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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

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Solar-Geophysical Data prompt reports

Data for May, June 1999 and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 659

(Issued in Two Parts)

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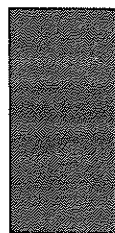
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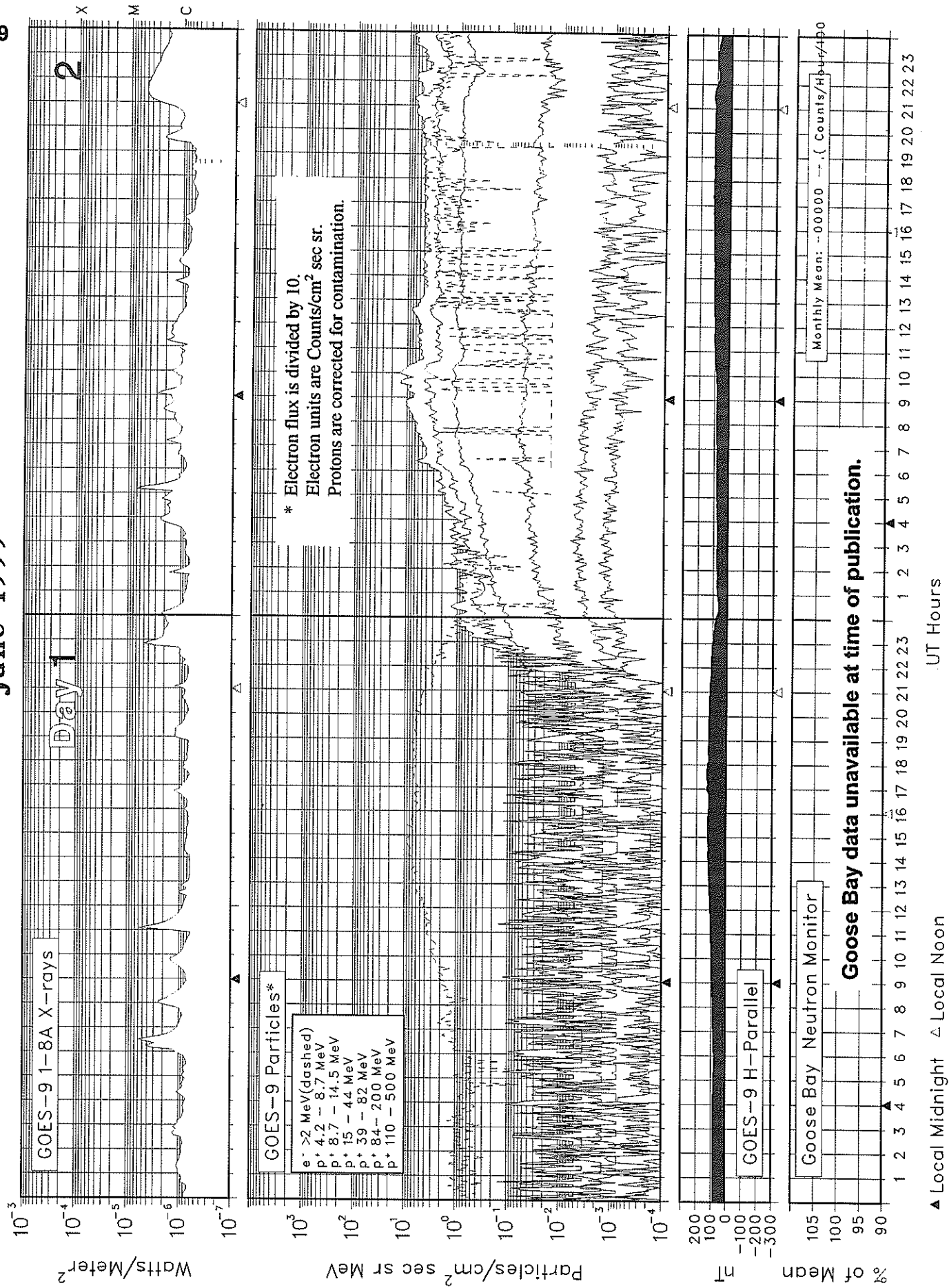
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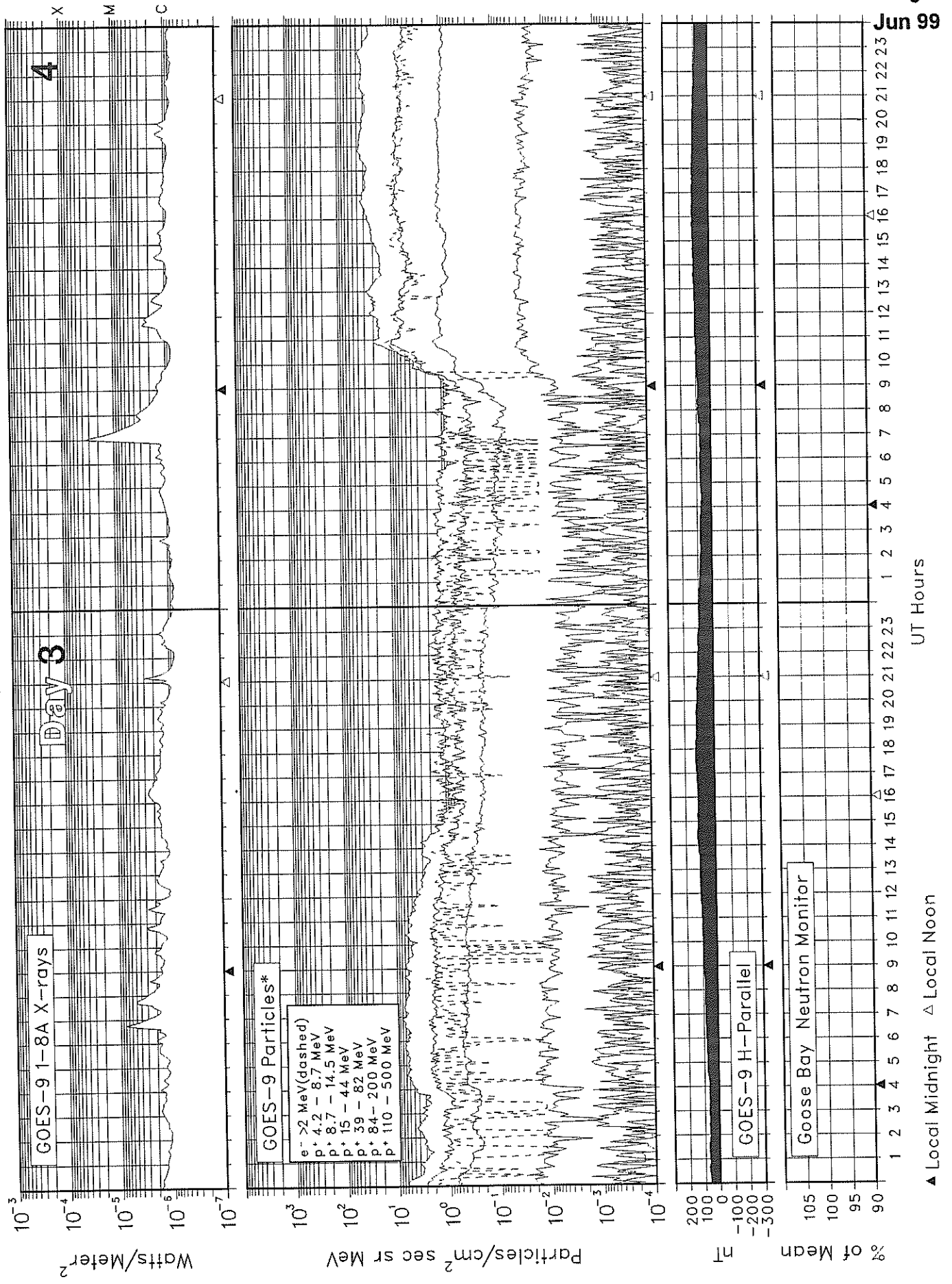
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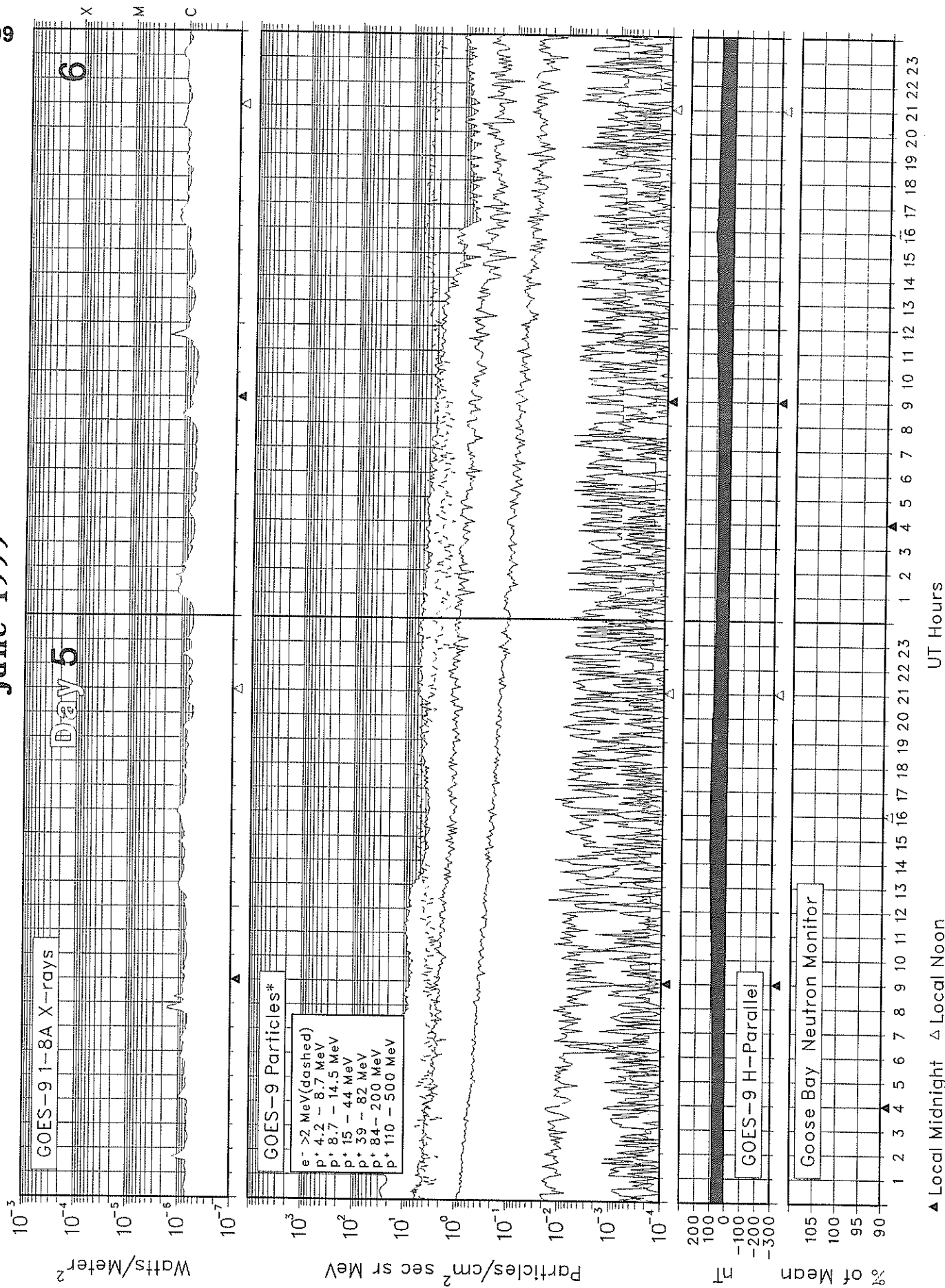
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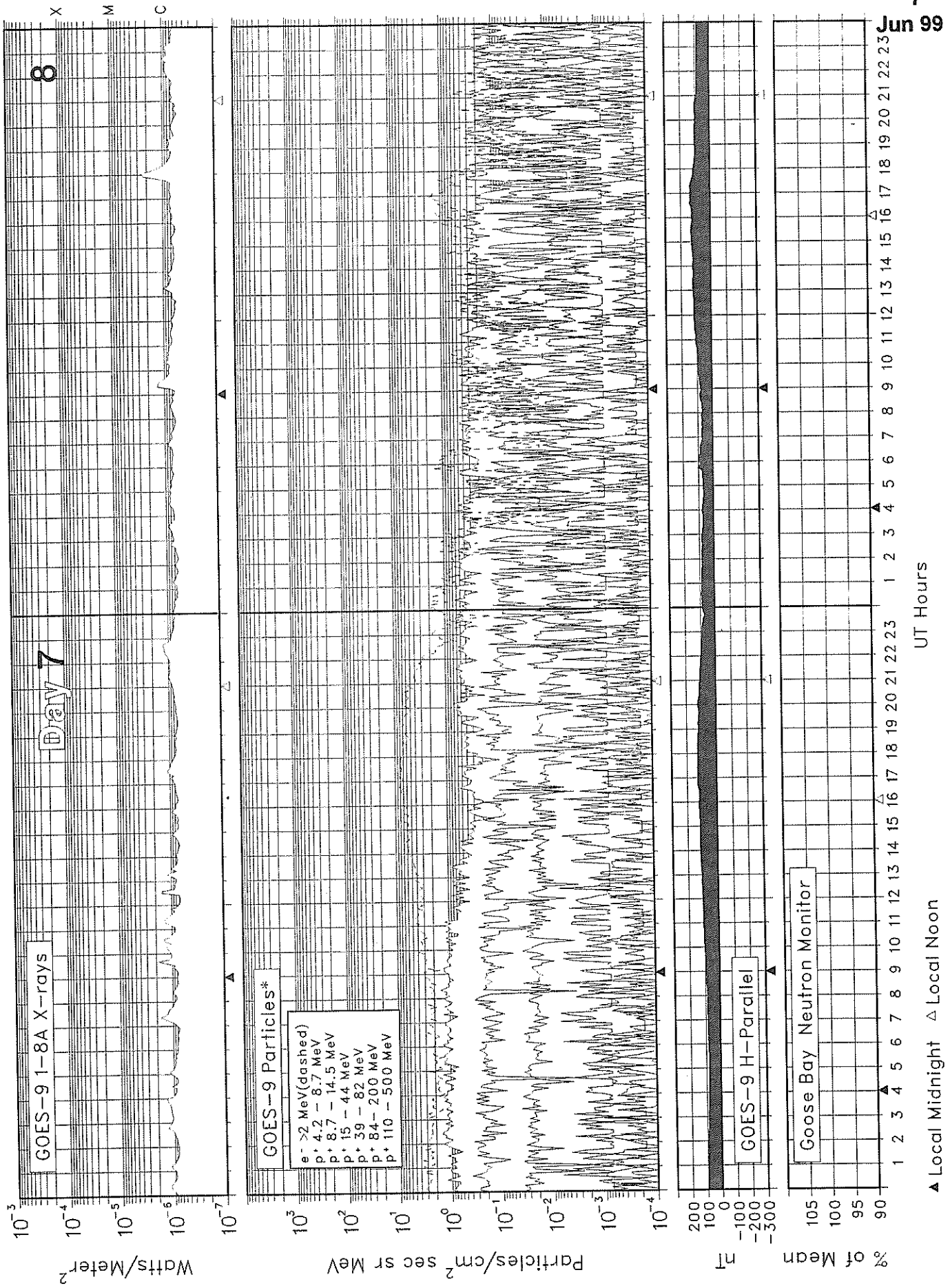
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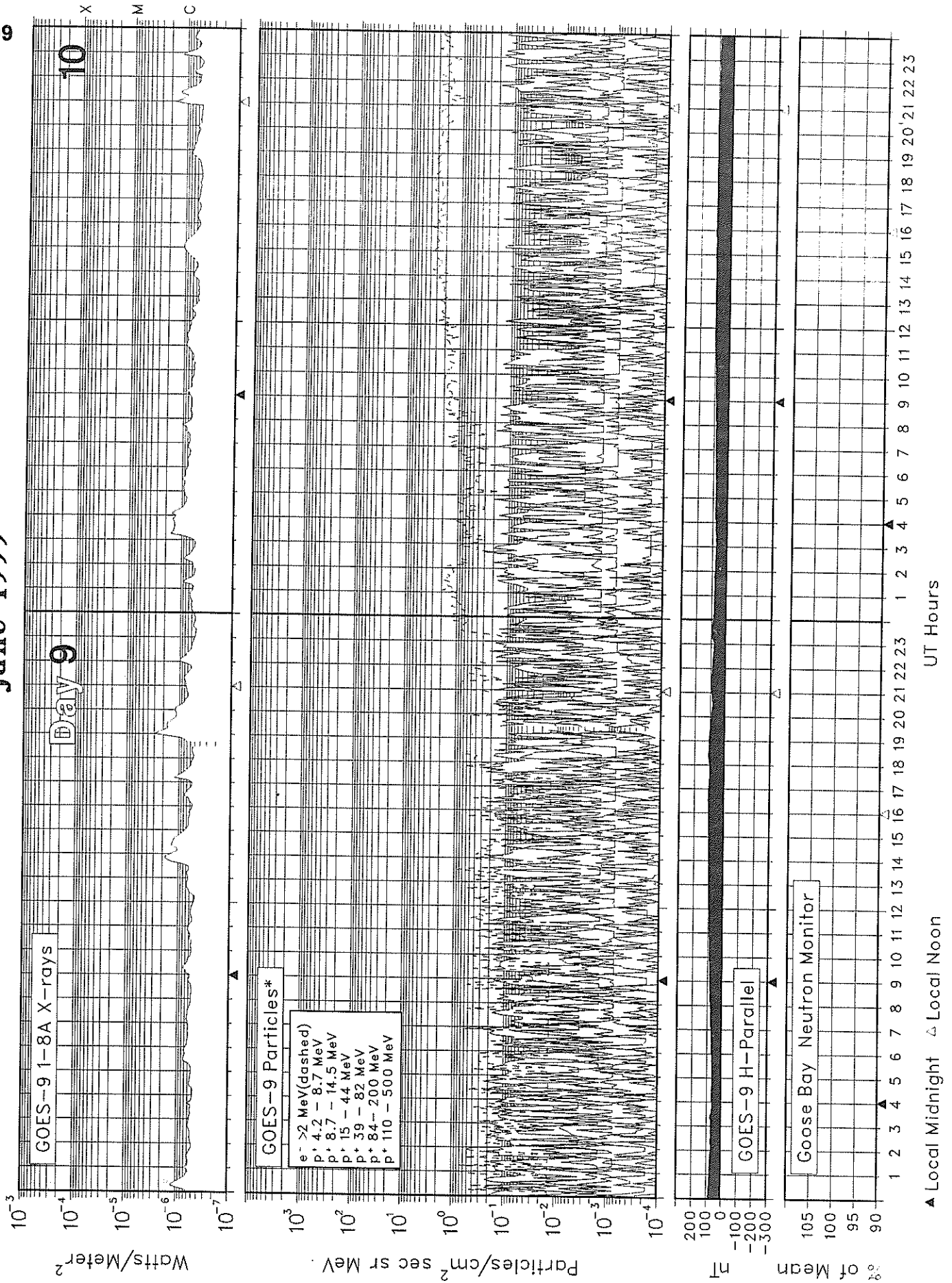
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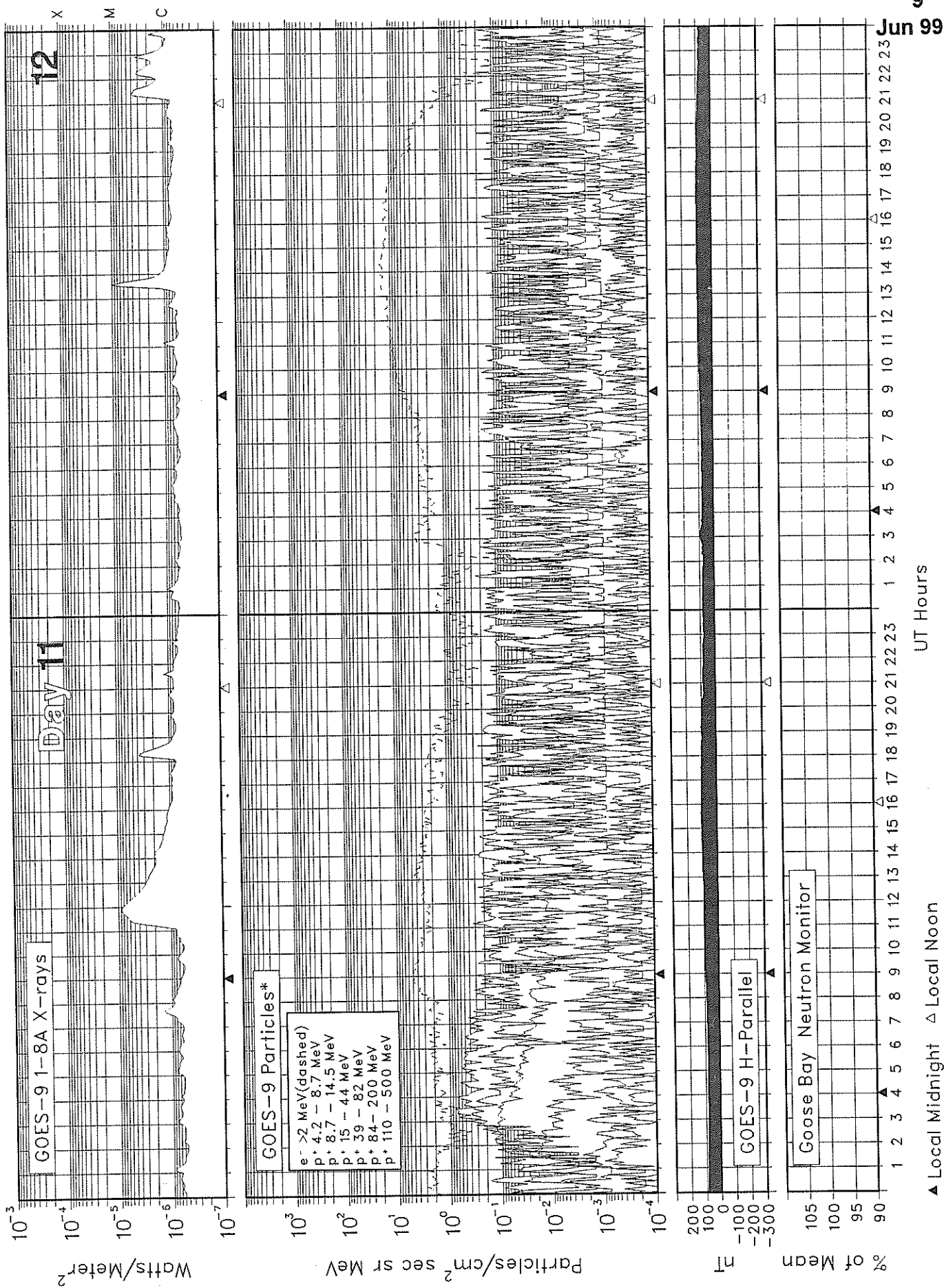
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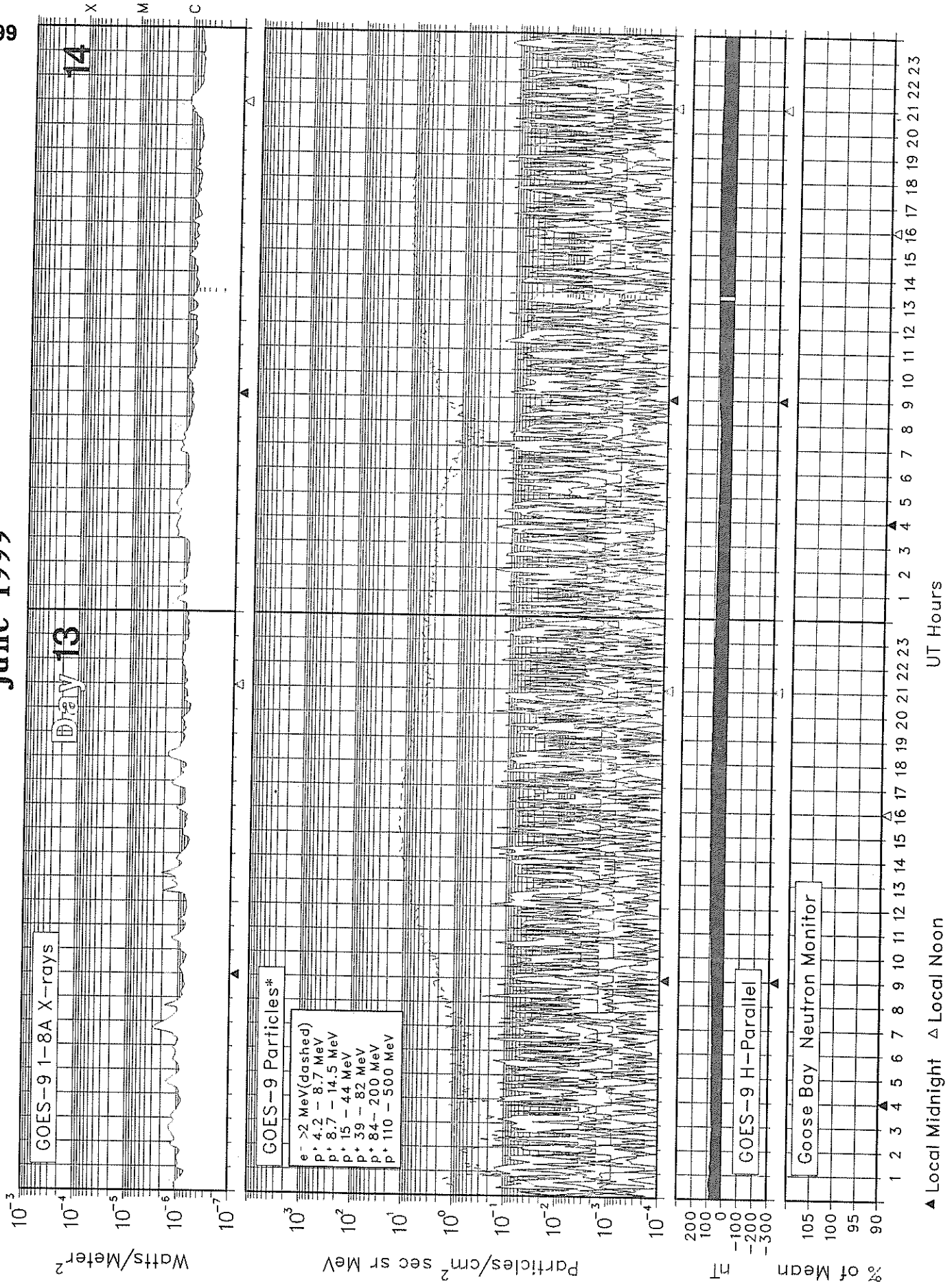
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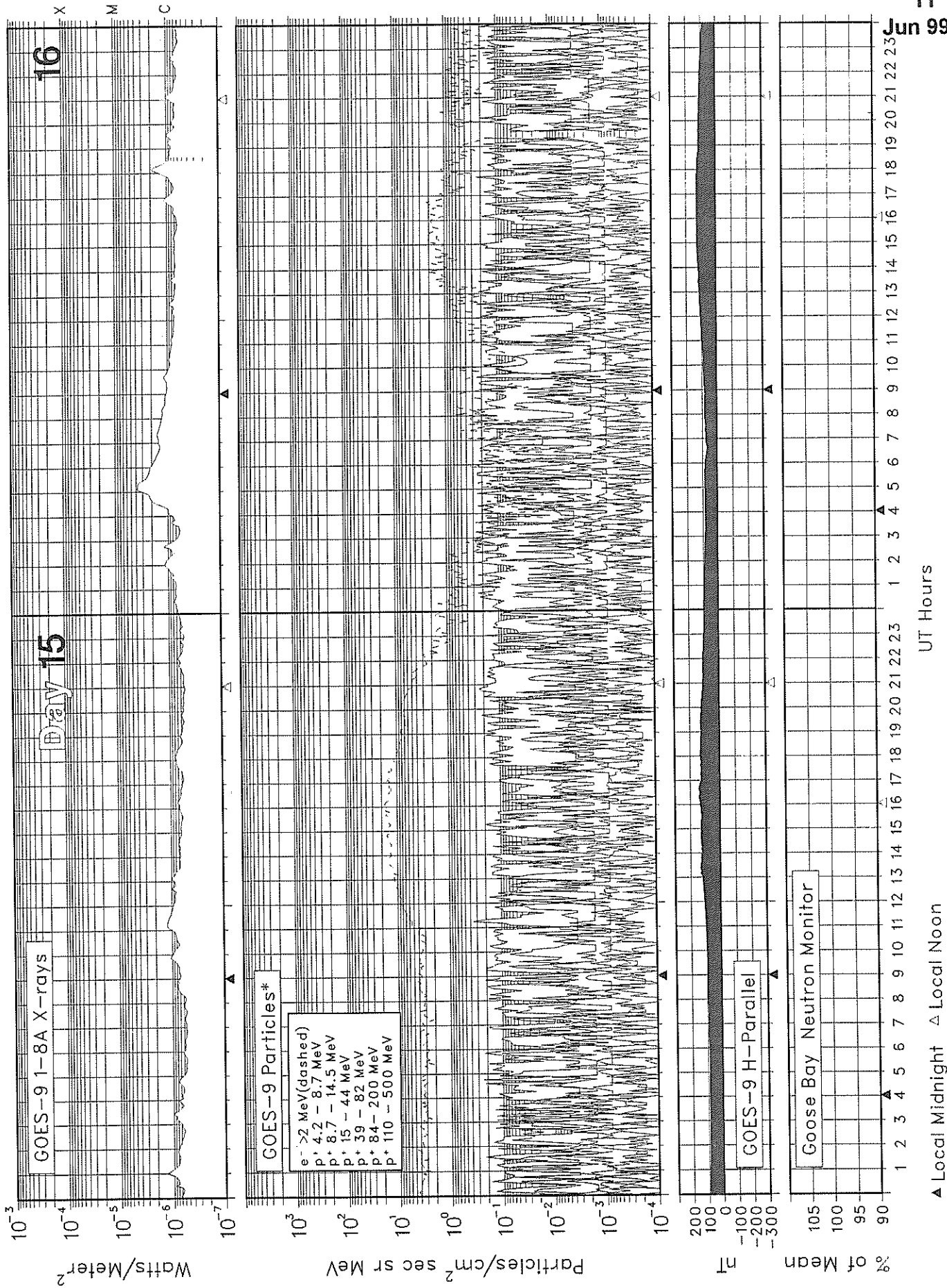
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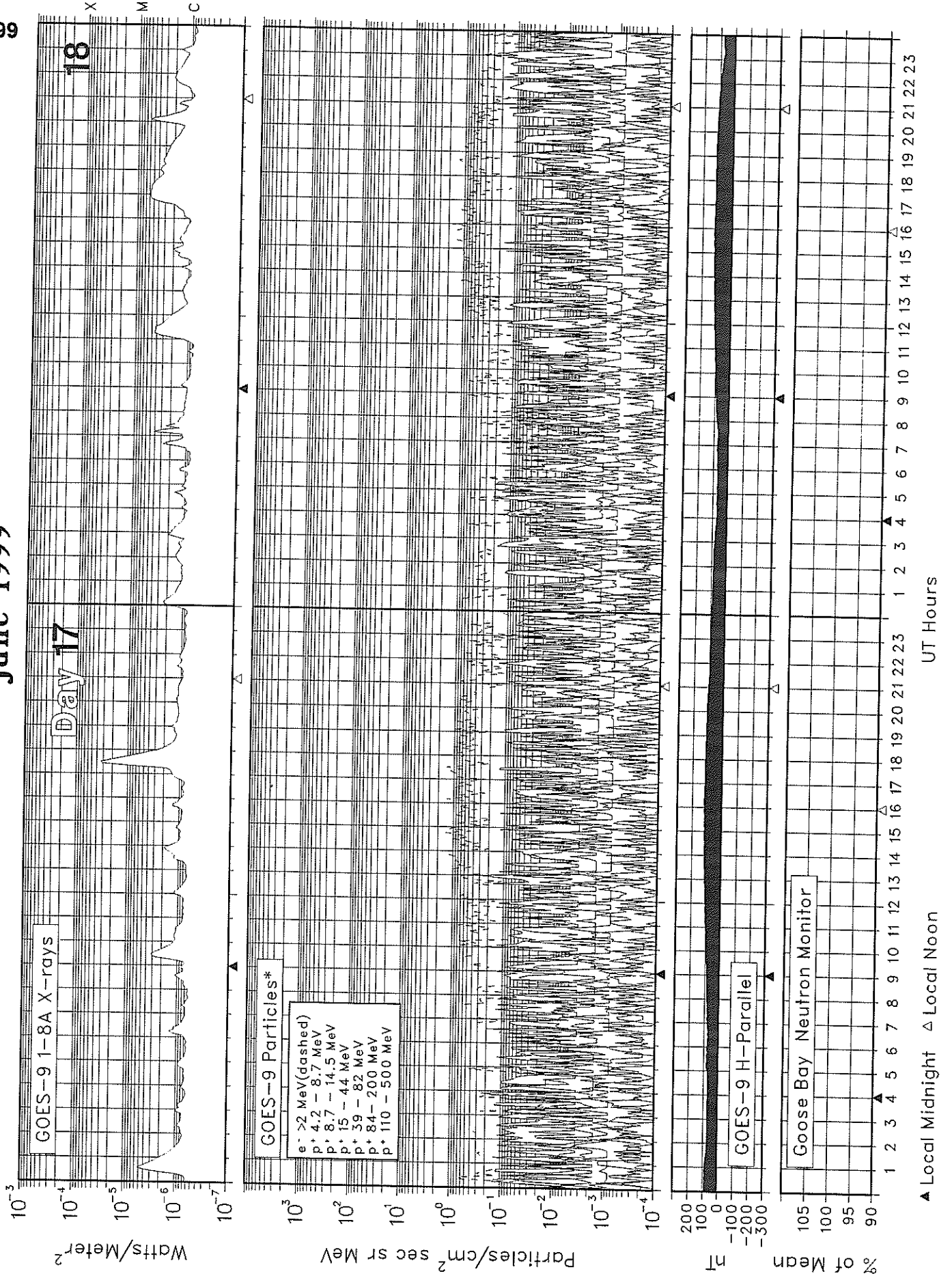
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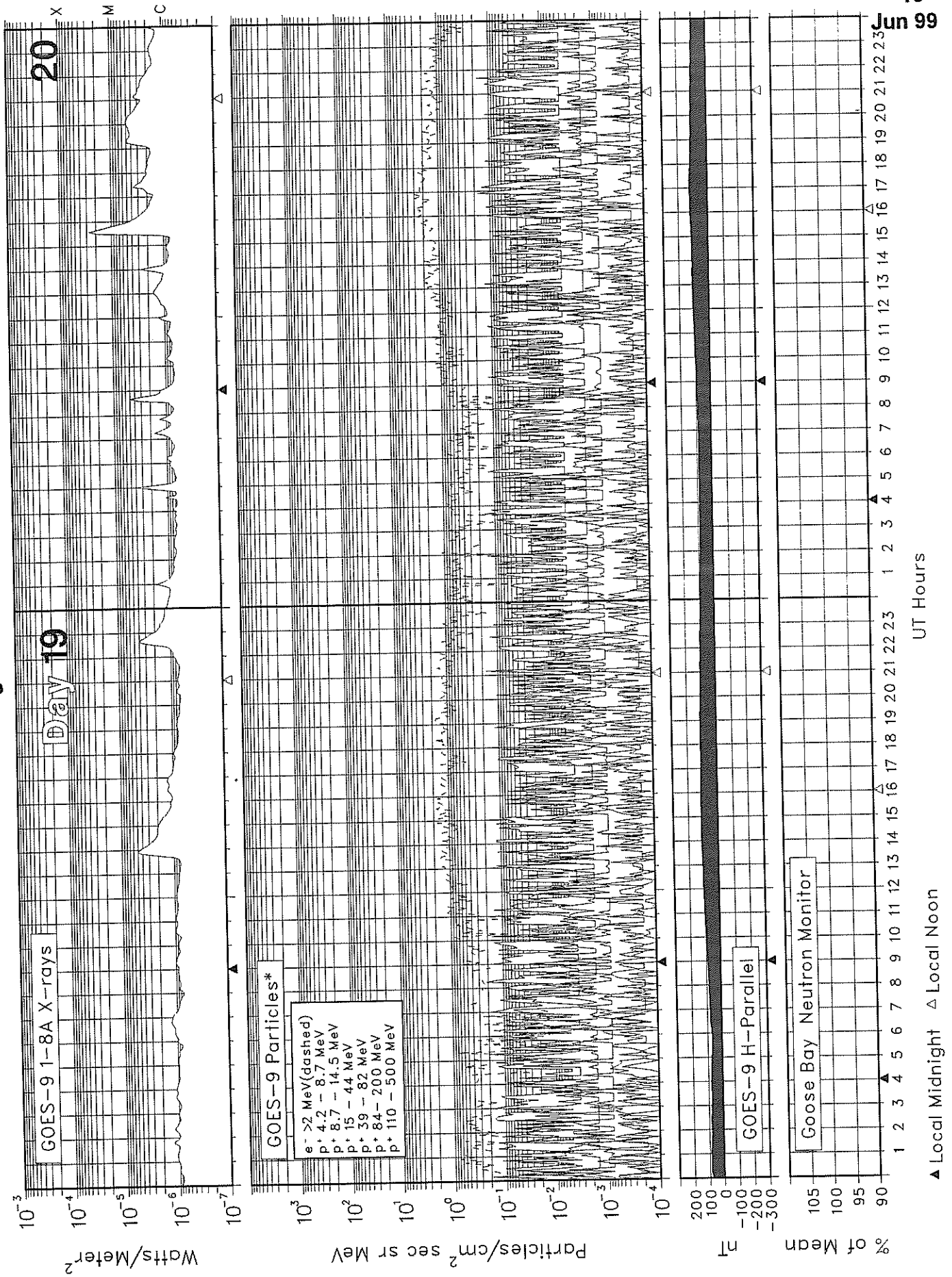
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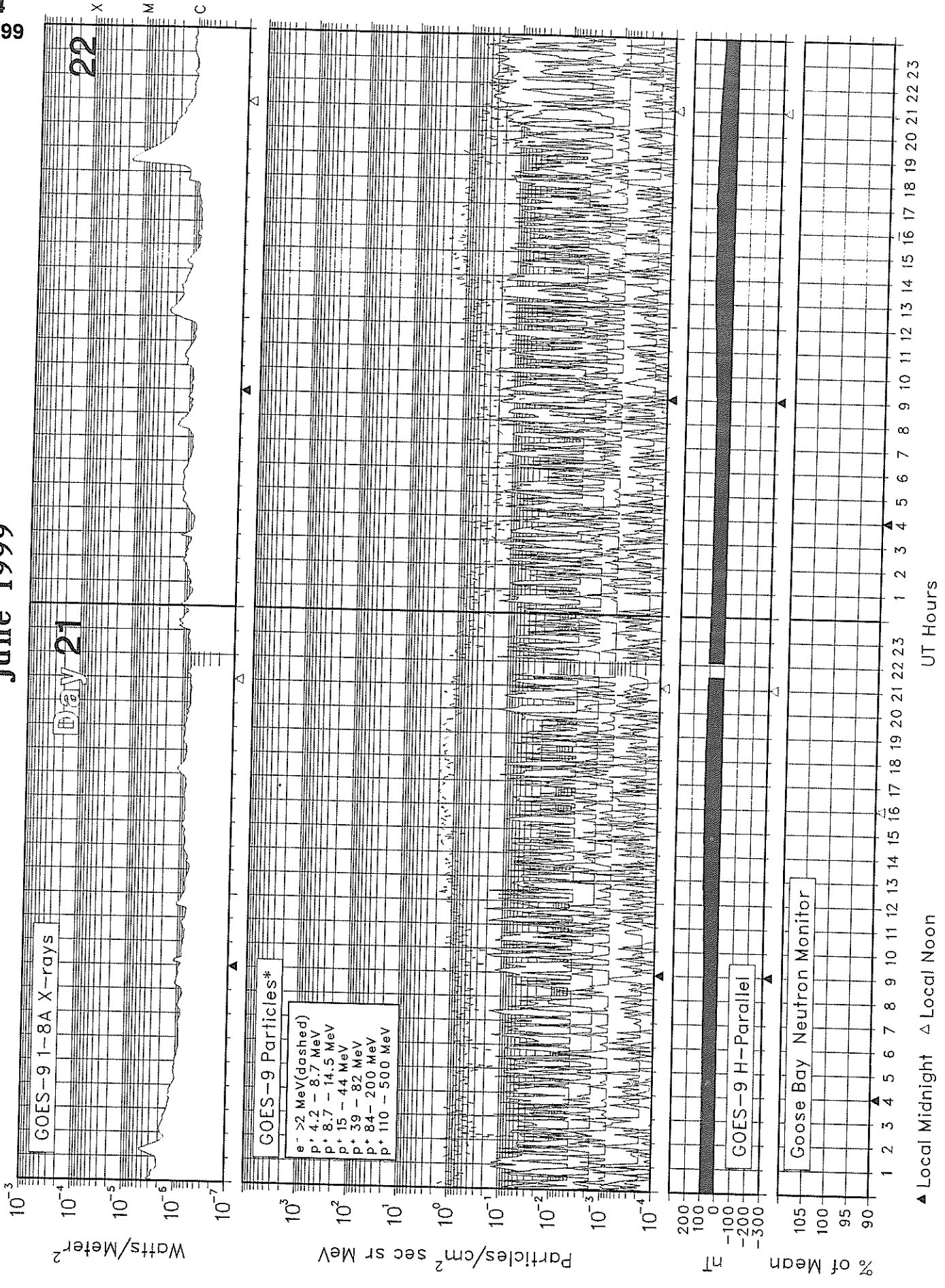
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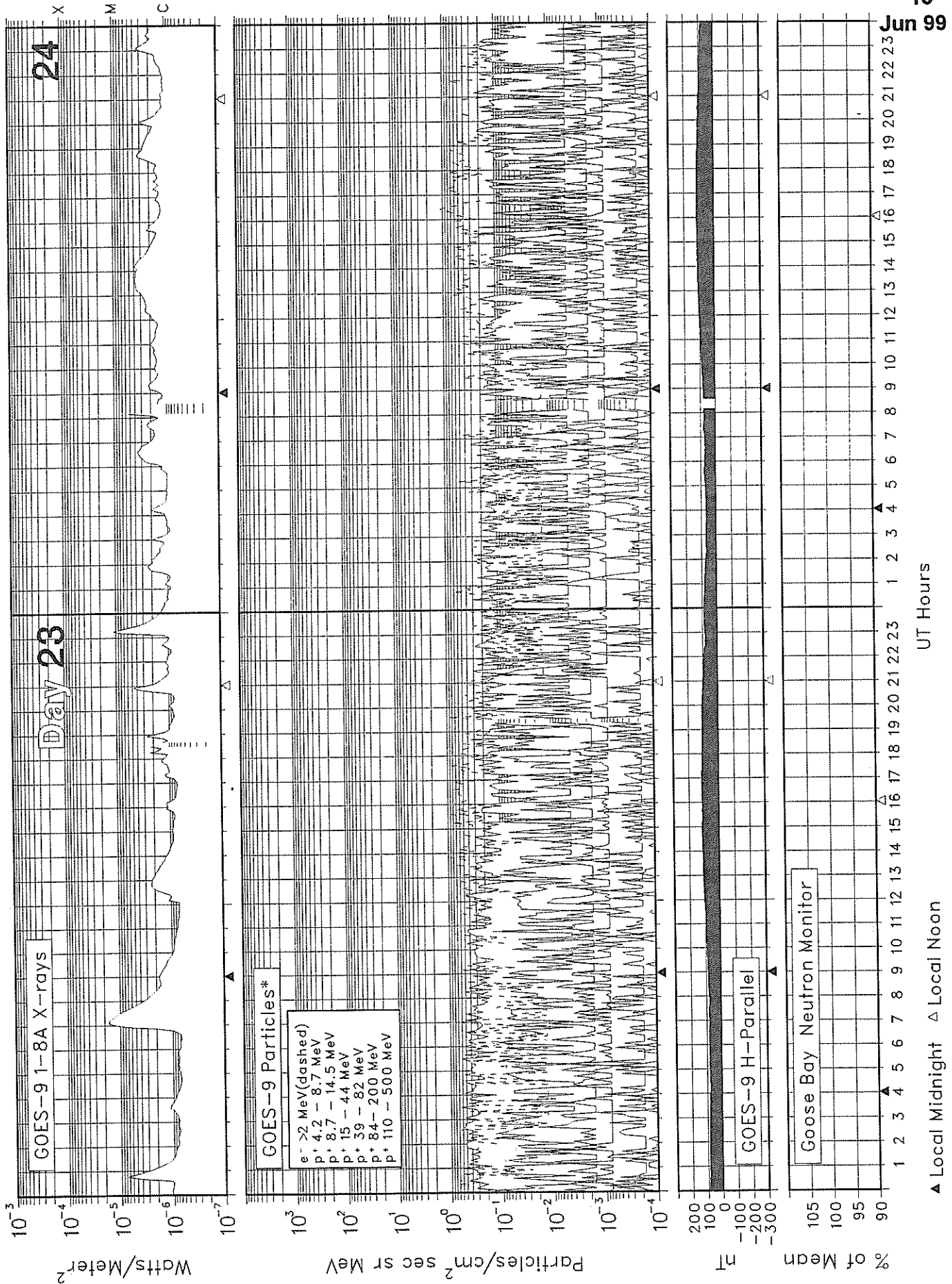
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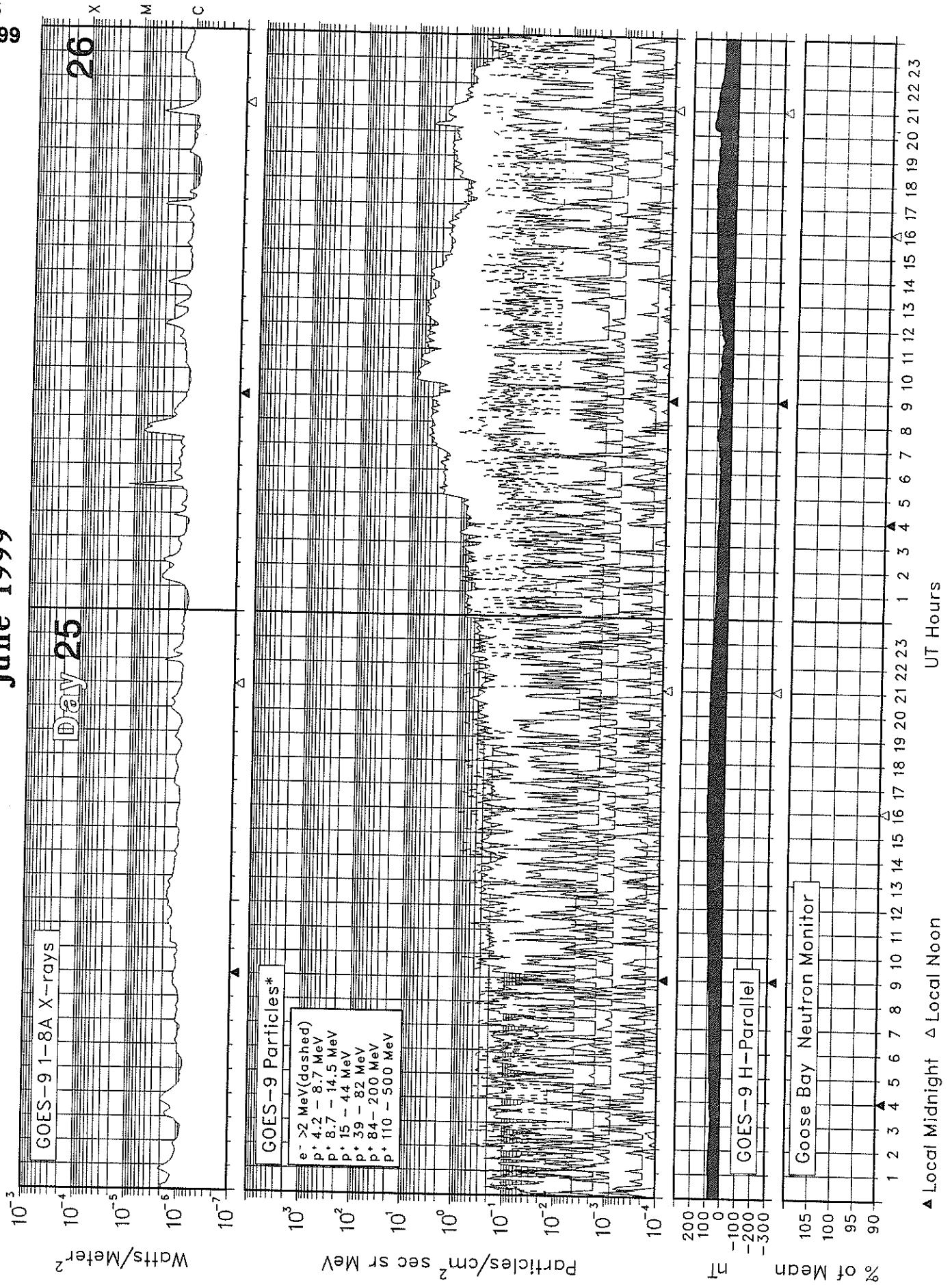
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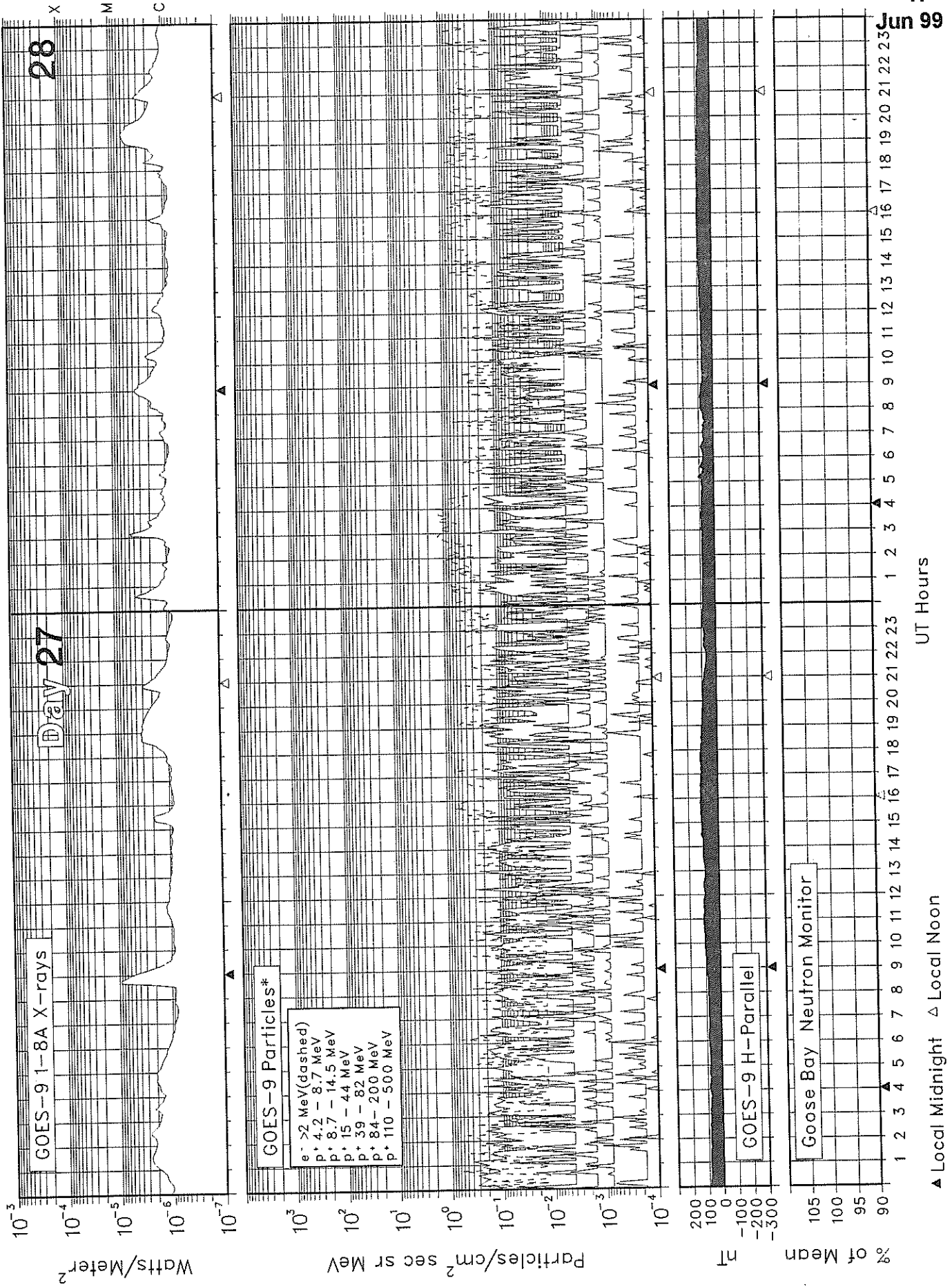
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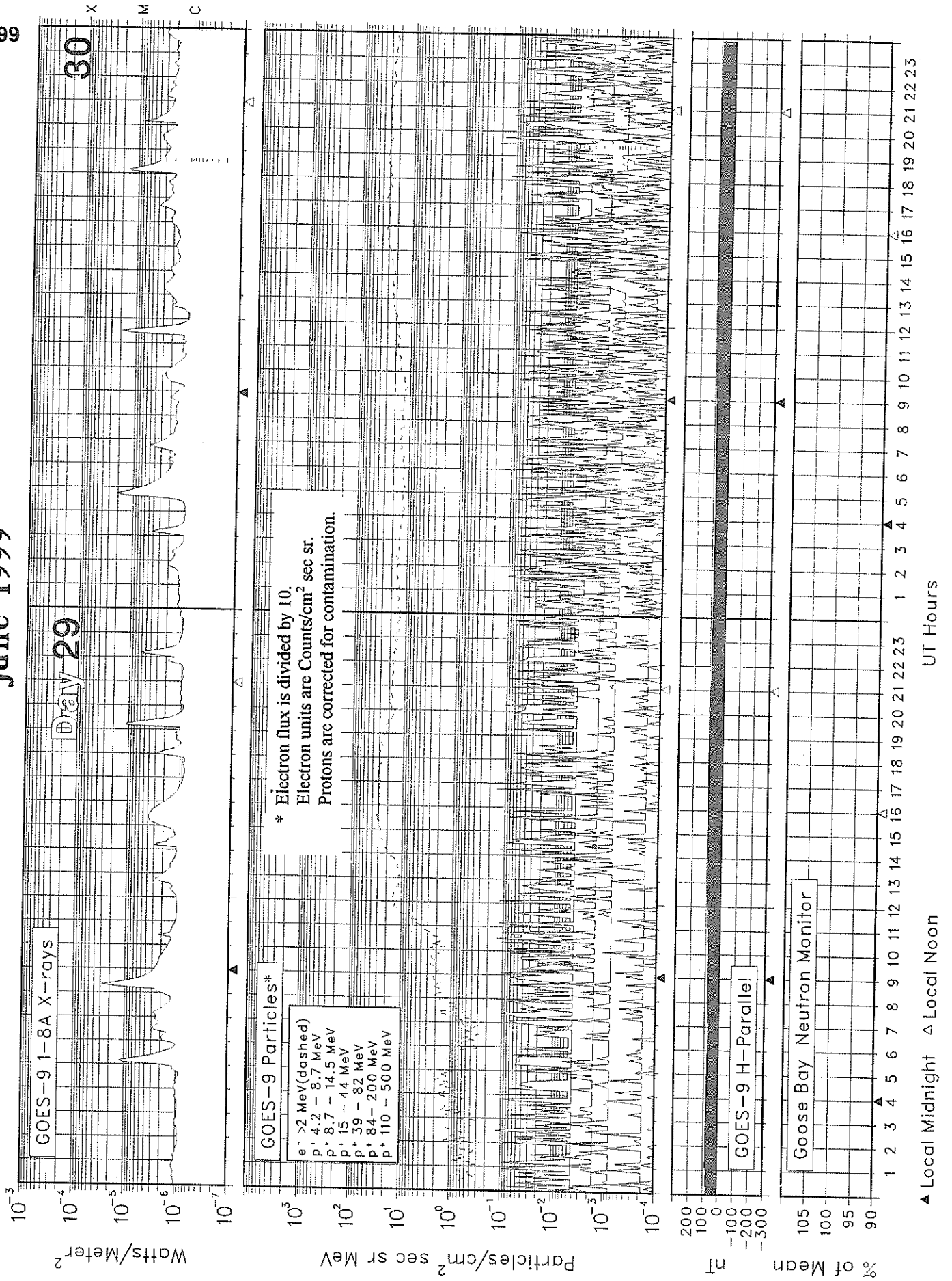
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A L E R T P E R I O D S
The International Space Environment Service

JUNE 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
152	01	31	157	165	3	N18	W32	1	0	0	01	E	SOL: Eruptive MAG: Quiet PRO: Quiet
						N25	W35	0	0	0	01	Q	
						N17	E08	0	0	0	01	Q	
						S30	E21	0	0	0	01	Q	
						N16	E30	0	0	0	01	E	
						N20	W23	0	0	0	01	Q	
						S24	E22	4	0	0	01	E	
						S15	E22	3	0	0	01	E	
						S25	E63	0	0	0	01	Q	
153	02	01	190	176	7	N32	W77	0	0	0	02	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						N18	W44	3	0	0	02	Q	
						N25	W48	6	0	0	02	Q	
						N17	W06	0	0	0	02	Q	
						S29	E08	3	0	0	02	Q	
						N15	E18	0	0	0	02	Q	
						N19	W33	0	0	0	02	Q	
						S16	E09	5	0	0	02	E	
						S26	E51	2	0	0	02	Q	
						S15	E68	0	0	0	02	Q	
						154	03	02	214	173	10	N32		W90	2	0	0	03	Q	SOL: Eruptive MAG: Quiet PRO: IP
N20	W57	1	0	0	03							Q	
N27	W63	2	0	0	03							Q	
N16	W18	0	0	0	03							Q	
S27	W06	1	0	0	03							Q	
N15	E04	1	0	0	03							Q	
N22	W50	0	0	0	03							Q	
S16	W05	3	0	0	03							E	
S26	E38	0	0	0	03							Q	
S16	E53	0	0	0	03							Q	
S07	E42	0	0	0	03							Q	
N23	E74	0	0	0	03							Q	
155	04	03	176	174	8							N20	W72	9	0	0	04	Q	SOL: Active MAG: Quiet PRO: No Fcst
						N24	W78	8	0	0	04	Q	
						N16	W30	0	0	0	04	Q	
						N16	W09	0	0	0	04	Q	
						N21	W63	0	0	0	04	Q	
						S15	W18	14	1	0	04	E	
						S25	E25	0	0	0	04	Q	
						S14	E40	0	0	0	04	Q	
						N23	E63	0	0	0	04	Q	
						S14	W04	0	0	0	04	Q	
156	05	04	209	171	8	N19	W86	7	1	0	05	E	SOL: Active MAG: Active PRO: IP
						N25	W89	3	0	0	05	Q	
						N15	W44	0	0	0	05	Q	
						N16	W22	0	0	0	05	Q	
						N21	W76	1	0	0	05	Q	
						S16	W31	2	0	0	05	E	
						S24	E11	0	0	0	05	Q	
						S14	E27	0	0	0	05	Q	
						N22	E50	0	0	0	05	Q	
						S14	W18	0	0	0	05	Q	
						N12	W55	1	0	0	05	Q	
						N18	E73	0	0	0	05	Q	
						S14	E74	0	0	0	05	Q	
157	06	05	233	164	5	N16	W57	0	0	0	06	Q	SOL: Active MAG: Quiet PRO: No Fcst
						N16	W35	0	0	0	06	E	
						N21	W90	0	0	0	06	Q	
						S15	W45	1	0	0	06	E	
						S24	W04	0	0	0	06	Q	
						S15	E13	0	0	0	06	Q	
						N22	E37	0	0	0	06	Q	
						S14	W32	0	0	0	06	Q	

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Jun 99

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

JUNE 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
						N11	W69	0	0	0	06	Q	
						N21	E59	0	0	0	06	Q	
						S14	E60	0	0	0	06	Q	
						S19	E60	2	0	0	06	Q	
						N26	W58	0	0	0	06	Q	
						N18	W45	0	0	0	06	Q	
						N30	E40	0	0	0	06	Q	
158	07	06	238	168	3	N16	W49	3	0	0	07	E	SOL: Eruptive
						S15	W57	2	0	0	07	E	MAG: Quiet
						S24	W17	0	0	0	07	Q	PRO: Quiet
						S15	E00	0	0	0	07	Q	
						N24	E26	0	0	0	07	Q	
						S14	W43	0	0	0	07	Q	
						N10	W81	0	0	0	07	Q	
						N18	E47	1	0	0	07	E	
						S14	E48	0	0	0	07	Q	
						S19	E48	0	0	0	07	Q	
						N26	W69	2	0	0	07	Q	
						N29	E28	8	0	0	07	E	
						M13	E32	0	0	0	07	Q	
						S29	E52	0	0	0	07	Q	
159	08	07	198	158	4	N16	W62	0	0	0	08	E	SOL: Eruptive
						S16	W70	4	0	0	08	E	MAG: Quiet
						S23	W31	0	0	0	08	Q	PRO: Quiet
						S15	W13	0	0	0	08	Q	
						N24	E14	0	0	0	08	Q	
						S13	W56	0	0	0	08	Q	
						N18	E35	0	0	0	08	Q	
						S14	E34	0	0	0	08	Q	
						S19	E36	0	0	0	08	Q	
						N28	E14	2	0	0	08	E	
						N14	E23	0	0	0	08	Q	
						S29	E40	0	0	0	08	Q	
160	09	08	192	157	15	N15	W76	1	0	0	09	E	SOL: Eruptive
						S15	W83	1	0	0	09	E	MAG: Quiet
						S15	W26	0	0	0	09	Q	PRO: Quiet
						N18	E20	2	0	0	09	Q	
						S13	E21	1	0	0	09	Q	
						S19	E23	1	0	0	09	Q	
						N28	E01	5	0	0	09	E	
						N14	E07	0	0	0	09	Q	
						S29	E26	0	0	0	09	Q	
						N19	W37	0	0	0	09	Q	
						N19	E04	0	0	0	09	Q	
161	10	09	204	165	12	N15	W92	0	0	0	10	Q	SOL: Eruptive
						S14	W40	0	0	0	10	Q	MAG: Quiet
						N19	E06	0	0	0	10	E	PRO: Quiet
						S13	E08	0	0	0	10	Q	
						S19	E09	0	0	0	10	Q	
						N29	W12	5	0	0	10	E	
						N13	W07	0	0	0	10	Q	
						S29	E10	0	0	0	10	Q	
						N19	W52	0	0	0	10	Q	
						N19	W09	1	0	0	10	Q	
						N12	E10	0	0	0	10	Q	
						S19	E67	0	0	0	10	Q	
162	11	10	214	161	6	S16	W54	0	0	0	11	Q	SOL: Eruptive
						N19	W07	4	0	0	11	E	MAG: Quiet
						S13	W05	0	0	0	11	Q	PRO: Quiet
						S20	W05	0	0	0	11	Q	
						N29	W25	1	0	0	11	E	
						N14	W18	0	0	0	11	Q	

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

JUNE 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
						S28	W07	0	0	0	11	Q	
						N19	W64	0	0	0	11	Q	
						N19	W23	3	0	0	11	Q	
						N12	W06	0	0	0	11	Q	
						S19	E54	0	0	0	11	Q	
						S38	W02	0	0	0	11	Q	
163	12	11	211	165	4	N19	W20	4	0	0	12	E	SOL: Eruptive
						S13	W18	0	0	0	12	Q	MAG: Quiet
						S19	W17	1	0	0	12	Q	PRO: Quiet
						N29	W37	2	0	0	12	Q	
						N13	W31	0	0	0	12	Q	
						S29	W18	0	0	0	12	Q	
						N19	W77	0	0	0	12	Q	
						N19	W37	0	0	0	12	Q	
						N10	W19	0	0	0	12	Q	
						S20	E42	0	0	0	12	Q	
						N26	E31	1	0	0	12	Q	
						S12	E68	0	0	0	12	Q	
164	13	12	233	168	5	N20	W32	2	0	0	13	E	SOL: Active
						S15	W34	0	0	0	13	Q	MAG: Quiet
						S19	W31	0	0	0	13	Q	PRO: Quiet
						N30	W50	0	0	0	13	E	
						N14	W45	0	0	0	13	Q	
						S28	W29	0	0	0	13	Q	
						N20	W49	0	0	0	13	Q	
						S20	E28	0	0	0	13	Q	
						N26	E18	1	0	0	13	Q	
						S13	E56	7	1	0	13	E	
						N25	W22	0	0	0	13	Q	
						N38	E77	0	0	0	13	E	
165	14	13	211	168	5	N19	W45	9	0	0	14	E	SOL: Eruptive
						S14	W45	0	0	0	14	Q	MAG: Quiet
						S19	W44	1	0	0	14	Q	PRO: Quiet
						N30	W63	0	0	0	14	Q	
						N14	W57	0	0	0	14	Q	
						S28	W40	1	0	0	14	Q	
						N20	W62	0	0	0	14	Q	
						S20	E15	0	0	0	14	Q	
						N26	E06	9	0	0	14	Q	
						S13	E44	4	0	0	14	Q	
						N38	E67	0	0	0	14	Q	
166	15	14	210	168	1	N19	W59	2	0	0	15	E	SOL: Eruptive
						S14	W58	0	0	0	15	Q	MAG: Quiet
						S20	W57	0	0	0	15	Q	PRO: Quiet
						N30	W76	0	0	0	15	Q	
						N15	W71	0	0	0	15	Q	
						S28	W54	2	0	0	15	Q	
						N21	W73	1	0	0	15	Q	
						S20	E02	0	0	0	15	Q	
						N27	W07	9	0	0	15	Q	
						S13	E31	1	0	0	15	Q	
						N39	E54	0	0	0	15	Q	
167	16	15	240	159	6	N19	W72	1	0	0	16	E	SOL: Eruptive
						S14	W72	0	0	0	16	Q	MAG: Quiet
						S20	W71	0	0	0	16	Q	PRO: Quiet
						N30	W91	0	0	0	16	Q	
						N16	W85	0	0	0	16	Q	
						S29	W66	0	0	0	16	Q	
						N20	W85	0	0	0	16	Q	
						S21	W11	1	0	0	16	Q	
						S35	W72	0	0	0	16	Q	
						N26	W20	3	0	0	16	Q	

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The International Space Environment Service

JUNE 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
						S12	E17	2	0	0	16	Q	
						N38	E40	0	0	0	16	Q	
						N34	W18	0	0	0	16	Q	
						N19	E05	0	0	0	16	Q	
						S22	E20	0	0	0	16	Q	
168	17	16	201	153	9	N18	W85	0	0	0	17	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						S06	W85	0	0	0	17	Q	
						S18	W84	0	0	0	17	Q	
						S29	W78	0	0	0	17	Q	
						N22	W99	0	0	0	17	Q	
						S20	W24	1	0	0	17	Q	
						N27	W31	0	0	0	17	Q	
						S13	E03	0	0	0	17	Q	
						N37	E28	3	0	0	17	Q	
						N31	W31	0	0	0	17	Q	
						N18	W10	0	0	0	17	Q	
						S21	E06	0	0	0	17	Q	
						N28	E04	0	0	0	17	Q	
169	18	17	167	147	6	S27	W91	0	0	0	18	Q		SOL: Eruptive MAG: Quiet PRO: Quiet
						S21	W37	0	0	0	18	Q	
						N27	W46	1	0	0	18	Q	
						S13	W10	0	0	0	18	Q	
						N37	E16	2	0	0	18	E	
						N34	W44	0	0	0	18	Q	
						S22	W06	0	0	0	18	Q	
						N27	W13	0	0	0	18	Q	
						S22	W15	0	0	0	18	Q	
						N12	E14	0	0	0	18	Q	
170	19	18	109	147	6	S21	W51	0	0	0	19	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						N27	W59	2	0	0	19	Q	
						S13	W23	0	0	0	19	Q	
						N38	E04	3	0	0	19	E	
						S22	W17	1	0	0	19	Q	
						N27	W25	0	0	0	19	Q	
						N13	W01	0	0	0	19	Q	
171	20	19	117	139	5	S21	W63	0	0	0	20	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						N27	W71	0	0	0	20	Q	
						S13	W36	0	0	0	20	Q	
						N38	W09	0	0	0	20	E	
						S21	W28	0	0	0	20	Q	
						N27	W37	0	0	0	20	Q	
						N15	W14	0	0	0	20	Q	
						N23	E71	0	0	0	20	E	
172	21	20	102	152	2	S20	W76	0	0	0	21	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						N29	W83	0	0	0	21	Q	
						S11	W51	1	0	0	21	Q	
						N38	W19	0	0	0	21	Q	
						N28	W51	0	0	0	21	Q	
						N22	E63	2	1	0	21	E	
						N19	W61	0	0	0	21	Q	
						N14	E84	0	0	0	21	E	
173	22	21	148	146	2	S21	W94	0	0	0	22	Q	SOL: Eruptive MAG: Quiet PRO: Quiet
						N38	W31	1	0	0	22	Q	
						N28	W64	0	0	0	22	Q	
						N22	E45	0	0	0	22	E	
						N20	W76	0	0	0	22	Q	
						N14	E67	4	0	0	22	E	
						N26	E18	0	0	0	22	Q	
						N23	E53	0	0	0	22	Q	
						N21	E65	0	0	0	22	Q	
						N26	E69	0	0	0	22	Q	

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Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
						S16	E76	0	0	0	22	Q	
174	23	22	160	162	2	N38	W44	0	0	0	23	Q	SOL: Eruptive
						N28	W77	0	0	0	23	Q	MAG: Quiet
						N24	E30	1	1	0	23	E	PRO: Quiet
						N21	W89	0	0	0	23	Q	
						N14	E56	0	0	0	23	E	
						N26	E03	0	0	0	23	Q	
						N22	E40	0	0	0	23	Q	
						N20	E54	0	0	0	23	Q	
						N25	E56	1	0	0	23	E	
						S16	E64	6	0	0	23	E	
						N19	W22	0	0	0	23	Q	
175	24	23	169	168	5	N38	W55	0	0	0	24	Q	SOL: Eruptive
						N22	E18	1	0	0	24	E	MAG: Quiet
						N14	E40	0	0	0	24	E	PRO: Quiet
						N23	W08	0	0	0	24	Q	
						N20	E27	1	0	0	24	Q	
						N23	E43	4	1	0	24	E	
						S17	E52	0	0	0	24	Q	
						N19	W37	0	0	0	24	Q	
						S15	W36	0	0	0	24	Q	
						N19	E75	0	0	0	24	Q	
						S16	E75	0	0	0	24	Q	
176	25	24	229	185	8	N36	W68	0	0	0	25	Q	SOL: Active
						N22	E04	1	0	0	25	Q	MAG: Active
						N14	E26	2	0	0	25	E	PRO: Quiet
						N21	E13	1	0	0	25	Q	
						N23	E28	15	0	0	25	E	
						S17	E39	1	0	0	25	Q	
						N19	W49	0	0	0	25	Q	
						S14	W51	0	0	0	25	Q	
						N19	E57	1	0	0	25	E	
						S15	E61	2	0	0	25	E	
						N12	W54	0	0	0	25	Q	
						S25	W32	0	0	0	25	Q	
						N17	E33	0	0	0	25	E	
177	26	25	260	201	3	N35	W80	0	0	0	26	Q	SOL: Active
						N23	W08	0	0	0	26	Q	MAG: Active
						N14	E14	0	0	0	26	Q	PRO: Quiet
						N21	E00	0	0	0	26	Q	
						N23	E13	5	0	0	26	E	
						S16	E27	0	0	0	26	Q	
						N18	W64	0	0	0	26	Q	
						S15	W63	0	0	0	26	Q	
						N18	E48	0	0	0	26	Q	
						S15	E54	0	0	0	26	Q	
						N12	W68	6	0	0	26	Q	
						S24	W48	0	0	0	26	Q	
						N17	E21	1	0	0	26	Q	
178	27	26	310	200	15	N37	W92	0	0	0	27	Q	SOL: Active
						N22	W21	0	0	0	27	Q	MAG: Active
						N13	E00	0	0	0	27	Q	PRO: Quiet
						N22	W12	4	1	0	27	Q	
						N23	E02	6	1	0	27	E	
						S16	E13	0	0	0	27	Q	
						N17	W80	0	0	0	27	Q	
						N17	E35	4	0	0	27	E	
						S16	E43	4	0	0	27	Q	
						N11	W82	1	0	0	27	Q	
						N17	E08	1	0	0	27	Q	
						N22	W53	0	0	0	27	Q	
						S12	W06	0	0	0	27	Q	

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Jun 99

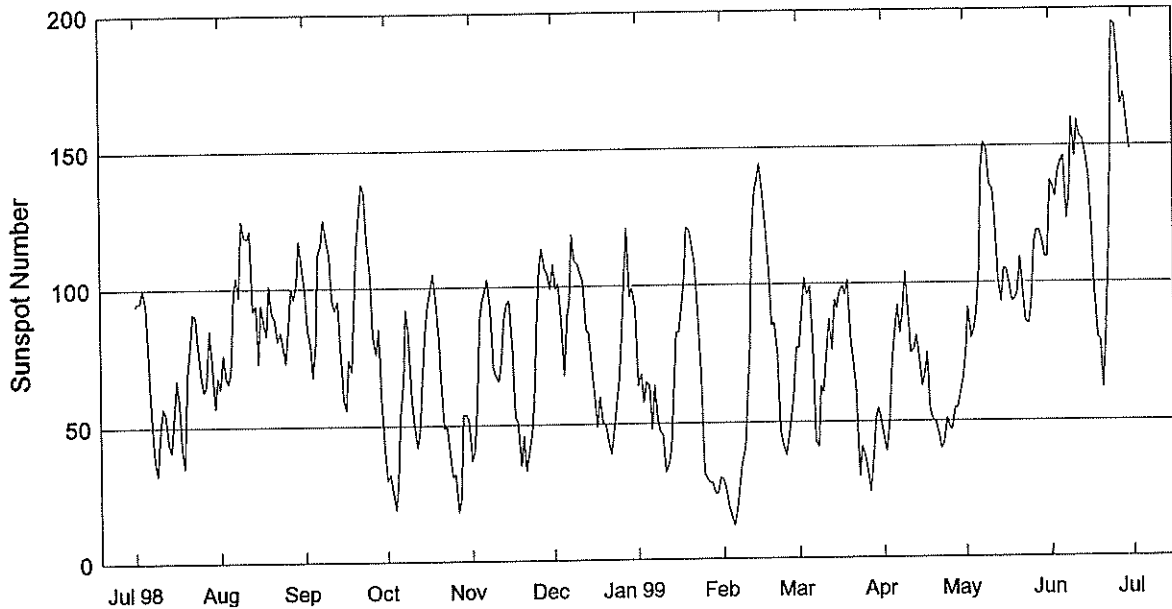
A L E R T P E R I O D S
The International Space Environment Service

JUNE 1999

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location		Flares			Date of Forecast	Region Forecast(1)	Geoadvice(1)
						Lat	Long	Optical	M	X			
179	28	27	341	207	20	N16	E20	0	0	0	27	Q	SOL: Active MAG: Active PRO: Quiet
						N11	E26	1	0	0	27	Q	
						N22	W33	1	1	0	28	Q	
						N13	W13	0	0	0	28	Q	
						N22	W11	1	0	0	28	E	
						S16	E00	0	0	0	28	Q	
						N20	W88	0	0	0	28	Q	
						N18	E22	3	0	0	28	E	
						S15	E30	0	0	0	28	E	
						N14	W92	0	0	0	28	Q	
						N17	W06	0	0	0	28	E	
						N23	W68	0	0	0	28	Q	
						N17	E04	0	0	0	28	Q	
						N12	E13	0	0	0	28	Q	
						S25	E61	3	0	0	28	Q	
S17	E21	0	0	0	28	Q							
180	29	28	268	197	21	N23	W46	2	0	0	29	Q	SOL: Active MAG: Active PRO: Quiet
						N14	W25	1	0	0	29	Q	
						N22	W25	1	0	0	29	E	
						S14	W14	0	0	0	29	Q	
						N18	E08	0	0	0	29	E	
						S15	E18	4	0	0	29	E	
						N17	W18	1	0	0	29	E	
						N12	E00	0	0	0	29	Q	
						S25	E47	11	0	0	29	E	
						S16	E08	1	0	0	29	Q	
						181	30	29	259	191	8	N23	
N15	W38	0	0	0	30							Q	
N23	W38	1	0	0	30							E	
S14	W30	0	0	0	30							Q	
N18	W07	7	1	0	30							E	
S15	E04	6	1	0	30							E	
N17	W32	0	0	0	30							E	
N18	W19	0	0	0	30							Q	
S25	E33	5	1	0	30							E	
S15	W05	0	0	0	30							Q	

STRATWARM ALERTS - NONE

International Relative Sunspot Numbers Jul 1998 - Jun 1999

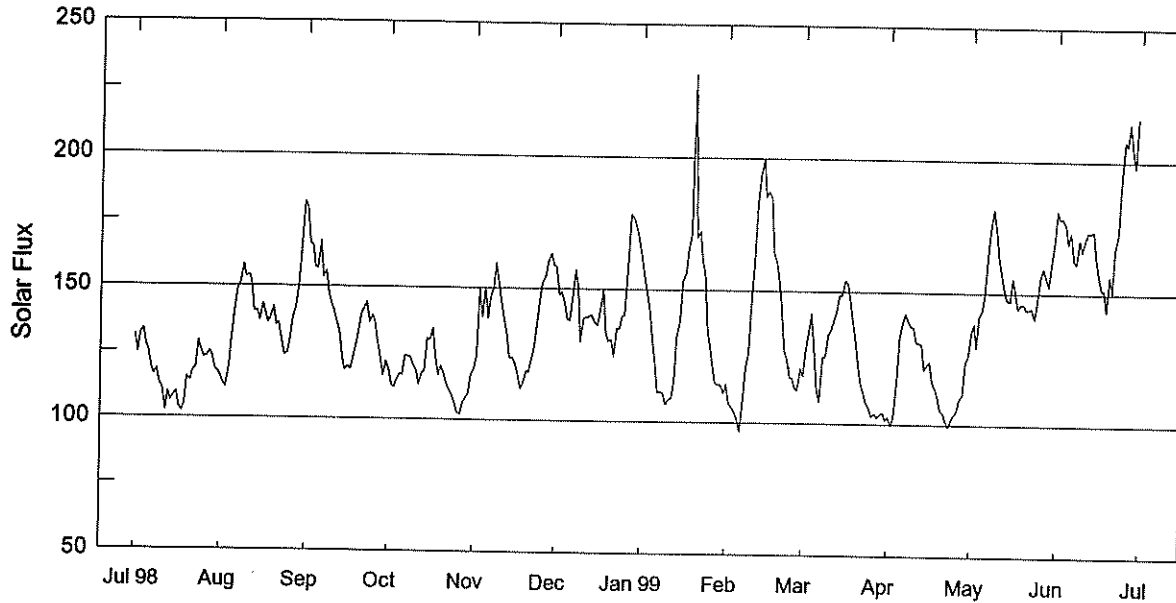


Day	Jul 98	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar	Apr*	May*	Jun*
1	94	64	100	30	37	108	64	29	77	44	75	137
2	95	76	85	32	41	99	68	25	88	39	91	135
3	95	68	79	25	56	101	58	19	102	48	80	131
4	100	66	68	19	88	86	65	15	96	71	83	140
5	94	70	80	30	95	68	64	12	99	81	89	144
6	74	98	112	54	98	89	48	19	79	92	105	146
7	51	104	116	66	103	95	64	28	43	82	141	123
8	38	97	125	92	92	119	51	36	41	89	151	131
9	32	125	119	84	71	109	47	41	63	104	149	160
10	49	119	112	60	68	108	46	60	61	90	136	146
11	57	118	96	51	66	105	32	78	76	75	134	159
12	55	121	92	42	73	102	35	115	87	76	122	153
13	44	92	95	48	88	84	41	134	76	81	101	152
14	41	94	78	66	94	83	65	138	94	74	93	147
15	55	73	60	84	95	72	83	144	91	63	105	139
16	67	94	56	93	76	60	83	133	97	67	105	120
17	59	87	74	98	53	49	93	122	99	75	99	97
18	42	83	70	105	51	60	102	105	96	55	93	80
19	35	101	93	96	35	50	121	85	101	50	94	79
20	69	91	114	81	46	50	120	86	78	50	96	62
21	78	89	125	63	33	43	114	74	71	45	109	79
22	91	81	138	49	41	39	108	47	61	40	97	106
23	90	84	135	50	47	47	87	42	30	42	86	144
24	79	79	117	39	59	58	68	38	41	51	85	195
25	68	73	105	31	85	66	31	44	37	48	92	194
26	63	87	82	32	106	81	30	51	31	47	114	182
27	65	100	76	18	114	100	28	59	24	55	119	165
28	85	96	85	23	106	121	28	77	37	55	119	169
29	74	102	60	54	105	96	24		51	61	115	160
30	57	117	41	54	99	99	24		55	66	109	148
31	68	109		52		92	30		51		109	
Mean	66.6	92.2	92.9	55.5	74.0	81.9	62.0	66.3	68.8	63.9	106.3	137.4

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux Jul 98 - Jun 99

Adjusted to 1 AU



Day	Jul 98	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar	Apr	May	Jun
1	131.1	115.4	180.2	119.1	119.5	158.2	161.6	114.5	118.0	102.9	134.9*	181.2
2	124.4	112.9	166.3	112.9	124.1	147.4	154.8	107.7	127.6	99.4	137.9	178.1
3	131.9	111.7	165.5	112.0	149.3	148.7	149.4	105.8	134.6	102.7	129.2	178.5
4	133.5	119.2	157.3	114.9	139.0	144.0	142.0	104.3	141.6	116.0	141.1	175.9
5	127.6	130.5	156.8	117.1	150.1	138.3	132.0	100.9	125.4	132.7	143.3	168.8
6	125.2	142.2	167.1	116.9	138.4	138.1	121.6	96.6	112.6	137.6	149.5	172.9
7	118.5	149.1	153.5	124.1	145.8	148.7	111.3	106.5	108.3	141.7	166.4	162.4
8	116.2	150.9	155.8	123.8	149.9	157.1	111.7	121.1	125.0	139.5	175.1	161.3
9	118.2	158.3	147.4	123.2	159.3	149.3	111.0	125.9	125.3	136.7	181.7	170.3
10	112.9	153.3	143.6	120.3	150.8	129.8	106.7	148.4	133.6	136.9	172.8	166.0
11	111.3	154.1	140.4	118.5	144.1	138.8	108.2	159.3	135.3	131.3	162.6	169.8
12	102.6	150.9	136.6	113.4	138.7	138.9	109.1	183.6	138.5	130.7	156.3	173.2
13	109.7	140.4	132.3	117.5	132.6	139.7	114.7	193.4	142.7	130.3	150.5	173.0
14	106.3	140.6	123.3	118.4	123.8	139.9	132.4	199.6	148.7	121.0	147.3	173.5
15	108.2	136.8	118.6	130.4	123.7	137.2	138.0	185.5	148.4	122.7	146.8	163.5
16	109.7	143.3	119.9	130.1	121.8	136.1	153.4	187.3	154.1	123.8	155.6	157.6
17	103.6	139.7	118.6	134.4	118.0	141.5	156.2	185.3	152.9	116.6	148.6	151.3
18	102.4	135.8	123.7	125.0	112.2	149.8	165.4	164.2	146.7	113.8	143.8	151.2
19	105.2	137.9	128.0	116.8	113.7	133.6	170.3	160.5	138.1	110.9	145.8	143.3
20	115.4	141.9	133.3	120.2	118.6	130.4	231.3	153.6	131.6	105.8	145.9	156.5
21	113.9	135.2	139.4	117.2	118.3	130.9	169.7	144.0	123.1	104.4	143.7	150.3
22	117.8	135.9	142.1	113.8	123.0	124.6	172.3	127.0	115.0	101.4	143.7	166.9
23	119.1	129.3	144.1	111.4	126.7	135.2	160.8	124.3	112.2	99.3	144.2	173.0
24	129.2	123.9	136.2	109.6	136.7	134.9	156.8	117.3	107.6	102.0	140.4	191.1
25	125.5	124.8	139.2	106.3	145.6	139.6	133.9	117.1	106.4	103.8	146.8	207.5
26	122.8	129.6	136.2	102.8	152.3	140.2	129.1	113.4	103.1	105.8	156.6	206.1
27	123.2	137.8	128.0	101.8	154.7	161.4	121.6	112.9	104.1	110.0	159.3	214.3
28	125.1	142.0	123.0	106.4	160.4	178.3	115.2	120.7	102.7	111.3	156.2	203.2
29	123.1	149.4	116.3	108.0	163.2	176.8	114.2		103.8	123.9	152.7	197.7
30	118.3	166.4	121.8	109.9	158.9	173.1	114.5		104.4	125.3	161.1	216.5
31	117.2	181.8	117.0			168.8	111.5		101.7		170.1	
Mean	117.7	139.4	139.8	116.6	137.1	145.5	138.1	138.6	124.9	118.0	151.9	175.2

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

DAILY SOLAR INDICES
June 1999

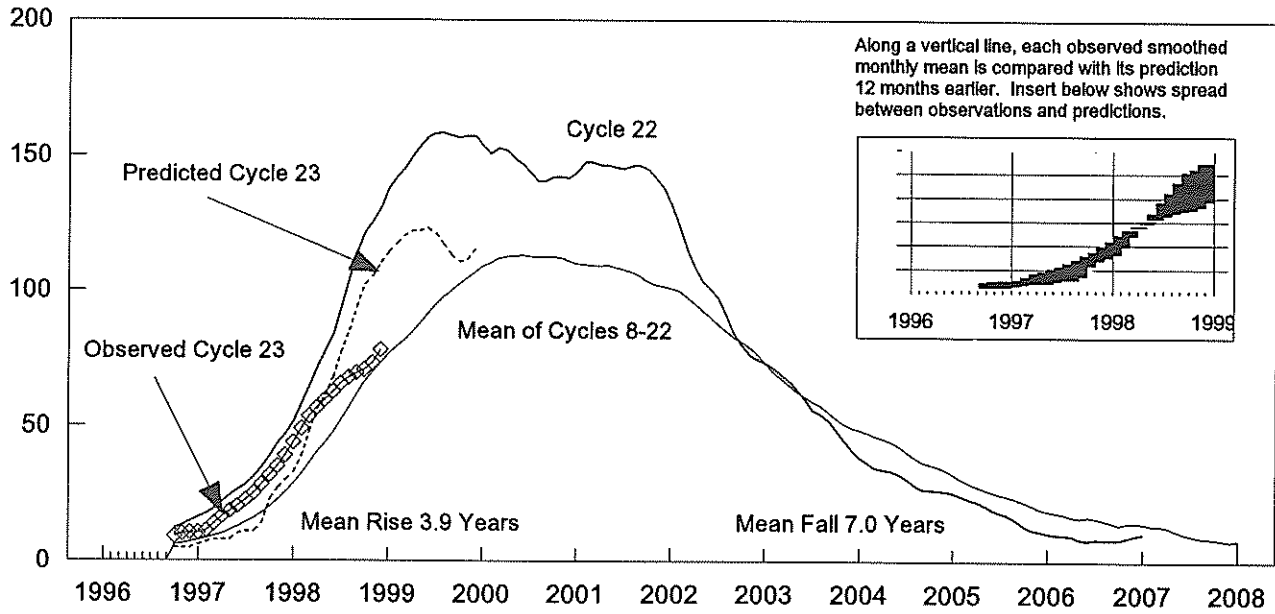
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Jun 99

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers		Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit									
			Int	Amer		SGMR (15400)	SGMR (8800)	SGMR (4995)	Pentic (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)	
1	152	9	137	140	176.2	538	305	220	181.2	170	139	69	48	31	
2	153	10	135	141	173.1	542	342	219	178.1	171	136	67	46	21	
3	154	11	131	137	173.5	554	347	226	178.5	175	139	73	59	32	
4	155	12	140	150	170.9	544	362	221	175.9	170	134	71	60	63	
5	156	13	144	137	164.0	549	316	200	168.8	163	128	71	59	34	
6	157	14	146	146	167.9	542	337	199	172.9	164	126	63	50	22	
7	158	15	123	122	157.7	551	--	197	162.4	161	124	67	50	58	
8	159	16	131	140	156.5	558	367	197	161.3	159	124	68	47	26	
9	160	17	160	136	165.2	542	388	204	170.3	157	123	72	45	20	
10	161	18	146	148	161.1	547	363	197	166.0	153	123	62	41	22	
11	162	19	159	172	164.7	555	392	211	169.8	163	129	65	42	20	
12	163	20	153	176	168.0	554	388	201	173.2	163	125	62	44	21	
13	164	21	152	170	167.7	548	--	214	173.0	169	124	61	39	23	
14	165	22	147	154	168.2	544	--	203	173.5	168	121	63	45	25	
15	166	23	139	139	158.5	555	299	195	163.5	157	120	63	48	23	
16	167	24	120	116	152.7	542	302	191	157.6	149	117	60	42	19	
17	168	25	97	91	146.5	521	329	190	151.3	147	116	61	43	22	
18	169	26	80	91	146.5	539	327	197	151.2	151	120	62	48	26	
19	170	27	79	77	138.8	542	321	177	143.3	142	112	60	41	19	
20	171	1	62	71	151.5	546	318	174	156.5	141	113	60	41	17	
21	172	2	79	93	145.5	546	308	186	150.3	145	119	62	42	20	
22	173	3	106	118	161.6	547	325	188	166.9	151	120	59	42	24	
23	174	4	144	152	167.5	548	299	196	173.0	165	127	62	42	19	
24	175	5	195	184	185.0	569	283	226	191.1	186	--	67	46	29	
25	176	6	194	181	200.8	565	303	235	207.5	200	147	65	49	46	
26	177	7	182	201	199.5	567	298	232	206.1	201	150	68	51	49	
27	178	8	165	187	207.4	553	244	215	214.3	194	148	66	41	25	
28	179	9	169	181	196.6	552	--	212	203.2	188	147	68	43	24	
29	180	10	160	154	191.3	559	265	216	197.7	198	147	66	48	39	
30	181	11	148	159	209.5	567	330	229	216.5	200	148	71	49	33	
MEAN			137.4	142.1	169.8	549	325	205	175.2	167	129	65	46	28	

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

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
1992	124	115	108	103	100	97	91	84	80	76	74	73	94
1993	71	69	67	64	60	56	55	52	48	45	41	38	56
1994	37	35	34	34	33	31	29	27	27	27	26	26	31
1995	24	23	22	21	19	18	17	15	13	12	11	11	17
1996	10	10	10	9	8*	9	8	8	8	9**	10	10	8
1997	11	11	14	17	18	20	23	25	28	32	35	39	23
1998	44	49	53	57	59	63	65	68	69	71	73	78	62
1999	82 (3)	85 (5)	88 (6)	92 (8)	96 (11)	99 (13)	103 (16)	105 (20)	107 (24)	110 (28)	113 (31)	115 (33)	100 (17)
2000	116 (35)	117 (36)	118 (37)	118 (37)	118 (37)	118 (37)	118 (36)	118 (36)	118 (37)	117 (37)	116 (38)	115 (38)	117 (37)

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

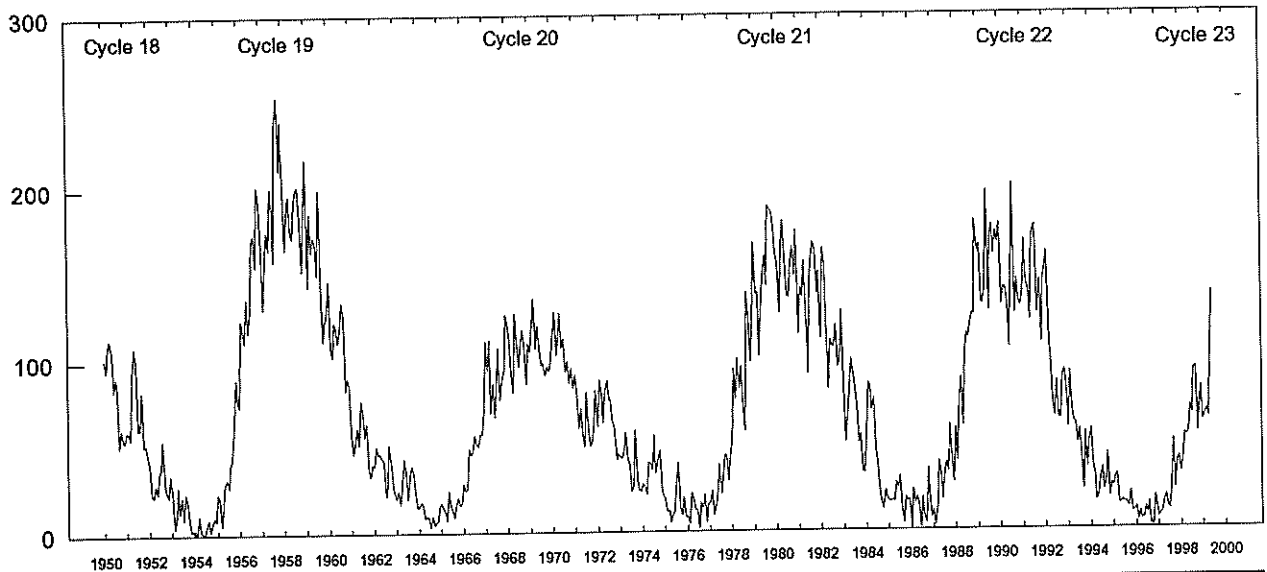
* May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.

Observed and Predicted Numbers. For the end of Cycle 22, and the rise and decline of Cycle 23, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Mar 1999 and on provisional numbers thereafter. Table entries with numbers in parentheses below them denote predictions by the McNish-Lincoln method. (See page 9 in the Jul 1987 supplement to *Solar-Geophysical Data*.) Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval. Subtracting the number from the predicted value generates the lower limit. Consider, for example, the December 1999 prediction. There exists a 90% chance that in December 1999, the actual smoothed number will fall somewhere between 82 and 148.

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

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

Mean Monthly Sunspot Numbers Jan 1950 - Jun 1999



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4 m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2 M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	122.3
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2 m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	83.2	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	63.9	106.3	137.4							84.1

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

H α SOLAR FLARES

JUNE 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/	CMP	Dur	Imp	Obs	Area	Measurement	Corr	Remarks		
							USAF									Region	Mo	Day	(Min)	Opt	Xray	See	Type	Time (UT)	Apparent (10^{-6} Disk)	(Sq Deg)
GOES	01	0235	0240	0250					15								
SVTO		0420E	0425U	0501	N25	W40	8554	05	29.2	41D	SF			2	E	20	1.1E-03
GOES		0607	0615	0622	N25	W41	8554			15	SF	C 4.6					3.0E-03
LEAR		0609	0620	0632	N25	W41	8554	05	29.2	23	SF			3	E	28	
SVTO		0621	0621	0625	N25	W41	8554	05	29.2	4	SF			3	E	22	
LEAR		0624	0629	0647	S15	E17	8562	06	2.5	23	SF			3	E	41	
GOES		0624	0632	0636			8560			12		C 6.2					3.4E-03
SVTO		0626	0628	0638	S15	E18	8562	06	2.6	12	SF			3	E	23	F
LEAR		0629	0630	0637	S21	E19	8557	06	2.7	8	1F			3	E	119	
SVTO		0630	0631	0635	S22	E18	8560	06	2.6	5	1F			3	E	129	
LEAR		0740	0741	0749	S23	E21	8557	06	2.9	9	SF			3	E	18	F
LEAR		0751	0759	0815	N25	W39	8554	05	29.4	24	SF			3	E	22	
SVTO		0755	0759	0810	N25	W42	8554	05	29.2	15	SF			3	E	25	
GOES		0755	0803	0812	N25	W39	8554			17	SF	C 2.5					2.2E-03
SVTO		0757	0759	0804	N18	W36	8552	05	29.7	7	SF			3	E	14	
SVTO		0859	0907	0924	N25	W43	8554	05	29.1	25	SF			3	E	45	
SVTO		0902	0912	0944	N18	W33	8552	05	30.0	42	SF			3	E	17	F
SVTO		0925	0928	0943	S29	E61	8563	06	6.2	18	SF			3	E	21	
SVTO		0928	0938	0944	N25	W43	8554	05	29.2	16	SF			3	E	11	
SVTO		0928	0943	0946	S15	E16	8562	06	2.6	18	SF			3	E	20	
GOES		1100	1106	1113	S14	E16				13	SF	C 6.2					3.2E-03
RAMY		1114E	1114U	1137D	S14	E16	8562	06	2.7	23D	SF			3	E	33	
GOES		1231	1234	1237	S28	E12	8557			6	SF	C 1.2					4.0E-04
RAMY		1233E	1233U	1248D	S28	E12	8557	06	2.5	15D	SF			3	E	29	
RAMY		1508	1509	1516	N24	W45	8554	05	29.2	8	SF			3	E	17	
GOES		1627	1646	1651	S27	E54	8563			24	1F	C 1.3					1.4E-03
SVTO		1640E	1644U	1648	S23	W54	8563	05	28.6	8D	SF			2	E	74	FH
RAMY		1642	1644	1650	S27	E54	8563	06	5.9	8	1F			3	E	100	
RAMY		1739	1742	1746	S14	E13	8562	06	2.7	7	SF			3	E	10	
RAMY		1754	1756	1759	S14	E13	8562	06	2.7	5	1F			3	E	178	
GOES		1853	1904	1932						39		C 1.2					2.7E-03
HOLL		2039	2039	2046	S22	E10	8557	06	2.6	7	SF			3	E	20	
GOES		2102	2108	2110						8		C 1.2					5.5E-04
GOES		2242	2252	2300						18		C 5.1					3.8E-03
LEAR		2334	2338	2346	N19	W43	8552	05	29.8	12	SF			3	E	14	
GOES	02	0143	0147	0151						8		C 1.9					6.7E-04
GOES		0340	0401	0410						30		C 2.5					3.6E-03
GOES		0444	0448	0451						7		C 2.9					9.7E-04
LEAR		0507	0512	0533	S15	E05	8562	06	2.6	26	1F			3	E	111	F
GOES		0509	0513	0517	S15	E05	8562			8	1F	C 9.2					3.1E-03
SVTO		0511	0518	0530	S14	E05	8562	06	2.6	19	SF			3	E	30	F
GOES		0705	0710	0713	N32	W82	8551			8	SF	C 2.4					8.7E-04
SVTO		0708	0709	0714	N32	W82	8551	05	26.9	6	SF			3	E	41	H
LEAR		0708	0710	0714	N32	W73	8551	05	27.6	6	SF			3	E	54	
GOES		0820	0829	0838	N25	W51	8554			18	SF	C 2.3					2.2E-03
LEAR		0823	0826	0837	N25	W51	8554	05	29.5	14	SF			3	E	14	
GOES		0903	0907	0912	S15	E01	8562			9	SF	C 3.5					1.4E-03
LEAR		0905	0906	0914D	S15	E01	8562	06	2.4	9D	SF			3	E	60	E
GOES		1054	1057	1100	N32	W81	8551			6	SF	C 1.2					4.0E-04
RAMY		1056E	1056U	1101D	N32	W81	8551	05	27.1	5D	SF			3	E	34	
GOES		1109	1115	1123						14		C 2.0					1.4E-03
SVTO		1138	1152	1158	N18	W50	8552	05	29.8	20	SF			3	E	17	
RAMY		1141E	1148U	1214D	N19	W53	8552	05	29.5	33D	SN			3	E	79	F
SVTO		1151	1159	1213	S14	E02	8562	06	2.6	22	SF			3	E	51	
RAMY		1154E	1154U	1224D	S14	E00	8562	06	2.5	30D	SF			3	E	12	F
GOES		1336	1340	1344						8		C 1.6					6.3E-04
RAMY		1418	1421	1437	S28	W02	8557	06	2.4	19	SF			3	E	23	
SVTO		1419	1423	1437	S29	W03	8557	06	2.4	18	SF			3	E	25	F
HOLL		1426	1431	1434	S28	E00	8557	06	2.6	8	SF			3	E	21	
RAMY		1507	1507	1513	N24	W56	8554	05	29.4	6	SF			3	E	20	
RAMY		1618	1618	1623	N16	E09	8558	06	3.4	5	SF			3	E	11	
GOES		1923	1935	1947						24		C 2.3					2.7E-03
GOES		2050	2127	2234						104		C 5.0					2.5E-02
LEAR	03	0120	0132	0142D	N20	W62	8552	05	29.4	22D	SF			2	E	37	
LEAR		0220	0221	0227	N19	W62	8552	05	29.5	7	SF			3	E	31	
LEAR		0228	0257	0302	N19	W63	8552	05	29.4	34	1F			3	E	126	

H α SOLAR FLARES

JUNE 1999

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/USAF		Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
							Region	Mo Day						Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
LEAR	03	0232	0232	0236	N24	W62	8554	05	29.4	4	SF	3	E		14		
LEAR		0345	0346	0452	N19	W59	8552	05	29.7	67	SF	3	E		36		
SVTO		0605	0614	0621	N18	W65	8552	05	29.4	16	SF	3	E		75		
SVTO		0607	0608	0620	S17	W07	8562	06	2.7	13	SF	3	E		29		
SVTO		0629	0631	0637	S28	W11	8557	06	2.4	8	SF	3	E		23		
SVTO		0633	0634	0642	N18	W62	8552	05	29.6	9	SF	3	E		16		
LEAR		0638	0645	0703D	S17	W09	8562	06	2.6	25D	SF	3	E		61		
GOES		0640	0644	0650	S15	W08				10	SF M 1.0					4.1E-03	
SVTO		0640	0646	0701	S15	W08	8562	06	2.7	21	SF	3	E		47		
SVTO		0650	0651	0657	N18	W62	8552	05	29.7	7	SF	3	E		30		
LEAR		0737E	0743U	0844	S27	W10	8560	06	2.5	67D	2B	3	E		305	U	
GOES		0738	0743	0754	S23	W07				16	1N C 5.6					4.3E-03	
SVTO		0739	0745	0839	S23	W07	8560	06	2.8	60	1N	3	E		105	U	
LEAR		0741	0741	0753	S15	W10	8562	06	2.6	12	SF	3	E		21		
SVTO		0747	0751	0756	S15	W09	8562	06	2.6	9	SF	3	E		11		
SVTO		0800	0804	0810	S15	W09	8562	06	2.6	10	SF	3	E		12		
GOES		0832	0837	0842	S15	W10				10	SF C 2.9					1.5E-03	
SVTO		0834	0837	0848	S15	W10	8562	06	2.6	14	SF	3	E		22		
GOES		0943	0949	0953	S15	W10	8562			10	SF C 2.3					1.2E-03	
SVTO		0947	0948	0953	S15	W10	8562	06	2.6	6	SF	3	E		17		
SVTO		1010	1011	1017	S15	W10	8562	06	2.7	7	SF	3	E		17		
SVTO		1034	1048	1126	S15	W11	8562	06	2.6	52	1F	3	E		116	F	
GOES		1044	1048	1054	S15	W11				10	1F C 3.5					1.7E-03	
RAMY		1047E	1048U	1052D	S16	W09	8562	06	2.8	5D	SF	3	E		31		
RAMY		1100E	1100U	1109	N26	W66	8554	05	29.4	9D	SF	3	E		21		
RAMY		1104	1105	1110	S17	W10	8562	06	2.7	6	SF	3	E		26	F	
GOES		1129	1136	1143	S20	W11				14	1F C 2.9					2.0E-03	
SVTO		1130	1133	1205	S20	W11	8562	06	2.6	35	1F	3	E		105	F	
RAMY		1131	1132	1151	S18	W12	8562	06	2.6	20	SF	3	E		63		
GOES		1153	1156	1159	S18	W11				6	SF C 2.3					7.3E-04	
RAMY		1154	1157	1204	S18	W11	8562	06	2.6	10	SF	3	E		31		
RAMY		1234	1235	1247	N17	W66	8552	05	29.6	13	SF	3	E		30		
RAMY		1337	1337	1347	S17	W10	8562	06	2.8	10	SF	3	E		41		
HOLL		1337	1338	1347	S17	W11	8562	06	2.7	10	SF	3	E		58		
HOLL		1410	1413	1417	S17	W12	8562	06	2.7	7	SF	3	E		42		
GOES		1605	1608	1612						7	C 2.5					9.3E-04	
RAMY		1744	1745	1752	N25	W69	8554	05	29.5	8	SF	3	E		14		
HOLL		1748	1749	1759	N25	W73	8554	05	29.2	11	SF	3	E		31		
HOLL		1818	1819	1822	N24	W70	8554	05	29.4	4	SF	3	E		17		
HOLL		1926	1930	1942	S15	W17	8562	06	2.5	16	SF	3	E		20		
GOES		1953	1956	1958	N27	W74	8554			5	SF C 1.8					4.7E-04	
HOLL		1955	1956	2000	N27	W74	8554	05	29.2	5	SF	3	E		53		
HOLL		2000	2004	2012	S16	W17	8562	06	2.5	12	SF	3	E		49		
GOES		2058	2101	2106	N19	W69	8552			8	SF C 1.5					6.4E-04	
HOLL		2101	2104	2107	N19	W69	8552	05	29.7	6	SF	3	E		20		
GOES		2109	2112	2114	N24	W74	8554			5	SF C 5.0					8.7E-04	
HOLL		2111	2111	2124	N24	W74	8554	05	29.3	13	SF	3	E		76		
HOLL		2237	2237	2249	N24	W73	8554	05	29.4	12	SF	3	E		38		
HOLL		2302	2305	2309	N24	W73	8554	05	29.4	7	SF	3	E		17		
HOLL		2355	2359	2402	N24	W74	8554	05	29.4	7	SF	3	E		21		
LEAR	04	0017	0022	0027	N19	W71	8552	05	29.7	10	SF	3	E		14		
LEAR		0031	0035	0036	N25	W73	8554	05	29.5	5	SF	3	E		12		
LEAR		0246	0247	0251	N24	W74	8554	05	29.5	5	SF	3	E		17	F	
GOES		0246	0250	0253	N24	W74	8554			7	SF C 1.6					5.7E-04	
LEAR		0438	0441	0445	N19	W70	8552	05	29.9	7	SF	4	E		36		
LEAR		0446	0453	0504	N19	W73	8552	05	29.7	18	SF	4	E		38		
LEAR		0615	0616	0625	S28	W27	8557	06	2.1	10	SF	4	E		38		
LEAR		0632	0636	0650	S27	W21	8557	06	2.6	18	SF	4	E		29		
LEAR		0635	0636	0639	S16	W23	8562	06	2.5	4	SF	4	E		12		
GOES		0652	0703	0711	N17	W69	8552			19	2B M 3.9					2.4E-02	
LEAR		0655	0700		N17	W69	8552	05	30.1	1025	2B	4	E		322		
LEAR		0657	0659	0704	N20	W65	8559	05	30.4	7	SF	4	E		21		
SVTO		0657	0700	0716	N18	W75	8552	05	29.7	19	1F	3	E		136	F	
LEAR		0721	0722	0725	N19	W75	8552	05	29.7	4	SF	4	E		25		
LEAR		0725	0731	0737	N19	W75	8552	05	29.7	12	SF	4	E		26		
LEAR		0752	0758	0813	N19	W75	8552	05	29.7	21	SF	4	E		95		
SVTO		0756	0756	0801	N16	W75	8552	05	29.7	5	SF	3	E		15		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/		Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement		Remarks
							USAF Region	CMP Mo Day						Time (UT)	Apparent (10 ⁻⁶ Disk)		Corr (Sq Deg)
GOES	04	1136	1143	1205	N11	W48			29	SF	C 2.7					4.0E-03
RAMY		1154	1156	1225	N11	W48		05 31.9	31	SF		3	E	76		
GOES		1235	1240	1250	S24	W22 8557			15	SF	C 1.8					
SVTO		1240	1240	1248	S24	W25 8560		06 2.6	8	SF		3	E	19		
RAMY		1240	1241	1248	S24	W22 8557		06 2.8	8	SF		3	E	18		
GOES		1425	1429	1433	N24	W86 8554			8	SF	C 1.8					7.3E-04
RAMY		1426	1429	1433	N24	W86 8554		05 29.0	7	SF		3	E	56		
SVTO		1426	1429U	1438D	N25	W84 8554		05 29.2	12D	SF		3	E	38		
HOLL		1504	1505	1507	N12	W52		05 31.7	3	SF		3	E	18		
GOES		1956	2001	2006	S16	W28 8562			10	SF	C 1.4					
HOLL		2000	2001	2008	S16	W28 8562		06 2.7	8	SF		2	E	19		
GOES	05	0135	0140	0145	N19	W85 8552			10	SF	C 1.3					7.0E-04
LEAR		0139	0140	0143	N19	W85 8552		05 29.7	4	SF		4	E	11		
GOES		0403	0409	0423					20		C 1.0					1.1E-03
LEAR		0652	0655	0658	S20	E71		06 10.7	6	SF		4	E	12		
GOES		0741	0748	0756	N26	W47			15	SF	C 1.7					1.3E-03
LEAR		0744	0751	0801	N26	W47		06 1.7	17	SF		4	E	28		
SVTO		0744	0755	0800	N27	W48		06 1.6	16	SF		3	E	19		
GOES		0812	0815	0817	S18	W39 8562			5	SF	C 1.7					3.6E-04
SVTO		0814	0815	0821	S18	W39 8562		06 2.4	7	SF		3	E	35		
LEAR		0815	0815	0818	S18	W39 8562		06 2.4	3	SF		4	E	17		
RAMY		1320	1321	1326	S20	E68		06 10.7	6	SF		3	E	18		
LEAR	06	0139	0142	0151	N15	W38 8558		06 3.2	12	SF		4	E	47		
GOES		0140	0143	0145	N15	W38			5	SF	C 1.6					4.0E-04
LEAR		0207	0207	0216	N29	E41 8574		06 9.3	9	SF		4	E	28		
LEAR		0417	0417	0420	N26	W59 8572		06 1.6	3	SF		3	E	18		
LEAR		0423	0428	0430	N26	W59 8572		06 1.6	7	SF		3	E	30		
LEAR		0500	0500	0506	N15	W41 8558		06 3.1	6	SF		4	E	19		F
SVTO		0557	0557	0601	N16	W39 8558		06 3.3	4	SF		3	E	12		
LEAR		0557	0557	0604	N16	W39 8558		06 3.3	7	SF		4	E	36		
LEAR		0658	0703	0706	S16	W49 8562		06 2.6	8	SF		4	E	30		
LEAR		0814	0816	0830	N29	E35 8574		06 9.1	16	SF		4	E	18		E
SVTO		0816	0818U	0824D	N29	E38 8574		06 9.3	8D	SF		3	E	15		F
LEAR		0854	0854	0857	N28	E36 8574		06 9.2	3	SF		4	E	11		
GOES		1126	1132	1138					12		C 2.0					1.2E-03
HOLL		1338	1751	1916	N29	E30 8574		06 8.9	338	SF		3	E	54		T
RAMY		1417	1457	1507	N29	E32 8574		06 9.1	50	SF		3	E	31		
SVTO		1456E	1456U	1505	N28	E32 8574		06 9.1	9D	SF		3	E	11		
SVTO		1636E	1638U	1640D	N28	E32 8574		06 9.2	4D	SF		3	E	43		
HOLL		1717	1724	1726	S14	W48 8562		06 3.1	9	SF		3	E	10		
HOLL		1857	1858	1901	N21	E54 8569		06 10.9	4	SF		3	E	23		
HOLL		2025	2026	2030	N30	E28 8574		06 9.0	5	SF		3	E	10		
HOLL		2228	2232	2242	N29	E29 8574		06 9.2	14	SF		3	E	12		F
LEAR	07	0358	0400	0406	N29	E27 8574		06 9.3	8	SF		3	E	44		
LEAR		0524	0525	0529	N27	E23 8574		06 9.0	5	SF		4	E	13		
LEAR		0620	0625	0627	S15	W61 8562		06 2.6	7	SF		3	E	20		
LEAR		0635	0642	0654	S15	W64 8562		06 2.4	19	SF		3	E	51		
GOES		0935	0940	0943					8		C 2.5					8.4E-04
GOES		1031	1034	1037					6		C 1.7					5.5E-04
GOES		1228	1234	1237					9		C 2.2					8.0E-04
GOES		1315	1318	1321	S16	W65 8562			6	SF	C 1.3					4.4E-04
RAMY		1317	1318	1328	S16	W65 8562		06 2.6	11	SF		3	E	17		
GOES		1330	1333	1336					6		C 1.1					3.7E-04
SVTO		1527	1528	1531	S15	W68 8562		06 2.5	4	SF		3	E	17		
HOLL		1527	1528	1532	S17	W67 8562		06 2.5	5	SF		3	E	21		
LEAR	08	0025	0030	0040	S13	W59 8562		06 3.6	15	SF		4	E	40		
HOLL		0027	0033	0039	S15	W58 8567		06 3.6	12	SF		3	E	12		
LEAR		0121	0125	0142	N29	E14 8574		06 9.1	21	SF		4	E	22		
LEAR		0322	0323	0336	N30	E14 8574		06 9.2	14	SF		4	E	15		
LEAR		0502	0504	0509	N19	W75 8573		06 2.5	7	SF		3	E	43		
LEAR		0523	0524	0530	N24	E30 8569		06 10.5	7	SF		3	E	18		
LEAR		0656	0659	0708	S16	E33 8571		06 10.8	12	SF		3	E	28		F
GOES		0916	0923	0940					24		C 1.4					1.7E-03
HOLL		1315E	1316U	1325	N29	E09 8574		06 9.2	10D	SF		3	E	67		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
															Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
GOES	08	1316	1320	1325	N29	E09	8574			9	SF	C	1.0					5.2E-04
HOLL		1353	1357	1405	S15	E28	8570	06	10.7	12	SF		3	E		49		F
RAMY		1355	1356	1401	S16	E29	8570	06	10.8	6	SF		3	E		39		
HOLL		1527	1529	1533	N16	W73	8558	06	3.1	6	SF		3	E		16		F
RAMY		1527	1529	1534	N11	W74	8558	06	3.1	7	SF		3	E		21		
GOES		1749	1800	1810	N31	E06	8574			21	SF	C	2.6					2.7E-03
HOLL		1751	1804	1817	N31	E06	8574	06	9.2	26	SF		3	E		68		F
RAMY		1753	1805	1817	N29	E04	8574	06	9.0	24	SF		3	E		84		
HOLL		1902	1906	1912	S20	E26	8571	06	10.8	10	SF		3	E		14		F
HOLL		2101	2105	2107	N30	E03	8574	06	9.1	6	SF		3	E		12		
HOLL		2106	2106	2109	N20	E25	8569	06	10.8	3	SF		3	E		10		
GOES	09	0007	0017	0031	N21	E05	8578			24	SF	C	1.2					1.5E-03
HOLL		0010	0021	0036	N21	E05		06	9.4	26	SF		3	E		43		
RAMY		1149E	1149U	1154	S16	W88	8562	06	2.8	5D	SF		3	E		23		
GOES		1334	1352	1404	N30	W06	8574			30	SF	C	1.8					2.5E-03
RAMY		1338	1340	1402	N30	W05	8574	06	9.2	24	SF		3	E		20		
HOLL		1339	1347	1359	N30	W06	8574	06	9.1	20	SF		3	E		18		
HOLL		1407	1424	1510	N27	W05	8574	06	9.2	63	SF		3	E		97		F
RAMY		1417	1423	1431	N27	W05	8574	06	9.2	14	SF		3	E		40		
GOES		1418	1423	1442	N27	W05	8574			24	SF	C	1.3					1.8E-03
GOES		1707	1712	1721	N29	W06	8574			14	SF	C	1.2					9.1E-04
HOLL		1708	1710	1721	N29	W06	8574	06	9.2	13	SF		3	E		22		
GOES		1853	1903	1912	N30	W08	8574			19	SF	C	3.0					2.6E-03
HOLL		1856	1858	1910	N30	W08	8574	06	9.1	14	SF		3	E		45		F
HOLL		1922	1927	1942	N30	W07	8574	06	9.2	20	SF		3	E		16		F
HOLL	10	0023	0023	0028	N21	W10	8578	06	9.2	5	SF		3	E		12		F
GOES		0112	0119	0126	N20	E08	8569			14	SF	B	9.1					6.9E-04
LEAR		0117	0117	0125	N20	E08	8569	06	10.7	8	SF		3	E		24		F
GOES		0313	0317	0323	N31	W11				10	SF	C	1.8					9.1E-04
LEAR		0317	0318	0324	N31	W11	8574	06	9.3	7	SF		3	E		17		
LEAR		0406	0411	0417	N21	E07	8569	06	10.7	11	SF		3	E		22		
RAMY		1105E	1107U	1111	N20	E04	8569	06	10.8	6D	SF		3	E		21		
RAMY		1449	1451	1459	N19	W21	8578	06	9.0	10	SF		3	E		11		
HOLL		1503	1503	1509	N19	E00	8569	06	10.6	6	SF		3	E		16		
RAMY		1504	1504	1513	N18	E00	8569	06	10.6	9	SF		3	E		13		
GOES		2053	2100	2105	N28	W25				12	SF	C	1.9					9.6E-04
HOLL		2056	2057	2120	N28	W25	8574	06	8.9	24	SF		3	E		59		
HOLL		2107	2108	2115	N19	W21	8578	06	9.3	8	SF		3	E		33		
GOES		2252	2257	2304						12			C	1.4				7.9E-04
GOES	11	0105	0110	0116						11			C	1.0				6.1E-04
SVTO		0505	0508	0525	N25	E42		06	14.5	20	SF		3	E		13		
SVTO		0553	0554	0604	N18	W08	8569	06	10.6	11	SF		3	E		12		F
GOES		0727	0739	0748	N33	W26	8574			21	SF	C	1.4					1.5E-03
SVTO		0736	0738	0757	N33	W26	8574	06	9.2	21	SF		3	E		20		
GOES		1107	1157	1231						84			C	8.8				3.1E-02
HOLL		1417	1418	1423	N28	W33	8574	06	9.0	6	SF		3	E		55		
RAMY		1417	1418	1424	N27	W32	8574	06	9.1	7	SF		3	E		63		
GOES		1808	1818	1830	N18	W16	8569			22	1F	C	3.9					3.8E-03
HOLL		1810	1813	1852	N18	W16	8569	06	10.5	42	1F		3	E		111		
RAMY		1817E	1817U	1857	N18	W16	8569	06	10.5	40D	SN		2	E		83		F
HOLL		1832	1833	1843	N26	E34	8582	06	14.4	11	SF		3	E		17		
HOLL		1952	1953	1959	N20	W20	8569	06	10.3	7	SF		3	E		11		
GOES		2133	2136	2139	N18	W18	8569			6	SF	C	1.3					4.2E-04
HOLL		2134	2136	2145	N18	W18	8569	06	10.5	11	SF		3	E		80		
HOLL		2150	2151	2153	S19	W18	8571	06	10.5	3	SF		3	E		13		
GOES		2250	2253	2255						5			B	9.2				2.5E-04
GOES	12	0103	0106	0110	N20	W23	8569			7	SF	C	1.0					4.0E-04
LEAR		0106	0107	0114	N20	W23	8569	06	10.3	8	SF		4	E		21		
LEAR		0212	0214	0219	S15	E69	8583	06	17.3	7	SF		4	E		18		
LEAR		0302	0302	0306	S12	E71	8583	06	17.5	4	SF		4	E		15		
SVTO		0934	0936	0941	N25	E26	8582	06	14.4	7	SF		3	E		19		
GOES		1105	1110	1114						9			C	1.2				5.4E-04
RAMY		1234	1244	1253	S13	E63	8583	06	17.3	19	SF		3	E		65		
SVTO		1235	1244	1257	S14	E64	8583	06	17.4	22	SF		3	E		82		H

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement		Remarks
															Time (UT)	Apparent (10-6 Disk)		Corr (Sq Deg)
HOLL	12	1317	1334	1402	S13	E65	8583	06	17.4	45	1F		3	E	208		
GOES		1319	1336	1344	S13	E63	8583			25	1N	M 1.0					7.6E-03
RAMY		1323	1333	1356	S13	E63	8583	06	17.3	33	1N		3	E	184		H
SVTO		1324	1346	1354	S14	E65	8583	06	17.5	30	2N		3	E	261		
HOLL		1714	1714	1720	S11	E65	8583	06	17.6	6	SF		3	E	21		
HOLL		1854	1856	1902	N17	W32	8569	06	10.3	8	SF		3	E	17		
HOLL		1919	1921	1930	S12	E59	8583	06	17.2	11	SF		3	E	24		
GOES		2113	2124	2144			8574			31		C 4.1					5.7E-03
HOLL		2122E	2122U	2145D	N23	W35	8569	06	10.2	23D	SF		3	E	48		
HOLL		2122E	2122U	2146D	N27	W43	8574	06	9.5	24D	SF		3	E	19		
GOES		2206	2218	2231	S12	E58	8583			25	SF	C 3.2					4.0E-03
HOLL		2215E	2215U	2228	S12	E58	8583	06	17.3	13D	SF		3	E	34		
GOES		2250	2257	2302						12		C 3.5					2.0E-03
GOES		2347	2351	2356	N18	W33				9	SF	C 2.0					8.8E-04
LEAR		2355	2404	2414	N18	W33	8569	06	10.5	19	SF		3	E	44		
LEAR	13	0023	0025	0027	S14	E56	8583	06	17.2	4	SF		3	E	12		
GOES		0055	0059	0105	N18	W34				10	SF	C 1.0					5.8E-04
LEAR		0057	0058	0109	N18	W34	8569	06	10.4	12	SF		4	E	31		E
LEAR		0158	0158	0203	N18	W35	8569	06	10.4	5	SF		3	E	14		
LEAR		0244	0244	0248	S13	E55	8583	06	17.3	4	SF		3	E	16		
LEAR		0301	0304	0308	S13	E55	8583	06	17.3	7	SF		4	E	16		
LEAR		0416	0416	0420	N25	E16	8582	06	14.4	4	SF		3	E	18		
LEAR		0431	0431	0435	N18	W37	8569	06	10.4	4	SF		3	E	24		
LEAR		0438	0441	0446	N18	W37	8569	06	10.4	8	SF		3	E	23		
SVTO		0552	0555	0612	N18	W38	8569	06	10.3	20	SF		3	E	39		
LEAR		0554	0556	0558	N18	W37	8569	06	10.4	4	SF		3	E	21		
LEAR		0628	0642	0711	S28	W30	8576	06	10.9	43	1F		3	E	105		F
GOES		0635	0647	0658	S28	W35	8583			23	SF	C 2.9					3.5E-03
SVTO		0636	0643	0656	S28	W35	8576	06	10.5	20	SF		3	E	24		
LEAR		0637	0644	0648	S13	E53	8583	06	17.3	11	SF		3	E	25		
GOES		0739	0743	0745	N18	W40	8569			6	SF	C 2.3					6.4E-04
SVTO		0740	0743	0755	N18	W40	8569	06	10.3	15	SF		3	E	56		
LEAR		0740	0743	0755	N17	W39	8569	06	10.3	15	SF		3	E	51		
LEAR		0815	0816	0820	N25	E14	8582	06	14.4	5	SF		3	E	21		
SVTO		0916	0916	0927	N25	E14	8582	06	14.5	11	SF		3	E	19		
RAMY		1117E	1118U	1128D	N17	W42	8569	06	10.3	11D	SF		2	E	35		
SVTO		1118	1119	1122	N16	W43	8569	06	10.2	4	SF		3	E	16		
GOES		1221	1225	1233	N25	E11	8582			12	1F	C 2.1					1.2E-03
RAMY		1224	1225	1244	N25	E11	8582	06	14.4	20	1F		3	E	102		F
SVTO		1224	1229	1243	N25	E11	8582	06	14.4	19	SF		3	E	75		F
RAMY		1249	1252	1305	N17	W42	8569	06	10.3	16	SF		3	E	25		
SVTO		1250	1252	1257	N18	W43	8569	06	10.3	7	SF		3	E	16		
GOES		1306	1311	1315	N17	W42	8569			9	SF	C 2.4					1.0E-03
RAMY		1307	1311	1333	N17	W42	8569	06	10.3	26	SF		3	E	68		
SVTO		1308	1310	1329	N18	W43	8569	06	10.3	21	SF		3	E	63		
RAMY		1445	1450	1515	N26	E09	8582	06	14.3	30	SF		3	E	26		
RAMY		1529	1529	1533	S19	W40	8571	06	10.6	4	SF		3	E	11		
RAMY		1543	1543	1610	N24	E07	8582	06	14.2	27	SF		3	E	10		
SVTO		1553	1555	1601	N26	E09	8582	06	14.4	8	SF		3	E	15		F
RAMY		1619	1623	1636	N25	E09	8582	06	14.4	17	SF		3	E	16		
SVTO		1623	1631	1642	N25	E10	8582	06	14.4	19	SF		3	E	18		
SVTO		1629	1629	1635	N16	W46	8569	06	10.2	6	SF		3	E	13		
SVTO		1638	1638	1644	N16	W46	8569	06	10.2	6	SF		3	E	12		
GOES		1644	1657	1706	N16	W46	8569			22	SF	C 1.4					1.7E-03
SVTO		1646	1651	1700	N25	E10	8582	06	14.5	14	SF		3	E	18		
RAMY		1647	1651	1703	N25	E09	8582	06	14.4	16	SF		3	E	19		
GOES		1747	1805	1819						32		C 1.8					2.8E-03
HOLL		1934	1937	1942	N26	E07	8582	06	14.3	8	SF		3	E	15		F
HOLL		2345	2345	2405	N19	W62	8578	06	9.2	20	SF		3	E	15		
HOLL	14	0012	0029	0054	N26	E05	8582	06	14.4	42	SF		3	E	44		
LEAR		0019	0028	0046	N26	E05	8582	06	14.4	27	SF		3	E	40		E
GOES		0302	0331	0411	N22	W44	8569			69	SF	C 1.4					5.5E-03
LEAR		0304	0307	0315	N22	W44	8569	06	10.7	11	SF		3	E	21		
LEAR		0404	0404	0407	S12	E43	8583	06	17.4	3	SF		3	E	11		
LEAR		0457	0459	0506	N26	E01	8582	06	14.3	9	SF		3	E	44		F
SVTO		0458	0459	0506	N26	E03	8582	06	14.4	8	SF		3	E	43		F

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	(Min)	Imp Opt	Xray	See	Obs Type	Area Measurement			Remarks
															Time (UT)	Apparent (10 ⁻⁶ Disk)	Corr (Sq Deg)	
LEAR	14	0547	0549	0601	N26	E01	8582	06	14.3	14	SF		3	E		25		
SVTO		0548	0548	0556	N27	E01	8582	06	14.3	8	SF		3	E		12		FH
LEAR		0636	0637	0647	N24	E00	8582	06	14.3	11	SF		3	E		21		F
SVTO		0637	0637	0644	N25	W01	8582	06	14.2	7	SF		3	E		17		FH
LEAR		0658	0701	0703	N24	E00	8582	06	14.3	5	SF		3	E		28		F
RAMY		1133E	1133U	1207D	N24	W04	8582	06	14.2	34D	SF		3	E		17		F
GOES		1214	1217	1223	N26	W01				9	SF	C 1.1						5.3E-04
RAMY		1217E	1221U	1230D	N26	W01	8582	06	14.4	13D	SF		3	E		15		
RAMY		1258	1258	1304	S27	W49	8576	06	10.7	6	SF		3	E		10		
RAMY		1435	1436	1450	N26	W03	8582	06	14.4	15	SF		3	E		13		
SVTO		1517	1522	1528	N26	W05	8582	06	14.2	11	SF		3	E		14		
RAMY		1703	1704	1707	S29	W48	8576	06	10.9	4	SF		3	E		15		
RAMY		1713	1713	1721	N16	W57	8569	06	10.4	8	SF		3	E		21		
HOLL		1714	1714	1722	N17	W59	8569	06	10.2	8	SF		3	E		16		
RAMY		1800	1833	1851	N17	W70	8578	06	9.4	51	SF		3	E		29		
HOLL		1813	1813	1837	N17	W71	8578	06	9.4	24	SF		3	E		45		
HOLL		1841	1841	1854D	N19	W73	8578	06	9.2	13D	SF		3	E		16		
GOES	15	0028	0031	0035	S11	E30	8583			7	SF	C 1.0						3.7E-04
HOLL		0030	0031	0036	S11	E30	8583	06	17.3	6	SF		3	E		60		
LEAR		0032	0032	0039	S11	E29	8583	06	17.2	7	SF		3	E		31		
HOLL		0034	0037	0041	N26	W10	8582	06	14.2	7	SF		3	E		14		
HOLL		0054	0102	0124	N25	W09	8582	06	14.3	30	SF		3	E		58		F
LEAR		0100	0115	0122	N25	W10	8582	06	14.3	22	SF		3	E		11		
LEAR		0440	0442	0445	N25	W13	8582	06	14.2	5	SF		3	E		16		
GOES		1103	1114	1150						47		C 1.2						
RAMY		1310	1311	1319	S19	W04	8580	06	15.2	9	SF		3	E		10		F
RAMY		1637	1639	1644	N18	W69	8569	06	10.4	7	SF		3	E		13		
RAMY		1647	1647	1650	S12	E22	8583	06	17.3	3	SF		3	E		10		
LEAR	16	0145	0145	0151	N39	E40	8585	06	19.3	6	SF		3	E		13		
LEAR		0151	0159	0216	N39	E40	8585	06	19.3	25	SF		3	E		33		
GOES		0421	0509	0536	N39	E38	8585			75	1F	C 3.9						1.2E-02
LEAR		0455	0515	0550	N39	E38	8585	06	19.3	55	1F		4	E		102		
SVTO		0500	0520	0540	N40	E39	8585	06	19.4	40	SF		3	E		48		F
RAMY		1358	1401	1405	S24	W16	8580	06	15.3	7	SF		4	E		11		FH
GOES		1739	1809	1821						42		C 1.9						3.3E-03
HOLL		2036	2036	2045	N22	W87	8584	06	10.2	9	SF		3	E		21		
HOLL		2046	2048	2052	N25	W34	8582	06	14.2	6	SF		3	E		16		
GOES		2240	2243	2246						6		C 1.0						3.1E-04
GOES	17	0022	0036	0050			8569			28		C 5.3						6.0E-03
GOES		0255	0259	0302	N40	E28	8585			7	SF	C 1.1						4.3E-04
LEAR		0257	0258	0308	N40	E28	8585	06	19.4	11	SF		4	E		22		
GOES		0609	0615	0621						12		C 1.4						8.9E-04
LEAR		0622	0622	0625	N25	W37	8582	06	14.4	3	SF		4	E		10		
LEAR		0837	0840	0850	N40	E24	8585	06	19.3	13	SF		3	E		14		
SVTO		0838E	0838U	0847D	N40	E24	8585	06	19.3	9D	SF		3	E		12		
GOES		0914	0930	0944						30		C 3.2						4.5E-03
GOES		1647	1730	1739						52		M 3.6						3.1E-02
GOES	18	0250	0256	0314						24		C 2.0						2.5E-03
GOES		0437	0442	0445						8		C 1.6						7.1E-04
GOES		0454	0457	0501						7		C 1.2						4.8E-04
GOES		0535	0539	0543						8		C 1.5						6.4E-04
GOES		0635	0642	0648	N35	E14	8585			13	SF	C 2.8						1.7E-03
LEAR		0636E	0649U	0720D	N39	E12	8585	06	19.2	44D	SF		2	E		45		
SVTO		0644E	0645	0701	N35	E14	8585	06	19.4	17D	SF		3	E		55		
GOES		0708	0714	0716						8		C 5.8						1.8E-03
GOES		0723	0726	0729						6		C 3.0						8.2E-04
SVTO		0905	0909U	0918D	S21	W11	8588	06	17.5	13D	SF		3	E		25		F
GOES		1104	1120	1145						41		C 4.4						8.9E-03
GOES		1356	1401	1405						9		C 1.4						6.9E-04
GOES		1433	1447	1455	N26	W53	8582			22	SF	C 2.2						2.2E-03
SVTO		1442E	1448	1454	N28	W51	8582	06	14.6	12D	SF		3	E		25		F
RAMY		1444	1449	1511D	N26	W53	8582	06	14.5	27D	SF		3	E		60		
GOES		1638	1657	1744						66		C 5.8						2.0E-02
HOLL		1941	1942	1948D	N27	W55	8582	06	14.5	7D	SF		3	E		36		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Time (UT)	Measurement Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks	
																			Area	Measurement	Corr
GOES	18	1956	2009	2014	N39	E05				18	1N	C	7.0					4.8E-03	
	HOLL	1957	2009	2040	N39	E05	8585	06	19.2	43	1N			3	E		219		FH
		2044	2048	2052						8		C	1.9						8.2E-04
		HOLL	2257	2258	2318	N40	E04	8585	06	19.3	21	SF			3	E		58		F
GOES	19	1342	1355	1417						35		C	5.1					7.7E-03	
GOES		2228	2241	2253						25		C	4.0					4.8E-03	
GOES	20	0056	0100	0105						9		C	1.9					8.7E-04	
GOES		0433	0436	0438						5		C	1.4					3.2E-04	
GOES		0454	0501	0506						12		C	4.2					2.0E-03	
GOES		0711	0716	0723						12		C	1.8					1.1E-03	
GOES		0747	0752	0755						8		C	1.3					5.9E-04	
GOES		0833	0840	0847						14		C	5.5					3.1E-03	
GOES		1155	1159	1203						8		C	1.5					6.2E-04	
GOES		1355	1403	1407						12		C	2.8					1.6E-03	
RAMY		1454	1454	1500	N14	W23	8591	06	18.9	6	SF			3	E		10		
GOES		1525	1535	1545	N22	E71				20	SB	M	2.9					2.0E-02	
RAMY		1529	1530	1614D	N22	E71	8592	06	26.1	45D	SB			3	E		96		S
GOES		1720	1727	1737						17		C	3.8					3.3E-03	
GOES		1908	2007	2035	N24	E67	8592			87	SF	C	5.1					2.3E-02	
HOLL		1912E	1915	1947	N27	E65	8592	06	25.9	35D	SF			3	E		38		FH
HOLL		1957	2020	2030	N24	E67	8592	06	26.0	33	SF			3	E		34		F
HOLL		2008	2014	2021	N23	E32		06	23.3	13	SF			3	E		31		F
HOLL		2032	2036	2039	N23	E66	8592	06	25.9	7	SF			3	E		11		
GOES		2104	2109	2115						11		C	3.8					2.3E-03	
HOLL		2312	2315	2322	S12	W49	8583	06	17.3	10	SF			3	E		20		
GOES	21	0001	0007	0028	N14	E75	8594			27	SF	C	3.4					4.6E-03	
LEAR		0004	0007	0011	N10	E76	8594	06	26.7	7	SF			3	E		35		
HOLL		0005	0005	0018	N14	E75	8594	06	26.7	13	SF			3	E		29		F
LEAR		0058	0118	0152	S12	W51	8583	06	17.2	54	1F			3	E		156		F
HOLL		0058	0118	0152	S11	W50	8583	06	17.3	54	1F			3	E		241		H
GOES		0102	0120	0127	S12	W51	8583			25	1F	C	4.9					5.5E-03	
LEAR		0140	0144	0149	N36	W24	8585	06	19.1	9	SF			3	E		22		
GOES		0910	0915	0917	N13	E69	8594			7	SF	C	1.6					5.3E-04	
LEAR		0913	0915	0918	N13	E69	8594	06	26.6	5	SF			3	E		10		
GOES		1129	1132	1142						13		C	1.2					8.3E-04	
HOLL		1815	1815	1819	N13	E66	8594	06	26.7	4	SF			3	E		25		
HOLL		1824	1824	1828	N12	E65	8594	06	26.7	4	SF			3	E		12		
GOES		2304	2309	2318						14		C	1.2					9.4E-04	
GOES	22	0253	0257	0300	S20	E83	8599			7	SF	C	1.4					4.9E-04	
LEAR		0257	0257	0301	S20	E83	8599	06	28.5	4	SF			3	E		15		
LEAR		0708	0713	0812	S19	E79	8599	06	28.3	64	SF			4	E		20		
GOES		0725	0731	0746	S19	E79	8599			21	SF	C	1.6					1.9E-03	
GOES		1150	1215	1237						47		C	2.6					5.7E-03	
HOLL		1419	1419	1428	S18	E74	8599	06	28.2	9	SF			3	E		20		H
HOLL		1538	1544	1550	S18	E72	8599	06	28.1	12	SF			3	E		15		
HOLL		1611	1618	1624	S18	E71	8599	06	28.1	13	SF			3	E		11		
GOES		1737	1829	1854						77		M	1.7					3.0E-02	
HOLL		1746	1746	1806	N26	E55	8598	06	27.0	20	SF			3	E		14		
HOLL		1818	1857	1858D	N22	E37	8592	06	25.6	40D	1N			3	E		225		
HOLL		1856	1901	1917	S18	E71	8599	06	28.2	21	SF			3	E		14		
GOES	23	0037	0047	0055	S12	W78	8583			18	1F	C	7.9					5.7E-03	
LEAR		0040	0045	0057	S12	W78	8583	06	17.1	17	1F			3	E		102		
GOES		0649	0709	0735	N23	E42	8598			46	2N	M	1.7					3.2E-02	
SVTO		0653	0656U	0817	N21	E43	8598	06	26.6	84	2N			3	E		334		UH
LEAR		0659E	0707	0819	N23	E42	8598	06	26.5	80D	2N			4	E		384		UF
GOES		1208	1252	1341	N23	E28	8592			93	SF	C	2.3					9.8E-03	
HOLL		1228	1230	1323	N23	E28	8592	06	25.7	55	SF			2	E		40		F
SVTO		1231	1243	1325	N22	E26	8592	06	25.5	54	SF			3	E		26		
SVTO		1231	1306	1438	N22	E28	8596	06	25.7	127	SF			3	E		67		F
GOES		1555	1559	1601						6		C	1.3					4.1E-04	
HOLL		1718	1720	1725	N24	E46	8698	06	27.3	7	SF			3	E		17		
SVTO		1718	1720	1725	N22	E48	8598	06	27.4	7	SF			3	E		14		
SVTO		1736	1737	1745	N22	E46	8598	06	27.3	9	SF			3	E		10		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
															Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
HOLL	23	1753E	1801U	1814D	N23	E45	8598	06	27.2	21D	SF		3	E		41		
GOES		1814	1817	1820	N23	E45	8598			6	SF	C 2.8						8.0E-04
GOES		1829	1834	1842						13		C 2.5						1.8E-03
GOES		1851	1857	1902						11		C 2.8						1.4E-03
GOES		2044	2055	2102						18		C 5.1						3.6E-03
HOLL		2112	2122	2157	N23	E44	8598	06	27.3	45	SF		3	E		23		
GOES		2306	2316	2325						19		M 1.1						8.5E-03
GOES	24	0141	0155	0217						36		C 2.4						4.5E-03
GOES		0258	0303	0307						9		C 2.0						9.5E-04
GOES		0410	0415	0422						12		C 2.1						1.4E-03
LEAR		0446	0447	0451	N26	E36	8598	06	27.0	5	SF		4	E		16		
LEAR		0500	0504	0520	N24	E38	8598	06	27.1	20	SF		4	E		12		
LEAR		0606	0612	0645	N26	E28	8598	06	26.4	39	SF		4	E		28		
GOES		0608	0638	0656	N26	E28	8598			48	SF	C 3.7						8.8E-03
LEAR		0633	0649	0705	N23	E40	8597	06	27.3	32	SF		4	E		82		
LEAR		0649	0649	0703	N26	E35	8598	06	27.0	14	SF		4	E		24		
LEAR		0709	0711	0713	N26	E35	8598	06	27.0	4	SF		4	E		11		
LEAR		0722	0722	0727	N24	E37	8598	06	27.2	5	SF		4	E		13		
LEAR		0738	0745	0804	N22	E42	8597	06	27.5	26	SF		4	E		42		
GOES		0806	0811	0815	N23	E38	8598			9	1F	C 6.5						2.2E-03
LEAR		0809	0812	0847	N23	E38	8597	06	27.3	38	1F		4	E		147		
SVTO		0811	0811	0817	N26	E34	8598	06	27.0	6	SF		3	E		61		
GOES		0907	0922	0932	N22	E21	8596			25	SF	C 2.2						3.0E-03
SVTO		0909	0914	0917	N22	E21	8596	06	26.0	8	SF		3	E		36		
GOES		1204	1412	1510	N29	W13	8595			186	1F	C 4.1						3.3E-02
HOLL		1321E	1342	1444	N29	W13	8595	06	23.5	83D	1F		3	E		227		US
HOLL		1534	1535	1551D	N24	E34	8598	06	27.3	17D	SF		3	E		14		
GOES		1538	1543	1548	N24	E34	8598			10	SF	C 2.3						1.3E-03
HOLL		1539	1540	1551D	N19	E65	8602	06	29.6	12D	SF		3	E		18		
GOES		1720	1723	1727						7		C 1.8						6.7E-04
GOES		1736	1739	1744	N22	E08	8592			8	SF	C 1.8						7.8E-04
HOLL		1737	1738	1809	N22	E08	8592	06	25.3	32	SF		3	E		33		
GOES		1826	1844	1905	N20	E26	8598			39	1F	C 3.3						6.4E-03
HOLL		1832	1840	1917	N20	E26	8598	06	26.8	45	1F		3	E		112		FS
HOLL		1834	1840	1847	N15	E27	8594	06	26.8	13	SF		3	E		24		
HOLL		1920	1924	1929	N22	E30	8598	06	27.1	9	SF		3	E		14		
HOLL		1930	1934	1944	N22	E30	8598	06	27.1	14	SF		3	E		70		F
HOLL		1939	1941	1944	N17	E36		06	27.5	5	SF		3	E		12		F
GOES		2000	2004	2011			8594			11		C 3.3						1.9E-03
HOLL		2002	2003	2011	S17	E56	8603	06	29.1	9	SF		3	E		25		
HOLL		2002	2005	2012	N14	E24	8594	06	26.6	10	SF		3	E		28		
HOLL		2103	2107	2116	N24	E29	8598	06	27.1	13	SF		3	E		23		
HOLL		2239	2239	2242	S17	E39	8599	06	27.9	3	SF		3	E		12		
HOLL		2256	2303	2314	S16	E65	8603	06	29.9	18	SF		3	E		15		
GOES		2300	2305	2313	S16	E65	8603			13	SF	C 3.4						2.4E-03
LEAR	25	0010	0011	0017	N22	E30	8598	06	27.3	7	SF		3	E		35		
LEAR		0028	0032	0036	N22	E29	8598	06	27.2	8	SF		3	E		18		E
LEAR		0154	0203	0205	N23	E28	8598	06	27.2	11	SF		4	E		10		E
LEAR		0337	0401	0413	N15	E21	8594	06	26.7	36	SF		4	E		22		E
SVTO		0606	0609	0621	N16	E31	8606	06	27.6	15	SF		3	E		10		
HOLL		1330	1332	1351	N22	E19	8598	06	27.0	21	SF		3	E		15		
HOLL		1330	1348	1452	N11	W65	8604	06	20.7	82	SF		3	E		19		
HOLL		1400	1402	1413	N23	E21	8598	06	27.2	13	SF		3	E		47		
SVTO		1402	1402	1408	N23	E21	8598	06	27.2	6	SF		3	E		15		
SVTO		1405	1406	1418	N12	W61	8604	06	21.0	13	SF		3	E		16		
SVTO		1429	1439	1444	N10	W63	8604	06	20.9	15	SF		3	E		14		
HOLL		1526	1526	1529	N11	W65	8604	06	20.7	3	SF		3	E		36		
HOLL		1534	1535	1545	N11	W65	8604	06	20.7	11	SF		3	E		23		
HOLL		1713	1714	1718	N11	W65	8604	06	20.8	5	SF		3	E		11		
SVTO		1726	1728	1730	N11	W64	8591	06	20.9	4	SF		3	E		10		
HOLL		1731	1737	1742	N11	W66	8604	06	20.8	11	SF		3	E		14		
HOLL		1850	1855	1858	N22	E20	8598	06	27.3	8	SF		3	E		10		F
HOLL		1959	2000	2005	N25	E11	8598	06	26.7	6	SF		3	E		12		
GOES		2152	2157	2203						11		C 2.4						1.3E-03
HOLL		2343	2347	2352	N11	W69	8604	06	20.8	9	SF		3	E		21		
GOES	26	0106	0125	0153	N17	E51	8602			47	SF	C 2.7						6.1E-03

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement		Remarks
															Time (UT)	Apparent (10-6 Disk)		Corr (Sq Deg)
HOLL	26	0110	0118	0145D	N17	E51	8602	06	29.9	35D	SF		3	E		35	F
GOES		0154	0205	0214	S18	E53	8603			20	SF	C 2.7					2.7E-03
LEAR		0201	0203	0217	S18	E53	8603	06	30.1	16	SF		4	E		32	E
GOES		0353	0356	0402						9		C 1.7					8.3E-04
SVTO		0431	0431	0436	N23	E13	8598	06	27.2	5	SF		3	E		10	F
LEAR		0440	0441	0445	N12	W70	8604	06	20.9	5	SF		3	E		19	
SVTO		0506E	0512	0600	N24	E02	8596	06	26.4	54D	2B		3	E		339	F
GOES		0508	0512	0514	N23	E03				6	2N	M 2.3					3.9E-03
LEAR		0510	0512	0528	N23	E03	8596	06	26.4	18	2N		3	E		294	E
LEAR		0650	0723	0819	N25	E00	8596	06	26.3	89	1F		3	E		130	F
SVTO		0650E	0724U	0828	N20	E01	8596	06	26.4	98D	1F		3	E		122	F
GOES		0714	0725	0749	N25	E00	8598			35	1F	C 7.0					1.1E-02
SVTO		0718E	0720U	0809D	N20	E09	8598	06	27.0	51D	SF		3	E		39	F
LEAR		0739	0740	0800	N26	E11	8598	06	27.2	21	SF		3	E		53	U
GOES		1149	1152	1158						9		C 3.1					1.6E-03
GOES		1233	1237	1243	N21	W03	8598			10	SF	C 2.2					1.1E-03
SVTO		1240E	1241U	1248	N21	W03	8596	06	26.3	8D	SF		3	E		18	F
GOES		1328	1334	1342			8598			14		C 3.0					2.0E-03
SVTO		1330	1331	1345	N22	E09	8598	06	27.2	15	SF		3	E		30	F
HOLL		1330	1335	1342	S17	E47	8603	06	30.1	12	SF		3	E		22	
HOLL		1332	1335	1347	N22	E09	8598	06	27.2	15	SF		3	E		93	
SVTO		1333	1334	1343	N17	E14	8606	06	27.6	10	SF		3	E		13	
HOLL		1603	1606	1612	N17	E39	8602	06	29.6	9	SF		3	E		18	
HOLL		1604	1607	1624	N22	W04	8596	06	26.4	20	SF		3	E		22	
GOES		1642	1650	1653	N24	W08	8596			11	1N	C 4.1					1.9E-03
SVTO		1644	1649	1706	N22	W05	8596	06	26.3	22	SF		3	E		68	F
HOLL		1644	1651	1705	N24	W08	8596	06	26.1	21	1N		3	E		114	F
HOLL		1717	1717	1723	N25	E08	8598	06	27.3	6	SF		3	E		18	
HOLL		1951	1951	1957	N22	E06	8598	06	27.3	6	SF		3	E		16	
GOES		2028	2036	2043	N20	E38	8602			15	SF	C 4.2					2.7E-03
HOLL		2031	2036	2110	N20	E38	8602	06	29.8	39	SF		3	E		91	
HOLL		2202	2202	2207	S18	E44	8603	06	30.3	5	SF		3	E		12	
HOLL		2243	2245	2303	N11	E26		06	28.9	20	SF		3	E		37	F
HOLL		2324	2324	2333	N16	E35	8602	06	29.6	9	SF		3	E		18	
HOLL		2324	2326	2329	S16	E43	8603	06	30.2	5	SF		3	E		24	
HOLL		2350	2352	2355	S16	E43	8603	06	30.2	5	SF		3	E		24	
GOES	27	0055	0137	0212						77		C 2.7					1.1E-02
GOES		0222	0231	0239	N19	E35	8602			17	SF	C 2.5					2.7E-03
LEAR		0225	0228	0254	N19	E35	8602	06	29.8	29	SF		3	E		21	F
LEAR		0320	0330	0357	N18	E35	8602	06	29.8	37	SF		3	E		48	
GOES		0326	0332	0342	N18	E35	8602			16	SF	C 2.3					2.0E-03
GOES		0834	0844	0902	N23	W25	8592			28	2N	M 1.0					1.2E-02
SVTO		0837	0841	0942	N23	W25	8592	06	25.4	65	2N		3	E		328	U
LEAR		0841	0842	0935D	N22	W26	8592	06	25.4	54D	2B		3	E		523	U
HOLL		1438	1445	1453	S26	E67		07	2.8	15	SF		3	E		18	
HOLL		1441	1443	1502	N18	E28	8602	06	29.7	21	SF		3	E		14	
HOLL		1507	1524	1538	S25	E65		07	2.7	31	SF		3	E		46	
GOES		1516	1533	1540	S25	E65	8611			24	SF	C 2.0					2.6E-03
GOES		1821	1844	1952	N24	W12	8598			91	SF	C 3.4					1.5E-02
HOLL		1835	1838	1903	N24	W12	8598	06	26.8	28	SF		3	E		73	
HOLL		1914	1916	1928	N24	W13	8598	06	26.8	14	SF		3	E		26	F
GOES		2045	2054	2107	S25	E63				22	SF	C 3.2					3.5E-03
HOLL		2046	2049	2114	S25	E63	8611	07	2.7	28	SF		3	E		51	
GOES	28	0029	0037	0047	S27	E61	8611			18	SF	C 4.0					3.2E-03
LEAR		0032	0037	0058	S27	E61	8611	07	2.8	26	SF		3	E		14	
LEAR		0301	0306	0319	S26	E57	8611	07	2.5	18	SF		3	E		97	F
GOES		0301	0309	0316	S26	E57	8611			15	SF	C 5.6					3.5E-03
LEAR		0322	0322	0326	S26	E56	8611	07	2.5	4	SF		3	E		34	
GOES		0336	0340	0343	N16	W06	8606			7	SF	C 2.2					9.0E-04
LEAR		0336	0341	0353	N16	W06	8606	06	27.7	17	SF		3	E		24	F
GOES		0529	0535	0544	S27	E55	8611			15	SF	C 1.3					1.1E-03
LEAR		0533	0535	0538	S27	E55	8611	07	2.5	5	SF		3	E		28	
LEAR		0548	0555	0617	N22	W37	8592	06	25.4	29	SF		3	E		37	
SVTO		0704	0722	0730	S14	E20	8603	06	29.8	26	SF		3	E		21	
SVTO		0715	0715	0722	N16	W12	8594	06	27.4	7	SF		3	E		12	
LEAR		0715	0716	0726	N14	W19	8594	06	26.9	11	SF		3	E		17	

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks	
															Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
SVTO	28	0748	0751	0758	N22	W17	8598	06	27.0	10	SF		3	E		15			
LEAR		0821	0823	0828	S16	E21	8603	06	29.9	7	SF		3	E		17			
SVTO		0823	0826	0829	S16	E21	8603	06	29.9	6	SF		3	E		12			
LEAR		0917	0917	0924	S16	E12	8612	06	29.3	7	SF		3	E		16			
SVTO		0917	0920	0925	S16	E21	8603	06	30.0	8	SF		3	E		15			
GOES		1018	1024	1033	S27	E55	8611			15	SF C 2.3							1.9E-03	
SVTO		1023	1031	1035	S27	E55	8611	07	2.7	12	SF		3	E		22			
GOES		1213	1217	1225	S27	E54	8611			12	SF C 1.6							1.1E-03	
SVTO		1213	1218	1225	S27	E54	8611	07	2.7	12	SF		3	E		14			
SVTO		1251	1253	1300	N23	W34	8596	06	25.9	9	SF		3	E		11			
SVTO		1305	1305	1308	S16	E19	8603	06	30.0	3	SF		3	E		18			
HOLL		1357	1400	1402	S25	E52	8611	07	2.6	5	SF		3	E		15			
HOLL		1550	1550	1554	S25	E50	8611	07	2.5	4	SF		3	E		11			
GOES		1554	1600	1605	S26	E52	8611			11	SF C 1.9							1.1E-03	
HOLL		1555	1558	1604	S26	E52	8611	07	2.7	9	SF		3	E		36			
SVTO		1558	1601	1608	S27	E52	8611	07	2.7	10	SF		3	E		15			
SVTO		1622	1627	1632	S27	E51	8611	07	2.6	10	SF		3	E		25			
HOLL		1627	1627	1633	S26	E52	8611	07	2.7	6	SF		3	E		18			
GOES		1815	1822	1832						17	C 2.2							1.8E-03	
HOLL		1839	1903	2017	S25	E49	8611	07	2.6	98	1F		3	E		102			
GOES		1859	1934	1959	S25	E49	8611			60	1F C 6.2							1.9E-02	
HOLL		2039	2042	2047	S25	E49	8611	07	2.6	8	SF		3	E		21			
GOES		2055	2101	2117			8592			22	C 3.5							4.0E-03	
HOLL		2056	2058	2137	N26	W41	8596	06	25.7	41	1F		3	E		139			
HOLL		2057	2058	2101	N22	W44	8592	06	25.5	4	1N		3	E		110			
LEAR	29	0447	0508	0533	S15	E08	8603	06	29.8	46	SF		4	E		84			E
GOES		0501	0510	0517	N18	E07				16	SF M 1.4							8.8E-03	
LEAR		0511	0521	0554	N18	E07	8602	06	29.7	43	SF		4	E		40			E
SVTO		0551E	0600U	0618D	N19	E02	8602	06	29.4	27D	SF		3	E		15			
GOES		0558	0603	0621	S26	E48	8611			23	SF C 1.9							2.5E-03	
LEAR		0600	0600	0613	S26	E48	8611	07	3.0	13	SF		4	E		22			
SVTO		0600E	0602U	0619D	S27	E44	8611	07	2.7	19D	SF		3	E		22			
LEAR		0624	0628	0729	N18	E06	8602	06	29.7	65	SF		4	E		36			
GOES		0624	0632	0643	N19	E02	8602			19	SF C 3.0							2.9E-03	
SVTO		0625	0627	0741D	N19	E02	8602	06	29.4	76D	SF		3	E		42			
LEAR		0653	0653	0658	S26	E44	8611	07	2.7	5	SF		4	E		20			
LEAR		0705	0709	0739	S14	E12	8603	06	30.2	34	SF		4	E		43			
LEAR		0805	0805	0828	N18	E05	8602	06	29.7	23	SF		4	E		11			
LEAR		0805	0806	0812	S15	E15	8603	06	30.5	7	SF		4	E		12			
GOES		0813	0821	0827	S27	E41	8611			14	1N M 3.1							1.6E-02	
LEAR		0815	0818	0849	S27	E41	8611	07	2.5	34	1N		4	E		156			UF
GOES		1024	1027	1030						6	C 2.9							8.0E-04	
SVTO		1240E	1243U	1328D	N21	W45	8596	06	26.1	48D	1F		3	E		101			
GOES		1240	1247	1255	N21	W45	8596			15	1F C 2.8							2.3E-03	
GOES		1407	1413	1417						10	C 3.7							1.5E-03	
HOLL		1455E	1504U	1630	N15	E02	8602	06	29.8	95D	SN		3	E		80			F
GOES		1455	1519	1543	N15	E02	8602			48	SN C 3.9							9.3E-03	
GOES		1753	1803	1809	S15	E01	8603			16	SF C 3.0							2.1E-03	
HOLL		1755	1801	1823	S15	E01	8603	06	29.8	28	SF		3	E		66			U
HOLL		1833	1841	1850	S27	E36	8611	07	2.6	17	SF		3	E		17			
HOLL		1851	1851	1856	S27	E36	8611	07	2.6	5	SF		3	E		23			F
GOES		1907	1913	1920	S14	E01				13	1N M 1.6							7.3E-03	
HOLL		1909	1912	1940	S14	E01	8603	06	29.9	31	1N		3	E		136			
HOLL		2006	2007	2010	N20	W02	8602	06	29.7	4	SF		3	E		14			
HOLL		2013	2013	2022	N20	W02	8602	06	29.7	9	SF		3	E		23			
GOES		2143	2152	2159	N25	W47	8598			16	SF C 1.9							1.5E-03	
HOLL		2149	2149	2202	N25	W47	8598	06	26.3	13	SF		3	E		12			
GOES		2204	2211	2217	S13	E03	8603			13	1N C 7.9							3.9E-03	
HOLL		2205	2210	2238	S13	E03	8603	06	30.1	33	1N		3	E		145			F
HOLL	30	0009	0030	0059	S25	E34	8611	07	2.6	50	SF		3	E		20			
HOLL		0014	0015	0020	S13	E01	8603	06	30.1	6	SF		3	E		12			F
GOES		0305	0312	0318						13	C 4.5							2.5E-03	
GOES		0433	0446	0455	S26	E28	8611			22	1N M 2.1							1.7E-02	
LEAR		0435	0441	0526	S26	E28	8611	07	2.4	51	1N		3	E		193			
SVTO		0439E	0446	0518	S27	E32	8611	07	2.7	39D	1N		3	E		103			
SVTO		0524	0531	0559	S26	E31	8611	07	2.6	35	SF		3	E		15			F

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks	
															Time (UT)	Apparent (10 ⁻⁶ Disk)	Corr (Sq Deg)		
GOES	30	0640	0646	0651	S16	W13	8612			11	1F	C	5.2						3.0E-03
LEAR		0641	0646	0727	S16	W13	8612	06	29.3	46	1F		3	E		163		F	
LEAR		0710	0710	0717	S26	E34	8611	07	2.9	7	SF		3	E		13			
LEAR		0716	0716	0722	N23	W58	8596	06	25.8	6	SF		3	E		52		F	
GOES		0841	0845	0852	S15	W03	8603			11	SF	C	2.1					1.3E-03	
LEAR		0843	0846	0853	S15	W03	8603	06	30.1	10	SF		2	E		23		F	
GOES		0921	0945	1004						43		C	2.6					5.9E-03	
SVTO		1123E	1133	1156	S15	E00	8603	06	30.5	330	1B		3	E		193		F	
GOES		1124	1130	1138	S15	E00	8603			14	1B	M	1.9					1.1E-02	
GOES		1229	1235	1244						15		C	2.0					1.7E-03	
SVTO		1312	1312	1324	S26	E27	8611	07	2.6	12	SF		3	E		15			
HOLL		1357	1406	1429	N18	W14	8602	06	29.5	32	SF		3	E		38			
HOLL		1432	1432	1451	S14	W14	8603	06	29.5	19	SF		3	E		20			
SVTO		1451	1451	1454	S25	E26	8611	07	2.6	3	SF		3	E		19			
HOLL		1452	1502	1510	S15	W10	8603	06	29.9	18	SF		3	E		65			
HOLL		1453	1454	1507	S25	E26	8611	07	2.6	14	SF		3	E		18			
SVTO		1459	1500	1508	S15	W02	8603	06	30.5	9	SF		3	E		25			
HOLL		1514	1516	1521	S15	W11	8603	06	29.8	7	SF		3	E		30			
SVTO		1519	1525	1527	S15	W03	8603	06	30.4	8	SF		3	E		13			
SVTO		1533	1534	1539	S27	E26	8611	07	2.7	6	SF		3	E		10			
HOLL		1533	1535	1539	S21	E23	8611	07	2.4	6	SF		3	E		12			
HOLL		1548	1557	1616	S15	W10	8603	06	29.9	28	SF		3	E		53		U	
SVTO		1557	1557	1604	S15	W03	8603	06	30.4	7	SF		3	E		11			
SVTO		1618	1620	1623	S27	E26	8611	07	2.7	5	SF		3	E		10			
GOES		1630	1642	1654	S27	E25	8611			24	SF	C	3.8					4.4E-03	
SVTO		1630	1659	1709	S27	E25	8611	07	2.6	39	SF		3	E		21			
HOLL		1634	1641	1702	S15	W09	8603	06	30.0	28	SF		3	E		44			
SVTO		1636	1641	1706D	S15	W03	8603	06	30.5	300	SF		3	E		53			
HOLL		1717	1739	1802	N19	W15	8602	06	29.6	45	SF		3	E		49			
SVTO		1722	1725	1729	N19	W17	8602	06	29.4	7	SF		3	E		14			
HOLL		1740	1741	1748	S16	W08	8603	06	30.1	8	SF		3	E		51			
HOLL		1759	1800	1817	S11	W40	8599	06	27.7	18	SF		3	E		32			
GOES		1803	1808	1816	S13	W05				13	2B	M	2.0					9.8E-03	
HOLL		1805	1808	1914	S13	W05	8603	06	30.4	69	2B		3	E		315		U	
HOLL		1911	1919	1946	S25	E23	8611	07	2.6	35	SF		3	E		33			
HOLL		1931	1935	1945	S15	W12	8603	06	29.9	14	SF		3	E		18		F	
GOES		2007	2012	2015			8606			8		M	1.1					3.3E-03	
HOLL		2010	2011	2023	N20	W56	8598	06	26.5	13	SF		3	E		65			
HOLL		2011	2011	2017	N17	W43	8606	06	27.6	6	SF		3	E		41			
HOLL		2020	2021	2025	S15	W11	8603	06	30.0	5	SF		3	E		19		F	
HOLL		2107	2123	2147	S24	E22	8611	07	2.6	40	1F		3	E		108			
HOLL		2148	2231	2249	S25	E23	8611	07	2.7	61	SF		3	E		84			
HOLL		2149	2153	2211	S15	W13	8603	06	29.9	22	SF		3	E		10			
HOLL		2220	2222	2229	S14	W14	8603	06	29.9	9	SF		3	E		13			
HOLL		2250	2257	2307	S24	E21	8611	07	2.6	17	SF		3	E		37			
HOLL		2303	2303	2320	N19	W19	8602	06	29.5	17	SF		3	E		16		F	
HOLL		2308	2314	2323	S24	E18	8611	07	2.3	15	SF		3	E		27		F	
HOLL		2326	2422	2528	S25	E22	8611	07	2.7	122	SF		3	E		67			
HOLL		2334	2347	2357	N27	W51	8598	06	27.0	23	SF		3	E		44		F	

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

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Jun 99

JUNE 1999

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 ⁻²² W/m ² Hz)	Mean		
01	8800	SVTO	8 S	0614.0	0614.0	U	26.0			QL=4 ST=2 TYP=3
	2695	SGMR	8 S	1103.0	1104.0	1.0	26.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	1103.0	1103.0	1.0	65.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1103.0	1103.0	1.0	39.0			QL=4 ST=2 TYP=3
	2695	SVTO	8 S	1103.0	1104.0	1.0	23.0			QL=4 ST=2 TYP=3
02	8800	LEAR	8 S	0906.0	0906.0	U	37.0			QL=2 ST=2 TYP=3
	2695	LEAR	8 S	0906.0	0906.0	U	52.0			QL=2 ST=2 TYP=3
	2695	SVTO	8 S	0906.0	0906.0	U	46.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	0906.0	0906.0	U	31.0			QL=4 ST=2 TYP=3
04	2695	LEAR	4 S/F	0653.0	0701.0	14.0	360.0			QL=2 ST=2 TYP=3
	2695	SVTO	4 S/F	0653.0	0701.0	15.0	360.0			QL=4 ST=2 TYP=3
	8800	LEAR	49 GB	0656.0	0700.0	17.0	2400.0			QL=2 ST=2 TYP=6
	8800	SVTO	49 GB	0656.0	0700.0	14.0	1500.0			QL=4 ST=2 TYP=6
12	2695	SGMR	20 GRF	1332.0	1334.0	20.0	18.0			QL=4 ST=2 TYP=2
17	8800	PALE	4 S/F	1721.0	1724.0	8.0	140.0			QL=4 ST=2 TYP=3
	8800	SGMR	4 S/F	1721.0	1724.0	10.0	180.0			QL=4 ST=2 TYP=3
	2695	PALE	4 S/F	1722.0	1725.0	4.0	58.0			QL=4 ST=2 TYP=3
	8800	SVTO	4 S/F	1722.0	1725.0	5.0	97.0			QL=2 ST=2 TYP=3
	2695	SVTO	4 S/F	1722.0	1725.0	4.0	69.0			QL=2 ST=2 TYP=3
	2695	SGMR	4 S/F	1723.0	1725.0	3.0	62.0			QL=4 ST=2 TYP=3
20	8800	LEAR	8 S	0836.0	0836.0	1.0	120.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	0836.0	0836.0	1.0	100.0			QL=4 ST=2 TYP=3
	2695	SGMR	4 S/F	1529.0	1532.0	8.0	60.0			QL=4 ST=2 TYP=3
	2695	SVTO	4 S/F	1529.0	1532.0	6.0	57.0			QL=4 ST=2 TYP=3
	8800	SGMR	4 S/F	1529.0	1532.0	11.0	93.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	1531.0	1532.0	2.0	53.0			QL=2 ST=3 TYP=3
22	2695	PALE	48 C	1820.0	1827.0	11.0	680.0			QL=4 ST=2 TYP=8
	2695	SGMR	49 GB	1820.0	1827.0	16.0	760.0			QL=4 ST=3 TYP=6
	8800	SGMR	4 S/F	1822.0	1822.0	14.0	35.0			QL=4 ST=3 TYP=3
23	2695	SVTO	4 S/F	0656.0	0700.0	5.0	83.0			QL=4 ST=2 TYP=3
	2695	LEAR	8 S	0659.0	0659.0	1.0	88.0			QL=4 ST=2 TYP=3
26	2695	LEAR	8 S	0511.0	0511.0	1.0	63.0			QL=4 ST=3 TYP=3
	8800	LEAR	8 S	0511.0	0511.0	1.0	200.0			QL=2 ST=2 TYP=3
	8800	SVTO	8 S	0511.0	0511.0	1.0	210.0			QL=4 ST=3 TYP=3
	2695	SVTO	8 S	0511.0	0511.0	1.0	67.0			QL=4 ST=3 TYP=3
	2695	LEAR	4 S/F	0716.0	0717.0	8.0	80.0			QL=4 ST=2 TYP=3
	2695	SVTO	8 S	0716.0	0717.0	2.0	51.0			QL=4 ST=2 TYP=3
	8800	LEAR	8 S	0739.0	0739.0	2.0	64.0			QL=2 ST=2 TYP=3
	2695	LEAR	8 S	0739.0	0739.0	2.0	38.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	0739.0	0739.0	2.0	67.0			QL=4 ST=2 TYP=3
	2695	SVTO	8 S	0740.0	0740.0	U	28.0			QL=4 ST=2 TYP=3
27	2695	LEAR	4 S/F	0836.0	0839.0	6.0	250.0			QL=4 ST=2 TYP=3
	2695	SVTO	4 S/F	0836.0	0839.0	6.0	240.0			QL=4 ST=2 TYP=3
	8800	SVTO	4 S/F	0837.0	0840.0	5.0	140.0			QL=4 ST=2 TYP=3
	8800	LEAR	4 S/F	0838.0	0841.0	4.0	130.0			QL=2 ST=2 TYP=3
28	2695	SGMR	4 S/F	2057.0	2057.0	5.0	28.0			QL=4 ST=2 TYP=3
	8800	PALE	4 S/F	2058.0	2059.0	3.0	31.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	2100.0	2100.0	U	6.0			QL=2 ST=2 TYP=3
29	2695	LEAR	8 S	0505.0	0505.0	U	28.0			QL=4 ST=2 TYP=3
	8800	LEAR	8 S	0505.0	0505.0	U	35.0			QL=2 ST=2 TYP=3
	8800	SVTO	8 S	0505.0	0505.0	U	25.0			QL=4 ST=2 TYP=3
	2695	SVTO	8 S	0505.0	0507.0	2.0	32.0			QL=4 ST=2 TYP=3
	2695	LEAR	4 S/F	0815.0	0817.0	7.0	130.0			QL=4 ST=2 TYP=3
	8800	LEAR	4 S/F	0815.0	0816.0	7.0	260.0			QL=2 ST=2 TYP=3
	2695	SVTO	4 S/F	0815.0	0817.0	10.0	140.0			QL=4 ST=2 TYP=3
	8800	SVTO	4 S/F	0815.0	0816.0	14.0	240.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	1241.0	1242.0	1.0	8.0			QL=2 ST=2 TYP=3
	2695	SGMR	4 S/F	1241.0	1242.0	3.0	27.0			QL=4 ST=2 TYP=3

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Jun 99

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

JUNE 1999

Day	Freq Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
						Peak (10 -22 W/m 2 Hz)	Mean		
29	2695 PALE	4 S/F	1909.0	1911.0	3.0	110.0		QL=4 ST=2 TYP=3	
	8800 PALE	4 S/F	1909.0	1910.0	3.0	84.0		QL=4 ST=2 TYP=3	
	8800 SGMR	4 S/F	1909.0	1910.0	8.0	120.0		QL=2 ST=2 TYP=3	
	2695 SGMR	4 S/F	1909.0	1911.0	5.0	140.0		QL=4 ST=2 TYP=3	
30	2695 LEAR	4 S/F	0438.0	0442.0	5.0	33.0		QL=4 ST=2 TYP=3	
	8800 LEAR	4 S/F	0438.0	0439.0	3.0	58.0		QL=2 ST=2 TYP=3	
	2695 SVTO	48 C	0438.0	0444.0	8.0	120.0		QL=4 ST=2 TYP=8	
	8800 SVTO	4 S/F	0439.0	0440.0	7.0	48.0		QL=4 ST=2 TYP=3	
	8800 PALE	8 S	0442.0	0442.0	U	38.0		QL=4 ST=2 TYP=3	
	2695 LEAR	4 S/F	0443.0	0444.0	5.0	96.0		QL=4 ST=2 TYP=3	
	8800 LEAR	4 S/F	0443.0	0444.0	5.0	8.0		QL=2 ST=2 TYP=3	
	2695 SVTO	4 S/F	1125.0	1127.0	8.0	190.0		QL=4 ST=2 TYP=3	
	8800 SVTO	49 GB	1125.0	1126.0	4.0	550.0		QL=4 ST=2 TYP=6	
	8800 SGMR	49 GB	1125.0	1126.0	13.0	510.0		QL=4 ST=2 TYP=6	
	2695 SGMR	4 S/F	1125.0	1127.0	13.0	220.0		QL=4 ST=2 TYP=3	
	2695 SGMR	4 S/F	1556.0	1556.0	3.0	34.0		QL=4 ST=2 TYP=3	
	2695 SVTO	8 S	1556.0	1556.0	1.0	27.0		QL=4 ST=2 TYP=3	
	8800 SVTO	8 S	1556.0	1556.0	1.0	26.0		QL=4 ST=2 TYP=3	
	2695 SGMR	4 S/F	1806.0	1806.0	4.0	86.0		QL=4 ST=2 TYP=3	
	8800 SGMR	4 S/F	1806.0	1807.0	7.0	110.0		QL=4 ST=2 TYP=3	
	2695 PALE	4 S/F	1806.0	1806.0	10.0	88.0		QL=4 ST=2 TYP=3	
	8800 PALE	4 S/F	1806.0	1807.0	10.0	80.0		QL=4 ST=2 TYP=3	
	2695 PALE	8 S	1932.0	1933.0	1.0	71.0		QL=4 ST=2 TYP=3	
	2695 SGMR	4 S/F	1932.0	1932.0	3.0	28.0		QL=4 ST=2 TYP=3	
2695 SGMR	4 S/F	2009.0	2010.0	5.0	260.0		QL=4 ST=2 TYP=3		
8800 SGMR	4 S/F	2009.0	2010.0	5.0	220.0		QL=4 ST=2 TYP=3		
2695 PALE	4 S/F	2010.0	2010.0	5.0	270.0		QL=4 ST=2 TYP=3		
8800 PALE	8 S	2010.0	2010.0	1.0	170.0		QL=4 ST=2 TYP=3		

Reports are received routinely from the following observatories:

LEAR = Learmonth

PALE = Palehua

SGMR = Sagamore Hill

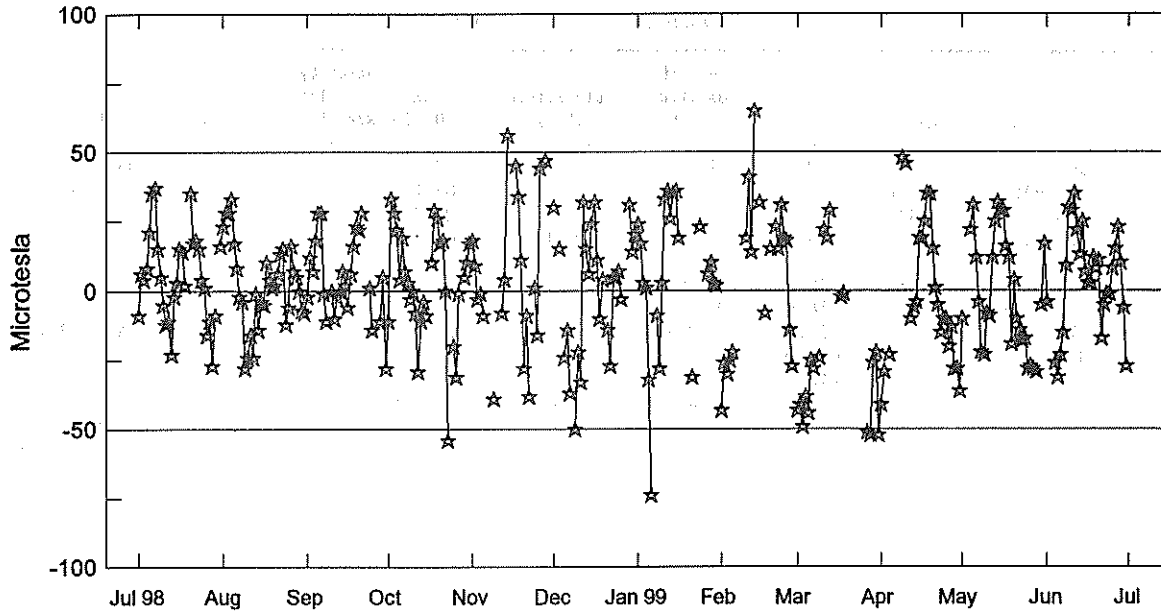
SVTO = San Vito

Explanation of Type Code:

1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precursor	41 Group of Bursts	47 Great Burst
6 Minor	23 Simple 3AF	29 Post Burst Increase	42 Series of Bursts	48 Major
1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F	
3A Simple 2A	40 Rise Only	16A Fall A	27AF Rise and Fall AF	
21A Simple 3A GRF	40F Rise Only F	260 Fall Only	31A Post Burst Decrease A	
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A	

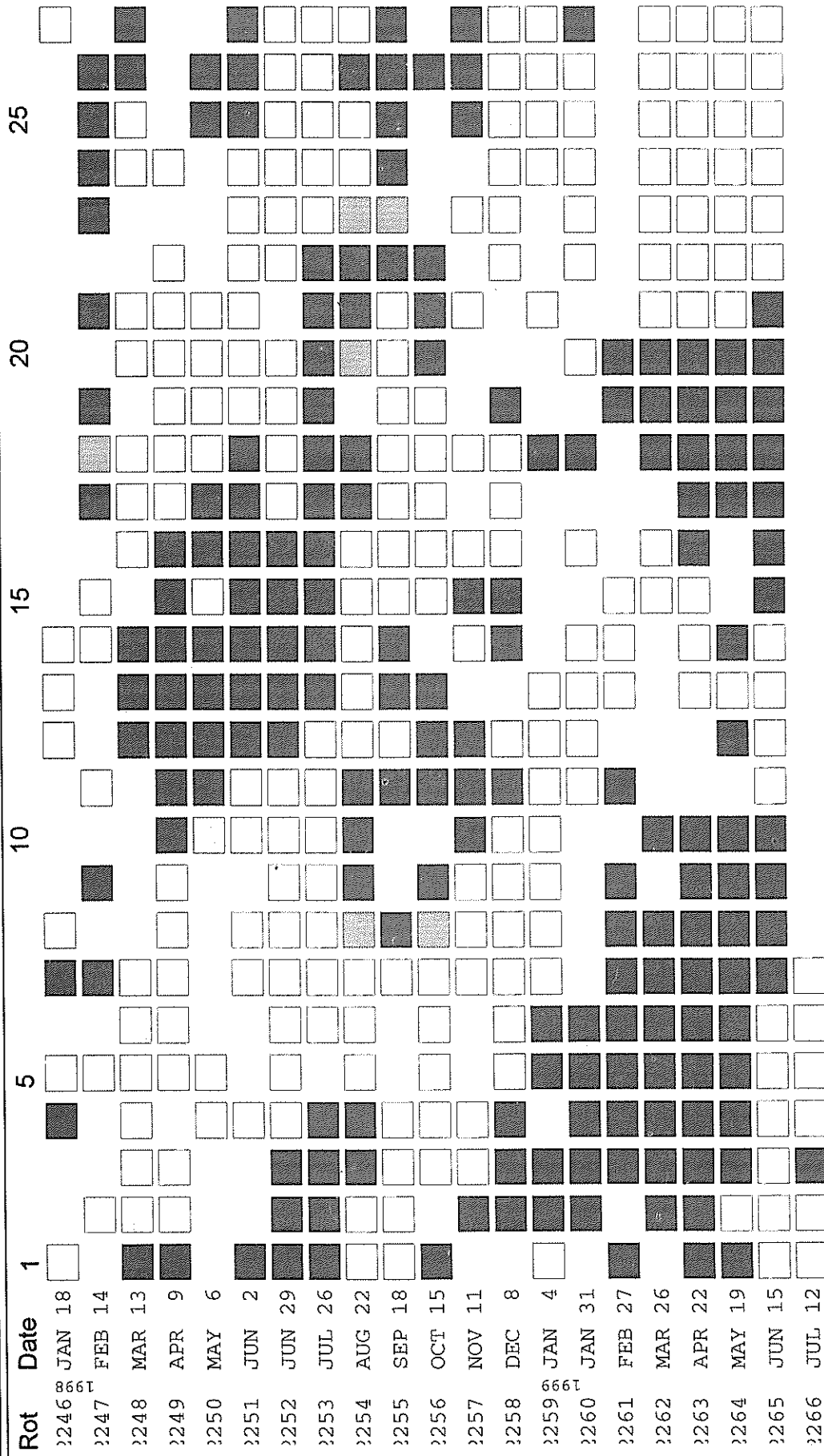
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500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

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



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

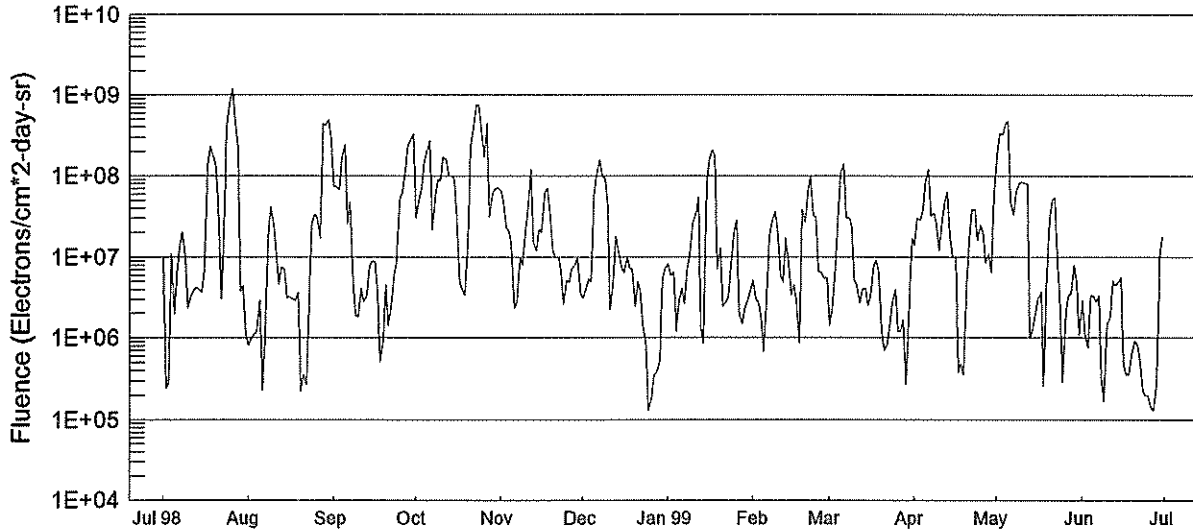
STANFORD MEAN SOLAR MAGNETIC FIELD



Mean Solar Magnetic Field Polarity:
 White box = field > 2 microT;
 Dark grey box = field < -2 microT;
 Light grey box = -2 microT ≤ field ≤ 2 microT
 No box = no data available

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

GOES Daily Electron Fluence Jul 98 - Jun 99



Day	Jul 98	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar	Apr	May	Jun
1	9.6E+06	8.1E+05	7.4E+07	3.0E+07	6.6E+07	3.1E+06	8.3E+06	5.2E+06	1.4E+06	1.4E+07	1.9E+08	2.9E+06
2	2.4E+05	1.0E+06	7.4E+07	4.8E+07	5.1E+07	3.9E+06	5.9E+06	3.2E+06	2.2E+06	3.0E+07	3.3E+08	1.1E+06
3	2.8E+05	1.1E+06	6.8E+07	7.0E+07	2.3E+07	5.4E+06	6.5E+06	2.7E+06	7.2E+06	2.9E+07	3.2E+08	7.7E+05
4	1.1E+07	1.2E+06	1.7E+08	1.5E+08	2.1E+07	4.9E+06	1.2E+06	1.8E+06	2.9E+07	3.6E+07	4.4E+08	3.3E+06
5	2.0E+06	2.9E+06	2.4E+08	2.1E+08	1.4E+07	5.8E+07	2.7E+06	6.8E+05	1.1E+08	8.3E+07	4.6E+08	3.3E+06
6	6.5E+06	2.3E+05	2.6E+07	2.7E+08	2.3E+06	1.0E+08	4.1E+06	3.4E+06	1.4E+08	1.2E+08	4.9E+07	2.8E+06
7	1.3E+07	9.5E+05	4.8E+07	2.2E+07	2.7E+06	1.6E+08	2.6E+06	1.8E+07	3.0E+07	3.2E+07	3.3E+07	3.3E+06
8	2.0E+07	1.8E+07	4.9E+06	5.8E+07	9.9E+06	1.0E+08	6.8E+06	2.7E+07	3.0E+07	3.5E+07	6.4E+07	3.2E+05
9	1.0E+07	4.2E+07	1.9E+06	9.0E+07	8.0E+06	9.1E+07	1.2E+07	3.6E+07	2.4E+07	2.5E+07	8.2E+07	1.7E+05
10	2.3E+06	2.5E+07	1.8E+06	8.9E+07	1.9E+07	4.3E+07	2.7E+07	2.2E+07	5.3E+06	1.2E+07	8.4E+07	1.5E+06
11	3.2E+06	1.1E+07	4.1E+06	1.7E+08	4.5E+07	2.2E+06	3.4E+07	5.9E+06	4.4E+06	2.8E+07	8.0E+07	1.8E+06
12	3.8E+06	4.6E+06	2.8E+06	1.6E+08	1.2E+08	5.1E+06	5.5E+07	4.9E+06	2.7E+06	4.8E+07	8.0E+07	5.1E+06
13	4.2E+06	7.5E+06	3.4E+06	1.0E+08	1.5E+07	1.8E+07	1.3E+06	1.7E+07	4.0E+06	6.3E+07	1.0E+06	4.4E+06
14	3.9E+06	7.2E+06	7.6E+06	1.0E+08	1.2E+07	1.2E+07	8.6E+05	7.8E+06	4.1E+06	1.9E+07	1.2E+06	4.8E+06
15	3.6E+06	3.1E+06	8.9E+06	9.2E+07	2.2E+07	7.5E+06	7.7E+07	3.4E+06	2.5E+06	9.8E+06	2.0E+06	5.6E+06
16	6.6E+06	3.2E+06	8.9E+06	3.1E+07	2.0E+07	6.4E+06	1.6E+08	4.6E+06	3.2E+06	1.0E+07	3.1E+06	5.0E+05
17	1.3E+08	3.0E+06	3.5E+06	4.7E+06	6.4E+07	1.0E+07	2.1E+08	2.9E+06	7.9E+06	3.8E+05	3.7E+06	3.6E+05
18	2.3E+08	2.9E+06	5.0E+05	4.0E+06	7.0E+07	7.3E+06	1.8E+08	8.7E+05	9.2E+06	4.8E+05	2.6E+05	3.6E+05
19	1.7E+08	3.6E+06	9.0E+05	3.4E+06	3.7E+07	7.2E+06	7.1E+06	3.9E+07	6.6E+06	3.5E+05	4.1E+06	6.5E+05
20	1.3E+08	2.2E+05	4.5E+06	1.5E+07	1.2E+07	2.4E+06	1.3E+07	2.7E+07	1.2E+06	4.5E+06	2.8E+07	9.2E+05
21	4.0E+07	3.5E+05	1.4E+06	2.3E+08	9.8E+06	4.9E+06	2.4E+06	6.3E+07	7.0E+05	1.6E+07	5.1E+07	8.2E+05
22	3.0E+06	2.7E+05	2.5E+06	4.2E+08	1.0E+07	3.8E+06	2.7E+06	1.0E+08	8.2E+05	3.8E+07	5.4E+07	5.3E+05
23	2.1E+07	2.5E+06	5.6E+06	7.5E+08	6.6E+06	1.4E+06	3.2E+06	3.2E+07	1.5E+06	3.9E+07	1.1E+07	2.2E+05
24	4.1E+08	2.6E+07	8.7E+06	7.4E+08	2.6E+06	8.5E+05	7.8E+06	3.1E+07	2.8E+06	1.6E+07	2.3E+06	2.0E+05
25	8.5E+08	3.4E+07	5.2E+07	3.0E+08	5.1E+06	1.3E+05	2.1E+07	6.8E+06	4.0E+06	2.5E+07	2.9E+05	2.0E+05
26	1.2E+09	3.0E+07	6.2E+07	1.7E+08	4.8E+06	1.8E+05	2.9E+07	6.4E+06	1.2E+06	2.0E+07	2.1E+06	1.4E+05
27	4.9E+08	1.7E+07	1.2E+08	4.4E+08	7.3E+06	3.5E+05	2.0E+06	5.5E+06	1.2E+06	8.5E+06	3.4E+06	1.3E+05
28	2.2E+08	4.4E+08	2.4E+08	3.1E+07	8.0E+06	3.8E+05	1.5E+06	5.6E+06	1.7E+06	1.1E+07	3.5E+06	3.0E+05
29	3.8E+06	4.2E+08	2.7E+08	6.1E+07	1.0E+07	5.0E+05	2.3E+06		2.7E+05	6.4E+06	8.0E+06	1.0E+07
30	4.4E+06	4.9E+08	3.3E+08	6.9E+07	3.5E+06	5.4E+06	2.8E+06		1.7E+06	6.0E+07	4.7E+06	1.8E+07
31	1.1E+06	2.7E+08		7.2E+07		7.1E+06	3.6E+06		1.7E+07		1.1E+06	

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

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

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Number 659 Part I

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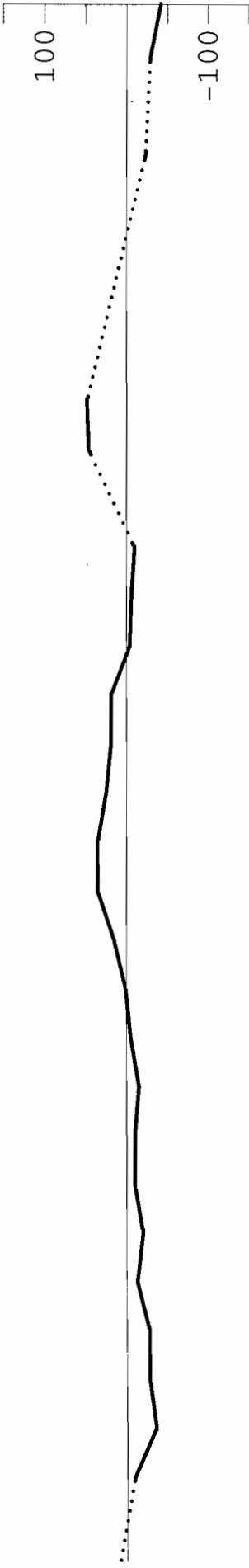
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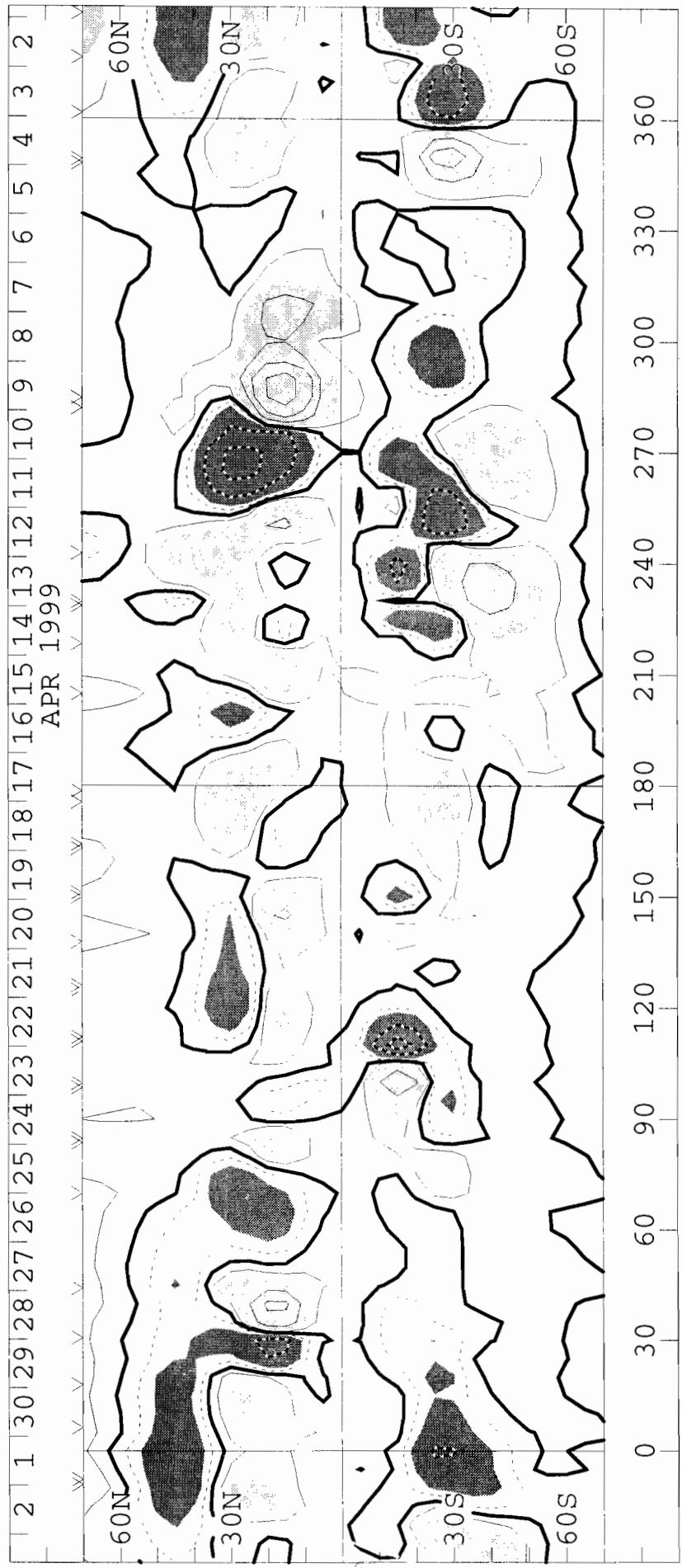
SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION NUMBER 1948
(4 April to 1 May 1999)

WILCOX SOLAR OBSERVATORY

Mean Field



Photospheric Magnetic Field 0, ± 100 , 500, 1000, 2000 MicroTesla



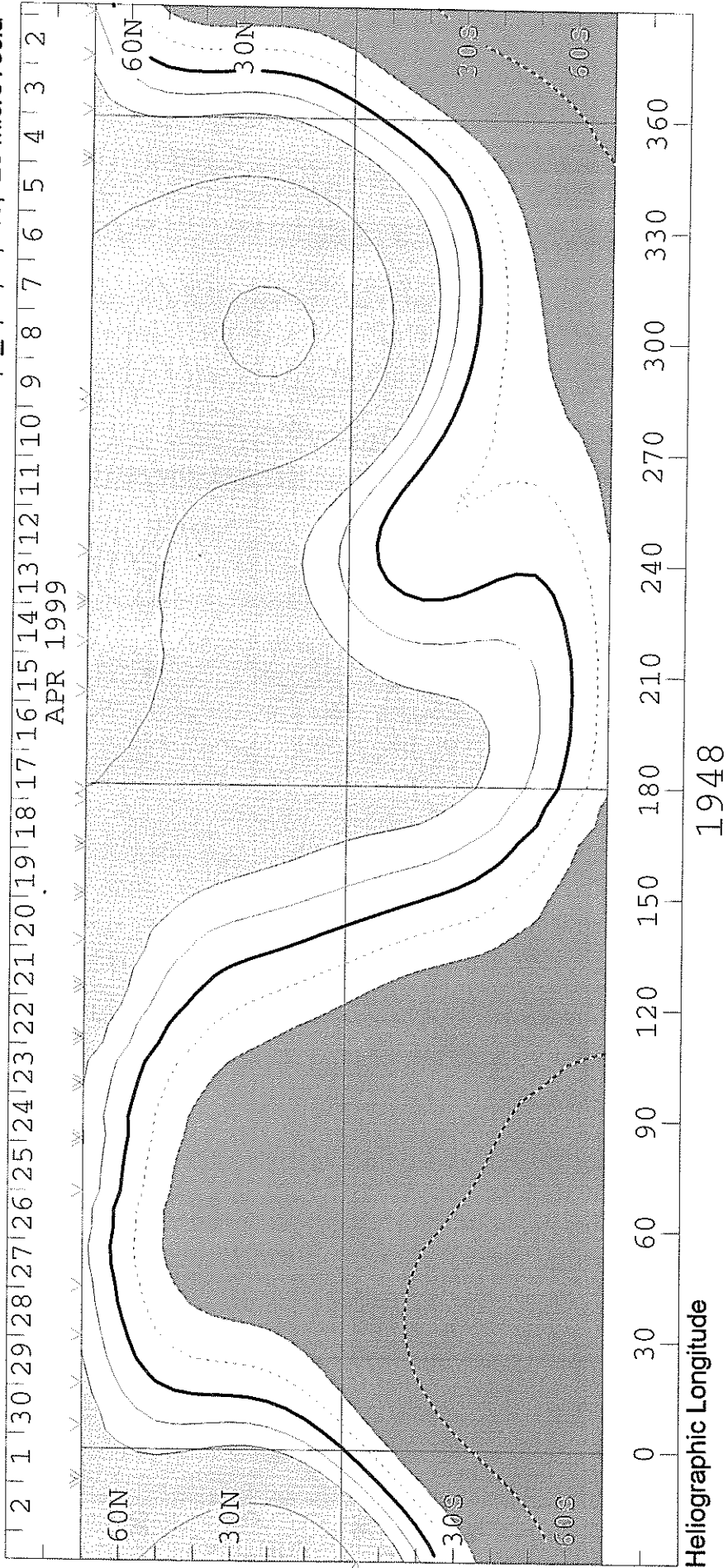
Heliographic Longitude

1948

SOLAR MAGNETIC FIELD SYNOPTIC CHART
SOURCE SURFACE FIELD
CARRINGTON ROTATION NUMBER 1948
 (4 April to 1 May 1999)

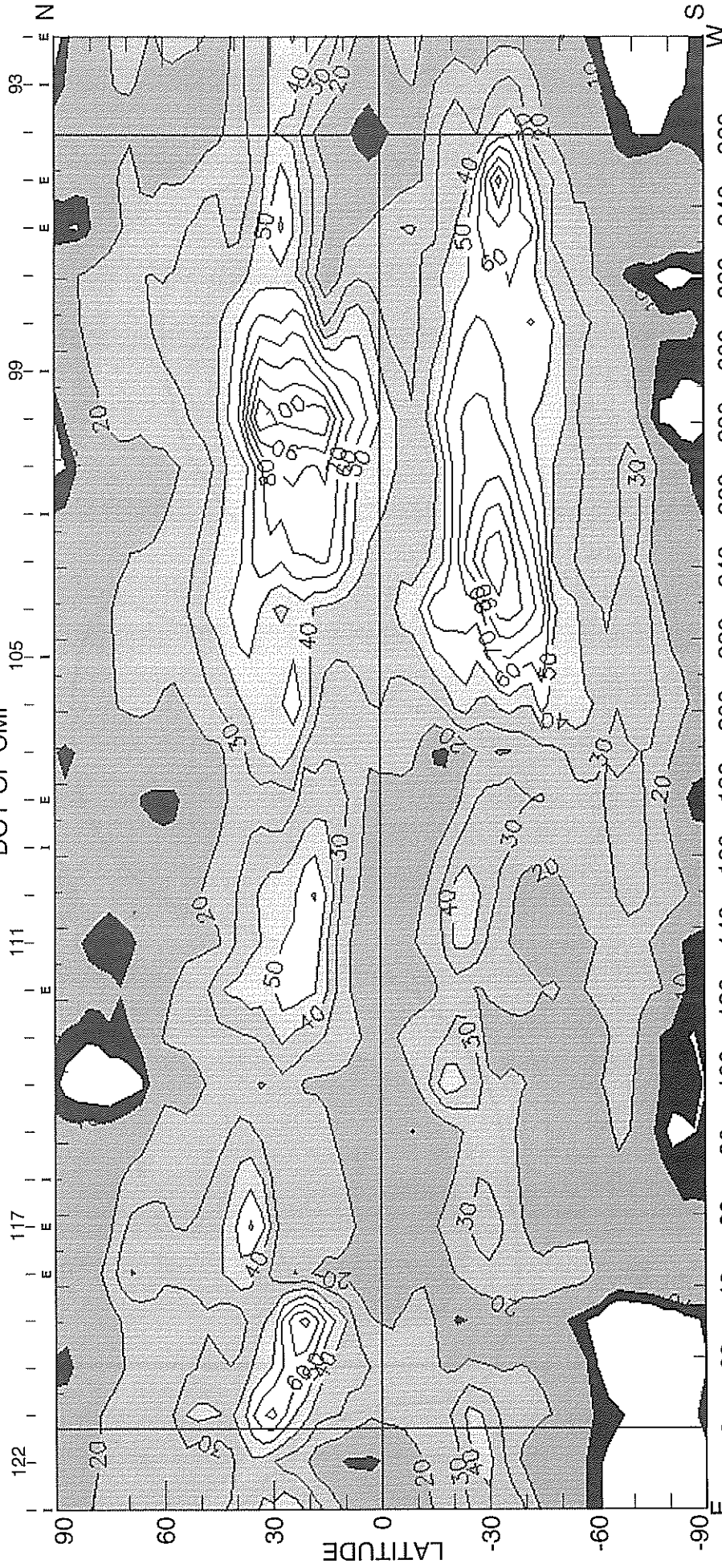
Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



CARRINGTON ROTATION NUMBER 1948 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o

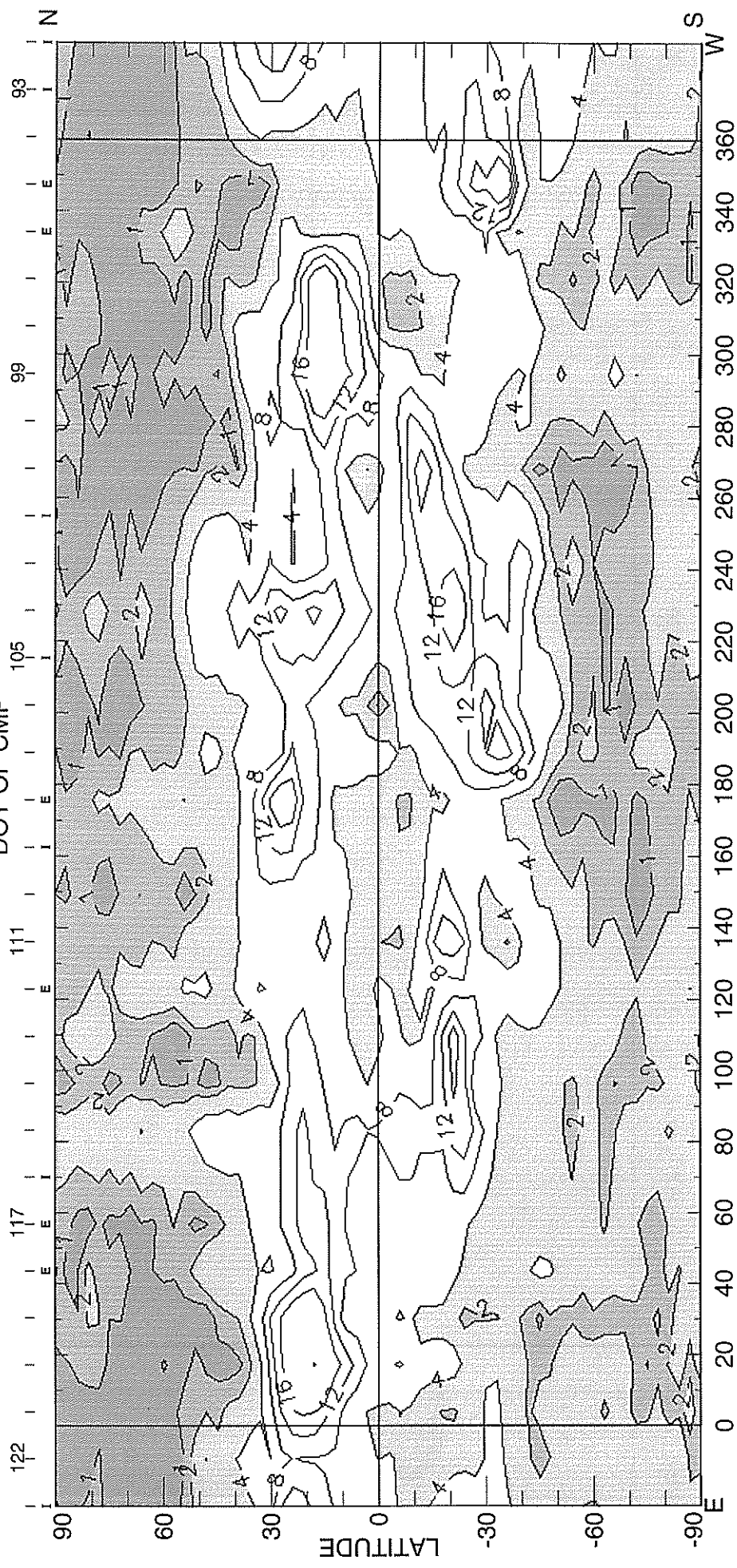
DOY OF CMP



(30-Jun-99)

1999 W+E LIMB CONTOURS: 7, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 MILLIONTHS OF I_o
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK
$\langle l \rangle = 27.17 \mu$

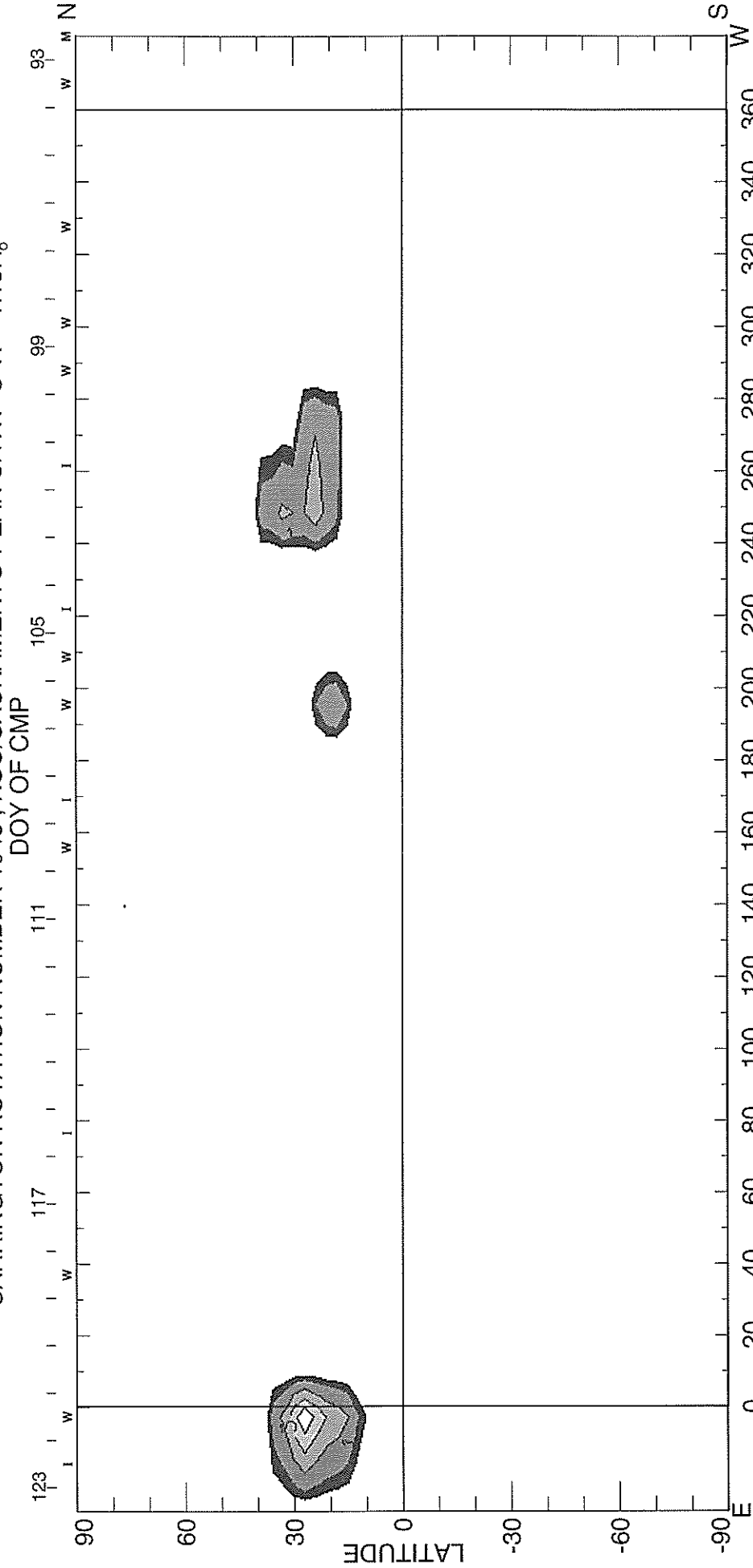
CARRINGTON ROTATION NUMBER 1948 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o
 DOY OF CMP



HELIOGRAPHIC LONGITUDE
 1999 W+E LIMB CONTOURS: 1, 2, 4, 8, 12, 16, 32, 48 MILLIONTHS OF I₀ <I> = 4.23μ

(30-Jun-99)

CARRINGTON ROTATION NUMBER 1948 ; NSO/SACRAMENTO PEAK CA XV @ $R = 1.15R_{\odot}$

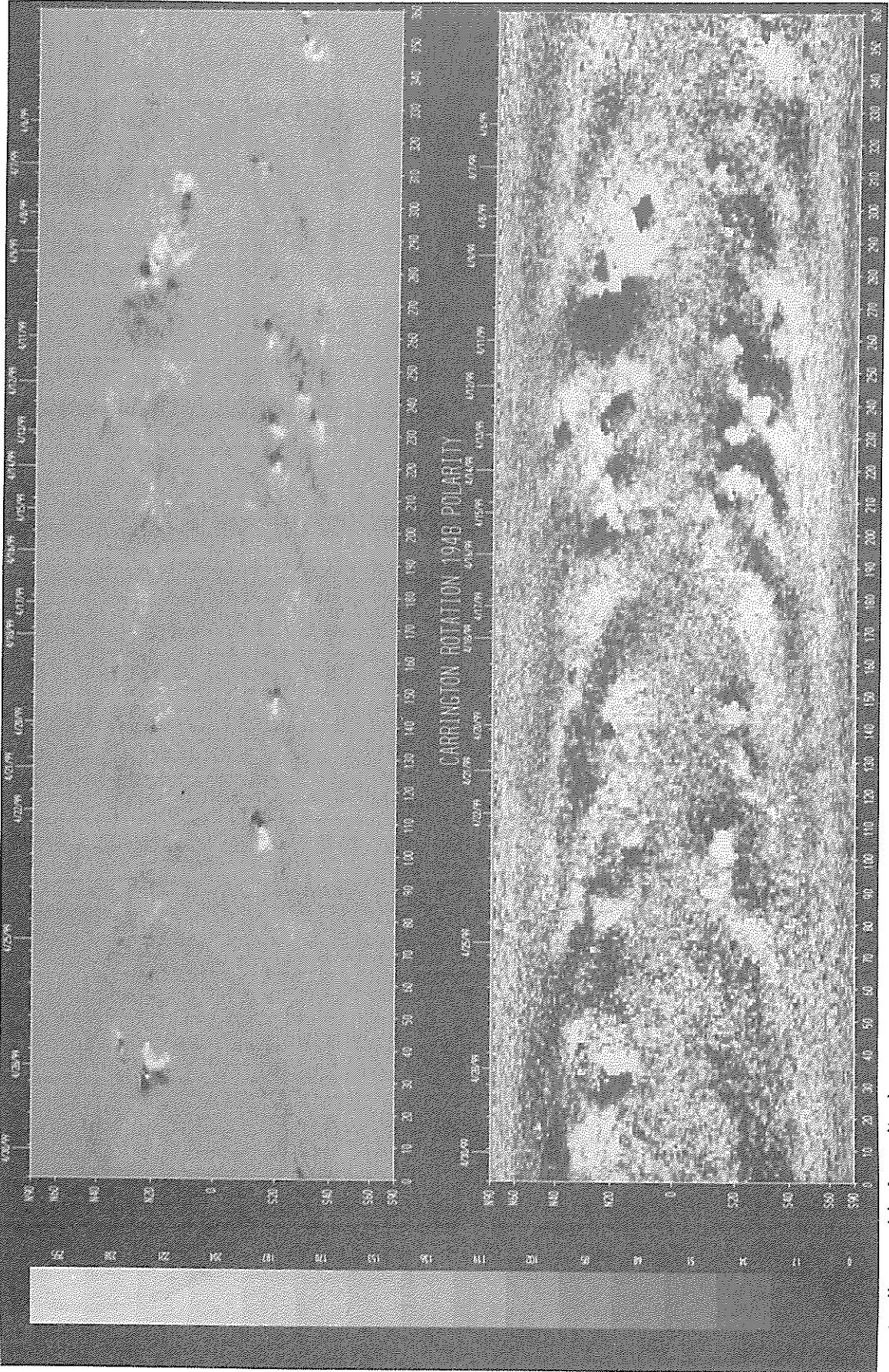


(30-Jun-99)
1999 E+W LIMB CONTOURS: YELMIN, 1, 2, 3, 4, 6, 8 MILLIONTHS OF I_0
HELIOGRAPHIC LONGITUDE

SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION NUMBER 1948
(4 April to 1 May 1999)

National Solar Observatory/Kitt Peak

Dates of Observation

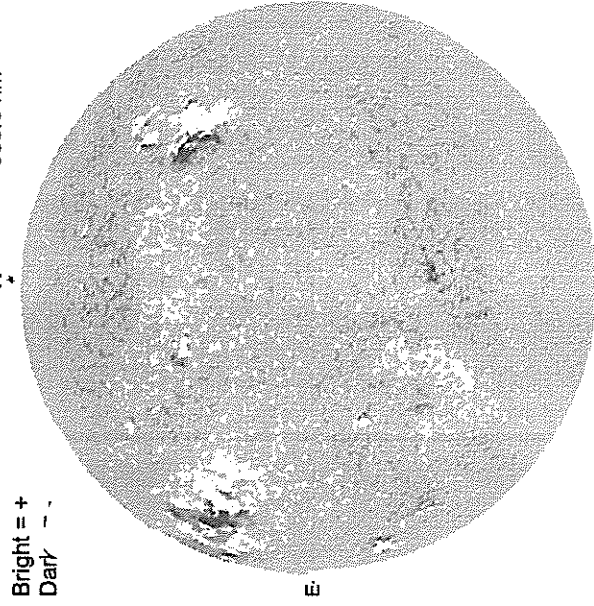


Heliographic Longitude

MAY 1, 1999 (P = -24.23, Bo = -4.21, Lo = 3.92)

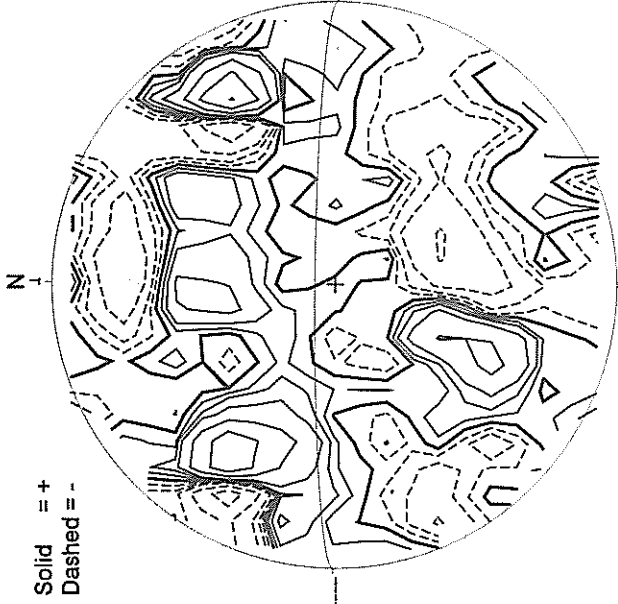
54
May 99

KITT PEAK MAGNETOGRAM
868.8 nm



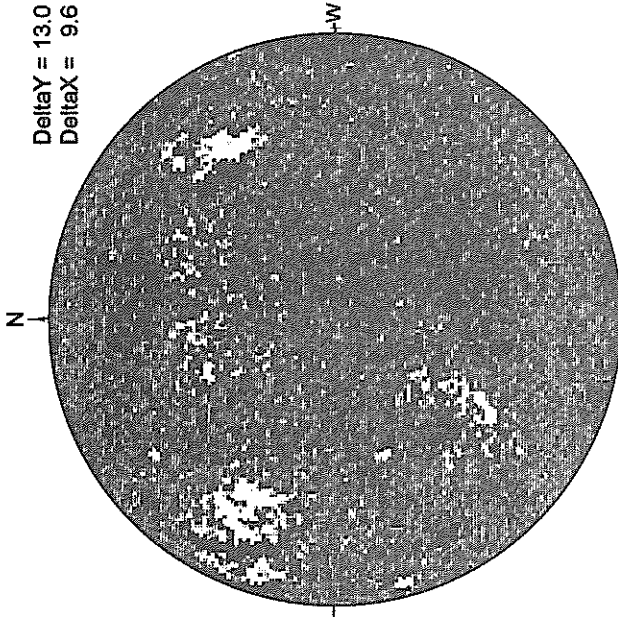
1424 UT

STANFORD MAGNETOGRAM



2340 UT

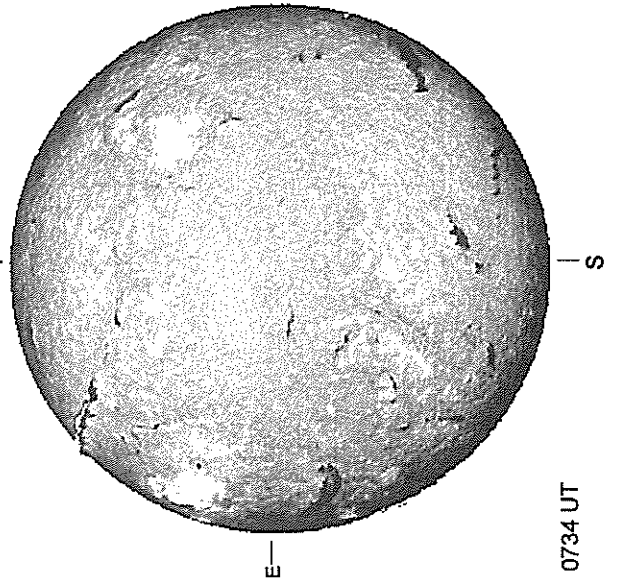
MT. WILSON MAGNETOGRAM



17.24 -
18.18 UT

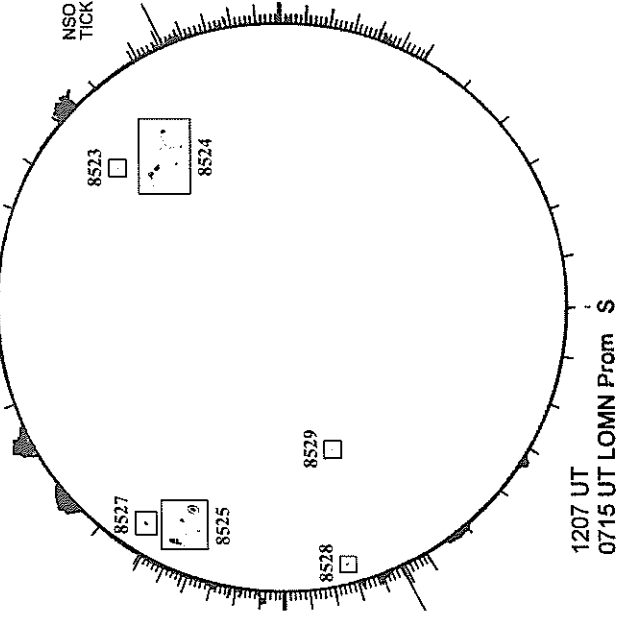
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



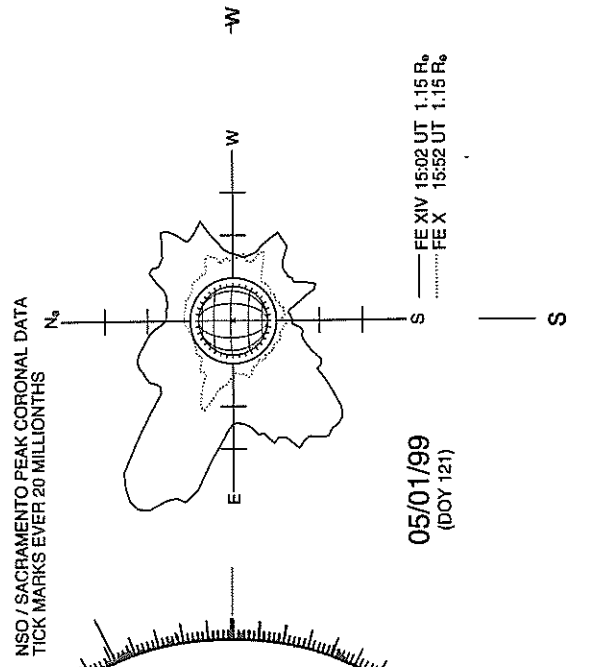
0734 UT

RAMEY SUNSPOT



1207 UT
0715 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

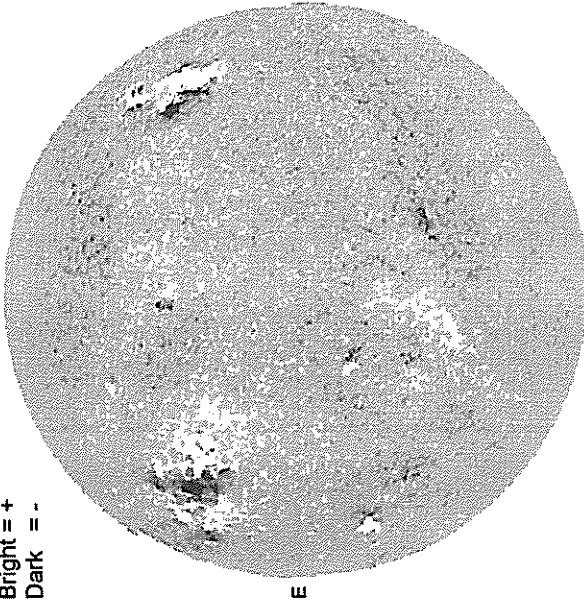


MAY 2, 1999 (P = -24.05, Bo = -4.11, Lo = 350.71)

KITT PEAK MAGNETOGRAM

N
868.8 nm

Bright = +
Dark = -

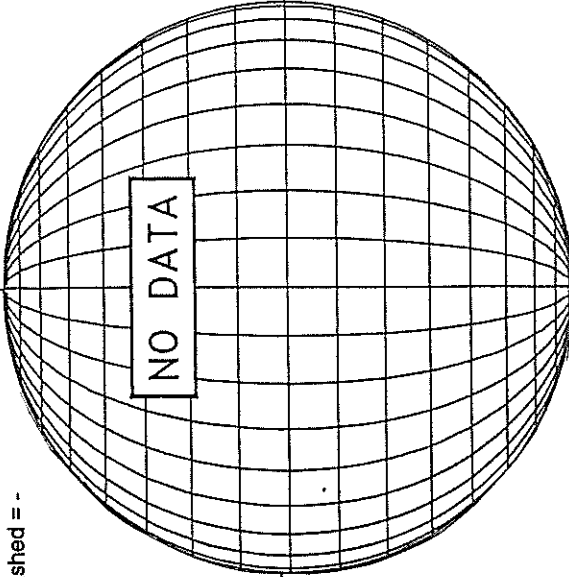


1444 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

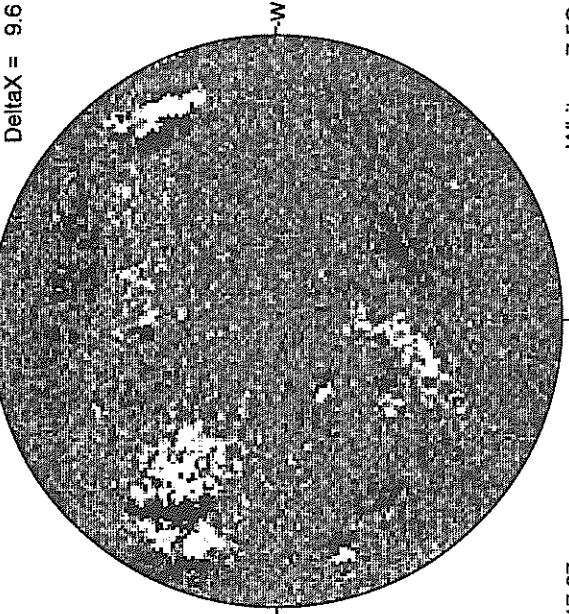


17.67 -
18.61 UT

MT. WILSON MAGNETOGRAM

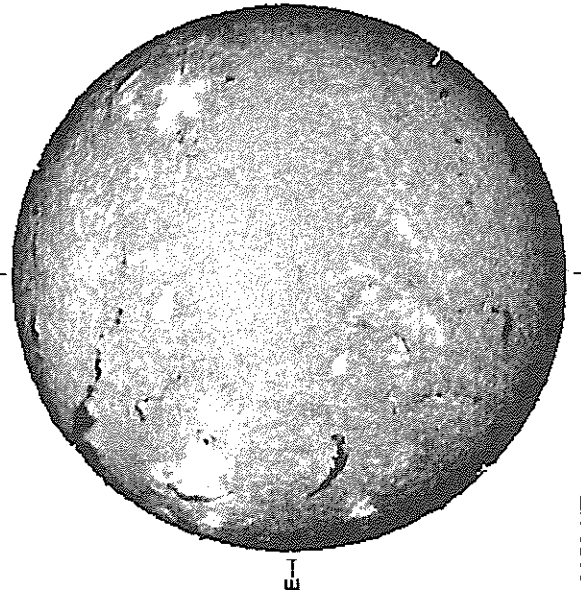
N

DeltaY = 13.1
DeltaX = 9.6



White = +7.5G
Black = -7.5G

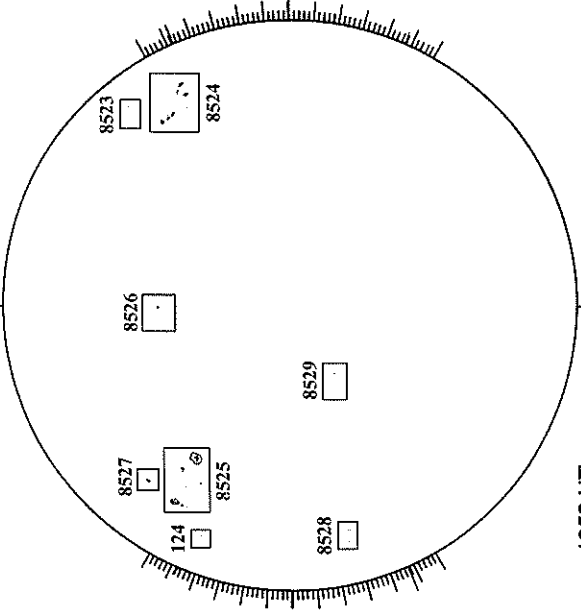
MEUDON H-ALPHA



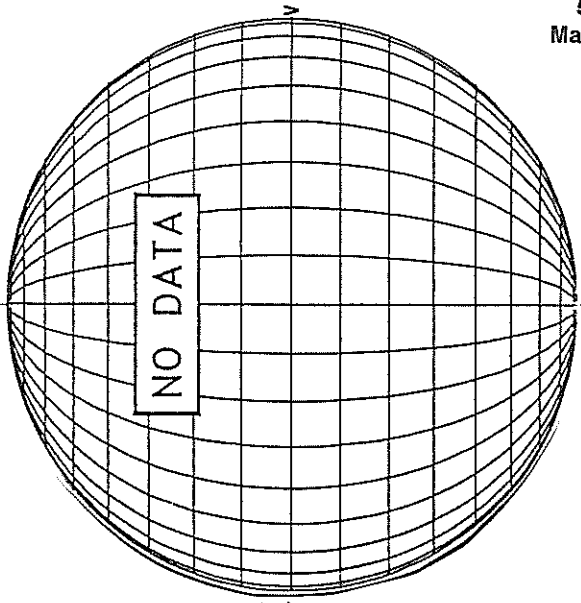
0658 UT

RAMEY SUNSPOT

SACRAMENTO PEAK CORONA (1.15 RadII)---



1258 UT

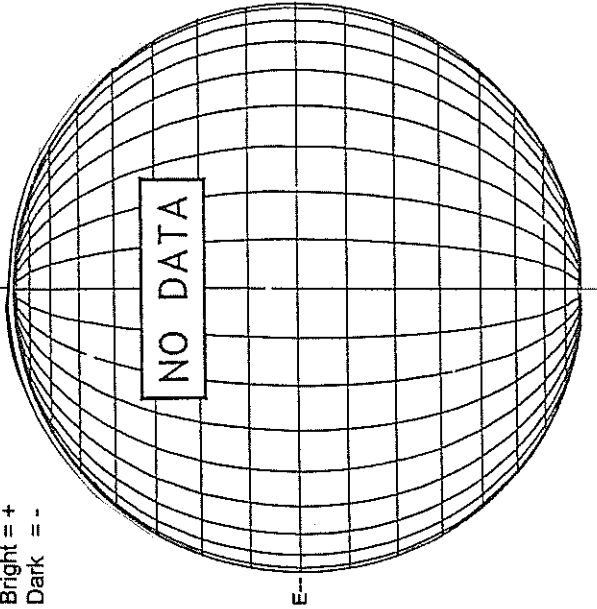


MAY 3, 1999 (P = -23.87, Bo = -4.01, Lo = 337.49)

KITT PEAK MAGNETOGRAM

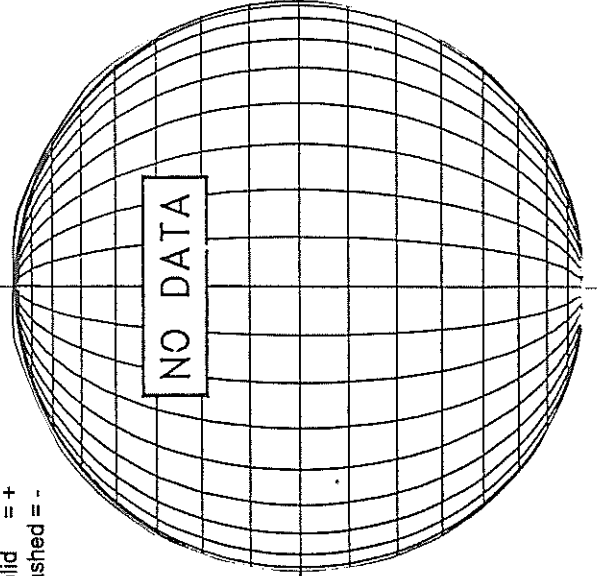
868.8 nm

Bright = +
Dark = -



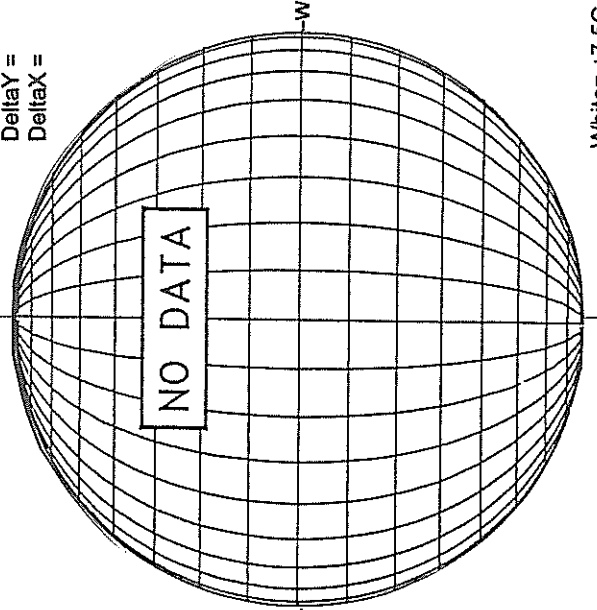
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



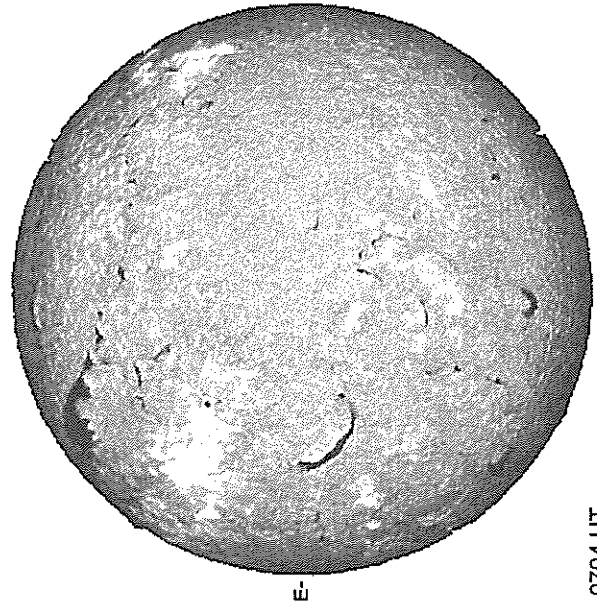
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



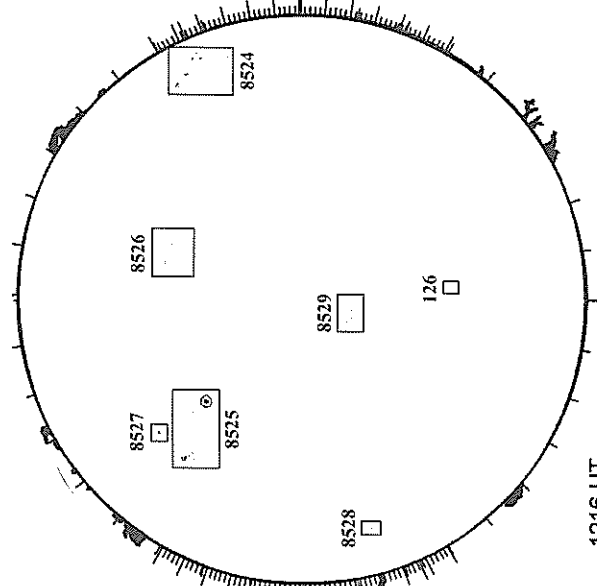
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



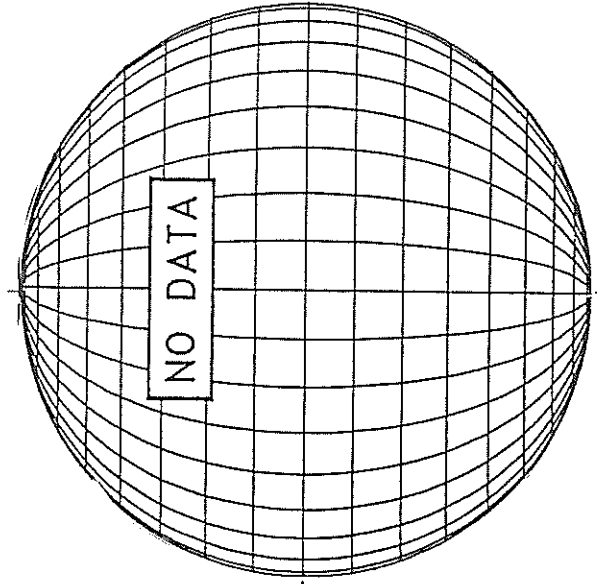
0704 UT

RAMEY SUNSPOT



1216 UT
0728 UT LOMN Prom S

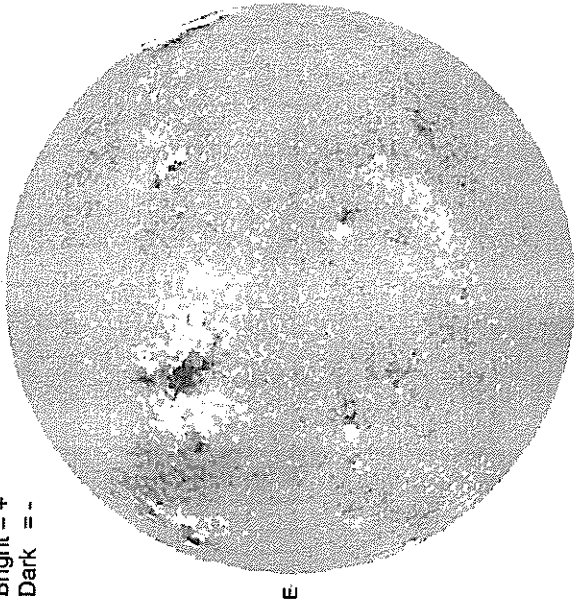
SACRAMENTO PEAK CORONA (1.15 Radii)



MAY 4, 1999 (P= -23.68, Bo = -3.90, Lo = 324.27)

KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



1651 UT

STANFORD MAGNETOGRAM

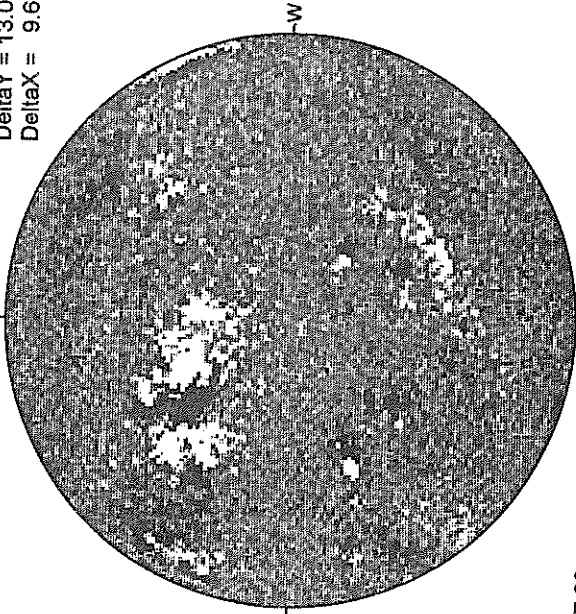
Solid = +
Dashed = -



2009 UT

MT. WILSON MAGNETOGRAM

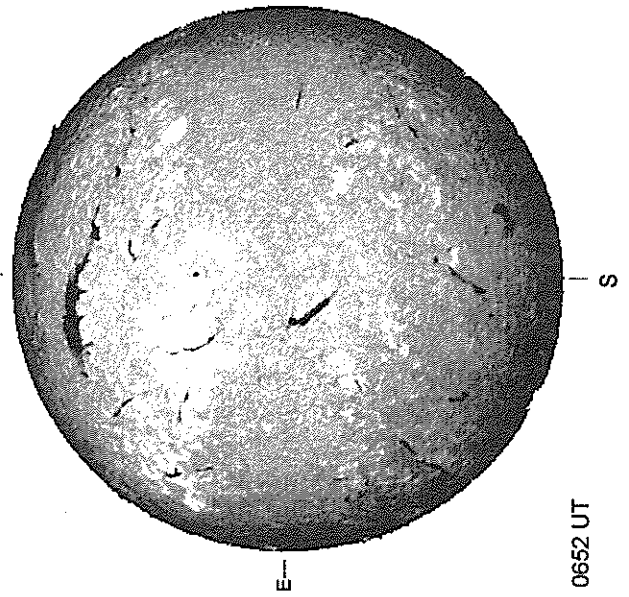
DeltaY = 13.0
DeltaX = 9.6



17.30 -
18.24 UT

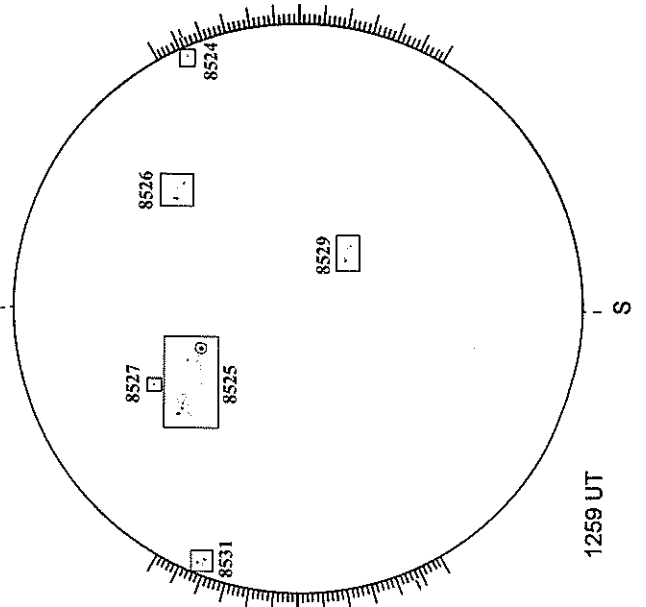
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Black = -7.5G

MEUDON H-ALPHA



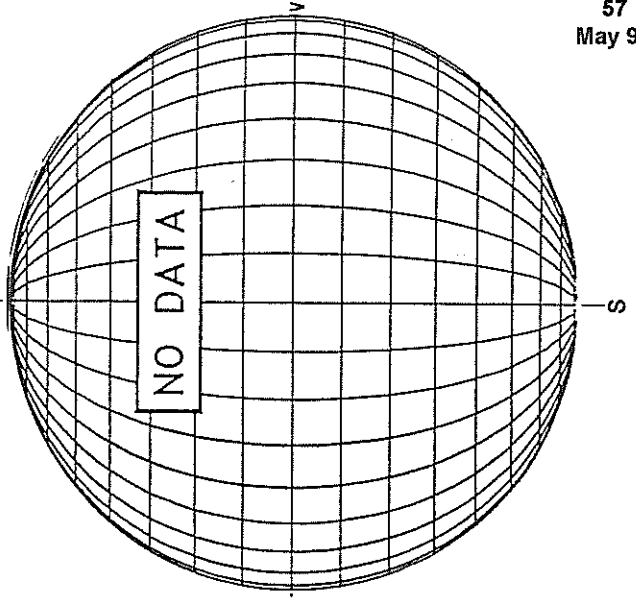
0652 UT

RAMEY SUNSPOT



1259 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

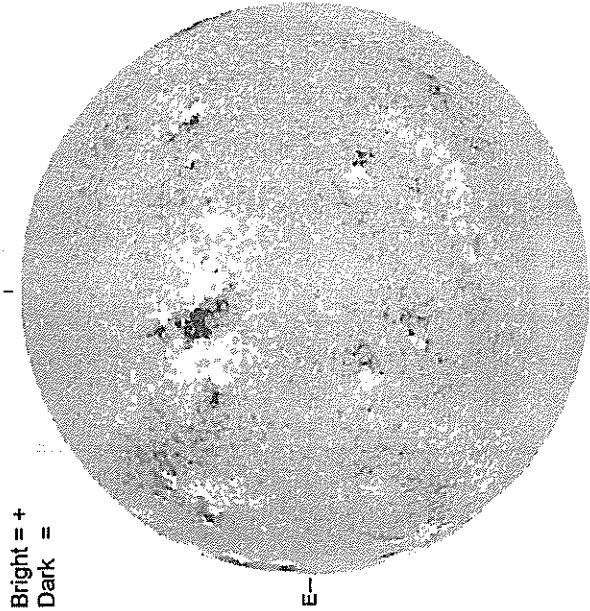


MAY 5, 1999 (P= -23.48, Bo = -3.80, Lo = 311.05)

58
May 99

KITT PEAK MAGNETOGRAM

868.8 nm



Bright = +
Dark = -

1428 UT

STANFORD MAGNETOGRAM

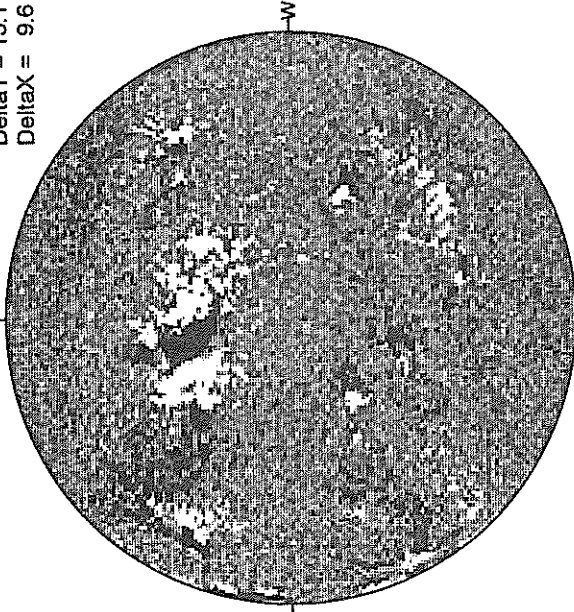


Solid = +
Dashed = -

2056 UT

MT. WILSON MAGNETOGRAM

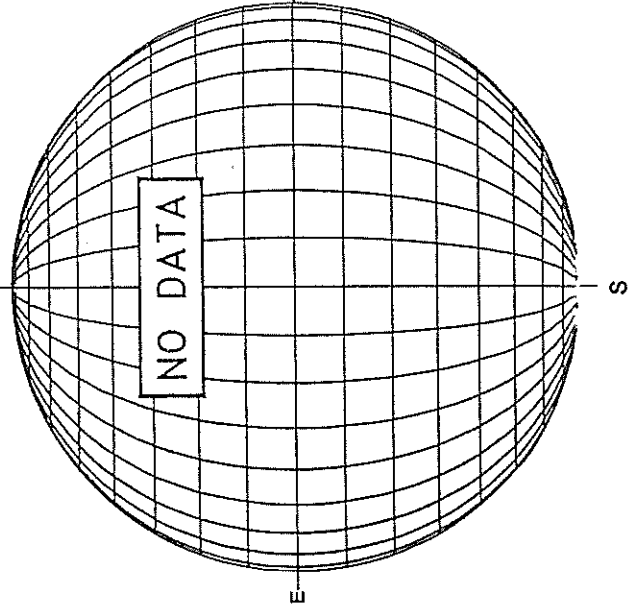
Delta Y = 13.1
Delta X = 9.6



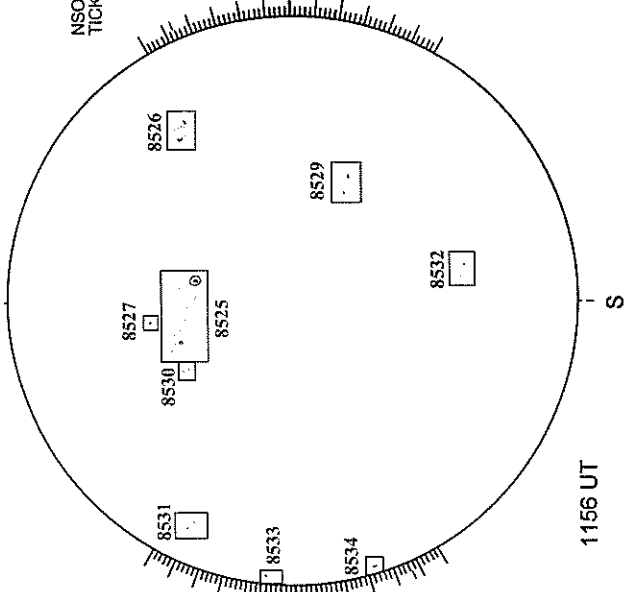
White = +7.5G
Black = -7.5G

18.78 -
19.71 UT

MEUDON H-ALPHA

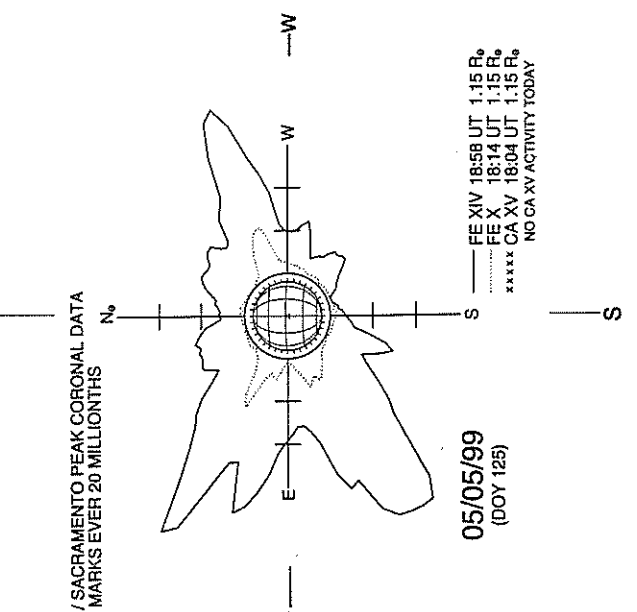


RAMEY SUNSPOT



1156 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

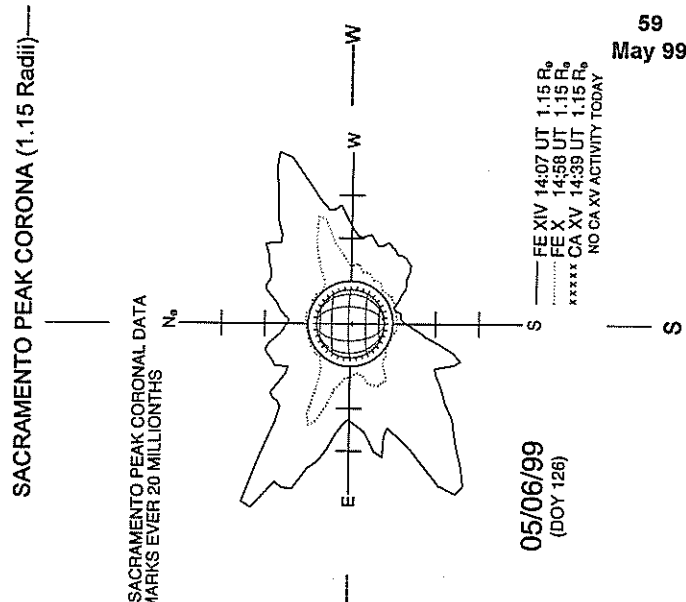
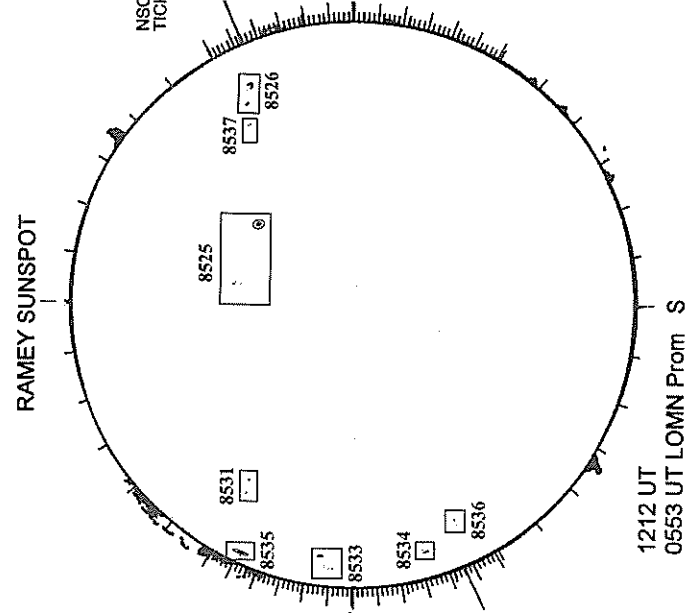
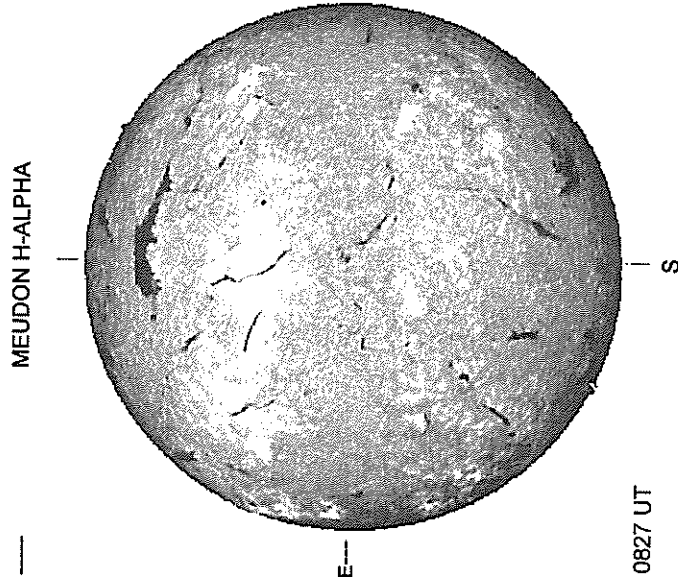
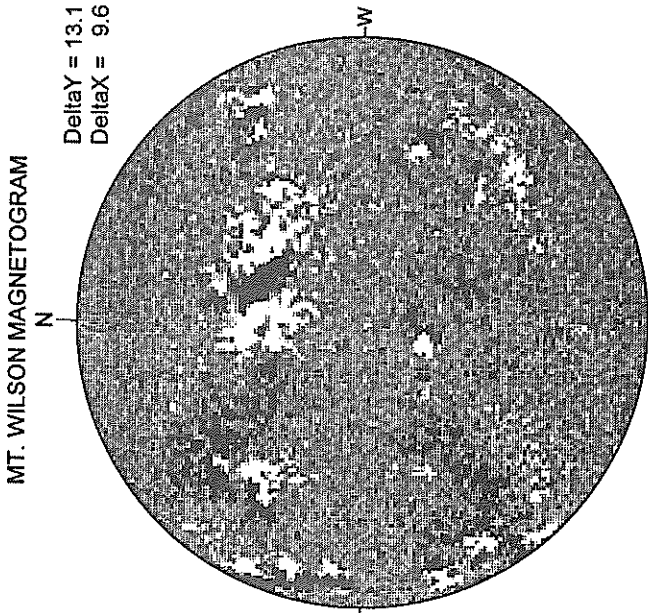
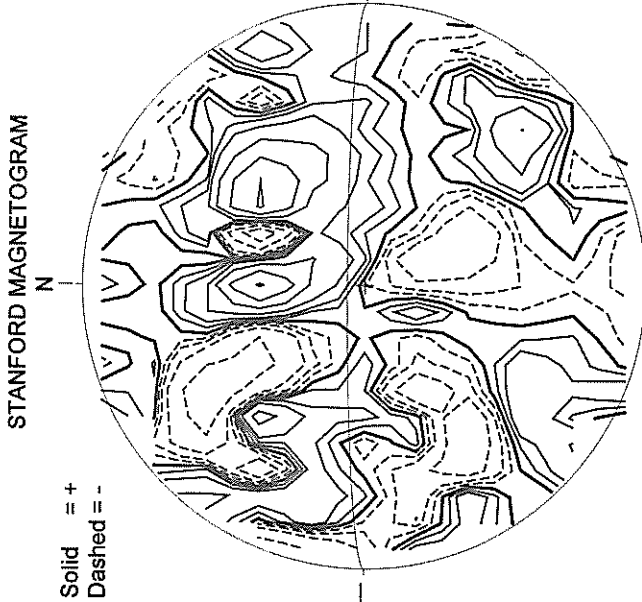
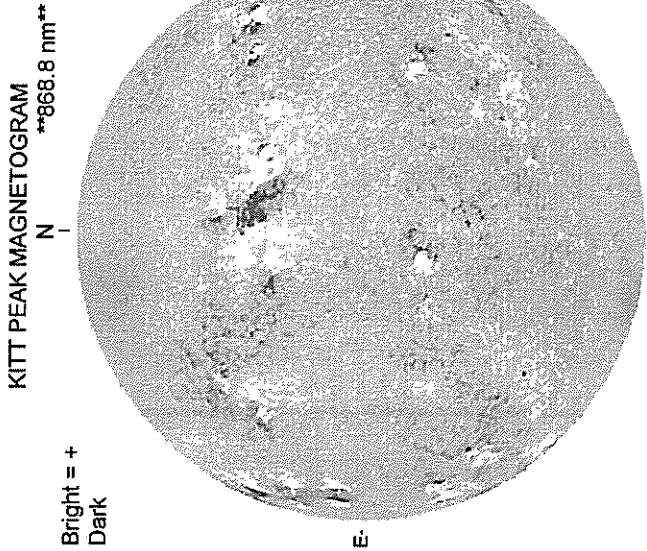


05/05/99
(DOY 125)

— FE XIV 18:58 UT 1.15 R_☉
- - - FE X 18:14 UT 1.15 R_☉
* * * * * CA XV 18:04 UT 1.15 R_☉
NO CA XV ACTIVITY TODAY

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS

MAY 6, 1999 (P = -23.27, Bo = -3.70 Lo = 297.83)

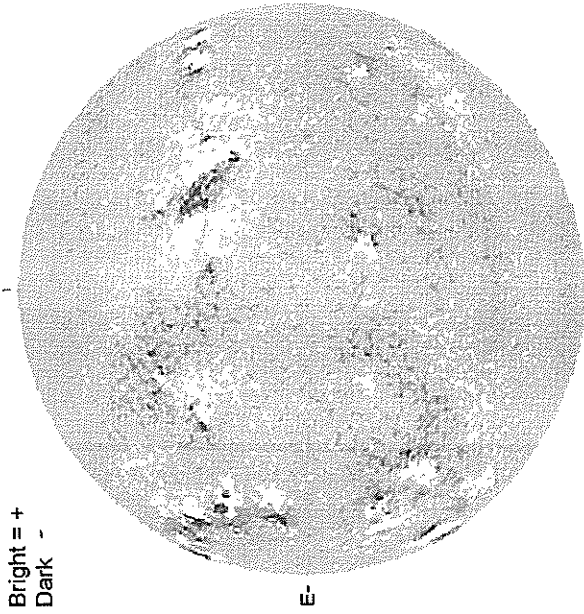


60
May 99

MAY 7, 1999 (P= -23.06, Bo = -3.59 Lo = 284.61)

KITT PEAK MAGNETOGRAM

868.8 nm

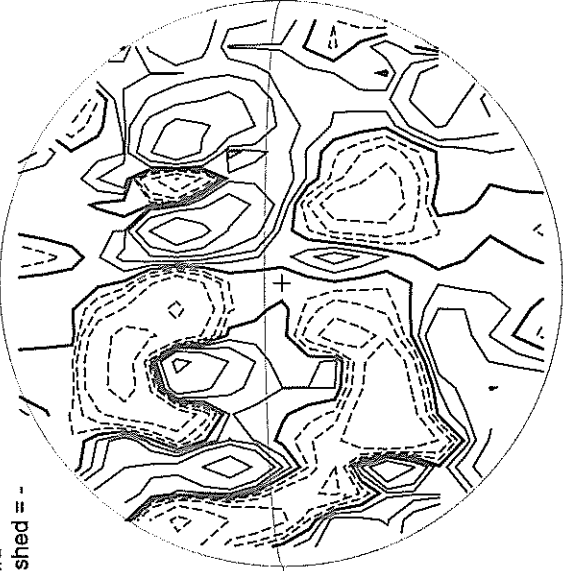


Bright = +
Dark = -

1555 UT

STANFORD MAGNETOGRAM

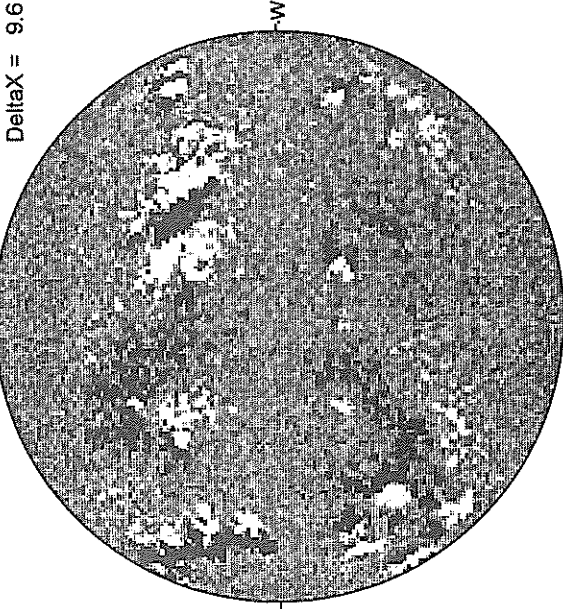
Solid = +
Dashed = -



1929 UT

MT. WILSON MAGNETOGRAM

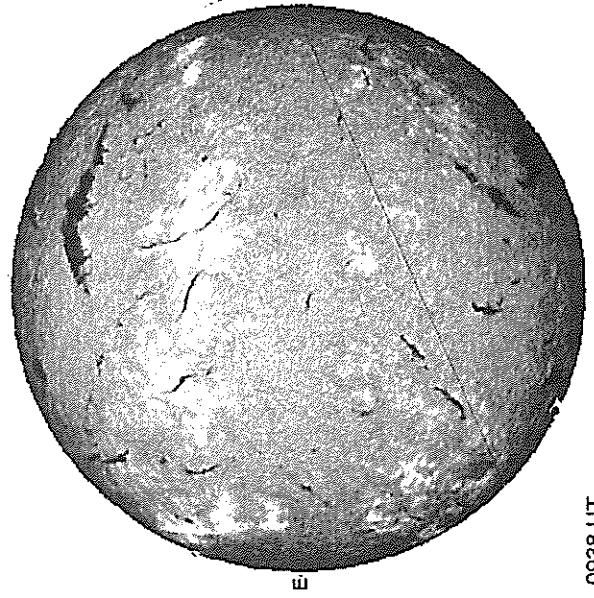
Delta Y = 13.1
Delta X = 9.6



18.27 -
19.20 UT

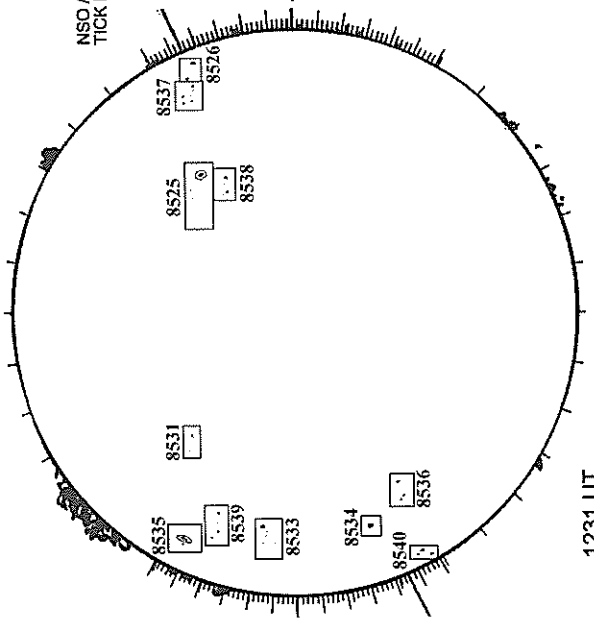
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



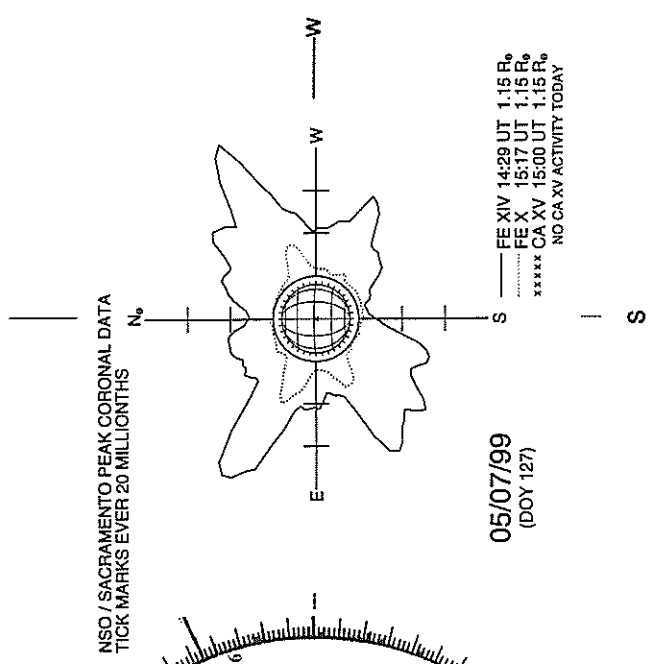
0938 UT

RAMEY SUNSPOT



1231 UT
0509 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)



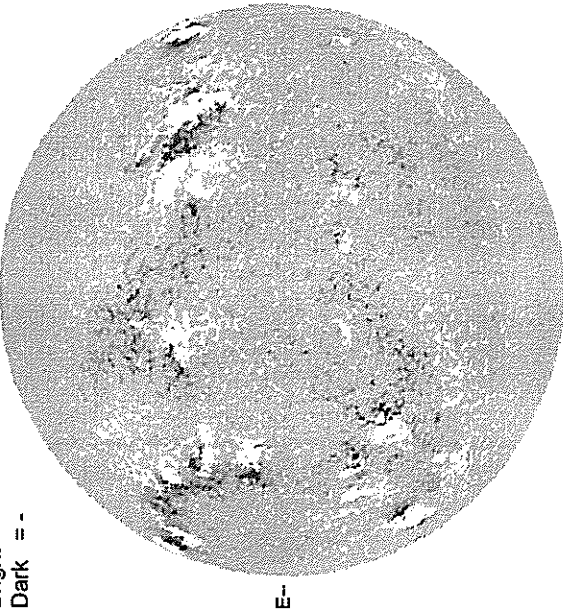
05/07/99
(DOY 127)

MAY 8, 1999 (P = -22.84, Bo = -3.48, Lo = 271.39)

KITT PEAK MAGNETOGRAM

868.8 nm

Bright = +
Dark = -



1439 UT

STANFORD MAGNETOGRAM

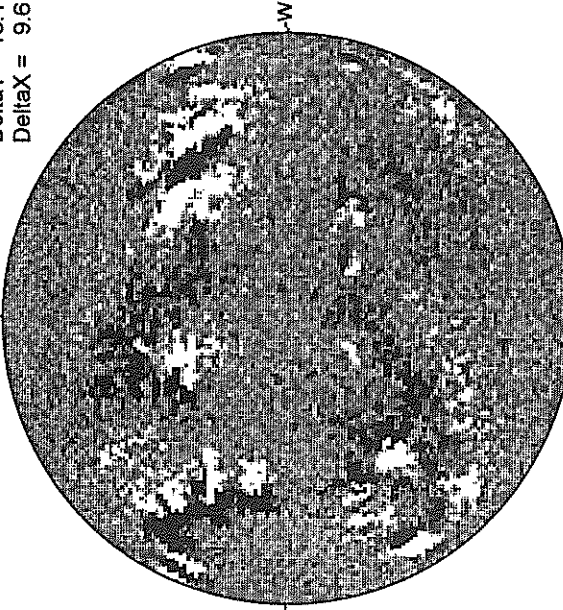
Solid = +
Dashed = -



1937 UT

MT. WILSON MAGNETOGRAM

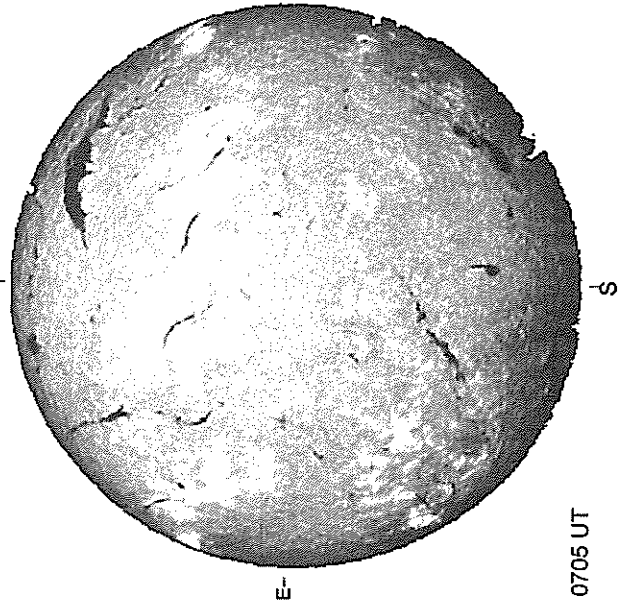
DeltaY = 13.1
DeltaX = 9.6



17.51 -
18.44 UT

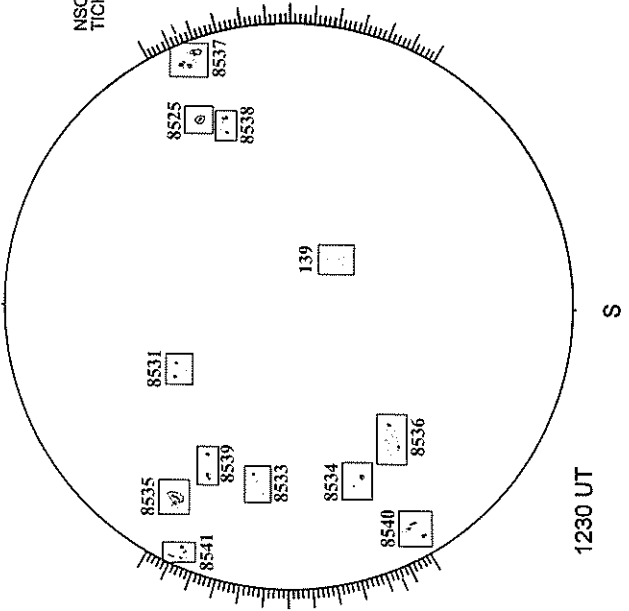
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



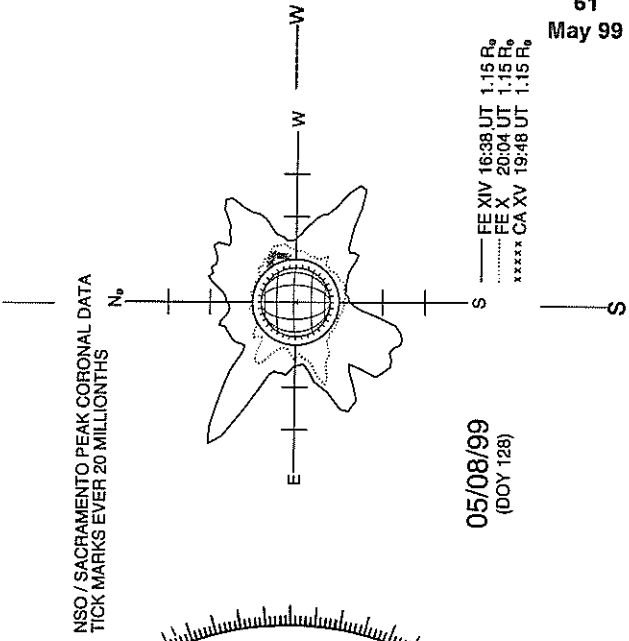
0705 UT

RAMEY SUNSPOT



1230 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



05/08/99
(DOY 128)

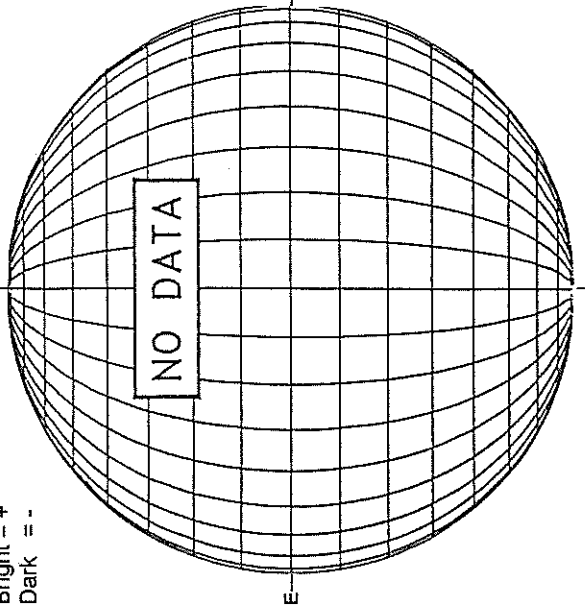
62
May 99

MAY 9, 1999 (P = -22.61, Bo = -3.37, Lo = 258.17)

KITT PEAK MAGNETOGRAM

$\lambda = 868.8 \text{ nm}$

Bright = +
Dark = -



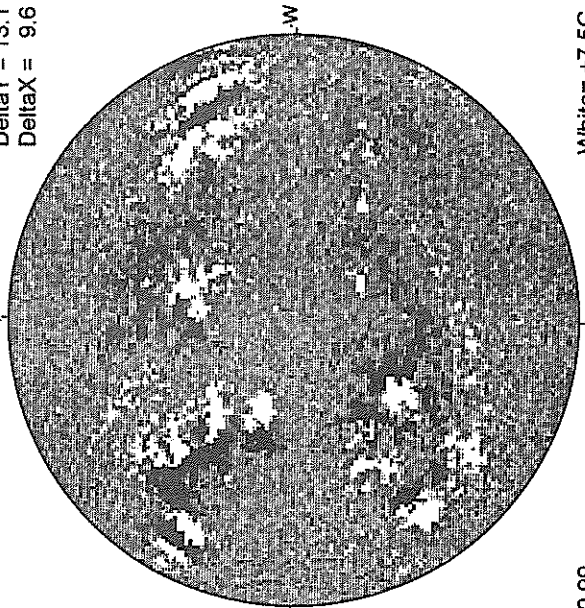
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

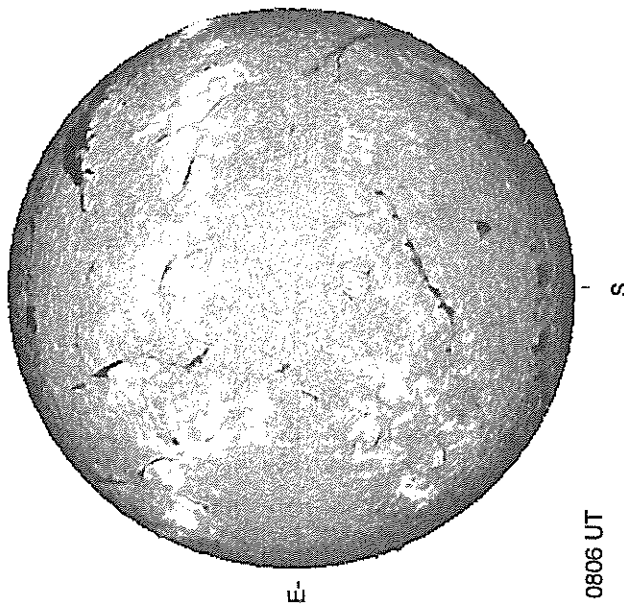
Delta Y = 13.1
Delta X = 9.6



20.99 -
21.92 UT

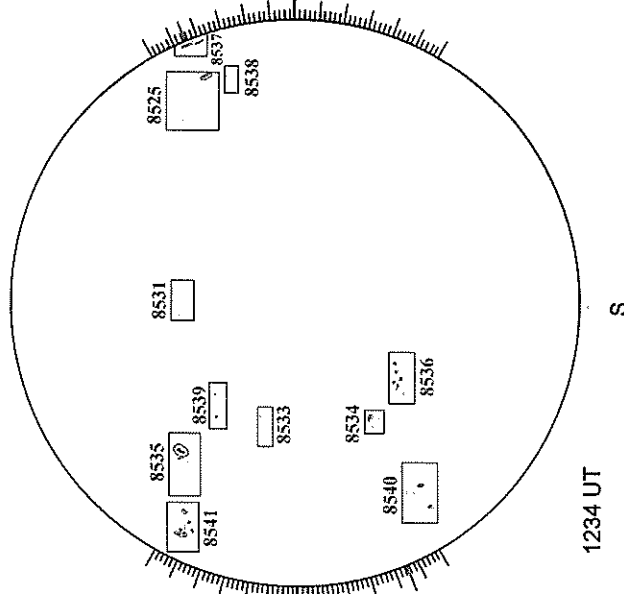
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



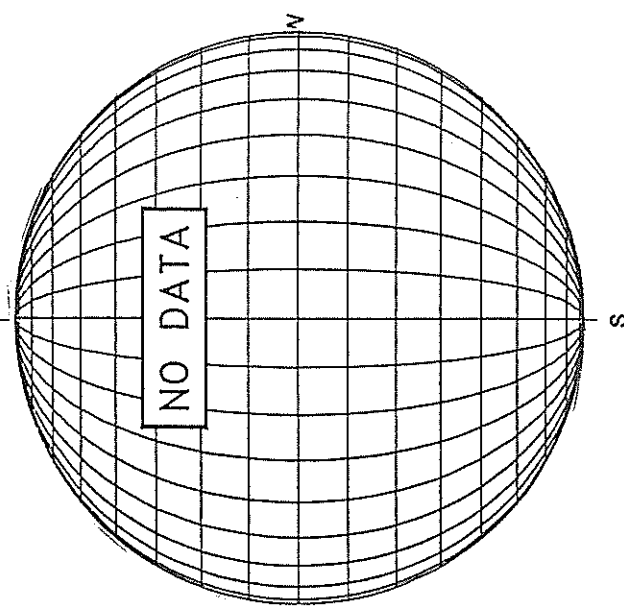
0806 UT

RAMEY SUNSPOT



1234 UT

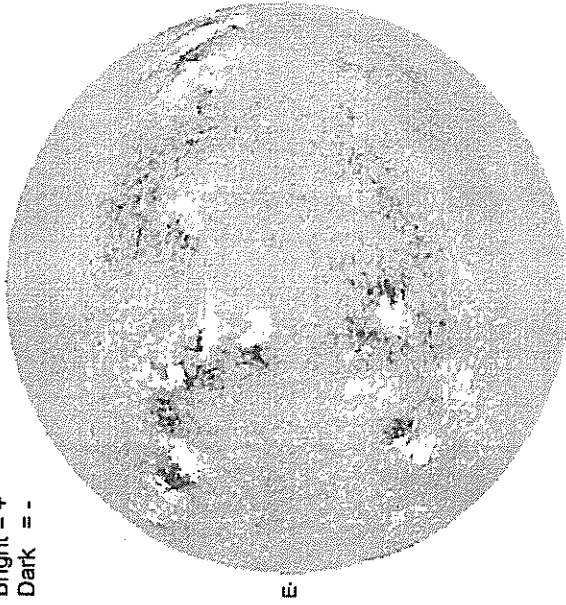
SACRAMENTO PEAK CORONA (1.15 Radii)



MAY 10, 1999 (P= -22.38, Bo = -3.27, Lo = 244.95)

KITT PEAK MAGNETOGRAM
868.8 nm

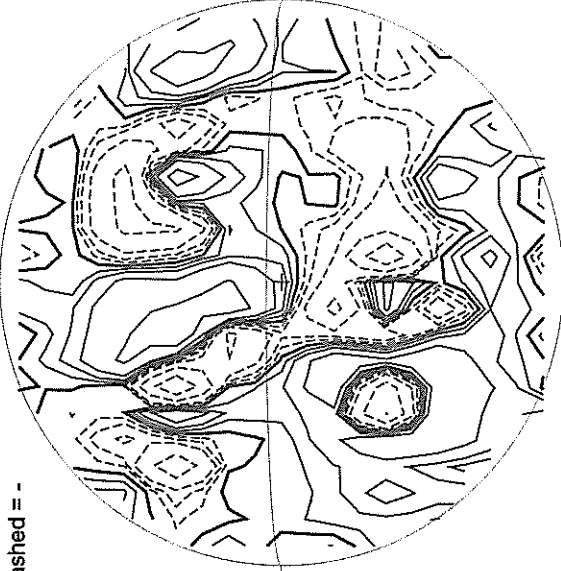
Bright = +
Dark = -



1551 UT

STANFORD MAGNETOGRAM

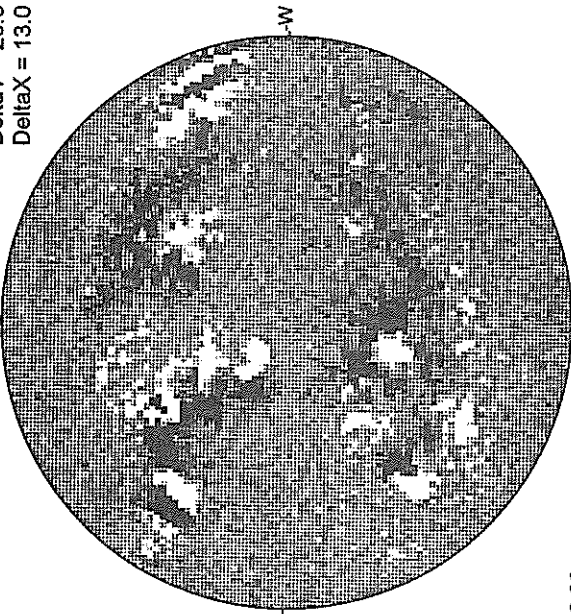
Solid = +
Dashed = -



2212 UT

MT. WILSON MAGNETOGRAM

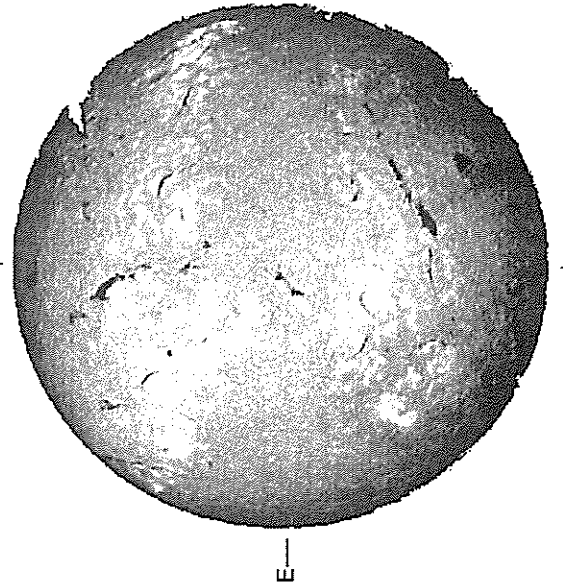
Delta Y = 20.0
Delta X = 13.0



18.32 -
18.73 UT

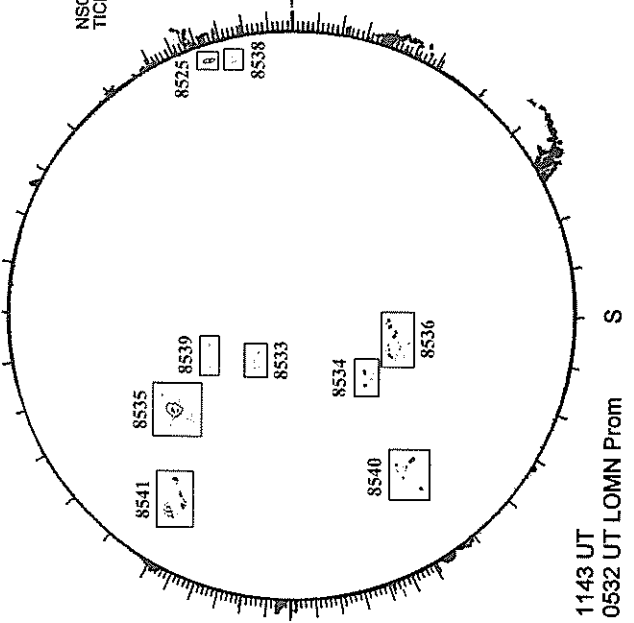
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



1140 UT

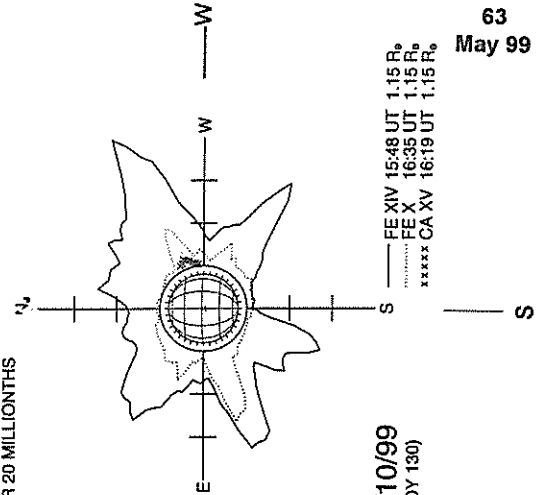
RAMEY SUNSPOT



1143 UT
0532 UT LOMN Prom

SACRAMENTO PEAK CORONA (1.15 Radii)---

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS



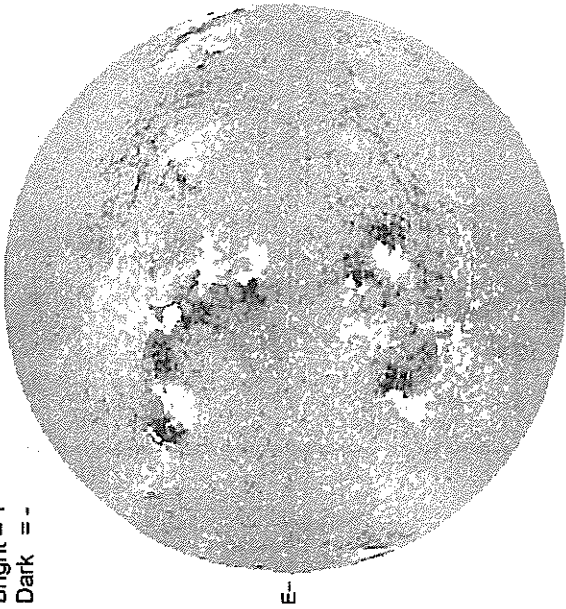
05/10/99
(DOY 130)

--- FE XIV 15:48 UT 1.15 R_o
..... FE X 16:35 UT 1.15 R_o
***** CA XV 16:19 UT 1.15 R_o

MAY 11, 1999 (P = -22.14 Bo = -3.16, Lo = 231.73)

KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



1521 UT

STANFORD MAGNETOGRAM

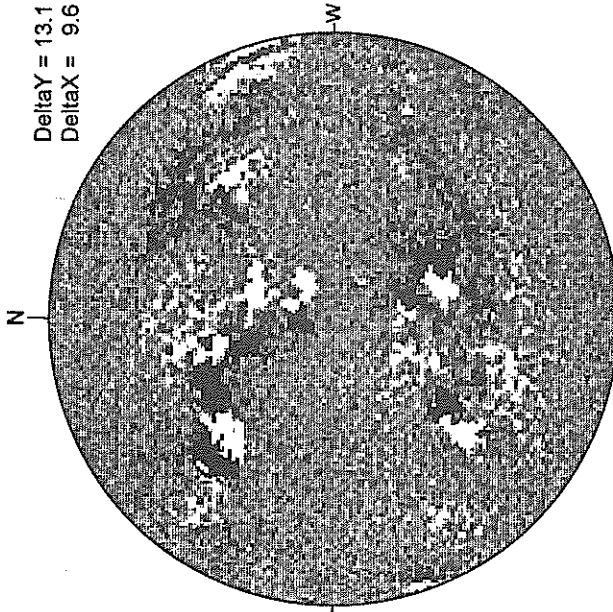
Solid = +
Dashed = -



2041 UT

MT. WILSON MAGNETOGRAM

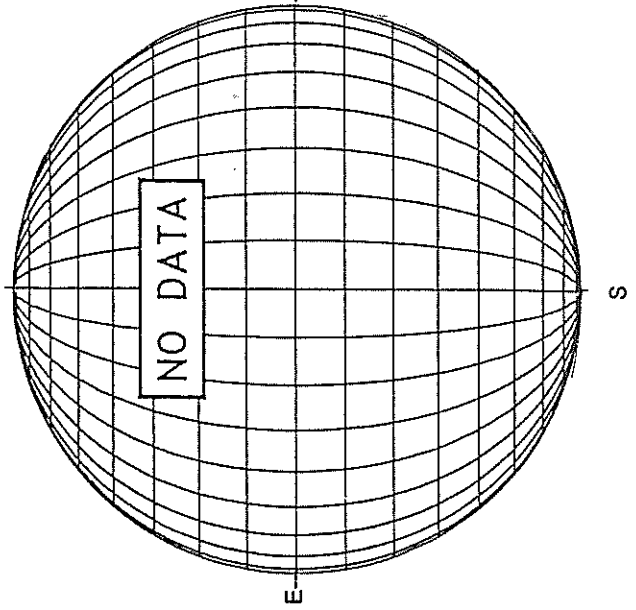
DeltaY = 13.1
DeltaX = 9.6



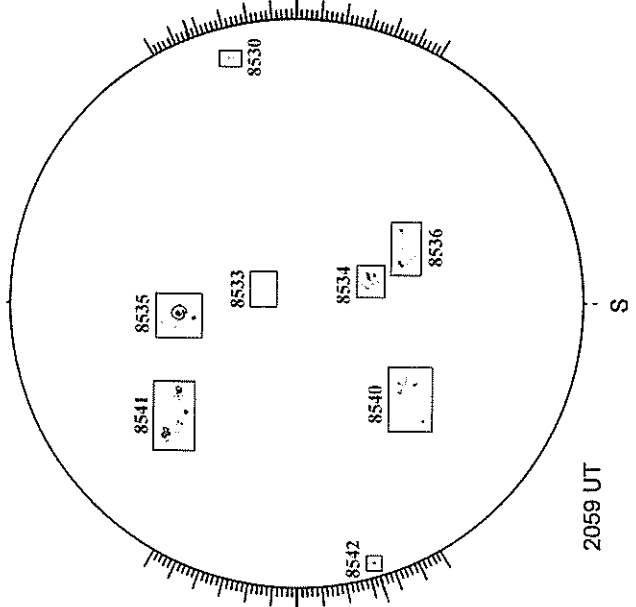
17.71 -
18.64 UT

White = +7.5G
Black = -7.5G

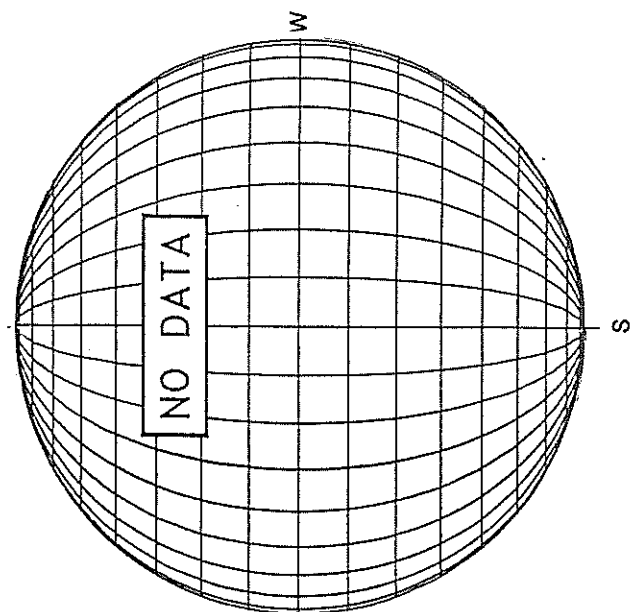
MEUDON H-ALPHA



HOLLOMAN SUNSPOT



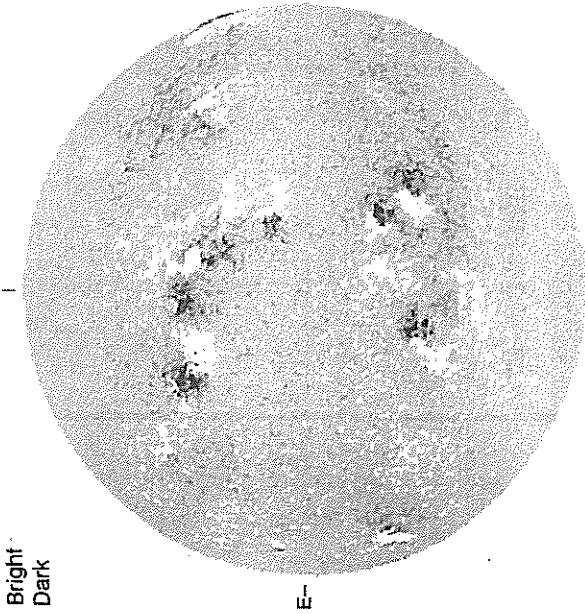
SACRAMENTO PEAK CORONA (1.15 Radii)



MAY 12, 1999 (P= -21.89, Bo = -3.05, Lo = 218.50)

KITT PEAK MAGNETOGRAM

868.8 nm



Bright
Dark

1524 UT

STANFORD MAGNETOGRAM

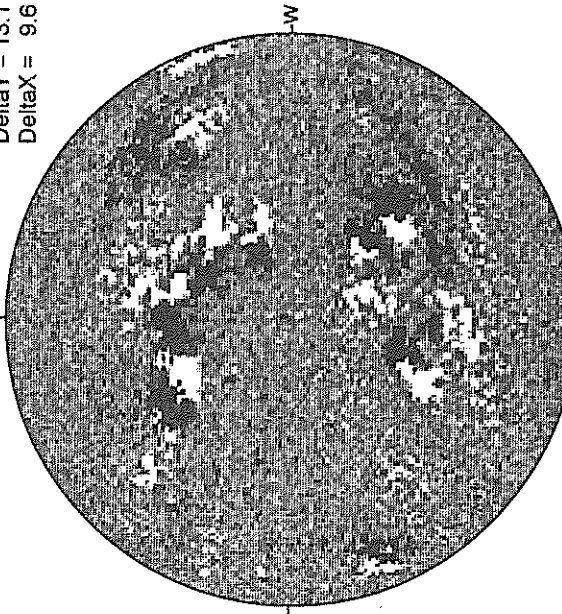
Solid = +
Dashed = -



1826 UT

MT. WILSON MAGNETOGRAM

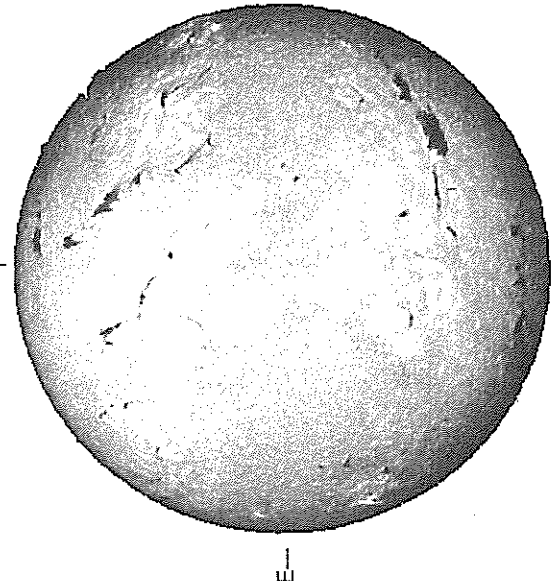
DeltaY = 13.1
DeltaX = 9.6



18.31 -
19.23 UT

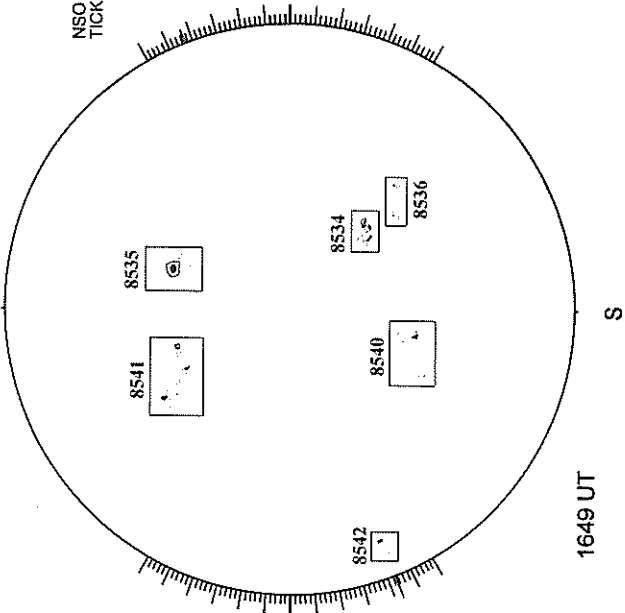
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



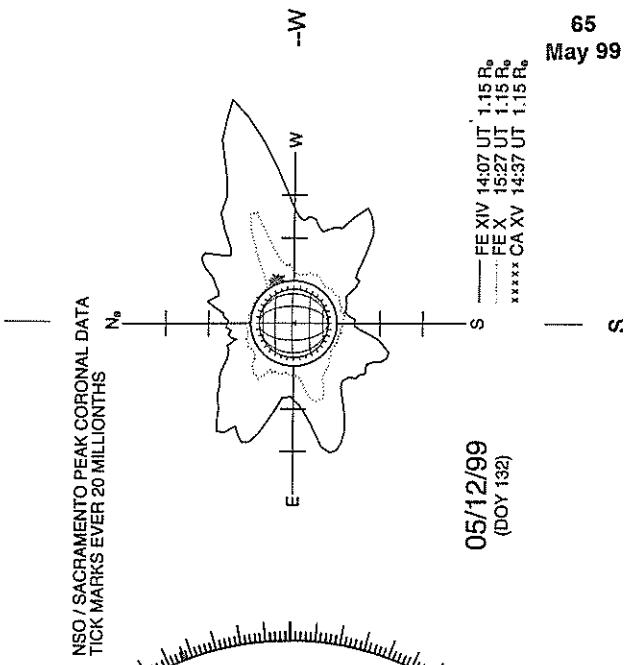
0912 UT

RAMEY SUNSPOT



1649 UT

SACRAMENTO PEAK CORONA (1.15 Radii)---



05/12/99
(DOY 132)

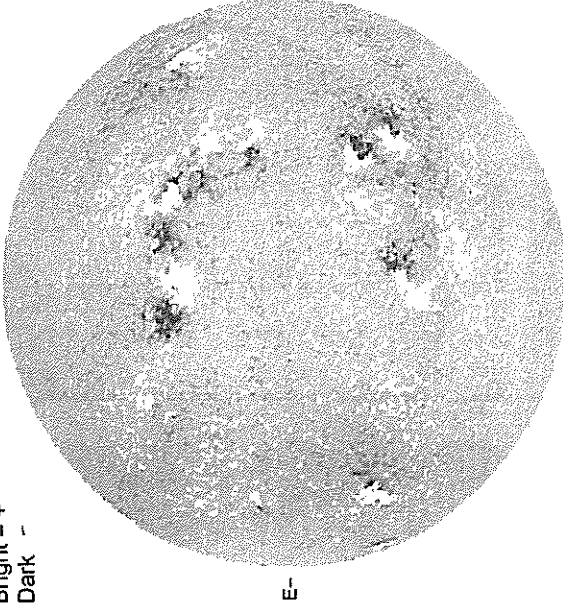
66
May 99

MAY 13, 1999 (P= -21.64, Bo = -2.93, Lo = 205.28)

KITT PEAK MAGNETOGRAM

868.8 nm

Bright = +
Dark = -



1524 UT

STANFORD MAGNETOGRAM

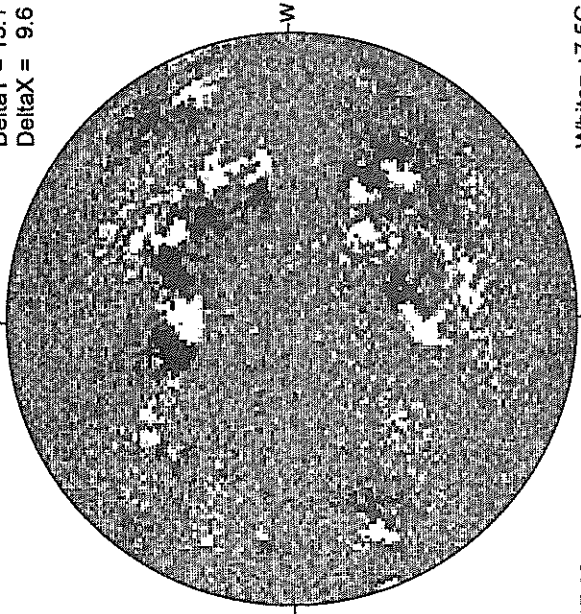
Solid = +
Dashed = -



1833 UT

MT. WILSON MAGNETOGRAM

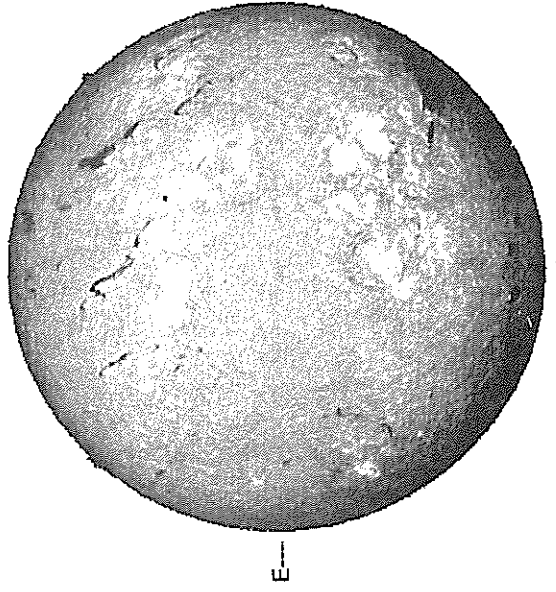
Delta Y = 13.1
Delta X = 9.6



17.83 -
18.76 UT

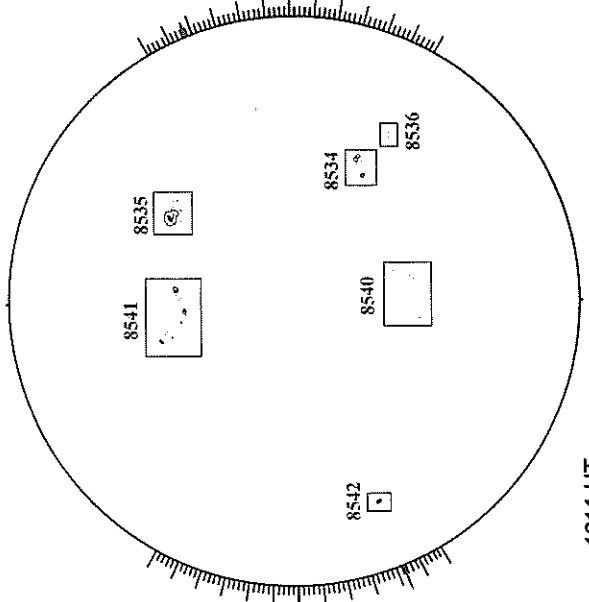
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



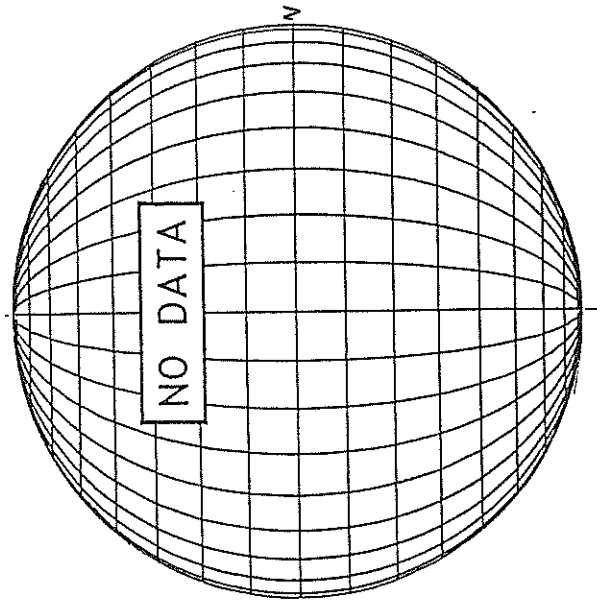
1058 UT

RAMEY SUNSPOT



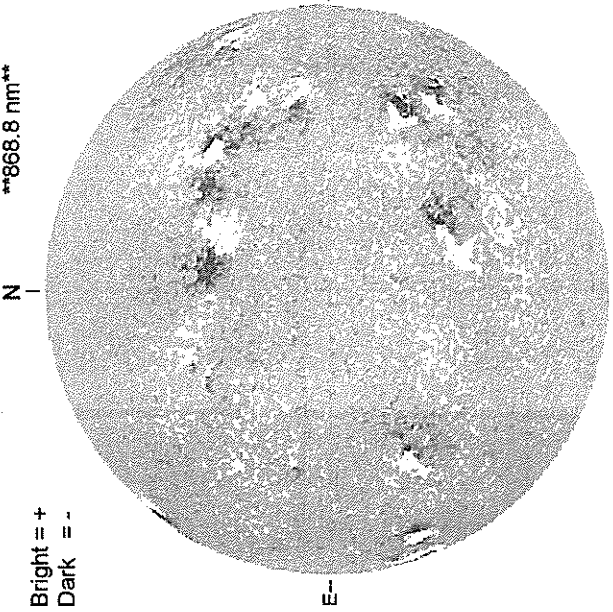
1611 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



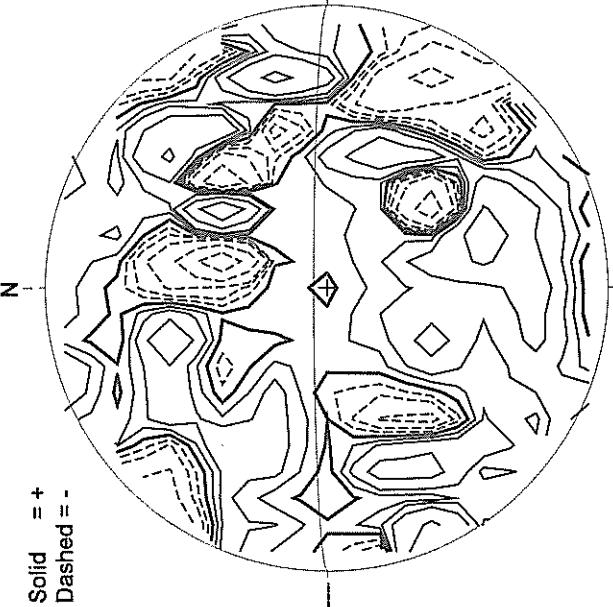
MAY 14, 1999 (P = -21.38, Bo = -2.82, Lo = 192.06)

KITT PEAK MAGNETOGRAM
868.8 nm



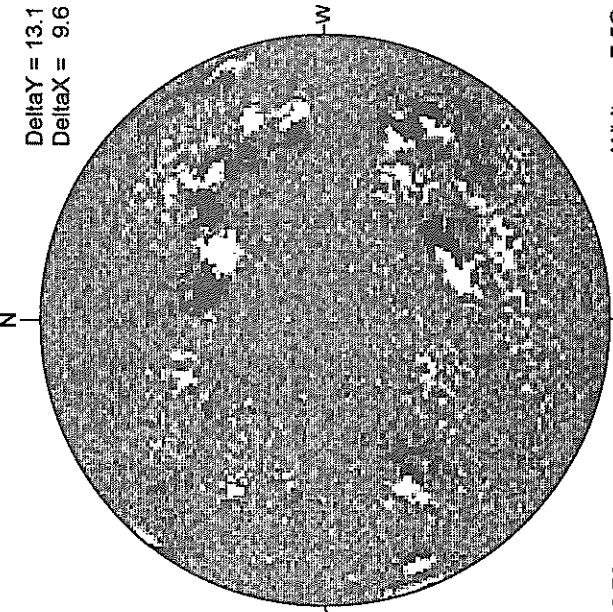
1430 UT

STANFORD MAGNETOGRAM



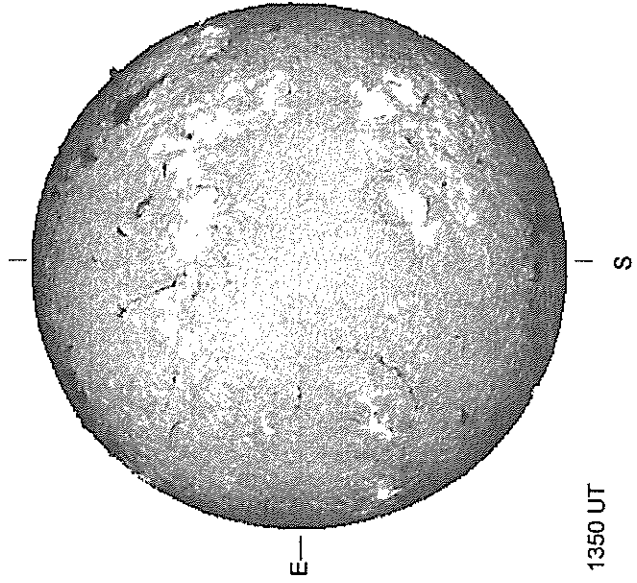
1841 UT

MT. WILSON MAGNETOGRAM



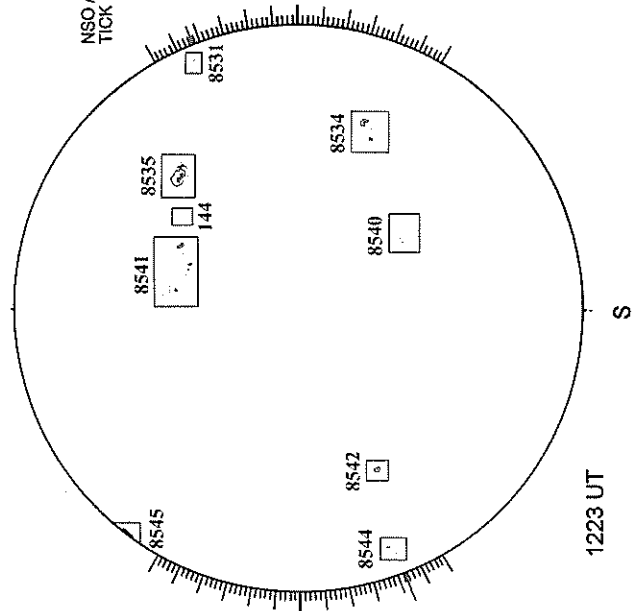
18.79 -
19.72 UT

MEUDON H-ALPHA



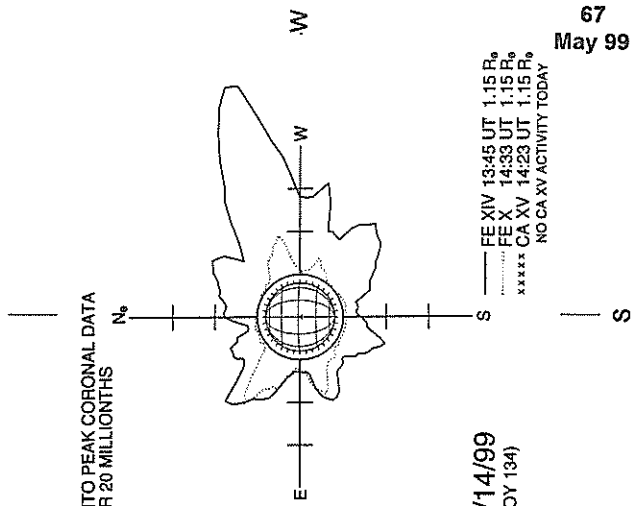
1350 UT

RAMEY SUNSPOT



1223 UT

SACRAMENTO PEAK CORONA (1.15 Radii)---



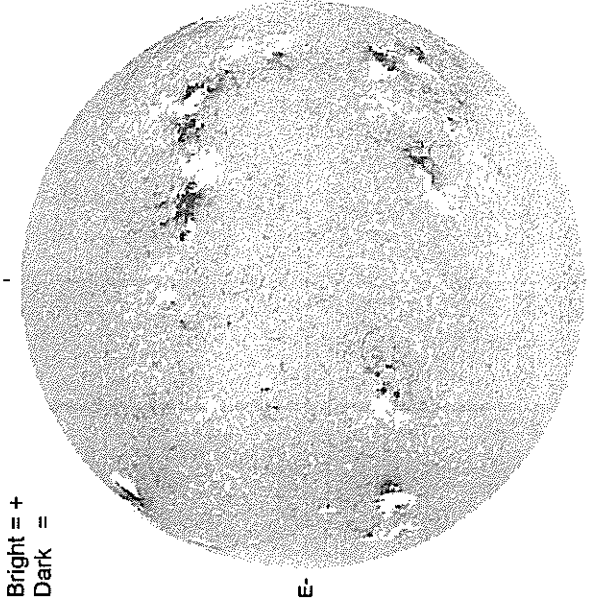
05/14/99
(DOY 134)

MAY 15, 1999 (P = -21.11, Bo = -2.71, Lo = 178.83)

68
May 99

KITT PEAK MAGNETOGRAM

868.8 nm

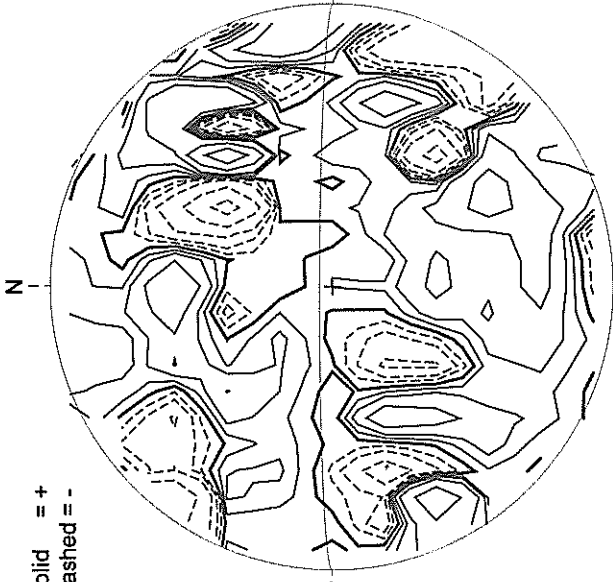


Bright = +
Dark = -

1422 UT

STANFORD MAGNETOGRAM

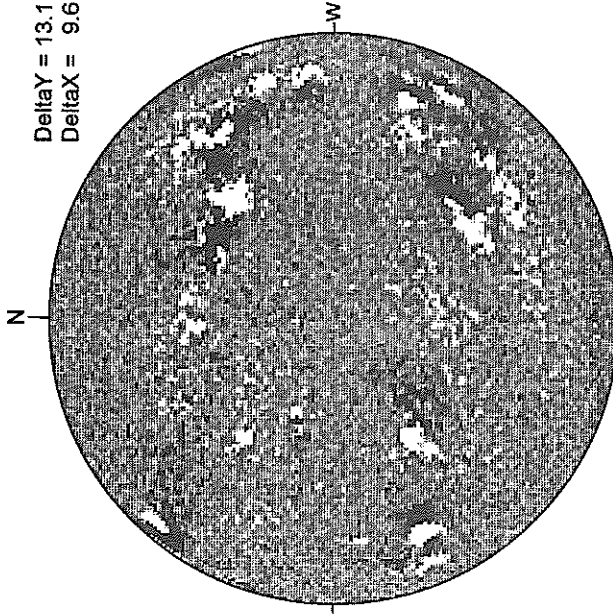
Solid = +
Dashed = -



1904 UT

MT. WILSON MAGNETOGRAM

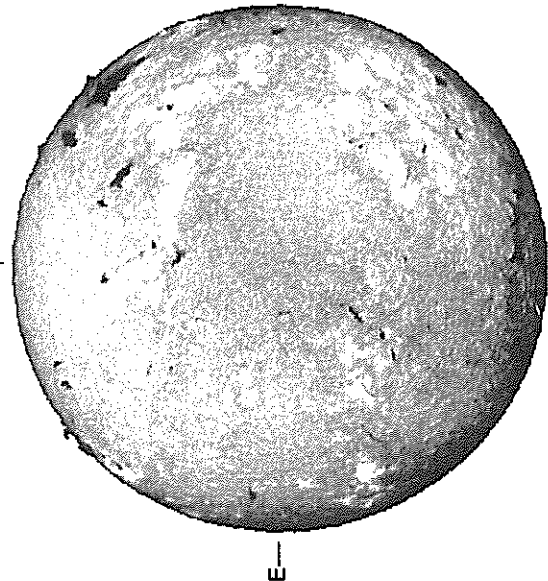
Delta Y = 13.1
Delta X = 9.6



17.52 -
18.46 UT

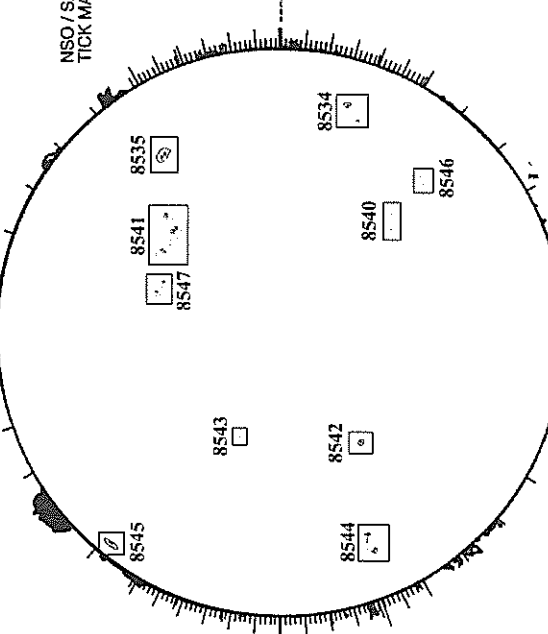
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



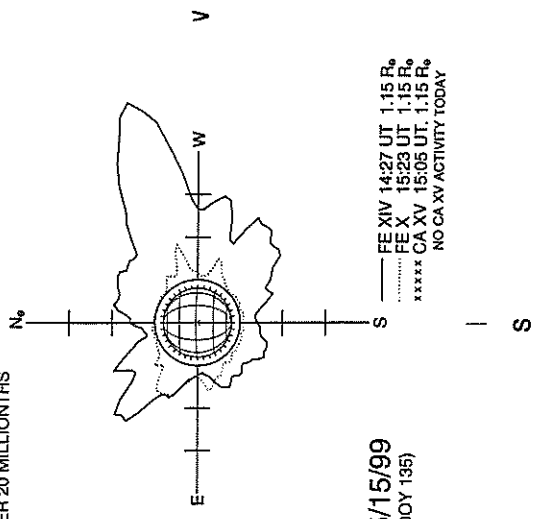
0938 UT

RAMEY SUNSPOT



1132 UT
1540 UT LOMN Prom S

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS

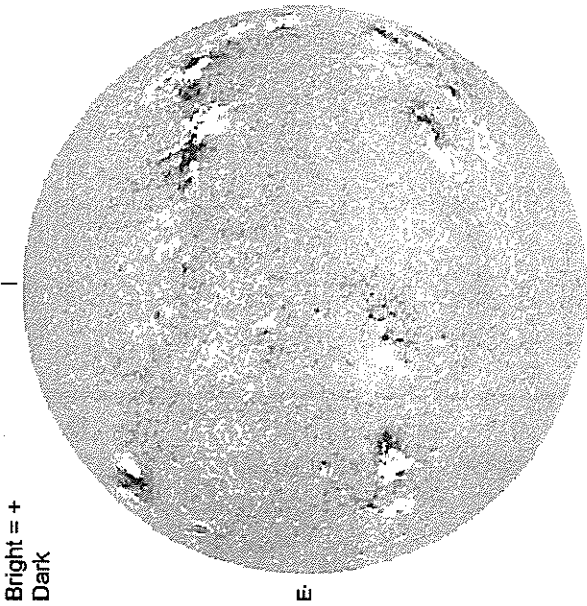


05/15/99
(DOY 135)

SACRAMENTO PEAK CORONA (1.15 Radii)---

MAY 16, 1999 (P= -20.83, Bo = -2.60, Lo = 165.61)

KITT PEAK MAGNETOGRAM
868.8 nm



Bright = +
Dark

1412 UT

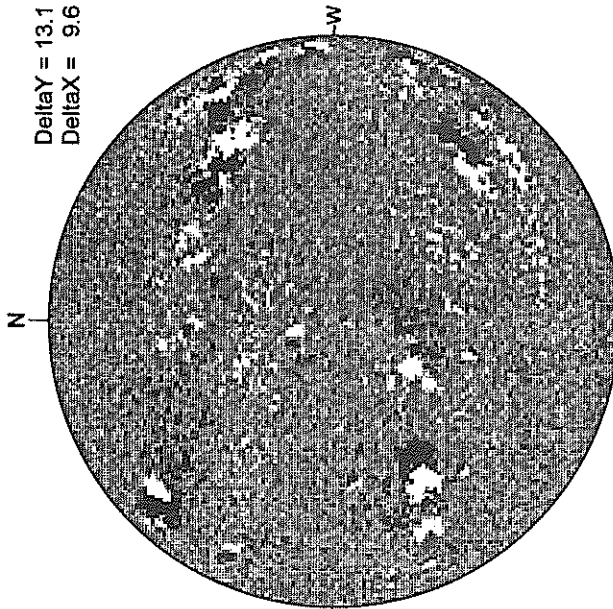
STANFORD MAGNETOGRAM



Solid = +
Dashed = -

2034 UT

MT. WILSON MAGNETOGRAM

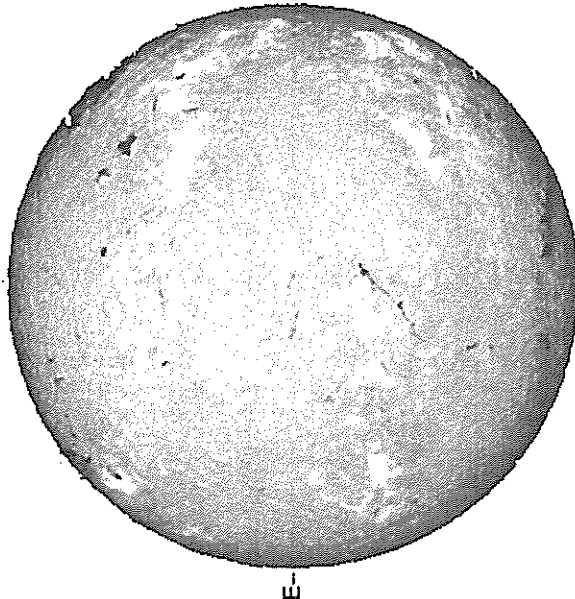


Delta Y = 13.1
Delta X = 9.6

White = +7.5G
Black = -7.5G

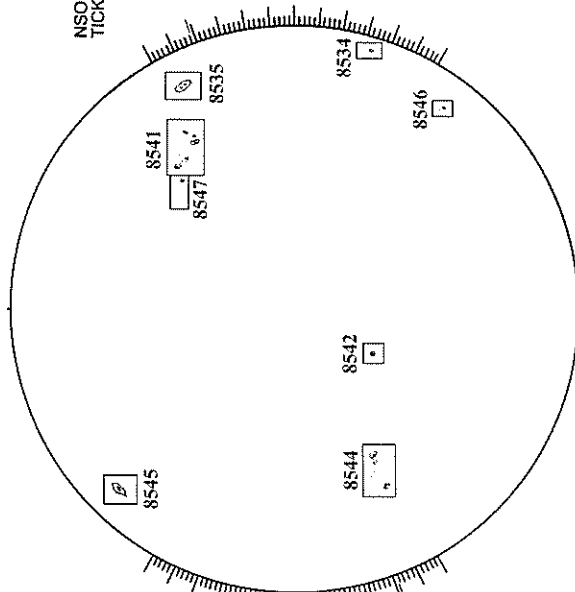
23.30 -
24.23 UT

MEUDON H-ALPHA



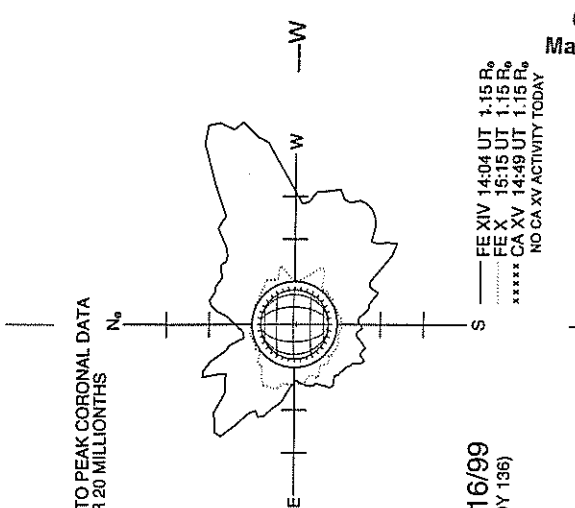
0646 UT

RAMEY SUNSPOT



1515 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



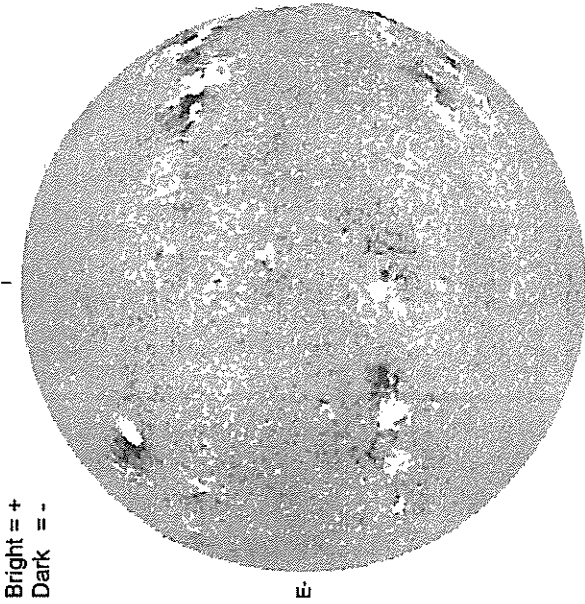
05/16/99
(DOY 136)

— FE XIV 14:04 UT 1.15 R_☉
— FE X 15:15 UT 1.15 R_☉
— CA XV 14:49 UT 1.15 R_☉
***** NO CA XV ACTIVITY TODAY

70
May 99

KITT PEAK MAGNETOGRAM

***668.8 nm**



Bright = +
Dark = -

1513 UT

STANFORD MAGNETOGRAM

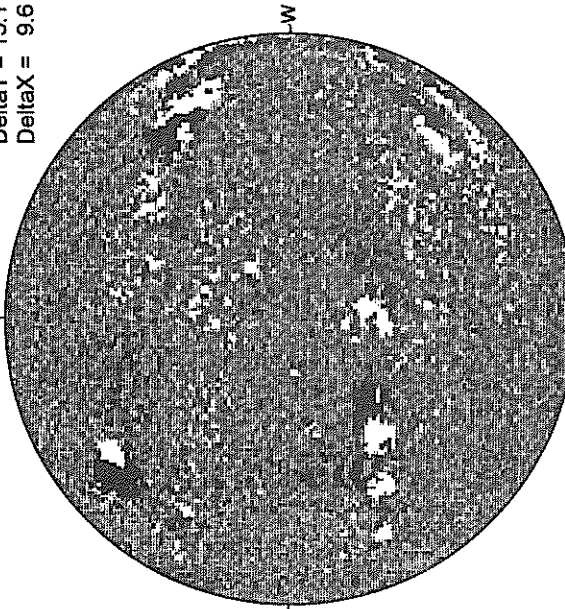
Solid = +
Dashed = -



1907 UT

MT. WILSON MAGNETOGRAM

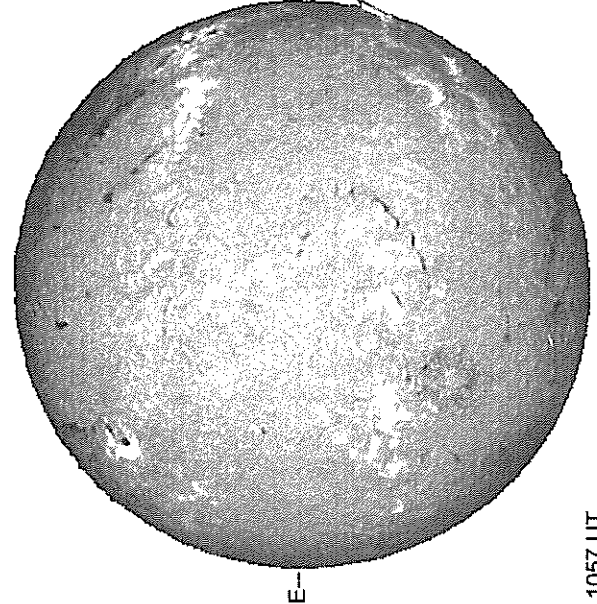
Delta Y = 13.1
Delta X = 9.6



21.23 -
22.15 UT

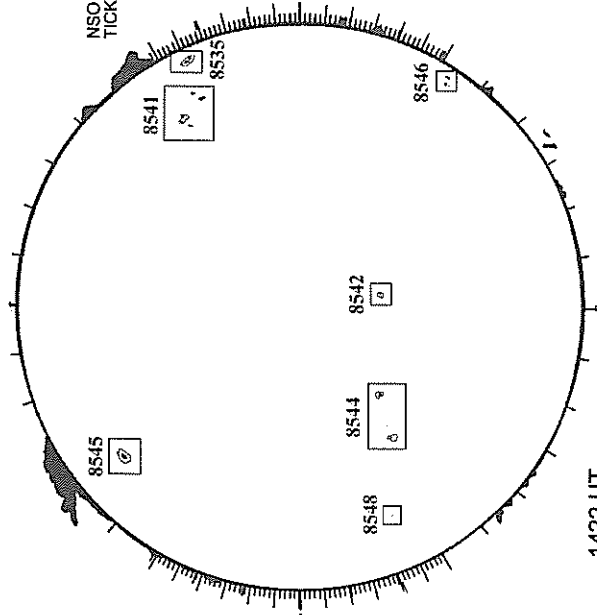
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



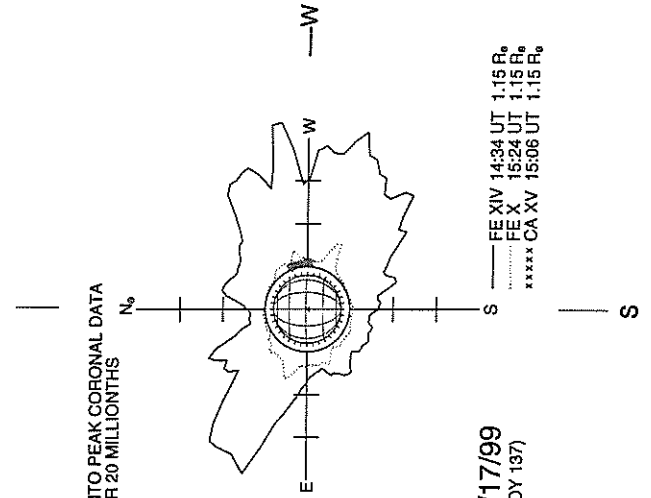
1057 UT

RAMEY SUNSPOT



1422 UT
0906 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

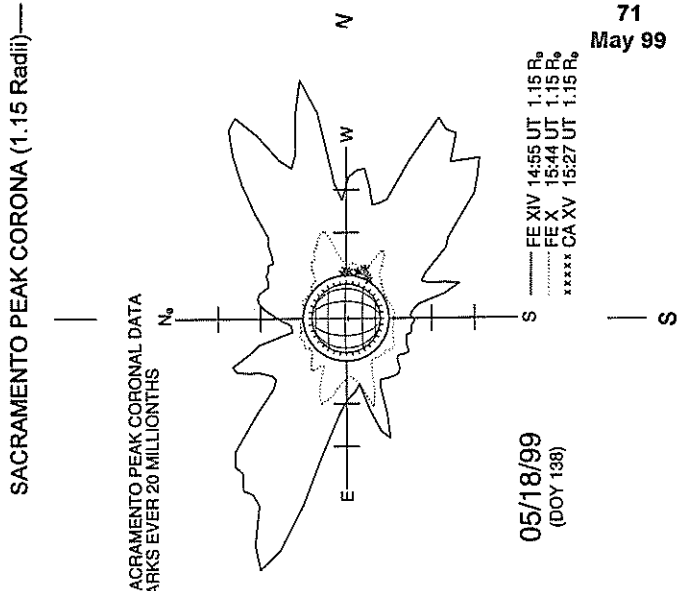
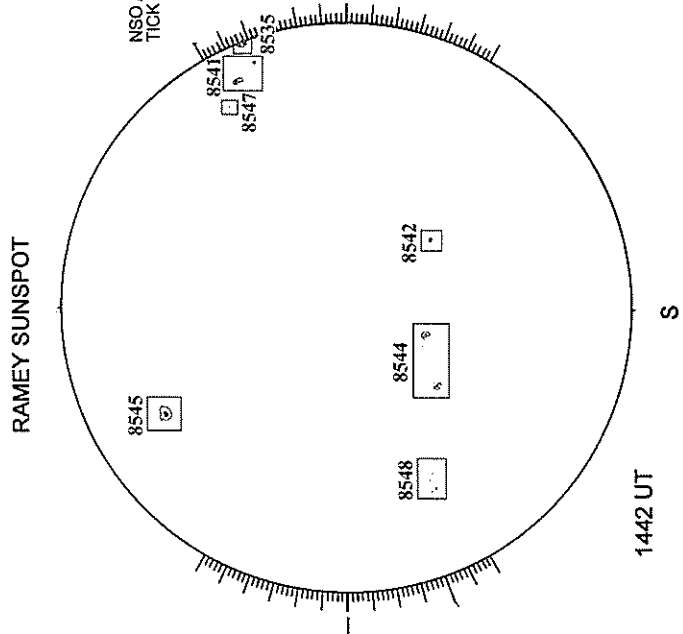
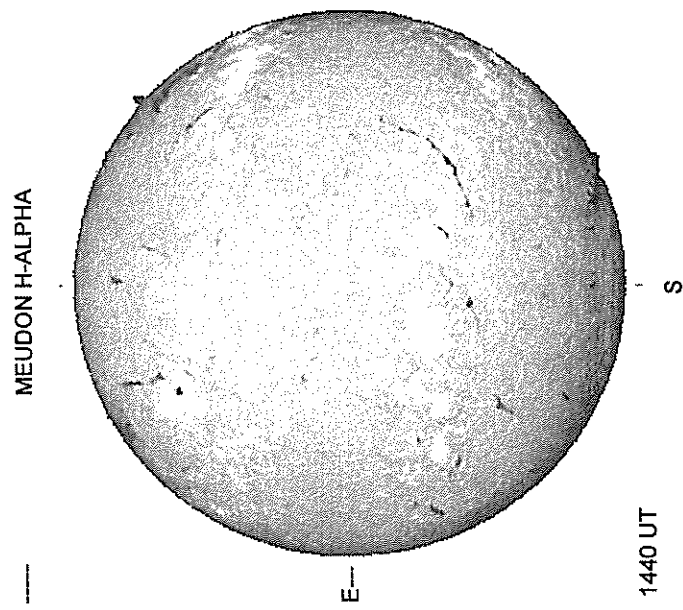
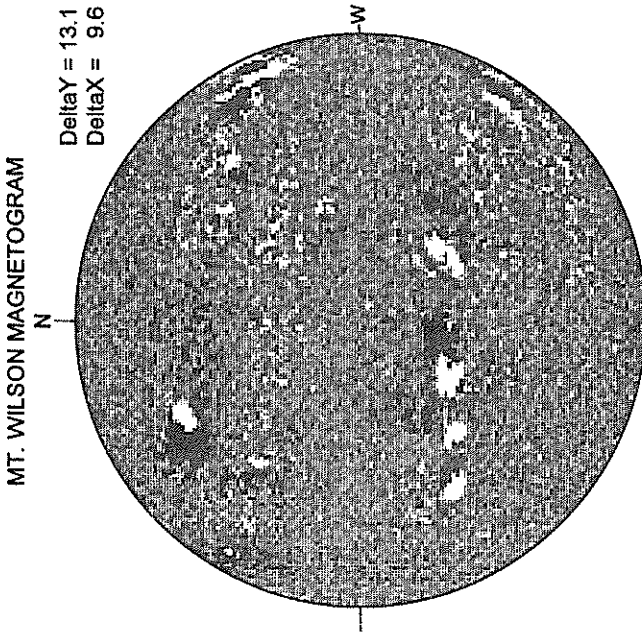
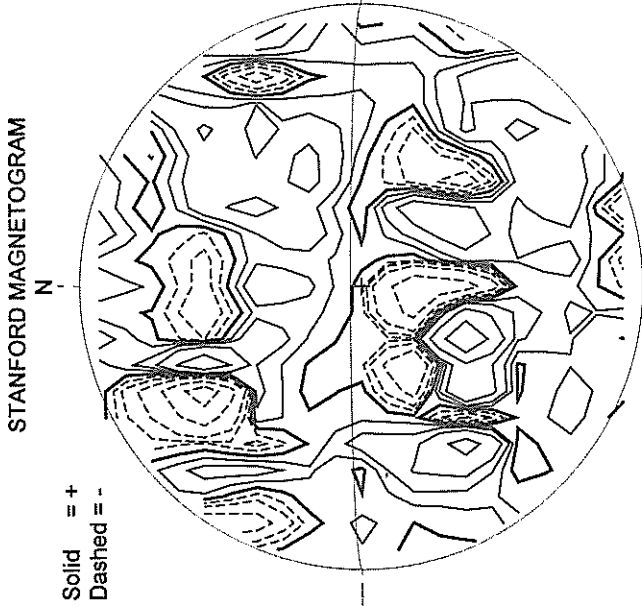
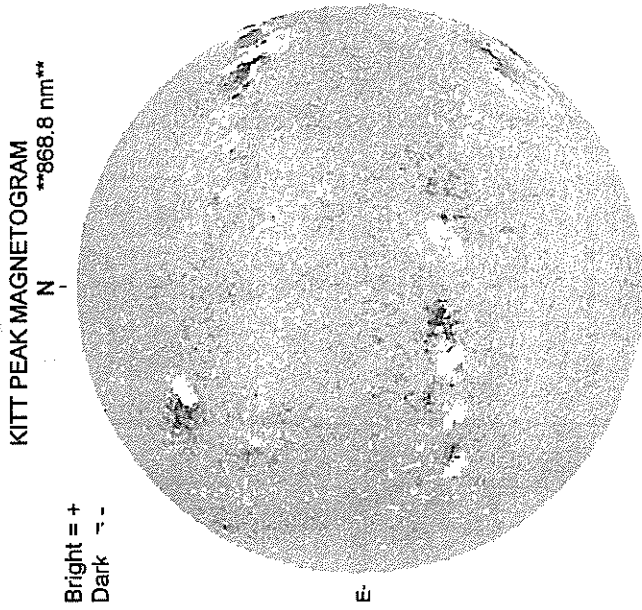


05/17/99
(DOY 137)

— EE XIV 14:34 UT 1.15 R₀
- - - - - EE X 15:24 UT 1.15 R₀
***** CA XV 15:06 UT 1.15 R₀

MAY 17, 1999 (P = -20.55, Bo = -2.46, Lo = 152.38)

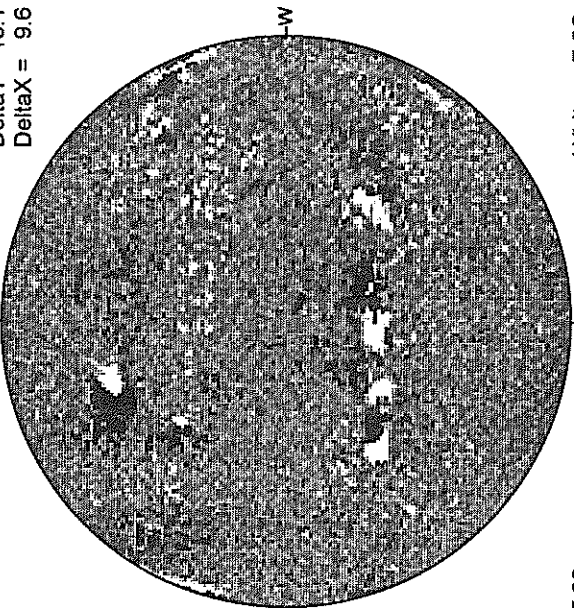
MAY 18, 1999 (P= -20.26, Bo = -2.37, Lo = 139.15)



72
May 99

MT. WILSON MAGNETOGRAM

DeltaY = 13.1
DeltaX = 9.6



White = +7.5G
Black = -7.5G

17.28 -
18.20 UT

MAY 19, 1999 (P = -19.97, Bo = -2.25, Lo = 125.93)

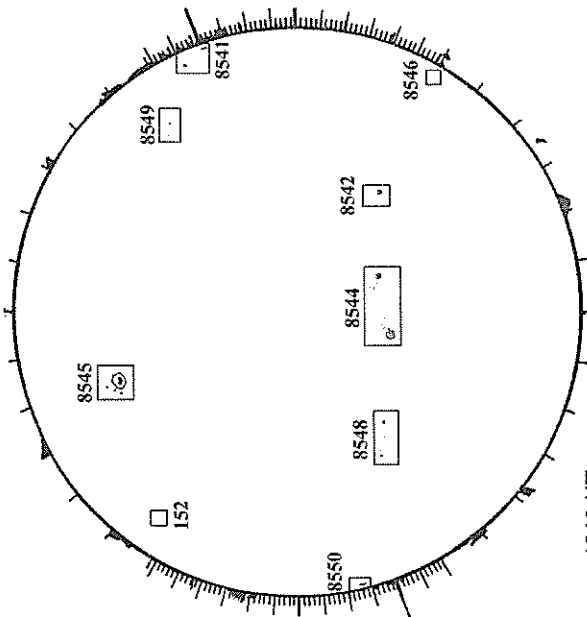
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



1938 UT

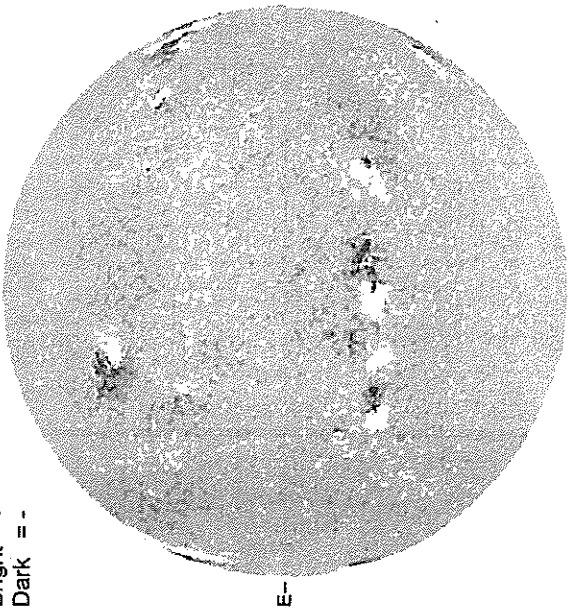
RAMEY SUNSPOT



1219 UT
0733 UT LOMN Prom S

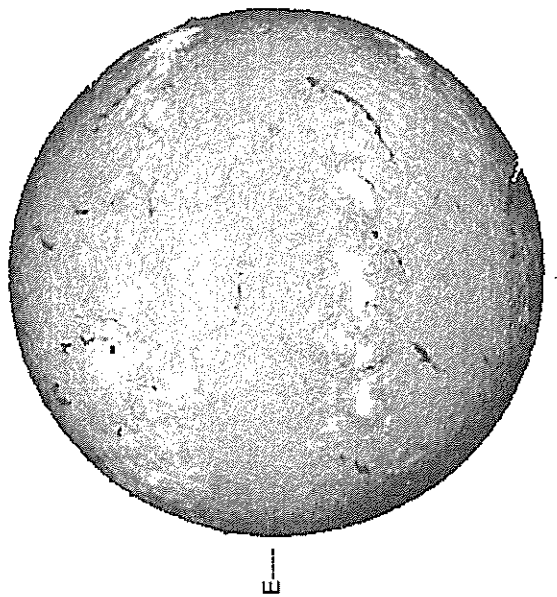
KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



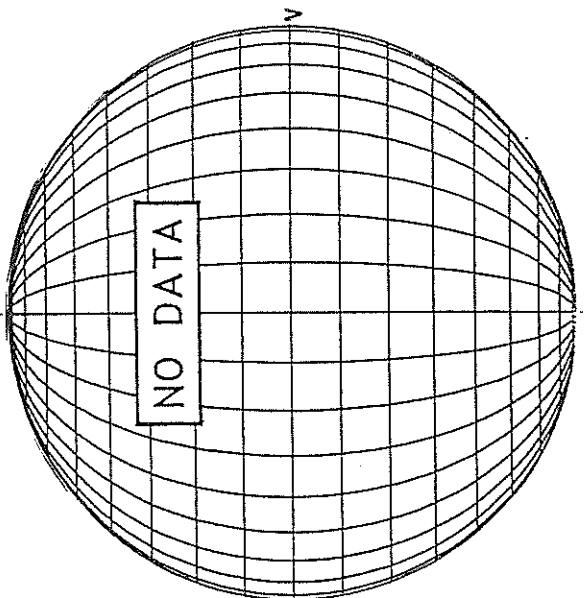
1556 UT

MEUDON H-ALPHA



0716 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

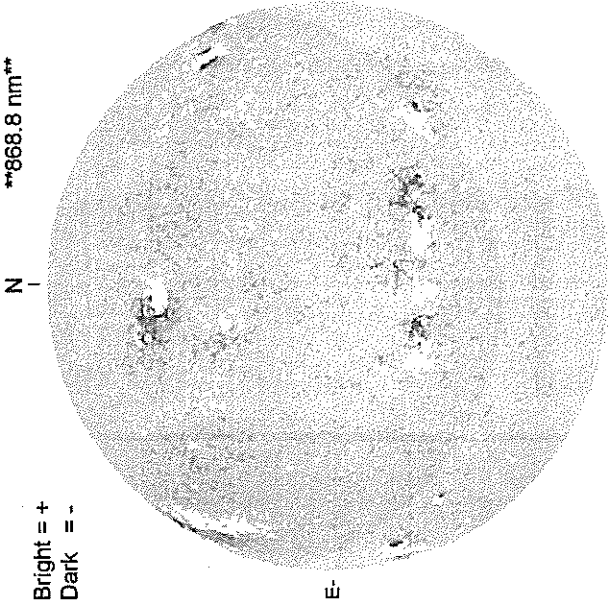


MAY 20, 1999 (P= -19.67, Bo = -2.14, Lo = 112.70)

KITT PEAK MAGNETOGRAM

$\lambda\lambda 868.8 \text{ nm}^{**}$

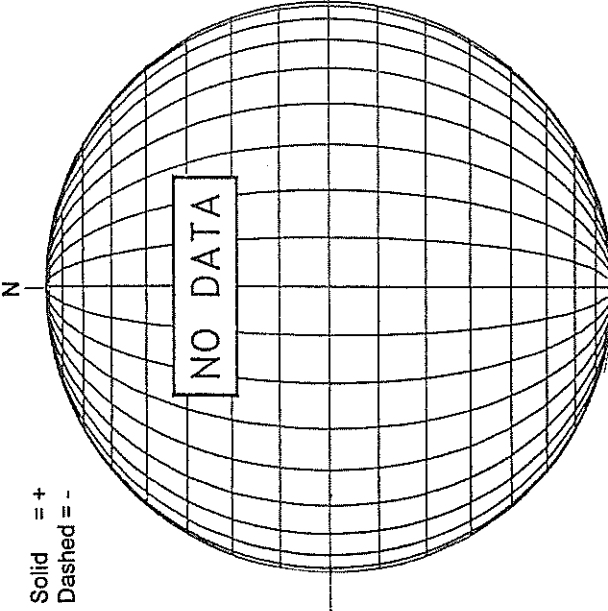
Bright = +
Dark = -



1606 UT

STANFORD MAGNETOGRAM

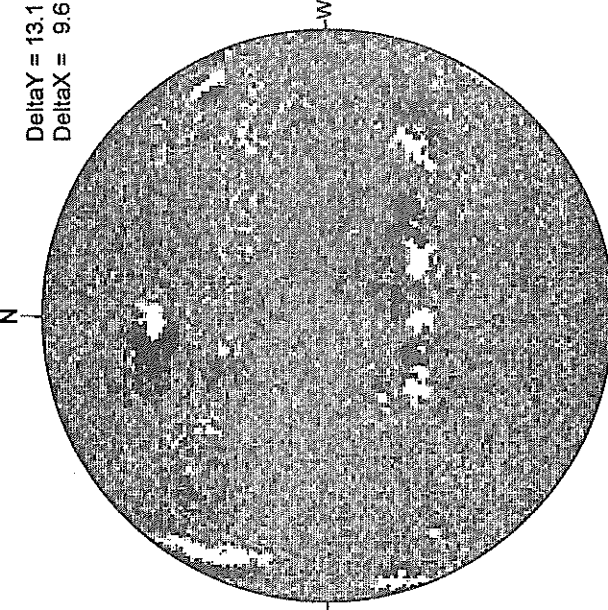
Solid = +
Dashed = -



18.47 -
19.40 UT

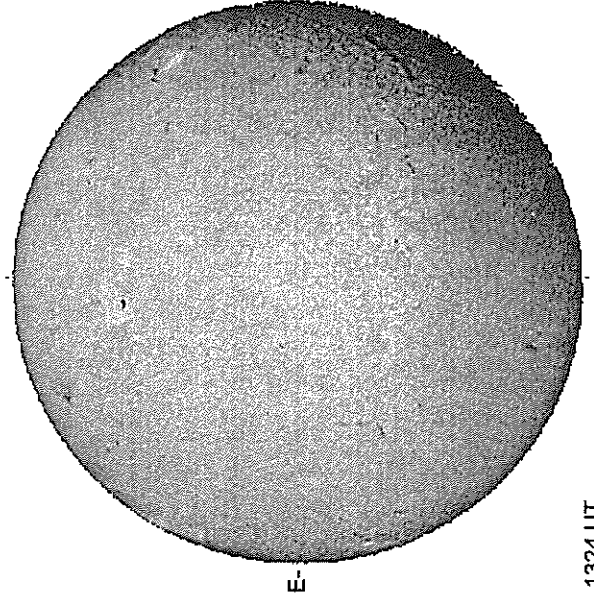
MT. WILSON MAGNETOGRAM

Delta Y = 13.1
Delta X = 9.6



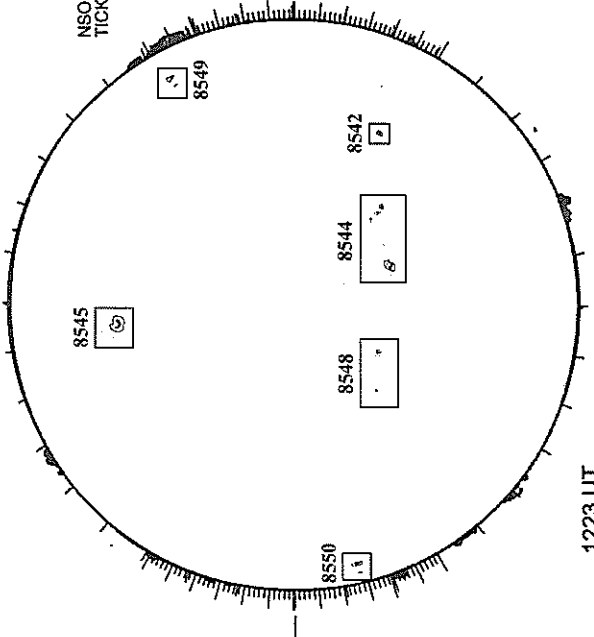
White = +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



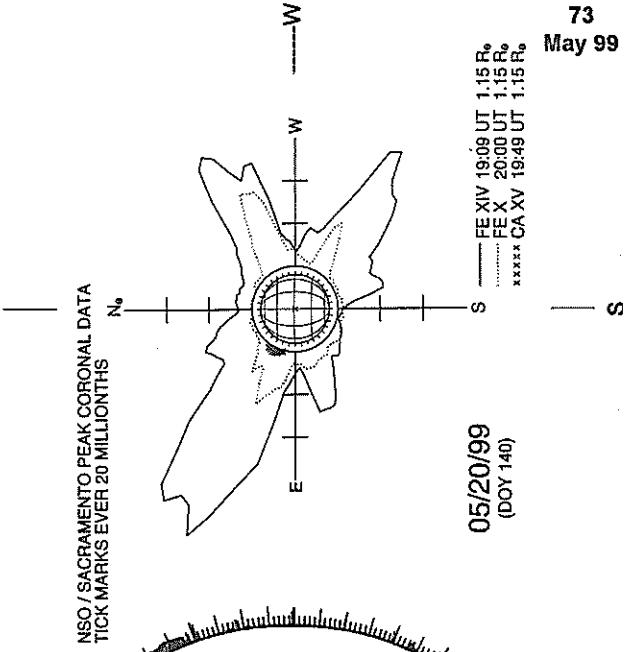
1324 UT

RAMEY SUNSPOT



1223 UT
0432 UT | OMN Prm S

SACRAMENTO PEAK CORONA (1.15 Radii)



NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS

05/20/99
(DOY 140)

— FE XIV 19:09 UT 1.15 R₀
..... FE X 20:00 UT 1.15 R₀
xxxxx CA XV 19:49 UT 1.15 R₀

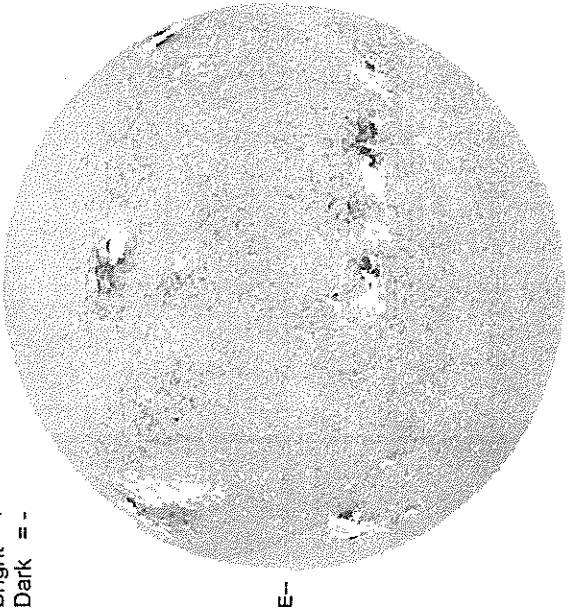
74
May 99

MAY 21, 1999 (P = -19.36, Bo = -2.02, Lo = 99.47)

KITT PEAK MAGNETOGRAM

***868.8 nm**

Bright = +
Dark = -



1555 UT

STANFORD MAGNETOGRAM

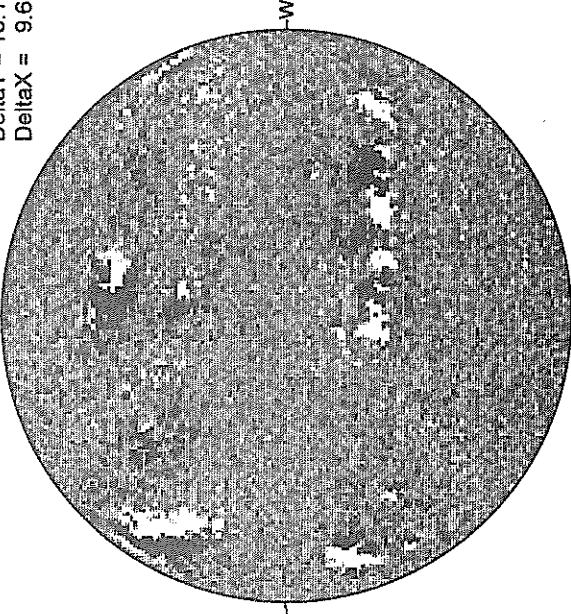
Solid = +
Dashed = -



2018 UT

MT. WILSON MAGNETOGRAM

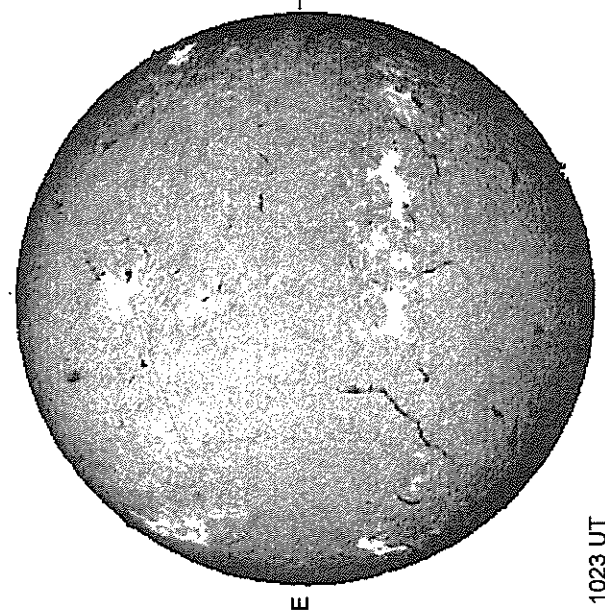
DeltaY = 13.1
DeltaX = 9.6



17.92 -
18.85 UT

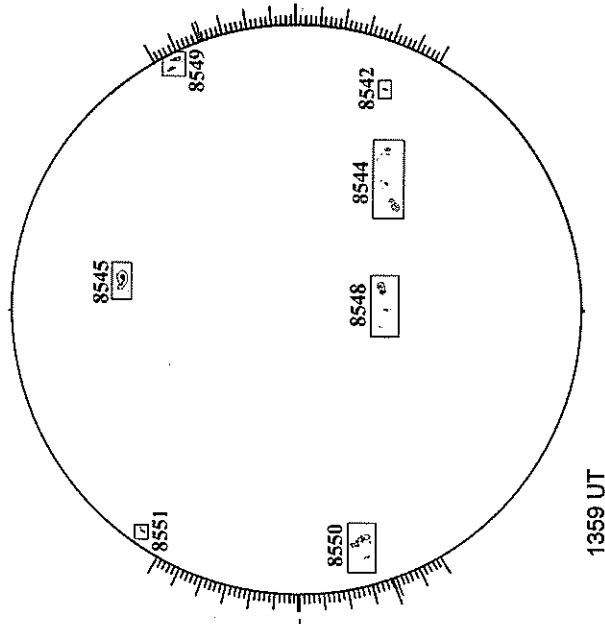
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



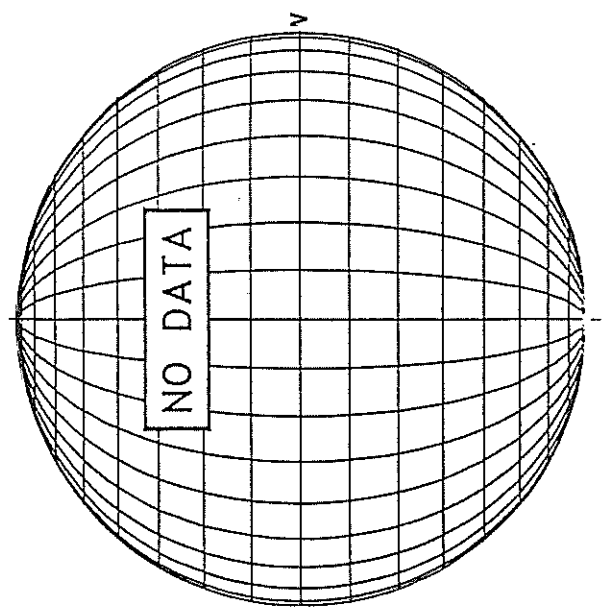
1023 UT

RAMEY SUNSPOT



1359 UT

SACRAMENTO PEAK CORONA (1.15 Radii)---

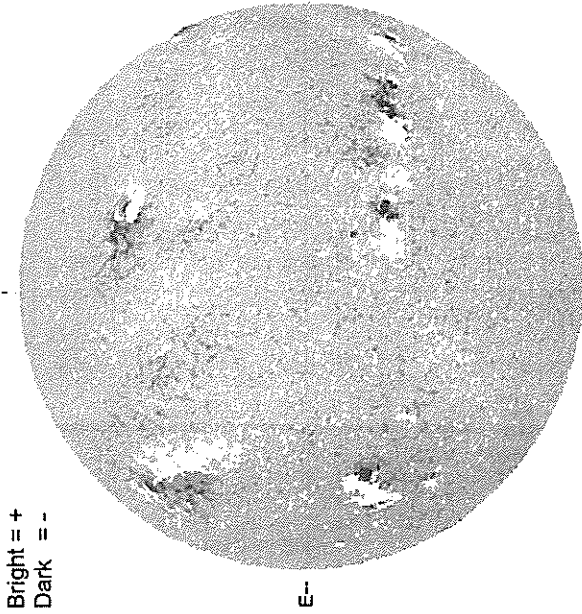


S

MAY 22, 1999 (P = -19.05, Bo = -1.90, Lo = 86.24)

KITT PEAK MAGNETOGRAM

868.8 nm

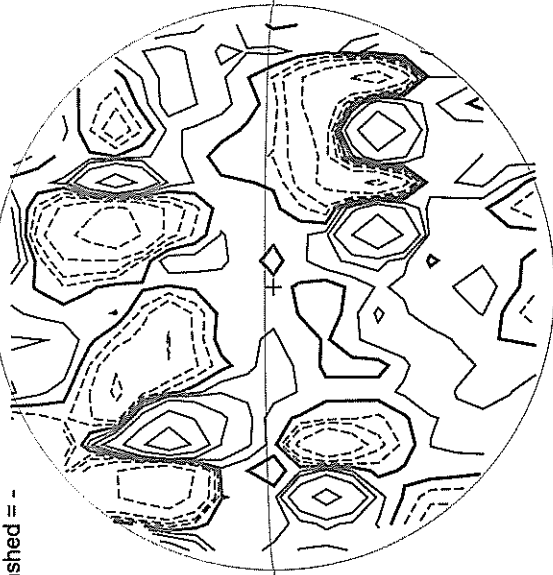


Bright = +
Dark = -

1403 UT

STANFORD MAGNETOGRAM

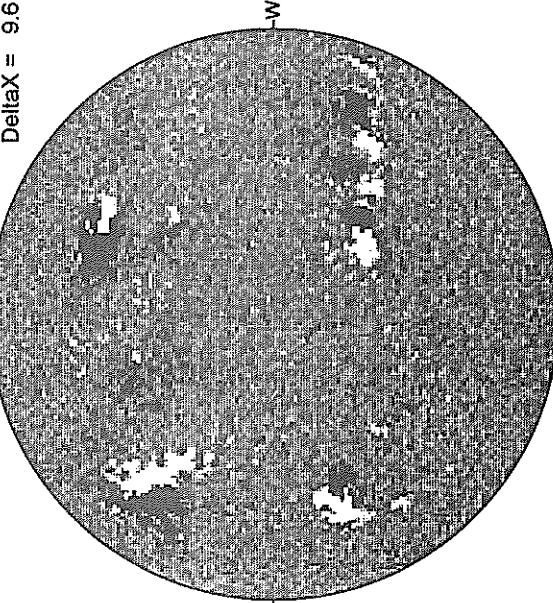
Solid = +
Dashed = -



2053 UT

MT. WILSON MAGNETOGRAM

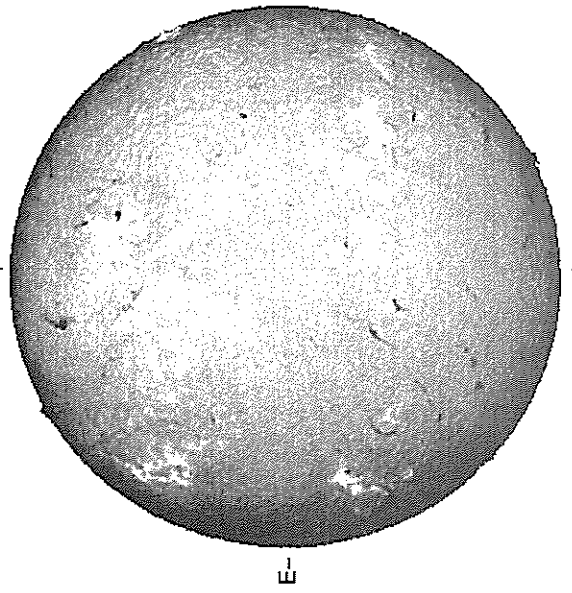
Delta Y = 13.1
Delta X = 9.6



23.60 -
24.52 UT

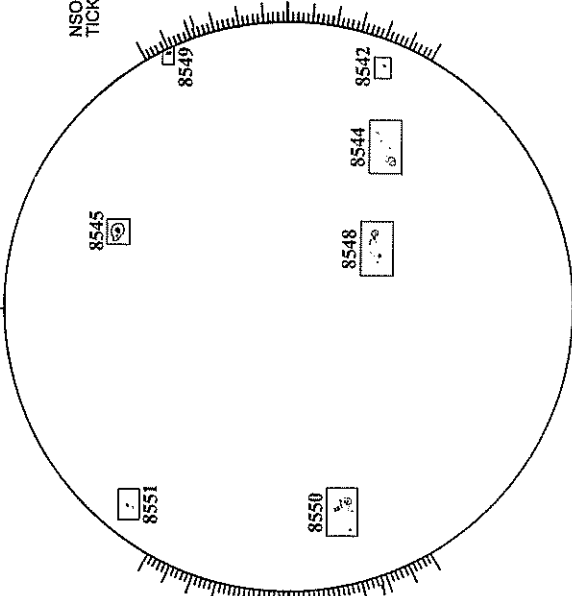
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



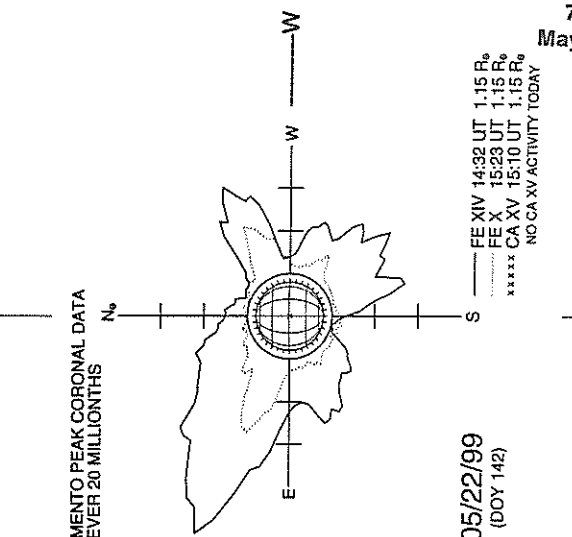
0659 UT

RAMEY SUNSPOT



1228 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



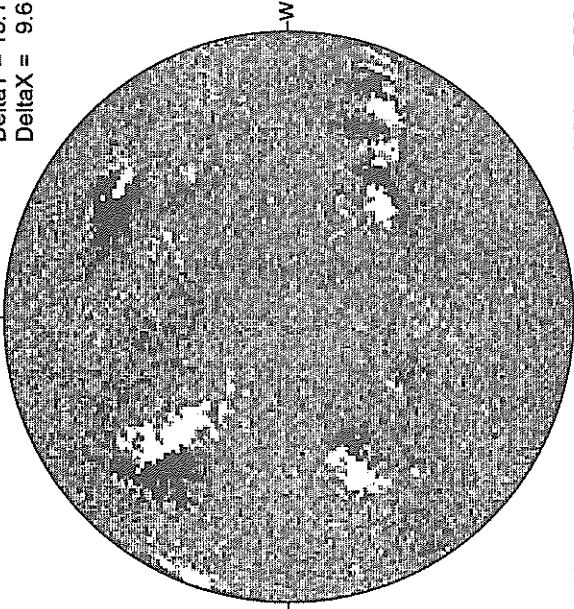
05/22/99
(DOY 142)

FE XIV 14:32 UT 1.15 R₀
FE X 15:23 UT 1.15 R₀
***** CA XV 15:10 UT 1.15 R₀
NO CA XV ACTIVITY TODAY

76
May 99

MT. WILSON MAGNETOGRAM

DeltaY = 13.1
DeltaX = 9.6



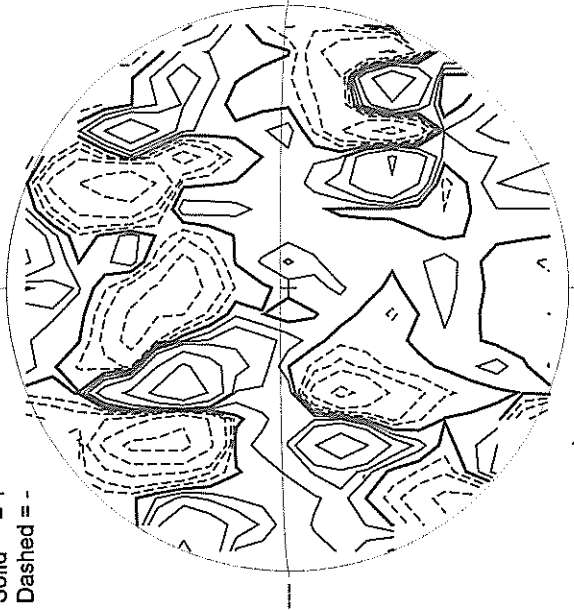
White = +7.5G
Black = -7.5G

19.00 -
19.93 UT

MAY 23, 1999 (P = -18.73, Bo = -1.79, Lo = 73.01)

STANFORD MAGNETOGRAM

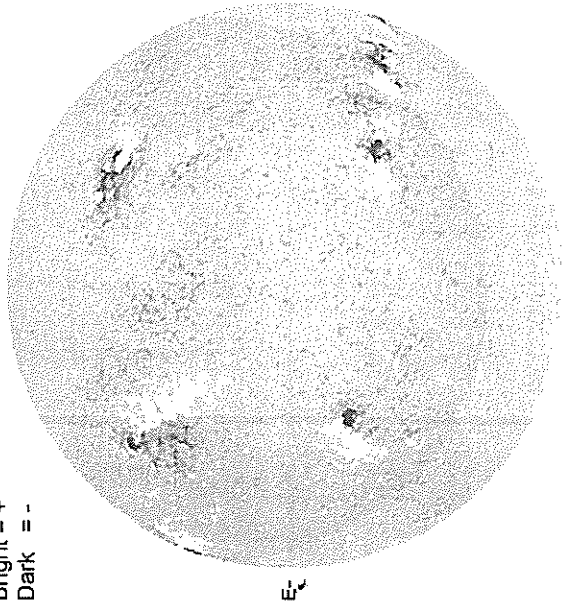
Solid = +
Dashed = -



2342 UT

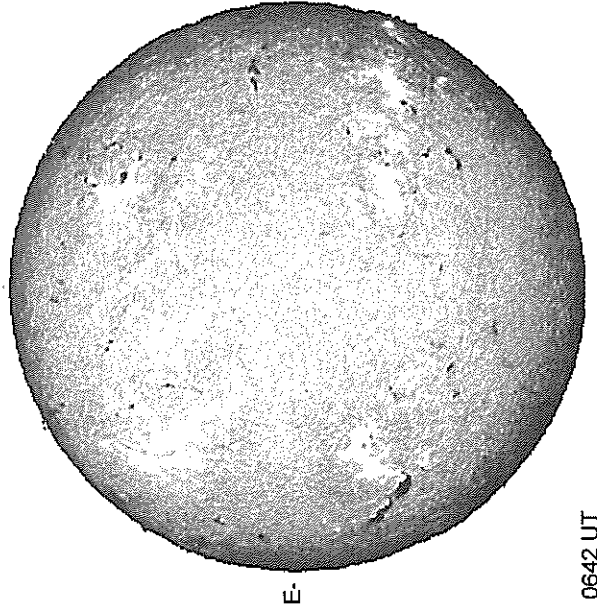
KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



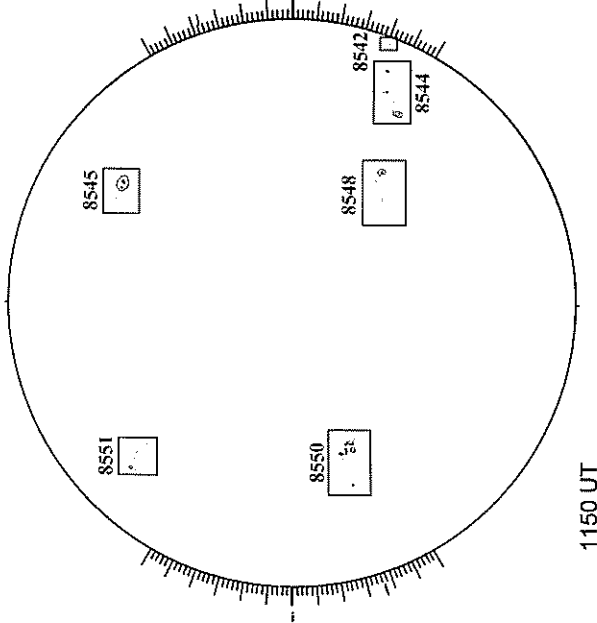
1555 UT

MEUDON H-ALPHA



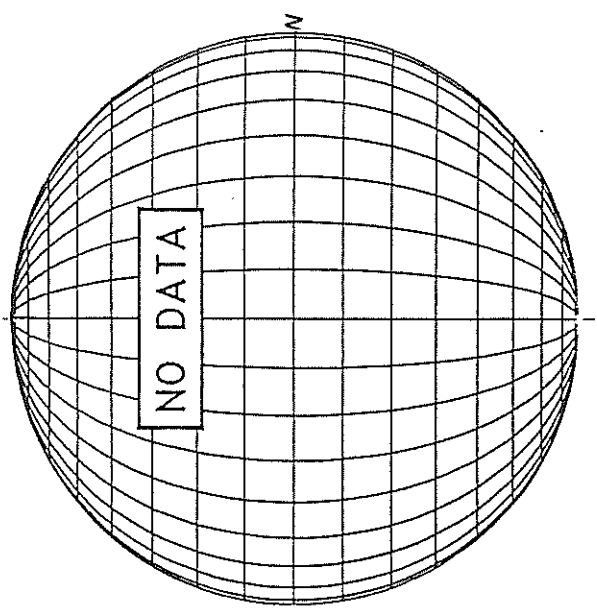
0642 UT

RAMEY SUNSPOT



1150 UT

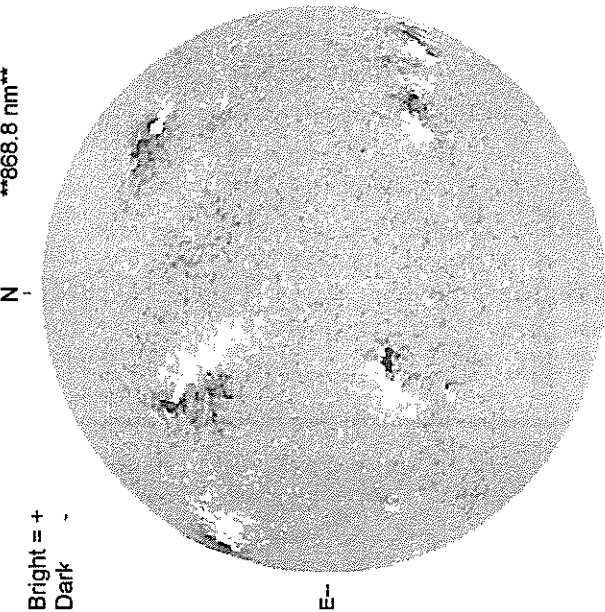
SACRAMENTO PEAK CORONA (1.15 Radii)



MAY 24, 1999 (P = -18.41, Bo = -1.67, Lo = 59.78)

KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



1603 UT

STANFORD MAGNETOGRAM

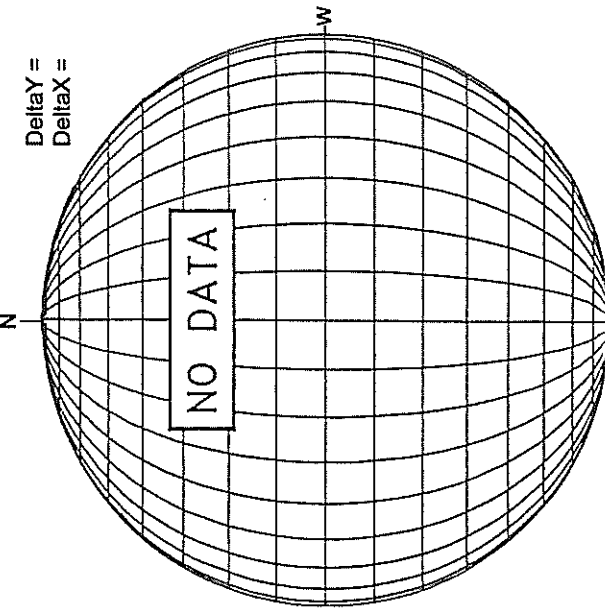
Solid = +
Dashed = -



1958 UT

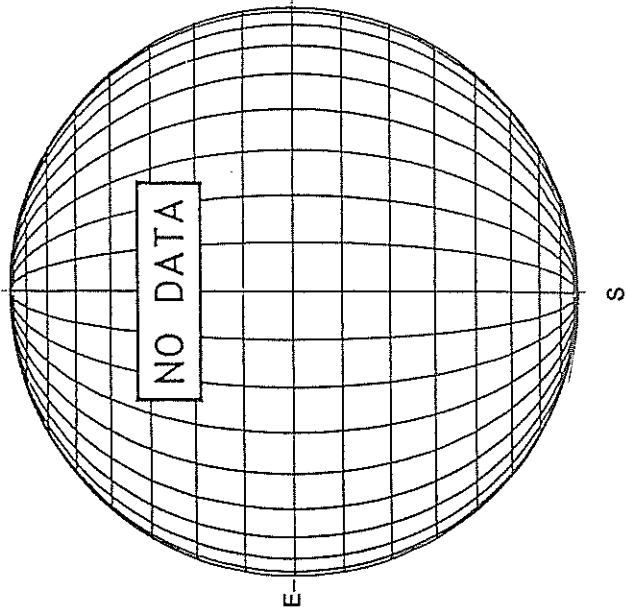
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =

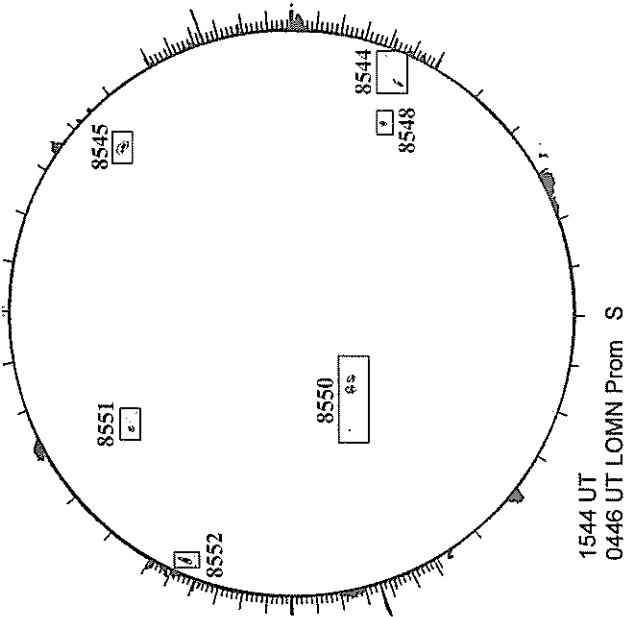


White = +7.5G
Black = -7.5G

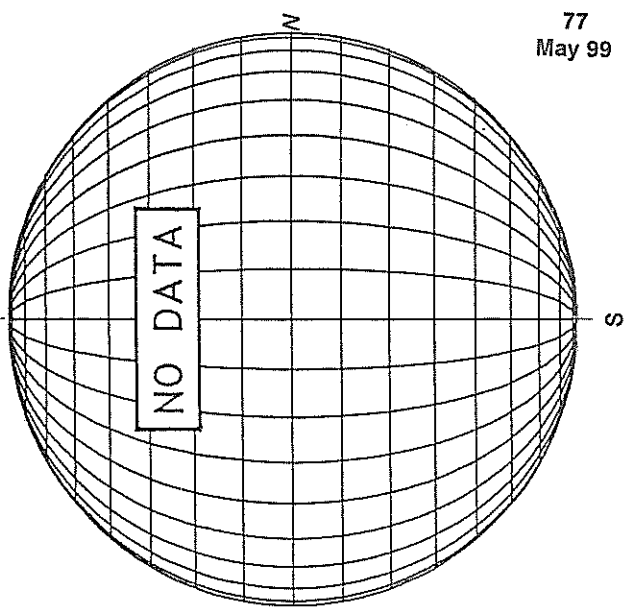
MEUDON H-ALPHA



RAMEY SUNSPOT



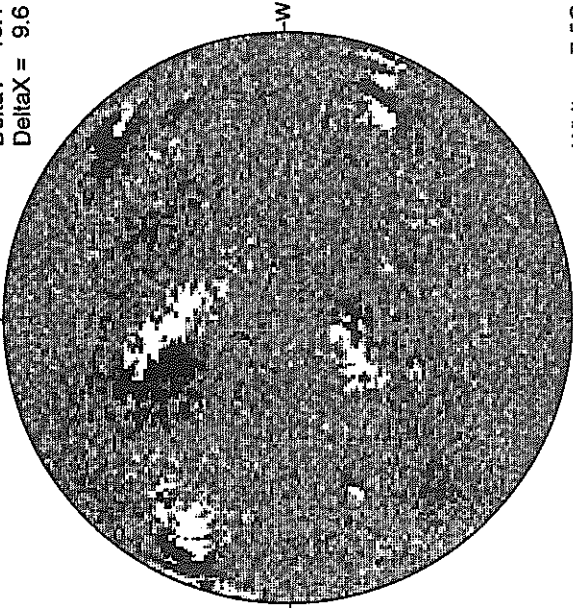
SACRAMENTO PEAK CORONA (1.15 Radii)



78
May 99

MT. WILSON MAGNETOGRAM

DeltaY = 13.1
DeltaX = 9.6



White = +7.5G
Black = -7.5G

17.46 -
18.38 UT

MAY 25, 1999 (P = -18.08, Bo = -1.55, Lo = 46.55)

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

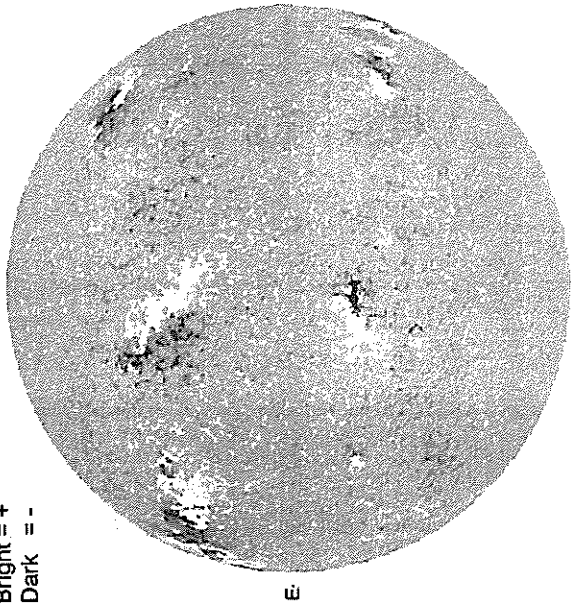


2033 UT

KITT PEAK MAGNETOGRAM

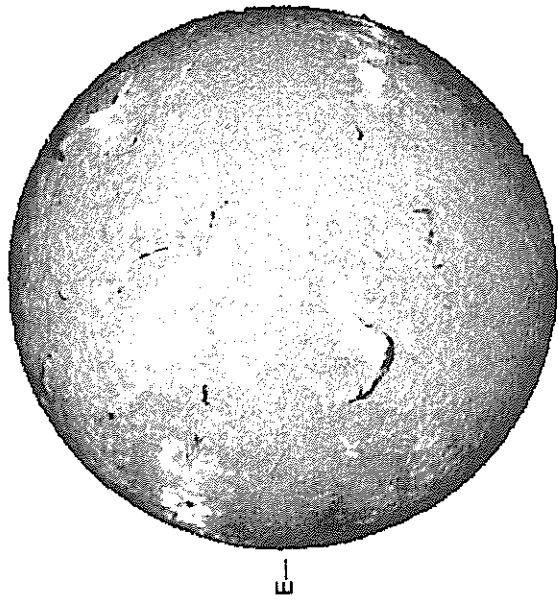
868.8 nm

Bright = +
Dark = -



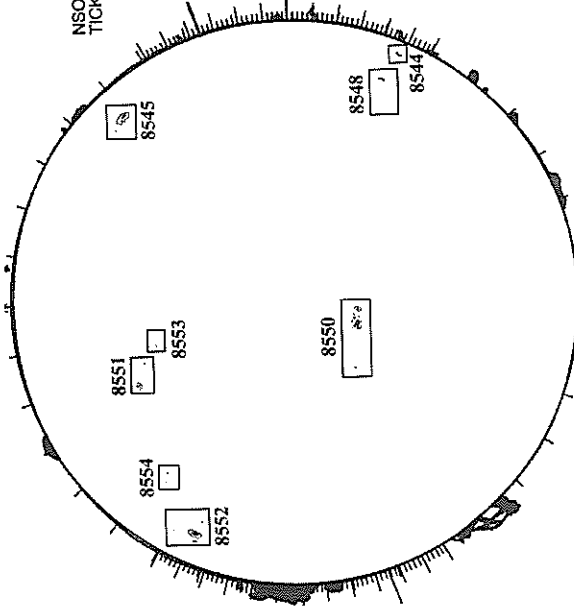
1603 UT

MEUDON H-ALPHA



1209 UT

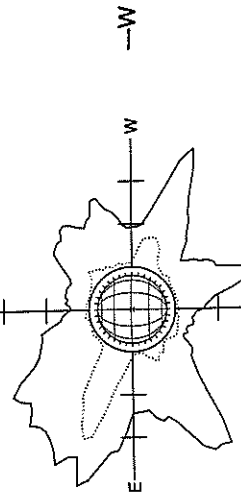
RAMEY SUNSPOT



1152 UT
0416 UT LOMIN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)---

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLION THS



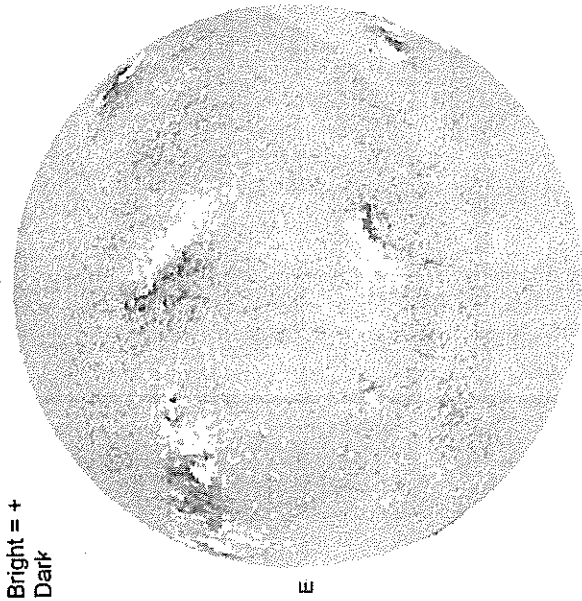
05/25/99
(DOY 145)

--- FE XIV 14:24 UT 1.15 R_o
..... FE X 15:35 UT 1.15 R_o
***** CA XV 15:10 UT 1.15 R_o
NO CA XV ACTIVITY TODAY

MAY 26, 1999 (P= -17.74, Bo = -1.43, Lo = 33.32)

KITT PEAK MAGNETOGRAM

868.8 nm



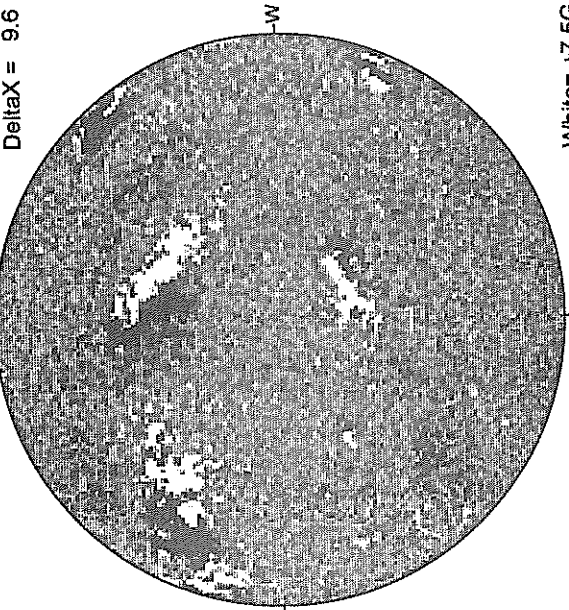
Solid = +
Dashed = -

STANFORD MAGNETOGRAM



MT. WILSON MAGNETOGRAM

Delta Y = 13.1
Delta X = 9.6



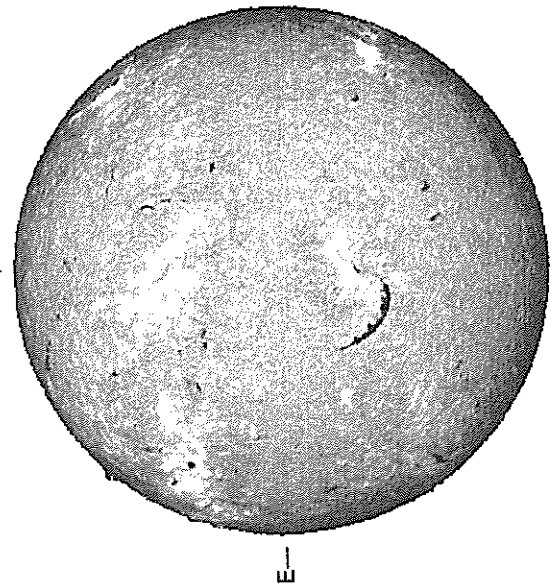
White = +7.5G
Black = -7.5G

18.15 -
19.07 UT

1929 UT

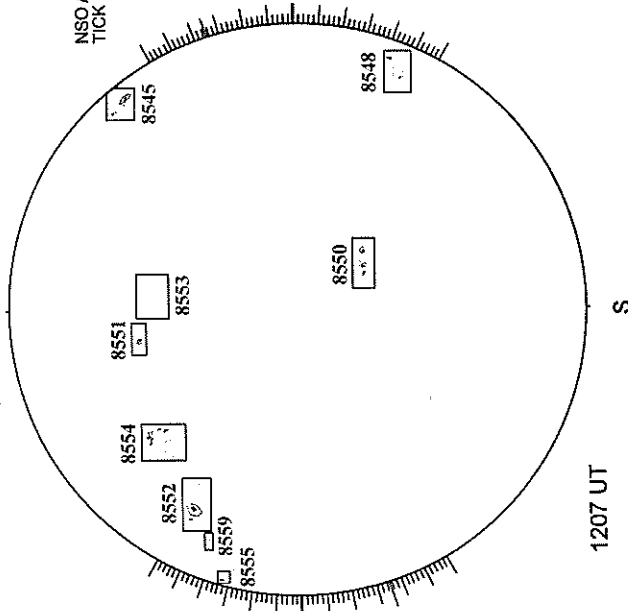
1647 UT

MEUDON H-ALPHA



0658 UT

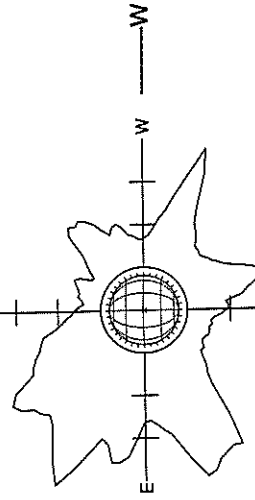
RAMEY SUNSPOT



1207 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS



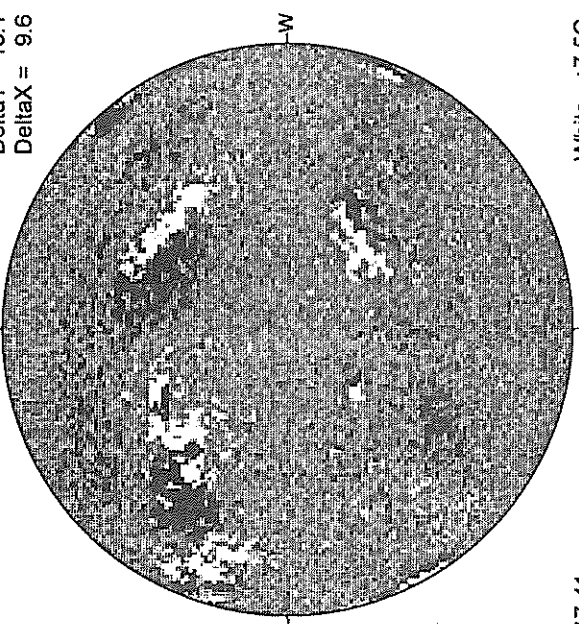
05/26/99
(DOY 146)

— FE XIV 15:16 UT 1.15 R_☉
***** CA XV 16:35 UT 1.15 R_☉
NO CA XV ACTIVITY TODAY

80
May 99

DeltaY = 13.1
DeltaX = 9.6

MT. WILSON MAGNETOGRAM



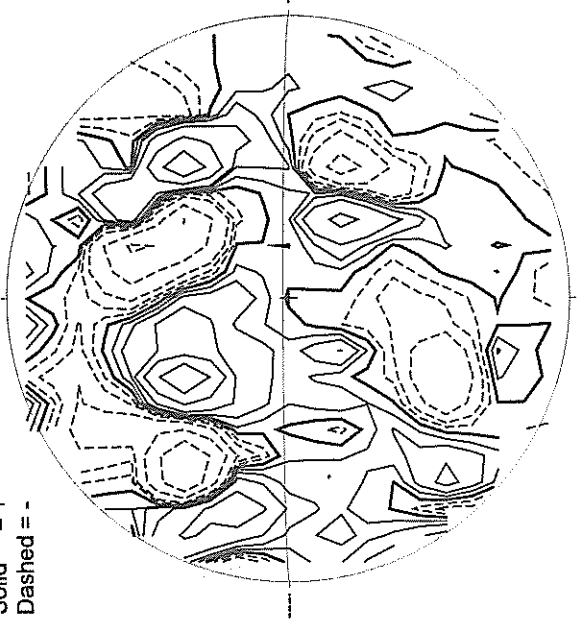
White = +7.5G
Black = -7.5G

17.41 -
18.33 UT

MAY 27, 1999 (P = -17.40, Bo = -1.31, Lo = 20.09)

STANFORD MAGNETOGRAM

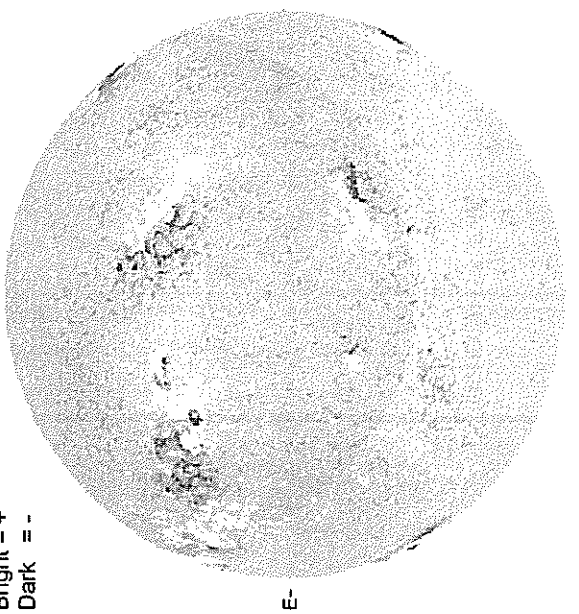
Solid = +
Dashed = -



2249 UT

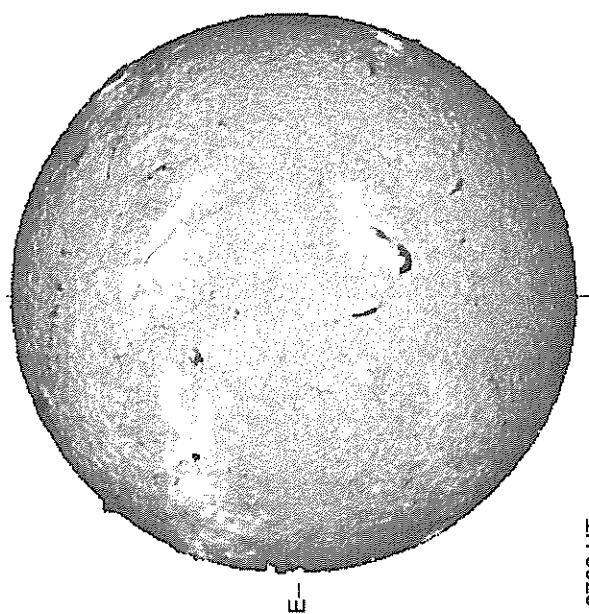
KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



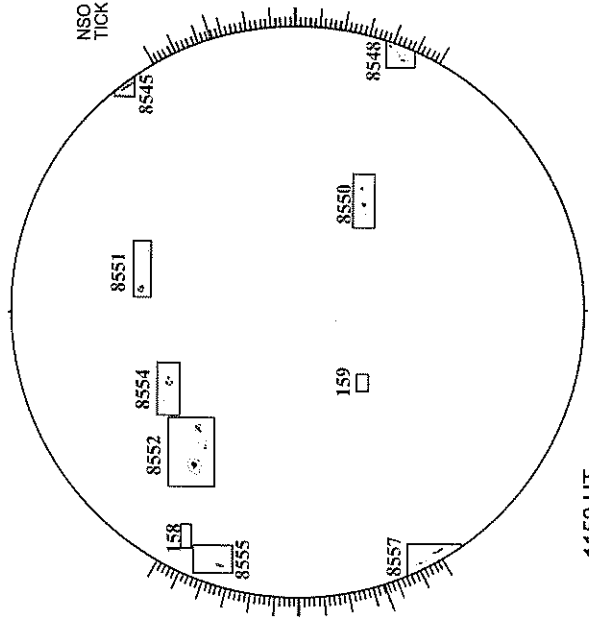
1420 UT

MEUDON H-ALPHA



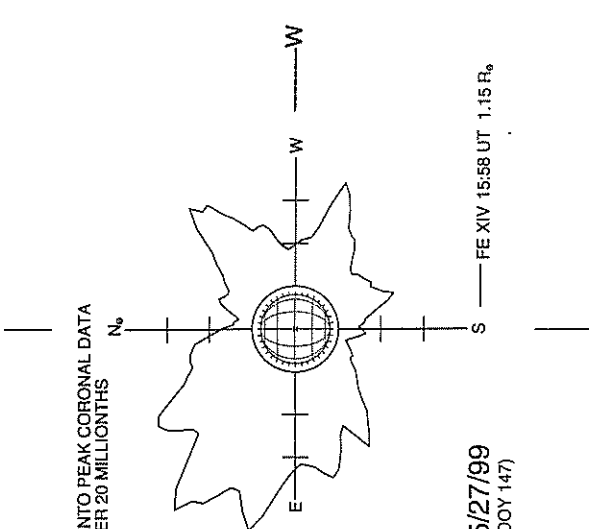
0702 UT

RAMEY SUNSPOT



1152 UT

SACRAMENTO PEAK CORONA (1.15 Radii) —



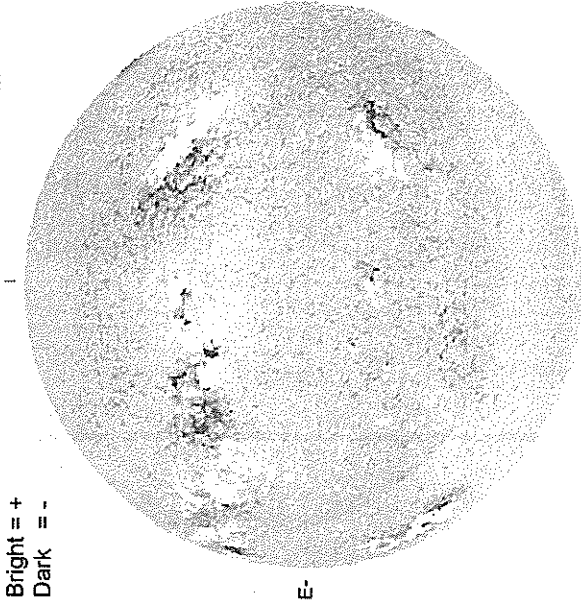
05/27/99
(DOY 147)

FE XIV 15:58 UT 1.15 R_o

MAY 28, 1999 (P = -17.05, Bo = -1.19, Lo = 6.86)

KITT PEAK MAGNETOGRAM

868.8 nm



Bright = +
Dark = -

1412 UT

STANFORD MAGNETOGRAM

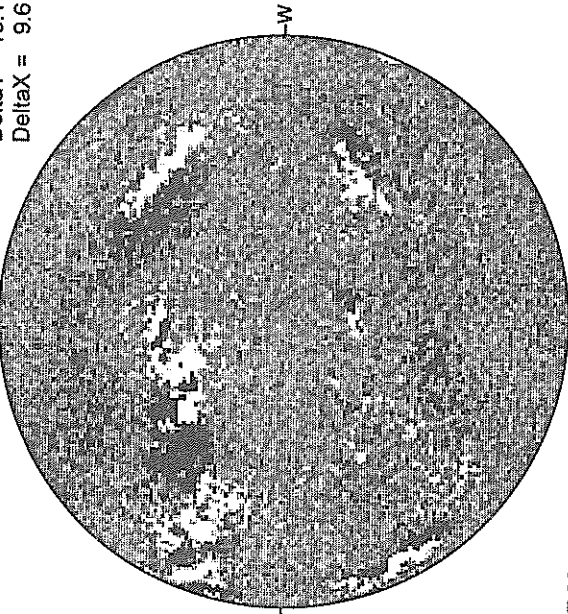
Solid = +
Dashed = -



2224 UT

MT. WILSON MAGNETOGRAM

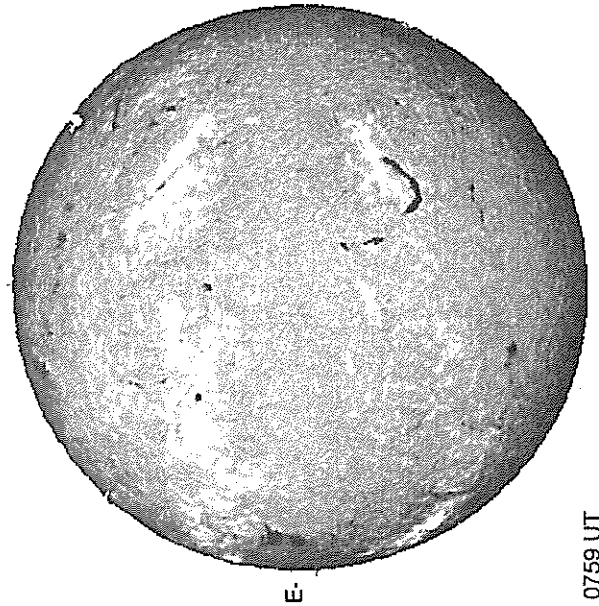
Delta Y = 13.1
Delta X = 9.6



17.33 -
18.25 UT

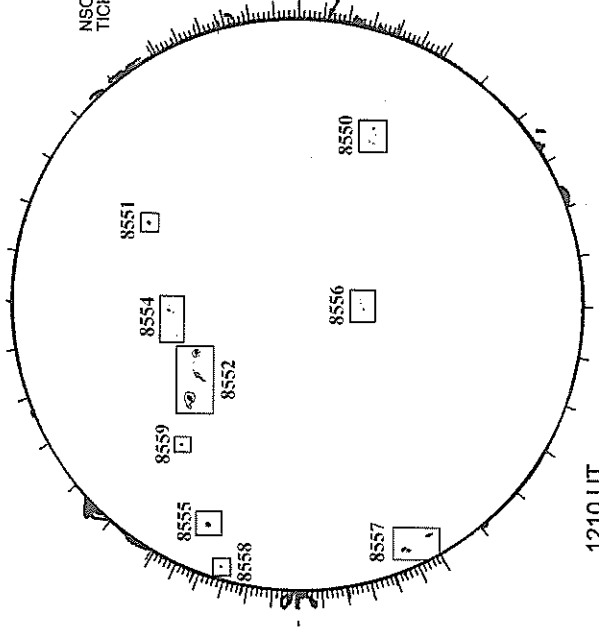
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



0759 UT

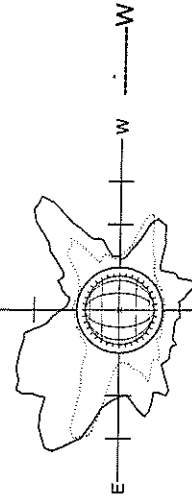
RAMEY SUNSPOT



1210 UT
0409 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)---

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 20 MILLIONTHS



05/28/99
(DOY 148)

FE XIV 14:18 UT 1.15 R_o
FE X 16:32 UT 1.15 R_o
CA XV 16:15 UT 1.15 R_o
NO CA XV ACTIVITY TODAY

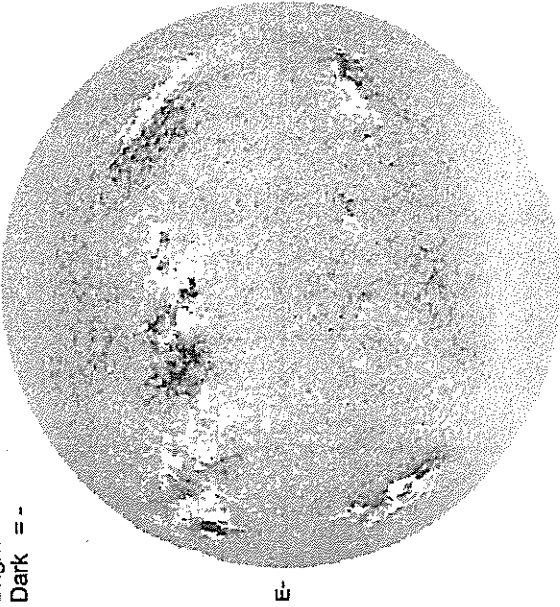
81
May 99

MAY 29, 1999 (P= -16.70, Bo = -1.07, Lo = 353.63)

KITT PEAK MAGNETOGRAM

868.8 nm

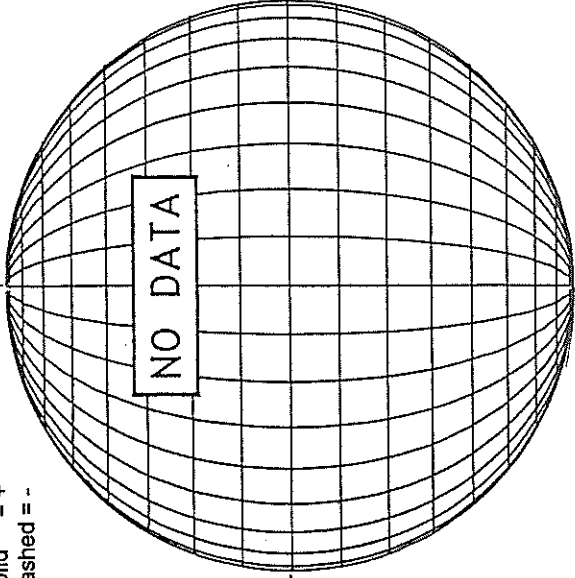
Bright = +
Dark = -



1420 UT

STANFORD MAGNETOGRAM

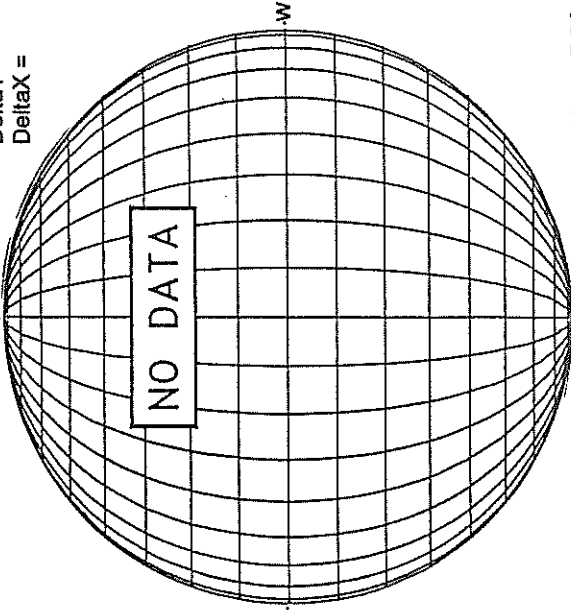
Solid = +
Dashed = -



NO DATA

MT. WILSON MAGNETOGRAM

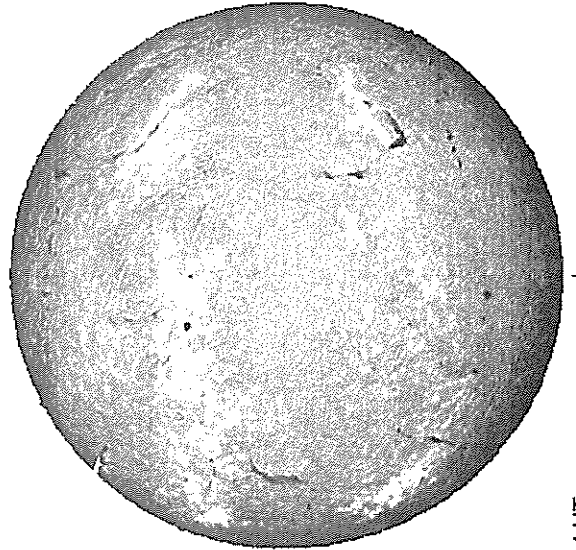
DeltaY =
DeltaX =



NO DATA

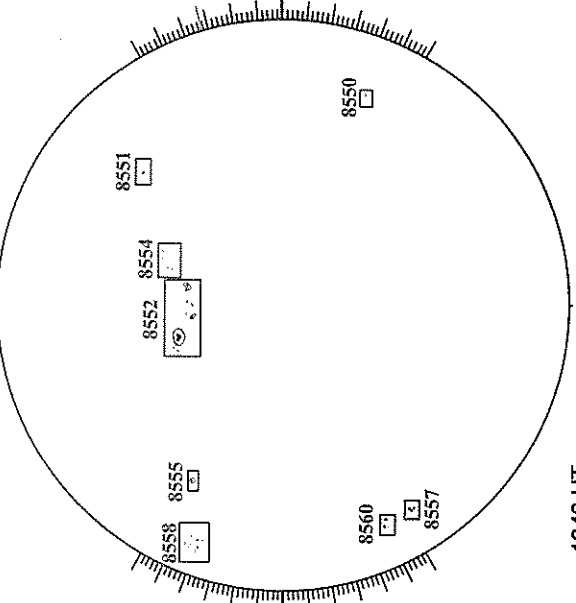
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



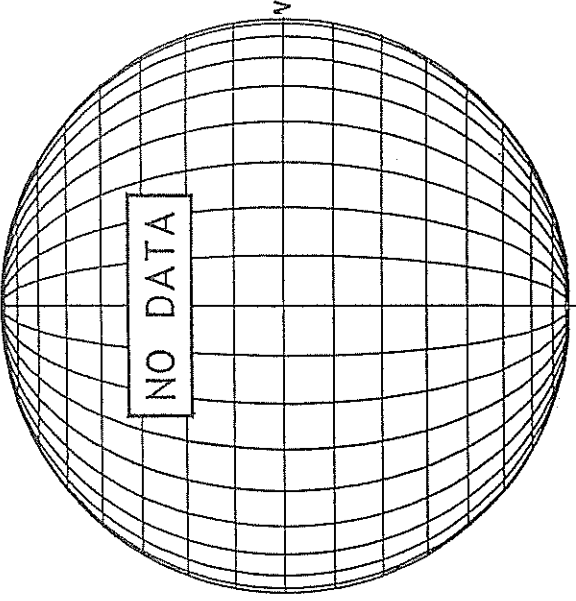
0714 UT

RAMEY SUNSPOT



1340 UT

SACRAMENTO PEAK CORONA (1.15 Radii)---



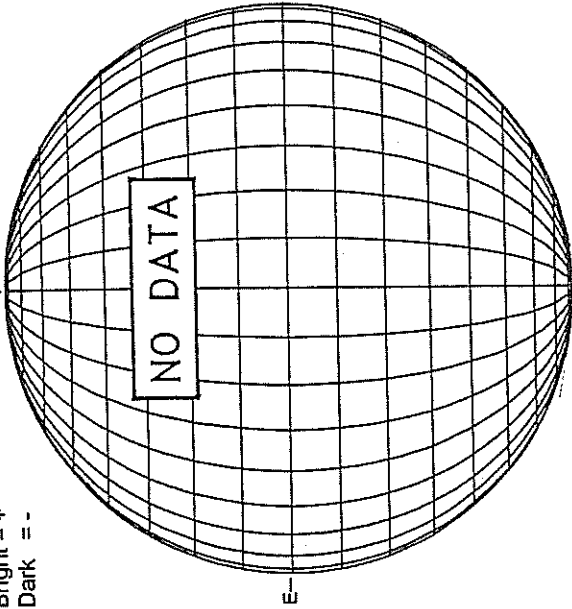
NO DATA

MAY 30, 1999 (P= -16.34, Bo = -0.95, Lo = 340.39)

KITT PEAK MAGNETOGRAM

868.8 nm

Bright = +
Dark = -



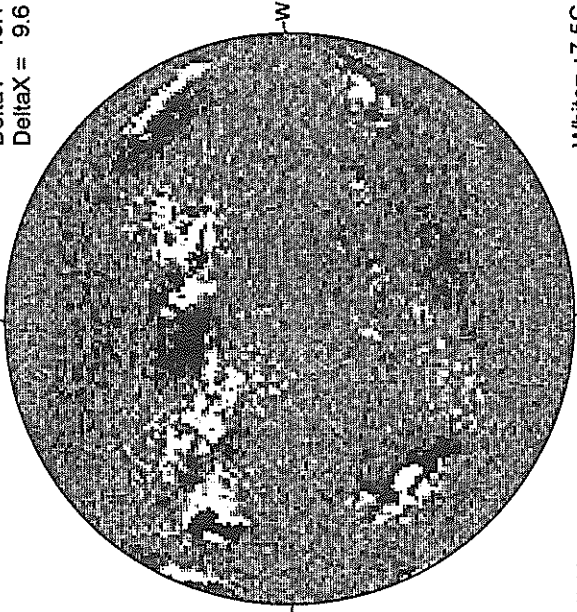
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

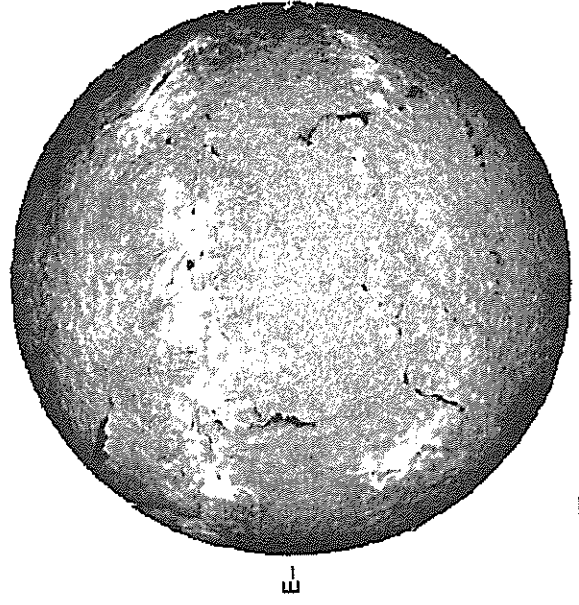
Delta Y = 13.1
Delta X = 9.6



White = +7.5G
Black = -7.5G

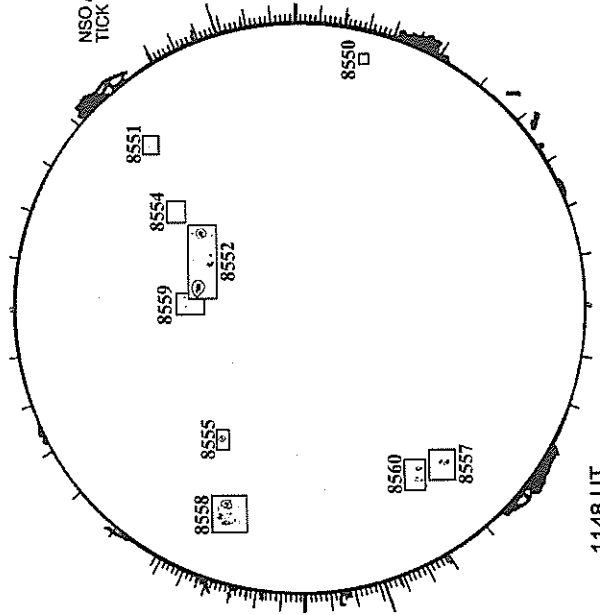
17.23 -
18.15 UT

MEUDON H-ALPHA



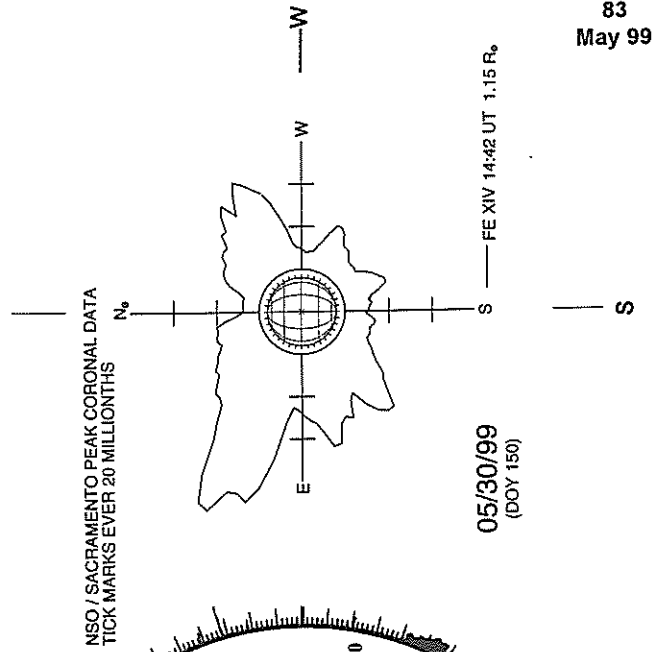
0933 UT

RAMEY SUNSPOT



1148 UT
0505 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

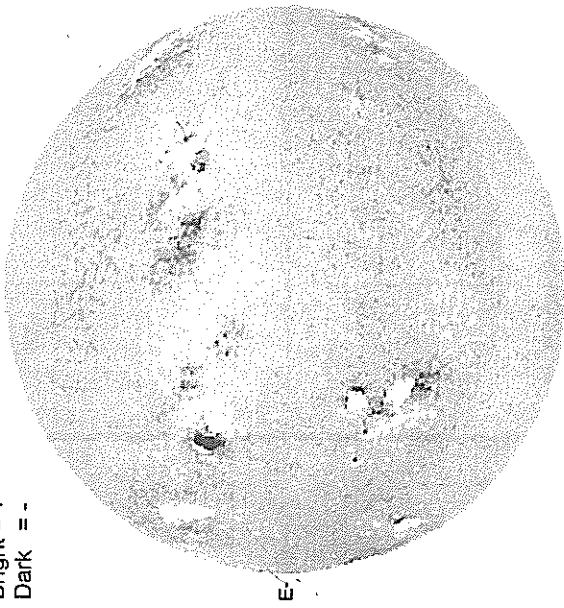


84
May 99

MAY 31, 1999 (P = -15.98, Bo = -0.83, Lo = 327.16)

KITT PEAK MAGNETOGRAM
868.8 nm

Bright = +
Dark = -



1831 UT

STANFORD MAGNETOGRAM

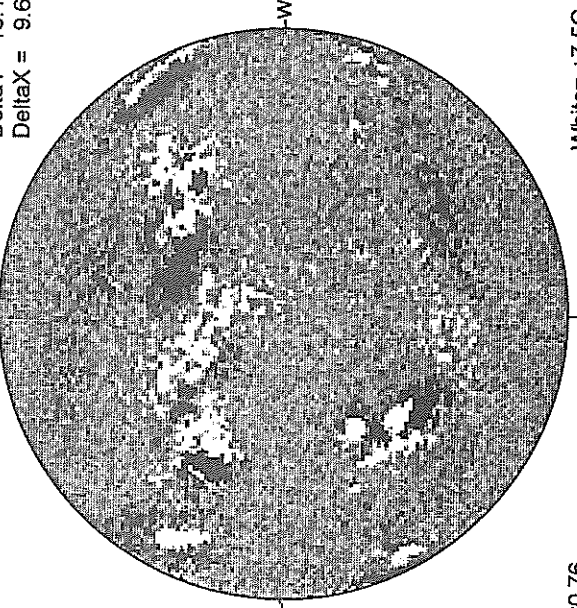
Solid = +
Dashed = -



2046 UT

MT. WILSON MAGNETOGRAM

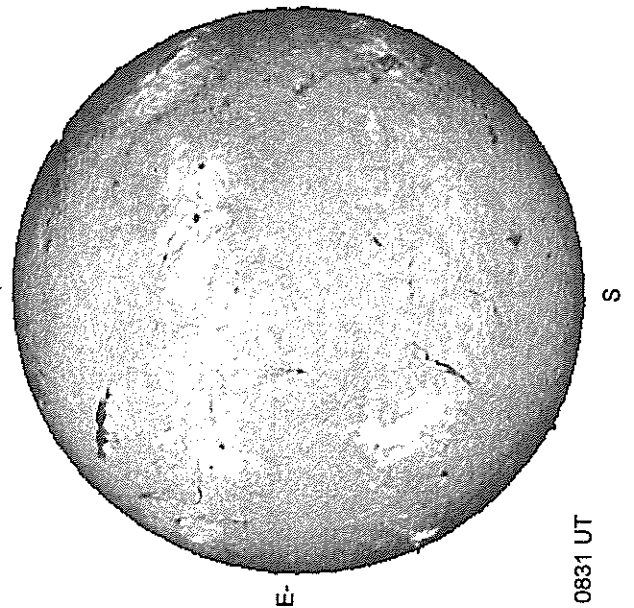
Delta Y = 13.1
Delta X = 9.6



20.76 -
21.68 UT

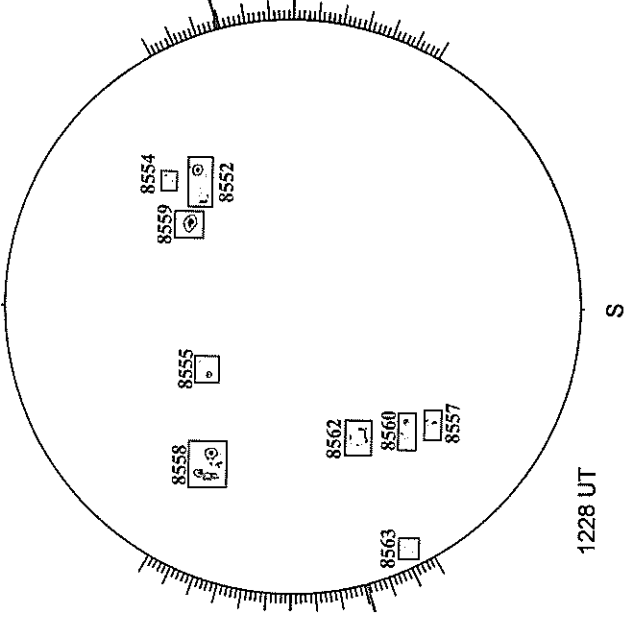
White = +7.5G
Black = -7.5G

MEUDON H-ALPHA



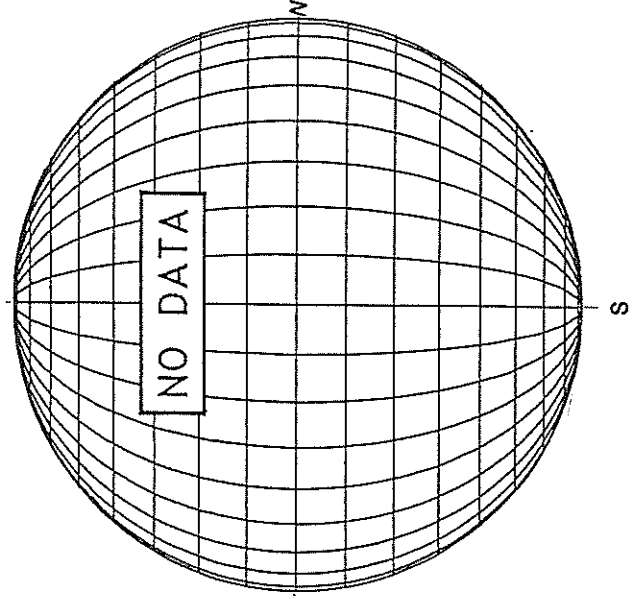
0831 UT

RAMEY SUNSPOT

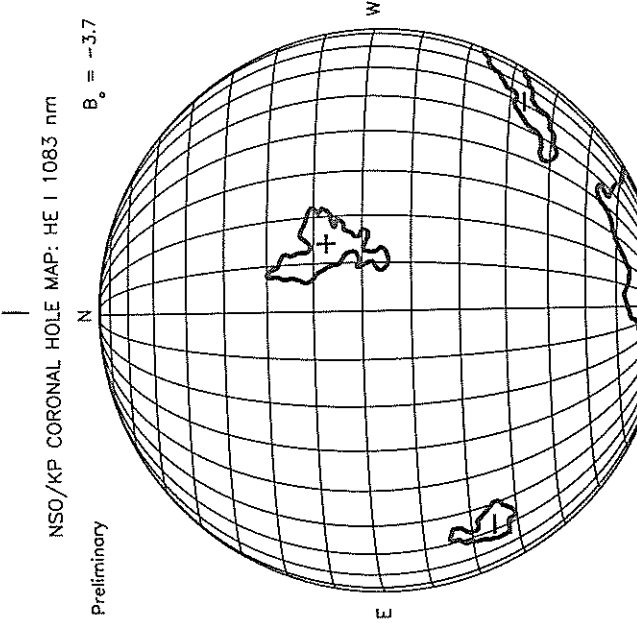
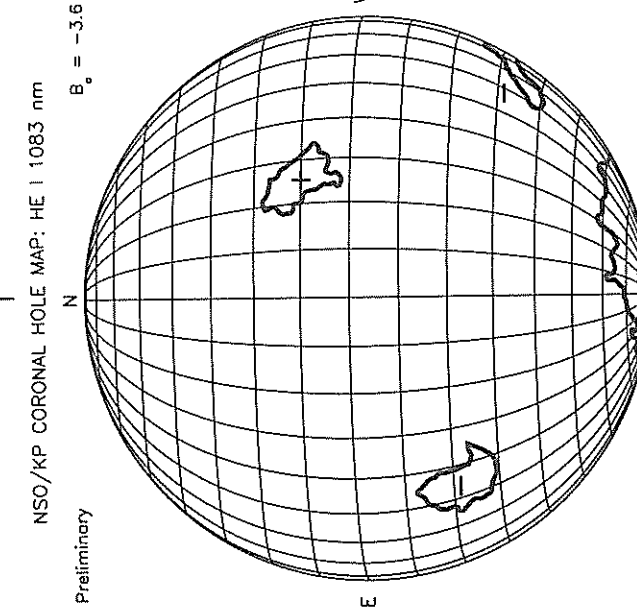
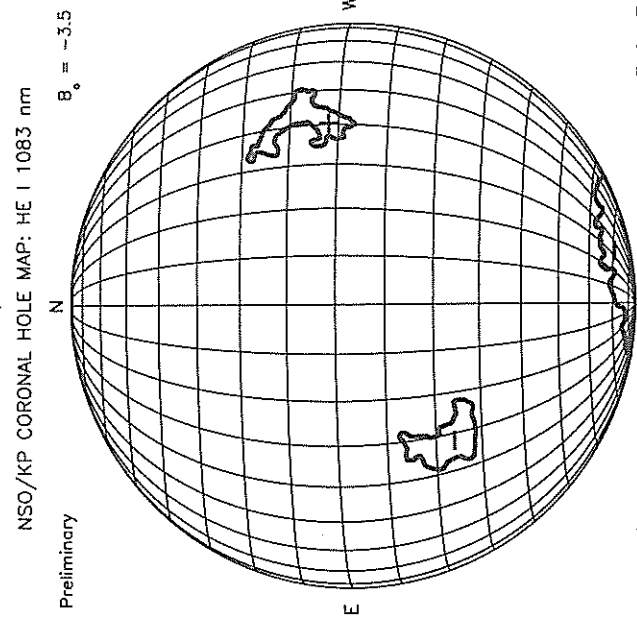
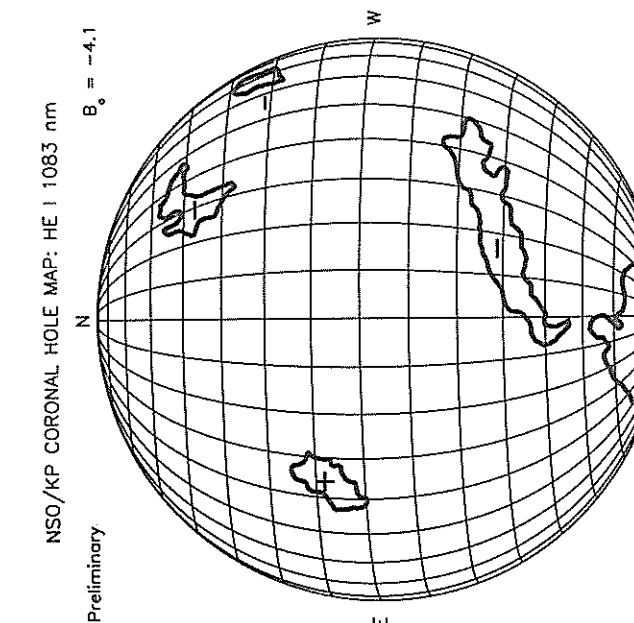
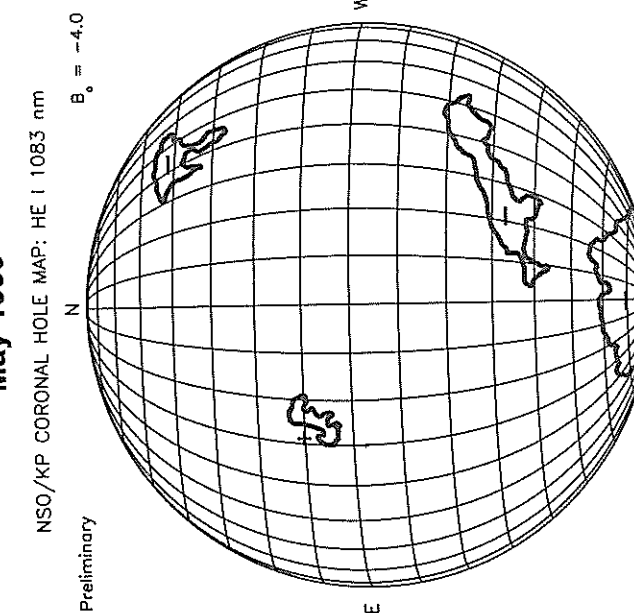
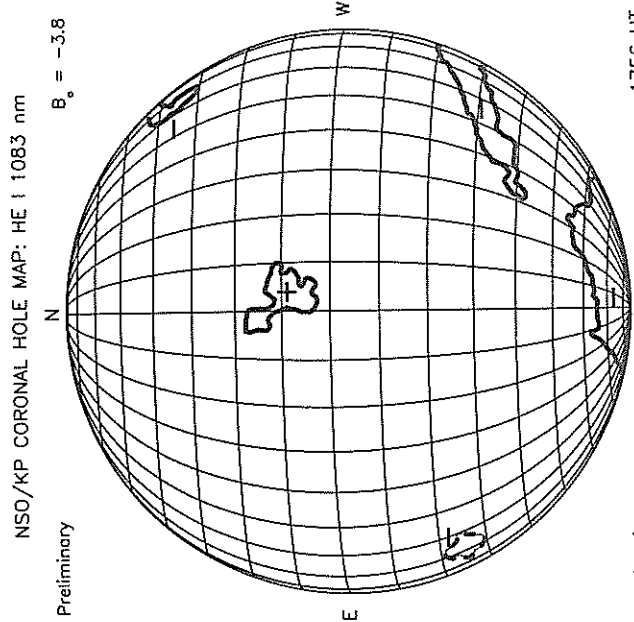


1228 UT

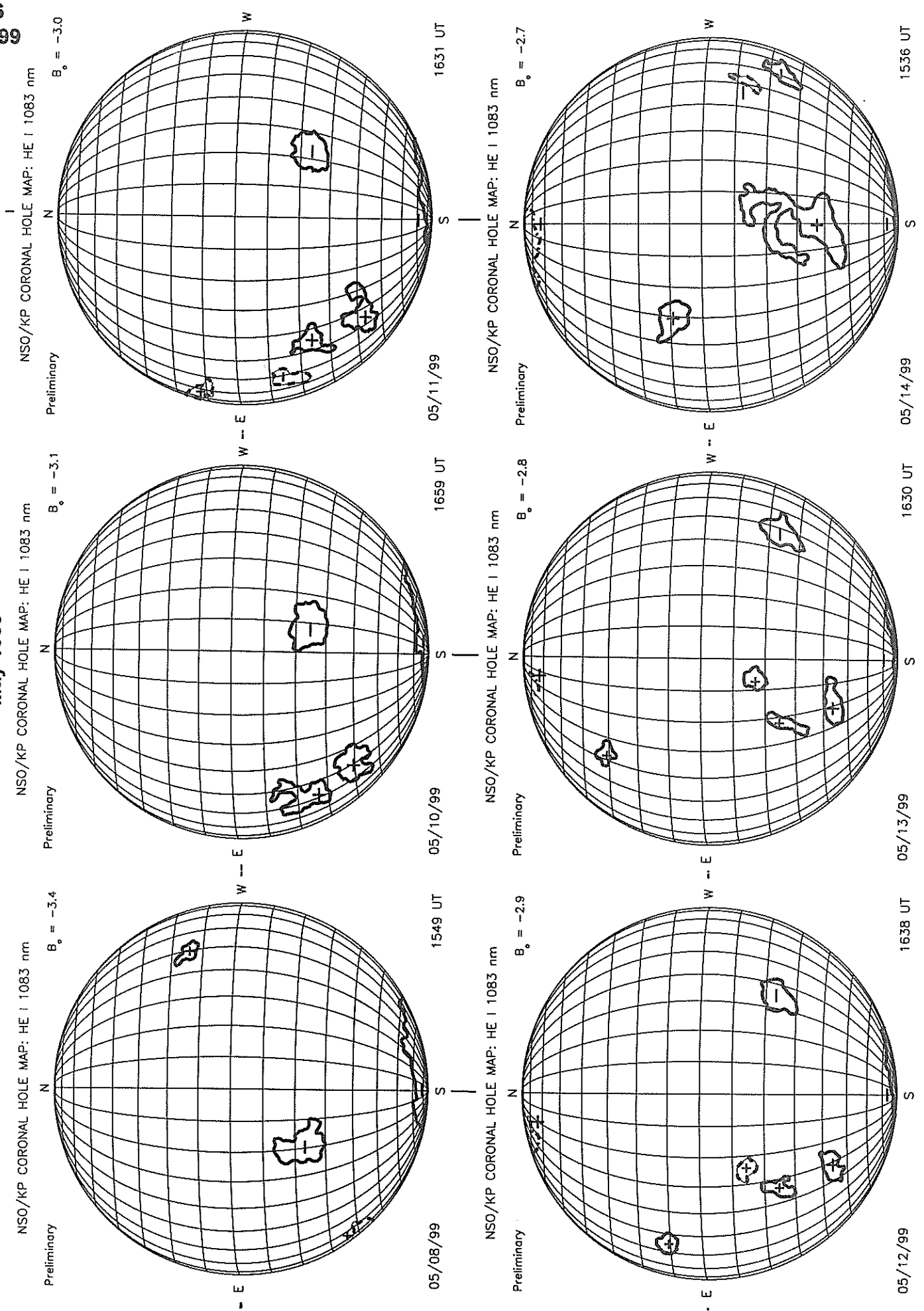
SACRAMENTO PEAK CORONA (1.15 Radii)



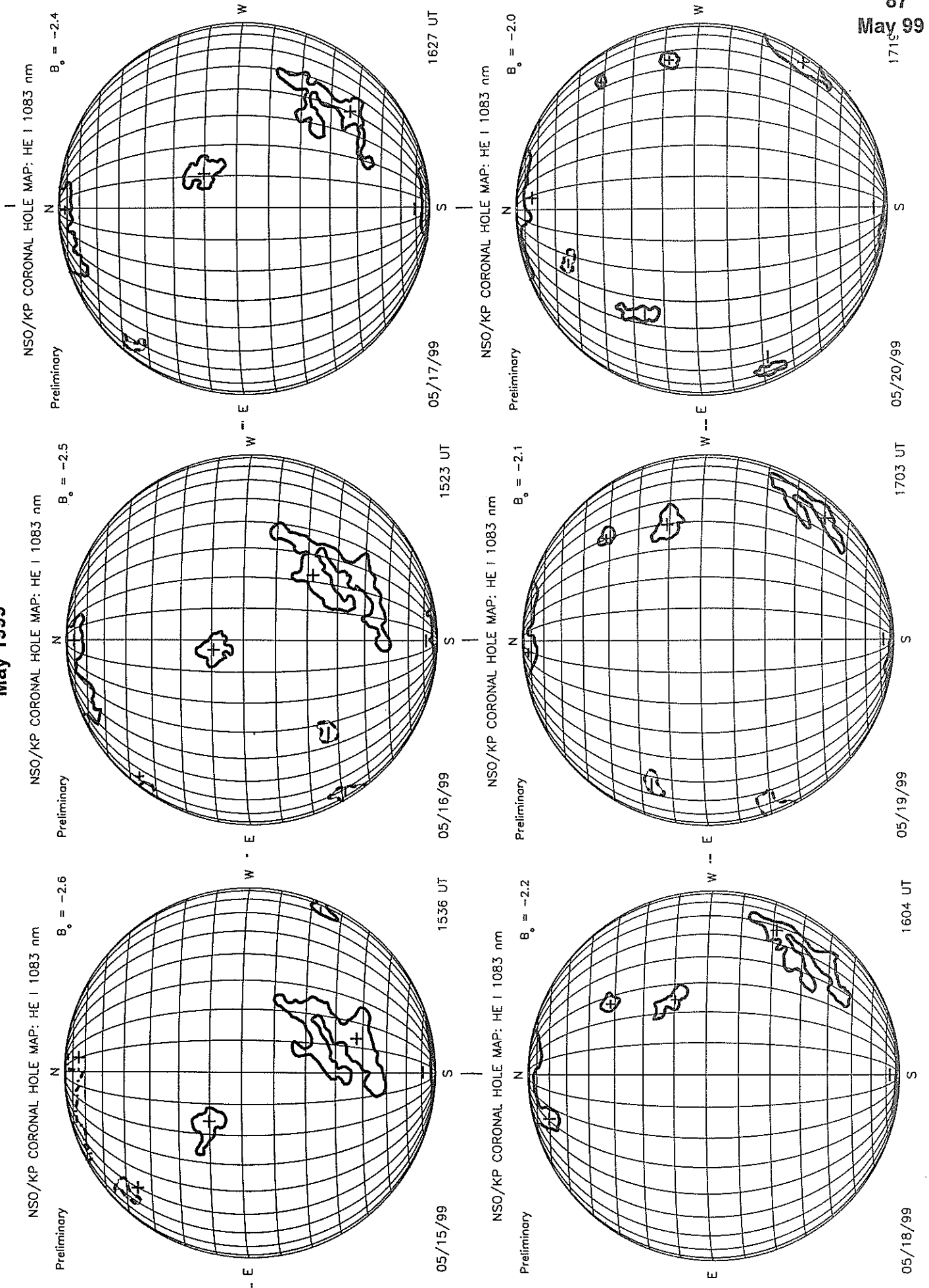
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm May 1999



KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
May 1999

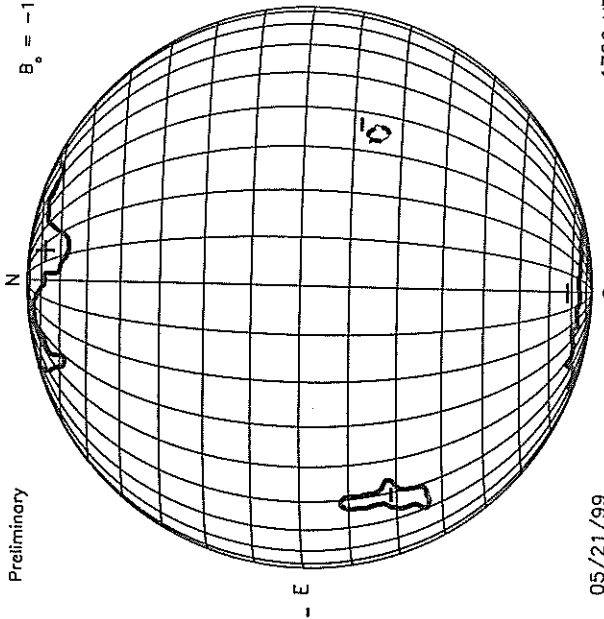


KITT PEAK CORONAL HOLE MAPS HE I 1083 nm May 1999

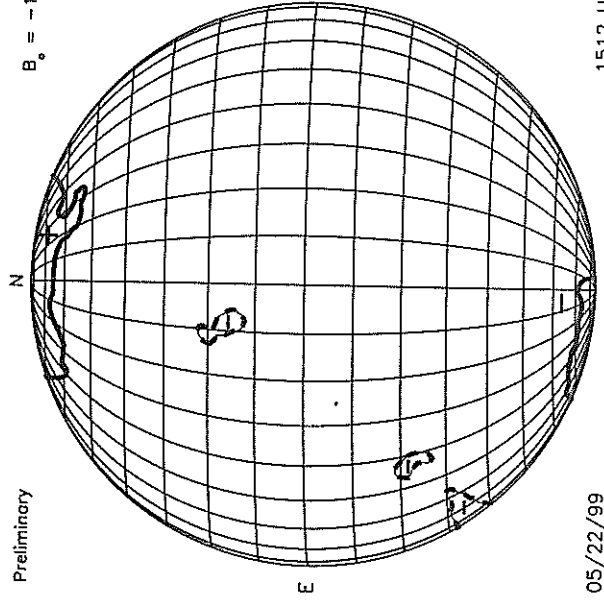


KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
May 1999

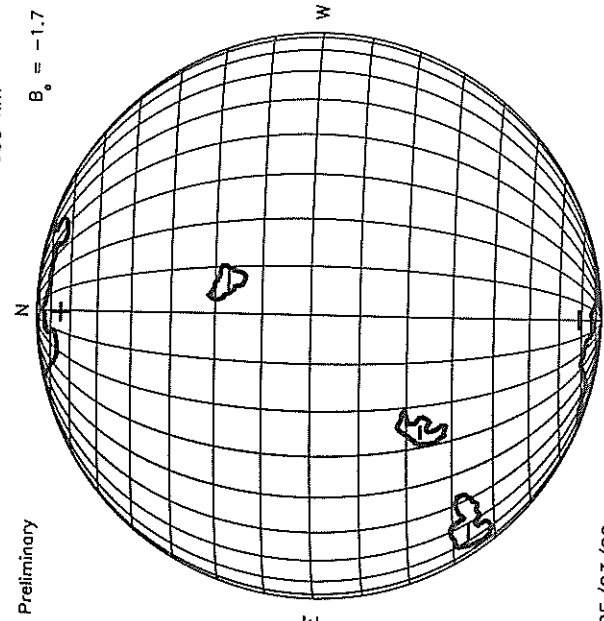
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



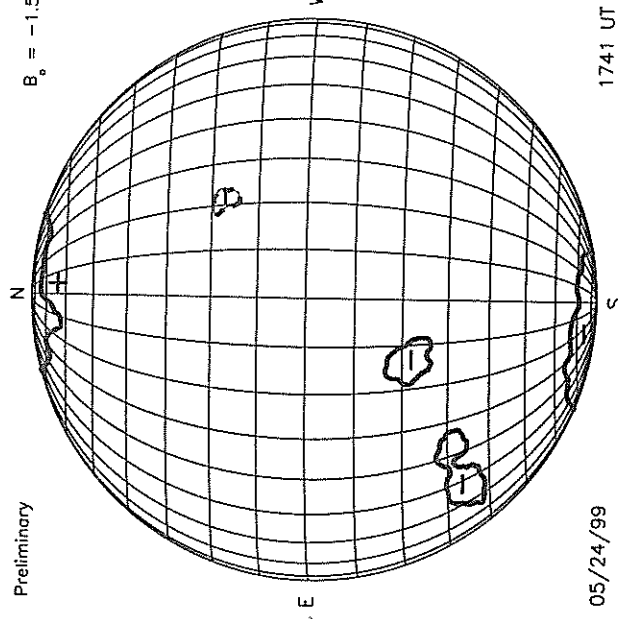
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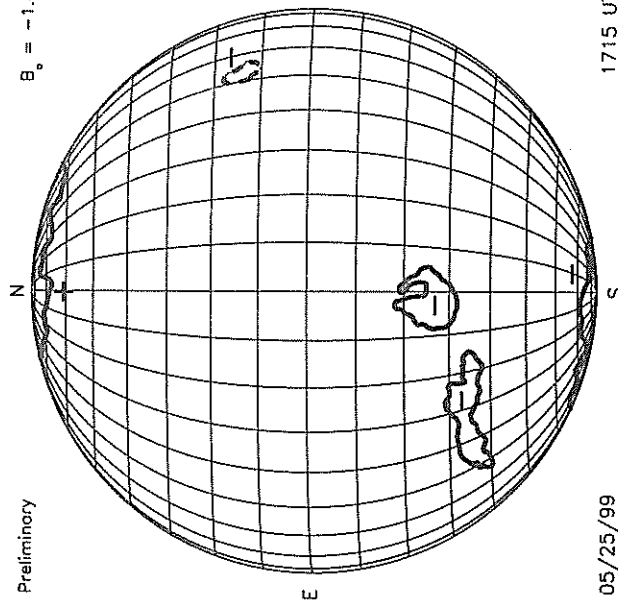
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



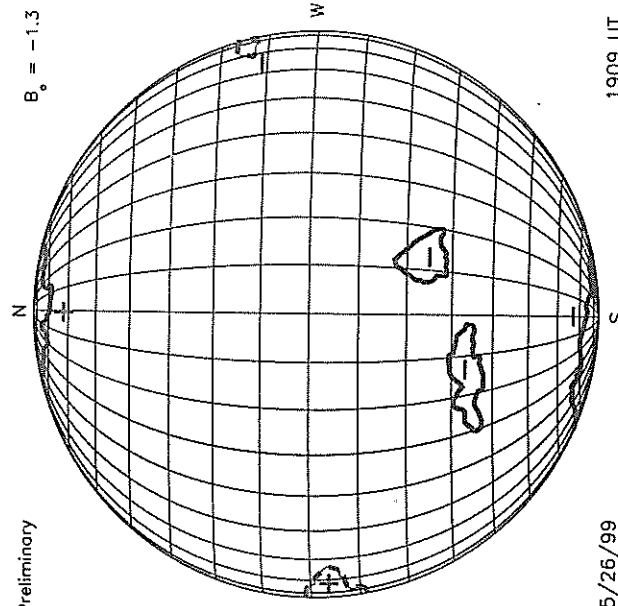
NSO/KP CORONAL HOLE MAP: HE I 1083 nm



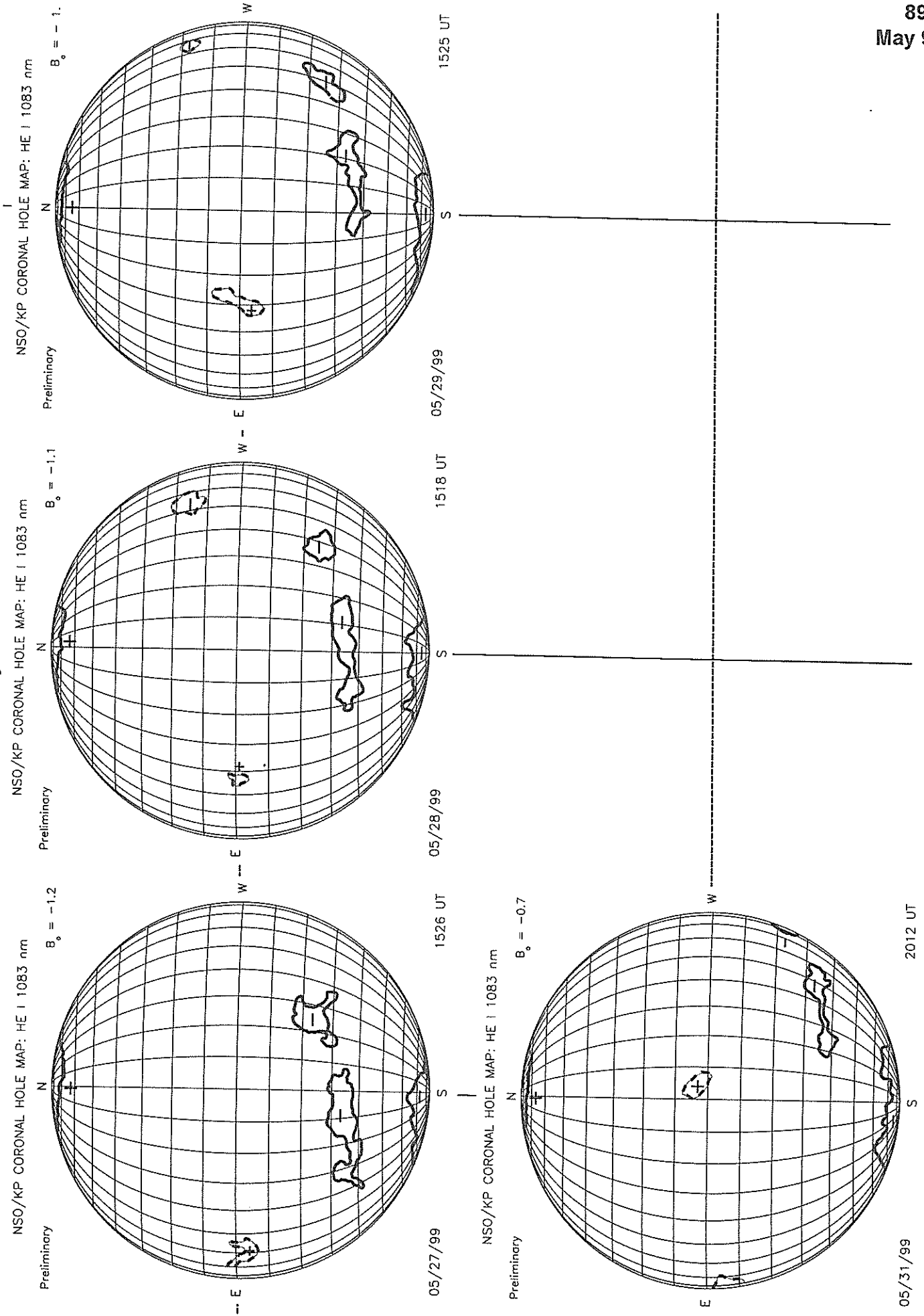
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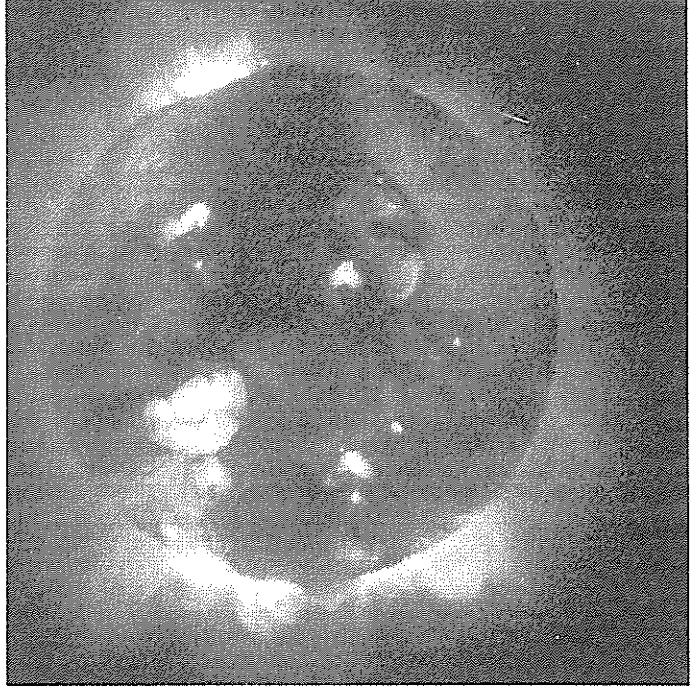
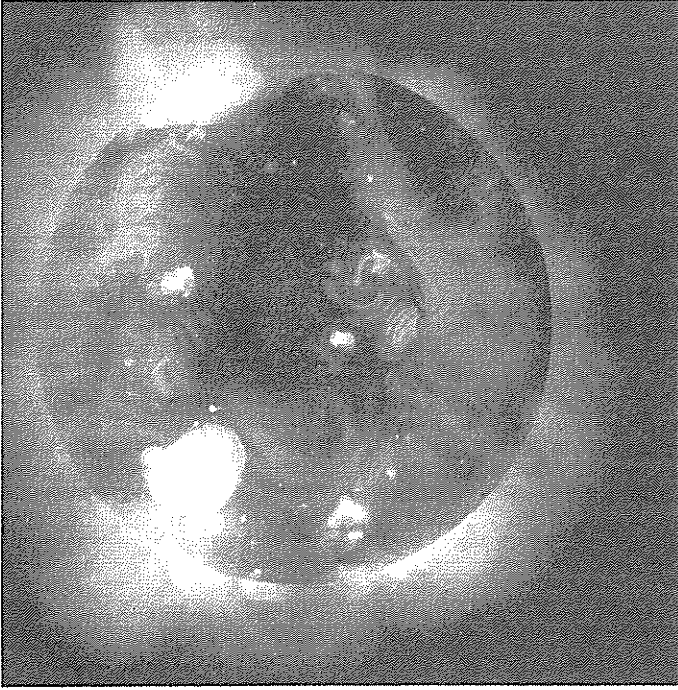


NSO/KP CORONAL HOLE MAP: HE I 1083 nm



KITT PEAK CORONAL HOLE MAPS HE I 1083 nm May 1999



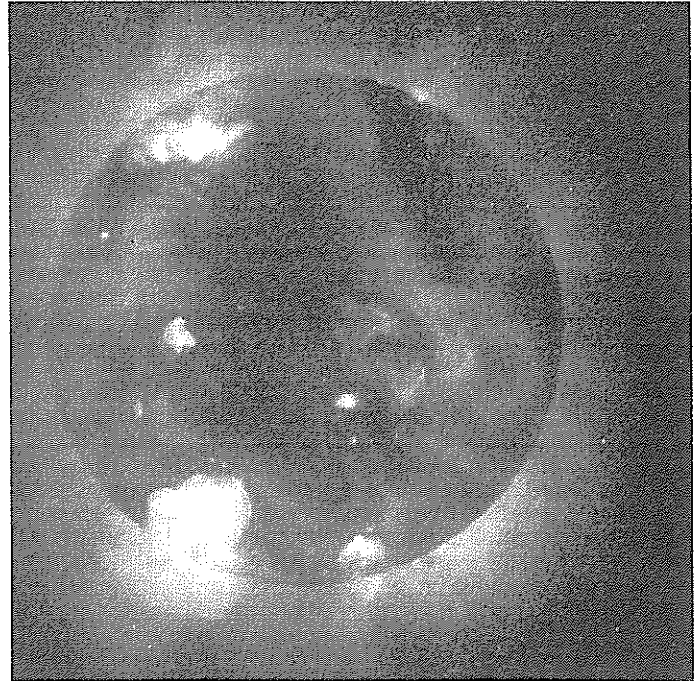
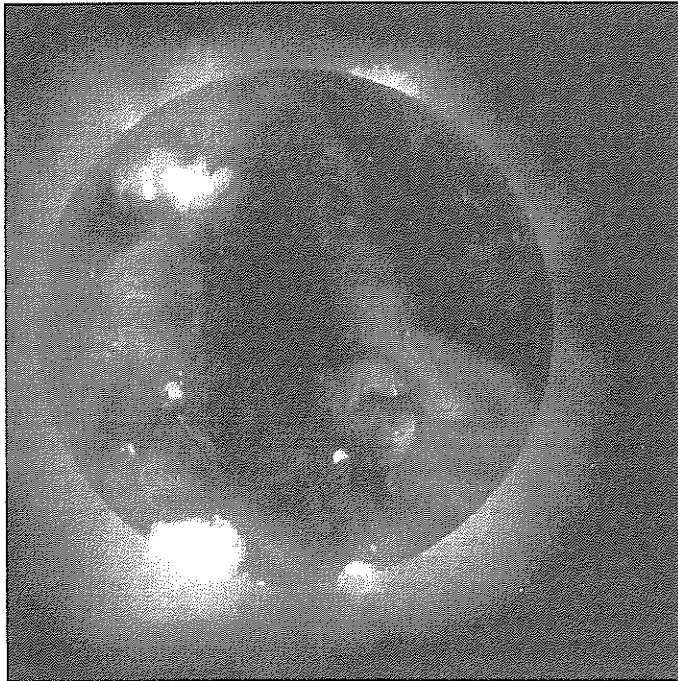


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 1
12:11:42 UT

Day 3
11:49:08 UT



Day 2
12:19:24 UT

Day 4
12:02:20 UT

YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 1 12:11:42 UT
Day 3 11:49:08 UT

Day 2 12:19:24 UT
Day 4 12:02:20 UT



YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

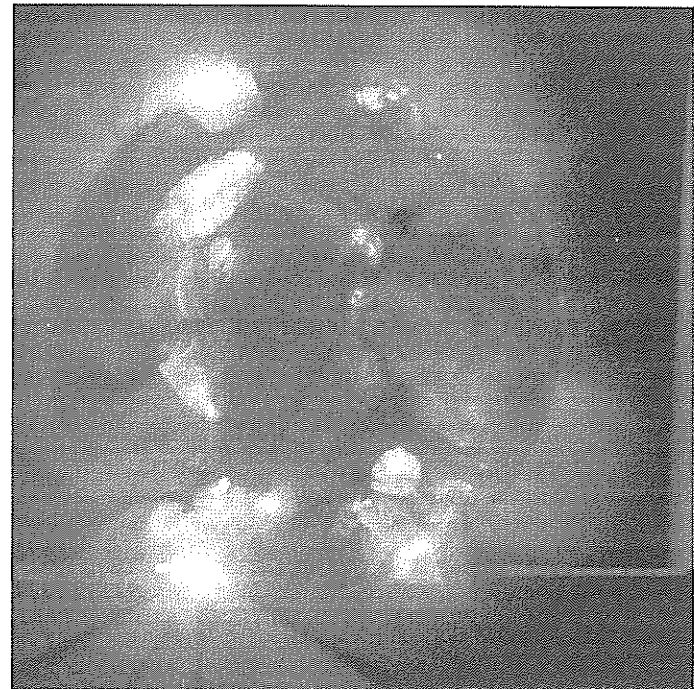
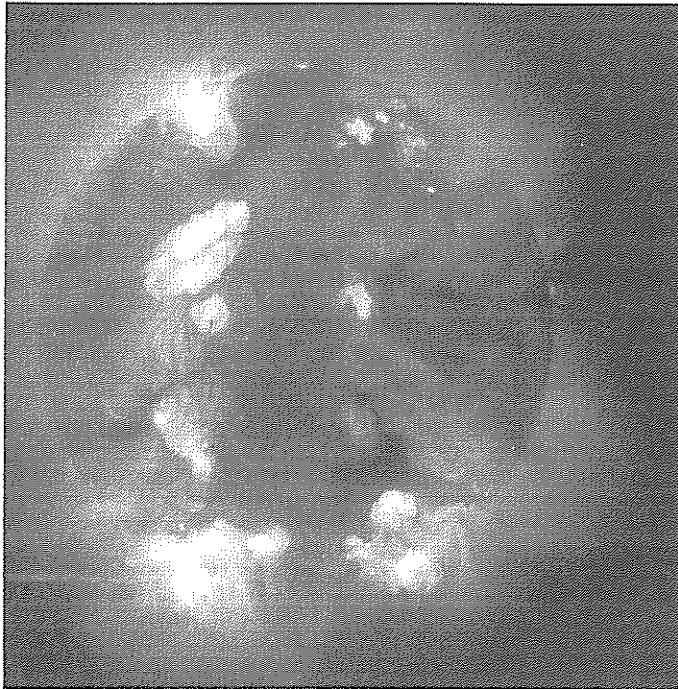
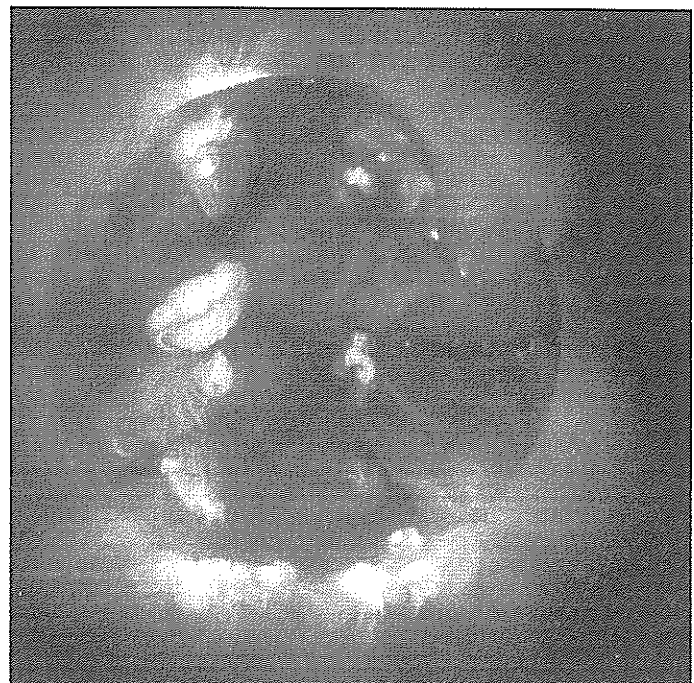
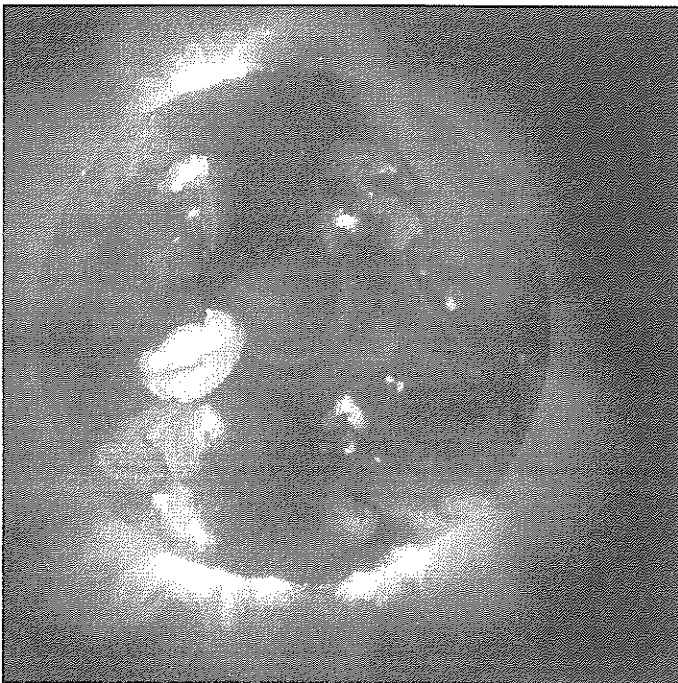
May
1999

Day 5
12:11:29 UT

Day 7
11:12:57 UT

Day 6
11:43:55 UT

Day 8
11:13:07 UT

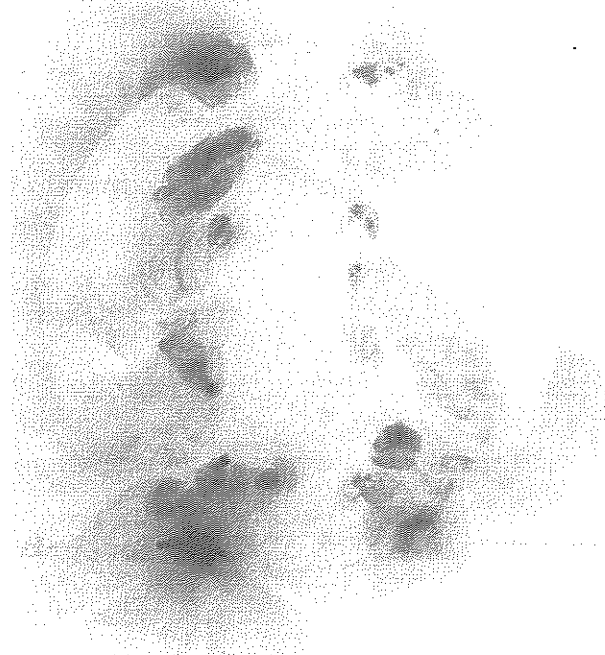
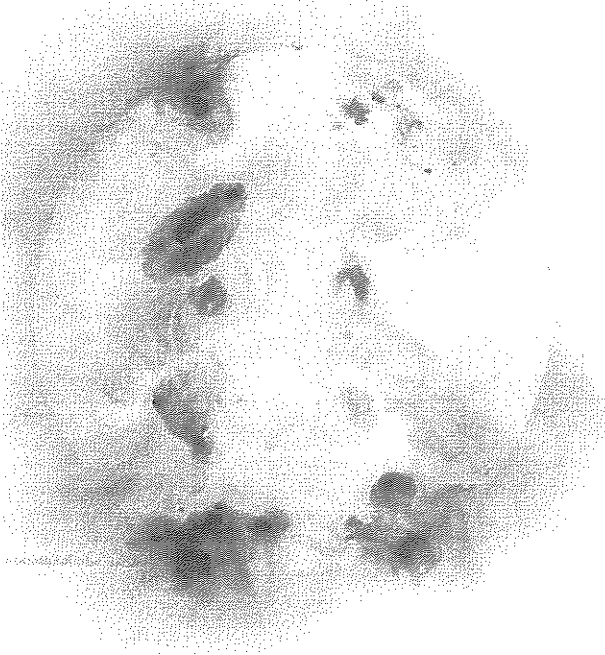
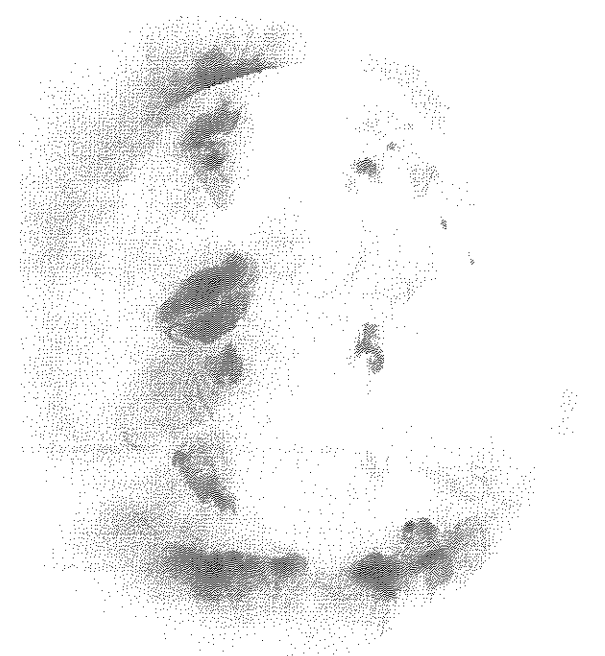


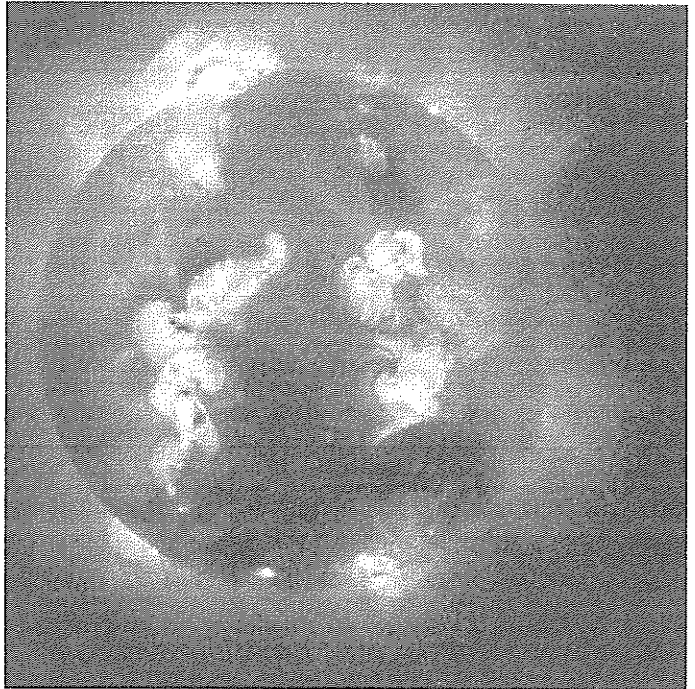
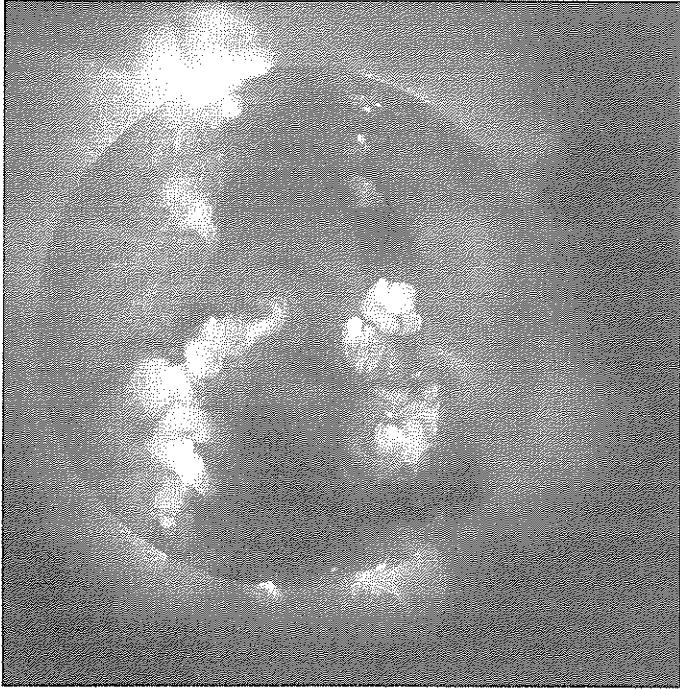
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 5 Day 7
12:11:29 UT 11:12:57 UT

Day 6 Day 8
11:43:55 UT 11:13:07 UT



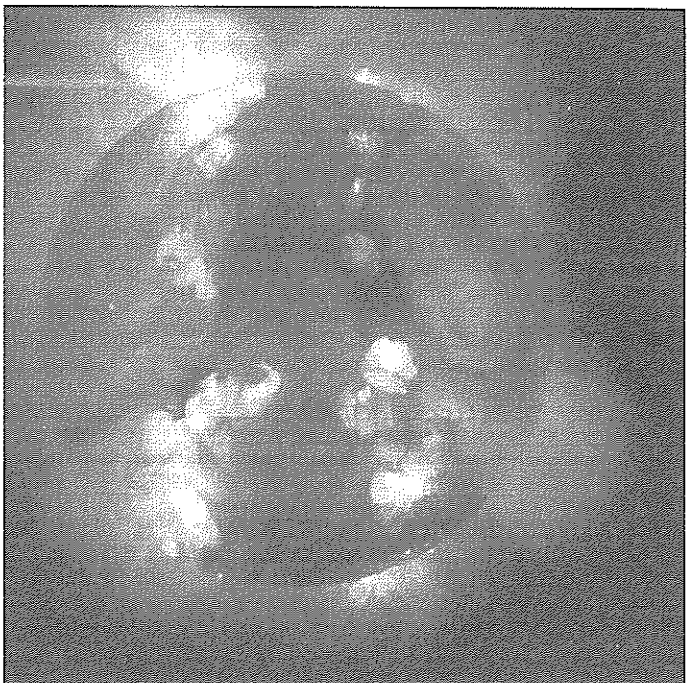
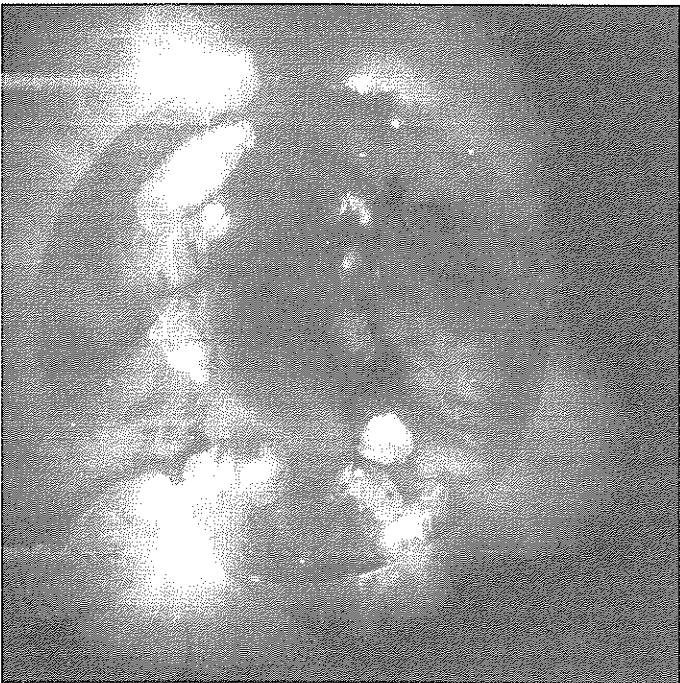


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 9 Day 11
00:16:25 UT 12:15:38 UT

Day 10 Day 12
11:58:46 UT 12:25:14 UT

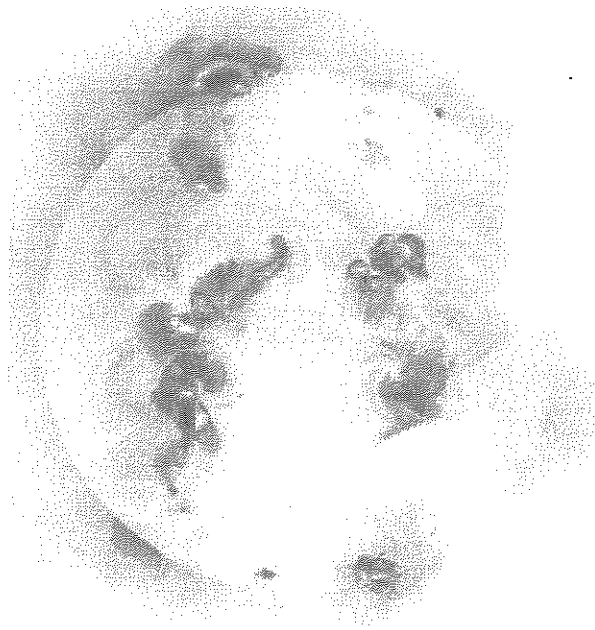
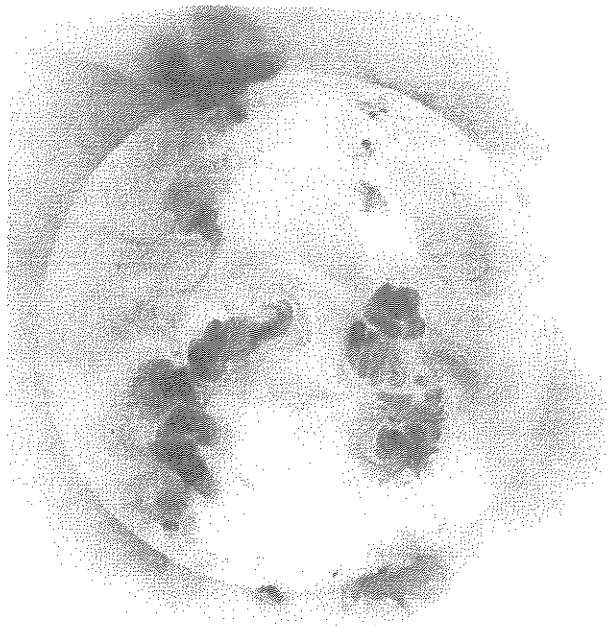
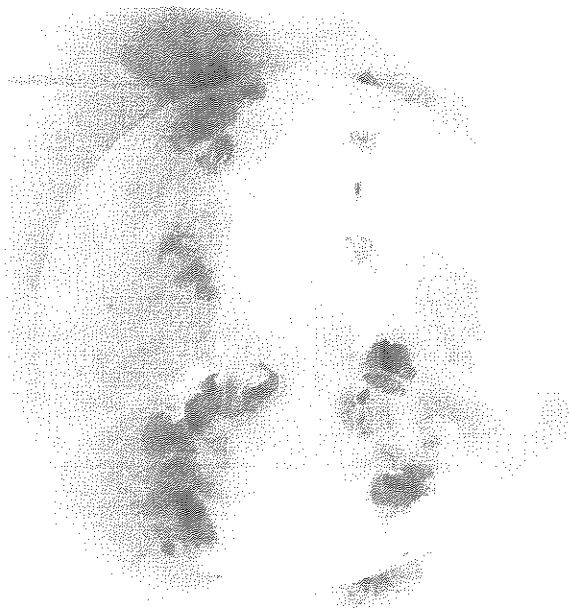


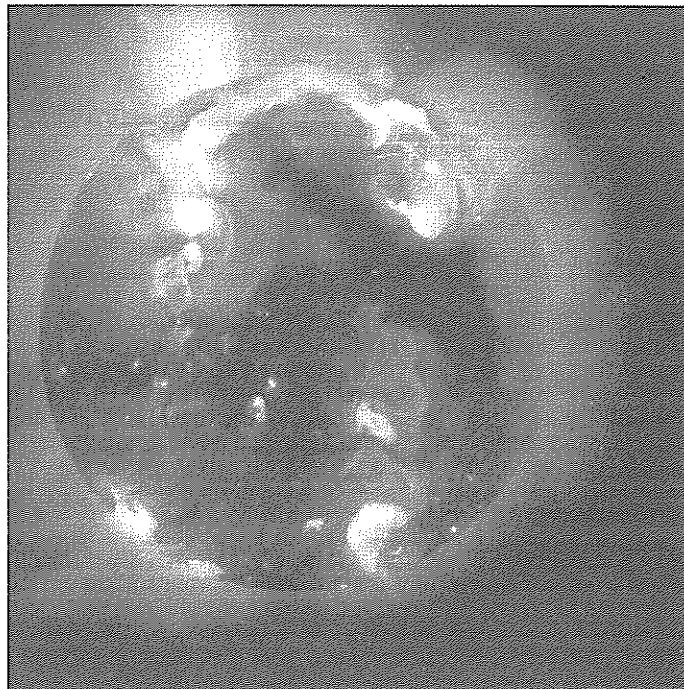
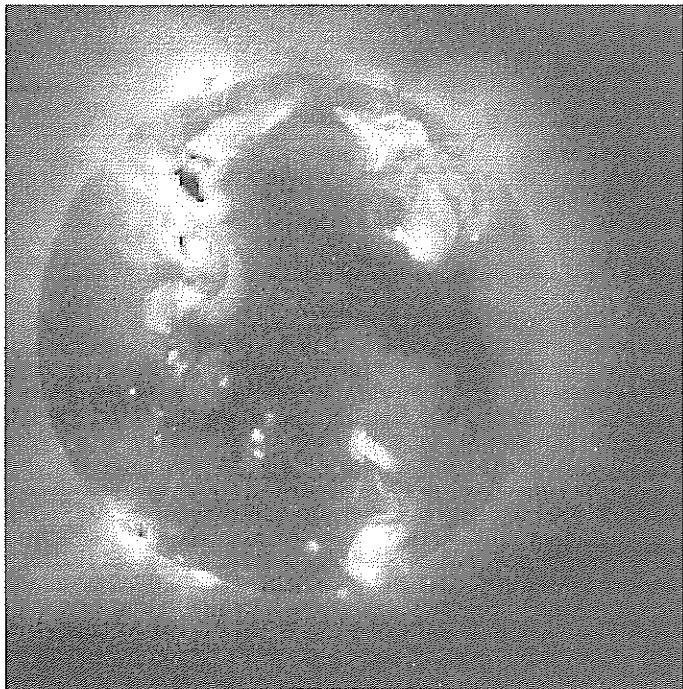
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 9 Day 11
00:16:25 UT 12:15:38 UT

Day 10 Day 12
11:58:46 UT 12:25:14 UT



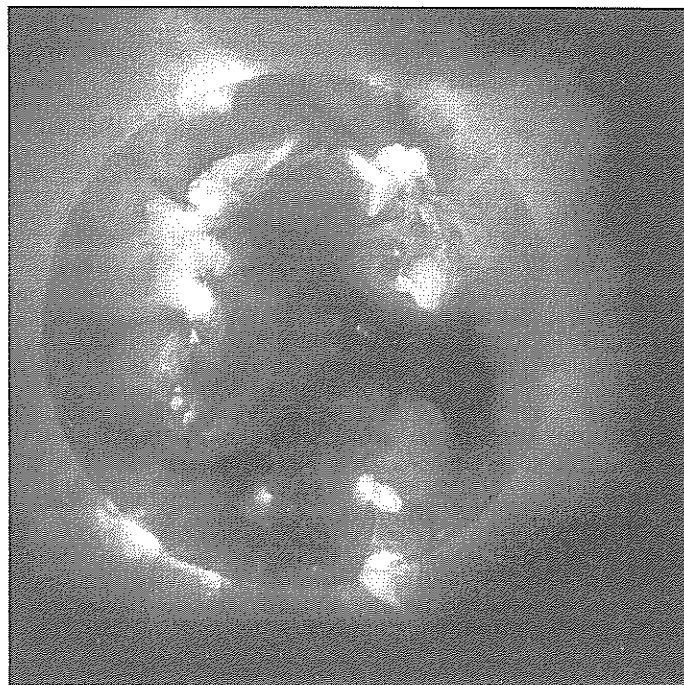
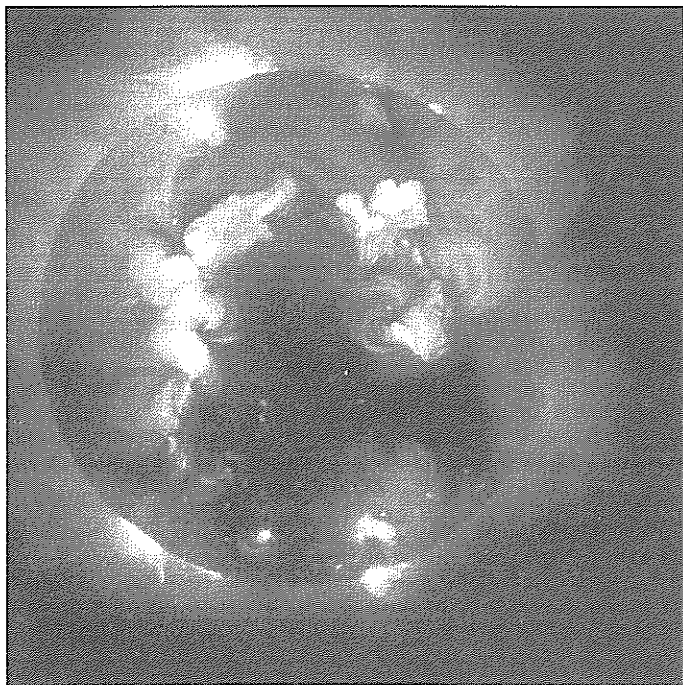


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 13 12:33:50 UT
Day 15 11:33:45 UT

Day 14 12:07:11 UT
Day 16 00:21:15 UT

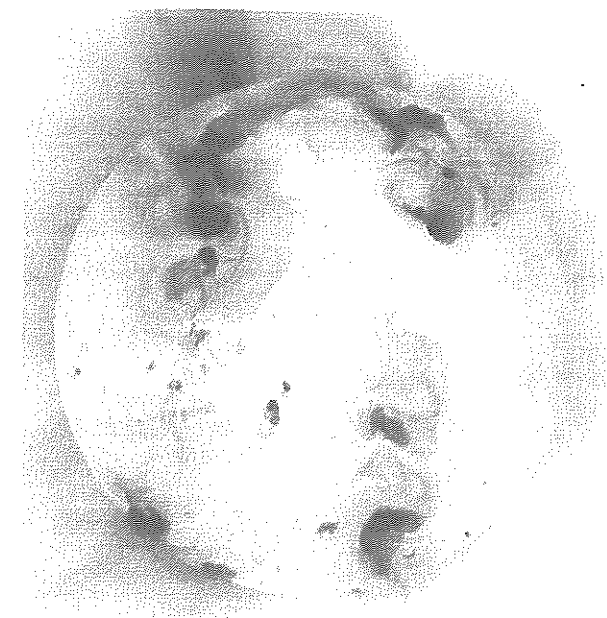
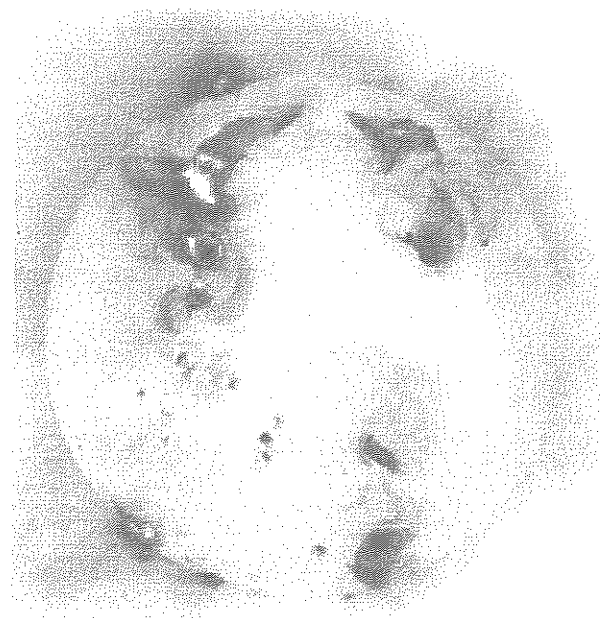
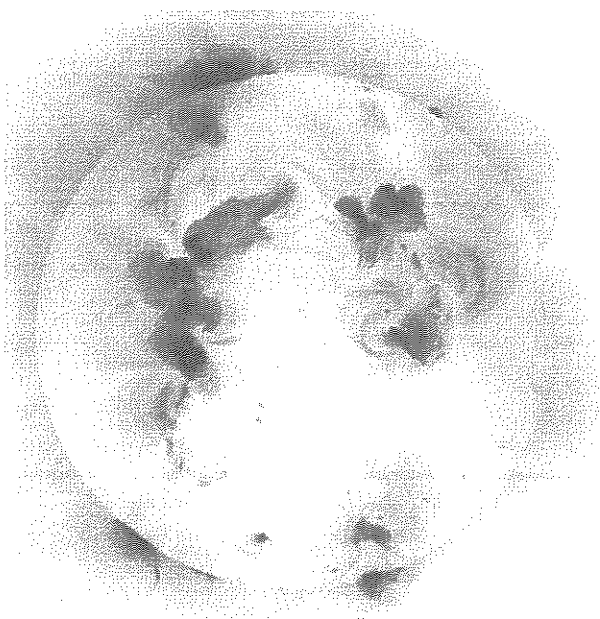


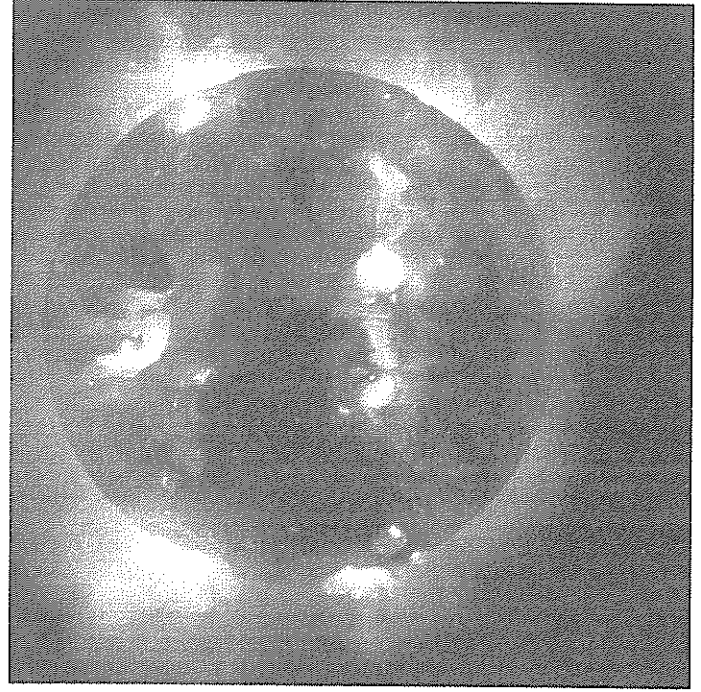
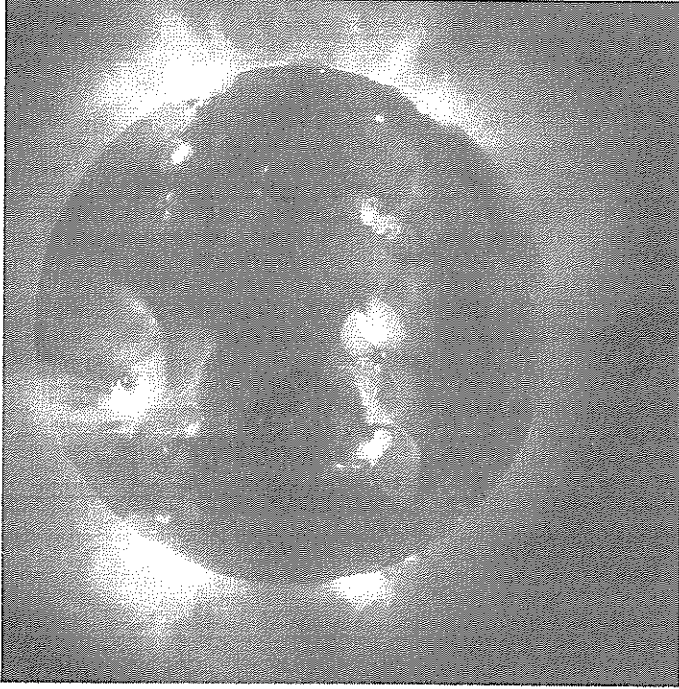
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 13 12:33:50 UT Day 15 11:33:45 UT

Day 14 12:07:11 UT Day 16 00:21:15 UT



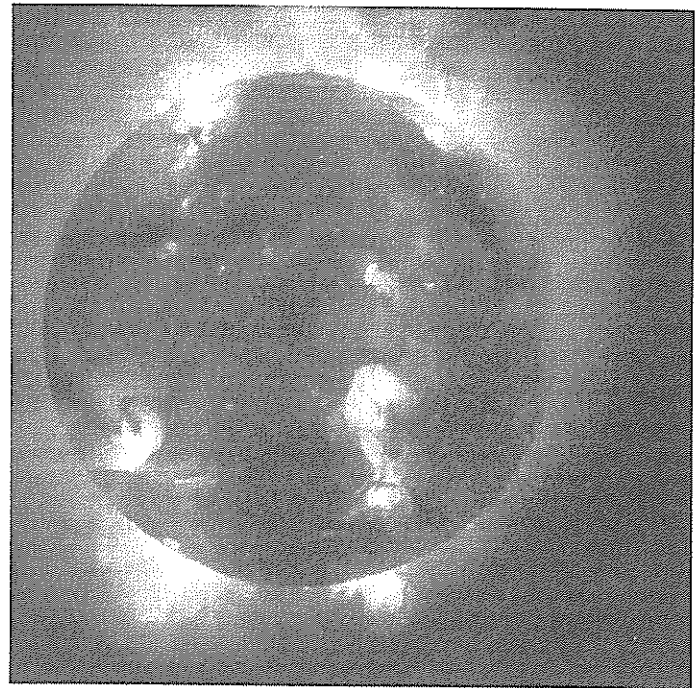
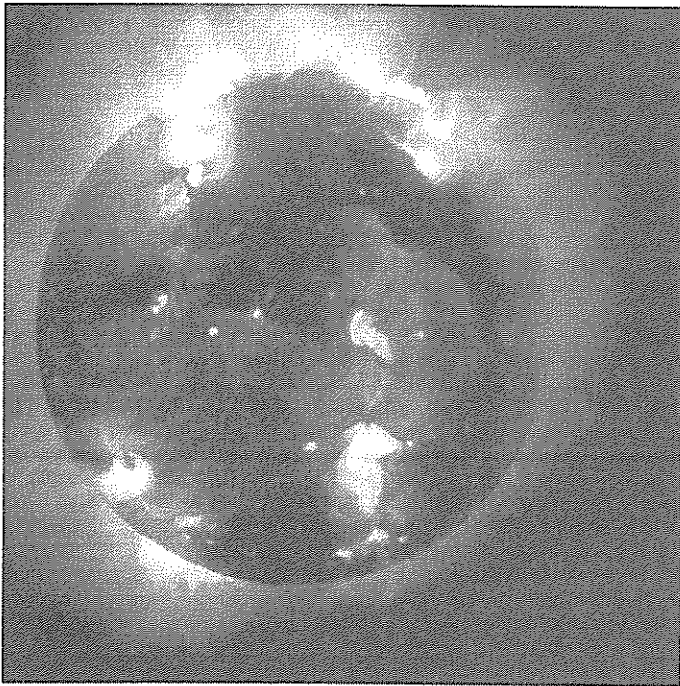


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 17 10:22:57 UT
Day 19 12:23:18 UT

Day 18 12:09:08 UT
Day 20 12:35:14 UT

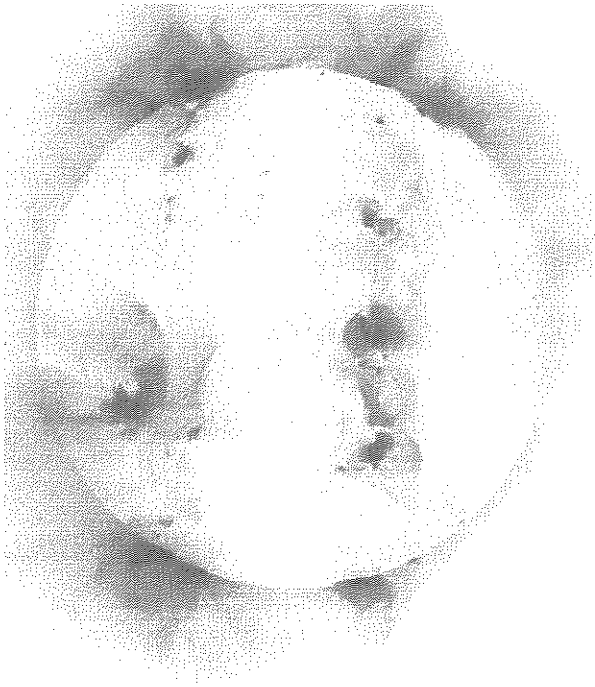


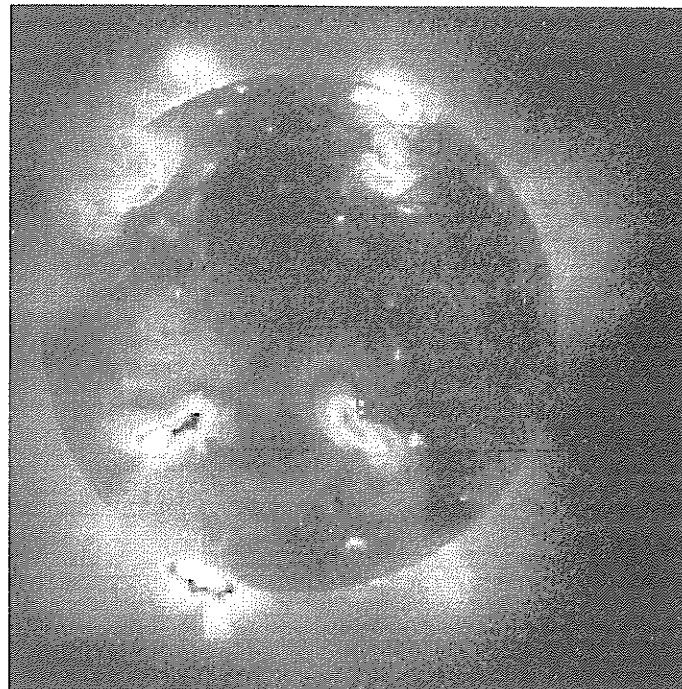
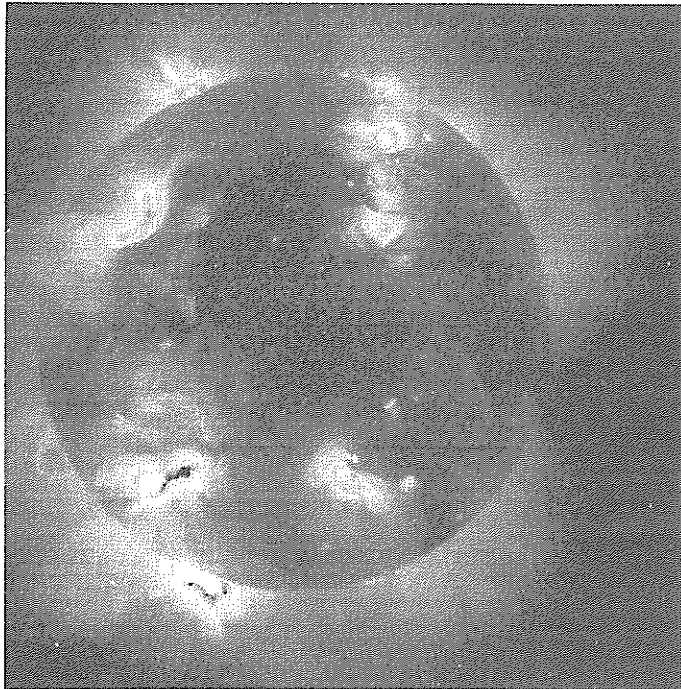
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 17 10:22:57 UT
Day 19 12:23:18 UT

Day 18 12:09:08 UT
Day 20 12:35:14 UT



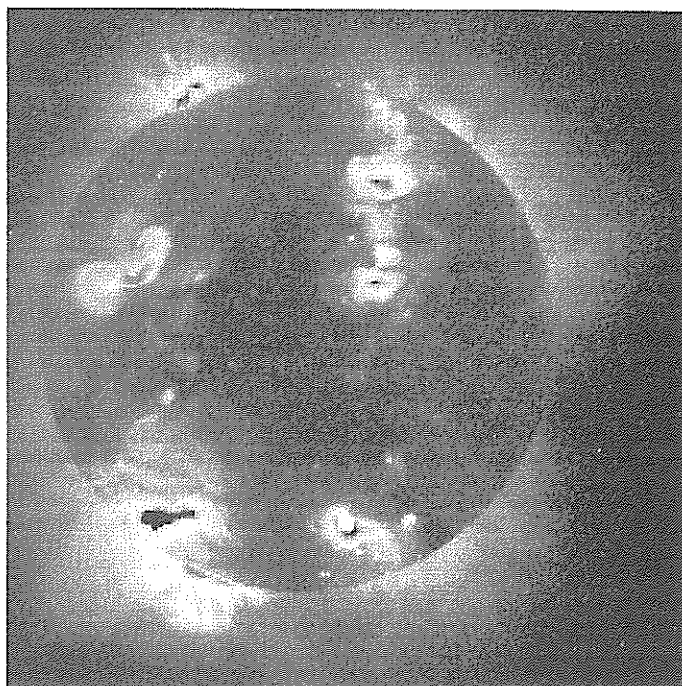
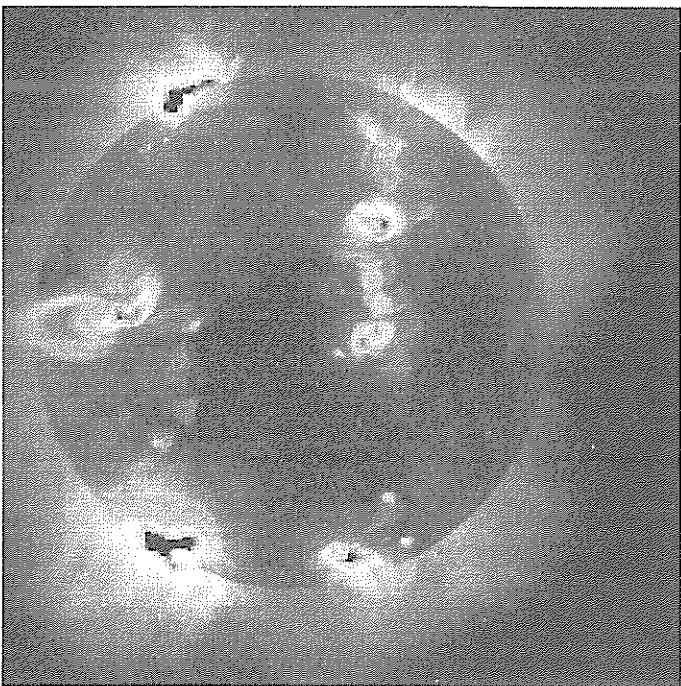


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 21 Day 23
12:37:44 UT 11:41:11 UT

Day 22 Day 24
11:35:52 UT 11:56:55 UT

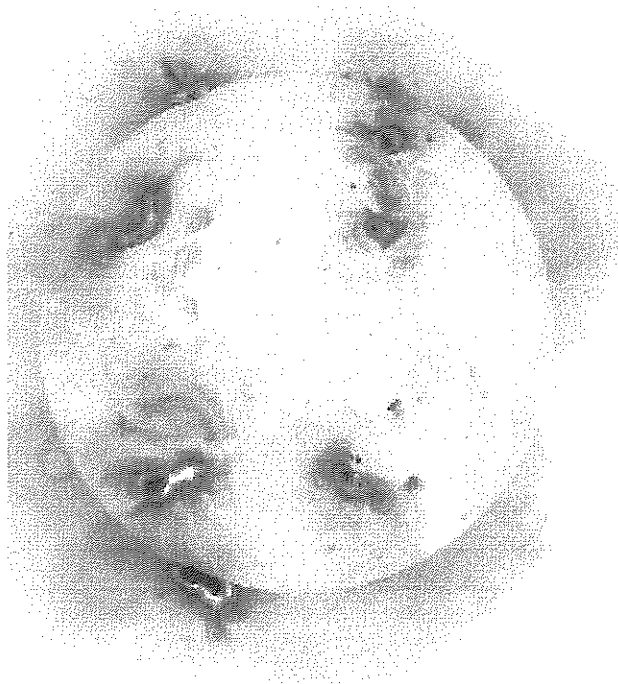
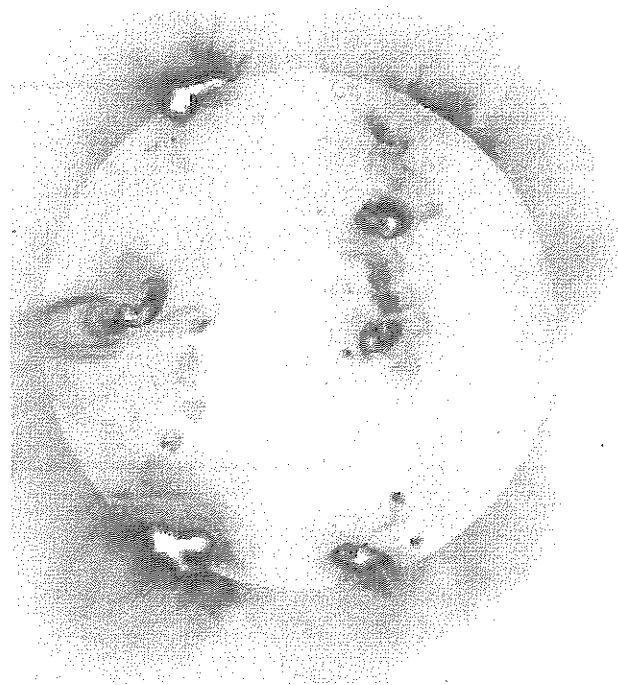


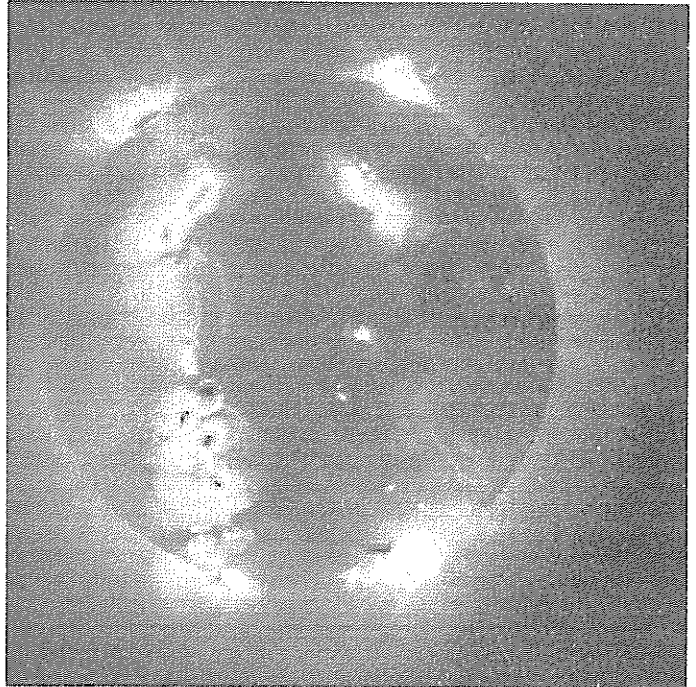
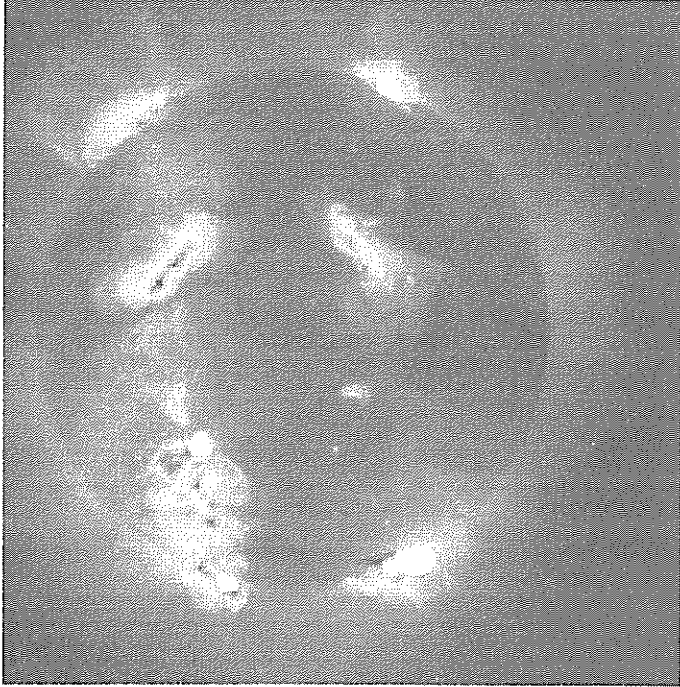
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 21 Day 23
12:37:44 UT 11:41:11 UT

Day 22 Day 24
11:35:52 UT 11:56:55 UT



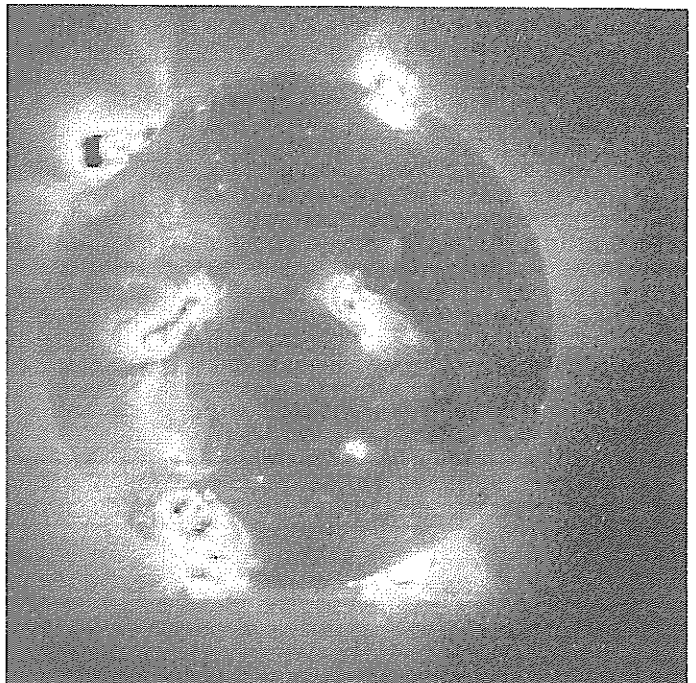
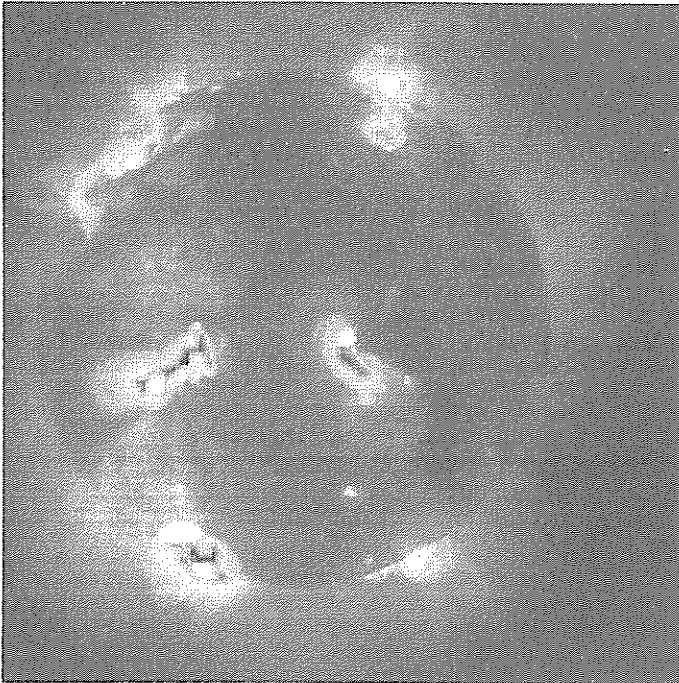


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 25
13:12:07 UT

Day 27
12:04:23 UT



Day 26
12:11:03 UT

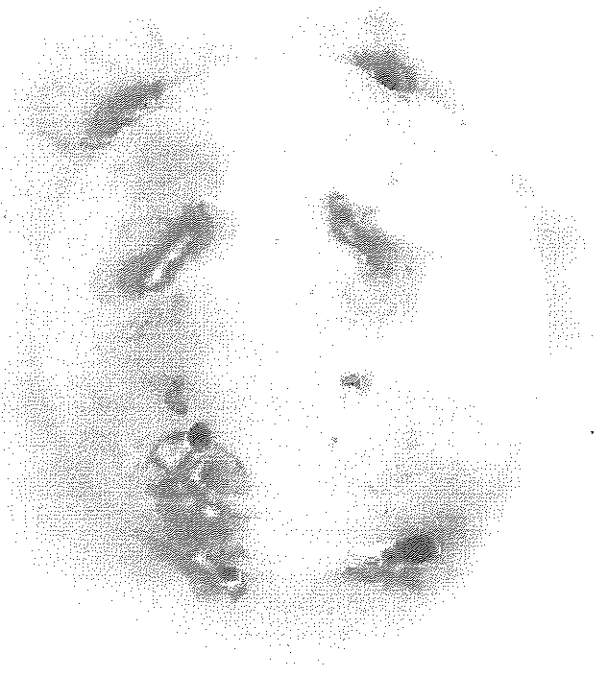
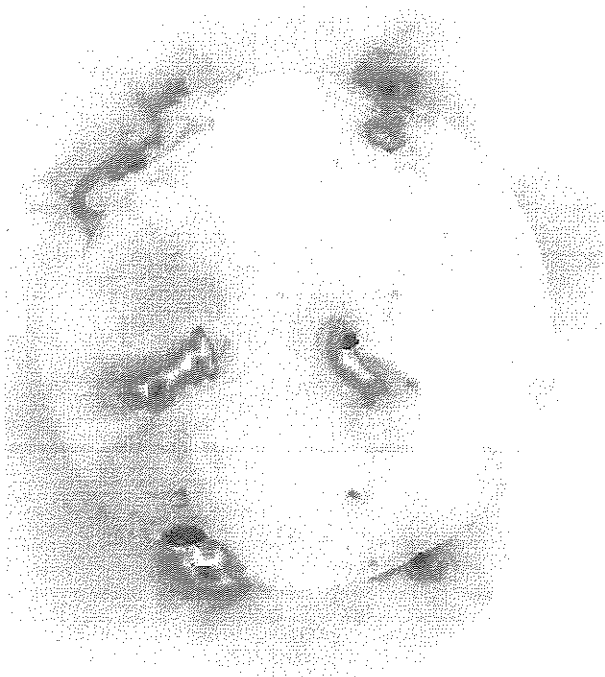
Day 28
12:13:58 UT

YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

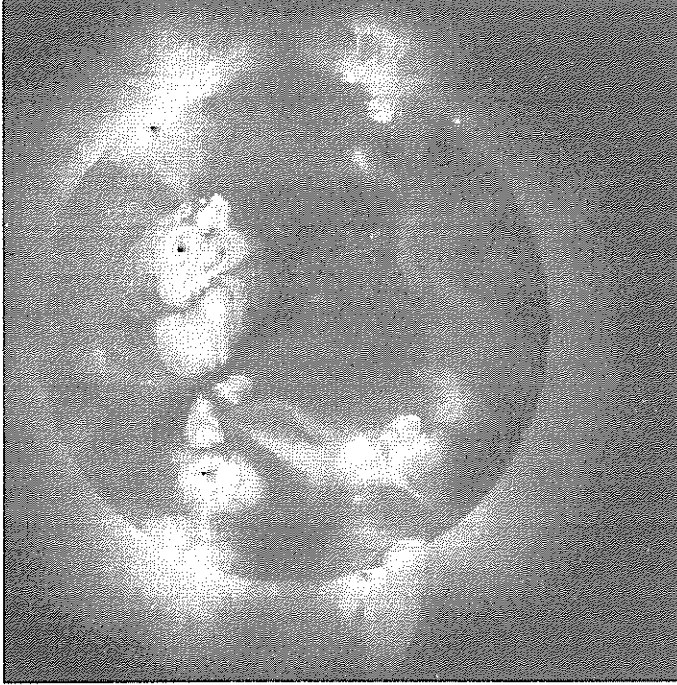
May
1999

Day 25 13:12:07 UT
Day 27 12:04:23 UT

Day 26 12:11:03 UT
Day 28 12:13:58 UT



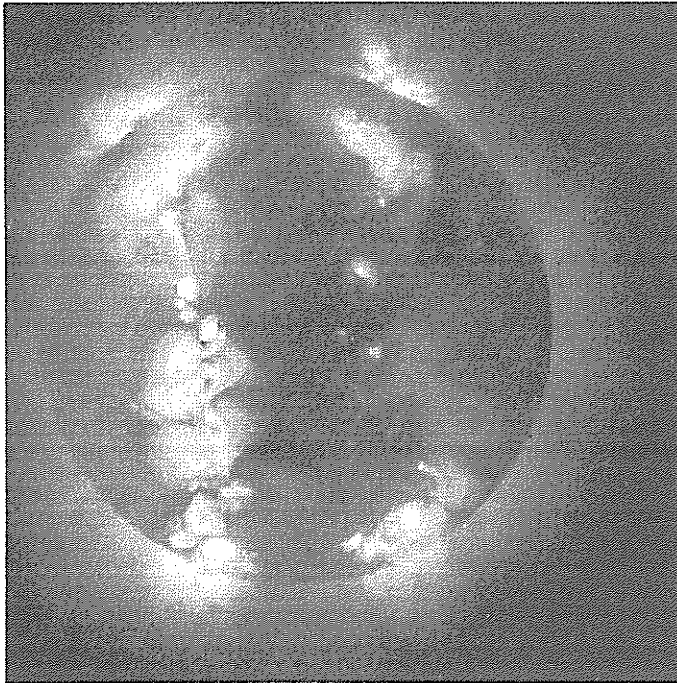
104
May 99



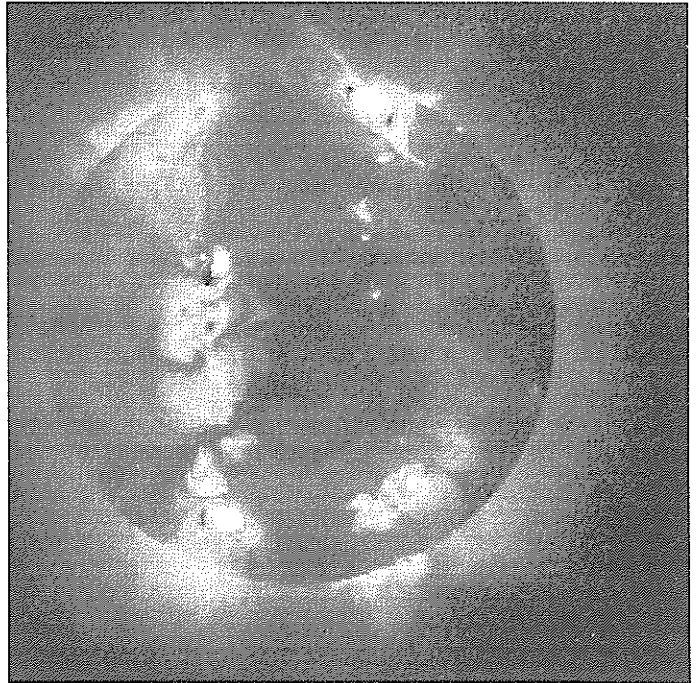
YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

May
1999

Day 29 11:45:58 UT Day 31 12:00:06 UT



Day 30 11:52:06 UT

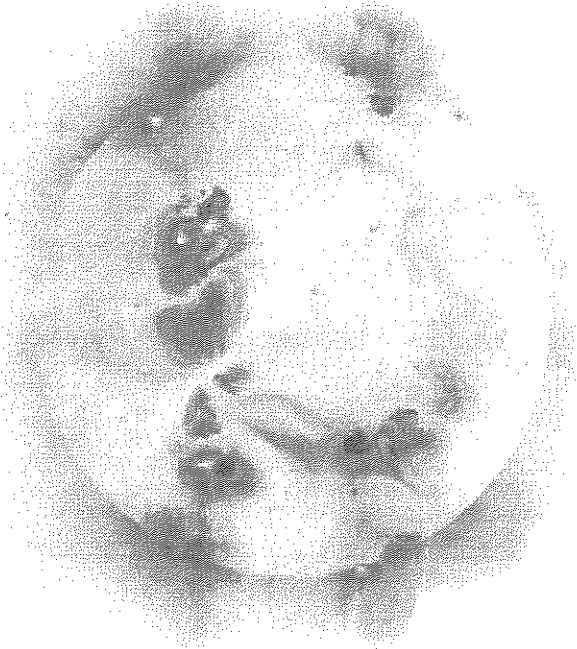
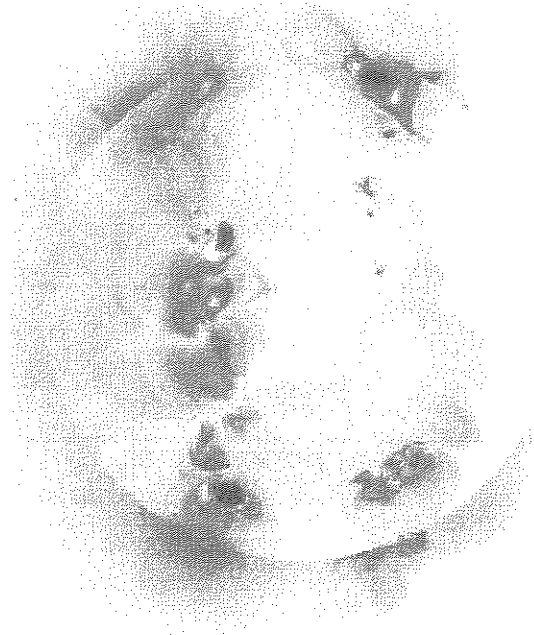
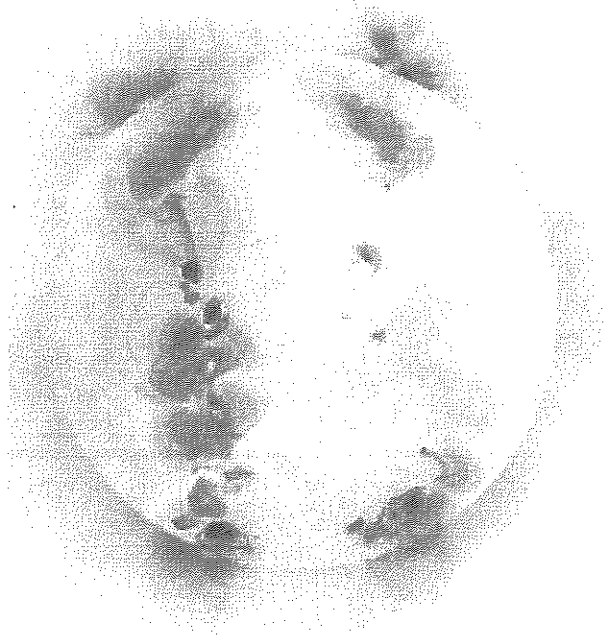


YOHKOH
SOFT X-RAY
TELESCOPE
IMAGES

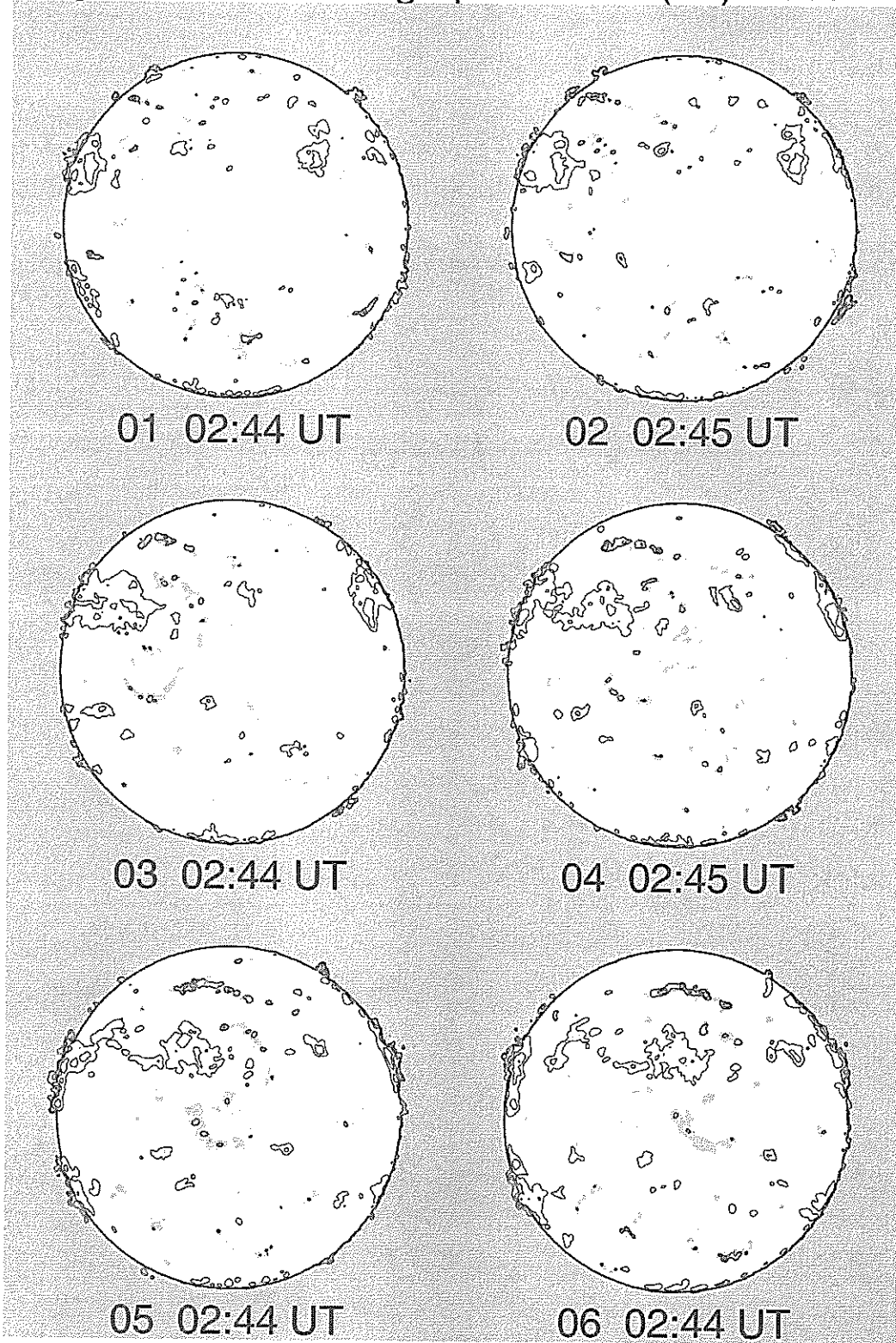
May
1999

Day 29 11:45:58 UT Day 31 12:00:06 UT

Day 30 11:52:06 UT

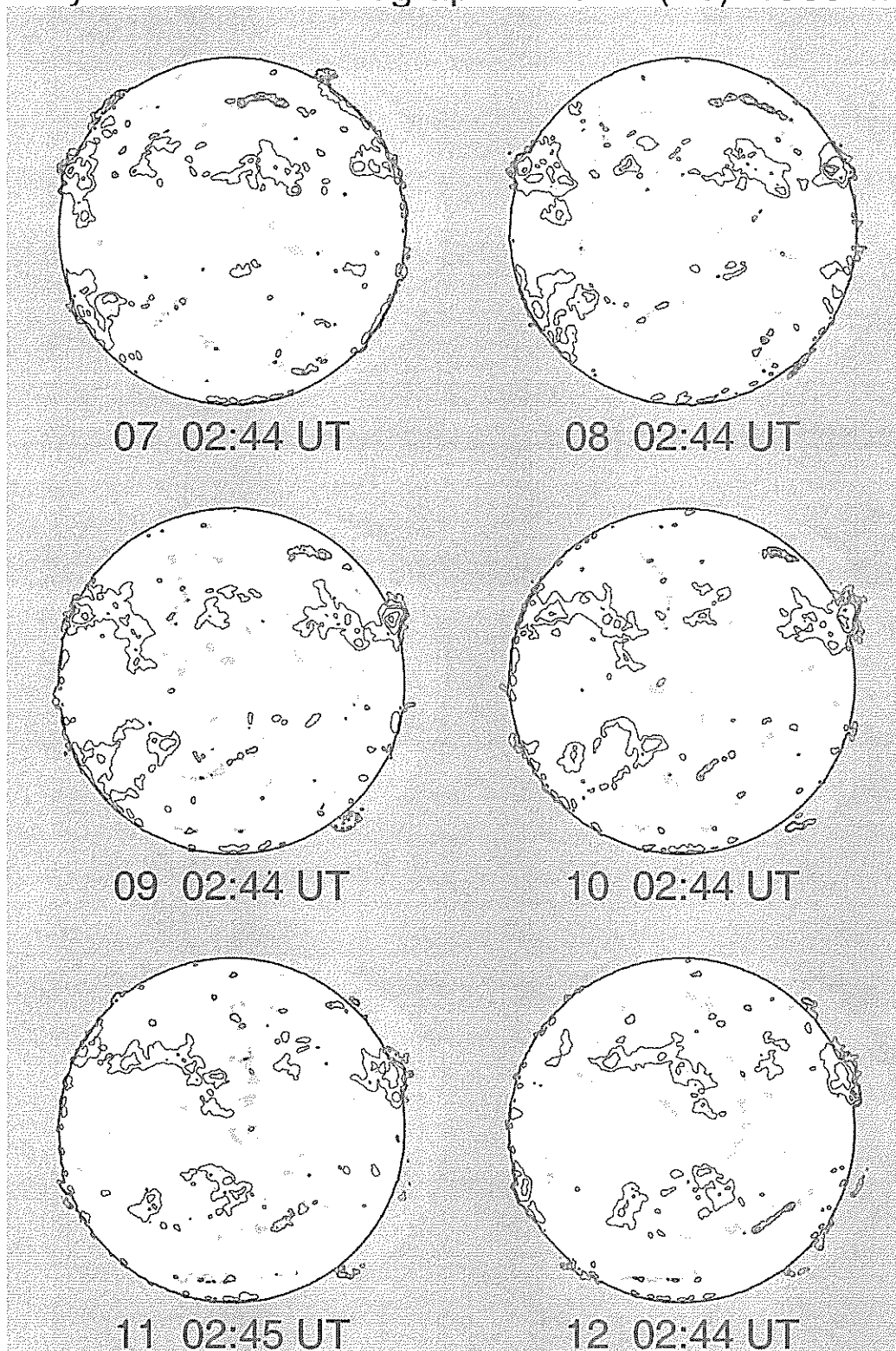


Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



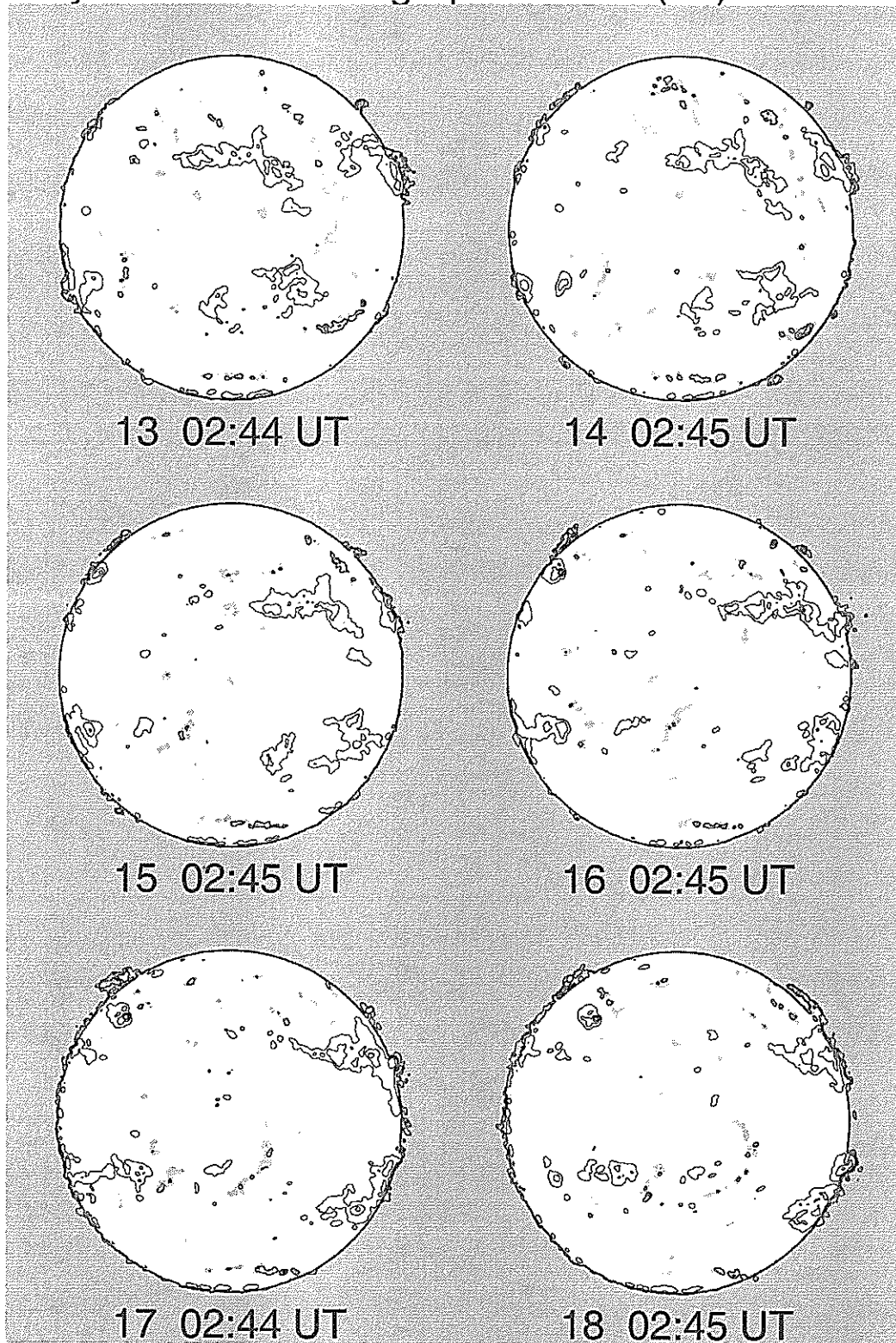
Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3$ K
Grey level $T_b \leq 9,500$ K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



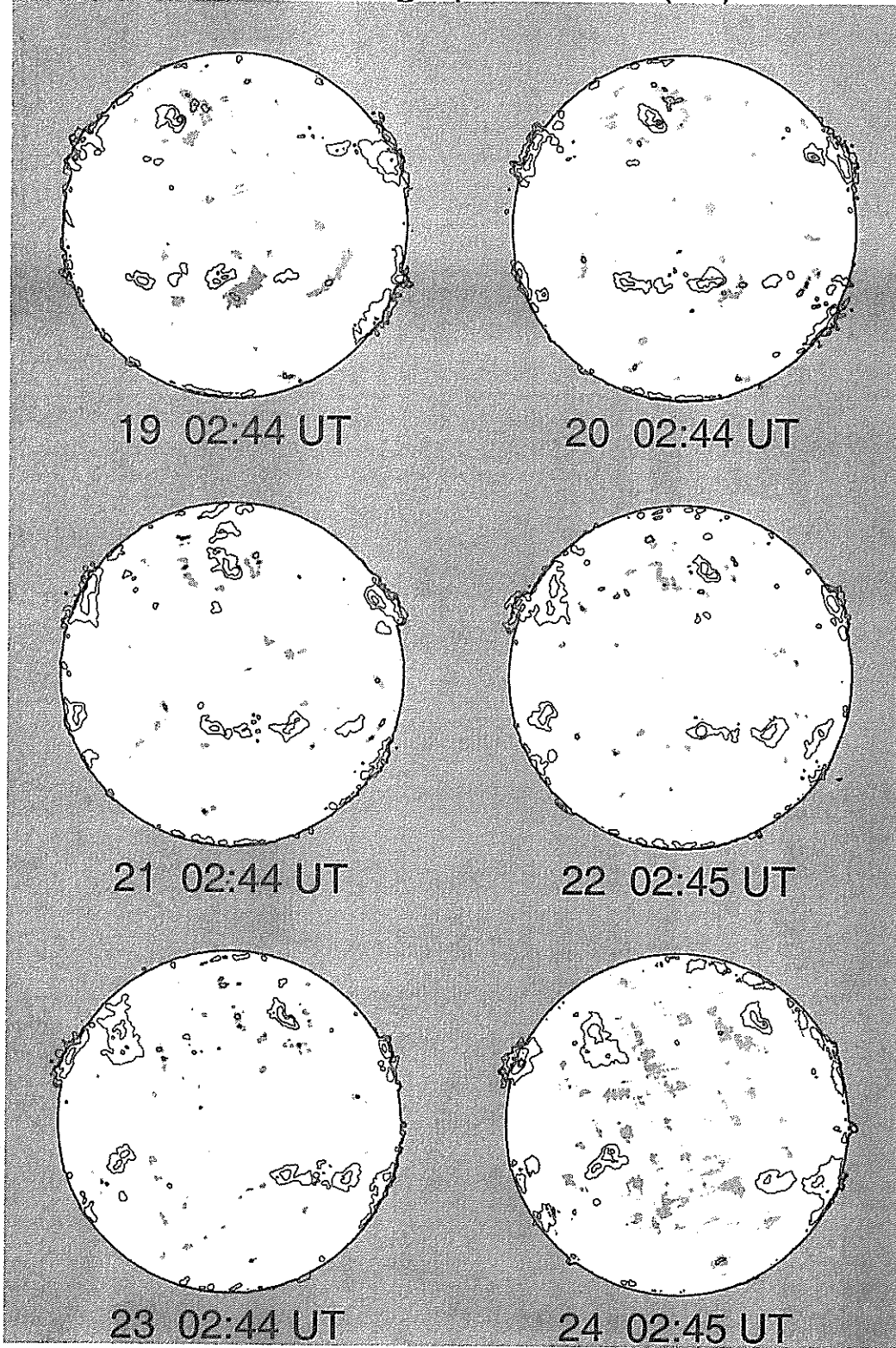
Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



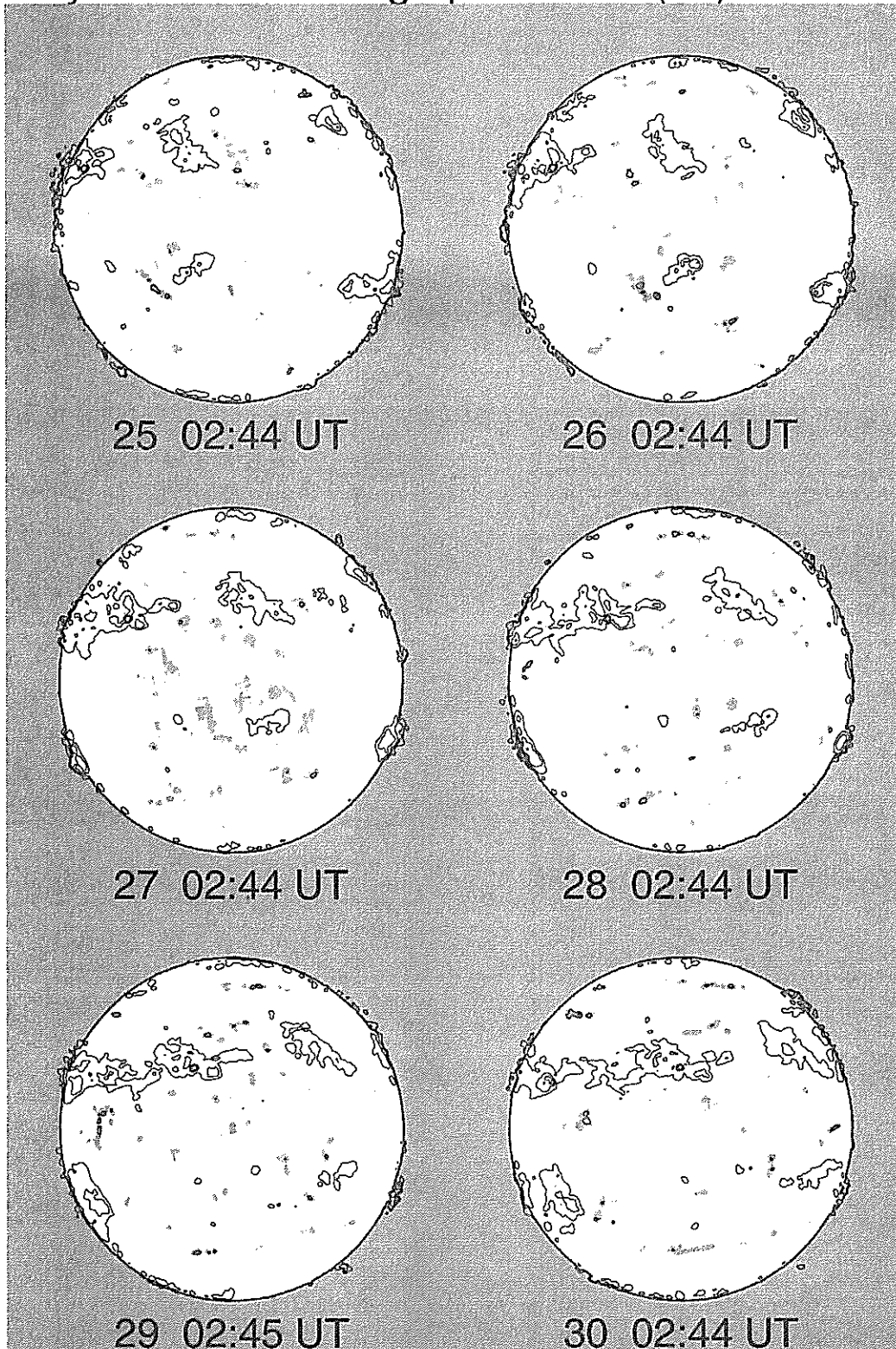
Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3$ K
Grey level $T_b \leq 9,500$ K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



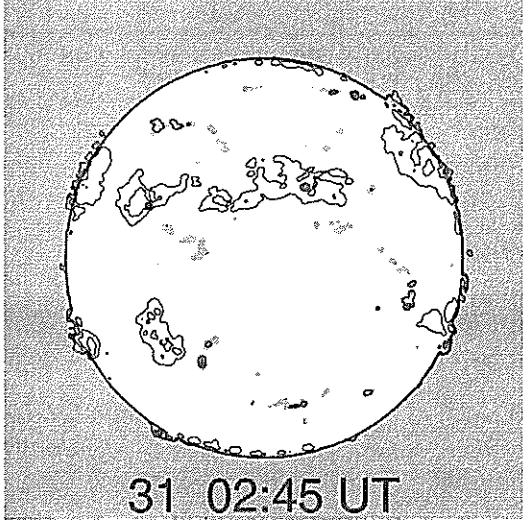
Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



Contour Levels Tb=[5,8,12,20,50,100] x 10³ K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1999 May



Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

MAY 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation		Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
			Mo	Day (UT)										
8526		LEAR	04	29	0129	N22 E48	05 2.7		A	AX		1		4
8526		RAMY	04	29	1223	N23 E41	05 2.7		B	BXO	10	3	3	3
8526		HOLL	04	29	1444	N21 E40	05 2.7		A	AX	10	1		3
8526		LEAR	05	02	0106	N23 E09	05 2.7		A	AX		1		3
8526		KAND	05	02	0645	N22 E05	05 2.7			BXO		3	3	2
8526		RAMY	05	02	1258	N23 E02	05 2.7		B	BXO	10	5	3	3
8526		SVTO	05	02	1443	N23 E02	05 2.8		B	CSO	20	4	3	2
8526	29076	MWIL	05	02	1445	N23 E02	05 2.8	4	(B)					
8526		LEAR	05	03	0108	N22 W08	05 2.4		B	CSO	20	2	3	3
8526		KAND	05	03	0730	N24 W08	05 2.7			BXO		2	4	3
8526		SVTO	05	03	0809	N24 W07	05 2.8		B	BXO	10	2	4	3
8526		RAMY	05	03	1216	N23 W09	05 2.8		B	BXO	10	6	6	4
8526		LEAR	05	04	0204	N23 W17	05 2.8		B	BXO	20	11	7	4
8526		KAND	05	04	0700	N21 W23	05 2.5			BXO		5	4	4
8526		SVTO	05	04	0945	N22 W25	05 2.5		B	CAO	30	6	5	3
8526		RAMY	05	04	1259	N21 W26	05 2.5		B	DAO	20	4	4	4
8526	29076	MWIL	05	04	1430	N21 W27	05 2.5	4	(B)					
8526		HOLL	05	04	1550	N22 W28	05 2.5		B	BXO	20	9	4	3
8526		LEAR	05	05	0118	N22 W32	05 2.6		B	CRO	30	7	3	3
8526		KAND	05	05	0635	N20 W36	05 2.5			CSO		5	5	3
8526		SVTO	05	05	0750	N21 W37	05 2.5		B	CSO	40	7	7	2
8526		RAMY	05	05	1259	N19 W39	05 2.6		B	DAO	50	8	5	3
8526	29076	MWIL	05	05	1430	N20 W40	05 2.5	5	(B)					
8526		HOLL	05	05	1520	N19 W40	05 2.6		B	DAO	80	8	6	2
8526		LEAR	05	06	0050	N21 W46	05 2.5		B	DAO	80	8	7	4
8526		SVTO	05	06	0724	N20 W48	05 2.6		B	DAO	70	3	7	2
8526		RAMY	05	06	1212	N19 W51	05 2.6		B	DAO	70	6	7	3
8526	29076	MWIL	05	06	1445	N20 W54	05 2.5	5	(B)					
8526		HOLL	05	06	1450	N19 W47	05 3.0		B	FAO	160	14	18	4
8526		LEAR	05	07	0057	N20 W57	05 2.7		B	EAO	1300	7	14	3
8526		KAND	05	07	0810	N19 W62	05 2.6			AX		1	1	3
8526		KAND	05	07	0810	N20 W64	05 2.4			DSO		2	10	3
8526		RAMY	05	07	1231	N19 W63	05 2.7		B	DAO	50	3	9	4
8526	29076	MWIL	05	07	1445	N20 W67	05 2.5	5	(BP)					
8526		HOLL	05	07	1522	N19 W68	05 2.4		B	CSO	40	5	7	3
8526		LEAR	05	08	0121	N19 W70	05 2.7		B	EAO	190	7	15	3
8526		SVTO	05	08	0730	N19 W70	05 3.0		B	DAO	320	3	7	3
8526B		RAMY	05	03	1216	S35 W03	05 3.3		A	AX		1		4
8537		LEAR	05	06	0050	N19 W34	05 3.4		B	BXO	10	4	3	4
8537		SVTO	05	06	0724	N19 W37	05 3.5		B	CRO	10	3	3	2
8537		RAMY	05	06	1212	N18 W40	05 3.5		B	BXO	10	4	3	3
8537	29085	MWIL	05	06	1445	N19 W41	05 3.5	4	(BP)					
8537		LEAR	05	07	0057	N20 W47	05 3.4		B	CAO	30	6	7	3
8537		KAND	05	07	0810	N19 W53	05 3.3			DAO		5	8	3
8537		RAMY	05	07	1231	N19 W54	05 3.4		B	DRO	30	10	8	4
8537	29085	MWIL	05	07	1445	N19 W57	05 3.3	4	(B)					
8537		HOLL	05	07	1522	N18 W56	05 3.4		B	CSO	60	11	8	3
8537		LEAR	05	08	0121	N19 W60	05 3.5		B	DSO	120	4	5	3
8537		KAND	05	08	0615	N20 W67	05 3.1			EAO		10	11	4
8537		SVTO	05	08	0730	N20 W64	05 3.4		B	DAO	180	3	7	3
8537		RAMY	05	08	1230	N18 W67	05 3.4		B	EAO	360	10	11	3
8537	29085	MWIL	05	08	1430	N19 W72	05 3.1	5	(B)					
8537		HOLL	05	08	1521	N20 W70	05 3.3		B	ESO	240	11	11	3
8537		LEAR	05	09	0101	N19 W78	05 3.1		B	DAO	300	6	10	3
8537		KAND	05	09	0725	N20 W77	05 3.4			ESO		3	12	3
8537		RAMY	05	09	1234	N20 W79	05 3.5		B	DAO	140	5	5	4
8537		SVTO	05	09	1452	N22 W85	05 3.1		B	DSO	150	2	5	3
8537	29085	MWIL	05	09	1500	N19 W81	05 3.4	4	(B)					
8537		HOLL	05	09	1640	N20 W85	05 3.2		A	HA	70	2	4	2
8529		RAMY	05	01	1207	S13 E31	05 3.8		A	AX		1		4
8529	29073	MWIL	05	01	1445	S13 E29	05 3.8	3	(B)					
8529		KAND	05	02	0645	S13 E20	05 3.8			BXO		2	4	2
8529		RAMY	05	02	1258	S13 E16	05 3.7		B	BXO		4	3	3
8529		SVTO	05	02	1443	S13 E14	05 3.7		B	BXO	10	3	4	2
8529	29073	MWIL	05	02	1445	S13 E15	05 3.7	4	(B)					
8529		LEAR	05	03	0108	S13 E09	05 3.7		B	BXO	10	8	5	3

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

MAY 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time		Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
			Mo	Day												(UT)
8529		SVTO	05	03	0809	S14 E05	05	3.7		B	CSO	10	5	4	3
8529		RAMY	05	03	1216	S14 E03	05	3.7		B	BXO	10	6	3	4
8529	29073	MWIL	05	03	1830	S13 W00	05	3.8	4	(B)					
8529		LEAR	05	04	0204	S14 W06	05	3.6		B	BXO	10	6	4	4
8529		KAND	05	04	0700	S14 W08	05	3.7			BXO		4	4	4
8529		SVTO	05	04	0945	S14 W09	05	3.7		B	CSO	20	4	4	3
8529		RAMY	05	04	1259	S14 W11	05	3.7		B	CSO	10	5	4	4
8529	29073	MWIL	05	04	1430	S14 W12	05	3.7	4	(B)					
8529		HOLL	05	04	1550	S14 W14	05	3.6		B	CAO	30	3	4	3
8529		LEAR	05	05	0118	S14 W18	05	3.7		B	BXO	10	8	4	3
8529		KAND	05	05	0635	S14 W23	05	3.5			BXO		3	5	3
8529		SVTO	05	05	0750	S15 W22	05	3.7		B	DRO	20	3	4	2
8529		RAMY	05	05	1259	S15 W24	05	3.7		B	BXO	10	3	6	3
8529	29073	MWIL	05	05	1430	S14 W26	05	3.6	4	(B)					
8529		HOLL	05	05	1520	S14 W27	05	3.6		B	CSO	20	2	5	2
8529		LEAR	05	06	0050	S14 W32	05	3.6		B	BXO	10	3	5	4
8529		SVTO	05	06	0724	S16 W36	05	3.6		B	BXO		3	6	2
8529	29073	MWIL	05	06	1445	S15 W43	05	3.3	3	(AP)					
8529		HOLL	05	06	1450	S14 W42	05	3.4		A	AX	10	1	1	4
8532		HOLL	05	04	1550	S41 E02	05	4.8		A	AX		1		3
8532		LEAR	05	05	0118	S40 W04	05	4.7		B	BXO	10	3	3	3
8532		KAND	05	05	0635	S40 W05	05	4.9			AX		1		3
8532		SVTO	05	05	0750	S40 W05	05	4.9		A	AX		1		2
8532		RAMY	05	05	1259	S40 W07	05	5.0		B	BXO	10	2	3	3
8532	29079	MWIL	05	05	1430	S40 W10	05	4.8	4	(BF)					
8525		LEAR	04	29	0129	N13 E77	05	4.9		A	HS	50	1	3	4
8525		TACH	04	29	0446	N16 E81	05	5.3			HSX	45	1	1	4
8525		KAND	04	29	0705	N17 E84	05	5.7			HA		1	2	4
8525		SVTO	04	29	0715	N16 E78	05	5.2		A	HS	60	1	3	3
8525		RAMY	04	29	1223	N16 E75	05	5.2		B	CAO	70	2	6	3
8525		HOLL	04	29	1444	N16 E75	05	5.3		A	HS	120	1	2	3
8525	29072	MWIL	04	29	1445	N15 E73	05	5.1	4	(AP)					
8525		LEAR	04	30	0105	N15 E65	05	5.0		B	CAO	140	5	7	4
8525		TACH	04	30	0438	N16 E65	05	5.1			FSI	135	4	19	3
8525		KAND	04	30	0635	N19 E70	05	5.6			CSO		4	17	3
8525		SVTO	04	30	0747	N17 E72	05	5.8		B	CAO	270	6	19	3
8525		RAMY	04	30	1315	N18 E67	05	5.6		B	FSO	210	13	17	3
8525		HOLL	04	30	1540	N17 E67	05	5.7		B	FSI	280	12	16	3
8525		LEAR	05	01	0042	N16 E59	05	5.5		B	FSO	220	12	16	4
8525		SVTO	05	01	0722	N17 E62	05	6.0		B	FAO	320	9	19	3
8525		KAND	05	01	0905	N18 E55	05	5.6			FSO		10	17	4
8525		RAMY	05	01	1207	N18 E55	05	5.7		B	FSO	280	12	18	4
8525	29072	MWIL	05	01	1445	N17 E54	05	5.7	5	(BP)					
8525		HOLL	05	01	1525	N17 E53	05	5.7		B	ESO	300	13	15	3
8525		LEAR	05	02	0106	N16 E45	05	5.4		B	FSO	240	17	16	3
8525		KAND	05	02	0645	N18 E44	05	5.6			FAO		7	16	2
8525		RAMY	05	02	1258	N18 E40	05	5.6		B	FAO	300	21	16	3
8525		SVTO	05	02	1443	N18 E41	05	5.7		B	FSO	330	8	19	2
8525	29072	MWIL	05	02	1445	N18 E40	05	5.7	5	(BP)					
8525		LEAR	05	03	0108	N18 E37	05	5.9		B	FSO	220	15	18	3
8525		KAND	05	03	0730	N18 E30	05	5.6			FAO		14	17	3
8525		SVTO	05	03	0809	N18 E32	05	5.8		B	FAI	300	9	17	3
8525		RAMY	05	03	1216	N18 E28	05	5.6		B	FSO	260	22	17	4
8525	29072	MWIL	05	03	1830	N18 E27	05	5.8	5	(BP)					
8525		LEAR	05	04	0204	N17 E23	05	5.8		B	FSO	160	23	16	4
8525		KAND	05	04	0700	N20 E19	05	5.7			FSO		14	17	4
8525		SVTO	05	04	0945	N18 E17	05	5.7		B	FSO	200	17	18	3
8525		RAMY	05	04	1259	N18 E15	05	5.7		B	FSO	250	20	17	4
8525	29072	MWIL	05	04	1430	N18 E14	05	5.7	5	(BG)					
8525		HOLL	05	04	1550	N17 E12	05	5.6		B	FSO	210	12	17	3
8525		LEAR	05	05	0118	N17 E10	05	5.8		BG	FSO	180	15	16	3
8525		KAND	05	05	0635	N16 E01	05	5.3			HS		1	3	3
8525		SVTO	05	05	0750	N19 E06	05	5.8		B	FSO	150	20	17	2
8525		RAMY	05	05	1259	N18 E03	05	5.8		B	FSO	200	17	16	3
8525	29072	MWIL	05	05	1430	N18 E02	05	5.7	5	(BP)					
8525		HOLL	05	05	1520	N17 E02	05	5.8		B	FSO	140	9	16	2
8525		LEAR	05	06	0050	N18 W04	05	5.7		B	ESO	140	12	14	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation			CMP Mo Day	Max H	Mag Class	Spot Class	Corrected		Long. Extent (Deg)	Qual
			Mo Day	Time (UT)	Lat					CMD	Area (10-6 Hemi)			Spot Count
8525		SVTO	05 06	0724	N17 W06	05 5.8		B	CSO	120	17	14	2
8525		RAMY	05 06	1212	N18 W09	05 5.8		B	CSO	160	6	15	3
8525	29072	MWIL	05 06	1445	N18 W13	05 5.6	6	(BP)					
8525		HOLL	05 06	1450	N18 W11	05 5.8		B	CSO	200	10	15	4
8525		LEAR	05 07	0057	N18 W21	05 5.4		B	CSO	90	6	8	3
8525		KAND	05 07	0810	N16 W29	05 5.1			HS		1	3	3
8525		RAMY	05 07	1231	N15 W24	05 5.7		B	CSO	150	5	12	4
8525	29072	MWIL	05 07	1445	N17 W27	05 5.6	5	(BP)					
8525		HOLL	05 07	1522	N16 W27	05 5.6		B	CSO	110	7	12	3
8525		LEAR	05 08	0121	N17 W35	05 5.4		B	CSO	200	2	6	3
8525		KAND	05 08	0615	N16 W40	05 5.2			HS		1	2	4
8525		SVTO	05 08	0730	N17 W42	05 5.1		A	HS	130	1	3	3
8525		RAMY	05 08	1230	N16 W43	05 5.2		A	HS	140	1	2	3
8525	29072	MWIL	05 08	1430	N16 W42	05 5.4	5	(BP)					
8525		HOLL	05 08	1521	N17 W46	05 5.1		A	HS	120	1	2	3
8525		LEAR	05 09	0101	N16 W51	05 5.2		A	HA	170	1	2	3
8525		KAND	05 09	0725	N16 W54	05 5.2			HS		1	2	3
8525		RAMY	05 09	1234	N18 W59	05 5.0		B	CSO	100	4	16	4
8525		SVTO	05 09	1452	N16 W58	05 5.2		A	HS	160	1	2	3
8525	29072	MWIL	05 09	1500	N16 W58	05 5.2	5	(AP)					
8525		HOLL	05 09	1640	N16 W57	05 5.4		A	HS	120	2	2	2
8525		LEAR	05 10	0145	N17 W60	05 5.5		B	CSO	100	8	13	3
8525		SVTO	05 10	0450	N17 W68	05 5.0		A	HS	100	1	2	3
8525		KAND	05 10	0700	N17 W68	05 5.1			CSO		2	2	3
8525		RAMY	05 10	1143	N16 W68	05 5.3		A	HS	130	1	3	3
8525		HOLL	05 10	1430	N15 W70	05 5.3		A	HS	100	1	2	3
8525	29072	MWIL	05 10	1500	N15 W70	05 5.3	5	(AP)					
8525		SVTO	05 11	0500	N15 W80	05 5.1		A	HS	90	1	4	3
8525		KAND	05 11	0755	N16 W83	05 5.0			HS		1	2	3
8538		LEAR	05 07	0057	N11 W21	05 5.4		B	CRO	20	4	3	3
8538		KAND	05 07	0910	N11 W26	05 5.4			CSO		4	4	3
8538		RAMY	05 07	1231	N10 W27	05 5.5		B	DRO	10	7	4	4
8538	29088	MWIL	05 07	1445	N10 W28	05 5.5	5	(B)					
8538		HOLL	05 07	1522	N10 W28	05 5.5		B	BXO	20	8	5	3
8538		LEAR	05 08	0121	N11 W34	05 5.5		B	DAO	70	6	6	3
8538		KAND	05 08	0615	N11 W38	05 5.4			CRO		4	5	4
8538		SVTO	05 08	0730	N11 W38	05 5.4		B	CRO	60	8	5	3
8538		RAMY	05 08	1230	N11 W40	05 5.5		B	DAO	50	8	5	3
8538	29088	MWIL	05 08	1430	N10 W42	05 5.4	4	(B)					
8538		HOLL	05 08	1521	N11 W43	05 5.4		B	BXO	20	7	6	3
8538		LEAR	05 09	0101	N11 W49	05 5.3		B	BXO	20	6	6	3
8538		KAND	05 09	0725	N11 W51	05 5.5			BXO		5	5	3
8538		RAMY	05 09	1234	N12 W55	05 5.4		B	BXO	20	10	4	4
8538		SVTO	05 09	1452	N11 W58	05 5.2		A	AX		1		3
8538	29088	MWIL	05 09	1500	N10 W55	05 5.5	4	(B)					
8538		HOLL	05 09	1640	N10 W58	05 5.3		B	BXO	20	3	3	2
8538		LEAR	05 10	0145	N11 W69	05 4.9		A	AX		1		3
8538		KAND	05 10	0700	N11 W63	05 5.5			AX		3	3	3
8538		RAMY	05 10	1143	N11 W66	05 5.5		B	BXO	10	4	3	3
8538		HOLL	05 10	1430	N10 W70	05 5.3		B	BXO	10	4	4	3
8538	29088	MWIL	05 10	1500	N10 W69	05 5.4	4	(BP)					
8538		SVTO	05 11	0500	N10 W78	05 5.3		B	CRO	40	4	3	3
8527		SVTO	04 30	0747	N28 E79	05 6.5		A	AX	10	1		3
8527		RAMY	04 30	1315	N27 E72	05 6.2		A	HR	10	1	1	3
8527		HOLL	04 30	1540	N25 E71	05 6.1		A	AX	20	1	1	3
8527		LEAR	05 01	0042	N26 E63	05 5.9		A	HR	30	1	1	4
8527		SVTO	05 01	0722	N26 E65	05 6.3		A	AX	10	1		3
8527		KAND	05 01	0905	N27 E62	05 6.2			HR		1	2	4
8527		RAMY	05 01	1207	N27 E58	05 6.0		A	HS	20	1	1	4
8527	29074	MWIL	05 01	1445	N26 E57	05 6.0	4	(BP)					
8527		HOLL	05 01	1525	N25 E58	05 6.1		A	HS	20	1	1	3
8527		LEAR	05 02	0106	N26 E49	05 5.8		B	BXO	20	3	1	3
8527		KAND	05 02	0645	N27 E48	05 6.0			HR		1	1	2
8527		RAMY	05 02	1258	N27 E44	05 6.0		A	HS	10	3	2	3
8527		SVTO	05 02	1443	N27 E44	05 6.0		B	CSO	30	2	1	2
8527	29074	MWIL	05 02	1445	N26 E45	05 6.1	4	(AP)					
8527		LEAR	05 03	0108	N28 E36	05 5.9		B	BXO	10	2	1	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat	CHD	Mo	Day	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8527		KAND	05 03 0730	N27	E34	05	6.0					AX		1	1	3
8527		SVTO	05 03 0809	N28	E34	05	6.0				A	HS	10	1	1	3
8527		RAMY	05 03 1216	N27	E32	05	6.0				A	HR	10	1	1	4
8527	29074	MWIL	05 03 1830	N26	E28	05	5.9			4	(AP)					
8527		LEAR	05 04 0204	N26	E25	05	6.0				B	CRO	20	2	1	4
8527		KAND	05 04 0700	N27	E22	05	6.0				A	AX		1	1	4
8527		SVTO	05 04 0945	N27	E20	05	6.0				A	HR	10	1	1	3
8527		RAMY	05 04 1259	N26	E17	05	5.9				A	AX		1		4
8527	29074	MWIL	05 04 1430	N26	E17	05	5.9			5	(AP)					
8527		HOLL	05 04 1550	N27	E16	05	5.9				A	HS	10	1	1	3
8527		LEAR	05 05 0118	N26	E12	05	6.0				A	HS	10	1	1	3
8527		KAND	05 05 0635	N27	E08	05	5.9					AX		1		3
8527		SVTO	05 05 0750	N28	E08	05	5.9				A	AX		1		2
8527		RAMY	05 05 1259	N26	E05	05	5.9				A	AX		1		3
8527	29074	MWIL	05 05 1430	N27	E05	05	6.0			4	(AP)					
8527		HOLL	05 05 1520	N26	E04	05	5.9				A	AX	10	1	1	2
8527		HOLL	05 06 1450	N26	W06	05	6.1				A	AX		1		4
8527		SVTO	05 10 0450	N21	W53	05	6.1				A	AX		1		3
8527A	29094	MWIL	05 09 1500	N20	W47	05	6.0			4	(B)					
8527A		HOLL	05 09 1640	N19	W49	05	5.9				B	BXO	10	2	4	2
8528A		HOLL	05 11 2059	S17	W72	05	6.4				A	HS	30	1	2	2
8528C	29089	MWIL	05 07 1445	S11	W15	05	6.5			3	(AP)					
8530A	29080	MWIL	05 05 1430	N18	E13	05	6.6			4	(AP)					
8530		RAMY	05 02 1258	N16	E58	05	6.9				B	BXO		2	2	3
8530		SVTO	05 02 1443	N15	E60	05	7.1				A	HR	10	1		2
8530	29077	MWIL	05 02 1445	N16	E60	05	7.2			3	(AP)					
8530		LEAR	05 04 0204	N14	E43	05	7.3				B	BXO	10	5	5	4
8530		KAND	05 04 0700	N17	E42	05	7.5					AX		1		4
8530		LEAR	05 05 0118	N14	E31	05	7.4				B	BXO	10	2	2	3
8530		RAMY	05 05 1259	N18	E25	05	7.4				A	AX	10	3	2	3
8530		KAND	05 08 0615	N16	W16	05	7.0					AX		1		4
8530		HOLL	05 11 2059	N12	W62	05	7.2				A	AX	10	2	1	2
8528		LEAR	05 01 0042	S15	E73	05	6.5				A	AX		1		4
8528		SVTO	05 01 0722	S15	E73	05	6.8				A	AX	10	1		3
8528		KAND	05 01 0905	S14	E71	05	6.7					AX		1	1	4
8528		RAMY	05 01 1207	S14	E69	05	6.7				A	AX		2	1	4
8528	29075	MWIL	05 01 1445	S15	E70	05	6.9			4	(B)					
8528		HOLL	05 01 1525	S16	E68	05	6.8				A	AX	10	1		3
8528		LEAR	05 02 0106	S15	E62	05	6.7				B	BXO	20	3	6	3
8528		KAND	05 02 0645	S15	E63	05	7.0					BXO		3	5	2
8528		RAMY	05 02 1258	S14	E56	05	6.8				B	BXO	10	3	5	3
8528		SVTO	05 02 1443	S15	E58	05	7.0				B	BXO	20	3	5	2
8528	29075	MWIL	05 02 1445	S15	E57	05	6.9			4	(BP)					
8528		LEAR	05 03 0108	S13	E48	05	6.7				A	AX		1		3
8528		SVTO	05 03 0809	S16	E62	05	8.0				A	AX		1		3
8528		RAMY	05 03 1216	S16	E57	05	7.8				A	AX		1		4
8528		SVTO	05 05 0750	S17	E22	05	7.0				B	BXO	10	2	3	2
8528	29081	MWIL	05 05 1430	S16	E17	05	6.9			4	(BF)					
8528	29082	MWIL	05 05 1430	S19	E18	05	7.0			4	(AP)					
8528		HOLL	05 05 1520	S16	E17	05	6.9				B	BXO	20	5	3	2
8528		LEAR	05 06 0050	S15	E13	05	7.0				A	AX		1		4
8528		SVTO	05 06 0724	S16	E10	05	7.1				A	AX		1		2
8528B		RAMY	05 08 1230	S12	W09	05	7.8				B	BXO		4	4	3
8528B	29093	MWIL	05 08 1430	S16	W11	05	7.8			3	(AP)					
8531		LEAR	05 04 0204	N16	E76	05	9.8				B	CRO	20	2	2	4
8531		KAND	05 04 0700	N19	E76	05	10.1					BXO		2	6	4
8531		SVTO	05 04 0945	N18	E76	05	10.2				B	DSO	40	2	7	3
8531		RAMY	05 04 1259	N18	E70	05	9.9				B	BXO	40	3	4	4
8531	29078	MWIL	05 04 1430	N18	E69	05	9.8			4	(B)					
8531		HOLL	05 04 1550	N18	E68	05	9.8				B	CSO	30	2	4	3
8531		LEAR	05 05 0118	N16	E64	05	9.9				B	BXO	30	4	5	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8531		KAND	05	05	0635	N18	E61	05	9.9			BXO		2	5	3
8531		SVTO	05	05	0750	N18	E63	05	10.1		B	BXO	20	4	5	2
8531		RAMY	05	05	1259	N19	E56	05	9.8		B	BXO	30	5	5	3
8531	29078	MWIL	05	05	1430	N18	E56	05	9.9	5	(B)					
8531		HOLL	05	05	1520	N17	E55	05	9.8		B	CSO	30	5	5	2
8531		LEAR	05	06	0050	N17	E50	05	9.8		B	CRO	30	4	4	4
8531		SVTO	05	06	0724	N18	E47	05	9.9		B	CRO	20	3	5	2
8531		RAMY	05	06	1212	N19	E43	05	9.8		B	BXO	10	4	5	3
8531	29078	MWIL	05	06	1445	N18	E42	05	9.8	5	(B)					
8531		HOLL	05	06	1450	N17	E42	05	9.8		B	CAO	30	3	5	4
8531		LEAR	05	07	0057	N18	E37	05	9.8		B	CAO	20	3	5	3
8531		KAND	05	07	0810	N17	E31	05	9.7			CSO		2	5	3
8531		RAMY	05	07	1231	N18	E29	05	9.7		B	BXO		3	4	4
8531	29078	MWIL	05	07	1445	N18	E28	05	9.7	4	(B)					
8531		HOLL	05	07	1522	N17	E27	05	9.7		B	BXO	20	4	5	3
8531		LEAR	05	08	0121	N20	E20	05	9.6		B	CAO	20	3	4	3
8531		KAND	05	08	0615	N20	E17	05	9.6			CRO		3	4	4
8531		SVTO	05	08	0730	N20	E17	05	9.6		B	DRO	20	6	7	3
8531		RAMY	05	08	1230	N18	E14	05	9.6		B	DSO	20	3	4	3
8531	29078	MWIL	05	08	1430	N18	E13	05	9.6	4	(BP)					
8531		HOLL	05	08	1521	N19	E12	05	9.5		B	BXO	10	5	5	3
8531		LEAR	05	09	0101	N20	E07	05	9.6		B	DSO	20	5	6	3
8531		KAND	05	09	0725	N20	E04	05	9.6			BXO		2	5	3
8531		RAMY	05	09	1234	N20	E00	05	9.5		B	BXO		2	5	4
8531		SVTO	05	09	1452	N20	E02	05	9.8		A	AX		1		3
8531	29078	MWIL	05	09	1500	N19	W01	05	9.5	4	(B)					
8531		HOLL	05	09	1640	N21	E00	05	9.7		A	AX	10	1		2
8531		SVTO	05	12	0610	N20	W36	05	9.5		A	AX		2	1	3
8531		RAMY	05	14	1223	N20	W68	05	9.3		B	BXO	10	2	3	3
8536		RAMY	05	06	1212	S23	E57	05	10.9		B	BXO	10	2	3	3
8536	29086	MWIL	05	06	1445	S26	E56	05	11.0	4	(B)					
8536		HOLL	05	06	1450	S25	E56	05	10.9		B	CAO	40	3	3	4
8536		LEAR	05	07	0057	S24	E50	05	10.9		B	CAO	30	3	3	3
8536		KAND	05	07	0810	S25	E47	05	11.0			DAO		4	6	3
8536		RAMY	05	07	1231	S24	E44	05	10.9		B	CRO	30	5	7	4
8536	29086	MWIL	05	07	1445	S25	E43	05	10.9	4	(BF)					
8536		HOLL	05	07	1522	S25	E43	05	11.0		B	DSO	20	7	7	3
8536		LEAR	05	08	0121	S24	E37	05	10.9		B	DAO	110	13	8	3
8536		KAND	05	08	0615	S23	E35	05	10.9			CSO		16	8	4
8536		SVTO	05	08	0730	S24	E35	05	11.0		B	CRO	100	16	8	3
8536		RAMY	05	08	1230	S23	E31	05	10.9		B	DSO	40	15	8	3
8536	29086	MWIL	05	08	1430	S25	E30	05	10.9	4	(BG)					
8536		HOLL	05	08	1521	S24	E29	05	10.9		B	DSO	40	16	9	3
8536		LEAR	05	09	0101	S23	E24	05	10.9		B	DAI	100	12	8	3
8536		KAND	05	09	0725	S23	E20	05	10.8			CSI		19	9	3
8536		RAMY	05	09	1234	S24	E17	05	10.8		BG	DSI	70	29	8	4
8536		SVTO	05	09	1452	S25	E16	05	10.8		B	DSI	60	15	8	3
8536	29086	MWIL	05	09	1500	S25	E16	05	10.9	5	(B)					
8536		HOLL	05	09	1640	S24	E17	05	11.0		B	DSO	80	15	8	2
8536		LEAR	05	10	0145	S23	E12	05	11.0		B	DSO	80	23	8	3
8536		SVTO	05	10	0450	S25	E09	05	10.9		B	DAI	130	14	9	3
8536		KAND	05	10	0700	S23	E08	05	10.9			DAO		24	10	3
8536		RAMY	05	10	1143	S25	E06	05	10.9		B	DAO	80	16	9	3
8536		HOLL	05	10	1430	S24	E05	05	11.0		B	DSC	90	18	8	3
8536	29086	MWIL	05	10	1500	S24	E04	05	10.9	4	(B)					
8536		SVTO	05	11	0500	S24	W04	05	10.9		B	DRO	110	19	9	3
8536		KAND	05	11	0755	S24	W06	05	10.9			DAO		9	9	3
8536	29086	MWIL	05	11	1500	S24	W09	05	10.9	4	(B)					
8536		HOLL	05	11	2059	S25	W12	05	10.9		B	DAO	50	18	8	2
8536		LEAR	05	12	0120	S23	W15	05	10.9		B	DAO	50	12	9	1
8536		SVTO	05	12	0610	S25	W17	05	10.9		B	CRO	30	10	10	3
8536		KAND	05	12	0740	S23	W20	05	10.8			BXO		4	8	2
8536		HOLL	05	12	1630	S23	W24	05	10.8		B	BXO	30	8	9	4
8536		RAMY	05	12	1649	S25	W24	05	10.8		B	BXO	10	6	8	2
8536	29086	MWIL	05	12	2200	S24	W26	05	10.9	4	(B)					
8536		SVTO	05	13	0546	S24	W29	05	11.0		B	CRO	10	4	7	3
8536		HOLL	05	13	1436	S23	W38	05	10.7		A	AX	10	2	2	3
8536	29086	MWIL	05	13	1445	S24	W39	05	10.6	4	(AP)					

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8536		RAMY	05 13 1611	S23 W39	05 10.7		B	BXO		2	2	2
8539		LEAR	05 07 0057	N13 E57	05 11.3		B	BXO	20	2	4	3
8539		KAND	05 07 0810	N14 E51	05 11.2			DAO		3	10	3
8539		RAMY	05 07 1231	N14 E51	05 11.4		B	DRO	20	5	10	4
8539	29090	MWIL	05 07 1445	N13 E50	05 11.4	4	(BG)					
8539		HOLL	05 07 1522	N13 E49	05 11.3		B	BXO	40	10	10	3
8539		LEAR	05 08 0121	N15 E45	05 11.5		B	EAO	50	6	11	3
8539		KAND	05 08 0615	N14 E40	05 11.3			DSO		5	7	4
8539		SVTO	05 08 0730	N14 E40	05 11.3		B	DRO	70	8	5	3
8539		RAMY	05 08 1230	N13 E35	05 11.2		B	DAO	40	4	7	3
8539	29090	MWIL	05 08 1430	N13 E35	05 11.2	4	(BP)					
8539		HOLL	05 08 1521	N13 E34	05 11.2		B	CSO	20	5	8	3
8539		LEAR	05 09 0101	N14 E28	05 11.1		B	DAO	40	2	7	3
8539		KAND	05 09 0725	N14 E24	05 11.1			BXO		2	6	3
8539		RAMY	05 09 1234	N14 E23	05 11.3		B	CSO	20	7	6	4
8539		SVTO	05 09 1452	N13 E21	05 11.2		B	BXO		2	5	3
8539	29090	MWIL	05 09 1500	N13 E22	05 11.3	4	(AP)					
8539		HOLL	05 09 1640	N13 E20	05 11.2		B	BXO	10	3	6	2
8539		LEAR	05 10 0145	N14 E14	05 11.1		B	CSO	30	5	6	3
8539		SVTO	05 10 0450	N13 E13	05 11.2		B	BXO		2	5	3
8539		KAND	05 10 0700	N13 E11	05 11.1			BXO		3	5	3
8539		RAMY	05 10 1143	N13 E08	05 11.1		B	BXO		2	5	3
8539		HOLL	05 10 1430	N13 E08	05 11.2		B	BXO	10	2	5	3
8539	29090	MWIL	05 10 1500	N13 E07	05 11.1	4	(B)					
8539		SVTO	05 11 0500	N13 W02	05 11.0		B	BXO	10	2	4	3
8539	29090	MWIL	05 11 1500	N13 W06	05 11.2	3	(AP)					
8534		SVTO	05 05 0750	S18 E83	05 11.6		A	HR	30	1	1	2
8534		RAMY	05 05 1259	S17 E78	05 11.5		A	HA	30	1	1	3
8534	29084	MWIL	05 05 1430	S18 E79	05 11.6	5	(AP)					
8534		HOLL	05 05 1520	S18 E78	05 11.6		A	HA	30	1	2	2
8534		LEAR	05 06 0050	S19 E70	05 11.4		A	HA	40	1	1	4
8534		SVTO	05 06 0724	S18 E73	05 11.9		A	HS	60	1	2	2
8534		RAMY	05 06 1212	S17 E65	05 11.4		B	CSO	20	2	3	3
8534	29084	MWIL	05 06 1445	S18 E66	05 11.6	5	(BP)					
8534		HOLL	05 06 1450	S18 E66	05 11.6		B	CAO	50	3	5	4
8534		LEAR	05 07 0057	S18 E60	05 11.6		B	CAO	40	2	2	3
8534		KAND	05 07 0810	S18 E55	05 11.5			HA		1	2	3
8534		RAMY	05 07 1231	S17 E52	05 11.5		A	HS	40	1	2	4
8534	29084	MWIL	05 07 1445	S18 E51	05 11.5	5	(AP)					
8534		HOLL	05 07 1522	S18 E51	05 11.5		A	HS	30	1	1	3
8534		LEAR	05 08 0121	S17 E47	05 11.6		B	CAO	60	4	4	3
8534		KAND	05 08 0615	S16 E44	05 11.6			CSO		3	4	4
8534		SVTO	05 08 0730	S17 E44	05 11.6		B	CSO	90	4	4	3
8534		RAMY	05 08 1230	S17 E40	05 11.6		B	CSO	50	4	4	3
8534	29084	MWIL	05 08 1430	S18 E39	05 11.6	4	(AP)					
8534		HOLL	05 08 1521	S18 E38	05 11.5		B	CSO	20	3	4	3
8534		LEAR	05 09 0101	S16 E34	05 11.6		B	CSO	50	3	3	3
8534		KAND	05 09 0725	S17 E29	05 11.5			CSO		2	3	3
8534		RAMY	05 09 1234	S18 E26	05 11.5		B	CSO	40	5	3	4
8534		SVTO	05 09 1452	S19 E26	05 11.6		B	CSO	50	4	4	3
8534	29084	MWIL	05 09 1500	S18 E26	05 11.6	5	(AP)					
8534		HOLL	05 09 1640	S18 E25	05 11.6		A	HS	30	1	1	2
8534		LEAR	05 10 0145	S17 E20	05 11.6		B	CSO	30	5	5	3
8534		SVTO	05 10 0450	S18 E18	05 11.6		B	BXO	20	4	6	3
8534		KAND	05 10 0700	S18 E17	05 11.6			CAO		9	5	3
8534		RAMY	05 10 1143	S19 E13	05 11.5		B	DAO	30	4	4	3
8534		HOLL	05 10 1430	S18 E13	05 11.6		B	CSO	30	4	4	3
8534	29084	MWIL	05 10 1500	S18 E12	05 11.5	4	(BP)					
8534		SVTO	05 11 0500	S18 E03	05 11.4		B	CRO	50	8	4	3
8534		KAND	05 11 0755	S17 E01	05 11.4			CAO		6	4	3
8534	29084	MWIL	05 11 1500	S18 W01	05 11.5	4	(B)					
8534		HOLL	05 11 2059	S18 W05	05 11.5		B	CAO	50	15	4	2
8534		LEAR	05 12 0120	S17 W08	05 11.4		B	DAO	90	12	4	1
8534		SVTO	05 12 0610	S18 W10	05 11.5		B	DAO	70	9	4	3
8534		KAND	05 12 0740	S17 W12	05 11.4			DAO		18	6	2
8534		HOLL	05 12 1630	S18 W15	05 11.5		B	DAI	110	19	6	4
8534		RAMY	05 12 1649	S18 W16	05 11.5		B	DAI	70	11	6	2

S U N S P O T G R O U P S
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8534	29084	MWIL	05	12	2200	S18 W19	05	11.5	4	(B)					
8534		SVTO	05	13	0546	S17 W22	05	11.6		B	DAO	110	12	8	3
8534		KAND	05	13	0810	S17 W25	05	11.4			DAO		8	6	3
8534		HOLL	05	13	1436	S18 W28	05	11.5		B	DSO	50	13	6	3
8534	29084	MWIL	05	13	1445	S18 W29	05	11.4	5	(BP)					
8534		RAMY	05	13	1611	S16 W29	05	11.5		B	DAO	70	8	5	2
8534		SVTO	05	14	0602	S17 W38	05	11.4		B	DAO	130	13	6	3
8534		LEAR	05	14	0657	S18 W37	05	11.5		B	DAO	60	9	6	2
8534		KAND	05	14	0740	S18 W38	05	11.4			CAO		14	8	2
8534		RAMY	05	14	1223	S16 W41	05	11.4		B	DAO	80	11	6	3
8534		HOLL	05	14	1434	S18 W42	05	11.4		B	DAO	70	7	6	2
8534	29084	MWIL	05	14	1600	S17 W43	05	11.4	4	(BP)					
8534		LEAR	05	15	0101	S17 W48	05	11.4		B	DAI	120	10	7	3
8534		SVTO	05	15	0602	S18 W52	05	11.3		B	DSO	100	5	9	3
8534		KAND	05	15	0610	S17 W51	05	11.4			DSO		3	7	5
8534		RAMY	05	15	1132	S16 W54	05	11.4		B	DAO	70	4	7	4
8534	29084	MWIL	05	15	1500	S17 W56	05	11.4	5	(AP)					
8534		HOLL	05	15	1535	S17 W56	05	11.4		B	CAO	90	7	7	3
8534		LEAR	05	16	0206	S16 W64	05	11.2		A	HA	70	1	2	4
8534		SVTO	05	16	0742	S16 W70	05	11.0		A	HA	40	1	2	3
8534		KAND	05	16	0745	S16 W69	05	11.1			HA		1	3	3
8534	29084	MWIL	05	16	1500	S17 W73	05	11.1	4	(AP)					
8534		RAMY	05	16	1515	S17 W72	05	11.2		B	CSO	40	1	2	2
8534		HOLL	05	16	1549	S17 W74	05	11.0		A	HS	50	1	2	4
8534		LEAR	05	17	0156	S16 W79	05	11.1		B	BXO		3	2	3
8534	29084	MWIL	05	17	1515	S16 W85	05	11.2	2	AP					
8533A		HOLL	05	06	1450	N08 E65	05	11.5		A	AX	20	1	1	4
8533		SVTO	05	05	0750	N04 E85	05	11.7		B	CRO	40	3	6	2
8533		RAMY	05	05	1259	N06 E77	05	11.3		B	CAO	30	2	3	3
8533	29083	MWIL	05	05	1430	N03 E78	05	11.4	5	(B)					
8533		HOLL	05	05	1520	N03 E78	05	11.5		B	CAO	90	3	5	2
8533		LEAR	05	06	0050	N03 E70	05	11.3		B	CAO	50	2	3	4
8533		SVTO	05	06	0724	N03 E71	05	11.6		B	CSO	40	6	12	2
8533		RAMY	05	06	1212	N03 E66	05	11.4		B	CSO	40	4	8	3
8533	29083	MWIL	05	06	1445	N03 E65	05	11.5	4	(B)					
8533		HOLL	05	06	1450	N03 E67	05	11.6		B	DAO	100	6	7	4
8533		LEAR	05	07	0057	N04 E57	05	11.3		B	CAO	40	2	2	3
8533		KAND	05	07	0810	N04 E55	05	11.4			CAO		3	8	3
8533		RAMY	05	07	1231	N03 E53	05	11.5		B	CSO	30	9	8	4
8533	29083	MWIL	05	07	1445	N03 E51	05	11.4	4	(BP)					
8533		HOLL	05	07	1522	N03 E51	05	11.4		B	CSO	30	4	6	3
8533		LEAR	05	08	0121	N04 E47	05	11.6		B	CAO	60	6	8	3
8533		KAND	05	08	0615	N04 E42	05	11.4			BXO		4	6	4
8533		SVTO	05	08	0730	N05 E42	05	11.4		B	DRO	40	6	3	3
8533		RAMY	05	08	1230	N04 E39	05	11.4		B	CSO	20	3	5	3
8533	29083	MWIL	05	08	1430	N03 E37	05	11.4	4	(BP)					
8533		HOLL	05	08	1521	N03 E38	05	11.5		B	CSO	20	4	5	3
8533		LEAR	05	09	0101	N05 E33	05	11.5		B	CSO	20	4	6	3
8533		KAND	05	09	0725	N05 E26	05	11.2			AX		2	2	3
8533		RAMY	05	09	1234	N04 E26	05	11.5		B	BXO	10	5	6	4
8533		SVTO	05	09	1452	N04 E25	05	11.5		B	BXO		2	6	3
8533	29083	MWIL	05	09	1500	N03 E24	05	11.4	4	(B)					
8533		HOLL	05	09	1640	N04 E25	05	11.6		B	BXO	10	3	6	2
8533		LEAR	05	10	0145	N05 E16	05	11.3		B	BXO	10	3	2	3
8533		SVTO	05	10	0450	N04 E17	05	11.5		B	BXO		2	4	3
8533		KAND	05	10	0700	N05 E14	05	11.3			AX		1	1	3
8533		RAMY	05	10	1143	N04 E09	05	11.2		B	BXO		4	3	3
8533		HOLL	05	10	1430	N04 E09	05	11.3		B	BXO		2	4	3
8533		SVTO	05	11	0500	N03 E04	05	11.5		B	BXO	20	6	8	3
8533		HOLL	05	11	2059	N04 W03	05	11.6		B	BXO	10	5	4	2
8535		HOLL	05	05	1520	N21 E80	05	11.8		A	HS	30	1	1	2
8535		LEAR	05	06	0050	N20 E78	05	12.0		A	HA	90	1	1	4
8535		SVTO	05	06	0724	N21 E80	05	12.4		A	HS	120	1	2	2
8535		RAMY	05	06	1212	N22 E72	05	12.0		A	HH	180	2	5	3
8535	29087	MWIL	05	06	1445	N21 E72	05	12.1	5	(AP)					
8535		HOLL	05	06	1450	N20 E73	05	12.2		B	CAO	230	4	5	4

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(Ordered by Central Meridian Passage Date)

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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
8535		LEAR	05 07 0057	N21	E67	05 12.2		B	CAO	1800	2	3	3
8535		KAND	05 07 0810	N21	E61	05 12.0			CHO		2	6	3
8535		RAMY	05 07 1231	N22	E60	05 12.1			DHO	260	2	5	4
8535	29087	MWIL	05 07 1445	N21	E58	05 12.1	5	(BP)					
8535		HOLL	05 07 1522	N21	E58	05 12.1		B	CHO	260	4	5	3
8535		LEAR	05 08 0121	N22	E54	05 12.2		B	DKO	300	2	6	3
8535		KAND	05 08 0615	N22	E51	05 12.2			HH		2	3	4
8535		SVTO	05 08 0730	N22	E52	05 12.3		B	DHO	360	4	6	3
8535		RAMY	05 08 1230	N21	E47	05 12.1		B	DHO	330	5	5	3
8535	29087	MWIL	05 08 1430	N21	E45	05 12.0	5	(BP)					
8535		HOLL	05 08 1521	N21	E47	05 12.2		B	CHO	190	4	4	3
8535		LEAR	05 09 0101	N22	E41	05 12.2		B	DKO	350	4	4	3
8535		KAND	05 09 0725	N23	E37	05 12.1			HH		3	4	3
8535		RAMY	05 09 1234	N21	E39	05 12.5		B	EKO	330	10	13	4
8535		SVTO	05 09 1452	N18	E35	05 12.3		B	CKO	370	5	8	3
8535	29087	MWIL	05 09 1500	N21	E32	05 12.1	5	(AP)					
8535		HOLL	05 09 1640	N22	E32	05 12.1		A	HH	210	2	4	2
8535		LEAR	05 10 0145	N22	E28	05 12.2		B	DKO	300	8	5	3
8535		SVTO	05 10 0450	N21	E28	05 12.3		B	CKO	340	3	5	3
8535		KAND	05 10 0700	N21	E24	05 12.1			CAO		7	5	3
8535		RAMY	05 10 1143	N21	E23	05 12.2		B	CKO	360	12	9	3
8535		HOLL	05 10 1430	N21	E19	05 12.1		B	CHO	230	8	6	3
8535	29087	MWIL	05 10 1500	N21	E20	05 12.1	5	(AP)					
8535		SVTO	05 11 0500	N21	E18	05 12.6		B	CKO	370	12	16	3
8535		KAND	05 11 0755	N22	E10	05 12.1			HH		2	4	3
8535	29087	MWIL	05 11 1500	N21	E07	05 12.2	5	(BG)					
8535		HOLL	05 11 2059	N22	E03	05 12.1		B	DKO	250	6	6	2
8535		LEAR	05 12 0120	N22	E06	05 12.5		B	CKO	240	8	13	1
8535		SVTO	05 12 0610	N23	E04	05 12.6		B	CKO	300	12	15	3
8535		KAND	05 12 0740	N22	W02	05 12.2			CKO		4	6	2
8535		HOLL	05 12 1630	N22	W07	05 12.1		B	CKO	220	11	6	4
8535		RAMY	05 12 1649	N20	W08	05 12.1		B	CKO	330	10	10	2
8535	29087	MWIL	05 12 2200	N21	W07	05 12.4	4	(BG)					
8535		SVTO	05 13 0546	N23	W12	05 12.3		B	DKO	470	11	8	3
8535		KAND	05 13 0810	N22	W16	05 12.1			CKO		6	6	3
8535		HOLL	05 13 1436	N21	W19	05 12.1		B	CKO	300	9	5	3
8535	29087	MWIL	05 13 1445	N22	W16	05 12.4	5	(BG)					
8535		RAMY	05 13 1611	N22	W21	05 12.1		B	CKO	310	7	6	2
8535		SVTO	05 14 0602	N21	W26	05 12.2		B	CKO	360	13	7	3
8535		LEAR	05 14 0657	N20	W29	05 12.1		B	CAO	320	8	5	2
8535		KAND	05 14 0740	N21	W29	05 12.1			CHO		8	6	2
8535		RAMY	05 14 1223	N22	W30	05 12.2		B	CKO	340	9	7	3
8535		HOLL	05 14 1434	N21	W32	05 12.1		B	CKO	300	5	6	2
8535	29087	MWIL	05 14 1600	N22	W33	05 12.1	4	(B)					
8535		LEAR	05 15 0101	N22	W38	05 12.1		B	DKO	500	6	6	3
8535		SVTO	05 15 0602	N21	W42	05 12.0		B	CKO	370	9	7	3
8535		KAND	05 15 0610	N21	W40	05 12.2			CHO		7	5	5
8535		RAMY	05 15 1132	N22	W42	05 12.2		B	CKO	320	7	7	4
8535	29087	MWIL	05 15 1500	N22	W45	05 12.2	5	(AP)					
8535		HOLL	05 15 1535	N22	W45	05 12.2		B	CKO	300	5	5	3
8535		LEAR	05 16 0206	N21	W50	05 12.2		B	CKO	330	4	5	4
8535		SVTO	05 16 0742	N22	W54	05 12.2		A	HK	470	2	6	3
8535		KAND	05 16 0745	N22	W54	05 12.2			HK		2	3	3
8535	29087	MWIL	05 16 1500	N22	W58	05 12.2	5	(AP)					
8535		RAMY	05 16 1515	N22	W57	05 12.2		A	HK	300	2	4	2
8535		HOLL	05 16 1549	N22	W58	05 12.2		A	HK	270	3	4	4
8535		LEAR	05 17 0156	N22	W64	05 12.2		A	HA	330	2	5	3
8535		KAND	05 17 1150	N23	W69	05 12.2			HK		3	5	4
8535		SVTO	05 17 1150	N23	W71	05 12.0		A	HK	300	2	6	2
8535		RAMY	05 17 1422	N23	W69	05 12.3		A	HK	420	2	5	2
8535	29087	MWIL	05 17 1515	N22	W70	05 12.2	5	(AP)					
8535		HOLL	05 17 1552	N22	W72	05 12.1		A	HK	280	3	6	4
8535		LEAR	05 18 0115	N22	W77	05 12.1		A	HK	240	2	6	4
8535		KAND	05 18 0650	N22	W78	05 12.3			DAO		2	4	4
8535		RAMY	05 18 1442	N21	W80	05 12.5		A	HS	150	1	10	2
8535	29087	MWIL	05 18 1515	N23	W84	05 12.2	5	(AP)					
8546		RAMY	05 15 1132	S33	W39	05 12.4		B	BXO		2	2	4
8546	29100	MWIL	05 15 1500	S33	W42	05 12.3	4	(AF)					

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SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8546		HOLL	05	15	1535	S32	W42	05	12.3		A	AX	10	1	1	3
8546	29100	MWIL	05	16	1500	S33	W56	05	12.2	4	AF					
8546		RAMY	05	16	1515	S34	W58	05	12.0		B	CSO	20	2	3	2
8546		HOLL	05	16	1549	S34	W57	05	12.1		B	CSO	30	4	5	4
8546		LEAR	05	17	0156	S32	W62	05	12.2		B	CSO	10	3	6	3
8546		KAND	05	17	1150	S30	W64	05	12.4			CSO		4	8	4
8546		SVTO	05	17	1150	S32	W70	05	11.9		B	CAO	150	4	7	2
8546		RAMY	05	17	1422	S32	W68	05	12.2		B	DAO	30	3	6	2
8546	29100	MWIL	05	17	1515	S32	W69	05	12.2	5	(B)					
8546		HOLL	05	17	1552	S32	W69	05	12.2		B	DAO	90	4	7	4
8546		LEAR	05	18	0115	S32	W74	05	12.2		B	BXO	30	2	6	4
8546		KAND	05	18	0650	S32	W80	05	11.9			BXO		2	8	4
8546	29100	MWIL	05	18	1515	S32	W80	05	12.3	3	AP					
8535A		RAMY	05	14	1223	N21	W21	05	12.9		B	BXO		3	2	3
8540		LEAR	05	07	0057	S27	E80	05	13.3		A	HA	60	1	2	3
8540		KAND	05	07	0810	S27	E77	05	13.3			CAO		2	4	3
8540		RAMY	05	07	1231	S28	E76	05	13.5		B	DSO	60	3	9	4
8540	29091	MWIL	05	07	1445	S28	E77	05	13.6	4	(BP)					
8540		HOLL	05	07	1522	S28	E75	05	13.5		B	CSO	50	4	9	3
8540		LEAR	05	08	0121	S27	E70	05	13.5		B	DAO	170	3	8	3
8540		KAND	05	08	0615	S27	E70	05	13.7			ESO		6	13	4
8540		SVTO	05	08	0730	S28	E70	05	13.8		B	ESO	200	7	11	3
8540		RAMY	05	08	1230	S27	E64	05	13.5		B	EAO	110	5	11	3
8540	29091	MWIL	05	08	1430	S28	E63	05	13.5	4	(BP)					
8540		HOLL	05	08	1521	S28	E62	05	13.5		B	DSO	90	6	10	3
8540		LEAR	05	09	0101	S27	E59	05	13.6		B	DAO	120	8	10	3
8540		KAND	05	09	0725	S26	E55	05	13.6			ESO		7	12	3
8540		RAMY	05	09	1234	S27	E51	05	13.5		B	ESO	60	12	13	4
8540		SVTO	05	09	1452	S29	E50	05	13.5		B	DSO	70	7	10	3
8540	29091	MWIL	05	09	1500	S28	E51	05	13.6	5	(BP)					
8540		HOLL	05	09	1640	S27	E50	05	13.6		B	DSO	80	6	9	2
8540		LEAR	05	10	0145	S27	E46	05	13.6		B	DSO	90	9	10	3
8540		SVTO	05	10	0450	S28	E43	05	13.6		B	DAO	100	6	10	3
8540		KAND	05	10	0700	S26	E41	05	13.5			CSO		12	11	3
8540		RAMY	05	10	1143	S27	E39	05	13.5		B	DSO	70	11	9	3
8540		HOLL	05	10	1430	S27	E38	05	13.6		B	EAI	120	12	12	3
8540	29091	MWIL	05	10	1500	S27	E38	05	13.6	4	(BP)					
8540		SVTO	05	11	0500	S26	E27	05	13.3		B	CSO	60	12	12	3
8540		KAND	05	11	0755	S26	E29	05	13.6			BXO		9	11	3
8540	29091	MWIL	05	11	1500	S27	E25	05	13.6	5	(BP)					
8540		HOLL	05	11	2059	S27	E23	05	13.7		B	BXO	40	14	13	2
8540		LEAR	05	12	0120	S26	E18	05	13.4		B	CAO	40	9	12	1
8540		SVTO	05	12	0610	S26	E18	05	13.6		B	ERO	40	14	14	3
8540		KAND	05	12	0740	S25	E15	05	13.5			CAO		14	12	2
8540		HOLL	05	12	1630	S28	E12	05	13.6		B	CRO	40	12	12	4
8540		RAMY	05	12	1649	S28	E10	05	13.5		B	CAO	20	8	15	2
8540	29091	MWIL	05	12	2200	S27	E08	05	13.5	4	(BP)					
8540		SVTO	05	13	0546	S27	E05	05	13.6		B	EAO	30	11	13	3
8540		KAND	05	13	0810	S26	E04	05	13.6			BXO		5	12	3
8540		HOLL	05	13	1436	S28	E01	05	13.7		B	BXO	20	5	11	3
8540	29091	MWIL	05	13	1445	S27	W01	05	13.5	4	(BP)					
8540		RAMY	05	13	1611	S27	W02	05	13.5		B	BXO	10	6	11	2
8540		LEAR	05	14	0657	S25	W14	05	13.2		B	BXO	10	3	5	2
8540		RAMY	05	14	1223	S25	W17	05	13.2		B	BXO	10	6	5	3
8540		HOLL	05	14	1434	S26	W16	05	13.4		B	BXO	10	6	5	2
8540	29097	MWIL	05	14	1600	S24	W17	05	13.3	4	AF					
8540		RAMY	05	15	1132	S26	W26	05	13.5		B	BXO		2	5	4
8540		HOLL	05	15	1535	S23	W31	05	13.3		A	AX	10	1	1	3
8540	29102	MWIL	05	16	1500	S30	W35	05	13.9	4	AF					
8540		HOLL	05	16	1549	S31	W34	05	14.0		A	AX		1		4
8540		RAMY	05	19	1219	S29	W70	05	14.0		A	AX		1		4
8541	29092	MWIL	05	07	1445	N21	E80	05	13.7	2	(AP)					
8541		LEAR	05	08	0121	N23	E80	05	14.2		B	DAO	140	7	11	3
8541		KAND	05	08	0615	N22	E75	05	14.0			ESO		5	11	4
8541		SVTO	05	08	0730	N22	E79	05	14.4		B	ERO	140	8	13	3
8541		RAMY	05	08	1230	N22	E70	05	13.9		B	DAO	120	8	10	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time			Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
			Mo	Day	(UT)										
8541	29092	MWIL	05	08	1430	N21 E70	05 14.0	4	(B)						
8541		HOLL	05	08	1521	N22 E69	05 13.9		B	ESO	120	11	11	3	
8541		LEAR	05	09	0101	N23 E66	05 14.1		B	DAI	200	15	9	3	
8541		KAND	05	09	0725	N23 E60	05 13.9			EAI		12	13	3	
8541		RAMY	05	09	1234	N22 E58	05 14.0		B	EAI	220	25	12	4	
8541		SVTO	05	09	1452	N20 E58	05 14.0		B	ESI	200	22	14	3	
8541	29092	MWIL	05	09	1500	N21 E57	05 14.0	5	(B)						
8541		HOLL	05	09	1640	N23 E58	05 14.2		B	ESO	90	13	12	2	
8541		LEAR	05	10	0145	N23 E49	05 13.8		B	EAI	240	24	13	3	
8541		SVTO	05	10	0450	N21 E49	05 13.9		B	EAI	270	16	14	3	
8541		KAND	05	10	0700	N22 E46	05 13.8			EAI		28	15	3	
8541		RAMY	05	10	1143	N22 E44	05 13.9		B	EAO	220	22	12	3	
8541		HOLL	05	10	1430	N22 E43	05 13.9		B	FAC	170	32	16	3	
8541	29092	MWIL	05	10	1500	N22 E43	05 13.9	5	(B)						
8541		SVTO	05	11	0500	N22 E35	05 13.9		BG	EAI	180	25	11	3	
8541		KAND	05	11	0755	N22 E35	05 14.0			ESC		11	14	3	
8541	29092	MWIL	05	11	1500	N22 E30	05 13.9	5	(B)						
8541		HOLL	05	11	2059	N23 E26	05 13.9		B	FAC	160	20	15	2	
8541		LEAR	05	12	0120	N22 E25	05 14.0		B	EAI	160	27	13	1	
8541		SVTO	05	12	0610	N21 E23	05 14.0		BG	ESI	130	17	15	3	
8541		KAND	05	12	0740	N22 E20	05 13.8			EAC		21	14	2	
8541		HOLL	05	12	1630	N21 E17	05 14.0		B	ESO	140	25	14	4	
8541		RAMY	05	12	1649	N20 E16	05 13.9		B	ESO	90	22	14	2	
8541	29092	MWIL	05	12	2200	N22 E13	05 13.9	5	(B)						
8541		SVTO	05	13	0546	N21 E09	05 13.9		B	ESI	140	17	14	3	
8541		KAND	05	13	0810	N22 E06	05 13.8			EAO		17	13	3	
8541		HOLL	05	13	1436	N21 E04	05 13.9		B	ESO	50	20	13	3	
8541	29092	MWIL	05	13	1445	N22 E04	05 13.9	5	(BP)						
8541		RAMY	05	13	1611	N22 E03	05 13.9		B	ESO	80	16	14	2	
8541		SVTO	05	14	0602	N20 W05	05 13.9		B	ESO	170	16	13	3	
8541		LEAR	05	14	0657	N21 W07	05 13.7		B	ESO	80	10	12	2	
8541		KAND	05	14	0740	N21 W06	05 13.8			EAC		14	13	2	
8541		RAMY	05	14	1223	N22 W08	05 13.9		B	DSO	80	18	12	3	
8541		HOLL	05	14	1434	N21 W09	05 13.9		B	EAO	80	15	11	2	
8541	29092	MWIL	05	14	1600	N22 W11	05 13.8	4	(BP)						
8541		LEAR	05	15	0101	N22 W13	05 14.0		B	DAI	90	31	17	3	
8541		SVTO	05	15	0602	N19 W15	05 14.1		BG	FSO	120	27	19	3	
8541		KAND	05	15	0610	N20 W19	05 13.8			CAO		13	10	5	
8541		RAMY	05	15	1132	N21 W21	05 13.9		B	ESO	100	28	11	4	
8541	29092	MWIL	05	15	1500	N21 W24	05 13.8	4	(B)						
8541		HOLL	05	15	1535	N21 W22	05 14.0		B	EAO	100	20	12	3	
8541		LEAR	05	16	0206	N21 W27	05 14.0		B	ESO	120	22	13	4	
8541		SVTO	05	16	0742	N20 W32	05 13.9		B	EAO	130	18	11	3	
8541		KAND	05	16	0745	N20 W32	05 13.9			EAO		13	11	3	
8541	29092	MWIL	05	16	1500	N21 W36	05 13.9	5	(B)						
8541		RAMY	05	16	1515	N19 W37	05 13.8		B	EAO	170	10	11	2	
8541		HOLL	05	16	1549	N21 W33	05 14.1		B	DAO	110	21	10	4	
8541		LEAR	05	17	0156	N21 W41	05 13.9		B	ESO	120	20	13	3	
8541		SVTO	05	17	1150	N21 W47	05 13.9		B	EKO	330	10	12	2	
8541		KAND	05	17	1150	N22 W47	05 13.9			DAO		12	10	4	
8541		RAMY	05	17	1422	N22 W47	05 14.0		B	EAO	280	13	12	2	
8541	29092	MWIL	05	17	1515	N21 W48	05 13.9	5	(B)						
8541		HOLL	05	17	1552	N20 W47	05 14.1		B	EAO	190	19	12	4	
8541		LEAR	05	18	0115	N21 W54	05 13.9		B	FAO	240	16	11	4	
8541		KAND	05	18	0650	N21 W56	05 14.0			DAO		14	10	4	
8541		RAMY	05	18	1442	N19 W61	05 13.9		B	DAO	140	3	7	2	
8541		HOLL	05	18	1501	N20 W60	05 14.0		B	DAO	120	10	8	3	
8541	29092	MWIL	05	18	1515	N21 W62	05 13.9	5	(BG)						
8541		LEAR	05	19	0216	N21 W67	05 13.9		B	DAO	180	8	7	2	
8541		KAND	05	19	0930	N20 W73	05 13.8			EAO		2	11	2	
8541		RAMY	05	19	1219	N21 W72	05 14.0		B	EAO	50	3	11	4	
8541	29092	MWIL	05	19	1430	N20 W75	05 13.9	4	(BF)						
8547		KAND	05	15	0610	N22 W07	05 14.7			BXO		3	2	5	
8547		RAMY	05	15	1132	N22 W09	05 14.8		B	BXO	20	7	3	4	
8547	29101	MWIL	05	15	1500	N22 W12	05 14.7	4	(B)						
8547		HOLL	05	15	1535	N22 W12	05 14.7		B	DSO	20	8	4	3	
8547		LEAR	05	16	0206	N22 W17	05 14.8		B	CRO	20	5	4	4	
8547		SVTO	05	16	0742	N21 W22	05 14.6		B	CSO	20	4	6	3	

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8547		KAND	05 16 0745	N21 W22	05 14.6			CAO		3	5	3
8547	29101	MWIL	05 16 1500	N22 W27	05 14.5	4	(B)					
8547		RAMY	05 16 1515	N20 W26	05 14.6		B	CSO	10	2	5	2
8547		HOLL	05 16 1549	N21 W28	05 14.5		B	CSO	40	6	7	4
8547		LEAR	05 17 0156	N22 W31	05 14.7		A	AX		1		3
8547		KAND	05 17 1150	N23 W41	05 14.3			BXO		3	2	4
8547	29101	MWIL	05 17 1515	N21 W41	05 14.5	5	(BP)					
8547		HOLL	05 17 1552	N22 W38	05 14.7		A	BXO	10	2	1	4
8547		KAND	05 18 0650	N24 W45	05 14.8			AX		1		4
8547		RAMY	05 18 1442	N23 W49	05 14.8		A	AX		1		2
8547		HOLL	05 18 1501	N25 W48	05 14.9		B	BXO	10	3	4	3
8547	29104	MWIL	05 18 1515	N25 W49	05 14.8	4	(B)					
8547A		OLL	05 17 1552	S17 W37	05 14.8		A	X		1		H
8549		RAMY	05 19 1219	N24 W46	05 15.9		B	BXO	10	4	5	4
8549	29105	MWIL	05 19 1430	N25 W46	05 16.0	4	(BP)					
8549		KAND	05 20 0730	N25 W56	05 16.0			CAO		8	6	3
8549	29105	MWIL	05 20 1430	N24 W59	05 16.0	5	(B)					
8549		LEAR	05 21 0322	N26 W67	05 15.9		B	DAO	340	6	10	3
8549		KAND	05 21 0715	N24 W67	05 16.1			DAO		5	9	3
8549		SVTO	05 21 0718	N27 W70	05 15.8		B	DAO	230	6	10	3
8549		RAMY	05 21 1359	N25 W74	05 15.8		B	DAO	180	9	10	3
8549		HOLL	05 21 1457	N25 W75	05 15.8		B	EAO	160	8	11	3
8549	29105	MWIL	05 21 1500	N25 W72	05 16.0	5	(BF)					
8549		LEAR	05 22 0115	N26 W75	05 16.2		B	DAO	210	7	9	3
8549		KAND	05 22 0710	N25 W77	05 16.3			HA		1	2	2
8549		RAMY	05 22 1228	N25 W78	05 16.5		A	HA	60	1	3	4
8549	29105	MWIL	05 22 1630	N25 W83	05 16.2	4	AF					
8543		SVTO	05 12 0610	N05 E70	05 17.5		A	AX		1		3
8543		HOLL	05 12 1630	N05 E63	05 17.4		A	AX	10	1		4
8543	29096	MWIL	05 12 2200	N05 E59	05 17.3	3	AP					
8543		SVTO	05 13 0546	N06 E56	05 17.4		A	AX		1		3
8543		KAND	05 13 0810	N05 E53	05 17.3			AX		1		3
8543		HOLL	05 13 1436	N05 E49	05 17.3		A	AX		1		3
8543	29096	MWIL	05 13 1445	N05 E49	05 17.3	4	(AP)					
8543		LEAR	05 15 0101	N05 E27	05 17.1		A	AX	10	1		3
8543		RAMY	05 15 1132	N06 E22	05 17.1		A	AX		2	1	4
8543	29096	MWIL	05 15 1500	N06 E19	05 17.0	3	(B)					
8543		LEAR	05 16 0206	N05 E15	05 17.2		B	BXO		2	3	4
8543		HOLL	05 16 1549	N06 E06	05 17.1		A	AX		1		4
8543		LEAR	05 17 0156	N06 E01	05 17.1		B	BXO		2		3
8542		SVTO	05 11 0500	S19 E79	05 17.2		A	HS	30	1	2	3
8542		KAND	05 11 0755	S19 E80	05 17.4			HA		1	2	3
8542	29095	MWIL	05 11 1500	S18 E75	05 17.3	4	(AP)					
8542		LEAR	05 12 0120	S18 E69	05 17.3		A	HA	20	1	1	1
8542		SVTO	05 12 0610	S19 E69	05 17.5		A	HS	40	1	1	3
8542		KAND	05 12 0740	S18 E65	05 17.3			HA		1	2	2
8542		HOLL	05 12 1630	S18 E60	05 17.2		A	HS	30	1	1	4
8542		RAMY	05 12 1649	S21 E62	05 17.4		B	CSO	20	2	9	2
8542	29095	MWIL	05 12 2200	S18 E59	05 17.4	4	(AP)					
8542		SVTO	05 13 0546	S19 E54	05 17.4		A	HS	30	1	2	3
8542		KAND	05 13 0810	S18 E53	05 17.4			HS		1	2	3
8542		HOLL	05 13 1436	S19 E49	05 17.3		A	HS	30	1	1	3
8542	29095	MWIL	05 13 1445	S19 E49	05 17.3	4	(AP)					
8542		RAMY	05 13 1611	S18 E48	05 17.3		A	HS	30	1	1	2
8542		SVTO	05 14 0602	S22 E42	05 17.5		A	HS	160	1	2	3
8542		LEAR	05 14 0657	S17 E41	05 17.4		A	HS	30	1	2	2
8542		KAND	05 14 0740	S18 E40	05 17.4			HS		1	2	2
8542		RAMY	05 14 1223	S18 E36	05 17.2		A	HS	40	1	1	3
8542		HOLL	05 14 1434	S19 E37	05 17.4		A	HS	20	1	1	2
8542	29095	MWIL	05 14 1600	S19 E36	05 17.4	5	(AP)					
8542		LEAR	05 15 0101	S19 E30	05 17.3		A	HS	50	1	1	3
8542		SVTO	05 15 0602	S19 E28	05 17.4		A	HS	40	1	1	3
8542		KAND	05 15 0610	S18 E28	05 17.4			HS		1	2	5
8542		RAMY	05 15 1132	S19 E24	05 17.3		A	HS	40	1	2	4
8542	29095	MWIL	05 15 1500	S19 E24	05 17.4	5	(BP)					

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

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long- Extent (Deg)	Qual
8542		HOLL	05 15 1535	S19 E23	05 17.4		A	HS	40	1	1	3
8542		LEAR	05 16 0206	S19 E17	05 17.4		A	HS	20	1	2	4
8542		SVTO	05 16 0742	S19 E15	05 17.5		A	HS	50	1	1	3
8542		KAND	05 16 0745	S18 E14	05 17.4			HS		1	2	3
8542	29095	MWIL	05 16 1500	S19 E09	05 17.3	5	(BP)					
8542		RAMY	05 16 1515	S19 E09	05 17.3		A	HS	20	1	1	2
8542		HOLL	05 16 1549	S19 E10	05 17.4		A	HS	40	1	2	4
8542		LEAR	05 17 0156	S18 E04	05 17.4		A	HS	30	1	2	3
8542		KAND	05 17 1150	S18 W01	05 17.4			HA		1	2	4
8542		SVTO	05 17 1150	S19 W01	05 17.4		A	HS	60	1	2	2
8542		RAMY	05 17 1422	S18 W03	05 17.4		A	HS	40	1	1	2
8542	29095	MWIL	05 17 1515	S18 W03	05 17.4	5	(AP)					
8542		HOLL	05 17 1552	S21 E01	05 17.7		B	CSO	40	2	7	4
8542		LEAR	05 18 0115	S19 W09	05 17.4		A	HS	40	1	1	4
8542		KAND	05 18 0650	S18 W11	05 17.4			HS		1	2	4
8542		RAMY	05 18 1442	S19 W14	05 17.5		A	HS	10	1	1	2
8542		HOLL	05 18 1501	S19 W15	05 17.5		A	HS	40	1	1	3
8542	29095	MWIL	05 18 1515	S19 W15	05 17.5	5	(AP)					
8542		LEAR	05 19 0216	S19 W22	05 17.4		A	HS	30	1	1	2
8542		KAND	05 19 0930	S18 W24	05 17.6			HS		1	1	2
8542		RAMY	05 19 1219	S18 W25	05 17.6		B	CSO	20	2	3	4
8542	29095	MWIL	05 19 1430	S19 W28	05 17.5	5	(BP)					
8542		KAND	05 20 0730	S18 W37	05 17.5			HS		1	2	3
8542	29095	MWIL	05 20 1430	S19 W41	05 17.5	5	(AP)					
8542		LEAR	05 21 0322	S18 W48	05 17.5		A	HA	30	1	1	3
8542		KAND	05 21 0715	S19 W50	05 17.5			HA		1	2	3
8542		SVTO	05 21 0718	S18 W51	05 17.4		A	HS	40	1	2	3
8542		RAMY	05 21 1359	S19 W55	05 17.4		A	HS	10	1	1	3
8542		HOLL	05 21 1457	S19 W55	05 17.4		A	B	20	1	1	3
8542	29095	MWIL	05 21 1500	S19 W55	05 17.4	4	(AP)					
8542		LEAR	05 22 0115	S18 W61	05 17.4		A	HS	30	1	2	3
8542		KAND	05 22 0710	S19 W62	05 17.6			HS		1	1	2
8542		SVTO	05 22 0852	S19 W66	05 17.3		A	HS	50	1	2	3
8542		RAMY	05 22 1228	S21 W64	05 17.6		A	HS	20	1	1	4
8542		HOLL	05 22 1551	S20 W69	05 17.4		A	HS	20	1	1	3
8542	29095	MWIL	05 22 1630	S19 W69	05 17.4	4	(AP)					
8542		LEAR	05 23 0131	S18 W73	05 17.5		A	HS	30	1	2	3
8542		SVTO	05 23 0600	S22 W78	05 17.2		A	AX		1	1	2
8542		KAND	05 23 0705	S19 W79	05 17.3			AX		1	1	3
8542		RAMY	05 23 1150	S21 W78	05 17.5		A	AX		1		5
8542	29095	MWIL	05 23 1600	S20 W84	05 17.2	2	AP					
8544		LEAR	05 14 0657	S18 E69	05 19.5		B	BXO	10	2	2	2
8544		KAND	05 14 0740	S20 E69	05 19.6			BXO		3	6	2
8544		RAMY	05 14 1223	S21 E65	05 19.5		B	BXO	10	3	5	3
8544		HOLL	05 14 1434	S20 E67	05 19.7		B	CRO	20	3	6	2
8544	29098	MWIL	05 14 1600	S21 E66	05 19.7	4	BP					
8544		LEAR	05 15 0101	S21 E59	05 19.6		B	DAO	60	8	8	3
8544		SVTO	05 15 0602	S21 E58	05 19.7		B	DSO	60	8	9	3
8544		KAND	05 15 0610	S19 E57	05 19.6			DRO		9	7	5
8544		RAMY	05 15 1132	S21 E53	05 19.5		B	DAO	100	16	8	4
8544	29098	MWIL	05 15 1500	S20 E52	05 19.6	5	(B)					
8544		HOLL	05 15 1535	S20 E52	05 19.6		B	DAO	140	15	9	3
8544		LEAR	05 16 0206	S21 E45	05 19.5		B	DAO	140	17	10	4
8544		SVTO	05 16 0742	S21 E44	05 19.7		B	DAO	200	16	10	3
8544		KAND	05 16 0745	S19 E42	05 19.5			DAO		18	10	3
8544	29098	MWIL	05 16 1500	S20 E38	05 19.5	5	(B)					
8544		RAMY	05 16 1515	S19 E37	05 19.4		B	DAO	140	8	10	2
8544		HOLL	05 16 1549	S20 E38	05 19.6		B	ESO	160	15	11	4
8544		LEAR	05 17 0156	S20 E31	05 19.4		B	DAO	150	11	11	3
8544		KAND	05 17 1150	S20 E25	05 19.4			EAO		10	13	4
8544		SVTO	05 17 1150	S20 E27	05 19.5		B	EKO	260	14	12	2
8544		RAMY	05 17 1422	S20 E24	05 19.4		B	EAO	140	11	12	2
8544	29098	MWIL	05 17 1515	S19 E25	05 19.5	5	(BP)					
8544		HOLL	05 17 1552	S20 E25	05 19.6		B	EAO	170	24	12	4
8544		LEAR	05 18 0115	S20 E18	05 19.4		B	FAO	190	16	12	4
8544		KAND	05 18 0650	S19 E15	05 19.4			EAO		27	14	4
8544		RAMY	05 18 1442	S19 E11	05 19.4		B	EAO	130	13	12	2
8544		HOLL	05 18 1501	S20 E11	05 19.5		B	ESO	120	26	11	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time		Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8544	29098	MWIL	05	18	1515	S20 E11	05 19.5	5	(B)					
8544		LEAR	05	19	0216	S20 E05	05 19.5		B	EAO	160	11	12	2
8544		KAND	05	19	0930	S19 E00	05 19.4			EAO		24	15	2
8544		RAMY	05	19	1219	S19 W01	05 19.4		B	EAO	120	29	14	4
8544	29098	MWIL	05	19	1430	S20 W02	05 19.4	4	(BG)					
8544		KAND	05	20	0730	S20 W11	05 19.5			FAO		23	16	3
8544	29098	MWIL	05	20	1430	S20 W15	05 19.4	5	(B)					
8544		LEAR	05	21	0322	S18 W23	05 19.4		BG	FSC	250	21	16	3
8544		KAND	05	21	0715	S20 W26	05 19.3			EAO		15	15	3
8544		SVTO	05	21	0718	S19 W27	05 19.2		B	EAI	170	17	15	3
8544		RAMY	05	21	1359	S20 W29	05 19.4		B	EAO	150	18	15	3
8544		HOLL	05	21	1457	S20 W31	05 19.2		B	EAO	120	22	15	3
8544	29098	MWIL	05	21	1500	S20 W29	05 19.4	5	(BG)					
8544		LEAR	05	22	0115	S20 W35	05 19.4		BG	ESI	220	16	15	3
8544		KAND	05	22	0710	S20 W37	05 19.5			FAO		13	16	2
8544		SVTO	05	22	0852	S21 W38	05 19.4		B	FAI	310	18	16	3
8544		RAMY	05	22	1228	S22 W40	05 19.4		B	ESO	130	14	14	4
8544		HOLL	05	22	1551	S20 W45	05 19.2		B	EAO	100	10	15	3
8544	29098	MWIL	05	22	1630	S20 W42	05 19.5	5	(B)					
8544		LEAR	05	23	0131	S21 W49	05 19.3		B	ESO	180	12	15	3
8544		SVTO	05	23	0600	S22 W48	05 19.6		B	FAO	120	9	16	2
8544		KAND	05	23	0705	S21 W51	05 19.4			FSO		4	17	3
8544		RAMY	05	23	1150	S22 W52	05 19.5		B	FSO	150	8	17	5
8544	29098	MWIL	05	23	1600	S21 W56	05 19.4	5	(BF)					
8544		LEAR	05	24	0113	S20 W60	05 19.5		B	FSO	140	9	16	4
8544		SVTO	05	24	0450	S20 W64	05 19.3		B	FHO	260	7	19	3
8544		KAND	05	24	0610	S20 W65	05 19.3			FAO		5	18	3
8544	29098	MWIL	05	24	1500	S22 W65	05 19.6	5	(BF)					
8544		RAMY	05	24	1544	S21 W67	05 19.5		B	FAO	100	6	16	3
8544		HOLL	05	24	1545	S20 W68	05 19.4		B	CAO	130	6	16	3
8544		LEAR	05	25	0209	S21 W72	05 19.6		B	CAO	60	2	2	4
8544		SVTO	05	25	0445	S22 W71	05 19.7		B	CSO	110	3	5	3
8544		KAND	05	25	1105	S22 W71	05 20.0			HS		2	2	2
8544		RAMY	05	25	1152	S23 W72	05 19.9		A	HA	40	1	2	3
8544	29098	MWIL	05	25	1430	S23 W75	05 19.8	4	(AF)					
8544		HOLL	05	25	1452	S22 W72	05 20.1		A	HS	60	1	1	3
8544		LEAR	05	26	0053	S22 W81	05 19.8		A	HA	60	1	3	4
8545		LEAR	05	14	0657	N39 E79	05 20.7		A	HS	30	1	1	2
8545		RAMY	05	14	1223	N36 E79	05 20.8		A	HS	60	1	3	3
8545		HOLL	05	14	1434	N37 E75	05 20.6		A	HH	150	1	3	2
8545	29099	MWIL	05	14	1600	N37 E76	05 20.8	4	AP					
8545		LEAR	05	15	0101	N36 E73	05 20.9		A	HK	300	1	7	3
8545		SVTO	05	15	0602	N37 E72	05 21.0		A	HK	210	1	3	3
8545		KAND	05	15	0610	N37 E69	05 20.8			HA		1	3	5
8545		RAMY	05	15	1132	N36 E68	05 20.9		A	HH	270	1	3	4
8545	29099	MWIL	05	15	1500	N37 E66	05 20.9	5	(AP)					
8545		HOLL	05	15	1535	N36 E66	05 20.9		B	CKO	210	5	4	3
8545		LEAR	05	16	0206	N36 E59	05 20.8		B	CKO	240	3	5	4
8545		SVTO	05	16	0742	N37 E59	05 21.1		A	HK	340	1	6	3
8545		KAND	05	16	0745	N37 E57	05 20.9			HH		4	5	3
8545	29099	MWIL	05	16	1500	N37 E54	05 21.0	5	(AP)					
8545		RAMY	05	16	1515	N36 E52	05 20.8		A	HK	310	1	4	2
8545		HOLL	05	16	1549	N37 E54	05 21.0		A	HK	210	3	4	4
8545		LEAR	05	17	0156	N36 E48	05 20.9		A	HA	260	2	5	3
8545		KAND	05	17	1150	N36 E43	05 20.9			HA		1	5	4
8545		SVTO	05	17	1150	N37 E47	05 21.3		A	HK	340	1	6	2
8545		RAMY	05	17	1422	N36 E42	05 21.0		A	HK	370	1	4	2
8545	29099	MWIL	05	17	1515	N37 E42	05 21.0	5	(BP)					
8545		HOLL	05	17	1552	N36 E41	05 20.9		A	HK	260	5	6	4
8545		LEAR	05	18	0115	N36 E37	05 21.0		B	CKO	280	4	5	4
8545		KAND	05	18	0650	N36 E33	05 20.9			CHO		4	6	4
8545		RAMY	05	18	1442	N37 E28	05 20.9		A	HK	350	1	4	2
8545		HOLL	05	18	1501	N37 E30	05 21.0		A	HK	420	1	3	3
8545	29099	MWIL	05	18	1515	N36 E29	05 21.0	5	(BP)					
8545		LEAR	05	19	0216	N37 E23	05 20.9		B	CKO	300	3	4	2
8545		KAND	05	19	0930	N37 E19	05 20.9			CHO		6	7	2
8545		RAMY	05	19	1219	N38 E19	05 21.0		B	DHO	380	7	6	4
8545	29099	MWIL	05	19	1430	N37 E17	05 21.0	5	(BP)					

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8545		KAND	05 20 0730	N36	E08	05 20.9			CKO		5	7	3
8545	29099	MWIL	05 20 1430	N36	E05	05 21.0	5	(BP)					
8545		LEAR	05 21 0322	N36	E01	05 21.2		B	CKO	490	7	6	3
8545		KAND	05 21 0715	N37	W03	05 21.1			CKO		8	6	3
8545		SVTO	05 21 0718	N37	W02	05 21.1		B	DKO	370	5	7	3
8545		RAMY	05 21 1359	N36	W06	05 21.1		B	CAO	270	5	6	3
8545		HOLL	05 21 1457	N37	W05	05 21.2		B	CKO	280	5	6	3
8545	29099	MWIL	05 21 1500	N36	W07	05 21.1	5	(BP)					
8545		LEAR	05 22 0115	N36	W11	05 21.2		A	HK	340	2	6	3
8545		KAND	05 22 0710	N37	W17	05 20.9			HH		6	6	2
8545		SVTO	05 22 0852	N36	W15	05 21.2		B	DHO	500	4	6	3
8545		RAMY	05 22 1228	N35	W18	05 21.1		A	HA	360	2	5	4
8545		HOLL	05 22 1551	N37	W20	05 21.0		A	HK	240	2	4	3
8545	29099	MWIL	05 22 1630	N36	W20	05 21.1	5	(AP)					
8545		LEAR	05 23 0131	N36	W24	05 21.1		A	HK	320	2	5	3
8545		SVTO	05 23 0600	N35	W27	05 21.1		A	HK	310	3	5	2
8545		KAND	05 23 0705	N37	W28	05 21.0			HK		2	6	3
8545		RAMY	05 23 1150	N35	W28	05 21.2		B	CAO	350	3	6	5
8545	29099	MWIL	05 23 1600	N36	W32	05 21.1	5	(BP)					
8545		LEAR	05 24 0113	N36	W37	05 21.1		B	CAO	300	3	5	4
8545		SVTO	05 24 0450	N37	W39	05 21.0		B	CKO	480	3	6	3
8545		KAND	05 24 0610	N36	W39	05 21.1			HH		2	5	3
8545	29099	MWIL	05 24 1500	N36	W44	05 21.1	5	(BP)					
8545		RAMY	05 24 1544	N35	W44	05 21.1		A	HH	260	3	4	3
8545		HOLL	05 24 1545	N37	W45	05 21.0		A	HK	260	3	5	3
8545		LEAR	05 25 0209	N36	W52	05 20.9		B	CKO	240	4	5	4
8545		SVTO	05 25 0445	N37	W50	05 21.2		B	CHO	280	5	8	3
8545		KAND	05 25 1105	N36	W53	05 21.2			CKO		3	6	2
8545		RAMY	05 25 1152	N37	W54	05 21.1		B	CHO	290	6	6	3
8545	29099	MWIL	05 25 1430	N37	W56	05 21.1	5	(BP)					
8545		HOLL	05 25 1452	N37	W55	05 21.2		B	CKO	330	5	8	3
8545		LEAR	05 26 0053	N39	W58	05 21.3		B	DKO	300	5	10	4
8545		SVTO	05 26 0650	N37	W61	05 21.4		B	DKO	390	4	7	3
8545		KAND	05 26 0800	N37	W64	05 21.2			DHO		4	9	3
8545		RAMY	05 26 1207	N36	W65	05 21.3		B	DSO	220	5	9	4
8545	29099	MWIL	05 26 1445	N38	W67	05 21.2	5	(BP)					
8545		HOLL	05 26 1546	N37	W67	05 21.2		B	CSO	120	5	7	3
8545		LEAR	05 27 0101	N39	W70	05 21.4		B	CAO	250	6	13	3
8545		SVTO	05 27 0631	N36	W72	05 21.5		A	HA	120	1	4	3
8545		KAND	05 27 0710	N37	W78	05 21.0			HH		1	4	4
8545		RAMY	05 27 1152	N37	W80	05 21.0		B	CHO	100	2	6	5
8545	29099	MWIL	05 27 1400	N37	W79	05 21.2	5	AP					
8545		HOLL	05 27 1516	N37	W80	05 21.2		A	HA	90	2	5	4
8548		LEAR	05 17 0156	S21	E59	05 21.6		A	AX		1		3
8548		RAMY	05 17 1422	S21	E52	05 21.6		A	AX		1		2
8548	29103	MWIL	05 17 1515	S20	E52	05 21.6	4	(AP)					
8548		HOLL	05 17 1552	S21	E52	05 21.6		A	AX	20	1	1	4
8548		LEAR	05 18 0115	S21	E47	05 21.6		B	CRO	20	7	4	4
8548		KAND	05 18 0650	S20	E45	05 21.7			BXO		8	5	4
8548		RAMY	05 18 1442	S19	E40	05 21.7		B	BXO	20	7	6	2
8548		HOLL	05 18 1501	S21	E40	05 21.7		B	BXO	30	15	6	3
8548	29103	MWIL	05 18 1515	S20	E40	05 21.7	4	(B)					
8548		LEAR	05 19 0216	S20	E34	05 21.7		B	CRO	30	9	9	2
8548		KAND	05 19 0930	S19	E30	05 21.7			DSI		15	9	2
8548		RAMY	05 19 1219	S19	E29	05 21.7		B	CRO	20	16	8	4
8548	29103	MWIL	05 19 1430	S20	E27	05 21.7	4	(B)					
8548		KAND	05 20 0730	S20	E17	05 21.6			CAO		10	10	3
8548	29103	MWIL	05 20 1430	S19	E14	05 21.7	5	(B)					
8548		LEAR	05 21 0322	S19	E04	05 21.4		B	CSO	100	16	10	3
8548		KAND	05 21 0715	S19	E04	05 21.6			CAO		13	10	3
8548		SVTO	05 21 0718	S20	E03	05 21.5		B	DAI	100	11	10	3
8548		RAMY	05 21 1359	S19	W01	05 21.5		B	DAO	90	13	10	3
8548		HOLL	05 21 1457	S20	W02	05 21.5		B	EAO	90	17	11	3
8548	29103	MWIL	05 21 1500	S19	W01	05 21.5	4	(BP)					
8548		LEAR	05 22 0115	S19	W07	05 21.5		B	CAO	110	18	10	3
8548		KAND	05 22 0710	S19	W10	05 21.5			DAO		8	7	2
8548		SVTO	05 22 0852	S20	W12	05 21.4		B	DAI	170	18	9	3
8548		RAMY	05 22 1228	S19	W13	05 21.5		B	DSO	80	12	7	4

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8548		HOLL	05 22 1551	S20 W16		05 21.4		B	DAO	90	16	9	3
8548	29103	MWIL	05 22 1630	S19 W15		05 21.5	5	(BP)					
8548		LEAR	05 23 0131	S19 W19		05 21.6		B	DAO	80	13	9	3
8548		SVTO	05 23 0600	S21 W20		05 21.7		B	CAO	60	10	9	2
8548		KAND	05 23 0705	S20 W24		05 21.4			CSO		7	11	3
8548		RAMY	05 23 1150	S20 W24		05 21.6		B	CAO	70	11	12	5
8548	29103	MWIL	05 23 1600	S20 W30		05 21.4	5	(BP)					
8548		LEAR	05 24 0113	S20 W32		05 21.6		B	CSO	60	7	9	4
8548		SVTO	05 24 0450	S19 W38		05 21.3		B	CSO	100	4	5	3
8548		KAND	05 24 0610	S19 W41		05 21.1			HS		2	3	3
8548	29103	MWIL	05 24 1500	S20 W44		05 21.2	5	(B)					
8548		RAMY	05 24 1544	S20 W45		05 21.2		A	HS	50	2	2	3
8548		HOLL	05 24 1545	S19 W46		05 21.1		A	HS	60	1	2	3
8548		LEAR	05 25 0209	S19 W52		05 21.1		A	HA	70	1	1	4
8548		KAND	05 25 1105	S19 W55		05 21.3			HS		1	2	2
8548		RAMY	05 25 1152	S21 W52		05 21.5		B	CSO	40	2	11	3
8548	29103	MWIL	05 25 1430	S20 W56		05 21.3	5	(BP)					
8548		HOLL	05 25 1452	S20 W54		05 21.5		B	CSO	40	3	10	3
8548		LEAR	05 26 0053	S18 W59		05 21.5		B	EAO	140	6	11	4
8548		SVTO	05 26 0650	S22 W64		05 21.4		B	CSO	90	7	10	3
8548		KAND	05 26 0800	S20 W64		05 21.4			DAO		6	10	3
8548		RAMY	05 26 1207	S22 W66		05 21.4		B	DSO	50	9	10	4
8548	29103	MWIL	05 26 1445	S21 W66		05 21.5	4	(B)					
8548		HOLL	05 26 1546	S21 W66		05 21.6		B	CSO	50	6	10	3
8548		LEAR	05 27 0101	S18 W71		05 21.6		B	EAO	120	8	11	3
8548		SVTO	05 27 0631	S22 W75		05 21.5		B	BXO	50	7	11	3
8548		KAND	05 27 0710	S22 W74		05 21.6			BXO		7	15	4
8548		RAMY	05 27 1152	S22 W78		05 21.5		B	ESO	60	7	11	5
8548	29103	MWIL	05 27 1400	S21 W78		05 21.6	4	(B)					
8548		HOLL	05 27 1516	S23 W78		05 21.6		A	AX	30	4	3	4
8548		SVTO	05 28 0540	S23 W88		05 21.4		A	HA	60	1	6	4
8548A	29106	MWIL	05 19 1430	N17 E53		05 23.6	4	(AP)					
8545A		RAMY	05 19 1219	N28 E55		05 23.8		A	AX		1		4
8552A		LEAR	05 25 0209	N22 E06		05 25.5		A	AX	20	5	7	4
8550		RAMY	05 19 1219	S13 E80		05 25.5		A	HS	30	1	1	4
8550	29107	MWIL	05 19 1430	S14 E83		05 25.9	4	AP					
8550		KAND	05 20 0730	S14 E72		05 25.7			CAO		2	9	3
8550	29107	MWIL	05 20 1430	S14 E72		05 26.0	5	(BP)					
8550		LEAR	05 21 0322	S15 E66		05 26.1		B	DAO	260	5	9	3
8550		KAND	05 21 0715	S13 E63		05 26.0			DAO		5	10	3
8550		SVTO	05 21 0718	S15 E65		05 26.2		B	DAO	180	6	10	3
8550		RAMY	05 21 1359	S14 E59		05 26.0		B	DAO	250	9	8	3
8550		HOLL	05 21 1457	S14 E60		05 26.1		B	EAO	180	10	12	3
8550	29107	MWIL	05 21 1500	S14 E60		05 26.1	5	(BP)					
8550		LEAR	05 22 0115	S15 E54		05 26.1		B	ESO	210	14	11	3
8550		KAND	05 22 0710	S13 E50		05 26.1			EAO		10	11	2
8550		SVTO	05 22 0852	S15 E51		05 26.2		B	ESI	320	15	12	3
8550		RAMY	05 22 1228	S13 E49		05 26.2		B	DAO	160	13	10	4
8550		HOLL	05 22 1551	S14 E47		05 26.2		B	ESO	100	13	11	3
8550	29107	MWIL	05 22 1630	S14 E46		05 26.2	5	(BP)					
8550		LEAR	05 23 0131	S14 E42		05 26.2		B	EAO	180	18	11	3
8550		SVTO	05 23 0600	S12 E41		05 26.3		B	EAO	130	7	12	2
8550		KAND	05 23 0705	S14 E38		05 26.2			EAO		7	12	3
8550		RAMY	05 23 1150	S13 E35		05 26.1		B	EAO	140	14	12	5
8550	29107	MWIL	05 23 1600	S14 E32		05 26.1	5	(D)					
8550		LEAR	05 24 0113	S14 E29		05 26.2		B	EAO	200	15	14	4
8550		SVTO	05 24 0450	S14 E28		05 26.3		B	EAO	330	19	12	3
8550		KAND	05 24 0610	S14 E25		05 26.1			EAO		10	13	3
8550	29107	MWIL	05 24 1500	S14 E19		05 26.1	5	(D)					
8550		RAMY	05 24 1544	S13 E20		05 26.2		B	EAO	160	19	12	3
8550		HOLL	05 24 1545	S15 E21		05 26.2		B	EAI	160	13	13	3
8550		LEAR	05 25 0209	S14 E13		05 26.1		B	EAO	200	19	13	4
8550		KAND	05 25 1105	S14 E09		05 26.1			CAO		16	14	2
8550		RAMY	05 25 1152	S14 E08		05 26.1		B	EAO	140	21	13	3
8550	29107	MWIL	05 25 1430	S14 E06		05 26.0	4	(BG)					

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8550		HOLL	05 25 1452	S15 E07	05 26.1		B	ES1	120	23	13	3
8550		LEAR	05 26 0053	S14 E02	05 26.2		B	EAO	170	22	14	4
8550		SVTO	05 26 0650	S15 W07	05 25.7		B	DSO	150	10	6	3
8550		KAND	05 26 0800	S14 W09	05 25.6			DAO		15	8	3
8550		RAMY	05 26 1207	S15 W06	05 26.0		B	ESO	80	19	13	4
8550	29107	MWIL	05 26 1445	S14 W09	05 25.9	5	(BP)					
8550		HOLL	05 26 1546	S14 W09	05 26.0		B	CSO	60	15	12	3
8550		LEAR	05 27 0101	S14 W18	05 25.7		B	DAO	90	9	7	3
8550		SVTO	05 27 0631	S15 W20	05 25.7		B	CSO	40	10	7	3
8550		KAND	05 27 0710	S14 W20	05 25.8			CAO		15	8	4
8550		RAMY	05 27 1152	S15 W24	05 25.7		B	DAO	30	13	7	5
8550	29107	MWIL	05 27 1400	S14 W24	05 25.8	5	(AP)					
8550		HOLL	05 27 1516	S14 W26	05 25.7		B	DSO	50	8	7	4
8550		SVTO	05 28 0540	S14 W36	05 25.5		B	BXO	20	11	7	4
8550		KAND	05 28 0900	S14 W37	05 25.6			BXO		7	5	2
8550		RAMY	05 28 1210	S16 W38	05 25.6		B	DAO	30	4	5	4
8550	29107	MWIL	05 28 1430	S15 W40	05 25.6	4	(BF)					
8550		SVTO	05 29 0500	S14 W48	05 25.6		B	BXO	20	5	5	3
8550		RAMY	05 29 1340	S17 W51	05 25.7		A	AX	10	1	1	4
8550		HOLL	05 29 1529	S14 W53	05 25.6		A	AX	10	1	1	4
8550		SVTO	05 30 0515	S15 W62	05 25.5		A	AX	10	1	1	3
8550		KAND	05 30 0820	S15 W64	05 25.5			AX		1	1	3
8550		RAMY	05 30 1148	S15 W66	05 25.5		A	AX		1	1	3
8550	29107	MWIL	05 30 1430	S14 W67	05 25.5	3	(AP)					
8553		KAND	05 25 1105	N28 E09	05 26.2			BXO		2	2	2
8553		RAMY	05 25 1152	N29 E09	05 26.2		B	BXO		3	2	3
8553		RAMY	05 26 1207	N29 W02	05 26.3		B	BXO	10	8	7	4
8553		HOLL	05 27 1516	N28 W18	05 26.2		B	BXO	10	4	3	4
8553A	29111	MWIL	05 26 1445	N23 W03	05 26.4	4	(AF)					
8551	29108	MWIL	05 20 1430	N33 E80	05 26.9	4	AF					
8551		LEAR	05 21 0322	N32 E72	05 26.8		A	HA	120	1	4	3
8551		KAND	05 21 0715	N33 E72	05 27.0			DAO		2	4	3
8551		SVTO	05 21 0718	N32 E70	05 26.8		B	CSO	60	2	6	3
8551		RAMY	05 21 1359	N33 E66	05 26.8		B	CSO	30	2	2	3
8551		HOLL	05 21 1457	N33 E68	05 27.0		B	CAO	40	2	3	3
8551	29108	MWIL	05 21 1500	N33 E67	05 26.9	4	(AF)					
8551		LEAR	05 22 0115	N32 E61	05 26.9		B	DSO	60	3	4	3
8551		KAND	05 22 0710	N33 E60	05 27.1			DAO		2	3	2
8551		SVTO	05 22 0852	N32 E58	05 27.0		B	DAO	110	4	3	3
8551		RAMY	05 22 1228	N33 E57	05 27.0		B	CSO	20	4	2	4
8551		HOLL	05 22 1551	N33 E55	05 27.0		B	CAO	40	2	3	3
8551	29108	MWIL	05 22 1630	N33 E54	05 27.0	5	(AF)					
8551		LEAR	05 23 0131	N32 E50	05 27.0		B	CSO	30	2	3	3
8551		SVTO	05 23 0600	N34 E49	05 27.1		B	CSO	50	4	3	2
8551		KAND	05 23 0705	N33 E47	05 27.0			HS		1	2	3
8551		RAMY	05 23 1150	N32 E40	05 26.6		B	CSO	40	10	11	5
8551	29108	MWIL	05 23 1600	N32 E42	05 27.0	4	(BF)					
8551		LEAR	05 24 0113	N31 E37	05 27.0		B	CSO	60	8	5	4
8551		SVTO	05 24 0450	N34 E35	05 27.0		B	CSO	110	11	6	3
8551		KAND	05 24 0610	N32 E34	05 26.9			CSO		6	6	3
8551	29108	MWIL	05 24 1500	N32 E29	05 26.9	5	(BF)					
8551		RAMY	05 24 1544	N32 E27	05 26.8		B	CAO	60	7	6	3
8551		HOLL	05 24 1545	N32 E29	05 26.9		B	DAO	70	9	6	3
8551		LEAR	05 25 0209	N32 E23	05 26.9		B	CSO	80	6	7	4
8551		KAND	05 25 1105	N32 E19	05 27.0			CAO		3	6	2
8551		RAMY	05 25 1152	N32 E18	05 26.9		B	CSO	50	6	8	3
8551	29108	MWIL	05 25 1430	N31 E15	05 26.8	5	(B)					
8551		HOLL	05 25 1452	N32 E13	05 26.6		B	CSO	30	2	7	3
8551		LEAR	05 26 0053	N30 E08	05 26.7		B	CSO	50	4	13	4
8551		SVTO	05 26 0650	N31 E04	05 26.6		B	CSO	80	9	15	3
8551		KAND	05 26 0800	N32 E09	05 27.0			HA		1	2	3
8551		RAMY	05 26 1207	N32 E04	05 26.8		B	CSO	40	4	3	4
8551	29108	MWIL	05 26 1445	N30 E00	05 26.6	5	(BG)					
8551		HOLL	05 26 1546	N32 E06	05 27.1		A	HS	40	1	1	3
8551		LEAR	05 27 0101	N32 W03	05 26.8		B	CSO	70	5	13	3
8551		SVTO	05 27 0631	N33 W03	05 27.0		A	HA	60	1	2	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8551		KAND	05 27 0710	N31 W02	05 27.1			HA		1	2	4
8551		RAMY	05 27 1152	N32 W10	05 26.7			CSO	50	6	11	5
8551	29108	MWIL	05 27 1400	N30 W13	05 26.6	5	(B)					
8551		HOLL	05 27 1516	N32 W08	05 27.0		A	HS	40	1	2	4
8551		SVTO	05 28 0540	N32 W15	05 27.0		A	HS	20	2	1	4
8551		KAND	05 28 0900	N32 W16	05 27.1			HS		1	2	2
8551		RAMY	05 28 1210	N31 W19	05 27.0		A	HS	20	1	1	4
8551	29108	MWIL	05 28 1430	N31 W19	05 27.1	4	(AP)					
8551		HOLL	05 28 1519	N33 W20	05 27.0		A	HS	20	1	1	3
8551		SVTO	05 29 0500	N32 W27	05 27.1		A	HS	20	1	1	3
8551		KAND	05 29 0655	N30 W28	05 27.1			HR		1	1	2
8551		RAMY	05 29 1340	N29 W32	05 27.1		A	HR	10	1	1	4
8551		HOLL	05 29 1529	N31 W32	05 27.1		A	HS	30	1	1	4
8551	29108	MWIL	05 29 2330	N31 W36	05 27.1	4	(AP)					
8551		SVTO	05 30 0515	N30 W40	05 27.1		A	AX	20	3	1	3
8551		RAMY	05 30 1148	N31 W42	05 27.2		A	AX		2	2	3
8551	29108	MWIL	05 30 1430	N30 W44	05 27.1	3	(AF)					
8550A		HOLL	05 29 1529	S18 W33	05 27.1		A	AX		1		4
8550A	29117	MWIL	05 29 2330	S19 W38	05 27.1	4	B					
8550A	29117	MWIL	05 30 1430	S20 W45	05 27.2	3	(BF)					
8556	29112	MWIL	05 26 1445	S14 E27	05 28.6	4	(BF)					
8556		HOLL	05 26 1546	S14 E27	05 28.7		A	HR	10	1		3
8556		LEAR	05 27 0101	S15 E21	05 28.6		B	BXO	10	5	3	3
8556		KAND	05 27 0710	S15 E18	05 28.7			AX		2	1	4
8556		RAMY	05 27 1152	S14 E14	05 28.5		B	BXO		2	2	5
8556	29112	MWIL	05 27 1400	S14 E14	05 28.6	4	(B)					
8556		HOLL	05 27 1516	S14 E12	05 28.5		B	BXO	10	5	3	4
8556		SVTO	05 28 0540	S15 E03	05 28.5		A	AX		2	1	4
8556		RAMY	05 28 1210	S13 E01	05 28.6		B	BXO	20	4	5	4
8556	29112	MWIL	05 28 1430	S15 W01	05 28.5	4	(AP)					
8554		RAMY	05 25 1152	N27 E44	05 28.9		B	BXO	10	3	4	3
8554	29110	MWIL	05 25 1430	N26 E43	05 28.9	4	(BP)					
8554		HOLL	05 25 1452	N27 E44	05 29.0		B	BXO	10	6	6	3
8554		LEAR	05 26 0053	N25 E39	05 29.0		B	BXO	20	4	9	4
8554		SVTO	05 26 0650	N26 E35	05 29.0		B	CRI	60	10	8	3
8554		KAND	05 26 0800	N26 E33	05 28.9			CRO		9	8	3
8554		RAMY	05 26 1207	N26 E31	05 28.9		B	CRO	30	19	7	4
8554	29110	MWIL	05 26 1445	N26 E30	05 28.9	4	(D)					
8554		HOLL	05 26 1546	N27 E29	05 28.9		B	CSO	20	15	7	3
8554		LEAR	05 27 0101	N25 E25	05 29.0		B	CAO	140	7	6	3
8554		SVTO	05 27 0631	N26 E19	05 28.7		BG	BXI	30	11	4	3
8554		KAND	05 27 0710	N26 E19	05 28.8			CAO		9	3	4
8554		RAMY	05 27 1152	N26 E18	05 28.9		B	DAO	50	16	7	5
8554	29110	MWIL	05 27 1400	N26 E15	05 28.7	4	(D)					
8554		HOLL	05 27 1516	N26 E14	05 28.7		B	DAO	30	8	3	4
8554		SVTO	05 28 0540	N27 E06	05 28.7		B	DRO	20	8	3	4
8554		KAND	05 28 0900	N27 E04	05 28.7			AX		4	2	2
8554		RAMY	05 28 1210	N27 E05	05 28.9		B	DRO	40	7	8	4
8554	29110	MWIL	05 28 1430	N25 E05	05 29.0	4	(BP)					
8554		HOLL	05 28 1519	N27 E04	05 28.9		B	BXO	10	7	9	3
8554		SVTO	05 29 0500	N25 W03	05 29.0		B	DRO	20	7	9	3
8554		KAND	05 29 0655	N24 F00	05 29.3			AX		2	1	2
8554		KAND	05 29 0655	N24 W06	05 28.8			BXO		4	6	2
8554		RAMY	05 29 1340	N24 W10	05 28.8		B	DRO	20	4	6	4
8554		HOLL	05 29 1529	N24 W10	05 28.9		B	BXO	20	3	6	4
8554		SVTO	05 30 0515	N24 W17	05 28.9		B	BXO	10	4	5	3
8554		RAMY	05 30 1148	N24 W22	05 28.8		A	AX		3	2	3
8554	29118	MWIL	05 30 1430	N25 W25	05 28.7	3	(AP)					
8554		KAND	05 31 0700	N26 W26	05 29.3			AX		1		3
8554		RAMY	05 31 1228	N24 W29	05 29.3		B	BXO		3	3	3
8554	29118	MWIL	05 31 1600	N25 W30	05 29.3	4	(BP)					
8554		HOLL	05 31 1600	N26 W31	05 29.2		B	BXO	10	3	3	3
8552	29109	MWIL	05 23 1600	N20 E86	05 30.2	4	AP					
8552		LEAR	05 24 0113	N19 E79	05 30.1		A	HA	90	1	2	4
8552		SVTO	05 24 0450	N20 E83	05 30.5		A	HH	260	1	7	3

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

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May 99

MAY 1999

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)		Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
8552		KAND	05 24	0610	N21	E80	05 30.4			HH		1	2	3
8552	29109	MWIL	05 24	1500	N20	E72	05 30.1	5	AP					
8552		RAMY	05 24	1544	N21	E69	05 29.9		B	CHO	220	3	7	3
8552		HOLL	05 24	1545	N19	E71	05 30.1		B	CHO	180	4	7	3
8552		LEAR	05 25	0209	N19	E67	05 30.2		B	CKO	240	3	8	4
8552		KAND	05 25	1105	N20	E61	05 30.1			CSO		4	8	2
8552		RAMY	05 25	1152	N23	E60	05 30.1		B	ESO	260	6	15	3
8552	29109	MWIL	05 25	1430	N20	E60	05 30.2	5	(BG)					
8552		HOLL	05 25	1452	N20	E59	05 30.1		B	CSO	320	4	8	3
8552		LEAR	05 26	0053	N18	E53	05 30.1		B	EKO	350	3	12	4
8552		SVTO	05 26	0650	N21	E50	05 30.1		B	CHO	390	5	14	3
8552		KAND	05 26	0800	N21	E51	05 30.2			HH		2	5	3
8552		RAMY	05 26	1207	N21	E47	05 30.1		B	EAO	340	9	13	4
8552	29109	MWIL	05 26	1445	N20	E40	05 29.7	6	(B)					
8552		HOLL	05 26	1546	N20	E43	05 29.9		B	CHO	210	7	12	3
8552		LEAR	05 27	0101	N18	E38	05 29.9		B	EKO	440	11	12	3
8552		SVTO	05 27	0631	N19	E35	05 29.9		BG	EKO	320	14	14	3
8552		KAND	05 27	0710	N18	E30	05 29.6			CAO		13	6	4
8552		RAMY	05 27	1152	N22	E30	05 29.8		BG	EKO	410	22	15	5
8552	29109	MWIL	05 27	1400	N20	E28	05 29.7	5	(B)					
8552		HOLL	05 27	1516	N20	E28	05 29.8		B	EHO	260	13	13	4
8552		SVTO	05 28	0540	N20	E22	05 29.9		BG	EKI	500	17	13	4
8552		KAND	05 28	0900	N20	E15	05 29.5			DAO		8	7	2
8552		RAMY	05 28	1210	N21	E15	05 29.6		BG	EKI	460	14	13	4
8552	29109	MWIL	05 28	1430	N19	E13	05 29.6	5	(D)					
8552		HOLL	05 28	1519	N21	E15	05 29.8		B	EKC	430	9	15	3
8552		SVTO	05 29	0500	N18	E07	05 29.7		BG	FHI	390	17	16	3
8552		KAND	05 29	0655	N18	E03	05 29.5			DAO		13	8	2
8552		RAMY	05 29	1340	N19	E03	05 29.8		BG	EHI	350	15	15	4
8552		HOLL	05 29	1529	N18	W02	05 29.5		BG	DAC	180	15	8	4
8552	29109	MWIL	05 29	2330	N18	W06	05 29.5	5	(B)					
8552		SVTO	05 30	0515	N19	W07	05 29.7		BG	FKI	580	19	18	3
8552		KAND	05 30	0820	N19	W12	05 29.4			DAO		11	8	3
8552		RAMY	05 30	1148	N19	W10	05 29.7		B	EHO	460	11	14	3
8552	29109	MWIL	05 30	1430	N18	W15	05 29.5	6	(BP)					
8552		HOLL	05 30	1440	N18	W13	05 29.6		B	DAO	200	11	9	4
8552		KAND	05 31	0700	N19	W24	05 29.5			DAO		8	9	3
8552		RAMY	05 31	1228	N18	W27	05 29.5		B	DSO	180	12	9	3
8552		HOLL	05 31	1600	N18	W28	05 29.5		B	CSO	110	9	7	3
8552	29109	MWIL	05 31	1600	N18	W28	05 29.5	5	(BG)					
8559		KAND	05 26	0800	N18	E61	05 31.0			AX		1	1	3
8559		RAMY	05 26	1207	N18	E58	05 30.9		A	AX		1		4
8559	29114	MWIL	05 26	1445	N20	E50	05 30.4	4	(BP)					
8559		KAND	05 27	0710	N21	E38	05 30.2			HH		1	4	4
8559		RAMY	05 27	1152	N20	E48	05 31.2		A	AX		1		5
8559	29114	MWIL	05 27	1400	N20	E38	05 30.5	6	(BP)					
8559		HOLL	05 27	1516	N19	E46	05 31.1		A	AX		1		4
8559		KAND	05 28	0900	N21	E24	05 30.2			HK		3	4	2
8559		RAMY	05 28	1210	N23	E32	05 31.0		A	AX	10	1	1	4
8559	29114	MWIL	05 28	1430	N20	E25	05 30.5	6	(BP)					
8559		SVTO	05 29	0500	N25	E20	05 30.7		B	BXO	70	3	14	3
8559		KAND	05 29	0655	N20	E11	05 30.1			HK		4	5	2
8559		HOLL	05 29	1529	N21	E12	05 30.6		B	EKO	250	4	12	4
8559	29114	MWIL	05 29	2330	N21	E06	05 30.4	6	(BP)					
8559		KAND	05 30	0820	N21	W03	05 30.1			DKO		4	6	3
8559		RAMY	05 30	1148	N22	W02	05 30.3		B	BXO	10	5	4	3
8559	29114	MWIL	05 30	1430	N20	W04	05 30.3	6	(BP)					
8559		HOLL	05 30	1440	N21	W04	05 30.3		B	DKO	330	8	6	4
8559		KAND	05 31	0700	N21	W14	05 30.2			CKO		2	6	3
8559		RAMY	05 31	1228	N20	W18	05 30.1		A	HS	320	1	4	3
8559	29114	MWIL	05 31	1600	N20	W18	05 30.3	5	(BP)					
8559		HOLL	05 31	1600	N20	W19	05 30.2		A	HK	220	1	3	3
8555A	29119	MWIL	05 30	1430	N16	E05	05 31.0	4	(AP)					
8561	29120	MWIL	05 30	1430	N25	E10	05 31.4	3	(AF)					
8561		HOLL	05 30	1440	N25	E11	05 31.5		A	AX		1		4

SUDDEN IONOSPHERIC DISTURBANCES

MAY 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF-SPA	SES			
01	1640	1646	1710	1	1		1				No flare		
01	2300	2304	2342	2	1					1	2254	C3.0	8524
02	0757	0801	0807	2+	5	1	3	1		1	0752	C4.1	8524
02	0925	0930	0937	1	1			1			No flare		
02	0940	0947	1001	1	1			1			*		
02	1001	1012	1026	3	5	1	3	1		1	0958	C7.5	
02	1438	1447	1507	2-	5	1	1	1		2	1436	C2.0	8525
02	1645	1655	1730	2-	5		1			3	1637	C2.2	8527
03	0543	0550	0601	3	5		3	1			0536	M4.4	8525
03	1532	1538	1548	2+	5		3	1			1530	C2.7	8524
03	1632	1639	1659	1	3		2				No flare		
03	2311	2313	2412	2+	1					1	2307	M1.9	
04	0854	0933	1008	1	3		2				No flare		
04	1005	1015	1030	1	1					1	1009	C1.1	
04	1335	1512U	1556	1	1		1				No flare		
04	1850	1855	2015	2+	1					1	1816	C2.8	8527
05	1131	1157	1229	1	3		2				No flare		
05	1230	1245	1305	1+	1					1	1234	C1.0	
05	1505	1525	1540	1+	1					1	1512	C1.4	
06	1049	1116U	1214	1	1		1				1040	C2.4	8534
06	1315	1330	1350	1+	1					1	1319	C1.3	8525
06	1503	1550	1648	1	3		2				No flare		
06	2200	2209	2300	2+	1					1	2157	C3.1	
07	0435	0445	0542	3	3		2				0428	M3.2	
07	0657	0704	0812	2	3		3	1			0655	C3.2	8526
07	1008	1026	1100	1	3		2				1004	C2.9	
07	1307	1312	1330	1	1					1	1249		8539
07	1421	1428	1506	3-	5	1	2	1		3	1423	C7.4	8525
07	1646	1708	1722	1	1		1				No flare		
07	1733	1735	1748	1	1		1				No flare		
07	1830	1834	1845	1-	1					1	1828	C2.3	8525
08	1038	1046	1127	3	5	1	2	1		2	1036	M1.6	8541
08	1400	1408	1444	1+	5		2			3	1401	C4.2	8541
08	1425	1432	1506	3	5	1	3	1		4	1422	M4.6	8526
08	1551	1622	1716	1	1		1				No flare		
09	0004	0010	0040D	2	1					1	2359	C5.0	8541
09	0040E	0048	0130	2+	1					1	0036	M1.1	8541
09	1052	1102	1149	2-	3		1			1	No flare		
09	1105	1116	1146	2+	5		3	1			No flare		
09	1151	1212	1252	3	5	1	3	1		3	1152	M1.0	
09	1608	1616	1639	2-	5		3	1		2	1606	C5.1	8537
09	1743	1750	1955	3	3					2	1753	M7.6	8537
09	1759	1811	1816	1	5	1	3			3	1753	M7.6	8537
09	2222	2234	2334	2+	1					1	2223		8541
10	0525	0536	0557	2+	5		3	1			0522	M2.5	8539
10	0717	0722	0740	1	1		1				0711	C2.1	
10	0754U	0808U	0830U	1	1		1				No flare		
10	0900	0929	0954	1	3		2				0916	C5.3	
10	1145	1207	1224	1	3		2				1155		8541
10	1538	1551	1622	1	3		1			1	1544	C1.7	8541
10	1654	1705	1720	1	1		1				No flare		
10	1723	1743	1802	1	3		1			1	1728	C1.6	
11	0926	0935	1000	1	1		1				0929	C2.0	8541
11	1108	1116	1155	2	5	1	2	1			1106	C3.9	
11	2035	2039	2132	2	3					2	2038	C2.1	8541
11	2146	2158	2312	3	1					1	2143	C4.7	

* = no flare patrol.

MAY 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF- SPA	SES			
12	1057U	1102U	1115U	2	1		1				No flare		
12	1428	1436	1545	1	1		1				No flare		
13	0700	0723	0833	2	1		1				*		
13	0846	0853	0937	1	1		1				No flare		
14	0948	1000	1029	1	3		2				No flare		
15	1527U	1600U	1624U	1	1		1				No flare		
16	1012	1047	1105	1+	3		2				1042	B9.3	
16	1349	1353	1422	3-	5	1	3	1		4	1345	M1.2	8534
16	1512U	1545	1652U	2	1		1				No flare		
16	1723	1726	1746	2	5		3	1		4	1720	M1.1	8534
16	2010	2015	2119	2+	3					3	2007	C5.7	8534
16	2229	2233	2320	2	3					3	2225	M1.0	8541
17	0022	0025	0058	2	1					1	0018	C9.7	8534
17	0453	0500	0514	2-	5		3	1			0449	M2.3	
17	0752	0758	0814	1	1		1				0749	C2.0	
17	0902	0905	0918	3	5	1	2	1		1	0900	C5.3	8534
17	1701	1711	1733	1	5		2			1	1700	C6.2	8541
17	1755	1805	1843	2+	1					1	1751	C5.6	8534
17	2012	2015	2043	1+	3					2	2001	C1.6	8541
17	2152	2200	2258	2+	1					1	2150	M1.0	
17	2154	2312	2336	2+	1					1	2150	M1.0	
18	1045	1130	1150	2+	1					1	1043	C3.9	
18	1050	1236	1353	1	3		2				1043	C3.9	
19	1242	1305	1344	2	3		2				No flare		
19	1351	1405	1430	2	1		1				1345	C1.1	
19	1518	1524	1600	2	1		1				No flare		
19	1737U	1800U	1830U	2	1		1				No flare		
19	1840	1845	1900	1	1					1	1841	C1.2	
19	1958	2000	2020	1	1					1	1957	C1.2	
21	0530	0537	0557	1	3		2				No flare		
21	0741	0816	0845	3	1		1				0745		8549
21	1713	1855	2105	3+	5					2	1712	C2.4	
23	0800U	0815	0830U	3	1		1				0804	C1.3	8545
23	1425	1438	1545	2+	1					1	1425	C3.4	8551
23	1729	1731	1800	1+	1					1	1728	C1.9	
24	0805	0815	0840	2	1					1	0806	C1.6	8551
24	1005	1007	1017	1-	1					1	1004		8550
24	1210	1220	1230	1	1					1	1214	C1.0	
24	1706	1716	1739	2-	5					2	1705	C3.3	8552
24	1730	1740	1745	1-	1					1	1735	C2.1	8550
25	2012	2018	2048	2	1					1	2009	C2.5	
26	1339U	1410U	1430U	2	1		1				1409	B9.9	8552
27	0318	0325	0409	1	1		1				No flare		
27	0732	0743	0800	1+	3		2				No flare		
27	0800	0834	0845	1+	1		1				No flare		
27	0849	0924	1024	1+	3		2				0913	C1.2	
27	1140	1146	1214	2	5		3	1		2	1136	C4.5	
27	1251	1317	1358	1+	5		2			2	1259	C3.4	8552
27	1356	1433	1513	1+	1		1				1423	C2.7	8548
27	1500	1510	1530	1	1		1				No flare		
27	1516	1539	1607	1+	5		1			1	1515	C6.2	8557
27	1613	1645	1722	2-	5		2			2	1637		8552
27	1810	1855	1930	1	1		1				1833	C2.3	8552

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

MAY 1999

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF- SPA	SES			
28	0552	0610	0703	2	3		2				0549	C2.3	
28	1037	1104	1129	1+	1		1				No flare		
29	0555	0610	0624	2	1		1				No flare		
29	0645	0730	0750	2	1		1				No flare		
29	1228	1234	1300	1	1		1				No flare		
29	2008	2010	2038	1+	1				1		2004	C2.3	8554
30	0358	0432	0501	2+	3		2				No flare		
30	0550	0614U	0635	1	1		1				0605	C1.1	8551
30	0723	0725U	0841	1	1		1				No flare		
30	1025	1045	1058	2	1		1				1025	C1.1	
30	1915	1920	1935	1	1					1	1912	C1.2	8558
30	2338	2344	2432	2+	1					1	2331	C8.7	
31	0607	0619	0654	2	3		2				No flare		
31	0700	0716	0742	3	3		2				No flare		
31	0758	0807	0849	1+	1		1				0802	C4.8	8560
31	0930	0946	0953	1+	3		2				0933	C2.8	8552

* = no flare patrol.

OBSERVATORIES REPORTING FOR MAY 1999

Banning, California, USA	SES	Rimavska Sobota, Slovakia	SEA
Cambridge, England, UK	SES	Rochester, New Hampshire, USA	SES
Columbia City, Indiana, USA	SES	Seattle, Washington, USA	SES
Edenvale, Rep of S. Africa	SES	Sun City Center, FL, USA	SES
Houston, Texas, USA	SES	Tucson, Arizona, USA	SES
Hudson, Ohio, USA	SES	Upice, Czech Republic	SEA
Koniz, Switzerland	SES	Vlasim, Czech Republic	SEA
Nerja, Spain	SES	Zilina, Slovakia	SEA
Panska Ves, Czech Republic	SES, SEA, SWF		

Observations are not necessarily continuous.

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

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OBSERVATION			Sta	EVENT				FREQUENCY			Remarks
Start Day	End (UT)	Start (UT)		End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	Upper (MHz)		
01	0000 0720	CULG	0235.0	0238.0	III	G	1	25	90		
		CULG	0317.0	0318.0	III	G	3	20	150		
		PALE	0317.0	0318.0	III		2	25	75		
	0000 0931	HIRA	0317.4	0317.8	III	B	2	25X	130		
		CULG	0357.0	0357.0	III	B	1	30	60		
	0450 1707	ONDR									
		CULG	0539.0	0541.0	III	G	2	18X	180		
		SVTO	0539.0	0541.0	V		2	35	85		
		HIRA	0540.0	0540.4	III	B	1	40	150		
		SVTO	0751.0	0752.0	III		2	35	73		
		SVTO	0855.0	0856.0	III		2	35	82		
		HIRA	0855.4	0855.6	III	B	1	30	130		
		SGMR	1402.0	1403.0	III		1	30	65		
	1938 2400	HIRA									
		CULG	2250.0	2252.0	III	G	1	30	150		
CULG		2310.0	2311.0	III	G	1	50	160			
	2045 2400	CULG	2340.0	2346.0	III	G	1	30	160		
02	0000 0720	CULG	0002.0	0002.0	III	B	1	40	100		
		CULG	0044.0	0044.0	III	B	1	40	150		
		CULG	0047.0	0049.0	III	G	2	18	240		
	0000 0931	HIRA	0047.2	0047.6	III	B	1	25X	230		
		CULG	0126.0	0127.0	III	G	2	30	160		
		HIRA	0126.2	0126.4	III	B	1	40	110		
		CULG	0148.0	0223.0	III	N	1	30	180		
		CULG	0216.0	0217.0	III	G	2	18X	180		
		HIRA	0216.2	0216.8	III	G	1	25X	150		
		CULG	0357.0	0359.0	III	G	1	23	180		
		PALE	0357.0	0357.0	III		1	25	75		
		HIRA	0357.4	0357.6	III	B	1	30	130		
		CULG	0426.0	0426.0	III	B	1	40	75		
	0448 1707	ONDR									
		CULG	0459.0	0513.0	III	N	1	23	150		
		SVTO	0459.0	0512.0	III	N	2	38	69		
		CULG	0602.0	0608.0	III	G	2	25	180		
		HIRA	0602.0	0607.2	III	G	1	30	140		
		SVTO	0602.0	0607.0	V		2	35	85		
		HIRA	0810.2	0810.6	III	B	1	120	300		
		SVTO	0812.0	0814.0	V		2	35	85		
		HIRA	0813.2	0814.2	III	G	2	40	180		
		SGMR	1442.0	1443.0	III		1	30	47		
		SVTO	1442.0	1442.0	III		1	35	44		
		2045 2400	CULG	2242.0	2242.0	III	B	1	130	470	
	1937 2400	HIRA	2242.2	2242.4	III	B	1	120	480		
		CULG	2335.0	2335.0	III	B	1	18	450		
	03	0000 0720	CULG	0030.0	0030.0	III	B	1	30	90	
			CULG	0340.0	0340.0	III	B	1	80	340	
			SVTO	0520.0	0606.0	II		3	35	85	ESS 0400
0447 1709		CULG	0542.0	0542.0	III	G	1	30	160		
		ONDR	0542.1	0641.3	DCIM	GG	2	800X	2000X		
0000 0932		CULG	0543.0	0612.0	II	SH,H	2	25	180	SWF ESS 450	
		HIRA	0543.0	0546.0	II		1	90	180		
		CULG	0544.0	0602.0	II	FN,H	2	25	80		
		CULG	0548.0	0548.0	III	B	1	50	260		
		SVTO	0550.0	0606.0	II		3	35	85	ESS 0400	
		POTS	0551 E	1010 U	III	N	1	40X	90U		
		0551 1041	POTS	0551 E	0710 U	IV		2	40X	800X	
			HIRA	0551.0	0601.0	II		2	50	100	
			POTS	0552.6	0607.8	II	UE	2	40X	70	
			SVTO	0606.0	0709.0	IV		3	35	85	
CULG			0608.0	0710.0	IV		1	30	400		
HIRA			0608.0	0618.0	IV		2	50	400		
SVTO			0656.0	0657.0	III		2	35	84		
POTS			0656.4	0656.9	III	B,RS	3	40X	170U		
CULG			0657.0	0657.0	III	B	1	30	180		
POTS			0710 U	1041 U	I	S,W	1	110U	170U		
POTS			0746.5	0747.9	DCIM		3	200U	400		
POTS			0747.2	0748.0	III	GG	3	110U	170U		

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Spectral Observations

MAY 1999

OBSERVATION			EVENT					FREQUENCY		Remarks	
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)		Upper (MHz)
03			HIRA	0747.4	0747.8	III	B	2	100	320	
			POTS	0829.1	0829.3	III	G	2	110U	170U	
			SVTO	0900.0	0901.0	III		2	35	85	
			SVTO	0930.0	0931.0	III		2	35	85	
			POTS	0930.3	0931.5	III	GG	3	40X	360	
			SGMR	1449.0	1500.0	III		1	30	55	
			SVTO	1459.0	1500.0	III		2	35	66	
			ONDR	1533.1	1534.5	DCIM	G	1	3045X	4345X	
		1936 2400		HIRA							
		2045 2400		CULG							
04	0000 0933		HIRA								
	0000 0715		CULG	0253.0	0254.0	III	G	1	25	90	
	0445 1710		ONDR								
	0534 1630		POTS	0534 E	1630 U	I	S,C,DC	2	70	350	
			SVTO	0634.0	0635.0	III		2	35	54	
		POTS	0634.6	0635.4	III	G	2	40X	350		
		CULG	0635.0	0635.0	III	B	1	30	70		
		POTS	1018.0	1018.2	III	B	2	40X	150		
		POTS	1053.6	1053.8	III	B	2	110U	145		
		POTS	1116	1543	III	N	1	40X	90U		
		POTS	1126.9	1127.1	III	B	2	40X	155		
		SVTO	1312.0	1615.0	CONT		2	52	85		
		SGMR	1820.0	1820.0	III		1	30	60		
		1935 2400		HIRA							
		2045 2400		CULG	2045.0E	2400.00	I	S	1	60	160
			CULG	2115.0	2119.0	III	G	1	25	170	
05	0000 0934		HIRA								
	0000 0715		CULG	0000.0E	0715.00	I	S	1	60	160	
	0414 1736		POTS	0414 E	1736 U	I	S,C,DC	2	110U	300	
	0444 1711		ONDR								
			SVTO	0520.0	1103.0	CONT		2	57U	85U	
	1934 2400		HIRA								
	2050 2400		CULG	2050.0E	2127.0	I	S	1	100	160	
06	0000 0935		HIRA								
	0414 1736		POTS	0414 E	1736 U	I	S,C,DC	2	110U	300	
	0442 1712		ONDR								
			POTS	0530.7	0530.9	III	B	2	40X	90U	
	0000 0715		CULG	0531.0	0531.0	III	B	1	30	80	
			CULG	0653.0	0715.00	I	S	1	120	170	
		POTS	0701	1612	III	N	1	40X	90U		
		POTS	0704.3	0704.4	III	B	2	40X	90U		
		POTS	0842.7	0843.6	III	G	2	40X	150		
		SVTO	0843.0	0843.0	III		2	35	68		
		POTS	1402.0	1402.2	III	G	2	40X	145		
		SVTO	1402.0	1402.0	III		2	35U	85U		
		POTS	1703.2	1703.4	III	B	2	40X	120		
		1933 2400		HIRA							
	2050 2400		CULG								
07	0000 0936		HIRA								
			PALE	0253.0	0256.0	III		1	25	60	
	0000 0715		CULG	0253.0	0256.0	III	G	2	18X	180	
	0510 1704		POTS	0535	1704 U	I	S	1	70	300	
			POTS	0625.3	0626.2	III	G	1	40X	60	
		POTS	0658.9	0700.2	III	G	2	40X	170U		
		CULG	0659.0	0702.0	III	G	1	30	180		
		SVTO	0659.0	0659.0	III		2	38	84		
		POTS	0921	1120	III	N	1	40X	90U		
		SGMR	1132.0	1133.0	III		1	35	50		
		SVTO	1132.0	1133.0	III		1	35	50		
		POTS	1132.7	1134.0	III	G	2	40X	70		
		SGMR	1232.0	1232.0	III		1	30	60		
		SVTO	1232.0	1232.0	III		1	39	55		
		POTS	1232.6	1232.8	III	B	2	40X	90U		
		POTS	1326.1	1326.4	III	G	2	110U	150		
	POTS	1405.6	1407.0	III	G	1	40X	170U			

S O L A R R A D I O E M I S S I O N
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OBSERVATION			EVENT				FREQUENCY			Remarks	
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)		Upper (MHz)
07			SGMR	1406.0	1406.0	III		1	30	60	
			SVTO	1406.0	1406.0	III		1	35	50	
			ONDR	1426.1	1429.3	DCIM	G	1	2000X	4355X	
	0441	1712	ONDR	1426.4	1429.1	DCIM	G	2	1105	2000X	
	0810	1750	BLEN	1426.6	1429.5	DCIM	P	2	1000	2200X	
			POTS	1457.1	1457.8	III	G	2	40X	250	
			PALE	1943.0	1944.0	III		1	28	56	
			SGMR	1943.0	1944.0	III		1	30	55	
			PALE	2113.0	2115.0	III		2	25	56	
	2050	2400	CULG	2114.0	2115.0	III	G	1	25	170	
	1932	2400	HIRA	2114.4	2114.6	III	B	1	25X	150	
	08			PALE	0016.0	0016.0	III		1	25	75
0000		0715	CULG	0016.0	0016.0	III	B	1	18	140	
0000		0937	HIRA	0016.6	0016.8	III	B	1	25X	140	
0526		1723	POTS	0526 E	1723 U	I	S,C,DC	2	110U	450	
			POTS	0813.9	0814.8	III	G	2	40X	90U	
			SVTO	0814.0	0822.0	III		2	35	65	
			POTS	0821.5	0822.5	III	G	3	40X	275	
			HIRA	0821.8	0822.0	III	B	1	40	230	
			POTS	0826	1723 U	III	N	1	40X	90U	
			SVTO	1009.0	1009.0	III		1	35	56	
			POTS	1009.2	1009.5	III	B	2	40X	60	
			POTS	1009.4	1009.5	III	B	1	110U	170U	
			POTS	1018.4	1019.8	III	G	3	40X	250	
			BLEN	1049.2	1049.5	III	G	2	580	650	
0505		1750	BLEN	1051.1	1059.2	III	GG	2	650	1200	
0439		1714	ONDR	1051.2	1051.4	DCIM		1	800X	2000X	
			SVTO	1111.0	1139.0	IV		2	35	60	
			POTS	1112.7	1113.5	III	G	2	40X	250	
			POTS	1129.0	1130.5	III	G	3	40X	325	
			SGMR	1129.0	1130.0	III		2	30	80	
			SVTO	1129.0	1130.0	III		3	36	75	
			POTS	1139.7	1139.8	III	B	2	110U	160	
			POTS	1147.9	1148.3	III	G	2	110U	170U	
			POTS	1216.0	1216.3	III	B	3	40X	145	
			SGMR	1216.0	1345.0	III	N	2	30	80	
			SVTO	1216.0	1224.0	III		2	35	81	
			POTS	1224.2	1224.8	III	G	3	40X	325	
			SVTO	1258.0	1345.0	III	N	2	35	54	
			POTS	1258.3	1258.7	III	G	2	40X	250	
			POTS	1313.3	1313.6	III	G	2	40X	70	
			POTS	1316.2	1316.4	III	B	2	40X	70	
			POTS	1330.4	1330.8	III	G	2	40X	120	
			SGMR	1423.0	1427.0	V		3	30	80	
			SVTO	1423.0	1426.0	V		3	35	85	
			POTS	1423.4	1427.5	III	G,C	3	40X	800X	
			ONDR	1424.0	1427.0	DCIM	G	1	800X	2000X	
			BLEN	1424.1	1427.2	III	GG,RS	1	450	2000	
			SVTO	1436.0	1525.0	IV		2	35	85	
			POTS	1452.0	1453.7	II	SH,H	3	80	130	
			SGMR	1452.0	1500.0	II		2	30	80	
			SVTO	1452.0	1500.0	II		2	35	85	ESS 0800
			POTS	1452.1	1453.7U	II	F	3	40X	65	
		POTS	1453.6	1456.2	II	SH,H	3	110U	170U		
		POTS	1454.3	1455.2U	II	F,H	3	40X	85		
		SGMR	1500.0	1525.0	IV		2	30	55		
		SGMR	1525.0	1539.0	III	N	2	30	80		
		SVTO	1525.0	1538.0	III	N	2	37	85		
		POTS	1525.4	1525.7	III	G	2	40X	80		
		POTS	1533.0	1538.4	III	G	2	40X	170U		
		POTS	1613.4	1614.6	III	GG	2	40X	325		
		SVTO	1614.0	1614.0	III		2	35	85		
		SGMR	1639.0	1642.0	III		2	30	80		
		SVTO	1639.0	1642.0	III		2	35	85		
		POTS	1639.1	1642.3	III	GG	3	40X	225		
		SGMR	1815.0	1815.0	III		1	30	80		
		PALE	2113.0	2114.0	III		2	25	70		
		SGMR	2113.0	2114.0	III		2	30	80		

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OBSERVATION Start End Day (UT) (UT)	Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks	
				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)		
08 2050 2400 1931 2400	CULG	2113.0	2114.0	III	G	2	25	180		
	HIRA	2113.4	2113.8	III	B	2	25X	200		
	CULG	2129.0	2129.0	III	B	1	30	80		
	PALE	2129.0	2129.0	III		1	25	60		
	CULG	2222.0	2222.0	III	G	1	25	95		
	CULG	2259.0	2259.0	III	B	1	20	65		
	PALE	2339.0	2339.0	III		1	25	55		
	CULG	2344.0	2348.0	III	G	1	20	160		
09 0000 0715	CULG	0015.0	0019.0	III	G	1	50	130		
	CULG	0033.0	0150.0	III	N	1	18	170		
	PALE	0033.0	0033.0	III		1	25	55		
	PALE	0047.0	0047.0	III		1	25	60		
	CULG	0222.0	0315.0	III	N	1	20	180		
	0000 0937	HIRA	0234.0	0234.2	III	B	1	25X	160	
		HIRA	0246.6	0246.8	III	B	1	30	140	
		CULG	0407.0	0411.0	III	G	1	20	180	
	0455 1750	BLN								
		CULG	0512.0	0512.0	III	B	1	60	170	
		HIRA	0512.4	0512.6	III	B	1	80	160	
		CULG	0549.0	0601.0	III	N	1	25	160	
		SVTO	0549.0	0619.0	III	N	2	35	85	
		HIRA	0551.2	0551.4	III	B	1	30	140	
		HIRA	0600.6	0600.8	III	B	1	30	150	
		CULG	0613.0	0623.0	III	G	1	25	180	
		SVTO	0717.0	0718.0	III		3	35	84	
		HIRA	0717.2	0717.6	III	B	3	25X	230	
		SVTO	0912.0	0950.0	III	N	2	36U	84U	
		0438 1716	ONDR	1105.2	1107.0	DCIM		1	3055X	4345X
SGMR			1205.0	1206.0	III		1	40	50	
SVTO	1205.0		1206.0	III		2	39	48		
SVTO	1442.0		1522.0	III	N	3	35	85		
SGMR	1448.0		1522.0	III	N	2	30	80		
SGMR	1643.0		1643.0	III		1	30	45		
PALE	1803.0		1803.0	III		1	25	75		
SGMR	1803.0		1803.0	III		1	30	80		
SGMR	1817.0		1921.0	CONT		1	30	80		
PALE	2321.0		2330.0	III		2	25	75		
2050 2400	CULG		2321.0	2330.0	III	G	1	18	180	
1930 2400	HIRA	2328.5	2330.0	III	G	1	25X	220		
10	SVTO	0516.0	0839.0	IV		3	35	85		
	0000 0710	CULG	0518.0	0530.0	III	GG	2	20	180	
	0455 1750	BLN	0524.6	0534.1	DCIM		3	490	2800X	
	0000 0938	HIRA	0526.0	0536.0	III	GG	3	25X	150	
		CULG	0531.0	0539.0	III	GG	2	20	180	
	0437 1717	ONDR	0533.3	0534.1	DCIM	G	1	1200X	2000X	
		CULG	0540.0	0603.0	III	N	1	20	180	
		HIRA	0602.8	0603.0	III	B	2	50	240	
		BLN	1113.5	1114.3	III	GG	1	1150	1380	
		SGMR	1426.0	1451.0	III	N	1	30	70	
		SVTO	1426.0	1442.0	III	N	2	35	85	
		SGMR	1524.0	1524.0	III		1	30	40	
		SGMR	1606.0	1613.0	III		1	30	60	
		SVTO	1606.0	1612.0	III		2	35	85	
	1929 2400	HIRA								
	2050 2400	CULG								
	11 0000 0710	CULG	0024.0	0028.0	III	G	1	20	100	
CULG		0056.0	0057.0	III	G	1	30	120		
CULG		0241.0	0245.0	III	G	1	20	180		
PALE		0241.0	0243.0	III		2	25	75		
0000 0939		HIRA	0241.0	0242.0	III	G	2	25X	200	
		CULG	0306.0	0306.0	III	B	1	20	120	
		PALE	0306.0	0306.0	III		2	30	60	
		CULG	0343.0	0343.0	III	B	1	20	70	
		CULG	0421.0	0427.0	III	G	2	18	180	
		PALE	0423.0	0425.0	III		1	40	60	
		SVTO	0423.0	0424.0	III		2	35	79	

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OBSERVATION		Sta	EVENT		Spectral Class	Event Remarks	Int (1-3)	FREQUENCY		Remarks	
Start Day (UT)	End (UT)		Start (UT)	End (UT)				Lower (MHz)	Upper (MHz)		
11		HIRA	0424.0	0424.8	III	G	2	25X	240		
		CULG	0449.0	0449.0	III	B	1	20	65		
		SVTO	0449.0	0449.0	III		1	37U	55U		
	0455	1750	BLEN								
		CULG	0535.0	0535.0	III	B	1	25	45		
		SVTO	0542.0	0543.0	III		2	35	81		
		CULG	0543.0	0543.0	III	B	1	25	90		
		SVTO	0923.0	0923.0	III		2	35	61		
		ONDR	1108.1	1109.1	DCIM		1	2070	4345X		
	0435	1717	ONDR	1108.2	1110.5	DCIM	G	1	840	2000X	
	1328	1725	POTS	1328 E	1725 U	I	S	1	110U	170U	
		PALE	1842.0	1842.0	III		1	42	56		
		SGMR	1842.0	1850.0	III		1	30	60		
	1928	2400	HIRA								
	2050	2400	CULG								
	PALE	2206.0	2206.0	III		1	25	55			
12	0000	0710	CULG	0024.0	0024.0	III	B	1	35	75	
		CULG	0054.0	0112.0	III	N	1	23	160		
		PALE	0201.0	0202.0	III		1	30	55		
	0434	1718	ONDR								
		CULG	0456.0	0459.0	III	G	2	18	250		
		SVTO	0456.0	0921.0	CONT		3	35	85		
	0000	0940	HIRA	0456.2	0457.4	III	G	1	25X	130	
	1000	1750	BLEN	0456.3	0457.2	III	GG	2	330	700	
		CULG	0503.0	0710.00	I	S	1	60	160		
	0522	1719	POTS	0522 E	1719 U	I	S,C,DC	3	40X	500	
		CULG	0534.0	0535.0	III	G	2	20	100		
		POTS	0534.2	0534.6U	III	G	3	40X	90U		
		HIRA	0534.4	0534.6	III	B	1	25X	90		
		POTS	0534.6U	0535.2U	V		3	40X	55		
		CULG	0540.0	0542.0	III	G	1	25	100		
		POTS	0540.4	0540.8	III	B	2	40X	90U		
		POTS	0541	1719 U	III	N	1	40X	90U		
		POTS	0653.9	0708.9	III	GG	3	40X	325		
		CULG	0654.0	0658.0	III	G	3	25U	150		
		HIRA	0654.0	0654.8	III	G	2	25X	130		
		POTS	0724	1719 U	III	N	2	40X	90U		
		SVTO	1021.0	1356.0	CONT		2	35	60		
		POTS	1054.9	1055.6	DCIM		1	300	600		
		SGMR	1209.0	1212.0	III		1	30	60		
		SGMR	1303.0	1304.0	III		1	30	60		
		SGMR	1324.0	1324.0	III		1	30	60		
		SGMR	1336.0	2034.0	CONT		2	30	80		
		POTS	1430.4	1430.7	DCIM		2	200U	500		
		SVTO	1519.0	1648.0	CONT		2	35	85		
		PALE	1711.0	2034.0	III	N	2	25	70		
	PALE	1722.0	2049.0	CONT		2	35	70			
1927	2400	HIRA									
2050	2400	CULG	2050.0E	2400.00	I	S	1	90	160		
	CULG	2150.0	2212.0	III	N	1	25	180			
	PALE	2205.0	2211.0	III		2	30	55			
	PALE	2313.0	2356.0	III	N	2	25	75			
	CULG	2342.0	2359.0	III	S	1	18	160			
13	0000	0941	HIRA								
	0000	0710	CULG	0000.0E	0710.00	I	S	1	60	170	
		CULG	0009.0	0009.0	III	B	1	30	170		
		CULG	0053.0	0200.0	III	N	1	25	150		
		PALE	0053.0	0152.0	III	N	1	25	60		
	0433	1722	ONDR								
		SVTO	0501.0	1635.0	CONT		2	35	85		
		CULG	0603.0	0710.00	III	N	1	30	100		
	0953	1037	IZMI	0953.0E	1037.00	I	S	2	95X	270X	
		SGMR	1303.0	1305.0	III		2	30	80		
		SGMR	1316.0	1316.0	III		1	30	75		
		SGMR	1430.0	1456.0	III	N	1	30	80		
	SGMR	1758.0	1758.0	III		2	30	62			
	PALE	1839.0	1911.0	III	N	1	40	56			

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OBSERVATION			Sta	EVENT				Int (1-3)	FREQUENCY		Remarks
Day	Start (UT)	End (UT)		Start (UT)	End (UT)	Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
13			SGMR	1839.0	1911.0	III	N	1	30	55	
	1926	2400	HIRA								
	2055	2400	CULG	2302.0	2400.00	I	S	1	60	170	
			PALE	2343.0	2343.0	III		1	25	75	
14	0000	0705	CULG	0000.0E	0400.0	I	S	2	70	180	
			CULG	0002.0	0233.0	III	S	2	25	180	
			CULG	0238.0	0400.0	III	S	1	25	180	
			CULG	0321.0	0322.0	III	G	2	25	90	
			CULG	0405.0	0437.0	I	S	1	30	160	
	0432	1723	ONDR								
			CULG	0530.0	0530.0	III	B	1	25	120	
	0545	1739	POTS	0545 E	1739 U	I	S,c,DC	3	50	400	
			POTS	0632	1739 U	III	N	1	40X	90U	
			CULG	0633.0	0633.0	III	B	1	40	100	
			POTS	0757.0	0758.8	III	G	2	40X	170U	
			SVTO	0757.0	0758.0	III		1	35	85	
			POTS	0808	1723	III	N	2	110U	170U	
			SVTO	0823.0	0908.0	III	N	2	35	85	
			POTS	0823.3	0828.3	III	GG	2	40X	170U	
	0455	1750	BLN	0825.9	0826.1	III		1	320	390	
	0000	0942	HIRA	0837.5	0838.5	III	G	1	50	150	
			POTS	0838	1705	III	N	2	40X	90U	
			SVTO	0852.0	0914.0	CONT		1	35	85	
			SGMR	1219.0	1642.0	III	N	2	30	80	
			SVTO	1219.0	1226.0	III		2	35	79	
			POTS	1224.8	1225.9	III	G	3	40X	300	
			SVTO	1247.0	1247.0	III		1	37	56	
			SVTO	1315.0	1316.0	III		1	36	61	
			SVTO	1352.0	1412.0	III	N	1	35	85	
			POTS	1454.8	1457.0	III	GG	3	40X	250	
			SVTO	1455.0	1456.0	III		2	35	85	
			SVTO	1518.0	1715.0	CONT		1	35	85	
			SGMR	1749.0	1805.0	III	N	1	30	80	
			PALE	1805.0	1805.0	III		1	40	55	
	1926	2400	HIRA								
			PALE	1937.0	2020.0	III	N	1	30	55	
			SGMR	1937.0	2020.0	III	N	1	30	80	
	2055	2400	CULG	2055.0E	2326.0	I	S	1	60	170	
			CULG	2140.0	2223.0	III	S	1	20	170	
			CULG	2328.0	2329.0	III	G	1	30	180	
15	0000	0942	HIRA								
	0000	0705	CULG	0027.0	0300.0	III	N	1	25	160	
	0431	1724	ONDR								
			SVTO	0549.0	0550.0	III		2	35	84	
	0549	1200	IZMI	0549.6	0549.9	III	G,HARM	2	45X	135	
			CULG	0550.0	0550.0	III	B	1	23	150	
			IZMI	0557.0U	0728.0U	I	N	1	200	245	
			IZMI	0621.2	0621.4	III	G,RS	2	45X	95	
	0626	1720	POTS	0626 E	1720 U	I	S	2	110U	325	
			POTS	0716.0	0716.1	III	B	2	110U	225	
			POTS	0853	1540	III	N	1	110U	170U	
			POTS	1000	1608	III	N	1	40X	90U	
			IZMI	1010.6	1012.0	III	GG	1	45X	90	
			POTS	1044.6	1044.8	III	G	2	110U	275	
			IZMI	1114.5	1115.1	III	G	2	45X	95	
			POTS	1114.5	1115.2	III	G	2	40X	170U	
			IZMI	1123.9	1130.7	III	G	1	45	90	
			POTS	1150.1	1150.5	III	G	2	110U	170U	
	0455	1750	BLN	1206.3	1230.6	DCIM	P	3	370	550X	
			POTS	1208.0	1228.2	DCIM		2	250	800X	
			POTS	1208.9	1210.8	III	G	2	110U	170U	
			POTS	1218.8	1218.9	III	G,RS	1	150	300	
			POTS	1245	1534	III	N	2	110U	170U	
			SGMR	1459.0	1503.0	III		1	30	50	
			SVTO	1500.0	1502.0	III		2	35	65	
			POTS	1525.6	1527.5	DCIM		2	325	625	
			POTS	1659.2	1659.4	III	B	2	40X	160	

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
Start Day (UT)	End Day (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
15		PALE	2029.0	2031.0	III		3	25	60	
		SGMR	2029.0	2031.0	V		1	30	80	
	1925 2400	HIRA	2029.8	2031.0	III	G	1	50	160	
		PALE	2056.0	2255.0	CONT		1	25	75	
		SGMR	2056.0	2134.0	CONT		1	30	80	
	2055 2400	CULG	2056.0	2058.0	III	G	1	40	180	
		HIRA	2056.6	2058.0	III	G	1	50	150	
		CULG	2108.0	2149.0	III	S	2	25	160	
		HIRA	2112.0	2141.0	III	GG	1	50	130	
		CULG	2232.0	2303.0	III	N	1	25	80	
		CULG	2355.0	2400.0	III	G	1	20	90	
		PALE	2356.0	0054.0	III	N	1	25	60	
16	0000 0943	HIRA								
	0000 0705	CULG	0011.0	0219.0	III	N	1	20	160	
		CULG	0328.0	0328.0	III	B	1	30	80	
		CULG	0404.0	0414.0	III	N	1	25	90	
		CULG	0526.0	0549.0	III	N	1	25	100	
		SVTO	0545.0	0548.0	III		2	40U	54U	
	0604 1107	IZMI	0604.0E	1107.0D	I	S	1	200	260	
	0628 1725	POTS	0628 E	1725 U	I	S,C,DC	2	110U	350	
		IZMI	0636.8	0636.9	III	B	1	45X	90	
		IZMI	0700.3	1107.0D	III	N	1	45X	120	
		SVTO	0730.0	0731.0	III		2	43	57	
		POTS	0753	1609	III	N	1	40X	90U	
		IZMI	0821.0	0825.7	III	GG	2	45X	180	
		POTS	0821.9	0822.2	III	G	2	40X	300	
		POTS	0823	1608	III	N	1	110U	170U	
		POTS	0855.1	0855.3	III	B	2	40X	145	
		SVTO	0918.0	0923.0	III		2	35	59	
		POTS	0918.4	0923.6	III	GG	2	40X	90U	
		SVTO	0940.0	0941.0	III		1	36	58	
		IZMI	0941.0	0941.1	III	B	2	45X	160	
		POTS	0941.0	0942.0	III	G	2	40X	170U	
		POTS	0943	1625	III	N	2	110U	170U	
		POTS	0954.1	0954.2	III	G	3	110U	170U	
		IZMI	1123.0	1200.0D	III	N	1	45X	90	
	1123 1200	IZMI	1123.0E	1200.0D	I	S	1	200	260	
		POTS	1154.8	1155.1	III	G	2	40X	120	
		SVTO	1201.0	1226.0	III	N	2	41	60	
		POTS	1208.3	1213.4	III	GG	3	40X	250	
		POTS	1327.7	1328.2	DCIM		1	200U	400	
		POTS	1345.9	1349.8	DCIM	U	2	200U	600	
	0455 1755	BLEN	1345.9	1349.3	III	GG,U	3	320	550X	
		ONDR	1348.1	1349.4	DCIM	G	2	800X	2000X	
	0429 1724	ONDR	1349.0	1349.3	DCIM	G	1	2265X	4375X	
		SVTO	1353.0	1358.0	III		2	35	61	
		SGMR	1357.0	1357.0	III		1	30	60	
		POTS	1409.5	1411.1	DCIM		2	200U	500	
		SGMR	1441.0	1442.0	III		1	30	55	
		SVTO	1450.0	1452.0	III		1	36	59	
		SGMR	1451.0	1452.0	III		1	30	55	
		BLEN	1527.1	1527.5	III	GG,RS	3	380	550X	
		POTS	1527.2	1531.1	DCIM		2	200U	550	
		BLEN	1530.7	1531.1	III	U	3	320	450	
		SGMR	1608.0	1609.0	III		1	30	50	
		POTS	1652.3	1657.1	DCIM		2	225	550	
		POTS	1719.1	1723.8	DCIM		2	200U	800X	
		BLEN	1723.2	1723.9	III	GG,RS	3	1000X	2800X	
		POTS	1724.5	1724.8	III	G	3	110U	325	
		SGMR	1739.0	1826.0	CONT		1	30	60	
		PALE	1825.0	1825.0	III		1	25	60	
		PALE	1922.0	1922.0	III		1	25	60	
		PALE	1933.0	1938.0	III		1	25	75	
		SGMR	1933.0	1937.0	III		1	30	60	
		PALE	2007.0	2007.0	III		1	25	75	
		SGMR	2024.0	2025.0	III		2	30	80	
	1924 2400	HIRA	2024.6	2024.8	III	B	1	25X	140	
		PALE	2025.0	2120.0	III	N	1	25	75	

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OBSERVATION			Sta	EVENT				FREQUENCY		Remarks			
Day	Start (UT)	End (UT)		Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)		Upper (MHz)		
16	2055	2400	CULG	2104.0	2158.0	III	N	1	25	150			
			CULG	2230.0	2230.0	III	B	1	300	500			
			CULG	2356.0	2356.0	III	B	1	130	180			
17	0000	0705	CULG	0015.0	0015.0	III	B	1	50	80			
			CULG	0021.0	0023.0	III	G	1	130	450			
			HIRA	0021.0	0021.8	III	G	1	130	500			
	0000	0944	CULG	0044.0	0048.0	III	G	1	35	140			
			PALE	0044.0	0048.0	III		2	25	60			
			CULG	0052.0	0054.0	III	G	1	120	180			
			CULG	0209.0	0227.0	III	N	1	30	90			
			CULG	0406.0	0408.0	III	G	2	50	300			
			HIRA	0406.8	0407.2	III	B	2	50	330			
			CULG	0419.0	0422.0	III	G	2	23	160			
			HIRA	0419.8	0421.4	III	G	1	50	120			
			CULG	0427.0	0437.0	III	G	1	23	160			
			0450	1755	BLEN	0453.1	0453.4	III	GG	3	320	550X	
			0548	1200	IZMI	0558.0E	1200.0D	I	S	2	75	260	
					IZMI	0704.4	0705.3	III	GG	2	120	260	
					HIRA	0704.6	0705.0	III	B	1	120	230	
					IZMI	0708.0U	1200.0D	III	N	1	45X	90	
					IZMI	0713.6	0713.7	III	B	2	140	230	
	BLEN	0745.2			0745.4	III	B	3	220X	490			
	SVTO	0751.0			0753.0	III		2	35	85			
	IZMI	0751.3			0754.7	III	GG	2	45X	270			
	0428	1725			ONDR	0751.4	0756.5	DCIM	G	1	2000X	4365X	
	HIRA	0751.6			0752.8	III	G	3	50	350			
	IZMI	0752.2	0753.2	V	G, HARM	2	60	270X					
	IZMI	0806.0	0812.4	UNCLF	FS	2	45X	90					
	BLEN	0822.0	0823.1	III	GG	3	320	550X					
	IZMI	0904.5	0904.8	III	G	1	215	270X					
	IZMI	0912.3	0912.4	III	G	1	200	270X					
	IZMI	1016.2	1016.4	III	G	2	90	150					
	1028	1751	POTS	1028 E	1751 U	I	S, C, DC	2	60	400			
			IZMI	1040.4	1040.5	III	G	3	70	180			
			POTS	1040.4	1040.6	III	B	3	70	250			
			IZMI	1057.2	1100.7	III	GG	2	45	160			
POTS			1057.6	1100.5	III	G	3	40X	170U				
POTS			1106	1555	III	N	1	40X	90U				
IZMI			1114.5	1114.8	III	G	2	90	165				
POTS			1114.5	1114.9	III	G	3	110U	170U				
IZMI			1137.7	1137.9	III	G	2	135	270X				
POTS			1137.7	1137.9	III	B	3	135	300				
POTS			1148.0	1148.1	III	B	1	250	400				
SVTO			1214.0	1214.0	III		1	46U	73U				
POTS			1214.2	1214.5	III	G	3	50	250				
POTS			1232.3	1232.5	III	G	3	40X	170U				
SVTO			1241.0	1251.0	III		2	35	85				
SGMR			1302.0	1307.0	V		2	30	80				
SVTO			1302.0	1308.0	V		2	35	85				
POTS			1302.7	1306.6U	III	G	3	40X	300				
POTS			1305.8	1306.2	DCIM		2	350	800X				
POTS			1315.1	1318.8	DCIM	UG	2	110U	800X				
BLEN			1317.0	1318.8	III	GG, U	3	220X	550X				
POTS			1339.9	1340.5	DCIM		1	250	500				
SGMR			1341.0	1351.0	III		2	30	80				
POTS	1341.6	1351.1	III	GG	3	40X	400						
POTS	1350.8	1351.3	V		2	50	70						
BLEN	1704.0	1708.0	CONT	GS	1	1200	2800X						
PALE	2003.0	2005.0	III		2	25	75						
SGMR	2003.0	2005.0	III		3	30	80						
1923	2400	HIRA	2003.4	2003.6	III	B	2	25X	260				
		CULG	2055.0E	2349.0	I	S	1	60	170				
2055	2400	CULG	2208.0	2210.0	III	G	1	25	90				
		CULG	2214.0	2219.0	III	G	2	100	180				
		HIRA	2214.0	2214.2	III	B	1	80	160				
18	0000	0705	CULG	0024.0	0024.0	III	B	1	60	180			
			CULG	0117.0	0406.0	III	N	1	30	150			

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
Day (UT)	End (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
18		PALE	0133.0	0133.0	III		1	45	60	
		PALE	0157.0	0158.0	III		1	40	56	
		CULG	0303.0	0304.0	III	B	2	18	180	
		PALE	0308.0	0309.0	V		2	25	75	
	0000 0945	HIRA	0308.2	0308.4	III	B	1	25X	200	
		CULG	0359.0	0401.0	III	G	3	18	210	
		PALE	0359.0	0401.0	III		1	30	75	
		SVTO	0359.0	0400.0	III		1	36	70	
		HIRA	0359.6	0400.8	III	G	3	25X	250	
		CULG	0435.0	0435.0	III	B	1	23	40	
		CULG	0449.0	0449.0	III	B	1	50	90	
	0450 1755	BLN								
		CULG	0517.0	0645.0	III	N	1	23	160	
		SVTO	0517.0	0521.0	III		2	35	85	
	0530 1727	POTS	0530 E	1727 U	I	S,C,DC	2	110U	450	
		POTS	0542.9	0546.4	III	GG	2	40X	170U	
		SVTO	0544.0	0644.0	III	N	2	35	85	
		POTS	0555	1727 U	III	N	2	110U	170U	
	0559 1200	IZMI	0555.3	0555.4	III	B	2	45	90	
		IZMI	0559.0E	1200.0D	I	N	2	50	260	
		IZMI	0559.0E	1200.0U	III	N	1	45X	120	
		IZMI	0607.2	0607.3	III	B	2	115	165	
		POTS	0644.0	0644.4	III	G,U	3	75	250	
		IZMI	0644.1	0644.3	III	G	2	45X	220	
	0427 1725	ONDR	0714.3	0715.1	DCIM		1	3035X	4365X	
		POTS	0746	1727 U	III	N	1	40X	90U	
		IZMI	0746.0	0746.1	III	G	2	45X	85	
		SVTO	0746.0	0758.0	III	N	2	39	63	
		IZMI	0757.7	0757.9	III	B	2	45X	85	
		POTS	0757.7	0757.9	III	B	2	40X	120	
		IZMI	0926.3	0926.6	III	G	1	45X	120	
		SVTO	0927.0	0931.0	III		2	35	63	
		IZMI	0927.4	0927.7	III	G,HARM	2	45X	165	
		POTS	0927.4	0931.9	III	G,RS	2	40X	375	
		IZMI	0927.5	0927.7	V	G	2	45X	90	
		IZMI	0930.2	0930.3	III	B	1	45X	85	
		IZMI	0931.3	0931.3	III	G	2	45X	270X	
		POTS	0953.8	0955.0	III	G	2	40X	250	
		IZMI	0954.4	0954.6	III	B	2	45X	140	
		IZMI	1004.9	1008.9	III	GG	2	45X	165	
		POTS	1005.0	1009.8	III	GG,C	3	40X	225 ₁	
		SVTO	1005.0	1009.0	V		1	35	85	
		IZMI	1005.1	1009.6	I	GG	2	105	165	
		IZMI	1116.9	1117.4	III	G	1	200	270X	
		POTS	1116.9	1117.8	DCIM		1	200U	500	
		POTS	1122.5	1122.8	DCIM		1	200U	400	
		POTS	1125.3	1125.5	III	B	2	40X	90U	
		IZMI	1136.5	1137.1	III	G	2	105	230	
		POTS	1136.6	1137.2	III	G,RS	3	110U	250	
		IZMI	1145.9	1146.1	III	B	2	45X	95	
		POTS	1145.9	1146.3	III	G	2	40X	170U	
		SGMR	1146.0	1149.0	III		1	30	65	
		SVTO	1146.0	1148.0	III		2	36	63	
		POTS	1148.1	1148.7	III	G	2	40X	90U	
		SGMR	1346.0	1608.0	III	N	1	30	65	
		SVTO	1346.0	1656.0	CONT		2	35	85	
		POTS	1406.0	1406.2	III	G	3	40X	170U	
		POTS	1528.9	1529.4	III	G	2	40X	150	
		ONDR	1538.1	1538.4	DCIM	G, SP	3	1040	1195	
		PALE	1647.0	1647.0	III		1	35	75	
		PALE	1819.0	1820.0	III		1	25	55	
		SGMR	1819.0	2000.0	CONT		1	30	70	
		PALE	1832.0	2001.0	CONT		2	25	60	
	1922 2400	HIRA								
		PALE	2241.0	2243.0	III		1	25	55	
	2055 2400	CULG	2241.0	2244.0	III	G	1	23	150	
		CULG	2326.0	2326.0	III	B	1	23	120	
		PALE	2326.0	2326.0	III		1	30	55	

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OBSERVATION			Sta	EVENT				FREQUENCY		Remarks	
Start Day	End (UT)	Start (UT)		End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	Upper (MHz)		
19	0000 0700	CULG	0032.0	0037.0	III	G	1	18	100		
		CULG	0050.0	0051.0	III	G	1	23	90		
		PALE	0132.0	0135.0	III		2	28	60		
		CULG	0238.0	0238.0	III	B	1	23	90		
		CULG	0255.0	0256.0	III	G	2	18	260		
		PALE	0255.0	0256.0	III		2	25	75		
		0000 0946	HIRA	0255.6	0256.0	III	B	1	25X	230	
			CULG	0259.0	0259.0	III	B	1	30	80	
			CULG	0321.0	0321.0	III	B	1	30	65	
			CULG	0322.0	0700.0D	III	S	2	23	180	
		0356 1751	POTS	0356 E	1751 U	I	S,C,DC	3	40X	550	
			0426 1728	ONDR							
			SVTO	0454.0	1656.0	CONT		3	35	85	
			POTS	0457	1630	III	N	2	40X	90U	
			IZMI	0608.0E	1200.0D	III	N	1	45X	90U	
		0608 1200	IZMI	0608.0E	1200.0D	I	S	2	45X	270X	
			IZMI	0720.6	0720.7	III	G	2	45	270X	
			IZMI	0721.3	0721.4	III	G	2	210	270X	
			IZMI	0754.1	0754.5	III	G	2	45X	135	
			IZMI	0754.1	0754.6	V	G	2	50	90	
	POTS		0754.1	0754.7	III	G	3	50	120		
	0445 1800		BLN	0808.0	0812.0	DCIM	C	1	320X	550X	
			IZMI	1110.5	1200.0D	III	S	2	45U	270X	
		BLN	1121.0	1155.5	DCIM	P	2	250	550X		
		IZMI	1157.4	1200.0D	II		1	145	270X		
		POTS	1306.5	1306.8	III	B	3	40X	65		
		POTS	1450.9	1451.0	III	G	2	200U	450		
		POTS	1630.1	1634.1	III	GG	2	200U	400		
		1921 2400	HIRA								
	2100 2400	CULG	2100.0E	2241.0	III	N	1	23	170		
		CULG	2233.0	2236.0	III	G	2	18X	80		
		CULG	2337.0	2337.0	III	B	1	50	250		
20	0000 0700	CULG	0142.0	0143.0	III	G	1	20	75		
		CULG	0151.0	0151.0	III	B	1	30	110		
		CULG	0229.0	0232.0	III	G	1	30	70		
		CULG	0355.0	0355.0	III	B	1	35	140		
		POTS	0356 E	1751 U	III	N	1	110U	170U		
		0356 1751	POTS	0356 E	1751 U	III	N	2	110U	170U	
			0425 1728	ONDR							
			POTS	0432.4	0432.8	III	G	3	40X	375	
			CULG	0433.0	0433.0	III	B	2	18	180	
		0000 0947	HIRA	0434.0	0434.2	III	B	1	25X	150	
			POTS	0520	1751 U	III	N	1	40X	90U	
			CULG	0521.0	0531.0	III	N	1	25	100	
			POTS	0522.1	0524.9	III	G,C	3	40X	275	
			CULG	0524.0	0525.0	III	G	2	20	180	
			HIRA	0524.0	0524.8	III	G	2	40	220	
			CULG	0552.0	0630.0	III	N	1	30	90	
			POTS	0729.9	0730.2	III	G	3	50	220	
			POTS	0744.3	0744.5	III	G	2	110U	400	
			POTS	0812.7	0812.9	III	G	3	40X	225	
			POTS	0855.8	0857.8	III	G	3	40X	225	
			POTS	0905.1	0905.4	III	G	2	40X	90U	
			POTS	0927.1	0927.8	III	G	2	40X	250	
			POTS	1018.0	1020.7	III	G,C	3	40X	275	
			POTS	1102.3	1102.7	III	G	3	40X	150	
			POTS	1109.5	1123.1	III	GG	3	40X	600	
			POTS	1128.6	1129.2	III	G	2	40X	250	
			POTS	1237.9	1238.1	III	G	2	40X	160	
			SGMR	1247.0	2339.0	CONT		2	30	80	
			POTS	1316.3	1316.7	III	G	3	40X	450	
		POTS	1336.6	1337.9	III	G	2	40X	225		
		POTS	1355	1608	III	N	2	40X	90U		
		POTS	1419.7	1421.0	III	G	2	40X	225		
		0445 1800	BLN	1603.0	1603.3	III	GG	2	2300	2800X	
			BLN	1623.6	1637.3	DCIM		2	1000X	1550	
			BLN	1717.3	1727.5	III	GG	2	1000X	1300	

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OBSERVATION			EVENT					FREQUENCY		Remarks
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	
22	0000	0700	CULG	0000.0E	0044.0	III	N	1	18	90
	0345	1804	POTS	0345	E 1804 U	I	S,C	1	110U	350
			CULG	0543.0	0543.0	III	B	1	25	60
			SVTO	0632.0	0634.0	III		2	35	83
	0600	1200	IZMI	0632.7	0634.4	III	G	2	45X	95
			POTS	0632.8	0634.5	III	G	2	40X	170U
			CULG	0633.0	0635.0	III	G	1	28	80
			SVTO	0704.0	0704.0	III		2	67	85
			IZMI	0704.4	0704.9	III	G	2	50	245
			POTS	0704.4	0704.9	III	G	3	40X	400
			POTS	1031.5	1031.6	III	B	1	120	275
			POTS	1125.1	1125.3	III	B	2	40X	60
			POTS	1155	1703	III	N	1	40X	90U
			SGMR	1429.0	1432.0	V		2	30	70
			POTS	1430.0	1430.8	III	G	3	40X	140
			SVTO	1430.0	1431.0	V		2	35	80
			SGMR	1510.0	1510.0	III		1	30	45
			SVTO	1510.0	1511.0	III		2	36	54
			POTS	1524.5	1525.0	III	G	3	140	500
	0423	1731	ONDR	1530.1	1530.2	DCIM	G	2	1020	1540
			POTS	1637.4	1637.7	III	G	2	150	275
			POTS	1638.5	1639.0	III	G	2	140	250
			PALE	1938.0	1938.0	III		1	28	49
			PALE	2057.0	2107.0	III	N	1	28	46
			PALE	2159.0	2207.0	III		2	25	70
			SGMR	2159.0	2159.0	III		2	30	80
	1919	2400	HIRA	2159.0	2159.2	III	B	1	25X	80
	2100	2400	CULG	2159.0	2159.0	III	B	1	23	90
			CULG	2204.0	2208.0	III	G	1	23	100
			CULG	2233.0	2233.0	III	B	1	25	50
23			PALE	0006.0	0006.0	III		2	25	50
	0000	0700	CULG	0006.0	0006.0	III	B	1	28	80
			CULG	0047.0	0048.0	III	G	1	20	100
			SVTO	0530.0	0531.0	III		2	35	85
	0000	0949	HIRA	0530.8	0531.0	III	B	1	50	170
			CULG	0531.0	0531.0	III	G	1	23	180
			CULG	0542.0	0542.0	III	B	1	30	120
	0600	1200	IZMI	0605.0U	0825.0U	I	S	1	85	245
			CULG	0611.0	0618.0	III	G	1	28	75
			IZMI	0615.4	0615.5	III	B	1	45X	70
			IZMI	0627.0U	1200.0D	III	N	1	45X	95
			IZMI	0730.5	0730.6	III	G	2	200	270X
			IZMI	0732.3	0734.9	III	GG	2	45X	95
			SVTO	0733.0	0811.0	III	N	2	35	85
			IZMI	0736.8	0741.3	III	GG	2	45X	270X
	0422	1730	ONDR	0740.1	0742.2	DCIM	GG,SP	3	890X	1915
			IZMI	0802.7	0803.1	III	GG	2	200	270X
			HIRA	0805.0	0806.0	III	G	2	50	250
			IZMI	0805.2	0806.3	III	GG	2	45X	270X
			IZMI	0805.3	0806.4	CONT		2	80	95
			IZMI	0806.6	0808.3	III	GG	2	45X	270X
			ONDR	0807.1	0810.0	DCIM	GG	2	885X	1500
			HIRA	0809.0	0810.5	III	G	2	50	400
			IZMI	0809.0	0910.4	III	GG	2	45X	270X
			IZMI	0809.1	0810.8	V	G	2	45X	95
			IZMI	0811.0	0812.1	I	GG	2	85	95
			IZMI	0811.1	0811.5	III	G	2	200	240X
			IZMI	0812.4	0812.8	III	G	2	190	270X
			IZMI	0825.0U	1200.0D	I	S	2	45	245
			IZMI	0845.0	0846.4	III	GG	2	190	270X
			IZMI	1012.1	1013.1	III	GG	2	200	270X
			IZMI	1015.0	1015.4	III	G	2	200	270X
			IZMI	1112.4	1112.5	III	B	1	195	270X
			SGMR	1123.0	1132.0	III		1	30	70
			SVTO	1123.0	1133.0	III		2	35	85
			IZMI	1123.8	1124.4	III	GG	2	45X	270X
		IZMI	1125.7	1127.5	III	GG	2	45X	270X	
		IZMI	1131.3	1132.6	III	GG	2	45X	270X	

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks	
Day	Start End (UT) (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)		
23		IZMI	1149.1	1149.2	III	G	1	200	270X		
		SVTO	1314.0	1625.0	CONT		1	35U	61U		
		SVTO	1402.0	1415.0	III	N	3	35	85		
		SGMR	1403.0	1415.0	III	N	2	30	80		
		PALE	1708.0	1708.0	III		1	35	70		
		PALE	1731.0	1731.0	III		1	40	55		
		SGMR	1731.0	1747.0	III	N	1	30	70		
		PALE	1856.0	1856.0	III		2	25	60		
		SGMR	1856.0	1856.0	III		1	30	70		
		PALE	1937.0	1937.0	III		1	40	50		
		PALE	2005.0	2219.0	III	N	1	25	55		
		SGMR	2022.0	2059.0	III	N	1	30	50		
	2100	2400	CULG	2100.0E	2223.0	III	N	1	25	90	
			SGMR	2142.0	2143.0	III		1	45	80	
	1919	2400	HIRA	2142.8	2143.2	III	B	3	50	500	
			CULG	2143.0	2143.0	III	B	1	25	420	
			CULG	2310.0	2310.0	III	B	1	25	70	
			PALE	2310.0	2310.0	III		1	27	35	
		PALE	2324.0	2325.0	III		1	28	39		
		PALE	2350.0	0252.0	CONT		1	35	50		
24	0000	0700	CULG	0001.0	0700.0D	III	N	1	18	180	
			PALE	0029.0	0225.0	III	N	3	25	75	
	0421	1733	ONDR								
			SVTO	0433.0	0434.0	III		2	37	84	
			CULG	0434.0	0435.0	III	G	2	18	180	
			PALE	0434.0	0434.0	III		1	34	70	
	0000	0950	HIRA	0434.0	0434.8	III	G	1	30	160	
			SVTO	0504.0	0514.0	III		2	37	84	
			SVTO	0552.0	0817.0	III	N	2	35	85	
	0607	1200	IZMI	0607.0E	1200.0D	III	N	1	45X	120U	
			IZMI	0623.2	0624.6	III	GG	2	45X	270X	
			HIRA	0623.4	0624.2	III	G	1	50	300	
			IZMI	0627.0	0629.2	III	GG	2	45X	270X	
			IZMI	0702.9	0703.7	III	G	2	45X	245	
			IZMI	0718.1	0722.7	III	GG	2	45X	270X	
			SVTO	0719.0	0723.0	V		3	35	85	
			IZMI	0719.1	0722.7	V	G	2	50	85	
			HIRA	0720.0	0721.4	III	G	2	25X	230	
			IZMI	0724.2	0726.5	III	G	2	45X	270X	
			IZMI	0728.3	0729.3	III	G	2	45X	270X	
			IZMI	0811.7	0812.5	III	GG	2	45X	270X	
			HIRA	0812.0	0812.2	III	B	1	40	300	
			SVTO	0812.0	0813.0	III		3	35	85	
			IZMI	0814.2	0815.3	III	GG	2	45X	270X	
			IZMI	0907.0E	1200.0D	I	S	1	80	260	
			SVTO	1251.0	1602.0	CONT		1	35	45	
			SGMR	1303.0	1303.0	III		1	30	60	
			SVTO	1303.0	1313.0	III		2	35	82	
			SGMR	1310.0	1337.0	CONT		2	30	80	
			SVTO	1330.0	1335.0	III		2	35	54	
			SGMR	1415.0	1457.0	III	N	2	30	80	
			SVTO	1416.0	1456.0	III	N	2	35	85	
			SGMR	1540.0	1828.0	CONT		1	30	60	
			SVTO	1542.0	1550.0	III		2	74	85	
			SVTO	1620.0	1711.0	III	N	2	70	85	
			PALE	1710.0	1710.0	III		1	45	60	
	1918	2400	HIRA								
			PALE	1943.0	1944.0	III		1	30	50	
			PALE	2007.0	2007.0	III		1	30	45	
			PALE	2047.0	2205.0	III	N	1	25	55	
			SGMR	2049.0	2049.0	III		1	30	60	
	2100	2400	CULG	2142.0	2142.0	III	B	1	25	80	
25		PALE	0225.0	0225.0	III		2	25	75		
	0000	0700	CULG	0225.0	0225.0	III	B	1	18	180	
	0420	1733	ONDR								
			CULG	0429.0	0430.0	III	G	2	30	180	
			SVTO	0429.0	0430.0	III		1	35	85	

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
Start Day (UT)	End Day (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
25	0000	0951	HIRA 0429.6	0430.0	III	B	2	40	200	
			CULG 0434.0	0436.0	II	FN	1	50	85	
			CULG 0434.0	0437.0	II	SH	1	75	150	
			CULG 0519.0	0520.0	III	G	1	60	300	
			HIRA 0519.0	0519.2	III	B	3	60	270	
			SVTO 0519.0	0538.0	III	N	2	35	85	
	0528	1722	POTS 0528 E	1722 U	I	S,C,DC	3	50	350	
			POTS 0535	1721	III	N	1	40X	90U	
	0548	1200	IZMI 0537.6	0538.3	III	G	2	45X	95U	
			POTS 0537.8	0538.6	III	G	3	40X	500	
			CULG 0538.0	0700.0D	III	N	1	25	180	
	0430	1810	BLEN 0538.0	0538.5	III		2	250x	550	
			IZMI 0548.0E	1200.0D	I	N	2	55	245U	
			BLEN 0603.0	0604.0	III		1	420	550	
			IZMI 0604.8	0610.9	III	GG	2	60	270X	
			POTS 0604.9	0615.4	III	G	2	140	375	
			IZMI 0610.0U	1200.0D	III	N	1	45X	95U	
			IZMI 0615.2	0615.3	III	G	2	190	270	
			POTS 0618	1715	III	N	2	40X	90U	
			SVTO 0618.0	0706.0	III	N	2	35	85	
			IZMI 0618.1	0619.5	III	GG	2	45X	95	
			IZMI 0627.3	0627.9	III	G	2	45X	125	
			POTS 0655.0	0701.2	III	G	3	50	400	
			BLEN 0655.1	0655.4	III		3	330x	480x	
			HIRA 0658.2	0658.4	III	B	1	50	270	
			IZMI 0658.2	0658.7	III	G	2	45	270X	
			IZMI 0659.4	0659.5	III	G	2	70	270	
			BLEN 0659.9	0659.9	III		3	340	400	
			SVTO 0700.0	1010.0	CONT		1	35	85	
			POTS 0737.6	0755.1	III	GG	3	55	600	
			IZMI 0743.1	0743.8	III	GG	2	60	270X	
			IZMI 0750.9	0753.3	III	GG	2	55	270X	
			HIRA 0751.0	0751.8	III	G	1	60	360	
			BLEN 0751.6	0751.8	III		2	250x	550	
			BLEN 0751.6	0755.0	III		2	250x	550	
			IZMI 0754.7	0755.0	III	G	2	65	270X	
			IZMI 0812.8	0812.9	III	B	1	200	230	
			IZMI 0813.7	0813.8	III	G	1	60	270X	
			POTS 0813.7	0813.8	III	B	2	60	325	
			IZMI 0817.9	0818.2	III	G	2	45X	95	
			SVTO 0818.0	0830.0	III	N	2	35	63	
			IZMI 0832.3	0834.0	III	GG	2	55	270X	
			POTS 0832.3	0834.1	III	GG	3	120	750	
			BLEN 0832.5	0834.2	III	U	2	250x	550x	
			HIRA 0833.0	0833.4	III	B	1	160	460	
			IZMI 0910.5	0912.3	III	GG	2	200	270X	
			IZMI 0951.4	0951.5	III	B	1	200	270X	
			POTS 0951.4	1006.8	III	GG	2	135	650	
			IZMI 0953.4	0953.6	III	G,RS	2	215	270	
			IZMI 1003.4	1006.8	III	GG	2	200	270X	
			BLEN 1004.0	1007.0	III		3	250x	550x	
			SVTO 1015.0	1038.0	III	N	1	35	65	
			IZMI 1015.2	1015.6	III	G	2	45X	95	
			POTS 1015.2	1015.7	III	G	3	40X	90U	
			IZMI 1016.0	1016.4	III	GG	2	200	270X	
			POTS 1016.0	1016.5	DCIM		2	200U	400	
			IZMI 1028.7	1028.8	III	B	1	190	270X	
			POTS 1028.7	1028.8	III	B	1	200U	400	
			IZMI 1037.8	1038.5	III	GG	2	45X	95	
			IZMI 1052.7	1052.8	III	B	1	200	270X	
			POTS 1052.7	1052.8	III	B	1	200U	300	
			IZMI 1122.0	1122.7	III	G,HARM	2	55	270X	
			POTS 1122.0	1123.9	DCIM		2	200U	400	
			SVTO 1143.0	1148.0	III		1	35	60	
			SGMR 1144.0	1149.0	III	N	1	30	80	
			POTS 1230.8	1230.9	III	B	3	40X	65	
			POTS 1309.3	1309.4	UNCLF		3	40X	55	
			POTS 1342.0	1342.5	III	G	2	40X	325	
			POTS 1635.9	1638.5	III	G	2	200U	360	

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OBSERVATION		Sta	EVENT		Event Remarks	Int (1-3)	FREQUENCY		Remarks		
Start Day (UT)	End (UT)		Start (UT)	End (UT)			Spectral Class	Lower (MHz)		Upper (MHz)	
25		POTS	1709.8	1715.0	DCIM		300	650			
		POTS	1711.2	1715.0	III	GG	3	40X	90U		
		BLEN	1711.5	1713.5	CONT		3	1000x	2800x		
		POTS	1719.4	1719.6	III	B	3	40X	120		
		BLEN	1726.0	1729.0	CONT		3	1100	2800x		
		SGMR	2056.0	2226.0	CONT		1	30	80		
	2100	2400	CULG	2100.0E	2400.0D	III	S	1	20	160	
	1918	2400	HIRA	2130.0	2130.2	III	B	1	25X	100	
			CULG	2334.0	2337.0	III	G	2	23	160	
26	0000	0700	CULG	0000.0E	0040.0	III	S	1	20	160	
	0000	0700	CULG	0000.0E	0040.0	III	S	1	20	160	
			CULG	0040.0	0606.0	III	N	1	20	160	
			CULG	0040.0	0700.0D	III	N	1	20	160	
			CULG	0235.0	0244.0	II	FN	3	25	80	
			CULG	0235.0	0244.0	II	FN	3	25	80	
			CULG	0235.0	0244.0	II	SH	2	50	160	ESS 650
			CULG	0235.0	0244.0	II	SH	2	50	160	ESS 650
			PALE	0235.0	0248.0	II		2	25	75	ESS 0600
			HIRA	0236.5	0244.0	II	SH	3	50	130	ESS 650
	0000	0951	HIRA	0236.5	0239.0	II	FN	3	50	70	ESS 650
			CULG	0244.0	0247.0	II	FN	1	30	40	
			CULG	0244.0	0249.0	II	SH	2	60	120	
			CULG	0244.0	0249.0	II	SH	2	60	120	
			CULG	0245.0	0247.0	II	FN	1	30	40	
			PALE	0305.0	0450.0	III	N	1	25	75	
			POTS	0345 E	1748	III	N	1	40X	90U	
			POTS	0345 E	1752	III	N	2	40X	90U	
	0345	1804	POTS	0345 E	1804 U	I	S,C,DC	3	40X	400	
			POTS	0407	1804 U	III	N	1	110U	170U	
			POTS	0412.9	0413.2	III	G	2	40X	70	
			POTS	0416.1	0416.8	III	G	3	40X	350	
			HIRA	0416.2	0416.4	III	B	1	50	300	
			CULG	0455.0	0700.0D	I	S	1	60	120	
			SVTO	0505.0	1745.0	CONT		2	35	85	
	0602	1200	IZMI	0602.0E	1200.0D	I	S	2	45X	240	
			POTS	0603.6	0605.4	DCIM		1	275	450	
			IZMI	0612.5	0612.9	III	G	2	200	270	
			IZMI	0652.9	0653.2	III	G,HARM	2	45	215	
			POTS	0652.9	0653.1	III	B	3	40X	225	
			IZMI	0729.6	0729.7	III	B	2	45X	95	
			POTS	0729.6	0729.9	III	B	3	40X	90U	
			IZMI	0747.7	0750.2	III	GG	2	45X	95	
			IZMI	0757.4U	1200.0D	III	N	1	45X	95	
			IZMI	0804.8	0805.9	III	G	2	45X	95	
			POTS	0804.8	0805.4	III	G	3	40X	130	
			POTS	0816.4	0816.7	DCIM		2	200U	475	
			IZMI	0818.2	0818.9	III	G	2	45X	95	
			POTS	0818.7	0819.0	III	B	3	40X	70	
	0420	1735	ONDR	0833.0	0833.5	DCIM	GG	2	800X	1470	
			POTS	0833.7	0834.1	III	G	3	40X	90U	
			POTS	0854.7	0856.2	III	G	3	40X	350	
		IZMI	0854.8	0856.0	III	GG	2	45X	120		
		ONDR	0855.3	0856.0	DCIM		1	3045X	4335		
		IZMI	0855.7	0856.0	III	G,RS	2	190	270X		
0440	1810	BLEN	0856.1	0856.7	III	G,RS	1	370	550X		
		POTS	0856.2	0856.3	DCIM		2	450	500		
		IZMI	0938.6	0938.7	III	B,HARM	2	50	170		
		SGMR	1058.0	2035.0	CONT		2	30	80		
		IZMI	1058.7	1058.9	III	G	2	45X	95		
		POTS	1404.2	1407.0	III	G	3	40X	90U		
		BLEN	1405.5	1408.0	III	GG	1	250	550X		
		POTS	1405.7	1407.8	DCIM		1	375	550		
		POTS	1418.6	1418.9	III	G	3	40X	90U		
		POTS	1424.1	1427.5	III	G	3	40X	90U		
		POTS	1427.1	1427.2	DCIM		1	325	375		
		POTS	1559.5	1612.6	III	GG	3	40X	250		
		PALE	1636.0	1638.0	III		1	25	65		
		POTS	1636.9	1638.5	III	G	3	40X	150		

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OBSERVATION			EVENT				FREQUENCY			Remarks	
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)		Upper (MHz)
26			POTS	1726.1	1727.1	DCIM		1	325	425	
			PALE	1742.0	1742.0	III		1	25	75	
			PALE	1751.0	2026.0	III	N	1	25	75	
			PALE	1901.0	0200.0	CONT		1	30	55	
			PALE	1954.0	2038.0	CONT		1	25	75	
	1917	2400	HIRA	1955.2	1955.4	III	B	2	25X	200	
			HIRA	2015.5	2015.6	III	B	1	25X	160	
			PALE	2058.0	0148.0	III	N	2	25	55	
			PALE	2157.0	2159.0	III		3	25	75	
			SGMR	2157.0	2159.0	III		1	30	80	
	2100	2400	CULG	2157.0	2159.0	III	G	2	23	160	
			HIRA	2157.5	2159.0	III	G	3	25X	160	
			CULG	2224.0	2225.0	III	G	1	25	120	
			PALE	2224.0	2225.0	III		1	25	55	
		CULG	2247.0	2347.0	III	N	1	20	160		
		PALE	2247.0	2319.0	III	N	2	25	55		
27	0000	0952	HIRA								
	0000	0655	CULG	0011.0	0136.0	III	N	1	20	180	
			PALE	0021.0	0155.0	III	N	2	25	55	
			PALE	0101.0	0209.0	CONT		1	35	55	
			CULG	0110.0	0114.0	III	G	2	18	140	
			CULG	0240.0	0332.0	III	N	1	30	90	
			CULG	0354.0	0637.0	III	N	1	30	90	
	0345	1803	POTS	0358.5	0358.6	III	B	2	110U	400	
			POTS	0408	1803	I	S,C,DC	2	50	400	
			POTS	0413	1718	III	N	1	40X	90U	
	0419	1737	ONDR								
			POTS	0436	1758	III	N	2	40X	90U	
			SVTO	0447.0	0637.0	III	N	2	35	85	
			POTS	0505.9	0506.2	III	G	2	40X	350	
			BLEN	0527.3	0527.6	III		3	420	540x	
			SVTO	0531.0	0921.0	CONT		2	36	85	
			CULG	0537.0	0538.0	III	G	2	23	90	
			POTS	0537.3	0537.8	III	G	2	40X	170U	
			BLEN	0541.0	0541.5	III		3	497	540x	
	0602	1200	IZMI	0547.2	0550.4	III	G	2	45X	90	
			POTS	0549.8	0549.9	III	B	2	140	350	
			IZMI	0607.0U	1200.0D	I	S	1	45	120	
			IZMI	0607.0U	1200.0D	III	S	2	45X	95U	
			POTS	0609.4	0609.5U	III	B	2	110U	155	
			IZMI	0635.8	0637.0	III	GG	2	45X	95	
			IZMI	0758.8	0758.9	III	B	2	45X	85	
			POTS	0758.9	0759.1	III	B	3	40X	90U	
			IZMI	0842.8	0842.9	III	B	2	45X	70	
			IZMI	0843.4	0844.3	I	GG,DC	2	55	70	
			SVTO	0926.0	0946.0	III	N	3	35	85	
			IZMI	0927.4	0933.8	III	GG	2	45X	95	
			POTS	0928.0	0940.3	III	GG.RS	3	40X	90U	
			SVTO	0938.0	1700.0	IV		2	35	85	
			IZMI	0938.4	0939.5	III	GG	2	45X	70	
			SVTO	1033.0	1043.0	III	N	2	35	81	
			IZMI	1042.9	1043.2	III	G	2	45X	125	
			POTS	1042.9	1043.3	III	G	3	40X	150	
			SVTO	1043.0	1154.0	III	N	3	35	85	
			SGMR	1046.0	1057.0	II		2	30	60	ESS 2500
			IZMI	1048.6	1056.8	III	GG	2	45X	95	
			POTS	1049.7	1057.7	IV		3	40X	160	
			SGMR	1103.0	2051.0	IV		1	30	80	
		IZMI	1105.8	1106.4	III	G	2	45X	120		
		POTS	1105.8	1106.6	III	G	2	40X	160		
		IZMI	1115.9	1119.3	CONT		2	45X	70		
		POTS	1116.0U	1119.5	UNCLF		3	40X	75		
		IZMI	1139.5	1140.5	III	GG	2	45X	120		
		POTS	1140.0	1140.6	III	G	2	40X	135		
		IZMI	1146.0	1146.2	III	G	2	45X	95		
		POTS	1146.0	1153.7	III	GG	3	40X	150		
		IZMI	1147.7	1148.0	III	G	2	45X	95		
		IZMI	1150.1	1154.3	III	GG	2	45X	135		

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks	
Day (UT)	Start (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)		
27		SGMR	1301.0	1304.0	V		3	30	80		
		SVTO	1301.0	1303.0	V		3	35	84		
		POTS	1301.8	1302.4	III	G	3	40X	140		
	0430	1810	BLN	1406.0	1408.0	III	U	2	300	580	
			BLN	1453.0	1454.5	III		3	440	550	
			BLN	1522.3	1522.5	III	U	3	420	490	
			BLN	1643.0	1652.0	III		3	1000x	2000	
			POTS	1643.2	1653.3	DCIM		2	200U	800X	
			PALE	1740.0	1929.0	CONT		1	25	75	
			PALE	1944.0	1944.0	III		1	25	75	
	2100	2400	CULG	2156.0	2159.0	III	G	2	25	180	
			PALE	2157.0	2235.0	III	N	2	25	75	
			SGMR	2157.0	2227.0	III	N	1	30	80	
	1917	2400	HIRA	2157.4	2158.4	III	G	2	25X	210	
			CULG	2201.0	2205.0	III	G	3	25	140	
			HIRA	2202.4	2204.0	III	G	3	25X	130	
			HIRA	2205.8	2208.8	III	G	1	50	80	
		CULG	2206.0	2228.0	III	N	2	28	130		
28		PALE	0020.0	0301.0	III	N	2	25	75		
	0000	0655	CULG	0020.0	0023.0	III	G	2	18	180	
	0000	0952	HIRA	0020.2	0020.4	III	B	1	25X	150	
			HIRA	0052.8	0053.0	III	B	1	25X	220	
			CULG	0054.0	0055.0	III	G	2	18X	180	
			CULG	0121.0	0255.0	I	S	1	60	120	
			CULG	0140.0	0655.0D	III	N	1	30	90	
			CULG	0324.0	0526.0	I	S	1	50	90	
	0345	1804	POTS	0345 E	1804 U	I	S,C,DC	2	40X	350	
			POTS	0351	1804 U	III	N	1	40X	90U	
			POTS	0400	1722	III	N	2	40X	90U	
	0418	1736	ONDR								
			SVTO	0503.0	1522.0	CONT		2	36	84	
	0607	1131	IZMI	0607.0E	1131.0D	III	N	2	45X	95	
			IZMI	0612.5	0612.9	III	G	2	45	90	
			IZMI	0630.0E	1131.0D	I	N	1	80	250	
			BLN	0710.0	0710.9	DCIM	P	2	370	400	
	0430	1810	BLN	0710.0	0711.0	DCIM	P	2	350	410	
			IZMI	0836.3	0836.4	III	G	2	125	215	
			POTS	0836.3	0836.5	III	B	3	130	220	
			IZMI	0900.9	0901.0	III	B	2	45	120	
			BLN	1000.2	1033.6	III	GG	2	320	580	
			IZMI	1012.9	1013.1	III	B	2	45X	125	
			SGMR	1216.0	1217.0	III		1	30	55	
			SGMR	1251.0	1303.0	III	N	1	30	60	
			SGMR	1358.0	2108.0	CONT		2	30	80	
	1916	2400	HIRA								
			PALE	1947.0	2108.0	CONT		1	25	55	
	2105	2400	CULG	2136.0	2138.0	III	B	1	25	90	
			PALE	2344.0	2349.0	III		1	25	40	
29	0000	0655	CULG	0120.0	0330.0	III	N	1	30	120	
			PALE	0219.0	0226.0	III		1	25	55	
			CULG	0311.0	0327.0	II	FN	3	20	90	SWF
			CULG	0311.0	0332.0	II	SH	2	40	180	ESS 650
			HIRA	0311.0	0322.0	II	SH	2	60	140	
			PALE	0311.0	0326.0	II		3	25	75	ESS 0600
	0000	0953	HIRA	0311.0	0314.5	II	FN	3	50	80	
	0345	1804	POTS	0345 E	1804 U	I	S,C,DC	2	70	600	
			POTS	0403	1754	III	N	1	40X	90U	
			POTS	0406	1748	III	N	2	40X	90U	
	0417	1737	ONDR								
			POTS	0504	1804 U	III	N	1	110U	170U	
			CULG	0508.0	0509.0	III	G	1	20	70	
	0549	1200	IZMI	0553.0U	1200.0D	III	N	1	45X	120U	
			CULG	0608.0	0655.0D	III	N	1	30	80	
			SVTO	0608.0	0613.0	III		1	36	55	
			IZMI	0613.9	0634.4	III	G	2	45X	120	
			IZMI	0632.0U	1200.0D	I	N	1	85	248	
			SVTO	0634.0	0640.0	III		1	38	59	

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OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
Day (UT)	Start End (UT)				Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
29		SVTO	0636.0	0930.0	CONT		1	35	85	
		POTS	0650.3	0652.9	III	G	2	110U	225	
		IZMI	0729.0	0730.1	III	G	2	45X	160	
		POTS	0729.0	0730.2	III	G	3	40X	225	
		SVTO	0729.0	0729.0	III		3	35	85	
		IZMI	0910.4	0910.6	III	B	2	50	95	
		POTS	0910.4	0910.6	III	B	2	55	170U	
		POTS	1132.6	1132.7	III	B	2	110U	170U	
		SVTO	1141.0	1747.0	CONT		2	35	55	
		SGMR	1245.0	1952.0	CONT		2	30	80	
		POTS	1333.7	1338.8	III	C	2	40X	300	
		POTS	1351.2	1351.5	III	G	2	110U	160	
	0430 1810	BLEN	1419.0	1420.0	III	RS	1	360	380	
		POTS	1429.4	1438.8	III	GG	2	40X	170U	
		POTS	1546.4	1546.8	III	G	2	40X	170U	
		POTS	1555.5	1556.8	III	G	2	55	170U	
		SVTO	1606.0	1631.0	III	N	2	35	85	
		POTS	1606.7	1630.6	III	GG,RS	3	40X	275	
		PALE	1806.0	2237.0	III	N	1	25	60	
	1916 2400	HIRA								
	2105 2400	CULG	2117.0	2400.0D	III	N	1	25	180	
		PALE	2348.0	0327.0	III	N	2	25	60	
30	0000 0655	CULG	0000.0E	0655.0D	III	N	1	25	180	
		POTS	0345 E	1804 U	III	N	1	40X	90U	
	0345 1804	POTS	0345 E	1804 U	I	S,C,DC	3	40X	400	
	0417 1737	ONDR								
		POTS	0434.4	0434.7	III	G	3	110U	250	
		POTS	0456	1804 U	III	N	1	110U	170U	
		SVTO	0507.0	0507.0	III		1	35	65	
		POTS	0507.3	0508.0	III	G	2	40X	250	
		POTS	0513	1752	III	N	2	40X	90U	
		SVTO	0552.0	1657.0	CONT		2	35	85	
		POTS	0553.2	0553.6	III	G	2	110U	150	
		POTS	0555	1804 U	III	N	2	110U	170U	
	0607 1200	IZMI	0607.0E	1200.0D	III	S	1	45X	95	
		POTS	0618.2	0620.1	III	G	3	50	250	
		IZMI	0619.3	0619.9	III	GG	2	55	180	
	0000 0954	HIRA	0619.4	0619.6	III	B	1	90	170	
	0430 1810	BLEN	0620.3	0620.5	DCIM	D	1	360	400	
		IZMI	0625.4	0625.5	III	B	2	45X	110	
		IZMI	0648.7	0649.6	III	GG	2	55	265	
		POTS	0648.7	0649.2	III	G,U	3	110U	275	
		HIRA	0649.0	0649.2	III	B	1	90	230	
		POTS	0649.5	0649.7	III	B	3	130	250	
		IZMI	0700.0U	1200.0D	I	S	1	55	230	
		POTS	0813.0	0817.0	III	GG,U	3	40X	650	
		SVTO	0813.0	0827.0	III	N	2	35	85	
		IZMI	0813.2	0813.8	III	GG,HARM	2	45	260	
		HIRA	0813.6	0816.8	III	G	2	50	220	
		IZMI	0813.6	0814.3	V	G,HARM	2	45X	135	
		IZMI	0814.5	0815.3	III	G,HARM	2	55	270X	
		IZMI	0815.9	0816.9	III	GG,HARM	2	45	230	
		IZMI	0855.1	0855.4	III	G,HARM	2	45X	180	
		POTS	0855.2	0859.5	III	G	3	40X	250	
		SVTO	0859.0	0859.0	III		2	35	70	
		IZMI	0859.1	0859.4	III	S	2	45X	145	
		IZMI	1033.9	1049.4	III	S	2	45X	240	
		POTS	1033.9	1049.3	III	GG	3	40X	350	
		SGMR	1035.0	2114.0	CONT		2	30	80	
		IZMI	1126.1	1126.8	III	GG	2	45X	260	
		POTS	1312.0	1314.3	III	GG,C	3	40X	250	
		SGMR	1614.0	1647.0	III	N	2	30	80	
		POTS	1617.7	1621.1	III	G	3	40X	300	
		SGMR	1811.0	1825.0	III	N	2	30	80	
		PALE	2054.0	2054.0	III		1	28	63	
	2105 2400	CULG	2130.0	2217.0	I	S	1	100	160	
		CULG	2250.0	2250.0	III	B	1	25	100	
		PALE	2250.0	2250.0	III		1	25	60	

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

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May 99

MAY 1999

OBSERVATION		Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks	
Day	Start (UT)				End (UT)	Spectral Class		Event Remarks	Lower (MHz)		Upper (MHz)
30		CULG	2323.0	2338.0	III	N	1	25	180		
		PALE	2323.0	0257.0	CONT		1	35	55		
		PALE	2327.0	0201.0	III	N	2	25	60		
	1915	2400	HIRA	2332.5	2334.5	III	G	1	50	160	
			CULG	2341.0	2345.0	III	G	2	18X	180	
			HIRA	2342.5	2343.5	III	G	1	25X	160	
			CULG	2351.0	2356.0	III	G	2	25	150	
		HIRA	2351.5	2352.5	III	G	2	30	130		
31	0000	0655	CULG	0051.0	0107.0	III	G	1	30	160	
			CULG	0115.0	0232.0	III	N	1	30	120	
			CULG	0434.0	0624.0	III	N	1	25	130	
			SVTO	0435.0	1450.0	CONT		2	35U	85U	
	0549	0705	IZMI	0549.0E	0705.0D	I	S	2	60U	270X	
			SVTO	0602.0	0607.0	III		2	35U	85U	
			IZMI	0614.0	0614.7	III	G	2	45X	95	
			CULG	0620.0	0655.0D	III	S	1	80	130	
			IZMI	0630.0U	0705.0D	III	N	1	45X	95	
			IZMI	0700.2	0701.6	III	GG	2	45X	230	
	0000	0955	HIRA	0700.4	0701.0	III	G	2	25X	210	
			HIRA	0745.6	0745.8	III	B	2	30	130	
	0759	1200	IZMI	0759.0E	1200.0D	I	S	2	45	270X	
	0804	1804	POTS	0804 E	1804 U	I	S,C,DC	3	70	500	
			IZMI	0808.0U	1200.0D	III	S	2	45X	95U	
			POTS	0813	1716	III	N	2	40X	90U	
			SVTO	0813.0	0818.0	III		2	35	85	
			POTS	0907	1716	III	N	2	110U	170U	
			SVTO	0932.0	0940.0	V		3	35	85	
			IZMI	0932.1	0932.5	III	G	2	45X	150	
			POTS	0932.2	0940.3	III	GG	3	40X	300	
			IZMI	0933.2	0935.5	III	GG	2	45X	130	
			SGMR	0935.0	0938.0	III		1	30	75	
	0416	1740	ONDR	0935.4	0937.0	DCIM	G	1	3055X	4325X	
			IZMI	0935.5	0938.3	III	GG	3	45X	270	
			HIRA	0935.6	0936.8	III	G	3	25X	260	
			IZMI	0935.6	0939.0U	CONT		1	45X	265	
			POTS	0935.6	0938.5U	DCIM		2	200U	800X	
			ONDR	0936.1	0937.1	DCIM	GG,SP	2	800X	2000X	
			POTS	0942.5	0948.6	II	SH,H	2	70	160	
			SVTO	0945.0	0949.0	II		2	35	85	ESS 0500
			IZMI	0945.8	0949.7	II	HARM	2	45X	95	
			POTS	0945.9	0948.2U	II	F,H	3	40X	60	
	0430	1810	BLN	1000.0	1025.0	III		3	400	580	
			IZMI	1043.1	1043.2	III	G,HARM	2	45	260	
			BLN	1215.0	1300.0	III		3	400	580	
			SGMR	1238.0	1530.0	CONT		1	30	80	
			BLN	1315.0	1430.0	DCIM	P	2	300X	550X	
			SVTO	1350.0	1358.0	III		2	35U	65U	
			POTS	1358.4	1403.6	III	GG	3	40X	400	
			SGMR	1402.0	1403.0	III		1	30	70	
			SVTO	1402.0	1403.0	III		2	35	85	
			SVTO	1456.0	1619.0	III	N	2	35U	63U	
		ONDR	1545.2	1545.4	DCIM	GG,SP	2	825	1265		
		POTS	1619.3	1619.7	III	B	3	40X	65		
		SGMR	1655.0	1716.0	III	N	2	30	80		
		PALE	1705.0	1711.0	III		2	25	56		
		SVTO	1705.0	1711.0	III		2	35U	85U		
		POTS	1705.4	1712.5	III	GG,RS	3	40X	400		
		PALE	1830.0	1831.0	III		1	28	55		
		SGMR	1830.0	1905.0	III	N	2	30	80		
		PALE	1840.0	1842.0	III		2	25	70		
		PALE	1854.0	1945.0	III	N	3	25	75		
		SGMR	1944.0	1945.0	III		1	30	45		
1914	2400	HIRA	2002.0	2002.2	III	B	1	25X	130		
		PALE	2041.0	2042.0	III		1	29	57		
		SGMR	2041.0	2042.0	III		2	30	55		
		HIRA	2112.0	2112.2	III	B	1	25X	80		
		PALE	2112.0	2119.0	III		2	28	63		
		SGMR	2112.0	2119.0	III		2	30	65		

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May 99

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

MAY 1999

OBSERVATION			Sta	Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
Start Day (UT)	End (UT)	Spectral Class				Event Remarks	Lower (MHz)		Upper (MHz)		
31	2105	2400	CULG	2112.0	2112.0	III	B	1	30	90	
			CULG	2119.0	2119.0	III	B	1	30	90	
			CULG	2140.0	2248.0	III	N	1	30	80	
			PALE	2156.0	2159.0	III		1	25	45	
			SGMR	2200.0	2232.0	V		1	30	60	
			PALE	2247.0	2254.0	III		2	25	60	
			CULG	2253.0	2255.0	III	G	2	20	100	
			PALE	2314.0	0312.0	III	N	/	25	65	
			CULG	2315.0	2321.0	III	G	2	18	130	
			HIRA	2315.0	2315.4	III	B	1	25X	250	

Event Remarks:

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

Frequency qualifiers:

X = Extends beyond instrument range U = Uncertain frequency

Remarks:

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

Stations Reporting:

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

COSMIC RAY INDICES
(Neutron Monitor)

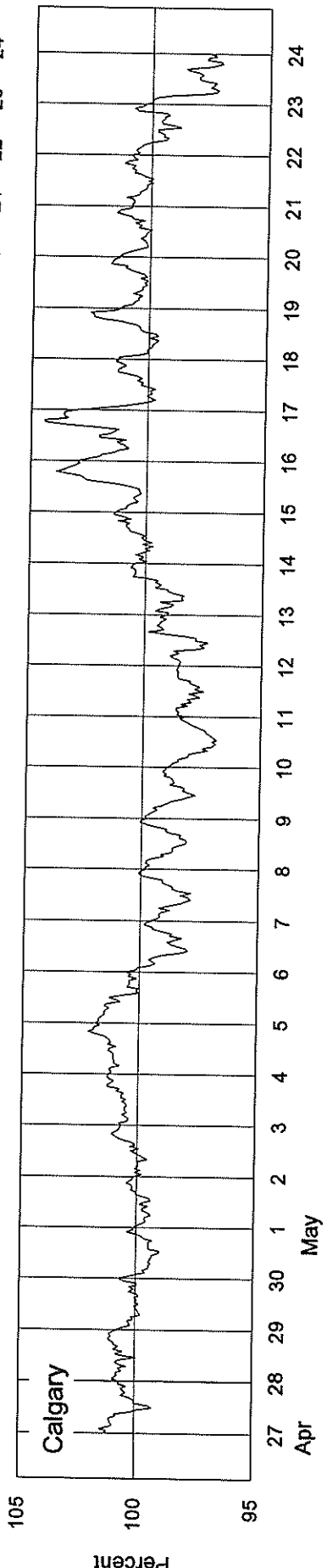
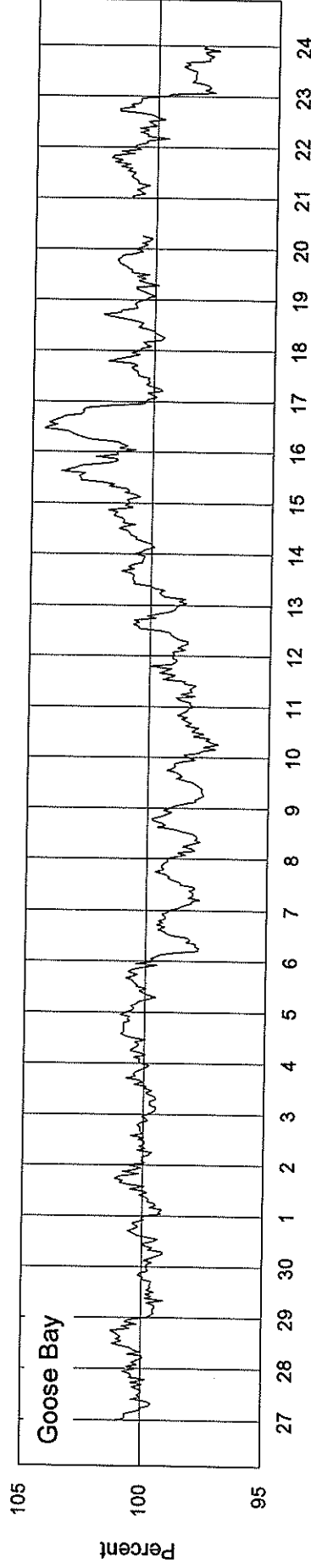
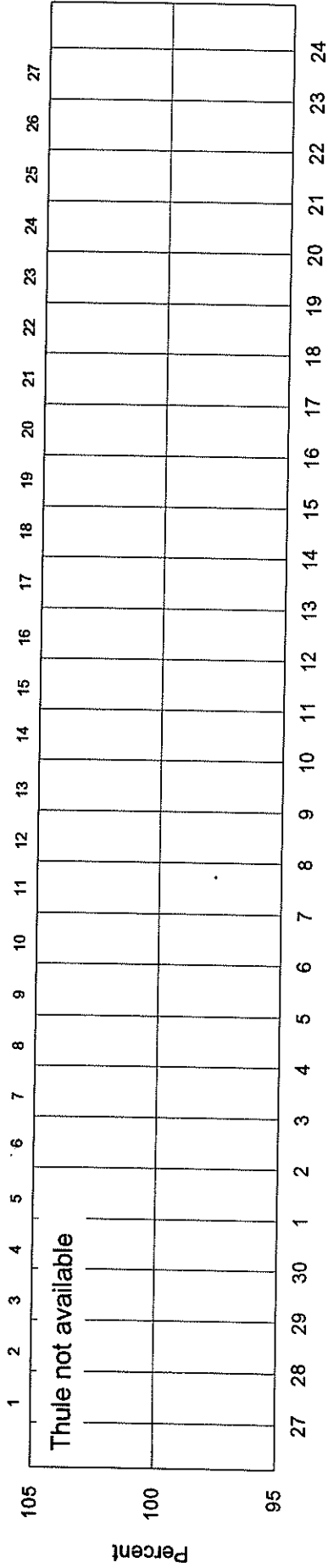
May 1999

Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	7073.0	3817.8	6052.8	9019.7	4085.5	1969.2	3522.4
2	at time of	7071.7	3832.7	6064.5	9049.6	4098.5	1973.9	3531.8
3	publication	7062.2	3852.7	6072.4	9085.5	4116.9	1975.3	3540.2
4		7104.8	3873.3	6087.4	9129.6	4134.4	1978.6	3546.5
5		7088.5	3858.8	6081.5	9116.6	4100.2	1971.1	3543.2
6		6993.7	3790.0	6007.2	8992.9	4020.0	1950.0	3517.0
7		6975.2	3781.7	5989.3	8951.0	4012.0	1944.1	3513.0
8		6980.2	3788.3	5991.7	8958.9	4004.5	1941.0	3512.9
9		6953.0	3779.7	5957.1	8926.6	3990.4	1934.8	3506.0
10		6931.1	3737.8	5924.2	8869.7	3973.5	1929.9	3497.2
11		6980.7	3754.2	5954.5	8903.3	3989.5	1926.2	3503.2
12		7023.5	3770.2	5983.5	8948.1	3997.2	1920.5	3522.1 (45)
13		7073.9	3802.2	6054.3	9063.2	4058.8	1948.6	3540.4
14		7128.6	3838.3	6081.6	9101.1	4107.5	1955.5	3556.5
15		7204.5	3885.7	6139.6	9190.1	4144.0	1965.6	3571.6
16		7260.7	3909.7	6178.3	9235.6	4169.8	1971.5	3576.3
17		7104.5	3848.0	6089.7	9122.2	4083.0	1964.7	3594.0 (3)
18		7111.9	3848.2	6077.7	9113.7	4080.2	1969.9	3571.8 (12)
19		7122.5	3848.7	6113.6	9141.3	4106.5	1978.6	3563.5
20		7101.0 (7)	3846.5	6093.7	9105.6	4094.3	1965.4	3555.5
21		7142.5	3844.7	6081.4	9088.6	4087.2	1951.2	3550.0
22		7108.2	3818.3	6053.0	9010.7	4054.9	1936.9	3534.9
23		6949.9	3751.2	5932.6	8861.5	3954.4	1930.4	3522.7
24		6957.2	3730.0	5912.1	8814.6	3949.5	1929.5	3514.7
25		6973.5	3742.0	5945.1	8902.0	3968.6	1945.1	3533.0
26		7025.7 (21)	3774.2	6012.2	8997.3	4021.5	1943.1	3541.2
27		7073.0	3809.0	6023.4	9018.7	4035.3	1945.0	3553.2
28		7085.9	3809.5	6018.5	9008.9	4040.1	1946.4	3551.5
29		7062.0	3790.7	6004.5	8995.1	4023.5	1936.1	3539.3
30		7067.3 (7)	3777.8	6000.4	8962.0	4027.0	1926.1	3539.0
31		7064.6 (8)	3785.3	6016.6	8964.0	4025.7	1927.4	3541.0
Mean		7059.8	3809.6	6032.1	9020.9	4050.4	1950.1	3536.3

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.

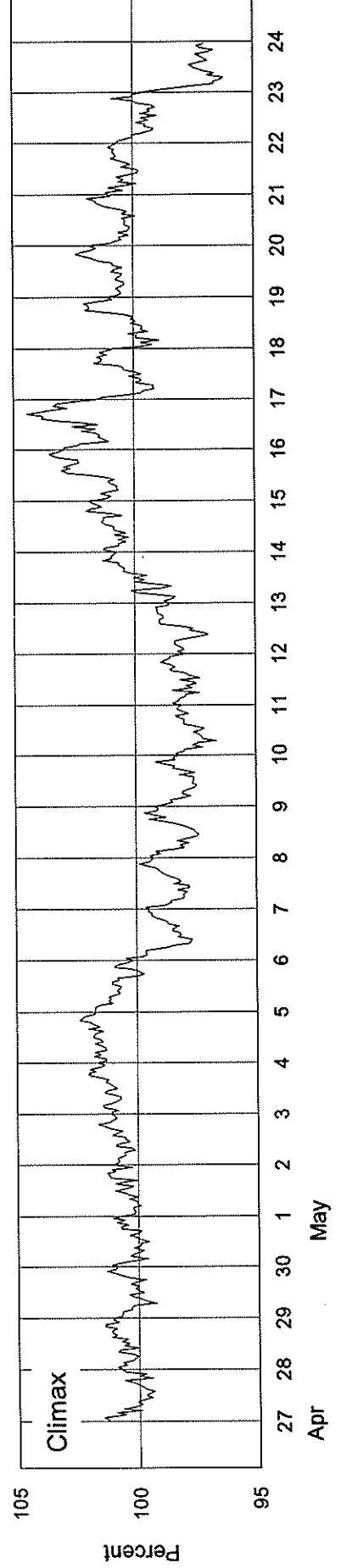
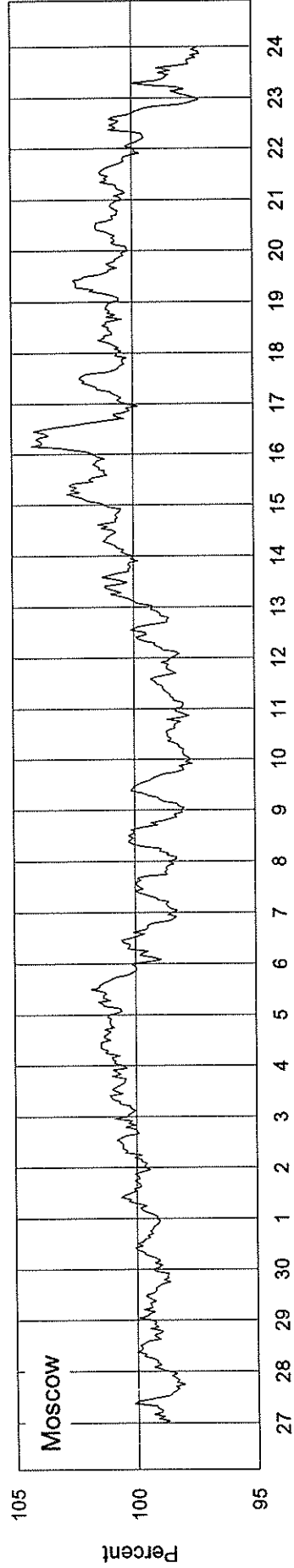
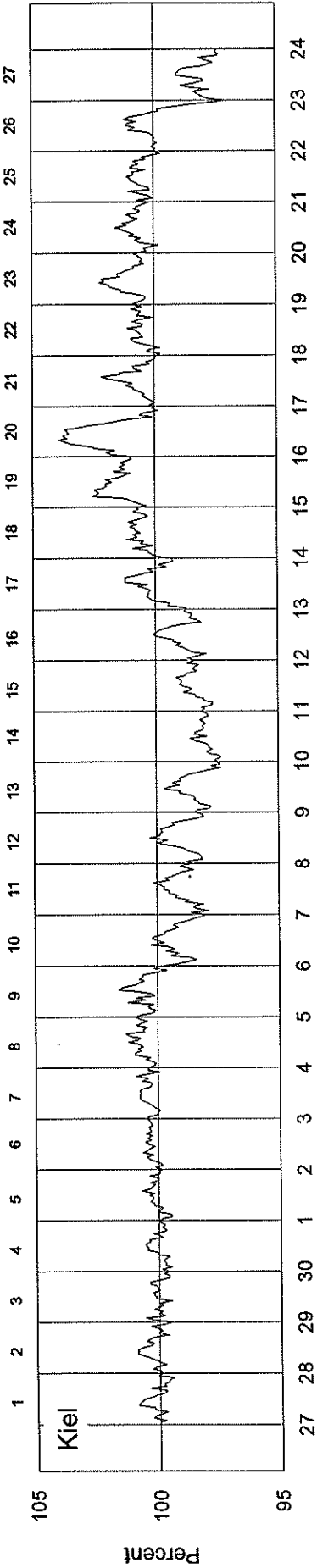
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2263 - Beginning 27 Apr 99



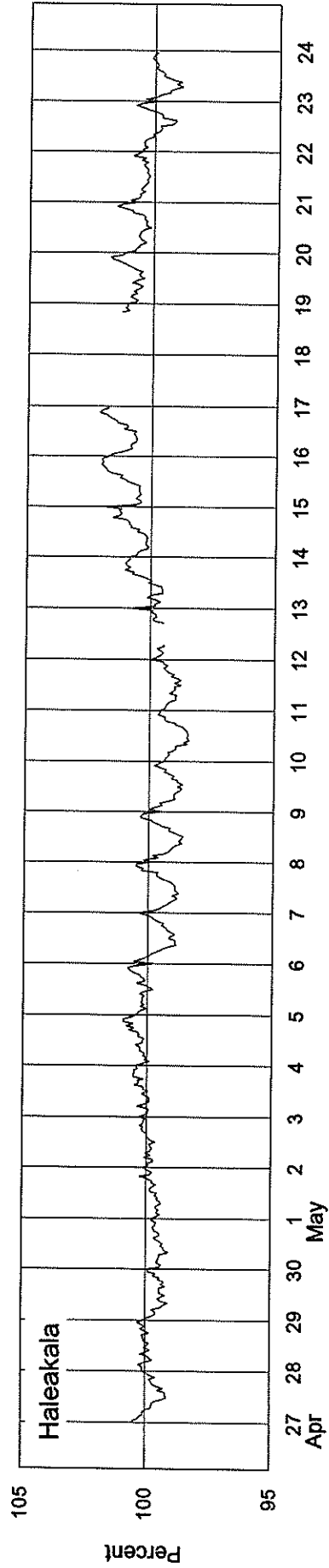
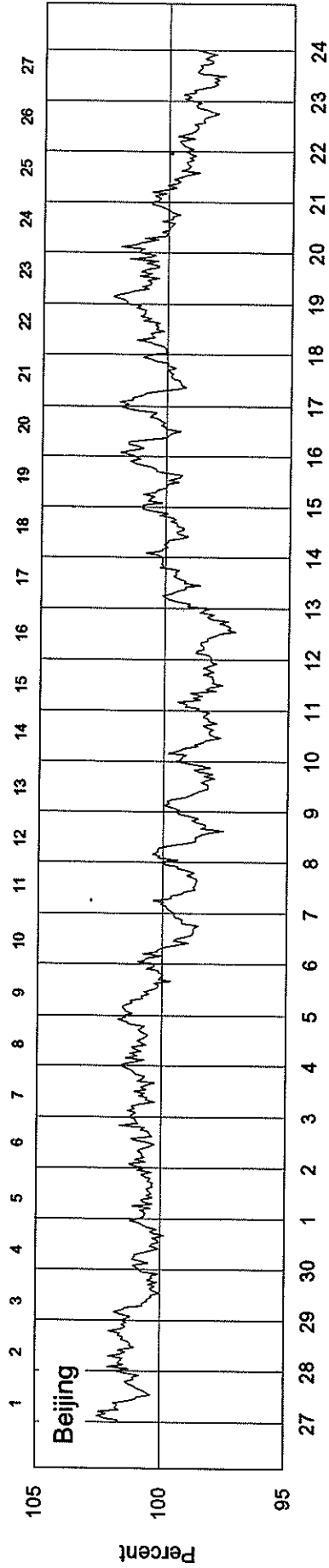
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2263 - Beginning 27 Apr 99



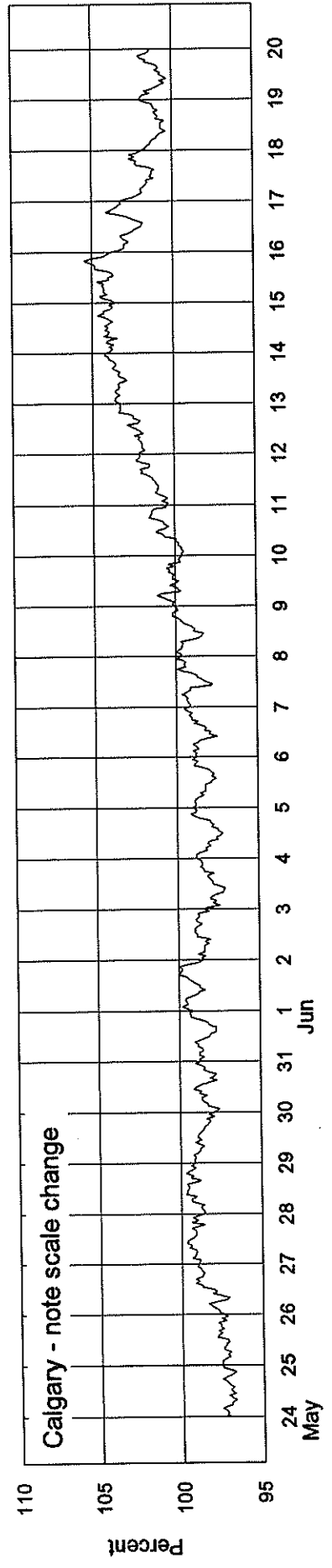
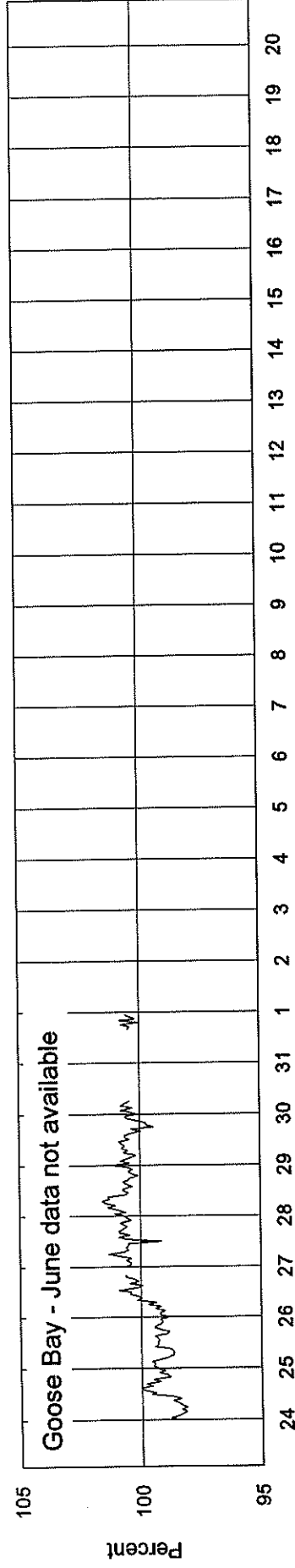
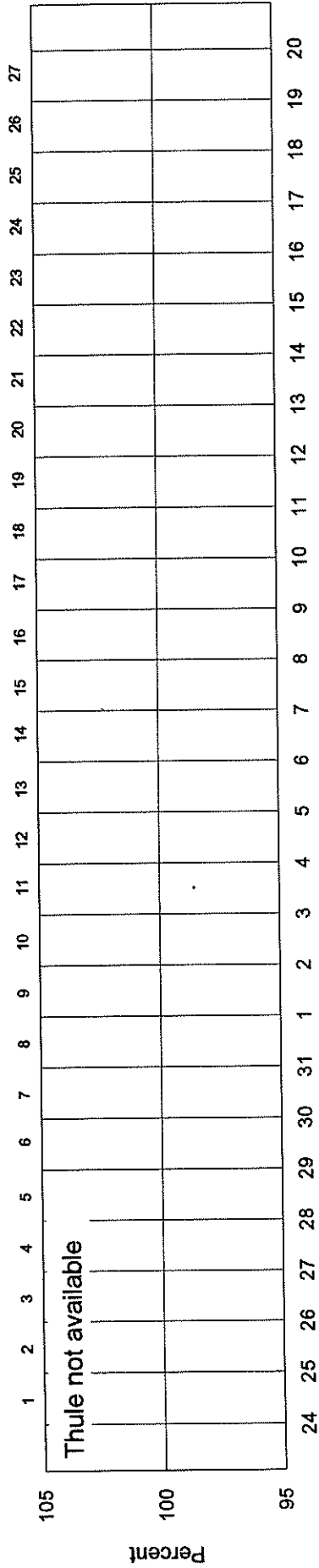
Apr May

COSMIC RAY INDICES (Neutron Monitor) Bartels Rotation 2263 - Beginning 27 Apr 99



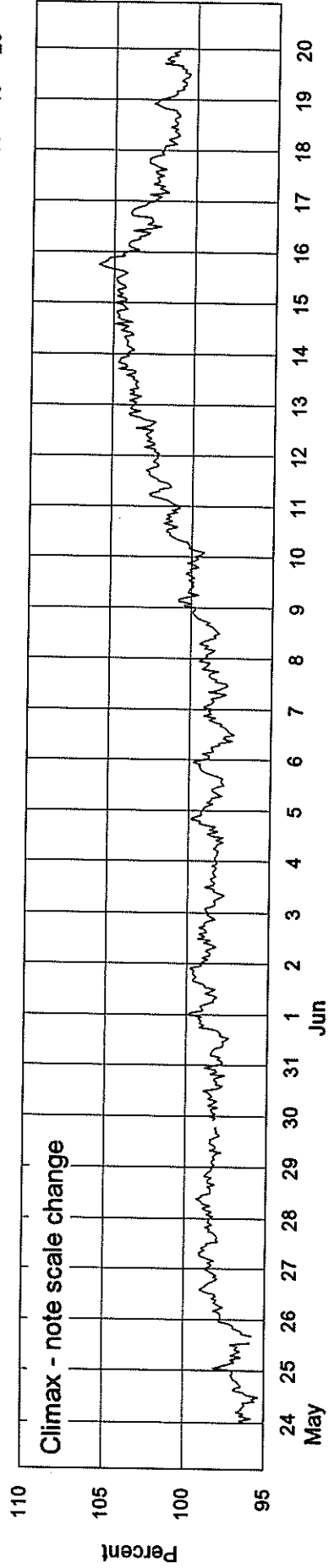
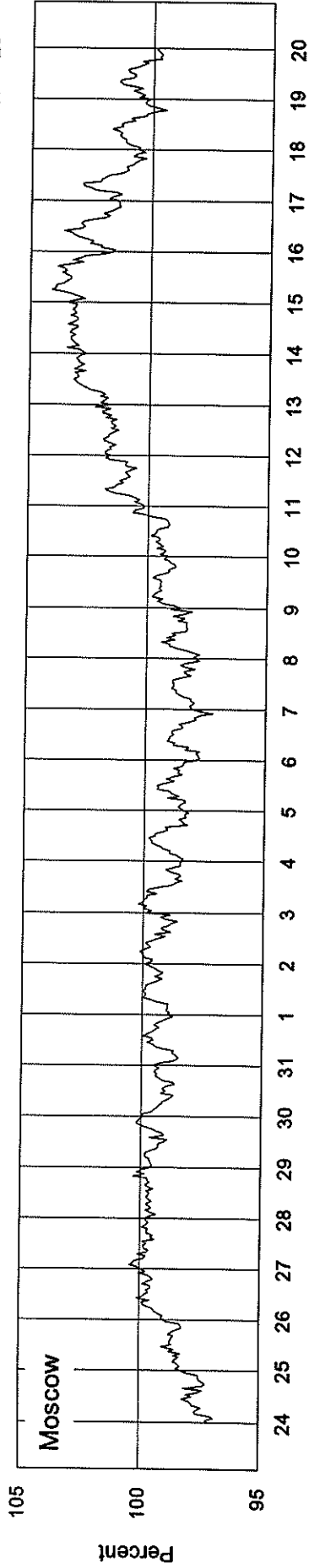
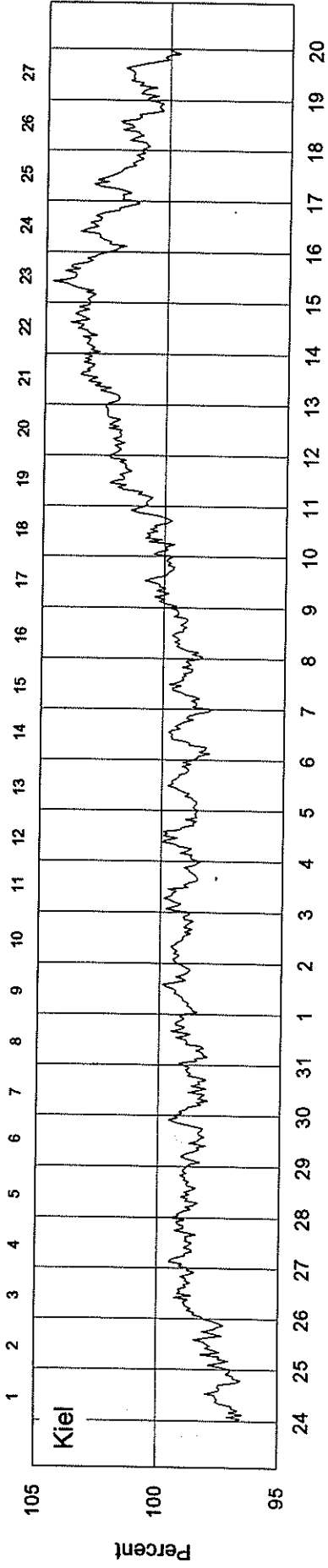
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2264 - Beginning 24 May 99



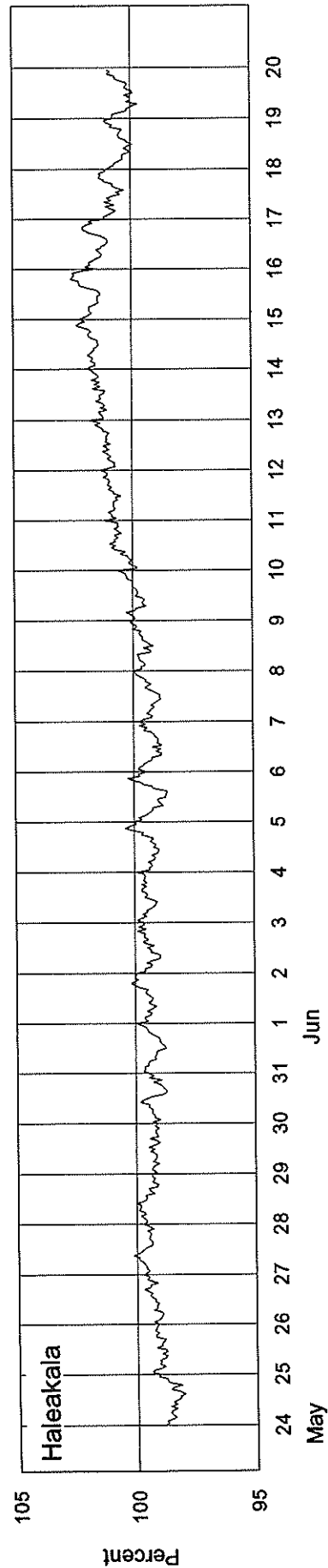
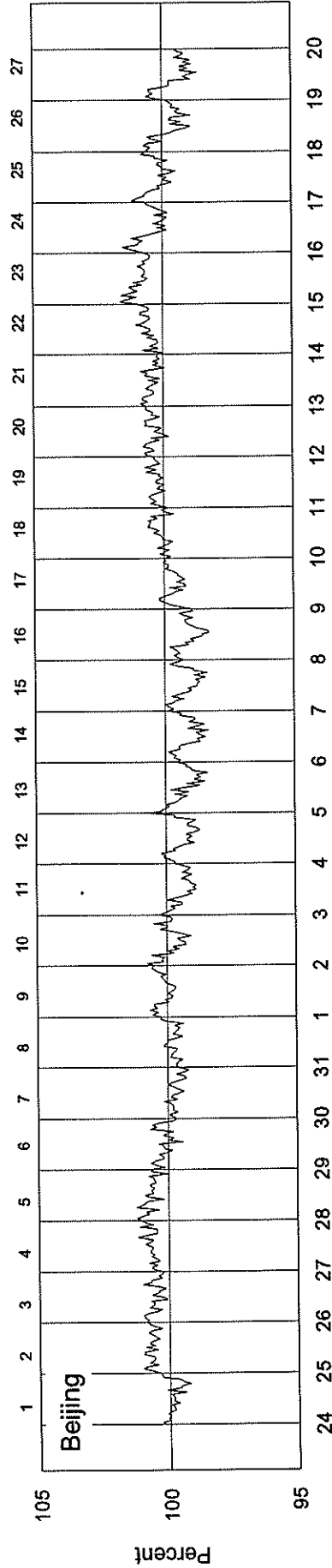
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2264 - Beginning 24 May 99

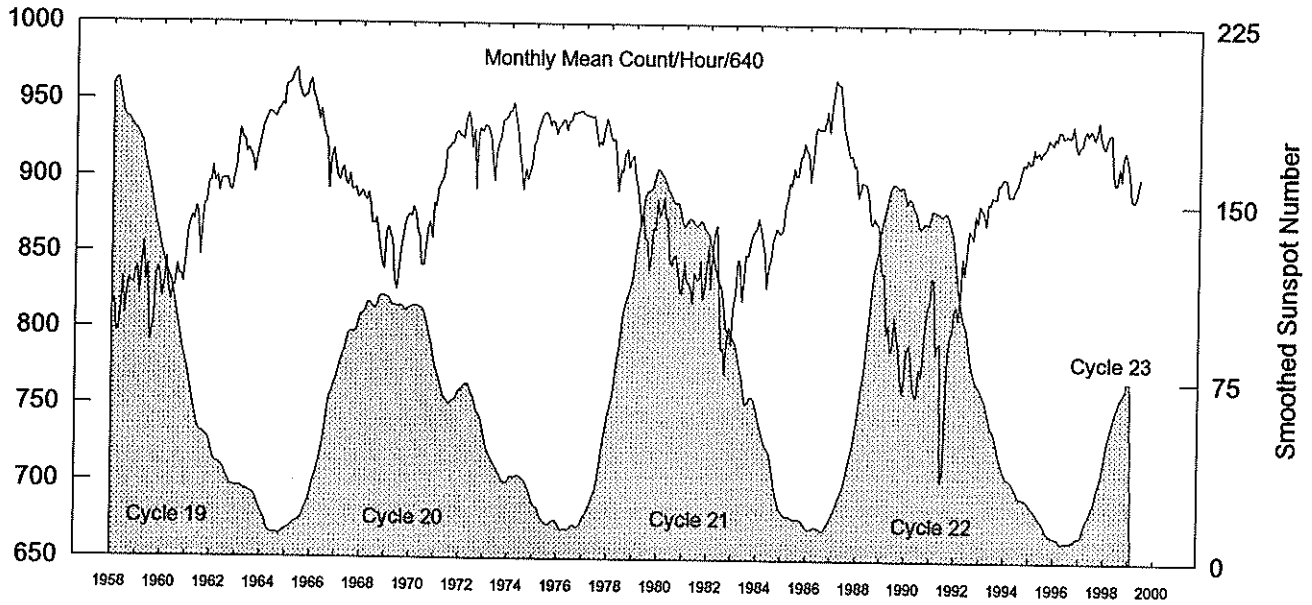


COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2264 - Beginning 24 May 99



Moscow Neutron Monitor Pressure-Corrected Values Jan 1958 - May 1999



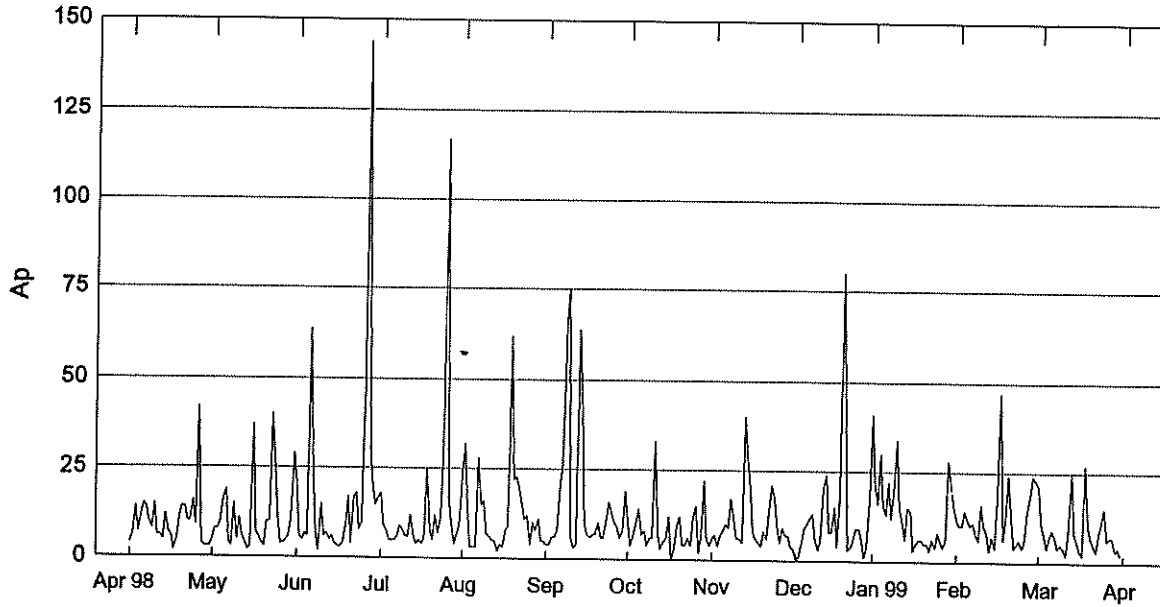
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1958	8171*	8175*	7973*	7971*	8145*	8330*	8087*	8266*	8324*	8291*	8294*	8378*	8200*
1959	8405	8223	8443	8565	8309	8416	7911	7972	8054	8351	8397	8325	8281
1960	8199	8313	8459	8264*	8178*	8272*	8272*	8417	8348	8348	8295	8464	8319*
1961	8619	8682	8731*	8708*	8791*	8759*	8472	8676	8608	8816	8957	8956	8748*
1962	9061	8959	8996	8891	8964*	8974	8977	8977	8908	8902	8973	9056	8940*
1963	9201	9308	9243	9239	9154	9180	9147	9109	9020	9110	9194	9259	9180
1964	9321	9353	9395	9416	9410	9396	9384	9425	9442	9473	9458	9594	9422
1965	9602	9608	9642	9685	9701	9586	9530	9505	9520	9525	9608	9630	9595
1966	9531	9502	9439	9367	9438	9336	9261	9242*	8916	9105*	9178	9094	9284*
1967	9006	8973	9038	9059	8956	8940	9015	8913	8911	8924	8860	8873	8956
1968	8904	8875*	8844*	8892*	8825*	8690*	8689	8725	8635*	8533*	8428	8394	8703*
1969	8628	8666	8606	8584	8334	8261	8378	8510	8612	8689	8731	8751	8562
1970	8735	8799	8749	8639	8608	8418	8420	8540	8656	8702	8596	8827	8641
1971	8805	8921	8952	8982	9028	9185	9190	9219	9215	9285	9302	9276	9113
1972	9260	9254	9367	9419	9364	9192	9311	8916	9275	9319	9298	9336	9275
1973	9333	9321	9258	9107	8975	9160	9233	9263	9368	9376	9392	9423	9267
1974	9431	9481	9390	9327	9153	9062	8916	9054	8983	9027	9092	9222	9178
1975	9238	9317	9361	9405	9415	9425	9395	9339	9370	9361	9285*	9330	9353*
1976	9339	9375	9370	9310	9363	9371	9423	9418	9423	9428	9440	9415	9380
1977	9405	9404	9401	9392	9399	9318	9209	9236	9216	9302	9384*	9341	9334*
1978	9279	9243	9254	9113	8907	9050	9035	9149	9189	9062	9118	9145	9216
1979	9012	8955	8860	8693	8778	8599	8592	8396	8470	8662	8661	8857	8740
1980	8752	8776	8871	8737	8732	8463	8430	8490	8491	8379	8259	8242	8552
1981	8451	8330	8311	8277	8176	8379	8332	8338	8452	8206	8289	8439	8332
1982	8565	8277	8565	8649	8686	8279	7870	7882	7712	7931	8023	7902	8195
1983	8150	8253	8460	8460	8194	8343	8498	8492	8575	8625	8658	8670	8448
1984	8736	8686	8574	8505	8286	8421	8476	8590	8632	8669	8641	8644	8575
1985	8671	8813	8878	8973	8958	9066	9018	9017	9140	9155	9233	9183	9009
1986	9162	8982	9125	9316	9339	9328	9326	9327	9368	9444	9312	9472	9292
1987	9553	9646	9619	9618	9505	9349	9268	9202	9149	9153	9085	9094	9353
1988	8885	8922	8979	8968	8961	8904	8724	8704	8745	8716	8699	8474	8807
1989	8381	8385	7985	8043	7868	7888	8102	7977	7897	7709	7592	7701	7961
1990	7871	7910	7846	7652	7574	7569	7755	7701	7864	8037	8168	8185	7844
1991	8356	8347	7850	7915	7926	7025	7082	7510	7863	7964	8008	8153	7833
1992	8169	8078	8247	8490	8378	8535	8670	8649	8614	8767	8717	8833	8512
1993	8804	8784	8705	8846	8842	8888	8884	8880	8968	8968	9010	9011	8882
1994	9001	8895	8899	8898	8942	8963	9013	9055	9110	9098	9141	9112	9011
1995	9122	9206	9169	9193	9159	9186	9203	9228	9272	9257	9241	9286	9210
1996	9266	9328	9324	9287	9291	9302	9295	9302	9364	9226	9192	9227	9284
1997	9240	9311	9334	9302	9340	9318	9277	9322	9390	9281	9233	9217	9297
1998	9273	9306	9312	9057	8981	8983	9088	9007	9157	9196	9133	9036	9127
1999	8883	8867	8887	8937	9021								8919

Multiply table entries by 64 to obtain hourly counting rate. Moscow, Russia: N55, E37, Alt= 200 m, Cutoff Rigidity= 2.42GV.
NOTE: * Indicates data have been restored using the corresponding data of other cosmic ray stations.

Geomagnetic Activity Indices May 1999

Day	Kp	Three-Hourly Indices								Sum	Ap	Cp	Kn Three-Hourly Indices								Am	aa Provisional			
		1	2	3	4	5	6	7	8				1	2	3	4	5	6	7	8		N	S	M	
1	D3	4	4-	4	3-	3+	3+	4	3	28	21	1.1	4-	4o	3+	3-	3o	3o	3+	3-	36	43	28	35	37
2	D5*	2+	2+	3-	2+	3-	2	3+	3-	20+	11	0.6	2o	3-	3o	3-	3-	2-	3o	3o	23	22	22	22	22
3		3	2+	2-	2	2	1+	2+	1	16-	8	0.4	3o	2+	2o	2+	2o	1+	2o	1o	16	18	10	14	14
4	Q7	1-	1+	1+	1	1-	0+	1+	1+	8	4	0.1	1-	1+	2-	1o	1o	0+	1+	1o	7	8	5	7	7 CC
5		1	0	1-	1+	2-	3	3-	2+	13-	7	0.3	0+	0o	1-	1+	1+	3o	2+	2o	11	17	9	6	20 KK
6		3-	2	3-	3-	3-	1+	1+	2	17+	9	0.5	2o	2o	3-	3-	2+	1+	1o	2-	16	19	10	16	13
7		2+	3-	2-	1	2-	2-	2-	2-	15-	7	0.4	3-	3-	2+	1o	1+	2-	1+	1+	14	17	10	13	14 C
8	Q8	1+	1+	0+	1	1	1-	1	2-	8+	4	0.1	1+	2-	1+	1+	1o	0+	1-	1+	8	9	7	8	8 CC
9	Q9	1+	1+	1	2-	1	1-	2-	1	10-	5	0.2	1+	1+	1+	2o	1o	1-	1+	1+	9	9	7	8	8 CC
10	Q10	2	2	1-	1+	1	1	1-	0	9-	4	0.1	2-	2-	1-	1o	1o	1+	0+	0o	7	10	9	11	8 CC
11	Q1	0	0+	0	0+	0+	0+	0+	0+	2	2	0.0	0o	0+	0o	0+	0+	0+	0+	0+	2	4	4	4	4 CC
12		0+	2	2	2	2+	3+	3-	2-	16+	8	0.5	0+	2-	2+	2-	2+	3o	3-	2-	16	23	13	10	26
13	D2	3+	5	5-	3-	5-	4	2	3-	29	25	1.2	3o	5-	4+	3-	4+	4o	2+	3-	45	52	53	58	47
14		3-	2+	3	2-	1+	1+	1+	1+	15	8	0.4	3o	2+	3o	2-	2-	1+	1o	1+	16	20	13	23	10
15		2	2-	1+	2	1+	1+	2-	1+	13-	6	0.3	2o	2-	2o	2o	2o	2-	1+	1+	12	13	12	12	13 CC
16	Q5	1+	1	1	1	1-	1+	0	0	6+	3	0.1	1+	1+	1+	1o	1o	2-	0o	0+	7	7	8	8	6 CC
17	Q2	0	0+	0+	1	0+	1	1	0+	4+	2	0.0	0o	0+	0o	1+	0+	1+	1o	0+	4	6	5	4	6 C
18	D1	4-	4	4	4-	4+	4	5	2+	31	27	1.2	4-	4o	4o	3+	4-	4-	4o	2+	45	55	35	43	47
19		3	2+	1+	1	2+	3-	3-	3	18+	10	0.6	3-	3-	2-	2-	3-	2o	2+	3o	20	27	15	14	28
20		2	2	1+	2-	2-	2	2-	3-	15	7	0.4	2o	2-	1+	2o	2-	2o	1+	3-	14	20	8	10	18
21		3-	1+	1-	1-	1+	1	1+	1+	10+	5	0.2	2+	2-	1o	1-	1+	1o	1o	1o	9	14	6	11	10 CC
22	Q4	1-	1	1-	1-	1+	1-	0+	1-	6	3	0.1	1-	1+	1+	1-	1o	0+	0+	1o	5	9	4	6	7 CC
23		2	1	1	3-	3+	2	2	1	15	8	0.4	2o	1-	2-	3o	3o	2o	2o	1-	16	17	12	12	17
24		2	3	2+	2+	2	2-	3-	4	19+	11	0.6	2+	3+	2-	3-	2o	2o	3-	3+	23	26	18	21	23
25	D4*	4	4-	3+	4-	3	2	2-	1+	23-	15	0.9	4-	4-	4-	4-	3-	2-	2-	2o	30	28	27	42	13
26		2+	2-	1+	1-	2-	2+	2-	2-	13+	6	0.3	2+	2-	2-	1-	2-	3-	1+	2-	13	19	12	14	18
27		2	2-	2-	1+	2-	1	1+	3	14-	7	0.3	2-	3-	3-	2o	1+	1-	1o	3-	15	15	15	16	14
28		2+	1+	2	1+	1+	2-	2+	2+	15-	7	0.3	2+	1+	2+	2-	2-	1+	2+	2+	14	17	14	13	18 C
29	Q6	1+	1-	0	0+	1+	2-	1	0+	7-	3	0.1	2-	1-	0+	1-	1+	2o	1o	0+	7	8	7	5	10 CC
30		0	0	0+	1	2	2+	2	1	9-	4	0.1	0o	0o	0o	1o	2o	2-	2o	1o	7	11	8	4	15 CC
31	Q3	1-	1-	0+	1-	0+	0	0+	1+	4+	2	0.0	0+	1-	0+	1o	1-	0o	0+	1+	4	6	3	5	4 CC
Mean											8	0.38									15.2	18.3	13.3	15.8	
Day	Kn Three-Hourly Indices								An	Ks Three-Hourly Indices								As	Sa	Prov Ri	Ra	Rs	IMF		
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8								
1	3+	4o	3+	3-	3+	3o	3+	2+	35	4o	4-	3+	3-	3o	3o	4-	3o	36	107.0	75	77	54			
2	2-	3-	3o	3-	3-	2+	3o	3o	23	2+	2o	3+	3-	3-	1+	3+	3o	23	137.9	91	87	87			
3	3o	2+	2-	2+	3-	2-	2o	1o	17	3o	2+	2+	3-	1+	1+	2-	1-	15	129.2	80	75	78			
4	0+	2-	2+	2-	1+	0+	2-	1+	10	1o	1o	1+	0+	1-	0o	1-	1-	5	141.1	83	67	90			
5	1-	0o	1o	2-	2-	3+	3o	2+	16	0+	0o	0+	1o	0+	2+	1+	1+	7	143.3	89	75	93			
6	2+	2o	3-	3o	3o	2-	2-	2+	19	1+	2o	3o	2+	2-	1o	0+	1o	13	149.5	105	93	99			
7	2o	3-	2o	1o	2-	2o	2o	2-	14	3o	3o	2+	1o	0+	1+	1+	1+	14	166.4	141	130	118			
8	1+	2-	1+	2-	1+	1o	1+	2o	10	1+	2-	1+	1+	0o	0o	0+	1o	6	175.1	151	151	127			
9	2-	1+	1o	3-	2-	1o	2-	1+	11	1+	1+	1+	2-	1-	0+	1-	1-	7	181.7	149	149	134			
10	2-	2o	1o	1+	1+	2-	1-	0o	9	1+	2-	1-	1-	1-	0+	0o	0o	5	172.8	136	119	125			
11	0o	0+	0o	1-	0+	1o	1-	0+	3	0o	1-	0+	0o	0o	0o	0o	0o	1	162.6	134	116	114			
12	1-	2o	2+	2o	3-	3+	3o	2o	20	0o	1+	2+	1o	2-	3-	3-	1+	12	156.3	122	117	107			
13	3o	4+	5-	2+	5-	4o	3-	3o	46	3o	5o	4+	3-	4o	4o	2+	2o	44	150.5	101	97	101			
14	3-	2+	3+	2-	2-	2o	2-	2-	18	3+	2+	3-	2-	1+	1-	0o	1o	14	147.3	93	88	97			
15	2-	2-	2-	2o	2+	2-	2-	1+	13	2o	2-	2-	2o	1+	1+	1+	1+	11	146.8	105	108	97			
16	1+	1+	1+	2-	1+	2o	0o	0+	9	1+	1+	1o	0+	1-	1+	0o	0o	5	155.6	105	106	106			
17	0o	0+	0o	2-	0+	2-	2-	0+	6	0o	0o	0o	0+	0+	1o	1-	0+	2	148.6	99	98	98			
18	4o	4+	4+	4-	4o	4o	4o	3-	51	3+	3+	4o	3+	4-	3o	4o	2o	38	143.8	93	91	93			
19	3o	2+	2-	2-	3-	3-	3o	3-	21	3-	3o	2-	2-	3-	1+	2+	3+	19	145.8	94	99	95			
20	2o	2o	1+	2-	2o	2+	2-	3o	16	2-	2-	2-	2o	1+	1+	1+	3-	12	145.9	96	100	96			
21	3-	2-	1o	1o	2-	2-	2-	2-	12	2+	2-	1+	0+	1-	0+	0+	0o	6	143.7	109	104	93			
22	1-	1+	1+	1o	2-	1o	0+	1+	7	0+	1+	1+	0+	0+	0o	0+	0+	3	143.7	97	97	93			
23	2+	1o	2+	3+	3o	2+	2+	1+	20	2-	1-	1+	3-	3o	1o	1+	0+	12	144.2	86	93	94			
24	3-	3+	2o	3-	2+	3-	3o	4o	29	2o	3o	2-	3-	1+	1+	2o	3-	16	140.4	85	87	90			
25	4o	4o	4-	4-	3-	2o	2o	2-	33	3+	3+	4-	3+	3-	1+	1+	2o	27	146.8	92	87	97			
26	2o	2o	2-	1o	2+	3-	2-	2+	15	3-	1+	1+	0+	1+	2+	1o	1o	10	156.6	114	100	107			
27	2-	3-	3-	2+	2-	2-	2-	3-	17	1+	3-	3-	1+	1o	0o	0+	3-	13	159.3	119	108	110			
28	2o	2-	2+	2-	2-	2+	2+	3-	15	2+	1o	2o	2-	1+	1-	2+	2-	12	156.2	119	102	107			
29	2-	1o	0+	1o	2-	2+	1+	1-	9	1+	1-	0+	0+	0+	2-	1-	0o	5	152.7	115	106	103			
30	0o	0o	0o	1+	2+	2+	2o	2-	10	0o	0o	0+	0+	1+	1o	2o	0o	5	161.1	109	97	112			
31	1-	1o	0+	1+	1o	0+	1-	2-	6	0o	0o	0+	0+	0+	0o	0+	1-	2	170.1	109	124	122			
Mean											17.4									12.9	151.0	106.3	101.6	101.1	

Daily Average Indices Ap Jun 1998 - May 1999



Day	Jun 98	Jul	Aug	Sep	Oct	Nov	Dec	Jan 99	Feb	Mar	Apr	May
1	4	5	21	18	24	4	11	6	0	41	12	21
2	7	8	6	9	32	4	4	7	1	22	10	11
3	14	8	5	8	14	6	7	4	5	16	10	8
4	7	10	7	5	3	6	10	7	9	30	14	4
5	12	16	6	5	3	8	14	8	10	16	12	7
6	15	19	64	5	3	20	7	10	12	13	10	9
7	14	4	24	6	28	26	8	9	13	22	11	7
8	10	3	7	9	15	66	4	17	6	12	8	4
9	8	15	2	8	16	75	6	11	3	21	6	5
10	15	5	15	6	7	6	6	6	6	34	16	4
11	6	11	6	6	6	3	33	6	20	15	10	2
12	6	6	7	12	5	4	7	5	24	11	8	8
13	5	4	5	6	5	64	3	40	8	6	3	25
14	12	2	6	4	2	41	5	29	8	15	7	8
15	7	3	4	5	4	10	6	20	15	14	4	6
16	6	37	3	4	3	7	12	8	4	3	18	3
17	2	7	3	6	8	6	0	6	17	5	47	2
18	5	6	4	25	9	7	3	5	80	6	6	27
19	11	4	9	8	62	7	9	4	40	6	12	10
20	14	3	17	5	22	10	12	8	3	5	24	7
21	14	10	4	12	23	6	4	6	4	5	12	5
22	10	10	17	7	20	6	4	14	6	3	4	3
23	10	40	18	11	15	11	6	21	9	6	5	8
24	16	28	8	28	11	16	4	17	9	4	6	11
25	9	11	10	117	12	13	12	9	6	8	4	15
26	42	4	49	17	4	10	15	5	1	6	6	6
27	4	4	144	10	10	9	2	9	4	4	14	7
28	3	5	30	4	8	6	7	7	17	6	19	7
29	3	6	20	7	11	8	22	7		28	24	3
30	3	11	15	9	5	19	6	4		22	23	4
31	4	29	17		5		4	3		15		2
Mean	10	11	18	13	13	16	8	10	12	14	12	8

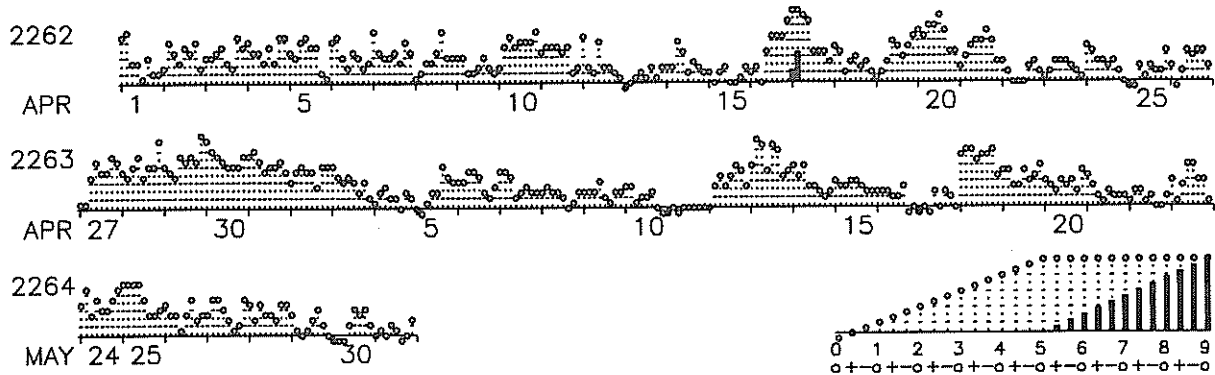
PLANETARY GEOMAGNETIC ACTIVITY

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

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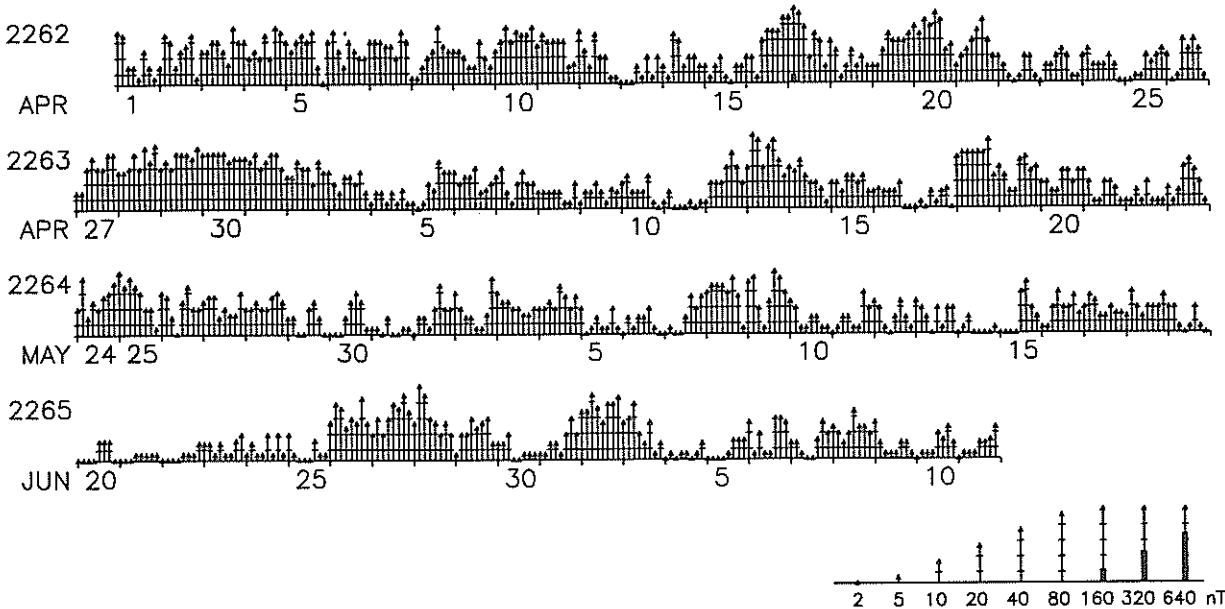
CETP, 4 Avenue de Neptune, F-94107 Saint Maur des Fosses CEDEX – FRANCE

ROT DAY IN SOLAR ROTATION INTERVAL Three-hour indices Km(provisional) APR–MAY 1999
No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27



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

ROT DAY IN SOLAR ROTATION INTERVAL Three-hour indices aa (logscale) APR–JUL 1999
No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

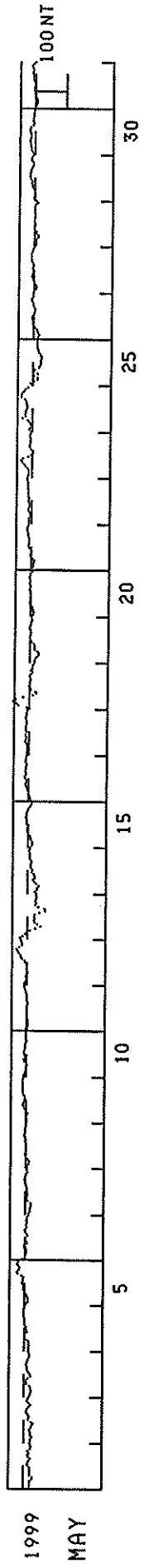


Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

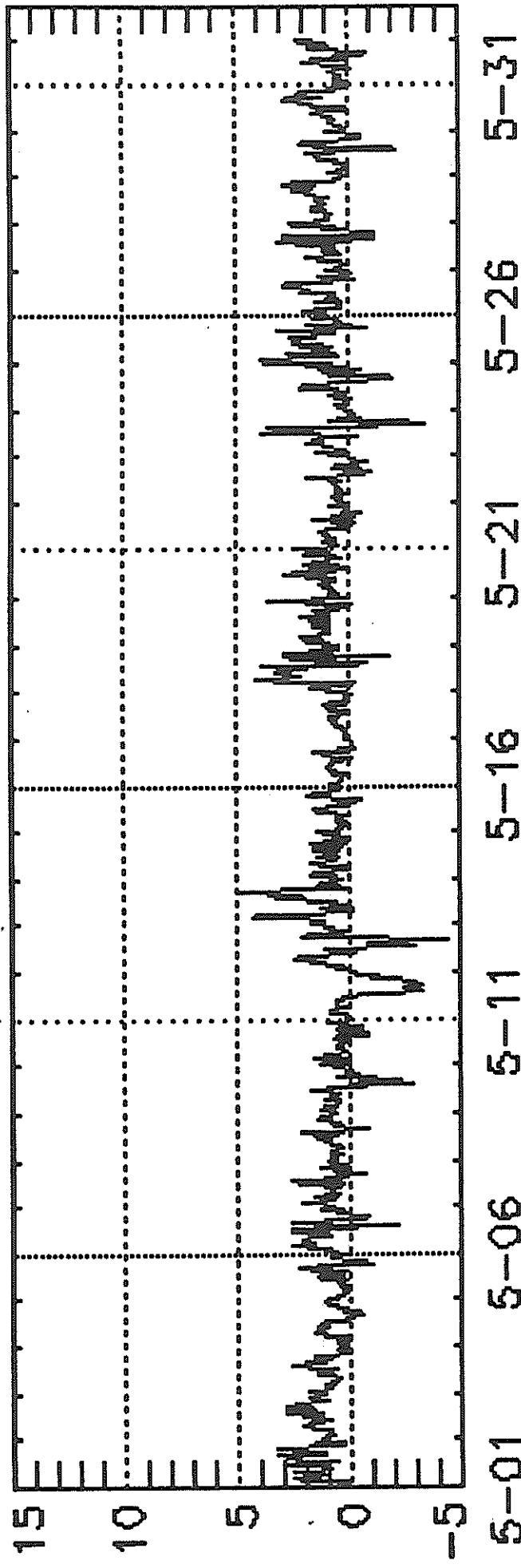
HOURLY EQUATORIAL DST VALUES (PROVISIONAL)

MAY 1999

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-18	-17	-17	-20	-26	-26	-18	-18	-18	-29	-18	-12	-12	-14	-16	-19	-13	-12	-15	-12	-19	-23	-19	-17
2	-19	-21	-25	-21	-20	-18	-18	-22	-25	-29	-22	-14	-14	-16	-11	-8	-7	-10	-15	-19	-14	-10	-11	-14
3	-18	-21	-22	-21	-16	-16	-7	-6	-5	-11	-19	-13	-13	-9	-8	-8	-6	-8	-9	-11	-15	-15	-14	-11
4	-13	-14	-14	-14	-12	-6	-2	0	-1	-7	-5	-3	-3	0	0	1	2	4	4	3	4	3	0	-2
5	-6	-9	-10	-10	-7	-3	2	4	5	3	5	9	8	8	5	11	25	27	21	19	23	26	23	19
6	9	1	-1	-3	-4	-4	3	3	-6	-4	1	-1	-7	-3	1	0	-3	-3	-3	-5	-3	-5	-6	-9
7	-9	-13	-14	-15	-16	-15	-7	-4	-3	-5	-5	-3	-3	-4	-2	0	5	3	2	2	-1	-6	-4	-3
8	-4	-8	-10	-9	-5	1	3	7	0	-2	0	2	2	3	2	4	5	4	4	3	4	2	0	-2
9	-2	-1	1	-1	-3	0	6	8	11	9	7	9	9	6	7	12	11	11	12	11	12	13	12	9
10	-2	9	4	3	-2	-2	2	8	1	4	6	8	9	7	5	6	5	4	2	3	3	4	4	4
11	4	-1	-1	-3	-4	-2	2	1	1	0	0	0	0	-1	-1	1	2	2	2	4	6	8	9	10
12	10	16	7	4	-7	1	-1	2	0	-21	8	10	10	17	22	23	29	31	35	26	18	18	20	22
13	24	-28	-31	-34	-27	-24	-41	-31	-22	-17	12	-23	-37	-37	-57	-54	-32	-24	-27	-25	-26	-28	-26	-26
14	-23	-14	-11	-8	-8	-21	-16	-23	-19	-17	-12	-10	-8	-8	-8	-11	-9	-6	-6	-6	-5	-4	-5	-6
15	-12	-14	-11	-8	-6	-6	0	4	4	4	2	5	5	5	7	7	5	5	3	0	-4	-7	-9	-7
16	-5	-4	-1	1	2	5	7	9	11	8	8	12	13	10	10	11	10	9	8	7	11	10	9	8
17	8	9	8	5	4	9	13	12	11	12	12	11	13	12	12	10	10	9	11	12	11	10	8	7
18	9	36	48	55	45	23	-9	-21	-18	-4	-2	3	1	1	-3	-2	2	-1	-4	-4	-7	-7	-8	-14
19	-14	-16	-21	-26	-26	-22	-14	-13	-13	-11	-4	-1	1	1	-2	-1	-1	3	0	-1	-1	-5	-3	-4
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30	8	11	13	14	15	16	17	15	14	13	16	17	17	16	8	6	7	7	7	6	5	5	4	5
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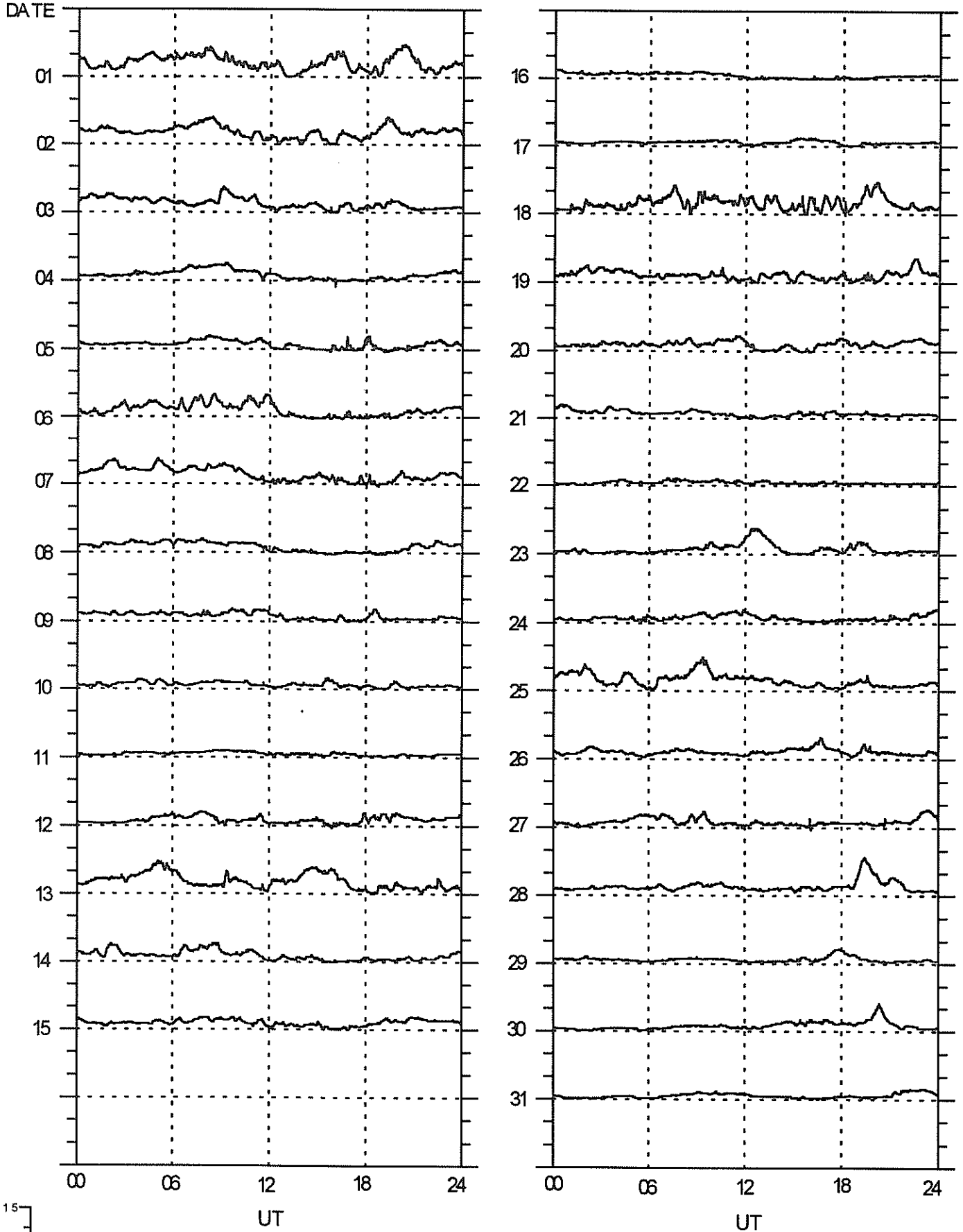
WDC C1 for Geomagnetism, Copenhagen
Polar Cap index
Thule(Qaanaaq), THL



Date, mm-dd
Data source: Solar-Terrestrial Physics Division
Danish Meteorological Institute

Vostok

May, 1999



15
0

PRINCIPAL MAGNETIC STORMS

MAY 1999

Sta	Geomag		Commencement Time		Type	SC Amplitudes			Maximum 3-Hour K Index Day(3-Hour Periods)	Ranges			End Hour Day (UT)	
	Lat	Day	(UT)	D (Min)		H (Gamma)	Z (Gamma)	D K (Min)		H (Gamma)	Z (Gamma)			
UJJ	13.6N	05	1500	..	..	..	..		-	6	67	37	06 20
NGP	11.3N	05	1500	..	..	..	..		-	3	89	33	06 20
ABG	09.4N	05	1500	..	..	..	..	05(6) 10(4)	4	6	81	40	06 20
HYB	07.6N	05	1544	SC	-	0.1	22	- 1	4	5	86	26	06 19	
PND	02.0N	05	1500	..	..	..	..		-	4	87	42	06 20
ETT	00.7S	05	1543	SC		0.2	23	18	-	--	111	35	06 20	
TRD	01.1S	05	1500	..	..	..	..		-	4	114	55	06 20
KRC	16.4N	12	1554	SC	-	2.0	37	18	13(6)	6	9	141	49	14 06
UJJ	13.6N	12	1200	..	..	..	..		-	7	132	33	14 11
NGP	11.3N	12	1200	..	..	..	..		-	7	158	28	14 11
ABG	09.4N	12	1200	..	..	..	..	13(5)	6	7	155	53	14 11
HYB	07.6N	12	1000	..	..	..	..	13(5,6)	6	7	161	25	14 12
PND	02.0N	12	1200	..	..	..	..		-	6	172	61	14 11
ETT	00.7S	12	0200	..	..	..	..		-	--	228	94	14 12
TRD	01.1S	12	1200	..	..	..	..		-	5	232	156	14 11
PAF	57.2S	12	12--	..	..	..	..	13(5,6)	5	31	173	184	14 10
AMS	46.8S	13	03--	..	..	..	..	13(5,6)	5	22	112	60	14 03
CZT	51.5S	13	03--	..	..	..	..	13(2,3)	5	32	108	57	14 12
BJI	28.8N	18	0055	SC		0.6	9	1	18(2)	5	14	91	41	18 24
KRC	16.4N	18	0101	..	..	..	..		6	8	133	82	19 07
UJJ	13.6N	18	0055	SC	-	0.4	26	- 5	-	8	125	37	18 23	
NGP	11.3N	18	0055	SC	-	0.3	27	- 2	-	8	162	24	18 23	
ABG	09.4N	18	0055	SC	-	0.3	24	- 3	18(2)	6	7	145	57	18 23
HYB	07.6N	18	0057	SC		0.6	26	- 2	18(1,2)	5	6	155	23	18 22
PND	02.0N	18	0055	SC	-	0.3	25	12	-	--	57	--	18 23	
ETT	00.7S	18	0057	SC		0.3	25	23	-	--	227	98	19 19	
TRD	01.1S	18	0055	SC		0.4	25	- 33	-	5	240	123	18 23	
AMS	46.8S	18	0057	SC*		2.7*	7.3	- 9.6*	18(7)	4	13	103	62	19 00
CZT	51.5S	18	0057	SC		3.3	10.2	- 3.7	18(2,3,7)	4	17	85	42	19 09
PAF	57.2S	18	0057	SC*		4.7*	10.4	--	18(7)	5	22	175	46	19 09
DRV	75.2S	18	0057	SC*	-	14.5	-120.8*	114.7*	18(1,2,3)	4	270	271	390	19 12
UJJ	13.6N	23	0100	..	..	..	..		-	6	130	39	25 18
NGP	11.3N	23	0100	..	..	..	..		-	6	152	36	25 18
ABG	09.4N	23	0100	..	..	..	..	23(4)	5	7	137	40	25 18
HYB	07.6N	23	0100	..	..	..	..	23(4,5) 24(2,8) 25(2,3,4)	4	6	142	19	25 19
PND	02.0N	23	0100	..	..	..	..		-	4	141	43	25 18
ETT	00.7S	23	0100	..	..	..	..		-	--	205	69	25 15
TRD	01.1S	23	0100	..	..	..	..		-	4	216	94	25 18
KRC	16.4N	24	0009	..	..	..	..	24(2)	5	10	150	37	25 08

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	TRD = TRIVANDRUM
CMO = COLLEGE	HER = HERMANUS	PAF = PORT AUX FRANCAIS	UJJ = UJJAIN

Stations observing no storms: HER

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

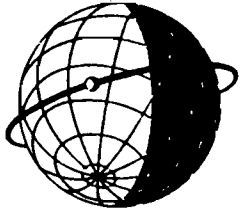
MAY 1999

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)			
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)	
05	1543	A: WNG* NAG COI GUI	03	0543-0554	BDV+	
		B: NGK* BDV* HRB EBR* SPT HYB ETT	08	0738-0748	HYB ETT	
		C: NUR* QUE GNA CNB	09	1759-1806	BDV+	
18	0056	A: NUR WNG* HRB* NAG* COI BJI	10	0524-0600	MMB+ KAK+ KNY+	
		SPT* GUI HYB	16	1349-1405	BDV+ GUI	
		B: NGK* BDV* CLF* MMB* EBR* KAK*	17	0020-0035	MMB+ KAK+ KNY+	
		KNY* QUE ETT GNA	17	0340-0355	MMB+ KAK+ KNY+	
		C: CNB*	17	0452-0515	BDV+ MMB+ KAK+	
						KNY+ HYB ETT
					30	1046-1058	NAG GUI (ssc: WNG NGK si: HRB)

REPORTING OBSERVATORIES (up to the 2nd of July 1999):

SOD NUR WNG NGK BDV CLF HRB NAG MMB EBR COI BJI SPT KAK KNY QUE GUI HYB ETT GNA HER
CNB

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



WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS



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

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