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C. William Verity, Jr., Secretary

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William E. Evans, Under Secretary for Oceans and Atmosphere

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Thomas N. Pyke, Jr., Assistant Administrator

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Data for December, November 1988, and Late Data

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Editor: Helen E. Coffey

Chief: Joe H. Allen
Solar-Terrestrial Physics Division

Staff: Daniel C. Wilkinson
Carol Weathers
John A. McKinnon

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ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages DECEMBER 1988

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		
336	01	30	140	140	031	N20 W38		1	0	0	01	N20 W38	Q	Solquiet, Magalert 01.	
						S28 W86		0	0	0		S28 W86	Q		
						S17 E02		6	0	0		S17 E02	E		
						N23 W37		0	0	0		N23 W37	Q		
						N14 E41		0	0	0		N14 E41	Q		
						N20 W06		0	0	0		N20 W06	Q		
						N17 E08		2	0	0		N17 E08	E		
N18 E62		2	0	0	N18 E62	Q									
Presto: ² Kakioka Magstorm began 30/0800 UT.															
337	02	01	152	155	007	S18 W11		0	0	0	02	S18 W11	E	Solquiet, Magnil.	
						N23 W51		0	0	0		N23 W51	Q		
						N14 E28		0	0	0		N14 E28	Q		
						N20 W20		0	0	0		N20 W20	Q		
						N18 W06		1	0	0		N18 W06	E		
						N18 E48		5	0	0		N18 E48	Q		
S15 E21		4	0	0	S15 E21	Q									
338	03	02	131	154	016	S17 W24		2	0	0	03	S17 W24	E	Solquiet, Magquiet.	
						N23 W65		3	0	0		N23 W65	Q		
						N15 E14		0	0	0		N15 E14	Q		
						N18 W20		1	0	0		N18 W20	Q		
						N19 E35		8	0	0		N19 E35	E		
						S14 E07		2	0	0		S14 E07	E		
339	04	03	165	151	019	S18 W37		1	0	0	04	S18 W37	Q	Solquiet, Magquiet.	
						N22 W80		1	0	0		N22 W80	Q		
						N14 E01		1	0	0		N14 E01	Q		
						N20 W44		0	0	0		N20 W44	Q		
						N18 W33		0	0	0		N18 W33	Q		
						N18 E20		2	0	0		N18 E20	E		
						S15 W07		4	0	0		S15 W07	E		
						S24 E68		0	0	0		S24 E68	Q		
						N25 E72		0	0	0		N25 E72	Q		
340	05	04	170	146	010	S17 W50		0	0	0	05	S17 W50	Q	Solquiet, Magquiet.	
						N14 W12		0	0	0		N14 W12	Q		
						N18 W46		0	0	0		N18 W46	Q		
						N18 E09		0	0	0		N18 E09	E		
						S15 W19		0	0	0		S15 W19	Q		
						S24 E56		0	0	0		S24 E56	Q		
						N26 E61		0	0	0		N26 E61	Q		
						N20 E74		0	0	0		N20 E74	E		
						S18 E77		1	0	0		S18 E77	Q		
						S33 E85		0	0	0		S33 E85	Q		
341	06	05	180	163	002	S17 W63		0	0	0	06	S17 W63	Q	Solquiet, Magquiet.	
						N13 W26		0	0	0		N13 W26	Q		
						N18 W59		0	0	0		N18 W59	Q		
						N18 W06		1	0	0		N18 W06	Q		
						S14 W33		1	0	0		S14 W33	Q		
						S25 E41		1	0	0		S25 E41	Q		
						N25 E46		0	0	0		N25 E46	Q		
						N20 E61		4	0	0		N20 E61	E		
						S19 E66		0	0	0		S19 E66	Q		
						S34 E68		0	0	0		S34 E68	Q		
S25 E71		0	0	0	S25 E71	Q									

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages DECEMBER 1988

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		
342	07	06	178	164	002	S16 W77	1	0	0	07	S16 W77	Q	Solquiet, Magquiet.		
						N14 W38	1	0	0		N14 W38	E			
						N18 W74	0	0	0		N18 W74	Q			
						N18 W18	2	0	0		N18 W18	Q			
						S15 W46	0	0	0		S15 W46	Q			
						S24 E29	0	0	0		S24 E29	Q			
						N26 E34	2	0	0		N26 E34	Q			
						N19 E49	5	0	0		N19 E49	E			
						S18 E52	0	0	0		S18 E52	Q			
						S34 E56	4	0	0		S34 E56	Q			
						S24 E60	0	0	0		S24 E60	Q			
343	08	07	181	165	002	S16 W90	3	1	0	08	S16 W90	E	Solquiet, Magquiet.		
						N14 W51	0	0	0		N14 W51	Q			
						N17 W89	0	0	0		N17 W89	Q			
						N18 W33	0	0	0		N18 W33	Q			
						S14 W60	2	0	0		S14 W60	E			
						S23 E14	0	0	0		S23 E14	Q			
						N25 E21	0	0	0		N25 E21	Q			
						N18 E35	2	0	0		N18 E35	E			
						S19 E38	0	0	0		S19 E38	Q			
						S35 E43	1	0	0		S35 E43	E			
						S25 E47	0	0	0		S25 E47	Q			
						N28 E62	0	0	0		N28 E62	Q			
						S18 W01	0	0	0		S18 W01	Q			
344	09	08	138	169	004	N15 W61	0	0	0	09	N15 W61	Q	Solquiet, Magquiet.		
						N18 W48	0	0	0		N18 W48	Q			
						S14 W77	0	0	0		S14 W77	Q			
						S22 W01	0	0	0		S22 W01	Q			
						N19 E21	2	0	0		N19 E21	E			
						S18 E25	0	0	0		S18 E25	Q			
						S34 E31	0	0	0		S34 E31	Q			
						S24 E35	0	0	0		S24 E35	Q			
						N13 E67	1	0	0		N13 E67	E			
345	10	09	151	170	001	N18 W61	0	0	0	10	N18 W61	Q	Solquiet, Magquiet.		
						S13 W85	1	0	0		S13 W85	Q			
						S22 W15	0	0	0		S22 W15	Q			
						N19 E08	9	3	0		N19 E08	A			
						S18 E12	0	0	0		S18 E12	Q			
						S35 E18	0	0	0		S35 E18	E			
						S25 E21	0	0	0		S25 E21	Q			
						N12 E54	1	0	0		N12 E54	E			
						S15 E63	0	0	0		S15 E63	Q			
S33 E72	0	0	0	S33 E72	Q										
346	11	10	176	164	008	N17 W75	0	0	0	11	N17 W75	Q	Solalert 11/13, Magquiet.		
						S15 W91	0	0	0		S15 W91	Q			
						N20 W06	5	1	0		N20 W06	A			
						S17 E01	0	0	0		S17 E01	Q			
						S34 E05	0	0	0		S34 E05	E			
						S24 E07	0	0	0		S24 E07	Q			
						N33 E27	0	0	0		N33 E27	E			
						N14 E41	0	0	0		N14 E41	E			
						S12 E51	1	0	0		S12 E51	Q			
						S32 E61	2	1	0		S32 E61	E			
						N33 E47	4	0	0		N33 E47	E			

Presto:² Toyokawa Tenflare 110 flux units began 10/2255 UT duration 25 minutes.

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages DECEMBER 1988

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										
347	12	11	222	184	015	N18 W86	0	0	0	12	N18 W86	Q	Solalert 12/14, Magquiet.										
						N20 W19	2	0	0		N20 W19	E											
						S16 W13	1	0	0		S16 W13	Q											
						S34 W06	1	0	0		S34 W06	E											
						S24 W09	1	0	0		S24 W09	Q											
						N32 E12	0	0	0		N32 E12	E											
						N14 E27	2	0	0		N14 E27	E											
						S12 E32	0	0	0		S12 E32	Q											
						S31 E42	3	0	0		S31 E42	E											
						N31 E34	1	0	0		N31 E34	E											
						S32 E56	20	1	0		N32 E56	A											
						S13 E02	0	0	0		S13 E02	Q											
						S13 W34	0	0	0		S13 W34	E											
						348	13	12	229		180	011		N19 W31	1	0	0	13	N19 W31	Q	Solalert 13/15, Magquiet.		
S18 W25	0	0	0	S18 W25	Q																		
S35 W18	0	0	0	S35 W18	Q																		
S23 W23	0	0	0	S23 W23	Q																		
N32 E02	1	0	0	N32 E02	Q																		
N13 E13	4	0	0	N13 E13	Q																		
S13 E24	1	0	0	S13 E24	Q																		
S32 E30	1	0	0	S32 E30	E																		
N31 E22	0	0	0	N31 E22	Q																		
S32 E43	3	0	0	S32 E43	E																		
S13 W48	0	0	0	S13 W48	Q																		
N26 E75	0	0	0	N26 E75	E																		
N22 E53	0	0	0	N22 E53	Q																		
349	14	13	230	186	020					N20 W47			1	0	0	14	N20 W47		Q	Solalert 14/16, Magquiet.			
						S18 W38	0	0	0	S18 W38	Q												
						S35 W31	1	0	0	S35 W31	Q												
						S22 W36	0	0	0	S22 W36	Q												
						N14 E02	0	0	0	N14 E02	Q												
						S12 E11	0	0	0	S12 E11	Q												
						S31 E16	1	0	0	S31 E16	E												
						N31 E08	0	0	0	N31 E08	Q												
						S33 E30	0	0	0	S33 E30	E												
						S13 W61	0	0	0	S13 W61	Q												
						N25 E66	1	1	0	N25 E66	A												
						N21 E39	0	0	0	N21 E39	Q												
						Presto: ² Toyokawa Tenflare 130 flux units began 13/0204 UT duration 20 minutes.																	
						350	15	14	261	215	012	N19 W60	0	0	0		15	N19 W60	Q		Solalert 15/17, Magquiet.		
S18 W52	0	0	0	S18 W52	Q																		
S35 W42	0	0	0	S35 W42	Q																		
S22 W50	0	0	0	S22 W50	Q																		
N12 W13	1	0	0	N12 W13	Q																		
S12 W02	0	0	0	S12 W02	Q																		
S31 E03	6	1	0	S31 E03	E																		
N31 W05	0	0	0	N31 W05	Q																		
S32 E17	1	0	0	S32 E17	E																		
S14 W72	0	0	0	S14 W72	Q																		
N25 E56	4	2	0	N25 E56	A																		
N21 E24	6	0	0	N21 E24	E																		
N27 E73	1	0	0	N27 E73	E																		
351	16	15	279	219	009							N19 W72	0	0	0	16		N19 W72	Q	Solalert 16/XX Magalert Minor 16/XX.			
						S18 W66	0	0	0	S18 W66	Q												
						S36 W53	0	0	0	S36 W53	Q												
						S24 W61	0	0	0	S24 W61	Q												
						N12 W27	1	0	0	N12 W27	Q												

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

7
DEC 88

Summary of the Gealert Messages DECEMBER 1988

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	Gealerts	
						°Lat	°Long	Total	M		X	°Lat			°Long
351	16	15				S13	W15	1	0	0	16	S13	W15	Q	
						S31	W09	4	0	0		S31	W09	E	
						N31	W16	0	0	0		N31	W16	Q	
						S32	E05	0	0	0		S32	E05	Q	
						S14	W85	0	0	0		S14	W85	Q	
						N26	E44	2	0	1		N26	E44	A	
						N21	E11	8	1	0		N21	E11	E	
						N26	E57	1	0	0		N26	E57	E	
						N19	W44	0	0	0		N19	W44	Q	
						Presto: ² Boulder Tenflare 370 flux units began 15/0501 UT duration 9 minutes. Sydney Culgoora Soflare 1/B E58 N26 began 15/0511 UT in progress, Type II began 15/0507 UT in progress.									
352	17	16	287	239	022	N19	W88	0	0	0	17	N19	W88	Q	Proton Flare Alert
						S17	W79	0	0	0		S17	W79	Q	17/19 N27 E30,
						S35	W67	0	0	0		S35	W67	Q	Magalert Minor
						N13	W42	0	0	0		N13	W42	Q	17/XX Flare,
						S12	W29	2	0	0		S12	W29	Q	Proton Arrival Alert
						S31	W22	3	0	0		S31	W22	E	16/17 0846 UT.
						N32	W30	2	0	0		N32	W30	Q	
						S31	W03	2	0	0		S31	W03	Q	
						N27	E30	3	0	1		N27	E30	A	
						N23	W02	8	0	0		N23	W02	E	
						N26	E45	5	0	0		N26	E45	E	
						N20	W59	0	0	0		N20	W59	Q	
						S23	E44	1	0	0		S23	E44	Q	
						Presto: Meudon Type IV at Nancay began 16/0823 UT in progress. Boulder Tenflare 3100 flux units began 16/0826 UT duration 99 minutes. Boulder X-ray event X4/1B N26 E40 began 16/0826 UT duration 184 minutes. Toyokawa Tenflare 110 flux units began 16/2246 UT duration 3 minutes.									
353	18	17	299	250	025	S17	W92	0	0	0	18	S17	W92	Q	Proton Flare Alert
						S33	W77	0	0	0		S33	W77	Q	18XX 11827,
						N14	W58	0	0	0		N14	W58	Q	Magalert 18/19, Flare.
						S11	W43	2	1	0		S11	W43	E	
						S31	W33	3	1	0		S31	W33	E	
						N33	W42	0	0	0		N33	W42	Q	
						S30	W17	0	0	0		S30	W17	Q	
						N27	E18	4	2	0		N27	E18	A	
						N23	W14	0	0	0		N23	W14	E	
						N26	E31	1	0	0		N26	E31	E	
						N20	W72	0	0	0		N20	W72	E	
						S26	E31	1	0	0		S26	E31	Q	
						N17	E72	6	0	0		N17	E72	E	
						Presto: Toyokawa Tenflare 110 flux units began 17/0345 UT duration 4 minutes. Sydney Culgoora Type II importance 3 began 17/0500 UT duration 4 minutes, Type IV importance 1 began 17/0455 UT duration 37 minutes. Boulder Proton event 18 pfu at greater than 10 MeV N27 E18 began 17/0610 UT, maximum at 17/0855 UT, ended 17/1440 UT. Kakioka Magstorm began 17/18XX. Boulder Proton event continues in progress 17/2000 UT.									
354	19	18	312	253	021	N12	W66	1	0	0	19	N12	W66	E	Proton Flare Alert
						S11	W57	0	0	0		S11	W57	Q	19/21 N27 E04,
						S30	W45	3	0	1		S30	W45	E	Magalert Minor 19/20,
						N33	W58	2	0	0		N33	W58	Q	Flare.
						S31	W29	0	0	0		S31	W29	Q	
						N27	E04	5	1	0		N27	E04	A	
						N23	W27	2	0	0		N23	W27	E	
						N27	E18	0	0	0		N27	E18	E	
						N20	W84	0	0	0		N20	W84	Q	

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Summary of the Geoalert Messages **DECEMBER 1988**

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										
354	19	18				S22 E16		7	1	0	19	S22 E16	Q										
						N17 E60		1	0	0		N17 E60	E										
						N32 E54		0	0	0		N32 E54	Q										
						N21 E76		2	0	0		N21 E76	Q										
						N25 W48		0	0	0		N25 W48	Q										
Presto: ² Boulder X-ray event X1/3B S30 W41 began 18/1705 UT duration 54 minutes. Boulder Tenflare 370 flux units began 18/1710 UT duration 8 minutes.																							
355	20	19	293	249	017	N12 W79		0	0	0	20	N12 W79	Q	Proton Flare Alert 20/22 N27 W09, Magalert Minor 20/XX, Flare.									
						S11 W70		1	0	0		S11 W70	Q										
						S30 W57		5	0	0		S30 W57	E										
						N34 W73		0	0	0		N34 W73	Q										
						S30 W40		1	0	0		S30 W40	Q										
						N27 W09		3	0	0		N27 W09	A										
						N23 W39		4	1	0		N23 W39	E										
						N27 E04		0	0	0		N27 E04	E										
						S22 E03		7	0	0		S22 E03	E										
						N16 E46		1	0	0		N16 E46	E										
						N22 E63		2	1	0		N22 E63	E										
						N17 E02		0	0	0		N17 E02	E										
						356	21	20	294	252		006	N11 W89			0	0	0	21	N11 W89	Q	Solalert 21/22, Magnil.	
S12 W83		0	0	0	S12 W83						Q												
S32 W70		5	1	0	S32 W70						Q												
N27 W24		4	0	0	N27 W24						A												
N22 W55		3	0	0	N22 W55						E												
N26 W10		2	0	0	N26 W10						E												
S22 W11		2	0	0	S22 W11						Q												
N17 E31		0	0	0	N17 E31						E												
N34 E29		0	0	0	N34 E29						Q												
N21 E51		6	1	0	N21 E51						E												
N17 W12		3	0	0	N17 W12						Q												
Presto: Toyokawa Tenflare 150 flux units began 20/0157 UT duration 8 minutes. Toyokawa Tenflare 150 flux units began 20/0215 UT duration 5 minutes. Boulder Tenflare 690 flux units began 20/1217 UT duration 31 minutes. Boulder Tenflare 270 flux units began 20/1254 UT duration 16 minutes.																							
357	22	21	269	252	011						S32 W79			3	1	0	22	S32 W79		Q	Solalert 22/XX, Magquiet.		
						N27 W35		4	0	0	N27 W35	E											
						N23 W65		3	0	0	N23 W65	E											
						N26 W22		1	0	0	N26 W22	Q											
						S21 W25		0	0	0	S21 W25	Q											
						N16 E19		0	0	0	N16 E19	Q											
						N21 E38		5	0	0	N21 E38	E											
						N17 W25		0	0	0	N17 W25	Q											
						S32 W43		0	0	0	S32 W43	Q											
						N16 E54		0	0	0	N16 E54	Q											
						N21 E73		1	0	0	N21 E73	Q											
						358	23	22	320	255	011	S32 W90		3	1	0		23	S32 W90	E		Solalert 23/24 Magquiet.	
												S32 W74		6	1	0			S32 W74	E			
N27 W48		5	0	0	N27 W48							A											
N23 W77		3	0	0	N23 W77							E											
N26 W35		3	1	0	N26 W35							Q											
S22 W39		0	0	0	S22 W39							Q											
N16 E06		2	0	0	N16 E06							Q											
N31 E03		0	0	0	N31 E03							Q											
N20 E25		3	0	0	N20 E25							E											
N17 W39		1	0	0	N17 W39							Q											
S33 W56		0	0	0	S33 W56							Q											
N15 E41		0	0	0	N15 E41							Q											

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Summary of the Geoalert Messages DECEMBER 1988

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		
358	23	22				N21 E61	2	0	0	23	N21 E61	Q			
						S18 W22	0	0	0		S18 W22	Q			
						S18 E71	0	0	0		S18 E71	E			
			Presto: ²	Boulder	Tenflare	170 flux units began 22/2305 UT duration 30 minutes.									
			Boulder		Type II importance 2	began 22/2323 UT duration 7 minutes,									
					Type IV	began 22/2330 UT duration 16 minutes.									
359	24	23	312	245	001	S33 W87	2	2	0	24	S33 W87	Q	Solalert 24/27, Magquiet.		
						N28 W62	2	0	0		N28 W62	E			
						N24 W88	0	0	0		N24 W88	Q			
						N25 W50	1	0	0		N25 W50	E			
						S22 W52	0	0	0		S22 W52	Q			
						N17 W07	0	0	0		N17 W07	Q			
						N31 W10	0	0	0		N31 W10	Q			
						N21 E13	0	0	0		N21 E13	Q			
						N17 W52	0	0	0		N17 W52	Q			
						S33 W71	0	0	0		S33 W71	Q			
						N16 E27	0	0	0		N16 E27	Q			
						N21 E49	3	0	0		N21 E49	Q			
						S17 W36	0	0	0		S17 W36	Q			
						S17 E57	2	0	0		S17 E57	E			
						S13 E43	0	0	0		S13 E43	Q			
360	25	24	257	229	003	N28 W76	0	0	0	25	N28 W76	E	Solalert 25/26, Magquiet.		
						N24 W65	0	0	0		N24 W65	E			
						S23 W67	0	0	0		S23 W67	Q			
						N18 W20	2	0	0		N18 W20	Q			
						N31 W23	0	0	0		N31 W23	Q			
						N21 W01	1	0	0		N21 W01	Q			
						N18 W65	1	0	0		N18 W65	Q			
						S33 W86	1	0	0		S33 W86	Q			
						N17 E18	0	0	0		N17 E18	Q			
						N22 E36	1	0	0		N22 E36	Q			
						S16 E44	1	1	0		S16 E44	E			
						S13 E27	0	0	0		S13 E27	Q			
						N22 W63	0	0	0		N22 W63	Q			
361	26	25	250	220	019	N27 W89	2	1	0	26	N27 W89	Q	Solalert 26, Magalert 26.		
						N25 W80	0	0	0		N25 W80	Q			
						S22 W83	0	0	0		S22 W83	Q			
						N18 W34	1	0	0		N18 W34	Q			
						N21 W13	0	0	0		N21 W13	Q			
						N18 W78	0	0	0		N18 W78	Q			
						N19 E05	0	0	0		N19 E05	Q			
						N21 E22	1	0	0		N21 E22	E			
						S17 E32	5	0	0		S17 E32	E			
						N21 W76	0	0	0		N21 W76	Q			
						S13 W04	0	0	0		S13 W04	Q			
						N18 E38	0	0	0		N18 E38	Q			
						S16 E65	1	0	0		S16 E65	Q			
			Presto:	Kakioka	Magstorm	began 25/08XX UT.									
362	27	26	226	201	028	N18 W47	1	0	0	27	N18 W47	Q	Solalert 27, Magnil.		
						N21 W25	0	0	0		N21 W25	Q			
						N18 W89	0	0	0		N18 W89	Q			
						N20 W10	0	0	0		N20 W10	Q			
						N22 E09	1	0	0		N22 E09	E			
						S17 E19	11	1	0		S17 E19	A			
						N21 W92	0	0	0		N21 W92	Q			
						S13 W17	0	0	0		S13 W17	Q			
						N18 E24	2	0	0		N18 E24	Q			
						S16 E50	0	0	0		S16 E50	Q			

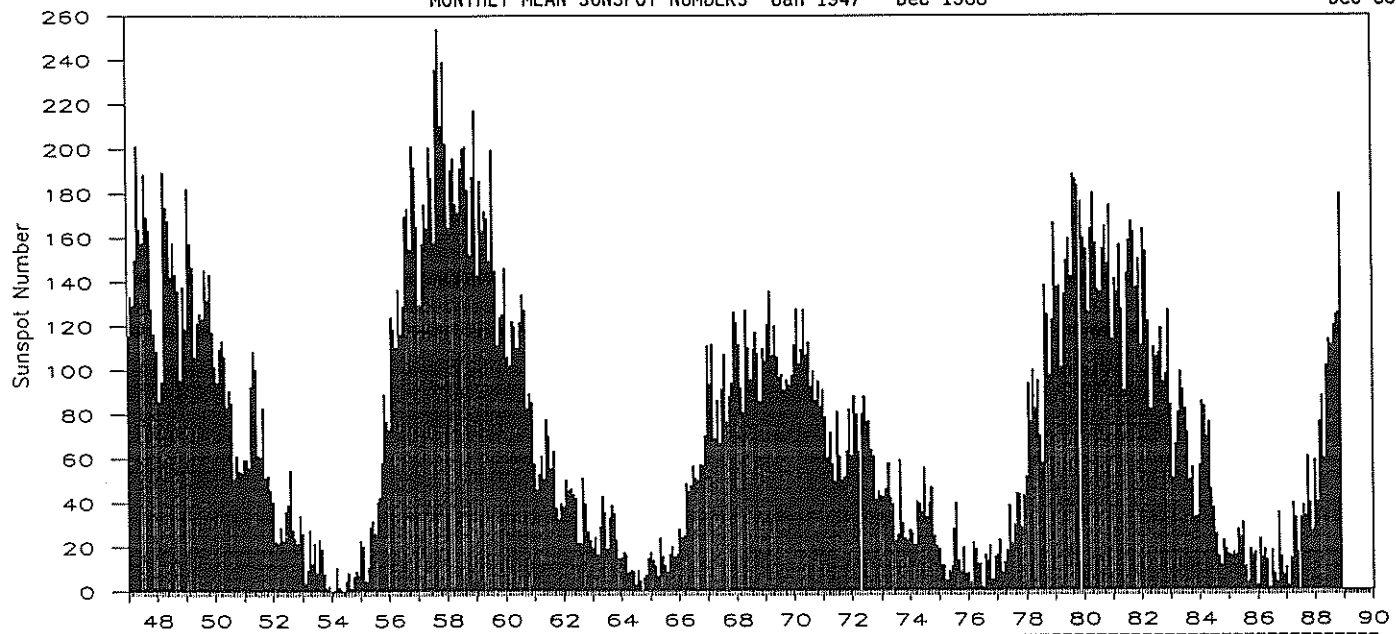
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Summary of the Geoalert Messages **DECEMBER 1988**

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						°Lat	°Long	Total	M	X		°Lat	°Long		
363	28	27	201	212	015	N17	W63	1	0	0	28	N17	W63	Q	Solalert 28/XX, Magquiet.
						N21	W38	8	1	0		N21	W38	E	
						N22	W07	4	0	0		N22	W07	E	
						S17	E05	11	0	0		S17	E05	E	
						S13	W31	0	0	0		S13	W31	Q	
						N18	E10	0	0	0		N18	E10	Q	
						S16	E30	0	0	0		S16	E30	Q	
						N20	E27	0	0	0		N20	E27	Q	
364	29	28	232	209	011	N17	W76	0	0	0	29	N17	W76	Q	Solalert 29/XX, Magquiet.
						N22	W52	8	2	0		N22	W52	E	
						N21	W19	3	0	0		N21	W19	Q	
						S18	W09	6	1	0		S18	W09	E	
						S14	W45	0	0	0		S14	W45	Q	
						N17	W04	1	0	0		N17	W04	Q	
						S15	E22	8	3	0		S15	E22	E	
						N20	E14	0	0	0		N20	E14	Q	
						S27	W32	0	0	0		S27	W32	Q	
						S42	W13	0	0	0		S42	W13	Q	
Presto: ² Boulder Tenflare 390 flux units began 28/2341 UT duration 5 minutes.															
365	30	29	247	202	016	N17	W90	0	0	0	30	N17	W90	Q	Solalert 30/XX, Magalert 30/31.
						N22	W64	5	0	0		N22	W64	E	
						N21	W32	0	0	0		N21	W32	Q	
						S18	W22	5	1	0		S18	W22	A	
						S14	W55	0	0	0		S14	W55	Q	
						N17	W17	0	0	0		N17	W17	Q	
						S16	E09	2	0	0		S16	E09	Q	
						N19	W02	0	0	0		N19	W02	E	
						S40	W26	2	0	0		S40	W26	E	
						S18	E43	0	0	0		S18	E43	Q	
						N27	E49	0	0	0		N27	E49	Q	
366	31	30	259	180	012	N22	W78	2	0	0	31	N22	W78	E		Solalert 31/XX, Magalert 31/01, Flare.
						N22	W44	2	0	0		N22	W44	Q	
						S19	W35	5	0	1		S19	W35	A	
						S13	W68	0	0	0		S13	W68	Q	
						N18	W30	1	0	0		N18	W30	Q	
						S15	W08	3	0	0		S15	W08	Q	
						N22	W11	0	0	0		N22	W11	Q	
						S39	W38	1	0	0		S39	W38	E	
						S18	E29	0	0	0		S18	E29	Q	
						N27	E36	0	0	0		N27	E36	Q	
						S18	E10	0	0	0		S18	E10	Q	
Presto: Boulder X-ray event X1/2N S20 W33 began 30/1802 UT duration 58 minutes. Boulder Tenflare 210 flux units began 30/1806 UT duration 3 minutes.															
01	01	31	212	182	010	N22	W88	0	0	0	01	N22	W88	Q	Solalert 01/02, Magalert 01/02, Flare.
						N22	W58	2	0	0		N22	W58	Q	
						S18	W50	1	0	0		S18	W50	E	
						N17	W43	3	0	0		N17	W43	Q	
						S15	W21	0	0	0		S15	W21	Q	
						S40	W51	0	0	0		S40	W51	Q	
						S18	E15	0	0	0		S18	E15	Q	
						N27	E26	0	0	0		N27	E26	Q	
						S18	W03	1	0	0		S18	W03	Q	

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

MONTHLY MEAN SUNSPOT NUMBERS Jan 1947 - Dec 1988



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	29.2
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	124.7*	125.6*	179.4*	100.0*

*Preliminary

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

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Jan 88	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct [†]	Nov [†]	Dec [†]
01	47	63	68	110	69	95	139	142	137	109	126	128
02	31	68	66	96	84	96	145	143	144	117	114	105
03	25	68	72	94	76	100	142	146	129	129	121	139
04	23	74	77	74	101	105	129	135	148	128	104	122
05	32	58	64	66	103	125	119	120	128	130	129	139
06	40	43	61	62	77	145	108	123	93	131	124	149
07	58	44	65	84	50	141	103	144	97	128	114	144
08	57	46	67	92	63	151	106	160	88	138	95	111
09	62	50	49	115	74	173	82	171	74	112	110	122
10	68	38	36	107	87	144	78	152	76	146	131	127
11	75	26	20	115	65	108	102	135	81	148	155	152
12	67	14	39	118	56	77	109	133	88	156	159	175
13	76	23	53	120	44	47	103	122	91	150	147	195
14	91	28	62	138	37	53	121	128	94	131	139	213
15	90	33	63	145	44	65	121	121	89	109	156	214
16	83	42	74	157	53	81	111	91	89	120	181	216
17	72	35	99	144	57	76	124	67	79	125	196	232
18	68	55	95	137	44	67	136	47	97	134	175	229
19	73	66	105	108	20	70	105	57	113	133	147	223
20	85	51	85	88	20	77	106	57	153	119	112	234
21	78	27	81	79	25	95	103	40	168	117	145	218
22	66	15	76	72	30	92	106	21	168	109	124	255
23	47	13	74	43	40	91	116	26	190	104	117	235
24	44	23	83	30	48	93	81	43	172	121	116	199
25	33	19	92	40	54	111	76	76	149	124	96	183
26	44	15	93	44	63	107	76	93	151	110	80	174
27	54	31	103	36	66	111	101	142	157	120	69	175
28	67	40	109	41	70	116	117	146	143	119	86	196
29	59	52	104	39	74	121	157	164	111	122	92	194
30	56		108	47	83	121	161	163	106	115	107	190
31	57		120		86		146	151		111		172
Mean	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	124.7	125.6	179.4

† = preliminary. The preliminary 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	Jan 88	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
01	100.1	105.5	99.8*	127.2	108.8	149.3*	194.4*	180.9	191.3	179.4	157.2*	150.5
02	93.7	104.3	99.1	126.5	113.1*	147.6	198.9	187.6	178.9	197.0	156.5*	149.4
03	101.2	103.6	101.9*	127.6	116.4*	149.5	190.2	172.2*	177.3	200.4	164.0	147.3
04	98.2	103.1	102.6*	122.6	127.4	150.9	181.0	163.6	165.9	189.2	159.7	142.7
05	99.5	102.6	106.7*	114.6	121.1	151.2	171.2	159.2	166.3	191.0	163.8	154.6*
06	101.7	103.6	107.6	116.8	116.5	159.0	156.7	163.4	152.4	193.4	161.2	157.7
07	102.1	105.3	107.3	120.0	112.9	164.6	152.4	170.4	145.4	182.4	151.6	152.9*
08	105.6	102.5	104.1*	121.8*	116.7	168.3	142.4	186.9	138.9	172.6	143.5	164.1
09	100.6*	101.0	101.5	121.8*	121.9	165.9*	137.7	182.4	128.0	176.5	152.4	165.2
10	100.9	100.2	99.2	127.2	116.4	149.8	138.3	181.8	117.6	177.8	147.7	161.2*
11	101.7*	99.6	102.9	128.0*	114.6	137.8	137.7*	178.2	121.9	168.2	153.8	176.4
12	107.5*	101.3	103.5	130.6*	111.6	125.9	137.9	161.2	127.0	148.4	150.6*	173.9
13	108.1*	102.9	107.8	134.6	105.9	115.0	141.3*	159.7	124.8	157.5	157.8*	181.1
14	113.7	102.6	108.9*	146.3	105.2	111.7	150.1	151.6	130.2	150.4	173.2*	204.4*
15	112.4	100.4	112.6*	143.5	103.4	113.5	150.7	144.0	126.1	149.1	161.1*	212.0
16	121.8*	101.0	114.1*	147.6	103.3	121.7	153.3*	137.8	128.5	152.3	186.1*	232.1
17	116.4*	106.2	117.4	145.5	103.7	124.8	152.8*	145.6	135.3	175.0	175.6	241.7
18	110.9	112.5	116.1	145.3	106.7	125.7	152.3	128.5	139.5	162.3	161.8	243.5
19	114.2	109.0	116.1*	138.5	104.8	119.4	142.1	123.9	138.6	164.0	151.2	240.2
20	112.7	106.5	116.3*	134.9	106.1	118.5	141.3	118.1	151.4	166.0	146.6	238.8
21	111.6	104.7	117.5*	127.6	112.6	122.8*	145.8	116.1	157.8	165.9	152.9	245.2
22	104.5	102.5	117.6	120.1	114.0	124.4*	141.2	114.9	178.6	166.2	153.1	246.6
23	104.7	100.2	120.9*	111.5	122.2	129.3	144.6	121.7A	177.8*	171.1	135.7	234.8
24	102.2	99.6	123.0*	105.6	119.8	135.7*	138.6	133.7	178.6	168.4	138.0	221.6
25	94.9	96.4	128.5*	106.7	123.8*	153.7	140.9	144.3	177.4	162.1	137.5	210.5
26	93.5	96.7	127.5*	103.8	127.8	157.6*	149.7	157.1	172.0	155.4	137.4	193.0
27	101.6	96.3	128.0*	101.9	130.0	160.5	161.5	166.8	179.6*	161.8	140.9	201.9
28	103.0	97.1	129.8	101.6	130.1	183.2	175.4	174.0	171.0	156.0	138.8	201.6
29	99.1	103.3	131.7	102.1	140.2	189.5	185.9	189.0	172.0	155.9	137.6	196.7
30	100.1		128.3	104.8	142.8	187.4*	188.3	190.0	173.1	154.2*	135.8	179.5
31	103.1		130.6*		153.6*		192.5	194.5		160.4		177.6
Mean	104.6	102.4	113.8	123.6	117.9	143.8	157.6	158.0	154.1	168.7	152.8	193.5

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

DAILY SOLAR INDICES

December 1988

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers		Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit								
			Int	Amer		SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
01	336	9	128	121	154.8	546	273	164	150.5	139	114	62	36	18
02	337	10	105	104	153.8	542	274	165	149.4	136	117	67	39	26
03	338	11	139	121	151.6	542	268	163	147.3	138	114	60	38	24
04	339	12	122	133	146.9	546	273	164	142.7	136	112	62	33	27
05	340	13	139	139	159.2*	543	280	172	154.6*	147	119	70	34	22
06	341	14	149	142	162.5	511	276	169	157.7	148	120	66	33	22
07	342	15	144	145	157.6*	550	277	167	152.9*	145	123	62	35	36
08	343	16	111	109	169.2	542	279	172	164.1	154	125	63	32	12
09	344	17	122	125	170.3	548	277	176	165.2	154	127	69	49	25
10	345	18	127	136	166.3*	526	272	174	161.2*	156	126	62	34	30
11	346	19	152	163	182.0	554	301	192	176.4	167	135	68	36	27
12	347	20	175	170	179.4	474	---	---	173.9	---	---	58	35	19
13	348	21	195	179	186.9	478	299	198	181.1	169	139	67	40	26
14	349	22	213	215	211.0*	453	316	216	204.4*	187	145	63	35	24
15	350	23	214	214	218.9	495	332	231	212.0	195	144	67	35	26
16	351	24	216	221	239.7	491	344	245	232.1	215	158	71	41	26
17	352	25	232	228	249.6	476	366	266	241.7	220	156	73	40	39
18	353	26	229	239	251.5	468	340	250	243.5	219	156	70	42	51
19	354	27	223	235	248.2	498	359	257	240.2	220	159	74	47	58
20	355	1	234	233	246.8	489	356	265	238.8	221	159	75	38	27
21	356	2	218	215	253.4	491	346	264	245.2	224	157	69	45	46
22	357	3	255	253	254.9	505	362	275	246.6	229	157	73	42	33
23	358	4	235	244	242.7	472	347	256	234.8	216	150	67	38	23
24	359	5	199	192	229.1	480	328	236	221.6	203	145	69	43	38
25	360	6	183	186	217.6	465	312	214	210.5	194	142	65	41	33
26	361	7	174	174	199.6	479	317	212	193.0	188	138	75	58	--
27	362	8	175	167	208.8	475	306	216	201.9	185	137	69	39	35
28	363	9	196	200	208.5	488	307	222	201.6	186	136	69	44	--
29	364	10	194	193	203.4	479	303	203	196.7	178	132	66	37	34
30	365	11	190	190	185.6	476	285	183	179.5	162	122	61	32	17
31	366	12	172	168	183.7	476	285	182	177.6	160	120	60	32	15
Mean			179.4	179.2	199.8	502	309	209	193.5	180	136	67	39	29

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	103 (3)	112 (6)	119 (10)	126 (14)	132 (18)	137 (21)
1989	140 (22)	144 (20)	153 (19)	160 (18)	166 (20)	171 (24)	174 (29)	177 (33)	184 (36)	189 (38)	191 (40)	192 (42)
1990	192 (45)	192 (47)	189 (49)	184 (48)	177 (45)	173 (41)	171 (39)	169 (40)	161 (39)	152 (38)	144 (35)	140 (31)

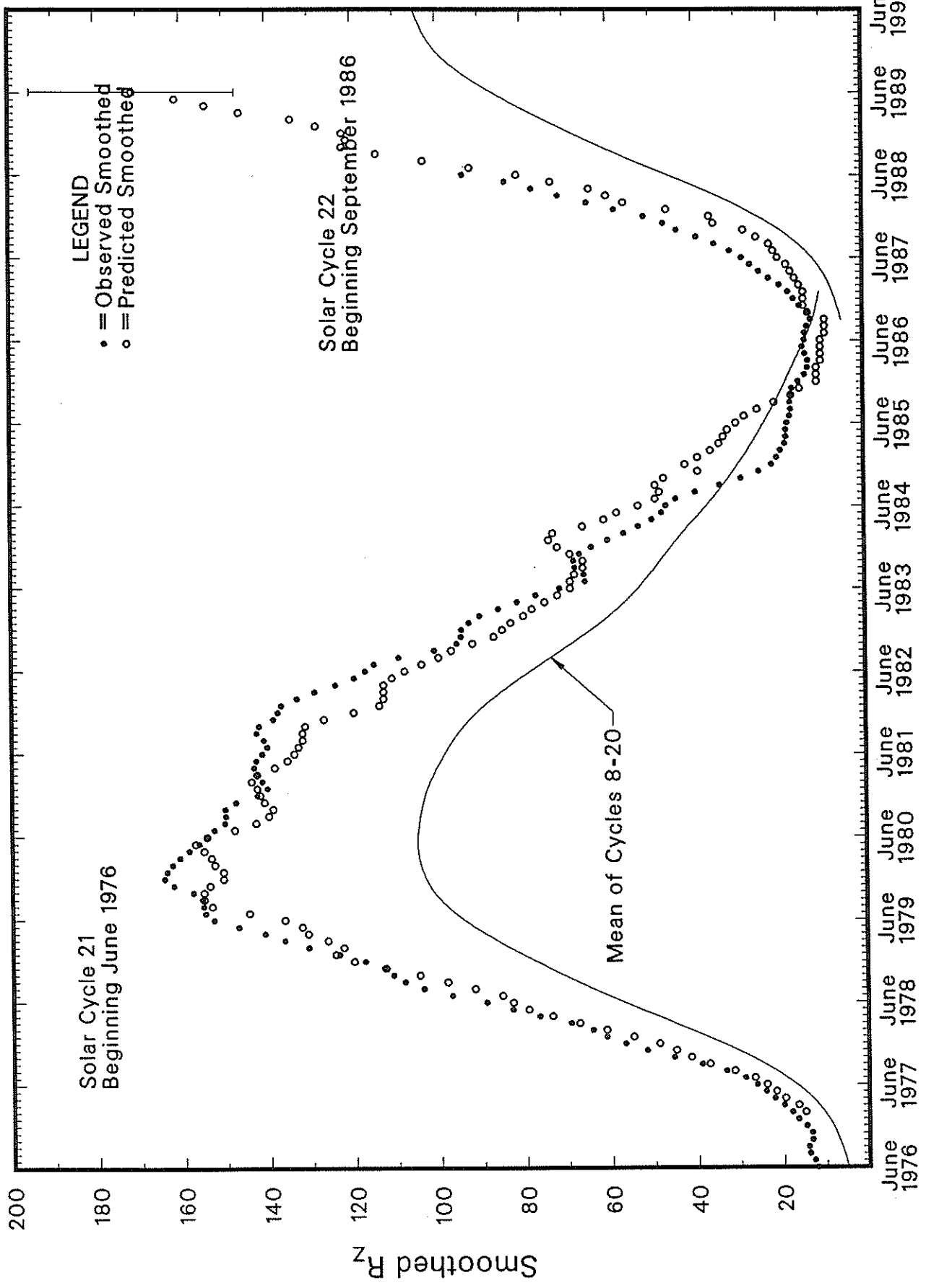
*September 1986 marks the onset of Sunspot Cycle 22.

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 September 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 June 1989 prediction. There exists a 90% chance that in June 1989 the actual smoothed sunspot number will fall somewhere between 147 and 195.

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



H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/		Dur (Min)	Imp	Obs	Area Measurement			Remarks
							USAF	CMP				Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
GOES	01	0201	0239	0242					41	C 1.5					
LEAR		0338	0339U	0351	N18	E07	5260	12	1.7	13	SF C 2.6	3	E	29	
GOES		0422	0426	0430						8	C 1.6				
GOES		0619	0625	0629						10	C 1.1				
GOES		0712	0715	0717						5	C 1.0				
LEAR		0750	0757	0804	N17	E53	5261	12	5.3	14	SF C 1.3	3	E	68	
RAMY		1336E	1353U	1412D	S15	E30		12	3.8	36D	SF	2	E	56	
RAMY		1635	1635	1645	S15	E27		12	3.7	10	SF C 1.6	4	E	38	
HOLL		1635	1636	1642	S14	E27		12	3.7	7	SF	3	E	34	
HOLL		1638	1643	1647	N19	E50	5261	12	5.5	9	SF	3	E	20	
RAMY		1822	1825	1835	N19	E51	5261	12	5.6	13	SF	3	E	51	
HOLL		1824	1825	1834	N19	E47	5261	12	5.3	10	SF C 1.3	4	E	20	H
RAMY		1833	1836	1845	S15	E26		12	3.7	12	SF	3	E	19	
HOLL		1834	1836	1848	S15	E25	5262	12	3.7	14	SF	4	E	20	
RAMY		1905	1907	1914	N19	E48	5261	12	5.4	9	SF C 2.2	4	E	57	H
HOLL		1905	1907	1914	N20	E46	5261	12	5.3	9	SN C 2.2	4	E	73	
HOLL		2042	2048	2058	S15	E24	5262	12	3.7	16	SF C 1.2	3	E	20	F
RAMY		2047	2047	2057	S15	E25	5262	12	3.7	10	SF C 1.2	3	E	16	F
HOLL		2114	2116	2131	N19	E45	5261	12	5.3	17	SF C 1.0	3	E	37	
GOES		2340	2346	2353						13	C 1.0				
LEAR	02	0044	0044	0104	S15	E21	5262	12	3.6	20	SF C 2.1	3	E	17	
GOES		0446	0455	0503						17	C 2.6				
GOES		1030E	1035	1042D						12D	C 1.5				
RAMY		1143	1145	1151	N19	E43	5261	12	5.8	8	SF	1	E	23	
RAMY		1245	1246	1259	S19	W15	5254	12	1.4	14	SF	3	E	10	
RAMY		1339	1340	1415	N19	E42	5261	12	5.8	36	SF C 5.3	3	E	35	
RAMY		1409	1414	1421	N22	W58	5256	11	28.2	12	SF	3	E	44	H
RAMY		1421	1422	1448	S19	W18	5254	12	1.2	27	SF C 1.7	3	E	23	F
RAMY		1446	1449	1458	N18	E39	5261	12	5.6	12	SF C 3.0	3	E	40	F
RAMY		1502	1503	1507	N23	W62	5256	11	27.9	5	SF	3	E	39	
RAMY		1536	1547	1622	N19	E40	5261	12	5.7	46	SF	4	E	21	F
HOLL		1549E	1555	1631	N19	E39	5261	12	5.6	42D	SF	4	E	49	F
RAMY		1710	1714	1727	N19	W15	5260	12	1.6	17	SF	4	E	17	F
RAMY		1720	1720	1726	N23	W58	5256	11	28.3	6	SF	4	E	11	
RAMY		1750	1753	1810	N18	E38	5261	12	5.6	20	SF C 1.8	4	E	73	F
PALE		1759E	1810U	1836D	N19	E39	5261	12	5.7	37D	SF	3	E	49	
HOLL		2008E	2018U	2024	S16	E09	5262	12	3.5	16D	SF	3	E	33	F
PALE		2327	2330	2342D	N19	E36	5261	12	5.7	15D	SF C 1.2	3	E	17	F
LEAR		2327	2331	2339	N18	E35	5261	12	5.6	12	SF C 1.2	4	E	19	F
HOLL		2328E	2330	2342	N18	E35	5261	12	5.6	14D	SN C 1.2	2	E	36	F
PALE	03	0006	0009	0018	N19	E35	5261	12	5.7	12	SF	3	E	17	F
LEAR		0008	0008	0024	N18	E34	5261	12	5.6	16	SF	3	E	13	F
PALE		0141	0145	0152	N18	E33	5261	12	5.6	11	SF C 2.0	3	E	36	F
PALE		0149	0153	0202	S18	W26	5254	12	1.1	13	SF	3	E	32	F
LEAR		0649	0651	0657	N24	W67	5256	11	28.2	8	SF	3	E	32	
RAMY		1307	1307	1313	S15	E00	5262	12	3.5	6	SF	3	E	11	
HOLL		1705	1707	1713	N13	E03	5258	12	3.9	8	SF C 1.6	4	E	23	
HOLL		1800	1802	1810	N24	E90		12	10.7	10	SF	4	E	36	
PALE		2047	2047	2109	S15	W05	5262	12	3.5	22	SF	3	E	17	
HOLL		2047	2048	2058	S14	W04	5262	12	3.6	11	SF	4	E	13	
RAMY		2051	2052	2059	S15	W04	5262	12	3.6	8	SF	3	E	12	
HOLL		2106E	2107	2113	N25	E90	5265	12	10.8	7D	SN C 4.0	4	E	93	
PALE		2107E	2107U	2111D	N24	E90	5265	12	10.8	4D	SF C 4.0	3	E	14	
HOLL		2149	2152	2205	S15	W06	5262	12	3.4	16	SF C 2.0	4	E	40	
PALE		2151	2152	2158	S15	W06	5262	12	3.4	7	SF C 2.0	3	E	22	FE
HOLL		2258	2301	2308	S15	W05	5262	12	3.6	10	SF	4	E	27	F
GOES	04	0115	0119	0123						8	C 1.1				
GOES		0147	0151	0154						7	C 1.1				
GOES		0302	0310	0319						17	C 1.3				
GOES		0512E	0522	0541D						29D	C 2.9				
GOES		2028	2032	2035						7	C 1.1				
LEAR	05	0151	0151	0156	N17	E73	5265	12	10.6	5	SF C 2.3	3	E	15	
PALE		0151	0151	0204	N17	E72	5265	12	10.5	13	SF C 2.3	3	E	20	

H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement		Remarks
															Time (UT)	Apparent (10-6 Disk)		Corr (Sq Deg)
GOES	05	0218	0223	0230						12							
GOES		0433	0442	0500						27							
LEAR		0819	0822	0828	N17	E67	5265	12	10.4	9	SF		4	E		21	
SVTO		1133	1134	1150	N20	E67	5265	12	10.6	17	SF	C 1.1	3	E		54	
RAMY		1448	1448	1459	N19	W01	5261	12	5.5	11	SF		3	E		12	F
HOLL		1821	1822	1835	S15	W30	5262	12	3.5	14	SF		3	E		17	
HOLL		1909	1915	1941	N18	E60	5265	12	10.4	32	SN	C 1.3	3	E		98	FE
RAMY		1915E	1924U	1936D	N24	E69	5265	12	11.1	21D	SF		2	E		33	
HOLL		2052	2053	2059	S25	E46	5263	12	9.4	7	SF		4	E		13	
YUNN	06	0616	0628	0653	N18	W09				37	SF			C		24	0.3
GOES		0627	0633	0640						13				C 1.0			
YUNN		0628E	0628U	0640	N13	W30				12D	SB			P		47	0.6
SVTO		0729	0732	0739	N19	E56	5265	12	10.6	10	SF		2	E		44	
LEAR		0729	0732	0742	N17	E53	5265	12	10.3	13	SF		4	E		48	F
YUNN		0732E	0734U	0744	N18	E54				12D	SN			P		31	0.6
YUNN		0744	0748	0815D	N25	E50				31D	1B			P		173	3.1
LEAR		0748	0750	0819	N25	E47	5264	12	10.0	31	SF	C 1.7	4	E		49	F
SVTO		0755E	0758U	0824	N26	E49	5264	12	10.1	29D	SF	C 1.7	2	E		57	F
SVTO		1051	1052	1102	S35	E66	5267	12	11.7	11	SF	C 1.0	3	E		28	F
SVTO		1107	1111	1128	N13	W28	5258	12	4.3	21	SB	C 3.3	3	E		56	FH
RAMY		1114E	1118	1129	N14	W30	5258	12	4.2	15D	SF	C 3.3	2	E		46	H
RAMY		1303	1305	1312	N18	E54	5265	12	10.6	9	SF		3	E		18	
RAMY		1354	1357	1402	S35	E67	5267	12	11.9	8	SF		3	E		38	
RAMY		1406	1406	1415	S35	E66	5267	12	11.9	9	SF		3	E		20	
RAMY		1503	1505	1518	N18	E52	5265	12	10.6	15	SF		4	E		43	
HOLL		1503	1506	1520	N18	E51	5265	12	10.5	17	SN		4	E		47	
RAMY		1505	1506	1518	S35	E65	5267	12	11.8	13	SF	C 2.0	4	E		34	
HOLL		1505	1506	1524	S35	E65	5267	12	11.8	19	SF	C 2.0	4	E		40	
RAMY		1611	1612	1622	N17	E53	5265	12	10.7	11	SF	C 1.7	4	E		35	
HOLL		1611	1612	1623	N18	E52	5265	12	10.6	12	SF	C 1.7	3	E		36	
HOLL		1715	1716	1727	S20	W73	5254	12	1.1	12	SF		4	E		11	
HOLL		1828	1831	1847	N29	E79		12	13.0	19	SF		4	E		39	
RAMY		1829	1831	1844	N39	E88	5269	12	13.9	15	SF	C 2.1	4	E		40	
RAMY		2013	2026	2056	N18	E49	5265	12	10.6	43	SF	C 3.0	3	E		88	F
HOLL		2013	2030	2054	N23	E51	5265	12	10.8	41	SF	C 3.0	4	E		79	F
HOLL		2030	2037	2146	N18	W14	5261	12	5.8	76	SF		4	E		57	F
RAMY		2036	2043	2118	N19	W15	5261	12	5.7	42	SF		3	E		30	F
HOLL		2201	2205	2215	N29	E77	5269	12	12.9	14	SN	C 1.9	3	E		85	
HOLL		2230	2231	2247	N26	E35	5264	12	9.6	17	SF		3	E		22	
HOLL		2253	2314	2335	N18	W16	5261	12	5.7	42	SF	C 2.3	3	E		56	
GOES	07	0222	0226	0230						8				C 2.1			
YUNN		0224E	0224	0241	S20	W84				17D	1N			P		16	
LEAR		0412	0413	0418	S21	W80	5254	12	1.0	6	SF	C 3.2	3	E		31	
GOES		0544	0555	0618						34				C 3.3			
LEAR		0714	0714	0720	S21	W84	5254	11	30.9	6	SF	C 6.3	3	E		16	
RAMY		1411	1412	1420	S16	W59	5262	12	3.1	9	SF		2	E		24	
RAMY		1420E	1423	1428	N19	E36	5265	12	10.3	8D	SF		3	E		18	H
RAMY		1441	1441	1457D	S15	W55	5262	12	3.4	16D	SF		2	E		20	
GOES		1631	1636	1640						9				C 3.0			
RAMY		1704E	1709U	1755D	N18	E37	5265	12	10.5	51D	SF	C 3.5	2	E		29	
RAMY		1712E	1715U	1736D	S34	E50	5267	12	11.7	24D	SF		2	E		16	
GOES		1826	1831	1834						8				C 3.7			
GOES		2108	2115	2121						13				C 1.6			
LEAR		2328	2329	2332	N16	E84	5271	12	14.3	4	SF	C 1.6	4	E		24	
PALE		2328E	2330U	2336D	N15	E81	5271	12	14.1	8D	SF	C 1.6	2	E		74	
GOES		2335E	2340	2400						25D	M	1.0					
LEAR	08	0321	0322	0325	N16	E81	5271	12	14.3	4	SF	C 1.4	4	E		17	
GOES		0732	0735	0740						8				C 1.3			
GOES		1252	1257	1303						11				C 2.9			
RAMY		1408E	1410U	1424	N18	E26	5265	12	10.6	16D	SF		1	E		25	F
PALE		1956	2005	2016	N19	E20	5265	12	10.3	20	SF	C 5.3	3	E		85	F
LEAR	09	0107	0110	0118	N21	E21	5265	12	10.6	11	SF	C 2.9	3	E		19	F
LEAR		0232	0234	0246	N21	E20	5265	12	10.6	14	SF	C 2.7	3	E		18	

H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	NOAA/USAF		CMP Mo Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement			Remarks
					Region	Lat CMD							Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
[LEAR	09	0316	0317	0333	N21	E20	5265	12 10.7	17	1N	M 2.2	3	E		107	
PALE		0319	0321	0332D	N21	E20	5265	12 10.7	13D	SN		2	E		65	
GOES		0353	0357	0401					8	C	1.7					
LEAR		0434	0437	0504	N18	E70	5271	12 14.5	30	SF	C 1.8	3	E		75	
LEAR		0601	0602	0614	N20	E14	5265	12 10.3	13	SF	C 3.0	3	E		45	F
LEAR		0732	0735	0751	N20	E13	5265	12 10.3	19	SN	M 3.8	3	E		78	ZF
RAMY		1645E	1645U	1651	N20	E07	5265	12 10.2	60	SF		2	E		19	
RAMY		1833E	1834U	1850	N19	E06	5265	12 10.2	17D	SF	C 2.4	2	E		71	
GOES		1959	2007	2013					14	C	2.4					
PALE		2117E	2120U	2125D	N21	E09	5265	12 10.6	8D	1N	M 2.6	3	E		155	UF
LEAR		2316	2317	2326	N19	E04	5265	12 10.3	10	SF	C 1.7	3	E		14	F
LEAR	10	0232	0236	0243	N21	E06	5265	12 10.6	11	SF	C 1.2	3	E		24	
LEAR		0445	0456	0511	N25	W06	5264	12 9.7	26	SF		4	E		30	F
LEAR		0453	0455	0510	N20	E02	5265	12 10.3	17	SN	C 9.4	4	E		86	F
LEAR		0651	0657	0700	N31	E56		12 14.7	9	SF		3	E		21	F
YUNN		0727	0730	0753	N22	E08			26	SN			C		94	F
[LEAR		0728	0732	0735	N21	E06	5265	12 10.8	7	SF	C 2.2	3	E		13	F
LEAR		1010	1012	1022	S11	E61	5272	12 15.0	12	SF	C 2.0	3	E		52	F
GOES		1148	1152	1159					11	C	1.8					
RAMY		1221E	1224U	1252	S31	E63	5273	12 15.5	31D	SF		2	E		39	
RAMY		1224	1228	1247	N32	E57		12 15.0	23	SF		2	E		26	
RAMY		1343	1344	1356	N31	E55		12 14.9	13	SF		4	E		23	
GOES		1420	1450	1717					177	M	2.2					
RAMY		1426	1431	1442	N20	W04	5265	12 10.3	16	SF		4	E		13	
GOES		1651	1654	1658					7	M	1.1					
LEAR		2259	2300	2304	S34	E73	5275	12 16.8	5	SF	M 1.8	3	E		55	
[PEKG	11	0055	0108	0126	S33	E75			31	1N			P	0108	84	
LEAR		0104	0105	0113	S34	E72	5275	12 16.8	9	SF	C 5.0	3	E		58	
LEAR		0152	0153	0158	S33	E57	5273	12 15.6	6	SF	C 5.2	3	E		12	
LEAR		0202	0206	0255	S33	E71		12 16.7	53	SF		3	E		40	
LEAR		0300	0333	0351	S33	E71		12 16.8	51	SF		3	E		26	
LEAR		0428	0429	0432	S30	E65		12 16.3	4	SF		3	E		18	
GOES		0515	0520	0524					9	C	8.1					
LEAR		0627	0627	0631	S34	E70	5275	12 16.8	4	SF	C 2.7	3	E		25	
LEAR		0649	0650	0657	S33	E69	5275	12 16.8	8	SF	C 2.2	3	E		28	
LEAR		0720	0725	0731	S34	E69	5275	12 16.8	11	SF	C 9.2	3	E		95	
LEAR		0753	0801	0818	S29	E47	5273	12 15.0	25	SF		3	E		16	
LEAR		0806	0806	0814	S34	E68		12 16.7	8	SF		3	E		15	
SVTO		0902	1029	1043	S32	E67	5275	12 16.7	101	1N	M 1.0	3	E		104	R
[LEAR		1010	1013	1021	S32	E48	5273	12 15.2	11	SF	C 2.9	3	E		45	
LEAR		1012	1026	1030	S34	E65		12 16.6	18	SF		2	E		51	
SVTO		1144	1229	1246	S32	E67	5275	12 16.8	62	1N	C 6.9	3	E		114	FR
RAMY		1148E	1150U	1159	S32	E62		12 16.4	11D	SF		1	E		35	FH
RAMY		1213	1229	1307	S29	E61		12 16.3	54	1N		3	E		129	
RAMY		1335	1338	1421	N16	E38	5271	12 14.4	46	SF		3	E		48	
RAMY		1353	1424	1455	S32	E65		12 16.7	62	SF		3	E		41	
[RAMY		1402	1407	1413	S23	W04	5268	12 11.3	11	SF		3	E		12	
HOLL		1411E	1415U	1455	S35	E65		12 16.8	44D	SF		2	E		30	
RAMY		1451	1451	1457	N31	E40	5274	12 14.8	6	SF		3	E		13	
RAMY		1456	1456	1504	S31	E61		12 16.4	8	SF		3	E		19	
RAMY		1509	1513	1527	S32	E60		12 16.4	18	SF		3	E		25	
RAMY		1543	1547	1556	S28	E59	5275	12 16.3	13	SF		3	E		22	
RAMY		1603	1603	1613	N22	W10	5265	12 10.9	10	SF		3	E		11	F
RAMY		1615	1620	1639	S32	E64	5275	12 16.7	24	SF		3	E		72	
HOLL		1743	1750	1756	S40	E01	5267	12 11.8	13	SF		3	E		17	
[HOLL		1808	1816	1830	S32	E61	5275	12 16.6	22	SN	C 3.6	3	E		78	
RAMY		1813	1816	1826	S32	E63	5275	12 16.7	13	SF		3	E		51	
HOLL		1907	1908	1913	S32	E58	5275	12 16.4	6	SF		3	E		11	
[HOLL		1921	1928	1937	N19	W20	5265	12 10.3	16	SF		4	E		22	H
RAMY		1922	1927	1938	N19	W19	5265	12 10.3	16	SF		3	E		19	
[RAMY		2020	2036	2050	S32	E60	5275	12 16.6	30	SF		2	E		46	
HOLL		2032	2035	2103	S32	E60	5275	12 16.6	31	SF		4	E		43	
HOLL		2131	2131	2216	S19	W10	5266	12 11.1	45	SF		3	E		27	F
HOLL		2215	2219	2242	N16	E33	5271	12 14.4	27	SF		3	E		21	
HOLL		2245	2247	2252	S32	E60	5275	12 16.7	7	SF		3	E		38	

H α SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	NOAA/USAF			CMP Mo	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
					Lat	CMD	Region							Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
GOES	12	0130E	0137	0215D					45D		M 2.0						
PEKG		0321E	0321	0345	N32	E15			24D	1N		P	0321	231	2.9		
LEAR		0350	0354	0412	S33	E40	5273	12	15.3	22	SF	4	E		19		
PEKG		0355E	0355	0404	S33	E40				9D	SN		P	0355	42	0.6	
PEKG		0500	0505	0510	N31	E26				10	SN		P	0505	84	1.1	
YUNN		0735E	0743U	0743D	N33	E13				8D	2N		P		472	6.0	F
SVTO		0736	0739U	0837	N32	E12	5269	12	13.3	61	1N C 7.8	3	E		174		
LEAR		0736	0740	0823	N32	E12	5269	12	13.3	47	1N C 7.8	3	E		115		F
SVTO		0808	0809	0815	N16	E28	5271	12	14.5	7	SF		E		15		H
SVTO		0843	0843	0855	N16	E27	5271	12	14.4	12	SF		E		10		
LEAR		0846	0846	0851	N15	E27	5271	12	14.4	5	SF		E		13		
SVTO		0940	0943	1015	S14	E35	5272	12	15.0	35	1B C 4.3	3	E		177		
LEAR		0941	0944	0957	S14	E36	5272	12	15.1	16	1F C 4.3	2	E		134		
SVTO		1420	1420	1423	S31	E51	5275	12	16.6	3	SF		E		21		
RAMY		1546	1547	1555	N20	W24	5265	12	10.8	9	SF C 2.9	3	E		25		
RAMY		1609	1615	1622	N16	E24	5271	12	14.5	13	SF		E		34		F
GOES		1922	1928	1934						12	C 6.5						
GOES		2014	2017	2022						8	C 2.6						
HOLL		2148	2149	2206	S33	E50	5275	12	16.9	18	SN C 3.9	3	E		43		
GOES		2224	2227	2231						7	C 1.6						
HOLL		2238	2242	2250	S33	E49	5275	12	16.8	12	SF		E		13		
PALE	13	0155E	0212	0220	N21	E73	5278	12	18.7	25D	SF		E		36		F
SVTO		1028E	1030U	1030D	N20	W37	5265	12	10.6	2D	1B C 7.6	2	E		191		
RAMY		1405	1416	1432	N32	W06	5269	12	13.1	27	SF C 6.5	4	E		89		F
HOLL		1415E	1422	1451	N31	W03	5269	12	13.3	36D	1F C 6.5	3	E		125		F
GOES		1938	1941	2004						26	C 1.7						
HOLL		2059	2117	2152	S41	W29	5267	12	11.5	53	SF		E		45		F
HOLL		2129	2129	2148	S31	E13	5273	12	14.9	19	SF		E		16		F
GOES		2352E	2354	2402D						10D	C 1.6						
GOES	14	0202	0207	0215						13	C 2.4						
GOES		0216	0219	0226						10	C 2.8						
LEAR		0217	0220	0223	S33	E31	5275	12	16.5	6	SF		E		13		
LEAR		0219	0219	0222	N21	E38	5279	12	17.0	3	SF		E		16		
GOES		0507E	0513	0520D						13D	C 2.5						
LEAR		0618	0621	0630	S20	W22		12	12.6	12	SF		E		24		F
PEKG		0632	0635	0642	N18	E31				10	SN		P	0635	126	1.6	
LEAR		0632	0636	0649	N18	E31	5279	12	16.6	17	SF C 5.9	3	E		74		F
GOES		0759	0803	0807						8	C 3.0						
LEAR		0842	0845	0856	N17	E30	5279	12	16.6	14	SF C 7.4	3	E		55		F
GOES		1008	1014	1019						11	C 6.3						
SVTO		1044E	1046U	1055	S30	E16	5273	12	15.7	11D	SN C 7.2	1	E		64		F
GOES		1121	1131	1140						19	C 4.4						
GOES		1246	1257	1300						14	C 7.5						
RAMY		1255E	1255U	1305	N25	E74	5278	12	20.3	10D	SF		E		83		
RAMY		1255E	1256U	1314	S31	E14	5273	12	15.6	19D	SN		E		91		
RAMY		1337	1337	1354	N30	E63	5278	12	19.5	17	1B M 2.1	3	E		136		FH
SVTO		1338E	1338U	1353	N30	E60	5278	12	19.3	15D	1N M 2.1	1	E		169		
RAMY		1339	1350	1426	N20	E31	5279	12	16.9	47	SF		E		62		FH
SVTO		1347	1350	1412D	N19	E27	5279	12	16.6	25D	SN		E		86		F
HOLL		1607	1607	1615	S32	E08	5273	12	15.3	8	SF		E		26		
RAMY		1607	1607	1615	S32	E09	5273	12	15.4	8	SF		E		18		F
HOLL		1617	1617	1622	N34	W14	5269	12	13.6	5	SF		E		14		
HOLL		1729	1743	1821	N27	E62	5278	12	19.5	52	SN M 1.3	3	E		43		
HOLL		1757E	1759U	1843	S33	E14				46D	1F		E		193		FH
RAMY		1800E	1806U	1825D	S33	E09	5273	12	15.5	25D	1F		E		104		F
HOLL		1909	1909	1913	S31	E12	5273	12	15.7	4	SF C 4.3	3	E		12		
HOLL		1913	1915	1929	S31	E10	5273	12	15.6	16	SF C 4.3	3	E		53		
HOLL		1943	1944U	2040D	N24	E70	5280	12	20.2	57D	1N		E		170		
GOES		1943E	1947	2000						17D	C 8.6						
RAMY		2035E	2037U	2058D	S33	E08	5273	12	15.5	23D	SF M 1.0	1	E		69		F
HOLL		2039E	2040	2110	S33	E12		12	15.8	31D	1N M 1.0	3	E		158		F
GOES		2053	2056	2106						13	C 4.1						
HOLL		2127	2141	2156	N15	W09	5271	12	14.2	29	SF		E		38		
HOLL		2216	2216	2223	N29	E57	5278	12	19.4	7	SF		E		22		
HOLL		2321E	2323	2348D	N20	E25	5279	12	16.9	27D	SF		E		38		

H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Time (UT)	Area Measurement		Remarks	
																Apparent (10-6 Disk)	Corr (Sq Deg)		
HOLL	14	2325	2325	2333	N28	E56	5278	12	19.3	8	SF	C	2.6	2	E		24		
PALE	15	0047E	0050U	0130D	N26	E58	5278	12	19.5	43D	SF	C	6.3	3	E		56		F
LEAR		0433	0435	0440	N21	E23	5279	12	16.9	7	SF			3	E		36		F
LEAR		0437	0438	0443	N11	W15	5271	12	14.1	6	SF			3	E		13		F
PEKG		0445	0506	0520	N28	E58				35	2B				C	0506	526	9.4	
LEAR		0446	0501U	0501D	N31	E66	5278	12	20.4	15D	1N	X	1.1	3	E		96		
LEAR		0446	0511	0555	N27	E59	5278	12	19.8	69	1N	X	1.1	2	E		214		F
LEAR		0501	0501	0508	N24	E61	5280	12	19.9	7	SF			3	E		15		F
YUNN		0651E	0652U	0653D	N22	E24				2D	SN				P		24	0.3	E
GOES		0724	0729	0810						46		M	1.3						
GOES		1208	1214	1238						30		C	5.1						
RAMY		1338	1347	1354	S31	W02	5273	12	15.4	16	SF			3	E		33		F
RAMY		1357E	1410	1420D	S30	W04	5273	12	15.3	23D	SF	C	5.9	3	E		51		F
RAMY		1402	1406	1420D	N18	E14	5279	12	16.6	18D	SN			3	E		72		F
GOES		1523	1529	1533						10		C	4.4						
GOES		1602	1609	1618						16		C	6.5						
RAMY		1751	1758	1832	N23	E19	5279	12	17.2	41	SF	C	5.3	3	E		35		F
RAMY		1817	1821	1854D	S29	W08	5273	12	15.1	37D	1F			3	E		146		F
HOLL		1925E	1927U	1944	N22	E17	5279	12	17.1	19D	SF	C	3.6	3	E		35		F
[HOLL		2002	2008	2033	N21	E15	5279	12	17.0	31	SF	C	3.8	3	E		38		F
[RAMY		2004E	2008U	2018	N22	E16	5279	12	17.1	14D	SF	C	3.8	3	E		21		
[RAMY		2016	2024U	2024D	S31	W07	5273	12	15.3	8D	SF			3	E		43		
[HOLL		2037	2043	2110	N21	E15	5279	12	17.0	33	SF			3	E		47		F
[PALE		2054E	2102	2111D	N21	E17	5279	12	17.2	17D	SF	C	3.1	3	E		23		
[HOLL		2115	2116	2120	N22	E16	5279	12	17.1	5	SF			3	E		42		
[HOLL		2123	2131	2206	N20	E14	5279	12	17.0	43	1B	M	1.5	3	E		144		FE
[HOLL		2135	2137	2150	S14	W12	5272	12	15.0	15	SF			3	E		18		F
[HOLL		2252	2254	2259D	N25	E56	5280	12	20.3	7D	SF			3	E		49		
[PALE	16	0124	0139	0202D	N33	W35	5269	12	13.3	38D	SF			3	E		92		F
[PEKG		0200E	0208	0255	N34	W34				55D	2B				P	0208	589	8.9	
[LEAR		0205	0228	0329	N34	W33	5269	12	13.4	84	2F			3	E		249		
[LEAR		0223	0237	0248	N18	E10	5279	12	16.9	25	SF			3	E		59		
[LEAR		0236	0238	0241	S33	W04	5275	12	15.8	5	SF			3	E		18		
[LEAR		0242	0247	0302	N27	E33	5278	12	18.7	20	SF			3	E		50		
[LEAR		0243	0244	0249	S30	W12	5273	12	15.2	6	SF			3	E		33		
[LEAR		0251	0302	0320	N22	E12	5279	12	17.0	29	SF			3	E		76		
[YUNN		0537E	0537U	0542D	N29	E46				5D	SN				P		31		E
[YUNN		0537E	0537U	0542D	S31	W11				5D	SN				P		31	0.4	E
[LEAR		0554E	0554U	0559	N18	E07	5279	12	16.8	5D	SF			2	E		20		
[GOES		0649	0653	0655						6		C	9.0						
[YUNN		0826	0833	0836	N27	E33				10	2B				P		707	9.8	F
[LEAR		0838	0841	0850D	N26	E37	5278	12	19.2	12D	1B	X	4.7	3	E		210		UE
[RAMY		1209	1211	1216	N26	E48	5280	12	20.2	7	SF			4	E		52		F
[RAMY		1222	1230	1244	N22	E06	5279	12	17.0	22	SF			4	E		36		F
[RAMY		1227	1227	1240	S11	W24	5272	12	14.7	13	SF			4	E		20		F
[RAMY		1355	1357	1405	N23	E08	5279	12	17.2	10	SF			4	E		21		
[RAMY		1401	1402	1418	N26	E47	5280	12	20.2	17	SF			3	E		31		F
[RAMY		1431	1432	1502	S11	W25	5272	12	14.7	31	SF			3	E		27		
[HOLL		1440	1441	1451	S12	W24	5272	12	14.8	11	SF			3	E		34		
[RAMY		1447	1503	1510	N26	E47	5280	12	20.3	23	SF			3	E		27		F
[HOLL		1450	1502	1515	N26	E47	5280	12	20.3	25	SF			4	E		64		F
[RAMY		1452	1456	1509	S31	W15	5273	12	15.4	17	SF			3	E		24		F
[RAMY		1456	1500	1510	N22	E05	5279	12	17.0	14	SF			3	E		28		
[HOLL		1520	1539	1604D	N25	E47	5280	12	20.3	44D	SN			4	E		36		
[RAMY		1539	1539	1550	N30	E35	5278	12	19.4	11	SF			4	E		18		
[HOLL		1539	1544	1604D	N30	E33	5278	12	19.2	25D	SF			4	E		25		
[RAMY		1751	1801	1810	S33	W11	5275	12	15.9	19	SF	C	3.9	3	E		10		
[RAMY		1754	1804	1812	N27	E48	5280	12	20.5	18	SF			4	E		25		F
[HOLL		1759E	1803	1853D	N27	E47	5280	12	20.4	54D	1F			4	E		120		F
[RAMY		1828	1834	1845	N17	E89				17	SF			4	E		20		
[RAMY		1853	1905U	1930D	N17	E86				37D	SF			3	E		37		
[RAMY		1909E	1928U	1930D	S32	W18	5273	12	15.4	21D	SF			3	E		14		
[HOLL		1957E	2004	2024	N22	E02	5279	12	17.0	27D	SF			3	E		44		F
[HOLL		1957E	2013	2043	N17	E83	5282	12	23.1	46D	SN	C	2.9	3	E		56		

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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	Obs See Type	Area Measurement			Remarks	
												Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
HOLL	16	2116	2120	2208	N17	E90	5283	12 23.7	52	SF C 3.2	3	E		27		
HOLL		2202	2204	2212	N33	W26	5274	12 14.8	10	SF	3	E		25		
HOLL		2220	2233	2250	N17	E83	5283	12 23.2	30	SF	3	E		36		
HOLL		2225	2233	2313	N23	E02	5279	12 17.1	48	1N	3	E		109		F
GOES		2246	2251	2305D					19D		C 9.3					
GOES	17	0254E	0257	0306D					12D		C 7.1					
PEKG		0258E	0303	0318D	S30	W22			20D	SN		P	0303	147	1.9	
GOES		0344E	0346	0406D					22D		M 2.8					
LEAR		0457	0505	0526D	N27	E42	5280	12 20.5	29D	SF	2	E		22		F
LEAR		0458	0500	0553D	N28	E30	5278	12 19.5	55D	SF M 3.2	2	E		51		ZF
YUNN		0502E	0502U	0532	N26	E42			30D	SN		P		79	0.7	
YUNN		0502E	0502U	0532	N29	E30			30D	SB		P		47	1.1	
PEKG		0502E	0506	0517	N29	E29			15D	1N		P	0506	189	2.6	
YUNN		0504	0507	0513	N23	W04			9	SN		C		47	0.5	
LEAR		0505	0505	0511	N22	W04	5279	12 16.9	6	SF		E		15		
LEAR		0505	0543	0553D	N27	E26	5278	12 19.2	48D	SF M 2.7	2	E		25		ZF
YUNN		0506	0510	0518	S12	W31			12	SF		C		31	0.4	
YUNN		0510	0513	0525	S35	W16			15	SN		C		47	0.6	
YUNN		0537E	0544	0606	N27	E30			29D	SN		P		79	1.1	
YUNN		0818	0824	0855	S12	W31			37	SN		C		63	0.8	E
YUNN		0849E	0849U	0856	N28	E42			7D	SN		P		16	0.3	D
YUNN		0900E	0902	0906	N22	E38			6D	SN		P		16	0.2	D
GOES		0956	1000	1002					6		C 3.2					
RAMY		1212	1220	1228	N15	E79	5283	12 23.5	16	SF	3	E		29		
RAMY		1249	1312	1333	N15	E70	5283	12 22.8	44	SF	3	E		15		
RAMY		1315	1319	1350	S13	W34	5272	12 15.0	35	SF	3	E		40		
RAMY		1511	1514	1527	N16	E79	5283	12 23.6	16	SF	3	E		41		
RAMY		1512	1515	1539	N21	E34	5280	12 20.2	27	SF	3	E		28		
RAMY		1630	1632	1643	N28	E22	5278	12 19.4	13	SF C 5.1	3	E		58		
HOLL		1732E	1736	2011	S15	W35	5272	12 15.1	159D	1B M 1.5	3	E		196		ZU
PALE		1735E	1738U	1738D	S14	W33	5272	12 15.2	3D	1B M 1.5	2	E		102		
RAMY		1749E	1749U	1925D	S13	W38	5272	12 14.9	96D	1N		E		231		UF
RAMY		1759	1800	1816	N15	E78	5283	12 23.6	17	SF	3	E		14		
HOLL		1943	2006	2111	S30	W30	5273	12 15.5	88	SF	3	E		68		
PALE		2029	2045	2055	N14	E75	5283	12 23.5	26	SF	3	E		32		
HOLL		2037	2043	2050	N14	E76	5283	12 23.6	13	SF	3	E		24		
HOLL		2105	2114	2129	S23	E34	5282	12 20.5	24	SF	3	E		22		
LEAR	18	0034	0035	0040	N24	W11	5279	12 17.2	6	SF C 3.2	3	E		20		F
YUNN		0101E	0103U	0126	N23	E12			25D	SF		P		31	0.4	
YUNN		0128	0132	0145	N28	E10			17	SF		C		157	1.9	
YUNN		0128E	0220	0220D	N33	W44			52D	SN		P		110	1.9	
PALE		0130E	0132U	0213D	N28	E11	5278	12 18.9	43D	SF	3	E		29		F
LEAR		0217	0220	0241	N32	W42	5274	12 14.8	24	SF C 5.5	2	E		38		F
YUNN		0400E	0400U	0431	N23	E15			31D	SF		P		47	0.6	
YUNN		0452	0458	0519	N25	E16			27	SF		P		110	1.3	
LEAR		0456	0456	0502	N23	E12	5278	12 19.1	6	SF C 3.9	2	E		29		F
YUNN		0600	0608	0612D	N21	E89			12D			P				Y
GOES		0607		0626					19		C 3.0					
LEAR		0831	0832	0838	S23	E26	5282	12 20.3	7	SF	3	E		27		F
SVTO		0902	0904	0911	S20	E24	5282	12 20.2	9	SF	3	E		26		
LEAR		0904	0905	0907	S22	E22	5282	12 20.1	3	SF	3	E		13		F
SVTO		0913	0915	0946	N22	E07	5278	12 18.9	33	SN M 1.0	3	E		45		F
LEAR		0913	0916	0946	N28	E13	5278	12 19.4	33	SF	3	E		31		F
YUNN		0931E	0931U	0931D	N21	E07			33D	SN		P		110	1.2	
LEAR		1020	1022	1029	S22	E21	5282	12 20.0	9	SF C 2.5	3	E		12		F
SVTO		1024	1026	1102	S24	W39	5273	12 15.4	38	SN	3	E		65		
SVTO		1112	1113	1123	N24	E07	5278	12 19.0	11	SF C 6.3	3	E		29		H
SVTO		1227	1240	1305	S20	E22	5282	12 20.2	38	SN C 6.2	3	E		68		
RAMY		1234	1240	1302	S21	E21	5282	12 20.1	28	SN C 6.2	3	E		50		
RAMY		1423	1428	1436	S24	E22	5282	12 20.3	13	SF	3	E		13		
HOLL		1635	1641	1658	S22	E19	5282	12 20.1	23	1B M 1.4	3	E		111		
RAMY		1636	1638	1701	S21	E19	5282	12 20.1	25	1N M 1.4	3	E		139		E
HOLL		1651	1714	1845	S31	W40	5273	12 15.5	114	3B X 1.1	3	E		643		ZU
RAMY		1651	1718	1910	S30	W41	5273	12 15.5	139	3B X 1.1	3	E		709		UF
HOLL		1700	1702	1727	N21	E04	5278	12 19.0	27	SF	3	E		43		

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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	Obs See Type	Area Measurement			Remarks	
												Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
L	RAMY	18	1701	1702	1727	N22 E04	5278	12 19.0	26	SF	3	E		44		
	RAMY		1716	1717	1723	N16 E60	5283	12 23.3	7	SF	3	E		13		
	PALE		1805E	1805U	1837	S30 W40	5273	12 15.6	320	SF	3	E		81		F
	RAMY		1904	1905	1909	N34 W64	5274	12 13.7	5	SF	3	E		22		
	RAMY		2035E	2035U	2049D	S21 E16	5282	12 20.1	14D	SF	1	E		31		
	PALE		2208E	2211U	2219D	N22 W25	5279	12 17.0	11D	1N C 7.4	3	E		118		F
	LEAR		2334	2342	2349	N11 W67	5271	12 13.9	15	SF	3	E		28		
	GOES	19	0030		0047				17	M 1.4						
	YUNN		0102E	0106	0152	N21 W28			50D	1N		P		393	5.0	F
	YUNN		0123E	0124	0130	N30 E04			7D	SN		P		24	0.3	
	YUNN		0124	0129	0135	N21 E89			11	SN		C		39		
	YUNN		0152	0153	0200	N31 E04			8	SN		C		16	0.2	
	YUNN		0210	0218	0255	S21 E13			45	SB		C		79	0.9	
	LEAR		0214	0218	0245	S21 E14	5282	12 20.2	31	SF C 8.4	3	E		37		
	YUNN		0302	0304	0304D	N27 W01			2D	SN		P		24	0.3	D
	YUNN		0302	0311	0328D	S30 W40			26D	SN		P		47	0.7	
	YUNN		0304	0311	0317	S20 E13			13	SN		P		47	0.5	
	YUNN		0440	0444	0519D	S20 E13			39D	SN		P		24	0.3	
	SVTO		0708	0709U	0727D	S31 W46	5273	12 15.7	19D	SF		E	2	45		
	YUNN		0745	0746	0757	S20 E10			12	SN		C		24	0.3	
	YUNN		0808	0820	0851	S20 E10			43	SN		C		24	0.3	
	LEAR		0935	0946	0956	S15 W60	5272	12 14.8	21	SF C 4.3	3	E		80		F
	SVTO		0945	0945	1001	S16 W59	5272	12 14.9	16	1N C 4.3	3	E		130		
	SVTO		0952	0959	1012	S21 E10	5282	12 20.2	20	SF		E		15		
	LEAR		1005	1007	1009	S21 E08	5282	12 20.0	4	SF		E		10		
	SVTO		1100	1100	1124	N24 W03	5278	12 19.2	24	SF		E		13		F
	RAMY		1112E	1112U	1150D	N23 W03	5278	12 19.2	38D	SF		E		15		
	RAMY		1138E	1138U	1146	N24 W13	5278	12 18.5	8D	SN		E		95		FH
	SVTO		1140	1149	1203	S21 E09	5282	12 20.2	23	SF C 7.7	3	E		35		
	RAMY		1152	1154	1233	S21 E09	5282	12 20.2	41	SF		E		60		
	RAMY		1212	1222	1224	S29 W54	5273	12 15.3	12	SF		E		34		
	RAMY		1406	1410	1423	S21 E10	5282	12 20.3	17	SF		E		33		
	RAMY		1438	1441	1501	S31 W46	5273	12 16.0	23	SF		E		20		
	HOLL		1516E	1523	1600D	S30 W56	5273	12 15.2	44D	SF		E		34		
	HOLL		1521	1522	1600D	S21 E05	5282	12 20.0	39D	SF		E		27		F
	RAMY		1828	1829	1836	S21 E03	5282	12 20.0	8	SF		E		22		F
	RAMY		1830	1831	1836D	N17 E52	5283	12 23.7	6D	SF		E		17		
	HOLL		1843	1848	1908	N21 E67	5285	12 24.9	25	SN M 1.2	3	E		86		FE
	HOLL		1911	1911	1929	N20 E69	5285	12 25.1	18	SF		E		14		F
	GOES		2000E	2004	2011D				11D	C 4.8						
	HOLL		2032	2034	2047	N29 W05	5278	12 19.5	15	SF C 3.7	3	E		34		F
	GOES		2107E	2111	2120				13D	C 5.3						
	HOLL		2240	2241	2246	N19 W42	5279	12 16.7	6	SF		E		35		
	LEAR	20	0043	0102	0116	N24 W10	5278	12 19.2	33	SF C 5.8	4	E		26		F
	YUNN		0058E	0058U	0121	N24 W09			23D	SB		P		157	1.8	
	YUNN		0127	0146	0158	S20 W01			31	SB		C		157	1.7	F
	LEAR		0145	0147	0153	S20 E00	5282	12 20.1	8	SF		E	4	26		F
	YUNN		0150	0157	0214D	S31 W51			24D	2B		P		346	6.5	F
	LEAR		0152	0200	0308	S31 W53	5273	12 15.9	76	2N M 1.9	4	E		274		F
	PALE		0159E	0159U	0201D	S29 W53	5273	12 15.9	2D	2N M 1.9	3	E		261		F
	LEAR		0234	0242	0303	N22 W41	5279	12 16.9	29	1F		E		107		F
	LEAR		0522	0522	0527	N23 W44	5279	12 16.8	5	SF		E		19		
	LEAR		0539	0540	0552	N20 W46	5279	12 16.7	13	SF C 4.5	3	E		72		
	LEAR		0621	0623	0629	N26 W14	5278	12 19.2	8	SF		E		35		
	LEAR		0721	0723	0729	N22 E60	5285	12 24.9	8	SF		E		12		
	SVTO		0851	0859U	0902D	N24 E57	5285	12 24.8	11D	1N		E		198		
	LEAR		0856	0858U	0858	N21 E58	5285	12 24.8	2	SF		E		99		
	LEAR		0856	0903	0923	N21 E58	5285	12 24.8	27	1F M 1.0	3	E		127		F
	GOES		1032	1045	1054				22	C 4.3						
	GOES		1122	1128	1133				11	C 7.0						
	RAMY		1209	1213	1222	N25 W03	5280	12 20.3	13	SF		E	3	18		F
	GOES		1218	1244	1532				194	M 7.3						
	RAMY		1321E	1331U	1354	N25 W03	5280	12 20.3	33D	SF		E	2	80		F
	RAMY		1326E	1326U	1336	S17 E90		12 27.4	10D	1N		E	2			

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF		CMP Mo	Dur Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
							Region	Mo								Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
RAMY	20	1401E	1406	1431D	S30	W63	5273	12	15.6	30D	SF		2	E		69		F	
RAMY		1407E	1407	1417	N17	W08	5287	12	20.0	10D	SF		3	E		20		F	
RAMY		1509	1511	1516	N17	W07	5287	12	20.1	7	SF		4	E		28			
RAMY		1528	1530U	1530D	N27	W15	5278	12	19.5	2D	SF		2	E		15			
HOLL		1543	1543	1545	S30	W64	5273	12	15.6	2	SF		3	E		15			
HOLL		1823	1827	1852	S34	W58	5273	12	16.1	29	SF		3	E		22			
HOLL		1829	1831	1839	N17	W09	5287	12	20.1	10	SF		3	E		16			
HOLL		1831	1835	1850	N27	W17	5278	12	19.4	19	SF		3	E		19		F	
RAMY		1833E	1836U	1904D	S35	W58	5273	12	16.1	31D	SF		2	E		30			
HOLL		2114	2114	2121	N20	E57	5285	12	25.2	7	SF		4	E		10			
HOLL		2146	2149	2201	N20	E55	5285	12	25.1	15	SF	C 4.5	4	E		33		F	
HOLL		2210	2210	2227	S20	W13	5282	12	19.9	17	SF		3	E		46			
LEAR		2259	2300	2316	N23	E51	5285	12	24.9	17	SF	C 4.2	4	E		43		F	
HOLL		2259	2301	2310	N20	E54	5285	12	25.1	11	SF	C 4.2	3	E		43			
LEAR	21	0112	0113	0117	S31	W68	5273	12	15.7	5	SF		4	E		12		F	
LEAR		0200	0202	0209	S34	W72	5273	12	15.3	9	SF	C 5.9	4	E		61			
LEAR		0309	0311	0316	N18	W64	5271	12	16.2	7	SF		3	E		39			
LEAR		0448	0451	0456	N21	E49	5285	12	24.9	8	SF		3	E		16			
YUNN		0608	0611	0645	N23	E49				37	SN			P		63	1.1		
YUNN		0610	0611	0626	N30	W23				16	SN			P		31	0.4		
LEAR		0612	0613	0623	N27	W27	5278	12	19.1	11	SF	C 5.2	4	E		25		F	
LEAR		0632	0632	0641	N20	E49	5285	12	25.0	9	SF		3	E		20			
LEAR		0642	0647	0652	N21	E49	5285	12	25.0	10	SF		4	E		16			
LEAR		0656	0658	0702	N17	W66	5271	12	16.3	6	SF		4	E		20			
LEAR		0656	0658	0702	N17	W66	5279	12	16.3	6	SF		4	E		20			
HOLL		1506	1522	1636	N27	W17	5280	12	20.3	90	SF		3	E		80			
HOLL		1553	1558	1605	S32	W67	5273	12	16.3	12	SF	M 1.5	3	E		25			
RAMY		1608	1611	1621	N27	W28	5278	12	19.5	13	SF		2	E		25			
HOLL		1802	1805	1814	N30	W28	5278	12	19.5	12	SF		3	E		18		F	
PALE		1842	1855	1915	N28	W36	5278	12	19.0	33	SF		3	E		37			
PALE		1852	1907	1924	N24	W52	5279	12	17.8	32	SF		3	E		23			
HOLL		1903	1905	1923	N22	W52	5279	12	17.8	20	SF		3	E		19			
HOLL		2024	2027	2100	N19	E43	5285	12	25.1	36	SF		3	E		16			
PALE		2147	2206	2227	N19	E42	5285	12	25.1	40	SF		3	E		38		F	
HOLL		2158	2205	2221	N19	E41	5285	12	25.0	23	SF		3	E		33			
HOLL		2232	2238	2257	N22	W67	5279	12	16.8	25	SF		3	E		16			
PALE		2234	2238	2243	N23	W69	5279	12	16.6	9	SF		3	E		16			
PALE		2245	2245	2304	N23	W69	5279	12	16.6	19	SF		3	E		12			
LEAR	22	0018	0021	0030	N21	E70	5290	12	27.4	12	SF	C 3.8	3	E		19			
YUNN		0150	0157	0212	N17	E20				22	SN			C		24	0.3		
YUNN		0237	0240	0246	N30	E12				9	SN			C		319	0.4		
YUNN		0253E	0253U	0256	N20	E32				3D	SN			P		24	0.3		
YUNN		0330E	0330	0335	S33	W66				5D	SN			P		24			
LEAR		0404	0418	0441	N19	E39	5285	12	25.1	37	SF		3	E		41			
GOES		0405	0417	0425						20		C 4.2							
YUNN		0407	0415	0446	N21	E40				39	SN			C		47	0.7		
GOES		0515	0519	0523						8		C 3.2							
LEAR		0617	0622	0629	S35	W80	5273	12	15.9	12	SF	M 1.0	3	E		25			
GOES		0822	0825	0828						6		C 3.5							
YUNN		0905	0911	0919	S33	W70				14	SN			C		16			
LEAR		0908	0910	0921	S34	W69	5275	12	16.9	13	SF		2	E		27			
SVTO		0909	0910	0925	S36	W69	5275	12	16.8	16	SF		3	E		81			
SVTO		0941	0941	0951	N26	W43	5278	12	19.1	10	SF	C 3.0	3	E		23			
GOES		1052	1056	1058						6		C 3.1							
SVTO		1052	1109	1145	N28	W42	5278	12	19.2	53	1B	C 9.4	3	E		114			
GOES		1101	1108	1126						25		C 9.4							
SVTO		1117	1118	1125	N22	W68	5279	12	17.2	8	SF		3	E		38			
SVTO		1212	1212	1219	N20	W66	5279	12	17.5	7	SF		3	E		28			
SVTO		1243	1243	1251	N26	W43	5278	12	19.2	8	SF		3	E		10			
SVTO		1247	1247	1251	N20	W68	5279	12	17.3	4	SF		3	E		19			
SVTO		1333	1336	1345	N15	W34	5287	12	20.0	12	SF		3	E		17		F	
SVTO		1404	1405	1416	N19	E32	5285	12	25.0	12	SF		3	E		15			
HOLL		1555	1559	1612	S31	W69	5275	12	17.2	17	SF	M 1.0	3	E		44			
HOLL		1633	1645	1653	N23	W41	5280	12	19.5	20	SF		3	E		21			
HOLL		1645	1656	1754	N17	E10	5283	12	23.4	69	SF		3	E		45			

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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	Obs See Type	Area Measurement			Remarks
												Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
HOLL	22	1713	1717	1720	S31	W69	5275	12 17.3	7	SF	3	E		24	
RAMY		1732E	1739U	1804D	N18	E11	5283	12 23.6	32D	SF	2	E		46	
HOLL		1743	1747	1759	S33	W74	5275	12 16.9	16	SF	3	E		30	
HOLL		1743	1747	1759	S33	W74	5273	12 16.9	16	SF	3	E		30	
RAMY		1745E	1748U	1809D	S33	W74	5273	12 16.9	24D	SF	2	E		23	
HOLL		1814	1821	1836	N20	E70	5290	12 28.1	22	SF	3	E		34	
HOLL		2153	2154	2204	N25	W45	5278	12 19.4	11	SF C 3.4	3	E		34	
HOLL		2250	2257	2304	N22	E28	5285	12 25.1	14	SF	3	E		50	
PALE		2257E	2258U	2304D	N20	E28	5285	12 25.1	7D	SF	3	E		26	
HOLL		2303	2311	2321	S33	W82	5273	12 16.4	18	SN	4	E		46	
HOLL		2307	2310	2354D	N26	W42	5280	12 19.7	47D	1N M 5.3	4	E		124	FE
LEAR		2309	2310	2316	S31	W78	5275	12 16.8	7	SF	3	E		21	
LEAR		2309	2318U	2318D	N27	W36	5280	12 20.1	9D	1F	3	E		107	
LEAR		2309	2326	2326D	N28	W43	5278	12 19.6	17D	2F	3	E		216	
LEAR		2309	2327	2330D	N28	W43		12 19.6	21D	2F	3	E		211	
PALE		2310E	2310U	2315D	N26	W39	5280	12 19.9	5D	1N	3	E		129	F
PALE	23	0016	0018	0034	N20	E62	5290	12 27.7	18	SF	3	E		49	
LEAR		0017	0019	0039	N20	E65	5290	12 28.0	22	SF	3	E		44	
YUNN		0028E	0047U	0150	N27	W41			82D	SB		P		63	1.0
YUNN		0100	0109	0132	N27	W41			32	SN		C		47	0.7
LEAR		0157	0200	0210	N20	E65	5290	12 28.0	13	SF	3	E		26	
PALE		0158	0200	0208	N19	E64	5290	12 28.0	10	SF	3	E		20	
GOES		0225	0231	0234					9			C 7.1			
LEAR		0257	0258	0304	N20	E64	5290	12 28.0	7	SF	3	E		34	
LEAR		0848	0853	0902	S32	W89	5275	12 16.3	14	SF M 1.6	3	E		38	
SVTO		0854E	0856U	0910	S34	W86	5275	12 16.5	16D	SF M 1.6	2	E		20	
SVTO		1001	1002	1007	N25	W58	5278	12 18.9	6	SF	3	E		35	
GOES		1414	1443	1509					55			C 9.3			
GOES		1510	1518	1643					93			M 1.9			
HOLL		1711	1711	1719	N20	W46	5280	12 20.2	8	SF	2	E		21	
HOLL		1919	1929	2026	S16	E65	5292	12 28.7	67	1F	2	E		109	F
PALE		1930E	1942U	2030	S16	E63	5292	12 28.6	60D	SF C 7.0	3	E		54	F
RAMY		1941E	1941U	1943D	S15	E62	5292	12 28.5	2D	SF C 7.0	1	E		51	F
PALE		2018	2019U	2033	N31	W58	5278	12 19.3	15	SF	4	E		38	
HOLL		2020	2020	2030	N29	W56	5278	12 19.4	10	SF	3	E		44	
HOLL		2038	2040	2107	S16	E65	5292	12 28.8	29	SF	3	E		40	
HOLL		2326	2328	2352D	N17	E48	5290	12 27.6	26D	SF	2	E		33	
GOES	24	0201	0207	0225					24			M 2.9			
GOES		0350	0400	0420					30			C 4.2			
LEAR		0538	0542	0547	N16	W54		12 20.1	9	SF	3	E		38	
GOES		0653	0658	0707					14			C 4.4			
GOES		1325	1336	1501					96			M 1.5			
GOES		1513	1521	1530					17			C 8.6			
HOLL		1550	1554	1601	N22	E39	5290	12 27.6	11	SF	3	E		42	
HOLL		1556	1558	1622	N17	W16	5283	12 23.4	26	SF	3	E		34	F
HOLL		1656E	1701	1728	S17	E54	5292	12 28.8	32D	SN M 1.1	3	E		71	
HOLL		1745	1746	1750	S34	W89	5288	12 17.6	5	SF	3	E		36	
PALE		1852	1856	1914	N19	W17	5283	12 23.5	22	SF	3	E		14	F
HOLL		1853	1857	1901	N17	W16	5283	12 23.6	8	SF	3	E		21	
PALE		1937	1938	1949	N21	E03	5285	12 25.0	12	SF	3	E		26	F
HOLL		1937	1938	1951	N20	E02	5285	12 25.0	14	SF	3	E		39	
PALE	25	0135	0140	0215	S19	E45	5292	12 28.5	40	SF	3	E		34	F
SVTO		0700E	0702U	0740D	S17	E43	5292	12 28.5	40D	SF	2	E		46	F
GOES		0852	0856	0858					6			C 3.3			
GOES		0914	0917	0919					5			C 3.4			
GOES		0954	1003	1011					17			C 4.1			
GOES		1110	1115	1123					13			M 1.1			
RAMY		1244E	1250U	1323D	N21	E25	5290	12 27.4	39D	SF	2	E		59	F
RAMY		1321E	1354U	1430D	S16	E39	5292	12 28.5	69D	SF	2	E		92	F
HOLL		1458	1503	1522	S16	E37	5292	12 28.4	24	SF	3	E		64	F
PALE		1904	1905	1921	N27	W87	5278	12 19.0	17	SF C 6.3	3	E		35	
RAMY		1904	1907	1932D	N25	W88	5278	12 19.0	28D	SF C 6.3	3	E		38	
PALE		2202	2203	2229	S18	E66	5297	12 30.9	27	SF	3	E		17	
PALE		2226	2236	2326	S17	E36	5292	12 28.7	60	SN	3	E		85	F

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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			Remarks
															Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
LEAR	25	2229	2300	2304	S17	E34	5292	12	28.5	35	2F	C 8.2	3	E		285		F
PALE	26	0037	0038	0046	S16	E29	5292	12	28.2	9	SF		3	E		17		
PALE		0055	0055	0104	N36	W32	5284	12	23.5	9	SF		3	E		12		
GOES		0656	0702	0707						11		C 6.4						
GOES		0823	0829	0835						12		C 2.5						
SVTO		0951	0952	1004	S16	E29	5292	12	28.6	13	SF	C 2.6	3	E		29		F
SVTO		1040	1049	1225	S16	E29	5292	12	28.6	105	1F	C 3.3	3	E		102		UF
SVTO		1130	1131	1141	N19	E30	5296	12	28.8	11	SF		3	E		11		F
RAMY		1134E	1134U	1225	S16	E30	5292	12	28.7	51D	SF		2	E		78		
RAMY		1222	1226	1236	N18	E30	5296	12	28.8	14	SF		3	E		16		
RAMY		1225	1257	1327	S18	E27	5292	12	28.6	62	1N	C 8.9	4	E		175		F
RAMY		1228	1230	1251	N16	W41	5283	12	23.4	23	SF		4	E		21		
SVTO		1228	1231	1242	N15	W41	5283	12	23.4	14	SF		3	E		13		F
SVTO		1230	1252	1324	S17	E24	5292	12	28.3	54	1N	C 8.9	3	E		116		F
SVTO		1310E	1311	1316	N25	W90	5278	12	19.6	60	SF		3	E				
RAMY		1311	1312	1315	N28	W89	5278	12	19.6	4	SF		4	E		43		
SVTO		1404	1415	1427	S19	E24	5292	12	28.4	23	SF	C 4.4	3	E		45		F
RAMY		1411	1414	1430	S19	E23	5292	12	28.3	19	SF	C 4.4	4	E		53		F
RAMY		1416	1416	1429	N19	E13	5290	12	27.6	13	SF		4	E		19		F
RAMY		1639	1651	1654	S19	E22	5292	12	28.4	15	SF		3	E		21		F
RAMY		1658	1706	1715	S18	E22	5292	12	28.4	17	SF		3	E		25		F
RAMY		1734	1800	1826	S20	E21	5292	12	28.3	52	SF		3	E		69		F
PALE		1750	1751	1819	S18	E24	5292	12	28.6	29	SF		3	E		12		
RAMY		1829	1830	1834	S21	E18	5292	12	28.1	5	SF		3	E		10		F
RAMY		1854	1856	1917D	S18	E20	5292	12	28.3	23D	SF		3	E		28		F
PALE		2017	2048	2126D	S20	E20	5292	12	28.4	69D	1N	M 6.1	3	E		211		UF
RAMY		2018	2042	2114	S20	E20	5292	12	28.4	56	1B	M 6.1	3	E		183		FE
GOES		2250	2302	2305						15		C 4.4						
LEAR	27	0029	0053	0114	N21	E04	5290	12	27.3	45	SF	C 7.4	3	E		28		F
PALE		0042E	0042U	0121	N20	E05	5290	12	27.4	39D	SN		3	E		37		F
PALE		0120E	0148	0206D	S14	E17	5292	12	28.3	46D	SF		3	E		55		F
LEAR		0145	0148	0207	S18	E19	5292	12	28.5	22	SF		4	E		42		F
GOES		0238	0311	0415						97		C 5.5						
PEKG		0520	0522	0541	S16	E18				21	SF			P	0524	147	1.6	
LEAR		0523	0523	0546	S18	E17	5292	12	28.5	23	SF		4	E		25		F
PEKG		0527	0528	0541	N21	W37				14	1N			P	0530	294	4.0	
LEAR		0530	0531	0542	N20	W35	5285	12	24.5	12	SF	M 1.3	4	E		65		
GOES		0712	0736	0911						119		M 1.9						
SVTO		0753E	0753U	0824	N20	W03	5290	12	27.1	31D	SF		2	E		24		F
SVTO		0824	0832	0914	S15	E20	5292	12	28.9	50	SN		2	E		54		F
LEAR		0830	0833	0842	S17	E17	5292	12	28.6	12	SF		3	E		13		
SVTO		0840	0841	0859	N20	W39	5285	12	24.4	19	SN		2	E		31		F
SVTO		1051	1052	1111	S19	E13	5292	12	28.4	20	SB	C 7.5	2	E		44		F
RAMY		1117E	1117U	1220	N24	E00	5290	12	27.5	63D	SF		1	E		49		
SVTO		1132	1134	1144	S22	E11	5292	12	28.3	12	SN	C 5.5	2	E		29		
RAMY		1358E	1359U	1412	N20	W39	5285	12	24.6	14D	SF	C 4.9	2	E		48		F
RAMY		1422	1428	1443	N24	E02	5290	12	27.7	21	SF		3	E		16		F
RAMY		1550	1551	1555	N30	W70		12	22.1	5	SF		3	E		16		
RAMY		1649	1653	1656	S22	E07	5292	12	28.2	7	SF		3	E		12		
GOES		1709E	1727	1801D						52D		C 4.8						
RAMY		1714	1715	1726	S22	E09	5292	12	28.4	12	SF		3	E		31		
HOLL		1816	1817	1855D	N20	W35	5285	12	25.1	39D	SF		3	E		48		
HOLL		1824	1902	1912	S19	E09	5292	12	28.4	48	SF		3	E		39		F
HOLL		1833	1835	1839	N29	W70		12	22.3	6	SF		3	E		45		
HOLL		2031	2031	2040	N15	W60	5283	12	23.3	9	SF		3	E		12		
HOLL		2229	2229	2236	S17	E11	5292	12	28.8	7	SF		3	E		18		
HOLL		2309	2313	2325	N22	W40	5285	12	24.9	16	SF		3	E		52		FE
HOLL		2328	2330	2333	S19	E06	5292	12	28.4	5	SF		3	E		15		
LEAR	28	0027E	0055	0206	S17	E10	5292	12	28.8	99D	1F	M 2.1	2	E		247		UF
YUNN		0037E	0038U	0055D	S16	E09				18D	2N			P		707	7.6	F
LEAR		0049	0103	0127	N20	W40	5285	12	25.0	38	SF		3	E		24		
LEAR		0109	0113	0132	N20	W09	5290	12	27.3	23	SF		3	E		25		F
PALE		0144E	0146U	0221	S19	E06	5292	12	28.5	37D	SF		3	E		52		F
LEAR		0426	0426	0442	N20	W42	5285	12	25.0	16	SF		3	E		22		F

H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/	CMP	Dur	Imp	Obs	Area Measurement			Remarks
							USAF Region					Mo Day	Opt Xray	See		Type	Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)
LEAR	28	0533	0544	0613	N20	W48	5285	12 24.5	40	SF C 6.6	3	E	35		F
LEAR		0536	0544	0609	S16	E31	5297	12 30.6	33	SF	3	E	30		F
YUNN		0721E	0736U	0754D	N20	W42			33D	SN		P	47	0.7	
LEAR		0726	0730	0802	N19	W41	5285	12 25.2	36	SF C 8.8	3	E	44		ZF
SVTO		0741E	0741U	0803D	N23	W41	5285	12 25.2	22D	SF	2	E	57		
LEAR		0825	0843U	0915	S16	E29	5297	12 30.5	50	1F M 1.2	3	E	106		F
SVTO		0832E	0832U	0903D	S18	E33	5297	12 30.9	31D	SN M 1.2	2	E	40		F
YUNN		0835E	0849	0909D	S15	E29			34D	SB		P	141	1.7	
LEAR		1019	1021	1029	S20	W03	5292	12 28.2	10	SF	3	E	16		
RAMY		1218	1221	1314D	N20	W50	5285	12 24.7	56D	1B M 2.2	3	E	135		F
RAMY		1353	1353	1403	S21	W05	5292	12 28.2	10	SF	3	E	15		F
RAMY		1425E	1430U	1500D	S17	E29	5297	12 30.8	35D	SN M 1.3	2	E	58		FE
HOLL		1425E	1431U	1503	S17	E27	5297	12 30.6	38D	SN M 1.3	2	E	56		FE
HOLL		1622	1623	1629	N23	W52	5285	12 24.7	7	SF	3	E	36		
RAMY		1648	1655U	1714	S16	E24	5297	12 30.5	26	SF	3	E	14		F
RAMY		1740	1740	1750	N18	W21	5290	12 27.1	10	SF	3	E	12		
HOLL		1741	1745	1751	N18	W20	5290	12 27.2	10	SF	3	E	22		U
RAMY		1755	1759	1822	N22	W50	5285	12 24.9	27	SF	4	E	41		F
HOLL		1756	1757	1822	N21	W49	5285	12 25.0	26	SF	3	E	25		F
HOLL		1819	1835	1854	S19	W04	5292	12 28.4	35	SF	3	E	29		F
RAMY		1819	1909U	1914D	S16	E26	5297	12 30.7	55D	SF	1	E	90		
RAMY		1828	1830U	1830D	S22	W04	5292	12 28.5	2D	SF	2	E	11		F
PALE		1843	1846U	1846D	S17	E24	5297	12 30.6	3D	1N M 1.4	3	E	127		
HOLL		1844	1847	1938	S16	E25	5297	12 30.7	54	1N M 1.4	3	E	147		FE
HOLL		1959	2005	2017	S21	W04	5292	12 28.5	18	SF	3	E	17		
RAMY		2051	2056	2111D	S22	W05	5292	12 28.5	20D	SN C 4.3	3	E	75		
HOLL		2052	2101	2157	S19	W05	5292	12 28.5	65	SN C 4.3	3	E	65		FE
PALE		2053E	2056U	2120	S21	W06	5292	12 28.4	27D	SN C 4.3	3	E	38		F
RAMY		2054	2055	2100	S17	E24	5297	12 30.7	6	SF	3	E	12		F
HOLL		2128	2129	2133	S15	E23	5297	12 30.6	5	SF	3	E	11		
HOLL		2313	2313	2334	S22	W06	5292	12 28.5	21	SF C 2.4	3	E	39		F
PALE		2314	2314	2323	S21	W07	5292	12 28.4	9	SF C 2.4	3	E	17		
HOLL		2322	2324	2344	N24	W16	5290	12 27.7	22	SF	3	E	22		F
HOLL		2342	2343	2358D	N21	W58	5285	12 24.5	16D	1B M 3.6	3	E	235		F
PALE		2343E	2345U	2404	N22	W51	5285	12 25.1	21D	SB M 3.6	3	E	86		FH
LEAR		2347E		2349D	N20	W51	5285	12 25.1	2D	SF M 3.6	1	E			
YUNN	29	0148E	0150	0207	S20	W10			19D	SN		P	79	0.9	
GOES		0331E	0337	0347D					16D	C 2.0					
GOES		0354	0359	0404					10	C 1.9					
LEAR		0415	0416	0423	N24	W60	5285	12 24.5	8	SF C 5.6	3	E	60		
SVTO		1155	1200	1447	S21	W17	5292	12 28.2	172	1B M 2.2	3	E	138		F
RAMY		1235E	1236U	1426D	S21	W17	5292	12 28.2	111D	1F	2	E	141		F
SVTO		1405	1406	1420	S16	E15	5297	12 30.7	15	SF	3	E	47		F
RAMY		1407E	1409U	1426D	S16	E15	5297	12 30.7	19D	SF	2	E	50		
HOLL		1421E	1423U	1509	S17	W21	5292	12 28.0	48D	SF	2	E	85		F
HOLL		1637	1639	1652	S42	W19	5300	12 28.1	15	1B C 7.5	3	E	123		FE
RAMY		1642E	1643U	1644D	S42	W19	5300	12 28.1	2D	SN C 7.5	1	E	57		F
HOLL		1651	1652	1700	N20	W67	5285	12 24.6	9	SF	3	E	13		
HOLL		1712	1718	1740	N20	W67	5285	12 24.6	28	SF	3	E	47		
RAMY		1715	1718	1724	N21	W69	5285	12 24.4	9	SF	2	E	44		
HOLL		1752	1805	1835	S18	W13	5292	12 28.7	43	1F	3	E	110		F
RAMY		1804E	1805U	1827	S17	W13	5292	12 28.8	23D	SF	2	E	77		FE
HOLL		1817	1826	1844	N20	W68	5285	12 24.6	27	1N C 4.4	3	E	103		E
RAMY		1819E	1826	1839	N21	W69	5285	12 24.5	20D	1N C 4.4	3	E	145		E
HOLL		1902	1902	1918	S19	W17	5292	12 28.5	16	SF	3	E	14		
RAMY		1903E	1903	1913	S21	W18	5292	12 28.4	10D	SF	3	E	12		F
HOLL		1920	1923	1927	S16	E11	5297	12 30.6	7	SF	3	E	11		
PALE		2017	2018	2024	S20	W23	5292	12 28.1	7	SF	3	E	18		
HOLL		2017	2018	2024	S21	W23	5292	12 28.1	7	SF	3	E	35		
PALE		2041	2041	2050	N22	W73	5285	12 24.2	9	SF	3	E	11		
HOLL		2044	2044	2049	S43	W22	5300	12 28.0	5	SF C 6.5	3	E	16		
PALE		2044	2045	2051	S41	W23	5300	12 28.0	7	SF C 6.5	3	E	21		
HOLL		2046	2046	2052	N19	W69	5285	12 24.6	6	SF	3	E	12		
PALE	30	0227	0233	0243	S42	W25	5300	12 28.0	16	SF C 2.2	3	E	65		F
PALE		0229	0229	0246	N21	W34	5290	12 27.5	17	SF	3	E	24		

H α SOLAR FLARES

DECEMBER 1988

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/USAF		Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement		Remarks	
							Region	Mo Day						Time (UT)	Apparent (10-6 Disk)		Corr (Sq Deg)
L	YUNN	30	0230E	0233U	0245	S42	W24		15D	SB			P	47	1.1		
	YUNN		0230	0233U	0249	N15	W18		19	SN			P	79	0.5		
	YUNN		0230E	0233U	0249	N19	W35		19D	SN			P	63	0.9		
	PALE		0312	0324	0342D	W23	W34	5290	12	27.5	30D	SF C 3.5	3	E	30		F
	YUNN		0323E	0323U	0340D	N20	W35		17D	SN			P	110	1.5	F	
	LEAR		0630E	0631U	0650D	S17	E06	5297	12	30.7	20D	SF C 3.2	2	E	62		
	GOES		0653	0710	0716				23				C 7.0				
	GOES		0831	0835	0842				11				C 2.9				
	YUNN		0853	0855	0904	N24	W34		11	SB			C	79	1.1		
	LEAR		0911	0914	0928	S22	W25	5292	12	28.5	17	SF C 2.4	3	E	16		
	GOES		1058	1102	1105				7				C 1.8				
	GOES		1128	1131	1133				5				C 1.7				
	GOES		1302	1312	1321				19				C 5.3				
	GOES		1407	1415	1420				13				C 2.6				
	GOES		1538	1542	1546				8				C 1.7				
	RAMY		1649E	1650U	1655	N21	W81	5285	12	24.5	6D	SF C 1.5	2	E	18		
	HOLL		1713	1715	1749	S16	W01	5297	12	30.6	36	SF C 2.6	3	E	35		F
	RAMY		1713E	1715U	1750D	S17	W02	5297	12	30.6	37D	SF C 2.6	2	E	22		F
	HOLL		1725	1816	1948	S19	W30	5292	12	28.4	143	3B X 1.4	3	E	788		ZU
	RAMY		1727	1821U	1927D	S20	W33	5292	12	28.2	120D	3B X 1.4	2	E	711		UY
	PALE		1806E	1814U	1922	S20	W30	5292	12	28.4	76D	2B X 1.4	3	E	389		F
	HOLL		2009	2011	2014	S19	W34	5292	12	28.2	5	SF	2	E	19		
	HOLL		2009	2016	2031	N16	W26	5296	12	28.9	22	SF	2	E	22		
	HOLL		2137	2149	2207	S20	W31	5292	12	28.5	30	SF	3	E	26		
	HOLL		2224	2224	2242	S16	W05	5297	12	30.5	18	SF	3	E	12		
	HOLL		2255	2301	2359D	S21	W34	5292	12	28.3	64D	SF C 3.2	3	E	40		F
	GOES		2338	2343	2349				11				C 3.1				
	GOES	31	0033	0037	0040				7				C 3.2				
	GOES		0354	0415	0524				90				C 4.8				
	LEAR		0815	0815U	0822D	N16	W33	5296	12	28.8	7D	SF C 3.1	3	E	15		F
	RAMY		1136E	1217	1232	S16	W42	5292	12	28.3	56D	SF	3	E	46		FH
	SVTO		1304	1305	1329	N21	W51	5290	12	27.6	25	SF C 3.5	3	E	14		
	RAMY		1304	1306	1327D	N21	W51	5290	12	27.6	23D	SF C 3.5	3	E	42		F
	RAMY		1350	1351	1356	N24	W51	5290	12	27.6	6	SF	3	E	29		
	RAMY		1357	1400	1424	N16	W36	5296	12	28.8	27	SF C 6.0	4	E	65		FE
	RAMY		1635	1645	1647D	N16	W38	5296	12	28.8	12D	SF	2	E	17		
	HOLL		1635	1646	1709	N15	W38	5296	12	28.8	34	SF	3	E	12		F
	HOLL		2114	2117	2122	S19	W01	5303	12	31.8	8	SF C 5.0	3	E	24		H
	PALE		2353	2408	2431	N22	W60	5290	12	27.4	38	SF C 8.1	3	E	65		

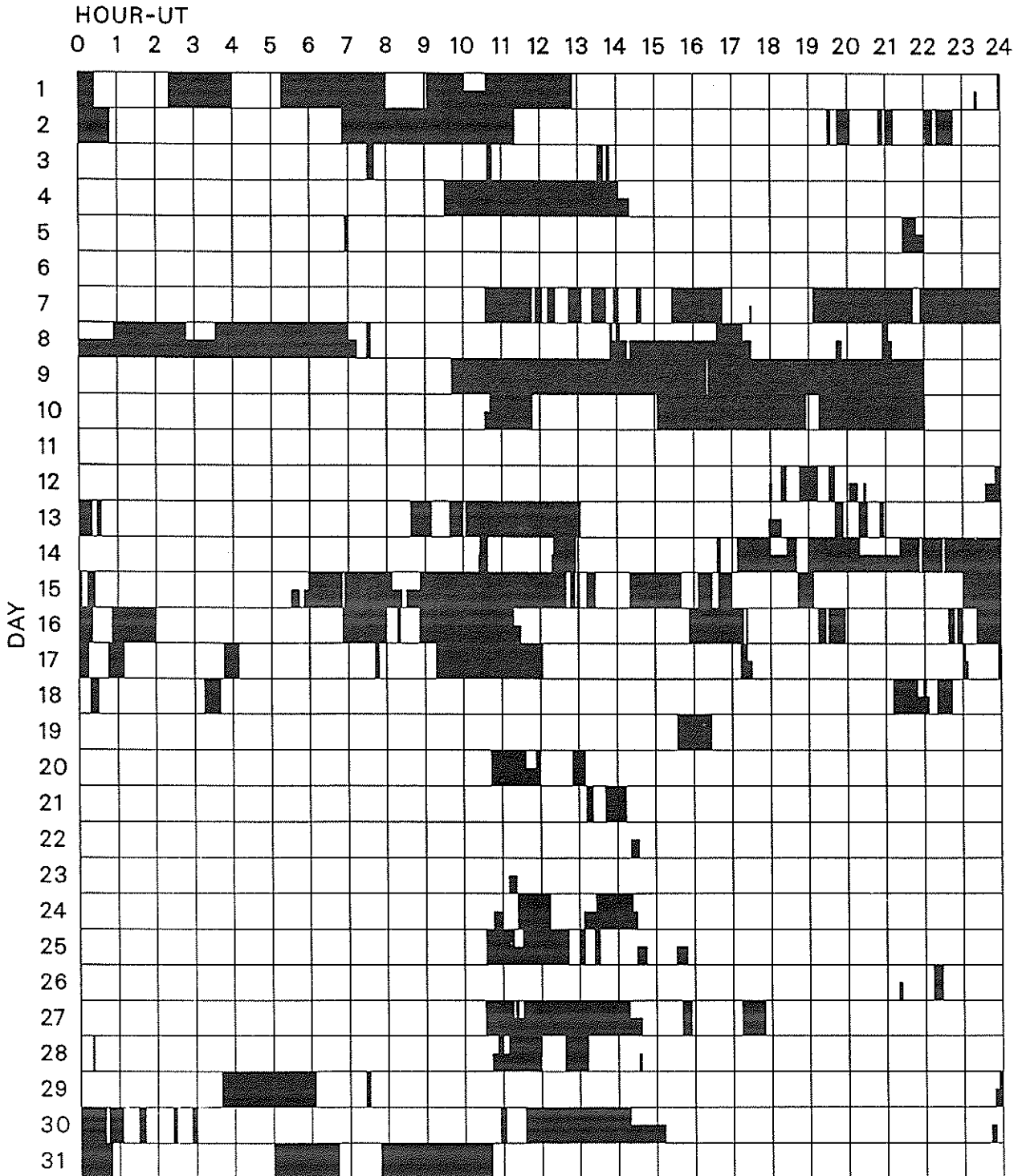
"Remarks"

A = Eruptive prominence whose base is less than 90 degrees from central meridian.
 B = Probably the end of a more important flare.
 C = Invisible 10 minutes before.
 D = Brilliant point.
 E = Two or more brilliant points.
 F = Several eruptive centers.
 G = No visible spots in the neighborhood.
 H = Flare accompanied by high-speed dark filament.
 I = Active region very extended.
 J = Distinct variations of plage intensity before or after the flare.
 K = Several intensity maxima.
 L = Existing filaments show signs of sudden activity.
 M = White-light flare.
 N = Continuous spectrum shows effects of polarization.

O = Observations have been made in the H and K lines of Ca II.
 P = Flare shows Helium D3 in emission.
 Q = Flare shows Balmer continuum in emission.
 R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
 S = Brightness follows disappearance of filament in same position.
 T = Region active all day.
 U = Two bright branches, parallel or converging.
 V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.
 W = Great increase in area after time of maximum intensity.
 X = Unusually wide H-alpha line.
 Y = System of loop-type prominences.
 Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE

DECEMBER 1988



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.

Beijing

Holloman

Learmonth

Palehua
Ramey

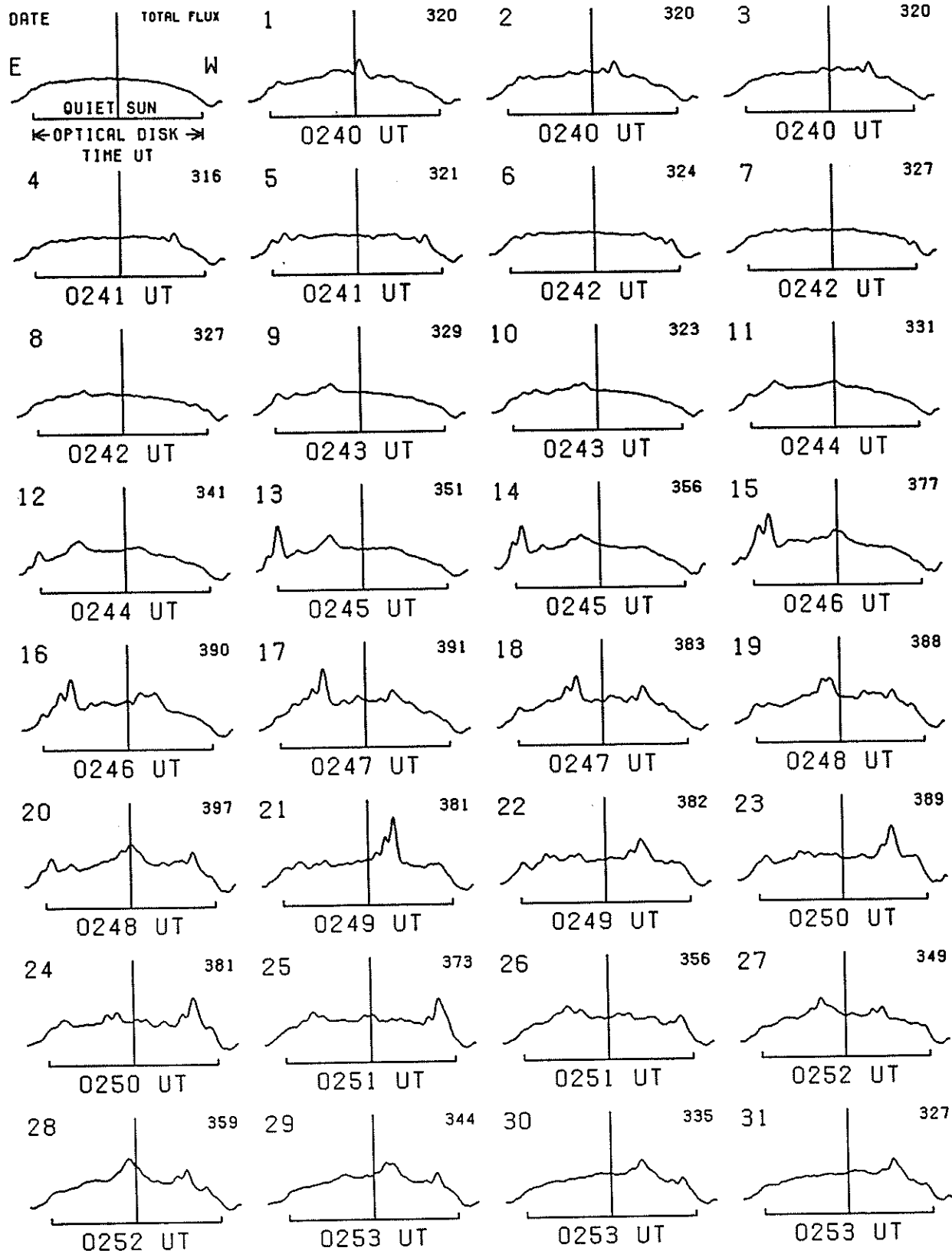
San Vito
Yunnan

EAST-WEST SOLAR SCANS DECEMBER 1988

29
Dec 88

TOYOKAWA, JAPAN

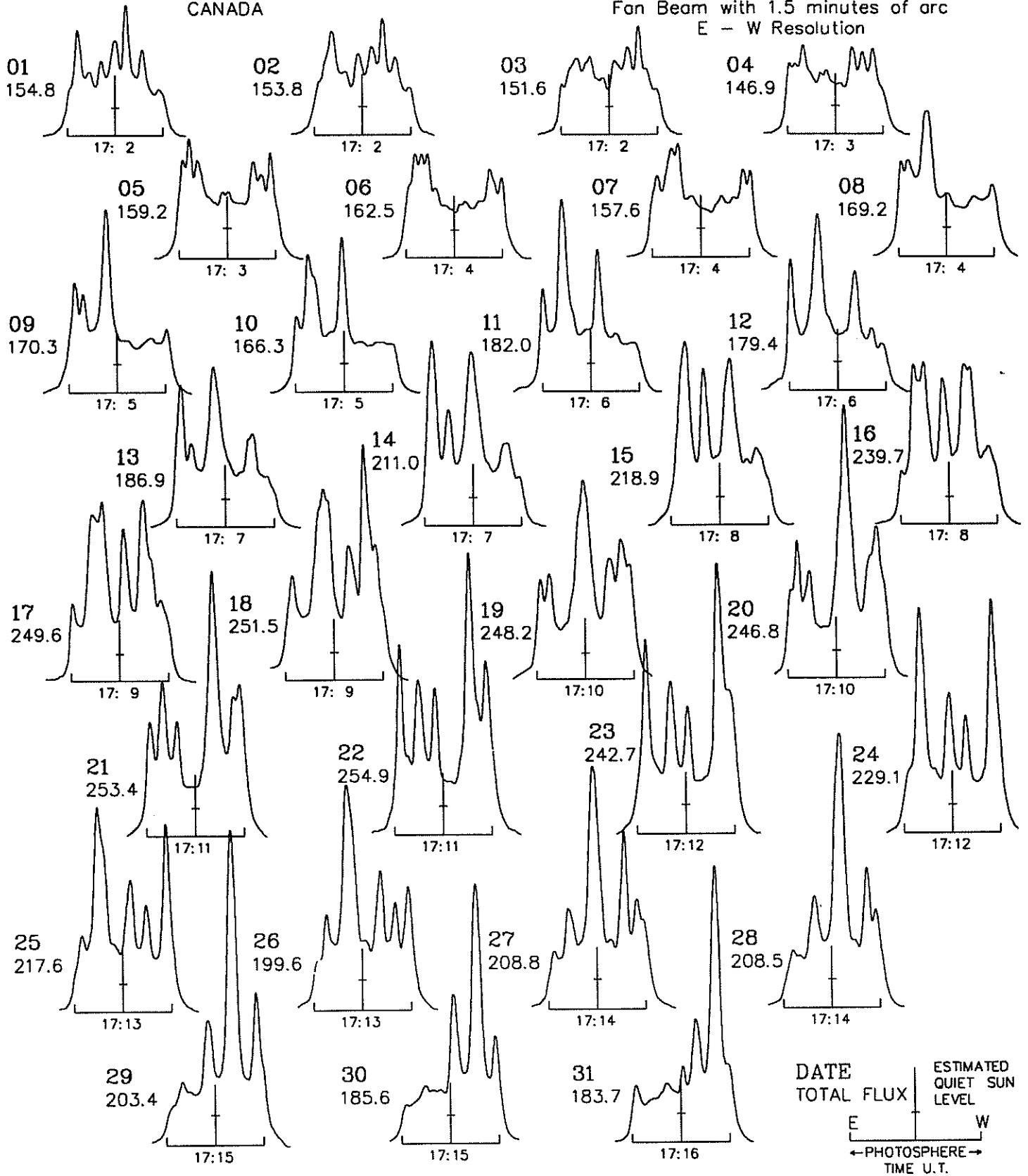
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST - WEST SOLAR SCANS
DECEMBER 1988

ALGONQUIN RADIO OBSERVATORY
CANADA

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



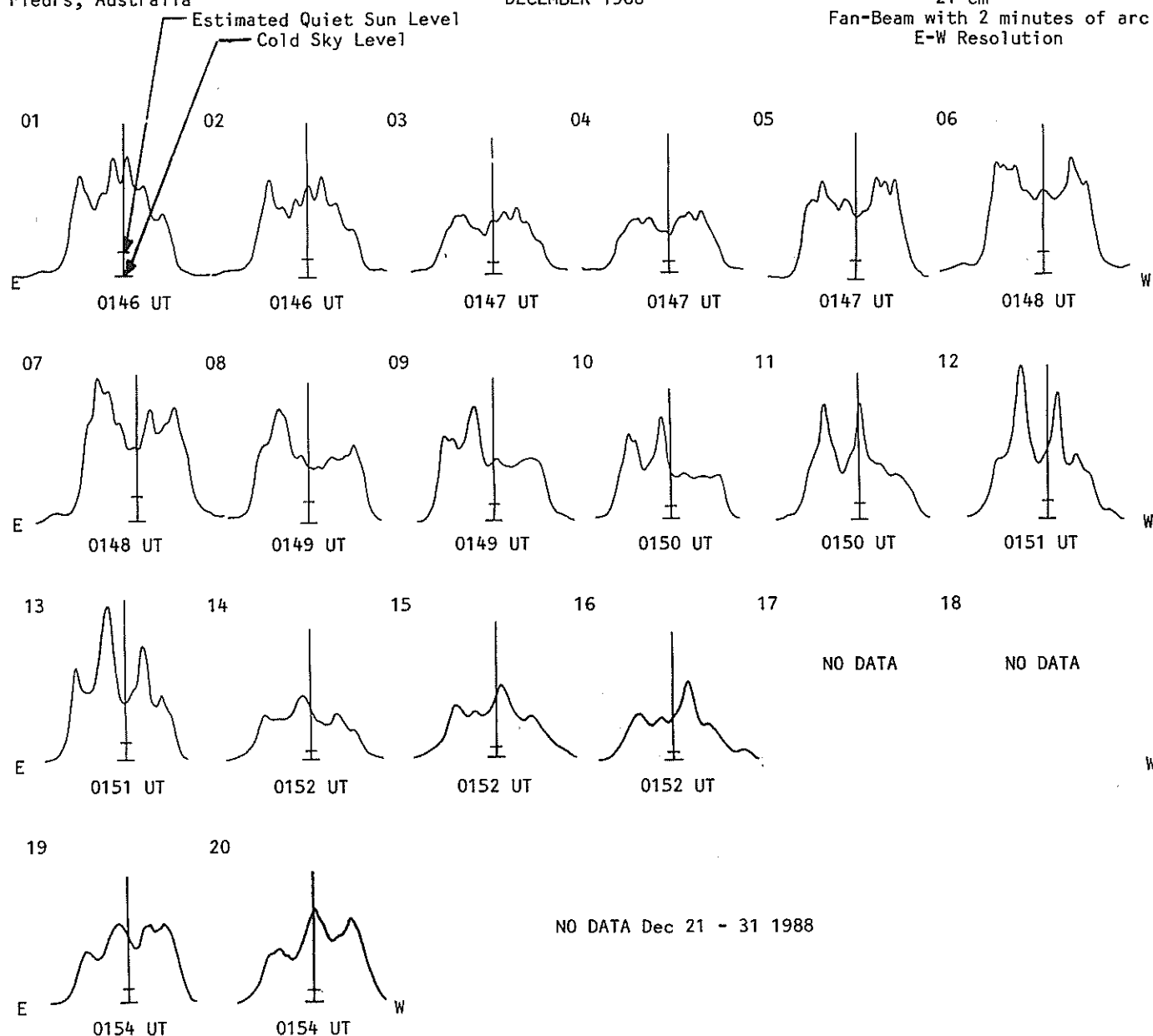
DATE
TOTAL FLUX
ESTIMATED QUIET SUN LEVEL
E W
←PHOTOSPHERE→
TIME U.T.

EAST - WEST SOLAR SCANS

Fleurs, Australia

DECEMBER 1988

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

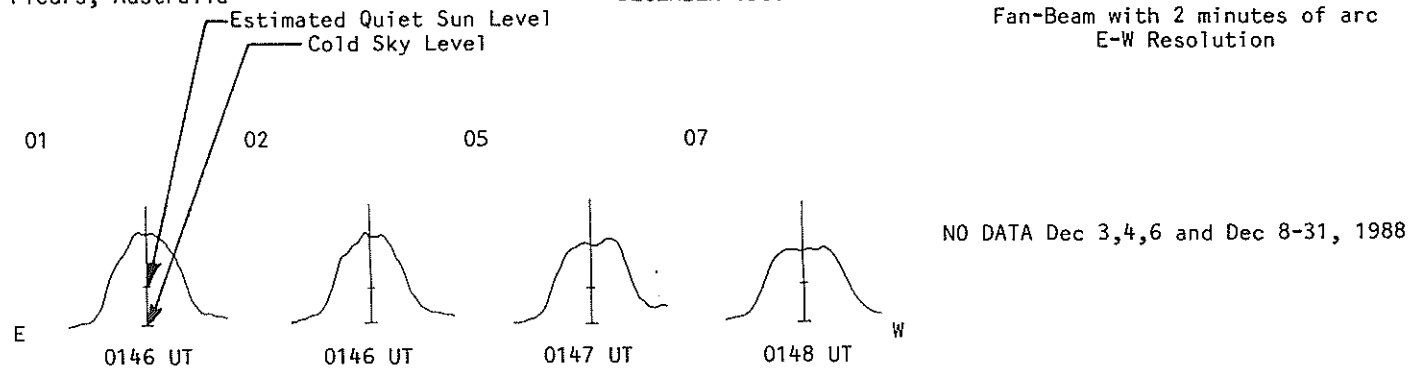


EAST - WEST SOLAR SCANS

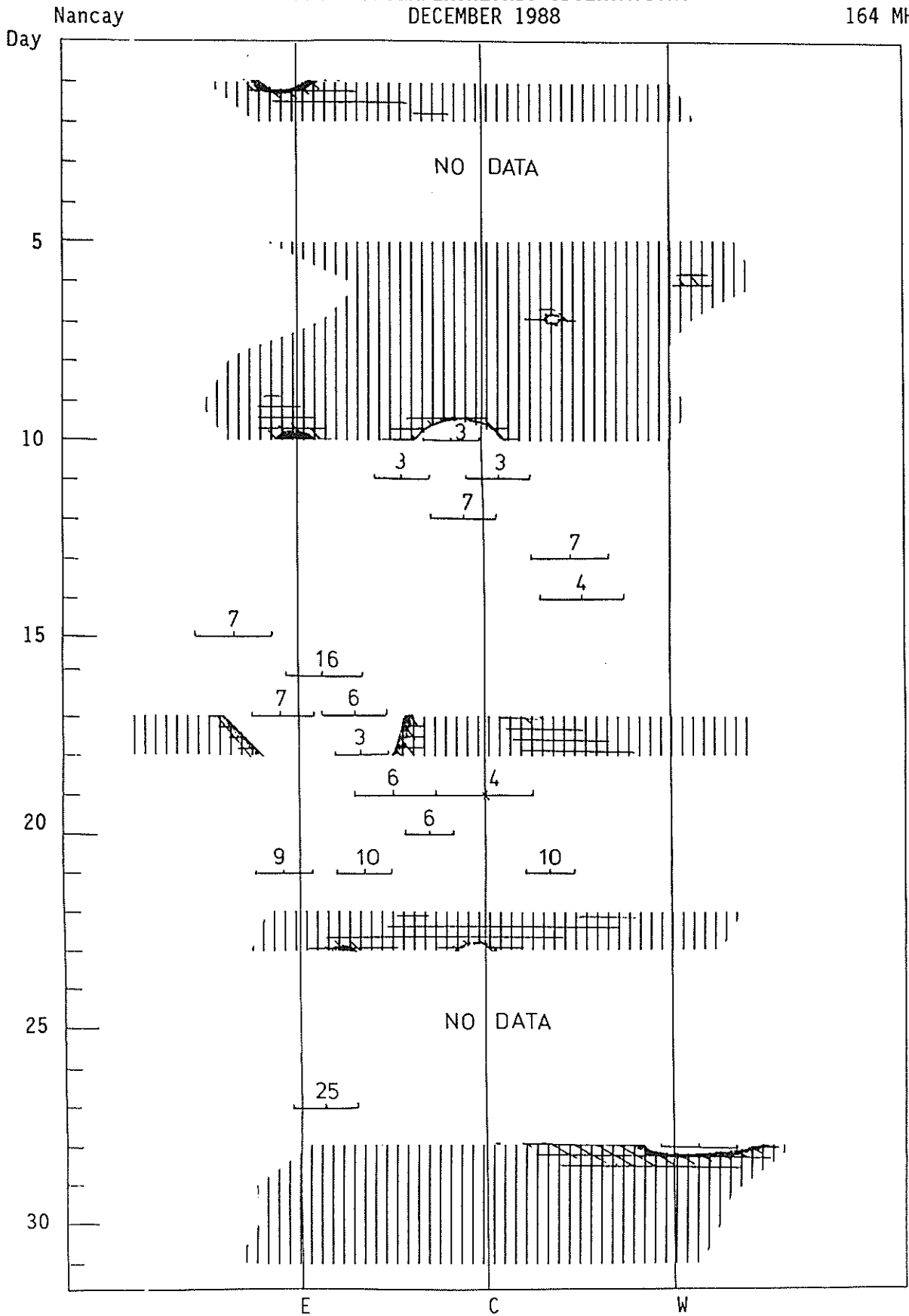
Fleurs, Australia

DECEMBER 1988

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



SOLAR INTERFEROMETRIC OBSERVATIONS
DECEMBER 1988



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

33
Dec 88

DECEMBER 1988

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 ⁻²² W/m ² Hz)		Int	Remarks
							Peak	Mean		
05	8800	SVTO	8 S	1154.0E	1155.0	2.0D	90.0			QL=1 ST=2 TYP=3
	2800	OTTA	20 GRF	1442.0	1515.0	240.0	4.4	2.0		
06	2695	LEAR	8 S	0627.0E	0628.0	1.0D	15.0			QL=1 ST=2 TYP=3
07	2695	LEAR	8 S	0714.0E	0714.0	1.0D	9.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0714.0E	0714.0	19.0D	20.0			QL=1 ST=2 TYP=3
	2800	OTTA	20 GRF	1400.0E	1543.0	360.0D	7.5	4.0		
	2800	OTTA	1 S	1748.0	1749.0	9.0	28.1	11.0		
08	8800	SGMR	8 S	1833.0E	1835.0	2.0D	120.0			QL=1 ST=2 TYP=3
09	2695	LEAR	4 S/F	0106.0E	0108.0	4.0D	22.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0108.0E	0109.0	2.0D	69.0			QL=1 ST=2 TYP=3
	8800	PALE	8 S	0108.0E	0109.0	1.0D	84.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0236.0E	0236.0	4.0D	14.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0316.0E	0316.0	3.0D	190.0			QL=1 ST=2 TYP=3
	8800	PALE	4 S/F	0316.0E	0316.0	5.0D	170.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0601.0E	0603.0	4.0D	30.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0602.0E	0603.0	3.0D	41.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0731.0E	0733.0	5.0D	62.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0732.0E	0732.0	6.0D	160.0			QL=1 ST=2 TYP=3
	2695	PENT	2 S/F	1959.0	2000.5	11.0	60.3	18.0		
	2695	PALE	45 C	1959.0E	2000.0	241.0D	44.0			QL=1 ST=1 TYP=3
	2695	PENT	28 PRE	2101.5	2109.7	8.2	4.0	2.0		
	2695	PENT	4 S/F	2109.7	2111.0	23.0	102.5	30.0		
	2695	PALE	8 S	2110.0E	2110.0	2.0D	62.0			QL=1 ST=2 TYP=3
	2695	PENT	4 S/F	2124.5	2126.7	3.3	64.8	22.0		
	2695	LEAR	8 S	2315.0E	2316.0	2.0D	43.0			QL=1 ST=2 TYP=3
8800	LEAR	8 S	2316.0E	2316.0	1.0D	46.0			QL=1 ST=2 TYP=3	
10	2695	LEAR	8 S	0453.0E	0454.0	2.0D	73.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0453.0E	0454.0	2.0D	99.0			QL=1 ST=2 TYP=3
	2800	OTTA	3 S	1420.0	1436.0	34.5	158.8	79.0		
	3200	BERN	46 C	1421.0	1433.0	30.0	288.0			
	8400	BERN	46 C	1421.0	1430.3	30.0	136.0			
	2695	SGMR	20 GRF	1425.0E	1435.0	16.0D	160.0			QL=1 ST=2 TYP=2
	8800	SGMR	20 GRF	1426.0E	1430.0	13.0D	130.0			QL=1 ST=2 TYP=2
	2695	LEAR	4 S/F	2301.0E	2304.0	6.0D	160.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	2303.0E	2304.0	1.0D	80.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	2317.0E	2317.0	6.0D	16.0			QL=1 ST=2 TYP=3
11	2695	LEAR	45 C	0723.0E	0724.0	997.0D	130.0			QL=1 ST=1 TYP=3
	8800	LEAR	8 S	0724.0E	0724.0	1.0D	26.0			QL=1 ST=2 TYP=3
13	8800	LEAR	4 S/F	0205.0E	0211.0	14.0D	200.0			QL=1 ST=2 TYP=5
	2695	LEAR	20 GRF	0205.0E	0211.0	11.0D	94.0			QL=1 ST=2 TYP=2
	2695	PALE	4 S/F	0207.0E	0211.0	6.0D	86.0			QL=1 ST=2 TYP=5
	8800	PALE	4 S/F	0207.0E	0211.0	5.0D	150.0			QL=1 ST=2 TYP=5
	8800	LEAR	8 S	1027.0E	1028.0	2.0D	220.0			QL=1 ST=2 TYP=3
	2695	LEAR	8 S	1027.0E	1028.0	2.0D	160.0			QL=1 ST=2 TYP=3
	8800	SVTO	8 S	1027.0E	1028.0	2.0D	260.0			QL=1 ST=2 TYP=3
	2695	SVTO	8 S	1027.0E	1028.0	2.0D	160.0			QL=1 ST=2 TYP=3
14	8800	LEAR	8 S	0509.0E	0511.0	2.0D	17.0			QL=1 ST=2 TYP=3
	2695	LEAR	8 S	0510.0E	0511.0	1.0D	73.0			QL=1 ST=2 TYP=3
	2695	LEAR	8 S	0633.0E	0634.0	1.0D	25.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0633.0E	0633.0	1.0D	18.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0800.0E	0800.0	1.0D	24.0			QL=1 ST=2 TYP=3
	2695	LEAR	8 S	0845.0E	0845.0	1.0D	29.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0845.0E	0845.0	1.0D	18.0			QL=1 ST=2 TYP=3
	8800	SVTO	4 S/F	1010.0E	1013.0	3.0D	280.0			QL=1 ST=2 TYP=3
	2695	SVTO	45 C	1010.0E	1010.0	813.0D	100.0			QL=1 ST=2 TYP=3
	8800	SGMR	8 S	1336.0E	1337.0	2.0D	440.0			QL=1 ST=2 TYP=3
	2695	SGMR	8 S	1336.0E	1337.0	2.0D	170.0			QL=1 ST=2 TYP=3
2695	SVTO	8 S	1336.0E	1337.0	2.0D	160.0			QL=1 ST=2 TYP=3	

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

DECEMBER 1988

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 -22 W/m 2 Hz)	Mean		
14	8800	SVTO	8 S	1336.0E	1337.0	2.0D	410.0			QL=1 ST=2 TYP=3
	2800	OTTA	4 S/F	1724.6	1731.7	15.1	153.6	61.0		
	8800	PALE	4 S/F	1730.0E	1733.0	6.0D	170.0			QL=1 ST=2 TYP=5
	2695	PALE	4 S/F	1730.0E	1731.0	6.0D	120.0			QL=1 ST=2 TYP=3
	2695	SGMR	4 S/F	1730.0E	1731.0	5.0D	140.0			QL=1 ST=2 TYP=3
	2800	OTTA	29 PBI	1739.7	1739.7	160.0D	15.4	8.0		
	8800	PALE	8 S	1944.0E	1944.0	1.0D	77.0			QL=1 ST=2 TYP=3
	8800	SGMR	45 C	1944.0E	1944.0	624.0D	70.0			QL=1 ST=2 TYP=3
15	8800	LEAR	4 S/F	0458.0E	0503.0	16.0D	400.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0501.0E	0504.0	9.0D	370.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0516.0E	0517.0	36.0D	18.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0523.0E	0528.0	28.0D	51.0			QL=1 ST=2 TYP=5
	8800	SGMR	4 S/F	1602.0E	1605.0	17.0D	91.0			QL=1 ST=2 TYP=3
16	8400	BERN	47 GB	0827.0	0833.0	65.0	10800.0			
	3200	BERN	47 GB	0827.0	0833.0	65.0	640.0			
	8800	LEAR	8 S	0650.0E	0651.0	2.0D	61.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0759.0E	0801.0	4.0D	53.0			QL=1 ST=2 TYP=3
	8800	LEAR	8 S	0801.0E	0803.0	2.0D	25.0			QL=1 ST=2 TYP=3
	8800	LEAR	49 GB	0826.0E	0834.0	24.0D	14000.0			QL=1 ST=2 TYP=7
	2695	LEAR	49 GB	0826.0E	0833.0	52.0D	3200.0			QL=1 ST=2 TYP=7
	8800	SVTO	49 GB	0826.0E	0833.0	81.0D	11000.0			QL=1 ST=2 TYP=7
	2695	SVTO	49 GB	0826.0E	0833.0	111.0D	3100.0			QL=1 ST=2 TYP=7
	2695	LEAR	4 S/F	2246.0E	2246.0	3.0D	130.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	2246.0E	2246.0	4.0D	100.0			QL=1 ST=2 TYP=3
	2695	PALE	8 S	2246.0E	2246.0	1.0D	130.0			QL=1 ST=2 TYP=3
	8800	PALE	8 S	2246.0E	2246.0	1.0D	100.0			QL=1 ST=2 TYP=3
	17	2695	LEAR	8 S	0345.0E	0346.0	2.0D	90.0			QL=1 ST=2 TYP=3
8800		LEAR	4 S/F	0345.0E	0346.0	3.0D	140.0			QL=1 ST=2 TYP=3
8800		LEAR	8 S	0450.0E	0451.0	2.0D	40.0			QL=1 ST=2 TYP=3
2695		LEAR	4 S/F	0457.0E	0500.0	16.0D	280.0			QL=1 ST=2 TYP=3
8800		LEAR	4 S/F	0457.0E	0504.0	29.0D	250.0			QL=1 ST=2 TYP=5
2800		OTTA	3 S	1629.4	1630.7	5.6	97.4	39.0		
2695		SGMR	8 S	1630.0E	1630.0	1.0D	83.0			QL=1 ST=2 TYP=3
18	8400	BERN	4 S/F	0912.0	0914.3	9.0	62.0			
	3200	BERN	4 S/F	0912.2	0913.4	9.0	54.0			
	8800	SVTO	4 S/F	0911.0E	0913.0	5.0D	60.0			QL=1 ST=2 TYP=3
	2695	SVTO	4 S/F	0912.0E	0913.0	3.0D	70.0			QL=1 ST=2 TYP=3
	2800	OTTA	4 S/F	1635.0E	1636.4	8.0	132.3	66.0		
	2695	SGMR	4 S/F	1635.0E	1636.0	5.0D	120.0			QL=1 ST=2 TYP=3
	8800	SGMR	4 S/F	1635.0E	1636.0	3.0D	220.0			QL=1 ST=2 TYP=3
	2800	OTTA	4 S/F	1707.0	1712.3	94.0	353.0	105.0		
	2695	SGMR	4 S/F	1709.0E	1712.0	8.0D	370.0			QL=1 ST=2 TYP=3
	8800	SGMR	4 S/F	1709.0E	1712.0	37.0D	290.0			QL=1 ST=2 TYP=3
8800	SGMR	8 S	1748.0E	1749.0	1.0D	54.0			QL=1 ST=2 TYP=3	
20	2695	LEAR	4 S/F	0155.0E	0202.0	9.0D	97.0			QL=1 ST=2 TYP=5
	8800	LEAR	4 S/F	0159.0E	0202.0	8.0D	85.0			QL=1 ST=2 TYP=3
	2695	LEAR	4 S/F	0214.0E	0217.0	6.0D	94.0			QL=1 ST=2 TYP=3
	8800	LEAR	4 S/F	0214.0E	0217.0	6.0D	56.0			QL=1 ST=2 TYP=3
	2695	PALE	8 S	0217.0E	0217.0	1.0D	97.0			QL=1 ST=2 TYP=3
	8800	PALE	45 C	0217.0E	0217.0	1319.0D	69.0			QL=1 ST=2 TYP=3
	2695	SVTO	49 GB	1207.0E	1218.0	713.0D	690.0			QL=1 ST=1 TYP=6
	2695	SVTO	49 GB	1217.0E	1218.0	31.0D	690.0			QL=1 ST=2 TYP=7
	8800	SVTO	49 GB	1217.0E	1228.0	35.0D	2500.0			QL=1 ST=2 TYP=7
	2695	SGMR	20 GRF	1235.0E	1239.0	12.0D	220.0			QL=1 ST=3 TYP=2
	8800	SGMR	49 GB	1235.0E	1237.0	16.0D	1300.0			QL=1 ST=3 TYP=6
	8800	SGMR	49 GB	1235.0E	1237.0	685.0D	1300.0			QL=1 ST=3 TYP=6
	2695	SGMR	20 GRF	1236.0E	1239.0	11.0D	220.0			QL=1 ST=2 TYP=2
	8800	SGMR	49 GB	1236.0E	1237.0	15.0D	1300.0			QL=1 ST=2 TYP=6
	2695	SVTO	4 S/F	1253.0E	1301.0	22.0D	290.0			QL=1 ST=2 TYP=3
	8800	SVTO	49 GB	1253.0E	1301.0	22.0D	500.0			QL=1 ST=2 TYP=6
	2695	SGMR	20 GRF	1254.0E	1301.0	16.0D	270.0			QL=1 ST=2 TYP=2

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

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Dec 88

DECEMBER 1988

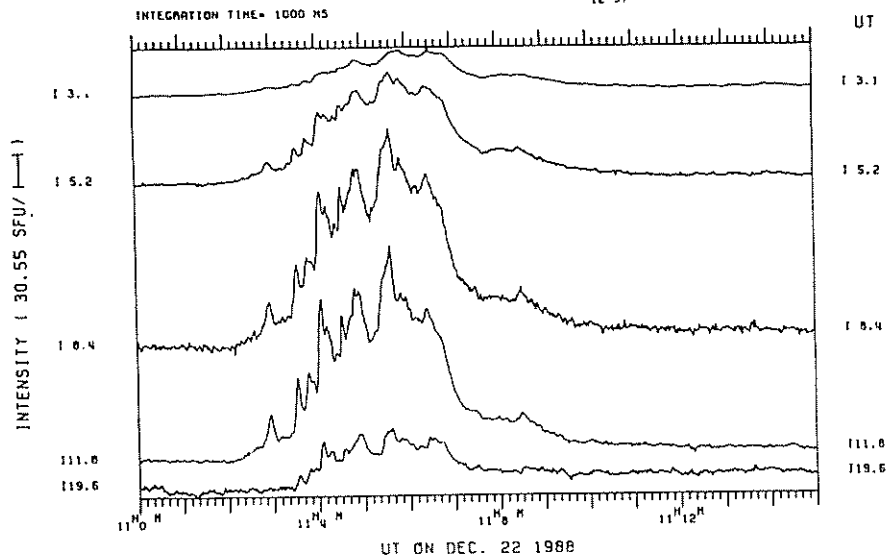
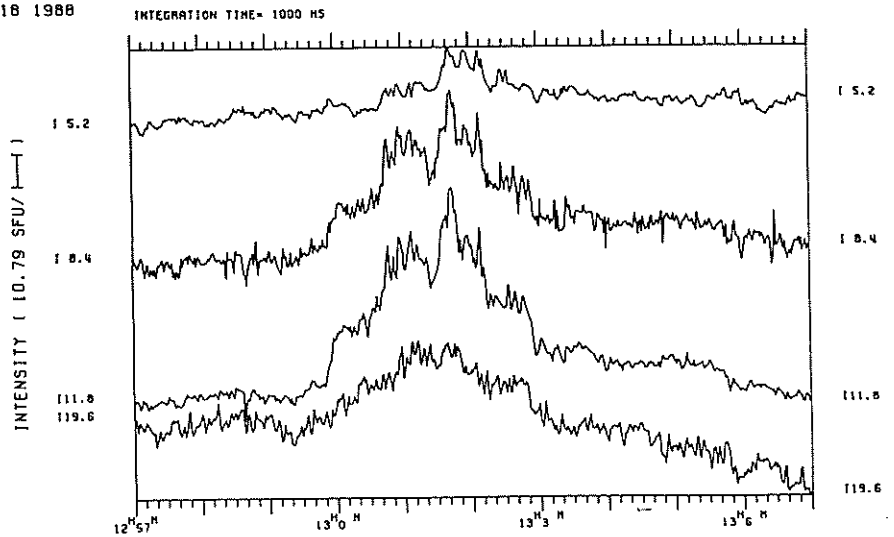
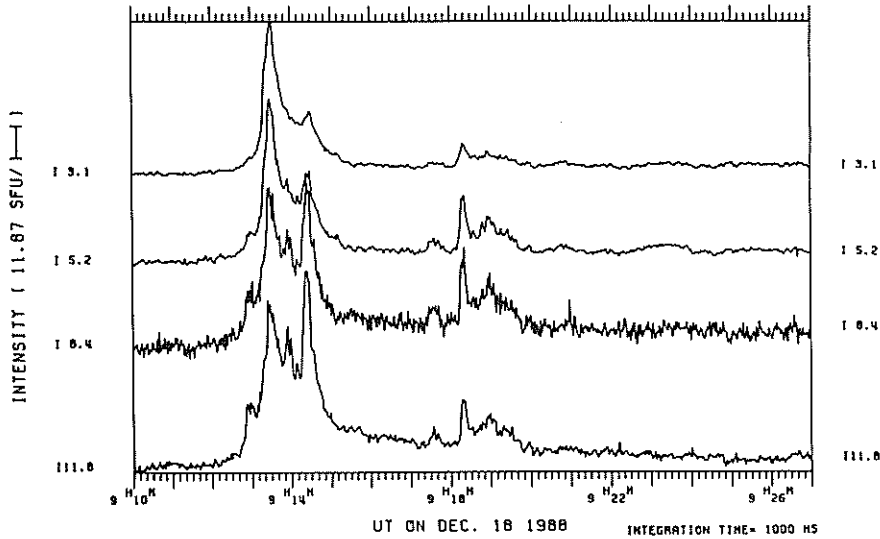
Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks	
							Peak (10 ⁻²² W/m ² Hz)	Mean			
20	8800	SGMR	49 GB	1254.0E	1306.0	42.0D	720.0			QL=1 ST=2 TYP=6	
		2695	SVTO	4 S/F	1316.0E	1321.0	13.0D	170.0			QL=1 ST=2 TYP=5
	8400	BERN	47 GB	1317.0	1330.0	90.0	1630.0				
		3200	BERN	47 GB	1317.0	1330.0	90.0	430.0			
	8800	2800	OTTA	4 S/F	1320.0E	1320.0	43.5D	168.0	84.0		
		2800	SGMR	20 GRF	1336.0E	1338.0	13.0D	190.0			QL=1 ST=2 TYP=2
		2800	OTTA	3 S	1337.0	1340.0	21.0	117.6	59.0		
2695		SGMR	20 GRF	1337.0E	1339.0	8.0D	130.0			QL=1 ST=2 TYP=2	
21	8400	BERN	4 S/F	1259.3	1301.4	6.0	57.0				
	8800	SVTO	45 C	1301.0E	1301.0	644.0D	57.0			QL=1 ST=2 TYP=3	
22	3200	BERN	46 C	1102.0	1105.1	8.0	39.0				
	8400	BERN	46 C	1102.0	1105.1	8.0	195.0				
	8800	SVTO	4 S/F	1103.0E	1105.0	4.0D	190.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	2305.0E	2325.0	30.0D	170.0			QL=1 ST=2 TYP=5	
	8800	LEAR	49 GB	2305.0E	2309.0	30.0D	500.0			QL=1 ST=2 TYP=7	
	8800	PALE	49 GB	2306.0E	2309.0	18.0D	570.0			QL=1 ST=2 TYP=6	
	2695	PALE	4 S/F	2308.0E	2309.0	9.0D	140.0			QL=1 ST=2 TYP=3	
	2695	PALE	4 S/F	2324.0E	2325.0	6.0D	170.0			QL=1 ST=2 TYP=3	
	8800	PALE	4 S/F	2324.0E	2325.0	33.0D	140.0			QL=1 ST=2 TYP=3	
23	2695	LEAR	4 S/F	0851.0E	0852.0	4.0D	37.0			QL=1 ST=2 TYP=3	
26	2695	LEAR	4 S/F	1048.0E	1049.0	3.0D	80.0			QL=1 ST=2 TYP=3	
	8800	LEAR	8 S	1049.0E	1049.0	1.0D	46.0			QL=1 ST=2 TYP=3	
	8800	SGMR	8 S	1413.0E	1414.0	1.0D	73.0			QL=1 ST=2 TYP=3	
27	8800	LEAR	4 S/F	0521.0E	0522.0	4.0D	96.0			QL=1 ST=2 TYP=3	
	2695	LEAR	8 S	0521.0E	0522.0	2.0D	26.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	0528.0E	0529.0	5.0D	93.0			QL=1 ST=2 TYP=3	
	8800	LEAR	4 S/F	0529.0E	0529.0	8.0D	28.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	0706.0E	0709.0	23.0D	66.0			QL=1 ST=2 TYP=3	
	8800	LEAR	8 S	0708.0E	0708.0	2.0D	48.0			QL=1 ST=2 TYP=3	
	2695	SVTO	4 S/F	0708.0E	0709.0	3.0D	64.0			QL=1 ST=2 TYP=3	
	2695	SVTO	4 S/F	0719.0E	0720.0	6.0D	54.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	0746.0E	0751.0	26.0D	160.0			QL=1 ST=2 TYP=3	
	8800	LEAR	4 S/F	0747.0E	0751.0	16.0D	110.0			QL=1 ST=2 TYP=3	
	2695	SVTO	20 GRF	0747.0E	0752.0	16.0D	150.0			QL=1 ST=2 TYP=2	
	8800	SVTO	4 S/F	0748.0E	0751.0	13.0D	110.0			QL=1 ST=2 TYP=3	
	2695	LEAR	8 S	0839.0E	0839.0	1.0D	38.0			QL=1 ST=2 TYP=3	
	2800	OTTA	4 S/F	1350.2	1351.5	6.5	97.5	39.0			
	8800	SVTO	8 S	1351.0E	1351.0	1.0D	62.0			QL=1 ST=3 TYP=3	
2695	SVTO	45 C	1351.0E	1351.0	973.0D	80.0			QL=1 ST=2 TYP=3		
28	2695	LEAR	4 S/F	0024.0E	0028.0	14.0D	140.0			QL=1 ST=2 TYP=3	
	2695	PALE	4 S/F	0027.0E	0031.0E	7.0D	57.0			QL=1 ST=3 TYP=3	
	8800	LEAR	20 GRF	0028.0E	0036.0	8.0D	20.0			QL=1 ST=2 TYP=2	
	2695	LEAR	4 S/F	0044.0E	0047.0	5.0D	38.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	0119.0E	0123.0	21.0D	110.0			QL=1 ST=2 TYP=3	
	8800	LEAR	45 C	0122.0E	0122.0	1412.0D	17.0			QL=1 ST=2 TYP=3	
	8800	LEAR	4 S/F	0536.0E	0540.0	8.0D	270.0			QL=1 ST=2 TYP=3	
	2695	LEAR	4 S/F	0536.0E	0540.0	6.0D	62.0			QL=1 ST=2 TYP=3	
	2695	SVTO	4 S/F	1218.0E	1221.0	10.0D	130.0			QL=1 ST=2 TYP=3	
	8800	SVTO	49 GB	1219.0E	1221.0	11.0D	1400.0			QL=1 ST=2 TYP=6	
	2695	LEAR	49 GB	2341.0E	2343.0	5.0D	390.0			QL=1 ST=2 TYP=7	
	8800	LEAR	49 GB	2342.0E	2343.0	7.0D	1600.0			QL=1 ST=2 TYP=7	
	8800	PALE	49 GB	2342.0E	2343.0	18.0D	1500.0			QL=1 ST=1 TYP=6	
	29	8800	SVTO	4 S/F	1158.0E	1159.0	3.0D	89.0			QL=1 ST=2 TYP=3
2695		SVTO	8 S	1258.0E	1259.0	2.0D	67.0			QL=1 ST=2 TYP=3	
30	2800	OTTA	4 S/F	1803.0	1807.3	12.5	277.2	83.0			
	2695	SGMR	4 S/F	1805.0E	1807.0	5.0D	220.0			QL=1 ST=2 TYP=3	
	8800	SGMR	49 GB	1805.0E	1806.0	39.0D	590.0			QL=1 ST=2 TYP=6	
	8800	PALE	49 GB	1805.0E	1806.0	355.0D	580.0			QL=1 ST=1 TYP=6	

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

DECEMBER 1988

Day	Freq Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
						Peak (10 ⁻²² W/m ² Hz)	Mean		
30	2695 PALE	4 S/F	1806.0E	1807.0	3.00	210.0			QL=1 ST=2 TYP=3
	2800 OTTA	29 PBI	1815.5	1815.5	105.0	36.8	18.0		

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INTEGRATION TIME= 1000 MS

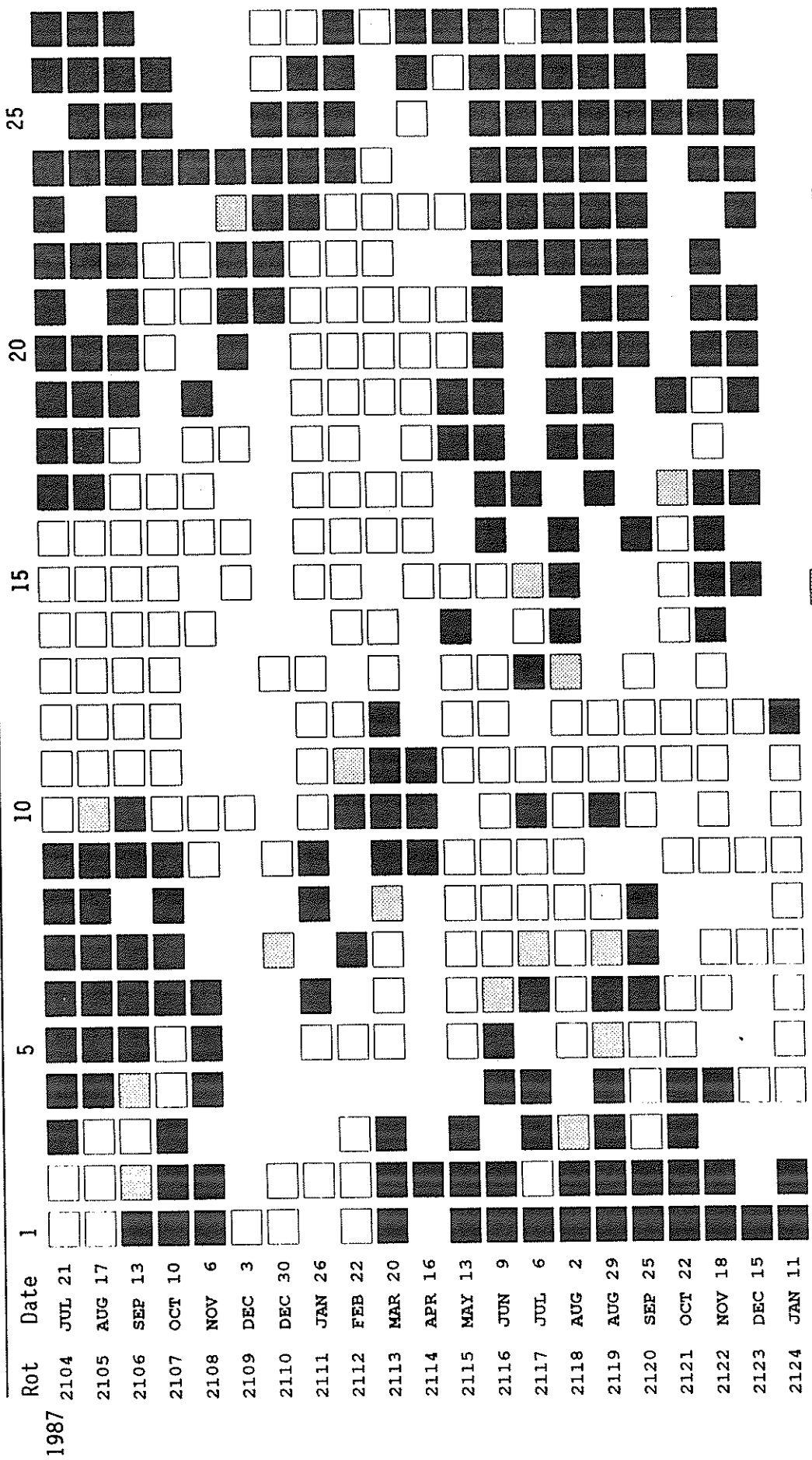


STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1988											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	.	.	.	12	13	14	-35	5	-27	-15	23	-3
2	.	-16	-16	21	12	7	-51	-22	-2	-19	24	-5
3	.	-5	1	.	28	.	-29	-14	-4	.	.	-4
4	.	16	22	35	29	33	-9	1	-2	8	40	-12
5	0	25	.	42	25	.	-13	.	16	12	19	2
6	.	42	49	.	37	.	-39	5	.	15	3	4
7	20	40	50	45	.	12	39	18	-22	10	0	-24
8	.	.	49	41	39	-14	-18	43	43	.	.	-27
9	.	62	44	53	.	-25	-29	48	45	.	-9	-33
10	.	56	53	47	6	-17	.	51	.	-8	.	.
11	29	58	52	43	-8	.	-16	22	.	.	.	-62
12	.	58	49	36	-11	-14	-1	25	.	.	.	-47
13	.	48	36	.	-22	-11	14	23	.	.	.	-53
14	.	47	35	.	-29	-1	15	1	-30	-36	.	-38
15	.	23	21	8	-25	13	-6	-14	-44	-33	-35	-30
16	.	16	-13	.	.	22	2	-15	-50	-43	.	.
17	.	-13	-9	-25	10	28	.	-20	-54	-39	-46	.
18	.	-22	-13	.	17	27	-3	.	-46	-52	-43	34
19	-12	-25	-9	.	15	30	3	-36	-49	-53	-46	.
20	-22	-13	-20	.	12	37	-1	-38	-64	-40	.	.
21	-35	11	-14	.	22	35	.	-49	-67	-37	-19	56
22	-28	14	-8	.	.	.	-16	.	-64	-34	.	.
23	-15	35	.	.	5	15	.	-57	-57	-38	29	61
24	4	37	18	-6	5	-3	.	-79	-36	-36	31	.
25	15	.	21	-20	4	-35	.	-91	-29	-17	.	.
26	.	17	12	-26	-6	-67	.	-77	-8	14	30	65
27	23	.	-1	.	7	-75	-49	-57	6	15	31	.
28	.	-14	-13	.	.	-80	-79	-24	34	.	24	.
29	.	.	-43	.	.	-57	-51	-10	13	.	26	-5
30	3	.	-40	18	-19	-29	-15	-20	-6	15	18	.
31	-15	.	-11	.	-13	.	-3	-20	.	.	.	-24

Dot symbol indicates no data available for the day.

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.

C O N T E N T S

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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 1808
(19 October to 15 November 1988)

Dates of Observations Below

Days of Year:

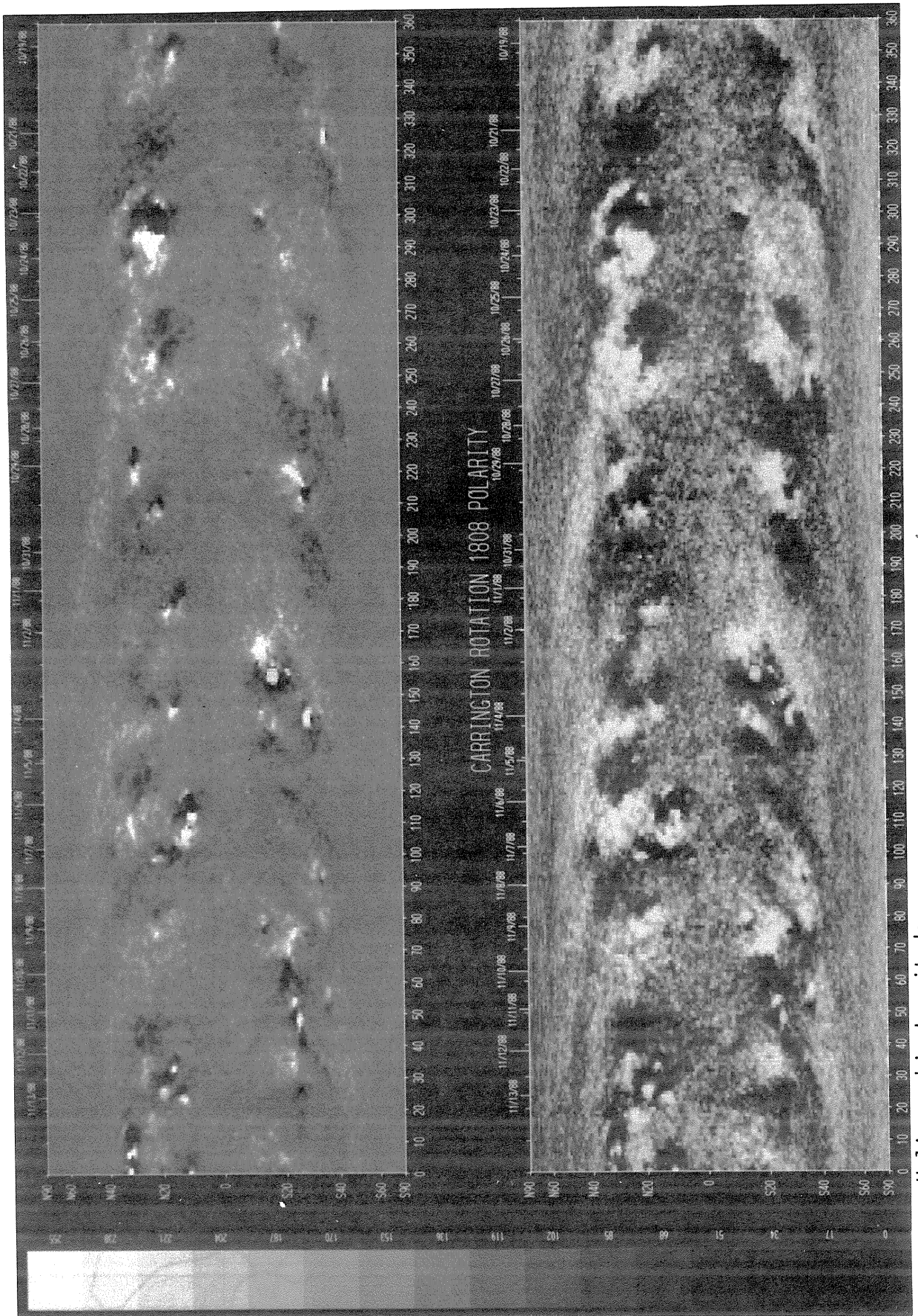
Chart unavailable at time of publication.

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

Kitt Peak National Observatory

Dates of Observation

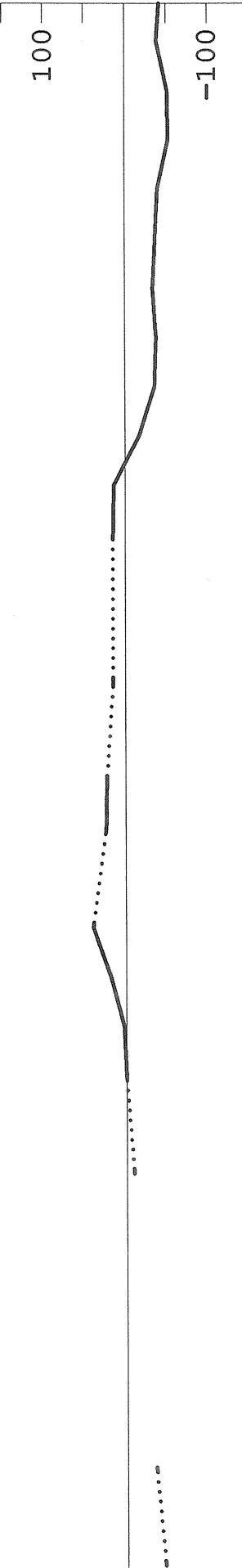


Heliographic Longitude

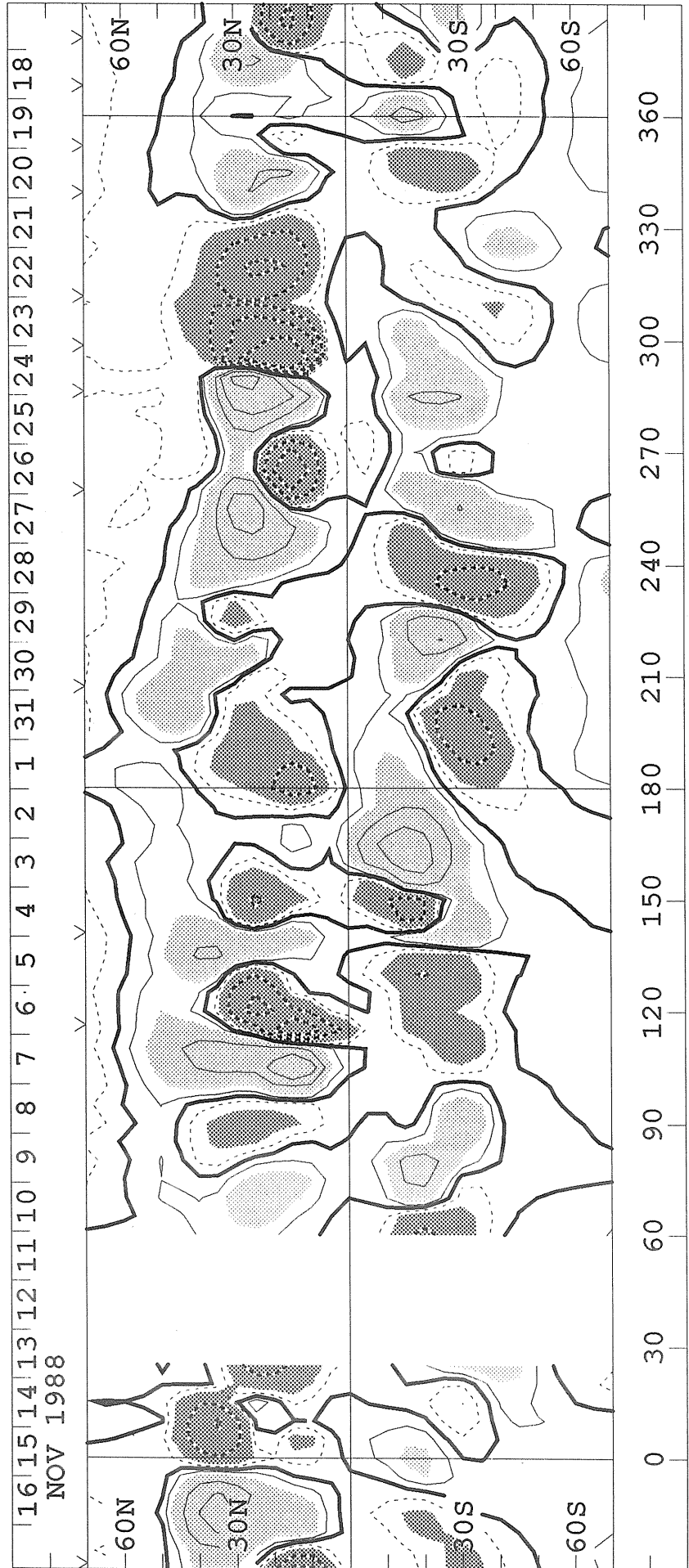
S O L A R M A G N E T I C F I E L D S Y N O P T I C C H A R T
CARRINGTON ROTATION NUMBER 1808
(19 October to 15 November 1988)

Stanford Solar Observatory

0, \pm 100, 500, 1000, 2000 microTesla

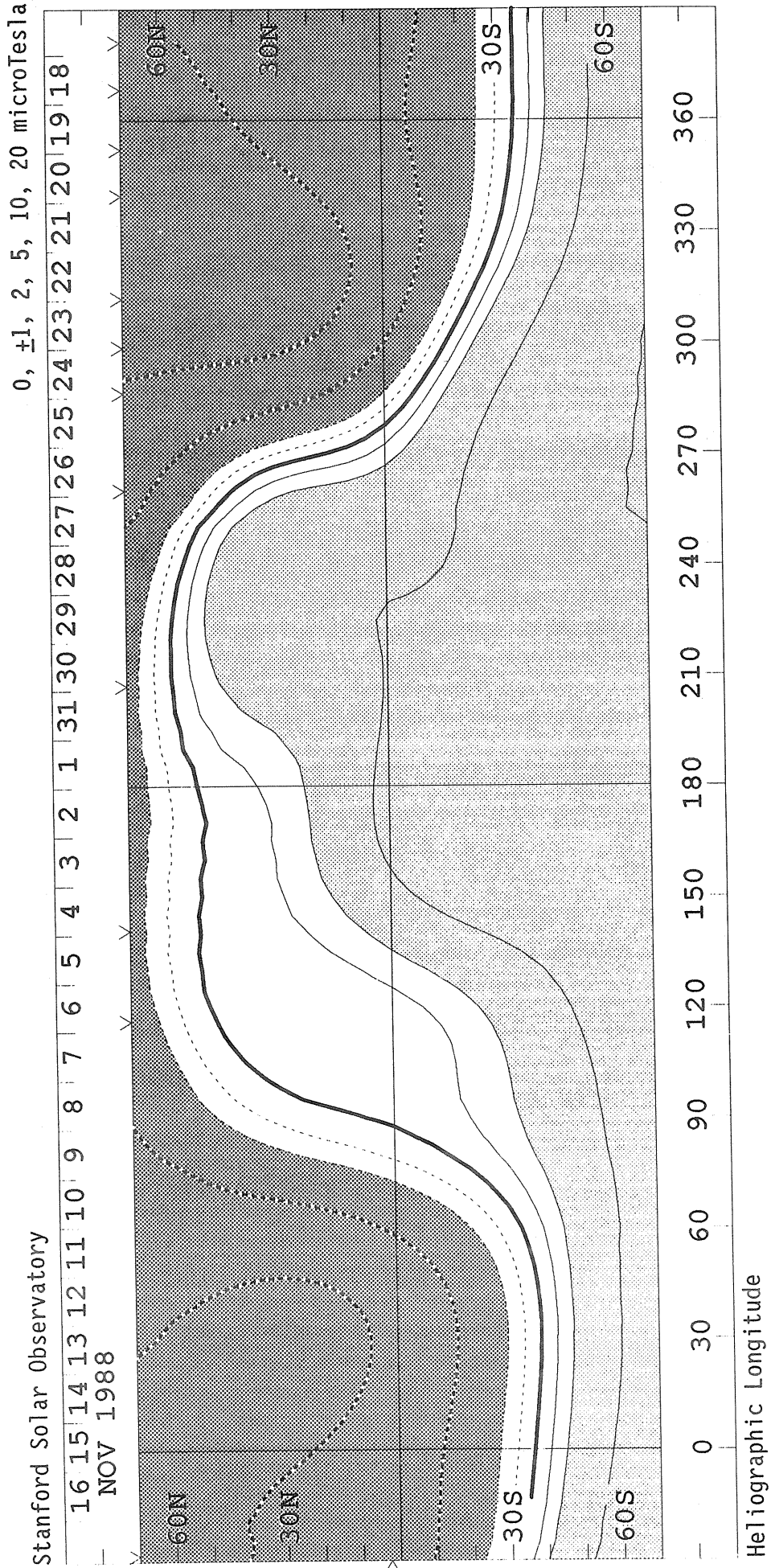


Photospheric Magnetic Field 0, \pm 100, 500, 1000, 2000 MicroTesla



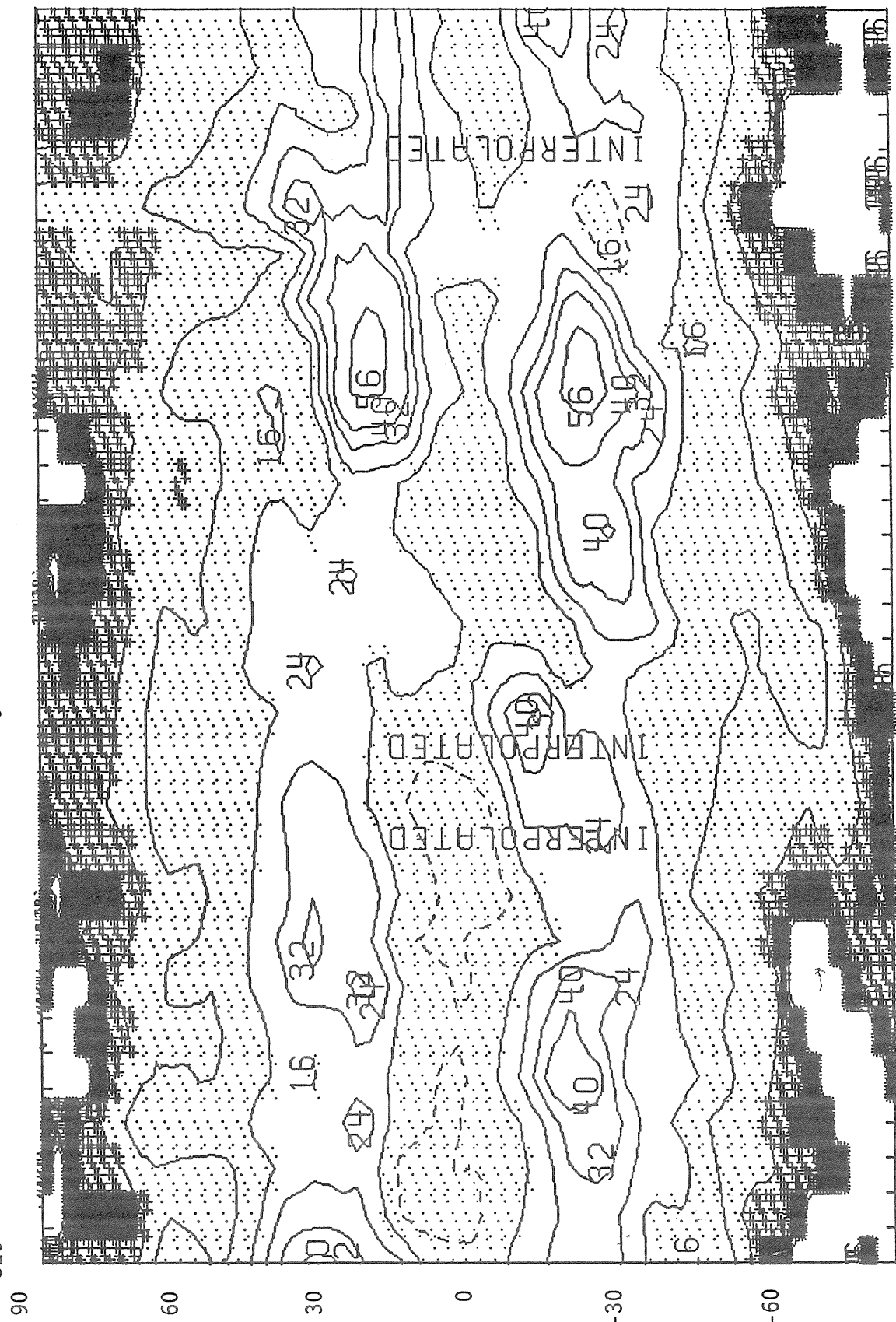
Heliographic Longitude

SOLAR MAGNETIC FIELD SYNOPTIC CHART
SOURCE SURFACE FIELD
CARRINGTON ROTATION NUMBER 1808
(19 October to 15 November 1988)



SACRAMENTO PEAK CORONAL GREEN LINE SYNOPSIS MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1808 (19 October to 15 November 1988)

320----- Day of Year of CMP -----293



90 60 30 0 -30 -60 -90 0 360
Heliographic Longitude

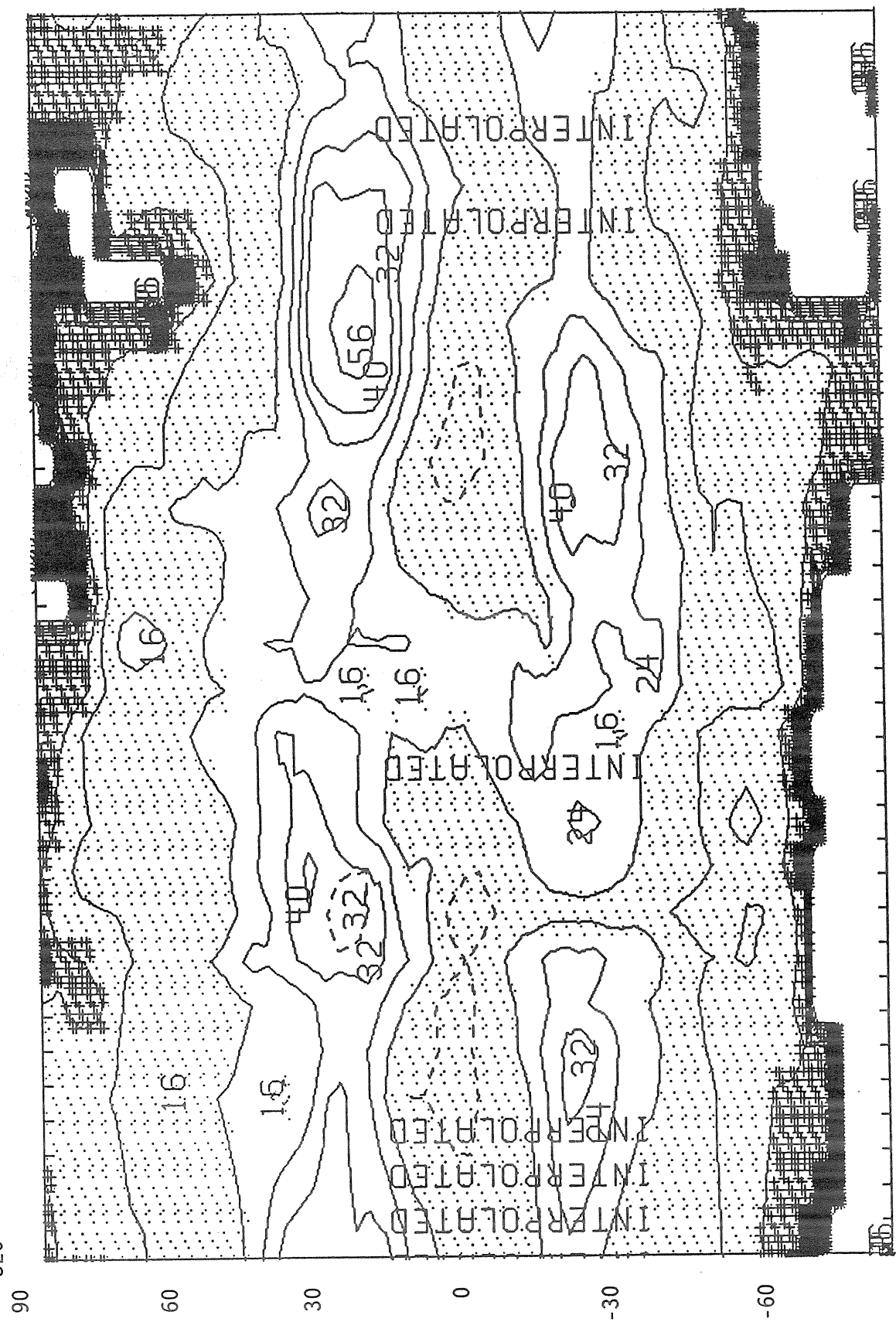
Heliographic Longitude

-90 0

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPSIS MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1808 (19 October to 15 November 1988)

Day of Year of CMP

320



90

60

30

0

-30

-60

-90

SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1808 (19 October to 15 November 1988)

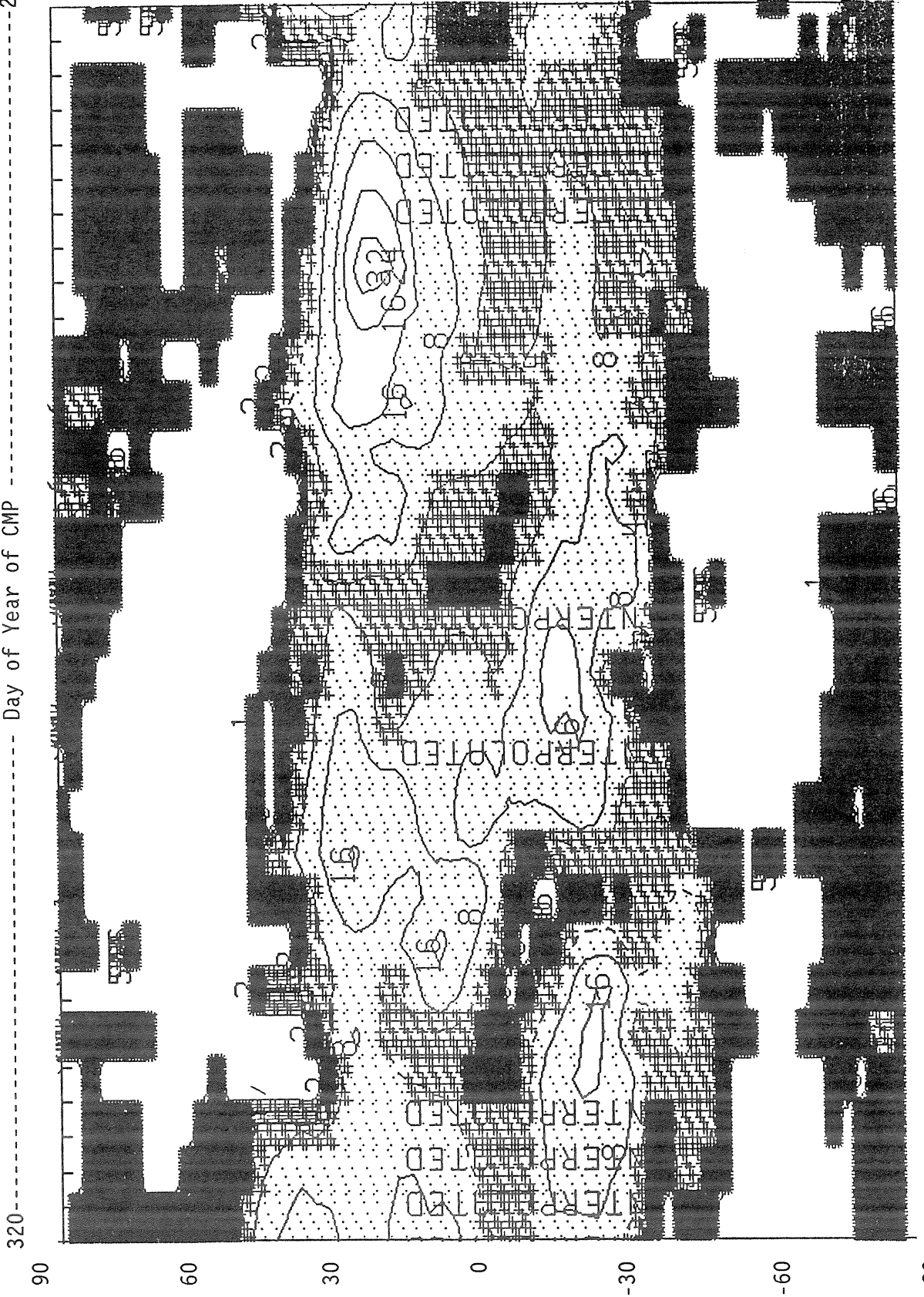
320----- Day of Year of CMP -----293



360
Heliographic Longitude
0

SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1808 (19 October to 15 November 1988)
Day of Year of CMP -----

293



320

90

60

30

0

-30

-60

-90

Heliographic Longitude

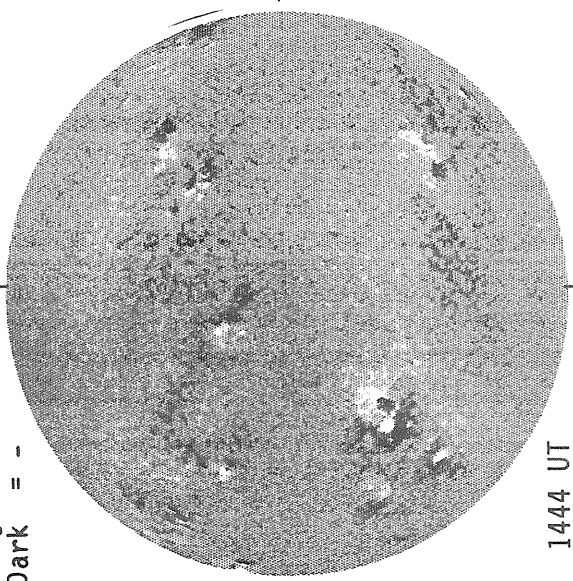
360

NOVEMBER 01, 1988 (P= 24.48, B₀= 4.33, L₀= 191.49)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

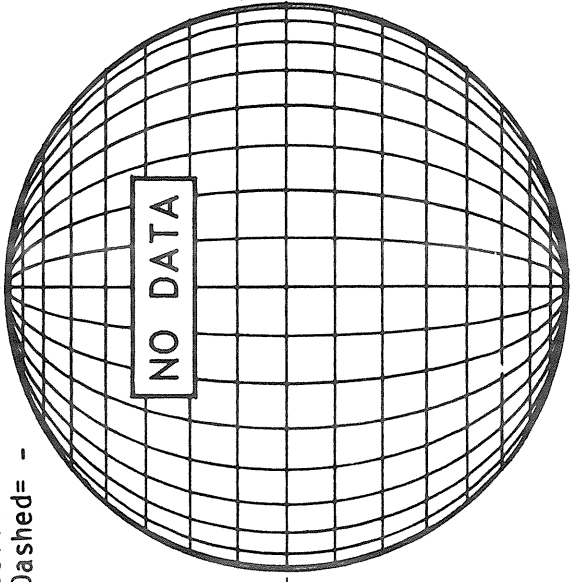


1444 UT

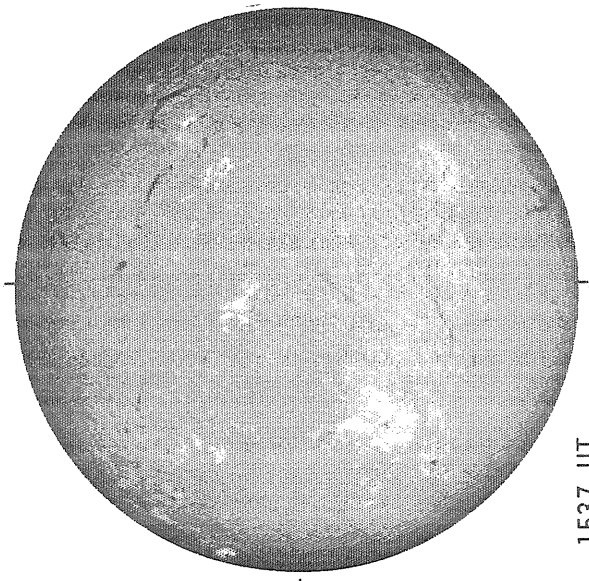
STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -



SACRAMENTO PEAK H-ALPHA

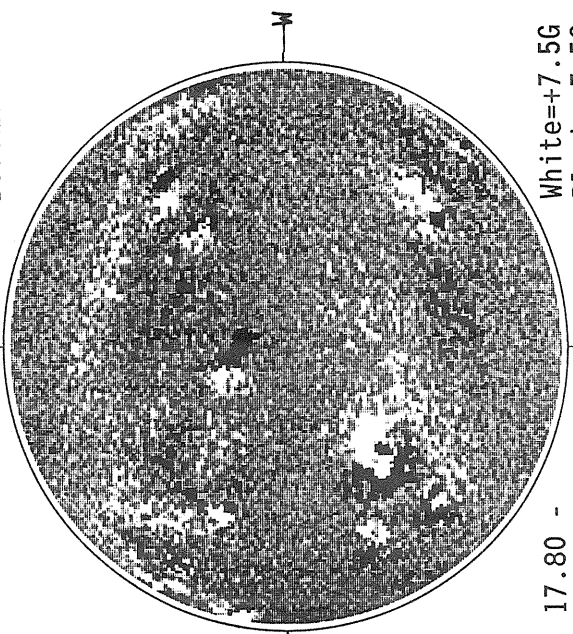


1537 UT

MT. WILSON MAGNETOGRAM

Np

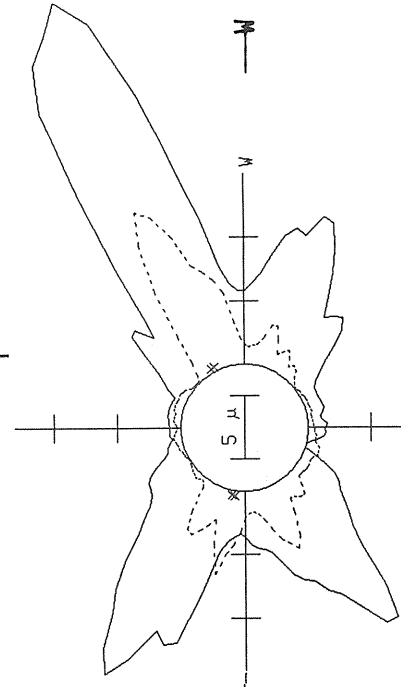
Delta Y = 13.0
Delta X = 9.6



17.80 -
18.77 UT

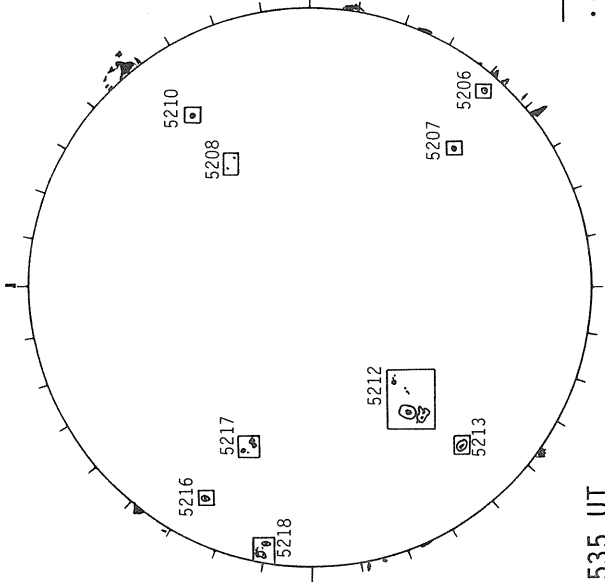
SACRAMENTO PEAK CORONA (1.15 Radii)

White = +7.5G
Black = -7.5G



5303A, 1443 UT
6374A, 1507 UT
5694A, 1457 UT

BOULDER SUNSPOTS



1535 UT
1610 UT BOUL Prom Sp

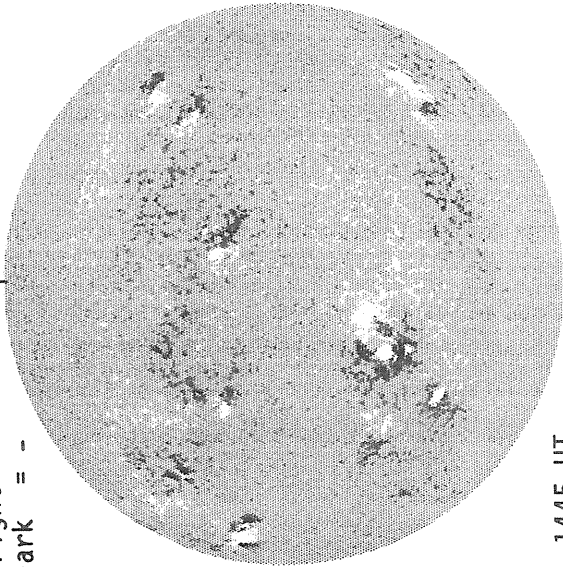
Sp

NOVEMBER 02, 1988 (P= 24.30, B₀= 4.23, L₀= 178.30)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

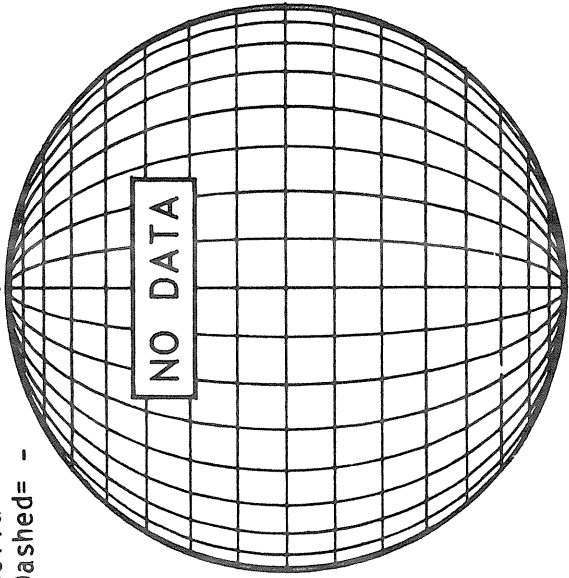


1445 UT

STANFORD MAGNETOGRAM

Np

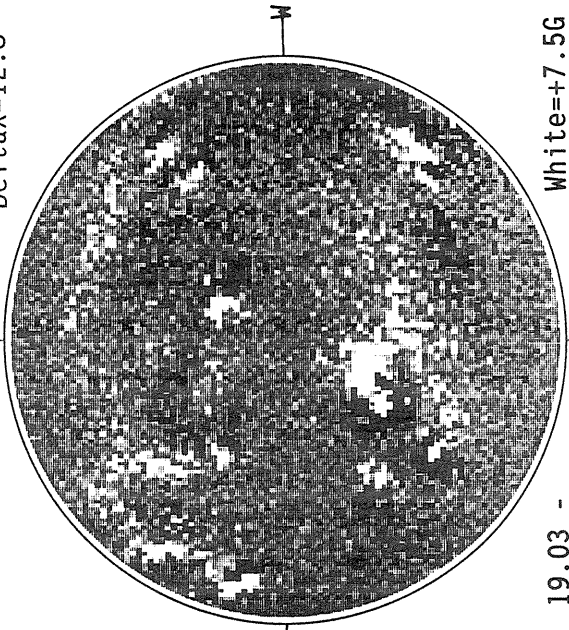
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

Np

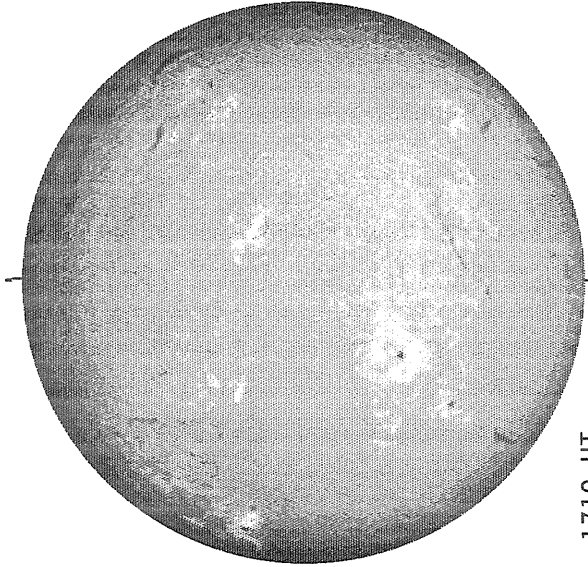
Delta Y=20.0
Delta X=12.8



19.03 -
19.38 UT

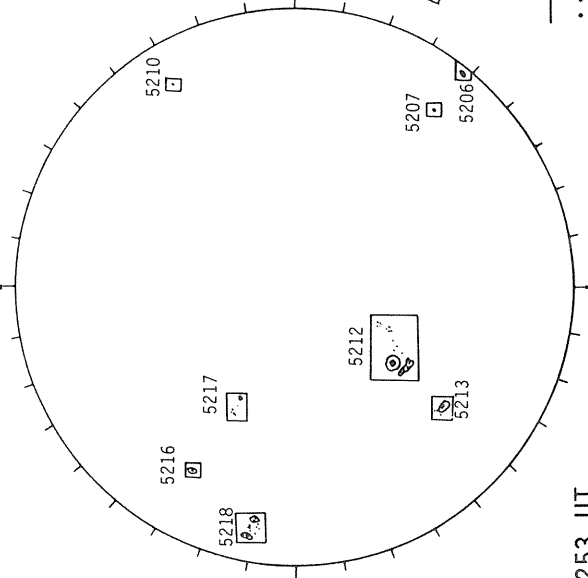
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



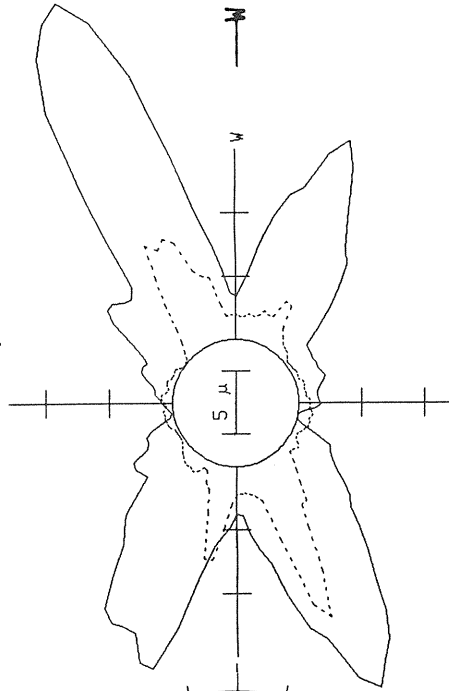
1719 UT

RAMEY SUNSPOTS



1253 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



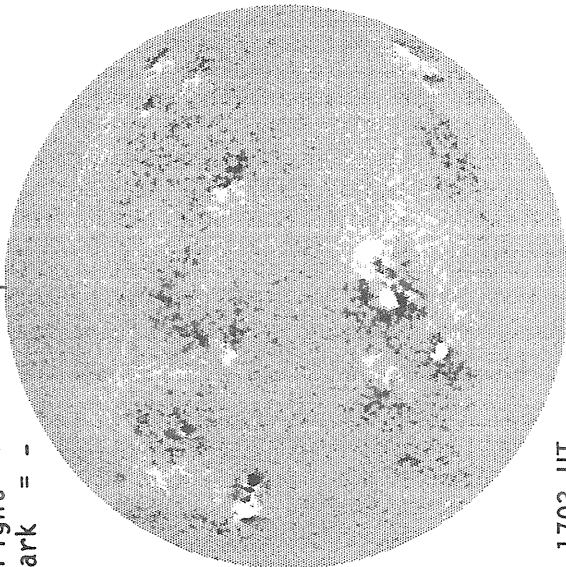
— 5303A, 1843 UT
... 6374A, 1917 UT
XXXX 5694A, 1903 UT
NO 5694A ACTIVITY TODAY

NOVEMBER 03, 1988 (P= 24.12, B₀= 4.13, L₀= 165.12)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

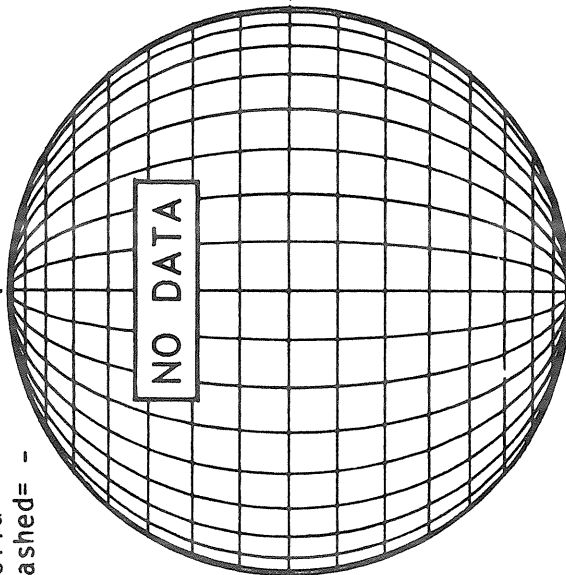


1703 UT

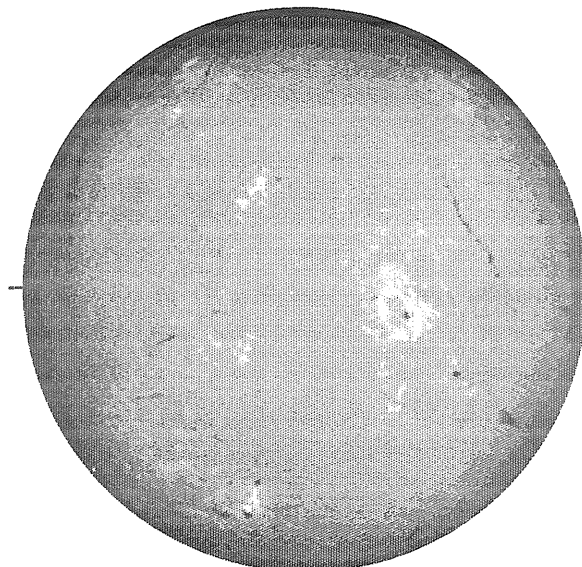
STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -



SACRAMENTO PEAK H-ALPHA

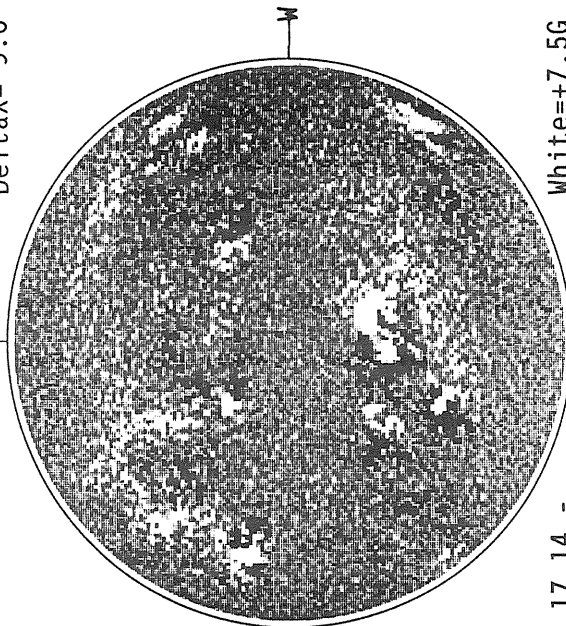


1621 UT

MT. WILSON MAGNETOGRAM

Np

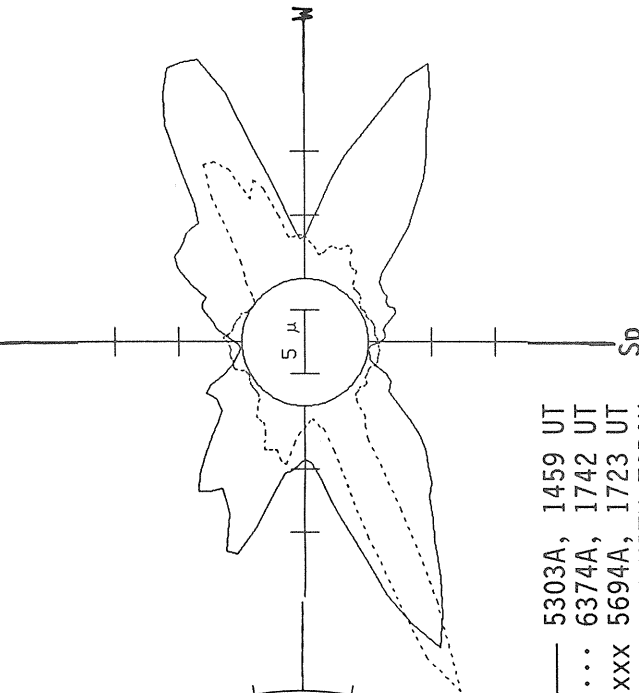
DeltaY=13.0
DeltaX= 9.6



17.14 -
18.11 UT

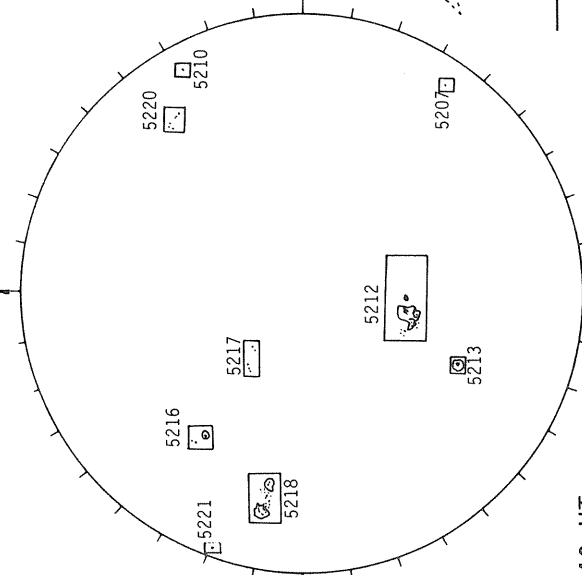
SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



Sp

RAMEY SUNSPOTS



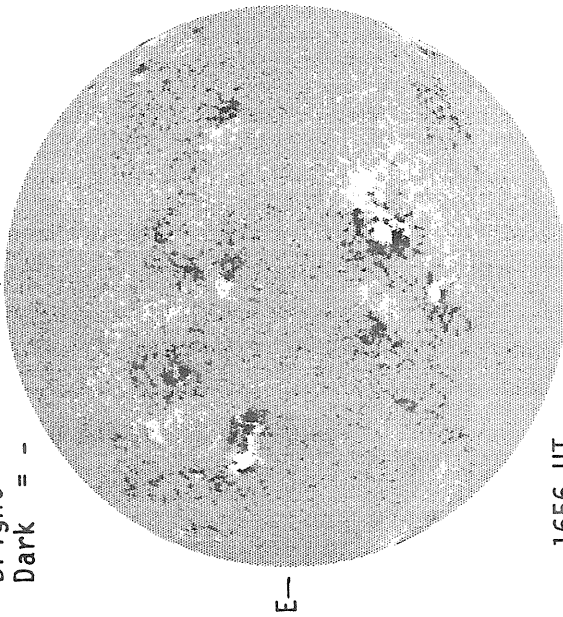
1340 UT

— 5303A, 1459 UT
 6374A, 1742 UT
 ' xxxx 5694A, 1723 UT
 NO 5694A ACTIVITY TODAY

NOVEMBER 04, 1988 (P= 23.93, B₀= 4.02, L₀= 151.93)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



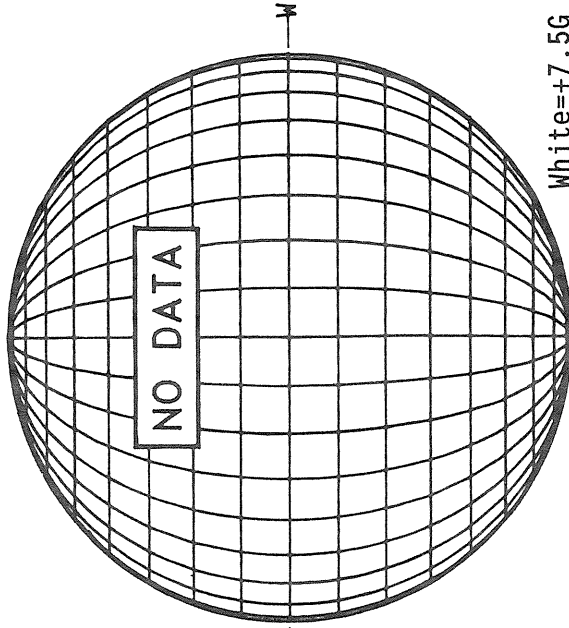
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

Np

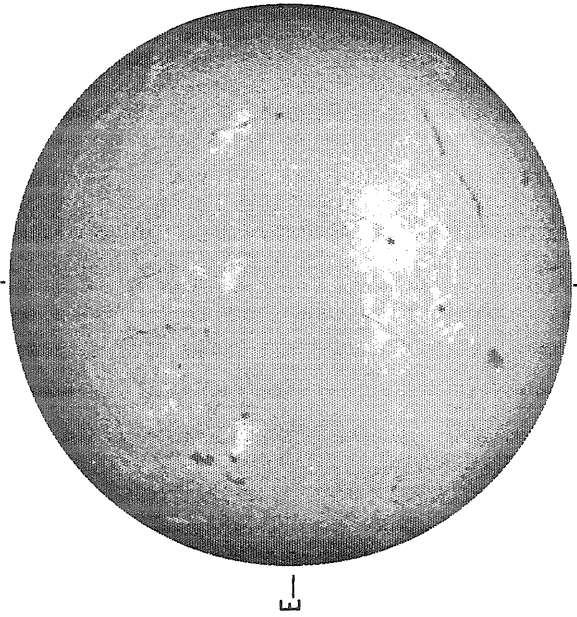


1656 UT

2210 UT

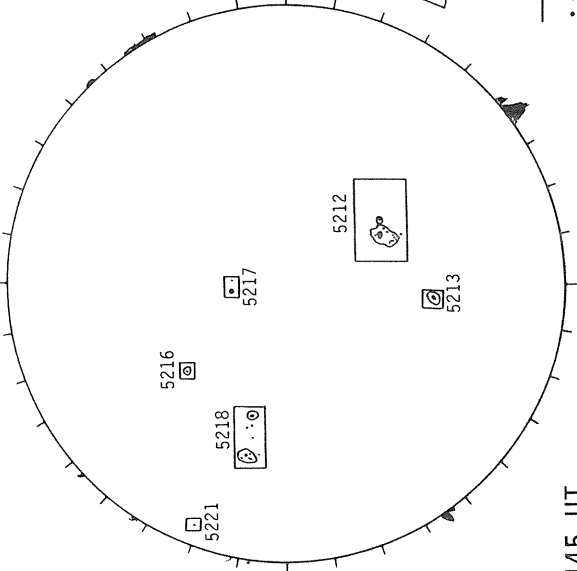
White=+7.5G
Black=-7.5G

SACRAMENTO PEAK H-ALPHA



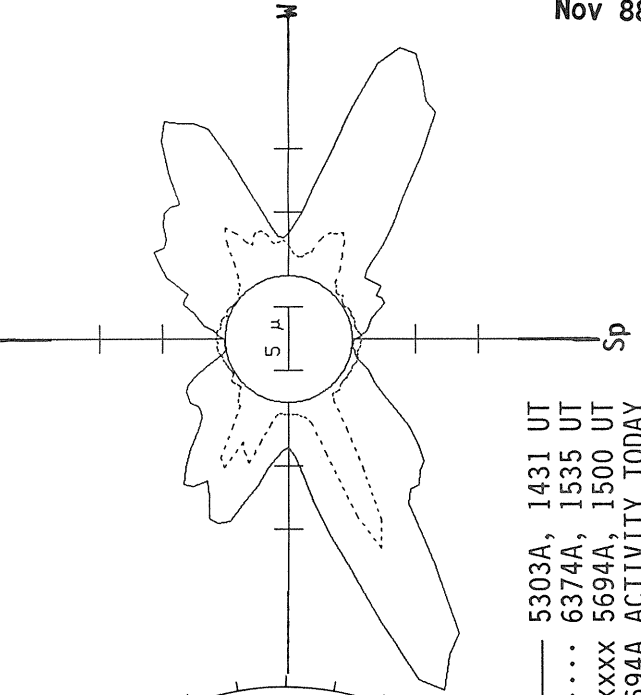
1622 UT

BOULDER SUNSPOTS



1445 UT
1500 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



— 5303A, 1431 UT
.... 6374A, 1535 UT
xxxx 5694A, 1500 UT
NO 5694A ACTIVITY TODAY

Sp

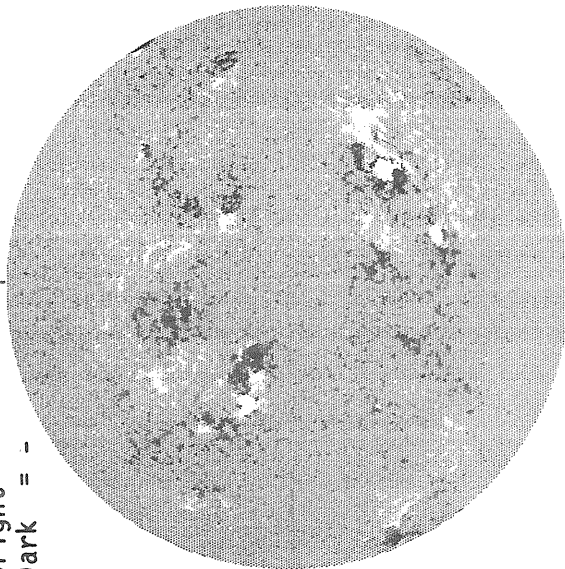
Sp

NOVEMBER 05, 1988 (P= 23.74, B₀= 3.92, L₀= 138.75)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

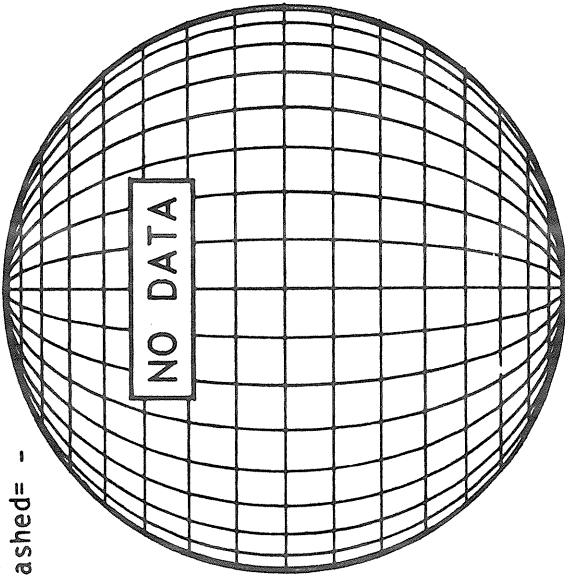


E-

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -

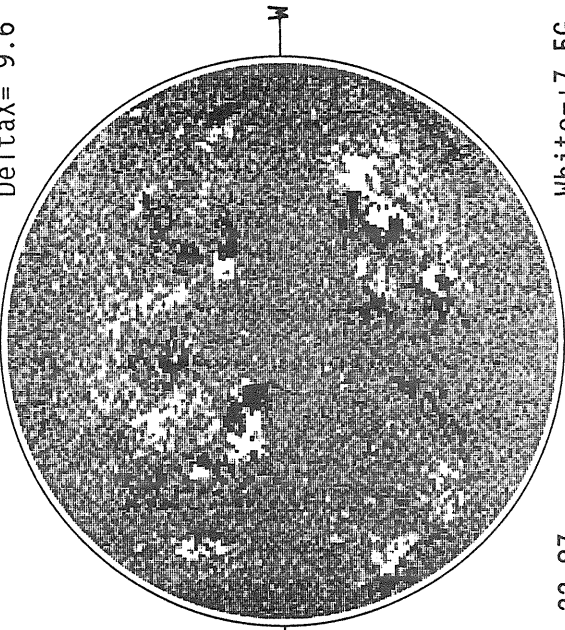


NO DATA

MT. WILSON MAGNETOGRAM

Np

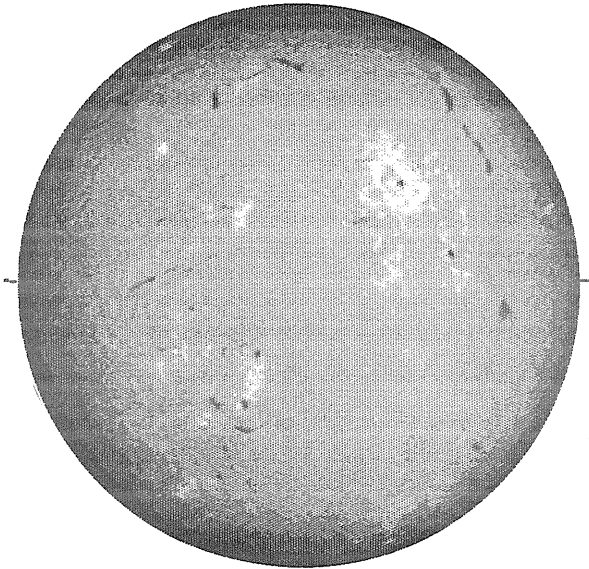
Delta Y = 13.0
Delta X = 9.6



M

1752 UT

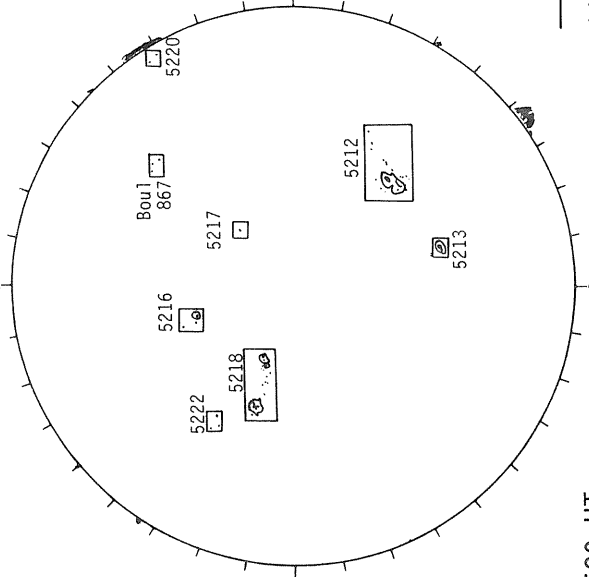
SACRAMENTO PEAK H-ALPHA



E-

1605 UT

BOULDER SUNSPOTS

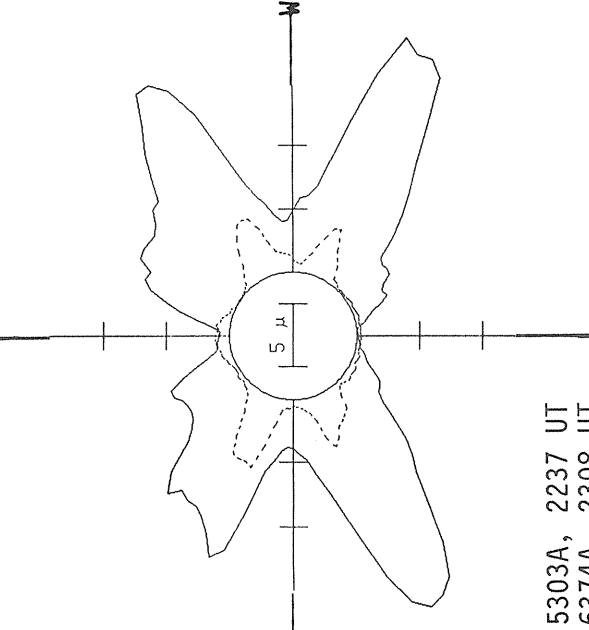


1520 UT
1538 UT BOUL Prom

22.87 -
23.84 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White = +7.5G
Black = -7.5G



Sp

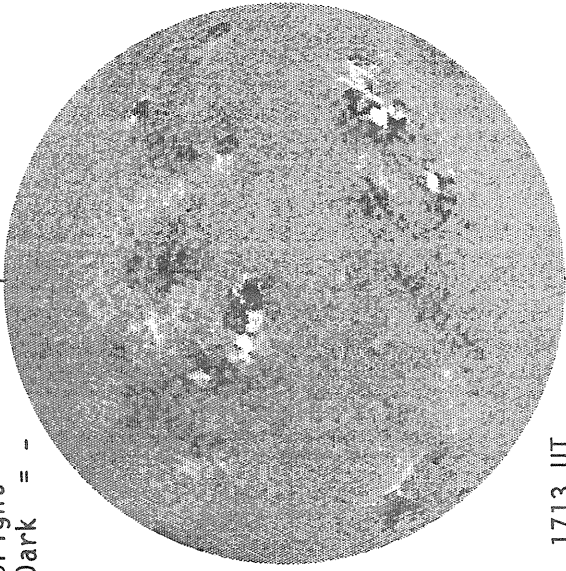
— 5303A, 2237 UT
... 6374A, 2308 UT
xxxx 5694A, 2256 UT
NO 5694A ACTIVITY TODAY

NOVEMBER 06, 1988 (P= 23.53, B₀= 3.81, L₀= 125.56)

KITT PEAK MAGNETOGRAM

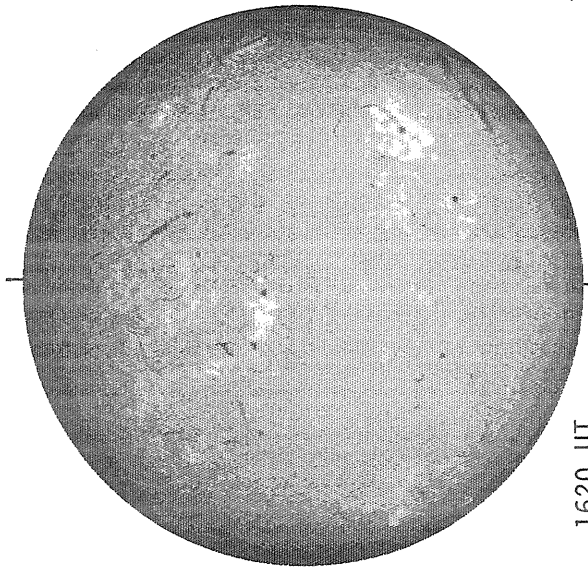
Np

Bright= +
Dark = -



1713 UT

SACRAMENTO PEAK H-ALPHA

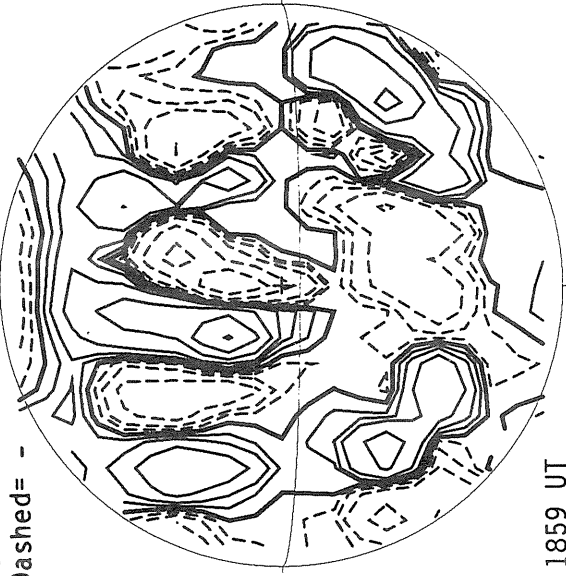


1620 UT

STANFORD MAGNETOGRAM

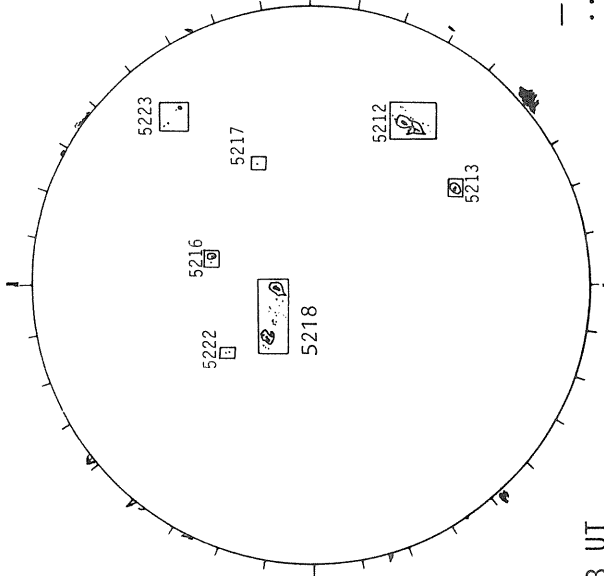
Np

Solid = +
Dashed = -



1859 UT

BOULDER SUNSPOTS



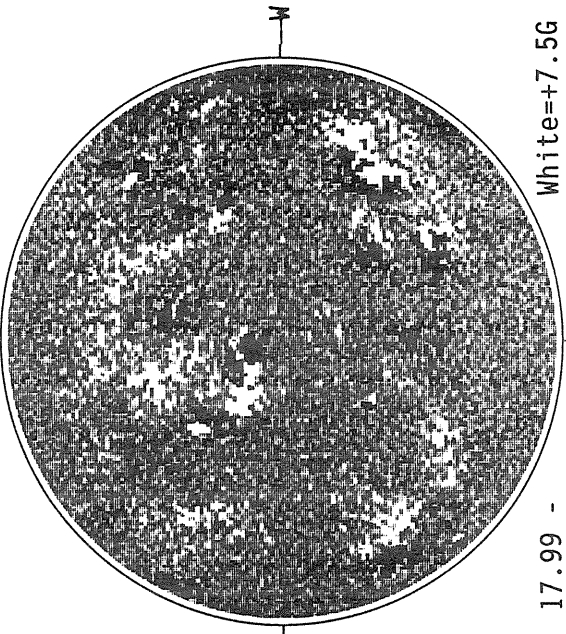
1848 UT

1843 UT BOUL Prom

MT. WILSON MAGNETOGRAM

Np

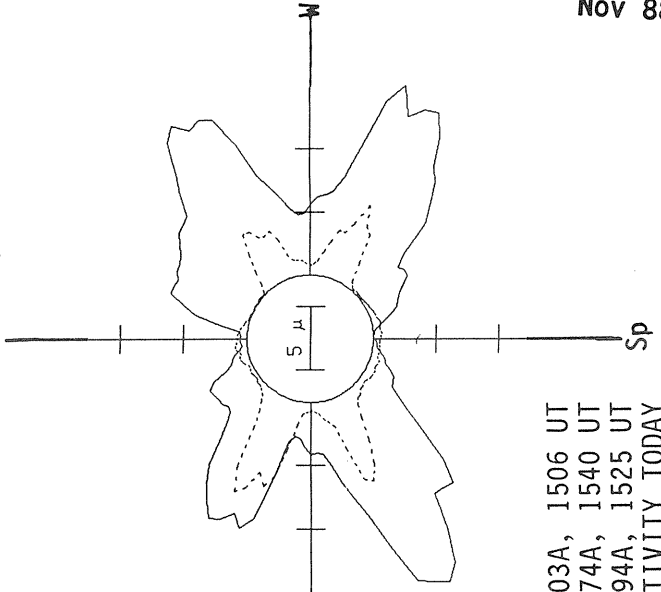
DeltaY=13.0
DeltaX= 9.6



17.99 -
18.96 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



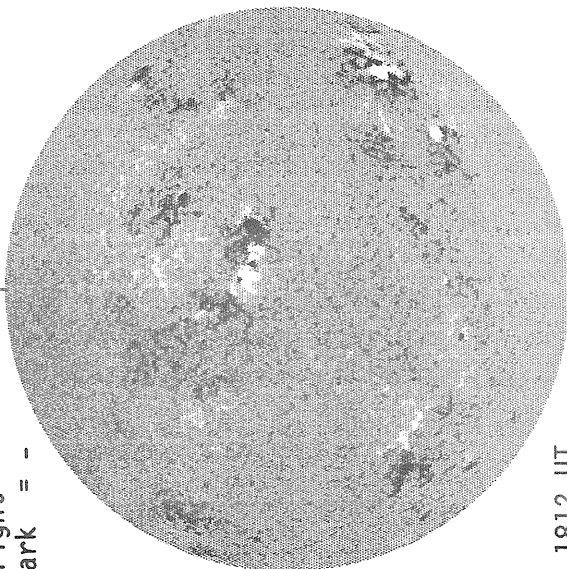
--- 5303A, 1506 UT
.... 6374A, 1540 UT
xxxx 5694A, 1525 UT
NO 5694A ACTIVITY TODAY

NOVEMBER 07, 1988 (P= 23.32, B₀= 3.70, L₀= 112.38)

KITT PEAK MAGNETOGRAM

Np

Bright = +
Dark = -

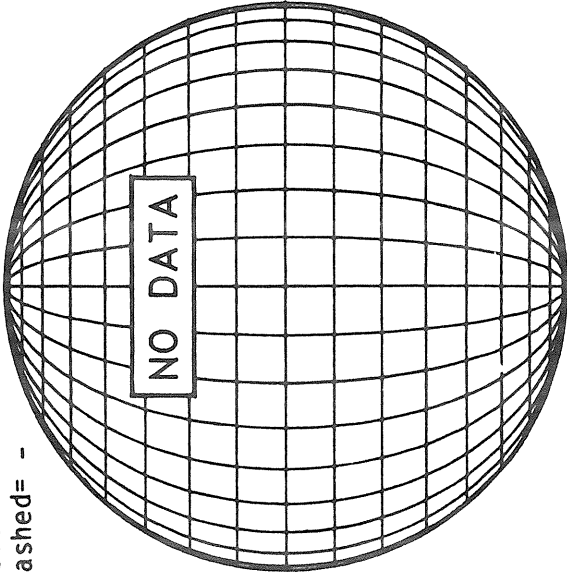


1812 UT

STANFORD MAGNETOGRAM

Np

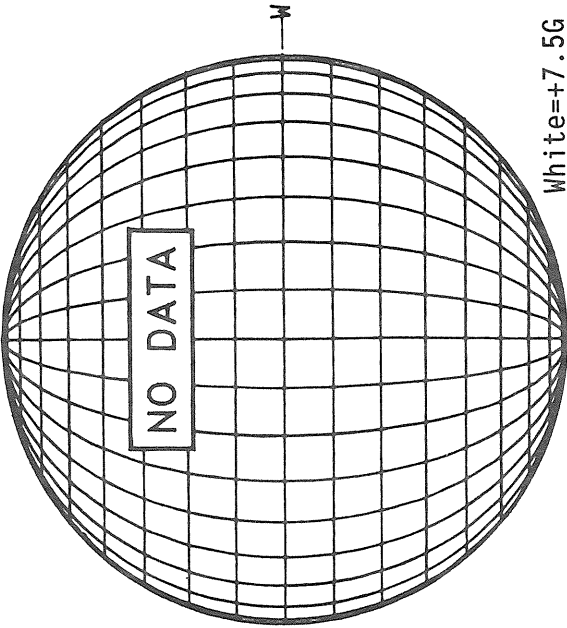
Solid = +
Dashed = -



NO DATA

MT. WILSON MAGNETOGRAM

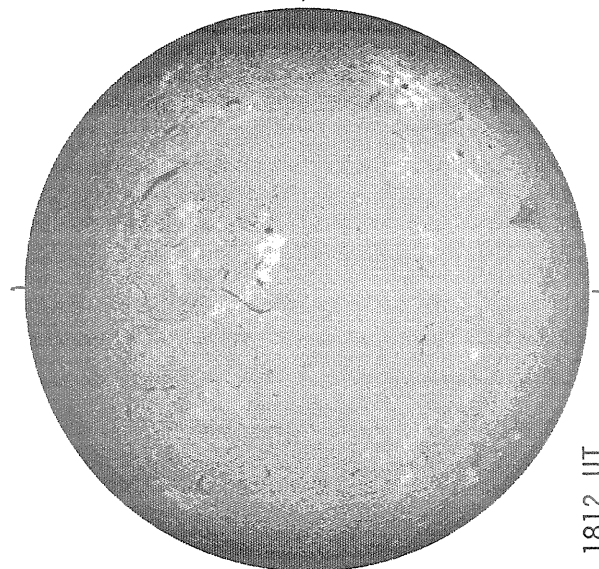
Np



NO DATA

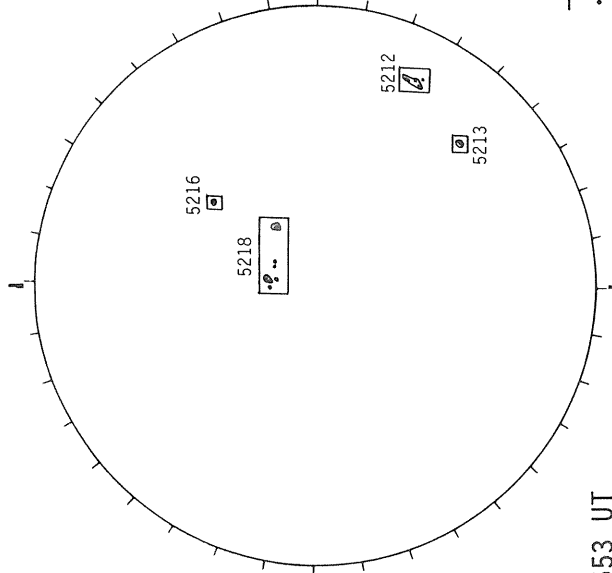
White = +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



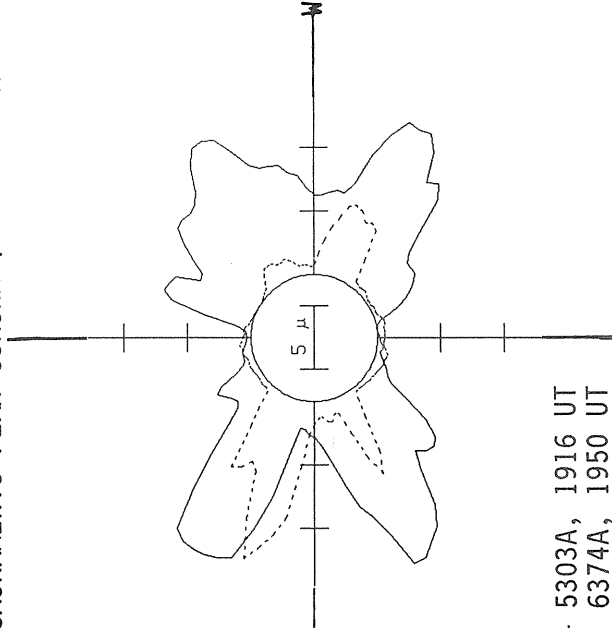
1812 UT

BOULDER SUNSPOTS



1653 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



— 5303A, 1916 UT
 6374A, 1950 UT
 XXXX 5694A, 1935 UT
 NO 5694A ACTIVITY TODAY

Sp

Sp

Sp

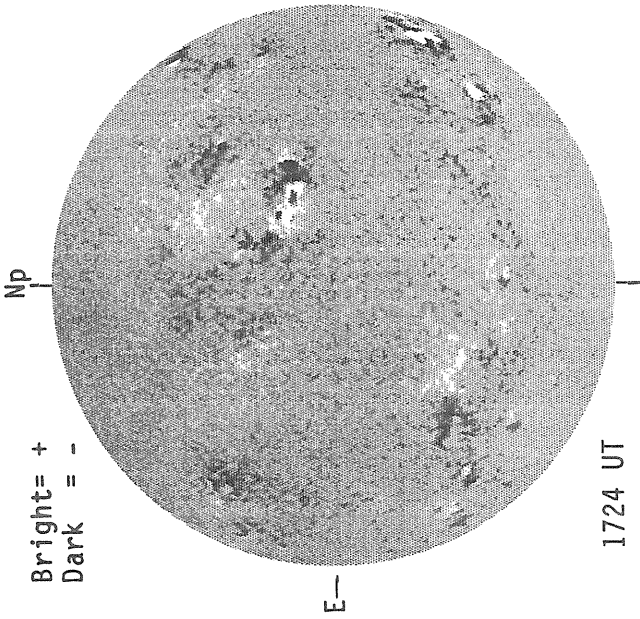
E

E

NOVEMBER 08, 1988 (P= 23.10, B₀= 3.59, L₀= 99.19)

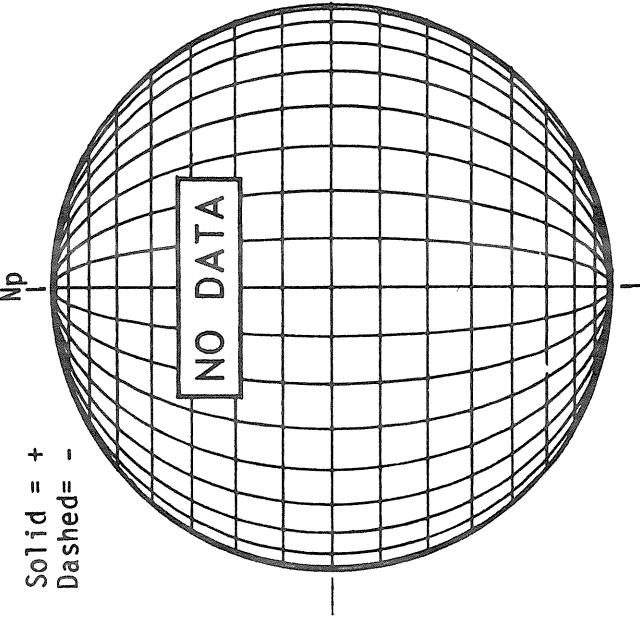
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

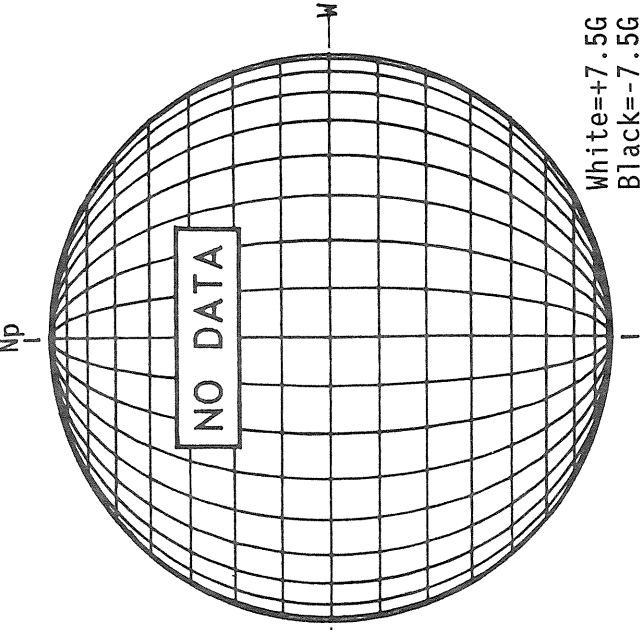


STANFORD MAGNETOGRAM

Solid = +
Dashed = -

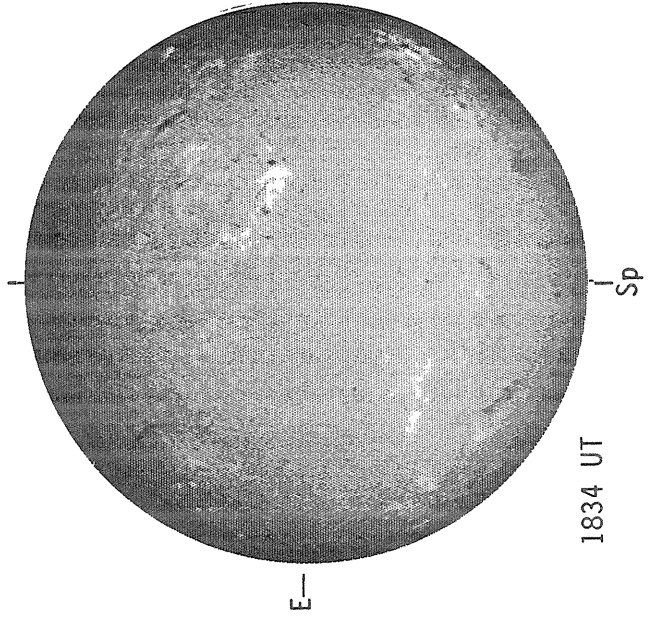


MT. WILSON MAGNETOGRAM

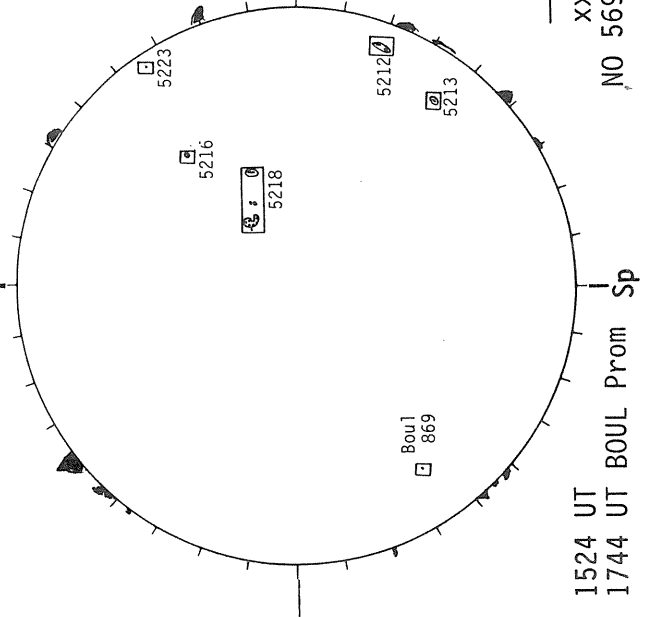


White=+7.5G
Black=-7.5G

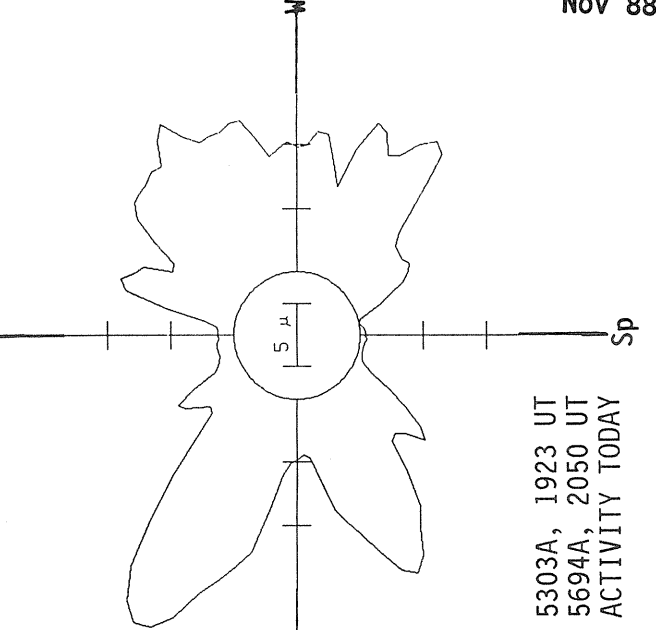
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

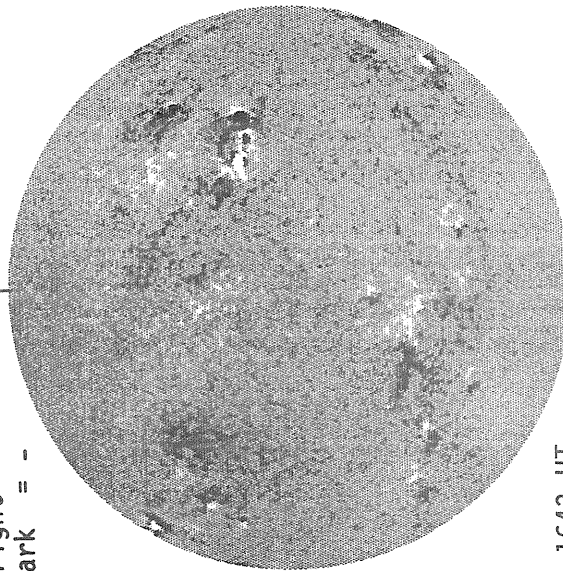


NOVEMBER 09, 1988 (P= 22.88, B₀= 3.48, L₀= 86.01)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

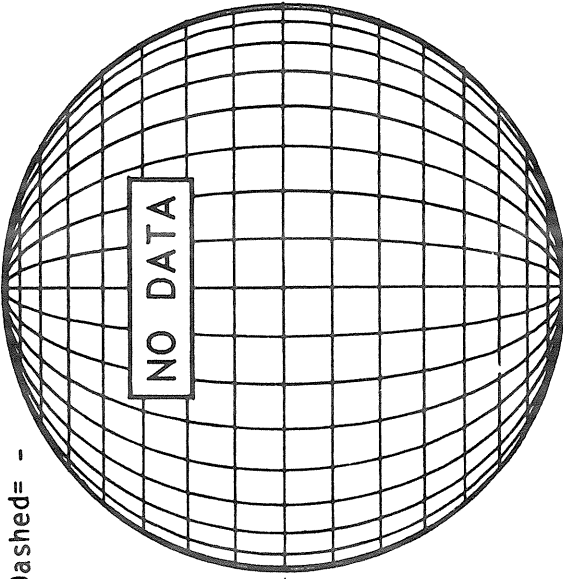


E

STANFORD MAGNETOGRAM

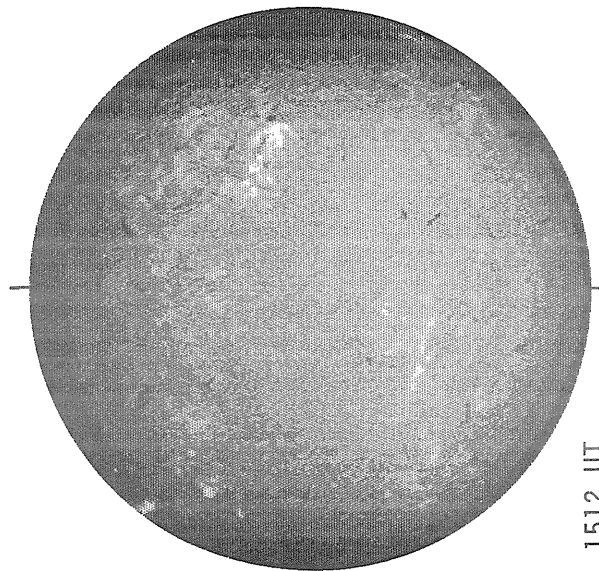
Np

Solid = +
Dashed = -



1643 UT

SACRAMENTO PEAK H-ALPHA



E

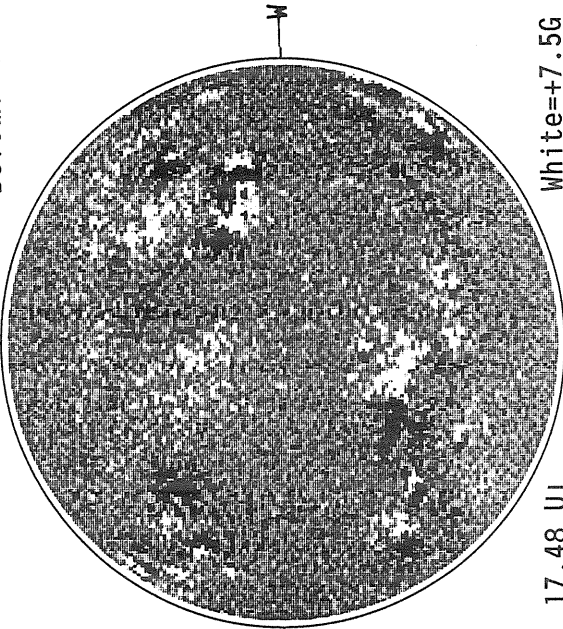
1512 UT

Np

MT. WILSON MAGNETOGRAM

Np

Delta Y = 13.0
Delta X = 9.6

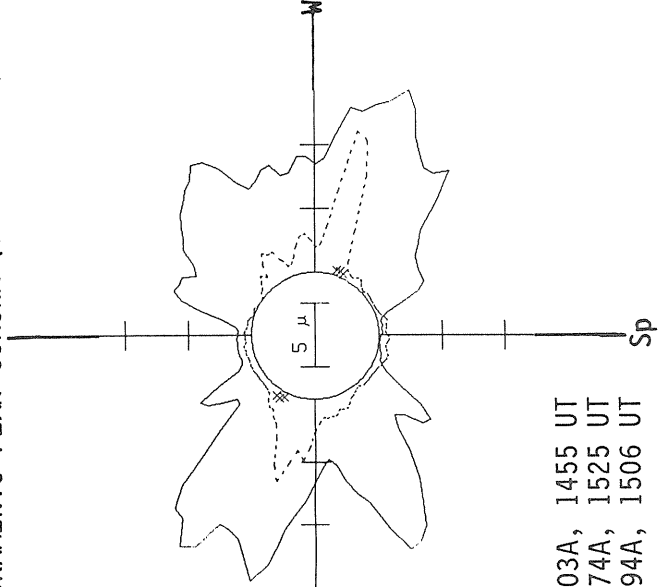


17.48 UT

18.45 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

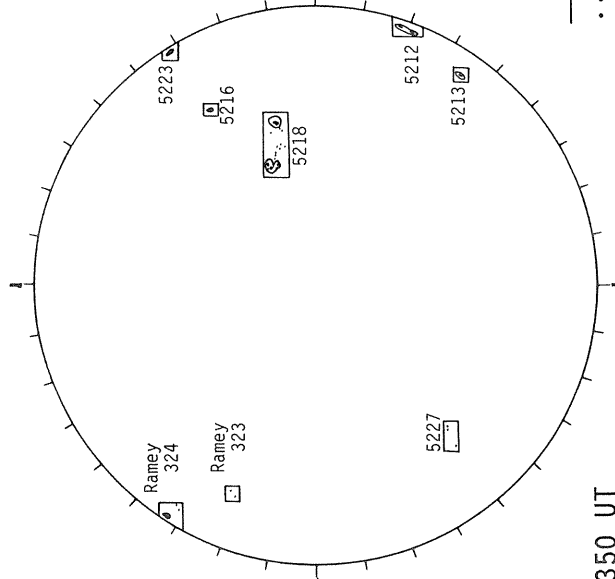
White = +7.5G
Black = -7.5G



1350 UT

Np

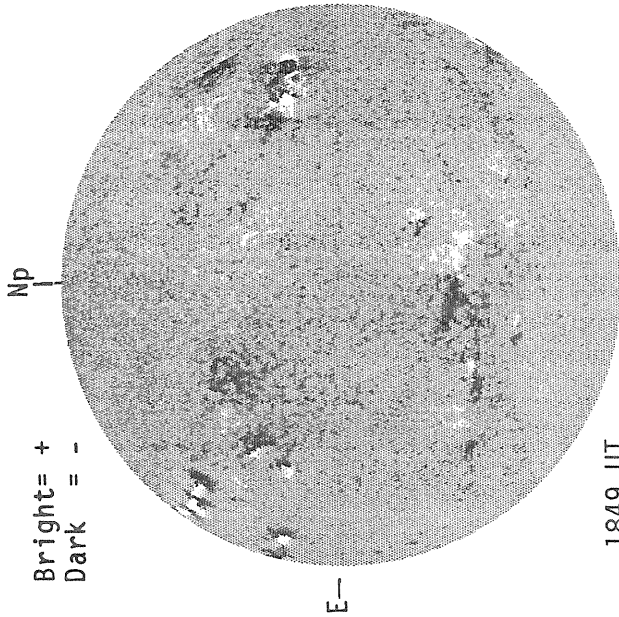
RAMEY SUNSPOTS



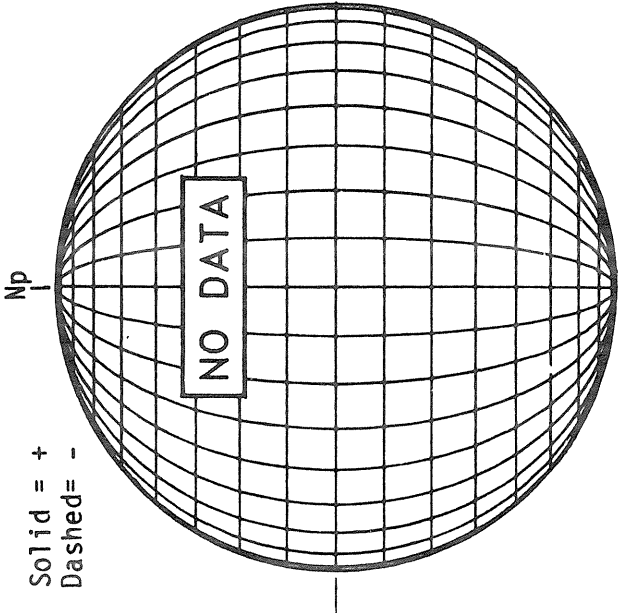
— 5303A, 1455 UT
... 6374A, 1525 UT
XXXX 5694A, 1506 UT

NOVEMBER 10, 1988 (P= 22.64, B₀= 3.37, L₀= 72.82)

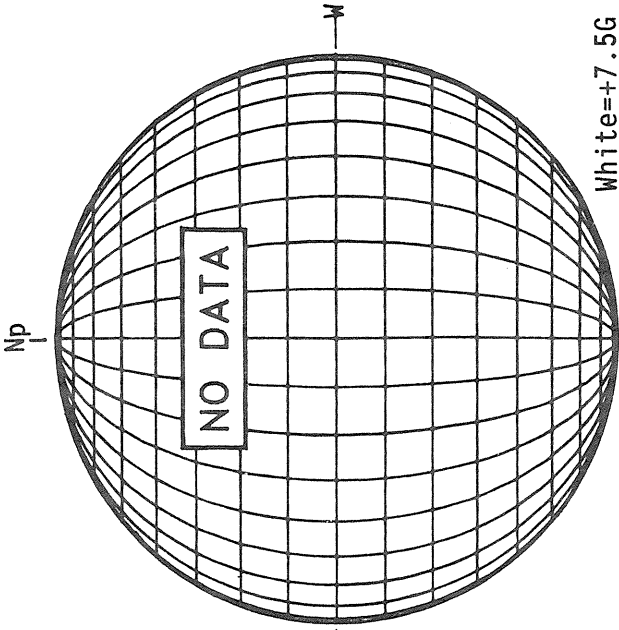
KITT PEAK MAGNETOGRAM



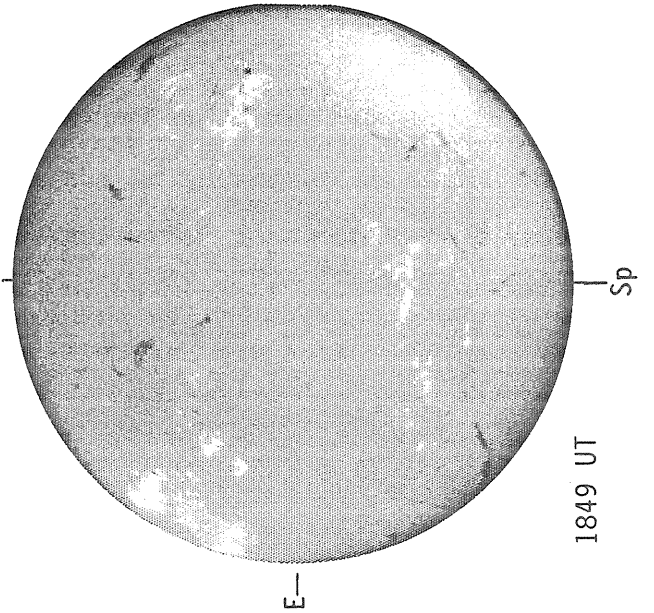
STANFORD MAGNETOGRAM



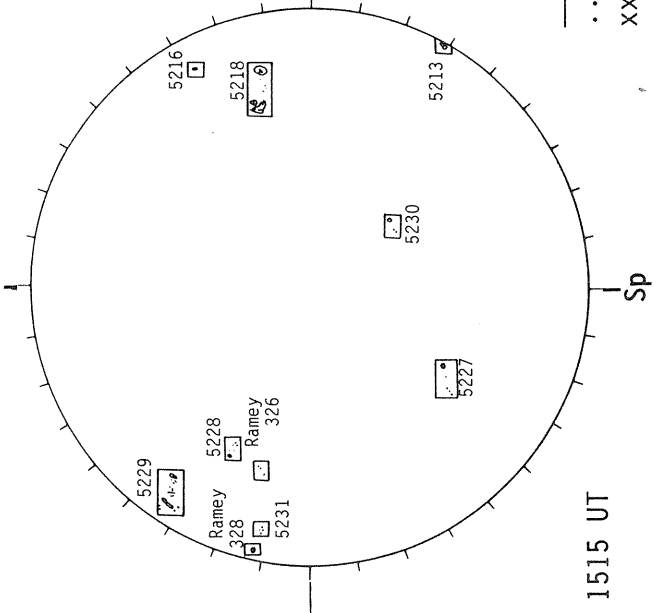
MT. WILSON MAGNETOGRAM



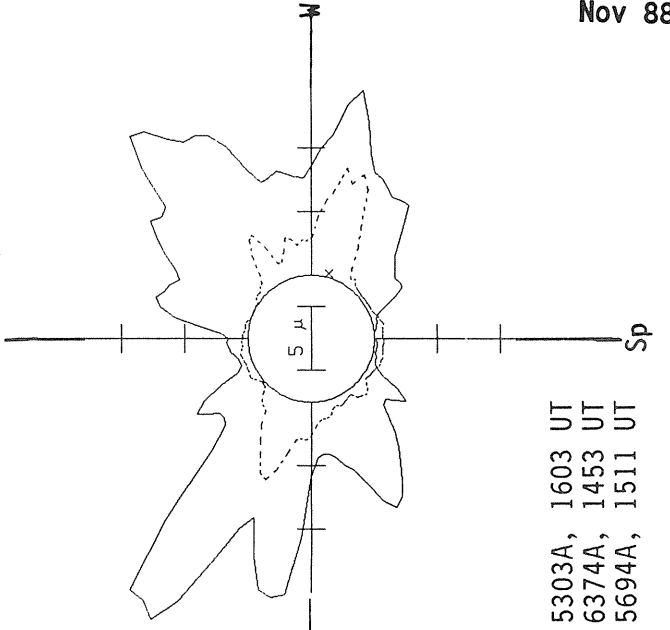
HOLLOMAN H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

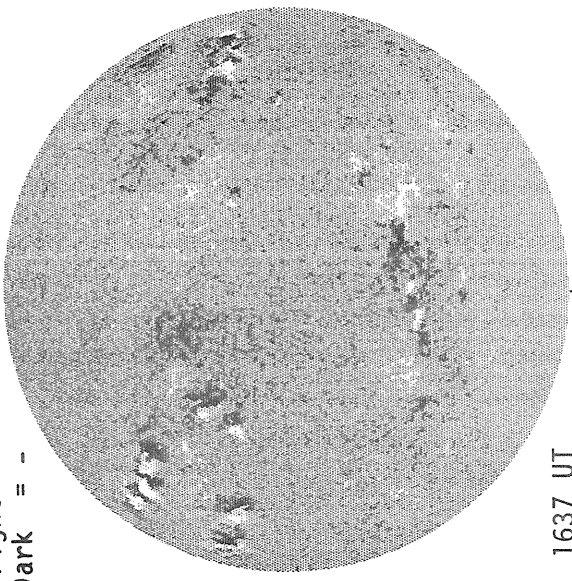


— 5303A, 1603 UT
 6374A, 1453 UT
 XXXX 5694A, 1511 UT

NOVEMBER 11, 1988 (P= 22.40, B₀= 3.26, L₀= 59.64)

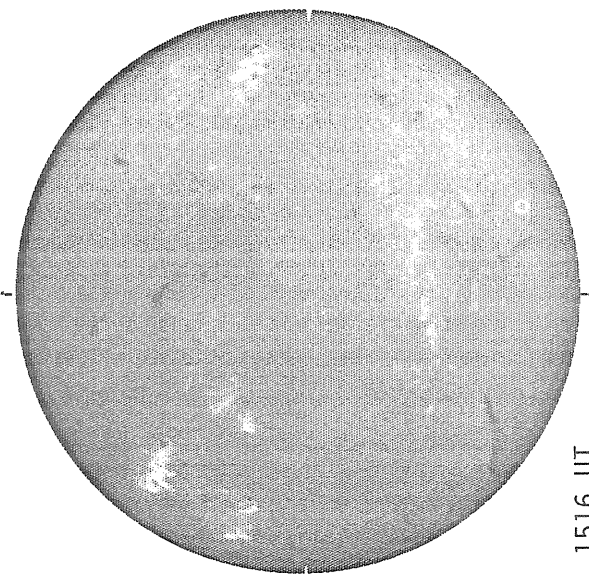
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



1637 UT

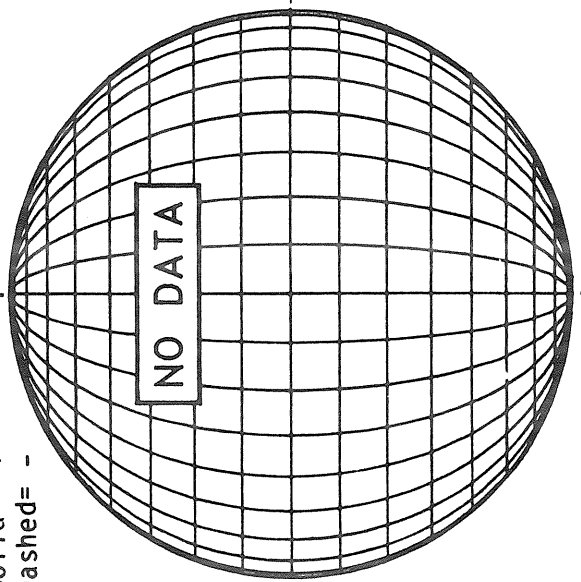
HOLLOMAN H-ALPHA



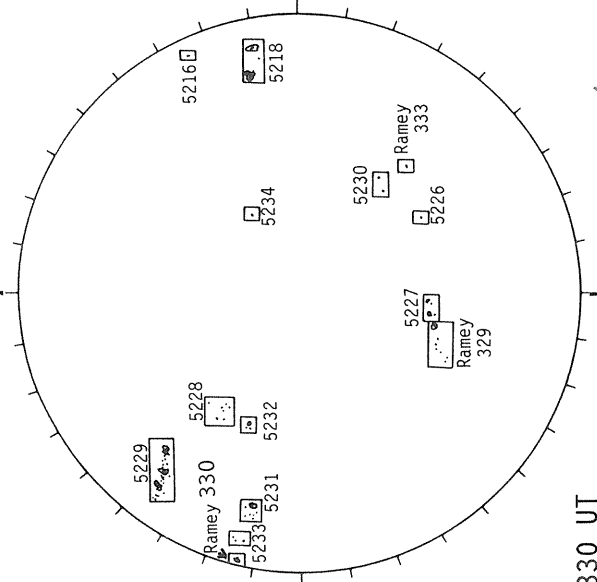
1516 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -



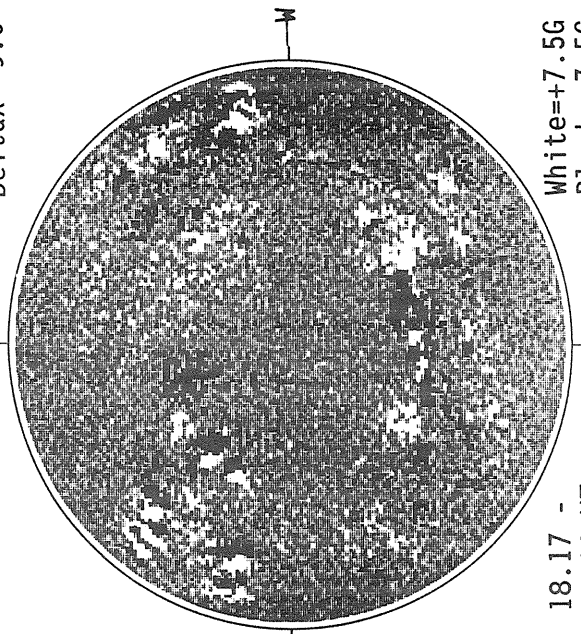
RAMEY SUNSPOTS



1330 UT

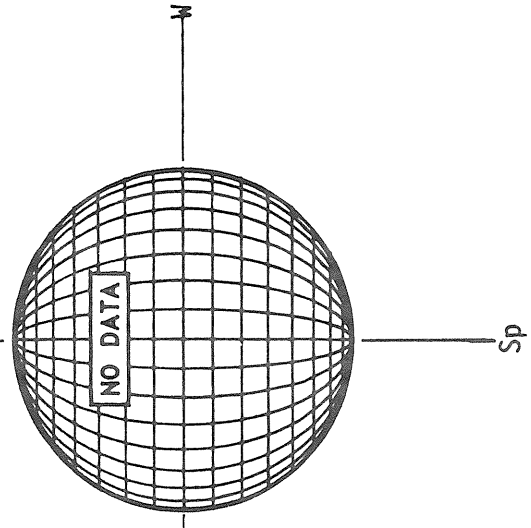
MT. WILSON MAGNETOGRAM

DeltaY=13.0
DeltaX= 9.6



18.17 -
19.14 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



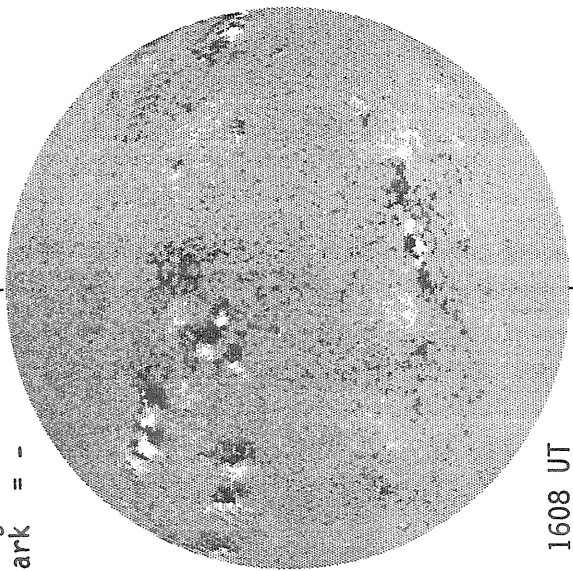
Sp

NOVEMBER 12, 1988 (P= 22.15, B₀= 3.14, L₀= 46.46)

KITT PEAK MAGNETOGRAM

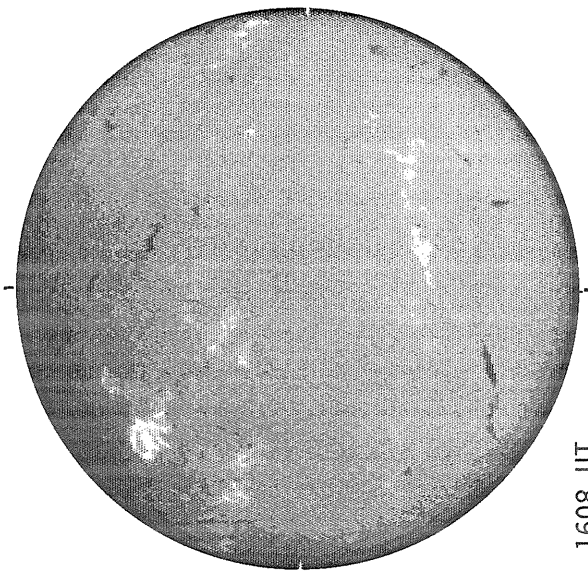
Np

Bright = +
Dark = -



1608 UT

HOLLOMAN H-ALPHA

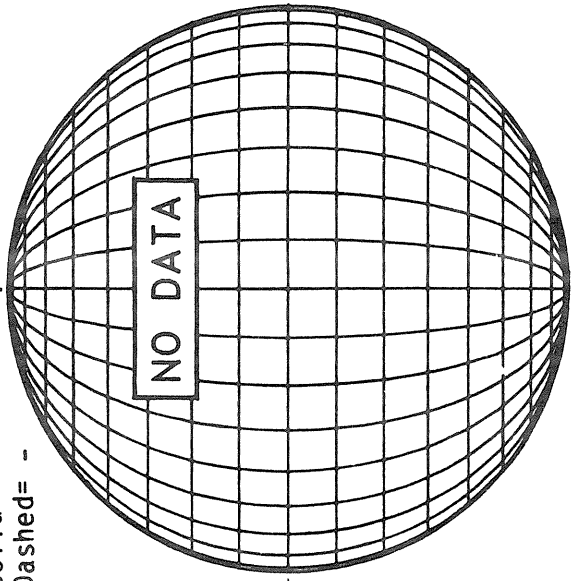


1608 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -

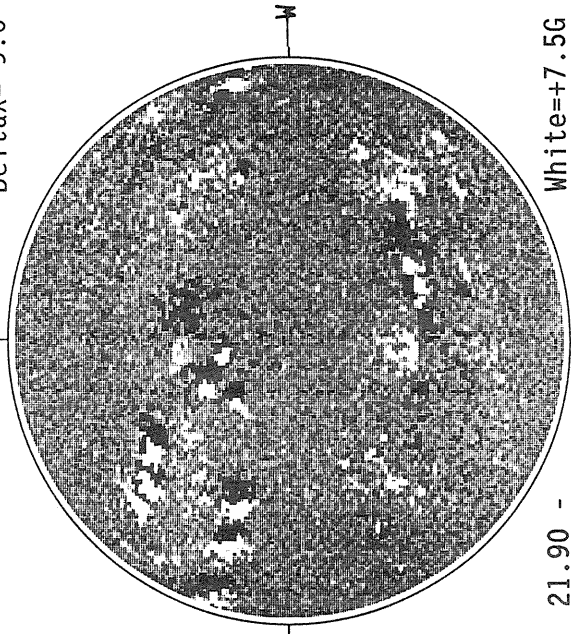


NO DATA

MT. WILSON MAGNETOGRAM

Np

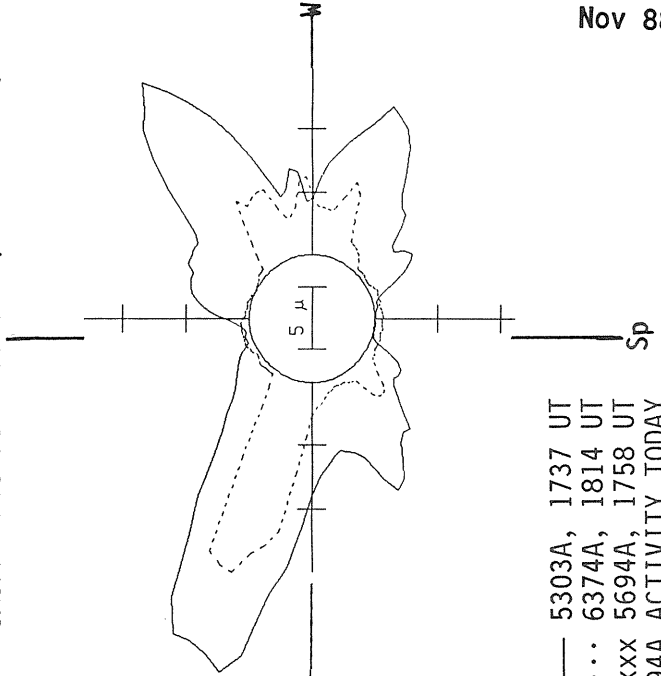
DeltaY=13.0
DeltaX= 9.6



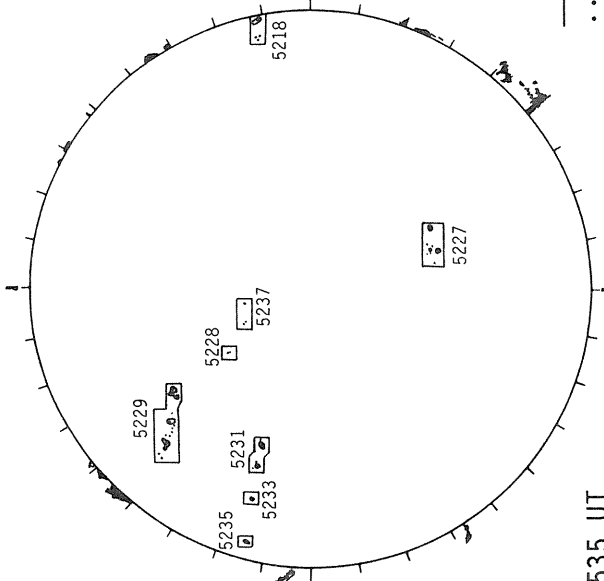
21.90 -
22.87 UT

White=+7.5G
Black=-7.5G

SACRAMENTO PEAK CORONA (1.15 Radii)



BOULDER SUNSPOTS



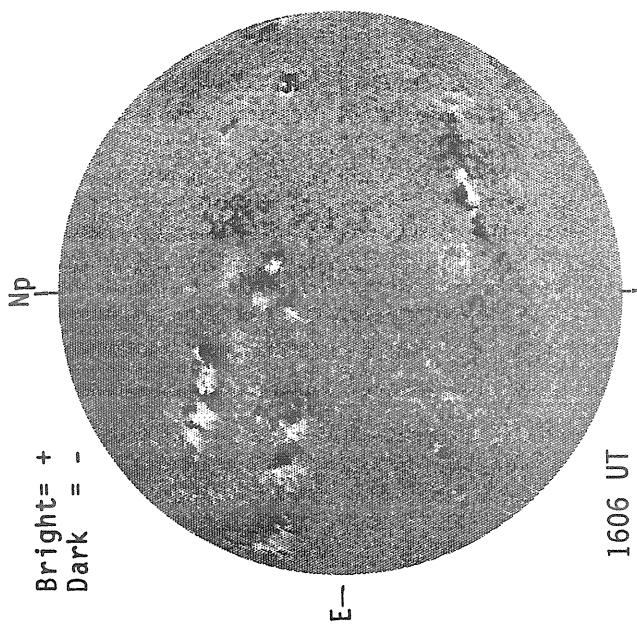
1535 UT
1540 UT BOUL Prom Sp

— 5303A, 1737 UT
... 6374A, 1814 UT
xxxx 5694A, 1758 UT
* NO 5694A ACTIVITY TODAY

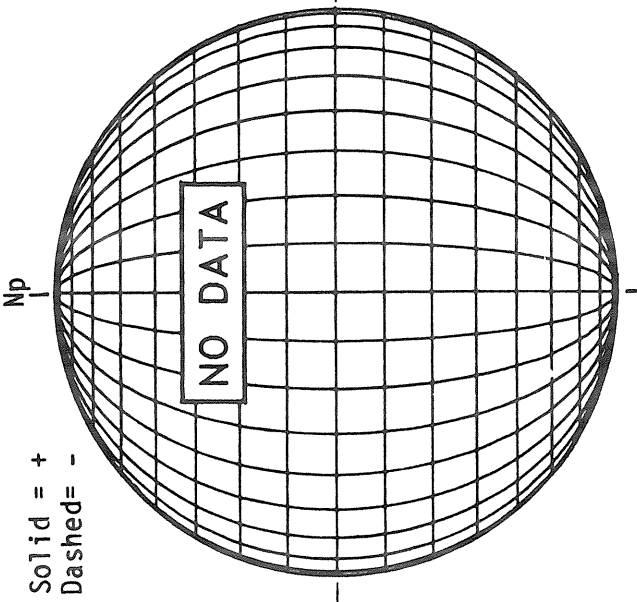
1608 UT

NOVEMBER 13, 1988 (P= 21.89, B₀= 3.03, L₀= 33.28)

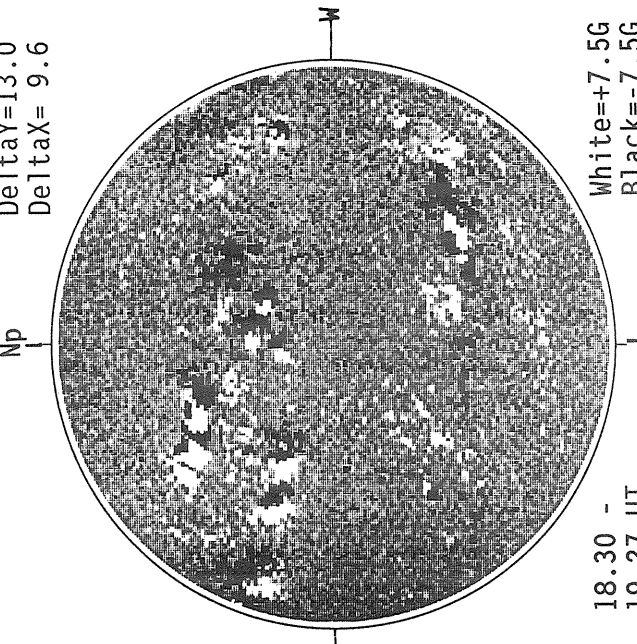
KITT PEAK MAGNETOGRAM



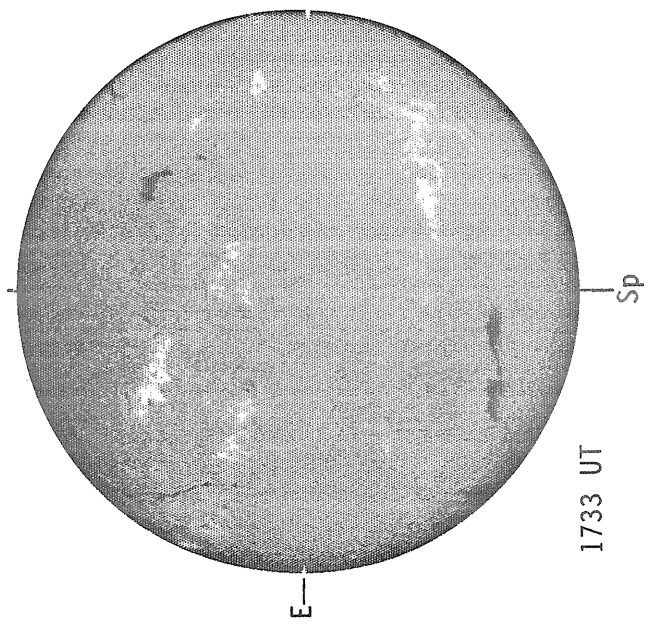
STANFORD MAGNETOGRAM



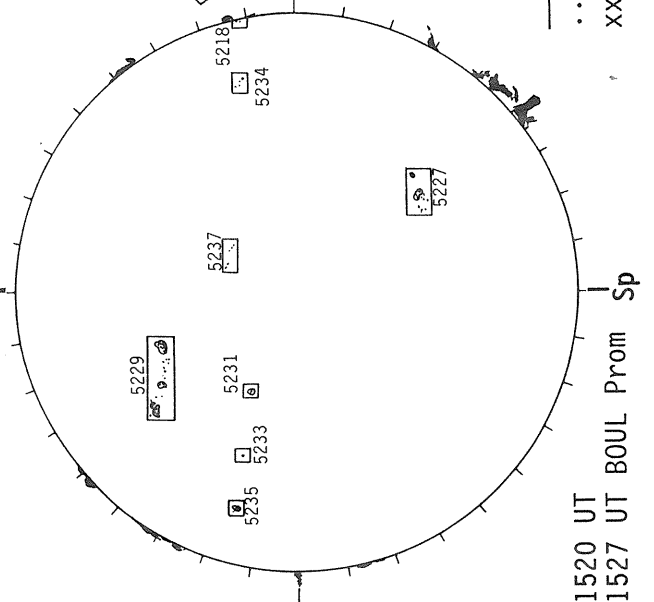
MT. WILSON MAGNETOGRAM



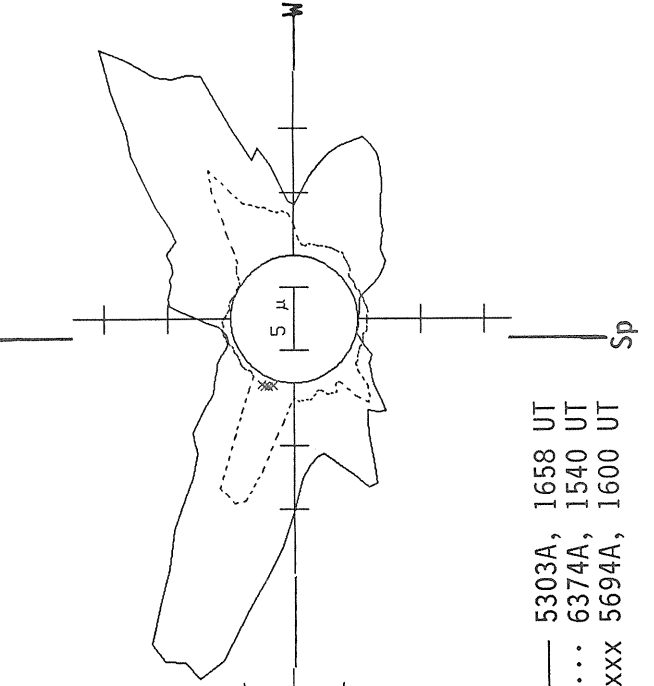
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



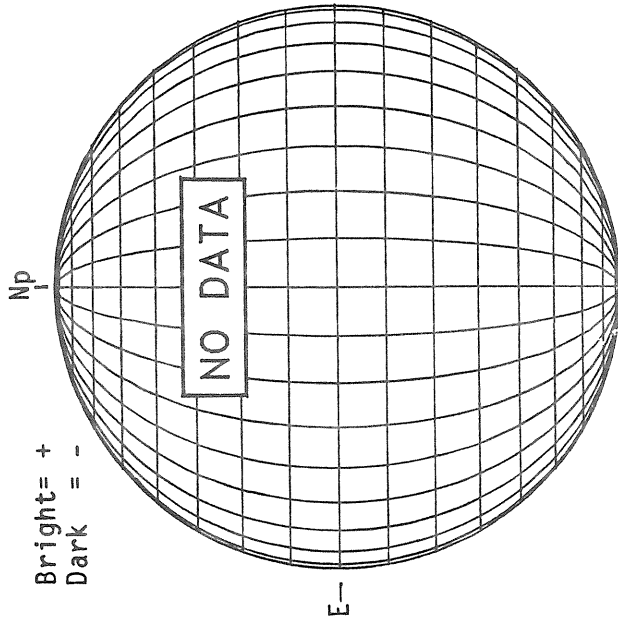
SACRAMENTO PEAK CORONA (1.15 Radii)



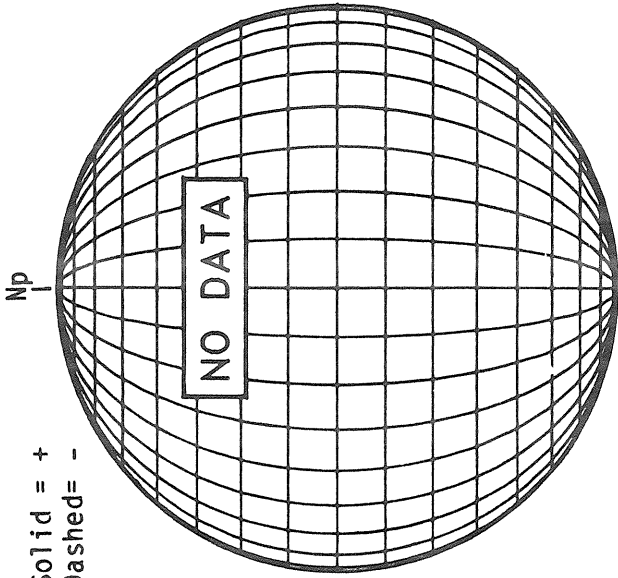
— 5303A, 1658 UT
... 6374A, 1540 UT
xxxx 5694A, 1600 UT

NOVEMBER 14, 1988 (P= 21.62, B₀= 2.91, L₀= 20.09)

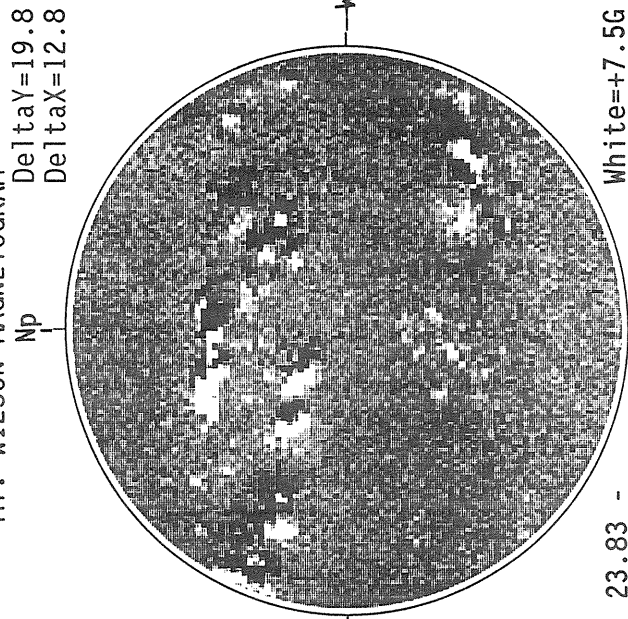
KITT PEAK MAGNETOGRAM



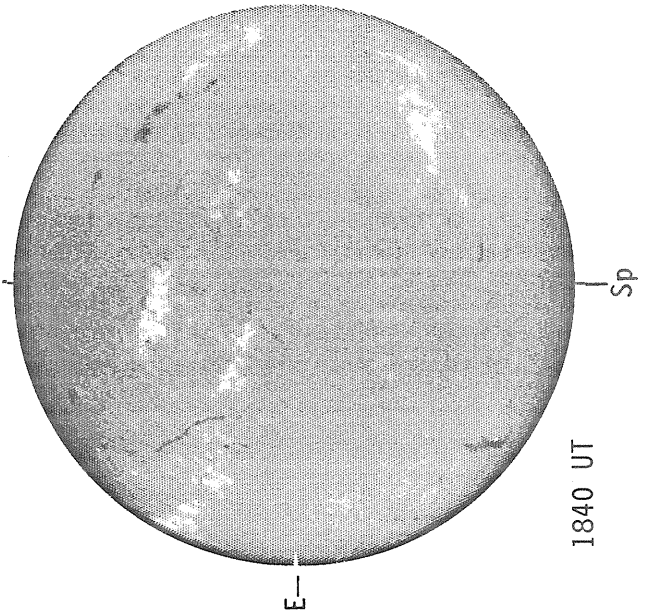
STANFORD MAGNETOGRAM



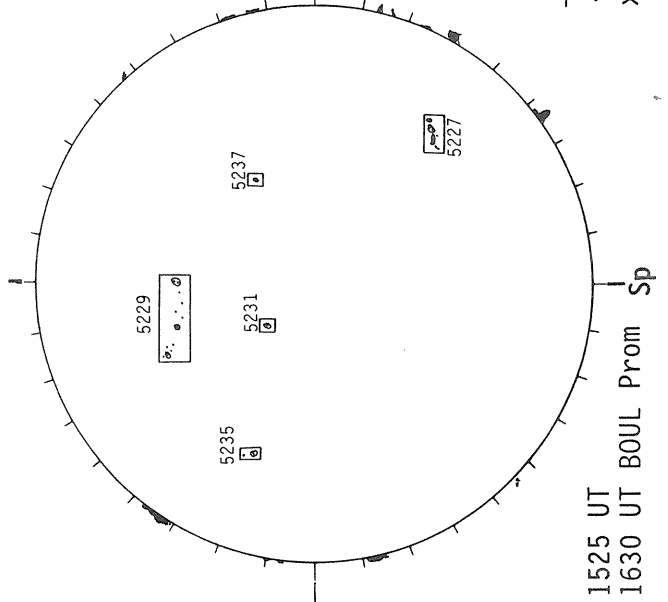
MT. WILSON MAGNETOGRAM



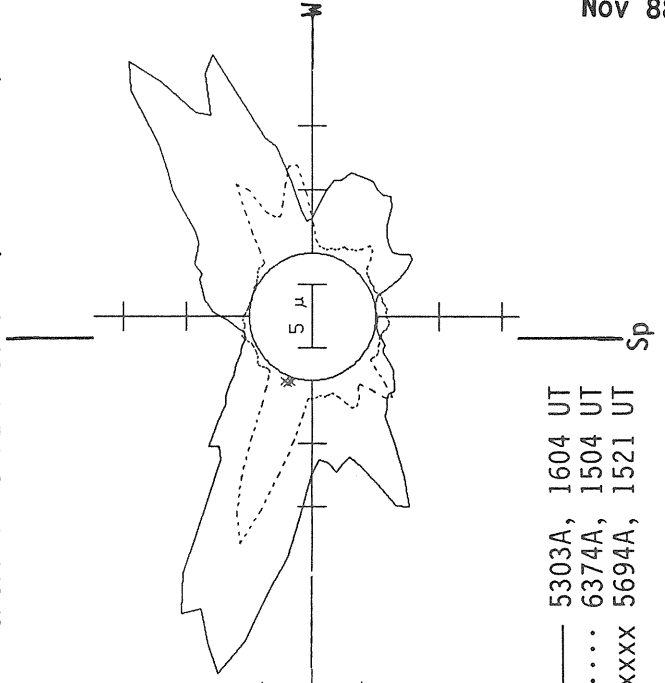
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



1525 UT
1630 UT

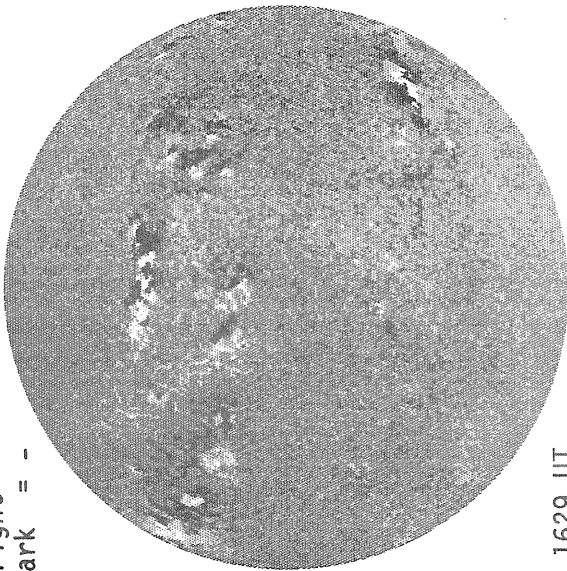
1840 UT

NOVEMBER 15, 1988 (P= 21.35, B₀= 2.80, L₀= 6.91)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



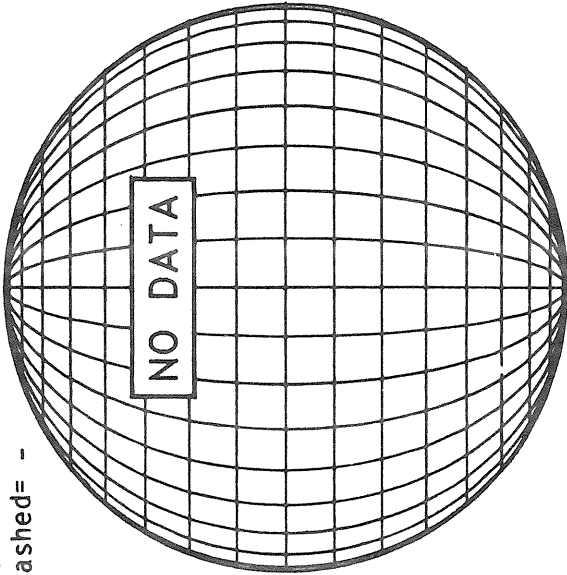
E

1629 UT

STANFORD MAGNETOGRAM

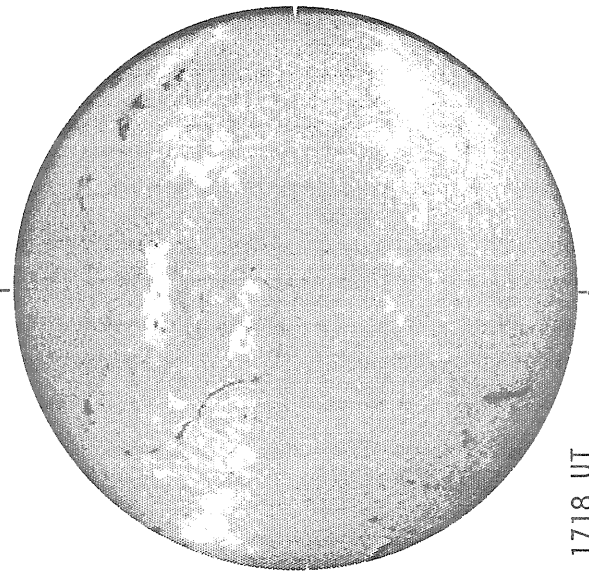
Np

Solid = +
Dashed = -



NO DATA

HOLLOMAN H-ALPHA

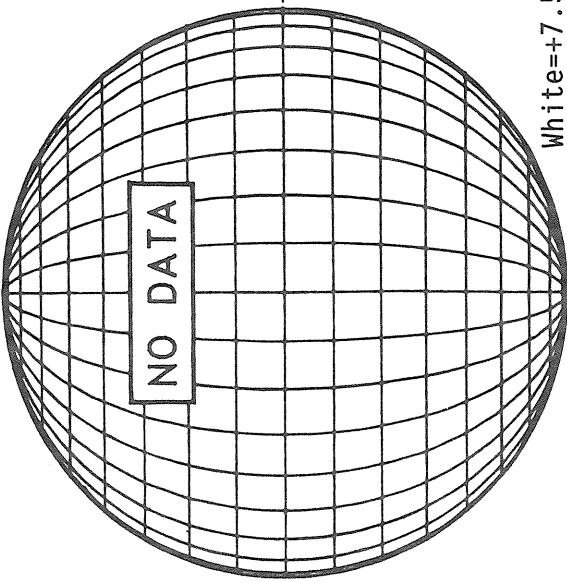


E

1718 UT

MT. WILSON MAGNETOGRAM

Np

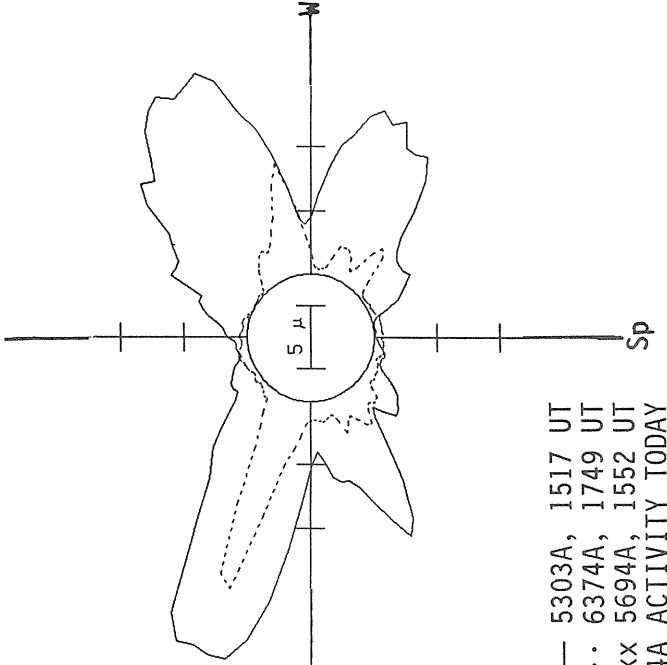


NO DATA

W

White=+7.5G
Black=-7.5G

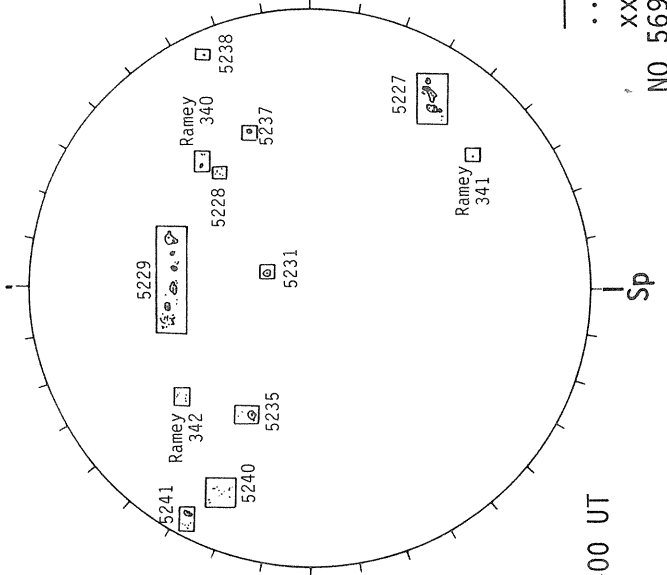
SACRAMENTO PEAK CORONA (1.15 Radii)



W

Sp

RAMEY SUNSPOTS



Sp

1400 UT

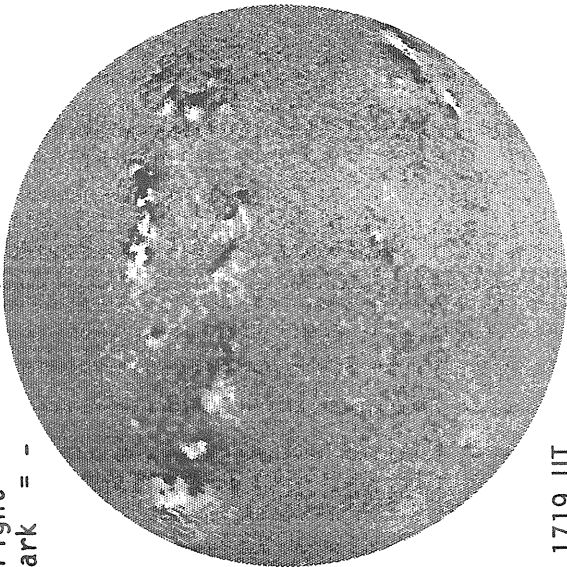
— 5303A, 1517 UT
 ... 6374A, 1749 UT
 XXXX 5694A, 1552 UT
 NO 5694A ACTIVITY TODAY

NOVEMBER 16, 1988 (P= 21.07, B₀= 2.68, L₀= 353.73)

KITT PEAK MAGNETOGRAM

Np

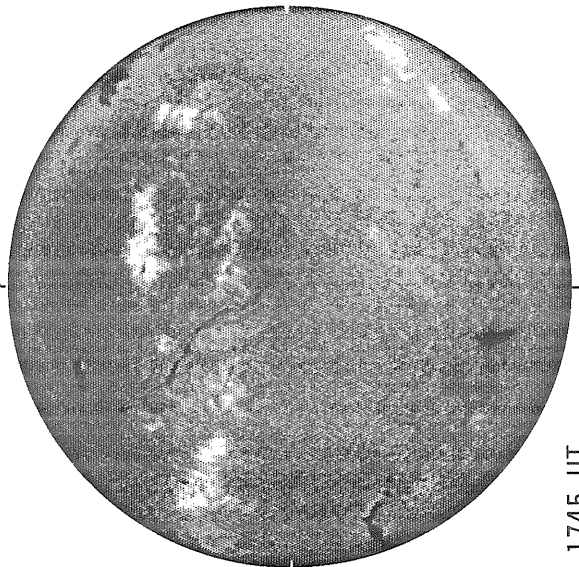
Bright= +
Dark = -



E

1719 UT

HOLLOWAN H-ALPHA



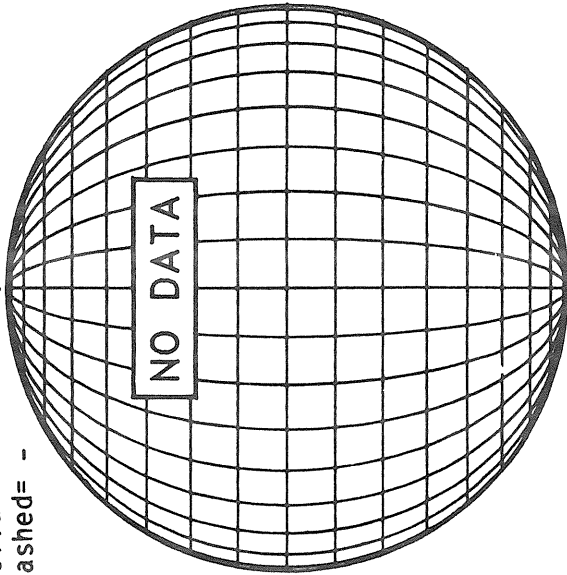
E

1745 UT

STANFORD MAGNETOGRAM

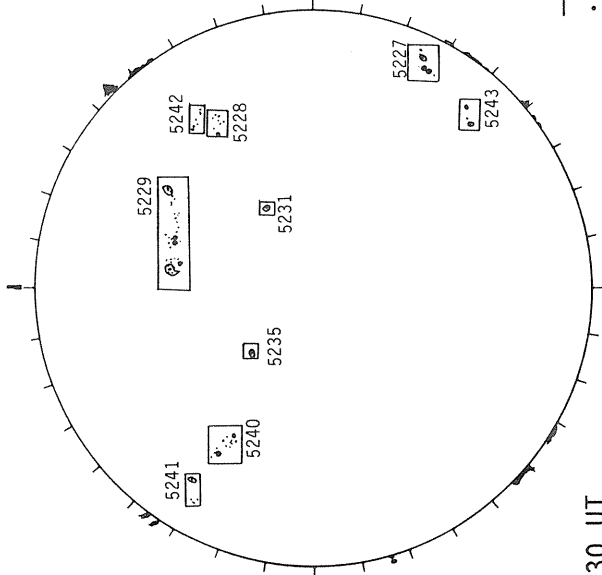
Np

Solid = +
Dashed = -



NO DATA

BOULDER SUNSPOTS



1530 UT

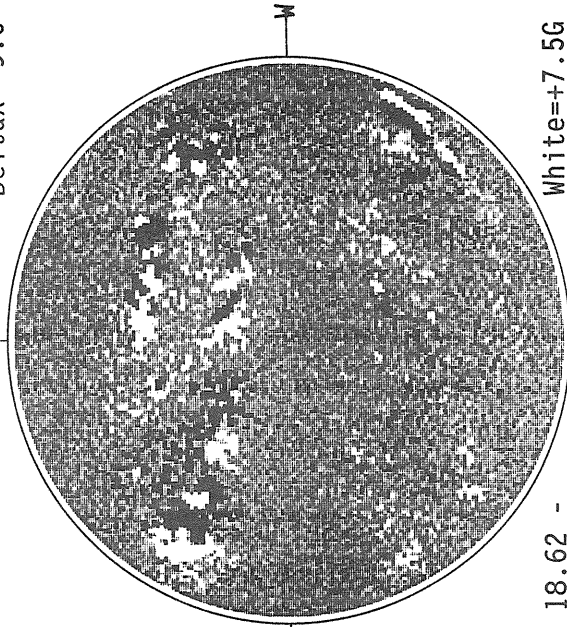
1550 UT BOUL Prom

Sp

MT. WILSON MAGNETOGRAM

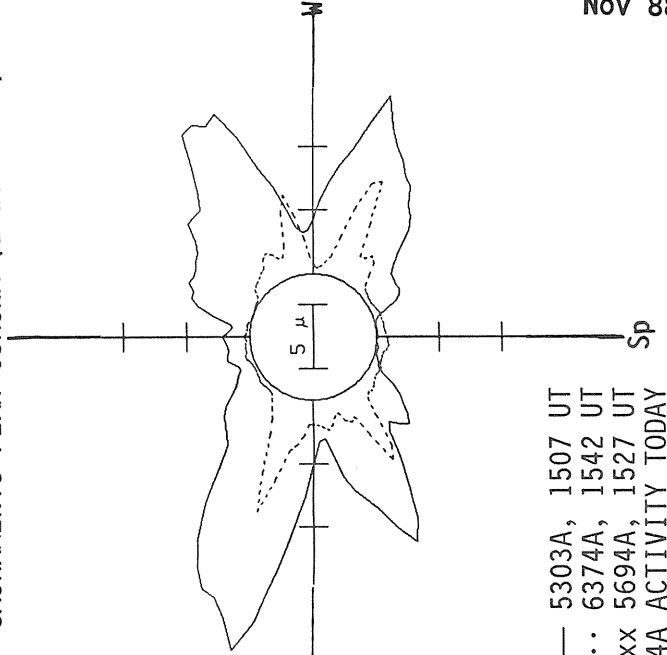
Np

DeltaY=13.1
DeltaX= 9.6



18.62 -
19.59 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



— 5303A, 1507 UT
... 6374A, 1542 UT
XXXX 5694A, 1527 UT
' NO 5694A ACTIVITY TODAY

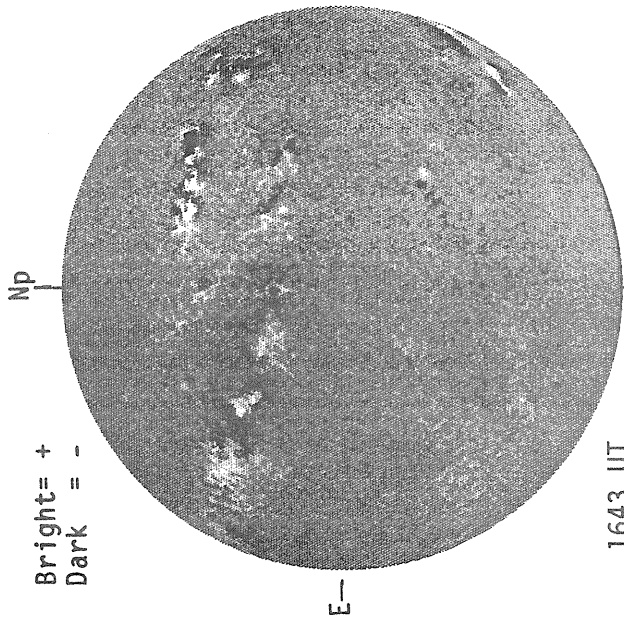
1530 UT

1550 UT BOUL Prom

Sp

NOVEMBER 17, 1988 (P= 20.78, B₀= 2.56, L₀= 340.55)

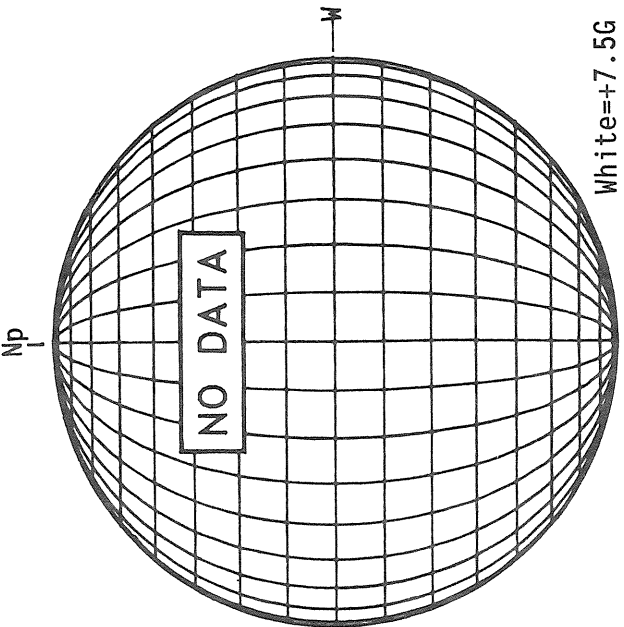
KITT PEAK MAGNETOGRAM



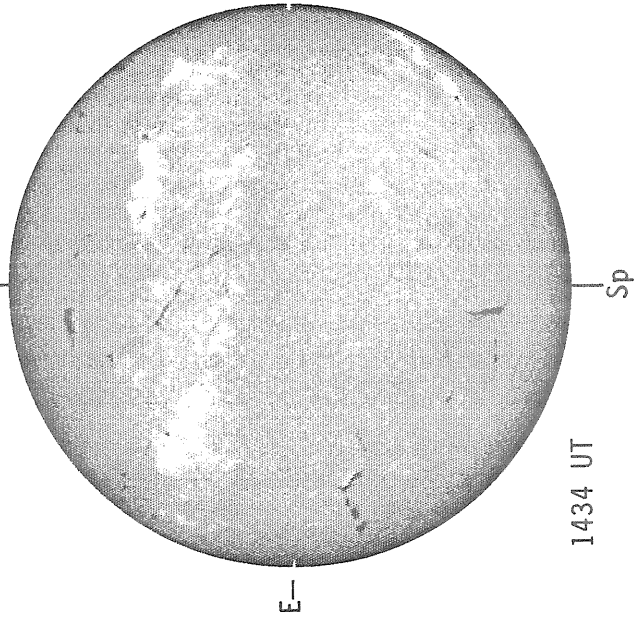
STANFORD MAGNETOGRAM



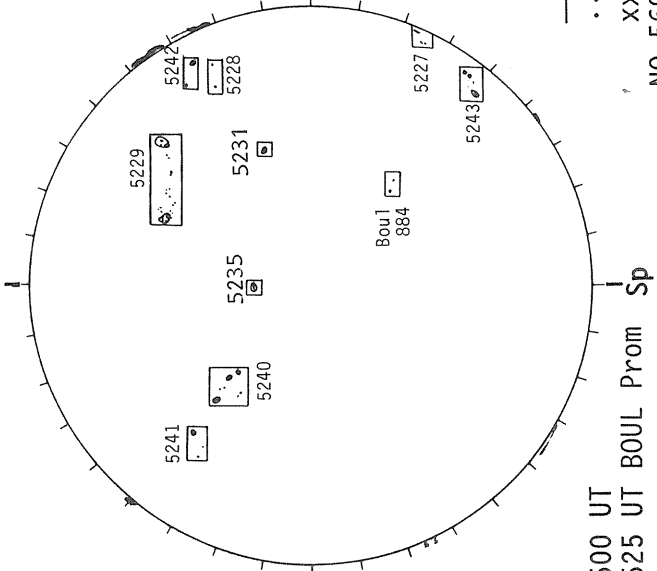
MT. WILSON MAGNETOGRAM



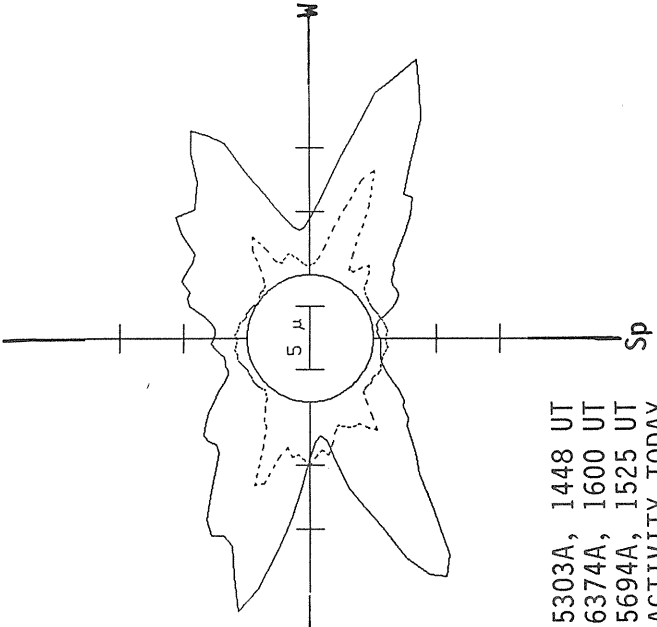
HOLLOWAN H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

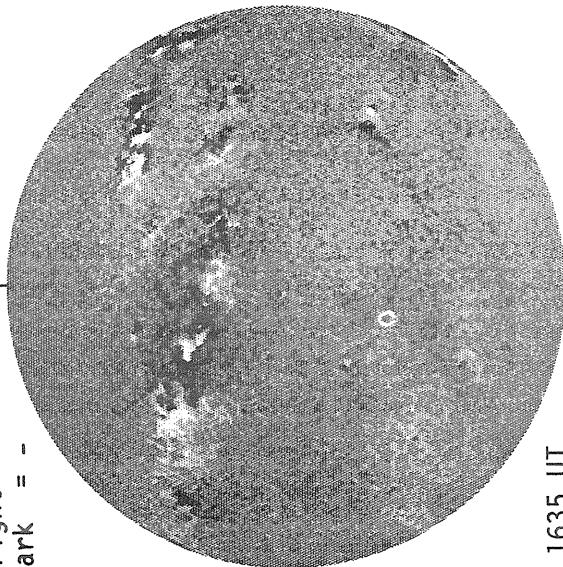


NOVEMBER 18, 1988 (P= 20.49, B₀= 2.44, L₀= 327.36)

KITT PEAK MAGNETOGRAM

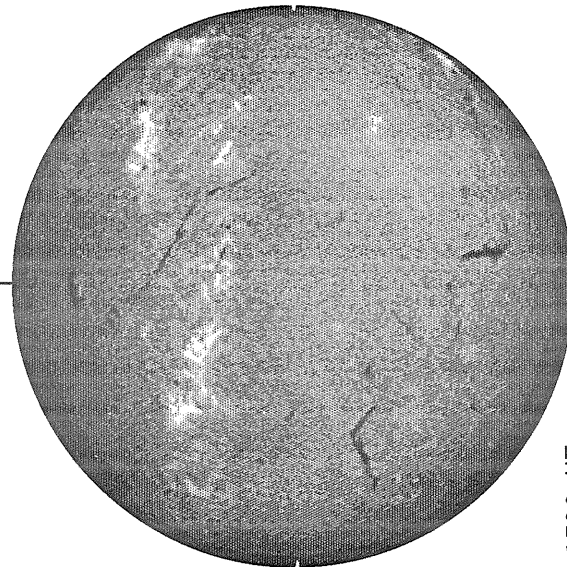
Np

Bright= +
Dark = -



1635 UT

HOLLOMAN H-ALPHA



1730 UT

STANFORD MAGNETOGRAM

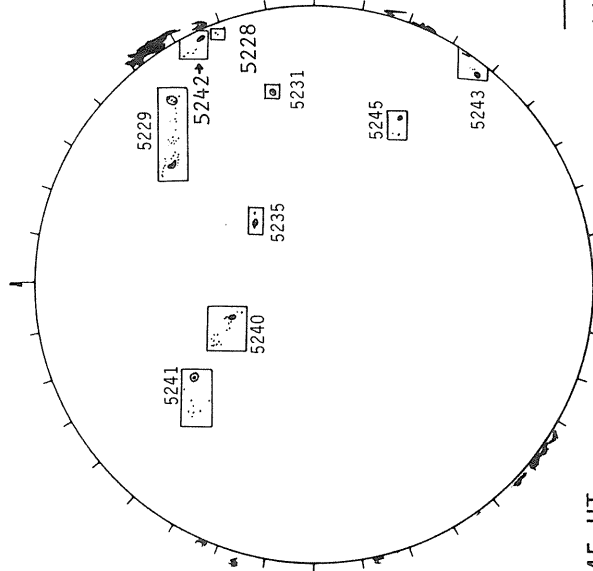
Np

Solid = +
Dashed = -



1824 UT

BOULDER SUNSPOTS



1545 UT

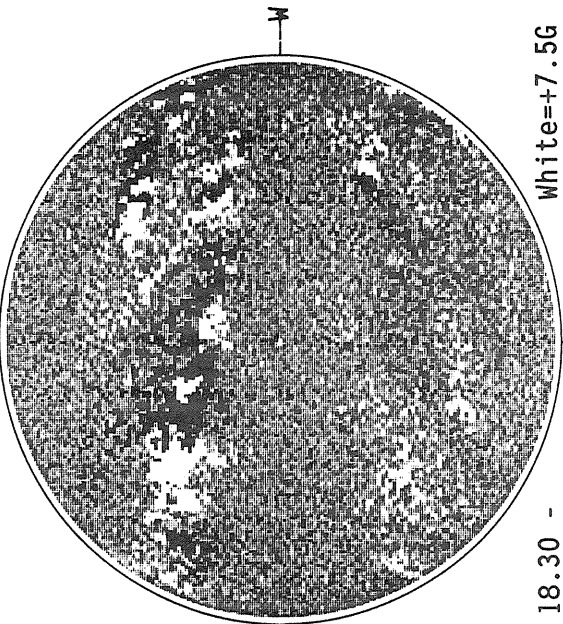
1557 UT BOUL Prom

Sp

MT. WILSON MAGNETOGRAM

Np

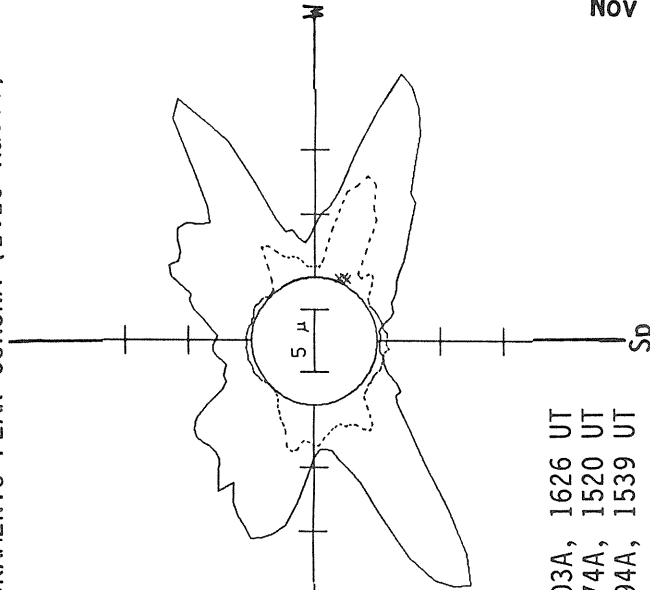
DeltaY=13.1
DeltaX= 9.6



18.30 -
19.27 UT

White=+7.5G
Black=-7.5G

SACRAMENTO PEAK CORONA (1.15 Radii)



— 5303A, 1626 UT
... 6374A, 1520 UT
XXXX 5694A, 1539 UT

1545 UT

1557 UT BOUL Prom

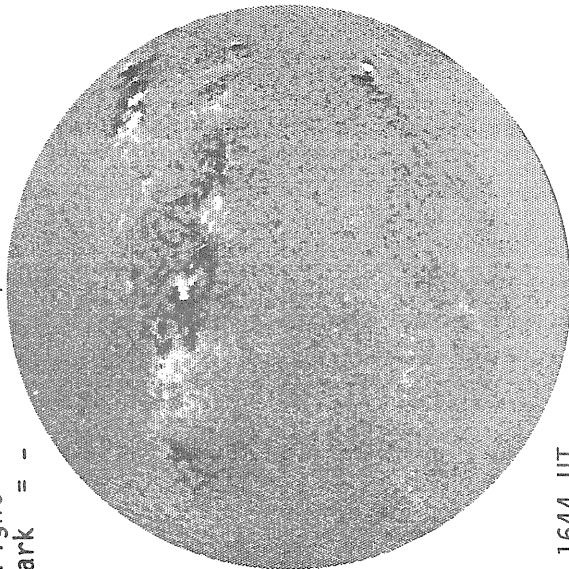
Sp

NOVEMBER 19, 1988 (P= 20.18, B₀= 2.32, L₀= 314.18)

KITT PEAK MAGNETOGRAM

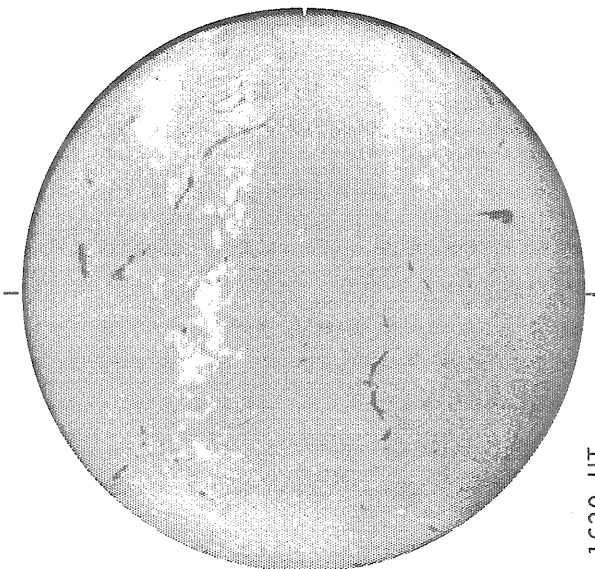
Np

Bright= +
Dark = -



1644 UT

HOLLOMAN H-ALPHA



1630 UT

STANFORD MAGNETOGRAM

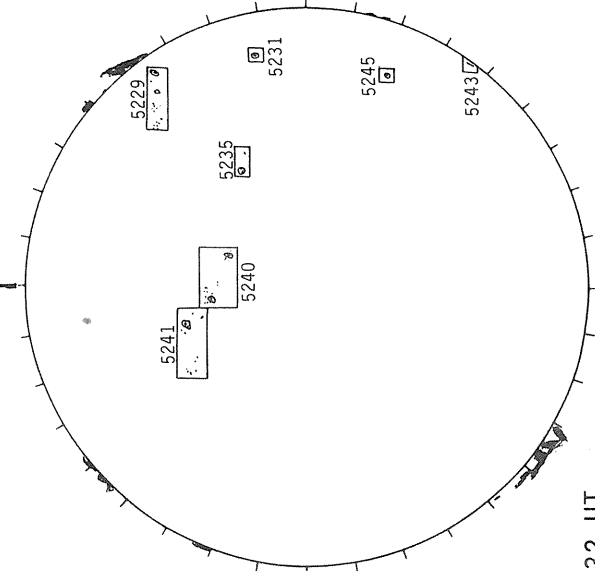
Np

Solid = +
Dashed = -



1753 UT

BOULDER SUNSPOTS

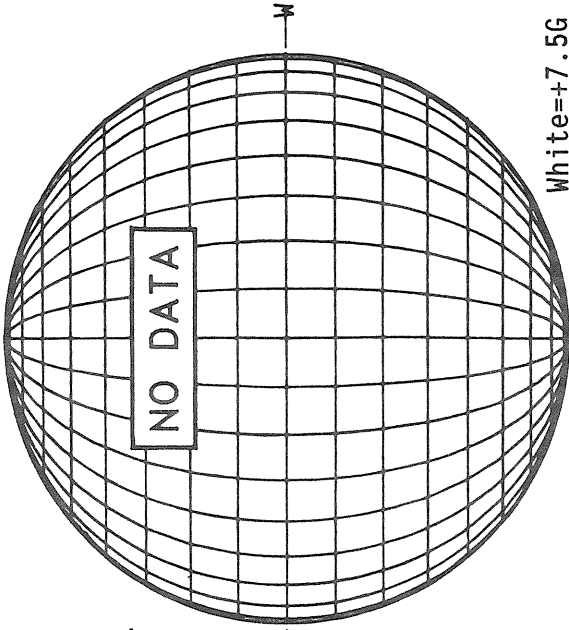


1532 UT

1532 UT BOUL Prom Sp

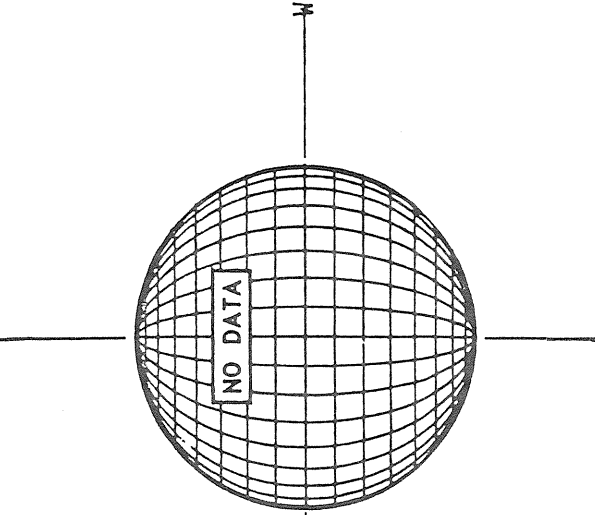
MT. WILSON MAGNETOGRAM

Np



White=+7.5G
Black=-7.5G

SACRAMENTO PEAK CORONA (1.15 Radii)



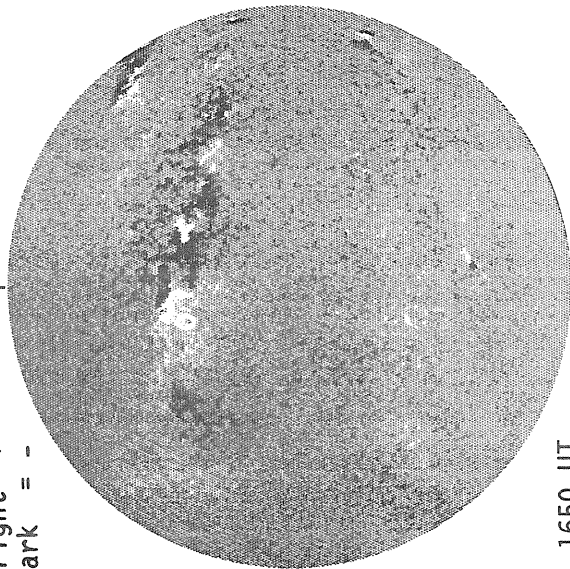
Sp

NOVEMBER 20, 1988 (P= 19.87 B₀= 2.20, L₀= 301.00)

KITT PEAK MAGNETOGRAM

Np

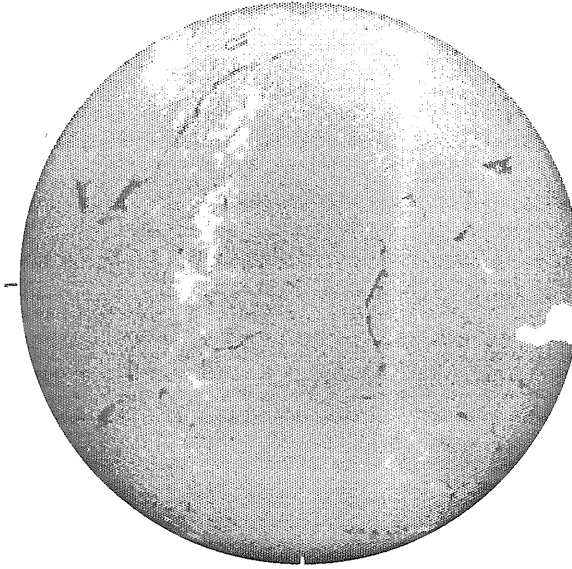
Bright= +
Dark = -



E

1650 UT

HOLLOWAN H-ALPHA



E

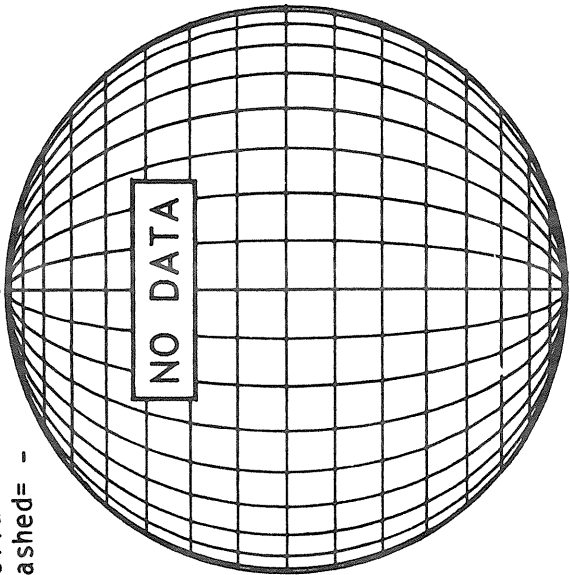
1616 UT

Sp

STANFORD MAGNETOGRAM

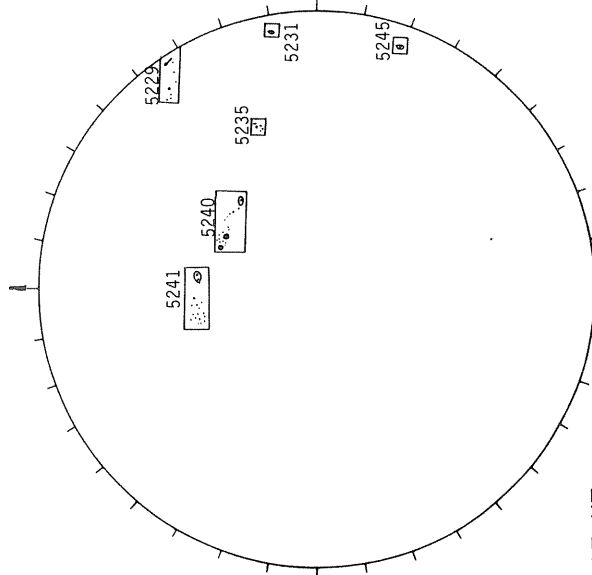
Np

Solid = +
Dashed = -



NO DATA

RAMEY SUNSPOTS



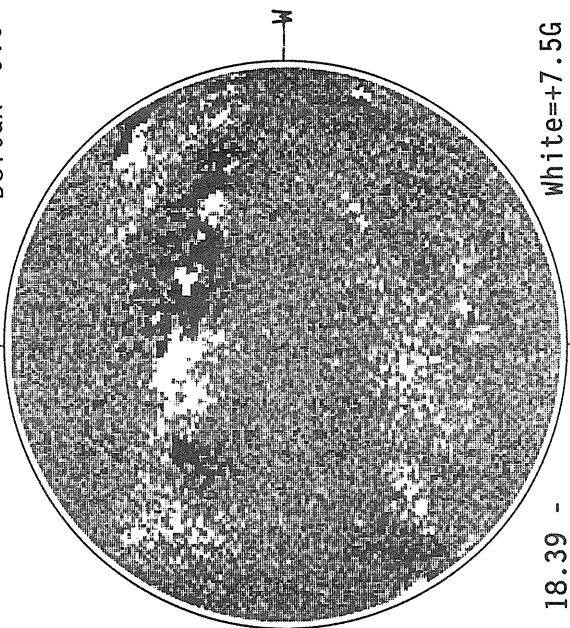
Sp

1317 UT

MT. WILSON MAGNETOGRAM

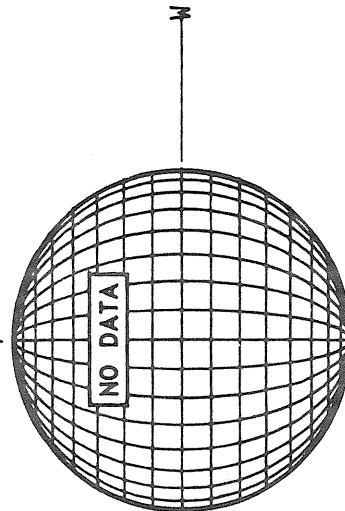
Np

Delta Y = 13.1
Delta X = 9.6



White = +7.5G
Black = -7.5G

SACRAMENTO PEAK CORONA (1.15 Radii)



NO DATA

Sp

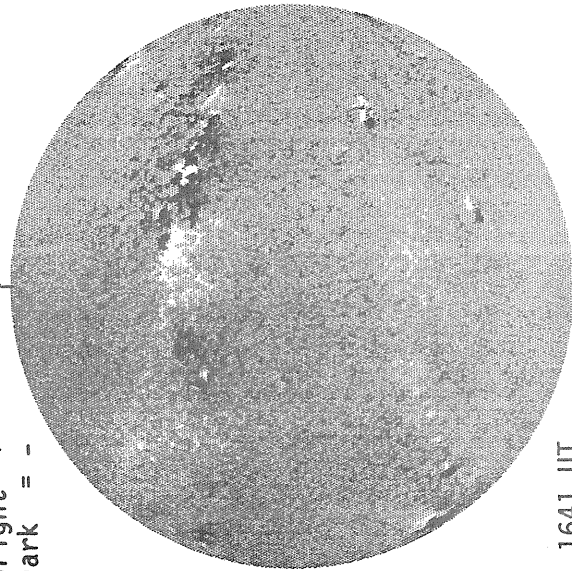
18.39 -
19.36 UT

NOVEMBER 21, 1988 (P= 19.56, B₀= 2.08, L₀= 287.82)

KITT PEAK MAGNETOGRAM

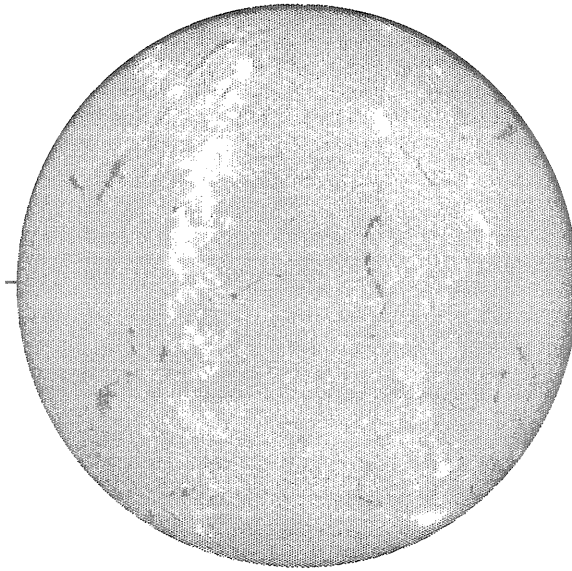
Np

Bright= +
Dark = -



1641 UT

HOLLOMAN H-ALPHA

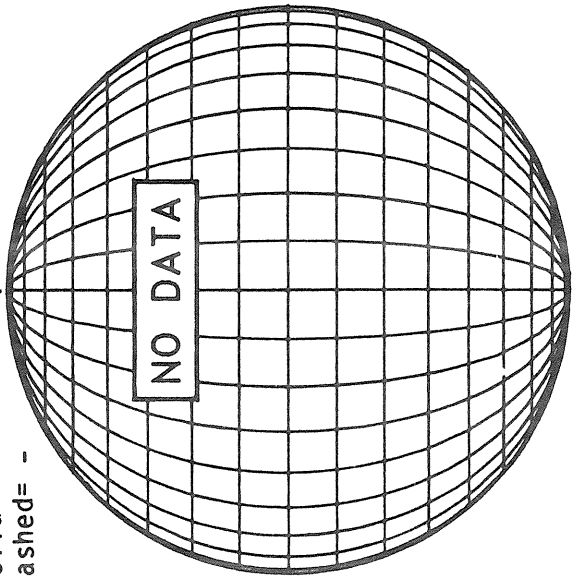


1654 UT

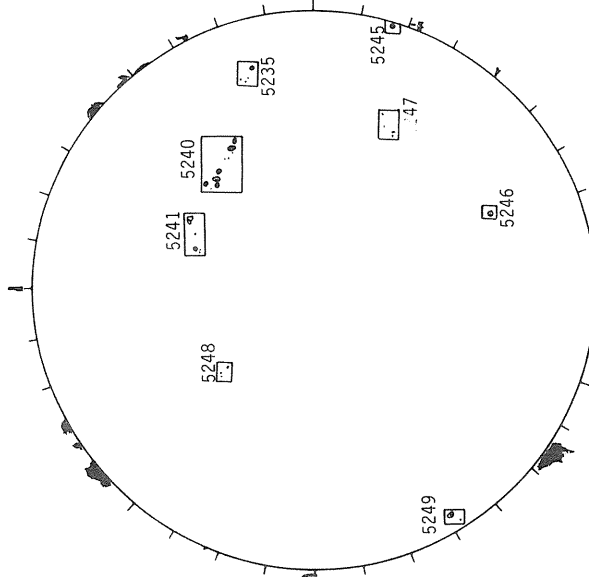
STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -



BOULDER SUNSPOTS



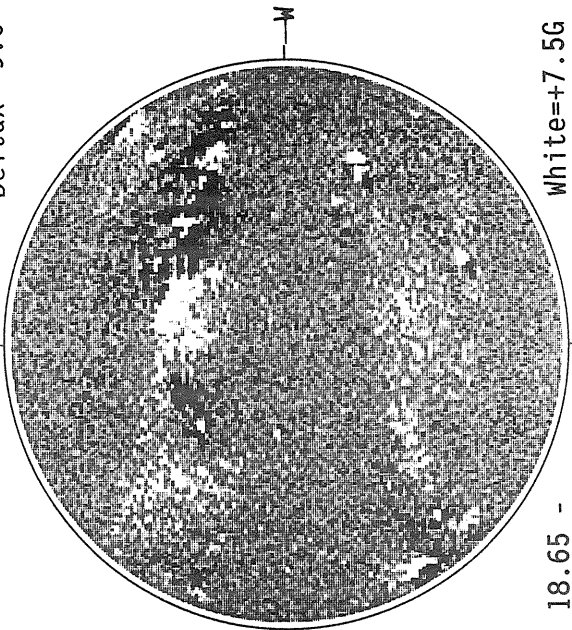
1520 UT

1535 UT BOUL Prom Sp

MT. WILSON MAGNETOGRAM

Np

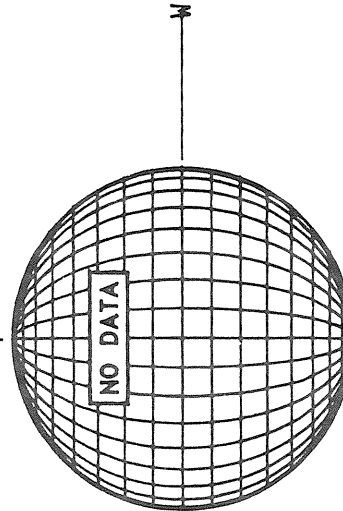
DeltaY=13.1
DeltaX= 9.6



18.65 -
19.62 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



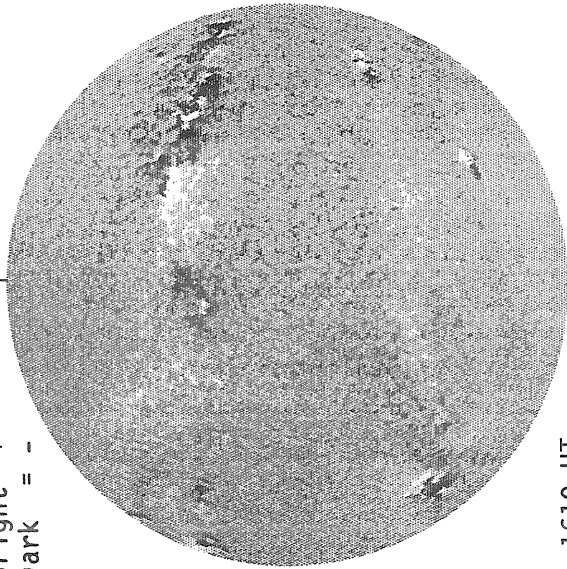
Sp

NOVEMBER 22, 1988 (P= 19.23, B₀= 1.96, L₀= 274.64)

KITT PEAK MAGNETOGRAM

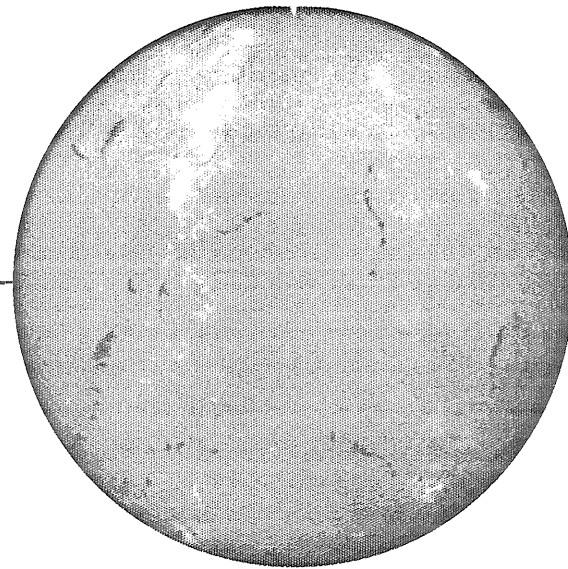
Np

Bright= +
Dark = -



1610 UT

HOLLOMAN H-ALPHA

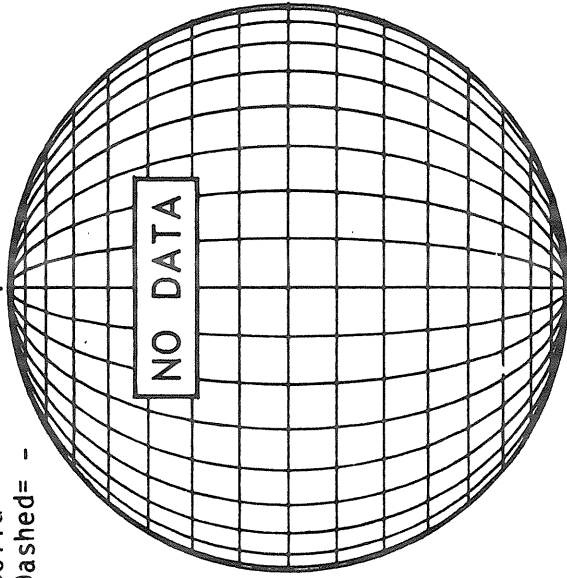


1633 UT

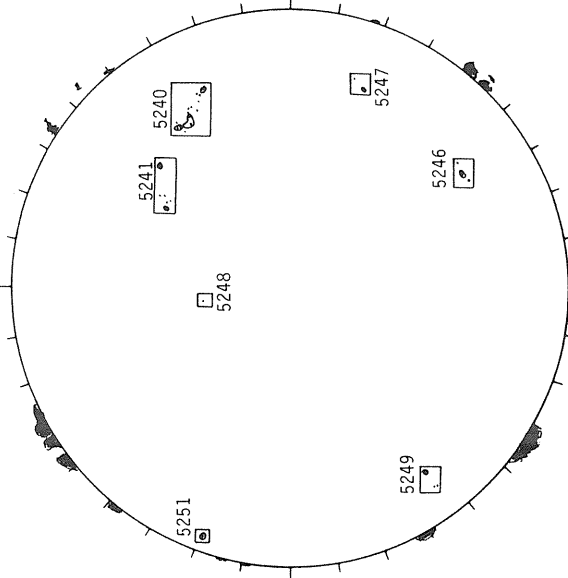
STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -



BOULDER SUNSPOTS



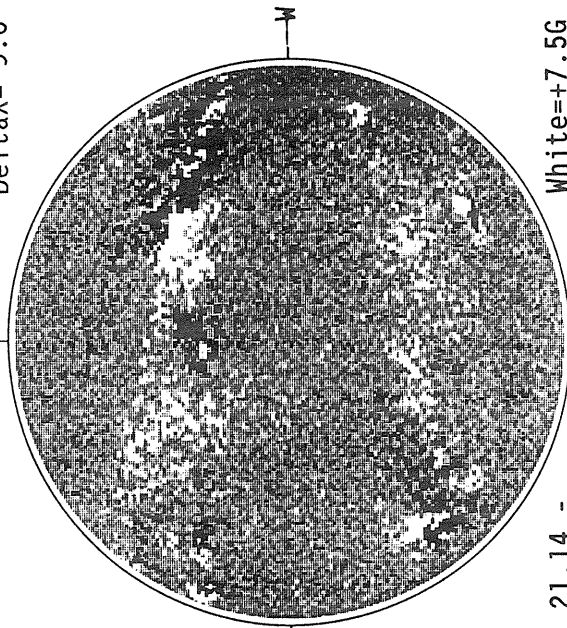
1550 UT

1610 UT BOUL Prom Sp

MT. WILSON MAGNETOGRAM

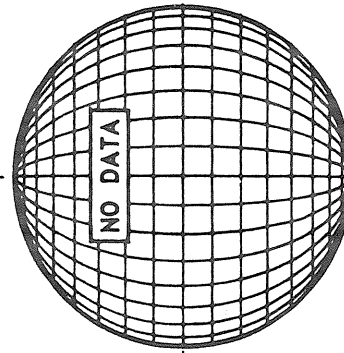
Np

Delta Y = 13.0
Delta X = 9.6



21.14 -
22.11 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

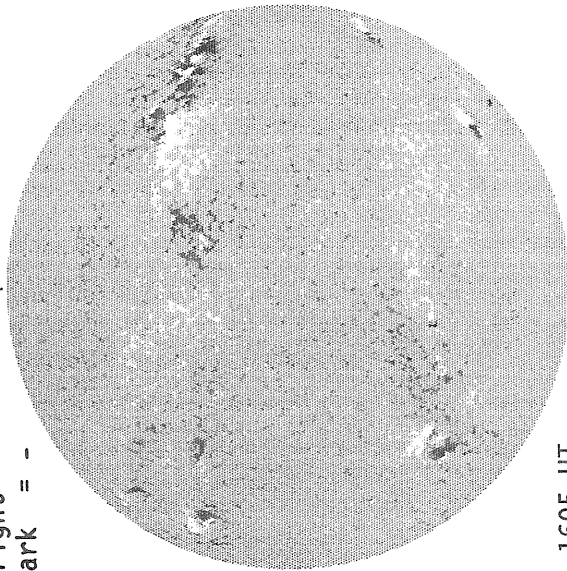


NOVEMBER 23, 1988 (P= 18.90, $B_0 = 1.83$, $L_0 = 261.46$)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

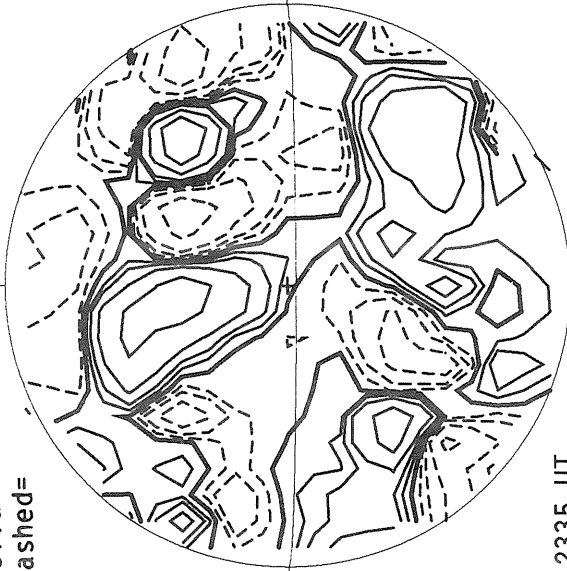


1605 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed = -

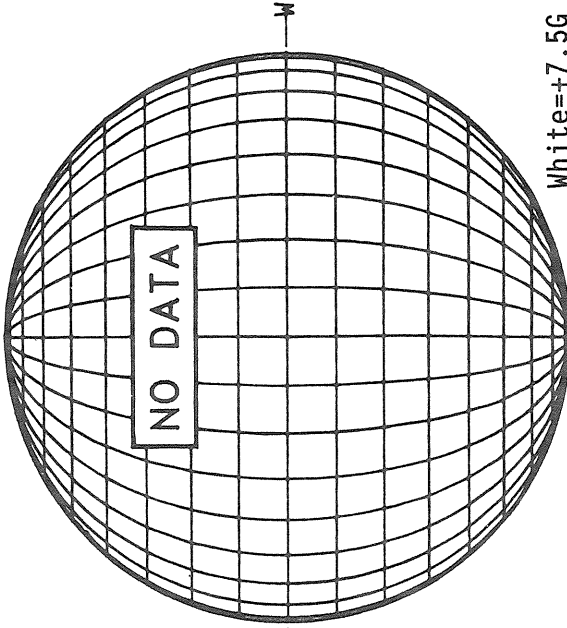


2335 UT

MT. WILSON MAGNETOGRAM

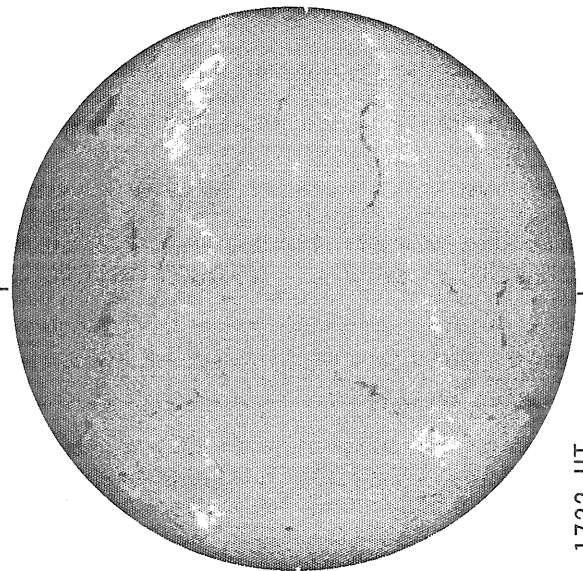
Np

NO DATA



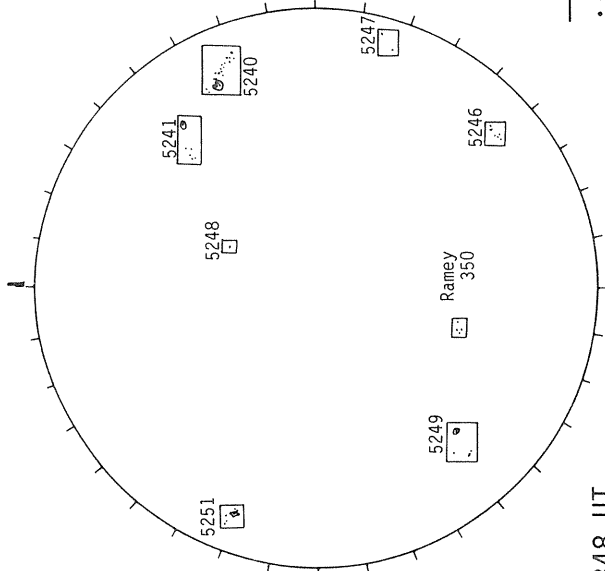
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



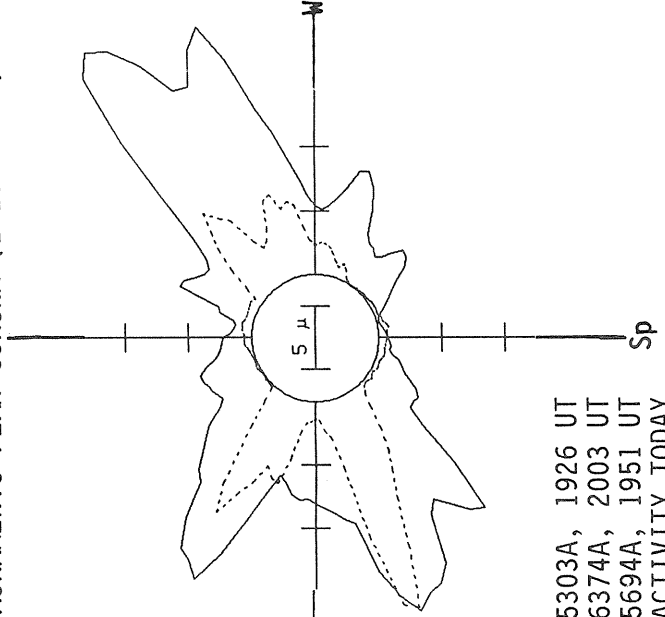
1722 UT

RAMEY SUNSPOTS



1348 UT

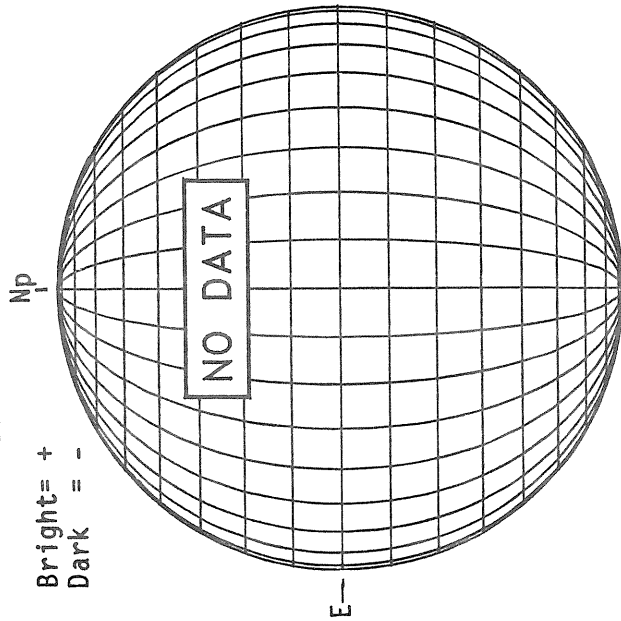
SACRAMENTO PEAK CORONA (1.15 Radii)



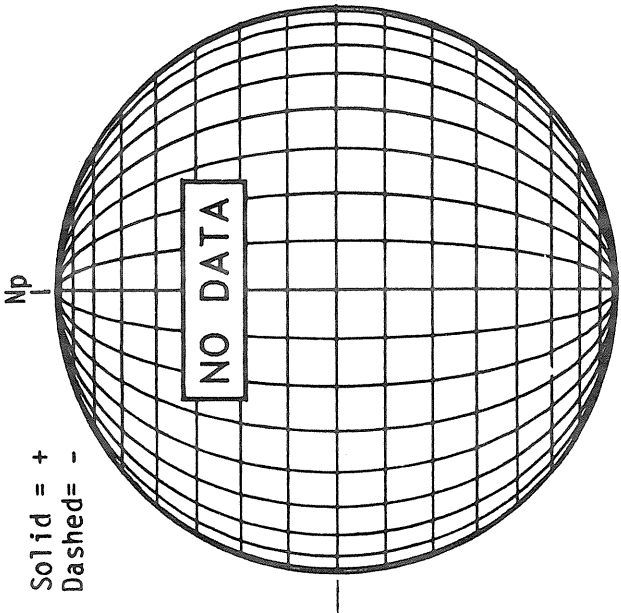
— 5303A, 1926 UT
 6374A, 2003 UT
 XXXX 5694A, 1951 UT
 NO 5694A ACTIVITY TODAY

NOVEMBER 24, 1988 (P= 18.56, B₀= 1.71, L₀= 248.27)

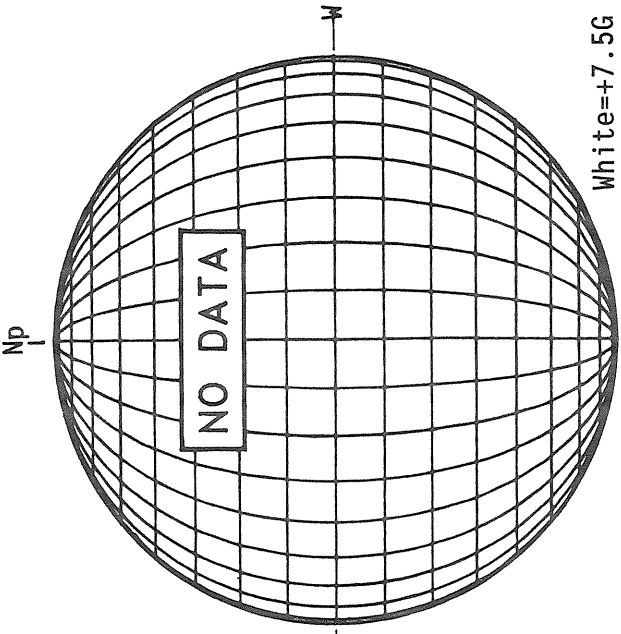
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

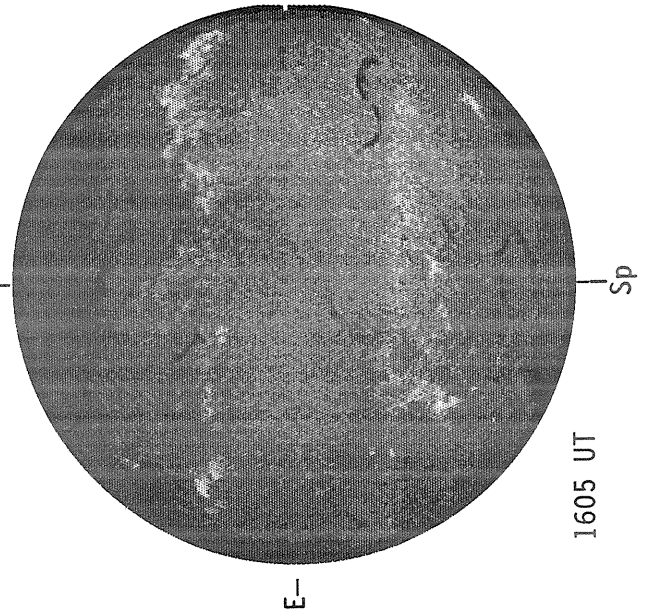


MT. WILSON MAGNETOGRAM



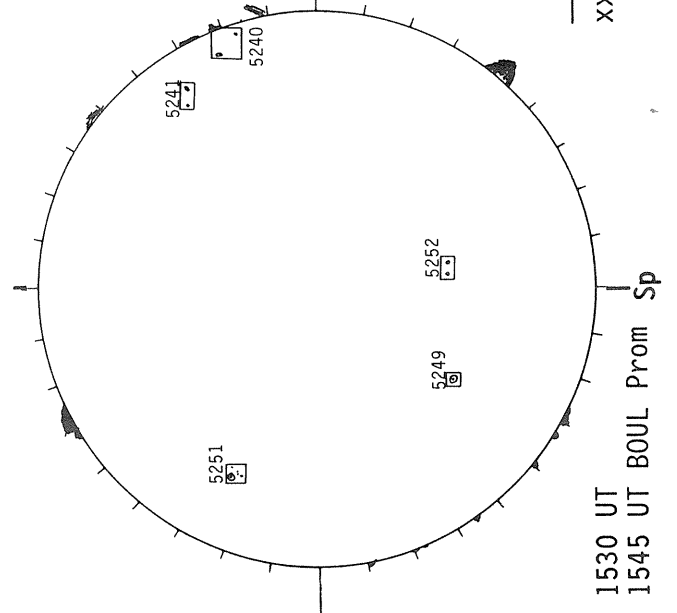
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



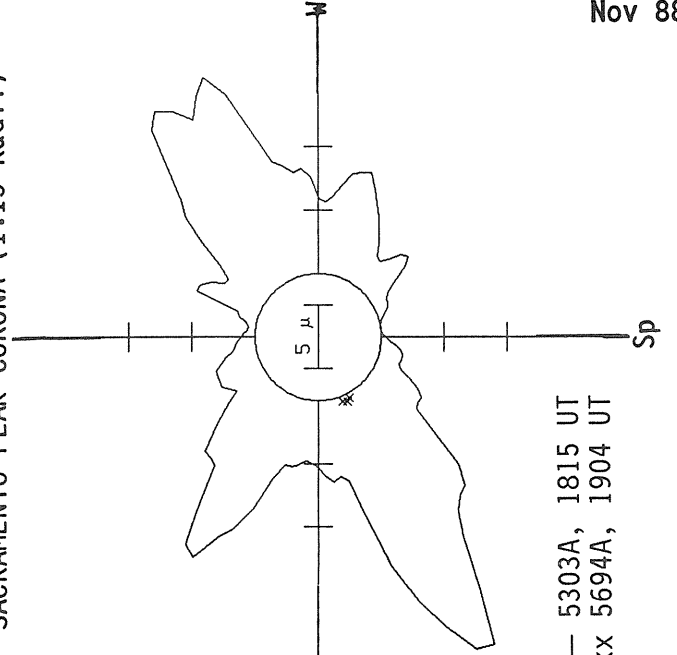
1605 UT

BOULDER SUNSPOTS



1530 UT
1545 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



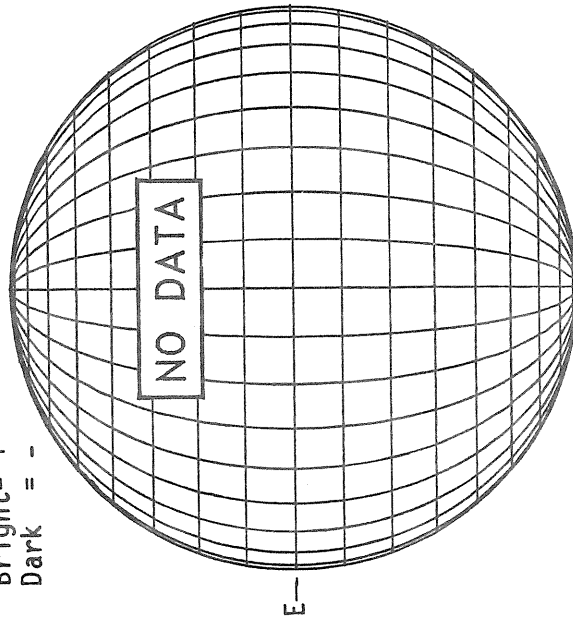
— 5303A, 1815 UT
xxxx 5694A, 1904 UT

NOVEMBER 25, 1988 (P= 18.22, B₀= 1.59, L₀= 235.09)

KITT PEAK MAGNETOGRAM

Np

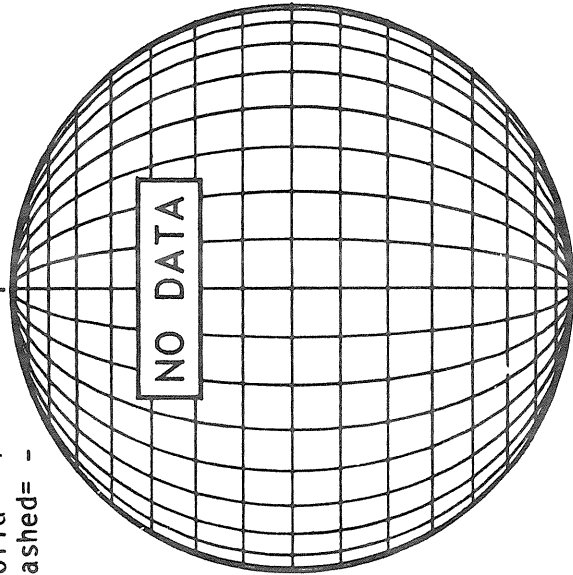
Bright= +
Dark = -



STANFORD MAGNETOGRAM

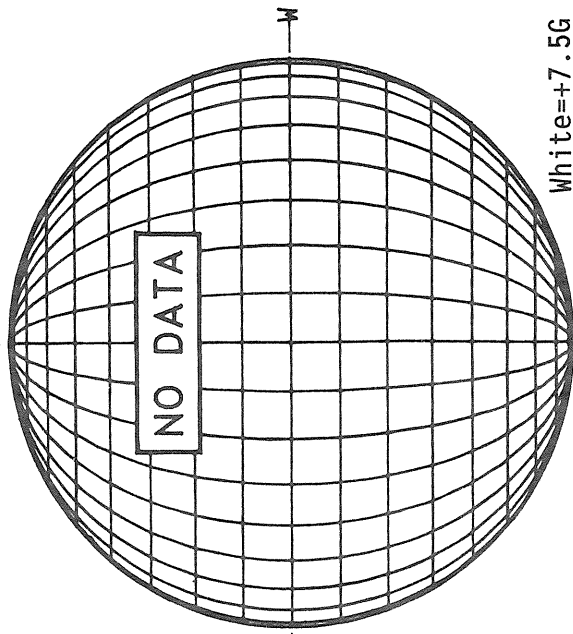
Np

Solid = +
Dashed = -



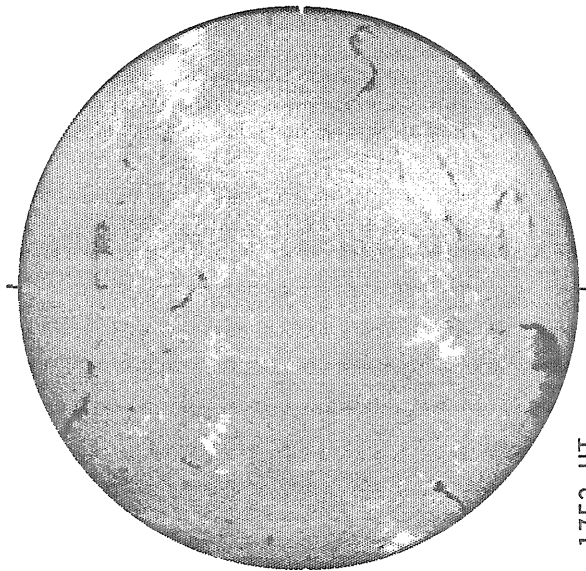
MT. WILSON MAGNETOGRAM

Np



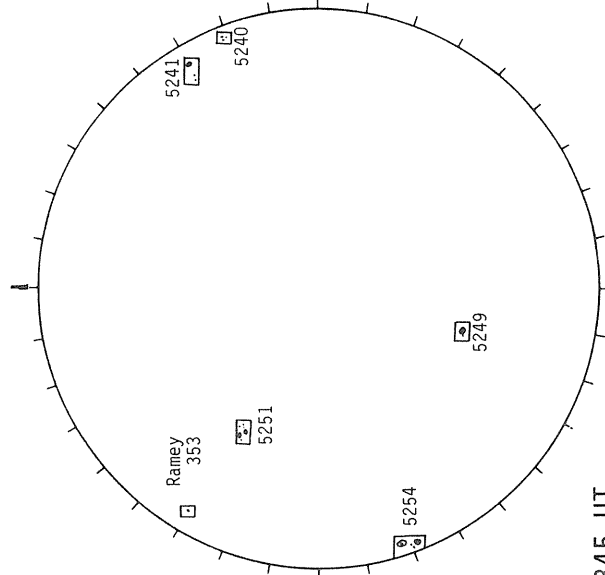
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



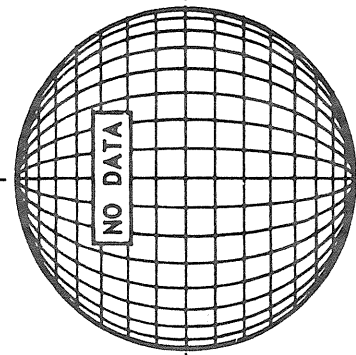
1753 UT

RAMEY SUNSPOTS



1345 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



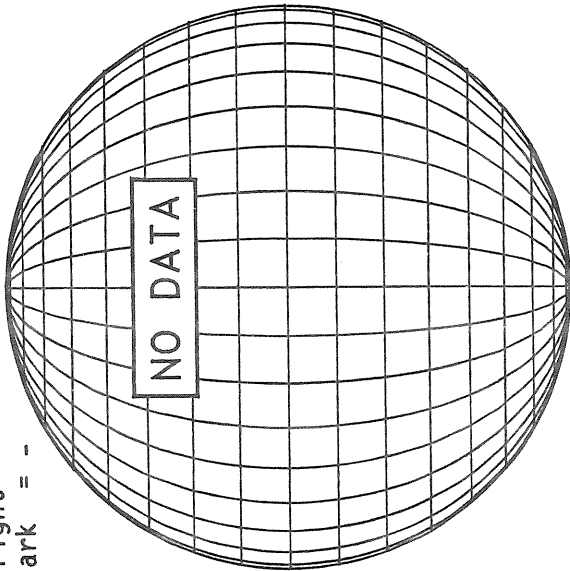
Sp

NOVEMBER 26, 1988 (P= 17.87, B₀= 1.46, L₀= 221.91)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

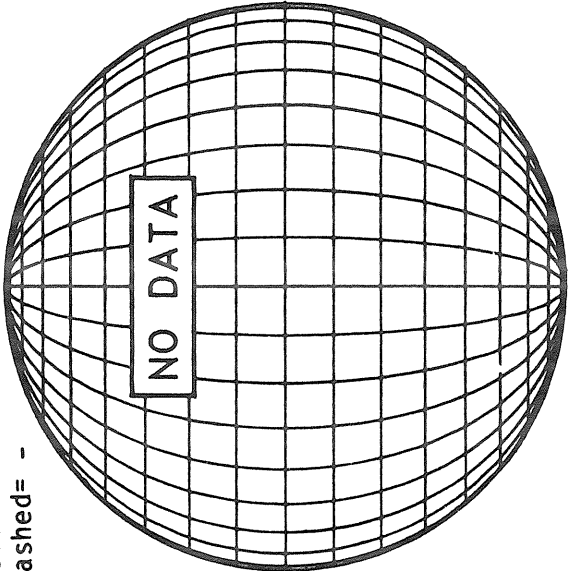
Np



STANFORD MAGNETOGRAM

Solid = +
Dashed = -

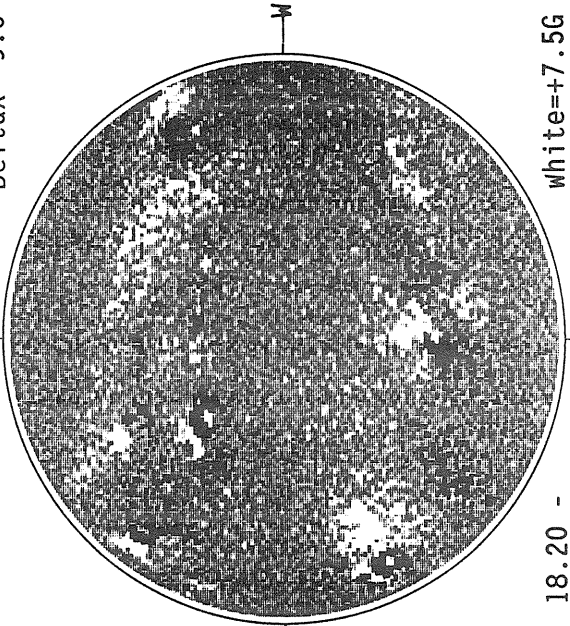
Np



MT. WILSON MAGNETOGRAM

DeltaY=13.1
DeltaX= 9.6

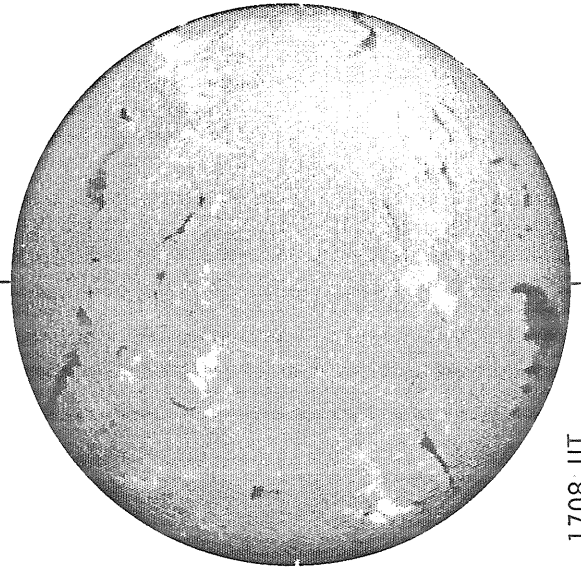
Np



18.20 -
19.18 UT

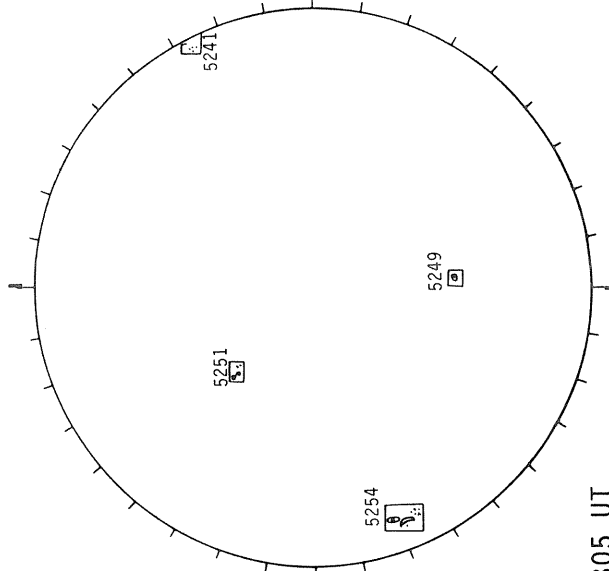
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



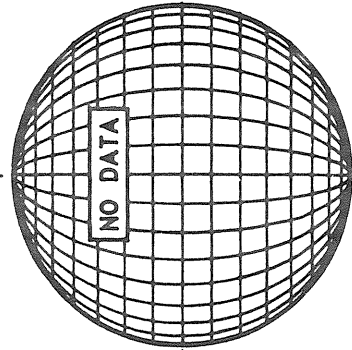
1708 UT

RAMEY SUNSPOTS



1305 UT

NO DATA



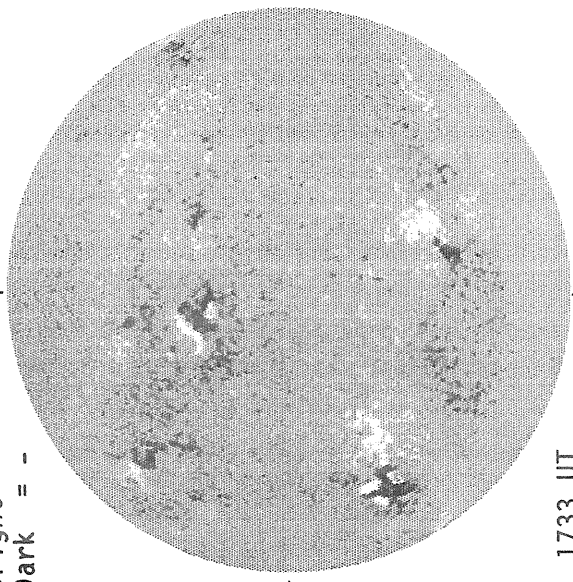
SACRAMENTO PEAK CORONA (1.15 Radii)

NOVEMBER 27, 1988 (P= 17.51, B₀= 1.34, L₀= 208.73)

KITT PEAK MAGNETOGRAM

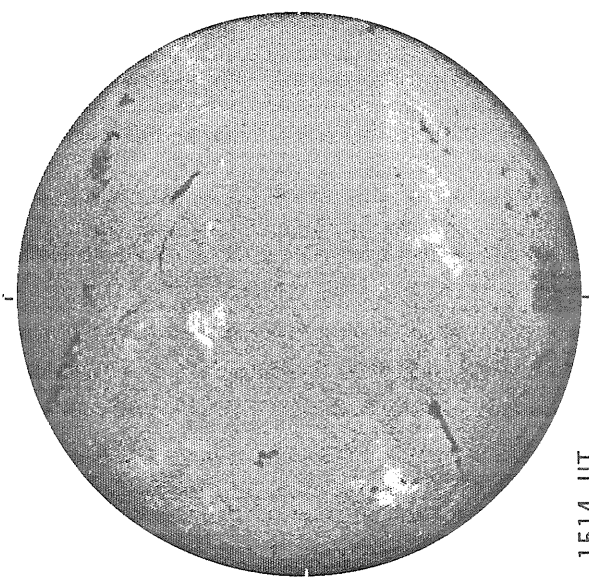
Np

Bright= +
Dark = -



1733 UT

HOLLOMAN H-ALPHA

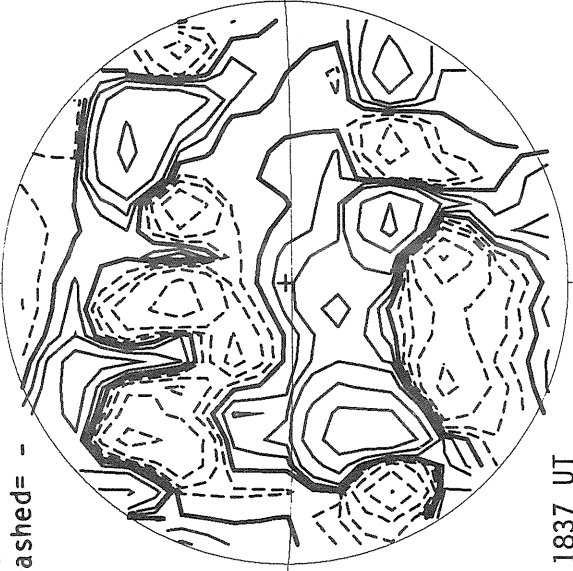


1514 UT

STANFORD MAGNETOGRAM

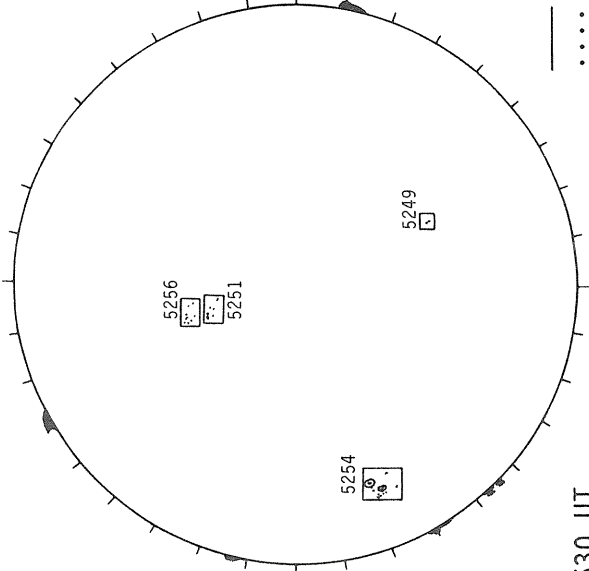
Np

Solid = +
Dashed = -



1837 UT

BOULDER SUNSPOTS

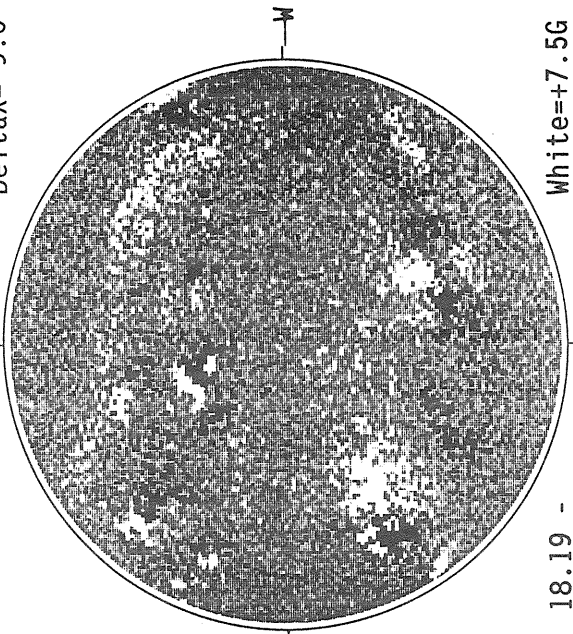


1530 UT
1536 UT BOUL Prom Sp

MT. WILSON MAGNETOGRAM

Np

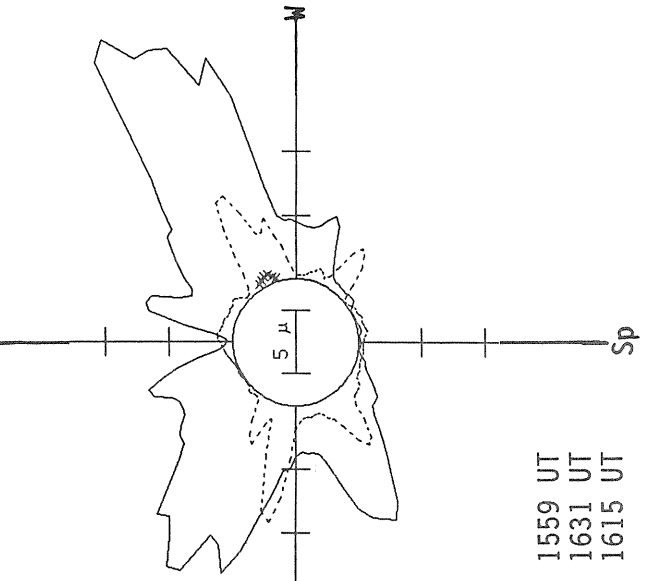
DeltaY=13.1
DeltaX= 9.6



18.19 -
19.16 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



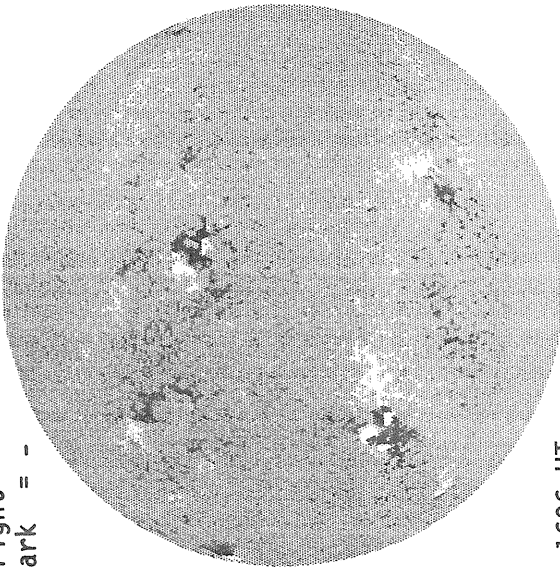
— 5303A, 1559 UT
... 6374A, 1631 UT
' xxx 5694A, 1615 UT

NOVEMBER 28, 1988 (P= 17.14, B₀= 1.21, L₀= 195.55)

KITT PEAK MAGNETOGRAM

Np

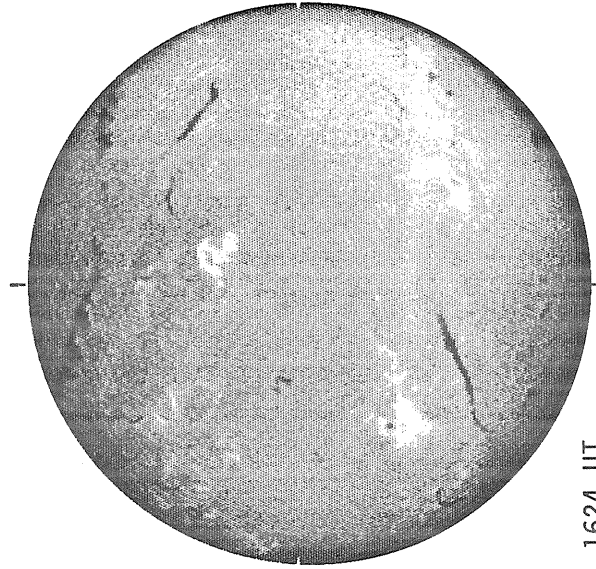
Bright= +
Dark = -



E

1606 UT

HOLLOMAN H-ALPHA



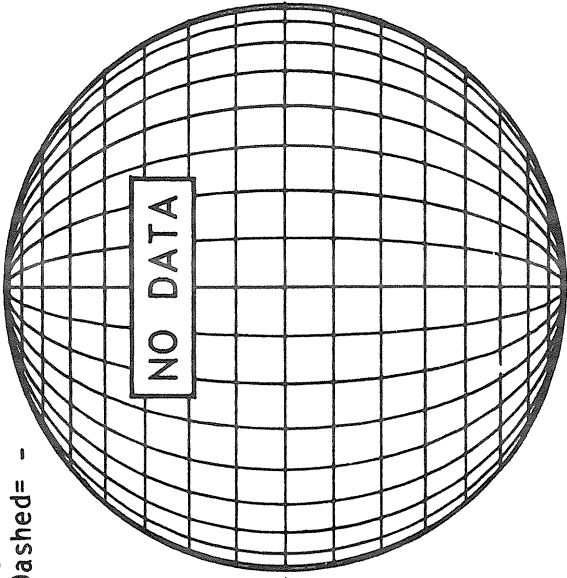
E

1624 UT

STANFORD MAGNETOGRAM

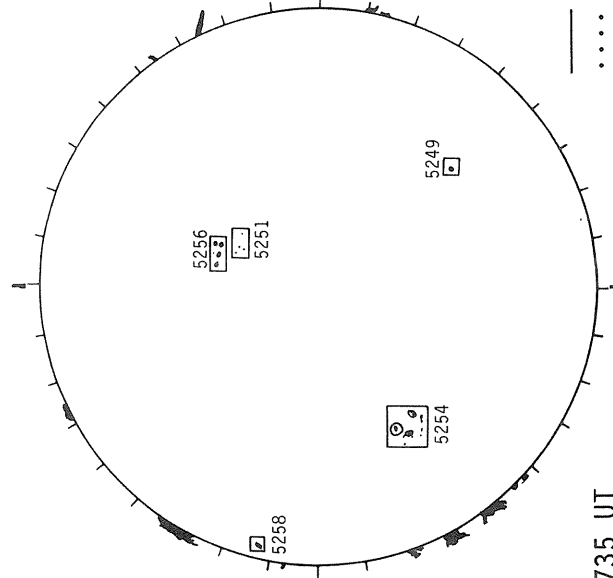
Np

Solid = +
Dashed = -



NO DATA

BOULDER SUNSPOTS



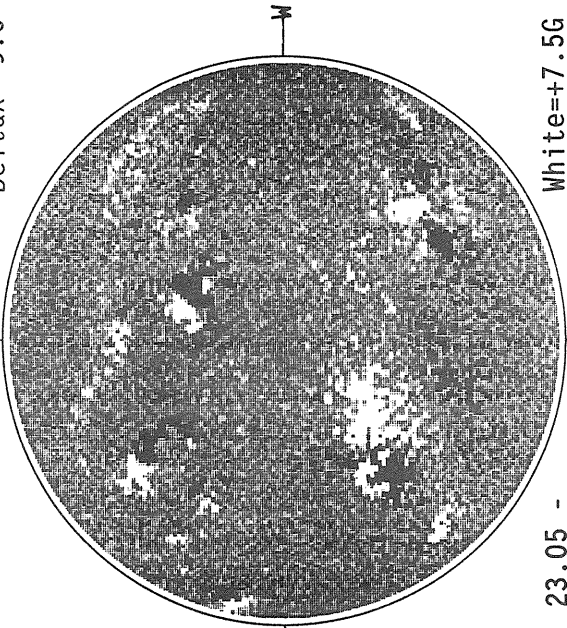
1735 UT

1745 UT BOUL Prom Sp

MT. WILSON MAGNETOGRAM

Np

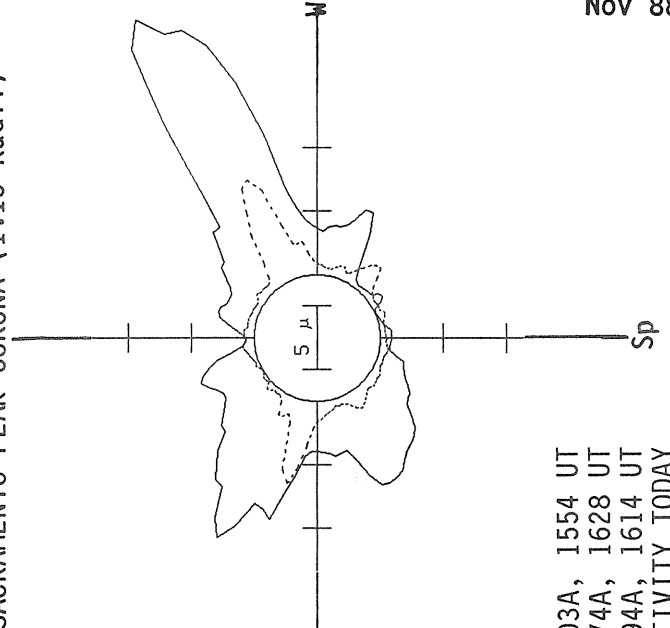
Delta Y = 13.1
Delta X = 9.6



M

23.05 -
24.02 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



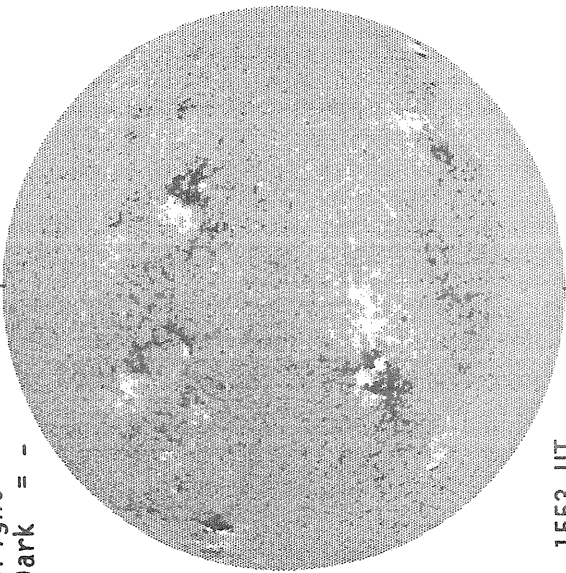
— 5303A, 1554 UT
... 6374A, 1628 UT
xxxxx 5694A, 1614 UT
NO 5694A ACTIVITY TODAY

NOVEMBER 29, 1988 (P= 16.77, B₀= 1.09, L₀= 182.37)

KITT PEAK MAGNETOGRAM

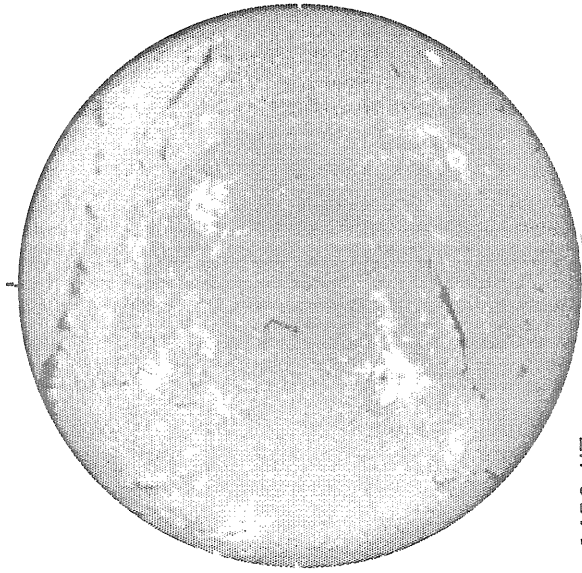
Np

Bright= +
Dark = -



1553 UT

HOLLOMAN H-ALPHA

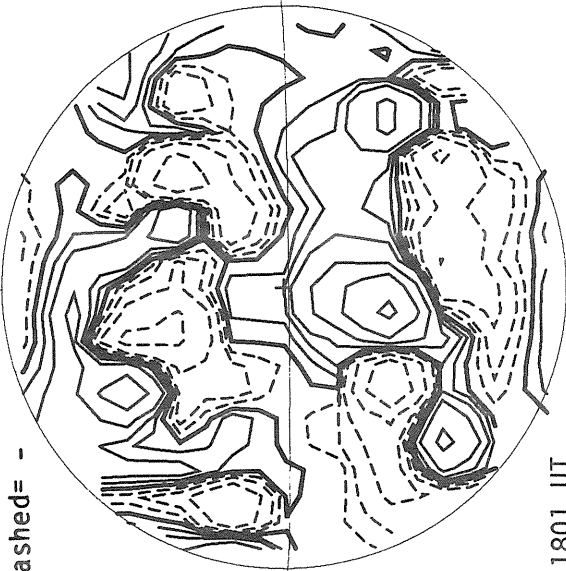


1456 UT

STANFORD MAGNETOGRAM

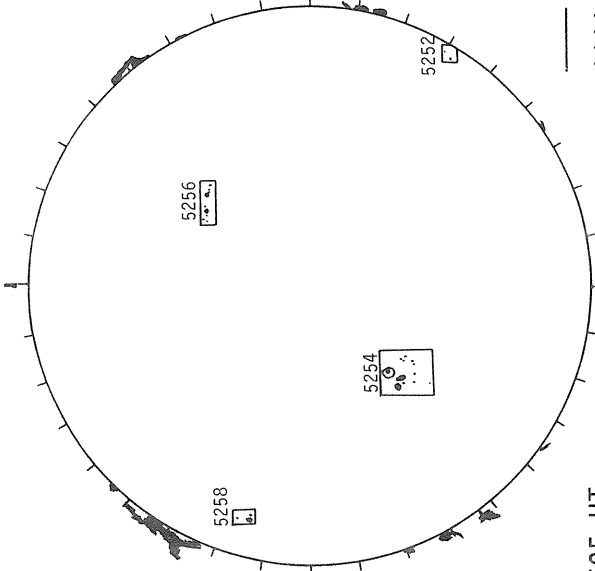
Np

Solid = +
Dashed = -



1801 UT

BOULDER SUNSPOTS

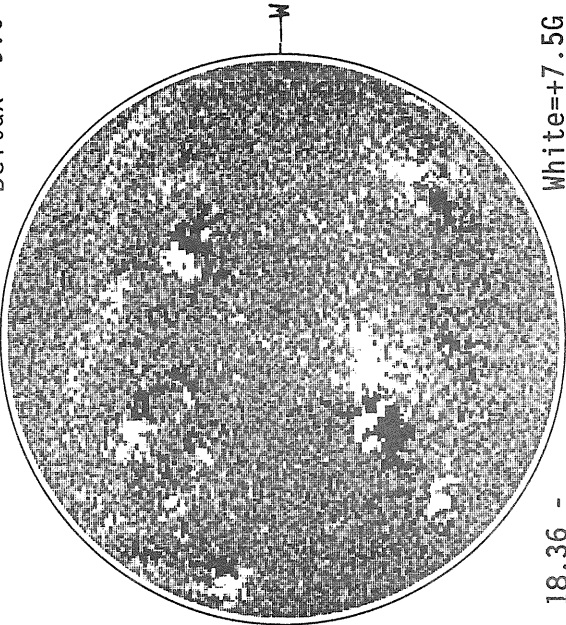


1525 UT
1537 UT BOUL Prom
1539 UT

MT. WILSON MAGNETOGRAM

Np

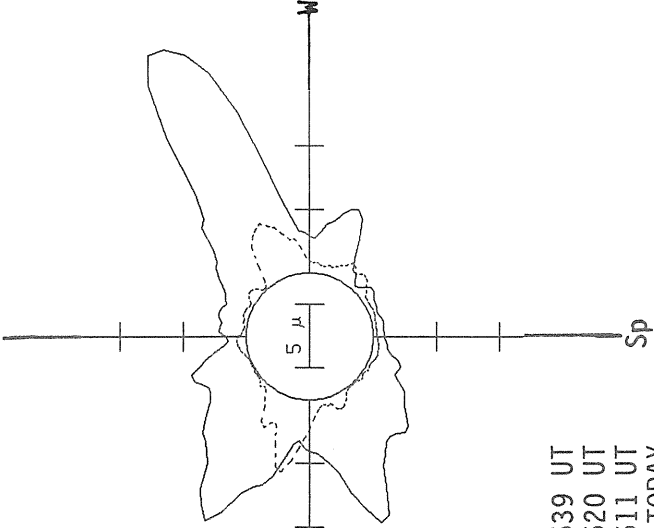
DeltaY=13.1
DeltaX= 9.6



18.36 -
19.34 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



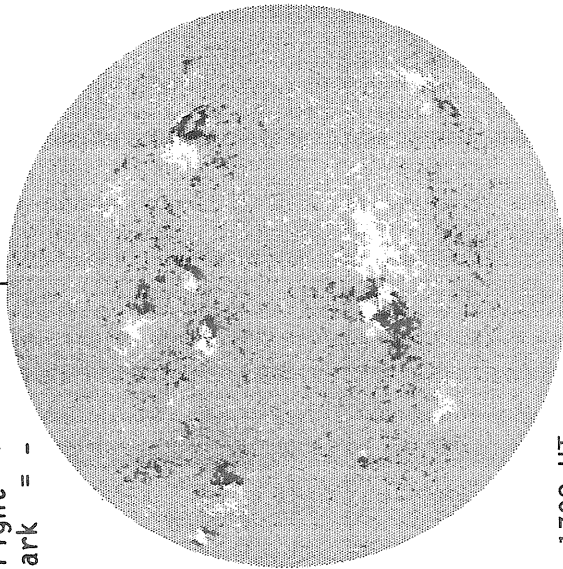
— 5303A, 1539 UT
.... 6374A, 1620 UT
·xxx· 5694A, 1611 UT
NO 5694A ACTIVITY TODAY

NOVEMBER 30, 1988 (P= 16.40, B₀= 0.96, L₀= 169.19)

KITT PEAK MAGNETOGRAM

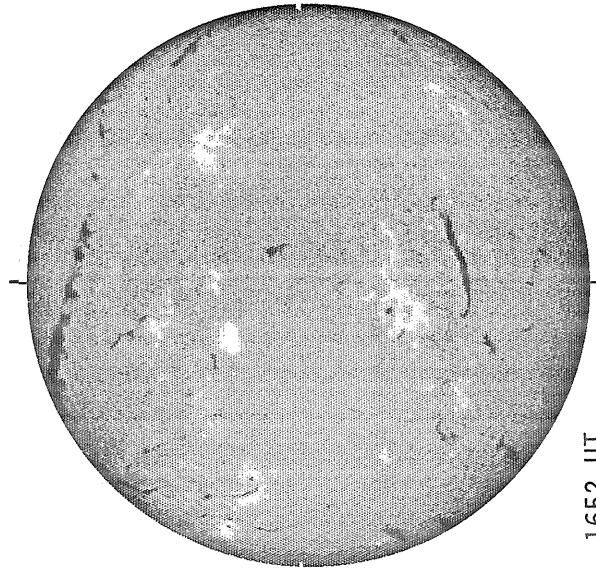
Bright= +
Dark = -

Np



1708 UT

HOLLOMAN H-ALPHA



1652 UT

STANFORD MAGNETOGRAM

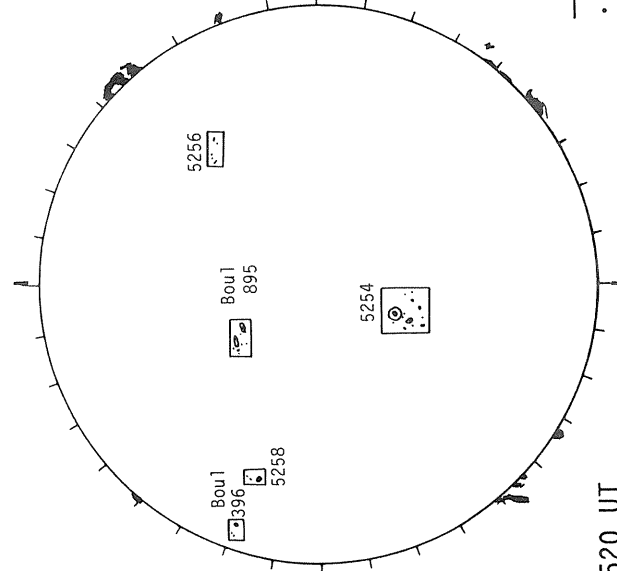
Solid = +
Dashed = -

Np



1837 UT

BOULDER SUNSPOTS



1520 UT

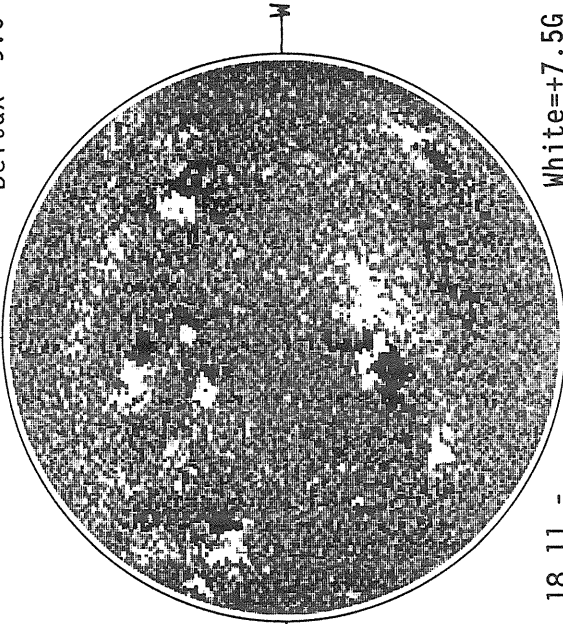
1538 UT BOUL Prom

Sp

MT. WILSON MAGNETOGRAM

DeltaY=13.1
DeltaX= 9.6

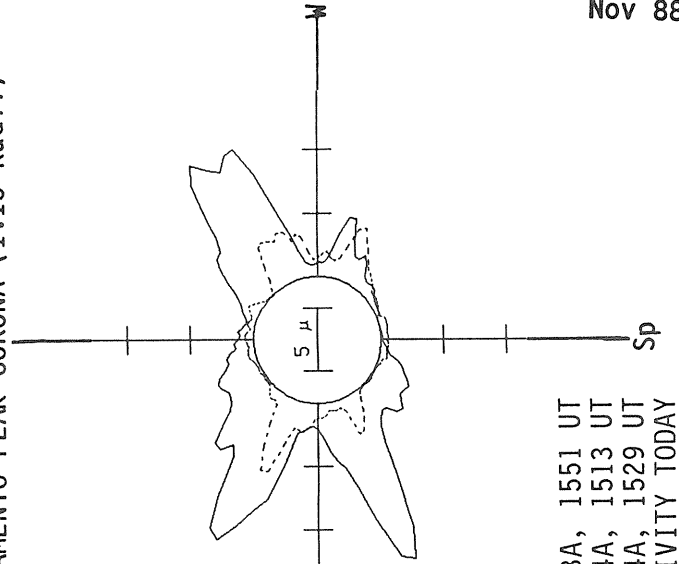
Np



18.11 -
19.08 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

White=+7.5G
Black=-7.5G



— 5303A, 1551 UT
... 6374A, 1513 UT
xxxx 5694A, 1529 UT
NO 5694A ACTIVITY TODAY

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

NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time		Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
			Mo	Day											(UT)
5211	24862	MWIL	10	26	1530	N15 E84	11	2.0	2	AP				
5211		HOLL	10	26	1542	N14 E84	11	2.0		A	AX	20	1	3
5211		LEAR	10	27	0025	N14 E75	11	1.7		A	AX	20	2	3
5211		CULG	10	27	0210	N12 E79	11	2.0		A	AX		1	1
5211		SVTO	10	27	0900	N14 E73	11	1.9		B	CSO	30	3	4
5211		RAMY	10	27	1240	N15 E70	11	1.8		B	CAO	40	4	3
5211	24862	MWIL	10	27	1530	N15 E69	11	1.9	4	(AP)				
5211		HOLL	10	27	1538	N15 E69	11	1.9		A	HR	20	4	2
5211		PALE	10	27	1830	N15 E70	11	2.1		A	HS	20	1	2
5211		LEAR	10	28	0020	N16 E66	11	2.0		B	CRO	20	2	4
5211		CULG	10	28	0415	N12 E62	11	1.8		A	HS	10	1	1
5211		SVTO	10	28	0754	N16 E63	11	2.1		B	CSO	60	4	7
5211	24862	MWIL	10	28	1530	N16 E57	11	2.0	5	(B)				
5211		BOUL	10	28	1605	N16 E56	11	1.9		B	CSO	30	2	2
5211		HOLL	10	28	1715	N17 E56	11	2.0		B	CAO	30	5	5
5211		PALE	10	28	1735	N15 E55	11	1.9		B	CSO	40	2	2
5211		LEAR	10	29	0020	N14 E51	11	1.9		A	HS	20	3	1
5211		CULG	10	29	0323	N13 E50	11	1.9		A	HS	30	3	1
5211		SVTO	10	29	0818	N15 E46	11	1.8		A	HS	30	3	2
5211		RAMY	10	29	1315	N15 E43	11	1.8		A	HA	40	3	2
5211		BOUL	10	29	1530	N15 E43	11	1.9		B	BXO		3	1
5211		HOLL	10	29	1545	N16 E42	11	1.8		B	CAO	30	5	4
5211		PALE	10	29	1840	N15 E42	11	1.9		A	HS	20	2	2
5211	24862	MWIL	10	29	2015	N15 E41	11	1.9	4	(AP)				
5211		LEAR	10	30	0015	N15 E38	11	1.9		A	HA	60	3	1
5211		SVTO	10	30	1014	N16 E33	11	1.9		A	AX	10	3	2
5211		RAMY	10	30	1427	N16 E32	11	2.0		B	CRO	30	4	6
5211		BOUL	10	30	1450	N17 E31	11	2.0		B	BXO		3	5
5211		HOLL	10	30	1515	N15 E29	11	1.8		A	AX	10	3	1
5211	24862	MWIL	10	30	1530	N16 E31	11	2.0	4	(B)				
5211		PALE	10	30	1945	N15 E27	11	1.9		A	HS	20	2	2
5211		LEAR	10	31	0055	N16 E26	11	2.0		B	BXO	30	7	7
5211		CULG	10	31	0538	N16 E22	11	1.9		B	CSO	10	2	2
5211		RAMY	10	31	1348	N16 E18	11	1.9		A	AX	10	3	1
5211		HOLL	10	31	1545	N16 E16	11	1.9		A	AX		1	3
5211	24862	MWIL	10	31	1545	N16 E19	11	2.1	4	(B)				
5211		CULG	11	01	0352	N16 E10	11	1.9		A	AX	10	1	2
5211		RAMY	11	01	1312	N14 E03	11	1.8		B	BXO		2	3
5211A		LEAR	11	06	0411	N23 W57	11	1.8		B	BXO	10	2	1
5211A		RAMY	11	06	1240	N25 W59	11	1.9		A	AX		1	3
5211A	24882	MWIL	11	06	1530	N26 W61	11	1.9	3	(AP)				
5211B		CULG	10	29	0442	S21 E56	11	2.5		B	CHO	130	8	11
5223		BOUL	11	05	1520	N33 W31	11	3.2		B	BXO		3	2
5223		HOLL	11	05	1530	N33 W32	11	3.1		B	BXO	10	6	4
5223		RAMY	11	05	1553	N33 W33	11	3.0		B	BXO	20	6	3
5223	24880	MWIL	11	05	1600	N33 W32	11	3.1	4	(B)				
5223		CULG	11	06	0400	N36 W36	11	3.3		B	CSO	20	3	5
5223		LEAR	11	06	0411	N33 W39	11	3.1		B	CRO	40	5	7
5223		SVTO	11	06	0632	N33 W39	11	3.2		B	DSO	20	4	4
5223		RAMY	11	06	1240	N34 W44	11	3.0		B	CAO	50	7	7
5223		HOLL	11	06	1515	N32 W45	11	3.1		B	CRO	30	8	9
5223	24880	MWIL	11	06	1530	N32 W45	11	3.1	4	(B)				
5223		BOUL	11	06	1848	N33 W46	11	3.1		B	CAO	20	4	5
5223		PALE	11	07	0001	N32 W50	11	3.0		B	CSO	40	2	6
5223		LEAR	11	07	0025	N35 W50	11	3.0		B	CRO	20	3	6
5223		CULG	11	07	0407	N34 W53	11	2.9		A	HR	10	1	1
5223		RAMY	11	07	1240	N33 W57	11	3.0		B	BXO	10	4	5
5223		HOLL	11	07	1615	N33 W60	11	2.9		B	BXO	10	3	5
5223		LEAR	11	08	0045	N36 W62	11	3.0		A	AX	10	1	1
5223		SVTO	11	08	0752	N32 W69	11	2.9		B	BXO	10	2	4
5223		BOUL	11	08	1524	N33 W70	11	3.1		A	AX	10	1	1
5223		HOLL	11	08	1725	N33 W72	11	3.0		B	CSO	50	2	5
5223	24880	MWIL	11	08	1845	N35 W70	11	3.2	4	(B)				
5223		PALE	11	08	1955	N33 W75	11	2.9		B	CAO	50	3	6
5223		LEAR	11	09	0045	N33 W75	11	3.1		B	CRO	30	2	3
5223		CULG	11	09	0320	N36 W73	11	3.3		A	AX		1	2

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

79
Nov 88

NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5223		SVTO	11 09 0704	N33 W79	11 3.0		B	BXO	60	2	3	1
5223		RAMY	11 09 1350	N32 W80	11 3.2		B	CAO	70	2	3	4
5223		HOLL	11 09 1538	N32 W82	11 3.2		B	CSO	70	2	3	3
5223	24880	MWIL	11 09 1545	N34 W79	11 3.3	4	B					
5223		PALE	11 09 2017	N31 W82	11 3.4		A	AX	10	1	1	2
5211C		CULG	10 29 0442	N16 E67	11 3.3		A	AX	10	1		2
5212		SVTO	10 28 0754	S15 E89	11 4.1		A	AX	20	2	2	4
5212	24869	MWIL	10 28 1530	S16 E80	11 3.7	5	BP					
5212		BOUL	10 28 1605	S17 E82	11 3.9		A	HA	240	2	3	2
5212		HOLL	10 28 1715	S16 E76	11 3.5		B	CHO	220	7	11	2
5212		PALE	10 28 1735	S16 E80	11 3.8		B	CHO	250	3	11	3
5212		CULG	10 29 0323	S18 E73	11 3.7		B	CHO	290	6	10	2
5212		SVTO	10 29 0818	S16 E71	11 3.7		B	EKI	700	21	14	2
5212		RAMY	10 29 1315	S16 E65	11 3.5		B	CHO	640	19	10	3
5212		BOUL	10 29 1530	S17 E67	11 3.7		B	DHI	360	8	12	2
5212		HOLL	10 29 1545	S15 E65	11 3.6		B	CKO	420	18	11	4
5212		PALE	10 29 1840	S17 E64	11 3.6		B	CKO	400	14	11	3
5212	24869	MWIL	10 29 2015	S16 E65	11 3.8	5	(B)					
5212		LEAR	10 30 0015	S16 E60	11 3.6		B	FKO	620	17	16	3
5212		SVTO	10 30 1014	S15 E56	11 3.7		B	EHI	400	15	13	1
5212		RAMY	10 30 1427	S16 E52	11 3.5		B	EHO	450	21	14	2
5212		BOUL	10 30 1450	S16 E53	11 3.6		B	CHI	260	25	13	3
5212		HOLL	10 30 1515	S16 E53	11 3.6		B	CKO	490	17	13	2
5212	24869	MWIL	10 30 1530	S17 E54	11 3.7	5	(BG)					
5212		PALE	10 30 1945	S17 E49	11 3.5		B	EHO	530	12	14	2
5212		LEAR	10 31 0055	S17 E47	11 3.6		BGD	FHI	660	28	16	3
5212		CULG	10 31 0538	S16 E45	11 3.6		B	EHO	450	15	11	2
5212		RAMY	10 31 1348	S17 E39	11 3.5		B	EKO	600	29	14	4
5212		BOUL	10 31 1426	S16 E38	11 3.5		B	EHI	490	15	12	1
5212		HOLL	10 31 1545	S16 E38	11 3.5		B	EHI	600	25	11	3
5212	24869	MWIL	10 31 1545	S17 E40	11 3.7	6	(D)					
5212		PALE	10 31 1945	S16 E38	11 3.7		B	EKO	580	26	12	3
5212		LEAR	11 01 0142	S17 E32	11 3.5		B	EHI	420	18	13	2
5212		CULG	11 01 0352	S17 E31	11 3.5		B	EHO	600	20	13	2
5212		SVTO	11 01 0724	S16 E30	11 3.6		BG	EKO	730	32	13	2
5212		RAMY	11 01 1312	S16 E27	11 3.6		BGD	EKI	610	31	13	4
5212		HOLL	11 01 1501	S16 E26	11 3.6		B	EHI	590	26	13	3
5212		BOUL	11 01 1535	S17 E25	11 3.5		B	EKI	730	12	12	2
5212	24869	MWIL	11 01 1600	S17 E27	11 3.7	6	(BG)					
5212		PALE	11 01 1815	S15 E24	11 3.6		B	EHI	700	25	13	3
5212		LEAR	11 02 0015	S17 E21	11 3.6		B	EHI	120	30	12	3
5212		CULG	11 02 0355	S18 E19	11 3.6		B	EHI	600	19	13	2
5212		SVTO	11 02 0954	S17 E16	11 3.6		BG	EHO	560	24	12	4
5212	24869	MWIL	11 02 1545	S17 E14	11 3.7	6	(B)					
5212		HOLL	11 02 1726	S16 E11	11 3.6		B	EHO	670	20	13	3
5212		PALE	11 02 1800	S16 E14	11 3.8		B	EHO	660	19	11	3
5212		LEAR	11 03 0017	S16 E07	11 3.5		BG	ESO	530	32	12	4
5212		CULG	11 03 0310	S18 E04	11 3.4		B	EKO	540	19	14	2
5212		RAMY	11 03 1340	S16 E01	11 3.6		BD	FKC	620	36	16	3
5212	24869	MWIL	11 03 1500	S17 W00	11 3.6	6	(D)					
5212		HOLL	11 03 1605	S17 W02	11 3.5		BGD	FKC	660	25	20	2
5212		LEAR	11 04 0010	S17 W06	11 3.5		BGD	FKO	580	32	16	3
5212		CULG	11 04 0400	S17 W09	11 3.5		B	EKO	560	22	14	2
5212		SVTO	11 04 0833	S16 W12	11 3.4		BGD	FKO	740	25	16	2
5212		RAMY	11 04 1250	S15 W13	11 3.5		BGD	FKC	660	44	18	4
5212		BOUL	11 04 1445	S15 W13	11 3.6		BGD	EKO	700	15	14	2
5212		HOLL	11 04 1505	S16 W14	11 3.6		BGD	FKI	700	37	17	3
5212		LEAR	11 05 0100	S15 W22	11 3.4		BGD	FKO	650	32	16	4
5212		SVTO	11 05 0753	S15 W24	11 3.5		BD	FKI	810	26	17	3
5212		BOUL	11 05 1520	S16 W28	11 3.5		BGD	FKO	590	23	15	3
5212		HOLL	11 05 1530	S16 W29	11 3.4		BGD	FKI	850	35	19	4
5212		RAMY	11 05 1553	S17 W27	11 3.6		BGD	FKC	760	32	16	2
5212	24869	MWIL	11 05 1600	S17 W26	11 3.7	6	(D)					
5212		CULG	11 06 0400	S16 W35	11 3.5		B	EKO	810	21	11	2
5212		LEAR	11 06 0411	S16 W34	11 3.6		BGD	DKO	600	28	14	3
5212		SVTO	11 06 0632	S18 W34	11 3.7		BGD	EKI	780	35	15	2
5212		RAMY	11 06 1240	S16 W39	11 3.6		BD	EKI	710	23	11	3

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(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)		Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5212		HOLL	11 06	1515	S16 W40	11 3.6		BD	FKO	720	25	18	4
5212	24869	MWIL	11 06	1530	S17 W37	11 3.8	6	(D)					
5212		BOUL	11 06	1848	S18 W39	11 3.8		BGD	CKO	600	12	7	3
5212		PALE	11 07	0001	S19 W39	11 4.0		BD	EKI	590	18	12	3
5212		LEAR	11 07	0025	S17 W42	11 3.8		BGD	DKC	510	17	7	3
5212		CULG	11 07	0407	S17 W46	11 3.7		B	DKI	600	19	8	2
5212		SVTO	11 07	0857	S18 W46	11 3.9		BGD	DKI	820	25	8	2
5212		RAMY	11 07	1240	S17 W49	11 3.8		BGD	DKI	770	24	8	4
5212	24869	MWIL	11 07	1600	S17 W50	11 3.9	6	(D)					
5212		HOLL	11 07	1615	S18 W50	11 3.9		BD	EKO	630	13	15	3
5212		BOUL	11 07	1653	S18 W50	11 3.9		B	DKO	350	4	4	1
5212		PALE	11 07	2100	S19 W55	11 3.7		BD	EKO	600	12	11	2
5212		LEAR	11 08	0045	S17 W56	11 3.8		BGD	DKC	430	11	7	4
5212		CULG	11 08	0330	S18 W56	11 3.9		B	DKI	570	8	5	2
5212		SVTO	11 08	0752	S18 W60	11 3.7		BD	DKI	760	10	6	2
5212		BOUL	11 08	1524	S17 W63	11 3.8		A	HK	30	2	4	1
5212		HOLL	11 08	1725	S17 W65	11 3.8		BD	DKO	380	6	6	2
5212	24869	MWIL	11 08	1845	S17 W64	11 3.9	6	(B)					
5212		PALE	11 08	1955	S18 W67	11 3.7		BD	DKO	530	4	6	2
5212		LEAR	11 09	0045	S17 W67	11 3.9		BG	CKC	310	6	5	4
5212		CULG	11 09	0320	S13 W69	11 3.9		B	DKI	600	3	3	2
5212		SVTO	11 09	0704	S17 W75	11 3.6		BGD	DHI	560	5	9	1
5212		RAMY	11 09	1350	S17 W76	11 3.8		BD	DHO	460	4	5	4
5212		HOLL	11 09	1538	S17 W77	11 3.8		BD	DKO	480	3	8	3
5212	24869	MWIL	11 09	1545	S17 W77	11 3.8	5	(D)					
5212		PALE	11 09	2017	S15 W75	11 4.2		BD	DKO	450	3	8	2
5212		LEAR	11 10	0324	S18 W85	11 3.7		B	DKO	210	2	14	3
5212		CULG	11 10	0345	S15 W80	11 4.1		A	HK	400	1	2	1
5212A		CULG	10 29	0442	S34 E71	11 3.8		A	HS	80	1	4	2
5212B		RAMY	11 04	1250	N27 W03	11 4.3		A	AX		1	1	4
5212C		SVTO	10 29	0818	S27 E78	11 4.4		A	HS	60	1	3	2
5212C		RAMY	10 29	1315	S27 E75	11 4.4		A	HS	120	1	2	3
5212C		HOLL	10 29	1545	S26 E75	11 4.5		A	HS	80	1	2	4
5215		HOLL	10 29	1545	N26 E79	11 4.8		B	BXO	10	4	3	4
5215		LEAR	10 30	0015	N24 E72	11 4.6		A	AX	10	1	1	3
5215		RAMY	10 30	1427	N23 E62	11 4.4		A	AX	20	3	2	2
5215		BOUL	10 30	1450	N25 E64	11 4.6		B	AXI		1		3
5215		HOLL	10 30	1515	N25 E65	11 4.7		A	AX	10	2	1	2
5215	24871	MWIL	10 30	1530	N24 E63	11 4.5	4	(AP)					
5215		PALE	10 30	1945	N23 E60	11 4.4		A	AX	10	2	1	2
5215		LEAR	10 31	0055	N24 E57	11 4.4		A	AX	20	2	1	3
5215		CULG	10 31	0538	N24 E56	11 4.6		A	AX	10	1		2
5215		RAMY	10 31	1348	N24 E51	11 4.5		A	AX	10	1	1	4
5215	24871	MWIL	10 31	1545	N24 E49	11 4.4	4	(AP)					
5215		HOLL	10 31	1545	N25 E50	11 4.5		A	AX		1		3
5215		PALE	10 31	1945	N25 E50	11 4.7		A	AX		1		3
5215		RAMY	11 04	1250	N22 W01	11 4.4		A	AX		1	1	4
5217		RAMY	10 31	1348	N16 E53	11 4.6		A	AX	20	5	2	4
5217		BOUL	10 31	1426	N17 E52	11 4.5		B	BXO	20	3	1	1
5217	24875	MWIL	10 31	1545	N16 E52	11 4.6	5	(B)					
5217		HOLL	10 31	1545	N17 E52	11 4.6		B	BXO	10	6	3	3
5217		PALE	10 31	1945	N16 E52	11 4.8		B	BXO	10	4	2	3
5217		LEAR	11 01	0142	N15 E46	11 4.5		B	CSO	50	3	1	2
5217		CULG	11 01	0352	N16 E44	11 4.5		B	DSO	20	4	4	2
5217		SVTO	11 01	0724	N17 E42	11 4.5		B	DAO	50	5	4	2
5217		RAMY	11 01	1312	N17 E40	11 4.6		B	CRI	30	9	5	4
5217		HOLL	11 01	1501	N16 E39	11 4.6		B	CRO	30	8	5	3
5217		BOUL	11 01	1535	N17 E37	11 4.5		B	DSO	80	5	4	2
5217	24875	MWIL	11 01	1600	N16 E38	11 4.5	5	(B)					
5217		PALE	11 01	1815	N17 E38	11 4.6		B	DSO	70	6	4	3
5217		LEAR	11 02	0015	N16 E33	11 4.5		B	DSO	40	7	5	3
5217		CULG	11 02	0355	N16 E31	11 4.5		B	DRO	30	4	4	2
5217		SVTO	11 02	0954	N16 E28	11 4.5		B	CSO	40	8	4	4
5217	24875	MWIL	11 02	1545	N16 E25	11 4.5	4	(B)					

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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
5217		HOLL	11 02 1726	N16	E24	11	4.5	B	CRO	20	5	5	3
5217		PALE	11 02 1800	N16	E23	11	4.5	B	BXO	10	5	4	3
5217		LEAR	11 03 0017	N16	E20	11	4.5	B	DRO	10	5	5	4
5217		CULG	11 03 0310	N15	E19	11	4.6	B	DAO	30	4	5	2
5217		RAMY	11 03 1340	N16	E13	11	4.5	B	BXO	20	9	6	3
5217	24875	MWIL	11 03 1500	N16	E13	11	4.6	4	(AF)				
5217		HOLL	11 03 1605	N18	E11	11	4.5	B	BXO	20	4	5	2
5217		LEAR	11 04 0010	N16	E08	11	4.6	B	CSO	10	3	3	3
5217		CULG	11 04 0400	N19	E08	11	4.8	A	HR	10	2	1	2
5217		SVTO	11 04 0833	N15	E04	11	4.6	B	BXO	10	5	4	2
5217		RAMY	11 04 1250	N17	E02	11	4.7	B	BXO	10	7	3	4
5217		BOUL	11 04 1445	N16	E01	11	4.7	B	CSO	30	2	3	2
5217		HOLL	11 04 1505	N16	E00	11	4.6	B	BXO	10	4	3	3
5217		LEAR	11 05 0100	N15	W06	11	4.6	B	CRO	30	7	4	4
5217		SVTO	11 05 0753	N15	W08	11	4.7	A	HR	10	1	1	3
5217		BOUL	11 05 1520	N15	W11	11	4.8	A	AX		1		3
5217		HOLL	11 05 1530	N16	W12	11	4.7	A	AX	10	2	2	4
5217		RAMY	11 05 1553	N15	W13	11	4.7	A	AX	10	1	1	2
5217	24875	MWIL	11 05 1600	N15	W12	11	4.7	4	(AF)				
5217		CULG	11 06 0400	N16	W19	11	4.7	A	AX		1		2
5217		LEAR	11 06 0411	N14	W18	11	4.8	B	CSO	20	2	3	3
5217		SVTO	11 06 0632	N14	W21	11	4.7	A	HX	10	1	1	2
5217		RAMY	11 06 1240	N16	W24	11	4.7	A	AX	10	1	1	3
5217		HOLL	11 06 1515	N14	W25	11	4.7	A	AX		1		4
5217	24875	MWIL	11 06 1530	N14	W26	11	4.7	4	(AF)				
5217		BOUL	11 06 1848	N15	W27	11	4.7	A	AX		1		3
5217		PALE	11 07 0001	N13	W30	11	4.7	A	AX		1	1	3
5217		LEAR	11 07 0025	N16	W31	11	4.7	A	AX	10	1	1	3
5217		CULG	11 07 0407	N17	W32	11	4.7	A	AX	10	1		2
5217		RAMY	11 07 1240	N15	W38	11	4.6	A	AX		1	1	4
5213		BOUL	10 29 1530	S27	E80	11	4.9	A	HS	60	1	1	2
5213		PALE	10 29 1840	S27	E78	11	4.8	A	HS	80	1	2	3
5213	24870	MWIL	10 29 2015	S28	E77	11	4.9	4	AP				
5213		LEAR	10 30 0015	S28	E71	11	4.5	A	HS	210	1	4	3
5213		SVTO	10 30 1014	S28	E73	11	5.1	A	HH	130	1	4	1
5213		RAMY	10 30 1427	S29	E65	11	4.7	A	HS	100	1	2	2
5213		BOUL	10 30 1450	S28	E68	11	4.9	A	HS	120	1	2	3
5213		HOLL	10 30 1515	S29	E66	11	4.8	A	HA	130	1	2	2
5213	24870	MWIL	10 30 1530	S28	E65	11	4.7	5	(AP)				
5213		PALE	10 30 1945	S29	E64	11	4.8	A	HS	120	1	2	2
5213		LEAR	10 31 0055	S28	E60	11	4.7	A	HS	220	1	4	3
5213		CULG	10 31 0538	S28	E58	11	4.8	A	HS	140	1	3	2
5213		RAMY	10 31 1348	S29	E55	11	4.9	A	HS	160	1	2	4
5213		HOLL	10 31 1545	S28	E53	11	4.8	A	HS	190	1	3	3
5213	24870	MWIL	10 31 1545	S28	E53	11	4.8	6	(AP)				
5213		PALE	10 31 1945	S29	E51	11	4.8	A	HS	220	1	2	3
5213		LEAR	11 01 0142	S29	E48	11	4.8	A	HS	100	1	1	2
5213		CULG	11 01 0352	S28	E47	11	4.8	A	HH	170	1	3	2
5213		SVTO	11 01 0724	S29	E44	11	4.7	A	HH	160	1	3	2
5213		RAMY	11 01 1312	S28	E42	11	4.8	A	HS	230	1	1	4
5213		HOLL	11 01 1501	S28	E42	11	4.9	A	HH	320	1	3	3
5213		BOUL	11 01 1535	S29	E41	11	4.9	A	HS	230	1	3	2
5213	24870	MWIL	11 01 1600	S28	E40	11	4.8	6	(AP)				
5213		PALE	11 01 1815	S29	E40	11	4.9	A	HH	240	1	3	3
5213		LEAR	11 02 0015	S29	E36	11	4.8	A	HS	690	2	3	3
5213		CULG	11 02 0355	S30	E35	11	4.9	A	HS	210	1	3	2
5213		SVTO	11 02 0954	S28	E33	11	5.0	A	HH	200	1	3	4
5213	24870	MWIL	11 02 1545	S28	E27	11	4.8	6	(AP)				
5213		HOLL	11 02 1726	S28	E28	11	4.9	B	CHO	200	3	3	3
5213		PALE	11 02 1800	S30	E28	11	4.9	B	CHO	200	4	3	3
5213		LEAR	11 03 0017	S28	E23	11	4.8	A	HS	180	4	3	4
5213		CULG	11 03 0310	S31	E18	11	4.5	A	HS	200	1	3	2
5213		RAMY	11 03 1340	S28	E17	11	4.9	A	HS	200	1	2	3
5213	24870	MWIL	11 03 1500	S29	E15	11	4.8	5	(AP)				
5213		HOLL	11 03 1605	S29	E17	11	5.0	B	CHO	240	3	6	2
5213		LEAR	11 04 0010	S28	E10	11	4.8	A	HS	190	3	3	3
5213		CULG	11 04 0400	S30	E04	11	4.5	A	HS	240	2	4	2
5213		SVTO	11 04 0833	S29	E07	11	4.9	A	HS	220	1	2	2

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
5213		RAMY	11 04 1250	S27 E03	11 4.8		B	CHO	220	3	4	4
5213		BOUL	11 04 1445	S28 E03	11 4.8		A	HH	240	1	3	2
5213		HOLL	11 04 1505	S28 E03	11 4.9		B	CSO	220	2	4	3
5213		LEAR	11 05 0100	S28 W03	11 4.8		A	HA	230	1	3	4
5213		SVTO	11 05 0753	S29 W05	11 4.9		A	HH	230	1	3	3
5213		BOUL	11 05 1520	S27 W09	11 4.9		A	HS	190	1	2	3
5213		HOLL	11 05 1530	S31 W10	11 4.8		B	CHO	250	3	7	4
5213		RAMY	11 05 1553	S29 W09	11 4.9		B	CHO	240	2	4	2
5213	24870	MWIL	11 05 1600	S28 W10	11 4.9	6	(AP)					
5213		CULG	11 06 0400	S27 W18	11 4.8		A	HS	180	2	3	2
5213		LEAR	11 06 0411	S31 W18	11 4.7		B	CAO	180	4	6	3
5213		SVTO	11 06 0632	S28 W17	11 4.9		A	HH	180	1	3	2
5213		RAMY	11 06 1240	S28 W21	11 4.9		A	HH	190	1	3	3
5213		HOLL	11 06 1515	S30 W20	11 5.1		B	CAO	220	3	5	4
5213	24870	MWIL	11 06 1530	S28 W22	11 4.9	5	(AP)					
5213		BOUL	11 06 1848	S27 W23	11 5.0		A	HS	200	1	2	3
5213		PALE	11 07 0001	S30 W27	11 4.9		A	HH	200	1	3	3
5213		LEAR	11 07 0025	S28 W28	11 4.8		A	HS	100	1	2	3
5213		CULG	11 07 0407	S28 W31	11 4.7		A	HS	190	1	3	2
5213		SVTO	11 07 0857	S28 W32	11 4.9		A	HA	170	1	3	2
5213		RAMY	11 07 1240	S28 W34	11 4.9		A	HH	280	2	3	4
5213	24870	MWIL	11 07 1600	S28 W36	11 4.8	6	(AP)					
5213		HOLL	11 07 1615	S30 W35	11 4.9		B	CSO	170	3	5	3
5213		BOUL	11 07 1653	S27 W35	11 5.0		A	HA	110	1	2	1
5213		PALE	11 07 2100	S30 W39	11 4.8		A	HH	220	1	4	2
5213		LEAR	11 08 0045	S26 W41	11 4.8		A	HS	120	1	2	4
5213		CULG	11 08 0330	S30 W42	11 4.8		A	HS	220	1	3	2
5213		SVTO	11 08 0752	S29 W44	11 4.9		A	HS	180	1	3	2
5213		BOUL	11 08 1524	S27 W48	11 4.9		A	HS	130	1	2	1
5213		HOLL	11 08 1725	S28 W49	11 4.9		A	HS	180	1	2	2
5213	24870	MWIL	11 08 1845	S28 W49	11 4.9	6	(AP)					
5213		PALE	11 08 1955	S29 W52	11 4.7		A	HS	190	1	2	2
5213		LEAR	11 09 0045	S28 W52	11 5.0		A	HS	100	1	2	4
5213		CULG	11 09 0320	S26 W57	11 4.7		A	HS	170	1	3	2
5213		SVTO	11 09 0704	S30 W58	11 4.7		A	HS	130	1	3	1
5213		RAMY	11 09 1350	S29 W60	11 4.9		A	HS	210	1	2	4
5213		HOLL	11 09 1538	S28 W60	11 5.0		A	HS	190	1	2	3
5213	24870	MWIL	11 09 1545	S28 W61	11 4.9	6	(AP)					
5213		PALE	11 09 2017	S30 W62	11 5.0		A	HS	200	1	2	2
5213		LEAR	11 10 0324	S28 W66	11 5.0		A	HA	220	1	6	3
5213		CULG	11 10 0345	S24 W69	11 4.8		A	HS	120	1	2	1
5213		RAMY	11 10 1515	S27 W73	11 4.9		A	HS	150	1	2	2
5213		HOLL	11 10 1556	S29 W74	11 4.9		A	HS	180	1	2	3
5213		PALE	11 10 1805	S31 W80	11 4.4		A	HS	120	1	2	3
5213	24870	MWIL	11 10 1915	S28 W74	11 5.0	5	(AP)					
5213		CULG	11 11 0348	S29 W82	11 4.7		A	HS	40	1	2	1
5213		SVTO	11 11 1055	S29 W80	11 5.2		A	HS	60	2	2	1
5213A		SVTO	10 30 1014	N25 E75	11 5.2		B	CSO	70	4	13	1
5213A		BOUL	10 31 1426	N28 E64	11 5.6		A	HS	90	1	2	1
5216		RAMY	10 30 1427	N24 E80	11 5.8		A	HA	70	1	2	2
5216		BOUL	10 30 1450	N25 E84	11 6.1		A	HS	100	1	2	3
5216		HOLL	10 30 1515	N26 E83	11 6.1		A	HA	60	1	2	2
5216	24872	MWIL	10 30 1530	N25 E81	11 5.9	4	AP					
5216		PALE	10 30 1945	N24 E80	11 6.0		A	HS	100	1	2	2
5216		LEAR	10 31 0055	N25 E77	11 6.0		A	HS	120	1	3	3
5216		CULG	10 31 0538	N25 E75	11 6.0		A	HS	80	1	1	2
5216		RAMY	10 31 1348	N24 E73	11 6.2		A	HA	100	1	2	4
5216		BOUL	10 31 1426	N26 E72	11 6.2		A	HS	110	1	3	1
5216	24872	MWIL	10 31 1545	N25 E69	11 6.0	5	(AP)					
5216		HOLL	10 31 1545	N26 E70	11 6.1		A	HA	100	1	2	3
5216		PALE	10 31 1945	N25 E71	11 6.3		A	HS	110	1	2	3
5216		LEAR	11 01 0142	N24 E63	11 5.9		A	HS	90	1	2	2
5216		CULG	11 01 0352	N25 E65	11 6.2		A	HS	90	1	2	2
5216		SVTO	11 01 0724	N25 E62	11 6.1		A	HA	80	1	2	2
5216		RAMY	11 01 1312	N25 E59	11 6.1		A	HS	110	1	2	4
5216		HOLL	11 01 1501	N25 E58	11 6.1		A	HS	80	1	2	3
5216		BOUL	11 01 1535	N25 E56	11 6.0		A	HS	70	1	2	2

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

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Nov 88

NOVEMBER 1988

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
5216	24872	MWIL	11 01 1600	N25 E58	11 6.1	5	(AP)					
5216		PALE	11 01 1815	N25 E59	11 6.3		A	HS	120	1	2	3
5216		LEAR	11 02 0015	N24 E52	11 6.0		A	HS	100	1	2	3
5216		CULG	11 02 0355	N25 E51	11 6.1		A	HS	100	1	2	2
5216		SVTO	11 02 0954	N24 E48	11 6.1		A	HS	120	1	2	4
5216	24872	MWIL	11 02 1545	N25 E45	11 6.1	5	(AP)					
5216		HOLL	11 02 1726	N25 E44	11 6.1		A	HS	120	1	2	3
5216		PALE	11 02 1800	N25 E44	11 6.1		A	HS	230	1	2	3
5216		LEAR	11 03 0017	N26 E41	11 6.2		A	HS	80	4	3	4
5216		CULG	11 03 0310	N22 E40	11 6.2		A	HS	110	1	2	2
5216		RAMY	11 03 1340	N26 E36	11 6.4		B	CSO	130	9	4	3
5216	24872	MWIL	11 03 1500	N25 E33	11 6.2	5	(AP)					
5216		HOLL	11 03 1605	N26 E32	11 6.1		A	HS	100	1	1	2
5216		LEAR	11 04 0010	N25 E28	11 6.2		A	HS	80	3	3	3
5216		CULG	11 04 0400	N23 E27	11 6.2		A	HS	70	2	2	2
5216		SVTO	11 04 0833	N23 E23	11 6.1		A	HS	90	1	2	2
5216		RAMY	11 04 1250	N28 E22	11 6.2		B	CSO	120	5	6	4
5216		BOUL	11 04 1445	N25 E20	11 6.2		A	HS	90	1	2	2
5216		HOLL	11 04 1505	N27 E21	11 6.3		B	CSO	90	3	4	3
5216		LEAR	11 05 0100	N25 E15	11 6.2		A	HS	100	4	2	4
5216		SVTO	11 05 0753	N25 E11	11 6.2		A	HS	100	1	2	3
5216		BOUL	11 05 1520	N26 E07	11 6.2		B	CSO	90	3	3	3
5216		HOLL	11 05 1530	N26 E08	11 6.3		B	CSO	90	3	5	4
5216		RAMY	11 05 1553	N26 E08	11 6.3		B	CSO	90	3	3	2
5216	24872	MWIL	11 05 1600	N26 E08	11 6.3	5	(AP)					
5216		CULG	11 06 0400	N26 E04	11 6.5				80	0	3	2
5216		LEAR	11 06 0411	N25 E00	11 6.2		A	HS	90	1	2	3
5216		SVTO	11 06 0632	N26 W01	11 6.2		A	HS	60	2	2	2
5216		RAMY	11 06 1240	N25 W03	11 6.3		A	HS	90	1	2	3
5216		HOLL	11 06 1515	N26 W05	11 6.2		B	CSO	90	3	5	4
5216	24872	MWIL	11 06 1530	N25 W06	11 6.2	5	(AP)					
5216		BOUL	11 06 1848	N25 W06	11 6.3		B	CSO	70	2	2	3
5216		PALE	11 07 0001	N25 W09	11 6.3		A	HS	140	1	2	3
5216		LEAR	11 07 0025	N27 W09	11 6.3		B	CSO	60	2	5	3
5216		CULG	11 07 0407	N25 W11	11 6.3		A	HS	90	1	2	2
5216		RAMY	11 07 1240	N26 W18	11 6.1		A	HS	110	1	1	4
5216	24872	MWIL	11 07 1600	N26 W18	11 6.3	5	(AP)					
5216		HOLL	11 07 1615	N25 W19	11 6.2		A	HS	100	1	2	3
5216		BOUL	11 07 1653	N26 W19	11 6.2		A	HS	60	1	1	1
5216		PALE	11 07 2100	N26 W22	11 6.2		A	HS	90	1	2	2
5216		LEAR	11 08 0045	N27 W23	11 6.2		A	HS	40	1	1	4
5216		CULG	11 08 0330	N25 W25	11 6.2		A	HS	60	2	2	2
5216		SVTO	11 08 0752	N25 W28	11 6.1		A	HA	70	1	2	2
5216		BOUL	11 08 1524	N26 W31	11 6.2		A	HS	40	1	1	1
5216		HOLL	11 08 1725	N26 W33	11 6.2		A	HS	70	1	2	2
5216	24872	MWIL	11 08 1845	N26 W34	11 6.1	5	(AP)					
5216		PALE	11 08 1955	N26 W35	11 6.1		A	HS	50	1	2	2
5216		LEAR	11 09 0045	N25 W37	11 6.2		A	HS	70	1	1	4
5216		CULG	11 09 0320	N27 W37	11 6.2		A	HS	30	1	2	2
5216		SVTO	11 09 0704	N25 W38	11 6.3		B	CSO	50	2	3	1
5216		RAMY	11 09 1350	N25 W44	11 6.2		A	HS	50	1	1	4
5216		HOLL	11 09 1538	N25 W44	11 6.2		A	HS	60	1	2	3
5216	24872	MWIL	11 09 1545	N26 W44	11 6.2	5	(AP)					
5216		PALE	11 09 2017	N25 W45	11 6.3		A	HS	30	1	1	2
5216		LEAR	11 10 0324	N25 W50	11 6.3		A	HS	60	1	1	3
5216		CULG	11 10 0345	N29 W50	11 6.2		A	HS	20	1	1	1
5216		SVTO	11 10 0905	N25 W54	11 6.2		A	HS	30	1	2	1
5216		RAMY	11 10 1515	N26 W58	11 6.1		A	HR	40	1	2	2
5216		HOLL	11 10 1556	N25 W57	11 6.2		A	HS	40	1	2	3
5216		PALE	11 10 1805	N25 W60	11 6.1		A	HS	80	1	1	3
5216	24872	MWIL	11 10 1915	N26 W58	11 6.3	5	(AP)					
5216		CULG	11 11 0348	N25 W63	11 6.3		A	HS	10	1	1	1
5216		RAMY	11 11 1330	N25 W70	11 6.1		A	HR	30	1	1	3
5216		HOLL	11 11 1515	N24 W70	11 6.2		A	HS	30	1	1	2
5216	24872	MWIL	11 11 1545	N26 W70	11 6.2	5	(AP)					
5216		PALE	11 11 1950	N25 W76	11 5.9		A	HS	30	1	2	3
5218		LEAR	11 01 0142	N10 E77	11 6.8		A	HS	60	1	1	2
5218		CULG	11 01 0352	N10 E80	11 7.2		B	DSO	90	3	7	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5218		SVTO	11	01	0724	N12	E77	11	7.1		B	DAO	140	4	8	2
5218		RAMY	11	01	1312	N12	E76	11	7.3		B	DSO	380	6	10	4
5218		HOLL	11	01	1501	N12	E74	11	7.2		B	DAO	310	6	10	3
5218		BOUL	11	01	1535	N11	E76	11	7.4		B	ESI	350	6	11	2
5218	24877	MWIL	11	01	1600	N11	E75	11	7.3	5	(BF)					
5218		PALE	11	01	1815	N12	E74	11	7.3		B	DAO	420	5	10	3
5218		LEAR	11	02	0015	N11	E68	11	7.1		BG	DAO	260	15	9	3
5218		CULG	11	02	0355	N11	E70	11	7.4		B	ESO	360	9	11	2
5218		SVTO	11	02	0954	N11	E64	11	7.2		B	EAI	400	17	11	4
5218	24877	MWIL	11	02	1545	N12	E61	11	7.2	5	(B)					
5218		HOLL	11	02	1726	N12	E60	11	7.2		B	DKO	340	13	10	3
5218		PALE	11	02	1800	N12	E59	11	7.2		B	EKO	420	11	12	3
5218		LEAR	11	03	0017	N12	E55	11	7.1		B	EAI	370	17	12	4
5218		CULG	11	03	0310	N08	E55	11	7.2		B	EKO	420	8	11	2
5218		RAMY	11	03	1340	N12	E48	11	7.2		B	EHI	600	32	12	3
5218	24877	MWIL	11	03	1500	N11	E47	11	7.2	5	(B)					
5218		HOLL	11	03	1605	N12	E49	11	7.4		B	EKI	490	17	13	2
5218		LEAR	11	04	0010	N12	E42	11	7.2		B	EKI	450	15	13	3
5218		CULG	11	04	0400	N08	E40	11	7.2		B	EKO	560	12	14	2
5218		SVTO	11	04	0833	N10	E39	11	7.3		B	EKI	720	20	13	2
5218		RAMY	11	04	1250	N12	E35	11	7.2		B	EKI	570	37	14	4
5218		BOUL	11	04	1445	N11	E33	11	7.1		B	EKO	600	9	14	2
5218		HOLL	11	04	1505	N12	E35	11	7.3		B	EHI	570	17	14	3
5218		LEAR	11	05	0100	N12	E28	11	7.1		B	EKI	660	40	12	4
5218		SVTO	11	05	0753	N12	E25	11	7.2		B	EKI	580	20	15	3
5218		BOUL	11	05	1520	N12	E20	11	7.1		B	EKI	510	19	14	3
5218		HOLL	11	05	1530	N11	E21	11	7.2		B	EKI	690	31	15	4
5218		RAMY	11	05	1553	N11	E21	11	7.2		B	EKI	670	22	14	2
5218	24877	MWIL	11	05	1600	N11	E20	11	7.2	5	(BG)					
5218		CULG	11	06	0400	N10	E15	11	7.3		B	EKI	630	17	14	2
5218		LEAR	11	06	0411	N12	E14	11	7.2		B	EKO	600	19	13	3
5218		SVTO	11	06	0632	N11	E13	11	7.2		B	EKI	700	27	14	2
5218		RAMY	11	06	1240	N12	E09	11	7.2		B	EKI	660	24	15	3
5218		HOLL	11	06	1515	N11	E08	11	7.2		BG	EKI	640	39	15	4
5218	24877	MWIL	11	06	1530	N11	E08	11	7.2	6	(D)					
5218		BOUL	11	06	1848	N12	E05	11	7.1		B	EAI	420	24	14	3
5218		PALE	11	07	0001	N12	E03	11	7.2		BG	EKI	540	24	14	3
5218		LEAR	11	07	0025	N12	E03	11	7.2		BG	EKI	500	34	14	3
5218		CULG	11	07	0407	N11	E01	11	7.2		B	EKI	520	27	13	2
5218		RAMY	11	07	1240	N12	W03	11	7.3		BG	EKI	630	35	15	4
5218	24877	MWIL	11	07	1600	N12	W05	11	7.3	6	(BG)					
5218		HOLL	11	07	1615	N11	W06	11	7.2		BG	EKI	610	33	15	3
5218		BOUL	11	07	1653	N12	W06	11	7.2		B	EKI	310	6	14	1
5218		PALE	11	07	2100	N12	W08	11	7.3		BGD	EKI	550	36	15	2
5218		LEAR	11	08	0045	N12	W11	11	7.2		BG	EKI	420	34	14	4
5218		CULG	11	08	0330	N12	W12	11	7.2		B	EKI	560	25	14	2
5218		SVTO	11	08	0752	N12	W15	11	7.2		BG	EKI	650	29	15	2
5218		BOUL	11	08	1524	N13	W18	11	7.3		B	EKO	370	10	14	1
5218		HOLL	11	08	1725	N12	W20	11	7.2		BGD	EAO	430	22	14	2
5218	24877	MWIL	11	08	1845	N12	W20	11	7.3	6	(BG)					
5218		PALE	11	08	1955	N12	W20	11	7.3		BGD	EKI	480	17	14	2
5218		LEAR	11	09	0045	N11	W23	11	7.3		BGD	EKO	480	29	14	4
5218		CULG	11	09	0320	N13	W25	11	7.2		B	EKI	540	22	14	2
5218		SVTO	11	09	0704	N12	W27	11	7.3		BG	EKI	610	22	13	1
5218		RAMY	11	09	1350	N11	W30	11	7.3		BGD	EKI	570	29	13	4
5218		HOLL	11	09	1538	N11	W32	11	7.2		BGD	EKO	810	24	14	3
5218	24877	MWIL	11	09	1545	N12	W30	11	7.4	6	(D)					
5218		PALE	11	09	2017	N12	W35	11	7.2		BGD	EKO	840	15	15	2
5218		LEAR	11	10	0324	N12	W38	11	7.3		BGD	EKO	420	23	14	3
5218		CULG	11	10	0345	N15	W38	11	7.3		B	EKI	500	11	13	1
5218		SVTO	11	10	0905	N11	W42	11	7.2		BGD	EKO	360	13	13	1
5218		RAMY	11	10	1515	N13	W46	11	7.2		BG	FHI	560	16	16	2
5218		HOLL	11	10	1556	N11	W45	11	7.3		BG	EKO	670	16	14	3
5218		PALE	11	10	1805	N12	W47	11	7.2		BG	EKO	590	9	14	3
5218	24877	MWIL	11	10	1915	N12	W45	11	7.4	5	(B)					
5218		CULG	11	11	0348	N12	W51	11	7.3		B	EKI	370	8	14	1
5218		SVTO	11	11	1055	N11	W55	11	7.3		B	EKI	490	8	13	1
5218		RAMY	11	11	1330	N12	W57	11	7.3		BG	EKO	510	6	13	3
5218		HOLL	11	11	1515	N11	W57	11	7.3		B	EKO	400	13	14	2

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

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Nov 88

NOVEMBER 1988

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
5218	24877	MWIL	11 11 1545	N12	W59	11 7.2	6	(B)					
5218		PALE	11 11 1950	N12	W63	11 7.1		B	EKO	410	8	14	3
5218		LEAR	11 12 0155	N13	W65	11 7.2		B	EAO	330	8	13	3
5218		CULG	11 12 0355	N12	W64	11 7.3		B	EAO	260	6	13	1
5218		RAMY	11 12 1413	N12	W70	11 7.3		B	EKO	350	4	13	2
5218		BOUL	11 12 1535	N13	W70	11 7.4		B	CSO	200	4	14	2
5218		HOLL	11 12 1610	N11	W70	11 7.4		B	CSO	250	8	14	3
5218		PALE	11 12 1840	N14	W74	11 7.2		B	EAO	330	4	13	3
5218		LEAR	11 13 0015	N13	W75	11 7.3		B	EHO	290	7	13	4
5218		CULG	11 13 0400	N13	W77	11 7.3		B	EAO	160	3	11	2
5218		RAMY	11 13 1320	N13	W79	11 7.6		B	DAO	60	3	3	4
5218		BOUL	11 13 1520	N13	W84	11 7.3		B	BXO		2	5	2
5218	24877	MWIL	11 13 1545	N13	W80	11 7.6	4	AF					
5218		HOLL	11 13 1610	N13	W78	11 7.8		B	CRO	40	3	3	3
5218		LEAR	11 14 0046	N13	W85	11 7.6		A	HS	20	2	2	4
5218A		HOLL	11 05 1530	S15	E27	11 7.7		A	AX		1		4
5222		LEAR	11 03 0017	N21	E66	11 8.1		A	AX	10	1	1	4
5222		LEAR	11 05 0100	N21	E38	11 7.9		B	BXO	30	4	2	4
5222		SVTO	11 05 0753	N21	E37	11 8.2		B	CSO	30	5	4	3
5222		BOUL	11 05 1520	N21	E31	11 8.0		B	CRO	10	3	3	3
5222		HOLL	11 05 1530	N21	E31	11 8.0		B	CAO	30	7	5	4
5222		RAMY	11 05 1553	N21	E32	11 8.1		B	CSO	30	4	3	2
5222	24881	MWIL	11 05 1600	N20	E31	11 8.0	4	(BP)					
5222		CULG	11 06 0400	N17	E26	11 8.1		B	CSO	10	2	3	2
5222		LEAR	11 06 0411	N20	E25	11 8.1		B	BXO	10	3	3	3
5222		SVTO	11 06 0632	N21	E22	11 7.9		A	HA	150	2		2
5222		RAMY	11 06 1240	N21	E19	11 8.0		A	HR	10	1	1	3
5222		HOLL	11 06 1515	N21	E17	11 7.9		A	HR	10	2	1	4
5222	24881	MWIL	11 06 1530	N20	E18	11 8.0	4	(AP)					
5222		BOUL	11 06 1848	N21	E15	11 7.9		A	AX		2	1	3
5222		PALE	11 07 0001	N21	E13	11 8.0		A	AX	10	2	1	3
5222		LEAR	11 07 0025	N20	E12	11 7.9		A	AX	10	1	1	3
5222		CULG	11 07 0407	N20	E11	11 8.0		A	HR	10	1		2
5222		RAMY	11 07 1240	N21	E06	11 8.0		A	AX		2	1	4
5222	24881	MWIL	11 07 1600	N20	E04	11 8.0	4	(AP)					
5222		HOLL	11 07 1615	N21	E04	11 8.0		A	HR	10	2	1	3
5222		PALE	11 07 2100	N21	E01	11 7.9		A	AX	10	1	1	2
5222		LEAR	11 08 0045	N21	W01	11 7.9		A	AX	10	1	1	4
5222		CULG	11 08 0330	N20	W03	11 7.9		A	AX	10	1		2
5222		SVTO	11 08 0752	N21	W05	11 7.9		A	AX		1		2
5222		HOLL	11 08 1725	N21	W11	11 7.9		A	AX		1		2
5222	24881	MWIL	11 08 1845	N21	W11	11 7.9	4	(AP)					
5222		PALE	11 08 1955	N21	W11	11 8.0		A	AX	10	1	1	2
5222		LEAR	11 09 0045	N20	W14	11 8.0		A	AX	10	1	1	4
5222		CULG	11 09 0320	N21	W14	11 8.1		A	AX		1		2
5222		SVTO	11 09 0704	N21	W18	11 7.9		A	AX	10	1	1	1
5225	24884	MWIL	11 07 1600	S34	E14	11 8.8	4	(AP)					
5225		HOLL	11 07 1615	S32	E14	11 8.8		A	AX		1		3
5225		PALE	11 07 2100	S35	E11	11 8.7		A	AX	10	2	2	2
5225		LEAR	11 08 0045	S33	E07	11 8.6		A	AX	10	2	2	4
5225		CULG	11 08 0330	S35	E06	11 8.6		A	AX	10	1		2
5225		SVTO	11 08 0752	S33	E03	11 8.6		A	AX		2	1	2
5225A		RAMY	11 11 1330	S19	W30	11 9.3		A	AX		1	1	3
5225A	24892	MWIL	11 11 1545	S19	W31	11 9.3	3	(AF)					
5221		RAMY	11 03 1340	N22	E78	11 9.6		A	AX	10	1	1	3
5221	24879	MWIL	11 03 1500	N21	E78	11 9.6	2	(AP)					
5221		HOLL	11 03 1605	N22	E80	11 9.8		A	AX	20	1	1	2
5221		LEAR	11 04 0010	N21	E72	11 9.5		A	AX	20	1	1	3
5221		CULG	11 04 0400	N20	E72	11 9.7		A	AX		1		2
5221		SVTO	11 04 0833	N19	E69	11 9.6		A	HR	30	1	1	2
5221		RAMY	11 04 1250	N22	E65	11 9.5		A	AX	10	2	1	4
5221		BOUL	11 04 1445	N21	E68	11 9.8		A	AX	20	1	1	2
5221		HOLL	11 04 1505	N22	E65	11 9.6		A	AX	10	1	1	3
5221		LEAR	11 05 0100	N22	E58	11 9.5		A	AX	20	1	1	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5221		SVTO	11	05	0753	N21	E56	11	9.6		A	AX		1		3
5221		HOLL	11	05	1530	N22	E51	11	9.6		A	AX		1	1	4
5221		RAMY	11	05	1553	N21	E51	11	9.6		A	AX	10	1	1	2
5221	24879	MWIL	11	05	1600	N21	E50	11	9.5	4	(AP)					
5221		LEAR	11	07	0025	N21	E32	11	9.5		A	AX	10	1	1	3
5230		LEAR	11	09	0045	S13	E10	11	9.8		A	AX	10	2	1	4
5230		SVTO	11	09	0704	S15	E06	11	9.7		B	BXO	20	3	2	1
5230		PALE	11	09	2017	S12	E01	11	9.9		A	HS	10	1	1	2
5230		LEAR	11	10	0324	S13	W05	11	9.8		B	CSO	40	2	2	3
5230		CULG	11	10	0345	S12	W08	11	9.5		A	HR	10	1	1	1
5230		SVTO	11	10	0905	S13	W08	11	9.8		B	CSO	20	3	3	1
5230		RAMY	11	10	1515	S13	W13	11	9.6		B	CAO	10	3	3	2
5230		HOLL	11	10	1556	S15	W12	11	9.7		B	CSO	20	4	3	3
5230		PALE	11	10	1805	S15	W13	11	9.8		B	CSO	20	2	3	3
5230	24888	MWIL	11	10	1915	S14	W14	11	9.7	4	(B)					
5230		CULG	11	11	0348	S14	W22	11	9.5		A	HR	10	1	1	1
5230		SVTO	11	11	1055	S14	W21	11	9.9		B	BXO		3	4	1
5230		RAMY	11	11	1330	S12	W24	11	9.7		B	BXO	10	2	4	3
5230		HOLL	11	11	1515	S13	W26	11	9.7		A	AX	10	1	1	2
5230	24888	MWIL	11	11	1545	S13	W27	11	9.6	5	(AP)					
5230		PALE	11	11	1950	S13	W30	11	9.6		A	AX	10	1	1	3
5230		LEAR	11	12	0155	S12	W33	11	9.6		A	AX	10	1	1	3
5234		CULG	11	11	0348	N13	W13	11	10.2		B	CSO	10	2	3	1
5234		SVTO	11	11	1055	N12	W17	11	10.2		B	CSO	20	4	3	1
5234		RAMY	11	11	1330	N13	W17	11	10.3		A	AX	10	1	1	3
5234		HOLL	11	11	1515	N13	W17	11	10.3		A	AX	10	2	1	2
5234	24893	MWIL	11	11	1545	N13	W17	11	10.4	4	(AF)					
5234		PALE	11	11	1950	N13	W21	11	10.2		A	AX	10	1	1	3
5234		LEAR	11	12	0155	N13	W24	11	10.3		A	AX	10	1	1	3
5234		CULG	11	12	0355	N13	W24	11	10.3		A	AX	10	1		1
5234		RAMY	11	12	1413	N12	W33	11	10.1		B	BXO	10	2	3	2
5234		LEAR	11	13	0015	N12	W39	11	10.1		B	BXO	10	2	3	4
5234		RAMY	11	13	1320	N14	W47	11	10.0		B	CRO	20	6	5	4
5234		BOUL	11	13	1520	N14	W50	11	9.9		B	CAO	10	4	2	2
5234	24893	MWIL	11	13	1545	N13	W50	11	9.9	5	(BP)					
5234		HOLL	11	13	1610	N13	W50	11	9.9		B	CRO	20	4	4	3
5234		PALE	11	13	2210	N13	W52	11	10.0		B	CSO	40	4	5	3
5234		LEAR	11	14	0046	N14	W54	11	9.9		B	CRO	20	6	6	4
5234		CULG	11	14	0330	N15	W56	11	9.9		B	CRO	20	2	5	2
5234		RAMY	11	14	1250	N13	W60	11	10.0		B	CRO	50	4	8	4
5234		HOLL	11	14	1610	N15	W63	11	9.9		B	CRO	20	5	6	3
5234		PALE	11	14	1750	N13	W69	11	9.5		A	AX	10	1	1	3
5238		RAMY	11	12	1413	N25	W26	11	10.6		B	BXO	10	2	3	2
5238		HOLL	11	12	1610	N24	W27	11	10.6		B	BXO	10	2	3	3
5238		PALE	11	12	1840	N27	W27	11	10.7		B	BXO	20	2	4	3
5238		LEAR	11	13	0015	N26	W32	11	10.5		B	BXO	10	2	4	4
5238		LEAR	11	14	0046	N27	W45	11	10.5		B	BXO	10	3	4	4
5238	24897	MWIL	11	14	2300	N25	W59	11	10.4	3	(AP)					
5238		SVTO	11	15	0755	N25	W64	11	10.4		A	AX	10	1	1	2
5238		RAMY	11	15	1400	N25	W67	11	10.4		A	AX	10	1	1	3
5238	24897	MWIL	11	15	1545	N25	W68	11	10.4	4	(AP)					
5238		HOLL	11	15	1721	N25	W70	11	10.3		A	AX		1		2
5226		RAMY	11	06	1240	S20	E59	11	11.0		A	AX		1		3
5226	24883	MWIL	11	06	1530	S21	E56	11	10.9	3	(AP)					
5226	24883	MWIL	11	07	1600	S21	E37	11	10.5	4	(AP)					
5226		HOLL	11	07	1615	S20	E38	11	10.6		A	AX		1		3
5226		PALE	11	07	2100	S22	E35	11	10.6		A	AX	10	2	1	2
5226		LEAR	11	08	0045	S22	E36	11	10.8		A	AX	10	1	1	4
5226		LEAR	11	09	0045	S21	E21	11	10.6		B	BXO	10	2	2	4
5226	24883	MWIL	11	09	1545	S22	E12	11	10.6	3	(AP)					
5226		LEAR	11	10	0324	S21	E10	11	10.9		B	BXO	10	2	3	3
5226		SVTO	11	10	0905	S21	E07	11	10.9		A	AX		1		1
5226		RAMY	11	11	1330	S22	W08	11	10.9		A	AX		1	1	3
5227		HOLL	11	08	1725	S24	E47	11	12.3		B	BXO	10	2	5	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
5227	24885	MWIL	11 08 1845	S25 E46	11 12.3	4	(B)					
5227		PALE	11 08 1955	S25 E48	11 12.5		B	BXO	30	2	4	2
5227		LEAR	11 09 0045	S25 E44	11 12.4		B	CRO	20	5	5	4
5227		CULG	11 09 0320	S29 E42	11 12.4		B	DRO	10	3	7	2
5227		SVTO	11 09 0704	S25 E41	11 12.5		B	CRO	30	5	7	1
5227		RAMY	11 09 1350	S25 E36	11 12.4		B	BXO	10	5	6	4
5227		HOLL	11 09 1538	S26 E37	11 12.5		B	BXO	20	4	6	3
5227	24885	MWIL	11 09 1545	S26 E34	11 12.3	4	(B)					
5227		PALE	11 09 2017	S25 E35	11 12.5		B	CAO	20	2	2	2
5227		LEAR	11 10 0324	S26 E30	11 12.5		B	CSO	40	3	7	3
5227		CULG	11 10 0345	S29 E26	11 12.2		B	CRO	10	2	6	1
5227		SVTO	11 10 0905	S25 E26	11 12.4		B	CSO	20	3	1	1
5227		RAMY	11 10 1515	S22 E23	11 12.4		B	CAO	40	6	8	2
5227		HOLL	11 10 1556	S26 E24	11 12.5		B	BXO	40	6	7	3
5227		PALE	11 10 1805	S27 E23	11 12.5		B	CSO	40	5	6	3
5227	24885	MWIL	11 10 1915	S26 E20	11 12.3	4	(B)					
5227		CULG	11 11 0348	S25 E08	11 11.8		B	DAO	30	4	6	1
5227		SVTO	11 11 1055	S26 E06	11 11.9		B	CAO	80	7	7	1
5227		RAMY	11 11 1330	S24 E03	11 11.8		B	DAO	50	3	4	3
5227		HOLL	11 11 1515	S24 E03	11 11.9		B	CRO	30	9	4	2
5227	24885	MWIL	11 11 1545	S26 E03	11 11.9	5	(BG)					
5227		PALE	11 11 1950	S24 W02	11 11.7		B	DAO	30	6	5	3
5227		LEAR	11 12 0155	S23 W04	11 11.8		B	DAO	160	12	7	3
5227		CULG	11 12 0355	S24 W05	11 11.8		B	DAI	130	12	7	1
5227		RAMY	11 12 1413	S23 W11	11 11.7		B	DAO	90	9	7	2
5227		BOUL	11 12 1535	S23 W10	11 11.9		B	DSO	70	8	9	2
5227		HOLL	11 12 1610	S23 W09	11 12.0		B	DSO	90	20	9	3
5227		PALE	11 12 1840	S23 W12	11 11.8		B	DAO	120	15	7	3
5227		LEAR	11 13 0015	S23 W15	11 11.8		B	DKO	150	17	9	4
5227		CULG	11 13 0400	S23 W17	11 11.8		B	DAO	150	13	9	2
5227		SVTO	11 13 0859	S23 W20	11 11.8		B	DAO	150	21	9	2
5227		RAMY	11 13 1320	S23 W22	11 11.9		BGD	DKI	230	21	10	4
5227		BOUL	11 13 1520	S23 W23	11 11.9		B	DAO	180	16	9	2
5227	24885	MWIL	11 13 1545	S23 W23	11 11.9	5	(D)					
5227		HOLL	11 13 1610	S23 W24	11 11.8		BD	DAO	260	26	11	3
5227		PALE	11 13 2210	S22 W26	11 11.9		BD	EAO	260	23	11	3
5227		LEAR	11 14 0046	S22 W29	11 11.8		B	DKI	330	22	10	4
5227		CULG	11 14 0330	S23 W29	11 11.9		B	EKI	340	14	12	2
5227		RAMY	11 14 1250	S23 W35	11 11.8		BGD	DKI	350	32	10	4
5227		BOUL	11 14 1525	S23 W36	11 11.9		B	DAO	200	9	8	1
5227		HOLL	11 14 1610	S23 W35	11 12.0		BGD	EKI	310	21	15	3
5227		PALE	11 14 1750	S23 W36	11 12.0		BG	EKI	420	26	12	3
5227	24885	MWIL	11 14 2300	S23 W40	11 11.9	4	(BG)					
5227		SVTO	11 15 0755	S25 W38	11 12.4		BGD	FAI	350	21	15	2
5227		RAMY	11 15 1400	S23 W47	11 12.0		BGD	EKC	480	36	12	3
5227	24885	MWIL	11 15 1545	S23 W49	11 11.9	5	(D)					
5227		HOLL	11 15 1721	S23 W48	11 12.0		BG	EAI	330	19	12	2
5227		PALE	11 15 1925	S23 W52	11 11.8		BG	EKC	520	30	13	3
5227		CULG	11 16 0600	S22 W57	11 11.9		B	DAO	190	11	8	2
5227		SVTO	11 16 1130	S24 W60	11 11.8		B	EAO	320	10	12	1
5227		RAMY	11 16 1446	S23 W62	11 11.8		BG	EAI	350	14	12	2
5227		BOUL	11 16 1530	S23 W62	11 11.9		B	EAI	200	9	11	2
5227	24885	MWIL	11 16 1600	S23 W61	11 12.0	5	(D)					
5227		HOLL	11 16 1640	S23 W62	11 11.9		BG	DAO	260	12	12	3
5227		PALE	11 16 1948	S20 W69	11 11.5		BG	EAI	330	13	13	3
5227		LEAR	11 17 0030	S23 W68	11 11.8		BG	EKI	430	17	13	4
5227		SVTO	11 17 0901	S23 W73	11 11.7		B	EAO	190	5	13	2
5227		BOUL	11 17 1500	S23 W76	11 11.8		B	DSO	180	3	9	1
5227	24885	MWIL	11 17 1530	S23 W73	11 12.0	4	(B)					
5227		HOLL	11 17 1603	S24 W75	11 11.9		B	DSO	180	4	9	3
5227		PALE	11 17 1805	S22 W74	11 12.1		B	DSO	240	4	9	3
5227		CULG	11 18 0355	S22 W80	11 12.0		A	HS	10	1	1	1
5227		LEAR	11 18 0405	S25 W77	11 12.2		B	DAO	80	5	8	3
5227		SVTO	11 18 1047	S24 W85	11 11.9		A	HH	50	2	3	3
5236		PALE	11 07 2100	S27 E62	11 12.7		A	AX	20	3	3	2
5236		LEAR	11 08 0045	S26 E55	11 12.3		A	AX	10	1	1	4
5236		CULG	11 08 0330	S25 E56	11 12.5		B	BXO	10	4	5	2
5236		SVTO	11 08 0752	S25 E54	11 12.5		B	BXO	10	3	5	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
5236		BOUL	11 08 1524	S24 E45	11 12.1		A	AX	10	1		1
5236		RAMY	11 11 1330	S26 E10	11 12.3		B	CAO	60	10	9	3
5236		HOLL	11 11 1515	S24 E07	11 12.2		A	HS	20	2	1	2
5236		PALE	11 11 1950	S25 E03	11 12.0		A	HS	40	2	2	3
5236		LEAR	11 12 0155	S26 E06	11 12.5		B	BXO	20	4	3	3
5236		CULG	11 12 0355	S27 E06	11 12.6		B	BXO	10	2	3	1
5236		RAMY	11 12 1413	S25 W05	11 12.2		B	CAO	30	9	9	2
5236		PALE	11 12 1840	S26 W05	11 12.4		B	CAO	20	4	8	3
5236		LEAR	11 13 0015	S25 W07	11 12.5		B	BXO	10	2	4	4
5236		CULG	11 13 0400	S27 W08	11 12.5		A	AX	10	1		2
5236		RAMY	11 14 1250	S26 W27	11 12.4		B	BXO	10	5	4	4
5227A		RAMY	11 12 1413	N24 W04	11 12.3		A	AX		1	1	2
5227A		HOLL	11 12 1610	N26 W05	11 12.3		B	BXO	10	2	3	3
5227A		PALE	11 12 1840	N25 W05	11 12.4		A	AX	10	1	3	3
5227B		SVTO	11 11 1055	N47 E11	11 12.4		A	HR	10	1	1	1
5243		PALE	11 14 1750	S33 W24	11 12.8		A	AX	10	2	2	3
5243	24898	MWIL	11 14 2300	S32 W25	11 13.0	4	(AP)					
5243		SVTO	11 15 0755	S33 W31	11 12.9		A	AX	10	1	1	2
5243		RAMY	11 15 1400	S32 W35	11 12.8		A	AX	10	1	1	3
5243	24898	MWIL	11 15 1545	S32 W36	11 12.8	3	(AP)					
5243		HOLL	11 15 1721	S32 W35	11 12.9		B	BXO	10	2	3	2
5243		RAMY	11 16 1446	S32 W47	11 12.9		B	DAO	50	7	8	2
5243		BOUL	11 16 1530	S33 W47	11 12.9		B	DAO	50	5	7	2
5243	24898	MWIL	11 16 1600	S33 W47	11 12.9	5	(B)					
5243		HOLL	11 16 1640	S33 W48	11 12.9		B	DSO	70	8	8	3
5243		PALE	11 16 1948	S32 W46	11 13.2		B	DAO	150	5	8	3
5243		LEAR	11 17 0030	S33 W51	11 13.0		B	DAO	200	4	10	4
5243		SVTO	11 17 0901	S33 W57	11 12.8		B	ESO	190	5	15	2
5243		BOUL	11 17 1500	S35 W61	11 12.7		B	DSI	210	6	10	1
5243	24898	MWIL	11 17 1530	S33 W59	11 12.9	5	(B)					
5243		HOLL	11 17 1603	S34 W59	11 13.0		B	DSO	280	5	9	3
5243		PALE	11 17 1805	S32 W60	11 13.0		B	DSO	220	7	9	3
5243		CULG	11 18 0355	S32 W68	11 12.8		B	DSO	70	5	12	1
5243		LEAR	11 18 0405	S35 W66	11 12.9		B	FKO	270	9	17	3
5243		SVTO	11 18 1047	S34 W70	11 12.9		B	EAO	370	8	12	3
5243		RAMY	11 18 1403	S34 W73	11 12.8		B	DAO	250	4	10	1
5243	24898	MWIL	11 18 1530	S34 W71	11 13.0	4	(B)					
5243		BOUL	11 18 1545	S34 W75	11 12.7		B	EAO	270	8	13	3
5243		HOLL	11 18 1606	S33 W72	11 12.9		B	DSO	300	5	10	2
5243		LEAR	11 19 0020	S36 W79	11 12.7		B	CSO	60	2	2	3
5243		CULG	11 19 0330	S33 W80	11 12.8		A	HS	40	1	1	1
5243		SVTO	11 19 1048	S34 W83	11 12.8		B	DKI	90	2	10	2
5243		RAMY	11 19 1236	S33 W78	11 13.3		B	CAO	70	5	4	3
5243		BOUL	11 19 1532	S35 W80	11 13.2		A	HS	10	1	2	3
5243		HOLL	11 19 1636	S35 W82	11 13.1		A	HS	60	1	2	3
5243	24898	MWIL	11 19 1830	S35 W80	11 13.4	3	AF					
5237		LEAR	11 12 0155	N16 E13	11 13.1		B	CRO	30	5	4	3
5237		CULG	11 12 0355	N16 E13	11 13.1		B	DAO	20	4	4	1
5237		RAMY	11 12 1413	N17 E06	11 13.0		B	CRO	20	7	5	2
5237		BOUL	11 12 1535	N17 E05	11 13.0		B	CAO	10	3	5	2
5237		HOLL	11 12 1610	N17 E05	11 13.0		B	CRO	20	9	5	3
5237		PALE	11 12 1840	N16 E05	11 13.1		B	CAO	40	7	5	3
5237		LEAR	11 13 0015	N17 E02	11 13.2		B	CRO	30	8	5	4
5237		CULG	11 13 0400	N16 W01	11 13.1		B	DRO	20	4	4	2
5237		RAMY	11 13 1320	N17 W06	11 13.1		B	CAO	30	7	4	4
5237		BOUL	11 13 1520	N17 W07	11 13.1		B	BXO		5	5	2
5237	24896	MWIL	11 13 1545	N16 W08	11 13.0	5	(B)					
5237		HOLL	11 13 1610	N17 W08	11 13.1		B	CRO	10	7	5	3
5237		PALE	11 13 2210	N17 W11	11 13.1		B	CSO	30	5	6	3
5237		LEAR	11 14 0046	N16 W13	11 13.0		B	CRO	20	6	4	4
5237		CULG	11 14 0330	N17 W13	11 13.1		B	DRO	10	3	5	2
5237		RAMY	11 14 1250	N16 W19	11 13.1		B	BXO	20	5	5	4
5237		BOUL	11 14 1525	N15 W22	11 13.0		A	HS	20	1	1	1
5237		PALE	11 14 1750	N15 W22	11 13.1		B	CSO	10	3	5	3
5237	24896	MWIL	11 14 2300	N16 W27	11 12.9	5	(B)					

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

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat	CMP CMD	Max Mo Day H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5237		SVTO	11 15 0755	N16	W32	11 12.9	A	HS	20	2	2	2
5237		RAMY	11 15 1400	N16	W35	11 12.9	A	HR	20	1	2	3
5237	24896	MWIL	11 15 1545	N16	W36	11 12.9	4	(AP)				
5237		HOLL	11 15 1721	N16	W37	11 12.9	A	AX	10	1	1	2
5242		SVTO	11 15 0755	N26	W26	11 13.3	A	AX		1	1	2
5242		RAMY	11 15 1400	N27	W30	11 13.2	B	CRO	20	4	4	3
5242	24900	MWIL	11 15 1545	N26	W31	11 13.2	4	(BF)				
5242		HOLL	11 15 1721	N26	W32	11 13.2	B	BXO	20	3	3	2
5242		PALE	11 15 1925	N27	W35	11 13.1	B	CSO	20	3	7	3
5242		CULG	11 16 0600	N28	W37	11 13.3	B	BXO	10	2	5	2
5242		RAMY	11 16 1446	N27	W45	11 13.1	B	DAO	110	12	7	2
5242		BOUL	11 16 1530	N26	W43	11 13.3	B	BXO	10	7	6	2
5242	24900	MWIL	11 16 1600	N26	W44	11 13.2	5	(B)				
5242		HOLL	11 16 1640	N26	W45	11 13.2	B	DSO	60	8	7	3
5242		PALE	11 16 1948	N28	W48	11 13.1	B	DAO	60	6	6	3
5242		LEAR	11 17 0030	N27	W50	11 13.1	B	CRO	70	10	7	4
5242		SVTO	11 17 0901	N27	W55	11 13.1	B	CAO	70	5	10	2
5242		BOUL	11 17 1500	N27	W58	11 13.1	B	DAO	120	2	8	1
5242	24900	MWIL	11 17 1530	N26	W57	11 13.2	4	(B)				
5242		HOLL	11 17 1603	N26	W60	11 13.0	B	DSO	190	6	8	3
5242		PALE	11 17 1805	N28	W57	11 13.3	B	DSO	100	6	9	3
5242		CULG	11 18 0355	N29	W64	11 13.1	B	DRO	50	5	9	1
5242		LEAR	11 18 0405	N24	W64	11 13.2	B	EKO	200	10	13	3
5242		SVTO	11 18 1047	N25	W66	11 13.3	B	CSO	60	5	10	3
5242		RAMY	11 18 1403	N26	W70	11 13.1	B	DAO	100	3	10	1
5242	24900	MWIL	11 18 1530	N25	W70	11 13.2	4	(B)				
5242		BOUL	11 18 1545	N27	W74	11 12.9	B	DSI	120	6	9	3
5242		HOLL	11 18 1606	N26	W72	11 13.1	B	DSO	60	4	10	2
5242		LEAR	11 19 0020	N26	W75	11 13.2	B	CSO	120	3	8	3
5242		SVTO	11 19 1048	N27	W77	11 13.4	B	B I	30	4	10	2
5242		RAMY	11 19 1236	N27	W79	11 13.4	B	CAO	50	3	3	3
5242		HOLL	11 19 1636	N27	W80	11 13.4	B	BXO	20	3	3	3
5242	24900	MWIL	11 19 1830	N25	W85	11 13.2	3	AF				
5228		RAMY	11 09 1350	N19	E53	11 13.6	B	BXO	10	2	3	4
5228		HOLL	11 09 1538	N20	E51	11 13.5	A	AX	20	4	2	3
5228	24886	MWIL	11 09 1545	N19	E51	11 13.5	4	(B)				
5228		PALE	11 09 2017	N20	E52	11 13.8	B	CAO	20	4	3	2
5228		LEAR	11 10 0324	N19	E45	11 13.6	B	CSO	60	5	3	3
5228		CULG	11 10 0345	N16	E47	11 13.7	B	CSO	10	2	3	1
5228		SVTO	11 10 0905	N20	E42	11 13.6	B	CSO	30	7	3	1
5228		RAMY	11 10 1515	N19	E38	11 13.5	B	CRI	30	8	5	2
5228		HOLL	11 10 1556	N20	E38	11 13.6	B	BXO	30	9	4	3
5228		PALE	11 10 1805	N20	E37	11 13.6	B	CSO	40	5	4	3
5228	24886	MWIL	11 10 1915	N19	E37	11 13.6	4	(B)				
5228		CULG	11 11 0348	N19	E33	11 13.7	B	CRO	20	8	5	1
5228		SVTO	11 11 1055	N20	E29	11 13.7	B	CSO	10	3	4	1
5228		RAMY	11 11 1330	N20	E27	11 13.6	B	CAO	20	7	5	3
5228		HOLL	11 11 1515	N20	E25	11 13.5	B	BXO	10	5	4	2
5228	24886	MWIL	11 11 1545	N21	E26	11 13.6	5	(B)				
5228		PALE	11 11 1950	N22	E22	11 13.5	B	CAO	30	4	5	3
5228		LEAR	11 12 0155	N22	E18	11 13.5	B	CAO	40	5	6	3
5228		CULG	11 12 0355	N20	E20	11 13.7	B	DRO	10	7	3	1
5228		RAMY	11 12 1413	N20	E13	11 13.6	B	BXO	10	4	5	2
5228		BOUL	11 12 1535	N20	E14	11 13.7	A	AX		2	1	2
5228		HOLL	11 12 1610	N20	E13	11 13.7	B	BXO	10	3	4	3
5228		PALE	11 12 1840	N19	E12	11 13.7	B	BXO	20	3	4	3
5228		LEAR	11 13 0015	N19	E09	11 13.7	A	AX	10	1	1	4
5228		LEAR	11 14 0046	N22	W08	11 13.4	A	AX	10	1	1	4
5228		RAMY	11 15 1400	N23	W27	11 13.5	B	BXO	20	5	3	3
5228	24886	MWIL	11 15 1545	N22	W27	11 13.6	4	(B)				
5228		HOLL	11 15 1721	N22	W28	11 13.6	A	AX	10	2	2	2
5228		PALE	11 15 1925	N23	W30	11 13.5	B	BXO	20	5	4	3
5228		CULG	11 16 0600	N24	W36	11 13.5	B	BXO	20	6	5	2
5228		RAMY	11 16 1446	N23	W41	11 13.4	B	CRO	50	8	7	2
5228		BOUL	11 16 1530	N21	W39	11 13.6	B	CAO	20	8	6	2
5228	24886	MWIL	11 16 1600	N22	W40	11 13.6	5	(B)				
5228		HOLL	11 16 1640	N22	W41	11 13.5	B	DSO	60	8	6	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5228		PALE	11 16 1948	N24	W45	11 13.3		B	DSO	70	7	5	3
5228		LEAR	11 17 0030	N22	W47	11 13.4		B	BXO	40	6	6	4
5228		SVTO	11 17 0901	N23	W52	11 13.4		B	CAO	60	2	9	2
5228		BOUL	11 17 1500	N22	W54	11 13.5		B	BXO	40	2	8	1
5228	24886	MWIL	11 17 1530	N21	W54	11 13.5	4	(B)					
5228		HOLL	11 17 1603	N21	W56	11 13.4		B	BXO	10	2	8	3
5228		PALE	11 17 1805	N23	W56	11 13.4		B	BXO	20	3	9	3
5228		CULG	11 18 0355	N25	W61	11 13.4		B	BXO	10	2	8	1
5228		LEAR	11 18 0405	N21	W61	11 13.5		B	BXO	40	4	8	3
5228		SVTO	11 18 1047	N21	W69	11 13.1		A	AX	10	1		3
5228		RAMY	11 18 1403	N21	W68	11 13.4		B	BXO	20	2	4	1
5228	24886	MWIL	11 18 1530	N20	W70	11 13.3	2	(AP)					
5228		BOUL	11 18 1545	N22	W75	11 12.9		B	BXO	20	2	2	3
5228		HOLL	11 18 1606	N22	W73	11 13.1		A	AX		1		2
5228		HOLL	11 19 1636	N21	W82	11 13.4		A	AX		1		3
5232		RAMY	11 10 1515	N13	E43	11 13.9		B	BXO	10	4	3	2
5232		HOLL	11 10 1556	N13	E43	11 13.9		B	BXO	10	4	4	3
5232		PALE	11 10 1805	N13	E41	11 13.8		A	AX	10	1	1	3
5232	24889	MWIL	11 10 1915	N14	E39	11 13.7	4	(AP)					
5232		CULG	11 11 0348	N14	E35	11 13.8		A	HR	20	1	1	1
5232		SVTO	11 11 1055	N13	E30	11 13.7		A	HS	20	1	1	1
5232		RAMY	11 11 1330	N13	E29	11 13.7		B	CAO	20	3	2	3
5232		HOLL	11 11 1515	N15	E28	11 13.7		A	AX	10	3	2	2
5232	24889	MWIL	11 11 1545	N14	E27	11 13.7	4	(AP)					
5232		PALE	11 11 1950	N14	E25	11 13.7		B	CAO	20	4	2	3
5232		LEAR	11 12 0155	N14	E22	11 13.7		A	AX	10	1	1	3
5232		CULG	11 12 0355	N13	E21	11 13.7		B	BXO	10	2	1	1
5232		RAMY	11 12 1413	N13	E17	11 13.9		A	AX		1	1	2
5232		HOLL	11 12 1610	N13	E16	11 13.9		A	AX		1		3
5232		PALE	11 12 1840	N12	E17	11 14.0		A	AX	10	1	1	3
5232		LEAR	11 13 0015	N12	E12	11 13.9		A	AX	10	1	1	4
5232		RAMY	11 13 1320	N14	E02	11 13.7		A	AX		1		4
5232	24889	MWIL	11 13 1545	N14	E01	11 13.7	3	(AP)					
5232		HOLL	11 13 1610	N15	E00	11 13.7		A	AX		1		3
5231		LEAR	11 10 0324	N13	E69	11 15.3		B	BXO	30	4	15	3
5231		RAMY	11 10 1515	N13	E65	11 15.5		B	BXI	20	4	6	2
5231		HOLL	11 10 1556	N14	E65	11 15.6		B	BXO	30	5	5	3
5231		PALE	11 10 1805	N14	E64	11 15.6		B	BXO	20	5	3	3
5231	24890	MWIL	11 10 1915	N13	E66	11 15.8	4	(B)					
5231		CULG	11 11 0348	N14	E59	11 15.6		B	CRO	40	4	5	1
5231		SVTO	11 11 1055	N13	E56	11 15.7		B	CSO	70	6	7	1
5231		RAMY	11 11 1330	N12	E52	11 15.5		B	CAO	110	7	5	3
5231		HOLL	11 11 1515	N14	E51	11 15.5		B	CSO	60	7	5	2
5231	24890	MWIL	11 11 1545	N13	E50	11 15.4	5	(B)					
5231		PALE	11 11 1950	N13	E48	11 15.4		B	CAO	80	4	5	3
5231		LEAR	11 12 0155	N12	E45	11 15.5		B	CSO	80	8	7	3
5231		CULG	11 12 0355	N12	E45	11 15.5		B	CSO	60	8	6	1
5231		RAMY	11 12 1413	N13	E39	11 15.5		B	DAO	80	8	6	2
5231		BOUL	11 12 1535	N13	E37	11 15.4		B	DSO	70	4	8	2
5231		HOLL	11 12 1610	N13	E38	11 15.5		B	CSO	60	6	6	3
5231		PALE	11 12 1840	N12	E37	11 15.6		B	DSO	120	6	6	3
5231		LEAR	11 13 0015	N13	E34	11 15.6		B	CSO	60	7	7	4
5231		CULG	11 13 0400	N12	E32	11 15.6		B	CSO	40	5	7	2
5231		RAMY	11 13 1320	N13	E26	11 15.5		B	CSO	70	6	7	4
5231		BOUL	11 13 1520	N13	E21	11 15.2		A	HS	40	1	1	2
5231	24890	MWIL	11 13 1545	N13	E23	11 15.4	5	(B)					
5231		HOLL	11 13 1610	N13	E25	11 15.5		B	CSO	60	6	6	3
5231		PALE	11 13 2210	N12	E19	11 15.3		A	HS	60	1	2	3
5231		LEAR	11 14 0046	N12	E18	11 15.4		B	CSO	50	3	3	4
5231		CULG	11 14 0330	N12	E16	11 15.3		B	CSO	40	2	3	2
5231		RAMY	11 14 1250	N12	E11	11 15.4		A	HS	60	1	1	4
5231		BOUL	11 14 1525	N13	E09	11 15.3		A	HS	40	1	1	1
5231		HOLL	11 14 1610	N12	E09	11 15.3		A	HS	60	1	1	3
5231		PALE	11 14 1750	N13	E08	11 15.3		A	HS	80	1	2	3
5231	24890	MWIL	11 14 2300	N13	E04	11 15.3	5	(AP)					
5231		SVTO	11 15 0755	N13	E04	11 15.6		B	CSO	80	3	7	2
5231		RAMY	11 15 1400	N13	W03	11 15.3		A	HS	70	1	2	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	Ht Wilson Group	Sta	Observation Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5231	24890	MWIL	11 15 1545	N12 W04	11 15.3	5	(AP)					
5231		HOLL	11 15 1721	N12 W05	11 15.3		A	HS	70	1	2	2
5231		PALE	11 15 1925	N13 W04	11 15.5		B	CSO	100	2	5	3
5231		CULG	11 16 0600	N13 W11	11 15.4		A	HS	30	1	1	2
5231		SVTO	11 16 1130	N11 W15	11 15.3				40	1	1	1
5231		RAMY	11 16 1446	N12 W18	11 15.2		A	HS	80	1	2	2
5231		BOUL	11 16 1530	N12 W17	11 15.4		A	HS	30	1	1	2
5231	24890	MWIL	11 16 1600	N12 W18	11 15.3	5	(AP)					
5231		HOLL	11 16 1640	N12 W18	11 15.3		A	HS	70	1	2	3
5231		PALE	11 16 1948	N13 W21	11 15.2		A	HS	60	1	2	3
5231		LEAR	11 17 0030	N12 W23	11 15.3		A	HA	50	1	2	4
5231		SVTO	11 17 0901	N11 W28	11 15.3		A	HA	50	1	1	2
5231		BOUL	11 17 1500	N12 W29	11 15.4		A	HA	50	1	2	1
5231	24890	MWIL	11 17 1530	N12 W31	11 15.3	4	(AP)					
5231		HOLL	11 17 1603	N11 W32	11 15.3		A	HS	40	1	2	3
5231		PALE	11 17 1805	N12 W32	11 15.3		A	HS	50	1	2	3
5231		CULG	11 18 0355	N12 W39	11 15.2		A	HS	30	1	1	1
5231		LEAR	11 18 0405	N10 W37	11 15.4		A	HA	50	1	2	3
5231		SVTO	11 18 1047	N11 W43	11 15.2		A	HS	80	2	2	3
5231		RAMY	11 18 1403	N11 W43	11 15.3		A	HS	60	1	2	1
5231	24890	MWIL	11 18 1530	N10 W44	11 15.3	4	(AP)					
5231		BOUL	11 18 1545	N11 W44	11 15.3		A	HS	60	1	2	3
5231		HOLL	11 18 1606	N11 W45	11 15.3		A	HS	50	1	2	2
5231		LEAR	11 19 0020	N10 W48	11 15.4		A	HS	60	1	1	3
5231		CULG	11 19 0330	N14 W52	11 15.2		A	HS	30	1	1	1
5231		SVTO	11 19 1048	N10 W56	11 15.2		A	HS	70	1	2	2
5231		RAMY	11 19 1236	N11 W57	11 15.2		A	HS	70	1	2	3
5231		BOUL	11 19 1532	N12 W58	11 15.3		A	HS	50	1	2	3
5231		HOLL	11 19 1636	N11 W58	11 15.3		A	HS	40	1	1	3
5231	24890	MWIL	11 19 1830	N11 W58	11 15.4	4	(AP)					
5231		PALE	11 19 2050	N15 W62	11 15.2		A	HS	80	1	2	3
5231		LEAR	11 20 0006	N11 W62	11 15.3		A	HS	40	1	1	2
5231		CULG	11 20 0325	N14 W66	11 15.1		A	HS	40	1	1	2
5231		SVTO	11 20 1226	N11 W70	11 15.2		A	HS	60	1	1	1
5231		RAMY	11 20 1317	N10 W70	11 15.3		A	HS	50	1	2	3
5231	24890	MWIL	11 20 1530	N12 W70	11 15.4	4	(AP)					
5231		HOLL	11 20 1535	N11 W71	11 15.3		A	HS	60	1	1	3
5231		PALE	11 20 1825	N14 W76	11 15.0		A	HS	60	1	2	3
5231		CULG	11 21 0115	N14 W80	11 15.0		A	HS	20	1	1	2
5231		LEAR	11 21 0345	N11 W78	11 15.3		A	AX	30	1	1	2
5229		CULG	11 09 0320	N33 E85	11 15.9		A	AX		1		2
5229		SVTO	11 09 0704	N34 E77	11 15.4		B	BXO	10	6	11	1
5229		RAMY	11 09 1350	N32 E73	11 15.3		B	ESO	180	11	14	4
5229		HOLL	11 09 1538	N33 E73	11 15.4		BG	EAO	170	10	15	3
5229	24887	MWIL	11 09 1545	N32 E74	11 15.5	4	(B)					
5229		PALE	11 09 2017	N35 E75	11 15.8		B	CRO	150	5	16	2
5229		LEAR	11 10 0324	N33 E68	11 15.5		BG	FKO	310	26	18	3
5229		CULG	11 10 0345	N28 E71	11 15.7		B	FAI	140	6	16	1
5229		SVTO	11 10 0905	N33 E66	11 15.6		BG	FAI	310	18	18	1
5229		RAMY	11 10 1515	N33 E62	11 15.6		BG	FKI	420	31	23	2
5229		HOLL	11 10 1556	N33 E60	11 15.4		BG	FAO	500	24	20	3
5229		PALE	11 10 1805	N32 E60	11 15.5		BG	FAO	440	14	20	3
5229	24887	MWIL	11 10 1915	N33 E60	11 15.6	5	(BG)					
5229		CULG	11 11 0348	N33 E58	11 15.8		B	FAI	340	14	24	1
5229		SVTO	11 11 1055	N33 E50	11 15.4		BGD	FKI	410	25	20	1
5229		RAMY	11 11 1330	N31 E50	11 15.5		BG	FAI	480	28	22	3
5229		HOLL	11 11 1515	N34 E50	11 15.6		BG	FAI	320	21	22	2
5229	24887	MWIL	11 11 1545	N33 E47	11 15.4	5	(D)					
5229		PALE	11 11 1950	N34 E45	11 15.4		BG	FAI	420	29	23	3
5229		LEAR	11 12 0155	N32 E41	11 15.3		BGD	FKC	410	36	23	3
5229		CULG	11 12 0355	N33 E43	11 15.6		B	FAI	250	28	23	1
5229		RAMY	11 12 1413	N32 E37	11 15.5		BGD	FAI	400	34	23	2
5229		BOUL	11 12 1535	N34 E35	11 15.4		B	FAI	280	15	23	2
5229		HOLL	11 12 1610	N33 E37	11 15.6		BGD	FAI	380	34	24	3
5229		PALE	11 12 1840	N32 E36	11 15.6		BGD	FAI	460	32	24	3
5229		LEAR	11 13 0015	N32 E31	11 15.5		BG	HKI	480	47	23	4
5229		CULG	11 13 0400	N33 E30	11 15.5		B	FAI	480	22	24	2
5229		RAMY	11 13 1320	N32 E24	11 15.4		B	HKI	610	45	23	4

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

NOVEMBER 1988

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
5229		BOUL	11 13 1520	N33 E21	11 15.3		B	FAI	400	30	20	2
5229	24887	MWIL	11 13 1545	N33 E20	11 15.2	5	(D)					
5229		HOLL	11 13 1610	N33 E22	11 15.4		BGD	FKI	520	46	20	3
5229		PALE	11 13 2210	N33 E20	11 15.5		BGD	FKI	750	26	22	3
5229		LEAR	11 14 0046	N32 E15	11 15.2		BG	FKI	440	53	21	4
5229		CULG	11 14 0330	N33 E17	11 15.5		B	FKI	520	35	21	2
5229		RAMY	11 14 1250	N32 E11	11 15.4		BGD	FKI	830	49	25	4
5229		BOUL	11 14 1525	N33 E09	11 15.3		B	FAI	350	12	20	1
5229		HOLL	11 14 1610	N33 E10	11 15.5		BG	FHI	640	50	25	3
5229		PALE	11 14 1750	N32 E08	11 15.4		BGD	FHI	660	35	23	3
5229	24887	MWIL	11 14 2300	N33 E04	11 15.3	5	(D)					
5229		SVTO	11 15 0755	N35 E03	11 15.6		BGD	FKI	550	26	25	2
5229		RAMY	11 15 1400	N33 W02	11 15.4		BG	FKI	560	51	24	3
5229	24887	MWIL	11 15 1545	N33 W03	11 15.4	5	(D)					
5229		HOLL	11 15 1721	N33 W05	11 15.3		BG	FKO	480	23	22	2
5229		PALE	11 15 1925	N35 W04	11 15.5		BG	FKI	500	38	24	3
5229		CULG	11 16 0600	N33 W08	11 15.6		BG	FKI	340	23	22	2
5229		SVTO	11 16 1130	N32 W12	11 15.5		BG	FKI	370	20	23	1
5229		RAMY	11 16 1446	N34 W14	11 15.5		BG	FKI	640	49	26	2
5229		BOUL	11 16 1530	N33 W12	11 15.7		B	FAI	370	36	25	2
5229	24887	MWIL	11 16 1600	N33 W15	11 15.5	6	(BG)					
5229		HOLL	11 16 1640	N33 W15	11 15.5		BG	FKO	430	35	23	3
5229		PALE	11 16 1948	N35 W16	11 15.5		BG	FKI	460	50	24	3
5229		LEAR	11 17 0030	N33 W21	11 15.3		BG	FKI	340	57	23	4
5229		SVTO	11 17 0901	N33 W23	11 15.5		BG	FAI	260	34	28	2
5229		BOUL	11 17 1500	N33 W27	11 15.5		B	FAI	510	31	24	1
5229	24887	MWIL	11 17 1530	N33 W28	11 15.4	5	(BG)					
5229		HOLL	11 17 1603	N32 W30	11 15.3		BG	FAI	490	40	25	3
5229		PALE	11 17 1805	N33 W29	11 15.4		BG	FAI	650	37	25	3
5229		CULG	11 18 0355	N36 W31	11 15.7		B	FAI	270	27	28	1
5229		LEAR	11 18 0405	N32 W33	11 15.5		BG	FHI	350	48	27	3
5229		SVTO	11 18 1047	N33 W37	11 15.5		BG	FHI	540	45	25	3
5229		RAMY	11 18 1403	N33 W38	11 15.6		BG	FKI	390	30	25	1
5229	24887	MWIL	11 18 1530	N32 W40	11 15.5	5	(BG)					
5229		BOUL	11 18 1545	N33 W41	11 15.4		B	FAI	750	42	25	3
5229		HOLL	11 18 1606	N33 W42	11 15.3		BG	FAI	330	44	26	2
5229		LEAR	11 19 0020	N31 W46	11 15.4		B	FHI	320	22	22	3
5229		CULG	11 19 0330	N36 W45	11 15.5		BG	FAI	150	12	25	1
5229		SVTO	11 19 1048	N34 W51	11 15.4		BG	ESI	20	14	14	2
5229		RAMY	11 19 1236	N34 W50	11 15.5		BG	FKI	370	22	25	3
5229		BOUL	11 19 1532	N34 W54	11 15.3		B	FAI	130	17	27	3
5229		HOLL	11 19 1636	N33 W55	11 15.3		BG	FAO	250	20	26	3
5229	24887	MWIL	11 19 1830	N32 W51	11 15.7	4	(B)					
5229		PALE	11 19 2050	N37 W57	11 15.3		BG	FAI	360	16	26	3
5229		LEAR	11 20 0006	N33 W57	11 15.5		BG	FAI	170	14	25	2
5229		CULG	11 20 0325	N36 W61	11 15.2		B	FAO	100	7	24	2
5229		SVTO	11 20 1226	N33 W65	11 15.3		B	FAO	160	6	24	1
5229		RAMY	11 20 1317	N32 W64	11 15.5		BG	FAI	220	9	24	3
5229	24887	MWIL	11 20 1530	N33 W64	11 15.6	4	(B)					
5229		HOLL	11 20 1535	N33 W67	11 15.3		BG	FSO	80	7	23	3
5229		PALE	11 20 1825	N37 W70	11 15.1		BG	FAO	190	4	23	3
5229		CULG	11 21 0115	N37 W75	11 15.0		A	HS	20	2	6	2
5229		LEAR	11 21 0345	N34 W65	11 16.0		B	CSO	80	2	4	2
5229		RAMY	11 21 1330	N34 W71	11 15.9		B	BXO	20	5	7	4
5229		HOLL	11 21 1535	N33 W71	11 16.0		B	BXO	40	3	4	3
5229	24887	MWIL	11 21 1600	N34 W79	11 15.4	5	(BF)					
5245		LEAR	11 17 0030	S14 W14	11 16.0		B	BXO	10	2	3	4
5245		SVTO	11 17 0901	S15 W19	11 15.9		B	BXO	20	6	3	2
5245		BOUL	11 17 1500	S15 W22	11 15.9		B	DSO	40	2	3	1
5245	24904	MWIL	11 17 1530	S15 W23	11 15.9	3	(B)					
5245		HOLL	11 17 1603	S15 W24	11 15.8		B	CRO	20	7	4	3
5245		PALE	11 17 1805	S15 W25	11 15.9		B	CRO	30	10	5	3
5245		CULG	11 18 0355	S15 W32	11 15.7		B	DSO	20	6	4	1
5245		LEAR	11 18 0405	S16 W28	11 16.0		B	CRO	40	8	5	3
5245		SVTO	11 18 1047	S16 W35	11 15.8		B	DSO	50	7	5	3
5245		RAMY	11 18 1403	S15 W35	11 15.9		B	CAO	50	4	5	1
5245	24904	MWIL	11 18 1530	S16 W38	11 15.8	4	(B)					
5245		BOUL	11 18 1545	S15 W36	11 15.9		B	CAO	50	3	5	3

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

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Nov 88

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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
5245		HOLL	11 18 1606	S17 W37	11 15.8		B	CSO	50	8	5	2
5245		LEAR	11 19 0020	S17 W44	11 15.7		B	CSO	60	4	6	3
5245		CULG	11 19 0330	S13 W48	11 15.5		A	HS	30	1	1	1
5245		SVTO	11 19 1048	S15 W47	11 15.9		B	CAO	80	2	5	2
5245		RAMY	11 19 1236	S15 W49	11 15.8		B	CSO	70	5	5	3
5245		BOUL	11 19 1532	S15 W52	11 15.7		A	HS	20	1	1	3
5245		HOLL	11 19 1636	S15 W50	11 15.9		B	CSO	70	4	5	3
5245	24904	MWIL	11 19 1830	S16 W52	11 15.8	4	(AP)					
5245		PALE	11 19 2050	S14 W55	11 15.7		B	CSO	90	2	4	3
5245		LEAR	11 20 0006	S16 W57	11 15.7		A	HS	40	1	1	2
5245		CULG	11 20 0325	S13 W61	11 15.5		A	HS	40	1	1	2
5245		RAMY	11 20 1317	S17 W67	11 15.5		A	HS	100	1	2	3
5245	24904	MWIL	11 20 1530	S16 W67	11 15.6	5	(AP)					
5245		HOLL	11 20 1535	S16 W66	11 15.6		A	HS	100	1	2	3
5245		PALE	11 20 1825	S13 W70	11 15.5		A	HS	110	1	2	3
5245		CULG	11 21 0115	S12 W76	11 15.3		A	HS	40	1	2	2
5245		LEAR	11 21 0345	S15 W73	11 15.6		A	HA	60	1	1	2
5245		RAMY	11 21 1330	S14 W78	11 15.7		A	HS	50	1	2	4
5245		BOUL	11 21 1520	S16 W79	11 15.6		A	HS	50	1	1	2
5245		HOLL	11 21 1535	S15 W80	11 15.6		A	HS	60	1	2	3
5245	24904	MWIL	11 21 1600	S15 W79	11 15.7	4	AP					
5245		PALE	11 21 1810	S12 W83	11 15.5		A	HS	50	1	2	2
5233		SVTO	11 10 0905	N14 E75	11 16.0		B	CSO	50	3	13	1
5233		RAMY	11 10 1515	N14 E77	11 16.4		A	HS	50	1	2	2
5233		HOLL	11 10 1556	N15 E79	11 16.6		A	HS	30	1	1	3
5233		PALE	11 10 1805	N15 E79	11 16.7		A	HS	30	1	1	3
5233	24891	MWIL	11 10 1915	N14 E76	11 16.5	4	(AP)					
5233		CULG	11 11 0348	N15 E75	11 16.8		A	HS	30	1	3	1
5233		SVTO	11 11 1055	N14 E69	11 16.7		A	HS	30	1	1	1
5233		RAMY	11 11 1330	N14 E66	11 16.5		B	CSO	30	4	3	3
5233		HOLL	11 11 1515	N16 E64	11 16.5		A	HS	20	1	1	2
5233	24891	MWIL	11 11 1545	N14 E65	11 16.6	5	(AP)					
5233		PALE	11 11 1950	N15 E62	11 16.5		B	CSO	30	3	3	3
5233		LEAR	11 12 0155	N15 E58	11 16.5		B	CSO	50	2	4	3
5233		CULG	11 12 0355	N14 E59	11 16.6		B	CSO	20	2	1	1
5233		RAMY	11 12 1413	N14 E52	11 16.5		B	CAO	30	3	3	2
5233		BOUL	11 12 1535	N15 E51	11 16.5		A	HS	30	1	1	2
5233		HOLL	11 12 1610	N14 E52	11 16.6		B	CSO	20	2	3	3
5233		PALE	11 12 1840	N12 E51	11 16.6		B	CSO	20	2	2	3
5233		LEAR	11 13 0015	N14 E47	11 16.6		A	HS	30	3	3	4
5233		CULG	11 13 0400	N12 E46	11 16.6		A	HR	10	1	1	2
5233		RAMY	11 13 1320	N14 E39	11 16.5		A	AX	2	1	1	4
5233		BOUL	11 13 1520	N14 E37	11 16.4		A	AX	1	1	1	2
5233	24891	MWIL	11 13 1545	N14 E38	11 16.5	4	(AF)					
5233		HOLL	11 13 1610	N15 E38	11 16.5		A	AX	2	1	1	3
5233		PALE	11 13 2210	N14 E34	11 16.5		A	AX	1	1	1	3
5233		LEAR	11 14 0046	N14 E33	11 16.5		A	AX	10	1	1	4
5233		CULG	11 14 0330	N13 E32	11 16.6		A	AX	10	1	1	2
5233		RAMY	11 14 1250	N15 E25	11 16.4		B	BXO	10	5	5	4
5233		HOLL	11 14 1610	N15 E23	11 16.4		B	BXO	2	2	4	3
5235		RAMY	11 11 1330	N14 E79	11 17.5		A	HS	60	1	2	3
5235		HOLL	11 11 1515	N17 E79	11 17.6		A	HS	120	1	1	2
5235	24894	MWIL	11 11 1545	N15 E80	11 17.7	4	AP					
5235		PALE	11 11 1950	N15 E78	11 17.7		A	HS	100	1	2	3
5235		LEAR	11 12 0155	N15 E74	11 17.7		B	CSO	120	2	3	3
5235		CULG	11 12 0355	N14 E77	11 18.0		A	HS	60	1	2	1
5235		RAMY	11 12 1413	N15 E68	11 17.7		A	HS	70	1	2	2
5235		BOUL	11 12 1535	N15 E69	11 17.9		A	HS	60	1	1	2
5235		HOLL	11 12 1610	N15 E68	11 17.8		B	CSO	70	2	2	3
5235		PALE	11 12 1840	N13 E68	11 17.9		B	CSO	100	2	2	3
5235		LEAR	11 13 0015	N14 E62	11 17.7		A	HS	80	2	2	4
5235		CULG	11 13 0400	N13 E62	11 17.8		A	HS	80	3	3	2
5235		RAMY	11 13 1320	N15 E55	11 17.7		A	HS	120	2	2	4
5235		BOUL	11 13 1520	N15 E53	11 17.6		A	HS	80	2	2	2
5235	24894	MWIL	11 13 1545	N15 E53	11 17.7	5	(AP)					
5235		HOLL	11 13 1610	N16 E55	11 17.8		A	HS	100	2	2	3
5235		PALE	11 13 2210	N15 E51	11 17.8		A	HS	160	2	2	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5235		LEAR	11	14	0046	N15	E49	11	17.7		A	HS	60	2	2	4
5235		CULG	11	14	0330	N14	E47	11	17.7		A	HS	70	2	2	2
5235		BOUL	11	14	1525	N16	E40	11	17.7		B	CSO	70	2	3	1
5235		HOLL	11	14	1610	N16	E42	11	17.8		B	CSO	100	5	5	3
5235		PALE	11	14	1750	N16	E40	11	17.8		B	CSO	130	4	2	3
5235	24894	MWIL	11	14	2300	N16	E36	11	17.7	5	(AP)					
5235		SVTO	11	15	0755	N17	E32	11	17.8		B	CSO	100	6	4	2
5235		RAMY	11	15	1400	N17	E28	11	17.7		B	CSO	90	7	4	3
5235	24894	MWIL	11	15	1545	N16	E28	11	17.8	5	(AP)					
5235		HOLL	11	15	1721	N16	E26	11	17.7		B	CSO	70	2	3	2
5235		PALE	11	15	1925	N16	E27	11	17.8		B	CSO	40	3	4	3
5235		CULG	11	16	0600	N13	E20	11	17.7		A	HS	40	2	3	2
5235		RAMY	11	16	1446	N16	E14	11	17.7		A	HS	80	2	2	2
5235		BOUL	11	16	1530	N15	E13	11	17.6		A	HA	30	2	1	2
5235	24894	MWIL	11	16	1600	N16	E14	11	17.7	5	(AP)					
5235		PALE	11	16	1948	N15	E12	11	17.7		B	CSO	100	5	4	3
5235		LEAR	11	17	0030	N16	E10	11	17.8		B	CSO	90	3	4	4
5235		SVTO	11	17	0901	N16	E07	11	17.9		B	CSO	70	5	3	2
5235		BOUL	11	17	1500	N14	E01	11	17.7		A	HS	80	1	2	1
5235	24894	MWIL	11	17	1530	N16	E00	11	17.6	4	(AP)					
5235		HOLL	11	17	1603	N15	E01	11	17.7		B	CSO	60	2	4	3
5235		PALE	11	17	1805	N15	E00	11	17.7		A	HS	60	1	2	3
5235		CULG	11	18	0355	N15	W05	11	17.8		A	HS	40	2	2	1
5235		LEAR	11	18	0405	N15	W06	11	17.7		A	HS	60	3	2	3
5235		SVTO	11	18	1047	N15	W09	11	17.8		A	HS	80	2	2	3
5235		RAMY	11	18	1403	N15	W12	11	17.7		A	HA	70	2	3	1
5235	24894	MWIL	11	18	1530	N14	W13	11	17.7	4	(AP)					
5235		BOUL	11	18	1545	N14	W14	11	17.6		B	CAO	50	4	4	3
5235		HOLL	11	18	1606	N17	W13	11	17.7		B	CSO	60	4	4	2
5235		LEAR	11	19	0020	N14	W20	11	17.5		B	CAO	40	5	5	3
5235		CULG	11	19	0330	N16	W21	11	17.5		B	CSO	40	3	5	1
5235		RAMY	11	19	1236	N15	W26	11	17.5		B	CSO	30	7	6	3
5235		BOUL	11	19	1532	N15	W27	11	17.6		B	CAO	30	3	5	3
5235		HOLL	11	19	1636	N15	W27	11	17.6		B	CSO	50	3	6	3
5235	24894	MWIL	11	19	1830	N14	W27	11	17.7	4	(AP)					
5235		PALE	11	19	2050	N17	W30	11	17.6		B	CAO	70	3	5	3
5235		LEAR	11	20	0006	N15	W33	11	17.5		B	CRO	20	4	8	2
5235		CULG	11	20	0325	N17	W31	11	17.8		A	HR	20	2	1	2
5235		SVTO	11	20	1226	N14	W36	11	17.8		B	DSI	30	8	3	1
5235		RAMY	11	20	1317	N11	W36	11	17.8		A	HR	20	9	2	3
5235	24894	MWIL	11	20	1530	N14	W38	11	17.8	5	(B)					
5235		HOLL	11	20	1535	N15	W38	11	17.8		B	BXO	40	7	3	3
5235		PALE	11	20	1825	N17	W41	11	17.6		B	CSO	50	7	4	3
5235		CULG	11	21	0115	N17	W45	11	17.6		B	DRO	20	4	4	2
5235		LEAR	11	21	0345	N15	W45	11	17.7		B	DSO	40	6	4	2
5235		RAMY	11	21	1330	N15	W52	11	17.6		A	HR	50	12	7	4
5235		BOUL	11	21	1520	N15	W53	11	17.6		B	DSO	80	5	5	2
5235		HOLL	11	21	1535	N14	W52	11	17.7		B	BXO	50	10	6	3
5235	24894	MWIL	11	21	1600	N14	W52	11	17.7	5	(B)					
5235		PALE	11	21	1810	N17	W53	11	17.7		B	CSO	50	5	8	2
5235		LEAR	11	22	0505	N16	W60	11	17.7		B	DSO	60	5	7	2
5235		CULG	11	22	0600	N18	W60	11	17.7		B	DSO	30	5	7	1
5235		RAMY	11	22	1335	N14	W64	11	17.7		B	BXO	50	4	7	3
5235		HOLL	11	22	1550	N15	W66	11	17.7		B	BXO	50	4	7	3
5235	24894	MWIL	11	22	1600	N14	W65	11	17.7	4	(AP)					
5235		PALE	11	22	2154	N15	W70	11	17.6		B	BXO	80	4	7	2
5235		LEAR	11	23	0225	N14	W73	11	17.6		B	BXO	60	3	10	3
5235		CULG	11	23	0315	N18	W73	11	17.6		B	BXO	10	2	7	2
5235		HOLL	11	23	1540	N15	W80	11	17.6		B	BXO	10	2	9	4
5244		RAMY	11	15	1400	N32	E27	11	17.7		B	BXO	20	6	3	3
5244	24902	MWIL	11	15	1545	N30	E25	11	17.6	4	(BF)					
5244		HOLL	11	15	1721	N30	E25	11	17.7		A	AX	10	1	1	2
5244		CULG	11	16	0600	N28	E20	11	17.8		B	BXO	10	4	3	2
5244		RAMY	11	16	1446	N32	E14	11	17.7		B	BXO	10	5	4	2
5244	24902	MWIL	11	16	1600	N31	E12	11	17.6	4	(B)					
5244		HOLL	11	16	1640	N31	E12	11	17.6		B	BXO	10	6	3	3
5244		PALE	11	16	1948	N31	E12	11	17.8		A	AX	10	1	1	3
5244		LEAR	11	17	0030	N32	E08	11	17.6		GD	AX	10	1	1	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5244		SVTO	11 18 1047	N29	W11	11 17.6		A	AX		1		3
5235A		RAMY	11 14 1250	N26	E42	11 17.8		B	CSO	120	5	4	4
5235A		HOLL	11 16 1640	N26	E14	11 17.8		A	HS	70	1	2	3
5235A		SVTO	11 19 1048	N25	W25	11 17.5		B	DAO	70	3	6	2
5247		CULG	11 21 0115	S13	W32	11 18.6		B	BXO	20	7	5	2
5247		LEAR	11 21 0345	S14	W32	11 18.7		B	BXO	30	7	5	2
5247		RAMY	11 21 1330	S13	W37	11 18.8		B	CRO	30	13	8	4
5247		BOUL	11 21 1520	S14	W37	11 18.8		B	DSO	50	4	5	2
5247		HOLL	11 21 1535	S14	W37	11 18.8		B	CSO	50	8	7	3
5247	24907	MWIL	11 21 1600	S14	W38	11 18.8	5	(B)					
5247		PALE	11 21 1810	S13	W40	11 18.7		B	CSO	50	4	7	2
5247		LEAR	11 22 0505	S13	W47	11 18.7		B	DSO	80	4	9	2
5247		CULG	11 22 0600	S12	W47	11 18.7		B	DSO	30	3	7	1
5247		RAMY	11 22 1335	S13	W49	11 18.9		B	BXI	40	3	9	3
5247		HOLL	11 22 1550	S13	W52	11 18.7		B	CSO	50	4	7	3
5247		BOUL	11 22 1550	S14	W49	11 18.9		B	DSO	60	2	4	1
5247	24907	MWIL	11 22 1600	S14	W52	11 18.7	4	(B)					
5247		PALE	11 22 2154	S13	W55	11 18.8		B	CSO	50	6	7	2
5247		LEAR	11 23 0225	S15	W57	11 18.8		B	BX	40	3	11	3
5247		CULG	11 23 0315	S11	W59	11 18.7		B	BXO	10	2	1	2
5247		HOLL	11 23 1540	S13	W65	11 18.7		B	BXO	10	2	10	4
5247		PALE	11 23 1840	S13	W68	11 18.6		B	BXO	20	2	7	2
5247		CULG	11 24 0405	S13	W68	11 19.0		A	AX	10	1	1	2
5247		SVTO	11 24 0845	S14	W75	11 18.7		B	BXO		2	10	2
5247		RAMY	11 24 1310	S14	W72	11 19.1		B	BXO	10	2	4	4
5235B		CULG	11 20 0115	S38	W15	11 18.8		A	AX	10	2	1	2
5235B		RAMY	11 21 1335	S38	W30	11 19.1		B	BXO	30	8	6	3
5240		RAMY	11 14 1250	N21	E65	11 19.5		B	BXO	20	4	5	4
5240		PALE	11 14 1750	N22	E62	11 19.5		B	BXO	10	2	4	3
5240		SVTO	11 15 0755	N21	E55	11 19.5		B	BXO	10	3	5	2
5240		RAMY	11 15 1400	N21	E52	11 19.6		B	BXI	40	12	9	3
5240	24903	MWIL	11 15 1545	N21	E50	11 19.5	4	(BP)					
5240		HOLL	11 15 1721	N22	E50	11 19.6		B	BXO	40	5	4	2
5240		PALE	11 15 1925	N22	E50	11 19.6		B	CRO	40	7	4	3
5240		CULG	11 16 0600	N19	E46	11 19.8		B	CRO	40	9	10	2
5240		RAMY	11 16 1446	N22	E38	11 19.5		B	CAI	100	29	8	2
5240		BOUL	11 16 1530	N21	E37	11 19.5		B	DAO	70	13	7	2
5240	24903	MWIL	11 16 1600	N22	E38	11 19.6	5	(BG)					
5240		HOLL	11 16 1640	N21	E38	11 19.6		B	CSO	60	16	9	3
5240		PALE	11 16 1948	N19	E35	11 19.5		B	DAO	170	24	8	3
5240		LEAR	11 17 0030	N21	E32	11 19.5		B	EAI	160	24	11	4
5240		SVTO	11 17 0901	N21	E29	11 19.6		B	DAO	140	14	10	2
5240		BOUL	11 17 1500	N19	E23	11 19.4		G	DSO	180	9	8	1
5240	24903	MWIL	11 17 1530	N22	E24	11 19.5	4	(BG)					
5240		HOLL	11 17 1603	N22	E23	11 19.4		BG	DAI	170	27	9	3
5240		PALE	11 17 1805	N20	E23	11 19.5		BG	DAI	160	35	9	3
5240		CULG	11 18 0355	N19	E19	11 19.6		B	DSI	90	17	10	1
5240		LEAR	11 18 0405	N22	E16	11 19.4		B	EKO	180	25	11	3
5240		SVTO	11 18 1047	N21	E13	11 19.4		B	EAI	200	38	12	3
5240		RAMY	11 18 1403	N21	E12	11 19.5		B	DAI	230	27	10	1
5240	24903	MWIL	11 18 1530	N20	E11	11 19.5	4	(B)					
5240		BOUL	11 18 1545	N21	E10	11 19.4		B	DAO	170	25	8	3
5240		HOLL	11 18 1606	N21	E10	11 19.4		B	DAI	180	31	9	2
5240		LEAR	11 19 0020	N19	E06	11 19.5		B	DSO	190	26	10	3
5240		CULG	11 19 0330	N22	E07	11 19.7		B	DAO	110	7	9	1
5240		SVTO	11 19 1048	N22	E01	11 19.5		B	EKI	280	22	12	2
5240		RAMY	11 19 1236	N20	E00	11 19.5		B	DAI	190	31	10	3
5240		BOUL	11 19 1532	N20	W02	11 19.5		B	EAO	100	26	11	3
5240		HOLL	11 19 1636	N20	W02	11 19.5		BG	EAO	130	30	13	3
5240	24903	MWIL	11 19 1830	N20	W02	11 19.6	4	(BG)					
5240		PALE	11 19 2050	N21	W04	11 19.6		B	EAI	260	30	12	3
5240		LEAR	11 20 0006	N21	W07	11 19.5		B	EAI	190	25	11	2
5240		CULG	11 20 0325	N22	W07	11 19.6		B	EAI	120	17	11	2
5240		SVTO	11 20 1226	N21	W12	11 19.6		BG	EAI	190	29	15	1
5240		RAMY	11 20 1317	N17	W14	11 19.5		BG	EAI	120	32	12	3

S U N S P O T G R O U P S
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NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time		Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual	
			Mo	Day (UT)										
5240	24903	MWIL	11 20	1530	N20 W16	11 19.4	5	(D)						
5240		HOLL	11 20	1535	N21 W15	11 19.5		BG	EAO	170	22	13	3	
5240		PALE	11 20	1825	N23 W16	11 19.5		BG	EAO	270	25	14	3	
5240		CULG	11 21	0115	N22 W18	11 19.7		B	FAI	160	17	15	2	
5240		LEAR	11 21	0345	N23 W23	11 19.4		BG	EKI	200	18	14	2	
5240		RAMY	11 21	1330	N22 W27	11 19.5		BG	ESI	270	38	14	4	
5240		BOUL	11 21	1520	N21 W28	11 19.5		B	EAI	280	15	11	2	
5240		HOLL	11 21	1535	N20 W29	11 19.4		BG	EAO	260	31	15	3	
5240		24903	MWIL	11 21	1600	N21 W29	11 19.4	5	(D)					
5240			PALE	11 21	1810	N23 W29	11 19.5		BG	EAO	240	24	14	2
5240	LEAR		11 22	0505	N21 W37	11 19.4		BG	EAI	330	24	14	2	
5240	CULG		11 22	0600	N24 W36	11 19.5		B	EAI	220	16	14	1	
5240	RAMY		11 22	1335	N20 W40	11 19.5		BG	EKI	300	33	12	3	
5240	24903	HOLL	11 22	1550	N20 W41	11 19.5		BG	EAO	300	31	14	3	
5240		BOUL	11 22	1550	N22 W43	11 19.3		B	EAI	420	15	11	1	
5240		MWIL	11 22	1600	N20 W42	11 19.4	5	(D)						
5240		PALE	11 22	2154	N21 W45	11 19.5		B	EAO	290	20	13	2	
5240		LEAR	11 23	0225	N19 W51	11 19.2		BG	EKI	350	23	15	3	
5240		CULG	11 23	0315	N23 W48	11 19.4		B	EAI	180	15	13	2	
5240		RAMY	11 23	1348	N20 W55	11 19.4		BG	EAI	320	19	12	3	
5240		HOLL	11 23	1540	N22 W56	11 19.3		BG	EAO	260	24	15	4	
5240		PALE	11 23	1840	N23 W57	11 19.4		BG	EAI	250	13	12	2	
5240		LEAR	11 24	0120	N19 W63	11 19.2		BG	FAO	190	14	16	3	
5240	24903	CULG	11 24	0405	N22 W63	11 19.3		B	EAI	130	14	13	2	
5240		SVTO	11 24	0845	N20 W65	11 19.4		BG	CAO	130	12	15	2	
5240		RAMY	11 24	1310	N21 W69	11 19.2		BG	CHI	230	17	14	4	
5240		BOUL	11 24	1530	N19 W70	11 19.3		B	DSO	120	2	10	1	
5240		HOLL	11 24	1600	N21 W69	11 19.4		BG	CKI	260	10	16	2	
5240		PALE	11 24	1920	N22 W74	11 19.1		B	EAI	260	7	13	3	
5240		MWIL	11 24	2330	N22 W68	11 19.7	4	(AF)						
5240		LEAR	11 25	0005	N19 W72	11 19.5		BG	CAO	100	10	18	3	
5240		CULG	11 25	0432	N21 W72	11 19.7		A	HA	30	3	4	1	
5240		SVTO	11 25	1113	N18 W75	11 19.7		B	DAO	130	5	5	2	
5240	24905	RAMY	11 25	1345	N22 W76	11 19.7		B	DAO	60	3	3	2	
5240		PALE	11 25	1800	N22 W80	11 19.6		B	CSO	70	2	3	3	
5246		24905	SVTO	11 20	1226	S39 W04	11 20.2		B	BXO	10	3	3	1
5246			MWIL	11 20	1530	S39 W06	11 20.1	3	(B)					
5246			HOLL	11 20	1535	S38 W06	11 20.2		A	AX	10	3	2	3
5246			PALE	11 20	1825	S38 W10	11 19.9		B	BXO	20	3	3	3
5246			CULG	11 21	0115	S38 W15	11 19.8		A	AX	10	2	1	2
5246			LEAR	11 21	0345	S37 W13	11 20.1		B	BXO	10	2	3	2
5246			RAMY	11 21	1330	S37 W18	11 20.1		B	CRO	10	4	5	4
5246			BOUL	11 21	1520	S37 W20	11 20.0		A	HS	30	1	1	2
5246	HOLL		11 21	1535	S38 W19	11 20.1		A	AX	10	3	2	3	
5246	24905		MWIL	11 21	1600	S37 W21	11 20.0	4	(AP)					
5246		PALE	11 21	1810	S37 W23	11 19.9		A	AX	10	2	2	2	
5246		LEAR	11 22	0505	S37 W27	11 20.0		B	BXO	10	5	5	2	
5246		CULG	11 22	0600	S37 W32	11 19.7		B	DSO	20	3	3	1	
5246		HOLL	11 22	1550	S37 W32	11 20.1		B	CSO	60	11	7	3	
5246	24905	BOUL	11 22	1550	S37 W32	11 20.1		B	DSO	90	4	4	1	
5246		MWIL	11 22	1600	S37 W32	11 20.1	5	(B)						
5246		PALE	11 22	2154	S38 W37	11 19.9		B	CSO	60	9	7	2	
5246		LEAR	11 23	0225	S38 W36	11 20.2		B	CAO	70	12	9	3	
5246		CULG	11 23	0315	S37 W41	11 19.8		B	CAI	30	6	3	2	
5246		RAMY	11 23	1348	S38 W43	11 20.1		B	BXO	30	6	6	3	
5246		HOLL	11 23	1540	S37 W45	11 20.0		B	BXO	20	7	6	4	
5246		PALE	11 23	1840	S36 W46	11 20.1		B	BXO	30	5	5	2	
5246		LEAR	11 24	0120	S37 W49	11 20.1		B	BXO	20	12	9	3	
5246		CULG	11 24	0405	S36 W53	11 19.9		B	CRO	30	4	4	2	
5246	24899	SVTO	11 24	0845	S38 W53	11 20.1		B	BXO	20	4	6	2	
5246		RAMY	11 24	1310	S36 W55	11 20.1		B	BXO	30	6	7	4	
5246		HOLL	11 24	1600	S36 W60	11 19.8		B	BXO	70	6	10	2	
5246		PALE	11 24	1920	S37 W58	11 20.1		B	BXO	30	3	4	3	
5246		LEAR	11 25	0005	S37 W59	11 20.2		B	BXO	10	7	12	3	
5241		24899	RAMY	11 14	1250	N28 E83	11 21.0		B	CSO	90	3	5	4
5241			PALE	11 14	1750	N28 E78	11 20.8		B	CSO	10	3	5	3
5241			MWIL	11 14	2300	N28 E75	11 20.8	5	AP					

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NOVEMBER 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time			CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
			Mo	Day	(UT)									Lat	CMD
5241		SVTO	11	15	0755	N27 E68	11 20.6	B	CSO	70	3	4	2
5241		RAMY	11	15	1400	N27 E69	11 20.9	B	CAO	170	7	10	3
5241	24899	MWIL	11	15	1545	N27 E65	11 20.7	5	(BP)				
5241		HOLL	11	15	1721	N28 E68	11 21.0	B	CSO	160	6	7	2
5241		PALE	11	15	1925	N28 E68	11 21.1	B	CSO	140	7	10	3
5241		CULG	11	16	0600	N24 E61	11 21.0	B	CSO	80	8	13	2
5241		RAMY	11	16	1446	N27 E55	11 20.9	B	ESO	180	10	11	2
5241		BOUL	11	16	1530	N28 E54	11 20.9	B	CSO	70	5	10	2
5241	24899	MWIL	11	16	1600	N27 E51	11 20.6	5	(B)				
5241		HOLL	11	16	1640	N28 E56	11 21.1	B	CSO	90	9	10	3
5241		PALE	11	16	1948	N26 E52	11 20.9	B	DSO	180	9	8	3
5241		LEAR	11	17	0030	N27 E49	11 20.8	B	EAO	160	12	11	4
5241		SVTO	11	17	0901	N28 E47	11 21.0	B	CSO	120	10	12	2
5241		BOUL	11	17	1500	N26 E39	11 20.6	B	CSO	70	3	7	1
5241	24899	MWIL	11	17	1530	N27 E39	11 20.7	5	(B)				
5241		HOLL	11	17	1603	N28 E39	11 20.7	B	DSO	150	11	9	3
5241		PALE	11	17	1805	N26 E41	11 20.9	B	DSO	130	11	9	3
5241		CULG	11	18	0355	N24 E36	11 20.9	B	CSO	80	5	12	1
5241		LEAR	11	18	0405	N27 E34	11 20.8	B	EHO	160	19	12	3
5241		SVTO	11	18	1047	N24 E29	11 20.7	B	CSI	160	30	13	3
5241		RAMY	11	18	1403	N26 E29	11 20.8	B	CAI	140	18	12	1
5241	24899	MWIL	11	18	1530	N26 E26	11 20.7	4	(B)				
5241		BOUL	11	18	1545	N27 E27	11 20.8	B	ESO	140	9	11	3
5241		HOLL	11	18	1606	N28 E27	11 20.8	B	DSO	130	14	10	2
5241		LEAR	11	19	0020	N27 E23	11 20.8	B	ESO	190	11	13	3
5241		CULG	11	19	0330	N26 E22	11 20.8	B	CSO	70	4	13	1
5241		SVTO	11	19	1048	N26 E16	11 20.7	B	CSI	120	13	15	2
5241		RAMY	11	19	1236	N27 E18	11 20.9	B	CAO	100	11	13	3
5241		BOUL	11	19	1532	N26 E13	11 20.6	B	CAO	90	13	14	3
5241		HOLL	11	19	1636	N27 E16	11 20.9	B	CSO	150	22	14	3
5241	24899	MWIL	11	19	1830	N27 E13	11 20.8	5	(B)				
5241		PALE	11	19	2050	N27 E13	11 20.9	B	CSO	200	16	14	3
5241		LEAR	11	20	0006	N26 E08	11 20.6	B	CSO	70	17	14	2
5241		CULG	11	20	0325	N27 E09	11 20.8	B	CSO	50	4	13	2
5241		SVTO	11	20	1226	N27 E04	11 20.8	B	EAO	120	21	13	1
5241		RAMY	11	20	1317	N27 E02	11 20.7	B	CSO	130	18	11	3
5241	24899	MWIL	11	20	1530	N27 E00	11 20.6	5	(B)				
5241		HOLL	11	20	1535	N28 E01	11 20.7	B	CSO	120	22	14	3
5241		PALE	11	20	1825	N28 E01	11 20.8	B	ESO	190	17	13	3
5241		CULG	11	21	0115	N28 W03	11 20.8	B	ESO	90	10	12	2
5241		LEAR	11	21	0345	N27 W05	11 20.8	B	ESO	110	9	12	2
5241		RAMY	11	21	1330	N28 W11	11 20.7	B	ESO	110	14	13	4
5241		BOUL	11	21	1520	N28 W14	11 20.5	B	DAO	90	5	8	2
5241		HOLL	11	21	1535	N27 W11	11 20.8	B	CSO	120	17	12	3
5241	24899	MWIL	11	21	1600	N27 W14	11 20.6	5	(BF)				
5241		PALE	11	21	1810	N28 W11	11 20.9	B	ESO	140	7	12	2
5241		LEAR	11	22	0505	N28 W19	11 20.7	B	EAO	100	14	12	2
5241		CULG	11	22	0600	N29 W17	11 20.9	B	ESO	80	9	12	1
5241		RAMY	11	22	1335	N27 W22	11 20.8	B	EKO	130	19	12	3
5241		HOLL	11	22	1550	N27 W23	11 20.9	B	CSO	120	12	12	3
5241		BOUL	11	22	1550	N28 W24	11 20.8	B	ESO	100	6	12	1
5241	24899	MWIL	11	22	1600	N27 W27	11 20.6	5	(B)				
5241		PALE	11	22	2154	N28 W24	11 21.0	B	CSO	50	6	8	2
5241		LEAR	11	23	0225	N27 W31	11 20.7	B	EKI	140	9	12	3
5241		CULG	11	23	0315	N30 W29	11 20.8	B	ESO	60	5	12	2
5241		RAMY	11	23	1348	N28 W35	11 20.8	B	EAO	110	7	12	3
5241		HOLL	11	23	1540	N29 W38	11 20.7	B	CAO	70	9	11	4
5241		PALE	11	23	1840	N29 W38	11 20.8	B	EAO	150	7	11	2
5241		LEAR	11	24	0120	N28 W42	11 20.8	B	CAO	90	10	12	3
5241		CULG	11	24	0405	N30 W44	11 20.7	B	ESO	40	7	11	2
5241		SVTO	11	24	0845	N28 W46	11 20.8	B	CAO	50	7	11	2
5241		RAMY	11	24	1310	N29 W49	11 20.7	B	CSO	90	6	11	4
5241		BOUL	11	24	1530	N29 W52	11 20.6	B	DSO	90	2	8	1
5241		HOLL	11	24	1600	N29 W49	11 20.8	B	CSO	100	6	10	2
5241		PALE	11	24	1920	N31 W54	11 20.5	B	CSO	110	5	11	3
5241	24899	MWIL	11	24	2330	N29 W56	11 20.6	4	(BP)				
5241		LEAR	11	25	0005	N28 W55	11 20.7	B	CAO	100	5	11	3
5241		CULG	11	25	0432	N29 W57	11 20.7	B	CSO	30	3	10	1
5241		SVTO	11	25	1113	N27 W62	11 20.6	B	CSO	40	3	13	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5241		RAMY	11	25	1345	N29	W62	11	20.7		B	CAO	50	4	9	2
5241		PALE	11	25	1800	N29	W62	11	20.9		B	CAO	110	5	10	3
5241	24899	MWIL	11	25	2315	N29	W68	11	20.6	4	(AP)					
5241		CULG	11	26	0340	N29	W73	11	20.4		B	CSO	20	3	10	2
5241		RAMY	11	26	1305	N27	W73	11	20.8		B	DAO	90	6	10	3
5241	24899	MWIL	11	26	1715	N27	W82	11	20.3	4	(AP)					
5241		PALE	11	26	1750	N30	W78	11	20.6		B	CAO	40	3	4	3
5241A	24906	MWIL	11	20	1530	N26	E16	11	21.9	3	(AF)					
5248		RAMY	11	21	1330	N21	E21	11	23.2		B	CRO	20	5	3	4
5248		BOUL	11	21	1520	N21	E18	11	23.0		B	CSO	20	3	2	2
5248		HOLL	11	21	1535	N20	E21	11	23.2		B	BXO	30	5	3	3
5248	24908	MWIL	11	21	1600	N20	E19	11	23.1	4	(B)					
5248		PALE	11	21	1810	N19	E20	11	23.3		B	CSO	20	4	4	2
5248		LEAR	11	22	0505	N20	E12	11	23.1		B	CSO	60	4	5	2
5248		CULG	11	22	0600	N19	E13	11	23.2		B	CSO	10	2	3	1
5248		RAMY	11	22	1335	N19	E07	11	23.1		A	AX	10	1	1	3
5248		BOUL	11	22	1550	N19	E03	11	22.9		A	HS	20	1	1	1
5248		HOLL	11	22	1550	N20	E04	11	23.0		A	AX	10	1	1	3
5248	24908	MWIL	11	22	1600	N20	E04	11	23.0	4	(AF)					
5248		PALE	11	22	2154	N20	E02	11	23.1		A	AX		1	1	2
5248		LEAR	11	23	0225	N20	W03	11	22.9		A	AX	10	1	1	3
5248		CULG	11	23	0315	N20	W01	11	23.0		A	AX	10	1	1	2
5248		RAMY	11	23	1348	N20	W09	11	22.9		A	AX	10	1	1	3
5248		HOLL	11	23	1540	N21	W07	11	23.1		B	BXO	10	4	5	4
5248		PALE	11	23	1840	N21	W11	11	22.9		A	AX	10	1	1	2
5248		LEAR	11	24	0120	N20	W16	11	22.8		A	AX	10	1	1	3
5248		CULG	11	24	0405	N20	W17	11	22.9		A	AX	10	1	1	2
5248		SVTO	11	24	0845	N20	W20	11	22.8		A	AX		1		2
5248		RAMY	11	24	1310	N20	W20	11	23.0		B	BXO	10	3	4	4
5248		PALE	11	24	1920	N20	W22	11	23.1		A	AX	10	1	1	3
5248		LEAR	11	25	0005	N21	W25	11	23.1		B	BXO	10	2	3	3
5248		PALE	11	25	1800	N21	W38	11	22.8		A	AX		1	1	3
5252		RAMY	11	23	1348	S28	E09	11	24.3		B	BXO	20	4	3	3
5252		HOLL	11	23	1540	S29	E08	11	24.3		B	BXO	10	4	3	4
5252		PALE	11	23	1840	S28	E06	11	24.2		B	BXO	20	4	3	2
5252		LEAR	11	24	0120	S28	E03	11	24.3		B	DAO	60	5	3	3
5252		CULG	11	24	0405	S29	W01	11	24.1		B	DRO	20	2	3	2
5252		SVTO	11	24	0845	S28	W01	11	24.3		B	BXO	20	5	4	2
5252		RAMY	11	24	1310	S27	W03	11	24.3		B	CRO	20	3	3	4
5252		BOUL	11	24	1530	S26	W05	11	24.2		B	DSO	30	2	4	1
5252		HOLL	11	24	1600	S29	W08	11	24.0		B	BXO	10	3	3	2
5252		PALE	11	24	1920	S27	W08	11	24.2		B	BXO	20	2	3	3
5252		LEAR	11	25	0005	S27	W09	11	24.3		B	BXO	10	2	3	3
5252		CULG	11	25	0432	S29	W13	11	24.2		B	BXO	10	2	3	1
5252		SVTO	11	25	1113	S30	W17	11	24.1		B	BXO		3	3	2
5252		SVTO	11	29	1004	S27	W65	11	24.3		B	CSO	40	4	6	2
5252		RAMY	11	29	1352	S27	W66	11	24.4		B	DRO	50	4	5	3
5252		BOUL	11	29	1525	S29	W72	11	24.0		B	BXO	50	2	5	3
5252		HOLL	11	29	1537	S27	W70	11	24.2		B	DSI	60	5	8	3
5252	24918	MWIL	11	29	1600	S27	W68	11	24.4	4	(AP)					
5252		PALE	11	29	1820	S28	W72	11	24.1		B	BXO	30	5	7	3
5252		LEAR	11	30	0050	S28	W72	11	24.4		B	BXO	80	6	4	3
5252		HOLL	11	30	1624	S28	W83	11	24.2		A	AX	10	1	1	3
5250		RAMY	11	21	1330	S31	E46	11	25.2		A	AX	10	1	1	4
5250		HOLL	11	21	1535	S30	E46	11	25.3		A	AX	10	2	2	3
5250	24909	MWIL	11	21	1600	S31	E44	11	25.1	3	(AP)					
5250		PALE	11	21	1810	S34	E42	11	25.1		A	AX		1	1	2
5250		LEAR	11	25	0005	S30	E05	11	25.4		A	AX	10	1	1	3
5253		SVTO	11	24	0845	N17	E13	11	25.3		A	AX		1		2
5253		RAMY	11	24	1310	N17	E13	11	25.5		B	BXO		2	3	4
5253		HOLL	11	24	1600	N18	E11	11	25.5		B	BXO	10	2	2	2
5253		PALE	11	24	1920	N17	E07	11	25.3		A	AX	10	1	1	3
5253		LEAR	11	25	0005	N21	E06	11	25.5		B	BXO	10	2	2	3

S U N S P O T G R O U P S
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NOAA/ USAF Group	Mt Wilson Group	Sta	Mo	Day	Observation Time (UT)	Lat	Cmd	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5249		CULG	11	21	0115	S33	E70	11	26.6		A	HR	10	1	1	2
5249		LEAR	11	21	0345	S28	E69	11	26.5		A	HA	40	1	1	2
5249		BOUL	11	21	1520	S29	E68	11	27.0		B	CAO	110	3	6	2
5249		HOLL	11	21	1535	S28	E67	11	26.9		B	CSO	60	5	4	3
5249	24910	MWIL	11	21	1600	S29	E64	11	26.7	4	BG					
5249		PALE	11	21	1810	S33	E62	11	26.7		B	CSO	100	4	8	2
5249		LEAR	11	22	0505	S29	E56	11	26.6		B	DAO	120	5	8	2
5249		CULG	11	22	0600	S33	E56	11	26.7		B	DSO	100	3	7	1
5249		RAMY	11	22	1335	S28	E53	11	26.7		B	CSO	160	6	6	3
5249		BOUL	11	22	1550	S29	E51	11	26.6		B	CSO	80	3	7	1
5249		HOLL	11	22	1550	S29	E53	11	26.8		B	CSO	130	3	9	3
5249	24910	MWIL	11	22	1600	S28	E50	11	26.6	5	(BG)					
5249		PALE	11	22	2154	S29	E47	11	26.6		B	CSO	120	4	8	2
5249		LEAR	11	23	0225	S27	E46	11	26.7		B	CSO	150	5	8	3
5249		CULG	11	23	0315	S31	E44	11	26.6		B	CSO	100	3	10	2
5249		RAMY	11	23	1348	S28	E40	11	26.7		B	ESO	150	6	9	3
5249		HOLL	11	23	1540	S29	E39	11	26.7		B	CSO	100	4	9	4
5249		PALE	11	23	1840	S30	E37	11	26.7		B	CSO	160	5	10	2
5249		LEAR	11	24	0120	S29	E34	11	26.7		B	CSO	140	4	11	3
5249		CULG	11	24	0405	S31	E30	11	26.5		B	CSO	70	3	10	2
5249		SVTO	11	24	0845	S30	E30	11	26.7		B	CAO	60	2	10	2
5249		RAMY	11	24	1310	S28	E27	11	26.6		B	CSO	120	8	11	4
5249		BOUL	11	24	1530	S27	E22	11	26.4		A	HS	70	1	2	1
5249		HOLL	11	24	1600	S30	E25	11	26.6		B	CSO	100	3	9	2
5249		PALE	11	24	1920	S31	E25	11	26.8		B	CSO	100	9	11	3
5249	24910	MWIL	11	24	2330	S27	E17	11	26.3	5	(AP)					
5249		LEAR	11	25	0005	S28	E22	11	26.7		B	CAO	80	9	10	3
5249		CULG	11	25	0432	S30	E18	11	26.6		B	CSO	50	5	9	1
5249		SVTO	11	25	1113	S28	E11	11	26.3		B	CSO	50	3	3	2
5249		RAMY	11	25	1345	S28	E10	11	26.3		A	HS	40	3	2	2
5249		PALE	11	25	1800	S28	E08	11	26.4		B	CAO	50	4	4	3
5249	24910	MWIL	11	25	2315	S27	E04	11	26.3	4	(AP)					
5249		CULG	11	26	0340	S28	E01	11	26.2		A	HS	30	2	1	2
5249		RAMY	11	26	1305	S28	W02	11	26.4		A	HS	70	3	2	3
5249	24910	MWIL	11	26	1715	S27	W04	11	26.4	5	(AP)					
5249		HOLL	11	26	1745	S28	W05	11	26.3		A	HS	20	2	2	3
5249		PALE	11	26	1750	S27	W06	11	26.3		A	HS	40	2	2	3
5249		CULG	11	27	0455	S29	W13	11	26.2		A	HS	10	1	1	2
5249		SVTO	11	27	1015	S29	W14	11	26.3		A	HS	20	2	1	3
5249		RAMY	11	27	1425	S27	W16	11	26.3		A	HS	20	2	2	3
5249		BOUL	11	27	1530	S27	W16	11	26.4		A	AX	2	2	1	2
5249	24910	MWIL	11	27	1600	S28	W16	11	26.4	5	(AP)					
5249		HOLL	11	27	1610	S28	W16	11	26.4		A	HR	10	2	1	3
5249		PALE	11	27	2235	S28	W20	11	26.4		A	HR	10	2	1	3
5249		CULG	11	28	0325	S28	W24	11	26.3		A	HR	10	2	1	1
5249		RAMY	11	28	1350	S27	W28	11	26.4		A	HR	10	2	2	4
5249	24910	MWIL	11	28	1600	S28	W29	11	26.4	5	(AP)					
5249		HOLL	11	28	1606	S28	W28	11	26.5		A	HR	30	2	1	2
5249		BOUL	11	28	1735	S27	W28	11	26.5		A	HS	10	1	1	1
5249		PALE	11	28	1950	S26	W34	11	26.2		A	HR	10	2	1	2
5249		LEAR	11	29	0135	S27	W34	11	26.4		A	AX	10	2	2	3
5249		CULG	11	29	0255	S26	W37	11	26.2		A	AX	1	1		1
5249A		HOLL	11	23	1540	N20	E37	11	26.5		A	AX		1		4
5249B		RAMY	11	21	1330	S18	E66	11	26.6		B	CAO	120	6	8	4
5249C		SVTO	11	27	1015	S17	W01	11	27.3		A	AX	10	1		3
5249C		RAMY	11	27	1425	S16	W02	11	27.4		A	AX		1	1	3
5249C	24915	MWIL	11	27	1600	S17	W02	11	27.5	4	(AF)					
5251		RAMY	11	21	1330	N18	E84	11	27.9		A	HS	90	1	2	4
5251		HOLL	11	21	1535	N18	E86	11	28.2		A	HS	60	1	2	3
5251	24911	MWIL	11	21	1600	N17	E86	11	28.2	4	AP					
5251		PALE	11	21	1810	N15	E85	11	28.2		A	HS	60	1	2	2
5251		LEAR	11	22	0505	N18	E75	11	27.9		A	HS	190	3	3	2
5251		CULG	11	22	0600	N15	E80	11	28.3		A	HS	80	1	1	1
5251		RAMY	11	22	1335	N18	E71	11	28.0		B	CSO	150	2	5	3
5251		BOUL	11	22	1550	N18	E70	11	28.0		A	HS	110	1	2	1

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)		Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual	
5251	24911	HOLL	11 22	1550	N18 E71	11 28.1		A	HS	180	1	2	3	
5251		MWIL	11 22	1600	N18 E70	11 28.0	5	(B)						
5251		PALE	11 22	2154	N18 E70	11 28.2		B	CSO	170	4	3	2	
5251		LEAR	11 23	0225	N20 E65	11 28.1		B	CSO	180	9	11	3	
5251		CULG	11 23	0315	N16 E67	11 28.2		A	HS	120	1	3	2	
5251		RAMY	11 23	1348	N19 E60	11 28.1		B	CAO	120	6	7	3	
5251		HOLL	11 23	1540	N20 E60	11 28.2		B	CAO	90	5	8	4	
5251		PALE	11 23	1840	N18 E57	11 28.1		B	CSO	180	4	4	2	
5251		LEAR	11 24	0120	N19 E52	11 28.0		B	CSO	110	5	6	3	
5251		CULG	11 24	0405	N17 E53	11 28.2		B	CSO	80	3	2	2	
5251		SVTO	11 24	0845	N18 E48	11 28.0		B	CAO	110	6	4	2	
5251		RAMY	11 24	1310	N18 E47	11 28.1		B	DAI	110	9	4	4	
5251		BOUL	11 24	1530	N19 E45	11 28.1		B	DSO	130	4	3	1	
5251		HOLL	11 24	1600	N18 E45	11 28.1		B	CSO	140	5	5	2	
5251		PALE	11 24	1920	N17 E43	11 28.1		B	DSO	120	8	4	3	
5251		24911	MWIL	11 24	2330	N17 E41	11 28.1	4	(BG)					
5251			LEAR	11 25	0005	N19 E40	11 28.0		BG	DAI	90	9	4	3
5251			CULG	11 25	0432	N18 E38	11 28.1		B	DAO	80	8	4	1
5251			SVTO	11 25	1113	N18 E33	11 28.0		B	DSO	90	10	5	2
5251		RAMY	11 25	1345	N18 E33	11 28.1		B	DAO	80	8	5	2	
5251	PALE	11 25	1800	N18 E32	11 28.2		B	DAO	100	8	5	3		
5251	24911	MWIL	11 25	2315	N18 E27	11 28.0	5	(BG)						
5251		CULG	11 26	0340	N17 E27	11 28.2		A	HR	20	3	3	2	
5251		RAMY	11 26	1305	N18 E20	11 28.1		B	DAO	50	10	4	3	
5251	24911	MWIL	11 26	1715	N18 E17	11 28.0	5	(BG)						
5251		HOLL	11 26	1745	N18 E16	11 27.9		B	DAO	30	9	8	3	
5251	PALE	11 26	1750	N17 E17	11 28.0		B	CSO	70	11	6	3		
5251	CULG	11 27	0455	N19 E12	11 28.1		B	BXI	20	12	7	2		
5251	SVTO	11 27	1015	N21 E09	11 28.1		B	CRO	30	12	10	3		
5251	RAMY	11 27	1425	N18 E06	11 28.0		B	BXO	30	15	7	3		
5251	BOUL	11 27	1530	N18 E05	11 28.0		B	BXO		7	5	2		
5251	24911	MWIL	11 27	1600	N18 E05	11 28.0	4	(BG)						
5251		HOLL	11 27	1610	N19 E05	11 28.0		B	BXO	20	8	5	3	
5251	PALE	11 27	2235	N19 E02	11 28.1		B	BXO	10	6	7	3		
5251	CULG	11 28	0325	N18 W01	11 28.1		B	BXO	10	4	4	1		
5251	RAMY	11 28	1350	N17 W07	11 28.0		B	BXO	20	9	6	4		
5251	24911	MWIL	11 28	1600	N18 W08	11 28.0	5	(BG)						
5251		HOLL	11 28	1606	N18 W09	11 28.0		B	BXO	30	6	5	2	
5251		BOUL	11 28	1735	N17 W09	11 28.0		B	BXO	20	4	5	1	
5251		PALE	11 28	1950	N19 W12	11 27.9		B	BXO	30	7	5	2	
5251		LEAR	11 29	0135	N18 W13	11 28.1		BG	BXO	20	4	3	3	
5251		CULG	11 29	0255	N19 W12	11 28.2		B	BXO	10	5	5	1	
5251		SVTO	11 29	1004	N22 W17	11 28.1		BG	BXI	10	5	6	2	
5251		RAMY	11 29	1352	N20 W18	11 28.2		B	CRO	10	5	2	3	
5251		HOLL	11 29	1537	N21 W22	11 28.0		B	BXO	10	2	2	3	
5251		24911	MWIL	11 29	1600	N19 W21	11 28.1	3	(AP)					
5251	PALE		11 29	1820	N20 W22	11 28.1		A	AX		1	1	3	
5251	LEAR		11 30	0050	N18 W25	11 28.1		B	BXO	20	6	5	3	
5251	CULG		11 30	0427	N20 W26	11 28.2		B	BXO	10	4	3	2	
5251	SVTO		11 30	0700	N22 W31	11 27.9		A	HR	20	3	2	2	
5251	RAMY		11 30	1440	N19 W32	11 28.2		A	AX		1		3	
5251	LEAR		12 01	0220	N19 W41	11 28.1		A	AX	10	1	1	2	
5251	LEAR		12 03	0020	N19 W69	11 27.8		A	AX	10	1	1	3	
5251	SVTO		12 03	1012	N20 W74	11 27.9				10	0	7	2	
5256	24916		RAMY	11 27	1425	N23 E07	11 28.1		B	BXO	30	17	5	3
5256		BOUL	11 27	1530	N23 E06	11 28.1		B	BXO		9	4	2	
5256		MWIL	11 27	1600	N23 E06	11 28.1	4	(B)						
5256		HOLL	11 27	1610	N23 E06	11 28.1		B	BXO	20	14	5	3	
5256		PALE	11 27	2235	N23 E04	11 28.2		B	BXO	20	15	6	3	
5256		CULG	11 28	0325	N23 E01	11 28.2		B	CSI	20	11	5	1	
5256		RAMY	11 28	1350	N23 W05	11 28.2		B	CRI	40	20	7	4	
5256		24916	MWIL	11 28	1600	N23 W06	11 28.2	4	(B)					
5256			HOLL	11 28	1606	N23 W07	11 28.1		B	CRO	30	11	7	2
5256			BOUL	11 28	1735	N22 W07	11 28.2		B	DSO	60	7	6	1
5256	PALE		11 28	1950	N24 W08	11 28.2		B	BXO	40	14	5	2	
5256	LEAR	11 29	0135	N23 W12	11 28.1		B	CRO	40	16	10	3		
5256	CULG	11 29	0255	N24 W11	11 28.3		B	CRI	30	8	7	1		
5256	SVTO	11 29	1004	N24 W14	11 28.3		B	CAO	20	5	4	2		

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

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)	Lat	CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5256		RAMY	11 29	1352	N24 W18	11 28.2		B	CRO	30	10	9	3
5256		BOUL	11 29	1525	N23 W18	11 28.2		B	DSO	60	9	9	3
5256		HOLL	11 29	1537	N25 W21	11 28.0		B	DSO	60	12	10	3
5256	24916	MWIL	11 29	1600	N23 W19	11 28.2	4	(B)					
5256		PALE	11 29	1820	N25 W21	11 28.1		B	BXO	30	12	10	3
5256		LEAR	11 30	0050	N23 W24	11 28.2		B	BXO	40	12	9	3
5256		CULG	11 30	0427	N24 W26	11 28.2		B	BXO	10	8	9	2
5256		SVTO	11 30	0700	N23 W26	11 28.3		B	CAO	20	6	5	2
5256		RAMY	11 30	1440	N22 W32	11 28.1		B	CRO	30	12	9	3
5256		BOUL	11 30	1520	N23 W31	11 28.2		B	CAO	10	7	7	3
5256	24916	MWIL	11 30	1600	N23 W33	11 28.1	5	(B)					
5256		HOLL	11 30	1624	N23 W34	11 28.1		B	CSO	30	8	6	3
5256		PALE	11 30	1835	N23 W36	11 28.0		B	BXO	30	8	8	3
5256		LEAR	12 01	0220	N23 W40	11 28.1		B	CRO	30	11	9	2
5256		CULG	12 01	0347	N24 W39	11 28.2		B	DRO	20	11	8	2
5256		RAMY	12 01	1345	N25 W45	11 28.2		B	DAI	130	17	9	2
5256		BOUL	12 01	1540	N22 W45	11 28.3		B	DSI	100	12	9	3
5256		HOLL	12 01	1542	N22 W47	11 28.1		B	BXO	30	15	8	3
5256	24916	MWIL	12 01	1700	N23 W47	11 28.2	4	(B)					
5256		PALE	12 01	1850	N24 W46	11 28.3		B	CSO	60	15	7	3
5256		LEAR	12 02	0033	N23 W52	11 28.1		B	ERO	50	11	11	3
5256		CULG	12 02	0400	N27 W51	11 28.3		B	BXO	20	3	4	1
5256		RAMY	12 02	1300	N23 W59	11 28.1		B	BXO	30	6	8	4
5256	24916	MWIL	12 02	1530	N22 W61	11 28.0	4	B					
5256		BOUL	12 02	1530	N22 W62	11 28.0		B	BXO	30	2	7	3
5256		PALE	12 02	2145	N26 W62	11 28.2		B	BXO	20	3	6	3
5256		LEAR	12 03	0020	N24 W63	11 28.2		A	AX	10	1	1	3
5256		CULG	12 03	0350	N22 W63	11 28.4		A	AX		1		2
5256		RAMY	12 03	1348	N21 W79	11 27.6		A	AX	10	1	1	2
5256		BOUL	12 03	1538	N21 W79	11 27.7		A	AX		1		4
5256		HOLL	12 03	1540	N19 W78	11 27.8		A	AX		1		4
5256		PALE	12 03	1750	N22 W82	11 27.5		A	AX	10	1	1	3
5256A		HOLL	11 23	1540	N34 E60	11 28.4		A	AX		1		4
5256B		RAMY	12 01	1345	S04 W35	11 29.0		A	AX		1	1	2
5256B	24922	MWIL	12 01	1700	S04 W36	11 29.1	2	(AF)					
5256C	24914	MWIL	11 26	1715	S17 E46	11 30.2	4	(AP)					
5256C		HOLL	11 26	1745	S18 E45	11 30.2		A	AX		1		3
5256C		PALE	11 26	1750	S19 E45	11 30.2		A	AX	10	1	1	3
5256C		RAMY	11 29	1352	S15 E09	11 30.2		B	BXO		3	1	3
5256C		HOLL	11 29	1537	S15 E06	11 30.1		B	BXO	10	3	3	3
5256C		RAMY	11 30	1440	S15 W12	11 29.7		A	AX	10	1	1	3
5256C		RAMY	12 01	1345	S16 W19	11 30.1		A	AX		2	1	2
5256C	24923	MWIL	12 01	1700	S16 W20	11 30.2	3	(AP)					
5256C		PALE	12 01	1850	S16 W23	11 30.0		A	AX	10	3	2	3
5256C		LEAR	12 02	0033	S17 W25	11 30.1		B	BXO	10	3	3	3
5256C		HOLL	12 03	1540	S18 W53	11 29.7		A	AX		1		4
5256D		SVTO	11 25	1113	N25 E64	11 30.4		B	BXO	10	3	10	2
5259		SVTO	11 29	1004	N20 E16	11 30.6		B	CRO	10	2	1	2
5259		RAMY	11 29	1352	N19 E15	11 30.7		B	BXO	10	5	2	3
5259		HOLL	11 29	1537	N21 E11	11 30.5		A	AX	10	1	1	3
5259	24919	MWIL	11 29	1600	N20 E13	11 30.7	3	(BP)					
5259		PALE	11 29	1820	N20 E11	11 30.6		A	AX		1	1	3
5259		LEAR	11 30	0050	N21 E08	11 30.6		B	BXO	20	6	3	3
5259		CULG	11 30	0427	N19 E07	11 30.7		B	BXO	10	5	3	2
5259		SVTO	11 30	0700	N20 E05	11 30.7		B	CRO	20	5	4	2
5259		RAMY	11 30	1440	N19 W01	11 30.5		A	AX		1		3
5259	24919	MWIL	11 30	1600	N20 W03	11 30.4	4	(AP)					
5259		HOLL	11 30	1624	N20 W03	11 30.4		A	AX		2	1	3
5259		PALE	11 30	1835	N20 W03	11 30.5		A	AX		2	1	3
5259		CULG	12 01	0347	N20 W08	11 30.5		A	AX	10	2	1	2
5259		HOLL	12 01	1542	N20 W16	11 30.4		A	AX		1		3
5259	24919	MWIL	12 02	1530	N20 W25	11 30.7	3	(BF)					
5259		PALE	12 02	2145	N22 W29	11 30.7		B	BXO	20	4	4	3
5259		LEAR	12 03	0020	N19 W31	11 30.6		B	BXO	10	3	3	3

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(Ordered by Central Meridian Passage Date)

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time (UT)		Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5259		CULG	12	03	0350	N22 W32	11 30.7		B BXO	10	2	2	2
5259		HOLL	12	03	1540	N19 W40	11 30.6		B BXO		2	3	4
5255		LEAR	11	25	0005	N31 E76	12 1.0		B BXO	10	2	8	3
5255		RAMY	11	25	1345	N29 E66	11 30.7		A AX	10	1	1	2
5255		PALE	11	25	1800	N29 E64	11 30.8		A AX	10	1	1	3
5255	24913	MWIL	11	25	2315	N28 E60	11 30.6	4	(AP)				
5255		HOLL	11	27	1610	N30 E38	11 30.7		A AX		1		3
5255A		RAMY	11	24	1310	S15 E83	11 30.8		A AX	10	1	1	4
5255A		HOLL	11	24	1600	S16 E80	11 30.7		A AX	50	1	1	2

Stations reporting:

BOUL = Boulder
CULG = Culgoora

HOLL = Holloman
LEAR = Learmonth

MWIL = Mt. Wilson
PALE = Palehua

RAMY = Ramey
SVTO = San Vito

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF- SPA	SES			
01	0435	0454	0603	1-	3			1	1		0433	C2.8	5212
01	0651		0831	3-	1			1			No flare		
01	1058	1110	1216	2+	5	3	3	1	1	2	1055	M3.4	5218
01	1306	1323	1336	1	1			1			No flare		
01	1525	1533	1610	2	3					3	1530	C9.2	5212
01	2143	2151	2327	2	5	1		1		1	2145	M1.6	5218
02	0256	0314	0347	1-	1			1			No flare		
02	0809	0815	0819	1-	1		1				0642	C1.0	5218
02	0957	1001	1021	1-	5		1	1	1	2	1000	C5.3	5212
02	1151	1155	1210	1	3		2			2	1151	C1.9	
02	1214	1224	1240	1	3	1	2		1	2	1210	C5.4	
02	1643	1647	1717	2-	3					9	1644	C4.2	5218
03	0011	0019	0059	1-	1			1			0015	C2.1	5218
03	0839	0852	0919	1-	5	1	4	1	1		0828	C4.4	5212
03	1218	1221	1225	1-	3					2	1220	C1.5	5212
03	1314	1315	1325	1-	5					6	1314	C1.7	5212
03	1328	1330	1347	1-	5					7	1314	C1.7	5212
03	1405	1411	1425	1-	5	1			1	9	1406	C2.2	5212
03	1605	1608	1632	1	3					3	1604	C2.1	5218
03	2124	2128	2220	1-	5			1		2	2123	C4.3	5218
04	0157	0203	0216	1-	1			1			0155	C1.1	
04	0218	0228	0311	1-	1			1			0220		
04	0527	0532	0604	1-	1			1			0529	C1.8	5218
04	0637	0643	0712	1-	1			1			0638	C1.5	5212
04	0830	0834	0856	1-	3		2	1			0830	C1.2	
04	0855	0912	0926	1+	3		2				No flare		
04	1210	1213	1222	1-	1		1				1208		5212
04	1434	1446	1536	2+	1					1	No flare		
04	1647	1649	1715	1+	3					7	1647	C1.7	5212
04	1742	1744	1800	1	3					9	1740	C2.1	5212
04	2228	2236	2252	1-	1			1			2250		5212
05	0417	0421	0457	1-	3			1	1		0418	C1.6	
05	0527	0530	0609	1-	1			1			0529	C2.1	5218
05	0905	0907	0920	1-	1					1	0907	C1.4	5212
05	1800	1802	1814	1-	3					6	1800	C1.8	5218
05	2123	2125	2217	1-	1			1			2151		5218
06	0305	0316	0347	1-	3			1	1		No flare		
06	0507	0510	0535	1-	1			1			0508	C1.2	5212
06	1029	1035		1-	3				1	2	1030E		
06	1045	1048	1100	1-	3				1	2	1030E		
06	1107	1111	1125	1-	3				1	2	1103	C3.6	5212
06	1405	1408	1426	1	3					6	1403		5212
06	1826	1829	1930	1-	5	1				11	1820	M4.9	5212
06	2112	2114	2115	1-	1	1					No flare		
07	0309	0315	0340	1-	3			1	1		0309	C1.4	5218
07	0404	0414	0435	1-	1			1			0406	C1.0	
07	0509	0520	0550	1-	1			1			0520		5218
07	0800	0811	0835	1-	5		2	1	1		0802	C1.9	
07	1038	1039	1045	1-	3			1		2	No flare		
07	1103	1116	1251	3	5	3	3	1	1	3	1103	M3.0	5212
07	1221	1243	1337	1	1			1			1233		5218
07	1400	1405	1415	1-	5		2		1	3	1359	C2.1	
08	0053	0106	0209	1-	3			1	1		0052	C2.1	
08	1232	1234	1243	1-	3					2	1228E	C3.0	5218
08	1933	1940	1952	1	1	1					No flare		
09	0051	0104	0119	1-	1			1			0043		5218
09	0211	0217	0314	1	3			1	1		0210	C4.3	5218
09	0408	0412	0422	1+	1			1			0403	C2.3	
09	0436	0439	0451	1-	3			1	1		0435	C1.2	
09	0459	0514	0548	1-	1			1			No flare		
09	0754	0804	0816	1-	1			1			0757		5218

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF-SPA	SES			
09	0817	0823	0901	1-	5			1	1		0817	C2.7	
09	0842	0854	0910	2	3		2				No flare		
09	0924	0925	0938	1	3		2				No flare		
09	0939	0952	1010	2	1		1				No flare		
09	1012	1026	1047	2	3		2				No flare		
09	1047	1106	1146	2	1		1				No flare		
09	1223	1235	1400	3+	5	4	3	1	1	9	1203	M9.7	5218
09	1932	1941	2021	2-	5			1		10	1932	M4.5	5218
10	0055	0108	0144	1-	1			1			0055E		5218
10	0534	0542	0605	1-	3			1	1		0533	C2.5	5229
10	0605	0620	0859	3+	5	2		1	1		0604	M9.5	5233
10	0841	0858	1020	1-	1			1	1		0844		5228
10	1032	1037	1119	1-	5		1	1	1	1	1031	C3.0	
11	0020	0022	0032	1-	3			1	1		0018	C1.9	
11	0105	0120	0156	1-	3			1	1		0111	C2.3	5218
11	0318	0331	0348	1-	3			1	1		No flare		
11	0355	0403	0420	1-	3			1	1		No flare		
11	0427	0430	0447	1-	3			1	1		0427	C2.5	
11	0503	0513	0537	1-	3			1	1		0458		
11	0537	0547	0617	1-	3			1	1		No flare		
11	0625	0635	0721	1+	5		1	1	1		0624	C5.9	
11	0730	0738	0805	1-	5		1	1	1		0731	C3.2	
11	0827	0831	0851	1-	5		1	1			0828	C3.4	
11	1203	1207	1231	1	3		2				No flare		
11	1502	1504	1513	1-	5		1			7	1456	C2.2	5229
11	1515	1522	1624	1-	5			1		10	1513	C6.6	5218
11	1913	1915	1945	1	3					5	1913	C3.1	
12	0722	0729	0754	1-	1			1			0724	C1.8	
12	1147	1159	1246	1+	5		1	1	1	2	1152	C7.4	5229
12	1212	1217	1240	1-	3	1	1		1	2	1209	C4.0	
12	1348	1350	1400	1-	1					1	1344	C1.9	5229
12	1609	1627	1739	1	5			1		9	1605	M5.1	5229
12	1943	1949	2006	1-	5			1		7	1941	C6.6	5218
12	2025	2027	2038	1-	5			1		1	No flare		
12	2115	2121	2216	1-	1			1			2117	C5.5	5229
12	2222	2248	2359	1-	1			1			2224	C4.2	5229
13	0125	0151	0249	2	3			1	1		0127	C6.0	5229
13	0249	0254	0321	1-	3			1	1		0253		5229
13	0449	0537	0712	3+	5	1		1	1		0450	M7.0	5229
13	0712	0719	0805	1-	3			1	1		0716	C4.3	5240
13	1311	1320	1352	1-	5	1	1	1	1	11	1245	C8.8	5227
13	1354	1404	1439	1-	5	1	1	1	1	10	1403	C6.7	5229
13	1525	1534	1615	2	3					7	1457	C4.5	5240
13	1632	1645	1754	1-	5			1		9	1628	M3.4	5229
13	2020	2023	2051	1	5			1		8	2022E	M3.8	5229
13	2057	2113	2242	2+	5	1		1		6	2022E	M3.8	5229
13	2251	2316	0116	2+	3	1		1			2252	M3.2	5227
14	0149	0203	0325	2+	5	1		1	1		0146	M2.3	5240
14	0343	0416	0546	3-	5	1		1	1		0323E	M1.3	5227
14	0632	0650	0720	1-	5		1	1	1		0634	C3.8	5227
14	0747	0802	0907	2+	5	2	2	1	2		0739	M1.4	
14	1204	1212	1300	1+	5		1	1	1	2	1150	M1.3	5227
14	1437	1452	1546	1	5	1	1	1	1	8	1344	M2.2	5229
14	1645	1655	1728	1-	5	1		1		8	1644	M3.4	5229
14	1947	1954	2024	2+	5	1		1		8	1944	M4.0	5240
15	0122	0138	0156	1-	1			1			0129		5227
15	0243	0252	0349	1-	3			1	1		0243	C4.4	5229
15	0652		0742	2-	1		1				No flare		
15	0909	0913	0922	1-	5		2	1			0905	C1.7	
15	1057	1106	1154	1+	5		3	1	1	1	1058	C5.5	
15	1438	1440	1500	1	5		1			4	1436	C2.7	5227
15	1750	1752	1815	1+	3					6	1749	C7.3	5227
15	2038	2104	2153	2	5			1		4	2034	C7.0	5227
15	2218	2231	0013	2+	3	1		1			2215	M2.0	5229

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Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF-SPA	SES			
16	0110	0119	0202	1-	3			1	1		0115	C3.2	5229
16	0228	0248	0400	1+	3			1	1		0307	C4.4	5240
16	0400	0414	0500	3+	5	1		1	1		0414		
16	0500	0506	0625	2+	1			1			0500	M1.2	
16	0625	0636	0756	3	5	1		1	1		0630E		
16	0804	0812	0835	1-	5			1	2		0804	C4.6	
16	0845	0852	0914	1-	5		1	1	1		0846	C4.5	
16	0921	0929	1006	1+	5	2	3	1	1	2	0919	M1.0	
16	1148	1200	1234	1-	5	2	1	1	1	2	1145	C7.8	5227
16	1457	1503	1515	1	5	1	2		1	9	1458E	M2.7	5240
16	1640	1643	1703	1	3					4	No flare		
16	1712	1715	1727	1-	3					8	1712	C7.3	5240
16	1730	1734	1800	2	3					9	1729	M1.1	5229
16	1909	1912	1931	1	3					5	1909	C5.1	5229
16	1957	2000	2045	1+	3					9	1957	M1.2	5229
16	2138	2148	2227	1	5	1		1		1	2139	C9.4	5229
17	0101	0108	0205	1-	1			1			0105	C3.0	
17	0542	0602	0635	1-	3			1	1		0541	C5.4	5229
17	0635	0641	0717	1	3			1	1		0637	C5.4	
17	0724	0733	0808	1+	5	1	1	1	2		0726	C8.0	5229
17	1303	1306	1330	1	5	1	3		1	4	1301		5229
17	1347	1353	1415	2	5		3		1	6	1345	C9.1	5240
17	2304	2309	2334	1-	1			1			2302	C2.2	5229
18	0053	0105	0131	1-	1			1			No flare		
18	0305	0312	0335	1-	1			1			No flare		
18	0455	0500	0524	1-	1			1			0455	C1.6	
18	1400	1406	1430	1+	3		1			1	1404E	C2.0	5229
18	1658	1700	1715	1-	3					4	1638	C1.6	5241
18	1717	1728	1750	2	3					3	1717	C3.1	5240
18	1943	1946	2015	1+	3					5	1943	C6.9	5229
19	2212	2221	2246	1-	1			1			2215	C2.4	5240
20	0240	0300	0314	1-	3			1	1		No flare		
20	0500	0508	0540	1-	3			1	1		*		
20	1416	1418	1428	1-	3					6	1417	C6.4	5235
20	1636	1640	1705	2-	3					7	1634	C6.0	5241
20	2209	2216	2311	1-	1			1			2218E	C3.4	5235
20	2324	2326	2338	1-	1			1			2322	C2.0	
20	2346	2355	0054	1-	1			1			2346	C3.8	
21	0136	0140	0151	1-	1				1		No flare		
21	0150	0208	0254	1-	3			1	1		0149	C3.6	
21	0309	0313	0327	1-	1			1			No flare		
21	0337	0346	0430	1-	1			1			0333	C1.9	
21	0402	0411	0424	1-	1			1			0406		5229
21	0431	0440	0526	1-	1			1			No flare		
21	0649	0701	0740	1-	5		1	1			No flare		
21	1338	1348	1504	1-	5			1		6	1349		5241
21	1410	1415	1430	1	3					5	1356	C6.7	5240
21	1526	1530	1546	1-	3					3	1527	C2.0	5241
21	1654	1658	1735	2	3					8	1654	C8.6	5240
21	1915	1927	2015	2-	3					5	1917E		5240
21	2251	2306	0024	2	5	2		1			2250	M1.6	5235
22	0054	0108	0141	1-	1			1			No flare		
22	0414	0421	0456	1-	1			1			No flare		
22	0620	0627	0703	1-	1			1			0625	C4.6	5241
22	0703	0710	0751	1-	1			1			0716		5229
22	1457	1504	1600	2+	3					5	1453	C9.3	5241
23	0656	0726	0826	3-	1		1				No flare		
23	0926	1016	1126	3+	1		1				No flare		
23	1226	1406	1456	3+	1		1				No flare		
24	0651	0658	0712	1	1		1				No flare		
24	0801	0814	0914	1-	5		1	1	1		0801	C2.4	

*No flare patrol

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type					Flare (UT)	X-ray Class	NOAA Region
						SWF	SEA	SPA	LF SPA	SES			
24	0943	1016	1146	3+	1		1				No flare		
24	1245	1256	1418	1	5			2	1	1	1250E	C5.8	5254
24	2204	2213	0007	1+	5	1		1		1	No flare		
25	0702		0822	2+	1		1				No flare		
25	0922	0928	1017	1	3		3				No flare		
25	1032	1142	1240	3+	1		1				No flare		
25	1342	1402	1447	2	1		1				1359E		5241
25	1621	1624	1653	1	3					5	1614E	C3.8	5254
26	0744	0808	0838	1	3		2				0550	C2.1	
26	2129	2143	2246	1-	1				1		2127	C7.3	
26	2313	2317	2325	1-	1				1		2307		5251
26	2328	2341	0049	2+	3	1		1			2330	M1.2	5254
27	0103	0118	0157	1-	1				1		No flare		
27	0215	0221	0234	1-	3				1	1	0221E	C3.3	5251
27	0249	0317	0419	1+	3				1	1	No flare		
27	0809	0827	1007	2	3				1	1	No flare		
27	2211	2236	0122	3+	5	2		1			2207	M6.5	5254
28	0509	0524	0552	1-	1				1		No flare		
28	0740	0751	0847	1-	3		1	1			0729		
28	1137	1144	1222	1-	5		1	1			1128E	C3.2	5254
29	0223	0227	0320	1-	3				1	1	0223	C3.7	5254
29	0633	0638	0723	1-	1				1		0634	C1.7	5254
29	0828	0841	0906	1+	1		1				0832		5252
29	0921	0946	1016	2-	1		1				No flare		
29	1030	1038	1100	1+	1		1				No flare		
29	1130	1136	1156	1	1		1				No flare		
30	0113	0118	0143	1-	1				1		0107	C1.1	
30	0336	0341	0416	1-	1				1		0337	C1.3	5254
30	0434	0440	0545	1-	3				1	1	0434	C2.6	5254
30	0608	0620	0700	1-	1				1		0612	C1.5	5254
30	0838	0903	0953	2+	1				1		No flare		

OBSERVATORIES REPORTING FOR NOVEMBER 1988

Amherst, New Hampshire, USA	SES	Lintong, People's Republic of China	SPA
Ayrshire, Scotland	SES	Louisville, Kentucky, USA	SES
Bayonne, New Jersey, USA	SES	Maui, Hawaii, USA	SWF
Darmstadt, German Federal Republic	SWF	Panska Ves, Czechoslovakia	SES, SEA, SWF
Farsta, Sweden	SES	Paterson, New Jersey, USA	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 Democratic Rep.	SWF	Upice, Czechoslovakia	SEA
Kandilli, Turkey	SEA	Valley Cottage, New York, USA	SES
Kuhlungsborn, German Democratic Rep.	SEA, SPA	Vlasim, Czechoslovakia	SEA
Latrobe, Pennsylvania, USA	SES		

Observations are not necessarily continuous.

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1988

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									
Reg. No.																																							
5212	2	1	5	5	1	4	1																																
5218	2	2	3	1	3	3	1	5	1	1	1																												
5227													2	3	4	1																							
5228											1																												
5229									1	1	5	7	2	2	5	4	2					1	1																
5233										1																													
5235																				2	1																		
5240													2	2	3	1	1	1																					
5241																		1	2	2				1															
5251																										1	1					1	1						
5252																								1	1	1	1	1	1	1	2	3							
5254																								1	1	1	1	1	1	1	2	3							

Number of events with X-Ray flares																																							
4	5	8	6	4	3	5	2	6	3	9	8	10	8	7	13	6	5	1	5	6	2				2	1	3	2	1	2	4								

Number of events with no flare reported																																							
2	1			2			2	1	1	6			4	1			1	1			2	1	4	2	3	3	3				3	1	3	1					

Number of events with no flare patrol																																							
																													1										

Total SID events																																							
6	6	8	11	5	8	8	3	14	5	14	9	11	8	9	16	7	7	1	7	13	5	3	5	5	4	5	3	6	5										

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

NOVEMBER 1988

Observation Day (UT)	Start (UT)	End (UT)	Sta	Decimetric Band			Metric Band			Dekametric Band			Spectral Type			
				Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)				
01	0647	1541	WEIS				1026.7	1027.3	2				IIIB,U			
			SVTO				1053.0	1057.0	3				III			
			WEIS	1057.51	1000.02									Spikes		
			WEIS				1059.7	1101.6	3					IIIGG,RS		
			WEIS				1100.7	1122.6	3				II	H,HB		
			SVTO				1101.0	1122.0	3				IV			
			WEIS				1120.5	1122.2	2						Cont	
			WEIS				1516.4	1524.6	2						IIIG, RS	
02	0648	1538	CULG				0252.0	0252.0	1				III			
			LEAR				0252.0	0252.0	1				III			
			CULG				0322.0	0322.0	1				III			
			LEAR				0322.0	0322.0	2				III			
			SVTO				0956.0	0958.0	3				III			
			WEIS				0956.4	0957.4	3				IIIG			
			SVTO				1041.0	1042.0	3				III			
			WEIS				1209.8	1213.2	3				IIIG			
			WEIS				1223.8	1232.8	2				IIIGG,RS,D			
			SGMR				1226.0	2113.0	1				CONT			
			WEIS				1239.3	1251.0	2				IIIGG			
			CULG				2125.0	2125.0	1				III			
			CULG				2140.0	2140.0	1				III			
CULG				2151.0	2205.0	1				III						
03	0652	0815	WEIS				0945.8	0946.3	2				IIIG			
			WEIS				1425.5	1425.6	2				IIIG			
			SGMR				1641.0	1641.0	1				III			
			PALE				1735.0	1735.0	1				III			
			SGMR				1735.0	1735.0	1				III			
			PALE				1830.0	1830.0	1				III			
			SGMR				1830.0	1830.0	2				III			
			PALE				2122.0	2123.0	2				V			
			CULG				2123.0	2123.0	3				III			
			CULG				2126.0	2132.0	1				II			
			CULG				2144.0	2147.0	2				III			
			PALE				2144.0	2148.0	1				III			
			CULG				2158.0	2207.0	1				S			
			PALE				2246.0	2257.0	1				S			
			CULG				2247.0	2158.0	2				III			
			LEAR				2247.0	2259.0	2				S			
			LEAR				2253.0	2254.0	3				III			
			LEAR				2316.0	2316.0	2				III			
LEAR				2346.0	2346.0	2				III						
04	0652	1536	LEAR				0020.0	0023.0	2				III			
			LEAR				0023.0	0226.0	1				CONT			
			WEIS	0134.96	1350.3	1							I			
			LEAR				0157.0	0158.0	2				III			
			LEAR				0217.0	0223.0	2				III			
			CULG				0224.0	0224.0	2				III			
			LEAR				0224.0	0226.0	3				III			
			CULG				0537.0	0537.0	1				III			
			LEAR				0537.0	0537.0	2				III			
			LEAR				0615.0	1020.0	1				CONT			
			WEIS				1100.0	1104.0	1				I			
			WEIS				1329.1	1331.7	1				I			
			LEAR				2334.0	1020.0	2				CONT			
			05	0654	1534	CULG				0431.0	0000.0D	1				S
						WEIS				0727.0	1533.0	3				IS
WEIS							1209.1	1211.3	1				IIIG			
WEIS							1316.3	1317.2	1				IIIG			
WEIS							1329.8	1330.8	1				IIIG			
WEIS							1521.4	1521.5	2				IIIG			
WEIS							1524.4	1524.5	1				IIIB			
SGMR							1702.0	1703.0	2				III			
PALE							1759.0	1802.0	3				V			
SGMR							1800.0	1803.0	3				III			

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

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NOVEMBER 1988

Day	Observation		Sta	Decimetric Band			Metric Band			Dekametric Band			Spectral Type
	Start (UT)	End (UT)		Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
05			PALE				1941.0	1941.0	2				III
			CULG				2131.0	2222.0	2				S
			PALE				2146.0	2147.0	2				III
			LEAR				2324.0	1021.0	1				CONT
06			CULG				0017.0	0107.0	2				S
			LEAR				0110.0	0111.0	3				III
			PALE				0110.0	0111.0	2				III
			CULG				0111.0	0111.0	2				III
			LEAR				0124.0	0125.0	3				III
			CULG				0125.0	0125.0	2				III
			PALE				0125.0	0125.0	1				III
			LEAR				0136.0	0137.0	3				III
			PALE				0136.0	0137.0	2				III
			CULG				0137.0	0137.0	2				III
	0658	1533	WEIS				0730.0	0730.2	2				III G
			WEIS				0753.3	0753.4	1				III G
			WEIS				0813.0	1100.0	2				IN
			WEIS				0818.6	0818.7	1				IIIB
			WEIS				0822.7	0824.8	3				III G
			LEAR				0823.0	0825.0	3				III
			SVTO				0823.0	0823.0	3				III
			WEIS				1138.4	1139.7	2				III G
			SGMR				1426.0	1427.0	3				III
			WEIS				1426.0	1427.8	3				III G
			WEIS				1430.1	1431.2	1				II faint
			CULG				2027.0	2027.0	2				S
			PALE				2027.0	2028.0	1				III
			SGMR				2027.0	2027.0	1				III
		LEAR				2224.0	1021.0	1				CONT	
		LEAR				2328.0	2329.0	2				III	
07			LEAR				0138.0	0139.0	2				III
			CULG				0323.0	0323.0	1				III
			LEAR				0323.0	0323.0	2				III
	0657	0936	WEIS				0707.0	0822.0	1				IN
	0942	1531	WEIS				1006.7	1007.6	1				III G
			WEIS				1035.7	1036.1	2				III G
			WEIS				1204.7	1206.4	1				DC
			WEIS				1303.4	1303.5	1				IIIB
			WEIS				1345.8	1346.1	1				III G
			WEIS				1354.2	1354.3	1				IIIB
			SGMR				1434.0	1434.0	1				III
			WEIS				1434.4	1434.6	2				III G
			CULG							2051.0	2051.0	2	III
			CULG				2210.0	0000.00	1				S
08			LEAR				0008.0	0011.0	1				III
			LEAR				0036.0	0036.0	1				III
			LEAR				0051.0	0052.0	1				III
			LEAR				0105.0	0107.0	2				III
			LEAR				0116.0	0116.0	1				III
			LEAR				0124.0	0126.0	1				III
			CULG				0515.0	0515.0	1				III
			CULG				0629.0	0629.0	1				III
			LEAR				0641.0	0641.0	1				III
			LEAR				0702.0	1022.0	1				CONT
			LEAR				0903.0	0903.0	2				III
	0659	1530	WEIS				0903.2	0903.4	3				IIIB
			WEIS				0909.3	0913.0	2				DC
			WEIS				0934.4	0934.5	1				IIIB
			WEIS				0946.9	0947.0	1				IIIB
			WEIS				0948.7	0948.9	2				III G
			WEIS				1034.6	1034.8	3				III G
			WEIS				1054.9	1057.7	2				III G
			WEIS				1131.1	1134.4	3				III G
			WEIS				1228.7	1233.8	1				Spikes
		WEIS				1230.4	1256.3	3				II H, HB	
		SGMR				1231.0	1248.0	3				IV	

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

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Nov 88

NOVEMBER 1988

Day	Observation		Sta	Decimetric Band			Metric Band			Dekametric Band			Spectral Type
	Start (UT)	End (UT)		Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
12	0836	1524	SGMR				1457.0	1458.0	1				III
			WEIS				1457.7	1457.9	2				IIIB
			SGMR				1606.0	1609.0	1				III
			SGMR				1611.0	1620.0	2				II
			CULG				2025.0	2025.0	1				III
			CULG				2054.0	2059.0	2				III
			CULG				2059.0	2107.0	1				III
			PALE				2223.0	2225.0	1				V
			CULG				2224.0	2225.0	3				III
			LEAR				2224.0	2227.0	2				III
			CULG				2225.0	2235.0	1				III
			LEAR				2233.0	2233.0	1				III
			13	0707	1523	CULG				0052.0	0053.0	3	
LEAR							0052.0	0053.0	3				III
PALE							0052.0	0053.0	1				III
CULG							0056.0	0056.0	1				III
CULG							0128.0	0130.0	1				III
LEAR							0128.0	0130.0	1				III
CULG							0135.0	0137.0	2				III
LEAR							0135.0	0136.0	3				III
CULG							0137.0	0156.0	1				I
LEAR							0147.0	0537.0	1				CONT
CULG							0248.0	0252.0	2				III
LEAR							0248.0	0252.0	3				III
PALE							0248.0	0248.0	1				III
CULG							0456.0	0457.0	2				III
LEAR							0456.0	0506.0	2				III
CULG							0531.0	0539.0	3				III
LEAR							0531.0	0537.0	2				III
CULG							0537.0	0555.0	1				II
LEAR							0537.0	0820.0	2				IV
LEAR							0547.0	0553.0	2				II
CULG							0556.0	0604.0	1				CONT
CULG							0713.0	0716.0	3				V
LEAR							0713.0	0716.0	3				III
SVTO							0714.0	0715.0	3				III
LEAR							0810.0	0811.0	3				III
SVTO							0810.0	0811.0	2				III
WEIS							0810.8	0810.9	1				IIIB
LEAR							0820.0	1025.0	1				CONT
WEIS							0933.5	0933.7	1				IIIB
WEIS							1010.8	1011.6	1				IIIG
WEIS							1150.2	1150.6	1				IIIG
WEIS							1208.9	1209.3	2				IIIG
WEIS							1303.9	1304.3	1				U
SGMR							1304.0	1311.0	2				III
WEIS							1308.3	1310.8	3				IIIGG
WEIS							1313.6	1317.8	2				Spikes
SGMR							1418.0	1418.0	1				III
WEIS							1418.0	1418.4	2				IIIG
SGMR							1433.0	1435.0	1				III
WEIS							1433.6	1435.3	2				IIIG
SGMR							1516.0	1523.0	1				III
WEIS							1516.3	1517.3	2				IIIG
WEIS							1519.9	1520.0	1				IIIB
SGMR				1634.0	1638.0	1				II			
PALE				1805.0	1806.0	1				III			
SGMR				1806.0	1806.0	1				III			
PALE				1913.0	1921.0	1				III			
PALE				2132.0	2132.0	1				III			
CULG				2133.0	2159.0	2				S			
PALE				2146.0	2154.0	1				III			
LEAR				2246.0	2310.0	1				CONT			
CULG				2305.0	2309.0	3				III			
LEAR				2305.0	2310.0	3				III			
PALE				2305.0	2328.0	2				IV			
CULG				2308.0	2326.0	2				II			
LEAR				2310.0	2320.0	3				IV			

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

NOVEMBER 1988

Observation Day (UT)	Start (UT)	End (UT)	Sta	Decimetric Band			Metric Band			Dekametric Band			Spectral Type
				Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
13			LEAR				2320.0	0038.0	2				IV
14			CULG				0014.0	0014.0	3				III
			LEAR				0038.0	1025.0	1				CONT
			LEAR				0046.0	0047.0	2				III
			CULG				0047.0	0051.0	3				III
			LEAR				0055.0	0057.0	3				III
			PALE				0056.0	0057.0	1				III
			CULG				0058.0	0416.0	1				S
			LEAR				0104.0	0104.0	2				III
			LEAR				0144.0	0156.0	3				S
			CULG				0210.0	0220.0	2				III
			LEAR				0210.0	0220.0	2				III
			CULG				0236.0	0250.0	2				III
			LEAR				0237.0	0243.0	2				III
			CULG				0642.0	0642.0	1				III
			LEAR				0902.0	0902.0	2				III
0709 1237			WEIS				0902.2	0902.4	2				IIIG
			WEIS	0912.10	9125.0	1							Spikes
			WEIS	0929.10	9294.0	2							Spikes
			WEIS	1103.91	1058.0	3							Spikes
			SGMR				1130.0	1459.0	1				CONT
			WEIS	1159.51	1597.0	1							Spikes
			WEIS				1200.0	1204.3	3				IIIGG
			WEIS	1203.61	2044.0	2							Spikes
			WEIS				1208.8	1209.9	2				IIIG
1255 1521			WEIS				1437.7	1442.3	2				II
			PALE				1944.0	1948.0	2				V
			LEAR				2243.0	2243.0	2				III
15			LEAR				0017.0	0037.0	2				S
			LEAR				0056.0	0103.0	2				III
			CULG				0256.0	0256.0	1				III
			CULG				0311.0	0319.0	1				III
			LEAR				0311.0	0311.0	2				III
			LEAR				0400.0	0401.0	2				III
			CULG				0439.0	0439.0	1				III
			CULG				0453.0	0454.0	1				III
			LEAR				0453.0	0454.0	2				III
			CULG				0515.0	0636.0	1				S
			LEAR				0531.0	0534.0	1				III
			LEAR				0607.0	0613.0	2				III
			LEAR				0610.0	0610.0	3				III
			LEAR				0636.0	0636.0	2				III
			LEAR				0715.0	0718.0	1				III
			LEAR				0752.0	0754.0	2				III
0712 1520			WEIS				0752.0	1426.0	2				IIIN
			SGMR				1412.0	1414.0	1				III
			WEIS				1412.8	1414.1	3				IIIG,U
			SGMR				1425.0	1425.0	1				III
			SGMR				1631.0	1632.0	2				III
			SGMR				1654.0	1655.0	1				III
			SGMR				1735.0	1740.0	1				S
			PALE				1737.0	1738.0	2				III
			PALE				1943.0	1945.0	2				V
			SGMR				1943.0	1945.0	3				V
			CULG				2110.0	2110.0	1				III
			CULG				2221.0	2235.0	1				III
			LEAR				2221.0	2222.0	2				III
			LEAR				2228.0	0045.0	1				CONT
			CULG				2239.0	0000.0	1				I
			LEAR				2243.0	2250.0	2				III
			PALE				2243.0	2250.0	1				III
			CULG				2244.0	2244.0	2				III
			CULG				2249.0	2250.0	2				III
			LEAR				2312.0	2313.0	3				III
			PALE				2312.0	2313.0	1				III
			LEAR				2336.0	2337.0	2				III
			PALE							2336.0	2336.0	2	III

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				Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)			
15			LEAR				2348.0	2348.0	2				III		
			CULG				2349.0	2354.0	3				III		
			LEAR				2349.0	2353.0	3				III		
16			CULG				0000.0	0004.0	1				III		
			LEAR				0001.0	0014.0	2				S		
			CULG				0022.0	0039.0	2				S		
			PALE				0024.0	0040.0	2				S		
			LEAR				0026.0	0039.0	3				S		
			LEAR				0045.0	0423.0	2				CONT		
			CULG				0051.0	0423.0	1				S		
			CULG				0113.0	0118.0	2				III		
			LEAR				0113.0	0118.0	3				III		
			PALE				0113.0	0116.0	3				V		
			CULG				0614.0	0615.0	1				III		
			CULG				0626.0	0648.0	1				S		
			LEAR				0626.0	0628.0	3				III		
			LEAR				0637.0	0639.0	2				II		
			LEAR				0643.0	0745.0	1				IV		
	0712	1519		WEIS	0736.40	7367.0	1							Spikes	
				WEIS	0806.20	8128.0	3								Spikes
				LEAR				0848.0	0858.0	3					III
				WEIS				0848.4	0850.1	3					IIIIG
				WEIS				0856.7	0856.8	1					IIIB
				WEIS				1204.7	1205.0	2					IIIIG
				WEIS				1236.7	1238.5	2					Spikes
				SGMR				1357.0	0000.0	1					CONT
				WEIS				1408.0	1500.0	2					Spikes
				SGMR				1433.0	1435.0	2					V
				WEIS	1433.41	4343.0	1								DCIM
				WEIS				1433.7	1434.3	1					IIIIG
			WEIS				1453.3	1459.1	3					IIIIGG	
			SGMR				1454.0	1500.0	3					V	
			SGMR				1714.0	1717.0	3					V	
			PALE				1828.0	1829.0	1					III	
			PALE				1922.0	1937.0	1					V	
			PALE				2001.0	2006.0	2					V	
			CULG				2118.0	2124.0	2					III	
			PALE				2124.0	2127.0	1					III	
			CULG				2146.0	2147.0	3					III	
			CULG				2156.0	2159.0	2					III	
			LEAR				2157.0	2159.0	1					III	
			LEAR				2307.0	2313.0	1					III	
			PALE				2336.0	2336.0	2					III	
			PALE				2349.0	2353.0	2					III	
17			CULG				0003.0	0004.0	2					III	
			LEAR				0003.0	0007.0	3					III	
			CULG				0004.0	0007.0	1					III	
			CULG				0030.0	0030.0	2					III	
			LEAR				0030.0	0031.0	3					III	
			PALE				0030.0	0031.0	2					III	
			CULG				0105.0	0106.0	1					III	
			CULG				0107.0	0631.0	1					S	
			LEAR				0107.0	0109.0	3					III	
			CULG				0202.0	0203.0	1					III	
			LEAR				0202.0	0203.0	2					III	
			LEAR				0221.0	0221.0	2					III	
			LEAR				0233.0	0236.0	3					III	
			PALE				0234.0	0235.0	2					III	
			LEAR				0309.0	0309.0	2					III	
			LEAR				0318.0	0319.0	1					III	
			LEAR				0322.0	0333.0	3					III	
			CULG				0330.0	0334.0	2					III	
			LEAR				0335.0	0502.0	1					CONT	
			LEAR				0448.0	0449.0	2					III	
			LEAR				0502.0	0504.0	2					III	
			LEAR				0553.0	0601.0	3					III	
			CULG				0557.0	0558.0	2					V	

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				Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
17			LEAR				0631.0	0632.0	2				III
			SVTO				0638.0	0640.0	2				III
			LEAR				0709.0	0710.0	1				III
			LEAR				0723.0	0739.0	3				S
	0714	0748		WEIS			0736.1	0737.2	3				IIIG
	0802	1516		WEIS			1107.4	1108.7	2				IIIGG
				WEIS			1118.4	1118.5	1				IIIB
				WEIS			1120.1	1121.2	2				IIIG
				SGMR			1341.0	1346.0	1				III
				WEIS			1403.4	1406.6	3				IIIGG
				SGMR			1404.0	1406.0	2				III
				LEAR			2319.0	2319.0	2				III
				LEAR			2357.0	0007.0	2				V
18			LEAR				0016.0	0016.0	2				III
			LEAR				0043.0	1028.0	1				III
			LEAR				0529.0	0530.0	2				III
			LEAR				0644.0	0644.0	2				III
	0717	1517		WEIS			0743.3	0744.0	2				IIIG
				LEAR			0940.0	0940.0	1				III
				WEIS			1103.1	1103.7	2				F
				CULG			2048.0	2048.0	2				III
				CULG			2051.0	2053.0	1				III
				LEAR			2330.0	2330.0	2				III
19			LEAR				0005.0	1028.0	2				CONT
			CULG				0252.0	0252.0	1				III
			CULG				0409.0	0409.0	1				III
			CULG				0428.0	0428.0	1				III
			CULG				0553.0	0553.0	1				S
			CULG				0636.0	0640.0	1				S
			SGMR				1331.0	1333.0	2				III
			SVTO				1331.0	1332.0	2				III
	0717	1515		WEIS			1331.0	1333.0	3				IIIG
				SGMR			1521.0	1521.0	1				III
				PALE			1801.0	1803.0	3				III
				CULG			2220.0	2220.0	1				III
				LEAR			2220.0	2220.0	2				III
				LEAR			2321.0	1004.0	1				CONT
20			LEAR				0200.0	0201.0	2				III
			LEAR				0207.0	0207.0	2				III
			CULG				0332.0	0635.0	1				S
			CULG				0353.0	0621.0	1				S
			LEAR				0353.0	0353.0	2				III
			LEAR				0446.0	0447.0	2				III
			LEAR				0530.0	0531.0	2				III
			CULG				0545.0	0545.0	2				III
			LEAR				0545.0	0546.0	3				III
			LEAR				0616.0	0625.0	2				III
			CULG				0708.0	0709.0	1				II
	0719	1512		WEIS			1149.8	1150.0	2				IIIG
				WEIS			1151.5	1151.7	2				IIIG
				SGMR			1319.0	1321.0	1				III
				WEIS			1319.9	1322.4	2				IIIG
				SGMR			1354.0	1354.0	2				III
				SGMR			1406.0	1407.0	2				III
				WEIS			1406.0	1407.6	2				IIIG
				SGMR			1416.0	1419.0	3				V
				SVTO			1416.0	1416.0	3				III
				WEIS			1416.3	1419.3	3				IIIGG
				SGMR			1429.0	1437.0	2				V
				WEIS			1430.1	1436.0	2				II
				SGMR			1627.0	1627.0	2				III
				PALE			1937.0	1939.0	2				V
				SGMR			1937.0	1938.0	1				III
				CULG			2022.0	0000.0D	2				S
			PALE			2028.0	2031.0	2				V	
			CULG			2029.0	2031.0	2				III	

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			Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
20		LEAR				2148.0	2153.0	1				III
		LEAR				2231.0	2232.0	1				III
		LEAR				2246.0	2254.0	2				III
		LEAR				2322.0	2327.0	3				III
		PALE				2322.0	2327.0	3				V
		CULG				2323.0	2328.0	3				III
21		LEAR				0023.0	0051.0	2				S
		CULG				0046.0	0546.0	2				S
		PALE				0106.0	0108.0	2				III
		LEAR				0107.0	0109.0	2				III
		LEAR				0115.0	0118.0	3				III
		PALE				0115.0	0117.0	2				III
		LEAR				0129.0	0130.0	2				III
		LEAR				0157.0	0204.0	3				III
		PALE				0157.0	0158.0	2				III
		LEAR				0229.0	0230.0	2				III
		CULG				0238.0	0240.0	2				III
		LEAR				0238.0	0250.0	3				S
		PALE				0238.0	0245.0	2				V
		CULG				0244.0	0247.0	2				V
		LEAR				0301.0	0302.0	2				III
		LEAR				0334.0	0338.0	3				III
		LEAR				0435.0	0445.0	2				III
		CULG				0437.0	0000.00	1				S
		LEAR				0451.0	0503.0	2				S
		CULG				0506.0	0507.0	1				III
	LEAR				0532.0	0605.0	3				S	
	LEAR				0621.0	0622.0	1				III	
	LEAR				0717.0	0721.0	2				III	
0722	1031	WEIS										
		LEAR				0755.0	0755.0	1				III
		LEAR				0829.0	0832.0	2				V
1043	1358	WEIS				1238.5	1238.6	1				III B
		SGMR				1410.0	1412.0	2				V
1418	1513	WEIS				1502.9	1503.1	1				III G
		SGMR				1503.0	1503.0	2				III
		SGMR				1653.0	1655.0	2				V
		SGMR				1730.0	1945.0	1				CONT
		PALE				2033.0	2038.0	1				V
		PALE				2132.0	2132.0	2				III
		LEAR				2224.0	2225.0	2				III
		LEAR				2250.0	2255.0	3				III
		PALE				2250.0	2255.0	2				V
		LEAR				2302.0	2318.0	1				II
		LEAR				2311.0	0425.0	1				IV
		PALE				2311.0	2317.0	2				II
		LEAR				2343.0	2343.0	2				III
22		LEAR				0120.0	0123.0	2				III
		CULG				0216.0	0325.0	1				S
		LEAR				0216.0	0226.0	2				S
		LEAR				0249.0	0303.0	2				S
		LEAR				0324.0	0324.0	3				III
		LEAR				0330.0	0343.0	2				S
		CULG				0333.0	0334.0	1				III
		CULG				0421.0	0421.0	1				III
		CULG				0425.0	0511.0	1				S
		LEAR				0425.0	0425.0	2				III
		LEAR				0505.0	0511.0	3				V
		CULG				0506.0	0507.0	3				III
		CULG							0507.0	0509.0	1	V
		CULG				0508.0	0508.0	1				III
		LEAR				0604.0	0604.0	1				III
		CULG	0658.0	0658.0	1							III
		LEAR				0658.0	0658.0	2				III
		LEAR				0725.0	0728.0	3				III
		SVTO				0725.0	0726.0	2				V
	0722	1512	WEIS				0725.8	0726.9	2			

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	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)		
22	LEAR			0832.0	0833.0	2				III	
	LEAR			0858.0	0858.0	1				III	
	LEAR			0938.0	0938.0	1				III	
	WEIS			1057.2	1057.6	3				IIIIGG	
	SGMR			1405.0	1406.0	1				III	
	WEIS			1405.7	1405.9	1				IIIB	
	PALE			2030.0	2031.0	1				III	
	CULG			2031.0	2032.0	2				III	
	CULG			2111.0	2220.0	1				III	
	PALE			2118.0	2118.0	1				III	
	PALE			2136.0	2136.0	1				III	
	CULG			2243.0	2243.0	1				III	
	23	LEAR			0035.0	0041.0	2				III
CULG				0036.0	0022.0	1				III	
LEAR				0212.0	0223.0	2				S	
LEAR				0304.0	0304.0	2				III	
LEAR				0319.0	0320.0	3				V	
LEAR				0510.0	0510.0	1				III	
SGMR				1344.0	1344.0	1				III	
0724 1509 WEIS				1344.3	1344.4	1				IIIIG	
CULG				2045.0	2045.0	1				III	
CULG				2133.0	2133.0	2				III	
CULG				2243.0	2307.0	1				S	
LEAR				2257.0	2258.0	1				III	
24		LEAR			0050.0	0052.0	2				III
	LEAR			0134.0	0134.0	1				III	
	LEAR			0203.0	0204.0	1				III	
	LEAR			0216.0	0223.0	2				III	
	LEAR			0245.0	0246.0	3				III	
	LEAR			0508.0	0509.0	2				III	
	LEAR			0522.0	0522.0	2				III	
	LEAR			0535.0	0536.0	2				III	
	LEAR			0543.0	0546.0	3				III	
	LEAR			0553.0	0555.0	2				III	
	LEAR			0555.0	0601.0	2				II	
	LEAR			0600.0	0623.0	1				IV	
	LEAR			0653.0	0653.0	1				III	
	0840 1510 WEIS										
	LEAR			0855.0	0859.0	2				III	
	SGMR			1243.0	1243.0	1				III	
	25	LEAR			0054.0	0054.0	2				III
PALE				0054.0	0054.0	1				III	
LEAR				0119.0	0120.0	2				III	
LEAR				0200.0	0300.0	1				CONT	
LEAR				0251.0	0251.0	2				III	
0727 1413 WEIS				1017.3	1017.6	2				IIIIG	
WEIS				1157.2	1157.8	2				IIIIG	
WEIS				1158.8	1159.1	1				IIIIG	
WEIS		1201.91	2023.0	1						Spikes	
SGMR				1605.0	1606.0	1				III	
CULG				2026.0	2026.0	1				III	
CULG				2048.0	2048.0	1				III	
LEAR				2328.0	2330.0	2				V	
PALE			2328.0	2330.0	2				V		
CULG			2329.0	2330.0	2				III		
26	CULG			0053.0	0057.0	1				S	
	LEAR			0221.0	0232.0	1				S	
	CULG			0457.0	0457.0	1				III	
	LEAR			0457.0	0458.0	2				V	
	CULG						0551.0	0557.0	1	II	
	LEAR			0551.0	0557.0	2				II	
	LEAR			0600.0	0700.0	1				IV	
	0728 1507 WEIS										
	CULG			2052.0	2053.0	1				III	
	CULG			2259.0	2300.0	1				III	

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	Start (UT)	End (UT)		Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	Start (UT)	End (UT)	Int (1-3)	
27			LEAR				0213.0	0215.0	3				III
			PALE				0213.0	0214.0	2				III
			CULG				0214.0	0215.0	1				III
			LEAR				0619.0	0619.0	1				III
	0732	1508	WEIS										
			CULG				2223.0	2223.0	1				III
28	0731	1407	WEIS										
	1420	1507	WEIS										
			SGMR				1451.0	1451.0	1				III
			SGMR				1736.0	1736.0	1				III
			SGMR				1740.0	1823.0	1				S
			SGMR				1850.0	1852.0	1				V
			PALE				1851.0	1852.0	2				V
			PALE				1940.0	1941.0	1				III
			SGMR				1940.0	1940.0	1				III
			CULG				2112.0	2114.0	1				III
			CULG				2134.0	2134.0	1				III
			CULG				2226.0	2228.0	2				III
			LEAR				2226.0	2231.0	3				III
			PALE				2226.0	2230.0	2				III
			CULG				2230.0	2239.0	1				S
			PALE				2257.0	2258.0	1				III
			CULG				2258.0	2259.0	2				III
			LEAR				2258.0	2304.0	2				III
			CULG				2304.0	2304.0	1				III
			LEAR				2341.0	2342.0	2				III
			PALE				2341.0	2342.0	1				III
			CULG				2342.0	2342.0	2				III
29			CULG				0008.0	0010.0	1				III
			LEAR				0008.0	0011.0	2				III
			PALE				0008.0	0011.0	1				III
			LEAR				0116.0	0124.0	3				III
			CULG				0119.0	0120.0	2				III
			PALE				0119.0	0120.0	2				V
			CULG				0212.0	0214.0	2				III
			PALE				0212.0	0213.0	1				III
			CULG				0307.0	0310.0	1				III
			LEAR				0307.0	0310.0	2				III
			CULG				0416.0	0416.0	1				III
			LEAR				0854.0	0854.0	2				III
	0732	1505	WEIS				1304.4	1304.6	1				IIIB
			SGMR				1351.0	1352.0	2				III
			WEIS				1351.3	1353.3	3				IIIGG
			CULG				2128.0	2129.0	1				III
			CULG				2221.0	2221.0	1				III
30			CULG				0343.0	0343.0	1				III
	0736	1506	WEIS										
			LEAR				0846.0	0847.0	1				III
			SGMR				1619.0	1619.0	1				III

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

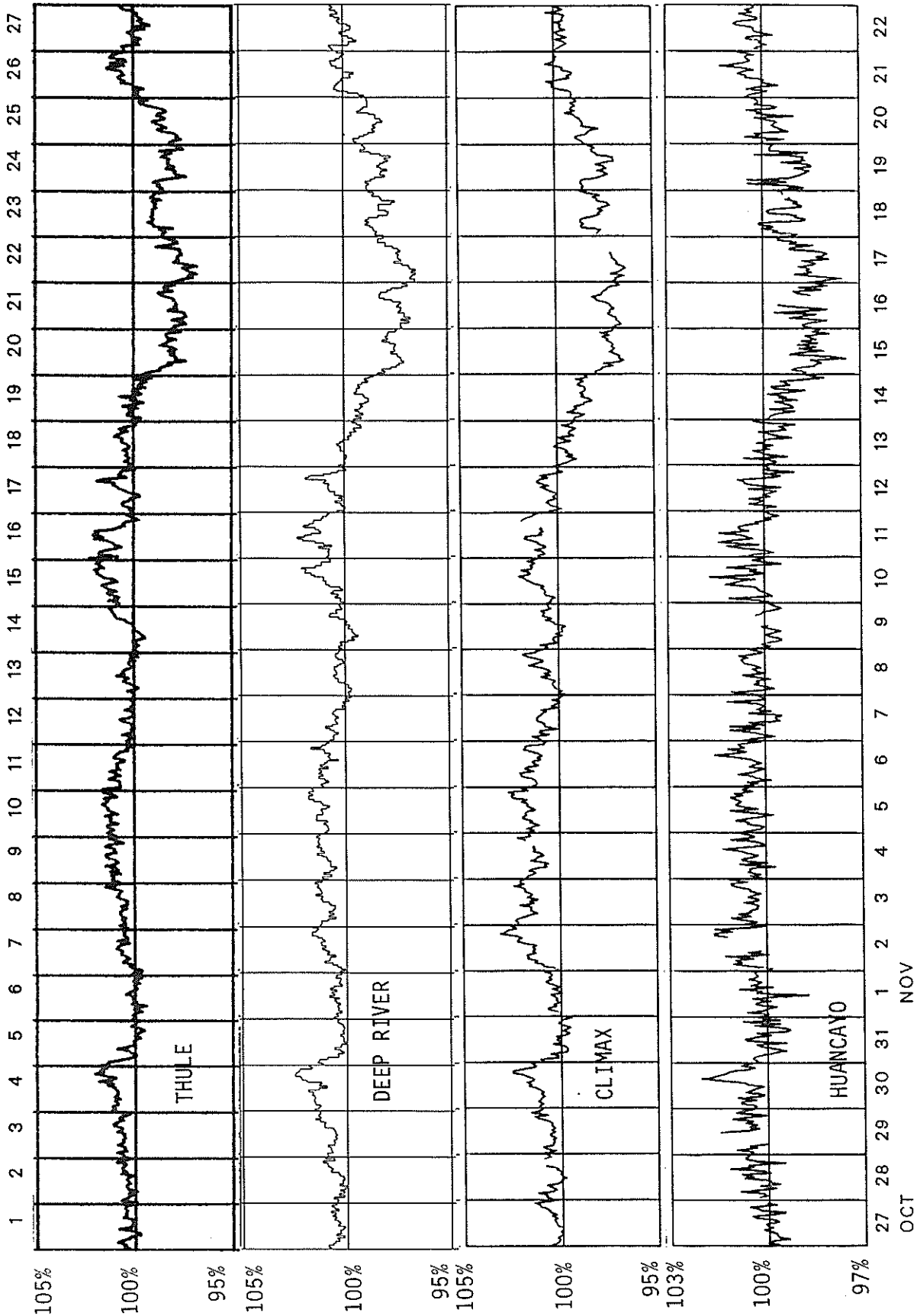
- | | |
|--------------------------------------------------------------------------|-------------------------------|
| B = Single burst | RS = Reverse slope burst |
| G = Small group (< 10) of bursts | DP = Drifting pairs |
| GG = Large group (> 10) of burst | DC = Drifting Chains |
| C = Underlying continuum (particularly with Type I) | H = Herringbone |
| S = Storm in the sense of intermittent but apparently connected activity | W = Weak |
| N = Intermittent activity in this period | P = Pulsations |
| U = U-shaped burst of Type III | CONT = Continuum |
| | UNCLF = Unclassified activity |
| | DCIM = Fast drift |

Stations Reporting:

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

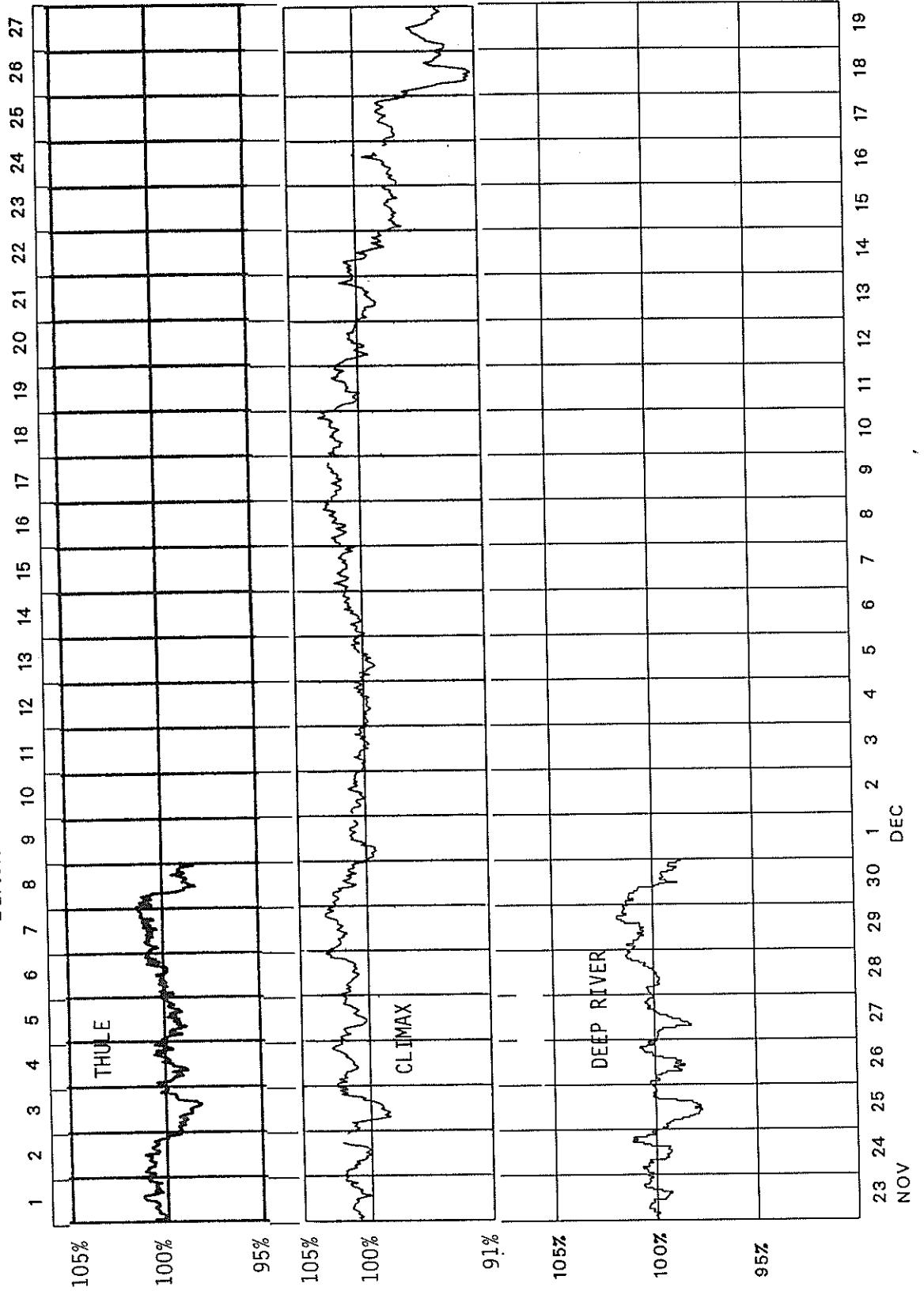
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2121 (October 1988-November 1988)



COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2122 (November 1988-December 1988)



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

NOVEMBER 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	4194	6615.6	5868.7	3853.6	3553.5	1707.3
2	4212	6649.2	5937.4	3904.1	3566.8	1716.7(36)
3	4223	6652.2	5934.7	3907.6	3568.1	1714.1
4	4240	6652.7	5934.5	3890.1	3555.2	1712.0
5	4248	6665.5	5950.0	3906.6	3568.2	1714.3
6	4228	6651.1	5941.1	3891.9	3558.3	1713.5
7	4202	6610.0	5871.8	3863.9	3554.6	1707.5
8	4203	6598.2	5894.9	3866.0	3552.7	1709.9
9	4205	6586.2	5886.3	3851.6	3543.0	1701.5
10	4252	6642.3	5907.0	3881.5	3559.1	1710.6
11	4240	6665.9	5892.4	3881.6	3552.3	1711.6
12	4216	6619.0	5871.0	3853.8	3548.5	1704.4
13	4211	6574.2	5867.8	3820.9	3539.1	1701.0
14	4189	6526.4	5802.2	3791.0	3522.2	1692.2
15	4120	6429.4	5717.6	3733.3	3501.8	1678.6
16	4108	6413.3	5713.2	3733.5	3500.1	1681.2
17	4095	6404.2	5722.9	3719.3(32)	3504.7	1680.1
18	4145	6474.4	5785.2	3762.7	3513.0	1692.7
19	4119	6481.8	5798.0	3757.3	3529.4	1690.5
20	4137	6505.0	5831.3	3790.5	3545.0	1701.6
21	4215	6587.5	5901.6	3827.4	3562.5	1710.4
22	4194	6591.5	5903.6	3827.5	3565.1	1708.7
23	4238	6625.8	5905.8	3849.5	3560.0	1711.2(34)
24	4234	6629.9	5887.2	3845.8	3581.2	1713.1
25	4176	6555.8	5864.1	3820.0	3558.2	1701.0
26	4204	6601.8	5898.9	3874.8	3587.2	1710.1
27	4194	6596.9	5894.8	3854.4	3589.9	1711.1
28	4221	6644.7	5920.8	3864.6	3599.4	1713.0
29	4247	6690.6	5953.6	3893.6	3612.5	1721.0
30	4193	6614.0	5887.0	3865.7	3596.4	1708.1
Mean	4197	6585.2	5871.5	3840.6	3554.9	1704.9

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.

DAILY AVERAGE INDICES Ap

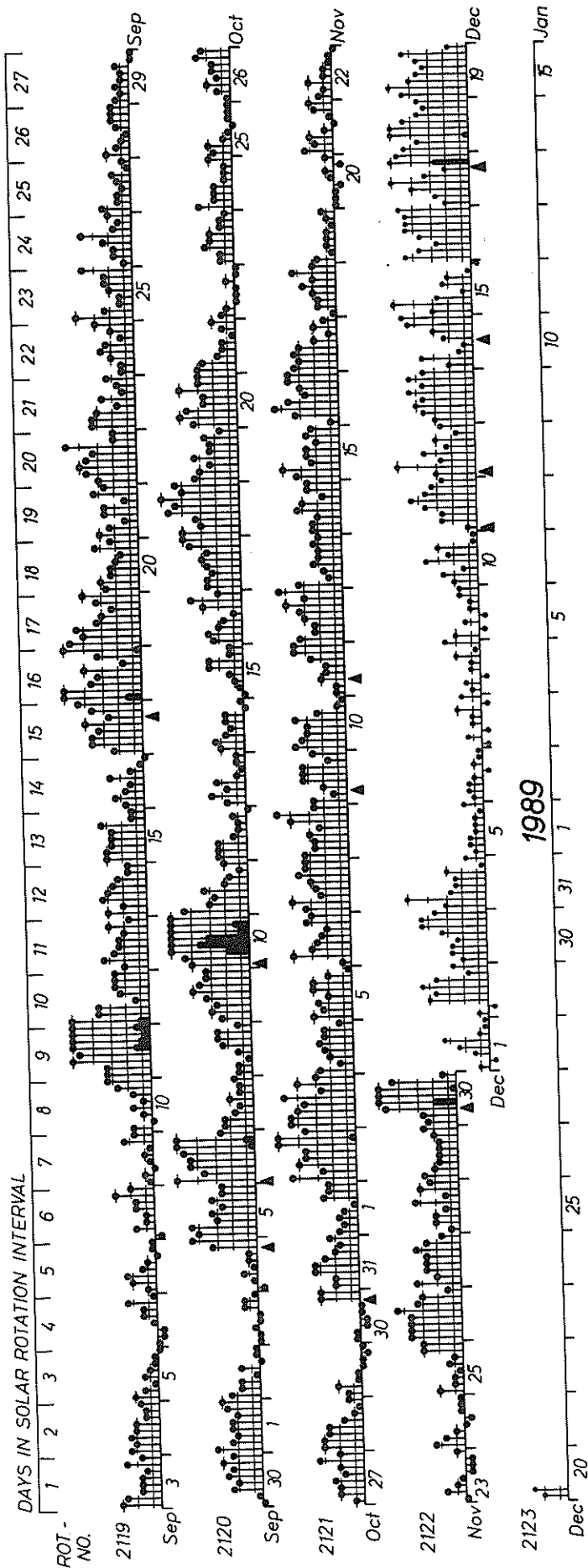
December 1987 to November 1988

DAY	1987 DEC	1988 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	5	5	2	4	13	5	6	14	8	21	11	7
2	4	29	5	6	19	7	5	10	5	12	5	30
3	12	7	3	10	48	7	2	7	6	8	3	26
4	10	14	7	19	78	13	3	4	2	7	9	8
5	17	14	29	8	24	20	10	5	6	4	18	10
6	8	31	11	19	48	106	8	11	5	3	38	13
7	4	24	6	11	15	13	6	8	5	5	6	17
8	1	19	5	26	7	13	6	10	3	6	7	18
9	6	7	11	13	10	10	8	3	13	4	17	12
10	28	4	13	12	16	11	9	7	9	7	85	14
11	15	11	11	14	9	6	7	21	8	51	13	10
12	9	21	16	9	14	5	4	15	16	20	6	18
13	4	7	14	5	10	5	6	5	17	10	6	8
14	4	48	7	12	9	4	20	7	21	11	6	11
15	11	63	19	20	6	6	9	11	16	12	6	13
16	39	5	15	14	5	11	6	22	8	6	10	18
17	16	7	14	9	5	24	10	6	5	20	15	11
18	8	12	19	7	7	18	14	9	8	34	30	8
19	7	10	7	4	9	6	21	9	8	23	12	4
20	4	12	5	6	7	6	13	3	17	11	18	2
21	10	9	26	2	8	10	5	26	7	11	7	6
22	22	7	97	3	44	8	12	27	24	20	3	4
23	10	2	36	5	21	6	8	12	10	11	6	2
24	6	5	12	5	7	8	17	7	11	8	6	4
25	7	6	14	10	6	6	27	6	15	12	4	7
26	4	8	9	49	5	8	17	16	9	8	7	20
27	1	12	7	34	6	3	9	12	15	5	8	12
28	2	6	5	26	11	3	10	11	9	5	9	9
29	5	4	3	32	6	7	26	7	13	4	3	8
30	3	3		34	7	12	22	6	12	8	5	37
31	4	3		11		9		8	13		10	
MEAN	9	13	15	14	16	12	11	10	10	12	13	12

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

Kp through November 30, 1988

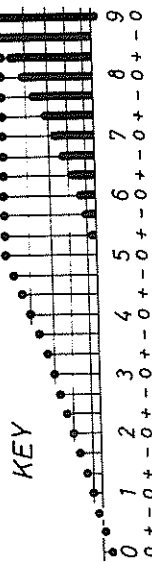
University of Göttingen



PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp (after Bartels)

Kp till 1988 November 30
Ks (from Wingst and Göttingen) till Dec 20

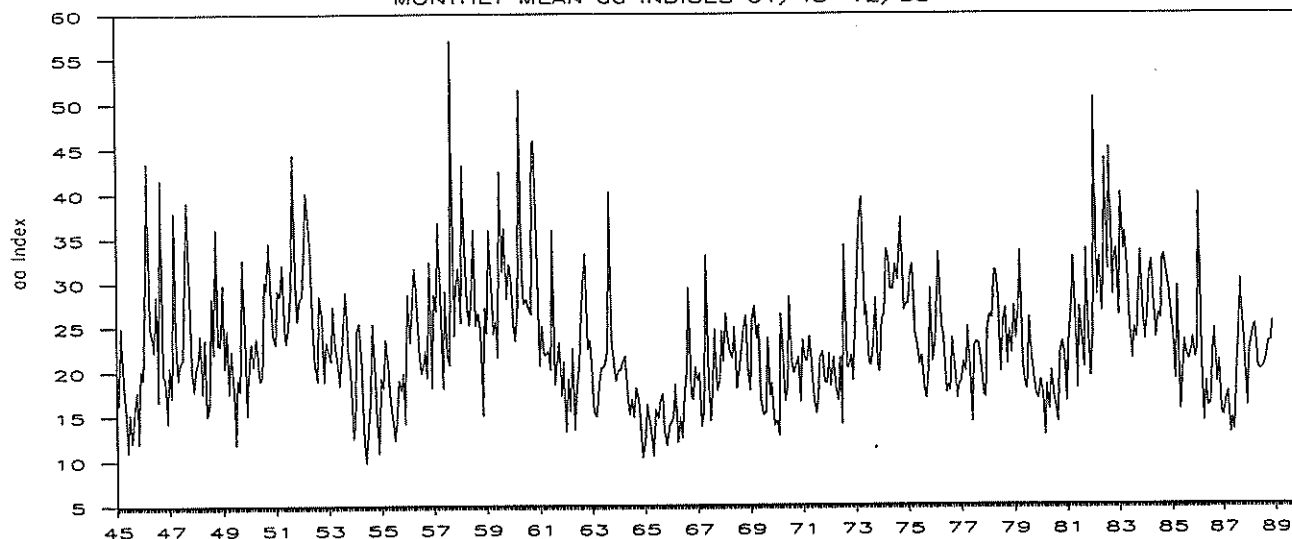
▲ = sudden commencement



With Best Wishes for a Happy New Year

Institut für Geophysik Göttingen

MONTHLY MEAN $\alpha\alpha$ INDICES 01/45-12/88



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

PRINCIPAL MAGNETIC STORMS

NOVEMBER 1988

Sta	Geomag Lat	Commencement		Type	SC Amplitudes			Maximum 3-Hour K Index Day(3-Hour Periods)	Ranges			End		
		Day	Time (UT)		D (Min)	H (Gamma)	Z (Gamma)		D K (Min)	H (Gamma)	Z (Gamma)	Day (UT)	Hour	
KRC	16.4N	01	2354	..	..	..	..	02(3)	5	--	110	45	03	22
HYB	07.6N	01	1400	..	..	..	..	02(5,6,7)	5	4	161	22	03	22
COL	64.6N	02	07--	..	..	..	..	03(5)	7	201	1300	1110	03	16
SIT	60.0N	02	07--	..	..	..	..	02(4)	6	--	410	370	03	17
ETT	00.6S	02	0000	..	..	..	..			5	199	60	03	22
HYB	07.6N	06	0500	..	..	..	..	08(6)	5	3	122	33	08	23
ETT	00.6S	07	0100	..	..	..	..			3	147	40	08	21
HYB	07.6N	09	0632	SC	0.1	10	- 1	09(6)	4	3	102	25	10	21
KRC	16.4N	11	0748	SC	- 1.2	20	12	12(5,6)	5	22	70	42	14	--
HYB	07.6N	11	0753	SC	- 0.2	15	- 2	12(6)	5	3	95	15	13	22
ETT	00.6S	11	0753	SC*	- 1.0	33	17			4	131	39	13	15
GNA	43.2S	11	0751	SC*	0.2*	18	* - 1.0*	11(7)	5	12	20	62	12	04
GUA	04.0N	12	0900	..	..	..	..	12(8)	5	--	100	20	13	08
HYB	07.6N	15	0100	..	..	..	..	16(3)	5	3	94	18	17	22
KRC	16.4N	25	22--	..	..	..	..	26(5)	5	7	70	33	27	19
HYB	07.6N	25	1300	..	..	..	..	26(3,4,7) 27(6)	4	4	104	26	27	19
GUA	04.0N	25	2336	..	..	..	..	25(8)	5	--	150	20	26	16
COL	64.6N	30	06--	..	..	..	..	30(6)	7	227	1235	980	30	21
SIT	60.0N	30	06--	..	..	..	..	30(4)	7	--	--	--	30	21
FRD	49.6N	30	0800	SC	6.5	28	- 5	30(4)	6	27	164	69	30	21
BJI	28.5N	30	0801	SC	3.4	54	3	30(4)	7	11	221	22	30	23
HON	21.1N	30	0801	SC	..	..	..	30(3)	6	--	--	--	--	--
KRC	16.4N	30	0700	SC	- 2.4	69	34	30(4)	7	--	237	94	30	23
ABG	09.5N	30	0759	SC	- 1.0	55	- 10	30(4)	7	5	250	27	30	24
HYB	07.6N	30	0801	SC	- 0.3	59	- 6	30(4,6)	7	3	264	22	30	24
GUA	04.0N	30	0800	SC	0.7	51	- 16	30(4)	7	--	200	40	30	24
ETT	00.6S	30	0801	SC	- 2.0	97	49			6	292	124	30	23
TRD	01.1S	30	0759	SC	0.5	105	119			3	305	238	30	24
HER	33.7S	30	0800	SC	- 3 *	44	20	30(4)	7	30	223	180	30	23
GNA	43.2S	30	0800	SC*	5.5*	- 79 *	31 *	30(4,6)	6	30	155	180	30	21
CNB	43.9S	30	0801	SC	1.7	101	13	30(4)	6	16	210	53	30	21
KGL	56.5S	30	0858	SC	3	72	24	30(6)	8	113	580	192	30	22

Stations:

ABG = ALIBAG
ANN = ANNAMALAINAGAR
API = APIA
BJI = BEIJING
CNB = CANBERRA
COL = COLLEGE

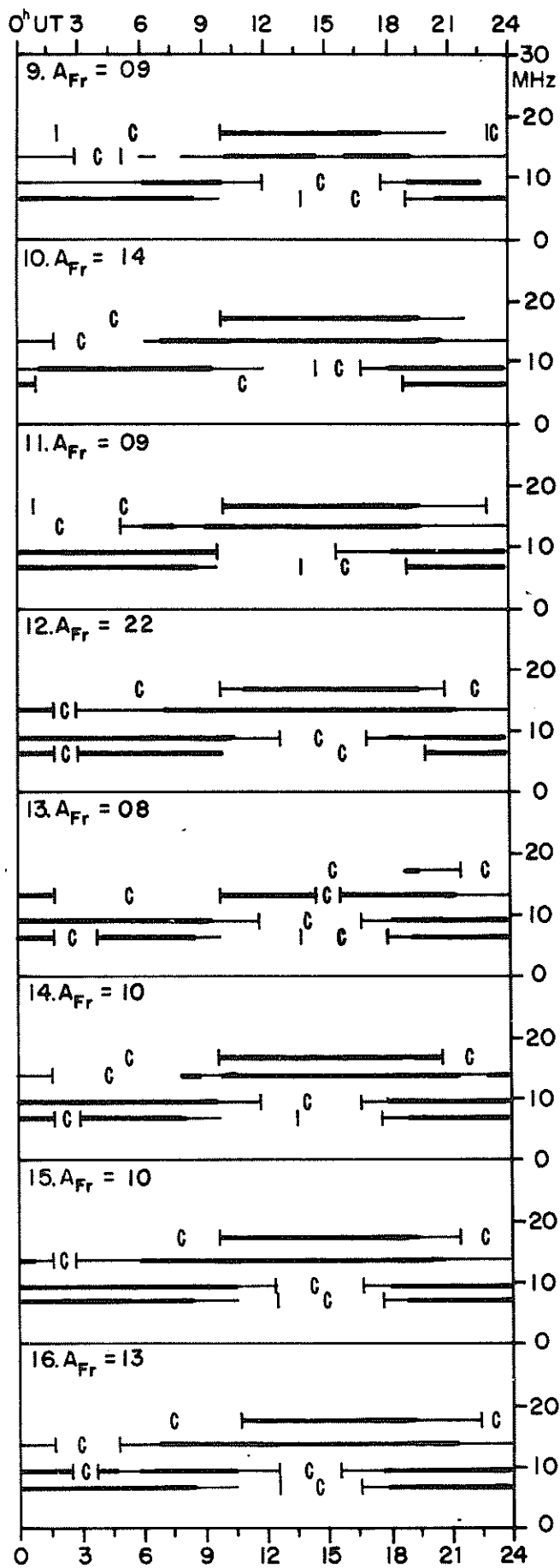
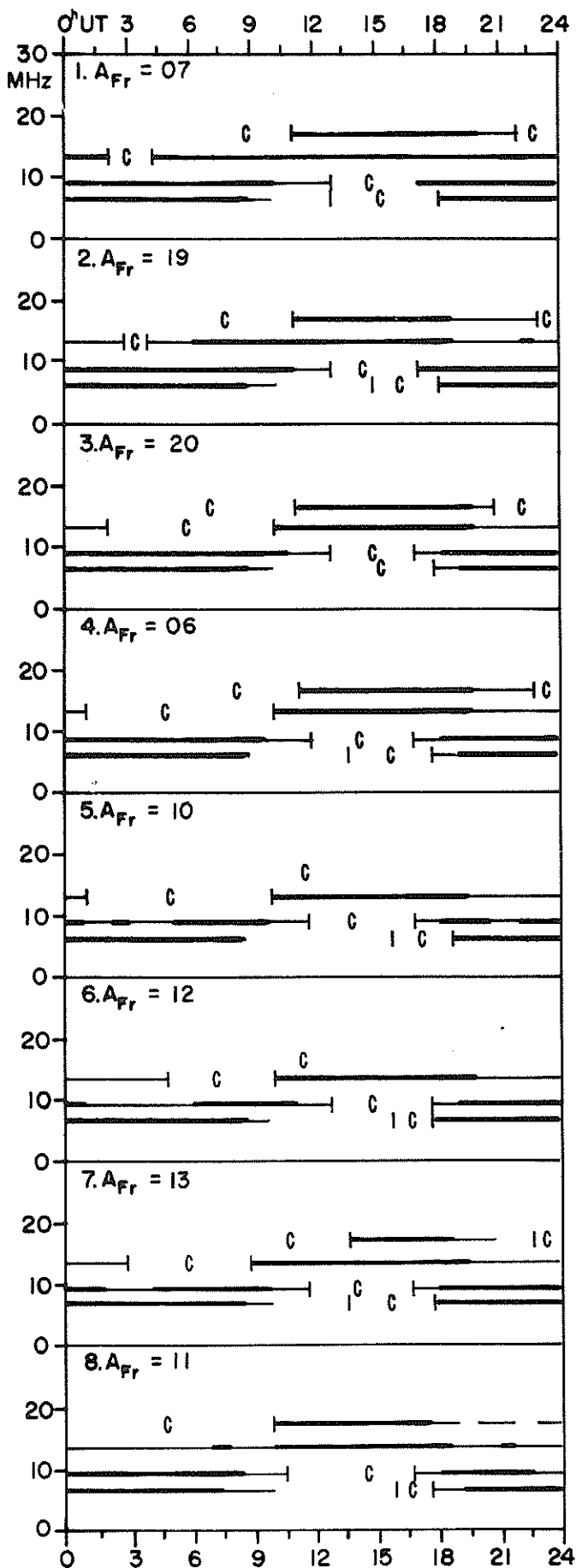
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS

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

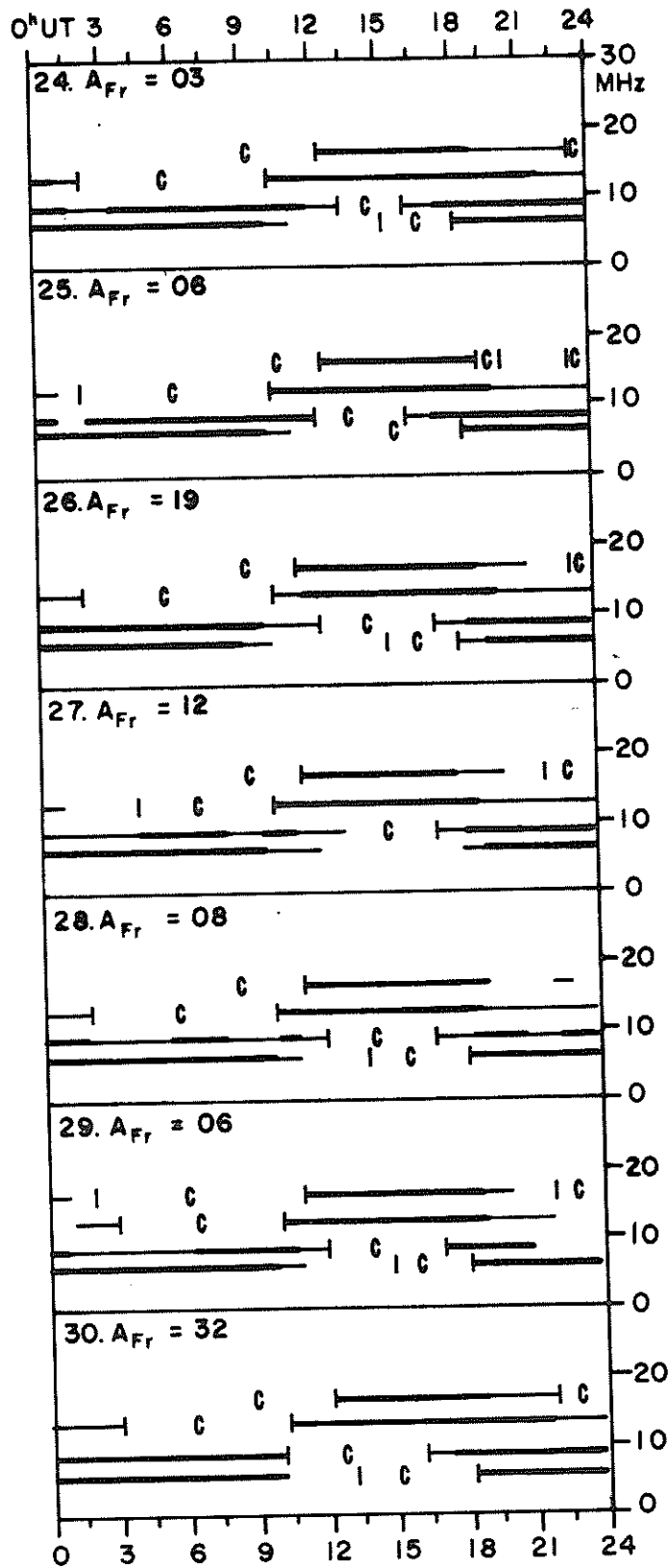
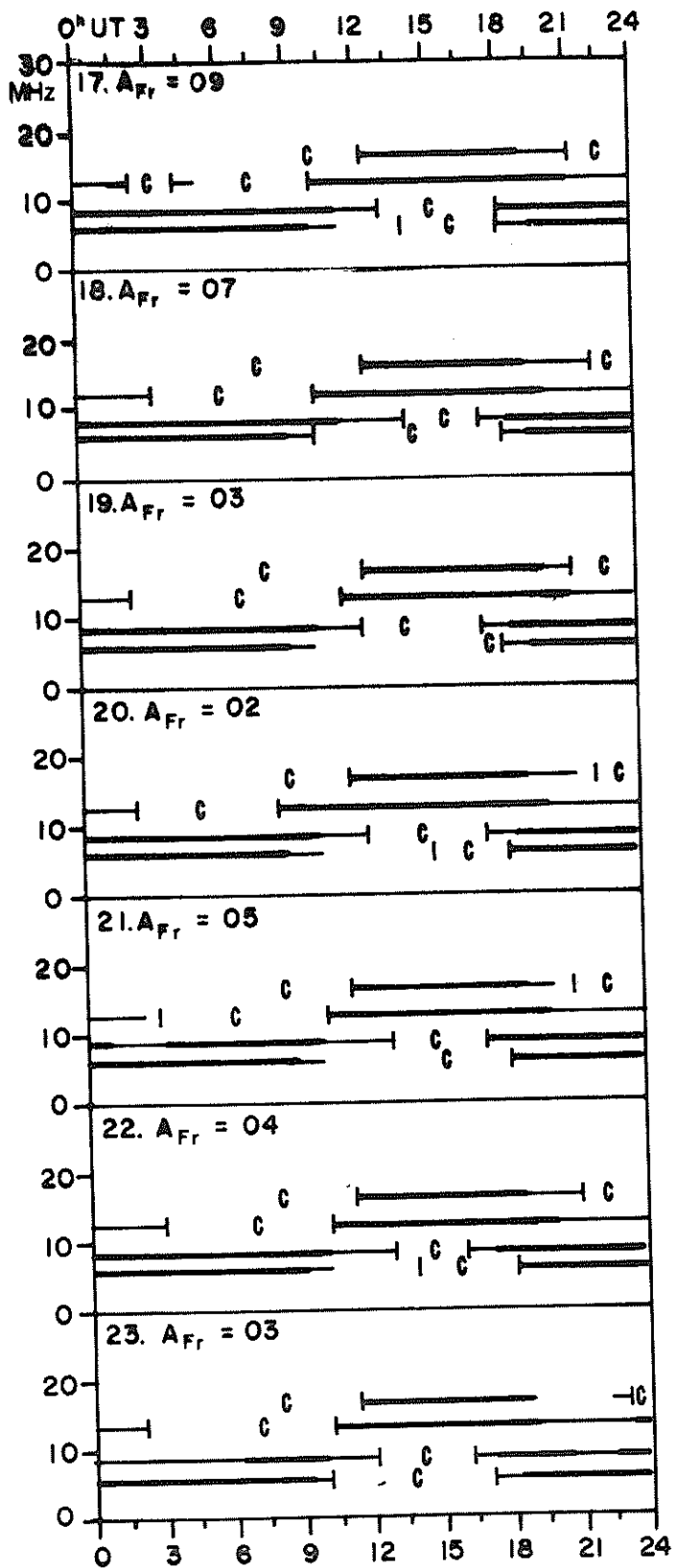
NOVEMBER 1988



TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

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Nov 88

NOVEMBER 1988



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 ≥ -12 dB above $1 \mu\text{V/m}$ (transmitter power reduced to 1 kW). Observed field strengths between -12 dB and -40 dB above $1 \mu\text{V/m}$ are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES
NOVEMBER 1988

Day	For Circuits from Norddeich to:					
	Bracknell England	Rome Italy	Teheran Iran	New York USA (East)	Tokyo Japan	Canberra Australia
1.	6.8	6.9	5.3	5.8	6.9	5.6
2.	6.7	6.2	5.6	5.0	6.4	5.6
3.	5.6	5.6	4.3	4.3	5.4	4.8
4.	5.3	5.3	3.2	3.7	5.6	4.4
5.	5.2	5.2	4.1	2.4	5.2	4.4
6.	5.6	5.1	3.4	3.1	5.0	4.4
7.	5.0	4.5	3.5	3.6	5.6	5.0
8.	5.3	4.4	2.8	3.1	5.7	4.0
9.	3.6	4.1	2.7	2.6	4.4	3.9
10.	4.2	4.3	3.2	3.8	4.2	4.2
11.	5.8	4.3	3.7	5.5	5.0	4.8
12.	6.0	5.1	4.1	5.5	5.5	5.3
13.	5.7	4.9	4.2	4.7	5.2	4.8
14.	5.4	4.2	5.8	5.5	6.3	4.8
15.	5.8	5.2	6.3	5.7	6.6	5.8
16.	6.5	6.2	6.9	5.9	5.7	6.4
17.	5.7	5.1	4.2	5.0	5.1	5.2
18.	5.9	5.4	5.1	4.7	6.2	5.4
19.	4.7	4.1	3.1	4.7	4.0	5.2
20.	5.2	4.8	3.9	4.1	5.5	5.0
21.	4.8	5.3	4.3	4.4	4.8	5.5
22.	4.9	4.5	4.1	4.7	4.1	5.1
23.	4.9	5.0	5.2	5.0	5.1	5.6
24.	5.2	5.0	6.8	6.3	4.3	5.7
25.	6.2	6.2	5.9	6.6	6.5	5.8
26.	4.4	5.1	4.3	4.6	6.3	5.5
27.	5.5	5.2	5.6	4.5	6.2	5.5
28.	5.2	5.6	4.0	4.2	7.1	5.1
29.	5.1	4.9	4.4	4.7	6.3	6.0
30.	5.5	6.5	6.0	5.2	6.2	6.7
MEAN:	5.4	5.1	4.5	4.6	5.5	5.2

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

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Late
Jan 88

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS			BT	REGION W=WAKE
	BXvso	BYvso	BZvso		
88 001 JAN 1 13:50:00					
88 002 JAN 2 13:50:00	-7.83	8.93	2.82	12.72	W
88 003 JAN 3 13:50:00	7.91	2.34	5.70	10.67	W
88 004 JAN 4 13:50:00	-10.05	6.61	3.44	13.75	W
88 005 JAN 5 13:50:00	-8.23	3.86	2.44	11.24	W
88 006 JAN 6 13:50:00	-8.12	1.55	.42	8.57	W
88 007 JAN 7 13:50:00	1.73	3.43	6.53	8.84	W
88 008 JAN 8 13:50:00	-5.38	-.05	-11.54	13.94	W
88 009 JAN 9 13:50:00	9.73	2.35	-7.67	13.37	W
88 010 JAN 10 13:50:00	8.48	-4.30	5.07	13.36	W
88 011 JAN 11 13:50:00	-5.34	1.31	-4.43	7.68	W
88 012 JAN 12 13:50:00	-2.91	4.61	5.73	8.43	W
88 013 JAN 13 13:50:00	-8.29	6.16	-7.71	15.01	W
88 014 JAN 14 13:50:00	-2.84	12.63	11.64	17.67	W
88 015 JAN 15 13:50:00	18.64	2.60	-3.83	22.22	W
88 016 JAN 16 13:50:00					
88 017 JAN 17 13:50:00					
88 018 JAN 18 13:50:00					
88 019 JAN 19 13:50:00					
88 020 JAN 20 13:50:00					
88 021 JAN 21 13:50:00					
88 022 JAN 22 14:00:00	7.96	-1.41	-.73	9.06	W
88 023 JAN 23 14:00:00	11.38	-3.07	.63	13.93	W
88 024 JAN 24 14:00:00	15.48	-.14	-.70	15.81	W
88 025 JAN 25 14:00:00	10.00	-1.24	-.44	10.21	W
88 026 JAN 26 14:00:00	-5.13	1.29	1.91	6.46	W
88 027 JAN 27 14:00:00	7.04	-7.95	4.01	13.40	W
88 028 JAN 28 14:00:00	4.26	-1.02	-.12	7.54	W
88 029 JAN 29 14:00:00	3.65	-1.03	-.31	5.50	W
88 030 JAN 30 14:00:00	7.53	-.23	6.93	11.21	W
88 031 JAN 31 14:00:00	11.40	-3.20	10.41	15.87	W

Source: Institute of Geophysics and Planetary Physics, UCLA

131
Late
Feb 88

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS			BT	REGION W-WAKE
	BXvso	BYvso	BZvso		
88 032 FEB 1 14:00:00	-1.19	-.79	2.98	5.25	W
88 033 FEB 2 14:00:00	-11.07	5.56	.54	13.35	W
88 034 FEB 3 14:00:00	-9.29	5.77	-1.12	11.17	W
88 035 FEB 4 14:00:00					
88 036 FEB 5 14:00:00	-7.92	-3.17	5.66	10.93	W
88 037 FEB 6 14:00:00	-8.41	1.99	-7.42	11.82	W
88 038 FEB 7 14:00:00	-11.35	4.35	2.63	14.56	W
88 039 FEB 8 14:00:00	-4.93	.54	-14.90	16.70	W
88 040 FEB 9 14:00:00	-13.68	4.62	-3.21	16.70	W
88 041 FEB 10 14:00:00	-11.55	6.88	-.31	14.29	W
88 042 FEB 11 14:00:00	-9.64	.04	3.56	14.13	W
88 043 FEB 12 14:00:00	-11.18	6.57	-.35	14.35	W
88 044 FEB 13 14:00:00	-3.76	1.38	-2.39	7.53	W
88 045 FEB 14 14:00:00	9.52	-7.10	1.27	12.22	W
88 046 FEB 15 14:00:00	.42	-9.85	8.77	13.32	W
88 047 FEB 16 14:00:00	2.73	-9.45	5.48	13.48	
88 048 FEB 17 14:10:00	.31	-10.53	-4.81	12.73	
88 049 FEB 18 14:10:00	-3.52	-10.81	-5.57	13.95	
88 050 FEB 19 14:10:00					
88 051 FEB 20 14:10:00	6.70	-5.86	-2.66	10.39	
88 052 FEB 21 14:10:00	-2.97	-3.29	2.63	7.90	
88 053 FEB 22 14:10:00	5.16	-8.97	-4.34	13.42	
88 054 FEB 23 14:10:00	-8.02	1.14	.74	8.84	
88 055 FEB 24 14:10:00	-5.55	1.21	-3.32	8.92	
88 056 FEB 25 14:10:00	6.85	-8.50	-5.31	14.30	
88 057 FEB 26 14:10:00	8.39	-2.28	.59	11.29	
88 058 FEB 27 14:10:00	5.19	-5.49	-1.22	8.59	
88 059 FEB 28 14:10:00	7.65	-.59	-.28	8.26	
88 060 FEB 29 14:10:00					

Source: Institute of Geophysics and Planetary Physics, UCLA

132
Late
Mar 88

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS			BT	REGION W=WAKE
	BXvso	BYvso	BZvso		
88 061 MAR 1 14:10:00					
88 062 MAR 2 14:10:00					
88 063 MAR 3 14:10:00	-8.09	9.56	-6.18	15.32	
88 064 MAR 4 14:10:00	-7.61	2.64	5.40	11.43	
88 065 MAR 5 14:10:00	-4.79	4.54	-3.39	8.79	
88 066 MAR 6 14:10:00	1.81	5.76	-6.05	9.38	
88 067 MAR 7 14:10:00	-1.94	-2.09	-9.19	11.33	
88 068 MAR 8 14:10:00	-9.73	4.88	-.56	12.44	
88 069 MAR 9 14:10:00	-7.74	2.09	-3.32	9.66	
88 070 MAR 10 14:10:00	-6.48	1.44	-.88	9.92	
88 071 MAR 11 14:10:00	-6.97	-.92	-.81	7.30	
88 072 MAR 12 14:10:00	-3.02	4.36	1.73	6.13	
88 073 MAR 13 14:10:00	-9.08	3.68	.92	10.63	
88 074 MAR 14 14:10:00	-5.36	6.43	-2.08	9.31	
88 075 MAR 15 14:10:00	3.97	-1.54	-2.38	5.59	
88 076 MAR 16 14:10:00	7.39	-4.99	.71	10.00	
88 077 MAR 17 14:10:00	3.61	-6.67	-3.83	9.28	
88 078 MAR 18 14:10:00	8.97	-4.84	-1.40	10.70	
88 079 MAR 19 14:10:00	8.60	-11.21	1.62	14.48	
88 080 MAR 20 14:10:00	15.87	-5.76	-.58	16.94	
88 081 MAR 21 14:10:00	7.31	-1.91	-.70	8.34	
88 082 MAR 22 14:10:00					
88 083 MAR 23 14:10:00	10.40	-14.24	-.39	18.43	
88 084 MAR 24 14:10:00	10.31	-6.23	7.95	15.19	
88 085 MAR 25 14:10:00	2.22	1.02	8.68	12.33	
88 086 MAR 26 14:10:00	1.96	-2.70	.98	4.31	
88 087 MAR 27 14:10:00	-.44	5.22	-19.56	21.28	
88 088 MAR 28 14:10:00					
88 089 MAR 29 14:10:00	5.85	-1.55	-4.93	9.99	
88 090 MAR 30 14:10:00					
88 091 MAR 31 14:10:00	-8.27	5.54	-11.97	16.62	

Source: Institute of Geophysics and Planetary Physics, UCLA

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME				NANOTESLAS			REGION
				BX _{vso}	BY _{vso}	BZ _{vso}	BT W=WAKE
88 092	APR 1	14:10:00		-10.80	.95	-3.38	14.14
88 093	APR 2	14:10:00		-8.53	3.59	3.90	12.15
88 094	APR 3	14:10:00		-8.25	2.80	-1.70	10.12
88 095	APR 4	14:10:00		-8.39	1.51	2.14	11.78
88 096	APR 5	14:10:00		-.92	-2.38	-8.64	10.11
88 097	APR 6	14:10:00		-8.39	5.11	4.05	10.74
88 098	APR 7	14:10:00		-5.90	.87	.63	9.94
88 099	APR 8	14:10:00		-8.65	3.23	.69	9.32
88 100	APR 9	14:10:00		-2.13	3.43	4.01	6.69
88 101	APR 10	14:10:00					
88 102	APR 11	14:10:00		-1.89	6.92	4.45	10.38
88 103	APR 12	14:10:00		1.48	-8.62	1.70	9.80
88 104	APR 13	14:10:00		-11.51	10.18	-1.18	16.20
88 105	APR 14	14:10:00		-3.56	3.24	-1.25	9.21
88 106	APR 15	14:10:00		-2.60	1.51	-10.51	11.28
88 107	APR 16	14:20:00		5.87	-9.19	-4.56	12.17
88 108	APR 17	14:20:00		11.02	-7.36	-2.12	13.81
88 109	APR 18	14:20:00		7.31	-4.83	-.54	9.93
88 110	APR 19	14:20:00		3.21	-2.40	-12.50	14.10
88 111	APR 20	14:20:00		-4.23	1.53	7.24	14.01
88 112	APR 21	14:20:00		1.08	-9.00	6.26	11.76
88 113	APR 22	14:20:00		10.35	-3.01	.21	11.04
88 114	APR 23	14:20:00		1.64	4.08	.89	8.31
88 115	APR 24	14:20:00		5.61	5.07	.65	10.45
88 116	APR 25	14:20:00		6.49	-4.57	-3.67	10.00
88 117	APR 26	14:20:00		4.76	4.95	3.01	7.52
88 118	APR 27	14:20:00					
88 119	APR 28	14:20:00		3.68	-3.58	2.52	8.25
88 120	APR 29	14:20:00		4.14	-2.19	-1.99	10.33
88 121	APR 30	14:20:00		6.91	-8.13	-1.42	11.01

Source: Institute of Geophysics and Planetary Physics, UCLA

134
Late
May 88

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME				NANOTESLAS			REGION
				BX _{vso}	BY _{vso}	BZ _{vso}	BT W=WAKE
88 122	MAY	1	14:20:00	-8.27	7.15	-5.83	12.79
88 123	MAY	2	14:20:00	-17.83	7.12	-9.45	21.64
88 124	MAY	3	14:20:00	-6.97	7.04	3.32	11.08
88 125	MAY	4	14:20:00	-6.81	-1.58	.36	8.32
88 126	MAY	5	14:20:00	-9.95	2.21	-.46	10.80
88 127	MAY	6	14:20:00	-9.05	-1.03	1.76	10.67
88 128	MAY	7	14:20:00				
88 129	MAY	8	14:20:00				
88 130	MAY	9	14:20:00	-6.73	3.50	-1.08	7.78
88 131	MAY	10	14:30:00	-5.27	3.76	1.62	6.79
88 132	MAY	11	14:30:00	-10.00	10.77	7.26	18.12
88 133	MAY	12	14:30:00	-5.63	5.27	-.75	9.97
88 134	MAY	13	14:30:00	5.37	-5.08	-1.11	7.49
88 135	MAY	14	14:30:00	2.98	-9.20	14.52	20.99
88 136	MAY	15	14:30:00	1.36	.09	-23.35	23.51
88 137	MAY	16	14:30:00	7.69	-4.89	3.52	10.84
88 138	MAY	17	14:30:00	2.80	-7.29	.63	8.60
88 139	MAY	18	14:30:00	12.45	4.42	9.03	16.69
88 140	MAY	19	14:30:00	-.04	7.67	8.53	12.48
88 141	MAY	20	14:30:00	2.27	4.68	1.20	5.75
88 142	MAY	21	14:30:00	2.23	-13.27	-4.49	14.33
88 143	MAY	22	14:30:00				
88 144	MAY	23	14:30:00	-3.08	1.22	1.17	3.86
88 145	MAY	24	14:30:00	-11.17	-.60	-2.92	11.66
88 146	MAY	25	14:30:00	.48	3.00	3.18	5.42
88 147	MAY	26	14:30:00	-5.76	4.57	-1.65	7.87
88 148	MAY	27	14:30:00	-11.23	4.24	-1.19	12.15
88 149	MAY	28	14:30:00	-9.01	6.70	2.25	13.18
88 150	MAY	29	14:30:00	-7.90	-5.13	-2.93	14.51
88 151	MAY	30	14:30:00	-8.12	1.32	-2.40	9.26
88 152	MAY	31	14:30:00	-6.19	5.03	-4.39	10.04

Source: Institute of Geophysics and Planetary Physics, UCLA

PIONEER VENUS ORBITER
ONE HOUR MAGNETIC FIELD AVERAGES AT APOAPSIS
VENUS SOLAR ORBITAL COORDINATES

UNIVERSAL TIME	NANOTESLAS			BT	REGION W-WAKE
	BX _{vso}	BY _{vso}	BZ _{vso}		
88 153 JUN 1 14:30:00	5.41	-6.37	-.88	8.50	
88 154 JUN 2 14:30:00	1.51	-7.86	3.32	8.84	
88 155 JUN 3 14:30:00	3.52	-6.82	-1.03	8.19	
88 156 JUN 4 14:30:00	6.39	-3.67	-2.01	8.96	
88 157 JUN 5 14:30:00	4.13	-12.45	4.59	14.55	
88 158 JUN 6 14:30:00	-.30	-8.04	2.71	10.47	
88 159 JUN 7 14:30:00	2.25	-9.71	2.97	10.52	
88 160 JUN 8 14:40:00	-3.14	6.98	.89	10.13	
88 161 JUN 9 14:40:00	-8.16	6.29	.96	11.37	
88 162 JUN 10 14:40:00	-2.72	4.18	-6.62	10.24	
88 163 JUN 11 14:40:00	-1.92	3.43	10.85	12.35	
88 164 JUN 12 14:40:00	4.35	-7.18	-1.06	9.78	
88 165 JUN 13 14:40:00	-.73	-9.34	1.65	13.26	
88 166 JUN 14 14:40:00	6.77	-9.51	4.32	13.07	
88 167 JUN 15 14:40:00	6.10	-8.42	-1.78	12.47	
88 168 JUN 16 14:40:00	10.77	-1.02	-2.20	11.59	
88 169 JUN 17 14:40:00	1.22	-.33	5.63	7.07	
88 170 JUN 18 14:40:00	-9.63	6.67	-4.70	13.14	
88 171 JUN 19 14:40:00	-2.22	2.03	5.92	9.10	
88 172 JUN 20 14:40:00	-6.65	3.90	-2.32	8.71	
88 173 JUN 21 14:40:00					
88 174 JUN 22 14:40:00	-8.33	2.86	-8.69	12.59	
88 175 JUN 23 14:40:00	-17.24	-2.25	.39	17.53	
88 176 JUN 24 14:40:00	-2.62	8.07	18.76	20.71	
88 177 JUN 25 14:40:00					
88 178 JUN 26 14:40:00	-14.70	1.77	-5.22	15.76	
88 179 JUN 27 14:40:00	5.22	5.02	4.16	10.94	
88 180 JUN 28 14:40:00	17.40	-5.74	-8.09	22.56	
88 181 JUN 29 14:40:00	11.83	-3.47	-2.18	15.49	
88 182 JUN 30 14:40:00	12.70	1.09	-1.29	12.88	

Source: Institute of Geophysics and Planetary Physics, UCLA

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

JULY 1988

Day	THULE Average (cts/h)/100	ALERT 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	4274	7003.5	6680.5	5962.1	3871.0	3571.5	1729.0(34)
2	4273	7001.1	6678.4	5975.9	3864.9	3574.5	1734.3
3	4281	7017.3	6696.8	5986.9	3871.6(38)	3573.0	1735.9
4	4290	7052.1	6696.4	5979.6	3905.7(12)	3579.0	1736.9
5	4288	7062.6	6720.4	6001.2	3904.5	3584.0	1743.5
6	4311	7086.0	6690.8	5972.9	3886.1	3581.6	1742.2
7	4315	7097.5	6702.4	5996.4	3894.7	3584.2	1742.9
8	4303	7081.7	6703.2	6003.4	3898.6	3578.7	1742.5
9	4300	7068.2	6708.9	6004.1	3890.0	3572.3	1741.6
10	4306	7070.3	6704.4	5981.3	3898.4	3571.3	1738.7
11	4303	7063.2(5)	6695.8	5990.7	3893.5	3572.2	1735.2
12	4267	---	6674.0	5950.3	3872.1	3567.1	1730.3(14)
13	4232	---	6620.5	5903.7	3830.9	3558.1	1729.2
14	4258	---	6644.7	5952.8	3854.0	3561.4	1729.6
15	4294	---	6688.3	5980.3	3874.0	3567.1	1738.5
16	4282	---	6667.0	5979.7	3885.1	3570.7	1738.4
17	4280	---	6664.6	5969.9	3871.6	3567.3	1738.3
18	4274	---	6668.7	5972.6	3880.8	3574.5	1741.0
19	4293	---	6692.6	5984.2	3897.3	3580.6	1746.3(28)
20	4290	---	6676.5	5978.9	3878.3	3572.7	1738.3
21	4240	---	6612.7	5898.7	3833.7	3557.4	1722.9
22	4230	---	6573.9	5870.4	3817.0	3561.0	1724.2
23	4209	---	6552.2	5838.6	3800.7	3541.3	1720.3
24	4258	---	6591.6	5879.6	3806.3	3553.1	1727.3
25	4276	---	6645.9	5934.7	3845.2	3569.4	1734.5
26	4282	---	6657.0	5947.1	3860.4	3562.7	1734.9
27	4216	---	6583.4	5892.1	3823.6	3546.1	1723.3
28	4220	---	6564.2	5878.6	3802.0	3533.5	1718.9
29	4228	---	6565.4	5889.7	3807.7(38)	3541.9	1718.6
30	4224	---	6567.2	5876.5	3805.3	3537.9	1718.9
31	4232	---	6576.0	5866.7	3802.6	3534.0	1715.8
Mean	4269	7054.9	6650.5	5945.1	3858.2	3564.5	1732.4

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.

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

137
Late
Aug 88

AUGUST 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	4213	6573.7	5868.7	3809.7	3534.3	1714.7(18)
2	4233	6583.5	5900.8	3830.9	3538.0	1723.0(6)
3	4225	6588.0	5906.5	3828.9	3533.0	1722.2
4	4231	6605.9	5915.5	3834.9	3539.2	1713.7(36)
5	4267	6627.2	5938.4	3868.9	3551.0	1707.0(34)
6	4231	6587.2	5882.5	3826.7	3540.7	1707.0
7	4228	6627.2	5899.8	3846.8	3550.5	1707.5
8	4250	6644.9	5952.0	3863.0	3552.4	1713.2
9	4269	6628.7	5970.6	3875.9	3553.1	1712.9
10	4269	6648.2	5949.6	3882.2	3560.8	1720.6
11	4276	6655.2	5945.1	3884.0	3566.7	1722.9
12	4257	6630.2	5949.4	3866.3	3554.2	1712.5(38)
13	4257	6626.9	5936.7	3879.7	3553.1	1715.5
14	4255	6627.9	5941.7	3867.0	3549.9	1715.4
15	4237	6615.2	5931.6	3872.5	3553.2	1713.7
16	4250	6640.7	5940.1	3875.4(20)	3556.3	1713.8
17	4279	6660.5	5957.8	3897.5(30)	3558.8	1716.9
18	4283	6706.8	5978.3	3904.1	3567.1	1721.1
19	4296	6722.8	6001.1	3907.2	3569.3	1727.8(12)
20	4288	6714.2	6010.6	3880.6	3571.6	1725.3
21	4259	6697.8	5975.5	3862.0	3560.8	1724.3
22	4251	6649.3	5941.8	3872.3	3561.5	1725.0
23	4271	6677.7	5951.4	3880.2	3553.6	1720.4
24	4280	6685.4	5978.8	3848.1	3559.1	1719.9
25	4240	6653.5	5973.4	3707.7	3521.4	1703.0
26	4107	6407.7	5708.0	3792.7	3461.3	1668.8(32)
27	4175	6542.8	5822.0	3803.2	3500.6	1692.5
28	4185	6541.7	5841.3	3802.5	3519.7	1689.0
29	4184	6547.8	5850.8	3824.0	3520.6	1691.2
30	4186	6578.8	5867.4	3838.0	3532.2	1700.4
31	4214	6621.4	5897.3	3807.3	3544.5	1704.3
Mean	4240	6623.2	5922.1	3848.7	3544.8	1711.4

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.

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

SEPTEMBER 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	4187	6554.5	5856.5	3823.7	3539.7	1701.2(26)
2	4201	6579.5	5909.5	3835.2	3546.8	1708.0(16)
3	4214	6600.3	5911.9	3844.9	3549.5	1709.7
4	4231	6620.3	5907.8	3863.2	3552.7	1704.7
5	4247	6656.7	5925.4	3877.3	3555.0	1706.9
6	4260	6692.1	5929.7	3871.8	3552.6	1714.1
7	4249	6674.0	5925.5	3873.8	3553.1	1723.4
8	4249	6674.6	5944.5	3884.1	3557.4	1720.8
9	4265	6685.5	5960.8	3895.2	3563.9	1719.2(36)
10	4272	6699.9	5959.4	3945.3	3557.9	1722.2
11	4274	6703.7	5976.6	3949.9	3573.5	1727.0
12	4295	6712.5	6023.6	3952.4	3571.3	1726.5
13	4300	6736.9	6044.4	3955.8	3572.8	1723.5
14	4303	6759.6	6027.4	3951.4	3569.3	1720.3
15	4294	6760.6	6011.8	3926.9	3570.2	1719.8
16	4300	6728.2	5982.3	3919.8	3560.7	1713.8(38)
17	4297	6704.7	5966.9	3928.9	3558.2	1719.0
18	4290	6687.5	5969.4	3915.3	3561.8	1716.4
19	4268	6675.1	5930.4	3882.0	3561.6	1714.9
20	4264	6649.4	5908.7	3818.7	3542.2	1709.1
21	4215	6578.5	5856.3	3815.3	3520.9	1697.7
22	4187	6571.3	5861.8	3829.1	3523.6	1698.3
23	4183	6568.0	5886.6	3829.5	3524.2	1705.9(38)
24	4198	6589.1	5886.3	3850.5	3526.1	1704.9
25	4226	6637.7	5900.7	3844.1	3541.6	1711.8
26	4232	6638.2	5902.5	3865.8	3541.2	1708.0
27	4244	6646.1	5910.4	3879.9	3537.1	1710.8
28	4241	6659.3	5923.6	3824.1	3544.9	1712.8
29	4203	6600.8	5871.2	3820.6	3533.6	1706.3
30	4196	6574.1	5857.4	3830.0	3530.8	1703.0
Mean	4246	6654.0	5930.9	3877.2	3549.8	1712.9

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)

139
Late
Oct 88

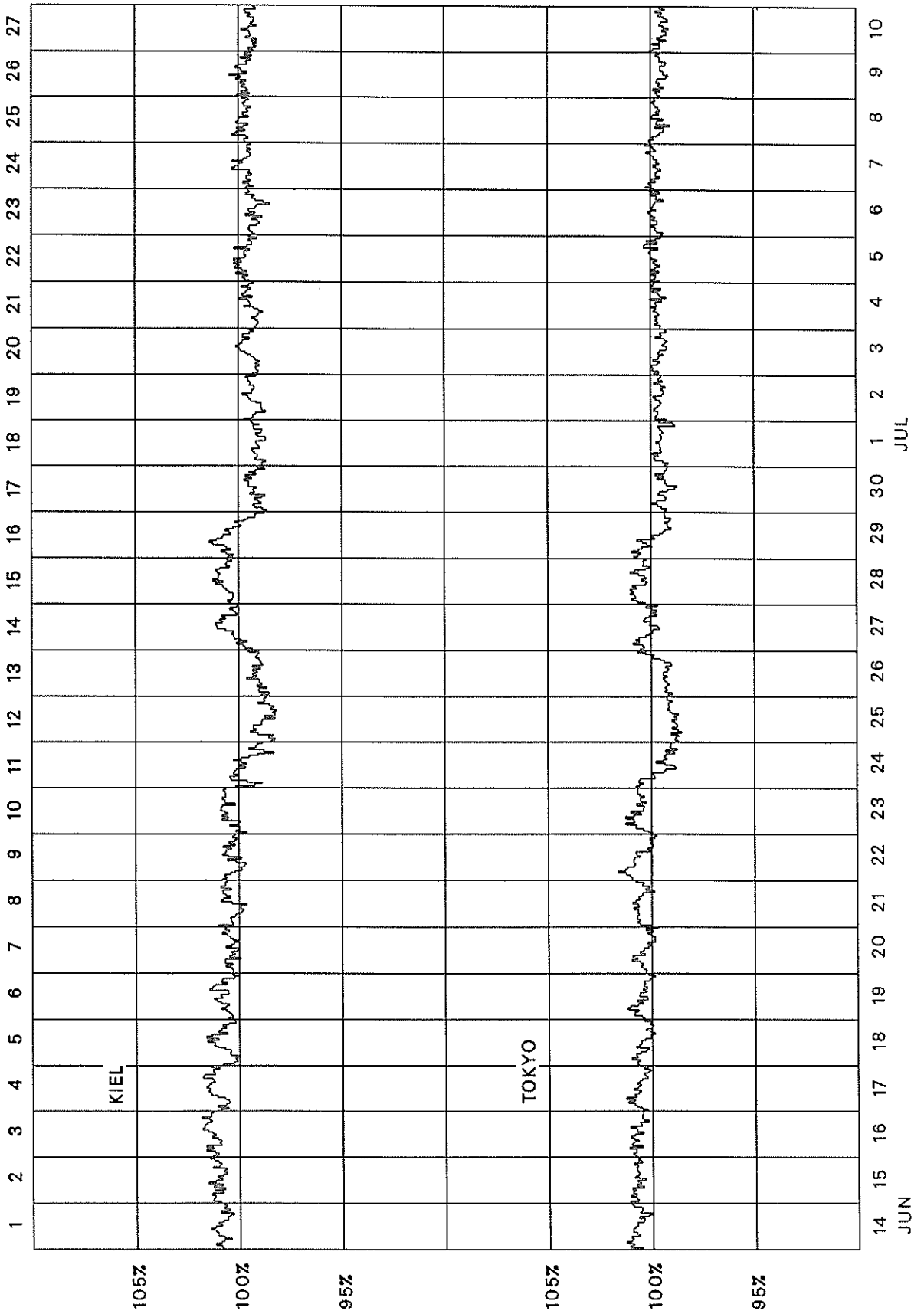
OCTOBER 1988

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	4207	6580.6	5860.6	3840.3	3539.0	1708.1
2	4213	6599.0	5883.2	3861.3	3545.8	1710.2(32)
3	4238	6665.1	5914.4	3867.8	3557.1	1721.7(8)
4	4258	6678.8	5934.5	3845.0	3560.4	1718.8
5	4214	6636.9	5917.1	3792.7	3545.3	1718.7
6	4173	6583.7	5849.9	3794.5	3523.0	1703.6
7	4200	6586.3	5891.6	3828.0	3527.7	1709.3
8	4216	6636.0(18)	5898.6	3879.2	3539.1	1711.5
9	4231	---	5928.7	3858.9	3554.0	1718.1
10	4174	---	5844.1	3815.4(34)	3545.8	1699.2(12)
11	4161	---	5835.4	---	3533.3	1704.3
12	4191	---	5848.3	---	3535.3	1703.4
13	4226	6680.4(9)	5877.5	---	3559.3	1708.3
14	4245	6665.6	5910.3	---	3559.8	1710.7
15	4257	6669.3	5914.1	3898.0	3552.1	1713.8
16	4185	6598.7	5865.1	3838.1	3528.8	1700.8
17	4187	6577.5	5863.5	3836.9	3518.8	1697.7(38)
18	4200	6567.5	5856.0	3840.3	3525.7	1703.3
19	4153	6549.8	5812.2	3803.5	3525.2	1691.2
20	4139	6562.7	5814.9	3807.3	3521.5	1697.4
21	4175	6568.5	5828.4	3816.3	3525.5	1702.1
22	4204	6614.8	5854.3	3840.9(38)	3540.0	1707.5
23	4226	6660.0	5903.6	3871.7	3548.5	1710.6
24	4234	6669.1	5920.4	3880.8	3543.9	1705.3
25	4226	6648.0	5896.8	3865.0	3542.7	1704.2(38)
26	4224	6642.3	5889.5	3860.8	3544.6	1702.8
27	4208	6618.9	5868.3	3857.0	3545.7	1703.4
28	4212	6617.1	5883.8	3857.0	3556.0	1709.6
29	4224	6643.6	5900.6	3866.8	3569.7	1714.4(38)
30	4247	6697.6	5931.3	3895.4	3580.5	1717.2
31	4202	6612.2	5888.0	3840.5	3562.2	1704.8
Mean	4208	6623.3	5880.1	3845.3	3543.7	1707.3

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)

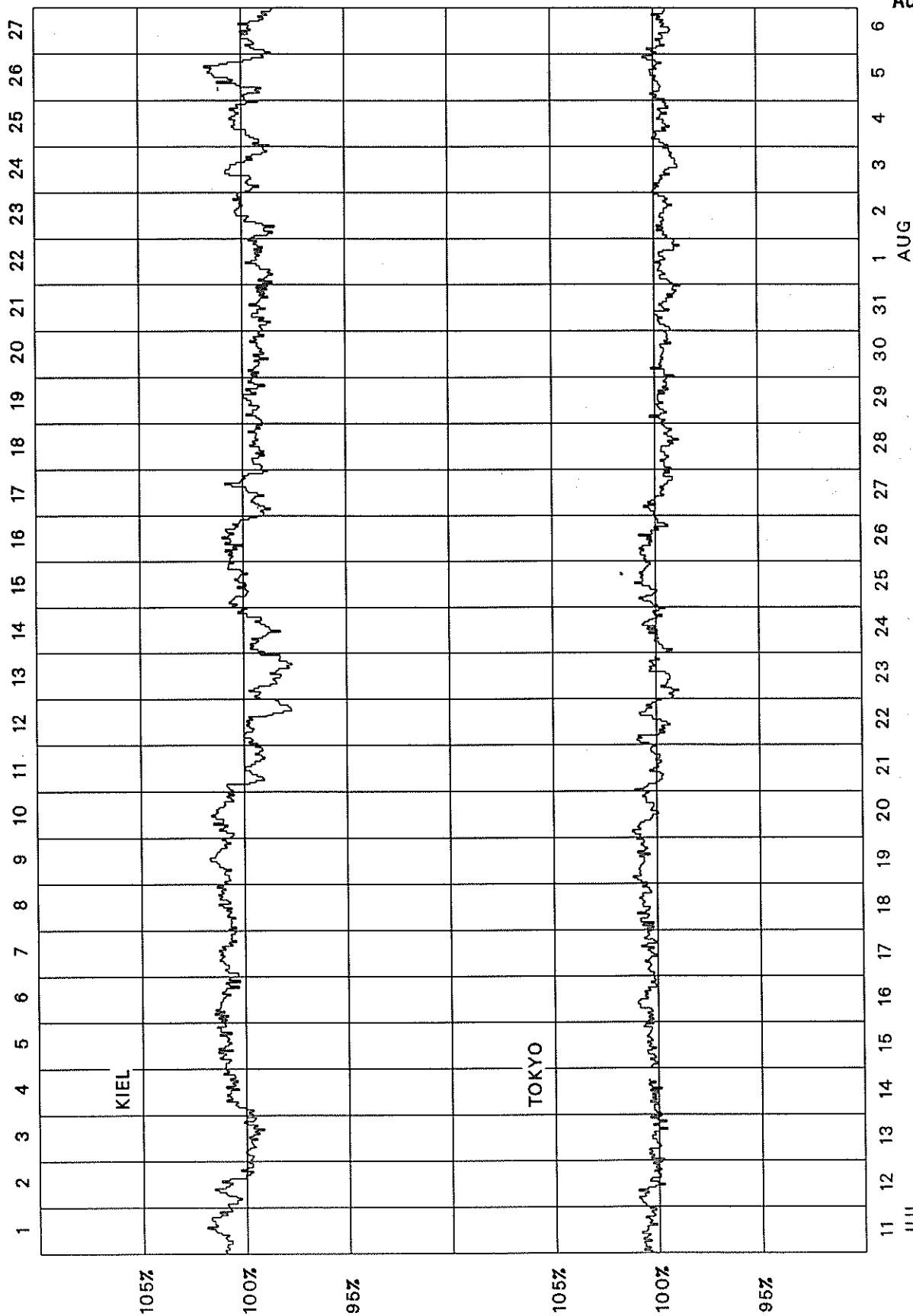
Bartels Rotation 2116 (June 1988-July 1988)



COSMIC RAY INDICES

(Neutron Monitor)

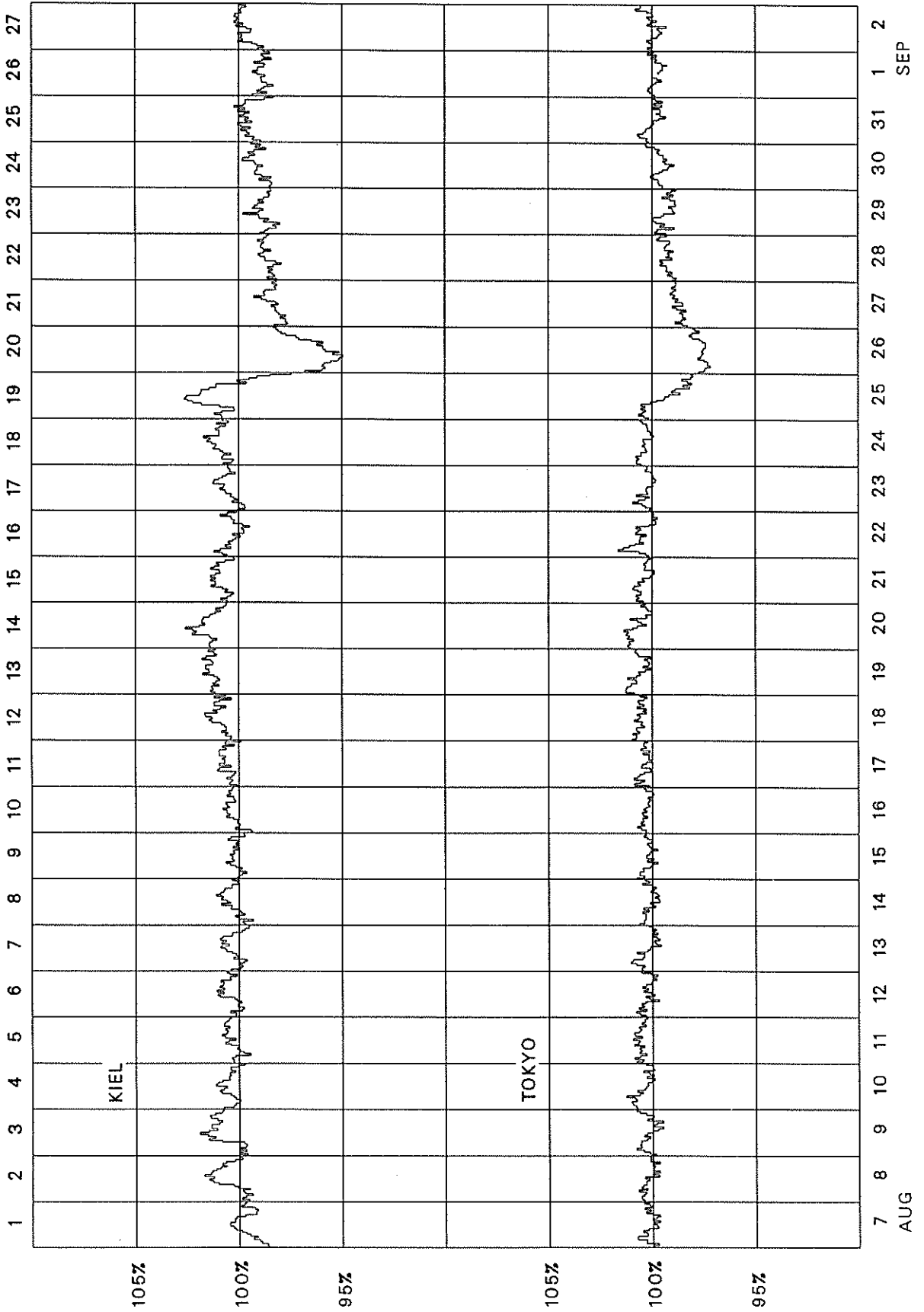
Bartels Rotation 2117 (July 1988-August 1988)



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JUL AUG

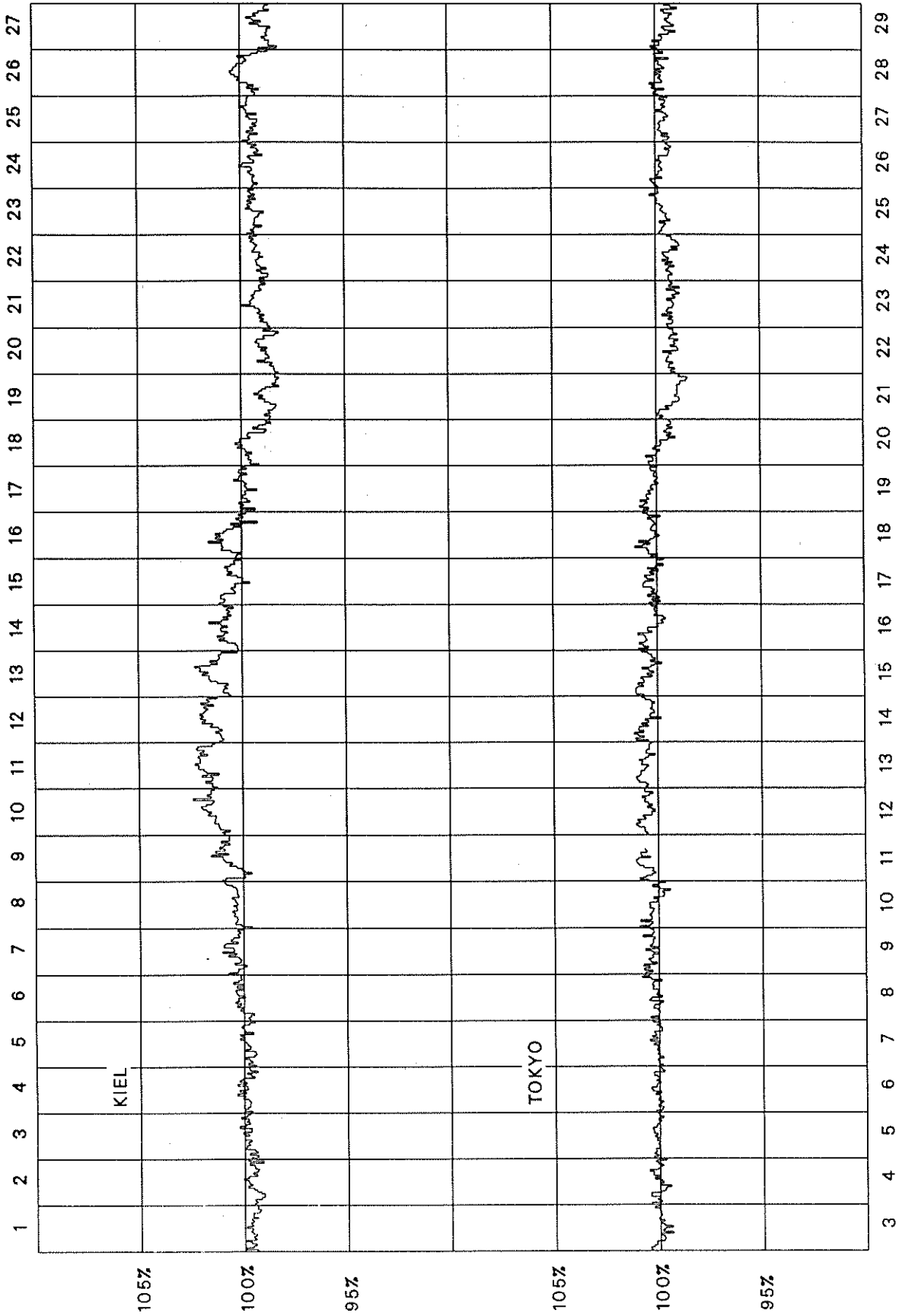
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2118 (August 1988-September 1988)



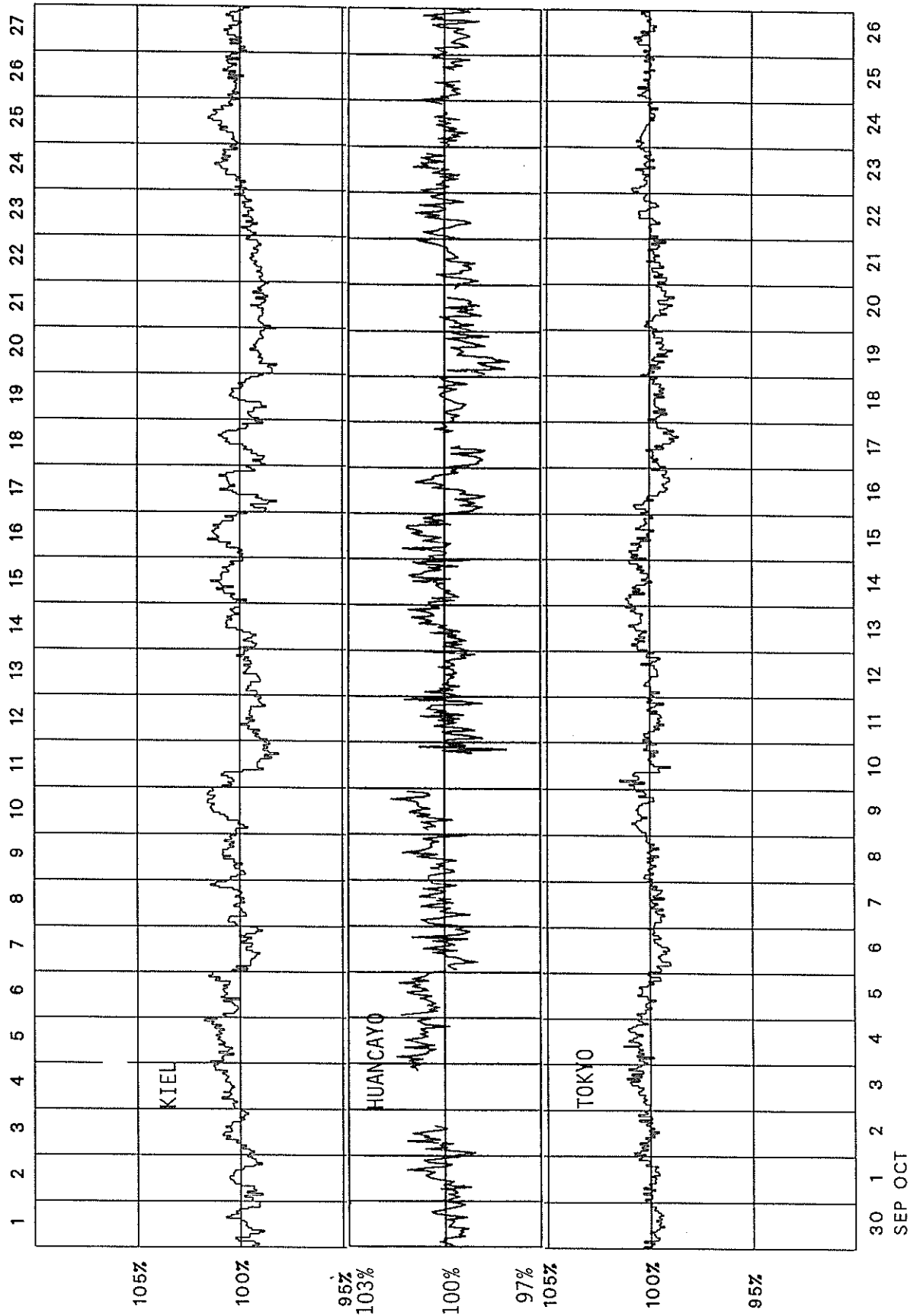
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2119 (September 1988)



COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2120 (September 1988-October 1988)



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

OCTOBER 1988

Storm Sudden Commencements (ssc)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
04	2015	A: NAG* COI B: WNG VAL CLF* GCK AQU EBR* SPT FRD TEN C: BDV MMB BJI LNP	03	1321-1350 1506-1546 2330-2360	WNG BDV WNG NGK VAL BDV CLF NAG AQU SPT TEN (ssc COI) MMB KAK KNY
05	1646	A: BJI QUE B: WNG NAG C: EBR	05	0616-0625	LNP
06	0038	A: WNG* CLF* NAG* AQU* COI* LNP KGL* B: DOB* NGK* VAL* BDV* GCK* MMB* EBR* SPT* KAK* KNY* AMS* CZT DUM si: QUE	17	1210-1250	WNG
10	0232	A: DOB* WNG* COI FRD LNP GNA* KGL* B: NGK BDV* CLF* GCK* MMB* AQU* EBR* BJI SPT* KAK* KNY* TEN AMS CZT	24	1405-1428	LNP SPT
30	2001	A: WNG* VAL NAG COI BJI LNP B: CLF GCK AQU KAK KGL* C: NGK BDV* EBR SPT FRD* TEN DUM			

Reporting Observatories: (up to the 3rd of December)

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