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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
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Data for August, July 1989, and Late Data

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S O L A R - G E O P H Y S I C A L D A T A

NUMBER 541

(Issued in Two Parts)

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C O N T E N T S

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PART II (COMPREHENSIVE REPORTS)

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C O N T E N T S

Prompt Reports DATA FOR **AUGUST 1989** Number 541 Part I

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
213	01	31	207	182	006	S19 W46	0	0	0	01	S19 W46	Q	Solquiet, Magquiet.
						S17 E24	5	1	0		S17 E24	E	
						N12 E29	0	0	0		N12 E29	Q	
						S04 E30	0	0	0		S04 E30	Q	
						N19 W27	1	0	0		N19 W27	E	
						S11 W41	0	0	0		S11 W41	Q	
						S11 E47	0	0	0		S11 E47	Q	
						N27 E49	0	0	0		N27 E49	Q	
						S27 E36	0	0	0		S27 E36	Q	
						S26 E56	0	0	0		S26 E56	Q	
						S13 E75	4	1	0		S13 E75	A	
						N12 E70	0	0	0		N12 E70	Q	
214	02	01	210	193	005	S19 W60	0	0	0	02	S19 W60	Q	Solquiet, Magquiet.
						S17 E12	2	0	0		S17 E12	E	
						N14 E15	0	0	0		N14 E15	Q	
						S05 E16	1	0	0		S05 E16	Q	
						N19 W40	1	0	0		N19 W40	E	
						S11 W55	0	0	0		S11 W55	Q	
						S11 E34	0	0	0		S11 E34	Q	
						N27 E36	0	0	0		N27 E36	Q	
						S25 E24	0	0	0		S25 E24	Q	
						S27 E42	0	0	0		S27 E42	Q	
						S14 E65	6	0	0		S14 E65	E	
215	03	02	234	196	006	S19 W72	0	0	0	03	S19 W72	Q	Solquiet, Magquiet.
						S17 E01	3	0	0		S17 E01	E	
						N12 E03	1	0	0		N12 E03	Q	
						S05 E04	1	0	0		S05 E04	Q	
						N18 W52	1	0	0		N18 W52	E	
						S11 W70	0	0	0		S11 W70	Q	
						S13 E21	0	0	0		S13 E21	Q	
						N26 E21	0	0	0		N26 E21	Q	
						S27 E11	0	0	0		S27 E11	Q	
						S27 E29	2	0	0		S27 E29	Q	
						S15 E50	6	1	0		S15 E50	E	
						N17 E68	0	0	0		N17 E68	Q	
						S17 E67	2	0	0		S17 E67	Q	
						S38 W54	0	0	0		S38 W54	Q	
216	04	03	300	213	007	S18 W86	0	0	0	04	S18 W86	Q	Solquiet, Magquiet.
						S18 W14	2	0	0		S18 W14	E	
						N13 W12	1	0	0		N13 W12	Q	
						S05 W10	0	0	0		S05 W10	Q	
						N18 W64	2	0	0		N18 W64	Q	
						S09 W84	0	0	0		S09 W84	Q	
						S13 E08	0	0	0		S13 E08	Q	
						N26 E13	0	0	0		N26 E13	Q	
						S27 W02	0	0	0		S27 W02	Q	
						S27 E16	4	0	0		S27 E16	Q	
						S15 E37	5	0	0		S15 E37	A	
						N12 E33	2	0	0		N12 E33	Q	
						N16 E56	0	0	0		N16 E56	Q	
						S18 E56	0	0	0		S18 E56	Q	
						S38 W67	3	0	0		S38 W67	Q	
						N10 E09	0	0	0		N10 E09	Q	
						S17 E73	5	0	0		S17 E73	E	
						N21 E53	0	0	0		N21 E53	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast[1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
217	05	04	330	220	010	S17 W28	1	0	0	05	S17 W28	E	Solquiet, Magquiet.
						N13 W27	1	0	0		N13 W27	Q	
						S05 W21	0	0	0		S05 W21	Q	
						N18 W76	0	0	0		N18 W76	Q	
						S13 W05	3	0	0		S13 W05	Q	
						N27 E02	1	0	0		N27 E02	Q	
						S25 W16	0	0	0		S25 W16	Q	
						S27 E03	7	0	0		S27 E03	Q	
						S14 E24	6	0	0		S14 E24	A	
						N12 E13	0	0	0		N12 E13	Q	
						N17 E42	0	0	0		N17 E42	Q	
						S18 E40	1	0	0		S18 E40	Q	
						S39 W79	0	0	0		S39 W79	Q	
						N10 W04	1	0	0		N10 W04	Q	
						S18 E60	3	0	0		S18 E60	E	
						N20 E40	0	0	0		N20 E40	Q	
						N23 W52	0	0	0		N23 W52	Q	
						N18 E52	0	0	0		N18 E52	Q	
218	06	05	337	234	003	S18 W40	2	0	0	06	S18 W40	E	Solquiet, Magquiet.
						N12 W39	0	0	0		N12 W39	Q	
						S06 W35	0	0	0		S06 W35	Q	
						S13 W19	3	0	0		S13 W19	Q	
						N26 W11	0	0	0		N26 W11	Q	
						S24 W27	0	0	0		S24 W27	Q	
						S27 W11	5	1	0		S27 W11	E	
						S15 E11	1	0	0		S15 E11	E	
						N14 E05	0	0	0		N14 E05	Q	
						N17 E28	0	0	0		N17 E28	Q	
						S17 E28	0	0	0		S17 E28	Q	
						S38 W85	0	0	0		S38 W85	Q	
						N10 W18	4	0	0		N10 W18	Q	
						S18 E46	2	0	0		S18 E46	A	
						N21 E26	0	0	0		N21 E26	Q	
						N22 W66	4	0	0		N22 W66	Q	
						N19 E39	0	0	0		N19 E39	Q	
						S27 E53	1	0	0		S27 E53	Q	
						S14 E78	1	0	0		S14 E78	E	
219	07	06	328	233	007	S18 W53	2	0	0	07	S18 W53	E	Solalert 07/XX,
						N10 W58	0	0	0		N10 W58	Q	Magquiet.
						S06 W51	0	0	0		S06 W51	Q	
						S14 W33	1	0	0		S14 W33	Q	
						S24 W40	0	0	0		S24 W40	Q	
						S27 W24	8	2	0		S27 W24	A	
						S14 W01	3	1	0		S14 W01	E	
						N17 E15	0	0	0		N17 E15	Q	
						S17 E14	1	0	0		S17 E14	Q	
						N09 W32	2	0	0		N09 W32	E	
						S17 E34	1	0	0		S17 E34	A	
						N19 E07	0	0	0		N19 E07	Q	
						N22 W80	0	0	0		N22 W80	Q	
						N19 E26	0	0	0		N19 E26	Q	
						S27 E40	8	1	0		S27 E40	E	
						S14 E69	6	0	0		S14 E69	E	
						N14 E72	0	0	0		N14 E72	Q	
						N35 E74	0	0	0		N35 E74	Q	

Presto:[2] Boulder Tenflare 990 flux units 06/1202 UT duration 14 minutes.
Toyokawa Tenflare 850 flux units 06/2337 UT duration 25 minutes.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
220	08	07	311	232	011	S18 W68	5	0	0	08	S18 W68	E	Solalert 08/XX, Magquiet.
						N11 W65	0	0	0		N11 W65	Q	
						S23 W55	1	0	0		S23 W55	Q	
						S27 W37	6	1	0		S27 W37	E	
						S14 W14	1	0	0		S14 W14	E	
						N14 W18	0	0	0		N14 W18	Q	
						N16 E02	0	0	0		N16 E02	Q	
						S18 E01	0	0	0		S18 E01	Q	
						N09 W46	1	0	0		N09 W46	Q	
						S17 E21	10	1	0		S17 E21	E	
						N24 W93	0	0	0		N24 W93	Q	
						S27 E27	5	2	0		S27 E27	E	
						S14 E56	4	0	0		S14 E56	E	
						N13 E64	1	0	0		N13 E64	E	
						N34 E57	0	0	0		N34 E57	Q	
						N26 E71	0	0	0		N26 E71	Q	
		Presto:[2] Toyokawa Tenflare 500 flux units 07/0922 UT duration 5 minutes.											
		Boulder Tenflare 320 flux units 07/2051 UT duration 16 minutes.											
221	09	08	310	225	010	S18 W80	0	0	0	09	S18 W80	E	Solalert 09/XX, Magquiet.
						S27 W51	1	0	0		S27 W51	E	
						S15 W27	0	0	0		S15 W27	E	
						N15 W11	0	0	0		N15 W11	Q	
						S18 W13	0	0	0		S18 W13	Q	
						N09 W59	0	0	0		N09 W59	Q	
						S18 E07	19	0	0		S18 E07	E	
						N18 E01	0	0	0		N18 E01	Q	
						S27 E14	3	1	0		S27 E14	E	
						S15 E42	3	0	0		S15 E42	E	
						N13 E51	1	0	0		N13 E51	E	
						N32 E43	0	0	0		N32 E43	Q	
						N26 E57	0	0	0		N26 E57	Q	
						S20 W43	0	0	0		S20 W43	Q	
						N28 E81	0	0	0		N28 E81	Q	
222	10	09	338	226	008	S17 W92	0	0	0	10	S17 W92	Q	Solalert 10/XX, Magquiet.
						S26 W64	2	0	0		S26 W64	E	
						S15 W40	1	0	0		S15 W40	Q	
						N15 W24	0	0	0		N15 W24	Q	
						S18 W25	0	0	0		S18 W25	Q	
						N09 W76	0	0	0		N09 W76	Q	
						S17 W07	7	0	0		S17 W07	A	
						N23 W26	0	0	0		N23 W26	Q	
						N21 W13	1	0	0		N21 W13	Q	
						S27 E01	3	0	0		S27 E01	E	
						S15 E29	4	0	0		S15 E29	E	
						N13 E38	1	0	0		N13 E38	E	
						N27 E36	0	0	0		N27 E36	Q	
						N26 E45	0	0	0		N26 E45	Q	
						S20 W57	2	0	0		S20 W57	Q	
						N28 E69	1	0	0		N28 E69	E	
		Presto:[2] Boulder Tenflare 320 flux units 09/1422 UT duration 13 minutes.											
223	11	10	282	224	037	S26 W79	0	0	0	11	S26 W79	Q	Solalert 11/XX, Magquiet.
						S15 W57	0	0	0		S15 W57	Q	
						N15 W37	0	0	0		N15 W37	Q	
						S19 W38	0	0	0		S19 W38	Q	
						N08 W92	0	0	0		N08 W92	Q	
						S18 W20	9	1	0		S18 W20	A	
						S26 W12	1	0	0		S26 W12	Q	
						S14 E16	2	0	0		S14 E16	E	
						N14 E23	1	0	0		N14 E23	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages AUGUST 1989

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
223	11	10				N28 E21	0	0	0	11	N28 E21	Q	
						N25 E34	0	0	0		N25 E34	Q	
						S20 W69	0	0	0		S20 W69	Q	
						N28 E57	9	0	0		N28 E57	E	
						N13 E61	0	0	0		N13 E61	Q	
						N19 E76	3	0	0		N19 E76	E	
224	12	11	306	235	025	S26 W83	0	0	0	12	S26 W83	Q	Solalert 12/XX,
						S14 W68	1	0	0		S14 W68	Q	Magquiet.
						N15 W51	0	0	0		N15 W51	Q	
						S19 W52	0	0	0		S19 W52	Q	
						S17 W33	13	3	0		S17 W33	A	
						S27 W28	0	0	0		S27 W28	Q	
						S15 E03	1	0	0		S15 E03	Q	
						N13 E12	0	0	0		N13 E12	Q	
						N29 E07	0	0	0		N29 E07	Q	
						N25 E22	0	0	0		N25 E22	Q	
						N27 E47	2	0	0		N27 E47	E	
						N13 E49	0	0	0		N13 E49	Q	
						N18 E64	3	0	0		N18 E64	E	
						N04 E22	0	0	0		N04 E22	Q	
						N14 E73	2	1	0		N14 E73	E	
225	13	12	278	286	011	S15 W82	0	0	0	13	S15 W82	Q	Solalert 13/XX,
						N16 W64	0	0	0		N16 W64	Q	Magquiet.
						S19 W64	0	0	0		S19 W64	Q	
						S16 W45	6	2	1		S16 W45	A	
						S26 W39	1	0	0		S26 W39	Q	
						S13 W09	0	0	0		S13 W09	Q	
						N14 W00	0	0	0		N14 W00	Q	
						N27 E09	0	0	0		N27 E09	Q	
						N29 E30	0	0	0		N29 E30	E	
						N14 E36	0	0	0		N14 E36	Q	
						N19 E52	0	0	0		N19 E52	Q	
						N15 E62	6	0	0		N15 E62	E	
						N22 E81	0	0	0		N22 E81	Q	

Presto:[2] Boulder Proton event began 12/1600 UT, maximum of 2300 particles/cm²-s-ster at greater than 10 MeV 12/2355 UT in progress.
Boulder X-ray event X2/2B S17 W36 12/1358 UT in progress.
Boulder Tenflare 3700 flux units 12/1359 UT in progress.

226	14	13	271	255	011	N15 W77	0	0	0	14	N15 W77	Q	Solalert 14/XX,
						S19 W76	0	0	0		S19 W76	Q	Magalert 14/15.
						S17 W57	9	1	0		S17 W57	A	
						S26 W52	2	0	0		S26 W52	Q	
						S13 W23	2	0	0		S13 W23	Q	
						N13 W13	0	0	0		N13 W13	Q	
						N28 W02	0	0	0		N28 W02	Q	
						N29 E19	0	0	0		N29 E19	Q	
						N14 E23	0	0	0		N14 E23	Q	
						N19 E38	1	0	0		N19 E38	Q	
						N16 E50	5	0	0		N16 E50	A	
						N22 E67	0	0	0		N22 E67	Q	
						N28 E73	1	0	0		N28 E73	Q	
						S22 E68	1	0	0		S22 E68	Q	

Presto:[2] Boulder Tenflare 1800 flux units 14/0041 UT duration 87 minutes.
Boulder X-ray event X3/3B S16 W60 14/0039 UT in progress.
Boulder Proton event still in progress from X2/2B at 12/1358 UT, maximum of 9200 particles/cm²-s-ster at greater than 10 MeV 13/0710 UT.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
227	15	14	232	266	032	N16 W91	0	0	0	15	N16 W91	Q	Solalert 15/XX,
						S17 W73	15	2	1		S17 W73	A	Magalert 15/17 Flare.
						S26 W66	0	0	0		S26 W66	Q	
						S13 W38	4	0	0		S13 W38	Q	
						N13 W26	0	0	0		N13 W26	Q	
						N29 E07	0	0	0		N29 E07	Q	
						N15 E13	1	0	0		N15 E13	Q	
						N19 E25	1	0	0		N19 E25	Q	
						N16 E36	11	1	0		N16 E36	A	
						N21 E54	0	0	0		N21 E54	Q	
						N28 E61	3	1	0		N28 E61	E	
						S22 E56	0	0	0		S22 E56	Q	
228	16	15	253	278	063	S16 W83	12	6	1	16	S16 W83	A	Solalert 16/XX,
						S26 W78	1	0	0		S26 W78	Q	Magalert 16/XX.
						S13 W51	1	0	0		S13 W51	Q	
						N13 W38	1	0	0		N13 W38	Q	
						N26 W41	0	0	0		N26 W41	Q	
						N29 W03	0	0	0		N29 W03	Q	
						N14 E01	1	0	0		N14 E01	Q	
						N18 E13	0	0	0		N18 E13	Q	
						N15 E24	4	1	0		N15 E24	A	
						N19 E40	0	0	0		N19 E40	Q	
						N27 E49	0	0	0		N27 E49	E	
						S23 E44	0	0	0		S23 E44	Q	
						N28 E77	0	0	0		N28 E77	Q	
		Presto:[2]	Boulder	Tenflare 16000 flux units 15/0218 UT duration 253 minutes.									
			Boulder	X-ray event X1/SF S18 W73 15/0215 UT in progress.									
229	17	16	225	254	025	S18 W95	1	0	1	17	S18 W95	A	Solalert 17/XX,
						S12 W68	0	0	0		S12 W68	Q	Magalert 18/18, Flare.
						N13 W51	0	0	0		N13 W51	Q	
						N30 W18	1	0	0		N30 W18	Q	
						N17 W10	0	0	0		N17 W10	Q	
						N18 W00	0	0	0		N18 W00	Q	
						N15 E10	3	0	0		N15 E10	E	
						N20 E27	1	0	0		N20 E27	Q	
						N28 E36	7	0	0		N28 E36	E	
						S23 E31	0	0	0		S23 E31	Q	
						N27 E61	0	0	0		N27 E61	Q	
						N07 W20	0	0	0		N07 W20	Q	
		Presto:[2]	Boulder	X-ray event X20/2N S18 W84 16/0054 UT duration 302 minutes.									
			Boulder	Tenflare 5000 flux units 16/0058 UT duration 41 minutes.									
			Boulder	Tenflare 270 flux units 16/0152 UT duration 6 minutes.									
			Boulder	Proton event began 12/1600 UT still in progress.									
				Cosmic ray increase began 16/0130 UT 05 percent above normal.									
230	18	17	251	258	025	S13 W84	0	0	0	18	S13 W84	Q	Solalert 18/XX,
						N12 W65	0	0	0		N12 W65	Q	Magalert 18/19 Flare.
						N25 W67	0	0	0		N25 W67	Q	
						N30 W32	0	0	0		N30 W32	Q	
						N19 W14	1	0	0		N19 W14	Q	
						N16 W01	4	0	0		N16 W01	E	
						N19 E14	1	0	0		N19 E14	Q	
						N28 E24	5	0	0		N28 E24	E	
						S23 E19	0	0	0		S23 E19	Q	
						N27 E48	1	0	0		N27 E48	Q	
						N07 W35	0	0	0		N07 W35	Q	
						N29 E54	0	0	0		N29 E54	Q	
		Presto:[2]	Boulder	X-ray event X2/SF S19 W90 17/0033 UT in progress.									
			Boulder	Tenflare 4900 flux units 17/0029 UT duration 100 minutes.									

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location		Region Forecast[1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long			
231	19	18	284	261	024	N25 W76	0	0	0	19	N25 W76		Q	Solalert 19/XX,
						N30 W43	0	0	0		N30 W43		Q	Magalert 19/XX.
						N18 W28	0	0	0		N18 W28		Q	
						N16 W15	3	0	0		N16 W15		E	
						N18 E02	0	0	0		N18 E02		E	
						N28 E10	1	0	0		N28 E10		E	
						S22 E08	1	0	0		S22 E08		Q	
						N27 E31	0	0	0		N27 E31		Q	
						N30 E41	1	0	0		N30 E41		Q	
						S14 E60	0	0	0		S14 E60		Q	
						N16 E48	0	0	0		N16 E48		Q	
232	20	19	283	244	015	N25 W92	0	0	0	20	N25 W92		Q	Solalert 20/21,
						N30 W56	0	0	0		N30 W56		Q	Magalert 20/21.
						N18 W41	0	0	0		N18 W41		Q	
						N17 W28	5	0	0		N17 W28		E	
						N20 W12	0	0	0		N20 W12		Q	
						N27 W01	4	0	0		N27 W01		E	
						S23 W07	1	0	0		S23 W07		Q	
						N28 E22	1	0	0		N28 E22		Q	
						N30 E28	0	0	0		N30 E28		Q	
						S13 E47	0	0	0		S13 E47		Q	
						N15 E38	0	0	0		N15 E38		Q	
						S20 E58	1	0	0		S20 E58		Q	
233	21	20	314	231	019	N27 W88	1	0	0	21	N27 W88		Q	Solnil, Magnil.
						N29 W69	0	0	0		N29 W69		Q	
						N17 W61	0	0	0		N17 W61		Q	
						N16 W41	4	0	0		N16 W41		E	
						N19 W27	4	0	0		N19 W27		E	
						N27 W13	1	0	0		N27 W13		E	
						S24 W19	1	0	0		S24 W19		Q	
						N28 E11	0	0	0		N28 E11		Q	
						N30 E14	0	0	0		N30 E14		Q	
						S13 E34	0	0	0		S13 E34		Q	
						N14 E21	0	0	0		N14 E21		Q	
						S20 E41	0	0	0		S20 E41		Q	
						S19 E50	2	0	0		S19 E50		Q	
234	22	21	257	222	012	N29 W81	0	0	0	22	N29 W81		Q	Solquiet, Magquiet.
						N16 W76	2	0	0		N16 W76		E	
						N16 W54	0	0	0		N16 W54		E	
						N20 W40	0	0	0		N20 W40		E	
						N27 W27	1	0	0		N27 W27		E	
						S23 W33	0	0	0		S23 W33		Q	
						N28 W02	0	0	0		N28 W02		Q	
						N31 E02	0	0	0		N31 E02		Q	
						S13 E21	0	0	0		S13 E21		Q	
						N15 E08	0	0	0		N15 E08		Q	
						S20 E28	1	0	0		S20 E28		Q	
						S19 E39	0	0	0		S19 E39		Q	
						N23 W02	1	0	0		N23 W02		Q	
235	23	22	201	202	018	N17 W90	1	0	0	23	N17 W90		Q	Solquiet, Magquiet.
						N16 W67	0	0	0		N16 W67		E	
						N19 W53	1	0	0		N19 W53		E	
						N27 W40	0	0	0		N27 W40		Q	
						S23 W45	0	0	0		S23 W45		Q	
						N28 W14	0	0	0		N28 W14		Q	
						N32 W12	0	0	0		N32 W12		Q	
						S19 E16	2	0	0		S19 E16		E	
						S20 E28	1	0	0		S20 E28		Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast[1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
235	23	22				N23 W17	0	0	0	23	N23 W17	Q	
						N25 E68	0	0	0		N25 E68	Q	
						N26 E25	0	0	0		N26 E25	Q	
						S19 E09	0	0	0		S19 E09	Q	
236	24	23	183	188	016	N16 W81	2	0	0	24	N16 W81	E	Solquiet, Magquiet.
						N20 W66	0	0	0		N20 W66	E	
						N27 W53	1	0	0		N27 W53	E	
						S23 W59	1	0	0		S23 W59	E	
						N15 W18	0	0	0		N15 W18	Q	
						S20 E04	0	0	0		S20 E04	Q	
						S20 E18	1	0	0		S20 E18	Q	
						N23 W32	0	0	0		N23 W32	Q	
						N25 E56	0	0	0		N25 E56	Q	
						N26 E13	0	0	0		N26 E13	Q	
						S19 W04	2	0	0		S19 W04	Q	
						N26 W90	1	0	0		N26 W90	Q	
						S16 E08	0	0	0		S16 E08	Q	
237	25	24	222	179	006	N16 W93	4	0	0	25	N16 W93	E	Solquiet, Magquiet.
						N20 W81	0	0	0		N20 W81	Q	
						N26 W66	0	0	0		N26 W66	Q	
						S23 W71	0	0	0		S23 W71	Q	
						N31 W42	0	0	0		N31 W42	Q	
						N15 W31	0	0	0		N15 W31	Q	
						S21 W09	0	0	0		S21 W09	Q	
						S22 E05	1	0	0		S22 E05	Q	
						N23 W43	0	0	0		N23 W43	Q	
						N25 E43	1	0	0		N25 E43	Q	
						N25 W02	0	0	0		N25 W02	Q	
						S19 W17	0	0	0		S19 W17	Q	
						S13 W03	1	0	0		S13 W03	Q	
						N14 W04	0	0	0		N14 W04	Q	
						N14 E54	1	0	0		N14 E54	Q	
						S18 E67	0	0	0		S18 E67	Q	
						N19 E09	0	0	0		N19 E09	Q	
238	26	25	138	158	004	N19 W95	0	0	0	26	N19 W95	Q	Solquiet, Magquiet.
						N28 W80	0	0	0		N28 W80	Q	
						S22 W84	0	0	0		S22 W84	Q	
						S19 W22	0	0	0		S19 W22	Q	
						S21 W09	1	0	0		S21 W09	Q	
						N24 E30	0	0	0		N24 E30	Q	
						S20 W33	0	0	0		S20 W33	Q	
						S13 W18	0	0	0		S13 W18	Q	
						N14 W18	0	0	0		N14 W18	Q	
						S17 E56	1	0	0		S17 E56	Q	
						S27 W00	0	0	0		S27 W00	Q	
239	27	26	205	159	007	N27 W94	0	0	0	27	N27 W94	Q	Solquiet, Magquiet.
						N33 W69	0	0	0		N33 W69	Q	
						S19 W32	0	0	0		S19 W32	Q	
						S21 W20	0	0	0		S21 W20	Q	
						N24 E18	0	0	0		N24 E18	Q	
						S21 W46	0	0	0		S21 W46	Q	
						S12 W29	0	0	0		S12 W29	Q	
						N14 W33	0	0	0		N14 W33	Q	
						N14 E32	0	0	0		N14 E32	Q	
						S16 E42	0	0	0		S16 E42	Q	
						N15 W20	0	0	0		N15 W20	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages AUGUST 1989

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
239	27	26				S28 W11	0	0	0	27	S28 W11	Q	
						S40 E46	0	0	0		S40 E46	Q	
						S39 E01	0	0	0		S39 E01	Q	
240	28	27	140	156	017	N32 W82	0	0	0	28	N32 W82	Q	Solquiet, Magquiet.
						S22 W33	0	0	0		S22 W33	Q	
						N25 E05	0	0	0		N25 E05	Q	
						S20 W56	0	0	0		S20 W56	Q	
						N16 W42	0	0	0		N16 W42	Q	
						S17 E29	0	0	0		S17 E29	Q	
						N17 W28	0	0	0		N17 W28	Q	
						S41 E36	0	0	0		S41 E36	Q	
						N23 E59	1	0	0		N23 E59	Q	
		Presto:[2] Kakioka Magstorm began 27/1338 UT.											
241	29	28	112	170	010	S21 W46	5	0	0	29	S21 W46	E	Solalert Major Flare
						N24 W08	0	0	0		N24 W08	Q	Alert 29/XX 28715,
						N17 W57	0	0	0		N17 W57	Q	Magalert 29/29.
						S17 E17	0	0	0		S17 E17	Q	
						S36 W27	0	0	0		S36 W27	Q	
						N23 E45	0	0	0		N23 E45	Q	
						N32 E79	0	0	0		N32 E79	Q	
						S15 E87	0	0	0		S15 E87	A	
		Presto:[2] Boulder Tenflare 180 flux units 28/1009 UT duration 2 minutes.											
		Boulder Tenflare 230 flux units 28/1311 UT duration 9 minutes.											
242	30	29	097	176	034	S21 W60	0	0	0	30	S21 W60	Q	Solalert Major Flare
						N23 W20	1	0	0		N23 W20	Q	Alert 30/XX 27116,
						N13 W12	0	0	0		N13 W12	Q	Magnil.
						S18 E06	0	0	0		S18 E06	Q	
						N23 E32	0	0	0		N23 E32	Q	
						N32 E68	0	0	0		N32 E68	Q	
						S16 E71	8	6	0		S16 E71	P	
		Presto:[2] Boulder Tenflare 360 flux units 29/0152 UT duration 10 minutes.											
		Boulder Tenflare 260 flux units 29/1654 UT duration 4 minutes.											
		Boulder Tenflare 220 flux units 29/1715 UT duration 9 minutes.											
243	31	30	129	188	021	S21 W76	0	0	0	31	S21 W76	Q	Solalert Major Flare
						N24 W34	0	0	0		N24 W34	Q	Alert 31/XX 26216,
						S18 W07	0	0	0		S18 W07	Q	Magquiet.
						N24 E20	0	0	0		N24 E20	Q	
						N33 E55	0	0	0		N33 E55	Q	
						S16 E62	9	3	0		S16 E62	P	
						S26 E28	3	0	0		S26 E28	Q	
		Presto:[2] Boulder Tenflare 820 flux units 30/1636 UT duration 11 minutes.											
244	01	31	173	205	004	S21 W89	0	0	0	01	S21 W89	Q	Solalert Major Flare
						N24 W47	0	0	0		N24 W47	Q	Alert 01/XX 24716 and
						S18 W21	0	0	0		S18 W21	Q	26719, Magquiet.
						N23 E05	0	0	0		N23 E05	Q	
						N32 E43	1	0	0		N32 E43	Q	
						S16 E47	13	2	0		S16 E47	A	
						S27 E15	5	0	0		S27 E15	Q	
						S19 E67	6	1	0		S19 E67	A	
		Presto:[2] Boulder Tenflare 210 flux units 31/1605 UT duration 2 minutes.											
		Boulder Tenflare 280 flux units 31/1615 UT duration 12 minutes.											

[1]Q = quiet, E = eruptive, A = active, P = proton.

[2]Presto message is a rapid report of a major event.

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Sep 88	Oct	Nov	Dec	Jan 89	Feb	Mar	Apr†	May†	Jun†	Jul†	Aug†
01	137	109	126	128	148	141	127	104	93	136	128	158
02	144	117	114	114	173	144	107	122	94	148	149	187
03	129	129	121	139	146	164	103	140	85	154	129	193
04	148	128	104	122	120	133	98	126	97	157	120	210
05	128	130	129	149	155	127	90	94	83	171	101	227
06	93	123	124	149	142	127	103	139	105	145	120	220
07	97	128	114	144	165	132	98	170	134	130	149	206
08	88	131	95	111	155	161	109	185	149	143	141	210
09	74	125	110	122	165	172	133	153	137	168	116	218
10	76	146	131	133	190	192	163	122	123	192	104	200
11	81	148	155	152	211	190	155	106	115	203	136	202
12	88	169	159	175	229	216	140	96	115	218	111	188
13	91	150	147	187	206	219	162	92	129	253	116	198
14	94	131	139	213	189	208	181	98	123	251	116	189
15	89	109	156	225	177	191	165	120	148	264	92	196
16	89	108	181	226	164	195	187	130	161	265	91	169
17	79	125	196	232	155	209	168	144	161	233	99	192
18	97	134	175	222	160	163	164	137	177	216	113	189
19	113	133	147	223	140	164	148	151	191	235	138	202
20	153	119	112	218	126	169	158	155	195	232	149	209
21	168	117	145	210	114	149	155	161	168	187	162	203
22	168	109	131	255	165	142	155	167	156	174	197	160
23	190	104	117	235	171	134	145	128	180	196	195	133
24	172	121	116	199	142	153	155	135	196	215	168	129
25	149	124	89	183	144	189	131	132	173	227	132	100
26	151	119	73	174	152	163	117	116	157	237	111	95
27	157	120	69	175	157	147	102	126	163	206	105	57
28	143	119	86	196	172	128	89	109	130	187	75	50
29	111	128	86	194	169		95	107	121	182	112	70
30	106	115	107	178	157		78	114	122	156	125	94
31		111		172	140		91		111		132	116
Mean	120.1	125.1	125.1	179.2	161.3	165.1	131.4	129.3	138.4	196.0	126.8	166.8

† = preliminary. The yearly mean sunspot number equaled 100.2 for 1988.

Algonquin Radio Observatory

OTTAWA 2800 MHz (10.7 cm) SOLAR FLUX

Adjusted to 1 AU

Day	Sep 88	Oct	Nov	Dec	Jan 89	Feb	Mar	Apr	May	Jun	Jul	Aug
01	191.3	179.4	157.2*	150.5	179.5*	184.8	168.8*	173.8*	180.5	191.6*	204.0	198.5
02	178.9	197.0	156.5*	149.4	193.7	171.2	173.7	183.5	184.5*	208.2*	193.4	201.7
03	177.3	200.4	164.0	147.3	189.2	185.8*	169.0	196.5*	190.6	203.3*	192.5*	220.2
04	165.9	189.2	159.7	142.7	195.7*	183.4	163.6	188.9	198.2	221.3*	189.8	225.7
05	166.3	191.0	163.8	154.6*	201.6	195.1	183.5	191.1	193.7	213.2*	183.4*	241.5
06	152.4	193.4	161.2	157.7	198.7	205.3*	201.1J	196.5	195.9*	212.2*	192.3	240.3
07	145.4	182.4	151.6	152.9*	239.5	210.5	190.3*	199.8	200.6	205.3	193.5	240.6
08	138.9	172.6	143.5	164.1	260.2	243.9	202.6	207.1	212.4	222.9	188.9	233.6
09	128.0	176.5	152.4	165.2	251.3	259.3	204.2*	194.0	205.1*	241.9	188.1	233.9*
10	117.6	177.8	147.7	161.2*	250.0	269.8	212.4*	182.3	208.7	250.9*	184.1	232.6
11	121.9	168.2	153.8	176.4	254.7*	257.0	232.4*	180.7	198.9	270.3	193.2	243.6
12	127.0	148.4	150.6*	173.9	263.2	257.3	237.6*	181.3	197.2	285.8*	190.7	256.1*
13	124.8	157.5	157.8*	181.1	291.7*	258.4	253.0	185.3*	197.5	319.2	184.0*	263.9
14	130.2	150.4	173.2*	204.4*	274.9	260.7	263.8J	198.1	193.1*	327.2	183.9	271.3
15	126.1	149.1	161.1*	212.0	280.1	241.3	255.8J	199.5	195.8	334.7*	185.7	281.7
16	128.5	152.3	186.1*	232.1	292.1	241.1	261.6J	203.9	188.6	320.9*	183.9	259.8
17	135.3	175.0	175.6	241.7	266.7*	233.9*	240.7	210.6*	187.0	303.7*	184.1	262.9
18	139.5	162.3	161.8	243.5	271.2	213.8	234.2	204.1	184.9	271.5	189.2	265.0
19	138.6	164.0	151.2	240.2	241.6	214.0	221.1	209.7	188.6	270.6	193.7	249.1
20	151.4	166.0	146.6	238.8	222.0*	202.2*	218.2*	192.5	203.1	249.3*	192.4	236.4
21	157.8	165.9	152.9	245.2	198.2*	217.8	213.5*	196.1	211.9*	242.8	195.0	225.7
22	178.6	166.2	153.1	246.6	203.6	213.9	222.5	193.6*	203.9	233.1	200.9	205.4
23	177.8*	171.1	135.7	234.8	205.6	214.7*	216.1*	183.1*	212.2	238.7	196.5	191.3
24	178.6	168.4	138.0	221.6	211.0	213.4	193.2*	189.0	210.0	227.6	191.1	182.0
25	177.4	162.1	137.5	210.5	227.3	203.8*	186.2*	179.7	194.6*	221.6	180.4	159.7
26	172.0	155.4	137.4	193.0	206.3	190.3*	171.6*	176.9	188.0	233.0	169.8	161.0
27	179.6*	161.8	140.9	201.9	211.1	168.6*	162.6	176.9	176.6	227.5	172.8	159.6
28	171.0	156.0	138.8	201.6	207.1	163.5	157.3	183.2	173.5	227.4	170.7	174.1
29	172.0	155.9	137.6	196.7	200.5		155.8	189.5	173.6	223.0	180.9	180.3*
30	173.1	154.2*	135.8	179.5	187.3		159.8	180.6	183.0	217.4	185.1	192.0*
31		160.4		177.6	187.5		167.5		194.2		188.2	208.9*
Mean	154.1	168.7	152.8	193.5	227.8	217.0	203.0	190.9	194.4	247.2	187.8	222.5

* = corrected for burst in progress; J = no calibration due to burst; the yearly mean flux equaled 141.1 in 1988.

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
01	213	9	158	161	192.7	---	292	237	198.5	186	128	76	37	18
02	214	10	187	184	195.9	564	298	244	201.7	192	129	78	39	24
03	215	11	193	205	213.9	571	302	255	220.2	200	136	80	43	27
04	216	12	210	219	219.3	567	300	258	225.7	213	142	81	42	25
05	217	13	227	243	234.7	569	308	273	241.5	233	149	88	45	31
06	218	14	220	244	233.6	575	325	284	240.3	230	147	87	46	26
07	219	15	206	226	234.0	587	321	283	240.6	228	152	92	57	79
08	220	16	210	222	227.3	590	310	274	233.6	228	151	92	69	87
09	221	17	218	241	227.6*	588	333	278	233.9*	221	156	--	--	--
10	222	18	200	205	226.4	592	328	269	232.6	216	153	--	--	--
11	223	19	202	218	237.2	544	340	285	243.6	226	157	90	60	--
12	224	20	188	204	249.5*	602	310	296	256.1*	282	184	97	55	--
13	225	21	198	204	257.2	527	353	315	263.9	248	158	83	42	34
14	226	22	189	175	264.5	---	377	331	271.3	258	166	87	44	40
15	227	23	196	187	274.7	619	394	373	281.7	281	168	90	44	28
16	228	24	169	172	253.4	---	349	332	259.8	245	159	87	43	25
17	229	25	192	189	256.6	581	330	320	262.9	255	161	89	50	59
18	230	26	189	197	258.7	582	313	305	265.0	241	153	85	50	30
19	231	27	202	210	243.3	567	301	286	249.1	242	156	81	40	16
20	232	1	209	216	231.0	568	306	275	236.4	224	142	90	63	92
21	233	2	203	189	220.6	---	299	253	225.7	211	136	78	48	41
22	234	3	160	156	200.9	577	296	242	205.4	195	130	78	44	28
23	235	4	133	138	187.2	574	294	231	191.3	181	122	76	36	38
24	236	5	129	147	178.1	576	270	218	182.0	177	116	80	41	37
25	237	6	100	102	156.4	554	263	196	159.7	155	108	75	40	18
26	238	7	95	82	157.7	558	265	195	161.0	151	109	74	39	19
27	239	8	57	78	156.4	554	260	190	159.6	152	108	72	37	17
28	240	9	50	68	170.7	562	278	210	174.1	165	118	78	41	36
29	241	10	70	74	176.9*	578	310	237	180.3*	183	128	99	41	35
30	242	11	94	97	188.4*	---	304	236	192.0*	186	130	80	42	18
31	243	12	116	125	205.1*	552	---	---	208.9*	---	---	87	54	41
Mean			166.8	173.5	217.1	572	311	266	222.5	213	142	84	46	36

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

The observed and the adjusted Ottawa fluxes tabulated here are the "Series C" daily values reported by the Algonquin Radio Observatory, Ottawa, Ontario, Canada. Numbers in parentheses in the column headings denote frequencies in MHz. Qualifiers after an entry have the following meaning:

* = corrected for burst in progress

Equipment problems produced any gaps in the Air Weather Service's Sagamore Hill (SGMR) observations.

SMOOTHED (OBSERVED AND PREDICTED) SUNSPOT NUMBERS: CYCLES 21 AND 22

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	120	117	115	109	101	96	95	95
1983	93	90	86	82	77	70	66	66	68	68	67	64
1984	60	56	53	50	48	46	44	40	34	29	25	22
1985	20	20	19	18	18	18	17	17	17	17	17	15
1986	14	13	13	14	14	14	14	13	12*	13	15	16
1987	18	20	22	24	26	28	31	35	39	44	47	51
1988	58	65	71	78	84	94	104	114	121	125	130	137
1989	142	145	152	158	165	171	173	176	183	188	191	193
			(6)	(9)	(11)	(14)	(19)	(24)	(27)	(30)	(32)	(33)
1990	194	194	193	187	181	177	174	172	165	156	148	143
	(34)	(36)	(37)	(36)	(35)	(31)	(30)	(31)	(31)	(32)	(30)	(27)
1991	141	138	133	133	134	131	127	122	117	115	116	117
	(28)	(29)	(30)	(35)	(36)	(33)	(30)	(27)	(23)	(21)	(22)	(25)

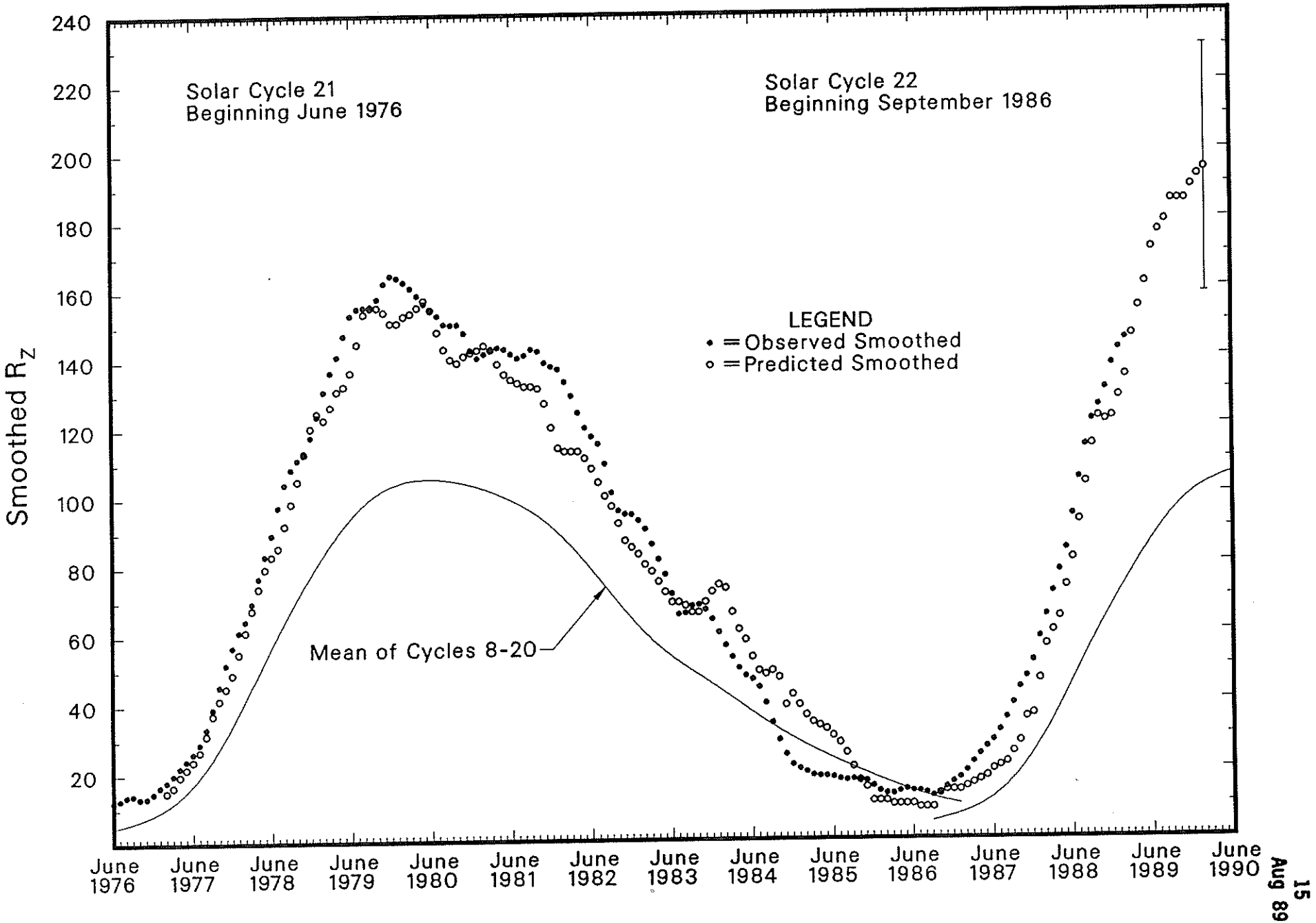
*September 1986 marks the onset of Sunspot Cycle 22.

For the end of Solar Cycle 21, and the beginning of 22, the table gives observed smoothed sunspot numbers up to the one calculated from the most recently available monthly mean. These smoothed observed values are based on final, monthly means through March 1989 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 July 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 February 1990 prediction. There exists a 90% chance that in February 1990 the actual smoothed sunspot number will fall somewhere between 158 and 230.

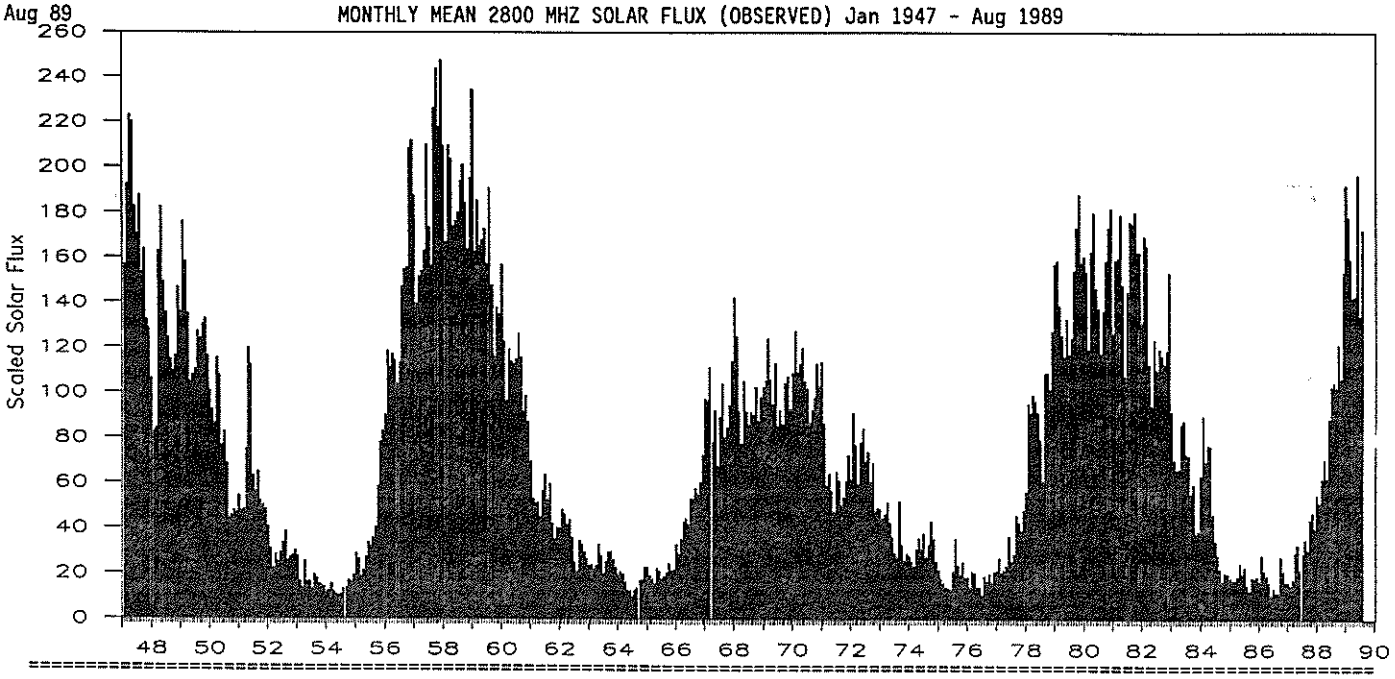
THE MCNISH-LINCOLN PREDICTION METHOD GENERATES USEFUL ESTIMATES OF SMOOTHED, MONTHLY MEAN SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 13 cycles used in the computation. Moreover, the method is very sensitive to the data defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the minimum value of 12.3 that occurred in September 1986.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SUNSPOT NUMBERS



Aug 89

MONTHLY MEAN 2800 MHZ SOLAR FLUX (OBSERVED) Jan 1947 - Aug 1989



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1947		202.7	235.7	264.1	261.2	226.6	215.2	231.2	199.7	209.0	179.8	176.4	218.3
1948	155.7	134.3	135.5	208.1	226.5	195.5	182.8	172.8	163.7	159.1	165.4	193.3	174.4
1949	183.5	220.2	203.9	182.5	154.9	157.5	159.9	175.2	172.5	178.2	180.4	165.2	177.8
1950	150.7	143.3	137.8	164.3	157.1	128.7	134.1	120.9	98.6	99.9	101.9	101.1	128.2
1951	107.9	101.9	102.5	127.1	168.6	161.7	116.3	109.8	117.8	106.0	104.4	102.4	118.9
1952	95.4	86.2	78.5	84.0	80.9	84.8	88.8	93.3	81.5	82.8	83.4	85.7	85.4
1953	83.2	72.8	70.4	81.0	72.5	73.0	69.8	75.5	74.3	71.9	71.4	70.8	73.9
1954	68.7	69.2	71.9	68.7	68.0	67.3	67.7	69.9	70.1	73.2	72.6	75.5	70.2
1955	84.3	82.0	74.8	77.3	82.8	88.8	87.3	90.7	91.1	111.8	130.0	134.6	95.0
1956	141.2	167.2	160.6	165.9	163.4	154.0	162.8	193.8	200.9	201.6	250.4	253.7	184.6
1957	231.2	186.7	197.8	200.0	208.5	252.1	218.0	202.3	267.1	283.1	259.2	286.5	232.7
1958	251.5	212.2	251.5	245.9	218.6	220.5	224.1	237.0	243.5	228.0	209.2	238.2	231.7
1959	274.5	207.9	229.2	210.6	212.7	217.5	203.0	234.2	194.3	165.1	184.8	182.2	209.7
1960	202.6	170.9	146.8	167.6	162.7	161.9	163.9	174.4	164.5	142.3	148.9	138.1	162.0
1961	122.0	106.4	104.8	105.0	99.3	109.9	116.5	106.2	112.7	96.7	90.3	94.8	105.4
1962	94.9	102.2	100.3	96.2	97.9	91.0	80.7	77.3	89.5	87.8	84.9	82.0	90.4
1963	79.5	79.7	77.8	79.5	87.8	83.5	75.9	80.9	85.1	85.1	81.7	78.4	81.2
1964	75.4	76.8	75.9	72.6	69.5	69.0	67.0	69.3	70.2	73.4	73.7	78.8	72.6
1965	78.6	75.2	74.1	72.0	78.2	77.0	74.3	74.8	76.6	80.2	77.7	77.8	76.4
1966	87.9	84.2	90.3	97.2	98.5	96.3	106.7	106.6	110.9	108.6	113.3	124.6	102.1
1967	147.7	147.0	160.6	129.9	143.0	120.2	140.3	153.7	132.1	136.1	145.3	163.0	143.2
1968	189.1	173.2	142.6	129.5	154.9	142.3	137.2	142.2	141.0	152.5	138.5	148.4	149.3
1969	152.7	155.2	172.3	155.5	145.4	162.2	136.6	143.0	137.3	154.0	156.7	143.6	151.2
1970	158.3	175.4	158.4	162.0	168.4	154.9	152.0	138.2	143.2	148.3	162.0	152.8	156.2
1971	162.6	137.8	111.9	116.7	109.9	101.7	117.4	114.1	104.0	107.2	114.0	124.5	118.5
1972	114.8	141.8	128.5	112.9	129.6	135.4	122.0	125.7	113.6	121.1	101.6	102.9	120.8
1973	102.2	98.7	100.4	105.0	97.0	91.2	84.5	82.9	105.6	87.7	81.5	84.2	93.4
1974	83.1	80.9	79.2	86.1	90.6	86.3	92.5	83.0	87.8	97.6	90.3	81.1	86.5
1975	77.5	74.2	72.4	70.7	70.1	69.7	77.2	90.4	79.6	75.7	80.8	74.6	76.1
1976	74.7	70.5	76.7	76.3	70.6	70.6	67.5	74.8	73.1	75.9	72.9	76.7	73.4
1977	77.4	82.3	76.6	77.6	79.6	91.5	81.1	84.3	99.9	96.9	93.7	102.1	86.9
1978	109.6	145.4	141.8	149.4	146.5	142.2	131.1	114.0	157.9	158.2	151.5	175.5	143.6
1979	203.0	204.1	185.8	173.8	165.2	180.3	165.9	172.7	200.2	217.9	231.7	203.5	192.0
1980	206.2	200.0	168.1	207.9	224.0	193.2	184.8	166.2	183.9	204.2	218.1	225.8	198.5
1981	174.6	204.5	205.3	223.2	194.6	156.9	191.9	220.6	219.5	224.3	207.8	207.8	202.6
1982	179.0	214.2	210.5	161.8	144.7	171.9	159.6	167.9	165.3	161.9	167.4	199.4	175.3
1983	142.3	122.6	118.6	118.9	137.1	138.6	125.0	124.4	109.0	112.4	92.5	93.4	119.6
1984	116.1	140.6	122.0	128.7	128.3	100.3	89.3	83.7	78.1	73.5	76.3	75.9	101.1
1985	74.5	73.7	73.3	75.1	80.2	76.1	78.7	71.5	69.5	74.7	74.2	74.8	74.7
1986	73.2	83.6	77.0	75.1	72.6	67.6	70.2	68.4	68.7	83.0	77.1	72.6	74.1
1987	72.5	71.5	74.0	84.9	87.8	77.9	84.2	90.0	86.1	98.1	101.2	94.4	85.3
1988	108.0	105.0	114.9	122.7	115.2	139.4	152.7	154.2	152.5	169.8	156.2	199.8	141.0
1989	235.4	222.4	205.1	189.6	190.1	239.6	181.9	217.1					210.2*

*Preliminary Graph shows EFFECTIVE sunspot numbers--fluxes scaled by linear regression equation (1.08Flux - 62).

Hα SOLAR FLARES

AUGUST 1989

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	01	0348	0350	0356	N16	E70	5624	08	6.5	8	SF		3	E		28		
LEAR		0456	0503	0523	S16	E25	5612	08	3.1	27	SF		3	E		26		
SVTO		0457	0512	0528	S15	E27	5612	08	3.2	31	SF		2	E		52		
SVTO		0647	0655	0704	S11	E73	5623	08	6.8	17	SF	C 3.3	3	E		38		
SVTO		0924	0929	0936	S13	E68	5623	08	6.5	12	SF	C 5.0	3	E		17		
SVTO		0943	0946	1008	S16	E21	5612	08	3.0	25	SF	C 3.7	3	E		57		F
SVTO		0957	1002	1023	N17	W33	5617	07	30.0	26	SF		3	E		32		
SVTO		1100	1102	1128	S04	E24	5615	08	3.2	28	SF		3	E		31		
SVTO		1442	1450	1503	S10	E67	5623	08	6.6	21	SF	C 2.5	3	E		60		
GOES		1732	1735	1737						5		C 1.8						
HOLL		2103E	2107U	2120	S13	E67	5623	08	6.9	17D	1N	C 5.4	3	E		197		EH
PALE		2105E	2105U	2128D	S10	E65	5623	08	6.8	23D	SF	C 5.4	2	E		88		H
HOLL		2144	2147	2153	S12	E62	5623	08	6.6	9	SF	C 2.0	3	E		17		
PALE	02	0112E	0112U	0120	S11	E61	5623	08	6.6	8D	SF		3	E		13		
GOES		0130	0136	0143						13		C 1.8						
PALE		0205	0206	0216	S11	E61	5623	08	6.7	11	SF		3	E		29		
SVTO		0442E	0448U	0513	S18	E11	5612	08	3.0	31D	SF	C 2.6	1	E		51		F
SVTO		0653	0655	0703	S12	E65	5623	08	7.2	10	SF	C 1.8	2	E		20		FH
GOES		0735	0755	0820						45		C 3.1						
SVTO		0855	0858	0905	S28	E38	5622	08	5.3	10	SF		3	E		34		
SVTO		1003	1004	1010	S15	E65	5623	08	7.3	7	SF		3	E		31		
SVTO		1003	1005	1018	N18	W45	5617	07	30.1	15	SF	C 1.7	3	E		24		
SVTO		1020	1025	1030	S14	E73		08	7.9	10	SF	C 2.8	3	E		55		H
SVTO		1037	1043	1049	S18	E81		08	8.6	12	SF	C 3.5	3	E		60		H
SVTO		1107	1111	1121	N14	E13	5614	08	3.4	14	SF		3	E		21		
SVTO		1228	1231	1238	S16	E07	5612	08	3.0	10	SF		3	E		20		F
GOES		1520	1645	1900						220		C 3.0						T
HOLL		1555	1600	1618	S16	E72		08	8.1	23	SF		3	E		29		
SVTO		1657	1657	1720	S15	E06	5612	08	3.2	23	SF		3	E		35		F
RAMY		1657	1701U	1729	S15	E06	5612	08	3.2	32	SF		3	E		35		F
SVTO		1703	1704	1711	S28	E34	5622	08	5.4	8	SF		2	E		15		F
HOLL		1759	1802	1815	S05	E06	5615	08	3.2	16	SF		3	E		73		F
GOES		2224	2230	2234						10		C 4.8						
HOLL		2304	2311	2330	S13	E49	5623	08	6.6	26	1B	M 2.5	3	E		154		FE
GOES		2356	2359	2401						5		C 1.5						
GOES	03	0149	0155	0203						14		C 1.4						
GOES		0306	0311	0318						12		C 2.0						
LEAR		0325	0337	0342	S37	W57	5627	07	29.6	17	SF	C 1.7	3	E		14		
SVTO		0615	0617	0627	S12	E45	5623	08	6.6	12	SF		3	E		17		
SVTO		0620	0620	0626	N13	W16		08	2.0	6	SF		3	E		12		F
SVTO		0653	0658	0708	S13	E46	5623	08	6.7	15	SN	C 3.1	3	E		88		H
GOES		0742	0750	0757						15		M 1.0						
SVTO		1004	1006	1013	S28	E22	5622	08	5.1	9	SF		3	E		24		
SVTO		1101	1107	1130	S21	E88		08	10.2	29	1F	C 3.6	3	E		137		H
SVTO		1109	1112	1122	S13	E43	5623	08	6.7	13	SF		3	E		24		
SVTO		1227	1235	1336	S12	E48	5623	08	7.1	69	1F	C 5.3	3	E		145		UF
SVTO		1235	1235	1257	N14	E38	5624	08	6.4	22	SF		3	E		14		
SVTO		1313	1319	1329	S39	W61	5627	07	29.7	16	SF		3	E		28		
SVTO		1326	1326	1330	S13	E83		08	9.8	4	SF		3	E		10		
SVTO		1326	1328	1332	S18	W06	5612	08	3.1	6	SF		3	E		10		F
SVTO		1432	1433	1456	N13	E37	5624	08	6.4	24	SF		3	E		52		F
HOLL		1440E	1440U	1459	N12	E37	5624	08	6.4	19D	SF		3	E		44		F
HOLL		1535	1535	1549	S28	E18	5622	08	5.0	14	SF		3	E		13		F
SVTO		1536	1536	1544	S28	E19	5622	08	5.1	8	SF		3	E		10		F
HOLL		1605	1613	1642	S20	E75	5629	08	9.4	37	SF		3	E		27		
HOLL		1659	1700	1712	N18	W62	5617	07	30.1	13	SF		3	E		16		
HOLL		1708	1716	1803	S18	W09	5612	08	3.0	55	SF		3	E		25		F
HOLL		1806	1844	1902	S28	E18	5622	08	5.2	56	SF		3	E		35		
HOLL		1825	1828	1906	S13	E41	5623	08	6.9	41	SF		3	E		34		
PALE		1829	1830	1835	S41	W61	5627	07	29.9	6	SF		3	E		13		
HOLL		1956	2000	2015	S13	E40	5623	08	6.8	19	SF		3	E		34		F
PALE		2046	2048	2116	S18	E74	5629	08	9.5	30	SF	C 5.7	3	E		16		F
HOLL		2221	2227	2311	S27	E18	5622	08	5.3	50	SF	C 3.4	3	E		86		
PALE		2221E	2229U	2257	S28	E19	5622	08	5.4	36D	SF		3	E		88		F
PALE		2229E	2229U	2258	N13	W68	5617	07	29.9	29D	SF		3	E		12		F
LEAR	04	0120	0122	0133	S17	W14	5612	08	3.0	13	SF		3	E		13		F

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
PALE	04	0121	0123	0133	S18	W14	5612	08	3.0	12	SF		3	E		22		
PALE		0123	0127	0136	S14	E41	5623	08	7.1	13	SF		3	E		12		F
LEAR		0204	0211	0226	S27	E13	5622	08	5.1	22	SF		3	E		24		F
PALE		0214	0217	0222	S14	E41	5623	08	7.2	8	SF		3	E		16		
PALE		0223	0223	0239	S13	E37	5623	08	6.9	16	SF		3	E		14		
LEAR		0411	0420	0536	S14	E40	5623			85	1F			E		150		K
LEAR		0411	0442	0536	S14	E40	5623	08	7.2	85	1F	C 3.9	3	E		127		F
PALE		0415	0443U	0446D	S11	E38	5623	08	7.0	31D	SF		3	E		90		F
SVTO		0444E	0445U	0526	S13	E36	5623	08	6.9	42D	1F		2	E		116		F
SVTO		0544	0545	0552	S28	E15	5622	08	5.4	8	SF		3	E		13		
SVTO		0724	0726	0742	S26	E13	5622	08	5.3	18	SF		3	E		14		
SVTO		0839	0840	0845	S26	E13	5622	08	5.4	6	SF		3	E		20		
SVTO		1000	1002	1008	S26	E11	5622	08	5.3	8	SF		3	E		26		
SVTO		1004	1006	1010	S14	E41	5626	08	7.5	6	SF	C 2.8	3	E		22		
GOES		1043	1046	1053						10		C 1.8						
SVTO		1119	1231	1328	S12	E33	5623	08	6.9	129	1F		3	E		195		F
SVTO		1136	1138	1144	S41	W81	5627	07	28.9	8	SF		3	E		32		
SVTO		1142	1155	1158	S12	E03	5619	08	4.7	16	SF		3	E		18		F
SVTO		1153	1153	1157	S17	E73	5629	08	10.0	4	SF		3	E		13		H
SVTO		1159	1236	1338	S12	E03	5619	08	4.7	99	1F	C 4.9	3	E		153		F
SVTO		1241	1245	1334	S19	E69	5629	08	9.8	53	SF		3	E		26		
SVTO		1250	1251	1300	N27	E07	5620	08	5.1	10	SF		3	E		18		
SVTO		1311	1314	1322	N13	W14	5614	08	3.5	11	SF		3	E		19		
SVTO		1405	1410	1623D	S14	E35	5623			138D	SF			E		12		K
SVTO		1405	1445	1623D	S14	E35	5623	08	7.2	138D	SF		3	E		11		F
SVTO		1452	1452	1521	S14	E71	5629	08	10.0	29	SF		3	E		14		
RAMY		1735	1738	1853	S27	E06	5622	08	5.2	78	SF	C 3.0	3	E		64		F
HOLL		1735	1739	1852	S27	E07	5622	08	5.3	77	SN	C 3.0	3	E		94		FE
HOLL		1735	1809	1852	S27	E07	5622			77	SN			E		70		K
RAMY		1829	1830	1843	S16	E30	5623	08	7.0	14	SF		3	E		24		FE
HOLL		1829	1832	1838	S16	E30	5623	08	7.0	9	SF		3	E		24		F
RAMY		1916	1917	1931	S27	E05	5622	08	5.2	15	SF		3	E		27		F
PALE		1917	1920	1924	S27	E06	5622	08	5.3	7	SF	C 1.8	3	E		22		F
HOLL		2153	2153	2158	N10	W03	5628	08	4.7	5	SF		3	E		10		F
HOLL		2216	2221	2248D	S14	E32	5623	08	7.3	32D	SF		3	E		50		F
RAMY		2220E	2226U	2233D	S13	E29	5623	08	7.1	13D	SF		2	E		64		F
PALE		2226E	2226U	2226D	S12	E31	5623	08	7.3	13D	SF		3	E		25		F
GOES		2242	2257	2317						35		C 5.1						
LEAR		2358	2359	2407	S11	W04	5619	08	4.7	9	SF		3	E		13		
LEAR	05	0156	0156	0202	S15	W07	5619	08	4.5	6	SF		3	E		18		F
LEAR		0216	0219	0244	S13	W28	5612	08	3.0	28	1F		3	E		101		F
PALE		0216	0219	0249	S17	W28	5612	08	3.0	33	1F	C 4.1	3	E		126		F
PALE		0218	0219	0223	S13	W05	5619	08	4.7	5	SF		3	E		14		F
PALE		0312	0314	0317	N20	W56	5631	07	31.8	5	SF		3	E		12		
GOES		0327	0334	0344						17		C 2.2						
LEAR		0422	0423	0438	N24	W56	5631	07	31.8	16	SF		4	E		36		
PALE		0423	0424	0433	N20	W57	5631	07	31.8	10	SF		3	E		16		
GOES		0437	0444	0453						16		C 3.2						
LEAR		0520	0520	0525	N23	W57	5631	07	31.8	5	SF		4	E		18		
SVTO		0520	0521	0538	N21	W56	5631	07	31.9	18	SF		3	E		17		
GOES		0549	0602	0642						53		M 1.0						
SVTO		0840	0840	0845	S19	E58	5629	08	9.8	5	SF		3	E		17		
SVTO		0916	0917	0924	S15	W30	5612	08	3.1	8	SF		3	E		16		
SVTO		1018	1027	1219	S29	W03	5622			121	1N			E		97		K
SVTO		1018	1115	1219	S29	W03	5622	08	5.2	121	1N	M 2.6	3	E		208		F
RAMY		1200E	1202U	1223	S29	W06	5622	08	5.0	23D	SF		3	E		80		F
RAMY		1245	1245	1258	N10	W12	5628	08	4.6	13	SF		3	E		12		H
RAMY		1611	1616	1636	S12	E79		08	11.6	25	1F		3	E		140		
SVTO		1611	1616	1637	S13	E83		08	11.9	26	1F		3	E		182		H
HOLL		1611	1625	1654D	S12	E76		08	11.4	43D	2N	C 6.5	3	E		419		
RAMY		1642	1644	1705	N10	W14	5628	08	4.6	23	SF		3	E		28		F
SVTO		1643	1643	1648	N10	W14	5628	08	4.6	5	SF		3	E		12		
RAMY		1823	1823	1828	S24	W09	5622	08	5.1	5	SF		3	E		17		
HOLL		1911	1918U	2009	S27	W07	5622	08	5.2	58	SF		3	E		78		F
HOLL		1918	1924U	1933	S28	E57	5633	08	10.2	15	SN		3	E		51		F
RAMY		1922	1923	1929	S26	E54	5633	08	10.0	7	SF		3	E		13		
RAMY		1958	1959	2015	N10	W17	5628	08	4.5	17	SF		3	E		19		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	05	1958	2001	2018	N09	W17	5628	08	4.5	20	SF	C 6.0	3	E		26		
PALE		1959	2000	2005	N09	W17	5628	08	4.5	6	SF	C 6.0	3	E		10		
PALE		2056	2056	2104	S15	E46	5629	08	9.3	8	SF		3	E		13		
PALE		2111	2117	2126D	N19	W64	5631	08	1.0	15D	SF		3	E		18		
HOLL		2112	2113	2118	N22	W65	5631	07	31.9	6	SF		3	E		23		
PALE		2114	2119	2252	S27	W06	5622	08	5.4	98	SF		3	E		39		F
HOLL		2115	2127	2335D	S26	W08	5622	08	5.3	140D	SF	C 5.9	3	E		25		F
PALE		2230E	2239U	2301	S12	W18	5619	08	4.6	31D	SF		3	E		20		
LEAR		2354	2354	2357	N08	W20	5628	08	4.5	3	SF		3	E		11		F
HOLL		2356	2356	2403D	N07	W21	5628	08	4.4	7D	SF		3	E		44		F
PALE	06	0041	0047	0100D	S18	W40	5612	08	3.0	19D	SF		3	E		45		F
LEAR		0044	0046	0106	S17	W40	5612	08	3.0	22	SF		3	E		36		
LEAR		0047	0051	0137	S13	E08	5623	08	6.6	50	2B	M 3.4	3	E		378		FH
PALE		0047	0052U	0100D	S15	E09	5623	08	6.7	13D	2B	M 3.4	3	E		441		FH
LEAR		0112	0117	0129	S27	W11	5622	08	5.2	17	SF		3	E		24		F
LEAR		0139	0201	0327	S28	W10	5622	08	5.3	108	SF		3	E		45		F
LEAR		0201	0204	0213	S30	E55	5633	08	10.4	12	SF	C 3.0	3	E		25		
LEAR		0321	0321	0326	S29	E50	5633	08	10.0	5	SF		3	E		21		
LEAR		0345	0349	0406	S21	E43	5629	08	9.4	21	SF	C 3.7	3	E		38		
LEAR		0405	0411	0456	S13	E16	5623	08	7.4	51	SF		3	E		55		F
LEAR		0432	0433	0441	S17	W43	5612	08	2.9	9	SF		3	E		20		
LEAR		0508	0513	0524	N12	W26	5628	08	4.2	16	SF		3	E		24		
LEAR		0523	0527	0611	S17	E87	5634	08	12.8	48	SF	C 4.8	3	E		90		
LEAR		0532	0532	0546	S27	W15	5622	08	5.1	14	SF		3	E		19		F
LEAR		0645	0652	0753	N11	W27	5628			68	1F	C 4.0		E		107		K
LEAR		0645	0710	0753	N11	W27	5628	08	4.2	68	1F		3	E		129		
SVTO		0646	0722U	0748	N10	W27	5628	08	4.2	62	SF		2	E		49		F
SVTO		0720	0750	0820	S27	W11	5622	08	5.4	60	SF		2	E		91		F
LEAR		0727	0732	0815	S28	W12	5622			48	SF			E		29		K
LEAR		0727	0750	0815	S28	W12	5622	08	5.4	48	SF		3	E		26		
LEAR		0730	0731	0737	S30	E53	5633	08	10.5	7	SF		3	E		27		
LEAR		0747	0750	0834	S30	E51	5633	08	10.3	47	1N	M 2.7	3	E		141		FE
SVTO		0747	0751	0821	S26	E53	5633	08	10.4	34	1N	M 2.7	3	E		163		F
LEAR		0756	0757	0812	S17	E83	5634	08	12.6	16	SF		3	E		26		
SVTO		0756	0758	0809	S13	E87	5634	08	12.9	13	SF		3	E		26		
LEAR		0844	0844	0904	S30	E50	5633	08	10.3	20	SF		3	E		18		
LEAR		0844	0851	0904	S30	E50	5633			20	SN			E		23		K
SVTO		0939	0939	0953	S15	E23	5626	08	8.1	14	SF	C 7.0	3	E		35		
RAMY		1130E	1207U	1303	S25	W17	5622	08	5.2	93D	1F	M 1.9	3	E		111		E
SVTO		1156	1219U	1301	S29	W16	5622	08	5.2	65	SN		3	E		76		F
RAMY		1248	1249	1321	S12	E74	5634	08	12.1	33	SF		3	E		29		
HOLL		1506	1507	1509	S26	E44	5633	08	10.0	3	SF	C 2.0	3	E		17		
HOLL		1651	1702	1708	S27	W22	5622	08	5.0	17	SF		2	E		25		
HOLL		1711	1716	1717	S26	E42	5633	08	10.0	6	SF		2	E		11		
HOLL		1814	1820	1851	S26	W22	5622	08	5.0	37	SF		3	E		33		
HOLL		1846	1846	1859	S13	W02	5623	08	6.6	13	SF		3	E		28		FE
PALE		1931	1943	2024D	S28	E47	5633	08	10.5	53D	SF	C 5.0	3	E		35		FH
HOLL		2216	2228	2305	S12	W31	5619	08	4.6	49	SF		3	E		92		
PALE		2217	2219	2244	S14	W30	5619	08	4.7	27	SF		3	E		39		F
HOLL		2235	2241	2259	S12	E67	5634	08	12.0	24	SF		3	E		19		
PALE		2240	2241	2301	S11	E72	5634	08	12.4	21	SF		3	E		15		F
HOLL		2301	2313	2358D	S26	W23	5622			57D	1B			E		100		K
HOLL		2301	2341	2358D	S26	W23	5622	08	5.2	57D	1B		3	E		109		FE
PALE		2316	2327	2444	S27	W22	5622			88	1N			E		75		K
PALE		2316	2349	2444	S27	W22	5622	08	5.2	88	1N		3	E		132		FE
PALE		2341	2341	2350	S24	E39	5633	08	10.0	9	SF		3	E		10		
LEAR		2342	2351	2410	S26	W26	5622	08	5.0	28	SN	M 4.8	2	E		65		F
PALE	07	0031	0034	0116	S27	E45	5633			45	SF			E		72		K
PALE		0031	0045	0116	S27	E45	5633	08	10.5	45	SF		3	E		44		
LEAR		0037	0044	0049D	S26	E38	5633	08	10.0	12D	SF		3	E		44		
PALE		0037	0044	0119	S16	E34	5629	08	9.6	42	1F	M 1.1	3	E		146		F
LEAR		0041	0044	0049D	S19	E31	5629	08	9.4	8D	SF	M 1.1	3	E		81		
PALE		0057	0100	0115	S16	W54	5612	08	2.9	18	SF		3	E		76		FH
LEAR		0333	0336	0341	S20	E34	5629	08	9.7	8	SF	C 4.0	3	E		18		F
LEAR		0512	0513	0526	S20	E29	5629	08	9.4	14	SF		3	E		32		
LEAR		0555E	0653	0804	S21	E44	5633	08	10.6	129D	SF		3	E		69		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	07	0602	0602	0608	S15	E65	5634	08	12.2	6	SF		3	E		27		
SVTO		0846	0847	0858	S14	W09	5623	08	6.7	12	SF		3	E		17		
SVTO		0920	0938	1009	S23	E29	5633	08	9.6	49	1B	M 2.4	3	E		163		F
SVTO		0922	0932	0955	S16	E24	5629	08	9.2	33	SN		3	E		59		F
SVTO		0936	0937	0951	S27	W29	5622	08	5.1	15	SF		3	E		19		F
SVTO		1022	1026	1035	S25	E43	5633	08	10.8	13	SF		3	E		12		
SVTO		1043	1044U	1057	S19	W43	5621	08	4.2	14	SF		3	E		68		F
SVTO		1228	1231	1240	N10	W44	5628	08	4.2	12	SF		3	E		22		
RAMY		1228	1232	1246	N11	W45	5628	08	4.1	18	SF		3	E		16		
RAMY		1228	1233	1242	S18	E24	5629	08	9.3	14	SF		3	E		34		
SVTO		1234	1234	1240	S16	W63	5612	08	2.7	6	SF		3	E		18		
RAMY		1248	1256	1313	S15	W64	5612	08	2.7	25	SF		3	E		50		
SVTO		1357	1402	1411	S15	E26	5629	08	9.5	14	SF		3	E		12		
SVTO		1512	1513	1523	S18	E24	5629	08	9.5	11	SF		3	E		15		
HOLL		1516E	1517	1617	S18	E24	5629			61D	1F			E		96		K
HOLL		1516E	1526	1617	S18	E24	5629	08	9.5	61D	1F	C 2.7	3	E		102		FE
SVTO		1537	1544	1636	S13	E62	5634	08	12.3	59	SF		3	E		35		
HOLL		1538	1608	1644	S14	E62	5634	08	12.3	66	SF	C 3.0	3	E		38		
HOLL		1601	1605	1618	N09	W43	5628	08	4.4	17	SF		3	E		27		
HOLL		1610	1622	1651	S19	W64	5612	08	2.8	41	SF		3	E		46		
HOLL		1646	1653	1701	S17	E26	5629	08	9.7	15	SF		3	E		15		
HOLL		1723	1731	1740	S26	W35	5622	08	5.0	17	SF		3	E		28		
HOLL		1727	1730	1735	S20	E29	5629	08	9.9	8	SF		3	E		39		E
RAMY		1729	1730	1736	S21	E29	5629	08	9.9	7	SF		3	E		22		
HOLL		1740	1741	1832	S28	W29	5622			52	SF			E		59		K
HOLL		1740	1806	1832	S28	W29	5622	08	5.5	52	SF		3	E		50		
RAMY		1802	1806	1818	S26	W35	5622	08	5.0	16	SF		3	E		43		ZF
HOLL		1842	1845	1917	S14	E62	5634	08	12.5	35	SN	C 3.0	3	E		62		
RAMY		1843	1844	1851	S15	E63	5634	08	12.5	8	SF	C 3.0	4	E		36		FE
HOLL		1902E	1920U	2001	S26	W36	5622	08	5.0	59D	SF		2	E		28		
PALE		1916	1917	1944	S28	W34	5622	08	5.1	28	SF		3	E		10		
RAMY		1917	1919	1922D	S26	W36	5622	08	5.0	5D	SF		3	E		16		Z
GOES		2003	2007	2009						6		C 2.2						
HOLL		2021E	2031	2220	S26	W38	5622			119D	SF			E		36		K
HOLL		2021E	2054	2220	S26	W38	5622	08	4.9	119D	1B	M 7.6	3	E		195		U
HOLL		2031E	2043U	2110	N13	E68	5635	08	13.0	39D	SF		2	E		55		
HOLL		2136	2144	2206	S30	E31	5633	08	10.3	30	1N	M 1.2	3	E		155		UE
HOLL		2213	2220	2227	S13	W66	5612	08	2.9	14	SF		3	E		69		
LEAR	08	0417	0419	0425	S15	E19	5629	08	9.6	8	SF		3	E		30		
SVTO		0420E	0432U	0443	S22	E20	5633	08	9.7	23D	S		2	E		68		F
LEAR		0427	0430	0445	S17	E17	5629	08	9.5	18	SF	C 2.2	3	E		54		
SVTO		0430E	0432U	0443	S22	E20	5633	08	9.7	13D	SF		2	E		68		F
LEAR		0508	0515	0631	S16	E18	5629	08	9.6	83	SF		3	E		40		F
LEAR		0509	0521	0611	S23	E19	5633	08	9.7	62	1N	M 3.5	3	E		244		F
SVTO		0511	0511	0519	S15	E52	5634	08	12.1	8	SF		3	E		18		
SVTO		0511	0519	0701	S25	E18	5633	08	9.6	110	1N		3	E		235		FH
SVTO		0511	0533	0727	S16	E15	5629			136	1N			E		88		K
SVTO		0511	0647	0727	S16	E15	5629	08	9.3	136	1N	C 5.0	3	E		109		FH
SVTO		0529	0533	0646D	S27	W38	5622			77D	SF			E		88		K
SVTO		0635	0638	0657	S27	W38	5622	08	5.3	22	SF		3	E		50		F
LEAR		0636	0639	0648	S27	W37	5622	08	5.4	12	SF		3	E		17		F
LEAR		0645	0647	0657	S16	E15	5629	08	9.4	12	SF		3	E		29		F
SVTO		0731	0734	0739	S16	E17	5629	08	9.6	8	SF		3	E		31		F
SVTO		0808	0843	0903	S16	E15	5629	08	9.5	55	SF		3	E		28		
SVTO		0903	0906	0917	S14	E17	5629	08	9.7	14	SF		3	E		25		F
SVTO		0918	0920	0927	S17	E22	5629	08	10.0	9	SF		3	E		22		F
SVTO		0928	0956	1004	S25	E06	5629	08	8.8	36	SF		3	E		33		
SVTO		1022	1024	1036	S16	E18	5629	08	9.8	14	SF		3	E		28		F
RAMY		1117	1119	1137	S17	E13	5629	08	9.4	20	SF		4	E		16		F
RAMY		1301	1302	1306	S13	E14	5629	08	9.6	5	SF		4	E		10		
SVTO		1343	1345	1348	N20	W16		08	7.3	5	SF		3	E		16		
HOLL		1346	1352	1430	S16	E12	5629	08	9.5	44	SF		3	E		28		
HOLL		1431	1432	1452	S14	E50	5634	08	12.4	21	SF		3	E		25		
RAMY		1432	1433	1450	S15	E49	5634	08	12.3	18	SF		3	E		21		F
HOLL		1445	1448	1502	S17	E14	5629	08	9.7	17	SF		3	E		33		F
SVTO		1517	1517	1545	N17	E55	5635	08	12.8	28	SF		3	E		13		
HOLL		1519	1519	1531	N16	E55	5635	08	12.8	12	SF		3	E		13		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	08	1519	1521	1539	S15	E48	5634	08	12.3	20	SF		3	E		18		
SVTO		1520	1522	1539	S13	E48	5634	08	12.3	19	SF		3	E		19		
SVTO		1528	1529	1539	S18	E17	5629	08	9.9	11	SN		3	E		78		H
HOLL		1528	1530	1540	S17	E11	5629	08	9.5	12	SN	C 3.8	3	E		87		H
HOLL		1906	1917	1957	S16	E09	5629	08	9.5	51	SN	C 4.4	3	E		81		F
HOLL		1906	1931	1957	S16	E09	5629			51	SB			E		74		K
RAMY		1917E	1917U	2005D	S17	E09	5629	08	9.5	48D	SN		3	E		78		FH
HOLL		2004	2016	2019	S14	E09	5629	08	9.5	15	SF		3	E		15		
HOLL		2020	2023	2037	S16	E10	5629	08	9.6	17	SF		3	E		15		
HOLL		2020	2023	2043	S30	E17	5633	08	10.2	23	SF		3	E		52		
RAMY		2024E	2024U	2034	S29	E15	5633	08	10.0	10D	SF		2	E		22		
HOLL		2044	2050	2058	S19	E14	5629	08	9.9	14	SF		3	E		37		F
RAMY		2044	2051	2108D	S20	E15	5629	08	10.0	24D	SF		3	E		27		F
PALE	09	0023	0035	0055	S16	E03	5629	08	9.2	32	SF		3	E		18		
GOES		0330	0333	0337						7		C 4.1						
LEAR		0457	0505	0518	S17	E46	5634	08	12.7	21	SF		3	E		35		F
LEAR		0612	0612	0616	S26	W56	5621	08	4.9	4	SF		3	E		21		F
SVTO		0612	0612	0622	S30	W57	5622	08	4.8	10	SF		3	E		21		
SVTO		0646	0707	0757	S19	W49	5638	08	5.5	71	SF		3	E		43		
LEAR		0647	0647	0706	S18	W48	5638	08	5.6	19	SF	C 3.8	3	E		27		F
SVTO		0901	0902	0906	S28	W56	5622	08	5.0	5	SF		3	E		20		
SVTO		1002E	1020	1026	S17	W03	5629	08	9.2	24D	SF	C 3.2	2	E		76		F
SVTO		1005	1009	1023	S12	W33	5623	08	6.9	18	SF		3	E		68		
SVTO		1028	1029	1034	N20	W07	5632	08	8.9	6	SF		3	E		35		
SVTO		1053	1059	1112	S20	W50	5638	08	5.6	19	SF		3	E		56		
SVTO		1303	1309	1313	S30	E12	5633	08	10.5	10	SF		3	E		14		
SVTO		1332	1344	1401	S14	E39	5634	08	12.5	29	SF		3	E		65		F
HOLL		1335	1344	1357	S15	E38	5634	08	12.4	22	SF		3	E		18		F
HOLL		1423	1424	1526	S16	E00	5629	08	9.6	63	SN	C 9.2	3	E		73		UF
HOLL		1600	1601	1605	S17	W07	5629	08	9.1	5	SF		3	E		21		
RAMY		1601	1601	1605	S17	W07	5629	08	9.1	4	SF		3	E		21		
HOLL		1631	1639	1707	N26	E78	5639	08	15.7	36	SF		3	E		20		
HOLL		1710	1711	1729	S17	W08	5629			19	SF			E		33		K
RAMY		1710	1711	1731	S17	W08	5629			21	SF			E		30		K
HOLL		1710	1722	1729	S17	W08	5629	08	9.1	19	SF	C 2.6	3	E		33		F
RAMY		1710	1723	1731	S17	W08	5629	08	9.1	21	SF	C 2.6	3	E		29		F
PALE		1720	1722	1726	S16	W01	5629	08	9.6	6	SF		3	E		11		
HOLL		1917	1921	1928	S16	W02	5629	08	9.6	11	SF	C 3.7	3	E		37		
HOLL		1930	1933	2003	S16	W03	5629	08	9.6	33	SF		3	E		18		F
HOLL		2022	2025	2035	S16	E37	5634	08	12.6	13	SF		3	E		20		
HOLL		2025	2026	2030	S16	W03	5629	08	9.6	5	SF		3	E		27		
HOLL		2141	2141	2147	S27	E00	5633	08	9.9	6	SF		3	E		11		
GOES		2207E	2211	2220D						13D		C 1.8						
HOLL		2208	2211	2216	S16	E32	5634	08	12.3	8	SF		3	E		29		
HOLL		2222	2223	2228	S27	E00	5633	08	9.9	6	SF		3	E		19		
HOLL		2330	2331	2344	N11	E35	5635	08	12.6	14	SF		3	E		24		
HOLL		2330	2336	2344	N11	E35	5635			14	SF			E		18		K
HOLL	10	0031	0031	0035	S15	W06	5629	08	9.6	4	SF		3	E		12		
LEAR		0140	0216	0330	S14	W08	5629	08	9.5	110	1N	M 1.7	3	E		143		F
LEAR		0140	0311	0330	S14	W08	5629			110	SF			E		38		K
LEAR		0442	0445	0450	N27	E68	5639	08	15.5	8	SF		3	E		49		
SVTO		0523E	0525	0541	S21	W12	5629	08	9.3	18D	SF	C 2.4	3	E		48		
SVTO		0523E	0526	0534	N28	E66	5639	08	15.4	11D	SF		3	E		40		
SVTO		0554	0618	0635	N28	E69	5639	08	15.6	41	SF		3	E		27		
SVTO		0615	0616	0637	S30	E02	5633	08	10.4	22	SF		3	E		44		
LEAR		0616	0616	0626	S27	W04	5633	08	9.9	10	SF		3	E		17		
SVTO		0633	0636	0641	S20	W03	5629	08	10.0	8	SF		3	E		24		
SVTO		0943	1004	1025	N29	E69	5639	08	15.8	42	SF		3	E		59		
SVTO		1027	1056	1235	N26	E61	5639	08	15.2	128	SF		3	E		36		F
GOES		1028E	1030	1035D						7D		C 2.6						
RAMY		1059	1107	1212D	N24	E59	5639			73D	SN			E		80		K
RAMY		1059	1122	1212D	N24	E59	5639	08	15.0	73D	SN		3	E		61		
RAMY		1136	1139	1159D	N12	E28	5635	08	12.6	23D	SF		3	E		33		
SVTO		1213	1218	1225	S14	W13	5629	08	9.5	12	SF		3	E		20		
RAMY		1216E	1222	1256D	S17	W09	5629			40D	SF			E		18		K
RAMY		1216E	1236U	1256D	S17	W09	5629	08	9.8	40D	SF		2	E		17		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
SVTO	10	1304	1310	1316	N30	E68	5639	08	15.9	12	SF		3	E		60		
SVTO		1317	1326	1547	N30	E68	5639	08	15.9	150	SF		3	E		87		
RAMY		1413	1623	1723	N27	E66	5639	08	15.7	190	SF		3	E		74		F
RAMY		1430	1438	1514	N17	E90		08	17.4	44	SF		3	E		22		
SVTO		1433	1438	1500	N19	E88		08	17.3	27	SF		3	E		27		H
SVTO		1518	1525	1537	N22	E86		08	17.2	19	SF		3	E		30		H
SVTO		1600	1623	1706	N27	E60	5639	08	15.3	66	SF		3	E		78		
SVTO		1612	1617	1635	S14	E22	5634	08	12.3	23	SF		3	E		48		F
SVTO		1621	1626	1637	N21	E85		08	17.2	16	SF		3	E		14		H
PALE		1650	1658	1705	N30	E62	5639	08	15.6	15	SF		3	E		12		
HOLL		1831	1835	1856	N30	E67	5639	08	16.0	25	SF		2	E		29		
PALE		1832E	1833	1855	N30	E63	5639			23D	SN			E		14		K
PALE		1832E	1847	1855	N30	E63	5639	08	15.7	23D	SF	C 2.4	3	E		37		F
RAMY		1835	1836	1853	N28	E64	5639	08	15.8	18	SF		3	E		31		
HOLL		2010	2019	2022	S18	W18	5629	08	9.5	12	SF	C 3.7	3	E		43		F
HOLL		2045	2045	2058	S14	E18	5634	08	12.2	13	SF	C 3.1	2	E		61		
PALE		2045	2045	2058D	S15	E21	5634	08	12.4	13D	SF	C 3.1	3	E		60		F
PALE		2114	2114	2126D	S15	W15	5629	08	9.7	12D	SF	C 2.9	3	E		20		F
HOLL		2223	2227	2243	S18	W19	5629	08	9.5	20	SF	C 2.8	3	E		32		F
HOLL		2319	2321	2323	S18	W20	5629	08	9.4	4	SF	C 5.2	3	E		22		
HOLL	11	0013	0015	0106	S16	W16	5629	08	9.8	53	SF	C 3.7	3	E		25		
PALE		0033	0037	0053D	N20	E75		08	16.7	20D	SF		3	E		22		
PALE		0143E	0151U	0311D	N20	E76		08	16.9	88D	1F	C 7.0	3	E		143		
LEAR		0144E	0144U	0158	N18	E81		08	17.2	14D	2F		4	E		267		
LEAR		0348	0401	0409	S18	W22	5629	08	9.5	21	SF		4	E		15		F
LEAR		0523	0530	0630	S12	W21	5629	08	9.6	67	SN	C 8.5	3	E		63		F
SVTO		0530E	0530U	0657	S14	W22	5629	08	9.6	87D	SB	C 8.5	3	E		42		FE
SVTO		1100	1102	1115	N19	E75	5641	08	17.2	15	SF		4	E		43		
SVTO		1129	1129	1136	S16	W24	5629	08	9.6	7	SF		4	E		10		
RAMY		1229	1241	1302	S20	W27	5629	08	9.4	33	SF		3	E		36		F
SVTO		1230	1244	1317	S15	W25	5629	08	9.6	47	SF		3	E		71		
RAMY		1250	1259	1302	N15	E85	5641	08	18.0	12	SF		3	E		17		
SVTO		1318	1336	1410D	S16	W25	5629	08	9.6	52D	SN		3	E		54		
SVTO		1321	1326	1336	S16	W55	5623	08	7.4	15	SF		3	E		59		
RAMY		1323	1326	1332	S14	W55	5623	08	7.4	9	SF		3	E		25		F
RAMY		1336	1336	1354	S15	W26	5629	08	9.6	18	SF		3	E		24		F
HOLL		1340E	1342	1416	S18	W28	5629	08	9.4	36D	SF		3	E		49		FE
SVTO		1443	1625U	1706D	S15	W26	5629	08	9.6	143D	SN	M 2.0	2	E		77		FE
HOLL		1528	1530	1536	N16	E84		08	18.0	8	SF		3	E		50		
HOLL		1540	1548	1604	S18	W29	5629	08	9.4	24	SF		3	E		15		F
RAMY		1552	1554	1559	S20	W22	5629	08	10.0	7	SF		3	E		13		FH
HOLL		1612	1613	1628D	S18	W29	5629			16D	1B			E		111		K
HOLL		1612	1625	1736	S18	W29	5629	08	9.5	84	1B		4	E		122		FE
HOLL		1612	1659	1736	S18	W30	5629			84	SF			E		36		K
RAMY		1620	1625	1636D	S15	W27	5629	08	9.6	16D	SB		3	E		85		F
PALE		1653E	1659U	1703D	S18	W29	5629	08	9.5	10D	SF		3	E		19		
PALE		1720	1721	1730	S15	W27	5629	08	9.7	10	SF		3	E		20		
HOLL		1828	1845	1903	S18	W30	5629	08	9.5	35	SF		3	E		20		
PALE		1838	1845	1853	S15	W28	5629	08	9.6	15	SF		3	E		16		F
HOLL		1946	1947	2011	N17	E81		08	18.0	25	SN	M 1.0	3	E		79		E
HOLL		2001	2002	2114	S14	W27	5629			73	SF			E		85		K
HOLL		2001	2021	2114	S14	W27	5629	08	9.8	73	1B	M 1.6	3	E		141		UE
PALE		2002	2036	2056	S18	W32	5629	08	9.4	54	SF		3	E		49		F
HOLL		2053	2054	2058	S14	E04	5634	08	12.2	5	SF		3	E		32		
HOLL		2243	2310	2354	S18	W32	5629	08	9.5	71	1B	M 5.7	4	E		229		FE
HOLL		2301	2301	2320	N28	E45	5639	08	15.5	19	SF		3	E		44		
PALE		2301E	2301U	2341D	S18	W33	5629	08	9.4	40D	1F		3	E		196		F
LEAR		2321E	2325U	2346	S14	W28	5629	08	9.8	25D	SF		2	E		30		F
HOLL	12	0004	0005	0013	N17	E80	5643	08	18.1	9	SF		3	E		23		
LEAR		0118	0119	0125	N20	E78	5643	08	18.0	7	SF	C 4.0	3	E		31		
GOES		0209	0212	0215						6		C 3.2						
PALE		0254	0255	0314	N16	E78	5643	08	18.0	20	SF		3	E		97		
PALE		0258E	0309U	0400	S16	W29	5629	08	9.9	62D	SN		3	E		91		F
LEAR		0301	0306	0337	S16	W34	5629			36	SF			E		94		K
LEAR		0301	0315	0337	S16	W34	5629	08	9.5	36	SF	M 1.9	3	E		84		F
PALE		0316E	0316U	0400D	N16	E77	5643	08	18.0	44D	SF		3	E		33		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	12	0701	0709	0716						15		C 3.3						
LEAR		0738	0738	0744	S18	W37	5629	08	9.5	6	SF	C 7.2	3	E		16		F
SVTO		0756E	0802	0903D	S18	W32	5629	08	9.9	67D	2B		2	E		282		F
LEAR		0757	0802	0831	S14	W36	5629	08	9.6	34	1N	M 2.9	3	E		102		F
GOES		0921	0935	0949						28		C 5.6						
SVTO		1015E	1025	1043D	S14	W36	5629	08	9.7	28D	SF		2	E		45		
GOES		1140	1143	1146						6		C 5.5						
GOES		1243	1247	1256						13		C 5.0						
RAMY		1311	1312	1318	N15	E69	5643			7	SF			E		39		K
RAMY		1311	1316	1318	N15	E69	5643	08	17.8	7	SF		3	E		21		
SVTO		1311	1317	1322	N15	E70	5643	08	17.8	11	SF		2	E		22		
SVTO		1357	1423	1713	S17	W36	5629	08	9.8	196	2B	X 2.6	3	E		490		FE
HOLL		1357	1424	1611	S16	W37	5629	08	9.8	134	2B	X 2.6	3	E		417		UF
HOLL		1357	1458	1611	S16	W37	5629			134	SF			E		314		K
SVTO		1416	1424	1436	S26	W28	5633	08	10.4	20	SF		3	E		65		
HOLL		1417	1424	1431	S23	W28	5633	08	10.4	14	SF		3	E		48		
RAMY		1418	1424	1432	S25	W29	5633	08	10.3	14	SF		3	E		27		
SVTO		1617	1623	1645	N19	E69	5643	08	17.9	28	SF		3	E		30		
HOLL		1634	1638	1704	S15	W40	5629	08	9.7	30	SF		3	E		58		F
PALE		1647E	1648U	1653	S15	W45	5629	08	9.3	6D	SF		3	E		16		F
GOES	13	0057E	0059	0119D						22D		C 8.3						
GOES		0624	0627	0631						7		C 2.9						
LEAR		0717	0719	0734	S22	W55	5629	08	9.1	17	1F	M 1.0	3	E		130		F
SVTO		0718	0718	0728	S23	W54	5629	08	9.1	10	SF		2	E		16		
SVTO		0720	0720	0732D	S24	W56	5633	08	9.0	12D	1F		2	E		112		F
LEAR		0846	0846	0851	S14	W15	5634	08	12.2	5	SF		3	E		18		
SVTO		0957E	1002	1008	N29	E86	5645	08	20.1	11D	SF		2	E		56		
GOES		1151	1155	1158						7		C 3.1						
SVTO		1325	1325	1330	S23	W53	5629	08	9.5	5	SF		3	E		29		
RAMY		1325	1326	1330	S19	W54	5629	08	9.4	5	SF		3	E		17		
RAMY		1355	1357	1408	S20	W61	5629	08	8.9	13	SN	C 6.6	3	E		97		
SVTO		1356	1358	1405	S20	W59	5629	08	9.1	9	SF	C 6.6	3	E		51		F
RAMY		1357	1403	1416	S29	W63	5633	08	8.6	19	SF		3	E		38		
SVTO		1359	1404	1411	S30	W60	5633	08	8.9	12	SF		3	E		18		
SVTO		1422	1425	1433	S26	E74		08	19.3	11	SF		3	E		27		H
HOLL		1502	1503	1508	S18	W56	5629	08	9.4	6	SF		3	E		30		F
HOLL		1619	1626	1631	N15	E57	5643	08	18.0	12	SF	C 4.3	3	E		14		F
HOLL		1731	1733	1736	S18	W56	5629	08	9.5	5	SF		3	E		28		
PALE		1749	1750	1810	N16	E59	5643	08	18.2	21	SF		3	E		12		F
HOLL		1806	1807	1821	N15	E55	5643	08	17.9	15	SF		3	E		45		F
PALE		1815	1818	1826	N16	E59	5643	08	18.2	11	SF		3	E		12		
HOLL		1827	1828	1835	S14	W19	5634	08	12.3	8	SF		3	E		27		F
HOLL		1847	1856	1912	N19	E41	5641	08	16.9	25	SF		3	E		50		F
PALE		1904	1911U	1927	N18	E55	5643	08	18.0	23	SF		3	E		52		F
HOLL		1906	1910	1916	N16	E54	5643	08	17.9	10	SN		3	E		61		FE
HOLL		1918	1918	1922	N16	E56	5643	08	18.0	4	SF		3	E		11		F
HOLL		1946	1951	1959	S18	W53	5629	08	9.8	13	SF	C 2.8	3	E		31		F
HOLL		2022	2025	2028	S15	W51	5629	08	10.0	6	SF	C 3.9	3	E		11		F
PALE		2025E	2035U	2047D	N16	E52	5643	08	17.8	22D	SF		3	E		31		F
GOES		2033	2037	2040						7		C 3.8						
GOES		2242E	2245	2300D						18D		C 3.9						
GOES	14	0022	0025	0028						6		C 4.9						
HOLL		0031	0034	0138D	S16	W60	5629			67D	3B			E		488		K
HOLL		0031	0056	0138D	S16	W60	5629	08	9.5	67D	3B	X 3.5	3	E		815		UF
LEAR		0046E	0048	0049D	S15	W60	5629	08	9.5	3D	1N		3	E		136		
LEAR		0046E	0054	0252	S15	W60	5629			126D	2N			E		322		K
LEAR		0046E	0110U	0252	S15	W60	5629	08	9.5	126D	2N		3	E		203		FE
HOLL		0114	0115	0138D	N28	W16	5636	08	12.8	24D	SF		3	E		19		F
HOLL		0114	0115	0147D	N28	W16	5636	08	12.8	33D	SF		3	E		19		F
HOLL		0114	0118	0138D	N19	E52	5643	08	18.0	24D	SF		3	E		11		F
HOLL		0114	0118	0147D	N19	E52	5643	08	18.0	33D	SF		3	E		11		F
LEAR		0400	0402	0408	S16	W63	5629	08	9.4	8	SF		3	E		44		F
LEAR		0417	0419	0425	N26	E77	5645	08	20.2	8	SF		3	E		14		
SVTO		0525	0533	0541	S19	W18	5634	08	12.8	16	SF		3	E		12		F
SVTO		0624	0625	0632	N17	E21	5640	08	15.9	8	SF		3	E		12		
LEAR		0626	0628	0633	N15	E49	5643	08	18.0	7	SF		4	E		18		F

Hα SOLAR FLARES

AUGUST 1989

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	14	0631	0633	0640	S13	W27	5634	08	12.2	9	SF		4	E		31		F
LEAR		0704	0707	0711	S16	W65	5629	08	9.4	7	SF	C 7.0	4	E		54		
SVTO		0704	0707	0713	S20	W64	5629	08	9.4	9	SF		3	E		70		
SVTO		0739	0739	0748	S20	W64	5629	08	9.4	9	SF		3	E		43		
LEAR		0739	0740	0742	S17	W66	5629	08	9.3	3	SF	C 6.4	4	E		14		F
SVTO		0752	0904	0940	N16	E49	5643	08	18.0	108	SF	C 4.6	3	E		97		F
LEAR		0903	0903	0912	N15	E48	5643	08	18.0	9	SF	C 4.6	4	E		17		F
SVTO		0906	0911	0916	S22	W57	5629	08	10.0	10	SF		3	E		24		
LEAR		0907	0908	0911	S19	W58	5629	08	9.9	4	SF		4	E		14		F
SVTO		0941	1015	1046	N15	E47	5643	08	18.0	65	1N	M 1.1	3	E		128		F
SVTO		1052	1058	1104	N29	E71	5645	08	20.0	12	SF	C 5.5	3	E		41		
RAMY		1055	1058U	1111D	N28	E71	5645	08	20.0	16D	SF	C 5.5	3	E		25		
RAMY		1056	1153	1308	N15	E46	5643	08	17.9	132	SF		3	E		51		
SVTO		1143	1143	1150	N28	W22	5636	08	12.8	7	SF		3	E		11		F
SVTO		1159	1204	1234	N28	E72	5645	08	20.1	35	1F	M 1.1	3	E		132		F
SVTO		1222	1228	1247	S19	W67	5629	08	9.4	25	SF		3	E		43		F
RAMY		1227	1228	1235	S20	W67	5629	08	9.4	8	SF		3	E		21		
HOLL		1505E	1527	1544	S18	W72	5629	08	9.1	39D	SF		3	E		36		
RAMY		1519	1530	1541	S21	W85	5629	08	8.1	22	SF		3	E		41		
SVTO		1527	1527	1532	S19	W74	5629	08	9.0	5	SF		3	E		19		H
SVTO		1603	1604	1618	N16	E44	5643	08	18.0	15	SF		3	E		13		
RAMY		1603	1610	1648	N18	E43	5643	08	17.9	45	SF		3	E		25		
RAMY		1610	1615	1636	S19	W62	5629	08	9.9	26	SF		3	E		44		F
SVTO		1613	1618	1640	S22	W61	5629	08	10.0	27	SF		3	E		26		
HOLL		1708	1709	1731	N19	E41	5643	08	17.8	23	SF		3	E		32		
RAMY		1756	1809	1826	N18	E42	5643	08	17.9	30	SN	C 4.0	3	E		49		
HOLL		1804	1809	1824	N19	E40	5643	08	17.8	20	SB	C 4.0	3	E		50		
PALE		1808	1809	1834	N19	E40	5643	08	17.8	26	SF	C 4.0	3	E		21		
HOLL		1833	1834	1843	S19	W70	5629	08	9.4	10	SF		3	E		12		
HOLL		1848	1858	1905	S18	W74	5629	08	9.1	17	SF	C 5.0	3	E		26		
HOLL		1914	1917	1936	S17	W63	5629	08	10.0	22	1N	M 2.2	3	E		111		E
HOLL		1939	1942	1943	S18	W69	5629	08	9.6	4	SF		3	E		10		
HOLL		1946	2023	2103	N16	E43	5643	08	18.1	77	SN	C 4.0	3	E		67		F
HOLL		1946	2056	2103	N16	E43	5643			77	SN			E		42		K
HOLL		1953	2002	2007	S18	W75	5629	08	9.1	14	SF		3	E		36		
HOLL		2048	2048	2101	N19	E28	5641	08	17.0	13	SF		3	E		23		F
PALE		2139	2146	2226	N17	E41	5643	08	18.0	47	1F		3	E		105		F
PALE		2153	2156	2205	S18	W73	5629	08	9.3	12	SF		3	E		23		
PALE		2156	2158	2215	S19	W30	5634	08	12.6	19	1N	C 5.1	3	E		116		
PALE		2229	2229	2304	N19	E38	5643	08	17.8	35	SF		3	E		17		F
LEAR		2322E	2416	2500	S16	W75	5629	08	9.3	98D	SF		3	E		68		F
PALE		2329	2341	2359	S16	W37	5634	08	12.2	30	SF		3	E		57		F
PALE		2358	2413	2438	S21	W90	5629	08	8.1	40	1F	M 3.4	3	E		151		
PALE	15	0027	0028	0038	S16	W37	5634	08	12.2	11	SF		3	E		42		
PALE		0102	0102	0130	S18	W74	5629	08	9.4	28	SF	M 2.3	3	E		64		F
GOES		0120	0128	0145						25		M 2.8						
LEAR		0142	0217	0420	S16	W74	5629			158	SF			E		22		K
LEAR		0142	0247	0420	S16	W74	5629			158	SF			E		81		K
LEAR		0142	0258	0420	S16	W74	5629	08	9.4	158	SF	X 1.0	3	E		87		YF
PALE		0159E	0254	0258D	S18	W73	5629	08	9.5	59D	SF	X 1.0	3	E		68		F
LEAR		0217	0238	0422	N19	E36	5643			125	SF			E		47		K
LEAR		0217	0329	0422	N19	E36	5643	08	17.8	125	SF		3	E		86		F
SVTO		0428E	0431U	0513D	S20	W82	5629	08	8.9	45D	SF		2	E		83		YF
SVTO		0729	0730	0759	S19	W76	5629	08	9.5	30	SF		3	E		21		YF
SVTO		0837	0854	0932	S19	W79	5629	08	9.3	55	SF	C 9.0	4	E		41		Y
RAMY		1137E	1139U	1143	S21	W72	5633	08	10.0	6D	SF		2	E		27		
RAMY		1137E	1139U	1203	S18	W82	5629	08	9.2	26D	SF		2	E		50		
SVTO		1137	1140	1143	S20	W72	5629	08	10.0	6	SF		3	E		24		F
RAMY		1210	1225	1325	S16	W78	5629	08	9.6	75	SF	C 5.8	3	E		25		
RAMY		1210	1322	1325	S16	W78	5629			75	SF			E		19		K
SVTO		1222	1223	1227	S19	W77	5629	08	9.6	5	SF	C 5.8	3	E		16		
SVTO		1329	1335	1520	S17	W79	5629			111	1N			E		122		K
SVTO		1329	1357	1520	S17	W79	5629	08	9.5	111	1N	M 3.9	3	E		137		FH
RAMY		1343E	1352U	1515	S19	W79	5629	08	9.5	92D	1N	M 3.9	2	E		156		F
SVTO		1433	1434	1439	N16	E07		08	16.1	6	SF		3	E		16		FH
GOES		1507	1509	1515						8		M 1.3						
HOLL		1518E	1519U	1529	S19	W80	5629	08	9.5	11D	SF		3	E		21		

Hα S O L A R F L A R E S

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	15	1537	1545	1552	S18	W80	5629	08	9.5	15	SF		3	E		12		
RAMY		1539	1545	1551	S18	W83	5629	08	9.3	12	SF		3	E		15		
SVTO		1544	1545	1551	S20	W87	5629	08	9.0	7	SF		3	E		27		H
SVTO		1608	1609	1656	N17	E28	5643	08	17.8	48	SF		3	E		27		F
HOLL		1609	1610	1655	N16	E29	5643	08	17.9	46	SF		3	E		25		
HOLL		1701	1702	1706	S16	W83	5629	08	9.4	5	SF	C 8.6	3	E		57		
SVTO		1701	1703U	1710	S19	W87	5629	08	9.1	9	SF	C 8.6	2	E		35		H
HOLL		1717	1718	1725	N13	W39	5635	08	12.8	8	SF		3	E		26		
HOLL		1747	1755	1759	S16	W84	5629	08	9.4	12	SN	M 1.0	3	E		46		
GOES		1838	1840	1844						6		C 8.4						
HOLL		1850	1900	1904	S18	W81	5629	08	9.6	14	SF		3	E		85		
PALE		1850	1900	1951	S16	W81	5629	08	9.6	61	SF		3	E		33		
HOLL		1912	1912	1920	N19	E27	5643	08	17.9	8	SF		3	E		15		
HOLL		1941	1951	1956	S16	W86	5629	08	9.3	15	SF	M 1.2	3	E		50		
HOLL		2046	2052	2055	S16	W87	5629	08	9.3	9	SF	M 5.2	3	E		25		
PALE		2048	2051	2112	S16	W82	5629	08	9.6	24	SF	M 5.2	3	E		27		
HOLL		2209	2210	2216	S16	W88	5629	08	9.2	7	SF	M 4.1	3	E		34		
LEAR		2341	2341	2344	N15	E24	5643	08	17.8	3	SF	M 1.1	3	E		21		
LEAR	16	0100	0119	0210	S16	W88	5629	08	9.4	70	2N	X20.0	3	E		303		YF
PALE		0108	0117	0228	S18	W84	5629	08	9.6	80	2N	X20.0	3	E		286		F
PALE		0108	0126	0228	S18	W84	5629			80	2N			E		207		K
PALE		0156	0159	0304	N29	E54	5645	08	20.3	68	SF		3	E		76		F
LEAR		0158	0219	0245	N24	E51	5645	08	20.0	47	SF		3	E		48		F
PALE		0216	0219	0230	N15	E23	5643	08	17.8	14	SF		3	E		68		F
LEAR		0218	0219	0234	N15	E23	5643	08	17.8	16	SF		3	E		65		
LEAR		0308	0308	0320	N15	E23	5643	08	17.9	12	SF		3	E		22		F
LEAR		0454	0456	0501	N15	E22	5643	08	17.9	7	SF		3	E		30		F
HOLL		1549	1549	1603	N28	E43	5645	08	20.0	14	SF		3	E		17		
GOES		1617	1623	1634						17		C 8.1						
HOLL		1901	1924	1945	N20	E31	5644	08	19.2	44	SF	C 7.3	3	E		27		F
HOLL		2037	2041	2050	N29	E39	5645	08	19.9	13	SF		3	E		10		F
HOLL		2102	2107	2123	N28	E38	5645	08	19.8	21	SF		3	E		10		
HOLL		2114	2117	2159	N27	W19	5639			45	SF			E		63		K
HOLL		2114	2132	2159	N27	W19	5639	08	15.4	45	SF	C 6.0	3	E		61		FR
HOLL		2136	2148	2202	N28	E40	5645	08	20.0	26	SF		3	E		12		
PALE		2228	2228	2235	N31	E36	5645	08	19.8	7	SF		3	E		13		
GOES		2242	2254	2308						26		C 8.0						
HOLL		2311	2313	2349	N29	E37	5645			38	SF			E		38		K
HOLL		2311	2325	2349	N29	E37	5645	08	19.9	38	SF	C 9.2	3	E		33		F
PALE		2312	2316	2320	N30	E38	5645	08	19.9	8	SF		3	E		14		F
PALE		2325	2325	2343	N32	E39	5645	08	20.1	18	SF		3	E		28		F
HOLL	17	0005	0006	0024	N28	E37	5645	08	19.9	19	SF		3	E		32		FE
PALE		0022	0022	0032	N15	E13	5643	08	18.0	10	SF		3	E		18		F
HOLL		0022	0022	0039	N15	E12	5643	08	17.9	17	SF		3	E		16		F
PALE		0107	0113	0120	N32	E39	5645	08	20.1	13	SF		3	E		22		F
PALE		0112	0115	0132	N18	E13	5643	08	18.0	20	SF		3	E		16		F
PALE		0132	0135	0139	S19	W88	5629	08	10.3	7	SF	X 2.9	3	E		15		
LEAR		0132	0142	0207	N28	E39	5645	08	20.1	35	SN		3	E		24		
PALE		0138	0140	0200	N31	E37	5645	08	20.0	22	SF		3	E		24		
PALE		0239	0240	0248	N31	E38	5645	08	20.1	9	SF		3	E		15		F
RAMY		1310E	1313U	1350D	N15	E06	5643	08	18.0	40D	SF		2	E		35		F
HOLL		1625	1629	1642	N29	E55	5647	08	22.0	17	SF		3	E		19		
GOES		1843	1924	2130						167		M 2.9						
PALE		1911	1918	1925	N31	E27	5645	08	19.9	14	SF		3	E		35		F
HOLL		1948	2000	2042	N17	E06	5643			54	SF			E		28		K
HOLL		1948	2016	2042	N17	E06	5643	08	18.3	54	SF		3	E		28		F
HOLL		1959	2000	2023	N18	E14	5644	08	18.9	24	SF		3	E		34		F
PALE		2000	2000	2033	N17	W01	5643	08	17.7	33	SF		3	E		29		
PALE		2034	2036U	2105D	N19	W11	5641	08	17.0	31D	SF		3	E		49		F
HOLL		2038	2039	2147D	N19	W10	5641	08	17.1	69D	1F		3	E		103		F
HOLL	18	0029	0037	0046	N27	E55	5649	08	22.3	17	SF		3	E		11		
RAMY		1533	1537	1542	N19	E01	5643	08	18.7	9	SF		3	E		17		
RAMY		1710E	1710U	1739D	N12	W10	5643	08	18.0	29D	SF		2	E		13		F
HOLL		1859	1901	1907	N18	W10	5643	08	18.0	8	SF		3	E		25		
PALE		1944E	1951U	1959	S26	E09	5646	08	19.5	15D	SF		3	E		13		H

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	18	2220	2221	2235	N28	E14	5645	08	20.0	15	SF		3	E		20		
HOLL		2224	2224	2231	S21	E69		08	24.2	7	SF		3	E		14		
PALE	19	0202	0202	0209D	N16	W18	5643	08	17.7	7D	SF		3	E		12		
PALE		0204	0207	0209D	N26	E15	5645	08	20.2	5D	SF		3	E		12		
LEAR		0209	0210	0221	S27	E03	5646	08	19.3	12	SF		3	E		13		F
LEAR		0245	0251	0336	N16	W17	5643	08	17.8	51	SF	C 8.6	3	E		64		F
PALE		0256E	0256U	0339	N16	W17	5643	08	17.8	43D	SF		3	E		69		F
SVTO		0627	0627	0632	N17	W21	5643	08	17.7	5	SF		3	E		13		F
LEAR		0627	0627	0635	N18	W19	5643	08	17.8	8	SF		4	E		13		F
LEAR		0700	0701	0725	N18	W19	5643	08	17.8	25	SF		4	E		16		F
SVTO		0801	0802	0813	N29	E08	5645	08	20.0	12	SF		3	E		18		
HOLL		1347	1347	1351	N25	E03	5645	08	19.8	4	SF		3	E		12		F
HOLL		1436	1436	1440	S20	E73		08	25.2	4	SF		3	E		18		
GOES		1638	1641	1643						5		C 1.8						
HOLL		1818	1822	1827	N28	E24	5647	08	21.6	9	SF		3	E		15		F
HOLL		1911	1946	2127D	N27	E02	5645	08	19.9	136D	1N		3	E		177		FE
HOLL		1911	1956	2127D	N27	E02	5645			136D	1B			E		152		K
PALE		1914E	1926U	1940D	N28	E01	5645	08	19.9	26D	SF		3	E		73		F
GOES		1915	2007	2130						135		C 8.2						
HOLL		2132	2137	2201	N18	W28	5643	08	17.8	29	SF		3	E		49		E
PALE	20	0047	0049	0101	N25	E02	5645	08	20.2	14	SF		3	E		52		F
LEAR		0048	0050	0056	N25	W03	5645	08	19.8	8	SF		4	E		23		
GOES		0133	0153	0228						55		C 5.5						
PALE		0218	0219	0232	S26	W08	5646	08	19.5	14	SF		3	E		15		
LEAR		0523	0525	0543	N17	W31	5643	08	17.9	20	SF		4	E		22		
SVTO		0816	0824	0900	S19	E61		08	25.0	44	SF	C 4.8	3	E		58		
LEAR		0831	0831	0837	S19	E59		08	24.8	6	SF		4	E@		38		
SVTO		1103	1108	1124	N15	W37	5643	08	17.6	21	SF		3	E		17		
SVTO		1105	1107	1127	N20	W18	5644	08	19.1	22	SF		3	E		19		H
SVTO		1147	1147	1152	N15	W24	5643	08	18.7	5	SF		3	E		15		F
SVTO		1155	1200	1204	N24	W07	5645	08	19.9	9	SF		3	E		15		F
RAMY		1253E	1256U	1319	N17	W35	5643	08	17.9	26D	SF		2	E		29		F
SVTO		1254	1258	1314	N17	W35	5643	08	17.9	20	SF		3	E		32		F
SVTO		1536	1537	1545	S19	E56		08	24.9	9	SF	C 1.7	3	E		15		F
RAMY		1536	1537	1545	S21	E56		08	24.9	9	SF	C 1.7	4	E		20		
RAMY		1643	1644	1648	N28	W86	5637	08	14.0	5	SF		3	E		21		
RAMY		1753	1800	1850	N20	W23	5644	08	19.0	57	SF		3	E		29		
PALE		1754	1759	1841	N21	W24	5644	08	18.9	47	SF		3	E		25		
HOLL		1958	1958	2010D	N21	W22	5644	08	19.1	12D	SF		3	E		23		
HOLL		2247	2305U	2333	N20	W24	5644	08	19.1	46	SF		3	E		42		F
PALE	21	0025	0049	0101	N14	W66	5640	08	16.0	36	SF		3	E		17		
SVTO		0902	0905	0913	N24	E07		08	21.9	11	SF		3	E		16		
GOES		1146	1153	1208						22		C 2.1						
SVTO		1230	1234	1247	N28	W20	5645	08	19.9	17	SF		3	E		21		F
HOLL		1859	1859	1919	N18	W65	5640	08	16.8	20	SF		3	E		12		
GOES		2323E	2332	2341						18D		C 3.3						
LEAR	22	0205	0208	0302	S20	E25	5652	08	24.0	57	SF	C 3.4	3	E		32		F
GOES		0624	0628	0632						8		C 1.8						
HOLL		1512E	1520	1528	N14	W84	5640	08	16.3	16D	SF		3	E		22		
HOLL		1704	1704	1712	N17	W50	5644	08	18.9	8	SF		3	E		12		
HOLL		2032	2039	2105	S19	E14	5652	08	23.9	33	SF		3	E		46		F
HOLL		2312	2312	2322	S20	E32	5653	08	25.4	10	SF		3	E		21		F
HOLL		2323	2324	2328	N27	W75		08	17.1	5	SF		3	E		23		F
HOLL	23	0020	0026	0040	S19	E12	5657	08	23.9	20	SF		3	E		37		F
HOLL		0023E	0024	0030	S25	E42		08	26.3	7D	SF		3	E		17		F
GOES		0221	0227	0232						11		C 2.4						
PALE		0245E	0303U	0316	S18	E13	5657	08	24.1	31D	SF		3	E		22		
LEAR		0604	0609	0617	S21	E27	5653	08	25.3	13	SF		3	E		24		
GOES		0846	0928	1037						111		M 1.1						
SVTO		1106E	1107U	1112D	N27	W46	5645	08	19.9	6D	SF		2	E		20		F
RAMY		1106	1107	1122	N28	W45	5645	08	19.9	16	SF		2	E		39		
RAMY		1124	1127	1151	N30	W19	5649	08	22.0	27	SN		2	E		98		F
SVTO		1126E	1128U	1144D	N27	W18	5649	08	22.1	18D	SF		1	E		51		U

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	23	1451	1456U	1525	N28	W78	5658	08	17.5	34	SF	C 6.5	3	E		28		F
GOES		1653	1656	1658						5		C 2.9						
HOLL		1853	1855	1902	S23	W56	5646	08	19.5	9	SF		3	E		29		
HOLL		1903	1914U	1927D	N14	W78	5643	08	17.9	24D	SF		3	E		93		F
HOLL		1958	2001	2025	N14	W73	5643	08	18.3	27	1N	C 4.6	3	E		131		
PALE		1959	2002	2010	N14	W82	5643	08	17.6	11	SF		3	E		91		F
HOLL	24	0002	0002	0016	N14	E71		08	29.4	14	SF		3	E		13		
PALE		0327	0330	0336	N14	W90	5643	08	17.3	9	SF		3	E		34		
GOES		0730	0736	0740						10		C 3.2						
RAMY		1313	1313	1319	N17	W89	5643	08	17.8	6	SF		3	E		10		
SVTO		1321	1328	1412	N25	E56	5655	08	28.9	51	SF		3	E		30		F
RAMY		1322	1334	1353	N24	E53	5655	08	28.6	31	SF		3	E		15		FH
RAMY		1328	1330	1334	N16	W90	5643	08	17.7	6	SF		3	E		39		
GOES		1604	1618	1650						46		C 7.7						
PALE		1856	1857	1907	N15	W90	5643	08	18.0	11	SF		3	E		43		
HOLL		2036E	2036U	2052D	S13	E00	5659	08	24.8	16D	SF		2	E		21		
PALE		2036	2039	2052	S22	E07	5653	08	25.4	16	SF		3	E		27		
RAMY	25	1324	1327	1339	S23	W05	5653	08	25.2	15	SF		3	E		26		
SVTO		1324	1328	1337	S23	W04	5653	08	25.2	13	SF		3	E		26		
HOLL		1326E	1328U	1341	S23	W04	5653	08	25.2	15D	SF		3	E		30		F
HOLL		1434	1434	1440	S15	E59	5662	08	30.1	6	SF		3	E		14		
HOLL		1758	1800	1825	N31	W44	5649	08	22.3	27	SF		3	E		63		F
PALE		1759	1759	1816	N28	W47	5649	08	22.1	17	SF		3	E		25		
RAMY		1759	1800	1816	N31	W44	5649	08	22.3	17	SF		3	E		25		
GOES	26	1142	1153	1212						30		M 1.1						
PALE		2331	2409	2711	N30	W64	5647	08	21.9	220	SF		3	E		61		FT
SVTO	27	0624E	0625U	0630	S22	E62		09	1.0	6D	SF	C 1.7	2	E		45		F
GOES		0820	0901	1000						100		C 4.8						
GOES		1615	1623	1630						15		C 3.6						
GOES		2330	2339	2349						19		C 4.1						
GOES	28	0221	0226	0228						7		C 3.8						
LEAR		0250	0251	0254	S24	W35	5653	08	25.4	4	SF		3	E		13		F
LEAR		0349	0353	0359	S23	W36	5653	08	25.4	10	SF	C 4.3	3	E		37		
GOES		0429	0435	0440						11		C 6.3						
SVTO		0558	0602	0608	S25	W36	5653	08	25.4	10	SF	C 4.7	3	E		35		F
LEAR		0559	0600	0606	S24	W37	5653	08	25.4	7	SF	C 4.7	3	E		20		
GOES		0731	0736	0746						15		C 6.5						
RAMY		1128	1130	1157	N29	W73	5647	08	22.7	29	SF	C 5.0	3	E		69		
GOES		1925	1930	1935						10		C 2.4						
HOLL		2217	2219	2228	S23	W45	5653	08	25.5	11	SF		3	E		23		
GOES		2240	2245	2300						20		M 1.2						
HOLL		2348	2350	2403	S23	W46	5653	08	25.4	15	SF		3	E		18		
GOES	29	0129	0202	0216						47		M 1.2						
LEAR		0243	0244	0248	N15	W59	5660	08	24.6	5	SF		3	E		19		F
GOES		0415	0431	0442						27		C 7.9						
GOES		0824	0828	0853						29		M 1.8						
GOES		1226	1230	1235						9		C 6.9						
RAMY		1242	1259	1336	S15	E73	5669			54	1N			E		172		K
RAMY		1242	1304	1336	S15	E73	5669	09	4.0	54	1N	M 4.7	3	E		169		F
RAMY		1453	1455	1609	S16	E83	5669	09	4.9	76	SF	M 6.8	3	E		45		F
PALE		1659E	1700U	1710	S16	E84	5669	09	5.1	11D	SF	M 2.6	3	E		18		F
PALE		1717	1719	1728	S15	E89	5669	09	5.4	11	1B	M 2.1	3	E		123		
PALE		1739	1739	1742	S15	E83	5669	09	5.0	3	SF		3	E		24		
PALE		1754	1808	1821	S10	E79	5669	09	4.7	27	2B	M 1.9	3	E		381		F
PALE		1827	1829	1851	N23	W17	5655	08	28.4	24	SF		3	E		21		F
GOES		1844	1849	1856						12		C 8.0						
PALE		1916E	1953U	2004D	S13	E77	5669	09	4.6	48D	SF	C 7.2	3	E		19		
HOLL		2003E	2010U	2027D	S15	E74	5669	09	4.4	24D	SF		2	E		53		F
HOLL		2051E	2057	2100	S15	E76	5669	09	4.6	9D	SF	C 7.2	3	E		34		F
GOES		2351	2357	2415						24		M 1.3						
PALE		2353	2357	2407	S14	E88	5669	09	5.6	14	SF		3	E		78		F
LEAR		2356	2358	2402	S14	E67	5669	09	4.1	6	SF		3	E		19		

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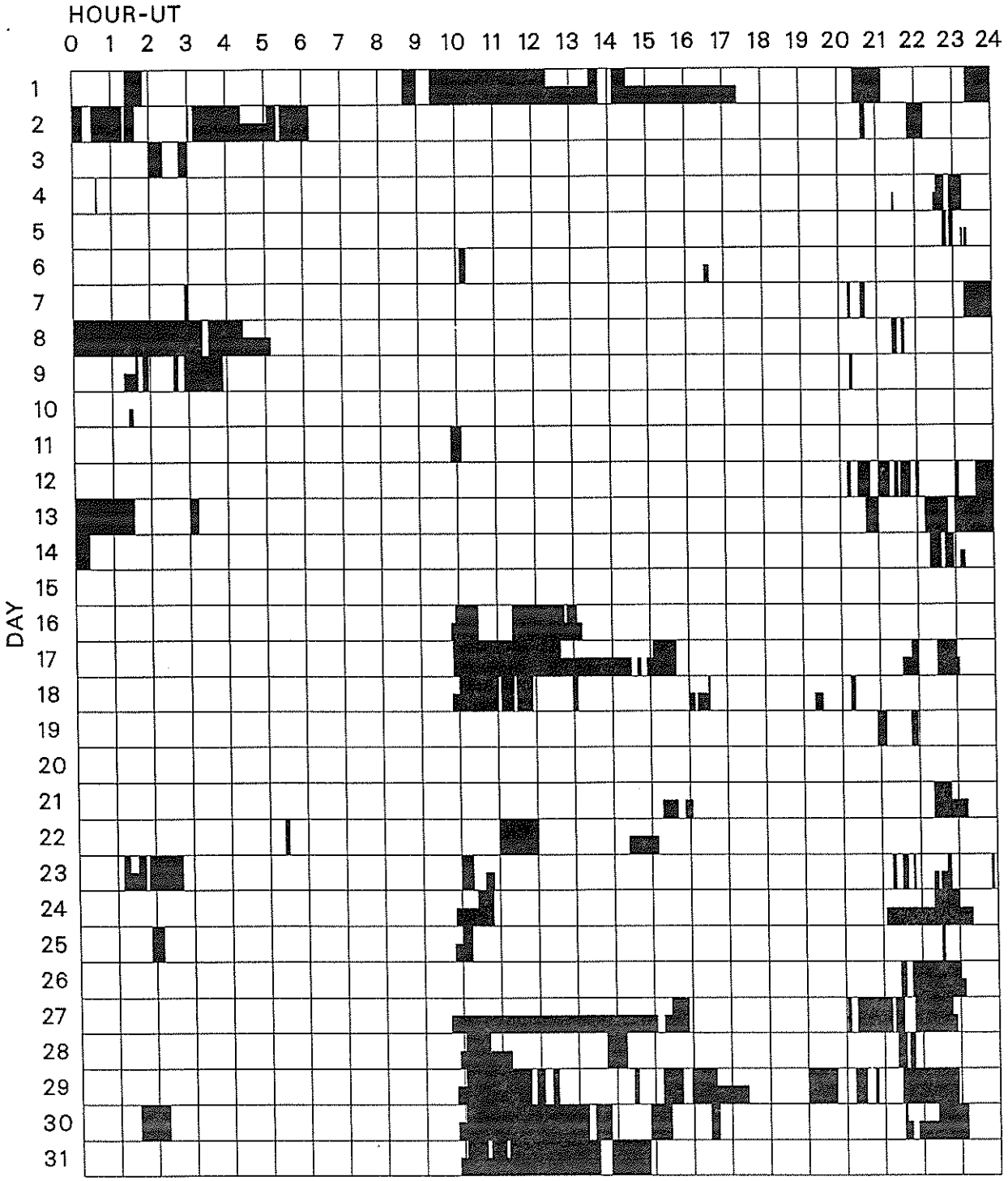
Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
PALE	30	0013	0018	0026D	S13	E75	5669	09	4.7	13D	1F		3	E		169		
LEAR		0016	0017	0022	S15	E70	5669	09	4.3	6	SF		3	E		23		
LEAR		0239	0244	0329	S19	E68	5669	09	4.3	50	1F	M 4.0	3	E		184		
LEAR		0239	0314	0329	S19	E68	5669			50	1F			E		130		K
GOES		0344E	0356	0409D						25D		M 3.1						
LEAR		0432	0437	0446	S20	E68	5669	09	4.4	14	SF	C 7.3	3	E		56		
GOES		0515	0525	0535						20		C 6.0						
GOES		0614	0618	0622						8		C 3.6						
GOES		0721	0727	0733						12		C 3.5						
GOES		1001	1011	1016						15		C 4.6						
GOES		1145	1200	1215						30		C 4.2						
GOES		1223	1227	1230						7		C 4.5						
RAMY		1411	1411	1415	S11	E67	5669	09	4.6	4	SF		3	E		20		
GOES		1440	1445	1450						10		C 5.3						
GOES		1530	1540	1550						20		C 2.8						
PALE		1648	1653	1713	S15	E77	5669	09	5.5	25	SF	M 7.1	3	E		75		F
HOLL		1657E	1657U	1706	S18	E74	5669	09	5.3	9D	SF	M 7.1	2	E		35		F
RAMY		1658E	1659	1717	S16	E77	5669	09	5.5	19D	SF	M 7.1	3	E		35		FE
PALE		1717	1721	1735	S25	E35	5670	09	2.4	18	SF		3	E		38		
HOLL		1720	1721	1736	S26	E32	5670	09	2.2	16	SF		2	E		18		
RAMY		1720	1725	1802	S28	E39	5670	09	2.8	42	SF		3	E		26		F
RAMY		1720	1750	1802	S28	E39	5670			42	SF			E		26		K
HOLL		1749	1749U	1757	S27	E33	5670	09	2.3	8	SF		2	E		12		F
PALE		1749	1750	1759	S25	E25	5670	09	1.7	10	SF		3	E		18		
PALE		1814	1815	1821	S15	E88	5669	09	6.4	7	SF	C 4.4	3	E		15		
HOLL		2005	2044	2122	S27	E29	5670	09	2.1	77	SF		3	E		47		
PALE		2039E	2043U	2048D	S26	E31	5670	09	2.3	9D	SF		3	E		23		F
HOLL		2040	2045	2108	S14	E58	5669	09	4.2	28	SF	C 4.1	3	E		65		
PALE		2042E	2043U	2048D	S12	E65	5669	09	4.7	6D	SF		3	E		23		F
PALE	31	0052	0059	0128D	S15	E58	5669	09	4.4	36D	1F	M 1.0	3	E		117		FE
LEAR		0058	0059	0114	S20	E56	5669	09	4.3	16	SF	M 1.0	3	E		29		
LEAR		0321	0322	0327	S19	E52	5669	09	4.1	6	SF		3	E		35		
PALE		0321	0323	0327	S17	E55	5669	09	4.3	6	SF		3	E		26		
LEAR		0538	0539	0544	S17	E62	5669	09	4.9	6	SF	C 3.0	3	E		44		
LEAR		0626	0627	0630	S17	E61	5669	09	4.9	4	SF	C 2.8	3	E		14		
LEAR		0650	0653	0657	S14	E52	5669	09	4.2	7	SF	C 4.1	3	E		29		
GOES		0816	0820	0828						12		C 2.6						
GOES		0845	0851	0855						10		C 3.6						
LEAR		0921	0921	0930	S20	E52	5669	09	4.4	9	SF		3	E		11		
LEAR		0932	0934	0938	S17	E58	5669	09	4.8	6	SF	C 3.7	3	E		11		
GOES		1006	1012	1017						11		C 3.1						
GOES		1040	1047	1104						24		C 3.5						
RAMY		1605	1608	1616	S20	E50	5669	09	4.5	11	1N	M 1.9	3	E		132		H
RAMY		1612	1621	1700	S17	E63	5671	09	5.5	48	SF		3	E		36		
HOLL		1619E	1625U	1642D	S18	E67	5671	09	5.8	23D	SF		3	E		27		FE
RAMY		1620	1620	1625	S20	E50	5669	09	4.5	5	SF		3	E		11		
RAMY		1635	1635	1643	S28	E18	5670	09	2.1	8	SF		3	E		12		
GOES		1641	1845	2401						440		M 1.9						T
RAMY		1648	1650	1657	S16	E53	5669	09	4.7	9	SF		3	E		21		
HOLL		1652	1656U	1708	S19	E64	5671	09	5.6	16	SF		3	E		33		F
HOLL		1701	1703	1711	N32	E47	5668	09	4.4	10	SF		3	E		19		F
RAMY		1704	1704	1710	N32	E47	5668	09	4.4	6	SF		3	E		12		
RAMY		1801	1809	1835	S27	E19	5670	09	2.2	34	SF		3	E		15		
PALE		1801	1813	1832	S27	E20	5670	09	2.3	31	SF		3	E		14		
RAMY		1811	1818	1853	S11	E52	5669			42	SN			E		27		K
RAMY		1811	1832	1853	S11	E52	5669	09	4.7	42	SF		3	E		20		
PALE		1814	1833	1857	S16	E50	5669	09	4.5	43	SF		3	E		42		F
RAMY		1840	1841	1854	S24	E21	5670	09	2.4	14	SF		3	E		26		F
PALE		1905	1905	1931	S19	E62	5671	09	5.5	26	SF		3	E		49		
RAMY		1940	1943	2035	S17	E70	5671			55	SB			E		54		K
RAMY		1940	1956	2035	S17	E70	5671	09	6.1	55	SF		3	E		24		
HOLL		1951	1957	2038	S18	E62	5671	09	5.5	47	1F		2	E		119		
PALE		2006	2006	2016	S15	E67	5671	09	5.9	10	SF		3	E		69		F
PALE		2100	2100	2109	S16	E68	5671	09	6.0	9	SF		3	E		15		F
PALE		2252	2253	2258	S26	E19	5670	09	2.4	6	SF		3	E		30		
PALE		2358	2358	2407	S23	E19	5670	09	2.5	9	SF		3	E		17		
PALE		2358	2401	2409	S23	E64	5671	09	5.9	11	SF		3	E		24		

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

AUGUST 1989



Times of no flare patrol, shown here as shaded areas, combine reports from the observatories listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind, that is, of neither visual nor cinematographic; portions of a panel with only the bottom half shaded mark times of strictly visual patrol.

Holloman Learmonth Palehua Ramey San Vito

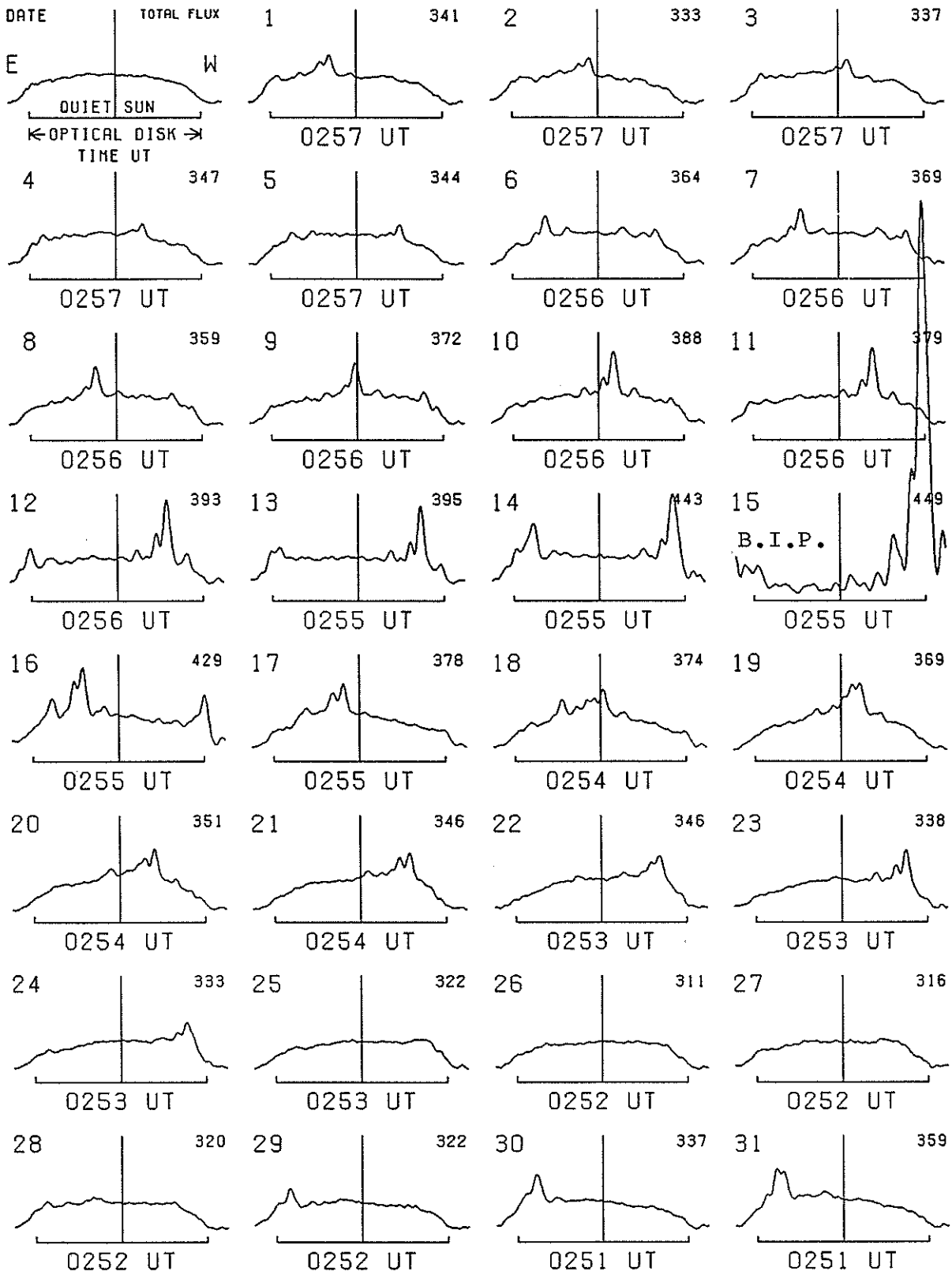
30
Aug 89

EAST-WEST SOLAR SCANS

AUGUST 1989

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



Note: All scans taken with 3 dB attenuation. This means all scans are one-half normal height.

EAST – WEST SOLAR SCANS
AUGUST 1989

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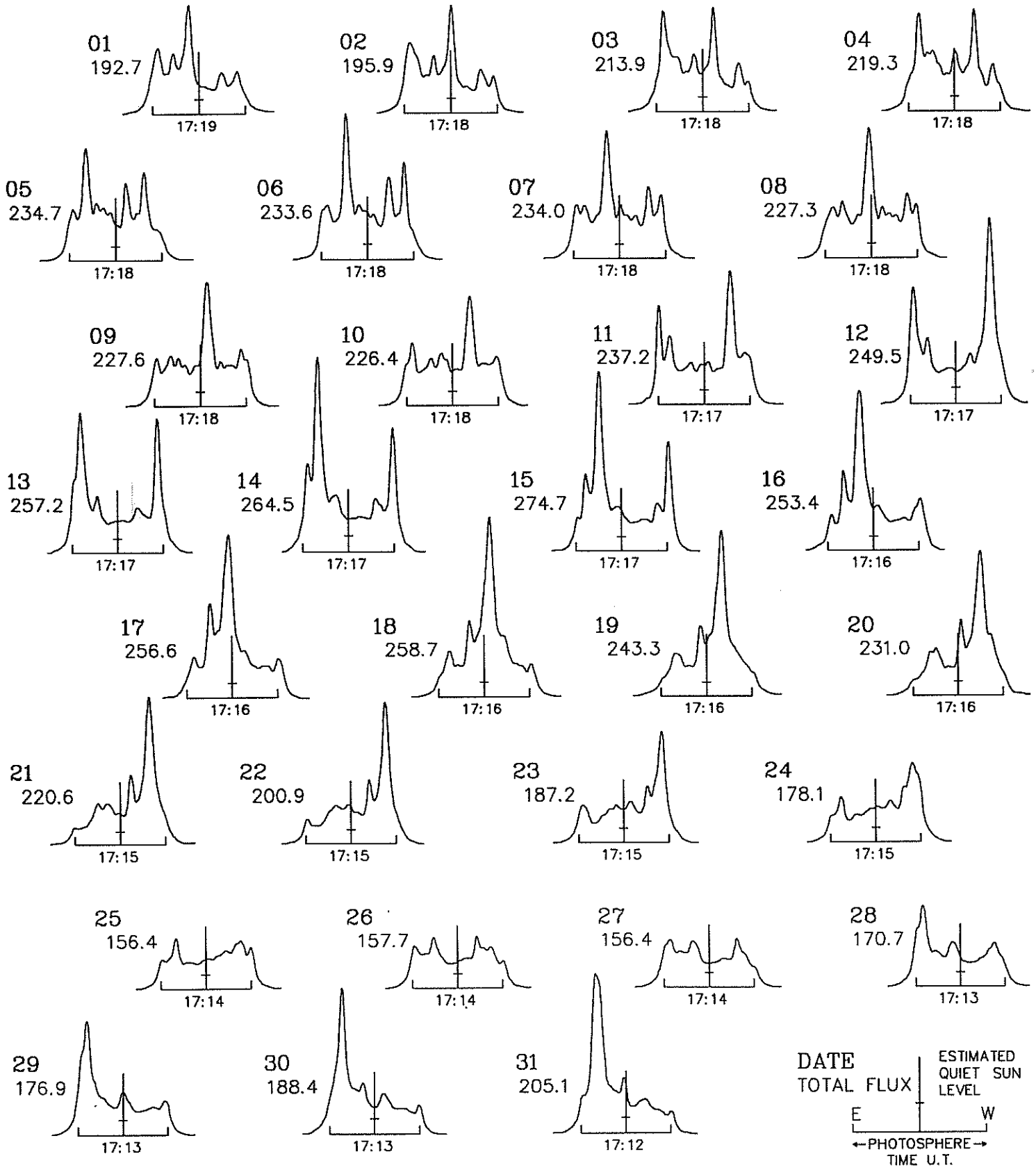
Aug 89

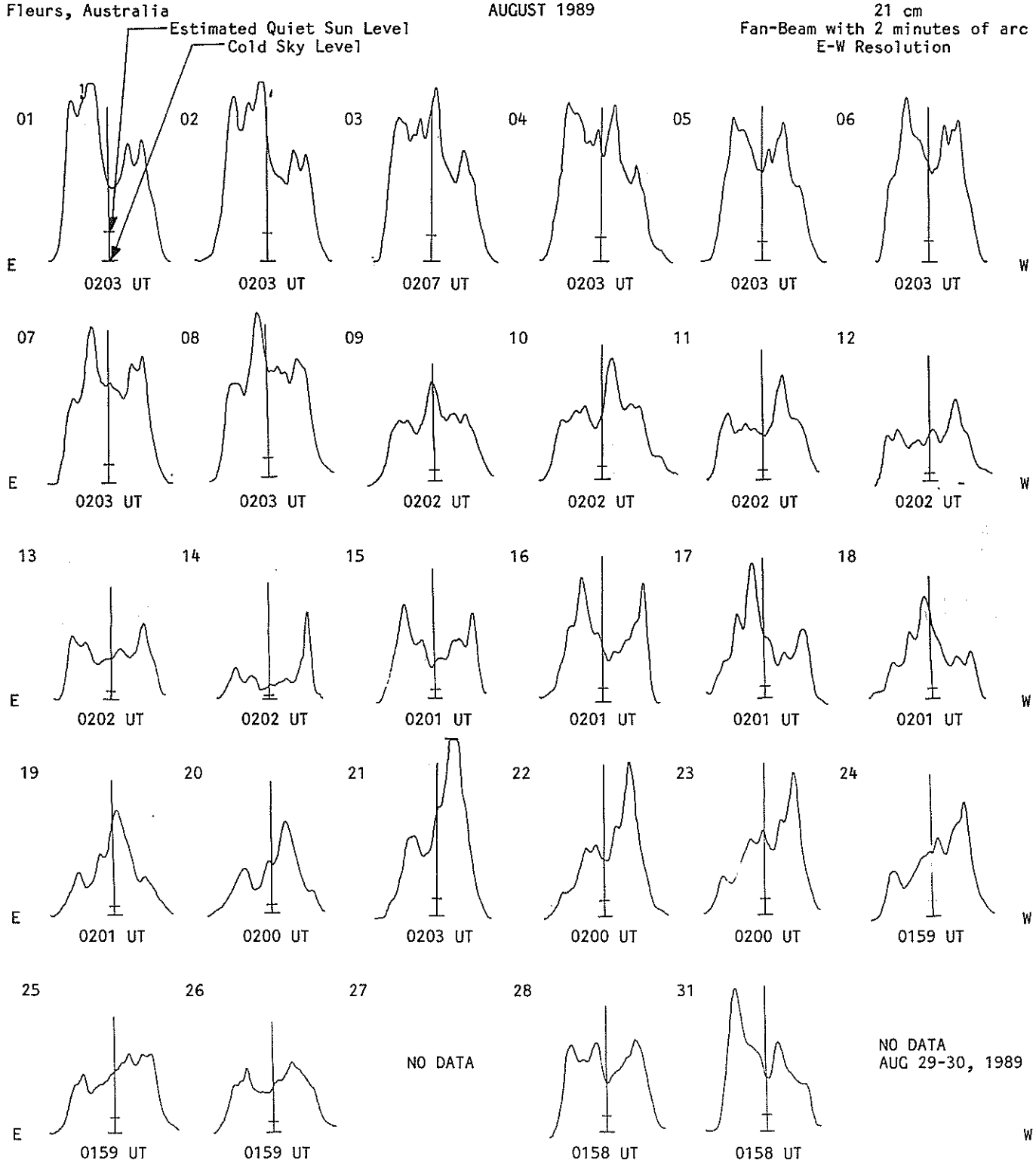
ALGONQUIN RADIO OBSERVATORY
CANADA

10.7 cm
Fan Beam with 1.5 minutes of arc
E – W Resolution



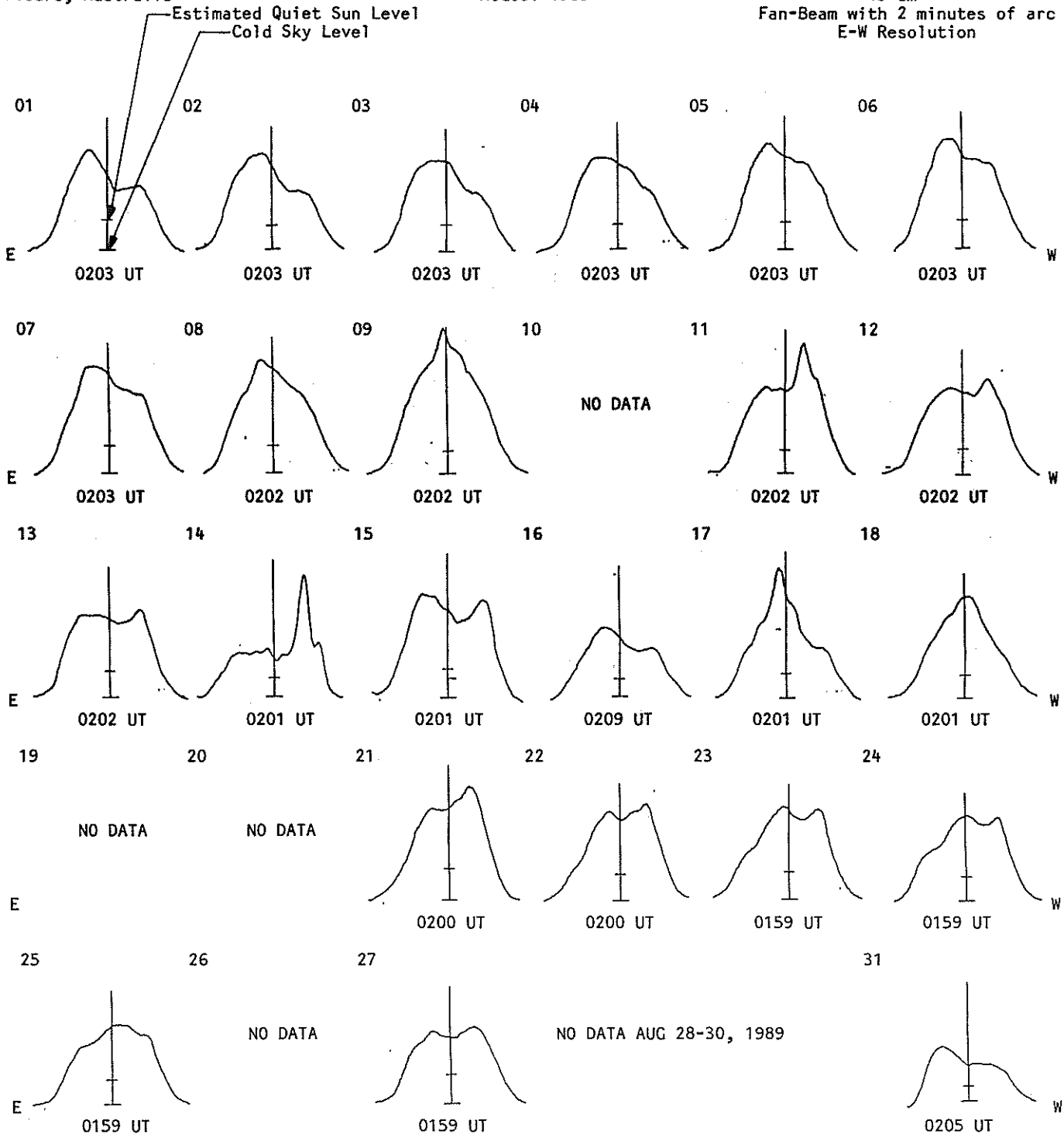
E A S T - W E S T S O L A R S C A N S

Fleurs, Australia — AUGUST 1989 — 21 cm Fan-Beam with 2 minutes of arc E-W Resolution



E A S T - W E S T S O L A R S C A N S

Fleurs, Australia — AUGUST 1989 — 43 cm Fan-Beam with 2 minutes of arc E-W Resolution



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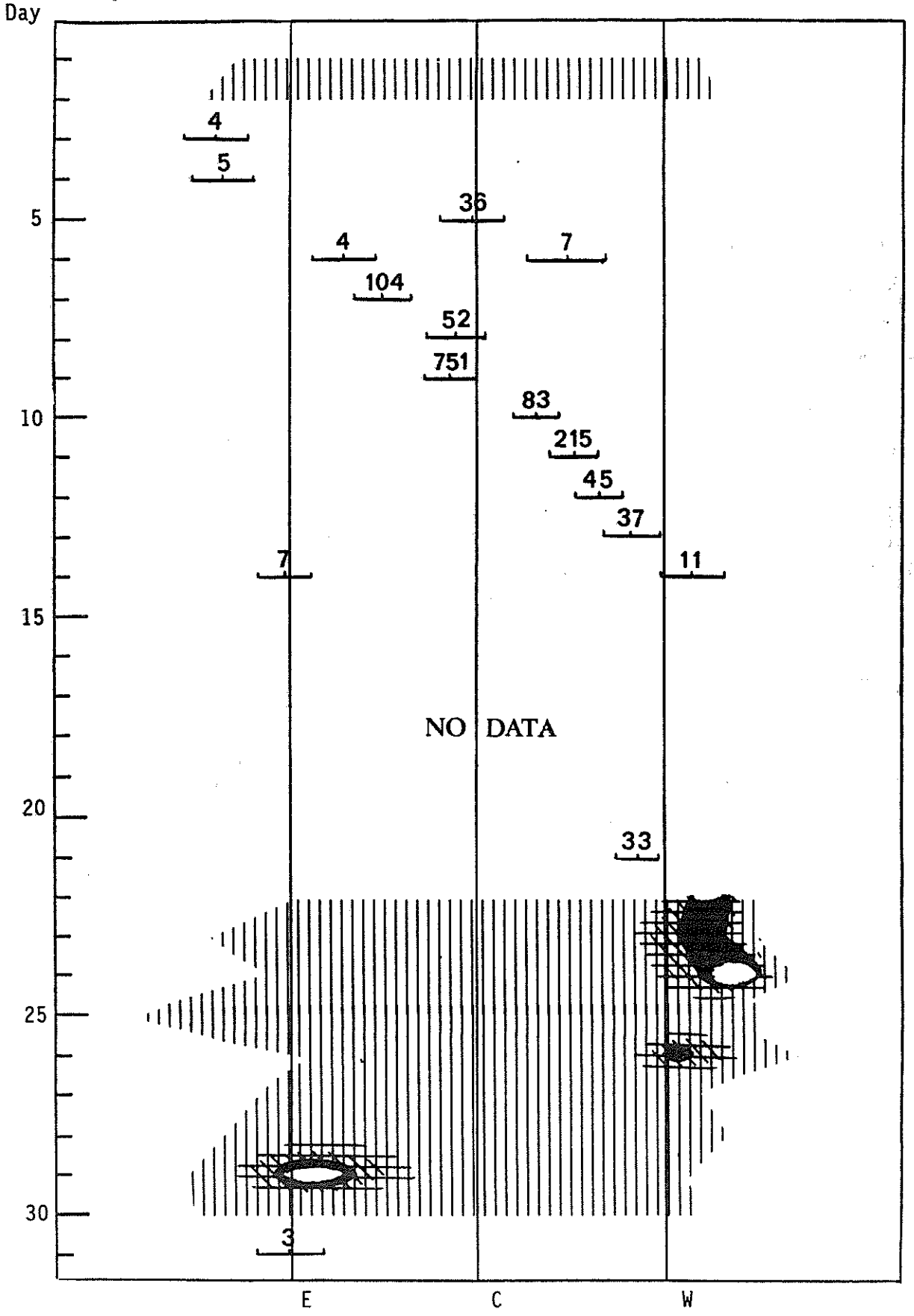
Aug 89

SOLAR INTERFEROMETRIC OBSERVATIONS

Nancay AUGUST 1989 164 MHz



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

AUGUST 1989

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	2695	PENT	4	S/F	0123.0	0126.0	9.0	51.0	20.0		
02	8800	LEAR	4	S/F	0446.0E	0449.0	5.0D	72.0			QL=1 ST=3 TYP=3
	2695	PENT	3	S	2002.0	2003.0	8.1	12.6	4.0		
┌	2800	OTTA	3	S	2303.0	2310.5	21.0	94.6	19.0		
├	8800	PALE	49	GB	2308.0E	2310.0	4.0D	520.0			QL=1 ST=2 TYP=6
└	2695	PALE	8	S	2309.0E	2310.0	2.0D	95.0			QL=1 ST=2 TYP=3
┌	2800	OTTA	3	S	2315.0	2317.2	6.0	44.3	14.0		
├	8800	PALE	4	S/F	2315.0E	2316.0	4.0D	66.0			QL=1 ST=2 TYP=3
└	2695	PALE	4	S/F	2315.0E	2317.0	3.0D	52.0			QL=1 ST=2 TYP=3
03	8800	LEAR	8	S	0306.0E	0307.0	2.0D	64.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0744.0E	0745.0	2.0D	41.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	2041.2	2044.5	5.0	12.5	4.0		
	2800	OTTA	29	PBI	2046.2	2046.2	55.0	5.0	2.0		
04	2800	OTTA	22	GRF	1147.0	1234.5	170.0	24.5	12.0		
05	8800	SGMR	8	S	1021.0E	1021.0	U	110.0			QL=1 ST=3 TYP=3
└	8800	SVTO	4	S/F	1021.0E	1022.0	4.0D	99.0			QL=1 ST=2 TYP=3
	2800	OTTA	26	FAL	1140.0E	1140.0	105.0D	14.3			
06	2695	PENT	4	S/F	0042.5	0051.7	16.0	81.3	25.0		
├	2695	LEAR	4	S/F	0048.0E	0051.0	7.0D	86.0			QL=1 ST=2 TYP=3
├	8800	LEAR	4	S/F	0049.0E	0051.0	6.0D	47.0			QL=1 ST=2 TYP=3
├	2695	PALE	4	S/F	0049.0E	0051.0	3.0D	81.0			QL=1 ST=2 TYP=3
└	8800	PALE	4	S/F	0050.0E	0051.0	5.0D	49.0			QL=1 ST=2 TYP=3
┌	2695	LEAR	4	S/F	0746.0E	0747.0	3.0D	40.0			QL=1 ST=2 TYP=3
├	8800	SVTO	4	S/F	0748.0E	0749.0	3.0D	78.0			QL=1 ST=2 TYP=3
├	3200	BERN	4	S/F	0748.6	0749.5	2.0	7.8			
├	8400	BERN	4	S/F	0748.6	0749.5	2.0	7.8			
├	8800	LEAR	8	S	0749.0E	0749.0	1.0D	48.0			QL=1 ST=2 TYP=3
└	2695	SVTO	8	S	0749.0E	0749.0	U	28.0			QL=1 ST=2 TYP=3
┌	8400	BERN	46	C	1201.0	1210.0	15.0	25.5			
├	3200	BERN	46	C	1201.0	1210.0	15.0	26.5			
├	8800	SGMR	4	S/F	1202.0E	1209.0	14.0D	260.0			QL=1 ST=2 TYP=3
├	2695	SGMR	49	GB	1202.0E	1212.0	14.0D	1000.0			QL=1 ST=2 TYP=7
├	8800	SVTO	4	S/F	1202.0E	1209.0	20.0D	240.0			QL=1 ST=2 TYP=3
├	2695	SVTO	49	GB	1202.0E	1212.0	20.0D	1000.0			QL=1 ST=2 TYP=7
├	2800	OTTA	47	GB	1210.5E	1210.5	14.0D	657.0			
└	2800	OTTA	29	PBI	1216.0	1216.0	74.0	51.3	25.0		
┌	2800	OTTA	3	S	1602.0	1604.1	10.0	34.0	10.0		
├	3200	BERN	4	S/F	1602.0	1604.5	6.0	1.6			
└	8400	BERN	4	S/F	1602.0	1604.5	6.0	1.4			
┌	2695	PENT	28	PRE	2320.5	2323.7	16.0	28.5	5.0		
├	8800	PALE	8	S	2322.0E	2323.0	1.0D	30.0			QL=1 ST=2 TYP=3
└	2695	PALE	8	S	2323.0E	2323.0	U	30.0			QL=1 ST=2 TYP=3
┌	2695	PENT	47	GB	2336.5	2340.2	21.8	600.0	180.0		
├	2695	PALE	49	GB	2337.0E	2347.0	20.0D	1100.0			QL=1 ST=2 TYP=7
├	8800	PALE	49	GB	2337.0E	2340.0	36.0D	2100.0			QL=1 ST=2 TYP=7
└	2695	LEAR	49	GB	2338.0E	2347.0	18.0D	1100.0			QL=1 ST=2 TYP=7
07	8800	PALE	8	S	0041.0E	0042.0	2.0D	48.0			QL=1 ST=2 TYP=3
┌	8800	LEAR	4	S/F	0922.0E	0923.0	3.0D	240.0			QL=1 ST=2 TYP=3
├	2695	SVTO	4	S/F	0922.0E	0923.0	878.0D	410.0			QL=1 ST=1 TYP=3
├	8800	SVTO	4	S/F	0922.0E	0923.0	878.0D	300.0			QL=1 ST=1 TYP=3
├	3200	BERN	47	GB	0922.1	0923.3	4.0	38.0			
└	8400	BERN	47	GB	0922.1	0923.3	4.0	36.4			
	2800	OTTA	3	S	1729.1	1729.3	2.0	20.6	6.0		
	2800	OTTA	3	S	1950.0	1950.4	1.0	31.4	9.0		
┌	2800	OTTA	4	S/F	2051.0	2100.0	18.0	432.0	130.0		
├	2695	PALE	49	GB	2051.0E	2059.0	16.0D	320.0			QL=1 ST=2 TYP=7
├	8800	PALE	49	GB	2051.0E	2054.0	19.0D	2100.0			QL=1 ST=2 TYP=7
├	8800	SGMR	49	GB	2051.0E	2054.0	18.0D	3400.0			QL=1 ST=2 TYP=7
└	2695	SGMR	49	GB	2051.0E	2053.0	189.0D	230.0			QL=1 ST=1 TYP=7
08	2695	LEAR	4	S/F	0513.0E	0514.0	4.0D	97.0			QL=1 ST=3 TYP=3
├	2695	SVTO	4	S/F	0514.0E	0514.0	1126.0D	100.0			QL=1 ST=1 TYP=3
├	8800	LEAR	8	S	0515.0E	0515.0	1.0D	59.0			QL=1 ST=2 TYP=3

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

AUGUST 1989

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
08	8800	SVTO	4	S/F	0515.0E	0515.0	6.0D	50.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0645.0E	0645.0	3.0D	44.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1528.0	1528.7	3.0	16.8	5.0		
	3200	BERN	4	S/F	1528.5	1528.6	1.0	6.6			
	8400	BERN	4	S/F	1528.5	1528.6	1.0	11.0			
	2695	SVTO	8	S	1715.0E	1715.0	1.0D	63.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	1912.0E	1915.0	9.0D	78.0			QL=1 ST=2 TYP=3
	2800	OTTA	20	GRF	1919.0	1922.0	40.0	10.2	5.0		
09	8800	SVTO	8	S	1018.0E	1019.0	1.0D	63.0			QL=1 ST=2 TYP=3
	8400	BERN	4	S/F	1018.0	1019.1	3.0	7.8			
	3200	BERN	4	S/F	1018.0	1019.1	3.0	4.2			
	8800	SVTO	49	GB	1422.0E	1423.0	9.0D	750.0			QL=1 ST=2 TYP=6
	2695	SVTO	4	S/F	1422.0E	1423.0	13.0D	320.0			QL=1 ST=2 TYP=3
	2695	SGMR	4	S/F	1422.0E	1423.0	578.0D	290.0			QL=1 ST=1 TYP=3
	8800	SGMR	49	GB	1422.0E	1423.0	578.0D	620.0			QL=1 ST=1 TYP=6
	2800	OTTA	3	S	1422.2	1424.1	4.5	278.0	56.0		
	8400	BERN	47	GB	1422.3	1423.8	3.3	67.3			
	3200	BERN	47	GB	1422.3	1423.8	3.3	18.7			
	2800	OTTA	29	PBI	1426.7	1426.7	170.0	20.4	8.0		
	2800	OTTA	20	GRF	1904.0	1934.0	64.0	13.8	6.0		
10	8800	LEAR	4	S/F	0139.0E	0141.0	5.0D	120.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	0139.0E	0141.0	14.0D	130.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0141.0E	0141.0	U	54.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0207.0E	0207.0	2.0D	63.0			QL=1 ST=2 TYP=3
	2695	PALE	4	S/F	0207.0E	0208.0	6.0D	68.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1950.0	2010.0	90.0	15.7	6.0		
11	8800	SGMR	8	S	1335.0E	1336.0	2.0D	70.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1335.0E	1336.0	1.0D	61.0			QL=1 ST=2 TYP=3
	8400	BERN	46	C	1335.5	1356.0	30.0	6.7			
	3200	BERN	46	C	1335.5	1356.0	30.0	0.7			
	8800	SGMR	8	S	1355.0E	1355.0	1.0D	75.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1355.0E	1355.0	1.0D	76.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1500.0	1501.7	5.0	21.6	6.0		
	8800	SGMR	8	S	1500.0E	1501.0	2.0D	50.0			QL=1 ST=2 TYP=3
	3200	BERN	4	S/F	1623.6	1624.8	2.0	3.0			
	8400	BERN	4	S/F	1623.6	1624.8	2.0	15.4			
	8800	SGMR	8	S	1624.0E	1624.0	2.0D	57.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1624.0E	1624.0	7.0D	81.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	2006.0E	2007.0	3.0D	63.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	2006.0E	2007.0	3.0D	59.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	2244.0E	2246.0	4.0D	77.0			QL=1 ST=2 TYP=3
	2695	SGMR	8	S	2245.0E	2245.0	U	90.0			QL=1 ST=2 TYP=3
12	8800	LEAR	4	S/F	0255.0E	0259.0	6.0D	54.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0259.0E	0259.0	U	64.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0304.0E	0305.0	7.0D	80.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	0304.0E	0304.0	4.0D	110.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0737.0E	0737.0	2.0D	47.0			QL=1 ST=2 TYP=3
	8400	BERN	4	S/F	0737.5	0737.9	1.0	3.0			
	3200	BERN	4	S/F	0737.5	0737.9	1.0	4.2			
	8800	SVTO	4	S/F	0755.0E	0801.0	17.0D	310.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0756.0E	0801.0	18.0D	290.0			QL=1 ST=2 TYP=3
	8800	SVTO	49	GB	1356.0E	1409.0	110.0D	5300.0			QL=1 ST=2 TYP=7
	8800	SGMR	49	GB	1357.0E	1413.0	120.0D	5900.0			QL=1 ST=2 TYP=7
	2800	OTTA	47	GB	1358.0	1409.0	35.0	3585.0	1075.0		
	2695	SVTO	49	GB	1359.0E	1409.0	116.0D	3700.0			QL=1 ST=2 TYP=6
	2695	SGMR	49	GB	1400.0E	1409.0	117.0D	3800.0			QL=1 ST=2 TYP=7
	2800	OTTA	29	PBI	1433.0	1433.0	380.0	153.5	77.0		
	2800	OTTA	4	S/F	1446.0	1503.0	48.0	337.7	101.0		
13	2695	PENT	47	GB	0040.0	0044.0	14.5	1494.0	300.0		
	2695	PENT	29	PBI	0054.5	0054.5	60.0D	162.4	81.0		
	2695	PENT	47	GB	0105.5	0114.0	36.0	1460.0	438.0		
	8800	LEAR	8	S	0624.0E	0624.0	U	26.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0717.0E	0719.0	5.0D	210.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0718.0E	0719.0	1.0D	38.0			QL=1 ST=2 TYP=3

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

AUGUST 1989

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
13	8800	SGMR	8	S	1324.0E	1324.0	1.0D	200.0			QL=1 ST=3 TYP=3
	8800	SVTO	8	S	1324.0E	1324.0	1.0D	210.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	1355.0E	1357.0	3.0D	100.0			QL=1 ST=2 TYP=5
	8800	SVTO	4	S/F	1355.0E	1357.0	3.0D	110.0			QL=1 ST=2 TYP=5
	8800	PALE	8	S	2021.0E	2021.0	1.0D	120.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	2021.0E	2022.0	1.0D	120.0			QL=1 ST=2 TYP=3
14	8800	PALE	49	GB	0033.0E	0044.0	94.0D	5400.0			QL=1 ST=2 TYP=7
	8800	LEAR	49	GB	0040.0E	0044.0	102.0D	4200.0			QL=1 ST=2 TYP=7
	2695	PALE	49	GB	0041.0E	0113.0	87.0D	1800.0			QL=1 ST=2 TYP=7
	2695	LEAR	49	GB	0042.0E	0044.0	58.0D	2000.0			QL=1 ST=2 TYP=7
	8400	BERN	4	S/F	0902.0	0902.8	3.0	4.5			
	8800	SVTO	4	S/F	1013.0E	1014.0	5.0D	80.0			QL=1 ST=2 TYP=3
	8400	BERN	3	S	1157.0	1201.3	7.0	4.9			
	3200	BERN	3	S	1157.0	1201.3	7.0	1.6			
	2800	OTTA	22	GRF	2002.0	2027.0	96.0	22.6	11.0		
	8800	LEAR	4	S/F	2320.0E	2324.0	13.0D	150.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	2320.0E	2325.0	16.0D	200.0			QL=1 ST=2 TYP=3
	2695	PENT	4	S/F	2321.5	2323.7	17.0	220.9	66.0		
	2695	PALE	4	S/F	2322.0E	2323.0	5.0D	130.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	2322.0E	2323.0	13.0D	80.0			QL=1 ST=2 TYP=3
	2695	PENT	4	S/F	2348.0	2401.5	17.0	200.6	60.0		
	8800	PALE	49	GB	2350.0E	2401.0	33.0D	1200.0			QL=1 ST=2 TYP=7
	8800	LEAR	49	GB	2351.0E	2401.0	34.0D	950.0			QL=1 ST=2 TYP=7
	2695	LEAR	4	S/F	2352.0E	2420.0	43.0D	310.0			QL=1 ST=2 TYP=5
	2695	PALE	4	S/F	2353.0E	2401.0	32.0D	180.0			QL=1 ST=2 TYP=3
15	2695	PENT	4	S/F	0010.5	0021.0	21.0	143.5	43.0		
	2695	LEAR	4	S/F	0206.0E	0210.0	6.0D	51.0			QL=1 ST=2 TYP=3
	2695	PALE	49	GB	0218.0E	0305.0	153.0D	16000.0			QL=1 ST=2 TYP=7
	2695	LEAR	49	GB	0218.0E	0304.0	253.0D	18000.0			QL=1 ST=2 TYP=6
	8800	PALE	49	GB	0225.0E	0302.0	139.0D	28000.0			QL=1 ST=2 TYP=7
	8800	LEAR	49	GB	0225.0E	0258.0	256.0D	18000.0			QL=1 ST=2 TYP=6
	2695	SVTO	49	GB	0404.0E	0412.0	82.0D	3600.0			QL=1 ST=2 TYP=7
	8800	SVTO	4	S/F	0412.0E	0412.0	1188.0D	160.0			QL=1 ST=1 TYP=3
	8800	SVTO	49	GB	0415.0E	0420.0	71.0D	700.0			QL=1 ST=2 TYP=7
	8800	SVTO	4	S/F	1333.0E	1333.0	22.0D	130.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1336.5	1348.0	94.0	126.9	38.0		
	2695	SVTO	4	S/F	1346.0E	1351.0	9.0D	150.0			QL=1 ST=2 TYP=5
	2695	SGMR	4	S/F	1347.0E	1351.0	8.0D	160.0			QL=1 ST=2 TYP=5
	8800	SGMR	4	S/F	1347.0E	1348.0	8.0D	130.0			QL=1 ST=2 TYP=3
	3200	BERN	46	C	1347.0	1348.3	10.0	5.7			
	8400	BERN	46	C	1347.0	1348.3	10.0	6.7			
	2800	OTTA	3	S	1603.0	1610.0	25.0	136.9	41.0		
	8800	SVTO	4	S/F	1607.0E	1609.0	6.0D	190.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1607.0E	1610.0	8.0D	130.0			QL=1 ST=2 TYP=3
	3200	BERN	3	S	1607.6	1609.6	7.0	9.0			
	8400	BERN	3	S	1607.6	1609.6	7.0	15.6			
	2800	OTTA	20	GRF	1915.0	1950.0	70.0	12.0	6.0		
	8800	PALE	20	GRF	2026.0E	2043.0	214.0D	120.0			QL=1 ST=3 TYP=2
	2695	PALE	20	GRF	2026.0E	2047.0	214.0D	49.0			QL=1 ST=3 TYP=2
	2800	OTTA	20	GRF	2030.0	2054.0	130.0	26.7	13.0		
	8800	SGMR	20	GRF	2030.0E	2038.0	23.0D	74.0			QL=1 ST=2 TYP=2
16	2695	PENT	47	GB	0020.0	0051.0	35.0	3808.0	1142.0		
	2695	PALE	49	GB	0033.0E	0034.0	1407.0D	760.0			QL=1 ST=1 TYP=6
	8800	PALE	49	GB	0033.0E	0034.0	1407.0D	930.0			QL=1 ST=1 TYP=6
	2695	PENT	47	GB	0033.2	0035.0	12.7	672.0	201.0		
	2695	PENT	3	S	0045.5	0052.0	9.0D	221.8	66.0		
	8800	PALE	49	GB	0055.0E	0119.0	57.0D	23000.0			QL=1 ST=2 TYP=7
	8800	LEAR	49	GB	0056.0E	0119.0	87.0D	22000.0			QL=1 ST=2 TYP=7
	2695	PENT	47	GB	0056.7	0104.0	42.5	4817.0	1445.0		
	2695	LEAR	49	GB	0057.0E	0106.0	62.0D	6000.0			QL=1 ST=2 TYP=7
	2695	PALE	49	GB	0058.0E	0106.0	41.0D	5400.0			QL=1 ST=2 TYP=7
	2695	PENT	47	GB	0101.5	0115.5	35.0	3850.0	1155.0		
	2695	PENT	47	GB	0139.0	0142.8	16.0	695.0	208.0		
	8800	PALE	4	S/F	0152.0E	0152.0	7.0D	430.0			QL=1 ST=2 TYP=3
	2695	PALE	4	S/F	0152.0E	0152.0	6.0D	270.0			QL=1 ST=2 TYP=3

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

AUGUST 1989

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
17	2695	LEAR	49	GB	0029.0E	0115.0	100.0D	5600.0			QL=1 ST=2 TYP=7
	8800	PALE	49	GB	0033.0E	0034.0	15.0D	930.0			QL=1 ST=2 TYP=6
	2695	PALE	49	GB	0033.0E	0034.0	15.0D	760.0			QL=1 ST=2 TYP=6
	8800	LEAR	49	GB	0033.0E	0114.0	97.0D	24000.0			QL=1 ST=2 TYP=7
	8800	PALE	49	GB	0048.0E	0114.0	82.0D	28000.0			QL=1 ST=2 TYP=7
	8800	SVTO	4	S/F	1058.0E	1059.0	4.0D	75.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1059.0E	1059.0	U	91.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1839.0	1959.0	190.0	21.2	10.0		
	2800	OTTA	4	S/F	1848.5	1850.2	7.0	46.6	14.0		
	2695	PALE	8	S	1849.0E	1850.0	2.0D	51.0			QL=1 ST=2 TYP=3
18	8800	SVTO	8	S	0757.0E	0758.0	1.0D	74.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1706.0	1710.2	6.5	8.6	2.0		
	2695	PALE	8	S	1941.0E	1942.0	1.0D	88.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	1941.1	1942.1	2.5	86.9	18.0		
	2695	SGMR	8	S	1942.0E	1942.0	U	80.0			QL=1 ST=2 TYP=3
19	8800	LEAR	8	S	0209.0E	0209.0	U	23.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0248.0E	0248.0	U	23.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0253.0E	0254.0	2.0D	34.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0424.0E	0424.0	U	31.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0424.0E	0424.0	U	160.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0424.0E	0424.0	U	140.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0424.0E	0424.0	U	90.0			QL=1 ST=3 TYP=3
	2695	PALE	8	S	1838.0E	1838.0	1.0D	53.0			QL=1 ST=2 TYP=3
	2695	SGMR	4	S/F	1838.0E	1838.0	17.0D	56.0			QL=1 ST=2 TYP=3
	2800	OTTA	8	S	1838.5	1838.7	1.0	70.7	21.0		
	2800	OTTA	22	GRF	1905.0	1947.0	200.0	24.9	12.0		
	8800	PALE	4	S/F	2131.0E	2134.0	6.0D	81.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	2132.0E	2134.0	3.0D	78.0			QL=1 ST=2 TYP=3
22	2695	SGMR	8	S	1711.0E	1711.0	U	120.0			QL=1 ST=2 TYP=3
23	2800	OTTA	3	S	1444.0	1449.0	11.0	31.6	9.0		
26	2695	LEAR	8	S	0402.0E	0402.0	1.0D	30.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1148.0E	1148.0	U	55.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1148.0E	1148.0	1.0D	59.0			QL=1 ST=2 TYP=3
	8400	BERN	3	S	1148.3	1148.5	1.0	7.1			
	3200	BERN	3	S	1148.3	1148.5	1.0	0.8			
28	2695	LEAR	8	S	0538.0E	0538.0	U	24.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0551.0E	0552.0	3.0D	50.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0613.0E	0613.0	4.0D	43.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0613.0E	0613.0	2.0D	34.0			QL=1 ST=2 TYP=3
	8400	BERN	46	C	0613.0	0613.5	10.0	11.2			
	3200	BERN	46	C	0613.0	0613.5	10.0	22.7			
	8800	SVTO	8	S	1009.0E	1009.0	U	54.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	1009.0E	1009.0	2.0D	180.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1207.2	1207.5	7.5	5.9	2.0		
	2800	OTTA	3	S	1217.2	1217.5	7.0	12.2	3.0		
	2800	OTTA	3	S	1225.7	1226.2	7.5	7.9	2.0		
	2800	OTTA	3	S	1240.6	1241.2	15.0	29.9	9.0		
	2800	OTTA	3	S	1249.0	1250.0	7.5	9.0	3.0		
	2800	OTTA	4	S/F	1311.0	1313.1	20.0	261.0	78.0		
	8800	SGMR	4	S/F	1311.0E	1312.0	3.0D	230.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1311.0E	1312.0	3.0D	160.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1311.0E	1312.0	9.0D	220.0			QL=1 ST=2 TYP=3
	2695	SGMR	4	S/F	1311.0E	1312.0	649.0D	230.0			QL=1 ST=1 TYP=3
29	8800	PALE	20	GRF	0152.0E	0153.0	7.0D	270.0			QL=1 ST=2 TYP=2
	2695	PALE	20	GRF	0152.0E	0153.0	10.0D	360.0			QL=1 ST=2 TYP=2
	8800	LEAR	8	S	0648.0E	0648.0	1.0D	42.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0653.0E	0653.0	1.0D	21.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0653.0E	0653.0	4.0D	39.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0730.0E	0731.0	1.0D	61.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0730.0E	0731.0	1.0D	70.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0731.0E	0731.0	3.0D	49.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0731.0E	0731.0	U	55.0			QL=1 ST=2 TYP=3

SOLAR RADIO EMISSION
Selected Fixed Frequency Events

AUGUST 1989

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
29	3200	BERN	4	S/F	0824.8	0825.2	0.6	6.0			
	8400	BERN	4	S/F	0824.8	0825.2	0.6	8.2			
	8400	BERN	3	S	1025.5	1027.3	4.0	4.6			
	3200	BERN	3	S	1025.5	1027.3	4.0	4.1			
	2695	SVTO	8	S	1026.0E	1027.0	1.0D	62.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1253.0E	1254.0	4.0D	70.0			QL=1 ST=2 TYP=3
	8400	BERN	46	C	1253.5	1254.3	35.0	8.0			
	3200	BERN	46	C	1253.5	1254.3	35.0	1.5			
	8400	BERN	3	S	1254.5	1255.1	3.0	20.8			
	3200	BERN	3	S	1254.5	1255.1	3.0	26.0			
	8800	PALE	4	S/F	1654.0E	1655.0	3.0D	320.0			QL=1 ST=2 TYP=3
	2695	PALE	4	S/F	1654.0E	1655.0	6.0D	300.0			QL=1 ST=2 TYP=3
	2695	SGMR	4	S/F	1654.0E	1655.0	4.0D	260.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1654.0E	1655.0	2.0D	390.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1654.0E	1655.0	4.0D	290.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1654.0E	1655.0	2.0D	180.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1654.5	1655.5	12.0	265.3	79.0		
	2800	OTTA	3	S	1715.0	1716.1	34.5	217.1	65.0		
	8800	PALE	4	S/F	1715.0E	1716.0	8.0D	130.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1715.0E	1716.0	1.0D	130.0			QL=1 ST=2 TYP=3
	2695	PALE	20	GRF	1715.0E	1716.0	12.0D	220.0			QL=1 ST=2 TYP=2
	2800	OTTA	3	S	1718.4	1721.5	10.5	94.9	28.0		
	2800	OTTA	3	S	1738.0	1739.2	5.0	28.1	8.0		
	2695	PALE	8	S	1738.0E	1739.0	1.0D	47.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	2045.0E	2046.0	1.0D	35.0			QL=1 ST=2 TYP=3
30	8800	LEAR	4	S/F	0239.0E	0239.0	5.0D	110.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	0239.0E	0239.0	6.0D	87.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0239.0E	0239.0	U	39.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0242.0E	0242.0	U	38.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0313.0E	0313.0	U	38.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0313.0E	0313.0	U	27.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0515.0E	0518.0	4.0D	56.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0516.0E	0517.0	2.0D	81.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0517.0E	0517.0	1.0D	41.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	1635.0	1640.5	36.0	466.8	140.0		
	8800	SGMR	49	GB	1636.0E	1638.0	444.0D	1100.0			QL=1 ST=3 TYP=7
	2695	SGMR	49	GB	1636.0E	1640.0	444.0D	790.0			QL=1 ST=3 TYP=7
	8800	SVTO	49	GB	1636.0E	1638.0	444.0D	980.0			QL=1 ST=1 TYP=7
	2695	PALE	4	S/F	1638.0E	1643.0U	14.0D	270.0			QL=1 ST=2 TYP=3
	8800	PALE	20	GRF	1638.0E	1641.0U	29.0D	220.0			QL=1 ST=2 TYP=2
	8800	SGMR	8	S	1650.0E	1651.0	2.0D	54.0			QL=1 ST=2 TYP=3
31	2695	LEAR	4	S/F	0057.0E	0058.0	3.0D	27.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0057.0E	0059.0	8.0D	44.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	0058.0	0058.3	7.0	35.2	11.0		
	2695	PALE	8	S	0058.0E	0058.0	U	29.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0112.0E	0112.0	2.0D	49.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0112.0E	0113.0	10.0D	29.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0437.0E	0437.0	1.0D	83.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	0931.0E	0934.0	3.0D	51.0			QL=1 ST=3 TYP=3
	2800	OTTA	4	S/F	1604.0	1606.9	7.0	228.9	69.0		
	8800	SVTO	8	S	1605.0E	1606.0	2.0D	440.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	1605.0E	1606.0	2.0D	210.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1615.0E	1619.0	12.0D	280.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1615.0E	1618.0	17.0D	430.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	1615.5	1621.2	22.0	273.4	82.0		
	2800	OTTA	22	GRF	1650.0	1955.0	395.0	22.3	11.0		
	8800	PALE	4	S/F	1850.0E	1851.0	310.0D	160.0			QL=1 ST=1 TYP=3

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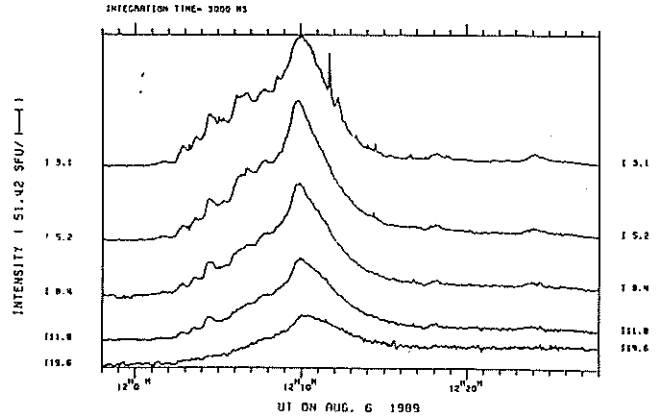

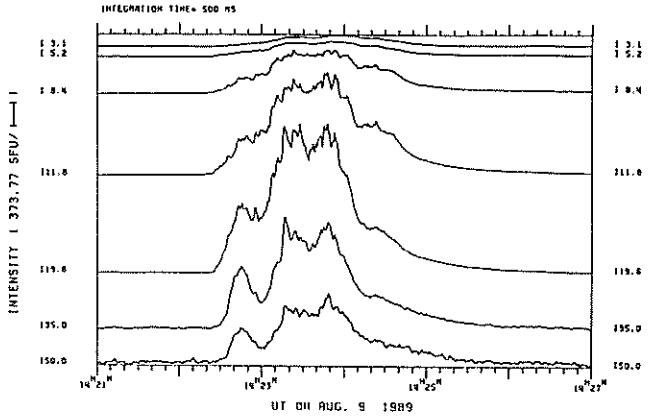

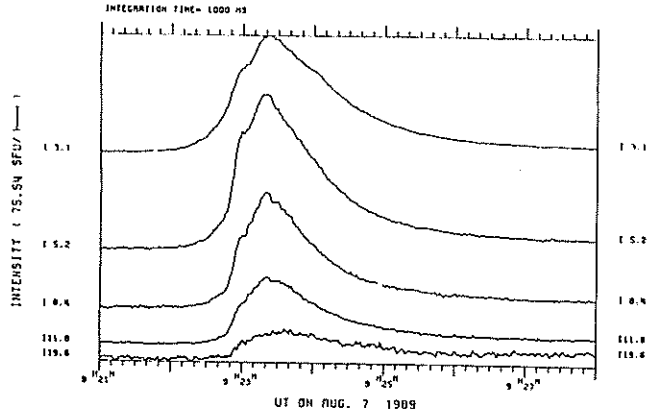

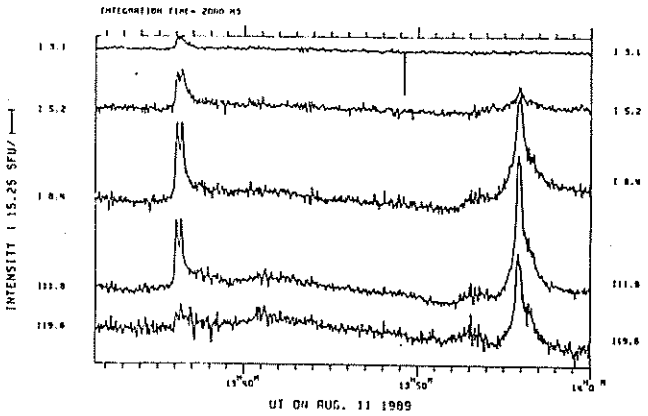

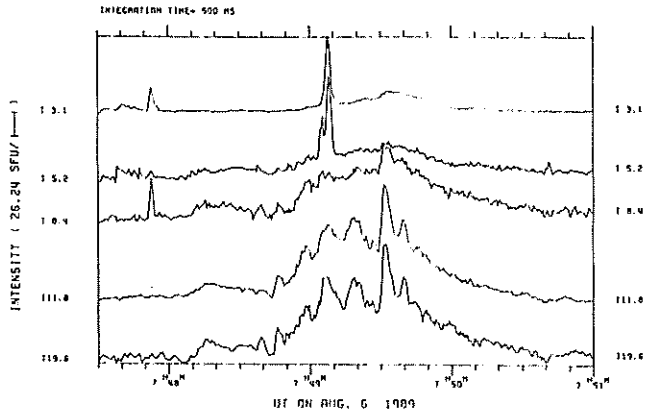

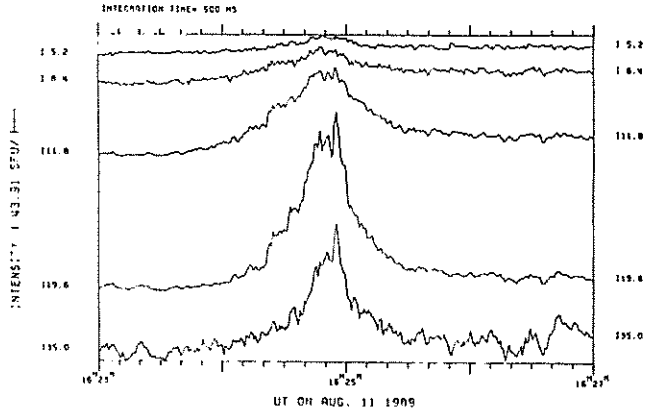

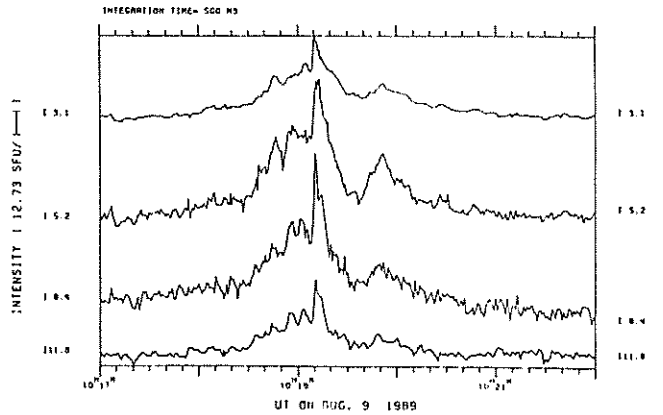

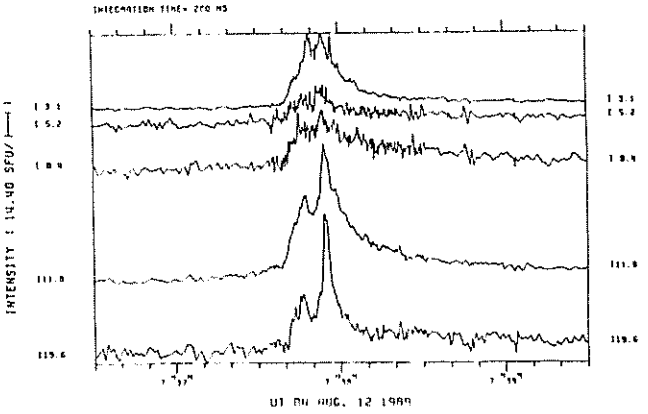

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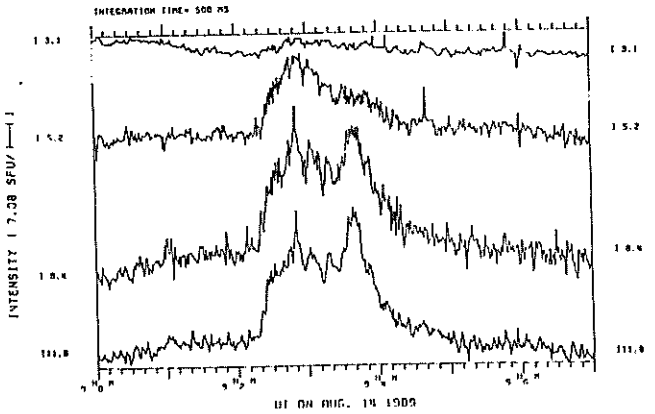
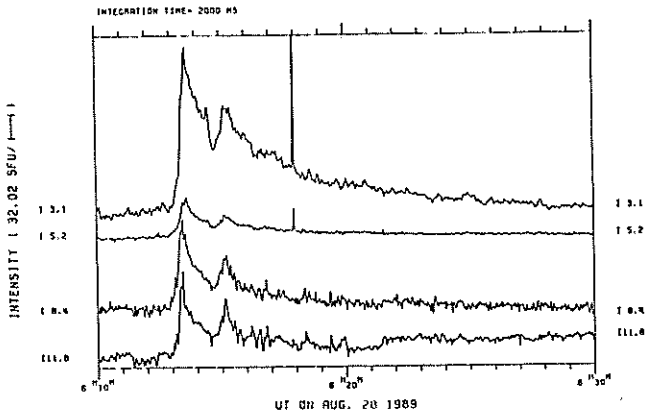
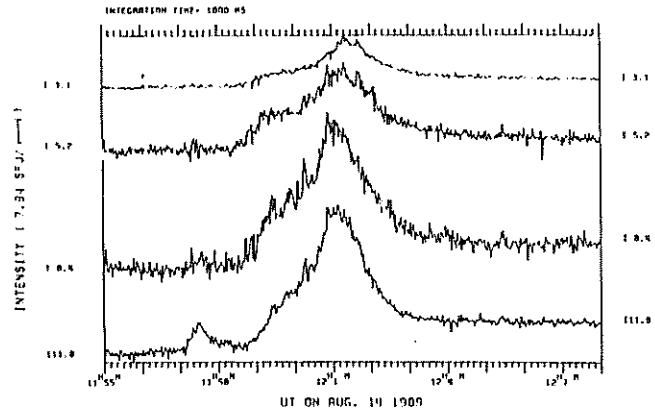
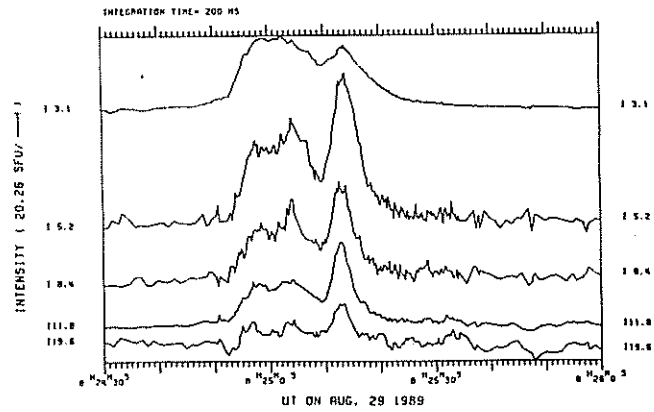
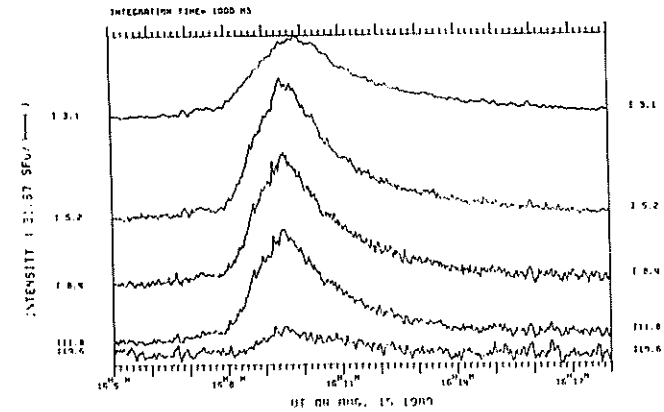
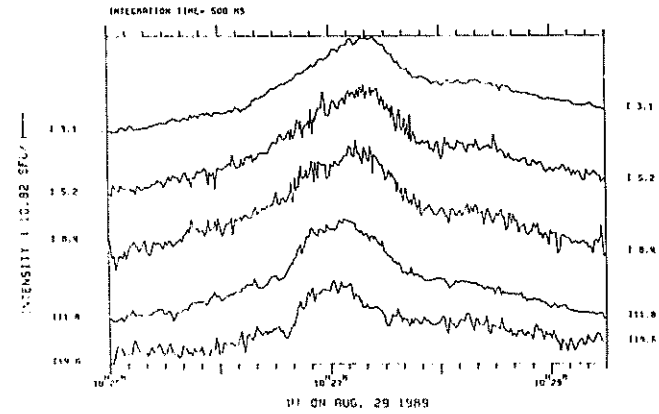


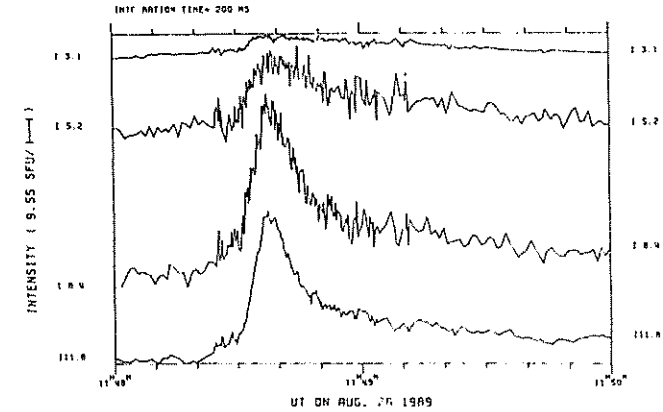


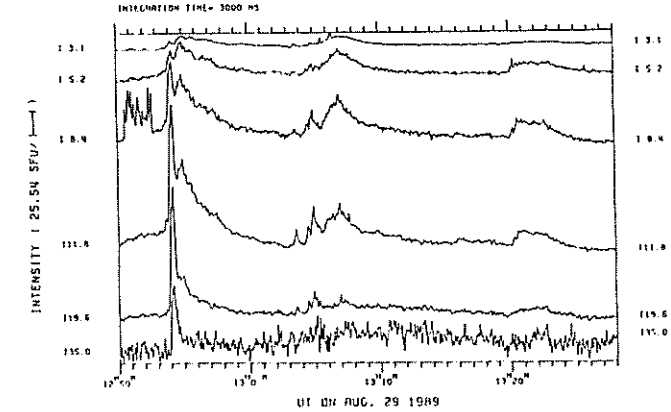




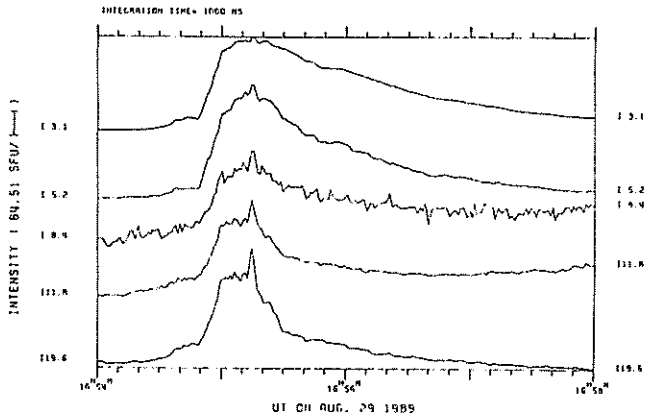


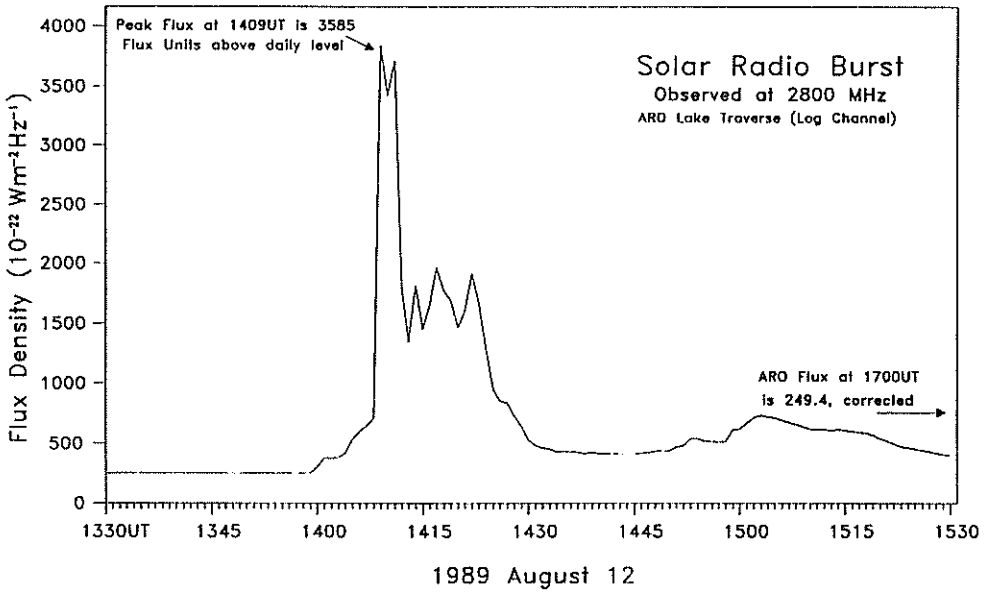


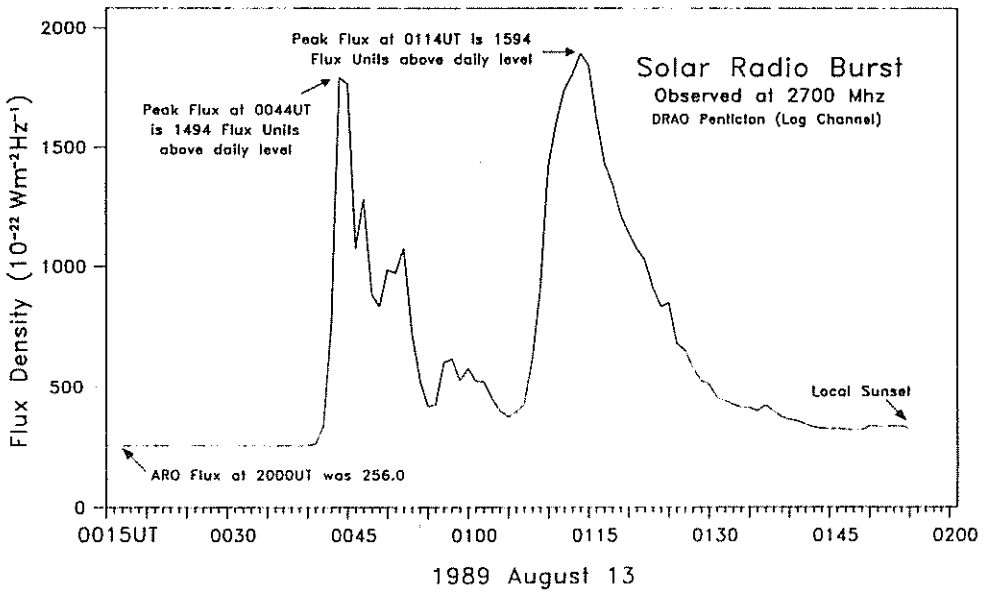


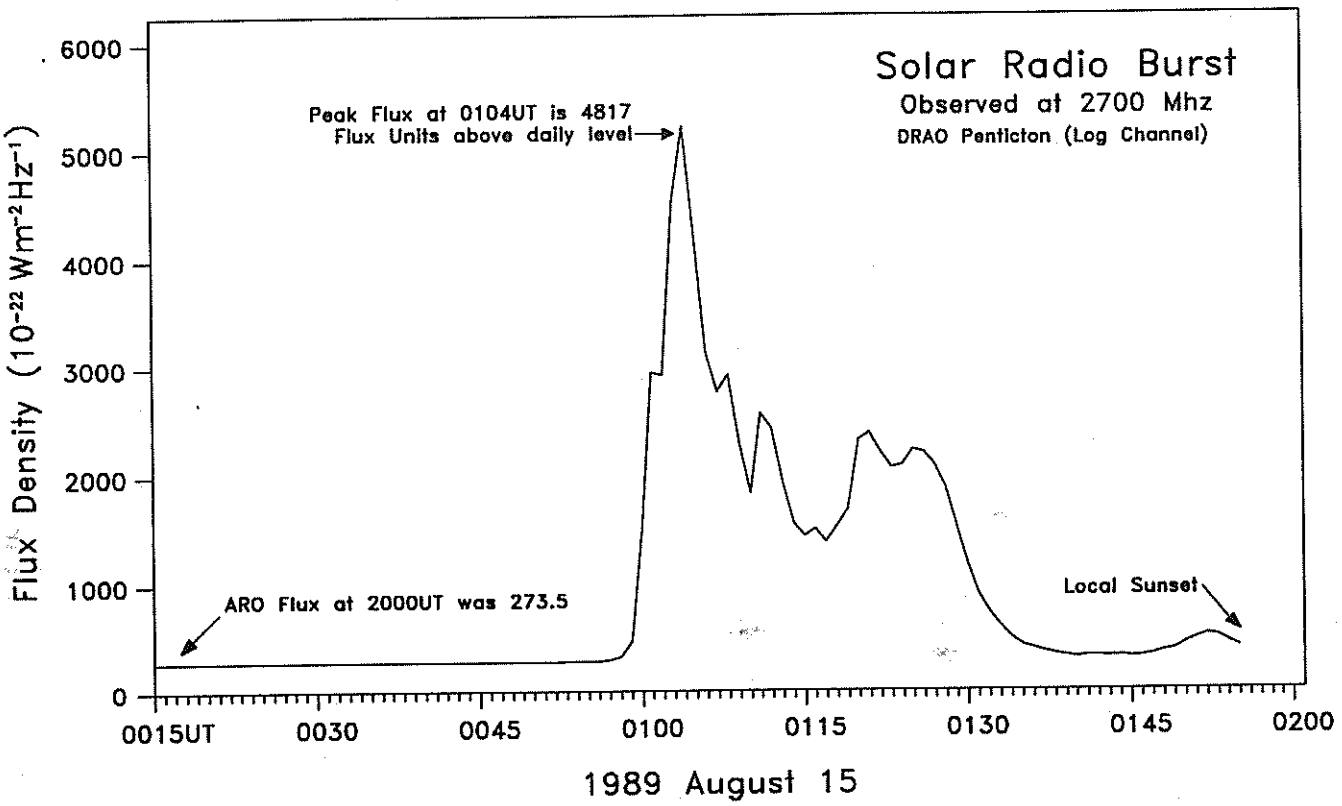


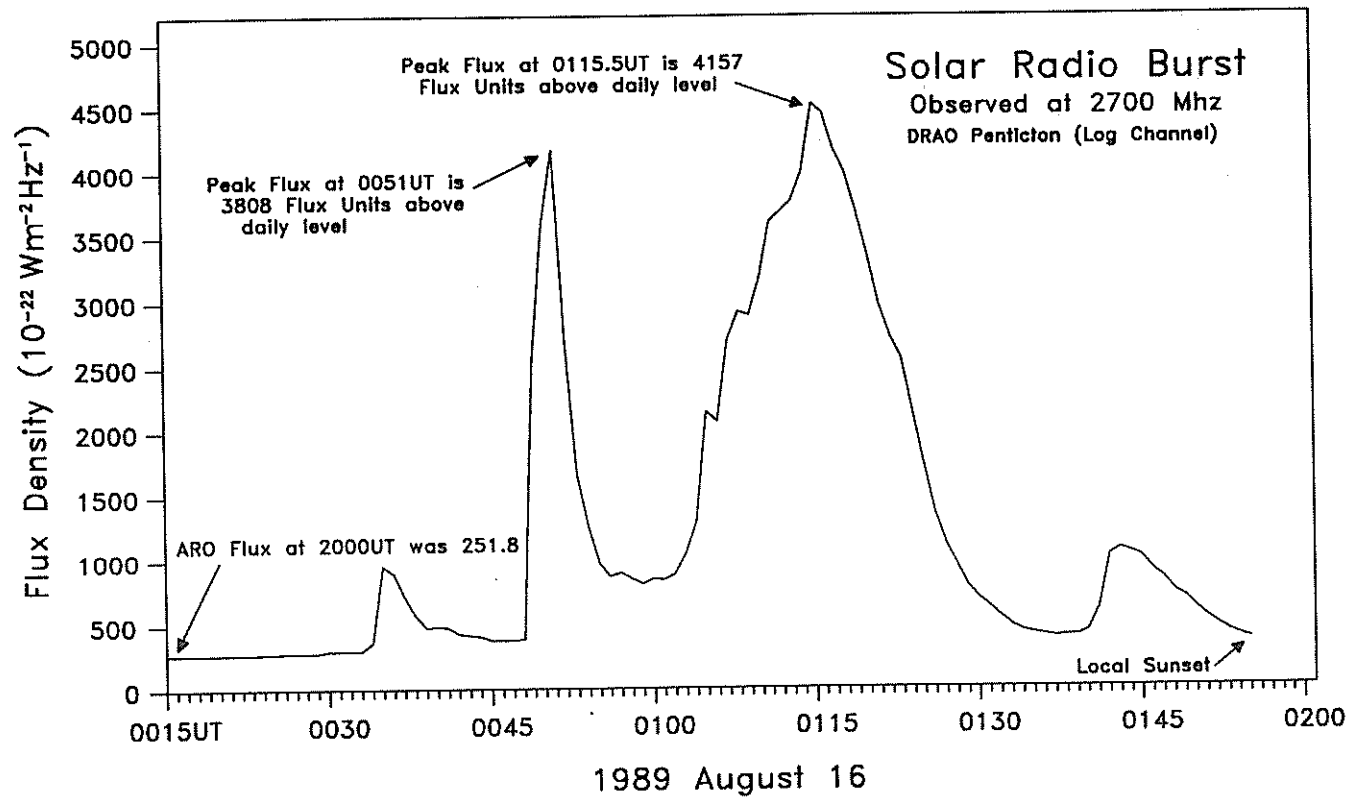
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERN, SWITZERLAND



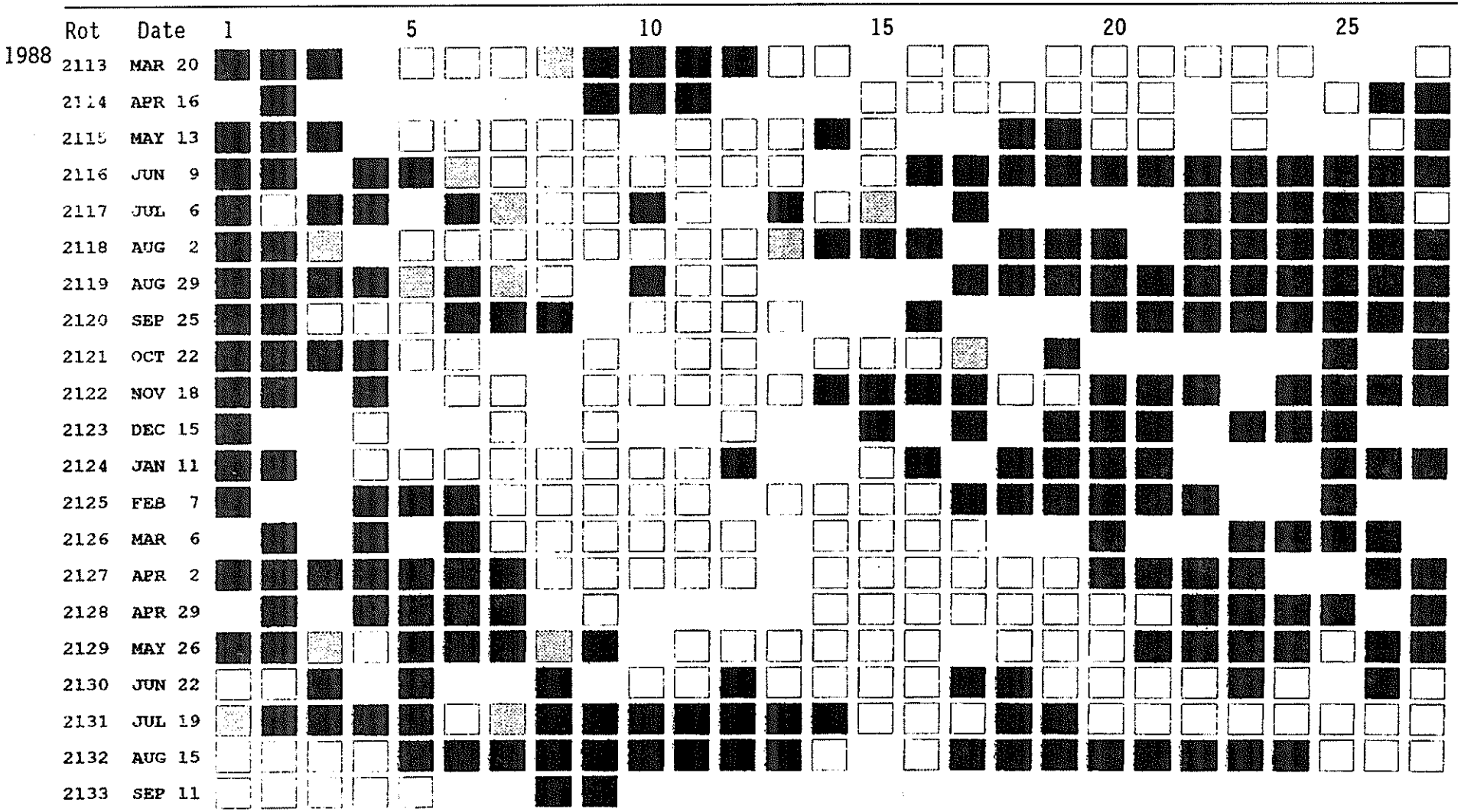





Solar Radio Burst
Observed at 2700 Mhz
DRAO Penticton (Log Channel)
Peak Flux at 0104UT is 4817
Flux Units above daily level
ARO Flux at 2000UT was 273.5
Local Sunset
Flux Density (10^{-22} $Wm^{-2}Hz^{-1}$)
6000
5000
4000
3000
2000
1000
0
0015UT
0030
0045
0100
0115
0130
0145
0200
1989 August 15


Solar Radio Burst
Observed at 2700 Mhz
DRAO Penticton (Log Channel)
Peak Flux at 0115.5UT is 4157
Flux Units above daily level
Peak Flux at 0051UT is
3808 Flux Units above
daily level
ARO Flux at 2000UT was 251.8
Local Sunset
Flux Density (10^{-22} $Wm^{-2}Hz^{-1}$)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0015UT
0030
0045
0100
0115
0130
0145
0200
1989 August 16

STANFORD MEAN SOLAR MAGNETIC FIELD



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

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1988 Sep	Oct	Nov	Dec	1989 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	-27	-15	23	-3	.	.	.	.	.	-5	4	-145
2	-2	-19	24	-5	-19	.	.	-97	-47	-1	51	80
3	-4	.	.	-4	-22	.	-66	-114	-31	-22	-19	121
4	-2	8	40	-12	-41	-65	.	-86	-22	.	3	14
5	16	12	19	2	.	-46	.	-76	-22	2	71	-51
6	.	15	3	4	-65	-4	.	-62	.	56	69	-65
7	-22	10	0	-24	-85	-13	-10	-28	65	74	25	9
8	43	.	.	-27	-101	.	.	-15	.	120	-90	145
9	45	.	-9	-33	.	.	-58	25	.	145	-79	86
10	.	-8	.	.	.	-16	.	71	.	142	106	82
11	.	.	.	-62	-16	-6	-16	101	.	.	115	59
12	.	.	.	-47	-23	-18	37	78	73	37	84	43
13	.	.	.	-53	.	23	39	54	87	34	73	43
14	-30	-36	.	-38	10	34	61	.	75	24	-55	55
15	-44	-33	-35	-30	24	55	63	44	76	-58	22	57
16	-50	-43	.	.	23	73	40	11	73	-26	.	66
17	-54	-39	-46	.	16	66	32	15	59	-91	-49	33
18	-46	-52	-43	34	74	.	.	19	53	-6	6	2
19	-49	-53	-46	.	101	116	64	29	22	4	0	-10
20	-64	-40	.	.	120	131	73	27	-37	-67	-138	-20
21	-67	-37	-19	56	119	94	14	-21	-44	-18	-126	-35
22	-64	-34	.	.	-29	40	12	-68	-48	35	-57	-41
23	-57	-38	29	61	.	-13	.	-6	-54	15	-25	-29
24	-36	-36	31	.	.	-7	.	-110	.	-15	10	-15
25	-29	-17	.	.	22	-35	-50	.	-44	.	-2	-13
26	-8	14	30	65	-37	-64	.	.	-14	-24	-15	-15
27	6	15	31	.	.	-108	.	-80	-13	.	-52	-7
28	34	.	24	.	-50	-93	-110	-77	1	.	-27	4
29	13	.	26	-5	-64		-105	.	7	-30	-12	.
30	-6	15	18	.	-91		-106	-64	-12	.	-44	3
31		.		-24	-101		-100		-5		-144	-29

Dot symbol indicates no data available for the day.

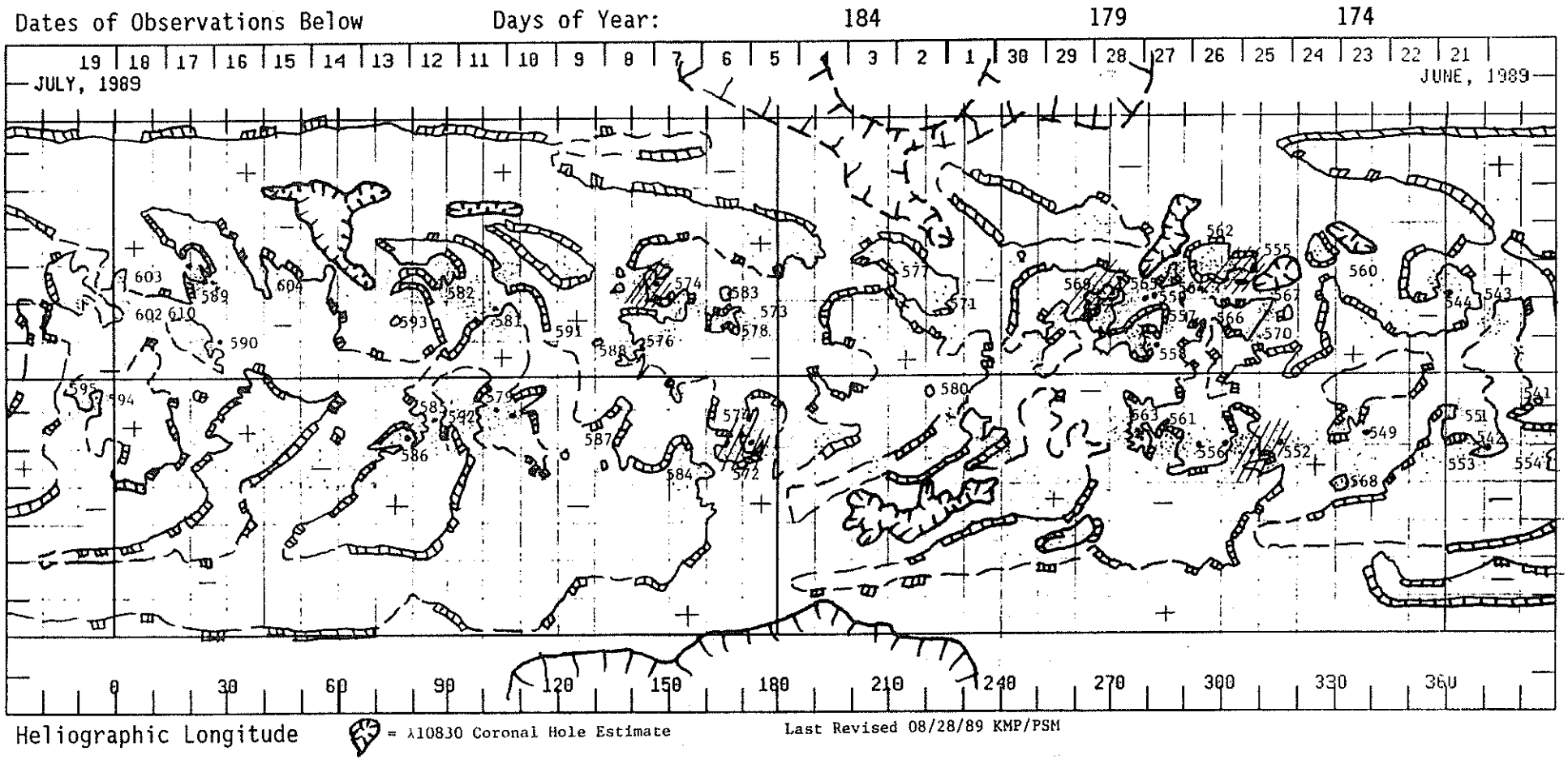
CONTENTS

Prompt Reports DATA FOR **JULY 1989** Number 541 Part I

*** Data no longer available in SGD because of extremely low usage. Please contact the data center for further information on data availability.

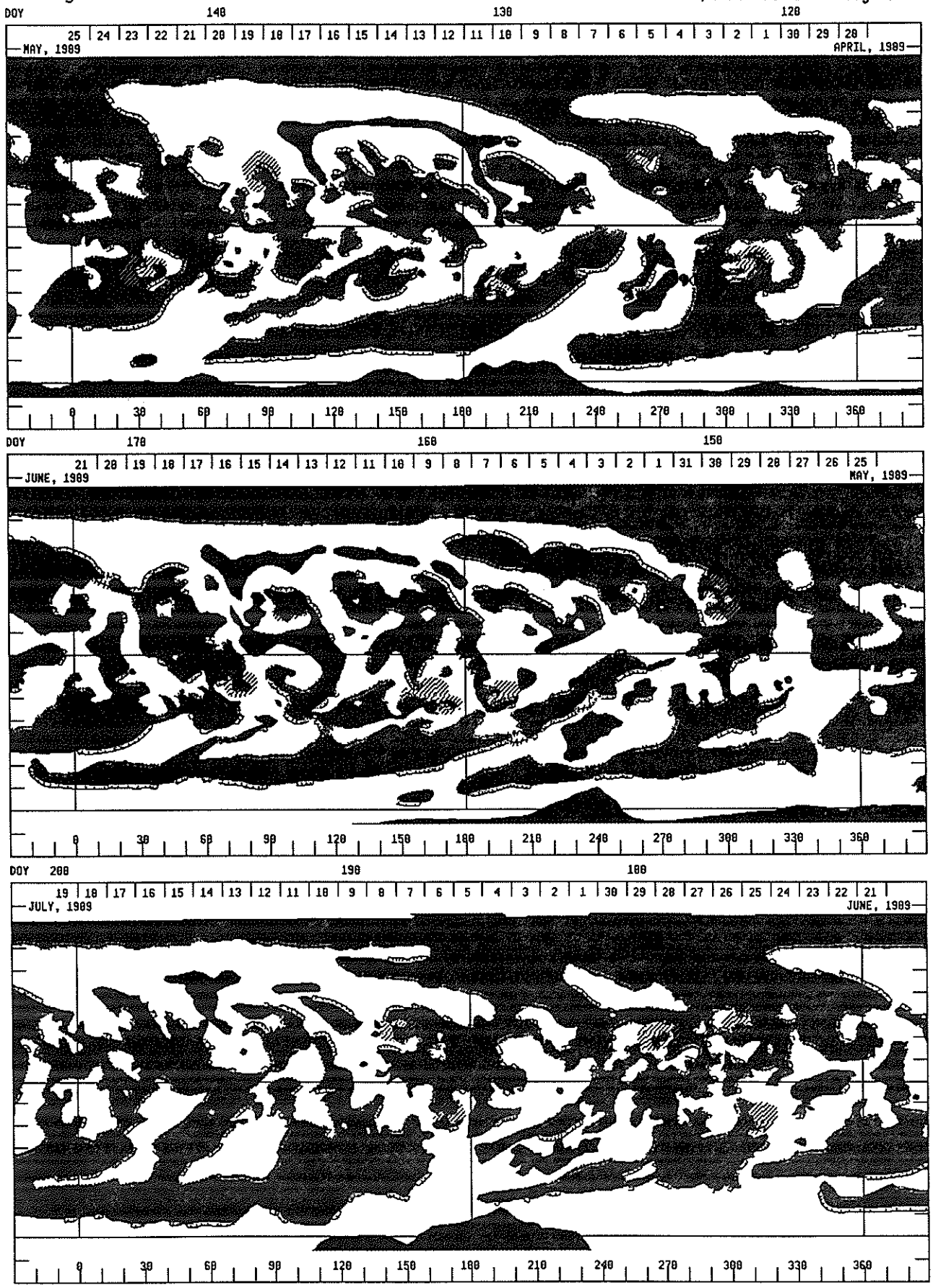
P R E L I M I N A R Y H - A L P H A S O L A R S Y N O P T I C C H A R T

CARRINGTON ROTATION NUMBER 1817
(21 June to 19 July 1989)



SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1815-1817 28 April to 19 July 1989



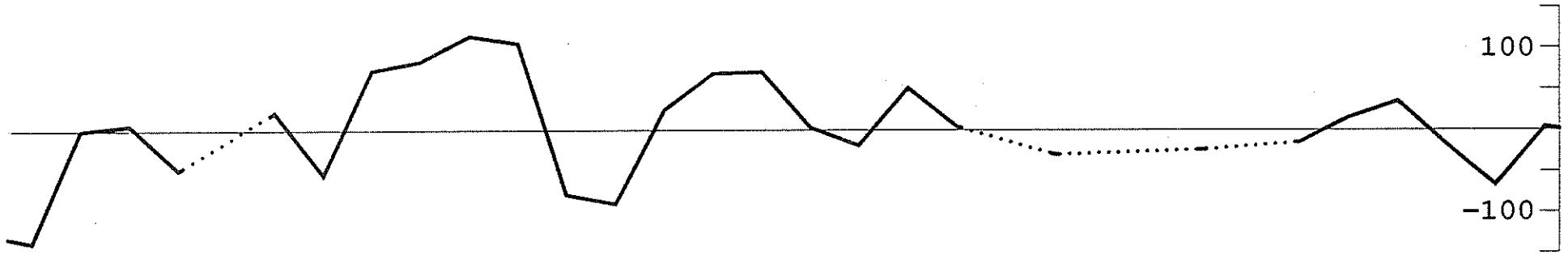
□ = Positive Polarity ■ = Negative Polarity ■ = 10830 Coronal Hole Estimate ▨ = X-Ray Flares > M1

Heliographic Longitude

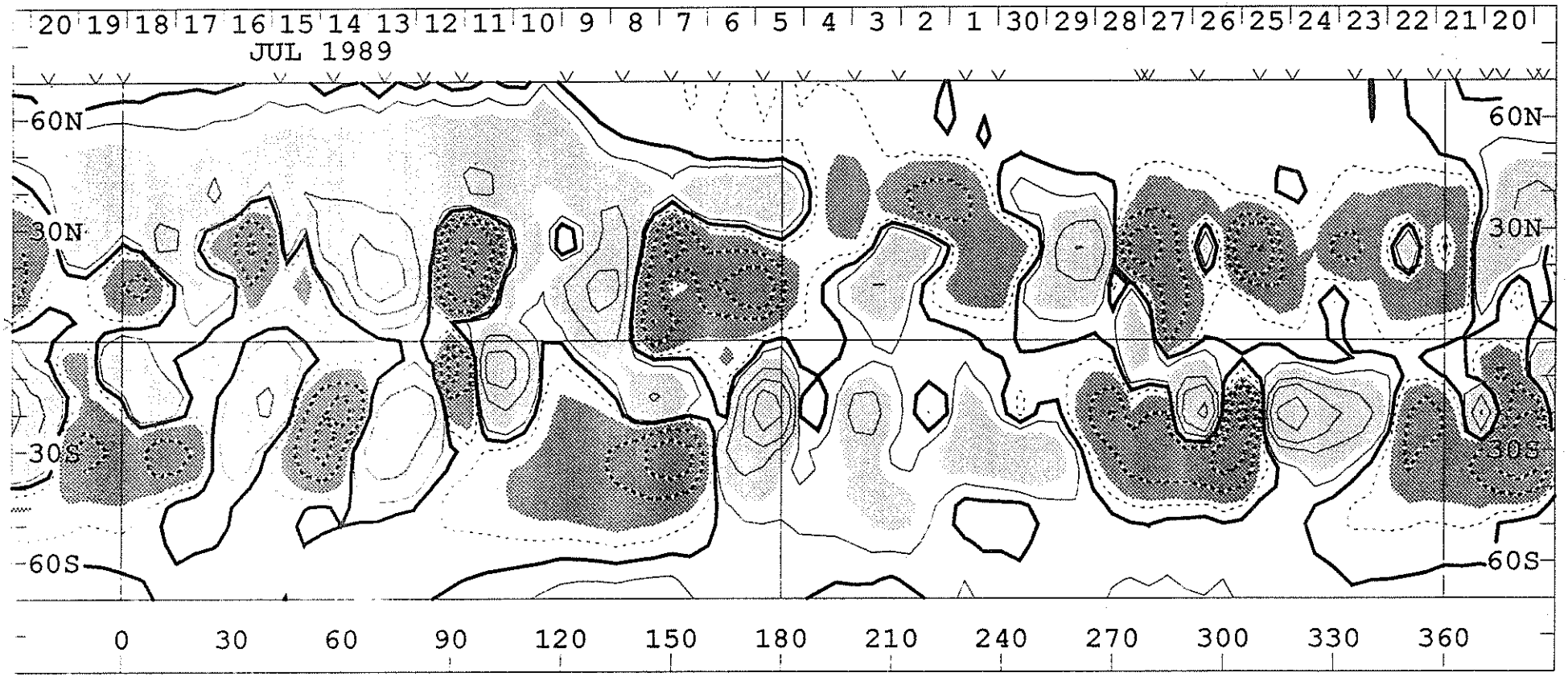
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1817
(21 June to 19 July 1989)

WILCOX SOLAR OBSERVATORY



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



SOLAR MAGNETIC FIELD SYNOPTIC CHART

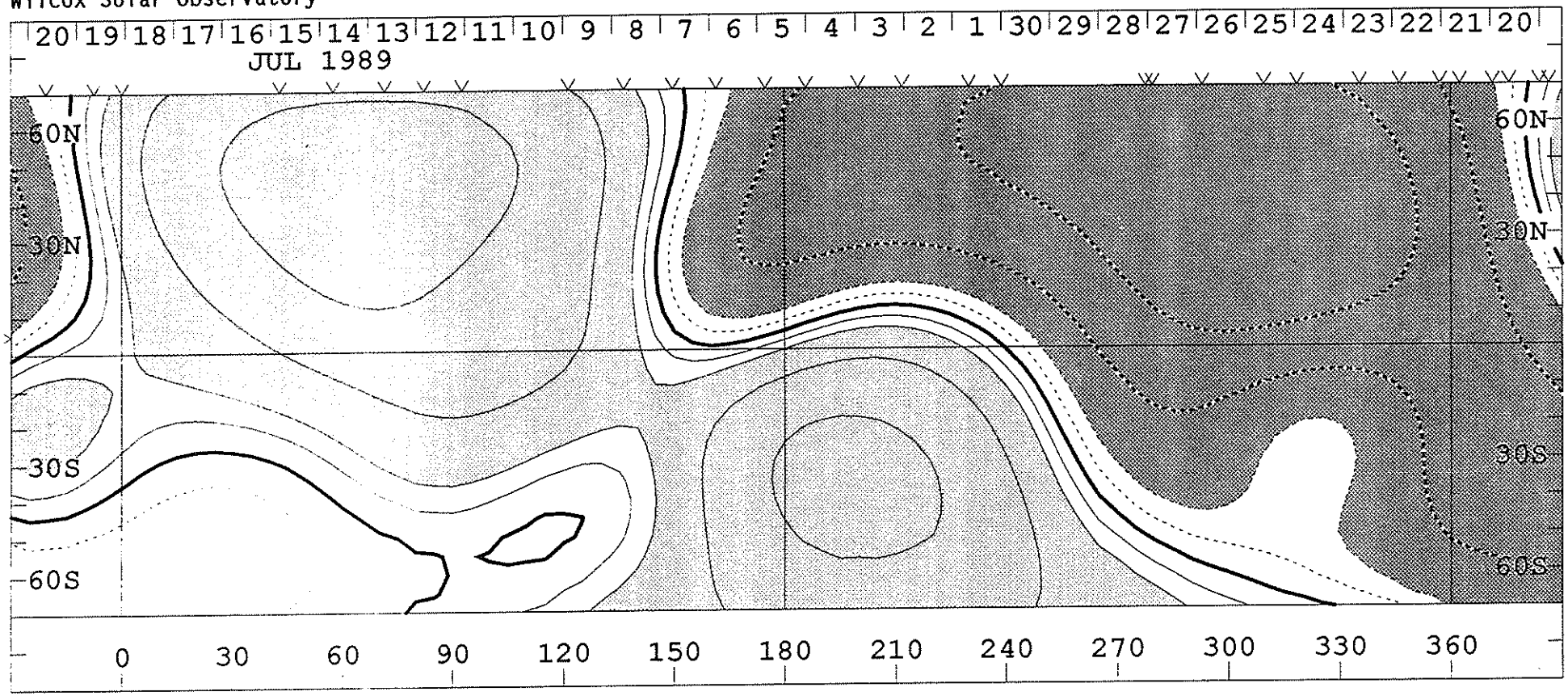
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1817

(21 June to 19 July 1989)

Wilcox Solar Observatory

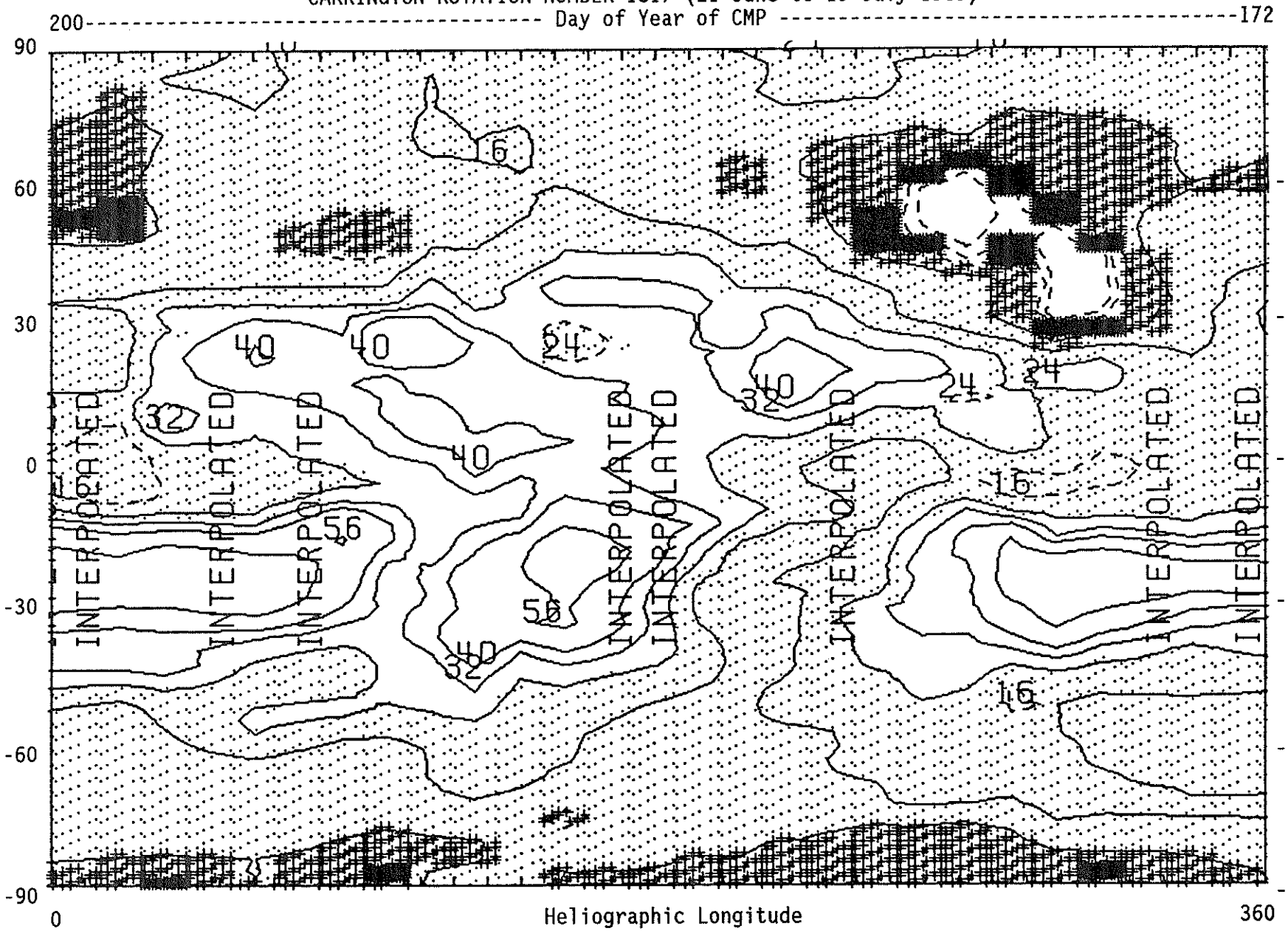
0, ±1, 2, 5, 10, 20 microTesla



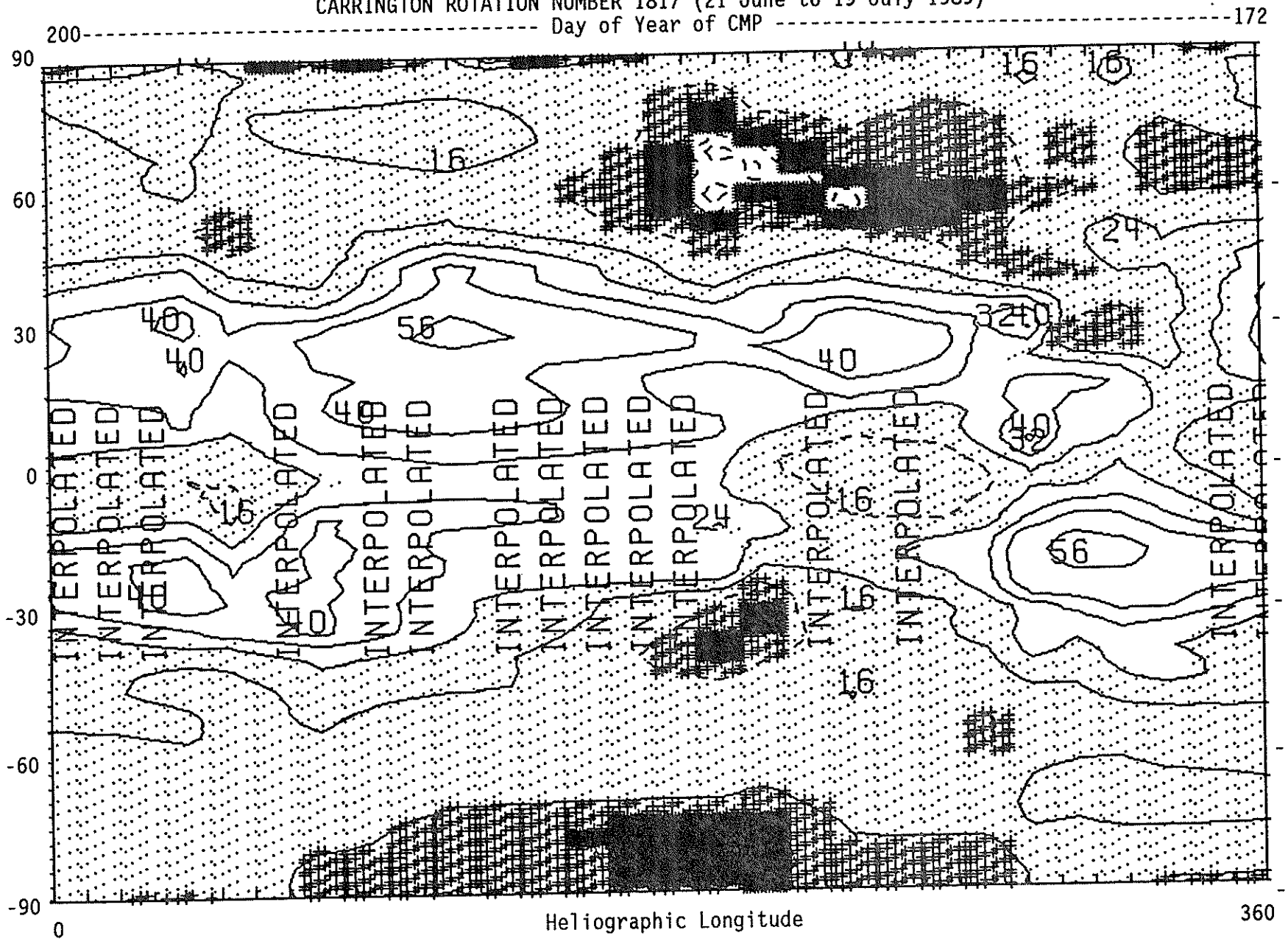
Heliographic Longitude

JUL 89

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1817 (21 June to 19 July 1989)

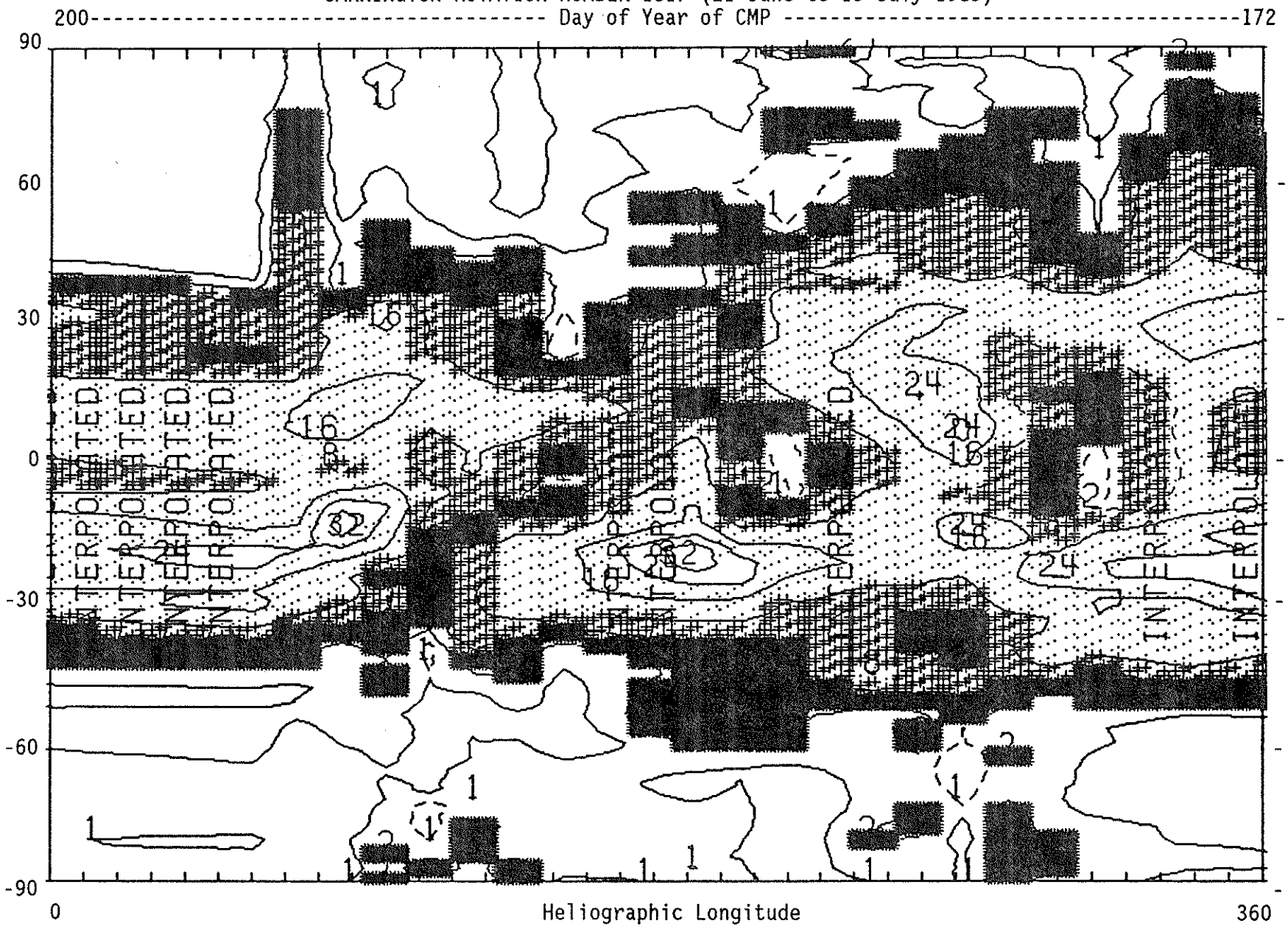


SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1817 (21 June to 19 July 1989)



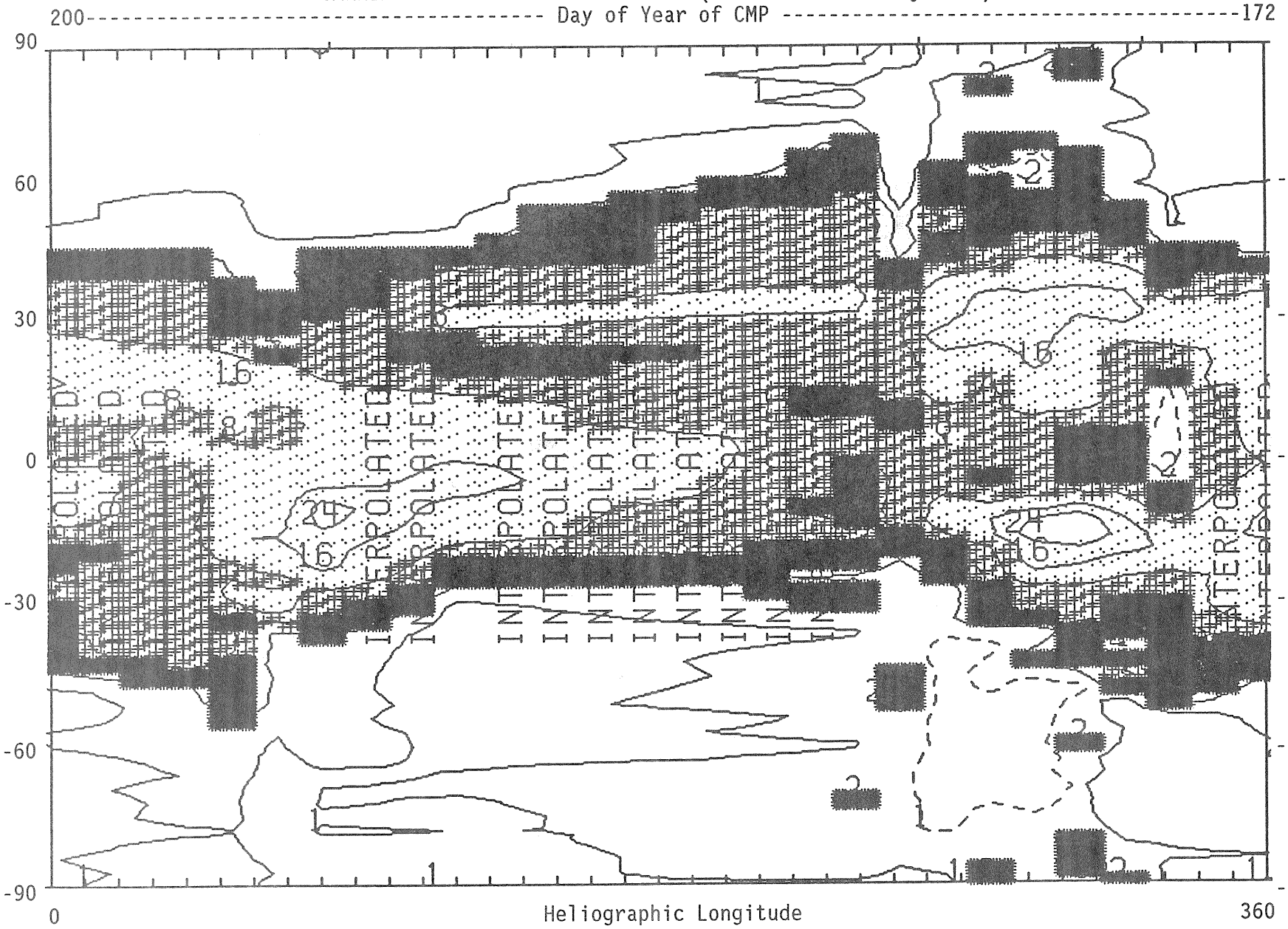
SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB

CARRINGTON ROTATION NUMBER 1817 (21 June to 19 July 1989)



SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB

CARRINGTON ROTATION NUMBER 1817 (21 June to 19 July 1989)

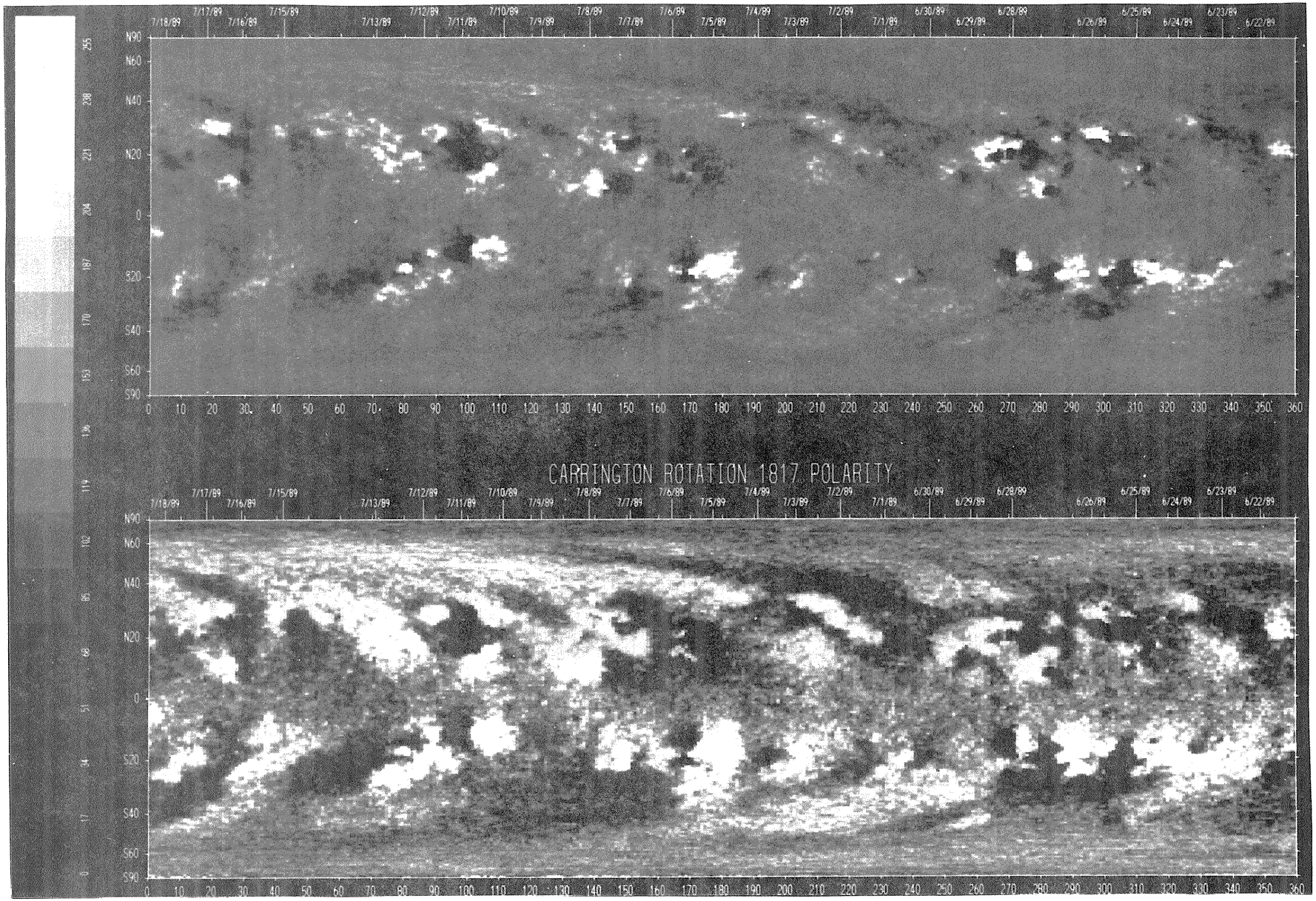


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1817
(21 June to 19 July 1989)

Kitt Peak National Observatory

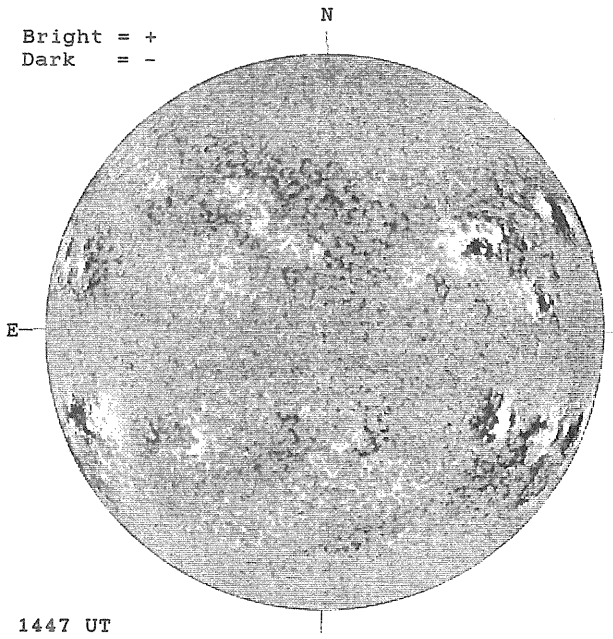
Dates of Observation



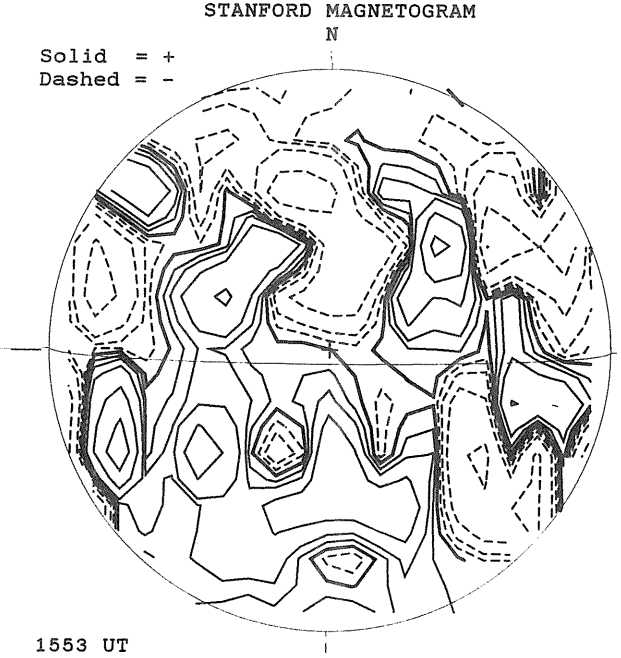
Heliographic Longitude

JULY 1, 1989 (P=- 2.70, B_o = 2.88, L_o = 238.83)

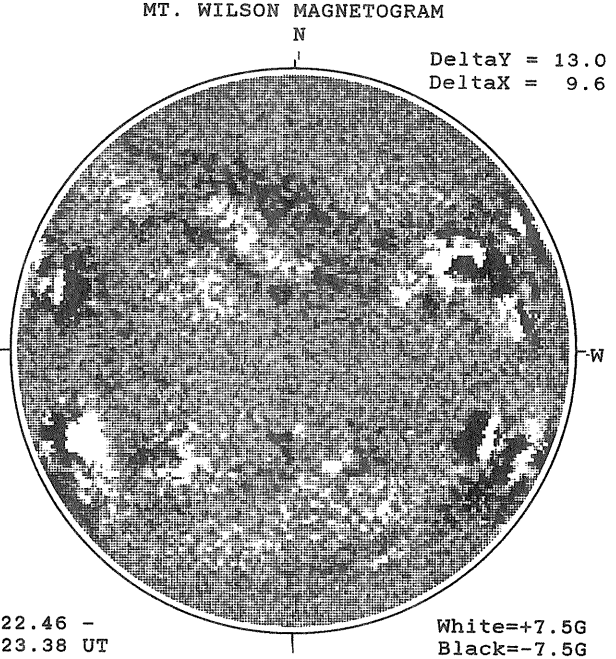
KITT PEAK MAGNETOGRAM



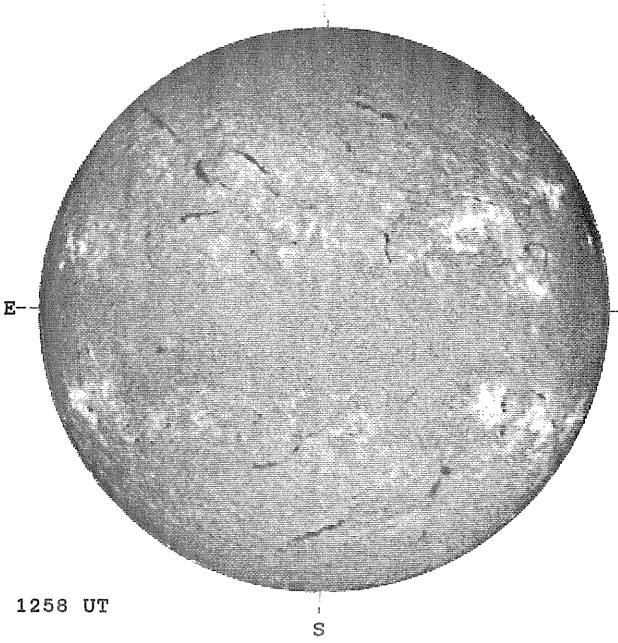
STANFORD MAGNETOGRAM



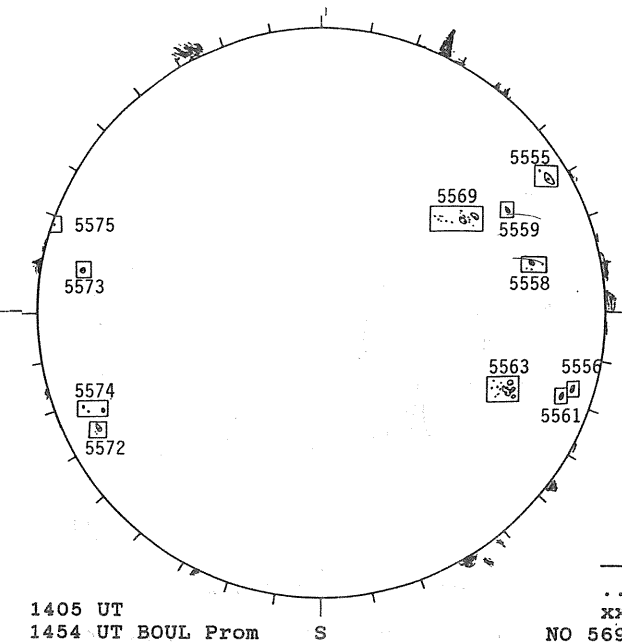
MT. WILSON MAGNETOGRAM



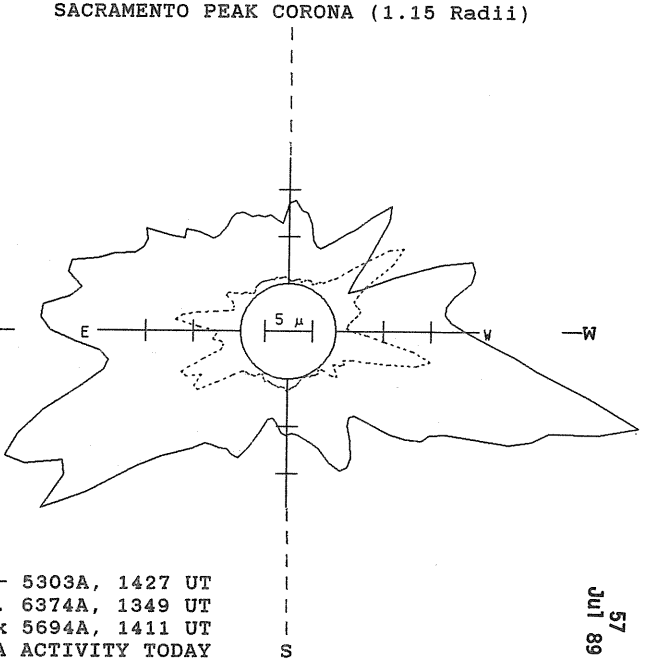
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



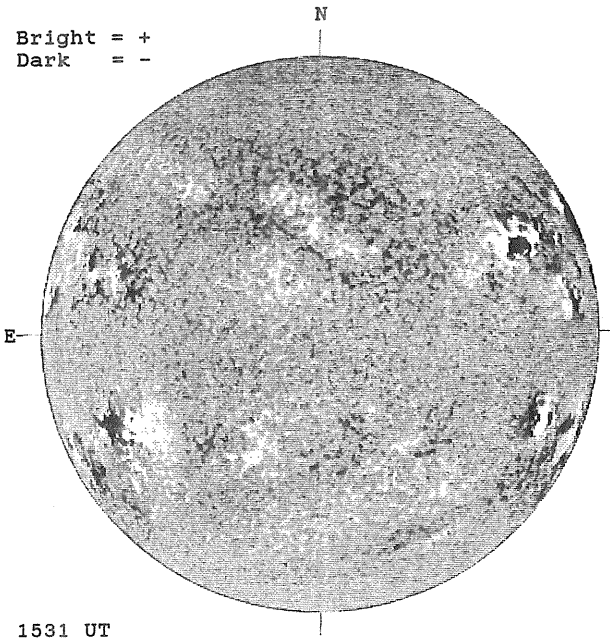
SACRAMENTO PEAK CORONA (1.15 Radii)



JULY 2, 1989 (P=- 2.24, B_o = 2.99, L_o = 225.59)

KITT PEAK MAGNETOGRAM

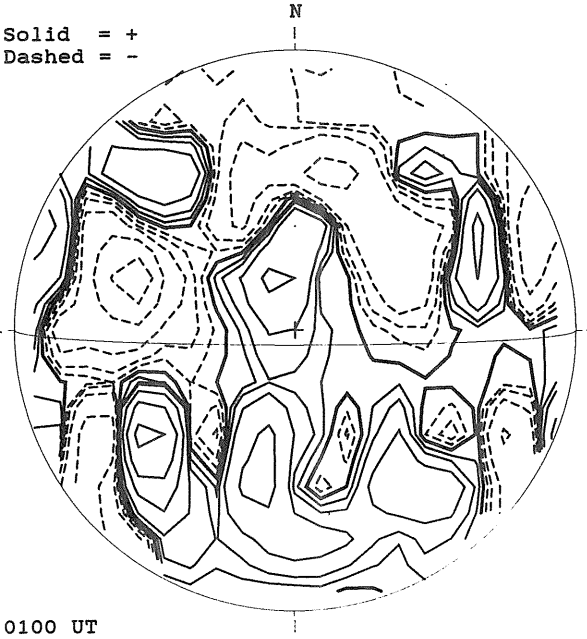
Bright = +
Dark = -



1531 UT

STANFORD MAGNETOGRAM

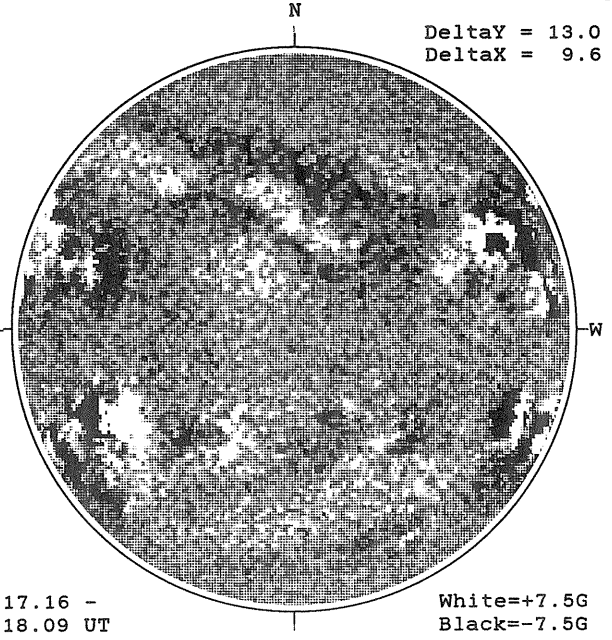
Solid = +
Dashed = -



0100 UT
July 3

MT. WILSON MAGNETOGRAM

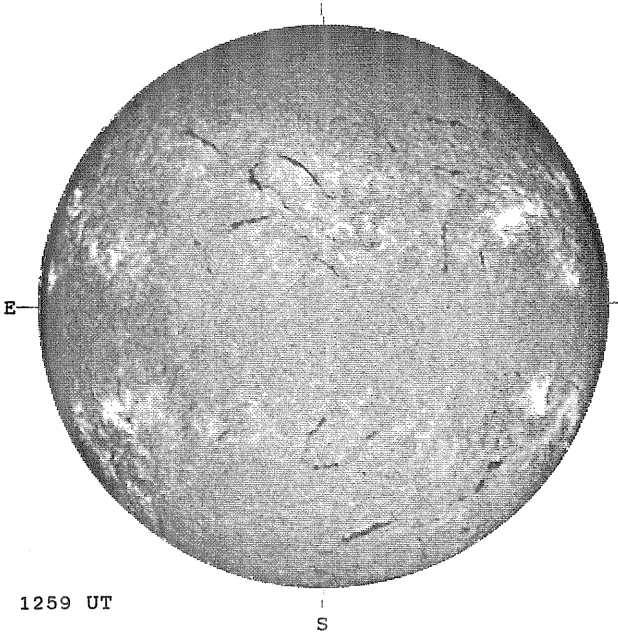
DeltaY = 13.0
DeltaX = 9.6



17.16 -
18.09 UT

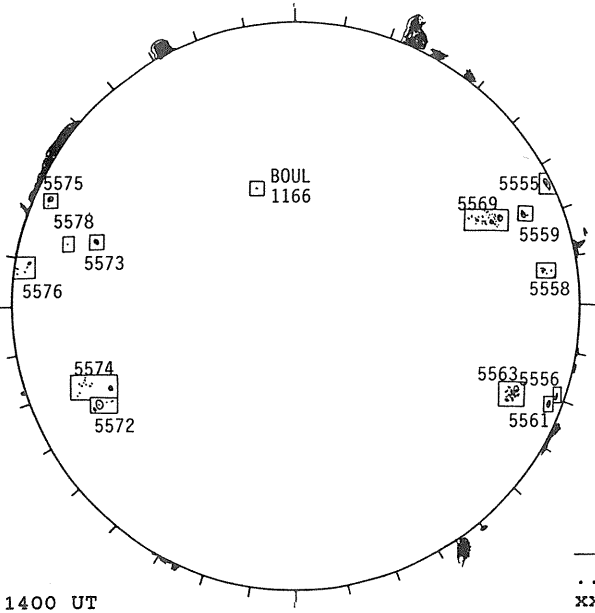
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



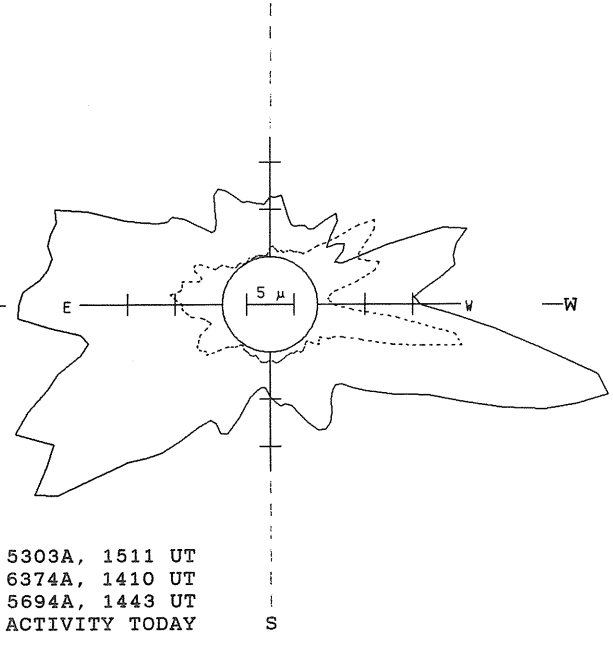
1259 UT

BOULDER SUNSPOT



1400 UT
1410 UT BOUL Prom

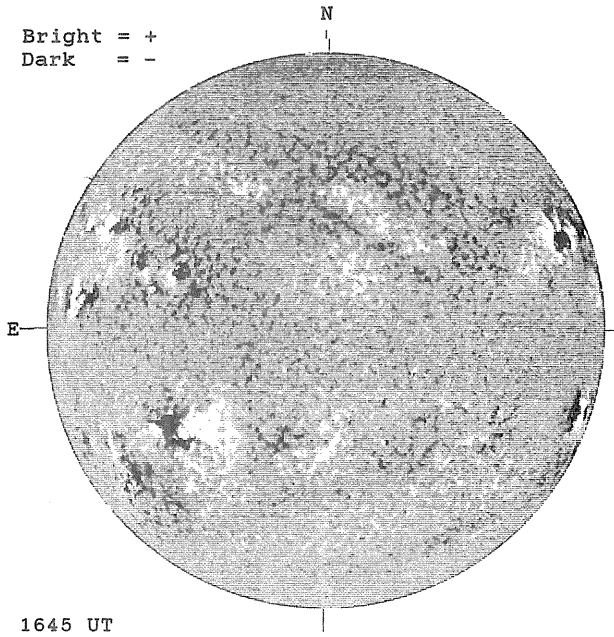
SACRAMENTO PEAK CORONA (1.15 Radii)



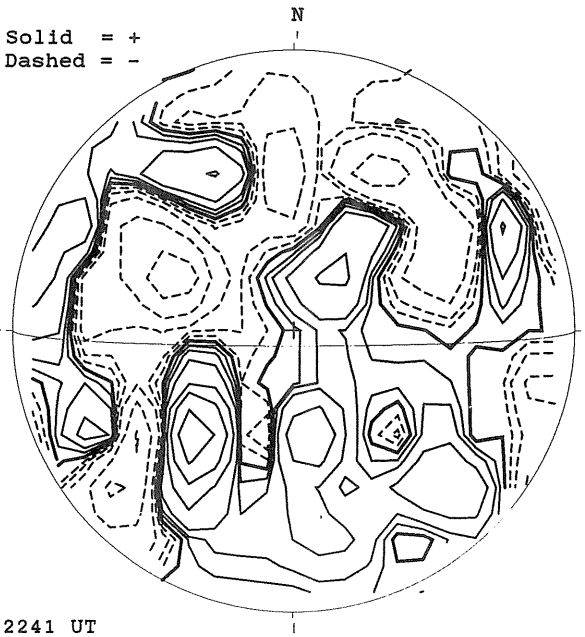
—— 5303A, 1511 UT
.... 6374A, 1410 UT
xxxx 5694A, 1443 UT
NO 5694A ACTIVITY TODAY

JULY 3, 1989 (P=- 1.79, B_o = 3.10, L_o = 212.35)

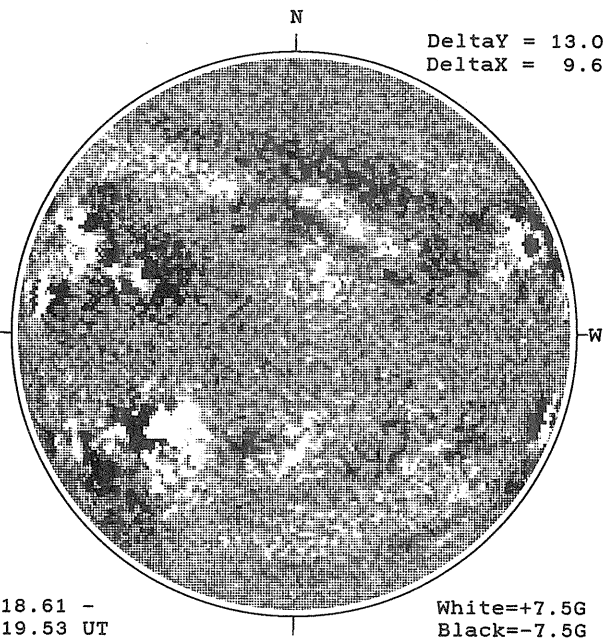
KITT PEAK MAGNETOGRAM



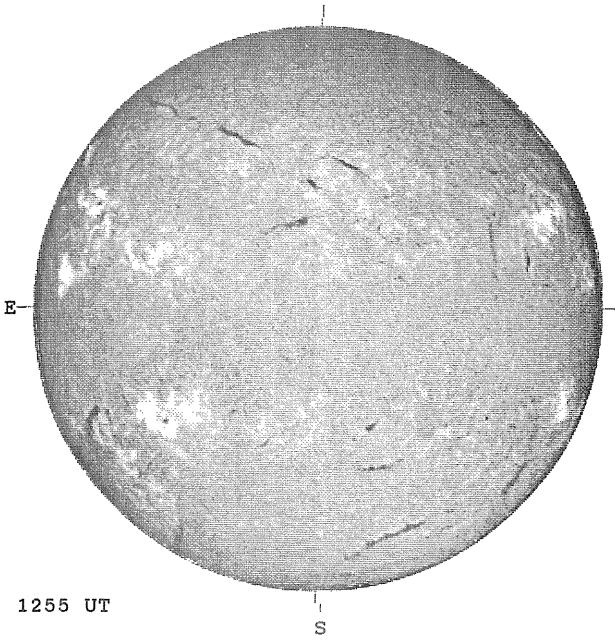
STANFORD MAGNETOGRAM



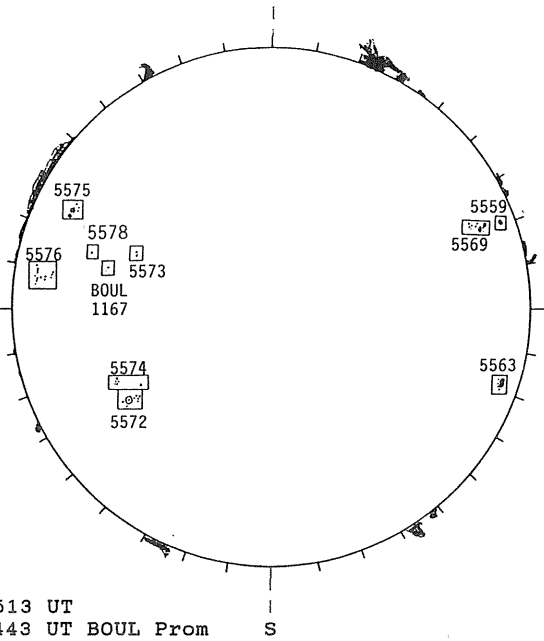
MT. WILSON MAGNETOGRAM



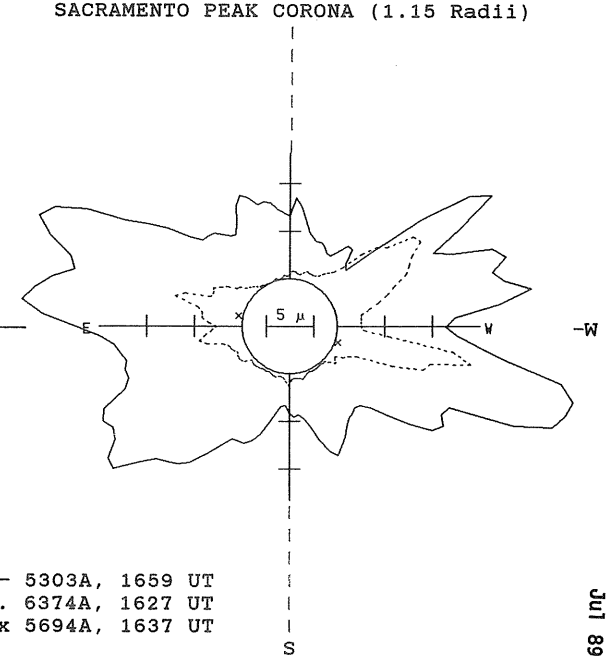
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



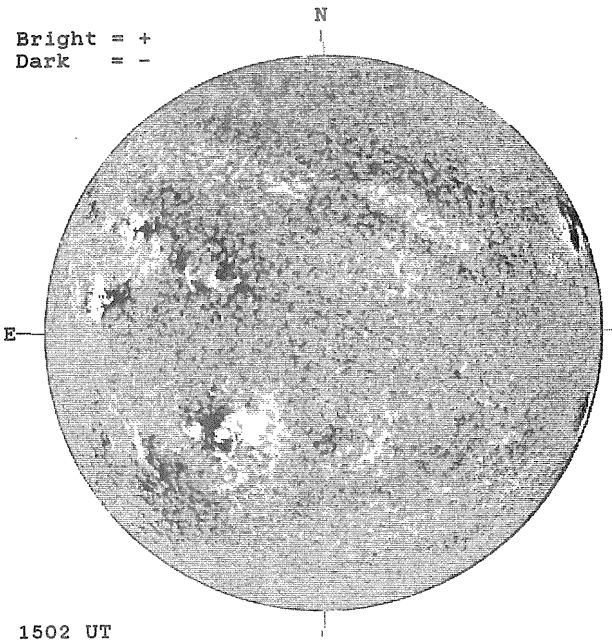
—— 5303A, 1659 UT
.... 6374A, 1627 UT
xxxx 5694A, 1637 UT

59
Jul 89

JULY 4, 1989 (P=- 1.33, B_o = 3.21, L_o = 199.12)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



1502 UT

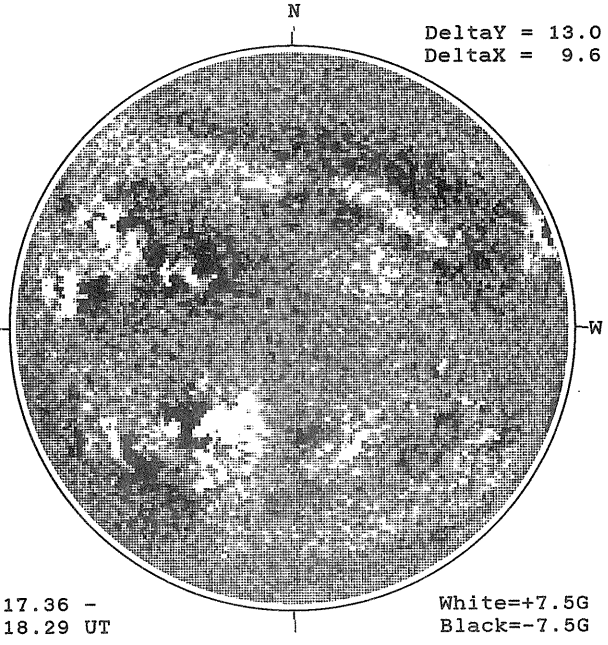
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

0012 UT
July 5

MT. WILSON MAGNETOGRAM

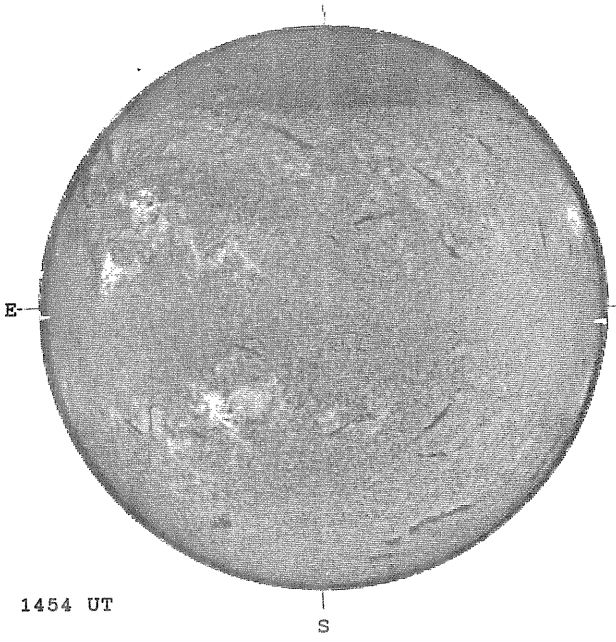
DeltaY = 13.0
DeltaX = 9.6



17.36 -
18.29 UT

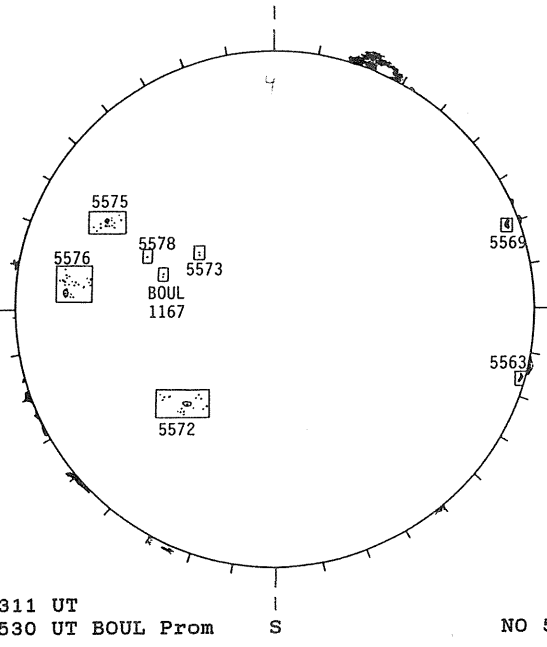
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



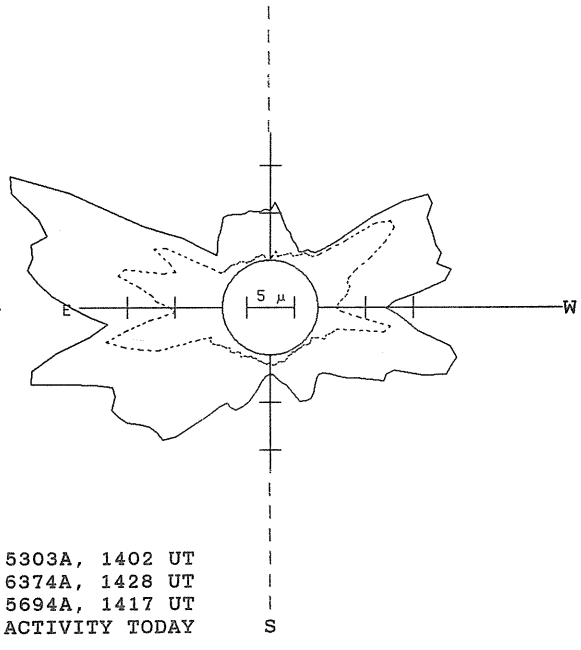
1454 UT

BOULDER SUNSPOT



1311 UT
1530 UT BOUL Prom

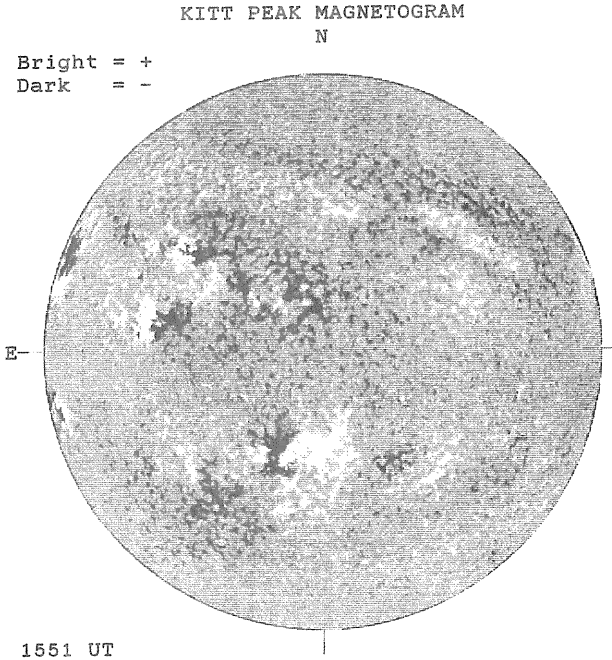
SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1402 UT
.... 6374A, 1428 UT
xxxx 5694A, 1417 UT
NO 5694A ACTIVITY TODAY

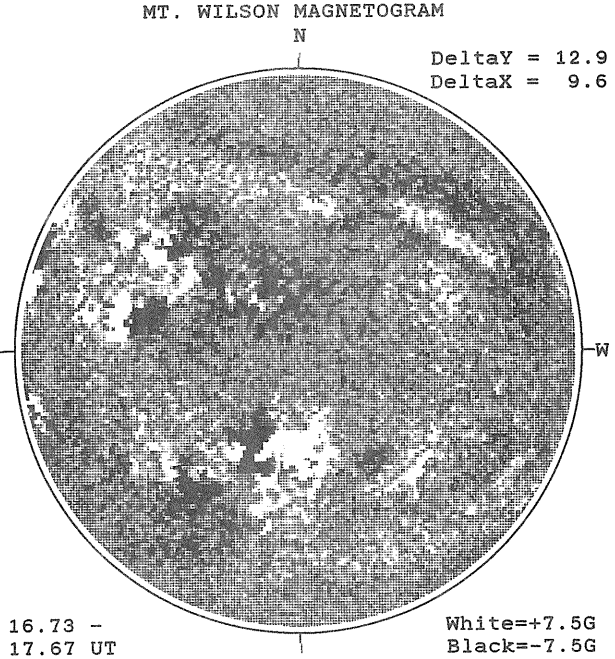
JULY 5, 1989 (P=- 0.88, B_o = 3.31, L_o = 185.88)

KITT PEAK MAGNETOGRAM

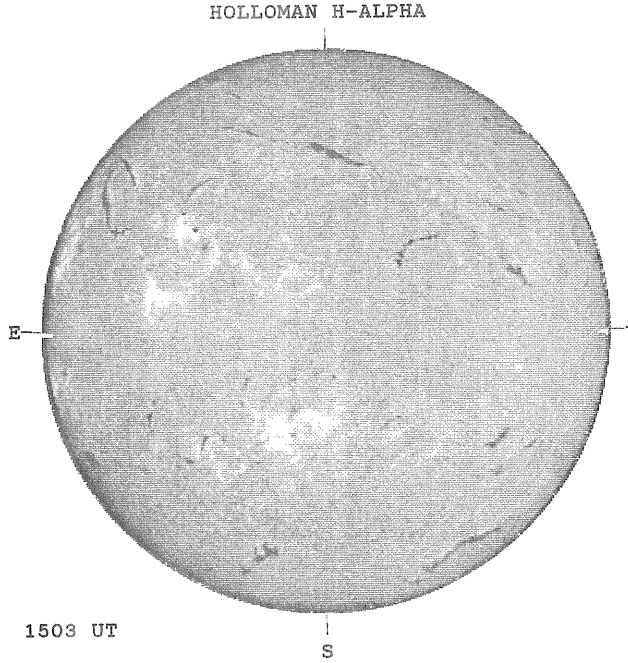


STANFORD MAGNETOGRAM

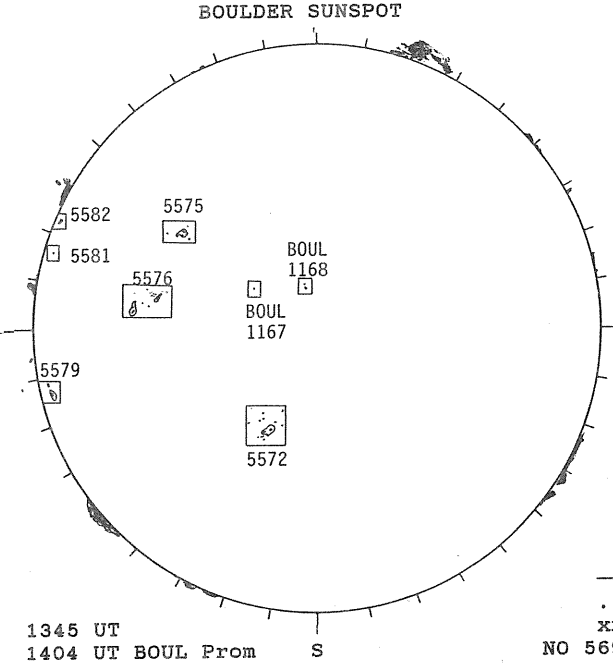
MT. WILSON MAGNETOGRAM



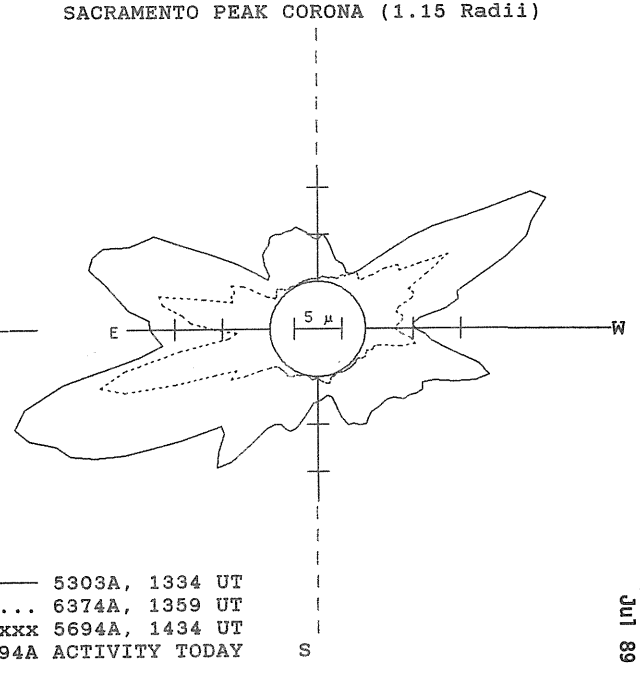
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



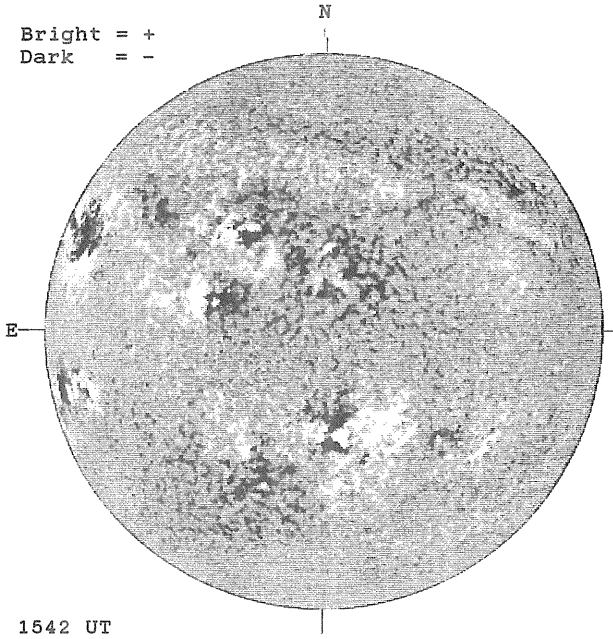
—— 5303A, 1334 UT
.... 6374A, 1359 UT
xxxx 5694A, 1434 UT
NO 5694A ACTIVITY TODAY

JULY 6, 1989 (P=- 0.42, B_o = 3.42, L_o = 172.65)

Jul 89 92

KITT PEAK MAGNETOGRAM

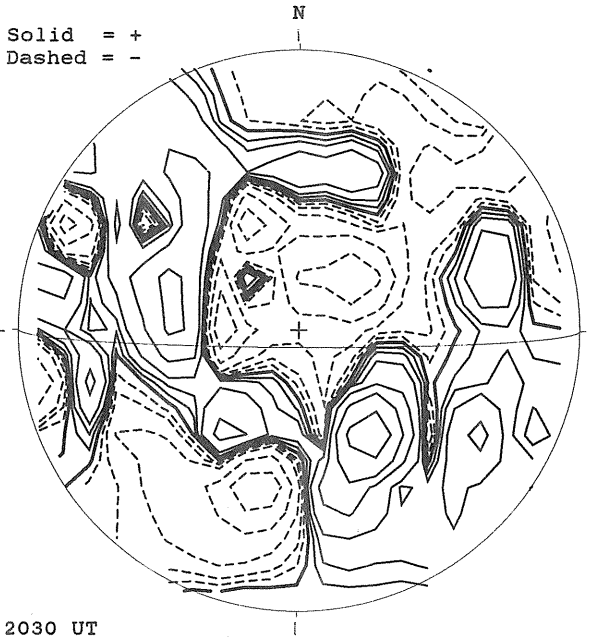
Bright = +
Dark = -



1542 UT

STANFORD MAGNETOGRAM

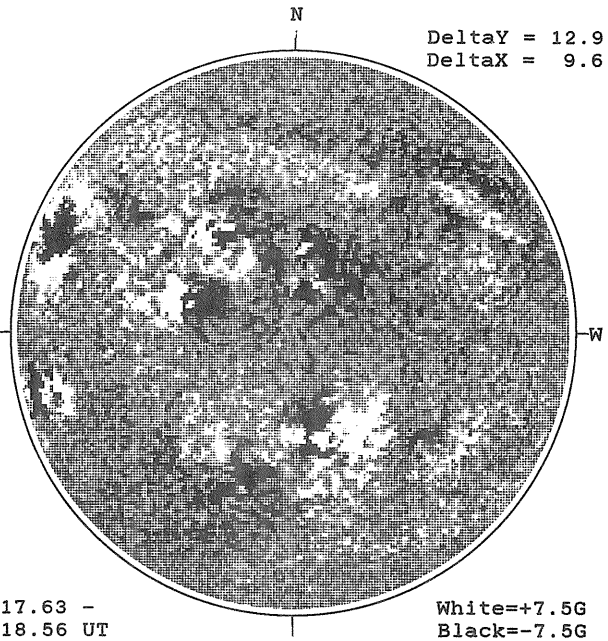
Solid = +
Dashed = -



2030 UT

MT. WILSON MAGNETOGRAM

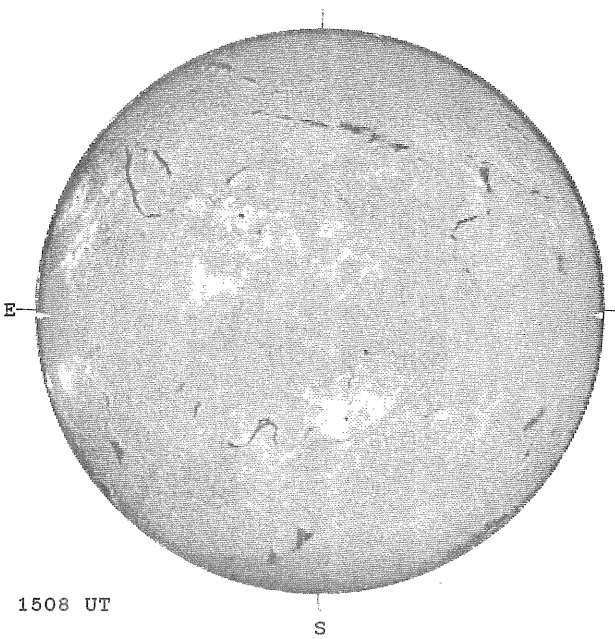
DeltaY = 12.9
DeltaX = 9.6



17.63 -
18.56 UT

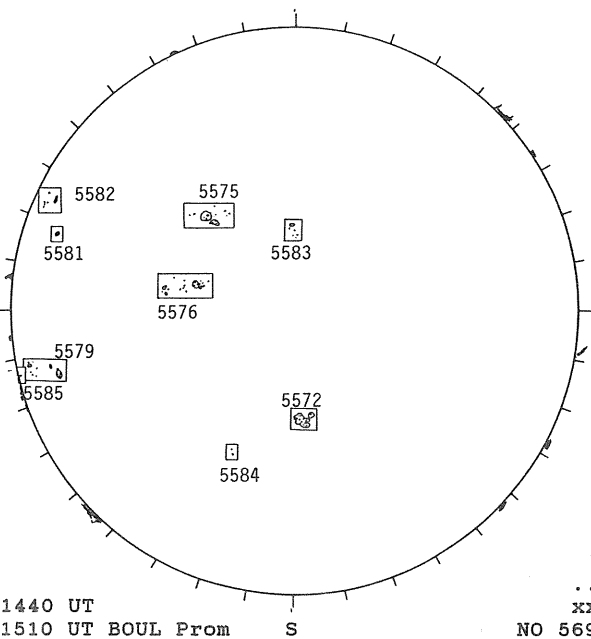
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



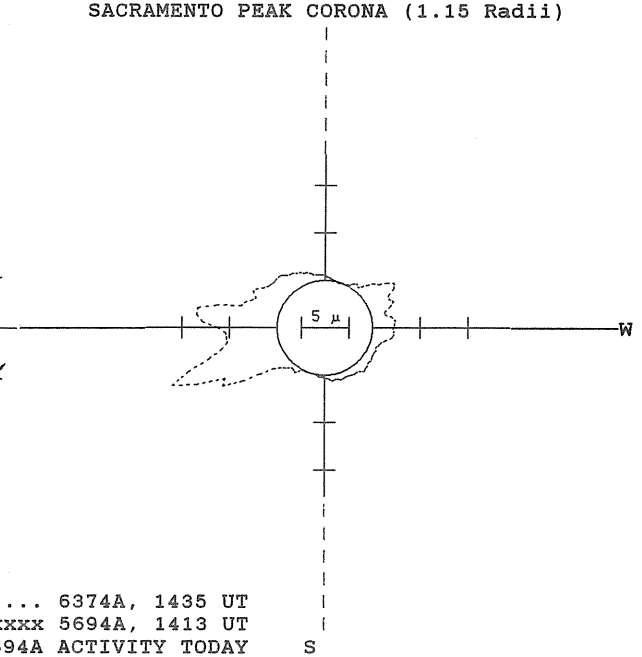
1508 UT

BOULDER SUNSPOT



1440 UT
1510 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

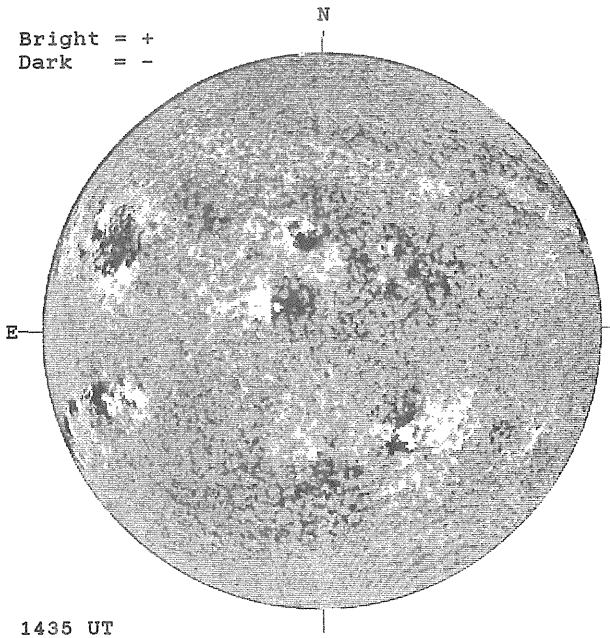


.... 6374A, 1435 UT
xxxx 5694A, 1413 UT
NO 5694A ACTIVITY TODAY

JULY 7, 1989 (P= 0.03, B_o = 3.52, L_o = 159.41)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



1435 UT

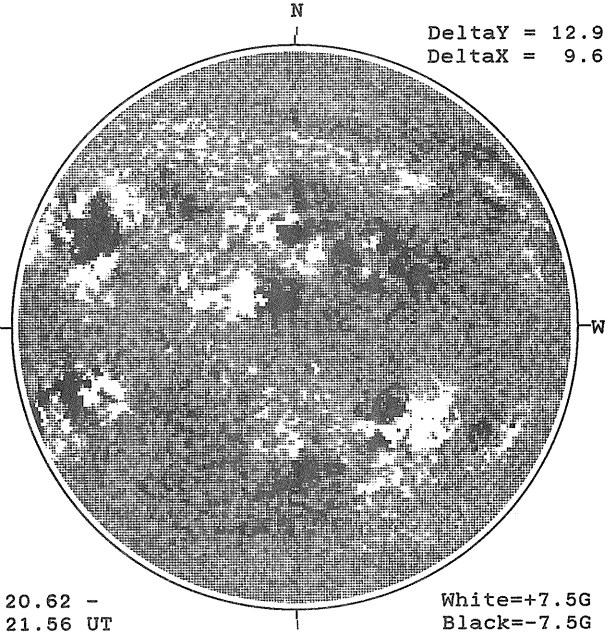
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

1757 UT

MT. WILSON MAGNETOGRAM

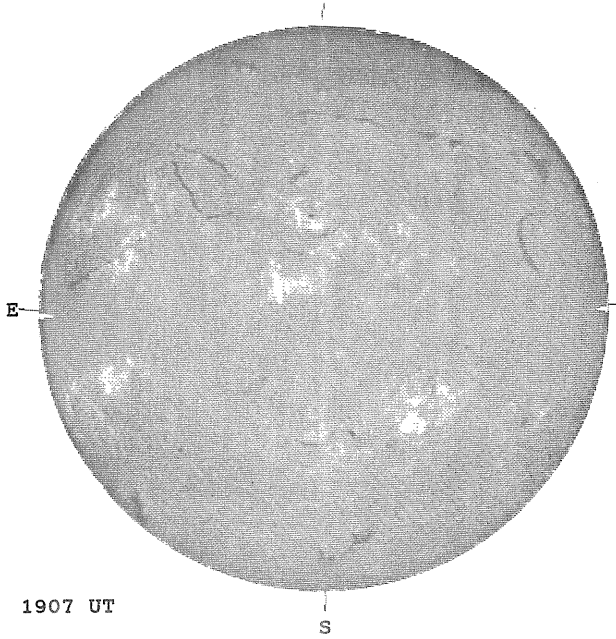
DeltaY = 12.9
DeltaX = 9.6



20.62 -
21.56 UT

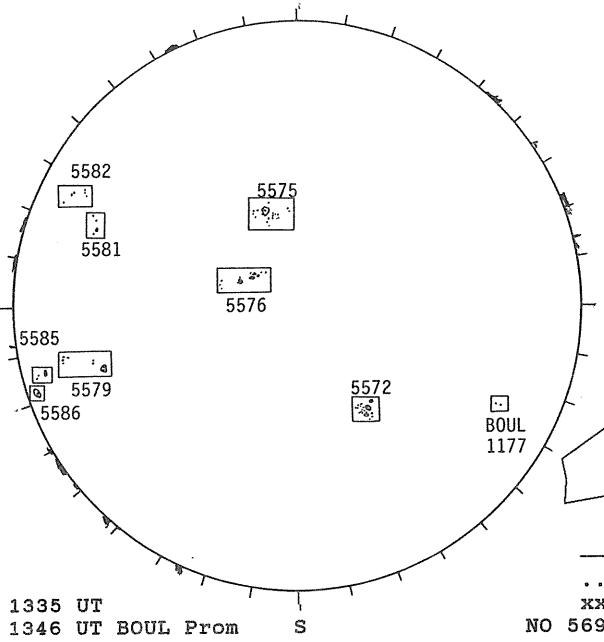
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



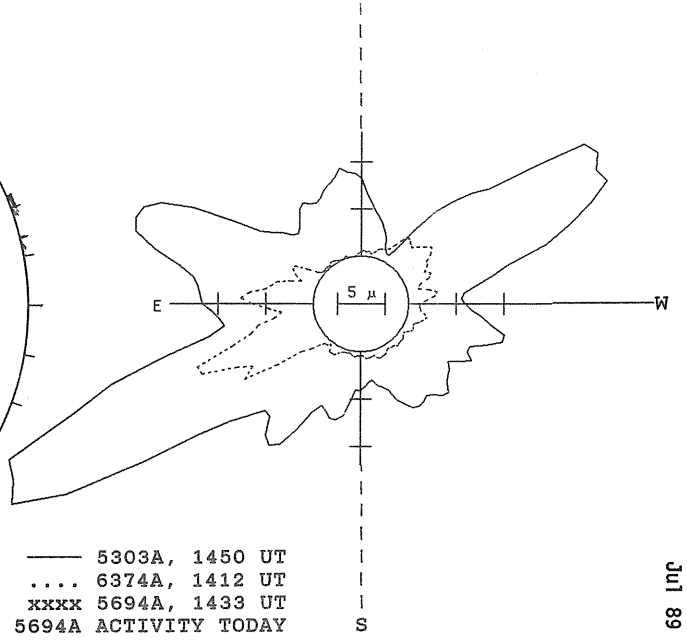
1907 UT

BOULDER SUNSPOT



1335 UT
1346 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1450 UT
.... 6374A, 1412 UT
xxxx 5694A, 1433 UT
NO 5694A ACTIVITY TODAY

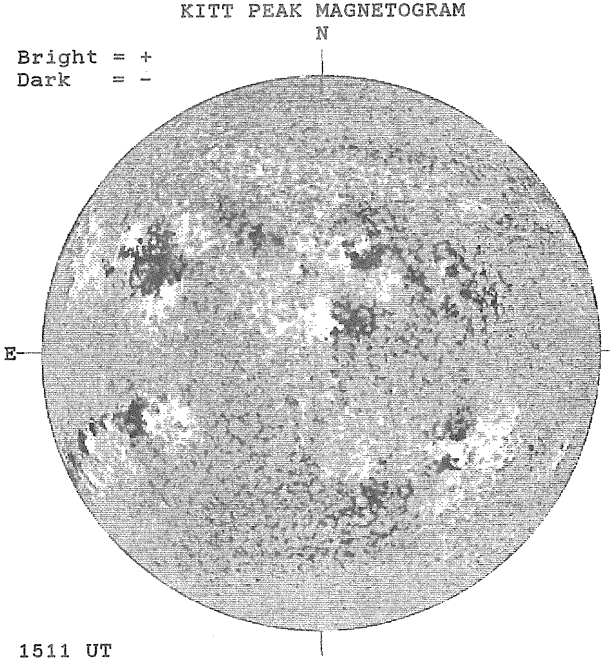
63
Jul 89

JULY 8, 1989 (P= 0.48, B_o = 3.63, L_o = 146.18)

Jul 64 89

KITT PEAK MAGNETOGRAM

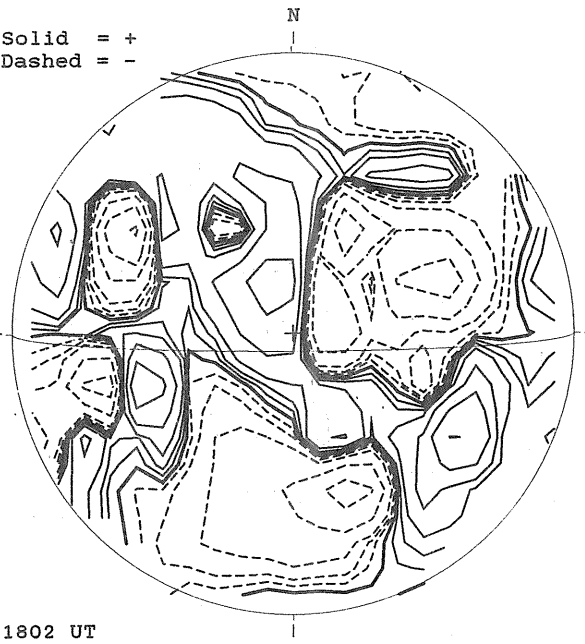
Bright = +
Dark = -



1511 UT

STANFORD MAGNETOGRAM

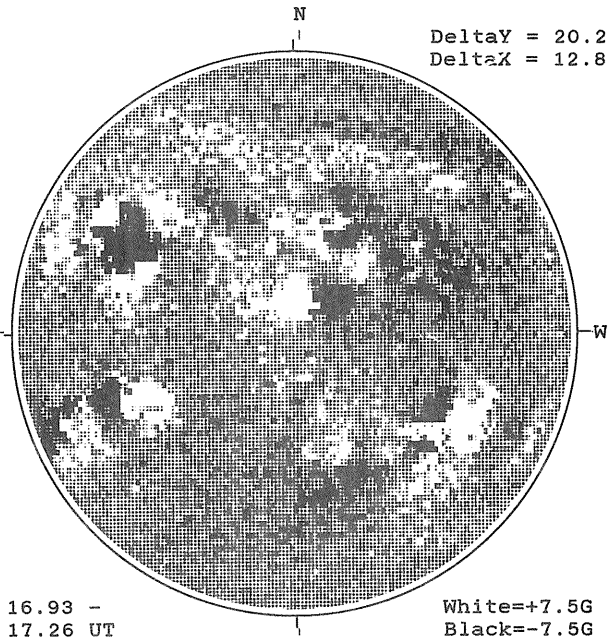
Solid = +
Dashed = -



1802 UT

MT. WILSON MAGNETOGRAM

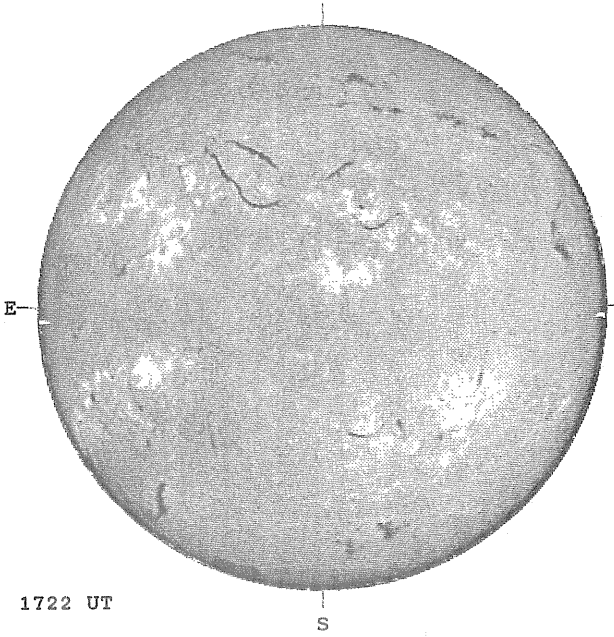
DeltaY = 20.2
DeltaX = 12.8



16.93 -
17.26 UT

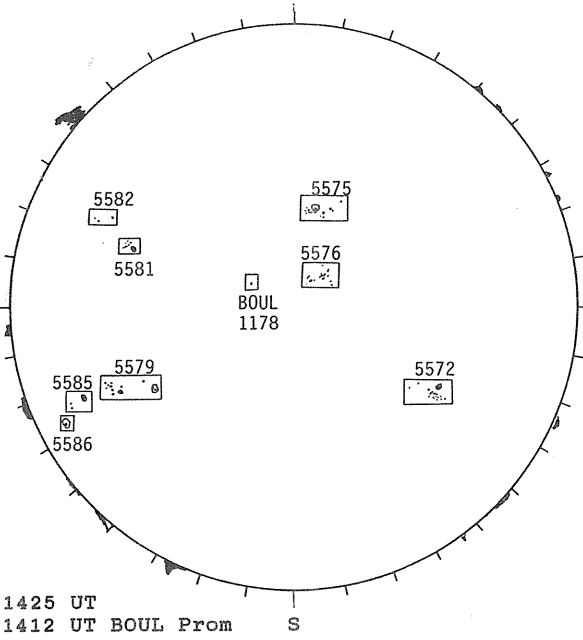
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



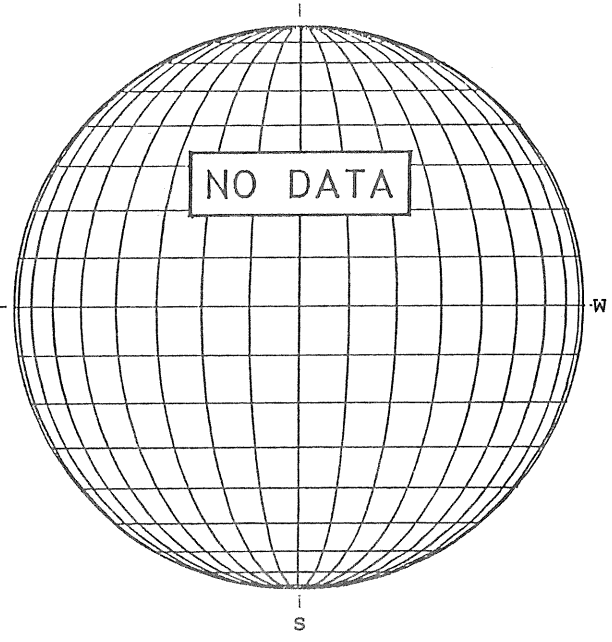
1722 UT

BOULDER SUNSPOT



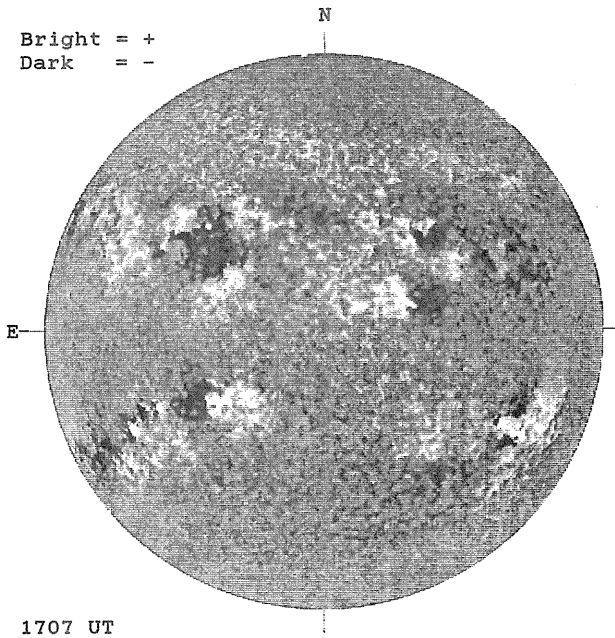
1425 UT
1412 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

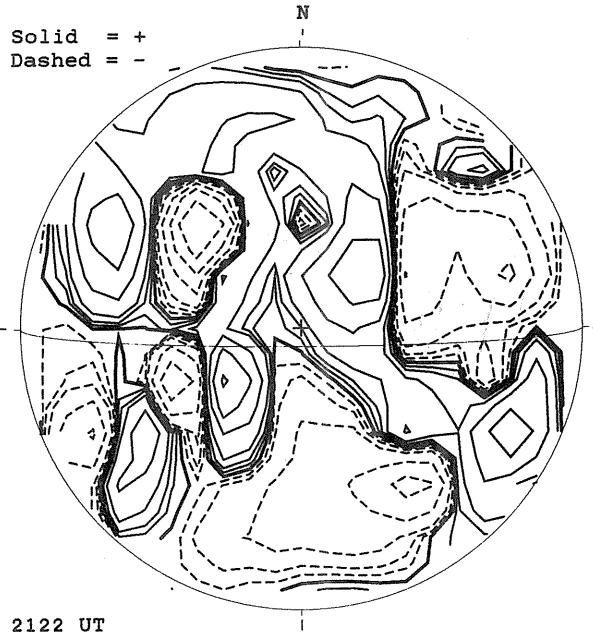


JULY 9, 1989 (P= 0.93, B_o = 3.73, L_o = 132.94)

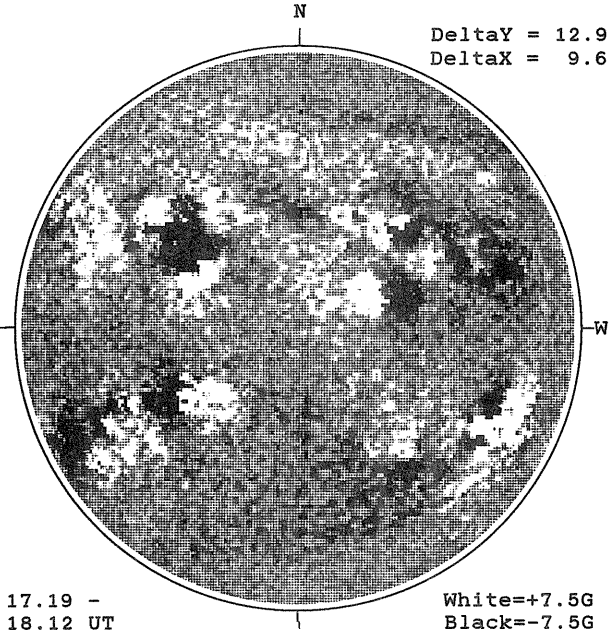
KITT PEAK MAGNETOGRAM



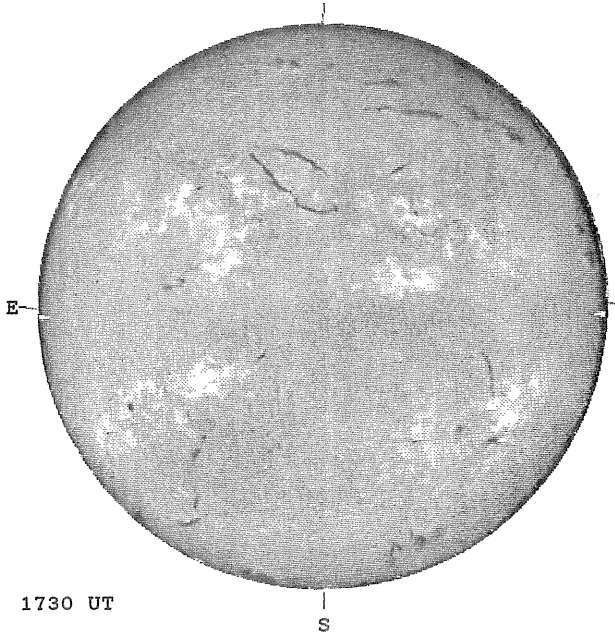
STANFORD MAGNETOGRAM



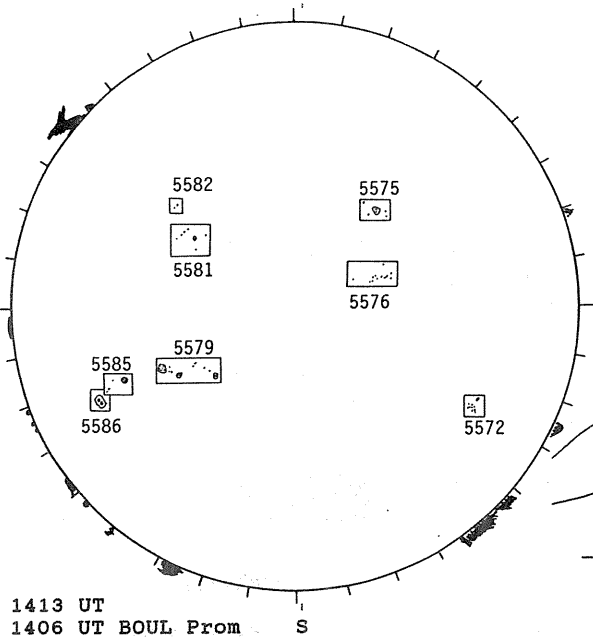
MT. WILSON MAGNETOGRAM



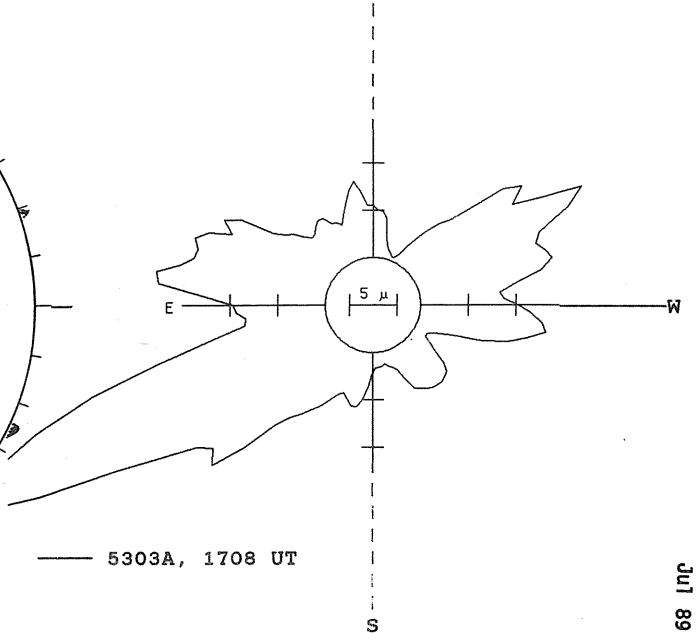
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



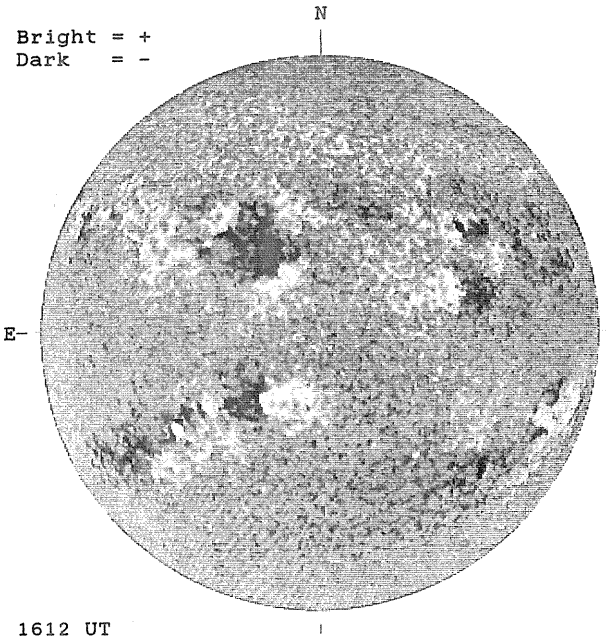
65
Jul 89

JULY 10, 1989 (P= 1.38, B_o = 3.84, L_o = 119.71)

6.6
Jul 89

KITT PEAK MAGNETOGRAM

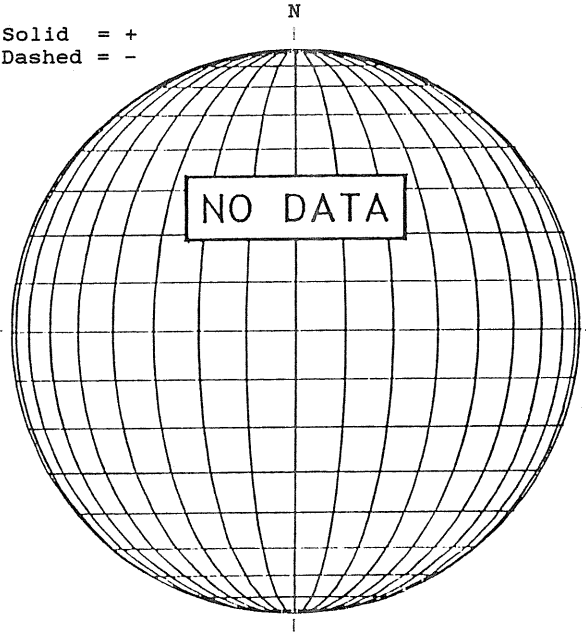
Bright = +
Dark = -



1612 UT

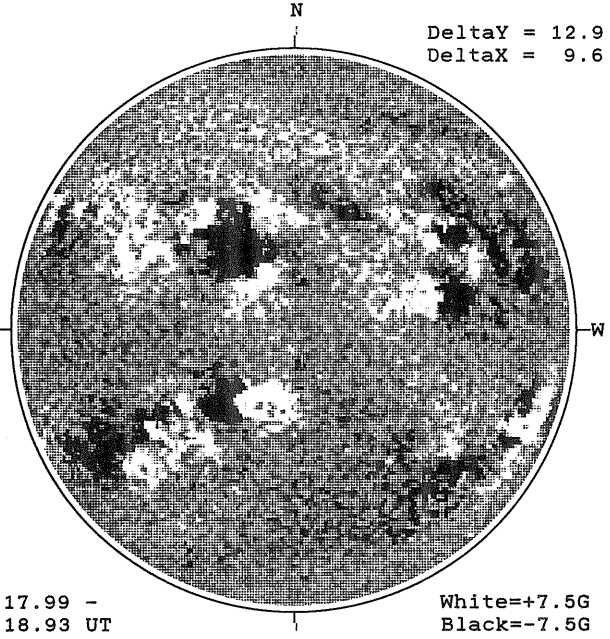
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

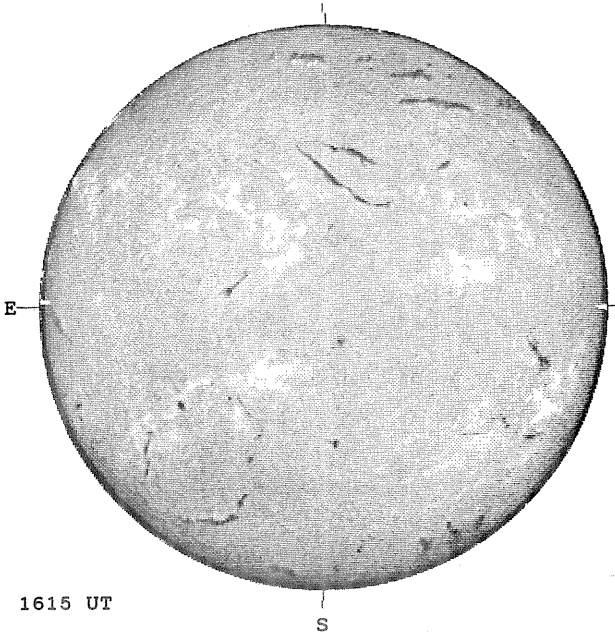
DeltaY = 12.9
DeltaX = 9.6



17.99 -
18.93 UT

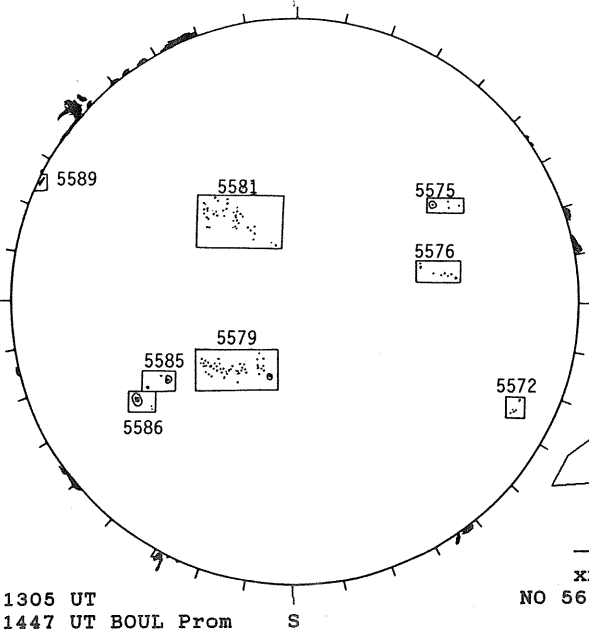
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



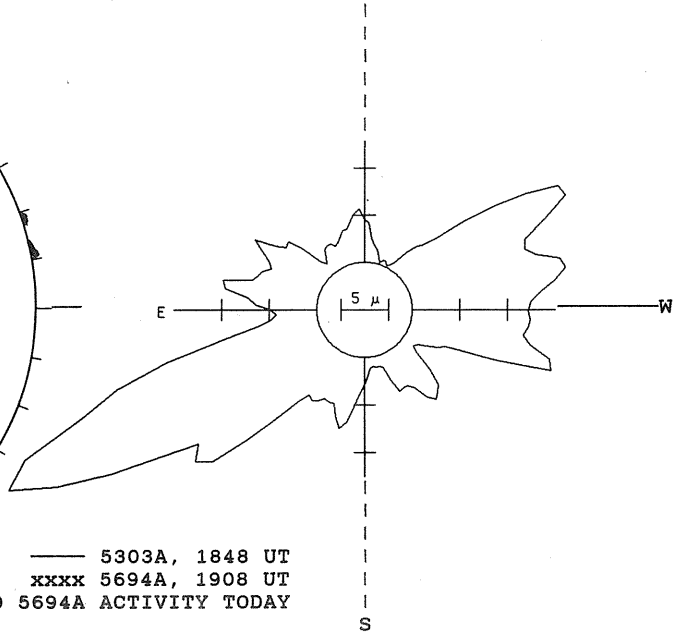
1615 UT

RAMEY SUNSPOT



1305 UT
1447 UT BOUL Prom

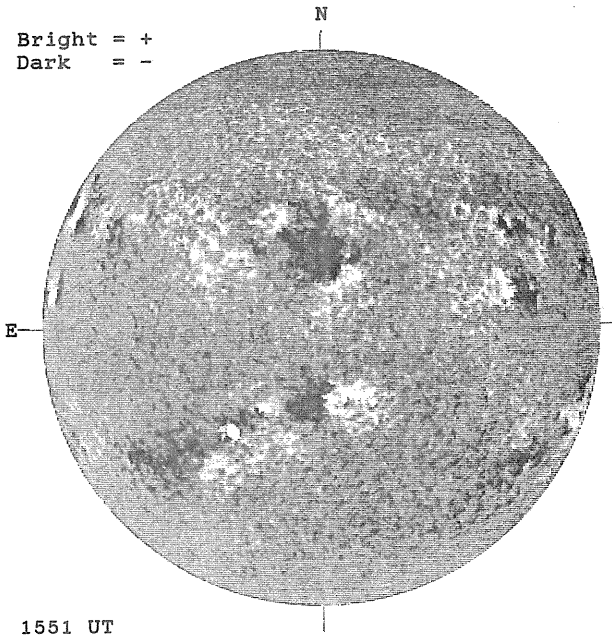
SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1848 UT
xxxx 5694A, 1908 UT
NO 5694A ACTIVITY TODAY

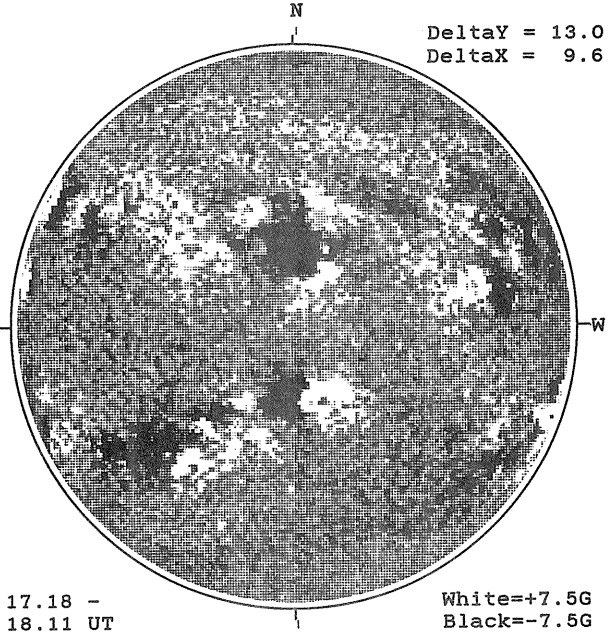
JULY 11, 1989 (P= 1.83, B_o = 3.94, L_o = 106.48)

KITT PEAK MAGNETOGRAM

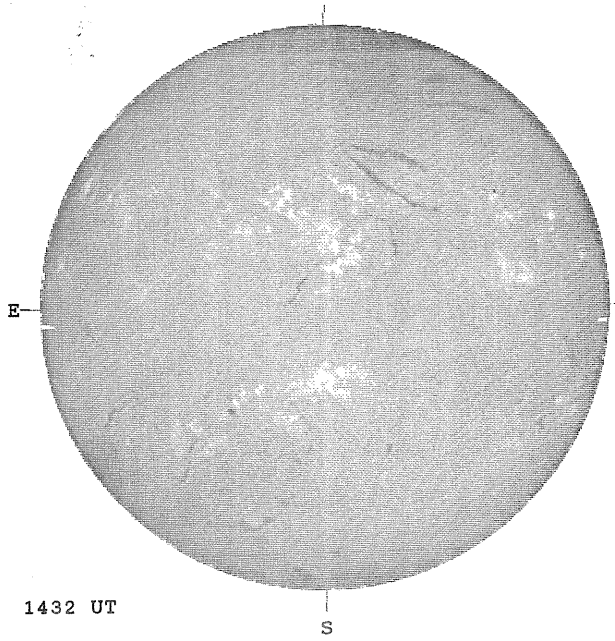


STANFORD MAGNETOGRAM

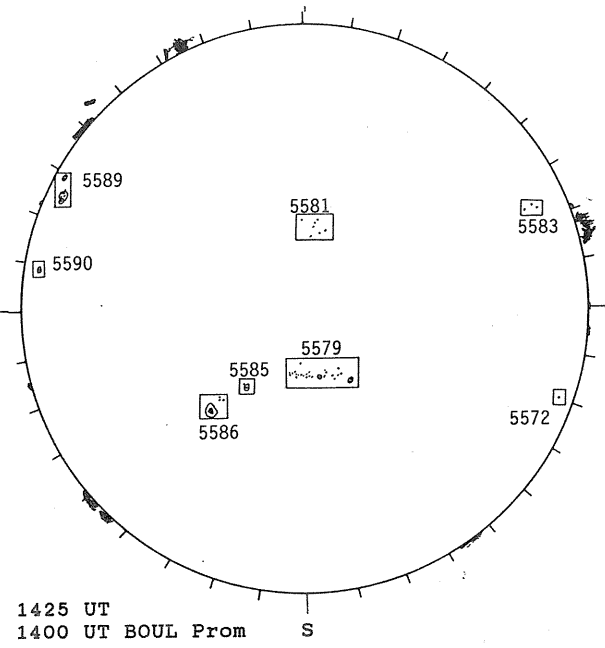
MT. WILSON MAGNETOGRAM



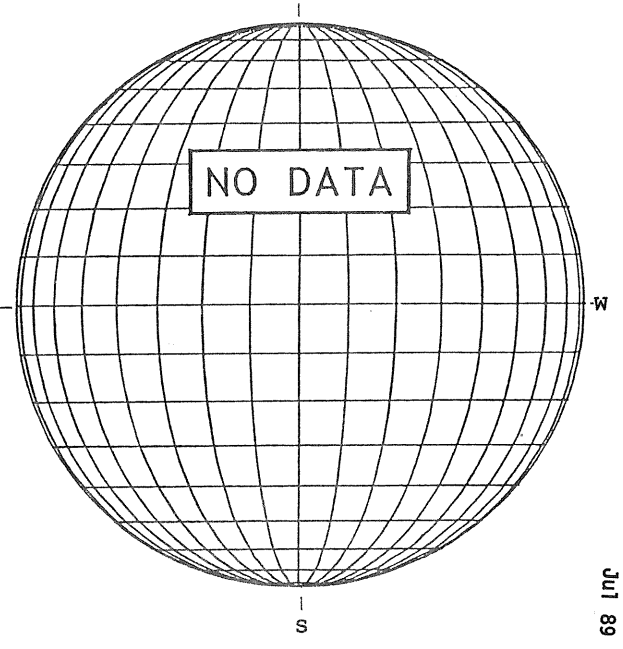
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



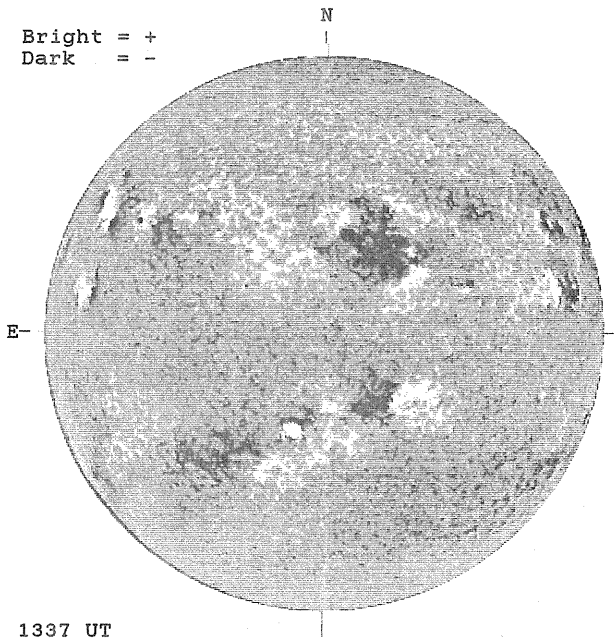
67
Jul 89

JULY 12, 1989 (P= 2.28, B_o = 4.04, L_o = 93.24)

Jul 89

KITT PEAK MAGNETOGRAM

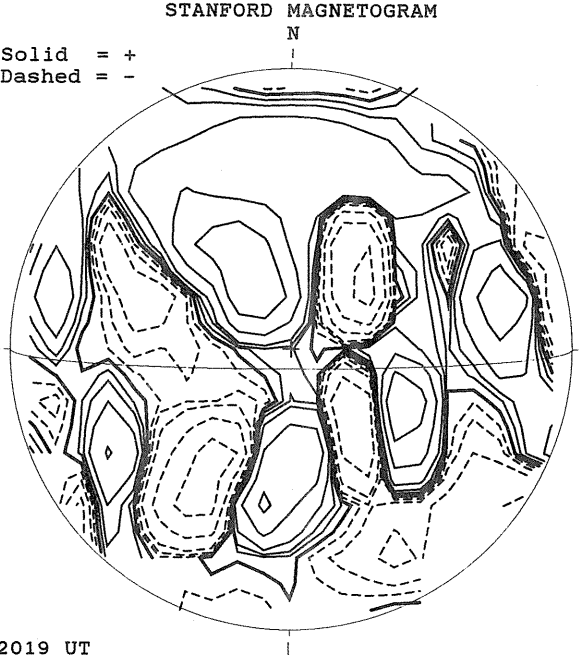
Bright = +
Dark = -



1337 UT

STANFORD MAGNETOGRAM

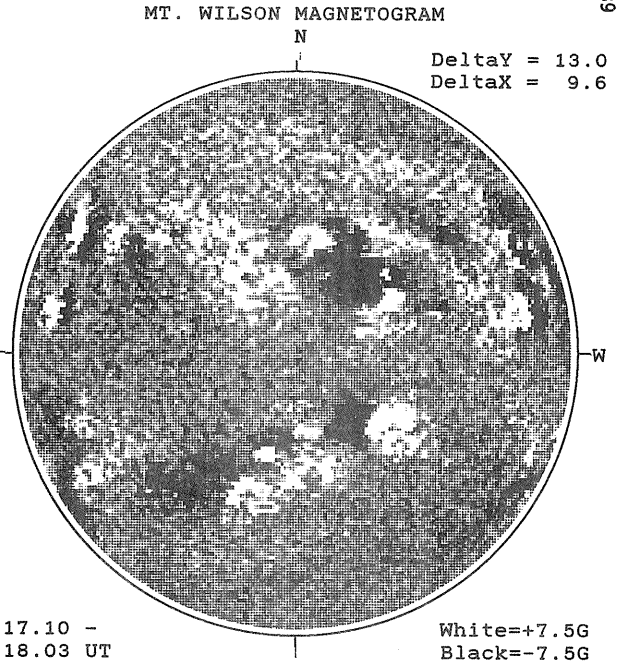
Solid = +
Dashed = -



2019 UT

MT. WILSON MAGNETOGRAM

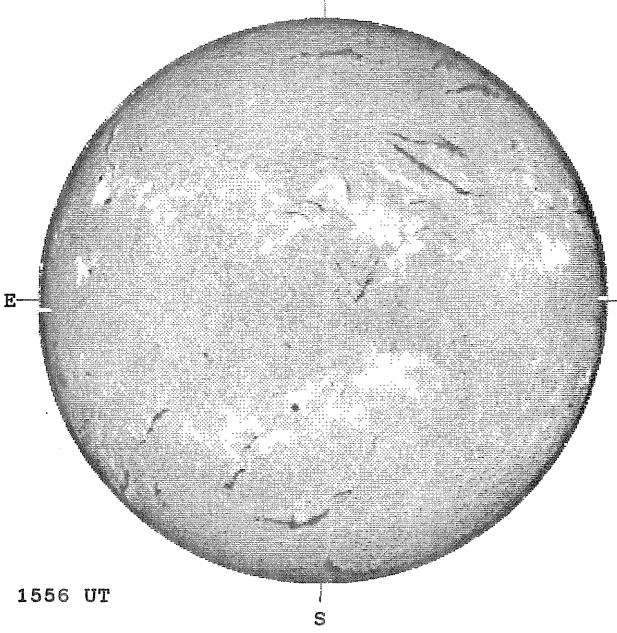
DeltaY = 13.0
DeltaX = 9.6



17.10 -
18.03 UT

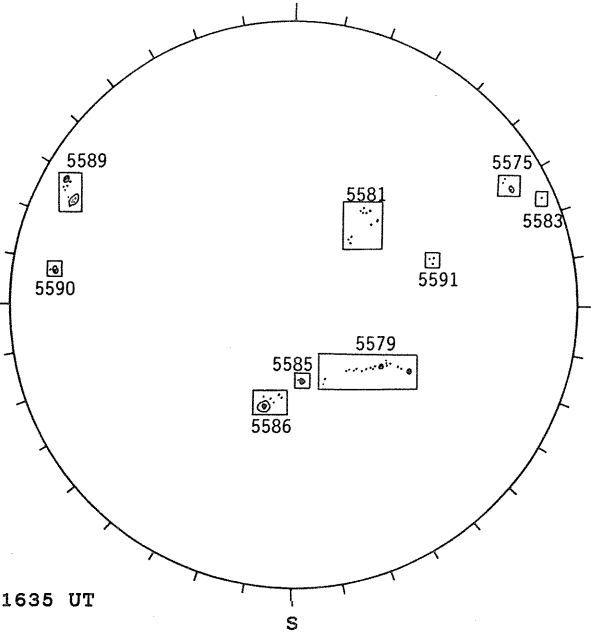
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



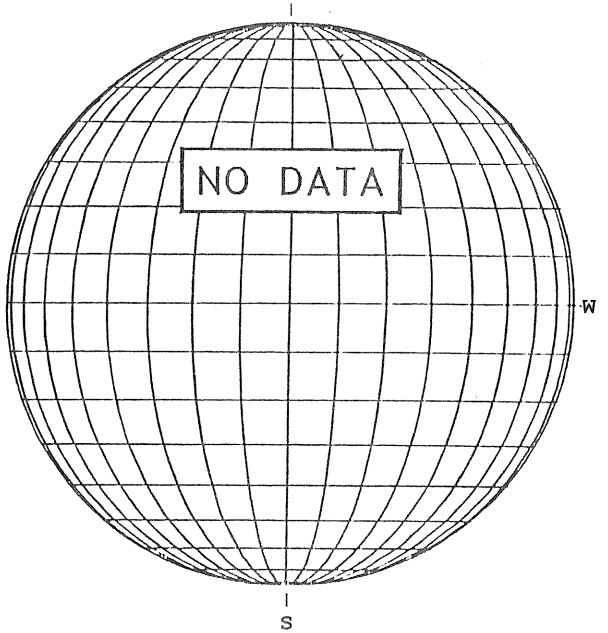
1556 UT

RAMEY SUNSPOT



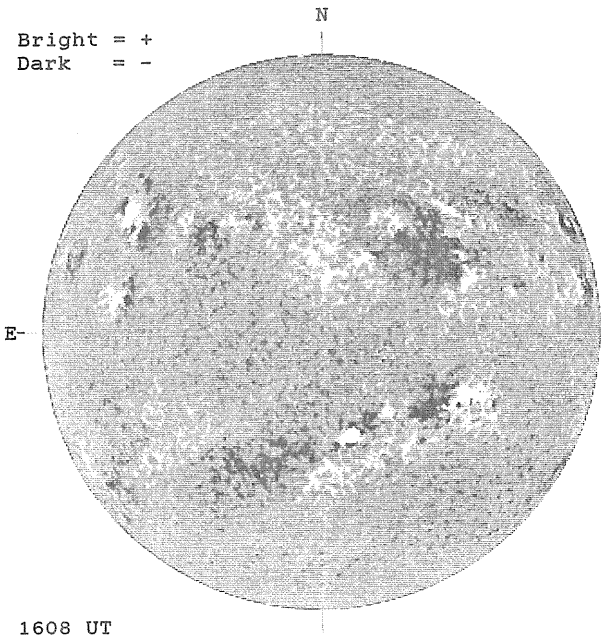
1635 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

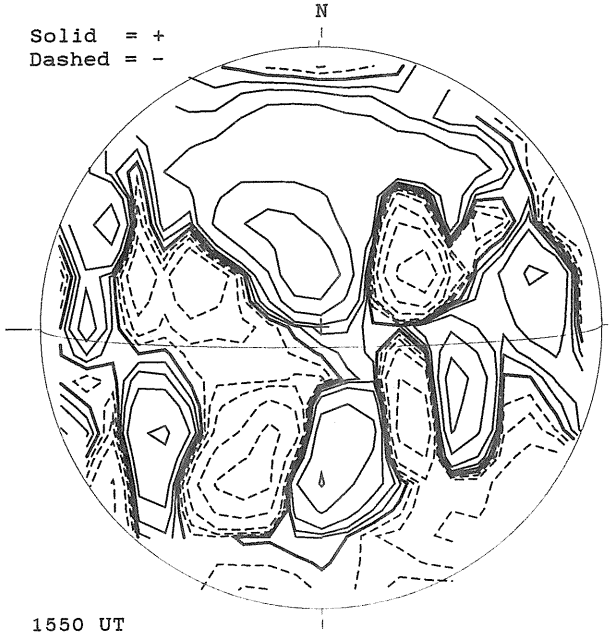


JULY 13, 1989 (P= 2.73, B_o = 4.14, L_o = 80.01)

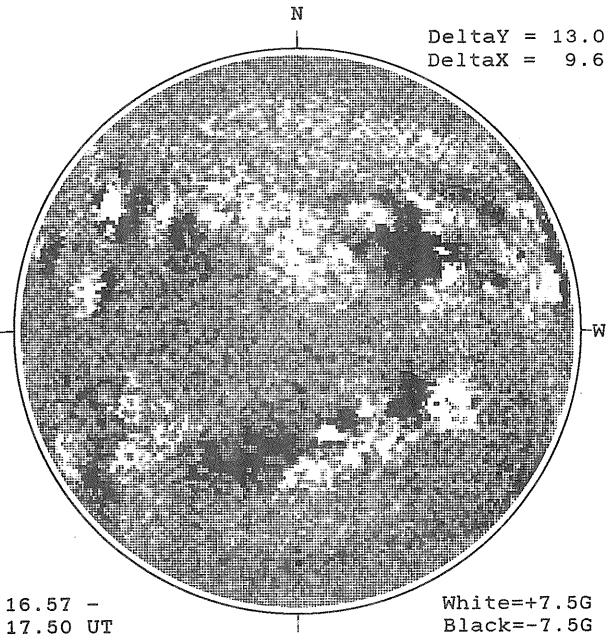
KITT PEAK MAGNETOGRAM



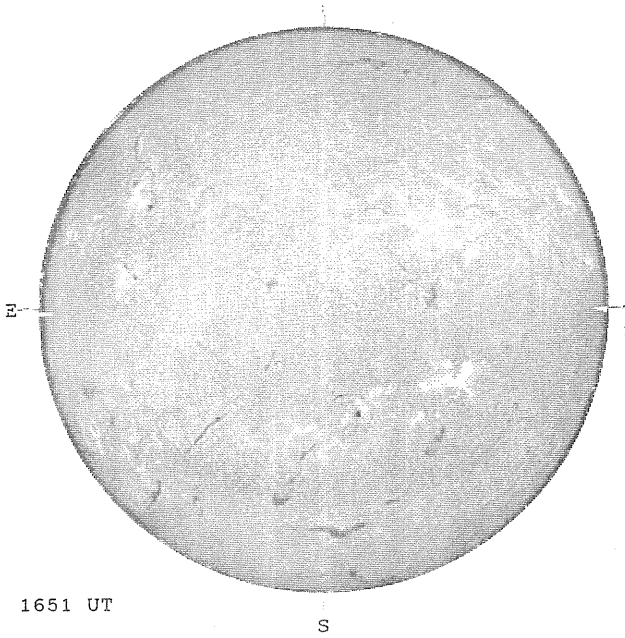
STANFORD MAGNETOGRAM



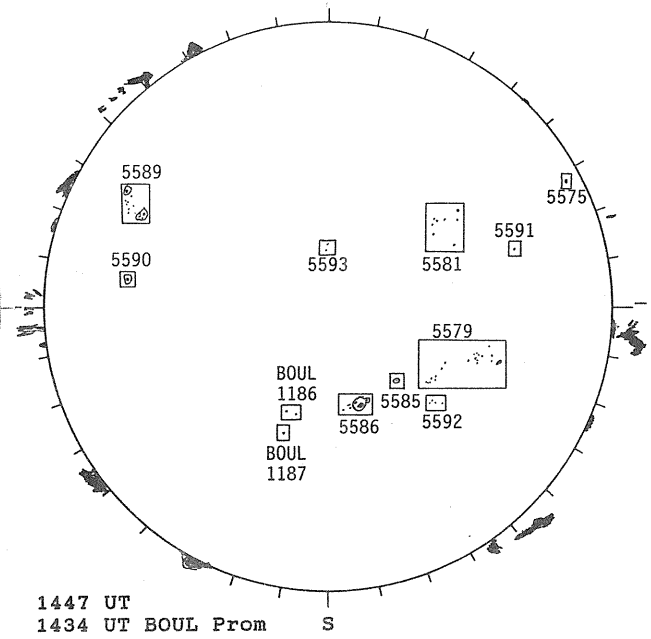
MT. WILSON MAGNETOGRAM



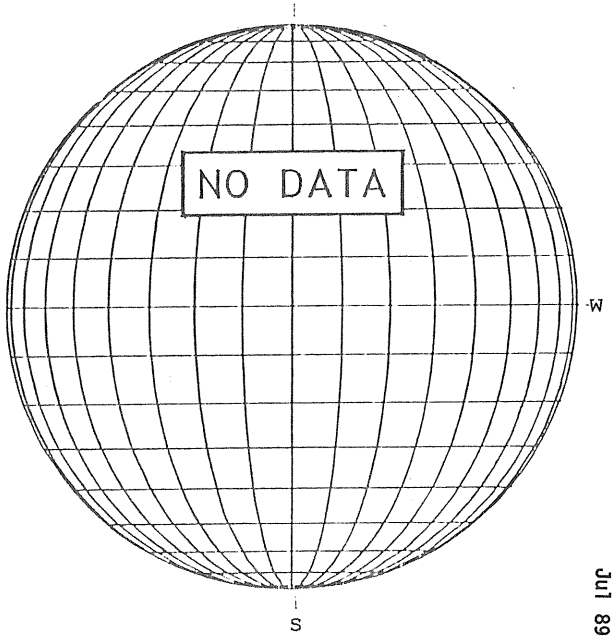
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

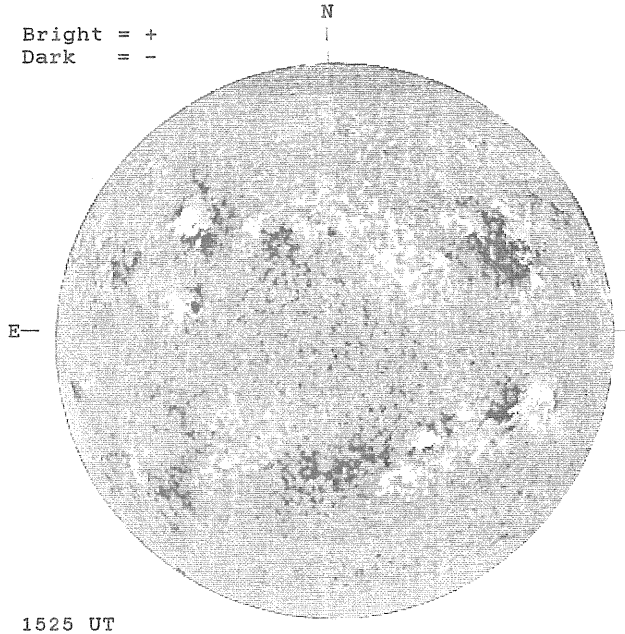


Jul 89

JULY 14, 1989 (P= 3.18, B_o = 4.23, L_o = 66.78)

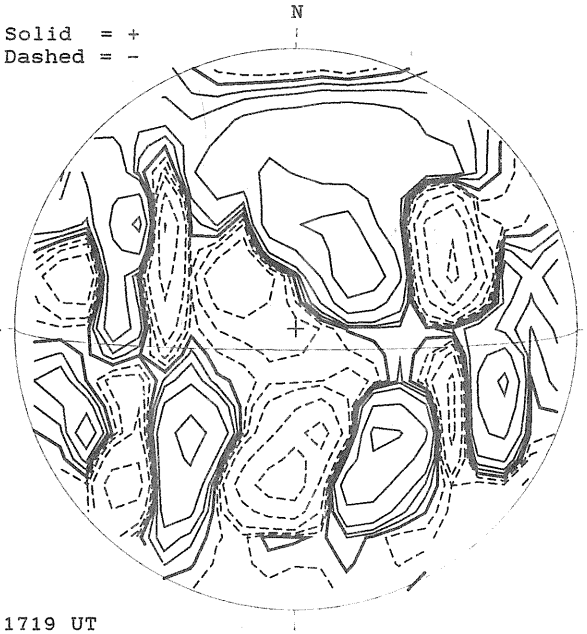
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



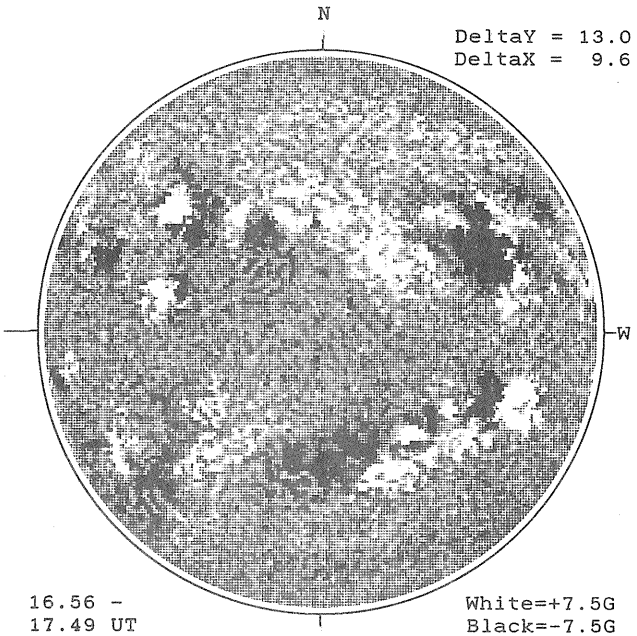
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

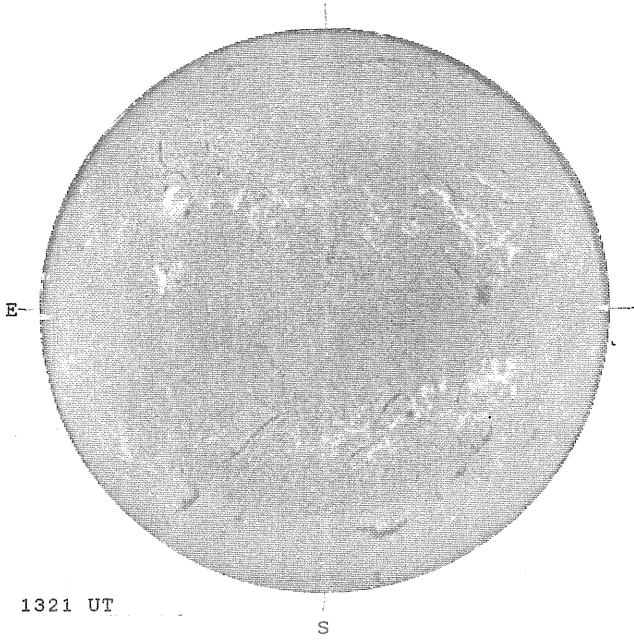


MT. WILSON MAGNETOGRAM

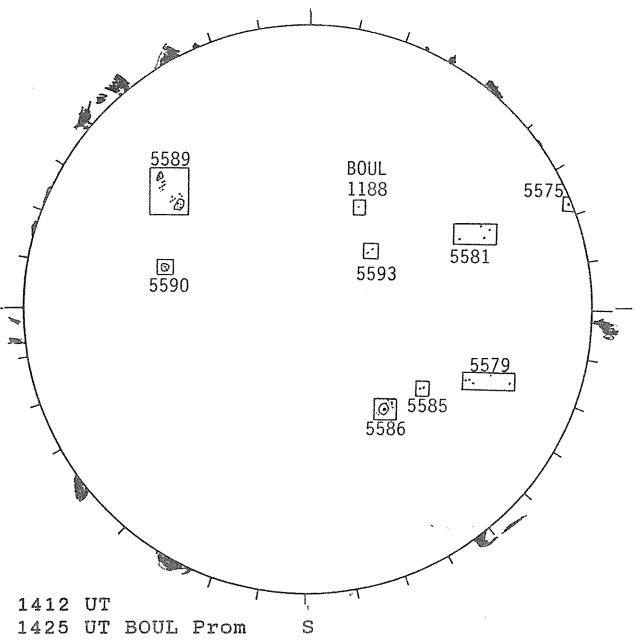
DeltaY = 13.0
DeltaX = 9.6



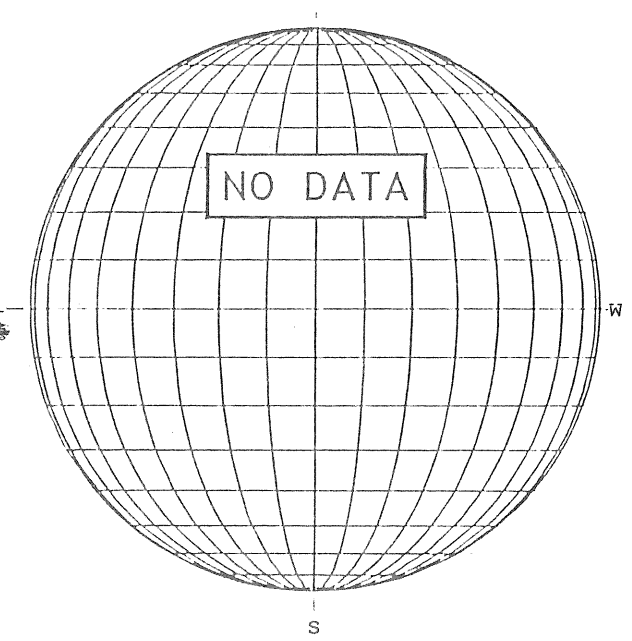
HOLLOMAN H-ALPHA



BOULDER SUNSPOT

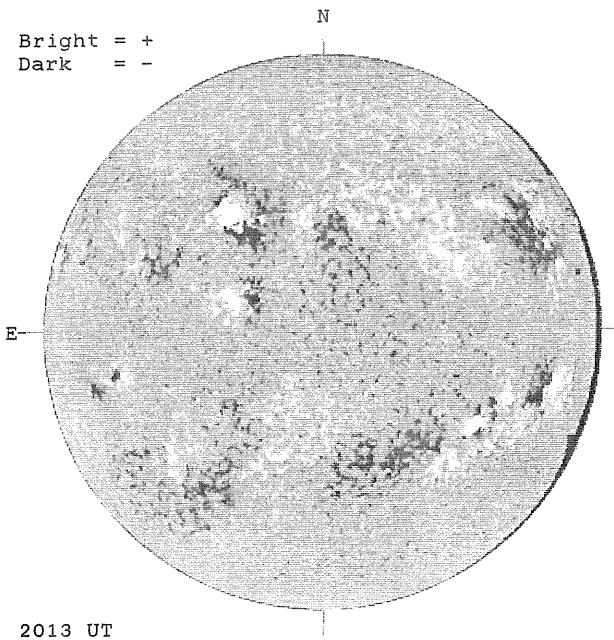


SACRAMENTO PEAK CORONA (1.15 Radii)



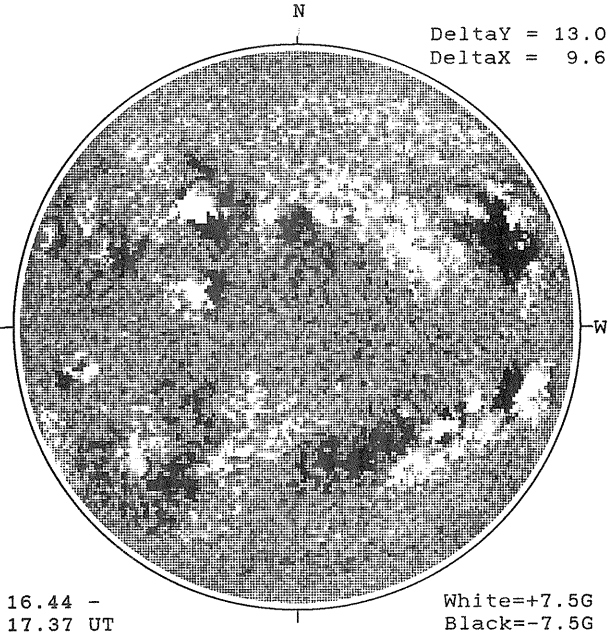
JULY 15, 1989 (P= 3.62, B_o = 4.33, L_o = 53.54)

KITT PEAK MAGNETOGRAM

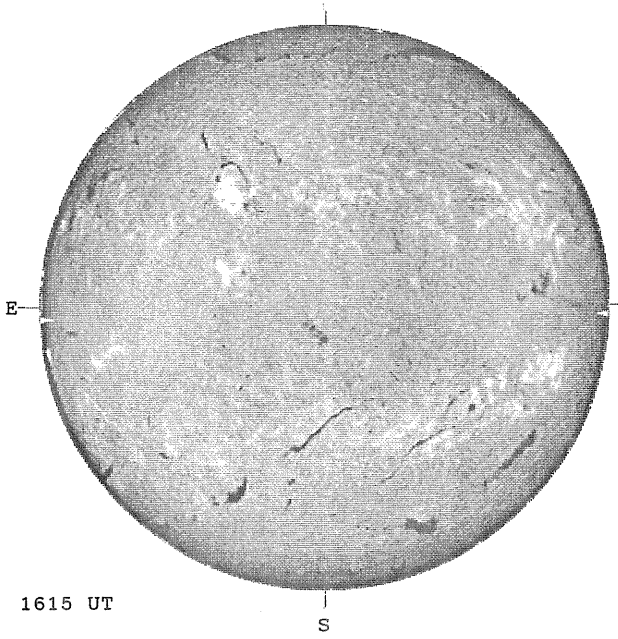


STANFORD MAGNETOGRAM

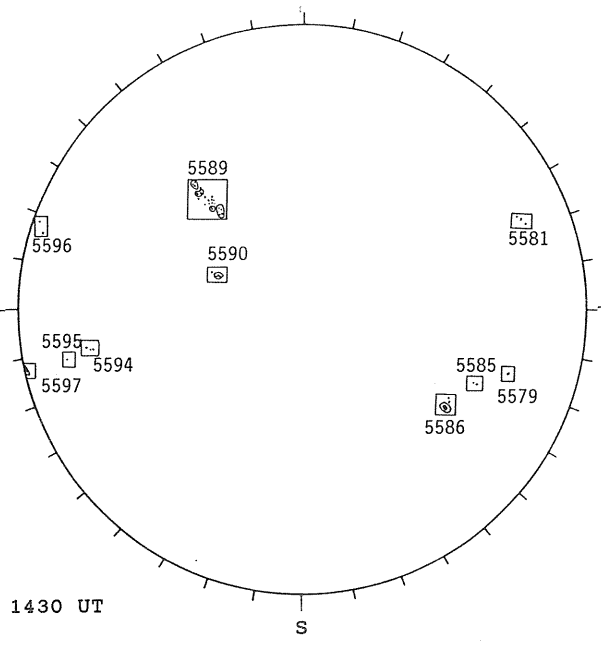
MT. WILSON MAGNETOGRAM



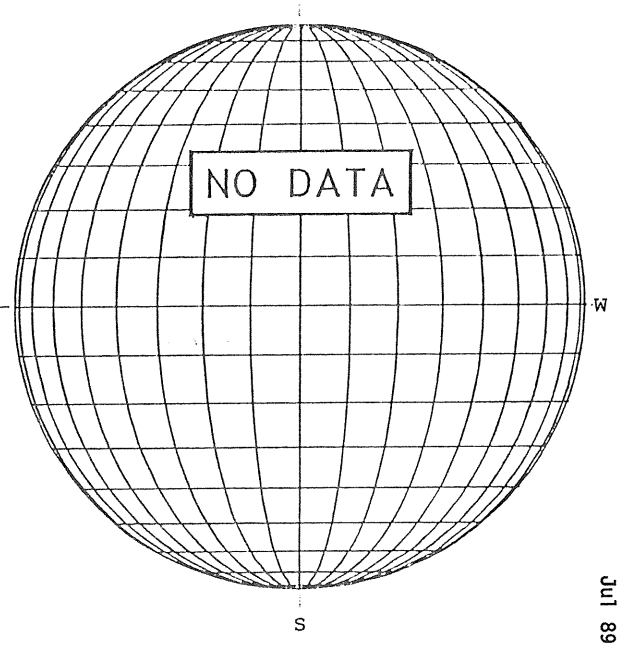
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

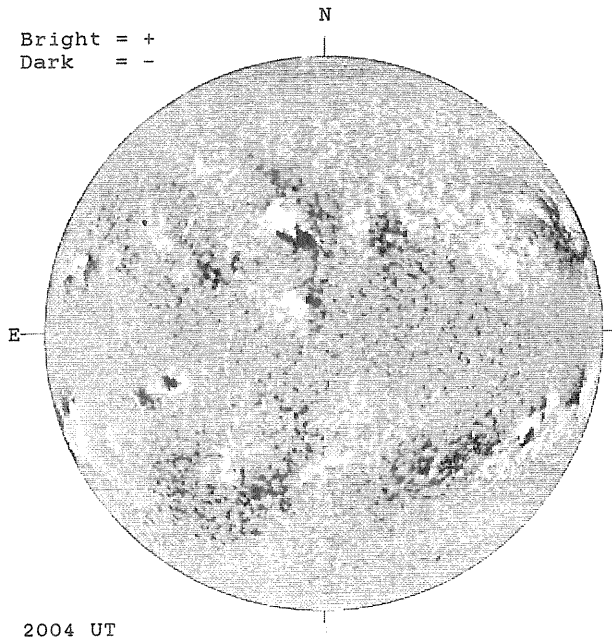


71
Jul 89

JULY 16, 1989 (P= 4.06, B_o = 4.43, L_o = 40.31)

KITT PEAK MAGNETOGRAM

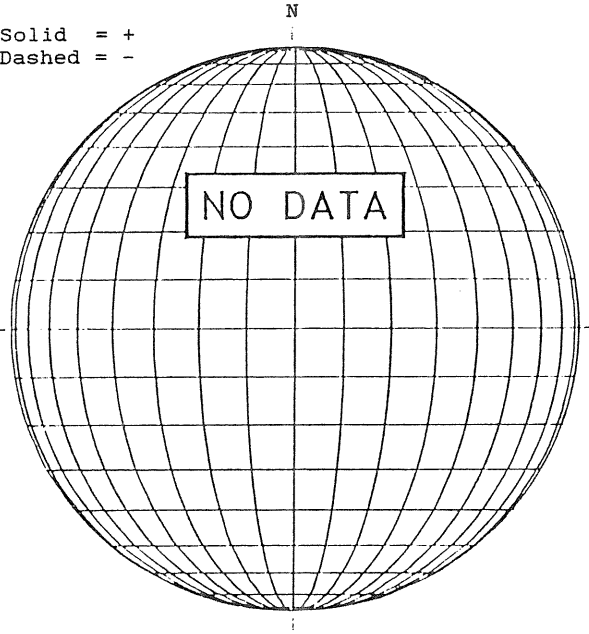
Bright = +
Dark = −



2004 UT

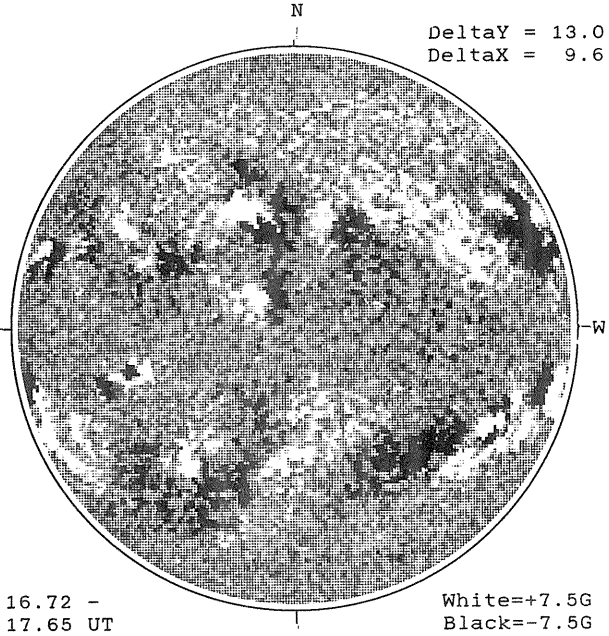
STANFORD MAGNETOGRAM

Solid = +
Dashed = −



MT. WILSON MAGNETOGRAM

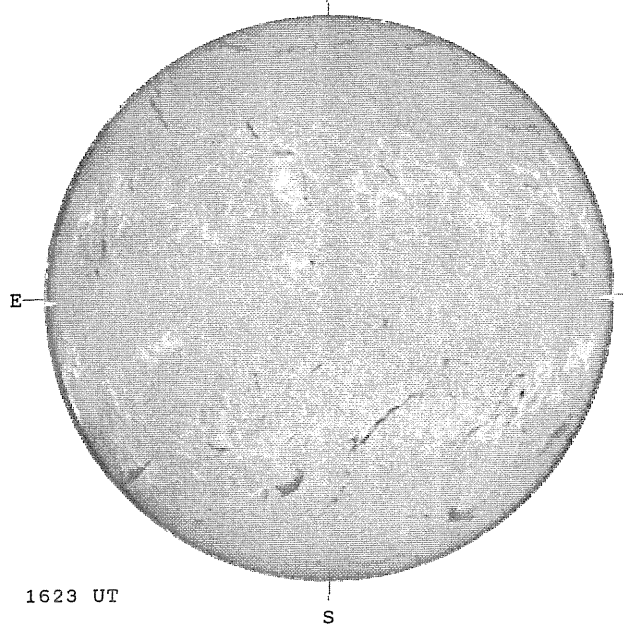
DeltaY = 13.0
DeltaX = 9.6



16.72 −
17.65 UT

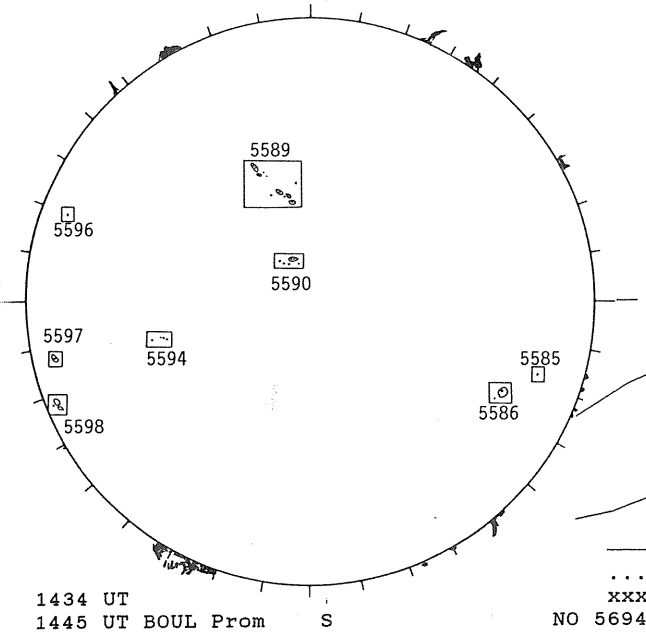
White=+7.5G
Black=−7.5G

HOLLOMAN H-ALPHA



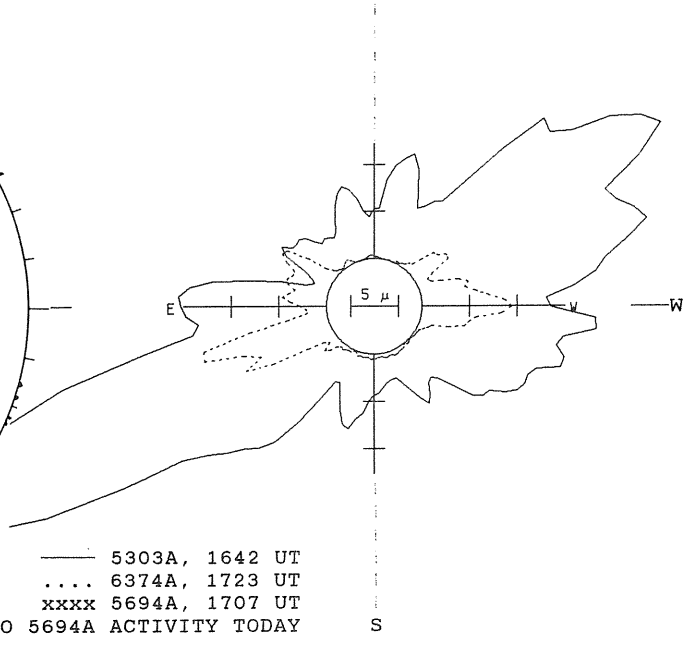
1623 UT

BOULDER SUNSPOT



1434 UT
1445 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

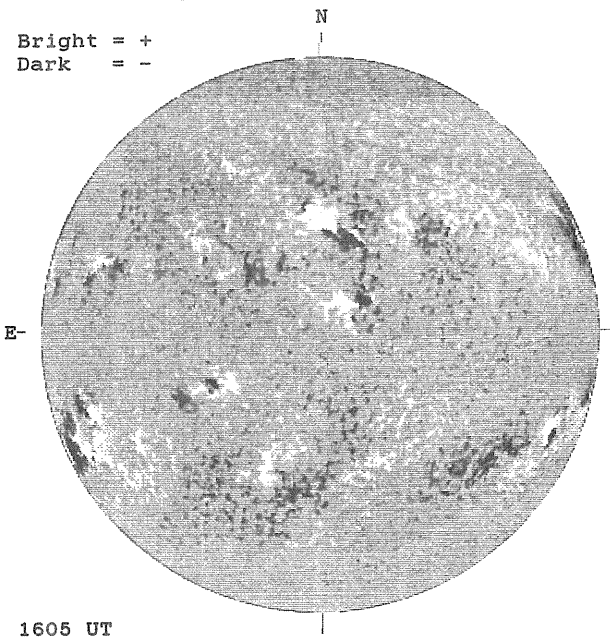


—— 5303A, 1642 UT
.... 6374A, 1723 UT
xxxx 5694A, 1707 UT
NO 5694A ACTIVITY TODAY

JULY 17, 1989 (P= 4.51, B_o = 4.52, L_o = 27.08)

KITT PEAK MAGNETOGRAM

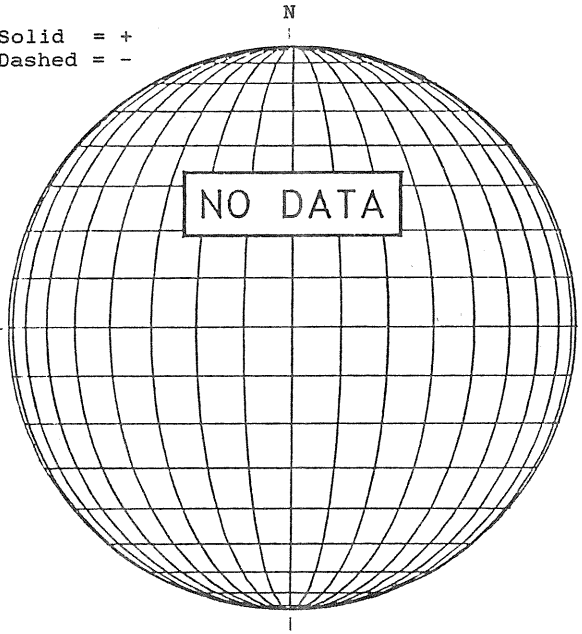
Bright = +
Dark = −



1605 UT

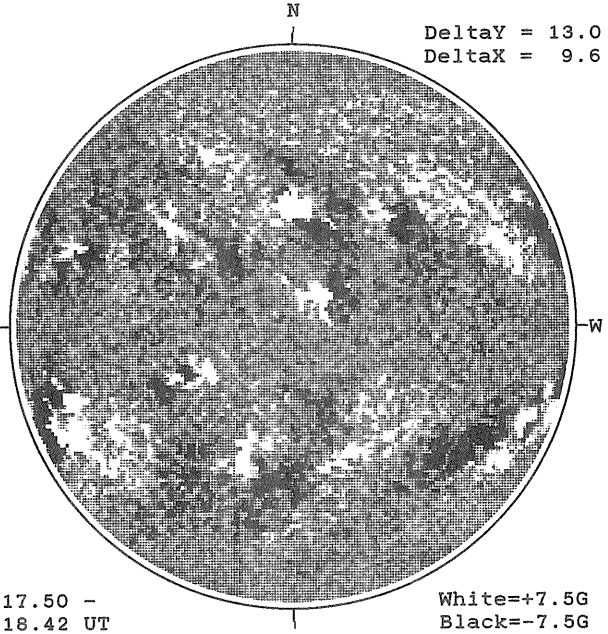
STANFORD MAGNETOGRAM

Solid = +
Dashed = −



MT. WILSON MAGNETOGRAM

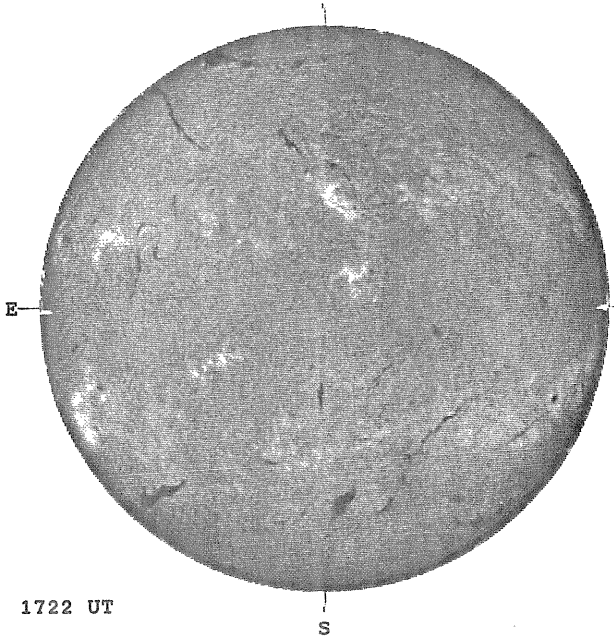
DeltaY = 13.0
DeltaX = 9.6



17.50 −
18.42 UT

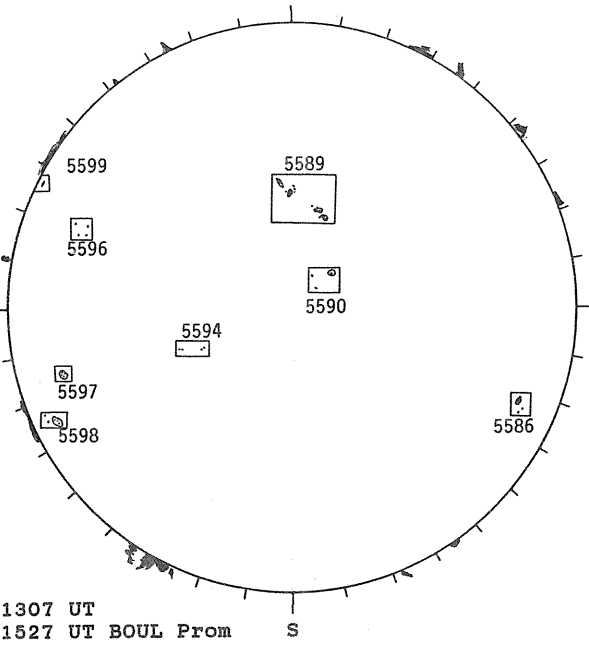
White=+7.5G
Black=−7.5G

HOLLOMAN H-ALPHA



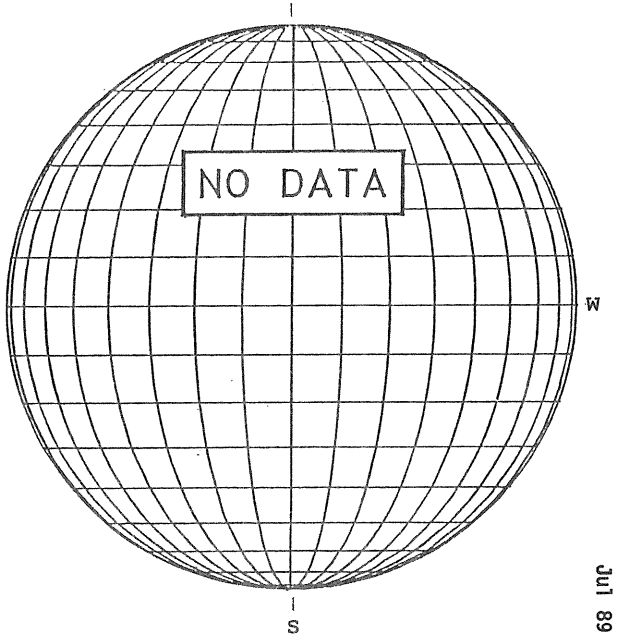
1722 UT

BOULDER SUNSPOT



1307 UT
1527 UT BOUL Prom

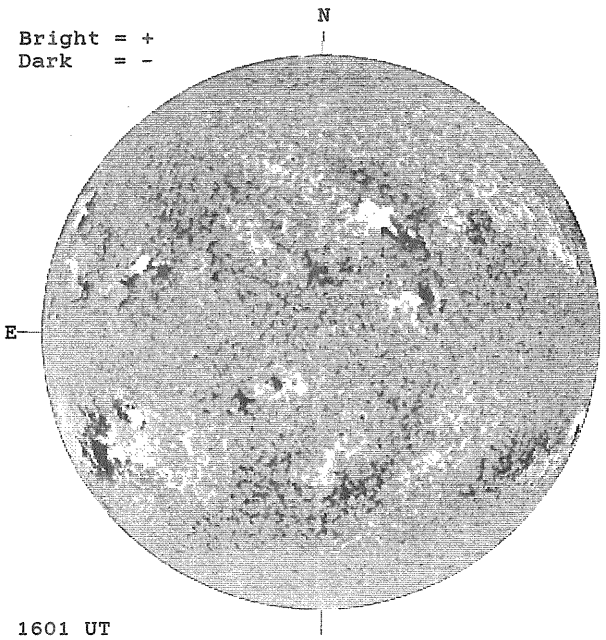
SACRAMENTO PEAK CORONA (1.15 Radii)



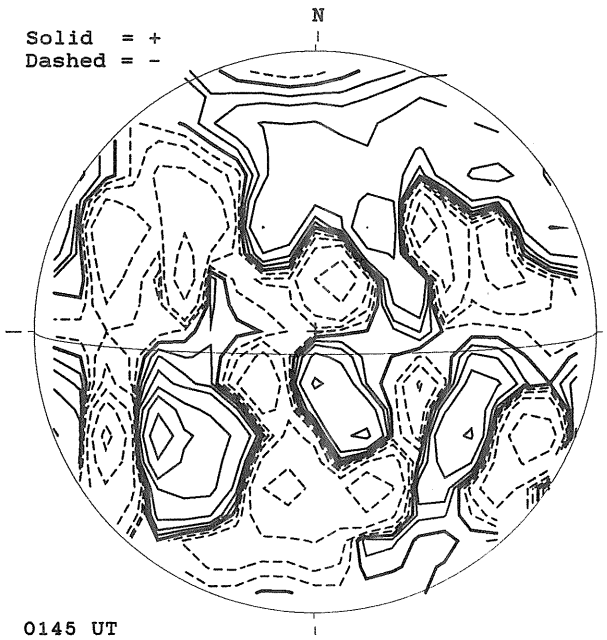
73
Jul 89

JULY 18, 1989 (P= 4.94, B_o = 4.62, L_o = 13.84)

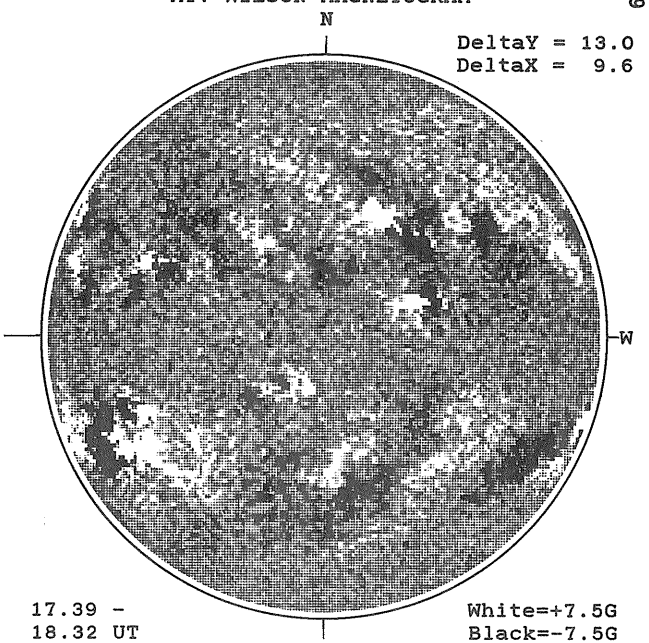
KITT PEAK MAGNETOGRAM



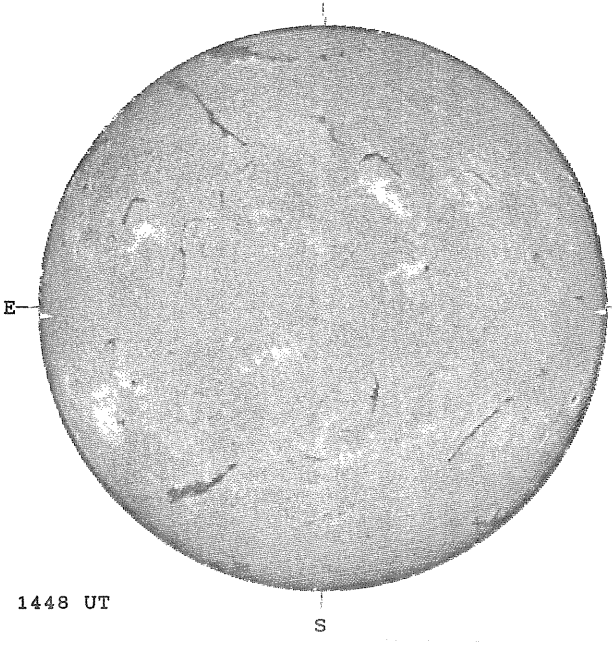
STANFORD MAGNETOGRAM



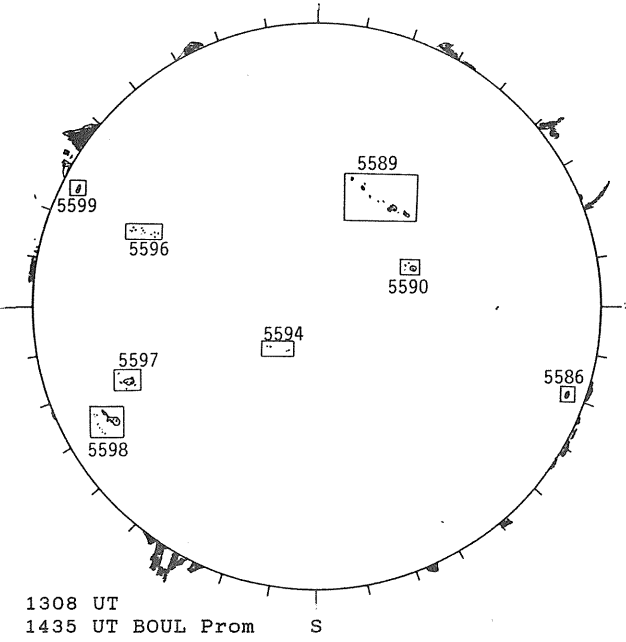
MT. WILSON MAGNETOGRAM



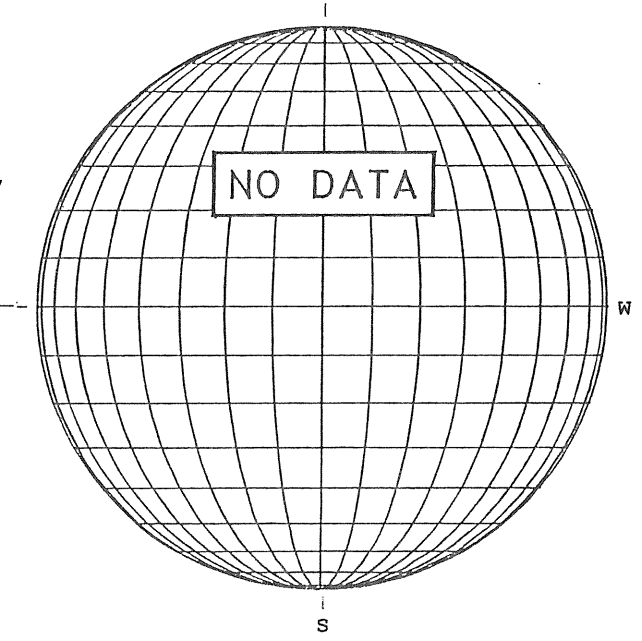
HOLLOMAN H-ALPHA



BOULDER SUNSPOT

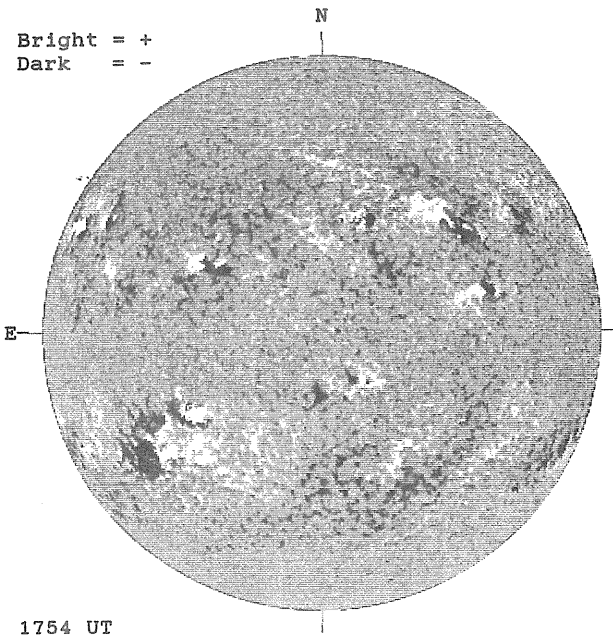


SACRAMENTO PEAK CORONA (1.15 Radii)

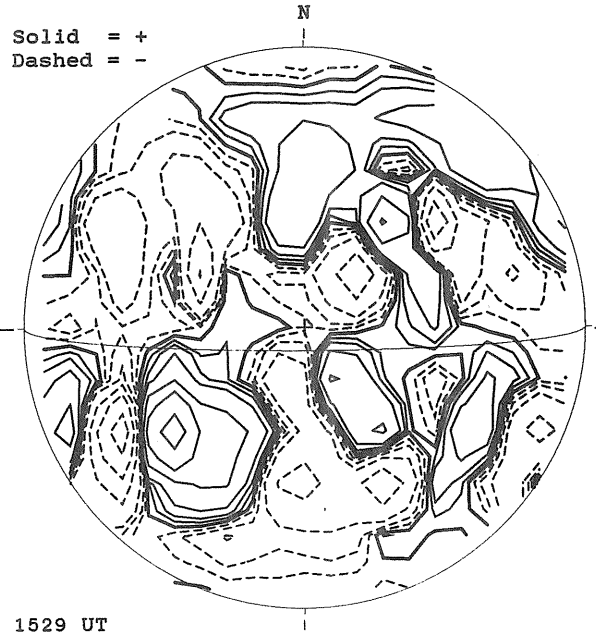


JULY 19, 1989 (P= 5.38, B_o = 4.71, L_o = 0.61)

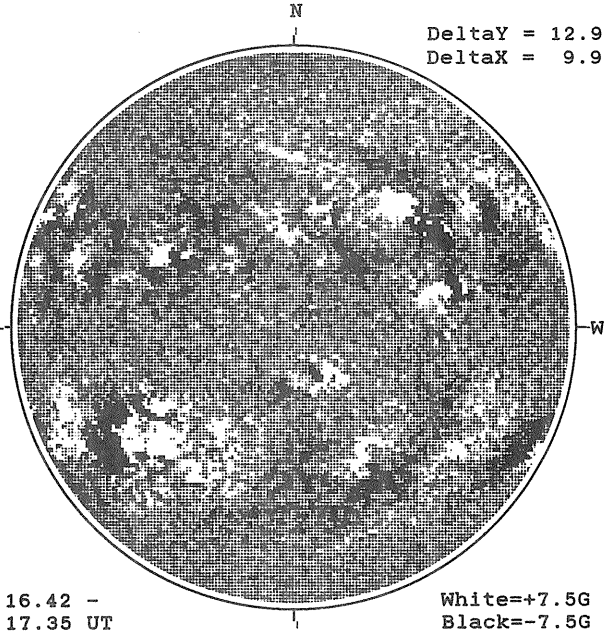
KITT PEAK MAGNETOGRAM



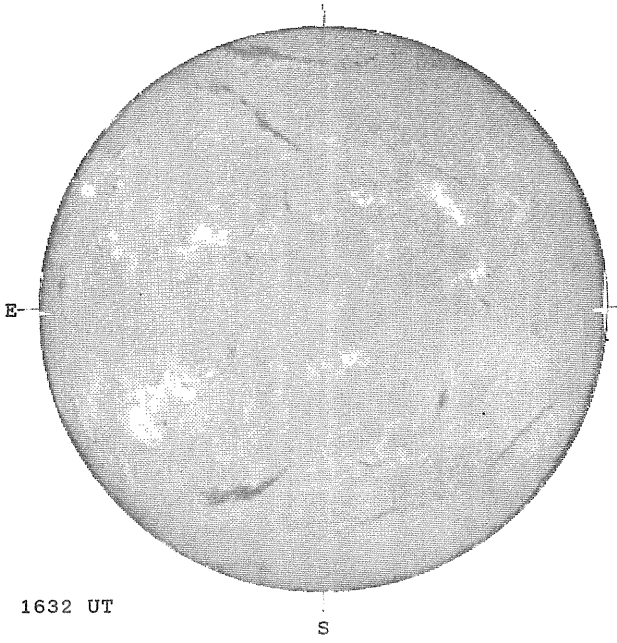
STANFORD MAGNETOGRAM



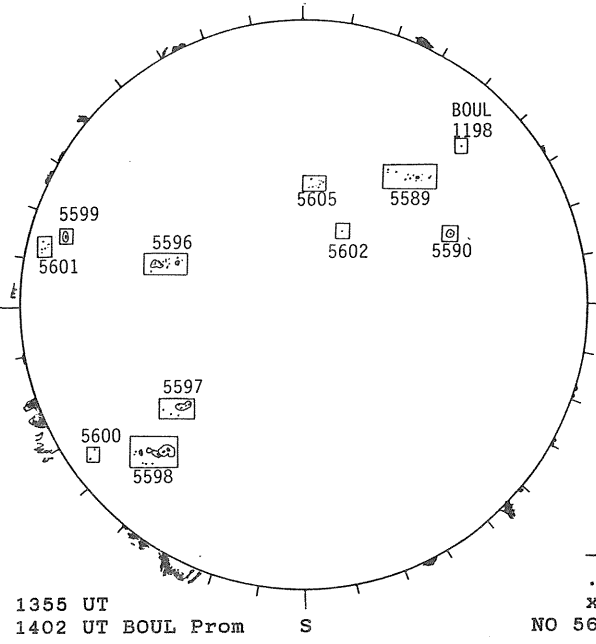
MT. WILSON MAGNETOGRAM



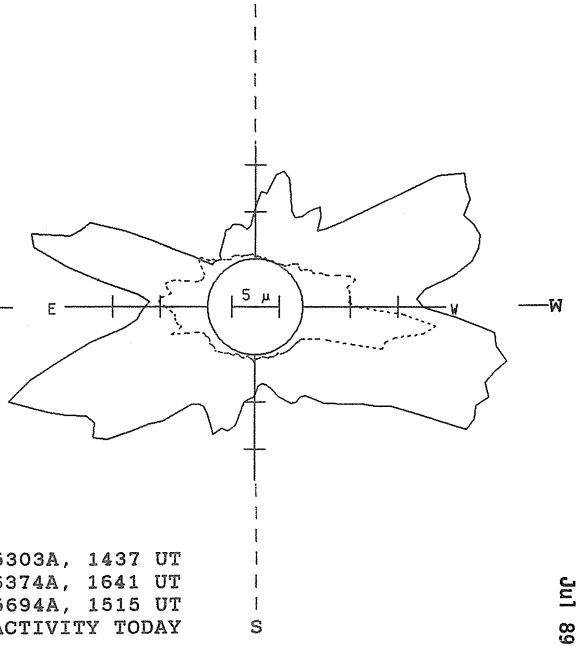
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

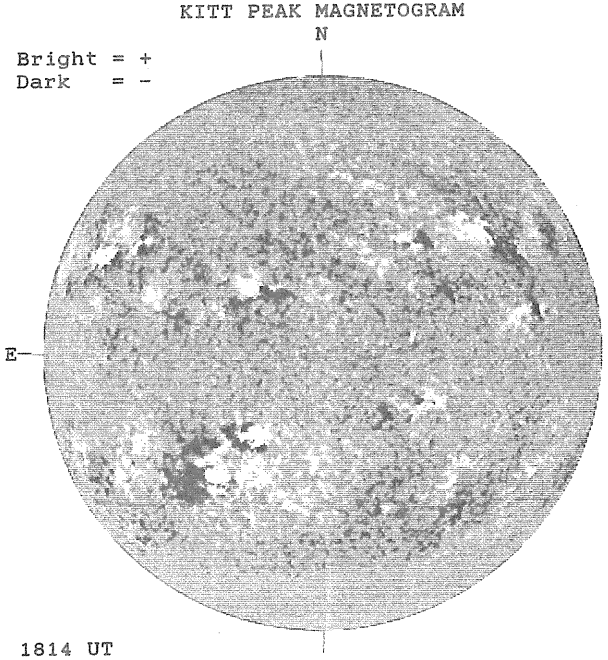


75
Jul 89

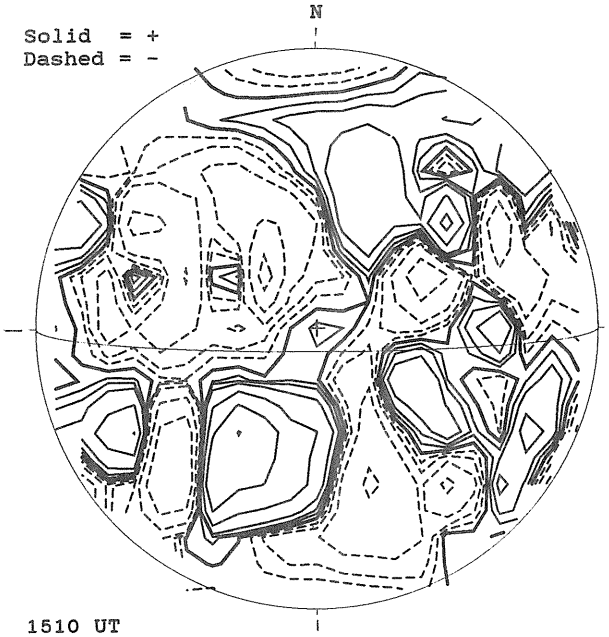
JULY 20, 1989 (P= 5.82, B_o = 4.80, L_o = 347.38)

76
Jul 89

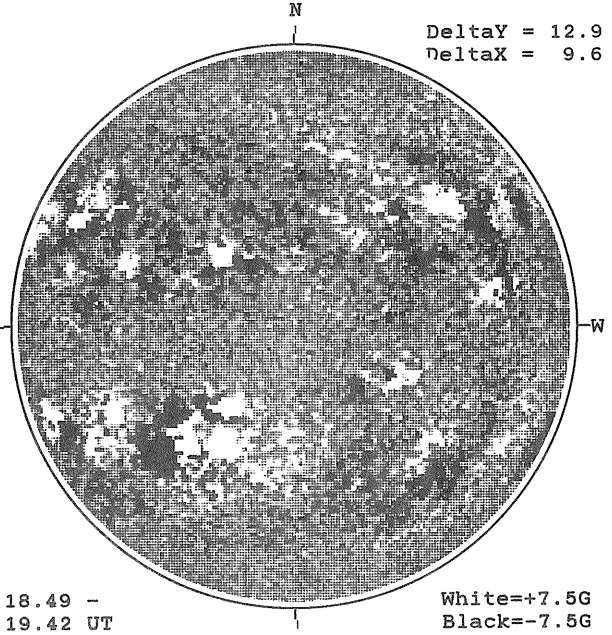
KITT PEAK MAGNETOGRAM



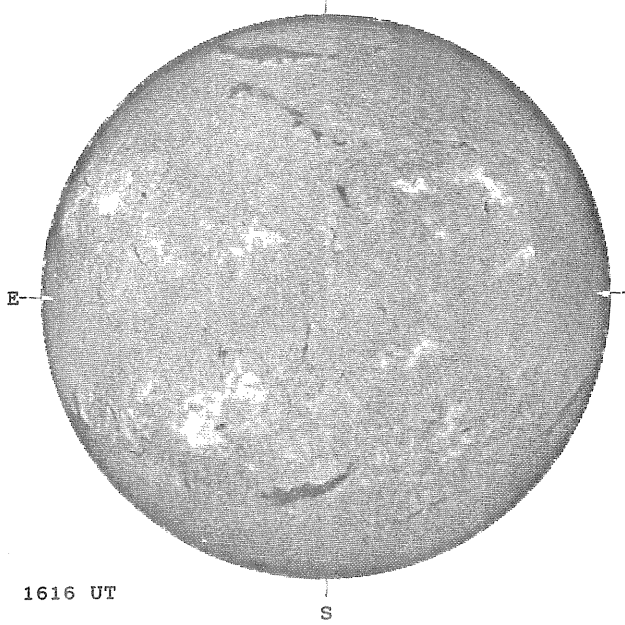
STANFORD MAGNETOGRAM



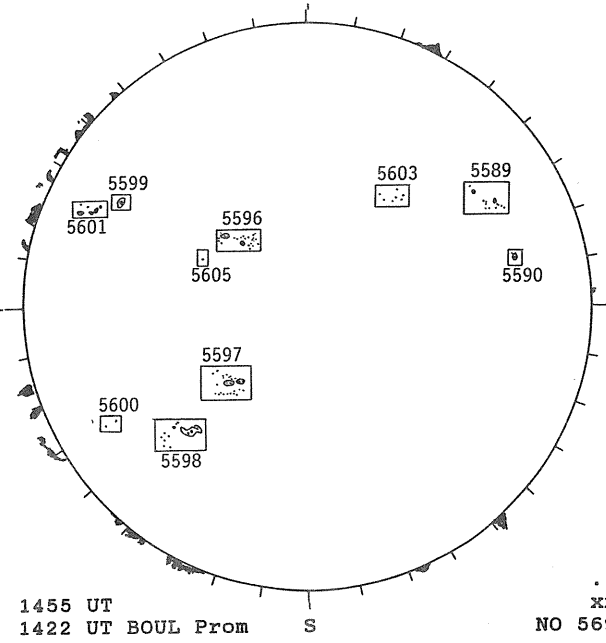
MT. WILSON MAGNETOGRAM



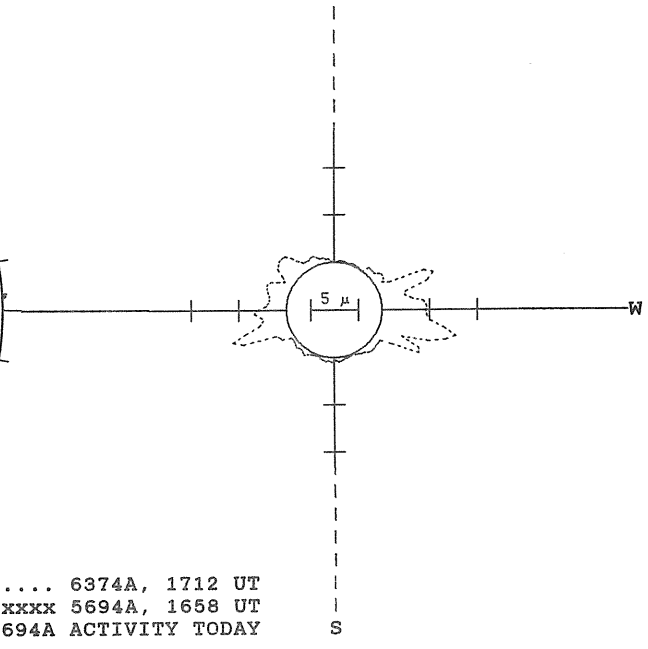
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



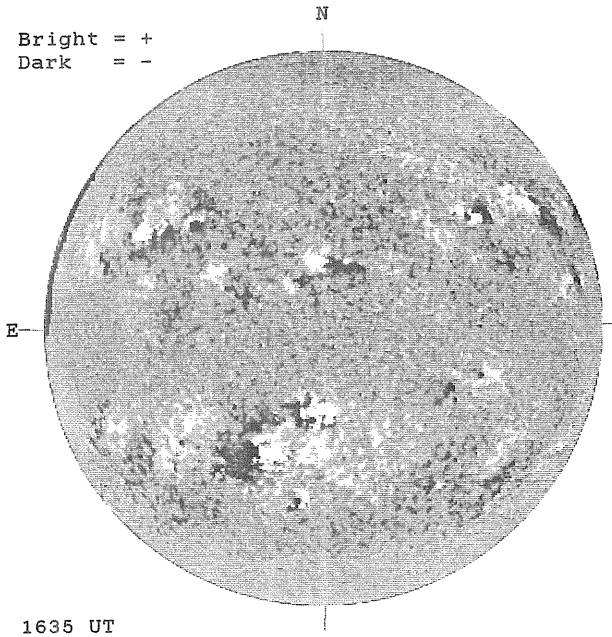
SACRAMENTO PEAK CORONA (1.15 Radii)



JULY 21, 1989 (P= 6.25, B_o = 4.89, L_o = 334.15)

KITT PEAK MAGNETOGRAM

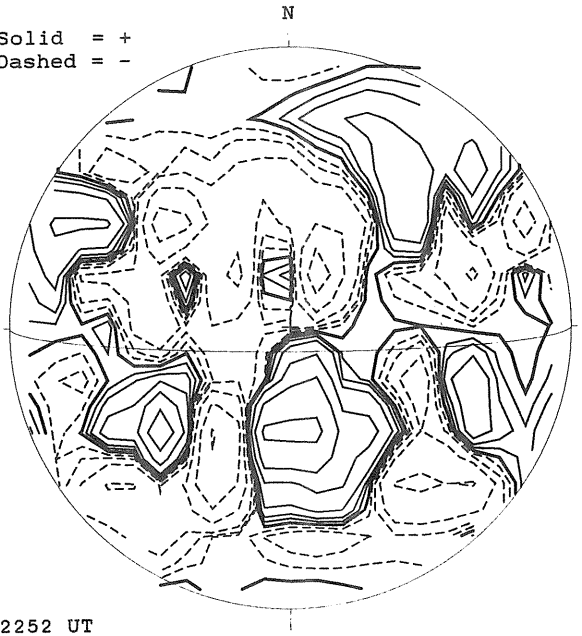
Bright = +
Dark = -



1635 UT

STANFORD MAGNETOGRAM

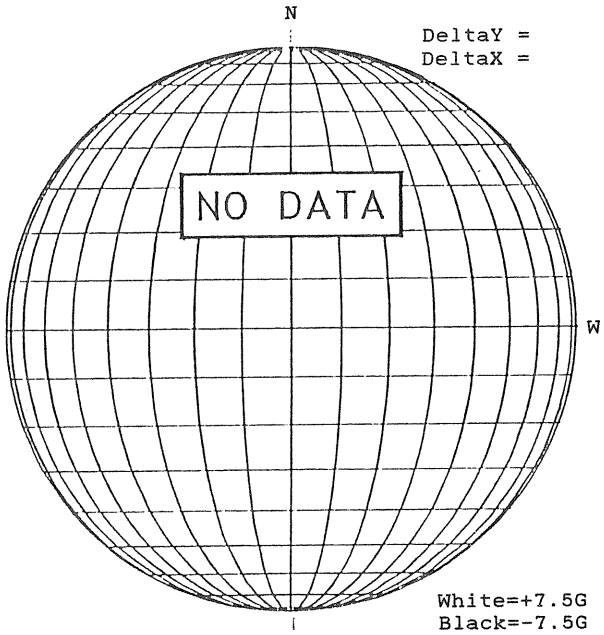
Solid = +
Dashed = -



2252 UT

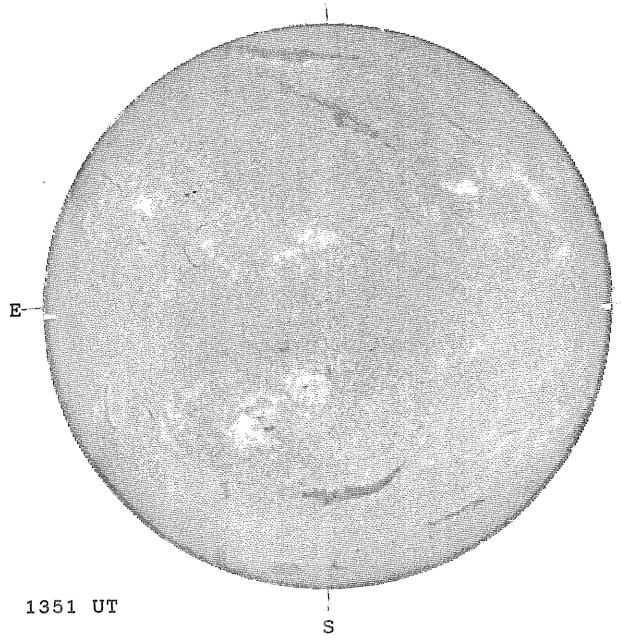
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



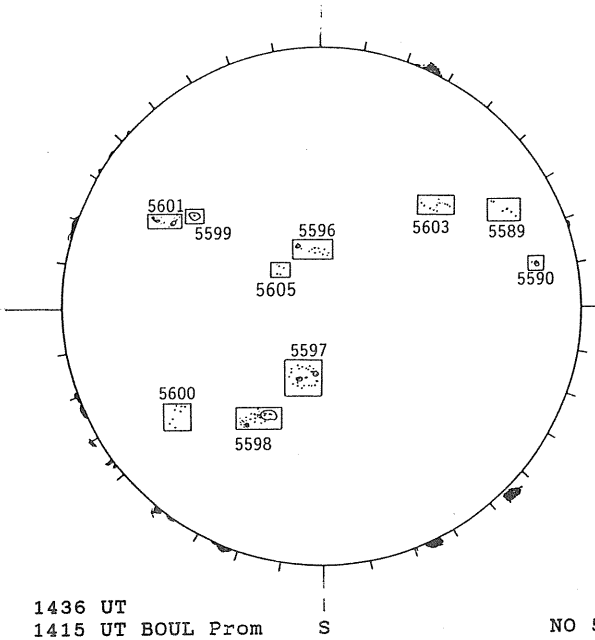
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



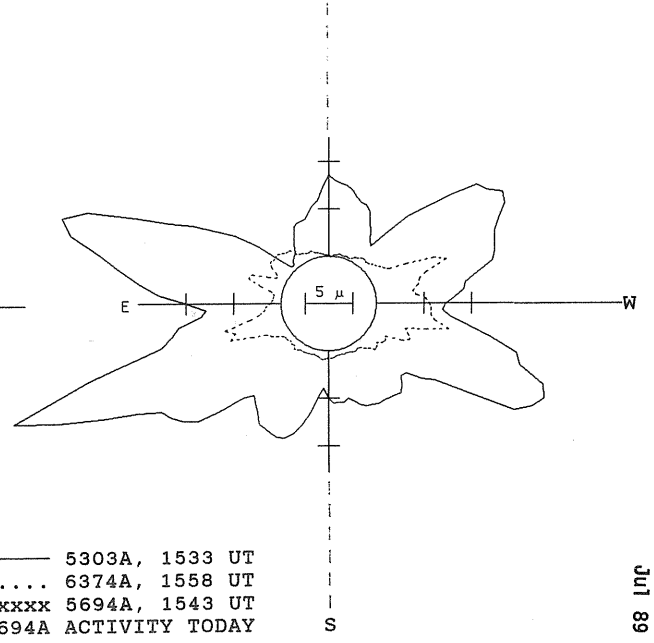
1351 UT

BOULDER SUNSPOT



1436 UT
1415 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

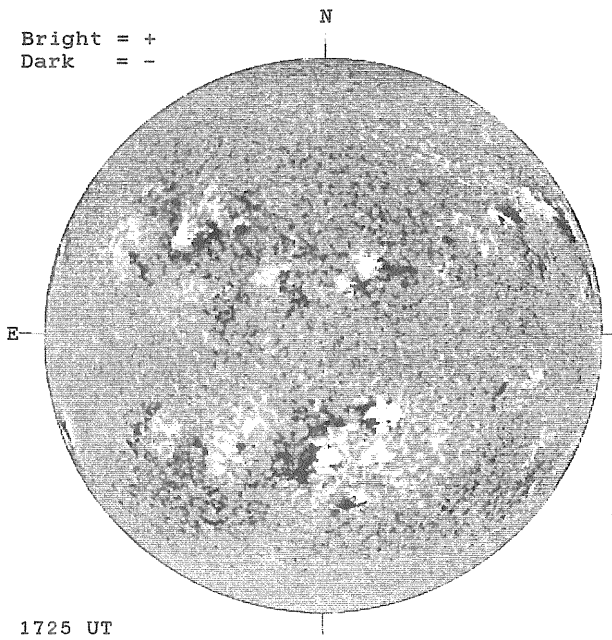


—— 5303A, 1533 UT
.... 6374A, 1558 UT
xxxx 5694A, 1543 UT
NO 5694A ACTIVITY TODAY

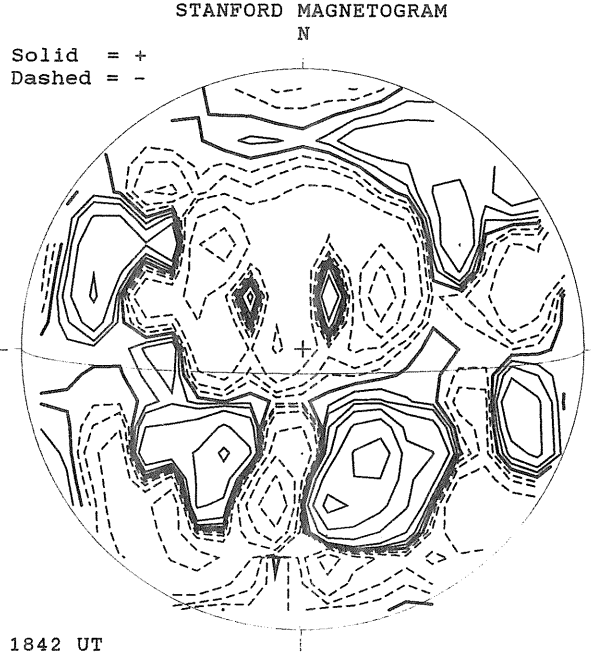
77
Jul 89

JULY 22, 1989 (P= 6.68, B_o = 4.98, L_o = 320.92)

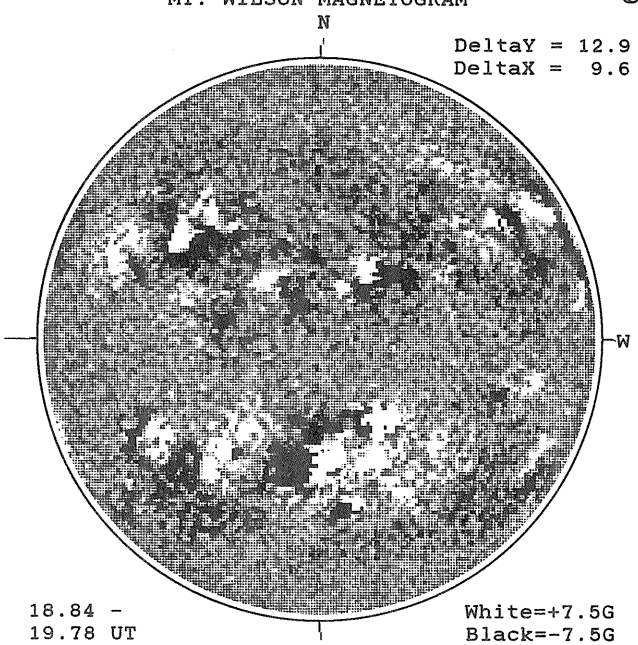
KITT PEAK MAGNETOGRAM



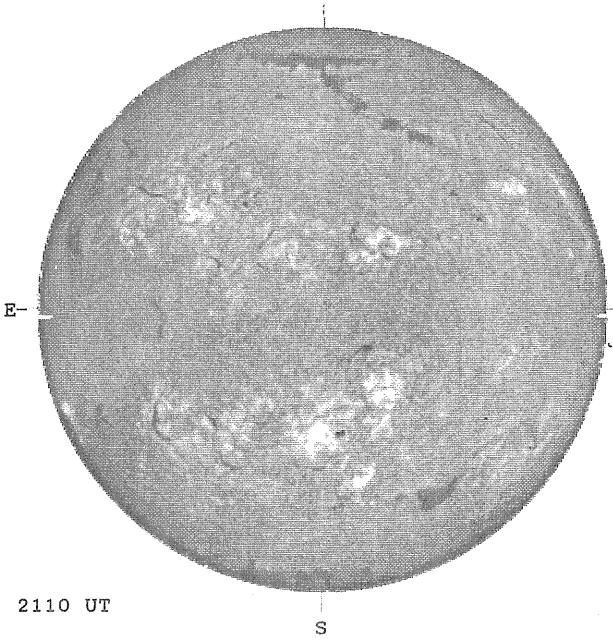
STANFORD MAGNETOGRAM



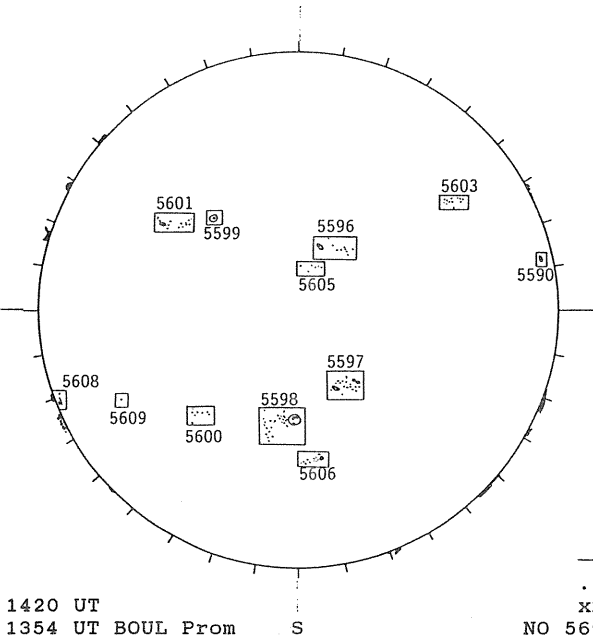
MT. WILSON MAGNETOGRAM



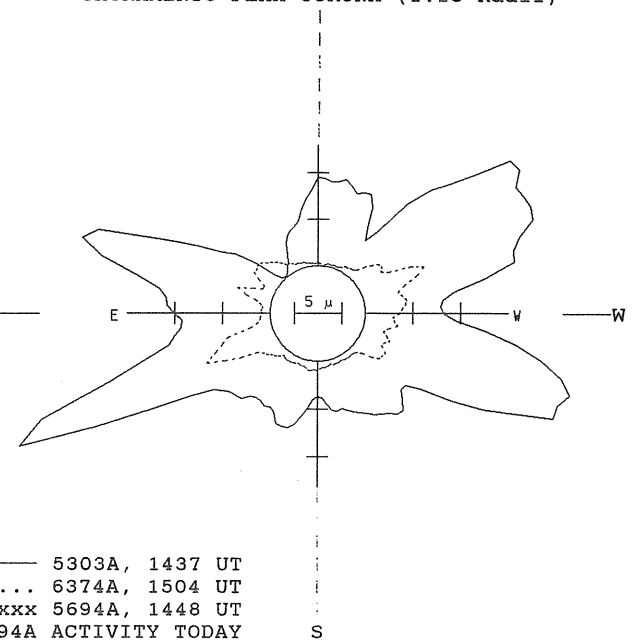
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



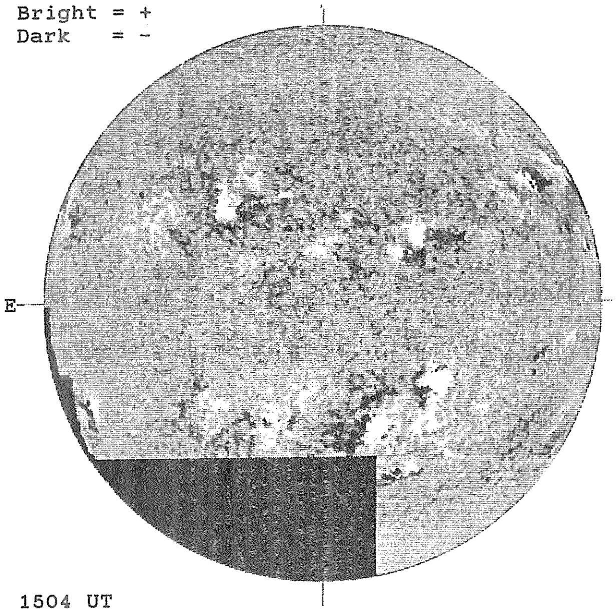
SACRAMENTO PEAK CORONA (1.15 Radii)



JULY 23, 1989 (P= 7.11, B_o = 5.06, L_o = 307.69)

KITT PEAK MAGNETOGRAM

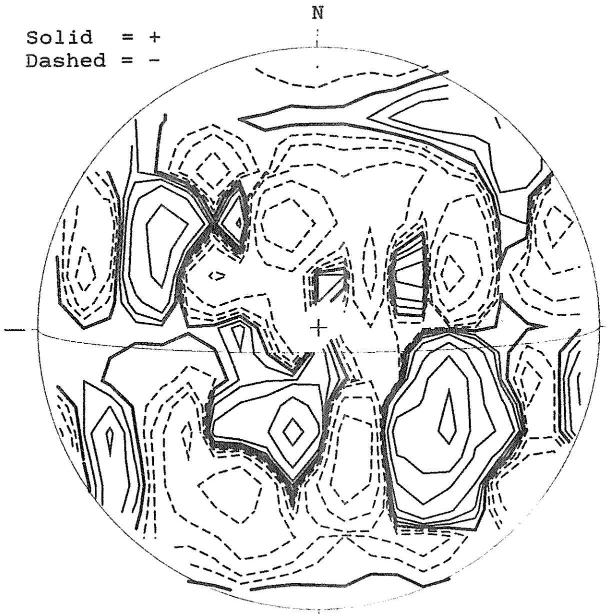
Bright = +
Dark = -



1504 UT

STANFORD MAGNETOGRAM

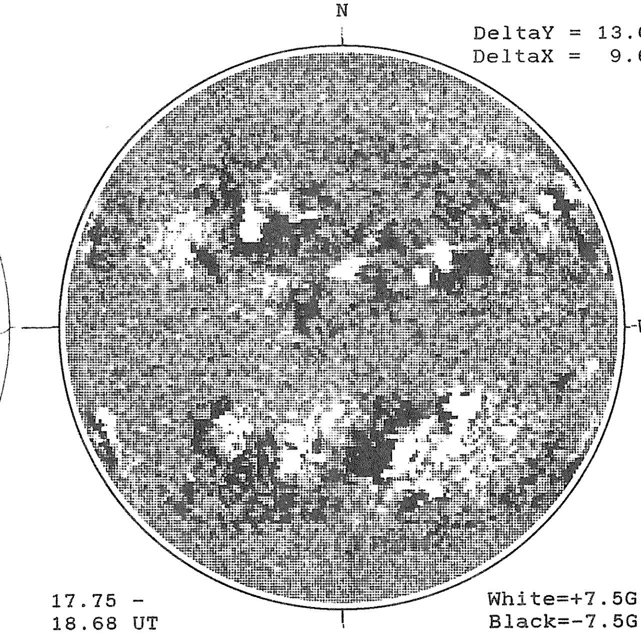
Solid = +
Dashed = -



2053 UT

MT. WILSON MAGNETOGRAM

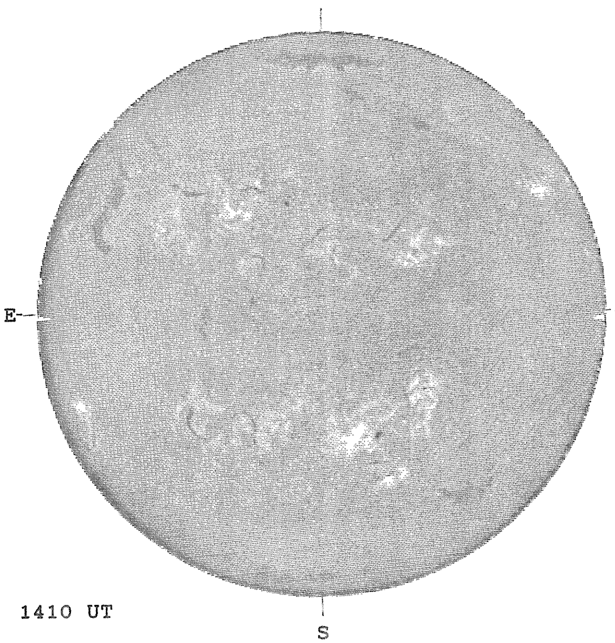
DeltaY = 13.0
DeltaX = 9.6



17.75 -
18.68 UT

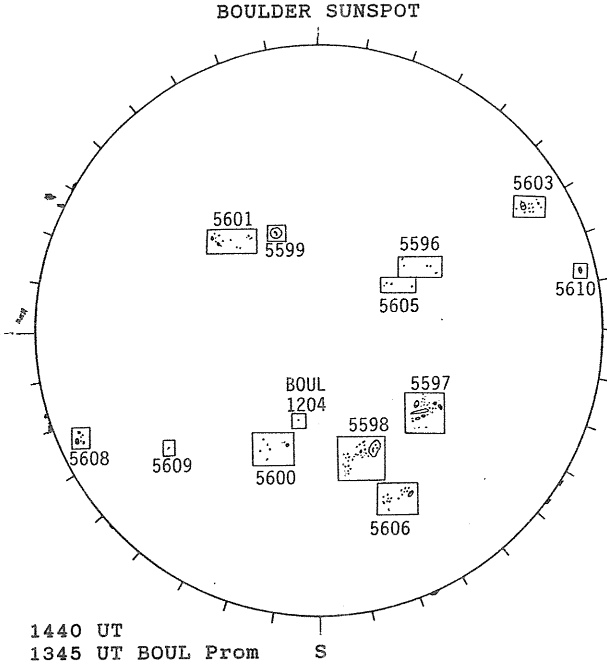
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



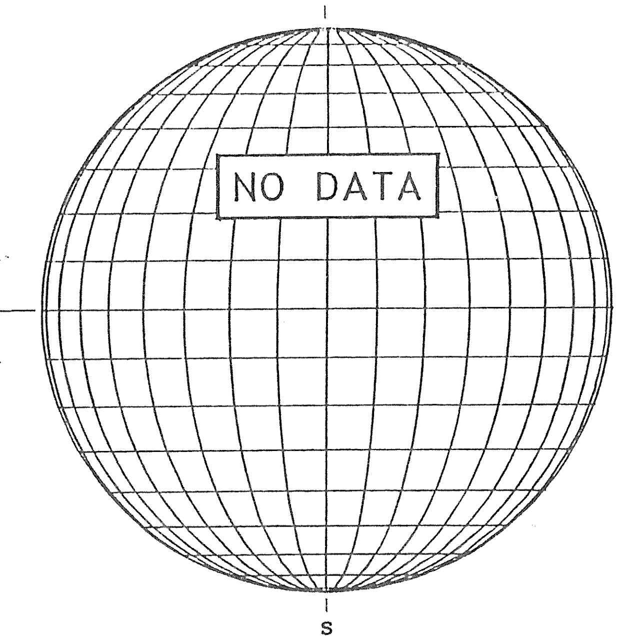
1410 UT

BOULDER SUNSPOT



1440 UT
1345 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

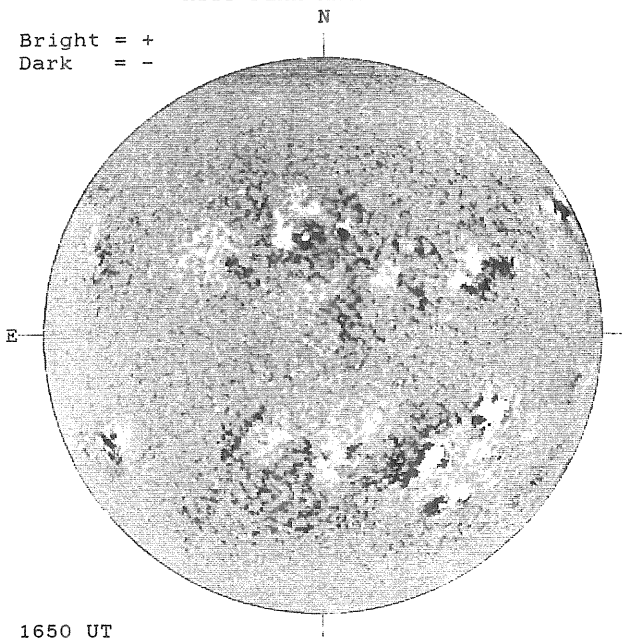


JULY 24, 1989 (P= 7.53, B_o = 5.15, L_o = 294.46)

80
Jul 89

KITT PEAK MAGNETOGRAM

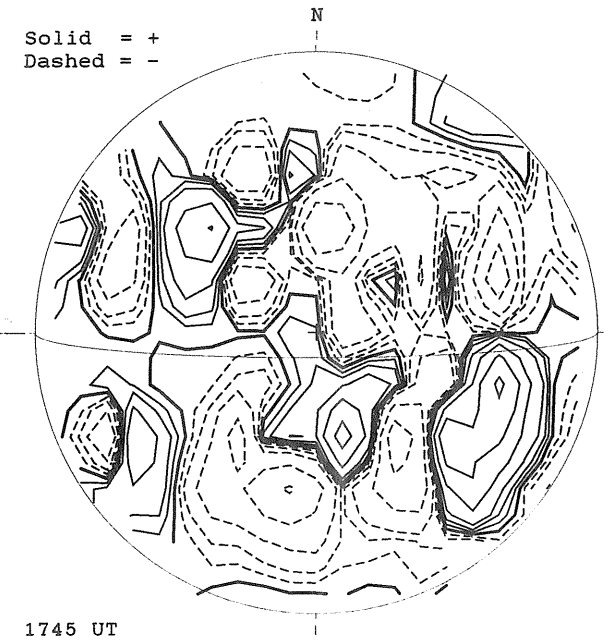
Bright = +
Dark = -



1650 UT

STANFORD MAGNETOGRAM

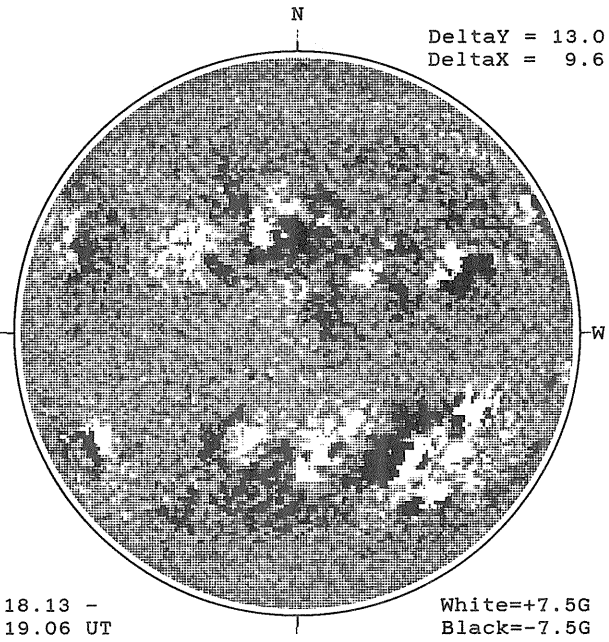
Solid = +
Dashed = -



1745 UT

MT. WILSON MAGNETOGRAM

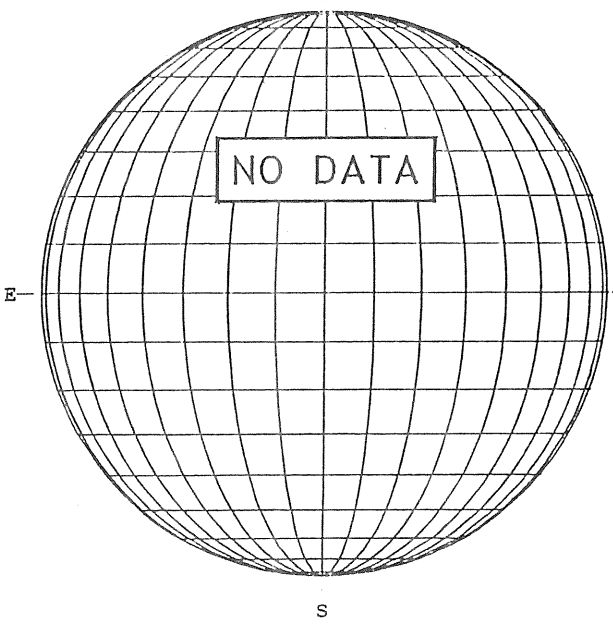
DeltaY = 13.0
DeltaX = 9.6



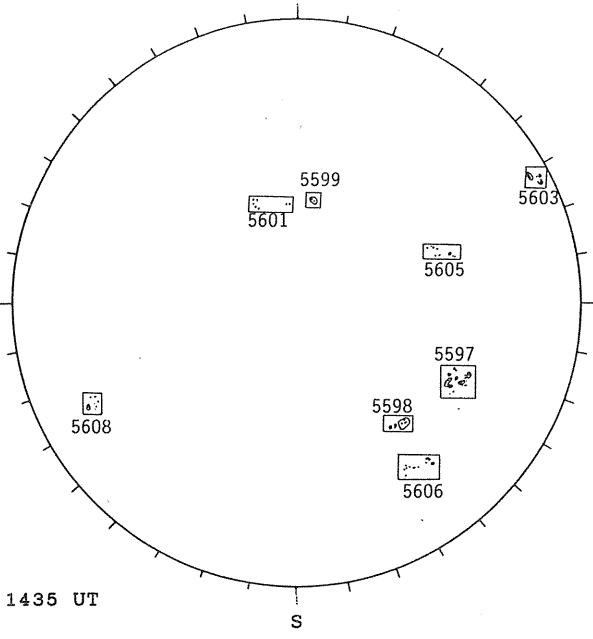
18.13 -
19.06 UT

White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA

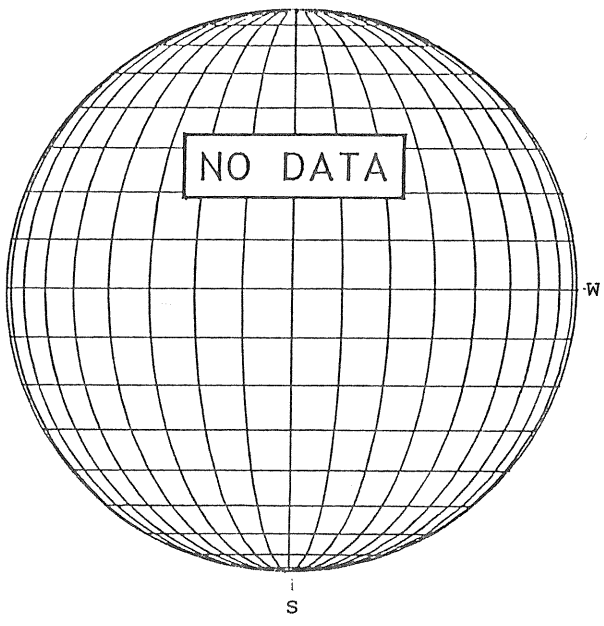


BOULDER SUNSPOT



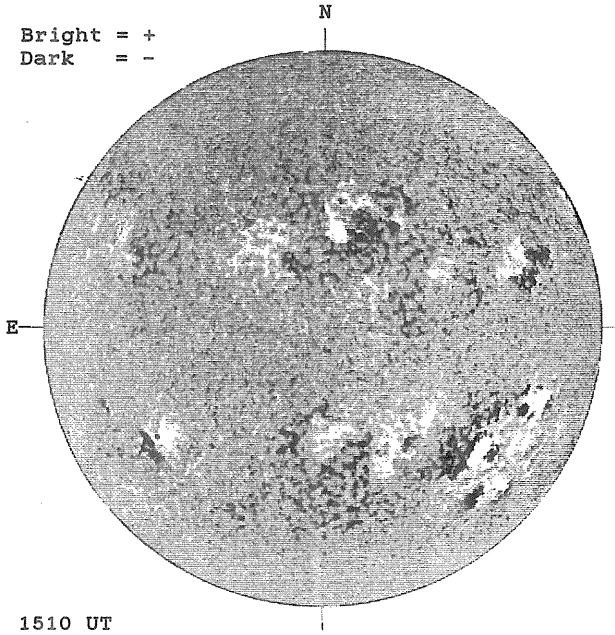
1435 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

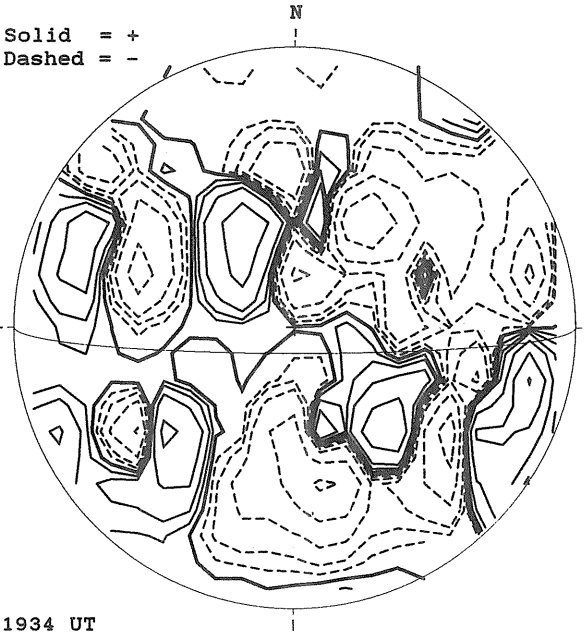


JULY 25, 1989 (P= 7.95, B_o = 5.23, L_o = 281.23)

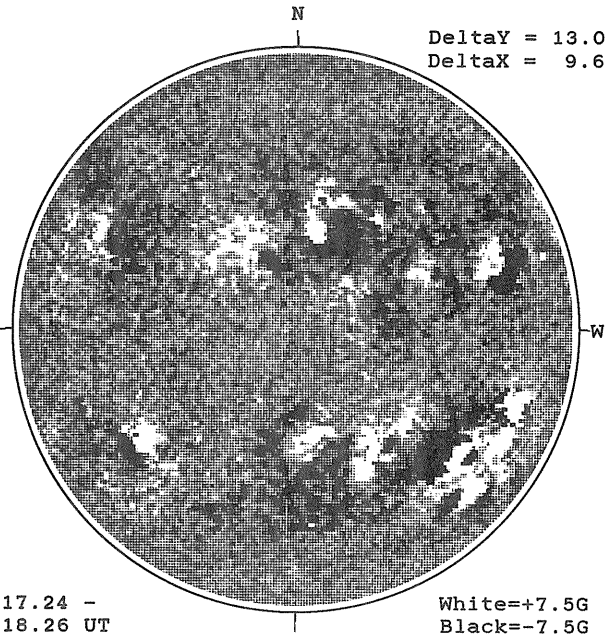
KITT PEAK MAGNETOGRAM



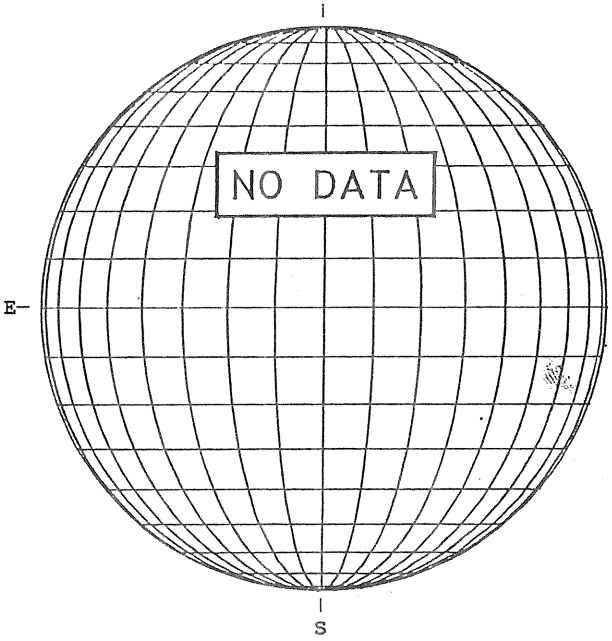
STANFORD MAGNETOGRAM



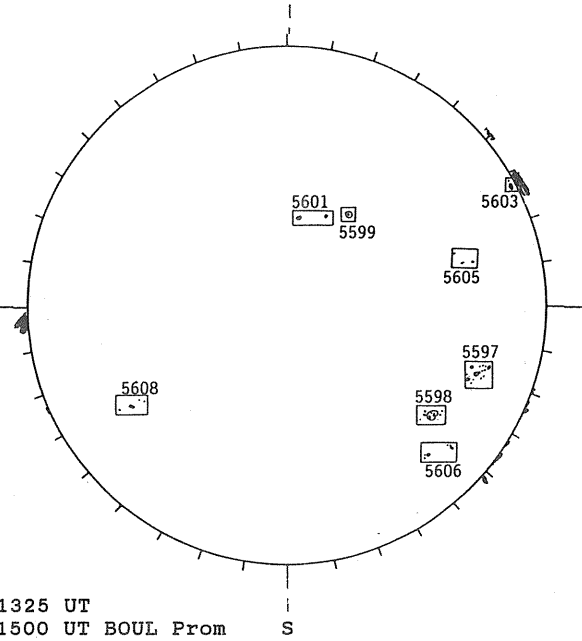
MT. WILSON MAGNETOGRAM



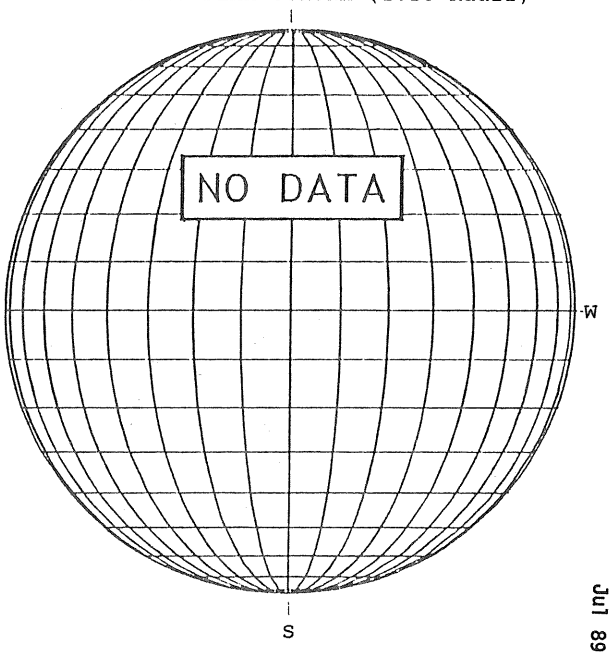
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

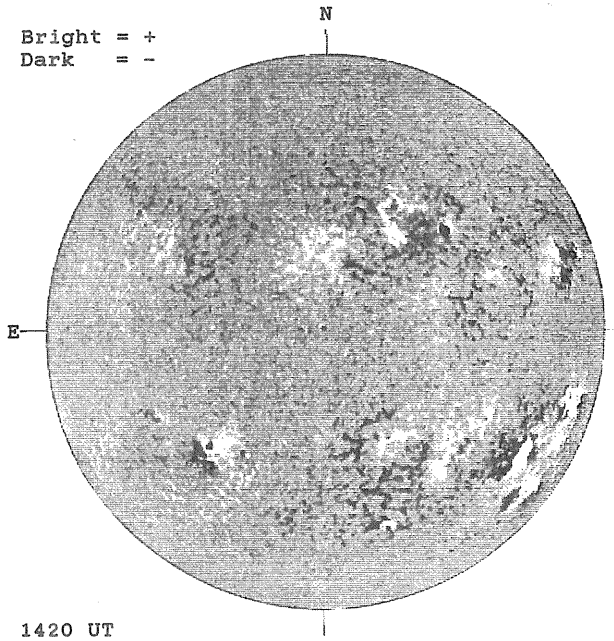


81
Jul 89

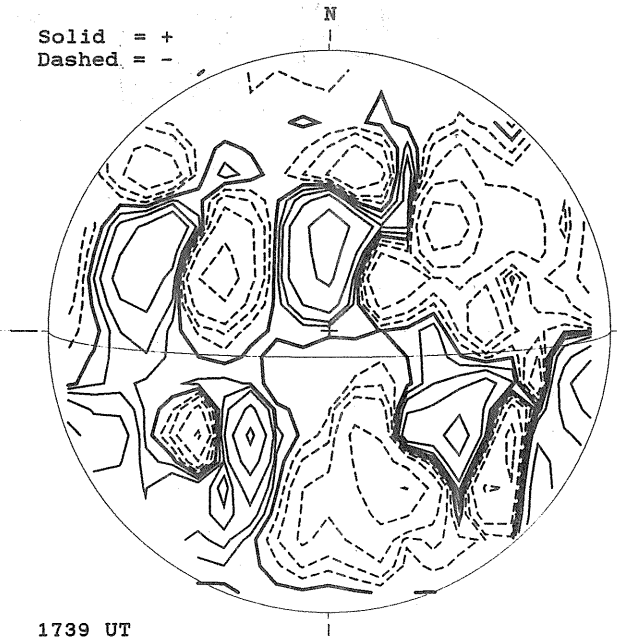
JULY 26, 1989 (P= 8.37, B_o = 5.31, L_o = 268.00)

82
Jul 89

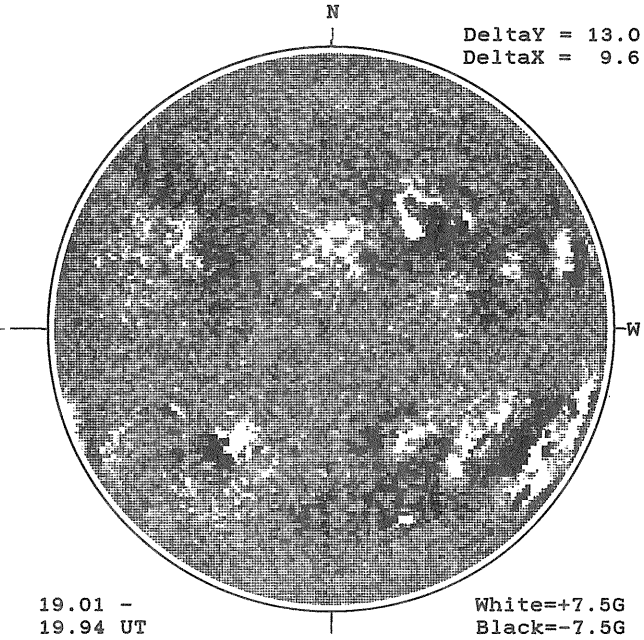
KITT PEAK MAGNETOGRAM



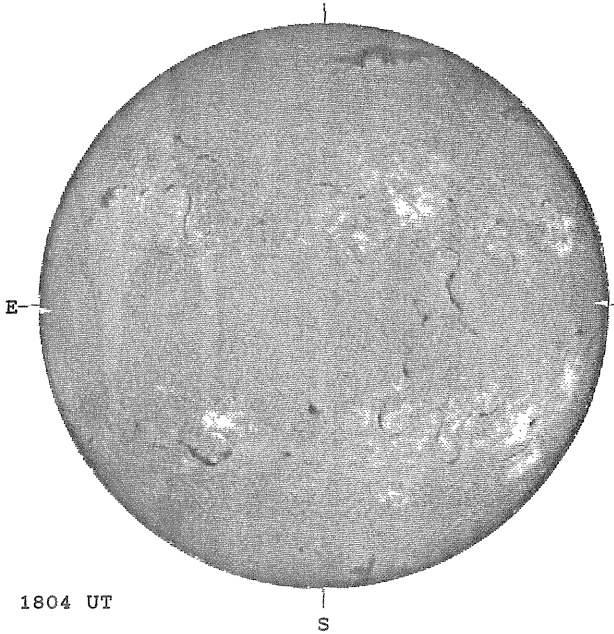
STANFORD MAGNETOGRAM



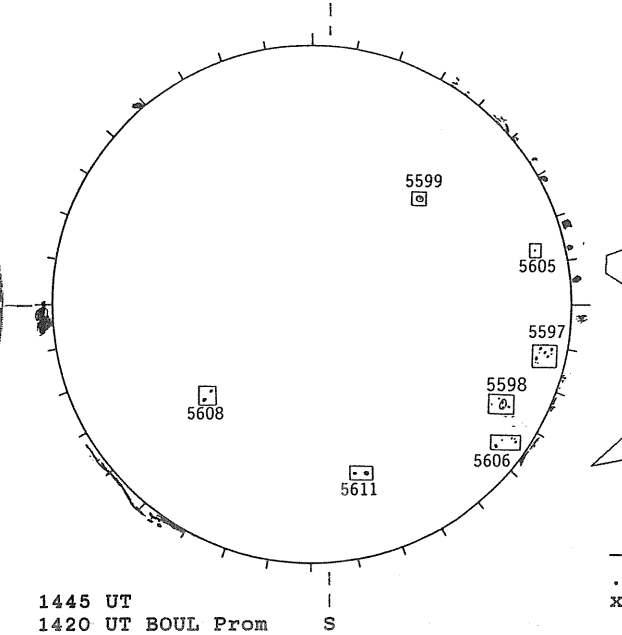
MT. WILSON MAGNETOGRAM



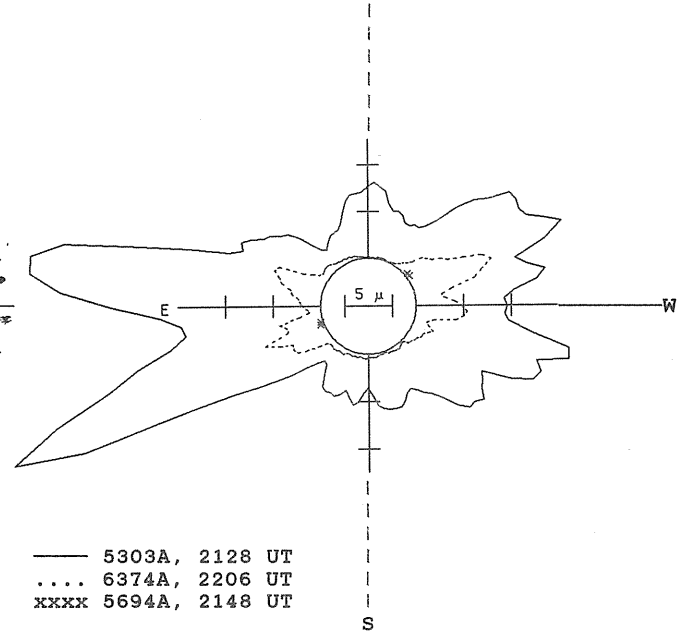
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



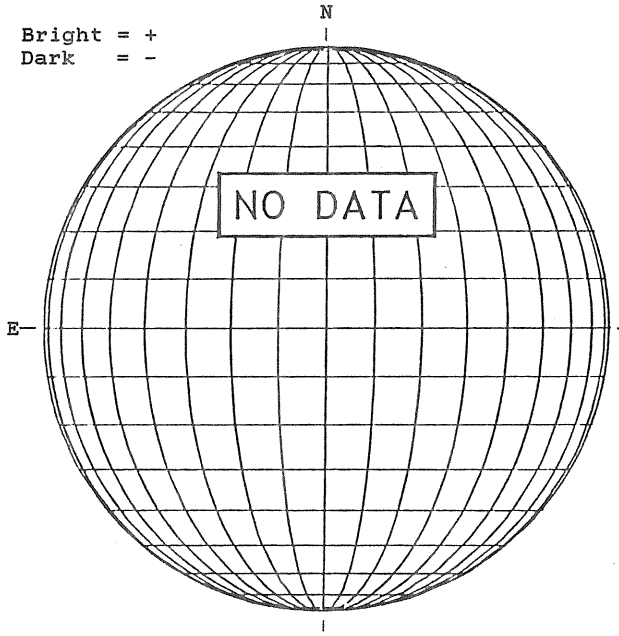
SACRAMENTO PEAK CORONA (1.15 Radii)



JULY 27, 1989 (P= 8.79, B_o = 5.40, L_o = 254.77)

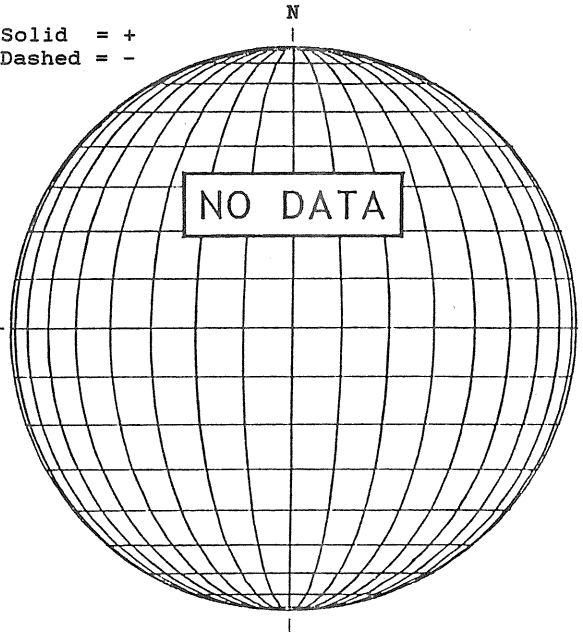
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



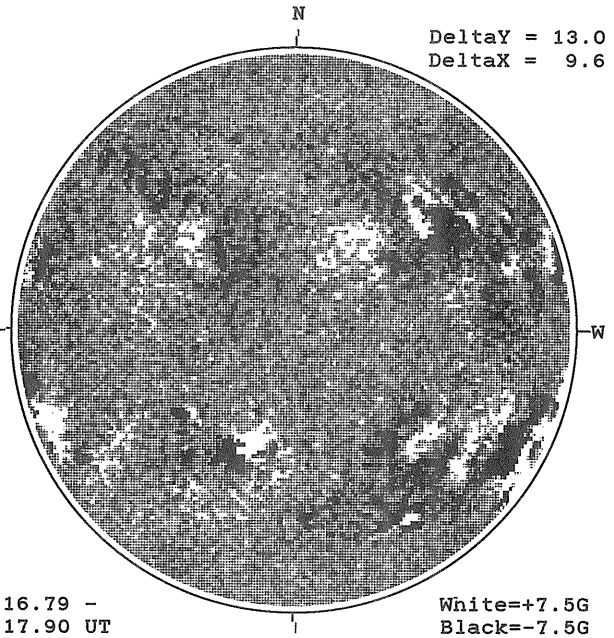
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

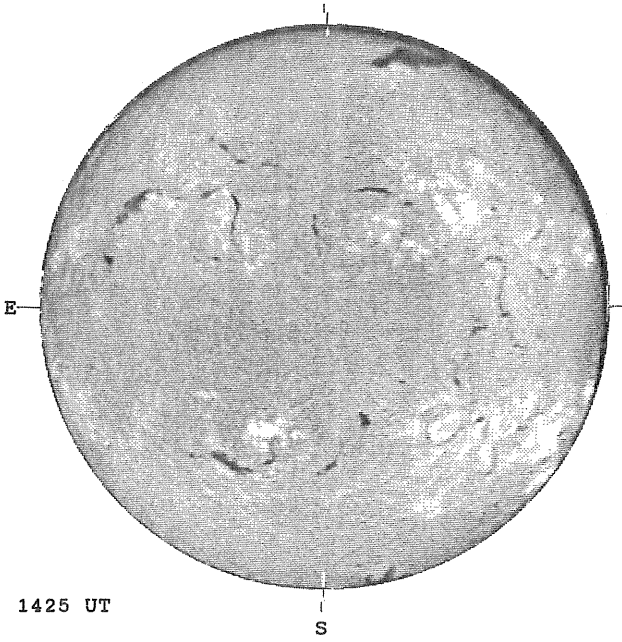
DeltaY = 13.0
DeltaX = 9.6



16.79 -
17.90 UT

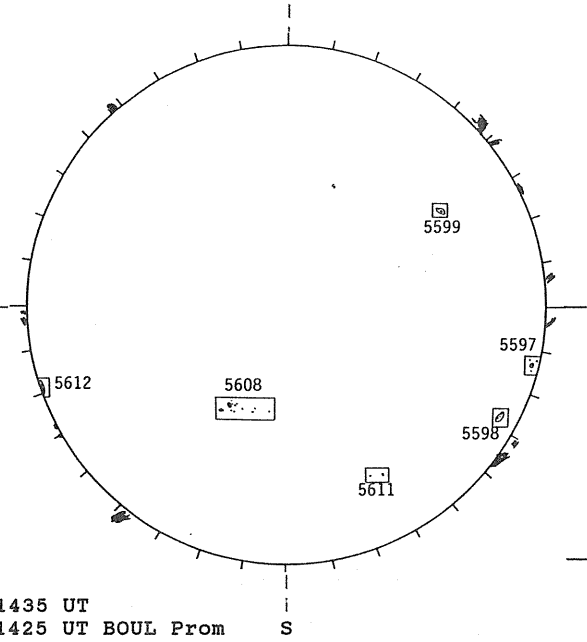
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



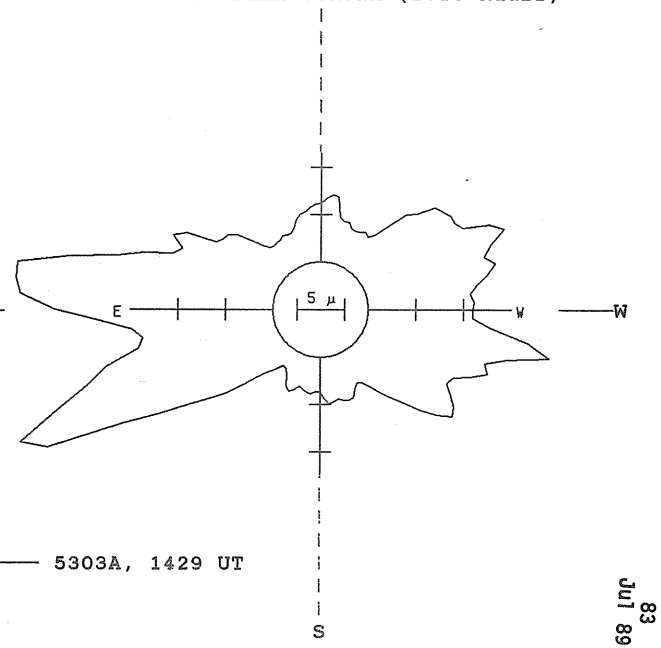
1425 UT

BOULDER SUNSPOT



1435 UT
1425 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



5303A, 1429 UT

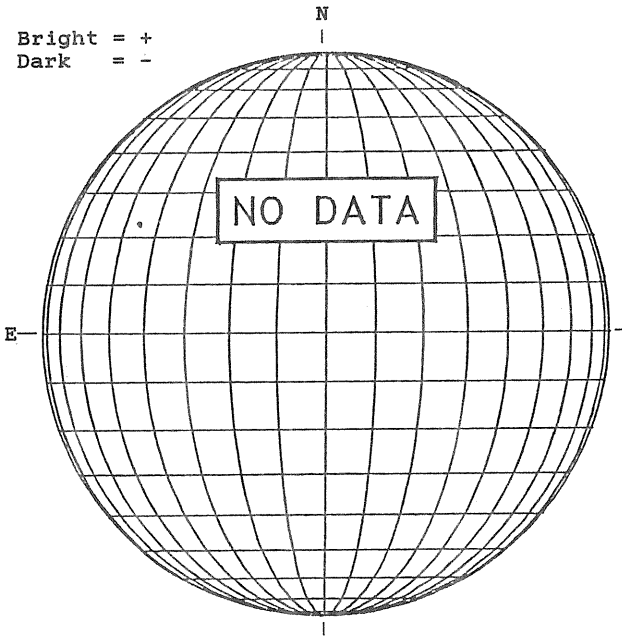
Jul 83
89

JULY 28, 1989 (P= 9.20, B_o = 5.48, L_o = 241.55)

84
Jul 89

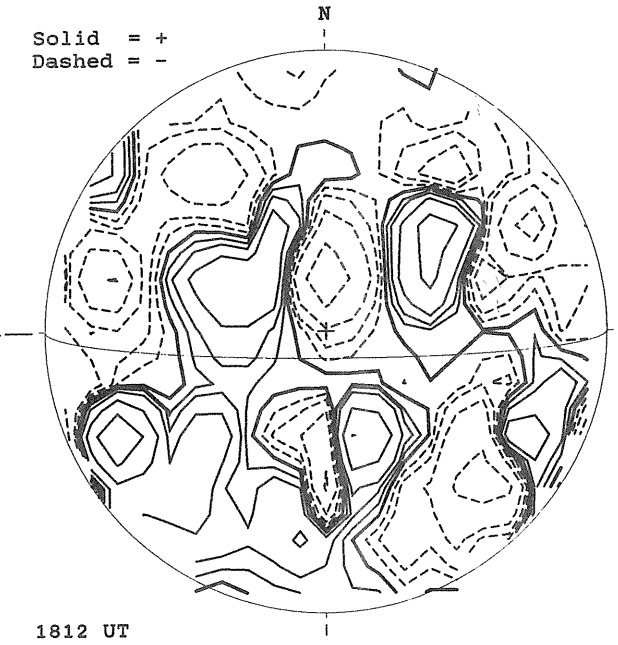
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



STANFORD MAGNETOGRAM

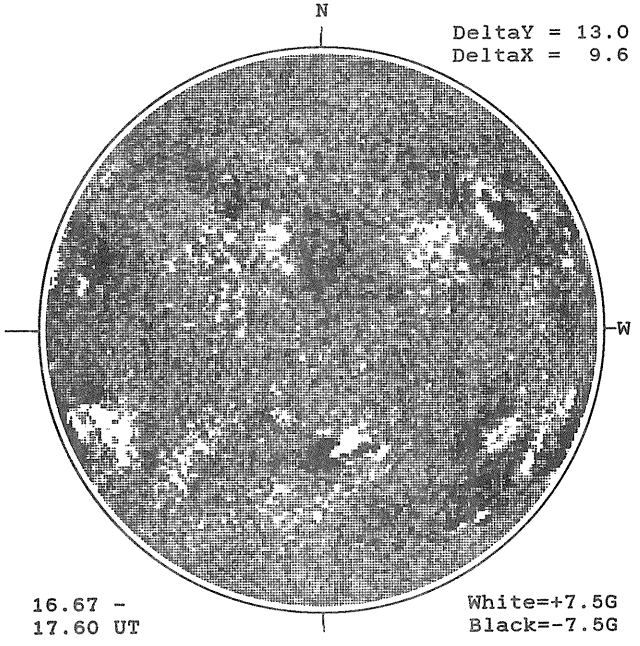
Solid = +
Dashed = -



1812 UT

MT. WILSON MAGNETOGRAM

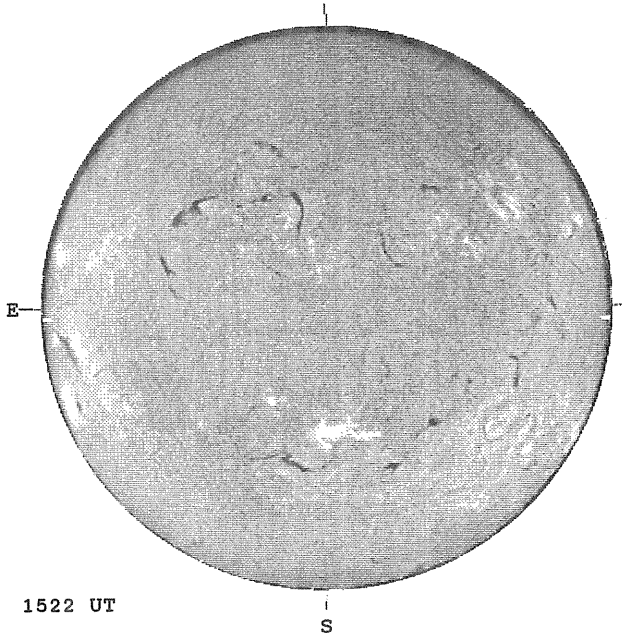
DeltaY = 13.0
DeltaX = 9.6



16.67 -
17.60 UT

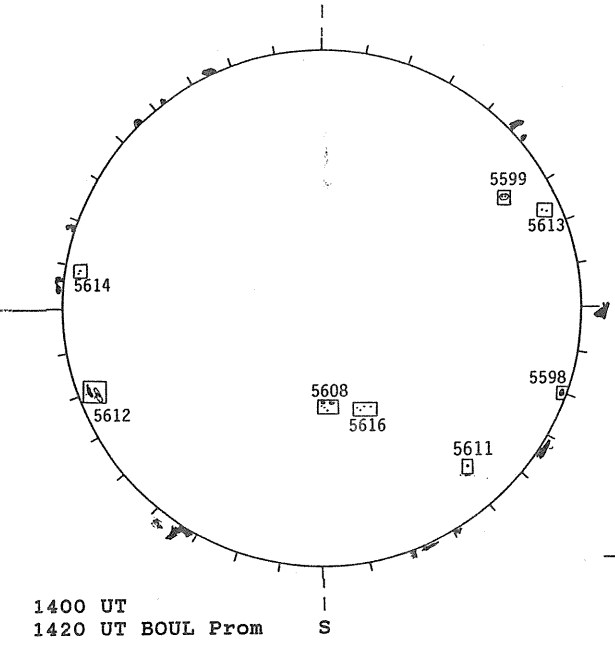
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



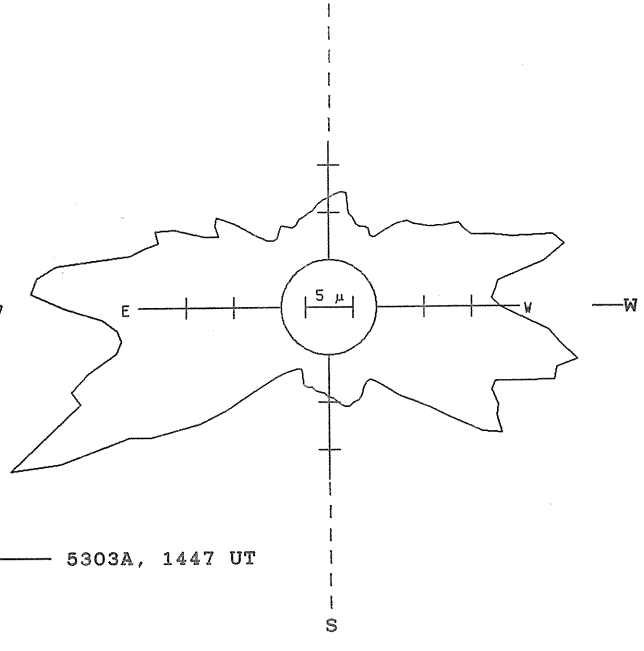
1522 UT

BOULDER SUNSPOT



1400 UT
1420 UT BOUL Prom

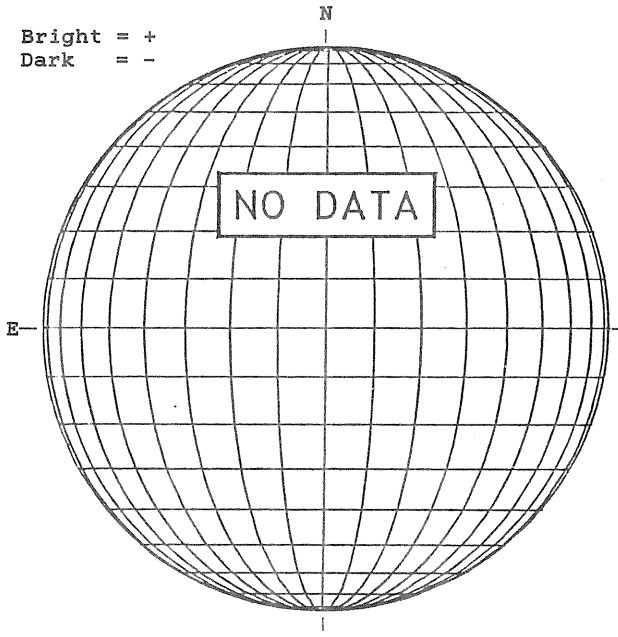
SACRAMENTO PEAK CORONA (1.15 Radii)



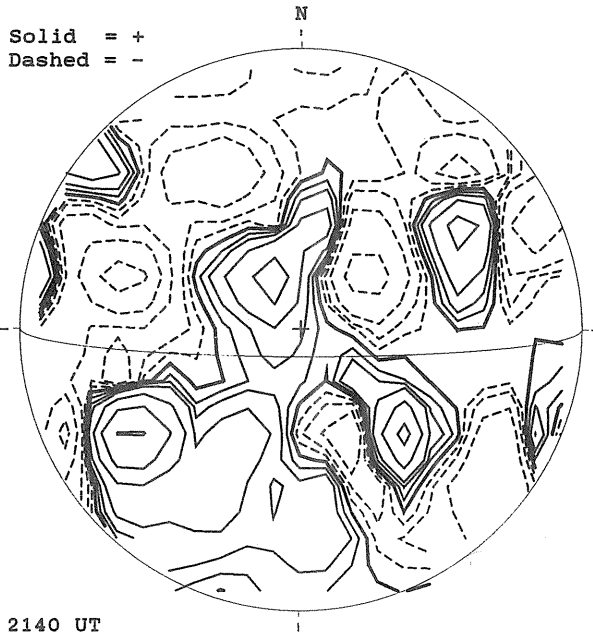
—— 5303A, 1447 UT

JULY 29, 1989 (P= 9.61, B_o = 5.55, L_o = 228.32)

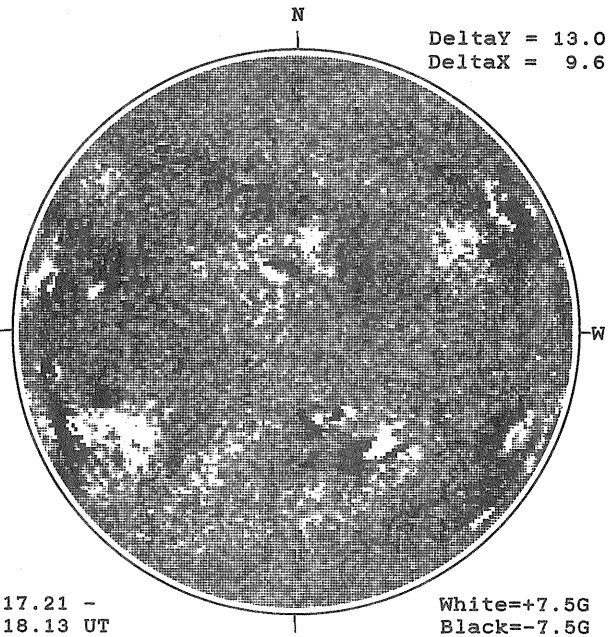
KITT PEAK MAGNETOGRAM



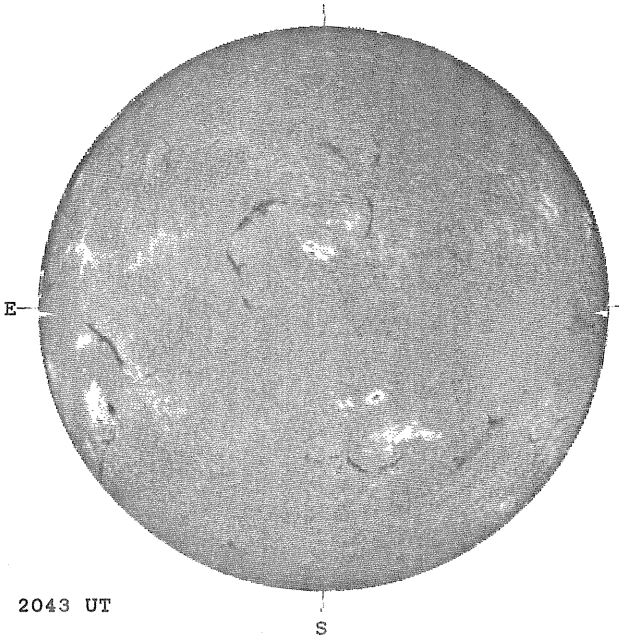
STANFORD MAGNETOGRAM



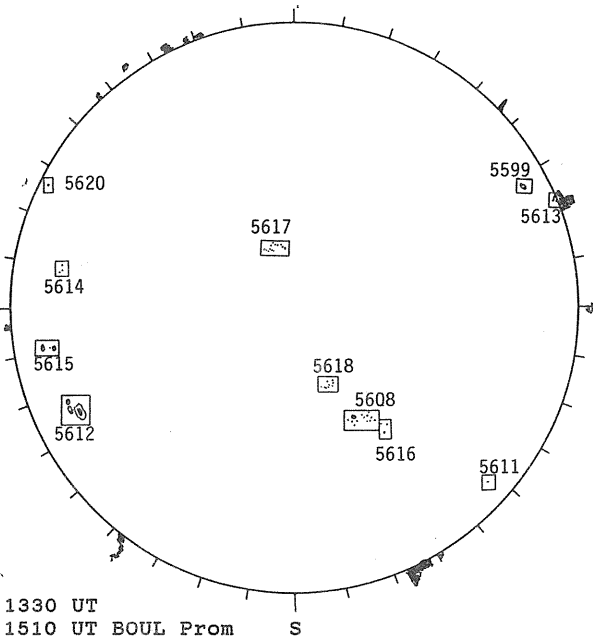
MT. WILSON MAGNETOGRAM



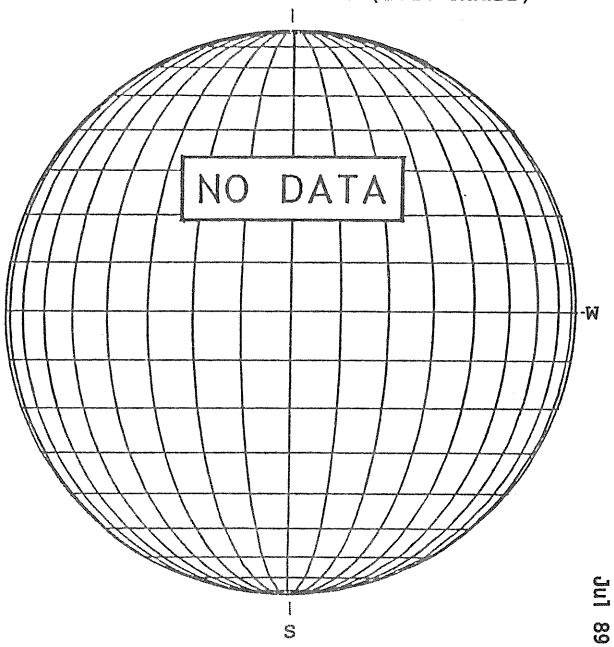
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



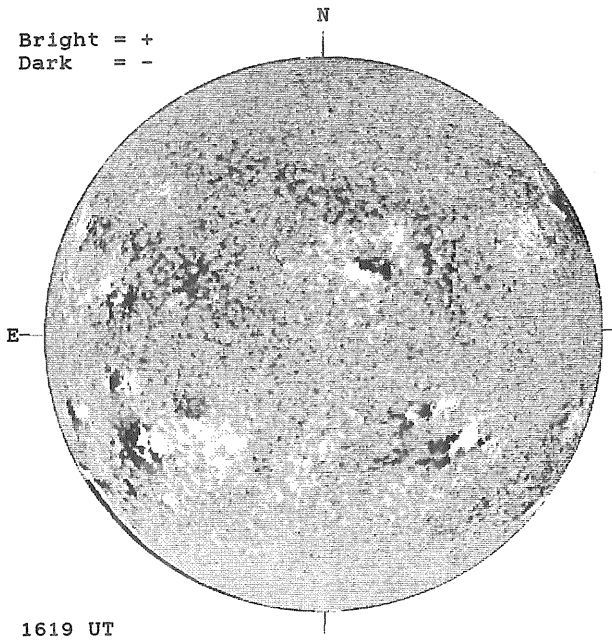
85
Jul 89

JULY 30, 1989 (P= 10.02, B_o = 5.63, L_o = 215.09)

Jul 89

KITT PEAK MAGNETOGRAM

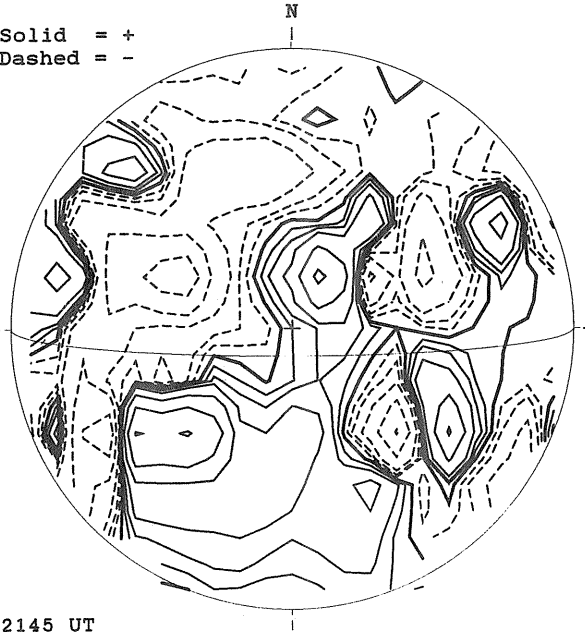
Bright = +
Dark = -



1619 UT

STANFORD MAGNETOGRAM

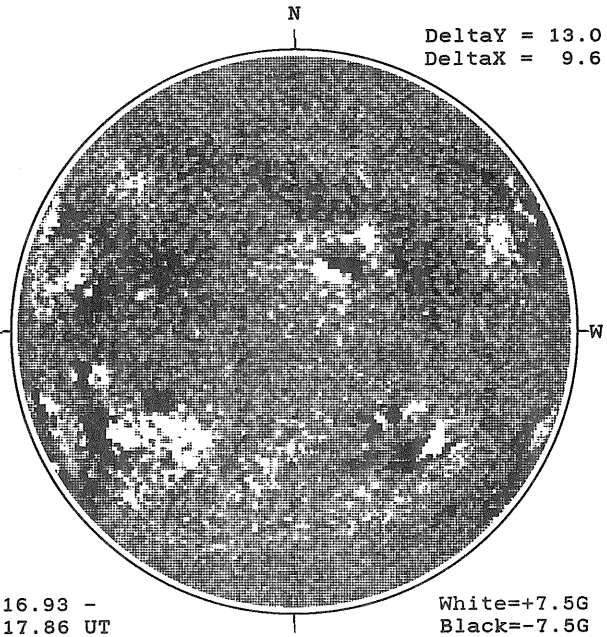
Solid = +
Dashed = -



2145 UT

MT. WILSON MAGNETOGRAM

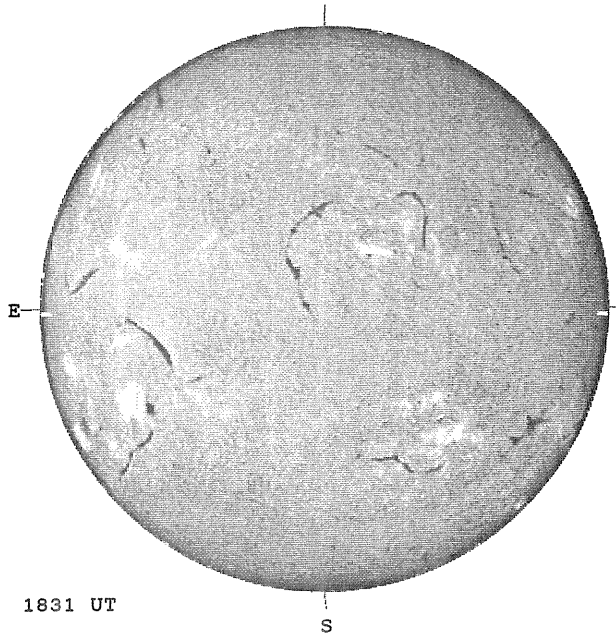
DeltaY = 13.0
DeltaX = 9.6



16.93 -
17.86 UT

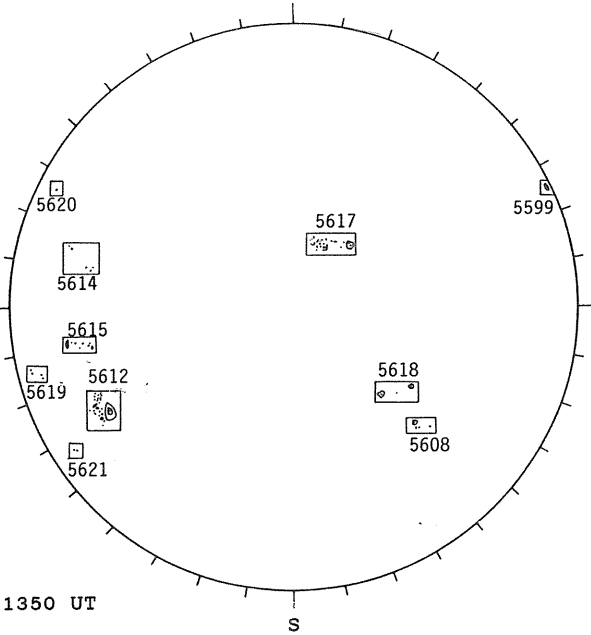
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



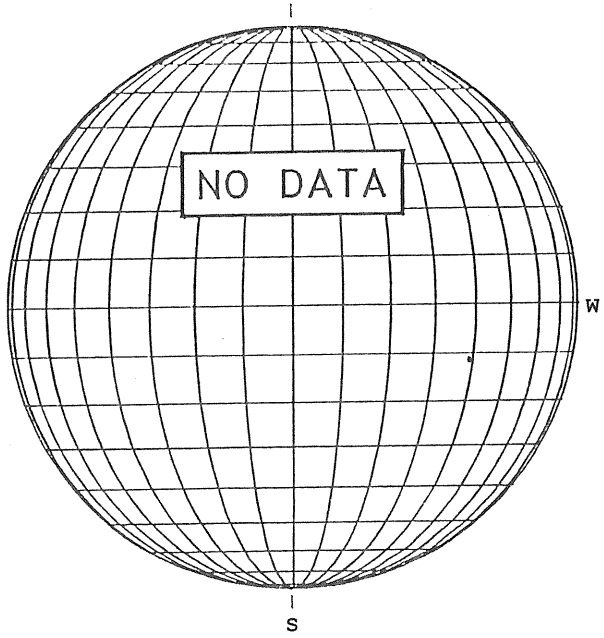
1831 UT

RAMEY SUNSPOT



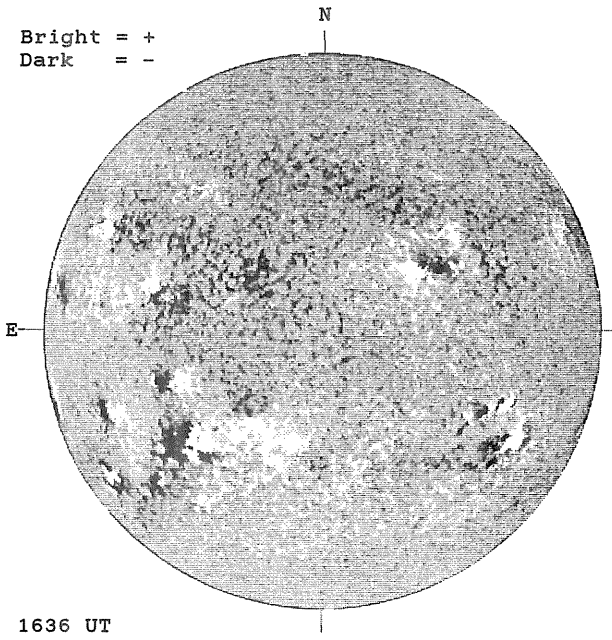
1350 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

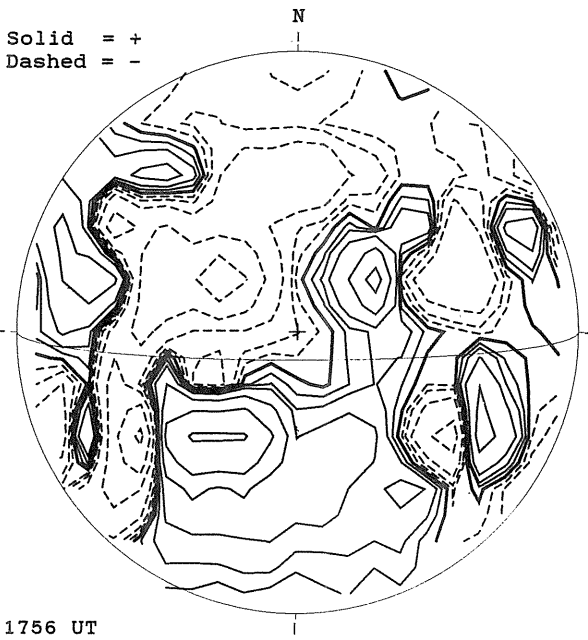


JULY 31, 1989 (P= 10.42, B_o = 5.71, L_o = 201.87)

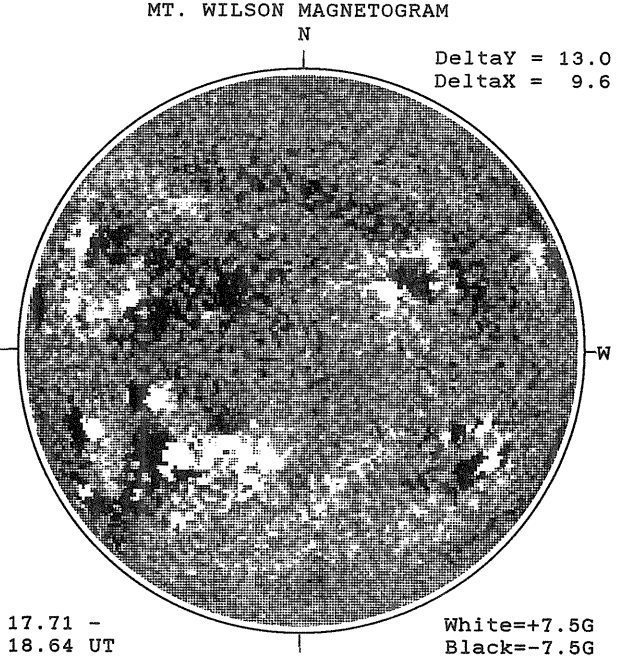
KITT PEAK MAGNETOGRAM



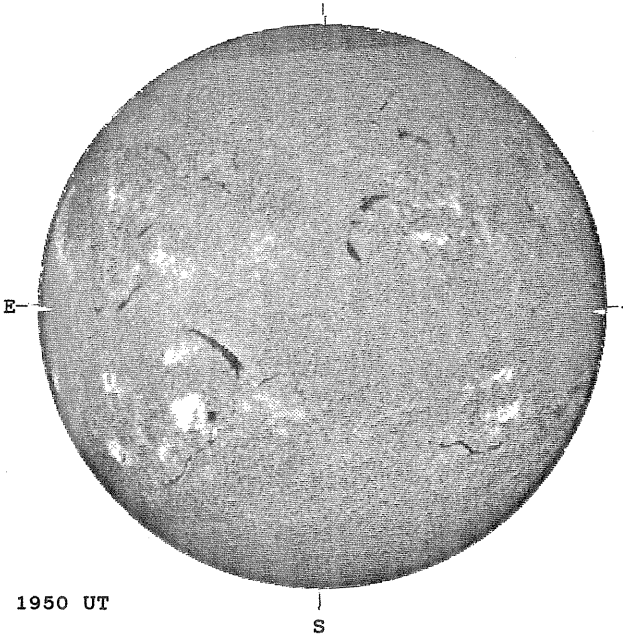
STANFORD MAGNETOGRAM



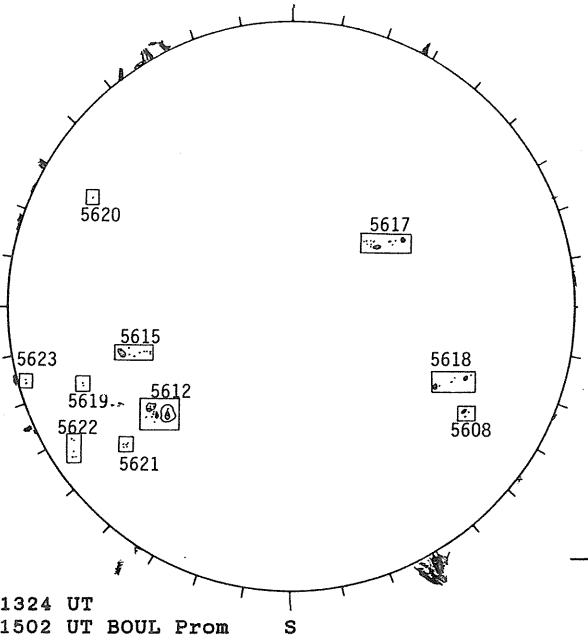
MT. WILSON MAGNETOGRAM



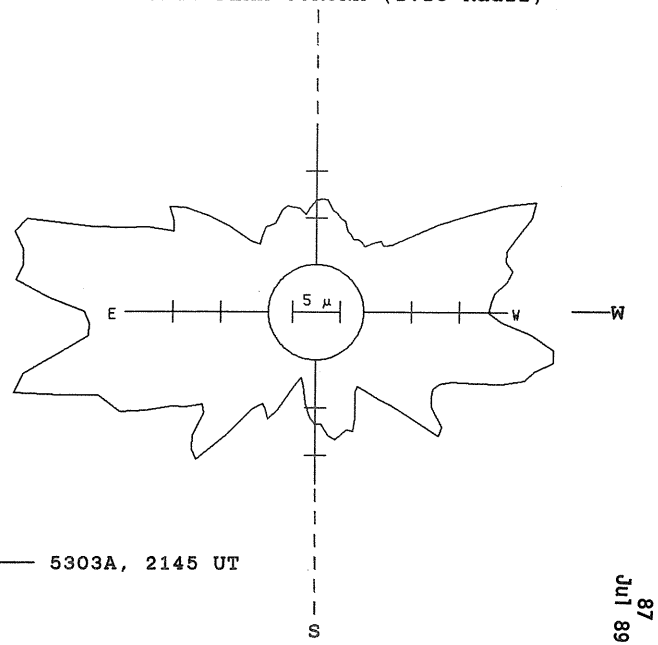
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



87
Jul 89

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

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
5569A		CULG	06 30 0400	S15 E12	07 1.1		B	DSO	90	2	5	1
5569A		RAMY	06 30 1219	S14 E10	07 1.3		A	AX	10	3	2	3
5571		SVTO	06 28 0430	N20 E46	07 1.7		A	AX		1		3
5571		BOUL	06 29 1340	N19 E29	07 1.8		B	BXO		3	4	3
5571		RAMY	06 29 1415	N20 E29	07 1.8		B	BXO	10	5	3	4
5571		HOLL	06 29 1720	N18 E23	07 1.5		A	AX	10	2	3	3
5571		LEAR	07 07 0102	N19 W68	07 1.8		A	AX	10	1	1	4
5571		SVTO	07 07 0722	N20 W72	07 1.8		A	AX		1		2
5571A		BOUL	06 30 1336	S13 E18	07 1.9		B	BXO		2	2	3
5571A		HOLL	06 30 1520	S14 E18	07 2.0		B	BXO	10	2	3	3
5571B		HOLL	07 04 1321	S05 W29	07 2.4		A	AX		1		3
5571B		RAMY	07 04 1528	S05 W30	07 2.4		A	AX		1		3
5571C		RAMY	07 02 1015	N29 E08	07 3.0		A	AX	10	2	1	2
5571C		BOUL	07 02 1400	N28 E09	07 3.3		A	AX		1		3
5571C		HOLL	07 02 1440	N29 E08	07 3.2		A	AX	10	1	1	3
5587		PALE	07 04 1910	S16 W17	07 3.5		A	AX		5		3
5587		BOUL	07 07 1335	S18 W48	07 3.9		B	BXO		2	2	3
5587		HOLL	07 07 1409	S18 W51	07 3.7		A	AX	10	2	2	4
5587		PALE	07 07 1741	S19 W53	07 3.7		A	AX	10	1	1	3
5587	25364	MWIL	07 07 1800	S18 W54	07 3.6	4	(AP)					
5587		CULG	07 08 0308	S18 W59	07 3.6		A	AX	10	1		3
5587	25364	MWIL	07 08 1500	S17 W68	07 3.4	4	(AP)					
5587		HOLL	07 08 1605	S18 W68	07 3.5		A	AX		1		3
5587A		CULG	07 04 0250	S22 W04	07 3.8		A	AX		1		3
5577		PALE	07 04 1910	N31 W06	07 4.3		B	BXO	10	9	3	3
5577A		HOLL	07 05 1450	S15 W02	07 5.5		A	AX		1	1	3
5577A		PALE	07 05 1928	S15 W04	07 5.5		A	AX		2	1	3
5577A		PALE	07 06 1723	S12 W18	07 5.4		A	AX		1	1	3
5573		HOLL	06 29 1720	N15 E87	07 6.3		A	HSO	60	1	2	3
5573		PALE	06 29 2100	N16 E85	07 6.3		A	HA	60	1	2	2
5573		LEAR	06 30 0525	N15 E78	07 6.1		A	HS	60	1	2	2
5573		RAMY	06 30 1219	N16 E74	07 6.1		A	HA	120	1	2	3
5573		BOUL	06 30 1336	N16 E70	07 5.9		A	HS	50	1	1	3
5573	25347	MWIL	06 30 1445	N15 E73	07 6.1	4	(AP)					
5573		HOLL	06 30 1520	N15 E75	07 6.3		A	HS	60	1	2	3
5573		PALE	06 30 1958	N15 E70	07 6.1		A	HS	110	1	1	3
5573		LEAR	07 01 0320	N16 E66	07 6.1		A	HA	70	1	2	3
5573		CULG	07 01 0430	N17 E66	07 6.2		A	HS	20	1	1	3
5573		RAMY	07 01 1320	N16 E60	07 6.1		A	HA	80	1	2	2
5573		BOUL	07 01 1405	N11 E59	07 6.0		A	HA	40	2	2	3
5573	25347	MWIL	07 01 1415	N15 E59	07 6.1	5	(AP)					
5573		HOLL	07 01 1440	N16 E60	07 6.2		A	HA	60	2	2	4
5573		PALE	07 01 1825	N15 E58	07 6.1		A	HA	80	1	1	4
5573		LEAR	07 02 0110	N15 E54	07 6.1		A	HA	60	2	2	3
5573		CULG	07 02 0330	N15 E53	07 6.1		A	HA	30	2	2	3
5573		SVTO	07 02 0804	N15 E55	07 6.5		B	CAO	50	6	11	3
5573		RAMY	07 02 1015	N15 E46	07 5.9		B	CAO	50	7	3	2
5573		BOUL	07 02 1400	N16 E46	07 6.1		A	HA	20	2	1	3
5573	25347	MWIL	07 02 1430	N15 E47	07 6.2	4	(BP)					
5573		HOLL	07 02 1440	N15 E48	07 6.2		B	CSO	70	8	3	3
5573		PALE	07 02 1907	N16 E45	07 6.2		B	CSO	60	2	3	3
5573		LEAR	07 03 0010	N15 E42	07 6.2		B	BXO	40	4	3	3
5573		SVTO	07 03 0605	N15 E43	07 6.5		B	CAO	20	4	10	3
5573		HOLL	07 03 1440	N15 E33	07 6.1		A	AX	10	2	2	3
5573		BOUL	07 03 1513	N15 E32	07 6.0		A	AX	10	2	1	1
5573	25347	MWIL	07 03 1515	N15 E33	07 6.1	4	(AP)					
5573		PALE	07 03 1830	N16 E32	07 6.2		A	AX		3	1	3
5573		LEAR	07 04 0010	N12 E32	07 6.4		A	HS	10	1	1	3
5573		SVTO	07 04 0703	N12 E30	07 6.5		A	AX		1	1	3
5573		BOUL	07 04 1311	N15 E17	07 5.8		A	AX	10	2		1

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5573		HOLL	07	04	1321	N15	E18	07	5.9		B	BXO		4	6	3
5573	25347	MWIL	07	04	1500	N13	E17	07	5.9	3	(B)					
5573		RAMY	07	04	1528	N14	E17	07	5.9		A	AX	10	3	2	3
5573		PALE	07	04	1910	N15	E17	07	6.1		B	BXO	10	6	6	3
5573		LEAR	07	05	0029	N13	E18	07	6.4		A	HS	10	1	1	3
5573		RAMY	07	05	1150	N12	E03	07	5.7		A	AX	10	2	1	2
5573	25347	MWIL	07	05	1430	N12	E02	07	5.7	4	(AP)					
5573		HOLL	07	05	1450	N12	E03	07	5.8		A	AX	10	3	2	3
5573		LEAR	07	06	0045	N14	E05	07	6.4		B	BXO	10	2	4	4
5573		SVTO	07	06	0758	N16	W03	07	6.1		A	AX		1		2
5573	25347	MWIL	07	06	1515	N14	W13	07	5.6	4	(AP)					
5573	25359	MWIL	07	06	1515	N17	W10	07	5.9	3	(AP)					
5573		SVTO	07	07	0722	N16	W15	07	6.2		A	AX	10	2	2	2
5573	25359	MWIL	07	07	1800	N16	W20	07	6.2	2	AP					
5573		CULG	07	08	0308	N17	W26	07	6.1		A	AX	10	1		3
5573		RAMY	07	08	1255	N16	W32	07	6.1		A	AX	10	3	1	1
5573	25359	MWIL	07	08	1500	N16	W34	07	6.0	4	(AP)					
5573		HOLL	07	08	1605	N16	W33	07	6.2		A	AX		2		3
5573		RAMY	07	11	1218	N14	W72	07	6.1		B	BXO	10	5	4	3
5573		PALE	07	11	1920	N11	W73	07	6.3		A	AX		1		3
5573		LEAR	07	12	0015	N13	W75	07	6.3		A	AX	10	1	1	3
5577B		BOUL	07	05	1345	N12	E02	07	5.7		A	AX	10	2	1	3
5573A		CULG	07	04	0250	S14	E24	07	5.9		A	AX		1		3
5573A		LEAR	07	06	0045	S14	W03	07	5.8		A	AX	10	1	1	4
5573A		RAMY	07	06	1222	S14	W08	07	5.9		A	AX	10	3	1	2
5572A		BOUL	06	30	1336	S17	E70	07	5.9		A	HS	80	1	1	3
5572A	25348	MWIL	06	30	1445	S17	E73	07	6.2	5	(AP)					
5573B		RAMY	07	05	1150	N21	E10	07	6.2		B	BXO	10	4	3	2
5572		BOUL	06	29	1340	S15	E83	07	5.8		A	AX	10	1	1	3
5572		RAMY	06	29	1415	S14	E80	07	5.6		A	AX	30	1	1	4
5572	25345	MWIL	06	29	1430	S14	E80	07	5.6	3	AP					
5572		HOLL	06	29	1720	S16	E85	07	6.2		B	CSO	90	2	4	3
5572		PALE	06	29	2100	S15	E84	07	6.2		B	DSO	90	2	10	2
5572		LEAR	06	30	0525	S17	E79	07	6.2		B	CSO	180	3	5	2
5572		RAMY	06	30	1219	S16	E70	07	5.8		B	DAO	210	6	10	3
5572		BOUL	06	30	1336	S14	E69	07	5.8		B	DSO	50	3	7	3
5572	25345	MWIL	06	30	1445	S14	E74	07	6.2	4	(B)					
5572		HOLL	06	30	1520	S16	E74	07	6.2		B	DSI	210	6	8	3
5572		PALE	06	30	1958	S17	E72	07	6.3		B	EAI	230	13	15	3
5572		LEAR	07	01	0320	S15	E66	07	6.1		B	DAO	230	11	9	3
5572		CULG	07	01	0430	S13	E66	07	6.2		B	CSO	50	4	8	3
5572		SVTO	07	01	0804	S15	E65	07	6.2		B	DAO	190	11	9	2
5572		RAMY	07	01	1320	S16	E61	07	6.2		B	DAO	230	13	8	2
5572		BOUL	07	01	1405	S17	E56	07	5.8		B	CSO	90	3	3	3
5572	25348	MWIL	07	01	1415	S18	E60	07	6.2	5	(BP)					
5572		HOLL	07	01	1440	S19	E60	07	6.2		B	CSO	110	5	5	4
5572		PALE	07	01	1825	S17	E58	07	6.2		B	DAO	170	4	7	4
5572		LEAR	07	02	0110	S19	E55	07	6.2		B	CSO	4140	4	4	3
5572		CULG	07	02	0330	S18	E53	07	6.2		B	CSO	100	5	4	3
5572		SVTO	07	02	0804	S19	E52	07	6.3		B	CAO	100	7	4	3
5572		RAMY	07	02	1015	S19	E47	07	6.0		B	CAO	140	5	7	2
5572		BOUL	07	02	1400	S18	E46	07	6.1		B	CAO	110	6	5	3
5572	25348	MWIL	07	02	1430	S19	E47	07	6.2	5	(BP)					
5572		HOLL	07	02	1440	S19	E48	07	6.3		B	DSO	160	7	7	3
5572		PALE	07	02	1907	S17	E46	07	6.3		B	DSO	200	7	8	3
5572		LEAR	07	03	0010	S18	E41	07	6.1		B	CSO	150	8	6	3
5572		SVTO	07	03	0605	S19	E38	07	6.1		B	DSO	160	8	6	3
5572		HOLL	07	03	1440	S18	E33	07	6.1		B	CSO	170	9	6	3
5572		BOUL	07	03	1513	S18	E34	07	6.2		B	CAI	120	10	5	1
5572	25348	MWIL	07	03	1515	S18	E34	07	6.2	5	(BG)					
5572		PALE	07	03	1830	S19	E32	07	6.2		B	CSO	120	11	6	3
5572		LEAR	07	04	0010	S18	E28	07	6.1		B	CSO	120	4	5	3
5572		CULG	07	04	0250	S19	E28	07	6.2		B	CAO	120	9	6	3
5572		SVTO	07	04	0703	S18	E24	07	6.1		B	DSO	170	13	8	3

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

JULY 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5572		BOUL	07	04	1311	S19	E22	07	6.2		B	CAI	150	22	11	1
5572		HOLL	07	04	1321	S19	E20	07	6.1		B	CAO	130	17	10	3
5572	25348	MWIL	07	04	1500	S19	E19	07	6.1	5	(D)					
5572		RAMY	07	04	1528	S18	E21	07	6.2		B	CAO	150	27	8	3
5572		PALE	07	04	1910	S17	E20	07	6.3		B	DKI	200	23	8	3
5572		LEAR	07	05	0029	S18	E16	07	6.2		B	CSO	100	6	6	3
5572		CULG	07	05	0255	S18	E16	07	6.3		B	DAI	100	6	5	2
5572		RAMY	07	05	1150	S19	E10	07	6.2		B	DAO	140	13	6	2
5572		BOUL	07	05	1345	S16	E11	07	6.4		B	CAO	150	16	8	3
5572	25348	MWIL	07	05	1430	S19	E09	07	6.3	5	(D)					
5572		HOLL	07	05	1450	S19	E08	07	6.2		B	DSO	110	18	9	3
5572		PALE	07	05	1928	S20	E07	07	6.3		B	CAO	80	9	4	3
5572		LEAR	07	06	0045	S19	E03	07	6.3		BG	DSI	130	14	4	4
5572		CULG	07	06	0300	S18	E03	07	6.3		B	DAO	90	11	4	3
5572		SVTO	07	06	0758	S19	E00	07	6.3		B	DAI	100	24	4	2
5572		RAMY	07	06	1222	S20	W03	07	6.3		B	DAO	110	18	5	2
5572		BOUL	07	06	1440	S20	W03	07	6.4		B	DAI	220	20	4	3
5572	25348	MWIL	07	06	1515	S18	W04	07	6.3	5	(D)					
5572		HOLL	07	06	1520	S20	W04	07	6.3		B	DAI	170	15	5	4
5572		PALE	07	06	1723	S18	W05	07	6.3		B	DKI	220	22	5	3
5572		LEAR	07	07	0102	S17	W08	07	6.4		B	DAI	140	29	8	4
5572		CULG	07	07	0310	S18	W09	07	6.4		B	DAI	140	16	4	2
5572		SVTO	07	07	0722	S18	W12	07	6.4		B	DKI	220	24	7	2
5572		RAMY	07	07	1255	S18	W16	07	6.3		B	DSO	90	22	5	3
5572		BOUL	07	07	1335	S17	W15	07	6.4		B	DAI	80	22	3	3
5572		HOLL	07	07	1409	S18	W17	07	6.3		B	DAI	170	19	5	4
5572		PALE	07	07	1741	S19	W18	07	6.4		B	DAC	180	27	5	3
5572	25348	MWIL	07	07	1800	S18	W12	07	6.8	5	(D)					
5572		LEAR	07	08	0022	S18	W22	07	6.3		B	CSO	100	8	4	3
5572		CULG	07	08	0308	S17	W23	07	6.4		B	DAI	70	19	4	3
5572		RAMY	07	08	1255	S19	W31	07	6.2		B	CAI	50	24	7	1
5572		BOUL	07	08	1425	S18	W29	07	6.4		B	DAI	160	19	9	3
5572	25348	MWIL	07	08	1500	S18	W30	07	6.3	5	(BG)					
5572		HOLL	07	08	1605	S18	W29	07	6.5		B	DAO	70	13	8	3
5572		PALE	07	08	1900	S18	W31	07	6.4		B	CAO	80	9	7	3
5572		LEAR	07	09	0030	S18	W36	07	6.3		B	DSO	80	4	5	3
5572		CULG	07	09	0415	S19	W36	07	6.4		B	CAO	50	4	3	1
5572		SVTO	07	09	0920	S18	W39	07	6.4		B	DAO	60	9	8	3
5572		RAMY	07	09	1300	S17	W43	07	6.3		B	CRO	30	8	4	2
5572		BOUL	07	09	1413	S17	W41	07	6.5		B	CRO	10	11	3	3
5572	25348	MWIL	07	09	1500	S18	W43	07	6.3	5	(D)					
5572		HOLL	07	09	1510	S19	W44	07	6.3		B	CRO	50	12	6	3
5572		PALE	07	09	1940	S19	W47	07	6.2		B	BXO	60	7	4	3
5572		LEAR	07	10	0009	S18	W49	07	6.3		B	DAO	60	5	4	2
5572		CULG	07	10	0355	S19	W50	07	6.3		B	BXO		3	1	2
5572		SVTO	07	10	0638	S18	W51	07	6.4		B	CRO	30	4	4	2
5572		RAMY	07	10	1305	S17	W55	07	6.4		B	BXO	30	5	5	3
5572		HOLL	07	10	1500	S18	W56	07	6.4		A	AX	30	3	2	3
5572	25348	MWIL	07	10	1515	S17	W57	07	6.3	4	(AP)					
5572		PALE	07	10	2200	S19	W60	07	6.3		B	BXO	10	3	3	2
5572		LEAR	07	11	0029	S17	W53	07	7.0		B	CRO	30	2	2	3
5572		SVTO	07	11	0724	S16	W60	07	6.7		B	CRO	20	2	11	3
5572		RAMY	07	11	1218	S17	W67	07	6.4		B	BXO	20	3	10	3
5572		BOUL	07	11	1425	S17	W69	07	6.3		A	AX	10	1		3
5572		HOLL	07	11	1500	S16	W69	07	6.4		A	AX	10	2		3
5572	25348	MWIL	07	11	1500	S17	W71	07	6.2	4	(BP)					
5572		PALE	07	11	1920	S19	W72	07	6.3		A	AX	10	1	1	3
5572		LEAR	07	12	0015	S16	W65	07	7.1		B	BXO	20	3	4	3
5572		SVTO	07	12	0550	S16	W70	07	6.9		B	BXO	10	2	5	3
5573D	25371	MWIL	07	11	1500	N13	W70	07	6.3	5	(BF)					
5574		SVTO	07	01	0804	S14	E52	07	5.3		B	EAO	100	8	11	3
5574		BOUL	07	01	1405	S17	E56	07	5.8		B	DSI	60	3	8	3
5574	25345	MWIL	07	01	1415	S14	E61	07	6.2	5	(B)					
5574		HOLL	07	01	1440	S14	E60	07	6.1		B	EAO	70	12	11	4
5574		PALE	07	01	1825	S14	E62	07	6.4		B	CAO	70	11	5	4
5574		LEAR	07	02	0110	S14	E55	07	6.2		B	DSI	90	9	10	3
5574		CULG	07	02	0330	S14	E52	07	6.1		B	DSO	30	5	9	3

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

JULY 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5574		SVTO	07	02	0804	S14	E52	07	6.3		B	EAO	100	8	11	3
5574		RAMY	07	02	1015	S14	E46	07	5.9		B	CAO	70	11	11	2
5574		BOUL	07	02	1400	S14	E46	07	6.0		B	CAO	30	12	11	3
5574	25345	MWIL	07	02	1430	S14	E47	07	6.1	4	(D)					
5574		HOLL	07	02	1440	S14	E49	07	6.3		B	DSO	60	14	11	3
5574		PALE	07	02	1907	S13	E51	07	6.6		B	CSO	100	5	3	3
5574		LEAR	07	03	0010	S14	E43	07	6.2		B	DAO	100	12	10	3
5574		SVTO	07	03	0605	S14	E40	07	6.3		B	EAO	50	17	13	3
5574		HOLL	07	03	1440	S14	E32	07	6.0		B	CAO	50	9	9	3
5574		BOUL	07	03	1513	S14	E34	07	6.2		B	CAO	40	6	7	1
5574	25345	MWIL	07	03	1515	S14	E34	07	6.2	5	(B)					
5574		PALE	07	03	1830	S13	E36	07	6.5		B	CRO		7	3	3
5574		LEAR	07	04	0010	S17	E33	07	6.5		B	BXO	20	9	5	3
5574		CULG	07	04	0250	S14	E33	07	6.6		B	CRO	10	8	7	3
5574		SVTO	07	04	0703	S15	E30	07	6.6		B	CRO	20	6	6	3
5574		HOLL	07	04	1321	S15	E26	07	6.5		B	BXO	10	5	6	3
5574	25345	MWIL	07	04	1500	S15	E21	07	6.2	4	(B)					
5574		RAMY	07	04	1528	S15	E27	07	6.7		B	BXO	10	7	6	3
5574		PALE	07	04	1910	S15	E30	07	7.1		B	BXO		2	4	3
5574		LEAR	07	05	0029	S16	E18	07	6.4		B	BXO	10	5	4	3
5574		CULG	07	05	0255	S14	E15	07	6.2		B	BXO		5	6	2
5574		RAMY	07	05	1150	S15	E12	07	6.4		A	AX	10	4	1	2
5574		LEAR	07	06	0045	S16	E05	07	6.4		B	BXO	10	2	3	4
5578		RAMY	07	02	1015	N14	E56	07	6.6		A	AX	10	1	1	2
5578		BOUL	07	02	1400	N15	E55	07	6.7		A	AX		1		3
5578		HOLL	07	02	1440	N14	E57	07	6.9		A	AX	10	1	1	3
5578		HOLL	07	03	1440	N12	E40	07	6.6		B	BXO	20	4	3	3
5578		BOUL	07	03	1513	N11	E40	07	6.6		A	AX	10	2	1	1
5578	25353	MWIL	07	03	1515	N12	E39	07	6.6	4	(BP)					
5578		PALE	07	03	1830	N11	E38	07	6.6		A	AX		2		3
5578		CULG	07	04	0250	N12	E32	07	6.5		A	AX		1		3
5578		SVTO	07	04	0703	N16	E35	07	6.9		A	AX		2	1	3
5578		BOUL	07	04	1311	N16	E29	07	6.7		A	AX	10	1		1
5578		HOLL	07	04	1321	N13	E29	07	6.7		B	BXO	10	3	7	3
5578	25353	MWIL	07	04	1500	N10	E25	07	6.5	4	(AP)					
5578		RAMY	07	04	1528	N14	E28	07	6.8		B	BXO	10	5	7	3
5578		PALE	07	04	1910	N09	E23	07	6.5		A	AX		2	2	3
5578		CULG	07	05	0255	N12	E18	07	6.5		A	AX		1		2
5578		RAMY	07	05	1150	N12	E13	07	6.5		A	AX	10	1	1	2
5578		BOUL	07	05	1345	N11	E12	07	6.5		A	AX	10	1		3
5578	25353	MWIL	07	05	1430	N11	E12	07	6.5	4	(B)					
5578		HOLL	07	05	1450	N12	E13	07	6.6		A	AX		1	1	3
5578		PALE	07	05	1928	N11	E11	07	6.6		B	BXO		3	4	3
5578		CULG	07	06	0300	N12	E05	07	6.5		A	AX	10	1	1	3
5578		LEAR	07	07	0102	N14	W05	07	6.7		A	AX	10	2	1	4
5578		SVTO	07	07	0722	N15	W08	07	6.7		A	AX		1		2
5583		LEAR	07	06	0045	N19	E06	07	6.5		A	AX	10	1	1	4
5583		SVTO	07	06	0758	N21	E03	07	6.6		B	CRO	10	4	3	2
5583		RAMY	07	06	1222	N20	E00	07	6.5		A	AX	10	10	2	2
5583		BOUL	07	06	1440	N19	E00	07	6.6		B	CRO	40	7	2	3
5583	25360	MWIL	07	06	1515	N22	W02	07	6.5	4	(BP)					
5583		HOLL	07	06	1520	N20	W02	07	6.5		B	BXO	20	6	3	4
5583		PALE	07	06	1723	N21	W03	07	6.5		B	BXO	10	5	2	3
5583		LEAR	07	07	0102	N21	W08	07	6.4		B	BXO	20	7	3	4
5583		SVTO	07	07	0722	N20	W13	07	6.3		A	AX		1		2
5583		PALE	07	07	1741	N19	W19	07	6.3		A	AX		2	2	3
5583	25360	MWIL	07	07	1800	N20	W10	07	7.0	4	(AP)					
5583	25360	MWIL	07	08	1500	N19	W22	07	6.9	4	(AP)					
5583		PALE	07	08	1900	N20	W24	07	6.9		A	AX		2		3
5583		PALE	07	10	2200	N22	W51	07	7.0		B	BXO	10	2	3	2
5583		LEAR	07	11	0029	N22	W52	07	7.0		B	CAO	30	2	3	3
5583		SVTO	07	11	0724	N23	W57	07	6.9		B	CRO	20	2	4	3
5583		RAMY	07	11	1218	N21	W60	07	6.9		B	CSO	30	5	6	3
5583		BOUL	07	11	1425	N23	W60	07	7.0		B	BXO	20	3	5	3
5583	25372	MWIL	07	11	1500	N22	W61	07	6.9	5	(B)					
5583		PALE	07	11	1920	N21	W61	07	7.1		A	AX		2	1	3
5583		LEAR	07	12	0015	N22	W64	07	7.1		A	AX	10	2	2	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

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
5583		SVTO	07 12 0550	N22 W68	07 7.0		A	AX	10	1	1	3
5583	25372	MWIL	07 12 1515	N22 W72	07 7.1	4	(AP)					
5583		RAMY	07 12 1635	N24 W74	07 7.0		A	AX	10	1	1	3
5583		PALE	07 12 1911	N21 W76	07 7.0		A	AX		1		3
5583A	25351	MWIL	07 02 1430	N14 E55	07 6.8	4	(AP)					
5583B		CULG	07 04 0250	N17 E37	07 6.9		A	AX		1		3
5583B	25355	MWIL	07 04 1500	N16 E31	07 7.0	4	(B)					
5584		RAMY	07 06 1222	S28 E15	07 7.7		A	AX	10	4	2	2
5584		BOUL	07 06 1440	S27 E14	07 7.7		A	AX	10	2	1	3
5584	25361	MWIL	07 06 1515	S27 E14	07 7.7	4	(AF)					
5584		HOLL	07 06 1520	S28 E14	07 7.7		A	AX	10	2	1	4
5584		PALE	07 06 1723	S27 E11	07 7.6		B	BXO	10	4	2	3
5584		LEAR	07 07 0102	S27 E08	07 7.7		B	BXO	10	4	3	4
5584		SVTO	07 07 0722	S25 E05	07 7.7		A	HR	10	2	1	2
5584		HOLL	07 07 1409	S27 E01	07 7.7		A	AX		1	1	4
5575		RAMY	07 01 1320	N25 E89	07 8.4		A	HA	60	1	2	2
5575		BOUL	07 01 1405	N19 E84	07 8.0		A	HS	20	1	1	3
5575	25350	MWIL	07 01 1415	N24 E85	07 8.2	4	AP					
5575		HOLL	07 01 1440	N24 E89	07 8.5		A	HS	30	1	2	4
5575		LEAR	07 02 0110	N24 E77	07 8.0		A	HS	60	1	2	3
5575		CULG	07 02 0330	N23 E78	07 8.1		A	HS	40	1	2	3
5575		SVTO	07 02 0804	N23 E75	07 8.1		B	CAO	60	2	3	3
5575		RAMY	07 02 1015	N24 E70	07 7.8		B	CSO	120	3	3	2
5575		BOUL	07 02 1400	N23 E70	07 8.0		A	HS	60	3	2	3
5575	25350	MWIL	07 02 1430	N24 E71	07 8.1	5	(AP)					
5575		HOLL	07 02 1440	N24 E72	07 8.2		B	CSO	120	3	4	3
5575		PALE	07 02 1907	N25 E73	07 8.4		B	CSO	120	2	5	3
5575		LEAR	07 03 0010	N24 E66	07 8.1		B	CSO	110	7	3	3
5575		SVTO	07 03 0605	N24 E64	07 8.2		B	DSI	110	10	8	3
5575		HOLL	07 03 1440	N23 E58	07 8.1		B	DAO	130	10	7	3
5575		BOUL	07 03 1513	N24 E57	07 8.0		B	DAI	110	6	4	1
5575	25350	MWIL	07 03 1515	N24 E58	07 8.1	5	(BP)					
5575		PALE	07 03 1830	N24 E57	07 8.2		B	CKO	140	10	6	3
5575		LEAR	07 04 0010	N24 E51	07 7.9		B	DAO	130	12	4	3
5575		CULG	07 04 0250	N26 E50	07 8.0		B	DAI	80	12	9	3
5575		SVTO	07 04 0703	N24 E48	07 8.0		B	DAI	200	17	8	3
5575		BOUL	07 04 1311	N23 E44	07 7.9		B	DAI	130	19	8	1
5575		HOLL	07 04 1321	N25 E45	07 8.0		B	CAI	140	18	10	3
5575	25350	MWIL	07 04 1500	N24 E43	07 7.9	5	(D)					
5575		RAMY	07 04 1528	N25 E44	07 8.0		B	CAO	200	18	9	3
5575		PALE	07 04 1910	N23 E42	07 8.0		B	CSO	120	9	9	3
5575		LEAR	07 05 0029	N24 E36	07 7.8		B	DAO	120	8	7	3
5575		CULG	07 05 0255	N25 E38	07 8.1		B	DAI	60	6	5	2
5575		RAMY	07 05 1150	N24 E32	07 8.0		B	DAO	180	14	10	2
5575		BOUL	07 05 1345	N24 E31	07 8.0		B	DAO	140	10	6	3
5575	25350	MWIL	07 05 1430	N23 E32	07 8.1	5	(D)					
5575		HOLL	07 05 1450	N23 E30	07 7.9		B	DSO	110	12	10	3
5575		PALE	07 05 1928	N22 E30	07 8.1		B	CSO	120	7	6	3
5575		LEAR	07 06 0045	N23 E26	07 8.0		B	DSI	190	8	5	4
5575		CULG	07 06 0300	N24 E25	07 8.0		B	DAO	120	7	7	3
5575		SVTO	07 06 0758	N23 E23	07 8.1		B	DAI	150	13	8	2
5575		RAMY	07 06 1222	N23 E19	07 8.0		B	CAO	100	15	7	2
5575		BOUL	07 06 1440	N23 E18	07 8.0		B	DAI	220	17	9	3
5575	25350	MWIL	07 06 1515	N24 E17	07 7.9	5	(BG)					
5575		HOLL	07 06 1520	N23 E17	07 7.9		B	CAO	120	14	9	4
5575		PALE	07 06 1723	N24 E15	07 7.9		B	CAO	110	19	8	3
5575		LEAR	07 07 0102	N24 E12	07 8.0		B	DAO	130	18	8	4
5575		CULG	07 07 0310	N25 E10	07 7.9		B	DAO	100	17	9	2
5575		SVTO	07 07 0722	N24 E08	07 7.9		B	DSO	190	20	9	2
5575		RAMY	07 07 1255	N24 E06	07 8.0		B	CAO	110	26	9	3
5575		BOUL	07 07 1335	N22 E05	07 7.9		B	CAO	70	20	8	3
5575		HOLL	07 07 1409	N23 E04	07 7.9		B	CAO	140	20	8	4
5575		PALE	07 07 1741	N24 E04	07 8.0		B	CAI	130	26	9	3
5575	25350	MWIL	07 07 1800	N24 E03	07 8.0	5	(BP)					
5575		LEAR	07 08 0022	N22 W02	07 7.9		B	DSO	120	12	10	3

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JULY 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5575		CULG	07	08	0308	N24	W03	07	7.9		B	DAO	70	16	9	3
5575		RAMY	07	08	1255	N24	W11	07	7.7		B	EAO	150	14	13	1
5575		BOUL	07	08	1425	N24	W07	07	8.0		B	DAO	140	13	8	3
5575	25350	MWIL	07	08	1500	N24	W07	07	8.1	5	(D)					
5575		HOLL	07	08	1605	N25	W08	07	8.0		B	CSO	100	10	7	3
5575		PALE	07	08	1900	N24	W11	07	7.9		B	CAI	120	13	10	3
5575		LEAR	07	09	0030	N24	W12	07	8.1		B	DSO	40	3	5	3
5575		CULG	07	09	0415	N23	W14	07	8.1		B	CSO	50	2	3	1
5575		SVTO	07	09	0920	N24	W17	07	8.1		B	DSO	90	10	6	3
5575		RAMY	07	09	1300	N24	W18	07	8.1		B	CSO	100	7	6	2
5575		BOUL	07	09	1413	N24	W17	07	8.3		B	CAO	70	6	5	3
5575	25350	MWIL	07	09	1500	N24	W20	07	8.1	5	(BP)					
5575		HOLL	07	09	1510	N25	W21	07	8.0		B	CSO	90	13	12	3
5575		PALE	07	09	1940	N24	W25	07	7.9		B	CSO	90	4	7	3
5575		LEAR	07	10	0009	N25	W27	07	7.9		B	CAO	100	4	7	2
5575		CULG	07	10	0355	N23	W29	07	7.9		B	CSO	70	3	6	2
5575		SVTO	07	10	0638	N25	W32	07	7.8		B	CSO	80	6	9	2
5575		RAMY	07	10	1305	N25	W35	07	7.8		B	CSO	90	4	7	3
5575		HOLL	07	10	1500	N25	W36	07	7.8		B	CSO	130	5	8	3
5575	25350	MWIL	07	10	1515	N24	W33	07	8.1	5	(BG)					
5575		PALE	07	10	2200	N24	W37	07	8.0		A	HS	80	2	2	2
5575		LEAR	07	11	0029	N26	W38	07	8.1		B	CAO	100	2	3	3
5575		SVTO	07	11	0724	N25	W41	07	8.1		A	HA	80	1	2	3
5575		RAMY	07	11	1218	N25	W44	07	8.1		A	HS	80	1	2	3
5575	25350	MWIL	07	11	1500	N24	W46	07	8.1	5	(BP)					
5575		HOLL	07	11	1500	N25	W43	07	8.3		B	CSO	80	2	15	3
5575		PALE	07	11	1920	N24	W49	07	8.0		A	HS	60	1	2	3
5575		LEAR	07	12	0015	N25	W52	07	8.0		A	HS	30	1	2	3
5575		CULG	07	12	0500	N24	W52	07	8.2		A	HS	40	1	2	2
5575		SVTO	07	12	0550	N25	W54	07	8.0		A	HS	70	1	2	3
5575		HOLL	07	12	1510	N23	W63	07	7.8		B	CSO	90	3	16	3
5575	25350	MWIL	07	12	1515	N25	W58	07	8.1	5	(BP)					
5575		RAMY	07	12	1635	N27	W58	07	8.2		B	CAO	80	3	3	3
5575		PALE	07	12	1911	N25	W60	07	8.1		A	HS	60	2	2	3
5575		LEAR	07	13	0055	N24	W63	07	8.2		A	HS	40	1	2	3
5575		SVTO	07	13	0910	N25	W68	07	8.1		A	HS	80	1	2	4
5575		PALE	07	13	0921	N25	W74	07	7.6		A	HR	60	1	3	2
5575		RAMY	07	13	1232	N25	W70	07	8.1		A	HA	50	1	2	4
5575	25350	MWIL	07	13	1430	N24	W72	07	8.0	4	(AP)					
5575		BOUL	07	13	1447	N28	W70	07	8.1		A	HA	60	1	1	4
5575		HOLL	07	13	1519	N25	W71	07	8.1		B	CSO	30	2	5	3
5575		PALE	07	13	1921	N25	W74	07	8.1		A	HR	60	1	3	2
5575		LEAR	07	14	0007	N23	W77	07	8.1		B	BXO	60	2	5	3
5575		SVTO	07	14	0521	N25	W81	07	7.9		A	HA	30	1	1	4
5575		RAMY	07	14	1251	N24	W81	07	8.3		A	HA	30	1	1	3
5575		HOLL	07	14	1323	N25	W80	07	8.3		A	AX	30	1		2
5575		BOUL	07	14	1412	N24	W82	07	8.2		A	HA	30	1	1	3
5575	25350	MWIL	07	14	1440	N24	W85	07	8.0	4	AP					
5576		SVTO	07	01	0804	N11	E78	07	7.2		B	BRO	10	3	3	3
5576		RAMY	07	02	1015	N09	E75	07	8.0		B	BXO	40	9	10	2
5576		BOUL	07	02	1400	N09	E75	07	8.2		B	CSO	30	4	9	3
5576	25352	MWIL	07	02	1430	N09	E74	07	8.1	4	(AP)					
5576		HOLL	07	02	1440	N08	E74	07	8.1		B	CSO	50	6	8	3
5576		PALE	07	02	1907	N10	E75	07	8.4		B	BXO	30	6	10	3
5576		LEAR	07	03	0010	N10	E70	07	8.3		B	DAO	100	8	9	3
5576		SVTO	07	03	0605	N11	E69	07	8.4		B	EAI	80	11	11	3
5576		HOLL	07	03	1440	N08	E62	07	8.2		B	CAI	120	16	10	3
5576		BOUL	07	03	1513	N09	E62	07	8.3		B	CAI	100	15	9	1
5576	25352	MWIL	07	03	1515	N08	E65	07	8.5	4	(BF)					
5576		PALE	07	03	1830	N09	E61	07	8.3		B	CAO	100	18	9	3
5576		LEAR	07	04	0010	N08	E58	07	8.3		B	EAI	170	18	10	3
5576		CULG	07	04	0250	N11	E55	07	8.2		B	DAO	140	17	10	3
5576		SVTO	07	04	0703	N09	E54	07	8.3		B	DAI	200	20	10	3
5576		BOUL	07	04	1311	N08	E49	07	8.2		B	DAI	170	28	10	1
5576		HOLL	07	04	1321	N10	E50	07	8.3		B	CAO	110	26	11	3
5576	25352	MWIL	07	04	1500	N09	E50	07	8.4	4	(B)					
5576		RAMY	07	04	1528	N10	E50	07	8.4		B	CAO	150	22	11	3
5576		PALE	07	04	1910	N08	E48	07	8.4		B	CAI	100	19	9	3

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5576		LEAR	07	05	0029	N09	E45	07	8.4		B	EAO	140	18	12	3
5576		CULG	07	05	0255	N11	E43	07	8.3		B	DAO	60	11	10	2
5576		RAMY	07	05	1150	N10	E39	07	8.4		B	DAI	140	24	10	2
5576		BOUL	07	05	1345	N07	E36	07	8.3		B	DAO	180	21	9	3
5576	25352	MWIL	07	05	1430	N09	E37	07	8.4	4	(B)					
5576		HOLL	07	05	1450	N08	E37	07	8.4		B	CSO	120	22	10	3
5576		PALE	07	05	1928	N09	E34	07	8.4		B	EAI	80	18	12	3
5576		LEAR	07	06	0045	N08	E32	07	8.4		B	EAO	80	17	11	4
5576		CULG	07	06	0300	N11	E29	07	8.3		B	DAO	40	18	10	3
5576		SVTO	07	06	0758	N09	E28	07	8.4		B	DAO	70	24	10	2
5576		RAMY	07	06	1222	N08	E23	07	8.2		B	DAO	60	25	10	2
5576		BOUL	07	06	1440	N07	E23	07	8.3		B	EAI	120	23	11	3
5576	25352	MWIL	07	06	1515	N09	E24	07	8.4	5	(BG)					
5576		HOLL	07	06	1520	N08	E22	07	8.3		B	CRO	110	21	10	4
5576		PALE	07	06	1723	N09	E22	07	8.4		B	BXO	60	27	10	3
5576		LEAR	07	07	0102	N10	E18	07	8.4		B	DAO	90	19	10	4
5576		CULG	07	07	0310	N10	E15	07	8.2		B	DAO	110	20	10	2
5576		SVTO	07	07	0722	N09	E14	07	8.3		B	DAO	90	24	10	2
5576		RAMY	07	07	1255	N10	E11	07	8.4		B	DAO	70	19	10	3
5576		BOUL	07	07	1335	N09	E10	07	8.3		B	DAI	30	16	10	3
5576		HOLL	07	07	1409	N08	E10	07	8.3		B	DAO	100	22	10	4
5576		PALE	07	07	1741	N09	E08	07	8.3		B	DAI	90	20	10	3
5576	25352	MWIL	07	07	1800	N10	E07	07	8.3	5	(BG)					
5576		LEAR	07	08	0022	N09	E02	07	8.2		B	DSO	70	13	6	3
5576		CULG	07	08	0308	N10	E02	07	8.3		B	DAO	60	28	10	3
5576		RAMY	07	08	1255	N10	W05	07	8.2		B	DAO	80	20	10	1
5576		BOUL	07	08	1425	N09	W05	07	8.2		B	CAI	60	20	5	3
5576	25352	MWIL	07	08	1500	N10	W05	07	8.2	5	(BG)					
5576		HOLL	07	08	1605	N10	W07	07	8.1		B	CRO	30	14	7	3
5576		PALE	07	08	1900	N10	W09	07	8.1		B	BXI	20	19	8	3
5576		LEAR	07	09	0030	N09	W11	07	8.2		B	DSO	20	5	6	3
5576		CULG	07	09	0415	N11	W13	07	8.2		B	CRO	10	2	3	1
5576		SVTO	07	09	0920	N11	W14	07	8.3		B	DAO	50	17	10	3
5576		RAMY	07	09	1300	N10	W16	07	8.3		B	BXO	30	14	8	2
5576		BOUL	07	09	1413	N10	W15	07	8.5		B	BXO		13	8	3
5576	25352	MWIL	07	09	1500	N10	W18	07	8.3	4	(BP)					
5576		HOLL	07	09	1510	N10	W19	07	8.2		B	BXO	40	17	10	3
5576		PALE	07	09	1940	N10	W23	07	8.1		B	BXO	10	9	8	3
5576		LEAR	07	10	0009	N10	W26	07	8.0		B	BXO	10	5	4	2
5576		SVTO	07	10	0638	N10	W29	07	8.1		B	CRO	20	4	4	2
5576		RAMY	07	10	1305	N09	W32	07	8.1		B	BXO	20	8	9	3
5576		HOLL	07	10	1500	N10	W31	07	8.3		B	BXO	40	16	9	3
5576	25352	MWIL	07	10	1515	N11	W29	07	8.4	4	(B)					
5576		PALE	07	10	2200	N10	W36	07	8.2		B	BXO	10	6	4	2
5576		LEAR	07	11	0029	N10	W35	07	8.4		B	BXO	10	5	4	3
5576		SVTO	07	11	0724	N10	W40	07	8.3		B	CRO	20	7	4	3
5576		RAMY	07	11	1218	N09	W43	07	8.3		B	BXO	20	8	6	3
5576	25352	MWIL	07	11	1500	N09	W45	07	8.2	5	(B)					
5576		HOLL	07	11	1500	N10	W43	07	8.4		B	BXO	20	7	7	3
5576		PALE	07	11	1920	N09	W47	07	8.3		B	BXO	10	3	6	3
5576		LEAR	07	12	0015	N10	W53	07	8.0		A	AX	20	4	2	3
5576A	25369	MWIL	07	09	1500	N27	W10	07	8.8	3	(AF)					
5588		BOUL	07	08	1425	N09	E08	07	9.2		A	AX	10	1		3
5588	25368	MWIL	07	08	1500	N10	E07	07	9.1	4	(AF)					
5588		HOLL	07	08	1605	N10	E08	07	9.3		A	AX		2		3
5588		PALE	07	08	1900	N09	E05	07	9.2		B	BXO	10	5	3	3
5588	25368	MWIL	07	09	1500	N10	W03	07	9.4	4	(AF)					
5588		PALE	07	09	1940	N09	W07	07	9.3		A	AX		2	1	3
5588		PALE	07	12	1911	N10	W50	07	9.0		B	BXO	10	4	6	3
5591		HOLL	07	12	1510	N13	W31	07	10.3		B	BXO	10	3	3	3
5591	25374	MWIL	07	12	1515	N13	W31	07	10.3	4	(BP)					
5591		RAMY	07	12	1635	N13	W31	07	10.3		A	AX	10	3	2	3
5591		LEAR	07	13	0055	N13	W37	07	10.2		B	BXO	10	4	4	3
5591		RAMY	07	13	1232	N12	W42	07	10.3		A	AX	10	1	1	4
5591	25374	MWIL	07	13	1430	N11	W43	07	10.4	4	(AF)					
5591		BOUL	07	13	1447	N15	W42	07	10.4		A	AX	10	1		4

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5591		HOLL	07 13 1519	N12 W43	07 10.4		A	AX		1		3
5579		HOLL	07 04 1321	S10 E85	07 10.9		A	HS	60	1	2	3
5579	25356	MWIL	07 04 1500	S12 E83	07 10.9	4	(AP)					
5579		RAMY	07 04 1528	S09 E82	07 10.8		A	HA	120	1	2	3
5579		PALE	07 04 1910	S11 E81	07 10.9		A	HS	120	1	2	3
5579		LEAR	07 05 0029	S10 E75	07 10.6		A	HS	30	1	2	3
5579		CULG	07 05 0255	S08 E77	07 10.9		B	DSO	90	2	5	2
5579		RAMY	07 05 1150	S09 E71	07 10.8		B	DAO	150	3	7	2
5579		BOUL	07 05 1345	S11 E70	07 10.8		B	DSO	240	2	4	3
5579	25356	MWIL	07 05 1430	S10 E71	07 10.9	5	(AP					
5579		HOLL	07 05 1450	S11 E72	07 11.0		B	CSO	180	4	9	3
5579		PALE	07 05 1928	S10 E68	07 10.9		B	CSO	130	2	4	3
5579		LEAR	07 06 0045	S12 E70	07 11.3		B	EAO	240	8	14	4
5579		CULG	07 06 0300	S08 E63	07 10.8		B	DAO	80	4	5	3
5579		SVTO	07 06 0758	S10 E68	07 11.4		B	EAO	210	12	15	2
5579		RAMY	07 06 1222	S10 E65	07 11.4		B	CAO	60	13	13	2
5579		BOUL	07 06 1440	S11 E62	07 11.3		B	EAI	230	13	15	3
5579	25356	MWIL	07 06 1515	S09 E57	07 10.9	5	(AP)					
5579	25362	MWIL	07 06 1515	S09 E68	07 11.7	5	(BF)					
5579		HOLL	07 06 1520	S11 E63	07 11.4		B	CAO	180	14	15	4
5579		PALE	07 06 1723	S10 E69	07 11.9		B	CSO	150	16	15	3
5579		LEAR	07 07 0102	S10 E56	07 11.2		B	FAO	140	15	17	4
5579		CULG	07 07 0310	S10 E55	07 11.3		B	DAO	120	7	4	2
5579		SVTO	07 07 0722	S09 E53	07 11.3		B	EAO	80	9	14	2
5579		RAMY	07 07 1255	S10 E50	07 11.3		B	EAO	130	17	14	3
5579		BOUL	07 07 1335	S09 E48	07 11.2		B	CAO	60	12	13	3
5579		HOLL	07 07 1409	S10 E50	07 11.3		B	CAO	130	6	13	4
5579		PALE	07 07 1741	S09 E49	07 11.4		B	CAO	60	14	15	3
5579	25356	MWIL	07 07 1800	S10 E43	07 11.0	5	(AP)					
5579	25362	MWIL	07 07 1800	S10 E53	07 11.7	4	(BF)					
5579		LEAR	07 08 0022	S10 E43	07 11.2		B	ESO	110	9	13	3
5579		CULG	07 08 0308	S10 E41	07 11.2		B	EAO	80	15	14	3
5579		RAMY	07 08 1255	S10 E35	07 11.2		B	EAO	130	17	12	1
5579		BOUL	07 08 1425	S10 E35	07 11.2		B	EAO	210	18	14	3
5579	25356	MWIL	07 08 1500	S10 E31	07 10.9	5	(AP)					
5579	25362	MWIL	07 08 1500	S10 E40	07 11.6	5	(BG)					
5579		HOLL	07 08 1605	S09 E35	07 11.3		B	EAO	100	22	14	3
5579		PALE	07 08 1900	S10 E33	07 11.3		B	EAO	150	19	15	3
5579		LEAR	07 09 0030	S10 E30	07 11.3		B	ESO	170	12	14	3
5579		CULG	07 09 0415	S09 E28	07 11.3		B	EAO	90	9	13	1
5579		SVTO	07 09 0920	S10 E27	07 11.4		B	EAO	150	29	15	3
5579		RAMY	07 09 1300	S09 E23	07 11.3		B	EAO	170	17	13	2
5579		BOUL	07 09 1413	S09 E22	07 11.2		B	EAI	150	18	14	3
5579	25356	MWIL	07 09 1500	S10 E18	07 11.0	5	(AP)					
5579	25362	MWIL	07 09 1500	S10 E27	07 11.6	5	(BF)					
5579		HOLL	07 09 1510	S10 E23	07 11.4		B	EAO	140	27	14	3
5579		PALE	07 09 1940	S10 E20	07 11.3		B	EAI	140	16	13	3
5579		LEAR	07 10 0009	S09 E17	07 11.3		B	EAO	210	15	13	2
5579		CULG	07 10 0355	S09 E17	07 11.4		B	EAO	110	18	13	2
5579		SVTO	07 10 0638	S09 E15	07 11.4		B	EAO	150	27	15	2
5579		RAMY	07 10 1305	S09 E13	07 11.5		B	EAI	200	76	15	3
5579		HOLL	07 10 1500	S10 E06	07 11.1		B	CAI	180	64	22	3
5579	25356	MWIL	07 10 1515	S10 E05	07 11.0	5	(AP)					
5579	25362	MWIL	07 10 1515	S10 E14	07 11.7	5	(BF)					
5579		PALE	07 10 2200	S10 E06	07 11.4		B	EAI	90	18	12	2
5579		LEAR	07 11 0029	S10 E03	07 11.2		B	EAO	190	21	13	3
5579		SVTO	07 11 0724	S10 E00	07 11.3		B	EAO	90	28	15	3
5579		RAMY	07 11 1218	S09 E00	07 11.5		B	EAI	120	44	15	3
5579		BOUL	07 11 1425	S09 W03	07 11.4		B	EAI	130	27	13	3
5579	25362	MWIL	07 11 1500	S10 W00	07 11.6	5	(B)					
5579		HOLL	07 11 1500	S10 W03	07 11.4		B	FAI	130	42	20	3
5579	25356	MWIL	07 11 1500	S10 W09	07 10.9	5	(AP)					
5579		PALE	07 11 1920	S10 W05	07 11.4		B	EAI	50	21	13	3
5579		LEAR	07 12 0015	S10 W09	07 11.3		B	EAO	60	24	13	3
5579		CULG	07 12 0500	S11 W11	07 11.4		B	EAO	50	11	13	2
5579		SVTO	07 12 0550	S10 W13	07 11.3		B	ESI	70	14	14	3
5579		HOLL	07 12 1510	S12 W14	07 11.6		B	FSO	80	19	18	3
5579	25362	MWIL	07 12 1515	S10 W15	07 11.5	5	(BP)					

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5579	25356	MWIL	07 12 1515	S11 W23	07 10.9	5	(AP)					
5579		RAMY	07 12 1635	S09 W16	07 11.5		B	FSO	80	21	18	3
5579		PALE	07 12 1911	S11 W21	07 11.2		B	CAO	40	14	10	3
5579		LEAR	07 13 0055	S09 W24	07 11.2		B	DAO	40	12	9	3
5579		SVTO	07 13 0910	S10 W30	07 11.1		B	ESI	40	14	8	4
5579		RAMY	07 13 1232	S10 W28	07 11.4		B	BXO	50	24	16	4
5579	25362	MWIL	07 13 1430	S11 W30	07 11.3	5	(BG)					
5579		BOUL	07 13 1447	S12 W28	07 11.5		B	CAI	90	22	17	4
5579		HOLL	07 13 1519	S11 W29	07 11.4		B	CRO	40	22	20	3
5579		PALE	07 13 1921	S10 W35	07 11.2		B	CRO	30	9	8	2
5579		LEAR	07 14 0007	S11 W39	07 11.1		B	BXO	30	4	5	3
5579		SVTO	07 14 0521	S11 W43	07 11.0		B	CRO	20	2	7	4
5579		RAMY	07 14 1251	S11 W42	07 11.4		B	BXO	20	9	15	3
5579		HOLL	07 14 1323	S10 W46	07 11.1		B	BXO	30	3	7	2
5579		BOUL	07 14 1412	S10 W41	07 11.5		B	BXO		5	13	3
5579	25362	MWIL	07 14 1440	S10 W43	07 11.4	4	(BP)					
5579		PALE	07 14 1740	S11 W49	07 11.0		B	BXO	20	2	5	2
5579		LEAR	07 15 0305	S08 W57	07 10.8		A	AX	10	1	1	2
5579		SVTO	07 15 0725	S11 W59	07 10.9		A	AX	10	1		4
5579		RAMY	07 15 1304	S12 W48	07 11.9		A	AX		1		4
5579		BOUL	07 15 1430	S11 W47	07 12.1		A	AX		1		3
5579	25362	MWIL	07 15 1445	S11 W50	07 11.8	4	(AF)					
5579		HOLL	07 15 1450	S11 W50	07 11.8		A	AX		1		3
5579		PALE	07 15 1805	S11 W55	07 11.6		B	BXO	10	4	7	4
5579		PALE	07 16 1955	S12 W66	07 11.8		A	AX		2	1	3
5581		RAMY	07 05 1150	N18 E74	07 11.1		A	HS	30	1	1	2
5581		BOUL	07 05 1345	N17 E74	07 11.2		A	AX	20	1	1	3
5581	25358	MWIL	07 05 1430	N17 E74	07 11.2	4	(AP)					
5581		HOLL	07 05 1450	N17 E74	07 11.2		A	HS	30	1	1	3
5581		PALE	07 05 1928	N18 E71	07 11.2		A	AX	10	1		3
5581		LEAR	07 06 0045	N16 E68	07 11.2		A	HS	40	1	1	4
5581		CULG	07 06 0300	N20 E66	07 11.2		A	HS	20	1	1	3
5581		SVTO	07 06 0758	N18 E65	07 11.3		A	HA	40	1		2
5581		RAMY	07 06 1222	N16 E61	07 11.1		A	HA	40	2	2	2
5581		BOUL	07 06 1440	N17 E59	07 11.1		A	HS	40	1	1	3
5581	25358	MWIL	07 06 1515	N18 E61	07 11.3	5	(AP)					
5581		HOLL	07 06 1520	N17 E60	07 11.2		A	AX	20	2	1	4
5581		PALE	07 06 1723	N18 E57	07 11.1		A	AX		1	1	3
5581		LEAR	07 07 0102	N18 E55	07 11.2		A	AX	10	1	1	4
5581		CULG	07 07 0310	N18 E54	07 11.2		A	HS	20	1	1	2
5581		SVTO	07 07 0722	N20 E52	07 11.3		A	HR	10	3	2	2
5581		RAMY	07 07 1255	N18 E48	07 11.2		A	HS	10	1	1	3
5581		BOUL	07 07 1335	N20 E48	07 11.2		B	CSO	20	3	3	3
5581		HOLL	07 07 1409	N19 E48	07 11.2		B	BXO	20	3	4	4
5581		PALE	07 07 1741	N19 E46	07 11.2		B	CAO	30	4	5	3
5581	25358	MWIL	07 07 1800	N18 E47	07 11.3	5	(AP)					
5581		LEAR	07 08 0022	N18 E42	07 11.2		B	CSO	20	4	4	3
5581		CULG	07 08 0308	N20 E43	07 11.4		B	CSO	10	4	4	3
5581		RAMY	07 08 1255	N20 E36	07 11.3		B	CSO	40	7	5	1
5581		BOUL	07 08 1425	N19 E37	07 11.4		B	CAO	40	9	4	3
5581	25358	MWIL	07 08 1500	N18 E36	07 11.4	5	(BG)					
5581		HOLL	07 08 1605	N20 E36	07 11.4		B	CSO	20	7	5	3
5581		PALE	07 08 1900	N19 E32	07 11.2		B	CRO	40	11	7	3
5581		LEAR	07 09 0030	N18 E30	07 11.3		B	CSO	20	3	3	3
5581		CULG	07 09 0415	N21 E28	07 11.3		B	CRO	10	2	3	1
5581		SVTO	07 09 0920	N21 E27	07 11.4		B	CAO	20	10	5	3
5581		RAMY	07 09 1300	N19 E23	07 11.3		B	CRO	20	4	3	2
5581		BOUL	07 09 1413	N17 E22	07 11.3		B	CSO	10	7	6	3
5581	25358	MWIL	07 09 1500	N19 E23	07 11.4	5	(BG)					
5581		HOLL	07 09 1510	N18 E22	07 11.3		B	CRO	30	10	6	3
5581		PALE	07 09 1940	N19 E20	07 11.3		B	BXO	20	7	5	3
5581		LEAR	07 10 0009	N19 E17	07 11.3		B	CAO	60	3	4	2
5581		CULG	07 10 0355	N21 E16	07 11.4		B	CRO	10	7	3	2
5581		SVTO	07 10 0638	N19 E16	07 11.5		B	CRO	30	13	7	2
5581		RAMY	07 10 1305	N22 E12	07 11.5		B	BXI	90	44	18	3
5581		HOLL	07 10 1500	N18 E11	07 11.5		B	BXO	70	30	8	3
5581	25358	MWIL	07 10 1515	N22 E13	07 11.6	5	(BG)					
5581		PALE	07 10 2200	N20 E06	07 11.4		B	BXO	20	6	4	2

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

JULY 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5581		LEAR	07	11	0029	N19	E04	07	11.3		B	CAO	30	5	5	3
5581		SVTO	07	11	0724	N18	E03	07	11.5		B	CRO	30	19	8	3
5581		RAMY	07	11	1218	N19	E00	07	11.5		B	BXO	40	30	8	3
5581		BOUL	07	11	1425	N21	W03	07	11.4		B	BXO	20	7	6	3
5581		HOLL	07	11	1500	N18	W03	07	11.4		B	BXO	20	9	5	3
5581	25358	MWIL	07	11	1500	N21	W03	07	11.4	5	(BG)					
5581		PALE	07	11	1920	N20	W04	07	11.5		B	BXO	20	11	6	3
5581		LEAR	07	12	0015	N19	W11	07	11.2		B	CSO	30	10	8	3
5581		CULG	07	12	0500	N20	W12	07	11.3		B	BXO	10	2	2	2
5581		SVTO	07	12	0550	N21	W12	07	11.3		B	BXO	10	7	5	3
5581		HOLL	07	12	1510	N21	W18	07	11.2		B	BXO	20	4	5	3
5581	25358	MWIL	07	12	1515	N21	W16	07	11.4	5	(BG)					
5581		RAMY	07	12	1635	N20	W15	07	11.5		B	BXO	20	10	7	3
5581		PALE	07	12	1911	N20	W18	07	11.4		B	BXO	20	6	5	3
5581		LEAR	07	13	0055	N22	W23	07	11.3		B	CSO	20	10	6	3
5581		SVTO	07	13	0910	N21	W25	07	11.5		B	CRO	20	4	6	4
5581		RAMY	07	13	1232	N21	W27	07	11.4		B	BXO	20	6	6	4
5581	25358	MWIL	07	13	1430	N21	W30	07	11.3	4	(B)					
5581		BOUL	07	13	1447	N19	W27	07	11.5		B	CRO	40	8	8	4
5581		HOLL	07	13	1519	N20	W27	07	11.6		B	BXO	20	8	11	3
5581		PALE	07	13	1921	N20	W29	07	11.6		B	BXO	20	6	7	2
5581		LEAR	07	14	0007	N21	W36	07	11.2		B	BXO	30	4	3	3
5581		SVTO	07	14	0521	N21	W35	07	11.5		B	BXO	20	8	9	4
5581		RAMY	07	14	1251	N21	W38	07	11.6		B	BXO	10	8	12	3
5581		HOLL	07	14	1323	N20	W40	07	11.5		B	BXO	20	7	9	2
5581		BOUL	07	14	1412	N20	W37	07	11.8		B	BXO		4	9	3
5581	25358	MWIL	07	14	1440	N20	W41	07	11.5	4	(AP)					
5581		PALE	07	14	1740	N19	W41	07	11.6		B	BXO	10	4	9	2
5581		LEAR	07	15	0305	N17	W48	07	11.5		A	AX	10	1	1	2
5581		CULG	07	15	0400	N19	W50	07	11.3		A	AX		1		3
5581		SVTO	07	15	0725	N22	W52	07	11.3		B	BXO	10	3	4	4
5581		RAMY	07	15	1304	N22	W56	07	11.2		B	BXO	10	3	3	4
5581		BOUL	07	15	1430	N21	W55	07	11.4		B	BXO		3	3	3
5581	25358	MWIL	07	15	1445	N21	W56	07	11.3	3	(AP)					
5581		HOLL	07	15	1450	N21	W56	07	11.3		B	BXO	10	3	3	3
5581		PALE	07	15	1805	N21	W55	07	11.5		B	BXO	110	4	8	4
5581		SVTO	07	16	0727	N21	W56	07	12.0		A	AX	10	1		2
5582		RAMY	07	05	1150	N26	E79	07	11.6		A	HS	60	1	1	2
5582		BOUL	07	05	1345	N23	E78	07	11.6		A	HA	60	1	2	3
5582	25357	MWIL	07	05	1430	N25	E82	07	11.9	5	(AP					
5582		HOLL	07	05	1450	N25	E78	07	11.7		A	HS	60	1	1	3
5582		PALE	07	05	1928	N25	E78	07	11.8		A	AX	30	1	1	3
5582		LEAR	07	06	0045	N23	E77	07	12.0		B	DSO	90	2	6	4
5582		CULG	07	06	0300	N26	E75	07	11.9				70	0	6	3
5582		SVTO	07	06	0758	N25	E75	07	12.1		B	DAO	60	3	7	2
5582		RAMY	07	06	1222	N25	E70	07	11.9		B	CAO	50	6	7	2
5582		BOUL	07	06	1440	N24	E69	07	11.9		B	CAO	80	6	5	3
5582	25357	MWIL	07	06	1515	N25	E72	07	12.2	5	(B					
5582		HOLL	07	06	1520	N24	E70	07	12.0		B	CSO	80	2	7	4
5582		PALE	07	06	1723	N24	E71	07	12.2		B	BXO	30	7	10	3
5582		LEAR	07	07	0102	N24	E66	07	12.1		B	CAO	40	6	7	4
5582		CULG	07	07	0310	N24	E65	07	12.1		B	DSO	30	2	7	2
5582		SVTO	07	07	0722	N25	E62	07	12.1		B	DAO	70	5	9	2
5582		RAMY	07	07	1255	N25	E58	07	12.0		B	BXO	30	6	8	3
5582		BOUL	07	07	1335	N25	E57	07	12.0		B	BXO		6	7	3
5582		HOLL	07	07	1409	N24	E58	07	12.1		B	BXO	30	4	6	4
5582		PALE	07	07	1741	N25	E57	07	12.1		B	BXO	30	8	8	3
5582	25357	MWIL	07	07	1800	N25	E56	07	12.1	4	(BP)					
5582		LEAR	07	08	0022	N24	E51	07	11.9		B	CSO	20	3	7	3
5582		CULG	07	08	0308	N24	E51	07	12.1		B	CSO	10	4	8	3
5582		RAMY	07	08	1255	N25	E44	07	11.9		B	CAO	20	4	6	1
5582		BOUL	07	08	1425	N25	E46	07	12.2		B	BXO	20	3	6	3
5582	25357	MWIL	07	08	1500	N25	E45	07	12.1	5	(BG)					
5582		HOLL	07	08	1605	N26	E45	07	12.2		B	BXO	10	5	6	3
5582		PALE	07	08	1900	N24	E42	07	12.0		B	BXO		2	6	3
5582		SVTO	07	09	0920	N24	E40	07	12.5		B	BXO	10	5	20	3
5582		RAMY	07	09	1300	N26	E28	07	11.7		A	AX	10	3	2	2
5582		BOUL	07	09	1413	N25	E27	07	11.7		A	AX		2	1	3

S U N S P O T G R O U P S
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JULY 1989

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
5582	25357	MWIL	07 09 1500	N25 E31	07 12.0	4	(BP)					
5582		HOLL	07 09 1510	N24 E32	07 12.1		B	BXO	20	13	9	3
5582		PALE	07 09 1940	N25 E25	07 11.7		A	AX		2		3
5582		SVTO	07 10 0638	N22 E23	07 12.0		A	AX	10	4	3	2
5582		HOLL	07 10 1500	N23 E18	07 12.0		B	BXO	30	15	7	3
5582	25357	MWIL	07 10 1515	N25 E21	07 12.3	4	(BF)					
5582		PALE	07 10 2200	N25 E14	07 12.0		A	AX		2	1	2
5582		SVTO	07 11 0724	N24 E11	07 12.1		B	BXO	10	2	1	3
5582		HOLL	07 11 1500	N22 W02	07 11.5		B	BXO	20	9	5	3
5582		HOLL	07 13 1519	N26 W19	07 12.2		B	BXO		3	3	3
5582		SVTO	07 14 0521	N28 W26	07 12.2		A	AX		2	2	4
5582		RAMY	07 14 1251	N28 W29	07 12.3		A	AX		1		3
5582A		SVTO	07 13 0910	S18 W20	07 11.8		B	BXO	10	3	4	4
5582A		RAMY	07 13 1232	S18 W21	07 11.9		B	BXO	10	4	4	4
5582A	25378	MWIL	07 13 1430	S18 W23	07 11.8	5	(B)					
5582A		SVTO	07 14 0521	S18 W32	07 11.8		A	AX		1		4
5592		PALE	07 13 0921	S15 W25	07 11.5		B	BXO	10	4	7	2
5592		BOUL	07 13 1447	S16 W24	07 11.8		B	BXO	10	4	3	4
5592		HOLL	07 13 1519	S19 W22	07 11.9		B	BXO		3	4	3
5592		PALE	07 13 1921	S15 W25	07 11.9		B	BXO	10	4	7	2
5592		SVTO	07 14 0521	S11 W31	07 11.9		A	AX		1		4
5592		PALE	07 14 1740	S12 W40	07 11.7		B	BXO	10	2	3	2
5585		RAMY	07 06 1222	S13 E89	07 13.2		A	AX	10	1	1	2
5585		BOUL	07 06 1440	S13 E79	07 12.6		A	AX	10	1	1	3
5585	25363	MWIL	07 06 1515	S12 E79	07 12.6	3	AP					
5585		HOLL	07 06 1520	S13 E80	07 12.7		A	HA	50	2	2	4
5585		PALE	07 06 1723	S13 E80	07 12.8		A	AX	50	1	1	3
5585		LEAR	07 07 0102	S12 E74	07 12.6		B	CSO	50	2	4	4
5585		CULG	07 07 0310	S13 E72	07 12.6		A	HS	30	1	2	2
5585		SVTO	07 07 0722	S12 E70	07 12.6		B	DSO	60	2	4	2
5585		RAMY	07 07 1255	S12 E68	07 12.7		B	CAO	110	2	5	3
5585		BOUL	07 07 1335	S13 E66	07 12.5		B	CSO	50	3	6	3
5585		HOLL	07 07 1409	S13 E68	07 12.7		B	CSO	80	4	6	4
5585		PALE	07 07 1741	S13 E66	07 12.7		BGD	CA	100	2	5	3
5585	25363	MWIL	07 07 1800	S13 E64	07 12.6	5	(BP)					
5585		LEAR	07 08 0022	S13 E59	07 12.5		B	DSO	60	2	6	3
5585		CULG	07 08 0308	S13 E59	07 12.6		B	DAO	50	3	6	3
5585		RAMY	07 08 1255	S12 E53	07 12.5		B	CAO	90	3	6	1
5585		BOUL	07 08 1425	S13 E51	07 12.4		B	CSO	80	3	6	3
5585	25363	MWIL	07 08 1500	S13 E54	07 12.7	5	(BP)					
5585		HOLL	07 08 1605	S12 E52	07 12.6		B	CSO	40	6	7	3
5585		PALE	07 08 1900	S13 E51	07 12.6		B	CAO	110	10	7	3
5585		LEAR	07 09 0030	S13 E48	07 12.6		B	CSO	30	2	6	3
5585		CULG	07 09 0415	S12 E46	07 12.6		B	CSO	30	2	4	1
5585		SVTO	07 09 0920	S14 E44	07 12.7		B	DSO	80	5	7	3
5585		RAMY	07 09 1300	S13 E41	07 12.6		B	DAO	70	7	6	2
5585		BOUL	07 09 1413	S13 E39	07 12.5		B	CAO	40	5	5	3
5585	25363	MWIL	07 09 1500	S13 E41	07 12.7	5	(BP)					
5585		HOLL	07 09 1510	S13 E40	07 12.6		B	DSO	60	4	7	3
5585		PALE	07 09 1940	S13 E38	07 12.7		B	CSO	50	5	13	3
5585		LEAR	07 10 0009	S13 E36	07 12.7		B	DAO	80	5	6	2
5585		CULG	07 10 0355	S12 E35	07 12.8		B	DSO	30	3	6	2
5585		SVTO	07 10 0638	S13 E32	07 12.7		B	DSO	90	3	6	2
5585		RAMY	07 10 1305	S13 E28	07 12.6		B	CSO	80	3	6	3
5585		HOLL	07 10 1500	S12 E28	07 12.7		B	CSO	90	8	6	3
5585	25363	MWIL	07 10 1515	S13 E27	07 12.7	5	(BP)					
5585		PALE	07 10 2200	S11 E22	07 12.6		B	CAO	70	4	3	2
5585		LEAR	07 11 0029	S12 E22	07 12.7		B	DAO	100	7	7	3
5585		SVTO	07 11 0724	S12 E18	07 12.7		B	CAO	60	13	7	3
5585		RAMY	07 11 1218	S12 E14	07 12.6		B	CSO	50	6	3	3
5585		BOUL	07 11 1425	S11 E12	07 12.5		B	CAO	40	3	2	3
5585	25363	MWIL	07 11 1500	S13 E14	07 12.7	5	(BP)					
5585		HOLL	07 11 1500	S13 E16	07 12.8		B	CSO	70	8	7	3
5585		PALE	07 11 1920	S11 E11	07 12.6		B	CSO	20	4	3	3
5585		LEAR	07 12 0015	S13 E10	07 12.8		B	CSO	40	4	7	3
5585		CULG	07 12 0500	S12 E06	07 12.7		A	HS	20	1	2	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

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
5585		SVTO	07 12 0550	S14 E06	07 12.7		B	CSO	40	2	6	3
5585		HOLL	07 12 1510	S13 W01	07 12.5		A	HS	40	1	2	3
5585	25363	MWIL	07 12 1515	S13 E01	07 12.7	5	(BP)					
5585		RAMY	07 12 1635	S12 W02	07 12.5		A	HS	40	2	2	3
5585		PALE	07 12 1911	S13 W01	07 12.7		B	BXO	30	7	6	3
5585		LEAR	07 13 0055	S14 W04	07 12.7		B	CSO	30	3	5	3
5585		SVTO	07 13 0910	S12 W11	07 12.5		A	HS	20	1	1	4
5585		RAMY	07 13 1232	S13 W13	07 12.5		A	HS	20	1	1	4
5585	25363	MWIL	07 13 1430	S13 W14	07 12.5	5	(BP)					
5585		BOUL	07 13 1447	S11 W14	07 12.6		A	HS	40	1	1	4
5585		HOLL	07 13 1519	S12 W12	07 12.7		B	CSO	20	3	5	3
5585		PALE	07 13 1921	S13 W16	07 12.6		A	HR	40	2	2	2
5585		LEAR	07 14 0007	S12 W19	07 12.6		A	HS	20	1	1	3
5585		SVTO	07 14 0521	S12 W23	07 12.5		A	HR	10	1	1	4
5585		RAMY	07 14 1251	S13 W27	07 12.5		A	HS	20	1	1	3
5585		HOLL	07 14 1323	S13 W27	07 12.5		A	HS	10	1	1	2
5585		BOUL	07 14 1412	S12 W26	07 12.6		A	HA	10	2	1	3
5585	25363	MWIL	07 14 1440	S13 W27	07 12.6	4	(AP)					
5585		PALE	07 14 1740	S14 W29	07 12.5		A	AX	10	2	1	2
5585		LEAR	07 15 0305	S09 W36	07 12.4		A	HS	10	1	1	2
5585		CULG	07 15 0400	S12 W33	07 12.7		A	AX	10	1	1	3
5585		SVTO	07 15 0725	S13 W37	07 12.5		A	HR	10	2	1	4
5585		RAMY	07 15 1304	S13 W39	07 12.6		A	AX		2	1	4
5585		BOUL	07 15 1430	S13 W36	07 12.9		A	AX	10	2	1	3
5585	25363	MWIL	07 15 1445	S13 W41	07 12.5	4	(AP)					
5585		HOLL	07 15 1450	S13 W41	07 12.5		A	AX	10	1	1	3
5585		PALE	07 15 1805	S14 W42	07 12.6		A	AX	10	2	1	4
5585		SVTO	07 16 0727	S13 W49	07 12.6		A	HA	20	2	1	2
5585		RAMY	07 16 1222	S12 W52	07 12.6		A	AX	10	2	1	4
5585		BOUL	07 16 1434	S13 W54	07 12.5		A	AX		1		3
5585	25363	MWIL	07 16 1440	S12 W54	07 12.5	4	(AP)					
5585		HOLL	07 16 1700	S12 W55	07 12.6		A	AX	10	1		3
5592A	25375	MWIL	07 12 1515	N22 W01	07 12.5	4	(AP)					
5585A	25376	MWIL	07 12 1515	S23 E07	07 13.2	3	(AP)					
5586		PALE	07 06 1723	S18 E83	07 13.0		A	AX	30	1	1	3
5586		LEAR	07 07 0102	S17 E79	07 13.0		A	HS	80	1	1	4
5586		CULG	07 07 0310	S18 E78	07 13.1		A	HS	60	1	3	2
5586		SVTO	07 07 0722	S17 E76	07 13.1		A	HS	120	1	3	2
5586		RAMY	07 07 1255	S17 E74	07 13.2		A	HK	180	1	3	3
5586		BOUL	07 07 1335	S17 E70	07 12.9		A	HS	180	1	2	3
5586		HOLL	07 07 1409	S17 E73	07 13.1		A	HK	240	1	3	4
5586	25367	MWIL	07 07 1800	S17 E70	07 13.1	5	(AP)					
5586		LEAR	07 08 0022	S18 E65	07 13.0		A	HS	140	1	3	3
5586		CULG	07 08 0308	S17 E66	07 13.1		A	HS	140	1	3	3
5586		RAMY	07 08 1255	S16 E60	07 13.1		A	HH	240	1	2	1
5586	25367	MWIL	07 08 1500	S17 E59	07 13.1	5	(AP)					
5586		HOLL	07 08 1605	S16 E59	07 13.1		A	HH	200	1	2	3
5586		PALE	07 08 1900	S17 E57	07 13.1		A	HH	210	1	3	3
5586		CULG	07 09 0415	S15 E52	07 13.1		A	HS	120	1	2	1
5586		SVTO	07 09 0920	S17 E50	07 13.2		A	HH	190	1	3	3
5586		RAMY	07 09 1300	S17 E47	07 13.1		A	HH	260	1	3	2
5586	25367	MWIL	07 09 1500	S17 E46	07 13.1	5	(AP)					
5586		HOLL	07 09 1510	S17 E47	07 13.2		A	AX	220	1	3	3
5586		PALE	07 09 1940	S17 E44	07 13.2		B	CHO	210	3	5	3
5586		LEAR	07 10 0009	S17 E42	07 13.2		A	HK	320	1	3	2
5586		CULG	07 10 0355	S16 E40	07 13.2		A	HA	170	2	3	2
5586		SVTO	07 10 0638	S17 E39	07 13.2		A	HH	280	1	3	2
5586		RAMY	07 10 1305	S17 E35	07 13.2		A	HH	220	3	5	3
5586		HOLL	07 10 1500	S17 E32	07 13.0		B	CKO	210	4	5	3
5586	25367	MWIL	07 10 1515	S17 E33	07 13.1	6	(AP)					
5586		PALE	07 10 2200	S16 E29	07 13.1		B	CHO	250	4	5	2
5586		LEAR	07 11 0029	S17 E27	07 13.1		B	CKO	300	3	3	3
5586		SVTO	07 11 0724	S17 E24	07 13.1		A	HH	220	3	3	3
5586		RAMY	07 11 1218	S15 E21	07 13.1		B	CSO	230	7	5	3
5586		BOUL	07 11 1425	S17 E18	07 13.0		B	CHO	230	4	5	3
5586		HOLL	07 11 1500	S16 E21	07 13.2		B	CKO	240	9	5	3

SUNSPOT GROUPS
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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
5586	25367	MWIL	07 11 1500	S17 E20	07 13.1	6	(BP)					
5586		PALE	07 11 1920	S16 E17	07 13.1		B	CHO	230	4	5	3
5586		LEAR	07 12 0015	S16 E15	07 13.1		B	CHO	180	6	4	3
5586		CULG	07 12 0500	S16 E12	07 13.1		B	CKO	220	5	5	2
5586		SVTO	07 12 0550	S16 E12	07 13.1		B	CHO	250	5	4	3
5586		HOLL	07 12 1510	S16 E05	07 13.0		B	CHO	280	14	8	3
5586	25367	MWIL	07 12 1515	S17 E07	07 13.2	6	(BG)					
5586		RAMY	07 12 1635	S15 E04	07 13.0		B	CHO	290	7	6	3
5586		LEAR	07 13 0055	S17 E03	07 13.3		B	CHO	210	8	5	3
5586		SVTO	07 13 0910	S18 W03	07 13.1		B	CHI	230	9	5	4
5586		RAMY	07 13 1232	S17 W04	07 13.2		B	CHO	220	18	6	4
5586	25367	MWIL	07 13 1430	S17 W06	07 13.1	6	(BG)					
5586		BOUL	07 13 1447	S16 W07	07 13.1		B	DKO	310	14	5	4
5586		HOLL	07 13 1519	S17 W05	07 13.2		B	CKO	240	12	9	3
5586		LEAR	07 14 0007	S17 W11	07 13.2		A	HS	210	6	5	3
5586		SVTO	07 14 0521	S18 W14	07 13.1		B	DHO	250	8	5	4
5586		RAMY	07 14 1251	S18 W18	07 13.2		B	CHO	240	7	6	3
5586		HOLL	07 14 1323	S17 W18	07 13.2		B	CHO	230	8	4	2
5586		BOUL	07 14 1412	S17 W18	07 13.2		B	CSO	170	10	3	3
5586	25367	MWIL	07 14 1440	S18 W19	07 13.2	6	(BF)					
5586		PALE	07 14 1740	S18 W19	07 13.3		B	CHO	220	7	5	2
5586		LEAR	07 15 0305	S15 W28	07 13.0		A	HH	150	3	3	2
5586		CULG	07 15 0400	S18 W24	07 13.3		A	HS	240	1	2	3
5586		SVTO	07 15 0725	S18 W28	07 13.2		A	HH	240	1	3	4
5586		RAMY	07 15 1304	S17 W32	07 13.1		A	HH	240	4	3	4
5586		BOUL	07 15 1430	S16 W32	07 13.2		B	CAO	120	4	3	3
5586	25367	MWIL	07 15 1445	S18 W33	07 13.1	5	(AP)					
5586		HOLL	07 15 1450	S18 W32	07 13.2		A	HS	210	2	3	3
5586		PALE	07 15 1805	S18 W33	07 13.2		A	HS	260	3	3	4
5586		SVTO	07 16 0727	S17 W40	07 13.3		A	HS	200	1	3	2
5586		RAMY	07 16 1222	S18 W43	07 13.2		B	CHO	270	5	4	4
5586		BOUL	07 16 1434	S16 W43	07 13.3		B	CSO	170	2	4	3
5586	25367	MWIL	07 16 1440	S17 W45	07 13.2	5	(BG)					
5586		HOLL	07 16 1700	S18 W45	07 13.3		B	CSO	220	5	5	3
5586		PALE	07 16 1955	S19 W48	07 13.2		B	CSO	250	6	3	3
5586		LEAR	07 17 0040	S18 W50	07 13.2		B	CSO	110	4	4	3
5586		SVTO	07 17 0959	S17 W53	07 13.4		B	DHO	220	3	4	2
5586		RAMY	07 17 1000	S20 W57	07 13.0		B	DAO	260	4	3	4
5586		BOUL	07 17 1307	S17 W56	07 13.3		B	CAO	170	3	4	2
5586	25367	MWIL	07 17 1515	S17 W58	07 13.2	6	(BG)					
5586		HOLL	07 17 1755	S17 W58	07 13.3		B	CSO	240	5	4	2
5586		PALE	07 17 1905	S19 W60	07 13.2		B	CAO	330	5	3	3
5586		LEAR	07 18 0055	S18 W65	07 13.1		B	CSO	150	4	3	3
5586		SVTO	07 18 0804	S17 W67	07 13.2		B	CHO	110	3	4	2
5586		RAMY	07 18 1123	S18 W70	07 13.1		B	CAO	190	3	4	3
5586		HOLL	07 18 1300	S17 W70	07 13.2		B	CSO	150	5	5	3
5586		BOUL	07 18 1308	S17 W68	07 13.4		A	HS	160	1	2	2
5586	25367	MWIL	07 18 1515	S17 W71	07 13.2	5	(BG)					
5586		PALE	07 18 1858	S18 W73	07 13.2		A	HA	180	1	2	2
5586		CULG	07 19 0145	S21 W82	07 12.8		A	HS	250	1	4	3
5586		SVTO	07 19 0818	S16 W79	07 13.3		A	HS	60	1	2	3
5586		RAMY	07 19 0845	S18 W80	07 13.3		A	HA	60	1	3	4
5586		HOLL	07 19 1500	S17 W85	07 13.2		A	AX	30	1	4	3
5593		PALE	07 13 0921	N16 W03	07 13.2		B	BXO	10	2	2	2
5593		RAMY	07 13 1232	N17 E00	07 13.5		A	AX	10	5	2	4
5593	25379	MWIL	07 13 1430	N16 W01	07 13.5	4	(AF)					
5593		BOUL	07 13 1447	N16 E00	07 13.6		B	BXO		2	1	4
5593		HOLL	07 13 1519	N17 W02	07 13.5		A	AX	10	3	2	3
5593		PALE	07 13 1921	N16 W03	07 13.6		A	AX	10	2	2	2
5593		SVTO	07 14 0521	N16 W09	07 13.5		A	AX		2	1	4
5593		RAMY	07 14 1251	N16 W13	07 13.5		A	AX	10	5	3	3
5593		HOLL	07 14 1323	N17 W13	07 13.6		A	AX	10	2	1	2
5593		BOUL	07 14 1412	N16 W13	07 13.6		A	AX		2	1	3
5593	25379	MWIL	07 14 1440	N16 W14	07 13.5	4	(AF)					
5593		PALE	07 14 1740	N16 W16	07 13.5		A	AX		2	1	2
5593		PALE	07 17 1905	N14 W70	07 12.5		A	AX	20	2	2	3
5593A	25377	MWIL	07 12 1515	N22 E13	07 13.6	4	(AF)					

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5593A		BOUL	07 14 1412	N25 W10	07 13.8		A	AX		1		3
5593A	25380	MWIL	07 14 1440	N26 W11	07 13.7	4	(AF)					
5593B		BOUL	07 13 1447	S18 E07	07 14.1		B	BXO	10	2	3	4
5593C		SVTO	07 13 0910	S23 E16	07 14.6		B	BXO		2	3	4
5593C		BOUL	07 13 1447	S23 E09	07 14.3		A	AX	10	1		4
5593D		SVTO	07 14 0521	N27 E08	07 14.8		B	BXO		3	3	4
5593E		RAMY	07 19 0845	N29 W49	07 15.5		A	AX	10	1	1	4
5593E		BOUL	07 19 1355	N29 W47	07 15.9		A	AX	10	1		3
5593E	25390	MWIL	07 19 1500	N27 W49	07 15.8	4	(AP)					
5590		PALE	07 10 2200	N11 E80	07 16.9		A	HS	60	2	3	2
5590		LEAR	07 11 0029	N11 E79	07 17.0		A	HS	180	3	3	3
5590		SVTO	07 11 0724	N11 E74	07 16.9		B	CAO	60	9	8	3
5590		RAMY	07 11 1218	N11 E73	07 17.0		B	CAO	150	4	7	3
5590		BOUL	07 11 1425	N11 E71	07 16.9		A	HA	120	3	2	3
5590	25373	MWIL	07 11 1500	N11 E71	07 17.0	5	(BP)					
5590		HOLL	07 11 1500	N11 E75	07 17.3		B	CSO	150	5	8	3
5590		PALE	07 11 1920	N12 E69	07 17.0		A	HS	100	1	2	3
5590		LEAR	07 12 0015	N12 E63	07 16.7		A	HA	90	1	2	3
5590		CULG	07 12 0500	N11 E62	07 16.9		A	HS	60	1	2	2
5590		SVTO	07 12 0550	N11 E63	07 17.0		GD	HSI	120	1	2	3
5590		HOLL	07 12 1510	N12 E58	07 17.0		A	HS	100	1	2	3
5590	25373	MWIL	07 12 1515	N11 E58	07 17.0	5	(AP)					
5590		RAMY	07 12 1635	N09 E58	07 17.0		A	HA	110	2	2	3
5590		PALE	07 12 1911	N11 E57	07 17.1		B	CSO	110	3	4	3
5590		LEAR	07 13 0055	N12 E52	07 16.9		A	HS	80	1	2	3
5590		SVTO	07 13 0910	N11 E48	07 17.0		A	HS	110	1	2	4
5590		PALE	07 13 0921	N11 E43	07 16.6		A	HH	140	1	3	2
5590		RAMY	07 13 1232	N10 E48	07 17.1		B	CSO	120	4	6	4
5590	25373	MWIL	07 13 1430	N10 E44	07 16.9	5	(BP)					
5590		BOUL	07 13 1447	N09 E45	07 17.0		A	HA	130	1	2	4
5590		HOLL	07 13 1519	N10 E47	07 17.2		B	CSO	120	3	8	3
5590		PALE	07 13 1921	N11 E43	07 17.0		A	HS	140	1	3	2
5590		LEAR	07 14 0007	N11 E39	07 16.9		A	HS	80	1	2	3
5590		SVTO	07 14 0521	N11 E37	07 17.0		A	HA	110	2	2	4
5590		RAMY	07 14 1251	N11 E35	07 17.2		B	CSO	120	6	6	3
5590		HOLL	07 14 1323	N11 E32	07 17.0		A	HS	100	3	2	2
5590		BOUL	07 14 1412	N11 E30	07 16.8		A	HA	80	3	2	3
5590	25373	MWIL	07 14 1440	N11 E32	07 17.0	5	(AP)					
5590		PALE	07 14 1740	N11 E30	07 17.0		A	HS	90	2	2	2
5590		LEAR	07 15 0305	N08 E26	07 17.1		A	HS	70	2	2	2
5590		CULG	07 15 0400	N12 E25	07 17.0		A	HS	130	1	2	3
5590		SVTO	07 15 0725	N11 E24	07 17.1		B	CSO	130	8	5	4
5590		RAMY	07 15 1304	N13 E18	07 16.9		B	CAO	110	7	3	4
5590		BOUL	07 15 1430	N11 E17	07 16.9		B	CAO	80	5	3	3
5590	25373	MWIL	07 15 1445	N11 E17	07 16.9	5	(AP)					
5590		HOLL	07 15 1450	N11 E19	07 17.0		B	CAO	100	5	3	3
5590		PALE	07 15 1805	N11 E16	07 16.9		B	CSO	110	5	4	4
5590		SVTO	07 16 0727	N11 E10	07 17.1		B	CAO	120	10	7	2
5590		RAMY	07 16 1222	N12 E08	07 17.1		B	CAO	120	11	7	4
5590		BOUL	07 16 1434	N13 E05	07 17.0		B	CAO	40	5	4	3
5590	25373	MWIL	07 16 1440	N12 E06	07 17.1	5	(BP)					
5590		HOLL	07 16 1700	N12 E06	07 17.2		B	CSO	120	13	6	3
5590		PALE	07 16 1955	N11 E04	07 17.1		B	CSO	80	5	3	3
5590		LEAR	07 17 0040	N12 E01	07 17.1		B	CSO	70	6	5	3
5590		SVTO	07 17 0959	N12 W03	07 17.2		B	DSO	120	7	5	2
5590		RAMY	07 17 1000	N11 W07	07 16.9		B	CSO	120	8	5	4
5590		BOUL	07 17 1307	N12 W06	07 17.1		B	CSO	60	3	5	2
5590	25373	MWIL	07 17 1515	N12 W07	07 17.1	5	(BP)					
5590		HOLL	07 17 1755	N12 W09	07 17.1		B	CSO	130	5	6	2
5590		PALE	07 17 1905	N12 W09	07 17.1		B	CSO	150	3	3	3
5590		LEAR	07 18 0055	N13 W13	07 17.0		B	CSO	70	10	5	3
5590		SVTO	07 18 0804	N13 W16	07 17.1		B	CSO	110	8	7	2
5590		RAMY	07 18 1123	N12 W18	07 17.1		B	CSO	110	8	5	3
5590		HOLL	07 18 1300	N13 W20	07 17.0		B	CSO	70	6	3	3

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5590		BOUL	07 18 1308	N13 W19	07 17.1		B	CSO	60	4	2	2
5590	25373	MWIL	07 18 1515	N12 W21	07 17.0	5	(BP)					
5590		PALE	07 18 1858	N12 W25	07 16.9		B	CSO	80	6	4	2
5590		CULG	07 19 0145	N11 W29	07 16.9		B	CSO	70	2	3	3
5590		SVTO	07 19 0818	N13 W32	07 16.9		A	HS	100	1	2	3
5590		RAMY	07 19 0845	N12 W35	07 16.7		A	HS	120	1	2	4
5590		BOUL	07 19 1355	N12 W34	07 17.0		A	HS	100	1	2	3
5590		HOLL	07 19 1500	N12 W36	07 16.9		B	CSO	70	2	3	3
5590	25373	MWIL	07 19 1500	N12 W36	07 16.9	5	(BP)					
5590		PALE	07 19 1745	N12 W36	07 17.0		B	CSO	80	2	5	3
5590		LEAR	07 20 0035	N13 W41	07 16.9		B	CAO	80	2	3	4
5590		CULG	07 20 0330	N11 W43	07 16.9		A	HS	80	1	2	3
5590		BOUL	07 20 1455	N14 W49	07 16.9		B	CSO	60	2	3	3
5590	25373	MWIL	07 20 1515	N13 W49	07 16.9	5	(AP)					
5590		HOLL	07 20 1545	N12 W50	07 16.9		A	HS	70	2	2	3
5590		PALE	07 20 1840	N11 W49	07 17.1		B	CSO	70	4	3	2
5590		LEAR	07 21 0045	N13 W53	07 17.0		B	CSO	70	2	3	3
5590		CULG	07 21 0330	N11 W57	07 16.8		A	HS	40	1	1	3
5590		SVTO	07 21 0515	N13 W57	07 16.9		A	HS	70	1	2	3
5590		RAMY	07 21 1330	N12 W62	07 16.9		A	HS	80	1	2	4
5590		BOUL	07 21 1436	N13 W58	07 17.2		A	HS	40	1	1	3
5590	25373	MWIL	07 21 1515	N13 W63	07 16.9	5	(AP)					
5590		HOLL	07 21 1530	N13 W63	07 16.9		A	HS	80	1	2	3
5590		PALE	07 21 2345	N11 W70	07 16.7		A	HS	50	1	2	1
5590		LEAR	07 22 0013	N12 W67	07 17.0		B	CAO	100	2	3	3
5590		SVTO	07 22 0731	N13 W71	07 16.9		A	HS	90	1	2	2
5590		RAMY	07 22 1255	N11 W76	07 16.8		A	HS	100	1	2	2
5590		BOUL	07 22 1420	N13 W72	07 17.2		A	HA	60	2	2	3
5590		HOLL	07 22 1430	N13 W78	07 16.7		A	HS	60	1	2	3
5590	25373	MWIL	07 22 1515	N13 W76	07 16.9	5	(AP)					
5590		LEAR	07 23 0016	N13 W81	07 16.9		A	HS	60	1	3	4
5590		SVTO	07 23 0610	N12 W87	07 16.7		A	HS	60	1	2	3
5590		HOLL	07 23 1430	N14 W73	07 18.1		A	HS	50	1	2	4
5590A	25385	MWIL	07 17 1515	N07 W06	07 17.2	4	(BP)					
5589		RAMY	07 10 1305	N26 E82	07 16.9		A	HS	80	1	2	3
5589	25370	MWIL	07 10 1515	N26 E85	07 17.2	4	AP					
5589		PALE	07 10 2200	N27 E81	07 17.2		A	HS	120	1	4	2
5589		LEAR	07 11 0029	N27 E78	07 17.1		B	DAO	240	6	7	3
5589		SVTO	07 11 0724	N29 E79	07 17.5		B	DAO	150	7	9	3
5589		RAMY	07 11 1218	N27 E75	07 17.3		B	DKO	310	6	10	3
5589		BOUL	07 11 1425	N26 E72	07 17.2		B	DKO	430	9	8	3
5589		HOLL	07 11 1500	N27 E74	07 17.4		B	DKO	360	10	7	3
5589	25370	MWIL	07 11 1500	N28 E70	07 17.1	5	(B					
5589		PALE	07 11 1920	N29 E74	07 17.6		B	DAO	420	9	10	3
5589		LEAR	07 12 0015	N28 E67	07 17.2		B	DAO	260	6	8	3
5589		CULG	07 12 0500	N29 E65	07 17.3		B	DAO	360	6	9	2
5589		SVTO	07 12 0550	N28 E65	07 17.3		B	DHO	550	6	10	3
5589		HOLL	07 12 1510	N28 E61	07 17.4		B	FHO	480	13	16	3
5589	25370	MWIL	07 12 1515	N28 E58	07 17.2	5	(B)					
5589		RAMY	07 12 1635	N25 E61	07 17.4		B	EKO	420	11	11	3
5589		PALE	07 12 1911	N27 E59	07 17.4		B	DAO	380	12	10	3
5589		LEAR	07 13 0055	N29 E56	07 17.4		B	EAO	380	11	11	3
5589		SVTO	07 13 0910	N28 E51	07 17.4		B	DHI	500	13	10	4
5589		PALE	07 13 0921	N27 E46	07 17.0		B	EHO	390	20	11	2
5589		RAMY	07 13 1232	N27 E50	07 17.4		B	DKO	350	15	9	4
5589	25370	MWIL	07 13 1430	N27 E47	07 17.3	5	(B)					
5589		BOUL	07 13 1447	N24 E48	07 17.3		B	DKI	410	19	9	4
5589		HOLL	07 13 1519	N29 E49	07 17.5		B	DKO	420	21	10	3
5589		PALE	07 13 1921	N27 E46	07 17.4		B	EHO	390	20	11	2
5589		LEAR	07 14 0007	N27 E44	07 17.4		B	DHO	420	12	10	3
5589		SVTO	07 14 0521	N28 E40	07 17.3		B	EKO	400	17	11	4
5589		RAMY	07 14 1251	N27 E37	07 17.4		B	EKO	410	21	11	3
5589		HOLL	07 14 1323	N28 E36	07 17.4		B	EHO	380	25	12	2
5589		BOUL	07 14 1412	N27 E34	07 17.2		B	DAO	180	21	10	3
5589	25370	MWIL	07 14 1440	N28 E35	07 17.3	5	(B)					
5589		PALE	07 14 1740	N28 E34	07 17.4		B	EKO	380	16	11	2
5589		CULG	07 15 0400	N29 E28	07 17.4		B	DAO	280	15	9	3

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5589		SVTO	07 15	0725	N28 E27	07 17.4		B	DHI	490	34	10	4
5589		RAMY	07 15	1304	N28 E23	07 17.3		B	EKI	280	45	13	4
5589		BOUL	07 15	1430	N26 E22	07 17.3		B	DAI	310	27	10	3
5589	25370	MWIL	07 15	1445	N28 E23	07 17.4	5	(B)					
5589		HOLL	07 15	1450	N28 E22	07 17.3		B	EKI	370	36	12	3
5589		PALE	07 15	1805	N28 E21	07 17.4		B	EKI	330	35	11	4
5589		SVTO	07 16	0727	N27 E14	07 17.4		B	EKI	260	45	11	2
5589		RAMY	07 16	1222	N28 E12	07 17.4		B	EKO	370	43	14	4
5589		BOUL	07 16	1434	N30 E09	07 17.3		B	EAI	200	13	11	3
5589	25370	MWIL	07 16	1440	N28 E10	07 17.4	5	(B)					
5589		HOLL	07 16	1700	N28 E10	07 17.5		B	EAO	290	31	13	3
5589		PALE	07 16	1955	N28 E08	07 17.4		B	EAO	320	23	13	3
5589		LEAR	07 17	0040	N27 E04	07 17.3		B	EAI	200	28	12	3
5589		SVTO	07 17	0959	N29 E01	07 17.5		B	EAO	220	31	13	2
5589		RAMY	07 17	1000	N28 W03	07 17.2		B	EAO	240	52	12	4
5589		BOUL	07 17	1307	N29 W02	07 17.4		B	EAI	160	19	11	2
5589	25370	MWIL	07 17	1515	N27 W04	07 17.3	5	(BP)					
5589		HOLL	07 17	1755	N28 W05	07 17.3		B	EAO	220	30	15	2
5589		PALE	07 17	1905	N27 W06	07 17.3		B	EAO	180	24	14	3
5589		LEAR	07 18	0055	N29 W09	07 17.3		B	EAO	90	23	12	3
5589		SVTO	07 18	0804	N28 W12	07 17.4		B	EAO	100	22	14	2
5589		RAMY	07 18	1123	N28 W15	07 17.3		B	EAO	100	23	13	3
5589		HOLL	07 18	1300	N29 W15	07 17.4		B	FAO	90	18	16	3
5589		BOUL	07 18	1308	N28 W15	07 17.4		B	EAI	120	15	12	2
5589	25370	MWIL	07 18	1515	N27 W16	07 17.4	5	(BP)					
5589		PALE	07 18	1858	N26 W19	07 17.3		B	EAO	110	6	12	2
5589		CULG	07 19	0145	N25 W25	07 17.1		B	EAO	70	16	11	3
5589		SVTO	07 19	0818	N28 W27	07 17.2		B	CAO	70	19	10	3
5589		RAMY	07 19	0845	N26 W29	07 17.1		B	EAI	110	29	11	4
5589		BOUL	07 19	1355	N25 W29	07 17.3		B	EAO	70	13	11	3
5589		HOLL	07 19	1500	N25 W31	07 17.2		B	ESO	60	18	12	3
5589	25370	MWIL	07 19	1500	N26 W31	07 17.2	5	(BG)					
5589		PALE	07 19	1745	N24 W34	07 17.1		B	CRI	20	12	7	3
5589		LEAR	07 20	0035	N25 W37	07 17.1		B	CRO	60	13	5	4
5589		CULG	07 20	0330	N23 W41	07 17.0		B	CRO	20	12	5	3
5589		SVTO	07 20	0555	N23 W35	07 17.5		B	BXI	40	18	10	4
5589		BOUL	07 20	1455	N27 W46	07 17.0		B	DSO	100	14	8	3
5589	25370	MWIL	07 20	1515	N26 W44	07 17.2	4	(BP)					
5589		HOLL	07 20	1545	N25 W45	07 17.2		B	DRO	60	14	12	3
5589		PALE	07 20	1840	N26 W46	07 17.2		B	CAO	40	6	8	2
5589		CULG	07 21	0330	N26 W53	07 17.0		B	CAO	20	9	8	3
5589		SVTO	07 21	0515	N26 W50	07 17.3		B	DRO	30	10	10	3
5589		RAMY	07 21	1330	N25 W57	07 17.1		B	CRO	20	7	8	4
5589		BOUL	07 21	1436	N26 W51	07 17.6		B	BXO	10	6	8	3
5589	25370	MWIL	07 21	1515	N25 W58	07 17.1	5	(BP)					
5589		HOLL	07 21	1530	N25 W58	07 17.1		B	BXO	50	7	13	3
5589		PALE	07 21	2345	N24 W64	07 17.0		B	BXO	10	3	9	1
5589		LEAR	07 22	0013	N27 W63	07 17.1		B	CRO	70	1	12	3
5589		SVTO	07 22	0731	N29 W62	07 17.4		A	AX		1		2
5589		LEAR	07 23	0016	N26 W77	07 17.0		B	BXO	10	5	6	4
5610		LEAR	07 23	0016	N14 W66	07 18.0		A	AX	10	2	1	4
5610		SVTO	07 23	0610	N13 W69	07 18.0		A	AX	10	1	1	3
5610		BOUL	07 23	1440	N13 W70	07 18.3		A	HA	30	2	1	2
5610	25404	MWIL	07 23	1515	N14 W74	07 18.0	4	(AP)					
5602		LEAR	07 18	0055	N18 E09	07 18.7		A	AX	10	2	1	3
5602		RAMY	07 19	0845	N19 W10	07 18.6		A	AX	10	2	1	4
5602		BOUL	07 19	1355	N18 W11	07 18.7		A	AX	10	1	1	3
5602		HOLL	07 19	1500	N18 W12	07 18.7		A	BX	10	3	1	3
5602	25391	MWIL	07 19	1500	N18 W12	07 18.7	4	(AP)					
5602		PALE	07 19	1745	N19 W13	07 18.7		A	AX		1		3
5603		RAMY	07 19	0845	N29 W07	07 18.8		B	BXO	10	7	3	4
5603		BOUL	07 19	1355	N29 W08	07 18.9		B	BXO	10	8	4	3
5603		HOLL	07 19	1500	N28 W08	07 19.0		B	BXO	20	12	4	3
5603	25392	MWIL	07 19	1500	N28 W08	07 19.0	5	(BG)					
5603		PALE	07 19	1745	N28 W09	07 19.0		B	BXO	10	6	5	3
5603		LEAR	07 20	0035	N29 W13	07 19.0		B	BXO	20	8	7	4

SUNSPOT GROUPS
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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
5603		CULG	07 20 0330	N28 W17	07 18.8		B	BXO		5	3	3
5603		SVTO	07 20 0555	N32 W12	07 19.3		B	BXO	10	5	4	4
5603		BOUL	07 20 1455	N29 W20	07 19.0		B	BXO	30	7	6	3
5603	25392	MWIL	07 20 1515	N28 W21	07 19.0	5	(BG)					
5603		HOLL	07 20 1545	N28 W21	07 19.0		B	BXO	60	9	6	3
5603		PALE	07 20 1840	N28 W23	07 19.0		B	BXO	10	8	6	2
5603		LEAR	07 21 0045	N34 W21	07 19.3		B	CAO	60	16	8	3
5603		CULG	07 21 0330	N29 W29	07 18.9		B	DRO	20	11	8	3
5603		SVTO	07 21 0515	N34 W23	07 19.4		BG	DAI	50	15	8	3
5603		RAMY	07 21 1330	N28 W33	07 19.0		B	DRI	70	27	9	4
5603		BOUL	07 21 1436	N29 W30	07 19.2		B	BXO	10	13	10	3
5603	25392	MWIL	07 21 1515	N28 W35	07 18.9	5	(BG)					
5603		HOLL	07 21 1530	N29 W35	07 18.9		B	BXO	90	24	9	3
5603		PALE	07 21 2345	N28 W40	07 18.9		B	DAO	90	12	8	1
5603		LEAR	07 22 0013	N29 W40	07 18.9		B	EAO	150	16	11	3
5603		SVTO	07 22 0731	N29 W42	07 19.0		BG	DAI	100	21	9	2
5603		RAMY	07 22 1255	N28 W47	07 18.9		BG	DAI	110	8	7	2
5603		BOUL	07 22 1420	N29 W44	07 19.1		B	BXO	10	11	7	3
5603		HOLL	07 22 1430	N29 W47	07 18.9		B	CHO	80	18	9	3
5603	25392	MWIL	07 22 1515	N28 W47	07 19.0	5	(BF)					
5603		LEAR	07 23 0016	N29 W53	07 18.8		B	DAO	140	15	10	4
5603		SVTO	07 23 0610	N28 W55	07 18.9		B	DAO	90	16	10	3
5603		RAMY	07 23 1247	N28 W63	07 18.6		B	DAO	200	6	8	1
5603		HOLL	07 23 1430	N29 W60	07 18.9		B	DAI	150	16	10	4
5603		BOUL	07 23 1440	N28 W58	07 19.1		B	DAO	100	14	8	2
5603	25392	MWIL	07 23 1515	N28 W60	07 18.9	5	(D)					
5603		LEAR	07 24 0130	N28 W68	07 18.7		B	DAO	290	14	8	2
5603		SVTO	07 24 0759	N28 W70	07 18.9		B	DSO	220	6	6	2
5603		RAMY	07 24 1321	N28 W73	07 18.8		B	DAO	280	5	10	2
5603		BOUL	07 24 1435	N27 W69	07 19.2		B	DAI	260	8	8	1
5603	25392	MWIL	07 24 1515	N28 W74	07 18.8	5	(BF)					
5603		PALE	07 24 1720	N27 W75	07 18.9		B	DAO	230	5	10	3
5603		LEAR	07 25 0018	N27 W80	07 18.8		B	DAO	270	4	9	1
5603		SVTO	07 25 0601	N28 W80	07 19.0		B	ESO	150	4	12	3
5603		RAMY	07 25 1220	N28 W85	07 18.9		B	DAO	90	3	5	3
5603		BOUL	07 25 1325	N28 W80	07 19.3		B	DAI	150	3	9	1
5603	25392	MWIL	07 25 1500	N28 W84	07 19.1	5	(AF)					
5603		PALE	07 25 1800	N29 W85	07 19.1		A	HS	120	3	4	3
5594		HOLL	07 13 1519	S05 E75	07 19.2		A	AX		1		3
5594		SVTO	07 14 0521	S05 E67	07 19.2		A	AX		1		4
5594		RAMY	07 14 1251	S05 E61	07 19.1		A	AX	10	1	1	3
5594		HOLL	07 14 1323	S05 E61	07 19.1		A	AX		1		2
5594	25381	MWIL	07 14 1440	S05 E60	07 19.1	4	(AP)					
5594		LEAR	07 15 0305	S03 E55	07 19.2		A	AX	10	2	1	2
5594		SVTO	07 15 0725	S05 E54	07 19.3		A	HR	20	2	2	4
5594		RAMY	07 15 1304	S05 E51	07 19.3		B	BXO	10	3	3	4
5594		BOUL	07 15 1430	S05 E48	07 19.2		B	BXO		3	3	3
5594	25381	MWIL	07 15 1445	S07 E51	07 19.4	3	(B)					
5594		HOLL	07 15 1450	S06 E50	07 19.4		B	BXO	10	3	3	3
5594		PALE	07 15 1805	S05 E48	07 19.3		B	BXO	10	4	4	4
5594		SVTO	07 16 0727	S05 E39	07 19.2		B	CRO	10	3	3	2
5594		RAMY	07 16 1222	S05 E37	07 19.3		B	BXO	10	5	5	4
5594		BOUL	07 16 1434	S04 E34	07 19.1		B	BXO	10	4	4	3
5594	25381	MWIL	07 16 1440	S04 E35	07 19.2	4	(BP)					
5594		HOLL	07 16 1700	S04 E35	07 19.3		B	BXO	40	10	6	3
5594		PALE	07 16 1955	S05 E32	07 19.2		A	AX		2	1	3
5594		LEAR	07 17 0040	S04 E28	07 19.1		B	CRO	10	2	2	3
5594		SVTO	07 17 0959	S04 E23	07 19.1		B	CRO	10	4	2	2
5594		RAMY	07 17 1000	S03 E21	07 19.0		B	BXO	10	7	5	4
5594		BOUL	07 17 1307	S03 E21	07 19.1		B	BXO	10	4	4	2
5594	25381	MWIL	07 17 1515	S05 E22	07 19.3	4	(BP)					
5594		HOLL	07 17 1755	S04 E17	07 19.0		A	AX	10	4	2	2
5594		PALE	07 17 1905	S04 E20	07 19.3		B	BXO	10	7	7	3
5594		LEAR	07 18 0055	S05 E15	07 19.2		B	BXO	10	6	5	3
5594		SVTO	07 18 0804	S04 E11	07 19.1		B	BXO	10	6	6	2
5594		RAMY	07 18 1123	S05 E10	07 19.2		B	BXO	10	5	6	3
5594		HOLL	07 18 1300	S04 E08	07 19.1		B	BXO		4	6	3
5594		BOUL	07 18 1308	S04 E07	07 19.1		B	BXO	10	4	5	2

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5594	25381	MWIL	07 18	1515	S05 E07	07 19.1	3	(BP)					
5594		SVTO	07 19	0818	S05 E01	07 19.4		A	AX		1		3
5594		RAMY	07 19	0845	S02 W06	07 18.9		B	BXO	10	2	4	4
5594		LEAR	07 20	0035	S07 W08	07 19.4		B	BXO	10	3	3	4
5594		SVTO	07 20	0555	S05 W10	07 19.5		B	BXO	10	4	7	4
5603A	25394	MWIL	07 20	1515	N08 W17	07 19.4	3	(AF)					
5594A	25386	MWIL	07 17	1515	N21 E27	07 19.7	3	(AF)					
5594A		HOLL	07 17	1755	N21 E27	07 19.8		A	AX		1		2
5594B	25395	MWIL	07 20	1515	S28 W12	07 19.7	4	(B)					
5595		RAMY	07 15	1304	S07 E58	07 19.9		A	AX		1		4
5595		HOLL	07 15	1450	S09 E58	07 20.0		A	AX		1		3
5595		SVTO	07 16	0727	S08 E44	07 19.6		A	AX	10	1		2
5595		RAMY	07 19	0845	S09 E04	07 19.7		A	AX	10	2	1	4
5595	25393	MWIL	07 19	1500	S09 E04	07 19.9	4	(AP)					
5595		LEAR	07 20	0035	S08 W02	07 19.9		A	AX	10	1	1	4
5595A		PALE	07 20	1840	N29 W07	07 20.2		A	AX		1		2
5596		SVTO	07 15	0725	N18 E80	07 21.4		A	AX		1		4
5596		RAMY	07 15	1304	N18 E77	07 21.4		A	AX		1		4
5596		BOUL	07 15	1430	N18 E76	07 21.4		B	BXO		2	8	3
5596	25382	MWIL	07 15	1445	N17 E75	07 21.3	3	(AP)					
5596		HOLL	07 15	1450	N18 E80	07 21.7		B	BXO	10	2	8	3
5596		PALE	07 15	1805	N19 E78	07 21.7		B	BXO	10	2	5	4
5596		SVTO	07 16	0727	N18 E68	07 21.5		B	BXO	20	3	7	2
5596		RAMY	07 16	1222	N18 E67	07 21.6		B	BXO	20	5	8	4
5596		BOUL	07 16	1434	N21 E67	07 21.7		A	AX		1		3
5596	25382	MWIL	07 16	1440	N20 E67	07 21.7	4	(B)					
5596		HOLL	07 16	1700	N19 E65	07 21.7		B	BXO	10	3	7	3
5596		PALE	07 16	1955	N20 E64	07 21.7		B	BXO		3	7	3
5596		LEAR	07 17	0040	N19 E61	07 21.7		B	BXO	20	4	6	3
5596		SVTO	07 17	0959	N19 E59	07 21.9		B	CRO	20	4	7	2
5596		RAMY	07 17	1000	N21 E54	07 21.5		B	BXO	30	11	8	4
5596		BOUL	07 17	1307	N20 E53	07 21.6		B	BXO	20	4	4	2
5596	25382	MWIL	07 17	1515	N19 E54	07 21.7	4	(B)					
5596		HOLL	07 17	1755	N19 E53	07 21.8		B	BXO	30	8	8	2
5596		PALE	07 17	1905	N20 E50	07 21.6		B	BXO	20	4	4	3
5596		LEAR	07 18	0055	N19 E47	07 21.6		B	BXO	20	7	7	3
5596		SVTO	07 18	0804	N19 E43	07 21.6		B	CRO	20	12	9	2
5596		RAMY	07 18	1123	N20 E42	07 21.7		B	BXO	30	16	9	3
5596		HOLL	07 18	1300	N19 E42	07 21.7		B	BXO	20	15	9	3
5596		BOUL	07 18	1308	N18 E41	07 21.7		B	BXO	50	12	9	2
5596	25382	MWIL	07 18	1515	N19 E40	07 21.7	5	(BG)					
5596		PALE	07 18	1858	N20 E38	07 21.7		B	CSO	40	7	8	2
5596		CULG	07 19	0145	N20 E35	07 21.7		B	DAO	50	14	8	3
5596		SVTO	07 19	0818	N19 E31	07 21.7		BG	DSI	100	18	8	3
5596		RAMY	07 19	0845	N19 E29	07 21.6		B	DAI	100	25	8	4
5596		BOUL	07 19	1355	N18 E28	07 21.7		B	DAI	170	18	8	3
5596	25382	MWIL	07 19	1500	N19 E27	07 21.7	5	(BG)					
5596		HOLL	07 19	1500	N19 E28	07 21.8		BG	DAO	100	23	7	3
5596		PALE	07 19	1745	N20 E26	07 21.7		B	DAI	130	23	7	3
5596		LEAR	07 20	0035	N21 E21	07 21.6		B	DKO	140	20	8	4
5596		CULG	07 20	0330	N20 E20	07 21.7		B	DAO	90	17	7	3
5596		SVTO	07 20	0555	N16 E21	07 21.8		B	DAI	120	16	9	4
5596		BOUL	07 20	1455	N20 E15	07 21.8		B	DAI	140	27	9	3
5596	25382	MWIL	07 20	1515	N19 E15	07 21.8	5	(BG)					
5596		HOLL	07 20	1545	N19 E14	07 21.7		B	DRO	60	29	10	3
5596		PALE	07 20	1840	N20 E13	07 21.8		B	CAI	40	17	7	2
5596		LEAR	07 21	0045	N18 E12	07 21.9		B	CAO	70	27	10	3
5596		CULG	07 21	0330	N20 E06	07 21.6		BG	CAI	30	25	9	3
5596		SVTO	07 21	0515	N19 E09	07 21.9		B	CAI	80	29	9	3
5596		RAMY	07 21	1330	N19 E03	07 21.8		B	CAO	90	37	9	4
5596		BOUL	07 21	1436	N19 E03	07 21.8		B	CAI	30	13	8	3
5596	25382	MWIL	07 21	1515	N19 E01	07 21.7	5	(BG)					
5596		HOLL	07 21	1530	N20 E02	07 21.8		BG	DRO	90	29	9	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5596		PALE	07	21	2345	N19	W05	07	21.6		B	CAO	20	12	9	1
5596		LEAR	07	22	0013	N19	W05	07	21.6		B	CSO	60	11	8	3
5596		SVTO	07	22	0731	N19	W08	07	21.7		B	DRI	40	21	9	2
5596		RAMY	07	22	1255	N19	W12	07	21.6		B	DAI	60	21	8	2
5596		BOUL	07	22	1420	N21	W08	07	22.0		B	CAO	30	14	8	3
5596		HOLL	07	22	1430	N19	W13	07	21.6		B	BXO	60	30	11	3
5596	25382	MWIL	07	22	1515	N19	W12	07	21.7	5	(B)					
5596		LEAR	07	23	0016	N21	W17	07	21.7		B	DAO	60	12	8	4
5596		SVTO	07	23	0610	N19	W18	07	21.9		B	DRO	30	10	7	3
5596		RAMY	07	23	1247	N19	W23	07	21.8		B	BXO	20	5	7	1
5596		HOLL	07	23	1430	N19	W24	07	21.8		B	BXO	20	15	9	4
5596		BOUL	07	23	1440	N17	W22	07	21.9		B	BXO		5	7	2
5596	25382	MWIL	07	23	1515	N19	W24	07	21.8	4	(BF)					
5596		LEAR	07	24	0130	N20	W30	07	21.8		B	BXO	20	5	7	2
5596		SVTO	07	24	0759	N20	W32	07	21.9		B	BXO	10	7	10	2
5596		RAMY	07	24	1321	N18	W32	07	22.1		A	AX	10	2	1	2
5596	25382	MWIL	07	24	1515	N18	W31	07	22.3	4	(BP)					
5596		SVTO	07	25	0601	N19	W44	07	21.9		B	BXO	10	2	8	3
5597		RAMY	07	15	1304	S10	E81	07	21.6		A	HS	90	1	2	4
5597		BOUL	07	15	1430	S12	E84	07	21.9		A	HS	90	1	2	3
5597	25383	MWIL	07	15	1445	S11	E80	07	21.6	4	(AP)					
5597		HOLL	07	15	1450	S12	E83	07	21.9		A	HS	60	2	2	3
5597		PALE	07	15	1805	S11	E85	07	22.1		A	HA	120	1	3	4
5597		SVTO	07	16	0727	S11	E71	07	21.6		A	HS	60	3	2	2
5597		RAMY	07	16	1222	S12	E69	07	21.7		A	HH	170	1	3	4
5597		BOUL	07	16	1434	S09	E67	07	21.6		A	HS	110	1	2	3
5597	25383	MWIL	07	16	1440	S12	E70	07	21.9	5	(AP)					
5597		HOLL	07	16	1700	S12	E68	07	21.8		A	HH	160	1	3	3
5597		PALE	07	16	1955	S13	E69	07	22.0		A	HS	210	1	1	3
5597		LEAR	07	17	0040	S12	E63	07	21.8		A	HS	130	1	2	3
5597		SVTO	07	17	0959	S11	E63	07	22.1		B	CAO	80	4	5	2
5597		RAMY	07	17	1000	S10	E56	07	21.6		A	HA	210	2	2	4
5597		BOUL	07	17	1307	S10	E54	07	21.6		A	HA	110	4	2	2
5597	25383	MWIL	07	17	1515	S13	E56	07	21.9	5	(AP)					
5597		HOLL	07	17	1755	S12	E55	07	21.9		A	HS	180	2	2	2
5597		PALE	07	17	1905	S12	E54	07	21.9		B	CAO	260	4	3	3
5597		LEAR	07	18	0055	S12	E50	07	21.8		B	CAO	140	5	4	3
5597		SVTO	07	18	0804	S12	E48	07	21.9		B	CAO	150	7	6	2
5597		RAMY	07	18	1123	S11	E46	07	21.9		B	CKO	170	6	6	3
5597		HOLL	07	18	1300	S11	E45	07	21.9		B	CSO	180	9	9	3
5597		BOUL	07	18	1308	S11	E42	07	21.7		B	CSO	140	9	4	2
5597	25383	MWIL	07	18	1515	S13	E43	07	21.9	5	(B)					
5597		PALE	07	18	1858	S11	E42	07	21.9		B	CAO	260	3	7	2
5597		CULG	07	19	0145	S11	E39	07	22.0		B	CAO	130	7	7	3
5597		SVTO	07	19	0818	S12	E34	07	21.9		B	DKI	170	15	7	3
5597		RAMY	07	19	0845	S11	E34	07	21.9		B	CAO	100	22	12	4
5597		BOUL	07	19	1355	S12	E32	07	22.0		B	CAO	200	10	7	3
5597		HOLL	07	19	1500	S12	E31	07	22.0		B	DKO	150	32	10	3
5597	25383	MWIL	07	19	1500	S13	E31	07	22.0	5	(BG)					
5597		PALE	07	19	1745	S12	E32	07	22.1		B	CAO	180	21	12	3
5597		LEAR	07	20	0035	S11	E27	07	22.0		BG	EKO	210	28	11	4
5597		CULG	07	20	0330	S12	E24	07	21.9		B	CAI	170	22	8	3
5597		SVTO	07	20	0555	S16	E20	07	21.8		BG	EAI	240	35	12	4
5597		BOUL	07	20	1455	S09	E16	07	21.8		B	DAI	230	29	8	3
5597	25383	MWIL	07	20	1515	S13	E16	07	21.8	5	(BG)					
5597		HOLL	07	20	1545	S13	E18	07	22.0		BG	DAO	210	32	10	3
5597		PALE	07	20	1840	S12	E16	07	22.0		B	DAI	130	29	7	2
5597		LEAR	07	21	0045	S13	E07	07	21.5		BG	DAI	170	25	7	3
5597		CULG	07	21	0330	S12	E09	07	21.8		BG	DAI	60	35	8	3
5597		SVTO	07	21	0515	S13	E05	07	21.6		BG	DAI	210	37	6	3
5597		RAMY	07	21	1330	S12	E04	07	21.9		BG	DAI	190	47	7	4
5597		BOUL	07	21	1436	S08	E05	07	22.0		B	DSI	50	30	7	3
5597	25383	MWIL	07	21	1515	S13	E03	07	21.9	5	(BG)					
5597		HOLL	07	21	1530	S11	E03	07	21.9		BG	DAI	200	54	8	3
5597		PALE	07	21	2345	S12	W03	07	21.8		B	DAI	90	25	6	1
5597		LEAR	07	22	0013	S11	W04	07	21.7		BG	DAI	250	28	7	3
5597		SVTO	07	22	0731	S12	W07	07	21.8		BG	DSI	220	31	8	2
5597		RAMY	07	22	1255	S13	W10	07	21.8		BG	DAI	290	31	8	2

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 Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5597		BOUL	07 22	1420	S11 W11	07 21.8		B	DAI	70	23	7	3
5597		HOLL	07 22	1430	S11 W11	07 21.8		BG	DAI	200	42	7	3
5597	25383	MWIL	07 22	1515	S13 W11	07 21.8	5	(BP)					
5597		LEAR	07 23	0016	S09 W17	07 21.7		B	DAI	300	34	8	4
5597		SVTO	07 23	0610	S12 W19	07 21.8		B	DAI	290	38	9	3
5597		RAMY	07 23	1247	S13 W24	07 21.7		B	DAI	250	16	7	1
5597		HOLL	07 23	1430	S12 W23	07 21.9		BGD	DAI	280	43	8	4
5597		BOUL	07 23	1440	S13 W23	07 21.9		B	DAI	180	30	7	2
5597	25383	MWIL	07 23	1515	S13 W24	07 21.8	5	(BG)					
5597		LEAR	07 24	0130	S10 W30	07 21.8		B	DAI	260	27	8	2
5597		SVTO	07 24	0759	S12 W33	07 21.8		B	DAI	330	37	9	2
5597		RAMY	07 24	1321	S13 W37	07 21.8		B	DAI	330	20	8	2
5597		BOUL	07 24	1435	S13 W35	07 22.0		B	DAI	240	19	7	1
5597	25383	MWIL	07 24	1515	S13 W37	07 21.8	5	(BG)					
5597		PALE	07 24	1720	S14 W38	07 21.8		B	DKI	390	15	7	3
5597		LEAR	07 25	0018	S12 W43	07 21.8		B	DKI	250	24	7	1
5597		SVTO	07 25	0601	S13 W45	07 21.8		BG	DAI	260	19	9	3
5597		RAMY	07 25	1220	S14 W50	07 21.7		BG	DAI	310	32	10	3
5597		BOUL	07 25	1325	S13 W49	07 21.9		B	DAI	180	17	8	1
5597	25383	MWIL	07 25	1500	S13 W51	07 21.8	5	(B)					
5597		PALE	07 25	1800	S13 W52	07 21.8		B	DAI	320	16	8	3
5597		CULG	07 26	0349	S14 W59	07 21.7		BG	DAI	220	21	10	2
5597		LEAR	07 26	0644	S12 W60	07 21.8		BG	EAO	300	14	11	2
5597		SVTO	07 26	0805	S13 W60	07 21.8		B	DAI	220	19	9	3
5597		RAMY	07 26	1325	S14 W64	07 21.7		BG	DAO	260	12	9	2
5597		BOUL	07 26	1445	S12 W68	07 21.5		B	DAI	180	10	9	3
5597	25383	MWIL	07 26	1700	S12 W65	07 21.8	5	(BP)					
5597		PALE	07 26	1715	S13 W66	07 21.7		B	DAI	230	15	8	4
5597		HOLL	07 26	1722	S13 W66	07 21.7		B	DSI	220	18	8	2
5597		CULG	07 27	0340	S17 W75	07 21.4		B	ESI	120	8	11	3
5597		SVTO	07 27	0830	S13 W75	07 21.7		B	DSI	150	9	9	2
5597		HOLL	07 27	1430	S11 W78	07 21.7		B	ESO	140	13	15	3
5597		BOUL	07 27	1435	S12 W79	07 21.6		B	CAO	90	5	9	3
5597	25383	MWIL	07 27	1450	S11 W79	07 21.7	5	AP)					
5597		RAMY	07 27	1829	S13 W79	07 21.8		B	DAO	80	7	6	3
5597		PALE	07 27	1907	S12 W81	07 21.7		B	CAO	40	4	4	3
5597A		CULG	07 21	0330	N11 E12	07 22.0		A	AX	10	1	1	3
5605		BOUL	07 20	1455	N16 E23	07 22.4		A	AX	10	1		3
5605	25396	MWIL	07 20	1515	N14 E23	07 22.4	4	(B)					
5605		HOLL	07 20	1545	N15 E22	07 22.3		A	AX	10	2	2	3
5605		RAMY	07 21	1330	N15 E10	07 22.3		B	BXO	20	10	4	4
5605		BOUL	07 21	1436	N15 E09	07 22.3		B	BXO	10	5	3	3
5605	25396	MWIL	07 21	1515	N14 E09	07 22.3	5	(B)					
5605		HOLL	07 21	1530	N15 E09	07 22.3		B	BXO	30	11	5	3
5605		PALE	07 21	2345	N15 E04	07 22.3		B	BXO	10	8	6	1
5605		LEAR	07 22	0013	N16 E03	07 22.2		B	CRO	20	6	6	3
5605		SVTO	07 22	0731	N16 W01	07 22.2		B	CRO	10	5	4	2
5605		RAMY	07 22	1255	N14 W04	07 22.2		B	CRO	20	8	5	2
5605		BOUL	07 22	1420	N16 W03	07 22.4		B	BXO	10	6	6	3
5605		HOLL	07 22	1430	N16 W04	07 22.3		B	BXO	30	12	5	3
5605	25396	MWIL	07 22	1515	N14 W05	07 22.2	5	(BG)					
5605		LEAR	07 23	0016	N18 W10	07 22.2		B	BXO	20	9	7	4
5605		SVTO	07 23	0610	N15 W16	07 22.0		B	CRO	10	2	3	3
5605		RAMY	07 23	1247	N14 W19	07 22.1		B	BXO	20	3	6	1
5605		HOLL	07 23	1430	N15 W19	07 22.2		B	BXO	10	8	7	4
5605		BOUL	07 23	1440	N13 W16	07 22.4		B	BXO		4	7	2
5605	25396	MWIL	07 23	1515	N15 W20	07 22.1	5	(BP)					
5605		LEAR	07 24	0130	N17 W23	07 22.3		B	BXO	50	12	6	2
5605		SVTO	07 24	0759	N16 W28	07 22.2		B	DAO	40	15	8	2
5605		RAMY	07 24	1321	N14 W33	07 22.1		B	DAO	50	7	8	2
5605		BOUL	07 24	1435	N14 W31	07 22.3		B	CAI	40	9	7	1
5605	25396	MWIL	07 24	1515	N15 W33	07 22.1	5	(B)					
5605		PALE	07 24	1720	N14 W33	07 22.2		B	DAO	60	7	7	3
5605		LEAR	07 25	0018	N15 W38	07 22.1		B	CSO	70	5	7	1
5605		SVTO	07 25	0601	N15 W40	07 22.2		B	DAO	70	9	8	3
5605		RAMY	07 25	1220	N14 W46	07 22.0		B	CAO	70	15	9	3
5605		BOUL	07 25	1325	N14 W44	07 22.2		B	CAO	30	3	6	1

SUNSPOT GROUPS
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5605	25396	MWIL	07 25 1500	N15 W47	07 22.1	5	(BP)					
5605		PALE	07 25 1800	N14 W48	07 22.1		B	CSO	30	6	8	3
5605		CULG	07 26 0349	N11 W58	07 21.8		A	HA	20	2	1	2
5605		SVTO	07 26 0805	N13 W60	07 21.8		A	HR	20	2	1	3
5605		RAMY	07 26 1325	N11 W61	07 22.0		A	AX	20	3	2	2
5605		BOUL	07 26 1445	N13 W62	07 21.9		A	AX	10	1	1	3
5605	25396	MWIL	07 26 1700	N13 W61	07 22.1	4	(AP)					
5605		PALE	07 26 1715	N12 W61	07 22.1		B	BXO	20	5	6	4
5605		HOLL	07 26 1722	N13 W63	07 22.0		B	BXO	20	4	6	2
5605		CULG	07 27 0340	N13 W69	07 21.9		B	BXO	10	3	4	3
5605		SVTO	07 27 0830	N12 W73	07 21.8		B	BXO	10	2	3	2
5605		HOLL	07 27 1430	N12 W78	07 21.7		B	BXO	30	2	3	3
5605	25396	MWIL	07 27 1450	N12 W77	07 21.8	4	(AP)					
5605		RAMY	07 27 1829	N12 W78	07 21.9		B	BXO	10	3	4	3
5605		PALE	07 27 1907	N13 W76	07 22.1		B	BXO	10	3	8	3
5606	25399	MWIL	07 21 1515	S33 E07	07 22.2	4	(BP)					
5606		HOLL	07 21 1530	S32 E07	07 22.2		B	BXO	20	5	3	3
5606		PALE	07 21 2345	S32 E03	07 22.2		B	DSO	40	6	3	1
5606		LEAR	07 22 0013	S31 E02	07 22.2		B	DAI	70	10	5	3
5606		SVTO	07 22 0731	S32 W01	07 22.2		B	DAO	50	8	6	2
5606		RAMY	07 22 1255	S32 W04	07 22.2		B	DAO	100	7	6	2
5606		BOUL	07 22 1420	S29 W03	07 22.4		B	CSI	40	14	6	3
5606		HOLL	07 22 1430	S32 W05	07 22.2		B	DAO	80	13	8	3
5606	25399	MWIL	07 22 1515	S33 W06	07 22.1	5	(BP)					
5606		LEAR	07 23 0016	S29 W11	07 22.1		B	DAO	150	15	7	4
5606		SVTO	07 23 0610	S32 W13	07 22.2		B	DAO	120	20	8	3
5606		RAMY	07 23 1247	S32 W20	07 21.9		B	DAO	90	7	7	1
5606		HOLL	07 23 1430	S32 W19	07 22.1		B	CSO	60	18	10	4
5606		BOUL	07 23 1440	S32 W18	07 22.2		B	CAO	30	16	7	2
5606	25399	MWIL	07 23 1515	S32 W19	07 22.1	5	(B)					
5606		LEAR	07 24 0130	S30 W25	07 22.1		B	DAO	160	20	8	2
5606		SVTO	07 24 0759	S32 W28	07 22.1		B	DSI	130	18	9	2
5606		RAMY	07 24 1321	S32 W32	07 22.0		B	DAO	140	16	10	2
5606		BOUL	07 24 1435	S32 W30	07 22.2		B	DAI	90	11	8	1
5606	25399	MWIL	07 24 1515	S32 W33	07 22.0	5	(B)					
5606		PALE	07 24 1720	S32 W31	07 22.3		B	DAO	80	13	10	3
5606		LEAR	07 25 0018	S30 W37	07 22.1		B	CSO	130	15	9	1
5606		SVTO	07 25 0601	S33 W40	07 22.1		B	ESO	70	10	11	3
5606		RAMY	07 25 1220	S33 W45	07 21.9		B	EAO	110	11	11	3
5606		BOUL	07 25 1325	S31 W44	07 22.1		B	DAI	60	6	8	1
5606	25399	MWIL	07 25 1500	S32 W46	07 22.0	5	(B)					
5606		PALE	07 25 1800	S32 W47	07 22.0		B	DAO	100	9	10	3
5606		CULG	07 26 0349	S33 W53	07 21.9		B	CAO	20	7	12	2
5606		LEAR	07 26 0644	S31 W53	07 22.1		B	CAO	40	13	11	2
5606		SVTO	07 26 0805	S33 W53	07 22.1		B	ERO	40	10	11	3
5606		RAMY	07 26 1325	S33 W60	07 21.8		B	DRO	40	6	10	2
5606		BOUL	07 26 1445	S32 W62	07 21.7		B	EAO	140	6	12	3
5606	25399	MWIL	07 26 1700	S31 W58	07 22.1	5	(B)					
5606		PALE	07 26 1715	S33 W60	07 21.9		B	DAO	60	9	10	4
5606		HOLL	07 26 1722	S32 W59	07 22.0		B	BXO	50	14	10	2
5606		CULG	07 27 0340	S34 W70	07 21.6		B	CRO	30	7	9	3
5606		SVTO	07 27 0830	S33 W64	07 22.3		B	BXO	10	2	3	2
5606		HOLL	07 27 1430	S32 W68	07 22.2		B	BXO	80	11	15	3
5606	25399	MWIL	07 27 1450	S32 W69	07 22.1	5	(B)					
5606		RAMY	07 27 1829	S34 W70	07 22.2		B	BXO	20	7	8	3
5606		PALE	07 27 1907	S34 W72	07 22.0		A	AX		1		3
5606A		PALE	07 20 1840	N15 E21	07 22.4		B	BXO	10	3	3	2
5598		SVTO	07 16 0727	S21 E76	07 22.1		B	CAO	30	2	5	2
5598		RAMY	07 16 1222	S22 E76	07 22.3		BD	DKC	140	4	5	4
5598		BOUL	07 16 1434	S19 E72	07 22.1		B	DAO	180	2	4	3
5598	25384	MWIL	07 16 1440	S21 E78	07 22.6	5	AP					
5598		HOLL	07 16 1700	S21 E75	07 22.4		B	DAO	150	4	9	3
5598		PALE	07 16 1955	S22 E70	07 22.2		B	DAO	180	2	10	3
5598		LEAR	07 17 0040	S21 E71	07 22.5		B	DAO	150	3	4	3
5598		SVTO	07 17 0959	S22 E70	07 22.8		B	DAO	240	9	9	2
5598		RAMY	07 17 1000	S19 E65	07 22.4		B	DAO	440	13	10	4

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5598		BOUL	07 17 1307	S20 E64	07 22.4		B	CAO	230	5	9	2
5598	25384	MWIL	07 17 1515	S22 E66	07 22.7	5	(B)					
5598		HOLL	07 17 1755	S22 E65	07 22.7		B	CKO	340	14	10	2
5598		PALE	07 17 1905	S21 E65	07 22.8		B	DAO	490	12	11	3
5598		LEAR	07 18 0055	S23 E61	07 22.7		B	DAO	200	13	10	3
5598		SVTO	07 18 0804	S22 E56	07 22.6		B	EAO	380	20	11	2
5598		RAMY	07 18 1123	S21 E55	07 22.7		B	EKO	400	15	11	3
5598		HOLL	07 18 1300	S22 E54	07 22.7		B	EAI	450	20	11	3
5598		BOUL	07 18 1308	S21 E53	07 22.6		B	DAC	100	15	9	2
5598	25384	MWIL	07 18 1515	S22 E53	07 22.7	5	(BP)					
5598		PALE	07 18 1858	S20 E53	07 22.8		B	EAO	450	8	11	2
5598		CULG	07 19 0145	S21 E50	07 22.9		B	DSI	340	15	10	3
5598		SVTO	07 19 0818	S21 E44	07 22.7		B	EKI	340	20	11	3
5598		RAMY	07 19 0845	S21 E42	07 22.6		B	EKO	530	22	11	4
5598		BOUL	07 19 1355	S22 E42	07 22.8		B	EKO	570	17	12	3
5598		HOLL	07 19 1500	S21 E40	07 22.7		B	DKI	360	25	10	3
5598	25384	MWIL	07 19 1500	S21 E40	07 22.7	5	(BP)					
5598		PALE	07 19 1745	S21 E41	07 22.9		B	DKO	420	20	12	3
5598		LEAR	07 20 0035	S20 E36	07 22.8		B	DKI	450	21	9	4
5598		CULG	07 20 0330	S21 E35	07 22.8		B	CAO	370	10	10	3
5598		SVTO	07 20 0555	S21 E28	07 22.4		B	DKI	450	18	10	4
5598		BOUL	07 20 1455	S21 E28	07 22.8		B	DKO	270	13	10	3
5598	25384	MWIL	07 20 1515	S21 E27	07 22.7	5	(B)					
5598		HOLL	07 20 1545	S22 E28	07 22.8		B	DKO	300	12	10	3
5598		PALE	07 20 1840	S21 E27	07 22.8		B	DKO	390	11	9	2
5598		LEAR	07 21 0045	S23 E17	07 22.3		B	DKI	380	23	9	3
5598		CULG	07 21 0330	S21 E21	07 22.7		B	DKO	360	17	9	3
5598		SVTO	07 21 0515	S25 E15	07 22.4		B	DKI	510	23	9	3
5598		RAMY	07 21 1330	S21 E17	07 22.9		B	DKI	510	37	10	4
5598		BOUL	07 21 1436	S19 E16	07 22.8		B	DAI	280	28	9	3
5598	25384	MWIL	07 21 1515	S22 E14	07 22.7	5	(D)					
5598		HOLL	07 21 1530	S20 E17	07 22.9		B	EKI	470	53	13	3
5598		PALE	07 21 2345	S21 E13	07 23.0		B	DAI	350	16	9	1
5598		LEAR	07 22 0013	S21 E11	07 22.8		BG	DKI	450	20	9	3
5598		SVTO	07 22 0731	S23 E07	07 22.8		B	DKI	490	33	10	2
5598		RAMY	07 22 1255	S23 E05	07 22.9		B	EKI	430	31	12	2
5598		BOUL	07 22 1420	S20 E03	07 22.8		B	CAI	250	30	10	3
5598		HOLL	07 22 1430	S21 E05	07 23.0		B	EKI	410	69	12	3
5598	25384	MWIL	07 22 1515	S22 E02	07 22.8	5	(BP)					
5598		LEAR	07 23 0016	S18 W02	07 22.8		B	DKI	370	21	8	4
5598		SVTO	07 23 0610	S21 W05	07 22.9		B	CKO	400	28	9	3
5598		RAMY	07 23 1247	S23 W09	07 22.8		B	DKI	360	14	8	1
5598		HOLL	07 23 1430	S22 W09	07 22.9		B	CKI	390	38	9	4
5598		BOUL	07 23 1440	S23 W09	07 22.9		B	CAI	300	42	8	2
5598	25384	MWIL	07 23 1515	S22 W11	07 22.8	5	(BP)					
5598		LEAR	07 24 0130	S21 W16	07 22.8		B	CKI	370	27	8	2
5598		SVTO	07 24 0759	S22 W18	07 22.9		B	DKO	340	20	9	2
5598		RAMY	07 24 1321	S23 W21	07 22.9		B	DKI	400	26	10	2
5598		BOUL	07 24 1435	S21 W22	07 22.9		B	DAI	250	6	5	1
5598	25384	MWIL	07 24 1515	S22 W24	07 22.8	6	(BG)					
5598		PALE	07 24 1720	S23 W22	07 23.0		B	DKO	420	13	8	3
5598		LEAR	07 25 0018	S22 W30	07 22.7		B	CKO	470	15	9	1
5598		SVTO	07 25 0601	S22 W32	07 22.8		BG	DKO	400	22	8	3
5598		RAMY	07 25 1220	S23 W36	07 22.7		BG	EKO	410	16	11	3
5598		BOUL	07 25 1325	S21 W36	07 22.8		B	DKI	260	9	6	1
5598	25384	MWIL	07 25 1500	S22 W38	07 22.7	5	(BG)					
5598		PALE	07 25 1800	S24 W38	07 22.8		B	DKO	390	17	9	3
5598		CULG	07 26 0349	S23 W45	07 22.7		BG	DKO	360	10	5	2
5598		LEAR	07 26 0644	S22 W46	07 22.7		BG	DKO	350	11	7	2
5598		SVTO	07 26 0805	S23 W46	07 22.8		B	DKO	350	12	8	3
5598		RAMY	07 26 1325	S24 W48	07 22.8		BG	DKO	310	10	10	2
5598		BOUL	07 26 1445	S20 W52	07 22.6		B	CKO	180	6	6	3
5598	25384	MWIL	07 26 1700	S21 W51	07 22.8	5	(BP)					
5598		PALE	07 26 1715	S23 W52	07 22.7		B	DKO	350	10	7	4
5598		HOLL	07 26 1722	S22 W53	07 22.6		B	CHO	290	9	6	2
5598		CULG	07 27 0340	S26 W57	07 22.7		B	DKI	280	12	9	3
5598		SVTO	07 27 0830	S22 W60	07 22.7		B	CKI	240	5	6	2
5598		HOLL	07 27 1430	S22 W64	07 22.7		B	CKO	250	2	7	3
5598		BOUL	07 27 1435	S25 W65	07 22.6		A	HK	210	3	3	3

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

JULY 1989

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
5598	25384	MWIL	07 27 1450	S22 W64	07 22.7	5	(AP)					
5598		RAMY	07 27 1829	S23 W66	07 22.7		A	HA	260	1	2	3
5598		PALE	07 27 1907	S23 W67	07 22.6		B	CKO	220	5	7	3
5598		CULG	07 28 0250	S24 W73	07 22.5		A	HS	180	1	5	3
5598		LEAR	07 28 0400	S21 W70	07 22.8		A	HA	180	1	2	3
5598		SVTO	07 28 1105	S19 W78	07 22.5		A	HA	50	1	2	2
5598		BOUL	07 28 1400	S18 W77	07 22.7		A	HS	120	1	3	3
5598	25384	MWIL	07 28 1440	S23 W78	07 22.6	5	AP					
5598		HOLL	07 28 1445	S23 W80	07 22.4		A	HS	120	1	2	3
5598		RAMY	07 28 1646	S20 W79	07 22.6		A	HA	120	1	2	1
5598		PALE	07 28 1927	S21 W79	07 22.7		A	HA	60	1	1	3
5606B		RAMY	07 21 1330	S15 E17	07 22.8		B	BXO	10	3	3	4
5606B	25400	MWIL	07 21 1515	S15 E16	07 22.8	4	(AF)					
5607		HOLL	07 21 1530	S14 E16	07 22.8		A	AX	20	9	2	3
5607		HOLL	07 22 1430	S15 E04	07 22.9		B	BXO	10	3	6	3
5607A		RAMY	07 25 1220	N30 W31	07 23.1		A	AX	10	2	2	3
5607A		CULG	07 27 0340	N27 W53	07 23.0		A	AX	10	2	3	3
5607A		SVTO	07 27 0830	N27 W55	07 23.1		BGD	CRI	10	3	3	2
5607A	25409	MWIL	07 27 1450	N27 W57	07 23.2	4	(AF)					
5613		HOLL	07 23 1430	N23 W07	07 23.1		A	AX		3	1	4
5613	25405	MWIL	07 23 1515	N23 W07	07 23.1	4	(AP)					
5613	25405	MWIL	07 24 1515	N23 W19	07 23.2	4	(AP)					
5613		BOUL	07 28 1400	N24 W70	07 23.2		B	BXO	10	2	3	3
5613	25413	MWIL	07 28 1440	N22 W74	07 22.9	4	(B)					
5613		HOLL	07 28 1445	N23 W73	07 23.0		B	BXO	10	2	4	3
5613		RAMY	07 28 1646	N25 W70	07 23.3		A	AX		1		1
5613		PALE	07 28 1927	N24 W75	07 23.0		B	BXO	10	3	3	3
5613		LEAR	07 29 0345	N21 W77	07 23.2		B	BXO	10	3	3	1
5613		RAMY	07 29 1330	N21 W82	07 23.3		B	CAO	60	3	4	2
5613		BOUL	07 29 1330	N23 W85	07 23.0		B	BXO	10	3	2	3
5613	25413	MWIL	07 29 1430	N22 W82	07 23.3	4	(AF)					
5613		PALE	07 29 1735	N23 W82	07 23.4		A	AX	10	1	1	3
5613		HOLL	07 29 2030	N23 W86	07 23.2		A	AX	20	1	1	2
5613A		PALE	07 21 2345	N19 E18	07 23.4		A	AX		1		1
5613A		SVTO	07 22 0731	N18 E14	07 23.4		A	HR	10	2	1	2
5613A		RAMY	07 22 1255	N18 E11	07 23.4		B	BXO	10	2	1	2
5613A	25401	MWIL	07 22 1515	N16 E12	07 23.5	4	(BF)					
5613B	25397	MWIL	07 20 1515	S15 E44	07 24.0	4	(BP)					
5613B		PALE	07 20 1840	S14 E42	07 23.9		A	AX		1		2
5613B		BOUL	07 23 1440	S13 E05	07 24.0		A	AX		1		2
5613B	25406	MWIL	07 23 1515	S14 E04	07 23.9	5	(AP)					
5613B		CULG	07 26 0349	S13 W31	07 23.8		A	AX	10	1	1	2
5613B		RAMY	07 26 1325	S14 W36	07 23.8		A	AX	10	2	1	2
5613B	25407	MWIL	07 26 1700	S12 W37	07 23.9	4	(AP)					
5599		RAMY	07 17 1000	N29 E88	07 24.3		A	HA	80	1	2	4
5599	25387	MWIL	07 17 1515	N26 E86	07 24.3	4	AP					
5599		HOLL	07 17 1755	N26 E82	07 24.1		A	HK	90	1	3	2
5599		PALE	07 17 1905	N28 E83	07 24.3		A	HA	120	1	2	3
5599		LEAR	07 18 0055	N26 E76	07 23.9		A	HS	90	1	2	3
5599		SVTO	07 18 0804	N26 E76	07 24.2		A	HS	120	1	2	2
5599		RAMY	07 18 1123	N26 E72	07 24.1		A	HA	120	1	2	3
5599		HOLL	07 18 1300	N27 E75	07 24.4		A	HS	90	1	2	3
5599		BOUL	07 18 1308	N26 E70	07 24.0		A	HS	80	1	2	2
5599	25387	MWIL	07 18 1515	N26 E71	07 24.1	6	(AP)					
5599		PALE	07 18 1858	N28 E68	07 24.1		B	CAO	220	3	12	2
5599		CULG	07 19 0145	N29 E68	07 24.4		A	HS	160	1	2	3
5599		SVTO	07 19 0818	N27 E62	07 24.2		A	HS	160	1	3	3
5599		RAMY	07 19 0845	N27 E60	07 24.0		A	HS	160	1	3	4
5599		BOUL	07 19 1355	N27 E61	07 24.3		A	HS	200	1	2	3
5599	25387	MWIL	07 19 1500	N27 E59	07 24.2	5	(AP)					
5599		HOLL	07 19 1500	N28 E60	07 24.3		B	CSO	160	2	5	3
5599		PALE	07 19 1745	N29 E59	07 24.4		B	CSO	190	3	4	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5599		LEAR	07	20	0035	N28	E54	07	24.2		A	HS	140	1	2	4
5599		CULG	07	20	0330	N28	E53	07	24.3		A	HS	140	1	2	3
5599		SVTO	07	20	0555	N28	E54	07	24.5		A	HA	140	2	4	4
5599		BOUL	07	20	1455	N27	E47	07	24.3		A	HS	150	1	3	3
5599	25387	MWIL	07	20	1515	N27	E47	07	24.3	6	(BG)					
5599		HOLL	07	20	1545	N27	E46	07	24.2		A	HH	150	1	3	3
5599		PALE	07	20	1840	N29	E46	07	24.4		A	HS	130	1	3	2
5599		LEAR	07	21	0045	N29	E43	07	24.4		A	HS	140	1	3	3
5599		CULG	07	21	0330	N28	E40	07	24.3		A	HS	140	1	3	3
5599		RAMY	07	21	1330	N27	E33	07	24.1		A	HS	190	2	3	4
5599		BOUL	07	21	1436	N27	E34	07	24.2		A	HS	130	1	3	3
5599	25387	MWIL	07	21	1515	N27	E34	07	24.3	5	(AP)					
5599		HOLL	07	21	1530	N27	E33	07	24.2		A	HH	200	1	3	3
5599		PALE	07	21	2345	N29	E29	07	24.3		A	HS	180	1	3	1
5599		LEAR	07	22	0013	N28	E29	07	24.3		A	HA	180	1	3	3
5599		SVTO	07	22	0731	N27	E25	07	24.3		A	HS	120	1	2	2
5599		RAMY	07	22	1255	N28	E21	07	24.2		A	HS	130	1	2	2
5599		BOUL	07	22	1420	N27	E22	07	24.3		A	HS	90	1	2	3
5599		HOLL	07	22	1430	N28	E22	07	24.3		A	HH	170	1	3	3
5599	25387	MWIL	07	22	1515	N27	E21	07	24.3	5	(AP)					
5599		LEAR	07	23	0016	N29	E17	07	24.3		A	HS	170	1	4	4
5599		SVTO	07	23	0610	N27	E12	07	24.2		A	HS	220	1	2	3
5599		RAMY	07	23	1247	N27	E09	07	24.2		A	HS	120	1	2	1
5599		HOLL	07	23	1430	N28	E09	07	24.3		A	HS	150	1	2	4
5599		BOUL	07	23	1440	N26	E10	07	24.4		A	HS	130	1	2	2
5599	25387	MWIL	07	23	1515	N27	E08	07	24.2	6	(AP)					
5599		LEAR	07	24	0130	N28	E03	07	24.3		A	HH	110	1	3	2
5599		SVTO	07	24	0759	N27	W01	07	24.2		A	HS	140	1	3	2
5599		RAMY	07	24	1321	N27	W03	07	24.3		A	HS	130	1	2	2
5599		BOUL	07	24	1435	N26	W04	07	24.3		A	HS	110	2	2	1
5599	25387	MWIL	07	24	1515	N26	W04	07	24.3	6	(AP)					
5599		PALE	07	24	1720	N27	W06	07	24.2		A	HS	150	2	2	3
5599		LEAR	07	25	0018	N27	W09	07	24.3		A	HH	170	1	3	1
5599		SVTO	07	25	0601	N27	W12	07	24.3		A	HS	220	1	3	3
5599		RAMY	07	25	1220	N27	W16	07	24.3		A	HS	220	1	2	3
5599		BOUL	07	25	1325	N27	W15	07	24.4		A	HA	90	1	2	1
5599	25387	MWIL	07	25	1500	N26	W16	07	24.4	5	(AP)					
5599		PALE	07	25	1800	N26	W15	07	24.6		B	CSO	170	4	7	3
5599		CULG	07	26	0349	N26	W25	07	24.2		A	HS	170	2	3	2
5599		LEAR	07	26	0644	N26	W23	07	24.5		B	CAO	190	4	8	2
5599		SVTO	07	26	0805	N27	W26	07	24.3		A	HS	120	1	2	3
5599		RAMY	07	26	1325	N26	W29	07	24.3		A	HS	120	1	2	2
5599		BOUL	07	26	1445	N28	W28	07	24.4		A	HA	70	1	2	3
5599	25387	MWIL	07	26	1700	N26	W30	07	24.4	5	(AP)					
5599		PALE	07	26	1715	N26	W28	07	24.5		B	CSO	130	2	7	4
5599		HOLL	07	26	1722	N27	W28	07	24.5		B	CSO	140	2	7	2
5599		CULG	07	27	0340	N27	W38	07	24.2		A	HS	90	1	2	3
5599		SVTO	07	27	0830	N26	W38	07	24.4		A	HS	130	1	2	2
5599		HOLL	07	27	1430	N26	W43	07	24.3		A	HH	140	2	3	3
5599		BOUL	07	27	1435	N27	W42	07	24.3		A	HA	110	2	3	3
5599	25387	MWIL	07	27	1450	N26	W41	07	24.4	5	(AP)					
5599		RAMY	07	27	1829	N26	W43	07	24.4		A	HS	110	1	2	3
5599		PALE	07	27	1907	N26	W46	07	24.2		B	CSO	110	3	3	3
5599		CULG	07	28	0250	N26	W49	07	24.3		A	HA	140	2	3	3
5599		LEAR	07	28	0400	N27	W49	07	24.3		A	HS	110	1	2	3
5599		SVTO	07	28	1105	N30	W52	07	24.4		A	HA	100	1	3	2
5599		BOUL	07	28	1400	N24	W54	07	24.4		A	HA	90	2	3	3
5599	25387	MWIL	07	28	1440	N27	W54	07	24.4	5	(AP)					
5599		HOLL	07	28	1445	N26	W55	07	24.3		A	HS	100	1	2	3
5599		RAMY	07	28	1646	N28	W54	07	24.5		A	HS	140	1	2	1
5599		PALE	07	28	1927	N27	W58	07	24.3		B	CSO	100	2	3	3
5599		CULG	07	29	0250	N26	W63	07	24.2		A	HS	100	1	3	2
5599		LEAR	07	29	0345	N27	W60	07	24.5		A	HS	80	1	2	1
5599		SVTO	07	29	1008	N27	W65	07	24.3		A	HS	90	1	2	3
5599		RAMY	07	29	1330	N26	W68	07	24.3		A	HS	100	1	2	2
5599		BOUL	07	29	1330	N27	W65	07	24.5		A	HA	70	2	2	3
5599	25387	MWIL	07	29	1430	N27	W67	07	24.4	5	(AP)					
5599		PALE	07	29	1735	N27	W68	07	24.4		A	HS	70	1	2	3
5599		HOLL	07	29	2030	N27	W70	07	24.4		A	HH	70	1	3	2

SUNSPOT GROUPS
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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
5599		LEAR	07 30 0005	N27 W73	07 24.3		A	HS	60	1	1	3
5599		SVTO	07 30 0810	N27 W77	07 24.3		A	HS	90	1	2	2
5599		RAMY	07 30 1350	N26 W79	07 24.4		A	HS	80	1	2	2
5599	25387	MWIL	07 30 1440	N27 W78	07 24.5	5	(AP)					
5599		HOLL	07 30 1825	N27 W83	07 24.3		A	HH	60	1	5	3
5599		PALE	07 30 1905	N27 W78	07 24.7		A	HS	120	1	2	3
5599		CULG	07 31 0310	N25 W88	07 24.3		A	HS	20	1	2	2
5600		RAMY	07 18 1123	S20 E77	07 24.4		A	AX	10	4	1	3
5600		HOLL	07 18 1300	S20 E75	07 24.3		B	BXO	10	2	5	3
5600	25388	MWIL	07 18 1515	S21 E73	07 24.2	4	(AP)					
5600		CULG	07 19 0145	S19 E74	07 24.7		B	BXO		2	7	3
5600		SVTO	07 19 0818	S20 E64	07 24.2		B	CRO	20	2	4	3
5600		RAMY	07 19 0845	S20 E61	07 24.0		B	CRO	30	3	5	4
5600		BOUL	07 19 1355	S20 E63	07 24.4		B	BXO	20	2	3	3
5600	25388	MWIL	07 19 1500	S20 E61	07 24.3	5	(AP)					
5600		HOLL	07 19 1500	S21 E65	07 24.6		B	BXO	30	3	5	3
5600		PALE	07 19 1745	S18 E63	07 24.5		B	BXO	20	5	5	3
5600		LEAR	07 20 0035	S17 E57	07 24.3		B	CRO	40	4	6	4
5600		CULG	07 20 0330	S19 E53	07 24.2		B	BXO		3	4	3
5600		SVTO	07 20 0555	S17 E49	07 24.0		B	BXO	10	4	4	4
5600		BOUL	07 20 1455	S20 E48	07 24.3		B	BXO	30	2	4	3
5600	25388	MWIL	07 20 1515	S21 E48	07 24.3	5	(BP)					
5600		HOLL	07 20 1545	S18 E48	07 24.3		B	BXO	30	12	10	3
5600		PALE	07 20 1840	S20 E49	07 24.5		B	BXO	10	2	3	2
5600		LEAR	07 21 0045	S17 E38	07 23.9		B	CAO	30	3	4	3
5600		SVTO	07 21 0515	S17 E35	07 23.9		B	BXO	10	2	4	3
5600		RAMY	07 21 1330	S19 E37	07 24.4		B	CRO	20	6	4	4
5600		BOUL	07 21 1436	S18 E37	07 24.4		B	BXO	10	6	4	3
5600	25388	MWIL	07 21 1515	S21 E36	07 24.4	5	(BG)					
5600		HOLL	07 21 1530	S19 E35	07 24.3		B	BXO	30	11	5	3
5600		PALE	07 21 2345	S20 E31	07 24.4		B	BXO	10	5	6	1
5600		LEAR	07 22 0013	S18 E30	07 24.3		B	DAO	50	7	6	3
5600		SVTO	07 22 0731	S20 E26	07 24.3		B	DRO	30	7	5	2
5600		RAMY	07 22 1255	S20 E23	07 24.3		B	CAO	30	5	5	2
5600		BOUL	07 22 1420	S17 E23	07 24.3		B	CRO	10	8	5	3
5600		HOLL	07 22 1430	S20 E23	07 24.4		B	CAO	50	15	7	3
5600	25388	MWIL	07 22 1515	S20 E23	07 24.4	5	(BP)					
5600		LEAR	07 23 0016	S17 E18	07 24.4		B	DAO	70	11	6	4
5600		SVTO	07 23 0610	S20 E14	07 24.3		B	DRI	30	11	6	3
5600		RAMY	07 23 1247	S20 E09	07 24.2		B	CRO	40	8	6	1
5600		HOLL	07 23 1430	S21 E10	07 24.4		B	BXO	20	16	9	4
5600		BOUL	07 23 1440	S20 E10	07 24.4		B	CRO	10	8	6	2
5600	25388	MWIL	07 23 1515	S20 E10	07 24.4	5	(BG)					
5600		LEAR	07 24 0130	S18 E03	07 24.3		B	BXO	40	6	9	2
5600		SVTO	07 24 0759	S19 W02	07 24.2		B	CRO	10	3	4	2
5600		RAMY	07 24 1321	S18 W04	07 24.2		B	BXO	20	5	6	2
5600	25388	MWIL	07 24 1515	S19 W04	07 24.3	4	(B)					
5600		PALE	07 24 1720	S20 W05	07 24.3		B	BXO		2	4	3
5600		LEAR	07 25 0018	S19 W12	07 24.1		A	AX	10	1	1	1
5600		SVTO	07 25 0601	S19 W14	07 24.2		A	AX		1		3
5600		RAMY	07 25 1220	S21 W16	07 24.3		A	AX	10	1	1	3
5600		LEAR	07 26 0644	S12 W32	07 23.9		A	AX	10	2	2	2
5600		SVTO	07 26 0805	S13 W34	07 23.8		A	AX	10	1		3
5600		PALE	07 26 1715	S14 W39	07 23.8		A	AX	10	2	1	4
5600A	25398	MWIL	07 20 1515	N14 E48	07 24.3	4	(BF)					
5601		CULG	07 19 0145	N27 E85	07 25.7		B	BXO	100	2	3	3
5601		SVTO	07 19 0818	N24 E72	07 24.9		B	CRO	60	7	5	3
5601		RAMY	07 19 0845	N25 E70	07 24.8		B	CRO	90	11	9	4
5601		BOUL	07 19 1355	N24 E70	07 25.0		B	BXO	170	6	4	3
5601		HOLL	07 19 1500	N25 E70	07 25.0		B	BXO	60	6	5	3
5601	25389	MWIL	07 19 1500	N25 E70	07 25.0	5	(BP)					
5601		PALE	07 19 1745	N26 E70	07 25.2		B	BXO	30	9	11	3
5601		LEAR	07 20 0035	N27 E67	07 25.2		B	CAO	80	10	13	4
5601		CULG	07 20 0330	N25 E62	07 24.9		B	DRO	20	3	2	3
5601		SVTO	07 20 0555	N25 E64	07 25.2		B	CAO	60	13	8	4
5601		BOUL	07 20 1455	N24 E58	07 25.1		B	DAO	150	12	10	3

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

JULY 1989

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
5601	25389	MWIL	07 20 1515	N24 E56	07 25.0	5	(B)					
5601		HOLL	07 20 1545	N25 E57	07 25.1		B	CRO	60	14	9	3
5601		PALE	07 20 1840	N26 E58	07 25.3		B	DAO	100	7	9	2
5601		LEAR	07 21 0045	N26 E54	07 25.2		B	DAO	100	11	9	3
5601		CULG	07 21 0330	N26 E50	07 25.0		B	DAO	40	11	9	3
5601		SVTO	07 21 0515	N26 E51	07 25.2		B	DAO	100	16	10	3
5601		RAMY	07 21 1330	N25 E45	07 25.0		B	DAO	160	25	10	4
5601		BOUL	07 21 1436	N26 E42	07 24.9		B	DAO	100	17	9	3
5601	25389	MWIL	07 21 1515	N24 E45	07 25.1	5	(B)					
5601		HOLL	07 21 1530	N25 E45	07 25.1		B	DSO	120	29	10	3
5601		PALE	07 21 2345	N26 E39	07 25.0		B	DAO	120	10	9	1
5601		LEAR	07 22 0013	N26 E40	07 25.1		B	DAO	200	19	9	3
5601		RAMY	07 22 1255	N25 E33	07 25.1		B	DAO	80	11	10	2
5601		BOUL	07 22 1420	N26 E32	07 25.1		B	ESI	70	15	12	3
5601		HOLL	07 22 1430	N25 E32	07 25.1		B	EAO	120	29	11	3
5601	25389	MWIL	07 22 1515	N25 E32	07 25.1	5	(B)					
5601		LEAR	07 23 0016	N27 E27	07 25.1		B	DAO	160	11	10	4
5601		SVTO	07 23 0610	N26 E24	07 25.1		B	DSO	80	17	10	3
5601		RAMY	07 23 1247	N24 E20	07 25.1		B	DAO	50	6	9	1
5601		HOLL	07 23 1430	N26 E20	07 25.1		B	DAO	60	22	10	4
5601		BOUL	07 23 1440	N24 E20	07 25.1		B	CAO	30	16	10	2
5601	25389	MWIL	07 23 1515	N25 E19	07 25.1	5	(B)					
5601		LEAR	07 24 0130	N28 E15	07 25.2		B	BXO	70	19	10	2
5601		SVTO	07 24 0759	N26 E09	07 25.0		B	DAO	50	18	9	2
5601		RAMY	07 24 1321	N25 E06	07 25.0		B	EAO	90	22	11	2
5601		BOUL	07 24 1435	N25 E06	07 25.1		B	BXO	20	7	9	1
5601	25389	MWIL	07 24 1515	N25 E06	07 25.1	5	(B)					
5601		PALE	07 24 1720	N25 E08	07 25.3		B	BXO	10	8	3	3
5601		LEAR	07 25 0018	N26 E00	07 25.0		B	BXO	70	11	11	1
5601		SVTO	07 25 0601	N25 W03	07 25.0		B	ERO	20	10	11	3
5601		RAMY	07 25 1220	N26 W06	07 25.0		B	DRO	50	10	10	3
5601		BOUL	07 25 1325	N26 W06	07 25.1		B	DSO	20	2	7	1
5601	25389	MWIL	07 25 1500	N25 W07	07 25.1	5	(BP)					
5601		PALE	07 25 1800	N28 W05	07 25.3		B	BXO		6	3	3
5601		CULG	07 26 0349	N26 W20	07 24.6		A	AX	10	2	2	2
5601		SVTO	07 26 0805	N28 W16	07 25.1		B	BXO	10	3	9	3
5601		RAMY	07 26 1325	N26 W19	07 25.1		B	BXO	10	4	9	2
5601	25389	MWIL	07 26 1700	N27 W19	07 25.2	3	(BP)					
5601		PALE	07 26 1715	N26 W18	07 25.3		A	AX		1		4
5611		CULG	07 26 0349	S39 W08	07 25.5		B	CAO	30	4	4	2
5611		LEAR	07 26 0644	S37 W10	07 25.5		B	DAO	60	6	5	2
5611		SVTO	07 26 0805	S38 W12	07 25.4		B	CRO	30	5	4	3
5611		RAMY	07 26 1325	S39 W14	07 25.4		B	DAO	70	3	5	2
5611		BOUL	07 26 1445	S37 W14	07 25.5		B	DAO	50	3	4	3
5611	25408	MWIL	07 26 1700	S38 W16	07 25.4	5	(B)					
5611		PALE	07 26 1715	S39 W16	07 25.4		B	DAO	60	5	5	4
5611		HOLL	07 26 1722	S38 W16	07 25.4		B	CSO	40	5	6	2
5611		CULG	07 27 0340	S39 W22	07 25.4		B	CSO	60	5	4	3
5611		SVTO	07 27 0830	S38 W25	07 25.3		B	CAO	60	5	6	2
5611		HOLL	07 27 1430	S37 W29	07 25.3		B	CAO	50	5	7	3
5611		BOUL	07 27 1435	S35 W27	07 25.4		B	CAO	40	2	4	3
5611	25408	MWIL	07 27 1450	S38 W30	07 25.2	4	(B)					
5611		RAMY	07 27 1829	S38 W30	07 25.3		B	CSO	40	3	6	3
5611		PALE	07 27 1907	S38 W31	07 25.3		B	CAO	30	2	6	3
5611		CULG	07 28 0250	S39 W38	07 25.0		A	HS	30	1	2	3
5611		LEAR	07 28 0400	S36 W35	07 25.3		B	CSO	40	3	8	3
5611		SVTO	07 28 1105	S35 W46	07 24.8		A	HR	20	1	1	2
5611		BOUL	07 28 1400	S33 W42	07 25.2		A	AX	10	2	1	3
5611	25408	MWIL	07 28 1440	S37 W44	07 25.1	4	(AP)					
5611		HOLL	07 28 1445	S36 W46	07 24.9		A	HS	40	1	1	3
5611		RAMY	07 28 1646	S36 W49	07 24.8		A	HA	20	2	2	1
5611		PALE	07 28 1927	S37 W50	07 24.8		B	BXO	20	4	6	3
5611		CULG	07 29 0250	S39 W52	07 24.9		A	AX	10	1	1	2
5611		LEAR	07 29 0345	S36 W50	07 25.1		A	AX	10	1	1	1
5611		SVTO	07 29 1008	S37 W55	07 25.0		A	AX	10	3	2	3
5611		BOUL	07 29 1330	S36 W57	07 25.0		A	AX		1		3
5611	25408	MWIL	07 29 1430	S37 W59	07 24.8	4	(AP)					
5611		PALE	07 29 1735	S36 W59	07 25.0		A	AX	10	1	1	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

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
5611		HOLL	07 29 2030	S37 W60	07 25.0		A	AX	20	1		2
5609		RAMY	07 22 1255	S17 E47	07 26.1		A	AX		2		2
5609		BOUL	07 22 1420	S16 E45	07 26.0		A	AX		1		3
5609		HOLL	07 22 1430	S16 E46	07 26.1		A	AX		1		3
5609	25402	MWIL	07 22 1515	S17 E46	07 26.1	4	(AF)					
5609		LEAR	07 23 0016	S14 E40	07 26.0		B	BXO	10	2	2	4
5609		HOLL	07 23 1430	S18 E33	07 26.1		B	BXO		3	6	4
5609		BOUL	07 23 1440	S20 E35	07 26.3		A	AX		1		2
5609		RAMY	07 24 1321	S22 E20	07 26.1		A	AX		1		2
5609A		RAMY	07 22 1255	N34 E49	07 26.4		A	AX		1		2
5609A		HOLL	07 22 1430	N34 E50	07 26.6		A	AX		1		3
5609B		HOLL	07 28 1445	N23 W24	07 26.8		B	BXO	10	2	3	3
5616	25410	MWIL	07 27 1450	S20 E04	07 27.9	4	(B)					
5616		BOUL	07 28 1400	S16 W10	07 27.8		B	BXO	10	4	4	3
5616	25410	MWIL	07 28 1440	S19 W10	07 27.8	4	(B)					
5616		RAMY	07 28 1646	S19 W12	07 27.8		B	BXO	20	5	4	1
5616		PALE	07 28 1927	S19 W14	07 27.7		B	BXO	10	6	5	3
5616		CULG	07 29 0250	S19 W16	07 27.9		B	BXO	10	5	5	2
5616		LEAR	07 29 0345	S19 W18	07 27.8		B	BXO	10	6	4	1
5616		RAMY	07 29 1330	S20 W21	07 27.9		B	BXO	10	4	5	2
5616		BOUL	07 29 1330	S21 W19	07 28.1		B	CAO	30	3	9	3
5616		PALE	07 29 1735	S19 W22	07 28.0		B	BXO	10	3	3	3
5616		HOLL	07 29 2030	S18 W24	07 28.0		B	BXO	20	3	4	2
5616		LEAR	07 30 0005	S18 W26	07 28.0		B	BXO	20	3	2	3
5616		SVTO	07 30 0810	S20 W31	07 28.0		A	AX		1		2
5608		RAMY	07 22 1255	S20 E79	07 28.6		A	HK	180	1	3	2
5608		BOUL	07 22 1420	S19 E78	07 28.5		B	DSI	120	4	5	3
5608		HOLL	07 22 1430	S18 E75	07 28.3		B	DKI	120	5	3	3
5608	25403	MWIL	07 22 1515	S19 E76	07 28.4	3	AP					
5608		LEAR	07 23 0016	S18 E70	07 28.3		B	DAO	180	11	7	4
5608		SVTO	07 23 0610	S18 E68	07 28.4		B	DAO	130	11	4	3
5608		RAMY	07 23 1247	S20 E65	07 28.5		B	DAI	200	8	5	1
5608		HOLL	07 23 1430	S19 E63	07 28.4		B	DAI	120	13	6	4
5608		BOUL	07 23 1440	S20 E63	07 28.4		B	DAO	90	6	6	2
5608	25403	MWIL	07 23 1515	S19 E64	07 28.5	4	(BF)					
5608		LEAR	07 24 0130	S18 E55	07 28.2		B	CSO	150	13	4	2
5608		SVTO	07 24 0759	S18 E53	07 28.4		B	DSO	90	9	6	2
5608		RAMY	07 24 1321	S19 E53	07 28.6		B	CAO	130	10	5	2
5608		BOUL	07 24 1435	S18 E48	07 28.3		B	CAI	60	7	5	1
5608	25403	MWIL	07 24 1515	S19 E51	07 28.5	5	(B)					
5608		PALE	07 24 1720	S18 E52	07 28.7		B	CAO	90	7	5	3
5608		LEAR	07 25 0018	S18 E45	07 28.4		B	CSO	110	10	6	1
5608		SVTO	07 25 0601	S18 E42	07 28.4		B	DSO	60	13	9	3
5608		RAMY	07 25 1220	S18 E39	07 28.5		B	DAO	100	11	7	3
5608		BOUL	07 25 1325	S18 E39	07 28.5		B	CAI	60	4	6	1
5608	25403	MWIL	07 25 1500	S19 E38	07 28.5	5	(B)					
5608		PALE	07 25 1800	S19 E38	07 28.6		B	CSO	60	5	8	3
5608		CULG	07 26 0349	S19 E33	07 28.7		B	DSO	50	9	7	2
5608		LEAR	07 26 0644	S18 E30	07 28.6		B	DAO	90	6	4	2
5608		SVTO	07 26 0805	S19 E28	07 28.5		B	DSO	50	8	6	3
5608		RAMY	07 26 1325	S20 E26	07 28.5		B	DAO	70	8	7	2
5608		BOUL	07 26 1445	S18 E25	07 28.5		B	DAO	40	2	3	3
5608	25403	MWIL	07 26 1700	S19 E24	07 28.5	5	(BF)					
5608		PALE	07 26 1715	S20 E24	07 28.5		B	CAO	40	7	7	4
5608		HOLL	07 26 1722	S19 E23	07 28.5		B	CSO	40	6	6	2
5608		CULG	07 27 0340	S17 E19	07 28.6		B	DSI	30	17	7	3
5608		SVTO	07 27 0830	S20 E13	07 28.3		B	CRI	50	16	13	2
5608		HOLL	07 27 1430	S20 E09	07 28.3		B	CAO	80	34	13	3
5608		BOUL	07 27 1435	S18 E09	07 28.3		B	EAI	80	12	12	3
5608	25403	MWIL	07 27 1450	S19 E12	07 28.5	4	(D)					
5608		RAMY	07 27 1829	S19 E07	07 28.3		B	EAO	30	21	14	3
5608		PALE	07 27 1907	S20 E06	07 28.2		B	BXO	40	25	14	3
5608		CULG	07 28 0250	S19 E04	07 28.4		B	DSO	30	11	10	3
5608		LEAR	07 28 0400	S19 E02	07 28.3		B	EAO	60	27	14	3

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JULY 1989

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
5608		SVTO	07 28 1105	S19 W05	07 28.1		B	EAO	80	29	14	2
5608		BOUL	07 28 1400	S16 W01	07 28.5		B	DSO	40	7	4	3
5608	25403	MWIL	07 28 1440	S18 W01	07 28.5	5	(D)					
5608		HOLL	07 28 1445	S19 W05	07 28.2		B	ESI	90	20	13	3
5608		RAMY	07 28 1646	S19 W08	07 28.1		B	DAO	180	22	7	1
5608		PALE	07 28 1927	S18 W05	07 28.4		B	CAI	80	24	6	3
5608		CULG	07 29 0250	S18 W09	07 28.4		B	DAO	60	13	6	2
5608		LEAR	07 29 0345	S18 W10	07 28.4		B	DAO	90	16	6	1
5608		SVTO	07 29 1008	S19 W13	07 28.4		B	DAO	60	9	6	3
5608		BOUL	07 29 1330	S17 W14	07 28.5		B	CAO	20	12	8	3
5608	25403	MWIL	07 29 1430	S19 W17	07 28.3	5	(BG)					
5608		PALE	07 29 1735	S19 W17	07 28.4		B	CSO	80	6	4	3
5608		HOLL	07 29 2030	S18 W20	07 28.3		B	CSO	60	15	5	2
5608		LEAR	07 30 0005	S18 W21	07 28.4		B	CAO	50	6	4	3
5608		SVTO	07 30 0810	S19 W25	07 28.4		B	DAO	60	10	6	2
5608		RAMY	07 30 1350	S19 W28	07 28.4		B	CAO	70	4	4	2
5608	25403	MWIL	07 30 1440	S19 W29	07 28.4	4	(B)					
5608		HOLL	07 30 1825	S18 W32	07 28.3		B	CSO	60	7	5	3
5608		PALE	07 30 1905	S18 W30	07 28.5		B	CSO	50	5	5	3
5608		CULG	07 31 0310	S22 W35	07 28.4		A	HA	20	3	2	2
5608		SVTO	07 31 0744	S18 W37	07 28.5		A	HS	40	3	2	2
5608		RAMY	07 31 1250	S19 W40	07 28.5		A	HA	50	4	2	3
5608		BOUL	07 31 1324	S17 W40	07 28.5		B	CSO	40	3	2	1
5608	25403	MWIL	07 31 1500	S19 W42	07 28.4	4	(B)					
5608		PALE	07 31 1755	S19 W43	07 28.5		B	DAO	60	3	3	3
5608		HOLL	07 31 2030	S18 W45	07 28.4		B	BXO	50	10	4	2
5608		LEAR	08 01 0245	S18 W48	07 28.5		B	CAO	30	6	3	3
5608		CULG	08 01 0310	S21 W49	07 28.5		B	DSO	50	2	3	3
5608		RAMY	08 01 1315	S20 W53	07 28.6		A	AX	20	5	2	4
5608		BOUL	08 01 1450	S18 W55	07 28.5		B	BXO	10	2	2	3
5608	25403	MWIL	08 01 1530	S18 W55	07 28.5	5	(B)					
5608		PALE	08 01 1800	S19 W56	07 28.6		B	CAO	30	5	3	3
5608		HOLL	08 01 1835	S19 W56	07 28.6		B	CAO	30	5	3	2
5608		CULG	08 02 0325	S21 W62	07 28.5		B	DAO	30	3	3	3
5608		RAMY	08 02 1234	S18 W66	07 28.6		B	BXO	30	5	4	2
5608	25403	MWIL	08 02 1515	S18 W68	07 28.5	4	(B)					
5608		HOLL	08 02 1535	S17 W67	07 28.6		A	AX	10	1		3
5608		BOUL	08 02 1715	S17 W66	07 28.8		A	AX	10	1	1	3
5608		PALE	08 02 1800	S20 W70	07 28.5		B	BXO	10	4	3	3
5608		LEAR	08 03 0103	S18 W72	07 28.7		B	BXO	60	3	3	4
5618		BOUL	07 29 1330	S10 W07	07 29.0		B	BXO	10	8	3	3
5618		RAMY	07 29 1330	S12 W07	07 29.0		B	CRO	20	5	4	2
5618	25416	MWIL	07 29 1430	S11 W08	07 29.0	5	(B)					
5618		PALE	07 29 1735	S11 W09	07 29.0		B	CSO	30	7	5	3
5618		HOLL	07 29 2030	S11 W12	07 28.9		B	BXO	30	10	5	2
5618		LEAR	07 30 0005	S11 W13	07 29.0		B	CRO	40	6	6	3
5618		SVTO	07 30 0810	S11 W18	07 29.0		B	DSO	80	10	6	2
5618		RAMY	07 30 1350	S12 W22	07 28.9		B	DAO	120	3	7	2
5618	25416	MWIL	07 30 1440	S11 W22	07 28.9	4	(B)					
5618		HOLL	07 30 1825	S11 W25	07 28.9		B	DSO	60	6	7	3
5618		PALE	07 30 1905	S12 W23	07 29.1		B	DSO	90	3	8	3
5618		CULG	07 31 0310	S13 W30	07 28.9		B	DSO	50	2	8	2
5618		SVTO	07 31 0744	S10 W33	07 28.8		B	DSO	100	10	9	2
5618		RAMY	07 31 1250	S12 W35	07 28.9		B	DAO	60	6	9	3
5618		BOUL	07 31 1324	S11 W34	07 29.0		B	DAI	60	7	9	1
5618	25416	MWIL	07 31 1500	S11 W37	07 28.8	4	(B)					
5618		PALE	07 31 1755	S11 W37	07 29.0		B	DAO	60	9	9	3
5618		HOLL	07 31 2030	S11 W40	07 28.8		B	BXO	40	8	10	2
5618		LEAR	08 01 0245	S10 W42	07 29.0		B	CAO	30	5	10	3
5618		CULG	08 01 0310	S13 W44	07 28.9		B	DSO	40	3	9	3
5618		RAMY	08 01 1315	S12 W49	07 29.0		B	CAO	60	7	13	4
5618	25416	MWIL	08 01 1530	S11 W51	07 28.9	5	(BG)					
5618		PALE	08 01 1800	S12 W51	07 29.0		B	CSO	40	5	11	3
5618		HOLL	08 01 1835	S11 W52	07 29.0		B	CSO	30	4	12	2
5618		CULG	08 02 0325	S13 W59	07 28.8		B	CSO	10	3	9	3
5618		RAMY	08 02 1234	S11 W63	07 28.9		B	BXO	40	6	10	2
5618	25416	MWIL	08 02 1515	S10 W67	07 28.7	4	(BP)					
5618		BOUL	08 02 1715	S09 W68	07 28.7		B	BXO	10	2	2	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JULY 1989

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
5618		PALE	08 02 1800	S12 W65	07 28.9		B	BXO	20	6	10	3
5618		LEAR	08 03 0103	S08 W72	07 28.7		A	AX	10	1	1	4
5618A		HOLL	07 27 1430	S12 E23	07 29.3		A	AX	10	2	2	3
5618A	25411	MWIL	07 27 1450	S12 E22	07 29.3	4	(AP)					
5618A		PALE	07 28 1927	S11 E08	07 29.4		B	BXO	10	6	4	3
5618A		SVTO	07 30 0810	S12 W13	07 29.4		B	BXO	10	2	1	2
5627	25430	MWIL	08 02 1515	S37 W48	07 29.9	4	(B)					
5627		HOLL	08 02 1535	S37 W49	07 29.8		B	BXO	40	8	10	3
5627		BOUL	08 02 1715	S37 W50	07 29.8		B	BXO	10	6	8	3
5627		PALE	08 02 1800	S38 W51	07 29.7		B	DAO	70	8	7	3
5627		LEAR	08 03 0103	S37 W54	07 29.8		B	DAO	120	5	8	4
5627		RAMY	08 03 1404	S37 W60	07 29.8		B	DAO	170	6	10	3
5627		BOUL	08 03 1410	S38 W63	07 29.6		B	BXO	10	2	10	3
5627	25430	MWIL	08 03 1500	S37 W61	07 29.8	5	(BP)					
5627		HOLL	08 03 1510	S37 W61	07 29.8		B	DSO	300	7	10	3
5627		PALE	08 03 1725	S40 W65	07 29.5		B	EKO	310	6	11	3
5627		LEAR	08 04 0045	S37 W66	07 29.8		B	DAO	270	6	10	3
5627		CULG	08 04 0308	S38 W70	07 29.6		B	EAO	150	7	16	3
5627	25430	MWIL	08 04 1515	S38 W74	07 29.7	5	(AF)					
5627		BOUL	08 04 1515	S41 W72	07 29.8		A	HA	180	3	3	1
5627		HOLL	08 04 1815	S39 W81	07 29.3		A	HK	150	1	4	3
5627		PALE	08 04 1905	S41 W72	07 30.0		A	HK	120	2	5	2
5627		LEAR	08 05 0025	S38 W72	07 30.3		A	HH	120	1	4	3
5627		CULG	08 05 0310	S42 W85	07 29.2		B	DAO	40	2	5	3
5617		LEAR	07 29 0345	N18 E12	07 30.1		B	BXO	10	3	3	1
5617		BOUL	07 29 1330	N18 E05	07 29.9		B	CRO	30	12	6	3
5617		RAMY	07 29 1330	N19 E05	07 29.9		B	DAO	90	9	4	2
5617	25417	MWIL	07 29 1430	N18 E04	07 29.9	5	(B)					
5617		PALE	07 29 1735	N19 E03	07 30.0		B	DKI	130	13	7	3
5617		HOLL	07 29 2030	N18 E02	07 30.0		B	CSO	80	27	7	2
5617		LEAR	07 30 0005	N18 E00	07 30.0		B	DAO	80	17	8	3
5617		RAMY	07 30 1350	N19 W08	07 30.0		B	DAO	220	22	9	2
5617	25417	MWIL	07 30 1440	N19 W08	07 30.0	5	(B)					
5617		HOLL	07 30 1825	N19 W10	07 30.0		B	DSO	160	27	10	3
5617		PALE	07 30 1905	N19 W10	07 30.0		B	DHI	230	28	9	3
5617		CULG	07 31 0310	N19 W17	07 29.8		B	DAO	100	21	9	2
5617		SVTO	07 31 0744	N20 W18	07 29.9		B	DSO	120	24	10	2
5617		RAMY	07 31 1250	N19 W20	07 30.0		B	DAO	170	29	10	3
5617		BOUL	07 31 1324	N19 W20	07 30.0		B	DAI	160	14	9	1
5617	25417	MWIL	07 31 1500	N18 W23	07 29.9	5	(B)					
5617		PALE	07 31 1755	N19 W24	07 29.9		B	DAI	120	20	10	3
5617		HOLL	07 31 2030	N19 W25	07 29.9		B	EAO	210	30	11	2
5617		LEAR	08 01 0245	N19 W27	07 30.1		B	DAO	110	19	10	3
5617		CULG	08 01 0310	N18 W30	07 29.9		B	DAO	70	17	8	3
5617		RAMY	08 01 1315	N18 W34	07 30.1		B	CAI	130	32	10	4
5617		BOUL	08 01 1450	N19 W35	07 30.0		B	CAI	100	12	9	3
5617	25417	MWIL	08 01 1530	N18 W35	07 30.1	5	(B)					
5617		PALE	08 01 1800	N19 W36	07 30.1		B	DAO	110	25	10	3
5617		HOLL	08 01 1835	N18 W37	07 30.0		B	CAO	90	18	9	2
5617		CULG	08 02 0325	N17 W42	07 30.0		B	DAO	80	16	9	3
5617		RAMY	08 02 1234	N18 W46	07 30.1		B	DAO	80	11	6	2
5617	25417	MWIL	08 02 1515	N18 W47	07 30.1	5	(BF)					
5617		HOLL	08 02 1535	N19 W48	07 30.1		B	DSO	80	17	9	3
5617		BOUL	08 02 1715	N19 W46	07 30.3		B	DSO	110	7	9	3
5617		PALE	08 02 1800	N18 W50	07 30.0		B	DAO	90	12	8	3
5617		LEAR	08 03 0103	N18 W52	07 30.2		B	BXO	110	16	9	4
5617		RAMY	08 03 1404	N19 W60	07 30.1		B	BXO	20	11	7	3
5617		BOUL	08 03 1410	N17 W55	07 30.5		B	BXO	10	3	3	3
5617	25417	MWIL	08 03 1500	N18 W60	07 30.1	5	(BF)					
5617		HOLL	08 03 1510	N19 W61	07 30.1		B	CAO	80	10	9	3
5617		PALE	08 03 1725	N18 W61	07 30.2		B	BXO	30	9	9	3
5617		LEAR	08 04 0045	N19 W62	07 30.4		B	BXO	60	6	3	3
5617		CULG	08 04 0308	N19 W66	07 30.2		B	BXO	10	2	1	3
5617		BOUL	08 04 1515	N17 W68	07 30.6		B	BXO	20	2	1	1
5617	25417	MWIL	08 04 1515	N18 W70	07 30.4	5	(AF)					
5617		HOLL	08 04 1815	N18 W72	07 30.4		B	BXO	40	6	4	3

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

JULY 1989

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
5617		PALE	08 04 1905	N18 W75	07 30.2		B	BXO	10	2	2	2
5617A	25429	MWIL	08 02 1515	S14 W32	07 31.2	3	(BF)					
5617A		HOLL	08 02 1535	S13 W32	07 31.2		A	AX	10	2	3	3
5617A		PALE	08 02 1800	S15 W33	07 31.2		B	BXO		2	3	3

Stations reporting:

BOUL = Boulder
CULG = Culgoora
HOLL = Holloman
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito

SUDDEN IONOSPHERIC DISTURBANCES

JULY 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
01	0426	0432	0500	1-	1			1			0424	C1.6	5558
01	2026	2029	2044	1-	1					1	2021	C1.4	5555
02	0011	0021	0112	1-	5	1		1			0011	C4.0	5575
02	0624	0659	0727	1+	3		2				No flare		
02	1032	1036	1050	1-	3				1	1	1032	C2.2	5569
02	1057	1105	1135	1-	3	1	1		1	1	1053	C2.0	5575
02	1142	1146	1210	1-	3				1	1	1133	C1.9	5569
02	1415	1418	1445	1+	1					1	1416		5569
02	2054	2057	2115	1	1					1	No flare		
02	2324	2330	2356	1-	1			1			2320	C2.6	5575
03	0134	0143	0235	1-	1			1			0134	C6.8	5574
03	0914	0916	0926	1-	5					3	0915	C2.2	
03	0924	0938	0944	1	1		1				*		
03	1210	1217	1300	2+	1					1	No flare		
03	1308	1318	1346	1	3		2				No flare		
03	1459	1503	1535	1	5				1	2	1459		5569
04	0000	0004	0100	2	5	2		1		1	2359	M7.4	5575
04	0515	0538	0651D	2	5	2	1	1	1	1	0518	C7.3	
04	0651E	0700	0738	1-	1			1			0644E		5576
04	1443	1447	1500	1-	5	1	1		1	7	1444	C3.5	5575
04	1724	1726	1750	1	3					3	1723	C2.9	5575
04	1735	1737	1801	1+	1					1	1742		5576
04	1901	1905	1915	1-	1					1	1906		5576
04	1951	1953	2007	1-	3					4	1948	C3.8	
04	2251	2255	2310	1-	1			1			2248	C1.8	
04	2348	0002	0145	3	1			1			No flare		
05	0025	0042	0145	1-	1			1			0027	C2.1	5575
05	0316	0324	0400	1-	1			1			0314	C3.1	
05	0457	0504	0517D	1-	1			1			No flare		
05	0517	0527	0552	1-	1			1			0516	C1.9	5572
05	0753	0816	0933	2	5	4	4	1	1	3	0753	C9.6	5575
05	0830	0832	0837	1-	1		1				0815	C5.8	
05	0937	0940	1008	1-	5	1	2	1	1	2	0931	C3.8	5576
05	1228	1236	1302	1	5		2			2	1238	C3.4	5575
05	1246	1254	1350	1-	5	1	1		1	2	1238	C3.4	5575
05	1512	1523U	1523	1	5	1	1		1	3	1523	C2.7	5575
05	1558	1600	1616	1	3					2	1556E	C2.8	5572
05	1645	1653	1714	1-	5	2	1	1	1	5	1625	M1.1	5575
05	1646	1705	1730	1-	5			1		3	1625	M1.1	5575
05	1823	1825	1838	1-	3					3	1823	C2.7	
06	0255	0300	0400	2+	1					1	No flare		
06	0411	0418	0455	2	1					1	No flare		
06	1157	1203	1209	1-	5		1			1	No flare		
07	0048	0053	0155	1-	1			1			0048	C4.2	5572
07	0332	0335	0403D	1-	1			1			0332	C3.7	5572
07	0404E	0409	0440	1-	1			1			0404	C2.8	5572
07	0430	0434	0500	1	1					1	No flare		
07	0540	0607	0640	1-	1		1				No flare		
07	1007	1012	1029	1-	5	1	2	1	1	2	1007	C2.5	
07	1212	1218	1250	1-	3	1	1		1	1	1211	C2.0	
07	1215	1301	1324	1+	3		2				No flare		
07	1422	1438	1510	1+	3		2				No flare		
07	1700	1705	1733	1	3		2				No flare		
07	1814	1815	1830	1-	1					1	1812		5575
07	1934	1936	1946	1-	1					1	1936	C2.0	5575
08	0800	0816	0829	1	3		2				0807		5579
08	0829	0851	1009	2+	3		2				0827		5579
09	0113	0130	0304	3	5	2		1		2	0115	M5.1	5572
09	0444	0609	0640	1	3		2				No flare		

* = No flare patrol.

JULY 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
10	0010	0011	0024	1-	1					1	0009		5575
10	0921	0928U	1000	1	1		1				No flare		
10	0923	0944U	0951	1	1		1				No flare		
10	1004	1006	1022	1-	1					1	1010E	C1.8	
10	1120	1125	1132	1-	1		1				No flare		
10	1223	1234	1304	1	3		2				No flare		
10	1855	1855	1904	1-	1					1	1853E		5579
10	2012	2015	2025	1-	1					1	2012	C1.3	5576
11	1014	1022	1100	1	1		1				No flare		
11	1122	1146	1153	1	1		1				1140		5581
11	1506	1524	1539	1	1		1				No flare		
12	0022	0023	0044	1	1					1	0028	C1.3	5576
12	0357	0405	0436	1-	1			1			0357	C3.1	5579
12	1121	1229	1303	1	1		1				No flare		
12	1518	1531	1610	1	1		1				No flare		
13	0731	0738	0830	1	1		1				No flare		
13	1050	1102	1122	1-	5	3	3	1	1	4	1050	C3.4	
13	1230	1250	1324	1	1		1				No flare		
13	1410	1435U	1458	1	1		1				No flare		
13	1557	1600	1624	1+	1					1	1559E		5582
15	1222	1230U	1334	1	1		1				1223		5589
16	0655	0712	0751	1-	5			1		1	0712	C1.6	5597
16	0738	0740	0750	1-	1					1	*		
16	1358	1417	1440	1	5	1	2		1	7	1402	C3.1	5589
17	0550	0600	0631	2-	5	1	1	1	1	1	0549	C5.9	5586
17	0641	0650	0705	1	1					1	0625	C2.8	
17	2048	2049	0853	1-	3					2	2047		5596
18	0021	0030	0123	1-	1			1			0020	C3.1	
18	0629	0638	0726	1-	1			1			0627E	C2.2	5597
18	0808	0811	0822	1-	3		1			1	No flare		
18	0919	0924	0943	1-	1			1			0906	C1.4	5589
18	0947	0947	1008	1	1					1	No flare		
18	1110	1113	1125	1-	1		1				No flare		
19	0400	0406	0451	1	3	1		1			0402	C6.8	5601
19	0941	0952	1031	1-	5			1	1	1	0944	C3.6	
19	1409	1416	1450	1-	5	1			1	5	1408	C2.2	5597
19	1610	1613	1630U	1	1					1	1610	C2.0	
19	2124	2137	2212	1-	5	1		1		2	2128E	C6.6	5601
20	1105	1118	1118D	1	3		1		1	1	1106	M1.0	5601
20	1118	1137	1226	1	5	2	2	1	1	5	1106	M1.0	5601
20	1653	1657	1712	1	3					3	1642	C2.6	5601
20	2027	2034	2145	2+	5	2		1		6	2025E	M3.3	5597
21	0047	0049	0119	1-	1			1			0045	C1.3	5597
21	0522	0534	0544D	1-	5			1		2	0523	C3.3	
21	0543E	0551	0649	2	5	2		1	1	5	0544	M1.4	5597
21	0903	0908	0917	1-	1			1			No flare		
21	0957	1021	1050	1	3		1		1	1	0955	C2.9	
21	1249	1256	1320	1-	5		1		1	6	1247	C2.8	
21	1612	1627	1645	1-	5		1		1	3	1631	C3.4	
21	1654	1658	1707	1-	1					1	1651	C1.5	5597
21	2010	2015	2036	1-	5			1		3	2005	C3.8	5606
21	2305	2320	0028	1-	5	1		1			2300E	C4.8	5606
22	0137	0143	0215	1-	1			1			0137	C2.0	
22	0205	0214	0238	1-	1			1			0207		5606
22	0305	0320	0320D	1-	1			1			0312	C4.2	5606
22	0511	0539	0547D	1-	1			1			0529		5597

* = No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JULY 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
22	0547E	0613	0735	1-	5			1		2	0603	C3.1	5597
22	0719	0720	0728	1-	1					1	No flare		
22	0814	0814	0830	1-	1					1	No flare		
22	1038	1041	1105	1+	1					1	1040	C1.5	5596
22	1135	1136	1150	1-	1					1	No flare		
22	1247	1247	1253	1-	1					1	No flare		
22	1301	1303	1322	1	1					1	1302		5606
22	1320	1321	1339	1	1					1	1312	C1.5	5596
22	1809	1814	1849	1	1		1				No flare		
22	1844	1846	1900	1-	3					2	1841	C2.0	
22	2048	2102	2138	1-	1			1			2046	C2.4	5597
23	0618	0627	0651	1-	5		1	1		2	0615		5606
23	0647	0653	0735	1	5			1	1	2	0643	C4.5	5606
23	0924	0927	0952	1-	1			1			0919		5589
23	1022	1033	1057	1+	3		1			1	1032	C2.0	5606
23	1128	1141	1234	1	1		1				1141		5608
23	2132	2135	2200	1-	5			1		1	2127	C2.9	
24	0213	0217	0246	1-	1			1			0209	C2.7	
24	0342	0351	0427	1-	1			1			0347	C1.8	
24	0520	0547	0630	1-	5			1		2	No flare		
24	0625	0627	0637	1-	1					1	No flare		
24	1111	1116	1148	1	1		1				1113	C5.0	
24	1149	1155	1239	1-	5	1		1	1	1	1113	C5.0	
24	2203	2214	2244	1-	1			1			No flare		
25	0028	0039	0142	2-	5	2		1			0025	C6.7	
25	0202	0208	0253	1-	3	1		1			0203	C3.1	5603
25	0453	0501	0545	1-	5			1		1	0452	C3.4	
25	0623	0627	0714	1-	5		1	1		1	0613E	C2.1	5601
25	0838	0845	1027	3	5	3	3	1	1	5	0839	X2.6	5603
25	0949	0957	1010	1-	3				1	2	0947	C3.4	
25	1010	1011	1025	1-	1					1	No flare		
25	1230	1233	1250	1	1					1	1234	C1.6	
25	1332	1337	1337D	1	5		1		1	2	1330	C5.0	
25	1349	1351	1400	1-	1				1		1347	C2.4	
25	1507	1510	1530	1-	5		1		1	2	1503	C2.6	
25	1549	1556	1625	1-	5				1	2	1548	C3.4	5603
25	1703	1707	1736	1+	5					3	1705	C4.3	
25	2312	2322	0012	1-	1			1			2309	C1.6	
26	0035	0043	0123D	1-	1			1			0036	C2.9	
26	0123E	0128	0149D	1-	1			1			0122	C2.2	5597
26	0149E	0205	0245	1-	1			1			No flare		
26	0258	0318	0403	1-	1			1			0250	C3.3	5597
26	0457	0523	0654	2	5	1		1		2	0454	C7.8	
26	0847	0911	0914	1	1		1				No flare		
26	1144	1223U	1257	1	1		1				No flare		
26	1337	1344	1344D	1-	5	1	1		1	3	1335	C2.1	
26	1351	1358	1500	1+	5	1	2		1	3	1349	C4.8	
26	1502	1510	1541	1	1		1				No flare		
27	0244	0257	0340	1-	1			1			No flare		
27	0351	0403	0434	1-	1			1			No flare		
27	0635	0644	0709	1-	5			1		1	0635	C1.9	
27	0716	0720	0741	1-	5			1		1	No flare		
27	0821	0836	0919	1-	5	1	2	1	1	1	No flare		
27	1005	1056	1131	1	1		1				No flare		
27	1627	1645	1713	2+	3					3	1625	C5.3	
27	2215	2228	2301	1-	1			1			2213	C2.0	
28	0023	0032	0102	1-	1			1			0021	C1.8	
28	0354	0411	0445	1-	1			1			0356	C2.7	5608
28	0601	0605	0628	1	1		1				No flare		
28	1145	1202	1240	1-	3		1		1	1	No flare		
28	1426	1449U	1551	1	1		1				No flare		

* = No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES
JULY 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
29	0554	0616	0653D	1-	5			1	1	3	0611	C3.8	
29	0653E	0711	0813	1-	5			1	1	3	0709	C4.3	5613
29	0838	0842	0922	1-	5			1	1	2	*		
29	0945	0948	1006	1-	1			1			*		
29	1023	1031	1101	1-	5	1	2	1	1	1	1033	C3.0	5613
29	1120	1128U	1257	1	1		1				1101		
29	1503	1510	1553	1-	5	1	1	1	1	6	1500	C7.1	5613
30	0038	0051	0118	1-	1			1			0035		5617
30	0453	0501	0605	1	5			1		1	0451	C4.6	5619
30	1039	1046	1110	1-	3		1		1	1	1035		5612
30	2042	2051	2122	1-	3				1	1	2040	C3.0	5616
30	2350	0002	0046	1-	5			1		1	2350	C3.2	
31	0112	0133	0300	1	1			1			0106	C7.2	5617
31	0646	0722	0906	2+	5	4	1	1	1	2	0703	C8.7	5612
31	1756	1800	1810	1-	5		1		1	2	1752	C9.6	5623
31	2058	2100	2108	1-	3	1				3	2058E	M1.5	5612
31	2257	2324	2324D	1	5	1		1		1	2315	M1.0	5623

OBSERVATORIES REPORTING FOR JULY 1989

Amherst, New Hampshire, USA	SES	Kuhlungsborn, German Dem Rep	SEA, SPA
Darmstadt, German Fed Rep	SWF	Latrobe, Pennsylvania	SES
Edenvale, Rep of S. Africa	SES	Maui, Hawaii, USA	SWF
Farsta, Sweden	SES	Panska Ves, Czechoslovakia	SES, SEA, SWF
Gainesville, Florida, USA	SES	Paterson, New Jersey, USA	SES
Hiraiso, Japan	SWF	San Jose, California, USA	SES
Houston, Texas, USA	SES	Sofia, Bulgaria	SES
Hudson, Ohio, USA	SES	Somesworth, New Hampshire, USA	SES
Inubo, Japan	SPA	Tucson, Arizona, USA	SES
Johannesburg, Rep of S. Africa	SES	Upice, Czechoslovakia	SEA
Juliusruh, German Dem Rep	SWF	Valley Cottage, New York, USA	SES
Kandilli, Turkey	SEA	Vlasim, Czechoslovakia	SEA

SIDs BY NOAA/SESC REGIONS

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	25	26	27	28	29	30	31
Reg. No.																															
5555	1																														
5558	1																														
5569		3	1																												
5572					2		3		1																						
5574			1																												
5575		3		3	7		2			1																					
5576				3	1					1		1																			
5579								2		1		1																			
5581											1																				
5582													1																		
5586																	1														
5589															1	1		1					1								
5596																	1					2									
5597																1		1	1	1	3	3				2					
5601																			2	3					1						
5603																									3						
5606																					2	3	3								
5608																							1					1			
5612																														1	2
5613																													3		
5616																														1	
5617																														1	1
5619																														1	
5623																															2
Number of events with X-Ray flares	2	5	2	6	13		6		1	2		2	1			2	2	3	5	4	9	7	3	4	13	6	3	2	4	3	5
Number of events with no flare reported	2	2	1	1			5		1	4	2	2	3						3			1	5			3	1	4	5	3	
Events:			1			3											1													2	
Total:	2	8	6	10	14	3	12	2	2	8	3	4	5			1	3	3	6	5	4	10	15	6	7	14	10	8	5	7	5	5

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

JULY 1989

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1–3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1–3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1–3)	Spectral Type
01	0413	0516	WEIS										
	0529	1400	WEIS				0529.3	0529.4	2				IIIG
	1429	1858	WEIS				1518.2	1518.6	2				IIIG
			PALE				1944.0	1946.0	1				III
			SGMR				1944.0	1946.0	1				III
02	0412	1856	WEIS										
03			LEAR				0214.0	0215.0	3				III
			PALE				0214.0	0215.0	3				V
	0415	1211	WEIS				0549.9	0551.4	2				IIIG,U
			LEAR				0722.0	0726.0	1				III
			SVTO				0727.0	0727.0	1				III
			SVTO				0806.0	0807.0	1				III
			SVTO				0910.0	0910.0	2				III
			WEIS				0910.3	0910.6	2				IIIB,U
			SVTO				0934.0	0934.0	2				III
			WEIS				0934.2	0934.4	2				IIIB
			WEIS	0955.3	0955.4	1							Spike
			WEIS	1016.5	1016.6	2							Spikes
			WEIS	1140.2	1140.4	2							IIIG
	1220	1859	WEIS	1310.7	1311.8	2							IIIG
			WEIS				1411.8	1411.9	2				U
			WEIS	1550.3	1550.5	2							IIIG
			SGMR				1747.0	1748.0	1				III
			PALE				1811.0	1811.0	1				III
			SGMR				1811.0	1812.0	1				V
			WEIS				1811.1	1811.5	1				IIIG
			SGMR				1852.0	1852.0	1				III
			SGMR				1912.0	1913.0	2				V
			PALE				1913.0	1913.0	1				V
			SGMR				1942.0	1943.0	1				III
04			SGMR				1614.0	1614.0	1				III
	0413	1855	WEIS				1614.5	1614.7	1				IIIB,U
			SGMR				1651.0	1651.0	1				V
			WEIS				1651.0	1651.1	1				IIIB
05			LEAR				0246.0	0247.0	1				III
			SVTO				0601.0	0750.0	1				CONT
			SGMR				1209.0	1209.0	1				III
			SVTO				1209.0	1209.0	2				III
	0416	1857	WEIS				1209.2	1209.8	2				IIIG,DCIM
			WEIS				1332.1	1333.1	1				IIIG
			SVTO				1419.0	1427.0	1				III
			WEIS				1608.9	1609.2	2				IIIG
	1155	1800	BLEN	1645.7	1647.4	2							III,RS
			PALE				2047.0	2047.0	1				III
06			SVTO				0418.0	1530.0	1				CONT
	0552	1855	WEIS										
	0535	1633	BLEN				1146.3	1146.5	2				IIIG
07			SVTO				0628.0	0638.0	1				III
			SVTO				0707.0	1236.0	1				CONT
	0908	1800	BLEN										
	0417	1312	WEIS				1228.2	1228.6	1				IIIG
08			LEAR				0200.0	0204.0	1				III
	0536	1724	BLEN	0818.5	0820.8	2							DCIM,P
			SGMR				1221.0	1222.0	2				III
			SVTO				1221.0	1223.0	2				III
	0416	1648	WEIS				1221.7	1222.7	3				IIIG
			BLEN				1309.6	1309.7	3				IIIB
			WEIS				1309.6	1309.7	3				IIIG
			BLEN				1359.5	1359.9	1				III
			SVTO				1611.0	1612.0	2				III
	1802	1854	WEIS										

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

JULY 1989

Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
09		LEAR				0100.0	0100.0	1				III
		LEAR				0128.0	0151.0	2				II
		PALE				0129.0	0149.0	2				II
	0419	1855 WEIS				0903.8	0903.9	1				IIIB
		WEIS				1238.6	1239.0	1				IIIG
		WEIS				1320.9	1322.4	2				IIIGG,RS
		SGMR				1321.0	1322.0	2				III
		SVTO				1321.0	1322.0	2				III
		WEIS				1420.6	1423.5	2				DCIM,IIIG
		SVTO				1421.0	1421.0	1				III
		SGMR				1834.0	1836.0	1				III
		WEIS				1834.6	1835.7	2				IIIG
		PALE				2052.0	2100.0	2				V
		SGMR				2052.0	2100.0	3				V
10		PALE				0008.0	0011.0	2				V
		PALE				0112.0	0112.0	1				III
		LEAR				0207.0	0208.0	1				III
		PALE				0207.0	0207.0	1				III
		LEAR				0254.0	0256.0	2				III
		PALE				0255.0	0255.0	1				III
		LEAR				0509.0	0509.0	2				III
		LEAR				0716.0	0716.0	1				III
		SVTO				0716.0	0716.0	1				III
	0418	1853 WEIS				0716.1	0716.3	1				IIIG
		SVTO				0837.0	0837.0	2				III
		WEIS				0837.1	0837.3	2				IIIG
		WEIS				0922.4	0922.5	2				IIIB
		WEIS				1058.4	1058.5	1				IIIB
		WEIS				1113.9	1114.1	1				IIIB
		SGMR				1247.0	1247.0	2				III
		SVTO				1247.0	1249.0	3				V
		WEIS				1247.3	1249.9	3				IIIGG,Spikes
		WEIS				1307.2	1307.3	1				IIIB
		SVTO				1333.0	1334.0	2				III
	1335	1800 BLEN										
		PALE				1854.0	1856.0	2				III
		SGMR				1854.0	1856.0	2				V
		SGMR				1856.0	2000.0	1				CONT
11		PALE				0127.0	0127.0	1				III
		LEAR				0345.0	0346.0	1				III
	0420	0914 WEIS										
		LEAR				0554.0	0555.0	1				III
		SGMR				1155.0	1155.0	1				III
		SVTO				1155.0	1155.0	3				III
	0936	1854 WEIS				1155.2	1155.6	3				IIIG
		WEIS				1158.5	1158.6	1				IIIB
		SVTO				1230.0	1230.0	2				III
		WEIS				1230.2	1230.4	3				IIIG
		SGMR							1231.0	1231.0	2	III
		SGMR				1319.0	1334.0	3				S
		SVTO				1319.0	1334.0	3				S
		WEIS				1319.5	1323.3	1				IIIG
	0430	1800 BLEN	1324.9	1333.6	1	1324.9	1333.6	3				IIIG
		WEIS				1325.0	1327.3	3				IIIG
		WEIS				1333.3	1334.6	3				IIIGG
		SGMR				1559.0	1601.0	2				III
		SVTO				1559.0	1559.0	2				III
		WEIS				1559.1	1600.9	2				IIIG
		WEIS				1702.7	1703.0	1				IIIG
		WEIS				1742.3	1742.4	2				IIIB
		PALE				2008.0	2008.0	1				III
		SGMR				2008.0	2008.0	2				III
12		LEAR				0021.0	0021.0	2				III
		PALE				0021.0	0021.0	2				III
		LEAR				0214.0	0215.0	2				III
		PALE				0214.0	0215.0	2				III

SOLAR RADIO EMISSION
Spectral Observations

JULY 1989

Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1–3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1–3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1–3)	Spectral Type
12		LEAR				0307.0	0307.0	1				III
		SVTO				0351.0	0351.0	2				III
0419	1852	WEIS										
0540	1800	BLEN										
		SGMR				1951.0	2016.0	2				S
		PALE				1952.0	2009.0	1				S
13		LEAR				0048.0	0049.0	2				III
		PALE				0048.0	0049.0	2				III
		LEAR				0117.0	0117.0	1				III
		LEAR				0401.0	0401.0	2				III
0540	1755	BLEN	0540.0	1755.0	1	0540.0	1755.0	1				I,DC
0422	1659	WEIS	0556.0	1811.0	1							IN
		LEAR				0652.0	0701.0	2				III
		SVTO				0652.0	0701.0	2				III
		BLEN	0658.1	0701.6	1	0658.1	0701.6	2				IIIGG
		WEIS				0658.7	0701.6	3				Spikes,IIIG
		SGMR				1656.0	1656.0	2				III
		WEIS				1656.3	1656.6	2				IIIG
1709	1852	WEIS										
		SGMR				1758.0	1759.0	1				III
		PALE				2055.0	2056.0	1				III
		SGMR				2055.0	2056.0	2				III
14		LEAR				0017.0	0017.0	1				III
		LEAR				0051.0	0052.0	2				III
		PALE				0051.0	0052.0	1				III
		LEAR				0143.0	0143.0	1				III
0421	1850	WEIS				0452.1	0452.3	1				IIIG
		WEIS				0453.0	1810.0	2				IN
0541	1755	BLEN	0541.0	1755.0	1	0541.0	1755.0	2				I,DC
		WEIS				1107.2	1107.4	1				IIIB
		SGMR				1224.0	1225.0	2				III
		SVTO				1224.0	1225.0	3				III
		BLEN	1224.3	1224.6	1	1224.3	1224.6	2				IIIG
		WEIS				1224.4	1224.9	3				IIIGG,U
		BLEN				1733.2	1733.9	1				IIIGG
		WEIS				1733.2	1733.8	1				Spikes
15		LEAR				0404.0	0407.0	1				III
		LEAR				0629.0	0629.0	2				III
		SVTO				0629.0	0629.0	2				III
0607	1555	BLEN				0714.6	0715.6	1				IIIG
		WEIS				0715.2	0715.8	2				Spikes,RS
0423	0820	WEIS				0728.9	0729.3	2				IIIG,U
0834	1851	WEIS	0959.2	0959.3	1							DCIM
		BLEN				1039.0	1555.0	1				I,DC,N
		SGMR				1055.0	1055.0	1				III
		WEIS				1055.7	1055.9	1				IIIB
		WEIS				1057.0	1342.0	1				I,DC
		BLEN	1340.3	1342.6	1	1340.3	1342.6	1				IIIG
		WEIS				1341.9	1342.6	1				Spikes
		PALE				1811.0	1811.0	1				III
16		LEAR				0104.0	0104.0	1				III
		PALE				0104.0	0105.0	1				III
0423	1848	WEIS				0624.6	0626.5	2				IIIG,RS
		WEIS	0654.0	0754.0	1							I
		WEIS				1321.1	1331.3	2				IIIB
		WEIS				1322.4	1322.5	1				IIIB
		SGMR				1331.0	1331.0	1				III
		SVTO				1331.0	1331.0	2				III
		SGMR				1434.0	1436.0	1				III
		WEIS				1434.7	1436.2	1				IIIG
		SVTO				1523.0	1527.0	2				III
		SGMR				1524.0	1527.0	2				V
		WEIS				1524.3	1525.0	2				IIIB
		WEIS				1526.6	1627.4	2				IIIG
		SGMR				1716.0	1720.0	2				V

SOLAR RADIO EMISSION
Spectral Observations

JULY 1989

Observation Day	Start (UT)	End (UT)	Sta	Decimetric Band Start (UT)	End (UT)	Int (1–3)	Metric Band Start (UT)	End (UT)	Int (1–3)	Dekametric Band Start (UT)	End (UT)	Int (1–3)	Spectral Type
16			SVTO				1716.0	1717.0	2				III
			WEIS				1716.6	1720.2	2				IIIG
			SGMR				1731.0	1736.0	1				V
			WEIS				1731.3	1731.5	1				IIIG
			PALE				2015.0	2016.0	2				V
			SGMR				2015.0	2016.0	2				V
17			PALE				0005.0	0005.0	1				III
			LEAR				0010.0	0010.0	1				III
			LEAR				0029.0	0029.0	1				III
			LEAR				0332.0	0337.0	2				III
	0426	1544	WEIS				0501.0	1650.0	2				IN
			LEAR				0548.0	0553.0	3				III
			WEIS				0548.8	0552.3	3				IIIGG,Spikes
			SVTO				0802.0	0000.0	1				CONT
	0826	1810	BLEN				1410.4	1410.8	2				IIIG
			WEIS				1410.4	1411.2	1				IIIG
	1551	1849	WEIS										
			PALE				1902.0	1904.0	3				III
			SGMR				1902.0	1904.0	3				V
			PALE				1932.0	1934.0	3				III
			PALE				2052.0	2053.0	1				III
18			LEAR				0021.0	0021.0	1				III
			PALE				0021.0	0021.0	1				III
	0425	1847	WEIS				0519.0	1131.0	1				IN
	0435	1810	BLEN	0626.2	0631.6	2	0626.2	0631.6	2				IIIGG
			WEIS				0627.2	0631.6	2				Spikes
			BLEN	0654.3	0654.4	2							III,RS
			SVTO				0702.0	0702.0	1				III
			WEIS				0702.6	0702.8	1				IIIB
			LEAR				0734.0	0736.0	3				III
			SVTO				0734.0	0735.0	3				III
			WEIS				0734.4	0735.9	3				IIIGG,Spikes
			BLEN	0734.5	0736.6	1	0734.5	0736.6	2				IIIGG
			LEAR				0803.0	0803.0	1				III
			SVTO				0803.0	0803.0	1				III
			WEIS				0803.1	0803.2	1				IIIB
			SVTO				0826.0	0827.0	1				III
			WEIS				0826.4	0826.9	1				Spikes,IIIB
			SVTO				0847.0	0848.0	2				III
			WEIS				0847.4	0848.3	2				IIIG
			SVTO				0911.0	0911.0	1				III
			SGMR				1122.0	1122.0	1				III
			SVTO				1123.0	1123.0	2				III
			WEIS				1123.2	1123.4	3				IIIG
			BLEN	1156.3	1158.0	3	1156.3	1158.0	1				IIIGG,RS
			WEIS				1156.3	1157.9	3				RS,DCIM
			SGMR				1412.0	1415.0	1				III
			SVTO				1413.0	1415.0	2				III
			WEIS				1413.3	1415.6	2				IIIG
			SGMR				1501.0	1502.0	1				III
			SVTO				1502.0	1502.0	2				III
			WEIS				1502.1	1503.0	1				IIIG
			SGMR				1606.0	1607.0	1				V
19			LEAR				0343.0	0351.0	1				III
			LEAR				0410.0	0410.0	1				III
			WEIS				0420.0	1422.0	1				I
			LEAR				0608.0	0609.0	1				III
			LEAR				0641.0	0643.0	1				III
			SVTO				0641.0	0641.0	2				III
	0427	1848	WEIS				0641.0	0813.0	2				IIIN
			SVTO				0849.0	0855.0	1				III
			SVTO				0957.0	0957.0	2				III
			SGMR				1121.0	1126.0	1				III
			SVTO				1121.0	1121.0	2				III
			SGMR				1140.0	1140.0	1				III
			SVTO				1140.0	1140.0	2				III

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19		SGMR				1210.0	1211.0	1				III
		SVTO				1210.0	1211.0	2				III
		SGMR				1312.0	1318.0	1				III
		SVTO				1312.0	1312.0	2				III
		SGMR				1406.0	1411.0	1				V
		SVTO				1406.0	1411.0	2				V
		SGMR				1416.0	1417.0	1				III
		SGMR				1417.0	1421.0	1				II
		SVTO				1417.0	1421.0	1				II
		SVTO				1429.0	1516.0	2				S
		SGMR				1508.0	1509.0	1				III
		SGMR				1601.0	1602.0	1				III
		SVTO				1601.0	1602.0	1				III
0435	1810	BLEN				1601.3	1601.6	1				IIIG
		SGMR				1621.0	1624.0	2				V
		SVTO				1621.0	1629.0	2				V
		WEIS				1621.6	1623.2	3				IIIG
		PALE				1622.0	1622.0	2				III
		SGMR				1629.0	1630.0	2				V
		SGMR				1640.0	1709.0	1				S
		BLEN	1651.9	1656.3	2	1651.9	1656.3	3				IIIGG
		WEIS				1651.9	1652.0	1				Spikes
		SGMR				1655.0	1657.0	2				V
		SVTO				1655.0	1656.0	2				III
		WEIS				1655.3	1656.3	3				IIIGG
		SGMR				1812.0	1813.0	1				V
		PALE				1820.0	1830.0	3				V
		SGMR				1820.0	1849.0	3				S
		WEIS				1821.3	1822.6	2				DCIM
		WEIS				1825.0	1827.9	3				IIIGG
		PALE				1838.0	1923.0	1				S
		SGMR				1922.0	1938.0	2				S
		PALE				1925.0	1928.0	3				V
		PALE				2216.0	2218.0	2				V
		SGMR				2217.0	2231.0	2				S
		PALE				2228.0	2231.0	2				V
		PALE				2248.0	2249.0	1				III
		LEAR				2353.0	0000.0	2				III
		PALE				2353.0	0005.0	2				III
20		LEAR				0008.0	0015.0	3				III
		PALE				0008.0	0014.0	3				V
		LEAR				0032.0	0035.0	2				III
		PALE				0032.0	0035.0	1				III
		LEAR				0254.0	0255.0	2				III
		PALE				0254.0	0255.0	1				III
		LEAR				0305.0	0311.0	2				III
		PALE				0305.0	0308.0	2				III
		LEAR				0325.0	0335.0	2				III
		PALE				0330.0	0335.0	2				III
		LEAR				0358.0	0402.0	3				V
		PALE				0358.0	0401.0	2				V
		SVTO				0358.0	0401.0	2				V
		LEAR				0419.0	0419.0	1				III
		LEAR				0434.0	0445.0	2				S
0430	1810	BLEN	0434.2	0444.8	2	0434.2	0444.8	2				IIIGG
0427	0851	WEIS				0434.3	0435.0	2				IIIG
		WEIS				0443.8	0444.8	2				IIIG
		LEAR				0550.0	0602.0	2				S
		BLEN	0550.5	0559.6	1	0550.5	0559.6	1				IIIG
		SVTO				0552.0	0556.0	2				III
		WEIS				0552.0	1623.0	2				IIIN
		LEAR				0647.0	0651.0	2				III
		SVTO				0647.0	0651.0	2				III
		WEIS				0700.7	0705.7	3				IIIGG,Spikes
		BLEN	0700.8	0704.7	1	0700.8	0704.7	2				IIIGG
		LEAR				0701.0	0708.0	3				III
		SVTO				0701.0	0707.0	3				V
		SVTO				0809.0	0810.0	2				III

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20			BLEN	0809.7	0810.0	2	0809.7	0810.0	1				IIIG
			WEIS				0809.7	0810.3	3				IIIG
			LEAR				0810.0	0810.0	2				III
			LEAR				0843.0	0844.0	2				III
			SVTO				0843.0	0848.0	3				V
			WEIS				0843.4	0844.8	3				IIIGG
			BLEN	0843.5	0844.5	2	0843.5	0844.5	3				IIIGG
			SVTO				0911.0	0915.0	3				V
	0901	1845	WEIS				0911.7	0914.7	3				IIIGG
			LEAR				0912.0	0914.0	2				III
			SGMR				0912.0	0913.0	1				III
			SVTO				0939.0	0939.0	1				III
			BLEN	1011.7	1013.8	2	1011.7	1013.8	3				IIIGG
			BLEN				1025.2	1025.3	2				IIIB
			SGMR				1117.0	1119.0	2				V
			SVTO				1117.0	1119.0	3				V
			BLEN				1239.5	1239.7	2				III
			SGMR				1241.0	1241.0	1				III
			SVTO				1241.0	1241.0	2				III
			SGMR				1428.0	1428.0	1				V
			SVTO				1428.0	1428.0	1				III
			SGMR				1510.0	1511.0	1				III
			BLEN				1528.0	1528.6	3				IIIG
			SGMR				1528.0	1529.0	1				V
			WEIS				1617.2	1618.9	3				IIIGG,Spikes
			SGMR				1630.0	1631.0	1				III
			BLEN	1743.8	1746.3	2							DCIM,C,P
			PALE				2026.0	2029.0	2				V
			SGMR				2026.0	2028.0	2				V
			PALE				2029.0	2034.0	3				II
			SGMR				2029.0	2045.0	3				II
			PALE				2031.0	2051.0	3				IV
21			LEAR				0104.0	0104.0	1				III
			LEAR				0215.0	0220.0	1				III
			PALE				0215.0	0216.0	1				III
			LEAR				0245.0	0249.0	2				III
			PALE				0245.0	0249.0	2				III
			LEAR				0330.0	0330.0	2				III
			PALE				0330.0	0330.0	1				III
			LEAR				0348.0	0351.0	3				III
			PALE				0349.0	0351.0	2				III
	0440	1810	BLEN	0450.2	0450.6	1	0450.2	0450.6	1				III
			LEAR				0451.0	0451.0	1				III
			SVTO				0511.0	0511.0	1				III
			BLEN	0511.4	0511.7	1	0511.4	0511.7	2				III
	0430	1845	WEIS				0511.4	0511.7	2				IIIG
			WEIS				0526.2	0526.3	2				IIIB
			BLEN	0529.9	0538.2	1	0529.9	0538.2	1				IIIGG
			WEIS				0530.0	0530.1	1				IIIG,DCIM
			WEIS	0535.6	0738.8	2							DCIM
			LEAR				0539.0	0540.0	1				III
			BLEN	0542.5	0546.6	2	0542.5	0546.6	2				IIIGG
			LEAR				0543.0	0547.0	3				III
			SVTO				0543.0	0546.0	3				V
			SVTO				0543.0	0604.0	3				II
			WEIS				0543.2	0546.7	3				IIIGG,RS,Spikes,DCIM
			BLEN	0543.8	0552.0	2	0543.8	0552.0	1				IV P
			BLEN	0545.4	0554.0		0545.4	0554.0	3				II
			WEIS	0547.4	0551.8	2							RS,DCIM
			SVTO				0548.0	0546.0	3				V
			WEIS				0548.7	0559.8	3				II H
			LEAR				0549.0	0605.0	3				II
			SVTO				0645.0	0648.0	2				III
			WEIS				0645.3	0648.1	2				IIIG
			BLEN	0647.3	0647.4	2							III
			LEAR				0718.0	0723.0	2				III
			SVTO				0718.0	0723.0	2				III
			LEAR				0753.0	0754.0	1				III

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21		SVTO				0753.0	0753.0	1				III
		WEIS				1113.8	1114.4	1				IIIG
		WEIS				1121.8	1122.1	1				IIIB
		SVTO				1124.0	1124.0	1				III
		WEIS				1124.2	1124.5	2				IIIG
		WEIS				1212.3	1212.4	1				IIIB
		BLEN				1234.5	1236.1	2				IIIG
		WEIS				1234.5	1235.3	2				IIIG
		WEIS				1650.3	1651.6	2				IIIG
		SVTO				1651.0	1652.0	3				III
		SGMR				1750.0	1752.0	1				III
22		LEAR				0050.0	0051.0	1				III
		PALE				0050.0	0051.0	2				V
		LEAR				0429.0	0430.0	1				III
	0440	1035 BLEN	0529.1	0529.3	3	0529.1	0529.3	1				III
	0429	1635 WEIS				0529.2	0529.4	3				IIIG
		WEIS	0536.6	0536.9	2							IIIG
		SVTO				0546.0	0548.0	3				III
		WEIS				0602.1	0602.2	2				IIIB
		WEIS	0603.2	0603.4	1							IIIG
		LEAR				0630.0	0632.0	2				III
		SVTO				0630.0	0632.0	2				III
		WEIS				0630.1	0631.8	2				IIIG
		LEAR				0651.0	0653.0	1				III
		SVTO				0651.0	0651.0	2				III
		WEIS				0651.6	0651.8	2				IIIB
		BLEN	0857.4	0902.4		2085.74	0090.24	2				IIIGG
		WEIS				0857.4	0859.9	2				DCIM
		WEIS				0901.4	0902.3	3				Spikes
		SGMR				1727.0	1729.0	1				V
		SGMR				1733.0	1738.0	1				V
		PALE				1803.0	1809.0	1				III
		SGMR				1803.0	1808.0	1				V
	1658	1844 WEIS				1803.2	1803.6	1				IIIB
		WEIS				1808.6	1808.9	1				IIIG
		PALE				1828.0	1844.0	2				S
		SGMR				1828.0	1841.0	1				S
		SGMR				1841.0	1844.0	2				V
		WEIS				1841.7	1843.5	2				IIIG
		PALE				1920.0	1921.0	1				III
		SGMR				1920.0	1921.0	1				III
		PALE				1934.0	1935.0	2				V
		SGMR				1934.0	1951.0	1				S
		SGMR				2014.0	2047.0	1				V
		PALE				2044.0	2047.0	2				III
		PALE				2103.0	2103.0	2				V
		SGMR				2103.0	2103.0	1				III
		PALE				2127.0	2128.0	1				III
		PALE				2147.0	2147.0	1				III
		PALE				2254.0	2258.0	2				III
23		LEAR				0028.0	0029.0	1				III
		PALE				0028.0	0029.0	2				V
		LEAR				0040.0	0054.0	2				S
		PALE				0040.0	0054.0	2				S
		LEAR				0226.0	0227.0	2				III
		LEAR				0412.0	0412.0	1				III
		LEAR				0611.0	0613.0	2				III
		SVTO				0611.0	0613.0	2				III
	0432	1844 WEIS				0611.4	0612.2	2				IIIG
		LEAR				0658.0	0700.0	2				III
		SVTO				0658.0	0659.0	2				III
		WEIS				0658.0	0659.8	3				IIIG
		LEAR				0851.0	0854.0	2				III
		SVTO				0851.0	0854.0	2				V
		WEIS				0851.7	0854.2	3				IIIG
		SVTO				0935.0	0938.0	2				V
		WEIS				0937.3	0938.1	2				IIIG

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23			SVTO				0953.0	0953.0	2				III
			WEIS				0953.0	0953.3	3				IIIB
			SVTO				1014.0	1014.0	2				III
			WEIS				1014.1	1014.3	2				IIIB
			WEIS				1143.6	1143.8	1				Spikes
			SGMR				1300.0	1300.0	1				V
			SVTO				1300.0	1300.0	1				III
			SGMR				1415.0	1415.0	1				III
24			LEAR				0619.0	0621.0	1				III
	0431	1841	WEIS				0727.7	0728.6	2				IIIG,Spikes
			SVTO				0728.0	0728.0	1				III
			WEIS	0843.6	0843.7	2							IIIG
			WEIS	1016.7	1016.8	2							IIIG
			WEIS	1030.6	1030.9	2							DCIM
			WEIS				1046.2	1046.4	1				IIIB
			SGMR				1221.0	1630.0	1				CONT
	1208	1810	BLEN	1238.3	1238.7	1							IIIG
			SVTO				1323.0	1423.0	2				CONT
			SVTO				1423.0	1512.0	1				CONT
			SVTO				1512.0	1719.0	2				CONT
			BLEN	1523.5	1523.6	2							IIIB
			BLEN	1612.6	1612.7	2							IIIB
			WEIS	1612.7	1612.8	2							IIIG
			BLEN	1758.3	1758.7	2							IIIU
			WEIS	1758.4	1759.1	2							IIIG,RS
			PALE				1850.0	1850.0	1				III
			SGMR				1850.0	1850.0	1				III
			PALE				2058.0	2101.0	1				III
			SGMR				2058.0	2100.0	1				III
			SGMR				2126.0	2251.0	1				CONT
25			LEAR				0305.0	0306.0	1				III
			PALE				0305.0	0306.0	1				III
	0450	1810	BLEN	0839.4	0843.5	3	0839.4	0843.5	1				IIIGG
	0433	0953	WEIS				0840.8	0844.6	3				IIIGG
			BLEN	0840.9	0849.5	3	0840.9	0849.5	3				II H
			LEAR				0841.0	0844.0	3				III
			LEAR				0844.0	0905.0	3				II
			SVTO				0844.0	0859.0	3				II
			WEIS				0844.1	0856.8	3				II H,HB
			SVTO				0845.0	0934.0	3				IV
			WEIS				0847.7	0849.4	2				DCIM
			WEIS				0947.7	0948.2	2				IIIG
			BLEN	0947.8	0957.7	2	0947.8	0957.7	2				III
			SVTO				0948.0	0948.0	2				III
			SGMR				1332.0	1332.0	2				III
			SVTO				1332.0	1332.0	2				III
			BLEN	1332.2	1332.4	3	1332.2	1332.4	3				IIIGG
	0956	1842	WEIS				1332.2	1332.7	3				IIIG
			SGMR				1351.0	1351.0	1				III
			WEIS	1812.6	1814.4	2							IIIG
26			LEAR				0300.0	0302.0	1				III
			LEAR				0553.0	0554.0	1				III
	0450	1810	BLEN	0553.1	0553.2	2	0553.1	0553.2	1				IIIB
	0433	1839	WEIS	0553.1	0553.2	2							IIIB
			BLEN	1230.0	1230.1	2							IIIU
			WEIS	1231.0	1231.1	2							IIIB
			SGMR				1350.0	1351.0	2				III
			SVTO				1350.0	1351.0	2				III
			BLEN	1350.2	1351.4	2	1350.2	1351.4	2				IIIG
			WEIS				1350.2	1351.4	3				IIIG
			SGMR				1558.0	0000.0	1				CONT
			BLEN				1708.3	1810.0	1				I,DC
			SGMR				1750.0	1750.0	1				V
			WEIS				1750.0	1750.4	2				IIIG
			PALE				1912.0	1912.0	1				III
			SGMR				1912.0	1912.0	2				V

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Day 26												
		PALE				2054.0	2054.0	1				III
		SGMR				2054.0	2054.0	1				III
		PALE				2058.0	2058.0	1				III
Day 27												
0436	1153	WEIS										
0450	1810	BLEN				1007.3	1007.5	1				III,RS
		SGMR				1426.0	1427.0	1				III
		BLEN	1716.3	1716.7	1	1716.3	1716.7	2				IIIG
1302	1746	WEIS				1716.4	1717.9	3				IIIG
		BLEN	1716.5	1717.7	2	1716.5	1717.7	1				DCIM,P,C
		BLEN	1747.0	1748.6	2	1747.0	1748.6	2				IIIGG
		SGMR				1747.0	1749.0	3				V
		BLEN	1748.3	1753.5	3	1748.3	1753.5	1			II	H
		SGMR				1749.0	1751.0	2			II	
		SGMR				1749.0	1839.0	1				CONT
		PALE				1750.0	1751.0	2			II	
1814	1839	WEIS										
		SGMR				2102.0	2103.0	1				III
		PALE				2103.0	2103.0	1				III
Day 28												
		LEAR				0329.0	0330.0	1				III
0450	1810	BLEN	0616.2	0616.7	1	0616.2	0616.7	1				IIIG
		LEAR				0653.0	0654.0	1				III
		LEAR				0724.0	0725.0	2				III
		SVTO				0724.0	0724.0	2				III
		BLEN	0724.3	0725.4	2	0724.3	0725.4	2				IIIGG
0435	1338	WEIS				0724.4	0725.4	3				IIIG,Spikes
		SVTO				0836.0	0837.0	2				III
		WEIS				0837.3	0838.2	1				IIIG
		WEIS				1042.6	1043.3	2				IIIG
1530	1838	WEIS										
Day 29												
		SVTO				0734.0	0737.0	2				III
		LEAR				0735.0	0737.0	2				III
0404	1524	BLEN	0735.7	0736.2	1	0735.7	0736.2	2				IIIGG
0438	1837	WEIS				0735.8	0736.8	3				IIIG,Spikes
		WEIS				1203.8	1204.6	2				IIIG
		SGMR				1204.0	1204.0	1				V
		SVTO				1204.0	1204.0	2				III
		BLEN	1319.3	1319.4	1							III
		SGMR				1348.0	1354.0	1				III
		SVTO				1348.0	1355.0	2				III
		WEIS				1350.3	1354.7	2				IIIG
		WEIS				1625.9	1631.1	2				IIIG
		SGMR				1626.0	1633.0	2				V
		WEIS				1634.1	1634.2	1				IIIB
1624	1858	BLEN				1649.6	1650.6	1				IIIG
		BLEN				1708.3	1708.8	1				IIIG
		WEIS				1708.3	1708.7	2				Spikes
		SGMR				1854.0	1905.0	1				S
		PALE				2217.0	2218.0	1				III
		PALE				2228.0	2229.0	1				V
Day 30												
0437	1214	WEIS										
		LEAR				0505.0	0509.0	1				III
0405	1857	BLEN				0507.3	0507.7	1				IIIG
		BLEN				1017.9	1018.7	1				IIIG
		SGMR				1326.0	1328.0	1				III
		SVTO				1326.0	1328.0	2				III
1229	1834	WEIS				1326.7	1328.1	2				IIIG
		PALE				1929.0	1930.0	1				III
		SGMR				1929.0	1930.0	1				V
		SGMR				1956.0	1957.0	1				III
		PALE				2039.0	2041.0	1				III
		SGMR				2039.0	2041.0	1				III
Day 31												
		LEAR				0213.0	0216.0	2				III
		PALE				0214.0	0216.0	1				III
		LEAR				0308.0	0309.0	2				III

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

JULY 1989

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1–3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1–3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1–3)	Spectral Type
31			LEAR				0512.0	0513.0	2				III
			SVTO				0515.0	0515.0	1				III
			SVTO				0739.0	0739.0	2				III
			SVTO				0827.0	0838.0	2				S
			LEAR				0837.0	0838.0	2				III
	0439	1833	WEIS				0837.6	0837.9	2				IIIB
	0407	1856	BLEN				1100.6	1100.7	1				IIIB
			PALE				1751.0	1755.0	2				III
			SGMR				1751.0	1756.0	2				V
			WEIS				1751.2	1755.8	3				IIIGG,Spikes
			BLEN	1752.8	1754.2	2	1752.8	1754.2	2				IIIGG
			BLEN				1759.2	1759.3	1				IIIB
			SGMR				1903.0	1953.0	1				CONT
			PALE				2313.0	2319.0	1				V

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

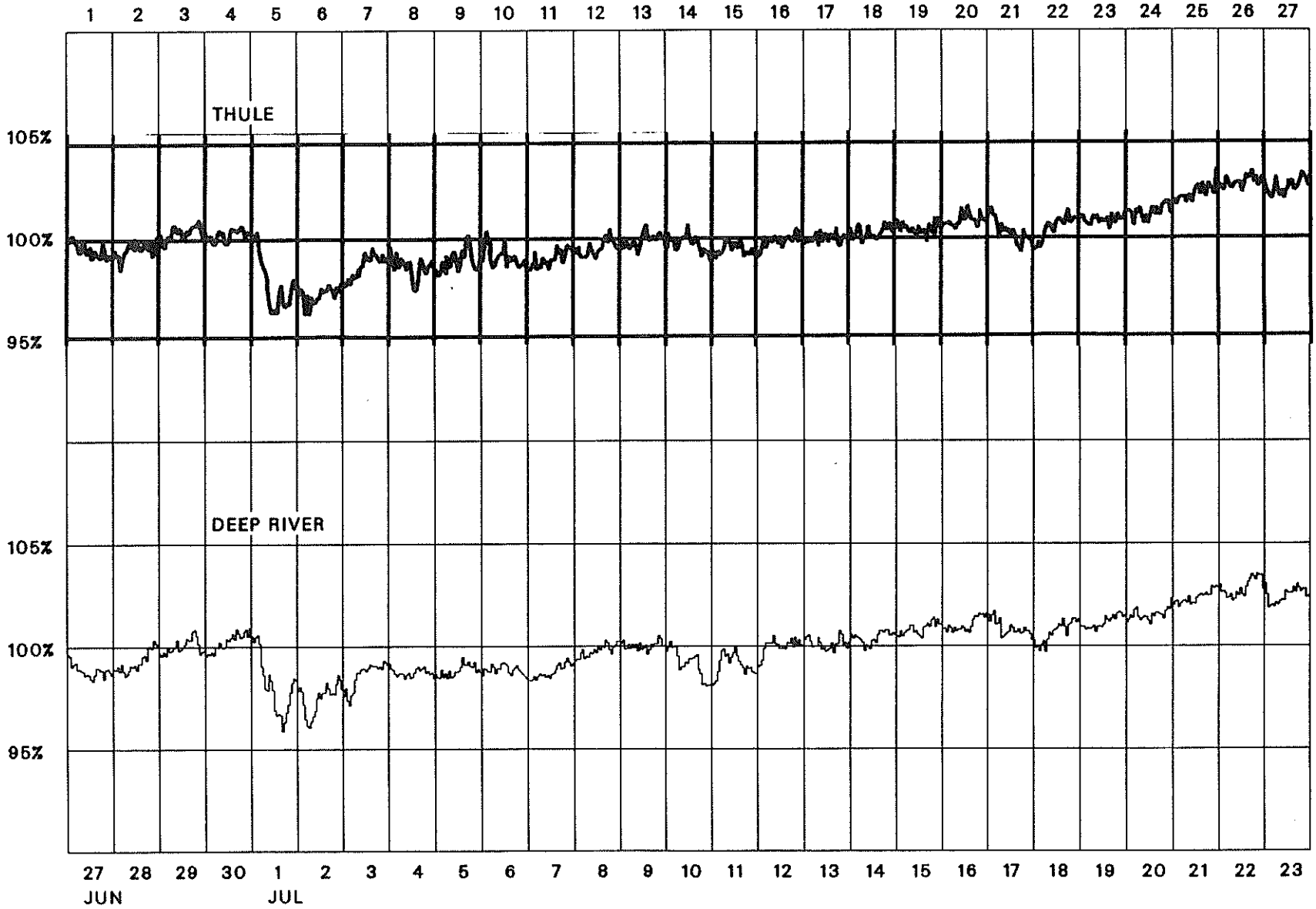
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

Stations Reporting:

BLEN = Bleien CULG = Culgoora LEAR = Learmonth PALE = Palehua SGMR = Sagamore Hill
SVTO = San Vito WEIS = Weissenau

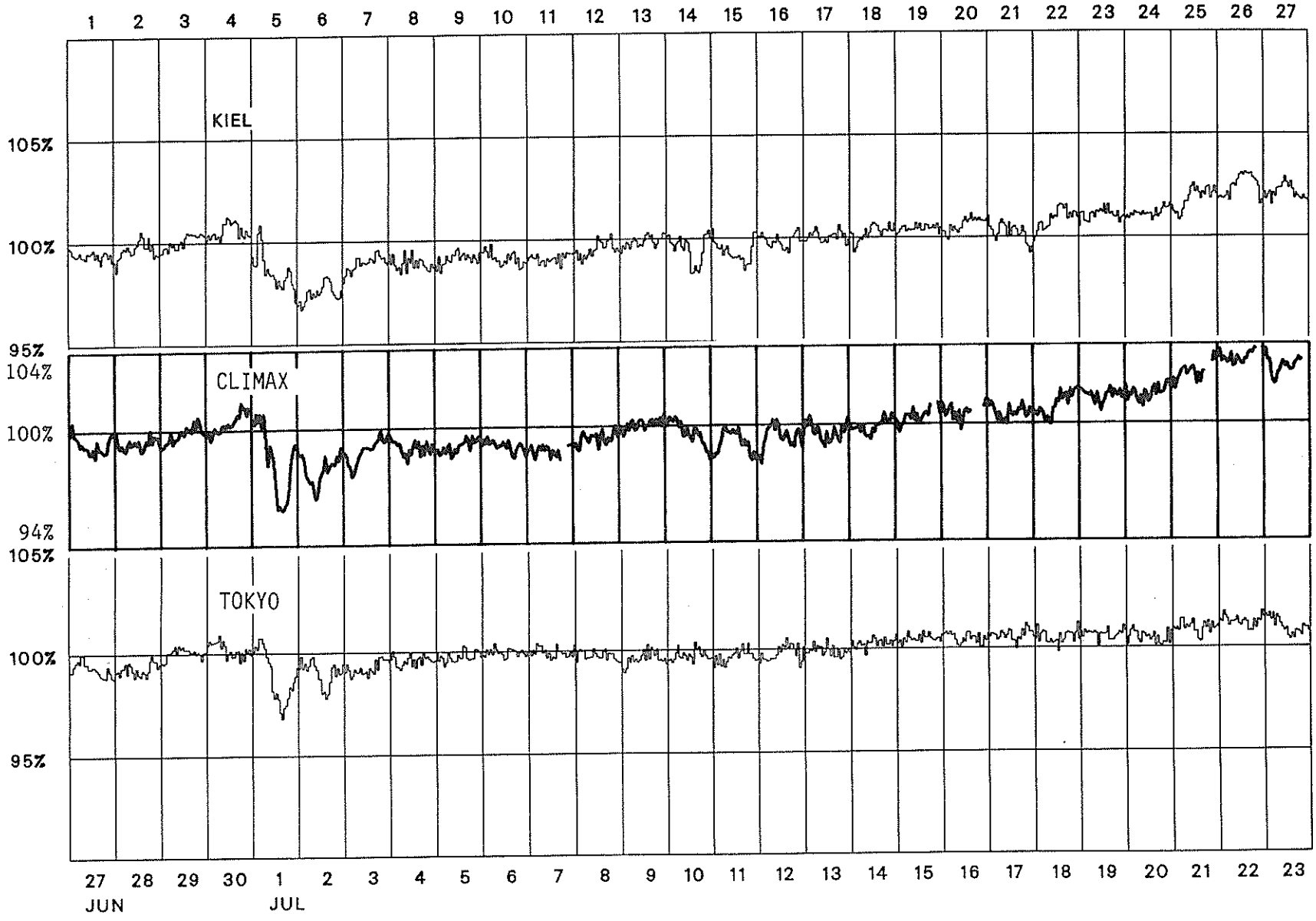
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2130 (June 1989-July 1989)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2130 (June 1989-July 1989)



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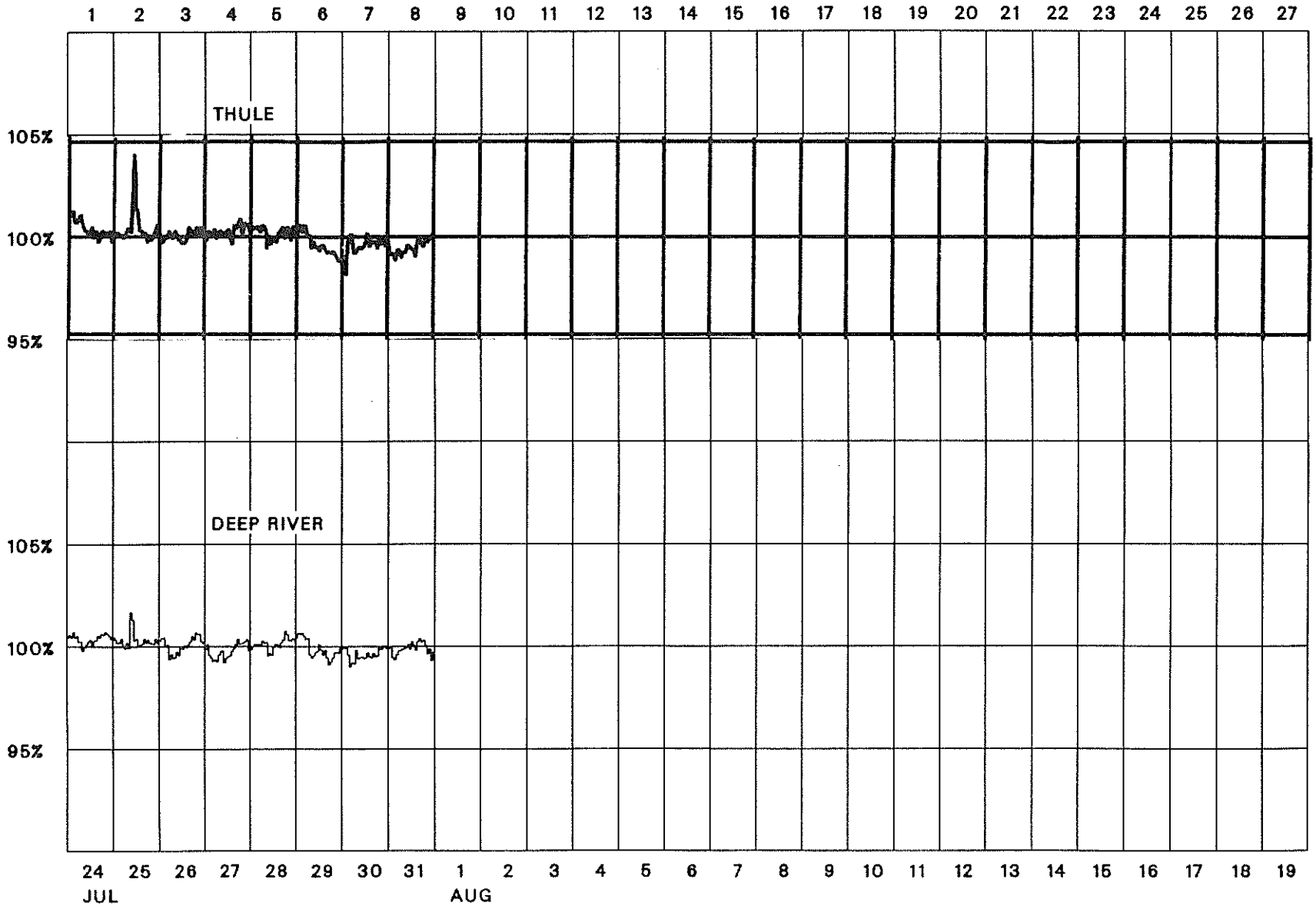
Jul 89

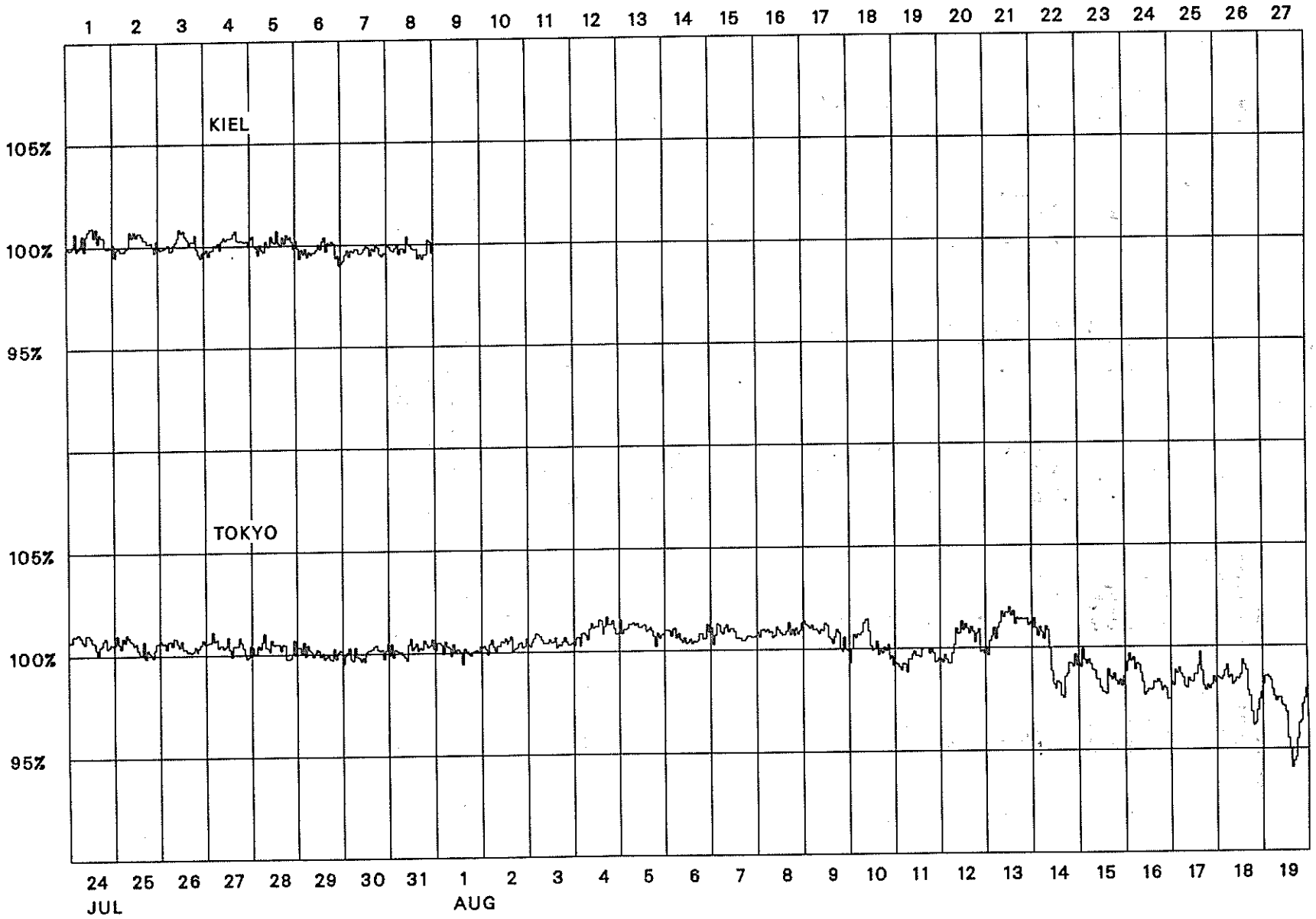
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2131 (July 1989-August 1989)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2131 (July 1989-August 1989)



135
Jul 89

COSMIC RAY INDICES
(Neutron Monitor)

JULY 1989

Day	THULE Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	3832	6034.9	5451.4	3473.4	3412.3	1653.8
2	3809	5993.7	5391.3	3458.5	3417.3	1655.0
3	3868	6061.2	5469.4	3490.3	3424.8	1659.8
4	3866	6069.0	5468.3	3494.8	3436.5	1667.0
5	3878	6074.7	5479.5	3496.6	3442.7	1671.2
6	3885	6076.7	5479.5	3496.4	3449.0	1674.6(34)
7	3881	6070.7	5478.1	3487.7	3448.4	1673.8
8	3902	6133.8	5501.9	3508.4	3442.1	1675.5
9	3917	6148.7	5521.6	3533.0	3436.8	1678.2
10	3910	6095.7	5500.9	3517.8	3441.5	1674.4
11	3898	6090.7	5492.4	3498.2	3438.7	1676.6
12	3915	6146.0	5521.5	3507.1	3443.9	1681.3
13	3920	6154.5	5531.5	3516.0	3446.9	1684.2(34)
14	3933	6171.5	5541.4	3525.6	3460.0	1685.5
15	3940	6198.3	5552.5	3542.4	3466.5	1692.0
16	3957	6210.5	5561.4	3550.9(36)	3467.0	1692.0
17	3932	6199.6	5541.1	3550.2	3471.7	1686.2
18	3942	6187.5	5576.4	3563.5	3467.8	1691.1
19	3958	6217.7	5586.6	3579.5	3472.6	1687.0
20	3973	6240.2	5591.1	3584.1	3466.8	1691.8(26)
21	4012	6292.3	5629.9	3619.3	3482.8	1693.7
22	4033	6321.0	5663.3	3647.4	3492.6	1698.2
23	4022	6297.4	5645.7	3631.4	3483.9	1696.6
24	4012	6267.2	5629.2	3631.9(36)	3477.0	1693.3
25	4019	6262.8	5623.1	3613.3	3469.2	1691.8
26	3999	6248.3	5619.7	3610.5	3469.5	1689.7
27	4008	6229.7	5621.6	3609.0(38)	3468.5	1684.3
28	4005	6250.7	5621.1	3598.9	3464.0	1682.4
29	3979	6236.5	5601.0	3587.4	3455.6	1680.2
30	3979	6219.7	5593.0	3576.9	3454.0	1684.2
31	3974	6237.0	5600.1	3587.2	3460.9	1687.7
Mean	3941	6175.4	5551.1	3549.4	3455.8	1681.6

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

GEOMAGNETIC ACTIVITY INDICES

July 1989

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M
1	D1	1+	1	2	2-	1+	5+	6+	4+	23+	26	1.2											
2		3	3-	1+	1-	0+	0+	0+	0+	9	5	0.2											
3	Q2	0+	1-	0+	0+	1	1-	1	0+	5-	3	0.0											
4	Q3	0+	1-	0+	0+	1+	1	0+	0+	5-	3	0.0											
5	D2*	2-	1	1	2	2+	4+	5-	4-	21-	15	0.9											
6		2+	3-	2-	2+	2+	3+	3	2	20-	11	0.6											
7		2+	2+	3-	1+	2	2-	2+	2-	16+	8	0.4											
8	Q4	1-	0+	1	1	1+	1-	1-	1	7-	4	0.1											
9		2+	3-	1	1	1	1-	2-	1+	12-	6	0.3											
10		2-	3-	3	2+	3-	3-	2+	3-	20	11	0.6											
11	Q5	1+	1	1-	1	1	1	1	1	8	4	0.1											
12	Q7	0+	0+	0	1	1	1-	1-	2+	6+	3	0.1											
13		2-	2+	3-	1+	2	1+	1	1+	14-	7	0.3											
14	Q8	1-	1	1-	1	1	1+	1+	2	9	4	0.2											
15		1-	2-	1+	2-	2	2+	2-	2-	13	6	0.3											
16	Q1	0+	1	0+	0+	0+	0+	0	0+	3	2	0.0											
17	D5*	3+	2+	3+	2+	3-	3	3-	2+	22	13	0.7											
18	D4*	4-	4+	2+	2+	2+	2+	2	1+	21-	13	0.7											
19	Q6	1+	1	2-	1-	1	1-	1-	1-	8-	4	0.1											
20	Q10	1-	2-	1-	1-	1-	1+	2-	2	11	4	0.2											
21		2-	2	1+	2-	1-	1	1	1+	11-	5	0.2											
22		2-	1	2-	1+	3-	2-	1	3-	14-	7	0.3											
23		3-	4-	2+	2-	3	3-	2-	2-	19+	11	0.6											
24		2	1+	2+	2+	3-	2+	2	2+	17+	8	0.5											
25		2	2	2	2-	2	1	1-	2+	14-	6	0.3											
26	Q3*	2+	2	3-	3-	3+	3+	3	3-	22	13	0.7											
27		2+	3	2	1	2	2	2-	3-	17-	8	0.5											
28		2+	3	2-	1+	2-	2-	3-	3	17+	9	0.5											
29		2+	2	2-	2	3-	2+	3+	3-	19	10	0.6											
30		2	2+	2-	1+	1+	2-	2+	2+	15	7	0.4											
31	Q9	2-	1	1+	1-	1	1-	1	2	9+	4	0.2											
Mean											8	0.38											

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Prov Sa	Ri	Ra	Rs	IMF
1																			204.0	128	139	158	
2																			193.4	149	153	147	
3																			192.5*	129	134	146	
4																			189.8	120	122	143	
5																			183.4*	101	110	136	
6																			192.3	120	131	146	
7																			193.5	149	153	147	
8																			188.9	141	144	142	
9																			188.1	116	112	141	
10																			184.1	104	115	137	
11																			193.2	136	145	147	
12																			190.7	111	123	144	
13																			184.0*	116	114	137	
14																			183.9	116	111	137	
15																			185.7	92	96	139	
16																			183.9	91	105	137	
17																			184.1	99	111	137	
18																			189.2	113	126	142	
19																			193.7	138	146	147	
20																			192.4	149	160	146	
21																			195.0	162	181	149	
22																			200.9	197	217	155	
23																			196.5	195	215	150	
24																			191.1	168	169	144	
25																			180.4	132	135	133	
26																			169.8	111	108	121	
27																			172.8	105	98	125	
28																			170.7	75	88	122	
29																			180.9	112	112	133	
30																			185.1	125	130	138	
31																			188.2	132	144	141	
Mean																			187.8	126.8	133.8	140.8	

D A I L Y A V E R A G E I N D I C E S Ap

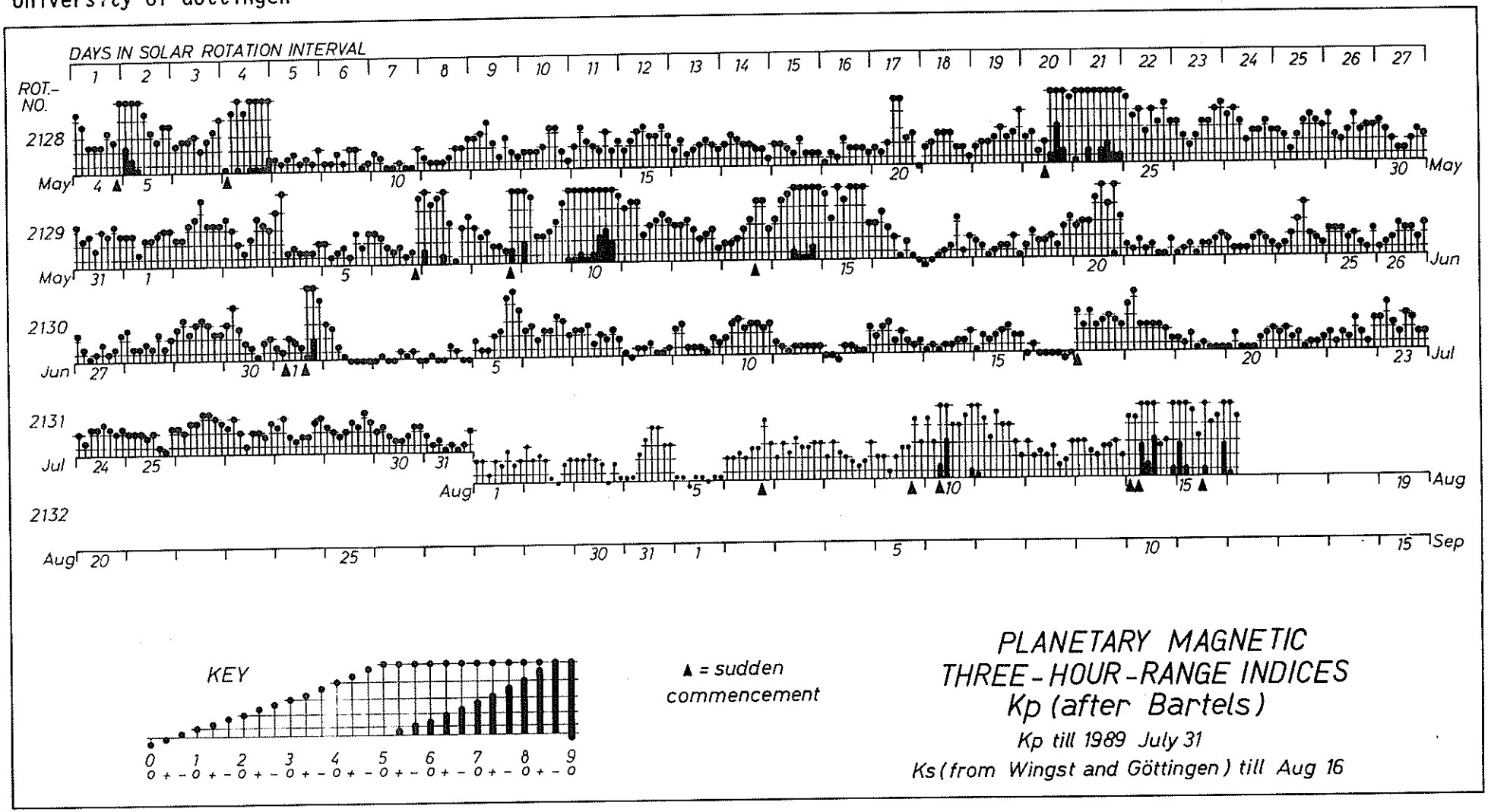
August 1988 to July 1989

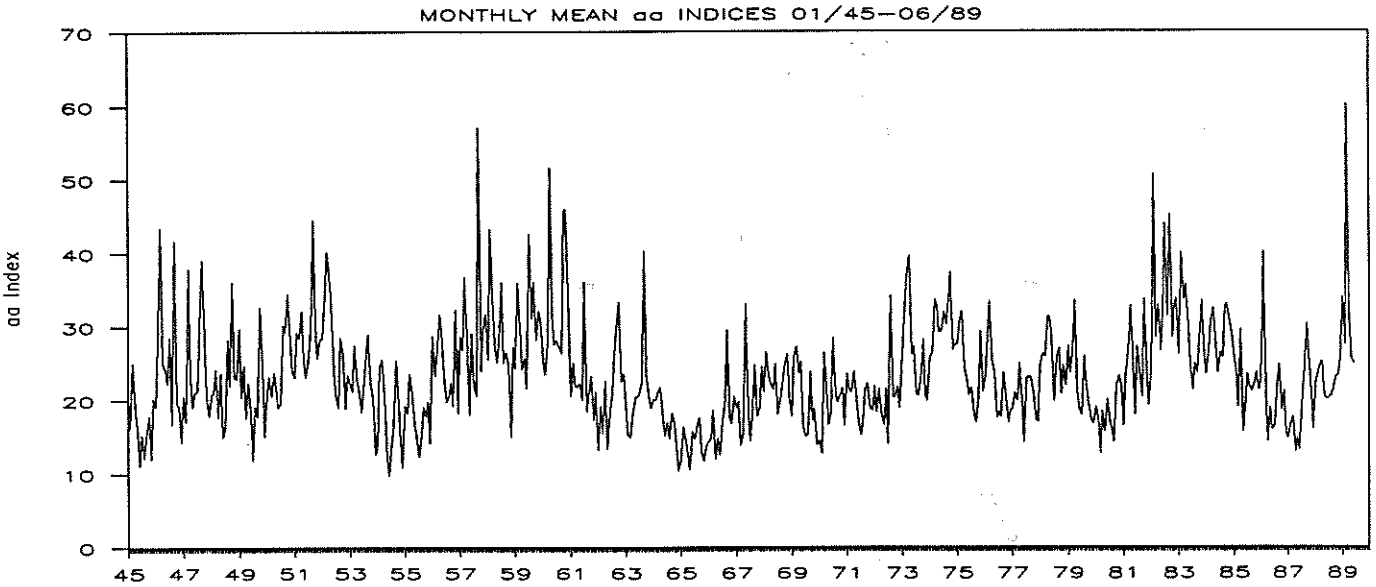
DAY	AUG 88	SEP	OCT	NOV	DEC	JAN 89	FEB	MAR	APR	MAY	JUN	JUL
1	8	21	11	7	5	15	29	12	42	10	11	26
2	5	12	5	30	15	6	21	25	26	18	19	5
3	6	8	3	26	18	4	44	37	21	12	14	3
4	2	7	9	8	10	9	24	13	46	20	14	3
5	6	4	18	10	4	33	22	30	42	44	7	15
6	5	3	38	13	3	10	23	24	14	14	11	11
7	5	5	6	17	3	10	25	18	27	46	34	8
8	3	6	7	18	5	17	14	24	20	5	23	4
9	13	4	17	12	4	16	19	31	15	5	34	6
10	9	7	85	14	8	12	12	19	8	4	78	11
11	8	51	13	10	17	37	10	17	14	6	22	4
12	16	20	6	18	14	20	14	23	6	11	12	3
13	17	10	6	8	20	11	21	246	17	9	16	7
14	21	11	6	11	13	14	14	158	24	10	50	4
15	16	12	6	13	10	38	14	49	27	13	37	6
16	8	6	10	18	25	43	17	50	20	7	9	2
17	5	20	15	11	35	28	5	34	10	7	5	13
18	8	34	30	8	25	15	9	15	10	6	5	13
19	8	23	12	4	20	7	9	55	6	6	8	4
20	17	11	18	2	7	45	21	14	10	15	28	4
21	7	11	7	6	11	28	11	22	7	8	4	5
22	24	20	3	4	13	30	13	39	7	12	5	7
23	10	11	6	2	4	22	5	36	12	47	5	11
24	11	8	6	4	4	10	9	16	8	68	10	8
25	15	12	4	7	22	12	7	10	34	24	7	6
26	9	8	7	20	25	10	4	14	76	17	8	13
27	15	5	8	12	20	12	6	44	49	16	6	8
28	9	5	9	9	14	13	13	39	39	14	7	9
29	13	4	3	8	20	10		71	28	14	13	10
30	12	8	5	37	11	12		47	17	9	10	7
31	13		10		12	32		52		13		4
MEAN	10	12	13	12	13	19	15	41	23	16	17	8

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

University of Göttingen

Kp through July 31, 1989





Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1945	16.1	16.4	25.0	19.1	15.4	11.1	15.3	12.1	15.6	17.9	12.0	20.2	16.3
1946	19.2	30.2	43.5	25.0	24.1	22.3	28.6	16.7	41.7	19.6	19.3	14.3	25.4
1947	20.6	17.1	37.9	23.3	19.1	21.1	21.4	32.9	39.1	31.3	20.7	17.9	25.2
1948	20.8	21.0	24.2	17.7	23.7	15.0	16.2	28.3	22.0	36.1	23.1	23.0	22.6
1949	29.8	20.4	24.7	17.6	22.4	17.9	11.8	19.2	17.8	32.7	24.6	15.1	21.2
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9							34.1

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

JULY 1989

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
COL	64.6N	01	0717	SC	- 7	101	- 34	01(6,7)	6	104	1125	300	02	02
FRD	49.6N	01	0717	SC	.5	24	- 3	01(7,8)	5	16	132	80	02	03
BJI	28.5N	01	0717	SC	.2	29	2	01(6)	5	12	129	50	02	08
KRC	16.4N	01	0716	SC	1.5	3	15	01(6)	6	4	128	46	02	21
UJJ	13.5N	01	0715	SC	- .5	20	- 5		-	9	142	39	02	24
ABG	09.5N	01	0715	SC	- .7	21	- 6	01(6,7)	5	10	157	66	02	24
HYB	07.6N	01	1547	SC	- .3	23	- 2		-	--	--	--	--	--
HYB	07.6N	01	0718	SC	- .4	18	- 2	01(3)	4	9	162	29	02	10
ANN	01.5N	01	0715	SC	- 1.1	40	14		-	8	173	49	02	24
ETT	00.6S	01	0716	SC	- .8	29	24			5	199	60	02	11
ETT	00.6S	01	1546	SC	- .4	16	19		-	--	--	--	02	11
HER	33.7S	01	0716	SC	2	9	8	01(6)	6	18	113	89	02	03
CNB	43.9S	01	1546	SC*	.9	15	0	01(7,8)	5	17	81	43	02	01
KGL	56.5S	01	1547	SC	2	16	8	01(7)	5	27	144	128	02	09
HYB	07.6N	05	0100	..	..	..	..	05(7)	4	8	140	39	06	22
ETT	00.6S	05	0000	..	..	..	..		-	6	156	37	07	14
COL	64.6N	17	0154	SC*	- 15	208	- 52	18(2)	6	162	1045	600	18	17
FRD	49.6N	17	0155	SC*	1.7	48	- 6	17(1,3) 18(1,2)	4	20	88	43	18	06
HYB	07.6N	17	0155	SC	.3*	29	- 3	17(1)	4	7	162	37	18	10
GUA	04.0N	17	0154	SC*	.2	46	- 14	17(1)	5	--	110	10	17	14
ETT	00.6S	17	0156	SC	- .5	31 *	22		-	6	182	50	17	20
HER	33.7S	17	0155	SC*	2 *	16	13	17(1,3)	3	13	67	36	17	13
KGL	56.5S	17	1551	SC	3	16	4	17(7) 18(1,2)	3	13	80	56	19	09
ETT	00.6S	22	2100	..	..	..	..		-	7	147	32	23	21

Stations:

ABG = ALIBAG
ANN = ANNAMALAINAGAR
API = APIA
BJI = BEIJING
CNB = CANBERRA
COL = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KGL = KERGUELEN
KRC = KARACHI
PMG = PORT MORESBY
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN

CONTENTS

Prompt Reports **LATE DATA** Number 541 Part I

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

MAY 1989

Storm Sudden Commencements (ssc)

Day	Time	Quality: Station Group*
04	2351	A: DOB* WNG* CLF* NAG GCK AQU EBR* COI BJI SPT ALM KNY* MPO CZT KGL
		B: SOD* NGK BDV* MMB* FRD KAK QUE HYD ETT CNB AMS DUM
		-: NUR
07	0512	A: SOD DOB* WNG* NAG* MMB* EBR COI BJI ALM KAK* KNY* LNP HYD ETT CNB* CZT
		B: NGK* BDV* CLF* GCK* AQU* SPT* FRD MPO AMS* KGL DUM
		-: NUR
13	1443	A: WNG* BJI
		B: SOD* CLF* NAG* AQU*
		C: EBR*
		si: MPO
		sfe: ALM
20	0957	B: SOD* WNG* BJI HYD ETT
		C: BDV* CLF* MMB EBR SPT ALM QUE
20	1545	B: WNG*
		C: BDV*
		si: ALM MPO
		sfe: CLF
22	2109	A: COI
		B: CLF BJI QUE
		si: MPO
23	1346	A: SOD DOB* WNG* BDV* CLF* NAG* GCK* MMB* AQU EBR COI* BJI SPT* ALM KAK* KNY* QUE LNP HYD ETT CNB
		B: NGK* FRD MPO GNA AMS* CZT* KGL DUM*
		-: NUR

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
02	0415-0419	LNP
03	0338-0435	MMB KAK KNY LNP
03	0647-0655	MPO
04	0335-0339	LNP
04	0418-0445	KNP LNP
04	1105-1135	WNG
05	0246-0254	LNP
05	0529-0534	LNP
06	0528-0605	MMB KAK KNY LNP
08	0106-0114	LNP
08	0743-0751	ETT
09	0709-0714	MPO
10	0426-0431	LNP
13	1447-1452	ALM (see SSC)
13	1650-1717	CLF SPT ALM (ssc:BJI)
13	1709-1737	QUE
20	1547-1603	CLF (see SSC)
21	0604-0630	ALM
23	1133-1200	NGK (ssc:WNG)
27	0812-0818	MPO
29	0434-0442	LNP
30	0053-0059	LNP
31	0715-0800	KNY LNP

Reporting Observatories: (up to the 1st of July 1989)

SOD DOB NUR WNG NGK BDV CLF NAG GCK MMB AQU EBR COI BJI SPT
FRD ALM KAK KNY QUE LNP HYD ETT MPO GNA CNB AMS CZT KGL DUM

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, ordinary, but unmistakable; and C means very poor, doubtful.

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

JUNE 1989

Storm Sudden Commencements (ssc)

Day	Time	Quality: Station Group*
06	2311	A: DOB WNG CLF HRB NAG GCK EBR COI BJI SPT TEN LNP HYD GNA* DUM
		B: SOD NGK BDV MMB FRD KAK HTY KNY QUE ETT AMS* CZT KGL
		-: NUR
08	1803	B: WNG
		C: CLF NAG EBR QUE LNP
08	1953	A: WNG* CLF HRB* EBR COI BJI SPT* FRD* QUE HYD KGL
		B: BDV* NAC* GCK* MMB KAK HTY KNY ETT GNA* CNB AMS CZT DUM
		C: NGK
13	1742	A: DOB* WNG* CLF* HRB* NAC* COI* BJI SPT* LNP HYD
		B: NGK* BDV* GCK* EBR* FRD* KAK QUE TEN* ETT GNA* CNB
		C: MMB* HTY KNY KGL
		-: NUR
14	0107	B: COI
		C: KGL
		si: HRB EBR
		sfe: LNP

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
02	0521-0526	LNP
03	1113-1129	BDV
04	0245-0250	LNP
	0922-0933	NAG
	1122-1140	NGK BDV CLF EBR SPT (SSC:BJI)
	1405-1431	NGK EBR SPT
05	0719-0732	LNP
06	0121-0126	LNP
	1334-1351	NGK
09	1527-1558	EBR
10	0602-0610	LNP
12	0155-0200	LNP
14	0105-0125	LNP (see SSC)
	1350-1408	WNG
15	1912-1945	WNG
16	0452-0501	LNP
	0520-0535	MMB KAK LNP
	0737-0759	WNG NGK CLF NAG MMB EBR KAK HTY KNY LNP HYD ETT
17	1630-1647	WNG
18	2328-2343	LNP
19	0745-0755	MMB KAK KNY LNP
20	1456-1530	EBR
21	0134-0141	LNP
24	0320-0355	MMB KAK HTY KNY LNP
28	1815-1855	WNG

Reporting Observatories: (up to the 1st of August 1989)

SOD DOB NUR WNG NGK BDV CLF NAG GCK MMB EBR COI BJI SPT HRB
FRD KAK KNY QUE LNP HYD ETT GNA CNB AMS CZT KGL DUM HTY TEN

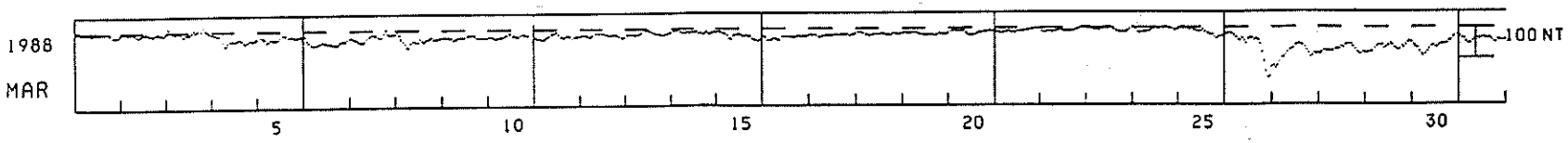
Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, ordinary, but unmistakable; and C means very poor, doubtful.

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

MARCH 1988

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
																							U.T.	
1	3	-2	-5	-7	-6	-6	-4	-6	-8	-5	-5	-5	-3	-2	-1	-1	-1	-4	-7	-14	-16	-16	-13	-9
2	-3	-2	-4	-6	-6	-4	-5	-10	-14	-15	-10	-7	-5	-5	-9	-11	-14	-11	-6	-7	-8	-9	-12	-5
3	11	8	2	-3	-7	-4	-2	-8	-13	-15	-11	-9	-9	-4	5	-1	4	10	1	14	4	0	-5	-9
4	-8	-12	-13	-15	-24	-35	-47	-46	-37	-32	-31	-33	-32	-29	-26	-30	-37	-40	-36	-31	-31	-32	-29	-26
5	-15	-20	-24	-26	-35	-34	-28	-29	-31	-31	-27	-22	-16	-13	-16	-20	-20	-19	-21	-23	-22	-21	-18	-17
6	-19	-32	-39	-46	-48	-47	-46	-44	-41	-38	-39	-41	-42	-42	-45	-46	-47	-45	-39	-36	-35	-36	-31	-26
7	-23	-28	-30	-33	-37	-39	-40	-35	-27	-21	-17	-16	-16	-17	-22	-25	-23	-10	1	-12	-15	-14	-14	-12
8	-7	-15	-29	-37	-45	-56	-57	-43	-36	-37	-40	-39	-29	-35	-39	-33	-30	-28	-23	-30	-30	-31	-28	-26
9	-25	-25	-25	-26	-28	-34	-32	-29	-26	-25	-26	-26	-20	-18	-18	-18	-19	-26	-29	-28	-28	-28	-28	-26
10	-23	-24	-28	-29	-29	-26	-25	-24	-21	-17	-14	-14	-21	-21	-24	-24	-18	-15	-17	-19	-20	-30	-38	-32
11	-28	-30	-30	-34	-34	-29	-26	-22	-16	-16	-12	-11	-17	-24	-28	-27	-22	-22	-23	-32	-28	-25	-24	-23
12	-19	-21	-21	-22	-26	-25	-21	-16	-14	-15	-14	-16	-16	-19	-21	-20	-20	-19	-21	-22	-25	-29	-31	-28
13	-20	-18	-19	-21	-21	-20	-19	-17	-12	-6	-5	-6	-9	-11	-14	-17	-17	-18	-20	-20	-19	-19	-15	-13
14	-9	-7	-6	-6	-11	-13	-14	-13	-11	-13	-10	-11	-11	-9	-15	-14	-19	-15	-10	-15	-15	-13	-11	-12
15	-9	-10	-12	-15	-17	-22	-32	-34	-23	-20	-18	-17	-21	-24	-23	-22	-24	-25	-32	-36	-37	-40	-35	-28
16	-25	-29	-39	-38	-37	-32	-33	-37	-38	-27	-26	-27	-25	-26	-28	-29	-28	-25	-23	-27	-26	-25	-26	-22
17	-19	-22	-21	-22	-27	-29	-26	-24	-22	-22	-22	-23	-20	-20	-20	-21	-18	-20	-18	-18	-23	-20	-19	-17
18	-12	-12	-14	-16	-20	-21	-23	-22	-20	-18	-19	-18	-17	-15	-18	-20	-21	-22	-17	-16	-17	-19	-17	-16
19	-14	-14	-15	-15	-14	-13	-13	-15	-19	-21	-21	-22	-20	-20	-20	-21	-23	-22	-17	-17	-18	-18	-19	-16
20	-11	-8	-7	-8	-10	-10	-9	-9	-15	-20	-24	-23	-22	-20	-17	-14	-14	-12	-10	-10	-9	-10	-11	-11
21	-12	-15	-16	-15	-14	-12	-10	-12	-13	-15	-15	-11	-11	-10	-9	-8	-7	-6	-6	-4	-2	-2	-2	-5
22	-12	-13	-13	-12	-11	-13	-12	-11	-8	-7	-7	-10	-11	-11	-10	-9	-8	-8	-6	-4	0	2	1	2
23	2	1	-1	-5	-5	-6	-8	-4	0	1	2	0	1	-1	-6	-10	-13	-14	-13	-15	-12	-11	-5	1
24	2	-5	-13	-18	-15	-13	-13	-13	-10	-8	-4	0	-2	-2	0	0	0	1	-1	-3	-4	-8	-7	-5
25	0	1	-2	0	-3	-6	-6	-9	-10	-13	-12	-12	-7	-14	-19	-20	-22	-24	-30	-35	-31	-29	-28	-25
26	-21	-18	-17	-21	-25	-33	-41	-42	-35	-44	-52	-38	-32	-35	-40	-37	-42	-55	-82	-111	-142	-163	-159	-129
27	-124	-130	-124	-112	-99	-96	-90	-82	-74	-72	-68	-59	-56	-54	-57	-60	-66	-77	-85	-95	-91	-85	-88	-85
28	-86	-81	-77	-76	-78	-77	-78	-76	-71	-71	-69	-63	-66	-58	-56	-54	-56	-62	-71	-79	-84	-86	-79	-81
29	-83	-82	-78	-78	-70	-62	-57	-58	-58	-69	-65	-60	-53	-58	-67	-70	-75	-72	-61	-67	-57	-49	-46	-49
30	-57	-63	-68	-79	-89	-94	-87	-80	-71	-62	-60	-66	-65	-59	-54	-54	-55	-52	-44	-42	-33	-29	-24	-29
31	-31	-35	-38	-48	-55	-53	-45	-41	-37	-35	-37	-34	-33	-37	-36	-36	-42	-48	-50	-41	-42	-42	-42	-42



Note: The baselines for the observatories were adjusted for secular change. Therefore there is a discontinuity in the Provisional Dst values between the last hour of February and the first hour of March.

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

APRIL 1988

DAY	UNIT=NT 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-35	-37	-41	-43	-39	-40	-43	-52	-60	-54	-48	-39	-32	-35	-37	-40	-40	-45	-49	-50	-57	-56	-52	-48
2	-44	-37	-38	-41	-41	-46	-55	-62	-64	-56	-51	-66	-71	-63	-60	-57	-53	-53	-52	-48	-49	-47	-42	-40
3	-38	-41	-43	-43	-45	-43	-40	-50	-64	-64	-48	-39	-37	-37	-36	-37	-32	-30	-66	-95	-71	-46	-61	-62
4	-67	-76	-78	-77	-82	-85	-90	-99	-106	-101	-101	-104	-99	-87	-88	-109	-134	-141	-135	-119	-106	-94	-78	-67
5	-60	-70	-69	-63	-62	-68	-76	-78	-78	-75	-70	-68	-69	-64	-59	-55	-49	-47	-45	-52	-63	-65	-62	-66
6	-73	-83	-79	-80	-88	-105	-109	-101	-86	-75	-74	-63	-58	-53	-48	-51	-55	-58	-55	-50	-45	-39	-37	-38
7	-38	-38	-41	-42	-44	-43	-49	-49	-50	-50	-45	-43	-46	-45	-44	-42	-42	-49	-51	-45	-41	-36	-35	-34
8	-34	-36	-34	-33	-33	-34	-35	-35	-33	-30	-29	-26	-27	-26	-24	-29	-28	-29	-28	-23	-21	-18	-15	-13
9	-20	-26	-23	-21	-21	-25	-28	-30	-30	-33	-32	-35	-32	-29	-30	-27	-27	-28	-26	-26	-27	-24	-24	-25
10	-22	-18	-13	-14	-19	-18	-21	-22	-40	-44	-41	-37	-37	-46	-44	-40	-38	-41	-36	-28	-24	-22	-24	-21
11	-18	-18	-15	-14	-18	-23	-30	-27	-26	-24	-21	-17	-18	-23	-24	-25	-27	-30	-30	-26	-24	-22	-19	-17
12	-19	-22	-25	-28	-27	-27	-28	-25	-23	-24	-26	-24	-29	-25	-25	-24	-24	-26	-19	-18	-18	-18	-17	-18
13	-19	-20	-19	-19	-21	-22	-23	-22	-22	-20	-19	-16	-16	-16	-18	-18	-16	-20	-20	-21	-20	-21	-16	-19
14	-23	-27	-27	-23	-23	-25	-25	-20	-18	-19	-17	-16	-18	-19	-14	-12	-9	-11	-11	-12	-10	-12	-14	-14
15	-13	-13	-13	-13	-14	-15	-17	-15	-14	-13	-12	-13	-13	-12	-10	-10	-7	-5	-7	-9	-8	-11	-16	-18
16	-17	-15	-15	-16	-15	-14	-10	-9	-12	-13	-14	-15	-13	-13	-17	-23	-25	-24	-18	-19	-21	-18	-12	-6
17	-7	-9	-9	-12	-12	-10	-9	-12	-12	-13	-16	-15	-14	-13	-12	-10	-8	-7	-11	-9	-9	-6	-6	-9
18	-15	-21	-24	-22	-24	-29	-35	-30	-23	-15	-15	-15	-18	-15	-15	-13	-9	-10	-9	-6	-5	-11	-10	-12
19	-12	-10	-1	12	11	-3	-8	-7	7	-7	-4	-7	-6	1	-1	-2	-1	-4	-10	-8	-11	-14	-14	-12
20	-11	-7	-6	-5	-7	-10	-12	-8	-6	-7	-6	-3	-4	-6	-9	-15	-14	-18	-14	-12	-12	-16	-16	-18
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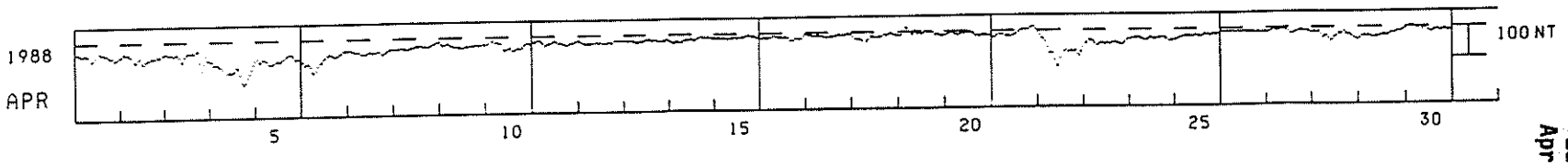

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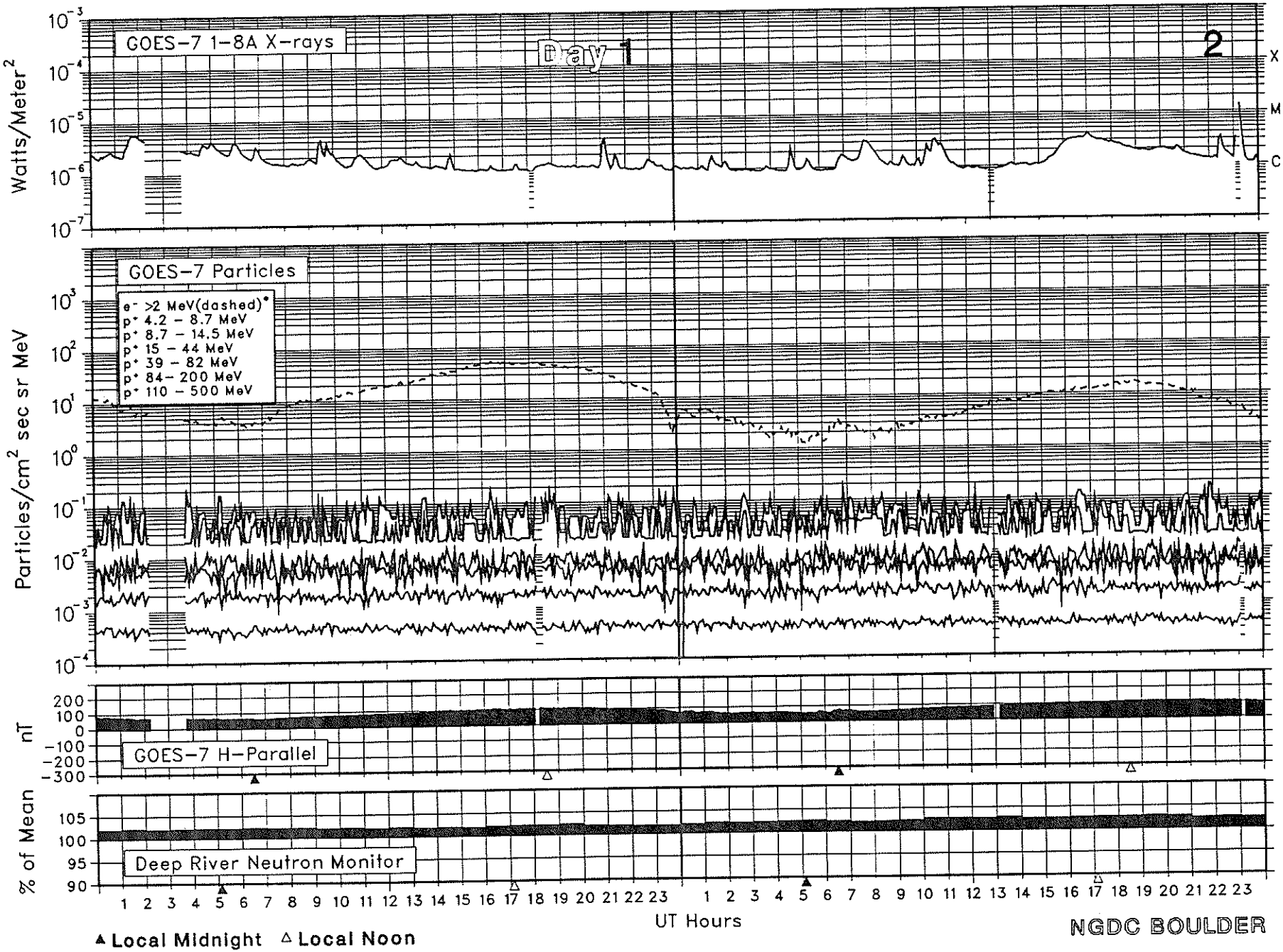

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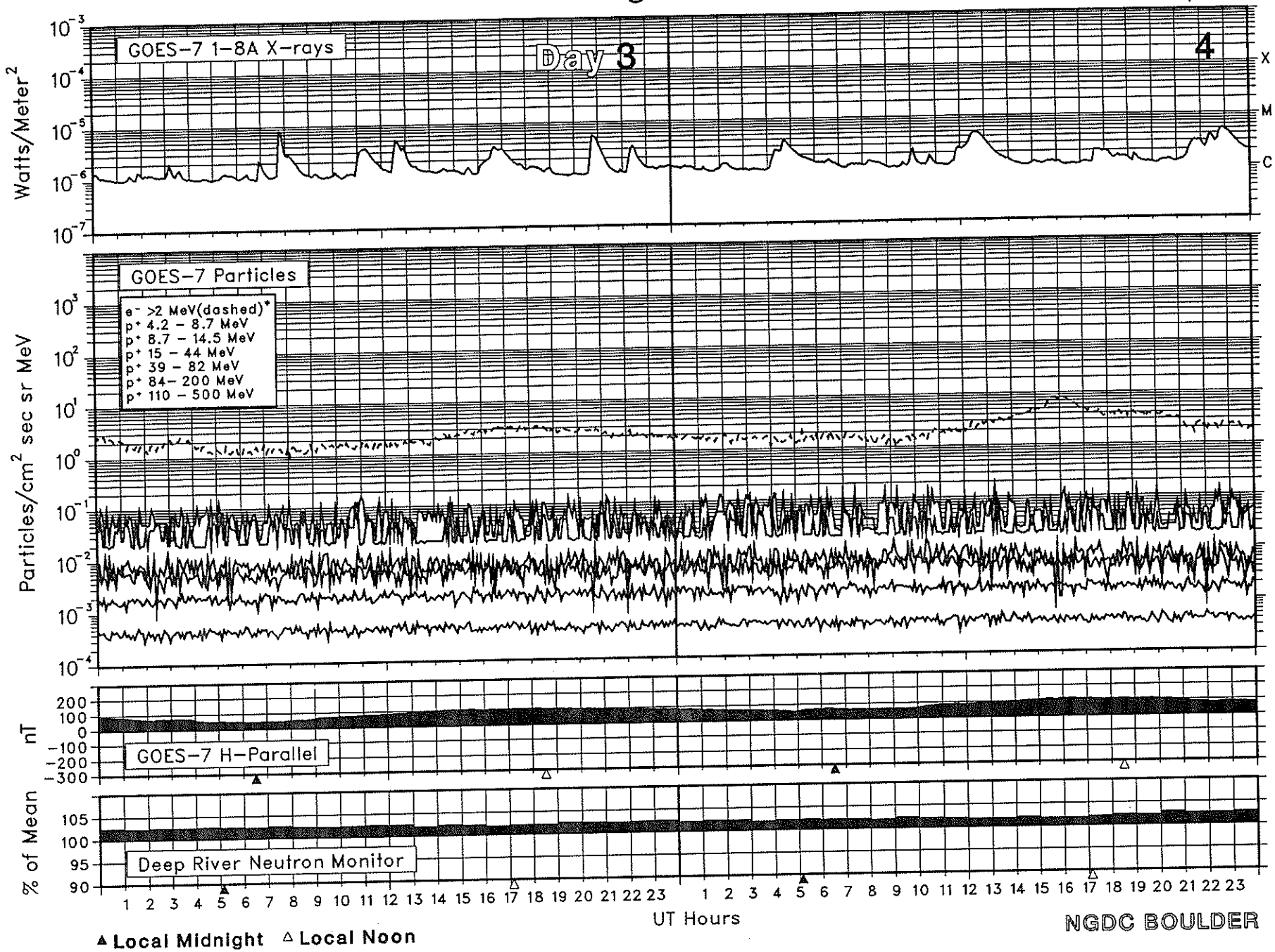

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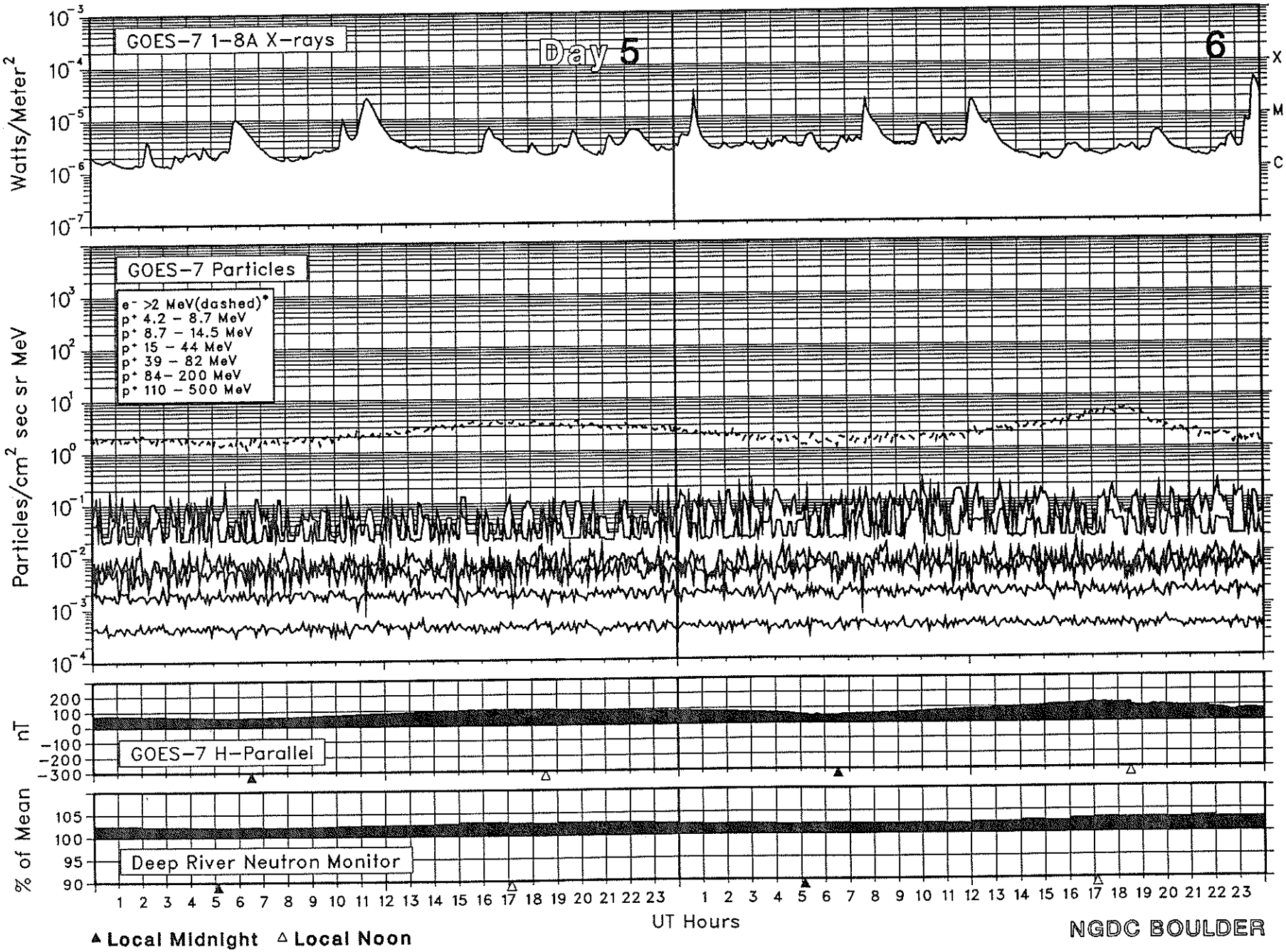

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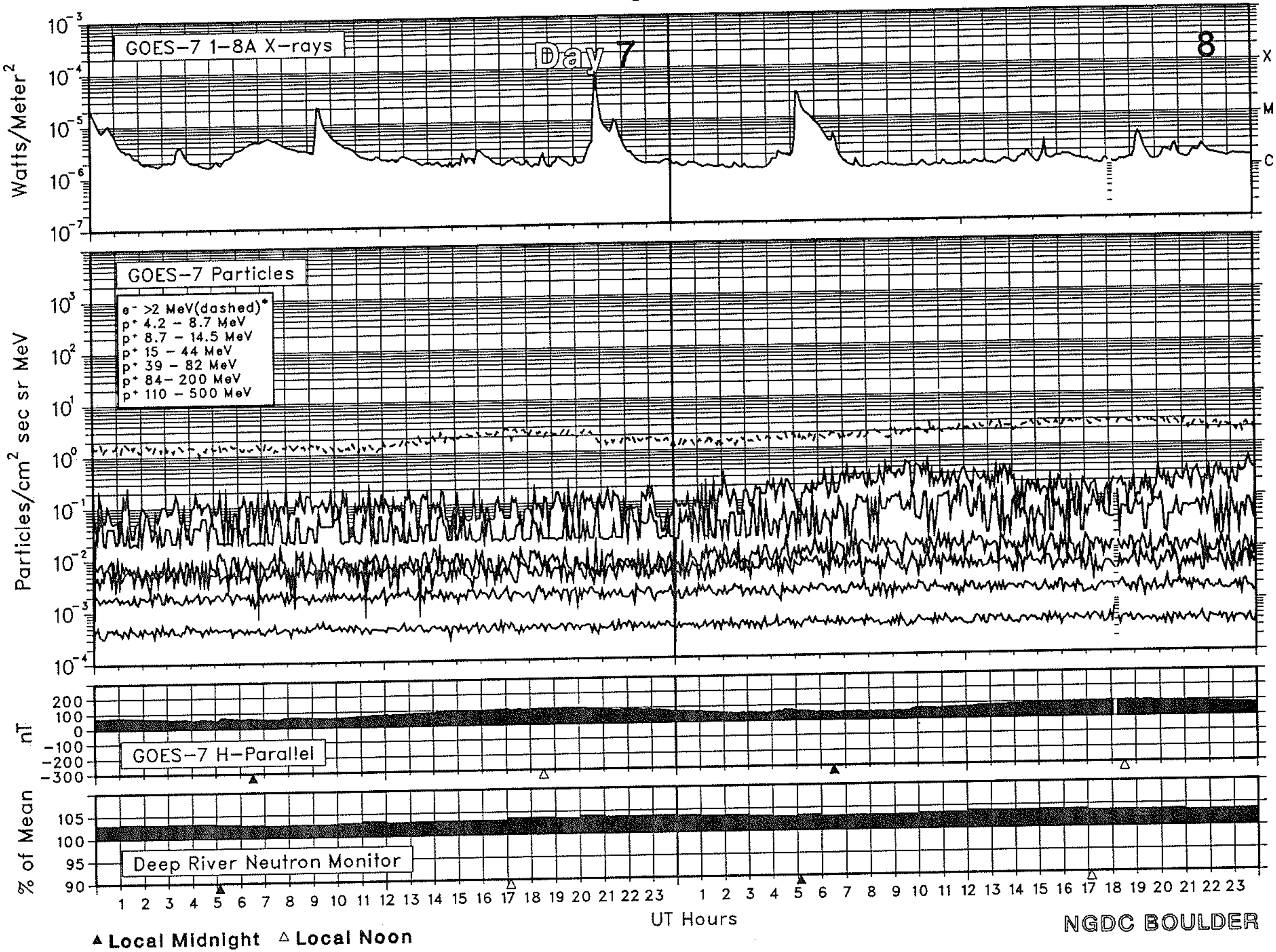

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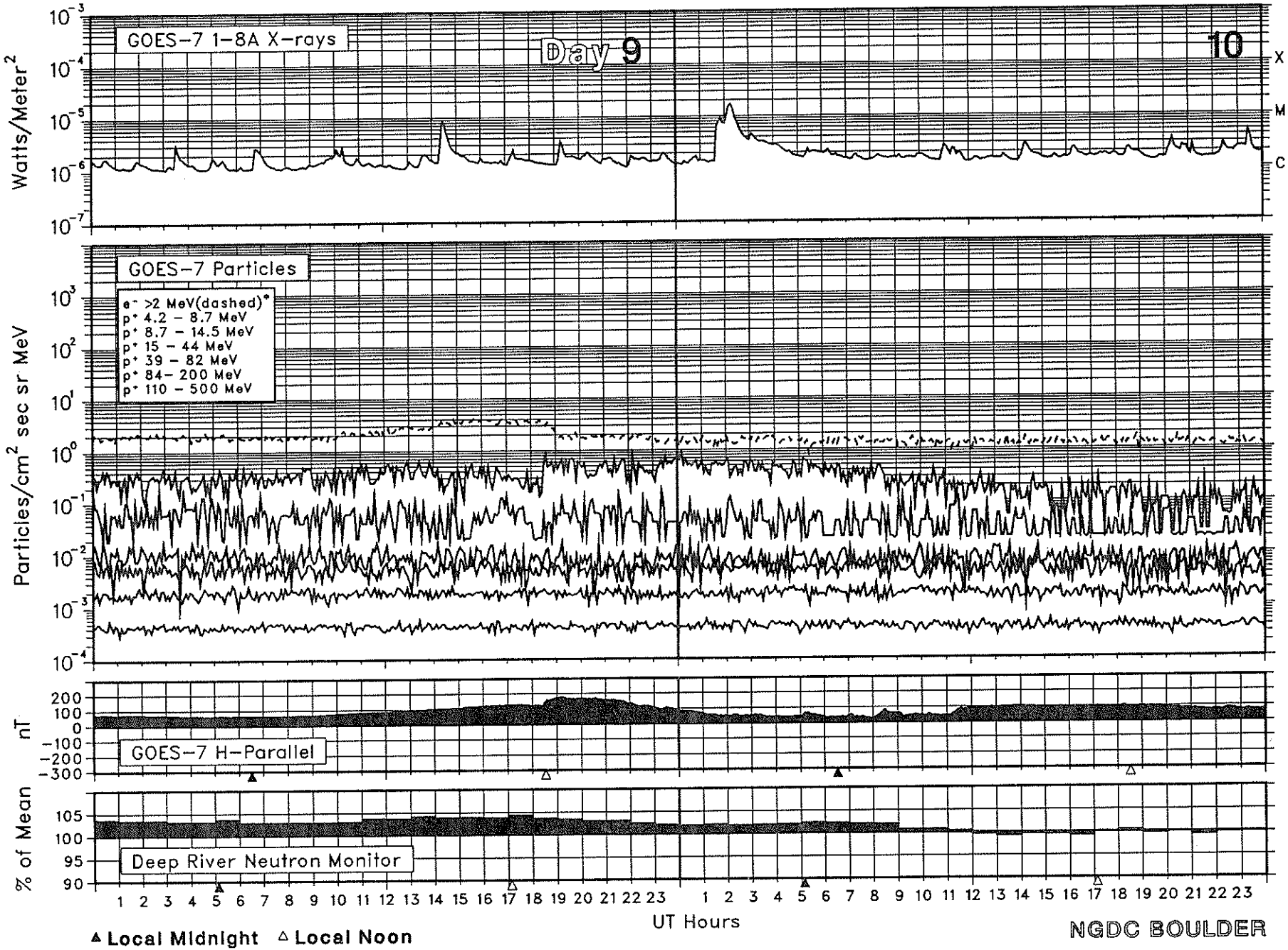

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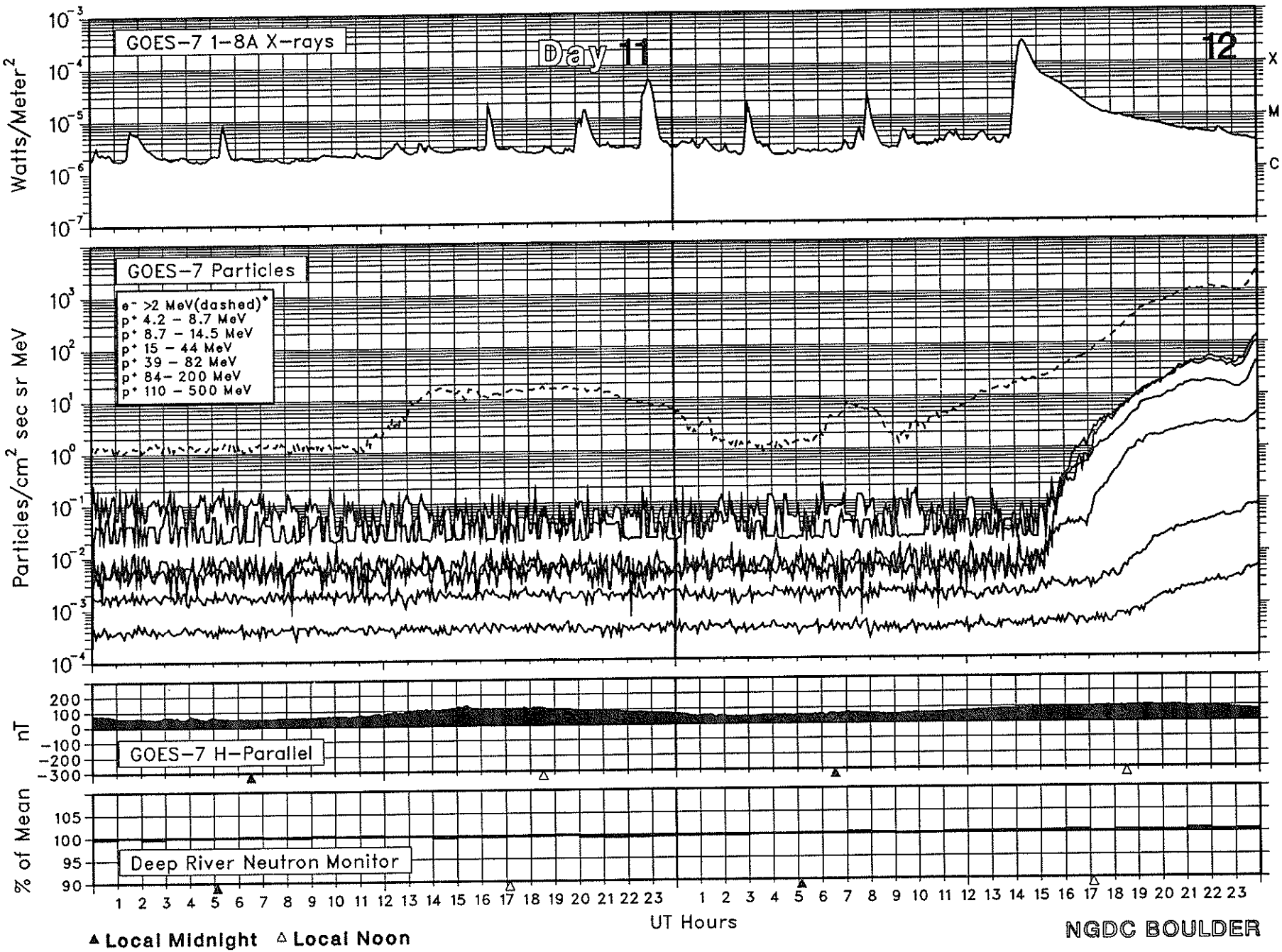

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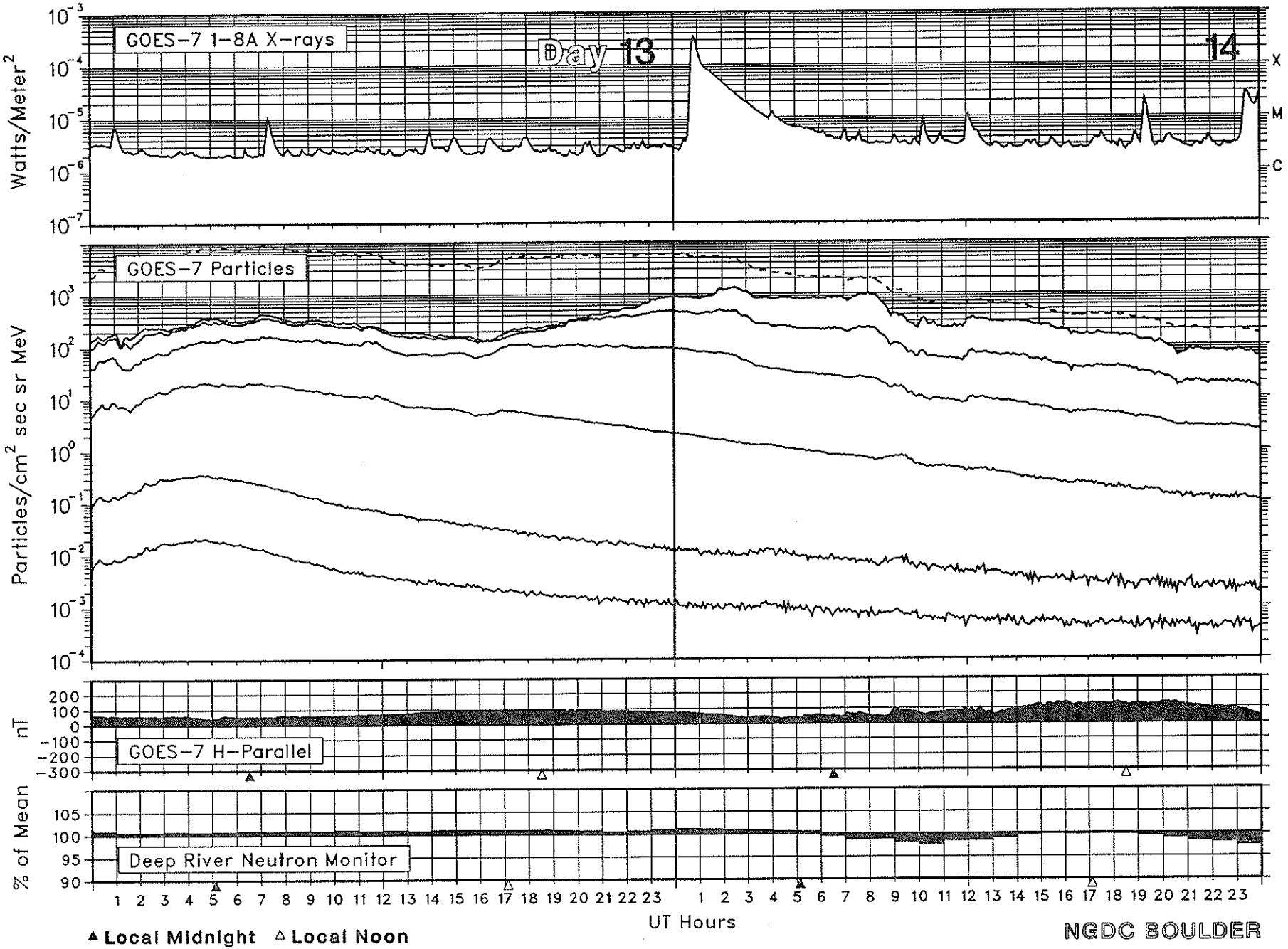

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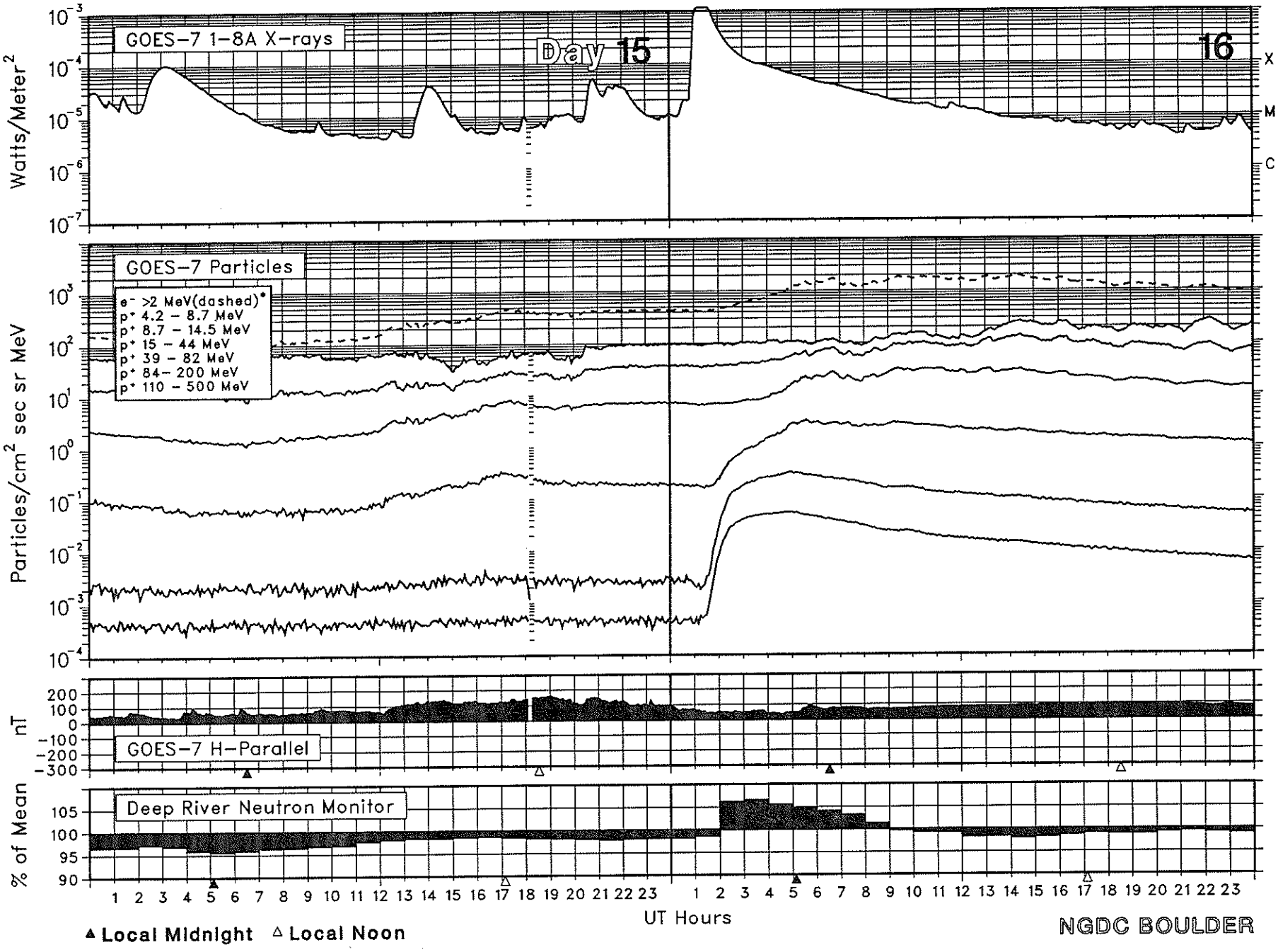

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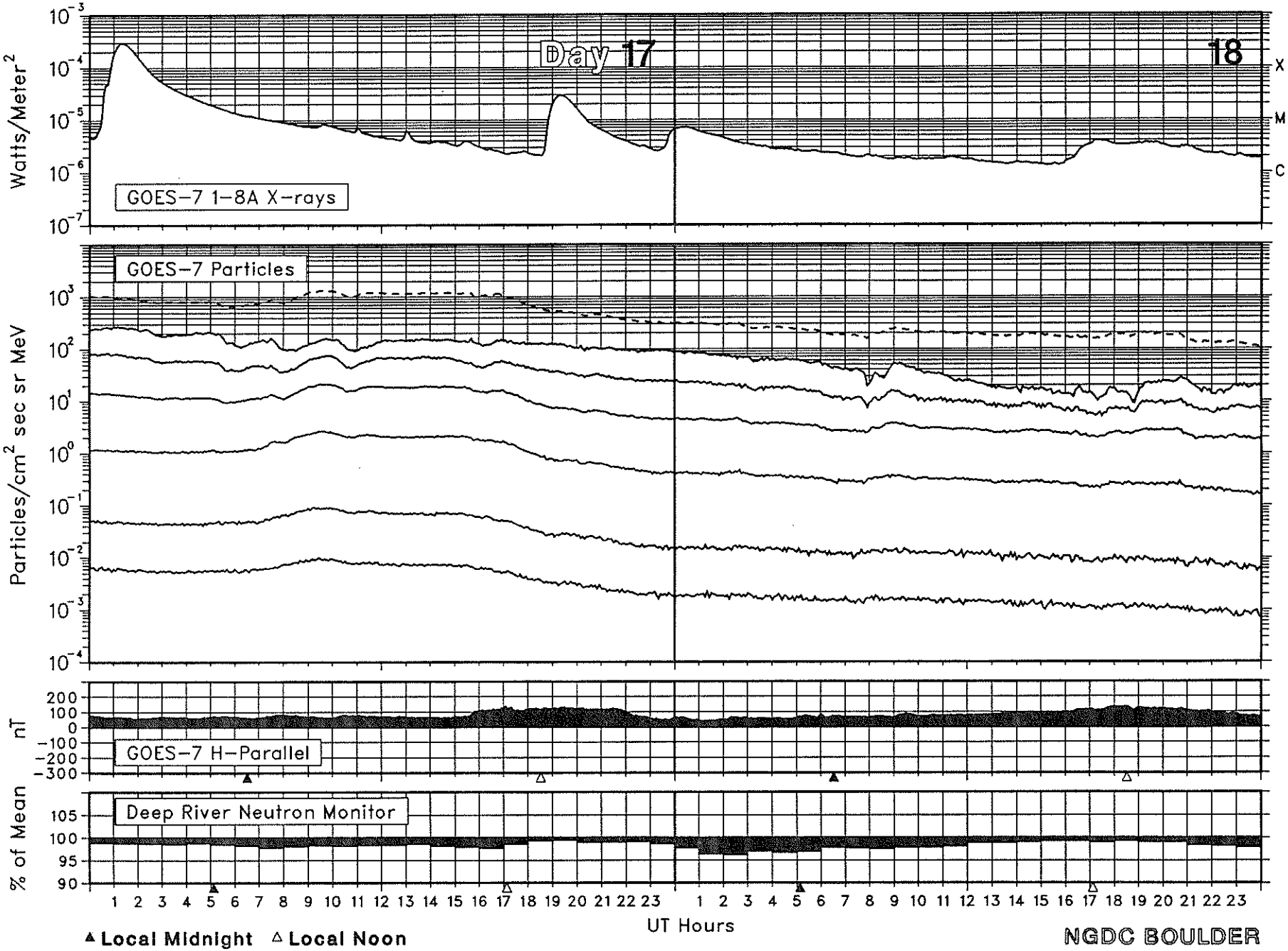

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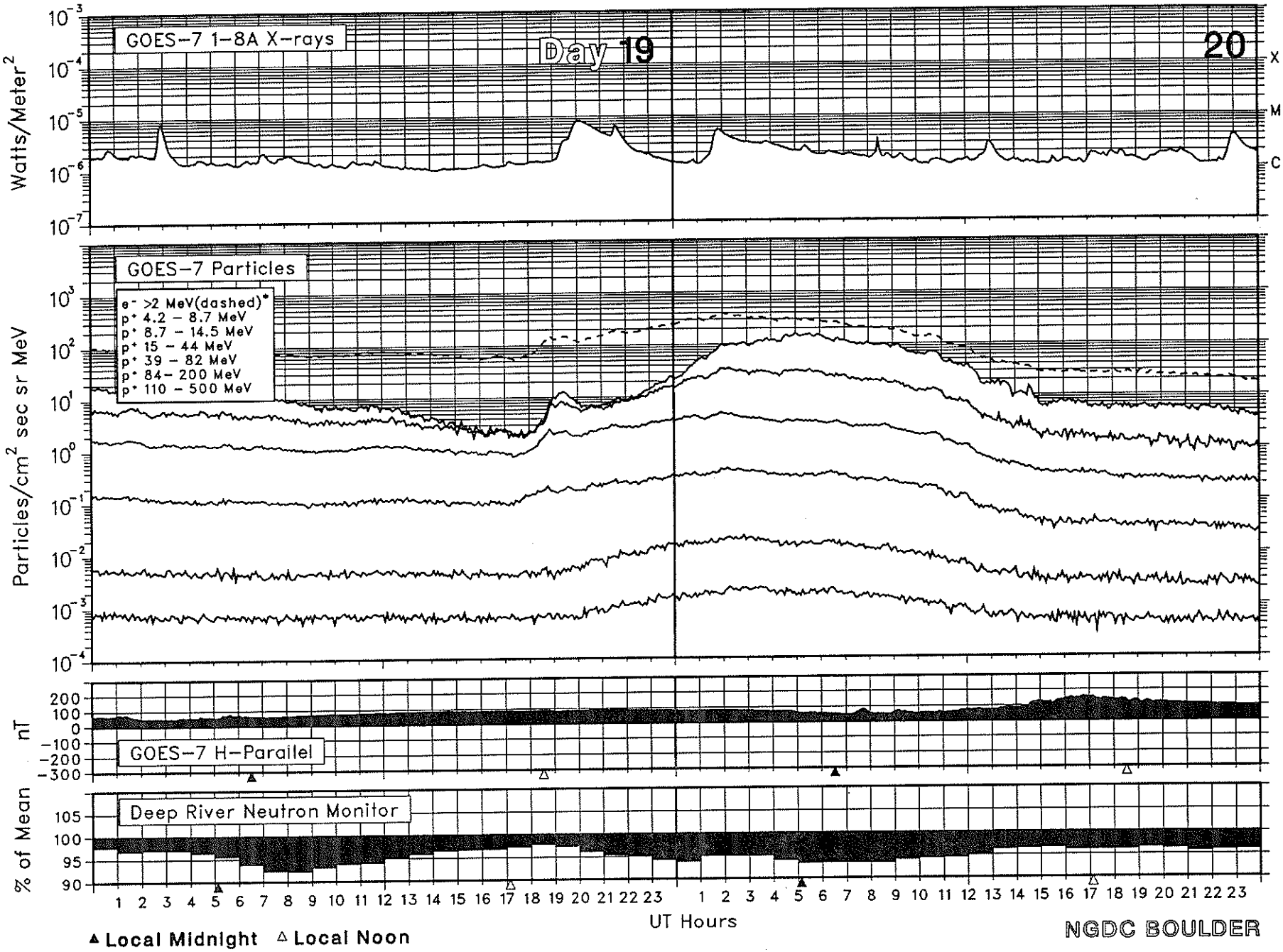

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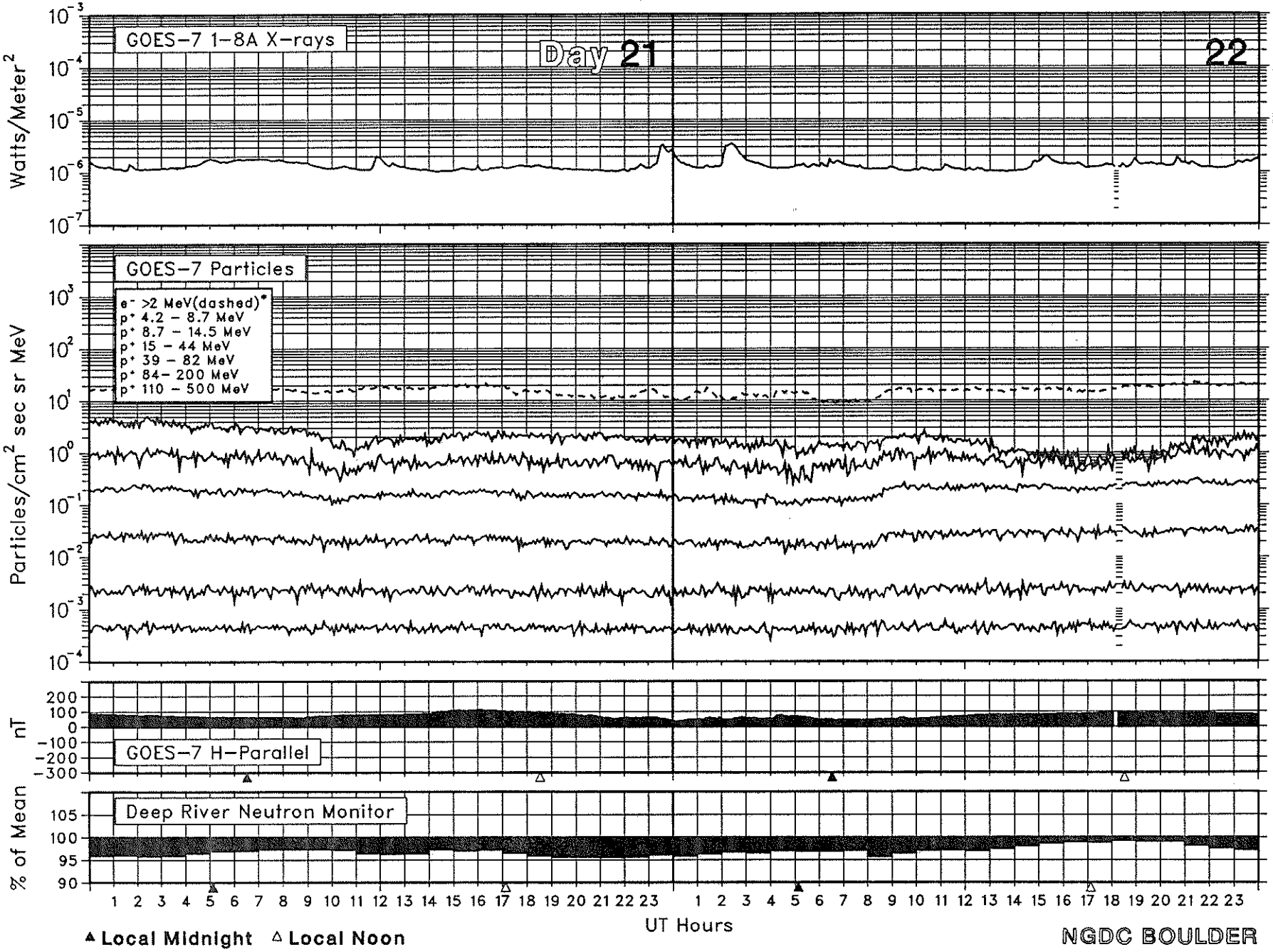

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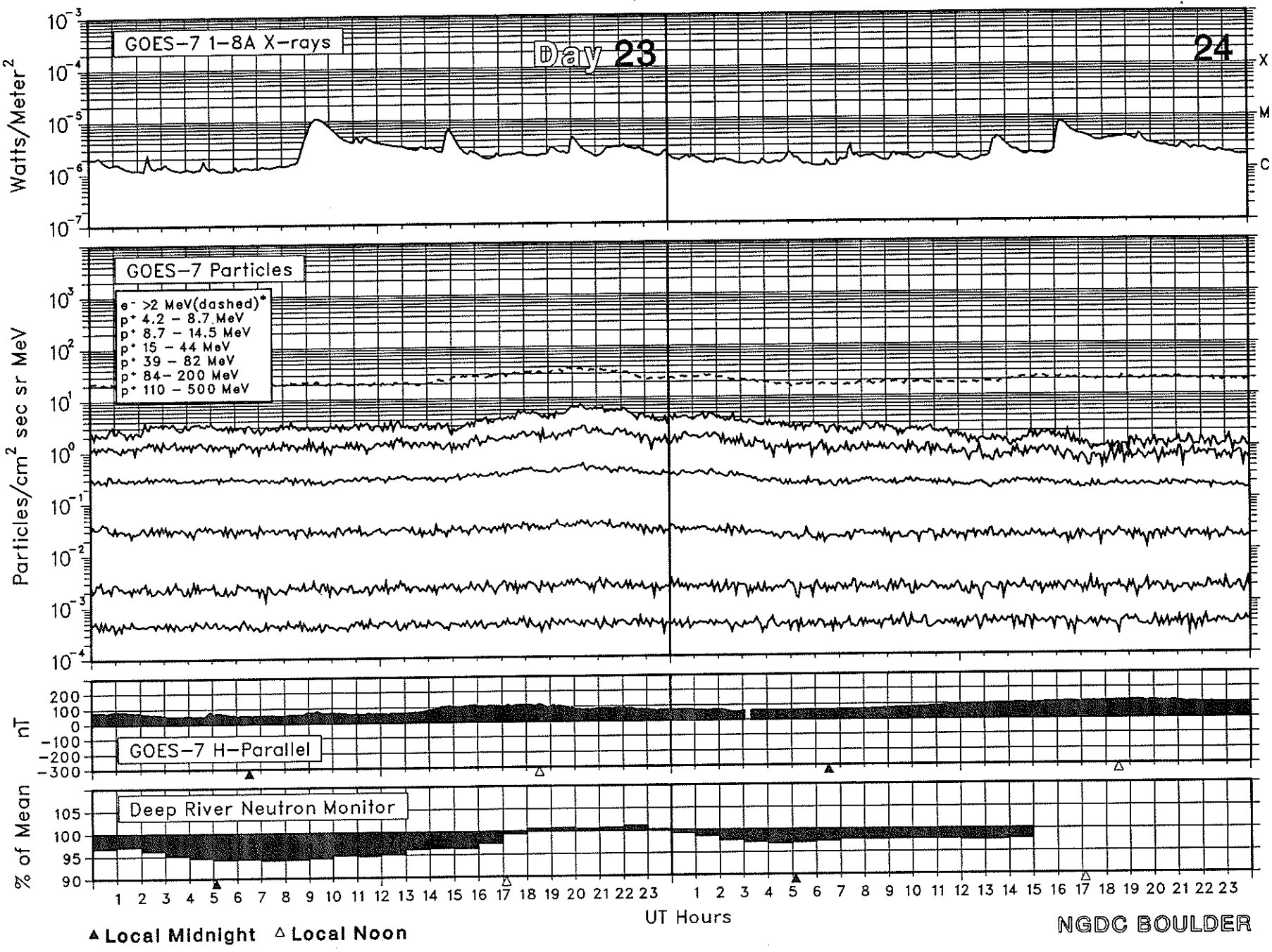

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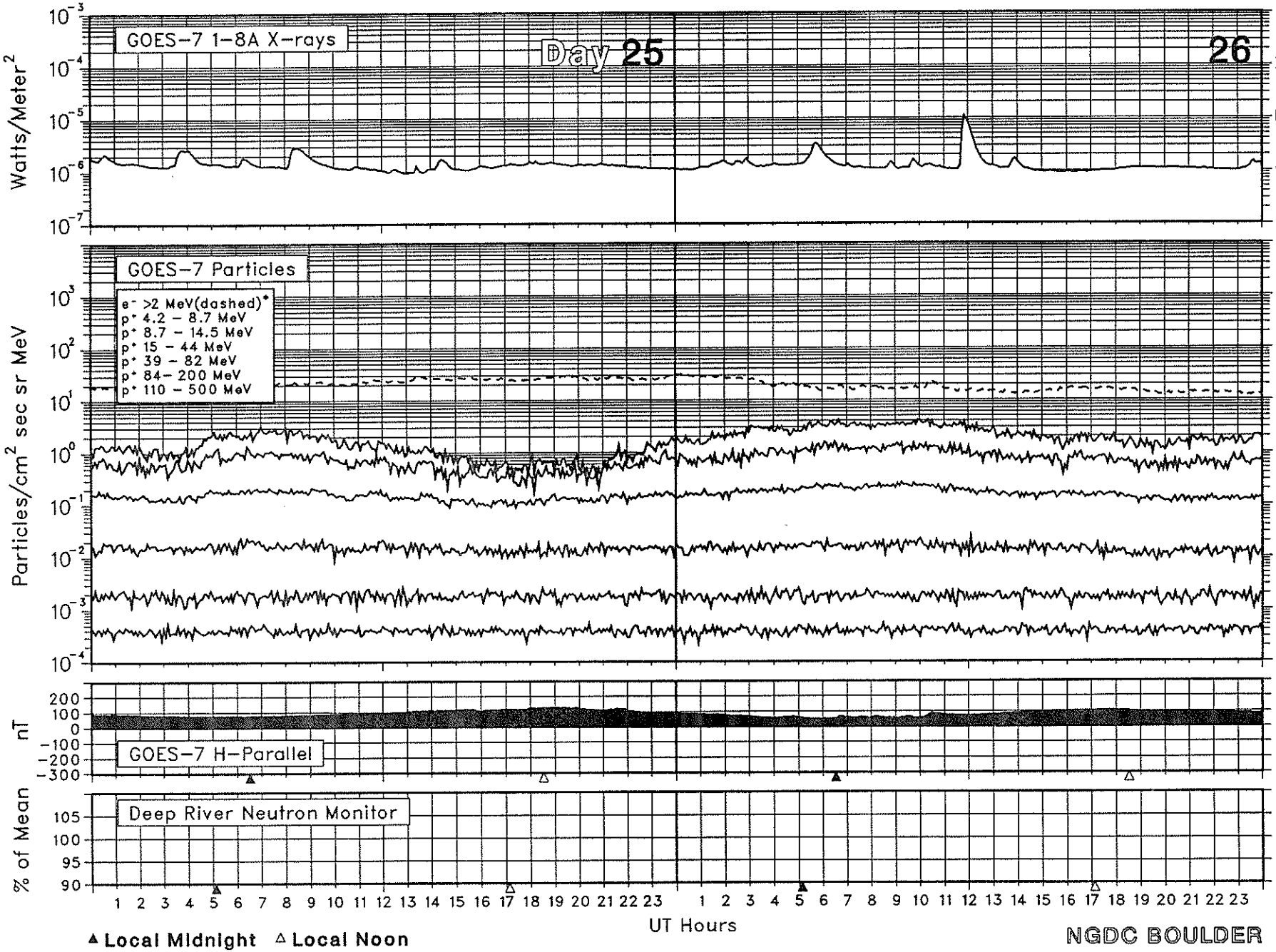

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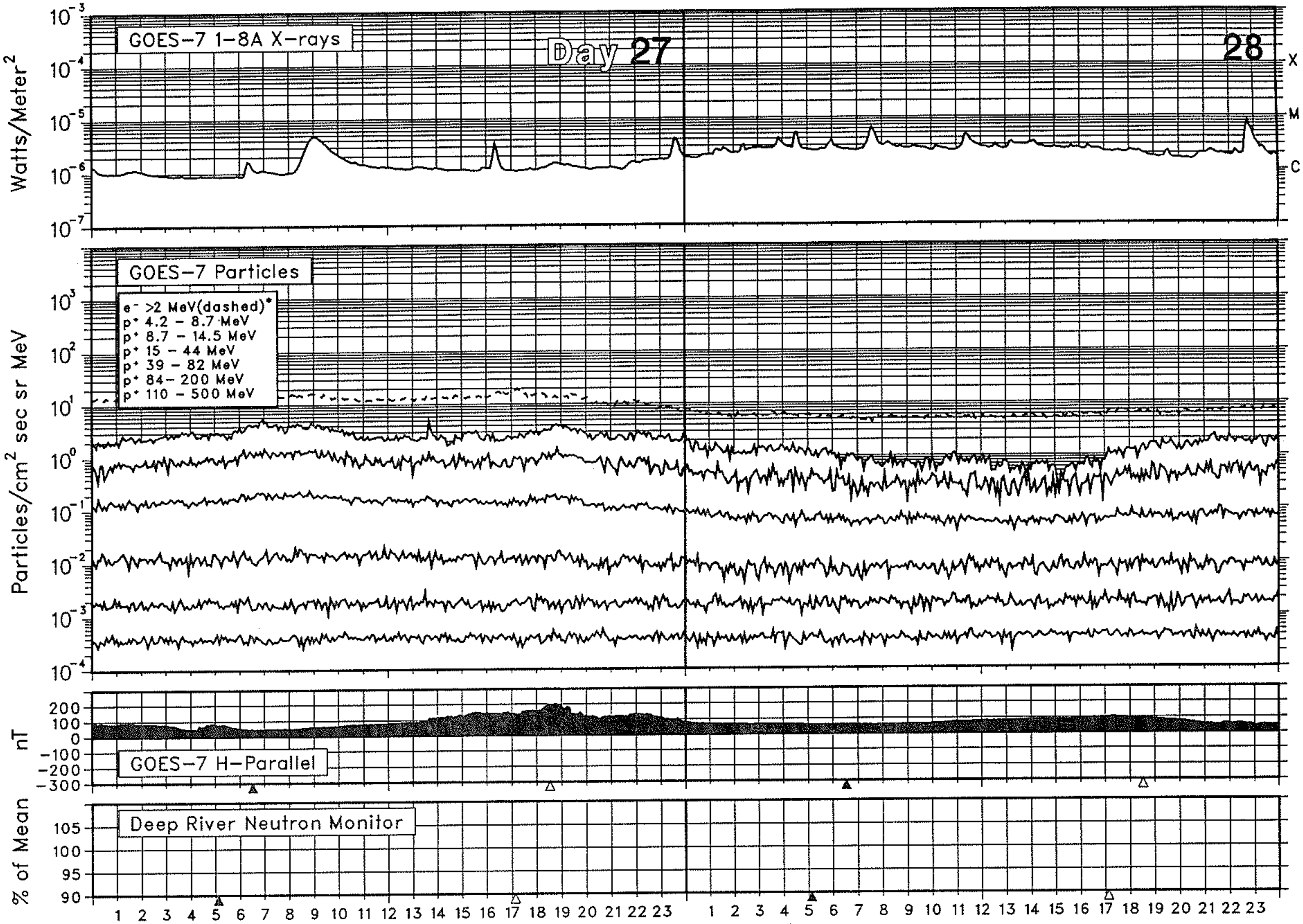

▲ Local Midnight △ Local Noon

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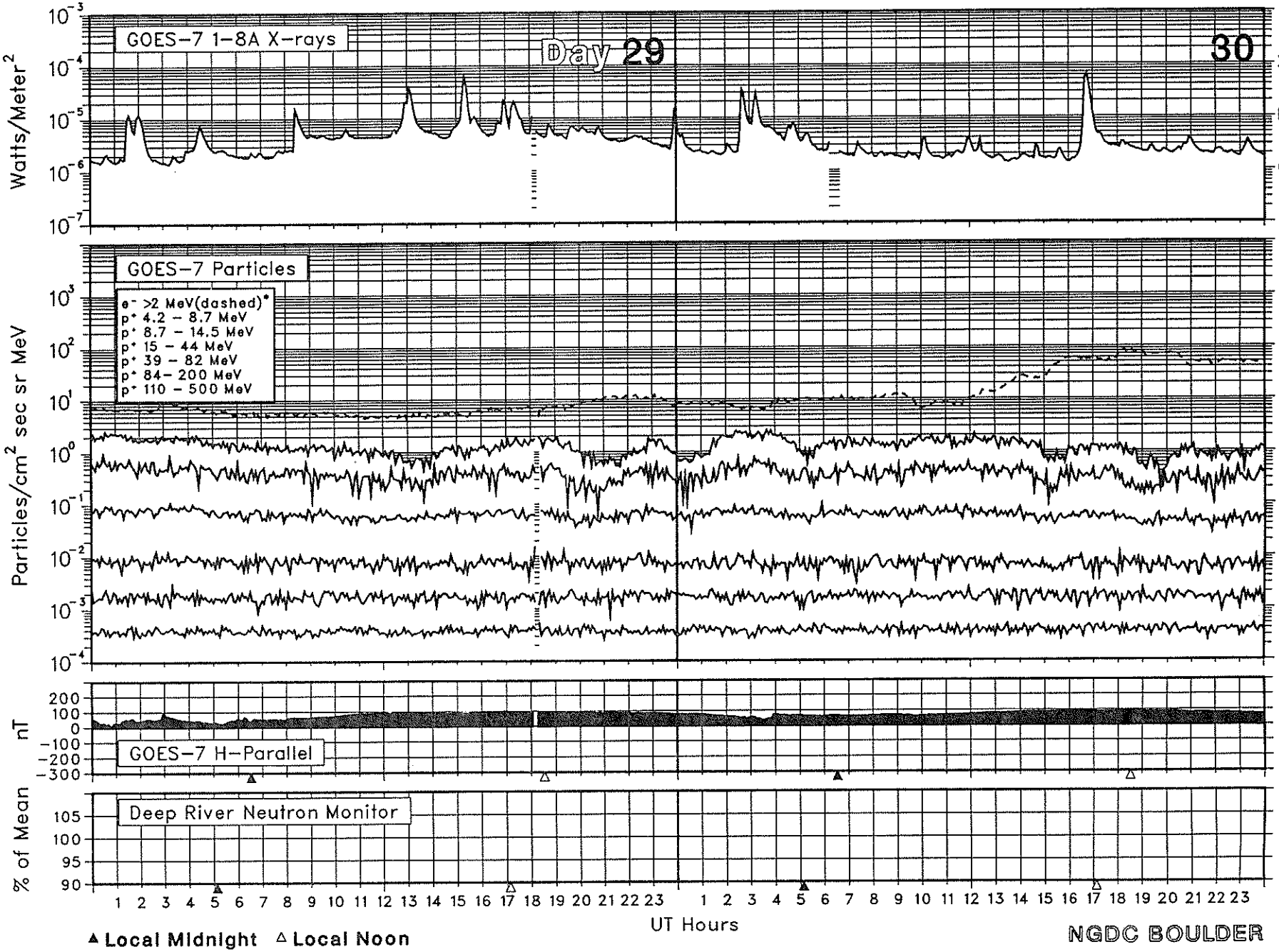

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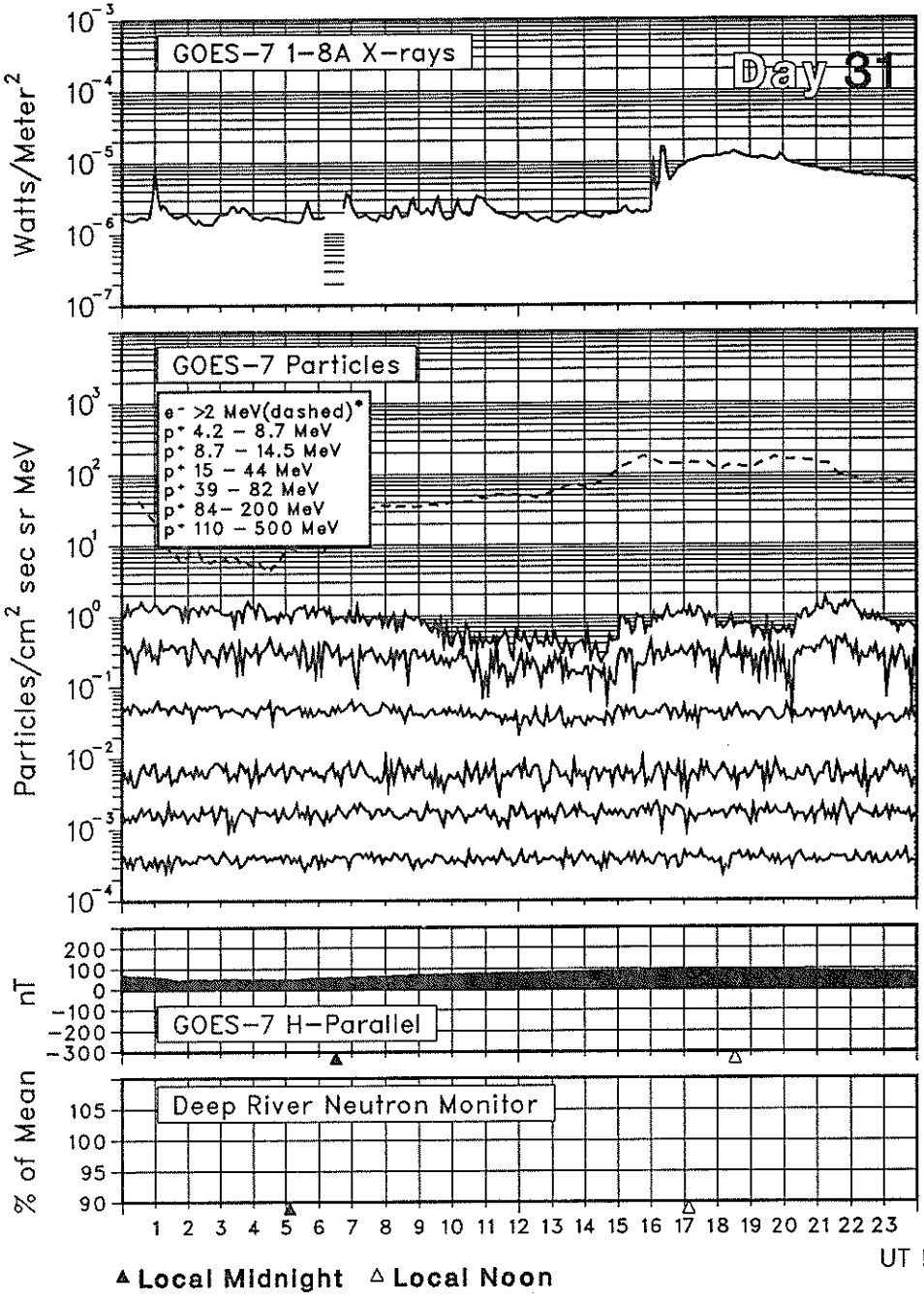

* The y-axis units for the electron flux are **Particles/cm² sec sr.** Also, the plotted electron values have been divided by 10.

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WORLD DATA CENTER A
FOR
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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."