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William E. Evans, Under Secretary for Oceans and Atmosphere

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Data for February, January 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 535

(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 **FEBRUARY 1989** Number 535 Part I

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — FEBRUARY 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
01	01	31	219	195	023	N19 W69	6	1	0	01	N19 W69	E	Solalert 01/XX,
						S18 W36	5	0	0		S18 W36	E	Magalert 01/XX.
						S21 E04	9	4	0		S21 E04	A	
						S18 W52	0	0	0		S18 W52	Q	
						N20 E17	0	0	0		N20 E17	Q	
						S22 E61	0	0	0		S22 E61	Q	
						S17 E72	0	0	0		S17 E72	Q	
						S27 E76	0	0	0		S27 E76	Q	
						S07 E29	0	0	0		S07 E29	Q	
						N25 E55	0	0	0		N25 E55	Q	
02	02	01	160	189	025	N20 W80	9	0	0	02	N20 W80	E	Solalert 02/XX,
						S18 W53	1	0	0		S18 W53	Q	Magalert 02/XX.
						S21 W09	11	2	0		S21 W09	A	
						S19 W65	0	0	0		S19 W65	Q	
						S21 E48	0	0	0		S21 E48	Q	
						S16 E61	0	0	0		S16 E61	Q	
						S26 E64	0	0	0		S26 E64	Q	
						N27 E39	0	0	0		N27 E39	Q	
						N09 W51	0	0	0		N09 W51	Q	
03	03	02	200	175	014	N21 W90	1	0	0	03	N21 W90	E	Solalert 03/XX,
						S18 W65	1	0	0		S18 W65	Q	Magnil.
						S21 W22	12	1	0		S21 W22	E	
						S19 W81	1	0	0		S19 W81	Q	
						N20 W13	0	0	0		N20 W13	Q	
						S21 E35	0	0	0		S21 E35	Q	
						S15 E51	0	0	0		S15 E51	Q	
						S26 E52	0	0	0		S26 E52	Q	
						S05 E02	0	0	0		S05 E02	Q	
						N25 E27	0	0	0		N25 E27	Q	
						N10 W63	0	0	0		N10 W63	Q	
						N20 W50	0	0	0		N20 W50	Q	
						S26 W45	0	0	0		S26 W45	Q	
						N16 E73	0	0	0		N16 E73	Q	
04	04	03	234	197	036	S19 W80	1	0	0	04	S19 W80	Q	Solalert 04/XX,
						S22 W35	0	0	0		S22 W35	E	Magalert 04/04 Minor.
						S20 W93	2	1	0		S20 W93	E	
						S21 E23	0	0	0		S21 E23	Q	
						S13 E44	0	0	0		S13 E44	Q	
						S26 E40	0	0	0		S26 E40	Q	
						S06 W12	0	0	0		S06 W12	Q	
						N26 E14	0	0	0		N26 E14	Q	
						N19 W65	0	0	0		N19 W65	Q	
						S26 W57	0	0	0		S26 W57	Q	
						N18 E61	0	0	0		N18 E61	Q	
						N35 W54	1	0	0		N35 W54	Q	
						N23 W12	0	0	0		N23 W12	Q	
						N13 E35	0	0	0		N13 E35	Q	
						N30 E62	2	0	0		N30 E62	Q	
						S18 E33	0	0	0		S18 E33	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **FEBRUARY 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
05	05	04	209	192	022	S21 W84	0	0	0	05	S21 W84	Q	Solalert 05/XX,
						S22 W48	6	0	0		S22 W48	E	Magalert 05/06
						S21 E10	1	0	0		S21 E10	Q	Coronal hole.
						S13 E31	0	0	0		S13 E31	Q	
						S26 E27	0	0	0		S26 E27	Q	
						S06 W25	0	0	0		S06 W25	Q	
						S26 W70	2	0	0		S26 W70	Q	
						N19 E47	1	0	0		N19 E47	Q	
						N36 W70	0	0	0		N36 W70	Q	
						N24 W25	0	0	0		N24 W25	Q	
						N18 E22	0	0	0		N18 E22	Q	
						N31 E53	1	0	0		N31 E53	Q	
						S30 E69	0	0	0		S30 E69	Q	
						N30 E75	3	0	1		N30 E75	A	
		Presto:[2]	Sydney	Culgoora Moderate Type II sweep began 04/0018 UT.									
			Boulder	X-ray event X1 04/0950 UT duration 171 minutes.									
				Tenflare 410 flux units began 04/1003 duration 49 minutes.									
06	06	05	178	201	015	S22 W59	0	0	0	06	S22 W59	Q	Solalert 06/XX,
						S22 W03	0	0	0		S22 W03	Q	Magalert 06/XX.
						S12 E16	0	0	0		S12 E16	Q	
						S26 E14	0	0	0		S26 E14	Q	
						N19 E32	1	0	0		N19 E32	Q	
						N22 W39	0	0	0		N22 W39	Q	
						N15 E05	0	0	0		N15 E05	Q	
						N31 E36	0	0	0		N31 E36	Q	
						S29 E57	0	0	0		S29 E57	Q	
						N31 E65	14	0	0		N31 E65	A	
07	07	06	146	216	021	S22 W73	1	0	0	07	S22 W73	Q	Solalert 07/XX,
						S22 W17	0	0	0		S22 W17	Q	Magalert 07/XX.
						S27 E01	0	0	0		S27 E01	E	
						N18 E17	1	0	0		N18 E17	Q	
						N23 W54	0	0	0		N23 W54	Q	
						S30 E44	0	0	0		S30 E44	Q	
						N32 E47	13	3	0		N32 E47	A	
						N20 E68	1	0	0		N20 E68	Q	
08	08	07	163	218	019	S23 W84	1	0	0	08	S23 W84	Q	Solalert 08/XX,
						S21 W29	0	0	0		S21 W29	Q	Magnil.
						S27 W11	0	0	0		S27 W11	Q	
						N18 E04	0	0	0		N18 E04	E	
						N22 W69	0	0	0		N22 W69	Q	
						S29 E32	0	0	0		S29 E32	Q	
						N32 E42	8	1	0		N32 E42	A	
						N21 E59	1	0	0		N21 E59	Q	
						S15 E76	0	0	0		S15 E76	Q	
09	09	08	194	248	010	S22 W42	0	0	0	09	S22 W42	Q	Solalert 09/XX,
						S13 W23	0	0	0		S13 W23	Q	Magquiet.
						S25 W27	0	0	0		S25 W27	Q	
						N17 W11	2	0	0		N17 W11	E	
						N22 W79	0	0	0		N22 W79	Q	
						S30 E19	0	0	0		S30 E19	Q	
						N31 E27	7	3	0		N31 E27	A	
						N22 E45	3	1	0		N22 E45	E	
						S16 E67	0	0	0		S16 E67	Q	
						N17 E69	0	0	0		N17 E69	Q	
		Presto:[2]	Sydney	Culgoora Soflare 2B N32 E30 08/2025 UT in progress.									

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **FEBRUARY 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
10	10	09	194	277	014	S22 W55	0	0	0	10	S22 W55	Q	Solalert 10/XX,
						N17 W23	0	0	0		N17 W23	E	Magalert 10/11.
						S27 E07	0	0	0		S27 E07	Q	
						N30 E15	3	1	0		N30 E15	A	
						N23 E33	4	0	0		N23 E33	A	
						S16 E57	1	0	0		S16 E57	Q	
						N18 E56	2	0	0		N18 E56	Q	
						S29 W07	0	0	0		S29 W07	Q	
		Presto:[2]	Boulder	X-ray event X3/3B N20 E40 09/1254 UT duration 99 minutes.									
				Tenflare 1100 flux units began 09/1256 duration 55 minutes.									
11	11	10	253	279	010	S23 W68	0	0	0	11	S23 W68	Q	Solalert 11/XX,
						N16 W37	8	0	0		N16 W37	E	Magalert 11/12.
						S31 W07	0	0	0		S31 W07	Q	
						N30 E02	5	0	0		N30 E02	A	
						N22 E20	1	0	1		N22 E20	A	
						S16 E44	3	0	0		S16 E44	E	
						N16 E43	5	0	0		N16 E43	E	
						S29 W19	0	0	0		S29 W19	Q	
						S18 E71	0	0	0		S18 E71	Q	
						N28 E63	0	0	0		N28 E63	Q	
		Presto:[2]	Boulder	X-ray event X1/3B N22 E32 10/0406 UT duration 102 minutes.									
			Sydney	Culgoora Soflare 2B N24 E30 10/0442 in progress.									
				Moderate Type II sweep 10/0427 and moderate Type II sweep 10/0529.									
12	12	11	281	264	010	S23 W80	1	0	0	12	S23 W80	Q	Solalert 12/XX,
						N17 W49	3	0	0		N17 W49	E	Magalert 12/13 Flare.
						S30 W19	0	0	0		S30 W19	Q	
						N31 W10	4	0	0		N31 W10	A	
						N22 E07	2	1	0		N22 E07	A	
						S16 E31	0	0	0		S16 E31	E	
						N17 E31	3	0	0		N17 E31	E	
						S28 W34	0	0	0		S28 W34	Q	
						S17 E60	0	0	0		S17 E60	Q	
						N30 E49	0	0	0		N39 E49	Q	
						S16 W50	0	0	0		S16 W50	Q	
						N18 E72	0	0	0		N18 E72	Q	
13	13	12	288	263	011	N17 W63	0	0	0	13	N17 W63	Q	Solalert 13/XX,
						S29 W32	1	0	0		S29 W32	Q	Magalert 13/XX.
						N31 W22	6	0	0		N31 W22	A	
						N22 W05	0	0	0		N22 W05	Q	
						S17 E18	10	0	0		S17 E18	E	
						N17 E18	2	0	0		N17 E18	E	
						S17 E50	0	0	0		S17 E50	Q	
						N30 E36	0	0	0		N30 E36	Q	
						S16 W63	0	0	0		S16 W63	Q	
						N20 E62	1	0	0		N20 E62	E	
						S38 W60	0	0	0		S38 W60	Q	
						N22 E03	0	0	0		N22 E03	Q	
						N17 W11	0	0	0		N17 W11	Q	
14	14	13	254	268	015	N16 W77	0	0	0	14	N16 W77	Q	Solalert 14/XX,
						S30 W45	0	0	0		S30 W45	Q	Magnil.
						N31 W35	7	0	0		N31 W35	E	
						N21 W20	2	1	0		N21 W20	E	
						S17 E05	6	0	0		S17 E05	E	
						N16 E05	3	0	0		N16 E05	E	
						N29 E21	0	0	0		N29 E21	Q	
						N20 E50	1	0	0		N20 E50	E	
						S37 W72	0	0	0		S37 W72	Q	
						N17 W27	0	0	0		N17 W27	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — FEBRUARY 1989

Julian Day	Date of Issue	Date of Observation	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		
15	15	14	292	258	015	N17 W84	0	0	0	15	N17 W84	Q	Solalert 15/XX,
						S30 W57	0	0	0		S30 W57	Q	Magquiet.
						N31 W47	7	1	0		N31 W47	E	
						N22 W31	1	0	0		N22 W31	Q	
						S17 W08	4	0	0		S17 W08	E	
						N16 W08	1	0	0		N16 W08	Q	
						S28 W59	0	0	0		S28 W59	Q	
						N29 E07	0	0	0		N29 E07	Q	
						N21 E38	0	0	0		N21 E38	E	
						S38 W85	0	0	0		S38 W85	Q	
						N24 W08	1	0	0		N24 W08	E	
						N30 E28	0	0	0		N30 E28	Q	
16	16	15	224	241	008	N31 W61	4	0	0	16	N31 W61	E	Solalert 16/XX,
						N21 W46	1	0	0		N21 W46	Q	Magquiet.
						S17 W20	8	0	0		S17 W20	E	
						N16 W20	0	0	0		N16 W20	Q	
						N21 E24	2	0	0		N21 E24	Q	
						N23 W21	0	0	0		N23 W21	Q	
						N29 E13	0	0	0		N29 E13	Q	
						S13 E60	2	0	0		S13 E60	Q	
						S21 E72	0	0	0		S21 E72	Q	
						S28 W32	0	0	0		S28 W32	Q	
17	17	16	229	240	013	N31 W72	2	1	0	17	N31 W72	A	Solalert 17/XX,
						S17 W33	2	0	0		S17 W33	Q	Magquiet.
						N16 W34	0	0	0		N16 W34	Q	
						N20 E12	6	1	0		N20 E12	E	
						N24 W35	2	0	0		N24 W35	Q	
						N29 E02	0	0	0		N29 E02	Q	
						S12 E45	10	1	0		S12 E45	Q	
						S59 E21	1	0	0		S59 E21	Q	
						N32 E23	0	0	0		N32 E23	Q	
						N16 E22	0	0	0		N16 E22	Q	
18	18	17	239	239	004	N31 W84	1	1	0	18	N31 W84	E	Solnil, Magquiet.
						S17 W47	1	0	0		S17 W47	Q	
						N18 W50	0	0	0		N18 W50	Q	
						N20 W02	0	0	0		N20 W02	E	
						N25 W49	0	0	0		N25 W49	Q	
						N29 W11	0	0	0		N29 W11	Q	
						S12 E31	1	0	0		S12 E31	E	
						S20 E48	0	0	0		S20 E48	Q	
						N32 E08	0	0	0		N32 E08	Q	
						N17 E08	0	0	0		N17 E08	Q	
						N17 E61	0	0	0		N16 E61	Q	
19	19	18	197	214	008	S17 W59	1	0	0	19	S17 W59	Q	Solquiet, Magquiet.
						N18 W63	0	0	0		N18 W63	Q	
						N20 W15	0	0	0		N20 W15	E	
						N25 W61	1	0	0		N25 W61	Q	
						N28 W27	0	0	0		N28 W27	Q	
						S12 E17	4	0	0		S12 E17	E	
						S21 E36	0	0	0		S21 E36	Q	
						N16 W03	0	0	0		N16 W03	Q	
						N16 E47	1	0	0		N16 E47	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **FEBRUARY 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
20	20	19	190	216	008	S17 W73	0	0	0	20	S17 W73	Q	Solquiet, Magquiet.
						N18 W76	1	0	0		N18 W76	Q	
						N21 W28	3	0	0		N21 W28	Q	
						N25 W77	6	0	0		N25 W77	Q	
						N28 W40	0	0	0		N28 W40	Q	
						S12 E03	4	0	0		S12 E03	E	
						S21 E23	0	0	0		S21 E23	Q	
						N17 E32	3	0	0		N17 E32	Q	
						S10 E71	0	0	0		S10 E71	Q	
21	21	20	230	210	015	S17 W80	0	0	0	21	S17 W80	E	Solquiet, Magquiet.
						N17 W88	0	0	0		N17 W88	Q	
						N21 W38	0	0	0		N21 W38	Q	
						N25 W84	0	0	0		N25 W84	Q	
						N27 W54	0	0	0		N27 W54	Q	
						S12 W10	8	1	0		S12 W10	E	
						S20 E11	2	0	0		S20 E11	E	
						N30 W27	4	0	0		N30 W27	E	
						N17 E20	4	0	0		N17 E20	E	
						S09 E58	4	0	0		S09 E58	Q	
						S25 E72	0	0	0		S25 E72	Q	
		Presto:[2] Boulder Tenflare 310 flux units began 20/1354 UT duration 51 minutes.											
22	22	21	190	222	010	N21 W53	0	0	0	22	N21 W53	Q	Solalert 22/XX,
						N28 W66	0	0	0		N28 W66	Q	Magquiet.
						S11 W24	8	4	0		S11 W24	A	
						S21 W01	0	0	0		S21 W01	E	
						N30 W42	0	0	0		N30 W42	Q	
						N17 E05	1	0	0		N17 E05	E	
						S08 E43	4	0	0		S08 E43	E	
						S24 E60	0	0	0		S24 E60	Q	
23	23	22	167	218	015	N21 W61	1	0	0	23	N21 W61	Q	Solalert 23/XX,
						S12 W39	14	3	0		S12 W39	A	Magquiet.
						S20 W16	0	0	0		S20 W16	Q	
						N18 W09	4	0	0		N18 W09	E	
						S08 E29	0	0	0		S08 E29	E	
						S26 E46	0	0	0		S26 E46	Q	
						N28 E09	0	0	0		N28 E09	Q	
24	24	23	162	222	003	S11 W52	6	1	0	24	S11 W52	E	Solalert 24/XX,
						S20 W26	1	0	0		S20 W26	Q	Magquiet.
						N17 W22	2	0	0		N17 W22	E	
						S09 E16	0	0	0		S09 E16	E	
						S24 E27	0	0	0		S24 E27	Q	
						N28 W03	0	0	0		N28 W03	Q	
						N12 E69	0	0	0		N12 E69	Q	
						N16 E03	0	0	0		N16 E03	Q	
25	25	24	230	221	007	S12 W65	10	0	0	25	S12 W65	E	Solalert 25/XX,
						S21 W45	0	0	0		S21 W45	Q	Magquiet.
						N17 W36	0	0	0		N17 W36	E	
						S09 E03	1	0	0		S09 E03	E	
						S25 E32	0	0	0		S25 E32	Q	
						N29 W14	0	0	0		N29 W14	Q	
						N12 E57	11	0	0		N12 E57	E	
						N15 W12	0	0	0		N15 W12	Q	
						S18 E58	0	0	0		S18 E58	Q	
						N39 E51	0	0	0		N39 E51	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — FEBRUARY 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		
26	26	25	244	211	010	S12 W78	5	0	0	26	S12 W78	E	Solnil, Magquiet.
						N17 W50	3	0	0		N17 W50	E	
						S09 W11	0	0	0		S09 W11	Q	
						S24 E24	1	0	0		S24 E24	Q	
						N29 W27	0	0	0		N29 W27	Q	
						N13 E43	6	0	0		N13 E43	E	
						N16 W25	3	0	0		N16 W25	Q	
						S19 E42	0	0	0		S19 E42	Q	
						N38 E36	1	0	0		N38 E36	Q	
						S07 E33	0	0	0		S07 E33	Q	
						S16 W15	0	0	0		S16 W15	Q	
27	27	26	219	200	002	S13 W91	1	0	0	27	S13 W91	E	Solquiet, Magquiet.
						N17 W61	2	0	0		N17 W61	E	
						S09 W25	0	0	0		S09 W25	Q	
						S24 E12	2	0	0		S24 E12	Q	
						N29 W40	0	0	0		N29 W40	Q	
						N13 E28	1	0	0		N13 E28	E	
						N16 W38	1	0	0		N16 W38	E	
						S19 E30	2	0	0		S19 E30	E	
						N38 E27	3	0	0		N38 E27	E	
						S17 W31	0	0	0		S17 W31	Q	
						N18 E36	0	0	0		N18 E36	Q	
28	28	27	187	173	005	N17 W73	3	0	0	28	N17 W73	E	Solquiet, Magquiet.
						S09 W37	0	0	0		S09 W37	Q	
						S24 E01	1	0	0		S24 E01	Q	
						N29 W51	0	0	0		N29 W51	Q	
						N12 E17	0	0	0		N12 E17	Q	
						N15 W51	0	0	0		N15 W51	Q	
						S20 E19	6	1	0		S20 E19	E	
						N38 E17	1	0	0		N38 E17	Q	
						S16 W41	1	0	0		S16 W41	Q	
						N17 E24	1	0	0		N17 E24	Q	
01	01	28	154	167	010	N16 W86	1	0	0	01	N16 W86	E	Solquiet, Magquiet.
						S09 W53	0	0	0		S09 W53	Q	
						S24 W16	0	0	0		S24 W16	Q	
						N12 W03	0	0	0		N12 W03	Q	
						N15 W65	10	1	0		N15 W65	E	
						S20 E05	3	0	0		S20 E05	E	
						N39 E08	0	0	0		N39 E08	Q	
						S16 W56	1	0	0		S16 W56	Q	
						N16 E08	1	0	0		N16 E08	Q	

[1]Q = quiet, E = eruptive, A = active, P = proton.
[2]Presto message is a rapid report of a major event.

STRATWARM ALERTS

01 February Stratwarm exists. Warming over Canada weakening, but further influences Greenland and the whole of the North American Continent, combined with extremely cold air over Europe. Temperature gradient reversed between 60° North and the pole only still 10 HPA.

04 February Stratwarm exists. New warming developed over southern Siberia. Since 01 February temperature increase more than 40° K at 10 mbar level, over approximately 60° North.

05 February Stratwarm exists. Warming over central Siberia intensifies, moving northwards. Strong Aleutian anticyclone.

STRATWARM ALERTS--*Continued*

07 February Stratwarm exists. Intense warming over Siberia continues. Temperature gradient reversed between 60° North and the pole in the upper stratosphere.

08 February Stratwarm exists. Intense warming over Siberia continues. Intensification of the Aleutian anticyclone. Temperature gradient reversed between 60° North and the pole in the upper stratosphere.

09 February Stratwarm exists. Ending, a new warming developed over the Atlantic, extending north and northeastwards. In the upper stratosphere temperature gradient continuously reversed between 60° North and the pole.

10 February Stratwarm exists. Warm center over northeastern Siberia continues, warming over the Atlantic intensifies, influencing Europe and the eastern part of North America. Temperature gradient in the upper stratosphere reversed between 60° North and the pole.

11 February Stratwarm exists. Warming over eastern Siberia and the Aleutian Islands continues. Intense warming from the eastern part of North America across the Atlantic to Europe strongly extending northeastwards. European anticyclone intensifying. Temperature gradient continuously reversed between 60° North and the pole in the upper stratosphere .

12 February Stratwarm exists. Intense warm region over Greenland further moves northeastwards. Temperature gradient between 60° North and the pole reversed from 10 HPA upwards. Major warming with break-down of the vortex very likely.

13 February Stratwarm exists. Intense warming reached the European and Siberian Arctic today. Temperature gradient reversed between 60° North and the pole from 10 HPA upwards. Major warming with break-down of the vortex very likely.

14 February Stratwarm exists. Center of the very intense warming reached northern Siberia and dominates the whole eastern northern hemisphere. Temperature gradient reversed between 60° North and the pole from 10 HPA upwards. At 1 HPA the mean zonal wind at 60° North is from the east. Major warming in progress.

15 February Stratwarm exists. Very intense warming over Europe and Siberia with center over central Siberia continues. Temperature gradient reversed between 60° North and the pole from 10 HPA upwards. The mean zonal wind at 60° North is from the east at 1HPA. Major warming in progress.

16 February Stratwarm exists. Intense warming over Europe and Siberia continues. Temperature gradient continuously reversed between 60° North and the pole from 10 HPA upwards. Major warming in progress.

17 February Stratwarm exists. Intense warm region further exists over Asia, Europe and the Atlantic ocean. Temperature gradient reversed between 60° North and the pole from 10 HPA upwards. Major warming in progress.

18 February Stratwarm exists. Intense warm region stays over polar latitudes. Major warming in progress.

19 February Stratwarm exists. Intense warm region stays over polar latitudes. Temperature gradient reversed between 60° North and the pole throughout the stratosphere. Major warming in progress.

20 February Stratwarm exists. Intense warming stays over the polar region and the adjacent area continues. Mean zonal wind at 60° North only still very weak from west at 1HPA. Temperature gradient reversed between 60° North and the pole throughout the whole stratosphere. Major warming in progress.

21 February Stratwarm exists. Major warming continues. Intensification of the warming over Greenland. Aleutian anticyclone moving northwards. Circulation reversal from 10 HPA upwards and temperature gradient reversed between 60° North and the pole throughout the whole stratosphere.

22 February Stratwarm exists. Major warming continues. Circulation reversal from 10 HPA upwards and temperature gradient reversed between 60° North and the pole throughout the whole stratosphere.

23 February Stratwarm exists. Major warming continues. A large warm area further dominates the whole polar region and the adjacent areas. The cold air returns from eastern Pacific to western North America. Circulation reversal from 10 HPA upwards continues, temperature gradient reversed between 60° North and the pole throughout the stratosphere without the uppermost level.

24 February Stratwarm exists. Major warming continues, penetrating downwards while the upper stratosphere starts to cool.

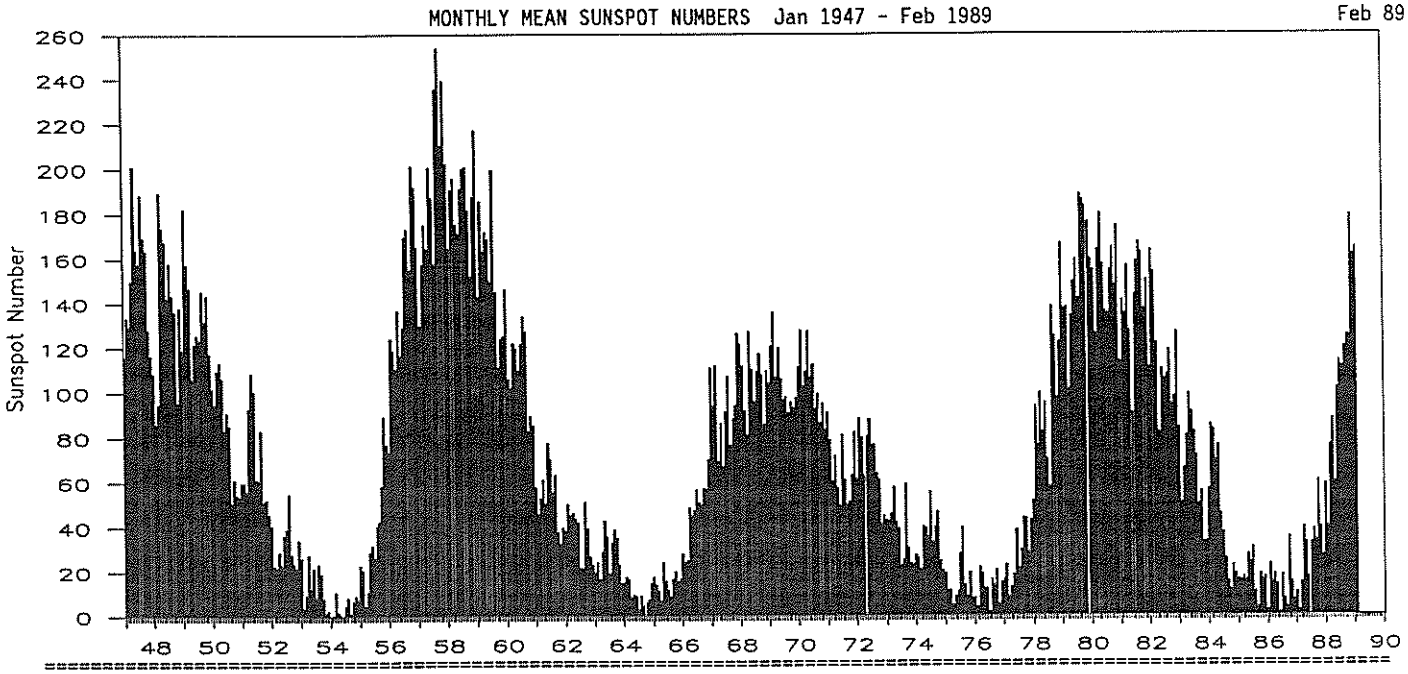
25 February Stratwarm exists. Major warming continues, further penetrating downwards. Temperature gradient reversed between 60° North and the pole in the lower and middle stratosphere, circulation reversal continues from 10 HPA upwards.

26 February Stratwarm exists. Major warming continues. Temperature gradient further reversed between 60° North and the pole in the lower and middle stratosphere, in the upper stratosphere slow cooling of the polar region continues. Circulation reversal exists in the middle stratosphere.

27 February Stratwarm exists. Major warming continues. Warming slowly weakening, but temperature gradient further reversed between 60° North and the pole in the lower and middle stratosphere, in the upper stratosphere slow cooling of the polar region continues. Circulation reversed in the middle stratosphere.

28 February Stratwarm exists. Major warming continues in the lower and middle stratosphere, but weakens. Cooling in the upper stratosphere.

MONTHLY MEAN SUNSPOT NUMBERS Jan 1947 - Feb 1989



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	
1947	115.7	133.4	129.8	149.8	201.3	163.9	157.9	188.8	169.4	163.6	128.0	116.5	151.6	M
1948	108.5	86.1	94.8	189.7	174.0	167.8	142.2	157.9	143.3	136.3	95.8	138.0	136.3	
1949	119.1	182.3	157.5	147.0	106.2	121.7	125.8	123.8	145.3	131.6	143.5	117.6	134.7	
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9	
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4	
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5	
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9	
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4	m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0	
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7	
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2	M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8	
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0	
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	112.3	
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9	
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6	
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9	
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2	m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1	
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0	
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8	
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9	M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5	
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5	
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6	
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9	
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0	
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5	
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5	
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6	m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5	
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5	
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4	M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6	
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4	
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9	
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6	
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9	
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9	
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4	m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.4	
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	100.2	
1989	161.6*	164.5*											163.1*	

*Preliminary

For the yearly means, each "M" marks a sunspot cycle maximum and each "m" a minimum.

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Mar 88	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan†89	Feb†
01	68	110	69	95	139	142	137	109	126	128	148	141
02	66	96	84	96	145	143	144	117	114	114	173	144
03	72	94	76	100	142	146	129	129	121	139	146	164
04	77	74	101	105	129	135	148	128	104	122	120	133
05	64	66	103	125	119	120	128	130	129	149	155	127
06	61	62	77	145	108	123	93	123	124	149	142	127
07	65	84	50	141	103	144	97	128	114	144	157	132
08	67	92	63	151	106	160	88	131	95	111	135	161
09	49	115	74	173	82	171	74	125	110	122	165	172
10	36	107	87	144	78	152	76	146	131	133	190	192
11	20	115	65	108	102	135	81	148	155	152	200	190
12	39	118	56	77	109	133	88	169	159	175	229	216
13	53	120	44	47	103	122	91	150	147	187	233	210
14	62	138	37	53	121	128	94	131	139	213	201	208
15	63	145	44	65	121	121	89	109	156	225	177	185
16	74	157	53	81	111	91	89	108	181	226	164	195
17	99	144	57	76	124	67	79	125	196	232	155	201
18	95	137	44	67	136	47	97	134	175	222	160	163
19	105	108	20	70	105	57	113	133	147	223	140	157
20	85	88	20	77	106	57	153	119	112	218	126	169
21	81	79	25	95	103	40	168	117	145	210	114	149
22	76	72	30	92	106	21	168	109	131	255	165	142
23	74	43	40	91	116	26	190	104	117	235	159	134
24	83	30	48	93	81	43	172	121	116	199	142	153
25	92	40	54	111	76	76	149	124	89	183	144	189
26	93	44	63	107	76	93	151	119	73	174	152	176
27	103	36	66	111	101	142	157	120	69	175	167	147
28	109	41	70	116	117	146	143	119	86	196	172	128
29	104	39	74	121	157	164	111	128	86	194	169	
30	108	47	83	121	161	163	106	115	107	178	157	
31	120		86		146	151		111		172	154	
Mean	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	161.6	164.5

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

Algonquin Radio Observatory — OTTAWA 2800 MHz (10.7 cm) SOLAR FLUX — Adjusted to 1 AU

Day	Mar 88	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec 88	Jan	Feb
01	99.8*	127.2	108.8	149.3*	194.4*	180.9	191.3	179.4	157.2*	150.5	179.5*	184.8
02	99.1	126.5	113.1*	147.6	198.9	187.6	178.9	197.0	156.5*	149.4	193.7	171.2
03	101.9*	127.6	116.4*	149.5	190.2	172.2*	177.3	200.4	164.0	147.3	189.2	185.8*
04	102.6*	122.6	127.4	150.9	181.0	163.6	165.9	189.2	159.7	142.7	195.7*	183.4
05	106.7*	114.6	121.1	151.2	171.2	159.2	166.3	191.0	163.8	154.6*	201.6	195.1
06	107.6	116.8	116.5	159.0	156.7	163.4	152.4	193.4	161.2	157.7	198.7	205.3*
07	107.3	120.0	112.9	164.6	152.4	170.4	145.4	182.4	151.6	152.9*	239.5	210.5
08	104.1*	121.8*	116.7	168.3	142.4	186.9	138.9	172.6	143.5	164.1	260.2	243.9
09	101.5	121.8*	121.9	165.9*	137.7	182.4	128.0	176.5	152.4	165.2	251.3	259.3
10	99.2	127.2	116.4	149.8	138.3	181.8	117.6	177.8	147.7	161.2*	250.0	269.8
11	102.9	128.0*	114.6	137.8	137.7*	178.2	121.9	168.2	153.8	176.4	254.7*	257.0
12	103.5	130.6*	111.6	125.9	137.9	161.2	127.0	148.4	150.6*	173.9	263.2	257.3
13	107.8	134.6	105.9	115.0	141.3*	159.7	124.8	157.5	157.8*	181.1	291.7*	258.4
14	108.9*	146.3	105.2	111.7	150.1	151.6	130.2	150.4	173.2*	204.4*	274.9	260.7
15	112.6*	143.5	103.4	113.5	150.7	144.0	126.1	149.1	161.1*	212.0	280.1	241.3
16	114.1*	147.6	103.3	121.7	153.3*	137.8	128.5	152.3	186.1*	232.1	292.1	241.1
17	117.4	145.5	103.7	124.8	152.8*	145.6	135.3	175.0	175.6	241.7	266.7*	233.9*
18	116.1	145.3	106.7	125.7	152.3	128.5	139.5	162.3	161.8	243.5	271.2	213.8
19	116.1*	138.5	104.8	119.4	142.1	123.9	138.6	164.0	151.2	240.2	241.6	214.0
20	116.3*	134.9	106.1	118.5	141.3	118.1	151.4	166.0	146.6	238.8	222.0*	202.2*
21	117.5*	127.6	112.6	122.8*	145.8	116.1	157.8	165.9	152.9	245.2	198.2*	217.8
22	117.6	120.1	114.0	124.4*	141.2	114.9	178.6	166.2	153.1	246.6	203.6	213.9
23	120.9*	111.5	122.2	129.3	144.6	121.7A	177.8*	171.1	135.7	234.8	205.6	214.7*
24	123.0*	105.6	119.8	135.7*	138.6	133.7	178.6	168.4	138.0	221.6	211.0	213.4
25	128.5*	106.7	123.8*	153.7	140.9	144.3	177.4	162.1	137.5	210.5	227.3	203.8*
26	127.5*	103.8	127.8	157.6*	149.7	157.1	172.0	155.4	137.4	193.0	206.3	190.3*
27	128.0*	101.9	130.0	160.5	161.5	166.8	179.6*	161.8	140.9	201.9	211.1	168.6*
28	129.8	101.6	130.1	183.2	175.4	174.0	171.0	156.0	138.8	201.6	207.1	163.5
29	131.7	102.1	140.2	189.5	185.9	189.0	172.0	155.9	137.6	196.7	200.5	
30	128.3	104.8	142.8	187.4*	188.3	190.0	173.1	154.2*	135.8	179.5	187.3	
31	130.6*		153.6*		192.5	194.5		160.4		177.6	187.5	
Mean	113.8	123.6	117.9	143.8	157.6	158.0	154.1	168.7	152.8	193.5	227.8	217.0

* = corrected for burst in progress; A = interpolation - interference during calibration. The yearly mean flux equaled 141.1 in 1988.

DAILY SOLAR INDICES

February 1989

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	32	17	141	132	190.3	562	285	218	184.8	173	133	61	32	19
02	33	18	144	148	176.3	542	280	206	171.2	159	129	63	33	22
03	34	19	164	169	191.3*	453	287	222	185.8*	177	132	59	35	18
04	35	20	133	152	188.7	---	318	221	183.4	177	137	70	35	17
05	36	21	127	127	200.7	556	330	236	195.1	183	149	76	37	19
06	37	22	127	127	211.1*	554	360	274	205.3*	201	155	76	40	19
07	38	23	132	127	216.4	597	---	---	210.5	---	---	74	38	22
08	39	24	161	150	250.7	658	353	284	243.9	221	179	74	41	20
09	40	25	172	158	266.4	653	372	312	259.3	240	190	85	49	37
10	41	26	192	200	277.1	637	362	306	269.8	---	195	87	43	24
11	42	27	190	201	263.8	633	348	291	257.0	231	187	81	41	21
12	43	1	216	216	264.0	626	347	289	257.3	233	186	78	42	22
13	44	2	210	207	265.1	612	349	298	258.4	233	188	81	46	29
14	45	3	208	221	267.3	580	352	306	260.7	239	188	82	47	49
15	46	4	185	187	247.3	540	305	267	241.3	220	174	76	44	47
16	47	5	195	191	247.0	596	340	275	241.1	217	179	79	46	28
17	48	6	201	192	239.5*	581	331	258	233.9*	215	178	80	46	12
18	49	7	163	156	218.9	574	317	239	213.8	197	160	77	44	20
19	50	8	157	152	219.0	577	328	248	214.0	197	163	71	40	23
20	51	9	169	174	206.8*	575	323	240	202.2*	189	158	72	39	22
21	52	10	149	152	222.7	437	301	242	217.8	199	160	74	40	20
22	53	11	142	132	218.6	495	314	246	213.9	198	157	72	44	19
23	54	12	134	126	219.3*	552	348	275	214.7*	198	159	84	52	36
24	55	13	153	163	217.9	539	347	262	213.4	199	160	85	70	30
25	56	14	189	191	208.0*	556	332	251	203.8*	193	159	83	44	27
26	57	15	176	169	194.1*	554	319	231	190.3*	179	153	81	41	23
27	58	16	147	147	171.9*	542	298	209	168.6*	161	142	68	36	26
28	59	17	128	121	166.6	547	---	---	163.5	---	---	68	35	23
Mean			164.5	163.9	222.4	568	327	258	217.0	201	163	76	42	25

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	122 (4)	129 (8)	136 (12)	141 (15)
1989	144 (17)	148 (16)	156 (15)	163 (15)	169 (18)	174 (23)	176 (28)	179 (33)	186 (36)	190 (39)	193 (41)	194 (43)
1990	194 (44)	195 (46)	193 (47)	187 (46)	181 (43)	176 (39)	175 (36)	173 (37)	165 (36)	156 (35)	149 (32)	144 (29)

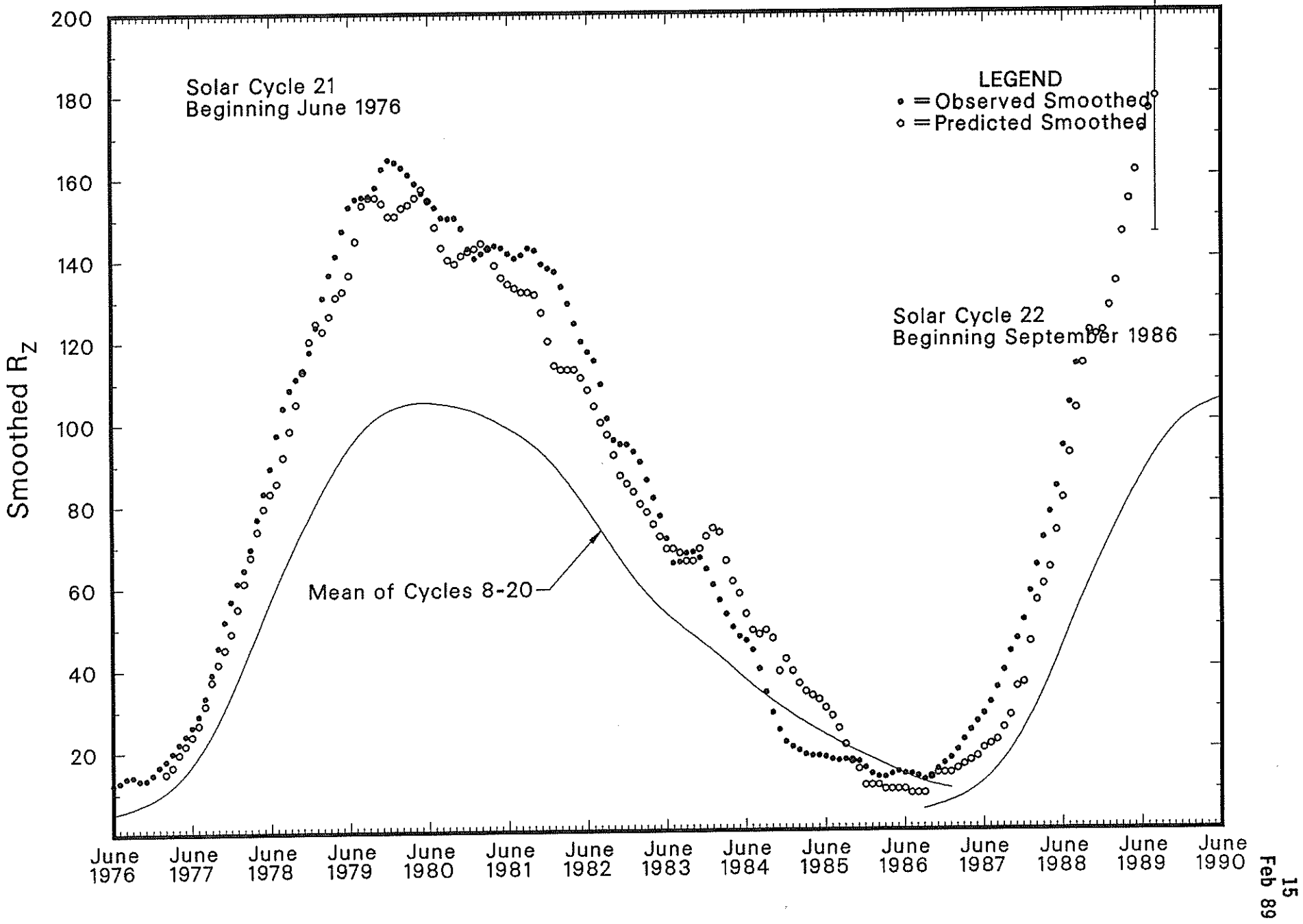
*September 1986 marks the onset of Sunspot Cycle 22.

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 December 1988 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 August 1989 prediction. There exists a 90% chance that in August 1989 the actual smoothed sunspot number will fall somewhere between 146 and 212.

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



Hα SOLAR FLARES

FEBRUARY 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
GOES	01	0112	0116	0118						6		C 3.5						
PALE		0205	0205	0210	S20	E01	5334	02	1.2	5	SN	M 1.4	3	E		54		F
PALE		0216	0216	0243	S22	E02	5334	02	1.2	27	SF		3	E		48		F
PALE		0237	0238	0241	S19	W35	5330	01	29.5	4	SF		3	E		25		
GOES		0343	0351	0406						23		C 3.0						
LEAR		0502	0505	0512	N20	W73	5329	01	26.7	10	1F	C 5.3	3	E		107		
LEAR		0516	0522	0534	N20	W75	5329	01	26.6	18	SF		3	E		55		
LEAR		0610	0610	0618	S21	W03	5334	02	1.0	8	SF		3	E		14		
LEAR		0626	0629	0710	S22	E01	5334	02	1.3	44	SF		3	E		70		F
SVTO		0739	0741	0813D	S22	W02	5334	02	1.2	34D	SN	C 6.4	2	E		85		F
LEAR		0739	0741	0816	S22	W03	5334	02	1.1	37	SF	C 6.4	4	E		60		F
LEAR		0803	0809	0836	N17	W74	5329	01	26.8	33	1N	C 7.9		E		78		K
LEAR		0803	0818	0836	N17	W74	5329	01	26.8	33	1N	C 7.9	3	E		199		F
SVTO		0812	0818	0829	N19	W76	5329	01	26.6	17	SN		2	E		78		FH
LEAR		0925	0933	0945	S22	W04	5334	02	1.1	20	SF		3	E		15		
SVTO		0926	0931	0940	S22	E00	5334	02	1.4	14	SF		3	E		29		F
LEAR		0946	1007	1025	N23	W69	5329	01	27.2	39	SF		3	E		32		
SVTO		0959	1025	1105	N21	W71	5329	01	27.1	66	SF		3	E		80		F
SVTO		1001	1010	1148	S21	W02	5334	02	1.3	107	1N			E		176		K
SVTO		1001	1034	1148	S21	W02	5334	02	1.3	107	1N	M 3.9	3	E		237		F
LEAR		1007	1030	1042D	S20	W06	5334	02	1.0	35D	SF	M 3.9	2	E		46		F
RAMY		1131E	1131U	1150D	S22	W15	5334	01	31.3	19D	SN		2	E		50		F
RAMY		1136E	1137U	1152	S23	W04	5334	02	1.2	16D	1F		1	E		119		F
SVTO		1252	1254	1258	S22	W02	5334	02	1.4	6	SF		3	E		17		F
RAMY		1254	1256	1300	S23	W03	5334	02	1.3	6	SF		4	E		10		FH
RAMY		1347	1348	1358	N20	W71	5329	01	27.2	11	SF		4	E		13		F
RAMY		1543	1545	1600	S22	W06	5334	02	1.2	17	SF		3	E		26		F
RAMY		1609	1616	1629D	N22	W81	5329	01	26.5	20D	SF	C 5.2	3	E		61		H
RAMY		1629E	1629U	1934	S23	W07	5334	02	1.1	185D	SF		2	E		25		F
RAMY		1631E	1632U	1710D	N13	W75	5329	01	27.1	39D	SF		2	E		37		
GOES		1737	1742	1746						9		C 4.9						
GOES		1858	1901	1903						5		C 2.9						
RAMY		2000E	2001U	2019D	N24	W74	5329	01	27.2	19D	SF	C 3.5	2	E		60		
RAMY		2030E	2030U	2047D	S23	W07	5334	02	1.3	17D	SF		2	E		15		F
RAMY		2056	2058	2102	N23	W75	5329	01	27.2	6	SF		2	E		15		
RAMY		2116	2121	2135	S22	W08	5334	02	1.3	19	SF		2	E		34		F
GOES		2232	2236	2239						7		C 2.2						
LEAR	02	0432	0433	0437	N24	E41		02	5.3	5	SF		4	E		18		
LEAR		0821	0824	0834	S22	W13	5334	02	1.3	13	SF	C 3.2	4	E		29		
LEAR		0841	0842	0849	S22	W13	5334	02	1.4	8	SF	C 2.5	4	E		23		
SVTO		0953	1007U	1020	S23	W14	5334	02	1.3	27	SF	C 3.0	2	E		62		F
SVTO		0954	1012	1020	S20	W73	5336	01	27.9	26	SF		3	E		50		
LEAR		0959	1004	1011	S22	W15	5334	02	1.3	12	SF	C 3.0	3	E		25		
SVTO		1124	1126U	1153	S22	W16	5334	02	1.2	29	1N	C 7.5	2	E		105		F
RAMY		1131E	1131U	1150D	S22	W15	5334	02	1.3	19D	SN	C 7.5	2	E		50		F
SVTO		1239	1242	1258	S22	W17	5334	02	1.2	19	SF		3	E		25		
SVTO		1304	1304	1307	N20	W88	5329	01	26.9	3	SF		3	E		24		
RAMY		1319	1320	1331	S21	W17	5334	02	1.2	12	SF		3	E		10		F
SVTO		1320	1323	1335	S22	W17	5334	02	1.2	15	SF		3	E		15		F
RAMY		1436	1437	1443	S22	W17	5334	02	1.3	7	SF		3	E		10		F
HOLL		1446	1449	1506D	S21	W19	5334	02	1.1	20D	SF		2	E		37		
SVTO		1446	1450	1505	S22	W18	5334	02	1.2	19	SF		3	E		19		F
RAMY		1450	1452	1500	S22	W18	5334	02	1.2	10	SF		3	E		10		
HOLL		1622	1642	1656	S22	W19	5334	02	1.2	34	SF		3	E		32		
RAMY		1633	1639	1708	S21	W21	5334	02	1.1	35	SF		2	E		21		
RAMY		1726	1727	1756D	S22	W19	5334	02	1.3	30D	1N	M 1.0	2	E		119		FE
GOES		2028	2032	2036						8		C 2.4						
HOLL		2116	2125	2143	S20	W23	5334	02	1.1	27	SF		3	E		11		
RAMY		2121	2121	2133	S21	W23	5334	02	1.1	12	SF		3	E		11		
HOLL		2305	2310	2312	S16	W65	5330	01	29.1	7	SF		3	E		10		
HOLL		2326	2329	2333	N36	W39		01	30.9	7	SF		3	E		12		
GOES	03	0049	0104	0111						22		C 4.1						
SVTO		0911	0915	0920	N37	W45		01	30.8	9	SF		3	E		27		
SVTO		1408	1416	1424	S20	W72	5336	01	29.2	16	SF	M 3.0	3	E		12		
HOLL		1540	1545	1603	S18	W73	5330	01	29.2	23	SF		3	E		21		
GOES		1603	1626	1757						114		M 1.1						

Hα S O L A R F L A R E S

FEBRUARY 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
RAMY	03	1920E	1924U	1933D	S18	W76	5336	01	29.1	13D	SF		2	E		12		
HOLL		2012	2013	2017	N29	E68	5351	02	9.2	5	SF		3	E		35		
GOES	04	0005	0022	0103						58		C 9.9						
LEAR		0211	0216	0314	S21	W40	5334	02	1.0	63	SF	C 4.4	3	E		81		
GOES		0259	0303	0309						10		C 3.6						
GOES		0416	0423	0429						13		C 4.1						
GOES		0527	0538	0553						26		C 6.9						
LEAR		0752	0752	0758	S27	W63	5346	01	30.5	6	SF		3	E		12		
LEAR		0809	0810	0826	S23	W43	5334	02	1.0	17	SF		3	E		15		
LEAR		0816	0821	0823	S27	W63	5346	01	30.5	7	SF		3	E		25		
GOES		0950	1017	1241						171		X 1.5						
RAMY		1342	1345	1346	N29	E82		02	11.0	4	SF		3	E		22		Y
RAMY		1451	1451	1509	N30	E56	5351	02	9.0	18	SF		3	E		39		F
HOLL		1451E	1452	1506	N30	E55	5351	02	8.9	15D	SF		2	E		26		
RAMY		1506	1506	1515	S21	W43	5334	02	1.3	9	SF		3	E		10		
HOLL		1707	1708	1711	S24	E15	5339	02	5.9	4	SF		3	E		11		
HOLL		1804	1817	1832	S21	W47	5334	02	1.1	28	SF		3	E		18		
HOLL		1825	1826	1829	N20	E54	5347	02	8.9	4	SF		3	E		21		
HOLL		1906	1906	1926	N21	E90		02	11.7	20	SF		3	E		11		
RAMY		1907	1907	1923	N21	E88		02	11.5	16	SF		4	E		19		
HOLL		2013	2022	2037	S21	W46	5334	02	1.3	24	SF		3	E		25		
RAMY		2020	2021	2034	S22	W48	5334	02	1.1	14	SF		4	E		11		
RAMY		2109	2124	2148	S22	W50	5334	02	1.0	39	SF		3	E		33		F
GOES		2202	2206	2208						6		C 3.4						
HOLL		2301	2302	2317	N27	E81	5354	02	11.3	16	SF	C 3.9	3	E		15		
LEAR	05	0135	0137	0142	N30	E81	5354	02	11.4	7	SF		3	E		22		
GOES		0153	0157	0202						9		C 5.6						
GOES		0233	0236	0238						5		C 2.7						
LEAR		0416	0418	0429	N26	E69	5354	02	10.5	13	SF		3	E		61		
LEAR		0451	0501	0508	N30	E78	5354	02	11.3	17	SF	C 9.8	3	E		95		F
GOES		0734	0740	0744						10		C 2.5						
LEAR		0806	0806	0810	N29	E75	5354	02	11.2	4	SF	C 4.2	3	E		18		
GOES		0931	0935	0939						8		C 2.7						
SVTO		0943	0945	0952	N32	E79	5354	02	11.6	9	SF		3	E		31		F
SVTO		1036	1118	1208	N29	E62	5354	02	10.3	92	1F		3	E		142		F
RAMY		1211E	1239U	1303D	N24	E65	5354	02	10.5	52D	SF		2	E		20		
HOLL		1531E	1533	1536	N28	E72	5354	02	11.3	5D	SF		2	E		34		F
RAMY		1536E	1540U	1544	N29	E60	5354	02	10.3	8D	SF		2	E		33		
RAMY		1603	1604	1613D	N27	E57	5354	02	10.1	10D	SF		2	E		22		
RAMY		1802E	1805U	1823D	N29	E70	5354	02	11.2	21D	SF	C 3.4	2	E		16		
RAMY		1828	1831	1842	N20	E39	5347	02	8.7	14	SF		3	E		39		F
RAMY		1840	1902	2002D	N29	E68	5354	02	11.1	82D	1N		2	E		138		F
RAMY		2112	2113	2128D	N29	E68	5354	02	11.2	16D	SF	C 3.6	2	E		18		
PALE		2114	2128	2140	N28	E68	5354	02	11.2	26	SF	C 3.6	3	E		55		
HOLL		2123E	2127U	2135D	N28	E69	5354	02	11.3	12D	SF	C 3.6	2	E		51		
HOLL		2310	2311	2328	N27	E58	5354	02	10.5	18	SF		3	E		17		
HOLL		2329	2331	2354D	N27	E64	5354	02	11.0	25D	SN	C 8.6	2	E		77		
LEAR		2330	2331	2348	N29	E64	5354	02	11.0	18	SF	C 8.6	3	E		44		
PALE	06	0004	0006	0012	N27	E63	5354	02	10.9	8	SF		3	E		40		
LEAR		0026	0028	0121	N28	E62	5334	02	10.9	55	SF		3	E		39		F
GOES		0128E	0131	0141D						13D		C 3.0						
GOES		0146	0150	0158						12		C 3.4						
PALE		0212	0216	0244	N27	E63	5354	02	11.0	32	SF	M 1.1	3	E		68		F
LEAR		0213	0215	0233	N29	E64	5354	02	11.1	20	SN	M 1.1	3	E		99		
PALE		0255	0256	0313	N28	E66	5354	02	11.3	18	SF		3	E		22		F
LEAR		0534	0535	0541	N30	E63	5354	02	11.2	7	SN	C 8.0	3	E		74		
SVTO		0804E	0805U	0819D	N35	E65	5354	02	11.5	15D	1N	C 6.1	2	E		148		
LEAR		0805	0806	0811	N30	E59	5354	02	11.0	6	SF	C 6.1	3	E		24		
LEAR		0919	0922	0934	N30	E57	5354	02	10.9	15	SF	M 1.2	3	E		24		
SVTO		0928E	0928U	1036D	N33	E63	5354	02	11.4	68D	SN	M 1.2	2	E		95		F
GOES		1105	1112	1118						13		C 6.2						
GOES		1334	1341	1343						9		C 2.9						
GOES		1433	1438	1443						10		C 6.7						
GOES		1538	1541	1543						5		C 2.8						
RAMY		1616	1619	1623	N29	E60	5354	02	11.4	7	SF		3	E		64		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
GOES	06	1642	1658	1750						68		M 2.1						
RAMY		1746	1749	1758	S21	W73	5334	02	1.1	12	SF		3	E		37		F
PALE		1747	1748	1759	S19	W73	5334	02	1.2	12	SF		3	E		28		F
PALE		1801	1802	1806	N30	E55	5354	02	11.1	5	SF		3	E		22		
PALE		1917	1918	1948	N29	E55	5354	02	11.1	31	SN	M 1.4	3	E		75		FE
RAMY		1917	1918	1959	N30	E55	5354	02	11.1	42	SF	M 1.4	3	E		80		FE
RAMY		2003E	2004U	2010D	N31	E48	5354	02	10.6	7D	SF		3	E		15		F
RAMY		2035E	2124U	2131D	N30	E55	5354	02	11.2	56D	SF	C 9.6	3	E		64		F
RAMY		2050E	2052U	2104D	N21	E66	5355	02	11.9	14D	SF	C 5.9	3	E		14		F
GOES		2321E	2323	2338						17D		C 5.2						
GOES	07	0055E		0057						2D		C 4.0						
LEAR		0131	0133	0143	N30	E51	5354	02	11.1	12	SF	C 7.0	2	E		79		F
GOES		0209	0216	0225						16		M 1.2						
GOES		0622	0624	0626D						4D		C 3.8						
GOES		0652E	0653	0706D						14D		C 3.5						
SVTO		0733	0734	0835	N32	E50	5354	02	11.3	62	SF			E		41		K
SVTO		0733	0747	0835	N32	E50	5354	02	11.3	62	SF	C 2.9	3	E		26		F
GOES		0753	0756	0758D						5D		C 3.6						
SVTO		0917	0922	0932	N31	E45	5354	02	10.9	15	SF	C 3.0	3	E		17		F
GOES		0922	0925	0929						7		C 4.2						
SVTO		1122	1126	1138	N33	E51	5354	02	11.5	16	SF		3	E		10		F
SVTO		1301	1303	1341	N31	E47	5354	02	11.2	40	SF			E		14		K
SVTO		1301	1328	1341	N31	E47	5354	02	11.2	40	SF		3	E		9		F
SVTO		1355	1357	1401	S25	W88	5334	01	31.8	6	SF		3	E		25		
RAMY		1443E	1444U	1458D	N29	E41	5354	02	10.8	15D	SF	C 9.0	1	E		35		
RAMY		1638	1640	1657	N31	E45	5354	02	11.2	19	1B	M 2.1	3	E		138		F
RAMY		1838	1849	1924D	N20	E61	5355	02	12.4	46D	SF		2	E		33		F
GOES	08	0322	0351	0412						50		C 3.9						
LEAR		0608	0609	0618	N36	E45	5354	02	11.9	10	SF	C 3.5	3	E		34		F
SVTO		0824	0826	0836	N29	E34	5354	02	11.0	12	SF		3	E		24		
LEAR		0935	0939	1005	N36	E42	5354	02	11.8	30	1B	M 1.1		E		182		K
LEAR		0935	0948	1005	N36	E42	5354	02	11.8	30	1B	M 1.1	3	E		127		F
SVTO		0946E		1002	N29	E34	5354	02	11.1	16D	SF		1	E		95		
SVTO		0957	1029	1045	N20	E51	5355	02	12.3	48	SF		2	E		28		
SVTO		1021	1022	1032	N16	W03	5347	02	8.2	11	SF		2	E		28		
SVTO		1059	1110	1154	N24	E56	5355	02	12.8	55	1N	M 1.9	3	E		124		F
SVTO		1125	1133	1142	N29	E33	5354	02	11.1	17	SF		3	E		17		
SVTO		1437	1443	1448	N15	W08	5347	02	8.0	11	SF		2	E		17		
SVTO		1449	1511	1521D	N37	E37	5354	02	11.6	32D	1N	M 1.4	2	E		132		F
SVTO		1505	1506	1516	N25	E51	5355	02	12.6	11	SF	C 6.8	2	E		17		
HOLL		1706	1709	1744	N30	E20	5354	02	10.3	38	SF	C 6.2	1	E		19		F
PALE		1900	2021	2233D	N30	E27	5354	02	10.9	213D	2N		3	E		435		FT
RAMY		1953E	2007	2022D	N30	E27	5354	02	10.9	29D	2B	M 9.8		E		361		K
RAMY		1953E	2023	2036D	N30	E27	5354	02	10.9	43D	2B	M 9.8	2	E		436		F
LEAR	09	0235	0235	0240	N22	E47	5355	02	12.7	5	SF	C 6.2	3	E		23		
GOES		0800	0803	0810						10		C 3.8						
SVTO		0924	0928U	0928D	N23	E44	5355	02	12.8	4D	SF		1	E		52		
SVTO		1212	1213U	1250	N37	E27	5354	02	11.7	38	SF		1	E		25		
SVTO		1251	1258U	1433	N30	E28	5354	02	11.7	102	1B		3	E		126		FH
SVTO		1251	1317	1433	N30	E28	5354	02	11.7	102	1B			E		85		K
RAMY		1252	1257	1420D	N20	E38	5355	02	12.4	88D	2B	X 3.9		E		164		K
RAMY		1252	1258U	1316D	N30	E28	5354	02	11.7	24D	1B		2	E		128		
RAMY		1252	1259U	1420D	N20	E38	5355	02	12.4	88D	2B	X 3.9	2	E		517		ZU
SVTO		1256	1304	1416	N22	E39	5355	02	12.5	80	2B	X 3.9	3	E		509		ZU
HOLL		1844E	1847U	1851	S20	E68	5356	02	15.0	7D	SF		3	E		68		
HOLL		1900	1901	1939D	N17	E61	5357	02	14.4	39D	SF		3	E		16		F
PALE		1917	1927U	1937	N29	E18	5354	02	11.2	20	1N		3	E		106		F
HOLL		1927	1927U	1943	N31	E28	5354	02	12.0	16	1N	M 1.0	3	E		132		E
RAMY		1927E	1929U	1941D	N30	E29	5354	02	12.1	14D	SN	M 1.0	2	E		91		FE
RAMY		1944E	1954U	2013D	N19	E41	5355	02	12.9	29D	SN		2	E		73		F
HOLL		1950	1952	2008D	N21	E39	5355	02	12.8	18D	SF		3	E		20		F
PALE		1951	1952	2010	N20	E39	5355	02	12.8	19	SF		3	E		23		
HOLL		2141	2142	2152	N13	E62	5357	02	14.6	11	SF		3	E		24		
PALE		2221	2222	2227	N17	E61	5357	02	14.6	6	SF		3	E		34		
HOLL		2304	2308	2311	N28	E17	5354	02	11.3	7	SF		3	E		14		

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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	10	0128	0154	0216	N15	W25	5347	02	8.2	48	SF		4	E		48		
LEAR		0407	0426	0603	N19	E30	5355	02	12.5	116	3B	X 1.8		E		987		K
LEAR		0407	0437	0603	N19	E30	5355	02	12.5	116	3B	X 1.8	3	E		891		F
LEAR		0435	0438	0451	N29	E22	5354	02	11.9	16	SF		3	E		35		
LEAR		0438	0439	0445	N12	E57	5357	02	14.5	7	SF		3	E		17		
SVTO		0726	0735	0748	N14	W29	5347	02	8.1	22	SF		2	E		36		F
SVTO		0755	0800	0821	N13	W29	5347	02	8.1	26	SF		3	E		13		ZZ
SVTO		0824	0826	0830	N15	W28	5347	02	8.2	6	SF		3	E		24		
LEAR		0825	0827	0832	N15	W27	5347	02	8.3	7	SF		3	E		27		
SVTO		0833	0834	0838	N13	W29	5347	02	8.2	5	SF		3	E		11		
SVTO		0840	0849	0853	N32	E03	5354	02	10.6	13	SF	C 3.6	3	E		15		F
LEAR		0845	0845	0853	N32	E14	5354	02	11.5	8	SF		3	E		10		
SVTO		0848	0849	0853	N32	E13	5354	02	11.4	5	SF		3	E		15		F
LEAR		0906	0936	0957	N17	W29	5347	02	8.2	51	SF		3	E		19		
LEAR		0909	0909	0912	N16	E53	5357	02	14.4	3	SF		3	E		21		
SVTO		1019	1019	1024	N15	W29	5347	02	8.2	5	SF		3	E		15		
SVTO		1035	1036	1041	N31	E11	5354	02	11.3	6	SF	C 3.9	3	E		16		
RAMY		1212E	1223	1416D	S17	E50	5356	02	14.3	124D	1N			E		112		K
SVTO		1212	1231	1408	S16	E54	5356	02	14.6	116	1N		3	E		130		F
RAMY		1212E	1232	1416D	S17	E50	5356	02	14.3	124D	1N		2	E		181		F
RAMY		1324	1327	1334	N31	E12	5354	02	11.5	10	SF		2	E		31		
SVTO		1326	1327	1333	N29	E06	5354	02	11.0	7	SF		3	E		38		
HOLL		1425E	1434U	1450	S16	E46	5356	02	14.1	25D	SF		3	E		12		
RAMY		1500	1510U	1531D	N16	W32	5347	02	8.2	31D	SF		2	E		21		
HOLL		1509	1509	1518	N16	W32	5347	02	8.2	9	SF		3	E		17		
HOLL		1520	1521	1526	N16	W32	5347	02	8.2	6	SF		3	E		13		
RAMY		1608	1628U	1648D	N17	W31	5347	02	8.3	40D	SF		2	E		17		F
HOLL		1634	1635	1642	N16	W32	5347	02	8.3	8	SF		3	E		11		
HOLL		1735	1739U	1804	N16	W33	5347	02	8.2	29	SF		3	E		27		
HOLL		1745	1807	1836	N14	E45	5357	02	14.1	51	SF		3	E		57		
HOLL		1915	1917	1925	N15	E46	5357	02	14.3	10	SF		3	E		13		F
HOLL		1958	2005	2010	N32	E09	5354	02	11.5	12	SF		3	E		19		
HOLL		2033	2035	2041D	S19	E43	5356	02	14.1	8D	SF	C 4.9	3	E		37		H
HOLL		2141E	2150	2200	N18	E42	5357	02	14.1	19D	SF	C 4.2	3	E		36		FH
LEAR	11	0126	0126	0148	S25	W66	5339	02	5.9	22	SF		3	E		15		
LEAR		0906	0909	0924	N16	W42	5347	02	8.2	18	SF		3	E		43		F
LEAR		0937	0943	0955	N31	W02	5354	02	11.2	18	SF		3	E		24		
RAMY		1139E	1150	1338	N22	E15	5355	02	12.6	119D	2N			E		450		K
RAMY		1139E	1223	1338	N22	E15	5355	02	12.6	119D	2N	M 2.9	3	E		471		FE
RAMY		1217	1223	1605	N28	E07	5354	02	12.0	228	SF		3	E		40		T
SVTO		1235E	1235U	1351	N22	E14	5355	02	12.6	76D	2F		2	E		365		F
RAMY		1238	1240	1254	N15	W46	5347	02	8.0	16	SF		3	E		20		
RAMY		1315	1326	1339	N26	W05	5354	02	11.2	24	SF		3	E		46		F
SVTO		1332	1332	1345	N16	W44	5347	02	8.2	13	SF		3	E		10		
RAMY		1334	1334	1350	N16	W44	5347	02	8.2	16	SF		3	E		10		
RAMY		1406	1411	1430	N18	E38	5357	02	14.5	24	SF		3	E		20		
SVTO		1407	1412	1416	N18	E38	5357	02	14.5	9	SF		3	E		12		F
RAMY		1458	1500	1529	N31	W05	5354	02	11.2	31	SF	C 3.6	3	E		90		
SVTO		1500E	1501U	1509	N34	E05	5354	02	12.0	9D	SN		2	E		54		H
RAMY		1603	1604	1613	N18	E38	5357	02	14.6	10	SF		3	E		17		F
RAMY		1618	1621	1657	N18	E37	5357	02	14.5	39	SN	C 6.5	3	E		87		F
HOLL		1627E	1629	1703	N16	E36	5357	02	14.4	36D	SF	C 6.5	3	E		96		F
GOES		2225	2228	2230						5		C 2.0						
GOES		2328	2331	2333						5		C 1.9						
GOES	12	0016	0019	0021						5		C 2.6						
LEAR		0203	0205	0240	N29	W11	5354	02	11.2	37	SF		3	E		41		
LEAR		0300	0300	0303	N27	W15	5354	02	10.9	3	SF		3	E		16		
LEAR		0348	0352	0400	S28	W24	5353	02	10.3	12	SF		3	E		35		FH
LEAR		0357	0359	0404	N31	W03	5354	02	11.9	7	SF	C 2.2	3	E		30		H
LEAR		0924	0924	0933	S18	E34	5356	02	15.0	9	SF	C 1.7	4	E		22		
LEAR		1006	1007	1010	S18	E22	5356	02	14.1	4	SF	C 1.7	3	E		20		
SVTO		1006	1008	1012	S17	E23	5356	02	14.2	6	SF	C 1.7	3	E		34		
SVTO		1043	1044	1048	N21	E63	5362	02	17.3	5	SF		3	E		33		
RAMY		1208E	1208U	1215	S17	E25	5356	02	14.4	7D	SF	C 1.8	3	E		25		F
RAMY		1215	1215U	1229	N27	W21	5354	02	10.9	14	SF		3	E		32		F
RAMY		1225	1226	1233	S18	E22	5356	02	14.2	8	SF	C 3.8	3	E		44		E

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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	12	1225	1228	1238	S17	E22	5356	02	14.2	13	SF	C 3.8	3	E		23		
RAMY		1437	1439U	1442	S19	E33	5356	02	15.1	5	SF		3	E		14		F
RAMY		1608	1608	1650	N16	E22	5357	02	14.3	42	SF		3	E		15		F
RAMY		1623	1625	1632	S38	W56		02	8.1	9	SF		3	E		38		
RAMY		1736	1738	1746	N17	E25	5357	02	14.6	10	SF		3	E		12		
HOLL		1737	1740	1742	N18	E19	5357	02	14.2	5	SF		3	E		17		
RAMY		1840	1842	1847	S19	E24	5356	02	14.6	7	SF		3	E		11		F
HOLL		2031	2037	2049	S18	E22	5356	02	14.5	18	SF		3	E		21		
RAMY		2034	2036	2045	S18	E22	5356	02	14.5	11	SF		3	E		13		
HOLL		2052	2053	2057	N27	W25	5354	02	10.9	5	SF		3	E		14		
RAMY		2052	2053	2058	N27	W25	5354	02	10.9	6	SF		3	E		11		F
PALE		2101	2101	2112	S17	E19	5356	02	14.3	11	SF		3	E		53		
RAMY		2116	2117	2125	S18	E21	5356	02	14.5	9	SF	C 2.5	3	E		13		F
RAMY		2127	2128	2139	N28	W23	5354	02	11.1	12	SF		3	E		24		F
PALE		2206	2209	2219	N31	W20	5354	02	11.3	13	SF	C 2.7	3	E		41		
PALE		2326	2333	2337	S18	E20	5356	02	14.5	11	SF		3	E		20		
LEAR	13	0323	0324	0344	N30	W25	5354	02	11.2	21	SF	C 8.4	3	E		41		F
GOES		0902E	0904	0906						4D		C 2.4						
SVTO		0906	0907	0910	N33	W17	5354	02	12.0	4	SF		3	E		23		
SVTO		1052	1103	1119	N20	E13	5357	02	14.4	27	SF		3	E		38		
SVTO		1157	1208	1239	S16	E13	5356	02	14.5	42	SF	C 4.2	3	E		32		
SVTO		1239	1242	1247	N32	W20	5354	02	11.9	8	SF		3	E		47		
RAMY		1630E	1632U	1642D	N24	E53	5362	02	17.8	12D	SF	C 3.7	3	E		46		F
HOLL		1811	1827	1944D	N20	W13	5355	02	12.8	93D	2N	M 1.4	3	E		270		UF
PALE		1816	1826	1900	N21	W13	5355	02	12.8	44	1N	M 1.4	3	E		194		F
RAMY		1820E	1828U	1902D	N21	W14	5355	02	12.7	42D	1N	M 1.4	2	E		152		UF
PALE		1822	1827	1836	S18	E08	5356	02	14.4	14	SF		3	E		27		
HOLL		1823	1827	1850	S18	E09	5356	02	14.4	27	SF		3	E		41		
HOLL		1856	1856	1904	N30	W32	5354	02	11.3	8	SF		3	E		17		
PALE		1923	1923	1950	S15	E07	5356	02	14.3	27	SF		3	E		30		
PALE		1952	2010	2057	S17	E09	5356	02	14.5	65	SF		3	E		35		
HOLL		1952	2104	2151	S18	E10	5356	02	14.6	119	SF		3	E		53		
RAMY		2002E	2007U	2029D	S19	E16	5356	02	15.0	27D	SF		2	E		25		F
HOLL		2046	2050	2102	N30	W33	5354	02	11.3	16	SF		3	E		42		
PALE		2047	2048	2106	N32	W30	5354	02	11.5	19	SF		3	E		39		
PALE		2047	2054	2109	N17	E10	5357	02	14.6	22	SF		3	E		17		
GOES		2102	2105	2108						6		C 2.7						
PALE		2123	2123	2129	N30	W36	5354	02	11.0	6	SF		3	E		20		F
HOLL		2306	2308	2323	S18	E07	5356	02	14.5	17	SF		3	E		33		
HOLL		2330	2335	2352	S15	E05	5356	02	14.3	22	1N	C 6.3	3	E		150		
PALE		2332	2333U	2348	S17	E06	5356	02	14.4	16	1F	C 6.3	3	E		116		F
PALE		2335	2336U	2407	N19	E07	5357	02	14.5	32	SF		3	E		18		
HOLL		2337	2340	2340D	N23	W13	5355	02	13.0	3D	SF		3	E		56		
PALE		2341	2342	2352	N24	W16	5355	02	12.7	11	SF		3	E		41		F
PALE	14	0348	0401	0409	N20	E05	5357	02	14.5	21	SF		2	E		60		F
PALE		0349	0352	0407	N22	E05		02	14.5	18	SF		2	E		38		
LEAR		0351	0352	0410	N20	E04	5357	02	14.5	19	SF		4	E		12		F
LEAR		0440	0459	0619	N29	W40	5354	02	11.0	99	1F	M 2.0	4	E		218		F
LEAR		0603	0605	0620	S17	E03	5356	02	14.5	17	1F		4	E		127		F
LEAR		0620	0636	0800	N26	W43	5354	02	10.9	100	1F		4	E		180		F
LEAR		0620	0714	0800	N26	W54	5354	02	10.1	100	1F			E		146		K
SVTO		0727E	0727U	0808	N40	W40	5354	02	11.0	41D	SF		2	E		56		F
SVTO		0946	0952	1035	N23	W22	5355	02	12.7	49	SB			E		81		K
SVTO		0946	1014	1035	N23	W22	5355	02	12.7	49	SN		3	E		74		F
LEAR		0948	0948	0955	N23	W21	5355	02	12.8	7	SF		3	E		16		
LEAR		1010	1013	1020	N23	W21	5355	02	12.8	10	SF		3	E		39		F
RAMY		1156E	1158U	1218D	N30	W40	5354	02	11.3	22D	SF		2	E		40		F
RAMY		1318E	1320U	1331D	N30	W41	5354	02	11.3	13D	SF		2	E		31		F
RAMY		1423E	1424U	1443D	S18	W03	5356	02	14.4	20D	SF	C 5.6	2	E		71		F
SVTO		1424E	1425U	1440	S17	W04	5356	02	14.3	16D	SN	C 5.6	2	E		66		F
RAMY		1531E	1533U	1559D	N31	W41	5354	02	11.4	28D	SF		3	E		77		F
RAMY		1742E	1742U	1830D	N23	W02		02	14.6	48D	SF		2	E		28		
PALE		1928	1929	1949	S16	W06	5356	02	14.3	21	SF		3	E		19		F
PALE		1945	2000	2012	N32	W44	5354	02	11.3	27	SF		3	E		16		F
PALE		2336		2404	N22	W05	5366	02	14.6	28	SF		3	E		53		F
PALE	15	0013	0013	0021	S15	W14	5356	02	13.9	8	SF		3	E		12		F

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	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
PALE	15	0115	0121	0134	N22	W30	5355	02	12.7	19	SF		3	E		62		
PALE		0244	0256	0305	S14	E72		02	20.5	21	SF		3	E		52		
LEAR		0323	0323	0327	S17	W10	5356	02	14.4	4	SF		3	E		16		
PALE		0323	0324	0331	S16	W10	5356	02	14.4	8	SF		3	E		31		
PALE		0325	0329U	0412D	N30	W63	5354	02	10.2	47D	1N	C 6.5	3	E		200		
LEAR		0328E	0332	0345	N26	W64	5354	02	10.2	17D	SF	C 6.5	3	E		41		F
PALE		0337	0341	0346	N19	E34	5362	02	17.7	9	SF		3	E		29		
LEAR		0426	0428	0432	S17	W10	5356	02	14.4	6	SF		3	E		23		
LEAR		0521	0522	0525	S17	W11	5356	02	14.4	4	SF	C 2.9	3	E		32		
LEAR		0642	0716	0741	N29	W51	5354	02	11.3	59	SF		3	E		23		F
LEAR		0854	0855	0910	S17	W12	5356	02	14.4	16	SF	C 5.4	3	E		72		F
LEAR		0915	0916	0921	N19	E26	5362	02	17.4	6	SF		3	E		17		
SVTO		0915	0917	0932	N20	E26	5362	02	17.4	17	SF		3	E		23		
RAMY		1333E	1341U	1441D	S17	W15	5356	02	14.4	68D	SF	C 3.4	3	E		73		F
SVTO		1339	1339	1356	S16	W17	5356	02	14.3	17	SF	C 3.4	3	E		19		F
RAMY		1349E	1357U	1441D	S14	E65		02	20.5	52D	SF		3	E		37		
SVTO		1422	1426	1435	N27	W62	5354	02	10.8	13	SF	C 5.6	3	E		46		H
RAMY		1431E	1431U	1441D	N28	W60	5354	02	10.9	10D	SF	C 5.6	2	E		29		H
PALE		1849	1850	1936	S16	W17	5356	02	14.5	47	SF	C 3.1	4	E		27		F
RAMY		2014E	2014U	2045D	N27	W59	5354	02	11.2	31D	SF	C 3.2	2	E		14		
HOLL		2347	2412	2435	S13	E59	5368	02	20.4	48	SF		3	E		57		
LEAR	16	0011	0012	0017	S12	E60	5368	02	20.5	6	SF		3	E		22		
GOES		0050	0053	0100						10		C 3.0						
LEAR		0306	0310	0337	S11	E57	5368	02	20.4	31	SF		3	E		47		
LEAR		0340	0348	0513	N22	E26	5362	02	18.1	93	2N	M 2.2	3	E		276		HF
LEAR		0424	0428	0439	N26	W69	5354	02	10.8	15	SF	M 3.5	3	E		45		
LEAR		0544	0546	0554	S11	E57	5368	02	20.5	10	SF		3	E		16		
LEAR		0702	0702	0708	S16	W27	5356	02	14.2	6	SF		3	E		21		
LEAR		0703	0707	0716	N19	E17	5362	02	17.6	13	SF		3	E		28		
LEAR		0706	0707	0713	N23	W26	5366	02	14.3	7	SF		3	E		31		
SVTO		0836	0839	0852	S19	W24	5356	02	14.5	16	SF		3	E		15		
SVTO		0844	0847	0900	N17	E18	5362	02	17.7	16	SF		3	E		41		
SVTO		0849	0854	0900	S19	E72	5369	02	21.9	11	SF		3	E		17		
SVTO		0948	1001	1026	N27	W67	5354	02	11.2	38	SF		3	E		21		
SVTO		1017	1021	1041	N23	W30	5366	02	14.1	24	SF		3	E		12		
RAMY		1135E	1136U	1142	S13	E53	5368	02	20.5	7D	SF		2	E		30		
RAMY		1243	1304	1340	N18	E20	5362	02	18.0	57	1F		2	E		115		FH
RAMY		1246	1301	1418D	S14	E52	5368	02	20.5	92D	SF		2	E		22		
RAMY		1522	1526	1528	S13	E50	5368	02	20.4	6	SF		2	E		14		
RAMY		1555	1558	1613	S13	E50	5368	02	20.4	18	SF		2	E		15		
GOES		1631E	1633	1725						54D		M 2.5						
RAMY		1800	1805	1829D	S14	E49	5368	02	20.4	29D	SF		2	E		14		
PALE		1806	1808	1823	N18	E15	5362	02	17.9	17	SF		3	E		31		F
RAMY		1806	1808	1827D	N17	E14	5362	02	17.8	21D	SF		2	E		34		
PALE		2108	2109U	2210D	S12	E47	5368	02	20.4	62D	SF	C 5.1	3	E		44		
GOES		2153E	2155	2220D						27D		C 5.7						
PALE		2201E	2203U	2214D	N20	E17	5362	02	18.2	13D	SF		3	E		44		F
GOES	17	0714	0722	0730						16		C 3.5						
PALE		1715	1717U	1751D	S14	E36	5368	02	20.4	36D	SF		3	E		41		F
RAMY		1716	1726U	1815D	S15	E36	5368	02	20.4	59D	SF		2	E		58		ZU
GOES		2212E	2216	2230D						18D		M 1.9						
PALE	18	0006E		0006	S18	W45	5356	02	14.6	18D	SF		3	E		20		
GOES		0349	0435	0623						154		C 5.6						
GOES		0744	0751	0800						16		C 9.9						
LEAR		0836	0838	0848	S12	E21	5368	02	19.9	12	SF		3	E		22		
SVTO		1011E	1013U	1025D	S13	E28	5368	02	20.5	14D	SF		2	E		32		
LEAR		1012E	1014U	1022	S12	E20	5368	02	19.9	10D	SF		2	E		20		
RAMY		1402	1403	1419	S12	E18	5368	02	19.9	17	SF		4	E		11		F
RAMY		1524	1528	1541	S17	W56	5356	02	14.4	17	SF		3	E		27		F
RAMY		1537	1541	1549	N16	E51	5373	02	22.5	12	SF	C 2.2	4	E		50		F
SVTO		1538E	1539U	1545	N17	E48	5373	02	22.3	7D	SF		2	E		34		
RAMY		1830	1831	1844	S16	E84		02	25.1	14	SF		2	E		33		F
RAMY		1832	1840	1848D	N25	W59	5366	02	14.2	16D	SF	C 3.5	2	E		21		F
PALE	19	0057	0101	0149	N16	W61	5357	02	14.4	52	1F	C 6.3	3	E		133		

Hα SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	19	0100	0102U	0139D	N14	W62	5357	02	14.3	39D	SF		1	E		65		F
PALE		0113	0117	0124	N24	W61	5366	02	14.3	11	SF		3	E		28		
SVTO		0922E	0926U	1013	N19	W19	5362	02	17.9	51D	1F	C 3.6	2	E		126		UF
SVTO		1043	1045	1127	N22	W17	5362	02	18.1	44	SF		3	E		23		F
SVTO		1116	1117	1133	N18	E39	5373	02	22.4	17	SF	C 4.0	3	E		18		
RAMY		1120E	1123U	1127	N20	W17	5362	02	18.2	7D	SF		1	E		48		
RAMY		1200	1208	1232	N24	W66	5366	02	14.4	32	SF		3	E		25		
RAMY		1225	1231	1252	S12	E09	5368	02	20.2	27	SF	C 3.5	3	E		12		FH
RAMY		1302	1322	1325	N25	W67	5366	02	14.3	23	SF		3	E		15		
RAMY		1346	1347	1353	S11	E08	5368	02	20.2	7	SF	C 9.7	3	E		17		F
RAMY		1401	1402	1419	N25	W67	5366	02	14.4	18	SF		3	E		17		H
RAMY		1404	1404	1409	N14	E39	5373	02	22.5	5	SF		3	E		13		F
SVTO		1455	1502	1520	S10	E07	5368	02	20.1	25	SF		3	E		19		
RAMY		1501	1505	1510	N24	W68	5366	02	14.4	9	SF		3	E		17		H
RAMY		1551	1555	1602	N25	W69	5366	02	14.3	11	SF		3	E		15		
RAMY		1712	1712	1722	N20	W22	5362	02	18.0	10	SF		3	E		14		
HOLL		2107E	2108	2126D	S12	E01	5368	02	19.9	19D	SF		2	E		26		F
PALE		2124E	2124U	2141	S13	E06	5368	02	20.3	17D	SF	C 5.7	3	E		31		F
PALE		2345	2346	2356	N17	E36	5373	02	22.7	11	SF		3	E		27		
GOES	20	0031	0038	0049						18		C 3.7						
LEAR		0415	0416	0419	S10	E67	5374	02	25.2	4	SF		3	E		24		
SVTO		0745	0750	0819	S19	E23	5369	02	22.1	34	SF		3	E		43		
SVTO		0754	0805	0812	S10	E00	5368	02	20.3	18	SF		3	E		12		H
SVTO		0902	0906	0913	N29	W21	5371	02	18.7	11	SF		3	E		13		
RAMY		1138E	1206	1254	N15	E26	5373	02	22.4	76D	SF		3	E		22		F
RAMY		1219	1219	1234	S11	W03	5368	02	20.3	15	SF		3	E		22		
RAMY		1220	1221	1227	N30	W22	5371	02	18.8	7	SF		3	E		17		
RAMY		1311	1312	1320	N16	E26	5373	02	22.5	9	SF		3	E		27		
RAMY		1333	1334	1345	S12	E64	5374	02	25.4	12	SF		3	E		18		F
SVTO		1356E	1357	1456	S15	W04	5368	02	20.3	60D	SB	M 2.5	2	E		80		ZF
RAMY		1400	1401	1414	N30	W23	5371	02	18.8	14	SF		3	E		13		
RAMY		1639	1647	1829	N16	E24	5373	02	22.5	110	SF		3	E		25		
HOLL		1658	1700	1728	S10	E61	5374	02	25.3	30	SF		3	E		42		
RAMY		1659	1659	1730	S09	E62	5374	02	25.4	31	SF		3	E		31		
HOLL		1709	1711	1723	S10	W08	5368	02	20.1	14	SF	C 2.9	4	E		30		FH
RAMY		1709	1711	1735	S11	W06	5368	02	20.3	26	SF	C 2.9	3	E		34		F
HOLL		1714	1717	1732	N16	E23	5373	02	22.5	18	SF		3	E		11		
HOLL		1744	1744	1835	N16	E23	5373	02	22.5	51	SF		3	E		13		
RAMY		1801	1810	1825	S11	W06	5368	02	20.3	24	SF		3	E		14		F
HOLL		1808	1810	1818	S11	W06	5368	02	20.3	10	SF		3	E		12		F
RAMY		1903	1911	1926	N30	W26	5371	02	18.7	23	SF		3	E		18		H
PALE		1908	1910	1916	N29	W25	5371	02	18.8	8	SF		3	E		17		
HOLL		1910	1911	1918	S20	E15	5369	02	21.9	8	SF		3	E		15		F
PALE		2216	2218	2222	S08	E57	5374	02	25.2	6	SF		3	E		14		
GOES	21	0026E	0029	0034D						8D		C 2.4						
GOES		0311E	0315	0333D						22D		C 2.4						
GOES		0900	0912	0959						59		C 3.9						
SVTO		1025	1030	1050	N16	E12	5373	02	22.3	25	SF	C 4.1	3	E		26		
RAMY		1207	1217	1342	S12	W14	5368	02	20.4	95	SB	M 2.7	3	E		69		FH
RAMY		1207	1250	1342	S12	W14	5368	02	20.4	95	SB			E		178		K
SVTO		1207	1253	1341	S13	W16	5368	02	20.3	94	1B		2	E		214		F
GOES		1350	1400	1410						20		C 5.5						
GOES		1602	1605	1612						10		C 4.4						
HOLL		1704E	1707	1732	S13	W19	5368	02	20.3	28D	SF	C 4.9	3	E		36		F
GOES		1739	1743	1746						7		C 6.3						
RAMY		1803E	1820U	1854D	S14	W21	5368	02	20.2	51D	1N	M 3.9	2	E		126		F
HOLL		1817	1819	1912D	S12	W19	5368	02	20.3	55D	1B	M 3.9	3	E		230		F
HOLL		1847	1851	1910	S09	E46	5374	02	25.2	23	SF		3	E		38		
RAMY		1852E	1856U	1924D	S09	E47	5374	02	25.3	32D	SF		2	E		12		
RAMY		1957	1958	2001	S09	E45	5374	02	25.2	4	SF		3	E		24		
RAMY		2039E	2042U	2101D	S09	E46	5374	02	25.3	22D	SF		2	E		19		
RAMY		2104	2111	2123	S13	W22	5368	02	20.2	19	SF	C 7.2	2	E		36		F
GOES		2158E	2203	2214D						16D		M 2.8						
HOLL		2235	2240	2251	S11	E44	5374	02	25.2	16	SF		3	E		41		F
GOES		2330	2333	2346						16		M 1.1						
HOLL		2343E	2357	2435	S13	W20	5368	02	20.5	52D	SB	M 7.9	3	E		88		FH

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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
GOES	22	0430E	0435	0449D						19D		C 4.8						
GOES		0447	0450	0452						5		C 4.2						
GOES		0645	0658	0730						45		C 4.2						
GOES		0756E	0758	0803D						7D		M 1.3						
LEAR		0906	0907	0915	N30	W47	5371	02	18.7	9	SF		3	E		15		
LEAR		0935	0950	1002	N23	W56	5362	02	18.1	27	SF		3	E		47		F
LEAR		0944	0945	1007	S10	W33	5368	02	19.9	23	SF	M 1.3	3	E		40		F
SVTO		1040E	1040U	1111D	S13	W33	5368	02	19.9	31D	SF		1	E		46		F
RAMY		1207	1212	1218	S11	W33	5368	02	20.0	11	SF		3	E		13		F
RAMY		1236	1247	1259	N30	W47	5371	02	18.8	23	SF		3	E		46		
RAMY		1242	1244	1253	S10	W36	5368	02	19.8	11	SF	C 4.5	3	E		21		
SVTO		1258E	1301U	1358D	S14	W34	5368	02	20.0	60D	SN	M 1.0	2	E		95		F
SVTO		1258E	1320	1358D	S13	W50	5368	02	18.8	60D	SF			E		37		K
RAMY		1259	1301	1339	S11	W34	5368	02	20.0	40	SN	M 1.0	3	E		98		F
RAMY		1438	1438	1502	S10	W35	5368	02	20.0	24	SF	C 7.9	3	E		22		F
HOLL		1443E	1443U	1458	S12	W33	5368	02	20.1	15D	SF	C 7.9	2	E		94		F
RAMY		1635	1637	1644	N17	W02	5373	02	22.5	9	SF		3	E		33		
HOLL		1705	1716	1738	S12	W34	5368	02	20.1	33	SN		3	E		46		F
RAMY		1714	1716	1723	S12	W34	5368	02	20.1	9	SF		3	E		17		F
RAMY		1742	1748	1816	S12	W32	5368	02	20.3	34	SF	C 6.9	3	E		20		F
HOLL		1742	1748	1819	S13	W34	5368	02	20.2	37	SN	C 6.9	3	E		38		FE
HOLL		1742	1807	1819	S13	W34	5368	02	20.2	37	SN			E		43		K
RAMY		1823	1824	1828	N16	W02	5373	02	22.6	5	SF		3	E		10		
HOLL		1831	1837	1846	N17	W03	5373	02	22.5	15	SF		3	E		60		F
LEAR		2339	2356	2421	S14	W36	5368	02	20.3	42	SF	C 3.4	3	E		86		F
HOLL		2352	2353	2358	N14	W08	5373	02	22.4	6	SF		3	E		24		
HOLL		2353	2355	2359	S13	W36	5368	02	20.3	6	SF	C 3.4	3	E		26		
HOLL	23	0002E	0002	0010	S24	W27	5369	02	20.9	8D	SF		3	E		47		
LEAR		0010	0011	0021	N17	W12	5373	02	22.1	11	SF		3	E		18		F
LEAR		0157	0204	0227D	N22	W62	5362	02	18.3	30D	1F	C 9.6	3	E		127		F
LEAR		0422	0425	0431	S13	W41	5368	02	20.1	9	SF	M 1.2	3	E		14		F
GOES		1225	1228	1232						7		C 2.6						
SVTO		1333E	1333U	1408D	S13	W50	5368	02	19.8	35D	SF		2	E		25		
RAMY		1342	1345	1405	S21	W22	5369	02	21.9	23	SF		3	E		21		
HOLL		1511	1511	1525	S14	W45	5368	02	20.2	14	SF		3	E		24		F
RAMY		1705	1718	1751	S13	W48	5368	02	20.1	46	SF	C 6.7	3	E		76		F
HOLL		1909	1926	2035	N17	W18	5373	02	22.4	86	SF	C 6.9	3	E		57		F
HOLL		1938	1949	2041	S16	W54	5368	02	19.7	63	1N	C 6.6	3	E		105		F
HOLL		1938	2021	2041	S16	W54	5368	02	19.7	63	1N			E		28		K
HOLL		2045	2046	2126	S16	W53	5368	02	19.8	41	SN			E		24		K
HOLL		2045	2110	2126	S16	W53	5368	02	19.8	41	SN	C 5.3	3	E		55		
HOLL		2344	2402	2410	S16	W55	5368	02	19.8	26	SN	C 5.7	3	E		67		
LEAR		2354	2401	2418	S14	W50	5368	02	20.2	24	SF	C 5.7	3	E		56		F
HOLL	24	0002E	0002	0010	S24	W27	5369	02	21.9	8D	SF		3	E		47		
LEAR		0007E		0007	S13	W66	5368	02	19.0	8D	SF		3	E		24		
GOES		0824	0828	0832						8		C 4.2						
GOES		0913	0920	0925						12		C 4.1						
SVTO		0934E	0951	0959	N12	E62	5377	03	1.1	25D	SF		2	E		56		
SVTO		1124	1127	1130	N11	E59	5377	02	28.9	6	SF		3	E		25		
SVTO		1145	1148	1155	S16	W58	5368	02	20.1	10	SF		3	E		21		
RAMY		1217	1221	1251	S13	W61	5368	02	19.9	34	SF	C 3.9	3	E		53		F
SVTO		1219	1220	1225	S15	W64	5368	02	19.7	6	SF	C 3.9	3	E		18		
GOES		1251	1254	1257						6		C 2.5						
RAMY		1419	1420	1451	S13	W61	5368	02	20.0	32	SF	C 8.3	3	E		46		F
HOLL		1420	1420	1433	S14	W60	5368	02	20.1	13	SF	C 8.3	3	E		30		
RAMY		1429	1439	1442	N11	E58	5377	03	1.0	13	SF		3	E		67		
HOLL		1432	1439	1444	N10	E56	5377	02	28.8	12	SF		3	E		54		
HOLL		1504	1504	1508	N11	E60	5377	03	1.1	4	SF		3	E		15		
HOLL		1543	1546	1624	S13	W64	5368	02	19.8	41	SF			E		32		K
HOLL		1543	1558	1624	S13	W64	5368	02	19.8	41	SF	C 4.7	3	E		19		
RAMY		1557	1559	1624	S12	W64	5368	02	19.8	27	SF	C 4.7	3	E		39		
GOES		1609	1612	1616						7		C 4.2						
PALE		1730E	1732U	1810D	S12	W61	5368	02	20.1	40D	SF		2	E		53		F
HOLL		1742	1743	1746	N11	E59	5377	03	1.2	4	SF		3	E		29		
PALE		1742E	1743	1813D	N11	E56	5377	02	28.9	31D	SN		2	E		39		F
RAMY		1743	1743	1837D	N12	E60	5377	03	1.2	54D	SF		3	E		43		

Hα SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	24	1932	1940	1948	N10	E57	5377	03	1.1	16	SF		4	E		35		
HOLL		1947	1947	2002	S13	W66	5368	02	19.8	15	SF	C 2.5	4	E		25		
HOLL		2006	2011	2114	N10	E57	5377	03	1.1	68	SN	C 9.7	4	E		93		FE
PALE		2106	2109	2118	S13	W66	5368	02	19.9	12	SF	C 5.3	3	E		20		
PALE		2126	2130	2154D	N13	E54	5377	03	1.0	28D	SF		3	E		25		
HOLL		2152	2154U	2157	S09	E02	5374	02	25.1	5	SF		3	E		49		
HOLL		2152E	2154U	2200	N13	E54	5377	03	1.0	8D	SF		3	E		65		
HOLL		2152E	2155U	2157	S12	W64	5368	02	20.1	5D	SF		3	E		26		
HOLL		2240E	2240U	2304	N13	E54	5377	03	1.0	24D	SF		3	E		63		
PALE		2243	2245	2252	N11	E56	5377	03	1.1	9	SF		3	E		25		F
PALE		2259	2301	2310	S13	W66	5368	02	20.0	11	SF	C 7.0	3	E		59		
LEAR		2303	2303	2307	S13	W66	5368	02	20.0	4	SF	C 7.0	3	E		13		
HOLL		2303E	2303U	2321	S13	W68	5368	02	19.8	18D	SF		3	E		68		
HOLL		2309	2313	2316	N10	E55	5377	03	1.1	7	SF		3	E		12		
PALE		2334	2336	2355	N11	E56	5377	03	1.2	21	SN	C 2.4		E		75		K
PALE		2334	2349	2355	N11	E56	5377	03	1.2	21	SN	C 2.4	3	E		52		
HOLL		2335		2408D	S13	W69	5368	02	19.8	33D	SN	C 3.4	3	E		32		
LEAR		2335	2336	2356	N10	E54	5377	03	1.0	21	SF			E		68		K
HOLL		2335E	2337	2356	N10	E55	5377	03	1.1	21D	SN		3	E		86		
HOLL		2335	2342	2408D	S13	W69	5377	02	19.8	33D	SN	C 3.4		E		57		K
LEAR		2335	2349	2356	N10	E54	5377	03	1.0	21	SF		3	E		48		
HOLL		2335E	2349	2356	N10	E55	5377	03	1.1	21D	SN			E		77		K
PALE	25	0001E	0001	0004	S12	W67	5368	02	19.9	3D	SF	C 3.4	3	E		15		
PALE		0103	0105	0113	N10	E54	5377	03	1.1	10	SF		3	E		47		
LEAR		0104	0105	0111	N13	E52	5377	03	1.0	7	SF		3	E		28		
PALE		0116	0125	0135	N41	E59	5380	03	1.9	19	1F		3	E		136		F
PALE		0116	0125	0135	N38	E48	5380	02	28.9	19	1F	C 6.4	3	E		136		F
LEAR		0117	0121	0134	N42	E58	5380	03	1.8	17	SF		3	E		35		F
PALE		0152	0156	0200	N10	E52	5377	03	1.0	8	SF		3	E		21		
LEAR		0156	0156	0159	N13	E52	5377	03	1.0	3	SF		3	E		15		
PALE		0242	0242	0246	S15	W62	5368	02	20.4	4	SF		3	E		20		
PALE		0245	0247	0252	N11	E51	5377	02	28.9	7	SF		3	E		39		
PALE		0313	0313	0318	N10	E55	5377	03	1.3	5	SF		3	E		28		
LEAR		0337	0338	0345	S13	W71	5368	02	19.8	8	SF	C 2.8	3	E		21		
LEAR		0339	0345	0353	N11	E50	5377	02	28.9	14	SF		3	E		35		
GOES		0414	0420	0428						14		C 3.7						
LEAR		0850	0851	0858	N12	E49	5377	03	1.0	8	SF		2	E		32		
RAMY		1215	1220	1238D	N17	W42	5373	02	22.3	23D	SF		3	E		40		FE
RAMY		1331	1335	1341	N15	W20	5378	02	24.0	10	SF		3	E		12		
HOLL		1546	1554	1608	S20	E68		03	2.8	22	SF		3	E		14		
RAMY		1646	1646	1650	S13	W78	5368	02	19.8	4	SF		3	E		40		
RAMY		1747	1754	1858D	N15	W22	5378	02	24.1	71D	SF		2	E		47		
PALE		1800	1816	1836	N14	W23	5378	02	24.0	36	SF		3	E		69		
HOLL		1856	1925	2001	N17	W45	5373	02	22.4	65	SF	C 4.2	3	E		79		
PALE		1858	1858	1916	N14	W46	5373	02	22.3	18	SF		3	E		16		
HOLL		2055	2056	2100	S16	W75	5368	02	20.2	5	SF		3	E		27		
HOLL		2157	2158	2209	S13	W80	5368	02	19.9	12	SF	C 3.7	3	E		33		
HOLL		2201	2203	2227	S30	E18	5375	02	27.3	26	SF		3	E		26		
PALE		2249	2249	2255	N15	W23	5378	02	24.2	6	SF		3	E		12		F
GOES		2327	2331	2337						10		C 3.9						
HOLL		2345	2346	2404	N17	W48	5373	02	22.3	19	SF		3	E		21		
PALE		2345	2348	2403	N18	W48	5373	02	22.3	18	SF		3	E		18		F
PALE	26	0009	0010	0013	S12	W79	5368	02	20.0	4	SF		3	E		16		
PALE		0144	0144	0209	N10	E41	5377	03	1.1	25	SF		3	E		15		F
LEAR		0147	0148	0157	N10	E40	5377	03	1.1	10	SF		3	E		18		
PALE		0231	0232	0235	N15	W25	5378	02	24.2	4	SF	C 2.4	3	E		27		
LEAR		0231	0232	0236	N14	W25	5378	02	24.2	5	SF	C 2.4	4	E		27		
PALE		0323	0326	0353	N42	E46	5380	03	1.9	30	SF	C 6.0	3	E		61		UF
LEAR		0324	0328	0348	N42	E43	5380	03	1.7	24	SF	C 6.0	3	E		51		UF
LEAR		0547	0551	0601	N17	W51	5373	02	22.4	14	SF		3	E		47		
GOES		0833	0837	0841						8		C 2.3						
GOES		1104	1108	1111						7		C 1.8						
GOES		1319	1322	1325						6		C 2.7						
SVTO		1356	1412	1435	S21	E38	5379	03	1.5	39	SF		3	E		33		F
HOLL		1553	1602	1611	N40	E39	5380	03	1.8	18	SF		3	E		16		F
HOLL		1653	1655	1851	S20	E30	5379	03	1.0	118	1N	C 4.3	3	E		113		FE

Hα S O L A R F L A R E S

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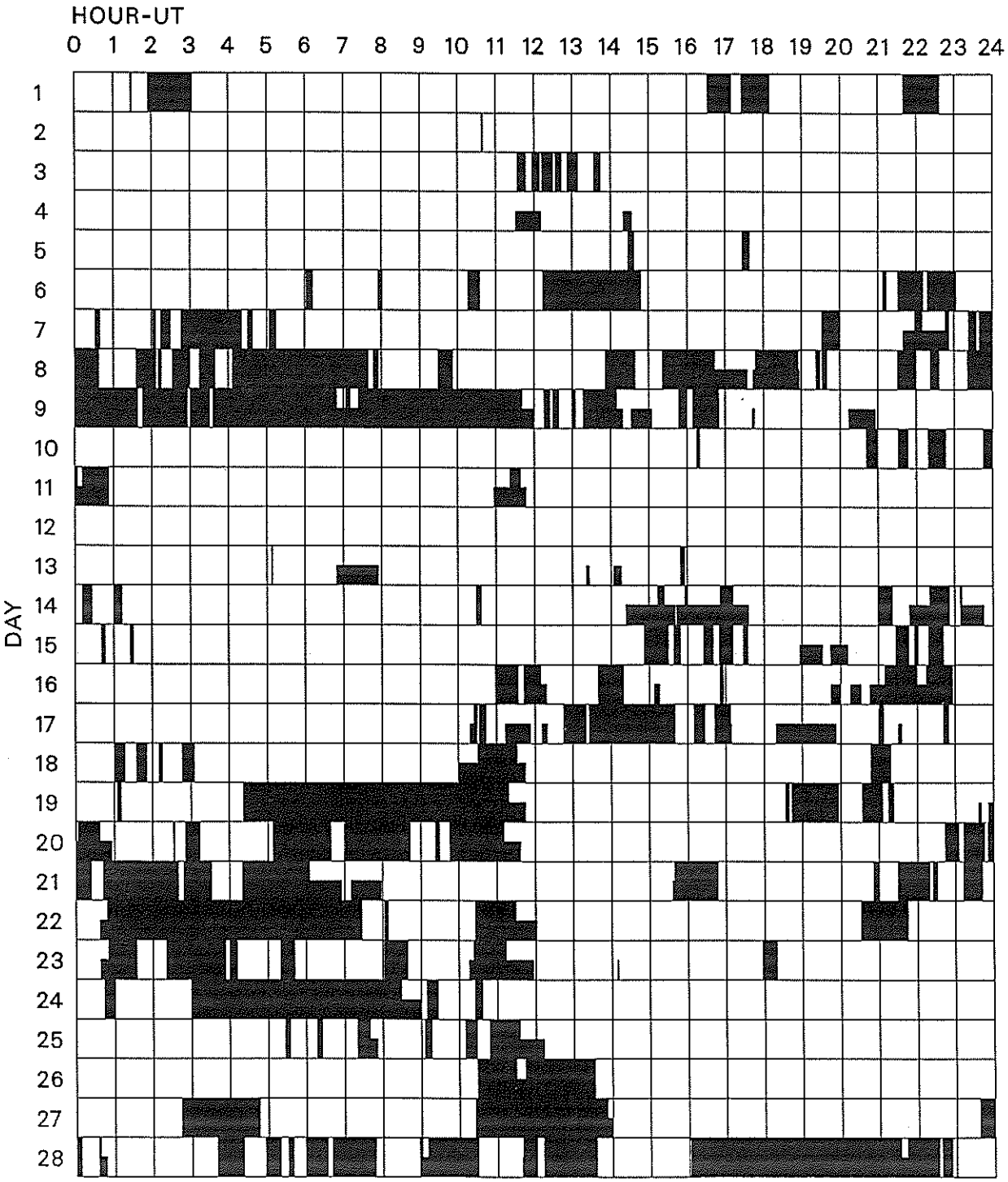
Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
HOLL	26	1817	1824	1852	S26	E10	5375	02	27.5	35	SN		3	E		64		FE
HOLL		2156	2202	2217	S27	E09	5375	02	27.6	21	SF		3	E		61		F
LEAR		2320	2331	2348	N14	W63	5373	02	22.2	28	SF		3	E		16		
LEAR	27	0135	0137	0155	S22	E31	5379	03	1.4	20	1N	M 1.8	3	E		142		
LEAR		0636	0637	0646	N17	W64	5373	02	22.4	10	SF	C 2.4	3	E		54		
SVTO		0638	0638	0643	N15	W64	5373	02	22.4	5	SF	C 2.4	3	E		12		
GOES		0845	0855	0905						20		C 2.5						
SVTO		0953	0954	1017D	S18	W33	5382	02	24.9	24D	SF		2	E		18		
SVTO		0956E	0956U	1000D	N58	W21	5378	02	25.6	4D	SF		1	E		35		
SVTO		1007E	1007U	1136D	S18	E23	5379	03	1.2	89D	SF	C 2.5	2	E		39		F
HOLL		1618	1619	1640	S21	E22	5379	03	1.4	22	SF		3	E		22		F
RAMY		1618	1621U	1648	S22	E24	5379	03	1.5	30	SF		3	E		40		
HOLL		1636	1639	1646	S28	W05	5375	02	27.3	10	SF		3	E		24		
RAMY		1638	1639	1645	S27	E06	5375	02	28.2	7	SF		3	E		18		
RAMY		1639	1640	1703	N38	E24	5380	03	1.6	24	SF		3	E		20		
HOLL		1655	1655	1707	N39	E24	5380	03	1.6	12	SF		3	E		11		F
HOLL		1658	1704	1735	N16	E24	5383	03	1.5	37	1F		3	E		104		FE
RAMY		1658	1705	1730	N17	E25	5383	03	1.6	32	SF		3	E		94		
RAMY		1805	1811U	1846	S22	E22	5379	03	1.4	41	SF		3	E		26		
HOLL		1817	1818	1851	S21	E21	5379	03	1.4	34	SF		3	E		33		F
HOLL		1836	1842	1850	N13	W71	5373	02	22.4	14	SF		3	E		35		
RAMY		1836	1843	1858D	N14	W73	5373	02	22.2	22D	SF		3	E		28		
RAMY		1949	2025	2119D	N17	W72	5373	02	22.3	90D	1N			E		65		K
RAMY		1949	2118U	2119D	N17	W72	5373	02	22.3	90D	1N	C 4.3	2	E		124		F
HOLL		2012	2017	2100D	S22	E22	5379	03	1.5	48D	SF			E		52		K
HOLL		2012	2030	2100D	S22	E22	5379	03	1.5	48D	SF		3	E		51		F
RAMY		2015	2029	2114D	S22	E22	5379	03	1.5	59D	SF		3	E		39		F
HOLL		2055E	2114	2129	N16	W71	5373	02	22.5	34D	1N	C 4.3	3	E		125		F
HOLL		2206	2210	2250	S21	E21	5379	03	1.5	44	SF		3	E		41		F
LEAR	28	0100	0107	0123	N13	W56	5378	02	23.8	23	SF		3	E		66		
LEAR		0301	0313	0320	N16	E20	5383	03	1.6	19	SF		3	E		35		
LEAR		0812	0814	0818	N13	W59	5378	02	23.9	6	SF		3	E		13		
SVTO		0956E	0956U	1000D	N58	W21	5378	02	26.6	4D	SF		1	E		35		
SVTO		1030E	1048	1204D	N12	W62	5378	02	23.8	94D	SN		2	E		44		
SVTO		1056	1059	1122	S20	E12	5379	03	1.4	26	SF		3	E		20		F
RAMY		1130E	1130U	1258	N14	W61	5378	02	23.9	88D	SF		3	E		42		H
SVTO		1235E	1424	1515	N12	W62	5378	02	23.8	160D	SN			E		56		K
SVTO		1235E	1435	1515	N12	W62	5378	02	23.8	160D	SN		2	E		46		
RAMY		1343	1344	1457	N14	W63	5378	02	23.8	74	SF		3	E		71		
RAMY		1518	1521	1544	S20	E11	5379	03	1.5	26	SF	C 2.7	3	E		79		F
SVTO		1519	1521	1532	S19	E09	5379	03	1.3	13	SF	C 2.7	3	E		38		F
RAMY		1524	1535	1559	N14	W63	5378	02	23.9	35	SF			E		26		K
RAMY		1524	1549	1559	N14	W63	5378	02	23.9	35	SF		3	E		15		
SVTO		1525	1538	1558	N12	W66	5378	02	23.7	33	SF			E		35		K
SVTO		1525	1551	1558	N12	W66	5378	02	23.7	33	SF		3	E		19		
RAMY		1625	1628	1727	N14	W64	5378	02	23.8	62	SF			E		39		K
RAMY		1625	1710	1727	N14	W64	5378	02	23.8	62	SF	C 4.9	3	E		53		
GOES		1646	1654	1702						16		C 2.6						
RAMY		1756	1821	1947	N14	W64	5378	02	23.9	111	SF	M 1.7	3	E		65		F
RAMY		1806	1808	1812	S17	W51	5382	02	24.9	6	SF		3	E		26		
RAMY		1819	1828	1858D	N18	W73	5373	02	23.2	39D	SF		3	E		68		
GOES		2140E	2144	2159D						19D		C 4.2						
LEAR		2322	2323	2339	N14	W67	5378	02	23.9	17	SF	C 5.6	3	E		70		

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

FEBRUARY 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.

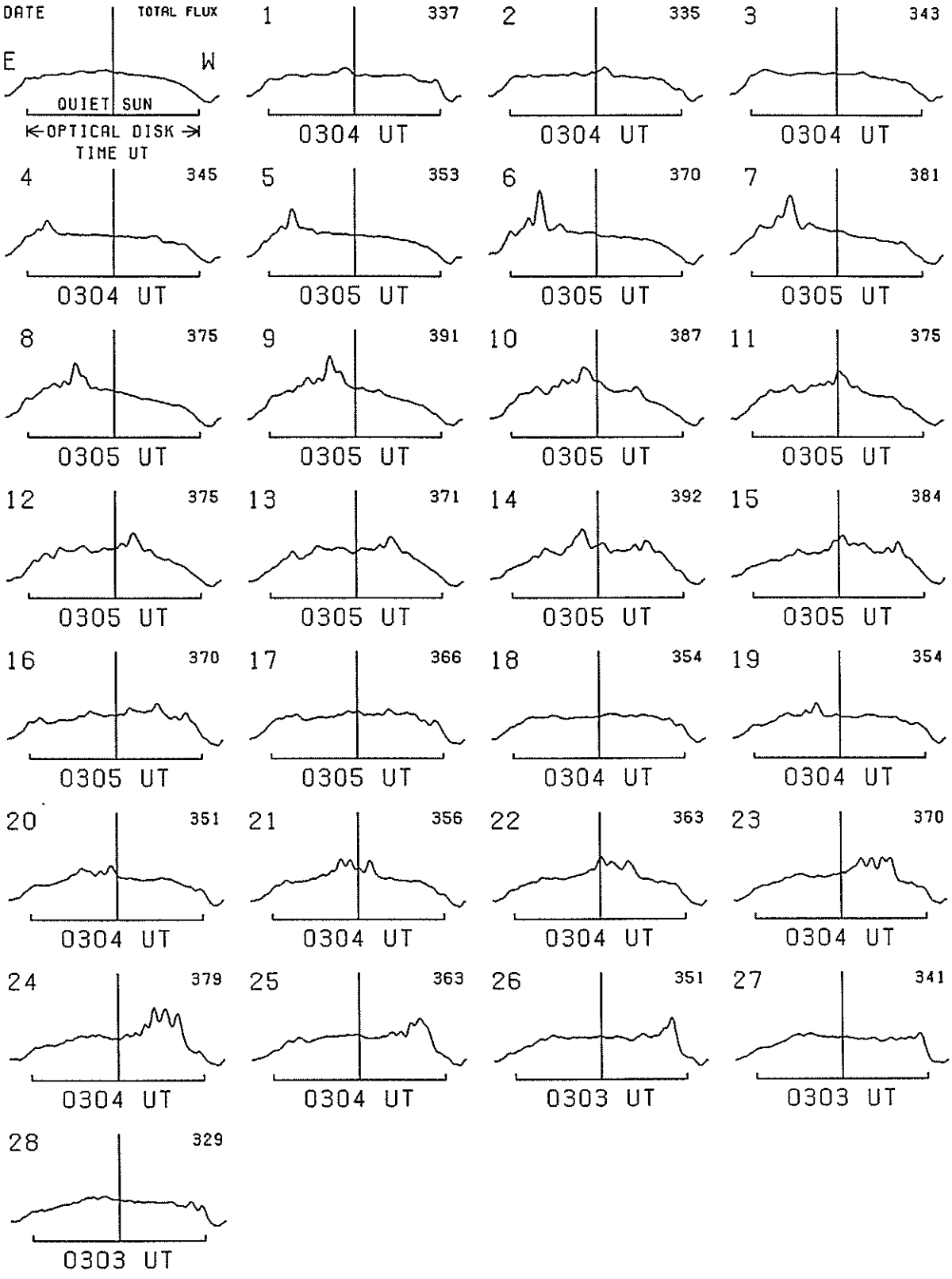
Holloman Learmonth Palehua Ramey San Vito

EAST-WEST SOLAR SCANS

FEBRUARY 1989

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



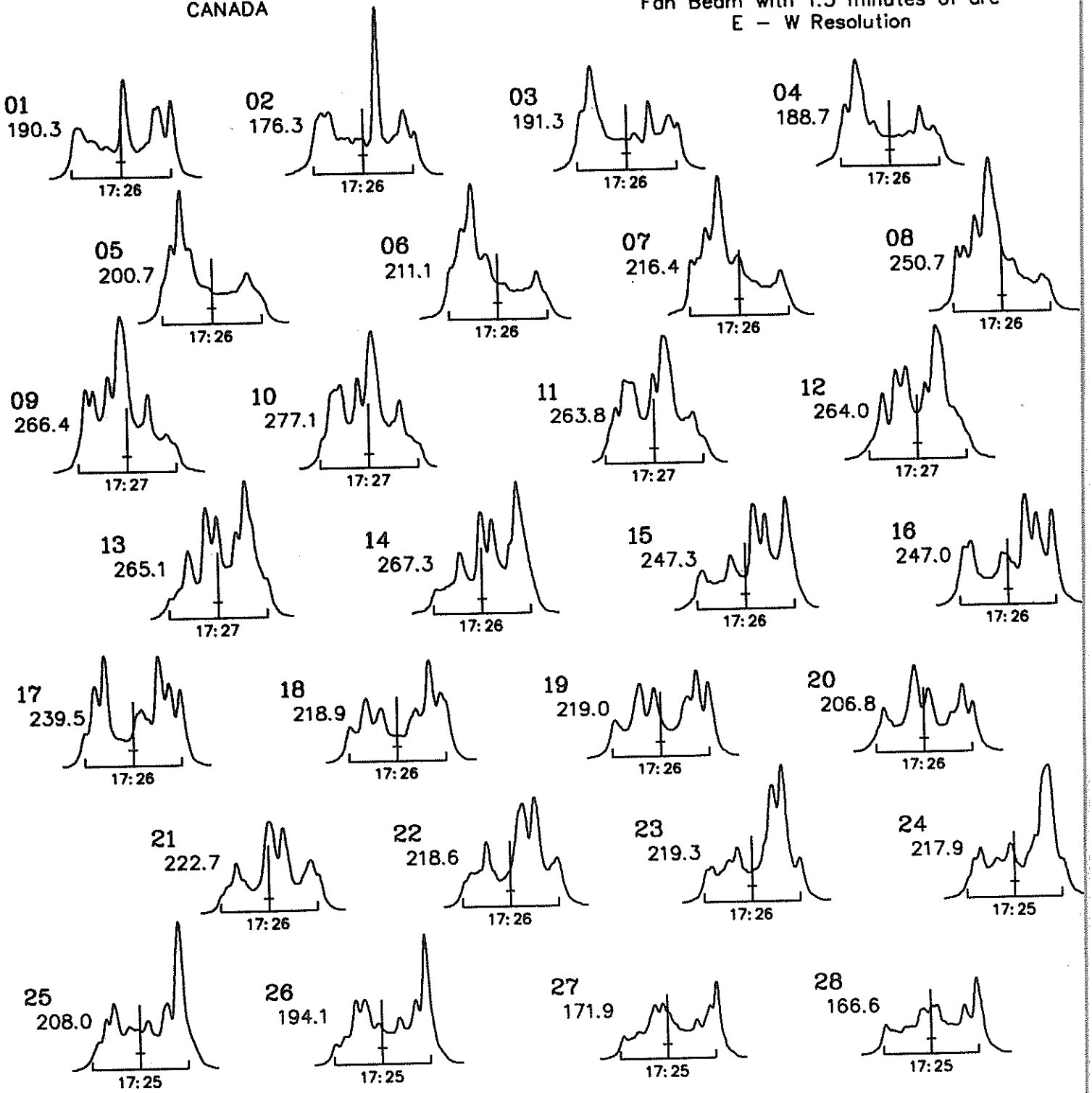
28
Feb 89

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

EAST – WEST SOLAR SCANS
FEBRUARY 1989

ALGONQUIN RADIO OBSERVATORY
CANADA

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



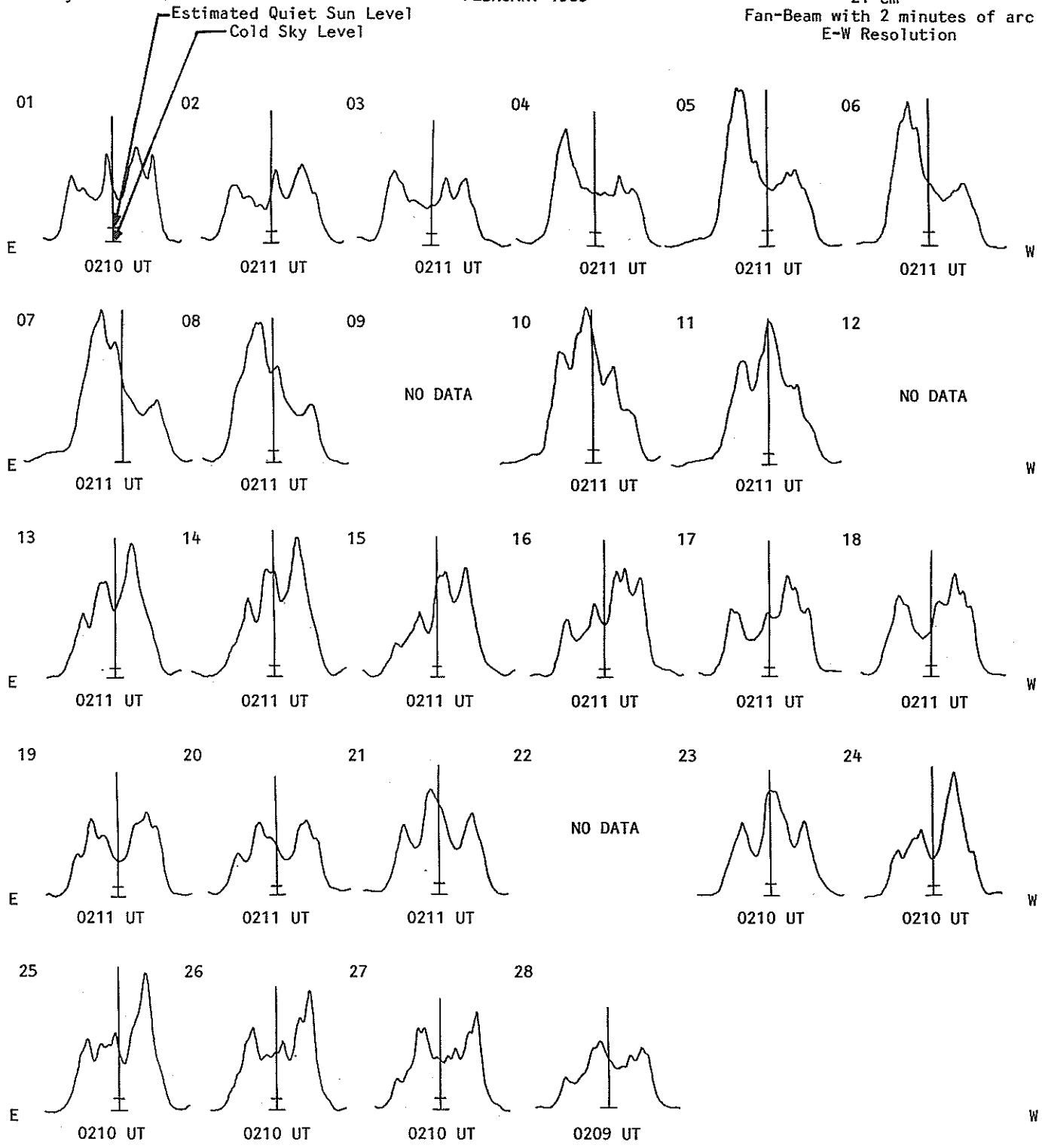
DATE
TOTAL FLUX
ESTIMATED QUIET SUN LEVEL
E
W
← PHOTOSPHERE →
TIME U.T.

EAST-WEST SOLAR SCANS

Fleurs, Australia

FEBRUARY 1989

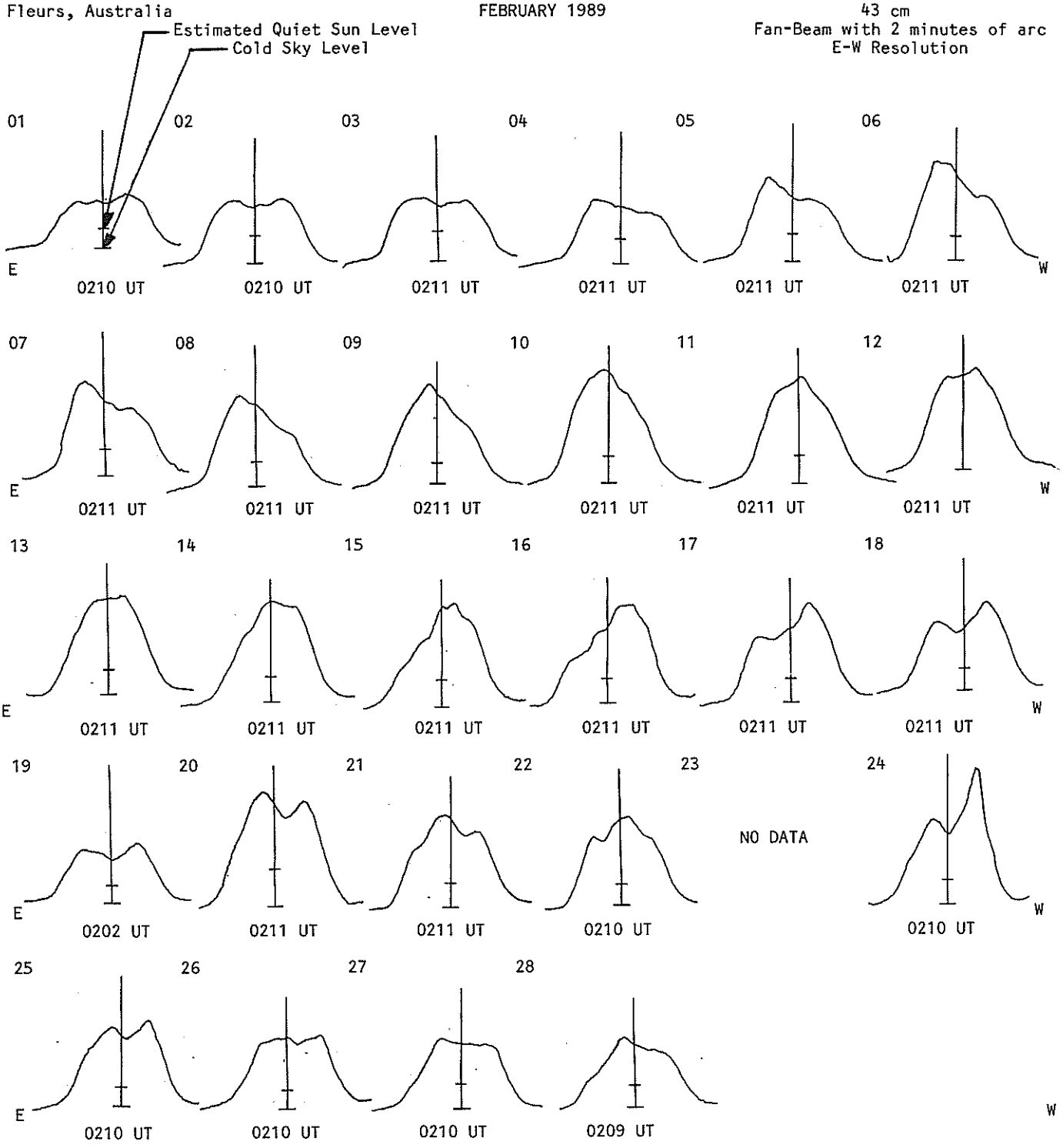
21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



30
Feb 89

EAST-WEST SOLAR SCANS

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

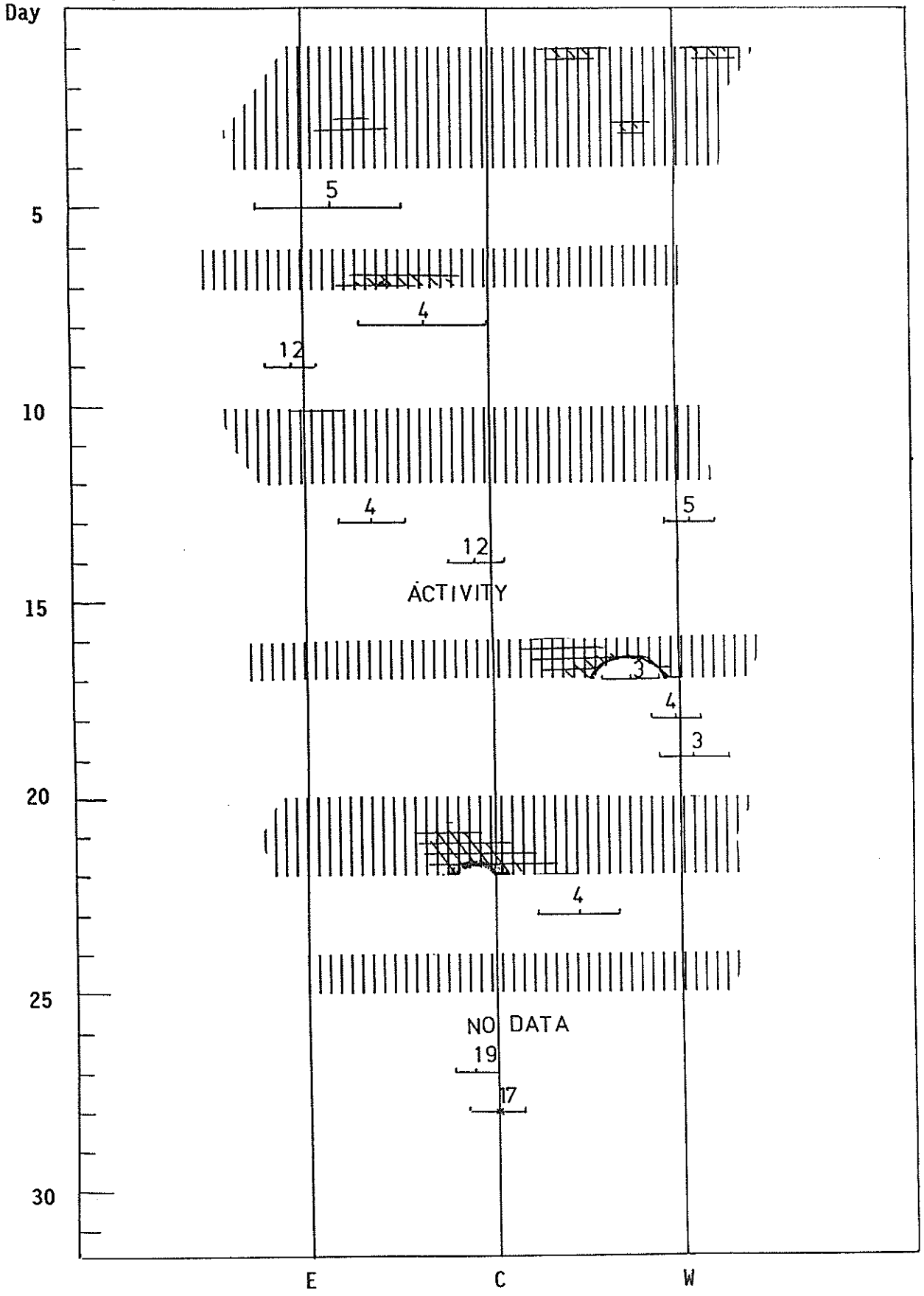


SOLAR INTERFEROMETRIC OBSERVATIONS

FEBRUARY 1989

Nancay

164 MHz



SOLAR RADIO EMISSION
Selected Fixed Frequency Events

FEBRUARY 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	LEAR	4	S/F	1012.0E	1014.0	5.0D	88.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1013.0E	1014.0	6.0D	93.0			QL=1 ST=2 TYP=3
	3200	BERN	46	C	1020.0	1045.0	45.0	239.0			
	8400	BERN	46	C	1020.0	1027.0	45.0	85.0			
	2695	LEAR	8	S	1021.0E	1021.0	1.0D	25.0			QL=1 ST=2 TYP=3
02	8400	BERN	4	S/F	1122.4	1123.4	2.0	105.0			
	3200	BERN	4	S/F	1122.4	1123.4	2.0	17.0			
	2800	OTTA	3	S	1724.6	1727.0	10.5	115.0	23.0		
	8800	SGMR	8	S	1726.0E	1726.0	1.0D	140.0			QL=1 ST=2 TYP=3
	2695	SGMR	8	S	1726.0E	1727.0	1.0D	97.0			QL=1 ST=2 TYP=3
03	2800	OTTA	40	F	1410.0	1441.0	31.0	15.0	6.0		
	2800	OTTA	22	GRF	1541.0	1615.0	170.0	12.5	4.0		
04	3200	BERN	46	C	0950.0	1004.0	40.0	440.0			
	8400	BERN	46	C	0950.0	0956.0	40.0	457.0			
	2695	SVTO	4	S/F	0950.0E	0956.0	52.0D	380.0			QL=1 ST=3 TYP=5
	8800	SVTO	4	S/F	0951.0E	0956.0	56.0D	470.0			QL=1 ST=2 TYP=5
	2695	LEAR	4	S/F	0951.0E	1003.0	61.0D	410.0			QL=1 ST=2 TYP=5
	8800	LEAR	4	S/F	0951.0E	0955.0	61.0D	420.0			QL=1 ST=2 TYP=3
05	2800	OTTA	20	GRF	1823.0	1845.0	53.0	5.9	3.0		
06	8400	BERN	46	C	0914.0	0917.0	11.0	228.0			
	3200	BERN	46	C	0914.0	0917.0	11.0	167.0			
	8800	LEAR	4	S/F	0533.0E	0534.0	4.0D	190.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0804.0E	0804.0	1.0D	310.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0914.0E	0916.0	11.0D	120.0			QL=1 ST=2 TYP=5
	8800	SVTO	4	S/F	0915.0E	0916.0	12.0D	100.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0916.0E	0916.0	5.0D	32.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1436.0E	1436.0	5.0D	87.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	1436.0E	1436.0	394.0D	91.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1643.0	1650.0	80.0	60.1	18.0		
	8800	SGMR	4	S/F	1916.0E	1918.0	4.0D	65.0			QL=1 ST=3 TYP=3
07	2695	LEAR	8	S	0213.0E	0214.0	1.0D	23.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0214.0E	0214.0	886.0D	28.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1700.0	1851.0	250.0	18.9	9.0		
	2800	OTTA	1	S	1912.0	1913.3	2.7	27.1	11.0		
08	2695	LEAR	8	S	0946.0E	0946.0	2.0D	130.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0946.0E	0946.0	1.0D	200.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	0946.0E	0946.0	4.0D	110.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	0946.0E	0946.0	4.0D	200.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1509.0E	1509.0	2.0D	71.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1509.0E	1509.0	3.0D	83.0			QL=1 ST=2 TYP=3
	8400	BERN	46	C	1509.0	1509.5	2.0	95.0			
	3200	BERN	46	C	1509.0	1509.5	2.0	80.0			
	2800	OTTA	4	S/F	1908.0	2039.0	200.0	176.8	53.0		
	8800	SGMR	4	S/F	2013.0E	2038.0	41.0D	240.0			QL=1 ST=2 TYP=5
	2695	SGMR	20	GRF	2017.0E	2038.0	28.0D	160.0			QL=1 ST=2 TYP=2
	8800	PALE	20	GRF	2017.0E	2038.0	78.0D	310.0			QL=1 ST=2 TYP=2
	2695	PALE	20	GRF	2019.0E	2038.0	26.0D	150.0			QL=1 ST=2 TYP=2
09	2695	SGMR	49	GB	1256.0E	1258.0	19.0D	1100.0			QL=1 ST=2 TYP=6
	8800	SGMR	49	GB	1256.0E	1258.0	19.0D	1300.0			QL=1 ST=2 TYP=6
	2695	SVTO	49	GB	1256.0E	1258.0	15.0D	1100.0			QL=1 ST=2 TYP=6
	8800	SVTO	49	GB	1256.0E	1258.0	664.0D	1200.0			QL=1 ST=1 TYP=6
	2800	OTTA	26	FAL	1320.0	1320.0	160.0	32.5	15.0		
	2800	OTTA	2	S/F	1925.5	1929.0	7.0	23.0	7.0		
	8800	SGMR	8	S	1928.0E	1928.0	2.0D	80.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	2049.0E	2049.0	1.0D	78.0			QL=1 ST=2 TYP=3
10	8800	LEAR	8	S	0844.0E	0844.0	1.0D	60.0			QL=1 ST=2 TYP=3
	3200	BERN	46	C	1218.0	1223.0	30.0	130.0			
	8400	BERN	46	C	1218.0	1223.0	30.0	74.0			
	2695	SGMR	4	S/F	1220.0E	1223.0	7.0D	190.0			QL=1 ST=3 TYP=3
	2695	SVTO	4	S/F	1220.0E	1222.0	27.0D	220.0			QL=1 ST=2 TYP=5

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

FEBRUARY 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
10	8800	SVTO	8	S	1222.0E	1222.0	1.0D	54.0			QL=1 ST=2 TYP=3
11	2800	OTTA	3	S	1615.0	1621.0	11.0	43.0	13.0		
12	2800	OTTA	20	GRF	1605.0	1609.0	50.0	10.2	5.0		
13	8800	PALE	8	S	0323.0E	0323.0	1.0D	71.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0323.0E	0323.0	1.0D	72.0			QL=1 ST=2 TYP=3
	2800	OTTA	20	GRF	1821.0	1826.0	70.0	13.5	4.0		
14	2695	LEAR	4	S/F	0439.0E	0458.0	35.0D	72.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0443.0E	0458.0	31.0D	46.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0602.0E	0603.0	2.0D	190.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0634.0E	0635.0	2.0D	81.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0634.0E	0635.0	2.0D	48.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0635.0E	0635.0	1.0D	100.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1420.0E	1421.0	2.0D	68.0			QL=1 ST=3 TYP=3
	8800	SVTO	8	S	1420.0E	1421.0	1.0D	60.0			QL=1 ST=2 TYP=3
	8400	BERN	4	S/F	1420.3	1421.0	2.0	197.0			
	2800	OTTA	20	GRF	1806.5	1808.5	12.0	5.9	2.0		
	2695	PENT	32	ABS	2130.0	2212.0	55.0	5.0	2.0		
15	8800	LEAR	4	S/F	0852.0E	0854.0	3.0D	43.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1340.0E	1341.0	1.0D	76.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1340.0E	1341.0	61.0D	60.0			QL=1 ST=2 TYP=3
	8400	BERN	3	S	1340.4	1341.1	1.5	83.0			
	2800	OTTA	2	S/F	2012.0	2014.3	3.5	10.0	4.0		
16	2695	SYDN	4	S/F	0338.0	0343.0	16.0	84.0			QL=/ ST=/ TYP=5
	8800	LEAR	4	S/F	0340.0E	0345.0	27.0D	94.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0340.0E	0342.0	27.0D	75.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	0341.0E	0346.0	7.0D	100.0			QL=1 ST=2 TYP=5
	2695	PALE	8	S	0342.0E	0342.0	1.0D	66.0			QL=1 ST=2 TYP=3
	2800	OTTA	3	S	1631.5	1633.0	6.0	12.2	5.0		
	2800	OTTA	3	S	2150.0	2153.5	12.0	45.0	18.0		
17	2695	LEAR	8	S	0203.0E	0204.0	1.0D	74.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1638.0	1737.5	215.0	38.0	15.0		
18	8400	BERN	4	S/F	0746.1	0747.1	3.5	57.0			
	3200	BERN	4	S/F	0746.1	0747.2	3.5	49.0			
	2695	LEAR	4	S/F	0746.0E	0747.0	5.0D	67.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0746.0E	0747.0	2.0D	49.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	0747.0E	0747.0	61.0D	53.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	0747.0E	0747.0	700.0D	62.0			QL=1 ST=2 TYP=3
20	8800	LEAR	4	S/F	0001.0E	0002.0	3.0D	51.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	1352.1	1357.9	16.5	328.3	131.0		
	3200	BERN	46	C	1353.0	1358.0	16.0	223.0			
	8400	BERN	46	C	1353.0	1358.0	16.0	193.0			
	2695	SGMR	4	S/F	1354.0E	1357.0	10.0D	300.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1354.0E	1357.0	11.0D	310.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1354.0E	1358.0	10.0D	180.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	1355.0E	1358.0	7.0D	170.0			QL=1 ST=2 TYP=3
	2800	OTTA	29	PBI	1408.6	1408.6	115.0	21.0	10.0		
21	8800	LEAR	4	S/F	0026.0E	0026.0	3.0D	26.0			QL=1 ST=2 TYP=3
	8800	SVTO	4	S/F	1211.0E	1212.0	3.0D	94.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1218.0E	1219.0	2.0D	75.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	2356.0E	2357.0	5.0D	32.0			QL=1 ST=2 TYP=3
22	2695	LEAR	4	S/F	0332.0E	0332.0	5.0D	6.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0332.0E	0332.0	2.0D	30.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1740.0	1802.0	108.0	7.8	3.0		
23	2800	OTTA	22	GRF	1625.0	1723.0	75.0	9.4	4.0		
24	2800	OTTA	22	GRF	1417.0	1420.5	98.0	10.5	5.0		
	2800	OTTA	3	S	1426.0	1427.5	2.8	10.5	5.0		

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

FEBRUARY 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
24	2695	SGMR	4	S/F	1547.0E	1547.0	606.0D	92.0			QL=1 ST=2 TYP=3
25	8800	LEAR	8	S	0415.0E	0415.0	2.0D	64.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1630.0	1825.0	205.0	7.7	3.0		
	8800	LEAR	8	S	2327.0E	2327.0	1.0D	50.0			QL=1 ST=2 TYP=3
26	2800	OTTA	22	GRF	1653.0	1810.0	145.0	9.0	4.0		
27	8800	LEAR	8	S	0137.0E	0138.0	2.0D	17.0			QL=1 ST=2 TYP=3
	2800	OTTA	4	S/F	1658.0	1659.5	5.0	11.9	5.0		
28	2800	OTTA	4	S/F	1805.0	1818.0	26.0	85.3	26.0		
	8800	PALE	4	S/F	1815.0E	1817.0	6.0D	210.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	1817.0E	1817.0	1.0D	89.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	1825.0E	1825.0	6.0D	74.0			QL=1 ST=2 TYP=3
	2800	OTTA	29	PBI	1830.0	1830.0	170.0	8.9	5.0		
	2800	OTTA	4	S/F	2139.0	2143.0	7.0	40.6	16.0		

Reports are received routinely from the following observatories:

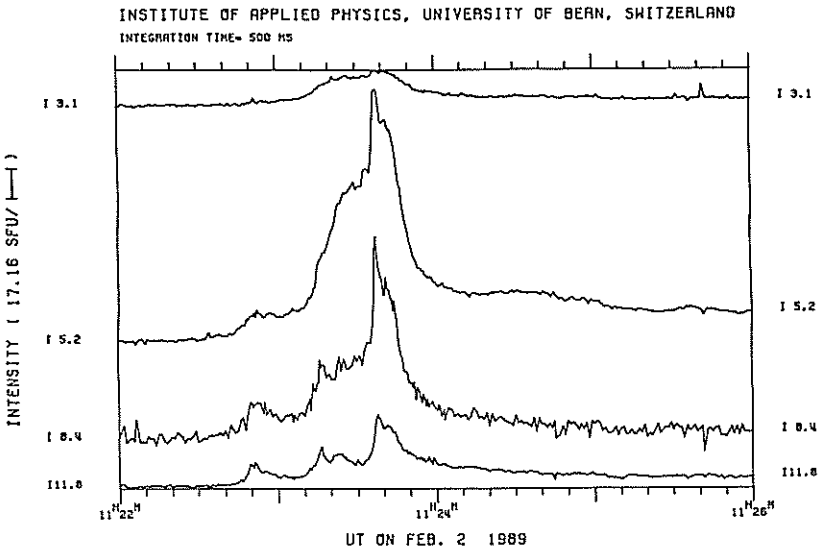
BERN = Berne LEAR = Learmonth PALE = Palehua SGMR = Sagamore Hill
OTTA = Ottawa PENT = Penticton SVTO = San Vito

Explanation of Type Code:

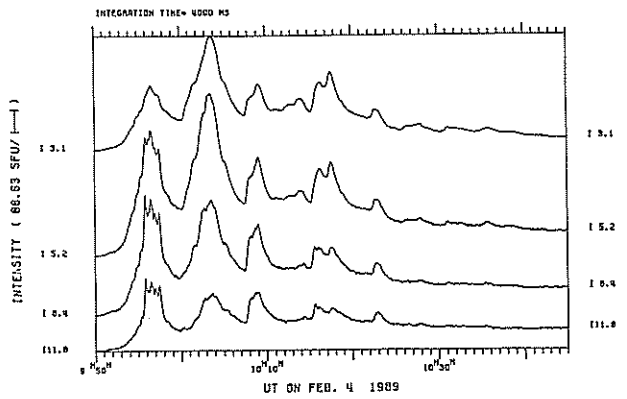
1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple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

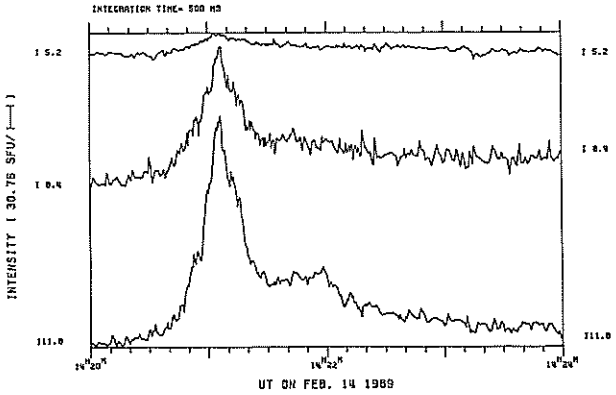
1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A	40 Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	40F Rise Only F	260 Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A

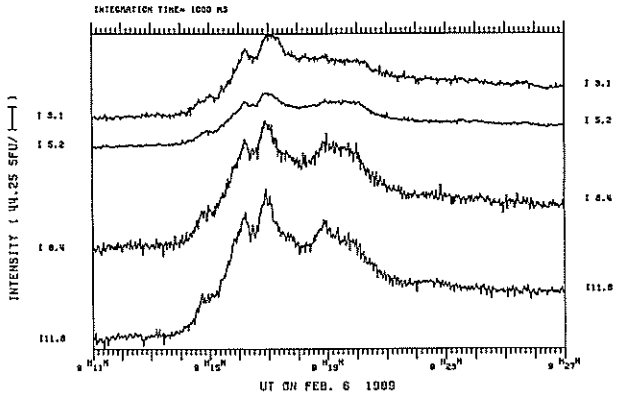
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Ottawa, Canada 2800 MHz; Hiraiso, Japan 500 and 200 MHz; and Toyokawa, Japan 9400, 3750, 2000 and 1000 MHz.

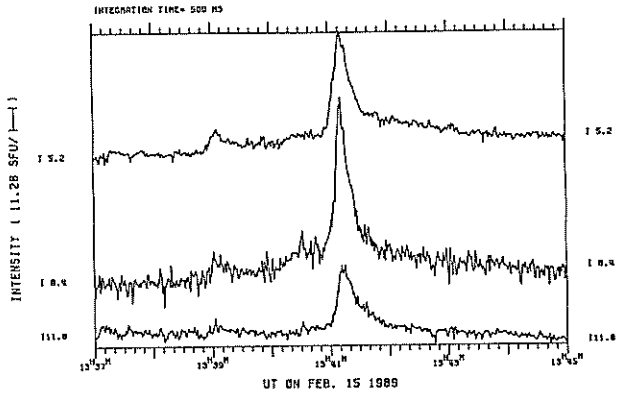


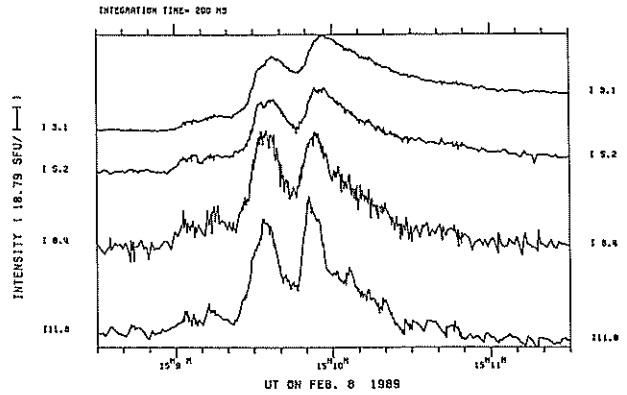
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERN, SWITZERLAND

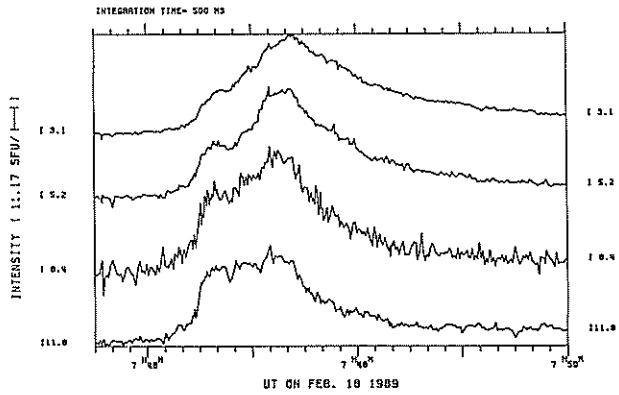


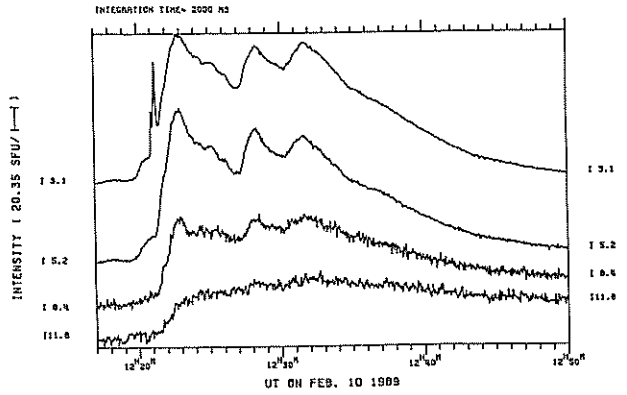


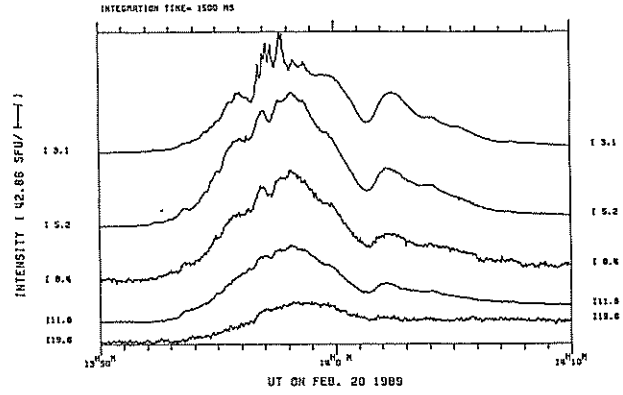




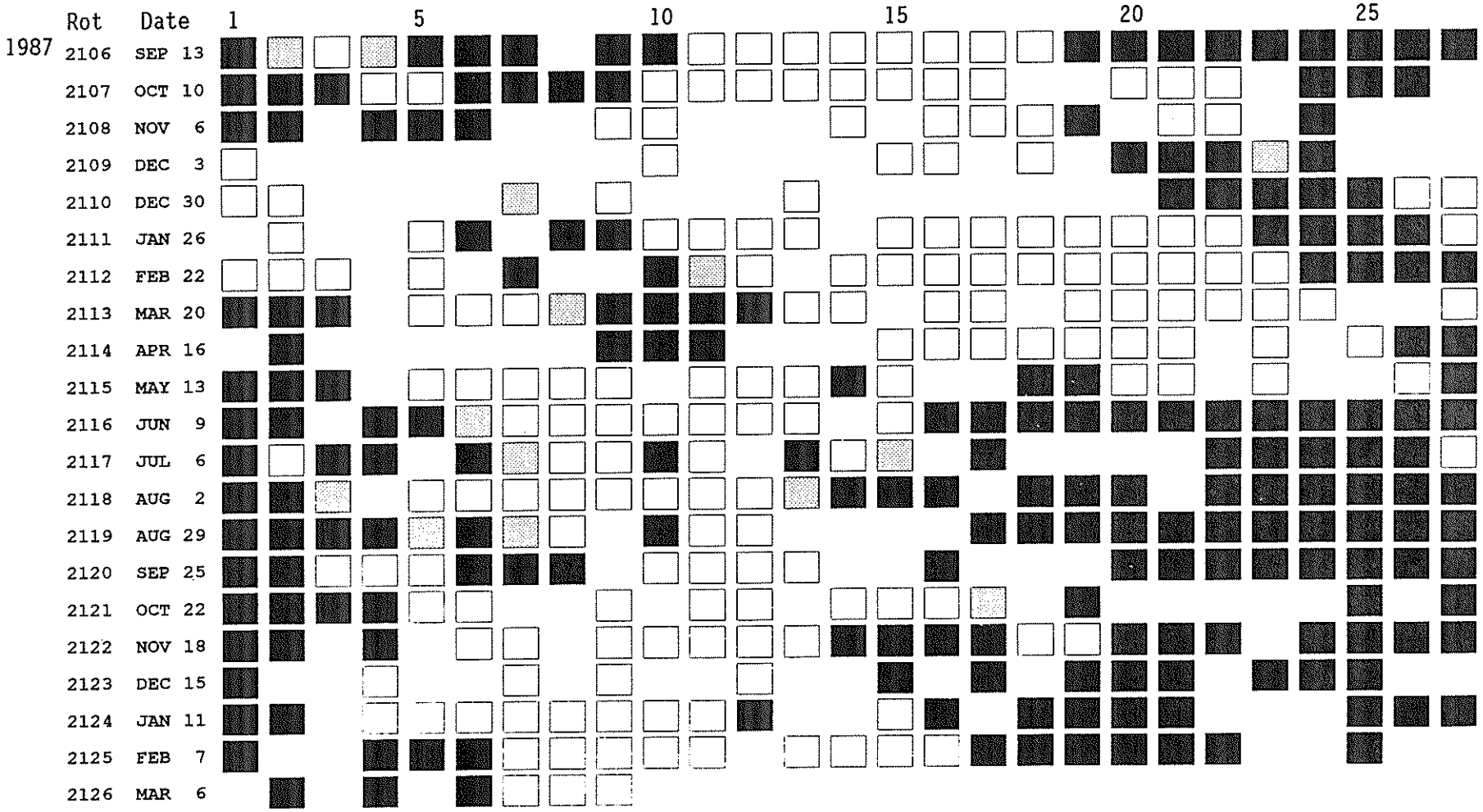








STANFORD MEAN SOLAR MAGNETIC FIELD



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 Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	1989 Feb
1	.	12	13	14	-35	5	-27	-15	23	-3	.	.
2	-16	21	12	7	-51	-22	-2	-19	24	-5	-19	.
3	1	.	28	.	-29	-14	-4	.	.	-4	-22	.
4	22	35	29	33	-9	1	-2	8	40	-12	-41	-65
5	.	42	25	.	-13	.	16	12	19	2	.	-46
6	49	.	37	.	-39	5	.	15	3	4	-65	-4
7	50	45	.	12	39	18	-22	10	0	-24	-85	-13
8	49	41	39	-14	-18	43	43	.	.	-27	-101	.
9	44	53	.	-25	-29	48	45	.	-9	-33	.	.
10	53	47	6	-17	.	51	.	-8	.	.	.	-16
11	52	43	-8	.	-16	22	.	.	.	-62	-16	-6
12	49	36	-11	-14	-1	25	.	.	.	-47	-23	-18
13	36	.	-22	-11	14	23	.	.	.	-53	.	23
14	35	.	-29	-1	15	1	-30	-36	.	-38	10	34
15	21	8	-25	13	-6	-14	-44	-33	-35	-30	24	55
16	-13	.	.	22	2	-15	-50	-43	.	.	23	73
17	-9	-25	10	28	.	-20	-54	-39	-46	.	16	66
18	-13	.	17	27	-3	.	-46	-52	-43	34	74	.
19	-9	.	15	30	3	-36	-49	-53	-46	.	101	116
20	-20	.	12	37	-1	-38	-64	-40	.	.	120	131
21	-14	.	22	35	.	-49	-67	-37	-19	56	119	94
22	-8	.	.	.	-16	.	-64	-34	.	.	-29	40
23	.	.	5	15	.	-57	-57	-38	29	61	.	-13
24	18	-6	5	-3	.	-79	-36	-36	31	.	.	-7
25	21	-20	4	-35	.	-91	-29	-17	.	.	22	-35
26	12	-26	-6	-67	.	-77	-8	14	30	65	-37	-64
27	-1	.	7	-75	-49	-57	6	15	31	.	.	-108
28	-13	.	.	-80	-79	-24	34	.	24	.	-50	-93
29	-43	.	.	-57	-51	-10	13	.	26	-5	-64	
30	-40	18	-19	-29	-15	-20	-6	15	18	.	-91	
31	-11		-13		-3	-20		.		-24	-101	

Dot symbol indicates no data available for the day.

C O N T E N T S

Prompt Reports DATA FOR **JANUARY 1989** Number 535 Part I

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

CARRINGTON ROTATION NUMBER 1811
(9 January to 5 February 1989)

Dates of Observations Below	Days of Year:	277	272	267

Chart unavailable at time of publication.

Heliographic Longitude

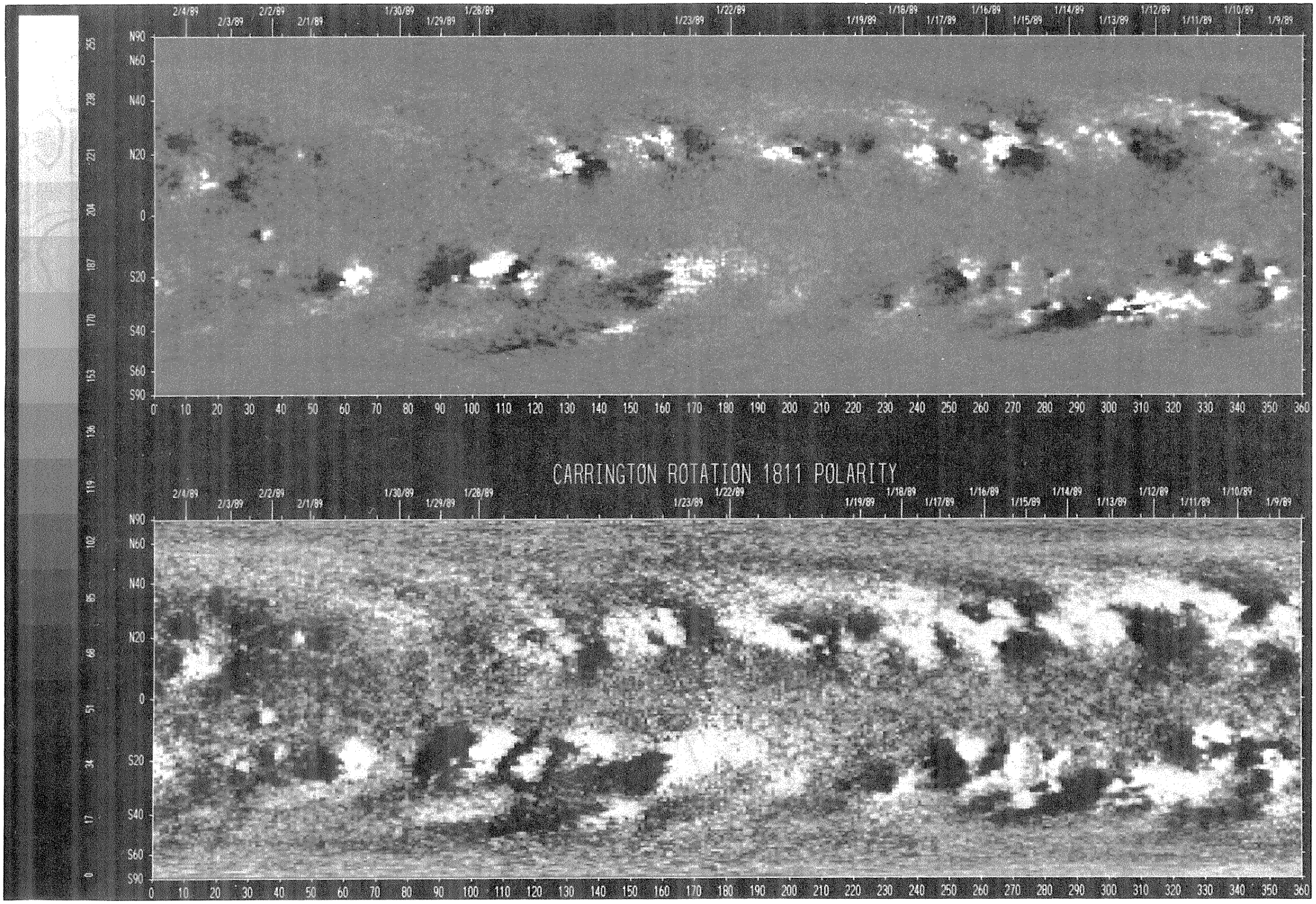
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1811

(9 January to 5 February 1989)

Kitt Peak National Observatory

Dates of Observation



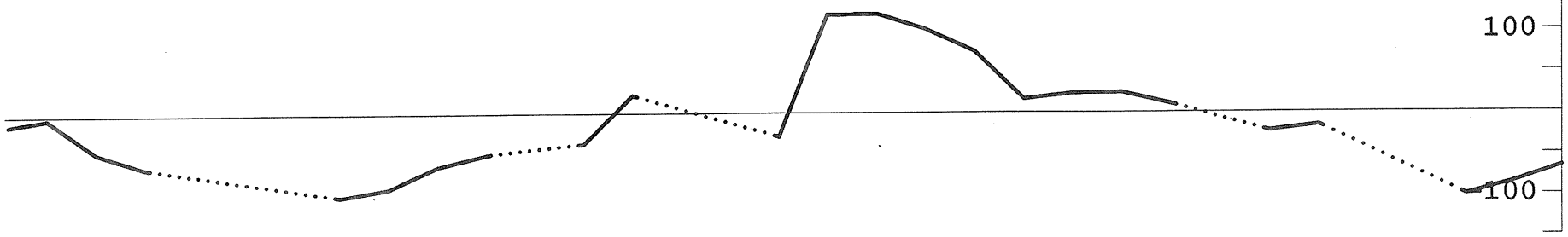
Heliographic Longitude

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1811
(9 January to 5 February 1989)

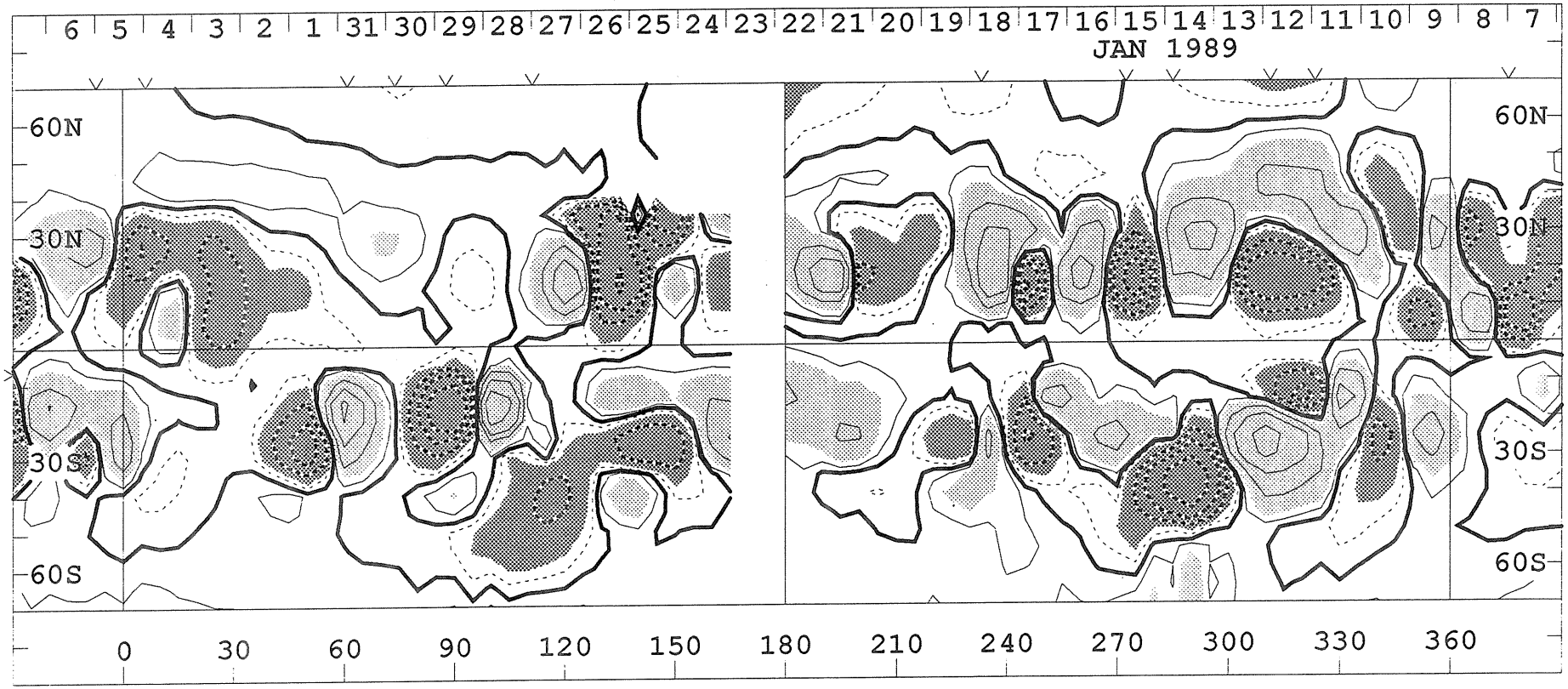
Stanford Solar Observatory

0, ±100, 500, 1000, 2000 microTesla



Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla



Heliographic Longitude

S O L A R M A G N E T I C F I E L D S Y N O P T I C C H A R T

SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1811

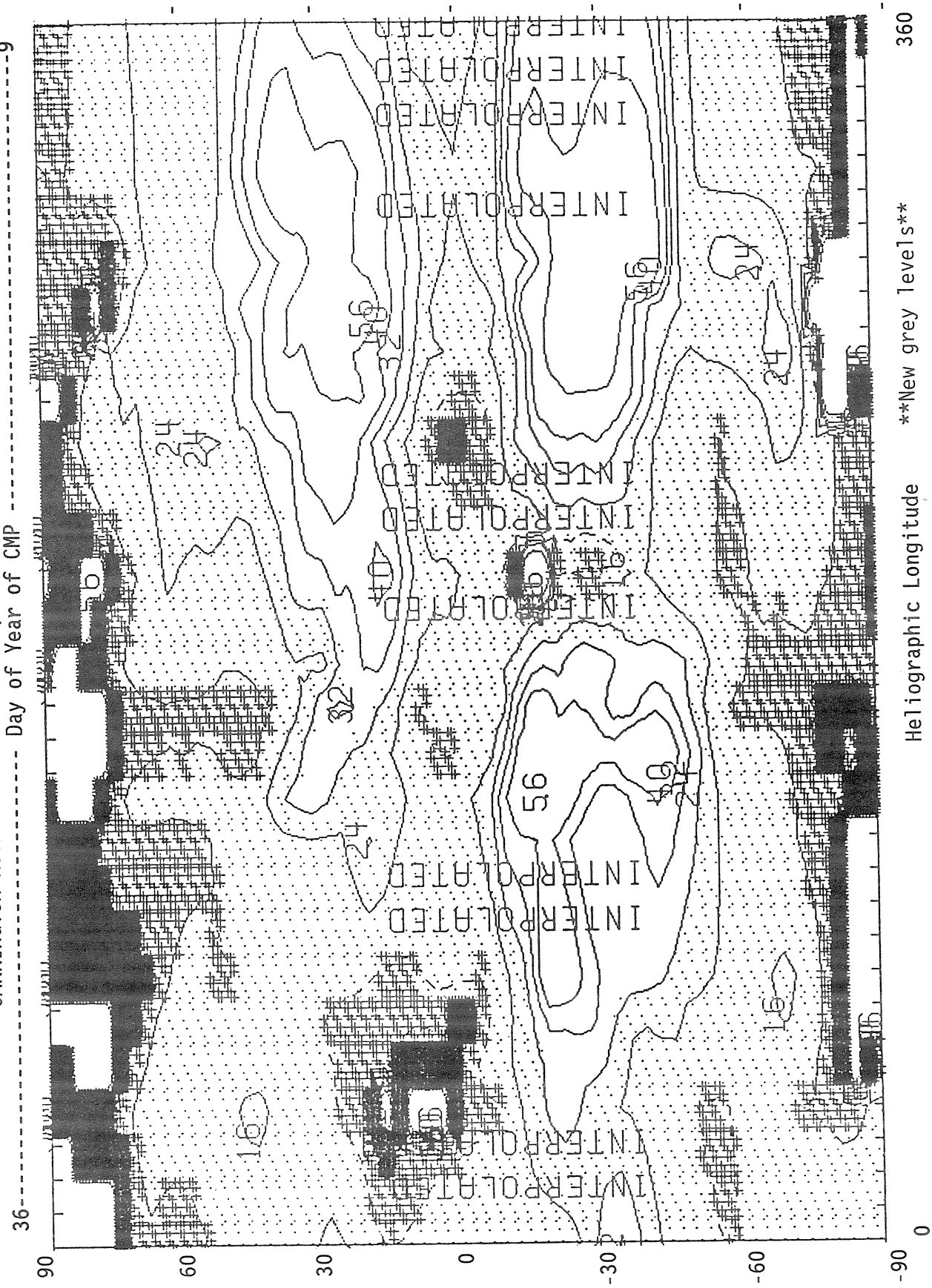
(9 January to 5 February 1989)

Stanford Solar Observatory

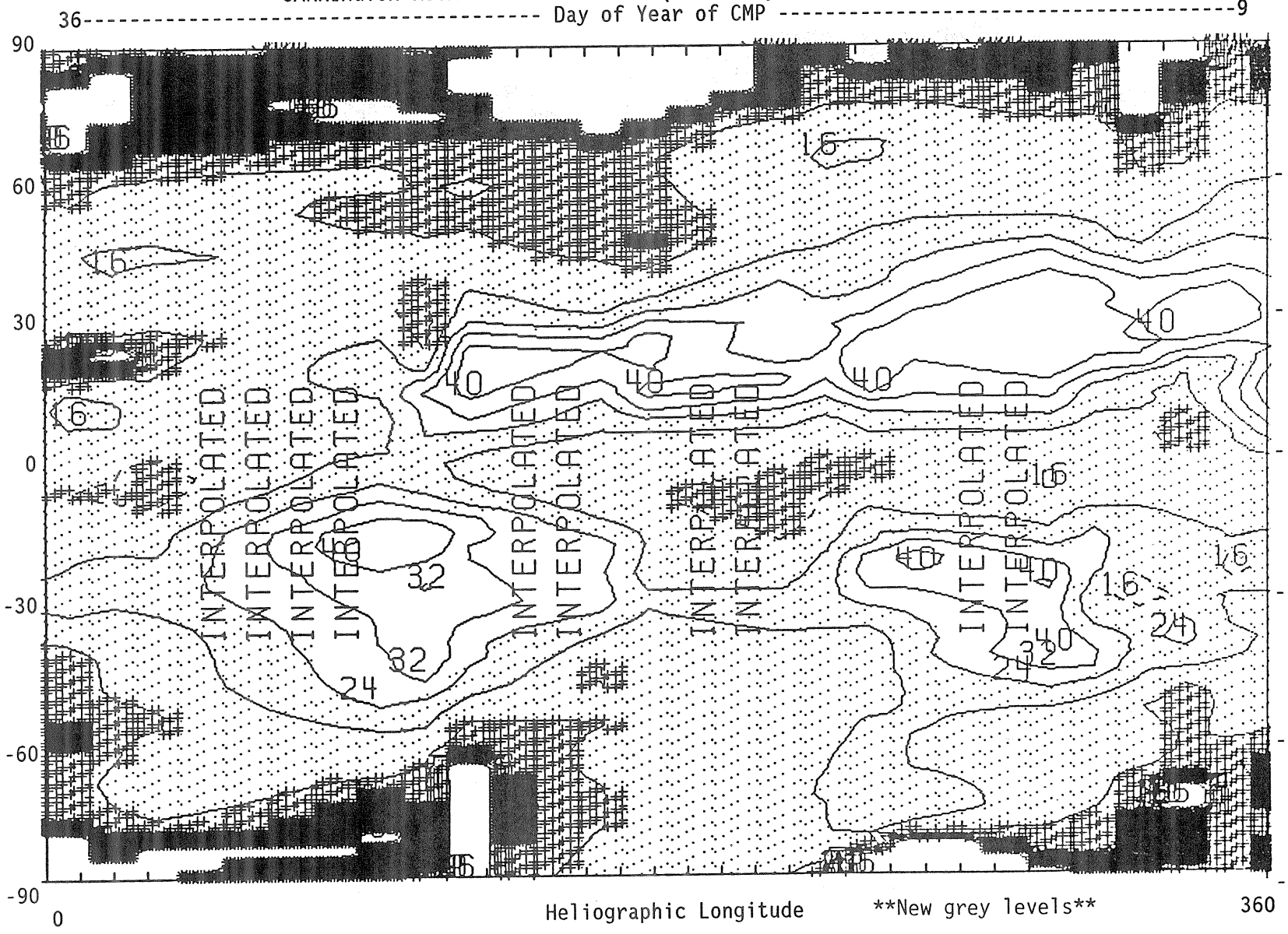
0, ±1, 2, 5, 10, 20 microTesla

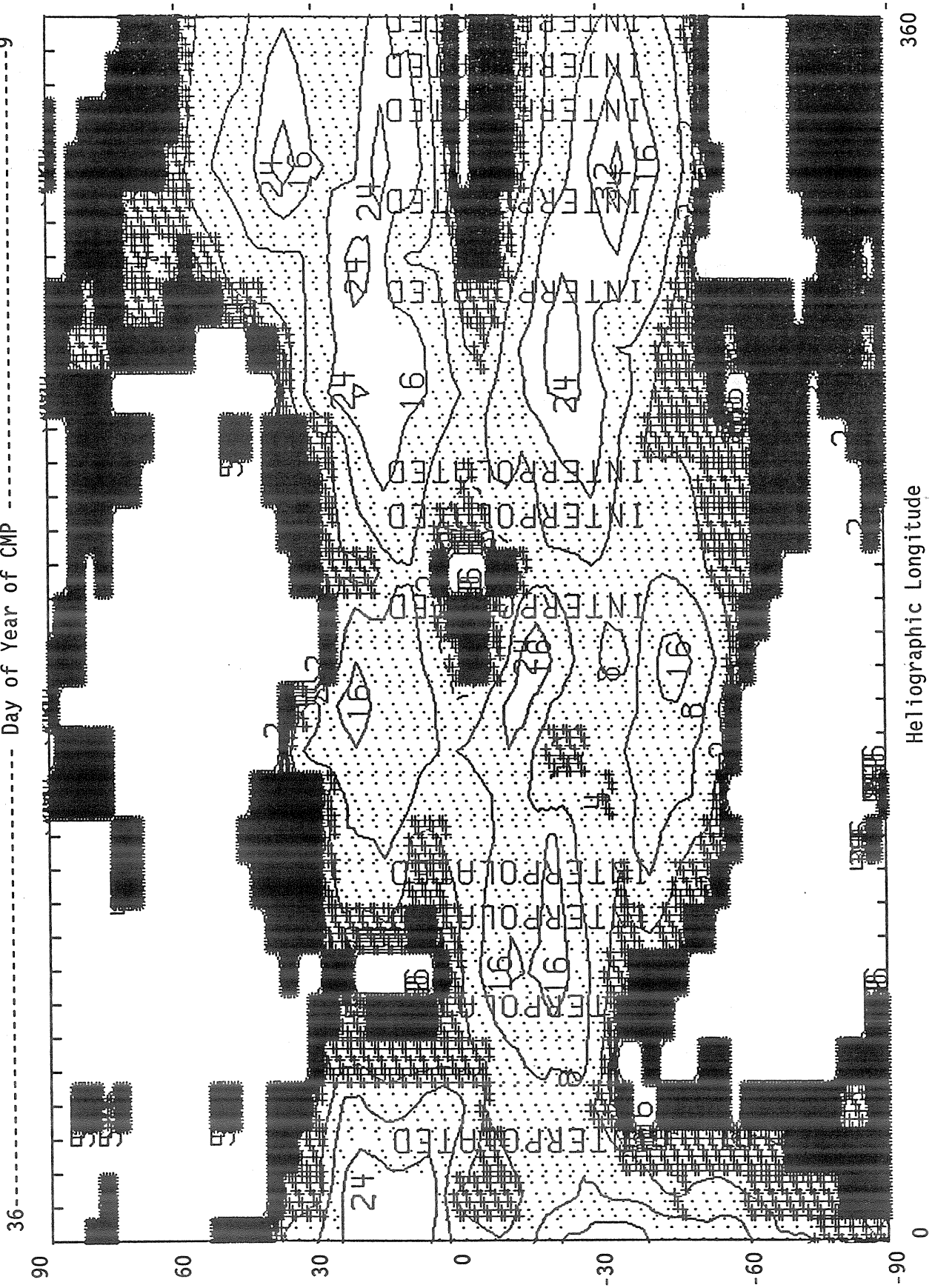
Chart unavailable at time of publication.

Heliographic Longitude

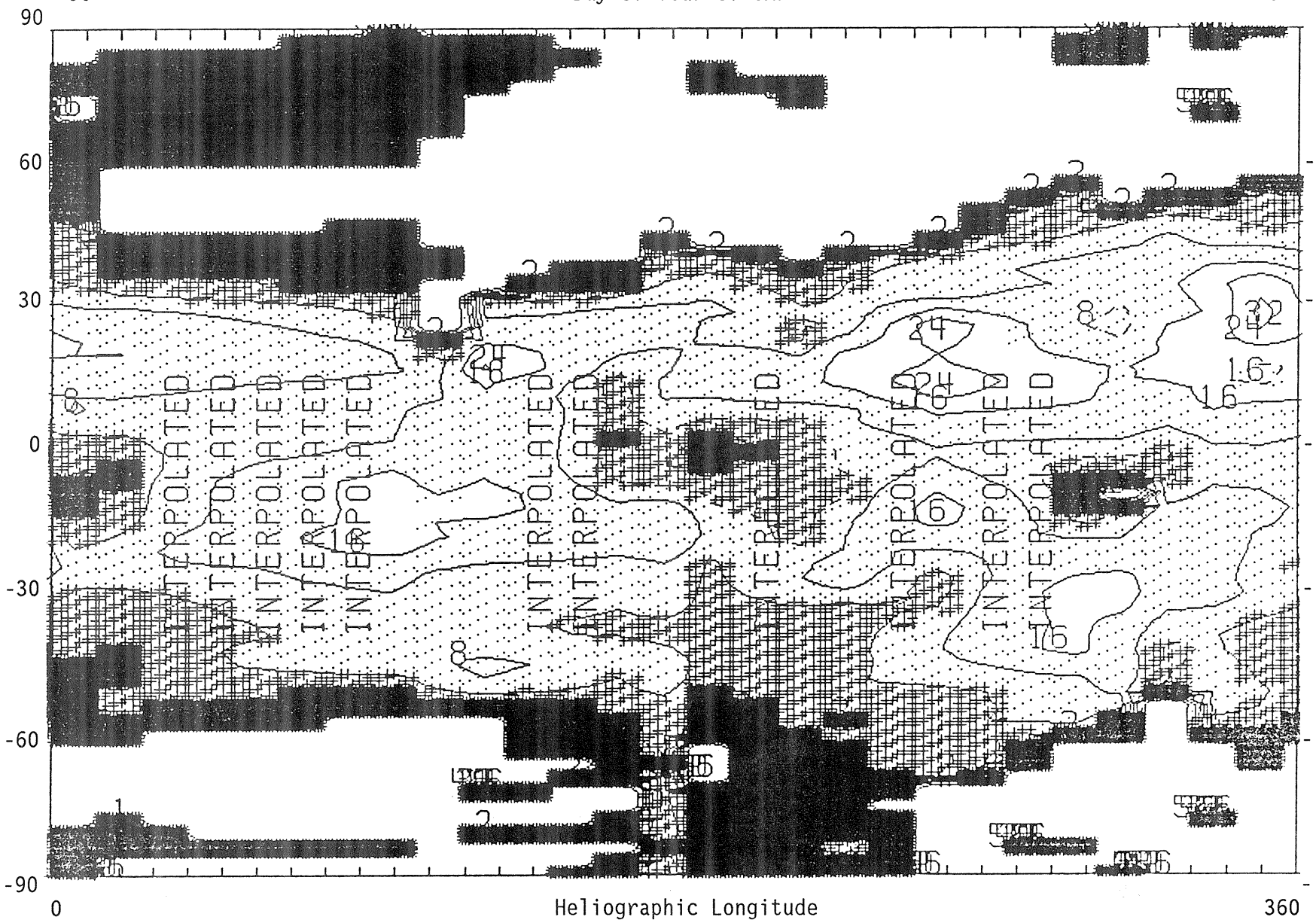

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1811 (9 January to 5 February 1989)
36---------- Day of Year of CMP ----------9
INTERPOLATED
90
60
30
0
-30
-60
-90
360
Heliographic Longitude
New grey levels

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1811 (9 January to 5 February 1989)




SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1811 (9 January to 5 February 1989)
36---------- Day of Year of CMP ----------9
90
60
30
0
-30
-60
-90
0
360
Heliographic Longitude
INTERPOLATED

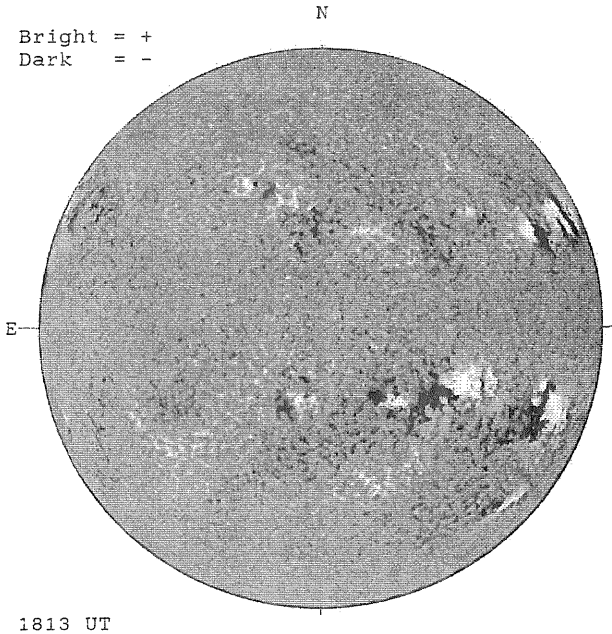
SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1811 (9 January to 5 February 1989)



JANUARY 1, 1989 (P= 2.03, B_o =-3.04, L_o = 107.61)

KITT PEAK MAGNETOGRAM

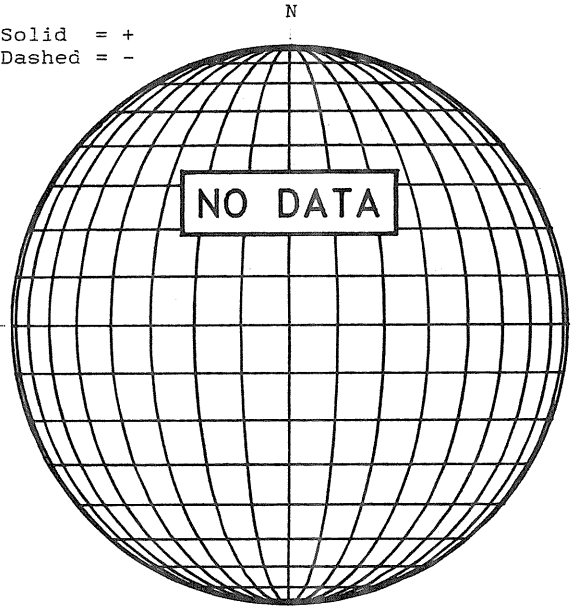
Bright = +
Dark = -



1813 UT

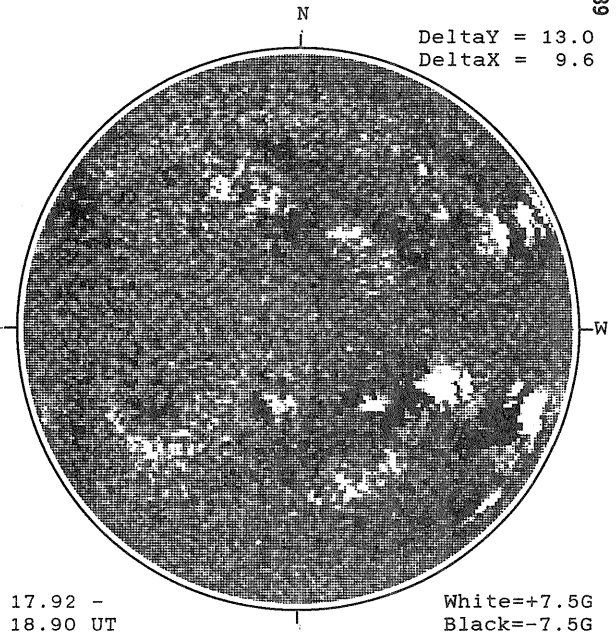
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

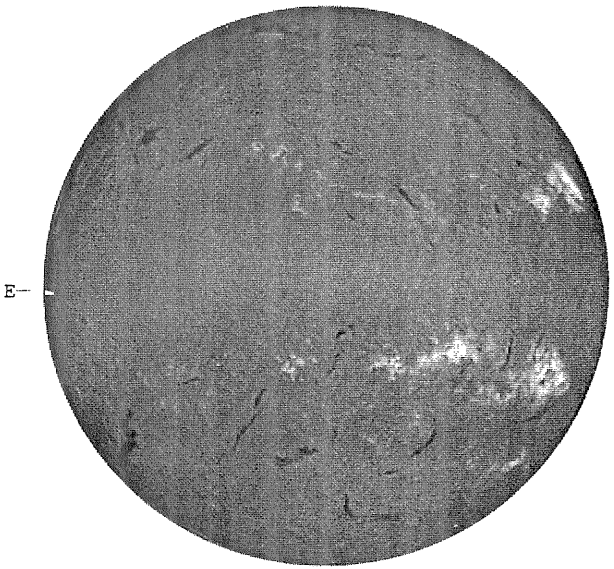
DeltaY = 13.0
DeltaX = 9.6



17.92 -
18.90 UT

White=+7.5G
Black=-7.5G

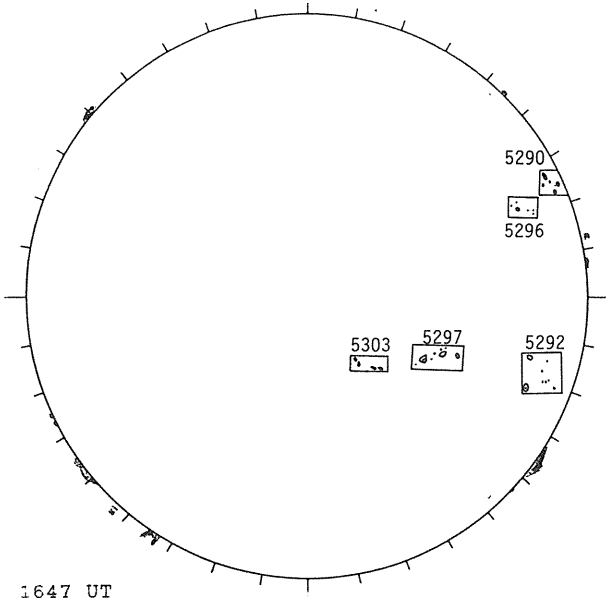
HOLLOMAN H-ALPHA



1543 UT

S

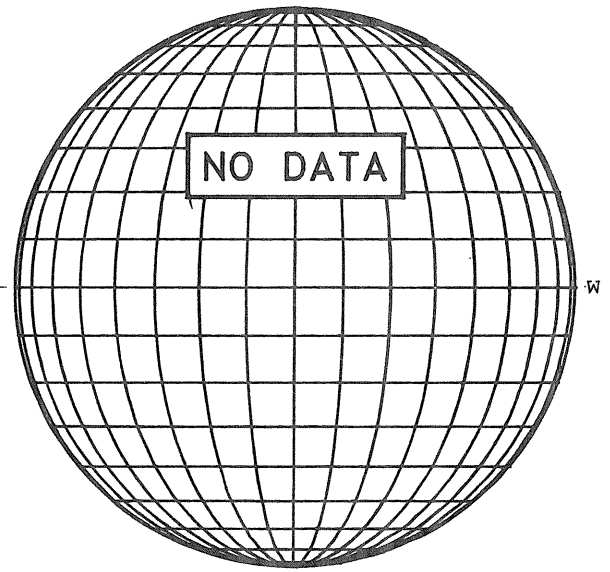
BOULDER SUNSPOT



1647 UT
1540 UT BOUL Prom

S

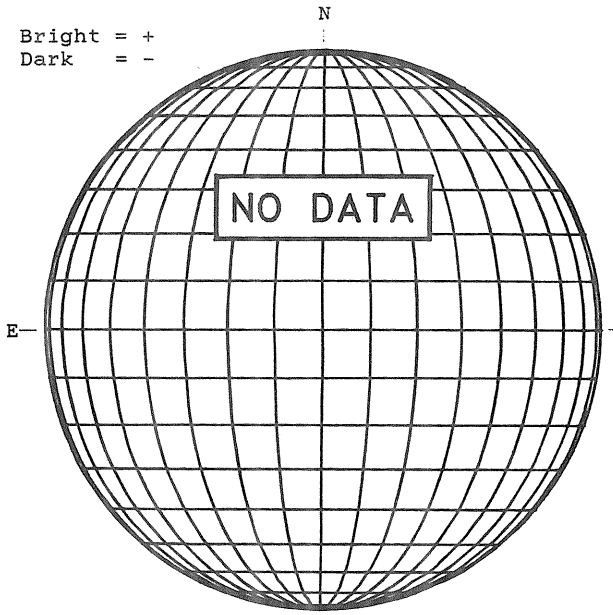
SACRAMENTO PEAK CORONA (1.15 Radii)



S

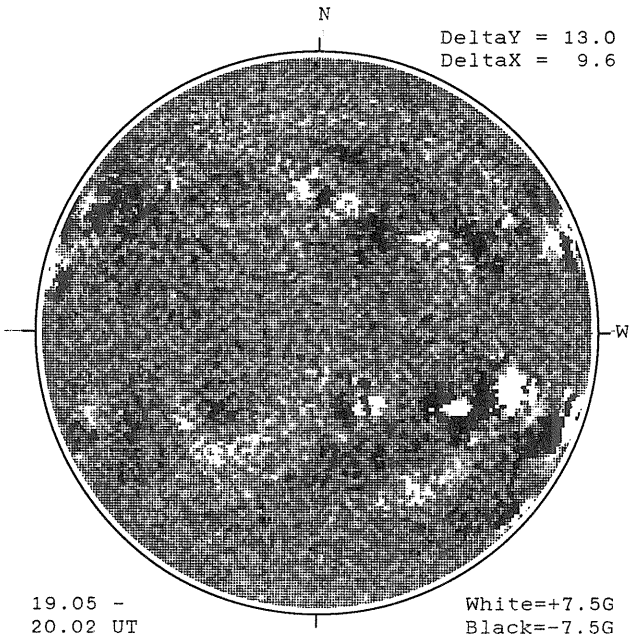
JANUARY 2, 1989 (P= 1.54, B_o =-3.16, L_o = 94.44)

KITT PEAK MAGNETOGRAM

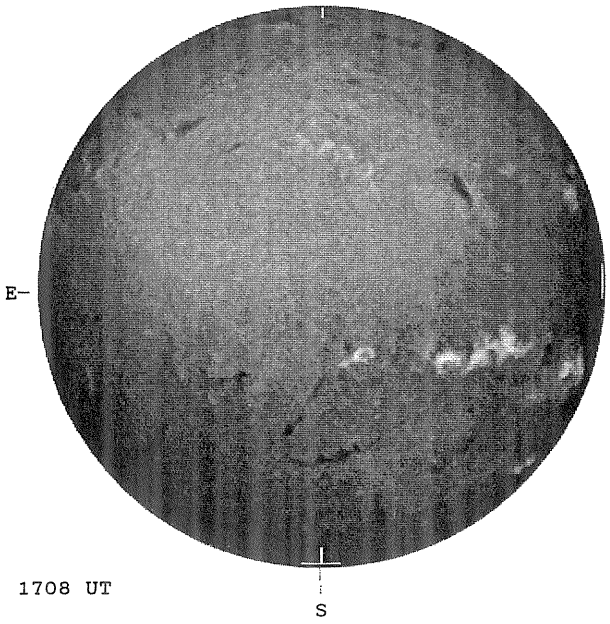


STANFORD MAGNETOGRAM

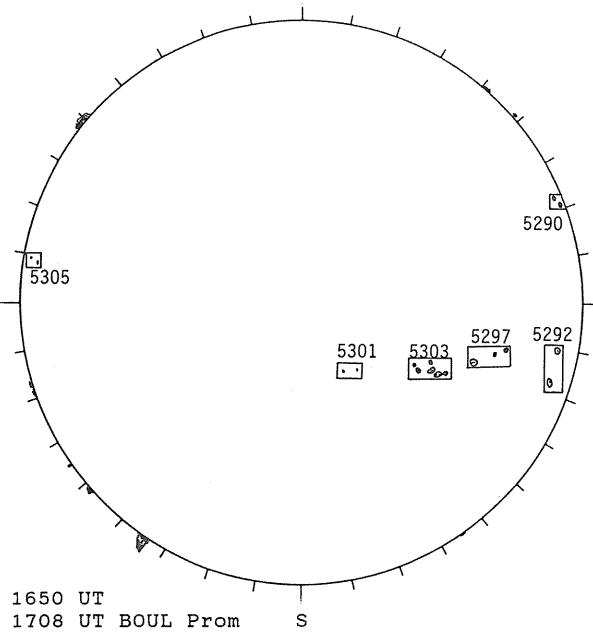
MT. WILSON MAGNETOGRAM



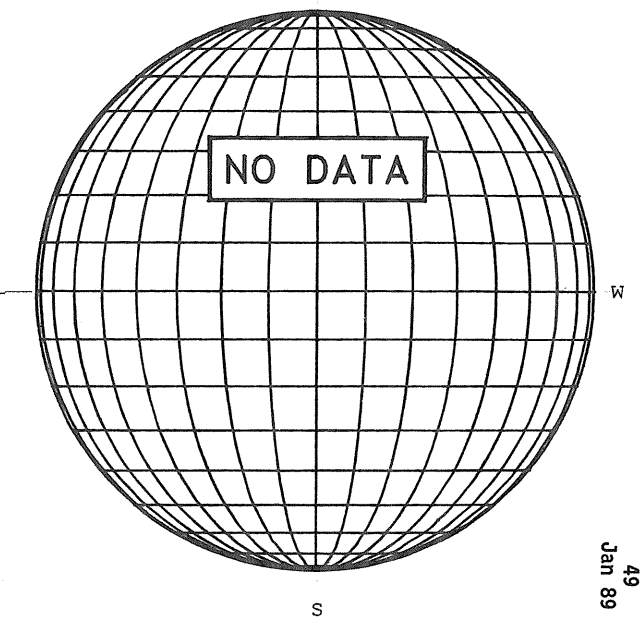
BOULDER H-ALPHA



BOULDER SUNSPOT

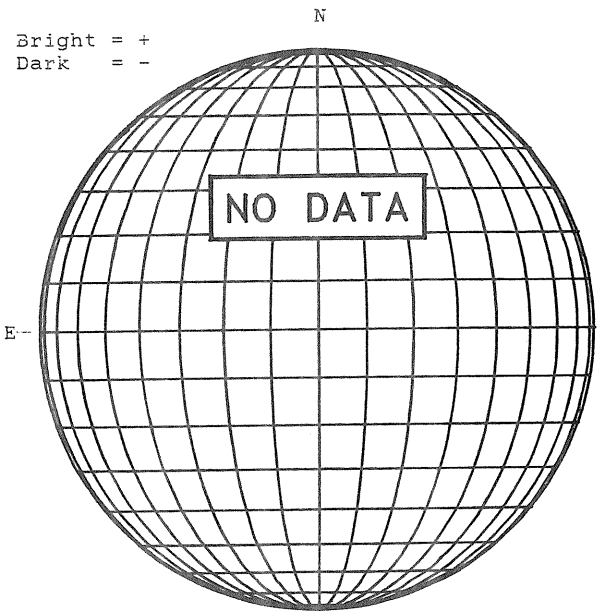


SACRAMENTO PEAK CORONA (1.15 Radii)

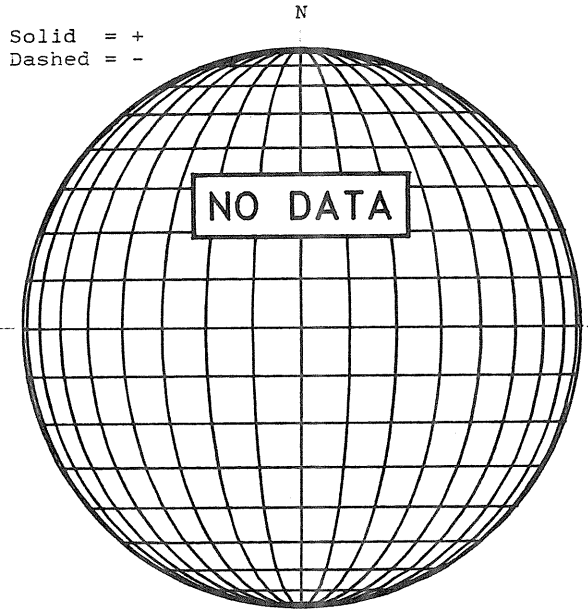


JANUARY 3, 1989 (P= 1.06, B_o =-3.27, L_o = 81.27)

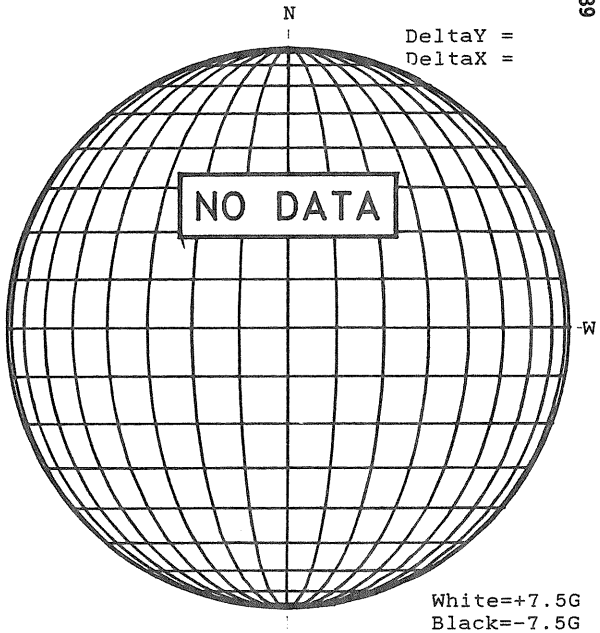
KITT PEAK MAGNETOGRAM



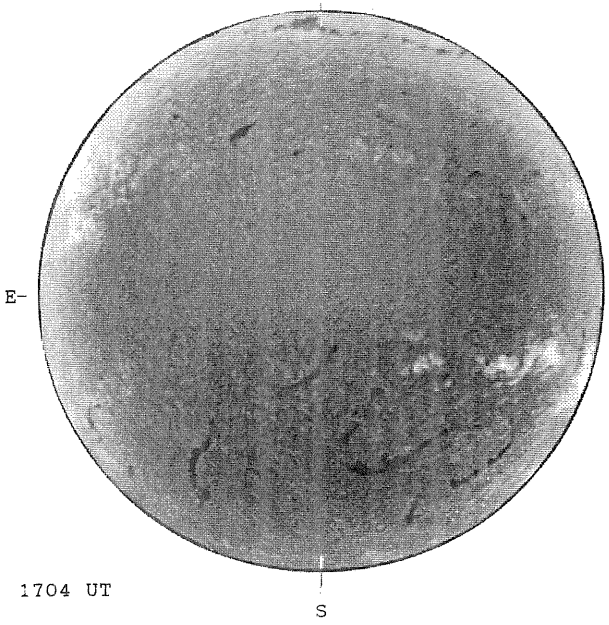
STANFORD MAGNETOGRAM



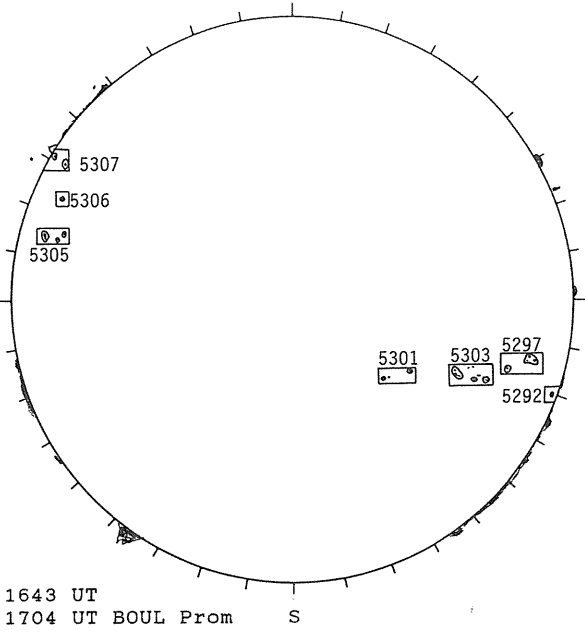
MT. WILSON MAGNETOGRAM



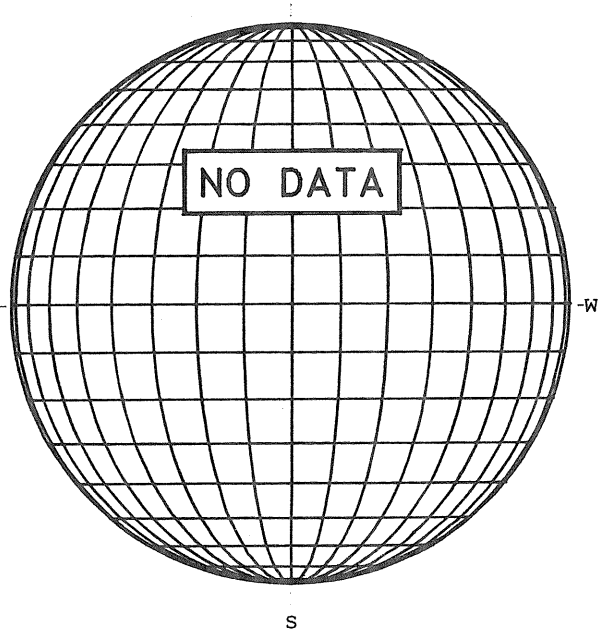
BOULDER H-ALPHA



BOULDER SUNSPOT

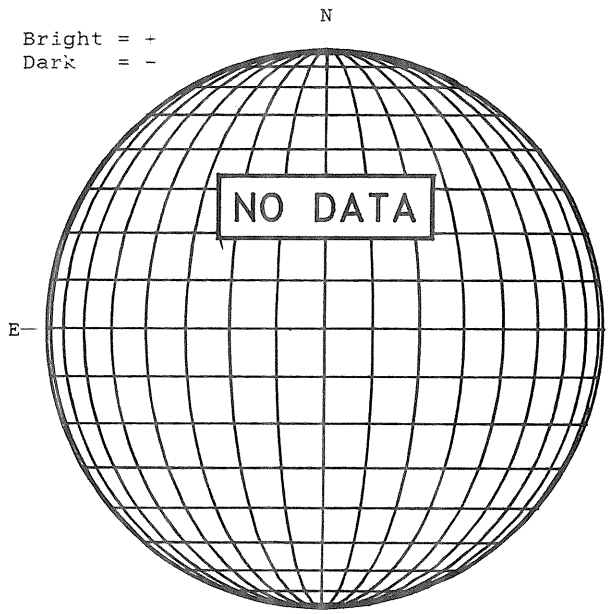


SACRAMENTO PEAK CORONA (1.15 Radii)



JANUARY 4, 1989 (P= 0.57, B_o =-3.39, L_o = 68.10)

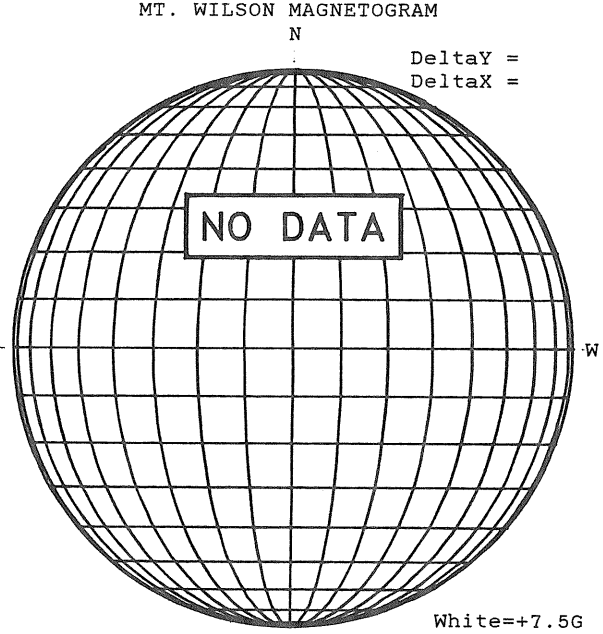
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

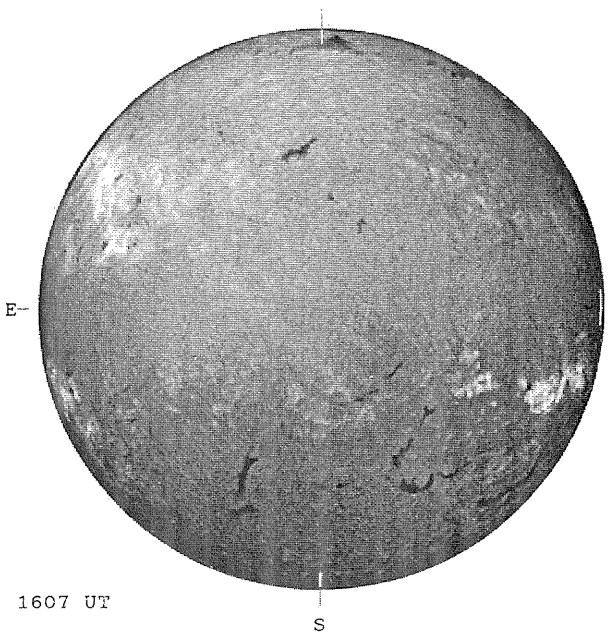
1942 UT

MT. WILSON MAGNETOGRAM



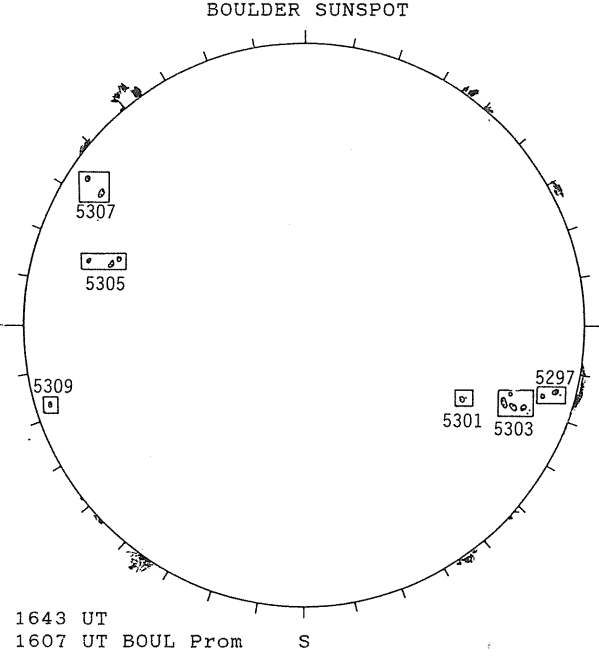
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



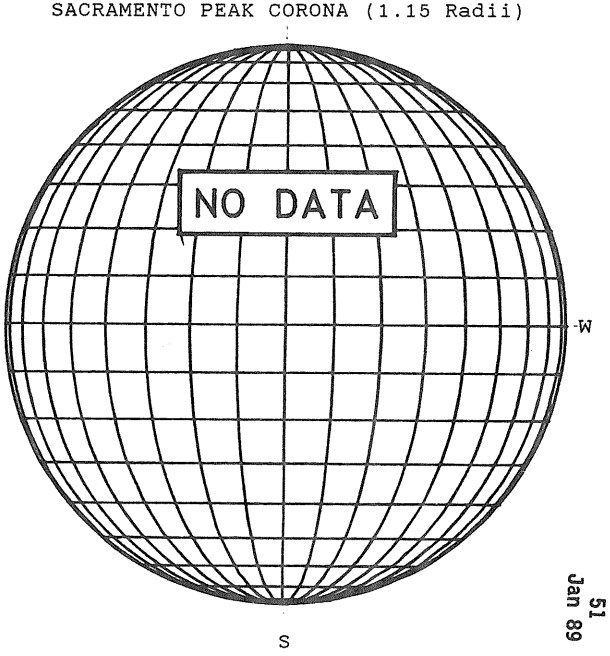
1607 UT

BOULDER SUNSPOT



1643 UT
1607 UT BOUL Prom

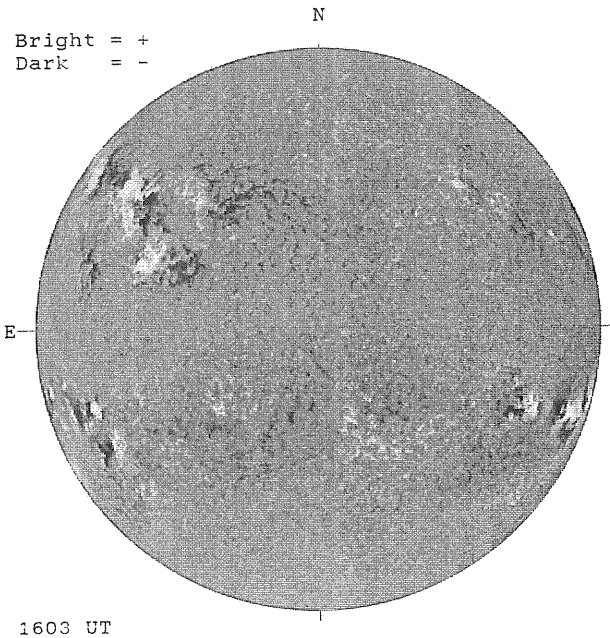
SACRAMENTO PEAK CORONA (1.15 Radii)



JANUARY 5, 1989 (P= 0.09, B_o =-3.50, L_o = 54.93)

KITT PEAK MAGNETOGRAM

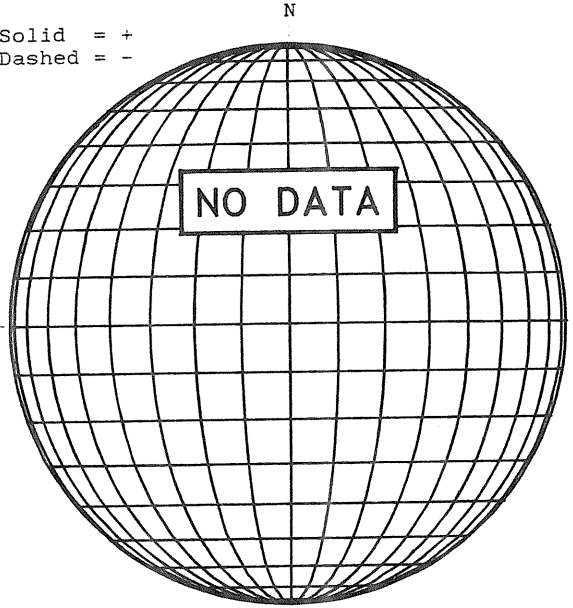
Bright = +
Dark = -



1603 UT

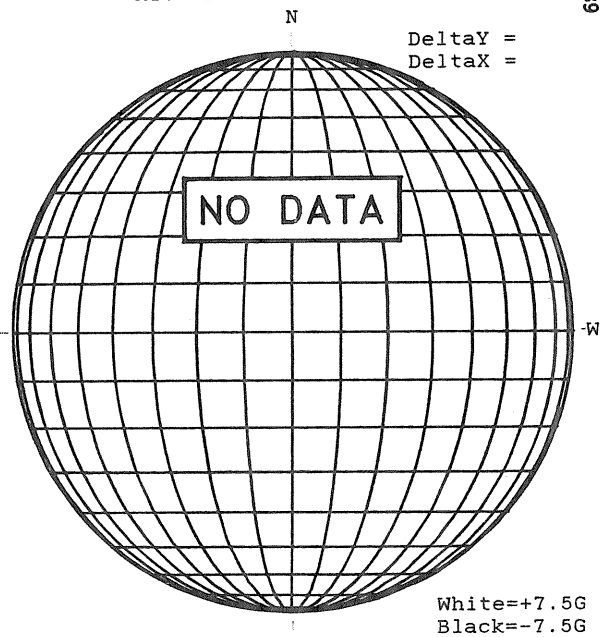
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



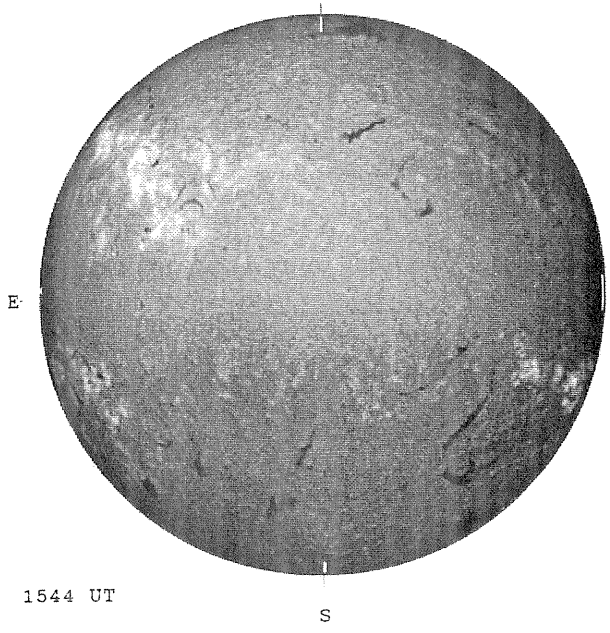
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



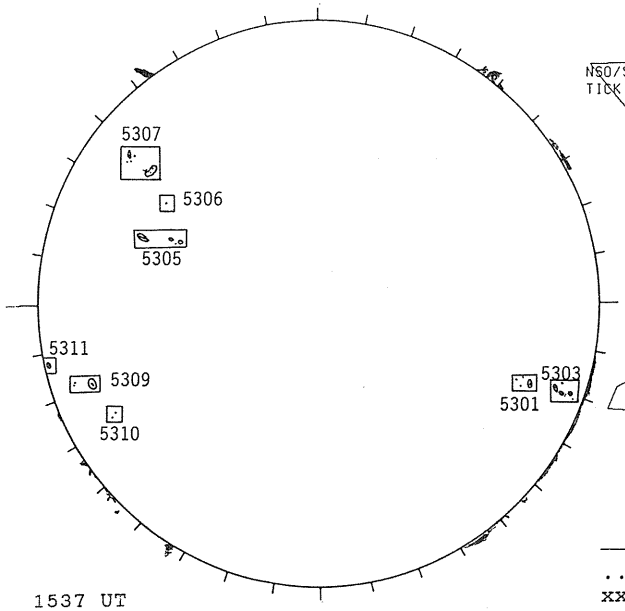
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



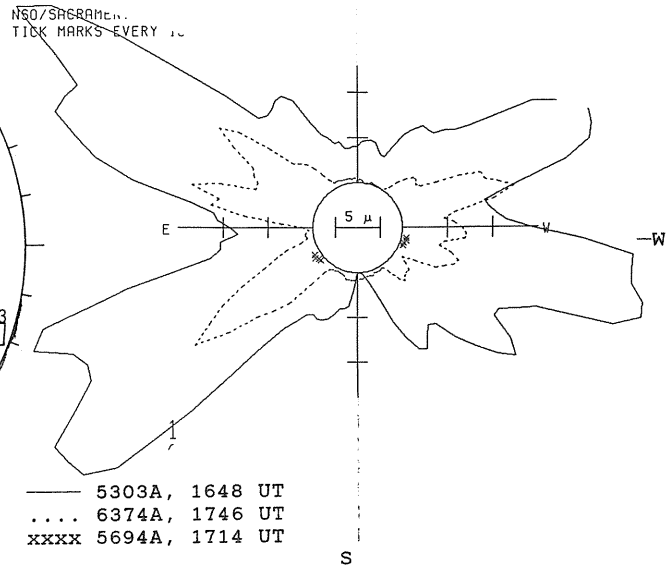
1544 UT

BOULDER SUNSPOT



1537 UT
1544 UT BOUL Prom

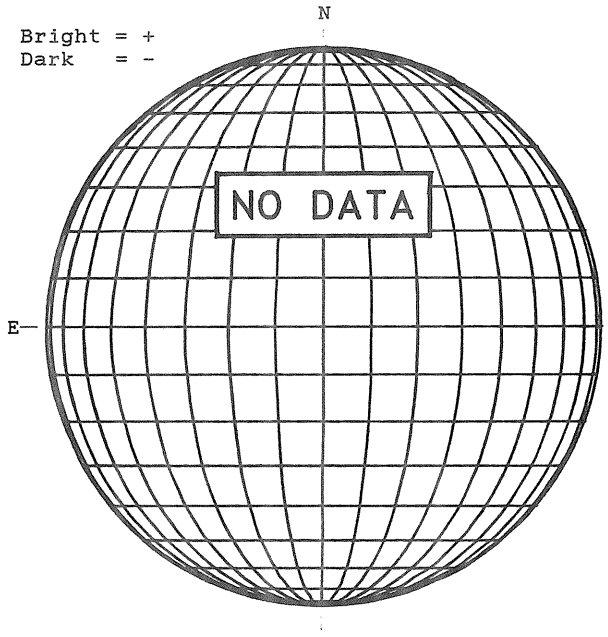
SACRAMENTO PEAK CORONA (1.15 Radii)



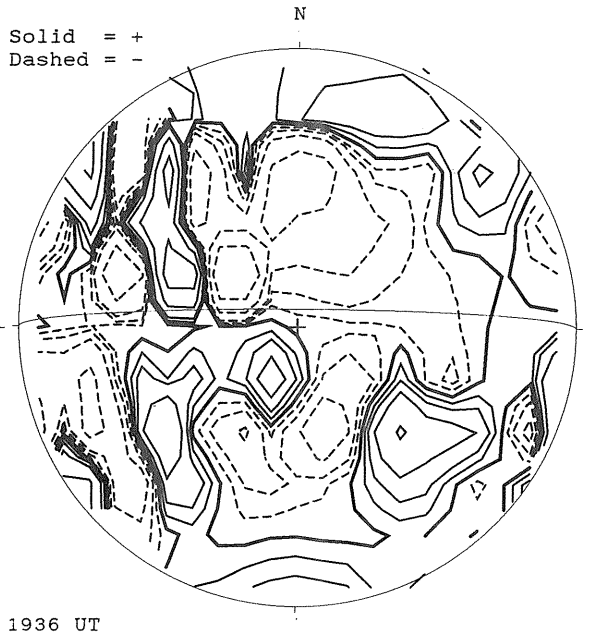
—— 5303A, 1648 UT
.... 6374A, 1746 UT
xxxx 5694A, 1714 UT

JANUARY 6, 1989 (P= -0.40, B_o =-3.61, L_o = 41.76)

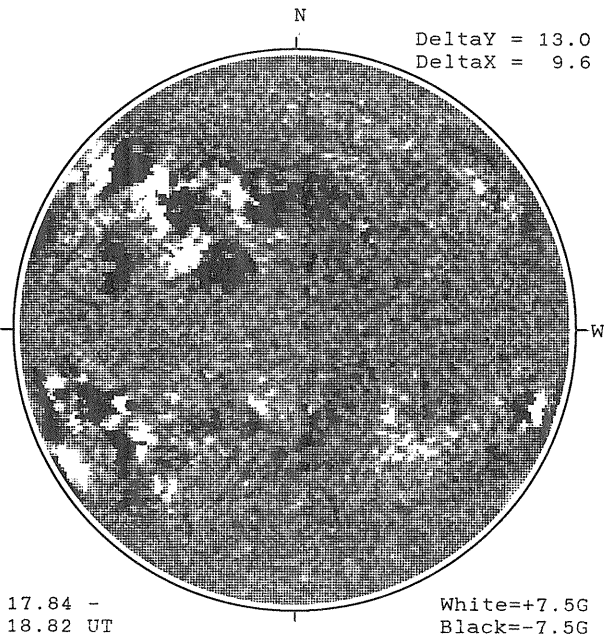
KITT PEAK MAGNETOGRAM



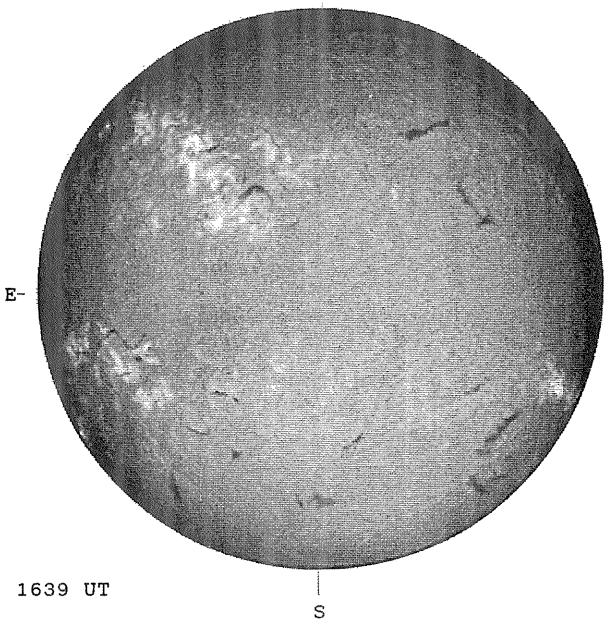
STANFORD MAGNETOGRAM



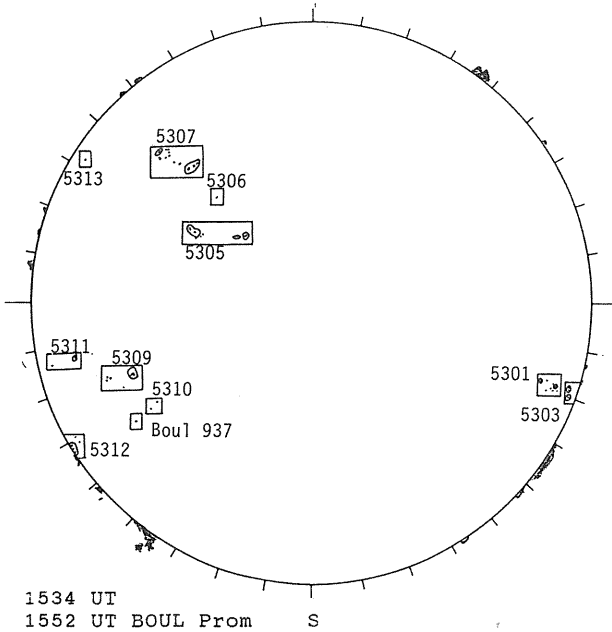
MT. WILSON MAGNETOGRAM



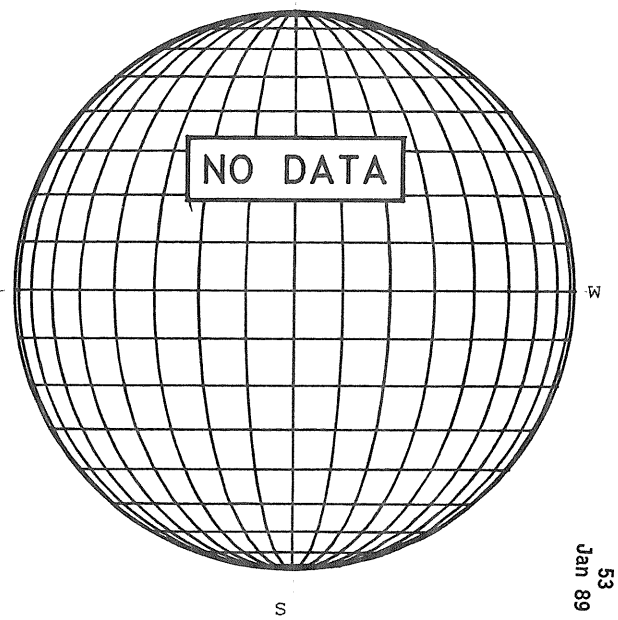
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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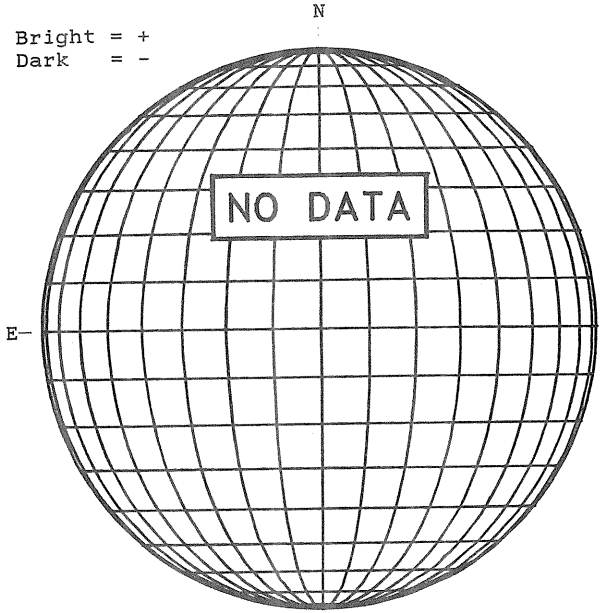
JANUARY 7, 1989 (P= -0.88, B_o =-3.72, L_o = 28.59)

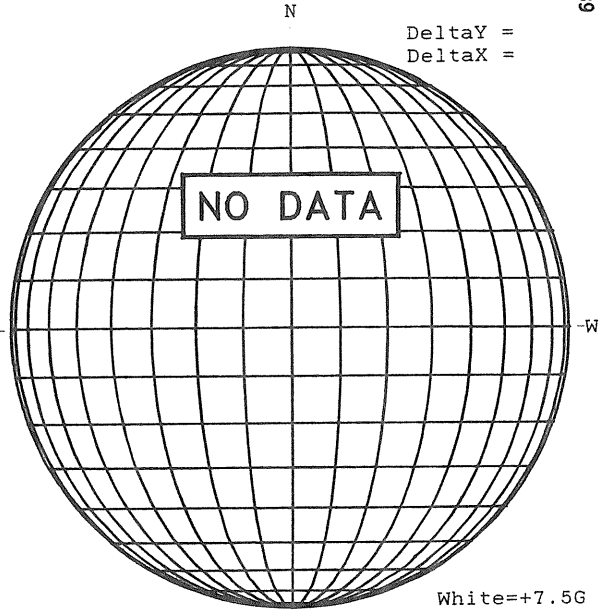
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

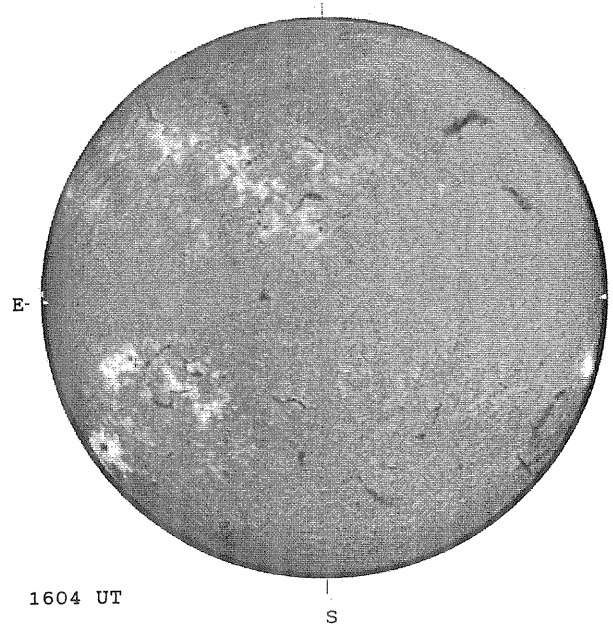
2326 UT

MT. WILSON MAGNETOGRAM



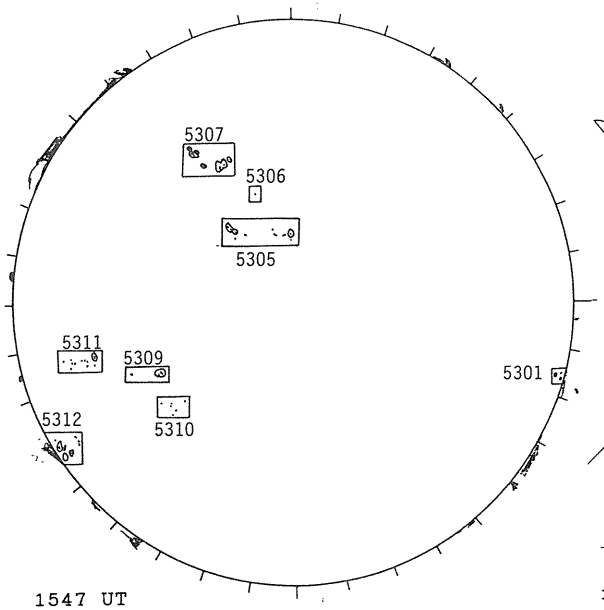
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



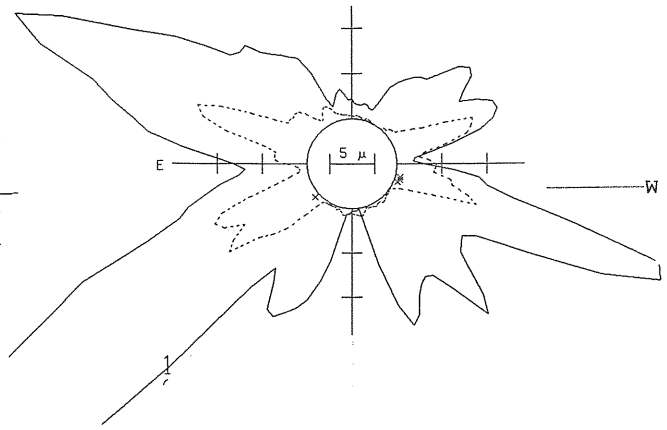
1604 UT

BOULDER SUNSPOT



1547 UT
1538 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

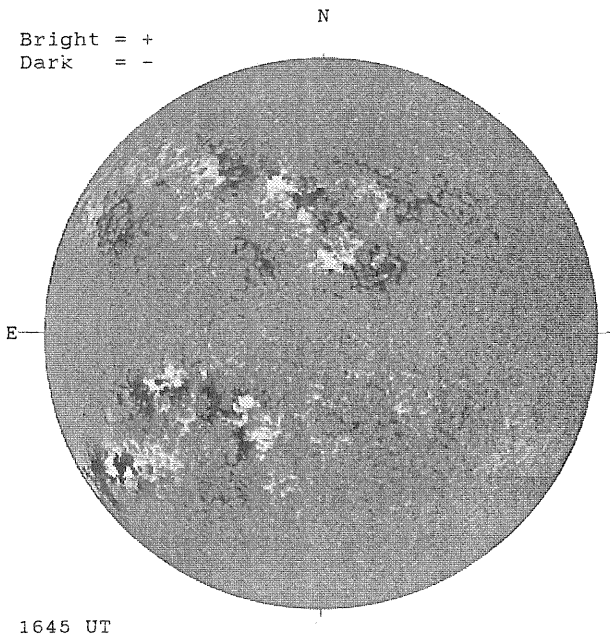


—— 5303A, 1909 UT
.... 6374A, 1952 UT
xxxx 5694A, 1924 UT

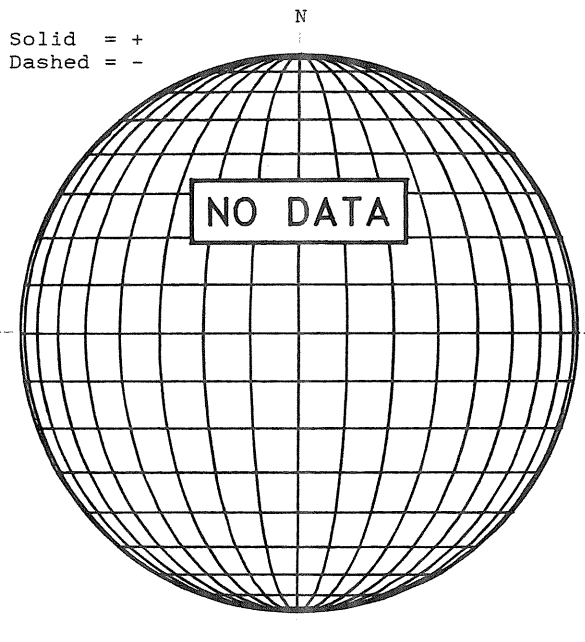
S

JANUARY 8, 1989 (P= -1.37, B_o =-3.83, L_o = 15.42)

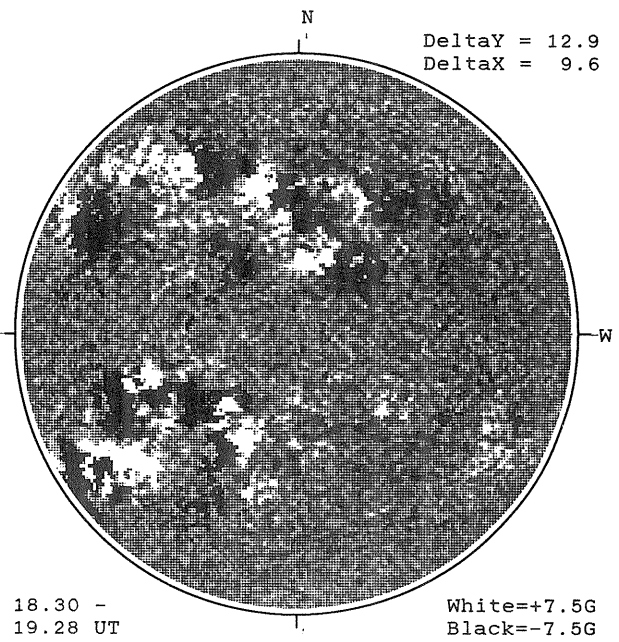
KITT PEAK MAGNETOGRAM



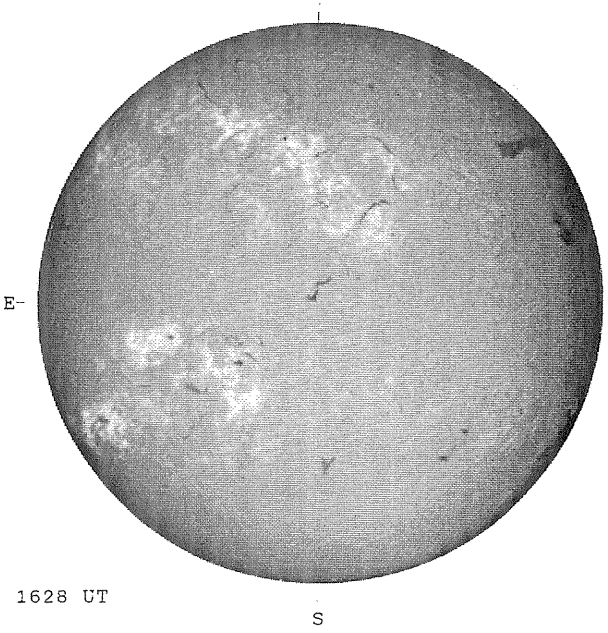
STANFORD MAGNETOGRAM



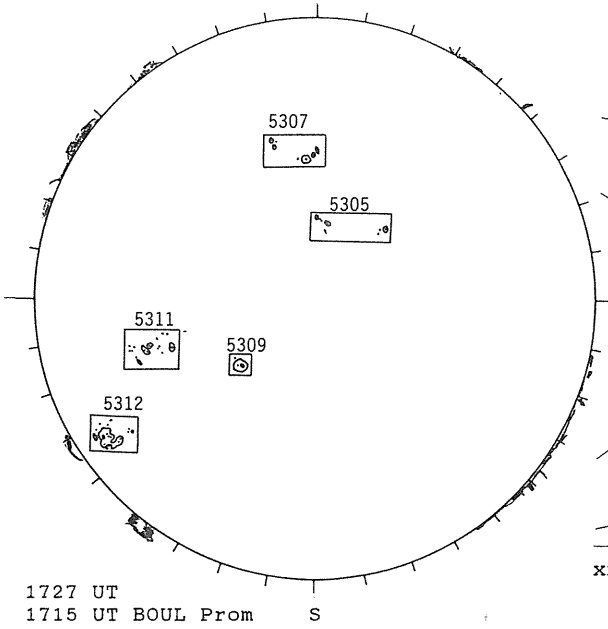
MT. WILSON MAGNETOGRAM



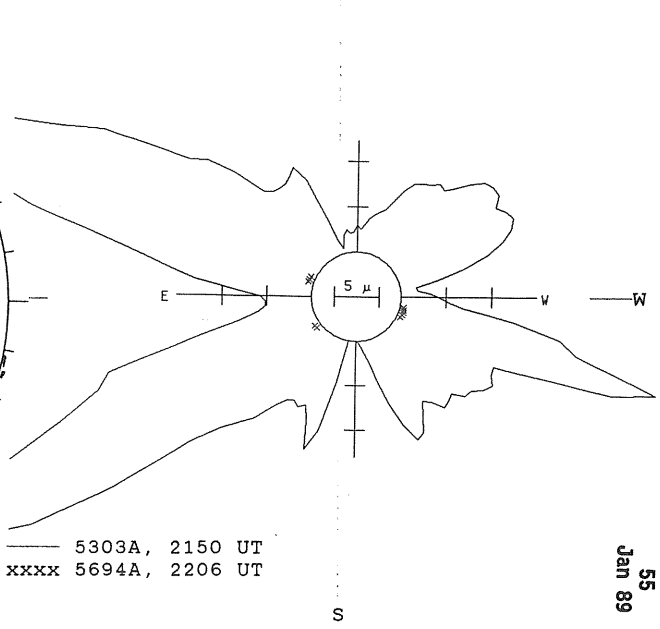
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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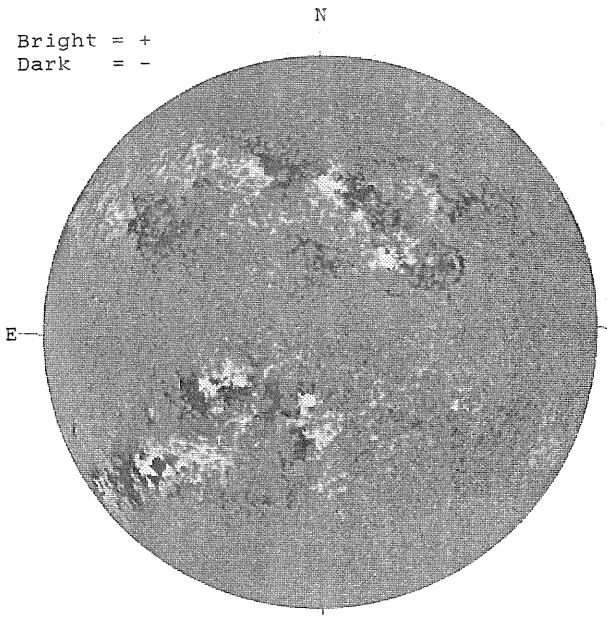
Jan 89

JANUARY 9, 1989 (P= -1.85, B_o =-3.94, L_o = 2.25)

KITT PEAK MAGNETOGRAM

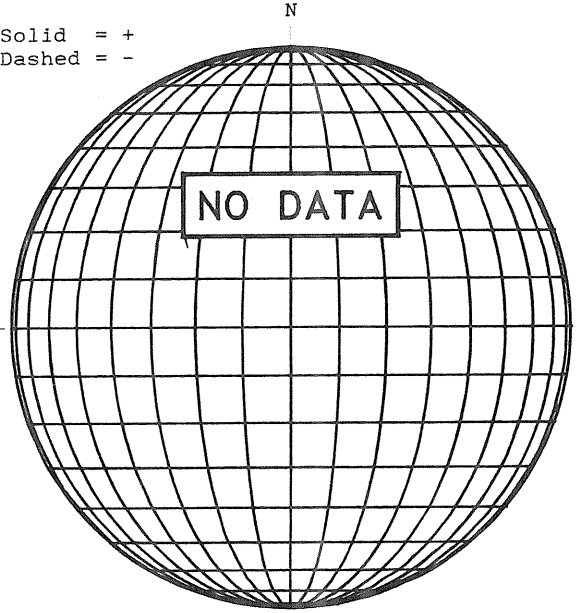
Bright = +
Dark = -



1611 UT

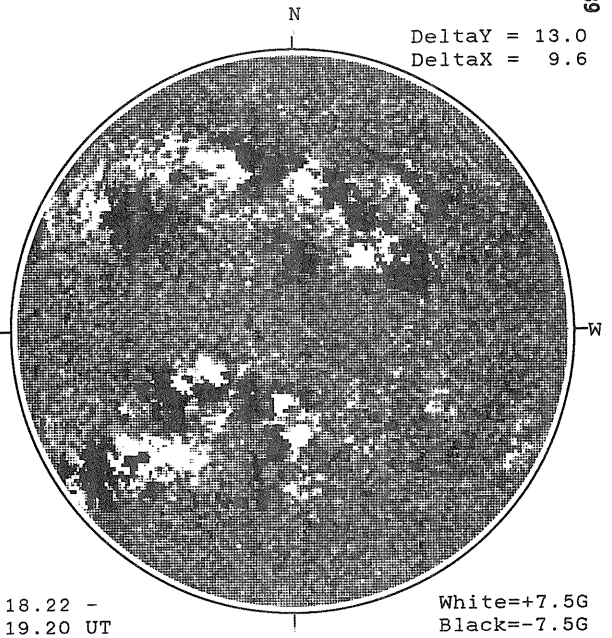
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

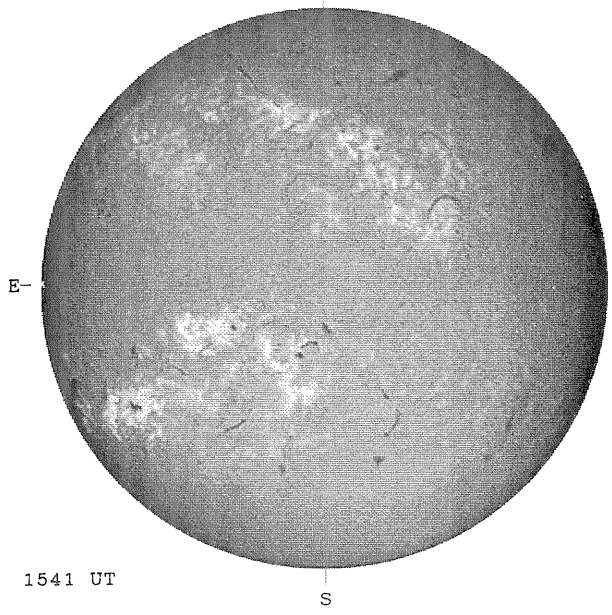
DeltaY = 13.0
DeltaX = 9.6



18.22 -
19.20 UT

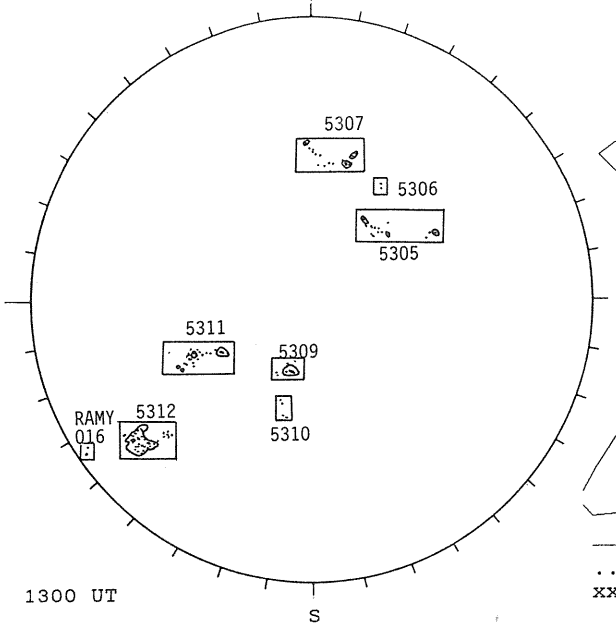
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



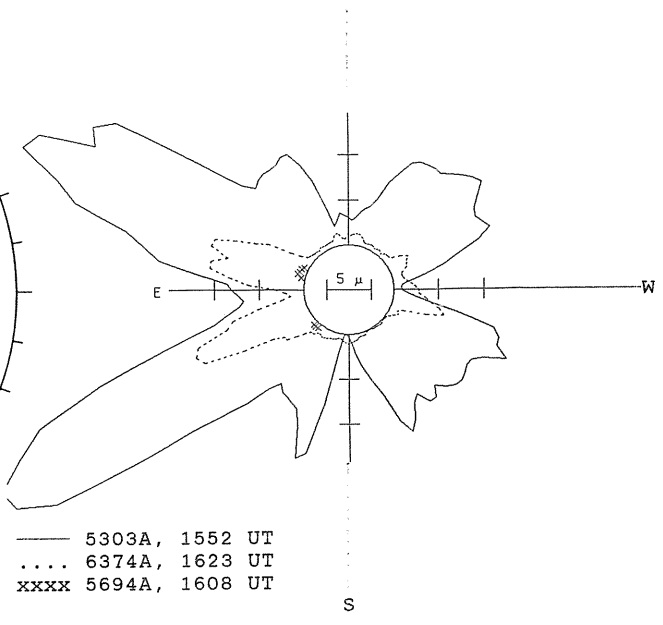
1541 UT

RAMEY SUNSPOT



1300 UT

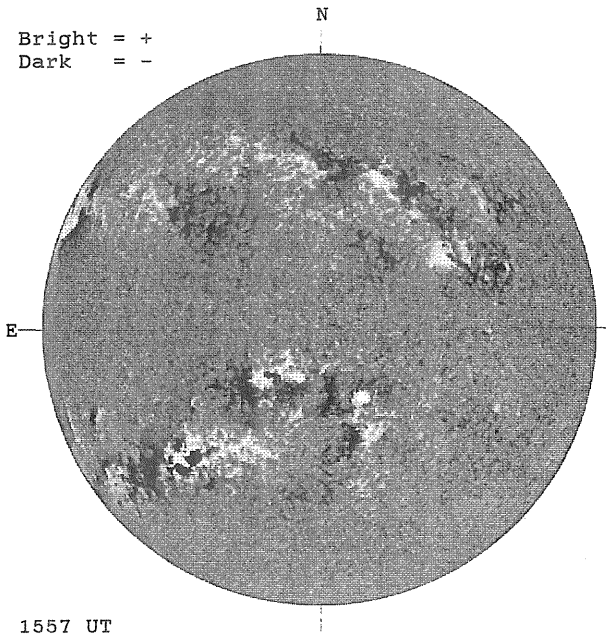
SACRAMENTO PEAK CORONA (1.15 Radii)



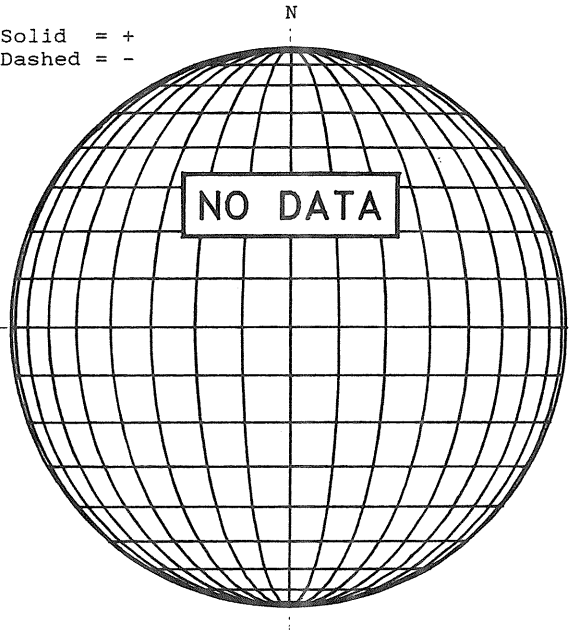
—— 5303A, 1552 UT
.... 6374A, 1623 UT
xxxx 5694A, 1608 UT

JANUARY 10, 1989 (P= -2.33, B_o =-4.05, L_o = 349.08)

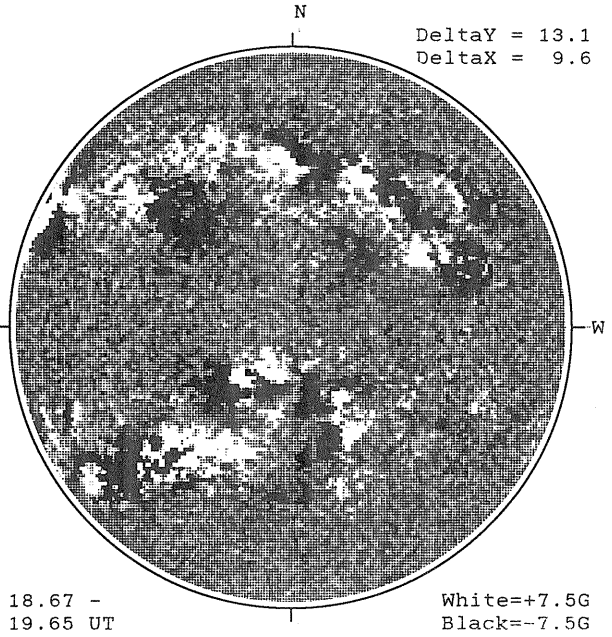
KITT PEAK MAGNETOGRAM



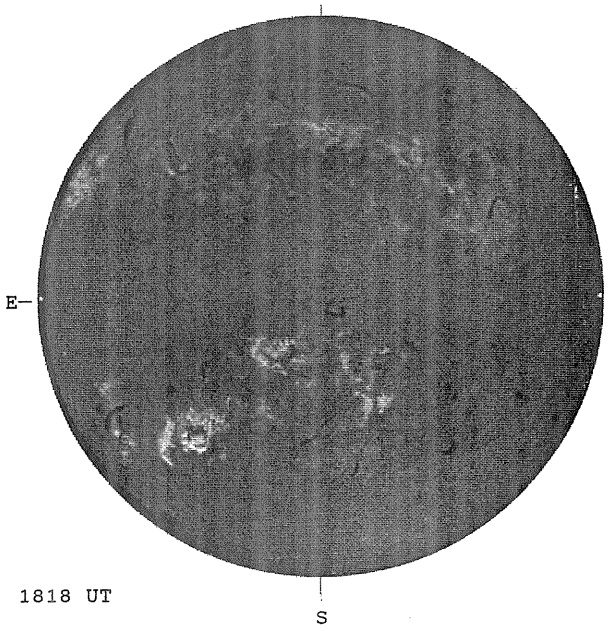
STANFORD MAGNETOGRAM



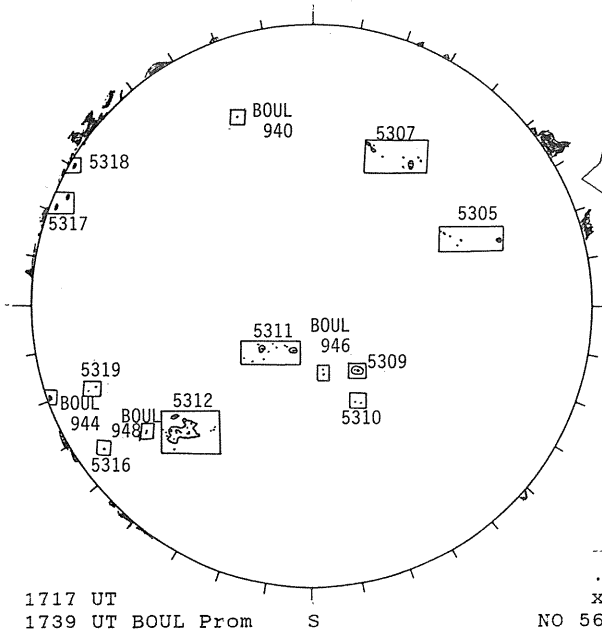
MT. WILSON MAGNETOGRAM



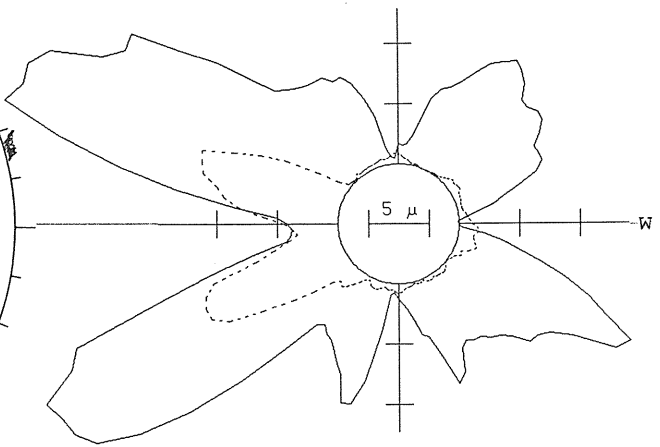
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



——— 5303A, 1619 UT
.... 6374A, 1711 UT
xxxx 5694A, 1700 UT
NO 5694A ACTIVITY TODAY
S

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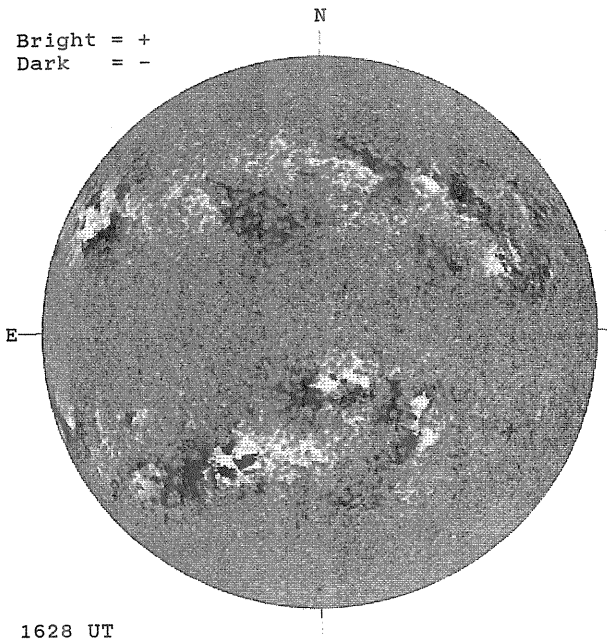
Jan 89

JANUARY 11, 1989 (P= -2.80, B_o =-4.15, L_o = 335.92)

KITT PEAK MAGNETOGRAM

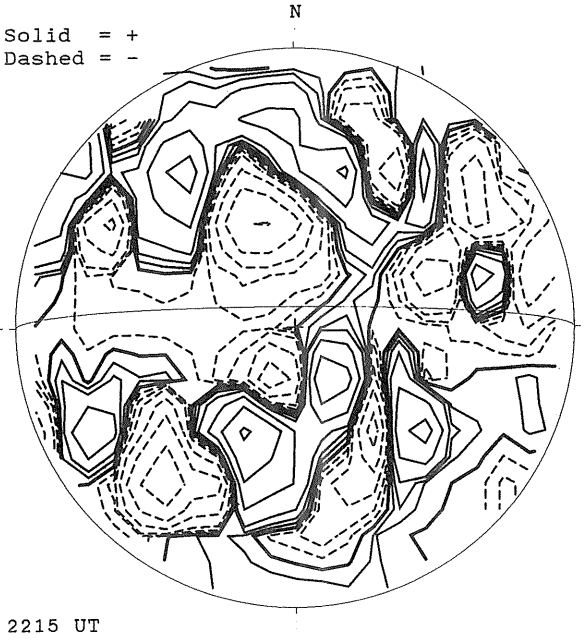
Bright = +
Dark = -



1628 UT

STANFORD MAGNETOGRAM

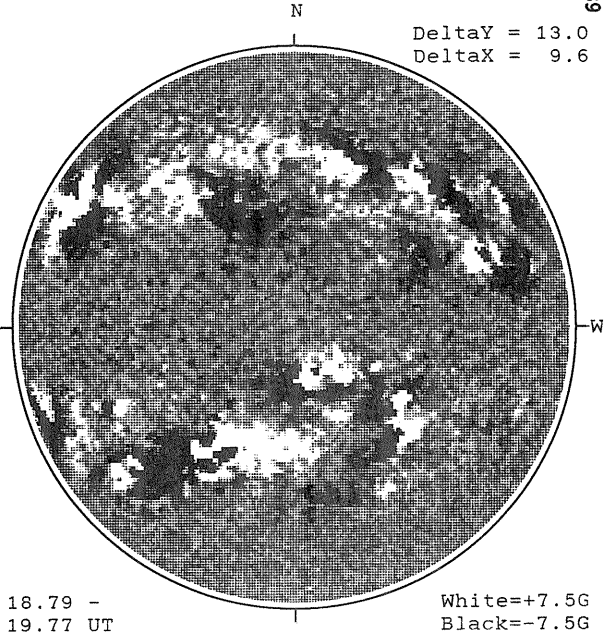
Solid = +
Dashed = -



2215 UT

MT. WILSON MAGNETOGRAM

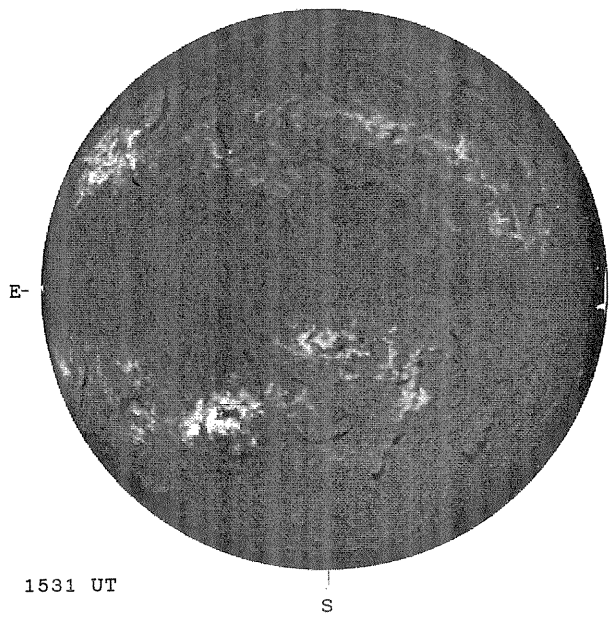
DeltaY = 13.0
DeltaX = 9.6



18.79 -
19.77 UT

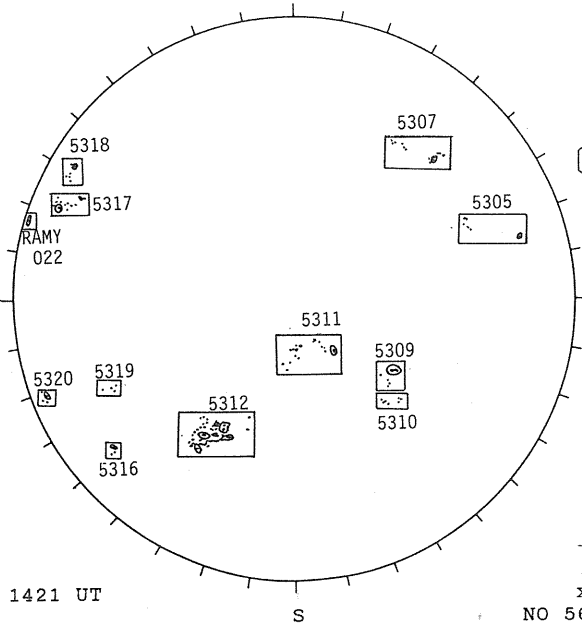
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



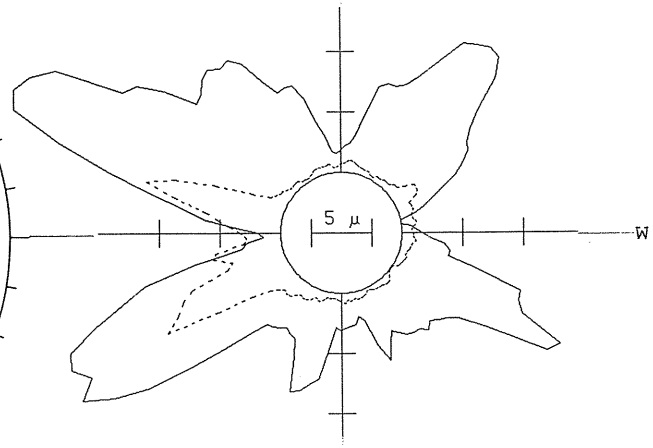
1531 UT

RAMEY SUNSPOT



1421 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

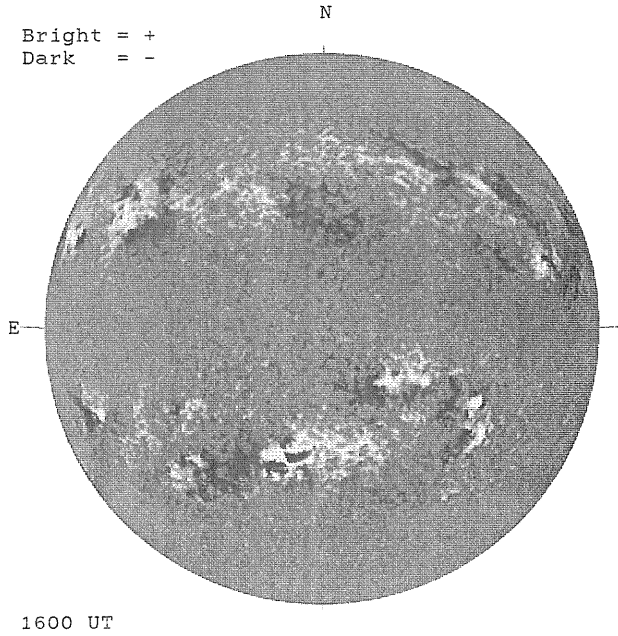


—— 5303A, 1556 UT
.... 6374A, 1521 UT
xxxx 5694A, 1534 UT
NO 5694A ACTIVITY TODAY

S

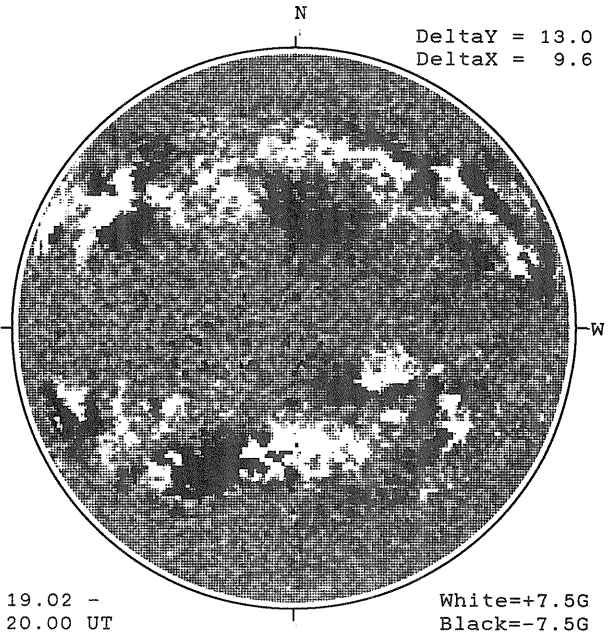
JANUARY 12, 1989 (P= -3.28, B_o =-4.26, L_o = 322.75)

KITT PEAK MAGNETOGRAM

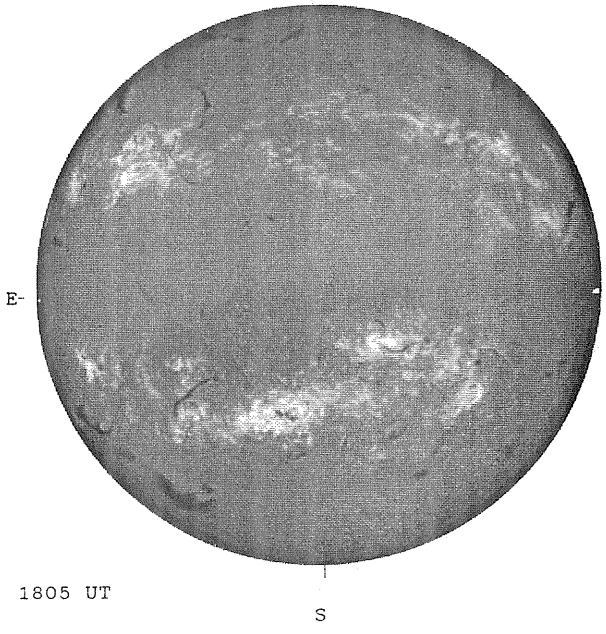


STANFORD MAGNETOGRAM

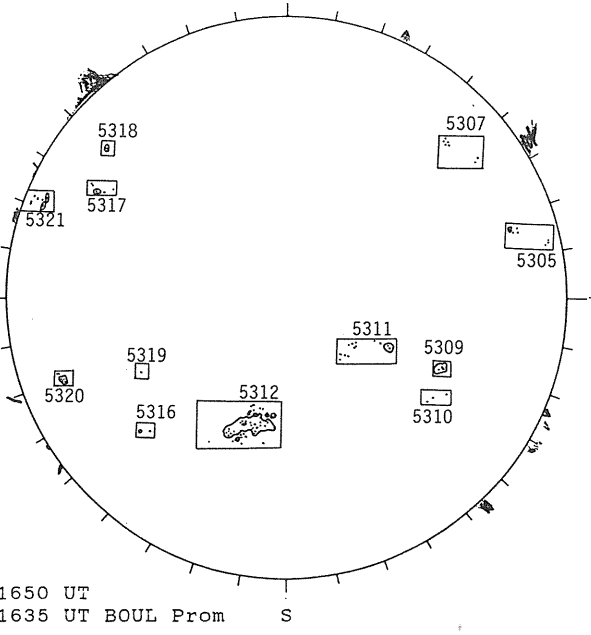
MT. WILSON MAGNETOGRAM



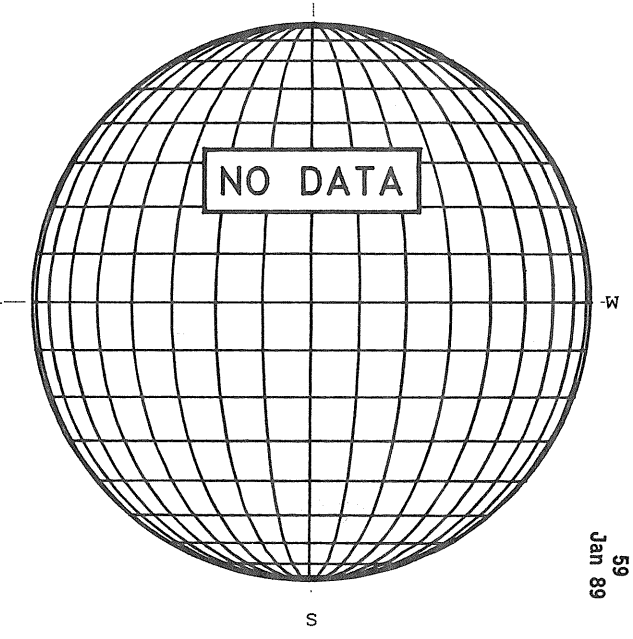
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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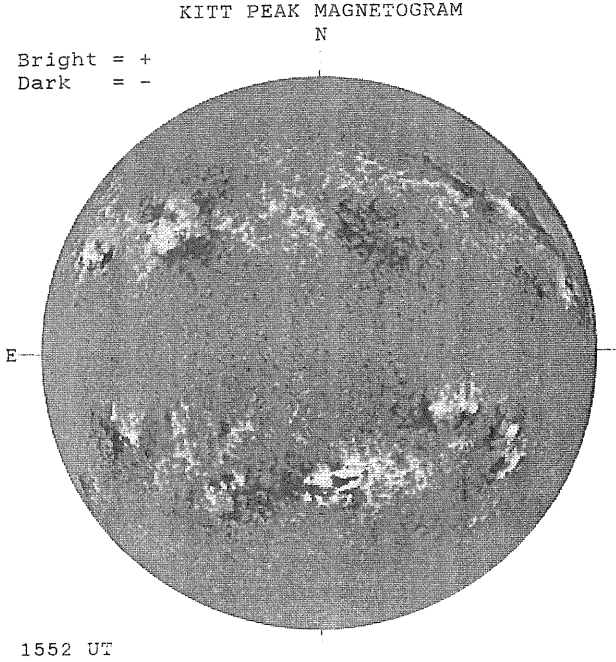
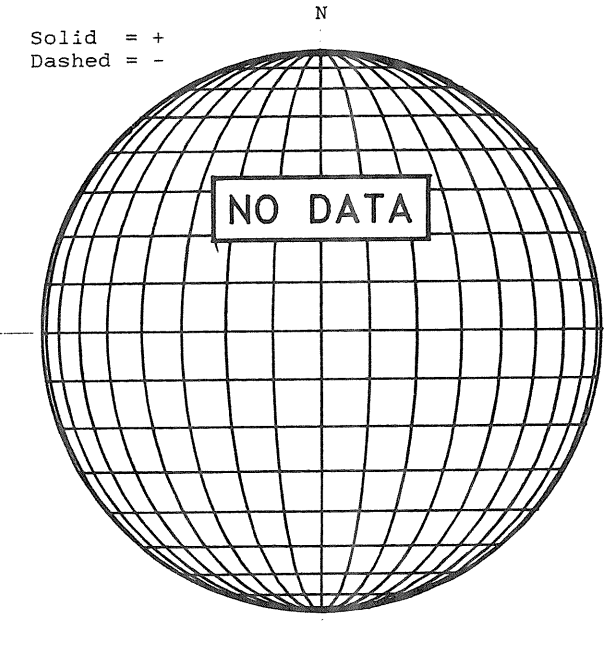
Jan 89

JANAURY 13, 1989 (P= -3.76, B_o =-4.36, L_o = 309.58)

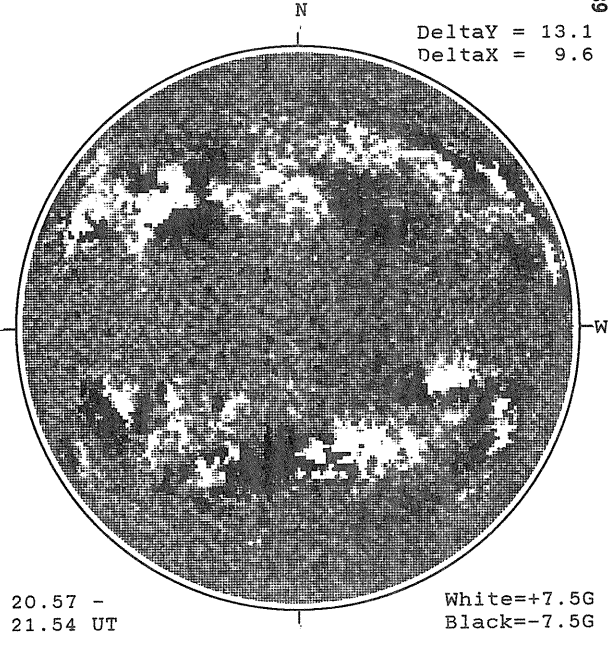
KITT PEAK MAGNETOGRAM



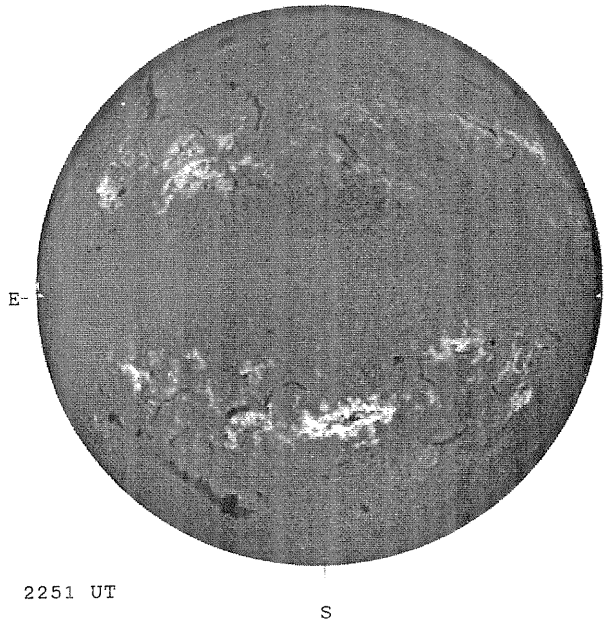
STANFORD MAGNETOGRAM



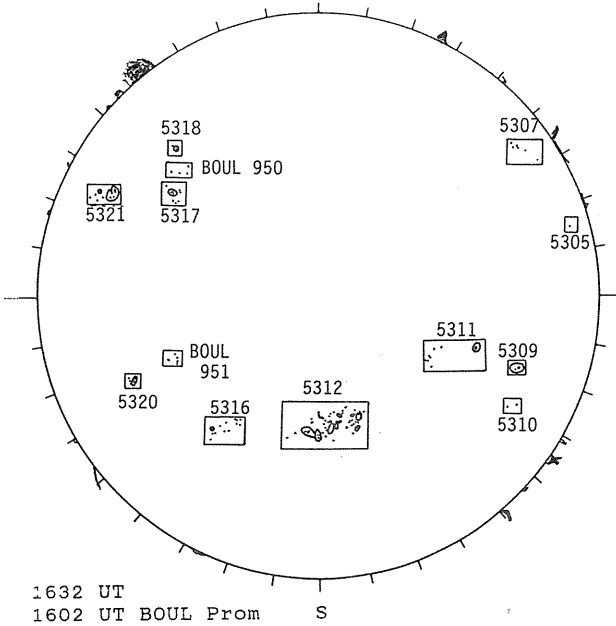
MT. WILSON MAGNETOGRAM



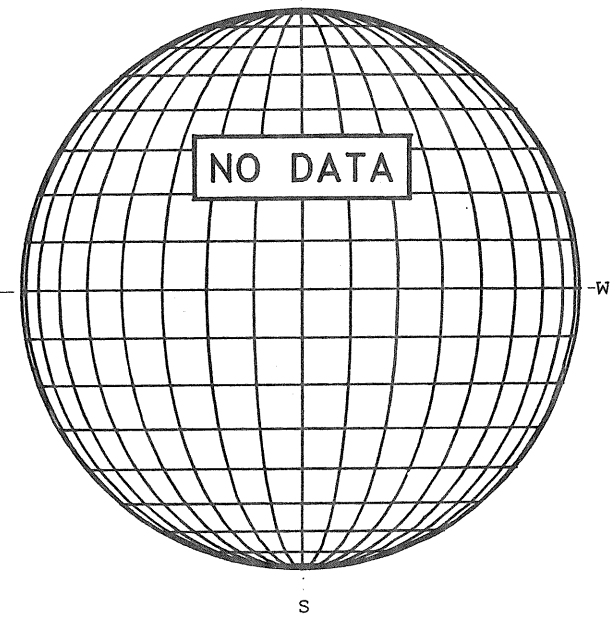
HOLLOMAN H-ALPHA



BOULDER SUNSPOT

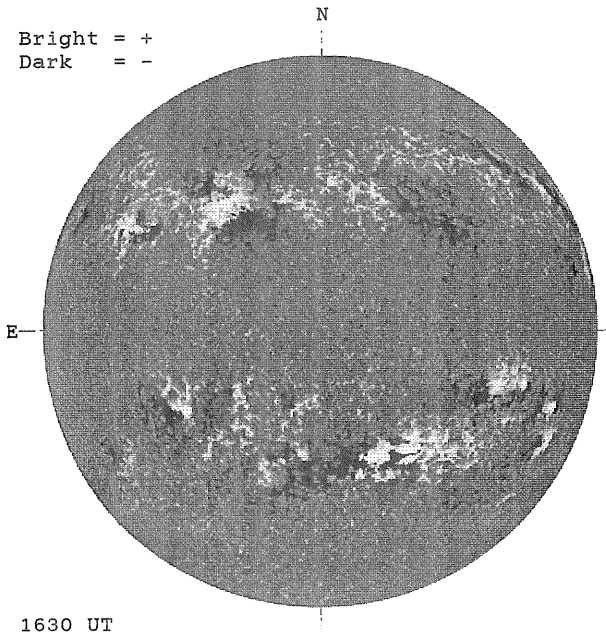


SACRAMENTO PEAK CORONA (1.15 Radii)

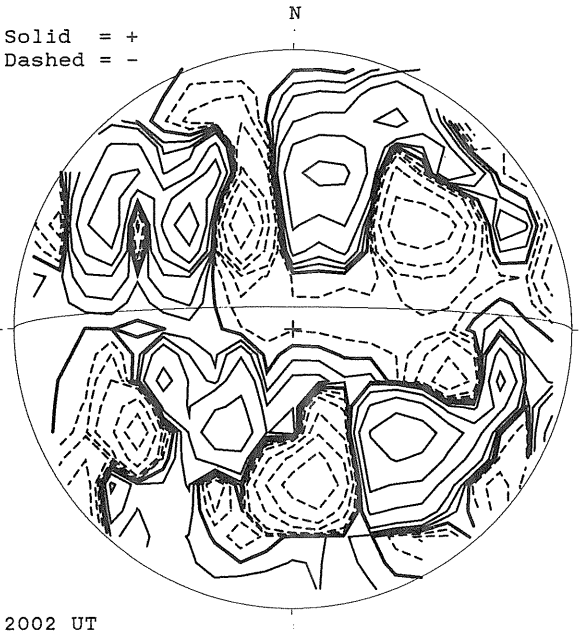


JANUARY 14, 1989 (P= -4.23, B_o =-4.46, L_o = 296.41)

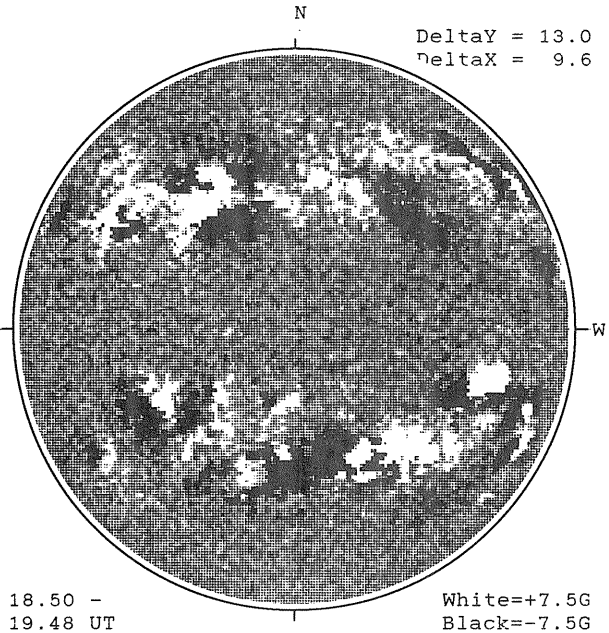
KITT PEAK MAGNETOGRAM



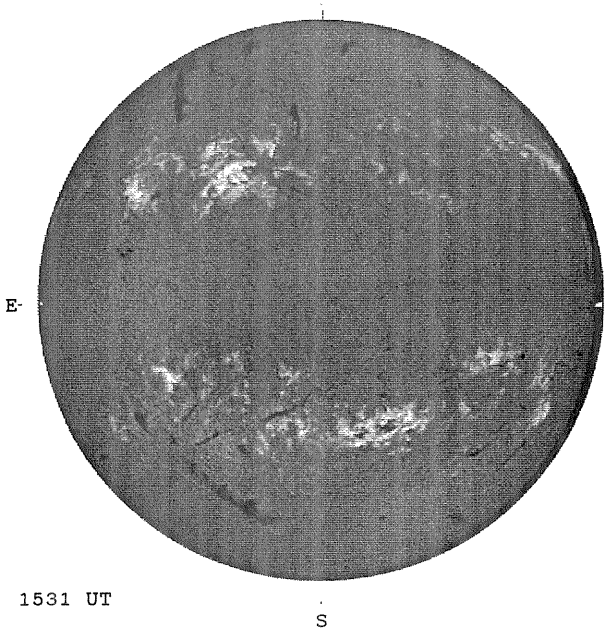
STANFORD MAGNETOGRAM



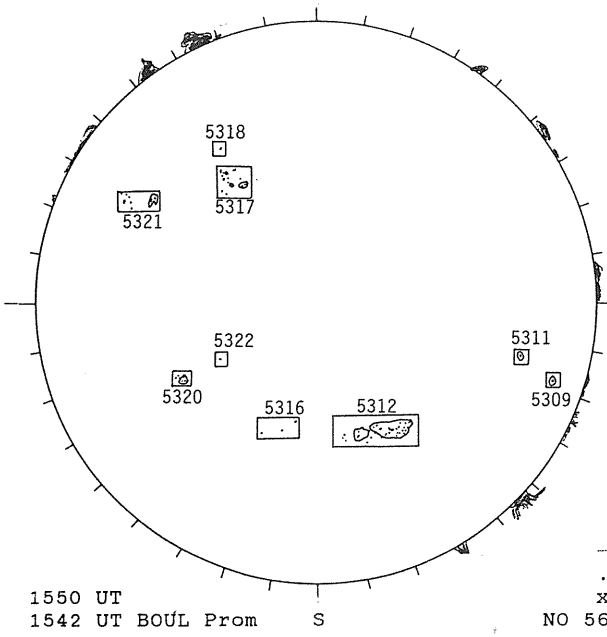
MT. WILSON MAGNETOGRAM



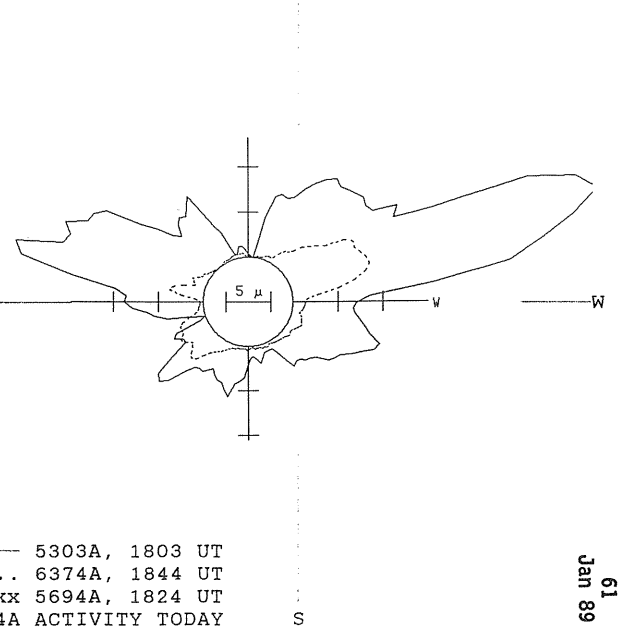
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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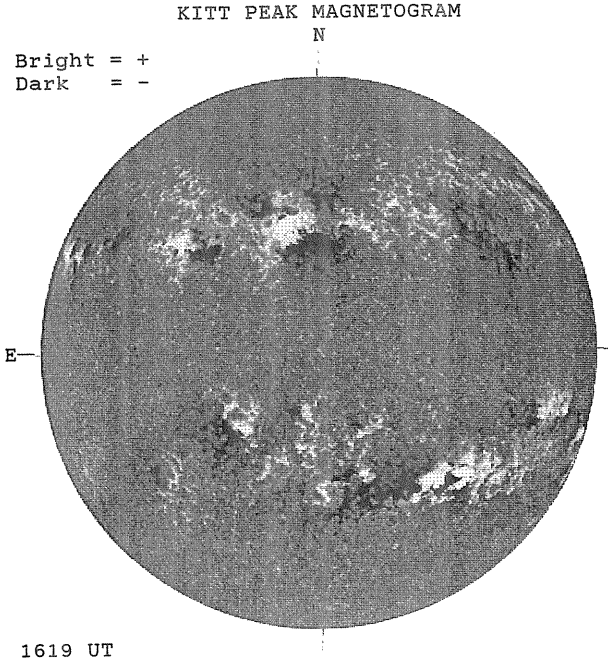
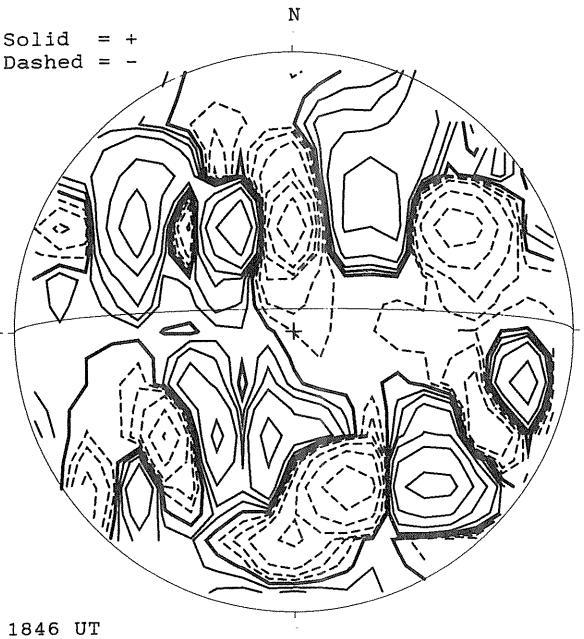
JANUARY 15, 1989 (P= -4.70, B_o =-4.56, L_o = 283.25)

KITT PEAK MAGNETOGRAM



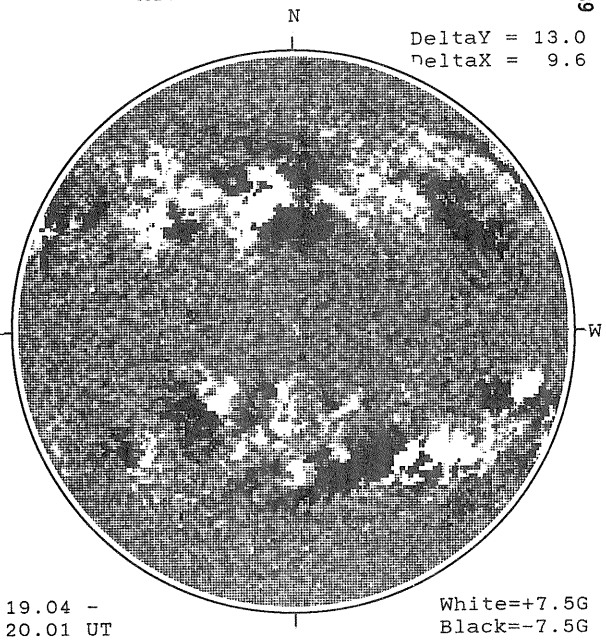
1619 UT

STANFORD MAGNETOGRAM



1846 UT

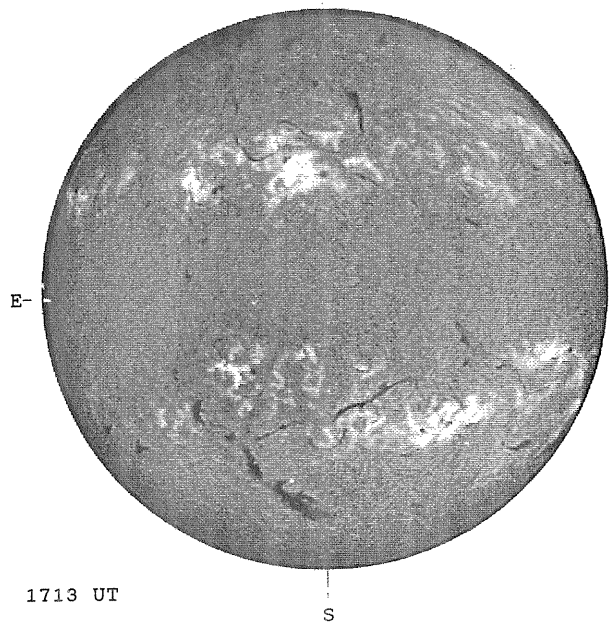
MT. WILSON MAGNETOGRAM



19.04 -
20.01 UT

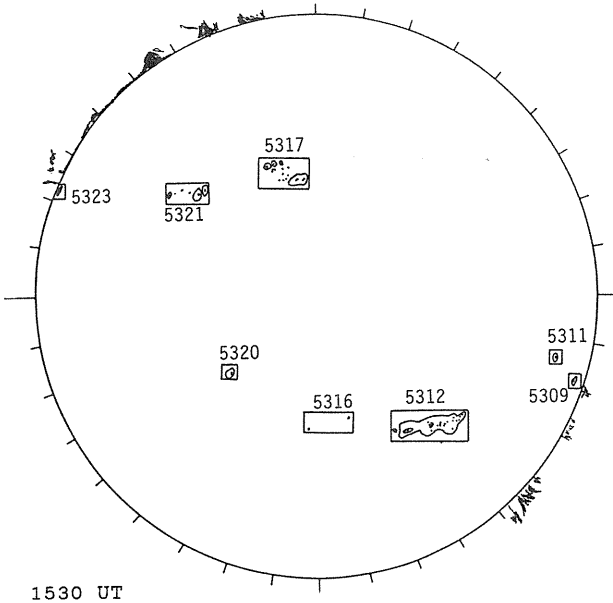
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



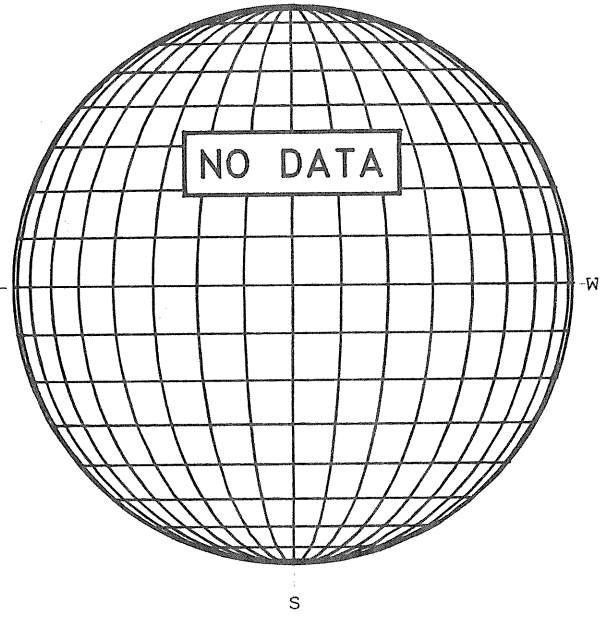
1713 UT

BOULDER SUNSPOT



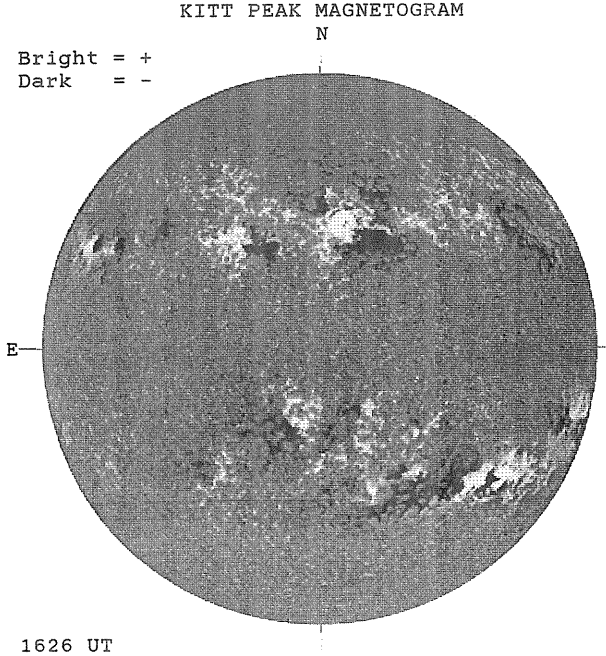
1530 UT
1525 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

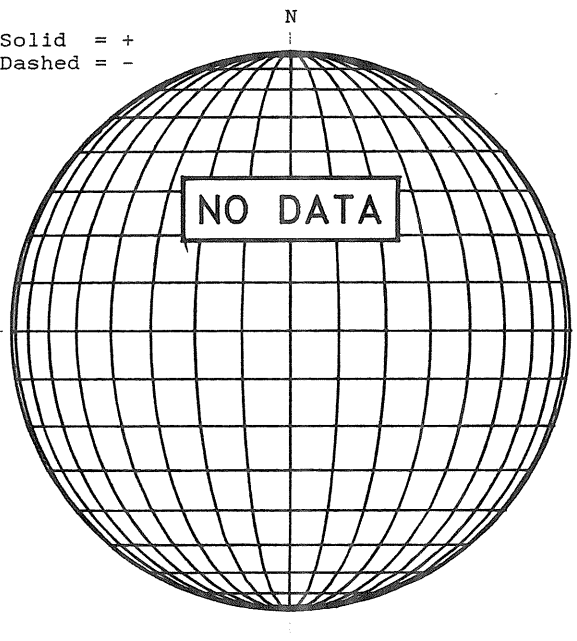


JANUARY 16, 1989 (P= -5.17, B_o =-4.66, L_o = 270.08)

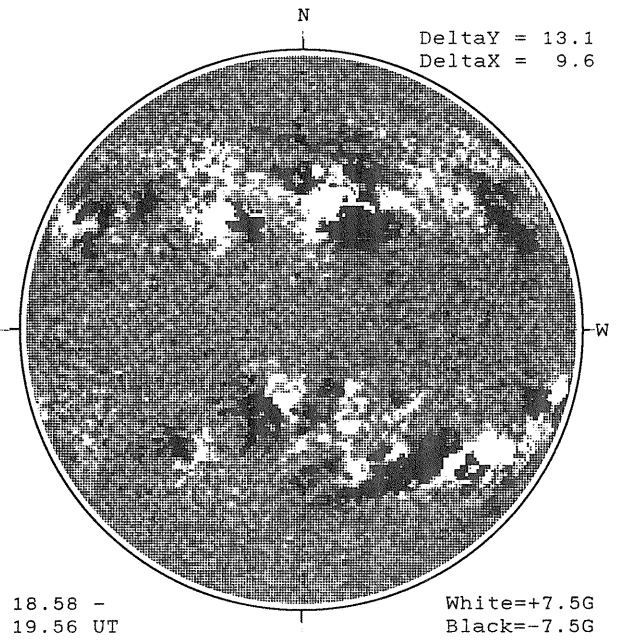
KITT PEAK MAGNETOGRAM



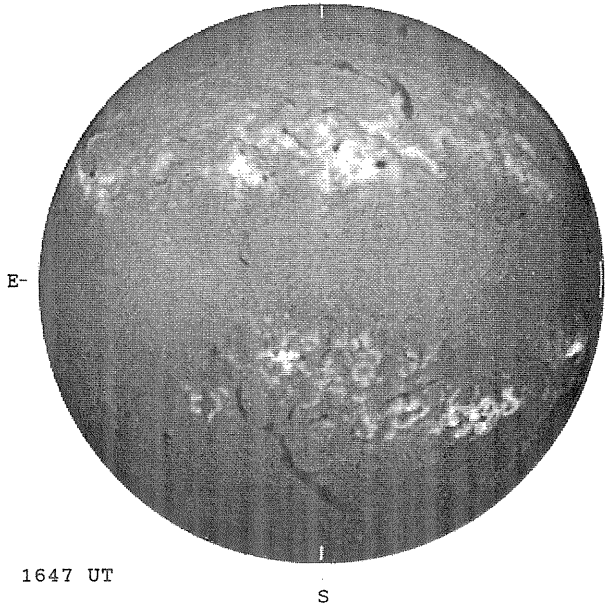
STANFORD MAGNETOGRAM



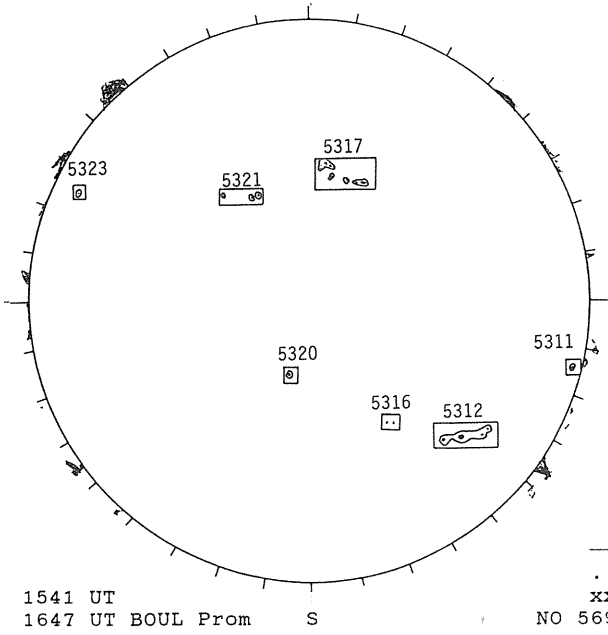
MT. WILSON MAGNETOGRAM



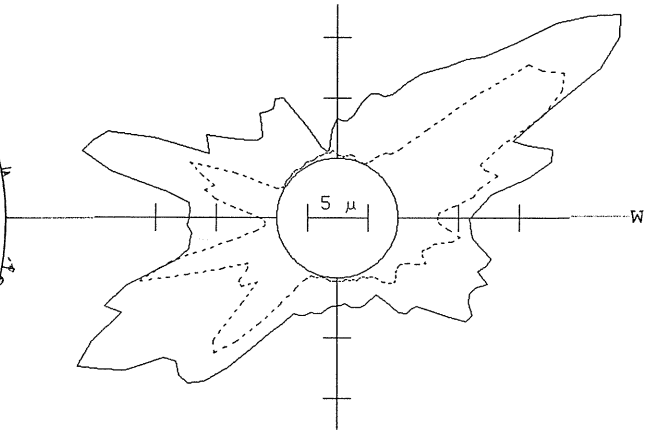
BOULDER H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1527 UT
.... 6374A, 1617 UT
xxxx 5694A, 1601 UT
NO 5694A ACTIVITY TODAY

S

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Jan 89

JANUARY 17, 1989 (P= -5.63, B_o =-4.76, L_o = 256.91)

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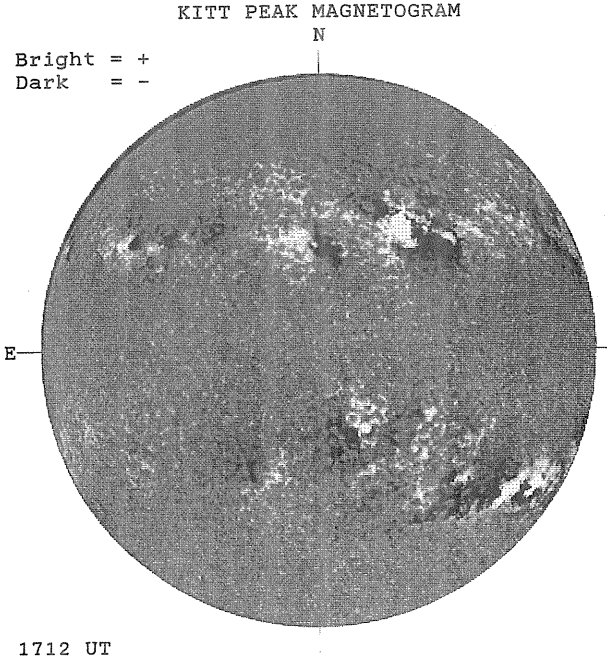
Jan 89

KITT PEAK MAGNETOGRAM

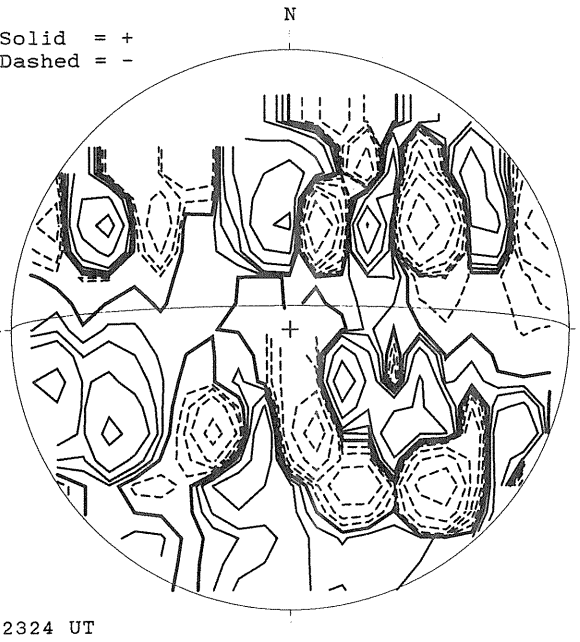
Bright = +
Dark = -



1712 UT

STANFORD MAGNETOGRAM

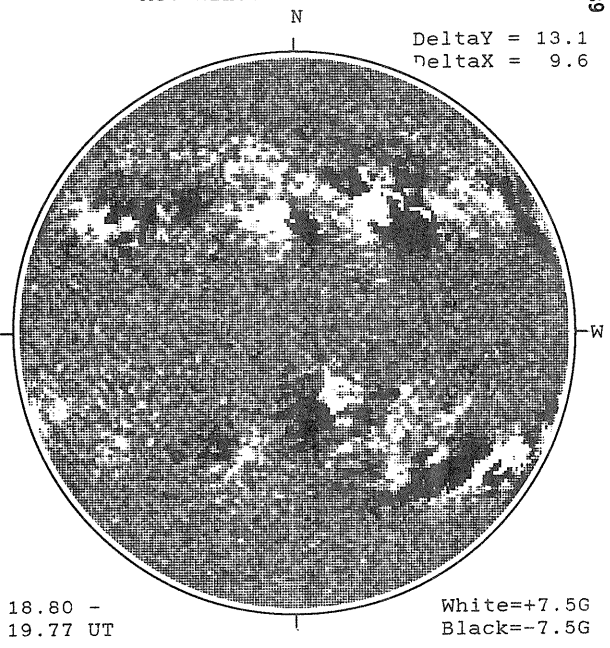
Solid = +
Dashed = -



2324 UT

MT. WILSON MAGNETOGRAM

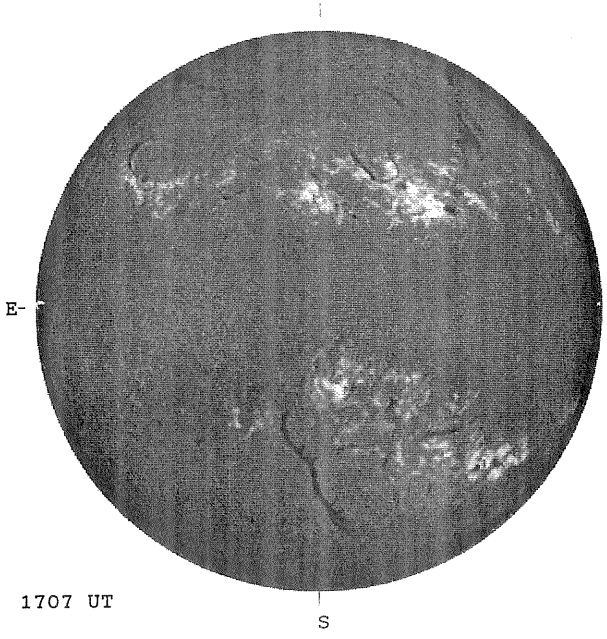
DeltaY = 13.1
DeltaX = 9.6



18.80 -
19.77 UT

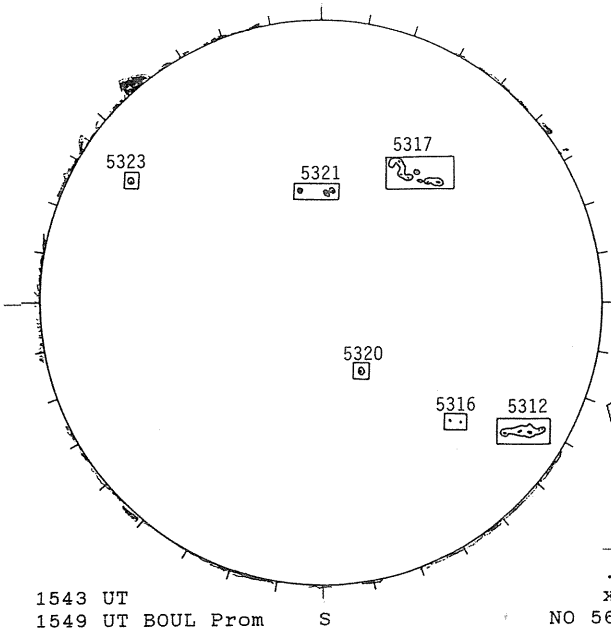
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



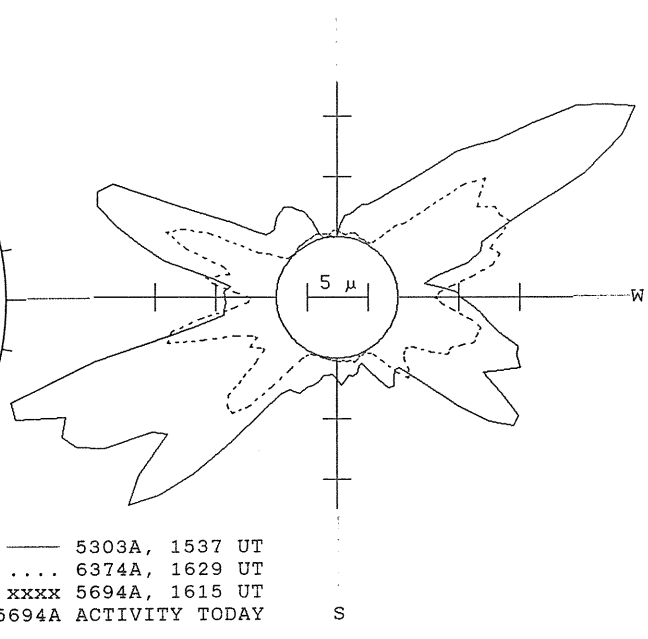
1707 UT

BOULDER SUNSPOT



1543 UT
1549 UT BOUL Prom

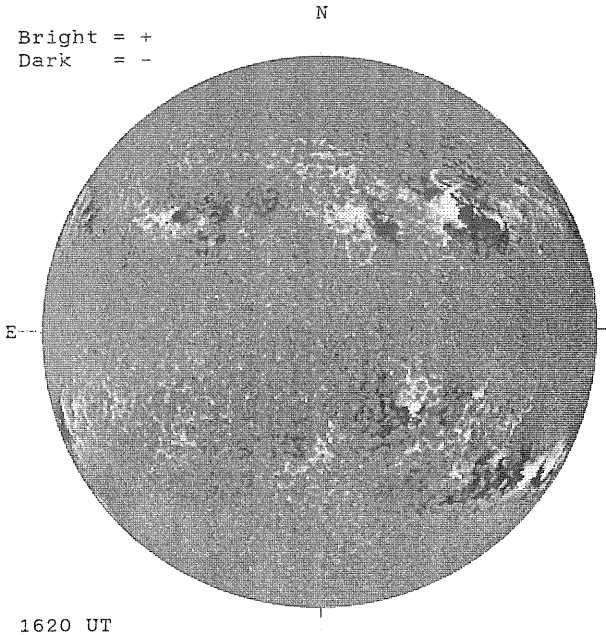
SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1537 UT
.... 6374A, 1629 UT
xxxx 5694A, 1615 UT
NO 5694A ACTIVITY TODAY

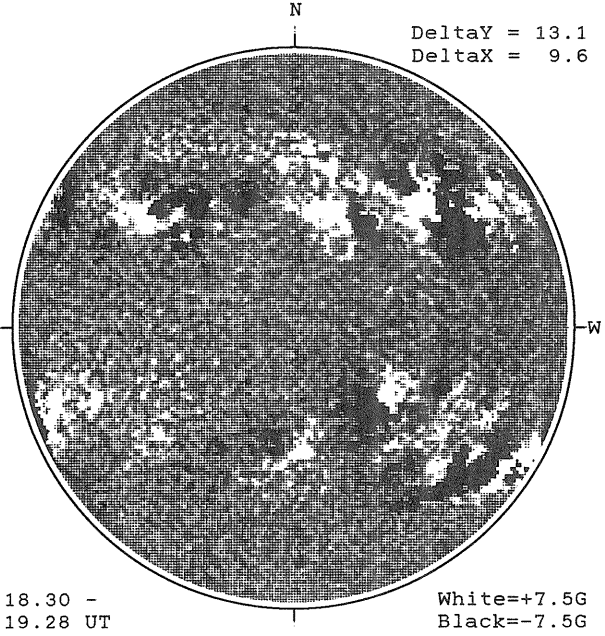
JANUARY 18, 1989 (P= -6.09, B_o =-4.86, L_o = 243.74)

KITT PEAK MAGNETOGRAM

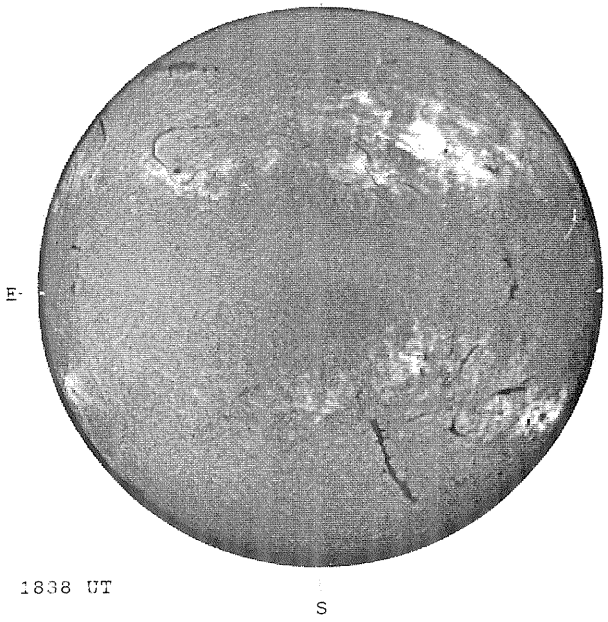


STANFORD MAGNETOGRAM

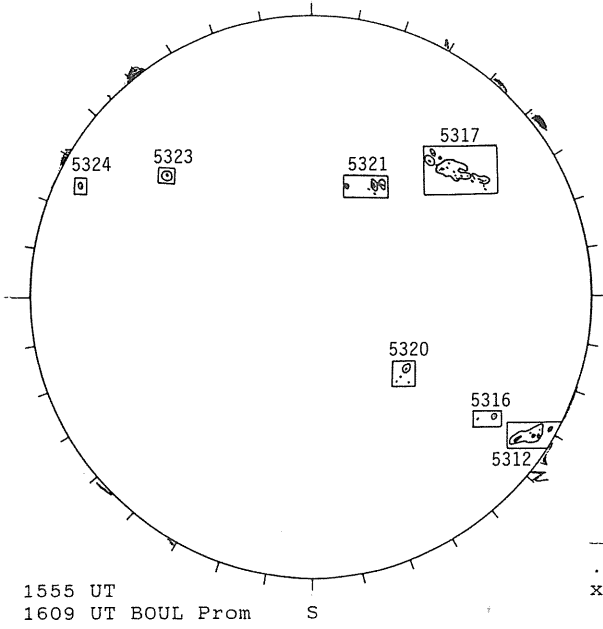
MT. WILSON MAGNETOGRAM



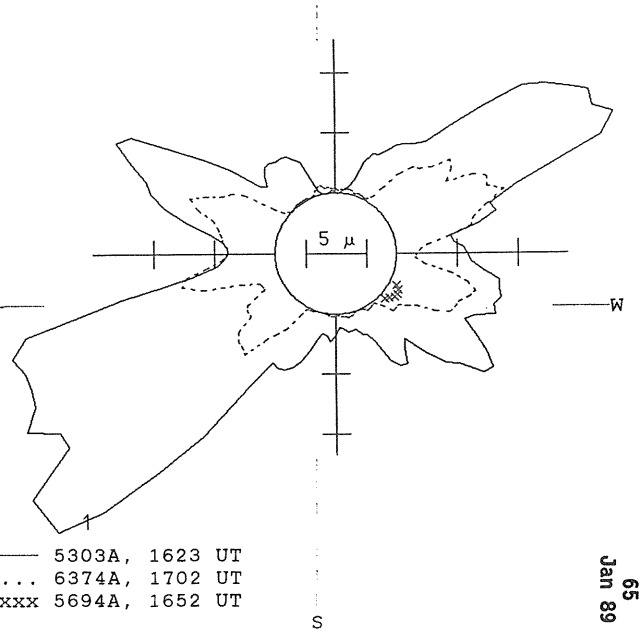
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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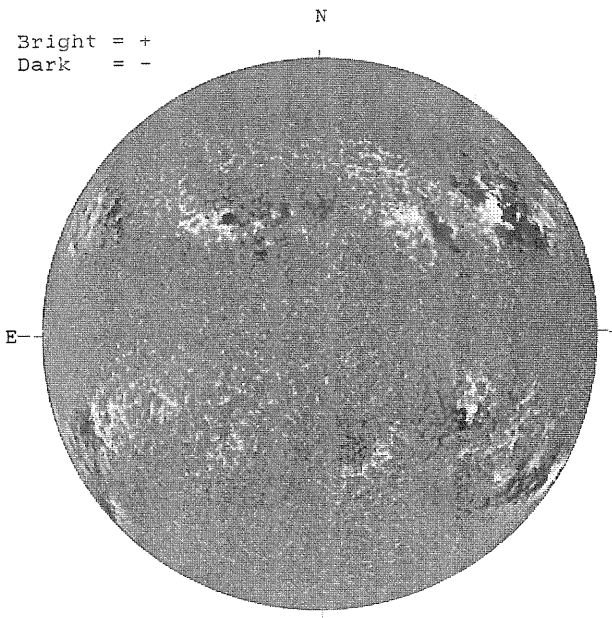
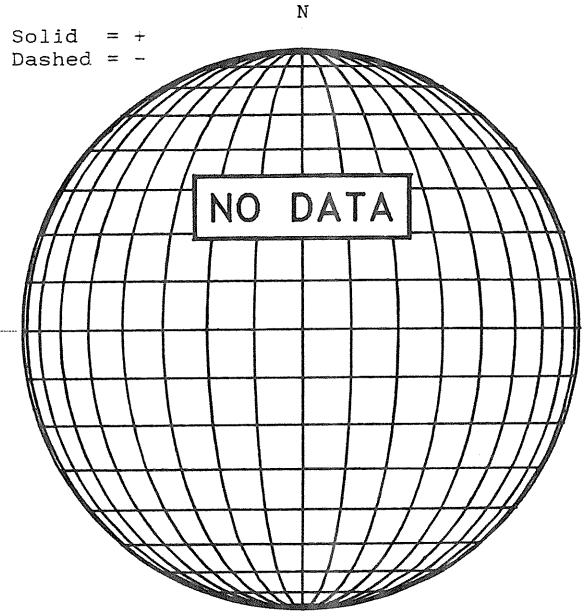
Jan 89

JANUARY 19, 1989 (P= -6.55, B_o =-4.95, L_o = 230.58)

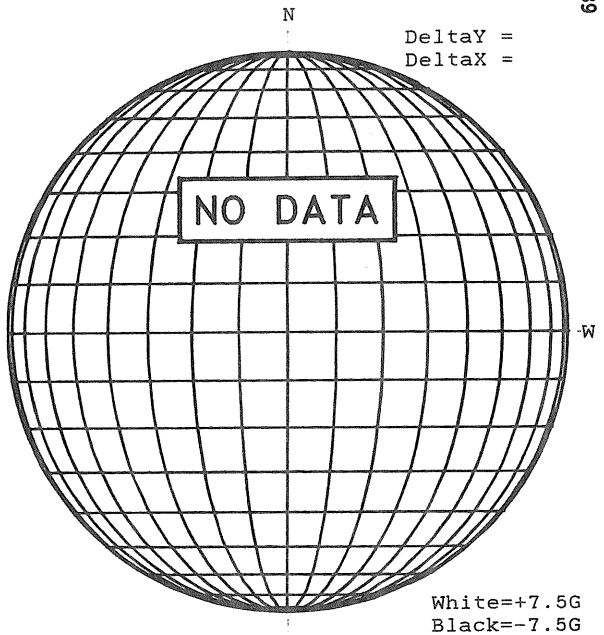
KITT PEAK MAGNETOGRAM



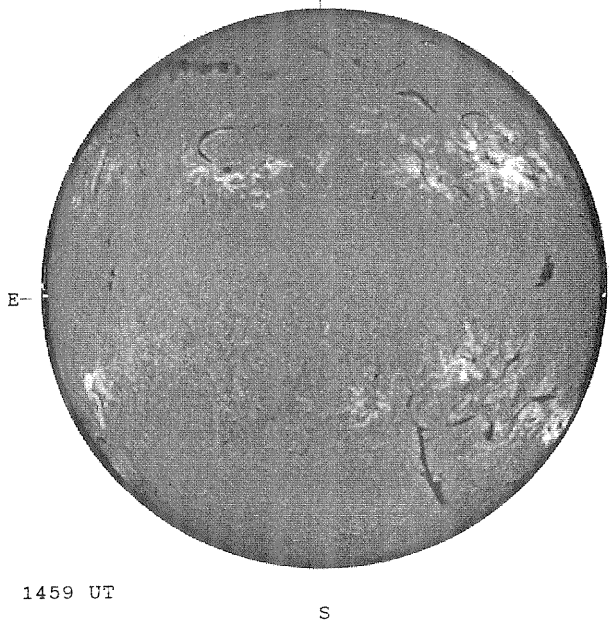
STANFORD MAGNETOGRAM



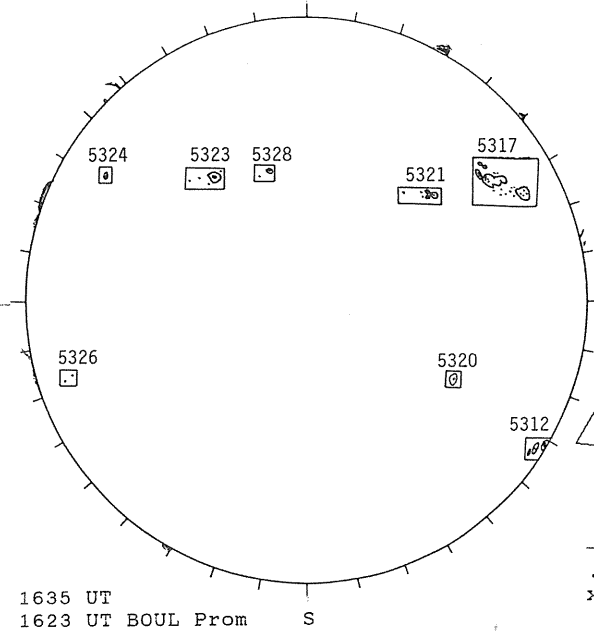
MT. WILSON MAGNETOGRAM



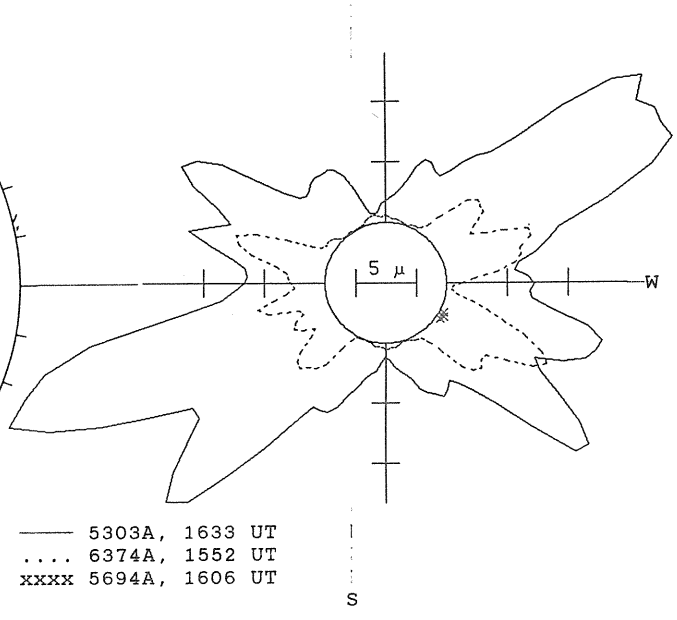
HOLLOMAN H-ALPHA



BOULDER SUNSPOT

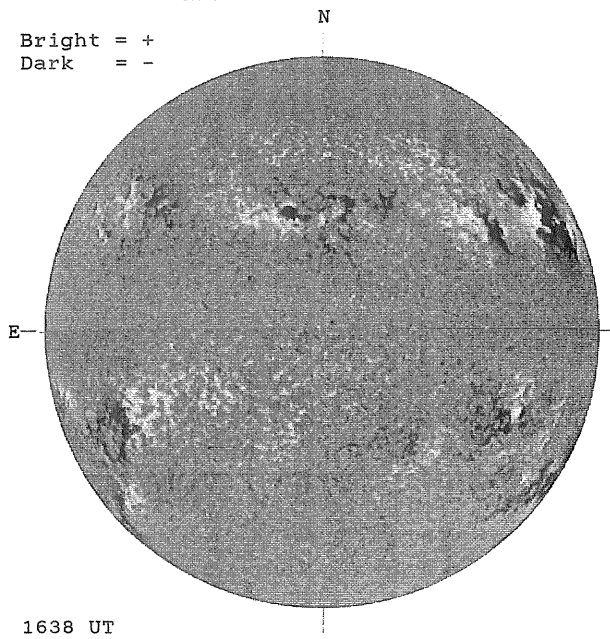


SACRAMENTO PEAK CORONA (1.15 Radii)

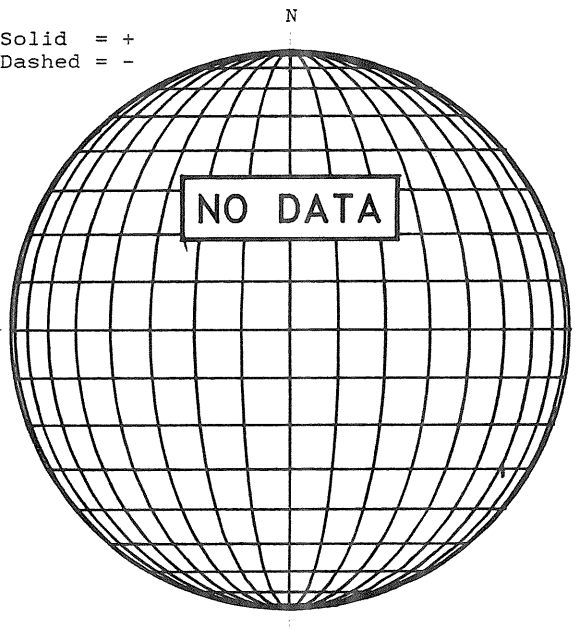


JANUARY 20, 1989 (P= -7.01, B_o =-5.04, L_o = 217.41)

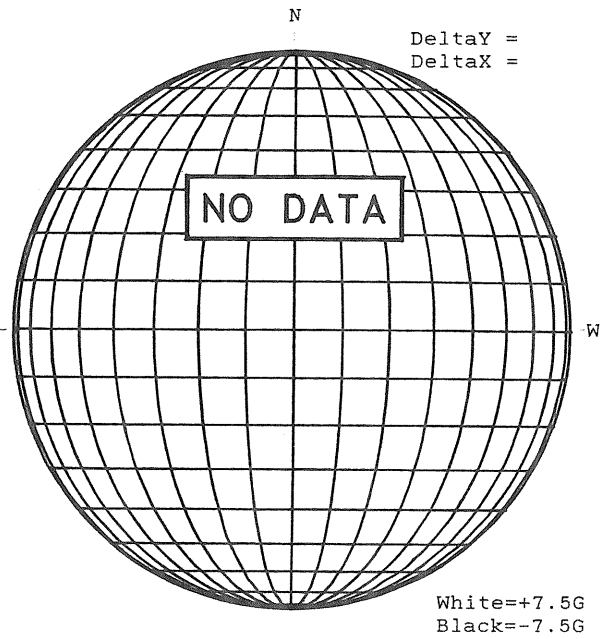
KITT PEAK MAGNETOGRAM



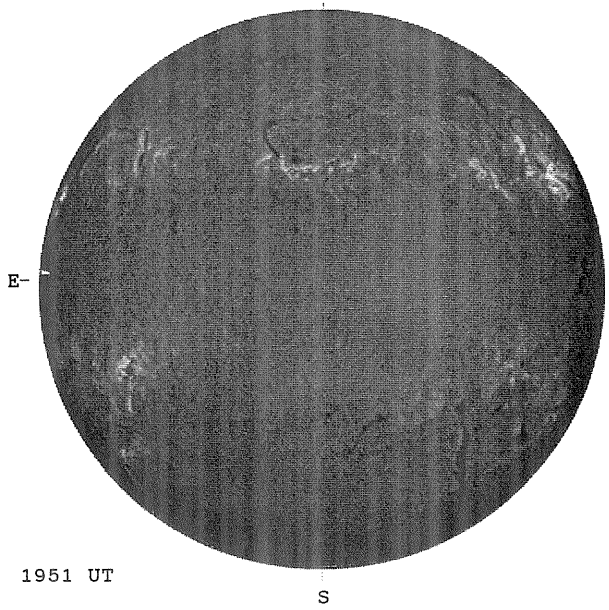
STANFORD MAGNETOGRAM



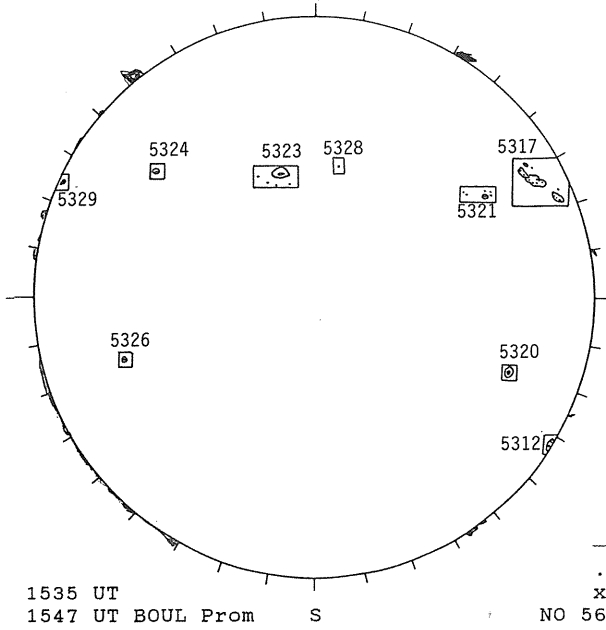
MT. WILSON MAGNETOGRAM



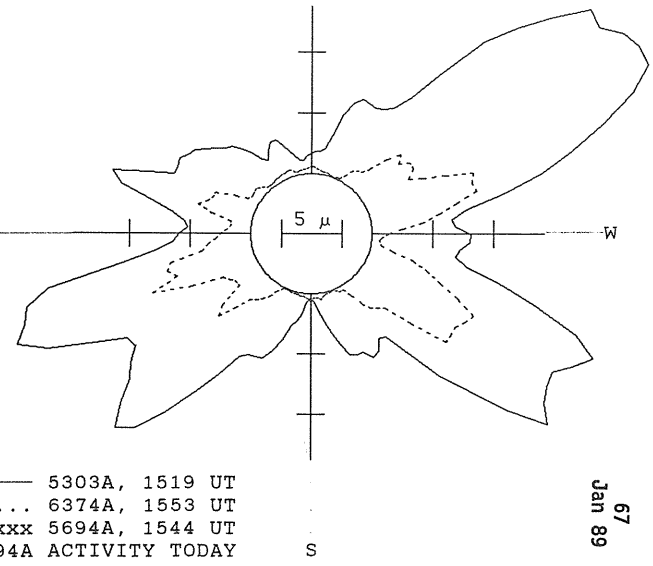
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



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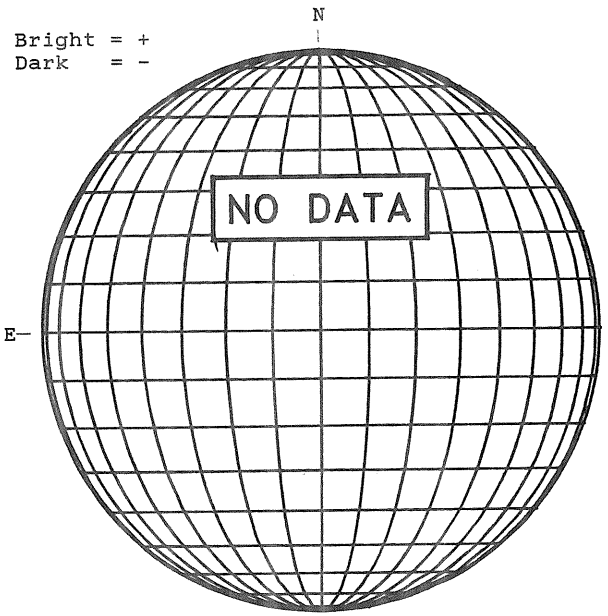
Jan 89

JANUARY 21, 1989 (P= -7.46, B_o =-5.14, L_o = 204.24)

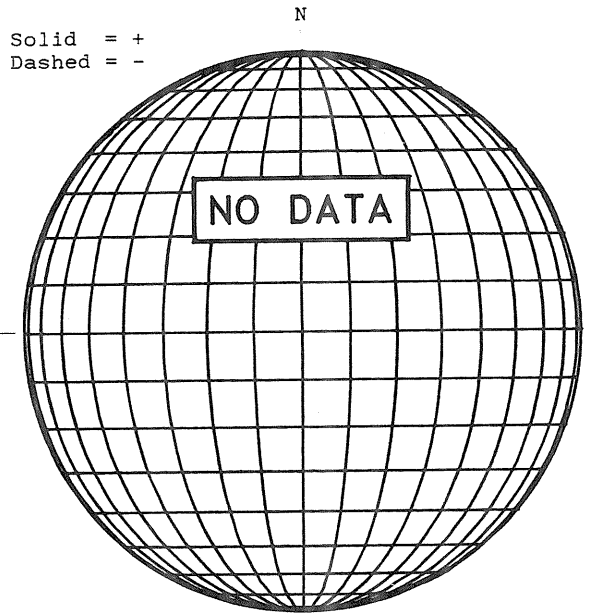
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



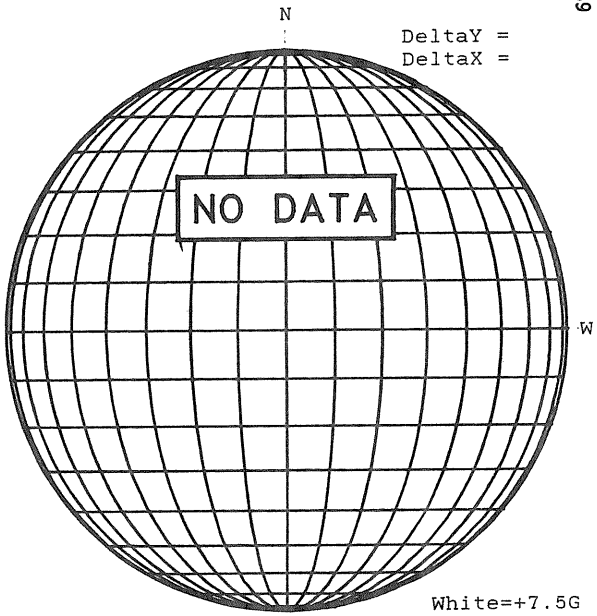
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



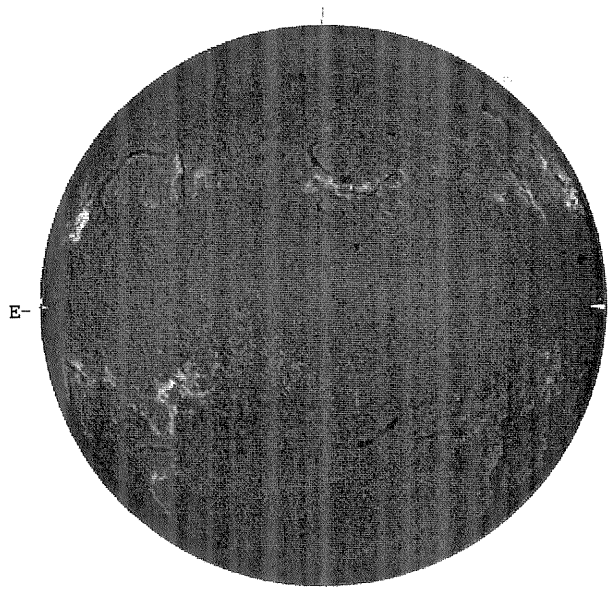
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



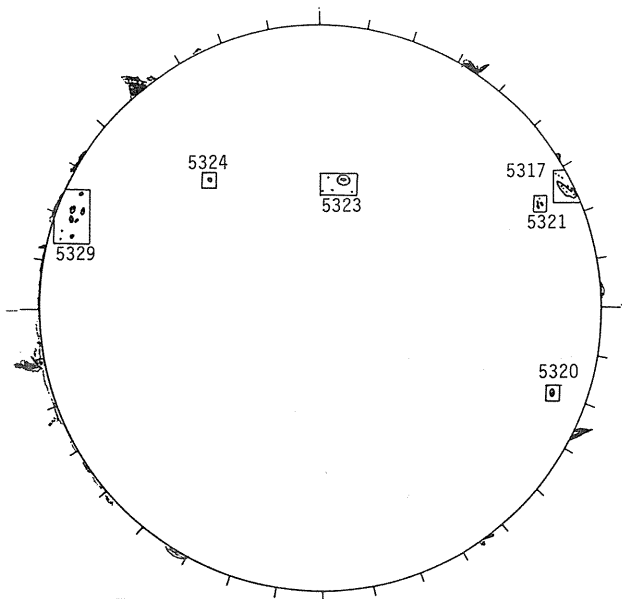
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



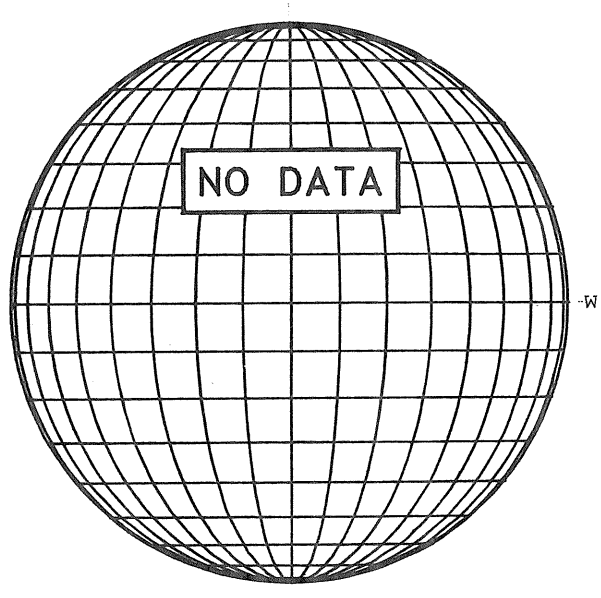
1604 UT

BOULDER SUNSPOT



1613 UT
1607 UT BOUL Prom

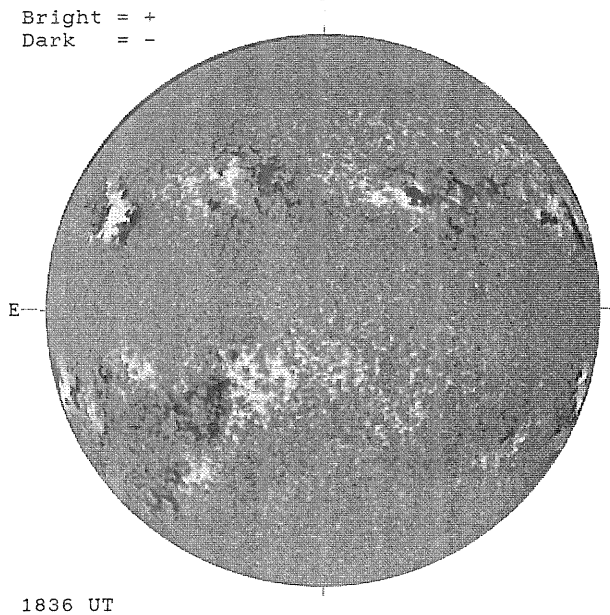
SACRAMENTO PEAK CORONA (1.15 Radii)



JANUARY 22, 1989 (P= -7.91, B_o =-5.22, L_o = 191.07)

KITT PEAK MAGNETOGRAM

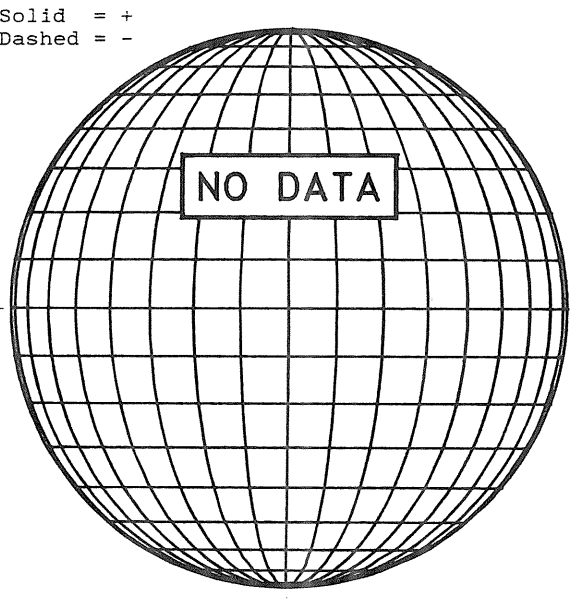
Bright = +
Dark = -



1836 UT

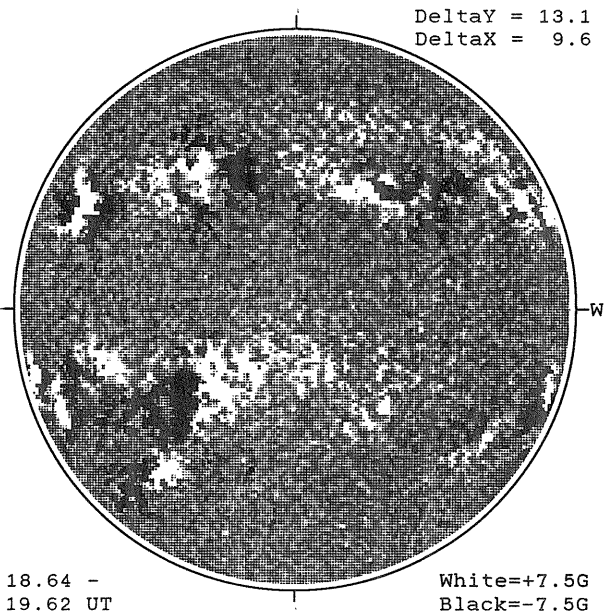
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

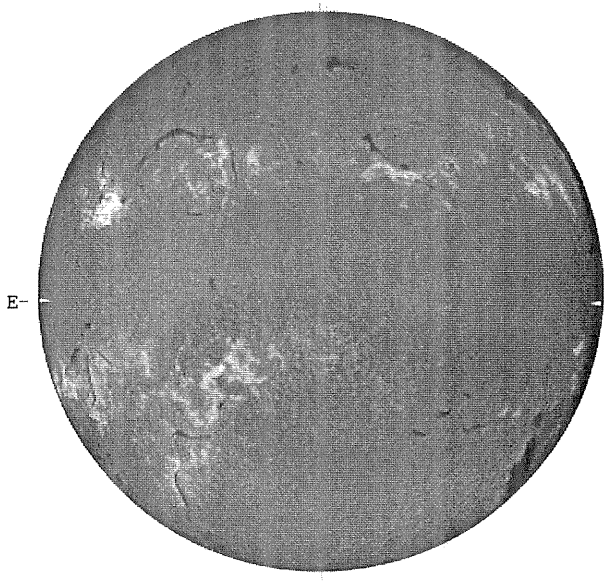
DeltaY = 13.1
DeltaX = 9.6



18.64 -
19.62 UT

White=+7.5G
Black=-7.5G

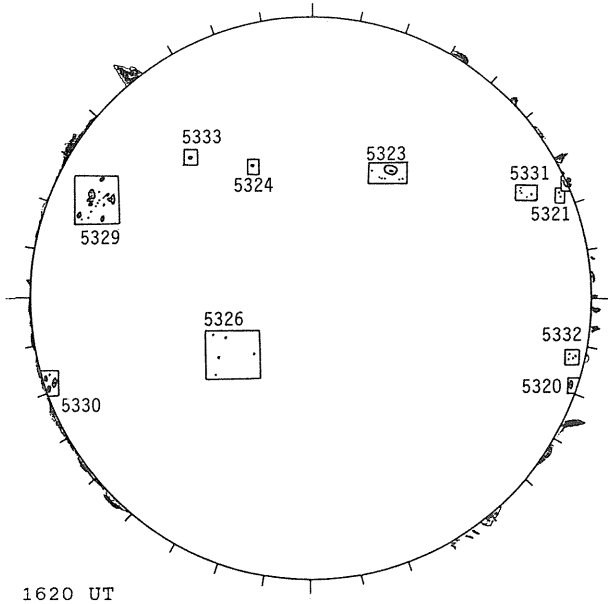
HOLLOMAN H-ALPHA



1744 UT

S

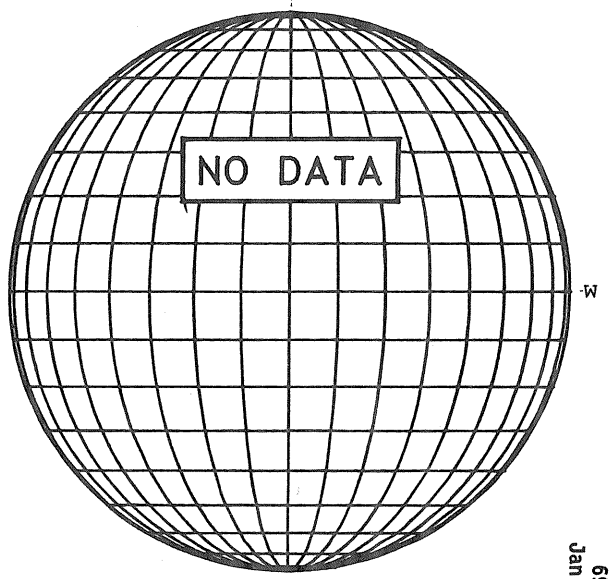
BOULDER SUNSPOT



1620 UT
1610 UT BOUL Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)



S

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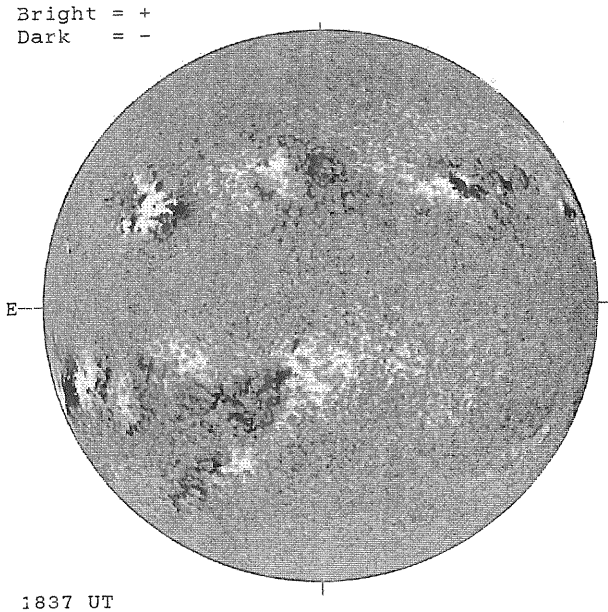
Jan 89

JANUARY 23, 1989 (P= -8.36, B_o =-5.31, L_o = 177.91)

KITT PEAK MAGNETOGRAM

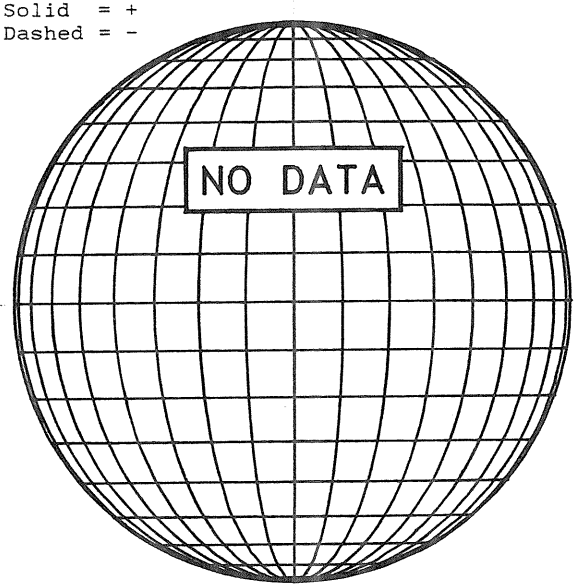
Bright = +
Dark = -



1837 UT

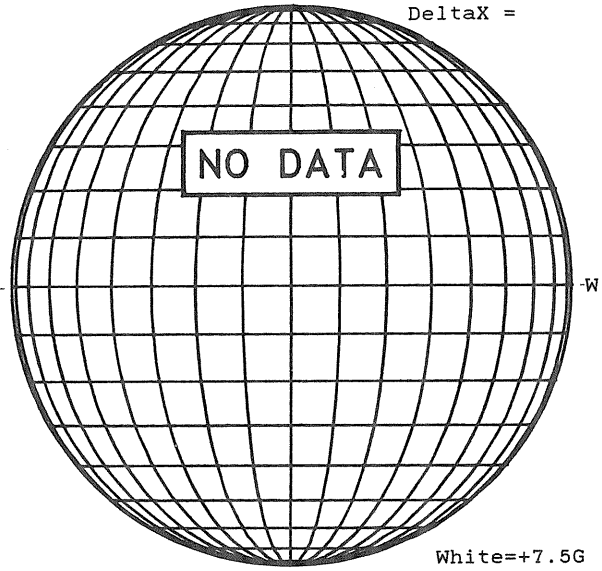
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



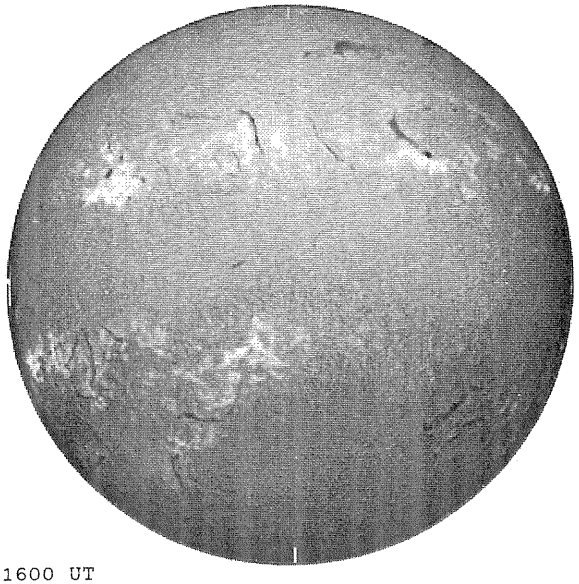
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



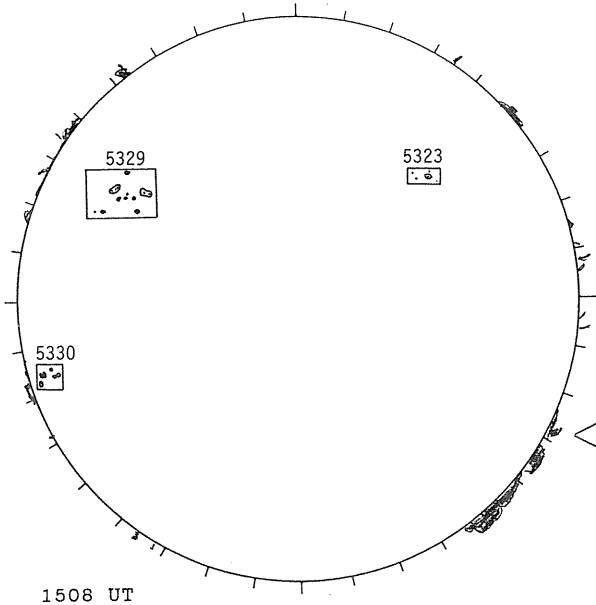
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



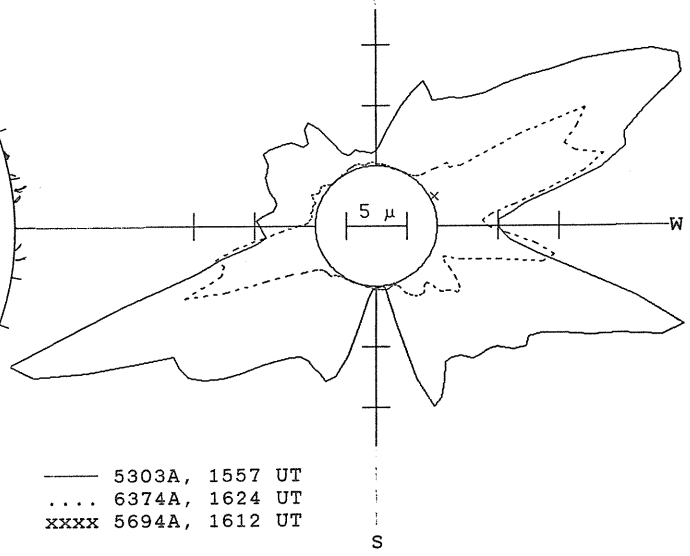
1600 UT

BOULDER SUNSPOT



1508 UT
1600 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

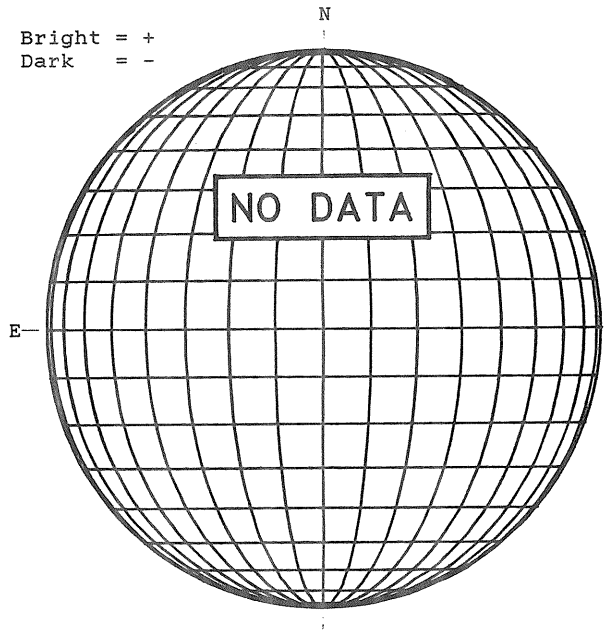


—— 5303A, 1557 UT
.... 6374A, 1624 UT
xxxx 5694A, 1612 UT

JANUARY 24, 1989 (P= -8.80, B_o =-5.40, L_o = 164.74)

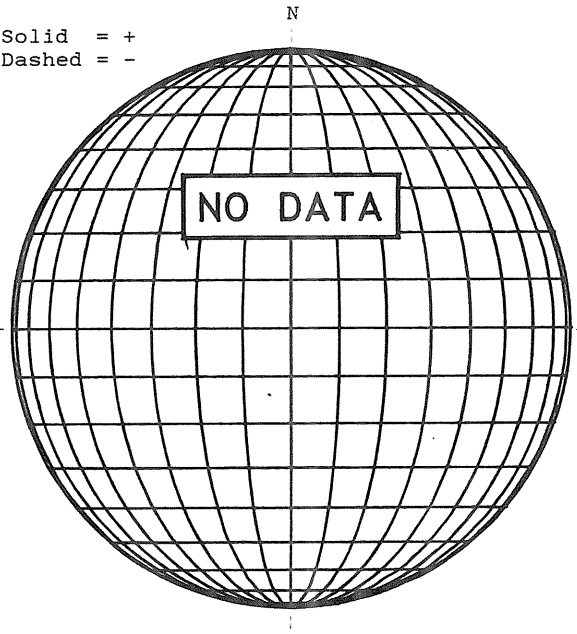
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



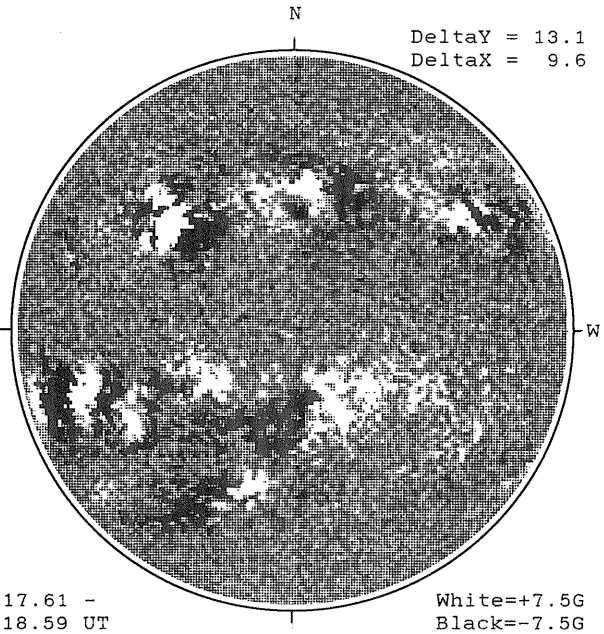
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

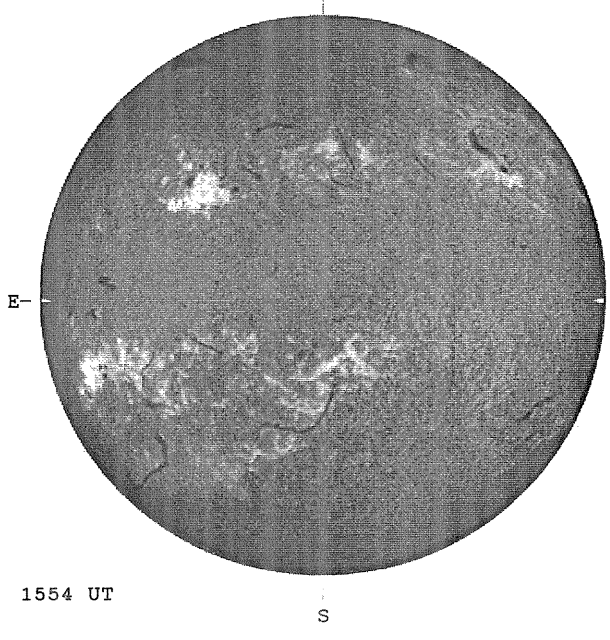
DeltaY = 13.1
DeltaX = 9.6



17.61 -
18.59 UT

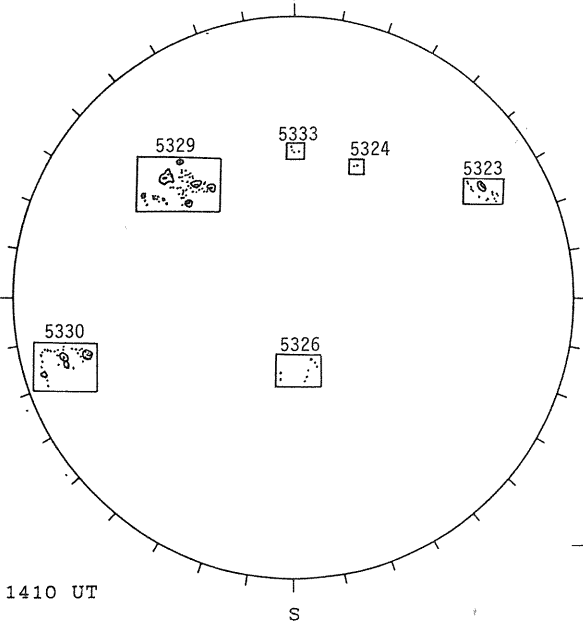
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



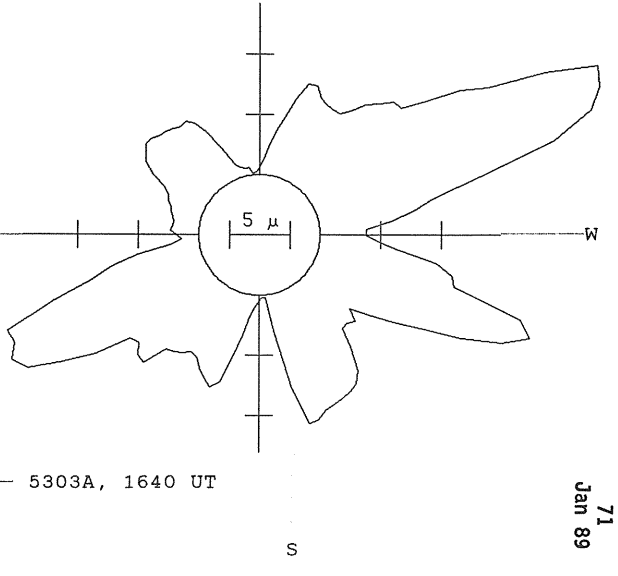
1554 UT

RAMEY SUNSPOT



1410 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



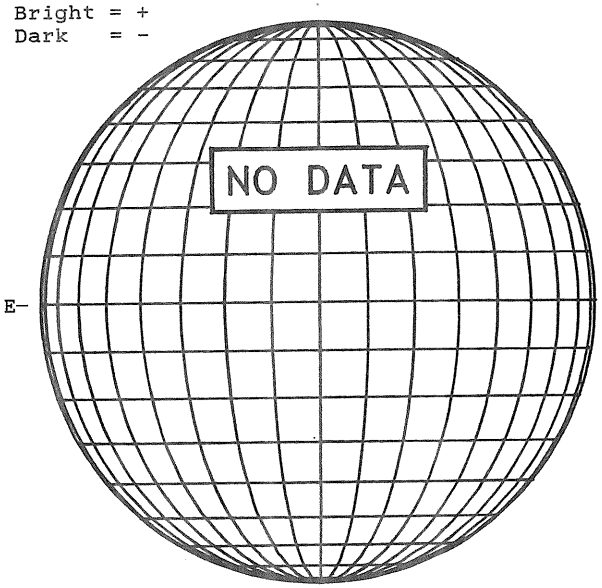
—— 5303A, 1640 UT

71
Jan 89

JANUARY 25, 1989 (P= -9.24, B_o =-5.48, L_o = 151.57)

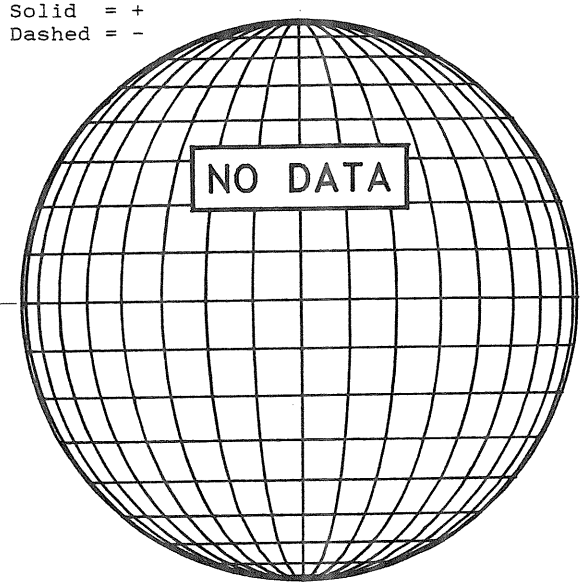
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



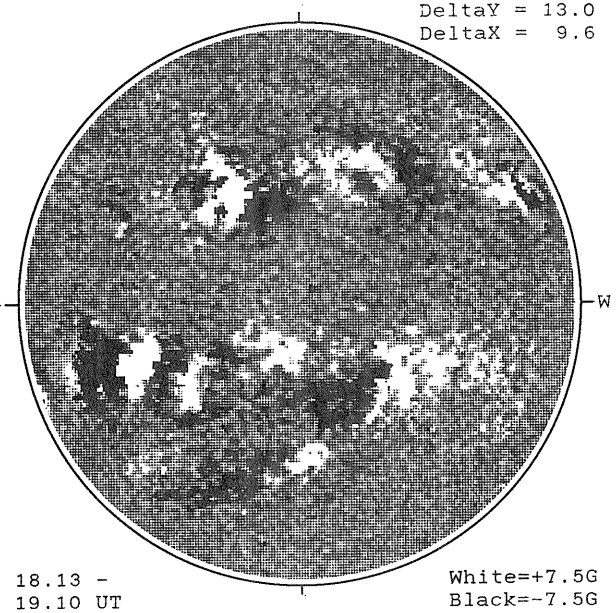
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

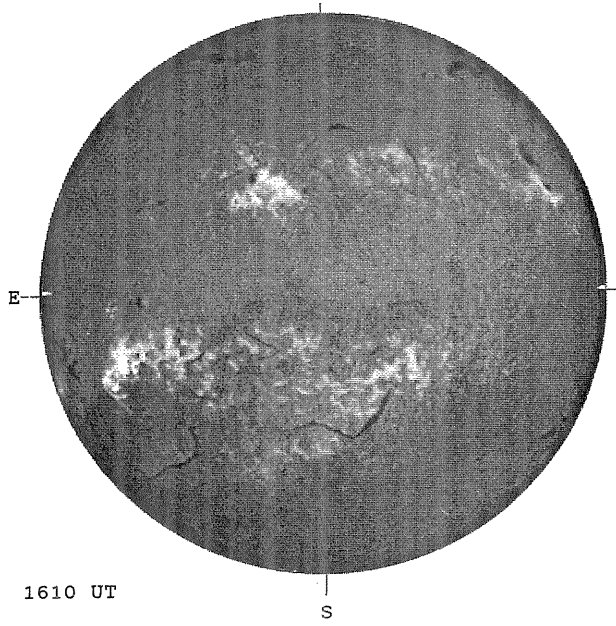
DeltaY = 13.0
DeltaX = 9.6



18.13 -
19.10 UT

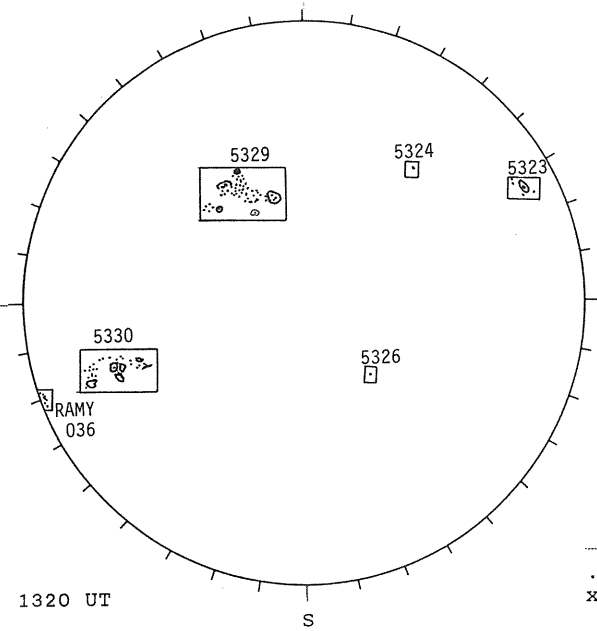
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



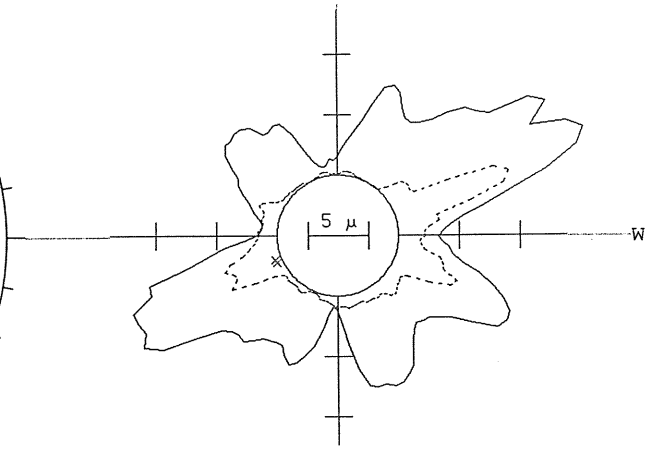
1610 UT

RAMEY SUNSPOT



1320 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



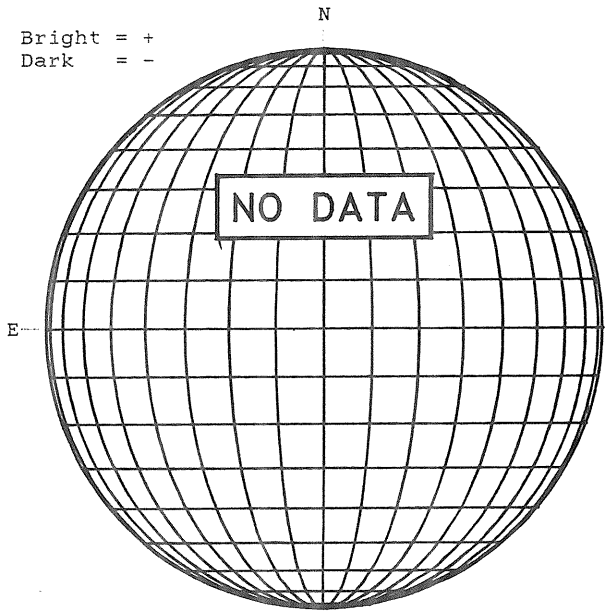
—— 5303A, 1804 UT
.... 6374A, 1858 UT
xxxx 5694A, 1831 UT

S

JANUARY 26, 1989 (P= -9.68, B_o =-5.57, L_o = 138.41)

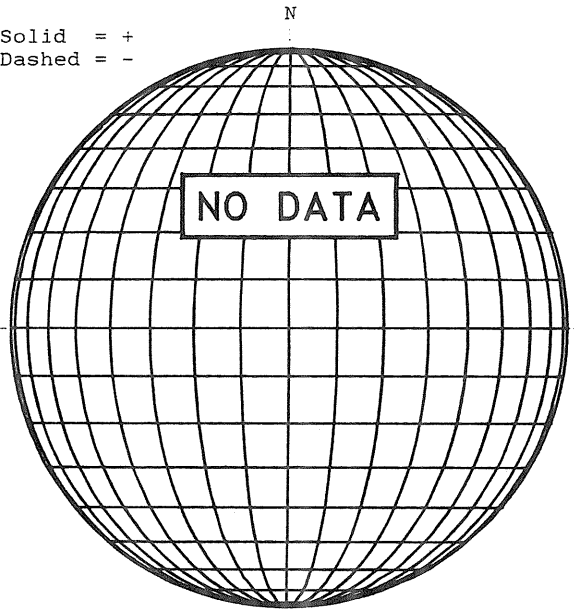
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



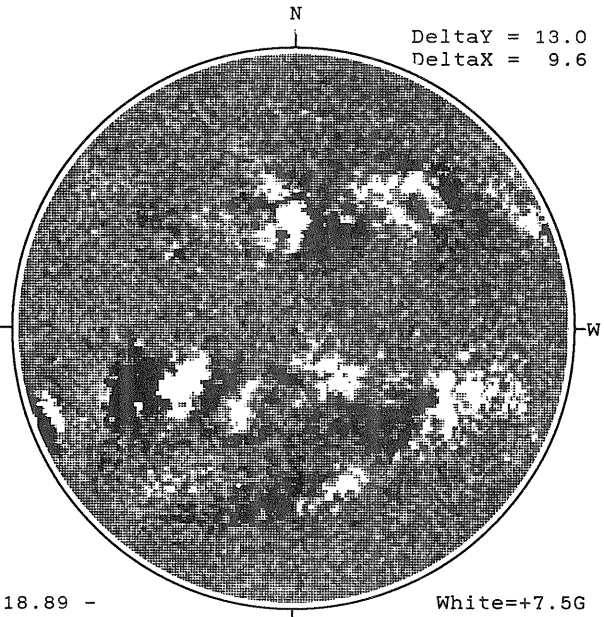
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

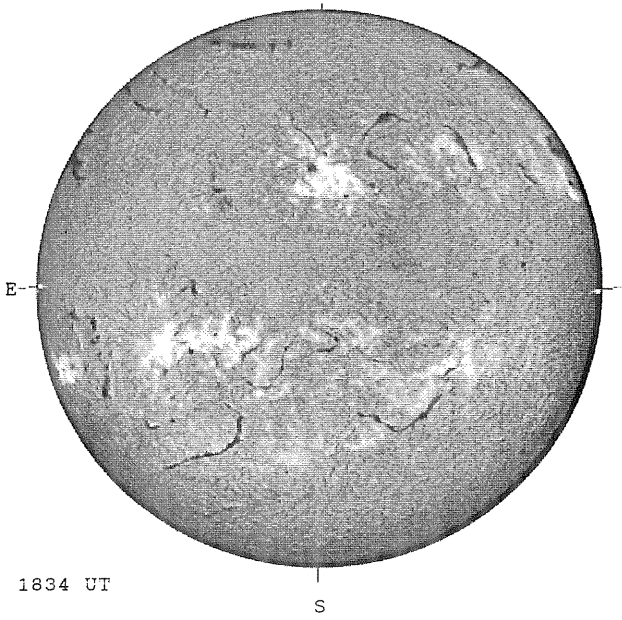
DeltaY = 13.0
DeltaX = 9.6



18.89 -
19.87 UT

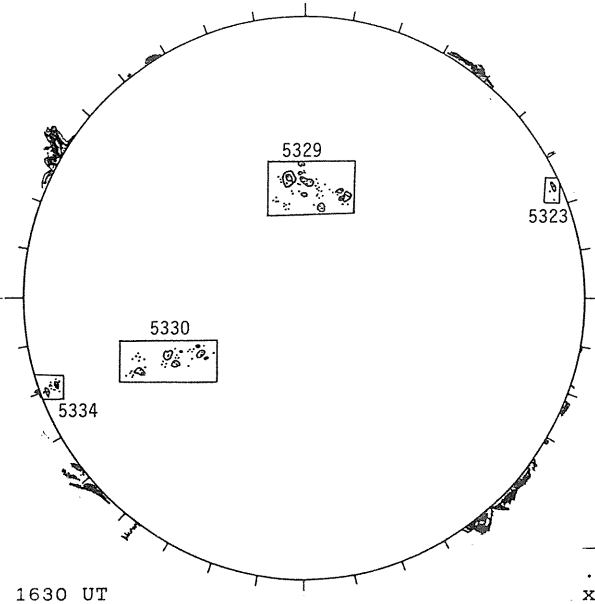
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



1834 UT

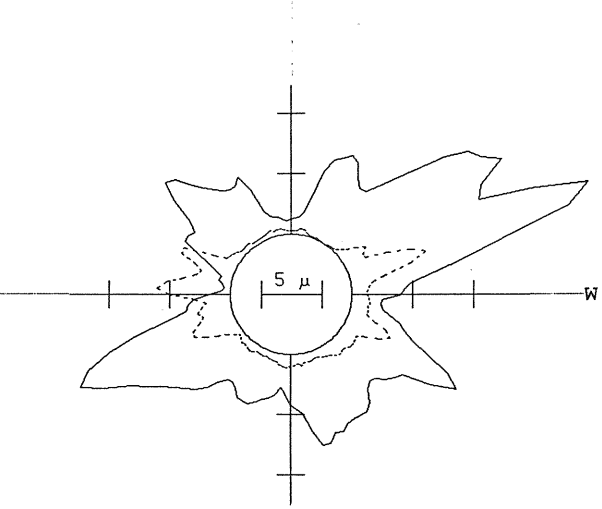
BOULDER SUNSPOT



1630 UT
1610 UT BOUL Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)



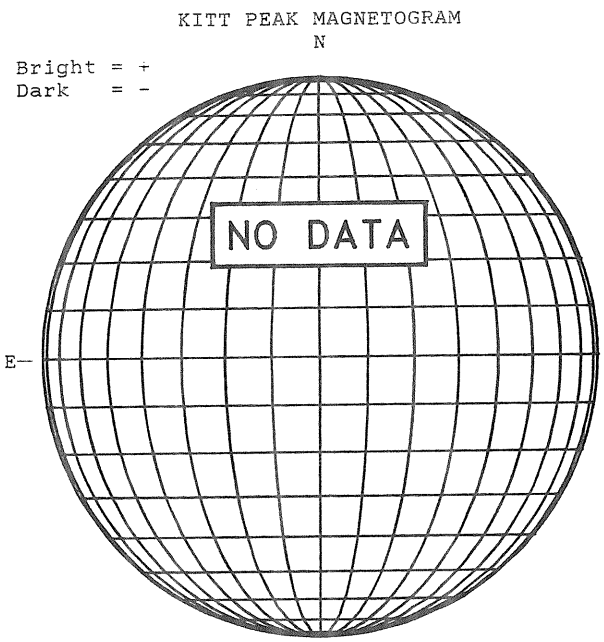
—— 5303A, 1857 UT
.... 6374A, 1931 UT
xxxx 5694A, 1918 UT
NO 5694A ACTIVITY TODAY

S

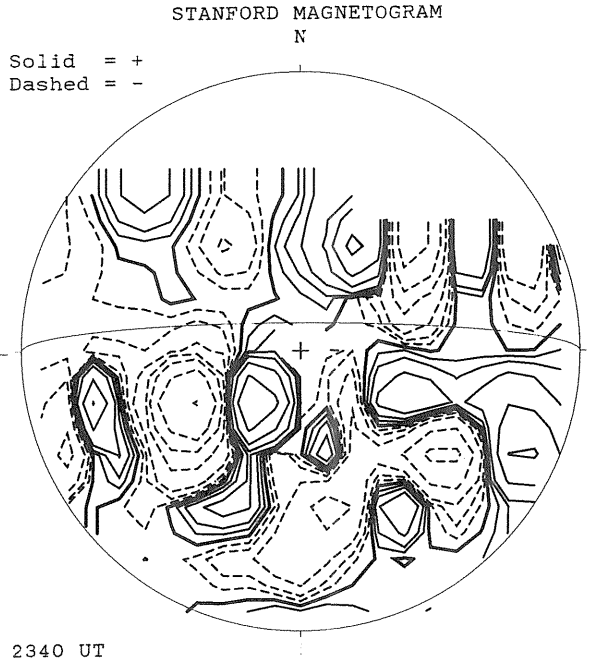
73
Jan 89

JANUARY 27, 1989 (P=-10.11, B_o =-5.65, L_o = 125.24)

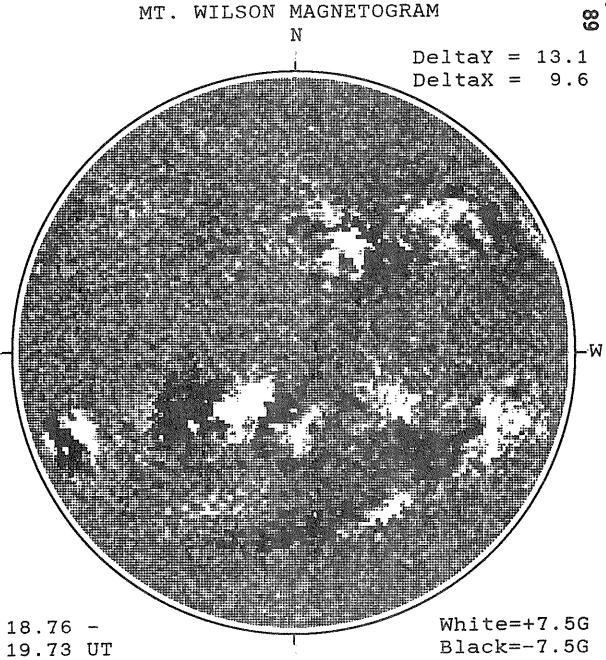
KITT PEAK MAGNETOGRAM



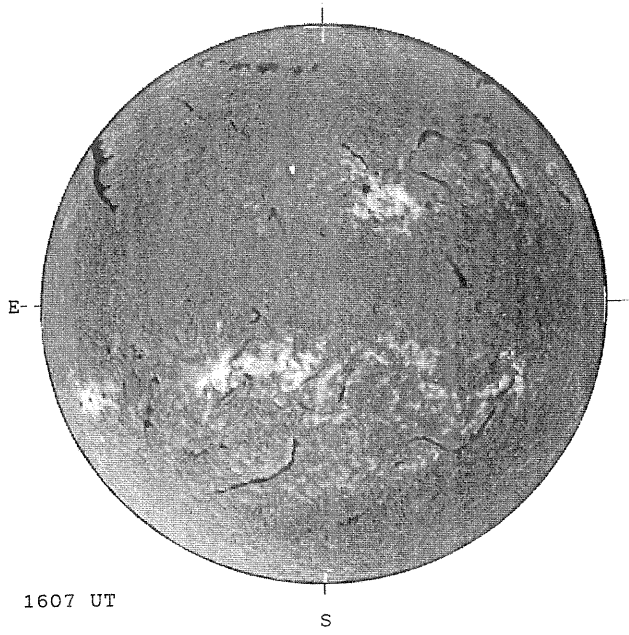
STANFORD MAGNETOGRAM



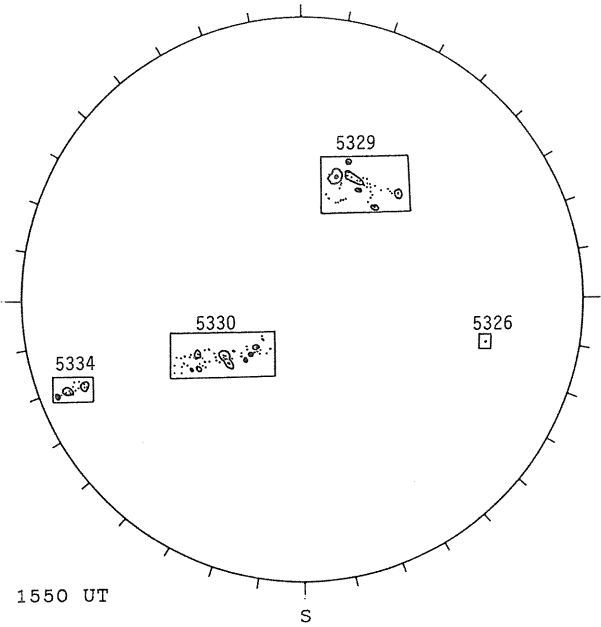
MT. WILSON MAGNETOGRAM



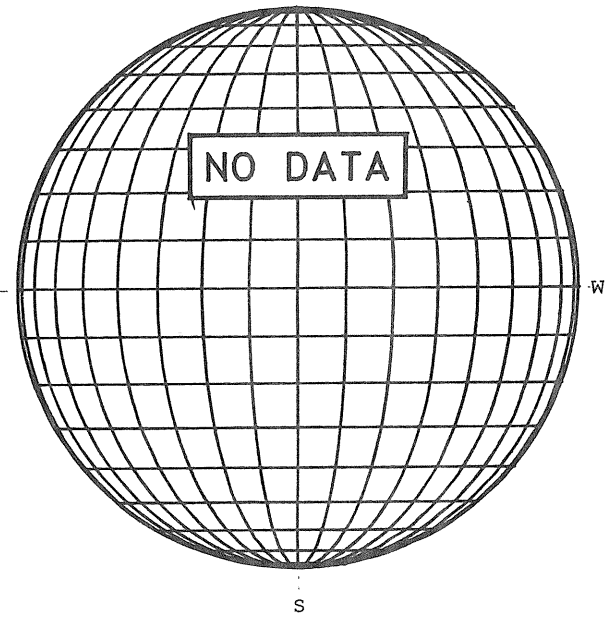
BOULDER H-ALPHA



BOULDER SUNSPOT



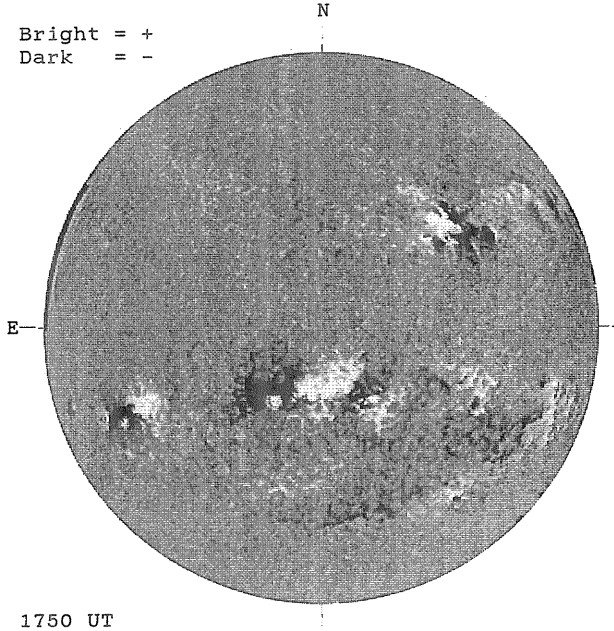
SACRAMENTO PEAK CORONA (1.15 Radii)



JANUARY 28, 1989 (P=-10.53, B_o =-5.73, L_o = 112.07)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



1750 UT

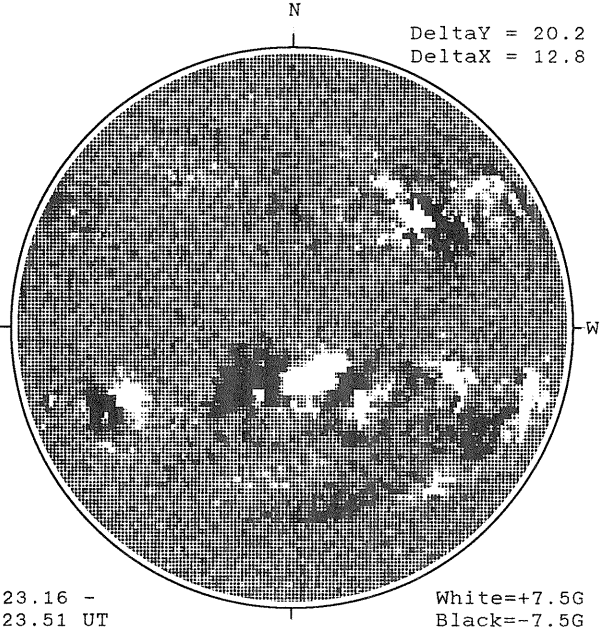
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

NO DATA

MT. WILSON MAGNETOGRAM

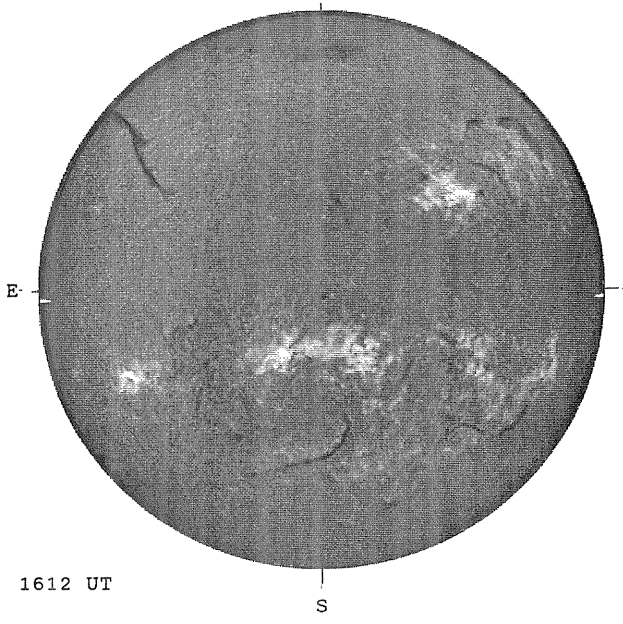
DeltaY = 20.2
DeltaX = 12.8



23.16 -
23.51 UT

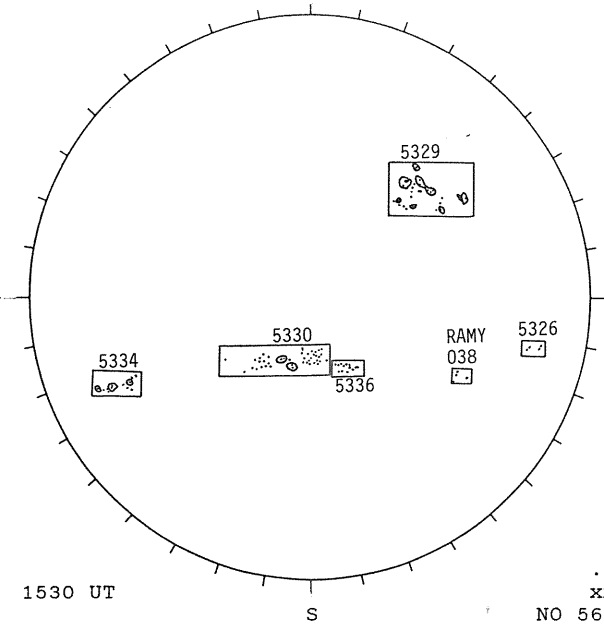
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



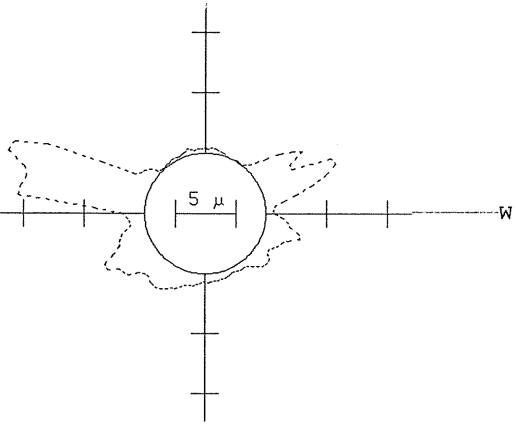
1612 UT

RAMEY SUNSPOT



1530 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



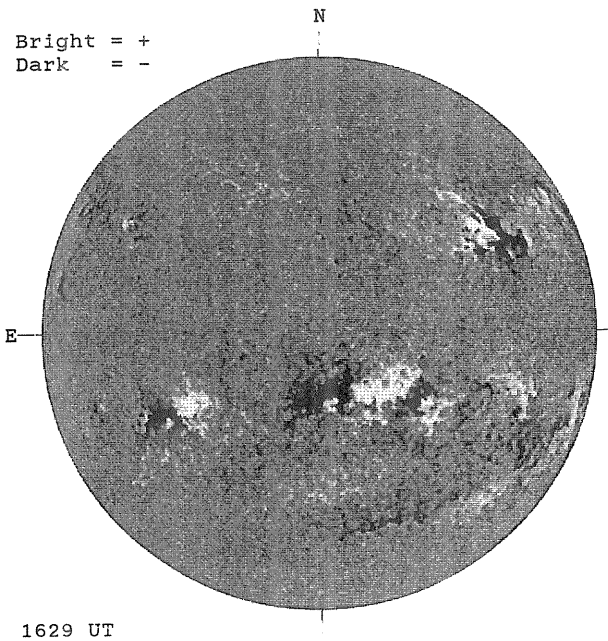
.... 6374A, 2122 UT
xxxx 5694A, 2101 UT
NO 5694A ACTIVITY TODAY

S

75
Jan 89

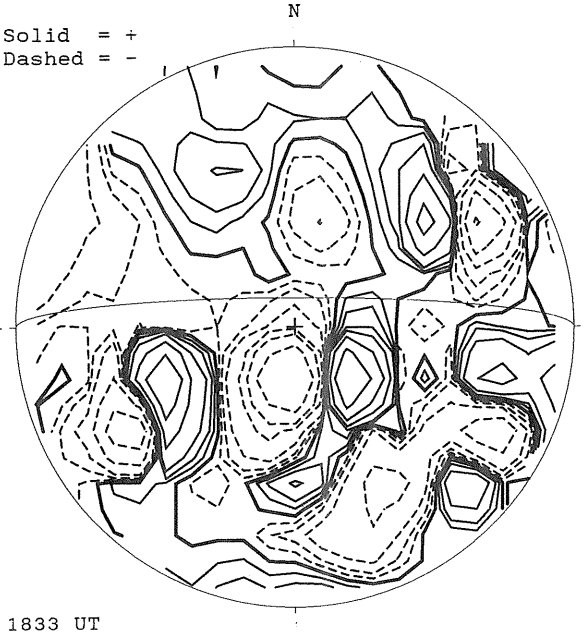
JANUARY 29, 1989 (P=-10.96, B_o =-5.80, L_o = 98.91)

KITT PEAK MAGNETOGRAM



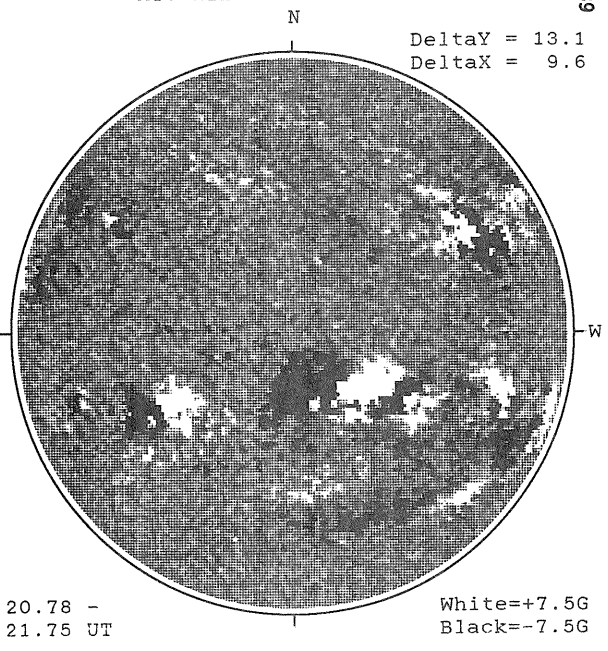
1629 UT

STANFORD MAGNETOGRAM



1833 UT

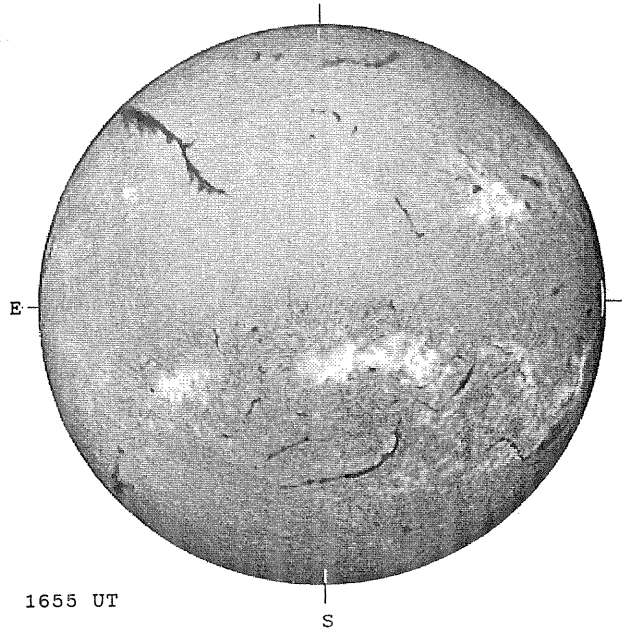
MT. WILSON MAGNETOGRAM



20.78 -
21.75 UT

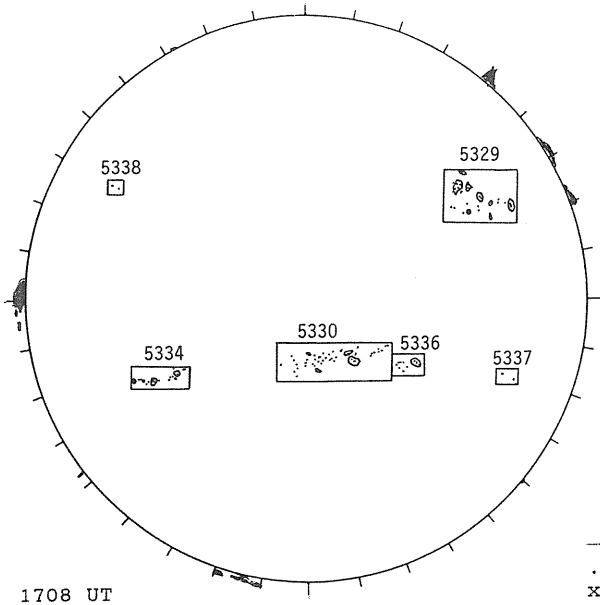
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



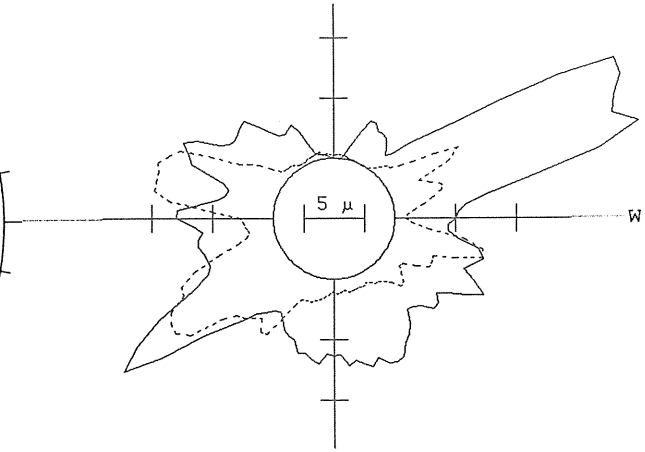
1655 UT

BOULDER SUNSPOT



1708 UT
1655 UT BOUL Prom

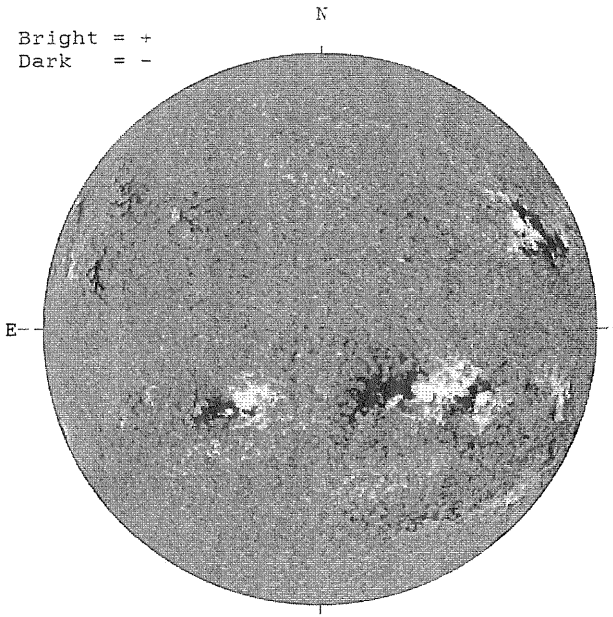
SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1647 UT
.... 6374A, 1711 UT
xxxx 5694A, 1657 UT
NO 5694A ACTIVITY TODAY

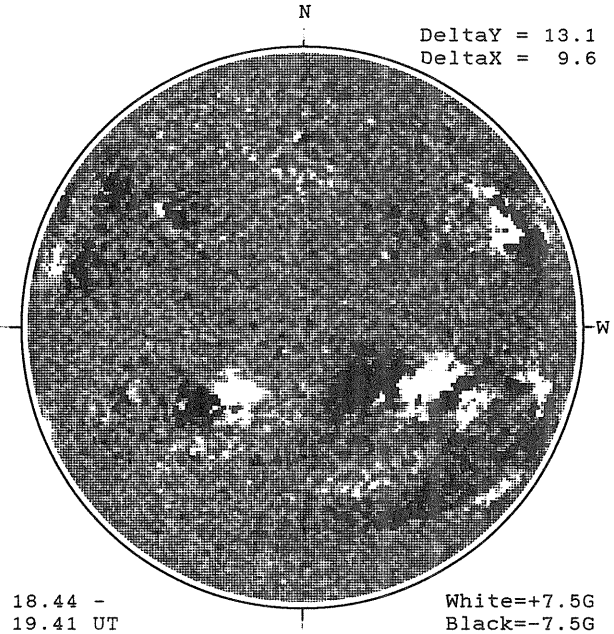
JANUARY 30, 1989 (P=-11.38, B_o =-5.88, L_o = 85.74)

KITT PEAK MAGNETOGRAM

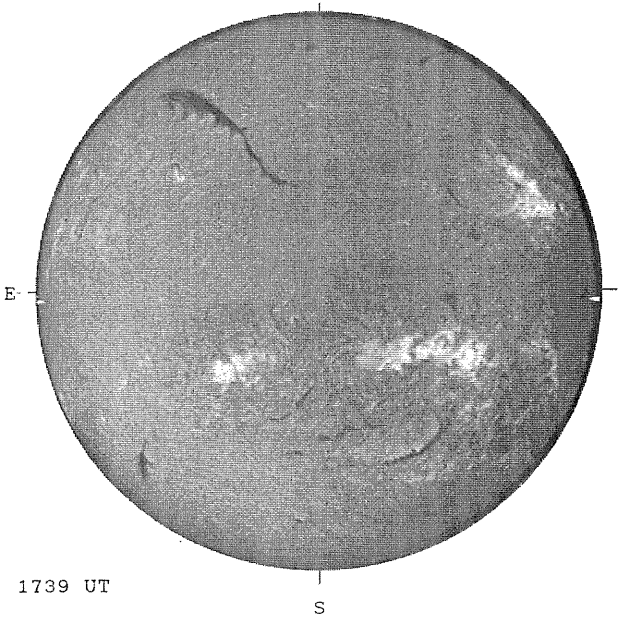


STANFORD MAGNETOGRAM

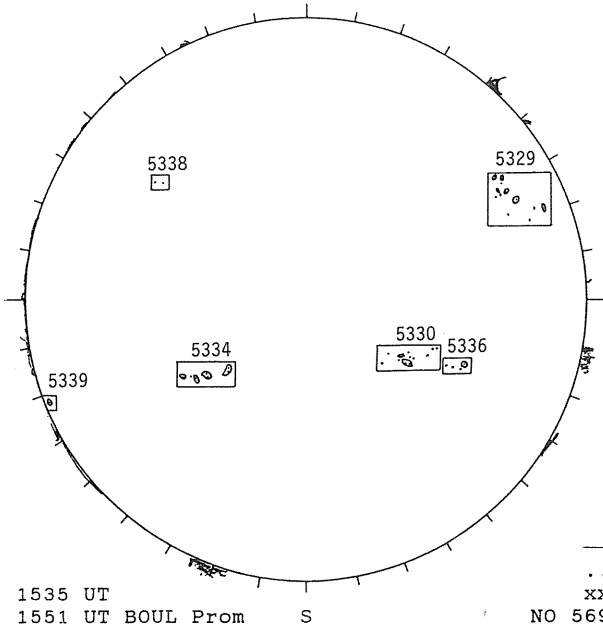
MT. WILSON MAGNETOGRAM



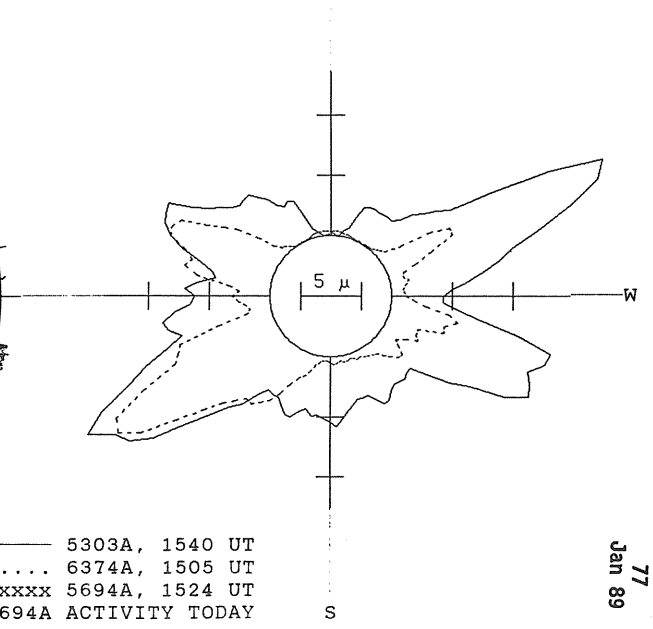
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



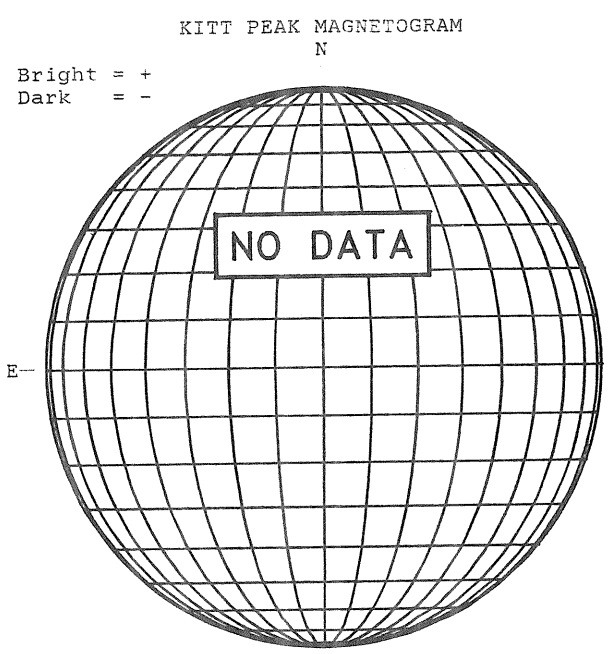
—— 5303A, 1540 UT
.... 6374A, 1505 UT
xxxx 5694A, 1524 UT
NO 5694A ACTIVITY TODAY

77 Jan 89

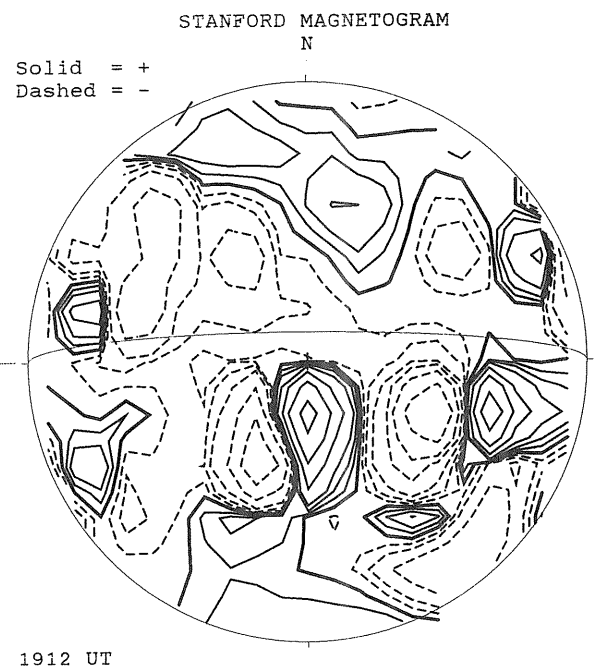
JANUARY 31, 1989 (P=-11.79, B_o =-5.95, L_o = 72.57)

78 Jan 89

KITT PEAK MAGNETOGRAM

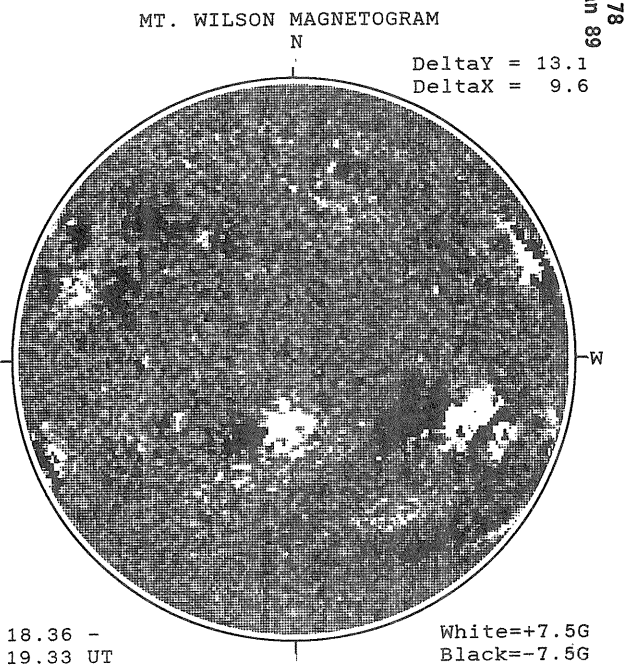


STANFORD MAGNETOGRAM



1912 UT

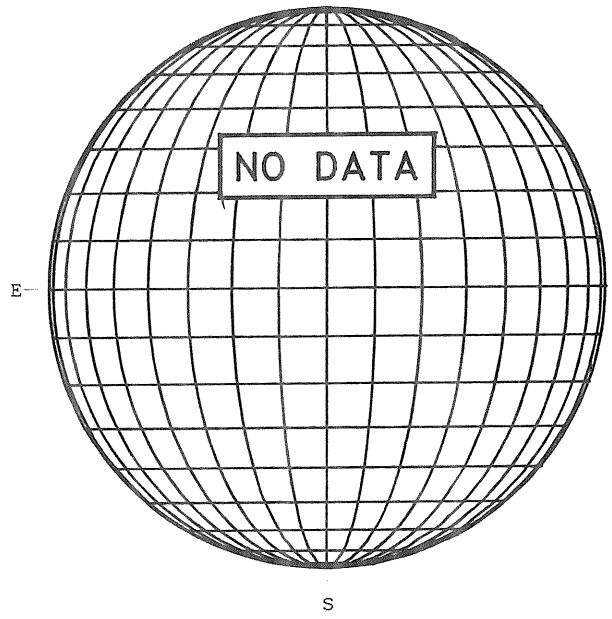
MT. WILSON MAGNETOGRAM



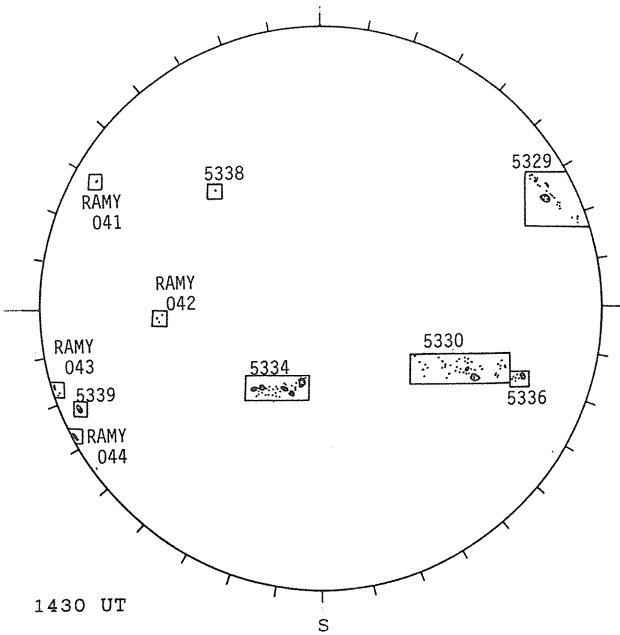
18.36 - 19.33 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

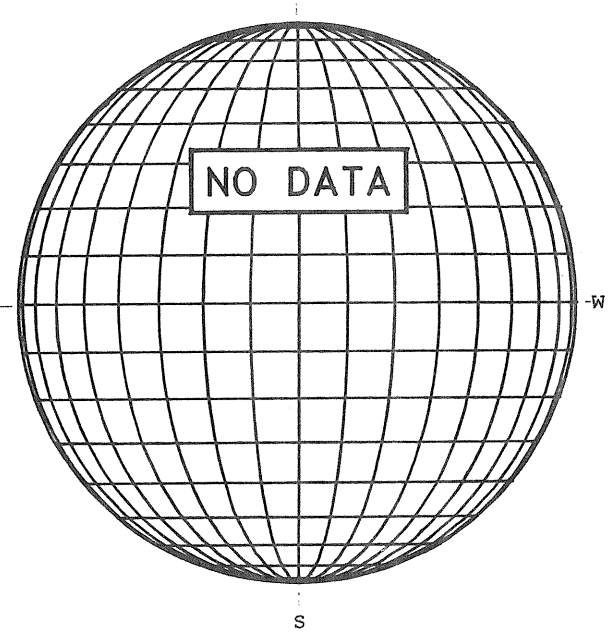


RAMEY SUNSPOT



1430 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



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

JANUARY 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
5301		SVTO	12	29	0910	S17	E50	01	2.2		A	AX		1		3
5301		RAMY	12	29	1615	S18	E48	01	2.3		B	CRO	30	6	4	1
5301		HOLL	12	29	1617	S18	E49	01	2.4		B	BXO	30	3	5	2
5301		BOUL	12	29	1645	S18	E46	01	2.2		B	CSO	40	2	3	1
5301	24968	MWIL	12	29	2100	S18	E44	01	2.2	4	(B)					
5301		LEAR	12	30	0115	S19	E42	01	2.2		B	CRO	10	4	4	3
5301		CULG	12	30	0230	S16	E40	01	2.1		A	AX		1		1
5301		SVTO	12	30	1040	S17	E37	01	2.2		B	BXO	10	5	5	3
5301	24968	MWIL	12	30	1545	S18	E32	01	2.1	4	(AP)					
5301		HOLL	12	30	1610	S17	E32	01	2.1		A	AX		1		3
5301		BOUL	12	30	1647	S17	E32	01	2.1		A	AX	10	1	1	1
5301		RAMY	12	30	1957	S18	E31	01	2.2				10	4	3	1
5301		LEAR	12	31	0145	S18	E28	01	2.2		B	BXO	20	5	6	3
5301		CULG	12	31	0500	S17	E27	01	2.3		B	BXO		2	5	2
5301		RAMY	12	31	1350	S18	E22	01	2.2		B	BXO	10	5	6	3
5301		HOLL	12	31	1609	S17	E18	01	2.0		A	AX	10	1	1	3
5301		BOUL	12	31	1620	S17	E18	01	2.0		A	AX		1		2
5301		PALE	12	31	2040	S23	E15	01	2.0		B	BXO		2	7	2
5301		CULG	01	01	0230	S17	E12	01	2.0		A	AX		1		1
5301		LEAR	01	01	0617	S18	E08	01	1.9		A	AX	10	1	1	3
5301		RAMY	01	01	1400	S14	E05	01	2.0		B	BXO	10	6	6	3
5301	24968	MWIL	01	01	1615	S17	E03	01	1.9	3	(AP)					
5301		HOLL	01	01	1730	S18	E03	01	1.9		B	BXO	10	3	3	3
5301		PALE	01	01	1935	S18	E02	01	2.0		B	BXO	10	3	2	3
5301		LEAR	01	02	0100	S17	E02	01	2.2		B	BXO	20	5	8	4
5301		CULG	01	02	0250	S17	W02	01	2.0		B	BXO		5	3	2
5301		SVTO	01	02	1010	S18	W06	01	2.0		B	HR	30	9	3	3
5301		RAMY	01	02	1515	S16	W10	01	1.9		B	DAO	40	9	4	4
5301		BOUL	01	02	1650	S17	W11	01	1.9		B	BXO	10	2	3	1
5301	24968	MWIL	01	02	1715	S17	W11	01	1.9	4	(B)					
5301		PALE	01	02	2015	S17	W12	01	1.9		B	CSO	30	6	4	4
5301		LEAR	01	03	0150	S15	W18	01	1.7		B	BXO	20	8	5	3
5301		CULG	01	03	0440	S19	W17	01	1.9		B	BXO	10	5	7	3
5301		RAMY	01	03	1430	S18	W23	01	1.8		B	CRI	30	13	6	4
5301	24968	MWIL	01	03	1630	S17	W24	01	1.9	5	(BG)					
5301		BOUL	01	03	1643	S19	W24	01	1.9		B	DAO	70	4	6	1
5301		PALE	01	03	2050	S18	W26	01	1.9		B	EAI	40	14	13	4
5301		LEAR	01	04	0045	S17	W27	01	2.0		A	CRO	30	15	6	3
5301		CULG	01	04	0425	S18	W31	01	1.8		B	CSO	40	5	6	2
5301		SVTO	01	04	0918	S18	W34	01	1.8		B	DAO	90	19	7	3
5301		RAMY	01	04	1315	S17	W35	01	1.9		B	CRI	60	19	7	3
5301		BOUL	01	04	1643	S18	W37	01	1.9		B	CAO	40	2	2	1
5301		LEAR	01	05	0104	S19	W42	01	1.8		B	CSO	40	13	8	2
5301		CULG	01	05	0417	S19	W43	01	1.9		B	CRO	20	11	7	2
5301		SVTO	01	05	0845	S17	W46	01	1.9		B	DAO	70	9	8	2
5301		RAMY	01	05	1514	S18	W48	01	2.0		B	CAI	130	11	10	3
5301		BOUL	01	05	1537	S18	W51	01	1.8		B	CAO	90	4	5	1
5301		HOLL	01	05	1555	S18	W49	01	1.9		B	CAO	100	9	8	2
5301		PALE	01	05	1845	S17	W51	01	1.9		B	CAO	80	11	10	3
5301		LEAR	01	06	0005	S18	W55	01	1.8		B	CSO	90	9	9	3
5301		CULG	01	06	0435	S18	W58	01	1.8		B	CAO	40	7	7	2
5301		SVTO	01	06	0912	S18	W59	01	1.9		B	CAO	80	9	11	3
5301		BOUL	01	06	1534	S19	W64	01	1.8		B	DSO	120	8	10	3
5301		HOLL	01	06	1556	S18	W65	01	1.7		B	DAO	90	7	8	2
5301	24968	MWIL	01	06	1630	S19	W68	01	1.5	4	(B)					
5301		RAMY	01	06	2015	S14	W64	01	2.0		B	DAI	110	15	9	3
5301		LEAR	01	07	0034	S18	W67	01	1.9		B	CAI	80	19	9	4
5301		CULG	01	07	0420	S18	W68	01	2.0		B	CSO	60	5	6	2
5301		SVTO	01	07	0930	S18	W73	01	1.8		B	CAO	110	10	10	1
5301		RAMY	01	07	1410	S17	W75	01	1.9		B	DAI	180	21	10	4
5301		BOUL	01	07	1547	S17	W80	01	1.6		B	DSO	60	3	9	2
5301		HOLL	01	07	1600	S18	W76	01	1.9		B	DAO	170	11	10	3
5301	24968	MWIL	01	07	1630	S18	W79	01	1.7	5	B)					
5301		PALE	01	07	2207	S18	W76	01	2.1		B	CAO	60	2	5	2
5301		LEAR	01	08	0152	S18	W80	01	2.0		B	DAO	60	6	9	3
5301		CULG	01	08	0332	S19	W79	01	2.1		B	DAO	10	4	4	2
5301		SVTO	01	08	0925	S17	W85	01	1.9		B	BXO	20	4	4	2
5301A		LEAR	01	03	0150	S11	W13	01	2.1		A	AX	10	2	2	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5301A		RAMY	01 03 1430	S11 W18	01 2.2		A	AX		1		4
5301A	24976	MWIL	01 03 1630	S12 W19	01 2.2	3	(B)					
5302		RAMY	12 28 1340	N26 E68	01 2.8		A	AX	10	2	2	3
5302		HOLL	12 28 1605	N27 E66	01 2.8		A	AX		1		3
5302		LEAR	12 29 0025	N27 E61	01 2.8		A	AX	10	2	1	3
5302		SVTO	12 29 0910	N27 E57	01 2.8		A	AX	10	1		3
5302		RAMY	12 29 1615	N27 E54	01 2.9		B	CRO	20	3	6	1
5302		HOLL	12 29 1617	N27 E52	01 2.7		A	AX	20	1	1	2
5302		BOUL	12 29 1645	N26 E53	01 2.8		A	AX	10	1	1	1
5302		PALE	12 29 1920	N27 E53	01 2.9				20	3	6	3
5302	24969	MWIL	12 29 2100	N26 E50	01 2.7	3	(AP)					
5302		LEAR	12 30 0115	N27 E49	01 2.9		B	BXO	10	3	5	3
5302		CULG	12 30 0230	N26 E45	01 2.6		A	AX		2	1	1
5302		SVTO	12 30 1040	N27 E45	01 2.9		B	BXO	10	4	5	3
5302	24969	MWIL	12 30 1545	N27 E42	01 2.9	4	(B)					
5302		HOLL	12 30 1610	N27 E40	01 2.8		A	AX	10	2	2	3
5302		RAMY	12 30 1957	N27 E42	01 3.1		B	BXO	10	2	3	1
5302		LEAR	12 31 0145	N27 E38	01 3.0		B	BXO	10	2	3	3
5302		RAMY	12 31 1350	N27 E33	01 3.1		A	AX		1	1	3
5302		HOLL	12 31 1609	N27 E30	01 3.0		A	AX		1		3
5302		BOUL	12 31 1620	N27 E30	01 3.0		A	AX		1		2
5302		LEAR	01 01 0617	N27 E23	01 3.0		A	AX	10	2	1	3
5302A		PALE	01 05 1845	N22 W24	01 3.9		A	AX	10	1	1	3
5302B		RAMY	01 07 1410	N18 W27	01 5.5		B	BXO	10	3	2	4
5302C		RAMY	01 08 1405	S15 W23	01 6.8		A	AX		1		3
5304		SVTO	01 01 0855	N22 E75	01 7.1		A	AX		1		3
5304		RAMY	01 01 1400	N22 E74	01 7.3		A	AX		1	1	3
5304	24988	MWIL	01 01 1615	N22 E75	01 7.4	3	(AP)					
5304		HOLL	01 01 1730	N23 E74	01 7.4		A	AX		1		3
5304		PALE	01 01 1935	N25 E72	01 7.4		A	AX	10	1	1	3
5304		LEAR	01 02 0100	N23 E69	01 7.3		A	AX	30	1	1	4
5304		CULG	01 02 0250	N22 E69	01 7.4		A	AX		1		2
5304		SVTO	01 02 1010	N23 E70	01 7.8		B	BXO	10	4	15	3
5304		RAMY	01 02 1515	N22 E62	01 7.4		A	AX	10	1	1	4
5304	24988	MWIL	01 02 1715	N22 E62	01 7.5	4	(AP)					
5304		PALE	01 02 2015	N20 E60	01 7.4		A	AX		1		4
5304		LEAR	01 03 0150	N22 E56	01 7.4		A	AX	10	1	1	3
5304		RAMY	01 03 1430	N21 E50	01 7.4		A	AX	10	2	1	4
5304	24988	MWIL	01 03 1630	N22 E48	01 7.4	3	(AP)					
5304		PALE	01 03 2050	N19 E46	01 7.4		A	AX		2		4
5304		LEAR	01 06 0005	N23 E18	01 7.4		A	AX	10	1	1	3
5304		RAMY	01 07 1410	N25 W07	01 7.0		A	AX		1	1	4
5305		LEAR	01 02 0100	N10 E78	01 7.9		A	HA	60	1	2	4
5305		CULG	01 02 0250	N11 E78	01 8.0		B	DSO	30	3	5	2
5305		SVTO	01 02 1010	N09 E76	01 8.1		B	CKO	150	6	6	3
5305		RAMY	01 02 1515	N10 E72	01 8.0		B	ESO	120	8	11	4
5305		BOUL	01 02 1650	N08 E75	01 8.3		B	CSO	50	2	8	1
5305	24973	MWIL	01 02 1715	N11 E75	01 8.4	5	(B)					
5305		PALE	01 02 2015	N09 E72	01 8.2		B	CAO	90	3	10	4
5305		LEAR	01 03 0150	N11 E67	01 8.1		B	DSO	100	7	9	3
5305		CULG	01 03 0440	N10 E66	01 8.1		B	DSO	70	3	7	3
5305		RAMY	01 03 1430	N10 E61	01 8.2		B	DSO	270	11	10	4
5305	24973	MWIL	01 03 1630	N12 E60	01 8.2	5	(B)					
5305		BOUL	01 03 1643	N11 E60	01 8.2		B	EAO	400	3	11	1
5305		PALE	01 03 2050	N10 E58	01 8.2		B	DAI	240	5	8	4
5305		LEAR	01 04 0045	N10 E54	01 8.1		B	DSO	270	16	10	3
5305		CULG	01 04 0425	N11 E53	01 8.2		B	DS	90	7	9	2
5305		SVTO	01 04 0918	N11 E51	01 8.2		B	EAO	330	13	11	3
5305		RAMY	01 04 1315	N11 E50	01 8.3		B	DSI	320	9	10	3
5305		BOUL	01 04 1643	N11 E47	01 8.2		B	DAO	180	3	9	1
5305		LEAR	01 05 0104	N12 E41	01 8.1		B	EAO	280	11	11	2
5305		CULG	01 05 0417	N13 E39	01 8.1		B	ESO	270	15	11	2
5305		SVTO	01 05 0845	N10 E37	01 8.1		B	EKO	240	16	12	2

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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
5305		RAMY	01 05 1514	N11 E34	01 8.2		B	ESI	310	17	14	3
5305		BOUL	01 05 1537	N11 E34	01 8.2		B	ESO	190	6	11	1
5305		HOLL	01 05 1555	N10 E34	01 8.2		B	EAO	170	11	12	2
5305		PALE	01 05 1845	N10 E32	01 8.2		B	EAO	260	18	11	3
5305		LEAR	01 06 0005	N10 E29	01 8.2		B	EAO	230	13	11	3
5305		CULG	01 06 0435	N12 E26	01 8.1		B	EAO	180	4	12	2
5305		SVTO	01 06 0912	N10 E25	01 8.3		B	EAO	350	24	13	3
5305		BOUL	01 06 1534	N11 E20	01 8.1		B	EAO	280	11	14	3
5305		HOLL	01 06 1556	N10 E20	01 8.2		B	EKO	200	9	12	2
5305	24973	MWIL	01 06 1630	N11 E19	01 8.1	5	(B)					
5305		RAMY	01 06 2015	N11 E18	01 8.2		B	EKO	260	26	14	3
5305		LEAR	01 07 0034	N10 E16	01 8.2		B	EAO	230	25	14	4
5305		CULG	01 07 0420	N11 E12	01 8.1		B	EAO	180	10	13	2
5305		SVTO	01 07 0930	N10 E10	01 8.1		B	EAO	160	14	15	1
5305		RAMY	01 07 1410	N11 E07	01 8.1		B	ESO	290	29	15	4
5305		BOUL	01 07 1547	N10 E07	01 8.2		B	ESO	120	13	14	2
5305		HOLL	01 07 1600	N10 E06	01 8.1		B	EAO	160	19	15	3
5305	24973	MWIL	01 07 1630	N11 E06	01 8.1	5	B					
5305		PALE	01 07 2207	N08 E04	01 8.2		B	EAI	210	16	14	2
5305		LEAR	01 08 0152	N11 E01	01 8.1		B	FAO	170	23	16	3
5305		CULG	01 08 0332	N11 W01	01 8.1		B	FSO	150	26	18	2
5305		SVTO	01 08 0925	N10 W03	01 8.2		B	FAO	180	22	16	2
5305		RAMY	01 08 1405	N11 W06	01 8.1		B	FAO	260	37	16	3
5305	24973	MWIL	01 08 1630	N11 W07	01 8.2	5	(B)					
5305		BOUL	01 08 1727	N11 W07	01 8.2		B	ESO	60	9	14	2
5305		HOLL	01 08 1759	N10 W07	01 8.2		B	FKO	200	22	16	4
5305		PALE	01 08 1950	N10 W10	01 8.1		B	FAI	280	26	16	3
5305		LEAR	01 09 0013	N11 W12	01 8.1		B	FKO	130	26	16	3
5305		CULG	01 09 0308	N11 W15	01 8.0		B	FSO	80	23	16	2
5305		SVTO	01 09 0910	N10 W17	01 8.1		B	FAO	170	25	16	3
5305		RAMY	01 09 1300	N11 W19	01 8.1		B	FSO	190	20	16	3
5305	24973	MWIL	01 09 1630	N11 W20	01 8.2	5	(BG)					
5305		HOLL	01 09 1810	N11 W21	01 8.2		B	FKO	220	18	16	3
5305		PALE	01 09 2030	N10 W23	01 8.1		B	FAO	200	20	16	3
5305		LEAR	01 10 0043	N11 W25	01 8.1		B	FAO	130	23	17	4
5305		CULG	01 10 0315	N11 W27	01 8.1		B	FAO	50	15	17	2
5305		SVTO	01 10 1045	N10 W31	01 8.1		B	FAO	120	23	19	2
5305		RAMY	01 10 1315	N11 W31	01 8.2		B	FSO	120	20	17	2
5305		HOLL	01 10 1620	N11 W33	01 8.2		B	EAO	60	18	15	4
5305	24973	MWIL	01 10 1630	N11 W34	01 8.1	5	(B)					
5305		BOUL	01 10 1717	N11 W34	01 8.2		B	ESO	70	5	14	2
5305		PALE	01 10 1935	N10 W35	01 8.2		B	EAO	100	13	15	3
5305		LEAR	01 11 0100	N10 W39	01 8.1		B	FAO	90	10	17	3
5305		CULG	01 11 0400	N10 W41	01 8.1		B	EAO	40	5	15	2
5305		RAMY	01 11 1421	N11 W48	01 8.0		B	FSO	80	6	17	2
5305	24973	MWIL	01 11 1715	N11 W48	01 8.1	5	(B)					
5305		HOLL	01 11 1805	N11 W51	01 7.9		B	CAO	70	9	20	4
5305		LEAR	01 12 0014	N12 W51	01 8.2		B	FAO	70	9	17	3
5305		CULG	01 12 0428	N10 W53	01 8.2		B	FSO	30	6	18	2
5305		RAMY	01 12 1356	N12 W59	01 8.1		B	FAO	80	7	18	3
5305		BOUL	01 12 1650	N11 W60	01 8.2		B	FSO	40	7	17	2
5305	24973	MWIL	01 12 1730	N12 W55	01 8.6	3	(B)					
5305		HOLL	01 12 1813	N09 W63	01 8.0		B	CAO	110	10	15	2
5305		LEAR	01 13 0010	N12 W65	01 8.1		B	ESO	70	5	16	4
5305		CULG	01 13 0310	N08 W67	01 8.1		B	FSO	20	5	17	2
5305		SVTO	01 13 1120	N11 W64	01 8.6		B	CRO	20	2	1	3
5305	24973	MWIL	01 13 1545	N11 W66	01 8.7	4	(AF)					
5305		BOUL	01 13 1632	N13 W67	01 8.6		A	AX	20	1	1	3
5306		SVTO	01 02 1010	N17 E76	01 8.2		B	CAO	10	1	1	3
5306		RAMY	01 02 1515	N17 E74	01 8.2		A	HR	10	1	2	4
5306	24974	MWIL	01 02 1715	N18 E77	01 8.6	4	(B					
5306		PALE	01 02 2015	N17 E72	01 8.3		A	HR	30	1	1	4
5306		LEAR	01 03 0150	N19 E68	01 8.3		A	AX	10	2	2	3
5306		CULG	01 03 0440	N18 E68	01 8.4		A	AX	10	1	1	3
5306		RAMY	01 03 1430	N18 E62	01 8.3		A	HR	40	1	1	4
5306	24974	MWIL	01 03 1630	N18 E61	01 8.3	4	(AP)					
5306		BOUL	01 03 1643	N19 E60	01 8.3		A	HS	40	1	1	1
5306		PALE	01 03 2050	N17 E59	01 8.3		A	HR	40	1	1	4

SUNSPOT GROUPS
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5306		LEAR	01	04	0045	N18	E55	01	8.2		A	HR	40	1	1	3
5306		CULG	01	04	0425	N18	E54	01	8.3		A	AX	10	1	1	2
5306		SVTO	01	04	0918	N19	E52	01	8.3		A	HR	30	1	1	3
5306		RAMY	01	04	1315	N19	E49	01	8.3		A	HR	30	1	1	3
5306		LEAR	01	05	0104	N18	E42	01	8.2		A	HR	30	3	2	2
5306		CULG	01	05	0417	N20	E39	01	8.2		A	HR	10	1	1	2
5306		SVTO	01	05	0845	N18	E38	01	8.2		A	HS	50	1	2	2
5306		RAMY	01	05	1514	N18	E35	01	8.3		A	HR	20	1	2	3
5306		BOUL	01	05	1537	N18	E34	01	8.2		A	AX	10	1		1
5306		HOLL	01	05	1555	N18	E35	01	8.3		A	AX	10	1	1	2
5306		PALE	01	05	1845	N18	E33	01	8.3		A	HS	30	2	2	3
5306		LEAR	01	06	0005	N18	E30	01	8.3		A	AX	10	1	1	3
5306		CULG	01	06	0435	N20	E27	01	8.2		A	HR	10	1	1	2
5306		SVTO	01	06	0912	N18	E25	01	8.3		A	AX	10	2	1	3
5306		BOUL	01	06	1534	N18	E21	01	8.2		A	HR	20	1	1	3
5306		HOLL	01	06	1556	N18	E21	01	8.3		A	AX	10	1	1	2
5306	24974	MWIL	01	06	1630	N18	E20	01	8.2	3	(AP)					
5306		RAMY	01	06	2015	N20	E18	01	8.2		A	HR	10	1	1	3
5306		LEAR	01	07	0034	N19	E17	01	8.3		B	CRO	10	3	3	4
5306		CULG	01	07	0420	N19	E12	01	8.1		A	AX	10	1	1	2
5306		SVTO	01	07	0930	N19	E11	01	8.2		A	HR	10	1	1	1
5306		RAMY	01	07	1410	N18	E08	01	8.2		A	HR	10	2	1	4
5306		BOUL	01	07	1547	N18	E08	01	8.3		A	AX		1		2
5306		HOLL	01	07	1600	N19	E07	01	8.2		A	AX	10	1		3
5306	24974	MWIL	01	07	1630	N18	E07	01	8.2	4	AP					
5306		PALE	01	07	2207	N18	E05	01	8.3		A	AX	10	1	1	2
5306		LEAR	01	08	0152	N18	E02	01	8.2		A	HS	10	1	1	3
5306		CULG	01	08	0332	N19	W01	01	8.1		A	AX	10	1	1	2
5306		SVTO	01	08	0925	N18	W02	01	8.2		A	AX	10	1		2
5306		RAMY	01	08	1405	N20	W03	01	8.3		A	HR	10	3	5	3
5306	24974	MWIL	01	08	1630	N18	W06	01	8.2	3	(AP)					
5306		HOLL	01	08	1759	N19	W08	01	8.1		A	AX		2	1	4
5306		PALE	01	08	1950	N19	W05	01	8.4		B	BXO	10	5	6	3
5306		LEAR	01	09	0013	N20	W08	01	8.4		B	BXO	10	4	6	3
5306		CULG	01	09	0308	N19	W13	01	8.1		B	BXO	10	2	2	2
5306		SVTO	01	09	0910	N20	W13	01	8.4		A	AX		1		3
5306		RAMY	01	09	1300	N21	W16	01	8.3		A	AX		2	1	3
5306		LEAR	01	10	0043	N19	W21	01	8.4		B	BXO	10	4	7	4
5307		RAMY	01	02	1515	N24	E78	01	8.7		A	HS	150	3	3	4
5307	24975	MWIL	01	02	1715	N26	E80	01	8.9	4	AP					
5307		PALE	01	02	2015	N24	E76	01	8.7		A	HA	180	2	3	4
5307		LEAR	01	03	0150	N25	E73	01	8.7		B	CSO	180	4	6	3
5307		CULG	01	03	0440	N26	E71	01	8.7		A	HA	90	2	1	3
5307	24975	MWIL	01	03	1630	N27	E67	01	8.9	5	(B)					
5307		BOUL	01	03	1643	N28	E69	01	9.1		B	ESO	250	2	13	1
5307		PALE	01	03	2050	N27	E65	01	8.9		B	DKO	270	7	10	4
5307		LEAR	01	04	0045	N27	E63	01	8.9		BG	DAO	440	12	10	3
5307		CULG	01	04	0425	N27	E63	01	9.1		B	DAO	160	3	9	2
5307		SVTO	01	04	0918	N28	E63	01	9.3		B	EKO	530	19	13	3
5307		RAMY	01	04	1315	N28	E59	01	9.2		B	DKO	480	9	10	3
5307		BOUL	01	04	1643	N28	E59	01	9.3		B	ESO	250	3	12	1
5307		LEAR	01	05	0104	N29	E51	01	9.0		B	EAO	410	9	12	2
5307		CULG	01	05	0417	N30	E50	01	9.1		B	EKO	450	15	12	2
5307		SVTO	01	05	0845	N29	E51	01	9.4		B	EKO	530	14	11	2
5307		RAMY	01	05	1514	N28	E45	01	9.1		B	EKO	450	15	13	3
5307		BOUL	01	05	1537	N28	E45	01	9.2		B	EKO	270	8	11	1
5307		HOLL	01	05	1555	N27	E45	01	9.2		B	EKO	280	9	13	2
5307		PALE	01	05	1845	N28	E44	01	9.2		B	EKO	350	19	12	3
5307		LEAR	01	06	0005	N27	E38	01	9.0		BG	DAO	390	11	10	3
5307		CULG	01	06	0435	N29	E37	01	9.1		B	EAO	150	5	11	2
5307		SVTO	01	06	0912	N28	E35	01	9.1		B	EKO	420	9	13	3
5307		BOUL	01	06	1534	N27	E33	01	9.2		B	EAO	470	13	13	3
5307		HOLL	01	06	1556	N27	E31	01	9.1		B	EKO	320	10	13	2
5307	24975	MWIL	01	06	1630	N27	E30	01	9.0	5	(B)					
5307		RAMY	01	06	2015	N24	E32	01	9.3		B	EKO	410	34	13	3
5307		LEAR	01	07	0034	N27	E26	01	9.0		B	EAO	330	22	12	4
5307		CULG	01	07	0420	N28	E23	01	9.0		B	EKO	230	11	11	2
5307		SVTO	01	07	0930	N27	E23	01	9.2		B	EKO	380	13	13	1

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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
5307		RAMY	01	07	1410	N27	E21	01	9.2		B	EKI	460	38	13	4
5307		BOUL	01	07	1547	N26	E19	01	9.1		B	DKI	290	10	10	2
5307		HOLL	01	07	1600	N28	E20	01	9.2		B	EKO	320	19	11	3
5307	24975	MWIL	01	07	1630	N27	E18	01	9.1	5	B					
5307		PALE	01	07	2207	N27	E16	01	9.2		B	EKI	420	21	13	2
5307		LEAR	01	08	0152	N28	E13	01	9.1		B	EAO	300	14	12	3
5307		CULG	01	08	0332	N29	E10	01	8.9		B	EKO	290	16	12	2
5307		SVTO	01	08	0925	N27	E10	01	9.2		B	EKO	350	20	12	2
5307		RAMY	01	08	1405	N27	E07	01	9.1		B	EKO	340	30	12	3
5307	24975	MWIL	01	08	1630	N27	E06	01	9.1	5	(B)					
5307		BOUL	01	08	1727	N27	E05	01	9.1		B	ESO	190	7	11	2
5307		HOLL	01	08	1759	N28	E05	01	9.1		B	EKO	320	28	12	4
5307		PALE	01	08	1950	N27	E04	01	9.1		B	EKI	400	24	12	3
5307		LEAR	01	09	0013	N28	E01	01	9.1		B	EAI	290	27	12	3
5307		CULG	01	09	0308	N28	W02	01	9.0		B	EKO	290	18	12	2
5307		SVTO	01	09	0910	N27	W03	01	9.1		B	EAI	300	26	12	3
5307		RAMY	01	09	1300	N28	W05	01	9.1		B	ESI	320	21	13	3
5307	24975	MWIL	01	09	1630	N27	W06	01	9.2	5	(B)					
5307		HOLL	01	09	1810	N29	W08	01	9.1		B	ESO	220	17	12	3
5307		PALE	01	09	2030	N27	W08	01	9.2		B	ESI	240	21	12	3
5307		LEAR	01	10	0043	N28	W11	01	9.2		B	EAO	250	14	12	4
5307		CULG	01	10	0315	N29	W14	01	9.0		B	EAO	170	14	12	2
5307		SVTO	01	10	1045	N27	W15	01	9.3		B	EAO	200	15	12	2
5307		RAMY	01	10	1315	N29	W18	01	9.1		B	ESO	150	15	13	2
5307		HOLL	01	10	1620	N29	W19	01	9.2		B	EAO	170	16	12	4
5307	24975	MWIL	01	10	1630	N27	W18	01	9.3	5	(B)					
5307		BOUL	01	10	1717	N28	W19	01	9.2		B	EAO	160	11	12	2
5307		PALE	01	10	1935	N28	W18	01	9.4		B	EAO	140	15	12	3
5307		LEAR	01	11	0100	N29	W23	01	9.2		B	EAO	140	13	13	3
5307		CULG	01	11	0400	N28	W28	01	9.0		B	EAO	90	8	12	2
5307		RAMY	01	11	1421	N27	W29	01	9.3		B	EAO	130	13	15	2
5307	24975	MWIL	01	11	1715	N27	W32	01	9.2	5	(B)					
5307		HOLL	01	11	1805	N29	W37	01	8.8		B	CSO	90	12	13	4
5307		LEAR	01	12	0014	N27	W35	01	9.3		B	EAO	60	1	13	3
5307		CULG	01	12	0428	N27	W40	01	9.1		B	EAO	50	7	12	2
5307		RAMY	01	12	1356	N28	W43	01	9.2		B	EAO	70	9	14	3
5307		BOUL	01	12	1650	N28	W44	01	9.3		B	BXO		7	9	2
5307	24975	MWIL	01	12	1730	N28	W47	01	9.0	4	(B)					
5307		HOLL	01	12	1813	N26	W48	01	9.0		B	CSO	70	7	10	2
5307		LEAR	01	13	0010	N27	W50	01	9.1		B	EAO	70	11	14	4
5307		CULG	01	13	0310	N26	W52	01	9.1		B	EAO	60	5	11	2
5307		SVTO	01	13	1120	N27	W55	01	9.2		B	CSO	40	6	9	3
5307	24975	MWIL	01	13	1545	N28	W57	01	9.2	3	(B)					
5307		BOUL	01	13	1632	N28	W56	01	9.3		B	BXO	50	6	8	3
5307		HOLL	01	13	2300	N30	W59	01	9.3		B	BXO	20	5	8	2
5307		LEAR	01	14	0020	N29	W60	01	9.3		B	BXO	10	2	4	3
5307		CULG	01	14	0330	N27	W60	01	9.5		B	BXO		3	2	2
5307		SVTO	01	14	1008	N29	W68	01	9.1		B	CRO	40	7	5	3
5307		HOLL	01	14	1515	N29	W69	01	9.2		B	BXO	20	4	6	3
5307		RAMY	01	14	1535	N30	W69	01	9.2		B	BXO	30	5	5	4
5307	24975	MWIL	01	14	1545	N29	W68	01	9.3	3	B					
5307		PALE	01	14	1940	N29	W70	01	9.3		B	BXO	30	2	6	3
5307		LEAR	01	15	0127	N29	W72	01	9.4		B	BXO	10	2	3	3
5310		SVTO	01	04	0918	S24	E70	01	9.8		A	HR	20	3	3	3
5310		RAMY	01	04	1315	S25	E66	01	9.7		B	BXO	10	2	2	3
5310		LEAR	01	05	0104	S24	E61	01	9.7		B	BXO	10	4	4	2
5310		CULG	01	05	0417	S24	E58	01	9.6		B	CRO	20	3	4	2
5310		SVTO	01	05	0845	S27	E57	01	9.8		B	CAO	60	5	8	2
5310		RAMY	01	05	1514	S26	E54	01	9.8		B	CRO	30	5	7	3
5310		BOUL	01	05	1537	S25	E52	01	9.7		A	AX	10	2	1	1
5310		HOLL	01	05	1555	S27	E54	01	9.9		B	CRO	40	4	10	2
5310		PALE	01	05	1845	S27	E51	01	9.7		B	CRO	20	5	6	3
5310		LEAR	01	06	0005	S26	E48	01	9.7		B	CAO	20	3	7	3
5310		CULG	01	06	0435	S27	E46	01	9.8		B	BXO	10	3	7	2
5310		SVTO	01	06	0912	S24	E42	01	9.6		B	CRO	50	5	4	3
5310		BOUL	01	06	1534	S24	E37	01	9.5		B	BXO	20	2	3	3
5310		HOLL	01	06	1556	S26	E40	01	9.8		B	BXO	40	4	8	2
5310	24978	MWIL	01	06	1630	S24	E38	01	9.6	4	(AP)					

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5310		RAMY	01 06 2015	S26 E35	01 9.6		B	BXO	20	5	8	3
5310		LEAR	01 07 0034	S25 E36	01 9.8		B	CRO	30	6	9	4
5310		CULG	01 07 0420	S26 E34	01 9.8		B	BXO	10	3	7	2
5310		SVTO	01 07 0930	S24 E32	01 9.9		B	CRO	20	5	6	1
5310		RAMY	01 07 1410	S25 E28	01 9.7		B	BXI	30	13	10	4
5310		BOUL	01 07 1547	S26 E28	01 9.8		B	BXO		6	6	2
5310		HOLL	01 07 1600	S25 E28	01 9.8		B	BXO	10	7	6	3
5310	24978	MWIL	01 07 1630	S26 E28	01 9.9	3	B					
5310		PALE	01 07 2207	S26 E25	01 9.9		B	BXO	10	11	8	2
5310		LEAR	01 08 0152	S25 E24	01 9.9		B	BXO	20	9	6	3
5310		CULG	01 08 0332	S23 E22	01 9.8		B	BXO	10	9	7	2
5310		SVTO	01 08 0925	S25 E20	01 9.9		B	BXO	10	7	5	2
5310		RAMY	01 08 1405	S26 E17	01 9.9		B	BXI	10	11	8	3
5310	24978	MWIL	01 08 1630	S26 E17	01 10.0	3	(B)					
5310		HOLL	01 08 1759	S26 E16	01 10.0		B	BXO	10	6	5	4
5310		PALE	01 08 1950	S27 E12	01 9.8		B	BXO	10	9	9	3
5310		LEAR	01 09 0013	S22 E16	01 10.2		B	BXO	10	5	5	3
5310		CULG	01 09 0308	S24 E10	01 9.9		B	BXO	10	7	4	2
5310		SVTO	01 09 0910	S26 E08	01 10.0		B	BXO	10	7	6	3
5310		RAMY	01 09 1300	S26 E05	01 9.9		B	BXO	10	5	5	3
5310	24978	MWIL	01 09 1630	S26 E02	01 9.8	3	(B)					
5310		HOLL	01 09 1810	S23 E02	01 9.9		B	BXO	20	3	4	3
5310		PALE	01 09 2030	S25 E00	01 9.8		B	BXO		3	5	3
5310		RAMY	01 10 1315	S25 W09	01 9.8		B	BXO	10	5	4	2
5310		HOLL	01 10 1620	S25 W10	01 9.9		B	BXO	10	6	4	4
5310	24978	MWIL	01 10 1630	S25 W09	01 10.0	4	(B)					
5310		BOUL	01 10 1717	S24 W10	01 9.9		A	AX		2	2	2
5310		PALE	01 10 1935	S25 W12	01 9.9		B	BXO	10	8	4	3
5310		LEAR	01 11 0100	S25 W15	01 9.9		B	CRO	20	4	4	3
5310		CULG	01 11 0400	S25 W16	01 9.9		B	CRO	10	4	4	2
5310		RAMY	01 11 1421	S25 W23	01 9.8		B	CRO	20	8	5	2
5310	24978	MWIL	01 11 1715	S25 W23	01 9.9	4	(B)					
5310		HOLL	01 11 1805	S26 W26	01 9.7		B	CAO	60	6	5	4
5310		LEAR	01 12 0014	S24 W27	01 9.9		B	DRO	20	6	6	3
5310		CULG	01 12 0428	S24 W28	01 10.0		B	CRO	10	5	5	2
5310		RAMY	01 12 1356	S23 W35	01 9.9		B	BXO	20	6	7	3
5310		BOUL	01 12 1650	S25 W36	01 9.9		B	BXO		3	6	2
5310		HOLL	01 12 1813	S25 W39	01 9.7		B	BXO	30	8	7	2
5310		LEAR	01 13 0010	S23 W42	01 9.8		B	BXO	20	7	7	4
5310		CULG	01 13 0310	S26 W42	01 9.9		B	BXO		2	4	2
5310		SVTO	01 13 1120	S26 W48	01 9.7		B	BXO		2	3	3
5310	24978	MWIL	01 13 1545	S26 W50	01 9.8	3	(B)					
5310		BOUL	01 13 1632	S26 W49	01 9.9		B	BXO	10	2	3	3
5310		LEAR	01 14 0020	S26 W53	01 9.9		A	AX	10	1	1	3
5309		RAMY	01 03 1430	S18 E80	01 9.7		A	HS	180	1	2	4
5309	24977	MWIL	01 03 1630	S17 E81	01 9.8	5	(AP)					
5309		PALE	01 03 2050	S19 E79	01 9.9		A	HA	120	1	2	4
5309		LEAR	01 04 0045	S17 E76	01 9.8		A	HS	120	1	1	3
5309		CULG	01 04 0425	S18 E73	01 9.7		A	HS	60	1	2	2
5309		SVTO	01 04 0918	S17 E79	01 10.4		B	EKO	290	5	11	3
5309		RAMY	01 04 1315	S18 E74	01 10.2		B	EHO	380	5	11	3
5309		BOUL	01 04 1643	S17 E71	01 10.1		A	HS	110	1	2	1
5309		LEAR	01 05 0104	S17 E66	01 10.0		B	CSO	230	9	9	2
5309		CULG	01 05 0417	S17 E64	01 10.0		B	CSO	190	5	11	2
5309		SVTO	01 05 0845	S18 E64	01 10.2		B	EKO	400	11	13	2
5309		RAMY	01 05 1514	S18 E59	01 10.1		B	EHO	380	10	12	3
5309		BOUL	01 05 1537	S18 E60	01 10.2		B	CKO	300	3	10	1
5309		HOLL	01 05 1555	S18 E60	01 10.2		B	DSO	130	5	10	2
5309		PALE	01 05 1845	S18 E58	01 10.2		B	EHO	310	9	11	3
5309		LEAR	01 06 0005	S18 E54	01 10.1		B	CSO	240	8	10	3
5309		CULG	01 06 0435	S17 E51	01 10.1		B	DSO	140	3	8	2
5309		SVTO	01 06 0912	S18 E52	01 10.3		B	CSO	350	6	9	3
5309		BOUL	01 06 1534	S18 E45	01 10.1		B	DAO	270	5	10	3
5309		HOLL	01 06 1556	S18 E46	01 10.2		B	CAO	210	8	10	2
5309	24977	MWIL	01 06 1630	S18 E44	01 10.0	5	(BP)					
5309		RAMY	01 06 2015	S13 E42	01 10.0		B	CHO	340	7	10	3
5309		LEAR	01 07 0034	S18 E42	01 10.2		B	DSO	250	14	10	4
5309		CULG	01 07 0420	S17 E38	01 10.1		B	CSO	120	4	8	2

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5309		SVTO	01	07	0930	S18	E38	01	10.3		B	CAO	280	4	10	1
5309		RAMY	01	07	1410	S17	E34	01	10.2		B	CHO	300	6	11	4
5309		BOUL	01	07	1547	S18	E33	01	10.2		B	CAO	160	3	10	2
5309		HOLL	01	07	1600	S18	E34	01	10.2		B	CAO	270	3	10	3
5309	24977	MWIL	01	07	1630	S18	E30	01	10.0	5	BP					
5309		PALE	01	07	2207	S19	E30	01	10.2		B	CKI	220	4	9	2
5309		LEAR	01	08	0152	S18	E28	01	10.2		B	CAO	220	10	9	3
5309		CULG	01	08	0332	S17	E26	01	10.1		B	CHO	220	9	11	2
5309		SVTO	01	08	0925	S19	E21	01	10.0		A	HA	250	4	5	2
5309		RAMY	01	08	1405	S19	E20	01	10.1		B	CKO	310	15	10	3
5309	24977	MWIL	01	08	1630	S18	E16	01	9.9	5	(BP)					
5309		BOUL	01	08	1727	S17	E16	01	9.9		A	HK	250	3	3	2
5309		HOLL	01	08	1759	S19	E17	01	10.0		B	CAO	250	7	5	4
5309		PALE	01	08	1950	S19	E15	01	10.0		B	CKI	380	9	6	3
5309		LEAR	01	09	0013	S17	E16	01	10.2		B	CHO	280	9	9	3
5309		CULG	01	09	0308	S18	E11	01	10.0		B	CHO	200	9	6	2
5309		SVTO	01	09	0910	S18	E07	01	9.9		B	CAO	220	4	6	3
5309		RAMY	01	09	1300	S17	E09	01	10.2		B	CKO	300	10	8	3
5309	24977	MWIL	01	09	1630	S18	E03	01	9.9	5	(BP)					
5309		HOLL	01	09	1810	S18	E03	01	10.0		B	CAO	210	6	9	3
5309		PALE	01	09	2030	S17	W04	01	9.5		B	CHO	230	5	9	3
5309		LEAR	01	10	0043	S18	W02	01	9.9		B	CHO	230	10	9	4
5309		CULG	01	10	0315	S17	W02	01	10.0		A	HA	220	22	3	2
5309		SVTO	01	10	1045	S19	W03	01	10.2		B	CAO	240	6	9	2
5309		RAMY	01	10	1315	S17	W06	01	10.1		B	CHO	210	8	8	2
5309		HOLL	01	10	1620	S18	W05	01	10.3		B	CSO	240	8	9	4
5309	24977	MWIL	01	10	1630	S18	W08	01	10.1	6	(BP)					
5309		BOUL	01	10	1717	S17	W09	01	10.0		A	HS	180	2	3	2
5309		PALE	01	10	1935	S18	W07	01	10.3		B	CSO	210	7	9	3
5309		LEAR	01	11	0100	S18	W10	01	10.3		BG	CHO	1070	12	9	3
5309		CULG	01	11	0400	S19	W15	01	10.0		B	DAO	210	5	4	2
5309		RAMY	01	11	1421	S19	W20	01	10.1		B	CHO	230	6	5	2
5309	24977	MWIL	01	11	1715	S18	W23	01	10.0	5	(AP)					
5309		HOLL	01	11	1805	S19	W21	01	10.1		B	CHO	190	13	8	4
5309		LEAR	01	12	0014	S18	W23	01	10.2		B	CSO	170	10	8	3
5309		CULG	01	12	0428	S18	W27	01	10.1		B	CAO	170	4	5	2
5309		RAMY	01	12	1356	S17	W32	01	10.1		B	CKO	210	4	7	3
5309		BOUL	01	12	1650	S17	W35	01	10.0		A	HA	200	2	3	2
5309	24977	MWIL	01	12	1730	S18	W37	01	9.9	5	(AP)					
5309		HOLL	01	12	1813	S19	W35	01	10.1		B	DHO	190	7	7	2
5309		LEAR	01	13	0010	S17	W38	01	10.1		B	CAO	160	5	7	4
5309		CULG	01	13	0310	S18	W41	01	10.0		A	HA	200	2	3	2
5309		SVTO	01	13	1120	S18	W46	01	10.0		A	HK	120	1	3	3
5309	24977	MWIL	01	13	1545	S18	W48	01	10.0	5	(AP)					
5309		RAMY	01	13	1605	S18	W48	01	10.0		A	HH	170	2	3	2
5309		BOUL	01	13	1632	S17	W48	01	10.0		A	HA	230	1	3	3
5309		HOLL	01	13	2300	S16	W52	01	10.0		A	HS	140	2	2	2
5309		LEAR	01	14	0020	S18	W53	01	10.0		A	HA	120	2	2	3
5309		CULG	01	14	0330	S21	W53	01	10.1		A	HA	170	2	2	2
5309		SVTO	01	14	1008	S18	W60	01	9.8		A	HK	200	2	3	3
5309		HOLL	01	14	1515	S19	W61	01	10.0		A	HA	110	2	2	3
5309		RAMY	01	14	1535	S17	W62	01	9.9		A	HK	220	2	3	4
5309	24977	MWIL	01	14	1545	S18	W61	01	10.0	5	(AP)					
5309		BOUL	01	14	1550	S19	W62	01	9.9		A	HS	140	1	3	1
5309		PALE	01	14	1940	S17	W65	01	9.9		A	HA	180	1	3	3
5309		LEAR	01	15	0127	S19	W68	01	9.9		A	HS	140	1	2	3
5309		CULG	01	15	0302	S22	W66	01	10.0		A	HS	110	1	3	1
5309		SVTO	01	15	1014	S18	W73	01	9.9		A	HS	170	1	2	2
5309		RAMY	01	15	1500	S18	W73	01	10.1		A	HA	170	1	2	3
5309		BOUL	01	15	1530	S19	W77	01	9.8		A	HS	130	1	2	1
5309	24977	MWIL	01	15	1545	S18	W75	01	9.9	5	(AP)					
5309		HOLL	01	15	1735	S18	W75	01	10.0		A	HA	70	2	2	4
5309		PALE	01	15	1950	S18	W76	01	10.0		A	HA	120	1	3	3
5309		LEAR	01	16	0040	S19	W78	01	10.1		A	HS	120	1	1	3
5309		CULG	01	16	0300	S18	W78	01	10.2		A	HS	60	1	2	2
5309		SVTO	01	16	0917	S19	W85	01	9.9		A	HR	60	1	3	2
5309A	24982	MWIL	01	10	1630	N30	W07	01	10.1	4	(AP)					

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5310A		BOUL	01	06	1534	S27	E45	01	10.1		A	HR	20	1	1	3
5313		RAMY	01	05	1514	N27	E67	01	10.8		A	AX	10	1	1	3
5313		PALE	01	05	1845	N27	E70	01	11.2		B	BXO	10	2	5	3
5313		BOUL	01	06	1534	N29	E67	01	11.9		A	AX	10	1	1	3
5313		HOLL	01	06	1556	N30	E63	01	11.6		A	AX	10	1		2
5313		LEAR	01	07	0034	N30	E62	01	11.9		B	BXO	20	2	6	4
5313		RAMY	01	07	1410	N33	E36	01	10.4		B	BXO	20	5	8	4
5313		PALE	01	07	2207	N28	E32	01	10.4		A	AX	10	1	1	2
5313		PALE	01	08	1950	N30	E21	01	10.5		A	AX	10	3	2	3
5313	24983	MWIL	01	10	1630	N34	W02	01	10.5	4	(AP)					
5315		SVTO	01	05	0845	N26	E70	01	10.8		A	AX	20	1		2
5315		RAMY	01	05	1514	N33	E64	01	10.7		A	AX	20	4	4	3
5315		HOLL	01	05	1555	N33	E68	01	11.1		A	AX	10	1		2
5315		PALE	01	05	1845	N33	E63	01	10.8		A	AX	10	2	2	3
5315		SVTO	01	06	0912	N28	E56	01	10.7		A	AX	20	1	1	3
5315		HOLL	01	07	1600	N29	E34	01	10.3		A	AX		1		3
5315		HOLL	01	08	1759	N35	E25	01	10.7		A	AX		1		4
5315		RAMY	01	10	1315	N34	E03	01	10.8		A	AX		1		2
5315		HOLL	01	10	1620	N35	E00	01	10.7		A	AX	10	3	1	4
5315		PALE	01	10	1935	N34	W01	01	10.7		A	AX	10	2	1	3
5315		LEAR	01	11	0100	N34	W06	01	10.6		A	BXO	10	2	2	3
5315		HOLL	01	11	1805	N31	W20	01	10.2		B	BXO	10	4	4	4
5315		LEAR	01	13	0010	N30	W45	01	9.5		B	BXO	10	2	3	4
5315		CULG	01	13	0310	N29	W27	01	11.0		A	AX		1		2
5315	24992	MWIL	01	13	1545	N29	W30	01	11.3	3	(AF)					
5311		LEAR	01	05	0104	S12	E81	01	11.1		A	HH	120	1	2	2
5311		CULG	01	05	0417	S11	E80	01	11.2		A	HS	60	1	3	2
5311		SVTO	01	05	0845	S14	E80	01	11.4		A	HA	60	2	3	2
5311		RAMY	01	05	1514	S13	E75	01	11.3		A	HA	80	1	2	3
5311		BOUL	01	05	1537	S12	E80	01	11.7		A	HS	60	1	2	1
5311		HOLL	01	05	1555	S14	E75	01	11.3		A	HS	90	2	2	2
5311		PALE	01	05	1845	S14	E72	01	11.2		A	HS	100	2	2	3
5311		LEAR	01	06	0005	S13	E69	01	11.2		A	HS	50	2	1	3
5311		CULG	01	06	0435	S12	E63	01	10.9		A	HS	70	1	2	2
5311		SVTO	01	06	0912	S12	E64	01	11.2		A	HA	90	1	2	3
5311		BOUL	01	06	1534	S14	E65	01	11.6		B	CSO	100	2	13	3
5311		HOLL	01	06	1556	S14	E63	01	11.4		B	CSO	100	2	9	2
5311	24979	MWIL	01	06	1630	S13	E60	01	11.2	4	(AP)					
5311		RAMY	01	06	2015	S10	E59	01	11.3		B	CSO	100	6	9	3
5311		LEAR	01	07	0034	S14	E59	01	11.5		B	EAO	100	11	11	4
5311		CULG	01	07	0420	S12	E53	01	11.2		B	CSO	40	4	6	2
5311		SVTO	01	07	0930	S13	E53	01	11.4		B	CAO	100	14	10	1
5311		RAMY	01	07	1410	S14	E51	01	11.4		BG	CAI	160	16	11	4
5311		BOUL	01	07	1547	S15	E53	01	11.7		B	CSI	70	10	11	2
5311		HOLL	01	07	1600	S13	E50	01	11.4		B	DSO	80	16	10	3
5311	24979	MWIL	01	07	1630	S14	E50	01	11.5	5	BP					
5311		PALE	01	07	2207	S15	E48	01	11.5		B	CAO	100	19	12	2
5311		LEAR	01	08	0152	S13	E45	01	11.5		B	EAO	140	18	11	3
5311		CULG	01	08	0332	S12	E44	01	11.5		B	EAO	130	25	12	2
5311		SVTO	01	08	0925	S14	E40	01	11.4		BG	EAI	200	30	11	2
5311		RAMY	01	08	1405	S15	E38	01	11.5		BG	EAI	320	51	14	3
5311	24979	MWIL	01	08	1630	S14	E35	01	11.3	5	(D)					
5311		BOUL	01	08	1727	S14	E37	01	11.5		B	ESI	170	15	11	2
5311		HOLL	01	08	1759	S13	E35	01	11.4		BGD	EAI	270	44	12	4
5311		PALE	01	08	1950	S14	E34	01	11.4		B	EAI	300	34	12	3
5311		LEAR	01	09	0013	S13	E31	01	11.3		BG	EAI	240	35	12	3
5311		CULG	01	09	0308	S13	E29	01	11.3		BG	EAI	210	38	13	2
5311		SVTO	01	09	0910	S15	E27	01	11.4		BG	EAI	260	27	13	3
5311		RAMY	01	09	1300	S14	E26	01	11.5		BG	ESI	410	33	14	3
5311	24979	MWIL	01	09	1630	S15	E22	01	11.3	5	(D)					
5311		HOLL	01	09	1810	S13	E19	01	11.2		BGD	EAI	240	28	12	3
5311		PALE	01	09	2030	S14	E21	01	11.4		BG	EAI	340	34	14	3
5311		LEAR	01	10	0043	S13	E17	01	11.3		BG	EAO	260	31	14	4
5311		CULG	01	10	0315	S13	E16	01	11.3		BGD	EAI	200	28	13	2
5311		SVTO	01	10	1045	S15	E14	01	11.5		B	EAO	200	11	12	2
5311		RAMY	01	10	1315	S14	E11	01	11.4		BGD	ESI	230	30	11	2

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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
5311		HOLL	01	10	1620	S15	E10	01	11.4		BGD	EAI	210	27	12	4
5311	24979	MWIL	01	10	1630	S15	E08	01	11.3	5	(D)					
5311		BOUL	01	10	1717	S13	E09	01	11.4		B	ESI	170	15	11	2
5311		PALE	01	10	1935	S14	E06	01	11.3		BG	EAI	190	27	12	3
5311		LEAR	01	11	0100	S15	E03	01	11.3		B	EAO	240	20	13	3
5311		CULG	01	11	0400	S14	E03	01	11.4		BGD	EAO	140	17	11	2
5311		RAMY	01	11	1421	S14	W05	01	11.2		B	ESI	180	20	12	2
5311	24979	MWIL	01	11	1715	S15	W06	01	11.3	5	(B)					
5311		HOLL	01	11	1805	S13	W06	01	11.3		BG	EAI	150	17	12	4
5311		LEAR	01	12	0014	S14	W08	01	11.4		B	EAI	180	18	12	3
5311		CULG	01	12	0428	S14	W10	01	11.4		B	EAO	120	15	12	2
5311		RAMY	01	12	1356	S14	W14	01	11.5		B	ESI	160	20	14	3
5311		BOUL	01	12	1650	S15	W17	01	11.4		B	CAO	110	13	12	2
5311	24979	MWIL	01	12	1730	S14	W21	01	11.1	5	(AP)					
5311		HOLL	01	12	1813	S16	W18	01	11.4		B	DSO	160	13	14	2
5311		LEAR	01	13	0010	S14	W20	01	11.5		B	CAI	120	23	13	4
5311		CULG	01	13	0310	S15	W23	01	11.4		B	EAO	100	12	13	2
5311		SVTO	01	13	1120	S15	W27	01	11.4		B	ESO	130	7	13	3
5311	24979	MWIL	01	13	1545	S15	W30	01	11.4	5	(BP)					
5311		BOUL	01	13	1632	S16	W29	01	11.5		B	CSO	140	7	3	3
5311		HOLL	01	13	2300	S14	W34	01	11.4		B	CSO	110	4	12	2
5311		LEAR	01	14	0020	S15	W34	01	11.4		B	CSO	110	7	14	3
5311		CULG	01	14	0330	S17	W35	01	11.5		B	CSO	100	7	12	2
5311		SVTO	01	14	1008	S15	W42	01	11.2		B	CSO	110	4	11	3
5311		HOLL	01	14	1515	S16	W44	01	11.3		B	CSO	80	4	13	3
5311		RAMY	01	14	1535	S15	W43	01	11.4		B	CSO	120	2	12	4
5311	24979	MWIL	01	14	1545	S15	W43	01	11.4	5	(BP)					
5311		BOUL	01	14	1550	S15	W48	01	11.0		A	HS	90	1	2	1
5311		PALE	01	14	1940	S15	W47	01	11.3		B	CSO	120	5	12	3
5311		LEAR	01	15	0127	S15	W49	01	11.3		B	CAO	110	4	12	3
5311		CULG	01	15	0302	S17	W47	01	11.5		B	CSO	100	5	14	1
5311		SVTO	01	15	1014	S15	W59	01	10.9		A	HS	110	1	2	2
5311		RAMY	01	15	1500	S14	W61	01	11.0		A	HS	110	1	2	3
5311		BOUL	01	15	1530	S15	W63	01	10.9		A	HS	80	1	2	1
5311	24979	MWIL	01	15	1545	S14	W61	01	11.0	6	(BP)					
5311		HOLL	01	15	1735	S14	W63	01	11.0		A	HS	80	1	2	4
5311		PALE	01	15	1950	S15	W64	01	11.0		A	HA	80	1	2	3
5311		LEAR	01	16	0040	S15	W63	01	11.2		B	EAO	60	3	8	3
5311		CULG	01	16	0300	S15	W67	01	11.0		A	HS	100	1	3	2
5311		SVTO	01	16	0917	S14	W74	01	10.8		A	HS	60	1	2	2
5311		BOUL	01	16	1541	S15	W77	01	10.8		A	HS	160	1	2	1
5311		RAMY	01	16	1628	S14	W76	01	10.9		A	HS	120	1	2	3
5311	24979	MWIL	01	16	1630	S14	W77	01	10.9	5	(AP)					
5311		HOLL	01	16	1720	S14	W73	01	11.2		A	HS	600	1	2	4
5311		CULG	01	17	0435	S18	W80	01	11.1		A	HS	80	1	2	2
5311		SVTO	01	17	1045	S15	W86	01	10.9		A	AX	30	1	2	2
5311A	24993	MWIL	01	13	1545	S30	W18	01	12.2	3	(AP)					
5325		SVTO	01	06	0912	N31	E70	01	11.9		B	BXO	30	2	5	3
5325		RAMY	01	06	2015	N33	E69	01	12.3		A	AX	10	10	1	3
5325		BOUL	01	10	1717	N28	E20	01	12.3		A	AX	10	1		2
5325		RAMY	01	17	1340	N27	W68	01	12.3		A	AX	10	1	1	4
5325	24997	MWIL	01	17	1630	N26	W69	01	12.3	3	(AP)					
5325		LEAR	01	18	0458	N27	W73	01	12.5		A	HR	10	1	1	2
5325A		BOUL	01	10	1717	S29	E29	01	13.0		A	AX	10	1		2
5325B		LEAR	01	13	0010	N23	E00	01	13.0		B	BXO	10	3	3	4
5312		RAMY	01	05	1514	S30	E83	01	12.2		A	HR	40	1	2	3
5312		PALE	01	05	1845	S32	E86	01	12.6		A	HS	100	1	2	3
5312		LEAR	01	06	0005	S30	E80	01	12.3		A	HS	120	2	1	3
5312		SVTO	01	06	0912	S29	E80	01	12.6		B	CRO	90	3	9	3
5312		BOUL	01	06	1534	S32	E80	01	13.0		B	DKO	390	5	10	3
5312		HOLL	01	06	1556	S31	E81	01	13.0		B	FKO	460	4	18	2
5312	24980	MWIL	01	06	1630	S30	E80	01	13.0	4	(B					
5312		RAMY	01	06	2015	S28	E78	01	12.9		B	EKO	690	14	14	3
5312		LEAR	01	07	0034	S32	E76	01	13.0		B	EKO	630	16	14	4

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5312		CULG	01 07 0420	S30 E70	01 12.7		B	EKO	300	7	11	2
5312		SVTO	01 07 0930	S30 E69	01 12.8		B	EKO	1070	8	15	1
5312		RAMY	01 07 1410	S32 E69	01 13.0		BGD	FKC	1370	28	20	4
5312		BOUL	01 07 1547	S33 E74	01 13.5		B	FAC	570	9	17	2
5312		HOLL	01 07 1600	S30 E68	01 13.0		B	FKC	1170	29	17	3
5312	24980	MWIL	01 07 1630	S32 E70	01 13.2	5	(D)					
5312		PALE	01 07 2207	S32 E69	01 13.4		BGD	FKC	640	20	18	2
5312		LEAR	01 08 0152	S31 E63	01 13.0		B	FKC	950	25	20	3
5312		CULG	01 08 0332	S28 E62	01 13.0		B	FKC	680	32	21	2
5312		SVTO	01 08 0925	S31 E60	01 13.1		BGD	FKC	1210	41	20	2
5312		RAMY	01 08 1405	S32 E59	01 13.2		BGD	FKC	1520	56	22	3
5312	24980	MWIL	01 08 1630	S32 E58	01 13.3	5	(D)					
5312		BOUL	01 08 1727	S32 E58	01 13.3		BD	FKC	1040	17	20	2
5312		HOLL	01 08 1759	S31 E59	01 13.4		BGD	FKC	1420	44	21	4
5312		PALE	01 08 1950	S32 E62	01 13.7		BGD	EKI	1220	18	15	3
5312		LEAR	01 09 0013	S32 E54	01 13.3		BGD	FKC	1260	36	17	3
5312		CULG	01 09 0308	S30 E51	01 13.1		BGD	FKC	1120	39	27	2
5312		SVTO	01 09 0910	S31 E51	01 13.4		BGD	FKI	1150	36	27	3
5312		RAMY	01 09 1300	S32 E49	01 13.4		BGD	FKC	1280	44	24	3
5312	24980	MWIL	01 09 1630	S32 E45	01 13.2	6	(D)					
5312		HOLL	01 09 1810	S31 E43	01 13.1		BGD	FKI	1310	40	17	3
5312		PALE	01 09 2030	S32 E45	01 13.4		BGD	FKC	1440	44	28	3
5312		LEAR	01 10 0043	S32 E38	01 13.0		BGD	FKC	1090	58	18	4
5312		CULG	01 10 0315	S27 E39	01 13.2		BGD	FKC	1030	41	19	2
5312		SVTO	01 10 1045	S32 E35	01 13.2		BGD	FKC	1560	42	16	2
5312		RAMY	01 10 1315	S31 E35	01 13.3		BGD	FKC	1430	54	22	2
5312		HOLL	01 10 1620	S30 E34	01 13.3		BGD	FKC	1570	61	21	4
5312	24980	MWIL	01 10 1630	S32 E33	01 13.3	6	(D)					
5312		BOUL	01 10 1717	S31 E30	01 13.1		BG	FKC	810	23	19	2
5312		PALE	01 10 1935	S32 E31	01 13.3		BGD	FKC	1560	36	22	3
5312		LEAR	01 11 0100	S30 E27	01 13.2		BGD	FKC	1200	37	16	3
5312		CULG	01 11 0400	S27 E23	01 12.9		BGD	FKC	1010	40	17	2
5312		RAMY	01 11 1421	S32 E20	01 13.2		BGD	FKC	1230	33	19	2
5312	24980	MWIL	01 11 1715	S32 E20	01 13.3	6	(D)					
5312		HOLL	01 11 1805	S31 E20	01 13.3		BGD	FKI	1210	44	18	4
5312		LEAR	01 12 0014	S30 E13	01 13.0		BGD	FKC	1240	46	21	3
5312		CULG	01 12 0428	S29 E15	01 13.4		BGD	FKC	1050	42	21	2
5312		RAMY	01 12 1356	S31 E09	01 13.3		BGD	FKC	1870	53	17	3
5312		BOUL	01 12 1650	S30 E11	01 13.6		B	FKC	1280	70	20	2
5312	24980	MWIL	01 12 1730	S31 E08	01 13.4	5	(D)					
5312		HOLL	01 12 1813	S32 E10	01 13.5		BGD	FKI	1340	53	21	2
5312		LEAR	01 13 0010	S30 E05	01 13.4		BGD	FKC	1240	82	23	4
5312		CULG	01 13 0310	S29 E05	01 13.5		BGD	FKC	1200	47	19	2
5312		SVTO	01 13 1120	S31 E01	01 13.5		BGD	FKC	1650	65	20	3
5312	24980	MWIL	01 13 1545	S31 W04	01 13.3	6	(D)					
5312		BOUL	01 13 1632	S30 W01	01 13.6		B	FKC	1780	58	19	3
5312		HOLL	01 13 2300	S30 W09	01 13.2		BGD	FKI	1460	50	22	2
5312		LEAR	01 14 0020	S31 W08	01 13.4		BGD	FKC	1500	72	21	3
5312		CULG	01 14 0330	S31 W07	01 13.6		BGD	FKC	1540	42	16	2
5312		SVTO	01 14 1008	S32 W13	01 13.4		BGD	FKC	2060	63	21	3
5312		HOLL	01 14 1515	S31 W15	01 13.4		BGD	FKI	1760	52	25	3
5312		RAMY	01 14 1535	S31 W16	01 13.4		BGD	FKC	1740	78	22	4
5312	24980	MWIL	01 14 1545	S31 W15	01 13.5	5	(D)					
5312		BOUL	01 14 1550	S32 W14	01 13.5		B	FKC	1390	43	19	1
5312		PALE	01 14 1940	S32 W20	01 13.2		BGD	FKC	1630	48	22	3
5312		LEAR	01 15 0127	S31 W22	01 13.3		BGD	FKC	1800	41	17	3
5312		CULG	01 15 0302	S31 W18	01 13.7		BGD	FKC	1680	36	19	1
5312		SVTO	01 15 1014	S32 W25	01 13.4		BGD	FKC	2160	40	19	2
5312		RAMY	01 15 1500	S31 W29	01 13.3		BGD	FKC	1870	61	22	3
5312		BOUL	01 15 1530	S32 W28	01 13.4		B	FKC	1810	15	17	1
5312	24980	MWIL	01 15 1545	S31 W28	01 13.4	6	(D)					
5312		HOLL	01 15 1735	S31 W29	01 13.4		BGD	FKI	1860	33	19	4
5312		PALE	01 15 1950	S32 W31	01 13.4		BGD	FKC	1470	29	18	3
5312		LEAR	01 16 0040	S33 W32	01 13.5		BGD	FKC	1690	34	19	3
5312		CULG	01 16 0300	S31 W33	01 13.5		BGD	FKC	1690	29	18	2
5312		SVTO	01 16 0917	S32 W38	01 13.4		BGD	FKC	2270	22	17	2
5312		BOUL	01 16 1541	S32 W41	01 13.4		BGD	FKC	1120	4	16	1
5312		RAMY	01 16 1628	S31 W42	01 13.4		BGD	FKC	1700	32	19	3
5312	24980	MWIL	01 16 1630	S32 W41	01 13.4	6	(D)					

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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
5312		HOLL	01 16 1720	S33 W42	01 13.4		BGD	FKC	1730	42	18	4
5312		CULG	01 17 0435	S34 W46	01 13.5			FKC	1100	11	16	2
5312		SVTO	01 17 1045	S32 W50	01 13.5		BGD	FKC	1550	29	21	2
5312		RAMY	01 17 1340	S33 W51	01 13.5		BGD	FKC	1430	36	19	4
5312		BOUL	01 17 1543	S32 W56	01 13.2		BGD	FKC	1080	4	18	1
5312	24980	MWIL	01 17 1630	S33 W53	01 13.5	6	(D)					
5312		HOLL	01 17 1655	S33 W52	01 13.6		BGD	FKC	1320	37	18	3
5312		CULG	01 18 0420	S34 W56	01 13.7			FKC	760	9	20	3
5312		LEAR	01 18 0458	S33 W61	01 13.4		BGD	FKC	1080	28	18	2
5312		RAMY	01 18 1545	S32 W64	01 13.6		BGD	FKC	1640	21	16	3
5312		BOUL	01 18 1555	S33 W69	01 13.2		B	FKC	1560	7	22	1
5312	24980	MWIL	01 18 1615	S33 W66	01 13.4	6	(D)					
5312		HOLL	01 18 1715	S32 W66	01 13.5		BGD	FKC	1280	28	19	3
5312		LEAR	01 19 0020	S32 W68	01 13.6		BGD	FKC	1040	10	16	3
5312		CULG	01 19 0540	S36 W73	01 13.4			FKC	750	4	18	2
5312		RAMY	01 19 1430	S33 W75	01 13.6		BGD	FKC	1090	11	17	4
5312		HOLL	01 19 1520	S32 W75	01 13.7		BGD	EKI	570	10	15	3
5312	24980	MWIL	01 19 1630	S33 W75	01 13.7	6	(D)					
5312		BOUL	01 19 1635	S32 W77	01 13.6		BGD	FKI	400	3	16	2
5312		LEAR	01 20 0212	S33 W78	01 13.9		BGD	FKC	750	12	16	3
5312		SVTO	01 20 0812	S33 W85	01 13.6		B	DAO	320	4	10	2
5312		BOUL	01 20 1535	S32 W84	01 14.0		A	HK	300	2	4	3
5312		RAMY	01 20 1542	S34 W81	01 14.2		A	HK	300	4	8	3
5312		HOLL	01 20 1745	S33 W83	01 14.1		BGD	DKC	240	3	5	3
5312	24980	MWIL	01 20 1915	S33 W86	01 14.0	4	D					
5327		RAMY	01 18 1545	N32 W55	01 14.3		A	AX		1		3
5327		HOLL	01 18 1715	N32 W56	01 14.3		A	AX		1		3
5327		LEAR	01 19 0020	N29 W59	01 14.4		A	AX	10	2	1	3
5319		LEAR	01 10 0043	S18 E66	01 15.0		B	BXO	10	4	4	4
5319		SVTO	01 10 1045	S20 E60	01 15.0		B	CRO	40	3	3	2
5319		RAMY	01 10 1315	S20 E58	01 15.0		B	DRO	40	3	3	2
5319		HOLL	01 10 1620	S19 E57	01 15.0		B	CRO	30	4	4	4
5319	24984	MWIL	01 10 1630	S18 E57	01 15.0	4	(B)					
5319		BOUL	01 10 1717	S19 E56	01 15.0		B	BXO	10	2	5	2
5319		PALE	01 10 1935	S20 E56	01 15.1		B	CSO	20	3	4	3
5319		LEAR	01 11 0100	S18 E52	01 15.0		B	DRO	30	3	5	3
5319		CULG	01 11 0400	S17 E49	01 14.9		B	DRO	20	2	3	2
5319		RAMY	01 11 1421	S20 E45	01 15.0		B	DRO	30	4	6	2
5319	24984	MWIL	01 11 1715	S19 E43	01 15.0	3	(B)					
5319		HOLL	01 11 1805	S19 E41	01 14.9		B	BXO	40	6	6	4
5319		LEAR	01 12 0014	S19 E38	01 14.9		B	DRO	10	2	5	3
5319		CULG	01 12 0428	S17 E36	01 14.9		B	BXO		2	5	2
5319		RAMY	01 12 1356	S19 E32	01 15.0		B	BXO	10	2	5	3
5319		BOUL	01 12 1650	S19 E33	01 15.2		A	AX		1		2
5319	24984	MWIL	01 12 1730	S19 E32	01 15.2	3	(AF)					
5319		HOLL	01 12 1813	S20 E31	01 15.1		A	AX	10	1	1	2
5319		LEAR	01 13 0010	S18 E28	01 15.1		A	AX	10	1	1	4
5319		CULG	01 13 0310	S17 E27	01 15.2		A	AX		1		2
5319	24984	MWIL	01 13 1545	S19 E20	01 15.2	3	(AF)					
5316		HOLL	01 08 1759	S32 E85	01 15.5		A	HS	30	1	2	4
5316		PALE	01 08 1950	S34 E76	01 14.9		B	BXO	10	2	11	3
5316		CULG	01 09 0308	S30 E81	01 15.5		A	HS	10	1	2	2
5316		SVTO	01 09 0910	S31 E75	01 15.3		B	CAO	30	2	6	3
5316		RAMY	01 09 1300	S33 E72	01 15.3		B	CRO	50	2	4	3
5316	24981	MWIL	01 09 1630	S33 E70	01 15.2	4	(BF)					
5316		HOLL	01 09 1810	S32 E70	01 15.3		B	CSO	40	2	5	3
5316		PALE	01 09 2030	S33 E72	01 15.6		A	HS	60	2	2	3
5316		LEAR	01 10 0043	S32 E66	01 15.2		B	CAO	80	4	7	4
5316		CULG	01 10 0315	S28 E66	01 15.3		B	CSO	20	2	5	2
5316		SVTO	01 10 1045	S32 E65	01 15.6		A	HA	50	1	2	2
5316		RAMY	01 10 1315	S32 E59	01 15.2		B	CSO	40	3	6	2
5316		HOLL	01 10 1620	S32 E61	01 15.5		A	HS	30	1	2	4
5316	24981	MWIL	01 10 1630	S32 E60	01 15.4	4	(AP)					
5316		BOUL	01 10 1717	S32 E62	01 15.6		A	HS	90	1	1	2
5316		PALE	01 10 1935	S32 E60	01 15.6		A	HA	30	1	1	3
5316		LEAR	01 11 0100	S31 E53	01 15.2		B	CSO	40	3	7	3

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5316		CULG	01	11	0400	S30	E57	01	15.6		A	HS	20	1	1	2
5316		RAMY	01	11	1421	S33	E50	01	15.6		B	CSO	40	5	3	2
5316	24981	MWIL	01	11	1715	S33	E48	01	15.5	4	(AP)					
5316		HOLL	01	11	1805	S33	E46	01	15.4		B	CSO	20	6	2	4
5316		LEAR	01	12	0014	S32	E43	01	15.4		A	HS	20	1	1	3
5316		CULG	01	12	0428	S31	E44	01	15.6		A	HS	10	2	1	2
5316		RAMY	01	12	1356	S33	E37	01	15.5		B	CRO	30	5	6	3
5316		BOUL	01	12	1650	S32	E36	01	15.5		B	CSO	10	2	3	2
5316	24981	MWIL	01	12	1730	S32	E37	01	15.6	4	(AP)					
5316		HOLL	01	12	1813	S32	E36	01	15.6		B	BXO	20	3	3	2
5316		LEAR	01	13	0010	S31	E31	01	15.4		B	CRO	20	4	3	4
5316		CULG	01	13	0310	S31	E31	01	15.6		B	CRO	10	4	3	2
5316		SVTO	01	13	1120	S31	E24	01	15.4		B	DAO	50	12	8	3
5316	24981	MWIL	01	13	1545	S31	E23	01	15.5	4	(BP)					
5316		BOUL	01	13	1632	S32	E23	01	15.5		B	DRI	110	14	9	3
5316		HOLL	01	13	2300	S32	E16	01	15.2		B	DAO	50	12	10	2
5316		LEAR	01	14	0020	S32	E18	01	15.4		B	DRI	40	11	9	3
5316		CULG	01	14	0330	S30	E14	01	15.2		B	EAO	20	7	12	2
5316		SVTO	01	14	1008	S32	E11	01	15.3		B	DAO	30	9	10	3
5316		HOLL	01	14	1515	S31	E08	01	15.3		B	CAO	30	7	10	3
5316		RAMY	01	14	1535	S31	E08	01	15.3		B	CAO	30	7	11	4
5316	24981	MWIL	01	14	1545	S31	E09	01	15.4	4	(BG)					
5316		BOUL	01	14	1550	S32	E09	01	15.4		B	BXO		3	9	1
5316		PALE	01	14	1940	S32	E08	01	15.4		B	CAO	20	6	10	3
5316		LEAR	01	15	0127	S32	E04	01	15.4		B	DAO	40	7	9	3
5316		CULG	01	15	0302	S30	E05	01	15.5		B	CRO	10	6	10	1
5316		SVTO	01	15	1014	S32	E00	01	15.4		B	DRO	30	9	10	2
5316		RAMY	01	15	1500	S32	W04	01	15.3		B	BXO	20	10	12	3
5316		BOUL	01	15	1530	S32	W04	01	15.3		B	BXO		2	10	1
5316	24981	MWIL	01	15	1545	S31	W03	01	15.4	4	(BG)					
5316		HOLL	01	15	1735	S32	W05	01	15.3		B	CRO	20	8	11	4
5316		PALE	01	15	1950	S32	W06	01	15.3		B	BXI	40	9	10	3
5316		LEAR	01	16	0040	S32	W07	01	15.5		B	CSO	20	6	11	3
5316		CULG	01	16	0300	S30	W13	01	15.1		B	CRO	10	2	3	2
5316		BOUL	01	16	1541	S31	W19	01	15.1		B	BXO	10	2	3	1
5316		RAMY	01	16	1628	S31	W21	01	15.0		B	CAO	30	4	5	3
5316	24981	MWIL	01	16	1630	S31	W20	01	15.1	5	(B)					
5316		HOLL	01	16	1720	S30	W21	01	15.1		B	CSO	20	6	5	4
5316		CULG	01	17	0435	S31	W26	01	15.1		B	CSO	20	2	4	2
5316		SVTO	01	17	1045	S30	W30	01	15.1		B	DRO	50	2	5	2
5316		RAMY	01	17	1340	S31	W31	01	15.1		B	CRO	30	2	6	4
5316		BOUL	01	17	1543	S31	W32	01	15.1		B	BXO	10	2	4	1
5316	24981	MWIL	01	17	1630	S30	W33	01	15.1	5	(B)					
5316		HOLL	01	17	1655	S32	W29	01	15.4		B	BXO	10	5	10	3
5316		CULG	01	18	0420	S31	W38	01	15.2		B	BXO	10	4	4	3
5316		LEAR	01	18	0458	S31	W38	01	15.2		B	BXO	10	5	4	2
5316		RAMY	01	18	1545	S29	W44	01	15.2		B	BXO	20	5	6	3
5316		BOUL	01	18	1555	S30	W46	01	15.0		B	DSO	50	3	5	1
5316	24981	MWIL	01	18	1615	S30	W45	01	15.1	4	(B)					
5316		HOLL	01	18	1715	S28	W46	01	15.1		B	BXO	10	7	5	3
5316		LEAR	01	19	0020	S30	W49	01	15.2		B	BXO	20	6	5	3
5316		RAMY	01	19	1430	S29	W55	01	15.3		A	AX	10	1	1	4
5316		HOLL	01	19	1520	S30	W55	01	15.3		A	AX		1		3
5316	24981	MWIL	01	19	1630	S31	W55	01	15.3	3	(AF)					
5316A	24994	MWIL	01	13	1545	N29	E27	01	15.8	2	(AP)					
5316A		SVTO	01	14	1008	N29	E17	01	15.7		A	HR	10	1	1	3
5316A		RAMY	01	14	1535	N31	E13	01	15.7		B	BXO	10	4	3	4
5316A	24994	MWIL	01	14	1545	N29	E13	01	15.7	3	(AP)					
5316C	24998	MWIL	01	17	1630	S35	W24	01	15.8	4	(AP)					
5316B	24986	MWIL	01	10	1630	N22	E66	01	15.8	5	(AP)					
5316B	24986	MWIL	01	11	1715	N21	E52	01	15.7	4	(AP)					
5316B		BOUL	01	13	1632	N24	E32	01	16.2		B	BXO	20	4	5	3
5317		HOLL	01	09	1810	N21	E79	01	15.8		B	BXO	30	2	1	3
5317		LEAR	01	10	0043	N21	E78	01	16.0		B	BXO	10	4	4	4
5317		CULG	01	10	0315	N24	E80	01	16.3		A	HS	40	1	1	2

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5317		SVTO	01 10 1045	N19 E73	01 16.0		B	CAO	90	6	10	2
5317		RAMY	01 10 1315	N20 E70	01 15.9		B	ESO	170	6	11	2
5317		HOLL	01 10 1620	N20 E69	01 15.9		B	EAO	110	9	11	4
5317	24987	MWIL	01 10 1630	N19 E71	01 16.1	5	(AP)					
5317		BOUL	01 10 1717	N20 E71	01 16.1		B	CSO	120	2	9	2
5317		PALE	01 10 1935	N21 E66	01 15.9		B	CAO	100	5	8	3
5317		LEAR	01 11 0100	N21 E64	01 15.9		B	DAO	190	8	9	3
5317		CULG	01 11 0400	N23 E59	01 15.7		B	DAO	70	4	8	2
5317		RAMY	01 11 1421	N19 E56	01 15.9		B	EAI	210	15	11	2
5317	24987	MWIL	01 11 1715	N19 E58	01 16.1	4	(BF)					
5317		HOLL	01 11 1805	N20 E51	01 15.6				160	16	11	4
5317		LEAR	01 12 0014	N20 E51	01 15.9		B	DAO	90	9	10	3
5317		CULG	01 12 0428	N21 E48	01 15.9		B	CAI	80	8	9	2
5317		RAMY	01 12 1356	N19 E47	01 16.2		B	FAI	140	21	16	3
5317		BOUL	01 12 1650	N20 E44	01 16.1		B	CAO	70	6	7	2
5317	24987	MWIL	01 12 1730	N18 E45	01 16.1	3	(B)					
5317		HOLL	01 12 1813	N18 E40	01 15.8		B	CKO	80	9	8	2
5317		LEAR	01 13 0010	N20 E38	01 15.9		B	EAO	90	15	11	4
5317		CULG	01 13 0310	N22 E35	01 15.8		B	CAO	50	8	8	2
5317		SVTO	01 13 1120	N21 E32	01 15.9		B	CAO	80	23	10	3
5317	24987	MWIL	01 13 1545	N20 E32	01 16.1	4	(D)					
5317		RAMY	01 13 1605	N21 E33	01 16.2		B	DSI	120	24	9	2
5317		BOUL	01 13 1632	N17 E33	01 16.2		B	CAO	90	10	4	3
5317		HOLL	01 13 2300	N20 E29	01 16.2		B	CAO	70	21	8	2
5317		LEAR	01 14 0020	N21 E28	01 16.2		B	DAI	160	21	8	3
5317		CULG	01 14 0330	N24 E24	01 16.0		B	DAI	120	12	5	2
5317		SVTO	01 14 1008	N22 E23	01 16.2		B	EAI	200	50	13	3
5317		HOLL	01 14 1515	N21 E19	01 16.1		B	DAO	210	37	8	3
5317		RAMY	01 14 1535	N22 E18	01 16.0		B	DKI	410	61	9	4
5317	24987	MWIL	01 14 1545	N22 E19	01 16.1	5	(B)					
5317		BOUL	01 14 1550	N21 E17	01 16.0		B	DAI	110	18	7	1
5317		PALE	01 14 1940	N20 E18	01 16.2		B	DAI	320	33	8	3
5317		LEAR	01 15 0127	N21 E13	01 16.0		B	DKI	410	31	9	3
5317		CULG	01 15 0302	N23 E09	01 15.8		B	DKI	390	31	9	1
5317		SVTO	01 15 1014	N23 E08	01 16.0		B	DKI	750	41	10	2
5317		RAMY	01 15 1500	N22 E08	01 16.2		B	EKC	990	63	14	3
5317		BOUL	01 15 1530	N21 E06	01 16.1		B	DKI	410	15	10	1
5317	24987	MWIL	01 15 1545	N22 E06	01 16.1	5	(B)					
5317		HOLL	01 15 1735	N22 E05	01 16.1		BG	EKC	820	66	15	4
5317		PALE	01 15 1950	N21 E03	01 16.0		BG	DKI	860	56	10	3
5317		LEAR	01 16 0040	N21 E02	01 16.2		BG	FKC	880	41	16	3
5317		CULG	01 16 0300	N22 W02	01 16.0		BG	EKI	860	52	12	2
5317		SVTO	01 16 0917	N23 W06	01 15.9		BG	EKO	1070	48	13	2
5317		BOUL	01 16 1541	N22 W08	01 16.0		B	DKI	480	8	9	1
5317		RAMY	01 16 1628	N23 W09	01 16.0		B	EKC	1400	43	13	3
5317	24987	MWIL	01 16 1630	N22 W08	01 16.1	6	(BG)					
5317		HOLL	01 16 1720	N22 W09	01 16.0		BD	EKI	840	57	12	4
5317		CULG	01 17 0435	N22 W17	01 15.9			EKI	700	26	11	2
5317		SVTO	01 17 1045	N21 W19	01 16.0		BG	FKC	960	40	16	2
5317		RAMY	01 17 1340	N22 W20	01 16.0		B	EKC	1130	62	14	4
5317		BOUL	01 17 1543	N22 W21	01 16.0		BG	EKI	350	9	13	1
5317	24987	MWIL	01 17 1630	N22 W21	01 16.1	6	(BG)					
5317		HOLL	01 17 1655	N23 W21	01 16.1		BGD	EKC	1360	77	14	3
5317		CULG	01 18 0420	N20 W30	01 15.9			EKC	950	32	14	3
5317		LEAR	01 18 0458	N22 W30	01 15.9		BG	EKC	1030	55	14	2
5317		RAMY	01 18 1545	N23 W33	01 16.1		BGD	FKC	1420	67	16	3
5317		BOUL	01 18 1555	N23 W34	01 16.0		BG	FKC	1410	20	16	1
5317	24987	MWIL	01 18 1615	N22 W35	01 16.0	5	(BG)					
5317		HOLL	01 18 1715	N23 W36	01 15.9		BGD	FKI	1390	52	17	3
5317		LEAR	01 19 0020	N23 W39	01 16.0		BG	EKC	1260	30	15	3
5317		CULG	01 19 0540	N19 W43	01 15.9			EKC	980	20	14	2
5317		RAMY	01 19 1430	N23 W46	01 16.0		BGD	FKC	1780	71	19	4
5317		HOLL	01 19 1520	N23 W46	01 16.1		BGD	FKI	1300	36	17	3
5317	24987	MWIL	01 19 1630	N22 W48	01 16.0	5	(D)					
5317		BOUL	01 19 1635	N22 W48	01 16.0		BGD	FKC	980	30	17	2
5317		LEAR	01 20 0212	N23 W53	01 16.0		BGD	FKC	1400	37	16	3
5317		SVTO	01 20 0812	N23 W61	01 15.6		B	FKO	1580	17	18	2
5317		BOUL	01 20 1535	N22 W62	01 15.9		BGD	FKC	1540	17	16	3
5317		RAMY	01 20 1542	N23 W61	01 15.9		BGD	FKC	1580	31	17	3

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
5317		HOLL	01	20	1745	N23	W61	01	16.0		BGD	FKI	1400	36	17	3
5317	24987	MWIL	01	20	1915	N22	W61	01	16.1	5	D					
5317		LEAR	01	21	0034	N22	W67	01	15.9		BGD	FKC	1290	31	16	3
5317		CULG	01	21	0330	N20	W69	01	15.9			EKC	600	12	15	1
5317		SVTO	01	21	0950	N21	W70	01	16.0		BGD	FKI	1080	22	16	2
5317		RAMY	01	21	1230	N25	W77	01	15.5		BGD	FKI	1200	13	17	3
5317		BOUL	01	21	1613	N24	W74	01	15.9		BD	EKC	660	10	14	3
5317		HOLL	01	21	1730	N23	W75	01	15.9		BGD	FKI	750	18	18	4
5317		PALE	01	21	1928	N21	W75	01	16.1		BGD	FKI	390	15	16	3
5317		LEAR	01	22	0125	N24	W75	01	16.3		BGD	EKI	230	11	15	4
5317		CULG	01	22	0420	N19	W77	01	16.3		A	HK	300	2	6	3
5317		RAMY	01	22	1256	N24	W84	01	16.0		BGD	EKC	300	5	13	3
5317		BOUL	01	22	1620	N24	W86	01	16.0		A	HA	200	1	9	3
5317	24987	MWIL	01	22	1630	N23	W79	01	16.6	5	(AF)					
5317		HOLL	01	22	1800	N24	W85	01	16.2		A	HK	60	1	8	3
5317		PALE	01	22	1910	N23	W87	01	16.1		A	HK	60	1	8	2
5322		SVTO	01	13	1120	S16	E34	01	16.0		B	BXO		4	3	3
5322	24995	MWIL	01	13	1545	S15	E32	01	16.1	4	(B)					
5322		RAMY	01	13	1605	S15	E32	01	16.1		B	CRO	10	3	3	2
5322		BOUL	01	13	1632	S15	E33	01	16.2		B	BXO	20	4	3	3
5322		HOLL	01	13	2300	S17	E28	01	16.1		B	CRO	10	3	3	2
5322		LEAR	01	14	0020	S16	E27	01	16.1		B	CRO	20	2	3	3
5322		CULG	01	14	0330	S14	E26	01	16.1		B	CSO	10	2	3	2
5322		SVTO	01	14	1008	S16	E24	01	16.2		A	HS	10	1	1	3
5322		HOLL	01	14	1515	S16	E21	01	16.2		A	AX	10	2	1	3
5322		RAMY	01	14	1535	S16	E20	01	16.2		A	AX		2	2	4
5322	24995	MWIL	01	14	1545	S16	E20	01	16.2	4	(AF)					
5322		BOUL	01	14	1550	S16	E21	01	16.2		A	AX		1		1
5322		PALE	01	14	1940	S18	E19	01	16.3		A	AX		1		3
5322		LEAR	01	15	0127	S17	E15	01	16.2		B	CAO	30	2	3	3
5322		CULG	01	15	0302	S14	E15	01	16.3		A	HR	10	2	1	1
5322		SVTO	01	15	1014	S15	E09	01	16.1		B	CRO	20	6	4	2
5322		RAMY	01	15	1500	S17	E08	01	16.2		B	BXO	10	3	3	3
5322	24995	MWIL	01	15	1545	S15	E06	01	16.1	3	(BF)					
5322		HOLL	01	15	1735	S17	E06	01	16.2		A	AX		2	2	4
5322		PALE	01	15	1950	S20	E04	01	16.1		A	AX		2	2	3
5322		LEAR	01	16	0040	S17	E02	01	16.2		B	BXO	10	4	3	3
5322		CULG	01	16	0300	S16	W02	01	16.0		A	AX	10	1	1	2
5322	24995	MWIL	01	16	1630	S16	W09	01	16.0	3	(AP)					
5322A	24989	MWIL	01	10	1630	N16	E75	01	16.4	4	(B)					
5318		LEAR	01	10	0043	N27	E79	01	16.2		B	CSO	150	3	9	4
5318		CULG	01	10	0315	N33	E81	01	16.6		A	HS	20	1	2	2
5318		SVTO	01	10	1045	N26	E72	01	16.0		B	CAO	70	2	8	2
5318		RAMY	01	10	1315	N28	E74	01	16.3		A	HS	120	1	2	2
5318		HOLL	01	10	1620	N27	E75	01	16.5		B	CSO	70	4	9	4
5318	24985	MWIL	01	10	1630	N29	E70	01	16.2	4	AF					
5318		BOUL	01	10	1717	N29	E76	01	16.7		A	HS	60	1	3	2
5318		PALE	01	10	1935	N28	E73	01	16.5		B	CAO	120	4	5	3
5318		LEAR	01	11	0100	N28	E69	01	16.4		B	CAO	150	5	7	3
5318		CULG	01	11	0400	N31	E65	01	16.3		A	HA	30	1	2	2
5318		RAMY	01	11	1421	N26	E61	01	16.3		B	CAO	60	5	3	2
5318	24985	MWIL	01	11	1715	N28	E59	01	16.3	4	(AF)					
5318		HOLL	01	11	1805	N28	E60	01	16.4		B	CSO	60	5	4	4
5318		LEAR	01	12	0014	N29	E54	01	16.2		A	HA	40	1	2	3
5318		CULG	01	12	0428	N30	E52	01	16.3		A	HS	20	1	2	2
5318		RAMY	01	12	1356	N27	E49	01	16.4		B	CAO	40	3	3	3
5318		BOUL	01	12	1650	N30	E47	01	16.4		A	HS	40	1	1	2
5318	24985	MWIL	01	12	1730	N28	E46	01	16.3	4	(AF)					
5318		HOLL	01	12	1813	N28	E45	01	16.3		A	HS	30	1	1	2
5318		LEAR	01	13	0010	N29	E42	01	16.3		A	HS	30	1	1	4
5318		CULG	01	13	0310	N31	E38	01	16.1		A	HA	20	1	2	2
5318		SVTO	01	13	1120	N29	E37	01	16.4		A	HS	30	2	1	3
5318	24985	MWIL	01	13	1545	N29	E35	01	16.4	4	(AF)					
5318		RAMY	01	13	1605	N29	E35	01	16.4		A	HR	30	2	1	2
5318		BOUL	01	13	1632	N29	E36	01	16.5		B	CSO	40	2	2	3
5318		HOLL	01	13	2300	N29	E29	01	16.2		B	CRO	20	3	8	2

S U N S P O T G R O U P S
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JANUARY 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
5318		LEAR	01	14	0020	N29	E31	01	16.4		A	HR	20	2	2	3
5318		CULG	01	14	0330	N30	E27	01	16.3		A	HA	10	2	1	2
5318		SVTO	01	14	1008	N29	E26	01	16.5		A	HR	20	1	1	3
5318		HOLL	01	14	1515	N29	E23	01	16.4		A	AX	10	1	1	3
5318		RAMY	01	14	1535	N29	E23	01	16.4		A	AX	10	2	2	4
5318	24985	MWIL	01	14	1545	N28	E22	01	16.4	4	(AF)					
5318		BOUL	01	14	1550	N28	E23	01	16.4		A	AX		1		1
5318		PALE	01	14	1940	N28	E22	01	16.5		A	AX		1		3
5318		LEAR	01	15	0127	N28	E17	01	16.4		A	AX	10	1	1	3
5318	24985	MWIL	01	15	1545	N27	E13	01	16.7	3	(AP)					
5318		PALE	01	15	1950	N28	E10	01	16.6		A	AX		1		3
5318		CULG	01	16	0300	N29	E05	01	16.5		B	BXO	10	2	3	2
5320		RAMY	01	10	1315	S20	E82	01	16.8		A	HS	60	1	2	2
5320		HOLL	01	10	1620	S19	E80	01	16.8		A	HS	50	1	2	4
5320	24990	MWIL	01	10	1630	S18	E81	01	16.8	4	AP					
5320		BOUL	01	10	1717	S19	E80	01	16.8		A	HS	60	1	5	2
5320		PALE	01	10	1935	S19	E80	01	16.9		A	HA	90	1	1	3
5320		LEAR	01	11	0100	S18	E78	01	17.0		B	DAO	60	4	4	3
5320		CULG	01	11	0400	S16	E76	01	16.9		B	DAO	70	2	5	2
5320		RAMY	01	11	1421	S21	E71	01	17.0		B	DAO	190	5	6	2
5320	24990	MWIL	01	11	1715	S19	E67	01	16.8	4	(B)					
5320		HOLL	01	11	1805	S18	E63	01	16.5		B	CAI	120	8	6	4
5320		LEAR	01	12	0014	S19	E64	01	16.9		B	DAO	130	4	6	3
5320		CULG	01	12	0428	S17	E63	01	17.0		B	DAO	120	3	6	2
5320		RAMY	01	12	1356	S20	E58	01	17.0		B	CAI	160	10	7	3
5320		BOUL	01	12	1650	S19	E57	01	17.0		B	CAO	140	6	4	2
5320	24990	MWIL	01	12	1730	S20	E55	01	16.9	4	(AP)					
5320		HOLL	01	12	1813	S20	E57	01	17.1		B	CAI	140	6	4	2
5320		LEAR	01	13	0010	S19	E51	01	16.9		B	CAO	90	7	4	4
5320		CULG	01	13	0310	S17	E50	01	16.9		A	HA	120	3	2	2
5320		SVTO	01	13	1120	S19	E47	01	17.0		B	CKO	150	7	4	3
5320	24990	MWIL	01	13	1545	S19	E43	01	16.9	5	(BP)					
5320		BOUL	01	13	1632	S20	E44	01	17.0		A	HA	220	8	3	3
5320		HOLL	01	13	2300	S21	E41	01	17.1		B	CAO	110	7	5	2
5320		LEAR	01	14	0020	S20	E39	01	17.0		B	CAO	120	6	5	3
5320		CULG	01	14	0330	S18	E38	01	17.0		A	HA	100	3	2	2
5320		SVTO	01	14	1008	S20	E34	01	17.0		A	HK	150	5	3	3
5320		HOLL	01	14	1515	S19	E31	01	17.0		B	CAO	140	8	4	3
5320		RAMY	01	14	1535	S19	E30	01	16.9		A	HA	130	12	3	4
5320	24990	MWIL	01	14	1545	S20	E30	01	16.9	4	(AP)					
5320		BOUL	01	14	1550	S20	E31	01	17.0		B	CAO	100	6	3	1
5320		PALE	01	14	1940	S21	E30	01	17.1		B	CAI	160	5	4	3
5320		LEAR	01	15	0127	S20	E25	01	17.0		B	DAO	190	9	8	3
5320		CULG	01	15	0302	S17	E26	01	17.1		B	CAO	120	7	4	1
5320		SVTO	01	15	1014	S19	E21	01	17.0		A	HK	150	4	3	2
5320		RAMY	01	15	1500	S20	E20	01	17.1		B	CSO	150	3	4	3
5320		BOUL	01	15	1530	S20	E18	01	17.0		A	HA	100	1	2	1
5320	24990	MWIL	01	15	1545	S20	E17	01	16.9	5	(AP)					
5320		HOLL	01	15	1735	S20	E19	01	17.2		B	CSO	150	6	7	4
5320		PALE	01	15	1950	S21	E16	01	17.0		A	HA	110	2	2	3
5320		LEAR	01	16	0040	S20	E17	01	17.3		B	CAO	180	11	8	3
5320		CULG	01	16	0300	S20	E12	01	17.0		A	HA	140	4	3	2
5320		SVTO	01	16	0917	S19	E08	01	17.0		A	HA	110	5	3	2
5320		BOUL	01	16	1541	S20	E04	01	16.9		A	HA	60	1	2	1
5320		RAMY	01	16	1628	S20	E07	01	17.2		B	CSO	110	3	3	3
5320	24990	MWIL	01	16	1630	S20	E04	01	17.0	5	(BP)					
5320		HOLL	01	16	1720	S20	E06	01	17.2		B	CSO	100	5	5	4
5320		CULG	01	17	0435	S19	E01	01	17.3		B	CSO	90	3	4	2
5320		SVTO	01	17	1045	S20	W03	01	17.2		B	CAO	130	4	5	2
5320		RAMY	01	17	1340	S19	W06	01	17.1		B	CSO	130	4	5	4
5320		BOUL	01	17	1543	S21	W08	01	17.0		A	HA	40	1	2	1
5320	24990	MWIL	01	17	1630	S20	W07	01	17.1	5	(BP)					
5320		HOLL	01	17	1655	S20	W09	01	17.0		A	HS	160	1	2	3
5320		CULG	01	18	0420	S21	W13	01	17.2		A	HS	90	1	2	3
5320		LEAR	01	18	0458	S20	W16	01	17.0		A	HA	80	4	2	2
5320		RAMY	01	18	1545	S21	W21	01	17.0		B	CSO	190	11	3	3
5320		BOUL	01	18	1555	S21	W21	01	17.0		B	DAO	140	5	4	1
5320	24990	MWIL	01	18	1615	S20	W21	01	17.1	5	(BP)					

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5320		HOLL	01 18 1715	S21 W21	01 17.1		B	CSO	110	10	5	3
5320		LEAR	01 19 0020	S20 W27	01 16.9		A	HS	110	4	3	3
5320		CULG	01 19 0540	S21 W27	01 17.2		A	HS	90	1	2	2
5320		RAMY	01 19 1430	S21 W33	01 17.1		B	CSO	180	8	6	4
5320		HOLL	01 19 1520	S21 W34	01 17.0		B	CSO	80	6	5	3
5320	24990	MWIL	01 19 1630	S20 W35	01 17.0	6	(BP)					
5320		BOUL	01 19 1635	S20 W34	01 17.1		A	HS	120	1	2	2
5320		LEAR	01 20 0212	S21 W40	01 17.0		B	CAO	130	4	6	3
5320		SVTO	01 20 0812	S20 W43	01 17.0		A	HA	100	5	3	2
5320		BOUL	01 20 1535	S18 W48	01 17.0		A	HS	230	1	3	3
5320		RAMY	01 20 1542	S19 W48	01 17.0		A	HS	110	1	2	3
5320		HOLL	01 20 1745	S20 W49	01 17.0		A	HS	120	1	2	3
5320	24990	MWIL	01 20 1915	S20 W49	01 17.0	5	AP					
5320		LEAR	01 21 0034	S21 W52	01 17.0		B	CAO	130	2	3	3
5320		CULG	01 21 0330	S22 W53	01 17.1		A	HS	70	1	1	1
5320		SVTO	01 21 0950	S21 W59	01 16.9		A	HA	100	1	2	2
5320		RAMY	01 21 1230	S19 W57	01 17.2		A	HS	110	2	2	3
5320		BOUL	01 21 1613	S20 W61	01 17.0		A	HA	60	2	2	3
5320		HOLL	01 21 1730	S19 W59	01 17.2		B	CSO	120	4	5	4
5320		PALE	01 21 1928	S20 W60	01 17.2		B	CSO	70	2	2	3
5320		LEAR	01 22 0125	S17 W62	01 17.3		B	CAO	150	4	9	4
5320		CULG	01 22 0420	S23 W67	01 17.0		A	HS	70	1	2	3
5320		RAMY	01 22 1256	S19 W72	01 17.0		A	HS	110	1	2	3
5320		BOUL	01 22 1620	S19 W78	01 16.7		A	HS	60	1	2	3
5320	24990	MWIL	01 22 1630	S20 W75	01 16.9	4	(AP)					
5320		HOLL	01 22 1800	S19 W75	01 17.0		A	HA	110	2	2	3
5320		PALE	01 22 1910	S21 W75	01 17.0		A	HS	130	3	2	2
5320		LEAR	01 23 0025	S17 W75	01 17.3		B	CSO	90	7	9	4
5320		CULG	01 23 0220	S23 W75	01 17.3		A	HS	60	1	1	2
5320		RAMY	01 23 1300	S23 W80	01 17.4		A	HA	50	1	2	4
5332		RAMY	01 22 1256	S13 W68	01 17.4		B	BXO	20	4	4	3
5332		BOUL	01 22 1620	S13 W72	01 17.2		B	BXO		4	5	3
5332	25006	MWIL	01 22 1630	S15 W70	01 17.4	4	(B)					
5332		HOLL	01 22 1800	S14 W71	01 17.4		B	BXO	10	4	6	3
5332		PALE	01 22 1910	S15 W71	01 17.4		B	BXO	10	5	5	2
5332		RAMY	01 23 1300	S17 W78	01 17.6		B	CAO	50	2	4	4
5332		HOLL	01 23 1840	S14 W85	01 17.3		B	BXO	10	3	4	4
5332		PALE	01 23 2005	S15 W86	01 17.3		A	AX	10	2	2	2
5321		CULG	01 11 0400	N21 E88	01 17.9		A	HS	60	1	2	2
5321		RAMY	01 11 1421	N17 E75	01 17.3		A	HK	160	1	4	2
5321	24991	MWIL	01 11 1715	N18 E79	01 17.7	5	AP					
5321		HOLL	01 11 1805	N18 E75	01 17.5		A	HKO	260	6	9	4
5321		LEAR	01 12 0014	N18 E76	01 17.8		B	CKO	210	7	9	3
5321		CULG	01 12 0428	N20 E75	01 17.9		B	DKO	300	4	10	2
5321		RAMY	01 12 1356	N18 E71	01 18.0		B	EKI	410	9	12	3
5321		BOUL	01 12 1650	N18 E68	01 17.9		B	ESI	260	7	13	2
5321	24991	MWIL	01 12 1730	N17 E66	01 17.7	5	(B)					
5321		HOLL	01 12 1813	N18 E64	01 17.6		B	DKO	290	10	10	2
5321		LEAR	01 13 0010	N18 E64	01 17.9		B	EKI	290	10	11	4
5321		CULG	01 13 0310	N22 E61	01 17.8		B	DKO	230	7	10	2
5321		SVTO	01 13 1120	N18 E56	01 17.7		B	EKO	190	16	12	3
5321	24991	MWIL	01 13 1545	N18 E55	01 17.8	5	(B)					
5321		RAMY	01 13 1605	N18 E57	01 18.0		B	EAI	100	19	11	2
5321		BOUL	01 13 1632	N18 E54	01 17.8		B	EKO	480	11	11	3
5321		HOLL	01 13 2300	N17 E53	01 18.0		B	EKO	270	9	11	2
5321		LEAR	01 14 0020	N19 E51	01 17.9		B	EKI	210	15	11	3
5321		CULG	01 14 0330	N22 E47	01 17.7		B	EAO	180	7	11	2
5321		SVTO	01 14 1008	N18 E45	01 17.8		B	EKO	350	12	11	3
5321		HOLL	01 14 1515	N19 E43	01 17.9		B	EAO	310	17	11	3
5321		RAMY	01 14 1535	N18 E42	01 17.8		B	EAI	380	24	13	4
5321	24991	MWIL	01 14 1545	N18 E41	01 17.8	5	(B)					
5321		BOUL	01 14 1550	N17 E42	01 17.8		B	EAO	200	8	11	1
5321		PALE	01 14 1940	N17 E41	01 17.9		B	EAI	350	12	11	3
5321		LEAR	01 15 0127	N18 E35	01 17.7		B	EAI	310	19	11	3
5321		CULG	01 15 0302	N22 E33	01 17.7		B	ESO	260	12	11	1
5321		SVTO	01 15 1014	N19 E33	01 17.9		B	EKI	380	20	11	2
5321		RAMY	01 15 1500	N18 E29	01 17.8		B	DAI	320	19	10	3

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

JANUARY 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
5321		BOUL	01	15	1530	N17	E28	01	17.8		B	DSO	240	5	10	1
5321	24991	MWIL	01	15	1545	N18	E28	01	17.8	5	(B)					
5321		HOLL	01	15	1735	N19	E28	01	17.9		B	DKO	280	21	10	4
5321		PALE	01	15	1950	N18	E26	01	17.8		B	DAI	330	15	10	3
5321		LEAR	01	16	0040	N18	E23	01	17.8		B	EAI	250	14	11	3
5321		CULG	01	16	0300	N19	E21	01	17.7		B	EAI	260	11	10	2
5321		SVTO	01	16	0917	N19	E18	01	17.8		B	DAO	220	8	10	2
5321		BOUL	01	16	1541	N18	E14	01	17.7		B	DSO	190	3	9	1
5321		RAMY	01	16	1628	N18	E15	01	17.8		B	DAO	240	10	10	3
5321	24991	MWIL	01	16	1630	N17	E13	01	17.7	5	(B)					
5321		HOLL	01	16	1720	N18	E13	01	17.7		B	DSO	220	9	9	4
5321		CULG	01	17	0435	N19	E03	01	17.4		B	DSI	210	7	9	2
5321		SVTO	01	17	1045	N17	E04	01	17.7		B	EAO	230	17	10	2
5321		RAMY	01	17	1340	N18	E03	01	17.8		B	DAO	140	17	9	4
5321		BOUL	01	17	1543	N17	E02	01	17.8		B	DSO	120	3	8	1
5321	24991	MWIL	01	17	1630	N17	W00	01	17.7	5	(BP)					
5321		HOLL	01	17	1655	N18	E00	01	17.7		B	CSO	80	9	12	3
5321		CULG	01	18	0420	N18	W07	01	17.6		B	DAO	110	6	9	3
5321		LEAR	01	18	0458	N19	W07	01	17.7		B	DAO	90	12	9	2
5321		RAMY	01	18	1545	N18	W12	01	17.7		B	CAO	210	16	10	3
5321		BOUL	01	18	1555	N18	W12	01	17.7		B	DAO	220	5	9	1
5321	24991	MWIL	01	18	1615	N17	W13	01	17.7	5	(BP)					
5321		HOLL	01	18	1715	N18	W12	01	17.8		B	CSO	100	6	7	3
5321		LEAR	01	19	0020	N18	W16	01	17.8		B	DAO	130	9	8	3
5321		CULG	01	19	0540	N17	W21	01	17.6		B	CAO	60	5	8	2
5321		RAMY	01	19	1430	N18	W24	01	17.8		B	CSO	190	19	8	4
5321		HOLL	01	19	1520	N19	W25	01	17.7		B	CAO	80	8	8	3
5321	24991	MWIL	01	19	1630	N17	W27	01	17.6	5	(BP)					
5321		BOUL	01	19	1635	N18	W25	01	17.8		B	DSI	100	6	8	2
5321		LEAR	01	20	0212	N18	W32	01	17.6		B	DAO	170	9	9	3
5321		SVTO	01	20	0812	N18	W35	01	17.7		B	CAO	110	9	8	2
5321		BOUL	01	20	1535	N17	W38	01	17.8		B	DSO	140	6	8	3
5321		RAMY	01	20	1542	N18	W38	01	17.8		B	CSO	90	10	8	3
5321		HOLL	01	20	1745	N18	W39	01	17.8		B	CSO	100	6	7	3
5321	24991	MWIL	01	20	1915	N17	W41	01	17.7	4	BP					
5321		LEAR	01	21	0034	N18	W42	01	17.8		B	DAO	110	8	7	3
5321		CULG	01	21	0330	N15	W46	01	17.7		B	CAO	50	4	8	1
5321		SVTO	01	21	0950	N17	W49	01	17.7		B	CAO	100	5	7	2
5321		RAMY	01	21	1230	N18	W49	01	17.8		B	CAO	80	4	7	3
5321		BOUL	01	21	1613	N19	W55	01	17.5		B	DSI	50	4	3	3
5321		HOLL	01	21	1730	N18	W55	01	17.5		A	HS	70	4	3	4
5321		PALE	01	21	1928	N17	W57	01	17.5		A	HS	80	5	3	3
5321		LEAR	01	22	0125	N17	W59	01	17.6		B	DAO	80	4	5	4
5321		CULG	01	22	0420	N14	W60	01	17.6		A	HA	50	3	3	3
5321		RAMY	01	22	1256	N19	W66	01	17.5		B	DSO	80	4	3	3
5321		BOUL	01	22	1620	N20	W71	01	17.2		B	DAO	30	2	1	3
5321	24991	MWIL	01	22	1630	N17	W65	01	17.7	5	(B)					
5321		HOLL	01	22	1800	N19	W69	01	17.5		A	HA	70	3	2	3
5321		PALE	01	22	1910	N19	W70	01	17.4		A	HA	70	2	2	2
5321		LEAR	01	23	0025	N18	W72	01	17.5		B	DAO	90	3	4	4
5321		CULG	01	23	0220	N15	W73	01	17.6		A	HS	60	1	1	2
5331		RAMY	01	21	1230	N16	W38	01	18.6		B	BXO	10	5	5	3
5331		HOLL	01	21	1730	N18	W41	01	18.6		B	BXO		3	3	4
5331		PALE	01	21	1928	N15	W45	01	18.4		A	AX		2	2	3
5331		LEAR	01	22	0125	N17	W45	01	18.6		B	AXO	50	6	6	4
5331		CULG	01	22	0420	N17	W47	01	18.6		B	BXO	10	2	3	3
5331		RAMY	01	22	1256	N19	W51	01	18.6		B	CRO	50	5	4	3
5331		BOUL	01	22	1620	N19	W54	01	18.5		B	BXO		5	5	3
5331		HOLL	01	22	1800	N18	W55	01	18.6		B	CRO	30	6	5	3
5331		PALE	01	22	1910	N18	W52	01	18.8		B	BXO	30	5	4	2
5331		LEAR	01	23	0025	N17	W57	01	18.7		B	BX	30	7	6	4
5331		RAMY	01	23	1300	N16	W63	01	18.8		B	BXO	30	5	5	4
5331		HOLL	01	23	1840	N19	W68	01	18.6		B	BXO	10	2	3	4
5331		PALE	01	23	2005	N16	W69	01	18.6		B	BXO	10	2	3	2
5328		RAMY	01	19	1430	N22	E11	01	20.4		B	BXO	20	7	4	4
5328		HOLL	01	19	1520	N21	E10	01	20.4		B	CRO	20	4	3	3
5328	25002	MWIL	01	19	1630	N22	E09	01	20.4	4	(BP)					

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
5328		BOUL	01 19 1635	N22 E09	01 20.4		B	BXO		3	2	2
5328		LEAR	01 20 0212	N23 E03	01 20.3		B	CRO	30	5	4	3
5328		BOUL	01 20 1535	N23 W06	01 20.2		A	AX	10	1	1	3
5328		RAMY	01 20 1542	N23 W06	01 20.2		A	AX		1		3
5328		HOLL	01 20 1745	N24 W07	01 20.2		A	HR	10	1	1	3
5328	25002	MWIL	01 20 1915	N23 W07	01 20.3	2	AP					
5328		LEAR	01 21 0034	N23 W10	01 20.2		A	AX	10	3	3	3
5328A	24999	MWIL	01 17 1630	N15 E36	01 20.4	4	(B)					
5323		PALE	01 14 1940	N19 E87	01 21.4		A	HA	10	1	2	3
5323		LEAR	01 15 0127	N22 E79	01 21.1		B	CHO	200	2	9	3
5323		CULG	01 15 0302	N26 E81	01 21.4		A	HS	200	1	5	1
5323		SVTO	01 15 1014	N23 E79	01 21.5		A	HH	230	1	2	2
5323		RAMY	01 15 1500	N20 E70	01 21.0		B	CHO	250	3	7	3
5323		BOUL	01 15 1530	N21 E77	01 21.5		A	HS	200	1	3	1
5323	24996	MWIL	01 15 1545	N20 E72	01 21.2	3	(BP)					
5323		HOLL	01 15 1735	N20 E68	01 20.9		B	CSO	140	5	10	4
5323		PALE	01 15 1950	N20 E68	01 21.0		B	CAO	220	3	10	3
5323		LEAR	01 16 0040	N22 E68	01 21.2		B	CSO	330	4	9	3
5323		CULG	01 16 0300	N23 E63	01 21.0		B	CSO	220	3	12	2
5323		BOUL	01 16 1541	N21 E62	01 21.4		A	HS	130	1	3	1
5323		RAMY	01 16 1628	N19 E56	01 20.9		B	CHO	190	5	10	3
5323	24996	MWIL	01 16 1630	N21 E58	01 21.1	6	(BP)					
5323		HOLL	01 16 1720	N20 E56	01 21.0		B	CSO	200	6	11	4
5323		CULG	01 17 0435	N24 E51	01 21.1		A	HS	140	1	2	2
5323		SVTO	01 17 1045	N20 E43	01 20.7		B	CAO	240	7	12	2
5323		RAMY	01 17 1340	N18 E42	01 20.8		BG	CHO	220	5	14	4
5323		BOUL	01 17 1543	N22 E48	01 21.3		A	HS	130	1	3	1
5323	24996	MWIL	01 17 1630	N21 E46	01 21.2	6	(BP)					
5323		HOLL	01 17 1655	N20 E43	01 21.0		B	CSO	230	6	13	3
5323		CULG	01 18 0420	N23 E40	01 21.3		B	CSO	180	3	5	3
5323		LEAR	01 18 0458	N18 E36	01 20.9		B	CSO	140	4	16	2
5323		RAMY	01 18 1545	N22 E36	01 21.4		B	CHO	290	4	6	3
5323		BOUL	01 18 1555	N22 E33	01 21.2		A	HS	200	1	3	1
5323	24996	MWIL	01 18 1615	N21 E34	01 21.3	6	(BP)					
5323		HOLL	01 18 1715	N21 E36	01 21.5		B	CSO	200	2	4	3
5323		LEAR	01 19 0020	N22 E31	01 21.4		A	CHO	260	4	6	3
5323		CULG	01 19 0540	N23 E27	01 21.3		B	CSO	130	3	7	2
5323		RAMY	01 19 1430	N21 E23	01 21.4		B	CHO	260	9	7	4
5323		HOLL	01 19 1520	N22 E23	01 21.4		B	CSO	270	7	7	3
5323	24996	MWIL	01 19 1630	N21 E21	01 21.3	6	(BP)					
5323		BOUL	01 19 1635	N22 E23	01 21.4		B	CSO	200	5	7	2
5323		LEAR	01 20 0212	N22 E16	01 21.3		B	DAO	280	11	8	3
5323		SVTO	01 20 0812	N21 E08	01 20.9		B	FAO	260	9	20	2
5323		BOUL	01 20 1535	N21 E09	01 21.3		B	CHO	330	5	7	3
5323		RAMY	01 20 1542	N20 E09	01 21.3		B	CHO	230	7	9	3
5323		HOLL	01 20 1745	N21 E08	01 21.3		B	CSO	220	7	8	3
5323	24996	MWIL	01 20 1915	N21 E07	01 21.3	5	BP					
5323		LEAR	01 21 0034	N21 E04	01 21.3		B	CAO	240	7	8	3
5323		CULG	01 21 0330	N22 E01	01 21.2		B	CSO	170	2	7	1
5323		SVTO	01 21 0950	N21 W03	01 21.2		B	DHO	240	4	5	2
5323		RAMY	01 21 1230	N19 W04	01 21.2		B	DHO	140	4	8	3
5323		BOUL	01 21 1613	N23 W05	01 21.3		B	CSO	200	5	7	3
5323		HOLL	01 21 1730	N21 W05	01 21.3		B	CSO	330	5	8	4
5323		PALE	01 21 1928	N20 W07	01 21.3		B	DAO	220	4	5	3
5323		LEAR	01 22 0125	N21 W09	01 21.4		B	CKO	250	7	8	4
5323		CULG	01 22 0420	N21 W13	01 21.2		A	HS	100	2	2	3
5323		RAMY	01 22 1256	N21 W16	01 21.3		B	DHO	240	11	10	3
5323		BOUL	01 22 1620	N22 W17	01 21.4		B	CSO	200	7	7	3
5323	24996	MWIL	01 22 1630	N21 W18	01 21.3	6	(B)					
5323		HOLL	01 22 1800	N22 W18	01 21.4		B	CSO	230	11	10	3
5323		PALE	01 22 1910	N20 W20	01 21.3		B	CHO	260	10	7	2
5323		LEAR	01 23 0025	N22 W23	01 21.2		B	CKO	260	13	6	4
5323		CULG	01 23 0220	N20 W23	01 21.3		B	DSO	200	2	4	2
5323		RAMY	01 23 1300	N21 W29	01 21.3		B	DHO	250	14	9	4
5323		BOUL	01 23 1508	N22 W30	01 21.3		B	CSO	100	5	6	2
5323		HOLL	01 23 1840	N22 W33	01 21.2		B	CSO	200	11	8	4
5323		PALE	01 23 2005	N20 W34	01 21.2		B	CSO	240	8	8	2

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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
5323		LEAR	01	24	0024	N22	W35	01	21.3		B	CSO	170	5	5	3
5323		CULG	01	24	0310	N20	W38	01	21.2		B	DSO	220	6	7	2
5323		RAMY	01	24	1410	N19	W43	01	21.3		B	DSO	280	13	10	3
5323		HOLL	01	24	1545	N21	W44	01	21.3		B	CSO	240	9	9	3
5323	24996	MWIL	01	24	1630	N22	W44	01	21.3	6	(BP)					
5323		PALE	01	24	1925	N21	W47	01	21.2		B	CHO	260	8	9	3
5323		LEAR	01	25	0035	N21	W48	01	21.3		B	CSO	170	6	7	2
5323		CULG	01	25	0330	N19	W52	01	21.2		B	CSO	180	4	8	2
5323		SVTO	01	25	1058	N22	W57	01	21.1		B	DHO	240	7	9	2
5323		RAMY	01	25	1320	N20	W55	01	21.3		B	CHI	280	9	8	4
5323	24996	MWIL	01	25	1645	N22	W57	01	21.3	6	(AP)					
5323		HOLL	01	25	1705	N21	W58	01	21.3		B	CSO	200	9	8	4
5323		PALE	01	25	1950	N21	W60	01	21.2		B	CHO	250	8	8	3
5323		LEAR	01	26	0040	N20	W63	01	21.2		B	CSO	190	2	6	3
5323		CULG	01	26	0315	N18	W64	01	21.3		A	HS	190	1	3	2
5323		SVTO	01	26	0850	N21	W69	01	21.1		B	CHO	230	3	6	3
5323	24996	MWIL	01	26	1620	N22	W69	01	21.4	5	AP					
5323		BOUL	01	26	1630	N21	W71	01	21.2		B	CSO	180	3	6	3
5323		HOLL	01	26	1915	N20	W70	01	21.4		B	CSO	130	5	5	4
5323		PALE	01	26	1925	N20	W74	01	21.1		B	CHO	180	5	7	3
5323		RAMY	01	26	2017	N21	W72	01	21.3		B	CHO	240	4	6	3
5323		LEAR	01	27	0100	N20	W73	01	21.4		B	CSO	60	3	5	3
5323		CULG	01	27	0310	N18	W78	01	21.2		B	CSO	180	2	6	2
5323		SVTO	01	27	0850	N20	W79	01	21.3		A	HS	30	1	1	3
5323		RAMY	01	27	1429	N18	W83	01	21.3		A	HA	70	1	3	3
5323	24996	MWIL	01	27	1550	N20	W80	01	21.5	3	AP					
5323B	25007	MWIL	01	22	1630	S14	E07	01	23.2	3	(B)					
5323A	25008	MWIL	01	22	1630	S16	E13	01	23.7	3	(AP)					
5323A		HOLL	01	22	1800	S18	E11	01	23.6		A	AX		1		3
5324		SVTO	01	17	1045	N22	E79	01	23.5		A	HR	20	1	1	2
5324		RAMY	01	17	1340	N23	E76	01	23.4		A	HS	50	1	2	4
5324	25000	MWIL	01	17	1630	N22	E76	01	23.5	4	(AP)					
5324		HOLL	01	17	1655	N23	E77	01	23.6		A	HS	60	1	2	3
5324		CULG	01	18	0420	N27	E70	01	23.6		A	HS	20	1	1	3
5324		LEAR	01	18	0458	N24	E71	01	23.7		A	HS	60	1	2	2
5324		RAMY	01	18	1545	N24	E66	01	23.7		B	CSO	70	3	4	3
5324		BOUL	01	18	1555	N22	E63	01	23.5		A	HS	100	1	2	1
5324	25000	MWIL	01	18	1615	N23	E63	01	23.5	5	(AP)					
5324		HOLL	01	18	1715	N23	E63	01	23.6		A	HS	20	1	1	3
5324		LEAR	01	19	0020	N23	E58	01	23.5		A	HS	40	1	1	3
5324		CULG	01	19	0540	N27	E55	01	23.5		B	CRO	20	3	7	2
5324		RAMY	01	19	1430	N24	E57	01	24.0		B	CAO	80	5	18	4
5324		HOLL	01	19	1520	N23	E51	01	23.6		A	HR	20	1	1	3
5324	25000	MWIL	01	19	1630	N23	E51	01	23.6	5	(AP)					
5324		BOUL	01	19	1635	N24	E52	01	23.7		A	HS	40	1	1	2
5324		LEAR	01	20	0212	N23	E44	01	23.5		B	CAO	80	3	3	3
5324		SVTO	01	20	0812	N23	E42	01	23.6		A	HA	20	1	1	2
5324		BOUL	01	20	1535	N23	E38	01	23.6		A	HS	30	1	1	3
5324		RAMY	01	20	1542	N23	E38	01	23.6		A	HS	60	2	1	3
5324		HOLL	01	20	1745	N24	E37	01	23.6		A	HR	30	1	1	3
5324	25000	MWIL	01	20	1915	N23	E37	01	23.6	4	BP					
5324		LEAR	01	21	0034	N25	E36	01	23.8		B	CAO	70	6	9	3
5324		CULG	01	21	0330	N25	E31	01	23.5		A	HS	10	1	1	1
5324		SVTO	01	21	0950	N23	E28	01	23.6		A	HR	30	1	1	2
5324		RAMY	01	21	1230	N23	E28	01	23.7		A	HS	20	1	1	3
5324		BOUL	01	21	1613	N24	E25	01	23.6		A	HS	20	1	1	3
5324		HOLL	01	21	1730	N24	E25	01	23.7		A	HR	20	1	1	4
5324		PALE	01	21	1928	N23	E23	01	23.6		A	AX	10	1	1	3
5324		LEAR	01	22	0125	N26	E22	01	23.8		B	CSO	30	3	7	4
5324		CULG	01	22	0420	N27	E17	01	23.5		A	HR	10	1	1	3
5324		RAMY	01	22	1256	N24	E13	01	23.5		B	CRO	20	4	16	3
5324		BOUL	01	22	1620	N23	E13	01	23.7		A	HA	20	1	1	3
5324	25000	MWIL	01	22	1630	N23	E13	01	23.7	5	(AP)					
5324		HOLL	01	22	1800	N25	E14	01	23.8		B	BXO	10	3	5	3
5324		PALE	01	22	1910	N24	E12	01	23.7		B	CSO	10	2	3	2
5324		LEAR	01	23	0025	N23	E08	01	23.6		B	CAO	30	2	3	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

JANUARY 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
5324		CULG	01 23 0220	N28 E07	01 23.6		A	AX	10	1	1	2
5324		RAMY	01 23 1300	N26 E02	01 23.7		B	CRO	10	5	5	4
5324		HOLL	01 23 1840	N24 W03	01 23.5		A	HS	10	1	1	4
5324		PALE	01 23 2005	N23 W04	01 23.5		A	HS	10	1	1	2
5324		LEAR	01 24 0024	N23 W05	01 23.6		A	HS	20	1	1	3
5324		CULG	01 24 0310	N23 W08	01 23.5		A	AX	10	1	1	2
5324		RAMY	01 24 1410	N23 W13	01 23.6		A	HR	20	2	2	3
5324		HOLL	01 24 1545	N24 W13	01 23.6		A	AX	10	1	1	3
5324	25000	MWIL	01 24 1630	N24 W13	01 23.7	4	(AP)					
5324		PALE	01 24 1925	N23 W15	01 23.6		A	HR	10	1	1	3
5324		LEAR	01 25 0035	N23 W18	01 23.6		A	AX	10	1	1	2
5324		CULG	01 25 0330	N23 W21	01 23.5		A	AX		1		2
5324		SVTO	01 25 1058	N24 W24	01 23.6		A	HS	20	1	1	2
5324		RAMY	01 25 1320	N23 W25	01 23.6		A	AX	10	1	1	4
5324	25000	MWIL	01 25 1645	N24 W27	01 23.6	3	(AP)					
5324		HOLL	01 25 1705	N24 W26	01 23.7		A	AX		1	1	4
5324		PALE	01 25 1950	N24 W29	01 23.6		A	AX	10	1	1	3
5324		LEAR	01 26 0040	N23 W31	01 23.6		A	AX	10	1	1	3
5324		SVTO	01 26 0850	N25 W32	01 23.9		A	AX		1		3
5324A	25010	MWIL	01 22 1630	S22 E18	01 24.1	3	(BP)					
5324A		HOLL	01 23 1840	S22 E03	01 24.0		A	AX	10	2	1	4
5324B	25009	MWIL	01 22 1630	S13 E18	01 24.0	4	(B)					
5324C	25014	MWIL	01 27 1550	S14 W44	01 24.3	4	(AP)					
5326		RAMY	01 18 1545	S18 E72	01 24.1		B	BXO	30	5	5	3
5326	25001	MWIL	01 18 1615	S19 E75	01 24.4	4	(BP)					
5326		HOLL	01 18 1715	S19 E75	01 24.4		B	BXO	10	3	3	3
5326		LEAR	01 19 0020	S19 E70	01 24.3		A	CRO	30	4	4	3
5326		RAMY	01 19 1430	S22 E61	01 24.3		B	CRO	30	4	5	4
5326		HOLL	01 19 1520	S19 E65	01 24.6		B	BXO	20	4	5	3
5326	25001	MWIL	01 19 1630	S18 E59	01 24.2	4	(BP)					
5326		BOUL	01 19 1635	S18 E62	01 24.4		B	BXO		2	5	2
5326		LEAR	01 20 0212	S18 E53	01 24.1		B	CAO	30	4	3	3
5326		SVTO	01 20 0812	S18 E49	01 24.1		A	HR	20	2	2	2
5326		BOUL	01 20 1535	S16 E44	01 24.0		A	HR	30	1	1	3
5326		RAMY	01 20 1542	S18 E46	01 24.1		A	AX	10	2	1	3
5326		HOLL	01 20 1745	S17 E44	01 24.1		A	HR	10	2	1	3
5326	25001	MWIL	01 20 1915	S17 E44	01 24.1	3	AP					
5326		LEAR	01 21 0034	S17 E41	01 24.1		B	CRO	20	2	3	3
5326		CULG	01 21 0330	S15 E39	01 24.1		A	AX		1		1
5326		SVTO	01 21 0950	S18 E32	01 23.8		B	BXO		2	6	2
5326		RAMY	01 21 1230	S18 E31	01 23.9		B	BXO	10	3	6	3
5326		HOLL	01 21 1730	S18 E29	01 23.9		B	BXO	10	6	11	4
5326		PALE	01 21 1928	S18 E27	01 23.9		B	BXO	10	7	12	3
5326		LEAR	01 22 0125	S16 E27	01 24.1		B	AXO	20	3	4	4
5326		CULG	01 22 0420	S15 E27	01 24.2		A	AX	10	1	1	3
5326		RAMY	01 22 1256	S17 E17	01 23.8		B	CRO	20	11	13	3
5326		BOUL	01 22 1620	S16 E17	01 24.0		B	BXO		5	9	3
5326	25001	MWIL	01 22 1630	S17 E20	01 24.2	4	(AP)					
5326		HOLL	01 22 1800	S16 E20	01 24.3		B	BXO	10	6	5	3
5326		PALE	01 22 1910	S15 E17	01 24.1		B	CSO	10	8	8	2
5326		LEAR	01 23 0025	S18 E12	01 23.9		B	BX	20	8	12	4
5326		RAMY	01 23 1300	S17 E07	01 24.1		B	BXO	10	5	10	4
5326		LEAR	01 24 0024	S18 E03	01 24.2		B	BXO	10	2	2	3
5326		RAMY	01 24 1410	S19 W02	01 24.4		B	BXO	20	9	8	3
5326		HOLL	01 24 1545	S19 W05	01 24.3		B	BXO	10	6	4	3
5326		PALE	01 24 1925	S19 W07	01 24.3		B	BXO	10	4	3	3
5326		LEAR	01 25 0035	S19 W11	01 24.2		A	AX	10	1	1	2
5326		RAMY	01 25 1320	S20 W15	01 24.4		A	AX		1	1	4
5326		PALE	01 25 1950	S19 W19	01 24.4		A	AX		1		3
5326		LEAR	01 26 0040	S20 W20	01 24.5		A	AX	10	1	1	3
5326		SVTO	01 27 0850	S15 W40	01 24.3		A	AX	10	3		3
5326		RAMY	01 27 1429	S18 W40	01 24.5		B	BXO	20	3	2	3
5326		BOUL	01 27 1550	S14 W42	01 24.5		A	AX	10	1	1	3
5326		PALE	01 27 1940	S17 W45	01 24.4		B	BXO	20	7	4	3
5326		CULG	01 28 0325	S17 W48	01 24.5		B	BXO		5	4	1

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5326		RAMY	01 28 1530	S15 W54	01 24.5		B	BXO	50	4	6	3
5326		CULG	01 29 0210	S16 W61	01 24.5		B	BXO		2	5	1
5326		RAMY	01 29 1300	S18 W66	01 24.5		B	BXO	20	3	7	2
5335		HOLL	01 27 2115	S13 W46	01 24.4		B	BXO	10	7	5	3
5335		LEAR	01 28 0050	S14 W47	01 24.5		A	CRO	20	4	3	3
5335		HOLL	01 28 1550	S15 W55	01 24.5		B	BXO	20	3	5	4
5335		LEAR	01 29 0020	S16 W61	01 24.4		B	CSO	20	2	6	3
5335		HOLL	01 29 1540	S15 W68	01 24.5		B	BXO	10	2	5	3
5335		PALE	01 29 1810	S14 W70	01 24.5		B	BXO	10	2	4	2
5333		LEAR	01 20 0212	N26 E57	01 24.5		B	BXO	10	3	3	3
5333		LEAR	01 22 0125	N27 E35	01 24.8		B	AXO	10	3	3	4
5333		CULG	01 22 0420	N29 E33	01 24.8		A	AX	10	1	1	3
5333		BOUL	01 22 1620	N26 E29	01 24.9		A	HS	20	1	1	3
5333	25011	MWIL	01 22 1630	N26 E25	01 24.6	5	(B)					
5333		HOLL	01 22 1800	N26 E26	01 24.8		B	BXO	10	5	4	3
5333		PALE	01 22 1910	N25 E26	01 24.8		B	CSO	10	2	3	2
5333		LEAR	01 23 0025	N27 E21	01 24.6		B	BX	20	9	7	4
5333		CULG	01 23 0220	N28 E19	01 24.6		A	AX	10	2	1	2
5333		RAMY	01 23 1300	N27 E15	01 24.7		B	BXO	10	4	2	4
5333		HOLL	01 23 1840	N27 E12	01 24.7		B	BXO	10	5	3	4
5333		PALE	01 23 2005	N27 E11	01 24.7		A	AX	10	3	2	2
5333		LEAR	01 24 0024	N27 E10	01 24.8		B	BXO	10	2	2	3
5333		CULG	01 24 0310	N26 E06	01 24.6		A	AX		2	1	2
5333		RAMY	01 24 1410	N27 E00	01 24.6		B	BXO	10	4	2	3
5333		HOLL	01 24 1545	N26 E01	01 24.7		A	AX		1		3
5333		PALE	01 24 1925	N26 W01	01 24.7		A	AX		1		3
5333A		LEAR	01 29 0020	S33 W54	01 24.7		A	AX	10	1	1	3
5333B		HOLL	01 28 1550	S39 W37	01 25.6		B	BXO		2	4	4
5337		RAMY	01 28 1530	S21 W35	01 26.0		B	BXO	40	4	4	3
5337		HOLL	01 28 1550	S22 W35	01 26.0		B	BXO	10	3	4	4
5337		LEAR	01 29 0020	S17 W37	01 26.2		B	CRO	10	4	8	3
5337		CULG	01 29 0210	S22 W40	01 26.0		B	BXO		2	3	1
5337		RAMY	01 29 1300	S23 W45	01 26.1		B	BXO	10	2	4	2
5337		HOLL	01 29 1540	S20 W48	01 26.0		B	BXO	10	2	4	3
5337		BOUL	01 29 1708	S20 W49	01 26.0		B	BXO		2	4	3
5337		PALE	01 29 1810	S19 W48	01 26.1		B	BXO	10	2	4	2
5337		LEAR	01 30 0035	S20 W54	01 25.9		B	BXO	10	2	5	3
5337A		HOLL	01 22 1800	S40 E45	01 26.4		A	AX		1		3
5329		BOUL	01 20 1535	N23 E78	01 26.6		A	HA	60	1	2	3
5329		RAMY	01 20 1542	N20 E79	01 26.7		B	DSO	120	3	8	3
5329		HOLL	01 20 1745	N21 E79	01 26.8		B	DSO	180	4	8	3
5329	25003	MWIL	01 20 1915	N17 E77	01 26.6	2	AP					
5329	25005	MWIL	01 20 1915	N19 E81	01 27.0	2	AP					
5329		LEAR	01 21 0034	N19 E76	01 26.8		B	DAO	150	10	9	3
5329		SVTO	01 21 0950	N19 E69	01 26.7		B	DAO	200	16	6	2
5329		RAMY	01 21 1230	N19 E69	01 26.8		B	DSI	390	15	10	3
5329		BOUL	01 21 1613	N18 E68	01 26.8		B	DAI	290	10	10	3
5329		HOLL	01 21 1730	N18 E64	01 26.6		B	DSI	530	23	10	4
5329		PALE	01 21 1928	N21 E65	01 26.8		B	DSI	350	18	10	3
5329		LEAR	01 22 0125	N18 E61	01 26.7		B	FKC	460	24	17	4
5329		CULG	01 22 0420	N23 E57	01 26.6		B	DSI	200	8	7	3
5329		RAMY	01 22 1256	N18 E54	01 26.6		B	ESI	590	42	11	3
5329		BOUL	01 22 1620	N18 E54	01 26.8		B	EAI	490	26	13	3
5329	25003	MWIL	01 22 1630	N14 E53	01 26.7	5	(B)					
5329	25005	MWIL	01 22 1630	N17 E52	01 26.6	5	(B)					
5329		HOLL	01 22 1800	N18 E51	01 26.6		B	EKI	720	39	12	3
5329		PALE	01 22 1910	N18 E50	01 26.6		B	EKI	650	34	12	2
5329		LEAR	01 23 0025	N18 E47	01 26.6		BG	EKI	910	43	14	4
5329		CULG	01 23 0220	N22 E45	01 26.5		B	EKI	700	26	12	2
5329		RAMY	01 23 1300	N18 E41	01 26.7		BG	FKI	1020	31	16	4
5329		BOUL	01 23 1508	N19 E40	01 26.7		B	EAI	480	13	15	2
5329		HOLL	01 23 1840	N18 E38	01 26.7		B	FKI	980	63	17	4

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5329		PALE	01 23 2005	N19 E37	01 26.7		B	FKI	920	36	16	2
5329		LEAR	01 24 0024	N17 E35	01 26.7		BGD	FKI	1030	34	17	3
5329		CULG	01 24 0310	N20 E32	01 26.6		BG	FKI	810	33	17	2
5329		RAMY	01 24 1410	N18 E28	01 26.7		BG	FKI	1000	59	17	3
5329		HOLL	01 24 1545	N18 E25	01 26.6		BG	FKI	1190	61	18	3
5329	25003	MWIL	01 24 1630	N14 E28	01 26.8	5	(D)					
5329	25005	MWIL	01 24 1630	N17 E26	01 26.7	6	(D)					
5329		PALE	01 24 1925	N19 E25	01 26.7		BG	FKI	1120	68	18	3
5329		LEAR	01 25 0035	N18 E21	01 26.6		BG	FHI	1090	50	18	2
5329		CULG	01 25 0330	N20 E17	01 26.4		B	FKI	930	53	19	2
5329		SVTO	01 25 1058	N18 E16	01 26.7		BG	FKI	1120	51	18	2
5329		RAMY	01 25 1320	N17 E13	01 26.5		BG	FKI	1170	98	20	4
5329	25003	MWIL	01 25 1645	N14 E14	01 26.7	4	(BP)					
5329	25005	MWIL	01 25 1645	N17 E12	01 26.6	5	(D)					
5329		HOLL	01 25 1705	N17 E12	01 26.6		BG	FKI	1030	94	18	4
5329		PALE	01 25 1950	N18 E10	01 26.6		BG	FKI	1190	87	17	3
5329		LEAR	01 26 0040	N18 E07	01 26.6		BG	FKC	900	82	19	3
5329		CULG	01 26 0315	N18 E03	01 26.4		BGD	FKI	950	45	16	2
5329		SVTO	01 26 0850	N18 E03	01 26.6		BGD	FKI	1200	61	17	3
5329	25003	MWIL	01 26 1620	N15 W00	01 26.7	4	(AP)					
5329	25005	MWIL	01 26 1620	N18 W02	01 26.5	5	(D)					
5329		BOUL	01 26 1630	N17 W01	01 26.6		B	FKI	760	73	17	3
5329		HOLL	01 26 1915	N18 W02	01 26.6		BGD	FKI	890	68	18	4
5329		PALE	01 26 1925	N18 W08	01 26.2		BG	FKI	1100	74	17	3
5329		RAMY	01 26 2017	N17 W03	01 26.6		BG	FKC	1030	64	18	3
5329		LEAR	01 27 0100	N17 W07	01 26.5		BG	FKI	830	43	17	3
5329		CULG	01 27 0310	N18 W10	01 26.4		BGD	FKI	740	45	18	2
5329		SVTO	01 27 0850	N16 W10	01 26.6		BG	FKI	990	79	16	3
5329		RAMY	01 27 1429	N17 W14	01 26.5		BGD	FKC	920	62	18	3
5329	25005	MWIL	01 27 1550	N16 W15	01 26.5	5	(D)					
5329		BOUL	01 27 1550	N17 W13	01 26.7		B	FKC	1160	50	17	3
5329		PALE	01 27 1940	N18 W18	01 26.4		BG	FKI	680	54	18	3
5329		HOLL	01 27 2115	N18 W18	01 26.5		BG	FKI	980	57	17	3
5329		LEAR	01 28 0050	N17 W20	01 26.5		BG	FKI	780	31	16	3
5329		CULG	01 28 0325	N17 W22	01 26.5		BGD	FKI	630	34	18	1
5329		RAMY	01 28 1530	N17 W27	01 26.6		BGD	FKC	750	41	17	3
5329		HOLL	01 28 1550	N17 W25	01 26.7		BG	FKI	860	54	18	4
5329		LEAR	01 29 0020	N17 W34	01 26.4		BG	FKI	700	44	18	3
5329		CULG	01 29 0210	N17 W34	01 26.5		BG	FKI	630	42	18	1
5329		RAMY	01 29 1300	N15 W41	01 26.4		B	FKI	870	26	17	2
5329	25005	MWIL	01 29 1530	N16 W38	01 26.8	5	(BG)					
5329		HOLL	01 29 1540	N17 W40	01 26.6		BG	FKI	590	41	18	3
5329		BOUL	01 29 1708	N17 W41	01 26.6		B	FKI	580	50	18	3
5329		PALE	01 29 1810	N16 W43	01 26.5		BG	FKI	980	33	17	2
5329		LEAR	01 30 0035	N17 W45	01 26.6		BG	FKI	650	34	18	3
5329		CULG	01 30 0300	N14 W48	01 26.5		BG	FAI	480	23	18	1
5329		SVTO	01 30 1003	N17 W50	01 26.6		BG	FKI	730	32	19	2
5329		BOUL	01 30 1535	N17 W53	01 26.6		B	FAI	630	14	17	1
5329	25005	MWIL	01 30 1630	N17 W52	01 26.7	5	(BG)					
5329		HOLL	01 30 1652	N18 W55	01 26.5		BG	FAI	560	41	19	3
5329		RAMY	01 30 1915	N15 W57	01 26.5		B	FAI	580	35	19	3
5329		PALE	01 30 2240	N18 W57	01 26.6		BG	FAI	540	31	19	3
5329		LEAR	01 31 0112	N17 W55	01 26.9		BG	FAI	560	27	19	3
5329		CULG	01 31 0334	N16 W60	01 26.6		BG	FAI	100	15	17	1
5329		SVTO	01 31 0800	N19 W59	01 26.8		BG	FAO	370	23	17	2
5329		RAMY	01 31 1430	N22 W62	01 26.8		B	FSI	470	39	19	4
5329	25005	MWIL	01 31 1630	N18 W65	01 26.7	5	(BG)					
5329		HOLL	01 31 1845	N20 W68	01 26.6		B	FAI	430	20	18	2
5329		PALE	01 31 1920	N19 W70	01 26.5		B	FAI	310	23	20	3
5329		LEAR	02 01 0016	N20 W67	01 27.0		B	DSO	180	12	10	3
5329		CULG	02 01 0310	N16 W69	01 27.0		BG	DAI	100	5	8	1
5329		SVTO	02 01 1010	N21 W71	01 27.1		B	DRO	70	4	8	2
5329		RAMY	02 01 1412	N22 W78	01 26.7		B	CSO	110	14	13	3
5329	25005	MWIL	02 01 1630	N20 W74	01 27.1	4	(BF)					
5329		LEAR	02 02 0026	N21 W77	01 27.2		A	HS	10	1	1	3
5329		CULG	02 02 0300	N22 W77	01 27.3		A	AX	10	1	1	2
5337B	25004	MWIL	01 20 1915	N23 E78	01 26.8	3	AP					
5337B	25004	MWIL	01 22 1630	N23 E52	01 26.7	5	(AP)					

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

JANUARY 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
5329A		SVTO	01 20 0812	N23 E84	01 26.8		A	HR	80	1	3	2
5329B		SVTO	01 27 0850	S25 E05	01 27.7		A	AX		2	1	3
5336		HOLL	01 27 2115	S21 E03	01 28.1		B	BXO	10	4	4	3
5336		LEAR	01 28 0050	S21 E01	01 28.1		A	AX	10	6	3	3
5336		CULG	01 28 0325	S21 E01	01 28.2		B	CRO	10	8	5	1
5336		RAMY	01 28 1530	S20 W08	01 28.0		B	BXI	80	21	7	3
5336		HOLL	01 28 1550	S20 W09	01 28.0		B	CAO	40	15	5	4
5336		LEAR	01 29 0020	S20 W13	01 28.0		B	CAO	50	13	5	3
5336		CULG	01 29 0210	S20 W13	01 28.1		B	DAO	40	14	6	1
5336		RAMY	01 29 1300	S21 W18	01 28.2		B	DAO	60	6	6	2
5336		HOLL	01 29 1540	S20 W22	01 28.0		B	CAO	50	15	5	3
5336		BOUL	01 29 1708	S19 W23	01 27.9		B	CAO	40	16	5	3
5336		PALE	01 29 1810	S19 W23	01 28.0		B	CSO	40	10	6	2
5336		LEAR	01 30 0035	S19 W26	01 28.0		B	DAI	110	22	10	3
5336		CULG	01 30 0300	S21 W28	01 28.0		B	DAO	30	8	5	1
5336		SVTO	01 30 1003	S19 W30	01 28.1		B	DAO	110	19	10	2
5336		BOUL	01 30 1535	S18 W35	01 28.0		B	CAO	80	4	5	1
5336		HOLL	01 30 1652	S19 W37	01 27.9		B	CSO	30	18	6	3
5336		RAMY	01 30 1915	S22 W35	01 28.1		B	CAI	70	17	7	3
5336		PALE	01 30 2240	S19 W38	01 28.0		B	CAO	50	16	6	3
5336		LEAR	01 31 0112	S19 W40	01 28.0		B	CAO	70	20	10	3
5336		CULG	01 31 0334	S21 W41	01 28.0		B	CSO	140	6	6	1
5336		SVTO	01 31 0800	S18 W41	01 28.2		B	CAO	50	12	9	2
5336		RAMY	01 31 1430	S17 W47	01 28.0		B	CSI	50	10	5	4
5336		HOLL	01 31 1845	S19 W50	01 28.0		B	CSO	40	11	7	2
5336		PALE	01 31 1920	S19 W50	01 28.0		B	CSO	80	10	7	3
5336		LEAR	02 01 0016	S18 W52	01 28.1		B	DSO	40	8	10	3
5336		CULG	02 01 0310	S21 W52	01 28.2		B	CRO	20	5	6	1
5336		SVTO	02 01 1010	S19 W59	01 28.0		B	CAO	90	5	5	2
5336		RAMY	02 01 1412	S17 W60	01 28.1		B	CAO	70	8	6	3
5336		LEAR	02 02 0026	S19 W68	01 27.9		A	HS	60	1	1	3
5336		CULG	02 02 0300	S18 W66	01 28.2		B	CSO	30	2	6	2
5336		SVTO	02 02 1101	S19 W77	01 27.7		A	HA	70	1	2	2
5336		RAMY	02 02 1430	S18 W77	01 27.8		A	HS	60	1	2	3
5336		LEAR	02 03 0026	S19 W80	01 28.0		A	HS	30	1	1	3
5336		CULG	02 03 0245	S22 W81	01 28.0		A	HS	10	1	1	1
5330		HOLL	01 21 1730	S17 E86	01 28.3		A	HS	120	1	2	4
5330		LEAR	01 22 0125	S17 E80	01 28.1		B	DAO	110	5	9	4
5330		CULG	01 22 0420	S17 E80	01 28.2		A	HS	80	1	2	3
5330		RAMY	01 22 1256	S18 E80	01 28.6		B	ESO	350	13	17	3
5330		BOUL	01 22 1620	S18 E78	01 28.6		B	EAI	200	5	11	3
5330	25012	MWIL	01 22 1630	S17 E76	01 28.5	5	(BG)					
5330		HOLL	01 22 1800	S18 E78	01 28.7		B	FKI	550	14	18	3
5330		PALE	01 22 1910	S18 E75	01 28.5		B	EAO	470	14	11	2
5330		LEAR	01 23 0025	S16 E74	01 28.6		B	EKI	390	12	13	4
5330		CULG	01 23 0220	S13 E73	01 28.6		B	EAO	300	9	11	2
5330		RAMY	01 23 1300	S15 E69	01 28.8		BG	FKI	660	27	18	4
5330		BOUL	01 23 1508	S17 E66	01 28.6		B	EAI	290	6	11	2
5330		HOLL	01 23 1840	S18 E69	01 29.0		B	FAI	760	34	20	4
5330		PALE	01 23 2005	S17 E65	01 28.8		B	FAI	630	18	21	2
5330		LEAR	01 24 0024	S18 E64	01 28.9		B	FAI	420	22	19	3
5330		CULG	01 24 0310	S14 E61	01 28.7		BG	FKI	410	23	21	2
5330		RAMY	01 24 1410	S16 E60	01 29.1		B	FAI	570	62	22	3
5330		HOLL	01 24 1545	S18 E55	01 28.8		B	FKI	500	47	24	3
5330	25012	MWIL	01 24 1630	S18 E55	01 28.9	5	(D)					
5330		PALE	01 24 1925	S18 E55	01 29.0		B	FAI	630	37	21	3
5330		LEAR	01 25 0035	S18 E52	01 29.0		B	FAI	470	31	20	2
5330		CULG	01 25 0330	S13 E50	01 28.9		B	FAI	360	22	20	2
5330		SVTO	01 25 1058	S18 E48	01 29.1		BG	FAI	720	47	23	2
5330		RAMY	01 25 1320	S17 E47	01 29.1		B	FKI	720	77	22	4
5330	25012	MWIL	01 25 1645	S18 E42	01 28.9	5	(D)					
5330		HOLL	01 25 1705	S19 E42	01 28.9		BG	FKI	610	62	20	4
5330		PALE	01 25 1950	S18 E41	01 28.9		BG	FAI	590	53	20	3
5330		LEAR	01 26 0040	S18 E40	01 29.1		B	FAI	580	61	23	3
5330		CULG	01 26 0315	S15 E37	01 28.9		BGD	FKI	340	28	21	2
5330		SVTO	01 26 0850	S17 E35	01 29.0		BGD	FKI	610	56	23	3

S U N S P O T G R O U P S
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JANUARY 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
5330	25012	MWIL	01 26 1620	S18 E30	01 29.0	5	(D)					
5330		BOUL	01 26 1630	S18 E30	01 29.0		B	FAI	350	41	24	3
5330		HOLL	01 26 1915	S19 E30	01 29.1		BGD	FKI	420	70	22	4
5330		PALE	01 26 1925	S18 E29	01 29.0		BG	FAI	440	62	22	3
5330		RAMY	01 26 2017	S19 E29	01 29.0		BG	FKI	420	50	22	3
5330		LEAR	01 27 0100	S18 E26	01 29.0		BG	FAI	280	43	22	3
5330		CULG	01 27 0310	S15 E25	01 29.0		BGD	FAI	280	61	22	2
5330		SVTO	01 27 0850	S18 E21	01 29.0		BGD	FAI	470	0	24	3
5330		RAMY	01 27 1429	S17 E20	01 29.1		BG	FAI	520	77	22	3
5330		BOUL	01 27 1550	S18 E18	01 29.0		B	FAC	590	68	23	3
5330	25012	MWIL	01 27 1550	S18 E19	01 29.1	5	(D)					
5330		PALE	01 27 1940	S16 E15	01 28.9		BG	FKI	340	93	24	3
5330		HOLL	01 27 2115	S19 E16	01 29.1		BG	FAI	370	57	21	3
5330		LEAR	01 28 0050	S18 E15	01 29.2		BG	FAO	280	34	20	3
5330		CULG	01 28 0325	S17 E12	01 29.0		BGD	FKI	320	36	20	1
5330		RAMY	01 28 1530	S18 E07	01 29.2		BG	FAI	310	55	22	3
5330		HOLL	01 28 1550	S19 E08	01 29.3		BG	FAI	260	53	22	4
5330		LEAR	01 29 0020	S18 W01	01 28.9		BG	FAI	240	51	16	3
5330		CULG	01 29 0210	S18 E01	01 29.2		BGD	FAI	170	49	18	1
5330		RAMY	01 29 1300	S17 W03	01 29.3		BG	FAI	340	55	21	2
5330	25012	MWIL	01 29 1530	S18 W15	01 28.5	4	(BG)					
5330		HOLL	01 29 1540	S19 W05	01 29.3		BG	FAI	230	56	21	3
5330		BOUL	01 29 1708	S18 W06	01 29.2		B	FAI	180	56	23	3
5330		PALE	01 29 1810	S19 W08	01 29.1		BG	FAI	230	48	20	2
5330		LEAR	01 30 0035	S18 W11	01 29.2		BG	FAI	250	48	21	3
5330		CULG	01 30 0300	S19 W13	01 29.1		BG	FAI	130	28	18	1
5330		SVTO	01 30 1003	S19 W15	01 29.3		BG	EAI	150	34	12	2
5330		BOUL	01 30 1535	S17 W23	01 28.9		B	EAI	220	14	14	1
5330	25012	MWIL	01 30 1630	S18 W27	01 28.6	5	(BG)					
5330		HOLL	01 30 1652	S19 W22	01 29.0		BG	CAI	130	48	22	3
5330		RAMY	01 30 1915	S19 W20	01 29.3		BG	FAI	190	47	25	3
5330		PALE	01 30 2240	S19 W23	01 29.2		BG	FAI	120	37	18	3
5330		LEAR	01 31 0112	S18 W27	01 29.0		BG	EAI	150	48	20	3
5330		CULG	01 31 0334	S20 W30	01 28.8		BG	CAI	10	16	15	1
5330		SVTO	01 31 0800	S19 W27	01 29.3		B	CAO	100	20	10	2
5330		RAMY	01 31 1430	S16 W31	01 29.2		B	FAI	170	43	20	4
5330	25012	MWIL	01 31 1630	S18 W39	01 28.7	5	(BG)					
5330		HOLL	01 31 1845	S17 W38	01 28.9		B	CAI	100	19	13	2
5330		PALE	01 31 1920	S18 W32	01 29.4		B	FAO	80	18	14	3
5330		LEAR	02 01 0016	S18 W40	01 29.1		B	BSO	90	5	5	3
5330		CULG	02 01 0310	S20 W40	01 29.2		BG	EAI	40	13	13	1
5330		SVTO	02 01 1010	S18 W47	01 28.9		B	DAO	60	8	6	2
5330		RAMY	02 01 1412	S18 W42	01 29.5		B	CAI	80	15	15	3
5330	25012	MWIL	02 01 1630	S18 W53	01 28.7	4	(BG)					
5330		LEAR	02 02 0026	S19 W51	01 29.2		B	BSO	30	7	5	3
5330		CULG	02 02 0300	S18 W53	01 29.2		B	DAO	30	5	6	2
5330		SVTO	02 02 1101	S19 W58	01 29.1		B	DAO	60	4	6	2
5330		RAMY	02 02 1430	S18 W63	01 28.9		B	BXO	40	4	4	3
5330		HOLL	02 02 1700	S18 W69	01 28.5		B	CSO	30	3	15	3
5330		LEAR	02 03 0026	S19 W66	01 29.1		A	AX	30	2	1	3
5330		CULG	02 03 0245	S22 W68	01 29.0		A	AX		1		1
5330		SVTO	02 03 0922	S18 W73	01 28.9		B	BXO	20	3	6	3
5330		HOLL	02 03 1550	S18 W75	01 29.0		B	BXO	10	3	8	3
5330		PALE	02 03 1920	S17 W71	01 29.5		B	BXO	10	2	3	2
5330		CULG	02 04 0310	S21 W73	01 29.6		A	AX		1		1
5330		CULG	02 05 0240	S19 W69	01 30.9		A	AX		1		2
5344		SVTO	02 01 1010	N09 W43	01 29.3		A	HR	10	1	1	2
5344		RAMY	02 01 1412	N09 W43	01 29.5		A	AX	10	1	1	3
5344	25021	MWIL	02 01 1630	N09 W45	01 29.4	4	(B)					
5344		LEAR	02 02 0026	N09 W49	01 29.4		B	BXO	10	2	3	3
5344		CULG	02 02 0300	N10 W50	01 29.5		B	BXO	10	3	2	2
5344		SVTO	02 02 1101	N10 W58	01 29.2		B	BXO	30	2	3	2
5344		RAMY	02 02 1430	N10 W57	01 29.4		B	BXO	40	2	3	3
5345		RAMY	02 02 1430	N19 W45	01 30.3		B	BXO	20	2	2	3
5345		HOLL	02 02 1700	N20 W47	01 30.2		B	BXO	10	2	3	3
5345		CULG	02 03 0245	N19 W52	01 30.2		A	AX		1		1
5345		SVTO	02 03 0922	N19 W59	01 30.0		B	BXO	20	5	5	3

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JANUARY 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
5345		HOLL	02	03	1550	N19	W59	01	30.2		B	BXO	10	4	4	3
5345		RAMY	02	03	1628	N20	W60	01	30.2		B	BXO	20	3	5	1
5345		PALE	02	03	1920	N19	W64	01	30.0		B	BXO	20	2	3	2
5346		RAMY	02	02	1430	S26	W40	01	30.6		B	BXO	20	2	2	3
5346		HOLL	02	02	1700	S25	W42	01	30.5		A	AX		2	2	3
5346		LEAR	02	03	0026	S27	W45	01	30.6		A	AX	30	2	1	3
5346		CULG	02	03	0245	S28	W45	01	30.7		A	AX		2	2	1
5346		SVTO	02	03	0922	S26	W51	01	30.5		A	AX	10	4	4	3
5346		HOLL	02	03	1550	S26	W50	01	30.9		A	AX	10	2	2	3
5346		RAMY	02	03	1628	S24	W52	01	30.8		B	BXO	10	3	4	1
5346		PALE	02	03	1920	S26	W58	01	30.4		B	BXO	10	2	3	2
5346		LEAR	02	04	0133	S26	W57	01	30.7		A	AX	10	1	1	3
5346		HOLL	02	04	1742	S25	W68	01	30.6		A	AX	10	1	1	3
5346		PALE	02	04	2205	S26	W75	01	30.2		A	AX	10	1	1	3
5330A		PALE	01	30	2240	N37	W02	01	30.8		B	BXO	10	2	3	3
5330A		LEAR	01	31	0112	N38	W04	01	30.7		B	BXO	10	2	3	3
5348		HOLL	02	02	1700	N38	W35	01	31.0		A	AX		2	2	3
5348		CULG	02	03	0245	N34	W43	01	30.8		A	AX		1		1
5348		SVTO	02	03	0922	N36	W48	01	30.6		A	AX	10	3	3	3
5348		HOLL	02	03	1550	N35	W48	01	30.9		B	BXO		2	3	3
5348		PALE	02	03	1920	N37	W55	01	30.5		B	BXO	10	2	4	2
5348		LEAR	02	04	0133	N36	W58	01	30.5		A	AX	10	1	1	3
5348		CULG	02	04	0310	N32	W59	01	30.6		A	AX		1		1
5348		RAMY	02	04	1310	N37	W65	01	30.4		A	AX	10	1	1	3

Stations reporting:

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

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 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	0002	0012	0129	1+	1			1			0001E	C8.1	5290
01	0407	0423	0507	1-	3			1	1		0353	C3.1	
01	0607	0628	0819	3-	5	1		1	1	2	0612	M1.4	5292
01	0900	0910	0920	1	1					1	No flare		
01	1022	1028	1035	1-	1					1	No flare		
01	1102	1108	1156	1-	5	1		1	1	3	1052	C6.7	5303
01	1336	1352	1428	1-	5	1	2	1	1	5	1121	C8.1	5290
01	1516	1520	1543	1-	5		1	1		4	1434	C8.3	5290
01	1627	1636	1717	1+	3					5	1627	C7.1	5292
01	1727	1734	1750	1	1					1	No flare		
01	1803	1805	1809	1-	1					1	1802	C2.8	5303
01	1818	1820	1828	1	3					2	1817	C4.8	
01	1828	1831	1848	1	1					1	1827	C6.3	5292
01	1848	1850	1903	1	3					3	1847	C3.4	
01	2321	2325	2334	1-	1			1			2321		5292
01	2340	2351	0048	1	1			1			2343	C8.1	5292
02	0213	0222	0312	1-	1			1			0210		
02	0345	0400	0433	1-	3			1	1		0346	C3.1	5290
02	0444	0457	0533	1-	1			1			0440	C4.1	
02	0543	0550	0641	1-	1			1			0541	C3.4	
02	0712	0715	0757	1-	1			1			No flare		
02	0816	0827	0858	1-	1			1			0821	C4.6	5292
02	0934	0950	1033	1-	5		2	1		1	0926	C8.5	5303
02	1033	1045	1112	1-	5	1	3	1	1	1	1017	M1.1	5292
02	1407	1417	1445	1-	1			1			No flare		
02	1717	1722	1745	1+	3					5	1715	C4.6	5292
02	1853	1907	2000	3-	3					7	1848	M2.2	
02	2307	2313	2356	1-	1			1			2306	C8.1	
03	0013	0017	0044	1-	1			1			0024		5303
03	0047	0054	0134	1-	3			1	1		No flare		
03	0200	0210	0303	1-	1				1		No flare		
03	0305	0317	0411	1	5	1		1	1		0304	C5.9	5303
03	0526	0530	0600	1-	3			1	1		No flare		
03	0628	0642	0717	1-	3			1	1		No flare		
03	0747	0754	0819	1-	1			1			No flare		
03	0927	0934	0950	1-	5			1		2	No flare		
03	1013	1028	1053	1+	5	2	3	1	1	2	1010	M1.2	
03	1056	1105	1124	1-	5	2	5	1	1	2	1054	C8.6	
03	1146	1155	1230	1-	5		2	1	1	2	1142	M1.0	5307
03	1340	1355	1453	1	5		2	1		1	1344	M1.1	5297
03	1452	1503	1528	1+	1		1				1450		5303
03	1648	1658	1707	1	3					4	No flare		
03	1735	1737	1754	1	3					3	1738E	M1.5	5307
03	1753	1756	1830	1+	3					4	1753	C8.5	
03	2304	2311	2351	1-	1			1			No flare		
04	0050	0055	0153	1-	1			1			0050	C3.5	5307
04	0632	0656	0737	1-	3			1	1		No flare		
04	0751	0806	0849	1-	1			1			0758E		
04	1111	1117	1141	1-	5		1	1		1	No flare		
04	1452	1458	1516	1-	5		1	1		5	1448	C9.0	
04	1602	1615	1640	2	3					4	1602	C8.4	
04	1653	1700	1714	1	5					5	1603	M4.7	
04	1748	1802	1818	1+	1					1	1713	M1.4	
04	2052	2100	2130	2	3					2	2052	C6.6	
05	0203	0210	0224	1-	3			1	1		No flare		
05	0224	0230	0304	1-	1			1			No flare		
05	0411	0437	0530	1-	3			1	1		0416		
05	0546	0552	0630	1-	5			1	1	1	No flare		
05	0635	0647	0737	1-	5			1	1	1	0635		5309
05	0757	0802	0830	1-	5				1	1	No flare		
05	0952	0957	1002	1-	5		3	1			0951	C3.2	5309
05	1159	1211	1241	1-	5		4	1		2	1156	C5.9	
05	2124	2130	2142	1-	3			1		1	2123	C5.7	5301
05	2330	2349	0042	1-	1			1			No flare		

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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
06	0233	0239	0309	1-	3			1	1		No flare		
06	0502	0512	0703	3-	5	1		1	1	1	0459	M1.4	
06	0747	0751	0801	1-	1					1	No flare		
06	1756	1810	1844	1-	5			1		6	No flare		
06	1915	1928	2002	2	3					3	1914E	M1.2	5301
06	1937	1954	2024	1	3			1		1	1949	C6.5	5312
06	2024	2036	2047	1-	1			1			2011		5301
06	2123	2127	2208	1-	1			1			*		
06	2251	2354	0038	2-	1			1			2250	M1.1	
07	0038	0047	0125	1-	3			1	1		0038	C6.6	
07	0225	0256	0327	2-	3			1	1		0236	C8.9	5301
07	0330	0352	0403	3-	3			1	1		No flare		
07	0403	0430	0635	3+	5	1		1	1		0412	X1.1	5312
07	0456	0525	0610	1-	1			1			No flare		
07	0657	0706	0740	1-	1			1			No flare		
07	0741	0802	0830	1-	3			1		1	0744	C8.6	5301
07	0937	0951	1009	1-	1			1			No flare		
07	1016	1030	1057	1-	5			1		2	1015	C9.0	
07	1251	1307	1415	2-	5	1	2	1	1	2	1306	M1.8	5301
07	1700	1706	1800	2+	3					5	1700	M1.3	5301
07	1943	1946	2002	1	1					1	1905E	M1.3	5312
07	2202	2302	0021	1+	5	1		1		1	2144	M1.6	
08	0103	0112	0129	1-	3			1	1		No flare		
08	0133	0143	0156	1-	1				1		No flare		
08	0155	0207	0252	1-	3			1	1		No flare		
08	0255	0306	0324	1+	3			1	1		No flare		
08	0324	0336	0507	1+	3			1	1		No flare		
08	0519	0550	0647	2	5			1	1	1	0514E	C6.6	
08	0647	0656	0800	3	5	1		1	1	1	*		
08	0745	0753	0805	1-	1					1	0757E	M2.4	
08	0829	0836	0902	1-	3			1		1	0828	C9.6	5311
08	0914	0923	0947	1-	5			1		2	No flare		
08	1118	1125	1151	1-	5		1	1	1	2	No flare		
08	1227	1251	1400	3-	5	3	6	1	1	3	1228E	M7.5	5312
08	1455	1503	1526	1-	5			1		5	1502	M1.1	5310
08	1705	1715	1750	1-	5			1		8	1704	M5.6	
08	1855	1908	1930	1-	5			1		6	1857	M1.5	5312
08	1946	1959	2040	2	5			1		3	1948	M1.1	
08	2112	2116	2124	1-	3			1		1	2109	C6.1	
08	2235	2249	2325	1-	1			1			2230		5312
08	2327	2349	0053	3	5	2		1		1	2325	M4.9	5312
09	0053	0114	0319	2+	5	2		1	1		0100	M3.2	5315
09	0352	0400	0445	1-	3			1	1		0352	C7.3	
09	0445	0513	0634	3+	5	1		1	1		0458E	M2.0	5312
09	0620	0630	0633	1-	1					1	No flare		
09	0634	0717	0849	2+	5			1	1	1	0632	M2.1	5311
09	0756	0758	0810	1	3		1			2	0734E		
09	0827	0832	0850	1-	3		1			2	0745		5311
09	1007	1010	1025	1-	5			1		2	No flare		
09	1035	1055	1205	2	3		1			1	No flare		
09	1216	1229	1253	1-	5	1		1		2	No flare		
09	1351	1405	1536	1+	5		3	1	1	5	1347	M1.0	
09	1538	1554	1611	1-	5			1		3	1542E	M1.3	5312
09	1825	1833	1900	2	3					2	No flare		
09	1916	1927	2056	2-	5	2		1		4	1914	M8.3	5312
09	2113	2123	2152	1-	1			1			No flare		
10	0024	0044	0152	3-	5	2		1			0021	M3.0	5312
10	0152	0203	0303	1	3			1	1		0148		5312
10	0333	0342	0451	1	5			1	1	1	No flare		
10	0451	0523	0620	3-	5			1	1	1	No flare		
10	0552	0600	0615	1	1					1	0549	M1.4	5316
10	0615	0617	0627	1	1					1	No flare		
10	0621	0632	0837	2+	5	1		1	1	1	0622	M3.6	5312
10	0730	0735	0747	1-	1					1	0720		5312

* = No flare patrol.

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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	0747	0750	0755	1-	1					1	No flare		
10	0921	0935	1015	1-	5	1		1	1	1	No flare		
10	1307	1317	1418	2-	5	1	6	1	1	6	1304	M1.5	
10	1741	1803	1830	1-	5			1		7	1733E	M2.6	5312
10	1904	1913	1939	1-	5			1		6	1855	M1.6	5315
10	2021	2032	2242	2+	5	1		1		7	2023	X1.4	5312
10	2351	2357	0027	1-	1			1			No flare		
11	0049	0059	0205	2+	5	2		1			0030	M2.1	5312
11	0208	0214	0242	1-	3			1	1		0207	C5.8	
11	0242	0305	0343	1-	3			1	1		0257	C7.6	5317
11	0442	0500	0625	2	5			1	1	1	0445	M1.0	5312
11	0625	0651	0814	3-	5	1		1	1	1	0635	M1.9	5312
11	0951	0956	1039	1+	5	1	3	1	1	2	0950	M1.2	
11	1042	1053	1109	1-	3			1		1	1040	C5.0	
11	1132	1135	1149	1-	3		1	1			1131	C6.5	
11	1205	1227	1314	1	5	1		1	1	1	1131	C6.5	
11	1313	1323	1332	1-	5		1	1	1	2	1312	C8.7	
11	1531	1537	1605	1-	5			1		6	1528	M1.2	
11	1637	1645	1708	1-	1			1			1641		5312
11	1745	1747	1802	1-	3					3	No flare		
11	1802	1803	1815	1-	3					5	1800	C8.1	
11	1819	1825	1841	1-	5			1		3	1745	C5.6	
11	1944	1945	2000	1-	3					2	1942	C5.7	5321
11	2050	2051	2125	2	1					1	2047E	C7.4	5312
11	2134	2138	2147	1-	1			1			2129	C5.3	5318
11	2229	2259	0031	2-	5			1		2	2225E	C8.9	
12	0052	0105	0131	1-	3			1	1		0050		5312
12	0146	0151	0206	1-	1				1		No flare		
12	0206	0210	0230	1-	1				1		0202		5321
12	0254	0300	0314	1-	1				1		No flare		
12	0345	0350	0409	1-	3				1	1	No flare		
12	0408	0430	0520	2+	3			1	1		0417	M1.4	5312
12	0455	0500	0516	1	1					1	0432E		
12	0520	0526	0620	1-	1			1			0521		5317
12	0616	0619	0645	1	1					1	No flare		
12	0638	0647	0733	1-	3			1	1		0633	C4.7	5312
12	0756	0803	0818	1-	1			1			0750		5312
12	0836	0838	0908	1-	5		5	1			0832	C4.2	5312
12	1020	1034	1117	1-	5	1		1	1	1	No flare		
12	1536	1538	1552	1-	3					2	No flare		
12	1744	1746	1811	1	3					4	1739	C8.7	5311
12	2014	2030	2156	1-	5	1		1		6	2029E	M4.7	5317
12	2354	0030	0142	2	3	1		1			0003	M1.5	5312
13	0142	0200	0244	1-	3			1	1		0135		5312
13	0351	0403	0514	3	5	1		1	1	1	0351	M2.1	5312
13	0432	0434	0440	1-	1					1	No flare		
13	0514	0520	0629	1-	5	1		1	1		No flare		
13	0633	0700	0754	1+	1			1			No flare		
13	0832	0839	0856	2-	5	1	5	1	1	2	0829	X2.3	5312
13	0856	0906	0931	2-	5		4	1		1	0829	X2.3	5312
13	1011	1029	1043	3+	5	3	5	1	1	3	0829	X2.3	5312
13	1225	1241	1358	2+	5	3	6	1	1	3	1225	M9.2	
13	1416	1418	1430	1-	1					1	No flare		
13	1522	1537	1555	1-	5			1		3	*		
13	1615	1618	1643	1+	5		1			2	1618E	M6.1	5312
13	1643	1645	1700	1-	3					3	1618E	M6.1	5312
13	1706	1718	1825	2+	3					3	1618E	M6.1	5312
13	1930	1933	1945	1-	3					5	1845	M1.4	5321
13	1945	1950	2013	1	3					5	1845	M1.4	5321
13	2023	2040	2052	1	5	1				3	2010	M2.0	
13	2107	2123	2148	1-	5			1		5	2027	M1.6	5321
13	2148	2212	2314	2	5	1		1		3	2152	M2.8	
13	2314	2324	0015	1-	1			1			2309		5321

* = No flare patrol.

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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
14	0146	0151	0205	1-	1			1			No flare		
14	0208	0233	0249	2+	5	1		1	1		0214	M1.0	5318
14	0249	0315	0324	3-	5	1		1	1		0254	M6.2	5312
14	0324	0333	0400	3+	5	1		1	1	1	0254	M6.2	5312
14	0400	0419	0812	3+	5	1		1	1	1	0254	X2.1	5312
14	0927	0934	1016	1-	3			1		1	0942E		5321
14	1354	1400	1515	1-	5		6	1	1	5	1353	M1.1	5312
14	1942	1947	2045	2	5	1				3	1940	C8.3	5321
14	2144	2149	2205	2	5			1		2	2118E	M2.4	5312
14	2205	2241	2325	3+	5	1		1		1	2145	X1.1	5312
14	2325	2355	0029	2-	1			1			2345		5312
15	0029	0053	0203	2-	3	1		1			0043		5312
15	0300	0309	0330	1-	3			1	1		No flare		
15	0333	0352	0402	2	3			1	1		0329		
15	0402	0511	0646	3-	5			1	1	1	0406		
15	0646	0653	0755	1-	3			1		1	0647		5317
15	0755	0801	0903	2	5			1		2	0758	M1.0	5312
15	0906	0910	0932	1-	5			1		2	No flare		
15	0942	0944	1016	1-	5			1		3	No flare		
15	1125	1129	1145	1-	1					1	No flare		
15	1150	1155	1205	1-	3			1		1	1151E	C7.0	5312
15	1303	1308	1341	1-	5		3	1	1	1	1238	M1.0	5312
15	1347	1400	1415	1+	3					3	No flare		
15	1513	1527	1546	2-	3					2	1515		5312
15	1547	1557	1626	1	5			1		5	1546	M4.5	5312
15	1839	1843	1912	1+	3					4	1841		5312
15	2105	2120	2207	1-	3			1		1	No flare		
15	2321	2327	0012	1-	3			1		1	2315	C5.9	5312
16	0047	0053	0133	1-	1			1			No flare		
16	0211	0215	0243	1-	1			1			0207		5311
16	0310	0332	0450	3-	5	1		1		1	0307	M1.7	5312
16	0450	0502	0620	1+	3			1		1	No flare		
16	0620	0633	0731	3-	5	1	1	1		1	0616	M1.4	5312
16	0710	0715	0727	1	1		1				No flare		
16	0731	0743	0829	1-	1			1			0729		
16	0829	0849	0906	2	5		2	1		2	0825	M2.1	5312
16	0906	0916	1002	2	5		4	1	1	2	0904E		
16	1003	1010	1040	1	5	1	3	1	1	2	No flare		
16	1040	1049	1142	2	3		1			1	No flare		
16	1041	1103	1341	2+	5	3	4	1	1	3	1051	M5.1	
16	1507	1523	1606	1	5		1	1		5	1504	M1.8	5312
16	1650	1659	1735	1+	3					3	1643		5311
16	1756	1800	1845	1+	5					6	1756	C6.6	5312
16	1848	1900	2020	2+	5					8	No flare		
16	2202	2221	0045	3-	5	1		1		5	2207	M7.2	
17	0143	0158	0220	1	3			1	1		0142		
17	0225	0229	0344	1-	3			1	1		No flare		
17	0513	0524	0535	1-	3			1	1		0512		
17	0535	0544	0640	2	3			1	1		0533E	C9.4	
17	0640	0650	0739	1-	5		1	1	1	1	0640	C5.7	
17	0816	0819	0834	1-	3			1		1	0817	C3.5	
17	0836	0840	0909	1-	3		1	1		1	0837		5317
17	1412	1415	1427	1	1		1				1413	C4.6	5312
17	1539	1543	1602	1	1					1	1529	C4.2	
17	2030	2030	2036	1	1					1	No flare		
17	2110	2117	2156	2+	1					1	2108		5317
18	0021	0048	0148	1-	1			1			0020	C5.2	
18	0333	0359	0456	1	3			1	1		No flare		
18	0509	0517	0609	2	5	1		1	1	1	0508	C9.6	5312
18	0609	0639	0656	3+	5	1		1	1	1	0606		
18	0656	0707	0849	3+	3	1		1			0702E	X1.4	5312
18	0849	0905	1100	3+	5	4	4	1	1	3	0851E	M9.0	5312
18	1156	1218	1311	1-	3			1	1		*		

* = No flare patrol.

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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
18	1314	1316	1340	1-	1					1	*		
18	1813	1824	1845	1+	5	1				7	1804	M9.6	5318
18	2130	2135	2155	1	1					1	No flare		
18	2358	0006	0023	1-	1			1			2358	C3.9	
19	0021	0027	0047	1-	1			1			No flare		
19	0110	0132	0229	1-	1			1			0108		5326
19	0242	0250	0252	1-	1				1		0236		
19	0256	0320	0400	1-	3			1	1		No flare		
19	0821	0832	0848	1-	1			1			No flare		
19	0934	0947	1037	1+	5			1	1	2	0943	C6.2	5317
19	1225	1233	1244	1-	1			1			No flare		
19	1953	2000	2030	2	3					2	1953E		5317
20	0126	0134	0245	1-	3			1	1		0118		
20	0414	0419	0507	1-	5			1	1	1	0414	C4.4	
20	0600	0608	0623	1-	3			1	1		No flare		
20	0647	0650	0702	1-	1			1			No flare		
20	0917	0921	1005	1-	5	1	1	1	1	2	0916	C4.3	
20	1440	1452	1512	1+	1		1				1422E	C5.5	5317
20	1515	1525	1532	1	3					2	1510		5317
20	1525	1603	1645	2+	5	1		1		6	1510	M8.4	
21	0021	0046	0110	1-	1			1			No flare		
21	0232	0242	0251	1-	3			1	1		No flare		
21	0251	0300	0411	1-	3			1	1		No flare		
21	0425	0430	0507	1-	3			1	1		0439		5329
21	0531	0600	0630	1	3			1	1		0537	C9.7	5329
21	0630	0646	0659	2	3			1	1		No flare		
21	0659	0709	0921	3	3			1	1		0658	M1.4	
21	0851	0903	0914	1+	1		1				*		
21	0958	1005	1019	1-	1			1			*		
21	1136	1145	1252	1-	5			1	1	2	1136	C5.4	
21	1241	1247	1320	2	1					1	1222		5329
21	2210	2253	0011	1-	1			1			No flare		
22	0133	0139	0208	1-	1			1			0133	C4.3	
22	0219	0235	0255	1	1			1			0207		5329
22	0255	0304	0321	2	3	1		1	1		0255	M1.0	
22	0324	0330	0432	1	1			1			No flare		
22	0729	0736	0820	1-	5			1	1	2	0729	C4.0	
22	0830	0838	0931	1-	5			1		2	0826	C6.1	
22	0945	1002	1119	3-	5	1	2	1	1	4	0944	M2.4	
22	1250	1308	1332	1	5		1	1		2	1247	M1.5	
22	1348	1358	1447	1-	5	1	2	1	1	2	1345	C6.0	
22	1855	1859	1928	2-	5					4	1855	C9.6	5330
22	2055	2057	2102	1-	1					1	2055	C5.9	5329
22	2213	2225	2315	1+	5	1		1		1	2211	C9.2	5329
22	2322	2329	2319	1-	3			1		1	No flare		
23	0054	0136	0257	2	5	2		1	1		0054	M1.6	5329
23	0330	0351	0455	1-	5	1		1	1		No flare		
23	0638	0650	0750	1-	3			1	1		0628	C4.5	5329
23	0749	0753	0821	2-	1			1			0733		
23	1241	1245	1309	1-	1			1			No flare		
23	1653	1655	1702	1-	1					1	No flare		
23	1720	1724	1728	1-	1					1	No flare		
23	2131	2148	2215	1-	5	1		1		3	2137	M1.2	
23	2215	2247	2352	1-	1			1			2233E		5329
23	2356	0006	0031	1-	1			1			No flare		
24	0017	0021	0045	1-	1			1			No flare		
24	0405	0437	0525	1-	1			1			0424	C3.9	5329
24	0608	0618	0635	1-	1			1			No flare		
24	1030	1042	1133	1-	1			1			1007	C6.7	5324
24	1550	1552	1605	1-	1					1	1536	C5.2	5329
24	1721	1730	1750	1	1					1	1711	C4.7	5329
24	1808	1813	1834	2	5					5	1730E	M1.1	5329
24	2103	2107	2115	1-	1					1	No flare		
24	2244	2313	0042	2	5	1		1		1	2243	M1.2	5329

* = No flare patrol.

JANUARY 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
25	0353	0411	0445	1-	3			1	1		0345	C3.3	
25	0505	0510	0528	1-	5			1		1	No flare		
25	0554	0600	0629	1-	3			1	1		No flare		
25	0708	0713	0758	1+	5			1	1	1	0712E	C8.0	
25	0901	0902	0910	1-	1					1	No Flare		
25	1140	1143	1215	1-	1					1	1137	C2.8	
25	1421	1428	1451	1-	5	1		1	1	4	1418	C4.0	5330
25	1453	1511	1619	1+	5	1	6	1	1	5	1449	M2.1	5330
25	1720	1723	1731	1-	3					4	1717		
25	1737	1743	1810	2	3					5	1736	C7.2	
25	2140	2148	2155	1-	1					1	2101	C3.7	5329
25	2155	2204	2310	1-	1					1	2203	C4.6	5329
25	2313	2318	2331	1-	1			1			No Flare		
25	2338	0006	0119	2	3			1	1		0001	C6.3	
26	0212	0224	0244	1-	1			1			0210	C2.3	5334
26	0315	0327	0355	1-	3			1	1		0254		5329
26	0426	0441	0518	3+	5	1		1	1	1	0419	M2.8	5329
26	0518	0528	0631	3	3			1		1	No flare		
26	0631	0648	0747	2-	3			1		1	0625	C6.4	
26	1048	1049	1117	1	1		1				No flare		
26	1413	1425	1517	1+	5	1	5	1	1	7	1408E	M1.2	5329
26	1647	1650	1702	1	3					4	1648	C4.4	5329
26	1807	1811	1900	2+	3					2	1810	C4.2	5329
26	2138	2145	2208	1-	1			1			2139	C2.9	5334
26	2347	2357	0135	3	5	1		1	1	1	2350	M3.2	5334
27	0235	0247	0326	1+	3			1	1		0229	C3.4	5329
27	0327	0338	0553	3	5	1		1	1	1	0326	M1.6	5330
27	0942	0945	0950	1-	1					1	0935		5334
27	1224	1232	1301	1-	5			1	1	1	1222	C2.5	5329
27	1522	1532	1610	1-	5			1		7	1516	M1.0	5329
27	1913	1919	1955	2-	5	1		1		7	1908	X1.1	5330
27	2149	2152	2234	1	5			1		5	2152	C6.8	5329
27	2208	2225	2250	2	1					1	*		
28	0244	0310	0449	1-	3			1	1		No flare		
28	0623	0635	0709	1-	1			1			0625		5330
28	0811	0819	0851	2-	5	1		1	1	2	0807	C9.8	5334
28	0856	0933	1001	1-	3			1		1	0852	C4.1	5330
28	1120	1129	1145	1+	1		1				No flare		
28	1200	1209	1235	1	3		1			1	1159E	C3.8	5329
28	1254	1304	1325	1	3	2	4			1	1217	M1.4	
28	1411	1419	1435	1-	3	1	4		1		1411	C7.5	
28	1555	1558	1615	1-	3					6	1557E	C3.6	5329
28	1755	1758	1830	1+						7	1753	C5.0	5329
28	2139	2143	2253	2	5	1		1		1	2138E	M1.7	5334
28	2231	2232	2233	1-	1					1	No flare		
28	2320	2330	2342	1-	1			1			2312		5329
29	0006	0015	0040	1-	1			1			No flare		
29	0321	0331	0356	1-	3			1	1		*		
29	0802	0810	0819	1-	3			1	1		No flare		
29	0832	0835	0837	1-	1				1		No flare		
29	0837	0840	0910	1-	1				1		No flare		
29	1048	1106	1215	2	5		5	1	1	3	1140E	M1.0	5330
29	1227	1232	1241	1-	5		2	1	1		1220	C4.1	5334
29	1311	1321	1356	1-	5	1	6	1	1	4	1258	C7.5	5334
29	1606	1608	1630	1-	3					4	1605	C2.8	5329
29	1749		1828	2	1	1					1758		5329
29	2303	2307	2318	1-	1			1			2304	C2.1	5329
29	2325	2335	0026	1-	1			1			2327	C4.3	5329
30	0041	0111	0115	3	5	2		1	1		0043	M2.9	5334
30	0149	0212	0313	1	3			1	1		0151	C9.5	5324
30	0350	0356	0531	2+	5	1		1	1	1	0330	M1.3	5329
30	0602	0608	0638	1-	1			1			No flare		
30	0812	0835	0950	2-	3		1		1		No flare		

* = No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES
JANUARY 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
30	1228	1236	1301	1-	5	1	1	1	1	3	1224	C9.6	5329
30	2057	2108	2201	2	5	1		1		8	2040	M2.1	5329
30	2257	2306	2327	1-	1			1			2302	C2.8	5329
30	2357	0000	0045	1-	1			1			2356	C6.1	5329
31	0126	0133	0227	1+	5	1		1	1		0118	M1.0	5334
31	0305	0315	0350	2+	5	1		1	1		0306	M1.0	5334
31	0352	0356	0441	1-	3			1		1	0347	C2.9	5330
31	0441	0447	0503	1-	5			1	1	1	0438E	C2.9	
31	0523	0531	0619	1-	3			1	1		0522	C2.4	5330
31	1202	1216	1346	3	5	4	6	1	1	2	1201	M7.5	
31	1617	1619	1640	1	3					3	1608	C2.8	5334
31	1654	1657	1715	1-	3					3	1643	C3.5	5334
31	1737	1743	1810	2	5					7	1734	M1.3	5329
31	1813	1815	1833	1	1					1	No flare		
31	1905	1907	1935	1	3					2	1858	C4.2	5329
31	2050	2052	2103	1	3					2	2051	C3.4	5334
31	2104	2120	2218	1+	5	1		1		4	2102	M1.1	5334

OBSERVATORIES REPORTING FOR JANUARY 1989

Amherst, New Hampshire, USA	SES	Louisville, Kentucky, USA	SES
Ayrshire, Scotland	SES	Maui, Hawaii, USA	SWF
Darmstadt, German Fed Rep	SWF	Panska Ves, Czechoslovakia	SES, SWF
Edenvale, Rep of S. Africa	SES	Paterson, New Jersey, USA	SES
Farsta, Sweden	SES	Sofia, Bulgaria	SES
Hiraiso, Japan	SWF	Somersworth, New Hampshire, USA	SES
Houston, Texas, USA	SES	Tavares, Florida, USA	SES
Inubo, Japan	SPA	Tucson, Arizona, USA	SES
Juliusruh, German Dem Rep	SWF	Uccle, Belgium	SEA
Kandilli, Turkey	SEA	Upice, Czechoslovakia	SEA
Kuhlungsborn, German Dem Rep	SEA, SPA	Valley Cottage, New York, USA	SES
Latrobe, Pennsylvania	SES	Vlasim, Czechoslovakia	SEA
Lintong, People's Rep of China	SPA	Zilina, Czechoslovakia	SEA

Observations are not necessarily continuous.

JANUARY 1989 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.																															
5290	3	1																													
5292	5	3																													
5297			1																												
5301					1	2	4																								
5303	2	1	3																												
5307			2	1																											
5309					2																										
5310								1																							
5311								1	2			1				2															
5312						2	2	4	3	6	5	6	8	7	8	5	1	3													
5315									1	1			4																		
5316										1							2														
5317											1	2			1				2	2											
5318											1			1				1													
5321											1	1		2																	
5324																								1						1	
5326																			1												
5329																					3	3	3	5	2	5	4	4	4	5	2
5330																						1			2		2	2	1		2
5334																										3	1	2	2	1	6
Number of events with X-Ray flares	12	9	7	6	3	5	9	10	7	7	17	6	8	7	5	7	5	6	1	4	3	10	3	6	9	8	6	8	6	7	12
Number of events with no flare reported	3	2	8	2	5	2	4	7	6	6	1	6	4	1	6	6	2	2	4	1	5	2	5	3	4	2		3	4	2	1
Number of events with no flare patrol								1					1					2			1						1		1		
Total SID events	16	12	17	9	10	9	13	19	15	15	19	17	20	11	17	17	11	11	8	8	12	13	10	9	14	11	8	13	12	9	13

SOLAR RADIO EMISSION
Spectral Observations

JANUARY 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			LEAR				0036.0	0041.0	3				III
			PALE				0036.0	0037.0	2				III
			LEAR				0412.0	0429.0	3				S
			LEAR				0504.0	0504.0	2				III
			LEAR				0550.0	0554.0	2				III
			LEAR				0622.0	0623.0	1				II
			LEAR				0631.0	0640.0	2				III
			LEAR				0720.0	0726.0	2				III
			SVTO				1223.0	1223.0	2				III
	0800	1514	WEIS				1223.2	1223.8	2				IIIG
			WEIS				1314.0	1320.7	1				IIIG
			WEIS				1342.4	1352.6	2				IIIB
			WEIS				1347.2	1350.3	2				IIIG
			SGMR				1406.0	1408.0	2				V
			WEIS				1406.6	1408.2	3				IIIG
			WEIS				1418.3	1418.5	1				IIIB
			LEAR				2249.0	1053.0	2				CONT
02			LEAR				0248.0	0249.0	3				III
	0758	1332	WEIS				0806.0	1450.0	1				I N
	1338	1515	WEIS				0923.0	1447.0	1				III
			SGMR				1359.0	1359.0	1				III
			SGMR				1405.0	2005.0	1				CONT
			PALE				1720.0	1720.0	1				III
			PALE				1803.0	1804.0	1				III
			SGMR				1803.0	1804.0	2				V
			PALE				2005.0	2007.0	2				III
			PALE				2005.0	2205.0	1				CONT
			LEAR				2215.0	2216.0	1				III
			LEAR				2300.0	1054.0	1				CONT
			LEAR				2308.0	2320.0	2				S
			LEAR				2334.0	2354.0	2				S
			PALE				2353.0	2359.0	1				III
			LEAR				2356.0	2359.0	3				III
03			LEAR				0048.0	0051.0	2				III
			PALE				0049.0	0101.0	2				S
			LEAR				0058.0	0114.0	2				S
			LEAR				0132.0	0136.0	2				III
			LEAR				0147.0	0148.0	2				III
			LEAR				0203.0	0203.0	2				III
			LEAR				0249.0	0250.0	2				III
			LEAR				0352.0	0352.0	2				III
			LEAR				0408.0	0416.0	2				III
			LEAR				0541.0	0542.0	2				III
			LEAR				0553.0	0554.0	2				III
			LEAR				0809.0	0809.0	2				III
	0758	1515	WEIS				0810.3	0819.4	1				IIIB
			LEAR				0939.0	0941.0	2				III
			WEIS				0940.4	0940.8	2				IIIG
			WEIS				1013.7	1014.4	3				IIIG
			LEAR				1014.0	1015.0	2				III
			WEIS				1129.7	1130.1	2				IIIG
			WEIS				1142.1	1145.3	2				IIIG
			WEIS				1152.7	1152.8	1				IIIB
			WEIS				1212.3	1212.5	2				IIIG
			SVTO				1220.0	1221.0	3				III
			WEIS				1308.0	1308.1	1				IIIB
			SGMR				1509.0	1509.0	1				III
			SGMR				1531.0	1531.0	1				III
			PALE				2109.0	2109.0	1				III
			PALE				2159.0	2159.0	1				III
			LEAR				2247.0	2248.0	1				III
			PALE				2247.0	2248.0	1				III
			LEAR				2344.0	2347.0	2				III
			PALE				2344.0	2347.0	1				III
04			LEAR				0018.0	0020.0	3				III
			PALE				0018.0	0020.0	2				V

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

JANUARY 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
04		LEAR				0022.0	0039.0	2				S
		PALE				0028.0	0028.0	1				III
		LEAR				0054.0	0055.0	2				III
		PALE				0054.0	0055.0	1				III
		LEAR				0101.0	0102.0	3				III
		PALE				0101.0	0101.0	2				III
		LEAR				0108.0	0108.0	2				III
		LEAR				0202.0	0207.0	3				III
		PALE				0202.0	0206.0	2				III
		LEAR				0216.0	0216.0	2				III
		LEAR				0304.0	0310.0	2				III
		LEAR				0516.0	0517.0	1				III
		LEAR				0549.0	0609.0	2				S
		LEAR				0721.0	0722.0	2				III
		LEAR				0805.0	0819.0	3				S
		LEAR				0819.0	0837.0	1				CONT
	0800	1517 WEIS				1001.4	1001.5	1				IIIB
		PALE				1752.0	1755.0	2				V
		SGMR				1752.0	1845.0	2				S
05		LEAR				0008.0	0010.0	1				III
		LEAR				0345.0	0346.0	1				III
		LEAR				0720.0	0723.0	2				III
		LEAR				0757.0	0758.0	1				III
		LEAR				0829.0	0829.0	1				III
		LEAR				0841.0	0852.0	3				S
		SVTO				0841.0	0841.0	2				III
	0758	1150 WEIS				0841.3	0842.7	1				IIIG
		WEIS				0851.9	0852.2	2				IIIB
		WEIS				0949.2	0951.3	2				IIIG
		WEIS	0959.1	0959.3	1							DCIM
		WEIS	1004.7	1005.9	1							DCIM,RS
		LEAR				1033.0	1034.0	1				III
		WEIS				1102.4	1103.1	3				IIIG
		WEIS				1143.3	1143.4	1				IIIB
	1158	1518 WEIS										
		SGMR				1516.0	1517.0	1				V
		SGMR				1528.0	1528.0	1				III
		PALE				2212.0	2213.0	1				III
06		LEAR				0058.0	0058.0	3				III
		PALE				0058.0	0058.0	2				V
		LEAR				0112.0	1054.0	1				CONT
		LEAR				0145.0	0145.0	2				III
		LEAR				0423.0	0424.0	3				III
		LEAR				0637.0	0656.0	2				S
		LEAR				0641.0	0646.0	2				II
		LEAR				0646.0	0652.0	3				III
		LEAR				0710.0	0710.0	2				III
		LEAR				0738.0	0739.0	2				III
		LEAR				0819.0	0820.0	2				III
		LEAR				0841.0	0843.0	2				III
	0857	1518 WEIS										
		LEAR				1004.0	1005.0	2				III
		SGMR				1801.0	0000.0	1				II
		SGMR				1831.0	1831.0	1				III
		PALE				2017.0	2017.0	2				III
		SGMR				2017.0	2017.0	1				III
		LEAR				2321.0	2322.0	2				III
		PALE				2321.0	2322.0	1				III
07		LEAR				0031.0	1055.0	1				CONT
		LEAR				0230.0	0231.0	2				III
		LEAR				0806.0	0806.0	2				III
		SGMR				1319.0	1321.0	1				III
	0759	1520 WEIS				1321.5	1322.3	2				IIIG
		SGMR				1835.0	1836.0	1				III
		PALE				1836.0	1837.0	1				III
		PALE				2129.0	2130.0	2				III

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

JANUARY 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
08			LEAR				0001.0	0007.0	2				III
			PALE				0001.0	0001.0	2				III
			LEAR				0124.0	0124.0	1				III
			LEAR				0142.0	0212.0	2				S
			PALE				0142.0	0143.0	1				III
			LEAR				0222.0	0223.0	2				III
			LEAR				0249.0	1055.0	1				CONT
			LEAR				0257.0	0258.0	2				III
			LEAR				0703.0	0704.0	2				III
			LEAR				0732.0	0732.0	2				III
	0759	0934	WEIS										
			LEAR				0901.0	0903.0	2				III
			LEAR				0926.0	0927.0	2				III
	0937	1522	WEIS				1337.2	1337.3	1				IIIB
			SGMR				1418.0	1418.0	1				III
			SGMR				2008.0	2008.0	2				III
			PALE				2050.0	2105.0	1				S
			LEAR				2220.0	1055.0	2				CONT
			LEAR				2340.0	2340.0	2				III
			PALE				2340.0	2341.0	2				III
09			LEAR				0405.0	0406.0	2				III
			LEAR				0515.0	0516.0	2				III
			LEAR				0531.0	0540.0	2				III
			SVTO				0751.0	1100.0	2				CONT
	0756	1522	WEIS				0852.0	1121.0	1				IIIN
			PALE				1916.0	1916.0	1				III
			PALE				1937.0	1937.0	1				III
			LEAR				2305.0	1055.0	1				CONT
10			LEAR				0024.0	0030.0	2				III
			PALE				0024.0	0027.0	2				III
			LEAR				0112.0	0113.0	2				V
			PALE				0112.0	0113.0	2				V
			LEAR				0136.0	0137.0	2				III
			LEAR				0156.0	0157.0	2				III
			LEAR				0227.0	0227.0	2				III
			PALE				0227.0	0227.0	1				III
			LEAR				0239.0	0239.0	2				III
			LEAR				0512.0	0514.0	2				III
			LEAR				0720.0	0720.0	2				III
	0757	1450	WEIS										
	1458	1524	WEIS										
			SGMR				1644.0	1644.0	2				III
			PALE				1848.0	1848.0	2				III
			SGMR				1848.0	1848.0	1				III
			PALE				1908.0	1910.0	2				V
			SGMR				1908.0	1909.0	1				V
			PALE				2033.0	2054.0	2				II
			PALE				2135.0	2136.0	1				III
			PALE				2142.0	2143.0	1				III
11			LEAR				0449.0	0500.0	3				S
			LEAR				0508.0	0509.0	2				III
			LEAR				0509.0	1055.0	1				CONT
			LEAR				0720.0	0721.0	2				III
	0755	1526	WEIS				1224.5	1224.6	1				IIIB
			WEIS				1229.5	1229.6	1				IIIB
			SGMR				1603.0	1604.0	1				V
			PALE				1837.0	1839.0	3				V
			SGMR				2015.0	2016.0	1				V
12	0754	1626	WEIS										
			SGMR				2029.0	2047.0	1				II
			PALE				2129.0	2146.0	2				II
			LEAR				2209.0	1055.0	1				CONT
13			LEAR				0357.0	0400.0	2				III
			LEAR				0707.0	0708.0	2				III

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

JANUARY 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
13	0755	1205	WEIS	1010.8	1016.2	2							Spikes
			WEIS	1012.9	0124.9	3							IV DM
			WEIS				1015.0	1015.7	2				II
			LEAR				1016.0	1029.0	2				II
			SVTO				1016.0	1028.0	2				V
			WEIS				1018.0	1026.6	2				II H,patch/splitband HB
			LEAR				1019.0	1023.0	2				III
			SVTO				1135.0	1333.0	2				CONT
			SGMR				1400.0	2108.0	1				CONT
	1208	1529	WEIS				1413.7	1414.3	1				IIIB
			PALE				2214.0	2215.0	1				III
			LEAR				2244.0	2246.0	3				III
			PALE				2244.0	2246.0	2				V
14			LEAR				0059.0	0101.0	3				III
			PALE				0100.0	0101.0	2				III
			LEAR				0245.0	0413.0	1				CONT
			LEAR				0413.0	0431.0	1				IV
			LEAR				0431.0	0446.0	2				II
			LEAR				0553.0	1056.0	1				CONT
			LEAR				0734.0	0735.0	2				III
			SGMR				1320.0	1321.0	1				III
	0753	1438	WEIS				1320.7	1321.2	2				IIIG
			SGMR				1519.0	1520.0	1				III
	1500	1530	WEIS				1519.7	1520.3	2				IIIG
			SGMR				1607.0	1608.0	2				III
15			LEAR				0046.0	0046.0	2				III
			LEAR				0101.0	0102.0	1				III
			LEAR				0223.0	0224.0	1				III
			LEAR				0340.0	0340.0	2				III
			LEAR				0447.0	0448.0	2				III
			LEAR				0653.0	0705.0	2				S
			LEAR				0705.0	1056.0	1				CONT
			SVTO				0959.0	1000.0	2				III
	0752	1530	WEIS				1148.4	1149.8	3				IIIG,Spikes
			LEAR				2252.0	1056.0	2				CONT
16	0759	0925	WEIS										
			LEAR				0902.0	0923.0	2				II
			LEAR				0925.0	0946.0	2				S
	0936	1533	WEIS										
			LEAR				2330.0	1056.0	1				CONT
17			SGMR				1428.0	1428.0	2				V
	0750	1535	WEIS				1428.2	1428.3	2				IIIB
			SGMR				1747.0	1905.0	1				CONT
18			LEAR				0028.0	0050.0	2				II
			PALE				0031.0	0044.0	2				II
			LEAR				0050.0	0530.0	2				IV
			SVTO				0757.0	0757.0	2				III
			SVTO				0819.0	0826.0	2				CONT
	0739	1406	WEIS				1039.2	1040.3	3				IIIG
			SGMR				1813.0	0000.0	2				S
			PALE				1815.0	1825.0	1				V
			SGMR				1819.0	1827.0	2				II
19			LEAR				0139.0	0143.0	1				III
			LEAR				0152.0	0153.0	2				III
			LEAR				0323.0	1055.0	1				CONT
	0750	1538	WEIS										
			LEAR				0957.0	0958.0	2				III
20			SGMR				1419.0	1519.0	1				III
	0747	1539	WEIS				1419.4	1419.6	2				IIIG
			SGMR				1543.0	1545.0	1				S
21			LEAR				0031.0	0038.0	2				III

SOLAR RADIO EMISSION
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JANUARY 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
21		LEAR				0038.0	0044.0	1				II
		LEAR				0055.0	0100.0	2				III
0746	1539	WEIS										
		SVTO				1034.0	1034.0	2				III
		LEAR				1035.0	1036.0	2				III
		SGMR				1615.0	1616.0	1				III
		LEAR				2250.0	1055.0	1				CONT
22		LEAR				0010.0	0012.0	2				III
		LEAR				0146.0	0149.0	2				III
		LEAR				0206.0	0224.0	2				S
		LEAR				0237.0	0237.0	3				III
		LEAR				0239.0	0252.0	2				S
		LEAR				0306.0	0313.0	3				III
		LEAR				0325.0	0325.0	2				III
		LEAR				0337.0	0339.0	2				III
		LEAR				0355.0	0357.0	2				III
		LEAR				0432.0	0433.0	2				III
		LEAR				0454.0	0458.0	3				III
		LEAR				0547.0	0557.0	3				III
		LEAR				0615.0	0627.0	3				S
		LEAR				0808.0	0812.0	3				III
0747	1542	WEIS				0947.3	0947.4	1				IIIB
		SGMR				1255.0	1255.0	1				III
		WEIS				1255.0	1258.6	3				IIIGG,DCIM
		WEIS				1300.6	1304.7	2				DCIM
		WEIS				1300.6	1304.7	2				IIIG
		WEIS				1321.1	1321.3	1				IIIB
23		LEAR				0007.0	0008.0	1				III
		LEAR				0109.0	0110.0	1				III
		LEAR				0121.0	0122.0	1				III
		LEAR				0250.0	0251.0	2				III
		LEAR				0318.0	0318.0	1				III
		LEAR				0349.0	0354.0	3				III
		LEAR				0402.0	0403.0	3				III
		LEAR				0511.0	0512.0	2				III
		LEAR				0527.0	0527.0	1				III
		LEAR				0545.0	0545.0	2				III
		LEAR				0622.0	0622.0	2				III
		LEAR				0651.0	0705.0	2				S
		LEAR				0723.0	0737.0	3				S
		LEAR				0742.0	0945.0	1				CONT
0744	1136	WEIS										
		SVTO				0746.0	0802.0	2				CONT
1147	1544	WEIS										
		LEAR				2257.0	2358.0	1				III
		LEAR				2319.0	0919.0	1				CONT
24		LEAR				0218.0	0218.0	2				III
		LEAR				0231.0	0236.0	2				V
		LEAR				0659.0	0702.0	2				III
		SVTO				0751.0	0757.0	3				III
0743	1544	WEIS				0754.6	0756.3	3				RS
		LEAR				0808.0	0811.0	3				III
		SVTO				0809.0	0810.0	3				III
		LEAR				0812.0	0823.0	2				S
		LEAR				0848.0	0849.0	2				III
		LEAR				0932.0	0932.0	2				III
		WEIS				0932.6	0932.7	2				IIIB
		WEIS				1107.1	1107.4	2				IIIG
		WEIS				1147.6	1148.2	1				IIIG
		WEIS				1150.3	1150.9	2				IIIG
		WEIS				1153.6	1154.0	3				IIIG
		WEIS				1344.1	1347.3	3				II H,RS,patchy
		SGMR				1358.0	1405.0	1				II
		SGMR				1657.0	1658.0	1				III
		SGMR				1715.0	1724.0	2				III
		SGMR				1904.0	1905.0	1				III

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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
24		LEAR				2329.0	2330.0	3				V
		PALE				2329.0	2330.0	2				V
25		LEAR				0011.0	0012.0	2				III
		LEAR				0045.0	1055.0	2				CONT
		LEAR				0145.0	0153.0	3				III
		LEAR				0252.0	0255.0	3				III
		PALE				0253.0	0255.0	2				III
		LEAR				0333.0	0334.0	2				III
		LEAR				0504.0	0505.0	3				III
		LEAR				0604.0	0605.0	2				III
		LEAR				0703.0	0703.0	2				III
		LEAR				0707.0	0712.0	3				V
	0744	1547 WEIS				0745.0	0957.0	2				I
		WEIS				0909.2	0909.4	2				IIIG
		WEIS				1007.4	1008.2	2				IIIG
		WEIS				1138.6	1138.8	2				IIIB
		WEIS				1239.4	1243.3	1				IIIG
		WEIS				1323.9	1324.5	1				IIIG
		SGMR				1324.0	1324.0	1				III
		SGMR				1350.0	1352.0	1				V
		WEIS				1352.2	1352.3	1				IIIB
		SGMR				1530.0	1530.0	2				III
		WEIS				1531.1	1531.3	1				IIIB
		SGMR				1733.0	1737.0	2				S
		SGMR				1734.0	1740.0	2				S
		PALE				1855.0	1856.0	1				III
		SGMR				1855.0	1856.0	1				III
		SGMR				2000.0	2001.0	1				V
		PALE				2111.0	2111.0	1				III
26		LEAR				0634.0	0638.0	3				III
	0741	0756 WEIS										
		LEAR				0803.0	0804.0	3				III
		LEAR				0824.0	0831.0	3				III
	0859	1549 WEIS				0825.0	1512.0	2				IIIN,RS
		SGMR				1253.0	1254.0	1				III
		SGMR				1330.0	1441.0	1				CONT
		SGMR				1441.0	1930.0	2				CONT
		WEIS				1536.3	1536.4	3				IIIG
		PALE				1922.0	0252.0	1				CONT
		PALE				1922.0	1923.0	2				III
		SGMR				1930.0	2125.0	1				CONT
		PALE				1959.0	2007.0	2				V
		SGMR				1959.0	2004.0	2				III
		PALE				2024.0	2024.0	2				III
27		LEAR				0701.0	0710.0	3				III
		SVTO				0745.0	0902.0	2				CONT
		WEIS				0748.8	0749.1	2				Spikes
		LEAR				0749.0	0757.0	3				III
	0739	1549 WEIS				0749.0	1205.0	2				IIIN
		LEAR				1022.0	1022.0	3				III
		WEIS				1358.6	1358.9	1				IIIG
		SGMR				1359.0	2126.0	1				CONT
		WEIS				1419.1	1419.2	2				RS
		PALE				1927.0	1927.0	1				III
		SGMR				1930.0	2125.0	1				CONT
		PALE				2005.0	0135.0	1				CONT
		LEAR				2245.0	1054.0	2				CONT
28		LEAR				0225.0	0227.0	2				III
		LEAR				0554.0	0555.0	2				III
	0740	1140 WEIS										
		SVTO				0806.0	0806.0	2				III
		LEAR				0810.0	0815.0	3				III
		WEIS				1210.7	1210.8	2				RS
		SGMR							1303.0	1309.0	1	III
		SGMR				1339.0	2030.0	1				CONT

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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
28	1255	1452	WEIS				1345.9	1346.1	1				IIIB
			WEIS				1413.6	1420.7	3				II H,HB,patchy
			SGMR				1414.0	1420.0	2				II
			SVTO				1414.0	1419.0	3				III
			WEIS				1417.2	1417.7	2				Spikes
			PALE				1856.0	1857.0	2				V
			SGMR				1856.0	1857.0	2				V
			PALE				1911.0	1913.0	2				V
			SGMR				1911.0	1913.0	2				V
			PALE				1927.0	0007.0	1				CONT
			PALE				2139.0	2150.0	3				V
			LEAR				2310.0	1054.0	1				CONT
29			LEAR				0006.0	0007.0	2				III
			LEAR				0033.0	0033.0	2				III
			LEAR				0307.0	0308.0	2				III
	0737	1554	WEIS				1047.7	1048.6	1				IIIB
			WEIS				1247.4	1247.9	2				Spikes
			SGMR				1431.0	1431.0	1				III
			SGMR				1455.0	1455.0	1				III
			SGMR				1538.0	1539.0	1				III
			SGMR				1545.0	1607.0	2				S
			WEIS				1545.3	1545.4	2				IIIG
			WEIS				1550.4	1550.5	2				IIIB
			WEIS				1552.3	1552.4	2				IIIB
			SGMR				1713.0	1717.0	1				III
			SGMR				1755.0	1757.0	1				III
			PALE				1758.0	1759.0	2				V
			SGMR				1758.0	1759.0	2				V
			SGMR				1935.0	2049.0	1				S
			PALE				1936.0	1951.0	1				S
			PALE				2014.0	2023.0	2				V
			SGMR				2014.0	2022.0	2				V
			PALE				2036.0	2047.0	2				S
			SGMR				2039.0	2047.0	2				III
			PALE				2100.0	2113.0	1				S
			LEAR				2244.0	2247.0	1				III
			PALE				2247.0	2247.0	1				III
			LEAR				2300.0	0107.0	1				CONT
			LEAR				2325.0	2336.0	3				S
			PALE				2325.0	2336.0	2				S
			PALE				2347.0	2347.0	1				III
			LEAR				2359.0	0010.0	2				S
30			LEAR				0033.0	0033.0	2				III
			LEAR				0103.0	0128.0	2				S
			LEAR				0105.0	0333.0	2				IV
			LEAR				0111.0	0112.0	3				III
			PALE				0111.0	0112.0	2				V
			LEAR				0155.0	0205.0	3				II
			PALE				0155.0	0204.0	1				II
			LEAR				0227.0	0241.0	3				S
			LEAR				0333.0	0408.0	3				S
			PALE				0334.0	0336.0	2				III
			PALE				0348.0	0351.0	3				V
			LEAR				0406.0	0407.0	2				II
			LEAR				0408.0	1053.0	1				CONT
			LEAR				0446.0	0446.0	2				III
			LEAR				0531.0	0532.0	2				III
			LEAR				0653.0	0653.0	2				III
			LEAR				0944.0	0945.0	2				III
	0735	1554	WEIS				1026.7	1027.7	2				IIIG
			WEIS				1031.2	1031.4	1				IIIG
			WEIS				1055.0	1056.1	3				IIIGG
			WEIS				1112.6	1113.1	3				IIIG
			WEIS				1122.8	1123.0	1				IIIB
			WEIS	1225.8	1230.8	2							DCIM,RS
			SGMR				1227.0	1235.0	2				V
			SVTO				1227.0	1227.0	3				III

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Spectral Observations

JANUARY 1989

Observation 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
Day												
30		WEIS				1227.2	1228.9	3				IIIGG
		WEIS				1233.1	1237.0	1				IIIG
		SGMR				1626.0	1636.0	1				III
		PALE				2001.0	2001.0	3				V
		SGMR				2001.0	2001.0	2				V
		PALE				2123.0	2125.0	2				III
		LEAR				2357.0	0000.0	2				III
31		LEAR				0445.0	0700.0	1				CONT
	0735	0757 WEIS										
		SVTO							1211.0	1216.0	3	II
		SVTO				1211.0	1216.0	3				II
	0828	1557 WEIS				1211.8	1214.2	1				II patchy
		WEIS	1212.5	1212.8	1							Spikes
		WEIS				1215.3	1217.9	2				HB
		WEIS				1223.7	1225.6	1				IIIG
		SGMR				1606.0	1607.0	1				III
		SGMR				2129.0	2129.0	1				III
		LEAR				2320.0	2320.0	2				III
		PALE				2320.0	2320.0	1				III
		LEAR				2357.0	0000.0	2				III

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)

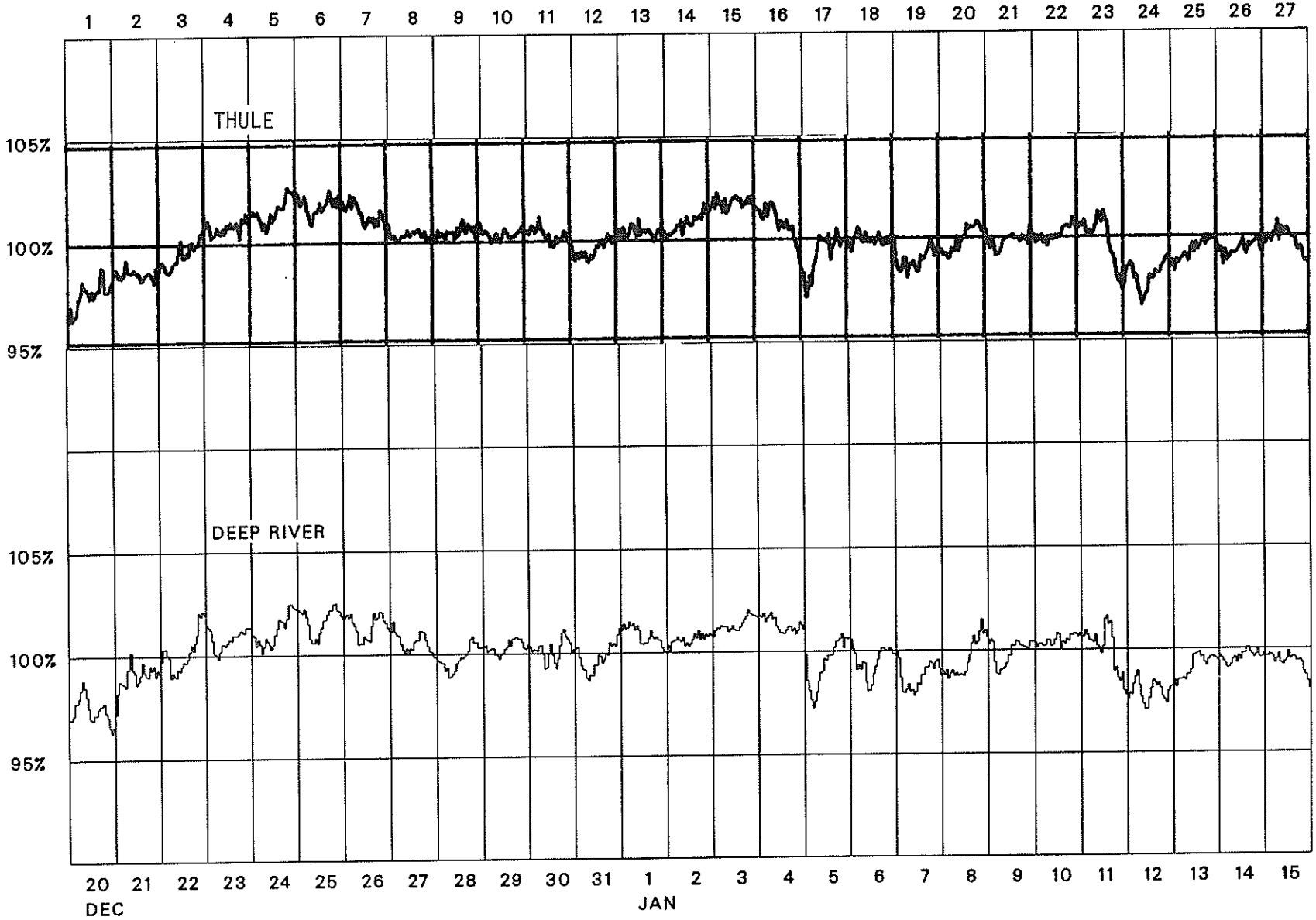
JANUARY 1989

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	4068	6409.8	5692.9	3717.3	3522.8	
2	4084	6396.3	5710.9	3707.0	3512.2	
3	4126	6442.0	5736.7	3712.9	3523.1	
4	4085	6439.7	5717.5	3710.8	3537.7	
5	4019	6321.9	5642.9	3677.2	3518.2	
6	4048	6324.5	5661.3	3674.9	3500.7	
7	4008	6278.2	5609.2	3643.3	3475.9	
8	4047	6332.9	5647.2	3685.5	3476.5	
9	4043	6350.7	5651.7	3671.6	3505.5	
10	4056	6386.0	5684.4	3686.1	3506.4	
11	4047	6359.8	5667.1	3677.8	3500.4	
12	3969	6227.3	5573.5	3613.9	3492.0	
13	4022	6304.6	5628.8	3643.5	3498.8	
14	4023	6331.7	5636.0	3669.7	3505.0	
15	4041	6316.0	5623.9	3674.0	3515.2	
16	3991	6273.3	5579.1	3631.8	3507.6	
17	4013	6302.4	5625.8	3646.6	3524.3	
18	4048	6340.4	5670.5	3679.3	3530.0	
19	4084	6374.6	5704.4	3697.6	3515.4	
20	4100	6398.2	5724.5	3717.0	3516.3	
21	4104	6406.9	5742.1	3725.1	3534.8	
22	4128	6428.5	5749.5	3756.3	3522.2	
23	4081	6381.5	5711.7	3729.0	3514.9	
24	4081	6385.7	5703.5	3721.8	3514.2	
25	4092	6436.7	5738.1	3741.2	3514.0	
26	4080	6397.0	5711.9	3723.5	3503.4	
27	4070	6359.3	5657.6	3686.5	3501.3	
28	4032	6282.7	5611.1	3648.4	3495.5	
29	4050	6305.2	5633.6	3663.5	3499.6	
30	4056	6309.2	5628.9	3649.0	3496.2	
31	4081	6348.6	5671.5	3685.6	3503.9	
Mean	4057	6353.3	5669.3	3685.9	3509.4	

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.

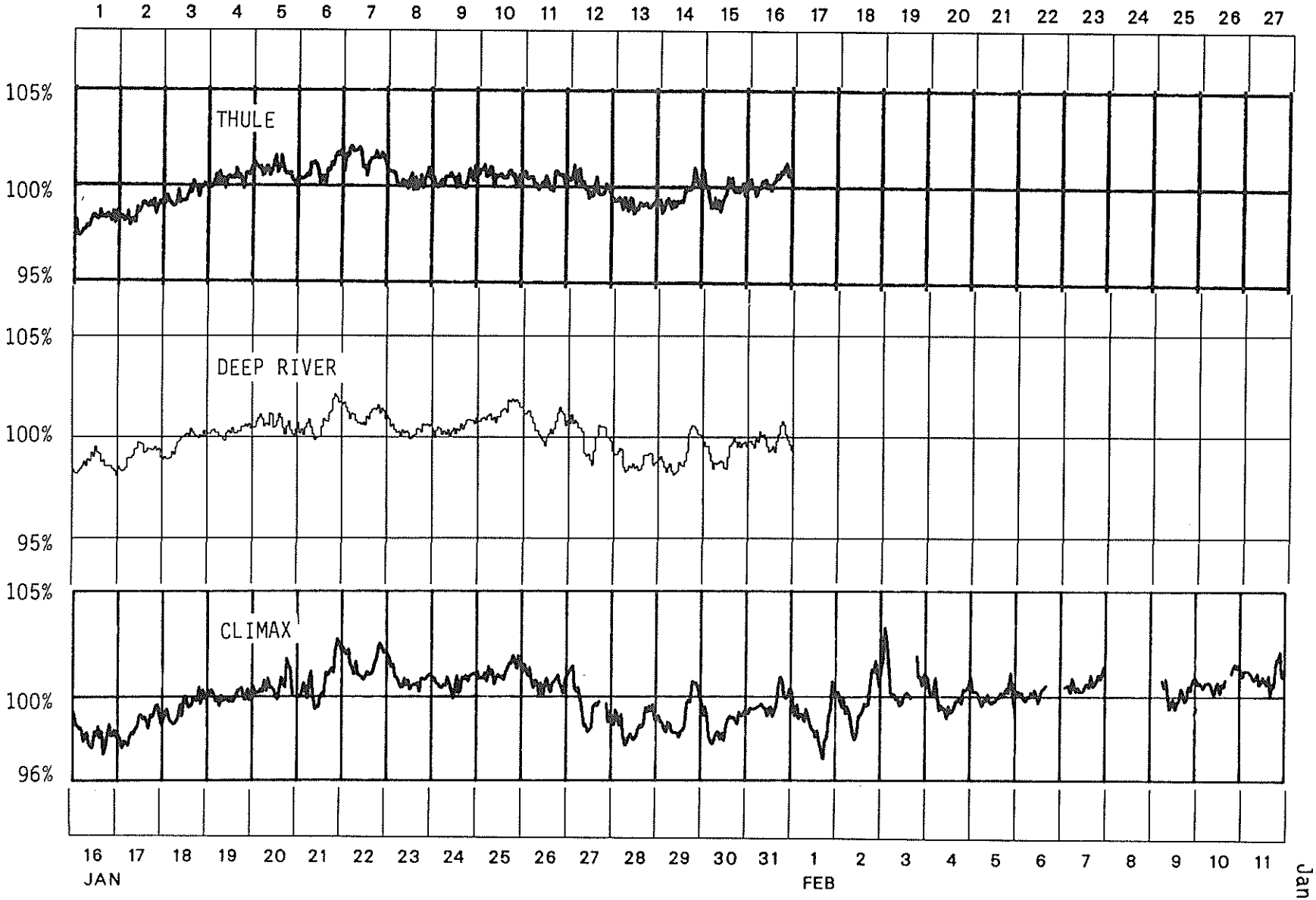
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2123 (December 1988-January 1989)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2124 (January 1989-February 1989)



121
Jan 89

GEOMAGNETIC ACTIVITY INDICES

January 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	aa Provisional Am	N	S	M	
1		4 3+ 3 2+	3 3- 3 3-	24	15	0.9	3+ 3- 3- 2+	3- 3- 3 2+	24	30	26	29	27
2	Q2	2- 1 2- 2-	1+ 1 2+ 2	13-	6	0.3	2- 1 2- 2	2 1+ 2+ 2-	12	16	12	14	14
3	Q1	0+ 0 1 1	1 1+ 2 2-	8+	4	0.1	1- 0+ 1+ 1	1 1+ 2+ 2	9	9	10	8	12 CC
4	Q4A	2- 2- 2+ 1	2 2- 2+ 4-	16+	9	0.5	2- 1+ 2+ 2-	2+ 2 3- 4	20	16	26	16	26
5	D4	4+ 6- 5 4-	3 5- 4 3-	33	33	1.3	4+ 4+ 4+ 4-	3 5 4+ 3-	57	55	75	81	49
6	Q5A	3 3- 3- 2+	2- 1 2 3-	18	10	0.5	2+ 2 3 2+	2 1+ 2 3-	17	22	25	28	19
7	Q7A	3+ 2 2 2	2+ 3- 3- 2	19	10	0.6	3+ 3- 3- 2+	2+ 3- 2+ 2	23	23	22	24	21
8		1 2+ 2+ 2+	4+ 4 4- 4	24	17	0.9	1+ 2+ 3 3-	4 4- 4- 4-	34	31	40	26	46
9		3- 3 3+ 3+	4- 3 3 3	25	16	0.9	3- 3- 3- 3	4- 3 3- 3	29	35	34	32	37
10		4- 2+ 2+ 3	3- 3- 2+ 2-	21-	12	0.7	3+ 2 2+ 2	3 3- 2+ 1+	21	22	23	24	21
11	D5	2 1+ 1+ 1+	4- 6- 6+ 6+	28	37	1.4	2 1+ 2- 1+	4- 6- 6 6-	63	65	58	12	110
12		6 4 3 2	2 2 2+ 2	23+	20	1.0	5 3+ 3- 2	2- 2 3- 2-	28	30	20	35	15
13	Q9A	1- 1- 1- 2+	3+ 4- 3+ 3	18-	11	0.7	1 1- 1+ 2-	3+ 4 3+ 3-	23	23	21	7	37
14		3+ 1 1 1	3- 3- 4- 5-	20	14	0.8	3- 2- 1 1+	2+ 3- 4- 5-	28	35	29	12	52
15	D3	5- 4+ 4- 4	4+ 5- 5 6-	36+	38	1.4	4 3+ 3+ 3+	5- 5- 5 6-	69	61	71	47	85
16	D1	6- 5 6- 4+	4- 4+ 5- 5-	38	43	1.5	5 4 5- 5-	3 5- 5- 4	66	64	64	65	63
17		4+ 3+ 4 5	4- 4- 5- 3	32-	28	1.2	4- 3 3+ 4	4- 4- 5- 3	45	54	39	42	51
18		4 3 3 4-	3 2+ 2 2	23	15	0.8	3+ 3- 3- 3+	3 3- 2 2-	24	27	21	28	20
19	Q3A	2 3- 2+ 2-	1- 1+ 2 2	15-	7	0.4	2 2- 3- 2-	1+ 1+ 3- 2	14	20	15	18	17
20	D2	3 2- 2 3-	6+ 7- 6- 5	33	45	1.5	3- 2- 2+ 3-	6+ 7- 5+ 5-	84	81	90	22	149
21		4- 4 4 4	4 5- 4 4+	33-	28	1.2	3+ 3+ 3+ 4-	4- 4+ 4 4-	47	42	46	34	54
22		4+ 5- 5- 3+	5+ 4- 3 3	32	30	1.3	4- 4 4- 3	5 4 3+ 3+	47	62	41	47	56
23		3+ 4+ 4 3+	4- 4- 3+ 3	29-	22	1.1	3- 3+ 4- 3	3+ 3 3 3-	32	38	33	38	33
24	Q10A	3- 2+ 2 2	2+ 3- 3 3-	20-	10	0.6	2+ 2 2- 2-	3- 3- 3 2+	19	20	21	15	26
25		2 3 3- 3	3+ 2 3- 3-	21+	12	0.7	2 2+ 2+ 3-	3 2+ 3- 2+	21	24	19	20	23
26	Q8A	2+ 2- 2+ 3	3- 3 2+ 2	19+	10	0.6	2 2- 2 3-	3- 3 2+ 2	19	20	22	19	23
27		3+ 4- 3- 3	3 2+ 1 1	20	12	0.7	3 3- 3- 3-	3 2+ 2- 1+	21	24	20	29	15
28		2 4- 2+ 2-	3- 3 4 2+	22-	13	0.8	2 3- 2 2-	3- 3 4- 3-	23	27	26	16	37
29	Q6A	2+ 1+ 2- 2+	3 4- 2+ 2-	18+	10	0.6	2 1+ 1+ 3-	3- 3+ 3- 2-	20	22	25	18	29
30		2+ 3 2 3+	3+ 3- 2+ 2+	21+	12	0.7	2- 2+ 2- 3	3 3 2+ 2+	21	26	23	21	28
31		3+ 3 3 3+	3+ 4+ 5+ 6	32-	32	1.3	2+ 2+ 3- 3-	3+ 4- 5+ 6-	49	23	59	23	59
Mean					19	0.87			32.5	33.8	34.2		33.9

Day	Kn Three-Hourly Indices 1 2 3 4	5 6 7 8	An	Ks Three-Hourly Indices 1 2 3 4	5 6 7 8	As	Sa	Prov Ri	Ra	Rs	IMF
1	3 3- 2+ 2+	3 3- 3+ 3-	25	3+ 3- 3 2	3- 3- 3- 2+	24	179.5*	148	150	132	- -
2	2- 1- 1 2-	2 1+ 2+ 2-	11	2 1 2 2	2 1+ 2+ 2-	14	193.7	173	149	147	- -
3	0+ 0 1 1-	1- 1+ 2 1+	6	1 0+ 2 1+	1+ 1+ 2+ 2+	11	189.2	146	135	142	- -
4	1+ 1+ 2+ 1	2 2- 2+ 3+	16	2 1+ 3- 2	2+ 2+ 3 4+	24	195.7*	120	116	149	- -
5	4 4+ 4- 3+	3 5 4 2+	51	5- 4+ 5- 4	3 5- 4+ 3+	62	201.6	155	142	156	- -
6	2+ 2- 2+ 2	2 1+ 2- 3-	15	2+ 2+ 3+ 2+	2 1+ 2+ 3-	20	198.7	142	146	153	- -
7	3 2 2+ 2	3- 3- 2+ 2-	20	4- 3 3 2+	2+ 3- 3- 2+	26	239.5	157	176	197	- -
8	1 2- 2 2+	4 4- 3+ 4-	29	2- 3- 3+ 3	4 4- 4 4	39	260.2	135	189	219	- -
9	2+ 3 2+ 3	4- 3+ 3- 3-	27	3 3- 3- 3	4 3- 3 3+	30	251.3	165	170	209	- -
10	3 2- 2 2	3 3- 2+ 1+	19	3+ 2+ 2+ 2	3 3 3- 2-	22	250.0	190	195	208	- -
11	1+ 1+ 2- 1+	4- 5+ 6- 5+	57	2+ 2- 2- 1+	4- 6- 6 6	71	254.7*	200	200	213	- -
12	5- 3 3- 2	2 2+ 3- 2-	27	5 4- 2+ 2-	2- 2- 2+ 2-	29	263.2	229	197	222	- -
13	1- 1- 1- 2-	3 4- 3+ 3-	20	1+ 1- 1- 2-	4- 4 3+ 3	26	291.7*	233	206	253	- -
14	3- 2- 1 1	2+ 3 3+ 4+	25	2+ 2- 1 2	2+ 2+ 4 5	31	274.9	201	189	235	- -
15	4 3+ 3+ 3+	4+ 5- 4 5	59	4+ 3 3+ 3+	5 5 6- 6	79	280.1	177	187	241	- -
16	5 4 4 4+	3 4+ 5- 4-	63	5 4+ 5- 5-	3 5- 4+ 5-	69	292.1	164	170	253	- -
17	3+ 3 3 5-	4- 4- 5- 3	47	4- 3 4- 4-	4- 3+ 4+ 3	42	266.7*	155	154	226	- -
18	3 3- 3- 3+	3 2+ 2- 2-	24	3+ 3- 3- 3	3 3- 2 1+	24	271.2	160	151	231	- -
19	2- 2 2 1+	1+ 2- 2 2-	12	2+ 2- 3 2	1 1+ 3 2+	17	241.6	140	132	199	- -
20	2+ 2- 2 3-	6+ 6+ 5 5-	79	3- 2- 3- 3	6+ 7 5+ 5	89	222.0*	126	113	178	- -
21	3 3 3 4-	4- 4+ 4- 3+	42	4- 4- 4- 4-	4- 4+ 4 4	51	198.2*	114	114	152	- -
22	4 4- 4- 3	5 4 3 3	47	4- 4 3+ 3	5- 4- 3+ 4-	40	203.6	165	151	158	- -
23	3- 3+ 4- 3	3 3+ 3 3-	31	3 3+ 4- 3	4- 3 3- 3	33	205.6	159	154	160	- -
24	2+ 2 1+ 2-	2+ 3- 3 2+	19	2 2 2- 2-	3- 3- 3 2+	19	211.0	142	130	166	- -
25	2- 2+ 3- 3-	3 2+ 3 2	21	2 3- 2- 3-	3 2+ 3- 3-	21	227.3	144	157	183	- -
26	2 1+ 2 3-	2+ 3 2+ 2	18	2 2 2 3-	3+ 3 2+ 2+	21	206.3	152	156	161	- -
27	3 3- 2+ 3-	3 3- 2- 1-	22	3- 3- 3- 3	3 2- 1+ 2-	20	211.1	167	166	166	- -
28	2- 3- 2 1+	3 3 4- 2+	22	2+ 3- 2 2-	3- 3 3+ 3-	24	207.1	172	172	162	- -
29	2 1+ 1+ 2+	3 3+ 3 2-	20	2 2- 1+ 3-	2+ 3+ 3- 2	20	200.5	169	168	155	- -
30	1+ 2 2 3+	3+ 3+ 2 2	22	2- 3 2- 3-	3 3- 2+ 2+	21	187.3	157	149	140	- -
31	3- 3- 3- 3-	3 4- 5- 5+	45	2- 2 3- 2+	3+ 4- 6- 6-	52	187.5	154	148	141	- -
Mean				30.4			34.7	227.8	161.6	159.1	184.0	

DAILY AVERAGE INDICES Ap

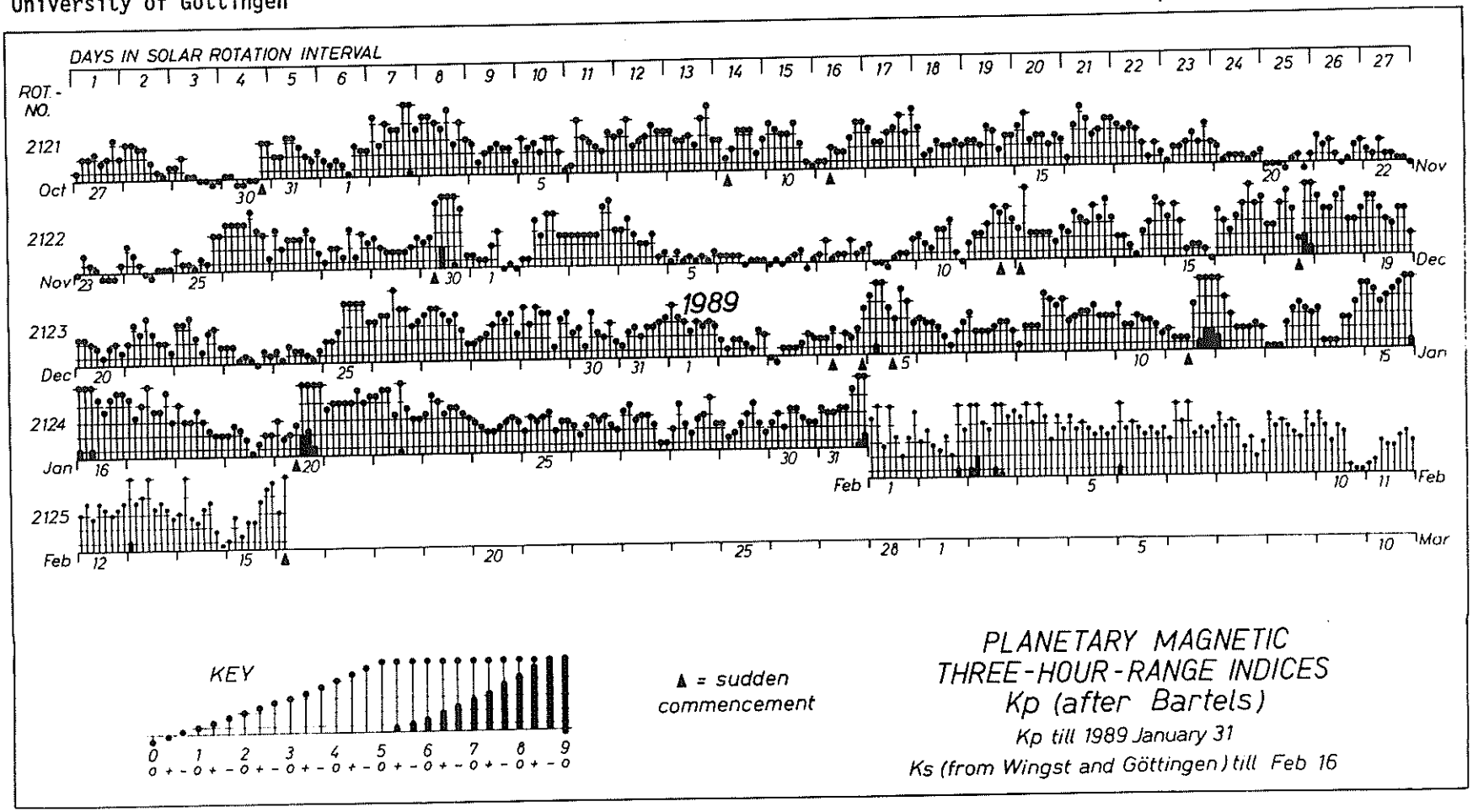
February 1988 to January 1989

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	2	4	13	5	6	14	8	21	11	7	5	15
2	5	6	19	7	5	10	5	12	5	30	15	6
3	3	10	48	7	2	7	6	8	3	26	18	4
4	7	19	78	13	3	4	2	7	9	8	10	9
5	29	8	24	20	10	5	6	4	18	10	4	33
6	11	19	48	106	8	11	5	3	38	13	3	10
7	6	11	15	13	6	8	5	5	6	17	3	10
8	5	26	7	13	6	10	3	6	7	18	5	17
9	11	13	10	10	8	3	13	4	17	12	4	16
10	13	12	16	11	9	7	9	7	85	14	8	12
11	11	14	9	6	7	21	8	51	13	10	17	37
12	16	9	14	5	4	15	16	20	6	18	14	20
13	14	5	10	5	6	5	17	10	6	8	20	11
14	7	12	9	4	20	7	21	11	6	11	13	14
15	19	20	6	6	9	11	16	12	6	13	10	38
16	15	14	5	11	6	22	8	6	10	18	25	43
17	14	9	5	24	10	6	5	20	15	11	35	28
18	19	7	7	18	14	9	8	34	30	8	25	15
19	7	4	9	6	21	9	8	23	12	4	20	7
20	5	6	7	6	13	3	17	11	18	2	7	45
21	26	2	8	10	5	26	7	11	7	6	11	28
22	97	3	44	8	12	27	24	20	3	4	13	30
23	36	5	21	6	8	12	10	11	6	2	4	22
24	12	5	7	8	17	7	11	8	6	4	4	10
25	14	10	6	6	27	6	15	12	4	7	22	12
26	9	49	5	8	17	16	9	8	7	20	25	10
27	7	34	6	3	9	12	15	5	8	12	20	12
28	5	26	11	3	10	11	9	5	9	9	14	13
29	3	32	6	7	26	7	13	4	3	8	20	10
30		34	7	12	22	6	12	8	5	37	11	12
31		11		9		8	13		10		12	32
MEAN	15	14	16	12	11	10	10	12	13	12	13	19

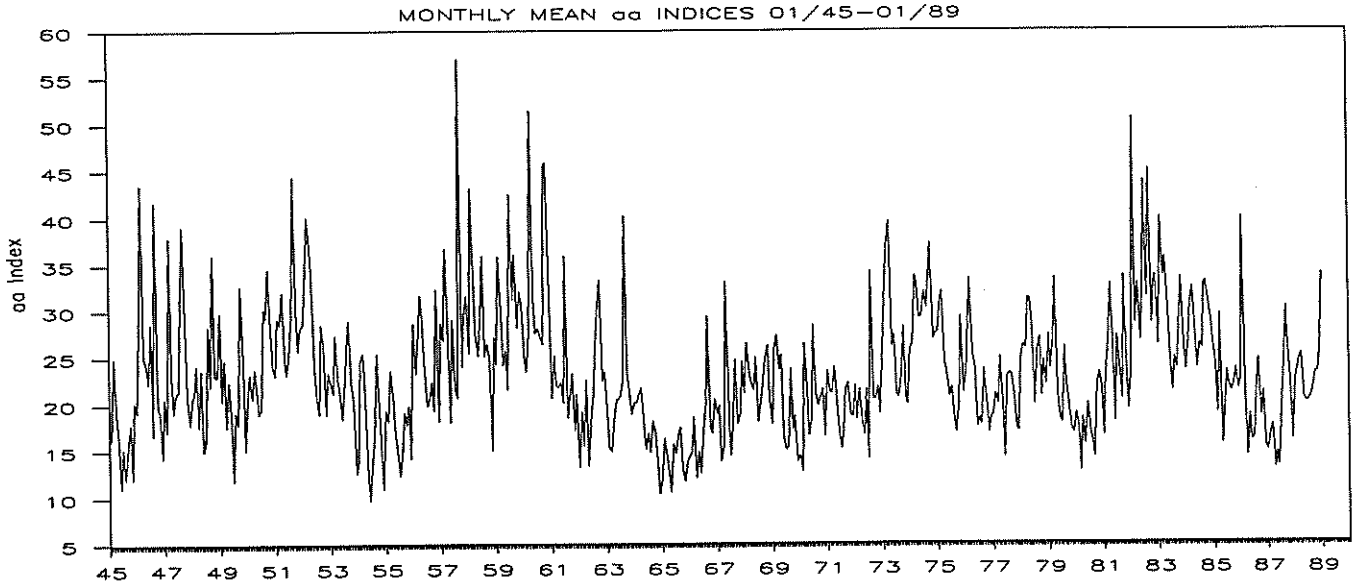
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Göttingen

Kp through January 31, 1989



MONTHLY MEAN aa INDICES 01/45–01/89



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												33.9

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

JANUARY 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)	Ranges K	D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
COL	64.6N	04	2306	SC*	12	54	..	05(6)	7	271	1645	830	05	23
FRD	49.6N	04	2305	SC*	2.4	41	- 9.2	05(1,6)	5	23	159	34	05	22
BJI	28.5N	04	2305	SC	0.7	33	..	05(6)	6	11	178	19	05	23
KRC	16.4N	04	2308	SC	- 1	17	10	05(6)	6	7	196	50	06	22
UJJ	13.5N	04	0845	SC	- 0.1	15	- 2		-	4	184	29	06	03
ABG	09.5N	04	0845	SC	- .2	14	- 3	05(6)	6	5	197	37	06	03
HYB	07.6N	04	2305	SC	- .2	13	- 1	05(6,7)	6	4	206	28	05	23
HYB	07.6N	04	0848	SC	- .1	13	- 1		-	--	--	--	05	23
GUA	04.0N	04	2305	SC*	.5	52	- 15	05(1)	5	--	190	20	05	11
ANN	01.5N	04	0845	SC	- 0.2	23	3		-	5	199	57	06	03
ETT	00.6S	04	0848	SC*	- 0.2	23	15		-	7	234	76	06	20
ETT	00.6S	04	2304	SC	- 0.6	13	12		-	--	--	--	06	20
HER	33.7S	04	2305	SC	7 *	25	28	05(6,7)	5	28	152	113	05	23
GNA	43.2S	04	2305	SC*	- 19.6*	11	- 76 *	25(1)	6	25	110	140	05	21
CNB	43.9S	04	2304	SC*	- 7.4	23	21	05(2,3,4,6)	5	21	127	94	06	12
KGL	56.5S	04	2304	SC	12	28	8	05(2)	5	28	176	124	05	11
KGL	56.5S	04	0847	SC	..	- 24	- 4	05(2)	5	28	176	124	05	11
GUA	04.0N	05	1542	..	..	..	..	05(6)	5	--	50	10	05	23
KGL	56.5S	05	1325	SC	4	32	6	05(6)	7	107	464	144	05	23
HYB	07.6N	06	2353	SC	- .2	10	- 1	07(1)	4	3	72	20	07	21
GUA	04.0N	06	2354	..	..	..	..	07(1)	5	--	80	40	07	12
ETT	00.6S	06	2353	..	..	..	..		-	3	121	88	07	14
KRC	16.4N	07	0000	SC	- 0.9	16	5	07(1,2)	4	4	54	42	08	01
BJI	28.5N	08	05--	..	..	..	..	08(6)	5	5	172	18	09	16
UJJ	13.5N	08	0500	..	...	..	..		-	4	165	30	09	24
ABG	09.5N	08	0500	..	..	..	..	08(6)	5	4	182	32	09	24
HYB	07.6N	08	0330	..	..	..	..	08(5,6)	5	3	181	26	09	22
GUA	04.0N	08	2216	..	..	..	..	09(1)	5	--	120	30	09	15
ANN	01.5N	08	0500	..	..	..	..		-	3	188	31	09	24
ETT	00.6S	08	0300	..	..	..	..		-	5	222	48	10	13
KGL	56.5S	08	0600	..	..	..	..	08(7)	6	26	256	232	09	00
COL	64.6N	11	1208	SC	- 5	26	- 12	11(6,7,8)	6	162	1075	595	12	04
FRD	49.6N	11	1206	SC	0.8	6	- 2	11(6)	6	25	184	75	12	09
BJI	28.5N	11	1205	SC	0.2	16	1	11(6)	6	10	162	16	12	21
KRC	16.4N	11	00--	..	..	..	..	11(6)	7	8	207	90	13	00
UJJ	13.5N	11	1204	SC	- 0.4	11	- 2		-	5	183	33	12	24
ABG	09.5N	11	1204	SC	- 0.2	9	- 7	11(6)	6	6	194	39	12	24
HYB	07.6N	11	1206	SC	- .3	9	- 1	11(7)	7	5	203	18	12	21
GUA	04.0N	11	1205	..	..	..	..			--	--	--	--	--
GUA	04.0N	11	1704	SC	.5	19	- 6	11(6)	6	--	130	30	12	09
ANN	01.5N	11	1204	SC	- 0.8	12	9		-	4	193	88	12	24
ETT	00.6S	11	1205	SC	- 0.4	7	9		-	5	196	90	12	21
HER	33.7S	11	1206	SC*	2	14	11	11(6,7,8)	6	40	164	230	12	06
GNA	43.2S	11	1207	SC*	- 1.6*	12 *	- 5 *	11(7,8)	6	23	170	120	12	10
CNB	43.9S	11	1206	SC	- 0.3	19	3	11(7)	6	23	150	46	12	09
KGL	56.5S	11	1206	SC	2	44	4	11(7,8) 12(3)	8	137	632	344	12	22
KRC	16.4N	13	1322	SC	..	14	..	15(5,8) 16(6)	6	6	139	43	18	20
KGL	56.5S	13	1327	SC	1	8	..	13(6,7)	5	21	208	144	14	01
FRD	49.6N	14	19--	..	..	..	..	15(6,8) 16(1,2,3) 17(4)	5	33	161	108	18	--
BJI	28.5N	14	16--	..	..	..	..	15(5)	6	12	144	30	17	23
ABG	09.5N	14	1200	..	..	..	..	15(5) 16(6)	6	5	149	73	18	24
HYB	07.6N	14	1100	..	..	..	..	15(5) 16(6)	6	5	160	53	17	23
GUA	04.0N	14	2111	..	..	..	..	15(1)	5	10	90	40	15	07
ANN	01.5N	14	1200	..	..	..	..		-	7	212	101	18	24
ETT	00.6S	14	1200	SC	..	..	..		-	6	253	90	17	24
GNA	43.2S	14	17--	..	..	..	..	15(8)	6	24	130	115	18	18
CNB	43.9S	14	12--	..	..	..	..	14(8) 15(5,6,7,8) 16(4,6)	5	24	151	75	18	18
KGL	56.5S	14	1700	..	..	..	..	15(8)	8	125	880	432	17	21
COL	64.6N	15	1000	SC	11	-382	78	15(6) 17(4)	7	206	1425	890	17	22

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

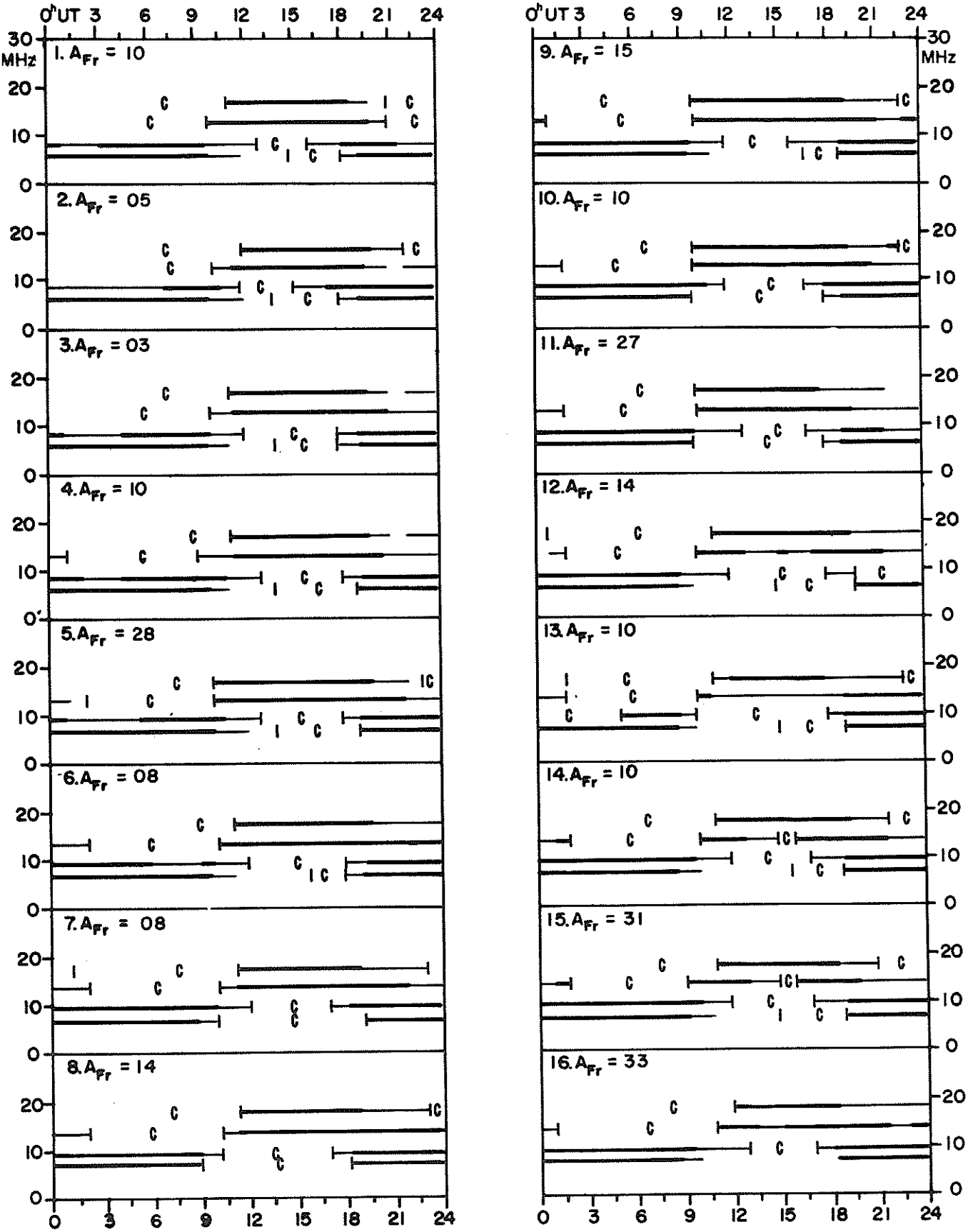
JANUARY 1989

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)
SIT	60.0N	15	10--	..	..	..	..	15(5)	7	--	--	580	17	14
GUA	04.0N	15	1219	..	..	..	..	15(8)	5	10	100	50	16	07
HER	33.7S	15	08--	..	..	..	..	15(7,8)	5	40	120	108	16	05
GUA	04.0N	16	1500	..	..	..	..	16(6)	5	--	120	20	18	00
HER	33.7S	16	15--	..	..	..	..	16(6,8) 17(5)	5	28	78	98	18	02
COL	64.6N	20	09--	..	..	..	..	20(5,6)	8	354	1940	1065	21	03
SIT	60.0N	20	12--	..	..	..	..	20(5)	8	--	--	--	22	16
FRD	49.6N	20	1130	SC	0.6	10	- 2	20(5,6)	6	29	252	77	24	--
BJI	28.5N	20	1129	SC	0.8	21	..	20(5)	8	13	317	28	20	24
KRC	16.4N	20	1128	SC	- 2	28	15	20(5)	9	9	347	107	26	00
ABG	09.5N	20	0100	..	..	..	..	20(5)	8	8	359	42	23	24
HYB	07.6N	20	1233	SC	- .3	39	- 2	20(5,6)	8	6	374	25	22	18
GUA	04.0N	20	1232	SC	..	31	- 4	20(5)	7	10	240	40	21	03
ANN	01.5N	20	0100	..	..	..	..		-	5	378	99	23	24
ETT	00.6S	20	0100	..	..	..	..		-	--	--	--	--	--
HER	33.7S	20	11--	..	..	..	..	20(5,6)	7	45	263	301	21	04
GNA	43.2S	20	11--	..	..	..	..	20(5,6)	7	26	270	200	22	15
CNB	43.9S	20	11--	..	..	..	..	20(6)	7	28	248	75	22	15
KGL	56.5S	20	1130	..	..	..	..	20(5,6)	8	186	1059	325	23	18
COL	64.6N	21	07--	..	..	..	..	22(5)	7	237	1435	950	23	00
GUA	04.0N	21	22--	..	..	..	..	22(2)	5	10	100	40	22	09
HYB	07.6N	30	0500	..	..	..	..	31(7,8)	5	5	175	34	02	03
COL	64.6N	31	05--	..	..	..	..	31(5,6,7)	6	207	1195	800	01	02
FRD	49.6N	31	----	..	..	..	..	31(7,8)	5	--	--	--	01	--
GUA	04.0N	31	18--	..	..	..	..	31(8)	5	--	100	20	01	17
ETT	00.6S	31	1400	..	..	..	..		-	--	--	--	02	08
HER	33.7S	31	17--	..	..	..	..	31(7,8)	6	22	132	124	01	05
CNB	43.9S	31	14--	..	..	..	..	31(7)	6	22	134	50	01	16
KGL	56.5S	31	1400	..	..	..	..	31(8)	7	72	765	416	01	06

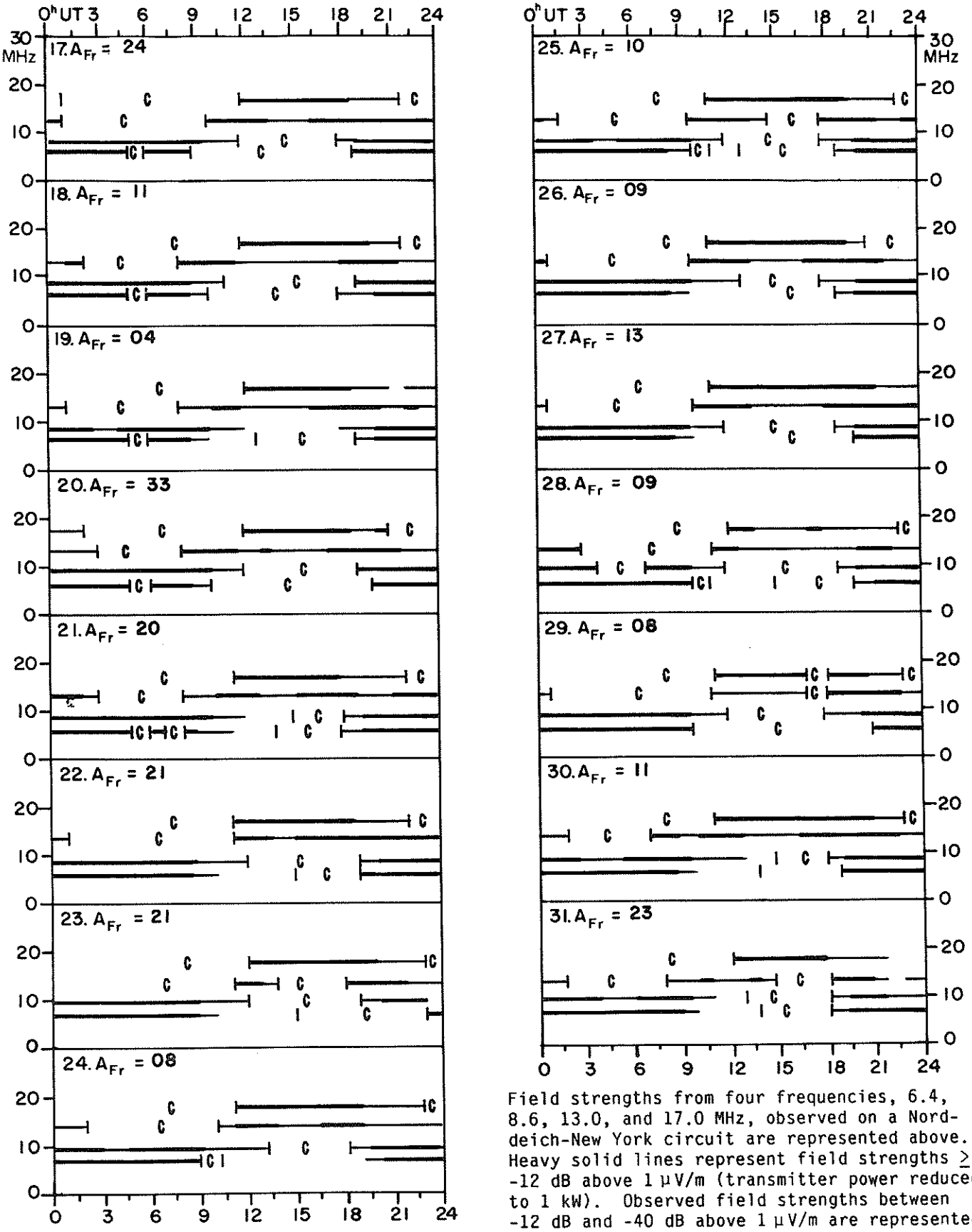
Stations:

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
WIT = WITTEVEEN

TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH
JANUARY 1989



TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH
JANUARY 1989



Field strengths from four frequencies, 6.4, 8.6, 13.0, and 17.0 MHz, observed on a Norddeich-New York circuit are represented above. Heavy solid lines represent field strengths $\geq$ -12 dB above 1 μV/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB and -40 dB above 1 μV/m are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES
JANUARY 1989

Day	For Circuits from Norddeich to: Bracknell England	Rome Italy	Teheran Iran	New York USA (East)	Tokyo Japan	Canberra Australia
1.	5.6	7.7	6.7	5.4	6.1	5.9
2.	5.9	5.9	4.7	5.4	6.2	6.2
3.	5.7	5.7	4.9	5.9	5.4	5.2
4.	5.6	5.3	5.8	5.2	6.8	6.1
5.	6.0	6.0	7.2	5.6	7.1	6.9
6.	5.3	5.7	6.1	6.0	6.6	5.0
7.	5.1	5.0	5.1	6.4	7.9	5.0
8.	5.6	5.1	6.9	6.8	7.1	5.7
9.	6.0	4.6	5.8	6.8	7.4	5.4
10.	6.3	5.6	6.1	6.9	7.7	5.9
11.	6.5	5.6	6.7	5.2	7.0	0.0
12.	5.8	5.3	7.4	5.2	7.8	6.7
13.	5.7	5.0	7.4	5.3	7.0	6.3
14.	5.9	4.9	5.9	5.9	8.0	6.3
15.	6.3	5.0	7.1	4.9	7.2	6.9
16.	6.8	5.5	7.3	6.0	7.9	5.9
17.	6.7	6.1	7.7	5.9	8.0	6.5
18.	5.9	5.2	5.3	4.9	7.2	6.5
19.	5.0	3.9	5.4	5.2	7.4	5.2
20.	5.3	6.0	7.4	5.7	6.2	6.7
21.	5.8	5.9	6.6	5.5	6.0	5.9
22.	5.2	5.5	6.5	5.4	6.8	6.2
23.	5.6	5.4	6.2	5.7	7.5	5.9
24.	4.6	4.7	5.0	4.9	7.0	5.8
25.	5.6	5.5	4.9	5.8	7.1	5.9
26.	5.8	5.6	5.3	4.7	7.1	6.1
27.	5.8	6.3	6.5	6.3	6.8	6.8
28.	6.3	6.7	7.5	5.0	7.6	6.6
29.	5.0	6.3	6.1	5.4	6.6	6.3
30.	5.0	4.8	6.4	5.8	6.4	6.2
31.	5.5	5.8	5.0	4.4	7.4	6.8
MEAN:	5.7	5.5	6.2	5.6	7.0	6.1

CALCULATION OF QUALITY INDICES (Q):
From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$Q = 6.0 + 20 \log (FD/FA)/3.0$

The quality indices vary from 0.1 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they respond to the average of the preceeding 27 days.

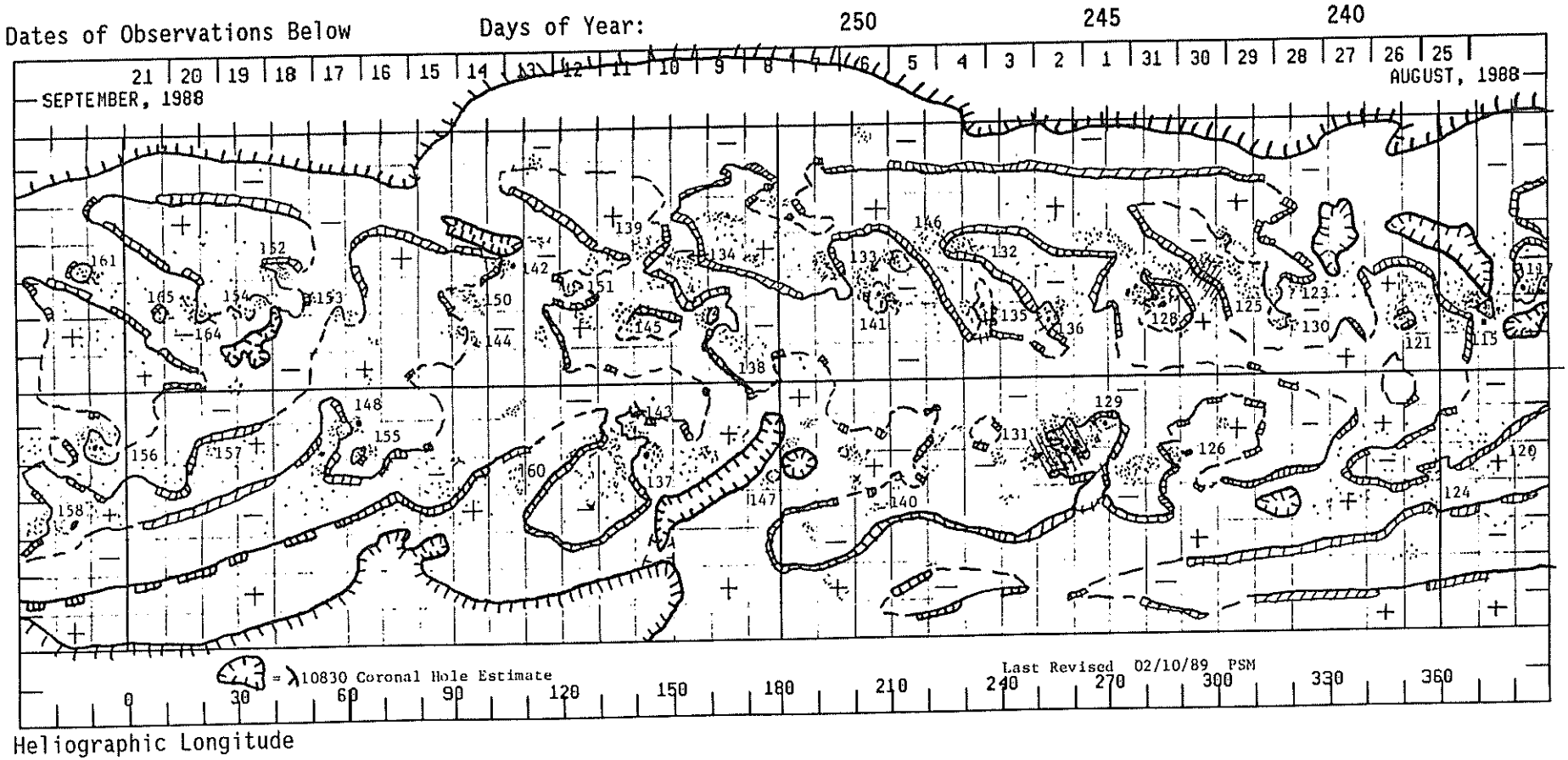
SCALE FOR QUALITY INDICES:
0.1 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 = normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

C O N T E N T S

Prompt Reports **LATE DATA** Number 535 Part I

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

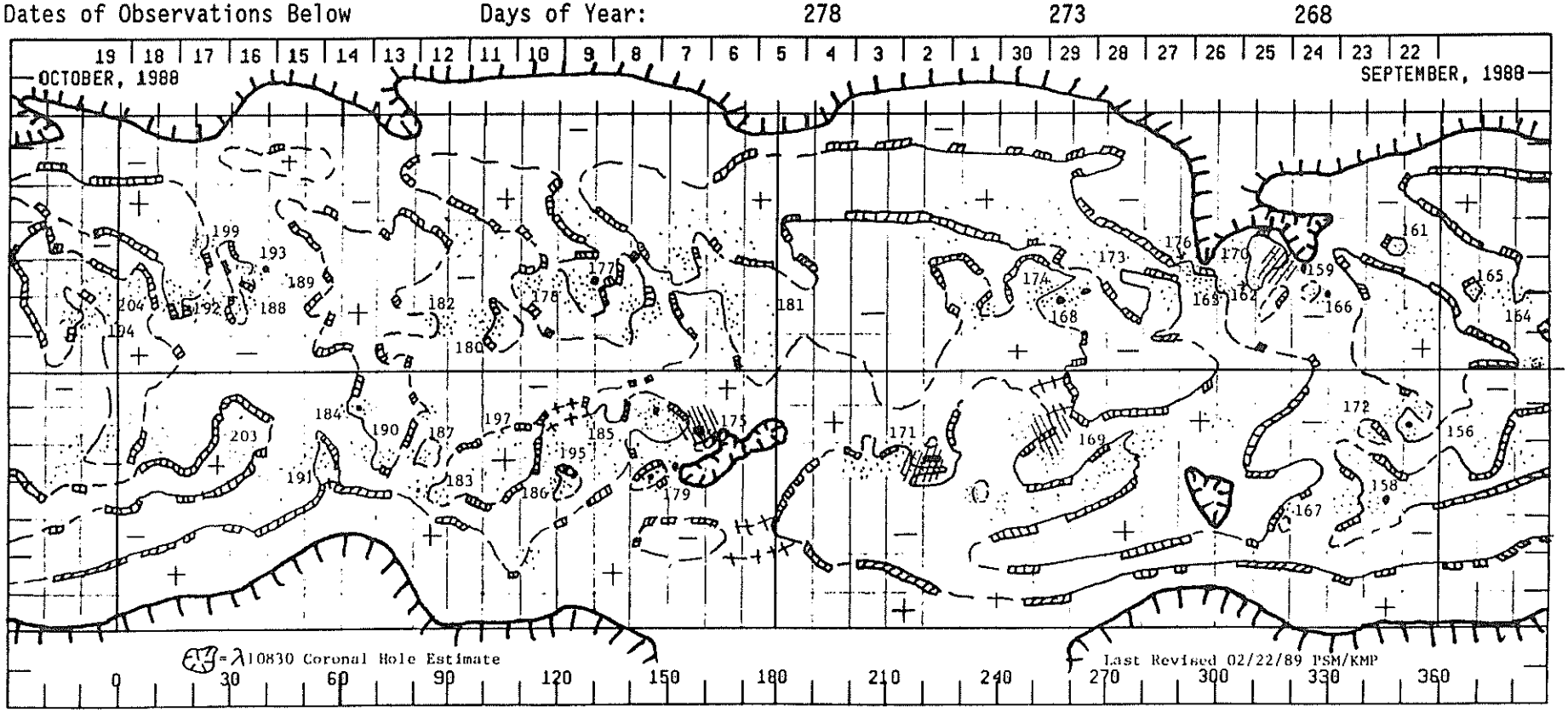
CARRINGTON ROTATION NUMBER 1806
(25 August to 21 September 1988)



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

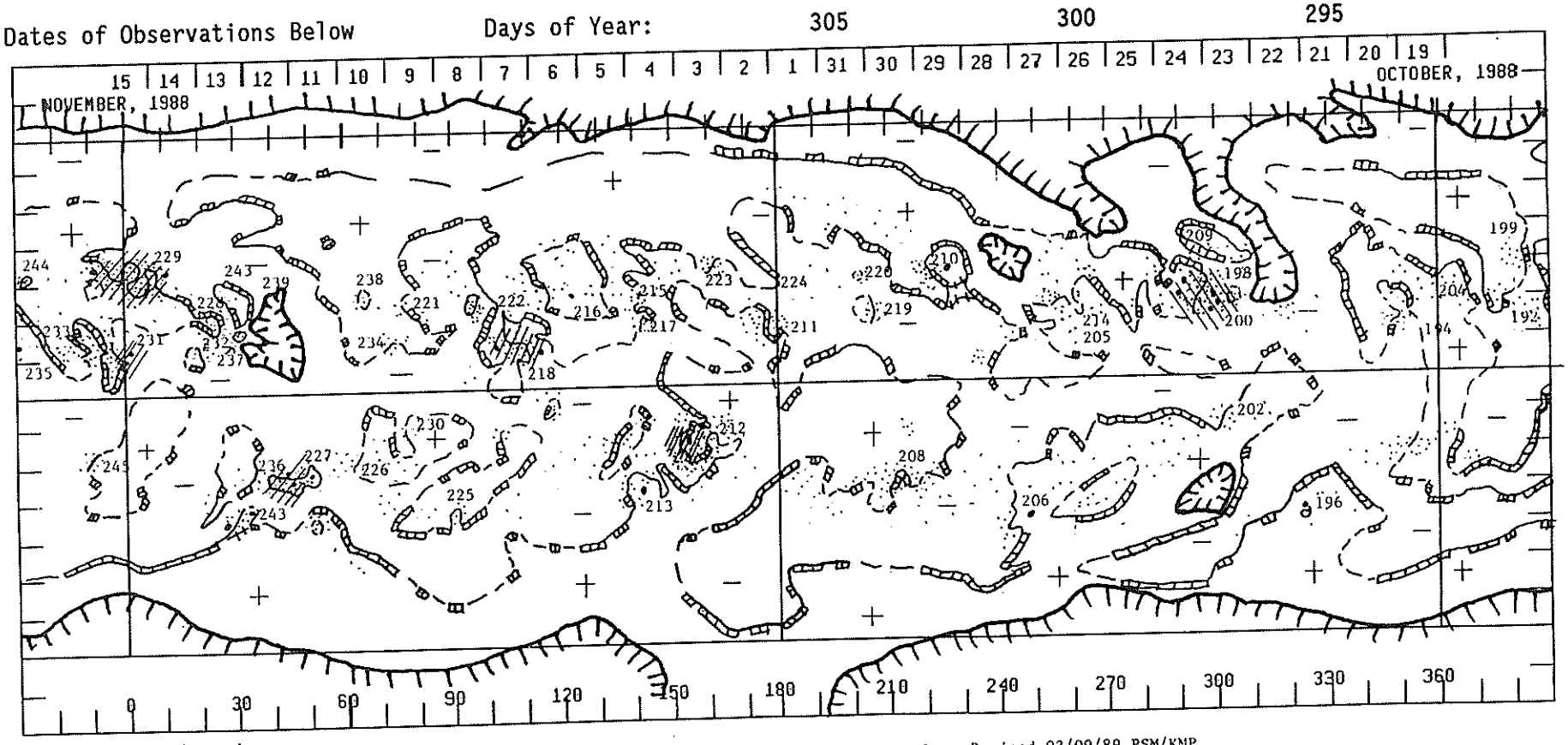
CARRINGTON ROTATION NUMBER 1807

(21 September to 19 October 1988)



PRELIMINARY H-ALPHA SOLAR SYNOPTIC CHART

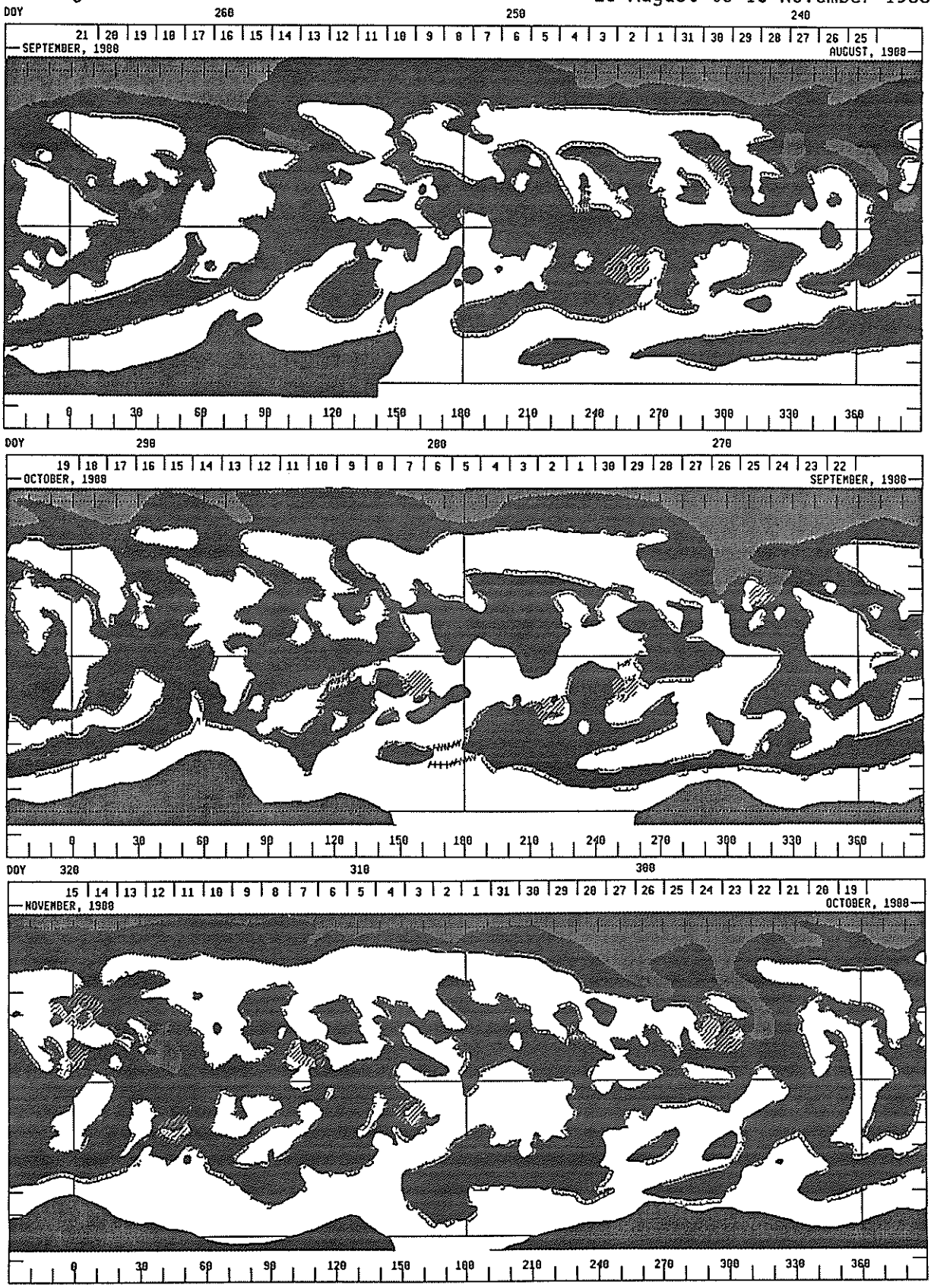
CARRINGTON ROTATION NUMBER 1808
(19 October to 15 November 1988)



Last Revised 03/09/89 PSM/KMP

SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1806-1808 25 August to 15 November 1988



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

Heliographic Longitude

C O S M I C R A Y I N D I C E S
(Neutron Monitor)

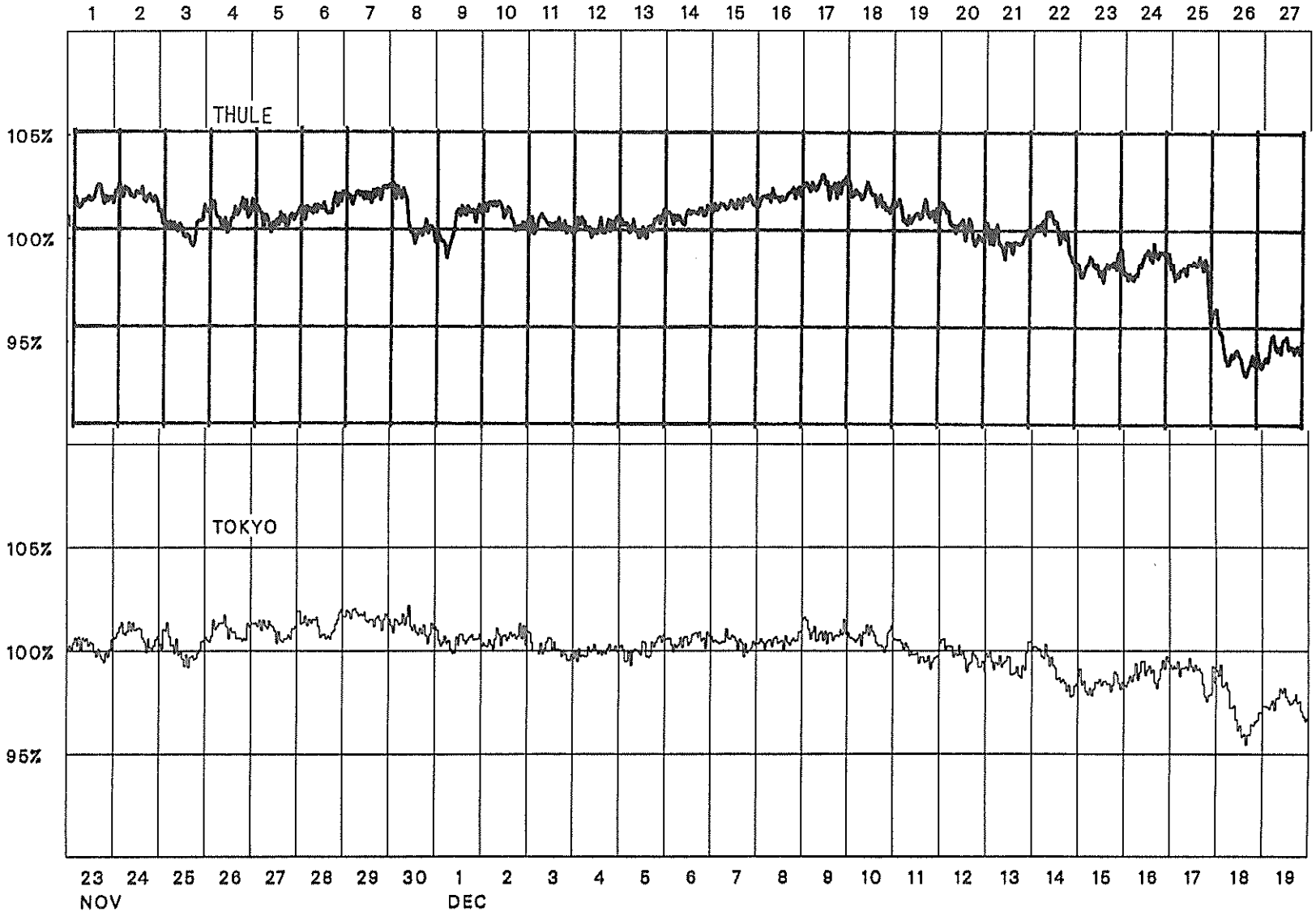
DECEMBER 1988

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	4184	6575.6	5863.8	3818.8	3572.4	1704.7(36)
2	4203	6597.2	5903.3	3830.6	3575.2	1709.4
3	4179	6549.5	5855.2	3810.8	3558.7	1702.5
4	4177	6588.2	5855.0	3803.3	3552.6	1701.6
5	4179	6601.0	5868.9	3805.6	3557.5	1704.6
6	4203	6600.2	5903.5	3831.9	3572.4	1708.9
7	4225	6628.3	5909.1	3852.6	3568.3	1710.0(4)
8	4243	6682.4	5909.9	3876.3	3570.9	1714.5(12)
9	4266	6703.1	5940.4	3875.6	3585.4	1718.5
10	4240	6714.1	5900.5	3879.9	3577.3	1716.8
11	4206	6663.2	5872.7	3844.3	3550.6	1708.2
12	4178	6627.2	5837.2	3816.6	3546.9	1701.7
13	4150	6554.9	5802.0	3788.5	3534.2	1694.9
14	4165	6529.2	5812.9	3781.1	3523.1	1687.1
15	4092	6405.8	5720.7	3703.5	3497.5	1666.9
16	4101	6459.4	5708.8	3716.7	3516.4	1674.7
17	4084	6459.9	5717.0	3714.3	3514.9	1683.2
18	3911	6207.2	5489.5	3559.3	3451.6	1643.1
19	3914	6169.6	5539.5	3591.9	3464.2	1655.5
20	3948	6193.5	5573.5	3600.6	3469.6	1668.4(28)
21	3990	6295.5	5605.7	3645.9	3493.8	1675.4(16)
22	4030	6369.0	5664.1	3691.9	3517.1	---
23	4085	6410.0	5712.1	3721.0	3533.6	1694.0(10)
24	4118	6434.4	5748.1	3735.5	3527.3	1691.2
25	4128	6463.2	5770.9	3779.7	3558.3	1695.6
26	4110	6444.1	5736.6	3766.5	3543.7	1693.8
27	4066	6392.7	5691.2	3733.0	3517.2	1684.2
28	4072	6345.5	5668.2	3700.4	3511.1	1683.1
29	4065	6378.0	5658.7	3693.4	3514.3	1687.7
30	4064	6367.3	5673.3	3672.8	3506.4	1686.5
31	4034	6343.2	5666.8	3679.6	3506.3	1681.5
Mean	4116	6475.9	5760.6	3751.8	3531.8	1691.0

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.

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2122 (November 1988-December 1988)



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Late
Dec 88

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

DECEMBER 1988

Storm Sudden Commencements (ssc)				Solar Flare Effects (sfe)		
Day	Time	Quality:	Station Group*	Day	Begin-End	Station(s)
11	0245	B:	WNG HRB QUE	05	1606-1609	MPO
		C:	VAL BDV CLF SPT LNP MPO	09	0315-0331	LNP
11	1827	A:	COI BJI MPO	10	1136-1209	SPT
		B:	CLF NAG SPT		2203-2216	QUE
		C:	NGK* EBR FRD*	12	1629-1635	NAG (si: MPO)
		si:	HRB	15	0457-0607	KAK KNY LNP
12	0300	A:	WNG* CLF* HRB* NAG* COI* MPO	22	0820-0855	TEN GNA (ssc: CLF*)
		B:	NGK* VAL* BDV* GCK* EBR COI* SPT*		1642-1708	TEN (see SSC)
14	1337	A:	MPO	24	0205-0222	LNP
		B:	WNG			
		C:	CLF BDV SPT			
17	1824	A:	NUR WNG* VAL* CLF* HRB* NAG GCK MMB*			
			AQU EBR* COI BJI SPT QUE LNP MPO CNA			
		B:	NGK* BDV* FRD KAK KNY* TEN			
22	1645	B:	SOD WNG* COI			
		C:	BDV* CLF BJI			
		sfe:	TEN			

Reporting Observatories: (up to the 31st of January 1989)

SOD DOB NUR WNG NGK VAL BDV CLF HRB NAG GCK MMB
AQU EBR COI BJI SPT FRD KAK KNY QUE TEN LNP MPO
GNA 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.

WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

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

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