0020	0020	0024	S21	W62	10417	07	18.3	4	SF		3	E		22		
LEAR		0131	0142	0152	S21	W65	10417	07	18.1	21	SF		3	E		29		F
GOES		0137	0142	0147	S21	W65	10417			10	SF	C 1.8						9.1E-04
LEAR		0206	0208	0216	S21	W66	10417	07	18.0	10	SF		3	E		25		
GOES		0409	0413	0416			10409			7		C 1.5						5.4E-04
GOES		0430	0435	0441	S21	W66	10417			11	SF	C 1.9						1.1E-03
LEAR		0436	0438	0442	S21	W66	10417	07	18.1	6	SF		3	E		26		
GOES		0546	0557	0603	S19	W70	10417			17	1F	C 3.9						2.8E-03
LEAR		0549	0601	0616	S21	W67	10417	07	18.1	27	SF		3	E		93		FH
SVTO		0552	0601	0617	S19	W70	10417	07	17.9	25	1F		3	E		136		FH
GOES		0824	0828	0835			10412			11		B 9.7						5.7E-04
GOES		0919	0923	0928			10419			9		C 1.0						5.2E-04
SVTO		0939	0940	0942	N17	W57	10409	07	19.1	3	SF		3	E		11		
GOES		1128	1137	1146	S19	W73	10417			18	SF	C 2.3						1.9E-03
SVTO		1131	1136	1142	S19	W73	10417	07	17.9	11	SF		3	E		24		F
GOES		1524	1530	1544			10417			20		C 2.2						2.1E-03
GOES		1714	1749	1806			10417			52		C 1.8						4.0E-03
GOES		2207	2211	2218			10417			11		B 8.9						5.1E-04
GOES	24	0119	0123	0140						21		C 1.4						1.5E-03
GOES		0229	0249	0305			10417			36		C 1.6						2.8E-03
GOES		0649	0734	0743			10417			54		C 1.4						3.9E-03
GOES		1400	1403	1405						5		C 1.2						2.7E-04
GOES	25	1639	1719	1802						83		C 1.1						4.3E-03
GOES	26	1841	1846	1849			10421			8		B 7.1						2.6E-04
GOES		2207	2211	2215			10414			8		B 4.4						1.8E-04
GOES	27	1738	1742	1746			10409			8		B 2.8						1.2E-04
GOES		2017	2020	2023			10422			6		B 4.5						1.3E-04
HOLL		2041	2042	2045	N14	W25		07	26.0	4	SF		3	E		16		
GOES		2225	2232	2241			10421			16		B 6.7						5.4E-04
GOES		2350	2356	2403			10422			13		B 8.1						5.0E-04
GOES	28	0025	0028	0039			10422			14		B 4.6						3.6E-04
LEAR		0101	0102	0106	N13	W26	10422	07	26.1	5	SF		3	E		18		
GOES		0325	0328	0331			10422			6		B 5.1						1.5E-04
GOES		0513	0520	0535			10421			22		B 4.9						5.6E-04
LEAR		0557	0609	0619	N14	W31	10422	07	25.9	22	SF		3	E		17		F
GOES		0658	0702	0704			10422			6		B 4.5						1.3E-04
GOES		1012	1016	1026			10422			14		B 6.2						4.2E-04
GOES		1107	1112	1114			10421			7		C 1.2						2.8E-04
GOES		1159	1203	1216			10422			17		B 9.2						7.6E-04
GOES		1343	1349	1357	N13	W33	10422			14	SF	C 1.0						7.3E-04
HOLL		1346	1347	1352	N13	W33	10422	07	26.1	6	SF		3	E		13		H
GOES	29	0128	0139	0143	S13	E72	10421			15	1F	M 1.3						4.7E-03
LEAR		0133E	0137U	0148D	S13	E72	10421	08	3.5	15D	1F		3	E		109		F
GOES		0532	0548	0550			10421			18		C 1.0						5.1E-04
GOES		0948	1009	1014			10422			26		B 3.7						4.8E-04
GOES		1245	1304	1312			10422			27		B 8.0						8.6E-04
GOES		1449	1454	1459			10421			10		B 4.0						1.9E-04
GOES		1552	1556	1600	S10	E63	10421			8	SF	B 3.7						1.3E-04
HOLL		1555	1557	1559	S10	E63	10421	08	3.4	4	SF		3	E		16		

Hα SOLAR FLARES

JULY 2003

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
GOES	29	1633	1641	1646			10422			13		C 1.7						7.8E-04
GOES		1906	1910	1920			10422			14		B 2.7						2.0E-04
GOES		2132	2138	2144			10422			12		B 6.1						3.7E-04
GOES		2257	2303	2309			10422			12		B 9.0						5.1E-04
GOES		2344	2354	2403	N15	W55	10422			19	SF	C 1.4						1.1E-03
HOLL		2348	2349	2402	N15	W55	10422	07	25.8	14	SF		3	E		22		H
GOES	30	0059	0108	0122			10422			23		B 3.1						4.0E-04
GOES		0212	0220	0229			10422			17		C 2.2						1.4E-03
GOES		0404	0410	0412	N14	W55	10422			8	1B	M 2.5						4.9E-03
LEAR		0408	0409	0446	N14	W55	10422	07	26.0	38	1B		3	E		146		FE
GOES		0517	0520	0530			10422			13		B 3.4						2.5E-04
GOES		0652	0656	0700			10422			8		B 9.5						3.7E-04
GOES		0952	1014	1024			10421			32		B 9.1						1.4E-03
GOES		1943	1947	1950						7		B 1.5						6.5E-05
GOES	31	0046	0049	0052						6		B 2.7						9.5E-05
GOES		0436	0441	0446	N13	W67	10422			10	SF	B 3.6						1.6E-04
LEAR		0440	0441	0444	N13	W67	10422	07	26.1	4	SF		3	E		23		F
GOES		0759	0803	0805			10422			6		B 3.0						9.5E-05
GOES		0830	0840	0845						15		B 2.9						2.2E-04
GOES		1027	1029	1030						3		B 2.7						3.9E-05
GOES		1618	1624	1638						20		B 6.8						6.3E-04
GOES		2001	2007	2011						10		B 6.5						3.1E-04
GOES		2117	2123	2129						12		B 5.4						3.4E-04
GOES		2216	2221	2230			10423			14		C 1.9						1.1E-03

"Remarks"

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

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

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

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

JULY 2003

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	8800	SVTO	8	S	1117.0	1117.0	U	190.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1317.0	1317.0	U	22.0			QL=4 ST=3 TYP=3
02	2695	SVTO	4	S/F	0711.0	0713.0	11.0	200.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0712.0	0713.0	5.0	230.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	0712.0	0713.0	10.0	58.0			QL=4 ST=2 TYP=3
04	2695	SGMR	4	S/F	1438.0	1440.0	5.0	71.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	1439.0	1440.0	4.0	59.0			QL=4 ST=2 TYP=3
	2695	SGMR	20	GRF	1453.0	1455.0	49.0	24.0			QL=4 ST=2 TYP=2
06	8800	PALE	8	S	2002.0	2002.0	1.0	93.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	2002.0	2002.0	1.0	93.0			QL=4 ST=2 TYP=3
09	2695	SGMR	4	S/F	1626.0	1626.0	4.0	42.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	1626.0	1626.0	11.0	54.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1636.0	1636.0	2.0	26.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	2207.0	2207.0	1.0	53.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2208.0	2208.0	U	67.0			QL=4 ST=2 TYP=3
10	2695	SVTO	4	S/F	1357.0	1359.0	4.0	130.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	1357.0	1359.0	5.0	270.0			QL=4 ST=2 TYP=3
	8800	SGMR	49	GB	1357.0	1359.0	10.0	500.0			QL=4 ST=2 TYP=6
	2695	SGMR	4	S/F	1357.0	1400.0	10.0	140.0			QL=4 ST=2 TYP=3
12	2695	SGMR	4	S/F	1901.0	1903.0	3.0	55.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1902.0	1903.0	2.0	39.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	1903.0	1903.0	U	58.0			QL=4 ST=2 TYP=3
17	2695	SVTO	4	S/F	0818.0	0821.0	5.0	280.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0819.0	0821.0	4.0	280.0			QL=4 ST=2 TYP=3
	8800	LEAR	49	GB	0819.0	0820.0	5.0	720.0			QL=4 ST=2 TYP=6
	8800	SVTO	49	GB	0819.0	0820.0	7.0	710.0			QL=4 ST=2 TYP=6
19	8800	SVTO	8	S	0930.0	0930.0	U	27.0			QL=4 ST=2 TYP=3
29	2695	LEAR	8	S	0136.0	0136.0	U	34.0			QL=4 ST=2 TYP=3
30	8800	LEAR	8	S	0409.0	0409.0	1.0	130.0			QL=4 ST=2 TYP=3
	2695	LEAR	8	S	0409.0	0409.0	1.0	190.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0409.0	0409.0	1.0	120.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	0409.0	0409.0	1.0	210.0			QL=4 ST=2 TYP=3
	2695	SVTO	8	S	0409.0	0409.0	2.0	230.0			QL=2 ST=2 TYP=3
	8800	SVTO	4	S/F	0409.0	0409.0	5.0	170.0			QL=2 ST=2 TYP=3

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

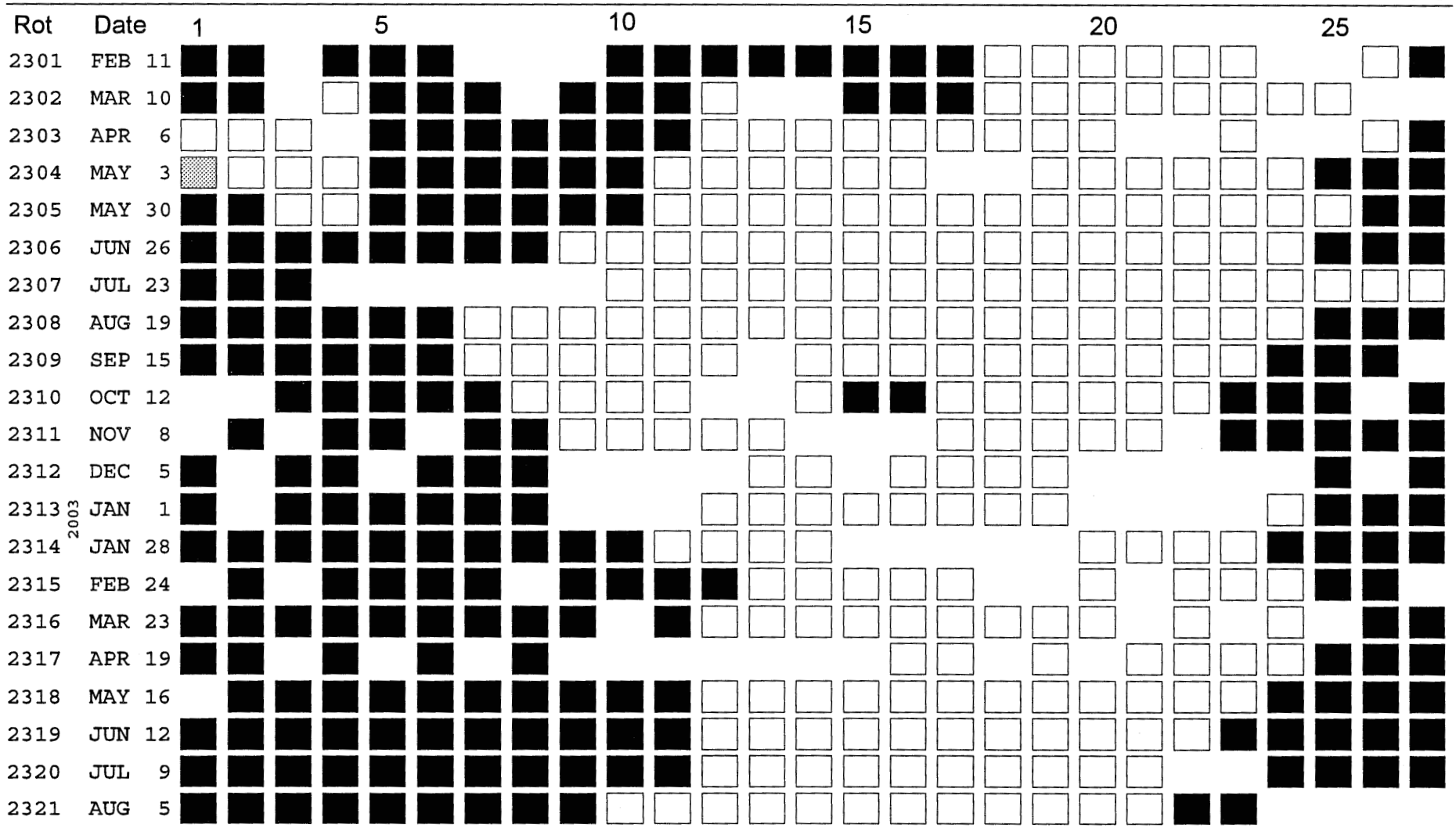
Explanation of Type Code:

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

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD

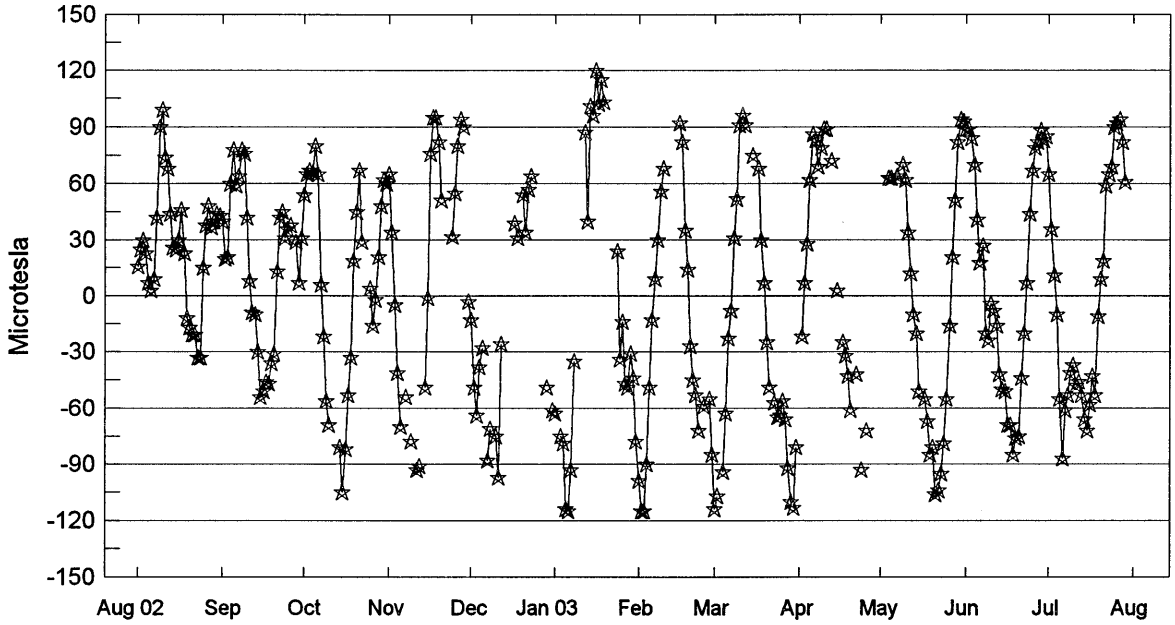


Mean Solar Magnetic Field Polarity: □ = field > 2 microT; ▒ = -2 microT ≤ field ≤ 2 microT

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

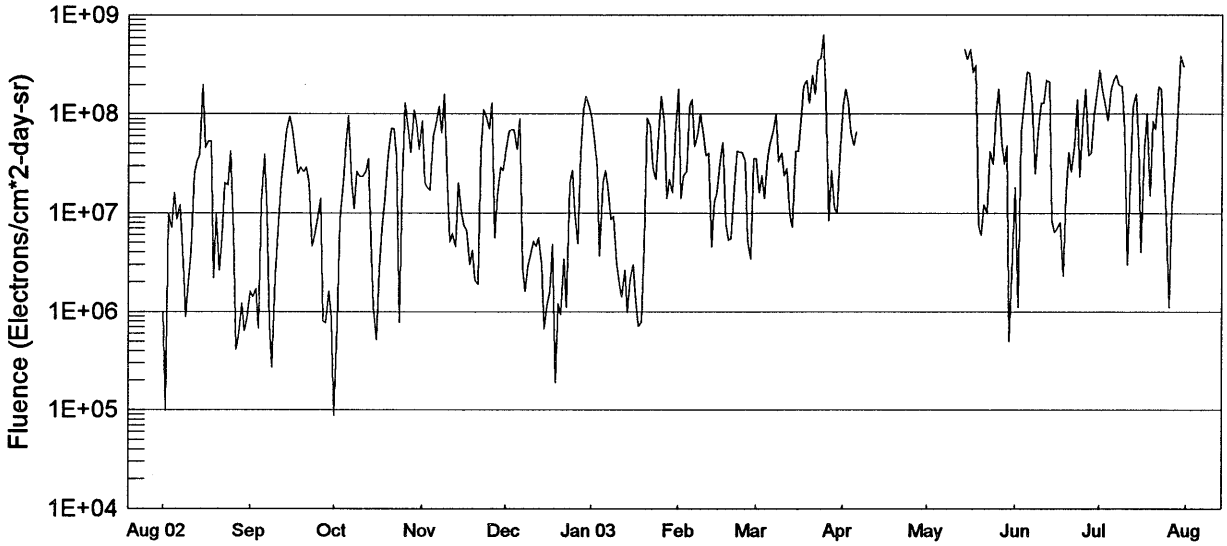
Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

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



Day	Aug 02	Sep	Oct	Nov	Dec	Jan 03	Feb	Mar	Apr	May	Jun	Jul
1	16	40	54	65	-13	-63	-99	-114	---	---	89	65
2	25	20	65	34	-49	---	-115	-107	-22	---	89	36
3	30	21	67	-5	-64	-75	-115	---	7	---	84	11
4	23	60	66	-41	-38	-79	-90	-94	28	63	70	-10
5	7	78	80	-70	-28	-114	-49	-63	62	63	41	-55
6	3	59	65	---	---	-115	-13	-23	86	---	18	-87
7	9	64	6	-54	-88	-93	9	-8	83	64	27	-61
8	42	78	-22	---	-71	-35	30	31	69	---	-20	-53
9	90	76	-56	-78	---	---	56	52	79	70	-24	-41
10	99	42	-69	---	-75	---	68	91	89	62	-4	-37
11	74	8	---	-93	-97	---	---	96	89	34	-8	-48
12	68	-9	---	-91	-26	87	---	91	---	12	-16	-46
13	44	-10	---	---	---	40	---	---	72	-10	-42	-53
14	26	-30	-81	-49	---	101	---	---	---	-20	-50	-66
15	25	-54	-105	-1	---	96	---	75	3	-51	-51	-72
16	30	-51	-82	76	---	120	92	---	---	---	-69	-58
17	46	-46	-53	95	39	102	82	68	-25	-55	-69	-43
18	23	-47	-33	95	31	115	35	30	-32	-67	-85	-53
19	-12	-36	19	82	---	103	14	7	-43	-85	-76	-11
20	-17	-31	45	51	54	---	-27	-25	-61	-81	-75	9
21	-21	13	67	---	34	---	-45	-49	---	-106	-44	19
22	-21	42	29	---	57	---	-53	---	-42	-104	-20	59
23	-33	45	---	---	64	---	-72	-57	---	-95	7	65
24	-33	31	---	32	---	24	---	-65	-93	-79	44	69
25	15	36	4	55	---	-34	-59	-64	---	-55	67	90
26	38	38	-16	80	---	-14	---	-56	-72	-16	79	92
27	48	---	-2	94	---	-47	-55	-66	---	21	82	94
28	37	29	21	90	---	-49	-85	-92	---	51	88	82
29	40	7	48	---	-49	-31		-110	---	82	83	61
30	44	31	62	-3	---	-44		-113	---	94	85	---
31	43		60		-61	-78		-81		93		---

GOES Daily Electron Fluence
Aug 2002 - Jul 2003



Day	Aug 02	Sep	Oct	Nov	Dec	Jan 03	Feb	Mar	Apr	May	Jun	Jul
1	1.0E+06	1.6E+06	8.7E+04	8.5E+07	4.2E+07	9.5E+07	1.8E+08	3.5E+07	4.5E+08	--	1.8E+07	2.8E+08
2	9.8E+04	1.4E+06	7.4E+05	2.0E+07	6.7E+07	5.1E+07	1.4E+07	1.6E+07	6.3E+08	sensor	1.1E+06	1.8E+08
3	1.0E+07	1.7E+06	8.5E+06	1.8E+07	7.0E+07	2.9E+07	2.4E+07	2.4E+07	3.0E+08	problems	6.5E+07	1.2E+08
4	7.1E+06	6.8E+05	2.0E+07	1.7E+07	6.8E+07	3.7E+06	2.6E+07	1.4E+07	1.4E+08	--	1.2E+08	8.5E+07
5	1.6E+07	1.3E+07	5.1E+07	5.9E+07	4.4E+07	2.0E+07	1.2E+08	3.6E+07	1.7E+08	--	2.7E+08	1.8E+08
6	8.6E+06	3.9E+07	9.6E+07	7.8E+07	8.9E+07	2.7E+07	1.4E+08	5.2E+07	1.6E+08	--	2.6E+08	2.2E+08
7	1.2E+07	1.0E+07	2.1E+07	1.2E+08	2.7E+06	1.8E+07	4.7E+07	6.8E+07	1.7E+08	sensor	1.2E+08	2.5E+08
8	4.2E+06	7.5E+05	1.1E+07	6.5E+07	1.6E+06	8.6E+06	6.3E+07	9.9E+07	--	problems	2.5E+07	2.0E+08
9	8.8E+05	2.7E+05	2.6E+07	1.6E+08	2.8E+06	9.2E+06	1.0E+08	3.3E+07	--	--	6.4E+07	1.9E+08
10	2.0E+06	2.3E+06	2.3E+07	2.0E+07	3.9E+06	3.1E+06	6.1E+07	4.0E+07	--	--	1.3E+08	7.0E+07
11	4.0E+06	6.4E+06	2.3E+07	5.1E+06	5.2E+06	2.0E+06	3.8E+07	2.4E+07	--	--	1.3E+08	3.0E+06
12	2.5E+07	2.1E+07	2.6E+07	6.2E+06	4.6E+06	1.4E+06	4.0E+07	2.8E+07	sensor	--	2.2E+08	2.1E+07
13	3.3E+07	3.7E+07	3.5E+07	4.5E+06	5.6E+06	2.6E+06	4.5E+06	9.7E+06	problems	--	2.1E+08	1.2E+08
14	3.9E+07	6.8E+07	5.4E+06	2.0E+07	3.0E+06	9.8E+05	1.3E+07	7.2E+06	--	4.6E+08	8.3E+06	1.6E+08
15	2.0E+08	9.5E+07	1.1E+06	1.0E+07	6.7E+05	2.1E+06	1.6E+07	4.2E+07	--	3.6E+08	6.4E+06	5.0E+07
16	4.6E+07	7.2E+07	5.2E+05	7.3E+06	1.2E+06	3.0E+06	3.4E+07	4.2E+07	--	4.5E+08	6.9E+06	4.0E+06
17	5.3E+07	4.4E+07	2.7E+06	6.8E+06	1.6E+06	1.3E+06	5.2E+07	8.4E+07	sensor	2.7E+08	8.0E+06	4.5E+07
18	5.3E+07	2.5E+07	6.9E+06	3.0E+06	4.8E+06	7.1E+05	7.7E+06	1.9E+08	problems	3.1E+08	2.3E+06	9.9E+07
19	2.2E+06	2.9E+07	1.6E+07	4.2E+06	1.9E+05	7.7E+05	5.3E+06	2.2E+08	--	7.4E+06	1.6E+07	1.5E+07
20	9.7E+06	2.6E+07	3.8E+07	2.1E+06	1.2E+06	4.7E+06	5.5E+06	1.3E+08	--	6.0E+06	4.1E+07	8.4E+07
21	2.6E+06	2.9E+07	7.2E+07	1.9E+06	9.3E+05	9.1E+07	1.8E+07	2.5E+08	--	1.2E+07	2.6E+07	7.1E+07
22	5.7E+06	2.0E+07	7.1E+07	4.3E+07	3.4E+06	7.6E+07	4.2E+07	1.6E+08	sensor	1.0E+07	4.9E+07	1.9E+08
23	2.0E+07	4.6E+06	3.7E+07	1.1E+08	1.1E+06	2.9E+07	4.1E+07	3.5E+08	problems	4.2E+07	1.4E+08	1.8E+08
24	1.9E+07	6.0E+06	7.7E+05	9.1E+07	2.0E+07	2.2E+07	4.1E+07	3.7E+08	--	3.1E+07	2.3E+07	3.5E+07
25	4.2E+07	8.4E+06	2.2E+07	7.1E+07	2.7E+07	6.5E+07	3.3E+07	6.3E+08	--	9.9E+07	8.7E+07	9.4E+06
26	6.2E+06	1.4E+07	1.3E+08	1.3E+08	1.0E+07	1.5E+08	5.2E+06	1.4E+08	--	1.8E+08	1.8E+08	1.1E+06
27	4.1E+05	8.0E+05	6.9E+07	5.6E+06	4.9E+06	8.1E+07	3.4E+06	8.3E+06	sensor	5.1E+07	3.8E+07	1.2E+07
28	5.7E+05	7.6E+05	4.1E+07	1.5E+07	4.1E+07	1.4E+07	3.5E+07	2.7E+07	problems	3.1E+07	4.0E+07	3.2E+07
29	1.2E+06	1.6E+06	1.1E+08	2.9E+07	1.1E+08	2.2E+07		1.1E+07	--	4.8E+07	9.4E+07	1.1E+08
30	6.4E+05	8.5E+05	8.0E+07	2.7E+07	1.5E+08	1.6E+07		1.0E+07	--	5.0E+05	1.7E+08	3.9E+08
31	8.3E+05		4.4E+07		1.2E+08	6.1E+07		3.7E+07		3.6E+06		3.0E+08

NOTE: The electron detector responds significantly to protons above 32 MeV; therefore, electron data are contaminated when a proton event is in progress. These days are indicated with '-999' in the table and are not plotted. '--' indicates data not available.
NOTE: GOES9 data began April, 1996 and ended on 26 July, 1998. GOES12 is primary satellite as of 15 May 2003.

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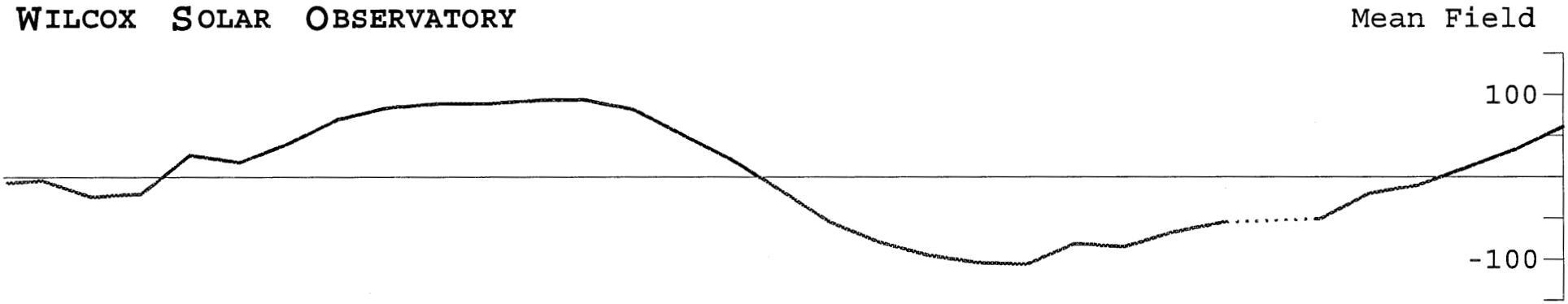
SOLAR MAGNETIC FIELD SYNOPTIC CHART

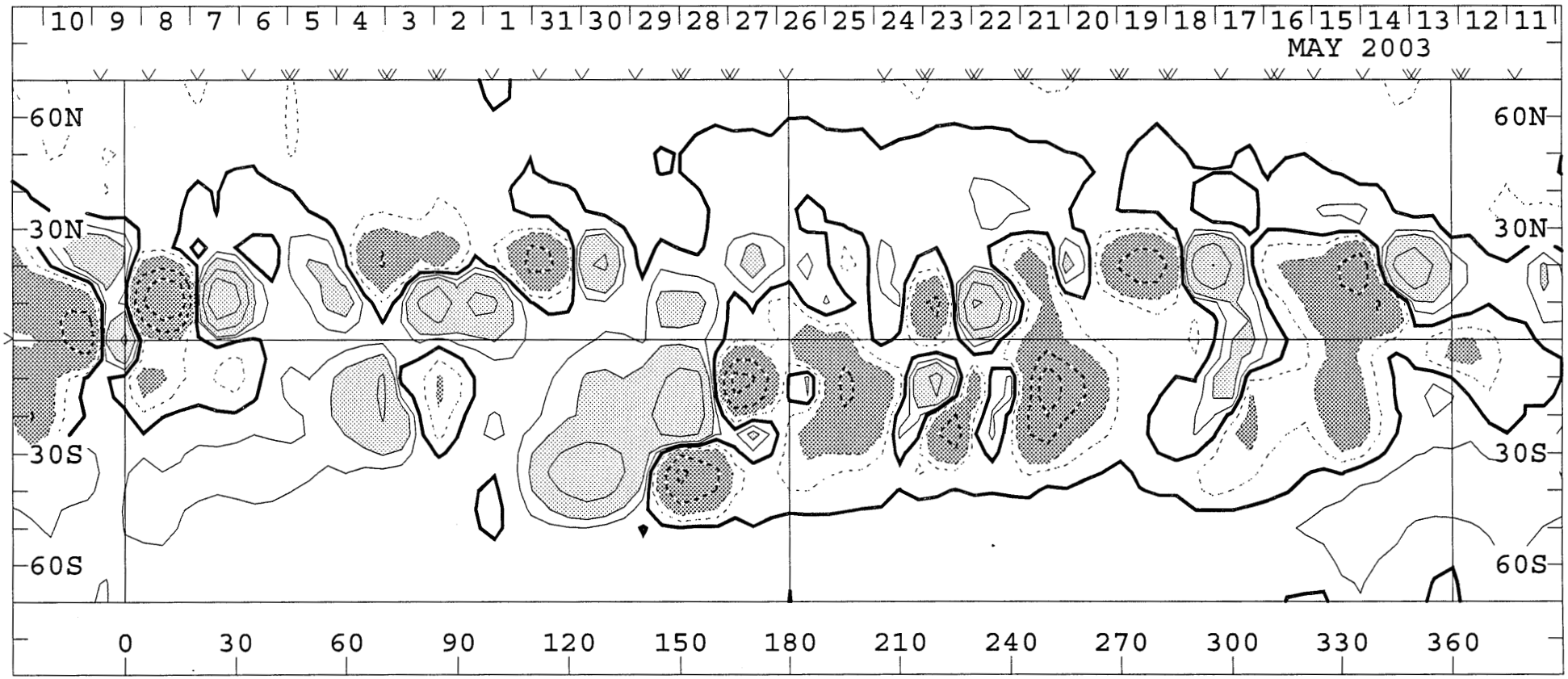
CARRINGTON ROTATION NUMBER 2003

(13 May to 9 June 2003)

WILCOX SOLAR OBSERVATORY



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



Heliographic Longitude

SOLAR MAGNETIC FIELD SYNOPTIC CHART

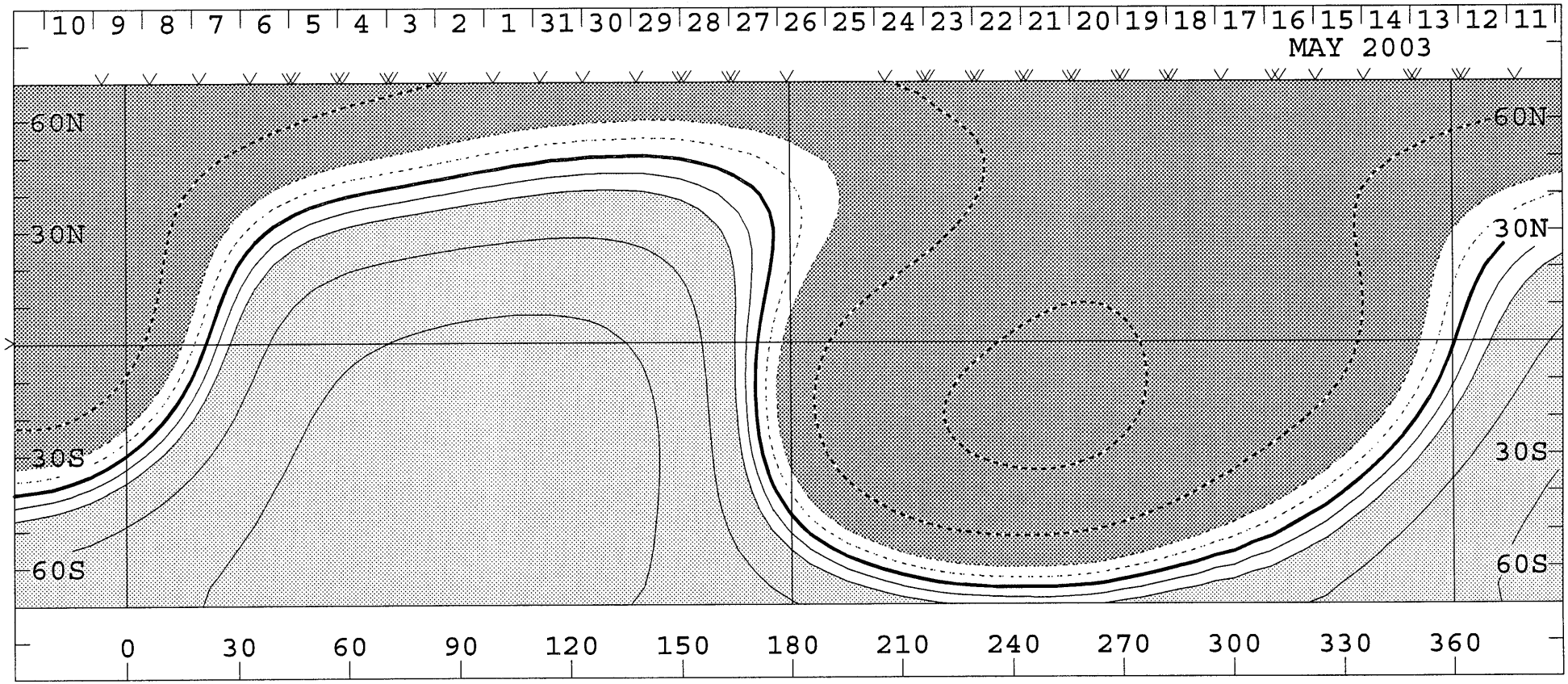
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 2003

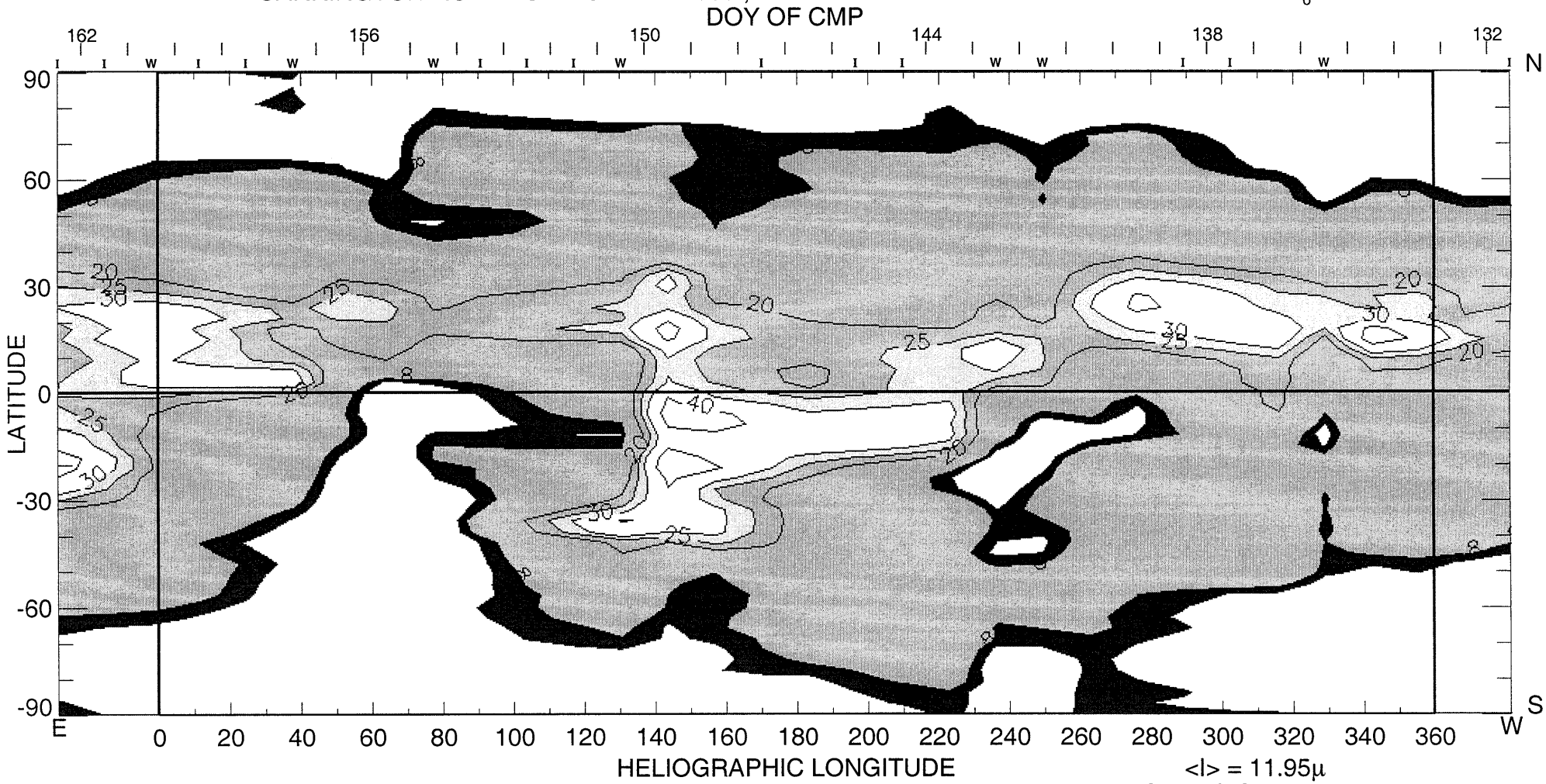
(13 May to 9 June 2003)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



CARRINGTON ROTATION NUMBER 2003 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o

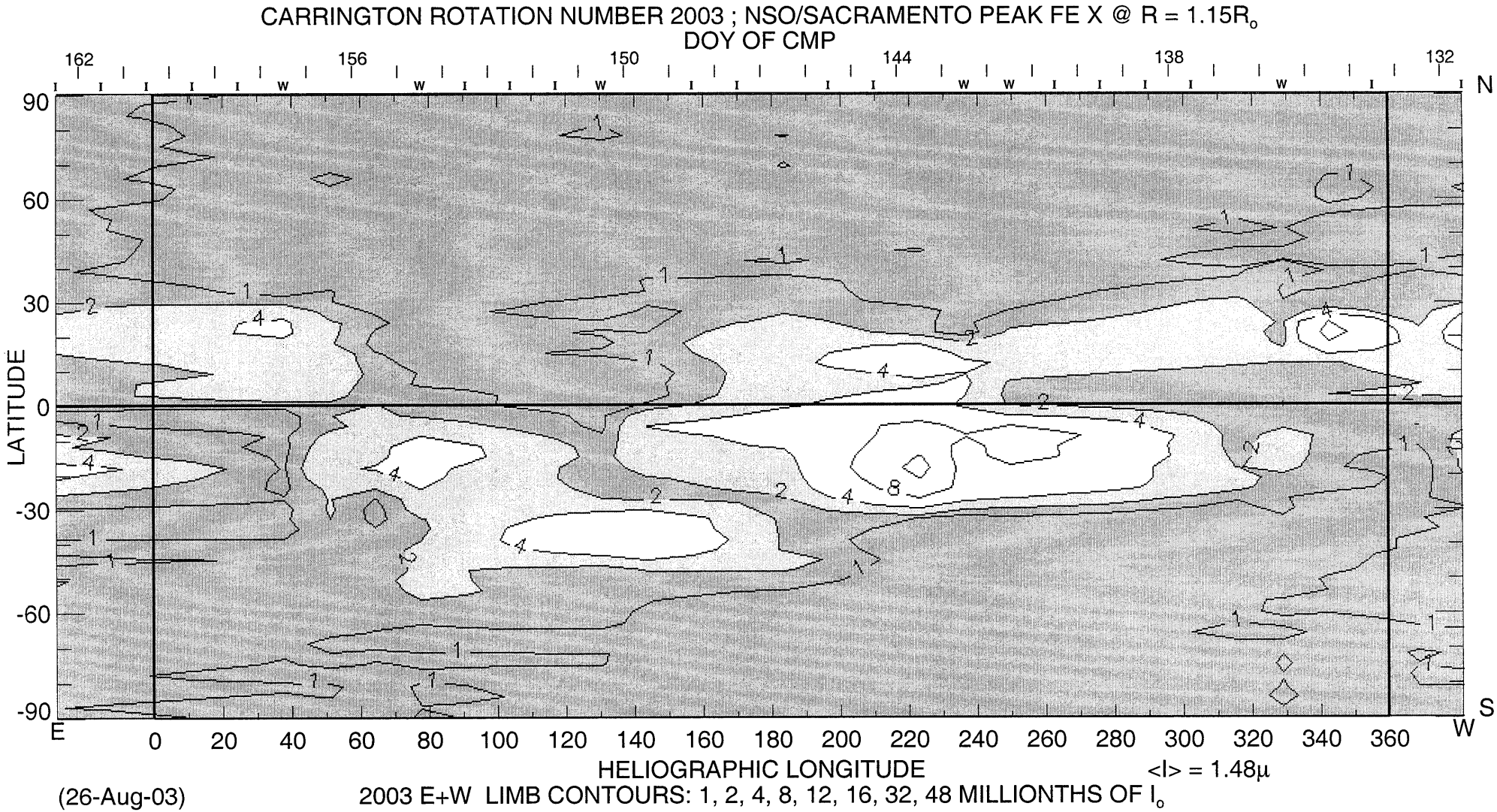


<I> = 11.95μ

(27-Aug-03) 2003 E+W LIMB CONTOURS: 6, 8, 20, 25, 30, 40, 50, 60, 80, 100, 120 MILLIONTHS OF I_o

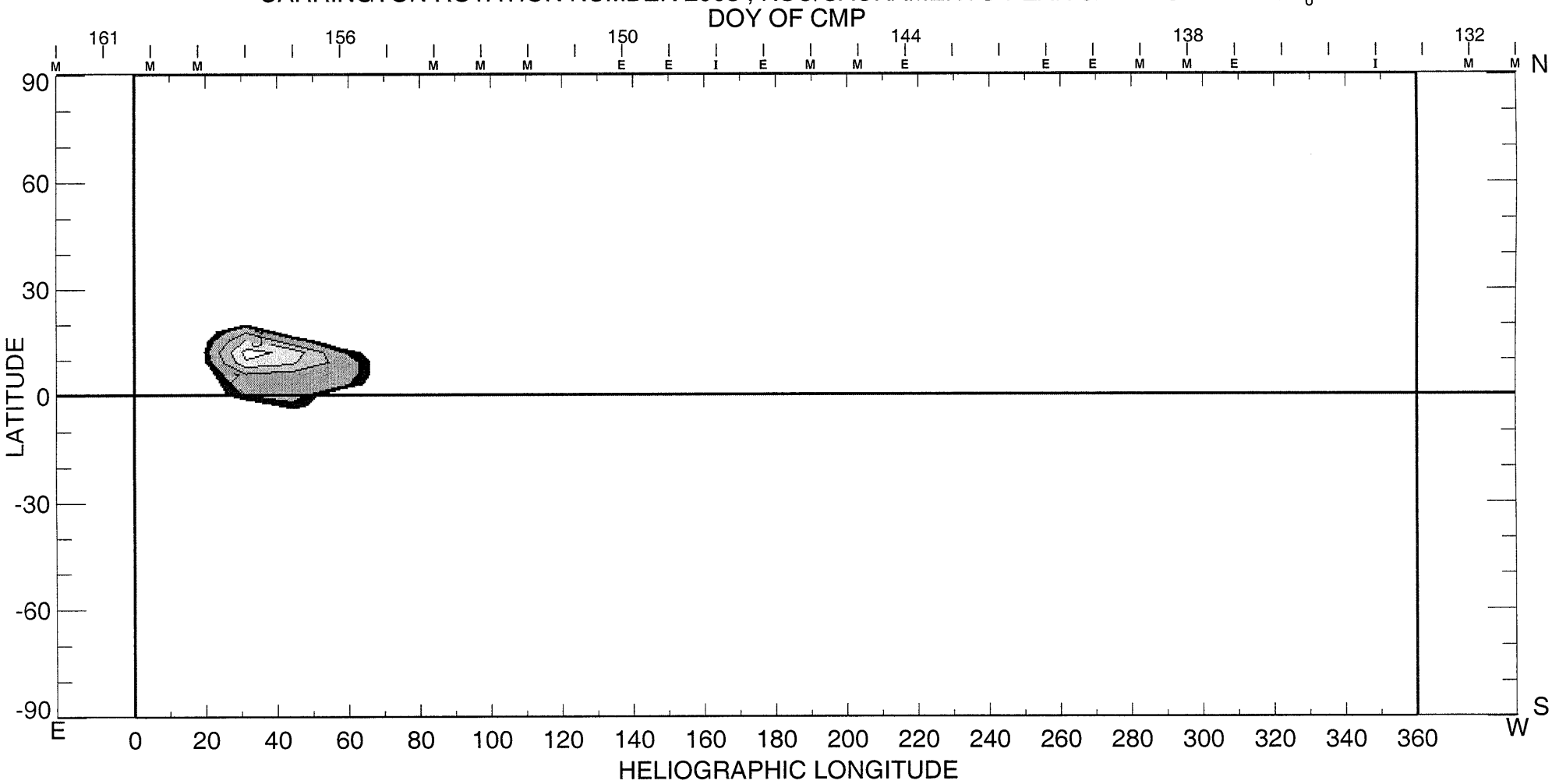
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

tex Wed Aug 27 13 14 17 2003



altrock Tue Aug 26 13:27:45 2003

CARRINGTON ROTATION NUMBER 2003 ; NSO/SACRAMENTO PEAK CA XV @ R = 1.15R_o



(07-Aug-03) 2003 W+E LIMB CONTOURS: YELMIN, 1, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20 MILLIONTHS OF I_o

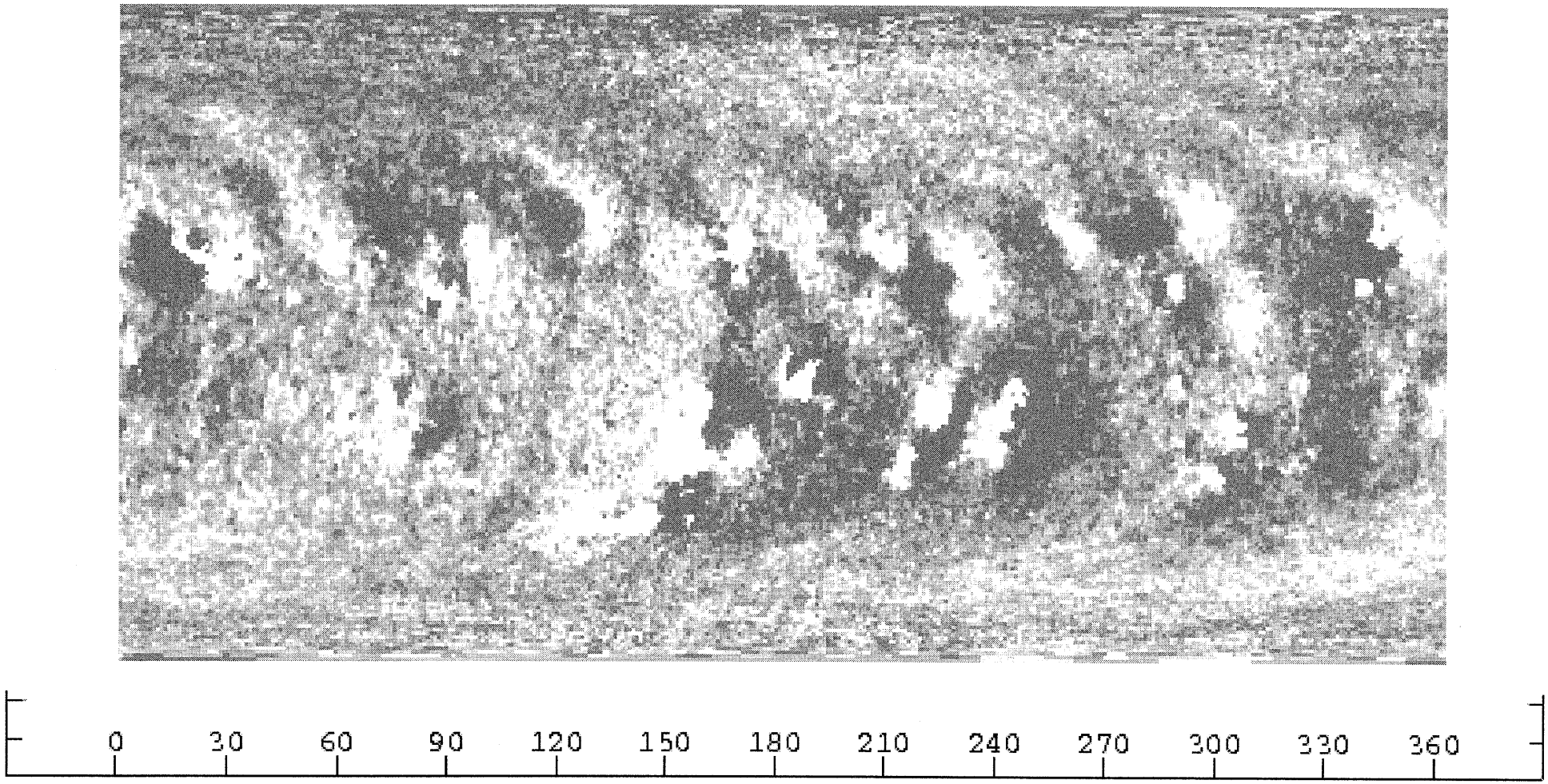
tex Thu Aug 7 15:12:06 2003

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2003

(13 May to 9 June 2003)

National Solar Observatory/Kitt Peak



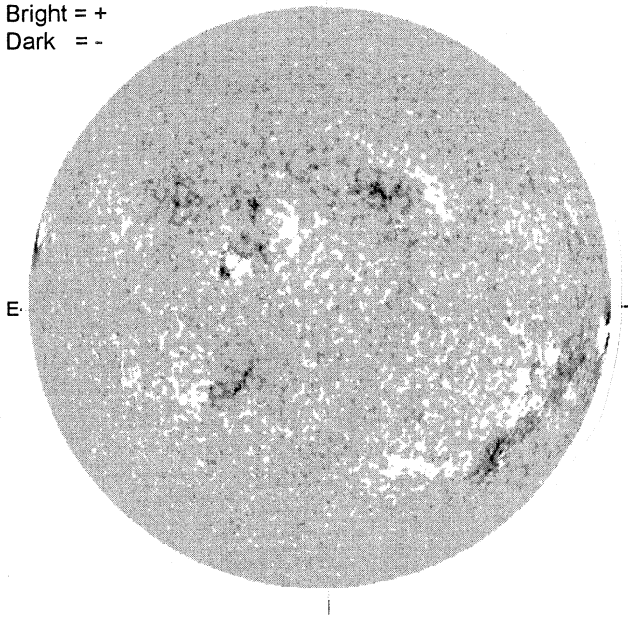
Heliographic Longitude

JUNE 1, 2003 (P= -15.60, Bo = -0.72, Lo = 110.49)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E

1610 UT

STANFORD MAGNETOGRAM

N

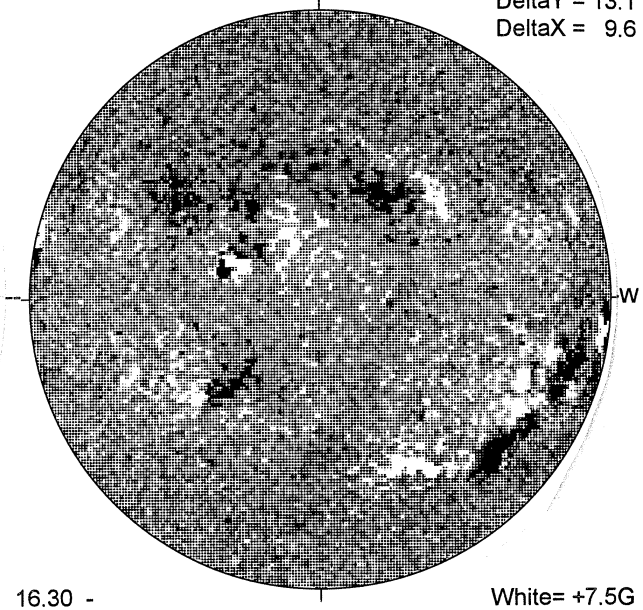
Solid = +
Dashed = -

1942 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

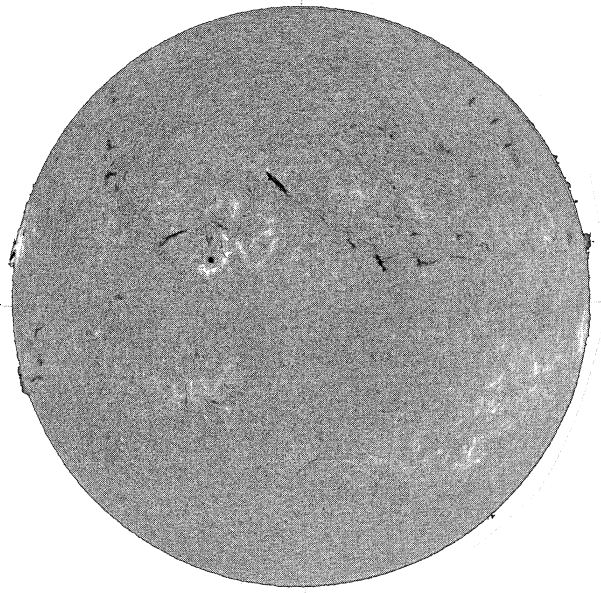


W

16.30 -
17.22 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

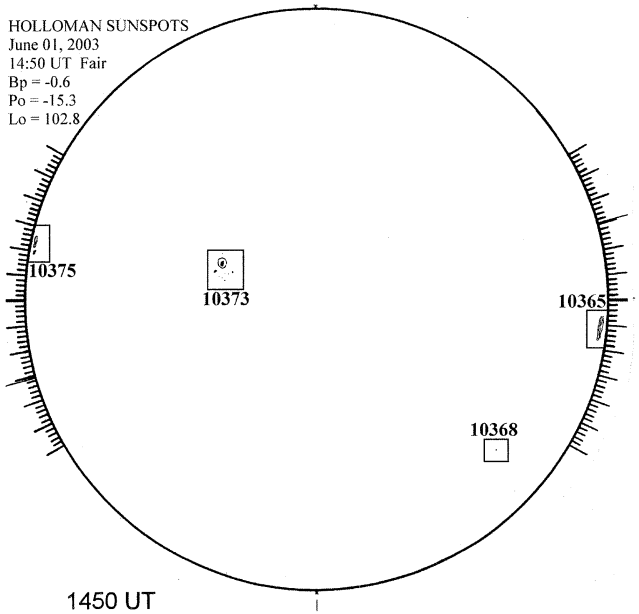


E

1545 UT

S

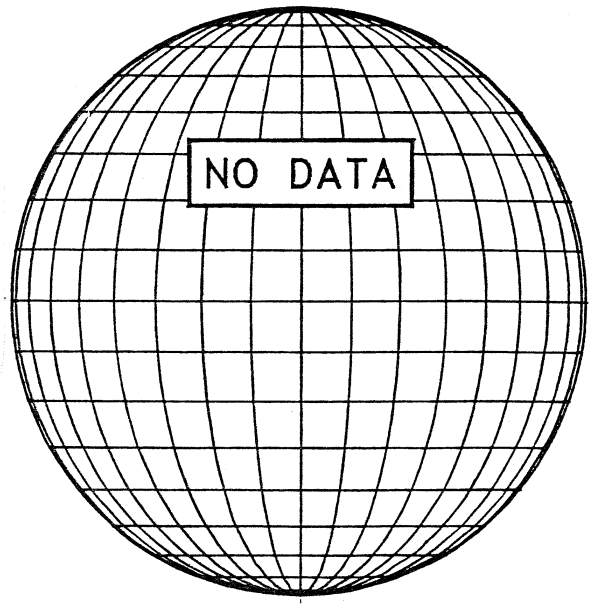
HOLLOMAN SUNSPOT



1450 UT

S

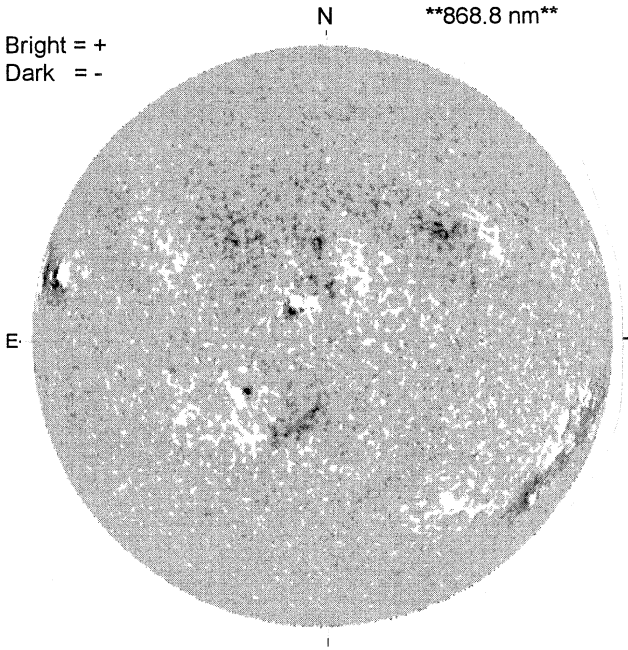
SACRAMENTO PEAK CORONA (1.15 Radii)



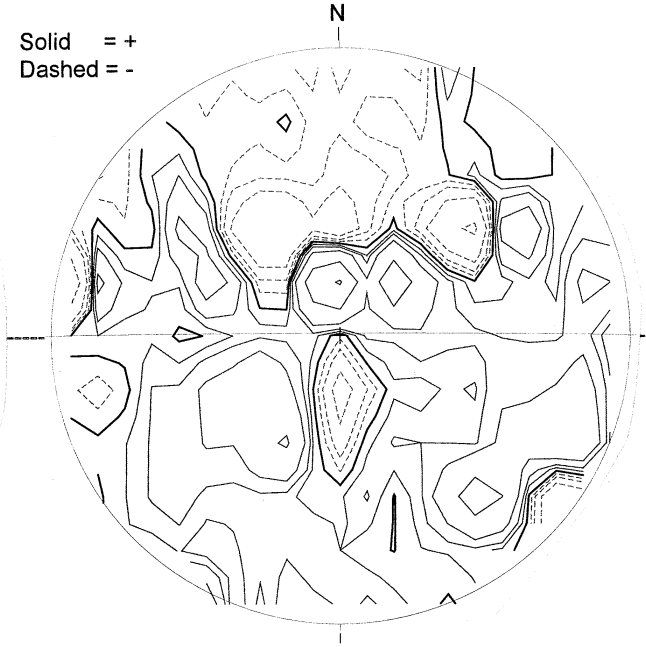
S

JUNE 2, 2003 (P= -15.23, Bo = -0.60, Lo = 97.26)

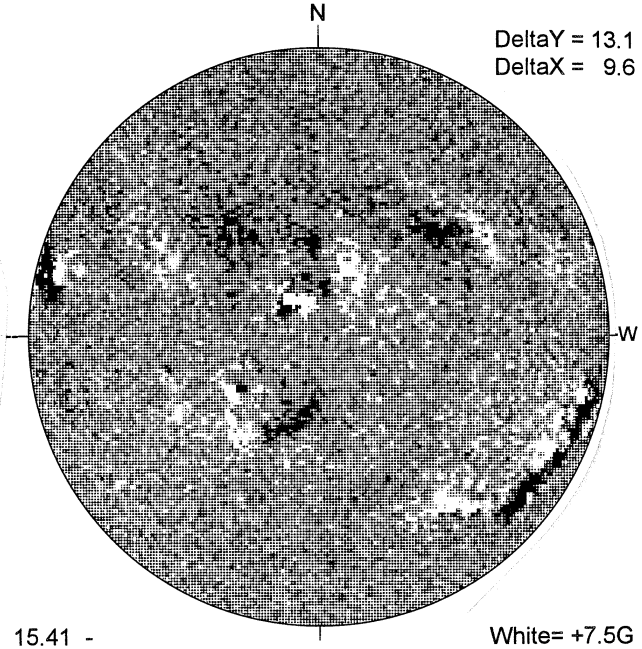
KITT PEAK MAGNETOGRAM



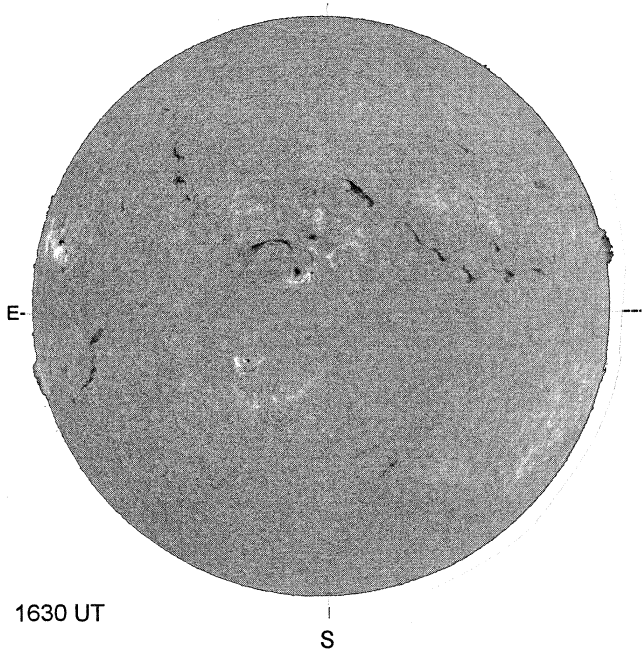
STANFORD MAGNETOGRAM



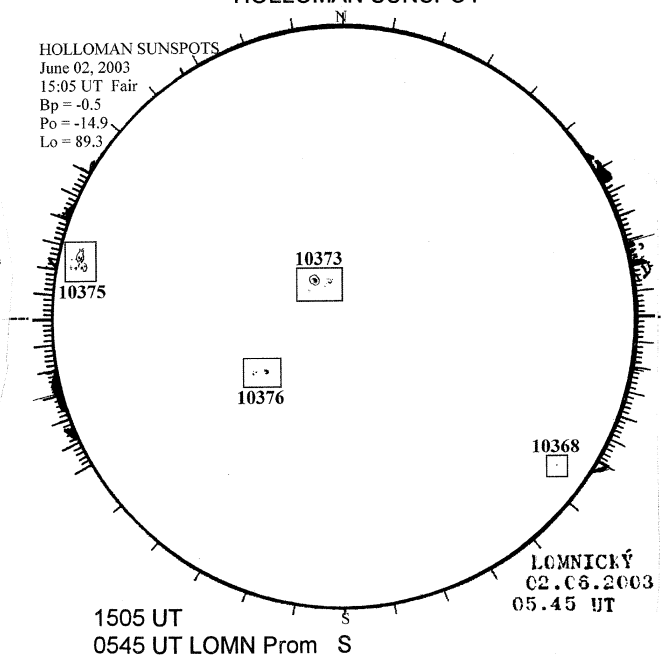
MT. WILSON MAGNETOGRAM



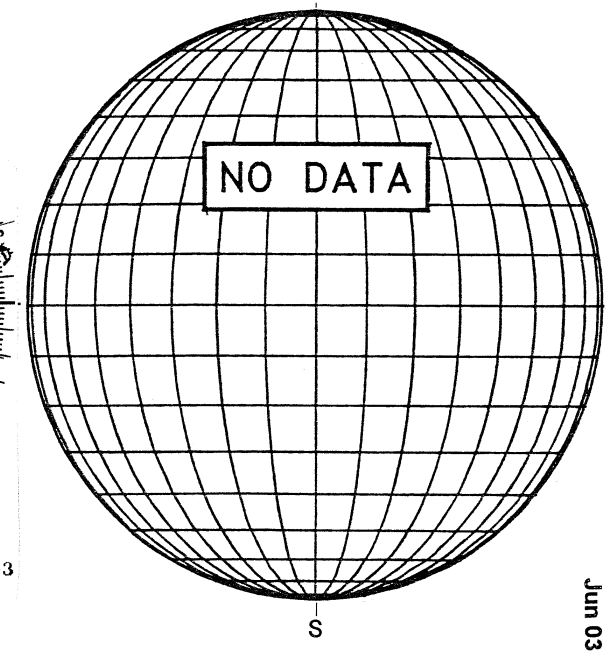
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

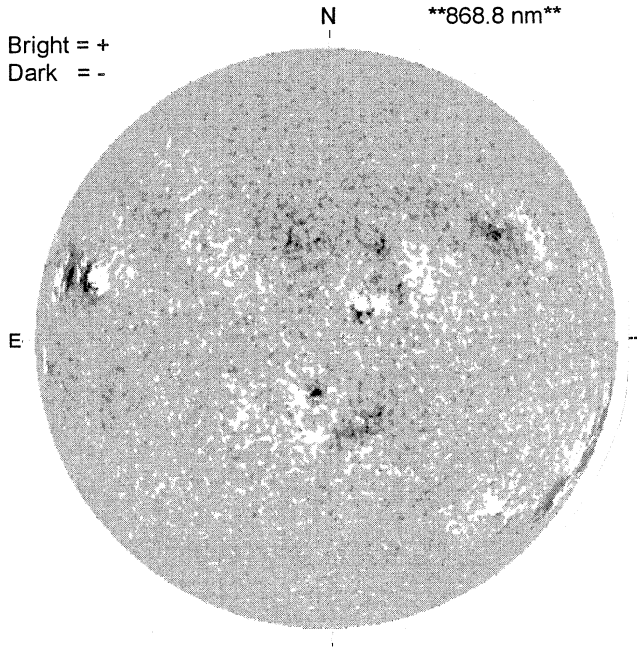


JUNE 3, 2003 (P= -14.85, Bo = -0.48, Lo = 84.03)

KITT PEAK MAGNETOGRAM

868.8 nm

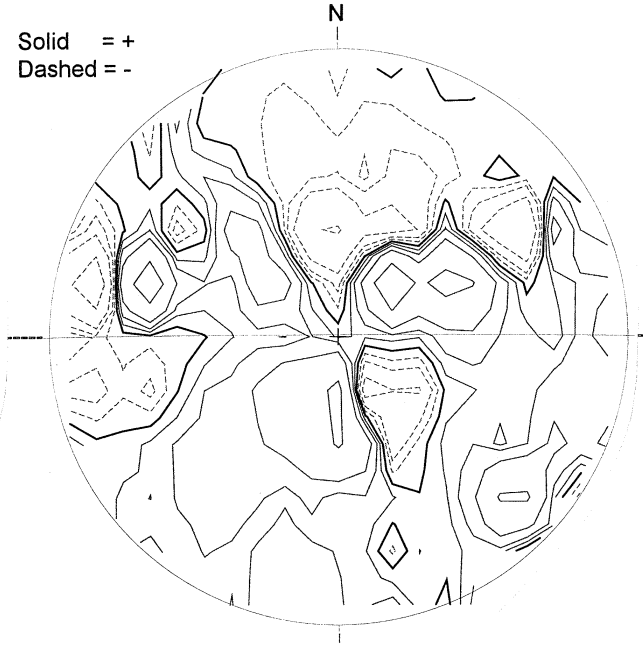
Bright = +
Dark = -



1423 UT

STANFORD MAGNETOGRAM

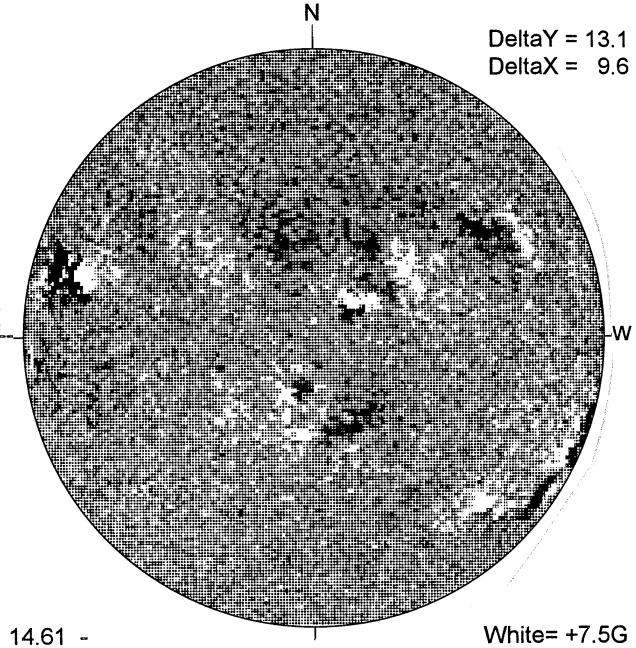
Solid = +
Dashed = -



2201 UT

MT. WILSON MAGNETOGRAM

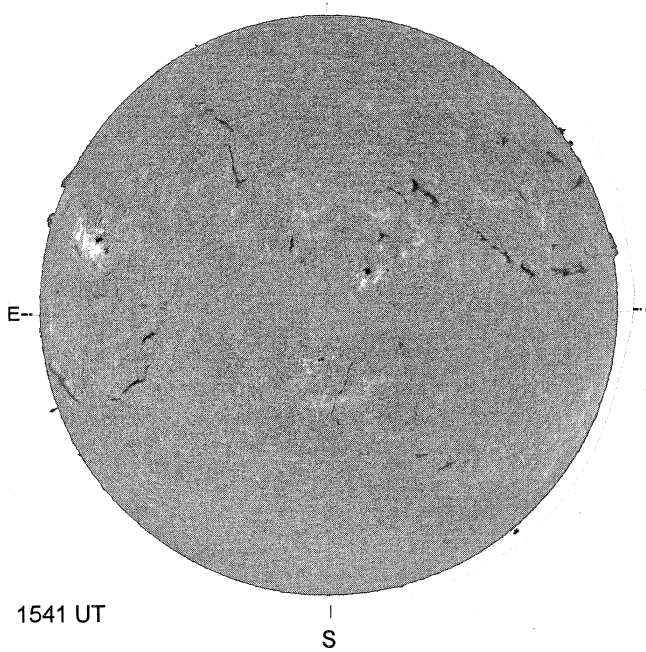
DeltaY = 13.1
DeltaX = 9.6



14.61 -
15.54 UT

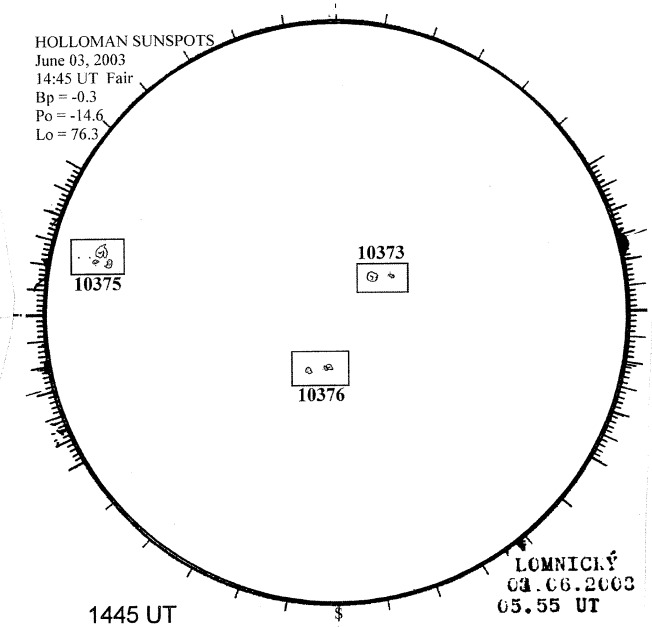
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



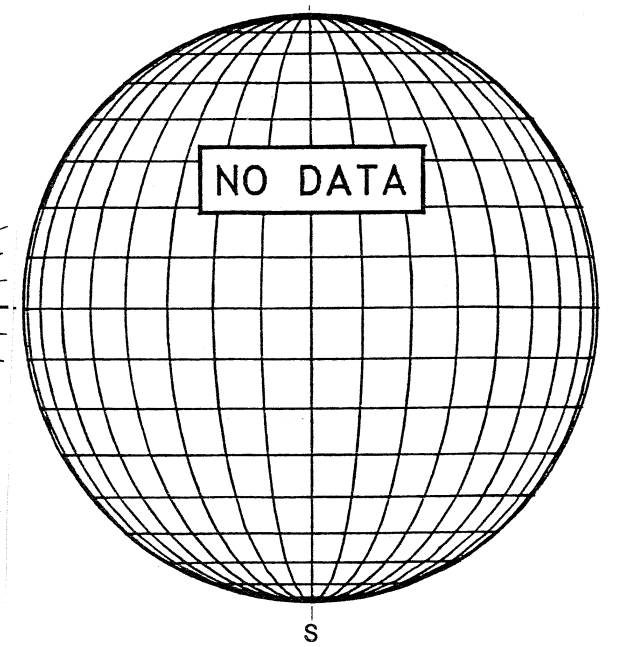
1541 UT

HOLLOMAN SUNSPOT



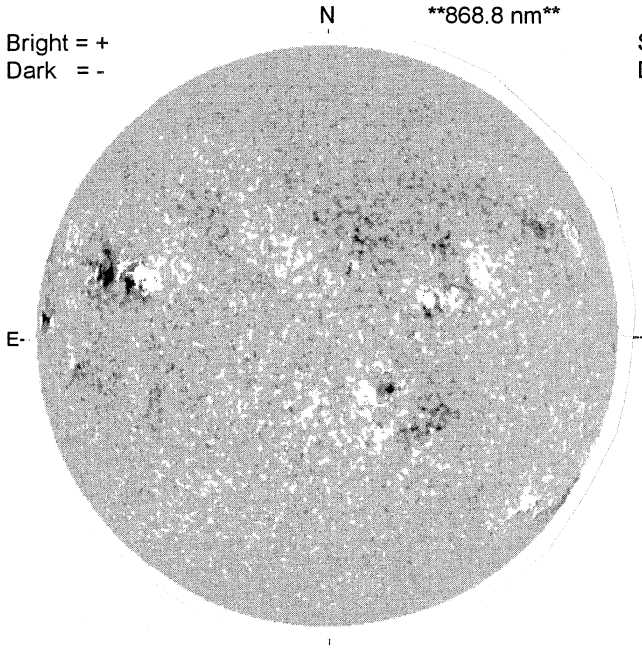
1445 UT
0555 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)----

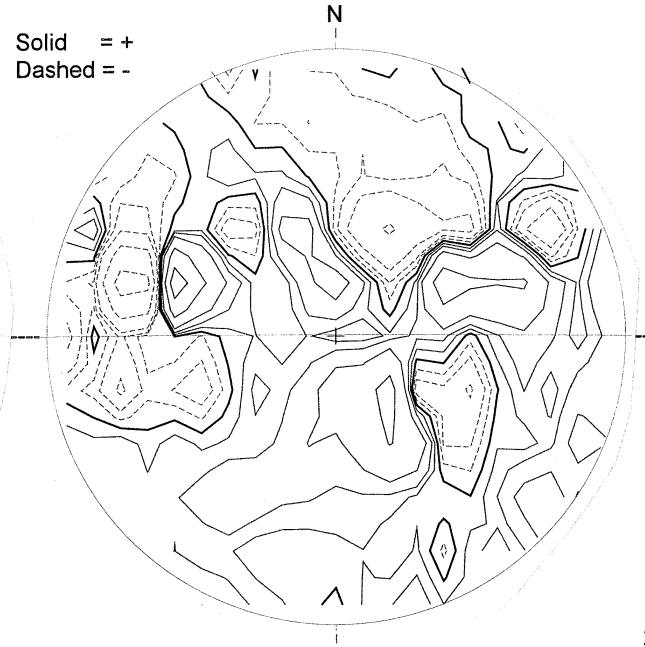


JUNE 4, 2003 (P= -14.47, Bo = -0.35, Lo = 70.79)

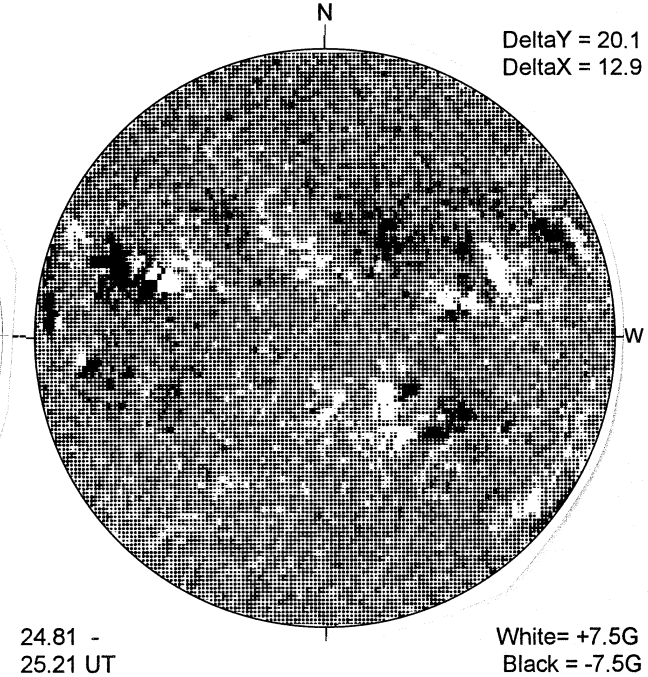
KITT PEAK MAGNETOGRAM



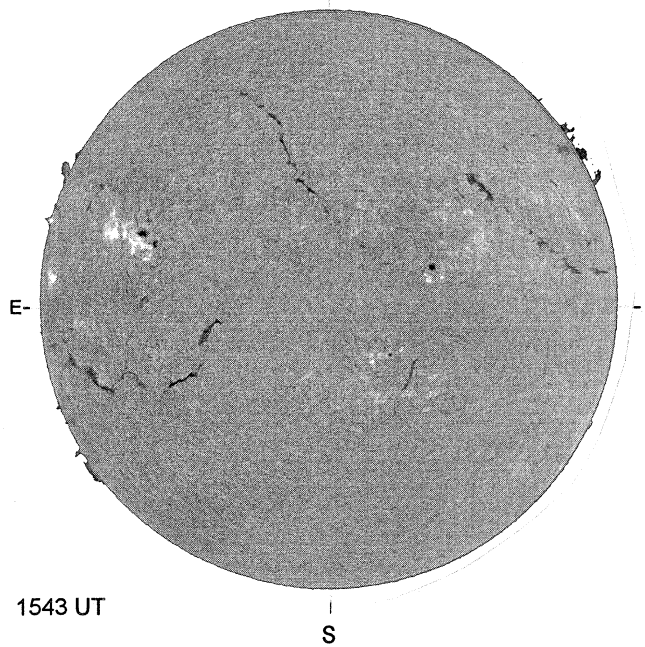
STANFORD MAGNETOGRAM



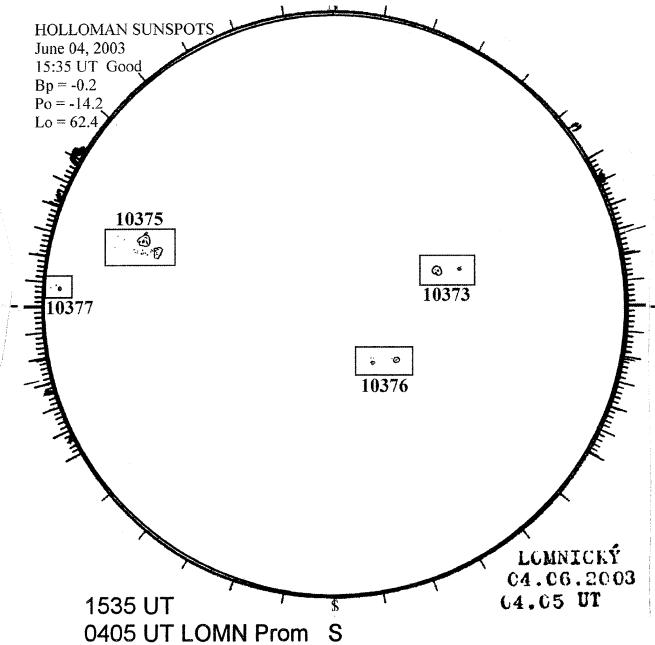
MT. WILSON MAGNETOGRAM



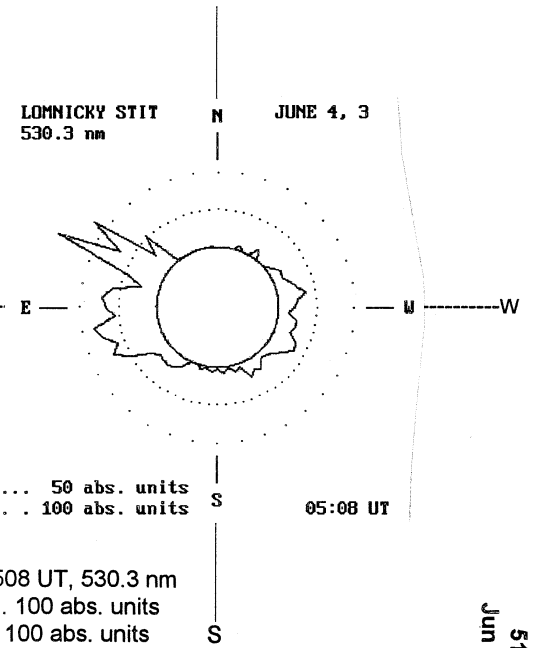
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

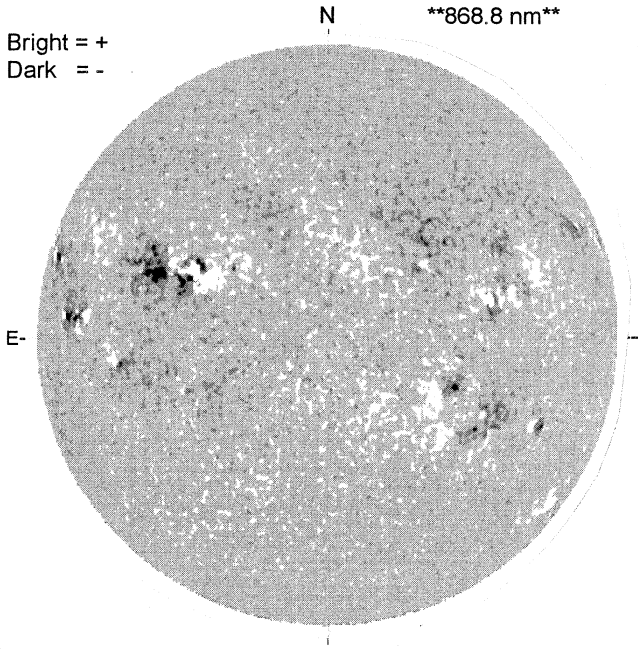


LOMNICKY PEAK CORONA (1.04 Radii)----

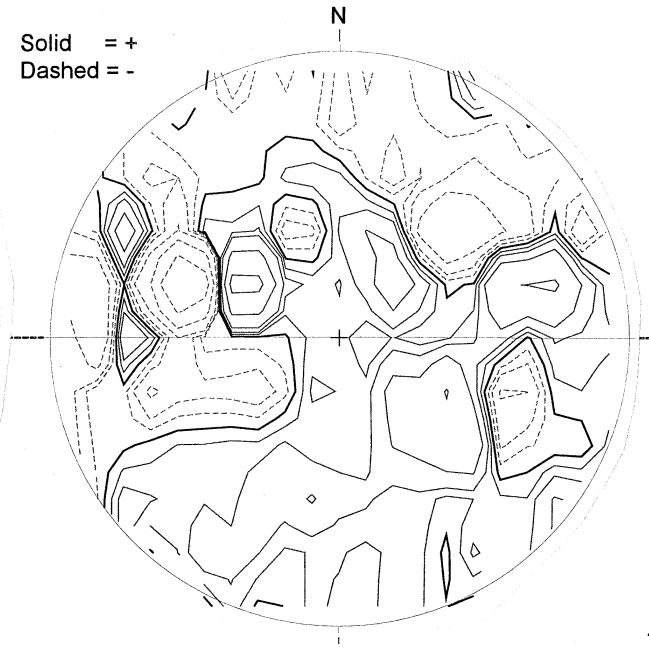


JUNE 5, 2003 (P= -14.08, Bo = -0.23, Lo = 57.56)

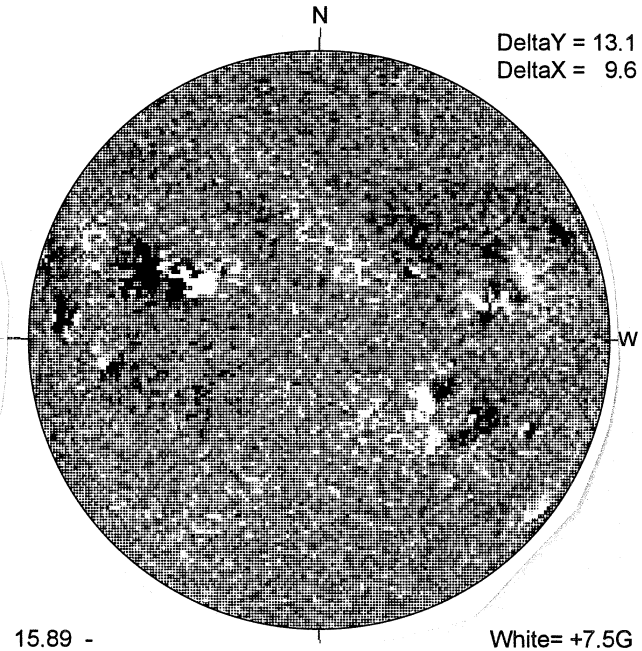
KITT PEAK MAGNETOGRAM



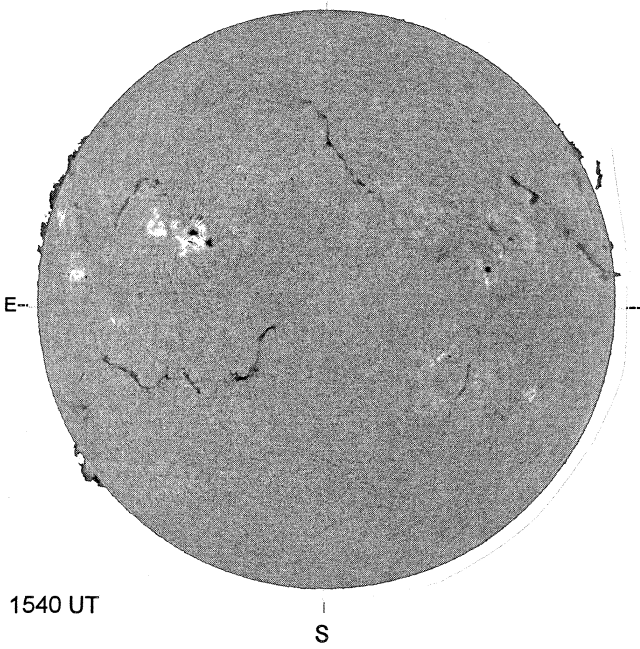
STANFORD MAGNETOGRAM



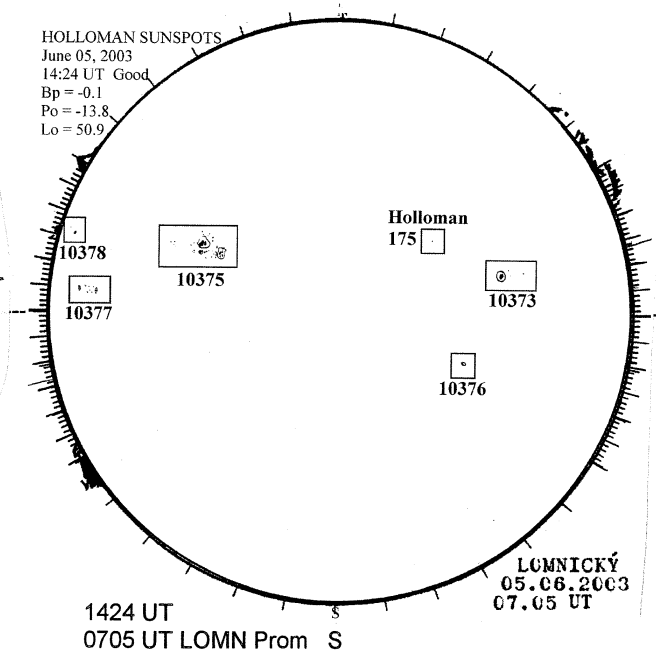
MT. WILSON MAGNETOGRAM



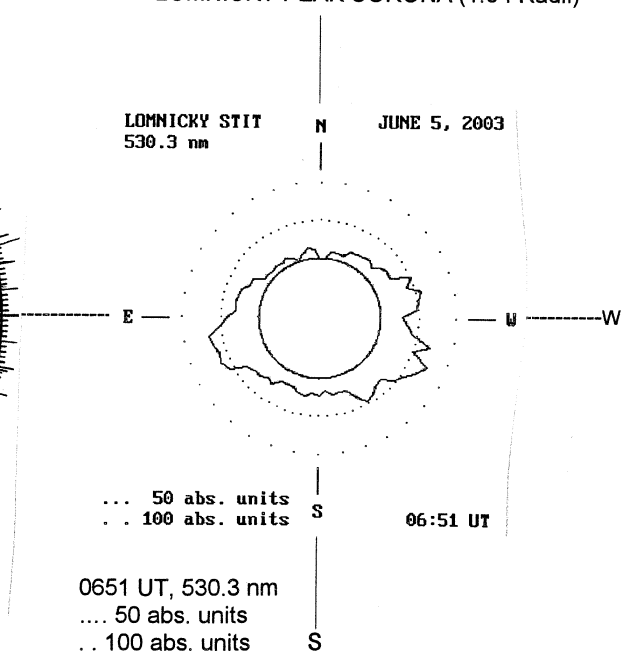
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

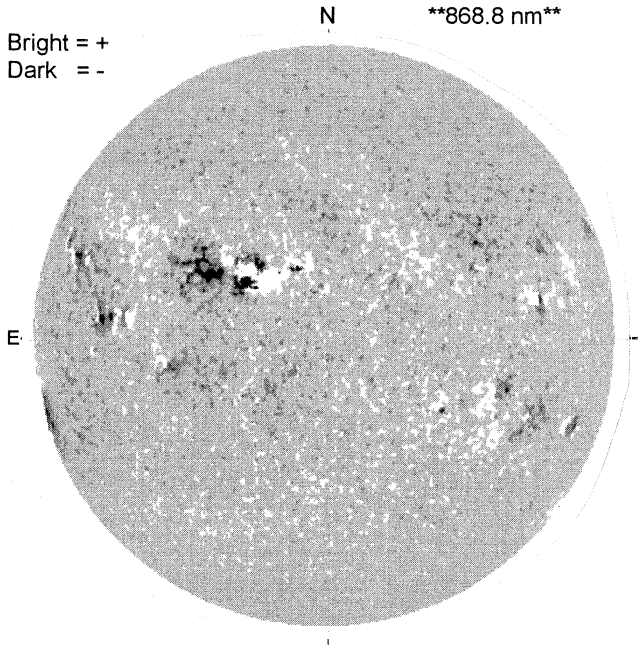


LOMNICKY PEAK CORONA (1.04 Radii)----

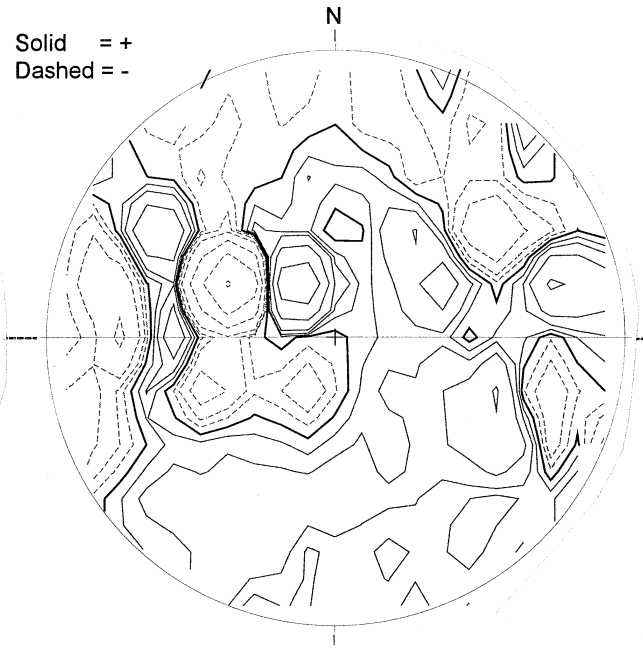


JUNE 6, 2003 (P= -13.69, Bo = -0.11, Lo = 44.32)

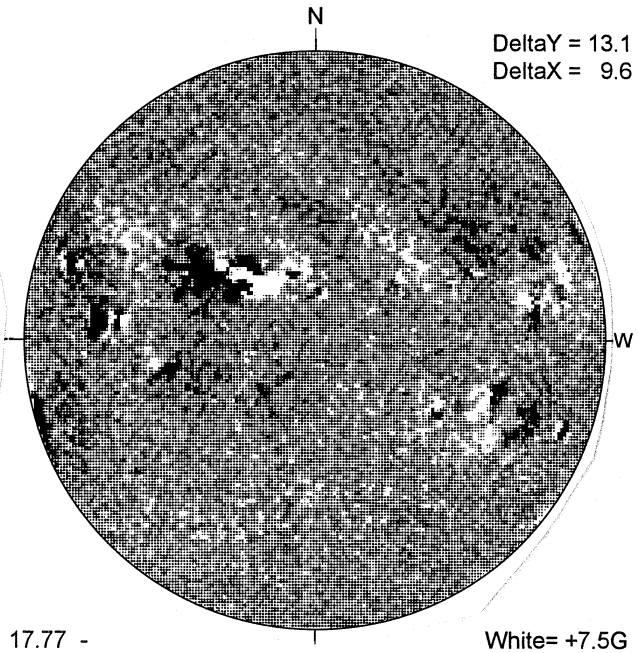
KITT PEAK MAGNETOGRAM



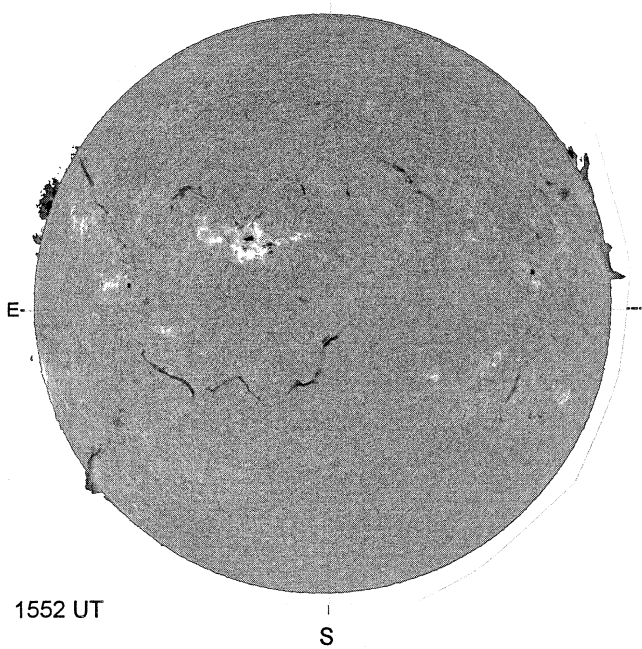
STANFORD MAGNETOGRAM



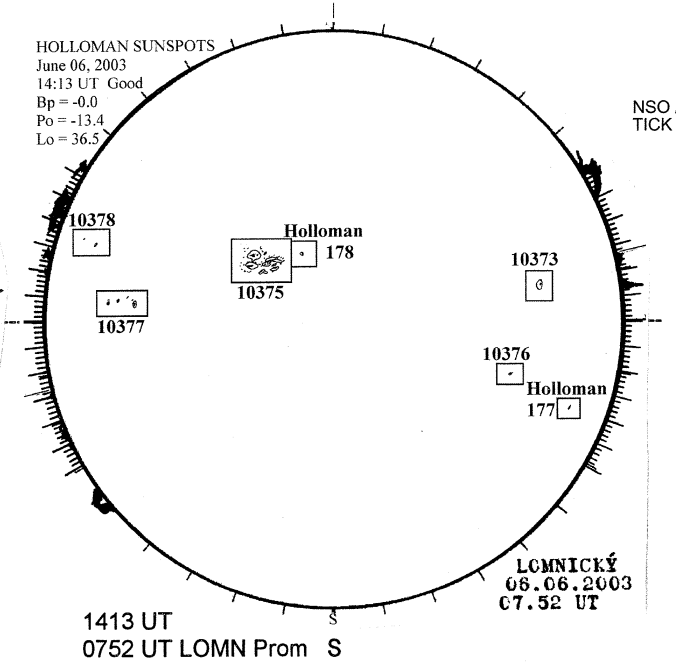
MT. WILSON MAGNETOGRAM



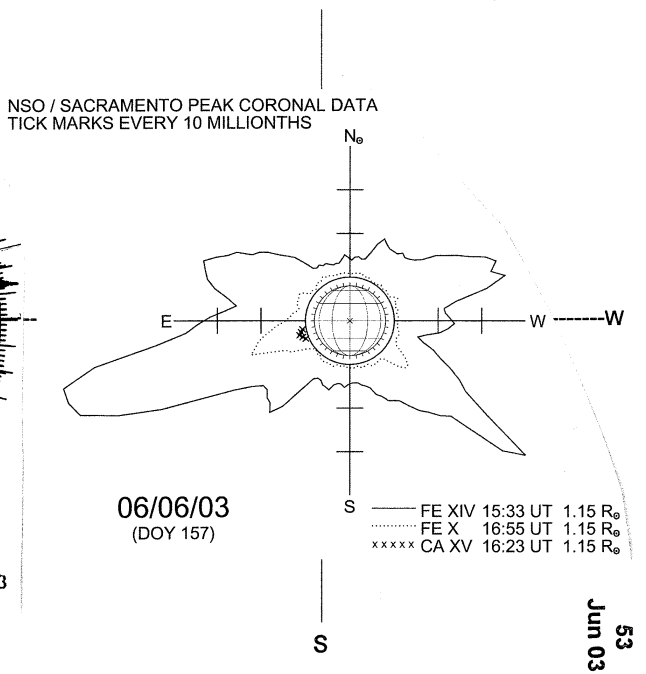
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

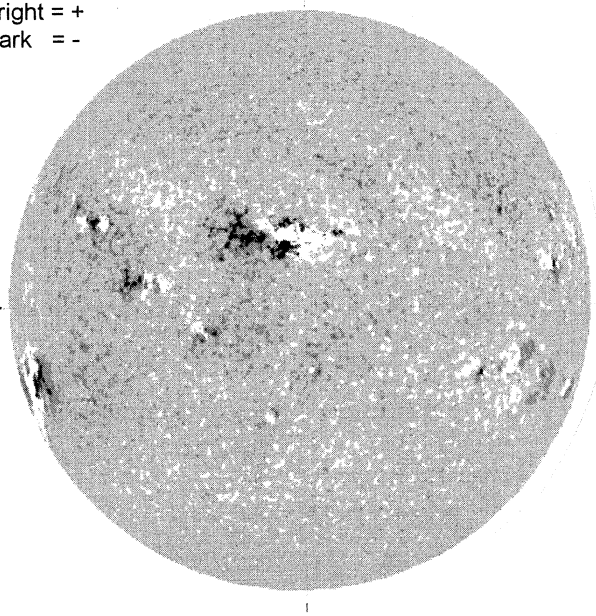


JUNE 7, 2003 (P= -13.29, Bo = 0.01, Lo = 31.09)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



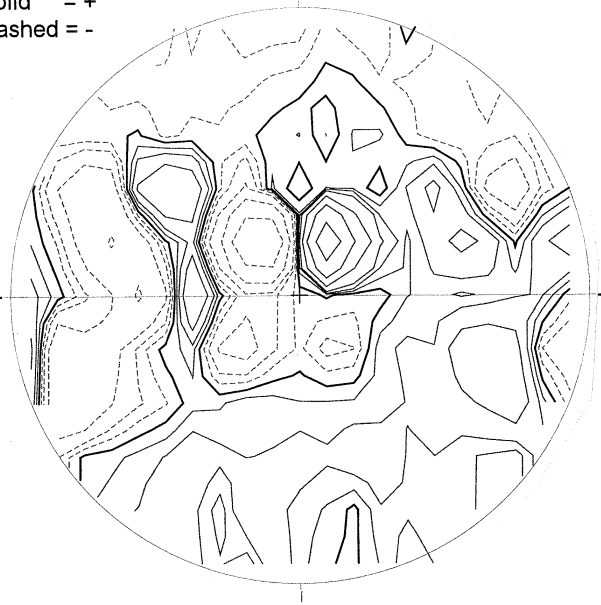
E-

1543 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

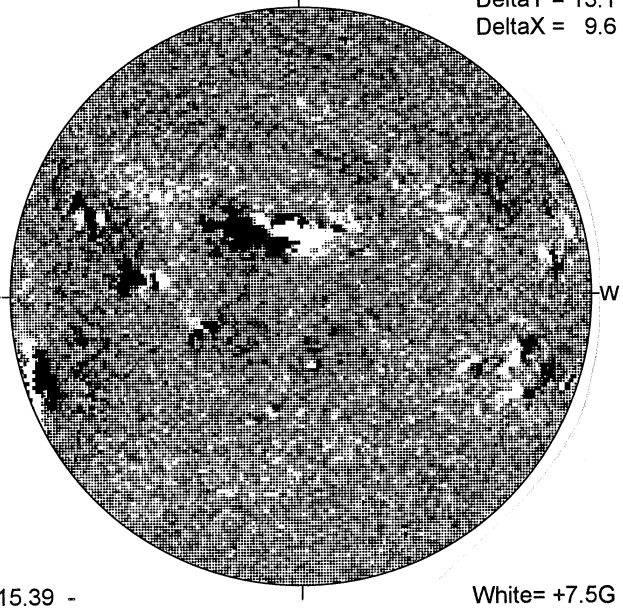


2028 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

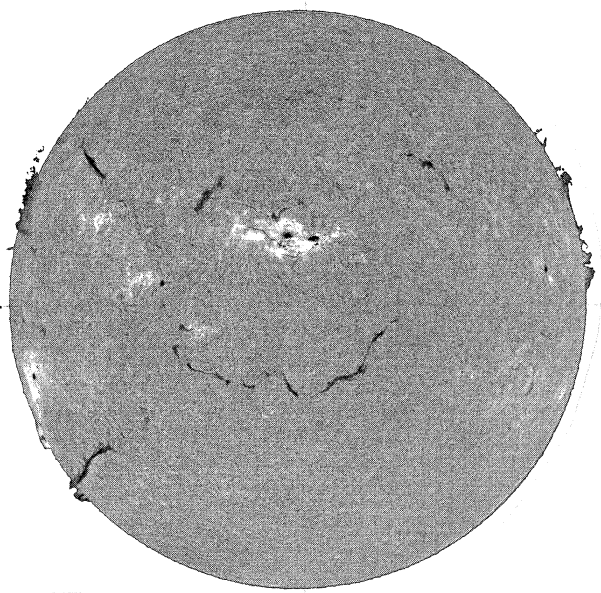


W

15.39 -
16.32 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

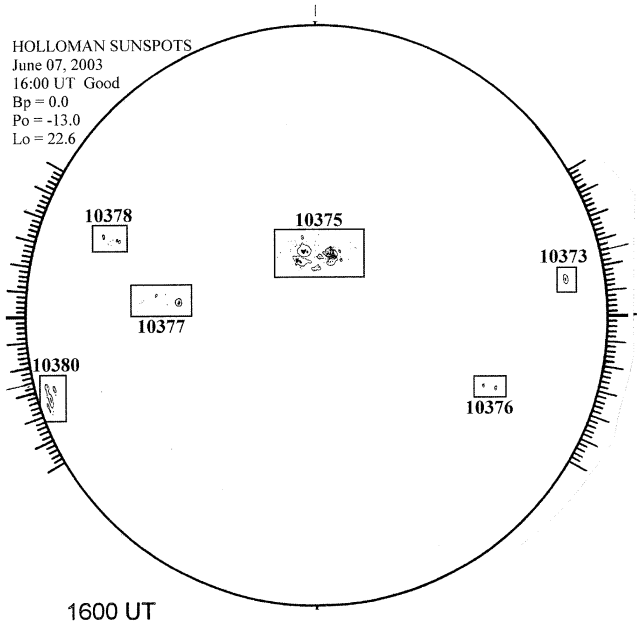


E-

1552 UT

S

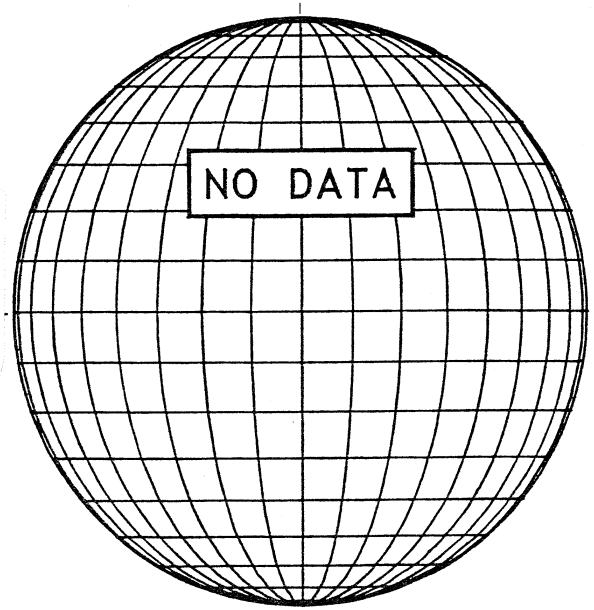
HOLLOMAN SUNSPOTS



1600 UT

S

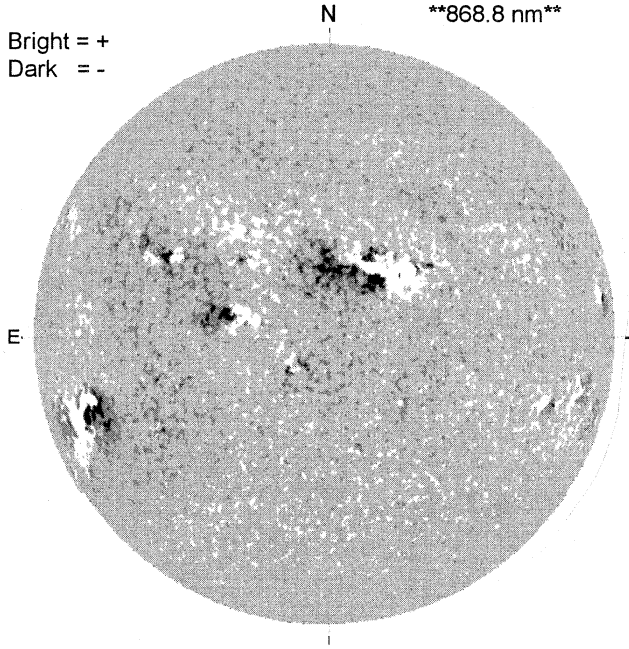
SACRAMENTO PEAK CORONA (1.15 Radii)



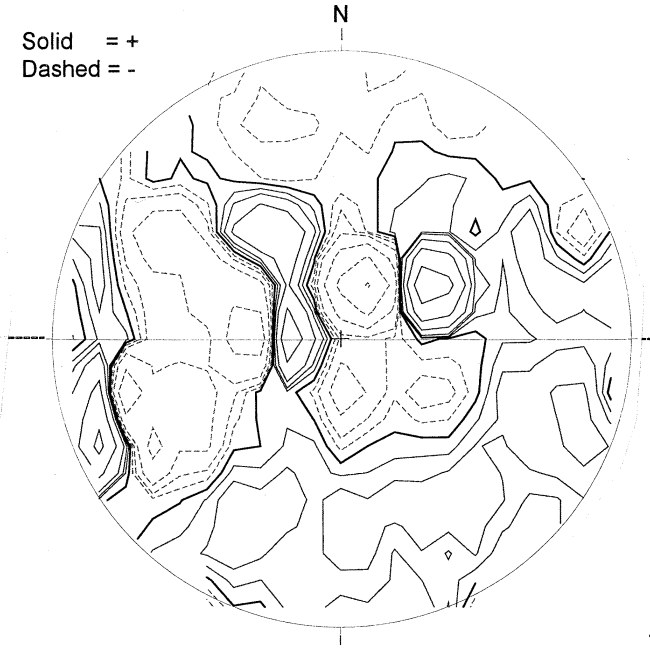
S

JUNE 8, 2003 (P= -12.89, Bo = 0.13, Lo = 17.85)

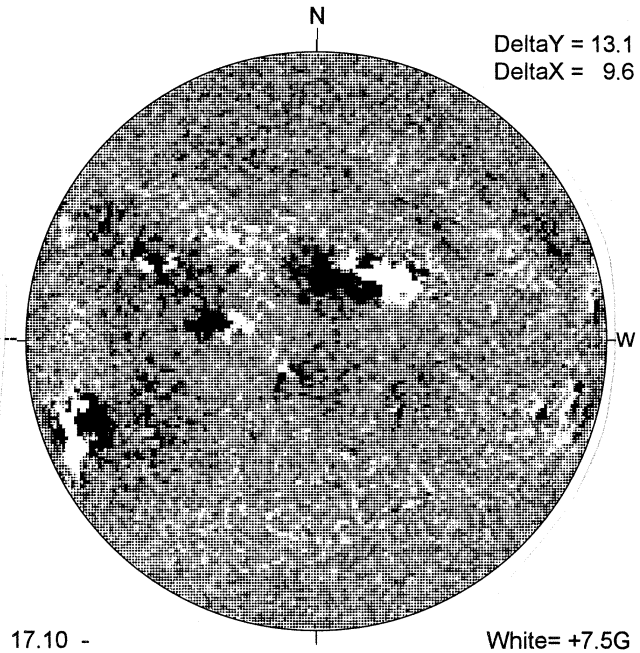
KITT PEAK MAGNETOGRAM



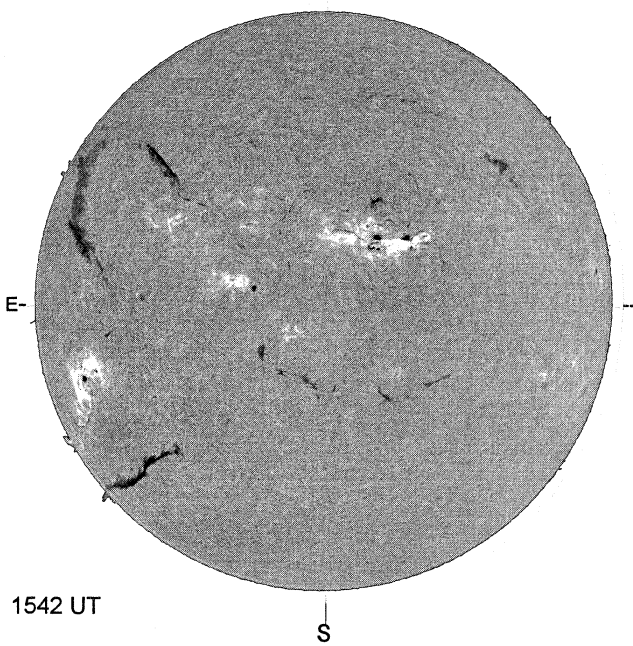
STANFORD MAGNETOGRAM



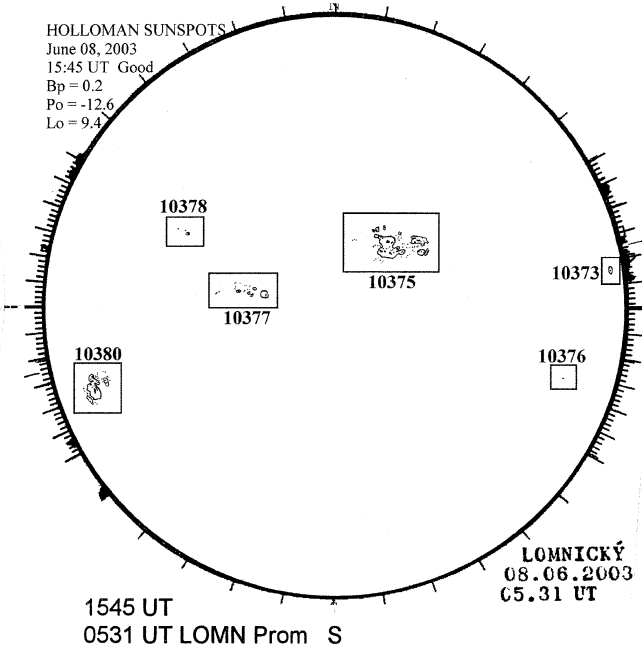
MT. WILSON MAGNETOGRAM



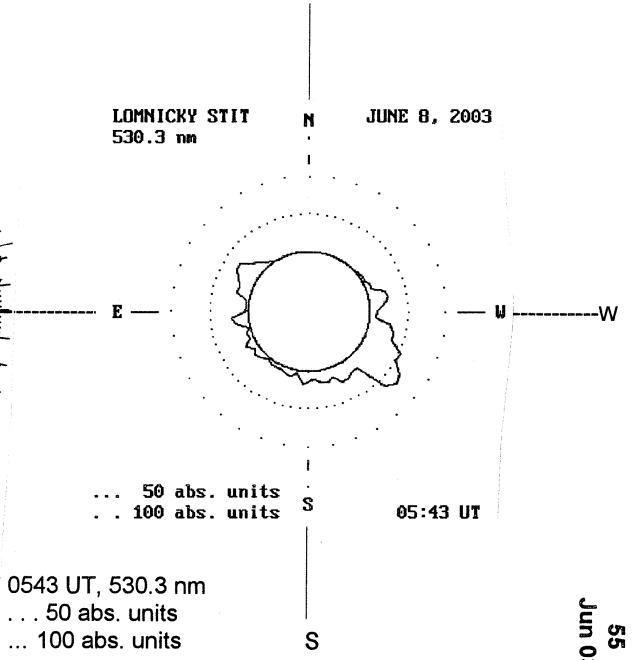
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

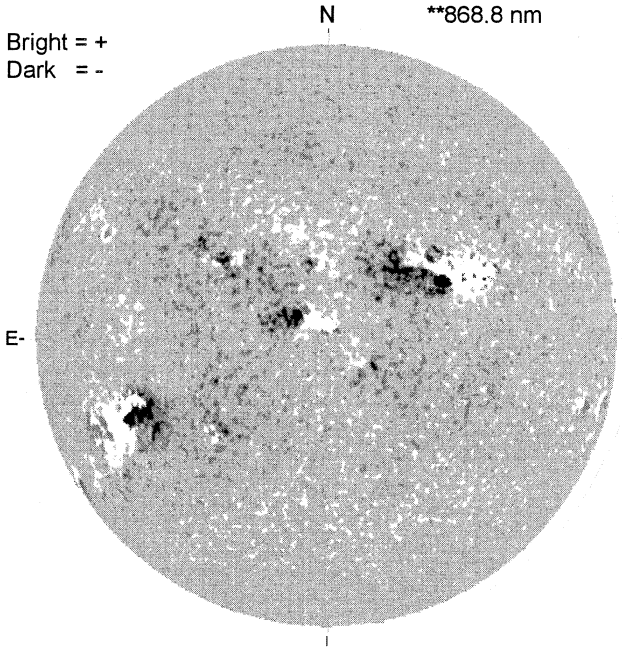


LOMNICKY PEAK CORONA (1.04 Radii)

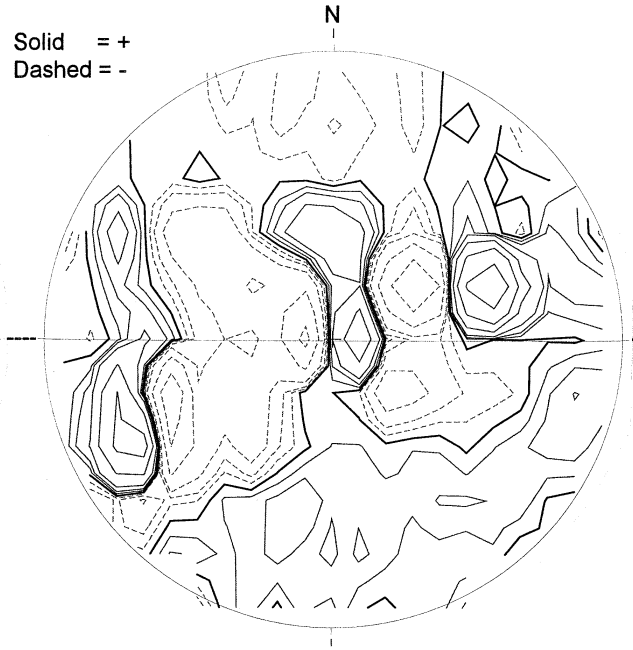


JUNE 9, 2003 (P= -12.49, Bo = 0.25, Lo = 4.62)

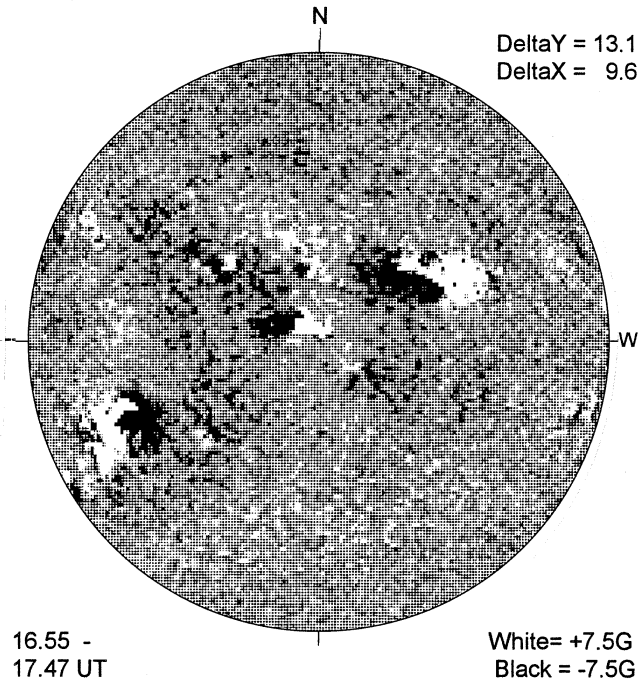
KITT PEAK MAGNETOGRAM



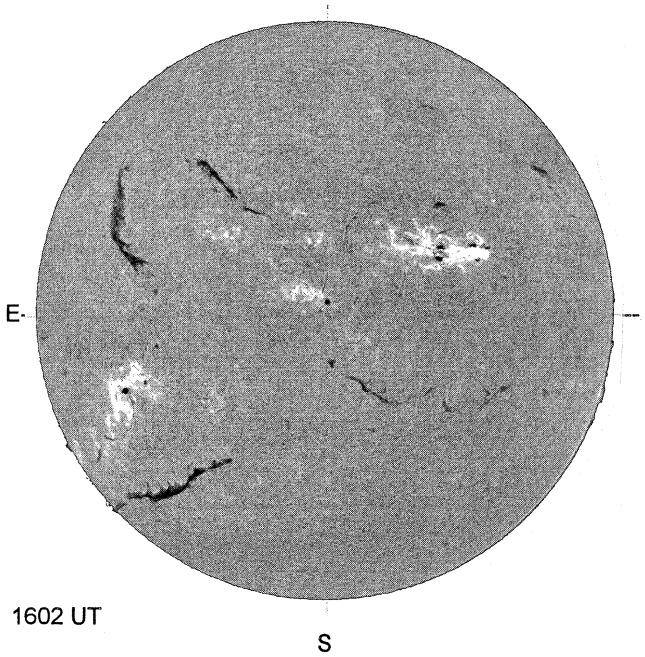
STANFORD MAGNETOGRAM



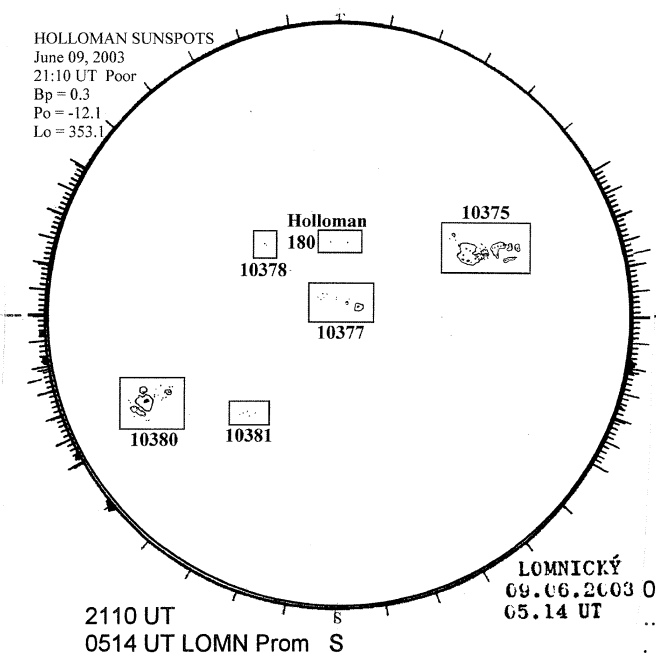
MT. WILSON MAGNETOGRAM



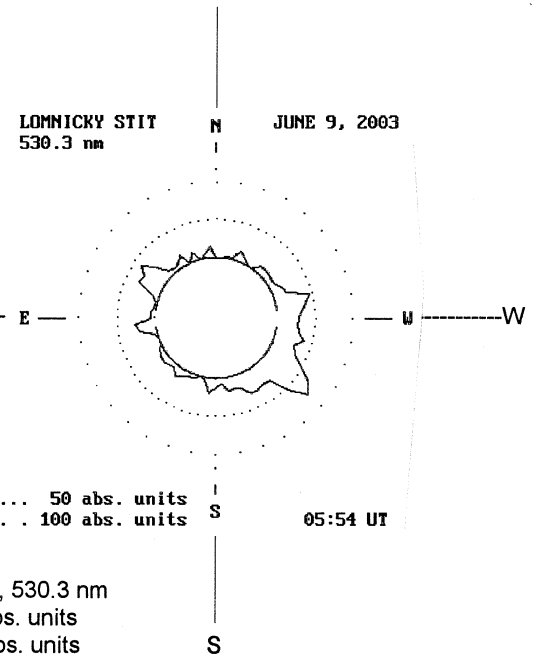
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)----

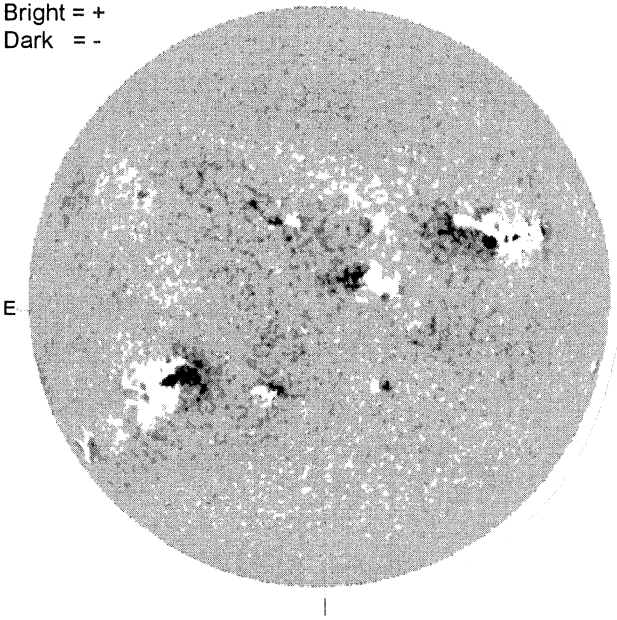


JUNE 10, 2003 (P= -12.08, Bo = 0.37 Lo = 351.38)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



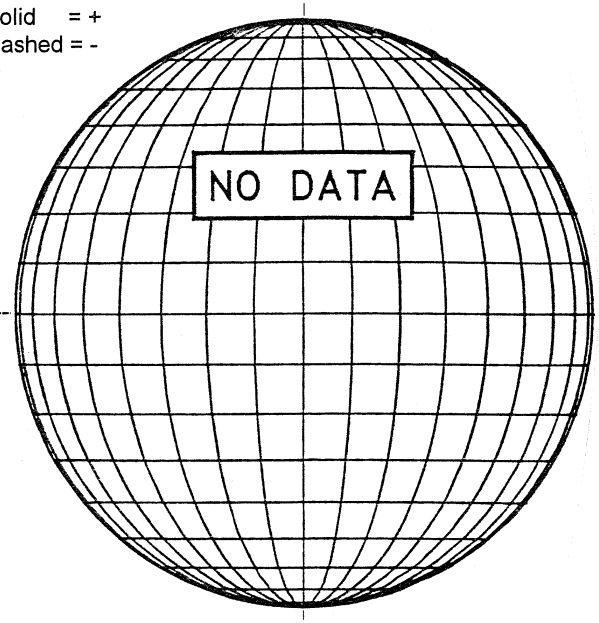
E

1547 UT

STANFORD MAGNETOGRAM

N

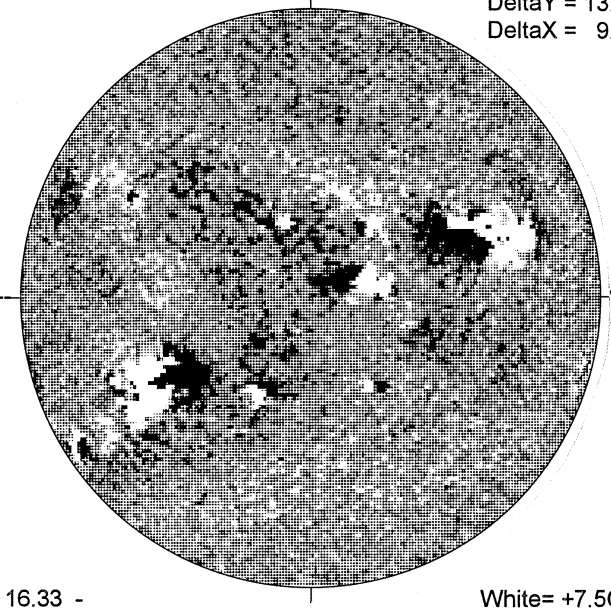
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

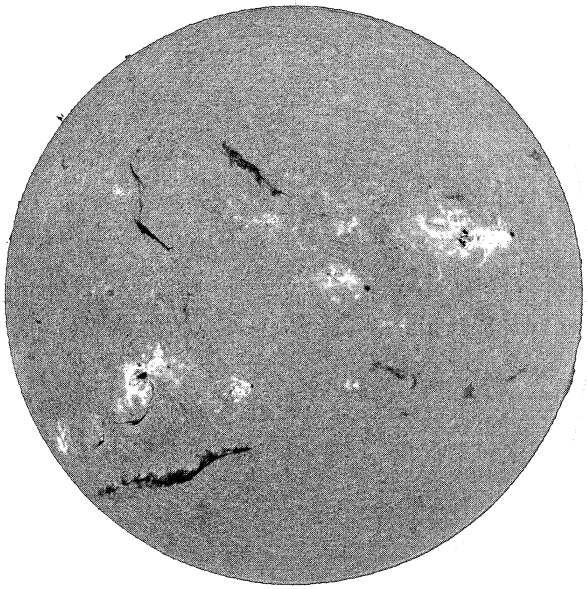


W

16.33 -
17.25 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

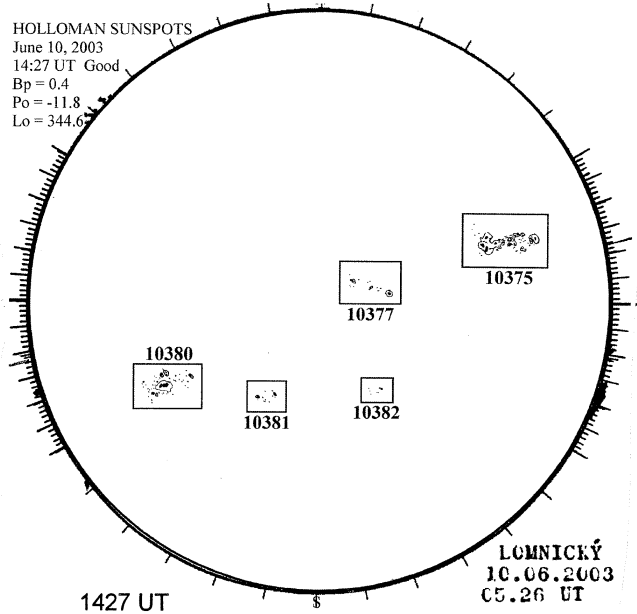


E-

1555 UT

S

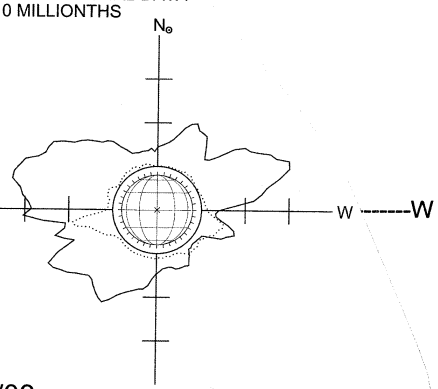
HOLLOMAN SUNSPOTS



1427 UT
0526 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/10/03
(DOY 161)

FE XIV 16:56 UT 1.15 R⊙
FE X 18:40 UT 1.15 R⊙
xxxxx CA XV 18:21 UT 1.15 R⊙
NO CA XV ACTIVITY TODAY

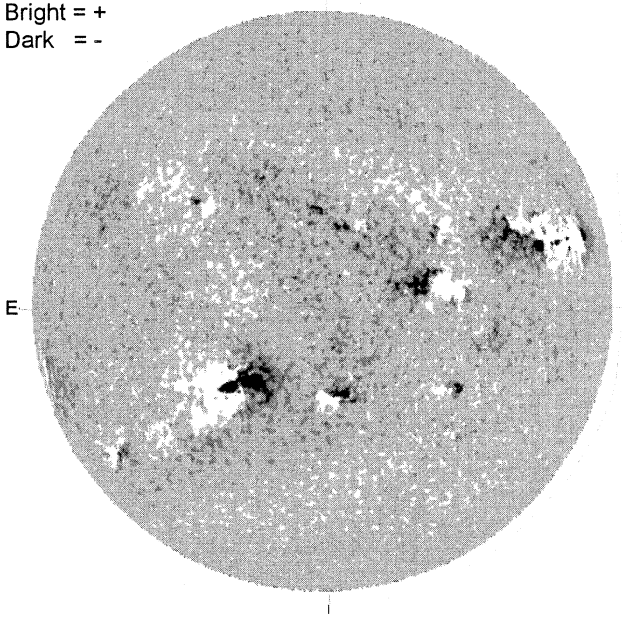
S

JUNE 11, 2003 (P= -11.67, Bo = 0.49, Lo = 338.15)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



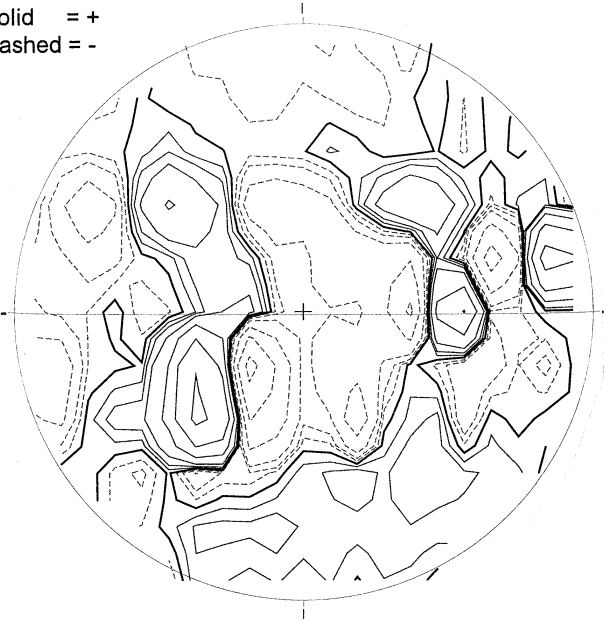
E

1528 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

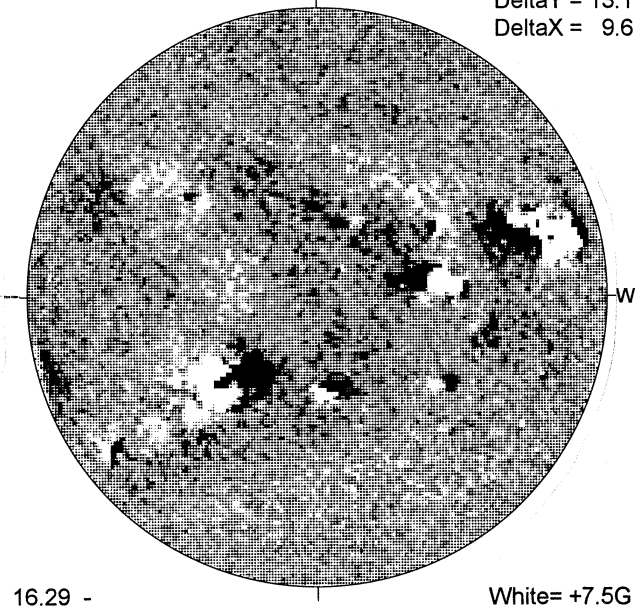


2136 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

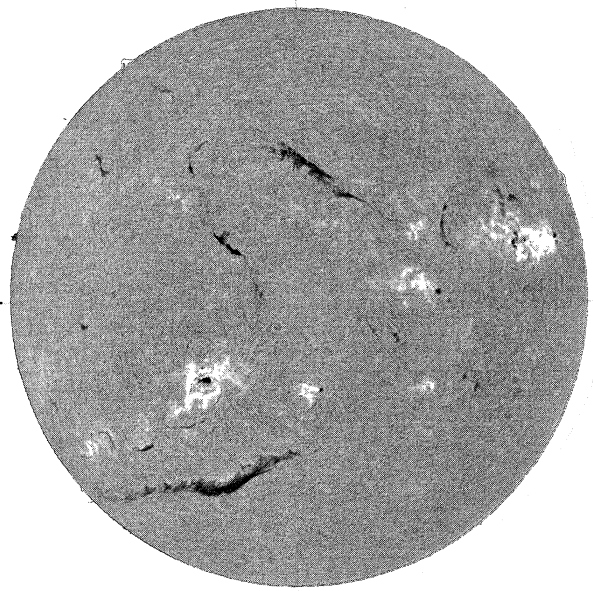


W

16.29 -
17.21 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



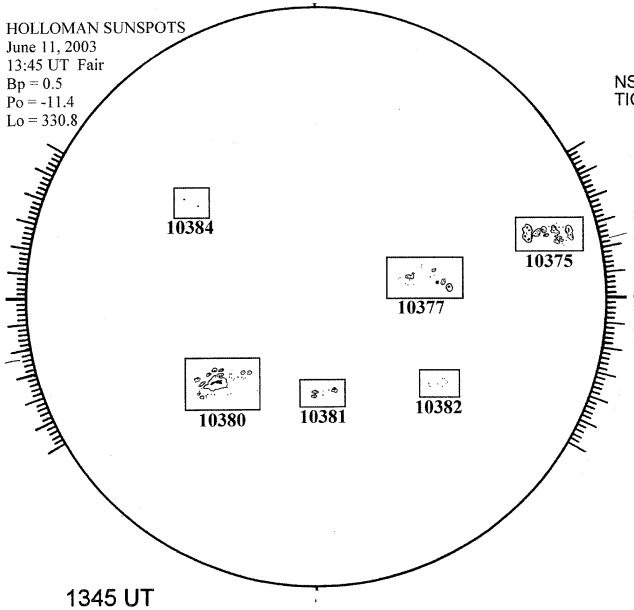
E

1610 UT

S

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
June 11, 2003
13:45 UT Fair
Bp = 0.5
Po = -11.4
Lo = 330.8

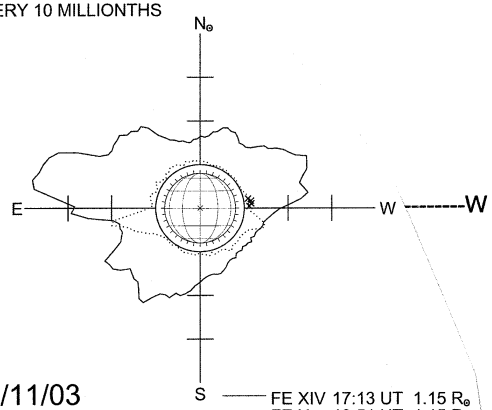


1345 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/11/03
(DOY 162)

FE XIV 17:13 UT 1.15 R⊙
FE X 18:51 UT 1.15 R⊙
xxxxx CA XV 18:29 UT 1.15 R⊙

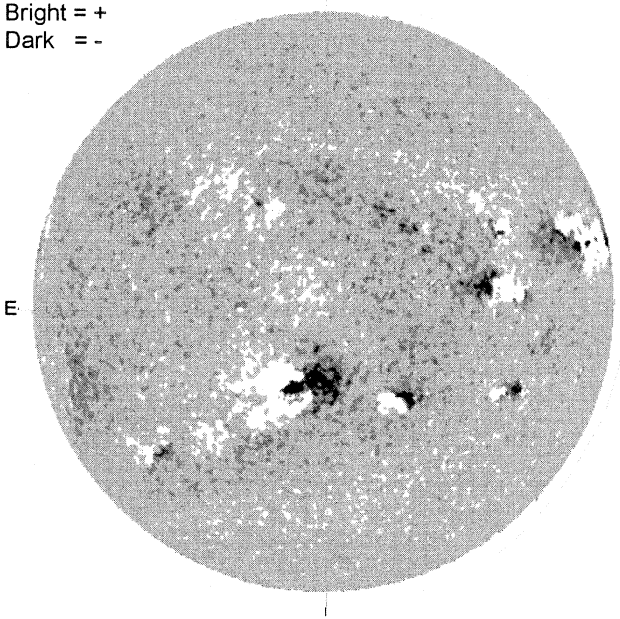
S

JUNE 12, 2003 (P= -11.26 Bo = 0.61 Lo = 324.91)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



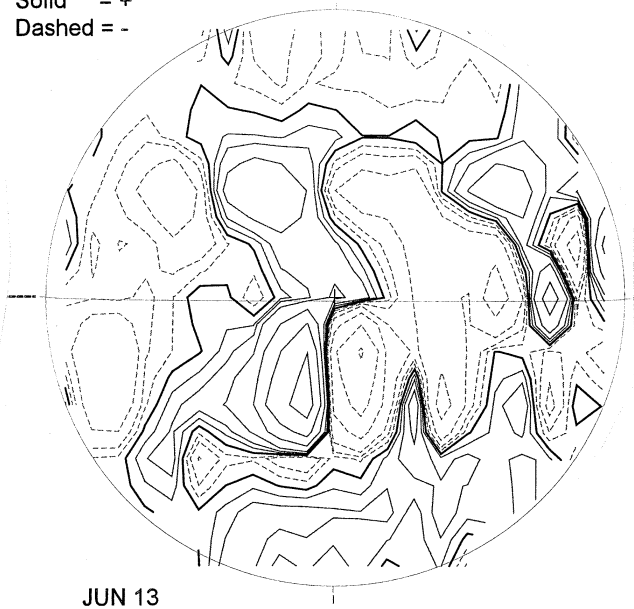
E

1611 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

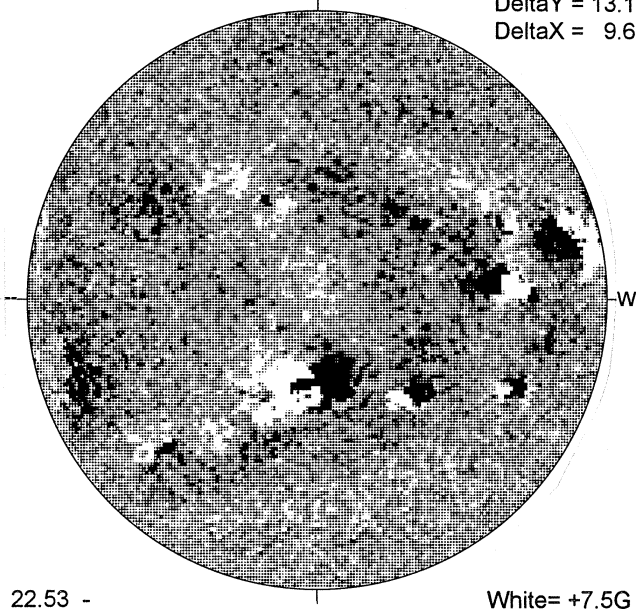


JUN 13
0043 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

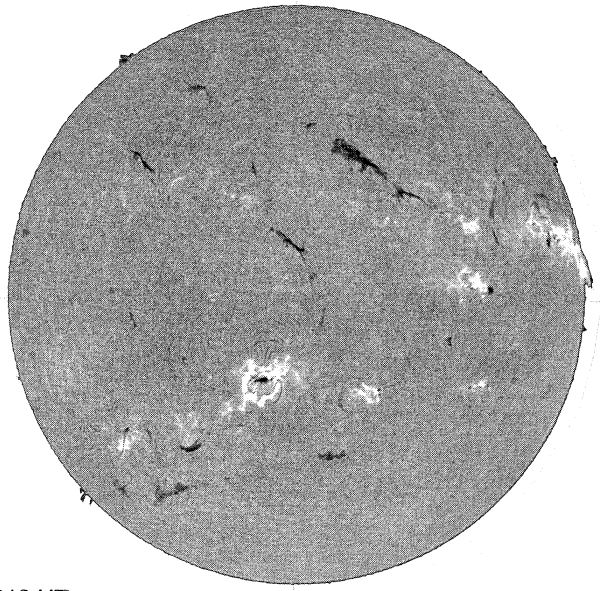


W

22.53 -
23.45 UT

White= +7.5G
Black = -7.5G

---- BIG BEAR H-ALPHA

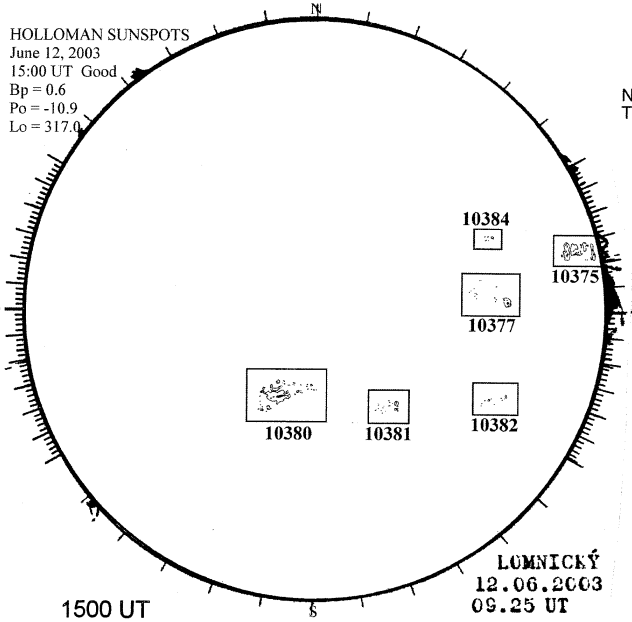


E

1612 UT

S

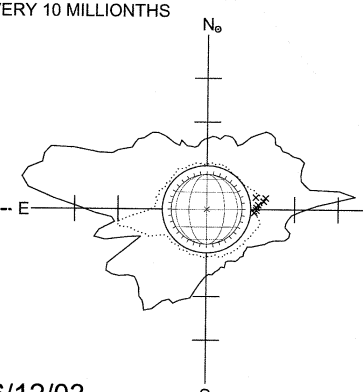
HOLLOMAN SUNSPOTS



1500 UT
0925 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



06/12/03
(DOY 163)

FE XIV 14:56 UT 1.15 R⊙
FE X 16:14 UT 1.15 R⊙
xxxxx CA XV 15:58 UT 1.15 R⊙

S

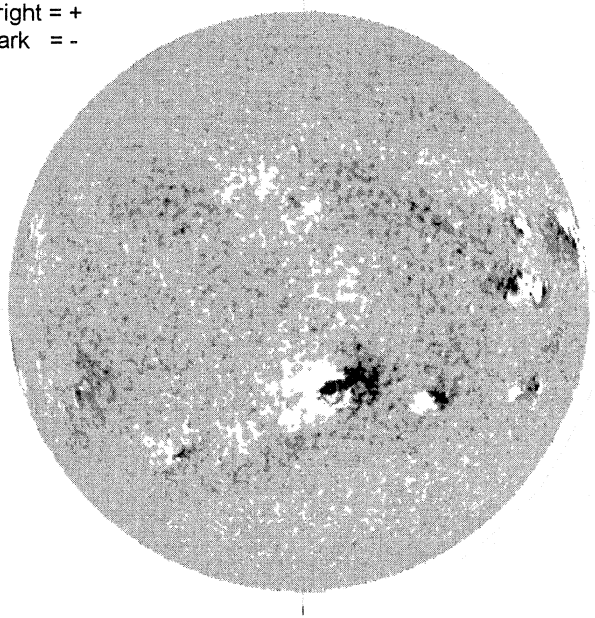
59
Jun 03

JUNE 13, 2003 (P= -10.84, Bo = 0.73, Lo = 311.67)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



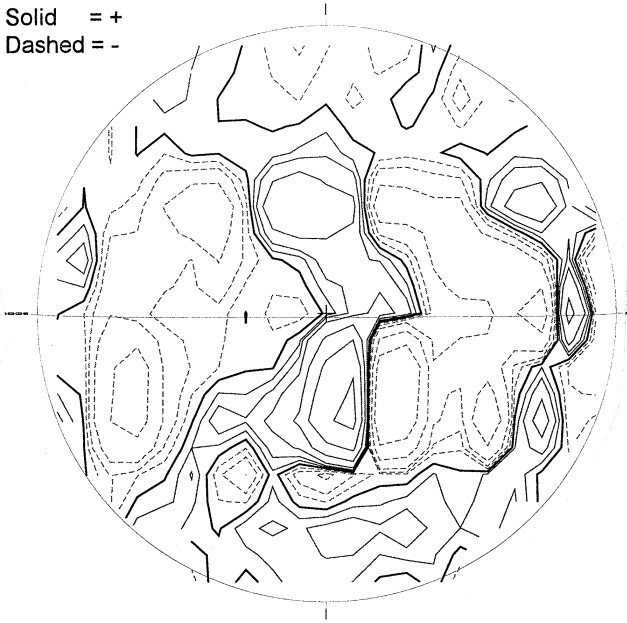
E

1557 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

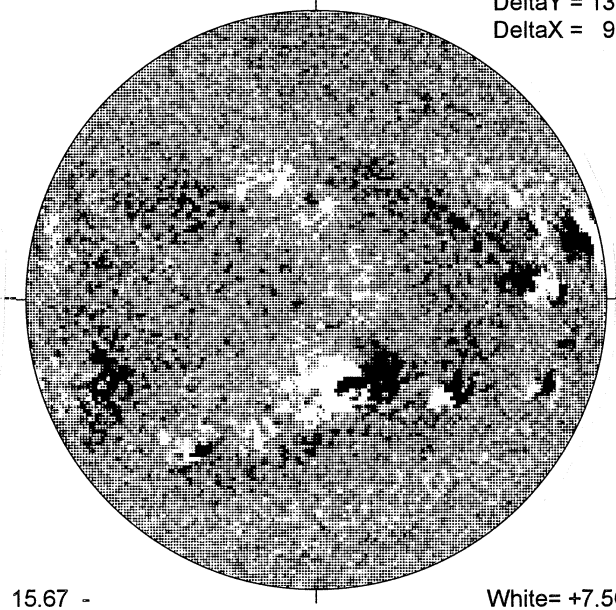


1926 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

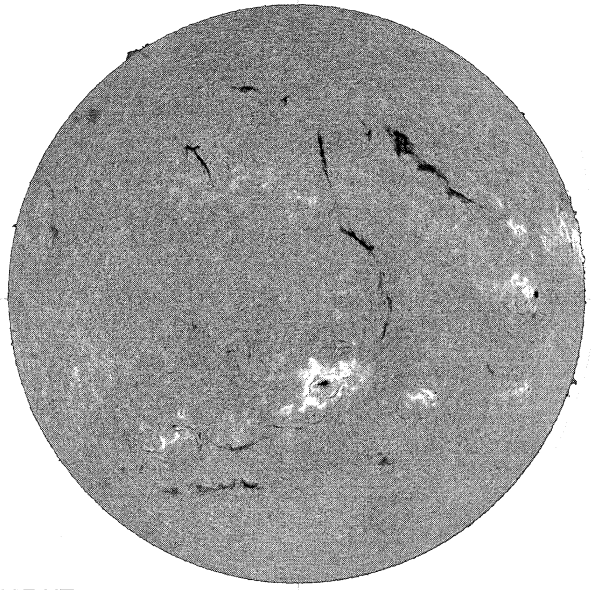


W

15.67 -
16.59 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



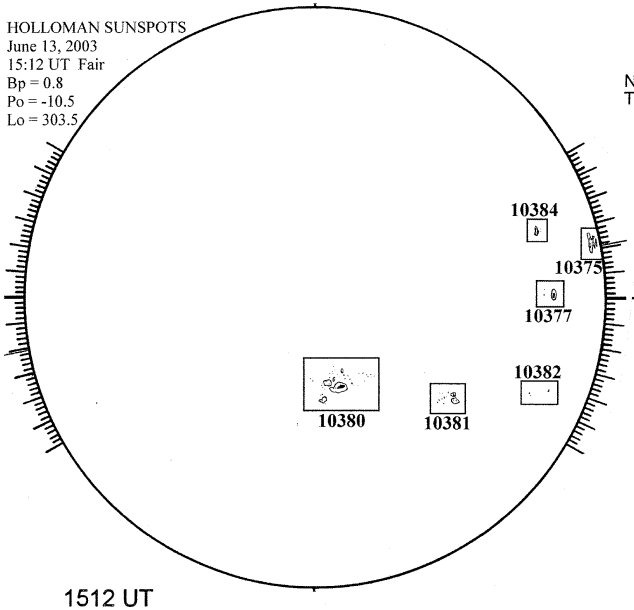
E

1637 UT

S

HOLLOMAN SUNSPOT

HOLLOMAN SUNSPOTS
June 13, 2003
15:12 UT Fair
Bp = 0.8
Po = -10.5
Lo = 303.5

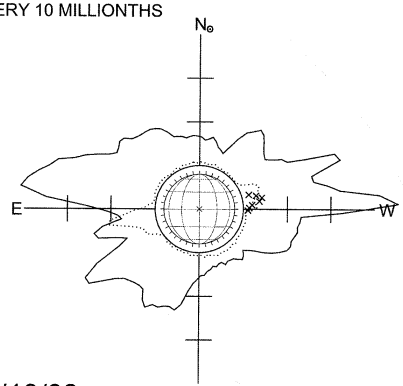


1512 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



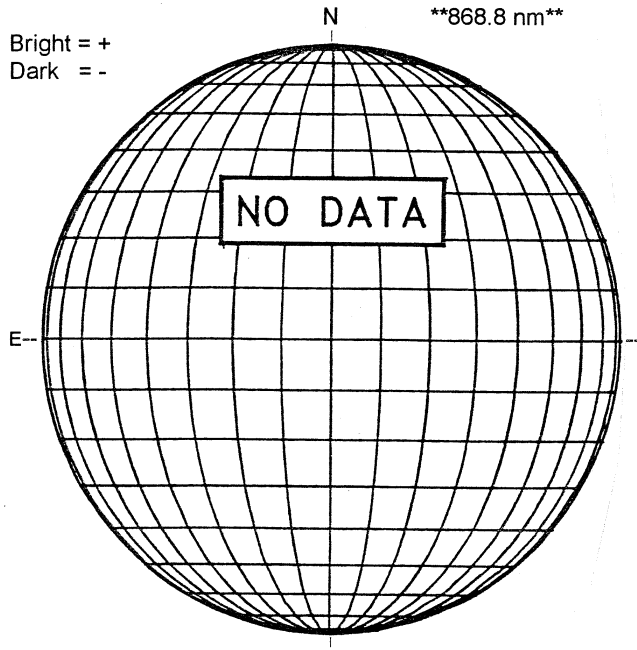
06/13/03
(DOY 164)

FE XIV 15:14 UT 1.15 R⊙
FE X 16:17 UT 1.15 R⊙
xxxxx CA XV 16:00 UT 1.15 R⊙

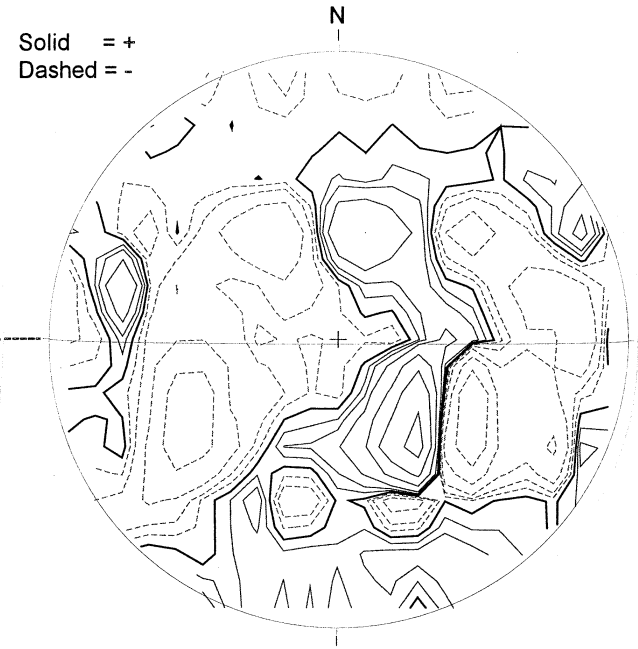
S

JUNE 14, 2003 (P= -10.41, Bo = 0.85, Lo = 298.44)

KITT PEAK MAGNETOGRAM

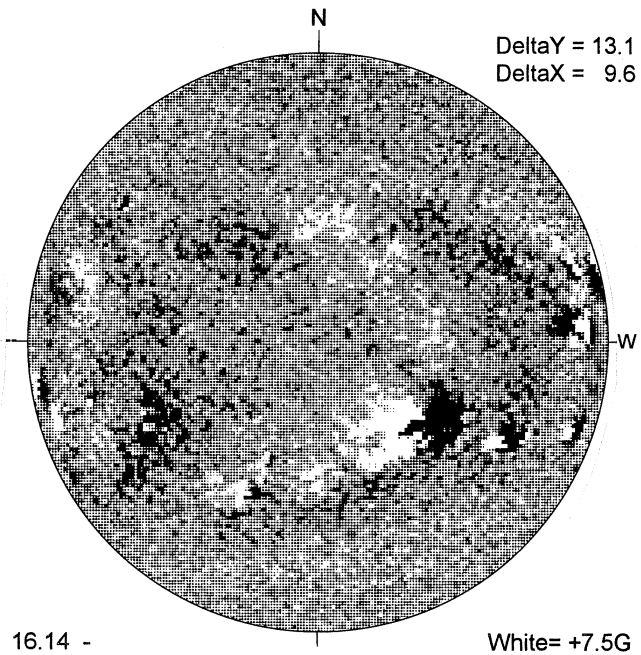


STANFORD MAGNETOGRAM



2022 UT

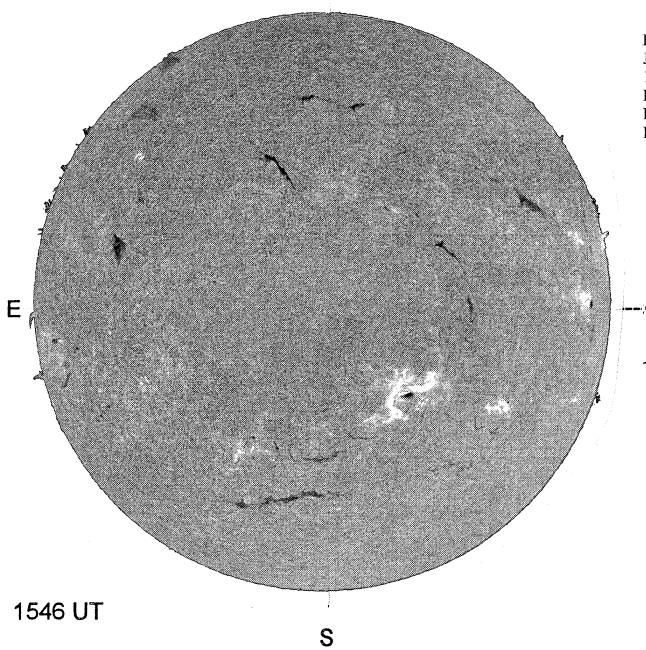
MT. WILSON MAGNETOGRAM



16.14 -
17.06 UT

White= +7.5G
Black = -7.5G

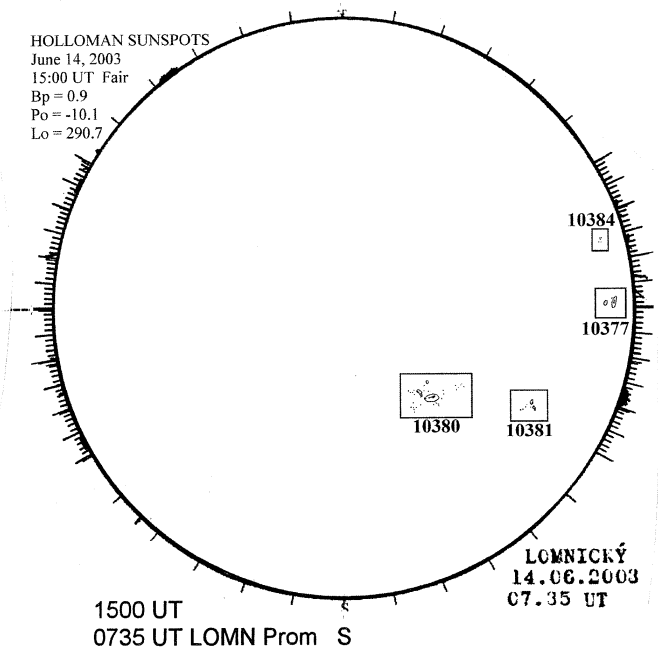
BIG BEAR H-ALPHA



1546 UT

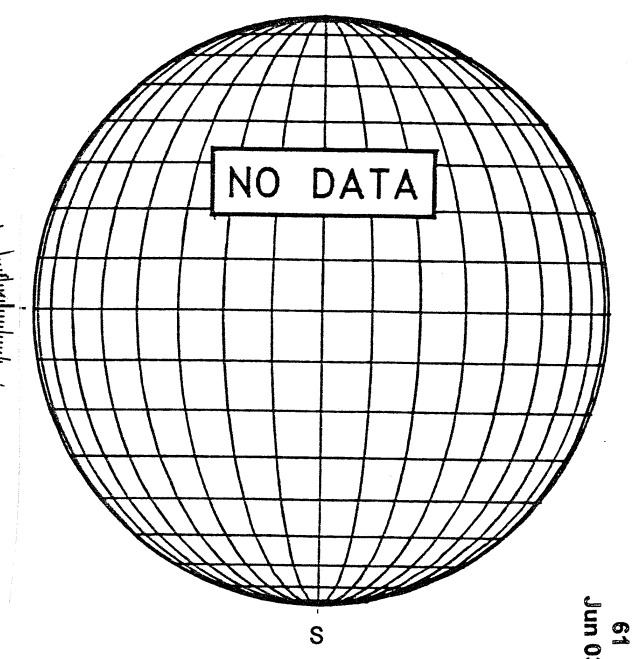
S

HOLLOMAN SUNSPOT



1500 UT
0735 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



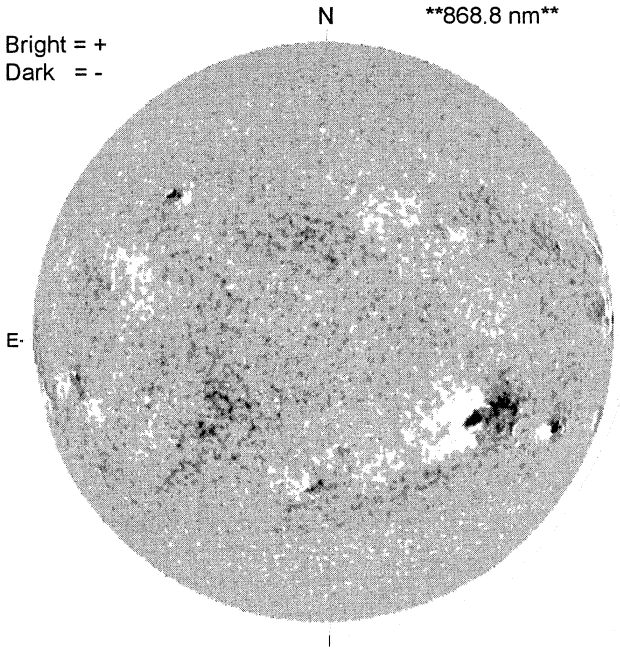
S

JUNE 15, 2003 (P= -9.99, Bo = 0.97, Lo = 285.20)

KITT PEAK MAGNETOGRAM

868.8 nm

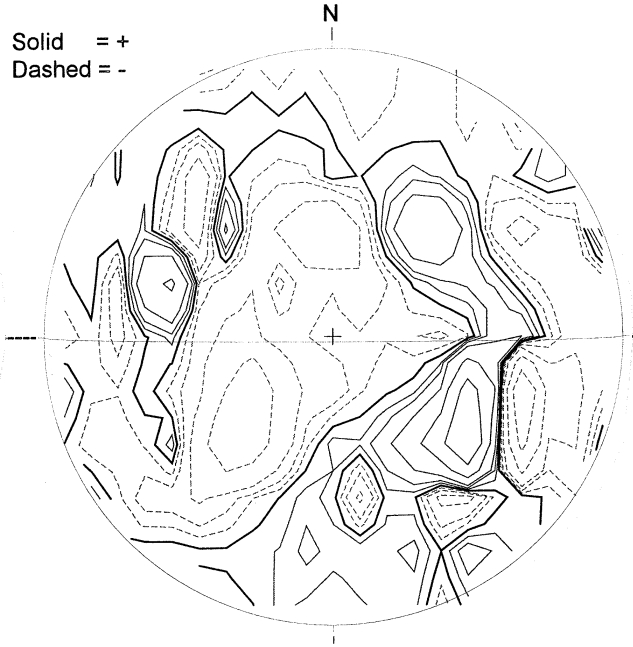
Bright = +
Dark = -



1619 UT

STANFORD MAGNETOGRAM

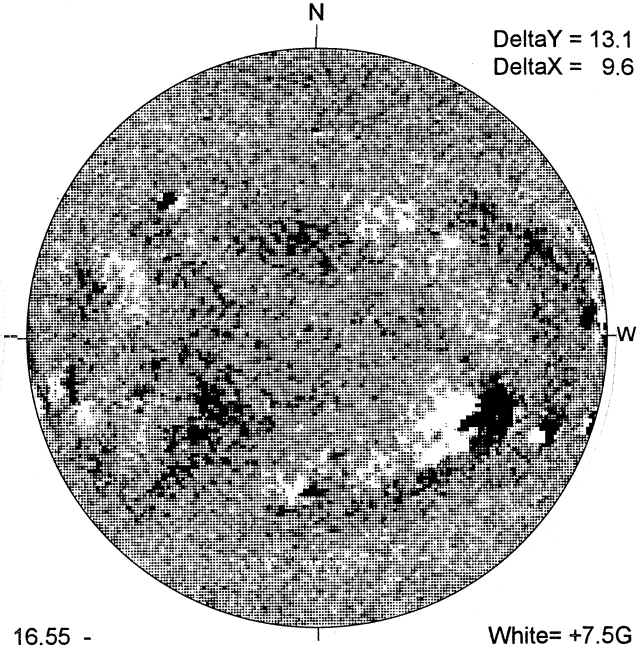
Solid = +
Dashed = -



2155 UT

MT. WILSON MAGNETOGRAM

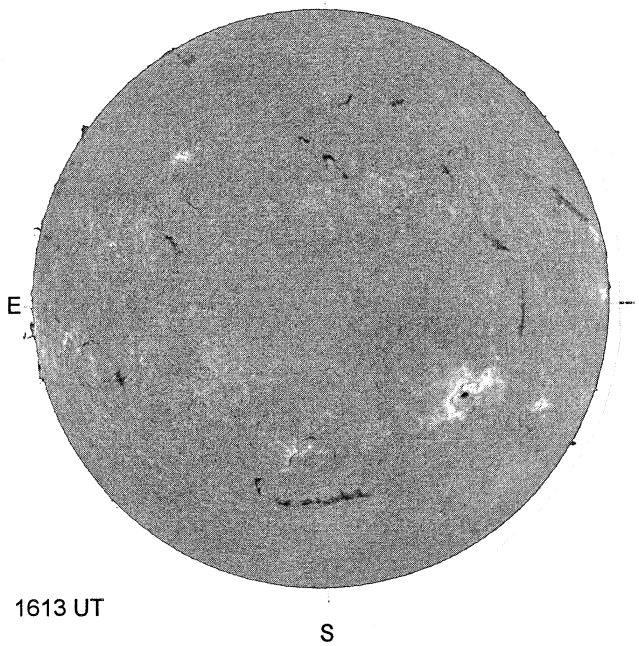
DeltaY = 13.1
DeltaX = 9.6



16.55 -
17.47 UT

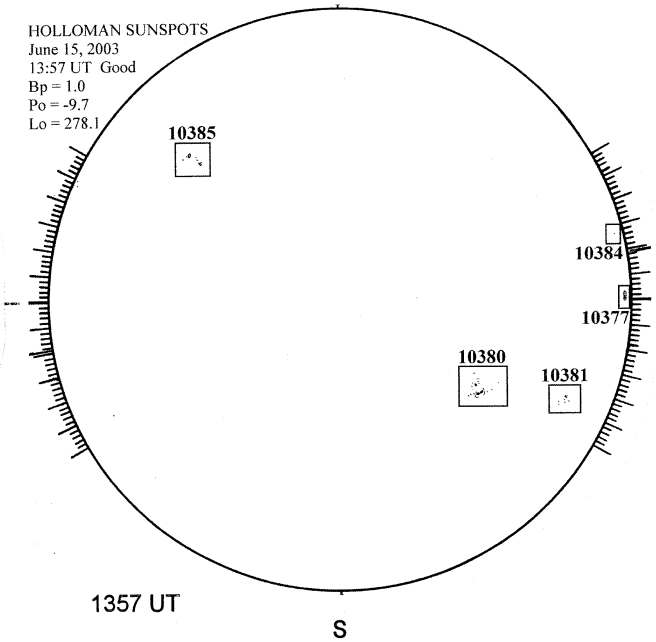
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



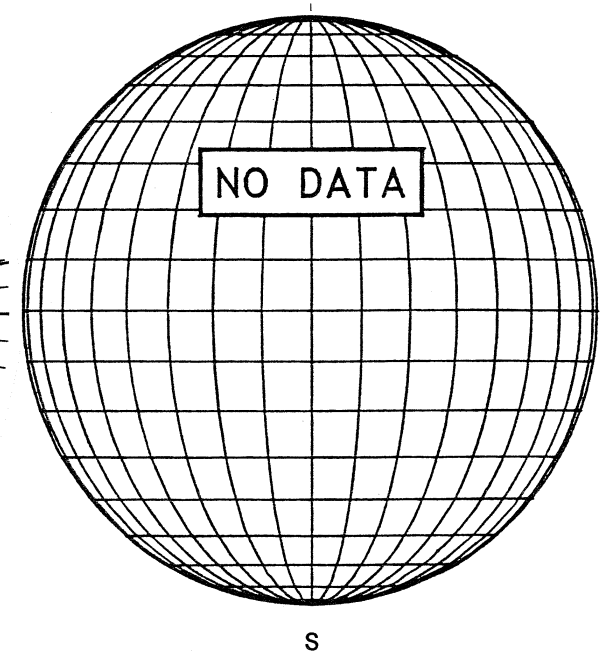
1613 UT

HOLLOMAN SUNSPOT



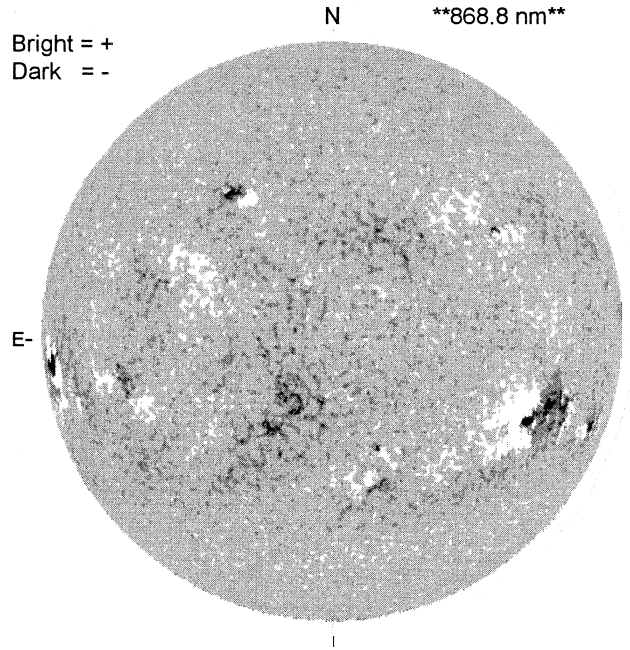
1357 UT

LOMNICKY PEAK CORONA (1.04 Radii)

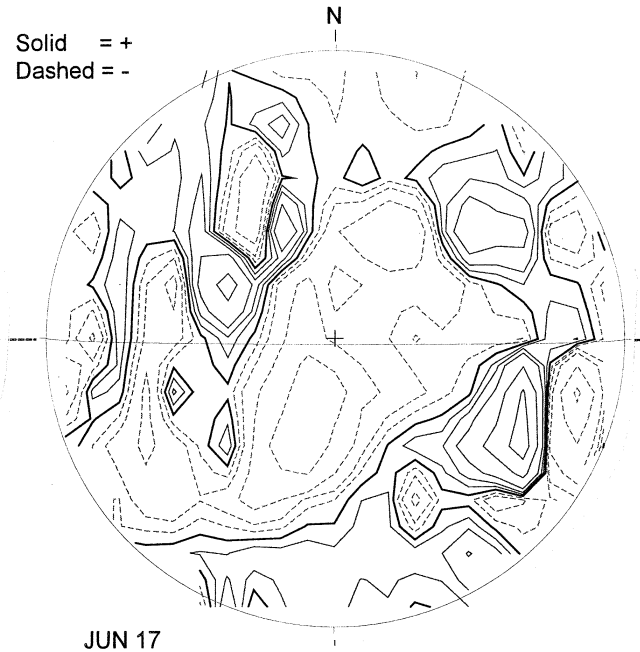


JUNE 16, 2003 (P= -9.56, Bo = 1.09, Lo = 271.96)

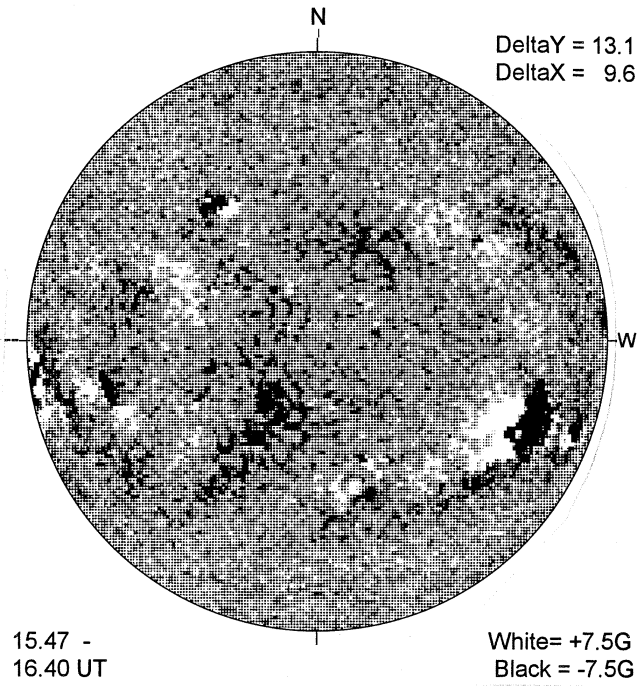
KITT PEAK MAGNETOGRAM



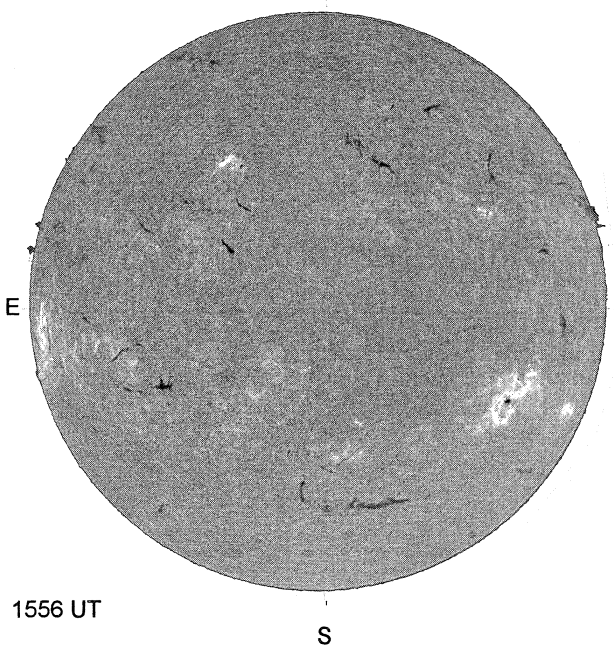
STANFORD MAGNETOGRAM



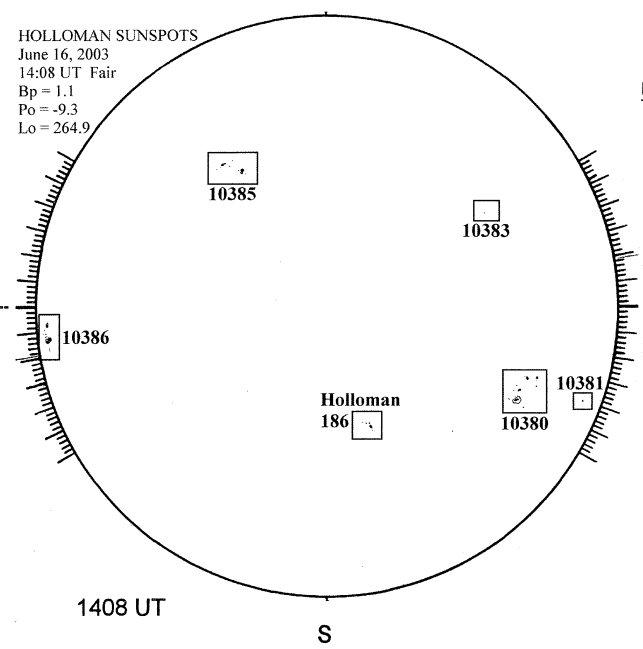
MT. WILSON MAGNETOGRAM



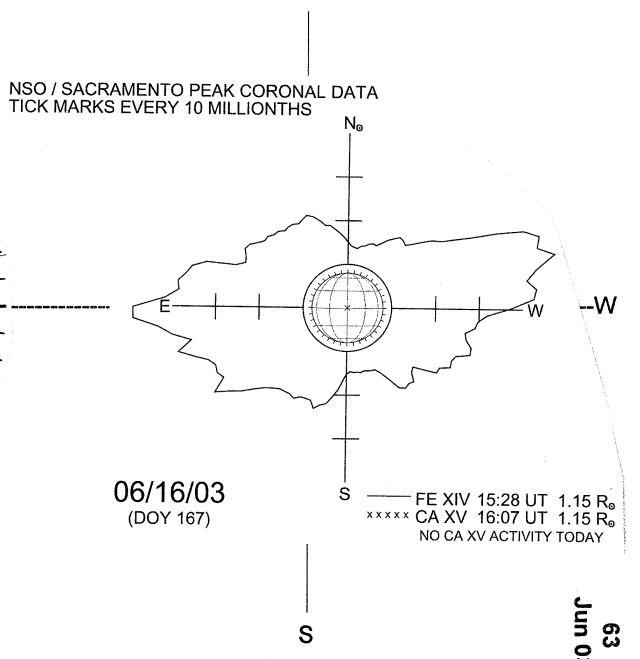
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

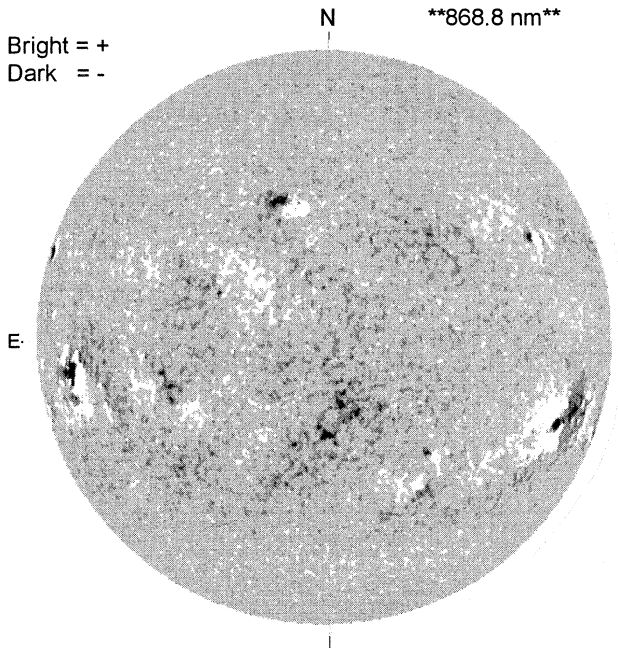


SACRAMENTO PEAK CORONA (1.15 Radii)

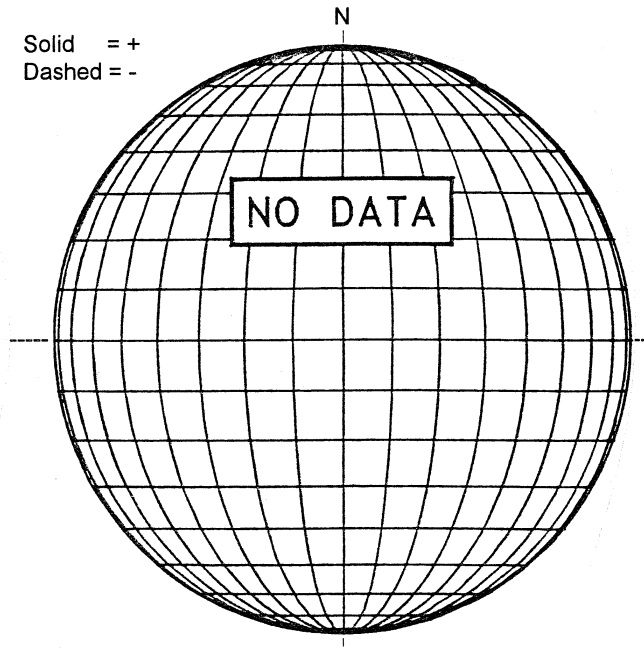


JUNE 17, 2003 (P= -9.13, Bo = 1.21, Lo = 258.72)

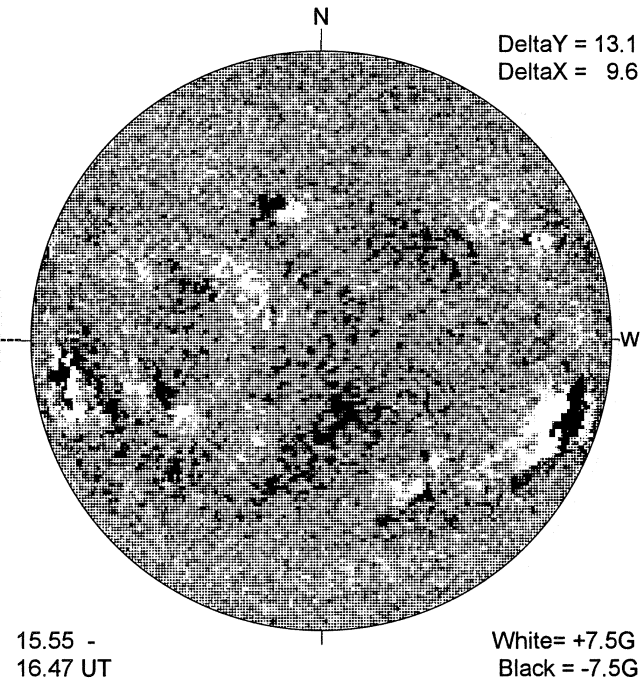
KITT PEAK MAGNETOGRAM



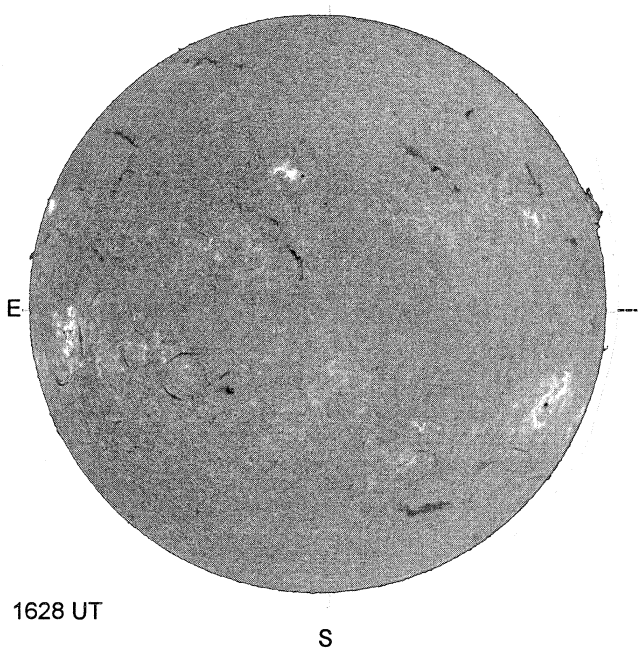
STANFORD MAGNETOGRAM



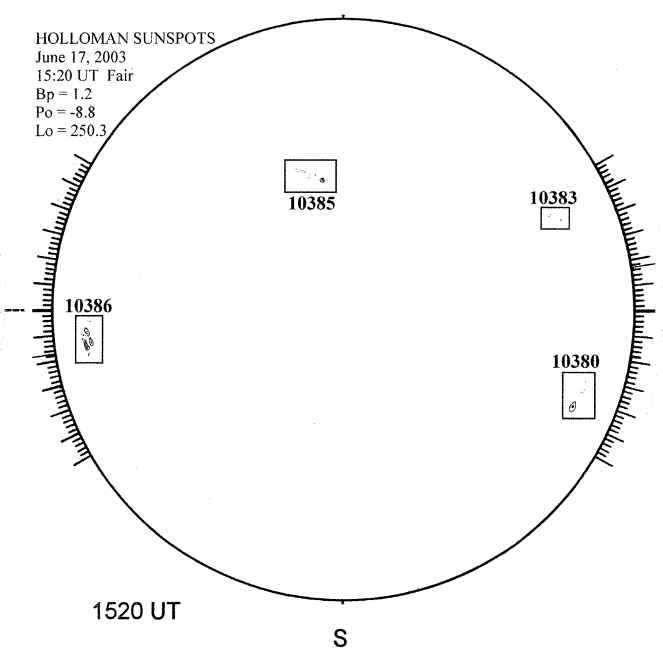
MT. WILSON MAGNETOGRAM



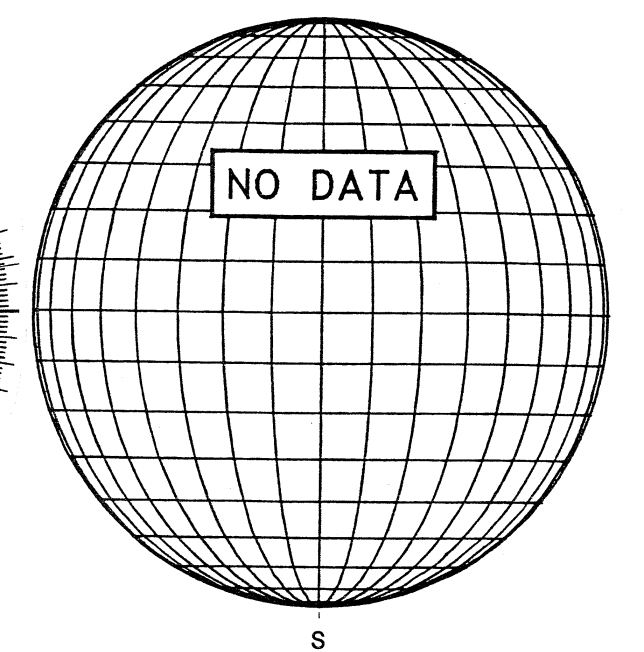
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

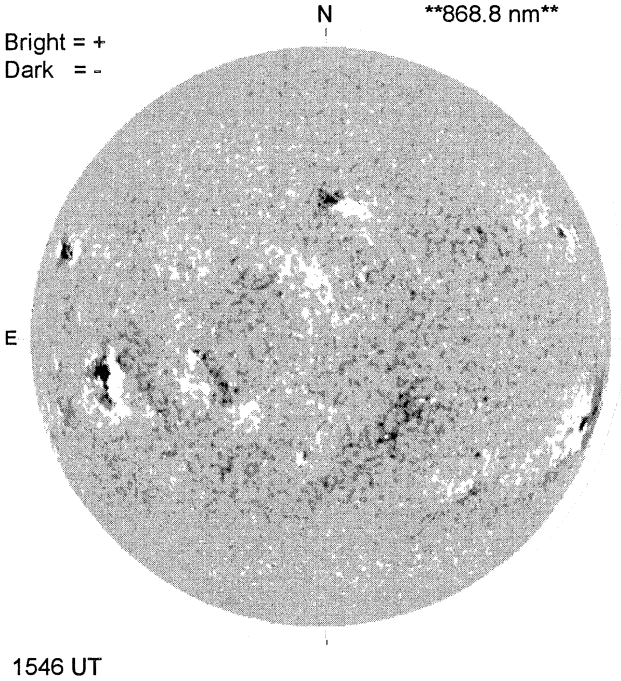


LOMNICKY PEAK CORONA (1.04 Radii)

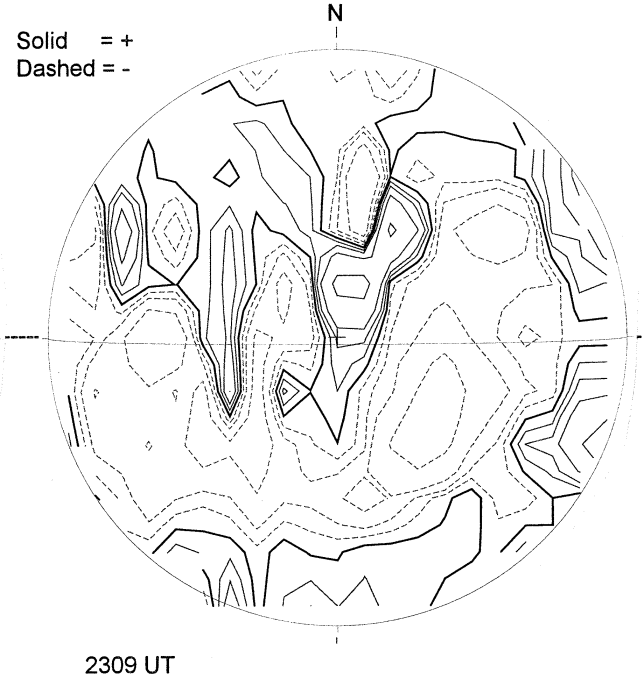


JUNE 18, 2003 (P= -8.70, Bo = 1.33, Lo = 245.49)

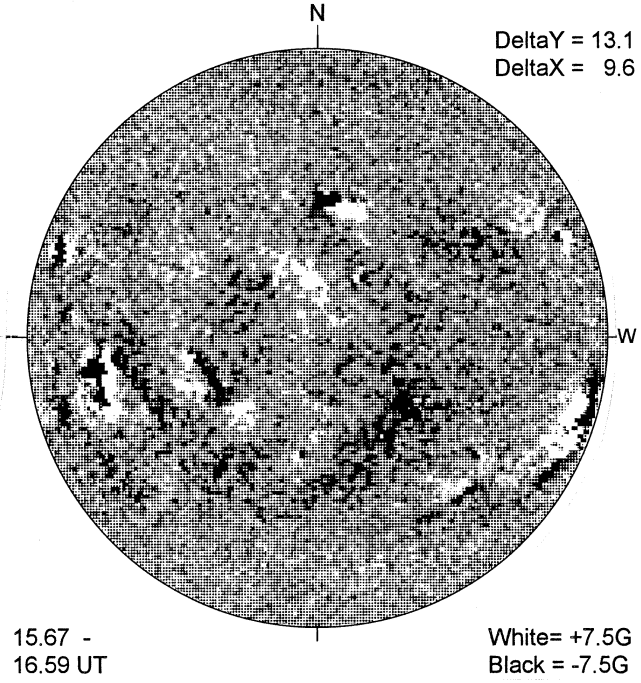
KITT PEAK MAGNETOGRAM



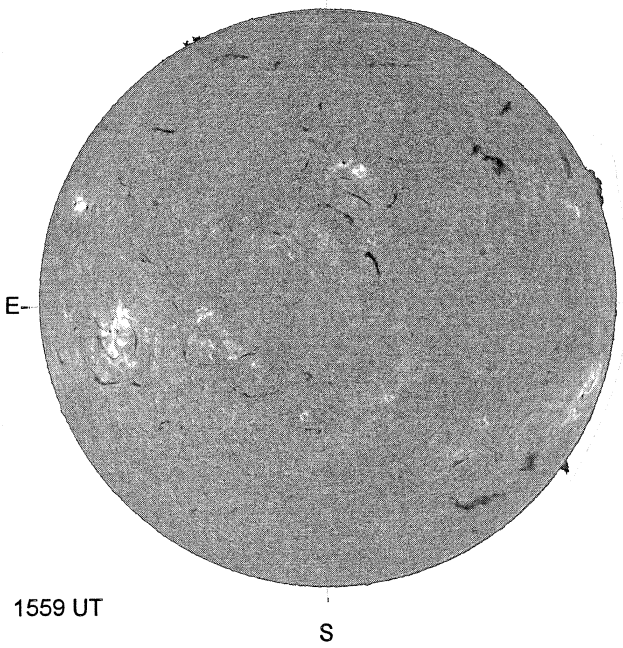
STANFORD MAGNETOGRAM



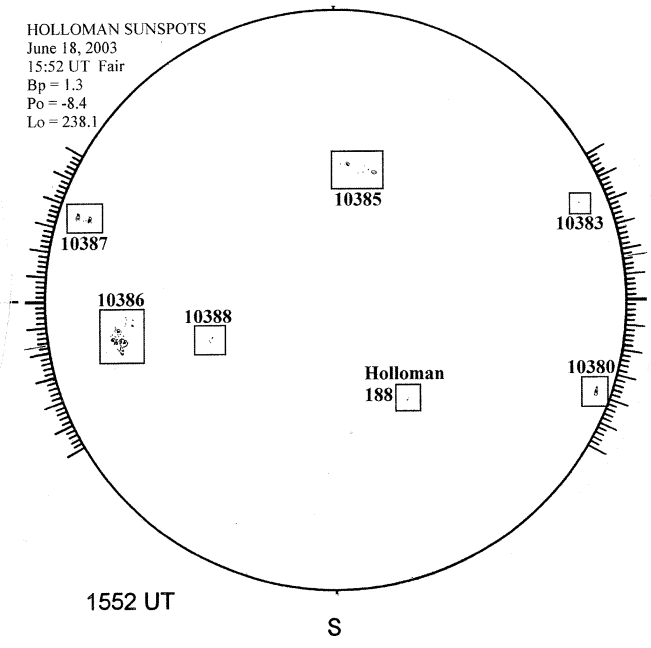
MT. WILSON MAGNETOGRAM



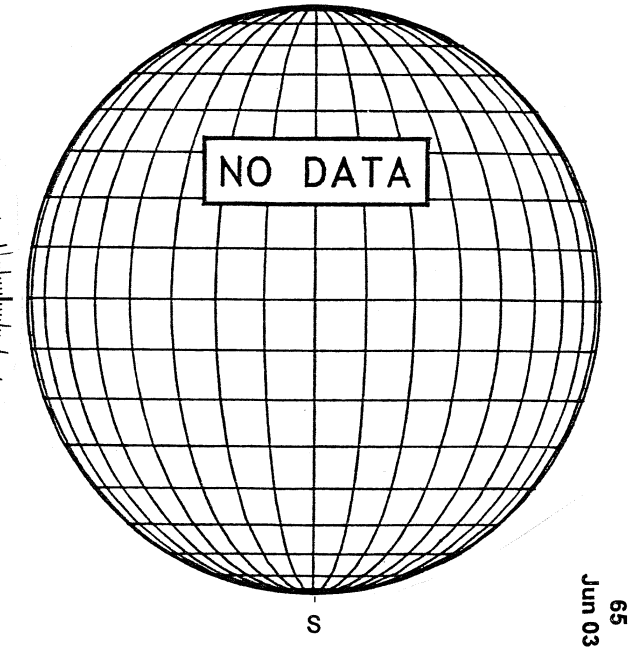
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

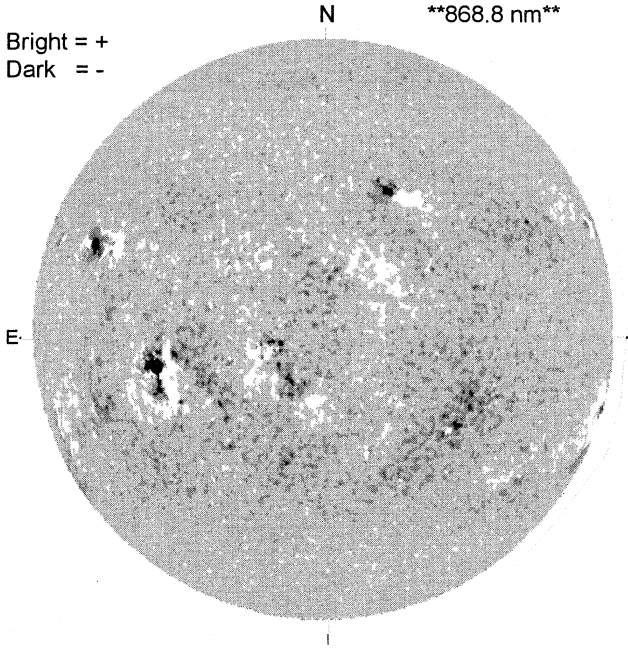


LOMNICKY PEAK CORONA (1.04 Radii)----

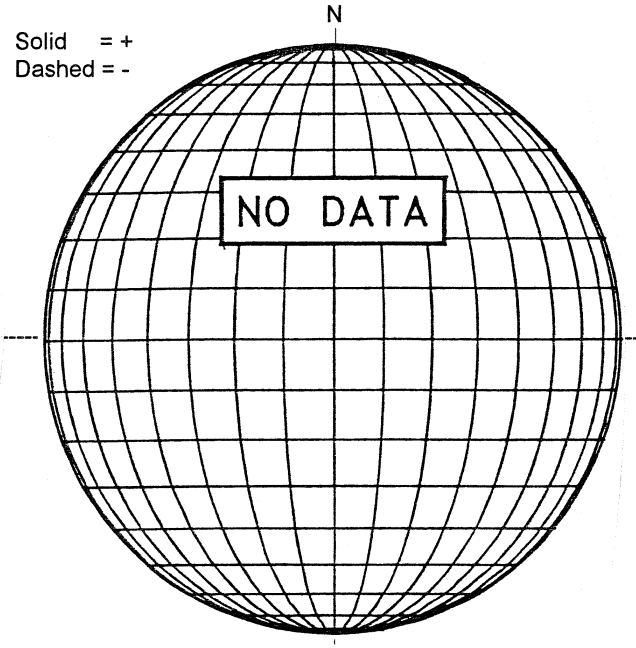


JUNE 19, 2003 (P= -8.26, Bo = 1.45, Lo = 232.25)

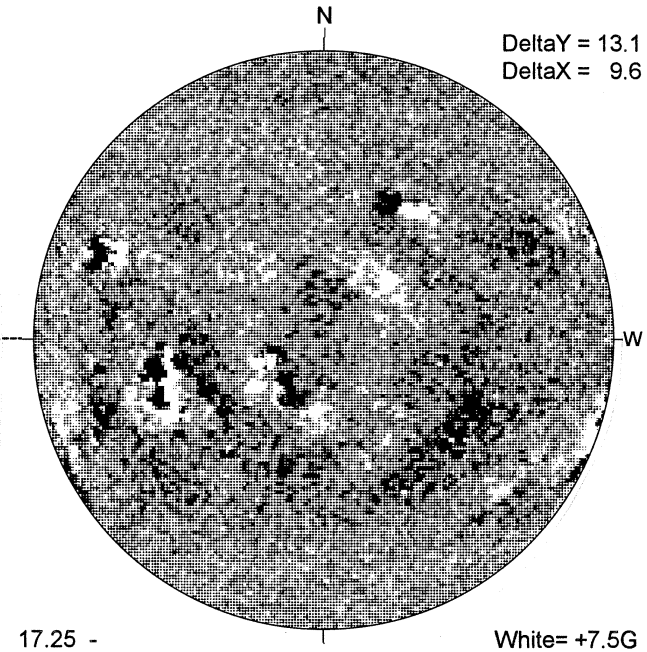
KITT PEAK MAGNETOGRAM



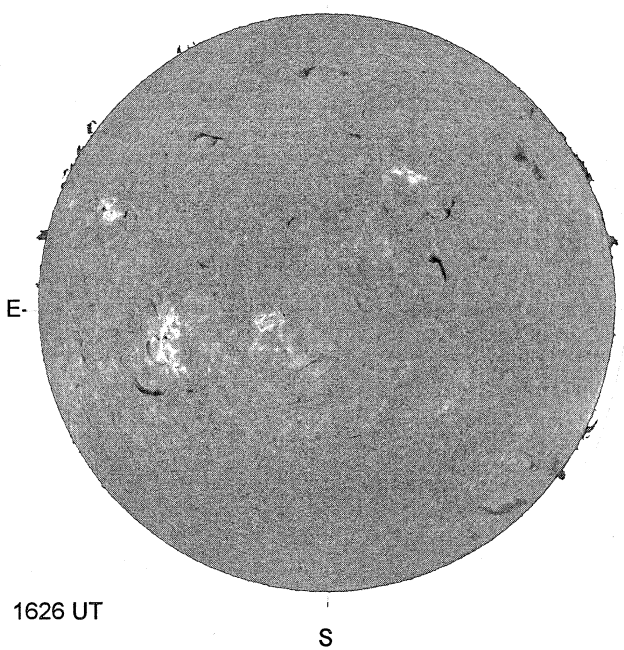
STANFORD MAGNETOGRAM



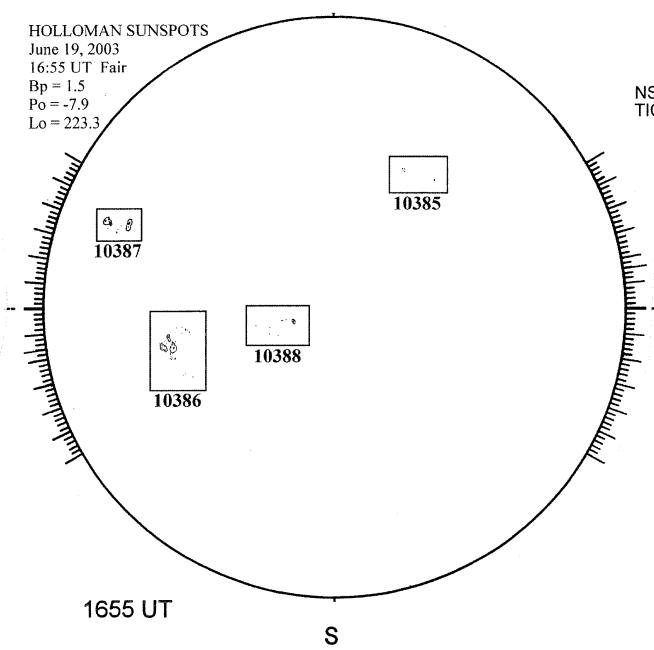
MT. WILSON MAGNETOGRAM



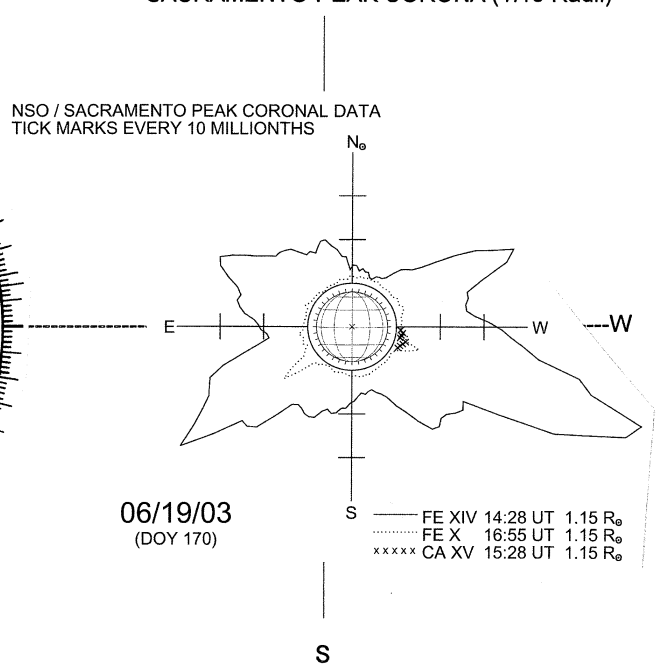
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

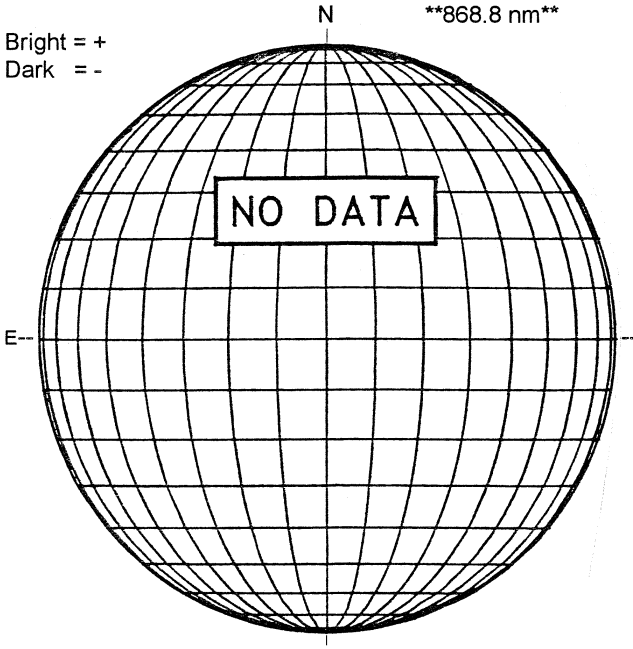


SACRAMENTO PEAK CORONA (1.15 Radii)

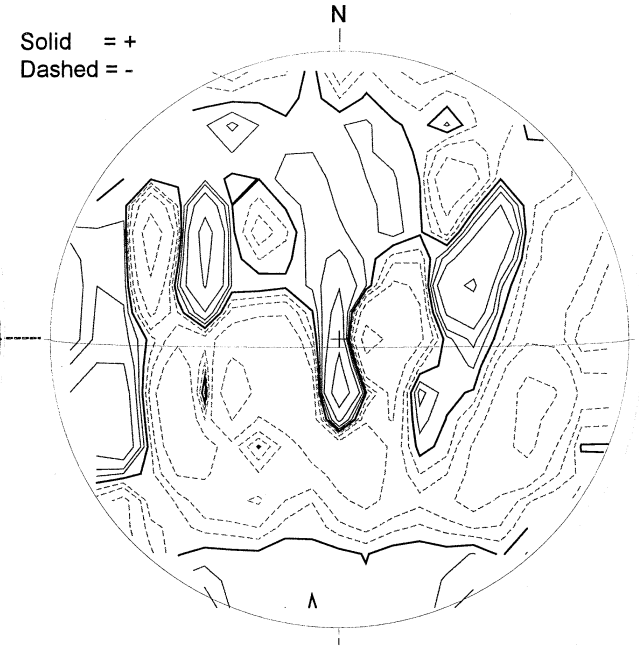


JUNE 20, 2003 (P= -7.82, Bo = 1.56, Lo = 219.01)

KITT PEAK MAGNETOGRAM

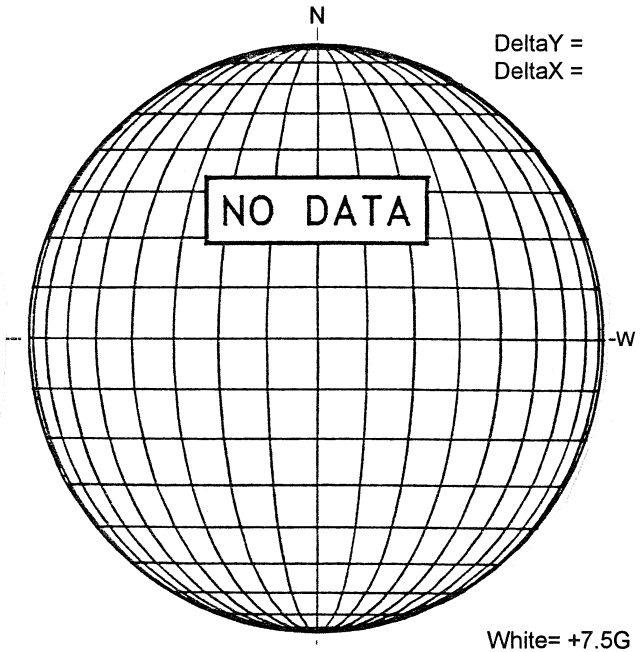


STANFORD MAGNETOGRAM



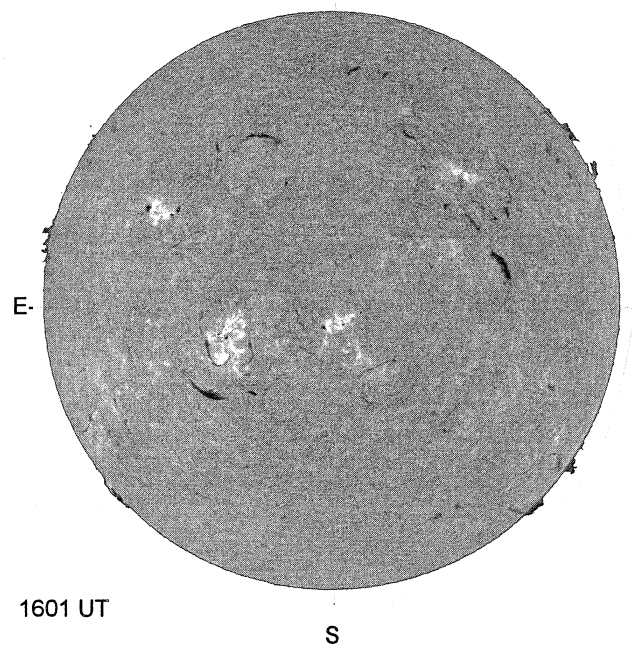
1921 UT

MT. WILSON MAGNETOGRAM



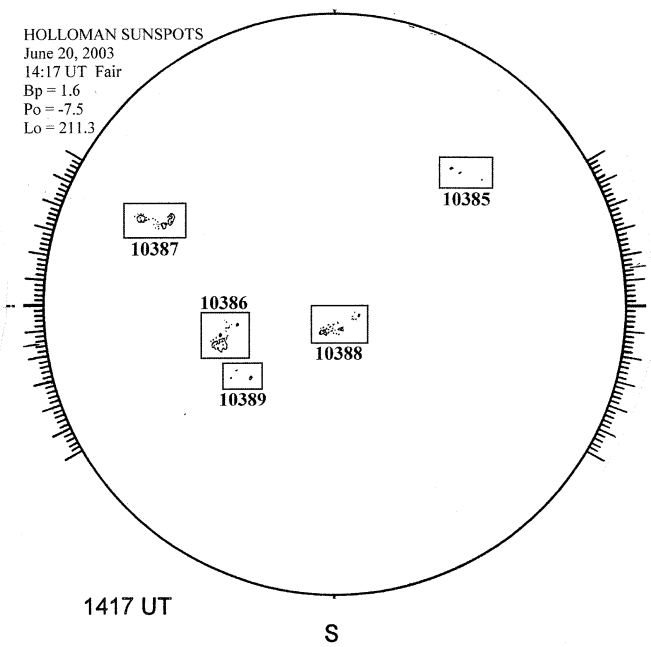
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



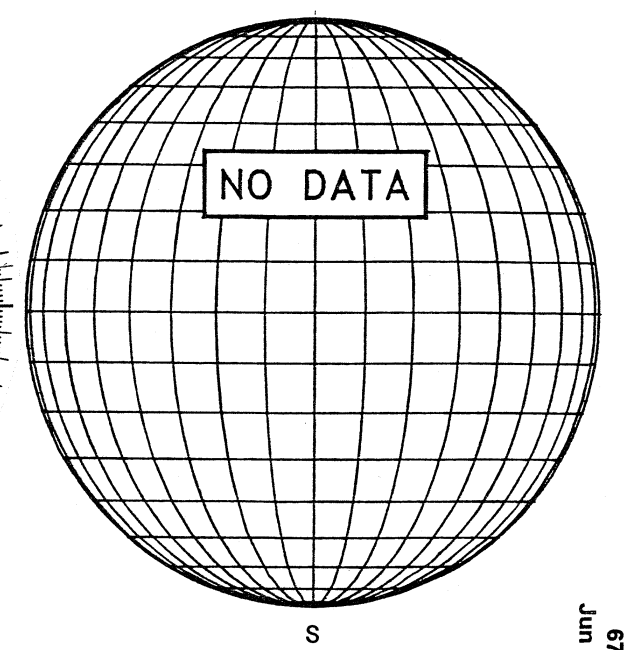
1601 UT

HOLLOMAN SUNSPOT



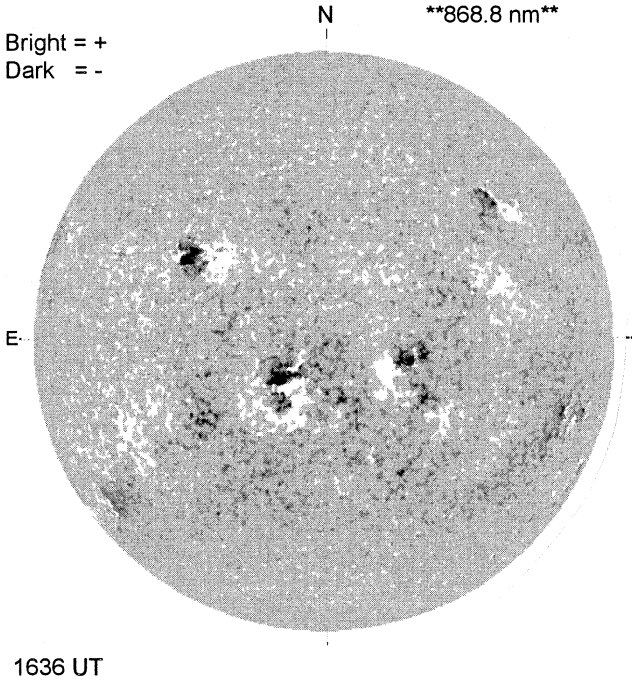
1417 UT

LOMNICKY PEAK CORONA (1.04 Radii)----

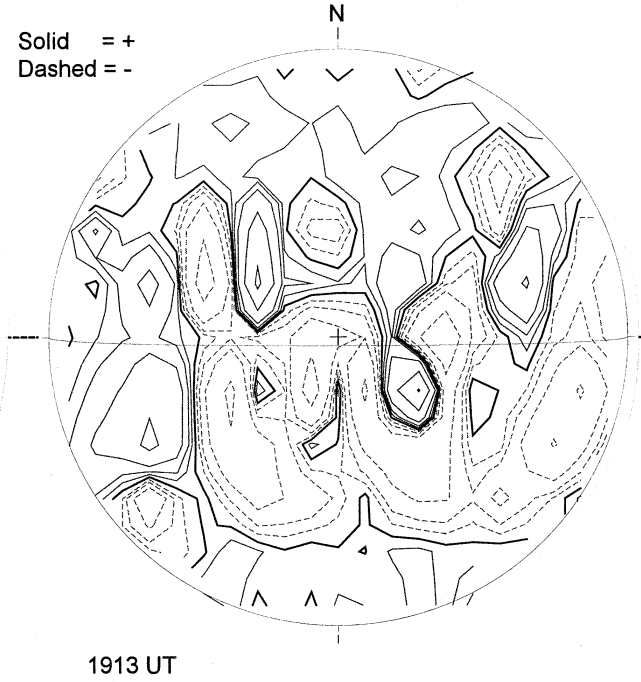


JUNE 21, 2003 (P= -7.38, Bo = 1.68, Lo = 205.78)

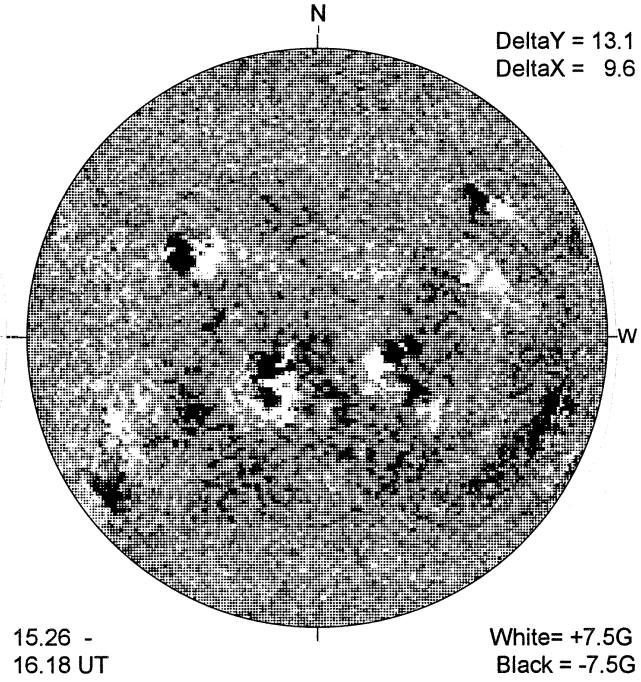
KITT PEAK MAGNETOGRAM



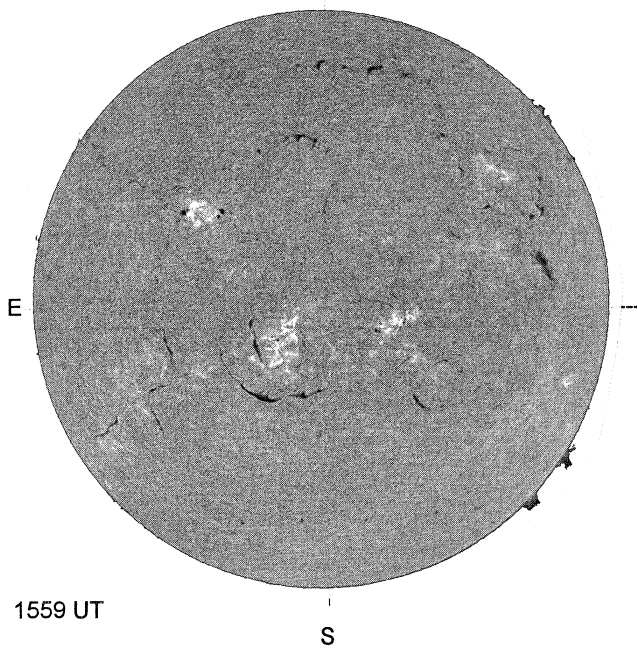
STANFORD MAGNETOGRAM



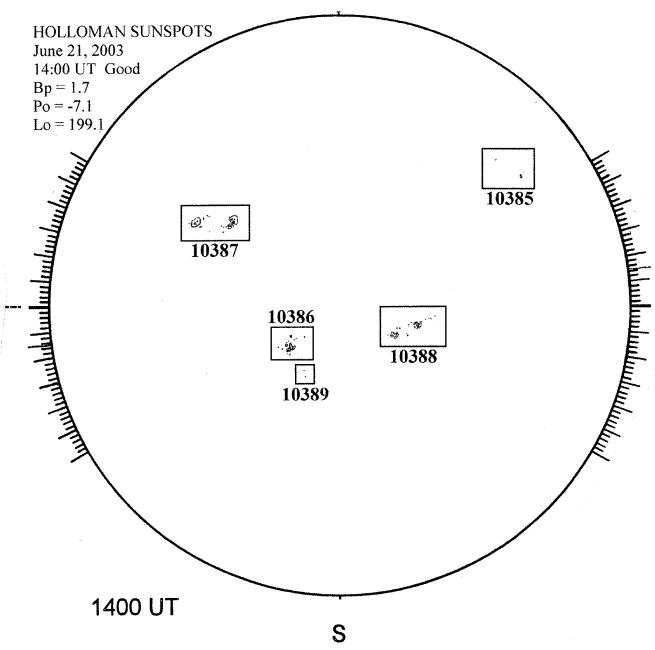
MT. WILSON MAGNETOGRAM



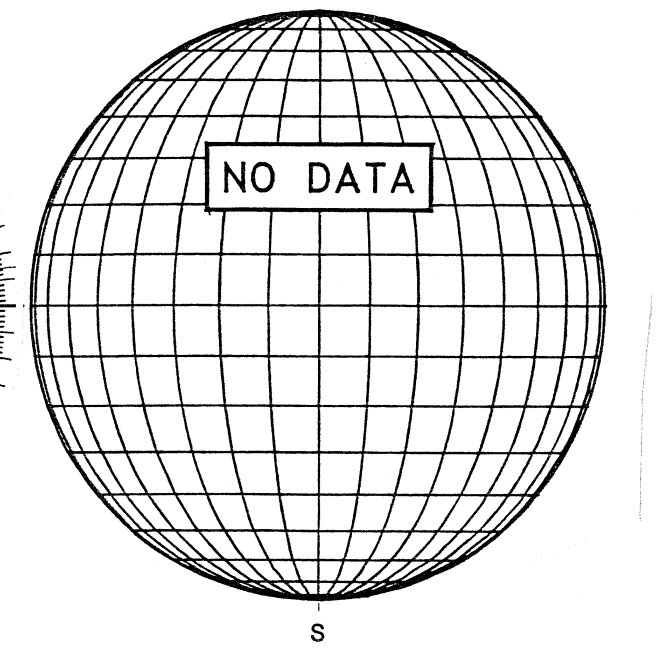
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

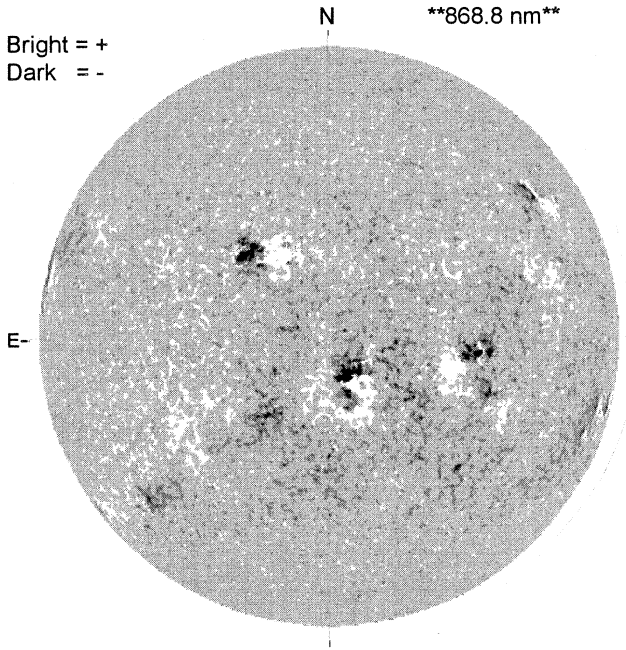


SACRAMENTO PEAK CORONA (1.15 Radii)



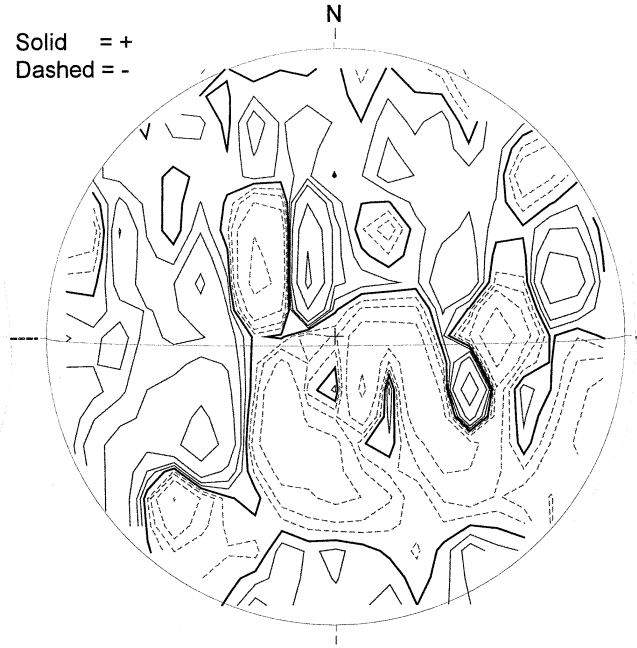
JUNE 22, 2003 (P= -6.94, Bo = 1.80, Lo = 192.54)

KITT PEAK MAGNETOGRAM



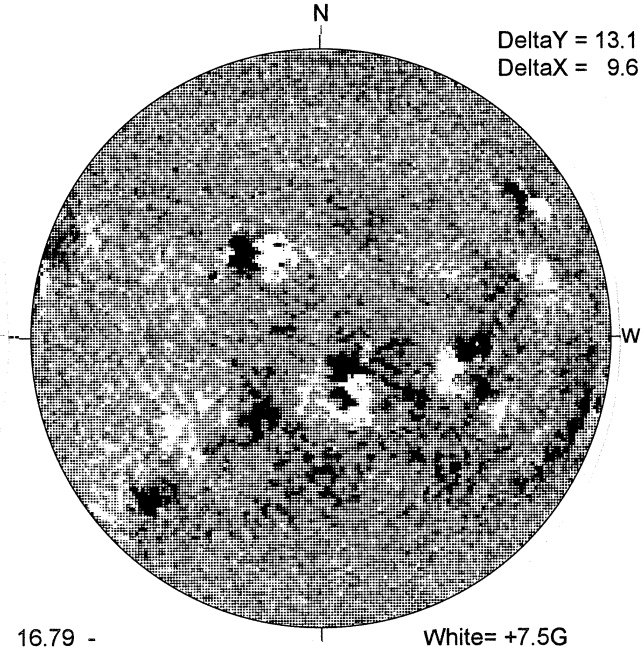
1457 UT

STANFORD MAGNETOGRAM



1958 UT

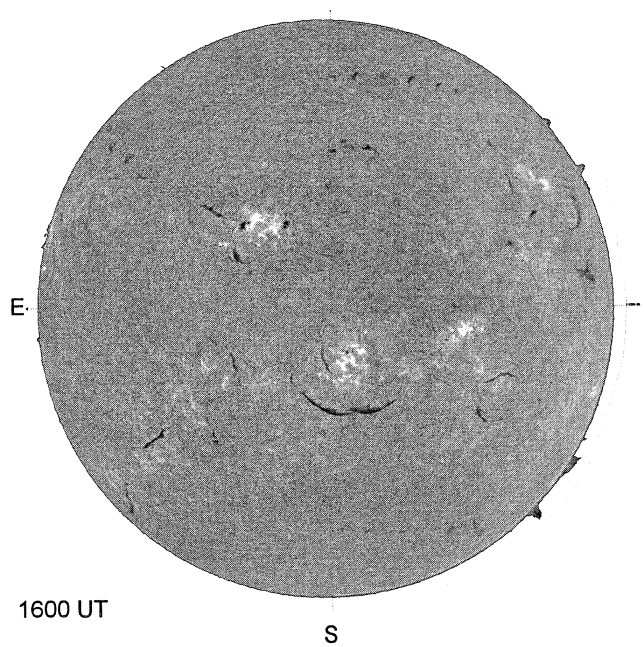
MT. WILSON MAGNETOGRAM



16.79 -
17.71 UT

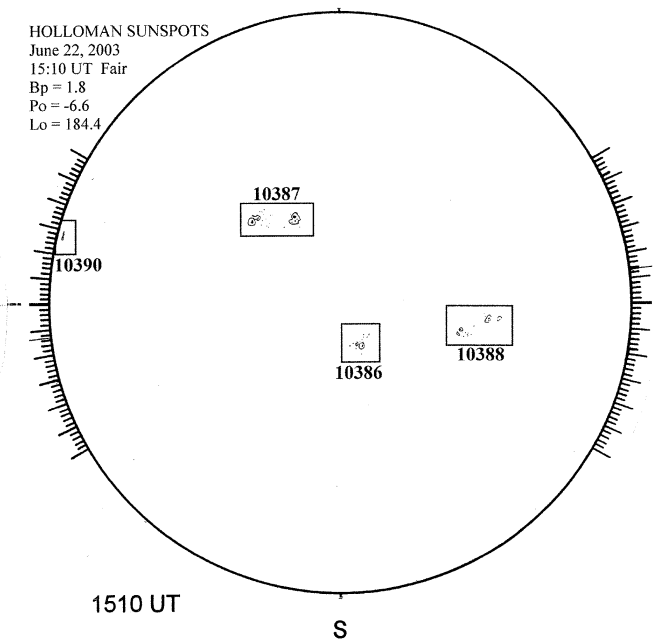
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



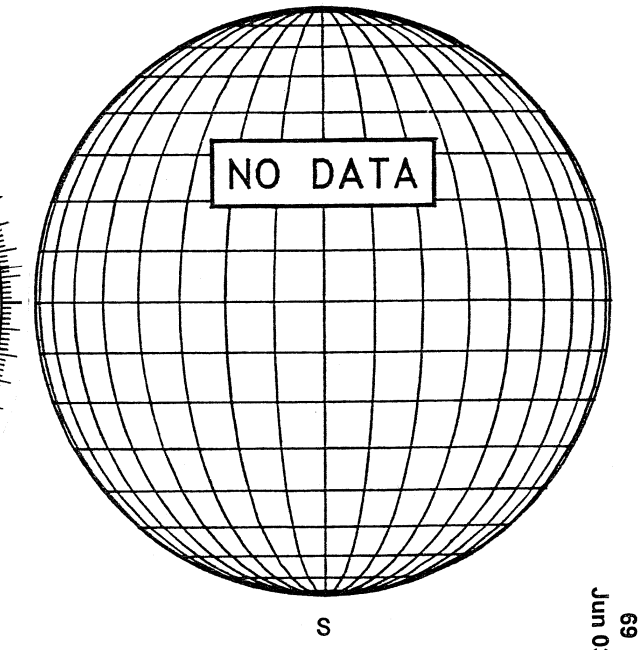
1600 UT

HOLLOMAN SUNSPOT



1510 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

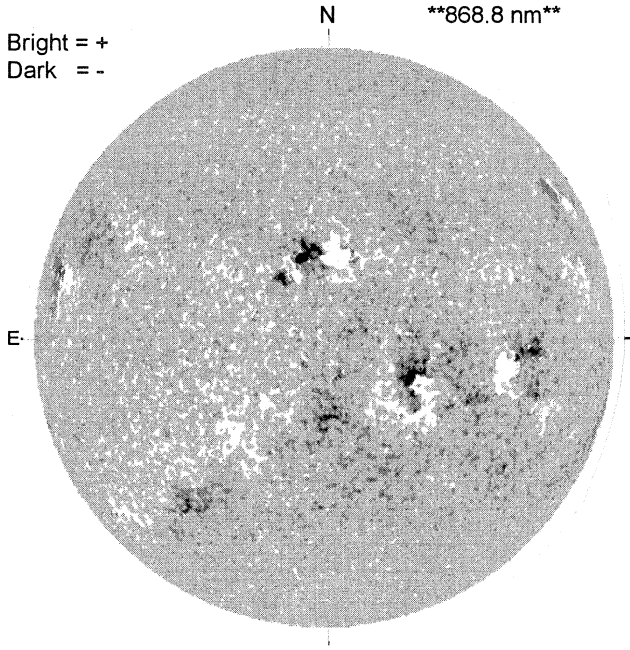


JUNE 23, 2003 (P= -6.50, Bo = 1.91, Lo = 179.30)

KITT PEAK MAGNETOGRAM

868.8 nm

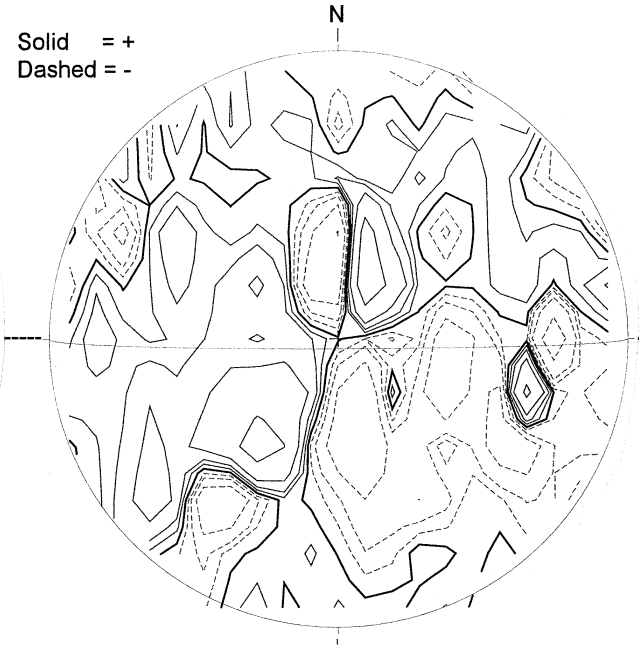
Bright = +
Dark = -



1607 UT

STANFORD MAGNETOGRAM

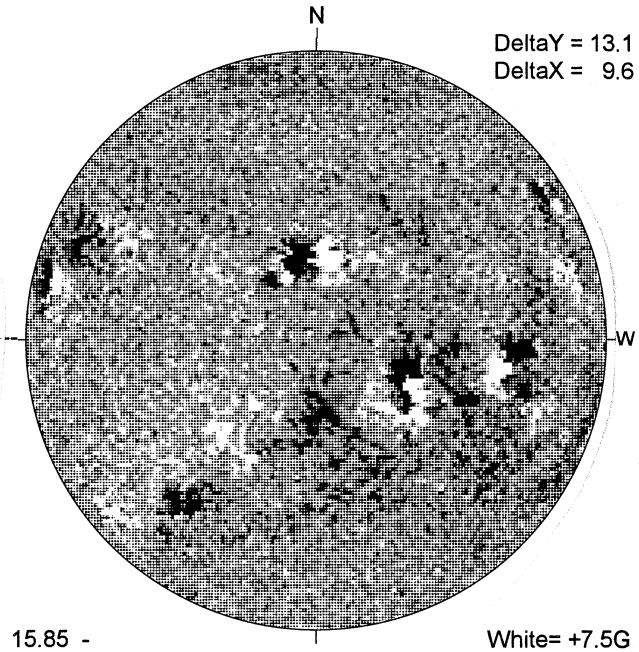
Solid = +
Dashed = -



2053 UT

MT. WILSON MAGNETOGRAM

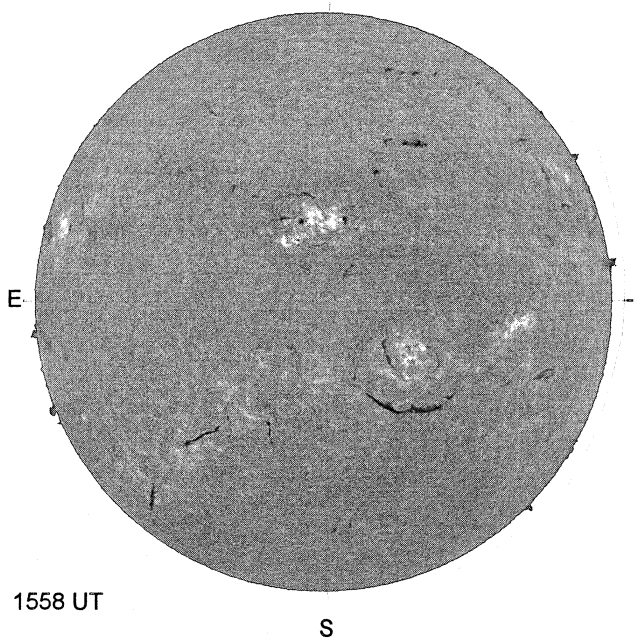
DeltaY = 13.1
DeltaX = 9.6



15.85 -
16.77 UT

White= +7.5G
Black = -7.5G

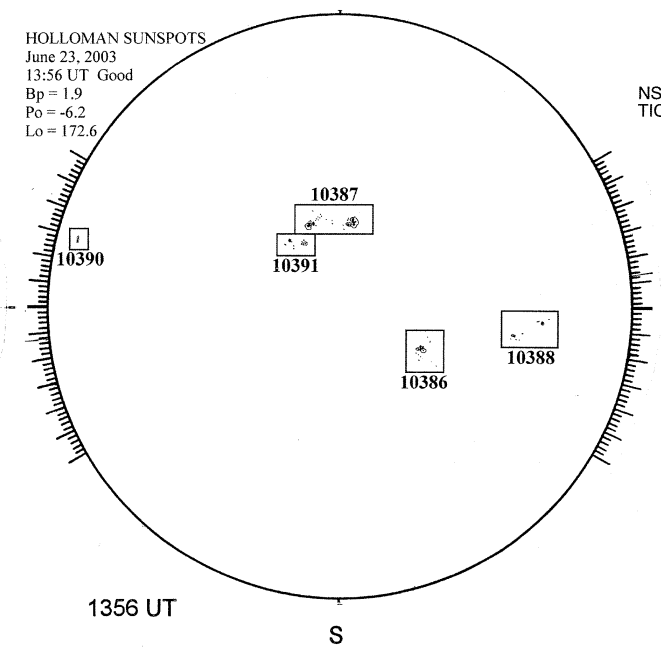
BIG BEAR H-ALPHA



1558 UT

HOLLOMAN SUNSPOT

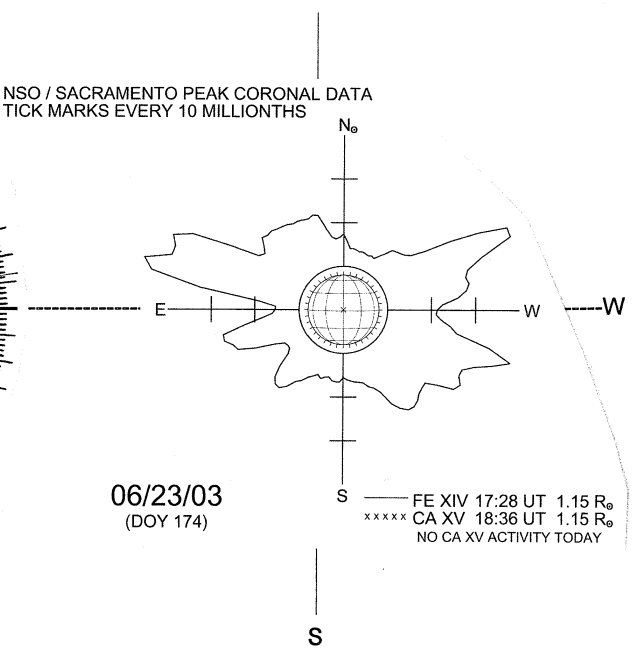
HOLLOMAN SUNSPOTS
June 23, 2003
13:56 UT Good
Bp = 1.9
Po = -6.2
Lo = 172.6



1356 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS

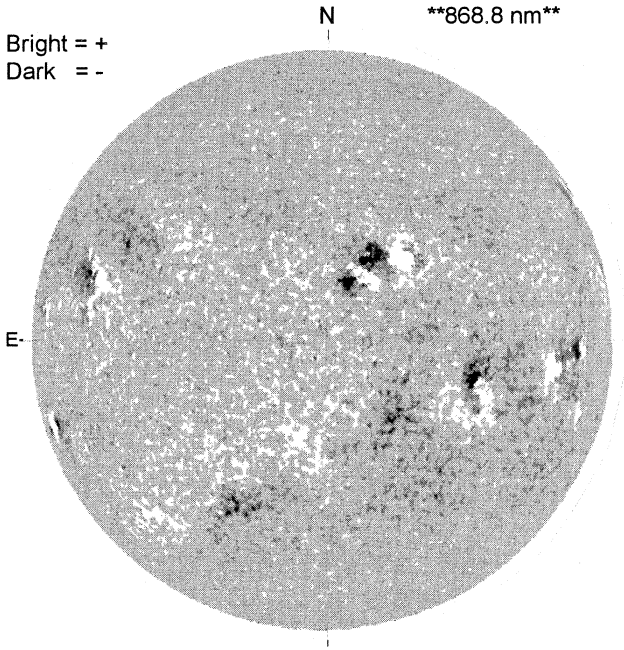


06/23/03
(DOY 174)

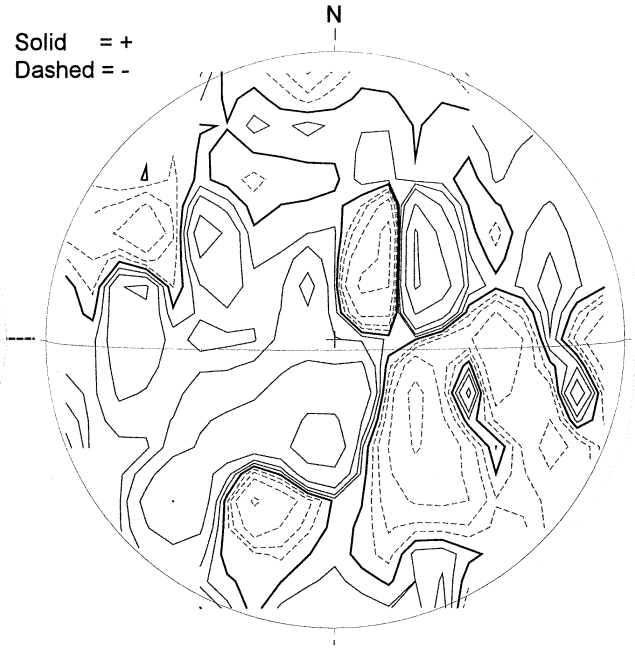
FE XIV 17:28 UT 1.15 R⊙
xxxxx CA XV 18:36 UT 1.15 R⊙
NO CA XV ACTIVITY TODAY

JUNE 24, 2003 (P= -6.05, Bo = 2.03, Lo = 166.07)

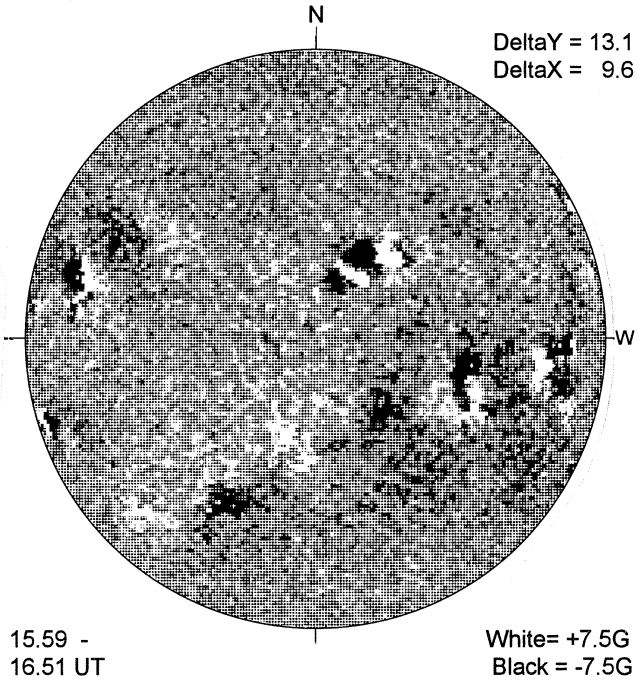
KITT PEAK MAGNETOGRAM



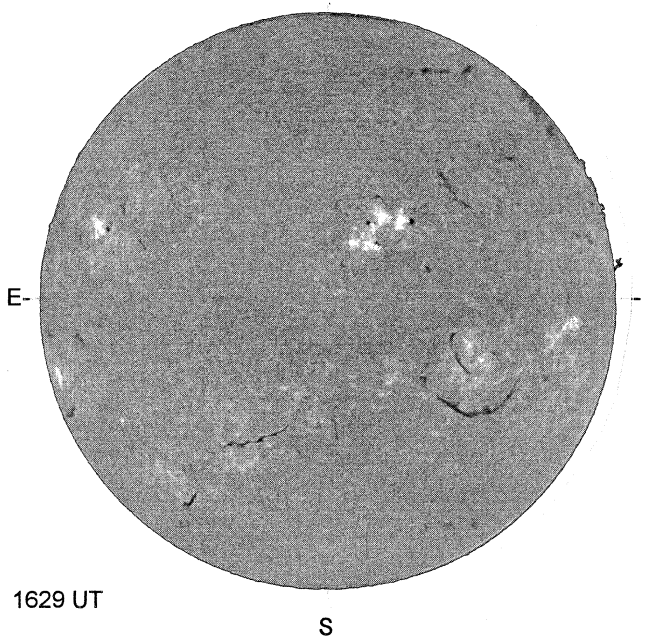
STANFORD MAGNETOGRAM



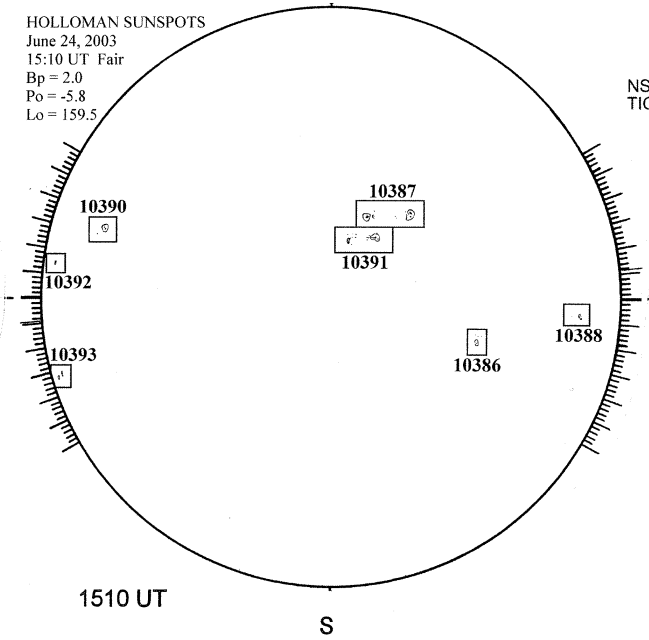
MT. WILSON MAGNETOGRAM



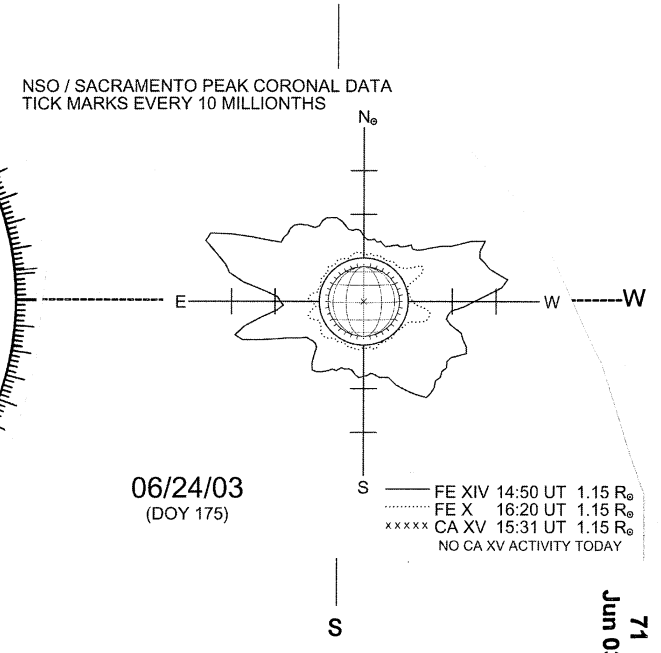
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

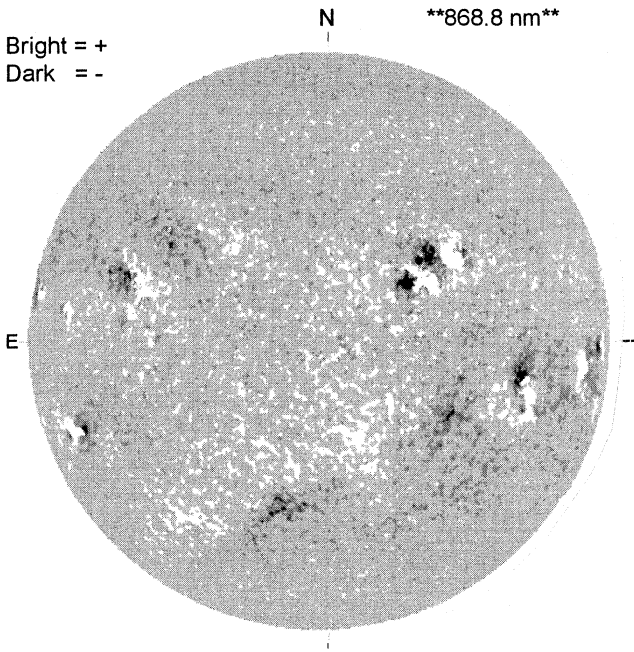


SACRAMENTO PEAK CORONA (1.15 Radii)----

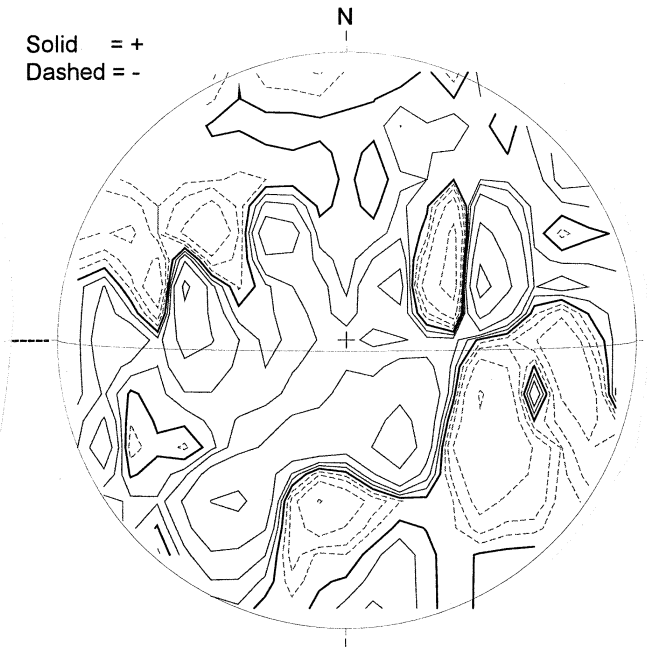


JUNE 25, 2003 (P= -5.60, Bo = 2.15, Lo = 152.83)

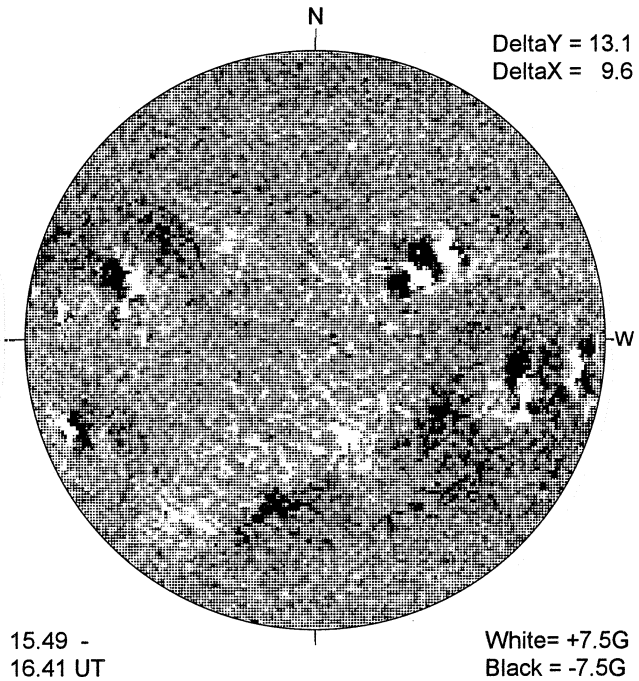
KITT PEAK MAGNETOGRAM



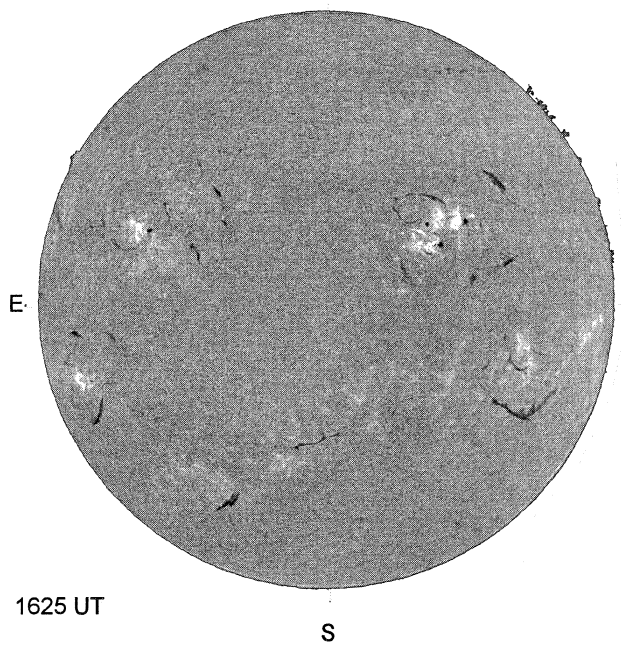
STANFORD MAGNETOGRAM



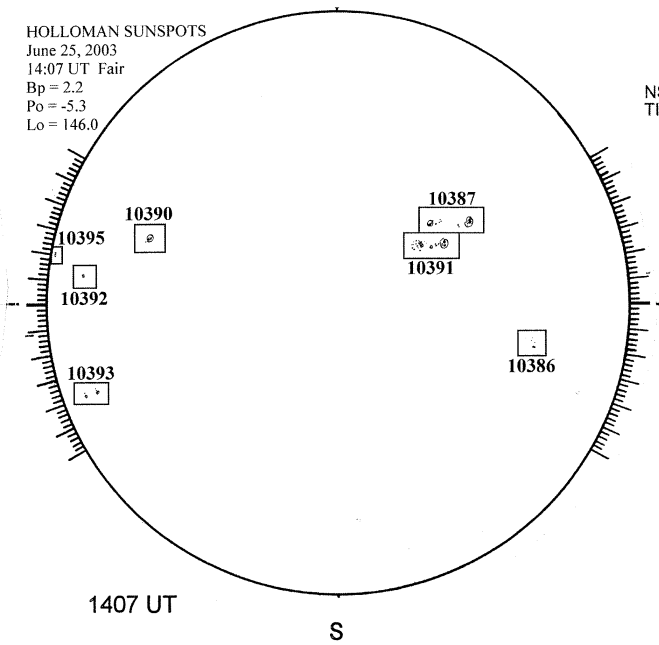
MT. WILSON MAGNETOGRAM



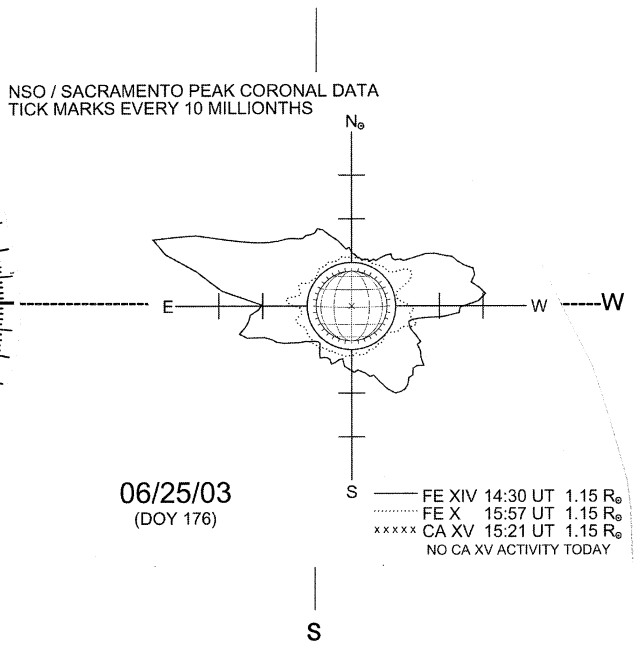
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

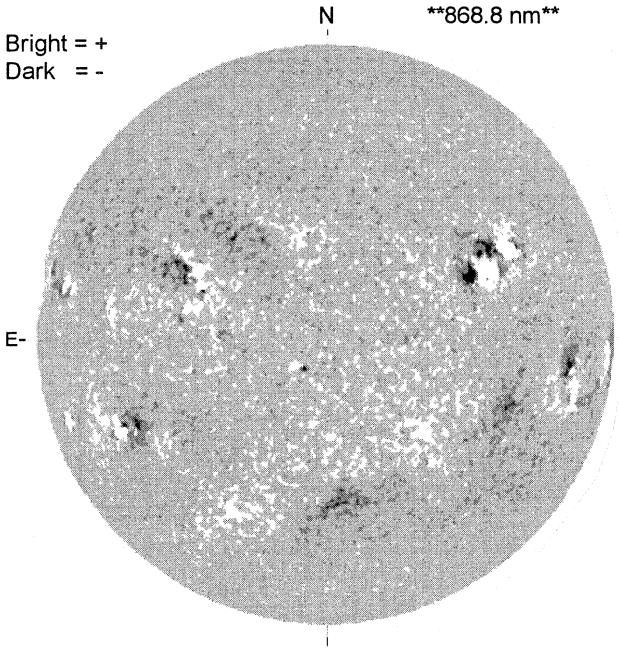


SACRAMENTO PEAK CORONA (1.15 Radii)

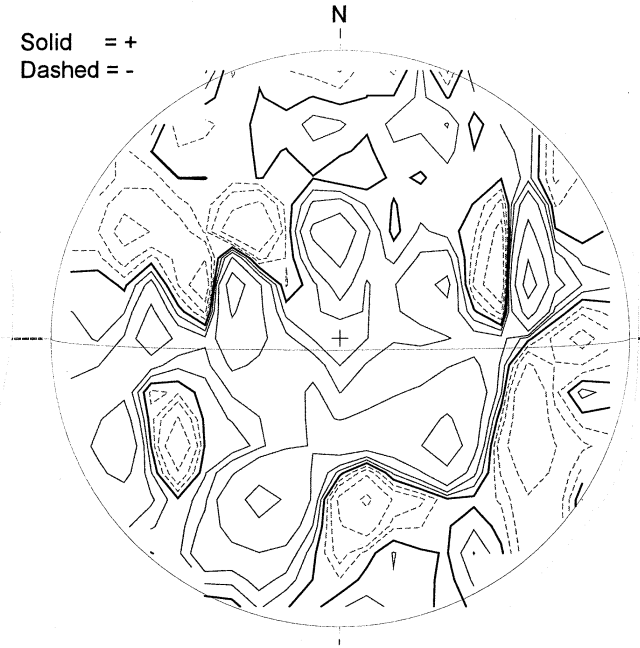


JUNE 26, 2003 (P= -5.15, Bo = 2.26, Lo = 139.59)

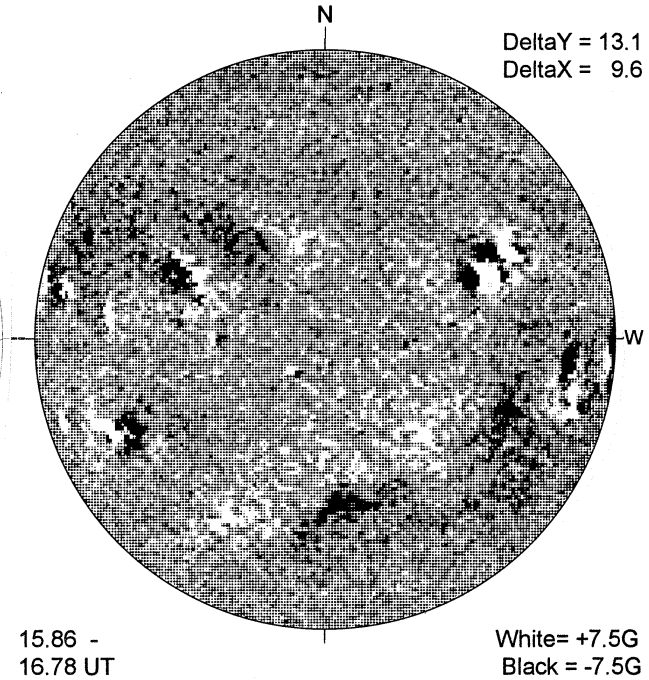
KITT PEAK MAGNETOGRAM



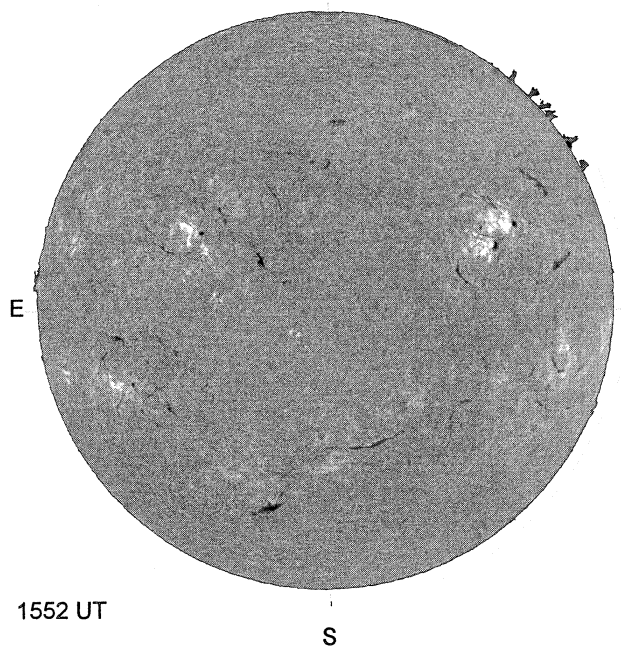
STANFORD MAGNETOGRAM



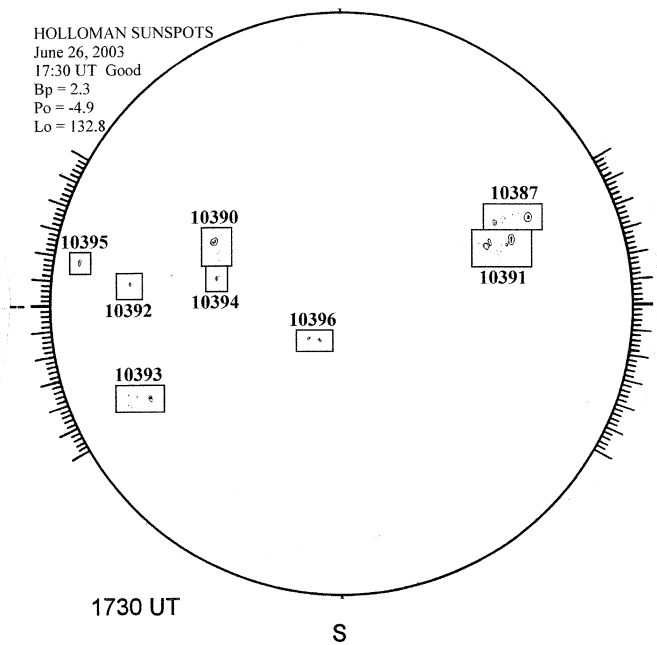
MT. WILSON MAGNETOGRAM



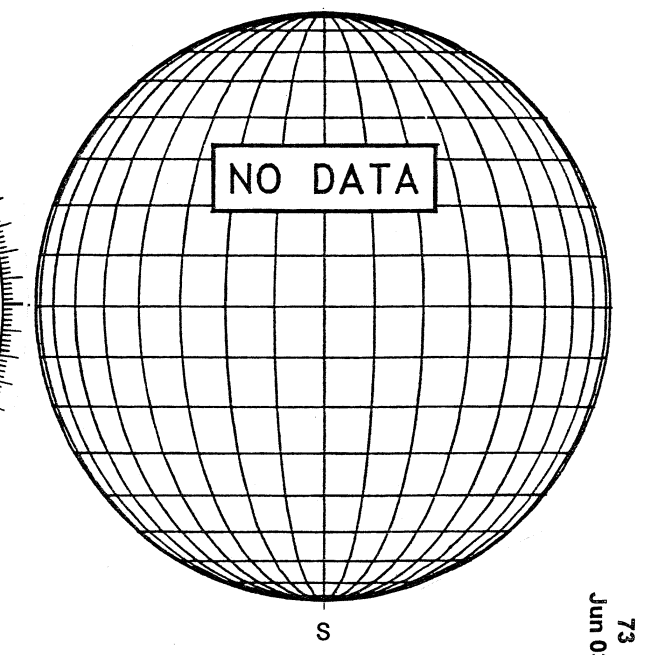
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT



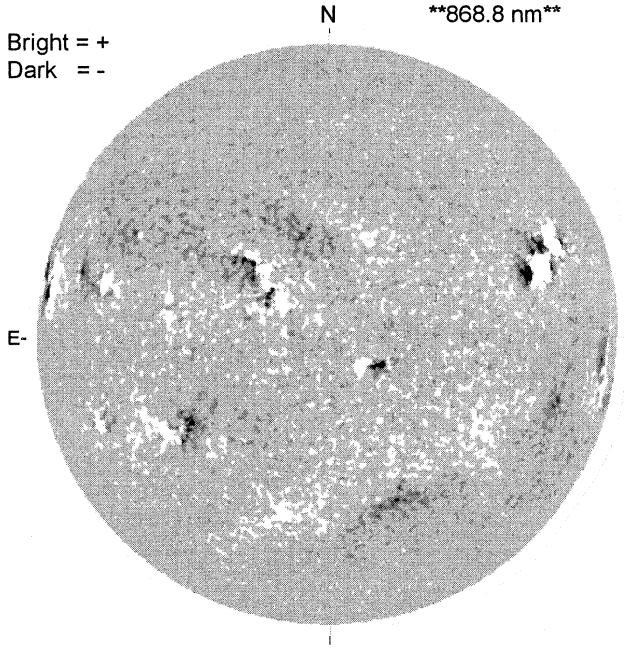
SACRAMENTO PEAK CORONA (1.15 Radii)----



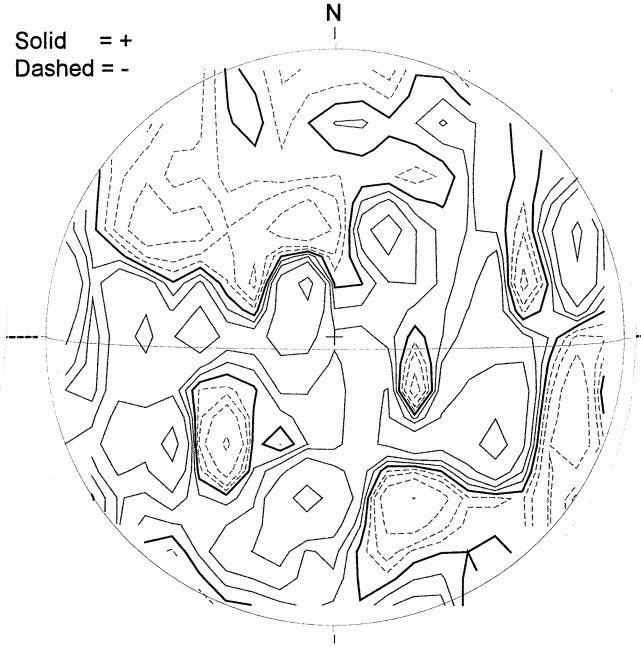
73
Jun 03

JUNE 27, 2003 (P= -4.70, Bo = 2.37, Lo = 126.36)

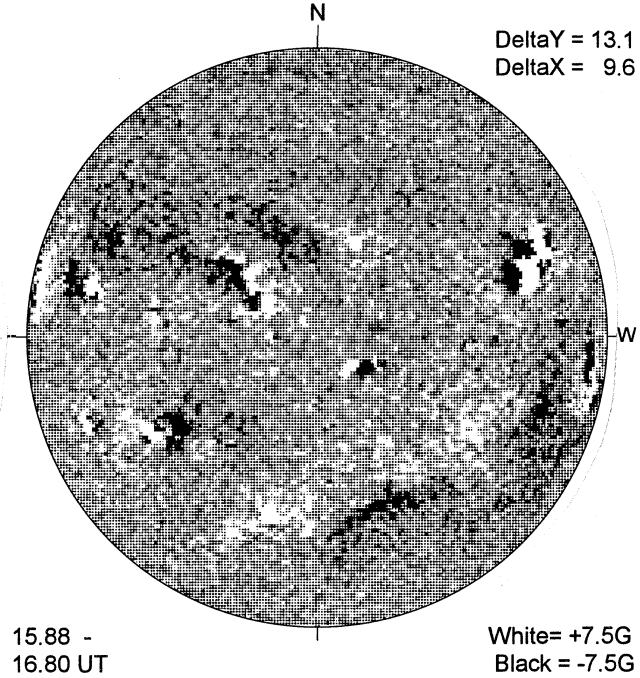
KITT PEAK MAGNETOGRAM



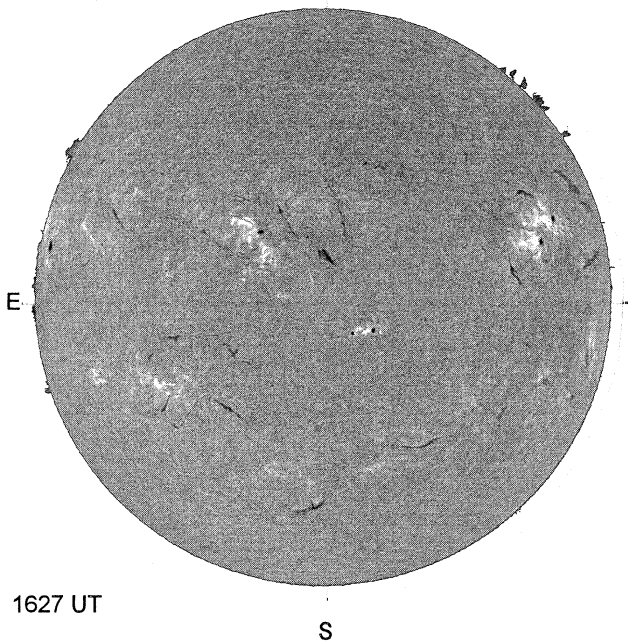
STANFORD MAGNETOGRAM



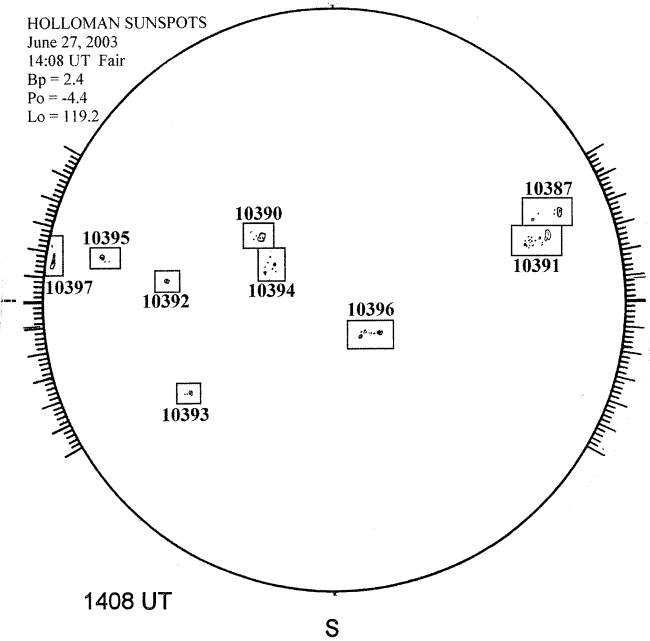
MT. WILSON MAGNETOGRAM



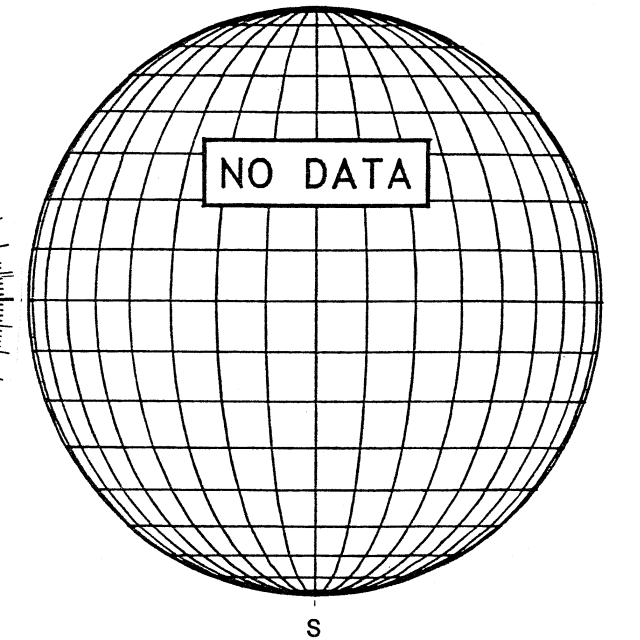
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT

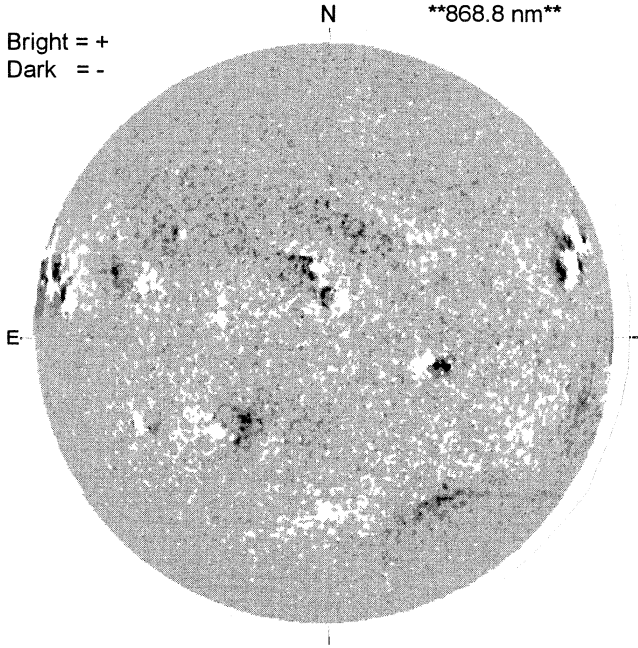


SACRAMENTO PEAK CORONA (1.15 Radii)

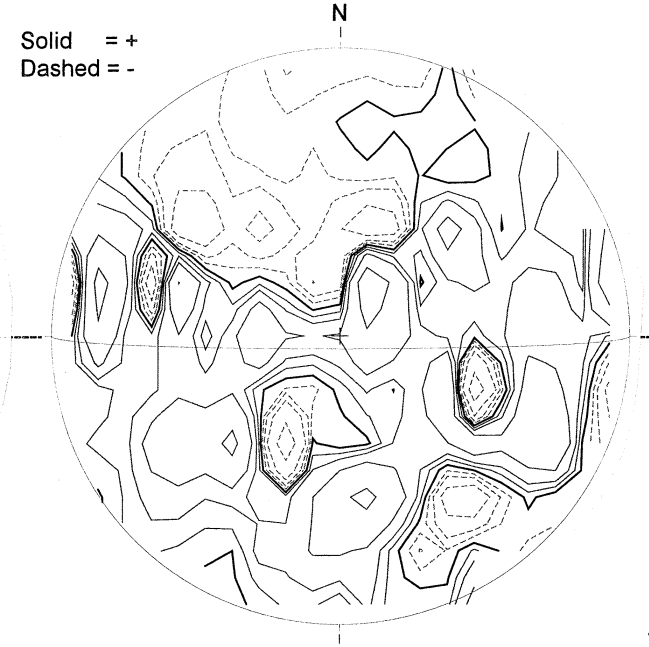


JUNE 28, 2003 (P= -4.25, Bo = 2.49, Lo = 113.12)

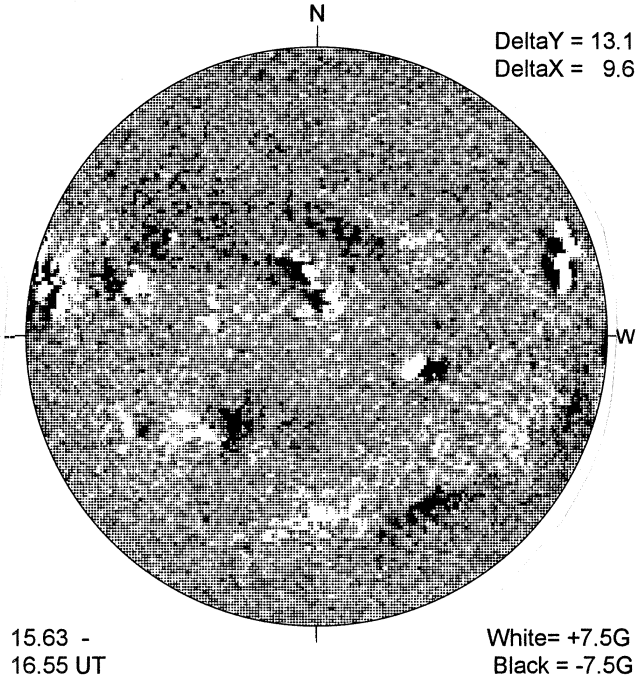
KITT PEAK MAGNETOGRAM



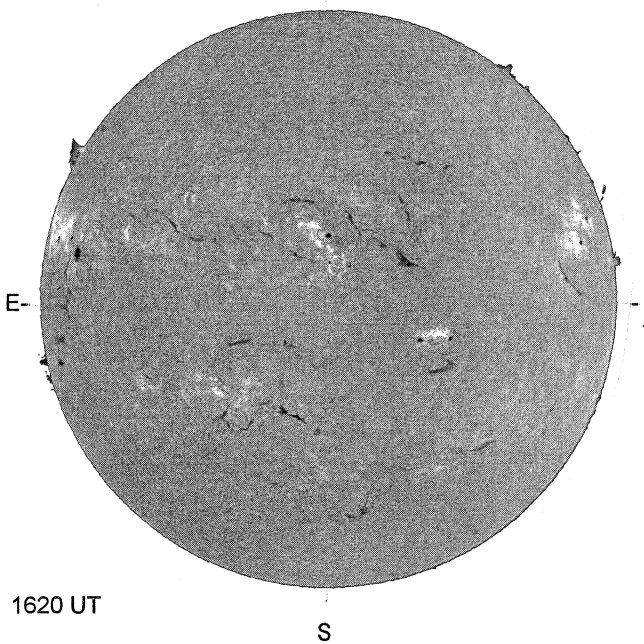
STANFORD MAGNETOGRAM



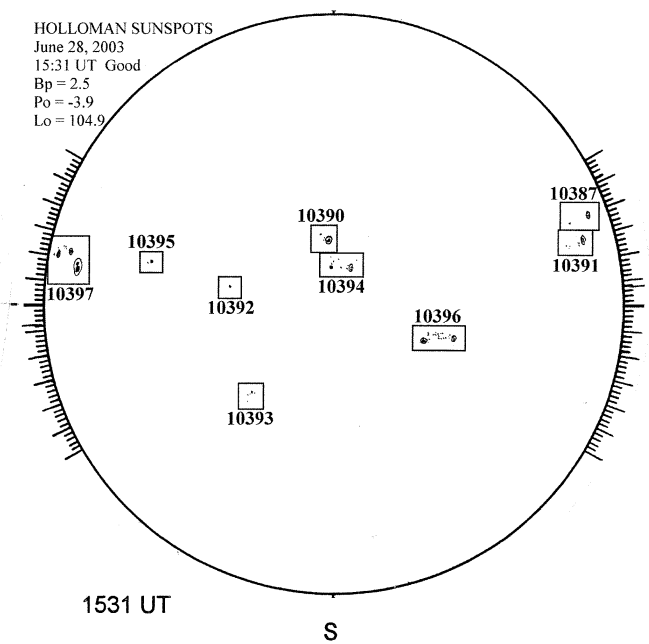
MT. WILSON MAGNETOGRAM



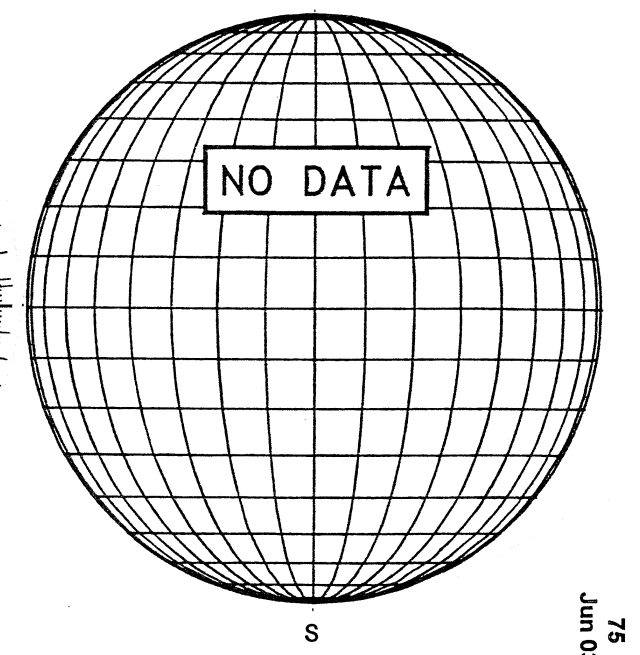
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



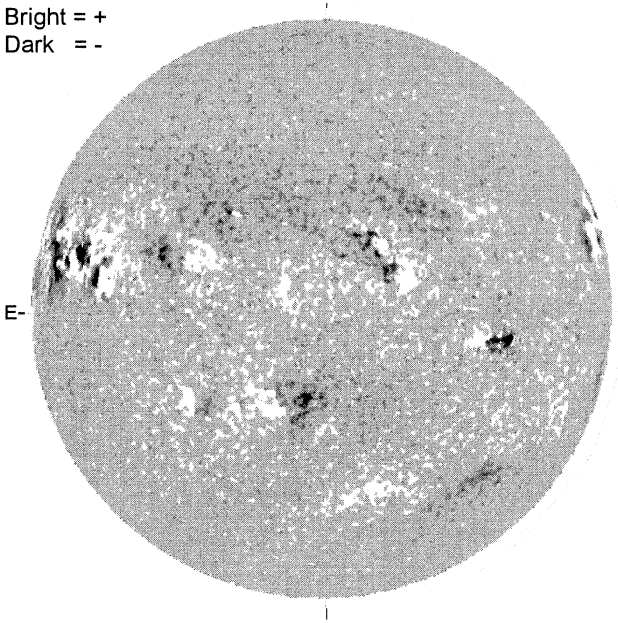
75
Jun 03

JUNE 29, 2003 (P= -3.80, Bo = 2.60, Lo = 99.88)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



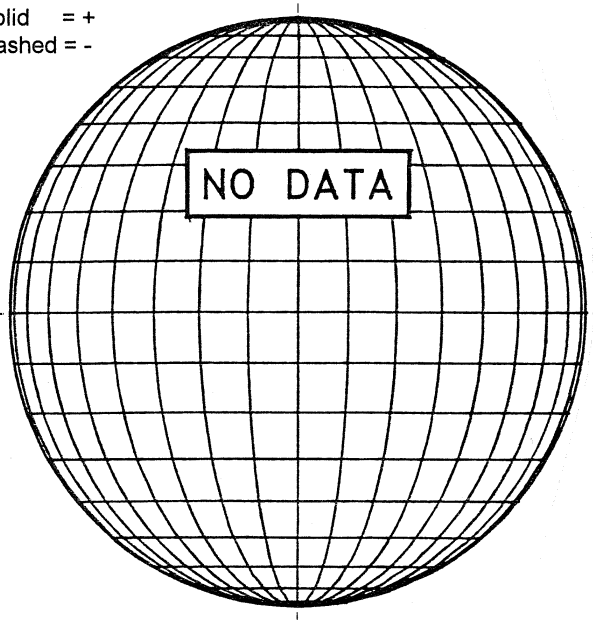
E-

1603 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

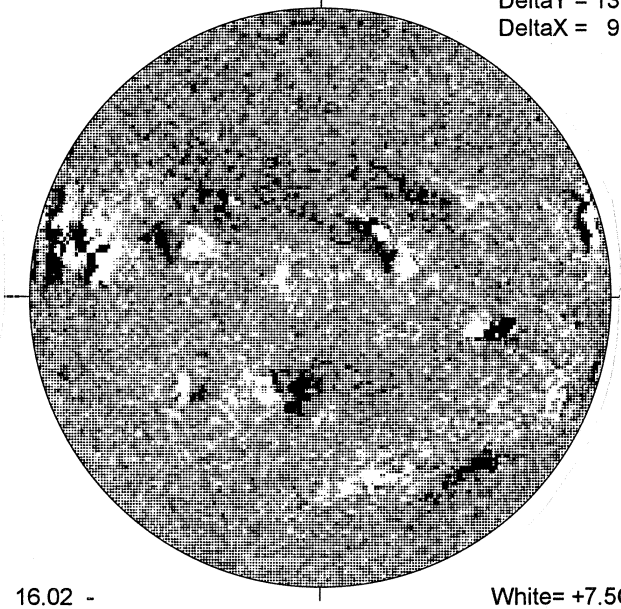


16.02 -
16.94 UT

MT. WILSON MAGNETOGRAM

N

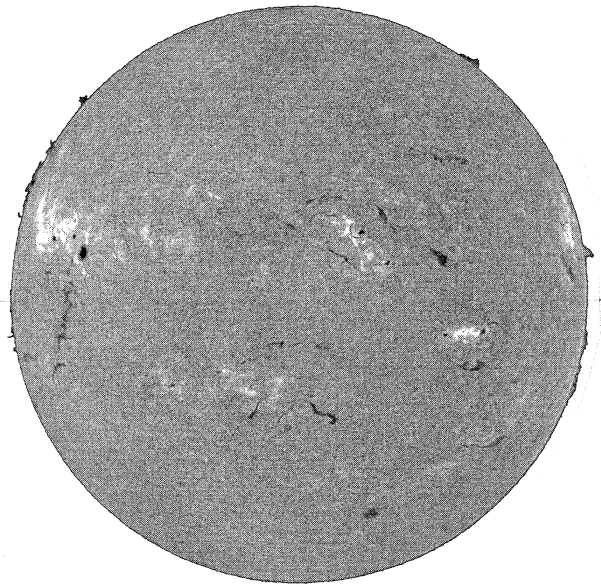
DeltaY = 13.1
DeltaX = 9.6



-W

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

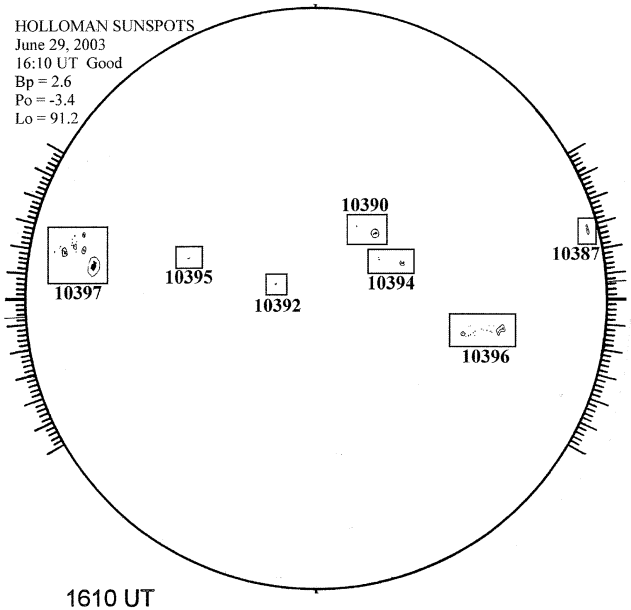


E-

1559 UT

S

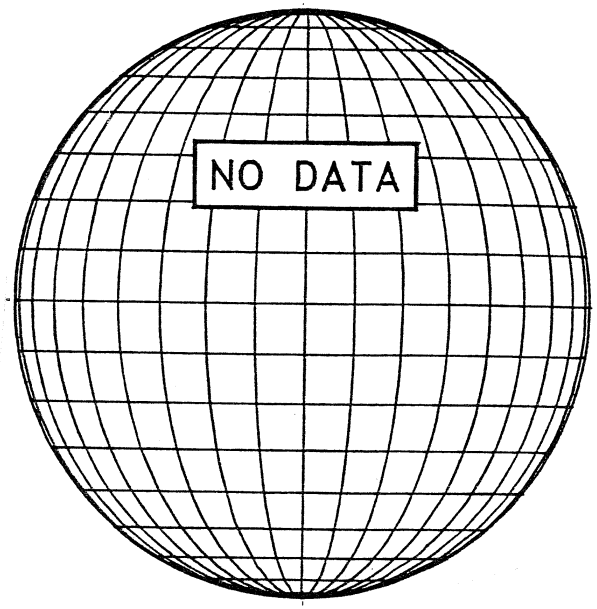
HOLLOMAN SUNSPOT



1610 UT

S

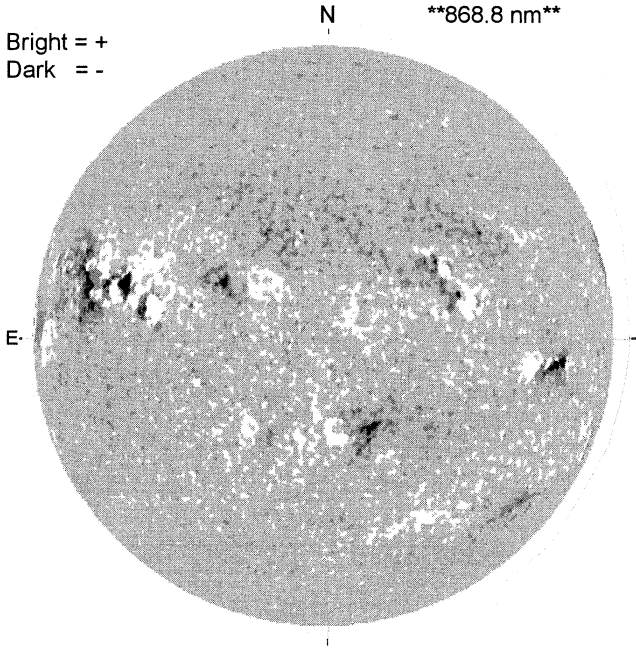
SACRAMENTO PEAK CORONA (1.15 Radii)----



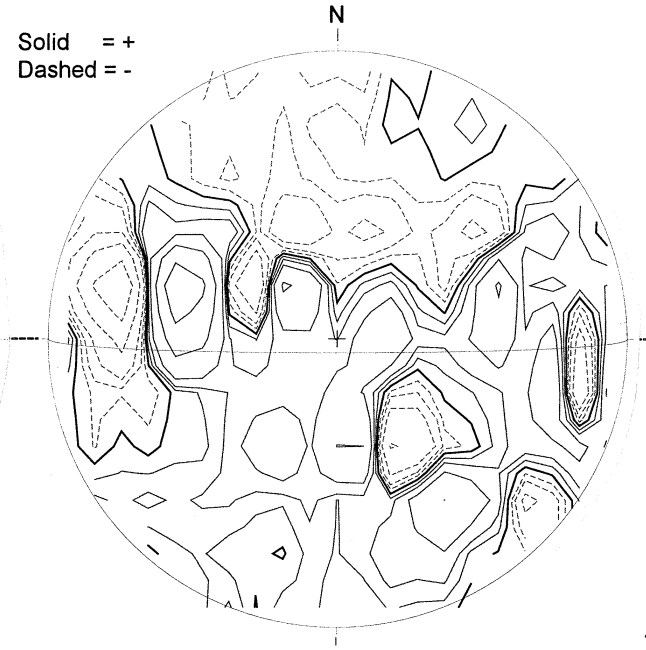
S

JUNE 30, 2003 (P= -3.35, Bo = 2.71, Lo = 86.65)

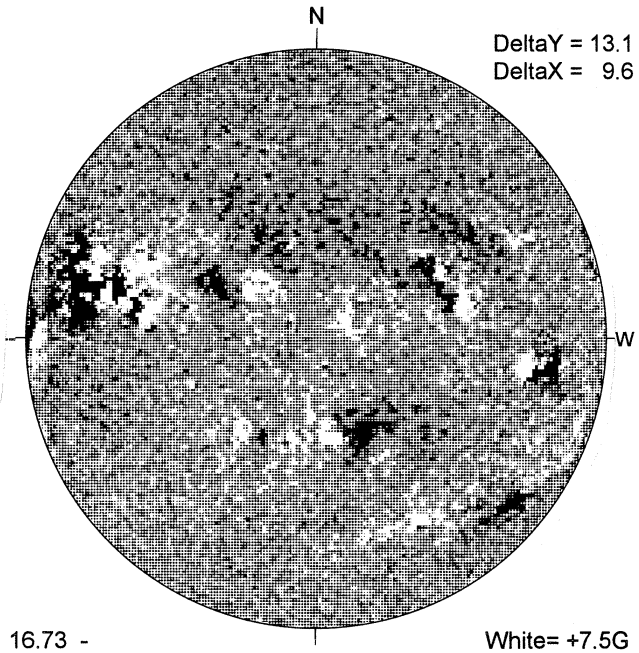
KITT PEAK MAGNETOGRAM



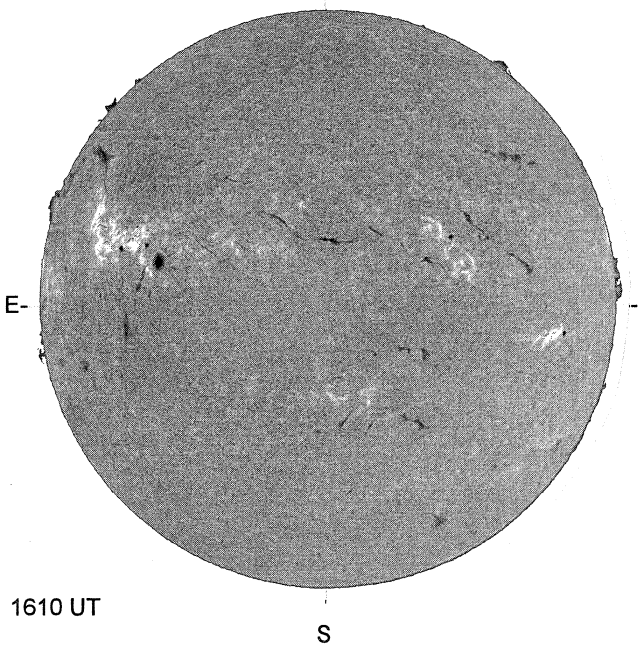
STANFORD MAGNETOGRAM



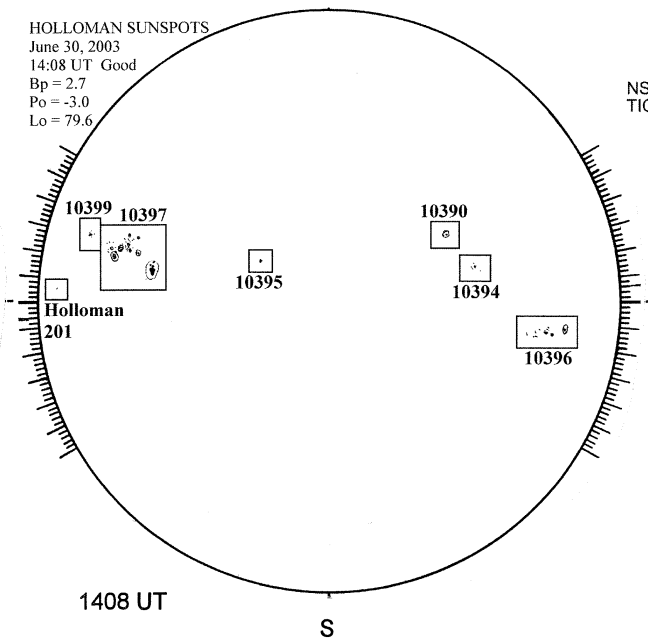
MT. WILSON MAGNETOGRAM



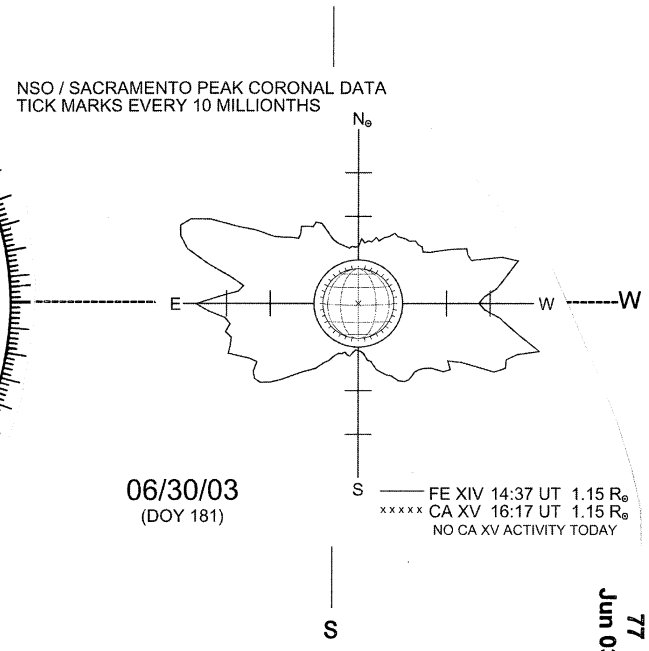
BIG BEAR H-ALPHA



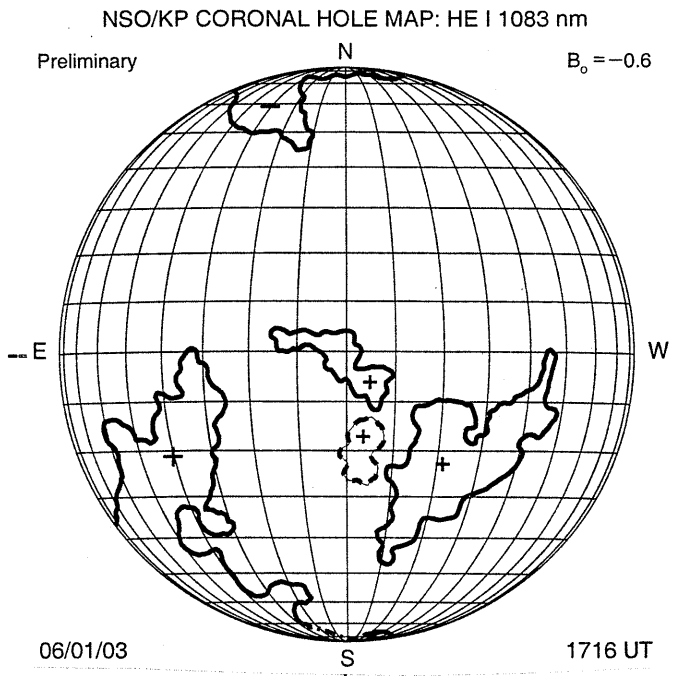
HOLLOMAN SUNSPOT

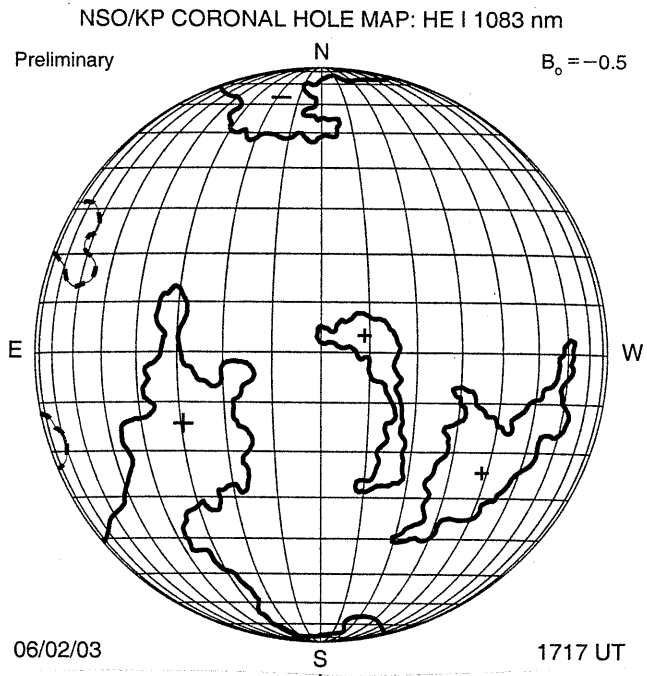


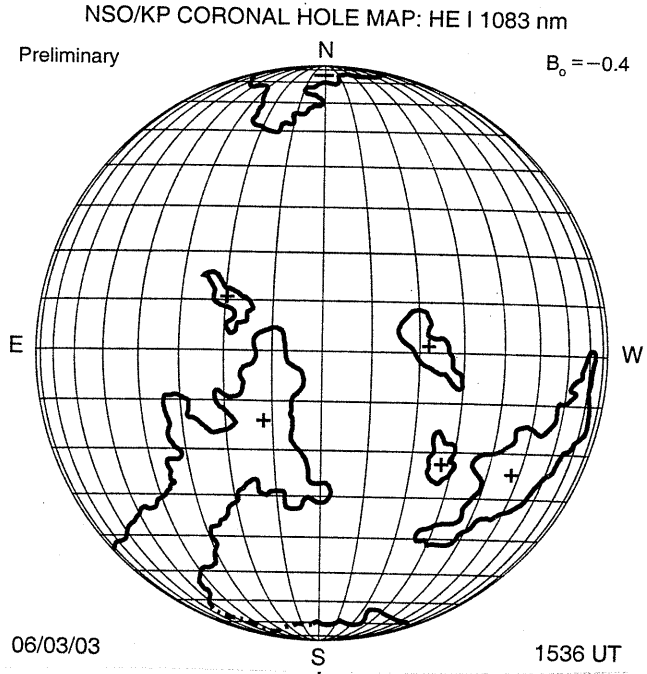
SACRAMENTO PEAK CORONA (1.15 Radii)----

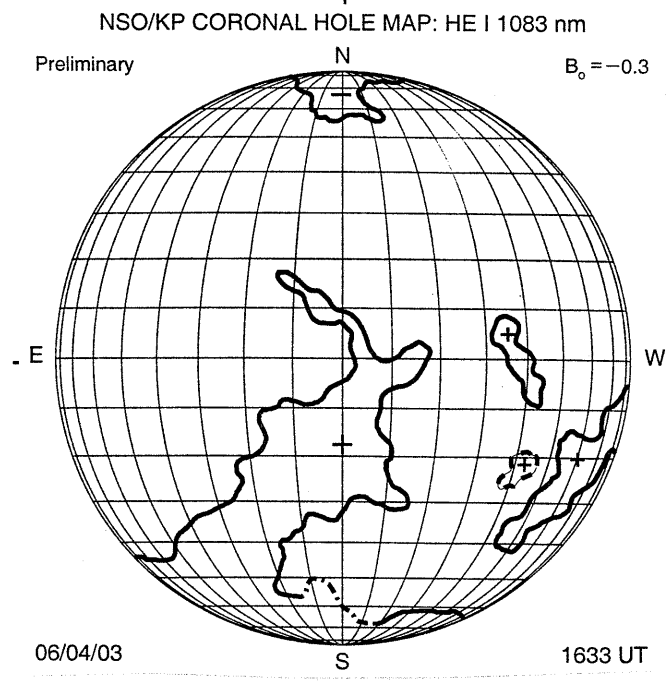


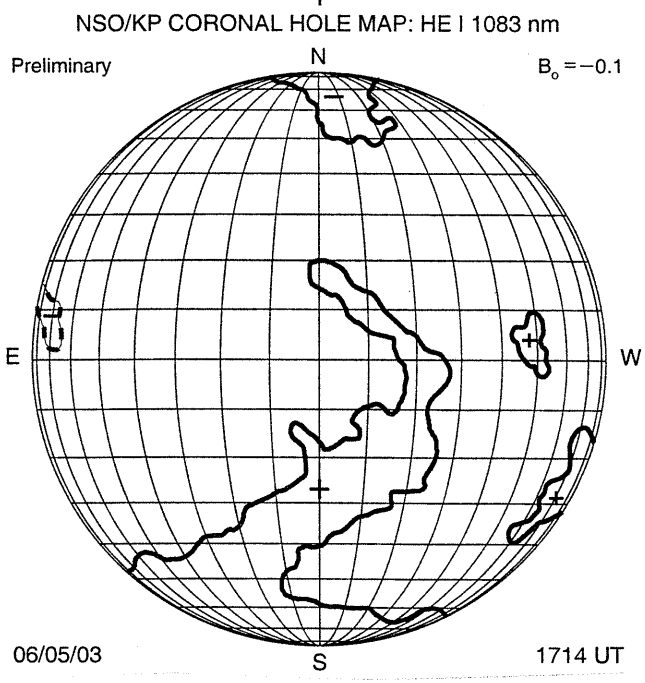
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 2003

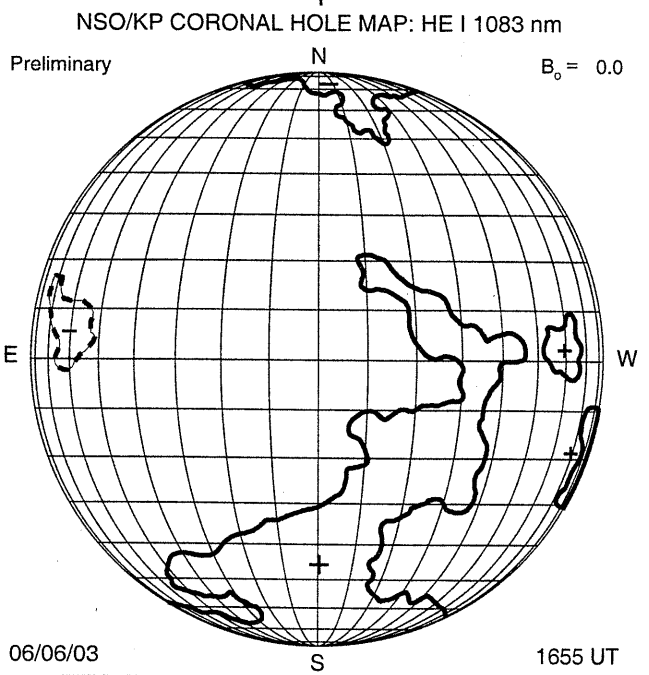




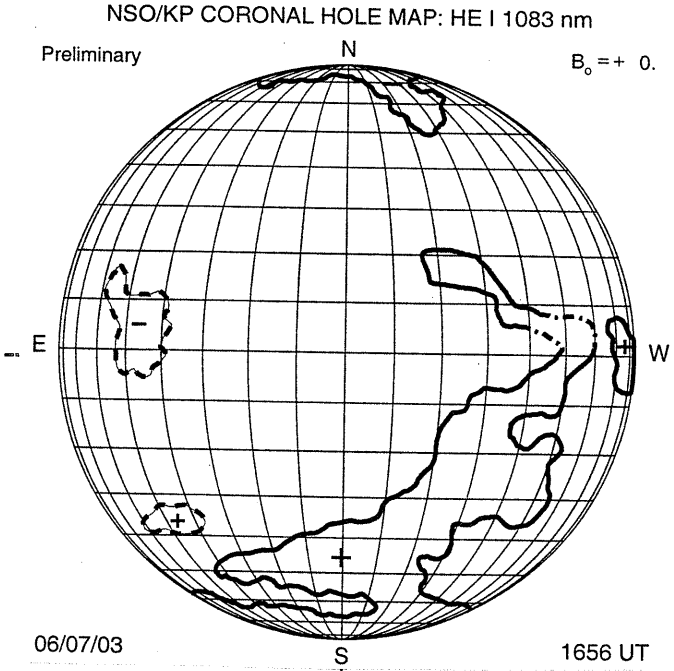


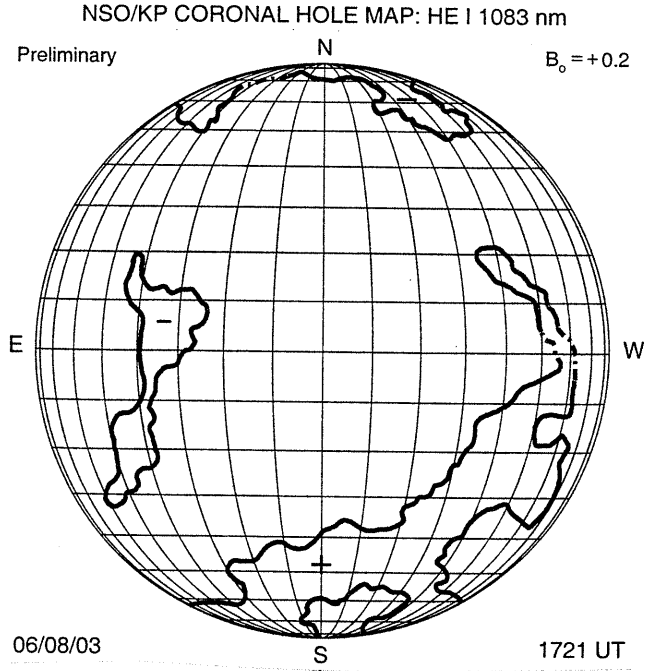


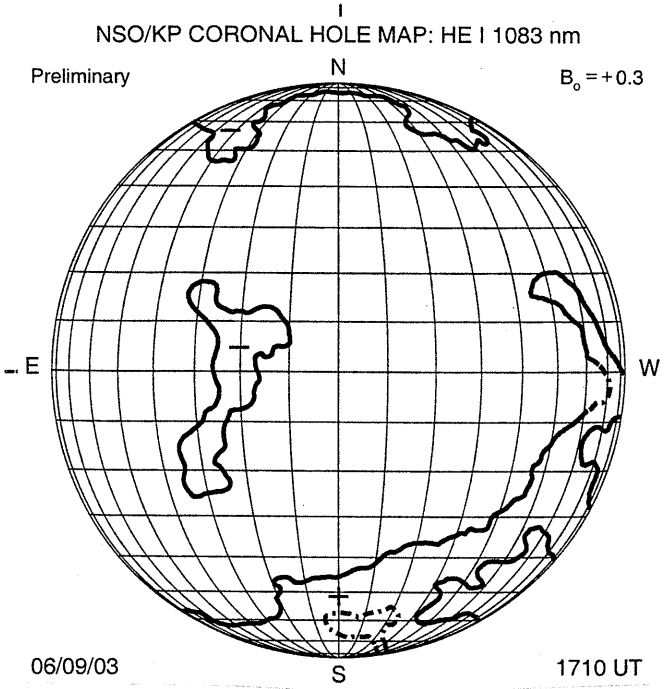


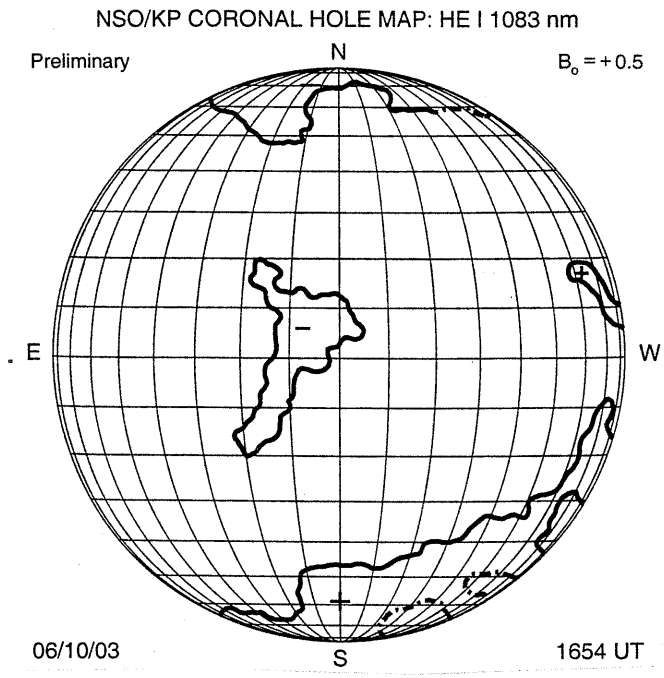


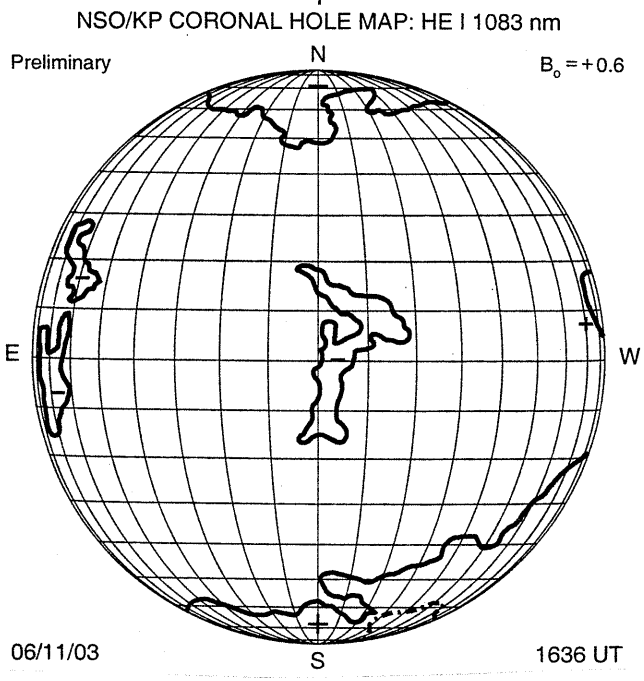
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 2003

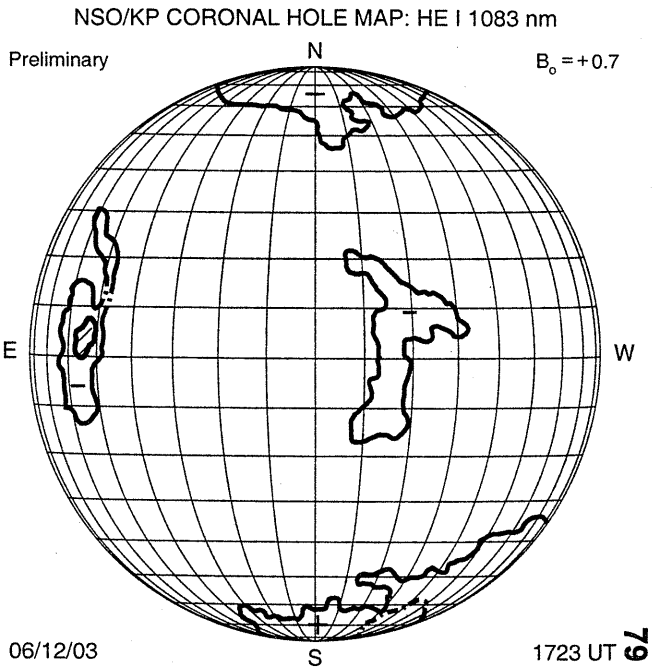








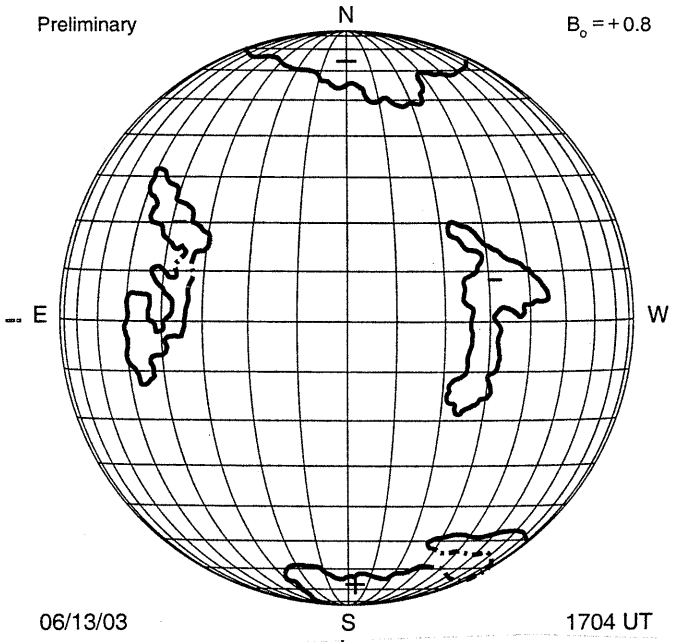




KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 2003

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

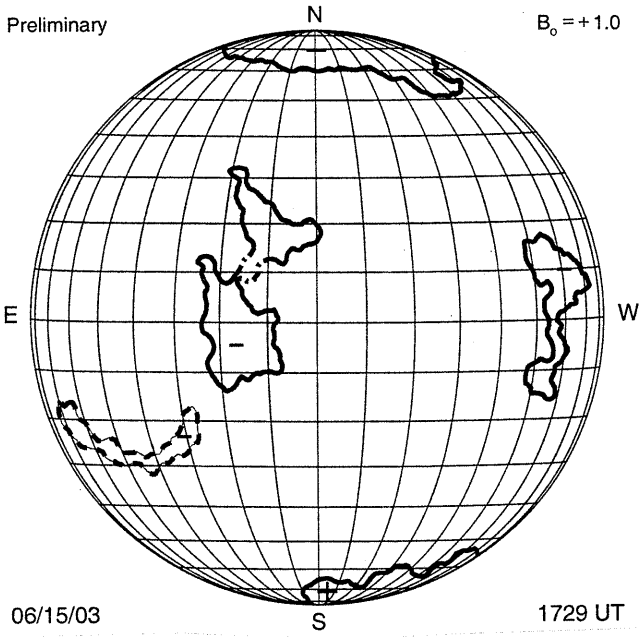
Preliminary $B_o = +0.8$



06/13/03 1704 UT

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

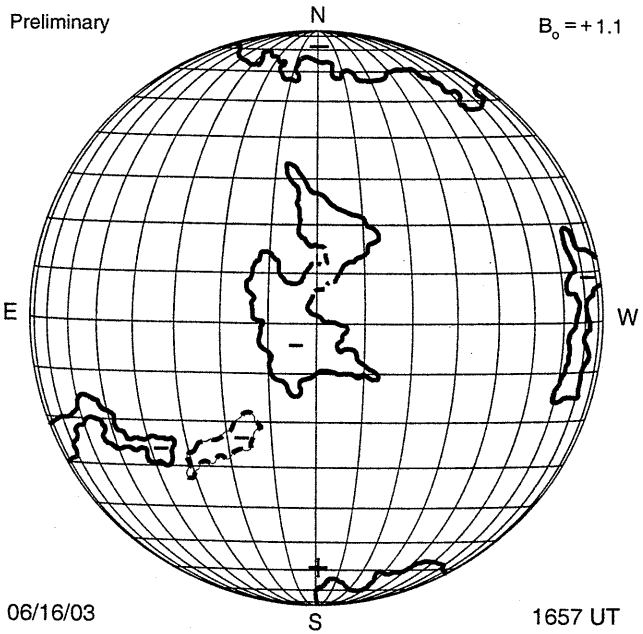
Preliminary $B_o = +1.0$



06/15/03 1729 UT

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

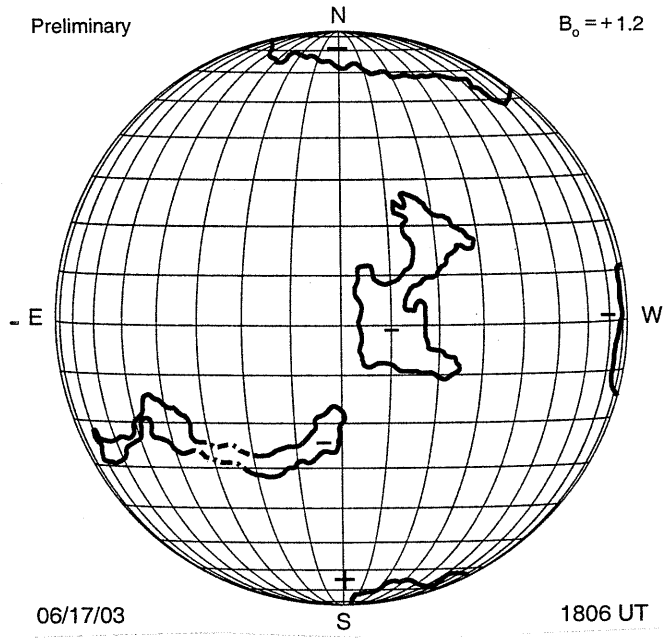
Preliminary $B_o = +1.1$



06/16/03 1657 UT

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

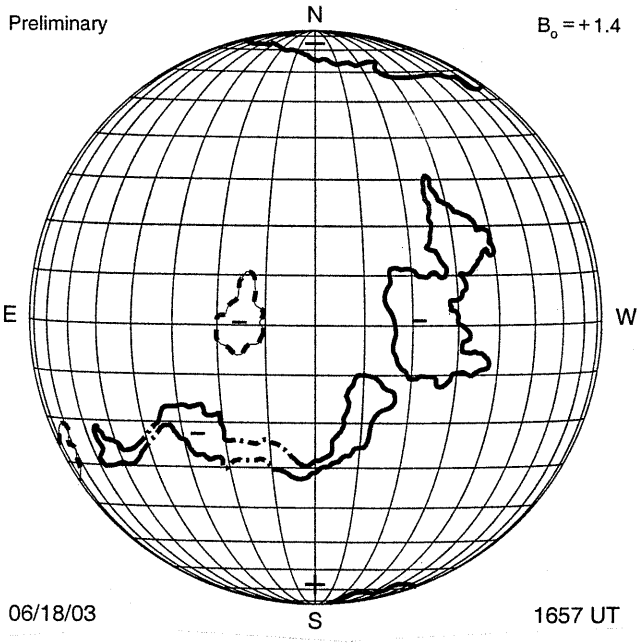
Preliminary $B_o = +1.2$



06/17/03 1806 UT

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

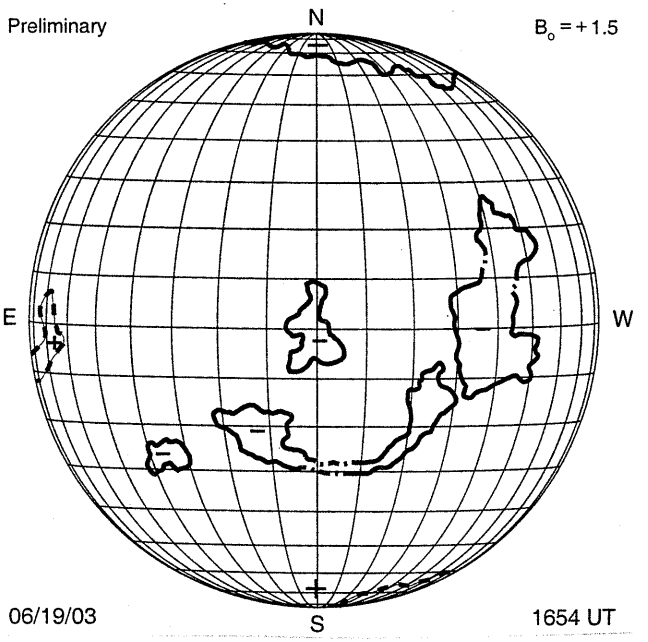
Preliminary $B_o = +1.4$



06/18/03 1657 UT

NSO/KP CORONAL HOLE MAP: HE I 1083 nm

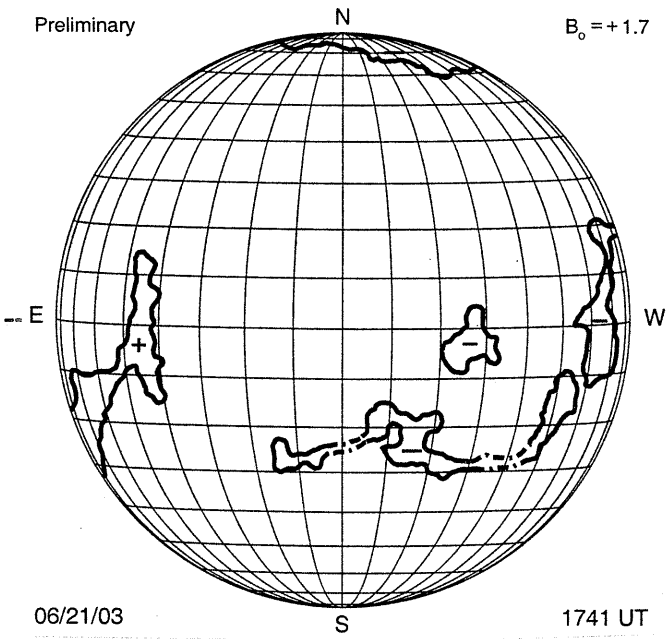
Preliminary $B_o = +1.5$



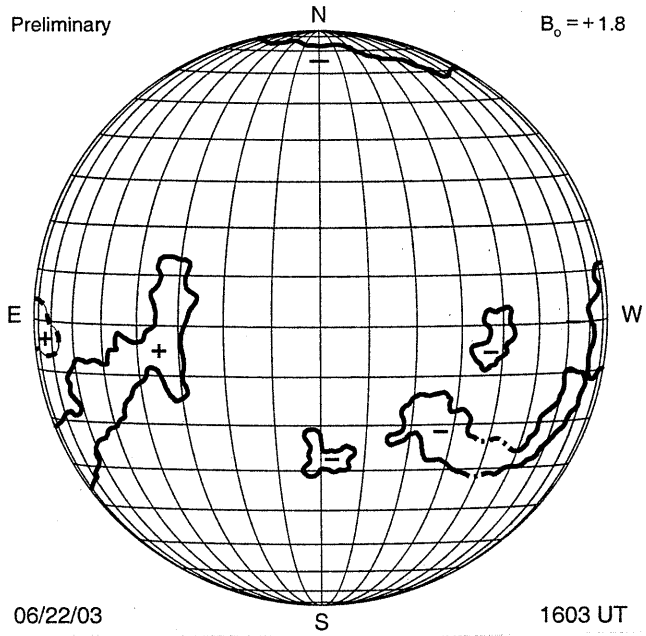
06/19/03 1654 UT

KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 2003

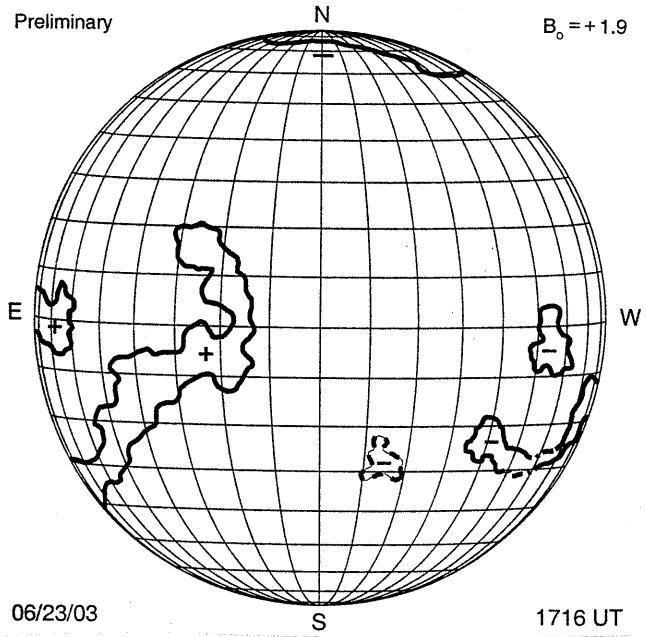
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



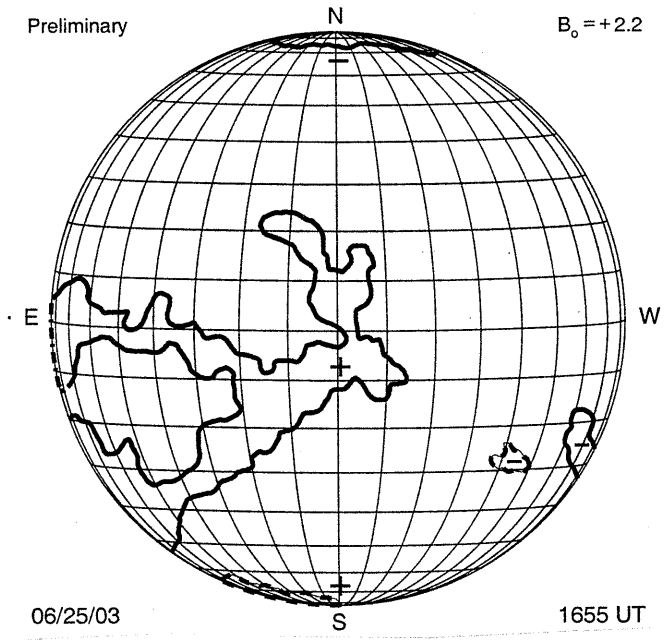
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



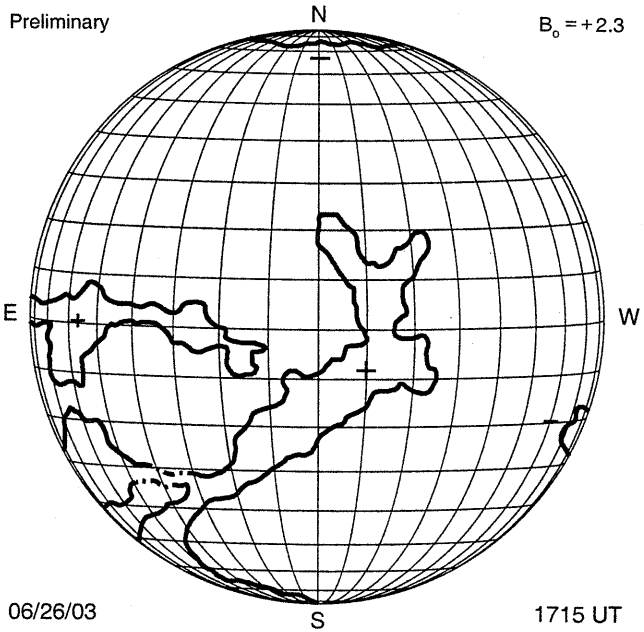
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



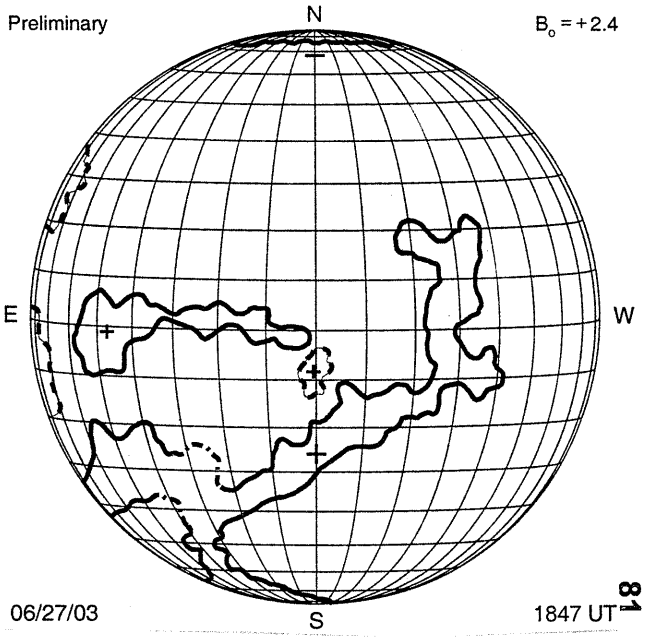
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



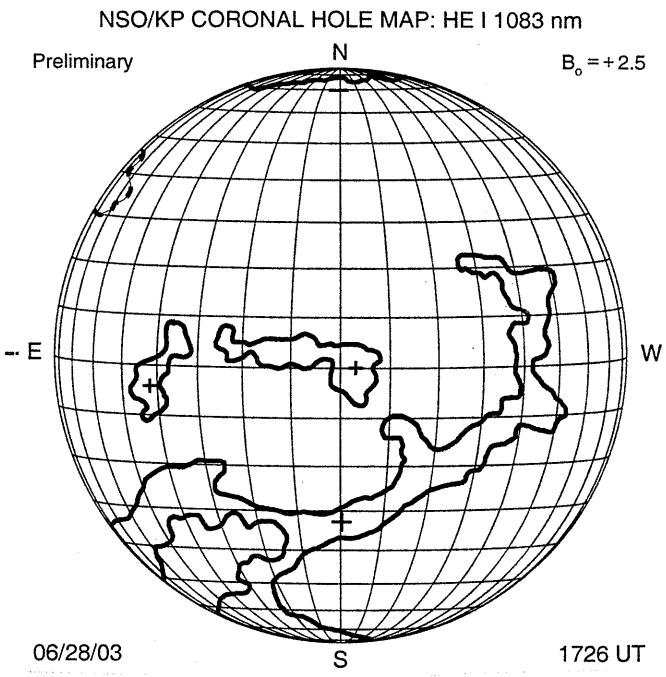
NSO/KP CORONAL HOLE MAP: HE I 1083 nm

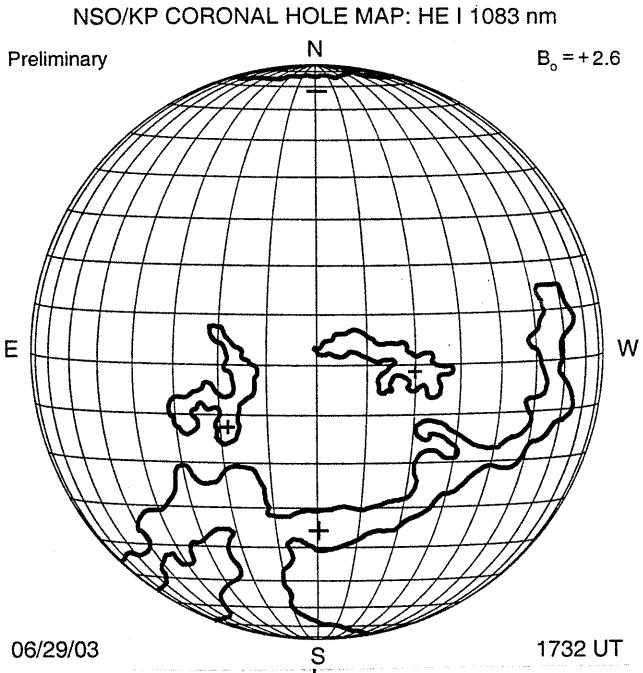


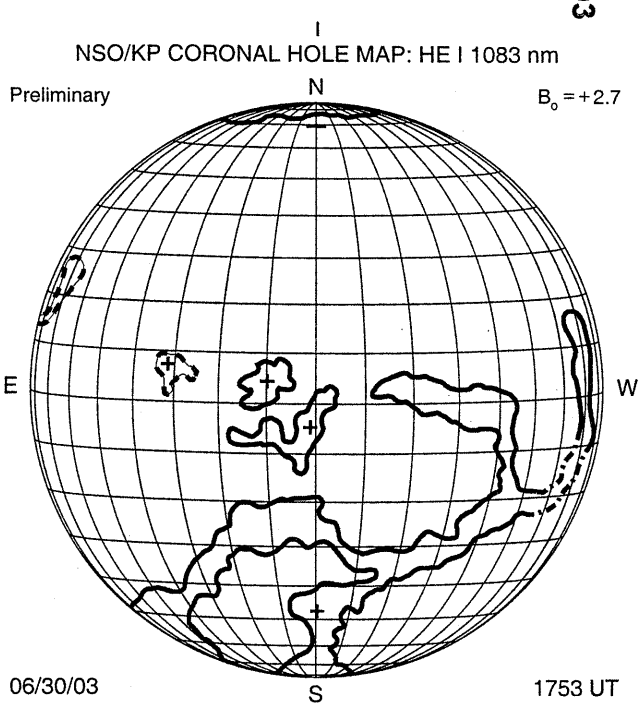
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



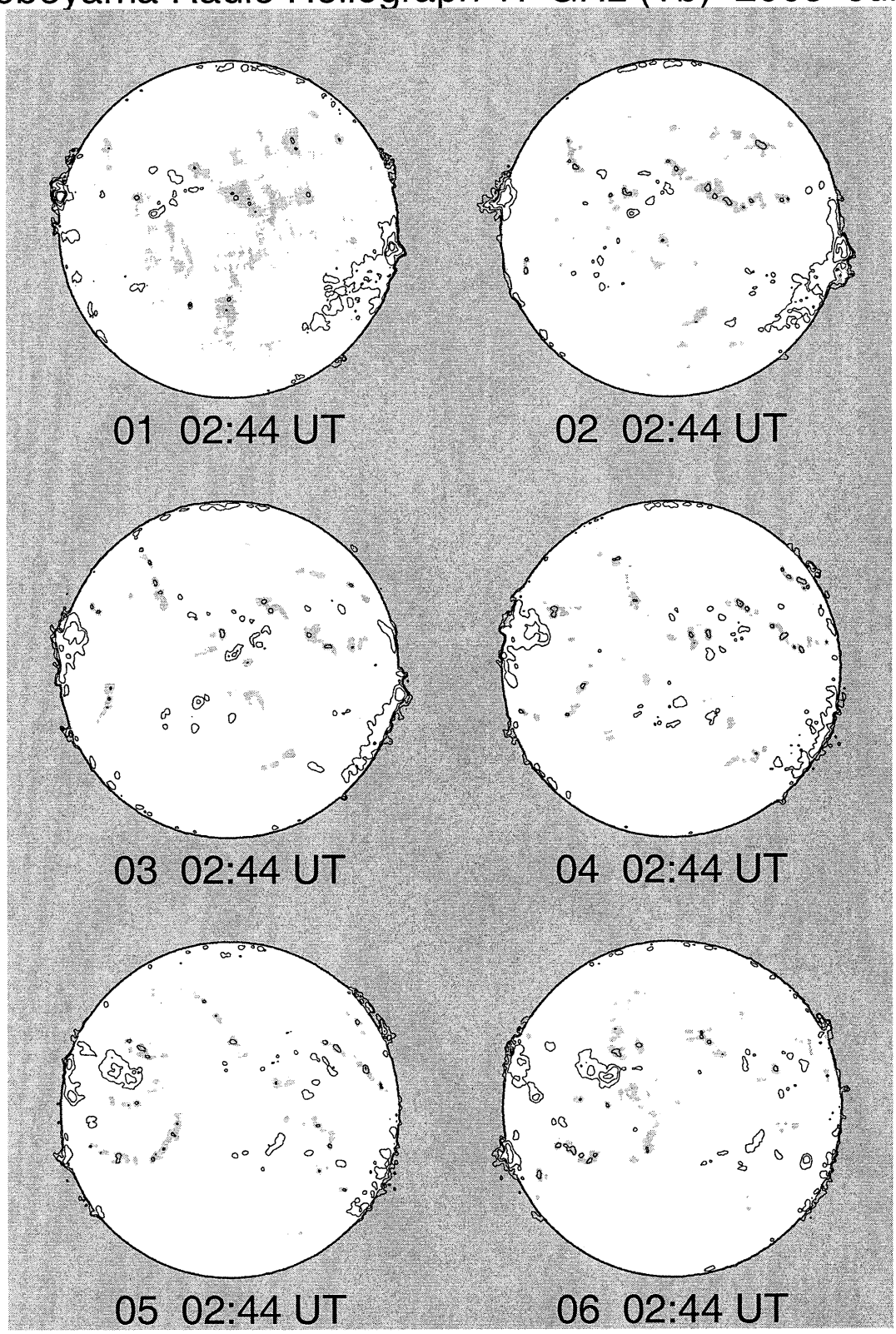
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 2003





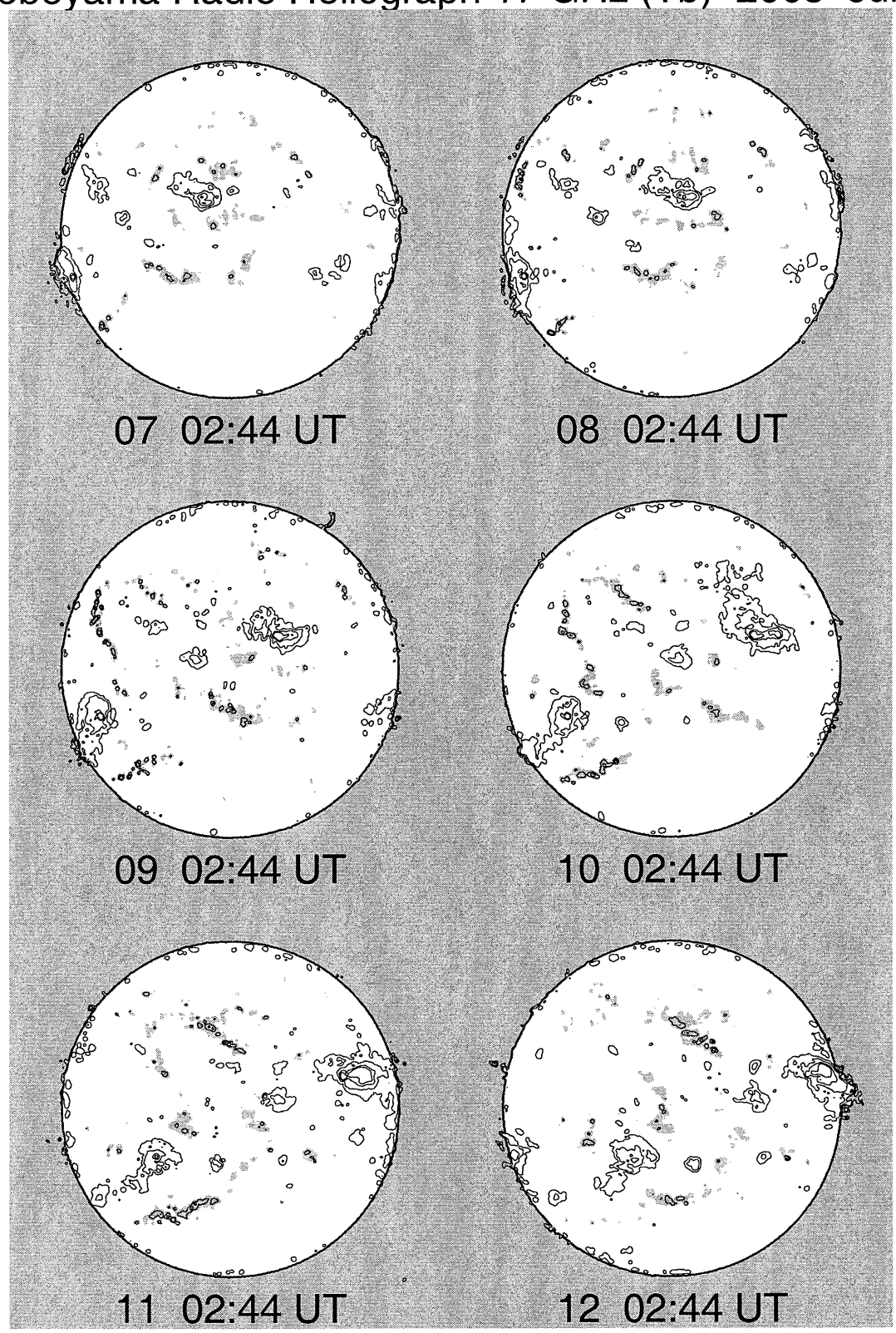


Nobeyama Radio Heliograph 17 GHz (Tb) 2003 June



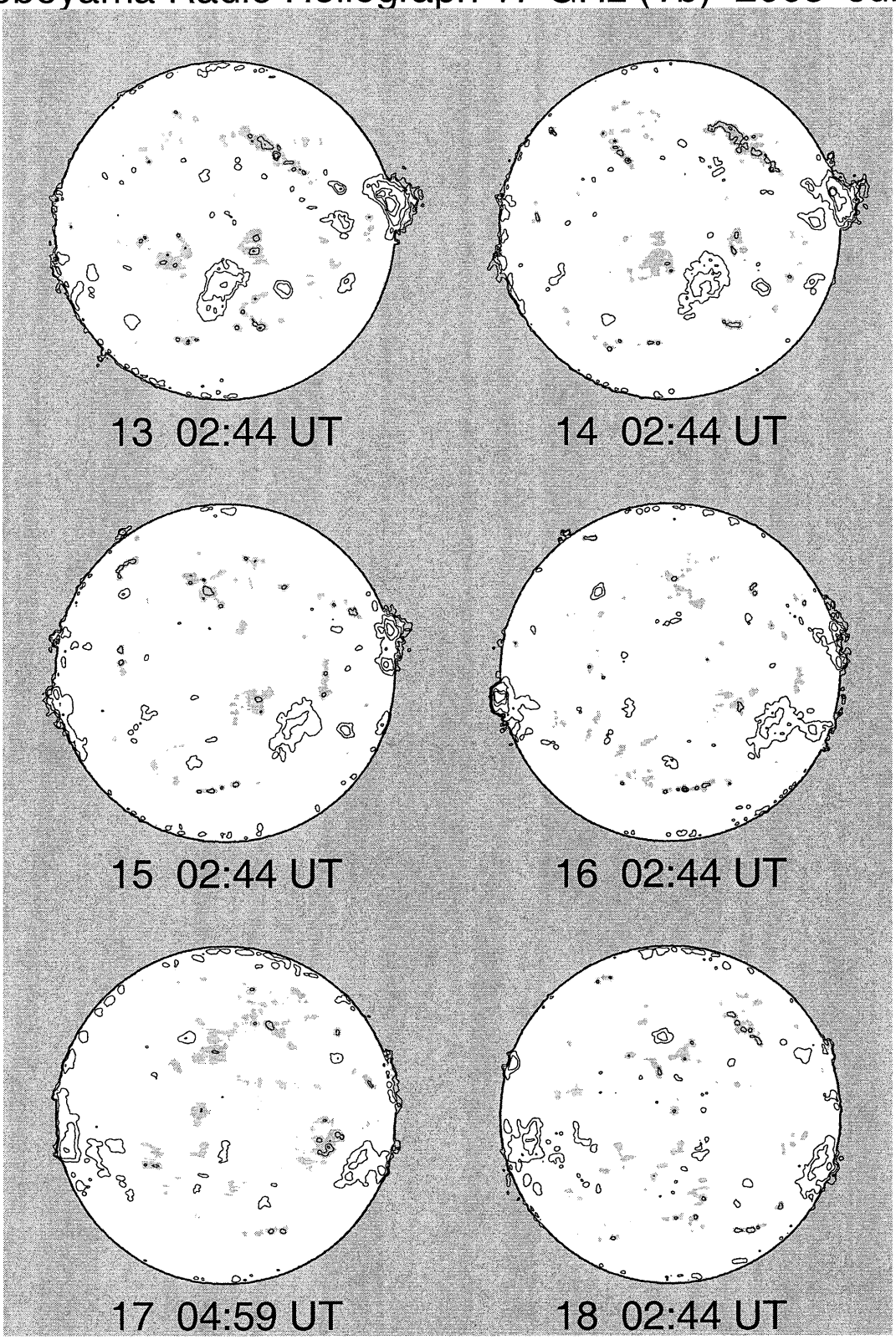
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 June



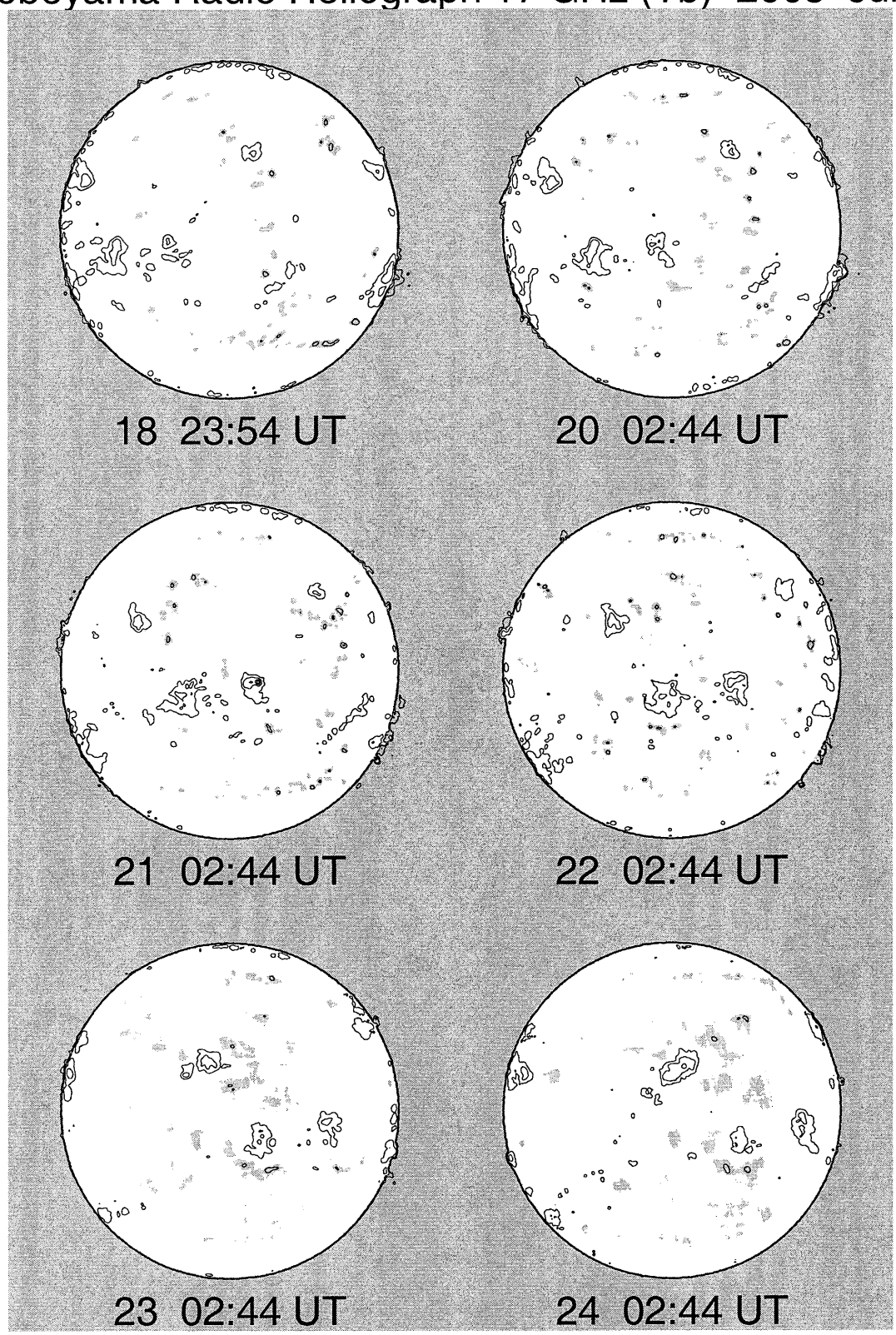
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 June



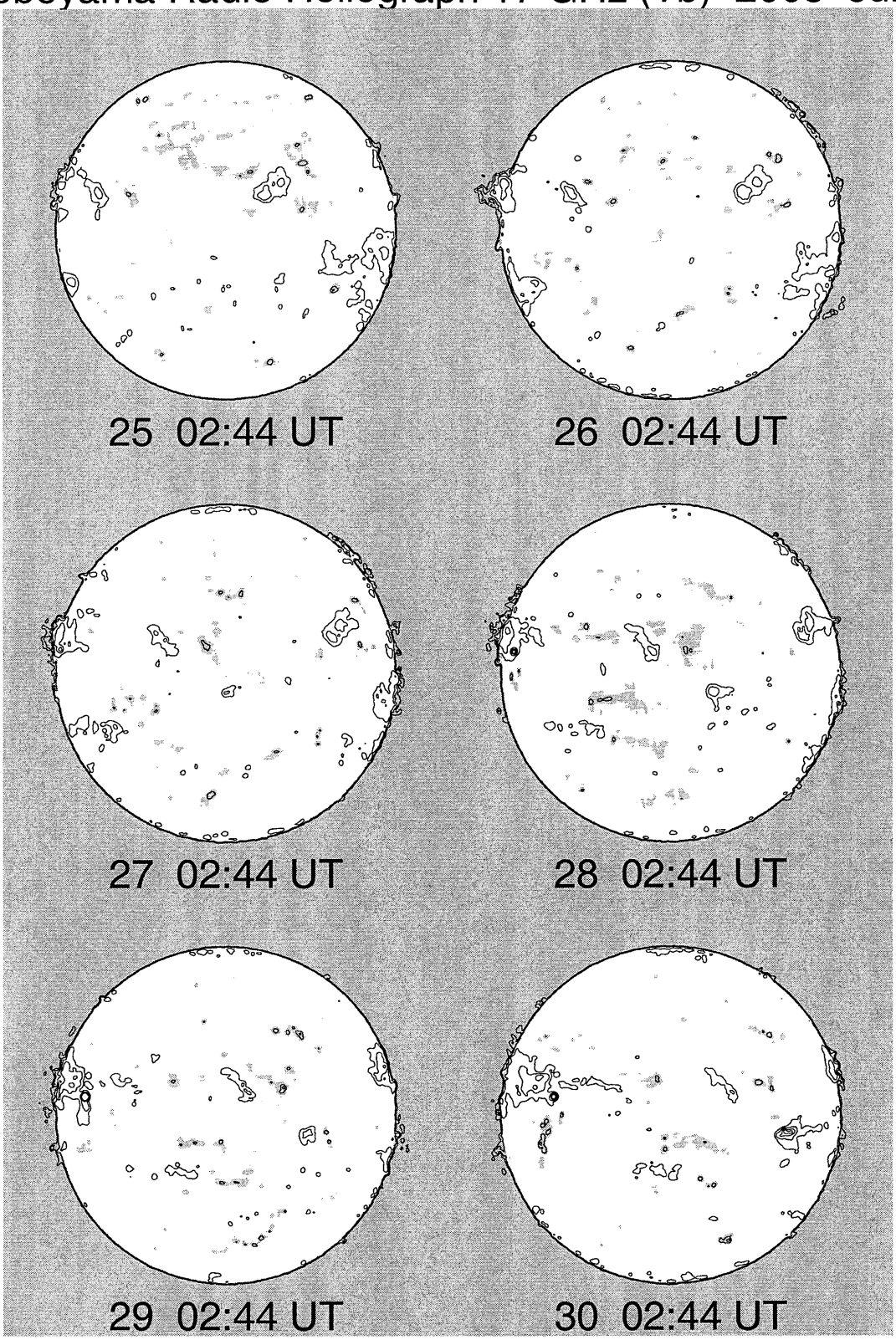
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 June



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) 2003 June



Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
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)

JUNE 2003

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
10368C		LEAR	05	29	0015	N07	E42	06	1.1		A	AXX	10	1	1	4
10368G		LEAR	06	06	0115	S20	W55	06	1.8		B	CAO	50	4	5	2
10368G		VORO	06	06	0226	S18	W55	06	1.9			CRI	25	6	4	3
10368G		SVTO	06	06	0647	S18	W59	06	1.8		B	CSO	40	2	5	3
10368G		KAND	06	06	0655	S18	W58	06	1.9			CSO		3	5	3
10368G		TACH	06	06	0739	S18	W58	06	1.9			BXO	6	2	5	3
10368G	31746	MWIL	06	06	1430	S18	W61	06	1.9	4	(B)					
10368D	31742	MWIL	05	30	1445	N10	E33	06	2.1	4	(AP)					
10368D		LEAR	05	31	0152	N15	E27	06	2.1		A	AXX	10	2	1	5
10368D	31742	MWIL	05	31	1430	N14	E20	06	2.1	4	(AP)					
10368D		KAND	06	01	0845	N19	E07	06	1.9			AX		1		3
10368E		HOLL	05	31	1515	S13	E19	06	2.1		B	BXO		2	1	2
10373	31739	MWIL	05	27	1430	N08	E87	06	3.1	4	AP					
10373		HOLL	05	27	1515	N08	E85	06	3.0		A	HAX	120	1	2	3
10373		VORO	05	27	2155	N08	E80	06	2.9			HAX	151	1		2
10373		LEAR	05	28	0024	N08	E77	06	2.8		A	HSX	120	2	2	3
10373		TACH	05	28	0552	N07	E77	06	3.0			HA	179	3	3	3
10373		SVTO	05	28	0905	N06	E75	06	3.0		A	HSX	90	1	2	3
10373		KAND	05	28	1025	N08	E77	06	3.2			CSO		3	3	3
10373	31739	MWIL	05	28	1445	N08	E71	06	2.9	5	(BG)					
10373		HOLL	05	28	1500	N08	E72	06	3.0		A	HAX	180	3	3	3
10373		VORO	05	28	2304	N07	E67	06	3.0			HAX	105	1		2
10373		LEAR	05	29	0015	N09	E65	06	2.9		B	CSO	110	3	4	4
10373		SVTO	05	29	0448	N06	E65	06	3.1		A	HSX	90	1	3	3
10373		KAND	05	29	0745	N07	E64	06	3.1			CSO		2	4	4
10373		HOLL	05	29	1418	N08	E57	06	2.9		B	CSO	120	4	4	2
10373	31739	MWIL	05	29	1445	N08	E58	06	3.0	5	(BG)					
10373		LEAR	05	30	0230	N08	E53	06	3.1		B	CSO	100	2	2	3
10373		VORO	05	30	0300	N07	E51	06	2.9			HAX	158	1		2
10373		SVTO	05	30	0523	N08	E51	06	3.0		A	HSX	60	1	2	3
10373		TACH	05	30	0718	N07	E50	06	3.0			HSX	87	1	2	4
10373		HOLL	05	30	1352	N07	E46	06	3.0		A	HSX	90	1	2	3
10373	31739	MWIL	05	30	1445	N07	E46	06	3.1	5	(AP)					
10373		VORO	05	30	2141	N07	E41	06	3.0			HAX	181	1		3
10373		LEAR	05	31	0152	N08	E39	06	3.0		A	HSX	90	1	2	5
10373		SVTO	05	31	0622	N08	E38	06	3.1		A	HAX	120	1	2	3
10373		KAND	05	31	1240	N07	E34	06	3.1			HA		2	3	4
10373	31739	MWIL	05	31	1430	N07	E32	06	3.0	5	(BG)					
10373		HOLL	05	31	1515	N07	E31	06	2.9		B	CSO	150	3	5	2
10373		VORO	05	31	2301	N07	E28	06	3.0			HAX	167	4		2
10373		LEAR	06	01	0025	N07	E27	06	3.0		B	CSO	120	5	3	3
10373		KAND	06	01	0845	N07	E22	06	3.0			DSO		7	4	3
10373	31739	MWIL	06	01	1430	N06	E18	06	2.9	5	(BP)					
10373		HOLL	06	01	1450	N06	E19	06	3.0		B	DSO	120	10	5	2
10373		VORO	06	02	0025	N07	E13	06	3.0			HHX	171	9		3
10373		LEAR	06	02	0103	N07	E13	06	3.0		B	DSO	180	9	5	3
10373		SVTO	06	02	0735	N06	E08	06	2.9		B	CSO	120	6	6	3
10373		KAND	06	02	0830	N07	E10	06	3.1			CSO		8	6	2
10373	31739	MWIL	06	02	1430	N06	E05	06	3.0	5	(BP)					
10373		HOLL	06	02	1505	N06	E04	06	2.9		B	CSO	180	14	6	3
10373		VORO	06	02	2307	N07	W00	06	3.0			HHX	183	7	3	3
10373		LEAR	06	03	0115	N07	W02	06	2.9		B	DSO	150	9	5	3
10373		KAND	06	03	0700	N07	W04	06	3.0			DSO		5	6	2
10373		SVTO	06	03	0736	N07	W06	06	2.9		B	DSO	120	5	5	3
10373		HOLL	06	03	1445	N07	W09	06	2.9		B	DSO	120	8	6	3
10373		VORO	06	04	0009	N07	W15	06	2.9			DSO	145	3	4	3
10373		LEAR	06	04	0210	N07	W16	06	2.9		B	DAO	140	9	5	3
10373		TACH	06	04	0601	N07	W18	06	2.9			DAO	132	3	5	2
10373		KAND	06	04	0640	N07	W18	06	2.9			DSO		2	6	4
10373		SVTO	06	04	0935	N07	W20	06	2.9		B	DSO	120	2	6	3
10373		HOLL	06	04	1535	N07	W24	06	2.8		B	DAO	120	5	7	4
10373		VORO	06	04	2304	N07	W28	06	2.9			DSO	137	3	5	3
10373		LEAR	06	05	0059	N07	W29	06	2.9		B	CSO	80	3	6	2
10373		TACH	06	05	0515	N07	W28	06	3.1			HSX	40	1	1	2
10373		SVTO	06	05	0752	N07	W31	06	3.0		A	HSX	110	1	3	3

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10373		KAND	06	05	0805	N08	W29	06	3.2			HA		1	2	5
10373		HOLL	06	05	1424	N07	W36	06	2.9		B	CSO	130	4	6	4
10373		LEAR	06	06	0115	N06	W40	06	3.0		B	CSO	90	2	2	2
10373		VORO	06	06	0226	N07	W40	06	3.1			HSX	126	1		3
10373		SVTO	06	06	0647	N07	W43	06	3.1		A	HSX	80	1	2	3
10373		KAND	06	06	0655	N07	W42	06	3.1			HS		1	2	3
10373		TACH	06	06	0739	N07	W43	06	3.1			HSX	69	1	1	3
10373	31739	MWIL	06	06	1430	N07	W47	06	3.1	5	(AP)					
10373		VORO	06	07	0131	N07	W52	06	3.2			HSX	85	1		2
10373		LEAR	06	07	0215	N07	W53	06	3.1		B	CSO	80	2	2	2
10373		SVTO	06	07	0625	N08	W57	06	3.0		A	HSX	70	1	2	3
10373		KAND	06	07	0740	N07	W57	06	3.0			HS		1	2	4
10373		HOLL	06	07	1600	N08	W60	06	3.2		A	H X	80	1	1	3
10373		VORO	06	08	0127	N07	W65	06	3.2			HSX	121	1		2
10373		LEAR	06	08	0344	N06	W67	06	3.1		A	HSX	80	2	2	4
10373		SVTO	06	08	0503	N08	W69	06	3.0		A	HSX	100	1	2	3
10373		TACH	06	08	0647	N07	W68	06	3.2			HSX	108	1	2	2
10373		KAND	06	08	1100	N07	W72	06	3.1			HS		1	2	4
10373	31739	MWIL	06	08	1430	N07	W72	06	3.2	5	(AP)					
10373		HOLL	06	08	1545	N08	W73	06	3.2		A	HSX	120	1	2	4
10373		LEAR	06	09	0531	N06	W79	06	3.3		A	HSX	80	1	2	3
10373		SVTO	06	09	0730	N02	W87	06	2.8		A	HSX	60	1	6	3
10373		KAND	06	09	0745	N07	W84	06	3.0			HS		1	2	4
10373		TACH	06	09	0808	N07	W80	06	3.3			HSX	131	1	4	3
10373	31739	MWIL	06	09	1445	N07	W85	06	3.2	5	AP					
10376		SVTO	06	02	0735	S12	E21	06	3.9		A	HSX	20	1	1	3
10376		KAND	06	02	0830	S11	E22	06	4.0			BXO		5	3	4
10376	31745	MWIL	06	02	1430	S12	E18	06	4.0	5	(B)					
10376		HOLL	06	02	1505	S11	E17	06	3.9		B	CRO	40	4	4	3
10376		VORO	06	02	2307	S11	E13	06	3.9			CRI	32	7	3	3
10376		LEAR	06	03	0115	S11	E12	06	3.9		B	CAO	40	6	4	3
10376		KAND	06	03	0700	S11	E09	06	4.0			DSO		4	5	2
10376		SVTO	06	03	0736	S11	E08	06	3.9		B	DSO	30	4	5	3
10376		HOLL	06	03	1445	S11	E05	06	4.0		B	DAO	100	9	6	3
10376		VORO	06	04	0009	S11	W02	06	3.8			DRO	56	4	4	3
10376		LEAR	06	04	0210	S11	W03	06	3.9		B	DAO	90	7	6	3
10376		TACH	06	04	0601	S11	W05	06	3.9			CAO	58	5	4	2
10376		KAND	06	04	0640	S10	W05	06	3.9			CSO		4	5	4
10376		SVTO	06	04	0935	S11	W07	06	3.9		B	DSO	60	4	5	3
10376		HOLL	06	04	1535	S11	W10	06	3.9		B	DSO	60	8	5	4
10376		VORO	06	04	2304	S11	W14	06	3.9			DRO	31	3	5	3
10376		LEAR	06	05	0059	S11	W16	06	3.8		B	CSO	30	3	6	2
10376		TACH	06	05	0515	S10	W21	06	3.6			AXX	16	1	1	2
10376		SVTO	06	05	0752	S11	W23	06	3.6		A	HSX	20	1	1	3
10376		KAND	06	05	0805	S09	W21	06	3.8			HS		1	1	5
10376		HOLL	06	05	1424	S10	W26	06	3.6		A	HAX	40	1	2	4
10376		LEAR	06	06	0115	S11	W32	06	3.6		A	HSX	30	1	2	2
10376		VORO	06	06	0226	S11	W30	06	3.8			CRI	18	3	4	3
10376		SVTO	06	06	0647	S11	W35	06	3.6		A	HSX	10	1	1	3
10376		KAND	06	06	0655	S10	W34	06	3.7			HS		1	1	3
10376		TACH	06	06	0739	S10	W35	06	3.7			AXX	9	1	1	3
10376	31745	MWIL	06	06	1430	S11	W38	06	3.7	4	(B)					
10376	31747	MWIL	06	06	1430	S15	W23	06	4.9	4	(B)					
10376		VORO	06	07	0131	S14	W29	06	4.9			DRO	22	3	2	2
10376		SVTO	06	07	0625	S14	W44	06	3.9		B	CRO	80	3	4	3
10376		KAND	06	07	0740	S15	W33	06	4.8			CRO		3	4	4
10376		HOLL	06	07	1600	S13	W39	06	4.7		B	DHO	30	4	4	3
10376		VORO	06	08	0127	S14	W43	06	4.8			BXI	17	3	4	2
10376		LEAR	06	08	0344	S15	W44	06	4.8		B	DAO	20	3	3	4
10376		SVTO	06	08	0503	S13	W46	06	4.7		B	CSO	30	3	4	3
10376		TACH	06	08	0647	S13	W45	06	4.9			BXO	9	2	5	2
10376	31747	MWIL	06	08	1430	S14	W53	06	4.6	4	(AP)					
10376		HOLL	06	08	1545	S14	W55	06	4.5		A	AXX	10	1	1	4
10376A		KAND	06	05	0805	N15	W14	06	4.3			AX		1		5
10376A		HOLL	06	05	1424	N15	W19	06	4.2		A	AXX		1	1	4
10376B		KAND	06	06	0655	N14	E11	06	7.1			CRO		2	1	3

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10376B	31748	MWIL	06	06	1430	N14	E06	06	7.0	4	(AF)					
10376B		SVTO	06	07	0625	N13	W03	06	7.0		A	AXX		2	2	3
10376B		KAND	06	07	0740	N13	W03	06	7.1			AX		2	2	4
10375		KAND	06	01	0845	N12	E85	06	7.8			BXO		2	2	3
10375	31744	MWIL	06	01	1430	N13	E85	06	8.0	5	B					
10375		HOLL	06	01	1450	N11	E79	06	7.6		B	DAO	140	2	12	2
10375		VORO	06	02	0025	N12	E75	06	7.7			DAO	306	5	3	3
10375		LEAR	06	02	0103	N12	E75	06	7.7		B	DSO	240	6	4	3
10375		SVTO	06	02	0735	N13	E75	06	8.0		B	DSO	240	4	8	3
10375		KAND	06	02	0830	N13	E74	06	7.9			DAO		7	6	4
10375	31744	MWIL	06	02	1430	N13	E69	06	7.8	5	(B)					
10375		HOLL	06	02	1505	N12	E68	06	7.7		B	DKO	620	9	5	3
10375		VORO	06	02	2307	N12	E63	06	7.7			DKO	470	4	3	3
10375		LEAR	06	03	0115	N13	E62	06	7.7		BG	DKO	400	14	7	3
10375		KAND	06	03	0700	N13	E59	06	7.7			DAO		3	6	2
10375		SVTO	06	03	0736	N13	E59	06	7.8		B	DKO	400	5	9	3
10375		HOLL	06	03	1445	N11	E55	06	7.7		BG	DKI	360	14	14	3
10375		VORO	06	04	0009	N12	E48	06	7.6			DKI	523	13	3	3
10375		LEAR	06	04	0210	N12	E51	06	7.9		B	EAI	410	18	14	3
10375		TACH	06	04	0601	N12	E47	06	7.8			DAI	344	9	8	2
10375		KAND	06	04	0640	N13	E47	06	7.8			DAO		12	10	4
10375		SVTO	06	04	0935	N11	E44	06	7.7		B	DAO	340	8	8	3
10375		HOLL	06	04	1535	N11	E45	06	8.0		BG	EAI	350	27	13	4
10375		VORO	06	04	2304	N12	E35	06	7.6			DKI	504	13	4	3
10375		LEAR	06	05	0059	N12	E38	06	7.9		BG	EAO	450	21	13	2
10375		TACH	06	05	0515	N11	E32	06	7.6			DAI	419	9	4	2
10375		SVTO	06	05	0752	N12	E33	06	7.8		B	DSI	240	23	8	3
10375		KAND	06	05	0805	N13	E32	06	7.7			DAO		24	8	5
10375		HOLL	06	05	1424	N13	E28	06	7.7		BG	EKI	410	39	14	4
10375		LEAR	06	06	0115	N12	E21	06	7.6		BG	DAI	300	24	6	2
10375		VORO	06	06	0226	N12	E20	06	7.6			DKI	669	29	4	3
10375		SVTO	06	06	0647	N12	E18	06	7.6		BG	DKI	620	25	8	3
10375		KAND	06	06	0655	N12	E20	06	7.8			DKC		27	8	3
10375		TACH	06	06	0739	N12	E18	06	7.7			DAI	502	14	5	3
10375	31744	MWIL	06	06	1430	N12	E15	06	7.7	5	(BG)					
10375		VORO	06	07	0131	N13	E05	06	7.4			DKI	890	24	10	2
10375		LEAR	06	07	0215	N13	E05	06	7.5		BGD	EKI	450	22	14	2
10375		SVTO	06	07	0625	N12	E05	06	7.6		BG	ESC	430	30	11	3
10375		KAND	06	07	0740	N13	E05	06	7.7			DKI		34	9	4
10375		HOLL	06	07	1600	N12	E01	06	7.7		BG	FKI	800	65	16	3
10375		VORO	06	08	0127	N13	W06	06	7.6			DKI	828	42	6	2
10375		LEAR	06	08	0344	N13	W08	06	7.5		BGD	EKC	750	88	12	4
10375		SVTO	06	08	0503	N13	W08	06	7.6		BG	ESC	820	25	13	3
10375		TACH	06	08	0647	N09	W08	06	7.7			DAI	596	17	8	2
10375		KAND	06	08	1100	N13	W10	06	7.7			EKC		35	13	4
10375	31744	MWIL	06	08	1430	N12	W12	06	7.7	5	(D)					
10375		HOLL	06	08	1545	N12	W13	06	7.7		BG	EKC	830	70	12	4
10375		LEAR	06	09	0531	N12	W22	06	7.6		BGD	FKC	850	84	16	3
10375		SVTO	06	09	0730	N11	W24	06	7.5		BG	FKI	770	34	16	3
10375		KAND	06	09	0745	N13	W24	06	7.5			EKC		28	15	4
10375		TACH	06	09	0808	N12	W25	06	7.4			DAI	684	13	7	3
10375	31744	MWIL	06	09	1445	N12	W28	06	7.5	5	(D)					
10375		HOLL	06	09	2110	N12	W29	06	7.7		BGD	FKC	1040	40	16	2
10375		VORO	06	09	2228	N13	W31	06	7.6			EKI	1540	63	13	4
10375		LEAR	06	10	0057	N12	W33	06	7.5		BGD	FKC	1200	90	16	4
10375		TACH	06	10	0508	N14	W36	06	7.5			EKI	997	25	14	4
10375		SVTO	06	10	0740	N09	W39	06	7.4		BGD	FKI	1220	44	18	3
10375		KAND	06	10	0830	N12	W38	06	7.5			FKC		37	17	3
10375		HOLL	06	10	1427	N13	W42	06	7.4		BGD	FKC	940	55	18	4
10375	31744	MWIL	06	10	1445	N13	W42	06	7.4	5	(D)					
10375		VORO	06	10	2213	N13	W44	06	7.6			FKI	1626	59	15	4
10375		LEAR	06	11	0022	N12	W47	06	7.5		BGD	FKC	1300	60	18	2
10375		SVTO	06	11	0542	N08	W53	06	7.3		BGD	FKC	1180	31	19	3
10375		KAND	06	11	1113	N12	W55	06	7.3			FKO		23	19	3
10375		HOLL	06	11	1345	N12	W57	06	7.3		BGD	FKC	1280	38	18	3
10375	31744	MWIL	06	11	1445	N13	W56	06	7.4	5	(D)					
10375		LEAR	06	12	0152	N12	W62	06	7.4		BGD	FKC	1180	61	18	3
10375		VORO	06	12	0440	N12	W65	06	7.3			FKI	1470	27	17	2

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10375		SVTO	06	12	0521	N08	W66	06	7.3		BD	FKC	1320	17	20	3
10375		TACH	06	12	0637	N13	W66	06	7.3			FAI	881	7	16	3
10375		KAND	06	12	0700	N12	W64	06	7.5			FKC		13	19	3
10375	31744	MWIL	06	12	1445	N12	W69	06	7.4	5	(D)					
10375		HOLL	06	12	1500	N13	W67	06	7.6		BGD	FKC	1050	18	20	4
10375		LEAR	06	13	0346	N12	W75	06	7.5		BGD	FKC	700	22	22	3
10375		SVTO	06	13	0532	N13	W75	06	7.6		B	ESC	510	5	11	3
10375		TACH	06	13	0709	N11	W74	06	7.7			HK	714	4	6	4
10375		KAND	06	13	1120	N13	W75	06	7.8			DKI		8	10	2
10375	31744	MWIL	06	13	1445	N13	W77	06	7.8	5	(D)					
10375		HOLL	06	13	1512	N12	W76	06	7.9		B	EKI	390	6	14	2
10375		VORO	06	14	0153	N13	W82	06	7.9			HKX	389	5		3
10375		TACH	06	14	0534	N13	W82	06	8.0			HSX	226	1	3	3
10375B		KAND	06	05	0805	N13	E43	06	8.6			AX		5	2	5
10375B	31749	MWIL	06	06	1430	N15	E25	06	8.5	4	(AF)					
10375B		KAND	06	07	0740	N13	E16	06	8.5			BXO		5	6	4
10375B	31749	MWIL	06	08	1430	N13	W04	06	8.3	3	(AF)					
10375B	31749	MWIL	06	09	1445	N13	W15	06	8.5	4	(AF)					
10375B	31749	MWIL	06	10	1445	N14	W27	06	8.6	4	(AF)					
10375A		VORO	06	08	0127	S07	E15	06	9.2			AXX	1	1		2
10375A		LEAR	06	08	0344	S07	E12	06	9.0		B	CRO	20	3	3	4
10384		HOLL	06	11	1345	N19	W26	06	9.6		A	AXX	10	2	4	3
10384		LEAR	06	12	0152	N15	W31	06	9.7		B	CAO	30	4	3	3
10384		HOLL	06	12	1500	N16	W38	06	9.7		B	CSO	50	6	3	4
10384		LEAR	06	13	0346	N15	W45	06	9.7		B	DAO	80	9	6	3
10384		SVTO	06	13	0532	N16	W47	06	9.7		B	DSO	40	5	4	3
10384		TACH	06	13	0709	N13	W48	06	9.7			HA	46	3	2	4
10384		HOLL	06	13	1512	N13	W52	06	9.7		B	CAO	70	4	5	2
10384		HOLL	06	14	1500	N15	W66	06	9.6		B	BXO	20	4	3	2
10384		LEAR	06	15	0100	N15	W70	06	9.7		B	BXO	30	2	1	3
10384		HOLL	06	15	1357	N14	W78	06	9.7		A	AXX		1	1	4
10382		SVTO	06	10	0740	S18	W08	06	9.7		A	HRX	20	2	3	3
10382		HOLL	06	10	1427	S18	W12	06	9.7		B	CAO	20	7	3	4
10382	31756	MWIL	06	10	1445	S17	W12	06	9.7	4	(B)					
10382		VORO	06	10	2213	S16	W16	06	9.7			BXO	8	2	3	4
10382		LEAR	06	11	0022	S18	W17	06	9.7		B	DAO	30	7	4	2
10382		HOLL	06	11	1345	S17	W26	06	9.6		B	BXO	20	11	5	3
10382	31756	MWIL	06	11	1445	S17	W26	06	9.6	4	(B)					
10382		LEAR	06	12	0152	S18	W33	06	9.6		B	DAO	40	8	4	3
10382		VORO	06	12	0440	S17	W35	06	9.5			CAO	34	4	4	2
10382		SVTO	06	12	0521	S20	W36	06	9.5		B	DSO	50	3	5	3
10382		TACH	06	12	0637	S17	W36	06	9.5			BXO	10	2	5	3
10382		KAND	06	12	0700	S17	W35	06	9.6			CRO		7	6	3
10382	31756	MWIL	06	12	1445	S17	W40	06	9.6	5	(B)					
10382		HOLL	06	12	1500	S17	W41	06	9.5		B	DSO	80	10	7	4
10382		LEAR	06	13	0346	S18	W49	06	9.4		B	DSO	60	4	7	3
10382		SVTO	06	13	0532	S16	W50	06	9.4		B	DRO	50	2	7	3
10382		TACH	06	13	0709	S19	W51	06	9.4			CSO	47	2	6	4
10382		KAND	06	13	1120	S17	W53	06	9.4			DSO		2	7	2
10382	31756	MWIL	06	13	1445	S17	W54	06	9.5	4	(B)					
10382		HOLL	06	13	1512	S19	W55	06	9.4		B	BXO	10	3	8	2
10382		VORO	06	14	0153	S17	W61	06	9.4			DAO	31	2	7	3
10382		TACH	06	14	0534	S16	W64	06	9.4			BXO	35	2	6	3
10382		SVTO	06	14	0625	S17	W67	06	9.2		B	BXO	10	2	7	3
10382		KAND	06	14	0925	S17	W65	06	9.4			BXO		3	8	4
10382	31756	MWIL	06	14	1445	S17	W68	06	9.4	4	(B)					
10382		LEAR	06	15	0100	S17	W72	06	9.6		B	BXO	20	2	7	3
10382		VORO	06	15	0225	S17	W73	06	9.5			BXO	22	2	4	3
10382B		VORO	06	09	2228	N23	W02	06	9.8			AXX	2	1		4
10382B		VORO	06	10	2213	N24	W15	06	9.8			AXX	7	1		4
10377		VORO	06	04	0009	N04	E81	06	10.1			AXX	4	1		3
10377		KAND	06	04	0640	N04	E78	06	10.1			AX		1		4
10377		HOLL	06	04	1535	N04	E75	06	10.2		B	CSO	30	3	9	4

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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
10377		VORO	06	04	2304	N04	E67	06	10.0			ARX	24	1		3
10377		LEAR	06	05	0059	N05	E70	06	10.3		B	CSO	70	3	7	2
10377		TACH	06	05	0515	N03	E65	06	10.1			CSO	30	2	6	2
10377		SVTO	06	05	0752	N04	E65	06	10.2		B	DSO	40	5	9	3
10377		KAND	06	05	0805	N05	E66	06	10.3			DAO		4	10	5
10377		HOLL	06	05	1424	N05	E61	06	10.2		B	DAO	90	10	7	4
10377		LEAR	06	06	0115	N05	E53	06	10.0		B	DSO	60	3	9	2
10377		VORO	06	06	0226	N04	E54	06	10.1			DAI	103	6	7	3
10377		SVTO	06	06	0647	N03	E53	06	10.2		B	DSO	110	6	5	3
10377		KAND	06	06	0655	N04	E52	06	10.2			DSO		5	9	3
10377		TACH	06	06	0739	N04	E51	06	10.1			BRO	25	4	9	3
10377		VORO	06	07	0131	N04	E40	06	10.0			DSI	121	3	8	2
10377		LEAR	06	07	0215	N05	E41	06	10.2		B	DSO	70	4	9	2
10377		SVTO	06	07	0625	N03	E38	06	10.1		B	DSO	60	3	9	3
10377		KAND	06	07	0740	N04	E36	06	10.0			CSO		5	9	4
10377		HOLL	06	07	1600	N04	E33	06	10.1		B	E O	90	12	11	3
10377		VORO	06	08	0127	N03	E27	06	10.1			CSI	127	9	9	2
10377		LEAR	06	08	0344	N04	E25	06	10.0		B	DSO	140	12	10	4
10377		SVTO	06	08	0503	N03	E25	06	10.1		B	ESI	150	10	11	3
10377		TACH	06	08	0647	N04	E23	06	10.0			CAI	52	5	10	2
10377		KAND	06	08	1100	N03	E20	06	9.9			ESI		12	11	4
10377	31750	MWIL	06	08	1430	N03	E17	06	9.9	5	(BP)					
10377		HOLL	06	08	1545	N04	E18	06	10.0		B	EAI	120	20	11	4
10377		LEAR	06	09	0531	N03	E11	06	10.0		B	DSI	180	30	11	3
10377		SVTO	06	09	0730	N04	E08	06	9.9		B	ESO	110	12	12	3
10377		KAND	06	09	0745	N03	E09	06	10.0			ESI		15	12	4
10377		TACH	06	09	0808	N03	E06	06	9.8			CAI	45	10	7	3
10377	31750	MWIL	06	09	1445	N03	E05	06	10.0	6	(BG)					
10377		HOLL	06	09	2110	N04	E00	06	9.9		B	EAO	90	12	13	2
10377		VORO	06	09	2228	N03	E01	06	10.0			DSI	190	17	11	4
10377		LEAR	06	10	0057	N03	W01	06	10.0		BG	ESO	170	27	11	4
10377		TACH	06	10	0508	N04	W05	06	9.8			CAI	54	7	7	4
10377		SVTO	06	10	0740	N03	W08	06	9.7		B	DSO	120	9	9	3
10377		KAND	06	10	0830	N03	W06	06	9.9			DSO		9	9	3
10377		HOLL	06	10	1427	N05	W10	06	9.8		B	DSI	100	15	9	4
10377	31750	MWIL	06	10	1445	N04	W10	06	9.9	5	(B)					
10377		VORO	06	10	2213	N04	W14	06	9.9			DSI	230	19	8	4
10377		LEAR	06	11	0022	N03	W15	06	9.9		B	ESO	190	27	13	2
10377		SVTO	06	11	0542	N02	W18	06	9.9		B	ESO	180	12	11	3
10377		KAND	06	11	1113	N03	W21	06	9.9			DAO		8	9	3
10377		HOLL	06	11	1345	N04	W24	06	9.8		B	EAI	150	19	11	3
10377	31750	MWIL	06	11	1445	N04	W24	06	9.8	5	(B)					
10377		LEAR	06	12	0152	N03	W30	06	9.8		B	DAO	150	23	9	3
10377		VORO	06	12	0440	N04	W30	06	9.9			CAI	172	7	11	2
10377		SVTO	06	12	0521	N02	W33	06	9.7		B	EAO	100	7	11	3
10377		TACH	06	12	0637	N04	W32	06	9.9			CAI	35	5	9	3
10377		KAND	06	12	0700	N03	W34	06	9.7			CAO		11	12	3
10377	31750	MWIL	06	12	1445	N04	W38	06	9.8	5	(BP)					
10377		HOLL	06	12	1500	N04	W36	06	9.9		B	CAO	180	19	11	4
10377		LEAR	06	13	0346	N03	W45	06	9.8		B	CAO	140	8	9	3
10377		SVTO	06	13	0532	N03	W48	06	9.6		B	CSO	160	3	6	3
10377		TACH	06	13	0709	N02	W47	06	9.8			CAO	103	3	10	4
10377		KAND	06	13	1120	N02	W52	06	9.6			CSO		3	5	2
10377	31750	MWIL	06	13	1445	N03	W54	06	9.6	5	(BP)					
10377		HOLL	06	13	1512	N02	W56	06	9.4		B	CSO	110	3	4	2
10377		VORO	06	14	0153	N03	W62	06	9.4			HHX	244	6		3
10377		TACH	06	14	0534	N03	W61	06	9.7			DSO	247	2	4	3
10377		SVTO	06	14	0625	N03	W64	06	9.5		B	CSO	140	2	6	3
10377		KAND	06	14	0925	N03	W66	06	9.5			DSO		2	7	4
10377	31750	MWIL	06	14	1445	N03	W68	06	9.5	5	(BP)					
10377		HOLL	06	14	1500	N02	W66	06	9.7		B	DSO	170	3	7	2
10377		LEAR	06	15	0100	N03	W72	06	9.7		B	CAO	180	6	7	3
10377		VORO	06	15	0225	N03	W76	06	9.4			HHX	236	5		3
10377		SVTO	06	15	0504	N03	W75	06	9.6		B	CAO	120	2	8	3
10377		TACH	06	15	0555	N04	W72	06	9.9			HSX	537	1	3	3
10377		KAND	06	15	0735	N01	W79	06	9.4			HS		1	3	2
10377		HOLL	06	15	1357	N02	W79	06	9.7		A	HAX	180	1	2	4
10377	31750	MWIL	06	15	1445	N02	W82	06	9.5	5	(BP)					
10382A	31754	MWIL	06	09	1445	N15	E02	06	9.8	4	(B)					

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10382A		HOLL	06	09	2110	N15	E01	06	9.9		A	AXX	10	2	2	2
10382A		VORO	06	09	2228	N15	W01	06	9.9			BXO	7	2	3	4
10382A		LEAR	06	10	0057	N15	W03	06	9.8		B	BXO	10	2	3	4
10382A	31754	MWIL	06	10	1445	N16	W12	06	9.7	4	(B)					
10382A		VORO	06	12	0440	N15	W31	06	9.8			AXX	11	2		2
10382A		TACH	06	12	0637	N14	W32	06	9.8			AXX	2	1	1	3
10382A		KAND	06	12	0700	N15	W33	06	9.8			BXO		4	3	3
10382A	31754	MWIL	06	12	1445	N15	W38	06	9.7	4	(BG)					
10382A		KAND	06	13	1120	N15	W50	06	9.7			CAO		5	4	2
10382A	31754	MWIL	06	13	1445	N15	W52	06	9.7	5	(BD)					
10382A		VORO	06	14	0153	N16	W58	06	9.7			HAX	87	8		3
10382A		TACH	06	14	0534	N16	W60	06	9.7			HA	27	3	2	3
10382A		KAND	06	14	0925	N15	W64	06	9.5			CRO		4	2	4
10382A	31754	MWIL	06	14	1445	N15	W65	06	9.7	4	(B)					
10382A		VORO	06	15	0225	N16	W72	06	9.6			HRX	32	3		3
10377A	31753	MWIL	06	08	1430	N03	E25	06	10.5	4	(AF)					
10378		SVTO	06	05	0752	N15	E75	06	11.0		A	AXX		1		3
10378		KAND	06	05	0805	N16	E78	06	11.2			AX		2	2	5
10378		HOLL	06	05	1424	N16	E75	06	11.3		B	CSO	40	3	6	4
10378		LEAR	06	06	0115	N17	E67	06	11.1		B	CSO	30	2	6	2
10378		VORO	06	06	0226	N16	E67	06	11.2			CRI	26	2	5	3
10378		SVTO	06	06	0647	N16	E67	06	11.4		B	CRO	40	2	4	3
10378		KAND	06	06	0655	N16	E67	06	11.4			CRO		2	8	3
10378		TACH	06	06	0739	N16	E65	06	11.2			BXO	5	2	8	3
10378	31751	MWIL	06	06	1430	N16	E60	06	11.1	4	(B)					
10378		VORO	06	07	0131	N17	E54	06	11.2			DRO	22	3	5	2
10378		LEAR	06	07	0215	N17	E55	06	11.3		B	CRO	30	2	7	2
10378		SVTO	06	07	0625	N15	E52	06	11.2		B	BXO	10	2	5	3
10378		KAND	06	07	0740	N16	E50	06	11.1			BXO		4	6	4
10378		HOLL	06	07	1600	N16	E46	06	11.1		B	D O	50	10	7	3
10378		VORO	06	08	0127	N16	E41	06	11.2			BXI	20	4	5	2
10378		LEAR	06	08	0344	N17	E40	06	11.2		B	CSO	30	9	5	4
10378		SVTO	06	08	0503	N16	E38	06	11.1		B	CSO	10	2	2	3
10378		TACH	06	08	0647	N15	E38	06	11.1			BXO	3	2	4	2
10378		KAND	06	08	1100	N16	E36	06	11.2			CRO		4	4	4
10378	31751	MWIL	06	08	1430	N16	E34	06	11.2	4	(BP)					
10378		HOLL	06	08	1545	N15	E32	06	11.1		B	CSO	10	3	3	4
10378		LEAR	06	09	0531	N15	E24	06	11.0		A	HRX	10	1		3
10378		SVTO	06	09	0730	N18	E22	06	11.0		A	HRX	10	1	1	3
10378		KAND	06	09	0745	N15	E23	06	11.1			AX		1		4
10378	31751	MWIL	06	09	1445	N15	E18	06	11.0	4	(AP)					
10378		HOLL	06	09	2110	N14	E15	06	11.0		A	AXX		2	1	2
10378		VORO	06	09	2228	N15	E14	06	11.0			AXX	5	2		4
10378		LEAR	06	10	0057	N15	E12	06	10.9		A	AXX	10	1	1	4
10381		LEAR	06	09	0531	S19	E29	06	11.4		A	AXX	10	2	1	3
10381		SVTO	06	09	0730	S17	E28	06	11.4		A	HSX	20	2	1	3
10381		KAND	06	09	0745	S18	E28	06	11.4			AX		2	1	4
10381	31755	MWIL	06	09	1445	S19	E22	06	11.3	4	(AP)					
10381		HOLL	06	09	2110	S19	E20	06	11.4		B	BXO	10	5	3	2
10381		VORO	06	09	2228	S19	E20	06	11.5			BXO	20	5	2	4
10381		LEAR	06	10	0057	S19	E18	06	11.4		B	CRO	20	3	3	4
10381		TACH	06	10	0508	S18	E16	06	11.4			BXO	6	2	3	4
10381		SVTO	06	10	0740	S18	E17	06	11.6		B	DSO	30	4	4	3
10381		KAND	06	10	0830	S19	E15	06	11.5			DSO		4	4	3
10381		HOLL	06	10	1427	S18	E11	06	11.4		B	DAO	50	13	5	4
10381	31755	MWIL	06	10	1445	S18	E11	06	11.4	5	(B)					
10381		VORO	06	10	2213	S18	E07	06	11.4			CAI	67	8	4	4
10381		LEAR	06	11	0022	S19	E07	06	11.5		B	DAO	70	8	5	2
10381		SVTO	06	11	0542	S18	E05	06	11.6		B	DSO	80	4	6	3
10381		KAND	06	11	1113	S19	E00	06	11.5			DAO		7	5	3
10381		HOLL	06	11	1345	S19	W02	06	11.4		B	DAO	60	8	6	3
10381	31755	MWIL	06	11	1445	S18	W02	06	11.5	5	(B)					
10381		LEAR	06	12	0152	S19	W08	06	11.5		B	DAO	90	23	5	3
10381		VORO	06	12	0440	S18	W09	06	11.5			CAI	109	16	5	2
10381		SVTO	06	12	0521	S19	W08	06	11.6		B	DSO	110	12	7	3
10381		TACH	06	12	0637	S19	W11	06	11.4			CAO	57	3	4	3

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10381		KAND	06	12	0700	S18	W12	06	11.4			CSO		17	5	3
10381	31755	MWIL	06	12	1445	S18	W15	06	11.5	5	(B)					
10381		HOLL	06	12	1500	S18	W16	06	11.4		B	CSI	110	21	5	4
10381		LEAR	06	13	0346	S21	W23	06	11.4		B	DSI	140	20	5	3
10381		SVTO	06	13	0532	S18	W25	06	11.3		B	DAO	100	9	6	3
10381		TACH	06	13	0709	S20	W27	06	11.2			BRO	34	4	7	4
10381		KAND	06	13	1120	S19	W27	06	11.4			DAO		10	5	4
10381	31755	MWIL	06	13	1445	S18	W29	06	11.4	5	(B)					
10381		HOLL	06	13	1512	S21	W30	06	11.3		B	DAI	90	15	6	2
10381		VORO	06	14	0153	S18	W34	06	11.5			CAI	75	9	5	3
10381		TACH	06	14	0534	S17	W39	06	11.3			BRO	64	3	2	3
10381		SVTO	06	14	0625	S18	W39	06	11.3		B	CSO	20	4	5	3
10381		KAND	06	14	0925	S18	W40	06	11.3			CAO		7	5	4
10381	31755	MWIL	06	14	1445	S18	W42	06	11.4	4	(B)					
10381		HOLL	06	14	1500	S18	W45	06	11.2		B	DAO	50	8	5	2
10381		LEAR	06	15	0100	S18	W48	06	11.4		B	CRO	40	8	5	3
10381		VORO	06	15	0225	S18	W50	06	11.3			HRX	37	2	1	3
10381		SVTO	06	15	0504	S18	W52	06	11.2		B	CSO	80	5	4	3
10381		TACH	06	15	0555	S18	W50	06	11.4			BRO	29	3	2	3
10381		KAND	06	15	0735	S19	W52	06	11.3			BXO		3	4	2
10381		HOLL	06	15	1357	S19	W57	06	11.2		B	CSO	40	7	4	4
10381	31755	MWIL	06	15	1445	S19	W56	06	11.3	5	(AP)					
10381		LEAR	06	16	0017	S18	W61	06	11.4		B	CAO	80	12	6	4
10381		SVTO	06	16	0523	S18	W68	06	11.0		A	HRX	10	1	1	3
10381		TACH	06	16	0635	S18	W67	06	11.2			AXX	7	1	1	3
10381		KAND	06	16	0808	S17	W66	06	11.3			AX		1	1	2
10381		HOLL	06	16	1408	S19	W67	06	11.5		A	AXX		1	1	3
10381	31755	MWIL	06	16	1430	S18	W69	06	11.3	4	(AP)					
10381	31755	MWIL	06	17	1430	S19	W83	06	11.3	4	AP					
10380	31752	MWIL	06	06	1430	S15	E85	06	13.0	5	AP					
10380		VORO	06	07	0131	S14	E78	06	12.9			DAI	376	4	3	2
10380		LEAR	06	07	0215	S15	E79	06	13.1		B	DAO	300	8	5	2
10380		SVTO	06	07	0625	S17	E78	06	13.2		B	EHO	430	5	12	3
10380		KAND	06	07	0740	S15	E79	06	13.3			EKD		9	12	4
10380		HOLL	06	07	1600	S15	E72	06	13.1		B	EKO	440	17	19	3
10380		VORO	06	08	0127	S15	E65	06	13.0			DKI	766	14	4	2
10380		LEAR	06	08	0344	S14	E66	06	13.1		BG	EKI	530	31	11	4
10380		SVTO	06	08	0503	S16	E66	06	13.2		B	EKO	570	6	11	3
10380		TACH	06	08	0647	S15	E62	06	13.0			DAI	503	6	6	2
10380		KAND	06	08	1100	S15	E63	06	13.2			EKO		15	12	4
10380	31752	MWIL	06	08	1430	S15	E60	06	13.1	6	(D)					
10380		HOLL	06	08	1545	S17	E60	06	13.2		BG	EKI	570	38	11	4
10380		LEAR	06	09	0531	S15	E51	06	13.1		BG	EKI	670	55	14	3
10380		SVTO	06	09	0730	S12	E51	06	13.1		B	EKO	680	21	13	3
10380		KAND	06	09	0745	S15	E52	06	13.2			EKO		23	13	4
10380		TACH	06	09	0808	S15	E48	06	13.0			CAO	233	4	6	3
10380	31752	MWIL	06	09	1445	S16	E47	06	13.2	6	(D)					
10380		HOLL	06	09	2110	S17	E42	06	13.1		BG	EKI	700	28	13	2
10380		VORO	06	09	2228	S15	E39	06	12.9			DKI	800	44	6	4
10380		LEAR	06	10	0057	S16	E40	06	13.1		BGD	EKI	780	66	14	4
10380		TACH	06	10	0508	S15	E37	06	13.0			EAI	441	13	13	4
10380		SVTO	06	10	0740	S13	E38	06	13.2		B	EKI	490	24	14	3
10380		KAND	06	10	0830	S17	E39	06	13.3			EKI		31	15	3
10380		HOLL	06	10	1427	S16	E33	06	13.1		BG	EKC	400	51	14	4
10380	31752	MWIL	06	10	1445	S15	E34	06	13.2	6	(D)					
10380		VORO	06	10	2213	S16	E29	06	13.1			DKI	747	42	10	4
10380		LEAR	06	11	0022	S17	E28	06	13.1		BGD	EKI	630	60	12	2
10380		SVTO	06	11	0542	S14	E26	06	13.2		BG	EKI	650	24	14	3
10380		KAND	06	11	1113	S16	E23	06	13.2			EKC		38	13	3
10380		HOLL	06	11	1345	S15	E19	06	13.0		BG	EKI	630	41	13	3
10380	31752	MWIL	06	11	1445	S15	E21	06	13.2	5	(D)					
10380		LEAR	06	12	0152	S17	E13	06	13.1		BG	EKI	500	77	12	3
10380		VORO	06	12	0440	S15	E10	06	12.9			DKI	597	20	7	2
10380		SVTO	06	12	0521	S14	E12	06	13.1		B	EKI	510	21	13	3
10380		TACH	06	12	0637	S16	E10	06	13.0			EAI	278	11	10	3
10380		KAND	06	12	0700	S16	E13	06	13.3			EKI		51	15	3
10380	31752	MWIL	06	12	1445	S16	E08	06	13.2	5	(D)					
10380		HOLL	06	12	1500	S16	E07	06	13.1		B	EKC	610	38	13	4

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10380		LEAR	06	13	0346	S17	E01	06	13.2		BG	FKI	590	69	14	3
10380		SVTO	06	13	0532	S15	W01	06	13.1		B	FAI	500	22	16	3
10380		TACH	06	13	0709	S17	W03	06	13.1			CAI	135	10	10	4
10380		KAND	06	13	1120	S16	W02	06	13.3			EKC		31	13	2
10380	31752	MWIL	06	13	1445	S16	W05	06	13.2	5	(BG)					
10380		HOLL	06	13	1512	S17	W07	06	13.1		BG	EKI	350	55	13	2
10380		VORO	06	14	0153	S16	W12	06	13.2			DKI	429	36	10	3
10380		TACH	06	14	0534	S13	W15	06	13.1			CAI	210	14	10	3
10380		SVTO	06	14	0625	S16	W17	06	13.0		B	EAI	250	20	13	3
10380		KAND	06	14	0925	S16	W15	06	13.2			CAI		44	13	4
10380	31752	MWIL	06	14	1445	S16	W18	06	13.2	5	(BG)					
10380		HOLL	06	14	1500	S16	W20	06	13.1		B	EKI	250	37	12	2
10380		LEAR	06	15	0100	S18	W23	06	13.3		BG	FAI	240	30	16	3
10380		VORO	06	15	0225	S15	W27	06	13.0			CHI	279	13	6	3
10380		SVTO	06	15	0504	S16	W29	06	13.0		B	DAO	150	5	9	3
10380		TACH	06	15	0555	S15	W30	06	13.0			CAI	79	7	9	3
10380		KAND	06	15	0735	S17	W27	06	13.3			EAO		11	11	2
10380		HOLL	06	15	1357	S16	W30	06	13.3		B	DAI	150	19	8	4
10380	31752	MWIL	06	15	1445	S16	W32	06	13.2	5	(BG)					
10380		LEAR	06	16	0017	S17	W37	06	13.2		BG	DAI	190	24	5	4
10380		SVTO	06	16	0523	S15	W42	06	13.0		B	DSO	140	6	8	3
10380		TACH	06	16	0635	S15	W41	06	13.2			CAO	171	4	3	3
10380		KAND	06	16	0808	S15	W40	06	13.3			DAO		6	7	2
10380		HOLL	06	16	1408	S15	W45	06	13.2		BG	EAI	140	16	11	3
10380	31752	MWIL	06	16	1430	S16	W45	06	13.2	5	(BG)					
10380		LEAR	06	17	0117	S15	W52	06	13.1		B	DAO	170	13	8	3
10380		TACH	06	17	0509	S16	W54	06	13.1			CSO	142	2	2	3
10380		SVTO	06	17	0540	S14	W57	06	12.9		B	DSO	130	4	6	3
10380		KAND	06	17	0905	S16	W55	06	13.2			DSO		2	3	3
10380	31752	MWIL	06	17	1430	S16	W58	06	13.2	5	(BG)					
10380		HOLL	06	17	1520	S17	W57	06	13.3		B	CXO	120	5	11	2
10380		LEAR	06	18	0038	S15	W64	06	13.2		B	CSO	140	4	6	4
10380		VORO	06	18	0153	S13	W66	06	13.1			ARX	6	3		3
10380		VORO	06	18	0153	S18	W63	06	13.3			HKX	156	1		3
10380		KAND	06	18	0725	S19	W67	06	13.2			HS		1	3	3
10380		TACH	06	18	0735	S16	W65	06	13.4			CSO	214	2	2	4
10380	31752	MWIL	06	18	1445	S17	W70	06	13.3	5	(AP)					
10380		HOLL	06	18	1552	S18	W71	06	13.2		A	HAX	140	1	2	3
10380		VORO	06	18	2210	S18	W74	06	13.3			HAX	126	1		3
10380		LEAR	06	19	0020	S17	W75	06	13.3		B	CSO	80	4	4	1
10380		KAND	06	19	0720	S18	W79	06	13.3			HS		1	2	3
10380	31752	MWIL	06	19	1430	S17	W80	06	13.5	5	AP					
10383		VORO	06	09	2228	N21	E51	06	13.8			AXX	2	1		4
10383	31757	MWIL	06	10	1445	N20	E39	06	13.6	4	(AP)					
10383		VORO	06	10	2213	N20	E36	06	13.7			BXI	11	6	2	4
10383		LEAR	06	11	0022	N19	E34	06	13.6		B	DRO	20	3	3	2
10383		SVTO	06	11	0542	N23	E28	06	13.4		B	CRO	10	2	1	3
10383		KAND	06	11	1113	N20	E29	06	13.7			BXO		3	4	3
10383	31757	MWIL	06	11	1445	N21	E26	06	13.6	4	(B)					
10383		HOLL	06	16	1408	N19	W35	06	13.9		A	AXX		1	1	3
10383		LEAR	06	17	0117	N20	W43	06	13.8		B	CAO	30	9	7	3
10383		TACH	06	17	0509	N19	W45	06	13.8			AXX	4	1	1	3
10383		SVTO	06	17	0540	N21	W48	06	13.5		A	AXX	10	1	1	3
10383		KAND	06	17	0905	N20	W48	06	13.7			BXO		3	4	3
10383	31762	MWIL	06	17	1430	N20	W51	06	13.7	5	(B)					
10383		HOLL	06	17	1520	N19	W51	06	13.7		BG	BAO	10	5	5	2
10383		LEAR	06	18	0038	N20	W57	06	13.7		B	BXO	20	3	4	4
10383		VORO	06	18	0153	N20	W59	06	13.6			AXX	7	2		3
10383	31762	MWIL	06	18	1445	N20	W65	06	13.6	4	(B)					
10383		HOLL	06	18	1552	N20	W65	06	13.7		A	AXX		1	1	3
10383A		HOLL	06	16	1408	S23	W08	06	16.0		B	CSO	30	5	4	3
10383A	31760	MWIL	06	16	1430	S23	W09	06	15.9	4	(B)					
10383A		LEAR	06	17	0117	S24	W17	06	15.7		B	CAO	10	4	3	3
10383A	31760	MWIL	06	17	1430	S24	W24	06	15.8	4	(AF)					
10383B		LEAR	06	21	0713	S14	W59	06	16.8		A	AXX	10	1	1	2
10383B	31767	MWIL	06	22	1430	S15	W75	06	16.9	4	(AF)					

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10383C	31758	MWIL	06	13	1445	S16	E54	06	17.7	4	(B)					
10383C	31763	MWIL	06	17	1430	S19	E01	06	17.7	4	(AP)					
10383C		LEAR	06	18	0038	S19	W05	06	17.6		B	BXO	10	2	3	4
10383C		VORO	06	18	0153	S18	W07	06	17.5			AXX	4	1		3
10383C		KAND	06	18	0725	S19	W09	06	17.6			AX		1	1	3
10383C		TACH	06	18	0735	S18	W10	06	17.5			AXX	33	1	1	4
10383C	31763	MWIL	06	18	1445	S18	W14	06	17.5	4	(AP)					
10383C		HOLL	06	18	1552	S19	W16	06	17.4		A	AXX	10	2	1	3
10383C		VORO	06	18	2210	S18	W19	06	17.5			AXX	3	1		3
10383C		KAND	06	19	0720	S19	W23	06	17.5			AX		3	1	3
10383C	31763	MWIL	06	19	1430	S17	W28	06	17.5	3	(AP)					
10385		KAND	06	14	0925	N29	E53	06	18.5			AX		2	2	4
10385	31759	MWIL	06	14	1445	N29	E50	06	18.5	3	(B)					
10385		LEAR	06	15	0100	N29	E42	06	18.3		B	BXO	20	6	5	3
10385		VORO	06	15	0225	N29	E42	06	18.4			BXO	19	3	4	3
10385		KAND	06	15	0735	N29	E40	06	18.4			BXO		5	5	2
10385		HOLL	06	15	1357	N30	E35	06	18.3		B	DSO	50	7	6	4
10385	31759	MWIL	06	15	1445	N29	E36	06	18.4	4	(B)					
10385		LEAR	06	16	0017	N29	E30	06	18.4		B	DAO	80	15	7	4
10385		SVTO	06	16	0523	N28	E27	06	18.3		B	DSO	60	3	5	3
10385		TACH	06	16	0635	N29	E26	06	18.3			CSO	56	2	5	3
10385		KAND	06	16	0808	N29	E26	06	18.4			CAO		5	5	2
10385		HOLL	06	16	1408	N29	E23	06	18.4		B	DAO	50	9	7	3
10385	31759	MWIL	06	16	1430	N29	E23	06	18.4	5	(B)					
10385		LEAR	06	17	0117	N28	E17	06	18.4		B	DAO	70	9	7	3
10385		TACH	06	17	0509	N28	E15	06	18.4			BXO	23	2	6	3
10385		SVTO	06	17	0540	N29	E13	06	18.2		B	CSO	40	3	7	3
10385		KAND	06	17	0905	N29	E11	06	18.2			CSO		5	7	3
10385	31759	MWIL	06	17	1430	N29	E08	06	18.2	5	(B)					
10385		HOLL	06	17	1520	N28	E07	06	18.2		B	CSO	30	13	8	2
10385		LEAR	06	18	0038	N28	E03	06	18.3		B	DSO	90	12	7	4
10385		VORO	06	18	0153	N28	E01	06	18.1			DRI	62	9	6	3
10385		KAND	06	18	0725	N28	E00	06	18.3			DSO		11	8	3
10385		TACH	06	18	0735	N28	W01	06	18.2			BRI	39	9	5	4
10385	31759	MWIL	06	18	1445	N29	W05	06	18.2	5	(B)					
10385		HOLL	06	18	1552	N27	W06	06	18.2		B	DSO	50	9	8	3
10385		VORO	06	18	2210	N28	W09	06	18.2			DRO	35	4	6	3
10385		LEAR	06	19	0020	N28	W11	06	18.1		B	DSO	60	5	7	1
10385		KAND	06	19	0720	N28	W13	06	18.3			CAO		6	7	3
10385	31759	MWIL	06	19	1430	N30	W18	06	18.2	4	(B)					
10385		HOLL	06	19	1655	N30	W19	06	18.2		B	BXO	10	5	8	2
10385		VORO	06	20	0015	N29	W23	06	18.2			BXO	13	3	7	3
10385		LEAR	06	20	0029	N28	W26	06	18.0		B	BXO	20	5	8	2
10385		KAND	06	20	0655	N29	W26	06	18.2			BXO		3	8	3
10385		HOLL	06	20	1417	N29	W32	06	18.1		B	CSO	30	3	7	3
10385		VORO	06	20	2204	N29	W34	06	18.2			BXI	7	4	6	3
10385		LEAR	06	21	0713	N28	W42	06	18.0		A	AXX	10	2	1	2
10385		HOLL	06	21	1400	N29	W42	06	18.3		B	CSO	20	3	8	4
10385A		SVTO	06	17	0540	N24	E20	06	18.8		A	AXX	10	1	1	3
10385B		LEAR	06	18	0038	S22	E13	06	19.0		A	AXX	10	2	2	4
10385B		VORO	06	18	0153	S22	E12	06	19.0			BRO	5	2	1	3
10385B		KAND	06	18	0725	S22	E09	06	19.0			AX		2	2	3
10388A		VORO	06	20	0015	S08	W02	06	19.9			AXX	1	5		3
10388		VORO	06	18	0153	S03	E34	06	20.6			AXX	2	1		3
10388	31765	MWIL	06	18	1445	S01	E27	06	20.6	4	(B)					
10388		HOLL	06	18	1552	S07	E25	06	20.5		A	AXX	10	3	2	3
10388		VORO	06	18	2210	S02	E21	06	20.5			BXO	13	5	4	3
10388		KAND	06	19	0720	S02	E17	06	20.6			BXO		9	5	3
10388	31765	MWIL	06	19	1430	S02	E12	06	20.5	5	(B)					
10388		HOLL	06	19	1655	S03	E11	06	20.5		B	CSO	30	8	9	2
10388		VORO	06	20	0015	S02	E07	06	20.5			CRI	47	11	6	3
10388		VORO	06	20	0015	S04	E07	06	20.5			AXX	2	1		3
10388		LEAR	06	20	0029	S02	E06	06	20.5		B	CSO	40	10	7	2
10388		KAND	06	20	0655	S03	E05	06	20.7			DSO		17	8	3

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10388		HOLL	06	20	1417	S03 W01	06	20.5		B	DAI	80	26	8	3
10388		VORO	06	20	2204	S02 W06	06	20.5			CAI	153	27	8	3
10388		LEAR	06	21	0713	S03 W11	06	20.5		B	DAO	140	20	9	2
10388		KAND	06	21	1135	S03 W12	06	20.6			DAO		17	10	5
10388		HOLL	06	21	1400	S03 W14	06	20.5		BG	EAI	130	23	11	4
10388		VORO	06	21	2312	S02 W19	06	20.5			DAI	146	21	9	3
10388		SVTO	06	22	0435	S02 W23	06	20.5		B	DAI	130	14	10	3
10388		LEAR	06	22	0555	S03 W23	06	20.5		B	DAO	140	18	1	3
10388		KAND	06	22	0605	S02 W23	06	20.5			EAC		13	11	3
10388		TACH	06	22	0805	S03 W24	06	20.5			DAI	160	7	6	2
10388	31765	MWIL	06	22	1430	S03 W28	06	20.5	4	(B)					
10388		HOLL	06	22	1510	S02 W28	06	20.5		B	EAO	100	20	11	2
10388		VORO	06	23	0235	S02 W35	06	20.5			CRO	80	12	10	3
10388		LEAR	06	23	0410	S02 W36	06	20.5		BG	DAO	110	12	10	4
10388		SVTO	06	23	0442	N01 W37	06	20.4		B	EAO	70	7	11	3
10388		TACH	06	23	0608	S02 W36	06	20.6			BRI	45	5	7	3
10388		KAND	06	23	1142	S03 W39	06	20.6			DAO		6	8	3
10388		HOLL	06	23	1356	S02 W42	06	20.4		B	ESO	110	9	12	4
10388	31765	MWIL	06	23	1445	S03 W41	06	20.5	4	(BG)					
10388		VORO	06	23	2201	S03 W45	06	20.5			CRO	53	7	9	3
10388		LEAR	06	24	0230	S03 W48	06	20.5		B	DAO	80	13	11	4
10388		SVTO	06	24	0432	N01 W49	06	20.5		B	ESO	50	4	11	3
10388		KAND	06	24	0844	S02 W51	06	20.5			CSO		4	11	3
10388	31765	MWIL	06	24	1445	S03 W55	06	20.5	4	(B)					
10388		HOLL	06	24	1510	S03 W58	06	20.3		B	CAO	40	4	4	2
10388		LEAR	06	25	0011	N01 W66	06	20.1		B	BXO	20	3	3	4
10388		SVTO	06	25	0500	N03 W61	06	20.6		A	HSX	60	1	2	3
10389		KAND	06	19	0720	S13 E38	06	22.2			BXO		3	1	3
10389	31766	MWIL	06	19	1430	S12 E32	06	22.0	4	(B)					
10389		VORO	06	20	0015	S12 E27	06	22.0			BXO	14	3	3	3
10389		LEAR	06	20	0029	S12 E26	06	22.0		B	BXO	10	4	4	2
10389		KAND	06	20	0655	S12 E23	06	22.0			BXO		3	5	3
10389		HOLL	06	20	1417	S12 E19	06	22.0		B	CAO	20	3	4	3
10389		VORO	06	20	2204	S09 E08	06	21.5			AXX	1	1		3
10389		VORO	06	20	2204	S12 E15	06	22.0			BXO	4	3	6	3
10389		LEAR	06	21	0713	S12 E06	06	21.7		A	AXX	10	1	1	2
10389		HOLL	06	21	1400	S12 E08	06	22.2		A	AXX	10	2	2	4
10389	31766	MWIL	06	22	1430	S10 W07	06	22.1	4	(AF)					
10389	31766	MWIL	06	23	1445	S09 W18	06	22.3	4	(BG)					
10386		LEAR	06	16	0017	S07 E84	06	22.3		B	DAO	150	14	8	4
10386		SVTO	06	16	0523	S09 E80	06	22.2		A	HSX	60	1	5	3
10386		TACH	06	16	0635	S07 E78	06	22.1			HSX	76	1	2	3
10386		KAND	06	16	0808	S07 E80	06	22.3			DAO		3	5	2
10386		HOLL	06	16	1408	S06 E76	06	22.3		B	DAO	200	11	8	3
10386	31761	MWIL	06	16	1430	S07 E77	06	22.4	5	(BG)					
10386		LEAR	06	17	0117	S07 E70	06	22.3		BG	DAI	350	27	7	3
10386		TACH	06	17	0509	S05 E68	06	22.3			DAI	206	6	3	3
10386		SVTO	06	17	0540	S08 E68	06	22.3		B	DAO	310	8	5	3
10386		KAND	06	17	0905	S06 E68	06	22.5			DAO		11	6	3
10386	31761	MWIL	06	17	1430	S06 E63	06	22.3	5	(BG)					
10386		HOLL	06	17	1520	S05 E63	06	22.3		B	DAI	260	14	10	2
10386		LEAR	06	18	0038	S06 E56	06	22.2		BG	DAO	290	18	8	4
10386		VORO	06	18	0153	S06 E56	06	22.3			DAI	344	17	3	3
10386		KAND	06	18	0725	S07 E55	06	22.4			DAC		18	7	3
10386		TACH	06	18	0735	S05 E53	06	22.3			DAI	216	14	2	4
10386	31761	MWIL	06	18	1445	S06 E49	06	22.3	5	(D)					
10386		HOLL	06	18	1552	S06 E47	06	22.2		BG	EKC	280	33	11	3
10386		VORO	06	18	2210	S05 E44	06	22.2			DAI	327	24	4	3
10386		LEAR	06	19	0020	S06 E42	06	22.1		BGD	EAI	210	16	6	1
10386		KAND	06	19	0720	S06 E40	06	22.3			DAO		23	9	3
10386	31761	MWIL	06	19	1430	S05 E36	06	22.3	5	(D)					
10386		HOLL	06	19	1655	S07 E33	06	22.2		BG	EKO	190	43	13	2
10386		VORO	06	20	0015	S05 E30	06	22.2			DAI	342	24	7	3
10386		LEAR	06	20	0029	S06 E29	06	22.2		BGD	DAI	240	36	7	2
10386		KAND	06	20	0655	S06 E26	06	22.2			BXO		3	9	3
10386		HOLL	06	20	1417	S06 E23	06	22.3		BGD	DKC	260	18	6	3
10386		VORO	06	20	2204	S05 E17	06	22.2			DKC	216	25	5	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
10386		LEAR	06	21	0713	S05	E12	06	22.2		BGD	DAI	130	19	8	2
10386		KAND	06	21	1135	S05	E11	06	22.3			DAI		23	6	5
10386		HOLL	06	21	1400	S06	E10	06	22.3		BGD	DAC	90	21	7	4
10386		VORO	06	21	2312	S05	E05	06	22.3			DAC	137	24	5	3
10386		SVTO	06	22	0435	S06	E02	06	22.3		B	DAI	110	10	5	3
10386		LEAR	06	22	0555	S06	E01	06	22.3		BGD	DAI	90	16	4	3
10386		KAND	06	22	0605	S06	E01	06	22.3			DAI		8	4	3
10386		TACH	06	22	0805	S06	W02	06	22.2			AR	54	5	3	2
10386	31761	MWIL	06	22	1430	S06	W03	06	22.4	4	(D)					
10386		HOLL	06	22	1510	S05	W04	06	22.3		BG	DAI	50	16	4	2
10386		VORO	06	23	0235	S06	W10	06	22.3			DAI	98	12	3	3
10386		LEAR	06	23	0410	S08	W12	06	22.3		BGD	EAI	90	11	5	4
10386		SVTO	06	23	0442	S06	W14	06	22.1		B	CAO	70	7	7	3
10386		TACH	06	23	0608	S08	W13	06	22.3			CAO	59	4	4	3
10386		KAND	06	23	1142	S06	W15	06	22.4			HA		2	2	3
10386		HOLL	06	23	1356	S07	W17	06	22.3		BG	DAI	70	13	5	4
10386	31761	MWIL	06	23	1445	S06	W17	06	22.3	5	(D)					
10386		VORO	06	23	2201	S06	W21	06	22.3			HAX	66	8		3
10386		LEAR	06	24	0230	S06	W24	06	22.3		BD	DAI	70	15	5	4
10386		SVTO	06	24	0432	S04	W26	06	22.2		B	CAO	60	4	4	3
10386		KAND	06	24	0844	S06	W27	06	22.3			HA		3	2	3
10386	31761	MWIL	06	24	1445	S06	W30	06	22.4	4	(BG)					
10386		HOLL	06	24	1510	S07	W31	06	22.3		B	CAO	30	5	3	2
10386		LEAR	06	25	0011	S06	W35	06	22.4		B	CAO	50	7	3	4
10386		SVTO	06	25	0500	S03	W40	06	22.2		B	DAO	40	2	2	3
10386		TACH	06	25	0656	S07	W39	06	22.4			HSX	52	1	1	3
10386		KAND	06	25	0850	S07	W40	06	22.4			HA		3	1	4
10386		HOLL	06	25	1407	S07	W42	06	22.4		B	CAO	20	5	3	3
10386	31761	MWIL	06	25	1430	S06	W44	06	22.3	4	(BP)					
10386		LEAR	06	26	0517	S06	W51	06	22.4		A	HRX	30	4	2	3
10386		VORO	06	26	0534	S06	W52	06	22.3			HRX	24	2		2
10386		SVTO	06	26	0548	S07	W54	06	22.2		A	HRX	20	1	1	3
10386		KAND	06	26	0650	S07	W54	06	22.2			BXO		4	1	3
10386	31761	MWIL	06	26	1445	S07	W58	06	22.3	4	(B)					
10386B	31768	MWIL	06	22	1430	S21	E00	06	22.6	4	(AP)					
10387	31764	MWIL	06	17	1430	N19	E87	06	24.2	4	AP					
10387		LEAR	06	18	0038	N18	E74	06	23.7		B	CSO	70	5	7	4
10387		VORO	06	18	0153	N18	E74	06	23.7			DRI	94	5	5	3
10387		KAND	06	18	0725	N17	E72	06	23.8			DAO		5	9	3
10387		TACH	06	18	0735	N18	E73	06	23.9			DAO	246	4	7	4
10387	31764	MWIL	06	18	1445	N18	E68	06	23.8	5	(B)					
10387		HOLL	06	18	1552	N17	E65	06	23.6		B	DAO	130	9	9	3
10387		VORO	06	18	2210	N18	E63	06	23.7			DAI	243	12	7	3
10387		LEAR	06	19	0020	N18	E60	06	23.6		BG	DAO	110	5	9	1
10387		KAND	06	19	0720	N18	E58	06	23.7			DSO		6	10	3
10387	31764	MWIL	06	19	1430	N18	E54	06	23.7	5	(B)					
10387		HOLL	06	19	1655	N18	E51	06	23.6		BG	DKO	240	8	10	2
10387		VORO	06	20	0015	N18	E48	06	23.7			DAI	320	13	8	3
10387		LEAR	06	20	0029	N18	E48	06	23.7		BG	DAO	300	14	9	2
10387		KAND	06	20	0655	N17	E45	06	23.7			EAI		14	13	3
10387		HOLL	06	20	1417	N18	E41	06	23.7		BG	DAI	210	23	9	3
10387		VORO	06	20	2204	N18	E35	06	23.6			DKI	345	22	9	3
10387		LEAR	06	21	0713	N18	E31	06	23.7		BG	DAI	310	26	10	2
10387		KAND	06	21	1135	N19	E30	06	23.8			DAO		15	10	5
10387		HOLL	06	21	1400	N18	E27	06	23.6		BG	ESO	240	19	12	4
10387		VORO	06	21	2312	N18	E23	06	23.7			DKI	340	17	9	3
10387		SVTO	06	22	0435	N17	E21	06	23.8		B	EAO	280	11	12	3
10387		LEAR	06	22	0555	N18	E19	06	23.7		BG	DAO	290	22	9	3
10387		KAND	06	22	0605	N19	E20	06	23.8			EAO		13	11	3
10387		TACH	06	22	0805	N18	E16	06	23.5			DAI	238	6	9	2
10387	31764	MWIL	06	22	1430	N18	E15	06	23.7	5	(BG)					
10387		HOLL	06	22	1510	N19	E13	06	23.6		BG	EKO	220	33	11	2
10387		VORO	06	23	0235	N18	E08	06	23.7			DAO	343	18	10	3
10387		LEAR	06	23	0410	N17	E07	06	23.7		BG	FAO	260	23	16	4
10387		SVTO	06	23	0442	N16	E08	06	23.8		B	EAO	270	18	15	3
10387		TACH	06	23	0608	N16	E07	06	23.8			DAI	234	9	10	3
10387		KAND	06	23	1142	N19	E04	06	23.8			EAO		13	11	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10387		HOLL	06	23	1356	N18	E02	06	23.7		BG	EKO	180	24	12	4
10387	31764	MWIL	06	23	1445	N18	E02	06	23.8	5	(B)					
10387		VORO	06	23	2201	N18	W03	06	23.7			DAI	383	23	9	3
10387		LEAR	06	24	0230	N19	W07	06	23.6		B	DAO	130	26	9	4
10387		SVTO	06	24	0432	N19	W05	06	23.8		B	EAO	200	7	12	3
10387		KAND	06	24	0844	N19	W08	06	23.7			EAO		9	11	3
10387	31764	MWIL	06	24	1445	N18	W11	06	23.8	5	(B)					
10387		HOLL	06	24	1510	N19	W12	06	23.7		BG	EKO	160	10	12	2
10387		LEAR	06	25	0011	N18	W17	06	23.7		B	EAO	200	16	11	4
10387		SVTO	06	25	0500	N19	W18	06	23.8		B	EAO	260	7	12	3
10387		TACH	06	25	0656	N15	W18	06	23.9			EAI	234	18	13	3
10387		KAND	06	25	0850	N19	W21	06	23.8			EAO		13	11	4
10387		HOLL	06	25	1407	N18	W26	06	23.6		B	EKO	180	11	11	3
10387	31764	MWIL	06	25	1430	N18	W24	06	23.8	5	(B)					
10387		LEAR	06	26	0517	N18	W33	06	23.7		B	EAO	160	10	11	3
10387		VORO	06	26	0534	N19	W33	06	23.7			DSI	223	7	9	2
10387		SVTO	06	26	0548	N19	W34	06	23.6		B	ESO	160	5	12	3
10387		KAND	06	26	0650	N19	W34	06	23.7			EAO		6	11	3
10387		TACH	06	26	0909	N17	W33	06	23.9			EAI	195	8	13	4
10387	31764	MWIL	06	26	1445	N19	W38	06	23.7	5	(B)					
10387		HOLL	06	26	1730	N19	W37	06	23.9		B	DSO	190	12	10	3
10387		LEAR	06	27	0230	N18	W44	06	23.7		B	DAO	140	6	10	1
10387		SVTO	06	27	0602	N18	W47	06	23.7		B	ESO	120	3	12	3
10387		TACH	06	27	0611	N17	W44	06	23.9			ESI	190	9	14	4
10387		KAND	06	27	0830	N19	W48	06	23.7			DSO		2	10	3
10387		HOLL	06	27	1408	N18	W50	06	23.8		B	DAO	110	5	8	3
10387	31764	MWIL	06	27	1445	N19	W52	06	23.6	5	(B)					
10387		LEAR	06	28	0055	N19	W58	06	23.6		B	ESO	120	5	11	3
10387		SVTO	06	28	0513	N19	W64	06	23.3		A	HSX	120	1	4	3
10387		TACH	06	28	0612	N16	W58	06	23.8			DAO	182	3	10	4
10387		KAND	06	28	1150	N19	W68	06	23.3			HS		1	2	3
10387	31764	MWIL	06	28	1445	N19	W66	06	23.6	5	(BP)					
10387		HOLL	06	28	1531	N18	W64	06	23.8		B	CAO	140	3	11	4
10387		SVTO	06	29	0608	N18	W79	06	23.2		A	HSX	120	1	2	3
10387		KAND	06	29	0630	N19	W80	06	23.2			HS		1	2	4
10387		TACH	06	29	0808	N15	W73	06	23.8			DSO	195	2	6	4
10387	31764	MWIL	06	29	1445	N19	W81	06	23.4	5	AP					
10387		HOLL	06	29	1610	N15	W75	06	24.0		A	HSX	90	1	2	3
10387		LEAR	06	30	0022	N15	W80	06	23.9		B	CAO	60	2	7	4
10391		VORO	06	23	0235	N14	E16	06	24.3			BXO	10	3	3	3
10391		KAND	06	23	1142	N15	E10	06	24.2			BXO		3	4	3
10391		HOLL	06	23	1356	N15	E08	06	24.2		B	DAO	60	9	6	4
10391	31770	MWIL	06	23	1445	N15	E08	06	24.2	5	(B)					
10391		VORO	06	23	2201	N14	E04	06	24.2			CAI	90	10	4	3
10391		LEAR	06	24	0230	N13	E02	06	24.2		B	DAO	110	26	7	4
10391		SVTO	06	24	0432	N14	E02	06	24.3		B	DSO	110	8	7	3
10391		KAND	06	24	0844	N14	W03	06	24.1			CAO		15	7	3
10391	31770	MWIL	06	24	1445	N14	W06	06	24.2	5	(B)					
10391		HOLL	06	24	1510	N14	W06	06	24.2		B	DKO	90	13	8	2
10391		LEAR	06	25	0011	N14	W11	06	24.2		B	DAO	150	19	9	4
10391		SVTO	06	25	0500	N16	W14	06	24.1		B	DAO	160	10	7	3
10391		KAND	06	25	0850	N14	W16	06	24.1			CAO		19	8	4
10391		HOLL	06	25	1407	N13	W17	06	24.3		B	DHI	190	23	7	3
10391	31770	MWIL	06	25	1430	N14	W20	06	24.1	5	(BP)					
10391		LEAR	06	26	0517	N14	W28	06	24.1		B	DAO	210	18	8	3
10391		VORO	06	26	0534	N14	W28	06	24.1			DAI	248	15	6	2
10391		SVTO	06	26	0548	N14	W28	06	24.1		B	DSO	200	9	8	3
10391		KAND	06	26	0650	N14	W30	06	24.0			DAI		19	8	3
10391	31770	MWIL	06	26	1445	N15	W34	06	24.0	5	(B)					
10391		HOLL	06	26	1730	N15	W34	06	24.1		B	DAI	170	22	8	3
10391		LEAR	06	27	0230	N14	W39	06	24.1		B	DAO	180	17	8	1
10391		SVTO	06	27	0602	N14	W43	06	24.0		B	DSO	160	8	9	3
10391		KAND	06	27	0830	N14	W44	06	24.0			CAI		17	7	3
10391		HOLL	06	27	1408	N14	W46	06	24.1		B	DAI	140	17	7	3
10391	31770	MWIL	06	27	1445	N15	W47	06	24.0	5	(BP)					
10391		LEAR	06	28	0055	N14	W52	06	24.1		B	DAO	220	18	9	3
10391		SVTO	06	28	0513	N14	W56	06	24.0		B	DSO	170	4	9	3
10391		KAND	06	28	1150	N18	W62	06	23.8			HS		4	3	3

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10391	31770	MWIL	06	28	1445	N14	W60	06	24.1	5	(BP)					
10391		HOLL	06	28	1531	N14	W59	06	24.2		B	CAO	120	7	11	4
10391		SVTO	06	29	0608	N15	W75	06	23.6		A	HSX	120	1	3	3
10391		KAND	06	29	0630	N14	W73	06	23.7			HS		1	2	4
10391	31770	MWIL	06	29	1445	N14	W77	06	23.8	4	(AP)					
10391A		LEAR	06	24	0230	N04	E07	06	24.6		A	HRX		1		4
10391C	31774	MWIL	06	26	1445	S15	W17	06	25.3	4	(AP)					
10391B		VORO	06	21	2312	N18	E52	06	25.9			AXX	5	3		3
10396	31775	MWIL	06	26	1445	S03	E07	06	27.1	4	(AP)					
10396		HOLL	06	26	1730	S05	E06	06	27.2		B	DAO	20	3	3	3
10396		LEAR	06	27	0230	S04	W01	06	27.0		B	DAO	40	4	4	1
10396		SVTO	06	27	0602	S04	W03	06	27.0		B	DSO	40	4	5	3
10396		TACH	06	27	0611	S04	W02	06	27.1			BRO	24	3	3	4
10396		KAND	06	27	0830	S04	W04	06	27.0			DSO		4	5	3
10396		HOLL	06	27	1408	S05	W07	06	27.1		B	DAO	60	9	5	3
10396	31775	MWIL	06	27	1445	S03	W07	06	27.1	5	(B)					
10396		LEAR	06	28	0055	S05	W13	06	27.1		B	DSO	130	16	6	3
10396		SVTO	06	28	0513	S04	W16	06	27.0		B	DSO	110	8	6	3
10396		TACH	06	28	0612	S05	W15	06	27.1			DAI	65	7	6	4
10396		KAND	06	28	1150	S04	W20	06	27.0			DAO		10	7	3
10396	31775	MWIL	06	28	1445	S04	W21	06	27.0	5	(B)					
10396		HOLL	06	28	1531	S03	W22	06	27.0		B	DAI	130	25	8	4
10396		SVTO	06	29	0608	S04	W30	06	27.0		B	DAO	170	11	10	3
10396		KAND	06	29	0630	S04	W30	06	27.0			DSO		14	10	4
10396		TACH	06	29	0808	S05	W30	06	27.1			CAI	135	6	8	4
10396	31775	MWIL	06	29	1445	S04	W35	06	27.0	5	(B)					
10396		HOLL	06	29	1610	S04	W34	06	27.1		B	DKI	120	27	11	3
10396		LEAR	06	30	0022	S04	W41	06	26.9		BG	EAO	230	22	11	4
10396		TACH	06	30	0747	S04	W46	06	26.9			EAI	128	5	12	4
10396		KAND	06	30	0838	S03	W45	06	27.0			EAC		8	13	4
10396		SVTO	06	30	0900	S06	W47	06	26.8		B	EAI	100	15	12	3
10396		HOLL	06	30	1408	S08	W50	06	26.8		B	EAO	140	14	12	4
10396		LEAR	07	01	0050	S04	W56	06	26.9		BG	ESO	180	13	14	3
10396		SVTO	07	01	0625	S06	W61	06	26.8		B	DSO	140	5	10	3
10396		KAND	07	01	0647	S04	W63	06	26.7			DSO		7	9	4
10396		TACH	07	01	0728	S04	W63	06	26.7			DAO	109	3	7	5
10396		HOLL	07	01	1515	S05	W65	06	26.9		B	CAO	80	5	9	3
10396		LEAR	07	02	0045	S05	W72	06	26.7		B	CSO	60	4	11	3
10396		SVTO	07	02	0455	S07	W74	06	26.8		B	DSO	90	3	8	3
10396		KAND	07	02	0730	S04	W75	06	26.8			BXO		2	12	4
10396		TACH	07	02	0845	S03	W76	06	26.8			CSO	86	2	10	4
10396		HOLL	07	02	1339	S04	W76	06	27.0		B	CSO	60	2	8	3
10394		LEAR	06	26	0517	N08	E32	06	28.6		A	AXX	10	2	2	3
10394		VORO	06	26	0534	N09	E31	06	28.5			AXX	4	3		2
10394		KAND	06	26	0650	N10	E31	06	28.6			BXO		3	2	3
10394	31776	MWIL	06	26	1445	N10	E27	06	28.6	4	(BG)					
10394		HOLL	06	26	1730	N08	E25	06	28.6		B	CAO	10	2	1	3
10394		LEAR	06	27	0230	N06	E20	06	28.6		A	AXX	10	2	1	1
10394		SVTO	06	27	0602	N12	E18	06	28.6		B	CRO	10	2	3	3
10394		KAND	06	27	0830	N09	E16	06	28.5			BXO		6	2	3
10394		HOLL	06	27	1408	N09	E13	06	28.6		B	DSO	40	7	4	3
10394	31776	MWIL	06	27	1445	N10	E13	06	28.6	4	(B)					
10394		LEAR	06	28	0055	N09	E07	06	28.6		B	DAO	80	17	5	3
10394		SVTO	06	28	0513	N10	E04	06	28.5		B	DAO	50	3	4	3
10394		KAND	06	28	1150	N10	E00	06	28.5			DAO		5	4	3
10394	31776	MWIL	06	28	1445	N10	W01	06	28.5	5	(BG)					
10394		HOLL	06	28	1531	N11	W02	06	28.5		B	DAO	70	11	6	4
10394		SVTO	06	29	0608	N11	W11	06	28.4		B	DAO	90	5	6	3
10394		KAND	06	29	0630	N11	W10	06	28.5			CAO		5	6	3
10394		TACH	06	29	0808	N12	W11	06	28.5			DAI	97	7	5	4
10394	31776	MWIL	06	29	1445	N10	W15	06	28.5	5	(B)					
10394		HOLL	06	29	1610	N10	W15	06	28.5		B	EAO	20	4	6	3
10394		LEAR	06	30	0022	N10	W20	06	28.5		B	CSO	50	5	5	4
10394		TACH	06	30	0747	N12	W24	06	28.5			CSO	72	2	5	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
10394		KAND	06	30	0838	N10	W27	06	28.3			HA		3	2	4
10394		SVTO	06	30	0900	N09	W28	06	28.3		A	HSX	50	3	2	3
10394		HOLL	06	30	1408	N05	W31	06	28.3		B	CSO	20	5	3	4
10394	31776	MWIL	06	30	1445	N10	W31	06	28.3	4	(AP)					
10394		LEAR	07	01	0050	N09	W37	06	28.3		A	HAX	30	4	2	3
10394		SVTO	07	01	0625	N07	W40	06	28.4		A	HSX	30	1	1	3
10394		KAND	07	01	0647	N09	W39	06	28.4			HR		1		4
10394		HOLL	07	01	1515	N05	W45	06	28.4		A	AXX	10	1	1	3
10394		LEAR	07	02	0045	N06	W49	06	28.5		A	AXX	10	1	1	3
10394		SVTO	07	02	0455	N06	W53	06	28.3		A	HSX	10	1	1	3
10394		KAND	07	02	0730	N09	W54	06	28.3			AX		1		4
10394		HOLL	07	02	1339	N09	W58	06	28.3		A	AXX		1	1	3
10390	31769	MWIL	06	22	1430	N14	E80	06	28.6	4	(AP)					
10390		HOLL	06	22	1510	N15	E80	06	28.7		B	DAI	80	2	8	2
10390		VORO	06	23	0235	N13	E74	06	28.7			HAX	168	4		3
10390		LEAR	06	23	0410	N14	E74	06	28.8		B	DAO	60	2	4	4
10390		SVTO	06	23	0442	N09	E73	06	28.7		B	DSO	110	2	3	3
10390		TACH	06	23	0608	N13	E72	06	28.7			HA	114	2	2	3
10390		KAND	06	23	1142	N14	E71	06	28.8			HA		2	3	3
10390		HOLL	06	23	1356	N14	E69	06	28.8		A	HAX	50	2	1	4
10390	31769	MWIL	06	23	1445	N14	E68	06	28.7	5	(AP)					
10390		VORO	06	23	2201	N14	E63	06	28.7			HAX	109	3		3
10390		LEAR	06	24	0230	N13	E61	06	28.7		B	CAO	90	9	3	4
10390		SVTO	06	24	0432	N09	E62	06	28.8		A	HSX	80	1	2	3
10390		KAND	06	24	0844	N15	E59	06	28.8			HA		2	2	3
10390	31769	MWIL	06	24	1445	N14	E55	06	28.8	5	(AP)					
10390		HOLL	06	24	1510	N15	E55	06	28.8		B	CAO	100	3	5	2
10390		LEAR	06	25	0011	N14	E49	06	28.7		B	CSO	90	4	3	4
10390		SVTO	06	25	0500	N11	E48	06	28.8		A	HSX	110	1	2	3
10390		TACH	06	25	0656	N14	E46	06	28.8			HSX	66	1	1	3
10390		KAND	06	25	0850	N15	E45	06	28.8			HS		2	2	4
10390		HOLL	06	25	1407	N14	E42	06	28.8		A	HSX	80	3	2	3
10390	31769	MWIL	06	25	1430	N15	E41	06	28.7	5	(AP)					
10390		LEAR	06	26	0517	N15	E34	06	28.8		B	CSO	70	3	4	3
10390		VORO	06	26	0534	N15	E32	06	28.6			HAX	115	3		2
10390		SVTO	06	26	0548	N14	E33	06	28.7		A	HSX	70	1	2	3
10390		KAND	06	26	0650	N15	E33	06	28.8			CAO		5	4	3
10390		TACH	06	26	0909	N12	E30	06	28.6			CSO	45	3	2	4
10390	31769	MWIL	06	26	1445	N16	E28	06	28.7	5	(BP)					
10390		HOLL	06	26	1730	N13	E26	06	28.7		B	CSO	70	7	6	3
10390		LEAR	06	27	0230	N13	E20	06	28.6		B	CSO	50	3	4	1
10390		SVTO	06	27	0602	N15	E19	06	28.7		A	HSX	50	1	2	3
10390		TACH	06	27	0611	N13	E18	06	28.6			CSO	57	2	3	4
10390		KAND	06	27	0830	N15	E19	06	28.8			HA		2	2	3
10390		HOLL	06	27	1408	N14	E16	06	28.8		A	HAX	80	5	4	3
10390	31769	MWIL	06	27	1445	N16	E15	06	28.7	5	(BP)					
10390		LEAR	06	28	0055	N15	E09	06	28.7		B	CSO	80	4	3	3
10390		SVTO	06	28	0513	N16	E06	06	28.7		A	HSX	60	1	2	3
10390		TACH	06	28	0612	N13	E04	06	28.6			CSI	82	4	4	4
10390		KAND	06	28	1150	N15	E03	06	28.7			HS		1	2	3
10390	31769	MWIL	06	28	1445	N16	E02	06	28.8	5	(BP)					
10390		HOLL	06	28	1531	N17	E02	06	28.8		B	CSO	70	6	3	4
10390		SVTO	06	29	0608	N17	W08	06	28.6		A	HSX	100	1	3	3
10390		KAND	06	29	0630	N16	W07	06	28.7			HS		1	2	4
10390	31769	MWIL	06	29	1445	N16	W12	06	28.7	5	(AP)					
10390		HOLL	06	29	1610	N16	W12	06	28.8		A	HSX	80	1	2	3
10390		LEAR	06	30	0022	N16	W18	06	28.6		A	HSX	80	1	2	4
10390		KAND	06	30	0838	N16	W22	06	28.7			HS		1	2	4
10390		SVTO	06	30	0900	N15	W22	06	28.7		A	HSX	80	2	3	3
10390		HOLL	06	30	1408	N21	W25	06	28.7		A	HSX	70	2	2	4
10390	31769	MWIL	06	30	1445	N16	W25	06	28.7	5	(AP)					
10390		LEAR	07	01	0050	N16	W31	06	28.8		A	HSX	70	2	2	3
10390		SVTO	07	01	0625	N15	W35	06	28.7		A	HSX	70	1	2	3
10390		KAND	07	01	0647	N16	W33	06	28.9			HS		1	2	4
10390		TACH	07	01	0728	N14	W37	06	28.6			CSO	44	2	6	5
10390		HOLL	07	01	1515	N12	W38	06	28.9		A	HSX	60	1	2	3
10390		LEAR	07	02	0045	N12	W42	06	29.0		A	HSX	30	1	2	3
10390		SVTO	07	02	0455	N14	W47	06	28.7		A	HSX	20	1	2	3

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10390		KAND	07	02	0730	N16	W47	06	28.8			HS		1	1	4
10390		TACH	07	02	0845	N14	W54	06	28.4			BXO	36	2	6	4
10390		HOLL	07	02	1339	N16	W52	06	28.7		A	HSX	50	1	2	3
10390		LEAR	07	03	0200	N16	W59	06	28.7		A	HSX	40	1	2	3
10390		SVTO	07	03	0615	N12	W61	06	28.8		A	HSX	40	1	1	3
10390		TACH	07	03	0707	N16	W61	06	28.8			HSX	43	1	1	3
10390		KAND	07	03	0830	N17	W61	06	28.8			HA		1	1	5
10390		HOLL	07	03	1510	N17	W65	06	28.8		A	HSX	20	1	1	3
10390		VORO	07	04	0009	N17	W70	06	28.8			HRX	17	1		3
10390		LEAR	07	04	0019	N17	W72	06	28.6		A	HSX	30	1	2	4
10390		KAND	07	04	0635	N16	W75	06	28.7			AX		1		5
10390A		TACH	06	28	0612	N14	E22	06	29.9			AR	2	2	1	4
10392		LEAR	06	24	0230	N06	E79	06	30.0		A	HAX	40	2	2	4
10392	31771	MWIL	06	24	1445	N07	E75	06	30.2	4	(AP)					
10392		HOLL	06	24	1510	N08	E75	06	30.2		A	HSX	20	1	1	2
10392		LEAR	06	25	0011	N06	E68	06	30.1		A	AXX	10	2	1	4
10392		SVTO	06	25	0500	N02	E68	06	30.3		A	HSX	20	1	2	3
10392		KAND	06	25	0850	N08	E65	06	30.2			AX		2	1	4
10392		HOLL	06	25	1407	N07	E62	06	30.2		A	HSX	20	1	1	3
10392	31771	MWIL	06	25	1430	N07	E61	06	30.2	4	(AP)					
10392		LEAR	06	26	0517	N06	E53	06	30.2		A	AXX	10	2	1	3
10392		VORO	06	26	0534	N07	E52	06	30.1			AXX	9	2		2
10392		SVTO	06	26	0548	N06	E54	06	30.3		A	HRX	10	1	1	3
10392		KAND	06	26	0650	N07	E53	06	30.2			AX		2	1	3
10392		TACH	06	26	0909	N07	E51	06	30.2			AXX	20	1	1	4
10392	31771	MWIL	06	26	1445	N07	E48	06	30.2	4	(AP)					
10392		HOLL	06	26	1730	N06	E46	06	30.2		A	HAX	20	1	1	3
10392		LEAR	06	27	0230	N05	E41	06	30.2		A	AXX	20	2	2	1
10392		SVTO	06	27	0602	N06	E39	06	30.2		A	AXX	10	1		3
10392		TACH	06	27	0611	N06	E39	06	30.2			AXX	13	1	1	4
10392		KAND	06	27	0830	N07	E39	06	30.3			AX		1		3
10392		HOLL	06	27	1408	N06	E36	06	30.3		A	HSX	30	1	1	3
10392	31771	MWIL	06	27	1445	N07	E35	06	30.2	4	(AP)					
10392		LEAR	06	28	0055	N06	E28	06	30.1		A	HSX	20	1	1	3
10392		SVTO	06	28	0513	N06	E27	06	30.2		A	HSX	10	1	1	3
10392		TACH	06	28	0612	N07	E26	06	30.2			AXX	11	1	1	4
10392		KAND	06	28	1150	N07	E24	06	30.3			HR		1	1	3
10392	31771	MWIL	06	28	1445	N07	E21	06	30.2	5	(AP)					
10392		HOLL	06	28	1531	N07	E21	06	30.2		A	HSX	10	1	1	4
10392		SVTO	06	29	0608	N07	E13	06	30.2		A	HRX		1		3
10392		KAND	06	29	0630	N07	E13	06	30.2			AX		1		4
10392		TACH	06	29	0808	N06	E12	06	30.2			AXX	5	1	1	4
10392	31771	MWIL	06	29	1445	N07	E08	06	30.2	4	(AP)					
10392		HOLL	06	29	1610	N06	E07	06	30.2		A	AXX		1	1	3
10392		LEAR	06	30	0022	N06	E03	06	30.2		A	AXX	10	3	2	4
10392		TACH	06	30	0747	N06	W02	06	30.2			AXX	3	1	1	4
10392		SVTO	06	30	0900	N07	W02	06	30.2		A	AXX		1		3
10392		HOLL	06	30	1408	N06	W03	06	30.4		A	HSX	20	1	1	4
10392	31771	MWIL	06	30	1445	N06	W05	06	30.2	4	(AP)					
10392		LEAR	07	01	0050	N06	W14	06	30.0		B	BXO	10	2	5	3
10392		HOLL	07	01	1515	N05	W16	06	30.4		A	AXX	10	1	1	3
10392		LEAR	07	02	0045	N02	W23	06	30.3		A	AXX	10	1	1	3
10392		HOLL	07	02	1339	N05	W31	06	30.2		A	AXX		1	1	3
10392		LEAR	07	03	0200	N04	W38	06	30.2		A	AXX	10	1	1	3
10393	31772	MWIL	06	24	1445	S16	E76	06	30.4	4	(B)					
10393		HOLL	06	24	1510	S15	E76	06	30.4		B	DAO	60	2	6	2
10393		LEAR	06	25	0011	S17	E69	06	30.2		B	DAO	110	4	5	4
10393		SVTO	06	25	0500	S22	E67	06	30.3		B	DSO	90	3	7	3
10393		TACH	06	25	0656	S16	E66	06	30.3			CSO	92	2	4	3
10393		KAND	06	25	0850	S16	E67	06	30.4			CAO		4	7	4
10393		HOLL	06	25	1407	S17	E64	06	30.4		B	DAO	50	5	8	3
10393	31772	MWIL	06	25	1430	S17	E62	06	30.3	4	(B)					
10393		LEAR	06	26	0517	S17	E53	06	30.2		B	CAO	50	6	8	3
10393		VORO	06	26	0534	S17	E52	06	30.2			CAO	48	2	7	2
10393		SVTO	06	26	0548	S18	E54	06	30.3		B	DSO	50	2	8	3
10393		KAND	06	26	0650	S17	E54	06	30.4			CSO		5	9	3

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10393		TACH	06	26	0909	S17	E50	06	30.2			CSO	40	2	5	4
10393	31772	MWIL	06	26	1445	S16	E47	06	30.2	5	(B)					
10393		HOLL	06	26	1730	S18	E46	06	30.2		B	CAO	40	6	8	3
10393		LEAR	06	27	0230	S17	E40	06	30.1		B	CAO	50	7	10	1
10393		SVTO	06	27	0602	S16	E37	06	30.0		B	CSO	30	2	5	3
10393		TACH	06	27	0611	S16	E35	06	29.9			AXX	16	1	1	4
10393		KAND	06	27	0830	S16	E35	06	30.0			HS		2	1	3
10393		HOLL	06	27	1408	S18	E32	06	30.0		B	CSO	20	3	2	3
10393	31772	MWIL	06	27	1445	S15	E33	06	30.1	5	(B)					
10393		LEAR	06	28	0055	S17	E24	06	29.9		A	HRX	30	9	3	3
10393		SVTO	06	28	0513	S15	E23	06	29.9		A	HSX	10	1	1	3
10393		KAND	06	28	1150	S15	E19	06	29.9			AX		2	1	3
10393	31772	MWIL	06	28	1445	S15	E19	06	30.0	4	(B)					
10393		HOLL	06	28	1531	S17	E18	06	30.0		B	CSO	10	5	3	4
10393		SVTO	06	29	0608	S13	E15	06	30.4		B	DSO	20	2	3	3
10393		KAND	06	29	0630	S14	E11	06	30.1			BXO		3	9	4
10393	31772	MWIL	06	29	1445	S16	E07	06	30.1	4	(B)					
10393		LEAR	06	30	0022	S13	E08	06	30.6		B	BXO	10	2	5	4
10393		SVTO	06	30	0900	S13	E06	06	30.8		A	AXX		1		3
10393		LEAR	07	01	0050	S12	W04	06	30.7		A	AXX	10	4	2	3
10393		SVTO	07	01	0625	S13	W07	06	30.7		B	DAO	30	3	3	3
10393		TACH	07	01	0728	S13	W08	06	30.7			AR	1	3	1	5
10393		HOLL	07	01	1515	S19	W13	06	30.6		B	BXO	10	3	2	3
10393		LEAR	07	02	0045	S17	W18	06	30.7		B	BXO	10	4	3	3

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

JUNE 2003

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	0705	0708	0740	3	5	1	2	1		5	0701	M1.0	10375
01	0746	0751	0804	1	3					3	0746	C4.6	
01	0901	0907	0919	2	5	1	1	1		3	0857	C5.0	
01	1247	1257	1325	3-	5	1	2	1		11	1239	M1.0	10375
01	1455	1504	1532	1	3		1			1	*		
01	1609	1617	1642	1	1		1				1558	B9.1	
01	1649	1651	1735	3-	5		2	1		7	1643	M1.4	10365
01	1721	1729	1744	1	1					1	No flare		
01	1849	1852	1918	1+	1					1	*		
01	1929	1945	2025	2+	3					2	1927	C1.7	
01	2046	2051	2059D	1-	1					1	No flare		
01	2100	2107	2143	2	3					2	2058	M1.0	
02	0830	0833	0859	3	5	1	1	1		5	0812	M3.9	10365
02	1216	1222	1234	2+	5	1	1	1		2	1210	C8.0	10375
02	1315	1324	1354	2+	5	1	1	1		4	1313	M1.0	10365
02	1537	1540	1608	3-	5	1	2	1		4	1534	C9.0	10365
02	1727	1736	1745	2	5		2	1		2	1722	M1.8	10375
03	1053	1100	1149	2-	3					2	1051	C2.9	10375
04	1513	1537	1620	2+	3					3	No flare		
04	1544	1623	1704	1	1		1				No flare		
05	0633	0646	0735	1	1		1				No flare		
05	1718	1731	1837	2+	1					1	1708	C1.7	10375
06	1250	1254	1310	1	3					2	1249	C1.5	
06	1311	1316	1341	2-	3					2	1309	C1.5	
06	1352	1400	1420	1+	5					3	1352	C2.8	10375
06	1420	1432	1507	2-	3					2	1420	C2.3	
06	1448	1454	1505	1-	1					1	1420	C2.3	
06	1538	1542	1559	1	1					1	1538	C1.6	
06	1611	1619	1639	1+	3					2	1611	C2.5	10375
06	1741	1746	1833	2	3					3	1738	C2.5	10378
07	0958	1010	1048	1	1		1				0939	C2.3	10375
07	1100	1110	1200	2+	1					1	1105	C1.8	10375
08	0456	0506	0531	1	3		1			2	0457	C5.7	10375
08	0607	0611	0635	1+	3					2	0606	C3.5	10375
08	0656	0700	0717	1	1					1	0652	C2.3	10375
08	0743	0746	0802	1	1					1	0741	C2.2	10375
08	0859	0907	1011	1	1		1				No flare		
08	1140	1151	1220	3	5	1	1	1		9	1137	C7.5	10380
08	1608	1615	1631	3	5	1	2	1		9	1605	M4.0	10380
09	0900	0908	0930	1+	1					1	0857	C3.3	10375
09	1123	1126	1159	3	5	1	2	1		9	1121	M4.7	10375
09	1439	1446	1508	1+	1					2	1433	C5.3	10375
09	1627	1633	1702	2-	1					2	1625	C5.9	10375
09	1929	1938	2010	2	1					1	1927	C5.0	10380
09	2056	2100	2119	1	3					4	2053	C7.1	10375
09	2112	2115	2135D	1	1					1	2108	C4.8	10375
09	2132	2138	2220	2-	3					4	2131	X1.7	10375
10	0835	0838	0905	2+	5	1	2	1		6	0834	M2.7	10375
10	1055	1105	1128	3-	5	1	2	1		8	1055	M5.1	10375
10	1157	1204	1232	2-	1					2	No flare		
10	1246	1251	1341	2+	5	1	1	1		9	1244	M2.2	10375
10	1408	1436	1459	2+	5		1	1		6	1408	M2.2	10375
10	1520	1539	1603	2	1					1	1527		10380
10	1629	1630	1703	2	5	1	1	1		7	1628	M3.9	10375
10	1647	1656	1732	1+	1		1				1708		10375
10	1810	1817	1903	2	5		1			5	1808	M5.6	10375
10	1848	1855	2005	2	3					3	No flare		
10	2355	2401	2452	2+	1					1	2319	X1.3	10375

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 2003

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
11	0446	0450	0530	2	1					1	0447	C8.1	10375
11	0545	0552	0640	2	3					2	No flare		
11	0829	0832	0859	2	5	1	1	1		4	0822	C8.3	10375
11	1032	1037	1041	2-	5	1	2	1		3	1028	M1.1	10375
11	1050	1120	1152	3-	5	1	1	1		3	1051	M1.4	10375
11	1312	1318	1340	2+	5	1	2	1		7	1309	M2.7	10375
11	1440	1456	1518	2-	5	1		1			1437	M3.7	10375
11	1517	1530	1600	2-	3					2	1517		10375
11	1619	1637	1707	2+	5	1	1	1		4	1621	M4.5	10375
11	1727	1744	1823	2	3					3	1727	M1.8	10380
11	1837	1841	1854	1-	1					1	1832		10375
11	1955	2002	2013	1-	1					1	2001	X1.6	10375
11	2002	2012	2130	3-	3					3	2001	X1.6	10375
11	2140	2153	2227	2-	3					3	2141	M2.9	10375
12	0105	0123	0231	3-	5					2	0104	M7.3	10375
12	0711	0713	0732	1	3					2	0710	C6.1	10375
12	0810	0813	0821	1-	3					4	0809	C7.2	10375
12	0826	0830	0859	2	5	1	2	1		4	0825	C8.4	10380
12	0855E	0900	0910	1-	1					1	0858		10375
12	1001	1006	1023	1	1					2	1000	C4.1	
12	1024	1027	1027U	2	5	1	2	1		5	1022	C8.1	10375
12	1138	1147	1159	2	5	1	1	1		7	1136	C7.1	
12	1401	1404	1435	3	5	1	2	1		12	1358	M1.0	10375
12	1706	1713	1754	2-	3					6	1706	M1.1	10375
12	2005	2013	2058	2	3					4	2005	C8.5	
12	2122	2127	2205	2	3					5	2122	M2.6	10375
12	2246	2252	2304	1	1					1	2244	C7.1	10375
13	0155	0205	0247	2+	5					3	0154	M3.1	
13	0433	0435	0515	2	1					1	0431	M1.7	10375
13	0631	0635	0730	3	5	1	1	1		3	0628	M1.8	10375
13	0631	0708	0805	1	1		1				0628	M1.8	10375
13	1438	1453	1554	3-	3					2	No flare		
13	1617	1624	1717	2+	3					3	1618	C4.4	
13	1732	1735	1839	2+	3					2	1730	C4.6	
13	2012	2030	2141	3-	3					4	2012	C8.7	
14	0529	0531	0717	2	5	1	2	1		2	0507	M1.5	
15	1221	1226	1307	2+	1					1	1222	C1.3	10375
15	1412	1438U	1534	1	1		1				1407	C3.3	
16	1157	1204	1230	3-	5	1	2	1		5	1152	M1.7	10386
16	1650	1659	1724	1	1		1				No flare		
17	2144	2153	2215	1+	1					2	2144	C5.2	10386
17	2237	2251	2335	2+	3					4	2227	M6.8	10386
18	0954	1021U	1039	2	1		1				*		
18	1726	1734U	1816	1	1		1				1711		10387
19	1529	1541U	1606	1	1		1				*		
20	0512	0526	0604	2	1		1				0453	C1.2	10386
21	1310	1313	1355	1+	5					4	1307	C2.5	10388
24	0406	0418	0454	1	1		1				0450	C1.5	10391
24	0500	0510	0531	1	1		1				0450	C1.5	10391
24	0646	0718U	0746	1	1		1				No flare		
24	0900	0910U	0933	1	1		1				0920	C1.3	10391
24	0923	0933	0955	1+	1						0920	C1.3	10391
24	1018	1028	1118	2	5	1	1	1		2	1017	C2.8	10391
24	1454	1528U	1555	1	1		1				No flare		
25	0701	0730	0812	2	5	1		1			No flare		
25	1527	1555	1707	2+	3					4	1515	C3.7	

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 2003

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
26	1107	1121	1216	2-	1		1			1	1104	C1.4	
26	1205	1207	1229	1-	1					1	1104	C1.4	
27	1632	1638	1649	1	1		1				No flare		
27	1651	1657	1705	1	1		1				No flare		
27	1713	1723U	1744	1	1		1				1729	C1.5	
28	0526	0542	0624	1	1		1				No flare		
28	0653	0656	0719	1	3					2	0651	C4.3	
28	1530	1557	1655	1	1		1				1524	C3.0	
29	1050	1108	1153	2+	5	1		1		2	1055	C3.9	
30	0735	0739	0824	2	5	1	2	1		3	0731	C5.2	10397

* = no flare patrol.

OBSERVATORIES REPORTING FOR JUNE 2003

Alberta, Canada	SES	Nerja, Spain	SES
Athens, Greece	SES	Panska Ves, Czech Republic	SES, SEA, SWF
Bedford, Massachusetts, USA	SES	Perth, Australia	SES
Bern, Switzerland	SES	Sofia, Bulgaria	SES
Brookline, Massachusetts, USA	SES	Sussex, United Kingdom	SES
Edenvale, Rep of S. Africa	SES	Torrington, Connecticut, USA	SES
Houston, Texas, USA	SES	Upice, Czech Republic	SEA
Isola del Gran Sasso, Italy	SES	Villiersdorp, South Africa	SES
Marlborough, Massachusetts, USA	SES		

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

JUNE 2003

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	0000	0700	CULG	0002.0	0003.0	III	G	1	30	180	
			CULG	0032.0	0201.0	III	N	1	30	180	
			PALE	0032.0	0159.0	III	N	1	25	64	
			CULG	0226.0	0345.0	III	N	1	30U	180	
			LEAR	0227.0	0232.0	III		1	25	180	
			PALE	0245.0	0245.0	III		1	25	83	
			PALE	0337.0	0339.0	III		1	25	135	
	0336	1848	POTS	0338.7	0339.1	III	G	2	40X	220	100-200MHz no data
			CULG	0339.0	0339.0	III	G	2	23	180	
			CULG	0343.0	0343.0	III	B	1	340	750	
			POTS	0343.3	0343.6	DCIM		2	300	400X	
			POTS	0415	0943	I	S,N	2	200U	370	
	0435	1815	BLEN								
			CULG	0454.0	0700.0D	III	N	1	30U	180	
			POTS	0531.6	0532.1	DCIM		2	250	400X	
			IZMI	0602.3	0603.6	III	G	1	45	90	
			IZMI	0616.2	0618.7	III	G	2	40	160	
			IZMI	0622.5	0624.0	III	GG	2	25X	250	
			POTS	0622.6	0627.3	III	G	2	40X	260	
			IZMI	0626.9	0628.1	III	GG,C	2	25X	160	
			IZMI	0651.2	0659.7	III	GG,FS	2	40	160	
			POTS	0651.2	0653.9	III	GG	1	40X	60	
			POTS	0700.8	0702.3	III	G,N	1	40X	55	
			IZMI	0705.2	0714.0	III	GG,FS	2	45	165	
			IZMI	0721.1	0722.6	III	G	1	45	95	
			IZMI	0731.0	0732.1	III	G	1	45	160	
			IZMI	0753.3	0757.0	III	GG	1	110U	150	
			IZMI	0811.9	0812.4	III	G	1	110	160	
			IZMI	0812.0	0818.7	I	N	1	130	250	
			IZMI	0835.0	0835.2	III	G	2	90U	270X	
			IZMI	0853.0	0856.9	I	N	1	80	95	
			IZMI	0854.1	0859.5	III	GG	1	45	175	
			POTS	0854.1	0854.3	III	B	1	40X	85U	
			POTS	0858.8	0906.3	III	GG,U	3	40X	400X	
	0418	1742	ONDR	0859.1	0903.2	DCIM	G	1	800X	2000X	
			IZMI	0900.1	0906.3	III	GG,FS	2	25X	270X	
			POTS	0924.5	0924.7	III	G	1	40X	60	
			IZMI	0926.0	0929.1	III	G	1	45	95	
			IZMI	0949.1	1016.0U	III	S	2	25X	270X	
			POTS	0949.2	1013.6	III	GG,RS,U	3	40X	400X	
			IZMI	0954.2	1000.0	III	GG	2	25X	279X	
			ONDR	0955.1	1011.2	DCIM	GG,W	1	800X	2000X	
			ONDR	0957.3	1005.3	DCIM	G	1	2000X	4500X	
			SVTO	1005.0	1024.0	III	N	1	25	83	
			POTS	1008 U	1033 U	I	S,N	2	40X	320	
			IZMI	1009.4	1012.1	III	G,C	2	25X	140	
			IZMI	1012.0U	1035.0U	I	S	2	45	90	
			POTS	1033 U	1153 U	I	S,N	1	200U	320	
			POTS	1100.6	1100.9	DCIM		1	300	400X	
			SGMR	1101.0	1109.0	III		1	30	60	
			SVTO	1101.0	1102.0	III		2	25	150	
			IZMI	1101.2	1102.6	III	GG,C	2	25X	180	
			POTS	1101.6	1102.6	III	G	3	40X	400X	
			SVTO	1108.0	1109.0	V		2	25	130	
			IZMI	1108.7	1109.1	III	G	2	25X	150	
			POTS	1108.8	1109.4	III	G	3	40X	230	
			IZMI	1109.1	1109.7	V		2	25X	40	
			POTS	1237 U	1848 U	I	S,N	1	200U	380	
			HOLL	1600.0	1601.0	III		1	25	85	
			POTS	1600.0	1601.0	III	G	2	60	240	
			SVTO	1600.0	1601.0	III		1	33	145	
			POTS	1734.8	1736.7	DCIM		1	230	400	
			HOLL	1837.0	1920.0	III	N	1	25	180	
			POTS	1837.6	1837.8	DCIM		2	250	400X	
			PALE	2050.0	0452.0	III	N	1	25	64	
			HOLL	2051.0	2051.0	III		1	25	88	
	2100	2400	CULG	2149.0	2149.0	III	B	1	25	180	
			CULG	2208.0	2212.0	III	G	2	23	180	
			HOLL	2208.0	2211.0	III		1	25	136	

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

JUNE 2003

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			SGMR	2210.0	2211.0	III		1	30	70	
02			CULG	0019.0	0026.0	II	FN	2	30	90	
	0000	0700	CULG	0019.0	0026.0	II	SH	3	60	180	ESS 700
			CULG	0020.0	0103.0	IV	FS	1	35U	1000	
			LEAR	0024.0	0033.0	II		2	25	180	ESS 0497
			CULG	0026.0	0038.0	III	G	1	40	130	
			LEAR	0033.0	0120.0	IV		1	25	180	
			HOLL	0036.0	0103.0	III	N	1	25	172	
	0336	1849	POTS	0440.9	0445.7	III	GG	2	40X	330	100-200MHz no data
			CULG	0441.0	0530.0	III	N	1	30U	110	
			SVTO	0441.0	0510.0	III	N	1	25	163	
			SVTO	0441.0	1026.0	III	N	1	25	163	
			LEAR	0443.0	0837.0	III	N	1	25	180	
			CULG	0524.0	0524.0	III	B	1	340	470	
	0435	1815	BLEN	0524.0	0524.6	III	GG,U	2	270	660	
			POTS	0524.1	0524.5	DCIM		2	270	400X	
			POTS	0609	0834.5U	I	S,N	1	200U	380	
			IZMI	0703.3	0705.2	III	GG	1	110	270X	
			POTS	0705.0	0705.2	DCIM		2	370	400X	
			IZMI	0745.5	0746.7	I	GG	2	130	170	
			BLEN	0827.3	0850.6	DCIM	C,S	3	100X	4000X	
			ONDR	0828.0	0846.3	DCIM	GG,SP	3	800X	2000X	
			SVTO	0829.0	1026.0	III	N	1	25	180	
			BLEN	0829.1	0840.6	II		3	100X	1000	
			IZMI	0829.6	0832.1	III	G	2	25X	270X	
			POTS	0829.6	0831.9	III	G	2	40X	85U	
			POTS	0834.5	0851 U	IV		2	40X	400X	
			IZMI	0835.0U	0940.0U	I	S,C	2	45	270X	
			LEAR	0837.0	0906.0	IV		1	45	180	
	0100	0951	HIRA	0837.0	0847.0	IV		1	60	270	
	0417	1743	ONDR	0840.5	0844.2	DCIM	G	2	2000X	4500X	
			HIRA	0841.0	0842.0	III	B	1	60	1000	
			IZMI	0841.0	0843.5	CONT		2	50	270X	
			POTS	0851 U	0903 U	I	S,N	2	40X	250	
			POTS	0859.6	0859.9	DCIM		2	240	400	
			HIRA	0902.5	0905.0	III	G	2	50	210	
			IZMI	0902.7	0905.1	III	GG	2	50	260	
			POTS	0902.8	0905	III	G	3	40X	340	
			POTS	0905	0930	III	GG	2	40X	85U	
			POTS	0928	0935 U	I	S,N	2	200U	280	
			HIRA	0931.5	0932.0	III	B	2	220	520	
			POTS	0931.7	0932.3	DCIM		3	240	400X	
			POTS	0935	1003 U	I	C	2	200U	400X	
			IZMI	0938.9	0941.0	III	G	2	80	260	
			IZMI	0939.0U	1001.0U	CONT		2	180	270X	
			ONDR	0940.0	0953.3	DCIM	GG	2	959	1573	
			POTS	0959.2	1000.4	DCIM		2	240	400X	
			POTS	1003 U	1010	I	S,N	1	200U	280	
			IZMI	1003.6	1004.1	III	G	2	25X	160	
			POTS	1003.6	1006.7	III	G	2	40X	85U	
			POTS	1011.0	1011.9	III	G	2	40X	85U	
			IZMI	1023.8	1032.0	III	GG	2	50	270X	
			POTS	1024.7	1031.8	III	GG	2	40X	300	
			BLEN	1025.9	1029.8	III	GG	2	100X	250	
			POTS	1038	1849 U	I	S,N	1	200U	350	
			POTS	1152.0	1154.9	DCIM		2	230	400X	
			POTS	1216.5	1216.8	III	B	1	50	85U	
			POTS	1525.8	1529.8	III	GG,N	2	200U	320	
			HOLL	1536.0	1543.0	III		1	25	105	
			SGMR	1536.0	1537.0	III		2	30	55	
			SVTO	1536.0	1537.0	V		2	25	83	
			POTS	1536.8	1537.3	III	G	2	40X	85U	
			HOLL	1704.0	2258.0	III	N	1	25	109	
	2100	2400	CULG	2100.0E	2237.0	I	S	1	60	180	
			CULG	2140.0	2141.0	III	G	1	25	200	
			PALE	2140.0	2141.0	III		1	25	180	
	1919	2400	HIRA	2140.5	2141.0	III	B	1	25X	210	
			CULG	2200.0	2200.0	III	B	1	45	180	

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02			CULG	2232.0	2232.0	III	G	1	20	150	
			LEAR	2343.0	2348.0	III		1	25	180	
			CULG	2344.0	2349.0	III	G	1	20	180	
			HIRA	2344.5	2345.0	III	B	1	100	220	
03			PALE	0100.0	0101.0	III		1	25	71	
	0000	0700	CULG	0101.0	0101.0	III	B	1	25	160	
			CULG	0213.0	0232.0	III	N	1	40	180	
	0336	1849	POTS	0415 U	1849 U	I	S,N	2	200U	350	100-200MHz no data
			CULG	0442.0	0447.0	III	G	1	50	180	
			CULG	0525.0	0700.0D	III	N	1	40	180	
			POTS	0532.2	0535.5	III	GG	2	200U	400X	
			LEAR	0552.0	0552.0	III		1	25	180	
			SVTO	0552.0	0552.0	III		1	25	58	
			IZMI	0552.1	0552.7	III	G	1	25X	95	
	0554	1200	IZMI	0554.0	0940.0U	I	S	1	110U	270X	
			LEAR	0610.0	0906.0	III	N	1	25	180	
			IZMI	0611.0	0611.4	III	G,FS	1	40	270	
			SVTO	0611.0	0816.0	III	N	1	29U	180U	
			IZMI	0619.0	0619.8	III	GG	1	45	190	
			IZMI	0624.3	0624.6	III	G	1	55	270X	
			IZMI	0632.3	0637.1	III	GG	1	40	220	
			IZMI	0644.1	0645.0	III	G,C	2	45	220	
			POTS	0648.4	0648.8	III	B	2	40X	230	
			IZMI	0651.8	0655.0	III	G,C	2	45	185	
			POTS	0658.8	0659.0	III	B	2	40X	75	
			IZMI	0718.4	0719.7	III	G	1	40	165	
			IZMI	0800.2	0800.3	III	G,FS	2	45	65	
			POTS	0805.5	0805.7	III	G	2	40X	250	
			IZMI	0816.2	0816.5	III	G,U	1	110	155	
			POTS	0846.2	0848.2	III	GG	3	40X	300	
			POTS	0848.9	0854.6	III	G,N	1	40X	80	
			SVTO	0857.0	0859.0	III		2	25	180	
			IZMI	0857.8	0900.7	III	GG,C	2	25X	270X	
	0000	0951	HIRA	0858.0	0859.0	III	G	3	30	200	
			IZMI	0903.9	0906.0	III	GG	1	25X	170	
			SVTO	0956.0	0957.0	III		1	120	152	
			IZMI	0956.8	0957.0	III	B	2	120	175	
			POTS	1029.3	1029.9	III	G	2	40X	380	
			IZMI	1039.0	1039.5	III	G	1	45	270X	
			SVTO	1039.0	1039.0	III		1	29	138	
			ONDR	1053.4	1055.3	DCIM	G,W	1	800X	2000X	
	0417	1743	ONDR	1053.4	1054.5	DCIM	G	1	2000X	4500X	
	0435	1815	BLEN	1053.7	1054.9	DCIM	C	2	400	4000X	
			ONDR	1112.5	1113.5	DCIM	G	2	800X	1377	
			IZMI	1114.6	1115.0	III	G	1	45	95	
			POTS	1125.9	1127.6	III	GG	2	40X	300	
			IZMI	1127.1	1128.3	III	G	1	60	270X	
			IZMI	1134.0	1136.9	III	GG	2	45	270X	
			POTS	1224.4	1224.7	III	B,U	2	55	85	
			POTS	1238.2	1239.0	III	G	2	45	80	
			HOLL	1310.0	1310.0	III		1	25	46	
			SGMR	1310.0	1310.0	III		1	30	45	
			SVTO	1310.0	1310.0	III		1	25	63	
			ONDR	1446.4	1451.3	DCIM	G	2	800X	1498	
			HOLL	1618.0	1623.0	III		1	25	180	
			SVTO	1618.0	1623.0	III		1	28	164	
			POTS	1620.1	1620.9	III	GG	2	200U	290	
			SVTO	1703.0	1703.0	III		1	41	149	
			HOLL	1751.0	1752.0	III		1	25	87	
			SGMR	1751.0	1752.0	III		2	30	65	
			HOLL	1955.0	1957.0	III		1	25	180	
			SGMR	1955.0	1957.0	III		3	30	80	
	1919	2400	HIRA	1955.5	1958.0	III	G	2	25X	290	
	2100	2400	CULG								
			PALE	2344.0	2348.0	III		1	25	146	
04	0000	0700	CULG	0011.0	0013.0	III	G	1	50U	180	
	0000	0629	HIRA	0044.0	0044.5	III	B	1	100	330	

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04			CULG	0045.0	0045.0	III	B	1	60	180	
			CULG	0151.0	0155.0	III	G	1	30	180	
			HIRA	0151.0	0154.5	III	B	1	30	180	
			LEAR	0151.0	0154.0	III		1	25	161	
			PALE	0151.0	0154.0	III		1	25	155	
			CULG	0217.0	0218.0	III	G	2	25	200	
			LEAR	0217.0	0218.0	III		1	25	180	
			PALE	0217.0	0218.0	III		1	25	180	
			HIRA	0217.5	0218.0	III	B	1	40	200	
			PALE	0259.0	0453.0	III	N	1	25	180	
			LEAR	0300.0	0545.0	III	N	1	25	180	
			CULG	0301.0	0301.0	III	B	1	23	180	
			HIRA	0304.0	0305.0	III	B	2	25X	200	
	0336	1848	POTS	0413 U	0555	I	S,N	2	200U	380	100-200MHz no data
	0416	1744	ONDR								
			CULG	0422.0	0422.0	III	B	1	40	180	
	0430	1815	BLEN								
			CULG	0449.0	0449.0	III	B	1	40U	180	
			CULG	0527.0	0527.0	III	B	1	40U	180	
			CULG	0541.0	0541.0	III	B	1	40U	180	
			LEAR	0545.0	0547.0	III		2	25	180	
			SVTO	0545.0	0546.0	III		3	25	180	
			HIRA	0545.5	0547.0	III	B	3	25X	220	
			POTS	0545.7	0546.6	III	GG	3	40X	280	
			CULG	0546.0	0546.0	III	G	3	35U	180	
			POTS	0546.0	0546.8	V	G	3	40X	70	
			POTS	0608.7	0609.0	III	G,RS	2	200U	380	
	0555	1200	IZMI	0608.7	0608.9	III	G	1	180	270X	
			POTS	0630	1019	I	S,N	1	210	350	
			IZMI	0700.8	0701.1	III	G	1	45	130	
			IZMI	0729.8	0731.4	III	GG,C	2	25X	230	
			POTS	0730.0	0731.1	III	G	2	40X	230	
			SVTO	0730.0	0731.0	III		1	25	82	
	0747	0952	HIRA								
			IZMI	0925.5	0925.8	III	B	1	25X	45	
			IZMI	0958.3	0959.1	III	GG,C	2	130	270X	
			POTS	0958.3	0959.1	III	G	2	200U	390	
			POTS	1116.4	1117.1	I	S	1	230	320	
			IZMI	1148.4	1150.2	III	GG,C	2	25X	165	
			POTS	1148.4	1150.5	III	GG	2	40X	320	
			POTS	1232	1848 U	I	S,N	1	200U	380	
			POTS	1238.0	1238.7	III	G	2	200U	350	
	1919	2400	HIRA								
	2100	2400	CULG	2239.0	2239.0	III	B	1	23	40	
05			LEAR	0002.0	0002.0	III		1	70	180	
	0000	0700	CULG	0003.0	0003.0	III	B	1	50U	180	
			LEAR	0139.0	0145.0	III		1	25	180	
			CULG	0140.0	0145.0	III	G	1	23	180	
			HOLL	0141.0	0144.0	III		1	25	152	
	0000	0953	HIRA	0141.0	0144.0	III	G	1	25X	200	
			CULG	0159.0	0200.0	III	G	1	40	160	
			CULG	0247.0	0248.0	III	G	2	30	180	
			LEAR	0247.0	0248.0	III		1	25	180	
			PALE	0247.0	0248.0	III		1	25	180	
			HIRA	0247.5	0248.0	III	B	1	25X	150	
			LEAR	0346.0	0350.0	III		1	25	180	
			CULG	0347.0	0347.0	III	B	1	30	130	
			CULG	0350.0	0351.0	III	G	2	25	180	
			HIRA	0350.0	0351.0	III	G	1	40	160	
			SVTO	0350.0	0350.0	III		1	25U	83U	
	0336	1849	POTS	0350.0	0350.7	III	G	2	40X	300U	100-200MHz no data
	0416	1745	ONDR								
	0430	1815	BLEN								
			POTS	0458 U	0544 U	I	S,N	1	200U	350	
			CULG	0503.0	0508.0	III	G	1	23	90	
			LEAR	0503.0	0508.0	III		1	25	98	
			SVTO	0503.0	0508.0	III		1	25	180	
			SVTO	0600.0	0602.0	III		1	25	75	

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05			LEAR	0602.0	0602.0	III		1	25	133	
	0600	1200	IZMI	0602.6	0602.8	III	G	2	45	140	
			CULG	0603.0	0603.0	III	B	1	50	150	
			SVTO	0656.0	0704.0	III		1	25	79	
			IZMI	0656.3	0656.6	III	B	2	25X	95	
			IZMI	0700.8	0701.3	III	G	1	45	85	
			POTS	0701	0725	I	S,N	1	200U	320	
			LEAR	0704.0	0704.0	III		1	25	108	
			IZMI	0704.2	0704.5	III	G	1	45	85	
			IZMI	0711.8	0711.9	III	B	1	190	215	
			LEAR	0714.0	0715.0	III		1	25	68	
			SVTO	0714.0	0715.0	III		1	25	62	
			IZMI	0714.3	0715.0	III	G	2	25X	80	
			IZMI	0826.9	0829.1	III	GG	2	25X	155	
			LEAR	0828.0	0829.0	III		1	25	136	
			SVTO	0828.0	0828.0	III		1	25	124	
			POTS	0828.3	0829.5	III	G	2	40X	330	
			LEAR	0852.0	0853.0	III		1	25	110	
			SVTO	0852.0	0852.0	III		1	25	53	
			IZMI	0852.2	0852.7	III	G	2	25X	125	
			POTS	0852.7	0853.1	III	G	2	40X	370	
			IZMI	0902.2	0902.4	III	G	1	45	75U	
			POTS	1007.4	1007.6	I	S	2	210	230	
			IZMI	1020.8	1020.9	III	B	2	45	90	
			POTS	1021.4	1024.1	III	G	2	40X	85U	
			IZMI	1023.4	1023.5	III	B	1	45	65	
			POTS	1156	1234	I	S,N	1	200U	400X	
			HOLL	1337.0	1544.0	III	N	1	25	180	
			HOLL	1406.0	1406.0	III		1	25	167	
			POTS	1406.0	1406.5	III	G	2	40X	85U	
			SGMR	1406.0	1407.0	III		2	30	80	
			SVTO	1406.0	1412.0	III		1	25	151	
			HOLL	1430.0	1431.0	III		1	25	153	
			SGMR	1430.0	1439.0	III		2	30	80	
			SVTO	1430.0	1439.0	III		2	25	180	
			POTS	1430.4	1430.7	III	B	3	40X	85U	
			HOLL	1436.0	1439.0	III		2	25	179	
			POTS	1436.5	1438.3	III	GG	3	40X	320	
			HOLL	1704.0	1705.0	III		1	25	180	
			PALE	1704.0	1704.0	III		1	74U	180U	
			SVTO	1704.0	1705.0	III		1	47U	180U	
			POTS	1704.6	1705.0	III	G	2	200U	390	
			HOLL	1747.0	1747.0	III		1	25	149	
			PALE	1747.0	1747.0	III		1	25	112	
			SGMR	1747.0	1747.0	III		1	30	60	
			PALE	1818.0	1818.0	III		1	25	84	
			SGMR	1818.0	1835.0	III	N	2	30	65	
			PALE	1835.0	1835.0	III		1	25	141	
			POTS	1835.3	1835.6	DCIM		2	200U	350	
			SGMR	1947.0	1947.0	III		1	30	60	
	1919	2400	HIRA	2002.0	2015.0	II		2	40	140	
			PALE	2004.0	2005.0	III		1	25	93	
	2100	2400	CULG	2150.0	2150.0	III	B	1	27	180	
			CULG	2216.0	2216.0	III	B	1	25	50	
			CULG	2255.0	2255.0	III	B	1	20	90	
			CULG	2301.0	2301.0	III	B	1	23	40	
			CULG	2316.0	2319.0	III	G	1	20	160	
			HIRA	2316.0	2316.5	III	B	1	40	110	
06			LEAR	0038.0	0039.0	III		1	25	114	
			PALE	0038.0	0039.0	III		1	25	118	
	0000	0700	CULG	0039.0	0039.0	III	B	1	40	140	
			CULG	0153.0	0202.0	III	G	1	27	170	
			LEAR	0154.0	0154.0	III		1	62	131	
			LEAR	0222.0	0223.0	III		1	68	162	
			CULG	0223.0	0223.0	III	B	1	40	180	
			CULG	0256.0	0256.0	III	B	1	40	100	
			LEAR	0256.0	0906.0	III	N	1	25	180	
			CULG	0309.0	0309.0	III	B	1	50	90	

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06	0336	1849	POTS	0411	1849 U	I	S,N,DC	2	200U	350	100-200MHz no data
			CULG	0429.0	0429.0	III	B	1	27	180	
			CULG	0438.0	0438.0	III	B	1	50	90	
			CULG	0443.0	0443.0	III	B	1	50	180	
	0557	1209	IZMI	0557.0E	1209.0D	I	N	2	55	270X	
			CULG	0620.0	0700.0D	III	N	1	50	180	
			IZMI	0627.0	0627.7	III	G,C	2	45	160	
			SVTO	0627.0	0627.0	III		1	25	83	
			IZMI	0638.1	0646.1	III	GG	2	45	150	
			IZMI	0651.4	0653.3	III	GG	1	45	145	
			IZMI	0657.0	0657.3	III	G	1	55	140	
			IZMI	0718.5	0718.7	III	G,C	2	115	175	
			IZMI	0731.3	0742.6	III	N	1	25X	150	
			IZMI	0743.8	0745.9	III	G,C	1	25X	150	
			SVTO	0750.0	1544.0	III	N	2	25	180	
			IZMI	0750.3	0751.0	III	G,C	1	25X	95	
			POTS	0750.3	0750.6	III	B	2	40X	85U	
			IZMI	0812.2	0814.0	III	G	1	45	95	
			IZMI	0835.6	0838.6	III	G	1	45	90	
			IZMI	0841.4	0842.8	III	G,C	2	25X	180	
			POTS	0841.5	0844.0	III	G	2	40X	85U	
	0000	0953	HIRA	0841.5	0842.0	III	B	1	25X	150	
			IZMI	0841.7	0841.9	V		2	25X	65	
			IZMI	0904.5	0908.8	III	G	1	45	65	
			POTS	0912.7	0916.7	III	G	2	40X	85U	
			IZMI	0912.8	0913.5	III	G	2	45	125	
			HIRA	0913.0	0916.0	III	G	1	40	150	
			IZMI	0915.3	0917.2	III	G,C	2	25X	165	
			IZMI	0921.0	0927.2	III	G	1	45	95	
			IZMI	0935.8	0936.6	III	G	1	45	175	
			POTS	0935.9	0936.7	III	G	1	40X	85U	
			IZMI	1004.3	1008.2	III	GG,C	2	25X	250	
			POTS	1004.3	1008.2	III	GG	2	40X	250	
			IZMI	1012.3	1027.3	III	N	1	45	140	
			POTS	1024.1	1024.6	III	G	2	40X	85U	
			IZMI	1024.2	1024.7	III	G	1	45	95	
			IZMI	1032.1	1032.2	III	B	2	55	70	
			IZMI	1046.2	1046.5	III	G	1	45	155	
			POTS	1046.4	1046.6	III	B	2	40X	85U	
			IZMI	1051.2	1051.2	III	B	1	50	65	
			IZMI	1102.4	1109.0	III	N	1	45	95	
			POTS	1103.5	1104.0	III	G	2	40X	75	
			IZMI	1112.4	1113.2	III	G,FS,C	2	25X	155	
			POTS	1112.4	1127.3	III	GG,N	2	40X	320	
			SGMR	1118.0	1126.0	III	N	2	30	60	
			IZMI	1118.2	1124.4	III	GG	2	25X	270X	
			IZMI	1126.6	1127.5	III	GG	2	25X	210	
			POTS	1143.8	1149.3	III	G,N	2	40X	85U	
			IZMI	1144.0	1144.6	III	GG,C	2	40	165	
			IZMI	1146.2	1152.5	III	GG	1	45	95	
			IZMI	1159.3	1200.8	III	G	1	45	85	
			SGMR	1337.0	1426.0	III	N	3	30	80	
			POTS	1337.2	1358.8	III	GG,N	3	40X	400X	
	0430	1815	BLEN	1352.0	1357.8	III	GG,C	3	100X	3400	
			ONDR	1352.1	1355.1	DCIM	G	2	800X	2000X	
			POTS	1352.6	1356.0	V	G,N	3	40X	70	
	0416	1746	ONDR	1354.2	1356.3	DCIM	G	2	2000X	4129	
			POTS	1425.3	1434.3	III	G,N	1	40X	85U	
			SGMR	1532.0	1544.0	III	N	2	30	60	
			POTS	1543.9	1544.2	III	B	1	40X	85U	
			HOLL	1736.0	1747.0	III		1	25	127	
			PALE	1740.0	1744.0	III		1	25	105	
			SGMR	1740.0	1747.0	III		1	30	60	
			SVTO	1741.0	1744.0	III		1	75U	153U	
			HOLL	1815.0	1821.0	III		1	25	83	
			PALE	1815.0	1821.0	III		1	25	72	
			HOLL	1915.0	1947.0	III	N	1	25	180	
			PALE	1915.0	0454.0	III	N	1	25	180	
			SGMR	1933.0	1947.0	III	N	2	30	80	

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06	1918	2400	HIRA	1933.5	1935.0	III	G	2	25X	110	
	2100	2400	CULG	2106.0	2107.0	III	G	1	23	180	
			CULG	2152.0	2152.0	III	B	1	50	180	
			CULG	2219.0	2219.0	III	B	1	40	180	
			CULG	2248.0	2249.0	III	G	3	30	190	
			HOLL	2248.0	2248.0	III		1	25	175	
			SGMR	2248.0	2248.0	III		1	30	80	
			HIRA	2248.5	2249.0	III	B	3	40	230	
			CULG	2307.0	2309.0	III	G	1	20	170	
			CULG	2316.0	2316.0	III	B	1	27	330	
			CULG	2329.0	2400.0D	III	N	1	23	180	
			HOLL	2332.0	2338.0	III		2	25	180	
			PALE	2332.0	2339.0	III		2	25	180	
			HIRA	2332.5	2338.0	III	G	3	25X	1200	
			CULG	2333.0	2339.0	III	G	3	18X	1300	
			SGMR	2335.0	2337.0	III		2	30	80	
			LEAR	2337.0	0354.0	CONT		1	55	180	
			LEAR	2337.0	2338.0	III		2	25	180	
			CULG	2341.0	2354.0	II	UE	1	35	90	
			LEAR	2341.0	2353.0	II		1	34	94	ESS 0383
			PALE	2345.0	2353.0	II		1	34	62	ESS 0386
07	0000	0700	CULG	0000.0E	0025.0	III	N	1	20	180	
			CULG	0002.0	0123.0	I	S,C	1	57	160	
			LEAR	0005.0	0906.0	III	N	1	25	180	
			CULG	0124.0	0124.0	III	B	3	18	450	
			HOLL	0124.0	0124.0	III		2	25	180	
			LEAR	0124.0	0124.0	III		2	25	180	
			PALE	0124.0	0124.0	III		2	25	180	
	0000	0954	HIRA	0124.0	0125.0	III	B	3	25X	460	
			CULG	0147.0	0220.0	III	N	1	20	180	
			LEAR	0218.0	0220.0	III		2	25	180	
			HIRA	0218.5	0221.0	III	G	2	25X	240	
			CULG	0220.0	0220.0	III	B	3	18	200	
			PALE	0220.0	0220.0	III		2	25	180	
			CULG	0307.0	0309.0	III	G	1	30	330	
			HIRA	0307.0	0309.0	III	G	1	25X	500	
			CULG	0324.0	0325.0	III	G	1	120	180	
			CULG	0347.0	0350.0	III	G	2	30	260	
			HIRA	0347.5	0350.0	III	G	2	25X	270	
	0336	1849	POTS	0347.5	0350.2	III	GG	2	40X	320	100-200MHz no data
			SVTO	0349.0	0349.0	III		1	25	180	
			POTS	0358	1849 U	I	S,N	2	200U	350	
	0415	0602	ONDR								
			SVTO	0519.0	0520.0	III		1	25	180	
			CULG	0520.0	0521.0	III	G	2	57U	330	
			POTS	0520.4	0522.4	III	GG	2	55	400X	
			HIRA	0520.5	0521.0	III	B	3	50	500	
			CULG	0529.0	0533.0	III	G	1	25	180	
			HIRA	0529.0	0532.0	III	G	1	25X	200	
			SVTO	0529.0	0532.0	III		1	25	147	
			POTS	0529.3	0531.7	III	GG	1	45X	230	
			CULG	0541.0	0541.0	III	B	1	57	180	
			HIRA	0541.0	0541.5	III	B	1	100	400	
			SVTO	0541.0	0541.0	III		1	113	180	
			POTS	0541.2	0546.5	III	GG,N	2	200U	400X	
			CULG	0546.0	0546.0	III	B	1	57	180	
	0600	1200	IZMI	0600.0E	1200.0D	I	S	1	130	270X	
			SVTO	0607.0	0610.0	III		1	25	180	
			IZMI	0607.2	0614.0	III	GG	2	110	270X	
			POTS	0607.2	0611.1	III	GG	2	40X	400X	
			IZMI	0607.9	0610.8	III	GG,C	2	25X	270X	
			CULG	0608.0	0610.0	III	G	2	30	500	
			HIRA	0608.0	0610.0	III	G	2	30	500	
			LEAR	0608.0	0610.0	III		2	25	180	
			IZMI	0609.4	0609.7	V		2	45	160	
			SVTO	0619.0	0726.0	III	N	1	25	180	
			CULG	0624.0	0648.0	III	N	1	40	180	
			IZMI	0624.4	0624.7	III	G,C	2	40	270X	

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07			POTS	0624.4	0624.7	III	G	2	40X	330	
			IZMI	0635.6	0637.1	III	G,C	2	40	250	
			POTS	0636.9	0637.2	III	B	2	40X	340	
			IZMI	0643.4	0646.4	III	G	1	45	155	
			IZMI	0647.3	0647.8	III	G	2	35	190	
			IZMI	0653.5	0700.3	III	G	1	45	170	
	0700	1815	BLEN								
			IZMI	0702.5	0703.2	III	GG	2	50	250	
		0	IZMI	0743.6	0750.7	III	N	2	45	95	
			HIRA	0759.0	0801.0	III	G	3	30	240	
			LEAR	0759.0	0801.0	III		2	25	180	
			SVTO	0759.0	0801.0	III		2	25	180	
			IZMI	0759.3	0803.2	III	GG,C	2	25X	270X	
			POTS	0759.3	0801.6	III	GG	3	40X	390	
			SVTO	0810.0	0821.0	III		1	25	180	
			SVTO	0810.0	0821.0	III	N	1	25	180	
			IZMI	0810.4	0820.0	III	GG	2	25X	200	
			POTS	0810.4	0818.8	III	GG	2	40X	85U	
			HIRA	0813.5	0814.5	III	G	1	30	130	
			IZMI	0840.4	0840.5	III	B	1	80	95	
			POTS	0854.3	0857.1	III	GG	2	40X	85U	
			IZMI	0854.5	0857.0	III	GG	2	25X	175	
			HIRA	0855.0	0857.0	III	G	1	25X	120	
			SVTO	0855.0	0856.0	III		2	25	138	
			IZMI	0901.1	0901.6	III	B	1	50	95	
			IZMI	0904.1	0908.3	III	GG,C	2	45	270X	
			IZMI	0927.2	0928.5	III	G C	1	45	160	
			POTS	0927.2	0928.5	III	G	1	40X	85U	
			IZMI	0944.2	0944.8	III	G	1	45	165	
			POTS	0944.2	0944.8	III	G	1	40X	85U	
			SVTO	0951.0	0958.0	III		2	25	180	
			IZMI	0951.7	0958.4	III	GG	2	25X	270X	
			POTS	0951.7	0958.3	III	G,N	3	40X	400X	
			IZMI	1013.3	1013.5	III	B	2	50	155	
			IZMI	1019.8	1019.9	III	B	1	50	85	
			SVTO	1027.0	1028.0	III		1	25	83	
			IZMI	1027.4	1028.0	III	G,C	2	25X	95	
			POTS	1027.4	1028.3	III	G	2	40X	85U	
			IZMI	1109.0	1109.4	III	G	1	55	160	
			IZMI	1152.9	1153.0	III	G	1	125	270	
			SVTO	1321.0	1324.0	III		2	25	180	
			SGMR	1322.0	1323.0	III		2	30	80	
			POTS	1322.1	1323.7	III	G	3	40X	230	
			SVTO	1347.0	1347.0	III		1	25U	180U	
			SVTO	1408.0	1648.0	III	N	1	25	180	
			PALE	1936.0	1945.0	III		1	25	180	
	1918	2400	HIRA	1936.5	1938.0	III	G	2	40	370	
			SGMR	1937.0	1945.0	III		2	30	80	
			HOLL	2040.0	2042.0	III		1	25	57	
			PALE	2040.0	2042.0	III		1	25	180	
			SGMR	2040.0	2042.0	III		2	30	55	
			HIRA	2040.5	2042.5	III	G	1	25X	210	
	2100	2400	CULG	2100.0E	2343.0	I	S	1	100	280	
			HIRA	2132.5	2134.5	III	G	2	80	300	
			CULG	2133.0	2135.0	III	G	1	70	290	
			CULG	2147.0	2147.0	III	B	1	20	65	
			CULG	2213.0	2213.0	III	B	1	20	90	
			CULG	2236.0	2238.0	III	G	1	260	390	
			PALE	2304.0	2312.0	III		1	25	60	
			CULG	2305.0	2313.0	III	GG	1	20	180	
08	0000	0700	CULG	0029.0	0029.0	III	B	1	57U	90	
			LEAR	0201.0	0201.0	III		1	64	180	
			CULG	0202.0	0202.0	III	B	1	57U	200	
			LEAR	0332.0	0341.0	III		1	25	180	
	0000	0955	HIRA	0332.0	0343.0	III	G	1	30	300	
			CULG	0333.0	0335.0	III	G	1	23	320	
			PALE	0333.0	0338.0	III		1	25	126	
	0336	1849	POTS	0336 E	1849 U	I	S,N	2	200U	370	100-200MHz no data

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08			CULG	0337.0	0340.0	III	G	1	30	180	
			CULG	0449.0	0501.0	III	G	1	57U	180	
	0600	1200	IZMI	0600.0E	1200.0D	I	S	1	50	270X	
			IZMI	0600.5	0600.6	III	B	1	45	90	
			IZMI	0607.8	0609.8	III	G	1	45	90	
			LEAR	0623.0	0624.0	III		1	25	180	
			SVTO	0623.0	0624.0	III		1	25	180	
			IZMI	0623.8	0624.6	III	GG,C	2	25X	270X	
			POTS	0623.8	0624.5	III	G	2	40X	400X	
			CULG	0624.0	0625.0	III	G	1	40	180	
			HIRA	0624.0	0624.5	III	B	1	50	210	
			CULG	0641.0	0641.0	III	B	1	40	180	
			IZMI	0641.4	0641.9	III	G	2	45	240	
			IZMI	0646.1	0646.2	III	B	2	60	260	
			IZMI	0652.9	0654.0	III	G	1	45	85	
			IZMI	0729.2	0732.1	III	GG	1	50	85	
			POTS	0808.9	0810.1	III	G	2	40X	340	
			IZMI	0809.0	0810.1	III	G,C,FS	1	45	270X	
			IZMI	0816.8	0817.3	III	GG,FS	2	45	200	
			IZMI	0941.2	0941.5	III	B	1	45	85	
			POTS	1029.7	1030.2	DCIM		2	330	400X	
			POTS	1038.7	1040.1	DCIM		1	340	400X	
			SVTO	1043.0	1046.0	III		2	25	180	
			IZMI	1043.7	1046.4	III	GG,C	2	25X	270X	
			POTS	1043.7	1046.6	III	GG	3	40X	400X	
			SVTO	1119.0	1506.0	III	N	1	25	180	
			IZMI	1122.8	1123.0	III	G	1	45	150	
			IZMI	1134.5	1135.4	III	G	1	50	250	
			POTS	1134.8	1147.8	III	G,N	2	40X	250	
			IZMI	1145.5	1148.4	III	GG	2	25X	95	
			POTS	1300.9	1301.3	III	B,U	2	60	240	
			HOLL	1309.0	1309.0	III		1	25	71	
			SGMR	1309.0	1309.0	III		1	30	60	
			POTS	1309.2	1310.2	III	G	2	40X	370	
			POTS	1311.0	1318.8	DCIM		2	220	400X	
			POTS	1315.8	1316.2	III	B	1	40X	80	
			HOLL	1629.0	1629.0	III		1	25	155	
			PALE	1629.0	1629.0	III		1	125	71	
			POTS	1629.0	1632.4	III	G	2	40X	310	
			SGMR	1629.0	1645.0	III	N	2	30	80	
			SVTO	1629.0	1629.0	III		1	25	150	
			HOLL	1644.0	1955.0	III	N	1	25	87	
			SVTO	1644.0	1754.0	III	N	1	25	142	
			SGMR	2040.0	2048.0	III		2	30	80	
	2000	2400	HIRA	2040.5	2048.5	III	G	2	25X	230	
	2100	2400	CULG	2115.0	2152.0	III	N	1	23	180	
			HOLL	2236.0	2350.0	III	N	1	25	180	
			CULG	2237.0	2242.0	III	G	2	20	180	
			HIRA	2237.0	2242.0	III	G	1	25X	200	
			PALE	2238.0	0455.0	III	N	1	25	180	
			CULG	2256.0	2256.0	III	B	1	25	180	
			CULG	2303.0	2400.0D	I	S	1	140	180	
			HIRA	2308.5	2309.5	III	G	1	30	200	
			CULG	2309.0	2310.0	III	G	3	20	200	
			CULG	2315.0	2316.0	III	G	1	25	130	
			CULG	2355.0	2358.0	III	G	1	27	180	
09	0000	0700	CULG	0000.0E	0056.0	I	S	1	140	180	
			CULG	0002.0	0007.0	III	G	1	23	160	
			LEAR	0002.0	0006.0	III		1	25	180	
	0000	0749	HIRA	0004.0	0004.5	III	B	1	60	200	
			CULG	0016.0	0016.0	III	B	1	40	150	
			CULG	0107.0	0107.0	III	B	1	45U	180	
			CULG	0132.0	0246.0	III	N	1	23	180	
			HIRA	0132.0	0139.0	III	G	1	25X	290	
			LEAR	0132.0	0140.0	III		1	25	180	
			LEAR	0148.0	0150.0	III		1	25	173	
			HIRA	0148.5	0151.0	III	G	1	40	210	
			LEAR	0206.0	0207.0	III		1	25	166	

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09			HIRA	0206.5	0207.0	III	B	1	25X	80	
			LEAR	0242.0	0245.0	III		1	25	180	
			HIRA	0244.5	0245.0	III	B	1	25X	130	
			CULG	0316.0	0424.0	III	N	2	20	350	
			HIRA	0316.0	0347.0	III	G	2	25X	300	
			LEAR	0316.0	0346.0	III	N	1	25	180	
	0336	0647	POTS	0337.8	0347.0	III	G,N	2	40X	380	100-200MHz no data
			SVTO	0344.0	0346.0	III		1	25	180	
			POTS	0350 U	1849 U	I	S,N,DC	1	200U	400X	
			HIRA	0407.0	0421.0	III	B	1	30	210	
			LEAR	0407.0	0423.0	III	N	1	25	180	
			SVTO	0407.0	0423.0	III	N	1	25	180	
			POTS	0407.1	0420.4	III	G,N	2	40X	370	
			POTS	0446	0448	DCIM		2	200U	400X	
			CULG	0508.0	0555.0	III	N	2	20	290	
			SVTO	0508.0	0907.0	III	N	2	25	180	
			HIRA	0508.5	0511.0	III	G	1	50	300	
			POTS	0509.0	0521.4	III	G,N	2	40X	370	
			POTS	0519.5	0519.9	DCIM		2	270	400X	
			HIRA	0528.0	0535.0	III	G	1	30	300	
			POTS	0528.5	0540.7	III	GG,N	2	40X	400X	
			CULG	0529.0	0529.0	III	B	3	27	250	
			CULG	0532.0	0532.0	III	B	3	18	90	
			CULG	0537.0	0700.0D	III	N	1	27	300	
			HIRA	0540.0	0544.5	III	G	1	90	310	
			IZMI	0554.7	0558.4	III	GG,C	2	30	95U	
			POTS	0555.7	0557.8	DCIM		1	270	400X	
	0430	1815	BLEN	0555.7	0557.7	III	GG,RS	2	100X	430	
			HIRA	0556.0	0558.0	III	G	1	80	240	
			POTS	0556.1	0557.9	III	G,U	2	40X	270	
	0606	1208	IZMI	0606.0E	1208.0D	I	S	1	120	270X	
			POTS	0615.2	0615.5	III	G	1	200U	320	
			POTS	0616.2	0616.9	DCIM		2	260	400X	
			IZMI	0622.6	0624.6	III	G	2	45	175	
			LEAR	0629.0	0632.0	III		1	64	180	
			IZMI	0629.6	0632.1	III	GG,FS	2	45	270X	
			POTS	0631.9	0632.1	III	B	1	50	270	
			IZMI	0648.1	0654.3	III	GG	2	45	250	
			LEAR	0653.0	0741.0	III	N	1	25	180	
			IZMI	0655.8	0704.1	III	GG,C,FS	2	25X	270X	
			BLEN	0700.3	0709.8	III	GG	2	100X	1200	
			HIRA	0700.5	0703.5	III	G	1	100	210	
			IZMI	0706.0	0706.6	III	GG,C	2	55	270X	
		0	IZMI	0717.2	0719.6	III	G,C	2	40	95	
			IZMI	0726.9	0727.0	III	B	2	40	95	
			IZMI	0730.8	0734.7	III	GG	2	25X	270X	
	0734	1833	POTS	0734.0	0741.4	III	G,N	2	40X	400X	
			IZMI	0735.9	0741.2	III	GG	2	45	250	
			IZMI	0830.8	0831.6	III	G,C	2	45	255	
			POTS	0831.0	0831.5	III	B	2	40X	330	
			IZMI	0842.0	0846.3	III	GG	2	45	270X	
			POTS	0842.0	0908.3	III	GG,N	3	40X	400X	
			LEAR	0846.0	0906.0	III	N	1	25	180	
			IZMI	0846.8	0850.2	III	GG,C	3	25X	270X	
			LEAR	0848.0	0849.0	V		2	25	180	
			SVTO	0848.0	0853.0	III		2	25	180	
			POTS	0848.5	0853.8	V	G,N	3	40X	85	
			IZMI	0852.9	0854.4	III	GG,C	2	25X	270X	
			IZMI	0901.2	0902.2	III	GG,C	2	25X	270X	
			IZMI	0906.5	0907.6	III	G	1	25X	165	
			POTS	0926.3	0926.8	III	G	2	40X	240	
			IZMI	0926.4	0930.2	III	GG	2	45	165	
	0410	1748	ONDR	0950.4	0953.4	DCIM	GG	3	800X	1466	
			SVTO	0953.0	0954.0	III		1	25	83	
			POTS	0953.2	1027.5	III	GG,N	3	40X	310	
			IZMI	0953.3	0954.5	III	GG	2	25X	270X	
			IZMI	0958.7	1002.1	III	GG	2	80	270X	
			BLEN	1000.2	1002.0	III	G,U	2	150	350	
			IZMI	1008.8	1012.8	III	GG	2	40	190	

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09			SVTO	1012.0	1754.0	III	N	2	25	180	
			IZMI	1019.0	1021.5	III	GG,C	1	25X	265	
			ONDR	1019.0	1020.3	DCIM	G	2	800X	1695	
			IZMI	1022.9	1026.3	III	GG,C	2	25X	270X	
			SGMR	1023.0	1024.0	III		1	30	55	
			ONDR	1046.1	1047.4	DCIM	GG	3	1339	2000X	
			POTS	1046.4	1047.2	III	G	2	40X	400X	
			IZMI	1046.6	1047.6	III	G	2	25X	250	
			IZMI	1107.2	1114.0	III	N	1	45	270X	
			IZMI	1116.6	1117.6	III	G	1	45	90	
			IZMI	1121.0	1128.8	III	GG,C,FS	3	25X	270X	
			POTS	1121.1	1148.5	III	GG	3	40X	400X	
			SGMR	1124.0	1136.0	III	N	3	30	80	
			SVTO	1124.0	1129.0	V		3	25	180	
			ONDR	1124.1	1126.5	DCIM	G	2	2000X	4500X	
			ONDR	1124.1	1139.4	DCIM	GG	3	800X	2000X	
			BLEN	1124.2	1128.8	III	GG,C	3	100X	4000X	
			POTS	1124.4	1128.0	V	G	3	40X	85	
			IZMI	1131.7	1138.0	III	GG,C	2	25X	220	
			IZMI	1142.2	1144.4	CONT		1	45	95	
			SVTO	1144.0	1148.0	II		1	40	58	ESS 0789
			IZMI	1145.0U	1146.5	II		2	40	65	
			SGMR	1145.0	1147.0	II		3	42	55	ESS 0750
			IZMI	1153.5	1153.7	III	G	2	50	240	
			IZMI	1203.8	1204.0	III	G	2	50	160	
			POTS	1216.4	1249.8	III	GG,N	2	40X	85U	
			SVTO	1251.0	1754.0	CONT		1	25	180	
			HOLL	1301.0	0149.0	III	N	2	25	180	
			POTS	1301.0	1312.2	III	G,N	3	40X	250	
			SGMR	1301.0	2345.0	III	N	3	30	80	
			POTS	1326.3	1338.2	III	GG,N	2	40X	270	
			POTS	1353.9	1357.7	III	G	2	40X	400X	
			POTS	1413.9	1418.7	III	GG	2	40X	400X	
			BLEN	1436.7	1443.4	III	GG,RS	2	100X	2440	
			POTS	1437.0	1450.7	III	GG	3	40X	400X	
			BLEN	1445.2	1450.3	III	GG,RS	2	100X	600	
			POTS	1512.6	1513.3	III	G	2	45	85U	
			POTS	1530.6	1541.4	III	G,N	2	40X	370	
			POTS	1558.9	1605.7	III	GG,RS	2	40X	400X	
			ONDR	1627.0	1628.5	DCIM	GG	3	800X	2000X	
			BLEN	1627.7	1628.7	III	GG,RS	3	100X	2100	
			POTS	1627.7	1651.4	III	GG,N	2	40X	400X	
			ONDR	1628.2	1628.4	DCIM	G	1	2000X	4500X	
			BLEN	1635.0	1642.8	III	GG,RS	3	100X	1700	
			PALE	1640.0	1651.0	III		2	25	180	
			BLEN	1645.3	1651.1	III	GG	2	100X	800	
			ONDR	1703.5	1707.0	DCIM	GG	2	800X	2000X	
			BLEN	1703.7	1714.2	III	GG,C	3	250	4000X	
			POTS	1713.5	1715.3	DCIM		2	250	400X	
			PALE	1734.0	1735.0	III		1	25	54	
			PALE	1810.0	0455.0	III	N	1	25	92	
			POTS	1824	1849 U	DCIM		2	270	400X	
			PALE	1900.0	1903.0	III		2	25	180	
			PALE	2016.0	2017.0	III		2	25	180	
			PALE	2109.0	2112.0	III		2	25	180	
	2100	2400	CULG	2110.0	2112.0	III	G	3	20	550	
			CULG	2117.0	2118.0	III	G	3	18	170	
			CULG	2136.0	2139.0	III	G	1	350	1000	
			CULG	2138.0	2152.0	II	FN	3	30	180	
			CULG	2138.0	2152.0	II	SH	3	60	360	ESS 550
			HOLL	2138.0	2152.0	II		2	43	180	ESS 1134
			PALE	2139.0	2152.0	II		1	25	180	ESS 0502
			CULG	2140.0	2147.0	CONT		1	400	800	
			SGMR	2142.0	2148.0	II		3	44	80	ESS 0480
			CULG	2208.0	2358.0	III	N	1	23	230	
			CULG	2209.0	2311.0	IV		1	200	700	
			CULG	2231.0	2231.0	III	B	2	27	180	
			CULG	2248.0	2248.0	III	B	2	18	57	
			HOLL	2307.0	0100.0	CONT		1	84	180	

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09			CULG	2317.0	2317.0	III	B	3	18	90	
			CULG	2334.0	2338.0	III	G	3	18	80	
			LEAR	2339.0	0414.0	CONT		1	50	180	
			LEAR	2339.0	0712.0	III	N	1	25	180	
			CULG	2346.0	2347.0	III	G	3	20	170	
			CULG	2354.0	2354.0	III	B	2	40	180	
			CULG	2359.0	2400.0D	IV		1	300	500	
10	0000	0700	CULG	0000.0E	0014.0	IV		1	260	660	
			CULG	0017.0	0238.0	III	N	1	18	180	
			CULG	0024.0	0024.0	III	B	2	35U	800	
			CULG	0029.0	0029.0	III	B	1	300	550	
			CULG	0040.0	0042.0	III	G	1	290	500	
			CULG	0125.0	0126.0	III	G	2	18	180	
	0047	0330	HIRA	0125.0	0128.5	III	G	1	25X	220	
			CULG	0126.0	0127.0	III	G	1	360	550	
			HIRA	0148.5	0151.0	III	G	1	40	220	
			HIRA	0225.0	0226.0	III	G	1	40	200	
			HIRA	0232.0	0232.5	III	B	1	25X	260	
			HIRA	0234.5	0236.0	III	G	2	30	200	
			CULG	0235.0	0235.0	III	G	2	20	230	
			CULG	0355.0	0356.0	III	G	1	40	130	
			SVTO	0355.0	0409.0	III	N	1	25	180	
			CULG	0402.0	0409.0	III	G	2	30	180	
	0336	1849	POTS	0402.4	0409.4	III	G	1	40X	85U	100-200MHz no data
			POTS	0420.0	0421.2	DCIM		2	200	400X	
			POTS	0422	0923	I	S,N	1	200U	380	
	0430	1810	BLEN	0448.2	0450.2	III	GG,C	3	100X	2000	
			CULG	0449.0	0450.0	III	G	3	20	800	
			LEAR	0449.0	0450.0	III		2	25	180	
			SVTO	0449.0	0450.0	III		2	25	180	
			POTS	0449.1	0450.0	III	G	3	40X	400X	
			POTS	0449.5	0450.3	V	B	3	40X	80	
			POTS	0551.7	0552.7	DCIM		3	200U	400X	
			CULG	0552.0	0552.0	III	B	1	120	360	
	0500	0956	HIRA	0552.0	0552.5	III	B	1	210	400	
	0552	1203	IZMI	0552.3	0552.6	III	G,C	2	120	270X	
			IZMI	0602.2	0603.5	III	G	1	50	155	
			POTS	0607.6	0612.8	III	G,N	2	40X	280	
			CULG	0608.0	0613.0	III	G	1	25	180	
			SVTO	0608.0	0612.0	III		1	25	158	
			IZMI	0608.1	0614.1	III	G,G	2	40	270X	
			HIRA	0609.0	0613.0	III	G	1	40	210	
			IZMI	0627.0U	1116.0	III	N	1	45	95	
			SVTO	0648.0	0648.0	III		1	25	141	
			IZMI	0648.1	0649.2	III	G	1	25X	160	
			POTS	0648.6	0648.8	III	B	1	40X	250	
			CULG	0649.0	0649.0	III	B	1	40	150	
			LEAR	0750.0	0752.0	III		1	44	135	
			IZMI	0751.9	0752.2	III	G,HARM	2	45	155	
			IZMI	0800.0	0804.4	III	GG,C,F,S	2	25X	270X	
			LEAR	0800.0	0803.0	III		1	25	180	
			SVTO	0800.0	0803.0	III		2	25	180	
	0414	1748	ONDR	0800.3	0805.3	DCIM		1	800X	1948	
			HIRA	0800.5	0802.5	III	B	2	30	500	
			POTS	0800.8	0835 U	III	GG,N	3	40X	400X	
			LEAR	0813.0	0817.0	III		2	25	180	
			IZMI	0813.8	0822.3	III	GG,C	2	25X	270X	
			HIRA	0814.0	0817.0	III	G	2	25X	500	
			SVTO	0814.0	0817.0	III		2	25	180	
			SVTO	0818.0	1755.0	CONT		1	25	170	
			IZMI	0830.7	0839.5	III	G,C,F,S	3	25X	270X	
			SVTO	0831.0	0840.0	III		2	25	180	
			LEAR	0833.0	0838.0	III		2	25	180	
			BLEN	0833.7	0839.6	III	GG,C,S	3	100X	4000X	
			POTS	0835	0841.4	IV	FS	3	40X	400X	
			HIRA	0835.0	0838.0	III	G	3	25X	400	
			ONDR	0835.2	0837.3	DCIM	G	2	2000X	4500X	
			ONDR	0835.2	0838.3	DCIM	GG,SP	2	800X	2000X	

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10			IZMI	0837.5	0840.4	III	UNCUF,FS	2	25X	55	
			IZMI	0838.0U	0845.0U	CONT		1	45	95	
			IZMI	0845.0U	1115.0U	I	N	2	80	260	
			IZMI	0921.7	0921.9	III	G	1	185	270X	
			POTS	0946.7	0947.0	III	B	1	40X	85	
			POTS	1002.8	1010.1	III	G,N	1	40X	65	
			POTS	1004	1849 U	I	S,N	2	220	400X	
			BLEN	1004.2	1021.7	DCIM	P	3	100X	2000	
			SVTO	1014.0	1017.0	III		2	25	180	
			POTS	1014.4	1115	III	GG,N	3	40X	400X	
			IZMI	1014.5	1017.3	III	GG,C	2	25X	270X	
			ONDR	1014.5	1017.2	DCIM	GG,SP	2	800X	1958	
			SGMR	1015.0	1111.0	III	N	2	30	70	
			ONDR	1015.2	1016.5	DCIM	G,W	1	2000X	4500X	
			POTS	1015.8	1016.9	V	G	3	40X	80	
			SVTO	1036.0	1037.0	III		2	25	180	
			IZMI	1036.2	1037.7	III	GG,C	2	25X	270X	
			IZMI	1042.8	1043.8	III	G	2	35	140	
			BLEN	1044.8	1049.7	II		2	380	560	
			BLEN	1055.9	1116.3	DCIM	P,C	3	140	1400	
			ONDR	1056.2	1059.0	DCIM	G	2	800X	2000X	
			ONDR	1057.0	1059.2	DCIM	G	1	2000X	4500X	
			SVTO	1057.0	1113.0	III	N	3	25	180	
			IZMI	1057.2	1057.8	III	G,C	2	25X	215	
			SGMR	1105.0	1109.0	V		3	30	80	
			IZMI	1105.3	1114.0	III	GG,C,F,S	2	25X	270X	
			ONDR	1106.0	1114.0	DCIM	G	1	2000X	4500X	
			ONDR	1106.1	1114.1	DCIM	GG	2	800X	2000X	
			IZMI	1115.0	1203.0D	I	S,DS	2	45U	270X	
			POTS	1116	1228 U	III	GG,N	2	40X	85U	
			IZMI	1116.0	1203.0D	III	S	1	45	95	
			IZMI	1144.2	1144.9	III	G	1	45	155	
			IZMI	1149.5	1149.7	III	B	1	25X	95	
			HOLL	1223.0	0100.0	CONT		1	29	148	
			POTS	1228 U	1259	III	GG,N	2	40X	330	
			POTS	1317.5	1320.5	UNCLF		2	65	85	
			POTS	1335	1350	III	G,N	2	40X	230	
			HOLL	1343.0	1345.0	III		1	25	168	
			HOLL	1407.0	1439.0	III	N	2	25	170	
			SVTO	1407.0	1413.0	III		3	25	180	
			POTS	1407.2	1413.8	III	G,N	3	40X	300	
			BLEN	1407.6	1408.6	DCIM	P	3	360	900	
			POTS	1427.8	1439.4	III	GG,N	2	40X	370	
			SVTO	1428.0	1651.0	III	N	2	25	180	
			BLEN	1521.3	1527.8	DCIM	P	3	100X	1600	
			POTS	1521.3	1529.4	III	GG,N	3	40X	400X	
			ONDR	1522.5	1538.1	DCIM	GG	2	800X	2000X	
			SVTO	1523.0	1524.0	III		3	25	180	
			ONDR	1523.1	1524.2	DCIM	G	1	2000X	4500X	
			ONDR	1618.0	1631.3	DCIM	GG,SP	2	800X	2000X	
			BLEN	1618.3	1631.5	DCIM	P	3	100X	4000X	
			SVTO	1620.0	1622.0	III		2	25	180	
			ONDR	1620.5	1622.4	DCIM	G	2	2000X	4500X	
			POTS	1620.6	1631.0	III	GG,N	3	40X	400X	
			ONDR	1629.0	1632.5	DCIM	GG	2	2557	4500X	
			PALE	1629.0	1632.0	III		2	25	180	
			SVTO	1629.0	1632.0	III		3	25	180	
	1917	2400	HIRA	2000.5	2003.0	III	G	1	25X	200	
			HIRA	2009.5	2011.0	III	G	2	25X	210	
			HIRA	2027.5	2029.0	III	G	1	25X	110	
			PALE	2118.0	2120.0	III		3	25	180	
	2100	2400	CULG	2118.0	2120.0	III	G	3	20	400	
			HIRA	2118.5	2120.0	III	B	3	25X	380	
			CULG	2156.0	2156.0	III	B	1	25	140	
			CULG	2204.0	2204.0	III	B	1	23	180	
			HOLL	2234.0	2235.0	III		1	25	180	
			HIRA	2234.5	2235.5	III	B	2	25X	210	
			CULG	2235.0	2235.0	III	G	3	18	280	
			CULG	2254.0	2254.0	III	B	1	27	90	

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11			HOLL	0019.0	0020.0	III		1	25	118	
			LEAR	0019.0	0020.0	III		1	25	180	
	0000	0956	HIRA	0019.5	0020.0	III	B	1	25X	80	
	0000	0700	CULG	0020.0	0020.0	III	B	1	20	110	
			LEAR	0151.0	0353.0	CONT		1	88	180	
			CULG	0251.0	0251.0	III	B	1	23	90	
	0600	1200	IZMI	0635.0U	0730.0U	I	N	1	210	270X	
			LEAR	0649.0	0650.0	III		1	25	147	
			SVTO	0649.0	0649.0	III		1	25	81	
			HIRA	0649.5	0650.0	III	B	1	40	100	
			IZMI	0649.5	0652.0	III	G	2	25X	175	
			CULG	0650.0	0650.0	III	B	1	23	180	
			IZMI	0657.5	0657.8	III	G	1	180	270X	
			IZMI	0703.5	0703.6	III	B	1	45	95	
			IZMI	0714.1	0716.6	III	G	1	45	95	
			LEAR	0743.0	0752.0	III		1	25	180	
			IZMI	0743.2	0744.7	III	G	2	45	250	
			SVTO	0751.0	0752.0	III		2	25	180	
			HIRA	0751.5	0752.0	III	B	2	40	170	
			IZMI	0751.6	0752.3	III	G,C	2	25X	185	
			IZMI	0829.0	0831.6	III	GG	1	45	180	
			LEAR	0829.0	0829.0	III		1	85	180	
			LEAR	0855.0	0858.0	III		1	25	180	
			HIRA	0855.5	0859.0	III	G	2	25X	230	
			IZMI	0855.7	0856.4	III	GG,C	2	25X	270X	
			SVTO	0856.0	0906.0	III	N	2	25	180	
			IZMI	0856.1	0856.8	V		2	25X	70	
			IZMI	0857.3	0858.3	III	GG,C	2	25X	170	
			IZMI	0857.9	0858.9	V		2	25X	60	
			IZMI	0905.9	0906.5	III	G,C	2	45	265	
			HIRA	0906.0	0906.5	III	B	1	50	210	
			HIRA	0936.0	0936.5	III	B	1	80	230	
			IZMI	0936.0	0936.2	III	G	2	40	260	
			SVTO	0936.0	0941.0	III		1	35	180	
			HIRA	0940.0	0941.5	III	G	1	80	230	
			IZMI	0940.2	0941.7	III	GG	2	40	270X	
	0414	1149	ONDR	0955.3	0956.4	DCIM	GG	2	800X	2000X	
	0430	1810	BLEN	0955.5	0956.8	III	GG,U	2	230	1600	
			SVTO	1051.0	1059.0	III		1	25	53	
			IZMI	1051.1	1053.4	III	GG	1	25X	170	
			IZMI	1057.4	1104.3	III	GG	1	25X	160	
			IZMI	1113.2	1118.0	III	GG	1	45	95	
			IZMI	1133.7	1139.2	III	G	1	25X	190	
			SVTO	1136.0	1137.0	III		1	25	50	
			SVTO	1220.0	1220.0	III		1	25	52	
			HOLL	1311.0	1311.0	III		1	38	180	
			SGMR	1311.0	1312.0	III		2	30	80	
			SVTO	1311.0	1312.0	III		2	25	180	
			SVTO	1326.0	1326.0	III		1	25	51	
			SVTO	1344.0	1755.0	III	N	2	25	180	
			HOLL	1353.0	1354.0	III		1	25	140	
			SGMR	1353.0	1629.0	III	N	3	30	80	
			ONDR	1358.5	1412.5	DCIM	G	2	800X	1620	
			ONDR	1451.1	1451.3	DCIM	GG	2	800X	2000X	
			BLEN	1516.6	1628.6	III	GG,C	2	100X	4000X	
			ONDR	1626.5	1631.0	CONT		1	800X	2000X	
			ONDR	1626.5	1631.0	CONT		2	2000X	4500X	
			SGMR	1727.0	1728.0	III		3	30	80	
			BLEN	1727.2	1753.9	DCIM	P,S	3	280	1000	
			ONDR	1732.5	1749.4	DCIM	G	2	800X	2000X	
			SGMR	1836.0	1837.0	III		3	30	80	
			PALE	1909.0	0316.0	III	N	1	25	180	
			PALE	2004.0	2008.0	III		2	25	180	
			SGMR	2004.0	2008.0	III		3	30	80	
	1917	2400	HIRA	2004.5	2009.0	III	G	3	25X	400	
			HIRA	2010.0	2023.0	II		1	50	170	
			HIRA	2010.0	2023.0	II		1	80	310	
			SGMR	2017.0	2020.0	II		2	34	42	ESS 0490
			PALE	2018.0	2023.0	II		1	25	46	ESS 0513

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11			SGMR	2032.0	2035.0	III		2	30	55	
	2100	2400	CULG	2100.0E	2400.0D	III	S,C	1	23	180	
			SGMR	2122.0	2216.0	III	N	3	30	80	
			HIRA	2122.5	2124.0	III	G	1	25X	320	
			CULG	2123.0	2123.0	III	G	2	23	290	
			PALE	2132.0	2136.0	III		2	25	180	
			CULG	2133.0	2136.0	III	G	3	20	350	
			HIRA	2133.0	2135.5	III	G	2	25X	400	
			CULG	2149.0	2149.0	III	B	2	20	70	
			HIRA	2211.5	2216.0	III	G	2	25X	500	
			CULG	2212.0	2216.0	III	G	3	20	500	
			HOLL	2338.0	2340.0	III		1	25	150	
			HIRA	2338.5	2340.5	III	G	1	30	320	
			CULG	2339.0	2340.0	III	G	2	23	180	
			LEAR	2341.0	0500.0	CONT		1	52	180	
12	0000	0700	CULG	0000.0E	0700.0D	III	S,C	1	20	180	
			HOLL	0109.0	0111.0	III		1	25	90	
			LEAR	0109.0	0649.0	III	N	2	25	180	
			HOLL	0122.0	0151.0	III	N	1	25	180	
			CULG	0253.0	0254.0	III	G	2	35	180	
	0000	0957	HIRA	0253.0	0254.0	III	G	1	30	200	
			SVTO	0503.0	0613.0	III	N	2	25	180	
			HIRA	0535.5	0536.5	III	B	1	30	200	
			CULG	0536.0	0537.0	III	G	2	20	180	
	0600	1200	IZMI	0600.0E	1200.0D	I	S	1	110	270X	
			IZMI	0603.1	0609.6	III	GG	1	110	170	
			IZMI	0606.8	0607.3	III	G	2	220	270X	
			IZMI	0622.2	0623.9	III	GG	1	140	270X	
			CULG	0628.0	0631.0	III	G	1	260	670	
			CULG	0649.0	0651.0	III	G	1	130	530	
			IZMI	0649.2	0651.7	III	GG	2	130	270X	
	0430	1810	BLEN	0649.2	0654.6	III	GG	2	140	600	
			BLEN	0700.2	0714.0	III	GG	2	140	1200	
			IZMI	0713.5	0713.6	III	B	1	45	85	
	0414	1749	ONDR	0804.3	0813.3	DCIM	G	2	800X	2000X	
			BLEN	0804.5	0930.0	III	GG,RS	1	230	1400	
			ONDR	0827.4	0829.2	DCIM	G,W	1	2850	4500X	
			ONDR	0856.4	0857.5	DCIM	G	2	800X	1939	
			SVTO	0900.0	1045.0	III	N	1	25	80	
			IZMI	0900.8	0901.5	III	G	1	145	210	
			ONDR	1022.2	1055.3	DCIM	GG	2	800X	1934	
			BLEN	1023.8	1028.4	III	GG	3	210	1900	
			IZMI	1034.0	1034.5	III	G	1	50	85	
			IZMI	1121.2	1121.4	III	B	1	45	90	
			ONDR	1141.1	1147.1	DCIM	GG	1	800X	1498	
			BLEN	1141.9	1148.5	III	GG	3	230	1800	
			SGMR	1204.0	1204.0	III		3	30	80	
			SVTO	1204.0	1204.0	III		2	25	180	
			BLEN	1255.3	1259.2	III	GG	2	230	900	
			BLEN	1400.1	1408.8	III	GG,H	3	250	1450	
			ONDR	1400.1	1400.5	DCIM	G	2	800X	1442	
			HOLL	1403.0	1404.0	III		1	25	140	
			SGMR	1403.0	1404.0	III		2	30	80	
			SVTO	1403.0	1404.0	III		2	25	148	
			HOLL	1435.0	1436.0	III		2	25	84	
			SVTO	1435.0	1436.0	V		2	25	142	
			SVTO	1458.0	1502.0	III		1	25	63	
			SVTO	1518.0	1519.0	III		1	25	158	
	1917	2400	HIRA								
	2100	2400	CULG	2100.0E	2303.0	I	S	1	100	160	
			CULG	2124.0	2126.0	III	G	1	400	1300	
			CULG	2213.0	2213.0	III	B	1	23	160	
			CULG	2233.0	2235.0	III	G	1	650	1300	
			CULG	2247.0	2248.0	III	G	1	550	850	
			CULG	2249.0	2251.0	III	G	1	30	160	
			HOLL	2249.0	2250.0	III		1	25	85	
			PALE	2249.0	2250.0	III		1	25	63	

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13			LEAR	0006.0	0010.0	III		2	25	180	
			PALE	0006.0	0009.0	III		1	25	155	
			HOLL	0007.0	0009.0	III		1	25	180	
			LEAR	0007.0	0405.0	CONT		1	110	180	
	0000	0700	CULG	0007.0	0009.0	III	G	2	18	210	
	0000	0957	HIRA	0007.0	0008.5	III	G	1	30	280	
			LEAR	0037.0	0906.0	III	N	1	25	180	
	0414	1750	ONDR								
	0430	1810	BLEN	0433.3	0450.2	III	GG,RS	3	420	4000X	
			CULG	0434.0	0435.0	III	G	1	550	1400	
			CULG	0510.0	0510.0	III	B	1	27	45	
			CULG	0536.0	0536.0	III	B	1	27	90	
			SVTO	0536.0	0536.0	III		1	41	80	
	0609	1203	IZMI	0625.0U	0655.0	I	N	1	45	270	
			CULG	0633.0	0700.0D	III	N	1	27	170	
			IZMI	0633.6	0638.6	III	G	1	55	150	
			IZMI	0634.0U	0825.0	III	N	2	45	95	
			SVTO	0638.0	0921.0	III	N	2	25	180	
			IZMI	0655.0	0850.0U	I	S	2	45U	270X	
			IZMI	0706.5	0709.7	III	GG,C	2	25X	155	
			HIRA	0708.0	0709.0	III	B	1	30	100	
			IZMI	0714.5	0715.2	III	G,C	2	30	270X	
			HIRA	0719.5	0721.0	III	G	3	40	300	
			IZMI	0719.6	0721.2	III	GG	2	30	270X	
			IZMI	0719.8	0720.9	V	G	2	40	160	
			IZMI	0814.1	0815.3	III	G	2	25X	180	
			HIRA	0814.5	0815.5	III	G	1	40	130	
			SVTO	0819.0	0906.0	CONT		1	25	180	
			IZMI	0825.0	0854.0U	III	S	2	25X	95U	
			IZMI	0830.7	0834.9	I	GG,DC	2	50	90	
			IZMI	0837.3	0840.8	III	G	2	25X	95	
			IZMI	0850.0	1203.0D	I	N	1	140	270X	
			IZMI	0854.0	0918.0	III	N	1	45	95	
			HIRA	0905.0	0905.5	III	B	1	50	120	
			IZMI	0905.0	0905.1	III	G	2	45	120	
			IZMI	0921.1	0921.4	III	G	1	40	95	
			SVTO	1055.0	1055.0	III		1	25	58	
			IZMI	1055.4	1055.4	III	G	1	25X	95	
			SVTO	1230.0	1250.0	III	N	1	25	56	
			BLEN	1233.5	1233.7	III		2	300	800	
			SVTO	1517.0	1517.0	III		1	36	143	
			HOLL	2106.0	2108.0	V		1	25	180	
	1917	2400	HIRA	2106.5	2108.0	III	G	2	80	200	
	2100	2400	CULG	2107.0	2107.0	III	G	1	57	180	
14	0000	0700	CULG	0008.0	0008.0	III	B	1	150	300	
			CULG	0021.0	0023.0	III	G	3	18X	200	
			HOLL	0021.0	0024.0	III		2	25	180	
			LEAR	0021.0	0024.0	III		2	25	180	
			PALE	0021.0	0025.0	V		2	25	180	
	0000	0958	HIRA	0021.0	0024.0	III	G	3	25X	200	
			CULG	0022.0	0024.0	V		3	20	35	
			CULG	0242.0	0245.0	III	G	1	40	270	
			HIRA	0243.0	0257.0	III	G	1	25X	620	
			LEAR	0249.0	0256.0	III		1	25	180	
			CULG	0250.0	0253.0	III	G	2	18	800	
			CULG	0256.0	0257.0	III	G	1	23	180	
	0414	1750	ONDR								
			CULG	0415.0	0418.0	III	G	1	27	180	
			SVTO	0515.0	0521.0	III		1	25	82	
			CULG	0519.0	0519.0	III	B	1	25	220	
	0430	1815	BLEN	0533.9	0551.1	DCIM	C	2	1200	4000X	
	0600	1200	IZMI	0942.7	0942.8	III	B	1	110	150	
			IZMI	1015.0U	1200.0D	I	N	1	130	270X	
			SVTO	1050.0	1056.0	III		1	25	52	
			SVTO	1208.0	1208.0	III		1	48	180	
			SVTO	1401.0	1406.0	III		1	29	180	
			SVTO	1531.0	1532.0	III		1	34	81	
			SVTO	1657.0	1659.0	III		1	38	154	

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14			SGMR	1658.0	1658.0	III		1	30	55	
	2100	2400	CULG	2127.0	2127.0	III	G	1	25	150	
			CULG	2134.0	2134.0	III	B	1	23	180	
			CULG	2203.0	2203.0	III	B	1	27	180	
			CULG	2238.0	2305.0	III	N	1	20	90	
			HOLL	2303.0	2303.0	III		1	25	109	
			CULG	2324.0	2324.0	III	G	1	23	130	
			HOLL	2324.0	2324.0	III		1	25	114	
			LEAR	2324.0	2324.0	III		1	25	129	
	1917	2400	HIRA	2324.0	2324.5	III	B	1	40	70	
15			LEAR	0004.0	0004.0	III		1	90	162	
	0000	0700	CULG	0004.0	0004.0	III	B	1	100	180	
			CULG	0438.0	0439.0	III	G	1	75	180	
	0000	0959	HIRA	0438.5	0439.0	III	B	1	80	190	
			SVTO	0456.0	0459.0	III		1	25	146	
			CULG	0457.0	0459.0	III	G	1	50U	180	
			HIRA	0457.0	0459.5	III	G	1	25X	280	
	0555	1215	IZMI	1049.3	1049.4D	III	B	1	25X	65	
			IZMI	1055.0	1055.1	III	G	1	50	90	
			SVTO	1252.0	1252.0	III		1	25	53	
			HOLL	1406.0	1409.0	III		1	25	130	
			SGMR	1406.0	1410.0	III		2	30	80	
			SVTO	1406.0	1411.0	III		2	25	180	
	0430	1815	BLEN	1408.3	1411.5	III	GG,U	2	100X	2000	
	0414	1751	ONDR	1409.1	1416.4	DCIM	G	1	800X	2000X	
			BLEN	1416.4	1421.7	DCIM	C	2	200	1500	
			HOLL	1440.0	1505.0	III	N	1	25	90	
			SGMR	1440.0	1505.0	III	N	1	30	65	
			SVTO	1440.0	1505.0	III	N	1	25	82	
			ONDR	1455.2	1456.1	DCIM	G	2	800X	1203	
			BLEN	1455.3	1456.4	III	GG	2	750	1150	
			HOLL	1603.0	1603.0	III		1	25	90	
			SVTO	1603.0	1603.0	III		1	39	125	
	2100	2400	CULG	2115.0	2121.0	III	G	1	30	80	
			CULG	2341.0	2347.0	III	G	3	18	300	
			PALE	2341.0	2346.0	III		2	25	180	
	1917	2400	HIRA	2341.0	2347.0	III	G	3	25X	310	
			SGMR	2342.0	2346.0	III		1	30	40	
			CULG	2343.0	2348.0	CONT		1	200	1800	
			LEAR	2344.0	2346.0	III		2	25	180	
			HIRA	2345.0	0009.0	IV		2	25X	140	
			LEAR	2346.0	0005.0	II		2	25	180	ESS 0871
			LEAR	2346.0	0008.0	IV		1	25	180	
			PALE	2346.0	0006.0	II		2	25	180	ESS 0501
			CULG	2347.0	2400.0D	III	GG	3	20	180	
16	0000	0458	HIRA								
	0000	0700	CULG	0000.0E	0007.0	III	GG	3	20	120	
			CULG	0012.0	0014.0	III	G	1	20	90	
			LEAR	0012.0	0012.0	III		1	25	84	
			PALE	0012.0	0012.0	III		1	25	54	
	0430	1815	BLEN								
	0605	1200	IZMI	0643.4	0643.5	III	G	2	70	130	
			IZMI	0819.3	0819.6	III	B	1	65	90	
	0841	0959	HIRA								
	0414	1751	ONDR	1155.2	1159.5	DCIM	G,W	1	875	2000X	
	1917	2400	HIRA	2245.5	2246.0	III	B	2	40	130	
	2110	2400	CULG	2246.0	2246.0	III	B	3	30	180	
			HOLL	2350.0	0006.0	II		1	25	68	ESS 0281
17	0000	0700	CULG								
	0000	0959	HIRA								
	0414	1752	ONDR								
	0430	1815	BLEN								
	0555	1205	IZMI	0604.5	0604.7	III	B,U	2	155	270	
	2110	2400	CULG	2240.0	2350.0	IV		1	120	1700	
			CULG	2242.0	2242.0	III	B	1	20	57U	
	1917	2400	HIRA	2243.0	2336.0	IV		2	60	2000	

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17			HIRA	2243.5	2244.0	III	B	1	25X	80	
			CULG	2244.0	2244.0	III	B	3	18	180	
			CULG	2245.0	2259.0	III	GG	2	20	800	
			CULG	2248.0	2258.0	II	SH	2	35	180	FLA ESS 1000
			PALE	2248.0	2300.0	II		2	25	180	ESS 0749
			CULG	2250.0	2257.0	II	FN	2	20	50	
			HIRA	2253.0	2255.5	III	G	2	40	800	
			HOLL	2254.0	2258.0	II		1	38	61	ESS 1145
			SGMR	2255.0	2256.0	II		3	45	55	ESS 1000
			CULG	2259.0	2308.0	III	G	1	30	100	
18	0000	0700	CULG								
	0000	0959	HIRA								
	0414	1752	ONDR								
	0430	1815	BLEN								
	0600	1200	IZMI								
			HOLL	1716.0	1717.0	III		1	25	92	
			HOLL	2141.0	2142.0	III		1	25	89	
			PALE	2141.0	2142.0	III		1	25	134	
			SGMR	2141.0	2142.0	III		1	30	50	
	1917	2400	HIRA	2141.0	2142.5	III	G	1	25X	200	
	2110	2400	CULG	2141.0	2142.0	III	G	1	25	180	
			CULG	2216.0	2216.0	III	B	2	23	70	
			HOLL	2228.0	2229.0	III		1	25	90	
			PALE	2228.0	2236.0	III		1	25	123	
			HIRA	2228.5	2229.5	III	G	1	25X	170	
			CULG	2229.0	2240.0	III	G	2	18	180	
19			LEAR	0025.0	0028.0	III		2	25	180	
	0000	0700	CULG	0025.0	0028.0	III	G	2	18	250	
	0000	0959	HIRA	0025.0	0028.0	III	G	1	25X	270	
			HOLL	0026.0	0027.0	III		1	25	173	
			LEAR	0311.0	0312.0	III		1	25	180	
			HIRA	0311.5	0312.0	III	B	1	25X	130	
			CULG	0312.0	0312.0	III	B	1	30	150	
			PALE	0312.0	0312.0	III		1	25	64	
	0414	1753	ONDR								
			CULG	0416.0	0417.0	III	G	1	23	100	
			HIRA	0416.5	0417.0	III	B	1	60	100	
	0430	1815	BLEN								
			CULG	0523.0	0525.0	III	G	1	20	50	
	0600	1200	IZMI	0748.0	0748.0	III	G	1	80	165	
			LEAR	0812.0	0814.0	III		1	25	180	
			IZMI	0812.4	0814.6	III	G	2	25X	250	
			HIRA	0812.5	0813.5	III	G	1	60	220	
			IZMI	0852.1	0852.4	III	G,C	1	55	85	
			IZMI	0919.1	0920.1	III	G	1	45	90	
			IZMI	1112.9	1113.3	III	G	1	25	85	
			HOLL	1812.0	1812.0	III		1	25	80	
			PALE	1812.0	1812.0	III		1	25	60	
			SGMR	1812.0	1812.0	III		1	30	80	
			PALE	1836.0	1848.0	III		1	25	136	
			HOLL	1922.0	1923.0	III		1	25	84	
			SGMR	1922.0	1923.0	III		2	30	80	
	1918	2400	HIRA	1922.0	1923.0	III	G	2	25X	50	
	2110	2400	CULG								
20			LEAR	0250.0	0557.0	III	N	1	76	180	
	0414	1753	ONDR								
	0550	1200	IZMI	0550.0E	1200.0D	I	N	1	170	270X	
			IZMI	0618.0	0620.4	III	G,C	1	25X	175	
	0000	0700	CULG	0618.0	0621.0	III	G	1	30	180	
			IZMI	0620.2	0620.7	III	GG	2	80	270X	
			IZMI	0637.3	0638.1	III	G,C	1	45	95	
			LEAR	0653.0	0656.0	III		1	25	180	
	0000	1000	HIRA	0653.5	0656.0	III	G	1	30	240	
			IZMI	0653.8	0656.8	III	GG,FS	2	25X	270X	
	0430	1815	BLEN	0653.8	0656.1	III	GG,S	2	100X	700	
			CULG	0654.0	0657.0	III	G	1	23	250	

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20			IZMI	0742.7	0745.5	III	G	1	25X	95	
			LEAR	0836.0	0843.0	III		1	25	180	
			IZMI	0836.4	0838.9	III	GG	1	25X	270X	
			BLEN	0836.9	0851.5	III	GG,RS	2	100X	900	
			HIRA	0843.5	0844.0	III	B	1	40	200	
			IZMI	0843.5	0843.6	III	G	2	25X	235	
			IZMI	0932.3	1022.0U	III	N	1	45	95	
			IZMI	0945.9	0952.3	III	GG	2	45	95	
			IZMI	1019.5	1021.8	III	G,U	2	50	95	
			IZMI	1028.1	1028.3	III	B	2	50	90	
			IZMI	1156.5	1156.6	III	G	2	110	160	
			HOLL	1805.0	1805.0	III		1	25	64	
			PALE	1805.0	1805.0	III		1	25	60	
			SGMR	1805.0	1805.0	III		2	30	60	
			HOLL	2225.0	2225.0	III		1	25	84	
	1918	2400	HIRA	2225.0	2225.5	III	B	1	25X	150	
	2110	2400	CULG	2225.0	2226.0	III	G	1	20	180	
			HOLL	2313.0	2313.0	III		1	25	179	
			HIRA	2313.5	2314.0	III	B	2	25X	160	
			CULG	2314.0	2314.0	III	B	3	18	230	
21			HOLL	0012.0	0014.0	III		2	25	180	
			LEAR	0012.0	0015.0	III		2	25	180	
	0000	0700	CULG	0012.0	0015.0	III	G	3	18	900	
	0000	1000	HIRA	0012.0	0015.0	III	G	2	25X	320	
			CULG	0023.0	0028.0	III	G	1	23	650	
			LEAR	0023.0	0026.0	III		1	25	146	
			LEAR	0116.0	0908.0	III	N	1	25	107	
			CULG	0130.0	0551.0	III	N	1	23	180	
			LEAR	0143.0	0151.0	III		1	25	112	
			HOLL	0145.0	0146.0	III		1	25	84	
			CULG	0146.0	0146.0	III	B	3	18X	180	
			HIRA	0146.0	0146.5	III	B	2	25X	50	
			HIRA	0235.0	0236.0	III	G	1	110	300	
			LEAR	0303.0	0307.0	III		2	25	180	
			HIRA	0303.5	0308.0	III	G	2	25X	210	
			CULG	0304.0	0304.0	III	B	3	18	150	
			CULG	0307.0	0308.0	III	G	2	30	140	
	0600	1200	IZMI	0600.0E	1200.0D	I	S	1	110	270X	
			ONDR	0646.5	0647.4	DCIM	G	1	800X	2000X	
	0414	1753	ONDR	0647.0	0647.2	DCIM	G,W	1	2000X	4500X	
	0430	1815	BLEN	0647.0	0647.9	DCIM	S	3	180	4000X	
			IZMI	0749.7	0749.8	III	G,RS	3	50	65	
			IZMI	0755.4	0756.6	III	G	1	45	90	
			ONDR	0834.3	0835.2	DCIM	G	1	964	2000X	
			IZMI	1056.8	1059.9	III	GG	2	60	270X	
			IZMI	1114.5	1114.8	III	G	1	55	190	
			IZMI	1123.7	1123.9	III	G,C	2	110	160	
			BLEN	1307.8	1313.5	DCIM	P	3	100X	4000X	
			ONDR	1308.4	1313.2	DCIM	G	2	2000X	4500X	
			HOLL	1422.0	1449.0	III		1	25	100	
			SGMR	1434.0	1436.0	III		2	30	55	
			HOLL	1724.0	1727.0	III		1	25	175	
			SGMR	1726.0	1727.0	III		2	30	70	
	1918	2400	HIRA								
	2110	2400	CULG	2125.0	2126.0	III	G	1	50	180	
			CULG	2214.0	2214.0	III	G	1	27	150	
22	0000	1000	HIRA	0208.5	0209.0	III	B	1	25X	160	
	0000	0700	CULG	0209.0	0210.0	III	G	2	18	180	
			CULG	0214.0	0214.0	III	B	1	35	180	
			CULG	0227.0	0228.0	III	G	1	20	180	
			CULG	0412.0	0414.0	III	G	1	100	300	
			HIRA	0412.0	0414.5	III	G	1	130	400	
	0430	1815	BLEN	0534.8	0544.4	III	GG,S	3	100X	1800	
	0415	1753	ONDR	0538.1	0543.5	DCIM	G,SP	2	800X	2000X	
	0600	1200	IZMI	0600.0E	1200.0D	I	N	1	110	270X	
			IZMI	0649.0	0649.1	III	G	2	180	270X	
			SVTO	0811.0	1759.0	CONT		1	25	75	

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22			BLEN	0901.5	0907.2	III	GG,S	3	230	1800	
			IZMI	0901.5	0901.5	III	B	2	245	270X	
			IZMI	0933.9	0934.2	III	G	2	230	270X	
			BLEN	0934.0	0951.6	III	GG,S	3	230	4000X	
			IZMI	0937.3	0938.1	III	GG	2	80	270X	
			ONDR	0937.5	0951.3	DCIM	G	1	800X	2000X	
			IZMI	0947.2	0949.7	III	GG,C	2	65	270X	
			SVTO	0948.0	1017.0	III	N	1	25	180	
			IZMI	1002.6	1002.9	III	B	2	25X	240	
			BLEN	1006.3	1011.2	III	GG,RS	2	100X	600	
			IZMI	1011.1	1011.2	III	G,C	2	115	240	
			BLEN	1017.4	1025.9	III	GG,RS	2	100X	600	
			IZMI	1017.5	1022.7	III	GG	2	110	270X	
			SVTO	1707.0	1708.0	III		1	25	180	
			SGMR	1708.0	1708.0	III		2	30	50	
	2110	2400	CULG	2146.0	2147.0	III	G	1	50	200	
	1918	2400	HIRA	2146.5	2147.0	III	B	1	80	150	
			CULG	2209.0	2305.0	III	N	1	18	50	
			HIRA	2337.0	2337.5	III	B	1	25X	60	
			HOLL	2337.0	2337.0	III		1	25	47	
23	0000	0700	CULG								
	0000	1000	HIRA								
	0415	1753	ONDR								
	0430	1815	BLEN								
	0608	1200	IZMI	0608.0E	1045.0U	I	N	1	110	270X	
			IZMI	1045.0U	1200.0D	I	S	2	45U	270X	
	1918	2400	HIRA	2039.5	2041.0	III	G	1	25X	300	
			HIRA	2256.0	2256.5	III	B	1	25X	50	
			HOLL	2256.0	2256.0	III		1	25	72	
			PALE	2256.0	2256.0	III		1	25	62	
	2110	2400	CULG	2256.0	2257.0	III	G	1	20	180	
			LEAR	2347.0	0000.0	CONT		1	86	180	
24	0000	1000	HIRA								
	0000	0700	CULG	0141.0	0700.0D	I	S	1	60	160	
	0552	1205	IZMI	0552.0E	1020.0U	I	S	2	55	270X	
			SVTO	0900.0	0901.0	III		1	25	135	
			IZMI	0900.2	0901.9	III	G	2	25X	150	
	0415	1753	ONDR	0917.5	0918.2	DCIM	G	2	1072	1569	
			IZMI	1020.3	1020.8	III	G	1	120	170	
			IZMI	1055.2	1055.4	III	B	1	25X	60	
	0430	1815	BLEN	1524.1	1531.5	III	GG	1	100X	500	
			HOLL	1528.0	1528.0	III		1	25	76	
			SGMR	1528.0	1530.0	III		1	30	55	
			SVTO	1528.0	1531.0	III		1	25	146	
			LEAR	2347.0	0521.0	CONT		1	75	180	
			LEAR	2347.0	0838.0	CONT		1	70	180	
	1919	2400	HIRA	2348.0	2348.5	III	B	1	25X	220	
	2110	2400	CULG	2348.0	2348.0	III	B	1	50U	180	
25	0000	0700	CULG								
	0000	1000	HIRA								
	0415	1753	ONDR								
	0430	1815	BLEN								
	0600	1200	IZMI	0636.2	0636.5	III	B	1	25X	65	
			IZMI	0923.0U	1200.0D	I	S	1	120	270X	
			IZMI	0958.1	0958.1	III	B	2	25X	65	
			SVTO	1525.0	1526.0	III		1	43	59	
			HOLL	1624.0	1625.0	III		1	25	91	
			SVTO	1624.0	1624.0	III		1	25	130	
	1920	2400	HIRA								
	2110	2400	CULG								
			HOLL	2348.0	2348.0	III		1	25	77	
26	0000	0700	CULG	0217.0	0217.0	III	B	1	50U	180	
			LEAR	0256.0	0258.0	III		1	25	180	
	0000	1000	HIRA	0257.0	0258.0	III	B	1	30	130	
			CULG	0357.0	0358.0	III	G	1	40	180	

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26	0416	1153	ONDR								
			CULG	0438.0	0438.0	III	B	1	40	180	
			CULG	0445.0	0446.0	III	G	1	23U	250	
			HIRA	0445.0	0446.0	III	B	1	30	300	
			SVTO	0445.0	0445.0	III		1	25	180	
	0430	1815	BLEN	0800.3	0800.6	III	RS	1	180	600	
	0600	1200	IZMI	0800.4	0800.5	III	G,C	1	180	270X	
			IZMI	1051.0	1052.5	III	G	1	45	85	
			IZMI	1115.8	1116.2	III	B	1	45	85	
			SVTO	1449.0	1450.0	III		1	29	66	
	1920	2400	HIRA								
	2110	2400	CULG	2313.0	2315.0	III	G	1	50U	180	
27			LEAR	0015.0	0016.0	III		1	25	106	
			PALE	0015.0	0016.0	III		1	25	60	
	0000	0700	CULG	0016.0	0016.0	III	B	1	35	180	
			CULG	0116.0	0116.0	III	B	1	30	180	
			LEAR	0116.0	0116.0	III		1	25	180	
			PALE	0116.0	0116.0	III		1	25	56	
	0000	1000	HIRA	0116.0	0116.5	III	B	1	25X	50	
			CULG	0326.0	0326.0	III	B	1	40	160	
	0600	1200	IZMI	0616.3	0625.5	I	GG	2	225	270X	
			IZMI	0617.9	0619.5	III	G	2	30	180	
			CULG	0618.0	0619.0	III	G	1	40	180	
			LEAR	0618.0	0618.0	III		1	25	131	
			SVTO	0618.0	0619.0	III		1	25	150	
			HIRA	0618.5	0619.0	III	B	1	25X	200	
			IZMI	0716.8	0717.9	III	G	1	25X	190	
			SVTO	0717.0	0724.0	III		1	25	135	
			LEAR	0724.0	0725.0	III		1	25	180	
			HIRA	0724.5	0725.0	III	B	1	50	210	
			IZMI	0724.5	0725.0	III	G,C	2	35	270X	
			IZMI	1023.9	1024.3	III	B	2	45	95	
			HOLL	1730.0	1732.0	III		1	25	85	
	0416	1754	ONDR	1731.3	1744.2	DCIM	GG	2	800X	2000X	
			HOLL	2039.0	2039.0	III		1	25	77	
			PALE	2039.0	2039.0	III		1	25	180	
	1920	2400	HIRA	2039.0	2039.5	III	B	1	25X	110	
	2110	2400	CULG								
28	0000	0700	CULG	0357.0	0357.0	III	B	1	23	75	
			CULG	0428.0	0428.0	III	B	1	25	180	
			CULG	0447.0	0447.0	III	G	1	20	180	
			CULG	0553.0	0700.0D	III	N	1	25	170	
	0550	1206	IZMI	0555.0E	1120.0U	I	N	1	110	270X	
			IZMI	0623.2	0624.0	III	G	1	45	260	
			IZMI	0642.0	0644.0	III	G	2	25	190	
			LEAR	0642.0	0642.0	III		1	25	123	
			SVTO	0642.0	0642.0	III		1	25	119	
	0000	1000	HIRA	0642.0	0642.5	III	B	1	30	120	
			CULG	0655.0	0657.0	III	G	1	75	720	
			HIRA	0655.0	0656.5	III	B	1	110	400	
			LEAR	0655.0	0656.0	III		1	125	180	
			SVTO	0655.0	0656.0	III		1	120U	180U	
			IZMI	0655.2	0656.3	III	GG,C	2	120	270X	
			ONDR	0655.3	0707.4	DCIM	GG	2	800X	2000X	
			IZMI	0657.6	0657.7	III	B	1	50	95	
	0417	1753	ONDR	0702.3	0707.4	DCIM	GG	1	2000X	4500X	
			LEAR	0802.0	0802.0	III		1	25	116	
			SVTO	0802.0	0802.0	III		1	25	123	
			IZMI	0802.1	0802.6	III	G	2	45	95	
			IZMI	0820.7	0822.0	III	G,U	2	50	270X	
			IZMI	0827.6	0829.0	III	G,U	2	30	90	
			IZMI	0851.2	0851.4	III	G	2	40	65	
			SVTO	0921.0	0922.0	III		1	25	142	
			IZMI	0921.6	0922.4	III	GG	2	25X	170	
			SVTO	0944.0	0945.0	III		1	25	81	
			IZMI	0944.2	0945.0	III	G,C	2	25X	270X	
			IZMI	1113.7	1114.0	III	G	1	50	240	

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28			HOLL	1435.0	1625.0	III	N	1	25	75	
			SVTO	1435.0	1435.0	III		1	25	42	
			SGMR	1444.0	1446.0	III		2	30	65	
			SVTO	1444.0	1446.0	III		2	25	180	
			SGMR	1535.0	1539.0	III		3	30	80	
			SVTO	1535.0	1538.0	III		2	25	180	
			ONDR	1536.1	1537.0	DCIM	G	2	800X	1330	
			SVTO	1725.0	1725.0	III		1	71	180	
			HOLL	1816.0	1818.0	III		1	25	75	
			SGMR	1818.0	1819.0	III		1	30	80	
			PALE	2051.0	2052.0	III		2	25	180	
			SGMR	2051.0	2052.0	III		2	30	80	
	1920	2400	HIRA	2051.0	2052.0	III	B	2	30	190	
	2110	2400	CULG	2147.0	2149.0	III	G	1	20	130	
			CULG	2200.0	2202.0	III	G	1	40	180	
			CULG	2228.0	2229.0	III	G	1	23	160	
			CULG	2342.0	2342.0	III	B	1	20	180	
29	0000	0700	CULG	0015.0	0015.0	III	B	1	50	100	
			CULG	0233.0	0244.0	III	G	1	25	840	
			CULG	0355.0	0429.0	III	N	1	27	180	
			LEAR	0415.0	0417.0	III		1	72	124	
			SVTO	0417.0	0417.0	III		1	113	127	
			LEAR	0428.0	0429.0	III		1	47U	130U	
			SVTO	0428.0	0429.0	III		1	60	84	
			CULG	0506.0	0506.0	III	B	1	60	140	
			CULG	0544.0	0553.0	III	G	1	30	260	
	0000	1000	HIRA	0552.0	0553.0	III	B	1	100	260	
	0605	1200	IZMI	0605.0E	0928.0U	I	N	1	120	270	
			CULG	0621.0	0700.0D	III	N	1	30	180	
			IZMI	0621.3	0621.5	III	G	2	65	230	
			IZMI	0628.3	0628.4	III	G	2	35	165	
			IZMI	0754.2	0754.2	III	B	1	45	90	
			SVTO	0810.0	0811.0	III		2	25	180	
			IZMI	0810.1	0814.8	III	GG	2	25X	270X	
			HIRA	0810.5	0811.5	III	G	1	25X	300	
			LEAR	0811.0	0815.0	III		1	25U	180U	
			IZMI	0819.0	0819.3	III	G	1	50	175	
			IZMI	0823.7	0823.8	III	G	1	45	90	
			SVTO	0834.0	0840.0	III		1	25	84	
			IZMI	0834.7	0840.4	III	GG	2	25X	175	
			LEAR	0840.0	0840.0	III		1	25	111	
			IZMI	0913.4	0920.9	III	GG	2	25X	270X	
			HIRA	0914.0	0927.0	III	G	1	25X	310	
			SVTO	0914.0	1008.0	III	N	1	25	180	
			IZMI	0924.0	0927.3	III	GG,C	2	25X	270X	
			IZMI	0935.0	0935.2	III	G	1	220	270X	
			IZMI	1003.0	1008.2	III	GG,C	2	25X	95	
			IZMI	1027.3	1027.4	III	B	1	50	90	
			IZMI	1042.2	1042.3	III	G	1	45	90	
			SVTO	1051.0	1715.0	III	N	1	25	180	
			IZMI	1057.3	1101.7	III	GG,C,FS	2	25X	270X	
	0417	1753	ONDR	1057.4	1059.5	DCIM	G	1	2557	4500X	
			IZMI	1105.0	1111.7	II	HARM	1	55	160	
			IZMI	1107.4	1119.8	III	N	1	45	270	
			IZMI	1112.2	1112.9	III	G	2	25X	145	
			IZMI	1132.9	1133.0	III	B	1	50	85	
			IZMI	1144.1	1148.8	III	G	1	45	65	
			SGMR	1402.0	1456.0	III	N	2	30	80	
			HOLL	1607.0	1607.0	III		1	25	180	
			SGMR	1607.0	1607.0	III		2	30	80	
			PALE	1816.0	0438.0	III	N	1	25	180	
			SGMR	1816.0	1817.0	III		1	30	60	
	1921	2400	HIRA	2020.0	2020.5	III	B	1	25X	150	
			HIRA	2114.0	2114.5	III	B	1	100	200	
	2110	2400	CULG	2114.0	2114.0	III	B	1	20	180	
			CULG	2147.0	2238.0	III	N	1	20	180	
			HIRA	2147.5	2156.0	III	G	1	25X	180	
			CULG	2148.0	2148.0	III	B	2	23	60	

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

JUNE 2003

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
29			HOLL	2148.0	2211.0	III	N	1	75	180	
			SGMR	2159.0	2212.0	III	N	2	30	80	
			HIRA	2159.5	2201.0	III	G	2	25X	190	
			CULG	2200.0	2200.0	III	B	2	23	180	
			HIRA	2210.0	2212.0	III	G	2	25X	200	
			CULG	2211.0	2212.0	III	G	3	20	180	
			HIRA	2235.5	2238.0	III	G	1	25X	200	
			CULG	2236.0	2236.0	III	B	3	18X	160	
			CULG	2345.0	2349.0	III	G	1	30U	180	
30	0000	0700	CULG	0001.0	0003.0	III	G	1	30	140	
			LEAR	0002.0	0123.0	III	N	1	25	180	
	0000	0816	HIRA	0003.0	0003.5	III	B	1	25X	70	
			CULG	0011.0	0026.0	III	GG	1	20	180	
			HOLL	0014.0	0024.0	III		1	75	180	
			HIRA	0016.5	0021.0	III	G	3	25X	360	
			LEAR	0017.0	0020.0	III		2	25	180	
			CULG	0019.0	0021.0	III	G	3	18	320	
			HIRA	0023.5	0025.0	III	G	1	30	120	
			LEAR	0123.0	0452.0	CONT		1	25	180	
			CULG	0124.0	0151.0	III	N	1	23	180	
			CULG	0155.0	0606.0	I	S	1	50	180	
			HIRA	0227.5	0228.5	III	B	2	40	180	
			CULG	0228.0	0230.0	III	G	2	35	180	
			CULG	0331.0	0332.0	III	G	2	30	250	
			HIRA	0331.0	0332.0	III	G	2	40	260	
			LEAR	0331.0	0332.0	III		1	25	180	
			CULG	0408.0	0408.0	III	B	1	57	180	
			HIRA	0408.0	0408.5	III	B	1	60	180	
			SVTO	0415.0	1550.0	CONT		1	25	180	
			HIRA	0423.5	0424.0	III	B	1	100	170	
			CULG	0424.0	0424.0	III	B	1	57	180	
			IZMI	0555.0E	1202.0U	III	N	1	25X	95	
	0550	1202	IZMI	0555.0E	1202.0U	I	N	1	130	270	
			IZMI	0610.7	0611.0	III	B	2	30	90	
			CULG	0611.0	0611.0	III	B	1	35	80	
			CULG	0646.0	0647.0	III	G	1	30	180	
			HIRA	0646.0	0646.5	III	B	1	30	140	
			IZMI	0646.3	0646.9	III	G,C	2	25X	210	
			IZMI	0702.1	0704.7	III	G	2	25X	250	
			IZMI	0713.0	0717.9	III	GG	2	40	270	
			IZMI	0721.5	0732.0	III	GG	2	25X	270X	
			LEAR	0732.0	0742.0	V		2	25	180	
			SVTO	0732.0	0754.0	III	N	3	25	180	
			IZMI	0732.1	0738.0	III	GG,C,FS	3	25X	270X	
			ONDR	0732.4	0758.0	DCIM	GG,FS	3	800X	2000X	
	0417	1753	ONDR	0732.5	0741.4	DCIM	GG	2	2000X	4500X	
			HIRA	0733.0	0744.0	III	G	3	25X	1600	
	0500	1630	BLEN	0733.0	0758.9	DCIM	P,S	3	100X	4000X	
			IZMI	0735.3	0737.2	UNCLF	FS	2	35	60	
			IZMI	0735.8	0740.1	III	GG	2	45	270X	
			IZMI	0742.0	0746.2	III	GG	2	45X	270X	
			LEAR	0743.0	0826.0	CONT		1	25	180	
			IZMI	0743.8	0759.2	II		2	40	160	
			IZMI	0746.3	0817.6	III	N	2	30	270X	
			IZMI	0800.0U	0843.0U	I	S,C	2	40U	160	
			IZMI	0842.8	0843.1	III	G	1	180	270	
			IZMI	0845.8	0847.6	III	G,C	2	25X	250	
			LEAR	0846.0	0847.0	III		1	25	117	
			BLEN	0854.7	0855.2	III	GG,RS	2	140	800	
			IZMI	0854.7	0855.3	III	G,C	1	30	270X	
			IZMI	0949.0	0949.4	III	B	2	45	90	
			IZMI	1057.5	1058.8	III	G,FS	2	45	150	
			IZMI	1103.5	1108.8	III	GG	2	25X	260	
			IZMI	1112.2	1112.3	III	B	2	90	190	
			IZMI	1118.2	1119.2	III	G	2	35	85	
			IZMI	1131.0	1131.3	III	G	1	45	90	
			HOLL	1416.0	1419.0	III		1	25	75	
			SGMR	1416.0	1418.0	III		1	30	60	

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

JUNE 2003

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	1524.0	1524.0	III		1	25	79	
			PALE	1807.0	1807.0	III		1	25	52	
	1921	2400	HIRA								
	2110	2400	CULG								

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 BLEN = Bleien
PALE = Palehua POTS = Potsdam SGMR = Sagamore Hill SVTO = San Vito

NOTE 1: Beginning June 26, 2001, the Bleien observatory changed to higher frequencies (1-4Ghz).

SOLAR RADIO NOISE STORM AT 164 MHZ

FROM NANÇAY RADIOHELIOGRAPH

JUNE 2003

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/03	-0.51	+0.05	I	8H18 E	15H18 D
01/06/03	+1.46	+0.26	I	8H18 E	15H18 D
02/03/03	-0.22	+0.08	I	8H19 E	15H19 D
02/06/03	+1.41	-0.02	I	12H13	15H19 D
03/06/03	-0.11	-0.09	I	12H01	15H19 D
03/06/03	+0.11	+0.09	I	8H19 E	15H19 D
03/06/03	+1.60	-0.09	I	8H19 E	15H19 D
04/06/03	-0.67	+0.09	I	8H19 E	10H30
06/06/03	-0.17	+0.67	II	12H17	15H19 D
06/06/03	-0.14	+0.47	II	8H19 E	15H19 D
07/06/03	+0.26	+0.54	II	8H19 E	15H19 D
08/06/03	+0.54	+0.14	II	8H20 E	15H20 D
08/06/03	+0.68	+0.53	II	8H20 E	15H20 D
09/06/03	+0.88	+0.50	III	8H20 E	15H20 D
10/06/03	+1.22	+0.19	III	8H20 E	15H20 D
11/06/03	-0.70	-0.29	I	8H20 E	15H20 D
11/06/03	+0.65	+0.90	I	8H20 E	15H20 D
11/06/03	+1.29	+0.54	I	8H20 E	15H20 D
12/06/03	+0.87	+0.87	I	8H20 E	15H20 D
12/06/03	+1.47	+0.19	I	8H20 E	15H20 D
13/06/03	-0.03	-0.20	I	8H21 E	15H21 D
13/06/03	+1.50	+0.47	I	8H21 E	15H21 D
13/06/03	+1.55	-0.17	I	8H21 E	15H21 D
14/06/03	+1.60	+0.19	I	8H21 E	15H21 D
18/06/03	-1.07	+0.51	I	9H05 E	15H22 D
19/06/03	-1.12	+0.47	I	9H05 E	15H22 D
20/06/03	-0.90	+0.57	I	10H07 E	15H23 D
20/06/03	-0.56	-0.22	I	10H07 E	15H23 D
21/06/03	-0.60	+0.48	II	8H22 E	15H23 D
21/06/03	-0.25	-0.16	I	8H22 E	15H23 D
22/06/03	-0.37	+0.42	I	8H22 E	15H23 D
22/06/03	+0.02	-0.25	II	8H22 E	15H23 D
23/06/03	+0.09	+0.43	III	8H32 E	15H23 D
23/06/03	+0.20	+0.40	II	8H32 E	15H23 D

[1] POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W QUADRANT
[2] IMP1: FLUX< 5 SFU IMP2: 5< FLUX < 20 SFU IMP3: 20< FLUX <100 SFU
IMP4: 100< FLUX <300 SFU IMP5> 300 SFU
[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANÇAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

23/06/03	+0.42	-0.28	I	8H32 E	11H50
24/06/03	+0.19	+0.53	I	8H22 E	15H23 D
25/06/03	+0.43	+0.48	III	8H36 E	15H24 D
27/06/03	+0.14	+0.06	I	9H26 E	15H24 D
27/06/03	+0.85	+0.19	I	9H26 E	15H24 D
28/06/03	+0.45	-0.16	I	10H08 E	15H37 D
28/06/03	+1.02	+0.19	I	10H08 E	15H37 D
29/06/03	-0.87	+0.16	I	8H27 E	15H38 D
30/06/03	-0.60	+0.02	III	8H58 E	15H25 D

NOISE STORM AT 327 MHZ
FROM NANÇAY RADIOHELIOGRAPH
JUNE 2003

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/03	-1.18	+0.09	I	8H18 E	12H00
01/06/03	-0.51	+0.06	I	8H18 E	15H18 D
01/06/03	+1.21	+0.11	I	8H18 E	15H18 D
02/06/03	-0.20	+0.03	I	8H19 E	15H19 D
02/06/03	-0.03	+0.19	I	8H19 E	15H19 D
03/06/03	-0.11	-0.11	I	8H19 E	15H19 D
03/06/03	+0.11	+0.09	I	8H19 E	15H19 D
04/06/03	-0.65	+0.19	I	8H19 E	11H10
04/06/03	+0.37	+0.05	I	8H19 E	15H19 D
05/06/03	-0.81	+0.12	I	8H19 E	15H19 D
05/06/03	-0.42	+0.33	I	13H22	15H19 D
05/06/03	+0.64	+0.02	I	8H19 E	15H19 D
06/06/03	-0.59	+0.14	I	8H19 E	15H19 D
06/06/03	-0.09	+0.45	II	8H19 E	15H19 D
07/06/03	+0.14	+0.40	II	8H19 E	15H19 D
08/06/03	+0.42	+0.40	II	8H20 E	15H20 D
08/06/03	+0.60	+0.23	II	8H20 E	15H20 D
09/06/03	-0.99	-0.28	I	8H20 E	15H20 D
09/06/03	+0.64	+0.33	II	13H09	15H20 D
09/06/03	+0.79	+0.37	III	8H20 E	13H45
09/06/03	+0.90	+0.11	II	13H09	15H20 D
10/06/03	-0.82	-0.26	I	8H20 E	15H20 D
10/06/03	+1.01	+0.26	I	8H20 E	15H20 D
11/06/03	-0.62	-0.29	I	8H20 E	15H20 D
11/06/03	+1.22	+0.37	II	8H20 E	15H20 D
12/06/03	+0.81	+0.08	I	8H20 E	15H20 D
12/06/03	+1.19	+0.02	I	13H58	15H20 D

Continued: NOISE STORM AT 327 MHZ FROM NANÇAY RADIOHELIOGRAPH

JUNE 2003

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
12/06/03	+1.47	+0.14	I	8H20 E	15H20 D
13/06/03	-0.02	-0.25	I	8H21 E	15H21 D
13/06/03	+0.91	+0.11	I	12H58	15H21 D
13/06/03	+1.35	+0.11	I	8H21 E	15H21 D
14/06/03	+0.23	-0.23	I	8H21 E	15H21 D
14/06/03	+1.12	+0.14	I	8H21 E	11H45
15/06/03	-1.02	-0.42	I	13H44	15H21 D
18/06/03	-1.05	+0.39	I	9H05 E	15H22 D
19/06/03	-0.91	+0.26	I	9H05 E	15H22 D
20/06/03	-0.84	+0.42	I	10H07 E	15H23 D
20/06/03	-0.43	-0.12	I	10H07 E	15H23 D
21/06/03	-0.42	+0.47	I	8H22 E	15H23 D
21/06/03	-0.17	-0.08	II	8H22 E	15H23 D
22/06/03	-0.19	+0.36	I	8H22 E	15H23 D
22/06/03	+0.06	-0.19	I	8H22 E	15H23 D
23/06/03	-0.17	+0.36	II	8H32 E	15H23 D
23/06/03	+0.08	+0.26	Ii	8H32 E	15H23 D
23/06/03	+0.4é	-0.20	I	8H32 E	15H23 D
24/06/03	+0.23	+0.36	I	8H22 E	15H23 D
25/06/03	+0.45	+0.48	II	8H36 E	15H24 D
25/06/03	+0.47	+0.26	II	8H36 E	15H24 D
26/06/03	+0.70	+0.22	I	9H11 E	15H24 D
27/06/03	+0.17	-0.03	I	9H26 E	15H24 D
27/06/03	+0.85	+0.25	II	9H26 E	15H24 D
28/06/03	+0.48	-0.11	I	10H08 E	15H37 D
28/06/03	+1.01	+0.23	I	10H08 E	15H37 D
29/06/03	-0.76	+0.08	I	8H27 E	15H38 D
29/06/03	+0.73	-0.12	I	8H27 E	15H38 D
29/06/03	+1.12	+0.20	I	8H27 E	15H38 D
30/06/03	-0.59	+0.12	II	8H58 E	15H25 D
30/06/03	+0.91	+0.05	II	8H58 E	15H25 D

16 JUNE : NO DATA

OTHERS DAYS: NO DETECTABLE NOISE STORM

- For the days marked by an asterisk, intense ionopheric gravity waves are observed during the whole day. Without a more detailed analysis leading to increase uncertainties in the deviation , the positions which are indicated are estimated within 0.2 R

** Following a large burst.

*** Importance not well determined due to the proximity off the very strong other source.

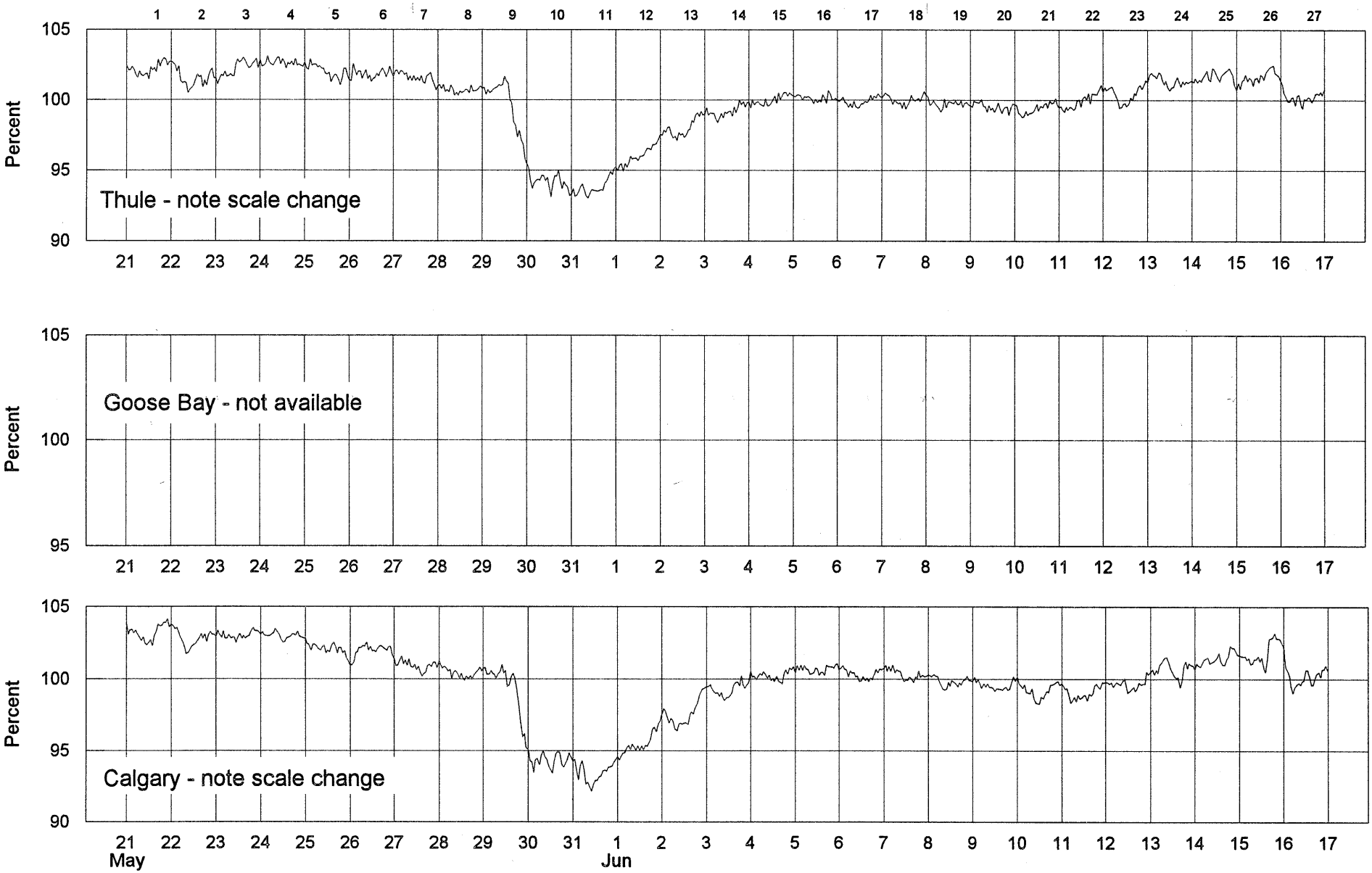
**** No flux measurements available.

COSMIC RAY INDICES
(Neutron Monitor)
June 2003

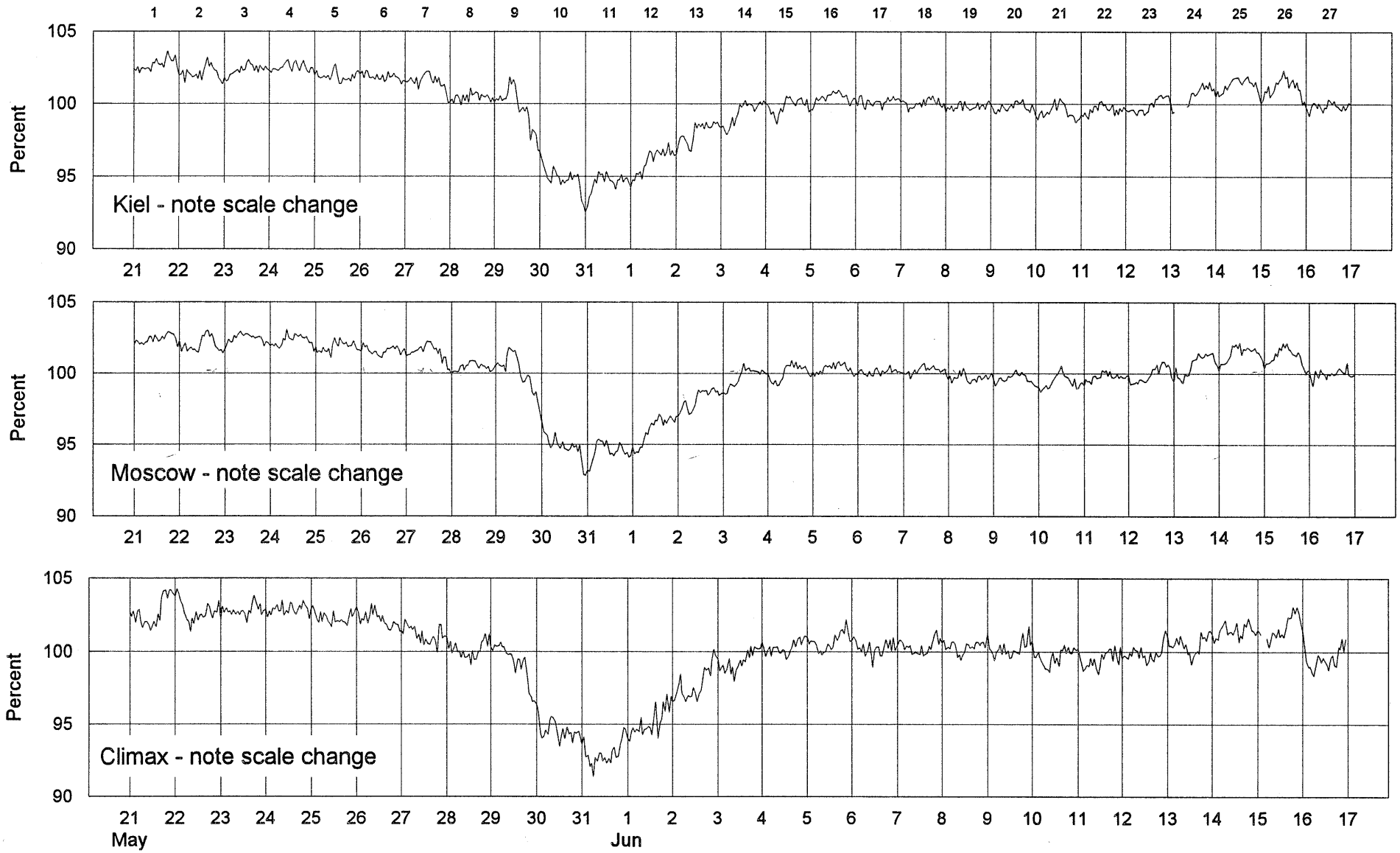
Day	THULE Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	4051.3	3557.3	5657.5	8497.4	3758.2	1895.4	3497.8
2	4048.7	3530.5	5652.1	8493.6	3751.2	1897.7	3494.5
3	4026.0	3505.2	5628.5	8439.2	3741.2	1885.3	3477.1
4	4014.1(20)	3519.0	5630.8	8439.5	3748.3	1882.4	3479.2
5	4032.7	3524.7	5636.7	8455.3	3752.1	1886.3	3484.0
6	4041.7	3535.8	5641.1	8450.8	3748.8	1884.1	3485.5
7	4037.1	3546.0	5641.7	8449.7	3758.2	1888.5	3484.6
8	4042.2	3537.8	5641.7	8440.5	3758.1	1890.4	3482.9
9	4055.7	3521.2	5661.9	8464.7	3792.5	1900.3	3497.4
10	4051.2	3503.0	5646.0	8447.5	3751.6	1910.4	3488.3
11	4016.5	3480.7	5593.7	8359.1	3710.0	1893.5	3467.1
12	4014.6	3497.2	5592.5	8376.8	3712.4	1892.2	3466.9
13	4033.0	3523.0	5612.2	8398.2	3730.7	1896.3	3478.9
14	4045.1	3526.7	5618.7	8424.0	3738.5	1896.8	3489.2
15	4049.2	3533.5	5629.8	8451.4	3757.8	1904.3	3496.3
16	4055.2	3527.0	5622.5	8435.7	3755.2	1902.3	3494.4
17	4067.9	3536.3	5620.2	8459.8	3762.5	1897.9	3500.6
18	4036.1	3533.2	5605.6	8421.5	3759.1	1893.1	3485.6
19	4020.2	3518.0	5588.0	8375.3	3747.2	1886.2	3458.8
20	4041.0	3537.0	5612.5	8408.8	3762.9	1892.4	3484.0
21	4053.8	3542.7	5638.5	8428.7	3775.7	1889.6	3475.0
22	4073.7	3557.7	5659.8	8482.7	3803.7	1896.9	3492.4
23	4081.9	3567.0	5688.2	8519.7	3832.7	1906.8	3503.3
24	4077.5	3563.3	5677.1	8483.0	3804.9	1909.0	3502.2
25	4086.7	3565.8	5672.5	8481.8	3800.0	1910.0	3502.5
26	4090.7	3575.5	5705.5	8526.5	3810.6	1916.1	3508.5
27	4109.0	3579.5	5734.1	8552.6	3822.2	1921.4	3520.2
28	4115.6	3580.8	5739.4	8553.5	3822.1	1917.0	3516.3
29	4106.7	3591.0	5731.8	8551.9	3831.0	1913.2	3509.6
30	4112.0	3607.0	5737.8	8576.5	3829.0	1914.6	3507.5
31							
Mean	4056.0	3540.8	5650.6	8461.5	3771.0	1899.0	3491.0

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.

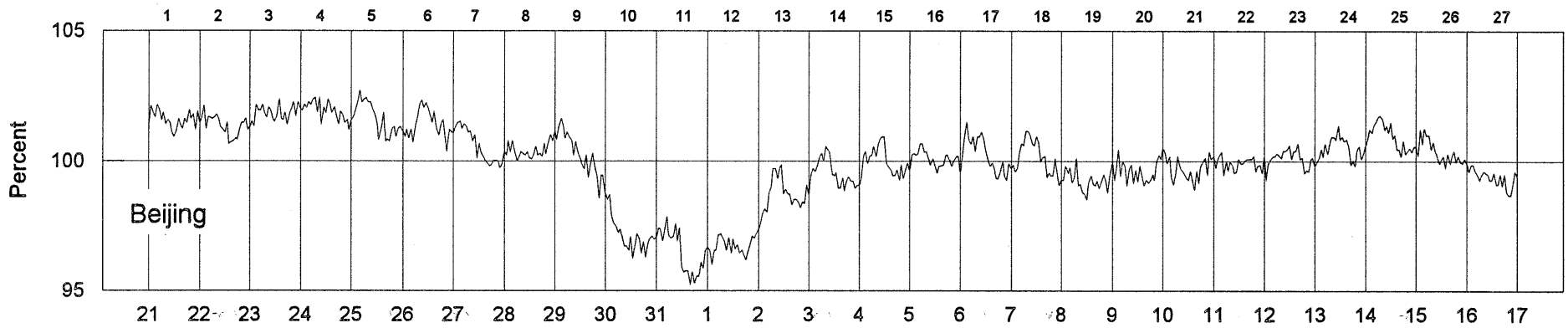
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2318 - Beginning 21 May 2003

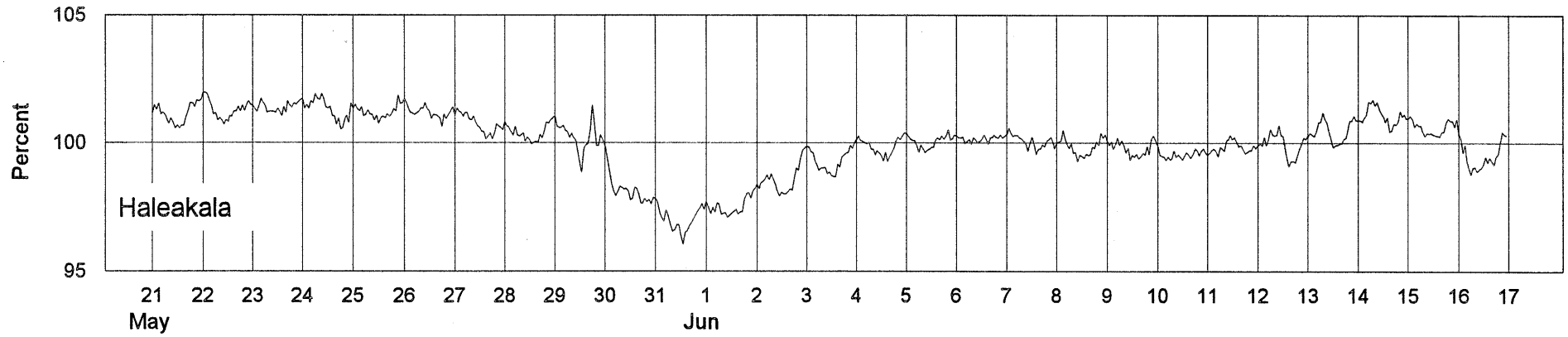


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2318 - Beginning 21 May 2003

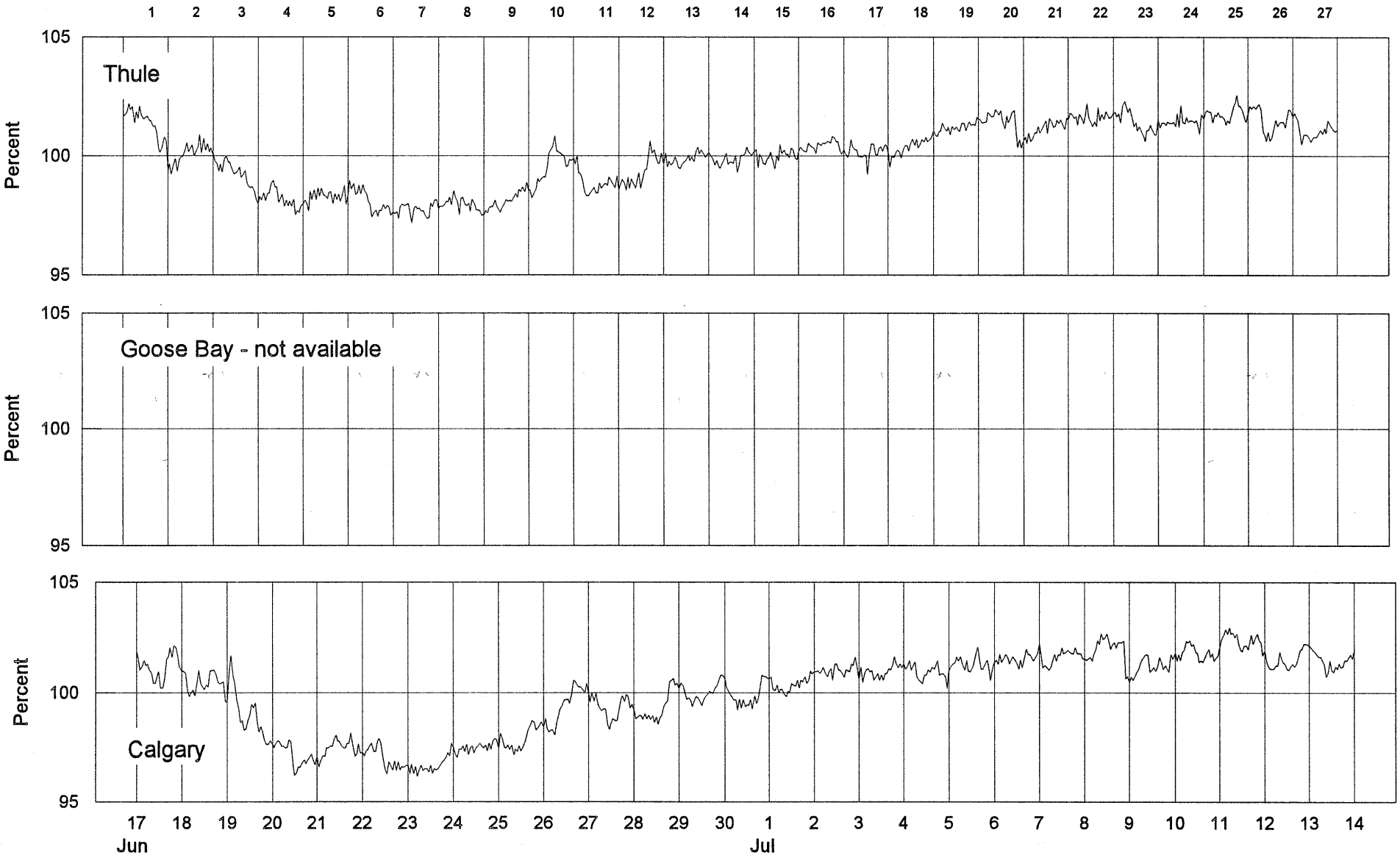


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2318 - Beginning 21 May 2003

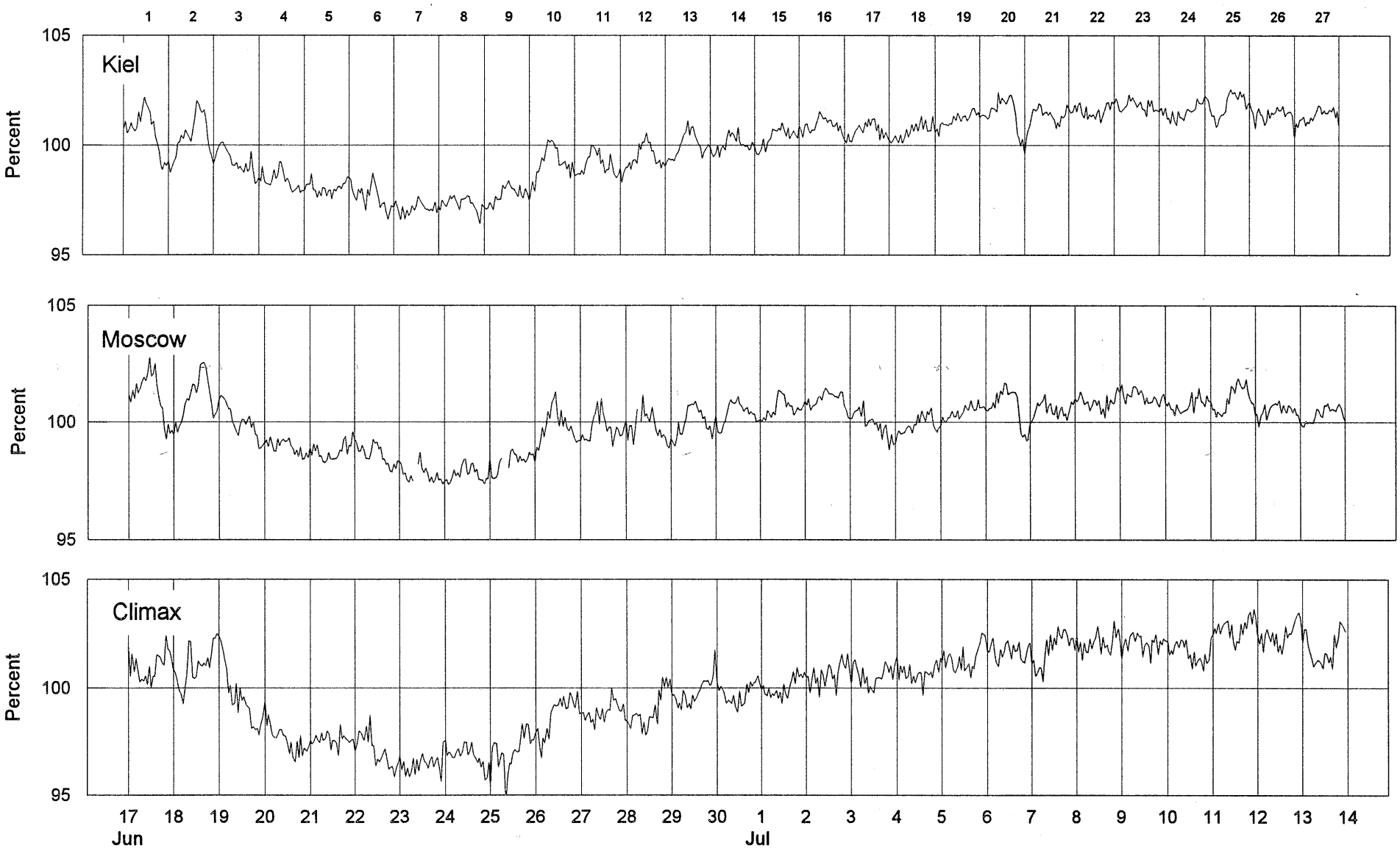




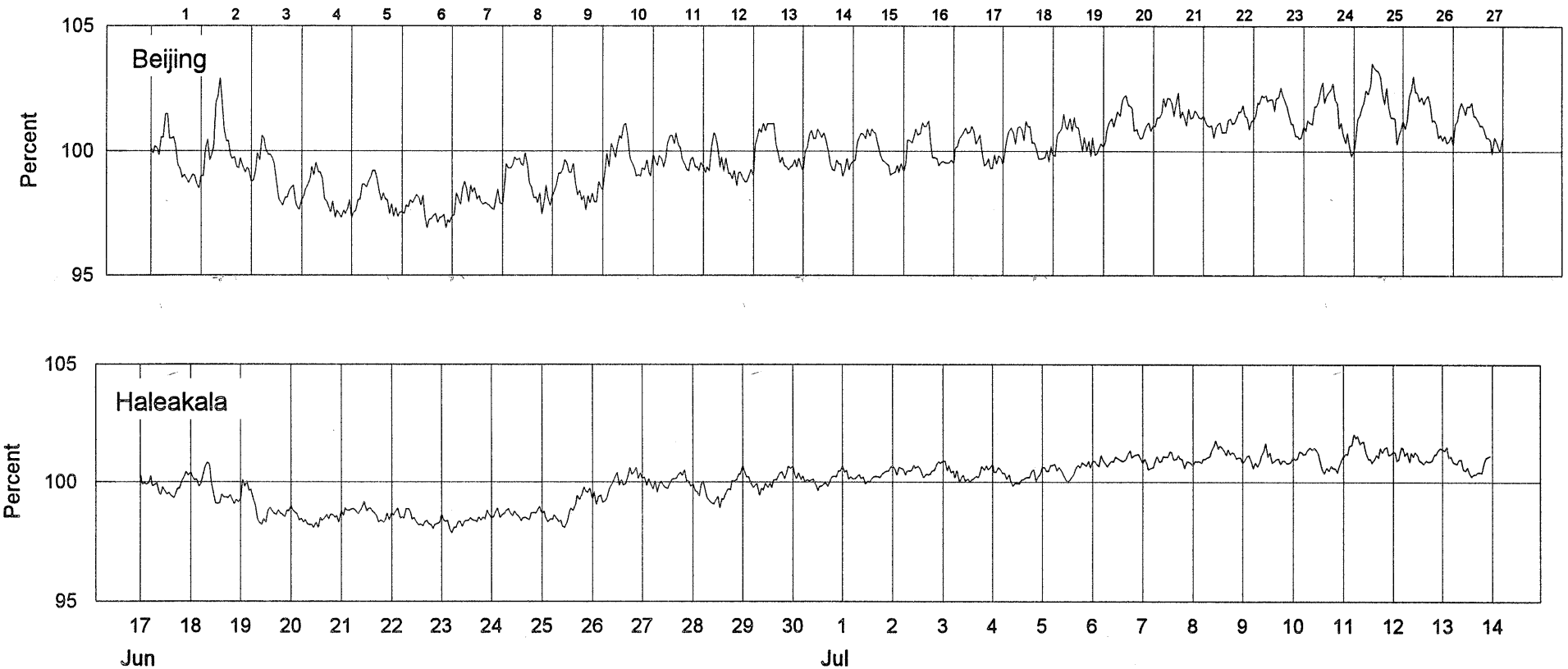
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2319 - Beginning 17 Jun 2003



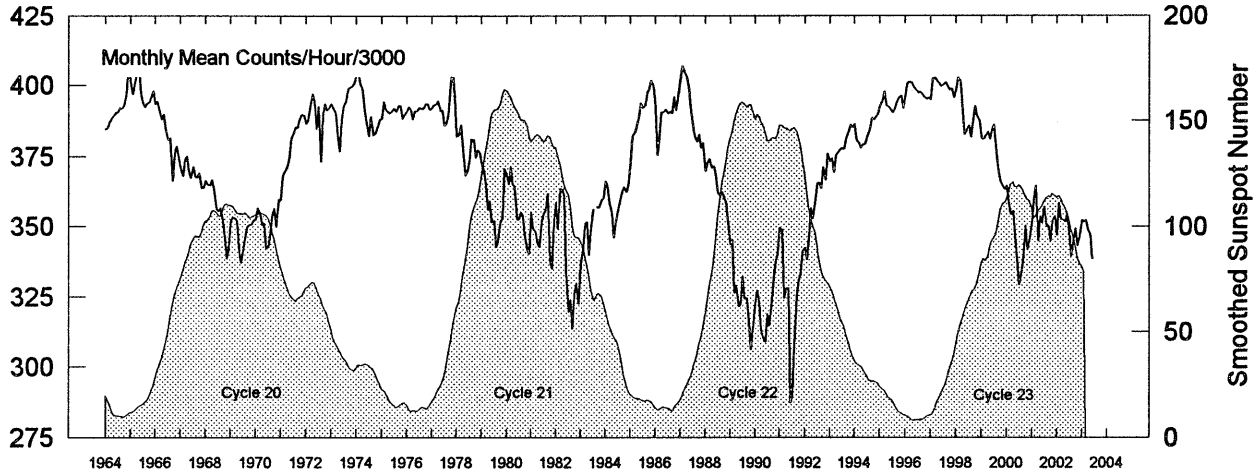
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2319 - Beginning 17 Jun 2003



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2319 - Beginning 17 Jun 2003



Calgary Neutron Monitor Pressure-Corrected Values
Jan 1964 - Jun 2003



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1964	3847	3852	3872	3883	3892	3905	3905	3921	3920	3926	3966	4064	3913
1965	4006	3968	4007	4040	4040	3967	3935	3923	3938	3942	3960	3980	3976
1966	3935	3943	3906	3881	3899	3844	3807	3814	3663	3758	3785	3750	3832
1967	3710	3678	3741	3750	3697	3671	3713	3679	3675	3691	3638	3639	3690
1968	3663	3653	3647	3665	3632	3561	3556	3567	3529	3482	3386	3420	3563
1969	3515	3531	3529	3520	3417	3370	3408	3464	3500	3507	3506	3524	3483
1970	3523	3565	3548	3505	3512	3424	3426	3477	3543	3564	3497	3596	3515
1971	3593	3678	3693	3712	3737	3813	3832	3853	3851	3883	3899	3893	3786
1972	3865	3875	3924	3969	3942	3847	3926	3731	3895	3935	3912	3920	3895
1973	3935	3919	3903	3819	3768	3875	3926	3944	3986	3995	3997	4008	3923
1974	4036	4043	4005	3988	3906	3861	3822	3890	3827	3831	3850	3881	3912
1975	3883	3943	3914	3905	3904	3910	3918	3907	3929	3927	3884	3897	3910
1976	3908	3923	3915	3881	387	3909	3921	3918	3920	3936	3935	3916	3916
1977	3919	3933	3933	3943	3911	3911	3857	3865	3895	4010	4055	3961	3933
1978	3823	3826	3860	3773	3681	3697	3730	3811	3808	3744	3772	3764	3774
1979	3726	3696	3647	3559	3592	3516	3521	3427	3447	3519	3528	3705	3573
1980	3681	3652	3711	3649	3643	3527	3525	3550	3540	3471	3414	3403	3564
1981	3550	3491	3483	3440	3426	3522	3546	3560	3615	3374	3348	3520	3490
1982	3586	3492	3634	3632	3608	3344	3196	3239	3137	3257	3296	3225	3387
1983	3364	3421	3510	3515	3399	3487	3563	No Data	3571	3569	3597	3599	3509
1984	3661	3646	3586	3551	3460	3515	3551	3593	3623	3641	3623	3652	3592
1985	3723	3821	3834	3858	3888	3936	3921	3929	3971	3987	4017	3997	3907
1986	3923	3755	3814	3905	3906	3915	3902	3907	3902	3958	3912	3974	3898
1987	4025	4068	4047	4028	3993	3914	3866	3822	3802	3827	3779	3796	3914
1988	3698	3729	3739	3709	3714	3682	3621	3608	3624	3603	3590	3520	3653
1989	3436	3454	3263	3290	3216	3222	3321	3224	3246	3164	3063	3152	3254
1990	3227	3272	3232	3129	3099	3089	3188	3147	3237	3317	3375	3401	3226
1991	3496	3489	3244	3279	3280	2873	2896	3078	3253	3311	3330	3412	3245
1992	3425	3382	3463	3566	3528	3593	3655	3655	3636	3711	3665	3758	3586
1993	3730	3741	3693	3753	3765	3775	3780	3775	3815	3836	3859	3852	3781
1994	3864	3807	3798	3779	3793	3793	3822	3841	3885	3878	3891	3896	3837
1995	3929	3945	3919	3929	3927	3917	3902	3919	3940	3956	3963	3920	3931
1996	3960	4008	4012	4010	3993	3983	3976	3976	3970	3960	3953	3955	3980
1997	3947	4023	4024	4014	4007	3998	4001	4010	3999	3985	3990	3955	3996
1998	3982	4025	4013	3910	3827	3839	3857	3817	3876	3925	3890	3875	3903
1999	3816	3811	3823	3836	3810	3843	3861	3760	3699	3664	3644	3631	3767
2000	3646	3586	3544	3554	3465	3386	3293	3337	3395	3503	3417	3447	3464
2001	3510	3599	3646	3449	3537	3511	3570	3501	3504	3449	3521	3537	3528
2002	3469	3585	3527	3526	3517	3541	3479	3393	3455	3493	3431	3474	3491
2003	3523	3517	3524	3488	3473	3384							3485

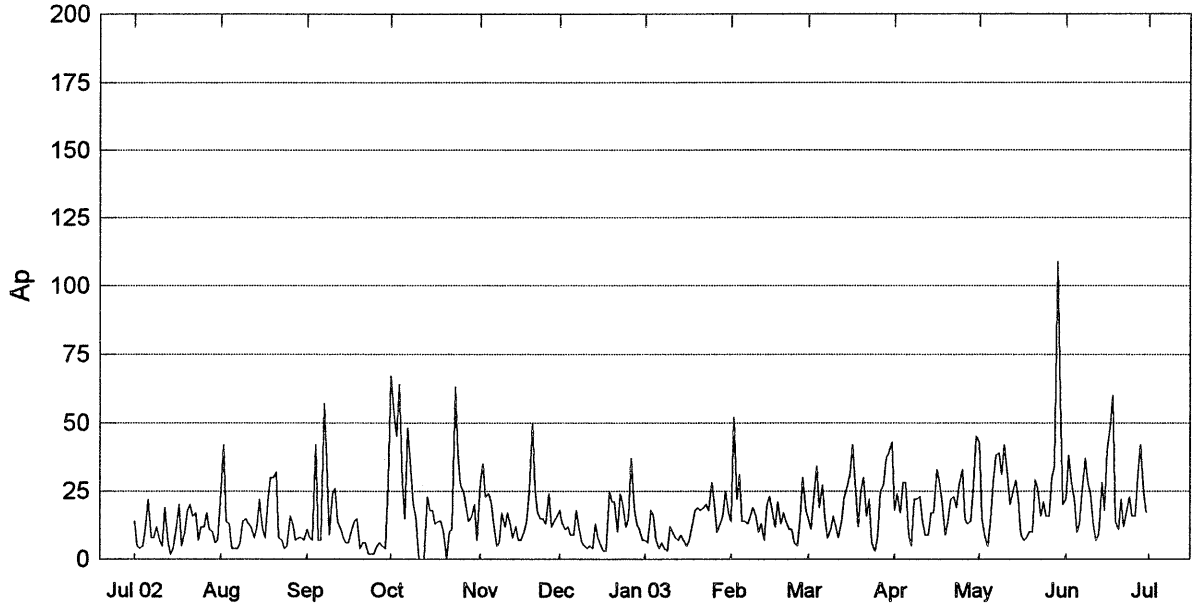
Multiply table entries by 300 to obtain hourly counting rate. Calgary, Canada: N51 W114, Alt=1128m, Cutoff Rigidity=1.09GV.

Geomagnetic Activity Indices
June 2003

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M	
1		2	4-	3+	3-	4-	3+	5-	5-	28	22	1.1	2o	3+	3o	3-	3o	3-	4-	4o	33	40	30	25	45	
2	D5	4	5	5+	5+	4	4	3-	5	35+	38	1.4	4o	4+	5+	5o	4-	3+	2+	4o	60	59	62	77	44	
3		5-	3	3	4	4	4-	4+	5+	32	29	1.3	4-	3+	3o	4-	4-	3-	4-	5-	45	48	41	37	52	
4		3+	3-	3-	4	4+	4+	4+	3	29-	22	1.1	3+	3o	3o	4o	3+	4-	4-	3-	37	45	30	35	40	
5	Q3A	2+	2+	2+	2	3-	3	3-	2+	20-	10	0.6	2+	2+	3-	3-	3-	3-	3-	2o	20	23	22	20	25	
6	Q7A	2	2	3-	3-	3-	3+	3+	3	22-	13	0.7	2+	2+	3-	3o	3-	3-	3o	3o	24	29	21	19	31	
7		4-	4-	3+	4-	5-	4	3+	4+	31-	25	1.2	4-	3+	3+	3+	3+	3+	3o	4o	39	48	32	37	43	
8		3+	4+	4-	4-	4-	5+	5+	6-	35	37	1.4	3+	4o	4-	3+	3+	4+	5-	5-	52	61	46	39	68	
9		3	3+	3+	4	3	4-	4+	6	31-	28	1.2	3o	3+	3+	3+	3o	3-	3+	5+	43	50	41	35	56	
10		4-	2+	6-	4	3	3+	3+	3	28+	24	1.2	3+	2+	4+	3+	3o	3-	3o	3-	32	43	31	47	27	
11	Q6A	2+	3	3+	3-	3-	3-	3	2	22-	12	0.7	3-	3-	3+	3-	2+	2+	3-	2o	23	34	17	27	24	
12	Q1A	1+	1+	2+	1+	2+	2+	2-	2	15-	7	0.3	2-	1+	2o	1+	2+	2-	1+	2o	12	15	11	10	16	C
13	Q2A	2+	1	1-	1-	1+	1+	3+	4-	14+	9	0.5	2-	1o	1o	1o	1+	2-	3-	3+	14	18	11	7	22	
14		2+	4-	4-	4+	5-	5	4+	4-	32-	28	1.2	2+	4-	4-	4+	4+	4o	4o	3+	48	42	50	34	58	
15		4-	5-	3+	3-	3+	3-	3	3-	26	18	1.0	4o	4o	3+	3-	3o	3-	3-	3+	36	40	35	41	34	
16	D4	3+	5-	2+	5	4	4-	6	6	35	40	1.5	3+	5o	2+	5-	4-	3+	5-	5+	61	60	66	58	68	
17	D2	5+	6	5+	5	5	5	4-	4+	40-	49	1.6	5-	5o	5o	5+	4o	4-	3o	4-	70	76	65	84	57	
18	D1	5	6-	7-	7-	4	5	5-	4	42-	60	1.7	4+	5o	6+	7-	3+	4-	4-	4o	91	76	87	109	54	
19	Q8A	4	3+	3-	3-	2+	3-	3+	2-	23-	14	0.8	4o	3o	3o	3-	2+	2+	3o	1+	26	29	17	22	24	
20	Q4A	1+	2+	3	2+	3-	3	3-	3-	20	11	0.6	2-	2o	3o	2+	2+	3o	3-	2+	21	23	23	16	30	
21		5-	4-	4	2	3-	4	3-	4	28-	22	1.1	4+	3+	5-	3o	2o	3+	3-	3+	40	43	47	52	38	
22	Q5A	3-	2	3	2	2-	3	4-	3	21	12	0.7	3-	2+	3o	3o	1+	3o	4-	3o	26	26	27	18	35	
23		4	4	3+	4-	2+	3-	3-	3+	26	18	1.0	4o	4o	4-	4o	2+	2+	3-	3o	38	36	37	46	27	
24		4	4	4+	4+	4+	2+	2	3	28+	23	1.1	4o	4o	4o	4+	4+	2+	2o	3-	43	41	46	58	30	
25	Q9A	2	2+	4-	3-	3-	3+	4-	4	24+	16	0.9	2o	2+	4-	3o	2+	3+	4-	3+	30	34	35	28	42	
26	Q10A	3+	3	3	3+	4	3	2+	3	25	16	0.9	3o	3o	3o	4o	4o	3-	2-	3-	32	32	37	34	35	
27		4	3+	5-	4	5	5-	4	4-	33+	31	1.3	3+	4-	4+	4-	4-	4-	3o	4-	45	54	46	49	51	
28	D3	3	5-	3+	6+	6-	5-	4	5-	36+	42	1.5	3-	4+	3o	5+	4o	4-	3o	4+	54	71	53	64	59	
29		4-	3+	4	5-	3+	4-	4-	4	30+	24	1.2	4o	3+	4-	4+	3+	3+	3o	4o	43	48	34	42	40	
30		3+	4	4+	3	2	3-	3-	3-	25-	17	0.9	3+	4-	5-	3+	2+	2+	2+	2o	32	34	32	46	21	
Mean											24	1.06									39.0	42.7	37.7	40.2	

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	3+	3o	3o	3+	3o	4o	4-	35	2+	3o	3+	2o	3o	2o	3+	4+	31	115.5	42	40	63	
2	4-	4+	5+	5+	4-	3+	3-	4o	61	4+	4+	5o	5o	4-	3+	2+	4o	60	124.8	38	40	73	
3	4-	3+	3+	4-	4-	3o	4o	4+	45	4-	3o	3-	4-	3+	2+	4-	5o	44	117.8	40	42	65	
4	3+	3o	3o	4o	4-	4-	4o	3o	40	3+	3o	3-	4-	3o	3+	3+	3-	34	108.7	47	52	55	
5	2+	2+	3-	3-	3-	3o	3o	2+	23	2o	2o	2+	3-	2+	2+	2o	2-	18	117.0	59	62	64	
6	3-	2+	3o	3o	3o	3o	3o	3o	27	2-	2+	2+	3-	2o	3-	3-	3-	20	129.4	86	88	78	
7	4-	4-	3+	3+	4-	4-	4-	4+	44	4-	3+	3+	3+	3o	3o	2o	4-	35	137.2	98	103	86	
8	3+	4o	4-	4-	3+	4+	4+	4+	53	3+	4o	4-	3o	3o	4o	5-	5-	52	158.0	101	100	109	
9	3o	3+	4-	3+	3+	3o	3+	5+	44	3+	3+	3+	3o	3o	3-	3o	5+	43	163.1	111	112	114	
10	3+	2+	5-	4-	3o	3o	3o	3o	38	3+	2o	4-	3+	3o	2o	3-	2o	27	182.0	111	110	135	
11	3o	3o	3+	3o	3-	3-	3-	2o	26	3-	3-	3+	2o	2-	2-	2+	2-	19	198.9	116	121	153	
12	2+	2-	2+	1+	3-	2o	2-	2o	15	1-	1o	2-	1o	2o	1+	1+	2-	9	168.6	115	120	120	
13	2-	1+	1+	1+	2-	2o	3o	4-	17	2-	1-	1-	1-	1o	1o	2+	3o	11	155.8	96	100	106	
14	2+	4-	4o	4+	4-	4o	4+	4-	50	2-	4-	3+	5-	5-	4o	4-	3o	47	137.7	81	70	87	
15	4-	4+	3+	3o	3+	3o	3o	3o	37	4+	4o	3+	2o	3-	3-	3-	3+	35	132.8	63	49	81	
16	4-	4+	2+	4+	4-	3o	5o	5+	59	3o	5+	2o	5-	4-	3+	5-	5+	63	126.5	57	56	75	
17	5o	5o	5o	5+	4+	4o	3+	4o	76	5-	5o	5o	5o	3+	3+	2+	4-	63	125.8	56	56	74	
18	4+	5o	6o	7-	3+	4o	4o	3+	90	5-	5-	7-	6+	3+	3+	4-	4+	93	124.3	68	66	72	
19	4-	3+	3o	3-	3-	3-	3o	2-	27	4o	3-	3o	3-	2+	2-	3o	1o	26	126.8	76	76	75	
20	2o	2+	3+	3o	3-	3o	3-	3-	24	1o	2o	3o	2-	2-	3o	2+	2+	17	120.8	74	78	68	
21	4o	3+	5-	3-	2+	3+	3o	3o	38	4+	3+	5-	3+	1o	4-	3-	4-	41	118.8	62	69	66	
22	3-	2+	3-	3o	2-	3o	3+	3-	25	3o	2+	3o	3-	1o	3-	4-	3o	27	113.9	61	65	61	
23	3+	4o	3+	4-	3-	3-	3-	3o	35	5-	4o	4-	4+	2o	2+	3-	3-	41	117.2	66	69	65	
24	3+	4o	4-	5-	4+	2+	2o	3-	41	4+	4o	4o	4o	4+	2o	2o	3-	45	118.3	68	74	66	
25	2o	2+	4-	3o	3-	3+	3+	3+	31	2o	2+	4-	3-	2o	3o	4-	3+	29	120.2	76	79	68	
26	3-	3o	3o	4o	4o	3o	2+	3o	34	3+	3o	3+	4-	4-	2+	1+	2o	29	122.9	82	84	71	
27	4-	4o	5-	4o	4+	4-	3+	3+	50	3+	3+	4o	3+	3+	3+	3o	4o	41	128.1	93	93	76	
28	3o	4o	3o	5+	4+	4o	3+	4+	58	3-	4+	3-	5+	4-	3+	3-	4+	51	128.1	93	95	76	
29	4-	3o	4o	4+	3+	4-	3+	4-	46	4+	3+	3+	4o	3o	3o	3-	4o	40	131.6	94	92	80	
30	3+	4-	4+	4-	3-	3-	3-	2o	35	3o	4-	5-	3-	2+	2o	2o	2-	30	132.5	92	85	81	
Mean									40.8									37.4	133.4	77.4	78.2	82.1	

Daily Average Indices Ap
Jul 2002 - Jun 2003

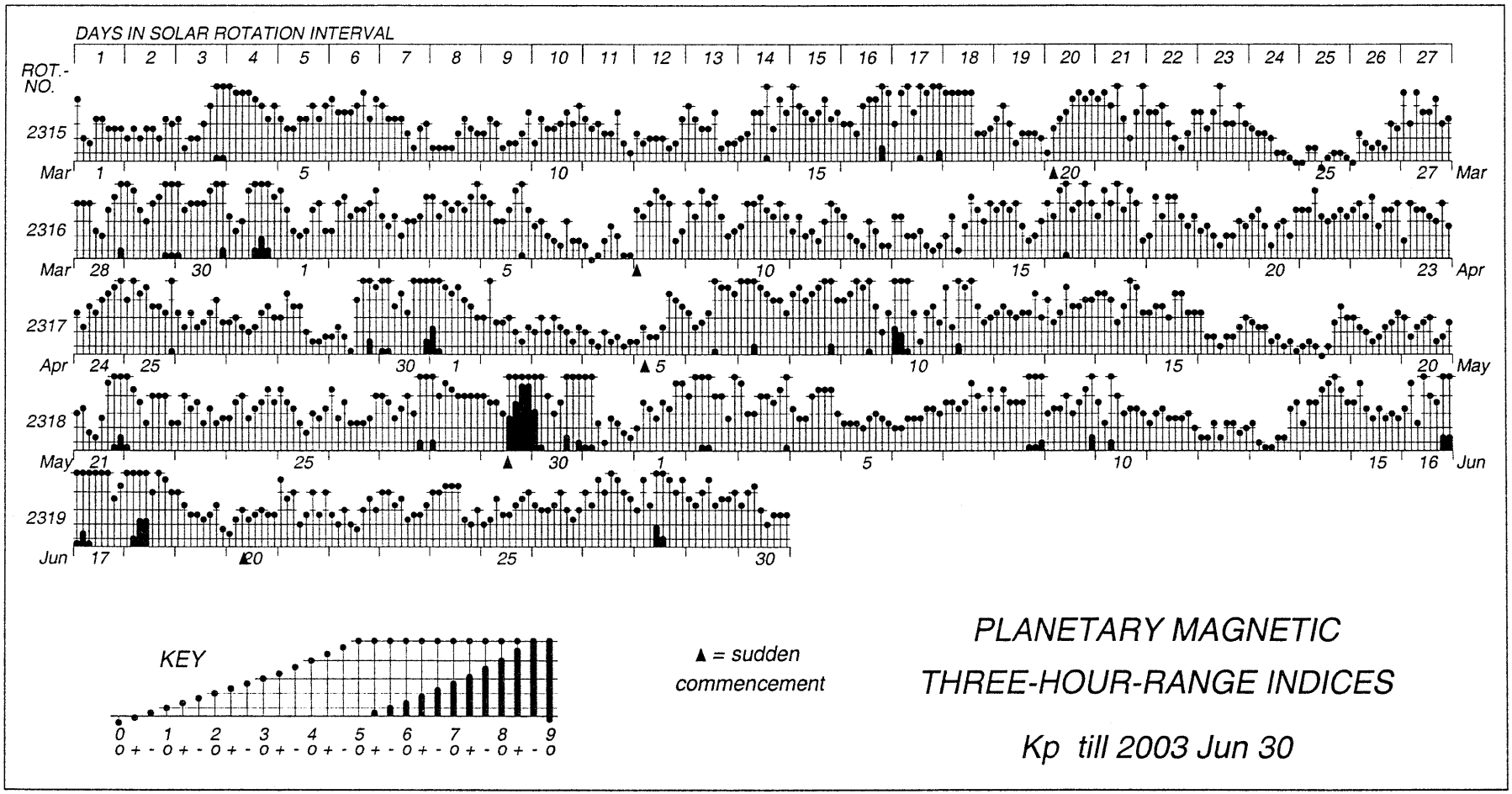


Day	Jul 02	Aug	Sep	Oct	Nov	Dec	Jan 03	Feb	Mar	Apr	May	Jun
1	14	25	11	67	7	18	7	14	15	18	43	22
2	5	42	8	53	28	13	6	52	11	24	15	38
3	4	14	7	45	35	11	18	22	24	17	9	29
4	5	13	42	64	23	12	16	31	34	28	5	22
5	12	4	7	28	24	9	7	14	19	28	14	10
6	22	4	7	15	21	9	4	14	27	9	28	13
7	8	4	57	48	13	18	6	13	15	5	38	25
8	8	6	36	33	5	12	4	16	8	22	39	37
9	12	14	9	20	6	6	3	19	11	22	31	28
10	7	15	24	16	17	5	12	16	16	23	42	24
11	5	13	26	6	12	4	10	10	12	14	31	12
12	19	12	14	6	17	5	8	13	8	9	20	7
13	6	8	11	5	13	4	7	7	14	9	24	9
14	2	12	8	23	8	13	9	20	23	17	29	28
15	4	22	6	18	12	8	7	23	26	17	22	18
16	12	11	6	18	7	5	5	17	31	33	9	40
17	20	8	11	13	7	3	7	12	42	28	7	49
18	5	21	14	14	10	3	12	21	28	21	8	60
19	10	30	15	14	14	25	18	13	12	9	10	14
20	18	30	4	10	25	21	19	17	25	14	10	11
21	20	32	6	8	50	21	18	14	30	22	29	22
22	16	8	6	10	26	10	19	11	16	23	26	12
23	17	7	2	11	17	24	20	11	22	19	16	18
24	7	4	2	63	15	20	18	6	6	27	21	23
25	12	5	2	39	15	12	28	5	3	33	16	16
26	12	16	5	27	13	15	20	15	8	15	16	16
27	17	13	6	25	24	37	10	30	25	13	30	31
28	11	7	5	19	12	19	13	18	27	14	34	42
29	10	8	4	14	14	13	16		37	27	109	24
30	6	8	28	16	16	11	25		39	45	59	17
31	7	7		20		7	17		43		20	
Mean	11	14	13	25	17	13	13	17	21	20	26	24

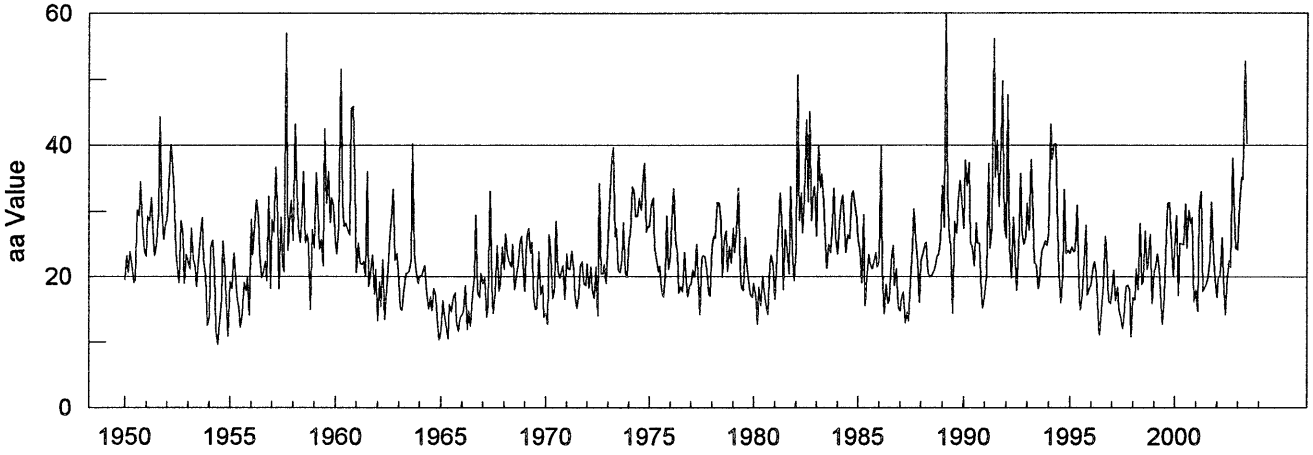
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

GeoForschungsZentraum Potsdam

Kp through June 30, 2003



Monthly Mean aa Index Jan 1950 - May 2003



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	20.1	22.2
2000	24.2	29.4	17.1	25.1	25.0	24.9	31.1	24.3	30.2	28.1	29.1	16.1	25.4
2001	18.0	14.7	30.2	33.0	17.8	18.2	18.7	19.9	22.7	31.4	24.4	19.5	22.4
2002	16.8	20.0	20.2	26.0	19.9	14.2	19.9	22.5	21.4	38.1	29.3	24.4	22.7
2003	24.2	31.3	35.2	34.9	52.7	40.2							36.4

PLANETARY GEOMAGNETIC ACTIVITY

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

ISGI PUBLICATION OFFICE – EMail : ISGI.PUBOFF@cetp.ipsl.fr
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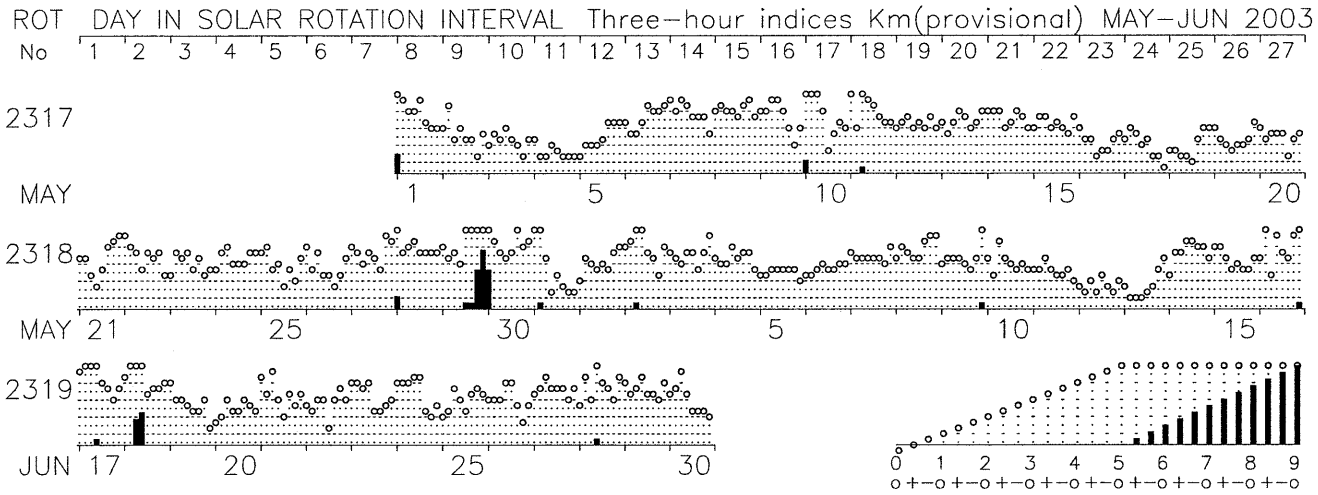
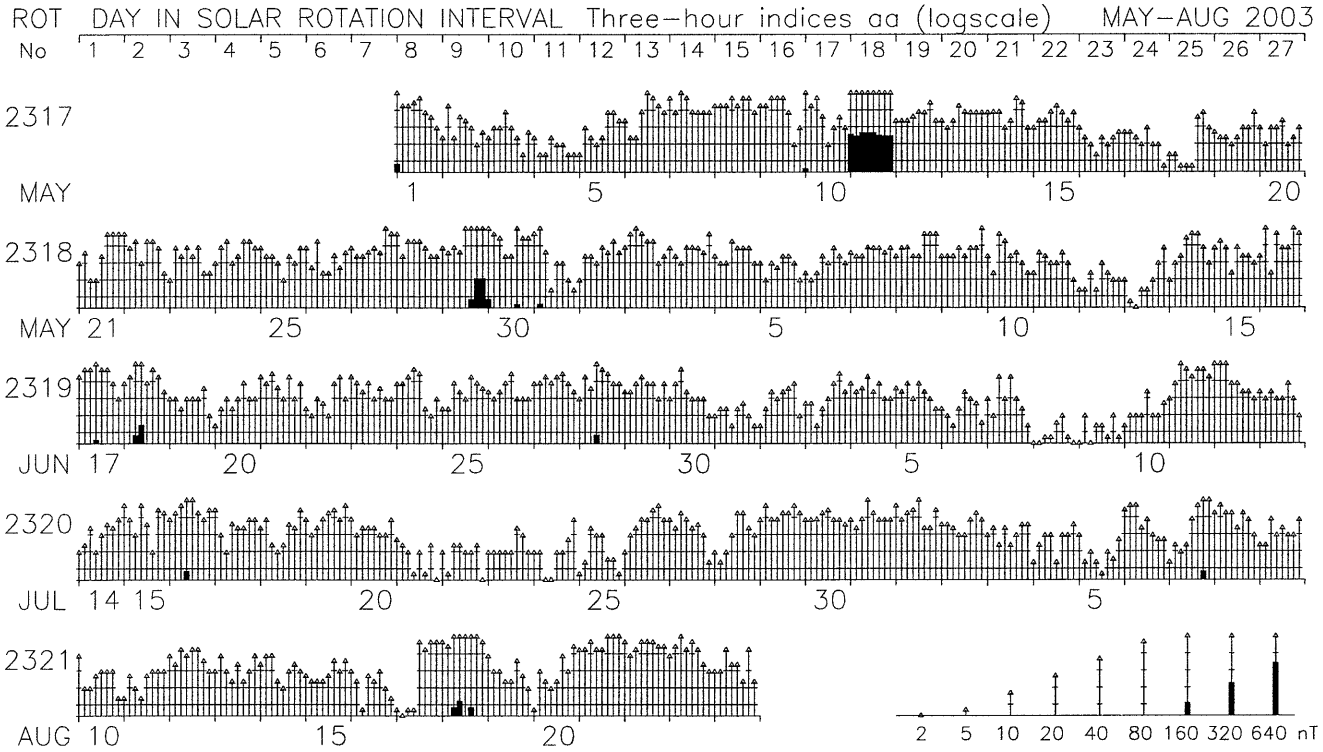


Indices Derivation at C.E.T.P.; Graph Prepared at ISGI Publication Office.



Indices Derivation at C.E.T.P.; Graph Prepared at ISGI Publication Office.

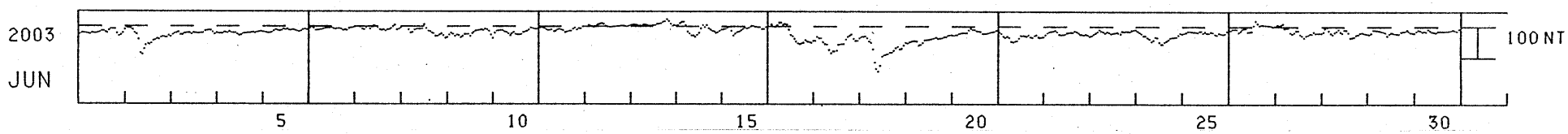
WDC FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

JUNE 2003

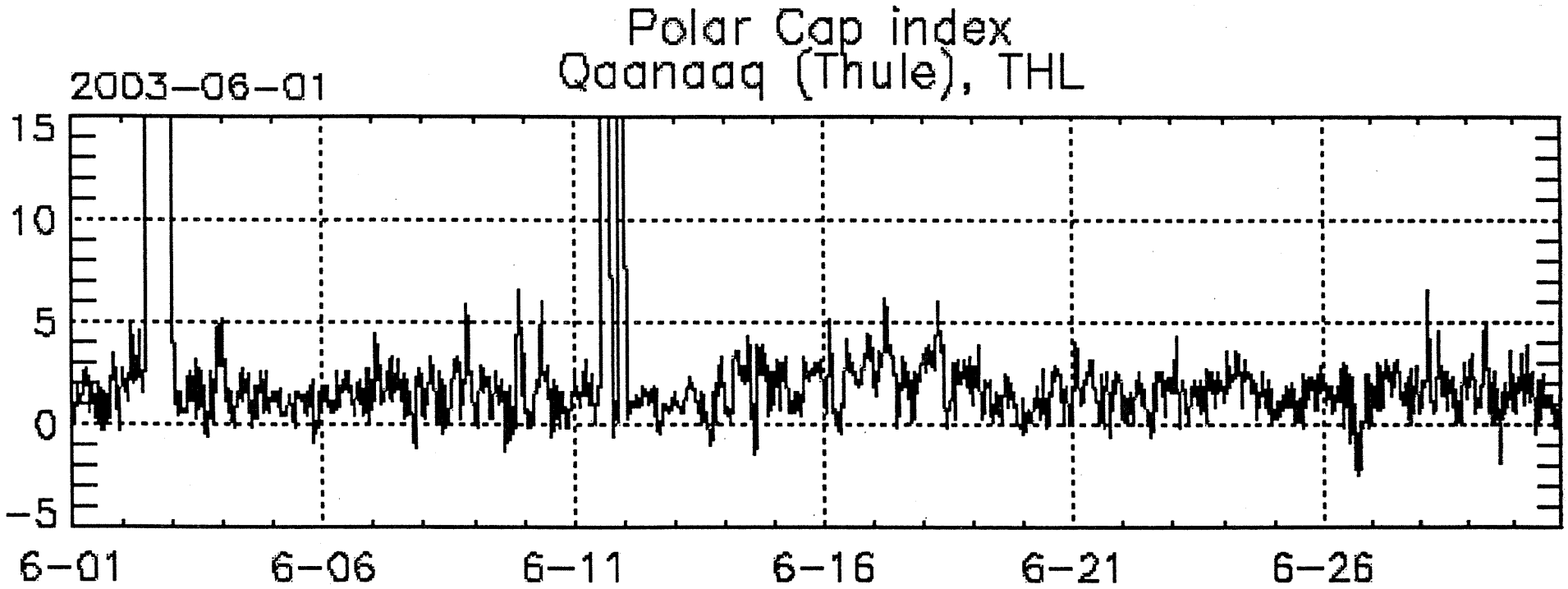
UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 (U.T.)
1	-25	-21	-21	-23	-22	-24	-21	-22	-23	-19	-17	-13	-14	-18	-19	-12	-8	-7	-8	-22	-31	-27	-19	-9
2	-4	-5	-5	-10	-21	-24	-41	-86	-90	-74	-60	-57	-58	-53	-46	-43	-40	-41	-36	-33	-35	-34	-29	-33
3	-27	-22	-21	-18	-26	-26	-23	-21	-20	-19	-24	-21	-19	-22	-23	-20	-20	-14	-12	-11	-12	-17	-24	-21
4	-23	-23	-22	-17	-19	-19	-16	-20	-20	-20	-24	-28	-27	-23	-23	-20	-19	-21	-17	-20	-18	-15	-15	-15
5	-17	-19	-20	-20	-17	-13	-10	-12	-13	-12	-7	-10	-7	-11	-12	-9	-11	-13	-15	-13	-9	-7	-10	-10
6	-5	-2	-5	-11	-11	-9	-9	-8	-6	-5	-6	-4	-5	-7	-6	-6	-8	-11	-10	-11	-5	-4	-3	-1
7	1	1	-2	-7	-9	-3	1	-7	-2	3	2	-4	-10	-12	-10	-14	-10	-9	-5	1	5	-10	-8	-4
8	1	2	1	-9	-19	-17	-10	-7	-7	-7	-7	7	-5	-13	-15	-20	-22	-31	-30	-27	-23	-28	-38	-35
9	-26	-19	-24	-30	-27	-28	-34	-30	-25	-24	-25	-31	-23	-18	-14	-11	-11	-9	-12	-8	-10	-14	-27	-37
10	-20	-13	-12	-11	-11	-15	-18	-22	-28	-23	-18	-24	-27	-27	-25	-17	-16	-14	-10	-3	-5	-7	-7	-8
11	-3	-3	-6	-10	-12	-9	-10	-16	-13	-9	-8	-10	-12	-17	-16	-14	-13	-8	-3	-9	-6	-6	0	0
12	2	5	4	2	-1	4	8	10	11	9	3	0	-2	-1	2	1	1	4	4	4	3	1	3	6
13	7	7	8	6	4	4	8	7	6	4	4	5	5	10	10	11	16	18	24	19	10	4	5	4
14	5	12	15	16	6	-15	-23	-28	-29	-32	-26	-19	-6	5	-2	5	-5	-9	-13	-16	-21	-18	-13	-10
15	-7	-7	-3	-1	-13	-28	-22	-18	-15	-12	-7	-4	-6	-4	1	4	2	-1	-1	-2	-7	-8	-1	-1
16	1	8	2	-2	5	14	13	7	9	8	-9	-26	-31	-39	-48	-54	-55	-53	-51	-43	-47	-49	-51	-45
17	-45	-33	-37	-37	-49	-57	-59	-76	-85	-80	-80	-77	-59	-57	-55	-55	-41	-33	-29	-25	-39	-45	-45	-37
18	-32	-33	-31	-38	-48	-51	-74	-116	-137	-145	-125	-97	-91	-90	-89	-83	-83	-78	-68	-65	-73	-70	-61	-51
19	-53	-50	-47	-46	-45	-47	-60	-59	-51	-43	-44	-41	-41	-39	-38	-36	-39	-38	-38	-32	-32	-29	-26	-27
20	-28	-26	-27	-23	-20	-19	-20	-19	-11	-6	-10	-9	-13	-14	-15	-22	-23	-22	-21	-18	-16	-16	-12	-12
21	-17	-22	-30	-34	-31	-35	-47	-50	-47	-46	-37	-28	-28	-29	-30	-27	-33	-36	-29	-27	-33	-34	-33	-33
22	-26	-21	-16	-15	-14	-12	-15	-25	-27	-25	-25	-20	-17	-18	-18	-14	-15	-20	-25	-25	-26	-25	-27	-31
23	-28	-24	-20	-15	-9	-14	-16	-19	-16	-17	-22	-19	-19	-18	-21	-22	-14	-16	-14	-14	-16	-11	-9	-9
24	-13	-17	-23	-28	-28	-36	-39	-47	-44	-32	-35	-50	-57	-56	-50	-45	-41	-36	-34	-32	-32	-27	-21	-22
25	-20	-18	-14	-13	-15	-15	-16	-18	-13	-14	-19	-16	-19	-20	-15	-18	-25	-27	-21	-23	-25	-22	-14	-11
26	-11	-8	-7	-7	-17	-14	-7	-5	-6	-15	-16	-14	5	20	12	6	8	7	5	5	5	3	2	4
27	7	5	8	11	-5	-4	-3	-17	-22	-18	-12	-12	-25	-29	-35	-28	-27	-23	-22	-16	-20	-20	-19	-20
28	-16	-6	-2	-12	-20	-24	-17	-14	-8	-16	-20	-10	-10	-18	-36	-34	-32	-26	-24	-20	-17	-20	-22	-22
29	-24	-19	-10	-9	-12	-11	-14	-16	-17	-28	-22	-18	-21	-22	-23	-22	-16	-13	-13	-10	-13	-18	-18	-20
30	-13	-10	-12	-15	-13	-15	-8	-12	-15	-16	-17	-13	-13	-13	-13	-14	-14	-13	-11	-9	-11	-13	-8	-8



Note: The baselines for the observatories were adjusted for secular change for the Provisional Dst values for June 2003.

WDC C1 for Geomagnetism, Copenhagen



Data source: Solar-Terrestrial Physics Division
Danish Meteorological Institute

P R I N C I P A L M A G N E T I C S T O R M S
JUNE 2003

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
JAI	17.4N	01	1930	..	..	..	..		-	9	99	57	02	19
NGP	11.3N	01	1930	..	..	..	..		-	7	114	38	02	19
ABG	09.4N	01	1930	..	..	..	..	02(3)	6	7	114	63	02	19
HYB	07.6N	01	0100	..	..	..	..	02(3)	6	7	133	45	04	21
PND	02.0N	01	1930	..	..	..	..		-	6	147	72	02	19
TIR	00.6S	01	1930	..	..	..	..		-	5	242	102	02	19
GNA	43.0S	01	1800	..	..	..	..	02(4,5,6)	5	19	126	90	02	21
CAN	43.6S	01	2200	..	..	..	..	02(3,4)	5	15	145	73	02	21
JAI	17.4N	08	1000	..	..	..	..		-	8	73	41	10	18
KRC	16.4N	08	1054	..	..	..	..	08(4,6,7,8)	5	5	82	21	08	23
NGP	11.3N	08	1000	..	..	..	..		-	6	87	33	10	18
ABG	09.4N	08	1000	..	..	..	..	08(7) 14(2,5) 15(2)	5	6	77	52	10	18
HYB	07.6N	08	0100	..	..	..	..	08(4,6,7,8) 09(8) 10(3)	4	6	76	36	10	22
PND	02.0N	08	1000	..	..	..	..		-	5	90	57	10	18
TIR	00.6S	08	1000	..	..	..	..		-	4	130	60	10	18
HYB	07.6N	13	1300	..	..	..	..	14(5)	5	6	103	40	15	01
GNA	43.0S	13	1500	..	..	..	..	14(4,5)	5	14	100	117	15	09
KRC	16.4N	14	0952	..	..	..	..	14(2,5)	5	6	75	--	15	06
CAN	43.6S	14	0600	..	..	..	..	14(4,5)	5	21	109	45	14	21
HYB	07.6N	15	1500	..	..	..	..	18(4)	6	8	209	44	19	04
JAI	17.4N	16	0030	..	..	..	..		-	11	132	45	17	21
NGP	11.3N	16	0030	..	..	..	..		-	8	162	41	17	21
ABG	09.4N	16	0030	..	..	..	..	16(4)	6	9	160	60	17	21
PND	02.0N	16	0030	..	..	..	..		-	8	196	77	17	21
TIR	00.6S	16	0030	..	..	..	..		-	7	236	99	17	21
GNA	43.0S	16	0900	..	..	..	..	18(4)	6	34	196	252	19	21
CAN	43.6S	16	0000	..	..	..	..	18(4)	7	40	226	105	19	00
JAI	17.4N	18	0512	SC*	--	11	- 2		-	9	140	33	19	20
NGP	11.3N	18	0512	SC*	0.2	15	- 3		-	9	159	31	19	20
ABG	09.4N	18	0512	SC*	- 0.1	5	--	18(3,4)	6	7	153	57	19	20
PND	02.0N	18	0512	SC*	- 0.1	17	7		-	7	175	92	19	20
TIR	00.6S	18	0512	SC*	- 0.2	25	20		-	5	241	121	19	20
JAI	17.4N	20	0840	SC	- 0.8	18	- 4		-	8	73	36	21	19
NGP	11.3N	20	0840	SC	- 0.3	18	- 4		-	7	94	24	21	19
ABG	09.4N	20	0840	SC	- 0.5	13	- 7	24(4,5)	5	6	85	42	21	19
HYB	07.6N	20	0840	SC	- 1	20	- 2		-	--	--	--	--	--
PND	02.0N	20	0840	SC	- 0.3	17	14		-	6	86	39	21	19
TIR	00.6S	20	0840	SC	- 0.4	25	25		-	5	116	60	21	19
GNA	43.0S	23	1500	..	..	..	..	24(5)	6	20	113	130	26	18
CAN	43.6S	24	0000	..	..	..	..	24(4,5)	5	11	86	31	24	18
HYB	07.6N	25	1700	..	..	..	..	26(5)	5	7	115	34	28	01
JAI	17.4N	26	0730	..	..	..	..		-	10	97	43	28	18
NGP	11.3N	26	0730	..	..	..	..		-	8	115	26	28	18
ABG	09.4N	26	0730	..	..	..	..	26(5) 28(4,5)	5	8	108	51	28	18
PND	02.0N	26	0730	..	..	..	..		-	7	107	90	28	18
TIR	00.6S	26	0730	..	..	..	..		-	5	147	104	28	18
HYB	07.6N	28	0400	..	..	..	..	28(4)	5	6	108	25	30	15
GNA	43.0S	28	0000	..	..	..	..	28(4)	6	16	107	123	30	21
CAN	43.6S	28	0300	..	..	..	..	28(4)	6	24	124	55	30	21

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

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

June 2003

Storm Sudden Commencements (SSC)

Day	Time	Quality: Station Group*
18	0512	B: HTY
		C: MMB KAK KNY

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
09	1119-1148	GUI
10	0924-0933	NGK NAG
13	0433-0459	MMB+ KAK+ HTY+ KNY+
13	0628-0715	MMB+ KAK+ KNY+
16	0924-0929	NGK
19	1316-1340	GUI

REPORTING OBSERVATORIES (up to the 31st of July 2003):
NUR NGK VAL DOU BDV HRB NAG GCK MMB EBR COI SPT KAK HTY KNY GUI GNA 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 (+).

Note that we have included data of the Antartic Station LIVINGSTONE (62° 39' 44" S, 60°23' 41" W) -- Luis F.

Criterion on Provisional SSC data

From December 2002, we are giving as provisional SSC only the SSC reported by more than 4 observatories. This is a change with respect to the previous criterion according to which we used to give the SSC reported by more than 5 observatories. The change, pending IAGA confirmation, has been provisionally taken because of the decreasing number of reporting observatories in order to keep the homogeneity of the data. The idea is to keep the same minimum percentage of the observatories reporting an SSC, relative to the total number of reporting observatories, to be considered as a probable SSC.