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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
Thomas N. Pyke, Jr., Assistant Administrator

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Data for July, June 1988, and Late Data

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NATIONAL GEOPHYSICAL DATA CENTER
Michael A. Chinnery, Director
Boulder, Colorado

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

NUMBER 528

(Issued in Two Parts)

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C O N T E N T S

PART I (PROMPT REPORTS)

PART II (COMPREHENSIVE REPORTS)

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C O N T E N T S

Prompt Reports DATA FOR JULY 1988 Number 528 Part I

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages JULY 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
183	01	30	191	184	021	S24 W69	0	0	0	01	S24 W69	Q	Solalert 01/XX,
						S17 W12	0	0	0		S17 W12	Q	Magalert 01/02.
						S19 E10	12	1	0		S19 E10	P	
						N27 E27	0	0	0		N27 E27	Q	
						N13 E17	8	0	0		N13 E17	E	
						N21 E06	0	0	0		N21 E06	Q	
						N23 E55	0	0	0		N23 E55	Q	
		Presto:[2]	Boulder	Tenflare 300 flux units began 30/0903 UT duration 10 minutes.									
			Boulder	Proton event began 30/1050 UT, maximum of 21 particles/cm^2-s-ster at greater than 10 MeV 30/1135 UT, ended 30/1825 UT.									
184	02	01	140	193	013	S17 W26	0	0	0	02	S17 W26	Q	Solalert 02/XX,
						S19 W03	8	0	0		S19 W03	A	Magalert 02/03.
						N26 E13	0	0	0		N26 E13	Q	
						N13 E03	2	0	0		N13 E03	E	
185	03	02	151	192	011	S18 W39	0	0	0	03	S18 W39	Q	Solalert 03/XX,
						S20 W15	9	1	0		S20 W15	A	Magalert 03/04.
						N26 W00	0	0	0		N26 W00	Q	
						N13 W10	5	0	0		N13 W10	E	
						S21 W27	0	0	0		S21 W27	Q	
186	04	03	185	187	007	S17 W52	0	0	0	04	S17 W52	Q	Solalert 04/XX,
						S20 W28	5	0	0		S20 W28	A	Magnil.
						N26 W13	0	0	0		N26 W13	Q	
						N13 W24	12	0	0		N13 W24	A	
						S20 W40	0	0	0		S20 W40	Q	
187	05	04	169	175	002	S20 W41	4	0	0	05	S20 W41	E	Solalert 05/XX,
						N26 W25	0	0	0		N26 W25	Q	Magquiet.
						N13 W37	1	0	0		N13 W37	E	
						S20 W55	0	0	0		S20 W55	Q	
						S10 W28	0	0	0		S10 W28	Q	
						N25 E18	0	0	0		N25 E18	Q	
188	06	05	143	166	002	S19 W54	7	0	0	06	S19 W54	E	Solalert 06/XX,
						N26 W36	0	0	0		N26 W36	Q	Magquiet.
						N13 W49	5	0	0		N13 W49	E	
						S20 W69	1	0	0		S20 W69	Q	
						N23 E53	0	0	0		N23 E53	Q	
						S14 E74	0	0	0		S14 E74	Q	
189	07	06	122	152	017	S20 W66	4	0	0	07	S20 W66	E	Solalert 07/XX,
						N25 W51	0	0	0		N25 W51	Q	Magquiet.
						N14 W66	6	0	0		N14 W66	E	
						N22 E40	4	0	0		N22 E40	Q	
						S13 E59	0	0	0		S13 E59	Q	
						N22 E76	0	0	0		N22 E76	Q	
190	08	07	128	147	006	S19 W79	3	0	0	08	S19 W79	E	Solalert 08/XX,
						N28 W63	0	0	0		N28 W63	Q	Magquiet.
						N14 W80	8	2	0		N14 W80	E	
						N30 W23	0	0	0		N30 W23	Q	
						N22 E26	2	0	0		N22 E26	E	
						S13 E45	0	0	0		S13 E45	Q	
						N24 E68	1	0	0		N24 E68	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages JULY 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
191	09	08	133	138	013	S17 W89	3	1	0	09	S17 W89	E	Solalert 09/09,
						N27 W76	0	0	0		N27 W76	Q	Magquiet.
						N13 W95	9	1	0		N13 W95	E	
						N31 W36	0	0	0		N31 W36	Q	
						N23 E14	7	0	0		N23 E14	E	
						S13 E34	0	0	0		S13 E34	Q	
						N24 E57	0	0	0		N24 E57	Q	
						N19 E36	0	0	0		N19 E36	Q	
192	10	09	122	133	002	N27 W89	0	0	0	10	N27 W89	Q	Solalert 10/10,
						N30 W51	0	0	0		N30 W51	Q	Magquiet.
						N23 E01	13	1	0		N23 E01	E	
						S14 E21	0	0	0		S14 E21	Q	
						N23 E44	2	0	0		N23 E44	Q	
						N20 E23	0	0	0		N20 E23	Q	
						N27 E36	1	0	0		N27 E36	Q	
		Presto:[2] Toyokawa Tenflare 110 flux units began 08/0754 UT duration 5 minutes.											
193	11	10	130	134	009	N29 W60	0	0	0	11	N29 W60	Q	Solnil, Magquiet.
						N22 W13	6	0	0		N22 W13	E	
						S12 E04	0	0	0		S12 E04	Q	
						N24 E32	0	0	0		N24 E32	Q	
						N18 E08	0	0	0		N18 E08	Q	
						N28 E24	1	0	0		N28 E24	E	
194	12	11	109	137	021	N23 W25	5	0	0	12	N23 W25	E	Solquiet, Magquiet.
						N25 E19	1	0	0		N25 E19	E	
						N18 W05	0	0	0		N18 W05	Q	
						N27 E10	0	0	0		N27 E10	Q	
						S16 E71	2	1	0		S16 E71	E	
195	13	12	122	133	018	N24 W38	0	0	0	13	N24 W38	E	Solquiet, Magquiet.
						N24 E06	5	0	0		N24 E06	E	
						N19 W19	0	0	0		N19 W19	Q	
						N28 W02	1	0	0		N28 W02	Q	
						S15 E55	0	0	0		S15 E55	Q	
						S21 E66	4	0	0		S21 E66	E	
196	14	13	107	138	007	N23 W52	2	0	0	14	N23 W52	E	Solquiet, Magquiet.
						N24 W08	5	0	0		N24 W08	E	
						N28 W16	7	1	0		N28 W16	E	
						S14 E42	0	0	0		S14 E42	Q	
						S20 E53	7	0	0		S20 E53	E	
197	15	14	116	145	008	N24 W65	0	0	0	15	N24 W65	Q	Solquiet, Magquiet.
						N23 W20	3	0	0		N23 W20	E	
						N28 W29	2	0	0		N28 W29	Q	
						S15 E29	0	0	0		S15 E29	Q	
						S21 E40	5	0	0		S21 E40	E	
198	16	15	112	146	010	N22 W82	0	0	0	16	N22 W82	Q	Solquiet, Magquiet.
						N23 W31	3	0	0		N23 W31	Q	
						N27 W41	0	0	0		N27 W41	Q	
						S15 E16	0	0	0		S15 E16	Q	
						S22 E28	2	0	0		S22 E28	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages JULY 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
199	17	16	151	149	021	N24 W93	0	0	0	17	N24 W93	Q	Solquiet, Magquiet.
						N24 W43	1	0	0		N24 W43	Q	
						N27 W53	0	0	0		N27 W53	Q	
						S15 E04	0	0	0		S15 E04	Q	
						S21 E15	2	0	0		S21 E15	E	
						S16 E18	2	0	0		S16 E18	E	
200	18	17	155	157	008	N25 W55	1	0	0	18	N25 W55	Q	Solquiet, Magquiet.
						N28 W67	0	0	0		N28 W67	Q	
						S15 W10	0	0	0		S15 W10	Q	
						S21 E02	3	0	0		S21 E02	E	
						S15 E06	0	0	0		S15 E06	Q	
						S21 E66	0	0	0		S21 E66	Q	
						N36 W01	0	0	0		N36 W01	Q	
201	19	18	165	148	013	N25 W68	2	0	0	19	N25 W68	Q	Solquiet, Magquiet.
						N29 W85	6	0	0		N29 W85	Q	
						S16 W23	0	0	0		S16 W23	Q	
						S21 W13	8	0	0		S21 W13	E	
						S15 W07	1	0	0		S15 W07	Q	
						S21 E52	0	0	0		S21 E52	Q	
						N37 W14	0	0	0		N37 W14	Q	
						S16 W32	0	0	0		S16 W32	Q	
						S18 E62	0	0	0		S18 E62	Q	
		Presto:[2] Boulder Tenflare 280 flux units began 18/1625 UT duration 2 minutes.											
202	20	19	133	138	008	N24 W85	1	0	0	20	N24 W85	Q	Solquiet, Magquiet.
						S16 W37	0	0	0		S16 W37	Q	
						S21 W27	8	0	0		S21 W27	E	
						S15 W20	1	0	0		S15 W20	Q	
						S21 E38	0	0	0		S21 E38	Q	
						S17 W46	0	0	0		S17 W46	Q	
						S18 E49	0	0	0		S18 E49	Q	
		Presto: Toyokawa Tenflare 135 flux units began 19/0751 UT duration 6 minutes.											
203	21	20	139	137	003	S16 W50	1	0	0	21	S16 W50	Q	Solquiet, Magquiet.
						S21 W39	5	0	0		S21 W39	E	
						S14 W34	0	0	0		S14 W34	Q	
						S21 E25	0	0	0		S21 E25	Q	
						S17 W61	3	0	0		S17 W61	Q	
						S17 E37	0	0	0		S17 E37	Q	
						S21 W23	0	0	0		S21 W23	Q	
						N26 E15	0	0	0		N26 E15	Q	
204	22	21	119	141	021	S15 W63	0	0	0	22	S15 W63	Q	Solquiet,
						S22 W52	4	0	0		S22 W52	E	Magalert 22/23.
						S22 E11	0	0	0		S22 E11	Q	
						S16 W75	3	0	0		S16 W75	E	
						S22 W36	0	0	0		S22 W36	Q	
						N25 E02	0	0	0		N25 E02	Q	
						N32 E26	0	0	0		N32 E26	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages JULY 1988

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
205	23	22	126	137	022	S15 W76	0	0	0	23	S15 W76	Q	Solquiet,
						S22 W64	6	0	0		S22 W64	E	Magalert 23/23.
						S22 W02	0	0	0		S22 W02	Q	
						S16 W85	4	0	0		S16 W85	E	
						S21 W49	0	0	0		S21 W49	Q	
						N25 W11	0	0	0		N25 W11	Q	
						S18 E90	1	0	0		S18 E90	E	
						N12 E74	0	0	0		N12 E74	E	
						S31 E18	0	0	0		S31 E18	Q	
206	24	23	129	140	015	S15 W88	0	0	0	24	S15 W88	Q	Solquiet, Magnil.
						S21 W77	3	0	0		S21 W77	E	
						S21 W17	0	0	0		S21 W17	Q	
						S21 W63	1	0	0		S21 W63	Q	
						N25 W25	0	0	0		N25 W25	Q	
						S24 E66	0	0	0		S24 E66	E	
						N12 E63	4	0	0		N12 E63	Q	
						S22 W27	0	0	0		S22 W27	Q	
						N22 W37	0	0	0		N22 W37	Q	
207	25	24	100	134	008	S21 W91	0	0	0	25	S21 W91	E	Solquiet, Magquiet.
						S20 W75	0	0	0		S20 W75	Q	
						N25 W38	0	0	0		N25 W38	Q	
						S24 E56	1	1	0		S24 E56	E	
						N12 E50	4	0	0		N12 E50	E	
						S23 W41	1	0	0		S23 W41	E	
						N22 W49	0	0	0		N22 W49	Q	
		Presto:[2] Boulder Tenflare 570 flux units began 24/0646 UT duration 32 minutes.											
		Toyokawa Tenflare 340 flux units began 24/0643 UT duration 27 minutes.											
208	26	25	099	137	005	N24 W51	0	0	0	26	N24 W51	Q	Solquiet,
						S23 E44	1	1	0		S23 E44	A	Magalert 26/27 Flare.
						N12 E38	0	0	0		N12 E38	Q	
						S22 W55	1	0	0		S22 W55	Q	
						N21 W64	0	0	0		N21 W64	Q	
						N21 E12	0	0	0		N21 E12	Q	
						N13 E50	1	0	0		N13 E50	Q	
		Presto: Sydney Culgoora Type II began 25/0543 UT. Clearly defined fundamental and second harmonic with split bands. Preceded by Type III at 25/0540 UT.											
		Boulder Tenflare 560 flux units began 25/0954 UT duration 5 minutes.											
209	27	26	097	145	016	N24 W61	0	0	0	27	N24 W61	Q	Solquiet,
						S23 E32	1	0	0		S23 E32	A	Magalert 27/27.
						N12 E24	0	0	0		N12 E24	E	
						S22 W71	0	0	0		S22 W71	Q	
						N13 E41	0	0	0		N13 E41	Q	
						S22 W44	0	0	0		S22 W44	Q	
						N26 E79	1	0	0		N26 E79	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JULY 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
210	28	27	146	157	013	S22 E18	6	0	0	28	S22 E18	A	Solalert 28/XX
						N12 E10	0	0	0		N12 E10	Q	Major Flare Alert
						S23 W79	0	0	0		S23 W79	Q	28/XX,
						N16 E24	2	0	0		N16 E24	Q	Magalert 28/29.
						S23 W60	0	0	0		S23 W60	Q	
						N26 E70	1	0	0		N26 E70	E	
						N26 W48	0	0	0		N26 W48	Q	
						S22 E06	0	0	0		S22 E06	Q	
						N32 E81	0	0	0		N32 E81	Q	
		Presto:[2] Sydney Culgoora Type II began 28/0128 UT, Importance I flare began 28/0135 UT.											
211	29	28	134	170	009	S20 E05	2	0	0	29	S20 E05	E	Solalert 29/XX,
						N12 W03	0	0	0		N12 W03	Q	Magnil.
						N16 E09	1	0	0		N16 E09	Q	
						N27 E56	4	0	0		N27 E56	E	
						N26 W62	0	0	0		N26 W62	Q	
						N30 E66	4	0	0		N30 E66	E	
212	30	29	196	180	005	S22 W08	4	0	0	30	S22 W08	E	Solalert 30/XX,
						N13 W20	0	0	0		N13 W20	Q	Magquiet.
						N16 W03	3	0	0		N16 W03	E	
						N29 E48	7	1	0		N29 E48	E	
						N27 W76	0	0	0		N27 W76	Q	
						N25 E26	1	0	0		N25 E26	E	
213	31	30	165	183	007	S21 W20	7	0	0	31	S21 W20	E	Solalert 31/XX,
						N12 W32	0	0	0		N12 W32	Q	Magquiet.
						N15 W17	4	0	0		N15 W17	E	
						N28 E34	8	1	0		N28 E34	A	
						N25 E14	0	0	0		N25 E14	Q	
		Presto: Toyokawa Tenflare 140 flux units began 30/0848 UT duration 6 minutes.											
214	01	31	162	187	010	S22 W32	1	0	0	01	S22 W32	E	Solalert 01/XX,
						N12 W45	1	0	0		N12 W45	Q	Magalert Minor
						N15 W30	4	0	0		N15 W30	E	01/XX.
						N27 E23	6	1	0		N27 E23	A	
						N25 W01	0	0	0		N25 W01	Q	
						S25 E39	1	0	0		S25 E39	Q	

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

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Aug 87	Sep	Oct	Nov	Dec	Jan 88	Feb	Mar	Apr†	May†	Jun†	Jul†
01	45	33	34	56	17	47	63	68	110	69	101	139
02	47	38	25	57	16	31	68	66	96	84	96	145
03	39	37	31	57	16	25	68	72	94	76	100	142
04	33	38	58	46	15	23	74	77	74	96	105	129
05	31	39	54	47	19	32	58	64	66	97	114	119
06	32	44	48	27	24	40	43	61	62	77	145	103
07	38	56	39	31	34	58	44	65	84	50	141	103
08	45	67	55	43	36	57	46	67	92	63	151	106
09	39	64	50	42	41	62	50	49	115	74	173	82
10	47	59	51	30	34	68	38	36	107	87	144	78
11	56	58	63	28	22	75	26	20	115	65	108	95
12	48	44	53	25	13	67	14	39	118	56	77	100
13	47	25	74	18	20	76	23	53	120	44	47	103
14	49	20	92	23	26	91	28	62	138	37	53	114
15	49	21	101	22	42	90	33	63	145	44	65	111
16	55	24	101	33	40	83	42	74	148	53	87	111
17	46	25	91	46	39	72	35	99	144	54	76	116
18	43	30	86	48	39	68	55	95	137	44	67	136
19	45	35	82	51	28	73	66	105	108	20	70	105
20	51	38	79	49	26	85	51	85	88	23	77	106
21	48	32	61	51	14	78	27	81	79	25	95	103
22	34	23	50	70	24	66	15	76	72	32	92	106
23	39	26	33	83	17	47	13	74	48	41	91	109
24	35	25	22	56	13	44	23	83	30	47	87	81
25	35	12	29	42	25	33	19	92	44	57	111	76
26	34	12	40	47	27	44	15	93	44	63	107	76
27	24	19	70	21	29	54	31	103	36	61	111	111
28	23	22	79	11	28	67	40	109	43	70	116	122
29	13	26	82	20	30	59	52	104	39	74	121	157
30	10	26	85	16	42	56		108	44	83	127	161
31	20		62		43	57		120		86		146
Mean	38.7	33.9	60.6	39.9	27.1	59.0	40.0	76.2	88.0	59.7	101.8	112.6

† = preliminary. The yearly mean sunspot number equaled 29.2 in 1987.

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

Day	Aug 87	Sep	Oct	Nov	Dec	Jan 88	Feb	Mar	Apr	May	Jun	Jul
01	91.0	85.3*	84.2	99.1	87.6	100.1	105.5	99.8*	127.2	108.8	149.3*	194.4*
02	89.7	85.5	84.8	105.0	86.5	93.7	104.3	99.1	126.5	113.1*	147.6	198.9
03	87.1	87.5	85.6*	98.0	85.8	101.2	103.6	101.9*	127.6	116.4*	149.5	190.2
04	84.0	89.6	89.2	101.1*	85.1	98.2	103.1	102.6*	122.6	127.4	150.9	181.0
05	81.6	93.5*	90.1	99.2	86.8	99.5	102.6	106.7*	114.6	121.1	151.2	171.2
06	85.2	95.6*	89.5	94.9	85.7	101.7	103.6	107.6	116.8	116.5	159.0	156.7
07	89.5*	99.5*	90.9	94.4	85.3	102.1	105.3	107.3	120.0	112.9	164.6	152.4
08	93.8	101.9	95.0	92.7	88.7	105.6	102.5	104.1*	121.8*	116.7	168.3	142.4
09	94.8	100.9	92.7	90.3	91.2	100.6*	101.0	101.5	121.8*	121.9	165.9*	137.7
10	94.0	97.8	101.1	89.2	90.1	100.9	100.2	99.2	127.2	116.4	149.8	138.3
11	99.8*	95.4	100.8*	92.6	91.1	101.7*	99.6	102.9	128.0*	114.6	137.8	137.7*
12	100.0	91.1	102.2	92.6	91.5*	107.5*	101.3	103.5	130.6*	111.6	125.9	137.9
13	101.8*	89.7	105.5	92.9	91.1	108.1*	102.9	107.8	134.6	105.9	115.0	141.3*
14	102.4	86.8	113.3*	92.3	91.5	113.7	102.6	108.9*	146.3	105.2	111.7	150.1
15	101.3	85.0	117.8I	93.7	92.0*	112.4	100.4	112.6*	143.5	103.4	113.5	150.7
16	102.7	83.5	111.1	95.0	93.4*	121.8*	101.0	114.1*	147.6	103.3	121.7	153.3*
17	101.2	84.0	106.0	96.8	92.2	116.4*	106.2	117.4	145.5	103.7	124.8	152.8*
18	100.4	82.4	106.5	100.0	90.2	110.9	112.5	116.1	145.3	106.7	125.7	152.3
19	99.0	82.7	100.4	106.6	88.4	114.2	109.0	116.1*	138.5	104.8	119.4	142.1
20	101.2	84.9	95.6	112.2	86.9	112.7	106.5	116.3*	134.9	106.1	118.5	141.3
21	96.6	83.0	89.3	115.3	90.7	111.6	104.7	117.5*	127.6	112.6	122.8*	145.8
22	94.4*	81.3	88.2	117.8	88.1	104.5	102.5	117.6	120.1	114.0	124.4*	141.2
23	91.8	80.4	87.0	115.1	88.2	104.7	100.2	120.9*	111.5	122.2	129.3	144.6
24	89.6	80.3	87.1	109.4	89.9	102.2	99.6	123.0*	105.6	119.8	135.7*	138.6
25	89.9	77.9	92.3	104.9	96.2*	94.9	96.4	128.5*	106.7	123.8*	153.7	140.9
26	87.3	76.4	96.9	101.3	96.8*	93.5	96.7	127.5*	103.8	127.8	157.6*	149.7
27	85.1	80.2	105.9	94.9	101.4	101.6	96.3	128.0*	101.9	130.0	160.5	161.5
28	81.3	82.3	106.2	92.3	102.5	103.0	97.1	129.8	101.6	130.1	183.2	175.4
29	79.9	83.5	102.7	90.7	101.4	99.1	103.3	131.7	102.1	140.2	189.5	185.9
30	78.5	81.9	104.2	89.1	99.2	100.1		128.3	104.8	142.8	187.4*	188.3
31	83.2		97.8		99.7	103.1		130.6*		153.6*		192.5
Mean	92.2	87.0	97.4	99.0	91.5	104.6	102.4	113.8	123.6	117.9	143.8	157.6

* = corrected for burst in progress; I = 1700 UT calibration taken at 1915 UT. The yearly mean flux equaled 85.3 in 1987.

DAILY SOLAR INDICES

July 1988

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
01	183	18	139	114	188.1*	736	354	267	194.4*	198	122	66	41	36
02	184	19	145	132	192.4	736	328	255	198.9	196	119	70	54	73
03	185	20	142	146	184.0	752	304	241	190.2	186	116	71	50	--
04	186	21	129	131	175.1	725	285	224	181.0	179	112	64	35	32
05	187	22	119	113	165.6	734	286	215	171.2	171	106	55	35	27
06	188	23	103	96	151.6	596	278	200	156.7	156	102	58	32	21
05	189	24	103	90	147.4	585	263	186	152.4	149	97	59	32	19
08	190	25	106	92	137.8	584	260	177	142.4	138	92	59	34	29
09	191	26	82	96	133.2	585	264	167	137.7	133	89	57	32	21
10	192	27	78	89	133.8	582	260	167	138.3	136	91	59	32	25
11	193	1	95	93	133.2*	594	258	170	137.7*	141	95	54	29	16
12	194	2	100	96	133.4	572	249	164	137.9	137	91	54	31	20
13	195	3	103	91	136.7*	596	279	180	141.3*	142	94	53	30	14
14	196	4	114	100	145.3	606	274	189	150.1	151	99	55	29	16
15	197	5	111	106	145.9	589	284	194	150.7	147	96	56	29	15
16	198	6	111	112	148.4*	590	275	197	153.3*	154	102	56	30	23
17	199	7	116	113	147.9*	598	273	201	152.8*	162	101	62	34	28
18	200	8	136	137	147.5	607	273	199	152.3	155	99	61	54	--
19	201	9	105	113	137.6	561	258	175	142.1	141	92	55	27	25
20	202	10	106	109	136.9	587	267	174	141.3	143	94	57	31	25
21	203	11	103	97	141.2	506	238	166	145.8	143	90	56	30	28
22	204	12	106	97	136.8	563	269	175	141.2	142	95	57	40	34
23	205	13	109	96	140.1	595	264	173	144.6	143	96	57	29	20
24	206	14	81	78	134.3	569	263	166	138.6	143	98	56	30	20
25	207	15	76	82	136.6	593	261	164	140.9	142	101	56	29	24
26	208	16	76	86	145.2	591	268	177	149.7	149	103	55	30	19
27	209	17	111	103	156.6	586	285	195	161.5	164	107	61	32	42
28	210	18	122	109	170.1	562	265	197	175.4	176	112	64	31	19
29	211	20	157	151	180.4	591	272	210	185.9	178	116	63	36	56
30	212	21	161	136	182.7	581	274	214	188.3	187	118	60	36	33
31	213	22	146	133	186.9	529	275	210	192.5	192	122	58	33	53
Mean			112.6	107.6	152.7	606	274	193	157.6	157	102	59	34	28

All sunspot numbers shown above are preliminary values.

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 shown above in the Air Weather Service's Sagamore Hill (SGMR) observations.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

JULY 1988

Date	RELATIVE SUNSPOT NUMBERS: International (R_i) Monthly Mean	International (R_i) Smoothed	American (R_a) Monthly Mean	American (R_a) Smoothed	Derived (R_s) Monthly Mean	Derived (R_s) Smoothed	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Monthly Mean	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Smoothed
Jul 84	37.4	44	36.2	42	37.6	39	92.2	99
Aug	25.5	40	24.5	38	30.7	41	85.8	95
Sep	15.7	34	13.6	32	23.2	35	78.9	90
Oct	12.0	29	9.8	27	16.9	31	73.1	86
Nov	22.8	25	19.4	23	18.6	26	74.6	72
Dec	18.7	22	17.0	20	17.4	23	73.5	79
Jan 85	16.5	20	14.5	19	15.9	21	72.1	77
Feb	15.9	20	16.3	18	15.7	20	71.9	76
Mar	17.2	19	11.8	16	16.3	19	72.5	75
Apr	16.2	18	17.1	17	19.8	19	75.7	75
May	27.5	18	24.0	17	26.6	19	82.0	75
Jun	24.2	18	22.2	16	22.8	19	78.5	75
Jul	30.7	17	30.8	16	25.8	19	81.3	75
Aug	11.1	17	10.7	15	17.2	19	73.3	75
Sep	3.9	17	3.4	16	13.8	20	70.2	76
Oct	18.6	17	16.5	16	18.1	20	74.2	76
Nov	16.2	17	16.4	15	16.4	19	72.6	75
Dec	17.3	15	10.1	14	16.2	19	72.4	75
Jan 86	2.5	14	2.3	12	14.6	18	70.9	74
Feb	23.2	13	23.8	11	26.0	17	81.5	74
Mar	15.1	13	12.5	11	20.3	17	76.2	73
Apr	18.5	14	13.8	12	19.6	18	75.6	74
May	13.7	14	11.6	12	18.1	18	74.2	74
Jun	1.1	14	0.8	11	13.3	18	69.7	74
Jul	18.1	14	17.7	11	16.3	18	72.5	74
Aug	7.4	13	7.6	11	13.7	17	70.1	73
Sep	3.8	12	3.5	10	13.0	17	69.4	73
Oct	35.4	13	19.8	11	27.0	17	82.4	73
Nov	15.2	15	14.7	13	19.5	18	75.5	74
Dec	6.8	16	5.1	14	14.0	19	70.4	75
Jan 87	10.4	18	9.4	16	13.8	20	70.2	76
Feb	2.4	20	3.0	18	13.4	22	69.8	78
Mar	14.7	22	13.3	20	17.2	24	73.3	80
Apr	39.6	24	39.4	23	30.3	25	85.5	81
May	33.0	26	30.7	26	35.0	27	89.8	83
Jun	17.4	28	18.0	28	24.8	29	80.4	84
Jul	33.0	31	34.3	31	32.0	32	87.0	87
Aug	38.7	35	39.0	34	37.6	35	92.2	89
Sep	33.9	39	34.0	38	32.0	38	87.0	93
Oct	60.6	44*	55.8	43	43.2	41	97.4	96
Nov	39.9	47*	42.5	47*	44.9	44	99.0	99
Dec	27.1	51*	26.7	52*	36.8	49	91.5	102
Jan 88	59.0	58*	56.8	59*	51.0	55	104.6	108
Feb	40.0	65(4)*	39.1	66	48.6	61	102.4	--
Mar	76.2	70(8)*	77.5	71	60.9	67	113.8	--
Apr	88.0*	77(11)*	90.9	78	71.5	73	123.6	--
May	59.7*	83(13)*	64.7	84	65.3	78	117.9	--
Jun	101.8*	89(15)*	106.4	90	93.3	84	143.8	--
Jul	112.6*	96(19)*	107.6*	98	108.2	92	157.6	--
Aug	----	104(22)*	----	106	----	99	----	--
Sep	----	111(25)*	----	112	----	106	----	--
Oct	----	117(29)*	----	118	----	111	----	--
Nov	----	121(34)*	----	123	----	116	----	--
Dec	----	125(37)*	----	127	----	120	----	--
Jan 89	----	128(37)*	----	130	----	122	----	--

*An asterisk marks either a preliminary value or one based in part on preliminary observations.

Underlined entries indicate predicted values and parentheses enclose the absolute value of the 90% confidence limits. The two columns headed "Derived" represent a sunspot number computed from a linear regression equation between the 2800 MHz solar flux (adjusted to 1 astronomical unit) and the Zurich sunspot number.

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 (4)	70 (8)	77 (11)	83 (13)	89 (15)	96 (19)	104 (22)	111 (25)	117 (29)	121 (34)	125 (37)
1989	128 (37)	133 (36)	141 (35)	149 (35)	156 (36)	161 (39)	164 (40)	168 (42)	174 (46)	179 (47)	181 (49)	181 (52)
1990	181 (54)	180 (57)	177 (58)	171 (57)	165 (54)	161 (49)	159 (48)	156 (48)	149 (46)	141 (43)	134 (39)	130 (35)

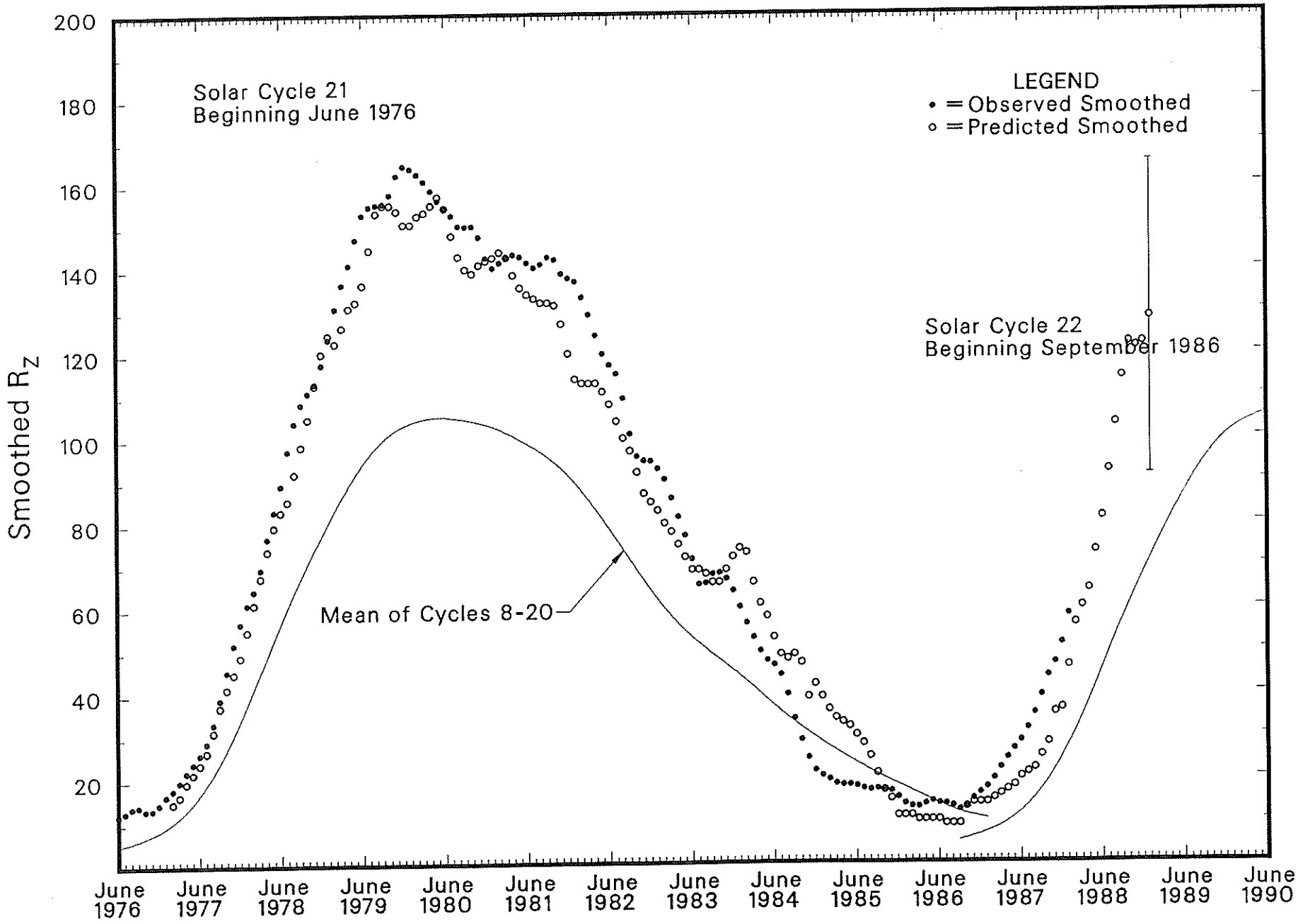
*September 1986 marks the onset of Sunspot Cycle 22.

For the end of Solar Cycle 21, and the beginning of 22, the table gives observed smoothed sunspot numbers up to the one calculated from the most recently available monthly mean. These smoothed observed values are based on final, monthly means through March 1988 and on provisional numbers thereafter.

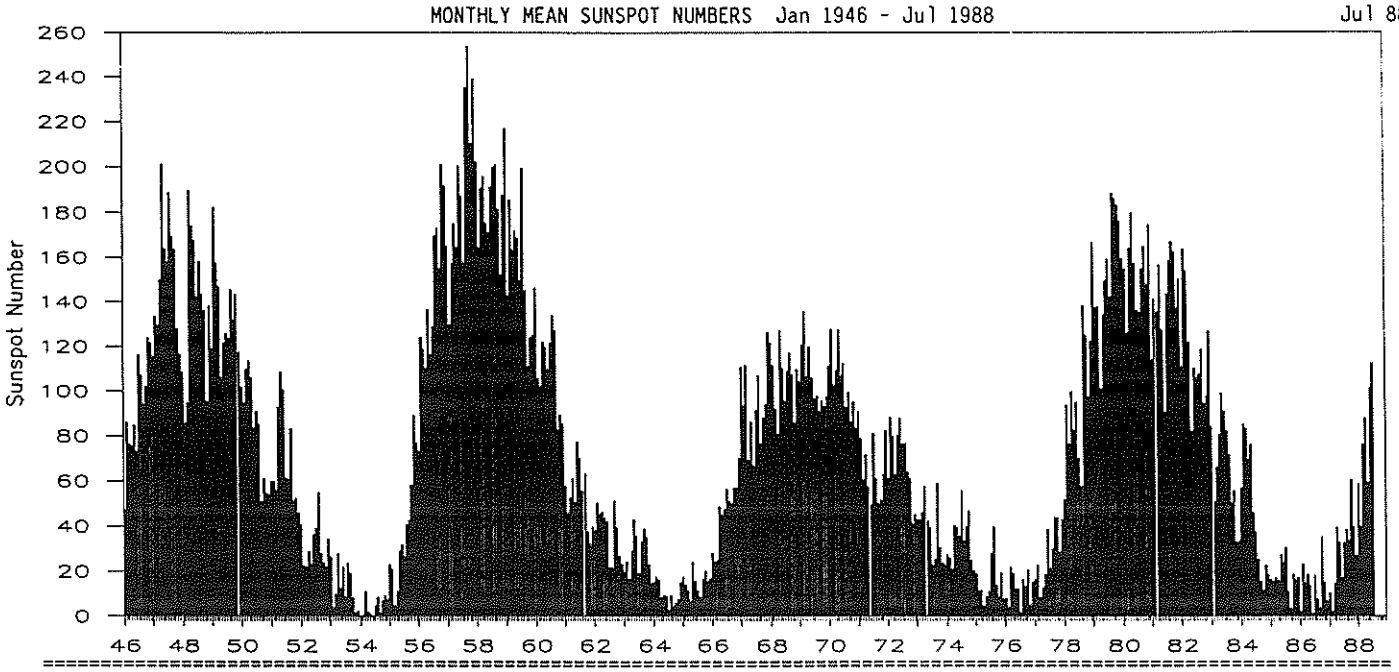
Table entries, with numbers in parentheses below them, denote predictions by the McNish-Lincoln method. (See page 9 in the July 1987 supplement to *Solar-Geophysical Data.*) Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval; subtracting the number from the predicted value generates the lower limit. Consider, for example, the January prediction. There exists a 90% chance that in January 1989 the actual smoothed sunspot number will fall somewhere between 91 and 165.

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 14 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



MONTHLY MEAN SUNSPOT NUMBERS Jan 1946 - Jul 1988



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	
1946	47.6	86.2	76.6	75.7	84.9	73.5	116.2	107.2	94.4	102.3	123.8	121.7	92.6	
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*	59.7*	101.8*	112.6*						76.8*	

*Preliminary

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

H - ALPHA SOLAR FLARES

JULY 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0001	PALE	01	0001	0003	0008	N13	E16	5062	07	2.2	7	SF		3	E		12		
0002		01	00311	00341	0042	N12	E16	5062	07	2.2	11	SF					18		
	HOLL	01	0031	0035	0041	N13	E16	5062	07	2.2	10	SF		3	E		19		
	LEAR	01	0032	0034	0042	N12	E15	5062	07	2.1	10	SF		3	E		17		
0003	LEAR	01	0216	0217	0233	S20	E11	5060	07	1.9	17	SF		3	E		23		
0004	LEAR	01	0414	0423	0441	S20	E11	5060	07	2.0	27	1F		3	E		106		
0005		01	05001	0501	0514	S21	E08	5060	07	1.8	14	SF	C 4.3				22		F
	SVTO	01	0500	0501	0502	S22	E07	5060	07	1.7	2	SF	C 4.3	2	E		32		F
	LEAR	01	0501	0501	0526	S20	E10	5060	07	2.0	25	SF	C 4.3	3	E		13		
0006		01	0832	08455	0914	S21	W06	5060	06	30.9	42	1N	C 6.9				265	3.6	FH
	LEAR	01	0832	0845	0921	S22	W10	5060	06	30.6	49	2F	C 6.9	3	E		259		FH
	SVTO	01	0832	0850	0917	S21	W04	5060	07	1.0	45	1F	C 6.9	3	E		216		H
	YUNN	01	0836E	0844U	0905	S19	W05	5060	07	1.0	29D	1B	C 6.9		P	0844	321	3.6	
0007	HOLL	01	1315E	1318U	1322D	S21	W09	5060	06	30.9	7D	SF		3	E		32		
0008	HOLL	01	1458	1458	1512	S18	E03	5060	07	1.8	14	SF		3	E		12		F
0009	HOLL	01	1543E	1553U	1616D	S20	E05	5060	07	2.0	33D	SN	C 6.3	3	E		60		F
0010	PALE	01	1901	1901	1929	S18	W08	5060	07	1.2	28	SF		3	E		16		
0011	RAMY	01	2109E	2110U	2123	S20	W08	5060	07	1.3	14D	SF	C 2.0	2	E		18		
0012	PALE	01	2304	2307	2322	S14	W06	5060	07	1.5	18	SN	C 1.9	3	E		39		F
0013		02	00417	00537	0149	S18	W11	5060	07	1.2	68	2B	M 3.0				646	11.7	U
	LEAR	02	0041	0053	0056D	S20	W13	5060	07	1.0	15D	2B		3	E		521		
	LEAR	02	0041	0100	0202	S20	W13	5060	07	1.0	81	3B	M 3.0	3	E		670		
	PEKG	02	0048	0100	0137	S19	W11	5060	07	1.2	49	2B	M 3.0		C	0100	1030	11.7	U
	PALE	02	0048	0100	0148	S14	W06	5060	07	1.6	60	2B	M 3.0	3	E		362		
0014		02	0128*	0136*	0150	N13	E06	5062	07	2.5	22	SN					34	0.3	E
	LEAR	02	0128	0136	0152	N12	E08	5062	07	2.7	24	SB		3	E		50		
	PALE	02	0136	0136	0149	N13	E03	5062	07	2.3	13	SF		3	E		22		
	PEKG	02	0145	0147	0150	N13	E06	5062	07	2.5	5	SF			C	0147	29	0.3	E
0015	PEKG	02	0530	0532	0535	N13	E05	5062	07	2.6	5	SF			C	0532	50	0.5	D
0016		02	06353	06431	0658	S22	W10	5060	07	1.5	23	1F	C 3.7				222	5.4	DF
	PEKG	02	0635	0644	0655	S23	W11	5060	07	1.4	20	2N	C 3.7		C	0644	463	5.4	D
	LEAR	02	0636	0643	0702	S22	W13	5060	07	1.3	26	1F	C 3.7	3	E		133		
	SVTO	02	0638	0646U	0658	S20	W07	5060	07	1.7	20	SF	C 3.7	2	E		71		F
0017	PEKG	02	0653	0655	0657	N13	E05	5062	07	2.7	4	SF			C	0655	59	0.6	D
0018	SVTO	02	0802	0805U	0810	S15	W01	5060	07	2.2	8	SF		2	E		16		
0019	LEAR	02	0826	0828	0832	S16	W02	5060	07	2.2	6	SF		3	E		31		
0020	HOLL	02	1315E	1318U	1322D	S21	W09	5060	07	1.9	7D	SF	C 1.4	3	E		32		
0021	HOLL	02	1336E	1339U	1349D	S26	W12	5060	07	1.6	13D	SF	C 1.4	3	E		18		
0022	HOLL	02	1603	1604	1611	S20	W16	5060	07	1.4	8	SF		3	E		12		F
0023		02	16045	1611	1618	N12	W04	5062	07	2.4	14	SF	C 1.5				22		
	SVTO	02	1604	1606U	1615	N12	W05	5062	07	2.3	11	SF	C 1.5	2	E		10		
	HOLL	02	1609	1611	1620	N12	W03	5062	07	2.4	11	SF	C 1.5	3	E		34		
0024	HOLL	02	1634	1635	1640	S16	W06	5060	07	2.2	6	SF		3	E		28		F
0025	HOLL	02	2022	2026	2039	N12	W08	5062	07	2.2	17	SF		4	E		13		F

H - ALPHA S O L A R F L A R E S

JULY 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0026		02	2026	20261	2034	S24	W11	5060	07	2.0	8	SF					14		F
	PALE	02	2026	2026	2033	S24	W12	5060	07	1.9	7	SF		3	E		14		F
	HOLL	02	2026	2027	2034	S23	W10	5060	07	2.1	8	SF		4	E		13		F
0027		02	2044	20451	2100	N13	W06	5062	07	2.4	16	SF	C 2.2				30		F
	PALE	02	2044	2045	2057	N13	W06	5062	07	2.4	13	SF	C 2.2	3	E		23		F
	HOLL	02	2044	2046	2103	N13	W06	5062	07	2.4	19	SF	C 2.2	4	E		37		F
0028		02	22101	2212	2218	S16	W16	5060	07	1.7	8	SF					14		F
	HOLL	02	2210	2212	2218	S16	W15	5060	07	1.8	8	SF		4	E		14		
	PALE	02	2211	2212	2218	S16	W16	5060	07	1.7	7	SF		3	E		14		F
0029		02	22181	22181	2225	N12	W10	5062	07	2.2	7	SF					13		EF
	HOLL	02	2218	2218	2226	N12	W10	5062	07	2.2	8	SF		4	E		15		F
	PALE	02	2219	2219	2224	N12	W11	5062	07	2.1	5	SF		3	E		11		E
0030	LEAR	03	0002	0003	0008	S20	W11	5060	07	2.2	6	SF		4	E		17		
0031		03	00161	00181	0031	N12	W13	5062	07	2.0	15	SF	C 2.5				34		F
	PALE	03	0016	0018	0032	N13	W14	5062	07	1.9	16	SF	C 2.5	3	E		29		F
	HOLL	03	0016	0019	0029	N12	W12	5062	07	2.1	13	SF	C 2.5	4	E		30		F
	LEAR	03	0017	0019	0032	N12	W12	5062	07	2.1	15	SF	C 2.5	4	E		43		
0032		03	00425	00462	0056	S17	W14	5060	07	2.0	14	SF	C 2.5				48	1.4	DEF
	LEAR	03	0042	0046	0102	S17	W14	5060	07	2.0	20	SF	C 2.5	4	E		36		F
	PEKG	03	0043	0046	0055	S17	W15	5060	07	1.9	12	SN	C 2.5		C	0046	126	1.4	D
	HOLL	03	0045	0046	0054	S17	W13	5060	07	2.0	9	SF	C 2.5	4	E		18		FE
	PALE	03	0047	0048	0053	S16	W14	5060	07	2.0	6	SF	C 2.5	3	E		10		
0033		03	00545	00547	0102	N14	W13	5062	07	2.0	8	SF	C 1.8				36	1.0	EF
	HOLL	03	0054	0054	0105	N13	W10	5062	07	2.3	11	SF	C 1.8	4	E		21		F
	PEKG	03	0054	0055	0100	N16	W16	5062	07	1.8	6	SN	C 1.8		C	0055	92	1.0	E
	LEAR	03	0055	0055	0058	N15	W15	5062	07	1.9	3	SF	C 1.8	4	E		14		F
	PALE	03	0059	0101	0104	N14	W12	5062	07	2.1	5	SF		3	E		15		F
0034	LEAR	03	0216	0218	0232	S17	W16	5060	07	1.9	16	SF	C 1.8	4	E		16		F
0035		03	0343	03431	0354	N12	W15	5062	07	2.0	11	SF					19		F
	PALE	03	0343	0343	0348	N13	W15	5062	07	2.0	5	SF		3	E		11		F
	LEAR	03	0343	0344	0359	N12	W15	5062	07	2.0	16	SF		4	E		27		F
0036		03	0407	04071	0413	N16	W16	5062	07	1.9	6	SF	C 1.6				22		F
	PALE	03	0407	0407	0410	N16	W16	5062	07	1.9	3	SF	C 1.6	3	E		13		
	LEAR	03	0407	0408	0416	N15	W16	5062	07	2.0	9	SF	C 1.6	4	E		31		F
0037	RAMY	03	1247	1317	1344	N12	W22	5062	07	1.9	57	SF		3	E		73		F
0038		03	1359*	14181	1508	N12	W18	5062	07	2.2	69	SN	C 7.1				95		F
	RAMY	03	1359	1418	1519	N12	W20	5062	07	2.1	80	1N	C 7.1	3	E		123		
	SVTO	03	1418	1418	1454	N13	W18	5062	07	2.2	36	SF	C 7.1	3	E		82		
	HOLL	03	1418	1419	1512	N12	W15	5062	07	2.5	54	SN	C 7.1	4	E		81		F
0039	RAMY	03	1426	1427	1430	S20	W18	5060	07	2.2	4	SF		3	E		86		
0040	RAMY	03	1521	1537	1552	N13	W22	5062	07	2.0	31	SF		3	E		19		F
0041		03	1554*	1603*	1624	N13	W19	5062	07	2.2	30	SF	C 8.2				63		EF
	RAMY	03	1554	1603	1622	N13	W19	5062	07	2.2	28	SF	C 8.2	3	E		91		F
	SVTO	03	1557	1603	1614	N13	W20	5062	07	2.1	17	SF	C 8.2	3	E		77		
	HOLL	03	1557	1605	1633	N12	W17	5062	07	2.4	36	SN	C 8.2	4	E		65		FE
	RAMY	03	1625	1626	1628	N13	W19	5062	07	2.2	3	SF	C 2.2	3	E		18		F
0042	RAMY	03	1625	1629	1631	S25	W25	5060	07	1.7	6	SF		3	E		14		
0043	PALE	03	1707E		1712	S19	W37	5060	06	30.9	5D	SN		3	E		34		
0044		03	18521	18542	1912	N12	W20	5062	07	2.3	20	SF	C 1.3				24		
	HOLL	03	1852	1854	1910	N12	W20	5062	07	2.3	18	SF	C 1.3	3	E		27		
	PALE	03	1853	1856	1914	N13	W20	5062	07	2.3	21	SF	C 1.3	3	E		22		

H - ALPHA SOLAR FLARES

JULY 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0045		03	19161	1924	1943	N13	W20	5062	07	2.3	27	SF	C 2.8				64		
	PALE	03	1916	1924	1946	N13	W21	5062	07	2.2	30	SF	C 2.8	3	E		71		
	HOLL	03	1917	1924	1940	N13	W20	5062	07	2.3	23	SF	C 2.8	3	E		57		
0046		03	20231	2025	2035	N12	W22	5062	07	2.2	12	SF					30		
	PALE	03	2023	2025	2036	N13	W21	5062	07	2.3	13	SF		3	E		34		
	HOLL	03	2024	2025	2034	N11	W22	5062	07	2.2	10	SF		3	E		27		
0047		03	2146	2147	2158	N12	W20	5062	07	2.4	12	SN	C 5.8				71		F
	PALE	03	2146	2147	2158	N13	W22	5062	07	2.2	12	SN	C 5.8	3	E		76		F
	HOLL	03	2150E	2150U	2158	N12	W19	5062	07	2.5	8D	SF	C 5.8	3	E		66		F
0048	LEAR	04	0223	0225	0233	N13	W23	5062	07	2.4	10	SF	C 2.0	3	E		32		F
0049	LEAR	04	0525	0527	0538	S20	W32	5060	07	1.8	13	SF		3	E		21		F
0050	RAMY	04	1221	1221	1229	S22	W39	5060	07	1.5	8	SF	C 1.5	3	E		15		
0051	RAMY	04	1705	1706	1711	S25	W39	5060	07	1.7	6	SF	C 1.0	3	E		39		
0052	HOLL	04	1732	1732	1748	S18	W38	5060	07	1.8	16	SF		3	E		19		F
0053	PALE	05	0059	0101	0115	N13	W37	5062	07	2.2	16	SF	C 1.3	3	E		44		
0054	PALE	05	0342	0344	0347	N11	W42	5062	07	2.0	5	SF		3	E		28		
0055	SVTO	05	0629	0630	0643	N10	W42	5062	07	2.1	14	SF	C 1.8	3	E		37		
0056	SVTO	05	1044	1044	1047	S21	W56	5060	07	1.1	3	SF		3	E		18		
0057	SVTO	05	1250	1252	1257	S21	W43	5060	07	2.2	7	SF	C 1.7	3	E		30		
0058	RAMY	05	1350E	1350U	1357	S20	W43	5060	07	2.3	7D	SF		3	E		24		
0059		05	1411	14111	1418	S19	W60	5066	07	1.0	7	SF					20		
	RAMY	05	1411	1411	1417	S19	W61	5066	06	30.9	6	SF		3	E		15		
	HOLL	05	1411	1412	1418	S19	W58	5066	07	1.2	7	SF		3	E		26		
0060	HOLL	05	1417	1421	1438	S20	W42	5060	07	2.4	21	SF	C 1.1	3	E		17		
0061	RAMY	05	1443	1452	1505	N13	W48	5062	07	2.0	22	SF		3	E		18		
0062	RAMY	05	1531	1531	1539	S19	W46	5060	07	2.1	8	SF	C 1.3	3	E		12		
0063	HOLL	05	1611	1613	1617	N12	W48	5062	07	2.0	6	SF		3	E		13		F
0064	PALE	05	1932	1933	1949	S19	W54	5060	07	1.7	17	SF	C 1.7	3	E		33		
0065	PALE	05	2153	2155	2210	S15	W52	5060	07	2.0	17	1N	C 5.2	3	E		101		
0066	SVTO	06	0558	0602U	0610	N13	W72	5062	06	30.8	12	SF		1	E		25		
0067	SVTO	06	0722	0725U	0735	N13	W72	5062	06	30.9	13	SF		1	E		95		
0068		06	1024	1026	1041	N12	W58	5062	07	2.1	17	SF	C 1.8				62		
	SVTO	06	1024	1026	1032	N12	W58	5062	07	2.1	8	SF	C 1.8	3	E		39		
	RAMY	06	1030E	1031U	1050	N13	W57	5062	07	2.1	20D	SF		2	E		85		
0069	RAMY	06	1030E	1031	1036	N48	E21	5069	07	8.2	6D	SF		2	E		38		
0070	RAMY	06	1132	1132	1137	N14	W57	5062	07	2.2	5	SF		3	E		12		
0071	RAMY	06	1156	1157U	1211	S16	W60	5060	07	1.9	15	SF	C 1.8	3	E		70		
0072	RAMY	06	1441	1441	1508D	S15	W62	5060	07	1.9	27D	SF		4	E		16		
0073	HOLL	06	1527	1532	1550D	S21	W59	5060	07	2.1	23D	SF	C 1.6	2	E		18		F
0074	RAMY	06	1702	1703	1707	N12	W63	5062	07	2.0	5	SF	C 1.0	3	E		21		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0075		06	1826	18272	1846	N21	E44	5069	07	10.1	20	SF					23		
	HOLL	06	1823E	1827	1849	N22	E45	5069	07	10.2	26D	SF		3	E		31		
	RAMY	06	1826	1829	1842	N20	E44	5069	07	10.1	16	SF		3	E		15		
0076		06	19521	19531	2004	N20	E43	5069	07	10.1	12	SF					14		
	RAMY	06	1952	1953	2024D	N20	E43	5069	07	10.1	32D	SF		3	E		14		
	PALE	06	1953	1954	2004	N21	E43	5069	07	10.1	11	SF		3	E		14		
0077		06	20243	20271	2040	N12	W64	5062	07	2.0	16	SF	C 1.4				40		
	RAMY	06	2024	2028	2042	N13	W64	5062	07	2.0	18	SF	C 1.4	3	E		48		
	HOLL	06	2027	2027	2038	N12	W63	5062	07	2.1	11	SF	C 1.4	3	E		31		
0078		06	20484	20541	2104	N12	W64	5062	07	2.0	16	SF					21		
	RAMY	06	2048	2055	2109D	N13	W64	5062	07	2.0	21D	SF		3	E		24		
	HOLL	06	2052	2054	2104	N12	W63	5062	07	2.1	12	SF		3	E		18		
0079		06	21152	21173	2129	S17	W66	5060	07	1.9	14	SF	C 1.0				51		H
	HOLL	06	2115	2117	2129	S19	W64	5060	07	2.0	14	SF	C 1.0	3	E		39		
	RAMY	06	2117	2120	2132D	S15	W67	5060	07	1.8	15D	SF	C 1.0	2	E		63		H
0080	PALE	06	2151	2154	2159	N22	E44	5069	07	10.3	8	SF		3	E		19		
0081		06	2203	2204	2210	N12	W64	5062	07	2.1	7	SF	C 1.4				45		F
	PALE	06	2203	2204	2208	N12	W65	5062	07	2.0	5	SF	C 1.4	3	E		44		
	HOLL	06	2203	2204	2213	N13	W63	5062	07	2.2	10	SF	C 1.4	3	E		46		F
0082		07	0558	0602U	0610	N13	W74	5062	07	1.7	12	SN	M 1.1				28		
	SVTO	07	0558	0602U	0610	N13	W72	5062	07	1.8	12	SF	M 1.1	1	E		25		
	YUNN	07	0600E	0604U	0635D	N13	W76	5062	07	1.5	35D	SN	M 1.1		P	0604	32		
0083		07	0722	0723	0741	N13	W75	5062	07	1.6	19	SF	M 3.3				87		F
	LEAR	07	0722	0723	0744	N13	W73	5062	07	1.8	22	1F	M 3.3	2	E		119		F
	SVTO	07	0722	0725U	0735	N13	W72	5062	07	1.9	13	SF	M 3.3	1	E		95		
	YUNN	07	0727E	0729U	0745	N13	W79	5062	07	1.3	18D	SN	M 3.3		P	0729	48		
0084	RAMY	07	1154E	1154U	1216D	N14	W90	5062	06	30.7	22D	SB		2	E				
0085	RAMY	07	1225	1233	1249	N13	W73	5062	07	2.0	24	SF		3	E		60		
0086		07	12532	12593	1313	S15	W72	5060	07	2.1	20	SF					20		
	RAMY	07	1253	1302	1313	S15	W74	5060	07	1.9	20	SF		3	E		24		
	HOLL	07	1255	1259	1313	S15	W70	5060	07	2.2	18	SF		3	E		16		
0087		07	14383	1445	1504	S17	W74	5060	07	2.0	26	1N	C 6.3				103		
	RAMY	07	1438	1445	1513D	S16	W75	5060	07	1.9	35D	1N	C 6.3	3	E		123		
	SVTO	07	1440	1446U	1505	S19	W75	5060	07	1.9	25	SN	C 6.3	2	E		64		
	HOLL	07	1441	1445	1504	S16	W71	5060	07	2.2	23	1B	C 6.3	3	E		121		
0088		07	1442*	1442*	1500	N12	W73	5062	07	2.1	18	SF					44		
	HOLL	07	1442	1442	1446	N11	W72	5062	07	2.2	4	SF		3	E		14		
	HOLL	07	1452	1453	1513	N13	W75	5062	07	2.0	21	SF		3	E		64		
	RAMY	07	1452	1454	1501	N13	W71	5062	07	2.3	9	SF		3	E		55		
0089	HOLL	07	1454	1456	1505	N22	E75	5071	07	13.4	11	SF		3	E		14		
0090		07	1530	15321	1537	N21	E34	5069	07	10.2	7	SF	C 1.6				30		H
	RAMY	07	1530	1532	1536	N21	E34	5069	07	10.2	6	SF	C 1.6	3	E		20		
	HOLL	07	1530	1533	1537	N21	E36	5069	07	10.4	7	SF	C 1.6	3	E		25		H
	SVTO	07	1531E	1532U	1537	N21	E33	5069	07	10.2	6D	SF	C 1.6	2	E		44		
0091		07	1701	1704	1722	S20	W74	5060	07	2.0	21	SF					30		F
	HOLL	07	1701	1704	1722	S20	W72	5060	07	2.2	21	SF		3	E		46		F
	RAMY	07	1704E	1704U	1707D	S19	W76	5060	07	1.9	3D	SF		2	E		13		
0092	HOLL	07	1711	1712	1717	N13	W76	5062	07	2.0	6	SF	C 1.1	3	E		16		
0093	HOLL	07	1741	1743	1801	N13	W76	5062	07	2.0	20	SF	C 1.3	3	E		39		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0094		07	18161	18176	1828	N21	E30	5069	07	10.1	12	SF					20		
	RAMY	07	1816	1817	1828	N21	E30	5069	07	10.1	12	SF		3	E		26		
	HOLL	07	1817	1823	1828	N21	E30	5069	07	10.1	11	SF		3	E		15		
0095		07	18403	1846	1858	N14	W75	5062	07	2.1	18	SF					24		
	HOLL	07	1840	1846	1858	N14	W73	5062	07	2.3	18	SF		3	E		30		
	RAMY	07	1843	1846	1915D	N13	W77	5062	07	2.0	32D	SF		2	E		19		
0096	RAMY	07	2050	2108	2120D	N12	W80	5062	07	1.8	30D	SF		2	E		26		
0097	LEAR	08	0055	0102	0106	N13	W81	5062	07	1.9	11	SF		3	E		19		
0098	LEAR	08	0121	0127	0131	N13	W82	5062	07	1.9	10	SF		4	E		23		
0099	LEAR	08	0335	0335	0343	S13	W80	5060	07	2.1	8	SF	C 9.4	4	E		19		
0100	LEAR	08	0347E	0347U	0350D	N22	E25	5069	07	10.1	3D	SF		2	E		24		
0101	LEAR	08	0708	0711	0721	N21	E24	5069	07	10.1	13	SF		3	E		15		
0102	SVTO	08	0745	0747	0755	N23	E23	5069	07	10.1	10	SF		3	E		12		
0103		08	0754	07551	0804	S22	W85	5060	07	1.8	10	SN	M 1.1				61		
	SVTO	08	0754	0755	0801	S23	W88	5060	07	1.5	7	SF	M 1.1	3	E		46		
	LEAR	08	0754	0756	0808	S20	W82	5060	07	2.0	14	SN	M 1.1	3	E		76		
0104	SVTO	08	0936	0941	0951	N23	E24	5069	07	10.2	15	SN	C 7.4	3	E		64		
0105	SVTO	08	1147	1155	1222	N11	W90	5062	07	1.7	35	SN	M 4.4	3	E				
0106		08	13081	13092	1314	S17	W90	5060	07	1.7	6	SF					32		
	HOLL	08	1308	1309	1314	S18	W89	5060	07	1.8	6	SF		3	E		32		
	RAMY	08	1309	1311	1313	S16	W90	5060	07	1.7	4	SF		3	E				
0107		08	13589	14093	1426	N22	E22	5069	07	10.3	28	SF	C 3.4				46		EF
	HOLL	08	1358	1412	1427	N22	E22	5069	07	10.3	29	SF	C 3.4	3	E		47		FE
	RAMY	08	1407	1409	1425	N22	E22	5069	07	10.3	18	SF	C 3.4	3	E		44		
0108		08	15401	15412	1547	N13	W90	5062	07	1.9	7	SF	C 4.7				30		
	RAMY	08	1540	1541	1546	N14	W91	5062	07	1.8	6	SF		3	E				
	HOLL	08	1540	1542	1546	N14	W90	5062	07	1.8	6	SF	C 4.7	3	E		30		
	SVTO	08	1541	1543	1549	N11	W90	5062	07	1.9	8	SF	C 4.7	2	E				
0109		08	16042	16061	1613	N13	W90	5062	07	1.9	9	SF	C 7.3				46		
	SVTO	08	1604	1606	1614	N12	W90	5062	07	1.9	10	SF	C 7.3	2	E				
	HOLL	08	1605	1607	1613	N13	W90	5062	07	1.9	8	SF	C 7.3	3	E		68		
	RAMY	08	1606	1607	1613	N14	W89	5062	07	1.9	7	SF	C 7.3	3	E		24		
0110		08	16411	16431	1648	N13	W90	5062	07	1.9	7	SF	C 3.4				38		
	RAMY	08	1641	1643	1647	N14	W90	5062	07	1.9	6	SF	C 3.4	3	E		40		
	HOLL	08	1642	1643	1649	N14	W90	5062	07	1.9	7	SF	C 3.4	3	E		35		
	SVTO	08	1642	1644	1648	N12	W90	5062	07	1.9	6	SF	C 3.4	2	E				
0111		08	17151	1717	1726	N14	W90	5062	07	1.9	11	SN	C 1.4				54		
	HOLL	08	1715	1717	1728	N13	W91	5062	07	1.8	13	SN	C 1.4	3	E		59		
	RAMY	08	1716	1717	1725	N14	W90	5062	07	1.9	9	SF	C 1.4	3	E		49		
0112		08	17461	1750	1806	N14	W90	5062	07	1.9	20	1N					160		
	HOLL	08	1746	1750	1806	N14	W90	5062	07	1.9	20	1N		3	E		166		
	RAMY	08	1747	1750	1805	N14	W89	5062	07	2.0	18	1N		3	E		153		
0113	RAMY	08	1755	1758	1805	N20	E19	5069	07	10.2	10	SF		3	E		16		
0114		08	1816	18161	1824	N22	E19	5069	07	10.2	8	SF					24		F
	RAMY	08	1816	1816	1822	N23	E19	5069	07	10.2	6	SF		3	E		28		F
	HOLL	08	1816	1817	1826	N22	E19	5069	07	10.2	10	SF		3	E		21		
0115	RAMY	08	1829	1831	1835	N22	E19	5069	07	10.2	6	SF		3	E		32		

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0116		08	20281	20281	2032	N14	W90	5062	07	2.0	4	SF					24		
	HOLL	08	2028	2028	2031	N13	W91	5062	07	2.0	3	SF		3	E		23		
	RAMY	08	2029	2029	2033	N14	W90	5062	07	2.0	4	SF		3	E		24		
0117		08	21001	21013	2113	N20	E16	5069	07	10.1	13	SF					14		
	PALE	08	2100	2104	2118	N21	E16	5069	07	10.1	18	SF		3	E		18		
	RAMY	08	2101	2101	2108	N20	E17	5069	07	10.2	7	SF		3	E		11		
0118	LEAR	09	0109	0110	0121	N20	E13	5069	07	10.0	12	SF		3	E		28		
0119	LEAR	09	0339	0340	0343	N20	E13	5069	07	10.1	4	SF		3	E		14		
0120	LEAR	09	0357	0357	0402	N25	E55	5071	07	13.4	5	SF		3	E		11		
0121		09	0718	07192	0739	N22	E12	5069	07	10.2	21	SN	C 6.8				62		F
	SVTO	09	0718	0719	0736	N22	E12	5069	07	10.2	18	SF	C 6.8	3	E		57		F
	LEAR	09	0718	0721	0742	N22	E13	5069	07	10.3	24	SN	C 6.8	3	E		67		F
0122	SVTO	09	1018	1018	1026	N22	E10	5069	07	10.2	8	SF	C 1.9	3	E		22		F
0123		09	1139*	13202	1337	N22	E08	5069	07	10.1	118	SF	C 2.0				24		F
	RAMY	09	1139	1320	1344	N21	E09	5069	07	10.2	125	SF	C 2.0	3	E		35		F
	SVTO	09	1321	1322	1330	N23	E08	5069	07	10.2	9	SF	C 2.0	3	E		12		
0124	RAMY	09	1353	1358	1401	N21	E08	5069	07	10.2	8	SF		3	E		13		
0125	RAMY	09	1412	1419	1511	N21	E08	5069	07	10.2	59	SF		3	E		32		F
0126	RAMY	09	1536	1558	1605	N21	E07	5069	07	10.2	29	SF		3	E		12		
0127	RAMY	09	1637	1639	1644	N22	E04	5069	07	10.0	7	SF		3	E		18		F
0128	RAMY	09	1705	1707	1723	N21	E06	5069	07	10.2	18	SF		3	E		12		F
0129	RAMY	09	1728	1732	1736	N21	E05	5069	07	10.1	8	SF		3	E		12		F
0130	RAMY	09	1755	1759	1806	N16	E10	5069	07	10.5	11	SF		3	E		29		F
0131	RAMY	09	1904	1911	1920	N20	E02	5069	07	9.9	16	SF		3	E		14		
0132	HOLL	09	2131	2133	2140	N24	E50	5071	07	13.7	9	SF		3	E		40		
0133	PALE	09	2316	2318	2324	N28	E38	5073	07	12.9	8	SF	C 1.5	3	E		45		F
0134		09	23391	23431	2419	N22	E01	5069	07	10.1	40	1N	M 1.6				134		F
	PALE	09	2339	2343	2425	N24	E01	5069	07	10.1	46	1N		3	E		158		F
	LEAR	09	2340	2344	2413	N20	E01	5069	07	10.1	33	1N	M 1.6	3	E		111		F
0135	LEAR	10	0458	0458	0508	N21	W01	5069	07	10.1	10	SF	C 1.3	3	E		12		
0136		10	0634*	06541	0744	N21	W04	5069	07	10.0	70	1F	C 5.3				108		F
	LEAR	10	0634	0654	0743	N21	W04	5069	07	10.0	69	1F	C 5.3	3	E		125		F
	SVTO	10	0652	0655	0744	N21	W04	5069	07	10.0	52	SF	C 5.3	3	E		91		F
0137		10	0803	08051	0816	N22	W02	5069	07	10.2	13	SF					15		
	LEAR	10	0803	0805	0815	N21	W02	5069	07	10.2	12	SF		3	E		11		
	SVTO	10	0803	0806	0818	N23	W01	5069	07	10.2	15	SF		3	E		19		
0138		10	1137	1145	1150	N21	W07	5069	07	9.9	13	SF					26		F
	SVTO	10	1137	1145	1150	N21	W07	5069	07	9.9	13	SF		3	E		16		
	RAMY	10	1142E	1142U	1150	N21	W07	5069	07	9.9	8D	SF		2	E		35		F
0139	RAMY	10	1159	1202	1205	N21	W05	5069	07	10.1	6	SF		3	E		10		
0140	RAMY	10	1217	1221	1246	N27	E30	5073	07	12.8	29	SF		3	E		16		F
0141		10	20221	20264	2102	N22	W08	5069	07	10.2	40	SF					66		F
	RAMY	10	2022	2030	2100	N22	W07	5069	07	10.3	38	SF		3	E		62		F
	PALE	10	2023	2026	2105	N22	W09	5069	07	10.1	42	SF		3	E		71		F

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0142	HOLL	11	0021	0023	0048	N22	W11	5069	07	10.2	27	SF			4	E		21		F
0143		11	0029	0038U	0102	S17	E89	5075	07	17.8	33	1B	M	2.7				146		
	HOLL	11	0029	0039U	0052	S17	E89	5075	07	17.8	23	1B	M	2.7	4	E		153		
	LEAR	11	0033E	0038U	0112	S15	E90	5075	07	17.8	39D	SN	M	2.7	3	E		98		
	PALE	11	0040E		0046D	S18	E89	5075	07	17.8	6D	1B	M	2.7	3	E		188		
0144	SVTO	11	1031	1041	1047	N21	W17	5069	07	10.1	16	SF			3	E		12		
0145	SVTO	11	1126	1126	1132	N24	E25	5071	07	13.4	6	SF	C	2.7	3	E		48		
0146	HOLL	11	1441E	1442	1452	N24	W20	5069	07	10.1	11D	SF			3	E		17		
0147		11	16268	16351	1647	N22	W19	5069	07	10.2	21	SF						27		F
	RAMY	11	1626	1635	1656D	N21	W17	5069	07	10.4	30D	SF			2	E		30		F
	HOLL	11	1634	1636	1647	N22	W21	5069	07	10.1	13	SF			3	E		24		
0148	HOLL	11	1923	1924	1948	N21	W23	5069	07	10.0	25	SF	C	1.2	3	E		38		F
0149	HOLL	11	2258	2301	2308	S22	E73	5074	07	17.6	10	SF			3	E		34		F
0150		12	14466	14572	1532	N24	E11	5071	07	13.5	46	SN	C	2.5				82		EF
	HOLL	12	1446	1459	1534	N25	E11	5071	07	13.5	48	1N	C	2.5	3	E		103		E
	RAMY	12	1447	1457	1540	N24	E11	5071	07	13.5	53	SN	C	2.5	3	E		97		E
	SVTO	12	1452	1458	1521	N24	E10	5071	07	13.4	29	SF	C	2.5	3	E		47		F
0151		12	15532	15561	1623	S22	E74	5075	07	18.3	30	SF						26		
	HOLL	12	1553	1556	1622	S21	E74	5075	07	18.3	29	SF			3	E		24		
	RAMY	12	1555	1557	1624	S23	E75	5075	07	18.4	29	SF			3	E		28		
0152	HOLL	12	1652	1652	1719	S21	E74	5075	07	18.4	27	SF			3	E		23		
0153	HOLL	12	1740	1741	1752	N22	E12	5071	07	13.6	12	SF			3	E		13		
0154	HOLL	12	1810E	1821	1829	S18	E69	5075	07	18.0	19D	SF			3	E		33		
0155	HOLL	12	1815	1816	1827	N24	E10	5071	07	13.5	12	SF			3	E		37		
0156	HOLL	12	1849	1851	1859	N27	E10	5071	07	13.6	10	SF			3	E		11		
0157	HOLL	12	1909	1915	2014	N30	E03	5073	07	13.0	65	SF	C	2.4	3	E		48		F
0158	HOLL	12	2125	2129	2137	S20	E70	5075	07	18.2	12	SF			3	E		23		
0159	HOLL	12	2133	2137	2159	N22	E06	5071	07	13.3	26	SF			4	E		35		E
0160	HOLL	12	2301	2309	2337	N24	E05	5071	07	13.3	36	SF			3	E		38		
0161	HOLL	12	2312	2318	2331	S21	E69	5075	07	18.2	19	SN			4	E		44		
0162	HOLL	13	0023	0023	0037	N22	E05	5071	07	13.4	14	SF			3	E		18		
0163		13	00291	0031	0113	N29	W03	5073	07	12.8	44	1N	M	1.1				262	4.8	EF
	YUNN	13	0025E	0039U	0039D	N30	W04	5073	07	12.7	14D	1B	M	1.1		P	0039	402	4.6	
	HOLL	13	0029	0031	0125	N29	W02	5073	07	12.9	56	1B	M	1.1	3	E		191		F
	PALE	13	0030	0031	0053	N28	W03	5073	07	12.8	23	1F	M	1.1	3	E		157		
	LEAR	13	0030	0031	0104	N28	W02	5073	07	12.9	34	1N	M	1.1	3	E		120		F
	PEKG	13	0033E	0033U	0131	N29	W02	5073	07	12.9	58D	1B				C	0033	442	5.0	E
0164		13	00255	00351	0048	S22	E69	5075	07	18.3	23	SN						73		D
	HOLL	13	0025	0036	0045	S21	E69	5075	07	18.3	20	SN			3	E		61		
	YUNN	13	0030	0035	0048	S20	E68	5075	07	18.2	18	1B				C		161		
	PALE	13	0030	0035	0049	S22	E68	5075	07	18.2	19	SF			3	E		48		
	LEAR	13	0030	0036	0050	S23	E67	5075	07	18.2	20	SF			3	E		65		
	PEKG	13	0033E			S23	E71	5075	07	18.5		D	SF			P	0033	29		D
0165	LEAR	13	0103	0107	0112	S20	E68	5075	07	18.2	9	SF			3	E		26		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0166		13	01061	0108	0118	N22	E05	5071	07	13.4	12	SN					52	1.1	DF
	HOLL	13	0106	0108	0118	N21	E04	5071	07	13.3	12	SF		3	E		39		F
	PEKG	13	0107E	0107U	0123	N21	E05	5071	07	13.4	16D	SB			C	0107	105	1.1	D
	PALE	13	0107	0108	0112	N23	E06	5071	07	13.5	5	SF		3	E		13		
0167		13	01366	01441	0150	S22	E68	5075	07	18.3	14	SN					40		D
	PEKG	13	0132E	0137U		S23	E69	5075	07	18.4	D	SB			P	0137	50		D
	LEAR	13	0136	0144	0150	S22	E66	5075	07	18.1	14	SF		3	E		45		
	PALE	13	0142	0145	0149	S21	E68	5075	07	18.3	7	SF		3	E		24		
0168	LEAR	13	0156	0159	0206	S23	E66	5075	07	18.2	10	SF		3	E		34		
0169	PEKG	13	0426	0430	0437	S19	E67	5075	07	18.3	11	SF			C	0430	46		E
0170		13	0428*	0430	0452	N28	W04	5073	07	12.9	24	1N	C 7.3				146	2.9	E
	PEKG	13	0428	0430	0459	N29	W05	5073	07	12.8	31	1B	C 7.3		C	0430	252	2.9	E
	SVTO	13	0438	0441U	0446	N28	W04	5073	07	12.9	8	SF	C 7.3	2	E		40		
0171	PEKG	13	0444	0446	0448	S22	E65	5075	07	18.2	4	SF			C	0446	42		D
0172	PEKG	13	0528	0535	0536D	S23	E68	5075	07	18.5	8D	SF	C 1.6		C	0535	67		D
0173		13	06121	06133	0622	N22	E02	5071	07	13.4	10	SN	C 2.3				48		
	LEAR	13	0612	0616	0626D	N24	E02	5071	07	13.4	14D	SN	C 2.3	3	E		56		
	SVTO	13	0613	0613	0622	N21	E01	5071	07	13.3	9	SF	C 2.3	3	E		41		
0174		13	1325	13282	1342	S22	E60	5075	07	18.2	17	SF					24		
	HOLL	13	1325	1328	1339	S22	E61	5075	07	18.2	14	SF		3	E		28		
	RAMY	13	1325	1330	1345	S22	E60	5075	07	18.2	20	SF		3	E		20		
0175	RAMY	13	1354	1359	1402	S22	E60	5075	07	18.2	8	SF		3	E		20		
0176		13	1606	1607	1630	N28	W11	5073	07	12.8	24	SN	C 1.7				48		E
	RAMY	13	1606	1607	1621	N28	W11	5073	07	12.8	15	SF	C 1.7	3	E		39		
	HOLL	13	1606	1607	1639	N28	W11	5073	07	12.8	33	SN	C 1.7	3	E		58		E
0177	HOLL	13	1636	1636	1652	N23	W48	5069	07	10.0	16	SF		3	E		32		F
0178	RAMY	13	1649	1651	1741	S20	E58	5075	07	18.1	52	SF		3	E		21		
0179		13	1741	17417	1801	N23	W04	5071	07	13.4	20	SF					54		F
	RAMY	13	1741	1741	1955D	N22	W06	5071	07	13.3	134D	SF		3	E		28		F
	HOLL	13	1741	1748	1801	N24	W03	5071	07	13.5	20	SF		3	E		80		F
0180		13	20092	20102	2025	N22	W51	5069	07	9.9	16	SF					24		F
	HOLL	13	2009	2010	2031	N22	W49	5069	07	10.1	22	SF		4	E		30		F
	PALE	13	2011	2012	2019	N22	W53	5069	07	9.8	8	SF		3	E		18		
0181		13	20101	20111	2024	N28	W14	5073	07	12.7	14	SN	C 2.5				46		F
	HOLL	13	2010	2011	2026	N29	W14	5073	07	12.7	16	SN	C 2.5	4	E		39		F
	PALE	13	2011	2012	2022	N28	W14	5073	07	12.7	11	SF	C 2.5	3	E		52		F
0182		13	2051*	20549	2104	N28	W14	5073	07	12.8	13	SF					34		
	PALE	13	2051	2054	2058	N29	W15	5073	07	12.7	7	SF		3	E		48		
	HOLL	13	2051	2054	2110D	N29	W14	5073	07	12.8	19D	SF		3	E		44		
	RAMY	13	2052	2054	2110	N28	W13	5073	07	12.8	18	SF		3	E		13		
	PALE	13	2102	2103	2104	N28	W14	5073	07	12.8	2	SF		3	E		33		
0183		13	2153	21531	2200	N21	W08	5071	07	13.3	7	SF					24		E
	PALE	13	2153	2153	2157	N21	W08	5071	07	13.3	4	SF		3	E		14		
	HOLL	13	2153	2154	2203	N21	W07	5071	07	13.4	10	SF		3	E		34		E
0184	HOLL	13	2211	2212	2225	N29	W16	5073	07	12.7	14	SF		3	E		12		
0185	HOLL	13	2252	2313	2331	N29	W15	5073	07	12.8	39	SF		4	E		47		
0186	LEAR	14	0206	0207	0214	S21	E54	5075	07	18.2	8	SF		3	E		13		
0187	PALE	14	0251	0251	0254	N25	W07	5071	07	13.6	3	SF		3	E		14		

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0188		14	0638	06455	0708	N25	W14	5071	07	13.2	30	SN					68	0.8	E
	YUNN	14	0638	0645	0722	N25	W15	5071	07	13.1	44	SN			C		32	0.4	
	PEKG	14	0647E	0650	0655	N25	W12	5071	07	13.3	8D	SF			P	0650	105	1.2	E
0189	RAMY	14	1228	1229	1235	S20	E48	5075	07	18.2	7	SF		3	E		14		
0190	RAMY	14	1257	1257	1300	N27	W17	5071	07	13.2	3	SF		3	E		15		
0191	HOLL	14	1325E	1329U	1350D	S19	E57	5075	07	18.9	25D	SF		3	E		22		
0192	RAMY	14	1430	1430	1437	N23	W13	5071	07	13.6	7	SF		3	E		15		
0193	RAMY	14	1521	1526	1537	N23	W13	5071	07	13.6	16	SF		3	E		19		
0194	RAMY	14	1708	1715	1733	S19	E46	5075	07	18.2	25	SF		3	E		11		
0195	PALE	14	1826	1827	1830	N28	W21	5073	07	13.1	4	SF		3	E		14		
0196	PALE	14	2221	2223	2240	S19	E43	5075	07	18.2	19	SF	C 1.1	3	E		73		
0197	LEAR	15	0415	0416	0425	N22	W22	5071	07	13.5	10	SF	C 1.1	3	E		31		
0198	LEAR	15	0906	0907	0916	N21	W24	5071	07	13.5	10	SF		3	E		30		
0199	SVTO	15	1646E	1646U	1706	S20	E33	5075	07	18.2	20D	SF		3	E		26		
0200		15	1728	1729	1740	N24	W32	5071	07	13.2	12	SF					24		
	RAMY	15	1728	1729	1736	N23	W31	5071	07	13.3	8	SF		3	E		28		
	PALE	15	1729E	1729U	1743	N24	W32	5071	07	13.2	14D	SF		3	E		20		
0201		15	18271	18281	1838	S19	E24	5075	07	17.6	11	SF					34		F
	RAMY	15	1827	1828	1838	S19	E24	5075	07	17.6	11	SF		3	E		34		F
	PALE	15	1828	1829	1834	S20	E24	5075	07	17.6	6	SF		3	E		24		F
	HOLL	15	1833E	1833U	1841	S19	E23	5075	07	17.5	8D	SF		2	E		45		F
0202		16	00353	00422	0106	S19	E26	5075	07	18.0	31	SF	C 1.2				40		F
	PALE	16	0035	0044	0110	S19	E26	5075	07	18.0	35	SF	C 1.2	3	E		42		F
	LEAR	16	0038	0042	0103	S19	E27	5075	07	18.1	25	SF	C 1.2	3	E		38		
0203		16	13423	13432	1354	S15	E25	5076	07	18.5	12	SF					18		F
	SVTO	16	1342	1343	1354	S15	E26	5076	07	18.5	12	SF		3	E		22		
	HOLL	16	1345	1345	1354	S15	E25	5076	07	18.5	9	SF		3	E		13		F
	RAMY	16	1345	1345	1426D	S15	E25	5076	07	18.5	41D	SF		2	E		20		F
0204		16	1547E	15473	1558	S24	E18	5075	07	18.0	11D	SF	C 2.4				41		F
	HOLL	16	1547E	1547	1601	S25	E21	5075	07	18.3	14D	SF	C 2.4	3	E		53		F
	RAMY	16	1549E	1550	1556	S24	E15	5075	07	17.8	7D	SF	C 2.4	3	E		29		
0205		16	1627*	1703	1737	S16	E24	5076	07	18.5	70	SF	C 3.0				78		FH
	RAMY	16	1627	1703	1743	S16	E24	5076	07	18.5	76	1F	C 3.0	3	E		115		FH
	PALE	16	1652	1703	1730	S17	E23	5076	07	18.4	38	SF	C 3.0	3	E		40		F
	HOLL	16	1654	1703	1738	S15	E24	5076	07	18.5	44	SF	C 3.0	4	E		78		F
0206	HOLL	16	1911	1911	1920	N22	W43	5071	07	13.5	9	SF		4	E		15		
0207	HOLL	16	2103	2104	2112	S21	E76	5077	07	22.7	9	SF		3	E		11		
0208	YUNN	17	0419	0431	0442	S21	E03	5075	07	17.4	23	SN			C		32	0.4	E
0209		17	1332	1333	1359	S21	E06	5075	07	18.0	27	SF	C 1.8				22		
	RAMY	17	1332	1333	1356	S21	E05	5075	07	17.9	24	SF	C 1.8	3	E		23		
	SVTO	17	1332	1333	1402	S21	E07	5075	07	18.1	30	SF	C 1.8	3	E		20		
0210	RAMY	17	1419	1419	1422	S20	E02	5075	07	17.7	3	SF	C 1.0	3	E		14		H
0211		17	15131	15171	1530	N22	W55	5071	07	13.4	17	SF					16		
	HOLL	17	1513	1517	1530	N22	W55	5071	07	13.4	17	SF		3	E		13		
	RAMY	17	1514	1518	1530	N22	W55	5071	07	13.4	16	SF		3	E		19		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
0212		18	0030	0005*	0028	S24	E02	5075	07	18.2	1438	SF C	1.2				14		
	LEAR	18	0005E	0005	0022	S24	E03	5075	07	18.2	17D	SF		3	E		12		
	LEAR	18	0030	0031	0034	S24	E02	5075	07	18.2	4	SF C	1.2	3	E		17		
0213		18	02211	02221	0230	S16	E04	5076	07	18.4	9	SN					51	0.9	E
	YUNN	18	0221	0223	0231	S18	E03	5076	07	18.3	10	SN			C		80	0.9	E
	LEAR	18	0222	0222	0230	S14	E05	5076	07	18.5	8	SF		3	E		22		
0214	LEAR	18	0225	0233	0303	N22	W59	5071	07	13.6	38	SF		3	E		41		F
0215		18	0305	03173	0330	S20	W08	5075	07	17.5	25	SN					44	0.7	
	YUNN	18	0305	0317	0330	S20	W09	5075	07	17.4	25	SN			C		64	0.7	
	LEAR	18	0305	0320	0329	S20	W08	5075	07	17.5	24	SF		3	E		25		
0216	LEAR	18	0324	0325	0327	N19	W61	5071	07	13.5	3	SF		3	E		12		
0217	LEAR	18	0700	0702	0707	N28	W75	5073	07	12.4	7	SF C	1.3	3	E		15		
0218		18	0742*	07548	0813	S24	W11	5075	07	17.5	31	SN					41	0.6	E
	LEAR	18	0742	0754	0811	S24	W10	5075	07	17.5	29	SN		3	E		33		
	SVTO	18	0742	0757	0811	S24	W09	5075	07	17.6	29	SF		3	E		42		
	YUNN	18	0742	0802	0817	S23	W13	5075	07	17.3	35	SN			C		48	0.6	
	PEKG	18	0759	0800	0812	S24	W11	5075	07	17.5	13	1N			V				E
0219	LEAR	18	0818	0823	0838	N28	W75	5073	07	12.5	20	SF		3	E		23		
0220	SVTO	18	0952	0952	0956	N26	W76	5073	07	12.5	4	SF C	1.8	3	E		25		
0221		18	10532	10533	1102	N28	W74	5073	07	12.7	9	SF C	2.8				40		H
	RAMY	18	1053	1053	1103	N28	W75	5073	07	12.6	10	SF C	2.8	2	E		48		H
	SVTO	18	1055	1056	1102	N29	W72	5073	07	12.8	7	SF C	2.8	3	E		33		
0222		18	12521	1253	1300	N27	W78	5073	07	12.4	8	SF C	2.3				30		
	RAMY	18	1252	1253	1300	N28	W77	5073	07	12.5	8	SF C	2.3	3	E		31		
	SVTO	18	1253	1253	1259	N26	W79	5073	07	12.4	6	SF C	2.3	3	E		28		
0223	SVTO	18	1540	1541	1544	S21	W13	5075	07	17.6	4	SF C	2.2	3	E		34		H
0224		18	1600*	1609*	1632	S22	W17	5075	07	17.4	32	1F C	6.3				88		FH
	SVTO	18	1600	1609	1621	S24	W14	5075	07	17.6	21	SF		3	E		39		
	RAMY	18	1607	1626	1642	S22	W22	5075	07	17.0	35	1F C	6.3	3	E		108		FH
	SVTO	18	1626	1627	1634	S20	W15	5075	07	17.5	8	1F C	4.6	3	E		117		
0225	HOLL	18	1948	2007U	2016D	S21	W13	5075	07	17.8	28D	SF		3	E		126		
0226	HOLL	18	1959	2004U	2012D	N22	W68	5071	07	13.6	13D	SF		3	E		56		
0227	HOLL	18	2024E	2024U	2028	N28	W85	5073	07	12.2	4D	SF		3	E		10		
0228		19	0027	0030	0051	S24	W15	5075	07	17.8	24	1N C	9.4				114		F
	LEAR	19	0027	0030	0051	S24	W19	5075	07	17.5	24	1N C	9.4	3	E		141		F
	PALE	19	0027E	0031U	0051	S24	W11	5075	07	18.2	24D	SN C	9.4	3	E		88		F
0229		19	0143	01431	0159	S22	W12	5075	07	18.1	16	SF C	2.2				26		F
	PALE	19	0143	0143	0203	S24	W12	5075	07	18.1	20	SF C	2.2	3	E		26		
	LEAR	19	0143	0144	0155	S21	W12	5075	07	18.1	12	SF C	2.2	3	E		25		F
0230	LEAR	19	0424	0429	0445	S20	W09	5075	07	18.5	21	SF		3	E		31		
0231		19	05391	05401	0602	N22	W73	5071	07	13.6	23	SF C	5.3				44		
	LEAR	19	0539	0541	0608	N23	W74	5071	07	13.5	29	SF C	5.3	3	E		60		
	SVTO	19	0540	0540	0555	N22	W72	5071	07	13.7	15	SF C	5.3	3	E		27		
0232		19	07521	0753	0804	S26	W22	5075	07	17.6	12	SF C	7.1				24		F
	LEAR	19	0752	0753	0809	S25	W23	5075	07	17.5	17	SF C	7.1	3	E		38		
	SVTO	19	0753	0753	0801	S26	W22	5075	07	17.6	8	SF C	7.1	3	E		17		
	SVTO	19	0753	0753	0801	S26	W22	5075	07	17.6	8	SF C	7.1	3	E		17		F
0233	RAMY	19	1212	1221	1227	S21	W25	5075	07	17.6	15	SF C	3.4	3	E		25		FH

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
0234	HOLL	19	1249	1253	1306	S12	W15	5076	07	18.4	17	SF		3	E		15		F
0235		19	13362	13372	1344	S17	W24	5075	07	17.7	8	SF	C 2.3				25		F
	SVTO	19	1336	1337	1344	S18	W23	5075	07	17.8	8	SF	C 2.3	3	E		21		
	RAMY	19	1336	1339	1344	S17	W24	5075	07	17.7	8	SF	C 2.3	3	E		23		F
	HOLL	19	1338	1338	1345	S17	W24	5075	07	17.7	7	SF	C 2.3	3	E		30		F
0236	HOLL	19	1745	1746	1758	S20	W25	5075	07	17.8	13	SF		3	E		13		
0237	HOLL	19	2148	2150	2201D	S24	W30	5075	07	17.6	13D	SF		2	E		60		F
0238	LEAR	19	2355	2359	2412	S22	W33	5075	07	17.5	17	SF	C 1.7	3	E		30		
0239	YUNN	20	0128	0137	0247	S20	W49	5079	07	16.3	79	SN			C		32	0.6	
0240		20	0254*	0306	0314	S17	W50	5079	07	16.3	20	SN					25	0.6	
	YUNN	20	0254	0306	0312	S17	W51	5079	07	16.2	18	SN			C		32	0.6	
	LEAR	20	0305	0306	0316	S17	W49	5079	07	16.4	11	SF		3	E		18		
0241		20	04482	04501	0456	S18	W50	5079	07	16.4	8	SF					23		
	SVTO	20	0448	0450	0457	S19	W49	5079	07	16.5	9	SF		3	E		22		
	LEAR	20	0450	0451	0456	S17	W51	5079	07	16.3	6	SF		3	E		24		
0242	SVTO	20	0927	0930	0941	S24	W37	5075	07	17.5	14	SF	C 1.8	3	E		48		F
0243	RAMY	20	1318	1319	1335	S17	W55	5079	07	16.4	17	SF		3	E		10		
0244		20	14102	14161	1424	S29	W43	5075	07	17.2	14	SF	C 2.8				70		FH
	SVTO	20	1410	1416	1424	S26	W40	5075	07	17.5	14	SF	C 2.8	3	E		68		FH
	RAMY	20	1412	1417	1423	S32	W46	5075	07	16.9	11	SF	C 2.8	3	E		73		F
0245	RAMY	20	1732	1736	1750	S17	W41	5075	07	17.6	18	SF	C 1.0	3	E		30		
0246	PALE	20	1734	1737	1748	S13	W46	5074	07	17.3	14	SF		3	E		27		F
0247	RAMY	20	1847	1849	1852	S22	W44	5075	07	17.4	5	SF		3	E		28		F
0248		20	23472	23501	2400	S22	W47	5075	07	17.4	13	SF	C 1.1				52		
	HOLL	20	2347	2350	2408	S22	W47	5075	07	17.4	21	SF	C 1.1	4	E		66		
	LEAR	20	2348	2350	2355	S22	W46	5075	07	17.4	7	SF	C 1.1	3	E		44		
	PALE	20	2349	2351	2356	S22	W47	5075	07	17.4	7	SF	C 1.1	3	E		45		
0249		21	01291	01311	0148	S15	W48	5075	07	17.4	19	1N	C 6.2				100		
	LEAR	21	0129	0131	0154	S13	W51	5075	07	17.2	25	1F	C 6.2	3	E		106		
	PALE	21	0130	0132	0142	S17	W46	5075	07	17.6	12	SN	C 6.2	3	E		93		
0250	LEAR	21	0413	0414	0424	S19	W56	5079	07	16.9	11	SF		3	E		42		
0251	LEAR	21	0504	0505	0518	S17	W65	5079	07	16.3	14	SF		3	E		16		
0252		21	0708	07081	0723	S18	W50	5075	07	17.5	15	1N	C 3.3				140	2.9	
	SVTO	21	0708	0708	0722	S19	W49	5075	07	17.5	14	1N	C 3.3	3	E		139		
	LEAR	21	0708	0709	0727	S17	W51	5075	07	17.4	19	1N	C 3.3	3	E		120		
	YUNN	21	0709E	0709U	0719	S17	W51	5075	07	17.4	10D	1B	C 3.3		P	0709	161	2.9	
0253		21	11321	1141	1153	S26	W44	5075	07	18.1	21	SF	C 1.2				30		
	RAMY	21	1132	1141	1157	S22	W46	5075	07	17.9	25	SF	C 1.2	3	E		33		
	SVTO	21	1133	1141	1149	S29	W43	5075	07	18.1	16	SF	C 1.2	3	E		27		
0254	HOLL	21	1533	1533	1535	S17	W69	5079	07	16.4	2	SF		3	E		28		
0255		21	18259	1834U	1847	S19	E84	5084	07	28.2	22	1N	C 4.5				257		
	RAMY	21	1823E	1834U	1847	S19	E88	5084	07	28.5	24D	1B	C 4.5	2	E		241		
	PALE	21	1825	1836U	1847D	S20	E88	5084	07	28.5	22D	2B	C 4.5	3	E		290		
	RAMY	21	1834	1834U	1835D	S17	E75	5084	07	27.5	1D	1F	C 4.5	3	E		241		
0256	HOLL	21	2234	2234	2243	S22	W51	5075	07	18.0	9	SF		3	E		20		

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Grp #	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 Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
0257		22	00251	0028	0034	S17	W58	5075	07	17.6	9	SF	C 1.6				53		
	PALE	22	0025	0028	0032	S17	W57	5075	07	17.7	7	SF	C 1.6	3	E		41		
	HOLL	22	0026	0028	0037	S17	W59	5075	07	17.5	11	SF	C 1.6	3	E		65		
0258		22	01051	0112	0118	S17	W59	5075	07	17.6	13	SF					27		H
	HOLL	22	0105	0112	0122	S17	W60	5075	07	17.5	17	SF		3	E		36		H
	PALE	22	0106	0112	0113	S17	W58	5075	07	17.6	7	SF		3	E		18		
0259		22	0154	01562	0203	S18	W59	5075	07	17.6	9	1N	C 1.7				99	2.7	D
	PALE	22	0154	0156	0203	S17	W58	5075	07	17.7	9	SF	C 1.7	3	E		68		
	PEKG	22	0155E	0158	0203	S18	W60	5075	07	17.5	8D	1B	C 1.7		C	0158	130	2.7	D
0260	LEAR	22	0500	0509	0514	S17	W76	5079	07	16.4	14	SF		3	E		34		
0261		22	0556	05561	0559	S18	W62	5075	07	17.5	3	SF	C 1.5				58	2.0	E
	LEAR	22	0556	0556	0558	S18	W61	5075	07	17.6	2	SF	C 1.5	3	E		20		
	PEKG	22	0556E	0557	0600	S18	W64	5075	07	17.4	4D	SF	C 1.5		C	0557	95	2.0	E
0262		22	0630	06302	0634	S19	W76	5079	07	16.5	4	SF					24		
	SVTO	22	0630	0630	0633	S20	W77	5079	07	16.4	3	SF		3	E		12		
	LEAR	22	0630	0632	0634	S18	W76	5079	07	16.5	4	SF		3	E		35		
0263		22	0815	0815	0822	S19	W80	5079	07	16.2	7	SF					12		
	LEAR	22	0815	0815	0822	S18	W81	5079	07	16.2	7	SF		3	E		12		
	SVTO	22	0815	0815	0823	S20	W79	5079	07	16.3	8	SF		3	E		12		
0264	SVTO	22	0912	0913	0918	S21	W84	5079	07	15.9	6	SF	C 1.3	3	E		31		
0265	RAMY	22	1115E	1119U	1131D	S20	E88	5084	07	29.2	16D	SF	C 7.3	2	E		82		
0266	SVTO	22	1658	1701	1705	S22	W67	5075	07	17.5	7	SF		3	E		22		
0267	HOLL	22	2039	2039	2045	S22	W66	5075	07	17.8	6	SF		3	E		10		
0268	HOLL	22	2322	2330	2405	S22	W01	5077	07	22.9	43	SF		4	E		41		F
0269		23	13106	13163	1338	S18	W64	5075	07	18.7	28	1N	C 2.3				119		EF
	HOLL	23	1310	1319	1338	S18	W61	5075	07	18.9	28	1N	C 2.3	3	E		124		E
	SVTO	23	1316	1316	1337	S18	W66	5075	07	18.5	21	1F	C 2.3	3	E		114		F
0270		23	15041	1513	1538	N13	E67	5085	07	28.7	34	SF					71		FH
	SVTO	23	1504	1513	1536	N13	E67	5085	07	28.7	32	SF		3	E		59		H
	HOLL	23	1505	1513	1537	N14	E68	5085	07	28.8	32	SF		4	E		87		F
	RAMY	23	1505	1513	1540	N11	E65	5085	07	28.5	35	SF		3	E		68		H
0271	RAMY	23	1623	1623	1633	S26	W74	5075	07	17.9	10	SF		3	E		11		
0272	HOLL	23	1625	1626	1634	S19	W68	5075	07	18.5	9	SF		3	E		11		
0273		23	1744	1746	1754	N12	E62	5085	07	28.4	10	SF					58		FH
	HOLL	23	1744	1746	1753	N12	E63	5085	07	28.5	9	SF		4	E		67		FH
	RAMY	23	1744	1746	1754	N13	E62	5085	07	28.4	10	SF		3	E		50		
0274	HOLL	23	1823	1829	1839	N12	E64	5085	07	28.6	16	SF		3	E		48		
0275	HOLL	23	1824	1829	1842	S24	W78	5075	07	17.7	18	SF		3	E		35		
0276	HOLL	23	2147	2148	2152	S19	W71	5081	07	18.5	5	SF		3	E		18		
0277	HOLL	23	2202	2212	2220	N10	E62	5085	07	28.6	18	SF		3	E		42		F
0278	LEAR	24	0250	0252	0258	N12	E63	5085	07	28.9	8	SF	C 1.1	3	E		22		
0279	SVTO	24	0637	0649	0824	S21	E55	5084	07	28.5	107	2N	M 2.8	3	E		293		FU
0280	SVTO	24	0830	0830	1059	S16	E60	5084	07	28.9	149	2F		3	E		441		U
0281	SVTO	24	1022	1025	1039	N16	E71	5090	07	29.8	17	SF		3	E		34		

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Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0282		24	1215	1216	1220	N14	E58	5085	07	28.9	5	SF	C 5.3				16		H
	SVTO	24	1215	1216	1219	N15	E58	5085	07	28.9	4	SF	C 5.3	3	E		14		H
	RAMY	24	1215	1216	1221	N13	E58	5085	07	28.9	6	SF	C 5.3	3	E		18		
0283		24	15581	16012	1633	S23	W35	5087	07	22.0	35	1F	C 4.3				136		FU
	HOLL	24	1558	1603	1647	S22	W36	5087	07	21.9	49	1N	C 4.3	4	E		176		UF
	SVTO	24	1559	1601	1620	S24	W35	5087	07	22.0	21	1F	C 4.3	3	E		104		F
	RAMY	24	1559	1601	1631	S23	W35	5087	07	22.0	32	1F	C 4.3	3	E		129		UF
0284	HOLL	24	1950	1952	2018	N13	E68	5090	07	29.9	28	SF		4	E		53		F
0285		25	05363	05391	0604	N14	E60	5090	07	29.8	28	1N	C 1.8				119		HS
	LEAR	25	0536	0539	0607	N12	E61	5090	07	29.8	31	1N	C 1.8	3	E		172		
	SVTO	25	0539	0540	0602	N15	E60	5090	07	29.8	23	SF	C 1.8	3	E		66		HS
0286	RAMY	25	1156	1159	1219	S23	W46	5087	07	21.9	23	SF		3	E		16		
0287		25	14182	1422	1429	S26	W35	5077	07	22.9	11	SF					28		H
	HOLL	25	1418	1422	1444D	S28	W35	5077	07	22.9	26D	SF		3	E		34		H
	RAMY	25	1420	1422	1429	S23	W35	5077	07	22.9	9	SF		3	E		21		
0288	HOLL	25	1526	1529	1532	S22	W90	5075	07	18.7	6	SF		3	E		35		
0289		25	1928	2007	2047	S28	E51	5084	07	29.8	79	2F	M 1.5				206		FH
	HOLL	25	1928	2007	2047	S27	E50	5084	07	29.7	79	2F	M 1.5	4	E		287		FH
	RAMY	25	1947E	1957U	2033D	S28	E52	5084	07	29.9	46D	1F	M 1.5	3	E		125		F
0290	PEKG	26	0251E	0255U	0312	S28	E48	5084	07	29.9	21D	1N	C 3.7		V				D
0291	RAMY	26	1206E	1208U	1218D	S25	E13	5084	07	27.5	12D	SN		2	E		87		F
0292	RAMY	26	1210E	1211U	1218D	N27	E70	5095	08	1.0	8D	SF		2	E		47		F
0293	HOLL	26	1324	1328	1344	N28	E90	5092	08	2.6	20	SF		3	E		17		
0294	HOLL	26	1648	1648	1701	S23	E39	5084	07	29.7	13	SF		3	E		17		
0295	HOLL	27	0038	0039	0046	S21	E30	5084	07	29.3	8	SF		3	E		27		F
0296		27	0729	0744	0800	S24	E30	5084	07	29.6	31	2N	C 8.9				330	5.4	F
	SVTO	27	0729	0744	0806	S24	E31	5084	07	29.7	37	2N	C 8.9	3	E		259		F
	YUNN	27	0740E	0744	0755	S23	E28	5084	07	29.5	15D	2N	C 8.9		P		402	5.4	
0297	SVTO	27	0954	0955	1005	N16	E37	5090	07	30.2	11	SF	C 2.0	3	E		30		
0298	SVTO	27	1031	1033	1037	N29	E81	5092	08	2.8	6	SF	C 3.2	3	E		16		
0299	SVTO	27	1104	1124	1138	S18	E29	5084	07	29.7	34	SF	C 5.7	3	E		79		
0300	RAMY	27	1206E	1208U	1208D	S26	E17	5084	07	28.8	2D	SN		2	E		87		F
0301	SVTO	27	1221	1221	1233	S21	E30	5084	07	29.8	12	SF	C 3.4	3	E		32		
0302	SVTO	27	1356	1356	1403	S21	E21	5084	07	29.2	7	SF	C 4.0	3	E		25		
0303		27	1455	14561	1506	N16	E32	5090	07	30.0	11	SF	C 1.3				22		
	HOLL	27	1455	1456	1505	N16	E33	5090	07	30.1	10	SF	C 1.3	2	E		24		
	SVTO	27	1455	1457	1506	N17	E32	5090	07	30.0	11	SF	C 1.3	3	E		20		
0304	RAMY	27	1732	1732	1741	S23	E24	5084	07	29.6	9	SF		3	E		28		
0305	LEAR	28	0011	0012	0017	N26	E69	5092	08	2.4	6	SF		3	E		22		
0306	PALE	28	0012	0013	0020	N28	E87	5095	08	3.8	8	SF		3	E		31		
0307		28	0122	01222	0138	N14	E30	5090	07	30.3	16	SF					29		
	PALE	28	0122	0122	0143	N15	E31	5090	07	30.4	21	SF		3	E		40		
	LEAR	28	0122	0124	0132	N14	E30	5090	07	30.3	10	SF		3	E		18		
0308	LEAR	28	0441	0443	0445	N25	E72	5092	08	2.8	4	SF	C 2.0	3	E		10		

H - ALPHA S O L A R F L A R E S

JULY 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0309	LEAR	28	0636	0636	0646	N25	E71	5092	08	2.8	10	SF	C 1.7	3	E		11		
0310	LEAR	28	0734	0736	0741	N28	E76	5092	08	3.2	7	SF	C 2.7	3	E		15		
0311		28	1206	1208U	1214	N27	E74	5095	08	3.3	8	SF	C 7.9				54		F
	SVTO	28	1206	1208U	1214	N27	E77	5095	08	3.5	8	SF	C 7.9	2	E		60		
	RAMY	28	1210E	1211U	1218D	N27	E70	5095	08	3.0	8D	SF	C 7.9	2	E		47		F
0312	PALE	28	1926	1929	1930	S21	E09	5084	07	29.5	4	SF		3	E		19		
0313	PALE	28	1932	1933	1938	N32	E77	5095	08	3.9	6	SF		3	E		46		F
0314	HOLL	28	2207	2225	2229	N28	E66	5095	08	3.1	22	SF	C 1.3	2	E		38		
0315	HOLL	28	2325	2326	2353D	N25	E40		08	1.1	28D	SF	C 4.0	3	E		20		
0316	PALE	29	0117E	0124	0136	N26	E40		08	1.2	19D	SF		3	E		19		
0317	LEAR	29	0529	0529	0534	N33	E67	5095	08	3.5	5	SF	C 1.9	3	E		12		
0318	LEAR	29	0632	0635	0637	N33	E70	5095	08	3.8	5	SF		3	E		26		
0319	LEAR	29	0748	0748	0757	S20	E05	5084	07	29.7	9	SF		3	E		26		F
0320		29	08022	08022	0815	N27	E60	5092	08	3.0	13	SF	C 2.5				32		
	LEAR	29	0802	0802	0807	N26	E61	5092	08	3.1	5	SF	C 2.5	3	E		30		
	SVTO	29	0804	0804	0823	N28	E59	5092	08	2.9	19	SF	C 2.5	3	E		35		
0321		29	1256	1259	1316	S25	W04	5084	07	29.2	20	SF					14		
	RAMY	29	1256	1259	1312	S25	W04	5084	07	29.2	16	SF		3	E		13		
	HOLL	29	1300E	1300U	1319	S25	W05	5084	07	29.1	19D	SF		3	E		14		
0322		29	13463	13511	1411	N28	E56	5095	08	2.9	25	SN	C 3.5				73		EF
	SVTO	29	1346	1351	1403	N27	E56	5095	08	2.9	17	SF	C 3.5	3	E		65		
	HOLL	29	1347	1352	1426	N28	E57	5095	08	3.0	39	SN	C 3.5	3	E		75		FE
	RAMY	29	1349	1351	1404	N28	E55	5095	08	2.9	15	SN	C 3.5	3	E		79		E
0323	HOLL	29	1349	1352	1420	N24	E49	5092	08	2.4	31	SF		3	E		20		
0324	RAMY	29	1515E	1515U	1523	N27	E52	5092	08	2.7	8D	SF		2	E		17		
0325	RAMY	29	1612	1615	1632	N14	E03	5090	07	29.9	20	SF		3	E		19		F
0326	PALE	29	1840	1840	1906	N14	E02	5090	07	29.9	26	SF		3	E		11		F
0327	PALE	29	2131	2133	2215D	N32	E61	5092	08	3.7	44D	1F	M 1.6	3	E		199		F
0328		29	2227	2236	2252	N14	W02	5090	07	29.8	25	SF					33		F
	PALE	29	2227	2236	2252	N15	W03	5090	07	29.7	25	SF		3	E		38		F
	HOLL	29	2247E	2247U	2252	N12	W02	5090	07	29.8	5D	SF		2	E		28		F
0329		29	2259	2316	2319	S21	W04	5084	07	29.6	20	SF					37		F
	HOLL	29	2247E	2249U	2301	S22	W02	5084	07	29.8	14D	SF		2	E		27		F
	PALE	29	2259	2316	2316	S20	W04	5084	07	29.6	17	SF		3	E		32		F
	HOLL	29	2319E	2321U	2340	S22	W07	5084	07	29.4	21D	SF		2	E		53		F
0330	HOLL	29	2336E	2340U	2356	N32	E56	5092	08	3.4	20D	SF		2	E		34		
0331	LEAR	29	2354	2414	2531	N16	E00	5090	07	30.0	97	SF		3	E		34		
0332		30	0008*	0013*	0040	S22	W06	5084	07	29.5	32	SF	C 6.0				50		F
	LEAR	30	0008	0013	0019	S21	W08	5084	07	29.4	11	SF	C 6.0	3	E		54		
	HOLL	30	0008	0013	0023D	S23	W02	5084	07	29.8	15D	SF	C 6.0	3	E		52		F
	PALE	30	0013	0013	0037	S22	W04	5084	07	29.7	24	SF	C 6.0	3	E		21		
	LEAR	30	0022	0024	0044	S21	W09	5084	07	29.3	22	SF		3	E		85		
	PALE	30	0038	0044	0047	S23	W04	5084	07	29.7	9	SF		3	E		22		
	LEAR	30	0048	0052	0054	S21	W09	5084	07	29.3	6	SF		3	E		64		
0333	LEAR	30	0011E	0011	0033	N26	E47	5092	08	2.6	22D	SF		3	E		22		

H - ALPHA S O L A R F L A R E S

JULY 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0334	PALE	30	0237	0239	0250	S20	W07	5084	07	29.6	13	SF		3	E		31		F
0335	PALE	30	0257	0311	0328	S21	W10	5084	07	29.3	31	SF	C 4.6	3	E		52		F
0336	PALE	30	0302	0303	0313	N14	W03	5090	07	29.9	11	SF		3	E		46		
0337	LEAR	30	0546	0546	0600	N33	E53	5095	08	3.4	14	SF		3	E		11		
0338		30	0655	06551	0718	S22	W08	5084	07	29.7	23	SN	C 2.7				23		F
	SVTO	30	0655	0655	0731	S21	W06	5084	07	29.8	36	SN	C 2.7	3	E		26		F
	LEAR	30	0655	0656	0704	S22	W09	5084	07	29.6	9	SF	C 2.7	3	E		20		F
0339	SVTO	30	0657	0658	0701	N13	W06	5090	07	29.8	4	SF		3	E		12		
0340	LEAR	30	0845	0848	0852D	N28	E47	5095	08	3.0	7D	1B		3	E		160		F
0341	SVTO	30	0847	0848	0912	N28	E41	5092	08	2.6	25	2N	M 1.8	3	E		267		F
0342	SVTO	30	0952	0954	1000	N13	W09	5090	07	29.7	8	SF		3	E		16		
0343	SVTO	30	1122	1125	1147	S22	W07	5084	07	29.9	25	SF	C 1.8	3	E		30		
0344	HOLL	30	1412	1412	1431	S20	W13	5084	07	29.6	19	SF	C 1.6	3	E		18		
0345	HOLL	30	1538	1539	1551	N28	E43	5092	08	3.0	13	SF		3	E		25		
0346	HOLL	30	1608	1609	1628	N28	E42	5092	08	2.9	20	SF	C 1.5	3	E		33		F
0347		30	17331	17345	1748	N28	E42	5092	08	3.0	15	SF	C 2.8				40		F
	HOLL	30	1733	1734	1748	N28	E42	5092	08	3.0	15	SF	C 2.8	3	E		45		F
	PALE	30	1734	1739	1748	N28	E42	5092	08	3.0	14	SF	C 2.8	3	E		34		
0348	HOLL	30	1857	1857	1902	N27	E41	5092	08	3.0	5	SF		4	E		11		
0349	HOLL	30	2104	2106U	2133	N16	W15	5090	07	29.7	29	SF		3	E		27		F
0350		30	21253	21331	2154	S22	W16	5084	07	29.7	29	1N	C 6.1				123		FU
	HOLL	30	2125	2134	2157	S23	W16	5084	07	29.6	32	1N	C 6.1	3	E		154		UF
	PALE	30	2128	2133	2151	S22	W17	5084	07	29.6	23	SN	C 6.1	3	E		92		F
0351		30	2141	21418	2212	N25	E36	5092	08	2.7	31	SF					56		F
	HOLL	30	2139E	2149	2204	N25	E36	5092	08	2.7	25D	SF		3	E		74		F
	PALE	30	2141	2141	2219	N25	E36	5092	08	2.7	38	SF		3	E		37		F
0352		30	2355	23554	2406	N14	W14	5090	07	29.9	11	SF	C 2.4				68		F
	LEAR	30	2355	2355	2409	N13	W14	5090	07	29.9	14	SF	C 2.4	3	E		45		F
	PALE	30	2355	2359	2404	N14	W15	5090	07	29.9	9	SF	C 2.4	3	E		92		F
0353		31	0242	02431	0249	N16	W17	5090	07	29.8	7	SF					27		
	LEAR	31	0242	0243	0248	N16	W17	5090	07	29.8	6	SF		3	E		12		
	PALE	31	0242	0244	0250	N16	W17	5090	07	29.8	8	SF		3	E		42		
0354	LEAR	31	0252	0300	0318	N33	E42	5095	08	3.4	26	SF		3	E		35		
0355	LEAR	31	0300	0300	0307	N24	E32	5092	08	2.6	7	SF		3	E		18		
0356	LEAR	31	0346	0349	0418	N13	W17	5090	07	29.9	32	SF	C 2.2	3	E		21		
0357	LEAR	31	0628	0638	0654	N26	E34	5095	08	2.9	26	SF		3	E		26		F
0358	LEAR	31	0654	0656	0703	N15	W19	5090	07	29.8	9	SF		3	E		17		F
0359		31	07183	07243	0813	N34	E41	5095	08	3.6	55	1B	M 4.0				145	0.5	F
	LEAR	31	0718	0727	0812	N34	E41	5095	08	3.6	54	1B	M 4.0	3	E		234		F
	SVTO	31	0721	0724	0814	N35	E41	5095	08	3.6	53	1B	M 4.0	3	E		170		F
	YUNN	31	0800E	0804U	0813D	N34	E41	5095	08	3.6	13D	SB	M 4.0		P	0804	32	0.5	
0360		31	0852	0901	0916	N12	W20	5090	07	29.9	24	SN					56	0.4	F
	LEAR	31	0852	0901	0916	N12	W20	5090	07	29.9	24	SF		3	E		81		F
	YUNN	31	0855E	0902U	0902D	N13	W21	5090	07	29.8	7D	SB			P	0902	32	0.4	

H - ALPHA SOLAR FLARES

JULY 1988

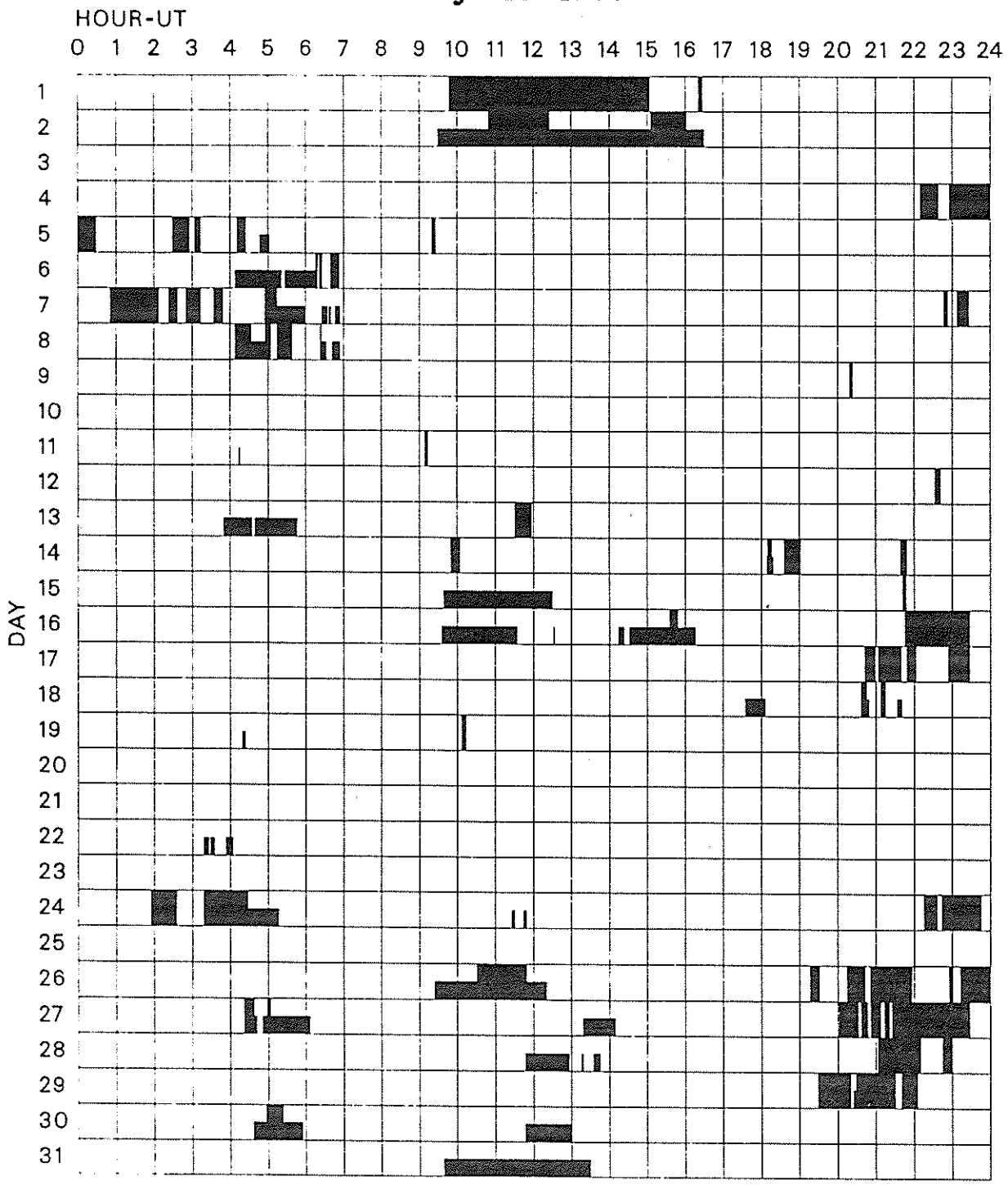
Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
0361	SVTO	31	1452E	1453U	1520	N34	E38	5092	08	3.6	28D	SN	C 3.2	3	E		46		F
0362		31	1540*	16101	1641	N32	E32	5092	08	3.2	61	SF	C 3.9				62		FH
	RAMY	31	1540	1611	1651	N32	E33	5092	08	3.3	71	SF	C 3.9	3	E		84		F
	HOLL	31	1602	1610	1631	N32	E30	5092	08	3.0	29	SF	C 3.9	4	E		47		FH
	SVTO	31	1606E	1607U	1640	N32	E32	5092	08	3.2	34D	SN	C 3.9	3	E		55		F
0363	HOLL	31	1642	1651	1704	S26	E42	5097	08	3.9	22	SF		4	E		36		F
0364		31	18011	18036	1821	N34	E35	5092	08	3.5	20	SF					28		F
	PALE	31	1801	1809	1821	N34	E36	5092	08	3.6	20	SF		3	E		54		
	RAMY	31	1801	1809	1823	N33	E34	5092	08	3.4	22	SF		2	E		12		
	HOLL	31	1802	1803	1820	N34	E35	5092	08	3.5	18	SF		4	E		17		F
0365	PALE	31	2129	2134	2144	N14	W30	5090	07	29.6	15	SF	C 2.1	3	E		34		
0366	HOLL	31	2310	2312	2333	N11	W47	5085	07	28.4	23	SF		3	E		25		

"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

JULY 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.

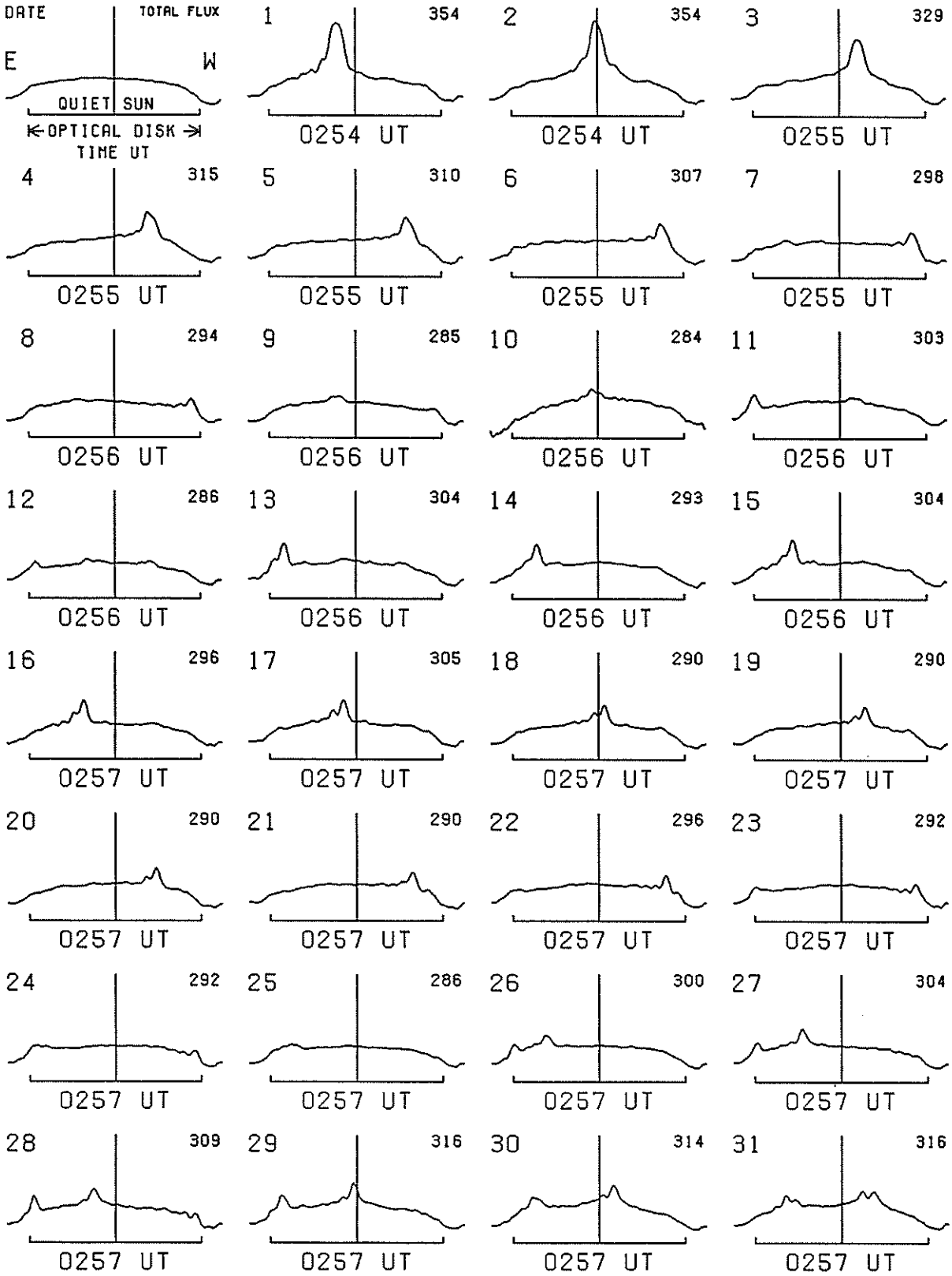
Holloman	Learmonth	Palehua	Peking Ramey	San Vito Yunnan

EAST-WEST SOLAR SCANS

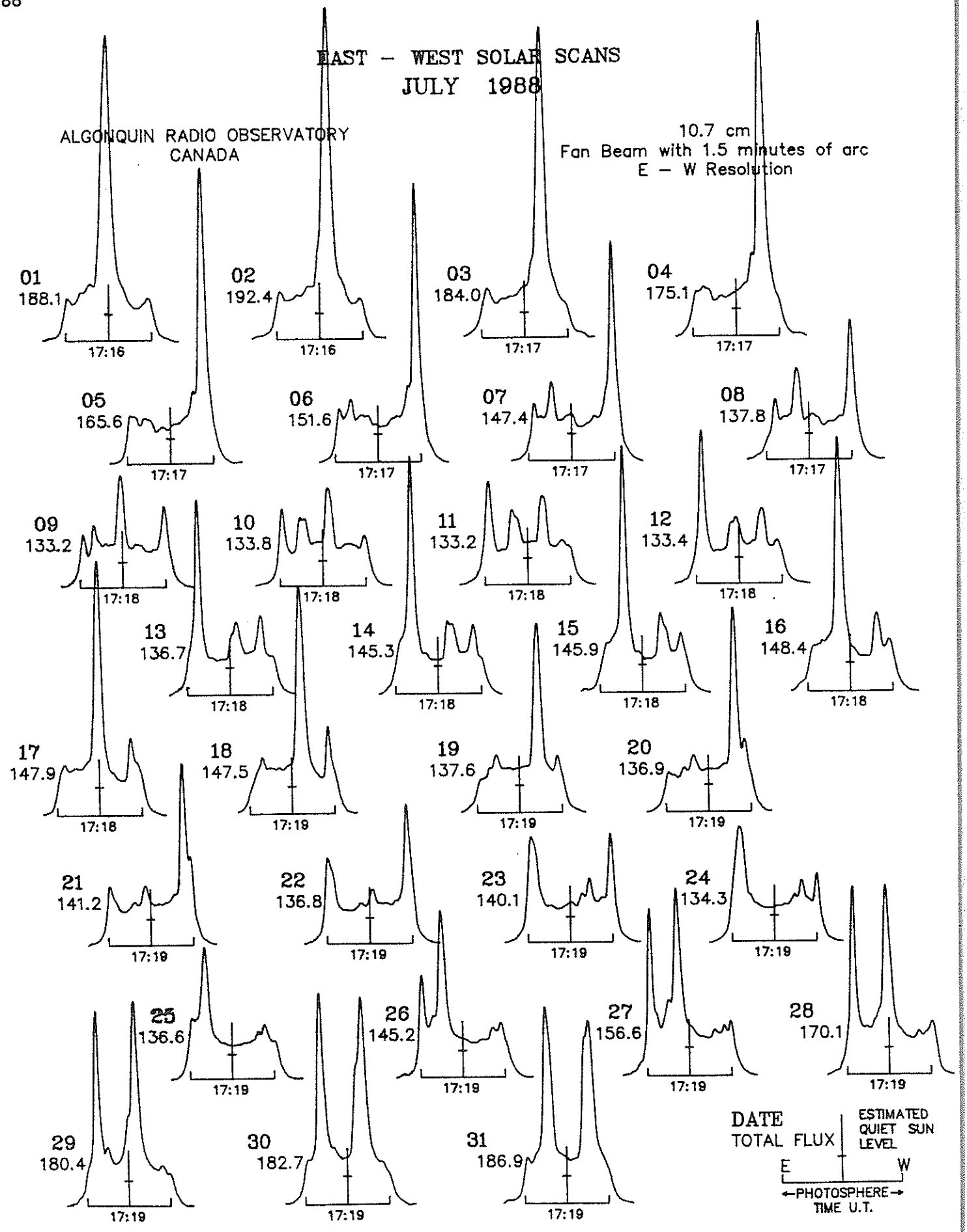
JULY 1988

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



34
Jul 88

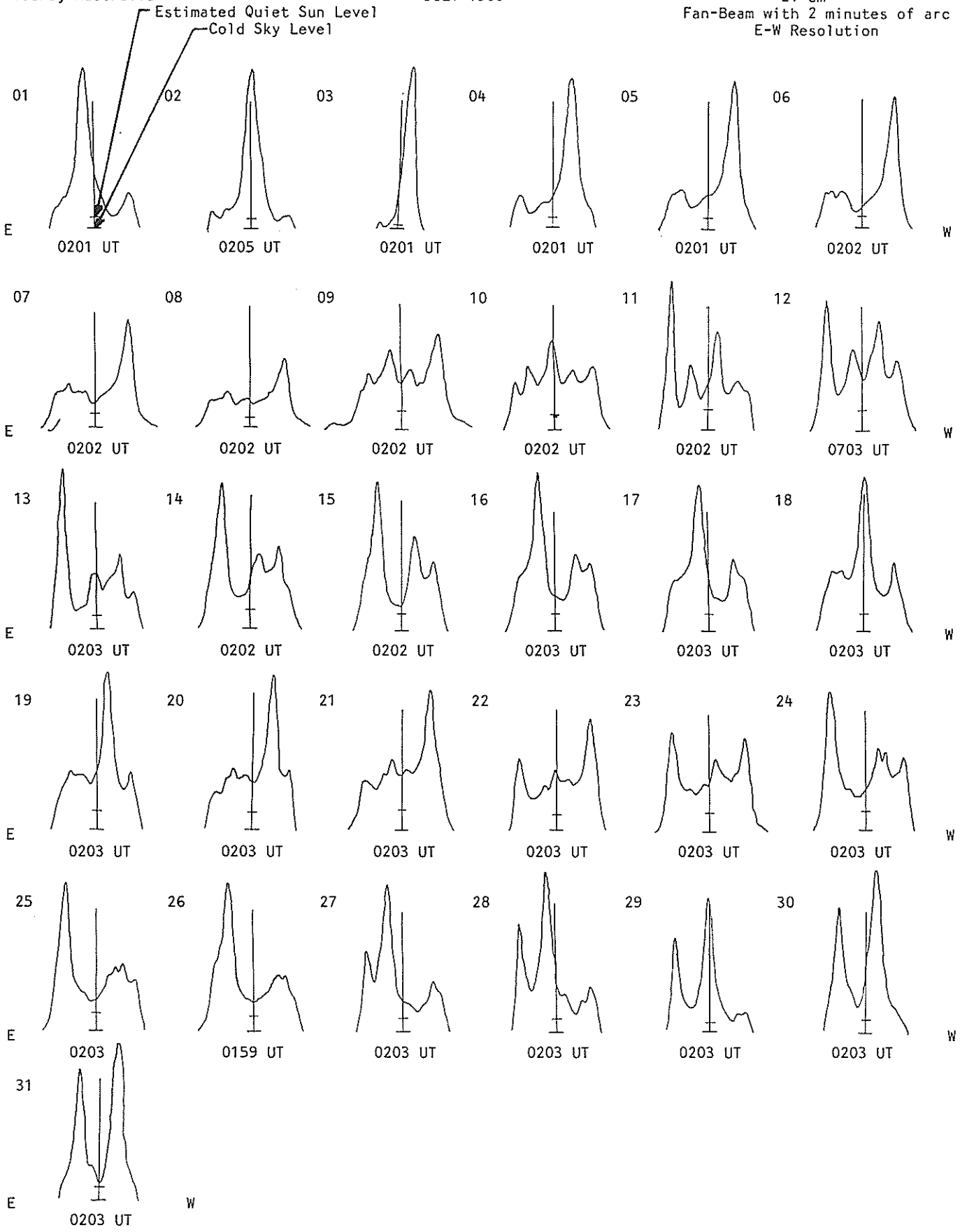

EAST – WEST SOLAR SCANS
JULY 1988
ALGONQUIN RADIO OBSERVATORY
CANADA
10.7 cm
Fan Beam with 1.5 minutes of arc
E – W Resolution
01 188.1 17:16
02 192.4 17:16
03 184.0 17:17
04 175.1 17:17
05 165.6 17:17
06 151.6 17:17
07 147.4 17:17
08 137.8 17:17
09 133.2 17:18
10 133.8 17:18
11 133.2 17:18
12 133.4 17:18
13 136.7 17:18
14 145.3 17:18
15 145.9 17:18
16 148.4 17:18
17 147.9 17:18
18 147.5 17:19
19 137.6 17:19
20 136.9 17:19
21 141.2 17:19
22 136.8 17:19
23 140.1 17:19
24 134.3 17:19
25 136.6 17:19
26 145.2 17:19
27 156.6 17:19
28 170.1 17:19
29 180.4 17:19
30 182.7 17:19
31 186.9 17:19
DATE
TOTAL FLUX
ESTIMATED QUIET SUN LEVEL
E
W
←PHOTOSPHERE→
TIME U.T.

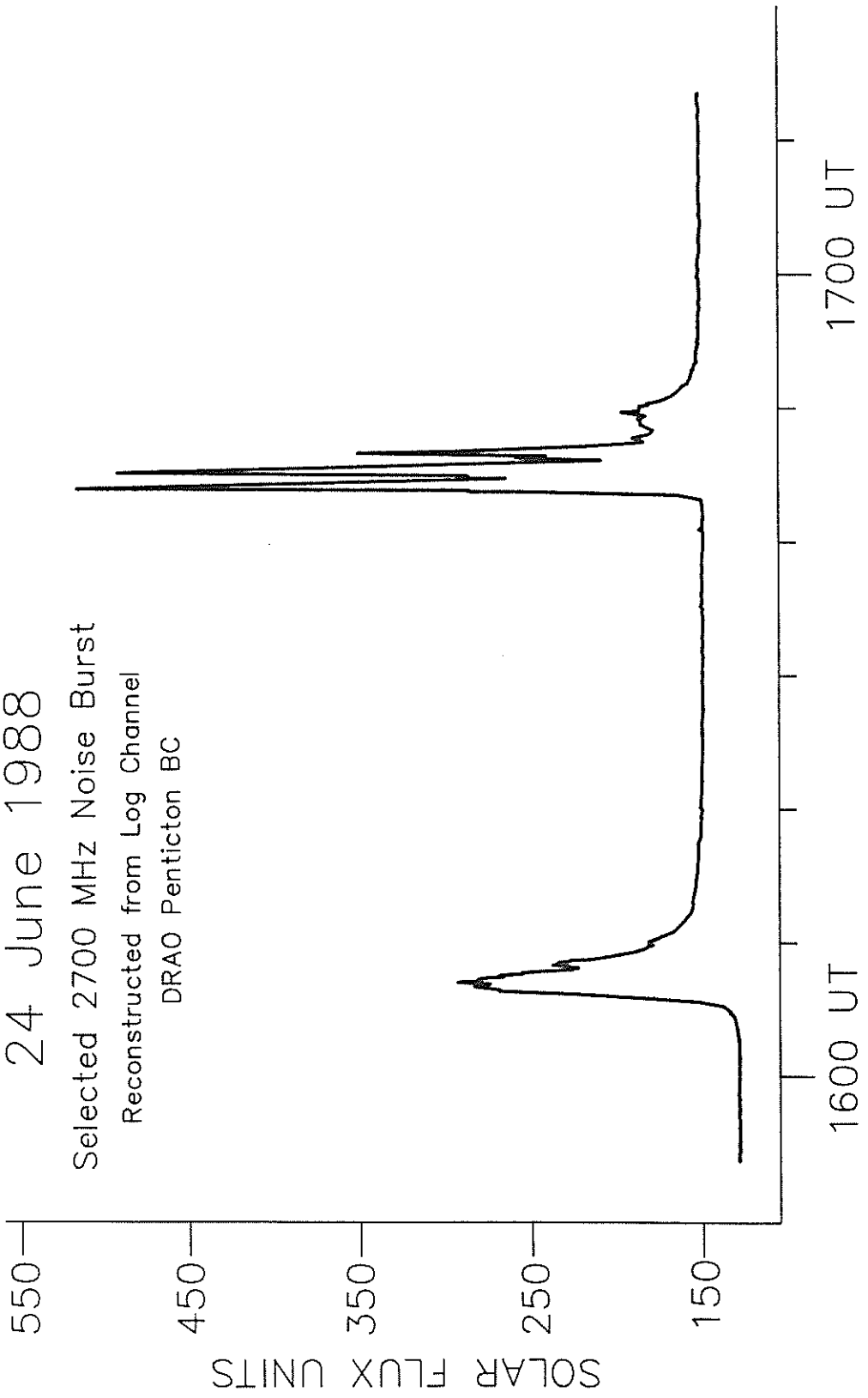
E A S T - W E S T S O L A R S C A N S

Fleurs, Australia

JULY 1988

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




24 June 1988
Selected 2700 MHz Noise Burst
Reconstructed from Log Channel
DRAO Penticton BC
SOLAR FLUX UNITS
550
450
350
250
150
1600 UT
1700 UT

JULY 1988

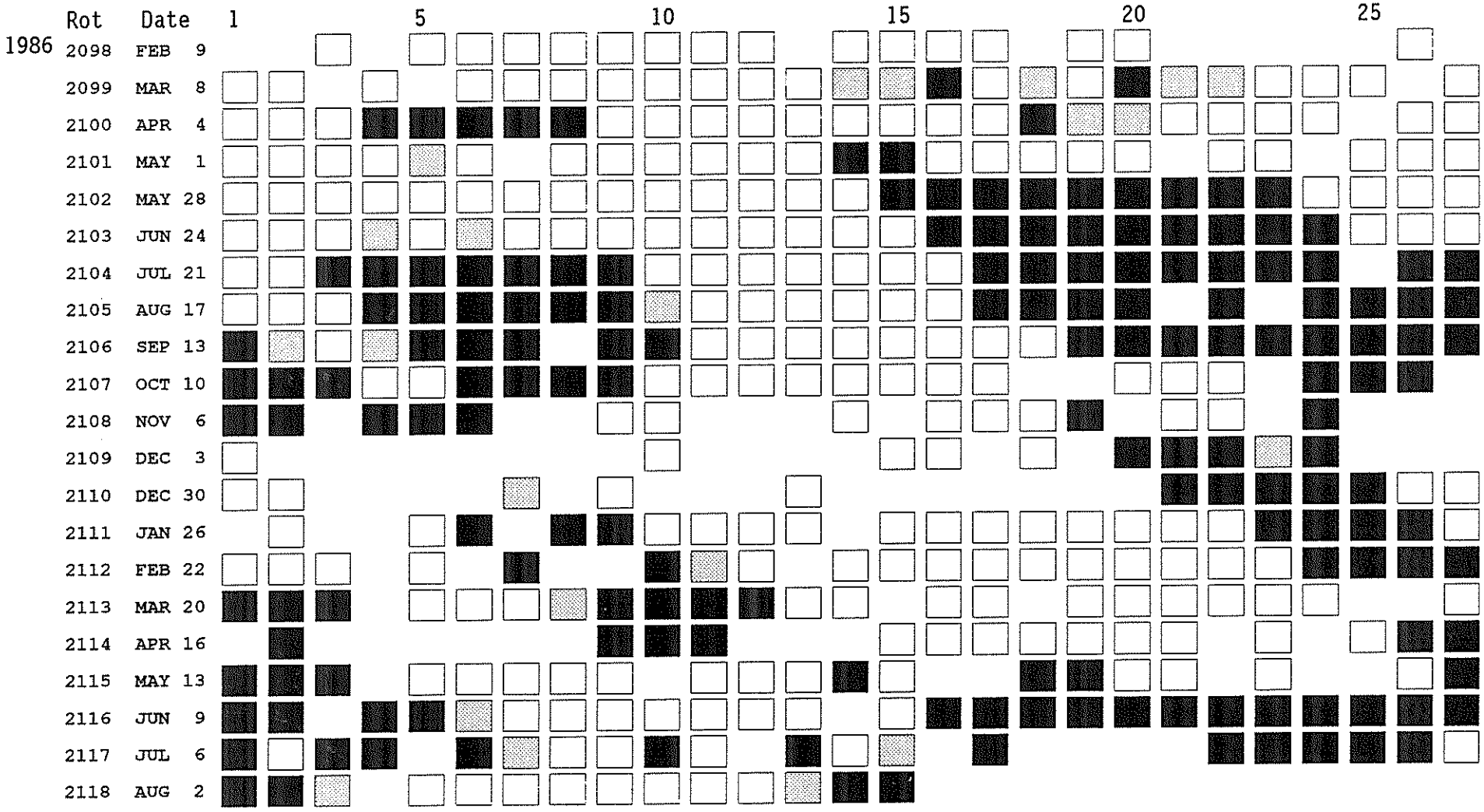
Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remark
01	2800	OTTA	22	GRF	1449.0	1456.8	165.0	142.0	7.0		
	8800	SGMR	4	S/F	1541.0	1549.0	8.0	60.0			QL=1 ST=3 TYP=3
	8800	SVTO	20	GRF	1541.0	1549.0	17.0	60.0			QL=1 ST=2 TYP=2
	8800	SGMR	4	S/F	1549.0	1549.0	8.0	60.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	2106.0	2106.0	1.0	110.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	2106.0	2106.0	1.0	120.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	2316.0	2316.0	1.0	76.0			QL=1 ST=2 TYP=3
02	2695	SVTO	4	S/F	0642.0	0642.0	10.0	61.0			QL=1 ST=3 TYP=3
	2695	LEAR	8	S	0643.0	0643.0	1.0	61.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0643.0	0643.0	8.0	30.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1330.0	1331.0	1.0	72.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1331.0	1331.0	1.0	58.0			QL=1 ST=2 TYP=3
03	2695	LEAR	4	S/F	0044.0	0044.0		83.0			QL=1 ST=1 TYP=3
	8800	LEAR	4	S/F	0044.0	0044.0	3.0	120.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0044.0	0044.0	2.0	83.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0044.0	0044.0	2.0	99.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0044.0	0044.0	1.0	120.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1417.5	1418.0	150.0	205.0	9.0		
	8800	PALE	8	S	2146.0	2146.0	1.0	92.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	2146.0	2146.0	1.0	82.0			QL=1 ST=2 TYP=3
05	2695	LEAR	4	S/F	0210.0	0210.0		44.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0429.0	0429.0	1.0	33.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0611.0	0611.0	1.0	120.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0930.0	0930.0	1.0	60.0			QL=1 ST=2 TYP=3
	2695	SGMR	4	S/F	2154.0	2154.0	4.0	94.0			QL=1 ST=2 TYP=3
06	8800	PALE	49	GB	2101.0	2111.0	18.0	580.0			QL=1 ST=2 TYP=7
07	8800	LEAR	8	S	0557.0	0559.0	2.0	21.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0558.0	0558.0	1.0	12.0			QL=1 ST=2 TYP=3
	3200	BERN	3	S	1437.0	1445.0	16.0	17.0			
	8400	BERN	3	S	1437.0	1445.0	16.0	40.0			
08	8400	BERN	3	S	0754.0	0754.3	1.5	780.0			
	8800	LEAR	4	S/F	0334.0	0335.0	4.0	31.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0334.0	0335.0	3.0	69.0			QL=1 ST=2 TYP=3
	2695	PALE	4	S/F	0334.0	0335.0	4.0	70.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0754.0	0754.0		21.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0754.0	0754.0	1.0	420.0			QL=1 ST=2 TYP=3
	8800	SGMR	8	S	1145.0	1146.0	1.0	110.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1145.0	1146.0	1.0	91.0			QL=1 ST=2 TYP=3
	8400	BERN	3	S	1145.0	1146.2	3.0	135.0			
	8400	BERN	46	C	1201.0	1202.3	4.0	140.0			
	8800	SVTO	8	S	1202.0	1202.0	1.0	110.0			QL=1 ST=2 TYP=3
09	8800	LEAR	8	S	0717.0	0718.0	2.0	29.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0718.0	0718.0	1.0	21.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1743.0	1900.0	260.0	300.0D	4.0		
	2695	LEAR	4	S/F	2339.0	2341.0	3.0	34.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	2339.0	2342.0	6.0	71.0			QL=1 ST=2 TYP=3
11	2695	SGMR	8	S	1125.0	1125.0	2.0	52.0			QL=1 ST=2 TYP=3
12	2800	OTTA	24	R	1725.0	2140.0	300.0D	12.1	6.0		
13	2695	LEAR	8	S	0029.0	0030.0	2.0	52.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0029.0	0030.0	2.0	42.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0029.0	0030.0	2.0	50.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0029.0	0030.0	2.0	50.0			QL=1 ST=2 TYP=3
	2695	SYDN	8	S	0029.0	0030.0	2.0	33.0			QL= ST= TYP=3
14	2800	OTTA	22	GRF	1648.8	1657.0	75.0	15.8	7.0		
17	8800	SGMR	4	S/F	1331.0	1332.0	3.0	170.0			QL=1 ST=2 TYP=3
18	2800	OTTA	4	S/F	1539.4	1541.5	7.0	81.0	28.0		
	2695	SGMR	8	S	1541.0	1541.0	2.0	65.0			QL=1 ST=2 TYP=3

SOLAR RADIO EMISSION--SELECTED FIXED FREQUENCY EVENTS

JULY 1988

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remark
	2800	OTTA	4	S/F	1555.0	1603.4	16.0	23.7	6.0		
	2800	OTTA	4	S/F	1625.0	1626.0	9.0	284.0	85.0		
	2695	SGMR	8	S	1625.0	1626.0	2.0	280.0			QL=1 ST=2 TYP=3
	8800	SGMR	4	S/F	1625.0	1626.0		140.0			QL=1 ST=1 TYP=3
19	8800	LEAR	4	S/F	0026.0	0030.0	8.0	49.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0026.0	0034.0	10.0	54.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0142.0	0143.0	1.0	81.0			QL=1 ST=2 TYP=3
	8800	PALE	4	S/F	0142.0	0143.0	4.0	87.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0750.0	0753.0	4.0	110.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0751.0	0753.0	3.0	56.0			QL=1 ST=2 TYP=3
	2695	SVTO	8	S	0752.0	0752.0	1.0	100.0			QL=1 ST=3 TYP=3
	2800	OTTA	4	S/F	1210.9	1215.8	6.8	57.2	26.0		
	2800	OTTA	29	PBI	1217.7	1217.7	22.3	16.1	8.0		
	2800	OTTA	4	S/F	1346.7	1347.4	2.3	28.2	14.0		
	2800	OTTA	4	S/F	1352.0	1353.0	3.0	34.7	17.0		
	2800	OTTA	4	S/F	1355.3	1356.1	2.9	39.2	19.0		
20	2695	SVTO	8	S	0707.0	0708.0	1.0	74.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0707.0	0708.0	1.0	50.0			QL=1 ST=2 TYP=3
21	8800	LEAR	4	S/F	0129.0	0131.0	4.0	120.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0129.0	0131.0	9.0	72.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0130.0	0130.0	1.0	130.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0130.0	0131.0	1.0	57.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	0204.0	0204.0	1.0	110.0			QL=1 ST=2 TYP=3
	2695	LEAR	8	S	0707.0	0708.0	2.0	76.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	0707.0	0708.0		74.0			QL=1 ST=1 TYP=3
	8800	LEAR	8	S	0708.0	0708.0	1.0	44.0			QL=1 ST=2 TYP=3
22	8800	SGMR	49	GB	1427.0E	1427.0	1.0D	2800.0			QL=1 ST=2 TYP=6
24	2695	SVTO	49	GB	0632.0	0647.0	48.0	530.0			QL=1 ST=2 TYP=6
	8800	SVTO	4	S/F	0637.0	0648.0	43.0	110.0			QL=1 ST=2 TYP=3
	8800	LEAR	4	S/F	0646.0	0648.0	6.0	59.0			QL=1 ST=2 TYP=3
	2695	LEAR	49	GB	0646.0E	0647.0	32.0D	570.0			QL=1 ST=2 TYP=6
25	2695	SVTO	49	GB	0954.0E	0955.0	5.0D	560.0			QL=1 ST=2 TYP=6
	8800	SVTO	8	S	0955.0	0955.0	2.0	280.0			QL=1 ST=2 TYP=3
	2800	OTTA	22	GRF	1845.0	2013.0	320.0	29.3	15.0		
26	2800	OTTA	3	S	1236.4	1237.3	6.7	32.0	8.0		
27	2695	SVTO	4	S/F	0710.0	0710.0	5.0	310.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0741.0	0743.0	2.0	2700.0			QL=1 ST=2 TYP=3
	8800	LEAR	8	S	0742.0	0743.0	2.0	130.0			QL=1 ST=3 TYP=3
	8800	SVTO	8	S	0743.0	0743.0	1.0	150.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0957.0	0957.0	1.0	140.0			QL=1 ST=2 TYP=3
	2695	PALE	4	S/F	1955.0	1957.0	3.0	86.0			QL=1 ST=3 TYP=3
	2695	SGMR	8	S	1956.0	1957.0	2.0	87.0			QL=1 ST=3 TYP=3
28	2695	LEAR	4	S/F	0732.0	0733.0	3.0	28.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	1009.0	1009.0	5.0	100.0			QL=1 ST=3 TYP=3
	8800	SGMR	4	S/F	1209.0	1209.0		74.0			QL=1 ST=2 TYP=3
29	8800	LEAR	8	S	0038.0	0039.0	2.0	52.0			QL=1 ST=3 TYP=3
	8800	PALE	8	S	0038.0	0039.0	1.0	52.0			QL=1 ST=2 TYP=3
30	8800	LEAR	8	S	0234.0	0235.0	1.0	26.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	0847.0	0848.0	2.0	360.0			QL=1 ST=2 TYP=3
	2695	SVTO	4	S/F	0848.0	0848.0	5.0	60.0			QL=1 ST=2 TYP=3
	8800	PALE	8	S	1710.0	1711.0	2.0	94.0			QL=1 ST=2 TYP=3
	8800	SVTO	8	S	1711.0	1711.0	1.0	120.0			QL=1 ST=2 TYP=3
31	8800	SVTO	4	S/F	0717.0	0724.0	8.0	120.0			QL=1 ST=2 TYP=5
	2695	SVTO	4	S/F	0717.0	0724.0	8.0	96.0			QL=1 ST=2 TYP=5
	8800	LEAR	4	S/F	0720.0	0724.0	8.0	71.0			QL=1 ST=2 TYP=3
	2695	LEAR	4	S/F	0720.0	0724.0	8.0	85.0			QL=1 ST=2 TYP=3

STANFORD MEAN SOLAR MAGNETIC FIELD



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

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1987 Aug	Sep	Oct	Nov	Dec	1988 Jan	Feb	Mar	Apr	May	Jun	Jul
1	39	12	-3	.	.	.	.	.	12	13	14	-35
2	43	-3	-4	-20	.	.	-16	-16	21	12	7	-51
3	27	-16	-3	-19	2	.	-5	1	.	28	.	-29
4	14	-19	-17	-24	.	.	16	22	35	29	33	-9
5	4	-31	-28	.	.	0	25	.	42	25	.	-13
6	-10	.	-35	-10	.	.	42	49	.	37	.	-39
7	-16	-49	-28	-12	.	20	40	50	45	.	12	39
8	-29	.	-24	.	.	.	.	49	41	39	-14	-18
9	-37	-50	-20	-28	.	.	62	44	53	.	-25	-29
10	-38	-39	-16	-28	.	.	56	53	47	6	-17	.
11	-36	-24	-6	-20	.	29	58	52	43	-8	.	-16
12	-43	-18	-3	.	19	.	58	49	36	-11	-14	-1
13	-32	-10	6	.	.	.	48	36	.	-22	-11	14
14	.	-1	7	4	.	.	47	35	.	-29	-1	15
15	-19	4	-11	5	.	.	23	21	8	-25	13	-6
16	-7	-1	-9	.	.	.	16	-13	.	.	22	2
17	2	-5	-10	.	22	.	-13	-9	-25	10	28	.
18	6	-5	-6	.	30	.	-22	-13	.	17	27	-3
19	3	-8	5	18	.	-12	-25	-9	.	15	30	3
20	-13	.	6	.	20	-22	-13	-20	.	12	37	-1
21	-15	-10	9	21	.	-35	11	-14	.	22	35	.
22	-18	-5	12	30	-10	-28	14	-8	.	.	.	-16
23	-22	7	23	3	-17	-15	35	.	.	5	15	.
24	-25	14	25	-10	-18	4	37	18	-6	5	-3	.
25	-18	19	21	.	-1	15	.	21	-20	4	-35	.
26	-2	21	23	4	-3	.	17	12	-26	-6	-67	.
27	12	22	.	4	.	23	.	-1	.	7	-75	-49
28	26	20	.	.	.	.	-14	-13	.	.	-80	-79
29	33	15	15	-5	.	.	.	-43	.	.	-57	-51
30	22	5	2	.	24	3		-40	18	-19	-29	-15
31	16		4		24	-15		-11		-13		-3

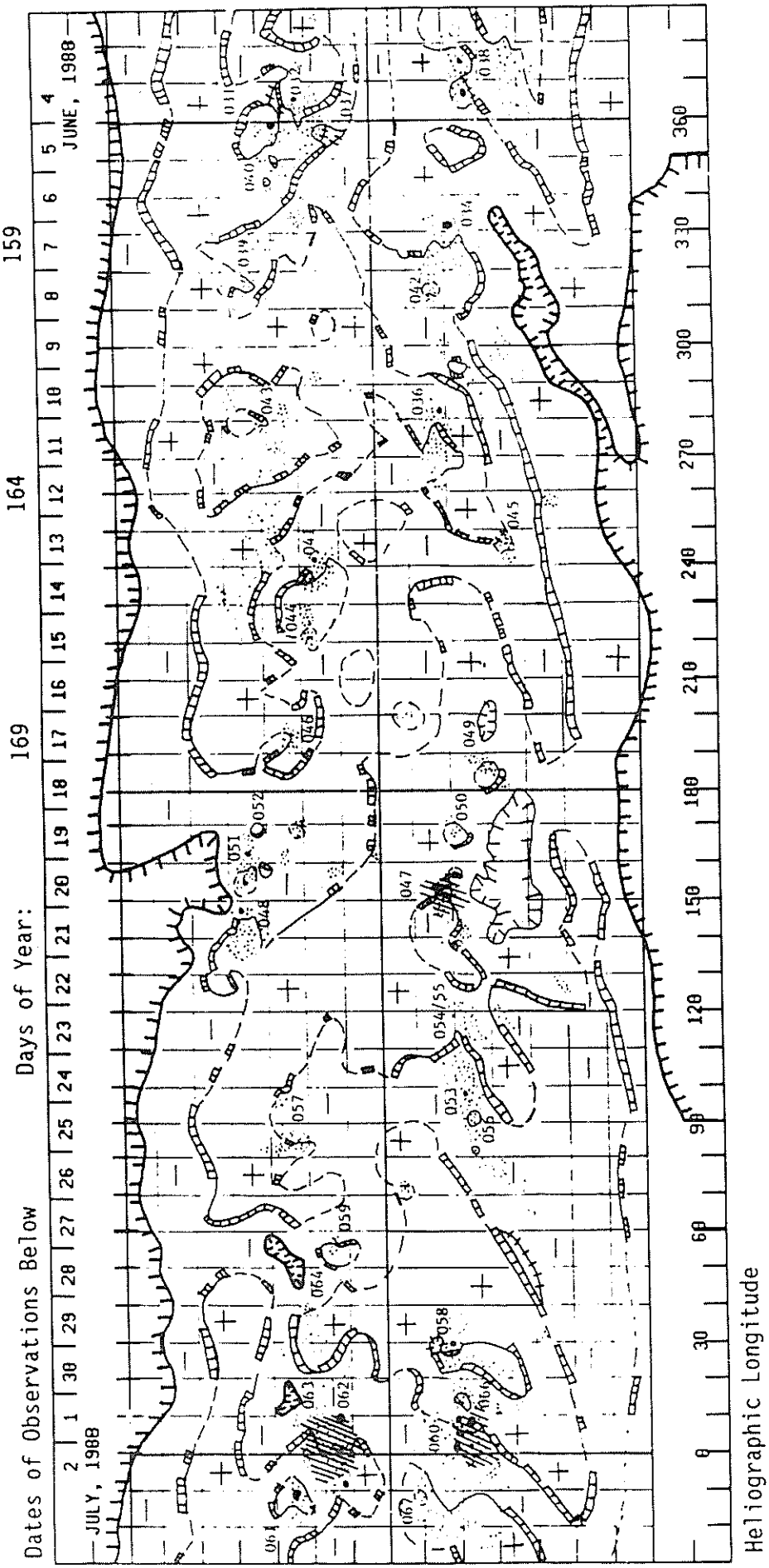
Dot symbol indicates no data available for the day.

C O N T E N T S

Prompt Reports DATA FOR **JUNE 1988** Number 528 Part I

PRELIMINARY H-ALPHA SOLAR SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1803
(5 June to 2 July 1988)

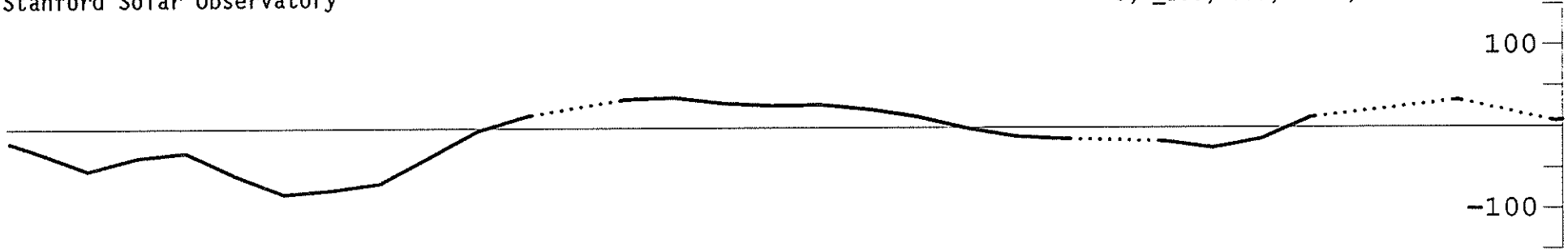


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1803
(5 June to 2 July 1988)

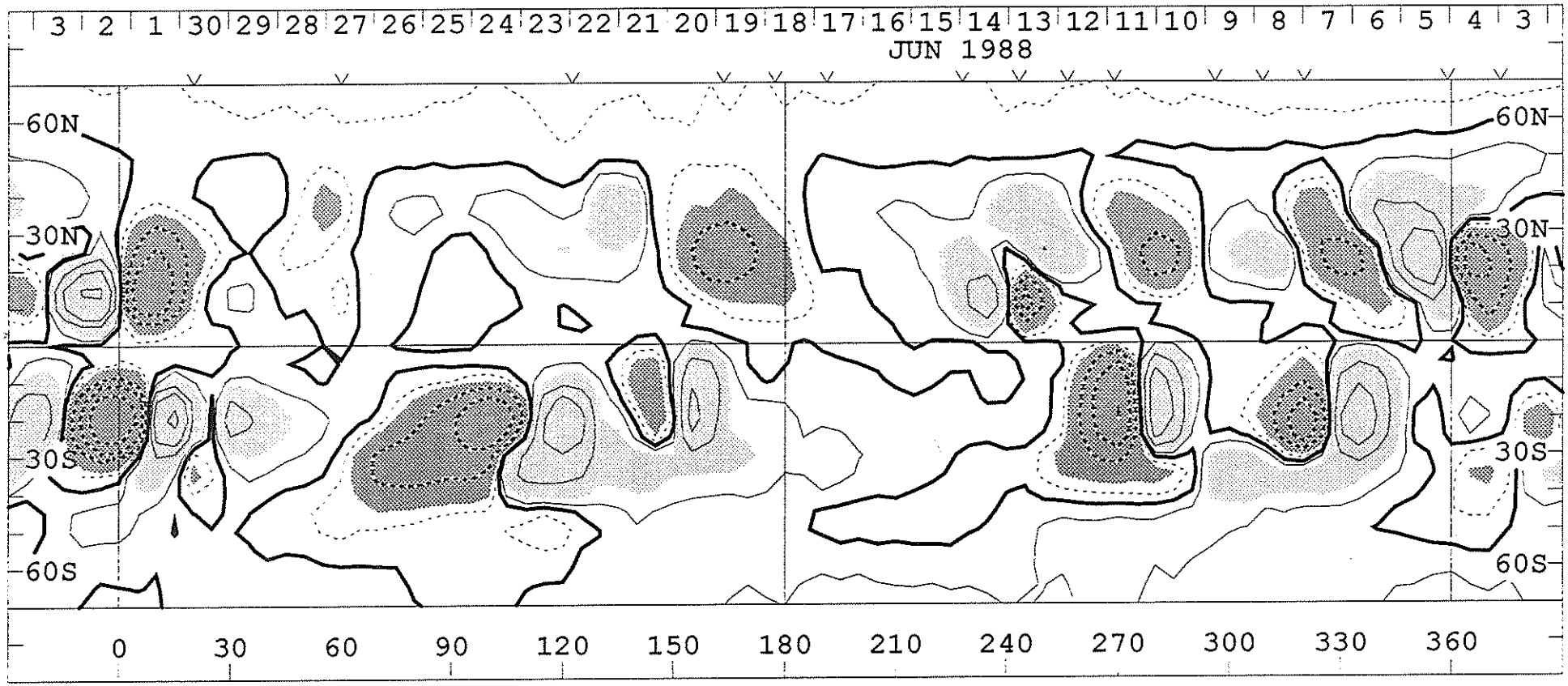
Stanford Solar Observatory

0, ±100, 500, 1000, 2000 microTesla



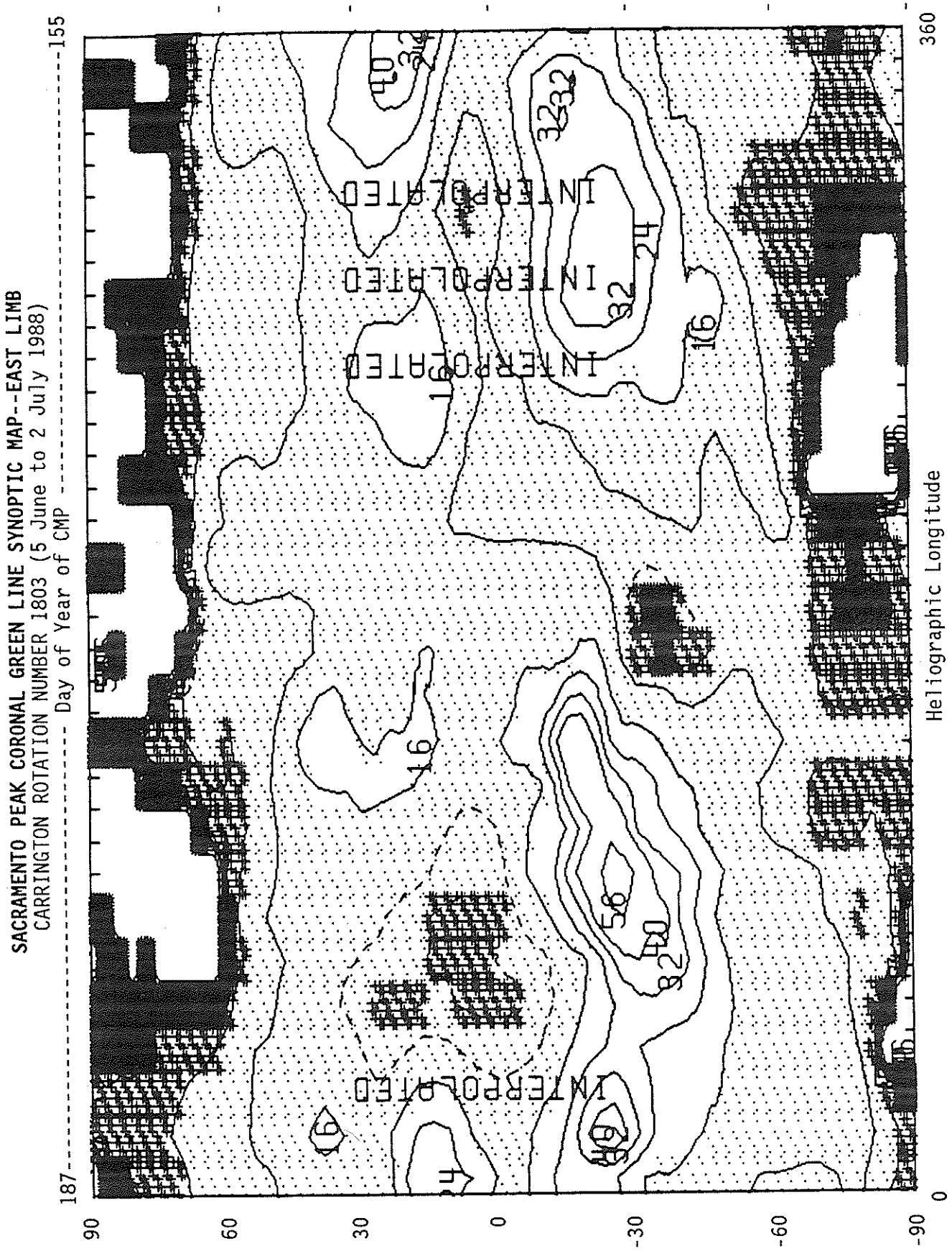
Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla

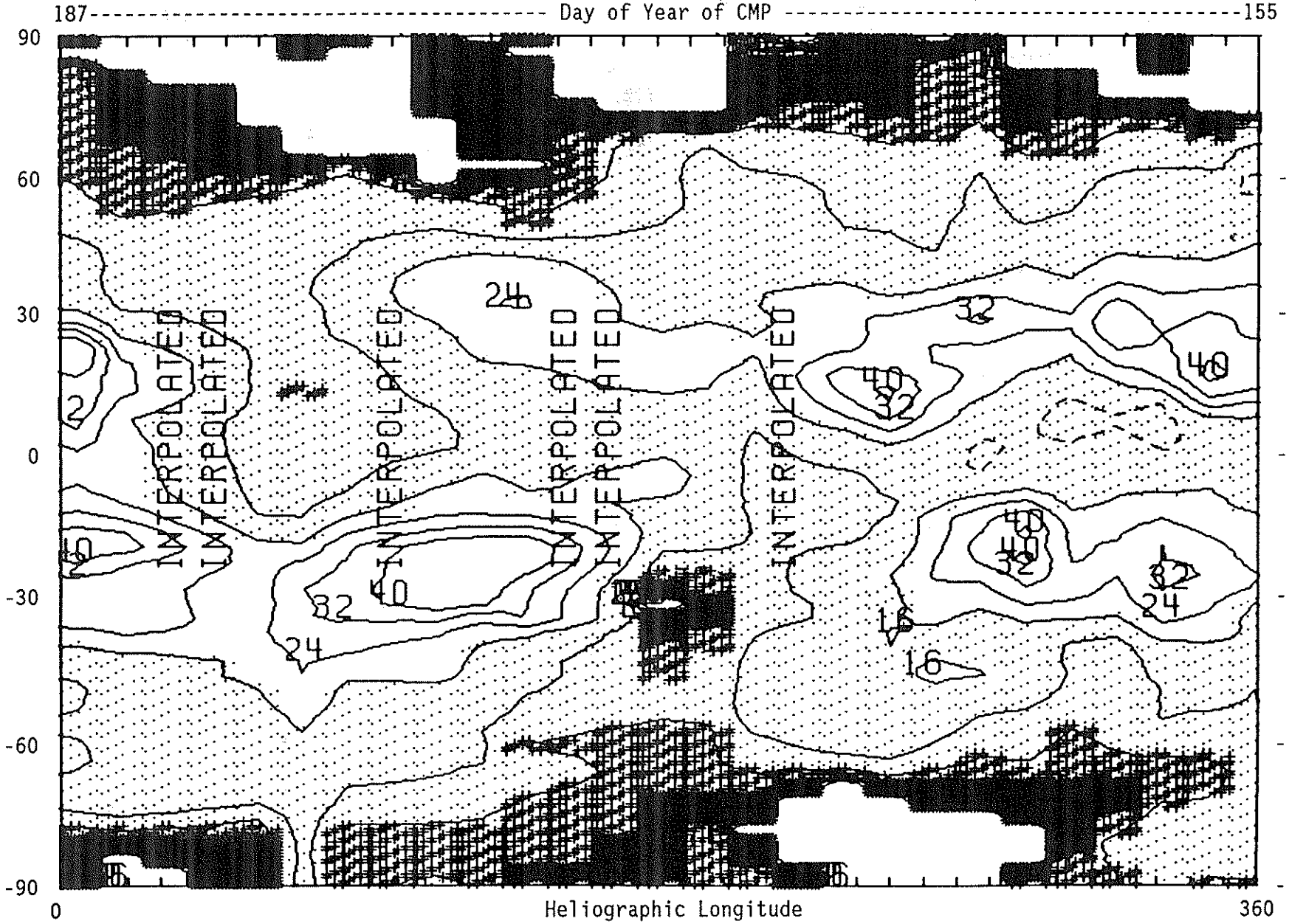


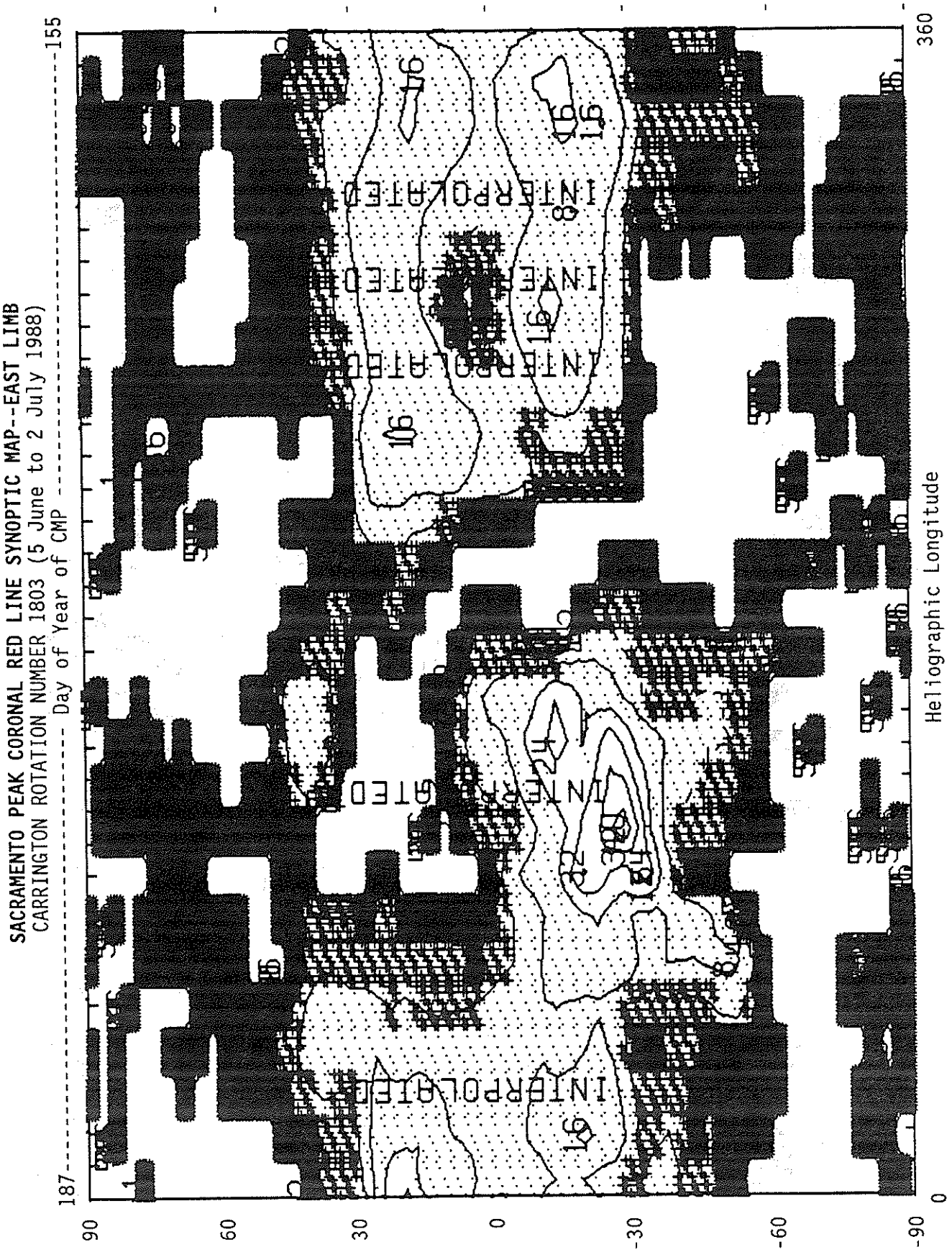
Heliographic Longitude

43
Jun 88


SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1803 (5 June to 2 July 1988)
187 ---------- Day of Year of CMP ---------- 155
INTERPOLATED
INTERPOLATED
INTERPOLATED
INTERPOLATED
90
60
30
0
-30
-60
-90
360
0
Heliographic Longitude

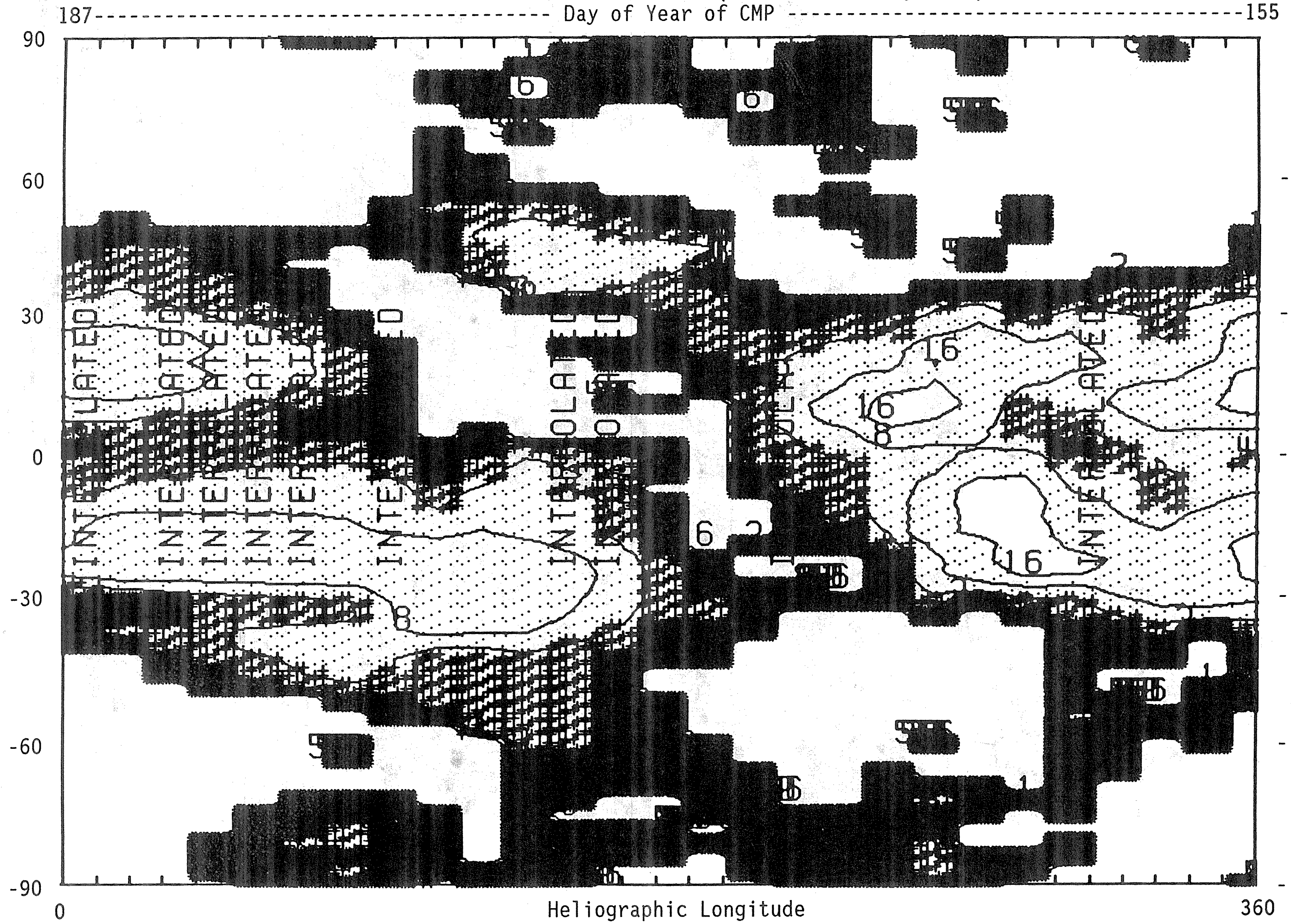
SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1803 (5 June to 2 July 1988)




SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1803 (5 June to 2 July 1988)
187 Day of Year of CMP 155
90
60
30
0
-30
-60
-90
0
360
Heliographic Longitude
INTERPOLATED

SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB

CARRINGTON ROTATION NUMBER 1803 (5 June to 2 July 1988)

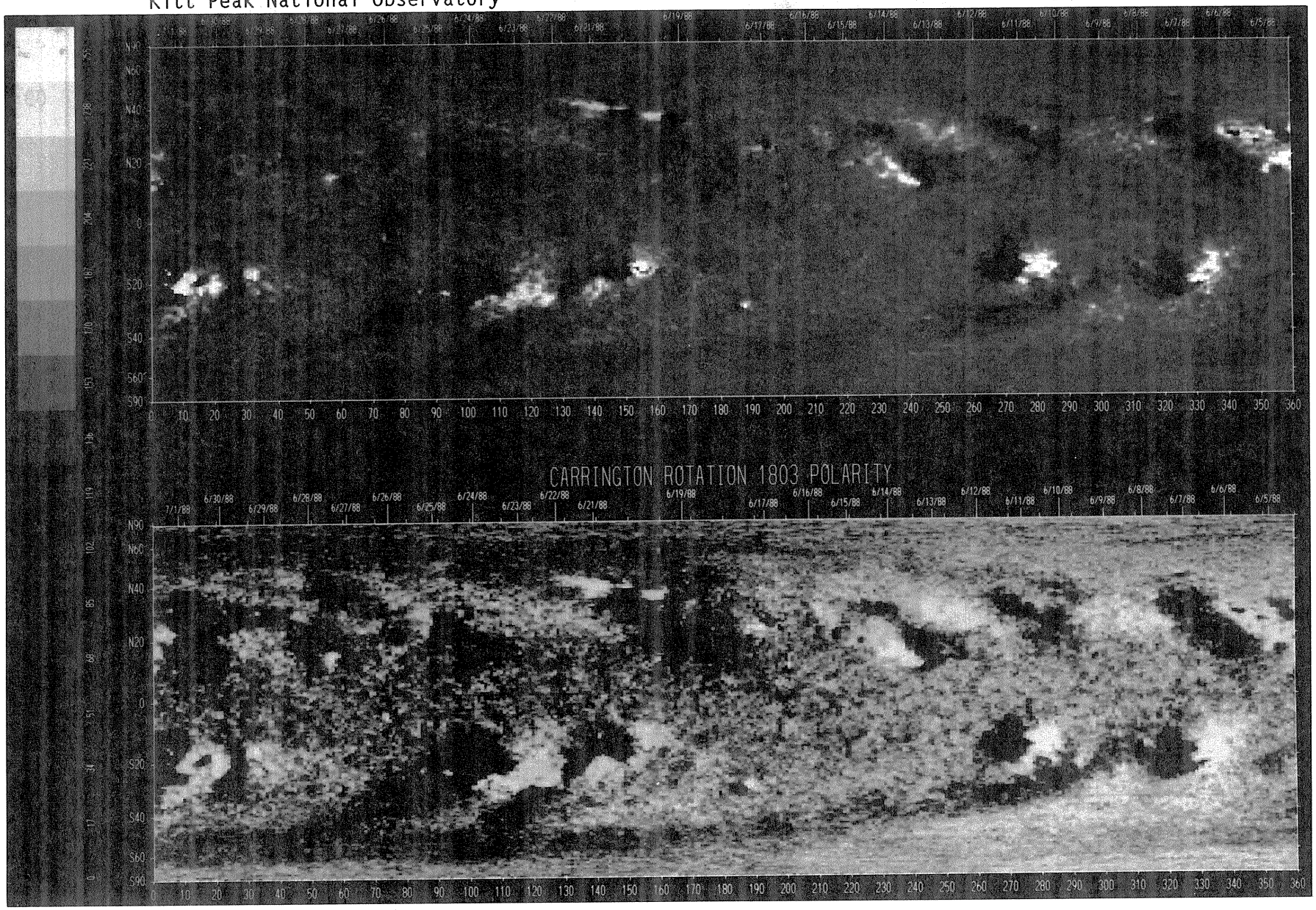


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1803
(5 June to 2 July 1988)

Kitt Peak National Observatory

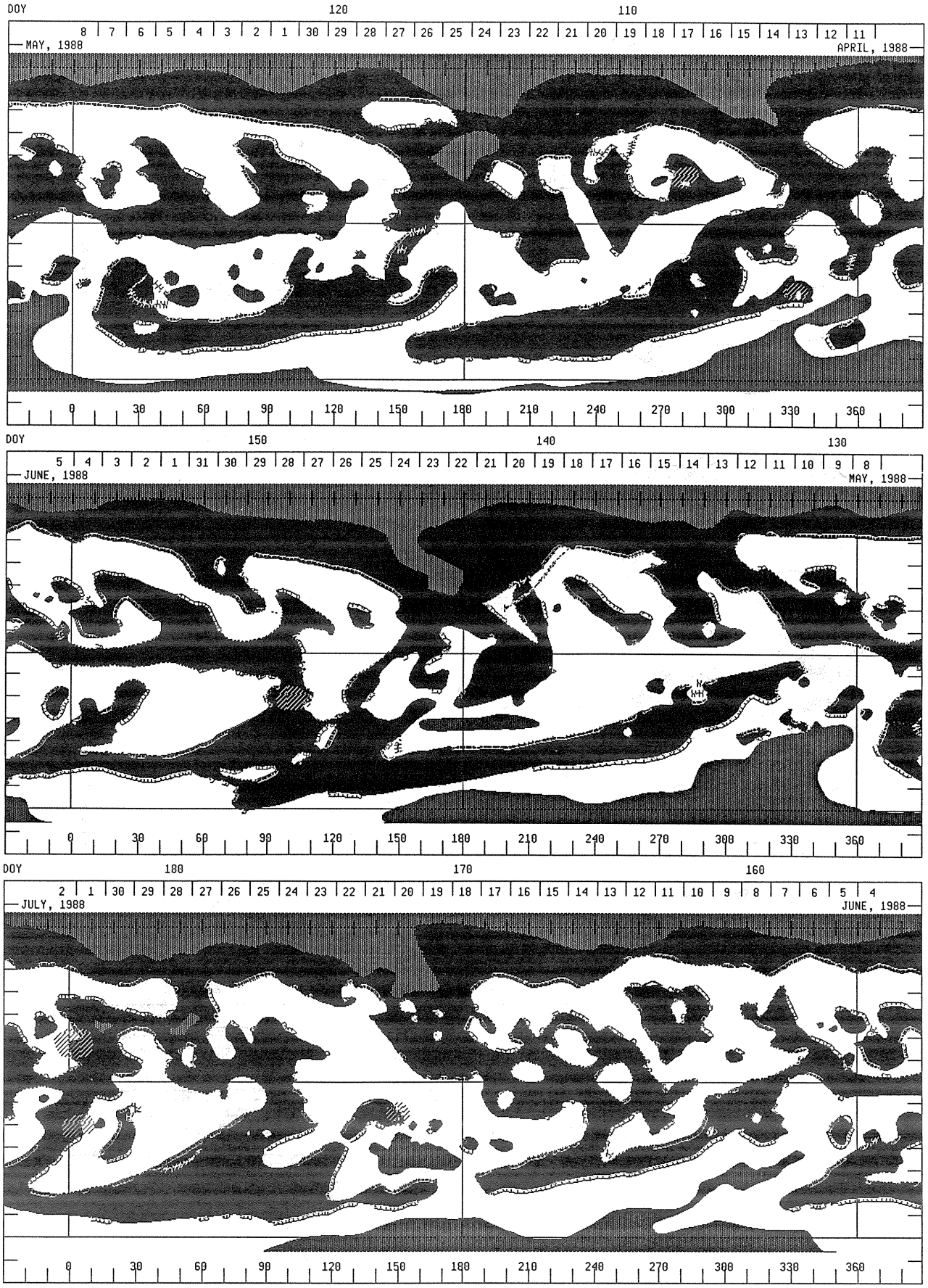
Dates of Observation



Heliographic Longitude

SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1801-1803 — 11 April to 2 July 1988



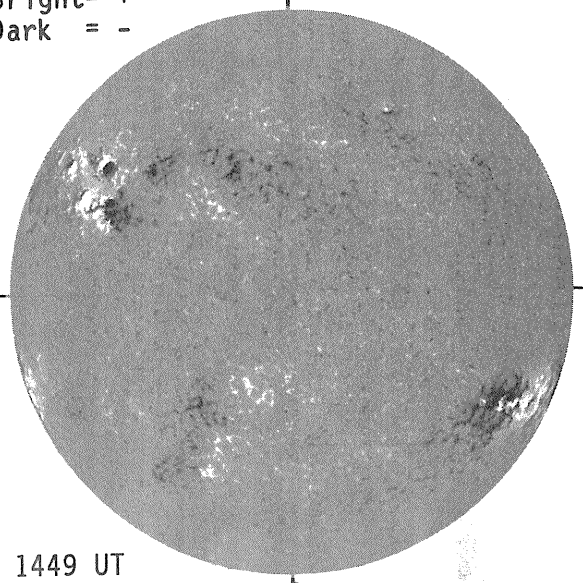
□ = *Positive Polarity* ■ = *Negative Polarity* ▩ = *10830 Coronal Hole Estimate* ▨ = *X-Ray Flares > M1*

Heliographic Longitude

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



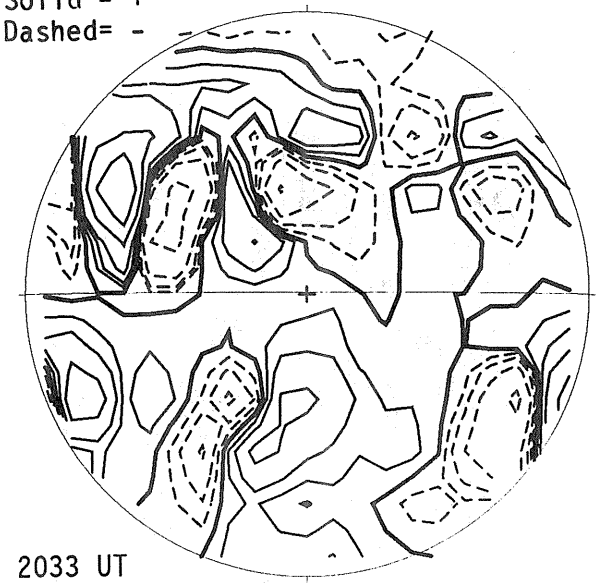
E

1449 UT

STANFORD MAGNETOGRAM

Np

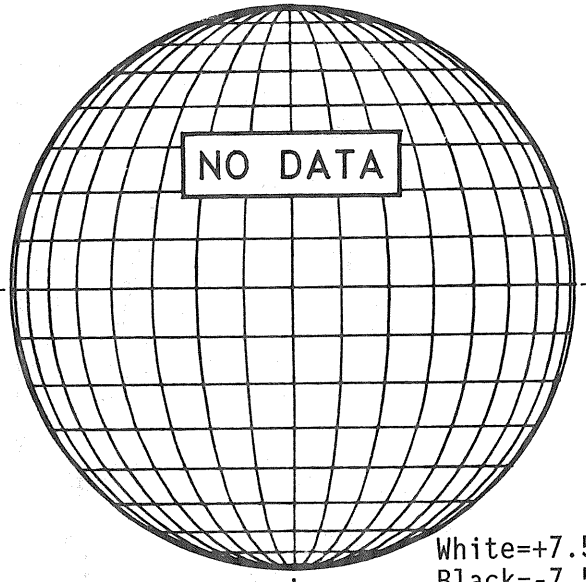
Solid = +
Dashed= -



2033 UT

MT. WILSON MAGNETOGRAM

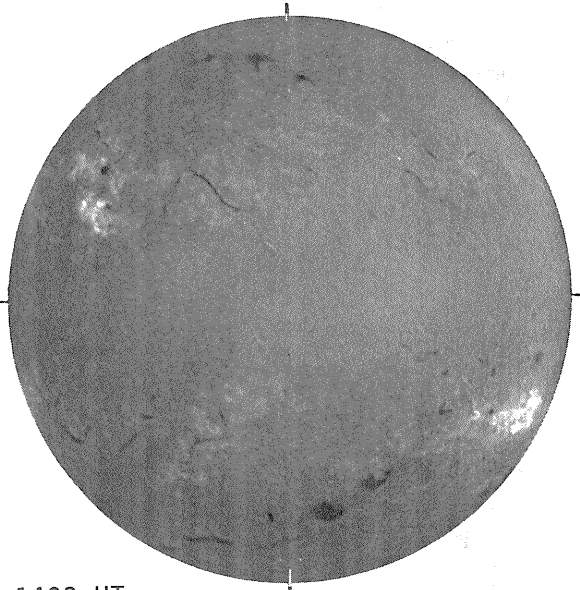
Np



W

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

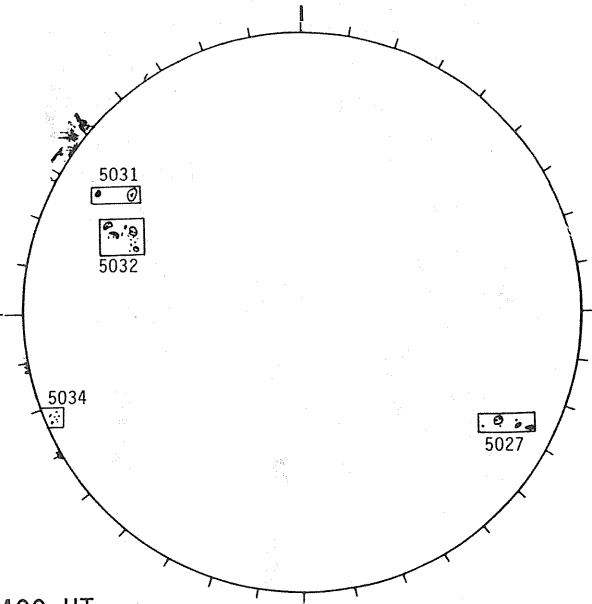


E

1429 UT

Sp

BOULDER SUNSPOTS



1400 UT
1429 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)

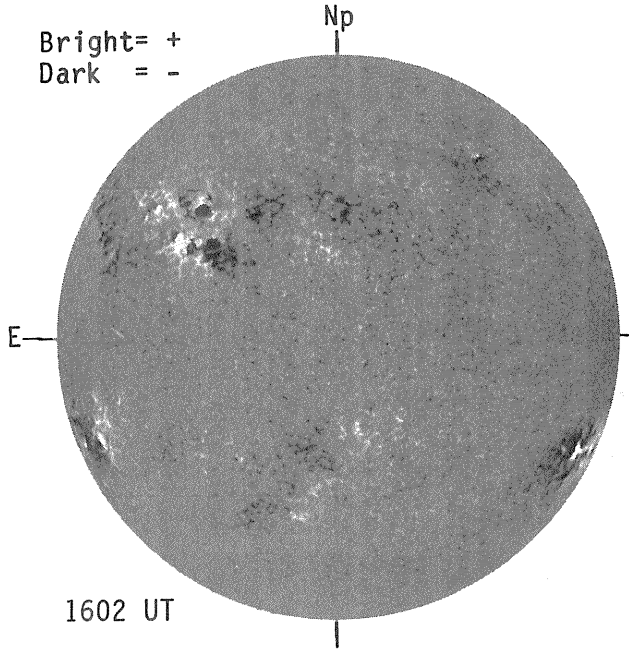
W

Sp

JUNE 01, 1988 (P=-15.35, B_o=-0.62, L_o= 53.46)

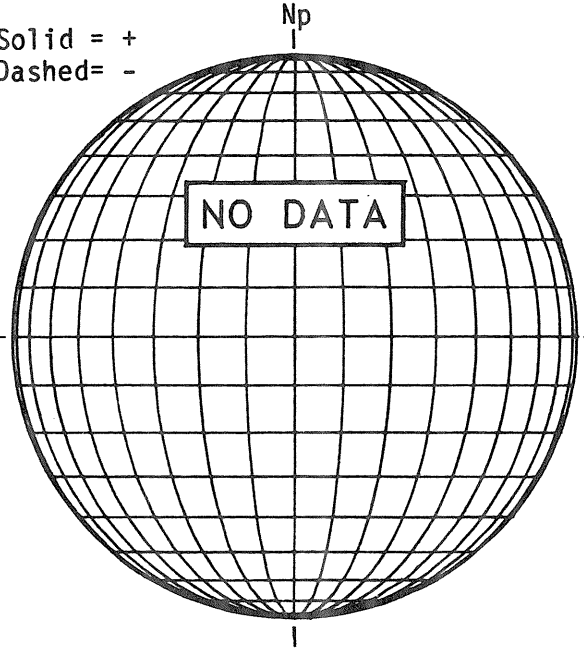
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



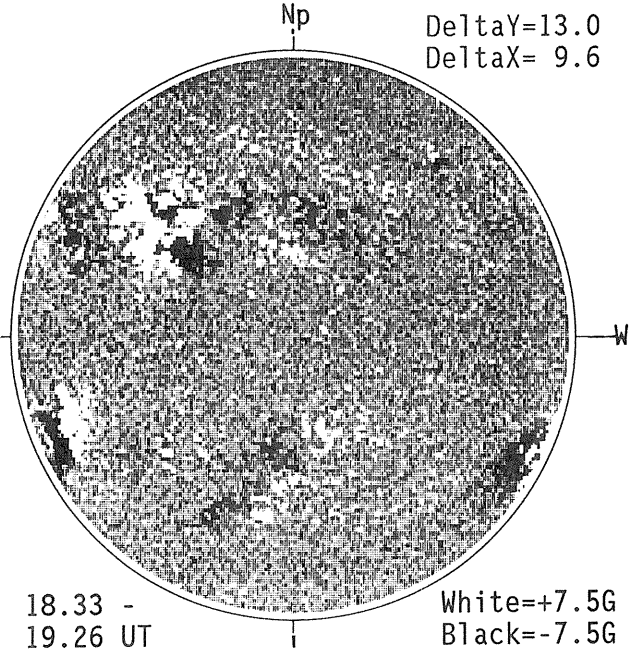
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

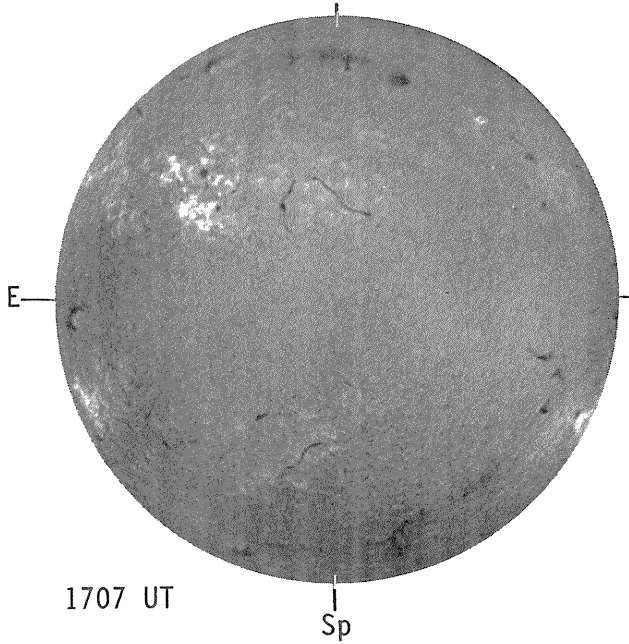


MT. WILSON MAGNETOGRAM

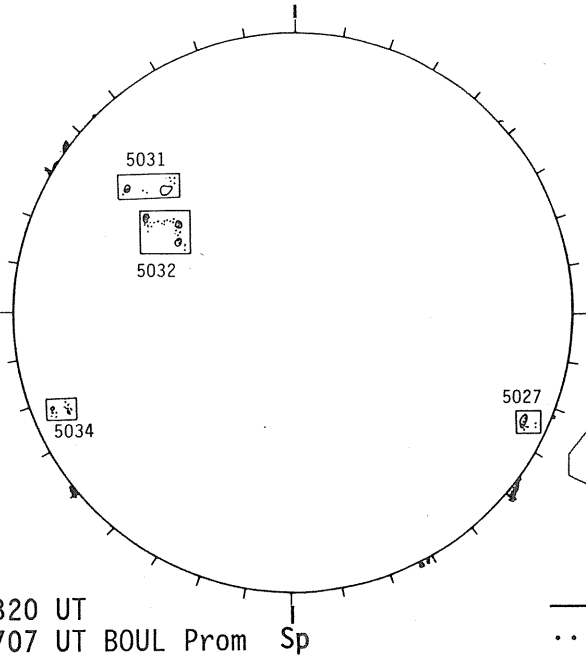
DeltaY=13.0
DeltaX= 9.6



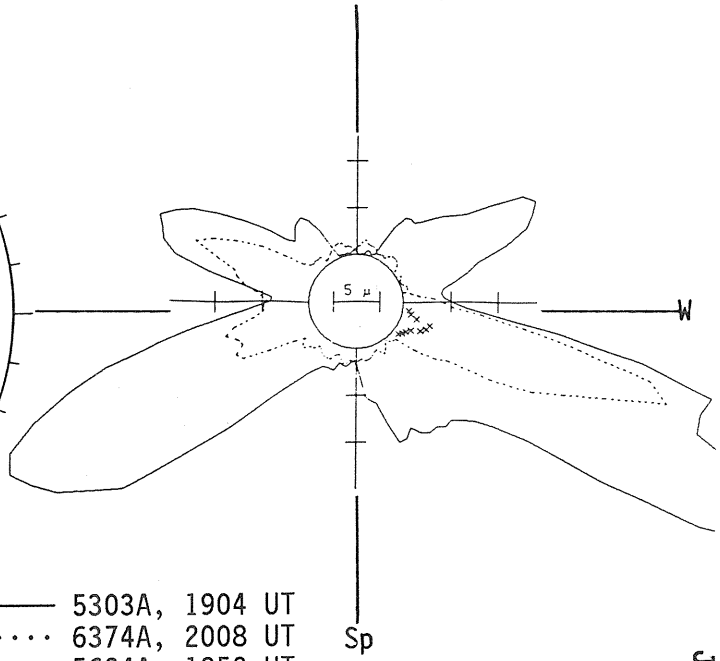
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



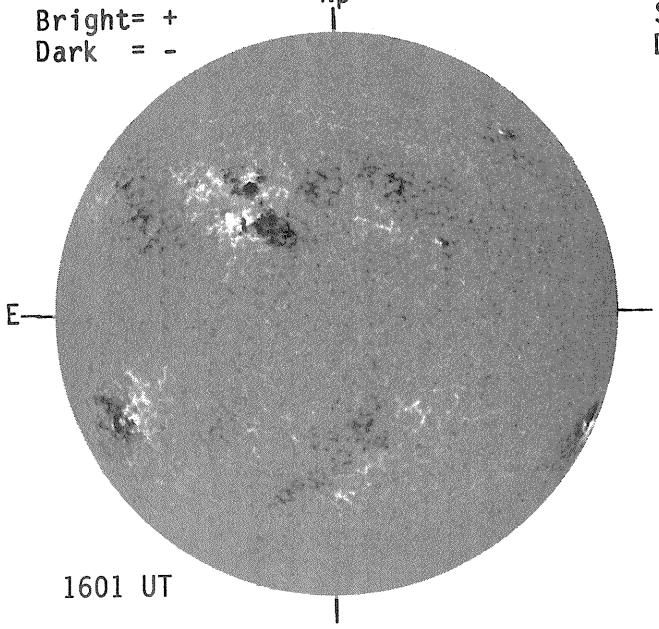
—— 5303A, 1904 UT
···· 6374A, 2008 UT
xxxx 5694A, 1959 UT

JUNE 02, 1988 (P=-14.98, B_0=-0.50, L_0= 40.23)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



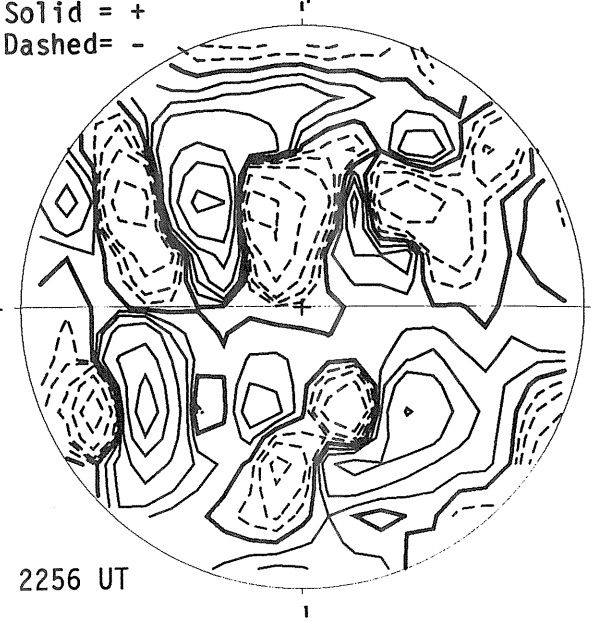
E

1601 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

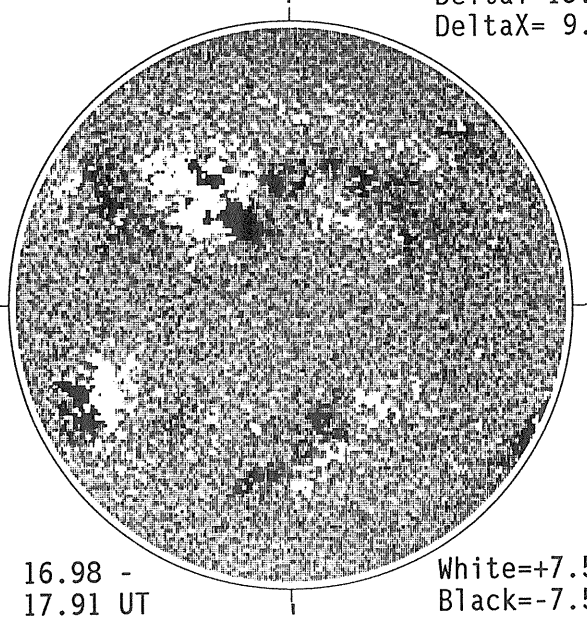


2256 UT

MT. WILSON MAGNETOGRAM

Np

DeltaY=13.0
DeltaX= 9.6

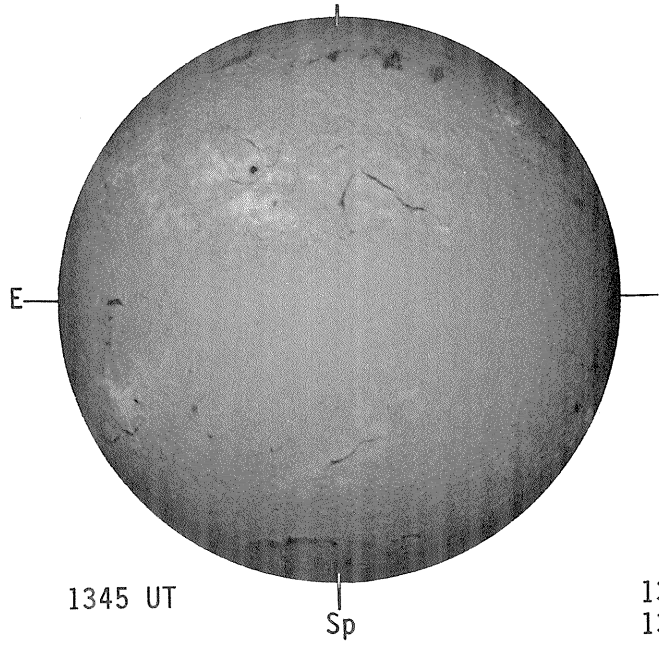


W

16.98 -
17.91 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

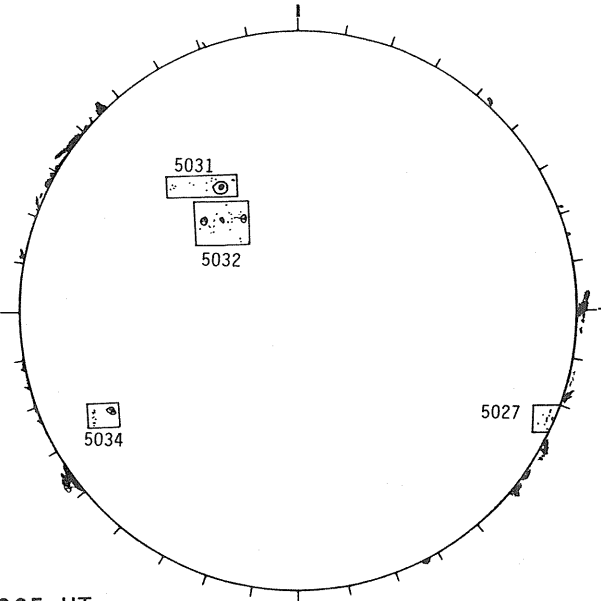


E

1345 UT

Sp

BOULDER SUNSPOTS



1325 UT
1345 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)

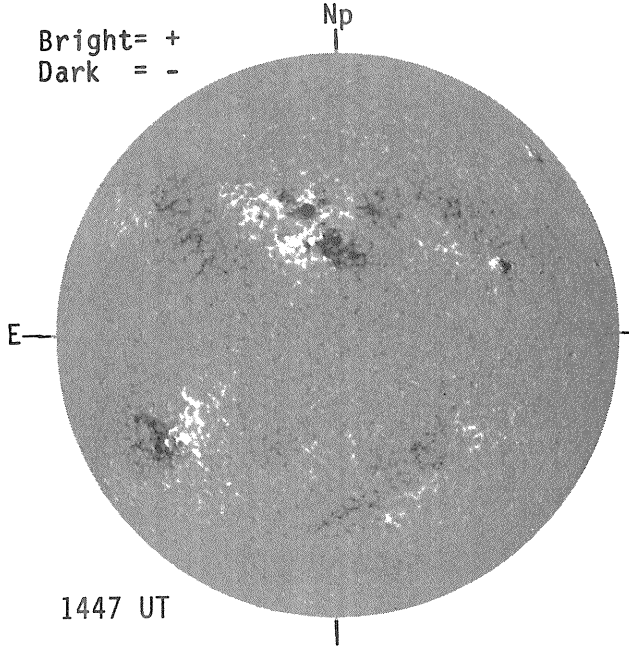
W

Sp

JUNE 03, 1988 (P=-14.60, B_o=-0.38, L_o= 26.99)

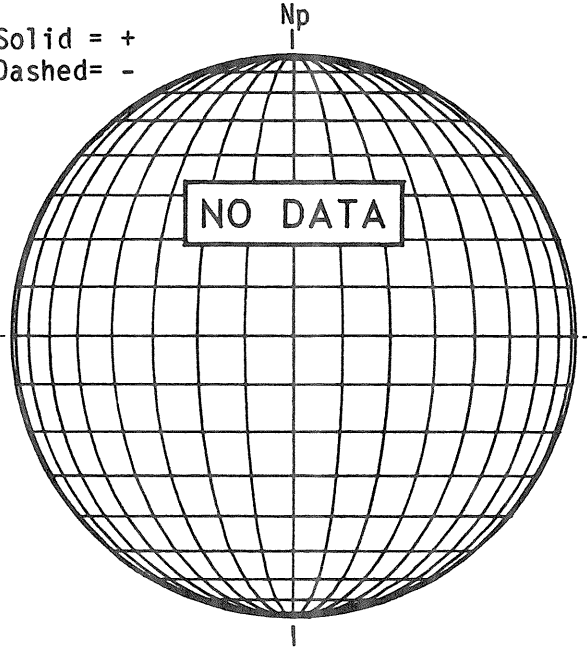
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



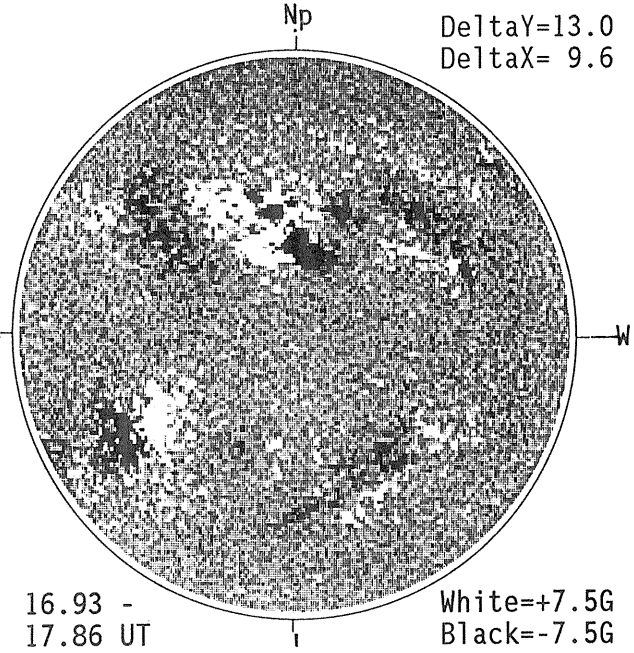
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



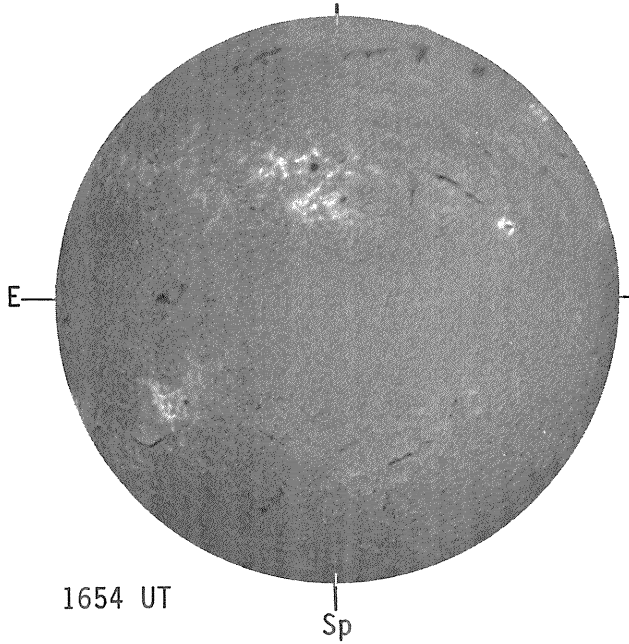
MT. WILSON MAGNETOGRAM

DeltaY=13.0
DeltaX= 9.6

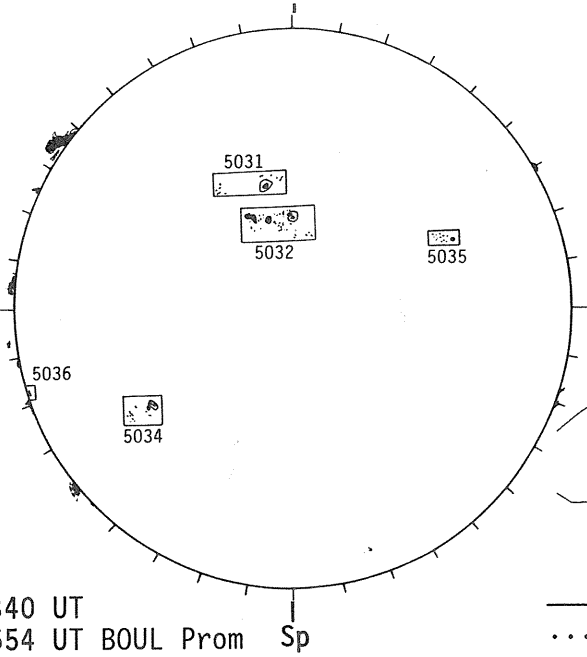


White=+7.5G
Black=-7.5G

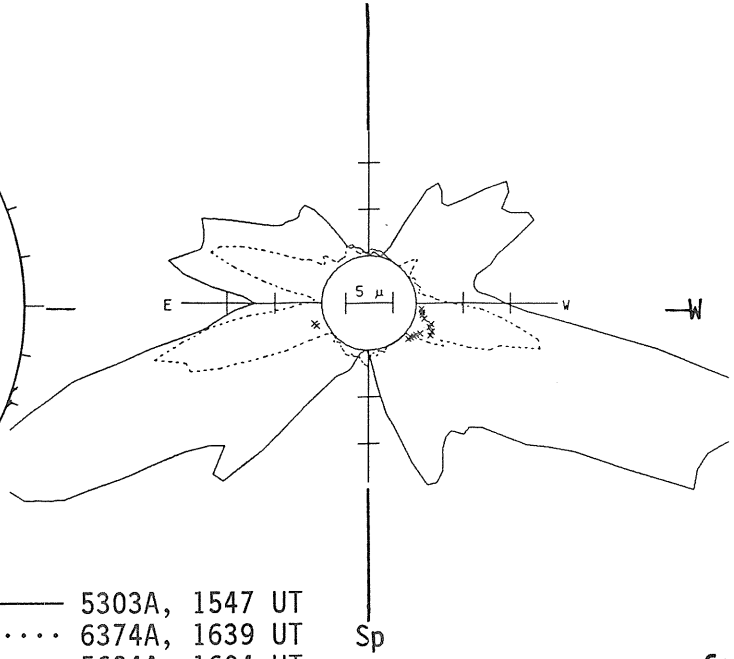
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



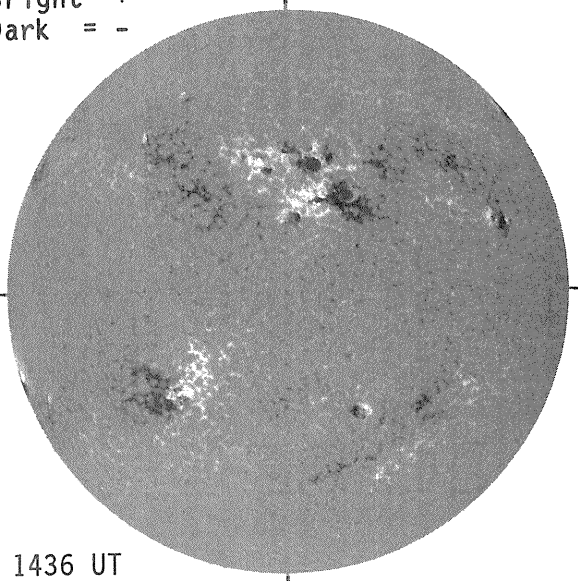
—— 5303A, 1547 UT
···· 6374A, 1639 UT
xxxx 5694A, 1604 UT

JUNE 04, 1988 (P=-14.21, B_0=-0.26, L_0= 13.76)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



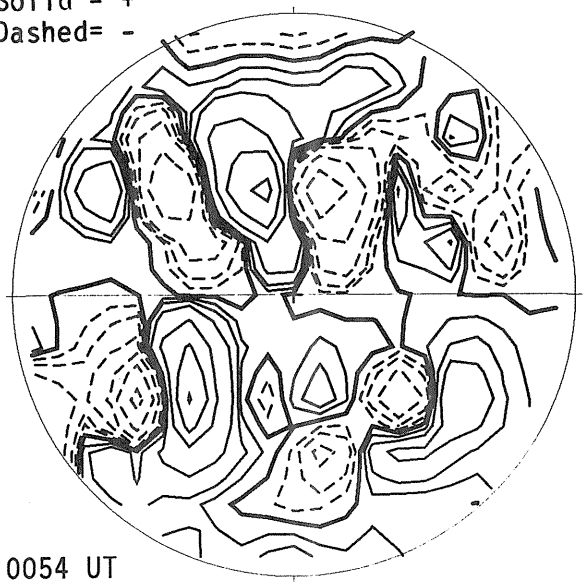
E

1436 UT

STANFORD MAGNETOGRAM

Np

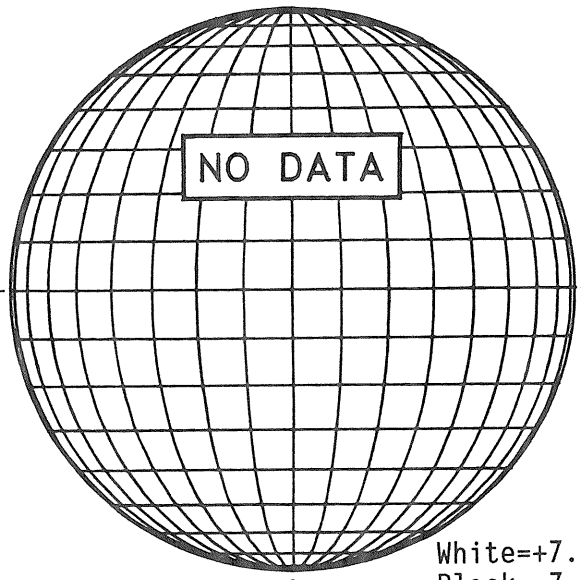
Solid = +
Dashed= -



0054 UT

MT. WILSON MAGNETOGRAM

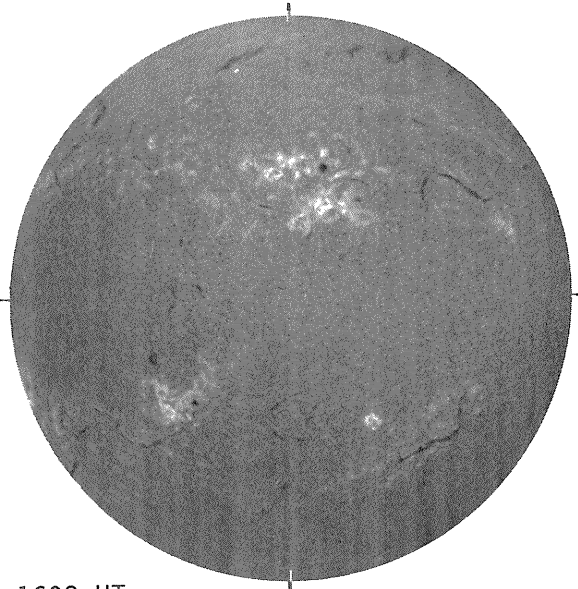
Np



W

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

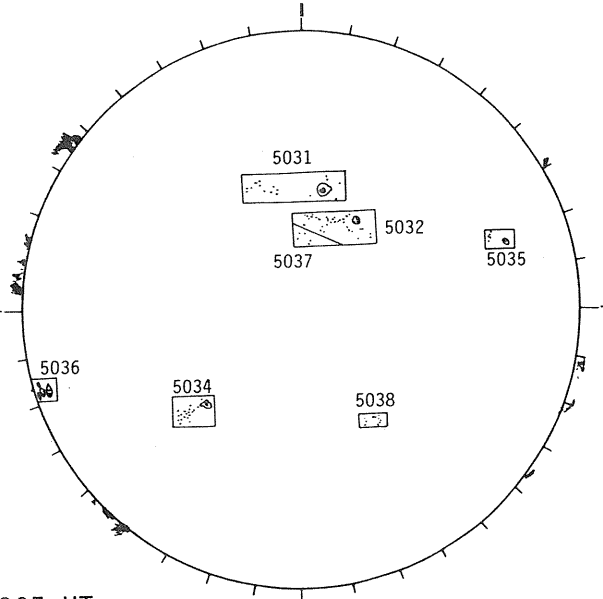


E

1608 UT

Sp

BOULDER SUNSPOTS



1325 UT
1608 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)

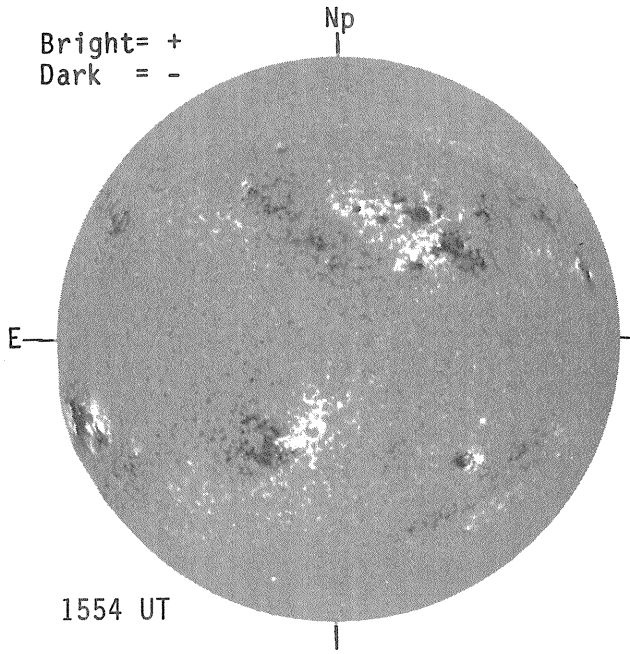
W

Sp

JUNE 05, 1988 (P=-13.82, B_o=-0.14, L_o= 0.52)

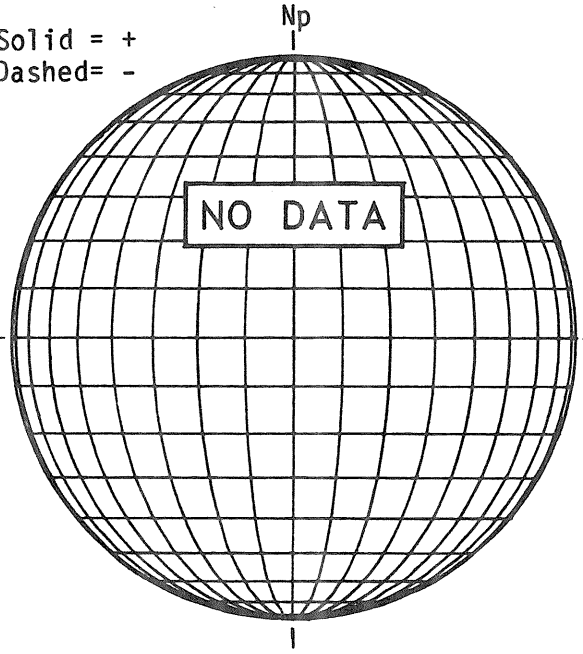
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

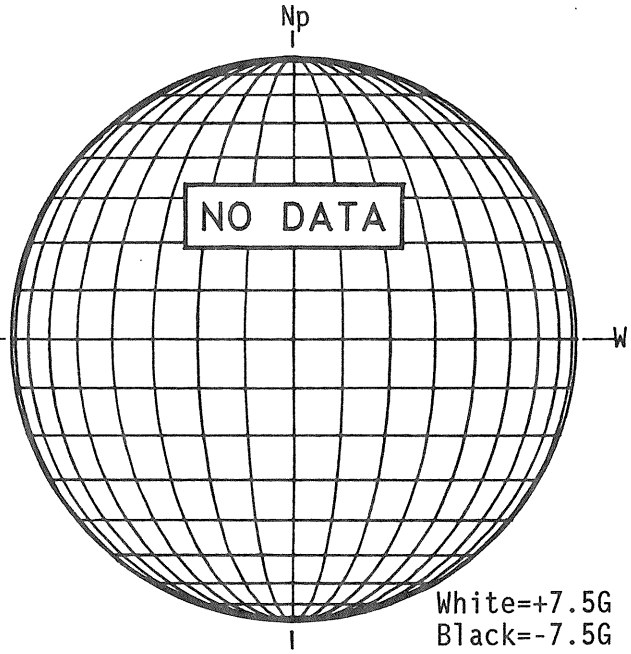


STANFORD MAGNETOGRAM

Solid = +
Dashed= -

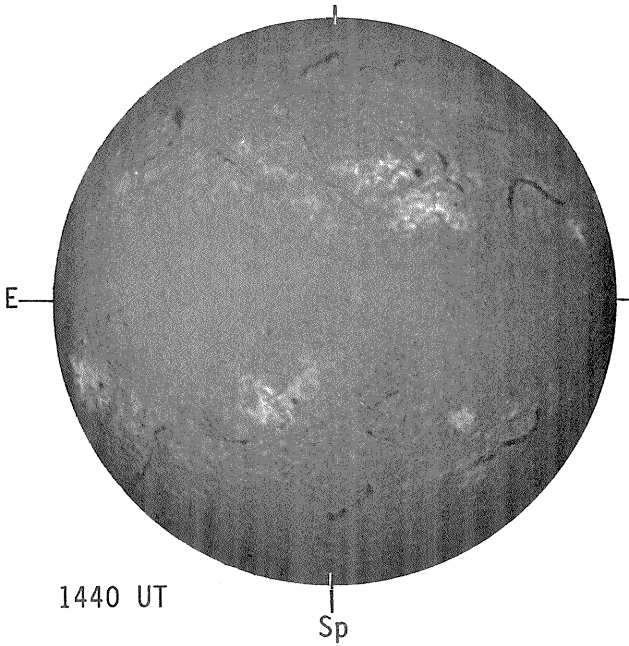


MT. WILSON MAGNETOGRAM

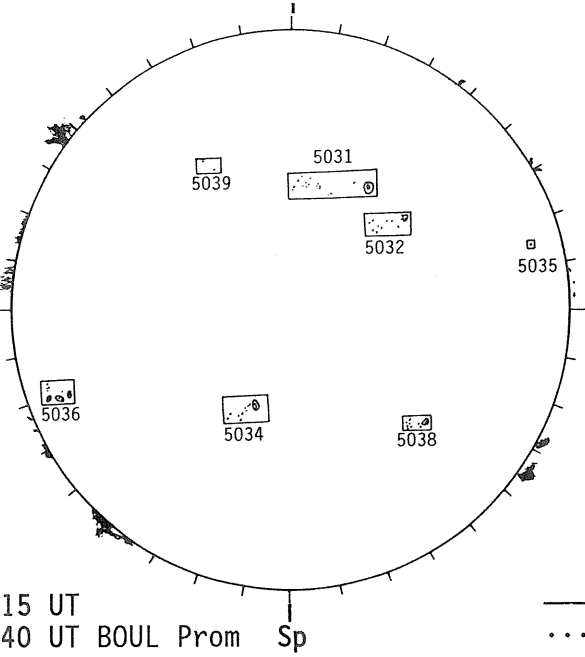


White=+7.5G
Black=-7.5G

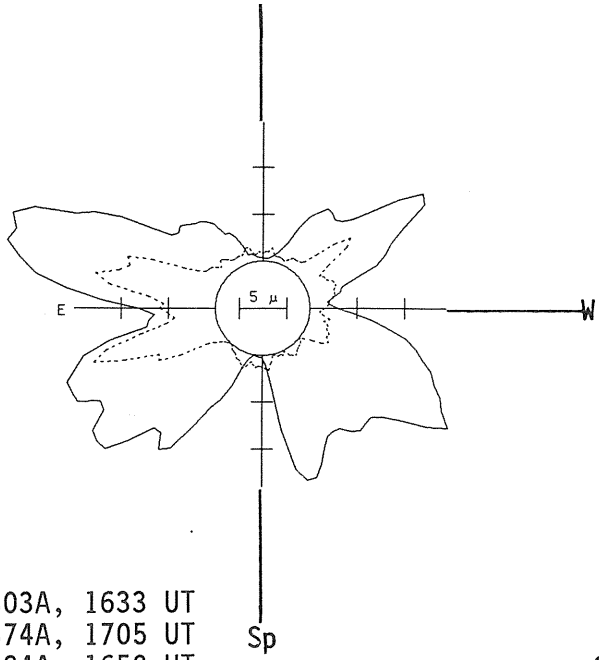
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



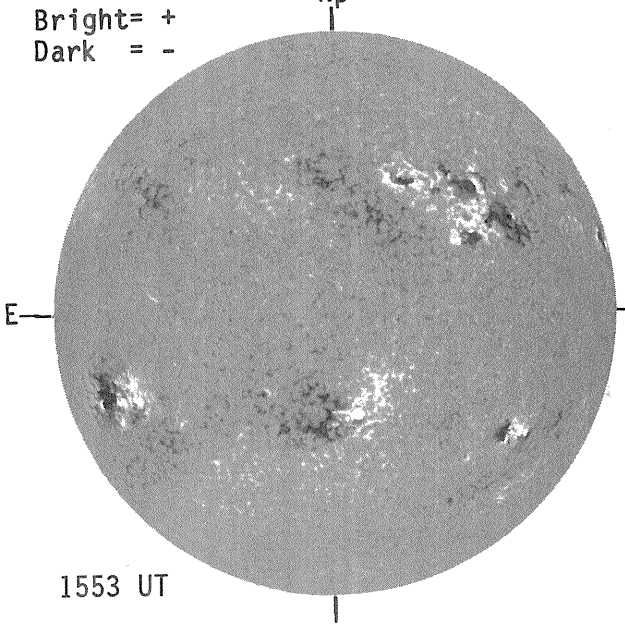
—— 5303A, 1633 UT
···· 6374A, 1705 UT
xxxx 5694A, 1652 UT
NO 5694A ACTIVITY TODAY

JUNE 06, 1988 (P=-13.43, B_o=-0.02, L_o= 347.29)

55
Jul 88

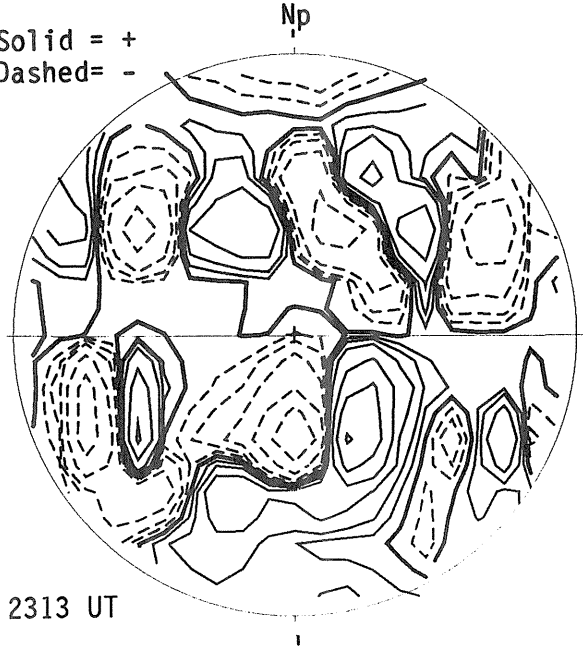
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



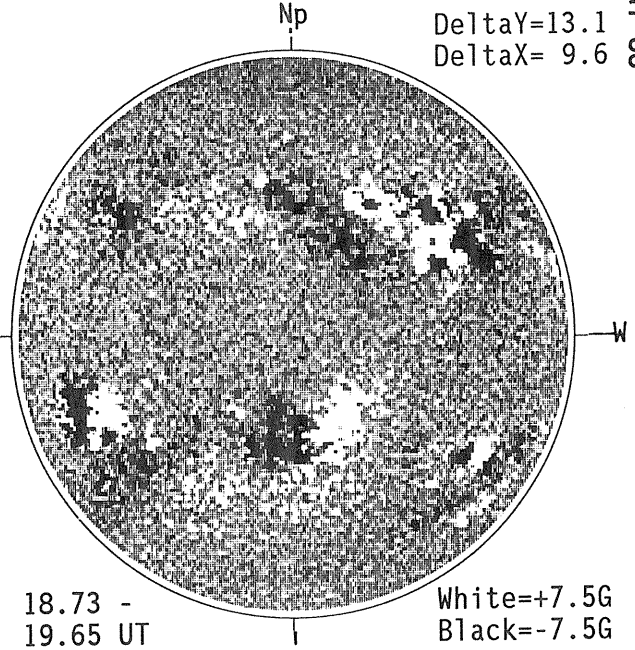
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

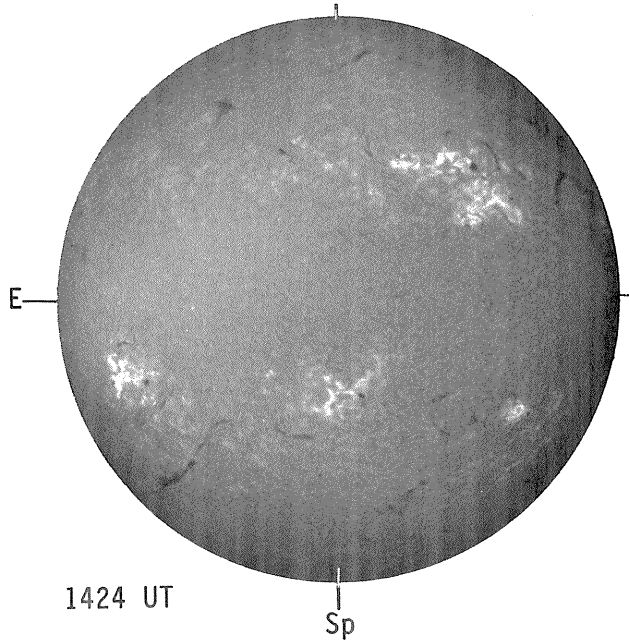


MT. WILSON MAGNETOGRAM

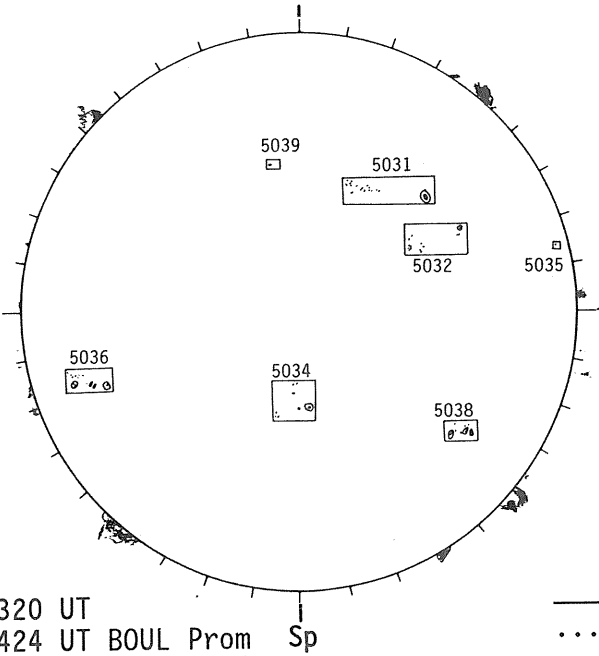
DeltaY=13.1
DeltaX= 9.6



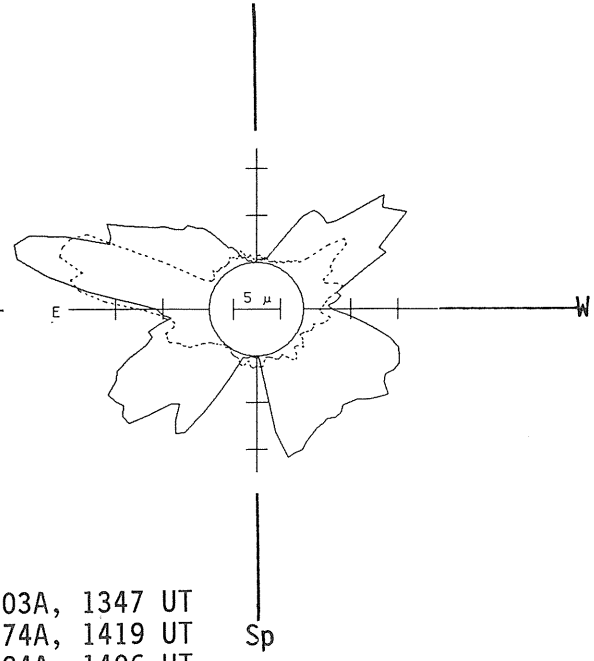
BOULDER H-ALPHA



BOULDER SUNSPOTS



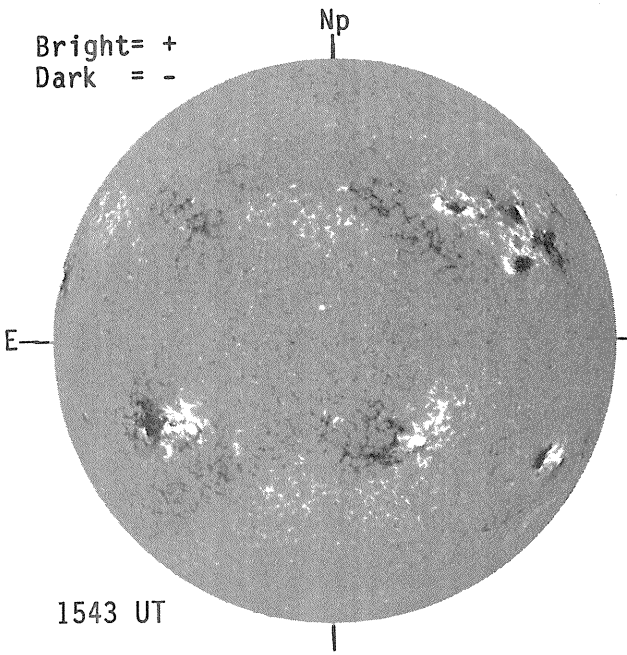
SACRAMENTO PEAK CORONA (1.15 Radii)



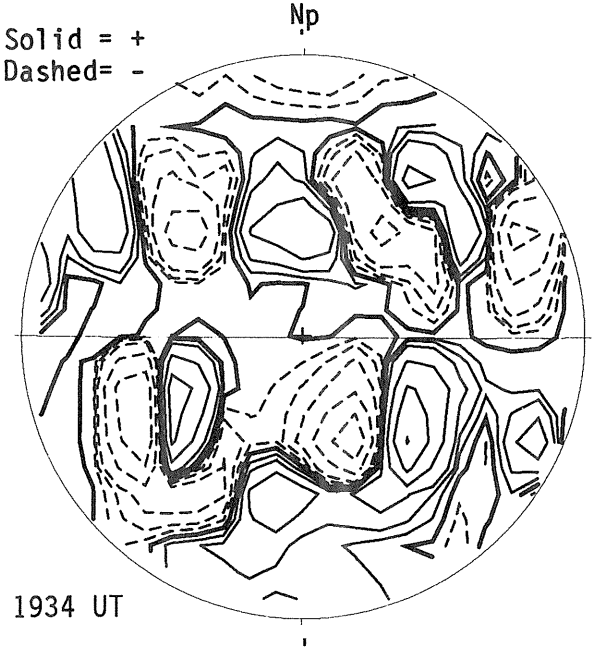
—— 5303A, 1347 UT
···· 6374A, 1419 UT
xxxx 5694A, 1406 UT
NO 5694A ACTIVITY TODAY

JUNE 07, 1988 (P=-13.03, B_o= 0.11, L_o= 334.05)

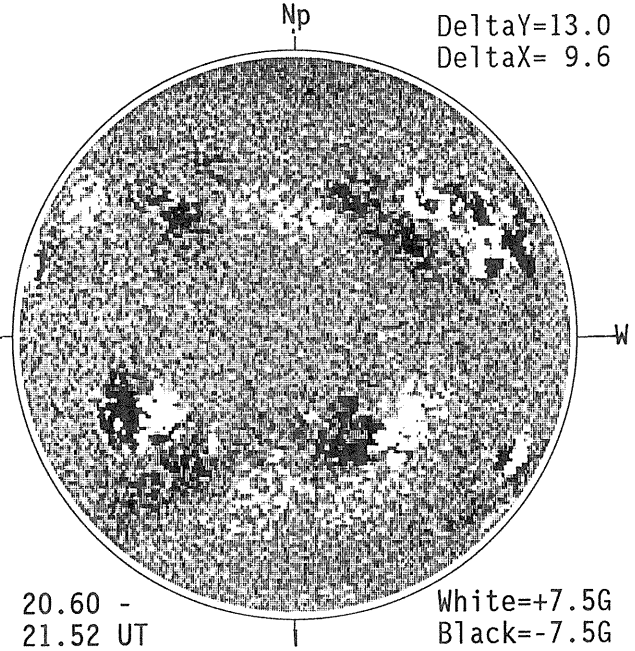
KITT PEAK MAGNETOGRAM



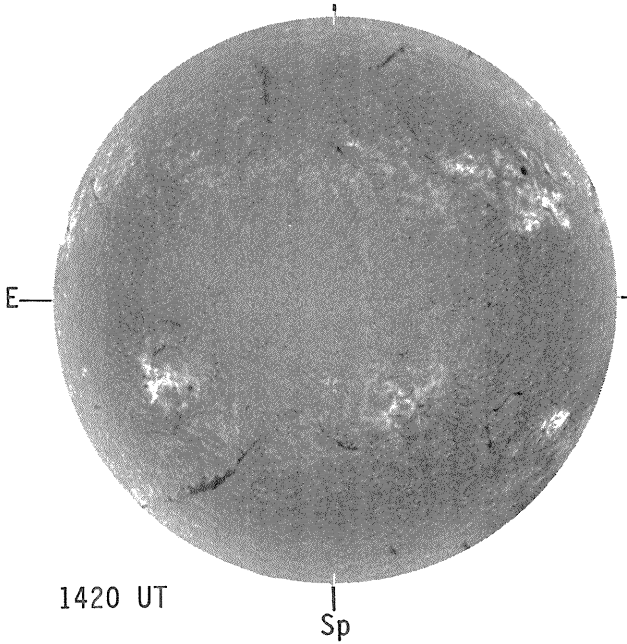
STANFORD MAGNETOGRAM



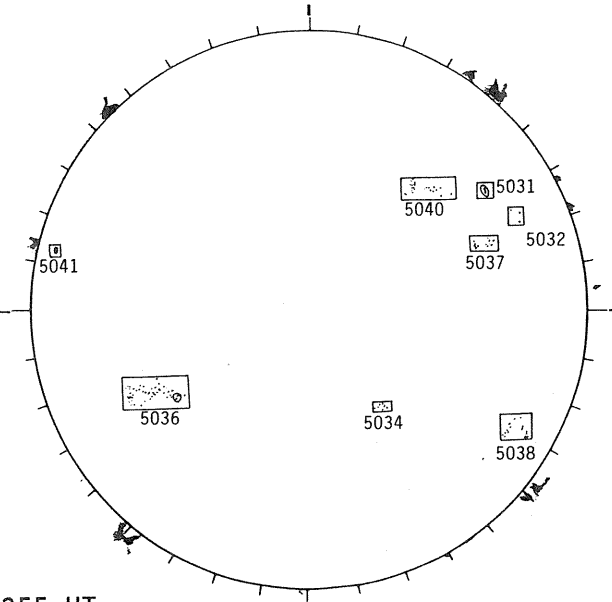
MT. WILSON MAGNETOGRAM



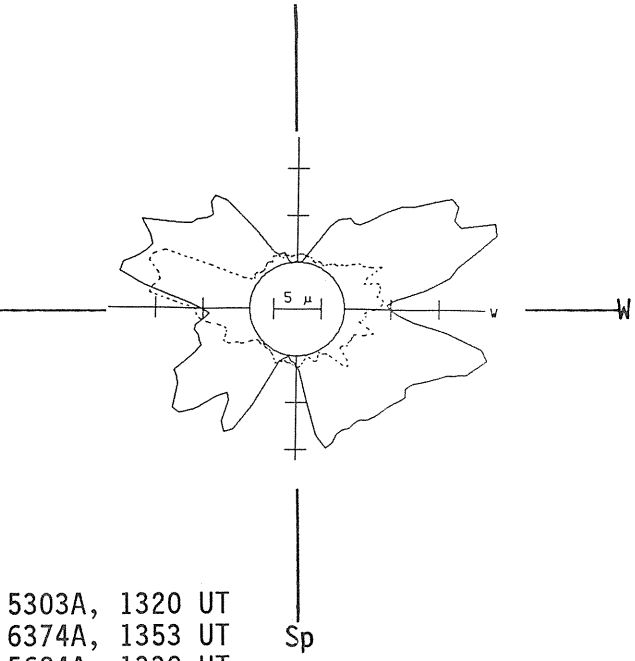
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



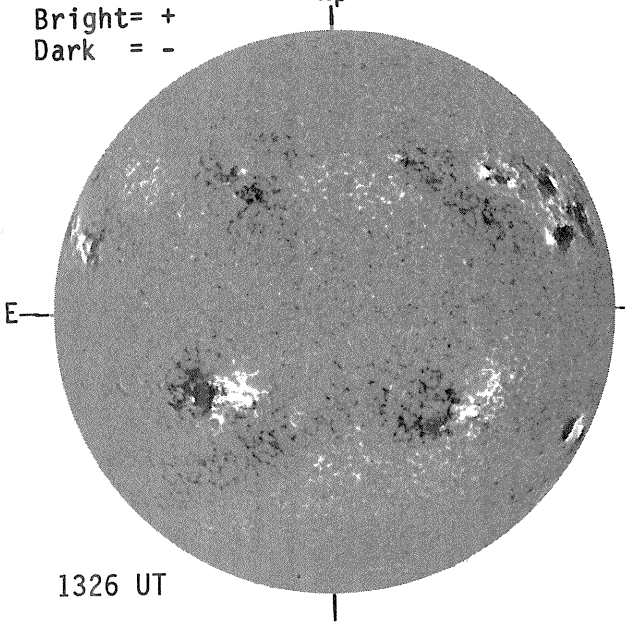
—— 5303A, 1320 UT
···· 6374A, 1353 UT
xxxx 5694A, 1339 UT
NO 5694A ACTIVITY TODAY

JUNE 08, 1988 (P=-12.62, B_o= 0.23, L_o= 320.82)

57
Jul 88

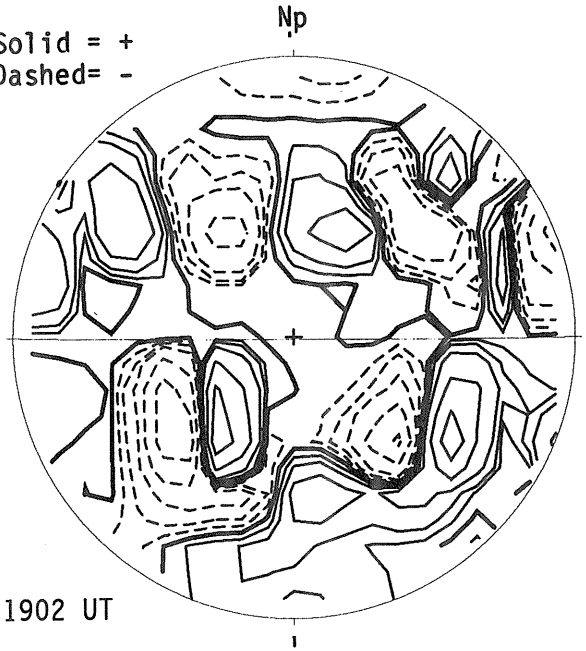
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



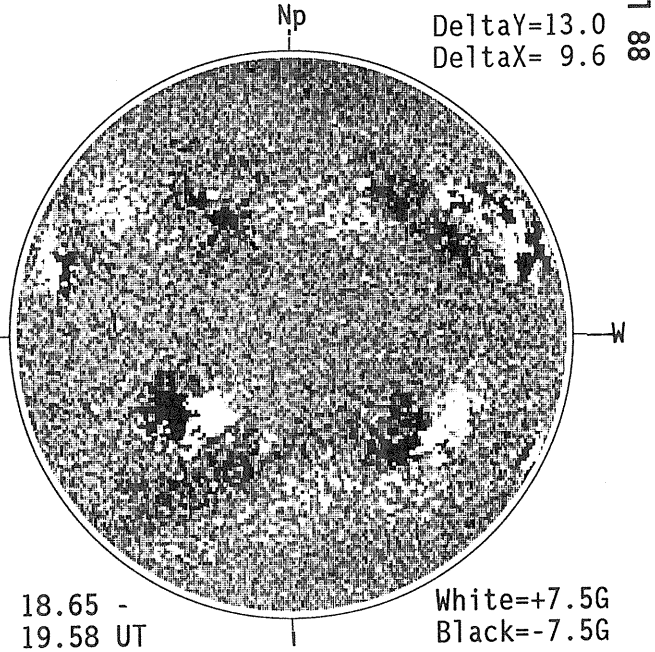
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

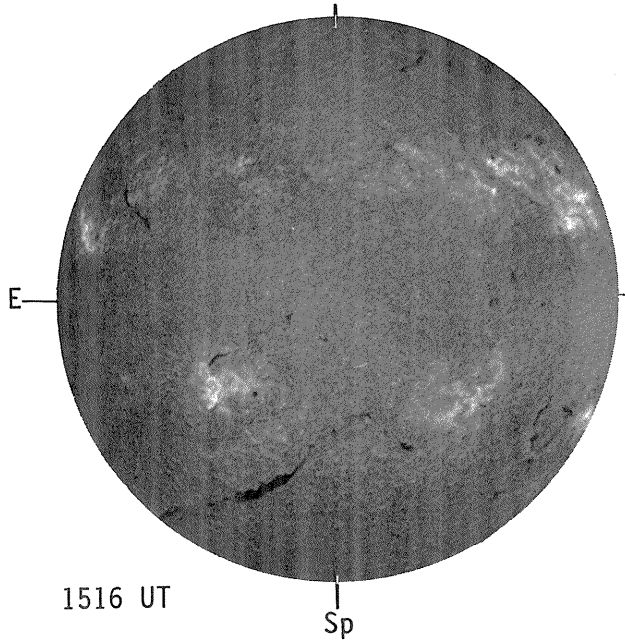


MT. WILSON MAGNETOGRAM

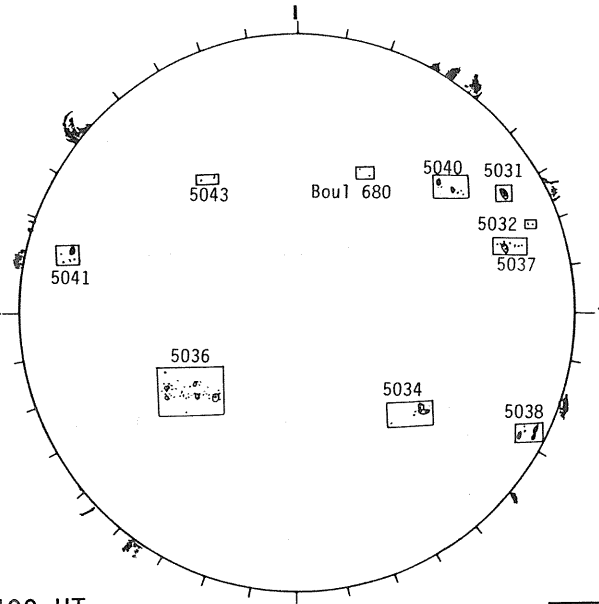
DeltaY=13.0
DeltaX= 9.6



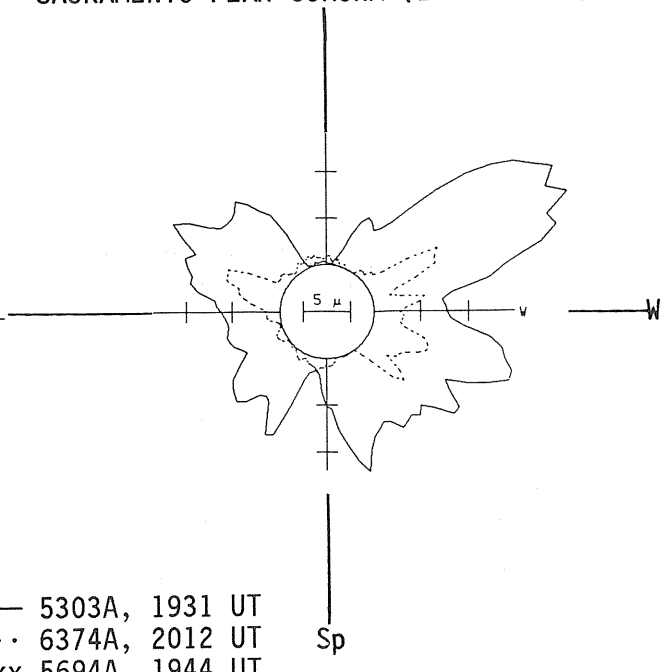
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



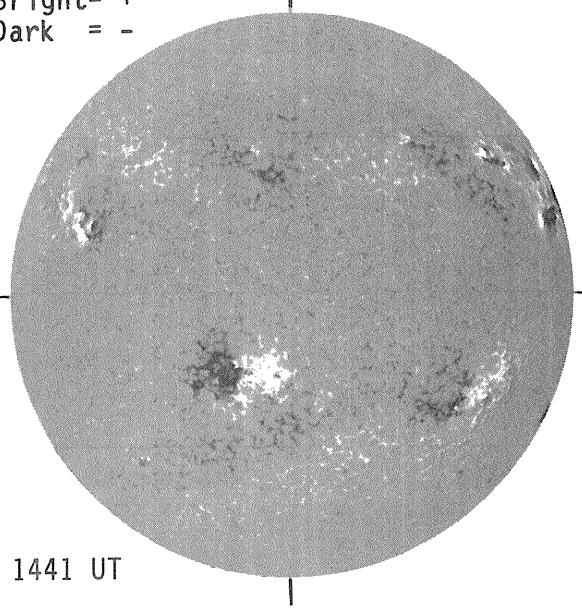
—— 5303A, 1931 UT
···· 6374A, 2012 UT
xxxx 5694A, 1944 UT
NO 5694A ACTIVITY TODAY

JUNE 09, 1988 (P=-12.22, B_o= 0.35, L_o= 307.58)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



E

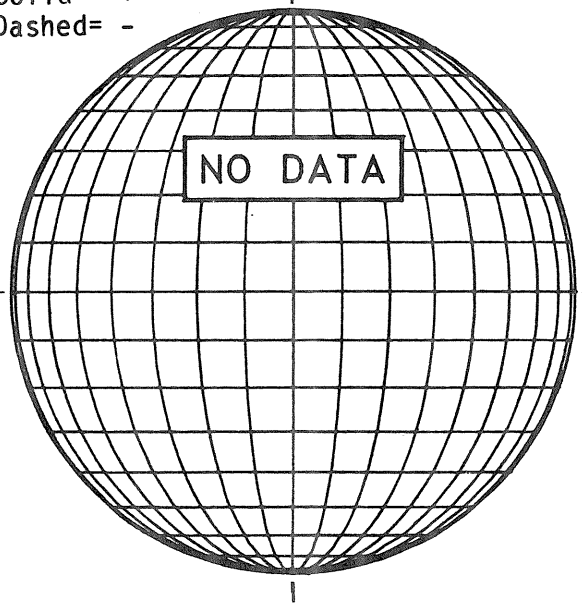
1441 UT

Sp

STANFORD MAGNETOGRAM

Np

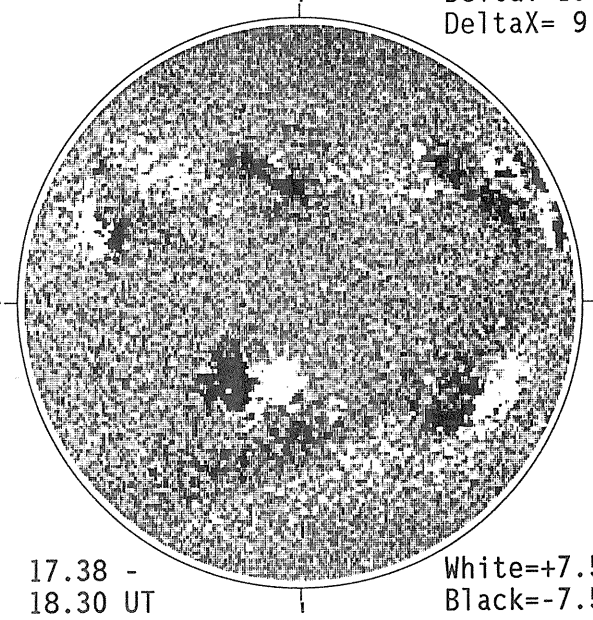
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

Np

DeltaY=13.0
DeltaX= 9.6

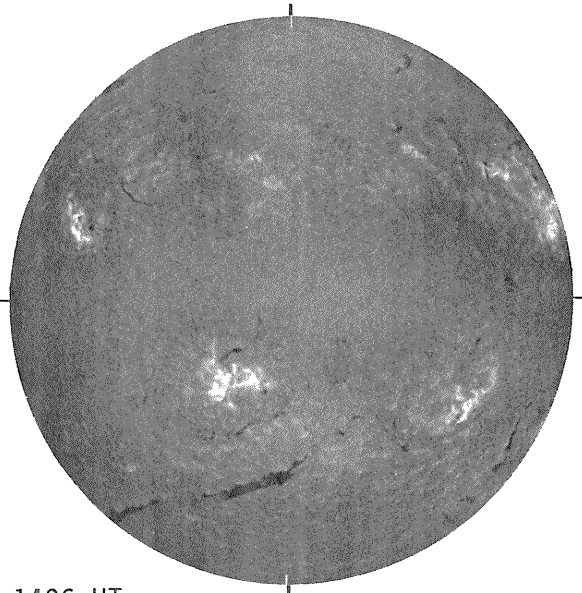


W

17.38 -
18.30 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

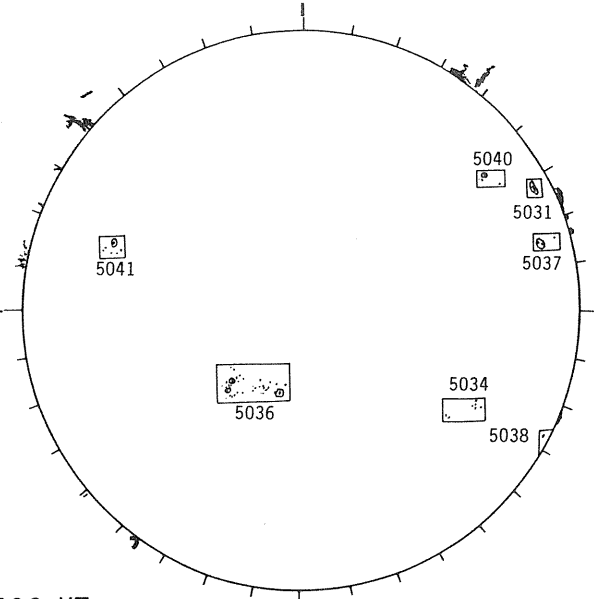


E

1426 UT

Sp

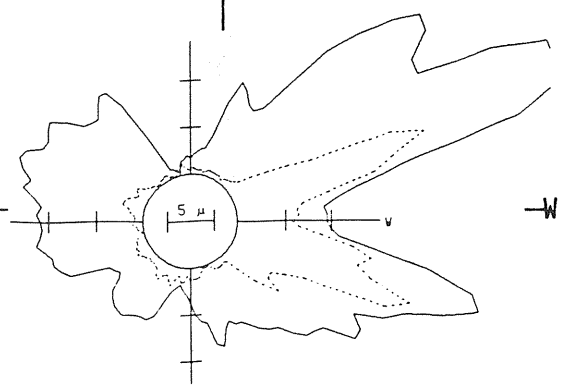
BOULDER SUNSPOTS



1336 UT
1426 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



W

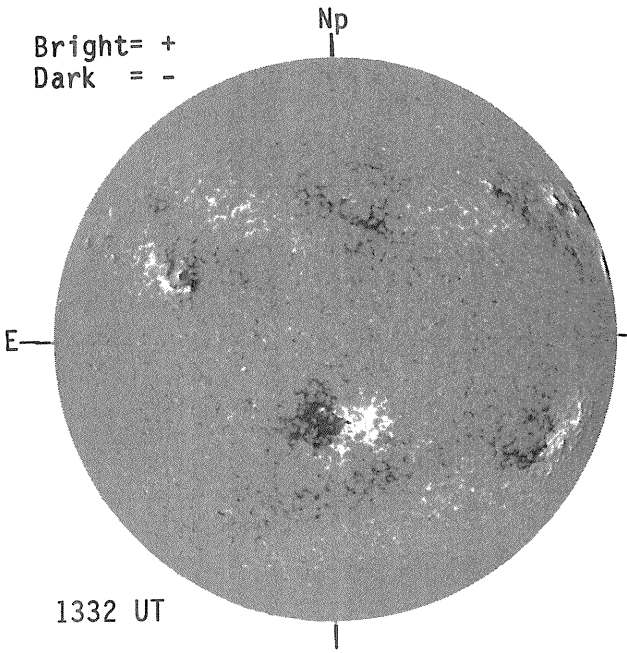
Sp

—— 5303A, 2259 UT
···· 6374A, 2311 UT
xxxx 5694A, 2333 UT
NO 5694A ACTIVITY TODAY

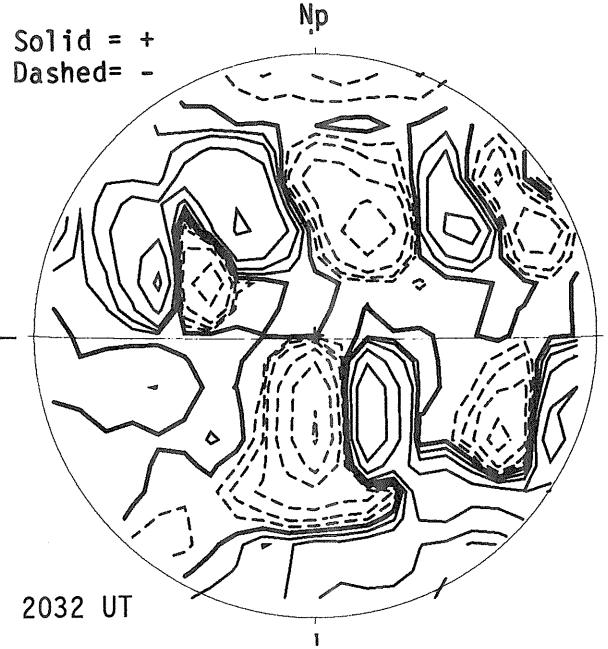
JUNE 10, 1988 (P=-11.81, B_o= 0.47, L_o= 294.35)

59
Jul 88

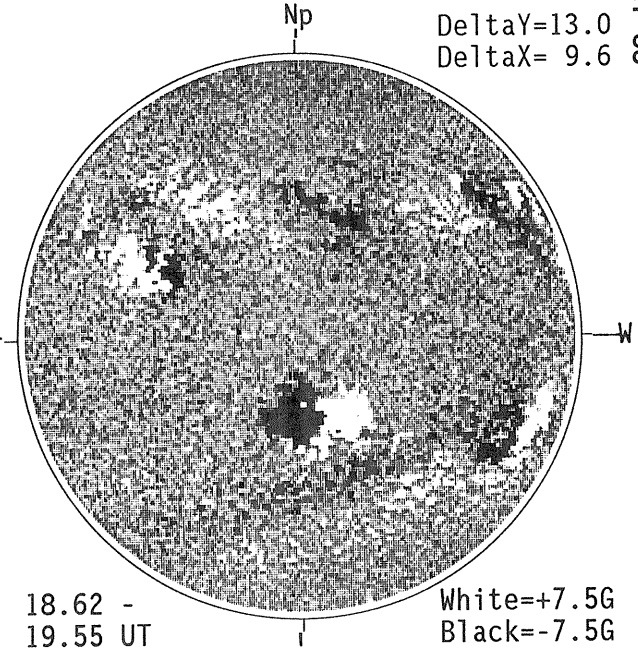
KITT PEAK MAGNETOGRAM



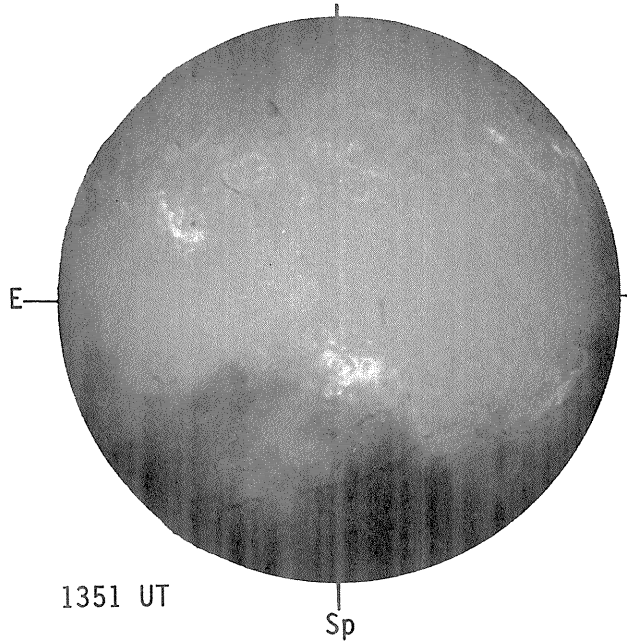
STANFORD MAGNETOGRAM



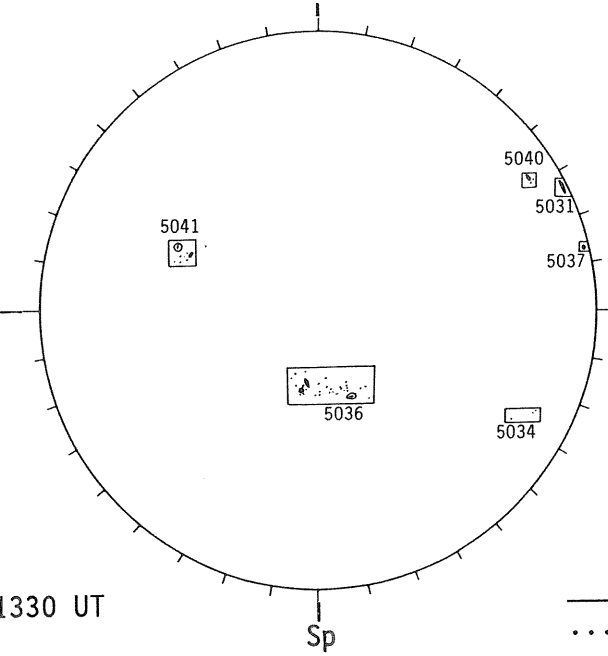
MT. WILSON MAGNETOGRAM



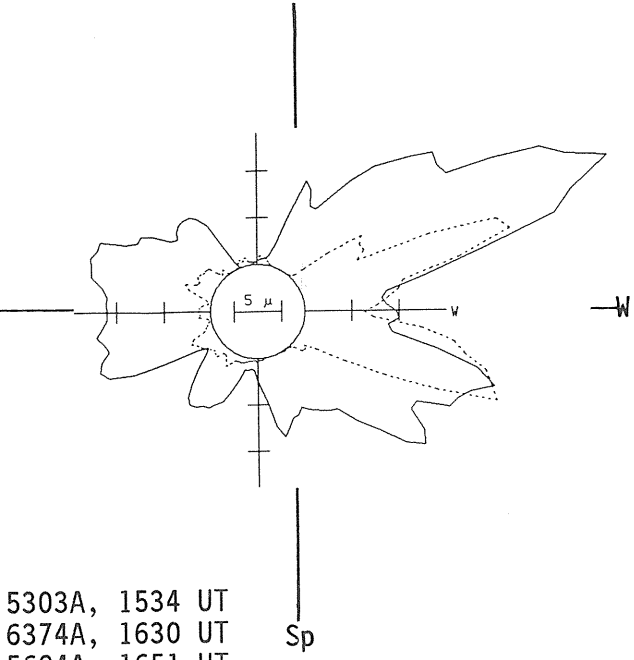
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1534 UT
···· 6374A, 1630 UT
xxxx 5694A, 1651 UT
NO 5694A ACTIVITY TODAY

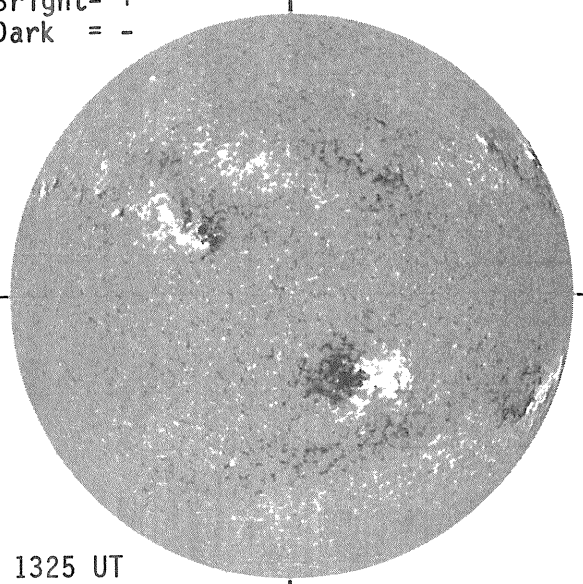
JUNE 11, 1988 (P=-11.39, B_o= 0.59, L_o= 281.11)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

E

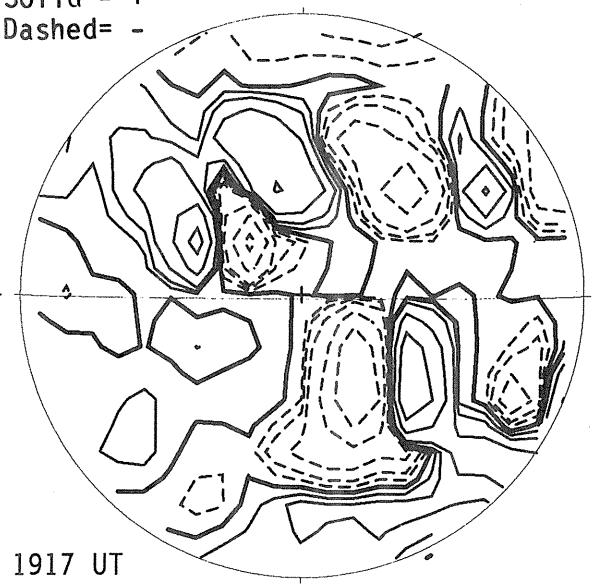


1325 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

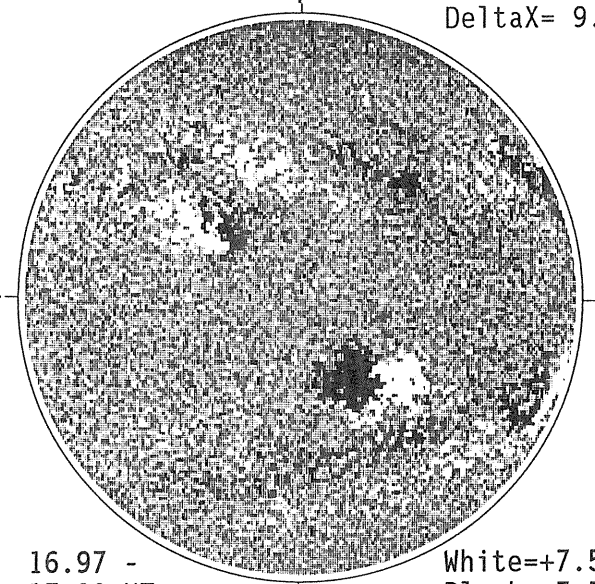


1917 UT

MT. WILSON MAGNETOGRAM

Np

DeltaY=13.0
DeltaX= 9.6

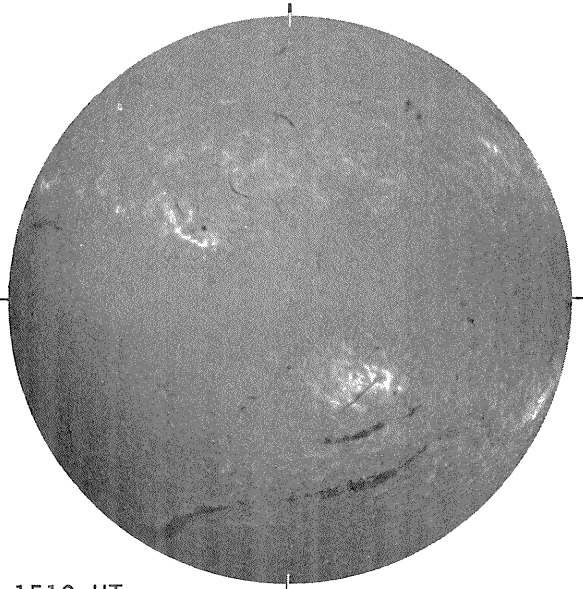


W

16.97 -
17.89 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

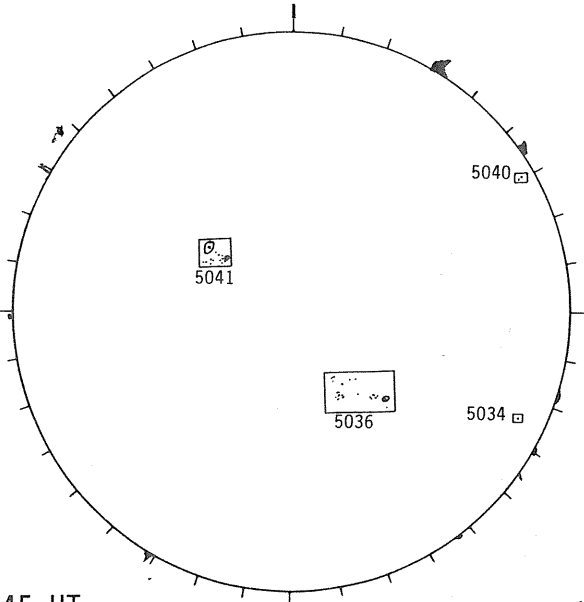


E

1512 UT

Sp

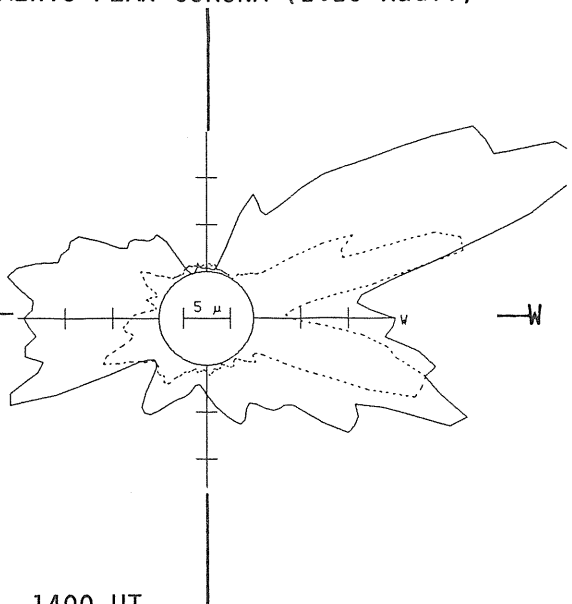
BOULDER SUNSPOTS



1445 UT
1512 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



W

Sp

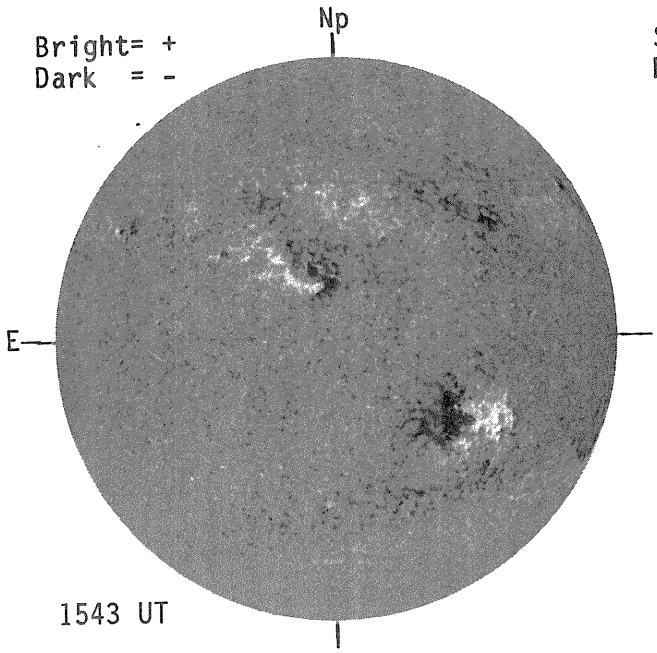
—— 5303A, 1400 UT
···· 6374A, 1435 UT
xxxx 5694A, 1425 UT
NO 5694A ACTIVITY TODAY

JUNE 12, 1988 (P=-10.97, B_o= 0.71, L_o= 267.88)

61
Jul 88

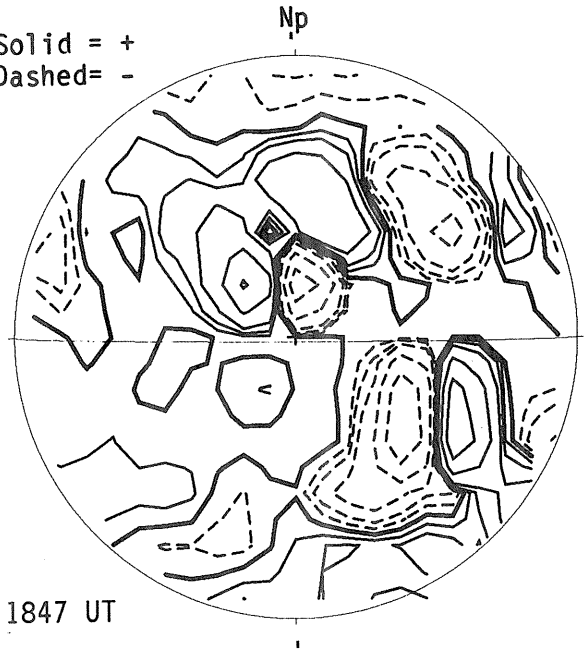
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



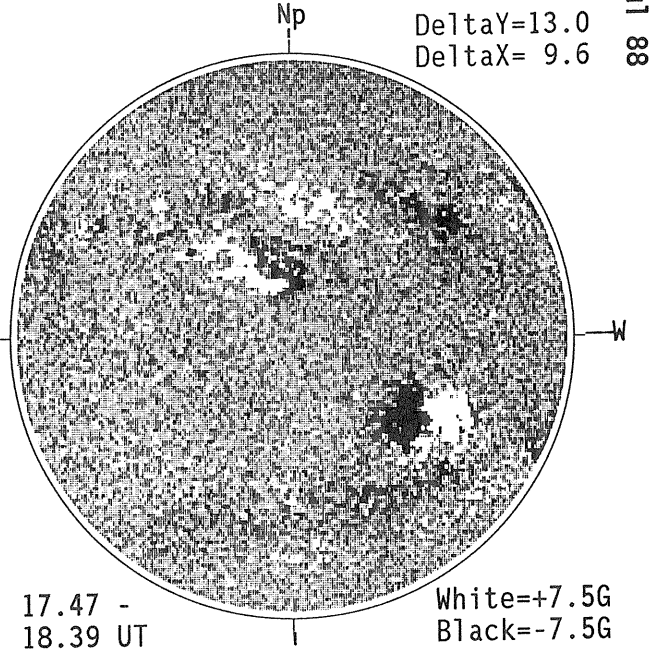
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

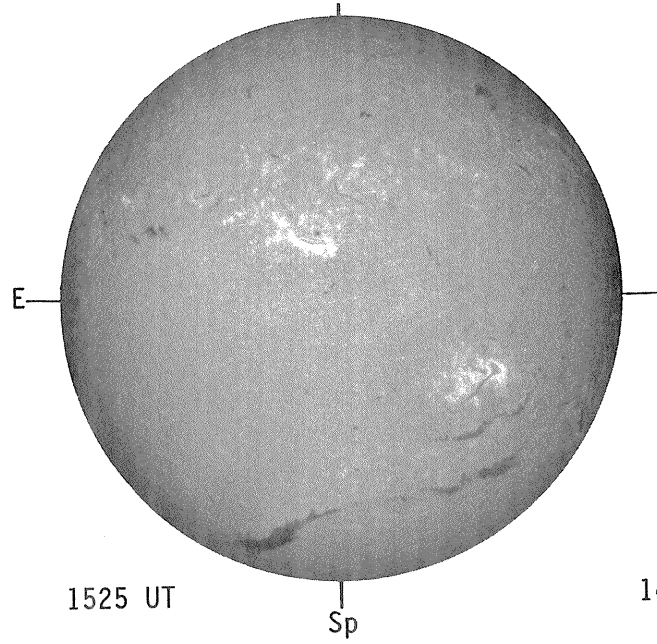


MT. WILSON MAGNETOGRAM

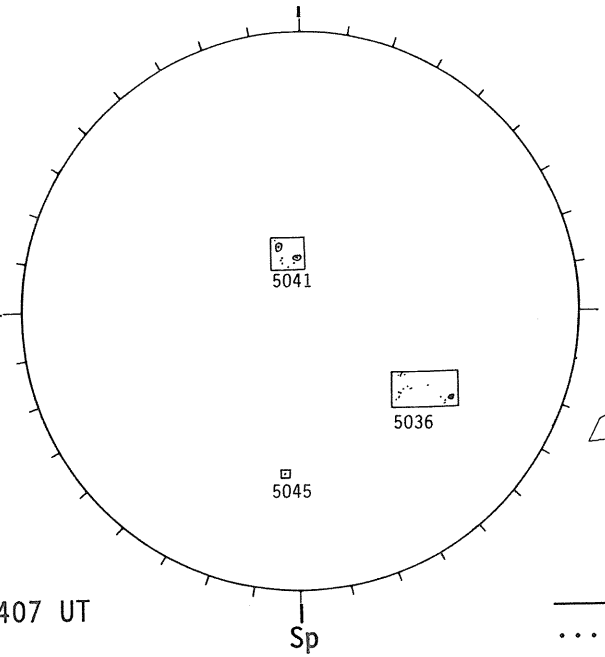
DeltaY=13.0
DeltaX= 9.6



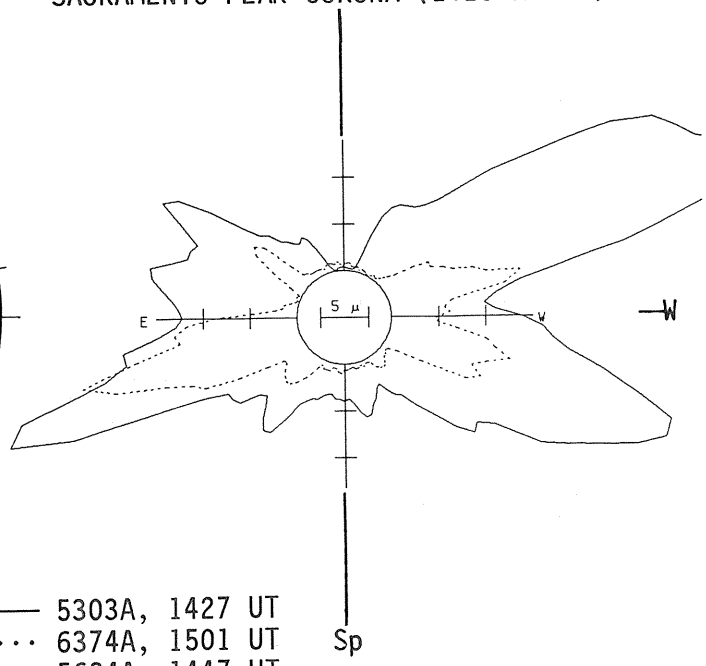
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



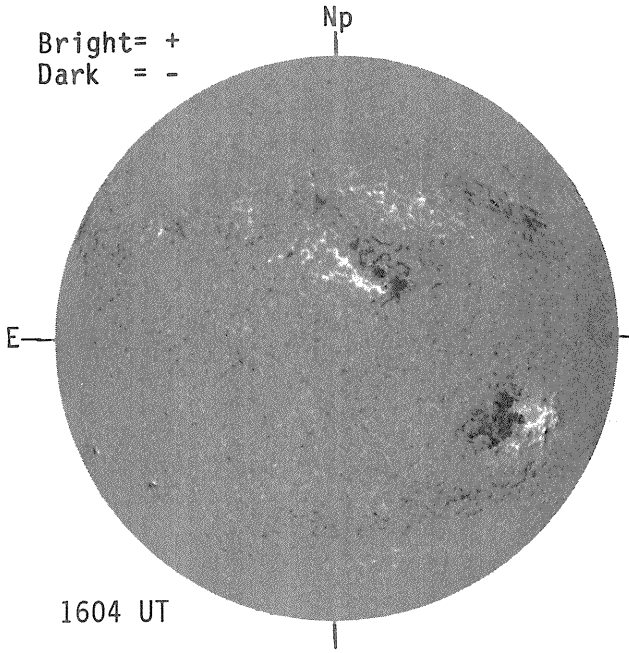
SACRAMENTO PEAK CORONA (1.15 Radii)



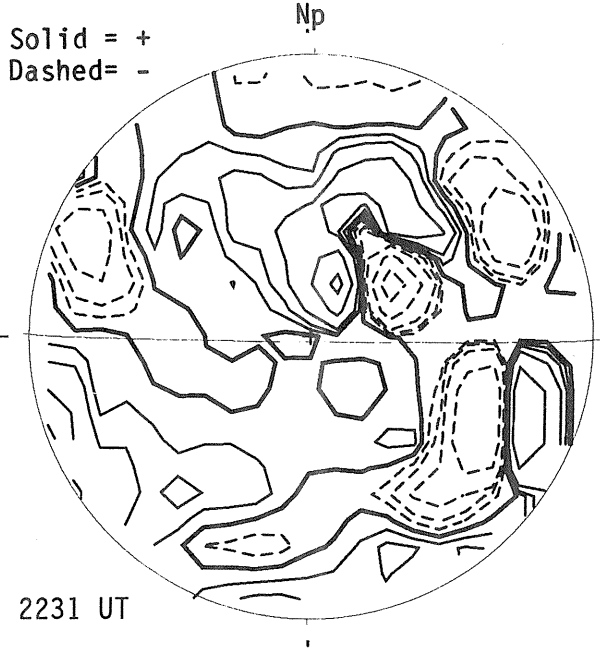
—— 5303A, 1427 UT
···· 6374A, 1501 UT
xxxx 5694A, 1447 UT
NO 5694A ACTIVITY TODAY

JUNE 13, 1988 (P=-10.55, B_o= 0.83, L_o= 254.64)

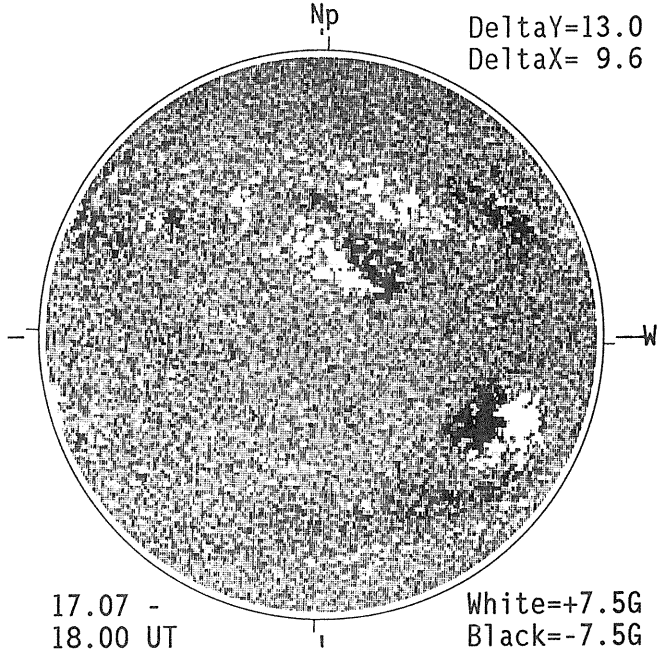
KITT PEAK MAGNETOGRAM



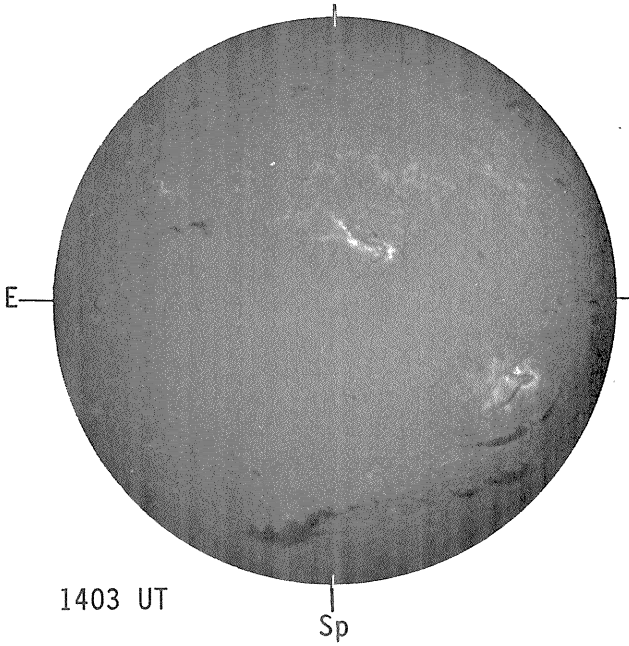
STANFORD MAGNETOGRAM



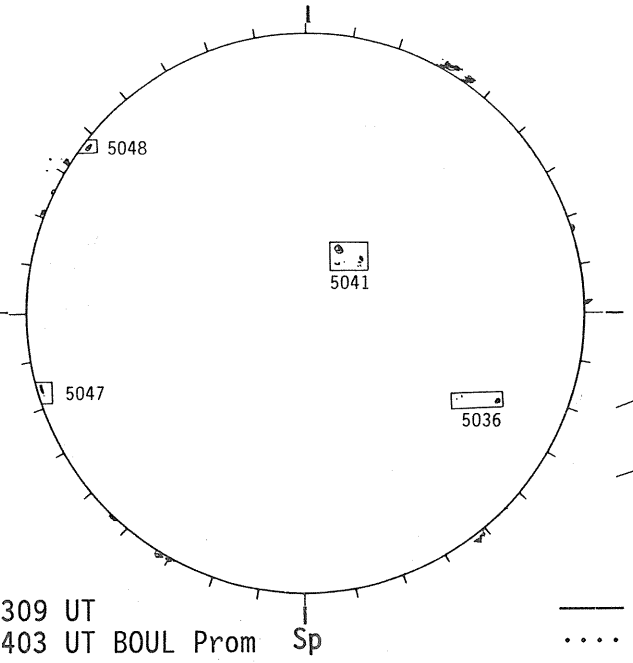
MT. WILSON MAGNETOGRAM



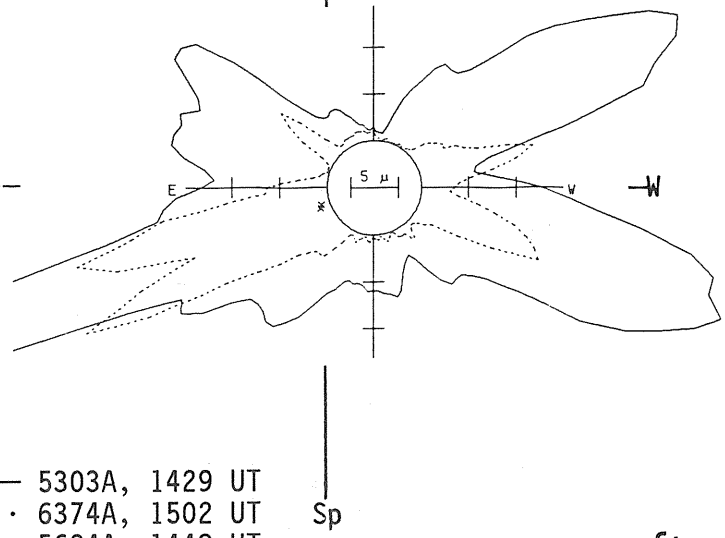
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

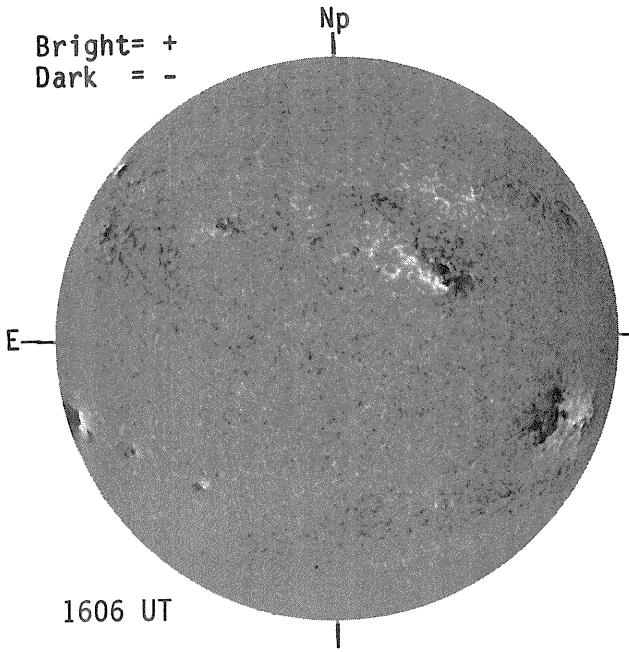


JUNE 14, 1988 (P=-10.13, B_o= 0.95, L_o= 241.40)

63
Jul 88

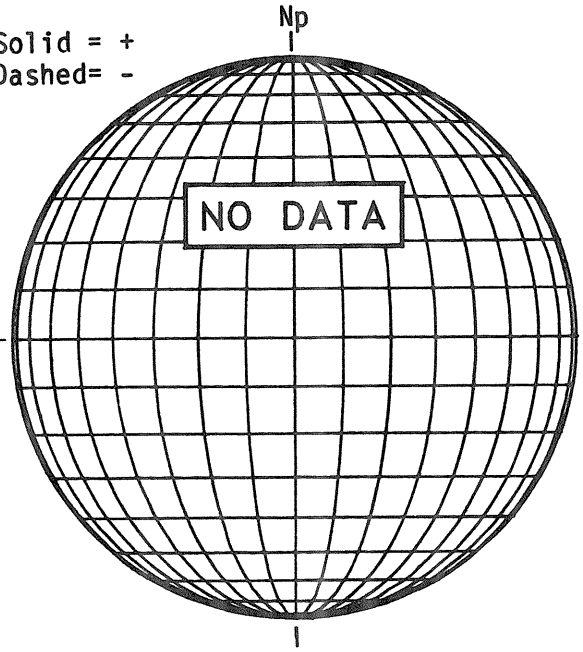
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



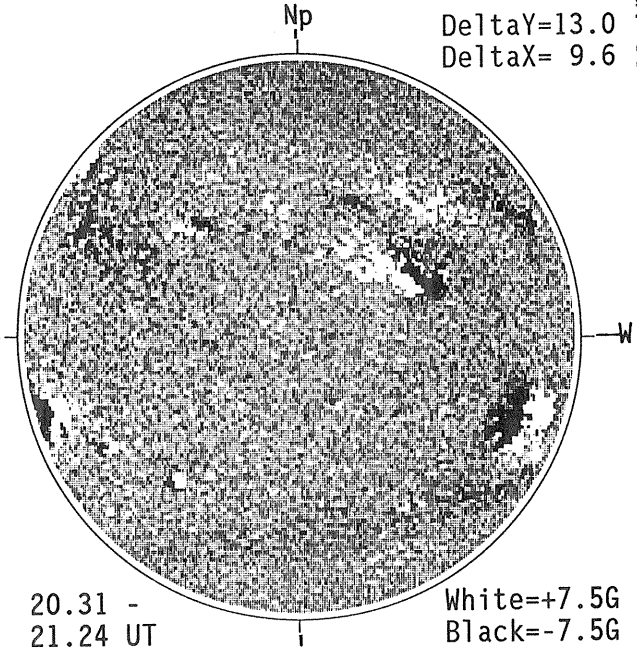
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

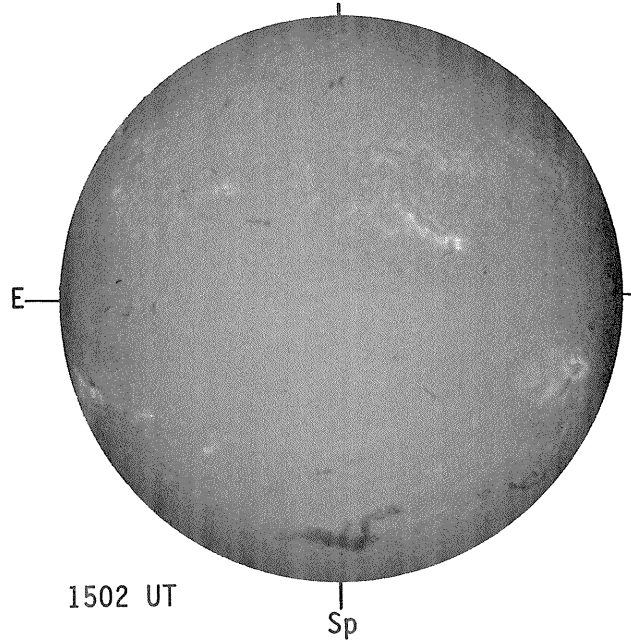


MT. WILSON MAGNETOGRAM

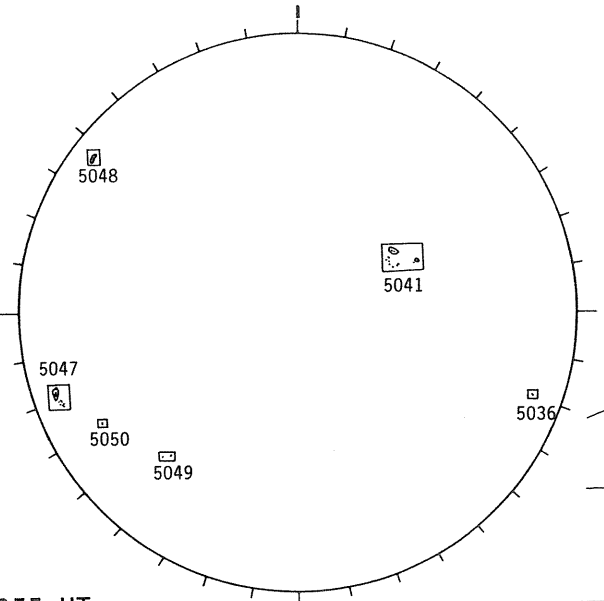
DeltaY=13.0
DeltaX= 9.6



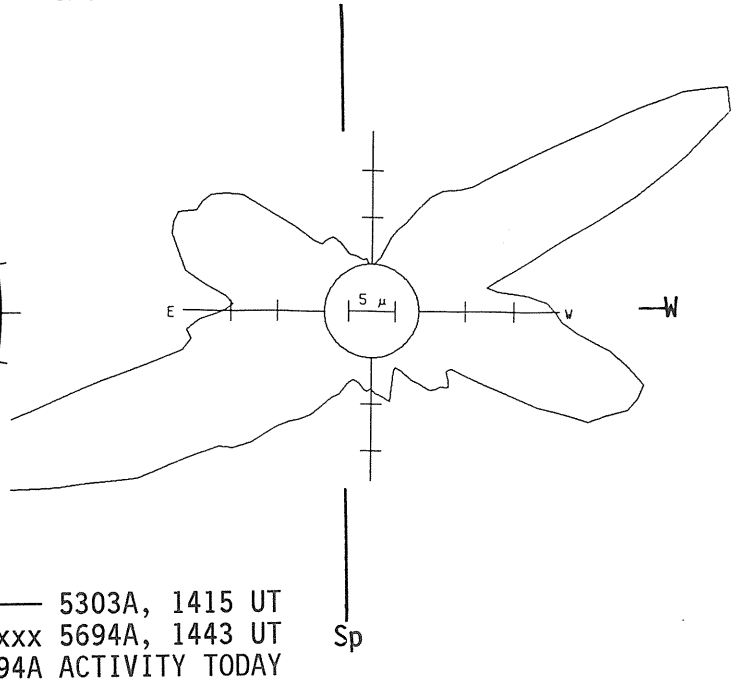
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



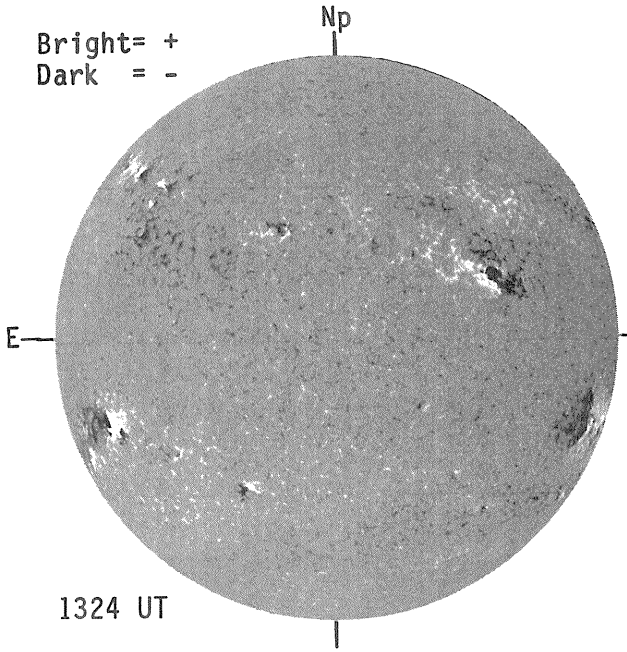
SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 15, 1988 (P=- 9.70, B_0= 1.06, L_0= 228.17)

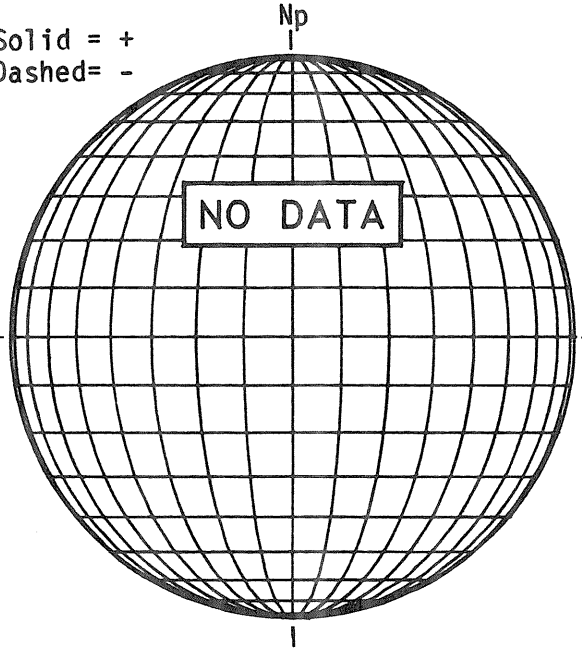
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



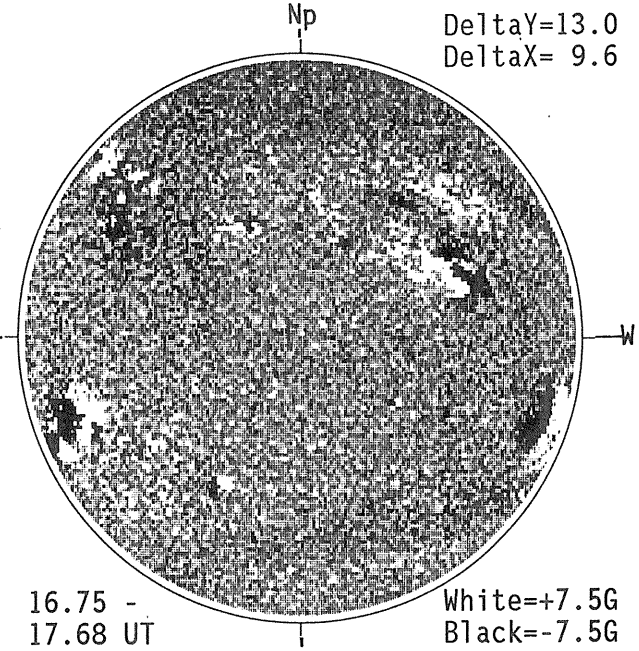
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

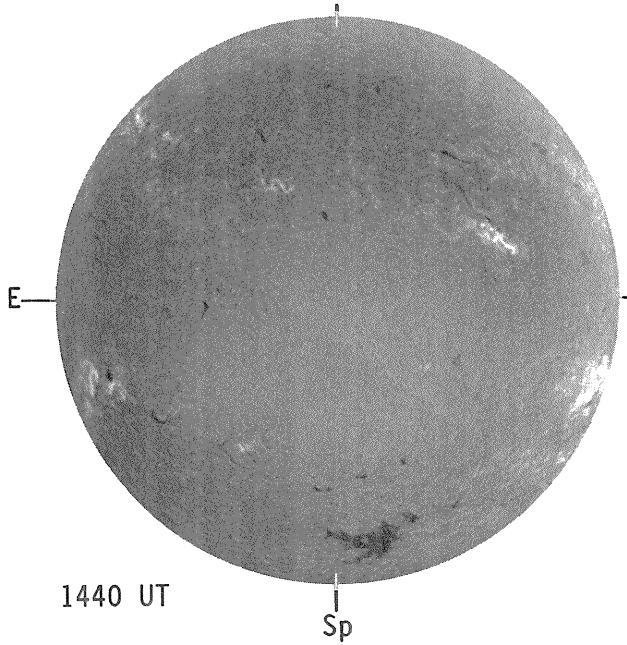


MT. WILSON MAGNETOGRAM

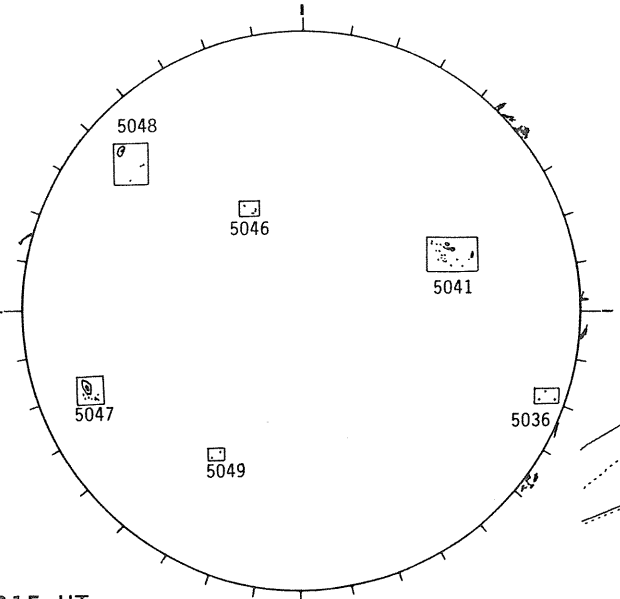
DeltaY=13.0
DeltaX= 9.6



BOULDER H-ALPHA



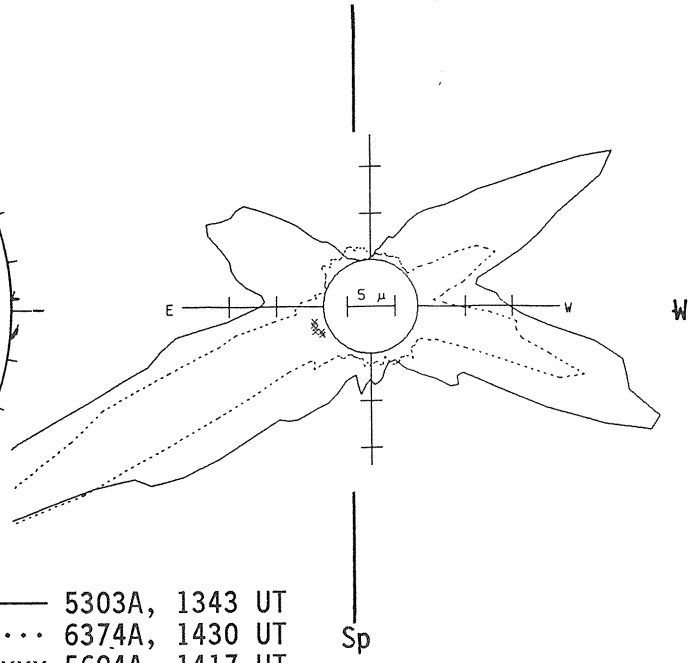
BOULDER SUNSPOTS



1315 UT
1440 UT BOUL Prom

Sp

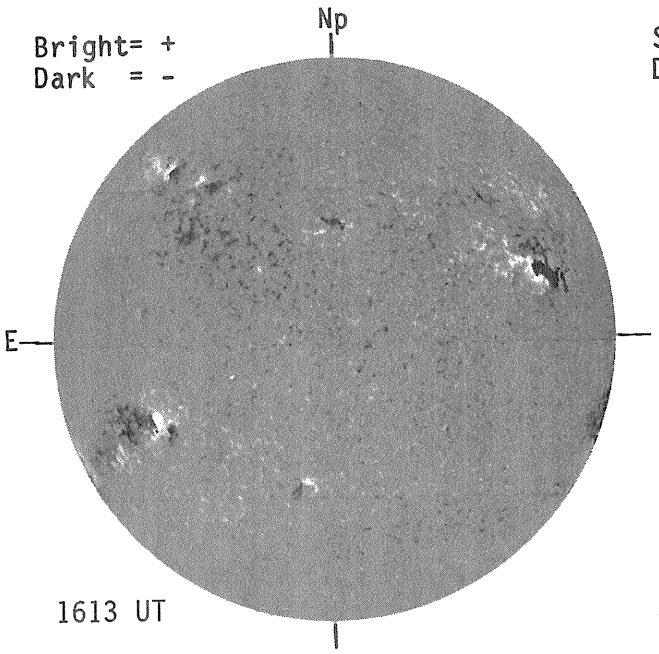
SACRAMENTO PEAK CORONA (1.15 Radii)



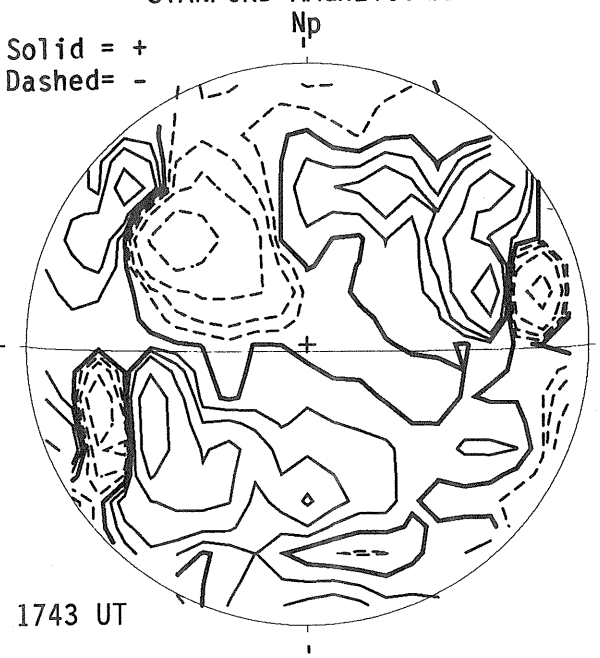
—— 5303A, 1343 UT
···· 6374A, 1430 UT
xxxx 5694A, 1417 UT

JUNE 16, 1988 (P=- 9.27, B_o= 1.18, L_o= 214.93)

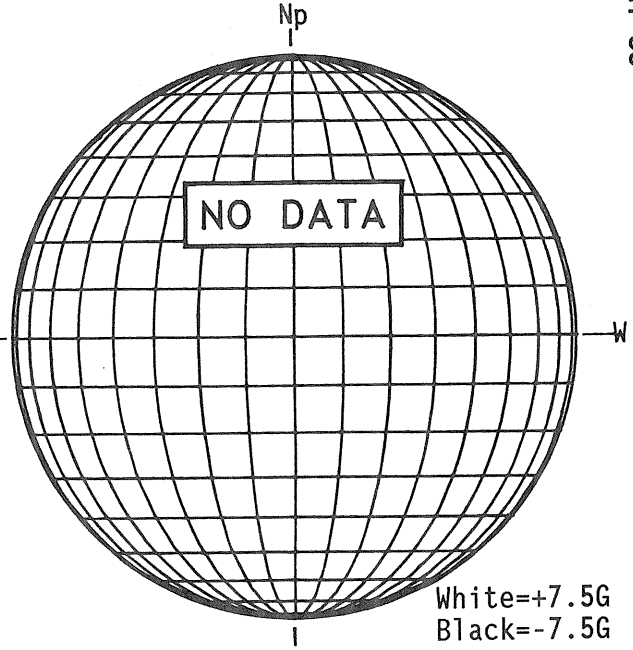
KITT PEAK MAGNETOGRAM



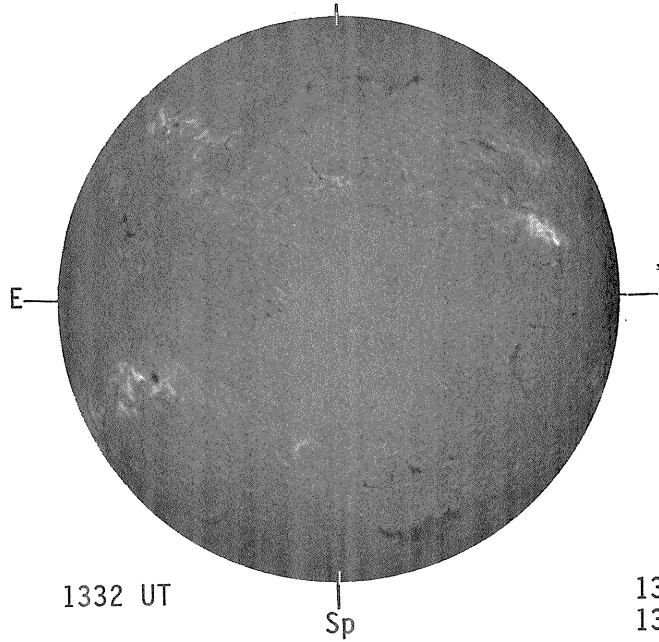
STANFORD MAGNETOGRAM



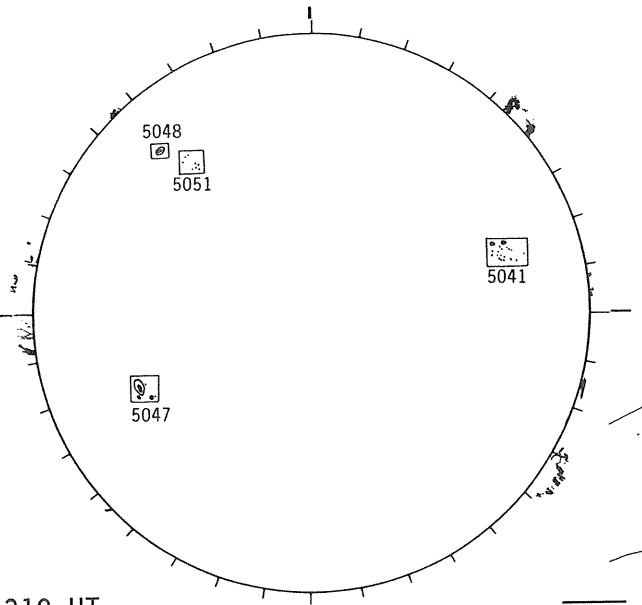
MT. WILSON MAGNETOGRAM



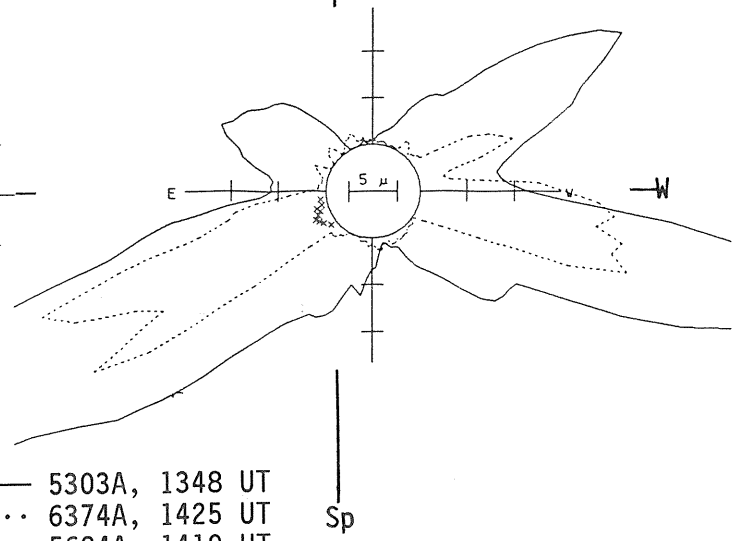
BOULDER H-ALPHA



BOULDER SUNSPOTS

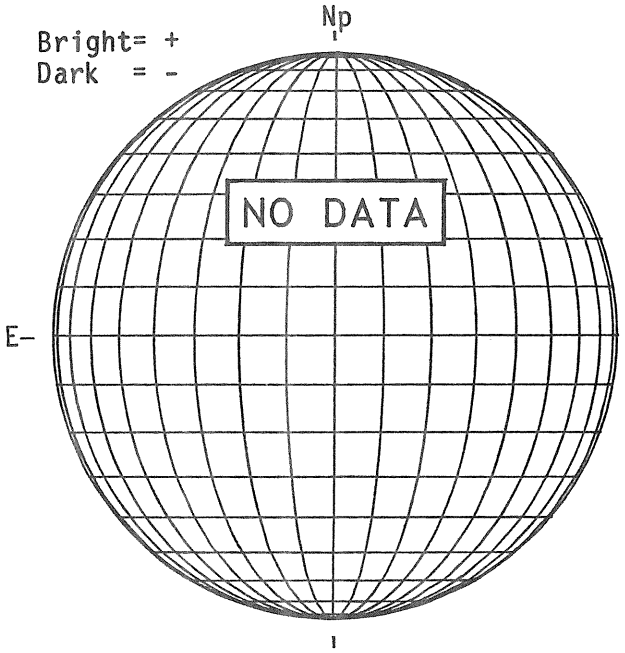


SACRAMENTO PEAK CORONA (1.15 Radii)

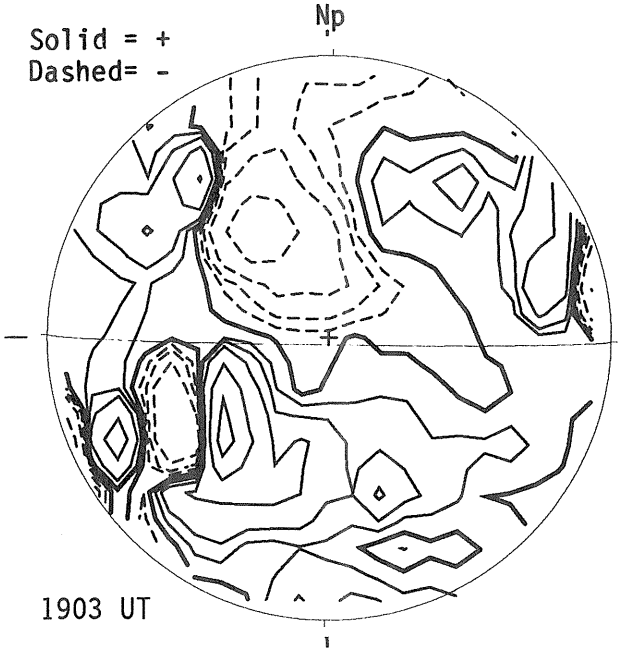


JUNE 17, 1988 (P=- 8.84, B_o= 1.30, L_o= 201.69)

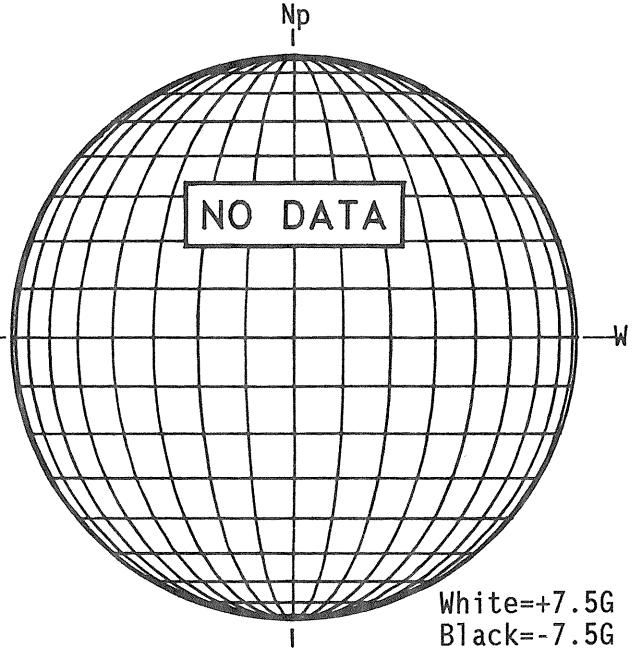
KITT PEAK MAGNETOGRAM



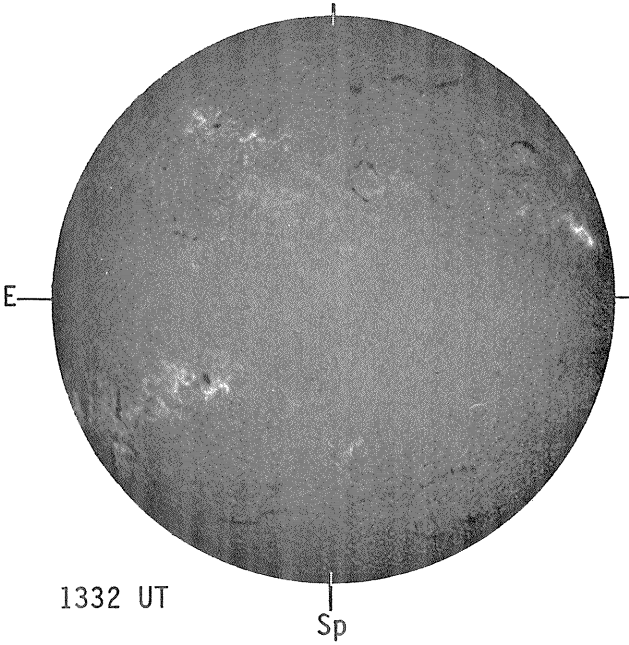
STANFORD MAGNETOGRAM



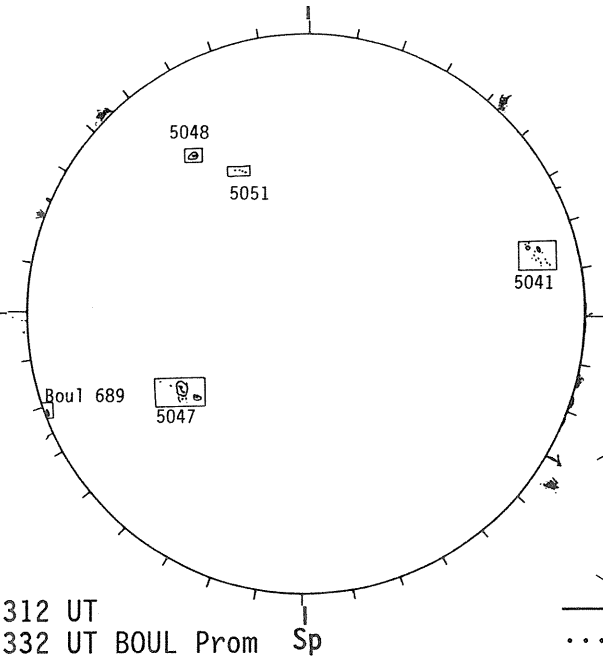
MT. WILSON MAGNETOGRAM



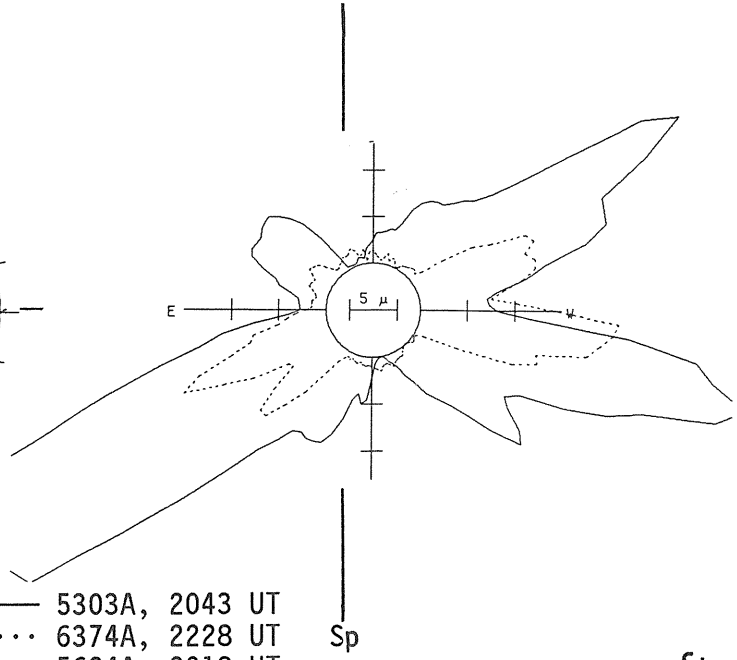
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



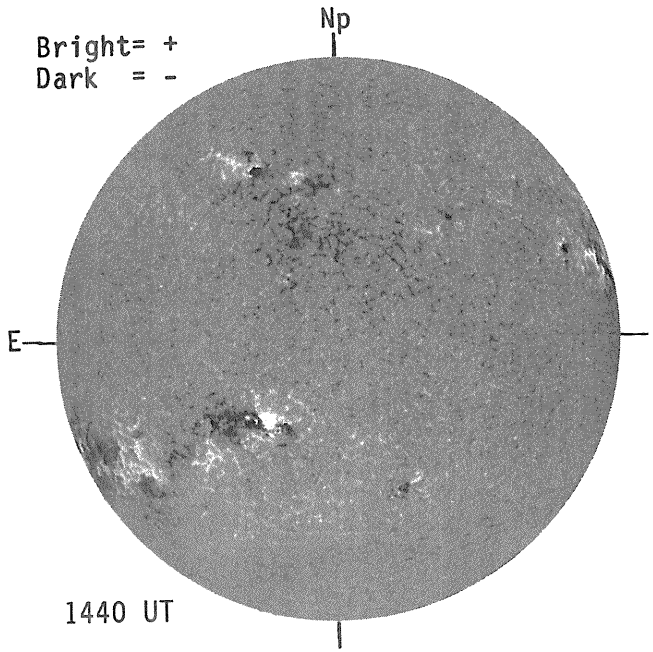
—— 5303A, 2043 UT
···· 6374A, 2228 UT
xxxx 5694A, 2218 UT
NO 5694A ACTIVITY TODAY

JUNE 18, 1988 (P=- 8.40, B_o= 1.42, L_o= 188.46)

67
Jul 88

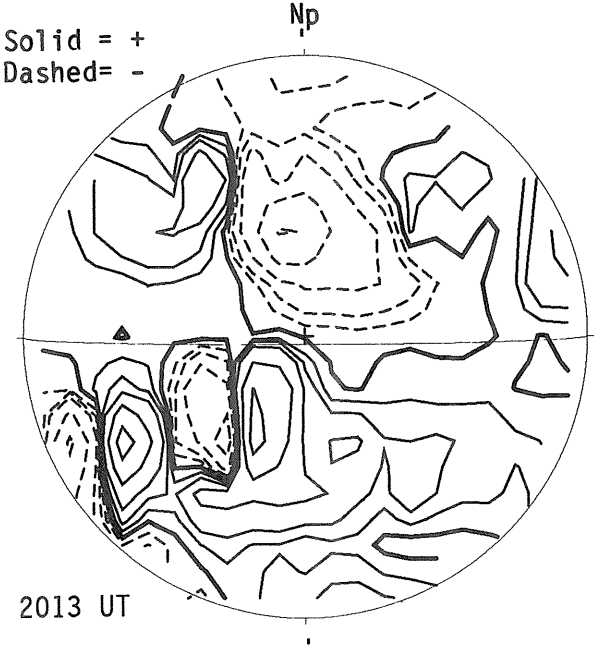
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



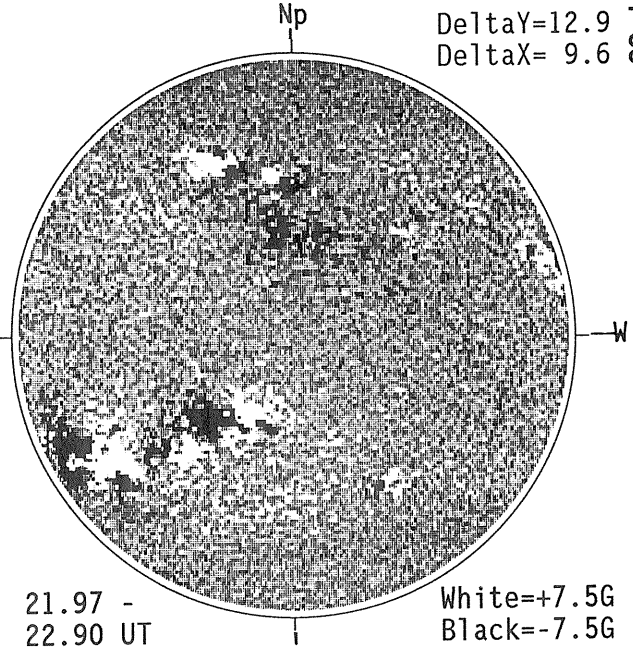
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

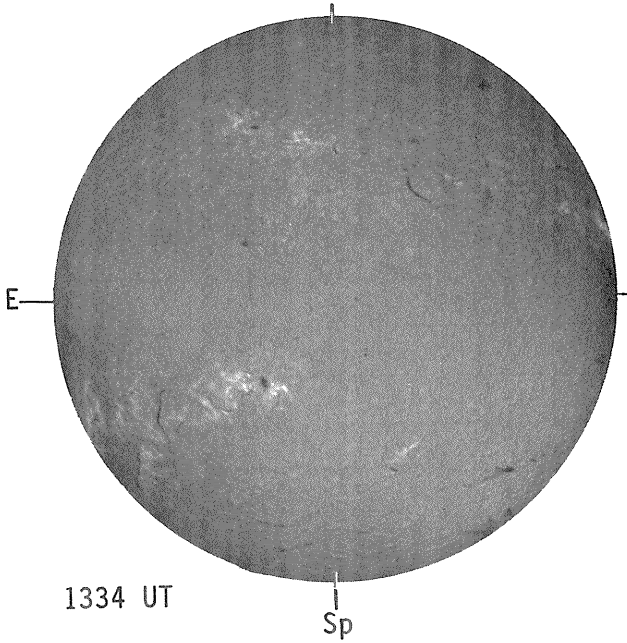


MT. WILSON MAGNETOGRAM

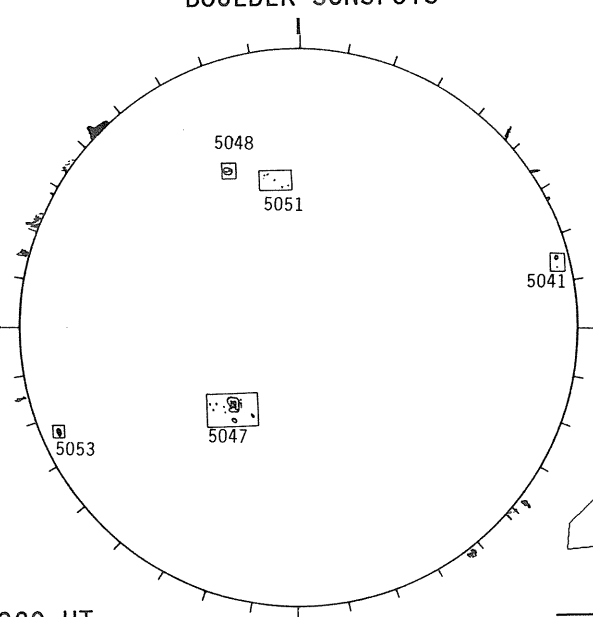
DeltaY=12.9
DeltaX= 9.6



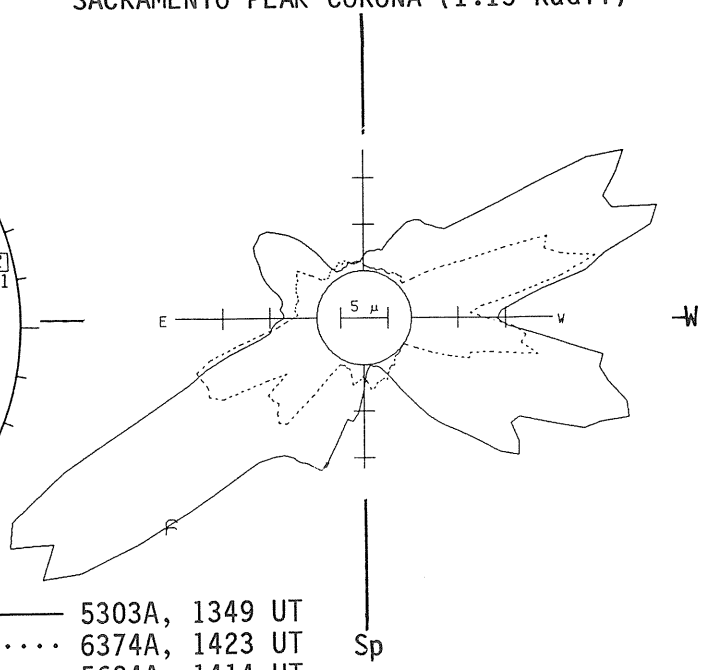
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A, 1349 UT
···· 6374A, 1423 UT
xxxx 5694A, 1414 UT
NO 5694A ACTIVITY TODAY

JUNE 19, 1988 (P=- 7.96, B_o= 1.54, L_o= 175.22)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

NO DATA

E

STANFORD MAGNETOGRAM

Np

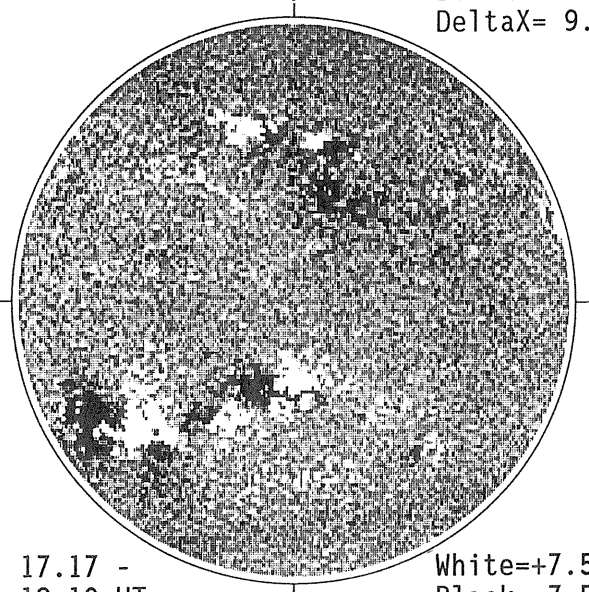
Solid = +
Dashed= -

NO DATA

MT. WILSON MAGNETOGRAM

Np

DeltaY=12.9
DeltaX= 9.6

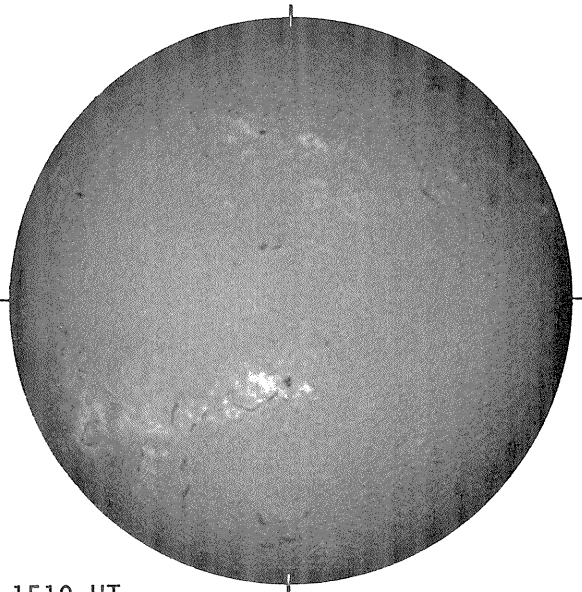


W

17.17 -
18.10 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

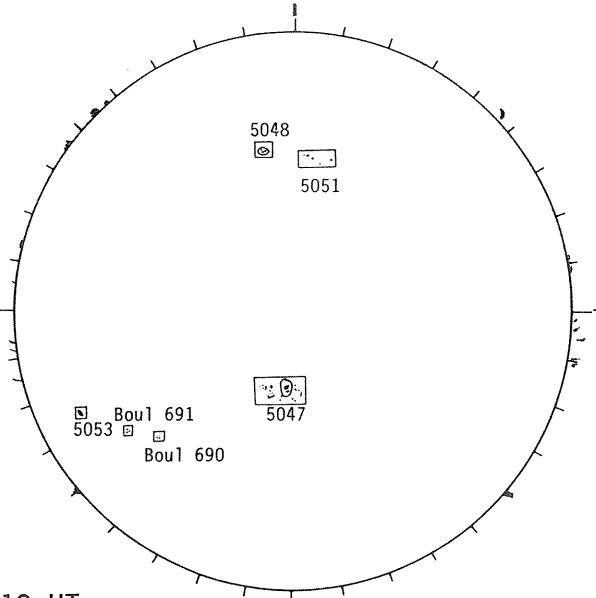


E

1510 UT

Sp

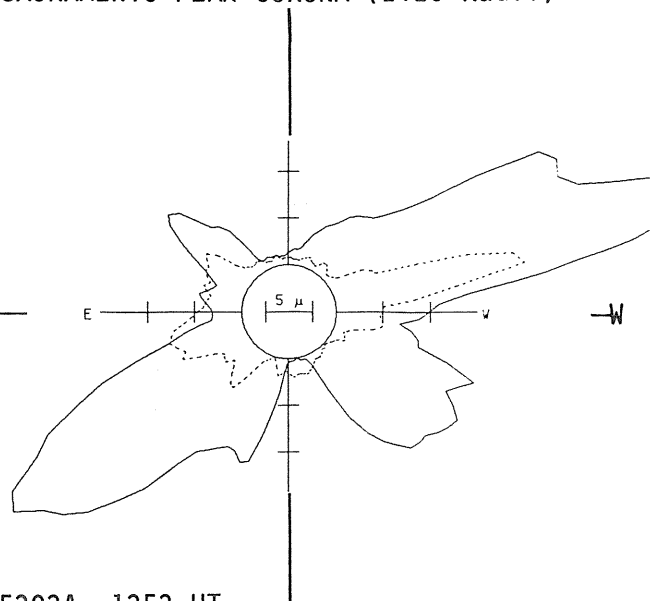
BOULDER SUNSPOTS



1318 UT
1510 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



W

—— 5303A, 1353 UT
···· 6374A, 1418 UT
xxxx 5694A, 1407 UT
NO 5694A ACTIVITY TODAY

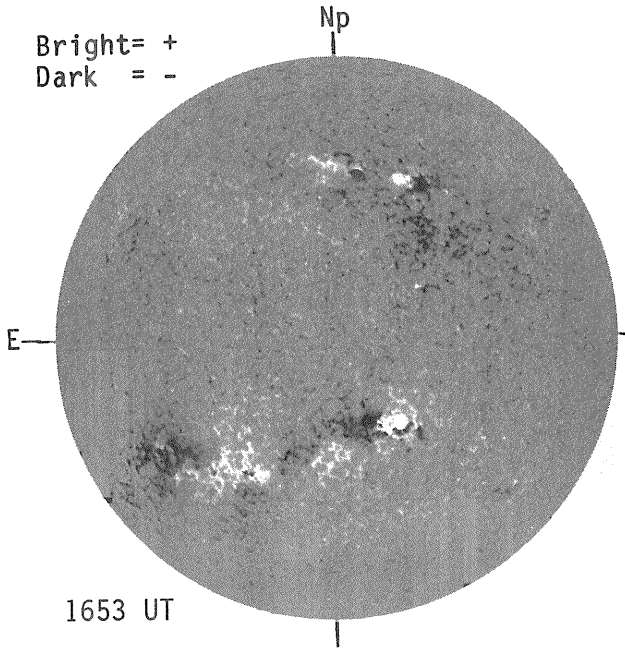
Sp

JUNE 20, 1988 (P=- 7.52 B_o= 1.66, L_o= 161.98)

69
Jul 88

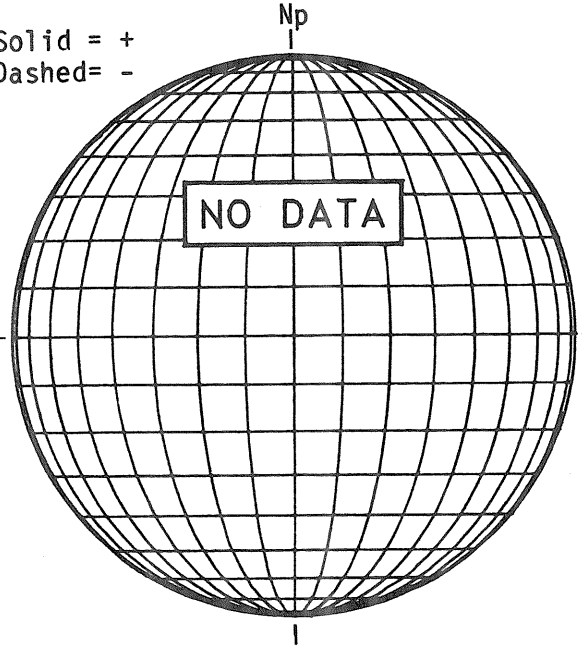
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



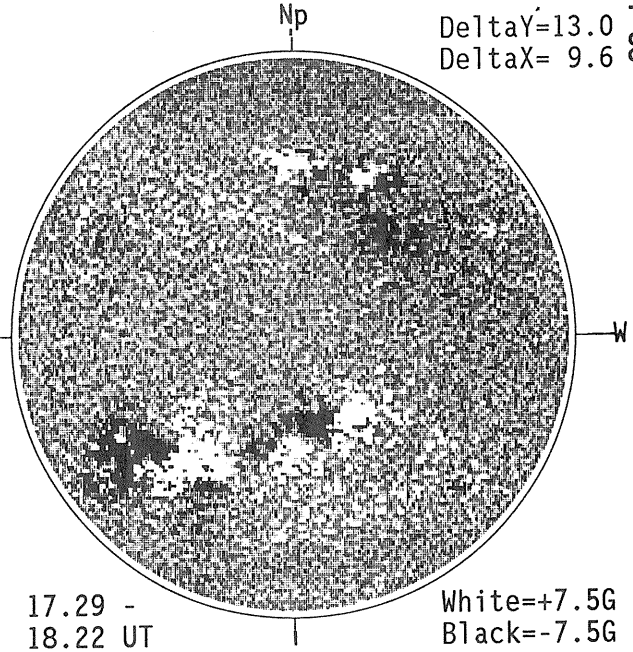
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

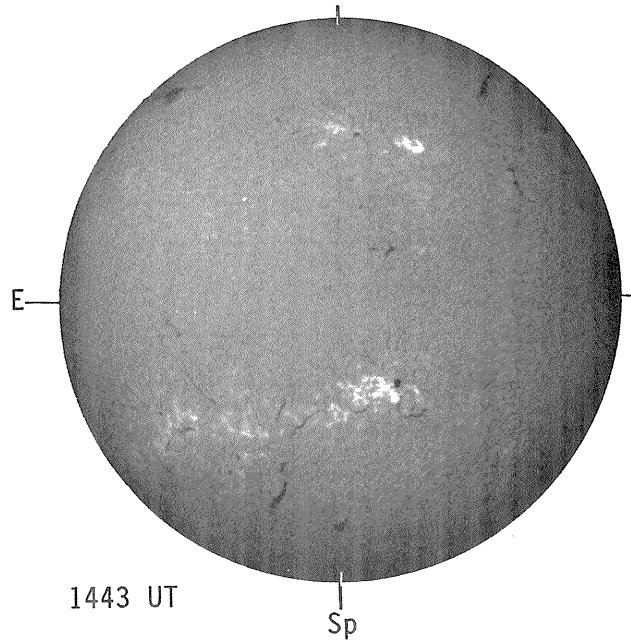
DeltaY=13.0
DeltaX= 9.6



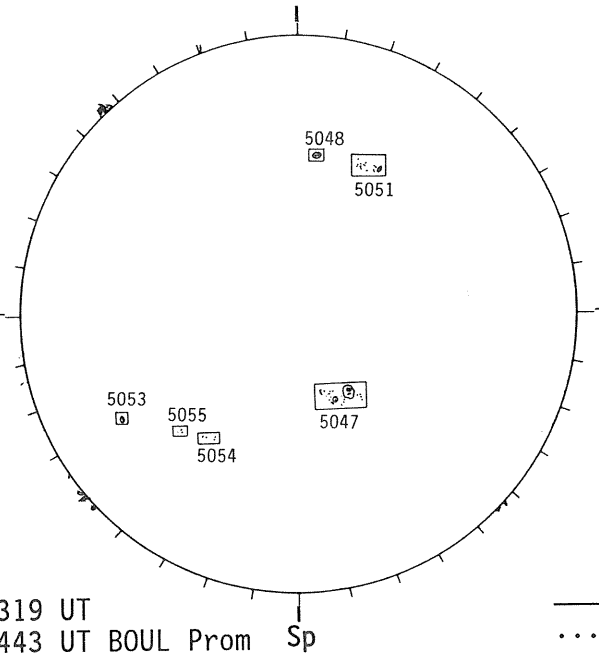
17.29 -
18.22 UT

White=+7.5G
Black=-7.5G

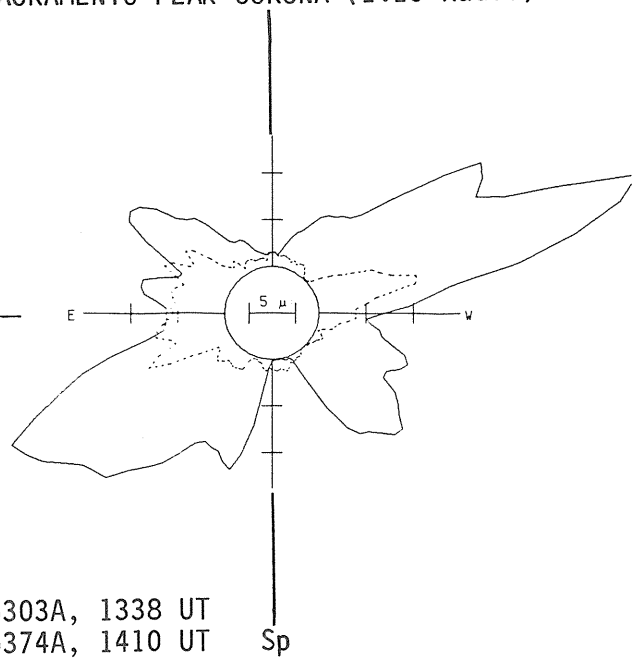
BOULDER H-ALPHA



BOULDER SUNSPOTS



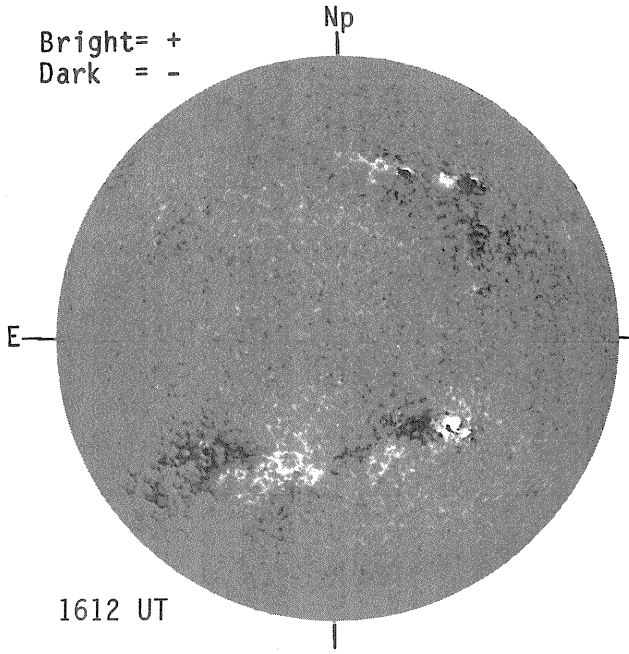
SACRAMENTO PEAK CORONA (1.15 Radii)



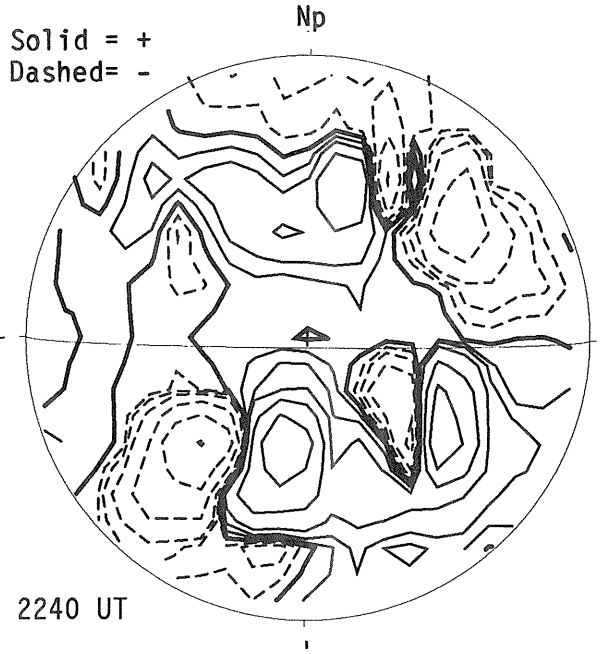
—— 5303A, 1338 UT
···· 6374A, 1410 UT
xxxx 5694A, 1401 UT
NO 5694A ACTIVITY TODAY

JUNE 21, 1988 (P=- 7.08, B_o= 1.77, L_o= 148.75)

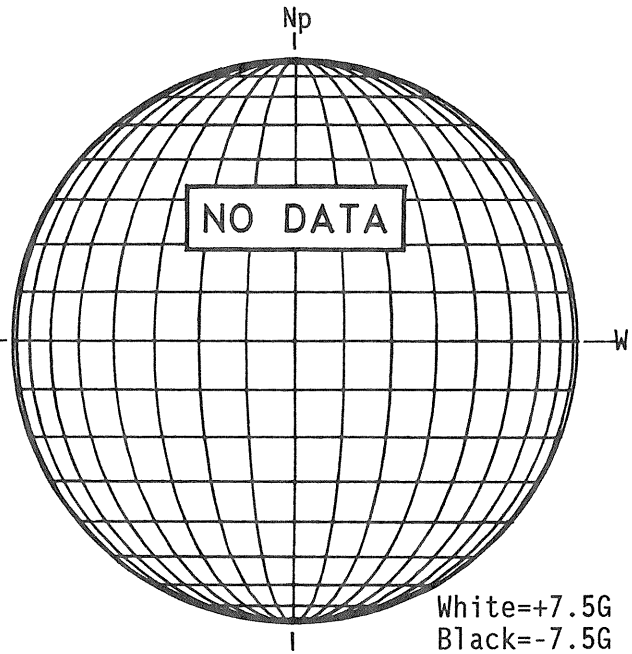
KITT PEAK MAGNETOGRAM



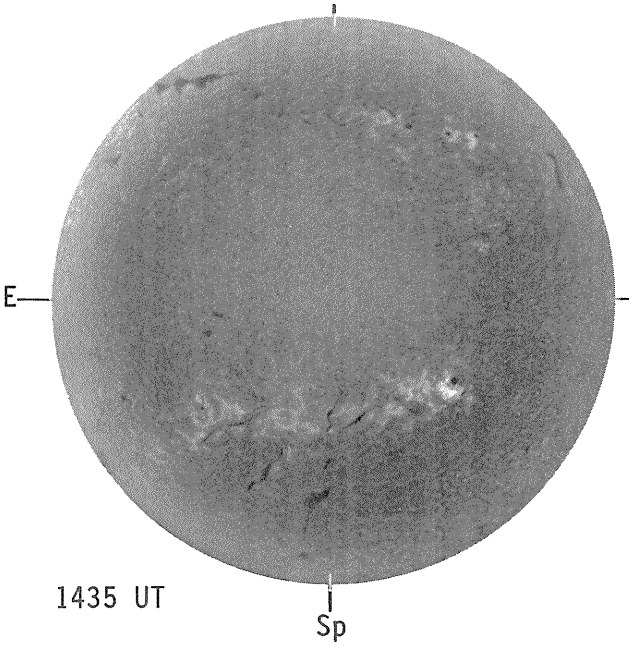
STANFORD MAGNETOGRAM



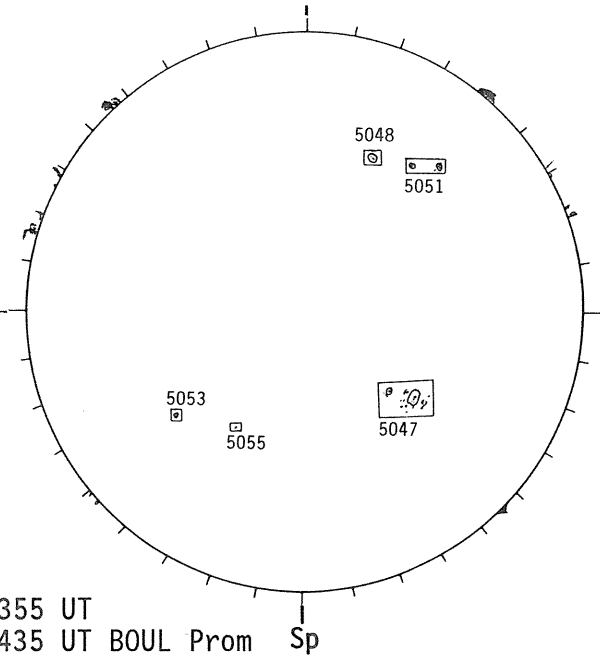
MT. WILSON MAGNETOGRAM



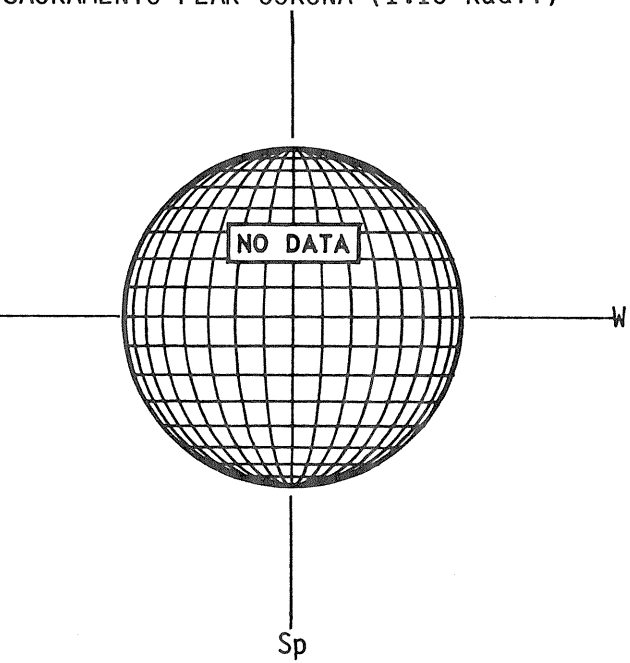
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

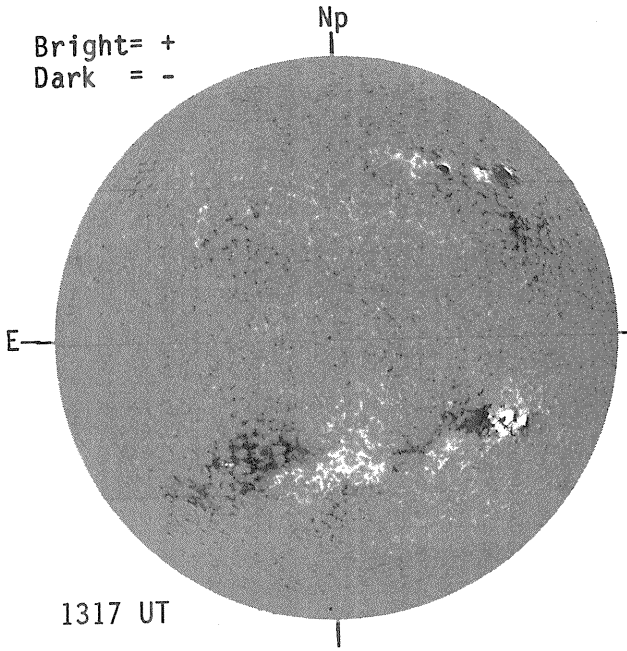


JUNE 22, 1988 (P=- 6.64, B_o= 1.89, L_o= 135.51)

71
Jul 88

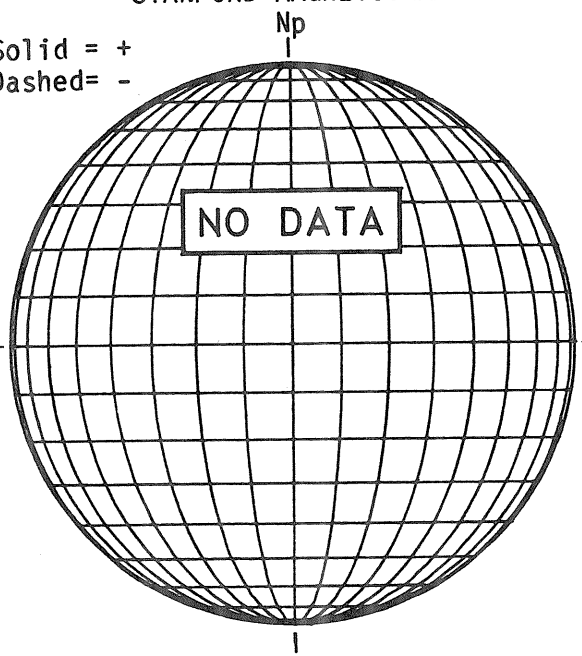
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



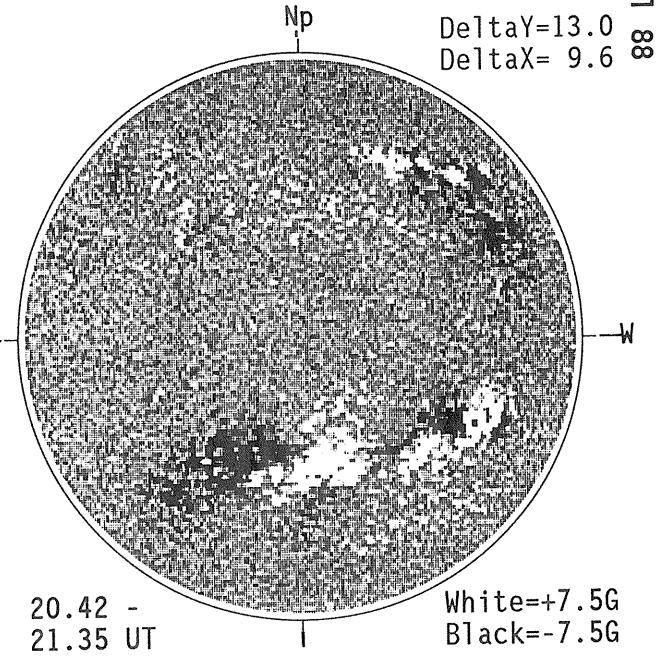
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



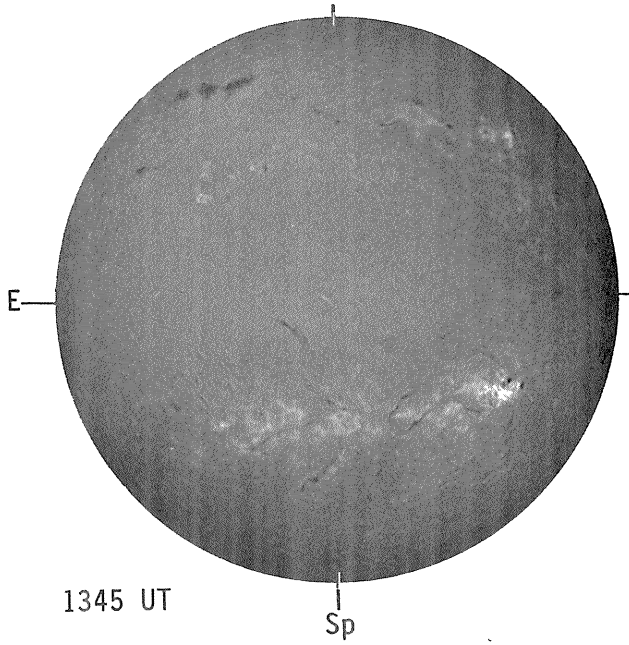
MT. WILSON MAGNETOGRAM

DeltaY=13.0
DeltaX= 9.6

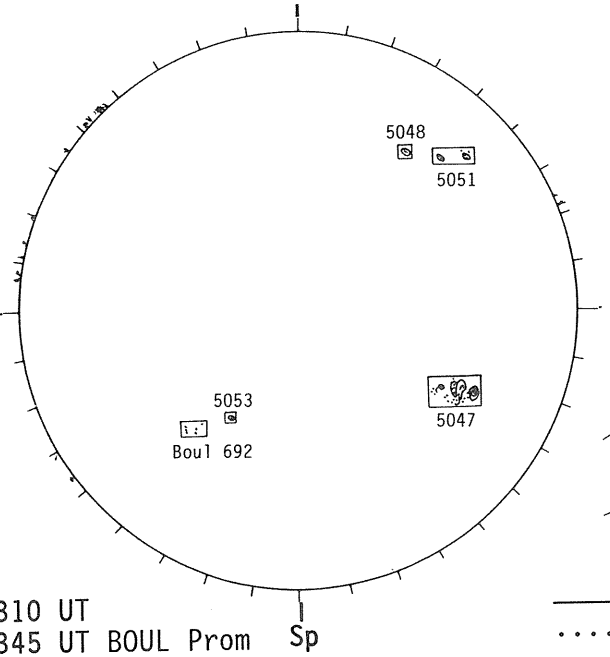


White=+7.5G
Black=-7.5G

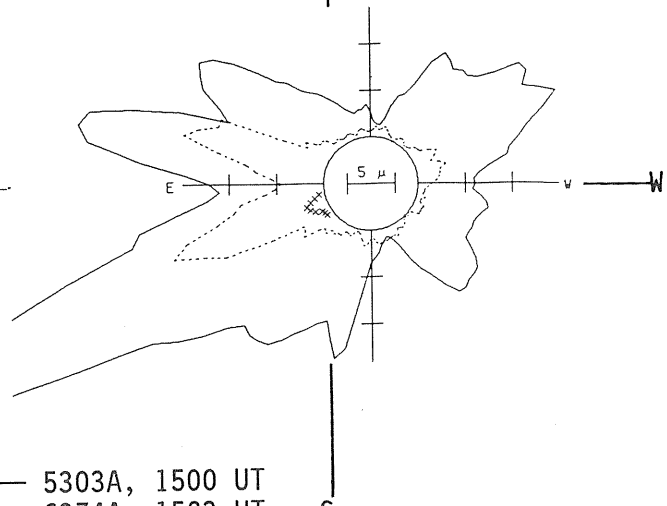
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

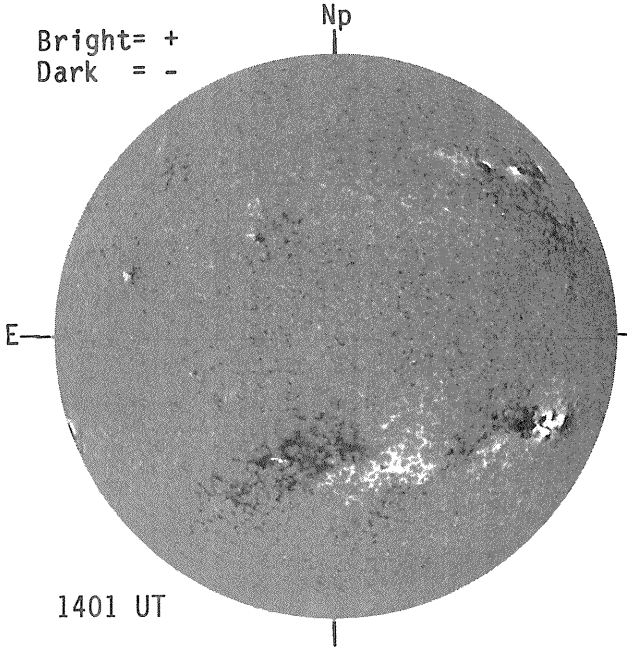


—— 5303A, 1500 UT
···· 6374A, 1523 UT
xxxx 5694A, 1514 UT

JUNE 23, 1988 (P=- 6.19, B_o= 2.00, L_o= 122.27)

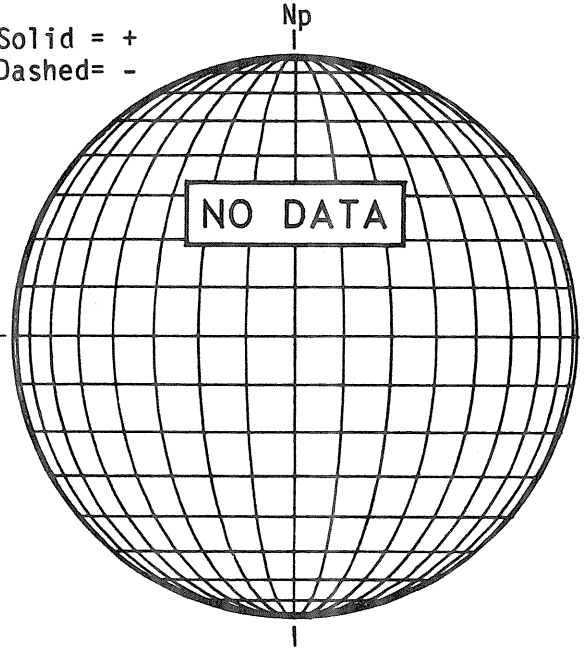
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



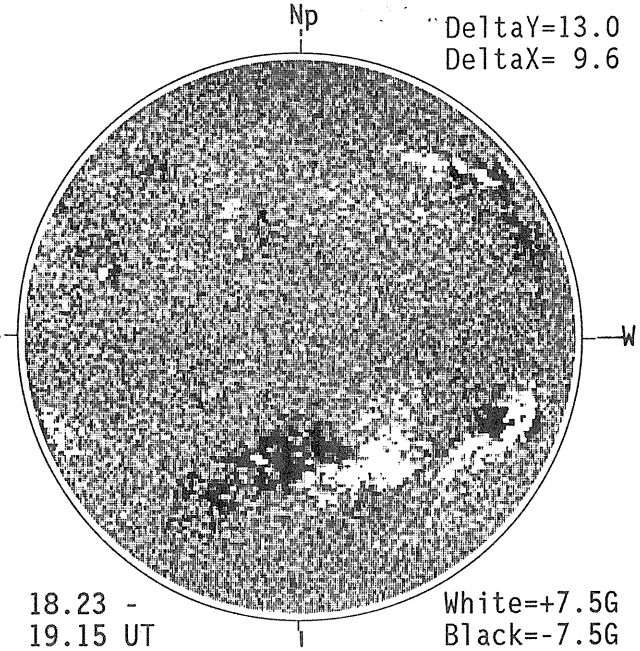
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

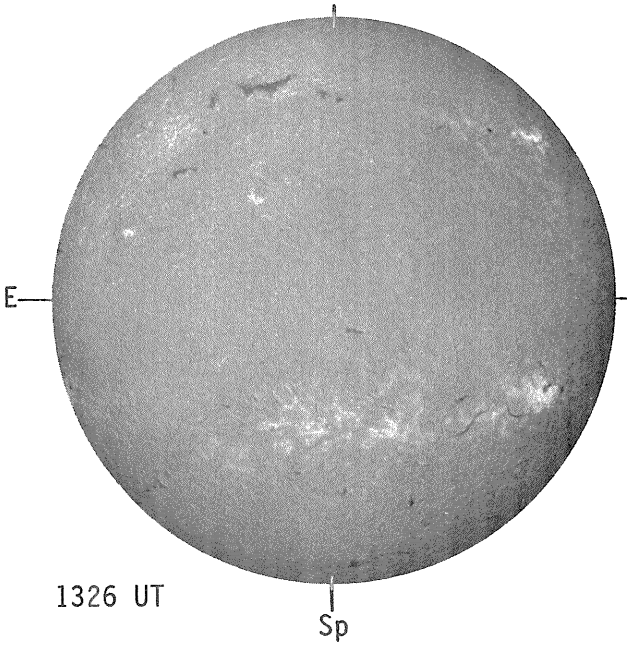
DeltaY=13.0
DeltaX= 9.6



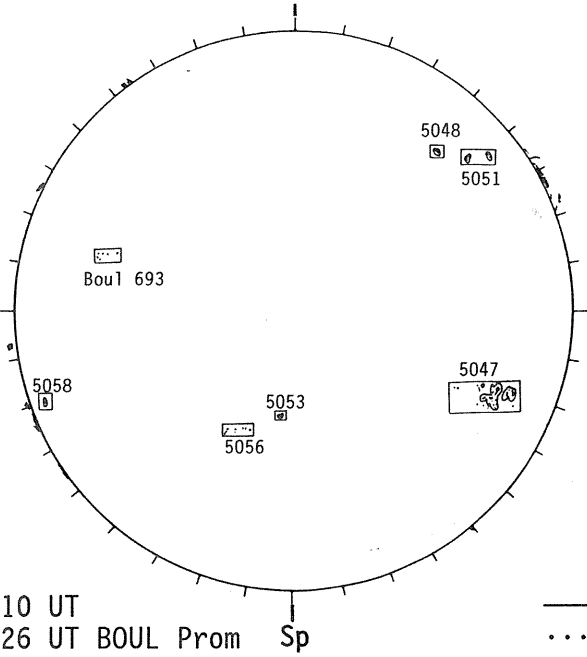
18.23 -
19.15 UT

White=+7.5G
Black=-7.5G

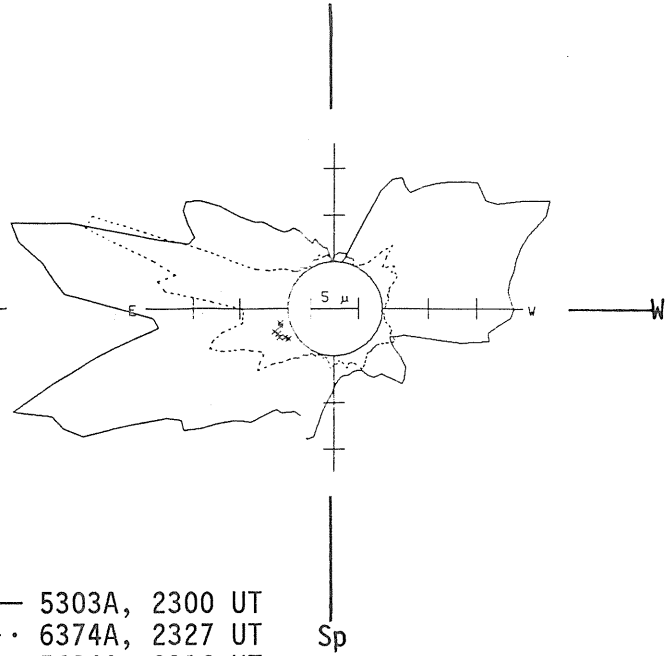
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



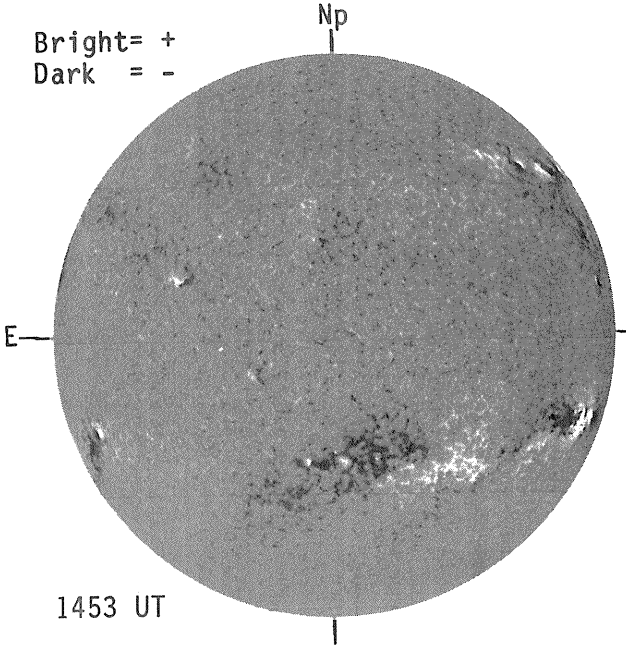
—— 5303A, 2300 UT
···· 6374A, 2327 UT
xxxx 5694A, 2316 UT

JUNE 24, 1988 (P=- 5.74, B_o= 2.12, L_o= 109.04)

73
Jul 88

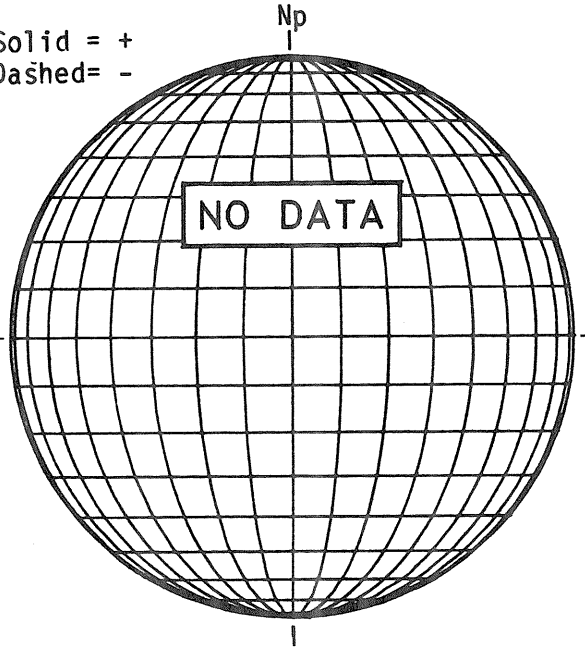
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



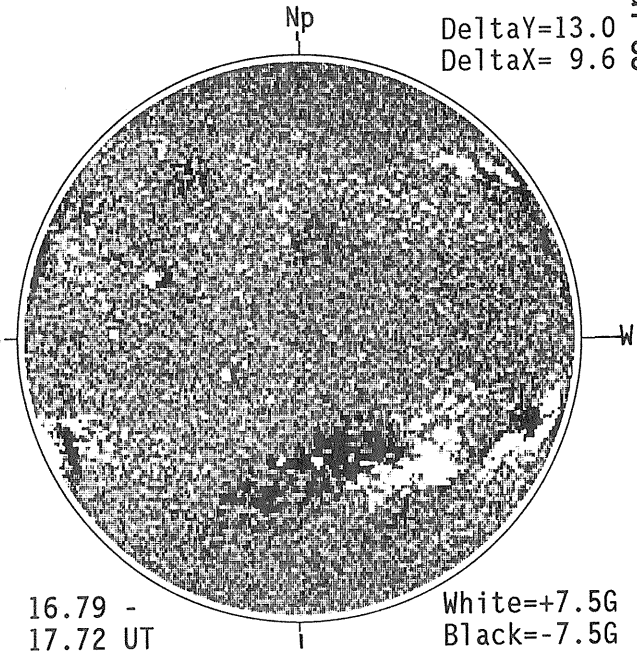
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

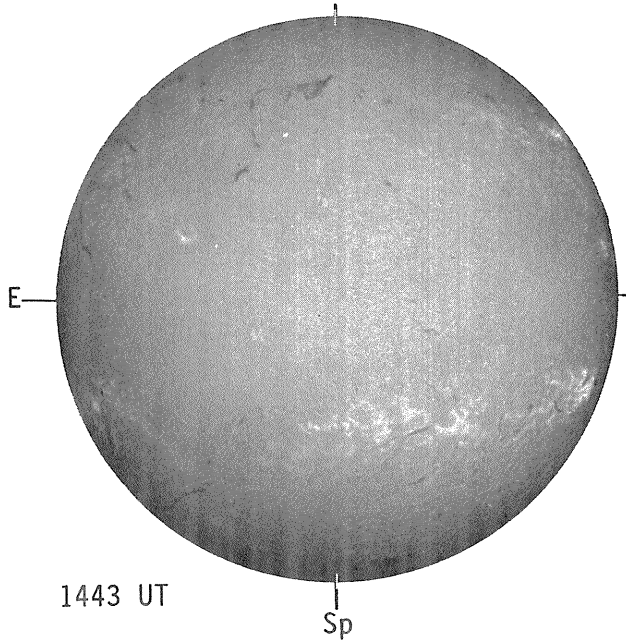


MT. WILSON MAGNETOGRAM

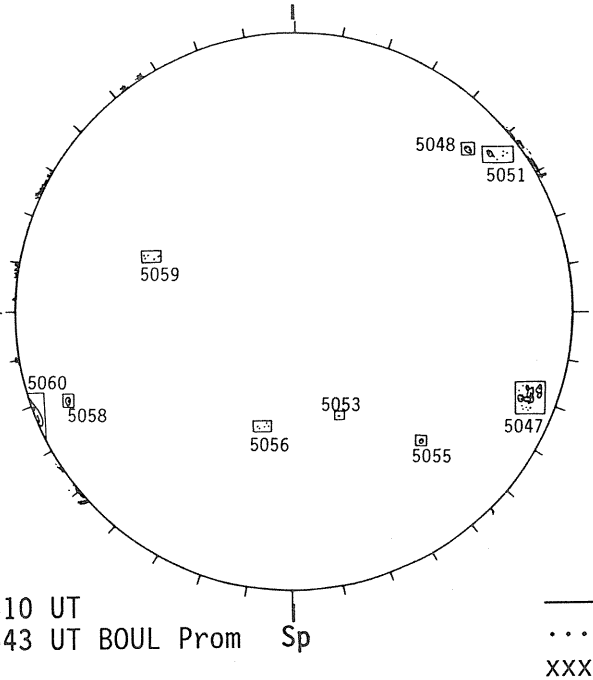
DeltaY=13.0
DeltaX= 9.6



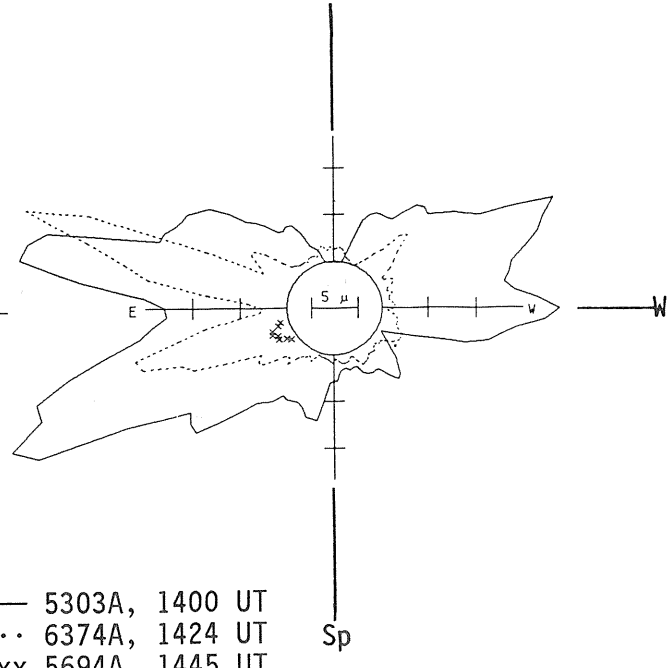
BOULDER H-ALPHA



BOULDER SUNSPOTS



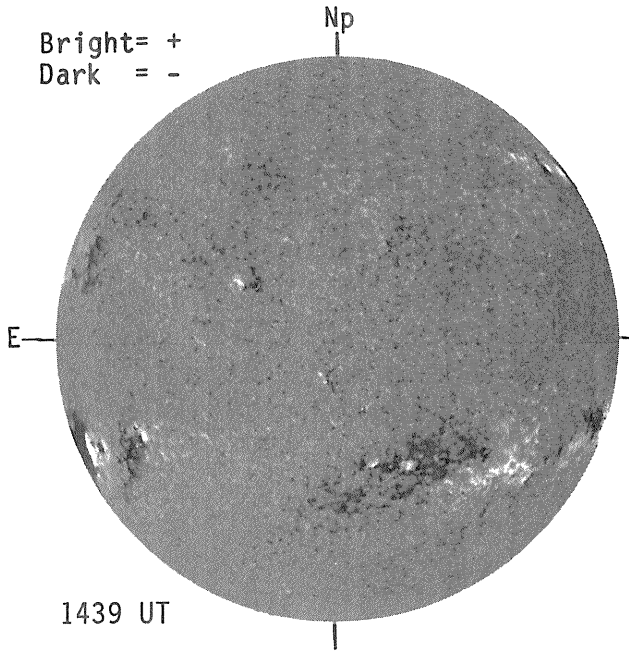
SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 25, 1988 (P=- 5.30, B_o= 2.23, L_o= 95.80)

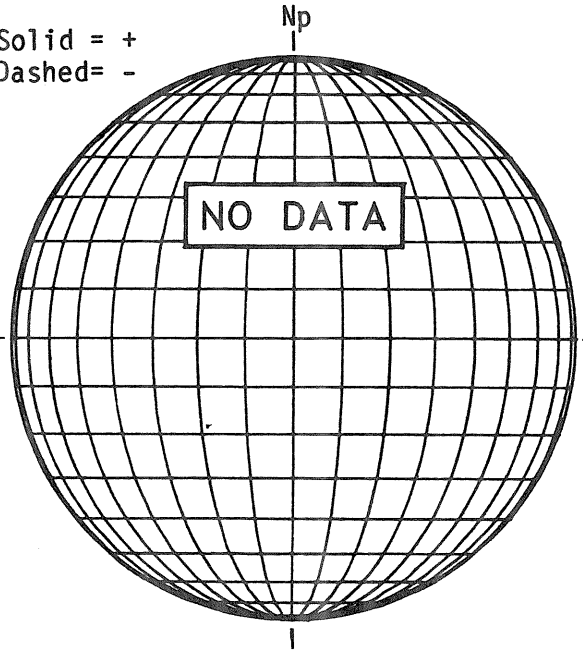
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



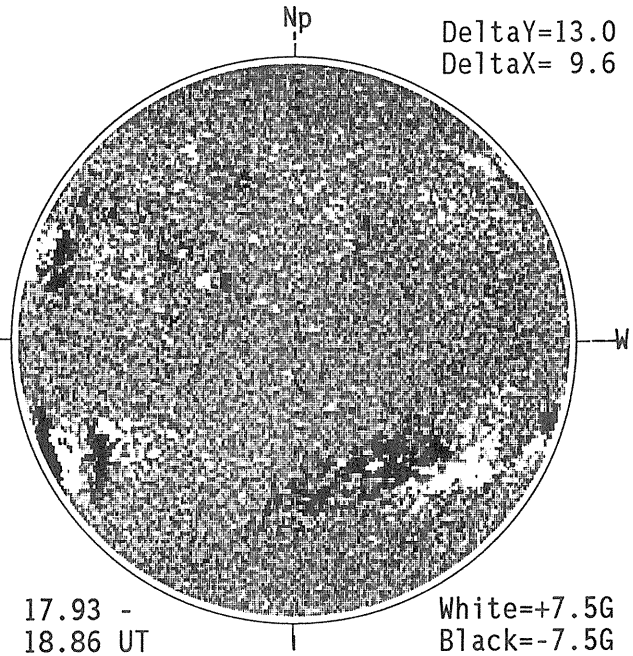
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

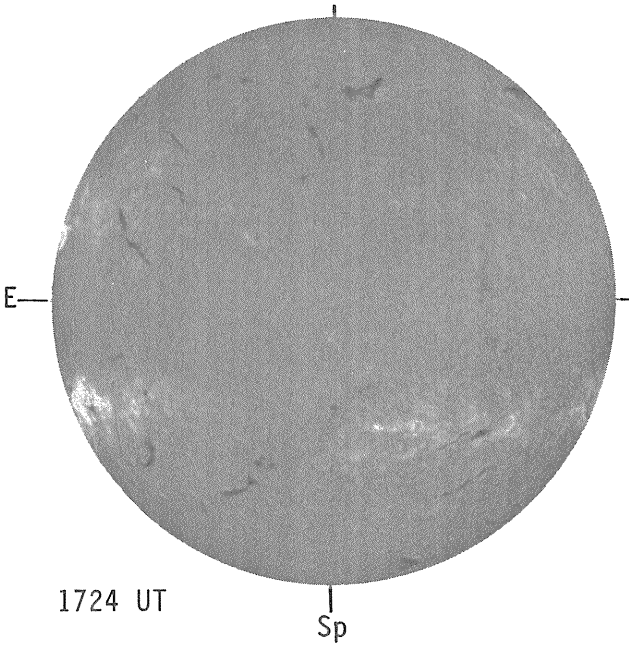


MT. WILSON MAGNETOGRAM

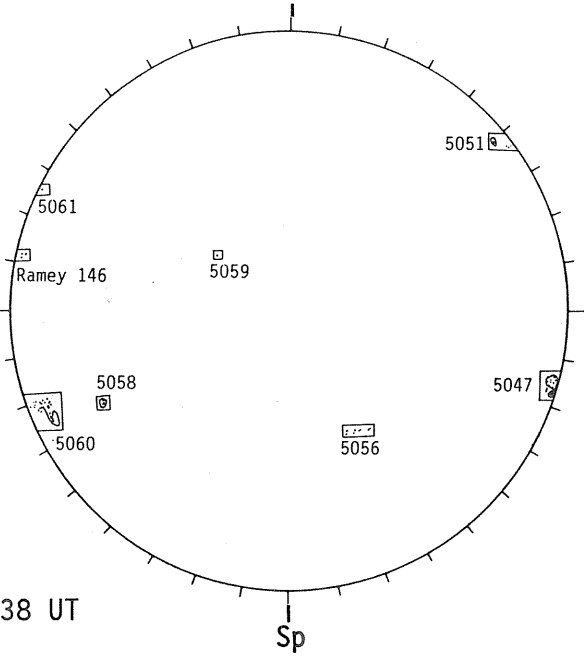
DeltaY=13.0
DeltaX= 9.6



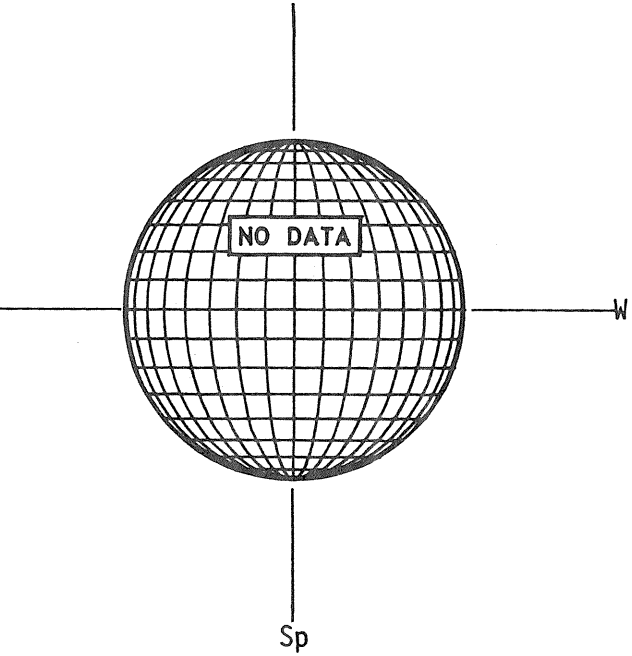
HOLLOMAN H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 26, 1988 (P=- 4.85, B_0= 2.35, L_0= 82.56)

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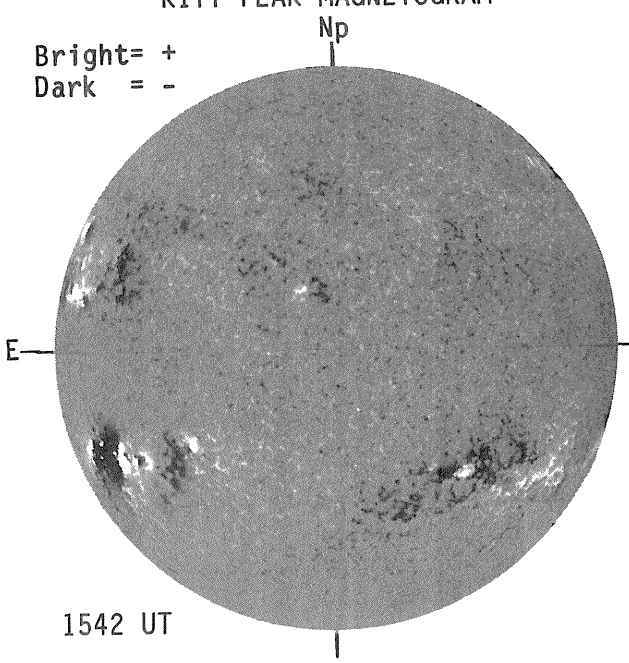
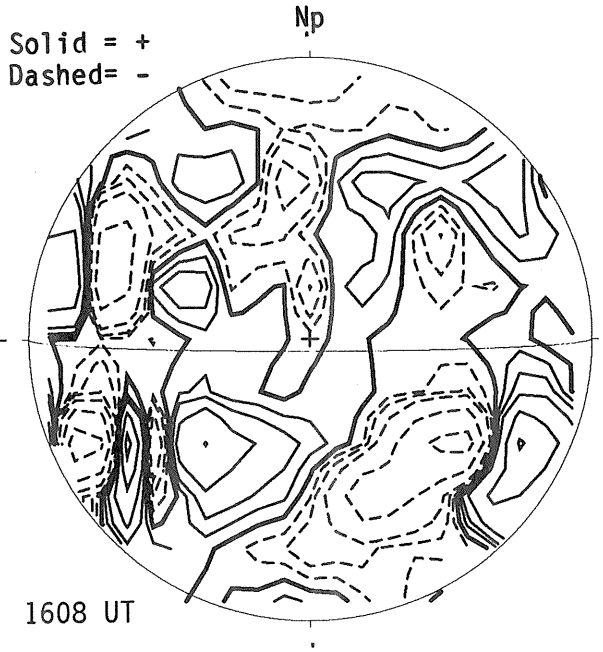
Jul 88

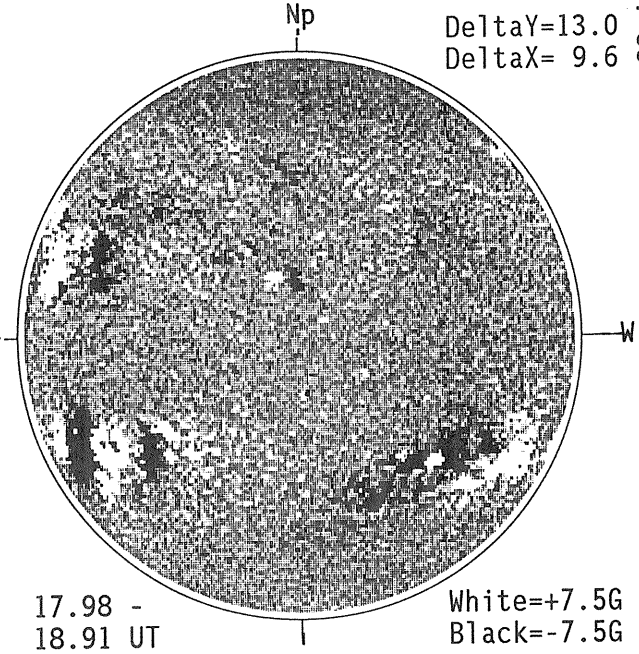
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

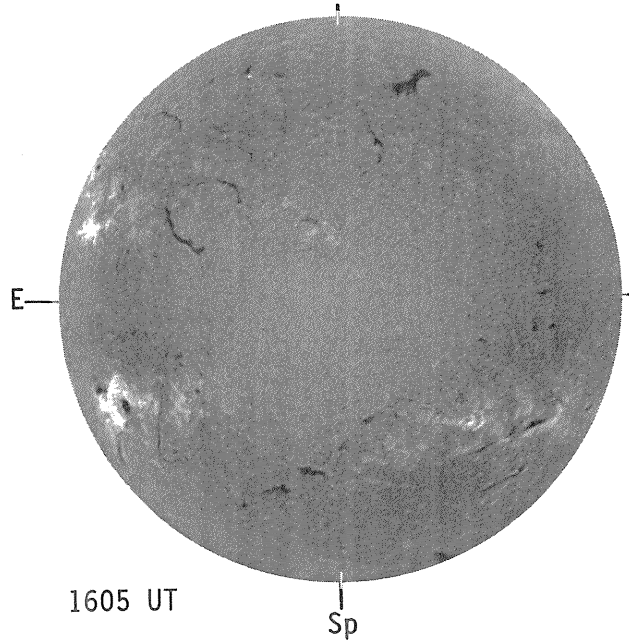


MT. WILSON MAGNETOGRAM

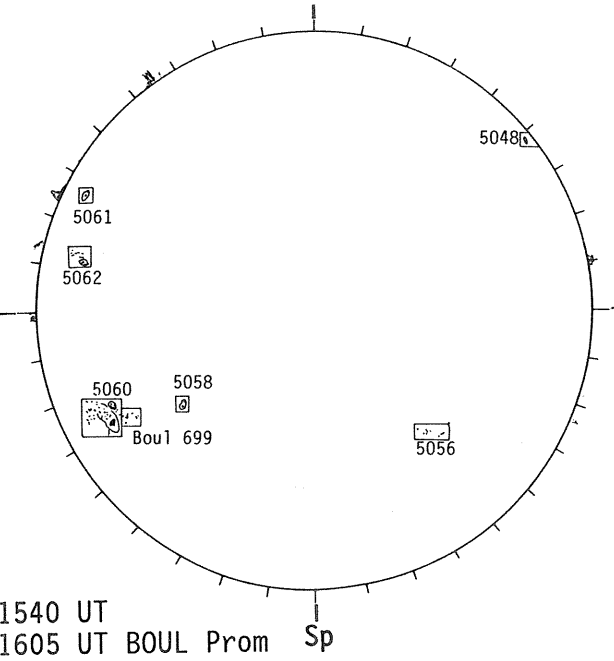


76 Jul 88

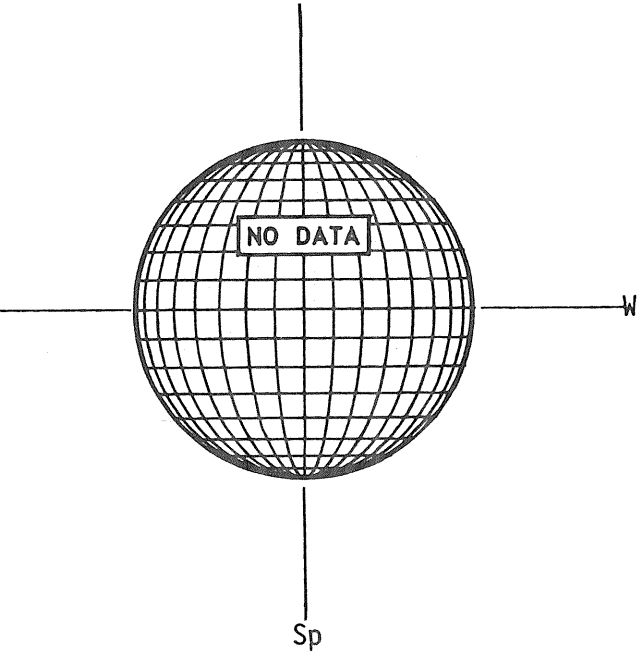
BOULDER H-ALPHA



BOULDER SUNSPOTS



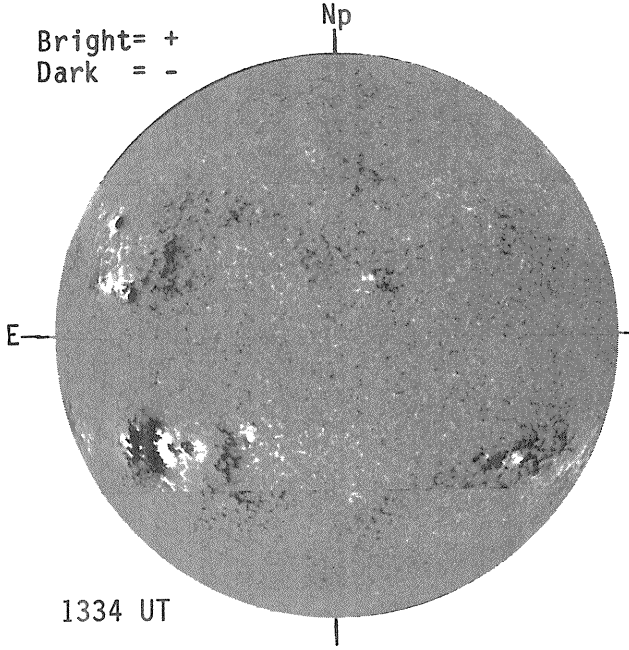
SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 27, 1988 (P=- 4.40, B_o= 2.46, L_o= 69.33)

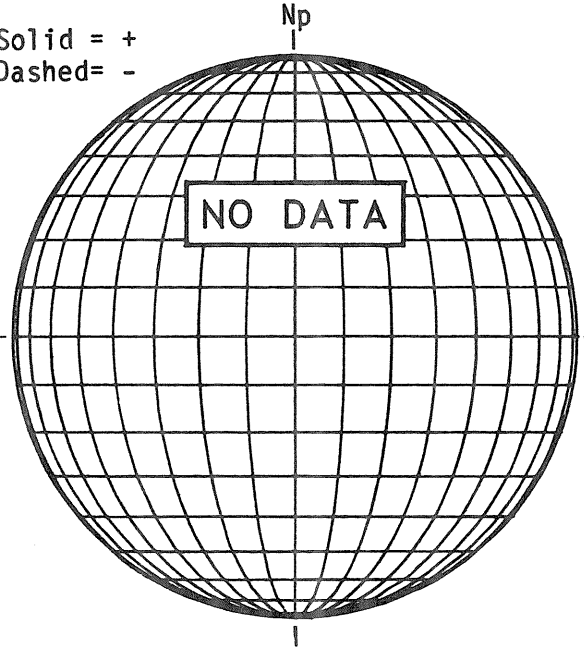
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



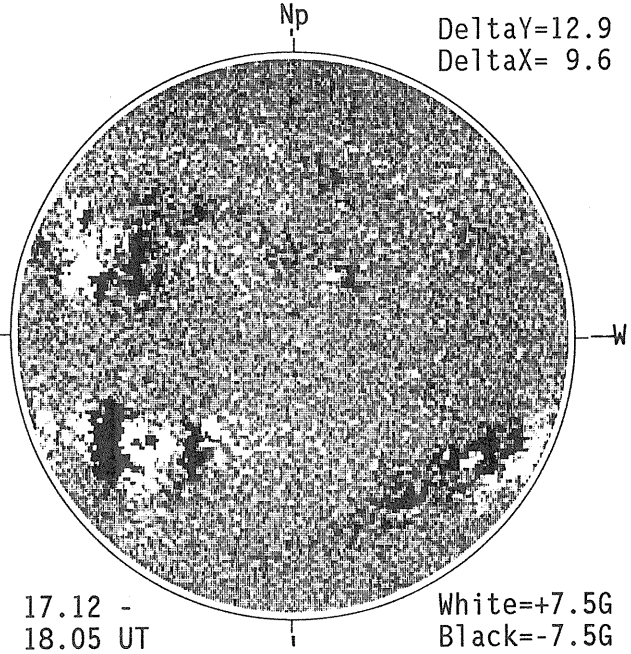
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

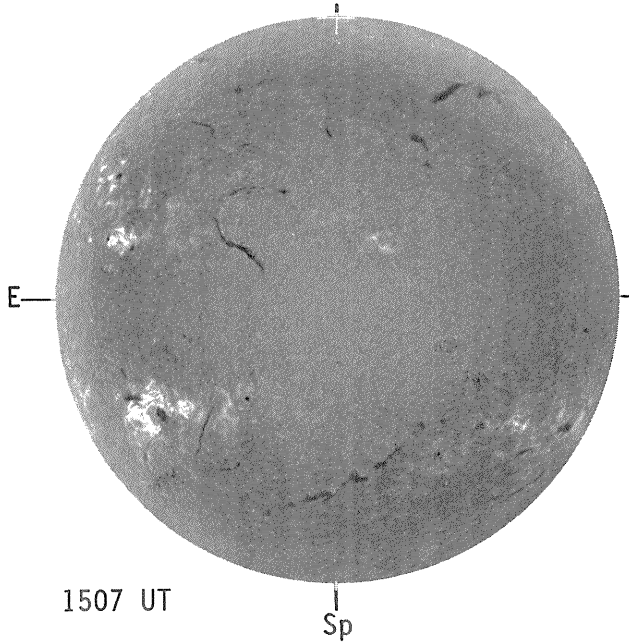


MT. WILSON MAGNETOGRAM

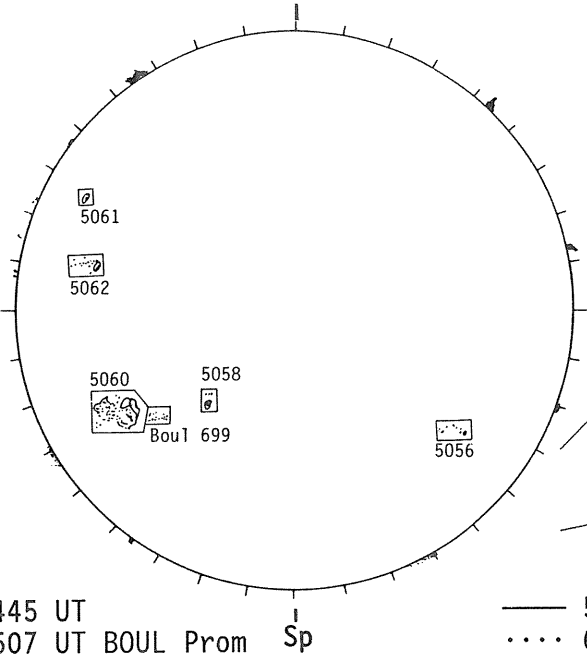
DeltaY=12.9
DeltaX= 9.6



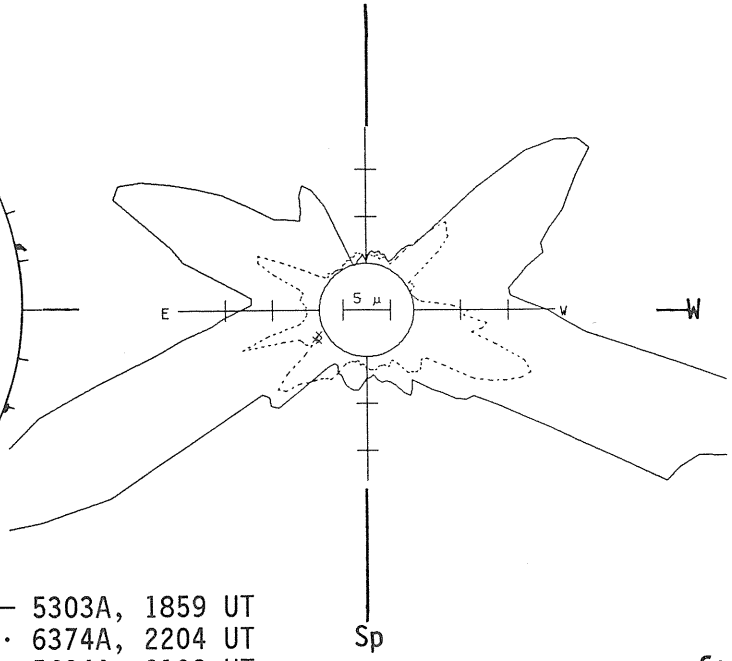
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



JUNE 28, 1988 (P=- 3.94, B_o= 2.57, L_o= 56.09)

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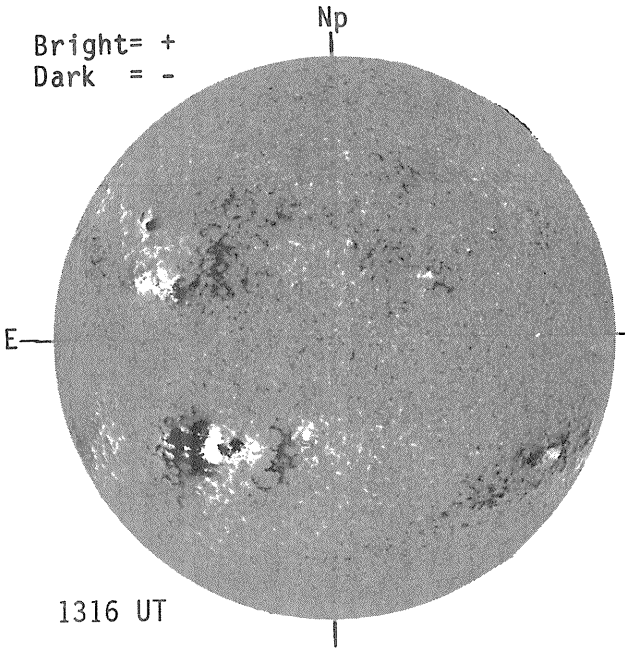
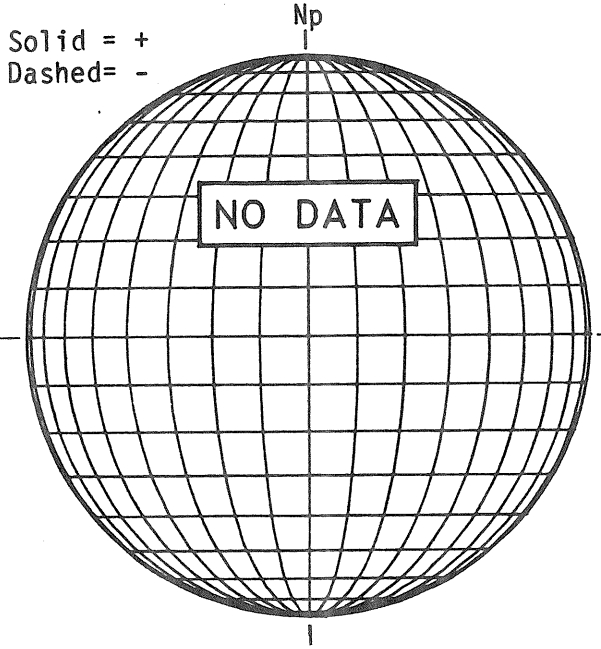
Jul 88

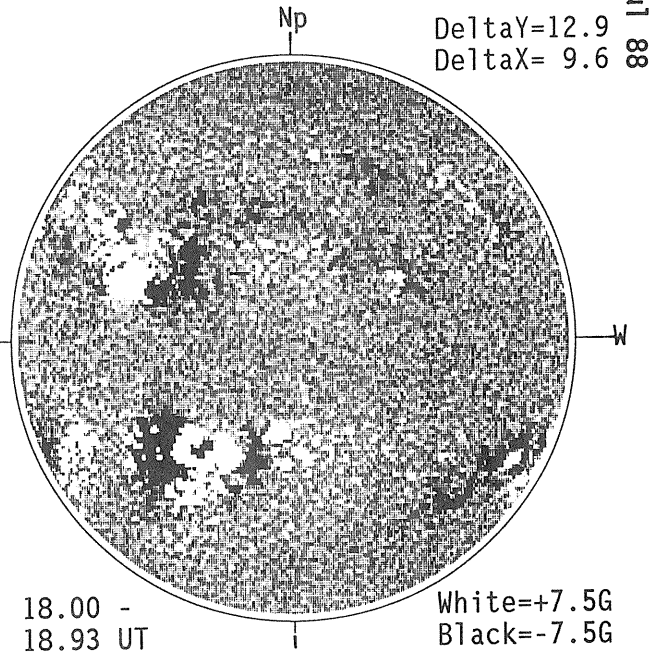
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

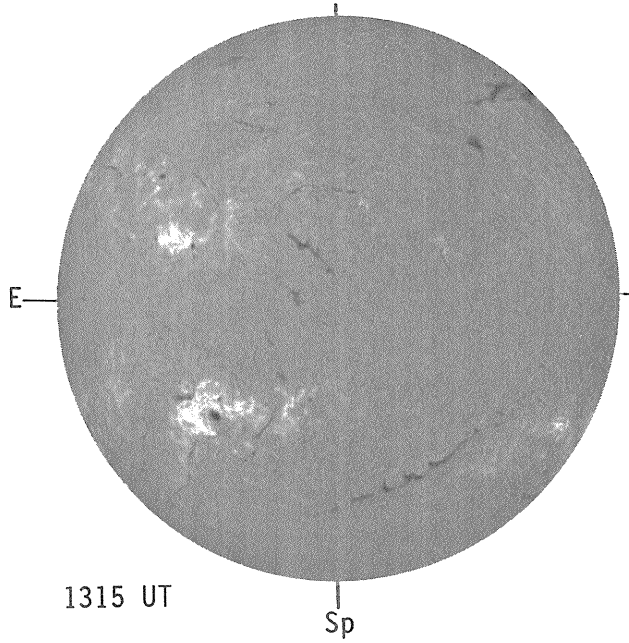


MT. WILSON MAGNETOGRAM

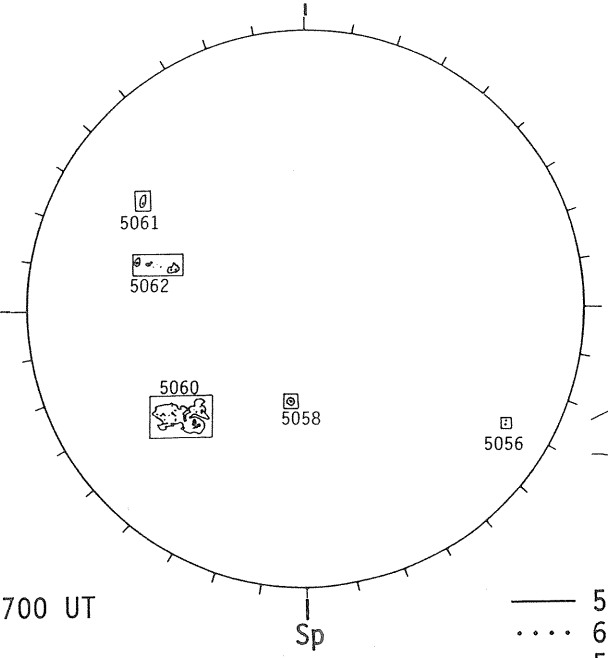


Jul 88 78

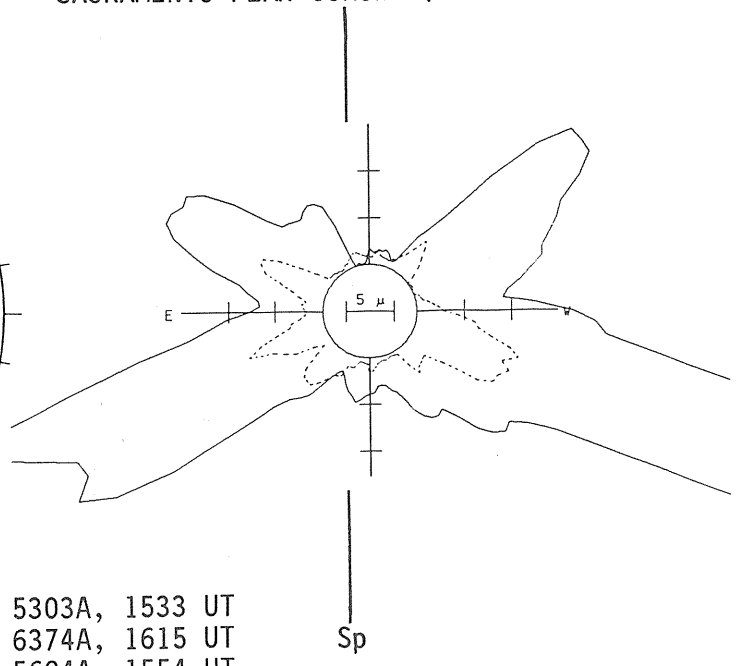
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



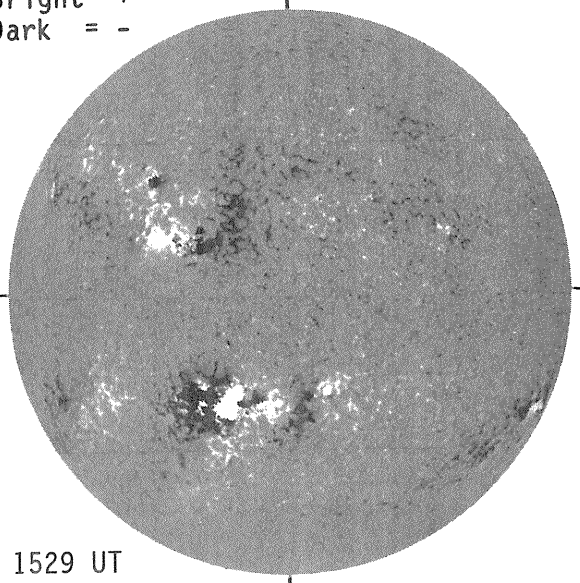
—— 5303A, 1533 UT
···· 6374A, 1615 UT
xxxx 5694A, 1554 UT
NO 5694A ACTIVITY TODAY

JUNE 29, 1988 (P=- 3.49, B_o= 2.69, L_o= 42.85)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



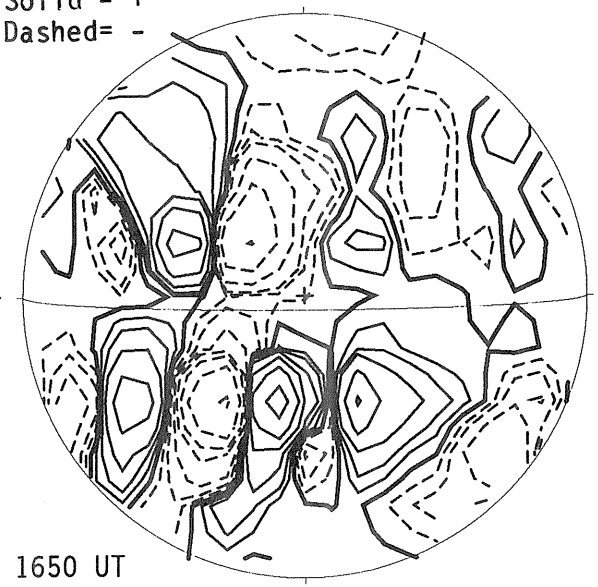
E

1529 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

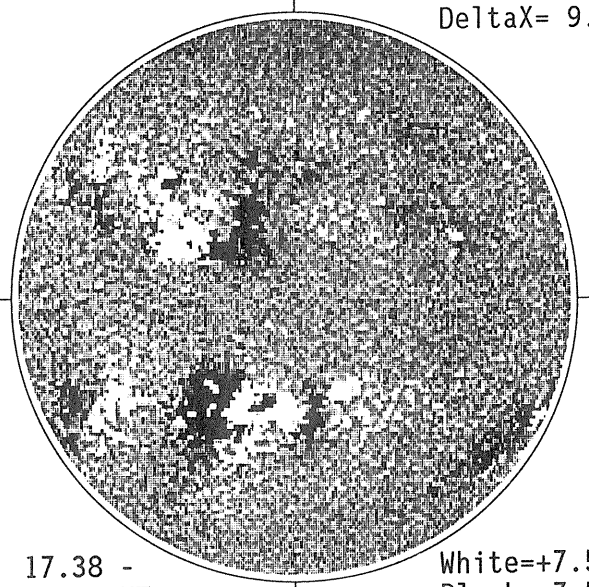


1650 UT

MT. WILSON MAGNETOGRAM

Np

DeltaY=13.0
DeltaX= 9.6

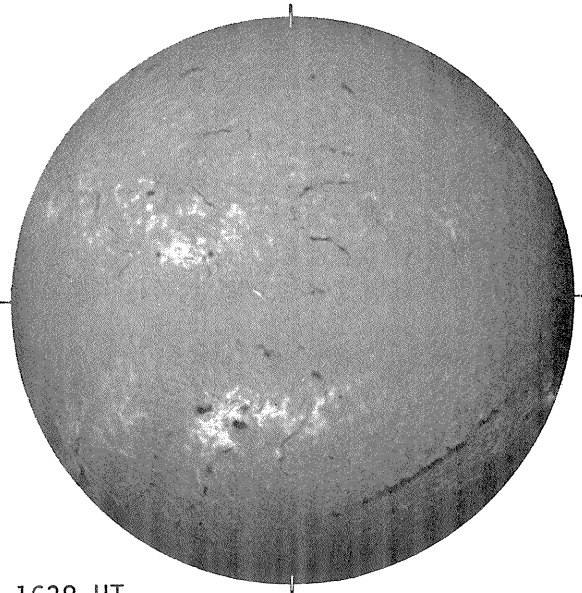


W

17.38 -
18.31 UT

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

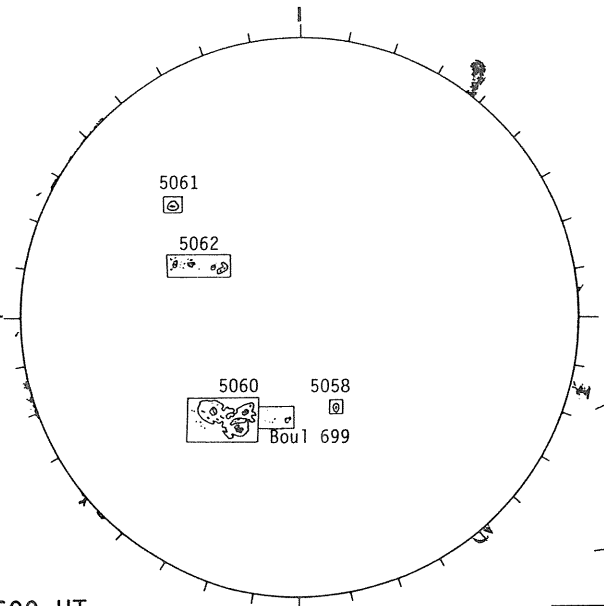


E

1638 UT

Sp

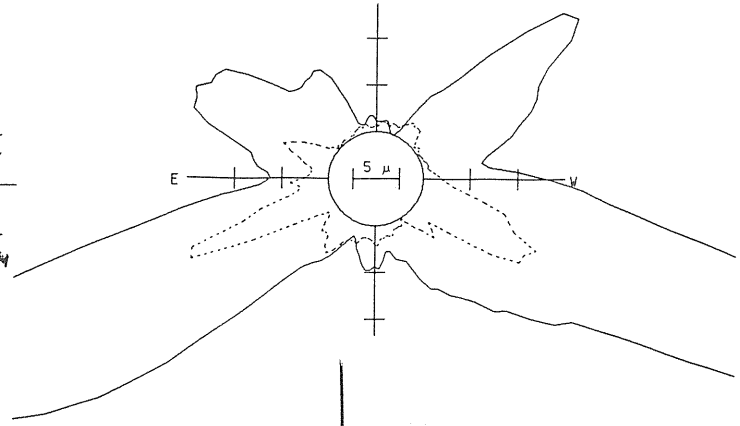
BOULDER SUNSPOTS



1600 UT
1638 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



Sp

—— 5303A, 1402 UT
···· 6374A, 1327 UT
xxxx 5694A, 1342 UT
NO 5694A ACTIVITY TODAY

JUNE 30, 1988 (P=- 3.04, B_o= 2.80, L_o= 29.62)

79 Jul 88

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

JUNE 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
5035		RAMY	06	03	1423	N13	W23	06	1.9		A	AX	10	2	1	4
5035	24619	MWIL	06	03	1445	N13	W24	06	1.8	3	(AP)					
5035		HOLL	06	03	1550	N14	W24	06	1.8		A	AX	10	3	2	3
5035		PALE	06	03	1746	N14	W23	06	2.0		A	AX	10	3	3	2
5035		LEAR	06	04	0017	N14	W28	06	1.9		B	DSO	40	7	4	3
5035		CULG	06	04	0100	N14	W27	06	2.0		B	CSO	10	2	3	1
5035		SVTO	06	04	0550	N15	W30	06	2.0		B	CRO	20	6	5	3
5035		BOUL	06	04	1340	N14	W33	06	2.1		B	CAO	40	15	6	3
5035		RAMY	06	04	1345	N15	W35	06	1.9		B	DAO	80	8	6	3
5035	24619	MWIL	06	04	1430	N14	W36	06	1.9	5	(B)					
5035		HOLL	06	04	1650	N14	W37	06	1.9		B	CAO	30	8	6	3
5035		PALE	06	04	2035	N12	W39	06	1.9		B	CAO	50	8	4	2
5035		CULG	06	05	0425	N15	W43	06	1.9		B	CAO	30	4	7	4
5035		LEAR	06	05	0658	N14	W46	06	1.8		B	CAO	40	4	6	2
5035		BOUL	06	05	1325	N14	W47	06	2.0		B	CSO	50	7	7	3
5035		RAMY	06	05	1327	N15	W48	06	1.9		B	CAO	50	4	5	3
5035		SVTO	06	05	1401	N15	W46	06	2.1		B	CSO	80	5	5	2
5035		HOLL	06	05	1800	N14	W50	06	2.0		B	CSO	40	4	5	3
5035		PALE	06	05	1940	N13	W50	06	2.0		B	CSO	50	4	5	3
5035		LEAR	06	06	0034	N14	W55	06	1.9		B	CSO	20	4	7	2
5035		CULG	06	06	0450	N15	W61	06	1.6		A	HS	30	1	1	4
5035		SVTO	06	06	0735	N15	W58	06	1.9		B	CSO	30	2	5	3
5035		HOLL	06	06	1415	N13	W61	06	2.0		B	CSO	60	3	3	3
5035		BOUL	06	06	1415	N14	W62	06	1.9		A	AX	10	1	1	2
5035		RAMY	06	06	1430	N16	W63	06	1.8		B	CAO	50	4	6	4
5035		PALE	06	06	1741	N11	W66	06	1.8		A	HS	20	1	2	3
5035		LEAR	06	07	0340	N13	W71	06	1.8		A	HS	30	1	1	4
5035		CULG	06	07	0500	N16	W70	06	1.9		B	BXO	10	2	2	3
5035		SVTO	06	07	0642	N14	W75	06	1.6		B	BXO	40	2	3	3
5035		BOUL	06	07	1320	N14	W75	06	1.9		A	AX	20	1	1	2
5035		RAMY	06	07	1345	N15	W77	06	1.7		B	BXO	10	2	1	3
5035	24619	MWIL	06	07	1515	N14	W79	06	1.7	3	AP					
5035		HOLL	06	07	1612	N13	W77	06	1.9		A	AX	10	1	1	4
5035		PALE	06	07	1838	N12	W80	06	1.7		A	AX	20	1	2	3
5035		LEAR	06	08	0015	N13	W86	06	1.5		B	BXO	30	2	1	4
5038	24620	MWIL	06	04	1430	S22	W05	06	4.2	4	(AP)					
5038		BOUL	06	05	1325	S24	W14	06	4.5		B	BXO	20	10	4	3
5038		RAMY	06	05	1327	S25	W18	06	4.2		B	CRO	20	6	4	3
5038		SVTO	06	05	1401	S25	W16	06	4.3		B	BXO	30	4	4	2
5038		HOLL	06	05	1800	S25	W19	06	4.3		B	DAO	30	7	5	3
5038		PALE	06	05	1940	S26	W20	06	4.3		B	CRO	40	10	5	3
5038		LEAR	06	06	0034	S25	W23	06	4.2		B	CAO	70	10	6	2
5038		CULG	06	06	0450	S24	W27	06	4.1		B	CAO	30	5	6	4
5038		SVTO	06	06	0735	S25	W27	06	4.2		B	DAO	90	12	6	3
5038		HOLL	06	06	1415	S26	W28	06	4.4		B	DAI	130	26	10	3
5038		RAMY	06	06	1430	S25	W31	06	4.2		B	CAI	100	19	7	4
5038		PALE	06	06	1741	S28	W32	06	4.2		B	CAI	100	12	7	3
5038		LEAR	06	07	0340	S26	W37	06	4.3		B	DAI	130	19	7	4
5038		CULG	06	07	0500	S24	W41	06	4.0		B	DSI	80	5	6	3
5038		SVTO	06	07	0642	S25	W43	06	3.9		B	DAI	220	9	8	3
5038		BOUL	06	07	1320	S24	W42	06	4.3		B	DAI	200	16	8	2
5038		RAMY	06	07	1345	S25	W44	06	4.2		B	DAI	350	27	9	3
5038	24620	MWIL	06	07	1515	S25	W45	06	4.1	4	(B)					
5038		HOLL	06	07	1612	S25	W44	06	4.3		B	DAI	230	17	9	4
5038		PALE	06	07	1838	S25	W46	06	4.2		B	DSI	170	9	8	3
5038		LEAR	06	08	0015	S25	W48	06	4.3		B	DAO	240	7	9	4
5038		BOUL	06	08	1355	S25	W57	06	4.2		B	DAO	320	18	10	4
5038		HOLL	06	08	1440	S25	W55	06	4.3		B	DAO	140	16	10	4
5038	24620	MWIL	06	08	1515	S26	W57	06	4.2	5	(B)					
5038		RAMY	06	08	1530	S25	W56	06	4.3		B	DAI	280	17	9	3
5038		PALE	06	08	1915	S27	W60	06	4.1		B	EAI	240	18	11	3
5038		LEAR	06	09	0110	S25	W64	06	4.1		B	DAO	190	15	10	4
5038		SVTO	06	09	0845	S25	W67	06	4.2		B	DSO	210	13	9	2
5038		BOUL	06	09	1400	S25	W68	06	4.3		B	DAO	160	5	10	3
5038		HOLL	06	09	1410	S26	W68	06	4.3		B	DAO	150	13	10	3
5038		RAMY	06	09	1415	S24	W66	06	4.5		B	DAO	220	9	9	4
5038	24620	MWIL	06	09	1515	S26	W70	06	4.2	4	(B)					
5038		PALE	06	09	1745	S28	W75	06	3.9		B	ESO	180	7	11	3

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

JUNE 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
5038		LEAR	06 10 0008	S25 W72	06 4.4		B	EAO	300	10	11	2
5038		CULG	06 10 0310	S27 W78	06 4.0		B	DSO	40	3	10	3
5038		SVTO	06 10 0612	S26 W79	06 4.1		B	DAO	160	9	10	3
5038		BOUL	06 10 1336	S27 W78	06 4.5		A	HR	30	1	1	2
5038	24620	MWIL	06 10 1530	S26 W79	06 4.5	3	AF					
5038		HOLL	06 10 1546	S26 W79	06 4.5		B	CSO	60	6	7	2
5038A	24622	MWIL	06 08 1515	N19 W54	06 4.5	5	(BP)					
5038A	24622	MWIL	06 09 1515	N19 W66	06 4.6	4	(AP)					
5038A	24622	MWIL	06 10 1530	N19 W80	06 4.5	2	AP					
5032		RAMY	05 29 1330	N17 E79	06 4.6		B	CSO	80	5	6	4
5032		BOUL	05 29 1415	N16 E80	06 4.7		B	CSO	150	2	4	3
5032		HOLL	05 29 1447	N17 E79	06 4.6		B	DSO	90	3	8	3
5032	24615	MWIL	05 29 1615	N14 E77	06 4.5	4	AP					
5032		PALE	05 29 1755	N17 E81	06 4.9		B	CSO	70	3	6	3
5032		CULG	05 30 0500	N15 E73	06 4.7		B	CSO	60	3	5	3
5032		SVTO	05 30 0541	N17 E77	06 5.1		B	DSO	50	5	8	4
5032		RAMY	05 30 1420	N16 E68	06 4.7		B	CSO	90	7	8	3
5032		BOUL	05 30 1430	N16 E66	06 4.6		B	CSO	70	4	10	2
5032		HOLL	05 30 1510	N17 E68	06 4.8		B	DSO	220	6	3	4
5032	24615	MWIL	05 30 1515	N17 E68	06 4.8	5	(B)					
5032		PALE	05 30 1709	N18 E68	06 4.9		B	DAO	120	8	7	3
5032		LEAR	05 31 0012	N16 E63	06 4.8		B	DSO	200	26	10	3
5032		CULG	05 31 0400	N17 E60	06 4.7		B	ESO	160	11	10	3
5032		SVTO	05 31 0708	N18 E61	06 4.9		B	ESI	240	13	10	3
5032		RAMY	05 31 1320	N17 E56	06 4.8		B	EAI	370	29	12	4
5032		HOLL	05 31 1408	N17 E55	06 4.8		B	DSI	170	32	10	4
5032	24615	MWIL	05 31 1500	N17 E54	06 4.7	5	(BG)					
5032		BOUL	05 31 1540	N18 E56	06 4.9		B	DAI	140	7	9	2
5032		PALE	05 31 1920	N17 E53	06 4.8		B	EAO	180	23	11	3
5032		CULG	06 01 0325	N17 E47	06 4.7		B	ESO	110	17	10	2
5032		LEAR	06 01 0450	N18 E49	06 4.9		B	ESO	160	19	11	3
5032		RAMY	06 01 1217	N17 E47	06 5.1		B	EAI	380	35	11	4
5032		BOUL	06 01 1400	N16 E44	06 4.9		B	EAI	280	18	13	3
5032	24615	MWIL	06 01 1500	N17 E43	06 4.9	5	(BG)					
5032		HOLL	06 01 1540	N18 E44	06 5.0		B	EAI	330	34	11	4
5032		SVTO	06 01 1640	N17 E43	06 5.0		B	EAI	200	24	10	2
5032		LEAR	06 02 0328	N18 E36	06 4.9		B	EAI	220	24	11	2
5032		RAMY	06 02 1315	N18 E31	06 4.9		B	EAI	250	18	11	2
5032		BOUL	06 02 1320	N17 E29	06 4.7		B	EAI	240	30	12	3
5032		SVTO	06 02 1455	N18 E30	06 4.9		BG	EAI	260	29	11	4
5032	24615	MWIL	06 02 1500	N17 E30	06 4.9	5	(B)					
5032		HOLL	06 02 1500	N18 E30	06 4.9		B	EAI	260	24	11	4
5032		LEAR	06 03 0020	N19 E25	06 4.9		B	ESO	310	23	12	3
5032		CULG	06 03 0330	N17 E23	06 4.9		B	ESO	170	9	11	1
5032		SVTO	06 03 0525	N18 E22	06 4.9		B	EAI	220	33	11	3
5032		BOUL	06 03 1325	N18 E17	06 4.8		B	DSI	340	35	10	4
5032		RAMY	06 03 1423	N19 E19	06 5.0		B	EAI	230	27	12	4
5032	24615	MWIL	06 03 1445	N19 E17	06 4.9	5	(BG)					
5032		HOLL	06 03 1550	N18 E18	06 5.0		B	EAI	240	36	12	3
5032		PALE	06 03 1746	N18 E15	06 4.9		B	ESI	300	25	12	2
5032		LEAR	06 04 0017	N19 E11	06 4.8		BG	ESI	320	39	12	3
5032		CULG	06 04 0100	N18 E12	06 4.9		B	ESO	120	20	11	1
5032		SVTO	06 04 0550	N18 E09	06 4.9		B	EAI	190	25	11	3
5032		BOUL	06 04 1340	N17 E04	06 4.9		B	FAI	260	57	16	3
5032		RAMY	06 04 1345	N20 E05	06 4.9		B	ESI	220	26	12	3
5032	24615	MWIL	06 04 1430	N19 E04	06 4.9	5	(BG)					
5032		HOLL	06 04 1650	N19 E04	06 5.0		B	EAI	180	28	12	3
5032		PALE	06 04 2035	N19 E01	06 4.9		B	EAI	240	19	11	2
5032		CULG	06 05 0425	N17 W03	06 4.9		B	FAI	100	31	17	4
5032		LEAR	06 05 0658	N18 W03	06 5.1		B	EAI	190	31	15	2
5032		BOUL	06 05 1325	N17 W07	06 5.0		B	CAI	110	45	16	3
5032		RAMY	06 05 1327	N20 W09	06 4.9		B	EAI	180	26	12	3
5032		SVTO	06 05 1401	N18 W05	06 5.2		B	FHI	240	23	17	2
5032		HOLL	06 05 1800	N19 W09	06 5.1		B	FAI	100	21	15	3
5032		PALE	06 05 1940	N18 W09	06 5.1		B	FAI	130	25	16	3
5032		LEAR	06 06 0034	N18 W14	06 4.9		B	ESI	170	21	13	2
5032		CULG	06 06 0450	N19 W17	06 4.9		B	ESI	40	14	14	4

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

JUNE 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
5032		SVTO	06 06 0735	N18 W17	06 5.0		B	ESI	120	31	15	3
5032		BOUL	06 06 1415	N17 W21	06 5.0		B	CAI	100	29	9	2
5032		HOLL	06 06 1415	N18 W20	06 5.1		B	DSI	130	17	10	3
5032		RAMY	06 06 1430	N20 W23	06 4.8		B	DAI	100	14	10	4
5032		PALE	06 06 1741	N17 W22	06 5.1		B	DSI	110	18	14	3
5032		LEAR	06 07 0340	N17 W29	06 4.9		B	EAI	160	22	14	4
5032		CULG	06 07 0500	N19 W30	06 4.9		B	CSO	40	5	8	3
5032		SVTO	06 07 0642	N19 W33	06 4.8		B	DSI	120	12	10	3
5032		BOUL	06 07 1320	N16 W32	06 5.1		B	CAI	80	16	15	2
5032		RAMY	06 07 1345	N20 W40	06 4.5		A	HS	50	5	2	3
5032	24615	MWIL	06 07 1515	N17 W36	06 4.9	4	(BG)					
5032		HOLL	06 07 1612	N18 W41	06 4.5		A	HS	30	3	2	4
5032		PALE	06 07 1838	N17 W43	06 4.5		A	HS	30	3	3	3
5032		LEAR	06 08 0015	N17 W40	06 5.0		B	ESO	60	7	13	4
5032		BOUL	06 08 1355	N19 W52	06 4.6		B	CRO	30	3	3	4
5032		HOLL	06 08 1440	N19 W54	06 4.5		A	HS	30	4	2	4
5032	24615	MWIL	06 08 1515	N14 W43	06 5.4	4	(B)					
5032		RAMY	06 08 1530	N22 W55	06 4.4		B	CRO	50	7	5	3
5032		PALE	06 08 1915	N18 W57	06 4.5		B	CAO	50	7	4	3
5032		LEAR	06 09 0110	N21 W60	06 4.4		B	DSI	100	12	8	4
5032		SVTO	06 09 0845	N19 W64	06 4.5		B	CAO	50	3	3	2
5032		BOUL	06 09 1400	N19 W63	06 4.8		B	BXO	10	2	3	3
5032		HOLL	06 09 1410	N20 W66	06 4.5		B	CSO	80	6	4	3
5032		RAMY	06 09 1415	N19 W65	06 4.6		B	CXO	30	2	2	4
5032	24615	MWIL	06 09 1515	N14 W55	06 5.5	5	(BP)					
5032		PALE	06 09 1745	N16 W69	06 4.5		B	CSO	10	2	2	3
5032		LEAR	06 10 0008	N19 W72	06 4.5		B	BXO	10	2	3	2
5032		CULG	06 10 0310	N18 W77	06 4.3		A	HS	10	1	2	3
5032		SVTO	06 10 0612	N19 W76	06 4.4		B	CAO	40	2	3	3
5032		RAMY	06 10 1435	N20 W82	06 4.3		B	BXO	30	2	2	3
5032	24615	MWIL	06 10 1530	N14 W69	06 5.4	5	(B)					
5032		HOLL	06 10 1546	N19 W80	06 4.5		A	AX	20	3	2	2
5032		PALE	06 10 1700	N14 W78	06 4.8		A	AX	10	1	1	3
5032	24615	MWIL	06 11 1415	N14 W79	06 5.6	3	(AF)					
5037		BOUL	06 05 1325	N14 W01	06 5.5		B	CRO	80	5	5	3
5037		RAMY	06 05 1327	N15 W01	06 5.5		B	CRO	30	6	3	3
5037		LEAR	06 06 0034	N17 W06	06 5.6		A	AX	10	3	1	2
5037		CULG	06 06 0450	N16 W11	06 5.4		B	BXO	10	6	5	4
5037		HOLL	06 06 1415	N17 W13	06 5.6		B	BXO	30	7	3	3
5037		RAMY	06 06 1430	N17 W15	06 5.5		B	BXO	10	7	7	4
5037		LEAR	06 07 0340	N16 W21	06 5.6		B	BXO	10	3	1	4
5037		CULG	06 07 0500	N16 W21	06 5.6		B	BXI	10	8	4	3
5037		SVTO	06 07 0642	N16 W24	06 5.4		B	CRO	30	10	5	3
5037		RAMY	06 07 1345	N16 W28	06 5.4		B	BXO	20	13	5	3
5037		HOLL	06 07 1612	N15 W29	06 5.5		B	BXO	20	15	5	4
5037		PALE	06 07 1838	N14 W30	06 5.5		B	CSO	40	9	6	3
5037		LEAR	06 08 0015	N14 W32	06 5.6		B	CRO	20	5	2	4
5037		BOUL	06 08 1355	N14 W40	06 5.5		B	CAO	100	14	6	4
5037		HOLL	06 08 1440	N13 W41	06 5.5		B	DAO	70	15	8	4
5037		RAMY	06 08 1530	N15 W44	06 5.3		B	CAO	90	18	8	3
5037		PALE	06 08 1915	N13 W44	06 5.5		B	CAO	80	17	8	3
5037		LEAR	06 09 0110	N14 W48	06 5.4		B	DAO	100	11	7	4
5037		SVTO	06 09 0845	N15 W53	06 5.3		B	DAO	80	8	8	2
5037		BOUL	06 09 1400	N14 W52	06 5.6		B	CAO	100	9	10	3
5037		HOLL	06 09 1410	N14 W54	06 5.5		B	CAO	140	15	9	3
5037		RAMY	06 09 1415	N15 W55	06 5.4		B	CAO	130	10	9	4
5037		PALE	06 09 1745	N12 W57	06 5.4		B	CSO	150	6	6	3
5037		LEAR	06 10 0008	N15 W61	06 5.4		B	CAO	100	13	11	2
5037		CULG	06 10 0310	N14 W63	06 5.4		B	CAC	60	6	9	3
5037		SVTO	06 10 0612	N15 W64	06 5.4		B	EKO	180	10	11	3
5037		BOUL	06 10 1336	N15 W65	06 5.6		B	CAO	100	3	9	2
5037		RAMY	06 10 1435	N15 W70	06 5.3		B	CAO	110	6	10	3
5037		HOLL	06 10 1546	N16 W70	06 5.3		B	CAO	100	8	9	2
5037		PALE	06 10 1700	N12 W68	06 5.6		A	HX	100	1	1	3
5037		LEAR	06 11 0058	N16 W76	06 5.3		B	CAO	150	8	12	4
5037		CULG	06 11 0330	N15 W71	06 5.8		A	HS	40	1	2	3
5037		SVTO	06 11 0605	N14 W75	06 5.6		B	CAO	50	3	4	2
5037		RAMY	06 11 1305	N15 W79	06 5.6		A	HA	60	1	3	4

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5037		BOUL	06 11 1330	N13 W79	06 5.6		A	HS	60	1	2	3
5037		HOLL	06 11 1425	N14 W81	06 5.5		B	BXO	30	3	3	3
5031		RAMY	05 29 1330	N26 E80	06 4.8		A	HH	300	1	3	4
5031		BOUL	05 29 1415	N24 E79	06 4.7		A	HA	150	1	2	3
5031		HOLL	05 29 1447	N26 E80	06 4.8		A	HH	180	1	3	3
5031	24616	MWIL	05 29 1615	N26 E80	06 4.9	4	AP					
5031		PALE	05 29 1755	N27 E80	06 5.0		A	HH	150	1	4	3
5031		CULG	05 30 0500	N24 E72	06 4.8		A	HH	300	1	3	3
5031		SVTO	05 30 0541	N26 E78	06 5.3		A	HH	300	1	3	4
5031		RAMY	05 30 1420	N26 E69	06 4.9		A	HH	240	1	3	3
5031		BOUL	05 30 1430	N24 E67	06 4.8		A	HH	140	2	3	2
5031		HOLL	05 30 1510	N25 E69	06 5.0		A	HK	120	1	8	4
5031	24616	MWIL	05 30 1515	N26 E74	06 5.4	5	(B					
5031		PALE	05 30 1709	N28 E75	06 5.6		B	EKO	360	2	11	3
5031		LEAR	05 31 0012	N27 E68	06 5.3		B	EHO	340	6	11	3
5031		CULG	05 31 0400	N27 E65	06 5.2		B	EHO	310	3	12	3
5031		SVTO	05 31 0708	N27 E67	06 5.5		B	EHO	290	2	15	3
5031		RAMY	05 31 1320	N26 E63	06 5.4		B	EHO	510	3	14	4
5031		HOLL	05 31 1408	N27 E61	06 5.3		B	EHO	380	2	13	4
5031	24616	MWIL	05 31 1500	N26 E60	06 5.3	6	(B)					
5031		BOUL	05 31 1540	N24 E58	06 5.1		B	EHO	260	2	11	2
5031		PALE	05 31 1920	N28 E60	06 5.5		B	DHO	500	4	10	3
5031		CULG	06 01 0325	N26 E54	06 5.3		B	EHO	300	2	13	2
5031		LEAR	06 01 0450	N27 E55	06 5.5		B	EKO	280	3	15	3
5031		RAMY	06 01 1217	N26 E51	06 5.5		B	EHO	420	9	14	4
5031		BOUL	06 01 1400	N25 E47	06 5.2		B	EHO	270	2	14	3
5031	24616	MWIL	06 01 1500	N27 E46	06 5.2	6	(B)					
5031		HOLL	06 01 1540	N27 E50	06 5.5		B	EHO	380	7	13	4
5031		SVTO	06 01 1640	N26 E49	06 5.5		B	EHO	330	5	14	2
5031		LEAR	06 02 0328	N27 E42	06 5.4		B	EHO	290	6	13	2
5031		RAMY	06 02 1315	N27 E37	06 5.4		B	EHO	340	6	13	2
5031		BOUL	06 02 1320	N27 E36	06 5.4		B	EHO	320	10	15	3
5031		SVTO	06 02 1455	N27 E36	06 5.4		B	EHO	330	8	14	4
5031	24616	MWIL	06 02 1500	N26 E35	06 5.3	6	(B)					
5031		HOLL	06 02 1500	N28 E36	06 5.4		B	EHO	360	7	15	4
5031		LEAR	06 03 0020	N26 E34	06 5.6		B	ESO	260	4	15	3
5031		CULG	06 03 0330	N26 E27	06 5.2		B	FHO	360	5	16	1
5031		SVTO	06 03 0525	N27 E28	06 5.4		B	EKO	290	9	15	3
5031		BOUL	06 03 1325	N27 E23	06 5.3		B	EHO	340	14	15	4
5031		RAMY	06 03 1423	N27 E24	06 5.5		B	EHO	370	9	15	4
5031	24616	MWIL	06 03 1445	N27 E21	06 5.2	6	(B)					
5031		HOLL	06 03 1550	N28 E23	06 5.4		B	EHO	340	13	15	3
5031		PALE	06 03 1746	N28 E17	06 5.1		B	EHO	350	11	15	2
5031		LEAR	06 04 0017	N26 E17	06 5.3		BG	FHO	240	14	16	3
5031		CULG	06 04 0100	N26 E17	06 5.4		B	FSO	290	4	16	1
5031		SVTO	06 04 0550	N26 E15	06 5.4		B	FKO	310	9	16	3
5031		BOUL	06 04 1340	N27 E09	06 5.3		B	CHO	260	15	15	3
5031		RAMY	06 04 1345	N27 E12	06 5.5		B	FHO	390	14	17	3
5031	24616	MWIL	06 04 1430	N26 E10	06 5.4	6	(BG)					
5031		HOLL	06 04 1650	N28 E10	06 5.5		B	CHO	240	10	16	3
5031		PALE	06 04 2035	N28 E02	06 5.0		B	CHO	350	10	15	2
5031		CULG	06 05 0425	N27 E04	06 5.5		B	CHO	210	8	17	4
5031		LEAR	06 05 0658	N27 E02	06 5.4		B	FHO	160	8	17	2
5031		BOUL	06 05 1325	N25 E02	06 5.7		B	CHO	250	17	22	3
5031		RAMY	06 05 1327	N27 E01	06 5.6		B	FHO	350	12	20	3
5031		SVTO	06 05 1401	N28 E04	06 5.9		B	CHO	260	9	21	2
5031		HOLL	06 05 1800	N27 W01	06 5.7		B	CHO	270	10	20	3
5031		PALE	06 05 1940	N27 W03	06 5.6		B	CHO	230	11	22	3
5031		LEAR	06 06 0034	N27 W02	06 5.9		B	FHO	320	10	21	2
5031		CULG	06 06 0450	N27 W08	06 5.6		B	CHO	250	6	19	4
5031		SVTO	06 06 0735	N27 W06	06 5.8		A	HH	250	1	3	3
5031		BOUL	06 06 1415	N26 W10	06 5.8		B	CHO	290	2	19	2
5031		HOLL	06 06 1415	N27 W12	06 5.6		B	FHI	260	20	21	3
5031		RAMY	06 06 1430	N28 W11	06 5.7		BG	FHO	350	21	21	4
5031		PALE	06 06 1741	N27 W13	06 5.7		B	FHI	280	15	21	3
5031		LEAR	06 07 0340	N26 W17	06 5.8		B	FKO	330	19	23	4
5031		CULG	06 07 0500	N27 W16	06 6.0		B	CSO	180	7	20	3
5031		SVTO	06 07 0642	N27 W18	06 5.9		A	HH	240	1	3	3

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5031		BOUL	06 07 1320	N26 W20	06 6.0		B	CHO	220	16	20	2
5031		RAMY	06 07 1345	N28 W22	06 5.8		BG	FHO	280	22	22	3
5031	24616	MWIL	06 07 1515	N26 W25	06 5.7	6	(BG)					
5031		HOLL	06 07 1612	N26 W34	06 5.0		A	HH	260	1	3	4
5031		PALE	06 07 1838	N26 W36	06 5.0		A	HH	270	1	4	3
5031		LEAR	06 08 0015	N27 W37	06 5.1		A	HH	210	1	2	4
5031		BOUL	06 08 1355	N26 W44	06 5.2		A	HH	300	1	3	4
5031		HOLL	06 08 1440	N26 W46	06 5.0		A	HH	230	1	3	4
5031	24616	MWIL	06 08 1515	N26 W40	06 5.5	6	(BG)					
5031		RAMY	06 08 1530	N27 W46	06 5.1		A	HH	260	1	3	3
5031		PALE	06 08 1915	N24 W48	06 5.1		A	HH	250	1	3	3
5031		LEAR	06 09 0110	N26 W50	06 5.2		A	HA	240	2	6	4
5031		SVTO	06 09 0845	N26 W56	06 5.0		A	HH	210	1	3	2
5031		BOUL	06 09 1400	N25 W56	06 5.2		A	HH	250	1	7	3
5031		HOLL	06 09 1410	N26 W57	06 5.2		A	HH	200	1	3	3
5031		RAMY	06 09 1415	N27 W57	06 5.1		A	AH	170	1	3	4
5031	24616	MWIL	06 09 1515	N27 W52	06 5.6	6	(BG)					
5031		PALE	06 09 1745	N25 W61	06 5.0		A	HH	440	1	3	3
5031		LEAR	06 10 0008	N27 W65	06 4.9		A	HK	140	1	8	2
5031		CULG	06 10 0310	N25 W68	06 4.9		A	HH	200	1	3	3
5031		SVTO	06 10 0612	N27 W68	06 4.9		A	HS	230	1	3	3
5031		BOUL	06 10 1336	N26 W67	06 5.4		A	HH	240	1	3	2
5031		RAMY	06 10 1435	N28 W73	06 4.9		A	HH	270	1	3	3
5031	24616	MWIL	06 10 1530	N27 W67	06 5.4	6	(BG)					
5031		HOLL	06 10 1546	N26 W70	06 5.2		A	HH	300	1	3	2
5031		PALE	06 10 1700	N25 W75	06 4.9		A	HH	240	1	3	3
5031		LEAR	06 11 0058	N27 W78	06 5.0		A	HA	150	1	2	4
5031		CULG	06 11 0330	N25 W77	06 5.2		A	HH	300	1	3	3
5031		SVTO	06 11 0605	N27 W81	06 4.9		A	HS	90	1	2	2
5031		RAMY	06 11 1305	N28 W87	06 4.7		A	HH	130	1	3	4
5031		BOUL	06 11 1330	N26 W89	06 4.6		A	HH	240	1	3	3
5031	24616	MWIL	06 11 1415	N28 W80	06 5.3	4	(B)					
5031		HOLL	06 11 1425	N26 W89	06 4.7		A	HH	180	1	3	3
5031	24616	MWIL	06 12 1500	N29 W89	06 5.6	4	(AF)					
5040		SVTO	06 06 0735	N27 W02	06 6.2		B	DAO	70	15	7	3
5040		SVTO	06 07 0642	N27 W12	06 6.3		B	DSI	90	9	8	3
5040		HOLL	06 07 1612	N26 W16	06 6.4		B	CRI	50	18	8	4
5040		PALE	06 07 1838	N28 W19	06 6.3		B	CSO	60	15	8	3
5040		LEAR	06 08 0015	N27 W20	06 6.4		BG	CSI	70	19	8	4
5040		BOUL	06 08 1355	N26 W28	06 6.4		B	EAI	150	22	12	4
5040		HOLL	06 08 1440	N27 W30	06 6.3		BG	DAO	100	18	10	4
5040		RAMY	06 08 1530	N28 W30	06 6.3		B	CAI	120	18	11	3
5040		PALE	06 08 1915	N27 W33	06 6.2		B	CAO	90	21	12	3
5040		LEAR	06 09 0110	N27 W35	06 6.3		B	EAI	140	14	12	4
5040		SVTO	06 09 0845	N28 W38	06 6.4		B	DAO	130	8	6	2
5040		BOUL	06 09 1400	N27 W37	06 6.7		B	DAO	110	9	9	3
5040		HOLL	06 09 1410	N27 W41	06 6.4		B	EAO	110	15	11	3
5040		RAMY	06 09 1415	N28 W40	06 6.5		B	DAI	130	11	7	4
5040		PALE	06 09 1745	N27 W42	06 6.5		B	DSO	120	10	8	3
5040		LEAR	06 10 0008	N28 W46	06 6.4		B	DSO	150	14	9	2
5040		CULG	06 10 0310	N28 W48	06 6.4		B	CSO	70	5	6	3
5040		SVTO	06 10 0612	N29 W49	06 6.4		B	CSO	100	5	6	3
5040		BOUL	06 10 1336	N29 W50	06 6.6		B	CSO	50	4	7	2
5040		RAMY	06 10 1435	N29 W53	06 6.4		B	CAO	90	4	7	3
5040		HOLL	06 10 1546	N28 W54	06 6.4		B	CSO	50	6	7	2
5040		PALE	06 10 1700	N28 W55	06 6.4		B	CAO	80	3	6	3
5040		LEAR	06 11 0058	N29 W55	06 6.7		B	CAO	100	2	3	4
5040		CULG	06 11 0330	N29 W58	06 6.6		A	HS	80	2	2	3
5040		SVTO	06 11 0605	N29 W59	06 6.6		B	CAO	50	4	3	2
5040		RAMY	06 11 1305	N31 W62	06 6.6		A	HA	90	1	2	4
5040		BOUL	06 11 1330	N29 W60	06 6.8		B	CAO	60	3	2	3
5040		HOLL	06 11 1425	N29 W62	06 6.7		B	CAO	50	3	5	3
5040		PALE	06 11 1700	N26 W66	06 6.6		B	CAO	60	3	2	3
5040		LEAR	06 12 0235	N29 W70	06 6.6		B	CAO	30	2	2	4
5040		CULG	06 12 0250	N29 W72	06 6.5		A	HS	20	1	2	3
5040		SVTO	06 12 0637	N29 W73	06 6.5		B	CRO	60	2	4	2
5040		RAMY	06 12 1345	N32 W77	06 6.5		A	AX	20	2	3	4
5040		HOLL	06 12 1410	N28 W72	06 7.0		B	CRO	60	4	6	4

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5040		BOUL	06 12 1445	N29 W68	06 7.3		B	BXO	10	2	2	3
5040		PALE	06 12 1805	N24 W69	06 7.4		A	AX	20	1	2	3
5040A		LEAR	06 01 0450	S20 E75	06 6.9		B	CSO	60	4	8	3
5040A		RAMY	06 06 1430	S14 E04	06 6.9		B	BXO	10	7	5	4
5034		CULG	06 01 0325	S21 E76	06 7.0		B	HS	30	1	1	2
5034		RAMY	06 01 1217	S22 E77	06 7.4		B	DAO	300	9	9	4
5034		BOUL	06 01 1400	S21 E75	06 7.3		B	DAI	100	6	9	3
5034	24618	MWIL	06 01 1500	S21 E75	06 7.4	4	(B)					
5034		HOLL	06 01 1540	S20 E76	06 7.5		B	EAO	180	9	13	4
5034		SVTO	06 01 1640	S21 E73	06 7.3		B	DSO	50	8	8	2
5034		LEAR	06 02 0328	S21 E70	06 7.5		B	DSO	120	8	10	2
5034		RAMY	06 02 1315	S23 E66	06 7.6		B	DAO	200	12	10	2
5034		BOUL	06 02 1320	S20 E64	06 7.4		B	CAO	90	16	11	3
5034		SVTO	06 02 1455	S22 E64	06 7.5		B	DSO	120	15	9	4
5034		HOLL	06 02 1500	S20 E65	06 7.6		B	DAO	150	13	10	4
5034	24618	MWIL	06 02 1500	S23 E63	06 7.5	4	(B)					
5034		LEAR	06 03 0020	S22 E59	06 7.5		B	DAO	140	10	8	3
5034		CULG	06 03 0330	S21 E55	06 7.4		B	DSO	200	4	9	1
5034		SVTO	06 03 0525	S21 E56	06 7.5		B	DSO	150	14	9	3
5034		BOUL	06 03 1325	S22 E58	06 8.0		B	CAO	210	13	8	4
5034		RAMY	06 03 1423	S23 E56	06 7.9		B	DAO	200	9	11	4
5034	24618	MWIL	06 03 1445	S22 E50	06 7.4	5	(B)					
5034		HOLL	06 03 1550	S21 E52	06 7.6		B	DSO	220	12	10	3
5034		PALE	06 03 1746	S22 E52	06 7.7		B	DSO	230	12	11	2
5034		LEAR	06 04 0017	S22 E46	06 7.5		B	DSO	260	17	8	3
5034		CULG	06 04 0100	S21 E46	06 7.6		B	DSO	130	8	8	1
5034		SVTO	06 04 0550	S22 E43	06 7.5		B	DSO	180	21	9	3
5034		BOUL	06 04 1340	S21 E37	06 7.4		B	CSO	180	17	9	3
5034		RAMY	06 04 1345	S23 E38	06 7.5		B	DAO	200	12	8	3
5034	24618	MWIL	06 04 1430	S22 E38	06 7.5	5	(B)					
5034		HOLL	06 04 1650	S22 E37	06 7.5		B	CSO	130	11	9	3
5034		PALE	06 04 2035	S20 E35	06 7.5		B	CSO	140	16	9	2
5034		CULG	06 05 0425	S23 E31	06 7.6		B	CAI	100	9	8	4
5034		LEAR	06 05 0658	S22 E30	06 7.6		B	DAI	100	18	8	2
5034		BOUL	06 05 1325	S22 E25	06 7.5		B	CAI	130	24	10	3
5034		RAMY	06 05 1327	S21 E25	06 7.5		B	DAO	170	12	9	3
5034		SVTO	06 05 1401	S22 E26	06 7.6		B	CHO	190	8	9	2
5034		HOLL	06 05 1800	S22 E24	06 7.6		B	CAI	180	12	9	3
5034		PALE	06 05 1940	S21 E23	06 7.6		B	DAI	180	12	10	3
5034		LEAR	06 06 0034	S22 E18	06 7.4		B	DSO	170	13	8	2
5034		CULG	06 06 0450	S22 E16	06 7.4		B	CSO	100	7	5	4
5034		SVTO	06 06 0735	S20 E13	06 7.3		B	EHI	250	18	11	3
5034		BOUL	06 06 1415	S22 E11	06 7.4		B	CAI	140	12	10	2
5034		HOLL	06 06 1415	S22 E11	06 7.4		B	CAO	120	15	9	3
5034		RAMY	06 06 1430	S22 E11	06 7.4		B	CAO	210	17	10	4
5034		PALE	06 06 1741	S21 E11	06 7.6		B	DSO	180	9	9	3
5034		LEAR	06 07 0340	S23 E05	06 7.5		B	DAI	190	17	10	4
5034		CULG	06 07 0500	S22 E02	06 7.4		B	CSO	70	6	9	3
5034		SVTO	06 07 0642	S23 E05	06 7.7		B	DSI	140	9	8	3
5034		BOUL	06 07 1320	S22 E00	06 7.5		B	CAO	130	10	10	2
5034		RAMY	06 07 1345	S22 W02	06 7.4		B	CAO	350	16	9	3
5034	24618	MWIL	06 07 1515	S22 W04	06 7.3	4	(B)					
5034		HOLL	06 07 1612	S22 W02	06 7.5		B	CSO	160	13	9	4
5034		PALE	06 07 1838	S22 W03	06 7.5		B	CSO	180	14	10	3
5034		LEAR	06 08 0015	S22 W05	06 7.6		B	EAO	160	12	11	4
5034		BOUL	06 08 1355	S20 W16	06 7.3		B	CAO	140	9	4	4
5034		HOLL	06 08 1440	S23 W13	06 7.6		B	CKO	140	10	11	4
5034	24618	MWIL	06 08 1515	S22 W17	06 7.3	5	(BP)					
5034		RAMY	06 08 1530	S23 W15	06 7.5		B	CAO	120	11	8	3
5034		PALE	06 08 1915	S19 W20	06 7.3		B	CAO	140	9	8	3
5034		LEAR	06 09 0110	S22 W23	06 7.3		B	CAO	130	10	5	4
5034		SVTO	06 09 0845	S21 W28	06 7.2		GD	CK	160	7	4	2
5034		BOUL	06 09 1400	S21 W26	06 7.6		B	CAO	130	7	10	3
5034		HOLL	06 09 1410	S23 W26	06 7.6		B	CKO	120	10	9	3
5034		RAMY	06 09 1415	S22 W26	06 7.6		B	CAO	100	7	9	4
5034	24618	MWIL	06 09 1515	S22 W31	06 7.2	4	(BP)					
5034		PALE	06 09 1745	S23 W32	06 7.3		A	HS	160	6	4	3

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5034		LEAR	06 10 0008	S23 W33	06 7.5		B	CAO	90	6	12	2
5034		CULG	06 10 0310	S22 W36	06 7.4		B	CAC	40	4	11	3
5034		SVTO	06 10 0612	S22 W38	06 7.3		B	CAO	60	7	10	3
5034		BOUL	06 10 1336	S21 W38	06 7.6		B	BXO	30	6	9	2
5034		RAMY	06 10 1435	S22 W41	06 7.4		B	CAO	50	6	9	3
5034	24618	MWIL	06 10 1530	S22 W44	06 7.3	5	(B)					
5034		HOLL	06 10 1546	S22 W40	06 7.6		B	CSO	50	8	9	2
5034		PALE	06 10 1700	S23 W42	06 7.5		B	BXO	10	4	9	3
5034		LEAR	06 11 0058	S22 W47	06 7.4		B	CRO	20	14	10	4
5034		CULG	06 11 0330	S22 W47	06 7.5		B	CSO	20	6	9	3
5034		SVTO	06 11 0605	S22 W50	06 7.4		B	CAO	20	6	11	2
5034		RAMY	06 11 1305	S21 W53	06 7.5		B	BXO	30	6	8	4
5034		BOUL	06 11 1330	S21 W53	06 7.5		B	BXO	20	3	10	3
5034	24618	MWIL	06 11 1415	S21 W54	06 7.4	4	(B)					
5034		HOLL	06 11 1425	S22 W53	06 7.5		B	BXO	30	3	9	3
5034		LEAR	06 12 0235	S22 W60	06 7.5		B	BXO	10	2	6	4
5034		SVTO	06 12 0637	S22 W61	06 7.6		A	AXO	10	2		2
5034		RAMY	06 12 1345	S22 W65	06 7.6		B	CRO	20	2	3	4
5034		HOLL	06 12 1410	S25 W64	06 7.6		B	CSO	20	4	9	4
5034		BOUL	06 12 1445	S22 W61	06 7.9		A	AX	10	1		3
5034	24618	MWIL	06 12 1500	S22 W63	06 7.8	4	(AF)					
5034		PALE	06 12 1805	S27 W65	06 7.7		A	AX	20	1	2	3
5034		LEAR	06 13 0224	S22 W70	06 7.7		A	AX	10	1	1	4
5034		CULG	06 13 0400	S23 W73	06 7.5		A	AX	10	1	1	2
5034		SVTO	06 13 0637	S21 W73	06 7.7		A	AX	10	1		2
5039		HOLL	06 05 1800	N32 E31	06 8.2		A	AX	10	2	2	3
5039		PALE	06 05 1940	N32 E31	06 8.3		B	BXO	10	2	3	3
5039		LEAR	06 06 0034	N32 E28	06 8.2		B	CRO	30	2	3	2
5039		CULG	06 06 0450	N31 E26	06 8.2		A	AX	10	1	1	4
5039		SVTO	06 06 0735	N32 E26	06 8.4		B	BXO	10	2	3	3
5039		HOLL	06 06 1415	N31 E21	06 8.2		B	BXO	10	2	4	3
5039		RAMY	06 06 1430	N33 E22	06 8.3		B	BXO	10	2	4	4
5039		PALE	06 06 1741	N32 E17	06 8.1		A	AX	10	1	1	3
5039		LEAR	06 07 0340	N32 E12	06 8.1		A	AX	10	1	1	4
5039		SVTO	06 07 0642	N31 E12	06 8.2		B	BXO	10	2	3	3
5039		BOUL	06 07 1320	N32 E05	06 7.9		A	AX	10	1	1	2
5039		RAMY	06 07 1345	N31 E06	06 8.0		A	AX		1	1	3
5039		HOLL	06 07 1612	N31 E04	06 8.0		A	AX	10	1	1	4
5039		LEAR	06 09 0110	N31 W12	06 8.1		A	AX	10	2	1	4
5039		SVTO	06 09 0845	N32 W15	06 8.2		B	BXO	10	2	3	2
5039		BOUL	06 09 1400	N31 W16	06 8.3		B	BXO	10	2	3	3
5039		HOLL	06 09 1410	N32 W17	06 8.2		B	BXO	10	2	4	3
5039		RAMY	06 09 1415	N33 W17	06 8.2		B	BXO	10	2	4	4
5039	24624	MWIL	06 09 1515	N32 W18	06 8.2	4	(B)					
5039		LEAR	06 10 0008	N32 W24	06 8.1		B	BXO	10	2	1	2
5039	24624	MWIL	06 10 1530	N32 W32	06 8.1	3	(B)					
5039		HOLL	06 10 1546	N32 W32	06 8.1		A	AX	10	2	1	2
5039		LEAR	06 11 0058	N32 W36	06 8.2		B	BXO	10	2	4	4
5039	24624	MWIL	06 11 1415	N34 W41	06 8.3	3	(AF)					
5039		LEAR	06 12 0235	N33 W48	06 8.3		A	AX	20	1	6	4
5039A		LEAR	06 08 0015	S17 E08	06 8.6		B	BXO	10	4	3	4
5043		PALE	06 08 1915	N25 E30	06 11.1		B	BXO	20	2	8	3
5043		LEAR	06 09 0110	N30 E28	06 11.2		B	BXO	10	2	3	4
5043		SVTO	06 09 0845	N30 E24	06 11.2		B	BXO	10	2	3	2
5043		BOUL	06 09 1400	N29 E22	06 11.3		B	BXO	10	2	4	3
5043		HOLL	06 09 1410	N29 E22	06 11.3		B	BXO	20	3	4	3
5043		RAMY	06 09 1415	N28 E23	06 11.4		B	BXO	10	2	4	4
5043	24625	MWIL	06 09 1515	N29 E21	06 11.3	4	(B)					
5043		PALE	06 09 1745	N29 E17	06 11.1		A	AX	10	1	1	3
5043		LEAR	06 10 0008	N30 E14	06 11.1		A	AX	10	1	1	2
5043A		LEAR	06 17 0011	S32 W69	06 11.5		B	BXO	10	2	3	3
5036		BOUL	06 04 1340	S17 E89	06 11.3		A	HS	90	1	1	3
5036		RAMY	06 04 1345	S18 E89	06 11.3		A	HR	30	1	2	3
5036	24621	MWIL	06 04 1430	S17 E86	06 11.1	2	(AP)					

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5036		HOLL	06 04 1650	S16 E84	06 11.1		A	HS	90	1	2	3
5036		PALE	06 04 2035	S14 E86	06 11.3		A	HS	10	1	8	2
5036		CULG	06 05 0425	S18 E82	06 11.4		B	CSO	80	2	10	4
5036		LEAR	06 05 0658	S17 E77	06 11.1		B	DSO	260	3	7	2
5036		BOUL	06 05 1325	S17 E75	06 11.2		B	DSI	270	6	10	3
5036		RAMY	06 05 1327	S18 E78	06 11.5		B	DKO	390	6	10	3
5036		SVTO	06 05 1401	S18 E79	06 11.6		B	FHO	440	7	17	2
5036		HOLL	06 05 1800	S16 E75	06 11.4		B	DAI	360	7	19	3
5036		PALE	06 05 1940	S16 E78	06 11.7		B	FHI	380	9	17	3
5036		LEAR	06 06 0034	S17 E70	06 11.3		B	EAI	510	11	14	2
5036		CULG	06 06 0450	S18 E69	06 11.4		B	ESO	200	6	12	4
5036		SVTO	06 06 0735	S18 E69	06 11.6		B	EHO	570	11	15	3
5036		BOUL	06 06 1415	S17 E63	06 11.4		B	EAI	280	11	12	2
5036		HOLL	06 06 1415	S18 E63	06 11.4		B	FAI	430	21	16	3
5036		RAMY	06 06 1430	S17 E63	06 11.4		B	EKI	530	24	14	4
5036		PALE	06 06 1741	S15 E65	06 11.6		B	EAI	440	13	12	3
5036		LEAR	06 07 0340	S17 E56	06 11.4		B	EAI	410	28	12	4
5036		CULG	06 07 0500	S19 E55	06 11.4		B	ESI	160	13	11	3
5036		SVTO	06 07 0642	S17 E54	06 11.4		B	EKI	440	7	15	3
5036		BOUL	06 07 1320	S16 E50	06 11.3		B	EAO	250	19	15	2
5036		RAMY	06 07 1345	S17 E50	06 11.4		B	EAI	590	33	14	3
5036	24621	MWIL	06 07 1515	S17 E51	06 11.5	4	(B)					
5036		HOLL	06 07 1612	S16 E50	06 11.5		B	EAI	340	23	12	4
5036		PALE	06 07 1838	S17 E49	06 11.5		B	EAI	390	21	12	3
5036		LEAR	06 08 0015	S17 E45	06 11.4		B	EAI	270	14	12	4
5036		BOUL	06 08 1355	S17 E35	06 11.2		B	FAC	600	53	16	4
5036		HOLL	06 08 1440	S16 E36	06 11.3		B	EAI	390	49	15	4
5036	24621	MWIL	06 08 1515	S17 E36	06 11.4	5	(BG)					
5036		RAMY	06 08 1530	S18 E35	06 11.3		B	EAI	380	52	14	3
5036		PALE	06 08 1915	S17 E36	06 11.5		B	EAI	360	51	15	3
5036		LEAR	06 09 0110	S17 E31	06 11.4		B	EAI	290	49	13	4
5036		SVTO	06 09 0845	S16 E28	06 11.5		B	ESI	380	55	14	2
5036		BOUL	06 09 1400	S16 E23	06 11.3		B	EAC	240	56	13	3
5036		HOLL	06 09 1410	S17 E24	06 11.4		B	EAI	280	58	15	3
5036		RAMY	06 09 1415	S17 E17	06 10.9		B	EAI	310	46	15	4
5036	24621	MWIL	06 09 1515	S17 E23	06 11.4	5	(BG)					
5036		PALE	06 09 1745	S17 E21	06 11.3		B	ESI	180	27	14	3
5036		LEAR	06 10 0008	S17 E19	06 11.4		B	ESC	350	59	14	2
5036		CULG	06 10 0310	S16 E17	06 11.4		B	EAI	160	47	13	3
5036		SVTO	06 10 0612	S16 E14	06 11.3		B	EAI	420	46	14	3
5036		BOUL	06 10 1336	S14 E10	06 11.3		B	EAI	200	36	13	2
5036		RAMY	06 10 1435	S16 E10	06 11.4		B	EAI	300	40	13	3
5036	24621	MWIL	06 10 1530	S17 E09	06 11.3	5	(BG)					
5036		HOLL	06 10 1546	S15 E10	06 11.4		B	EAI	230	53	14	2
5036		PALE	06 10 1700	S16 E10	06 11.5		B	EAI	170	28	14	3
5036		LEAR	06 11 0058	S17 E05	06 11.4		B	ESO	160	51	15	4
5036		CULG	06 11 0330	S15 E03	06 11.4		B	ESI	130	31	13	3
5036		SVTO	06 11 0605	S16 E03	06 11.5		B	EAI	880	27	15	2
5036		RAMY	06 11 1305	S15 W03	06 11.3		B	EAI	220	36	13	4
5036		BOUL	06 11 1330	S14 W03	06 11.3		B	FAI	110	36	17	3
5036	24621	MWIL	06 11 1415	S16 W03	06 11.4	4	(BG)					
5036		HOLL	06 11 1425	S16 E00	06 11.6		B	FAI	160	47	18	3
5036		PALE	06 11 1700	S16 W06	06 11.2		B	EAI	130	33	14	3
5036		LEAR	06 12 0235	S17 W09	06 11.4		B	FRI	100	60	23	4
5036		CULG	06 12 0250	S17 W10	06 11.3		B	ESI	150	27	14	3
5036		SVTO	06 12 0637	S17 W12	06 11.4		B	ESI	100	22	12	2
5036		RAMY	06 12 1345	S15 W17	06 11.3		B	FSI	150	47	18	4
5036		HOLL	06 12 1410	S18 W16	06 11.4		B	ESI	70	29	12	4
5036		BOUL	06 12 1445	S16 W15	06 11.5		B	CAI	90	24	14	3
5036	24621	MWIL	06 12 1500	S17 W16	06 11.4	5	(BG)					
5036		PALE	06 12 1805	S18 W17	06 11.4		B	CSI	90	25	14	3
5036		LEAR	06 13 0224	S17 W23	06 11.3		B	CAO	60	34	15	4
5036		CULG	06 13 0400	S18 W24	06 11.3		B	CSI	30	17	14	2
5036		SVTO	06 13 0637	S17 W25	06 11.4		B	CSO	60	9	14	2
5036		BOUL	06 13 1407	S16 W26	06 11.6		B	CSI	60	16	15	2
5036		HOLL	06 13 1420	S16 W27	06 11.5		B	CSO	40	12	12	3
5036	24621	MWIL	06 13 1500	S17 W32	06 11.2	5	(B)					
5036		RAMY	06 13 1540	S15 W30	06 11.4		B	CSO	70	14	14	3
5036		PALE	06 13 1830	S17 W30	06 11.5		B	CSO	40	10	15	3

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5036		LEAR	06 14 0015	S17 W36	06 11.3		B	CSO	60	17	13	3
5036		CULG	06 14 0300	S21 W35	06 11.4		B	CSO	150	4	12	2
5036		SVTO	06 14 0740	S18 W40	06 11.3		B	CRO	30	6	13	3
5036		BOUL	06 14 1309	S17 W41	06 11.4		B	CAO	40	3	14	2
5036		RAMY	06 14 1313	S18 W42	06 11.3		B	CSO	40	5	13	3
5036	24621	MWIL	06 14 1430	S17 W46	06 11.1	4	(B)					
5036		HOLL	06 14 1500	S17 W42	06 11.4		B	CAO	30	4	12	4
5036		LEAR	06 15 0012	S17 W54	06 10.9		B	CSO	20	3	4	3
5036		SVTO	06 15 0618	S17 W59	06 10.8		A	AX	20	1	1	3
5036		RAMY	06 15 1300	S18 W61	06 10.9		A	AX	20	1	1	3
5036		BOUL	06 15 1355	S17 W62	06 10.9		A	AX	20	1	1	4
5036	24621	MWIL	06 15 1500	S17 W61	06 11.0	5	(B)					
5036		HOLL	06 15 1515	S18 W65	06 10.7		B	CSO	30	4	14	3
5036		PALE	06 15 1935	S19 W67	06 10.7		A	AX	10	1	1	3
5036		LEAR	06 16 0025	S18 W68	06 10.8		A	AX	10	1	1	3
5036		CULG	06 16 0340	S18 W72	06 10.7		A	AX	10	1	1	3
5036		SVTO	06 16 0443	S17 W72	06 10.7		A	AX	20	1	1	3
5036		RAMY	06 16 1214	S17 W75	06 10.8		A	AX	10	1	1	4
5036		BOUL	06 16 1315	S17 W77	06 10.7		B	BXO	10	3	9	4
5036	24621	MWIL	06 16 1430	S18 W70	06 11.3	4	(BP)					
5036		HOLL	06 16 1528	S18 W79	06 10.6		B	BXO	10	3	12	4
5041		HOLL	06 07 1612	N15 E81	06 13.8		A	HS	80	1	2	4
5041		PALE	06 07 1838	N15 E83	06 14.0		A	HH	50	1	4	3
5041		LEAR	06 08 0015	N15 E81	06 14.1		A	HA	60	1	1	4
5041		BOUL	06 08 1355	N13 E68	06 13.7		A	HA	100	1	1	4
5041		HOLL	06 08 1440	N13 E70	06 13.9		B	CSO	80	2	4	4
5041	24623	MWIL	06 08 1515	N14 E72	06 14.1	5	(AP)					
5041		RAMY	06 08 1530	N12 E68	06 13.8		B	CAO	80	5	4	3
5041		PALE	06 08 1915	N13 E69	06 14.0		B	CAO	110	2	6	3
5041		LEAR	06 09 0110	N14 E67	06 14.1		A	HS	120	2	6	4
5041		SVTO	06 09 0845	N14 E62	06 14.0		B	DSO	180	5	6	2
5041		BOUL	06 09 1400	N12 E58	06 13.9		B	CAO	80	5	6	3
5041		HOLL	06 09 1410	N13 E59	06 14.0		B	CSO	100	5	6	3
5041		RAMY	06 09 1415	N13 E57	06 13.9		B	CAO	130	5	4	4
5041	24623	MWIL	06 09 1515	N14 E59	06 14.1	5	(B)					
5041		PALE	06 09 1745	N13 E58	06 14.1		A	HS	100	6	4	3
5041		LEAR	06 10 0008	N13 E54	06 14.1		B	CSO	140	7	6	2
5041		CULG	06 10 0310	N15 E52	06 14.1		A	HS	90	3	2	3
5041		SVTO	06 10 0612	N14 E51	06 14.1		B	DSO	200	11	7	3
5041		BOUL	06 10 1336	N14 E45	06 14.0		B	CSO	110	6	7	2
5041		RAMY	06 10 1435	N13 E45	06 14.0		B	DAO	190	8	7	3
5041	24623	MWIL	06 10 1530	N14 E45	06 14.0	5	(B)					
5041		HOLL	06 10 1546	N14 E45	06 14.0		B	DSO	130	9	7	2
5041		PALE	06 10 1700	N15 E41	06 13.8		B	CAO	140	5	6	3
5041		LEAR	06 11 0058	N13 E40	06 14.0		B	CAO	130	10	8	4
5041		CULG	06 11 0330	N16 E39	06 14.1		B	CSO	120	7	8	3
5041		SVTO	06 11 0605	N13 E38	06 14.1		B	CSO	140	12	8	2
5041		RAMY	06 11 1305	N13 E34	06 14.1		B	CSO	190	15	10	4
5041		BOUL	06 11 1330	N14 E29	06 13.7		B	DSO	120	8	5	3
5041	24623	MWIL	06 11 1415	N13 E30	06 13.8	5	(BP)					
5041		HOLL	06 11 1425	N14 E34	06 14.2		B	CSO	100	14	13	3
5041		PALE	06 11 1700	N17 E28	06 13.8		B	CAO	130	8	4	3
5041		LEAR	06 12 0235	N13 E23	06 13.8		B	DSO	130	22	5	4
5041		CULG	06 12 0250	N14 E24	06 13.9		B	CSO	140	10	6	3
5041		SVTO	06 12 0637	N13 E22	06 13.9		B	DSO	140	10	6	2
5041		RAMY	06 12 1345	N13 E17	06 13.8		B	CSI	180	18	7	4
5041		HOLL	06 12 1410	N12 E17	06 13.9		B	DSI	60	17	7	4
5041		BOUL	06 12 1445	N13 E16	06 13.8		B	DAI	170	14	6	3
5041	24623	MWIL	06 12 1500	N14 E17	06 13.9	6	(BP)					
5041		PALE	06 12 1805	N14 E14	06 13.8		B	DSI	190	12	7	3
5041		LEAR	06 13 0224	N12 E10	06 13.8		B	DSO	150	13	6	4
5041		CULG	06 13 0400	N15 E07	06 13.7		B	DSO	180	12	6	2
5041		SVTO	06 13 0637	N13 E07	06 13.8		B	DSI	170	14	7	2
5041		BOUL	06 13 1407	N13 E02	06 13.7		B	DAI	160	13	6	2
5041		HOLL	06 13 1420	N12 E03	06 13.8		B	DSO	160	12	6	3
5041	24623	MWIL	06 13 1500	N14 E03	06 13.8	5	(BP)					
5041		RAMY	06 13 1540	N13 E03	06 13.9		B	CSI	190	15	7	3
5041		PALE	06 13 1830	N13 E01	06 13.8		B	DSI	160	13	7	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5041		LEAR	06 14 0015	N13 W04	06 13.7		B	DSO	160	23	6	3
5041		CULG	06 14 0300	N14 W06	06 13.7		B	DSO	30	7	6	2
5041		SVTO	06 14 0740	N13 W07	06 13.8		B	DSO	160	11	6	3
5041		BOUL	06 14 1309	N13 W05	06 14.2		B	EAI	150	18	17	2
5041		RAMY	06 14 1313	N13 W10	06 13.8		B	DSI	220	16	7	3
5041	24623	MWIL	06 14 1430	N14 W10	06 13.8	5	(B)					
5041		HOLL	06 14 1500	N12 W10	06 13.9		B	DSO	180	14	6	4
5041		LEAR	06 15 0012	N13 W16	06 13.8		B	DAO	130	8	6	3
5041		SVTO	06 15 0618	N13 W19	06 13.8		B	DSO	130	11	7	3
5041		RAMY	06 15 1300	N13 W24	06 13.7		B	DAI	150	13	8	3
5041		BOUL	06 15 1355	N12 W23	06 13.8		B	DAO	180	13	8	4
5041	24623	MWIL	06 15 1500	N14 W24	06 13.8	5	(B)					
5041		HOLL	06 15 1515	N13 W23	06 13.9		B	DAO	140	17	8	3
5041		PALE	06 15 1935	N13 W27	06 13.8		B	CAI	120	15	7	3
5041		LEAR	06 16 0025	N12 W28	06 13.9		B	DAO	140	17	10	3
5041		CULG	06 16 0340	N13 W31	06 13.8		B	DSO	70	15	10	3
5041		SVTO	06 16 0443	N13 W32	06 13.8		B	DSI	150	16	8	3
5041		RAMY	06 16 1214	N13 W34	06 13.9		B	DAI	80	23	10	4
5041		BOUL	06 16 1315	N13 W33	06 14.1		B	EAI	130	23	12	4
5041	24623	MWIL	06 16 1430	N13 W36	06 13.9	5	(BG)					
5041		HOLL	06 16 1528	N13 W36	06 13.9		B	DSO	120	28	11	4
5041		PALE	06 16 1730	N12 W37	06 13.9		B	CSI	160	21	11	3
5041		LEAR	06 17 0011	N13 W41	06 13.9		B	DRI	50	34	10	3
5041		CULG	06 17 0230	N13 W43	06 13.8		B	CSI	60	14	10	1
5041		SVTO	06 17 0604	N14 W46	06 13.8		B	EAI	120	19	11	3
5041		BOUL	06 17 1310	N13 W47	06 14.0		B	DAI	140	20	10	4
5041		RAMY	06 17 1348	N14 W47	06 14.0		B	DAI	120	17	10	4
5041		HOLL	06 17 1516	N14 W48	06 14.0		B	CSO	60	21	11	4
5041		PALE	06 17 1725	N13 W47	06 14.2		B	CSO	90	20	10	3
5041	24623	MWIL	06 17 2030	N15 W51	06 14.0	5	(BG)					
5041		LEAR	06 18 0033	N14 W54	06 13.9		B	DAI	60	16	8	4
5041		CULG	06 18 0310	N14 W55	06 14.0		B	CSI	100	14	6	3
5041		SVTO	06 18 0550	N15 W57	06 13.9		B	DAI	90	18	8	4
5041		BOUL	06 18 1312	N14 W59	06 14.1		B	DAI	90	16	6	4
5041		RAMY	06 18 1345	N15 W60	06 14.0		B	DAI	100	13	8	4
5041	24623	MWIL	06 18 1430	N14 W61	06 14.0	4	(BG)					
5041		HOLL	06 18 1902	N15 W64	06 13.9		B	DSO	70	12	10	4
5041		PALE	06 18 1945	N13 W64	06 14.0		B	CSO	100	17	8	3
5041		LEAR	06 19 0147	N14 W68	06 13.9		B	CRO	40	5	4	3
5041		CULG	06 19 0210	N16 W71	06 13.7		B	CSO	60	5	7	3
5041		SVTO	06 19 0720	N16 W75	06 13.6		B	CSO	50	3	8	3
5041		BOUL	06 19 1320	N14 W72	06 14.1		B	CAO	60	2	3	3
5041		RAMY	06 19 1330	N17 W75	06 13.9		B	CAO	50	3	3	4
5041	24623	MWIL	06 19 1430	N15 W73	06 14.1	4	(B)					
5041		HOLL	06 19 1438	N15 W72	06 14.1		B	CSO	30	2	3	4
5041		PALE	06 19 1748	N14 W78	06 13.8		B	CAO	40	2	2	3
5041		LEAR	06 20 0020	N16 W80	06 13.9		A	AX	10	1	1	3
5045	24626	MWIL	06 10 1530	S34 E41	06 13.9	3	(AP)					
5045		BOUL	06 13 1407	S35 E03	06 13.8		A	AX	10	1	1	2
5045		HOLL	06 13 1420	S36 E03	06 13.8		A	AX	10	1	1	3
5045	24626	MWIL	06 13 1500	S37 E04	06 13.9	3	(AP)					
5044		SVTO	06 12 1110	N19 E39	06 15.4		A	AX	10	1	1	3
5044		RAMY	06 12 1345	N18 E38	06 15.5		B	BXO	10	2	3	4
5044		HOLL	06 12 1410	N19 E38	06 15.5		B	BXO	10	3	3	4
5044		LEAR	06 13 0224	N20 E30	06 15.4		B	BXO	10	2	4	4
5044		RAMY	06 19 1330	N20 W57	06 15.2		B	BXO	10	2	2	4
5044	24637	MWIL	06 19 1430	N18 W58	06 15.2	3	(AP)					
5044		HOLL	06 19 1438	N18 W58	06 15.2		A	AX	10	1	1	4
5046		RAMY	06 13 1540	N24 E54	06 17.8		A	AX		1	1	3
5046		CULG	06 16 0340	N23 E16	06 17.4		A	AX	10	1		3
5046		RAMY	06 16 1214	N24 E13	06 17.5		B	BXO	10	4	3	4
5046		BOUL	06 16 1315	N22 E11	06 17.4		B	BXO	10	4	3	4
5046	24632	MWIL	06 16 1430	N24 E11	06 17.4	4	(BF)					
5046		HOLL	06 16 1528	N24 E12	06 17.6		B	BXO	10	4	3	4
5046		PALE	06 16 1730	N24 E11	06 17.6		A	AX		1	1	3
5046		LEAR	06 17 0011	N24 E07	06 17.5		A	AX	10	1	1	3

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5046	.	SVTO	06 17 0604	N25 E06	06 17.7		A	AX	10	1		3
5046		RAMY	06 17 1348	N25 E01	06 17.6		B	BXO	10	2	2	4
5046		HOLL	06 17 1516	N25 E00	06 17.6		A	AX	10	1	1	4
5046		PALE	06 17 1725	N25 W02	06 17.6		A	AX	10	2	2	3
5046		LEAR	06 18 0033	N25 W06	06 17.5		A	AX	10	1	1	4
5046		SVTO	06 18 0550	N26 W08	06 17.6		A	AX		1		4
5049	24628	MWIL	06 14 1430	S29 E45	06 18.1	4	(AP)					
5049		HOLL	06 14 1500	S28 E46	06 18.2		A	AX	10	1	1	4
5049		LEAR	06 15 0012	S28 E41	06 18.2		B	BXO	10	3	3	3
5049		RAMY	06 15 1300	S30 E35	06 18.3		B	BXO	10	2	1	3
5049		BOUL	06 15 1355	S32 E33	06 18.2		B	BXO	10	2	3	4
5049	24628	MWIL	06 15 1500	S30 E33	06 18.2	4	(BP)					
5049		HOLL	06 15 1515	S29 E34	06 18.3		A	AX	10	2	2	3
5049		PALE	06 15 1935	S32 E32	06 18.3		B	BXO	10	2	1	3
5049		LEAR	06 16 0025	S31 E28	06 18.2		B	BXO	10	2	3	3
5049		CULG	06 16 0340	S30 E27	06 18.3		B	BXO	10	3	2	3
5049		SVTO	06 16 0443	S31 E25	06 18.2		B	CRO	20	7	3	3
5049		RAMY	06 16 1214	S31 E22	06 18.2		B	BXO	10	3	3	4
5049		BOUL	06 16 1315	S30 E20	06 18.1		B	BXO	10	2	2	4
5049	24628	MWIL	06 16 1430	S30 E21	06 18.2	4	(B)					
5049		HOLL	06 16 1528	S30 E21	06 18.3		B	BXO	10	4	3	4
5049		PALE	06 16 1730	S31 E19	06 18.2		B	BXO	10	2	2	3
5049		LEAR	06 17 0011	S29 E15	06 18.2		B	BXO	10	4	3	3
5049		CULG	06 17 0230	S31 E13	06 18.1		B	BXO	10	4	3	1
5049		SVTO	06 17 0604	S31 E12	06 18.2		B	BXO	10	5	3	3
5049		RAMY	06 17 1348	S29 E08	06 18.2		A	AX	10	1	1	4
5049		HOLL	06 17 1516	S29 E07	06 18.2		B	BXO	10	2	3	4
5049		PALE	06 17 1725	S29 E07	06 18.3		A	AX		1	1	3
5050		LEAR	06 15 0012	S22 E57	06 19.4		B	BXO	10	2	2	3
5050		SVTO	06 15 0618	S22 E55	06 19.5		B	BXO	20	2	3	3
5050		RAMY	06 15 1300	S22 E51	06 19.5		A	AX	10	1	1	3
5050		BOUL	06 15 1355	S23 E50	06 19.4		A	AX	10	1	1	4
5050	24631	MWIL	06 15 1500	S22 E50	06 19.5	4	(AF)					
5050		HOLL	06 15 1515	S21 E50	06 19.5		A	AX	10	1	1	3
5050		LEAR	06 16 0025	S22 E45	06 19.5		A	AX	10	1	1	3
5051		RAMY	06 16 1214	N34 E46	06 20.2		A	AX	10	2	1	4
5051	24633	MWIL	06 16 1430	N34 E44	06 20.1	5	(AP)					
5051		HOLL	06 16 1528	N34 E44	06 20.1		A	AX	10	3	2	4
5051		PALE	06 16 1730	N34 E42	06 20.1		A	AX	10	2	2	3
5051		LEAR	06 17 0011	N34 E38	06 20.0		B	BXI	20	8	4	3
5051		CULG	06 17 0230	N34 E38	06 20.1		B	BXO	10	2	2	1
5051		SVTO	06 17 0604	N34 E37	06 20.2		B	CRO	20	8	5	3
5051		BOUL	06 17 1310	N34 E31	06 20.0		B	BXO	10	8	5	4
5051		RAMY	06 17 1348	N33 E34	06 20.3		B	BXO	30	7	6	4
5051		HOLL	06 17 1516	N35 E31	06 20.1		B	BXO	20	9	5	4
5051		PALE	06 17 1725	N36 E32	06 20.3		B	BXO	10	3	3	3
5051	24633	MWIL	06 17 2030	N34 E27	06 20.0	4	(AP)					
5051		LEAR	06 18 0033	N35 E25	06 20.0		B	CRO	20	5	6	4
5051		CULG	06 18 0310	N34 E23	06 20.0		A	HR	10	3	2	3
5051		SVTO	06 18 0550	N34 E24	06 20.1		B	CRO	20	6	6	4
5051		BOUL	06 18 1312	N33 E17	06 19.9		B	BXO	10	4	3	4
5051		RAMY	06 18 1345	N34 E17	06 19.9		A	AX	10	3	1	4
5051	24633	MWIL	06 18 1430	N34 E16	06 19.9	4	(AP)					
5051		HOLL	06 18 1902	N34 E12	06 19.7		B	CSO	20	6	4	4
5051		PALE	06 18 1945	N34 E13	06 19.8		B	BXO	20	3	2	3
5051		LEAR	06 19 0147	N36 E10	06 19.9		B	BXO	10	3	3	3
5051		CULG	06 19 0210	N34 E10	06 19.9		B	BXO	10	3	3	3
5051		SVTO	06 19 0720	N37 E09	06 20.0		B	BXO	20	4	7	3
5051		BOUL	06 19 1320	N34 E07	06 20.1		B	BXO	10	6	6	3
5051		RAMY	06 19 1330	N37 E07	06 20.1		B	CRO	20	7	7	4
5051	24633	MWIL	06 19 1430	N36 E06	06 20.1	4	(B)					
5051		HOLL	06 19 1438	N36 E05	06 20.0		B	BXO	10	6	7	4
5051		PALE	06 19 1748	N36 E04	06 20.1		B	BXO	20	6	7	3
5051		LEAR	06 20 0020	N37 E02	06 20.2		B	BXO	50	4	8	3
5051		CULG	06 20 0330	N36 W01	06 20.1		A	BXO	10	3	7	3
5051		SVTO	06 20 0650	N37 W03	06 20.0		B	BXO	20	9	7	4

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5051		BOUL	06 20 1318	N34 W05	06 20.1		B	BXO	10	5	8	3
5051	24633	MWIL	06 20 1400	N36 W08	06 19.9	4	(B)					
5051		RAMY	06 20 1400	N37 W07	06 20.0		B	BXO	20	9	7	4
5051		HOLL	06 20 1510	N37 W09	06 19.9		B	BXO	10	6	8	3
5051		PALE	06 20 2010	N36 W11	06 19.9		B	BXO	10	6	8	3
5051		LEAR	06 21 0015	N36 W13	06 20.0		B	CRO	20	7	7	4
5051		SVTO	06 21 0515	N36 W14	06 20.1		B	DRO	50	12	7	4
5051		BOUL	06 21 1319	N34 W18	06 20.1		B	CAI	70	16	7	3
5051	24633	MWIL	06 21 1500	N36 W19	06 20.1	5	(B)					
5051		HOLL	06 21 1600	N37 W20	06 20.0		B	DAO	70	13	8	3
5051		RAMY	06 21 1648	N36 W19	06 20.2		B	DRI	110	12	6	2
5051		LEAR	06 22 0050	N35 W25	06 20.0		B	DAO	130	13	8	3
5051		PALE	06 22 0140	N34 W25	06 20.1		B	DSO	170	9	8	3
5051		CULG	06 22 0420	N34 W26	06 20.1		B	DAO	50	4	8	4
5051		SVTO	06 22 0617	N35 W28	06 20.0		B	DSO	80	9	9	2
5051		RAMY	06 22 1313	N37 W30	06 20.1		B	DAO	160	6	9	2
5051		BOUL	06 22 1355	N33 W30	06 20.2		B	DAO	130	4	8	3
5051		HOLL	06 22 1615	N37 W32	06 20.1		B	DAO	100	6	9	3
5051	24633	MWIL	06 22 1700	N36 W34	06 20.0	5	(B)					
5051		LEAR	06 23 0015	N37 W38	06 19.9		B	DSO	110	4	10	2
5051		CULG	06 23 0500	N34 W38	06 20.2		B	DSO	60	2	9	3
5051		SVTO	06 23 0545	N37 W41	06 19.9		B	EAO	120	3	11	2
5051		BOUL	06 23 1310	N35 W43	06 20.1		B	EAO	130	7	11	4
5051		RAMY	06 23 1449	N37 W45	06 20.0		B	EAO	100	3	11	3
5051	24633	MWIL	06 23 1715	N36 W46	06 20.0	5	(B)					
5051		HOLL	06 23 1811	N37 W45	06 20.1		B	DSO	90	4	10	3
5051		PALE	06 23 2045	N35 W50	06 19.9		B	EAO	90	4	11	3
5051		LEAR	06 24 0012	N38 W52	06 19.8		B	EAO	120	6	12	3
5051		CULG	06 24 0500	N37 W52	06 20.0		B	ESO	40	2	11	3
5051		SVTO	06 24 0704	N38 W53	06 20.0		B	EAO	100	3	13	1
5051		BOUL	06 24 1310	N35 W54	06 20.2		B	EAO	100	6	11	4
5051		RAMY	06 24 1448	N38 W59	06 19.8		B	DAO	110	4	10	3
5051	24633	MWIL	06 24 1515	N36 W58	06 20.0	5	(B)					
5051		HOLL	06 24 1830	N35 W58	06 20.1		B	DSO	70	5	10	3
5051		PALE	06 24 1920	N37 W60	06 20.0		B	DSO	70	4	10	3
5051		CULG	06 25 0353	N35 W65	06 20.0		B	ESO	70	5	12	2
5051		SVTO	06 25 0555	N36 W62	06 20.3		B	ESO	80	5	13	3
5051		BOUL	06 25 1410	N36 W65	06 20.4		B	CAO	60	7	13	2
5051		RAMY	06 25 1418	N37 W69	06 20.0		B	DAO	90	7	10	3
5051	24633	MWIL	06 25 1430	N36 W69	06 20.1	5	(B)					
5051		HOLL	06 25 1541	N36 W70	06 20.0		B	CAO	150	7	11	3
5051		CULG	06 26 0400	N34 W76	06 20.1		B	DRO	30	2	10	2
5051		SVTO	06 26 1022	N36 W80	06 20.0		B	BXO	10	3	3	3
5051	24633	MWIL	06 26 1415	N37 W77	06 20.4	4	(B)					
5051		RAMY	06 26 1538	N37 W78	06 20.4		B	BXO	20	5	5	2
5051		HOLL	06 26 1726	N35 W80	06 20.3		A	AX	20	2	2	3
5052	24634	MWIL	06 16 1430	N30 E47	06 20.3	4	(B)					
5052		HOLL	06 16 1528	N30 E46	06 20.3		A	AX		1		4
5052		PALE	06 16 1730	N31 E44	06 20.2		A	AX		1		3
5052		LEAR	06 17 0011	N29 E40	06 20.1		A	AX	10	2	1	3
5052		SVTO	06 17 0604	N29 E38	06 20.2		A	AX	10	2	1	3
5052		RAMY	06 17 1348	N29 E32	06 20.1		A	AX	10	2	2	4
5052		HOLL	06 17 1516	N29 E31	06 20.1		A	AX	10	1	1	4
5052		PALE	06 17 1725	N32 E31	06 20.2		A	AX	10	4	2	3
5047		SVTO	06 14 0740	S15 E83	06 20.6		A	HH	80	1	4	3
5047		BOUL	06 14 1309	S15 E76	06 20.3		B	CSO	140	3	11	2
5047		RAMY	06 14 1313	S16 E77	06 20.4		B	CSO	210	3	3	3
5047	24629	MWIL	06 14 1430	S16 E78	06 20.5	5	(AP)					
5047		HOLL	06 14 1500	S14 E79	06 20.6		A	HK	150	3	3	4
5047		LEAR	06 15 0012	S15 E73	06 20.5		A	HS	180	3	5	3
5047		SVTO	06 15 0618	S16 E73	06 20.8		B	OHO	230	4	4	3
5047		RAMY	06 15 1300	S17 E66	06 20.5		B	DAO	310	6	4	3
5047		BOUL	06 15 1355	S17 E65	06 20.5		B	DSO	380	8	4	4
5047	24629	MWIL	06 15 1500	S16 E67	06 20.7	6	(D)					
5047		HOLL	06 15 1515	S16 E66	06 20.6		B	DAO	330	7	7	3
5047		PALE	06 15 1935	S16 E63	06 20.6		B	CAI	360	7	6	3
5047		LEAR	06 16 0025	S15 E60	06 20.5		B	DSO	300	4	4	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5047		CULG	06 16 0340	S14 E60	06 20.7		B	DSO	220	5	5	3
5047		SVTO	06 16 0443	S17 E58	06 20.6		B	DHO	420	8	7	3
5047		RAMY	06 16 1214	S16 E53	06 20.5		B	DSI	430	10	5	4
5047		BOUL	06 16 1315	S16 E52	06 20.5		B	DHI	260	9	5	4
5047	24629	MWIL	06 16 1430	S16 E53	06 20.6	6	(B)					
5047		HOLL	06 16 1528	S16 E53	06 20.7		B	DKO	430	10	9	4
5047		PALE	06 16 1730	S16 E52	06 20.7		B	DKO	400	9	6	3
5047		LEAR	06 17 0011	S14 E46	06 20.5		B	DHI	270	7	6	3
5047		CULG	06 17 0230	S15 E48	06 20.7		B	DHO	280	5	4	1
5047		SVTO	06 17 0604	S17 E44	06 20.6		B	DHO	430	6	6	3
5047		BOUL	06 17 1310	S15 E38	06 20.4		B	DHO	280	6	6	4
5047		RAMY	06 17 1348	S16 E40	06 20.6		B	DKO	470	6	5	4
5047		HOLL	06 17 1516	S15 E39	06 20.6		B	DHO	350	7	7	4
5047		PALE	06 17 1725	S15 E39	06 20.7		B	CHO	410	9	6	3
5047	24629	MWIL	06 17 2030	S16 E36	06 20.6	6	(BP)					
5047		LEAR	06 18 0033	S16 E33	06 20.5		B	DHI	260	7	7	4
5047		CULG	06 18 0310	S15 E32	06 20.5		B	DKO	340	4	6	3
5047		SVTO	06 18 0550	S17 E32	06 20.7		B	DHO	470	10	5	4
5047		BOUL	06 18 1312	S15 E27	06 20.6		B	DKI	370	13	10	4
5047		RAMY	06 18 1345	S16 E29	06 20.8		B	DHO	410	13	10	4
5047	24629	MWIL	06 18 1430	S15 E27	06 20.6	6	(D)					
5047		HOLL	06 18 1435	S13 E27	06 20.6		BG	DHO	400	15	10	3
5047		PALE	06 18 1945	S16 E22	06 20.5		BG	EHI	430	15	13	3
5047		LEAR	06 19 0147	S15 E20	06 20.6		B	DHO	320	8	6	3
5047		CULG	06 19 0210	S15 E19	06 20.5		B	DKO	270	4	7	3
5047		SVTO	06 19 0720	S16 E18	06 20.7		BGD	DHI	390	13	10	3
5047		BOUL	06 19 1320	S16 E14	06 20.6		B	DKI	340	14	10	3
5047		RAMY	06 19 1330	S15 E14	06 20.6		BG	EKI	480	31	14	4
5047	24629	MWIL	06 19 1430	S16 E14	06 20.7	6	(BG)					
5047		HOLL	06 19 1438	S14 E15	06 20.7		BG	DHO	360	22	10	4
5047		PALE	06 19 1748	S15 E13	06 20.7		BG	DHO	330	18	10	3
5047		LEAR	06 20 0020	S15 E08	06 20.6		B	DHO	330	18	9	3
5047		CULG	06 20 0330	S15 E08	06 20.7		B	FHO	400	20	16	3
5047		SVTO	06 20 0650	S15 E07	06 20.8		BG	FHI	470	31	16	4
5047		BOUL	06 20 1318	S15 E03	06 20.8		B	DKI	350	27	9	3
5047		RAMY	06 20 1400	S14 E06	06 21.0		BG	EKI	520	41	15	4
5047	24629	MWIL	06 20 1400	S16 E02	06 20.7	5	(BG)					
5047		HOLL	06 20 1510	S15 E05	06 21.0		BGD	EHI	450	28	15	3
5047		PALE	06 20 2010	S16 W05	06 20.5		BG	DKI	400	25	8	3
5047		LEAR	06 21 0015	S15 W03	06 20.8		BG	EHI	430	36	12	4
5047		SVTO	06 21 0515	S16 W05	06 20.8		BG	EHI	470	49	12	4
5047		BOUL	06 21 1319	S15 W09	06 20.9		B	EKI	380	30	11	3
5047	24629	MWIL	06 21 1500	S16 W11	06 20.8	5	(BG)					
5047		HOLL	06 21 1600	S15 W11	06 20.8		BG	EHI	450	31	11	3
5047		RAMY	06 21 1648	S15 W12	06 20.8		BG	DHI	460	26	10	2
5047		LEAR	06 22 0050	S16 W15	06 20.9		BG	EKI	390	38	11	3
5047		PALE	06 22 0140	S16 W15	06 20.9		BG	EKI	500	39	12	3
5047		CULG	06 22 0420	S16 W17	06 20.9		BG	DKC	330	22	9	4
5047		SVTO	06 22 0617	S17 W21	06 20.7		BG	EKI	520	27	13	2
5047		RAMY	06 22 1313	S16 W24	06 20.7		BG	DKI	550	34	10	2
5047		BOUL	06 22 1355	S16 W23	06 20.8		B	EKC	560	33	11	3
5047		HOLL	06 22 1615	S15 W24	06 20.9		B	EKC	530	40	11	3
5047	24629	MWIL	06 22 1700	S16 W25	06 20.8	6	(D)					
5047		LEAR	06 23 0015	S16 W28	06 20.9		BGD	EKC	450	44	12	2
5047		CULG	06 23 0500	S17 W31	06 20.8		B	EKC	520	20	11	3
5047		SVTO	06 23 0545	S16 W34	06 20.7		BG	DKI	690	25	9	2
5047		BOUL	06 23 1310	S15 W35	06 20.9		B	EKC	620	34	13	4
5047		RAMY	06 23 1449	S16 W38	06 20.7		B	EKC	560	30	11	3
5047	24629	MWIL	06 23 1715	S16 W39	06 20.8	5	(D)					
5047		HOLL	06 23 1811	S15 W38	06 20.9		BGD	EKC	810	33	14	3
5047		PALE	06 23 2045	S18 W42	06 20.7		BGD	EKI	700	24	12	3
5047		LEAR	06 24 0012	S16 W42	06 20.8		B	EKI	840	25	11	3
5047		CULG	06 24 0500	S16 W47	06 20.6			DKC	510	10	9	3
5047		SVTO	06 24 0704	S15 W50	06 20.5		BGD	DKC	870	16	10	1
5047		BOUL	06 24 1310	S16 W46	06 21.0		B	FKC	930	31	19	4
5047		RAMY	06 24 1448	S16 W50	06 20.8		BG	EKC	960	28	12	3
5047	24629	MWIL	06 24 1515	S16 W51	06 20.8	5	(D)					
5047		HOLL	06 24 1830	S17 W54	06 20.7		BGD	EKC	1040	22	12	3
5047		PALE	06 24 1920	S17 W55	06 20.6		BGD	EKC	920	18	12	3

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5047		CULG	06	25	0353	S18	W60	06	20.6		BGD	EKC	700	21	12	2
5047		SVTO	06	25	0555	S16	W58	06	20.8		BGD	EKC	690	18	12	3
5047		BOUL	06	25	1410	S17	W63	06	20.8		B	EKC	680	20	11	2
5047		RAMY	06	25	1418	S16	W64	06	20.7		B	EKC	750	19	11	3
5047	24629	MWIL	06	25	1430	S16	W66	06	20.6	6	(D)					
5047		HOLL	06	25	1541	S17	W63	06	20.9		GD	EKC	780	19	12	3
5047		CULG	06	26	0400	S19	W71	06	20.7		BGD	EKC	400	11	14	2
5047		SVTO	06	26	1022	S16	W77	06	20.6		BG	DHC	400	12	10	3
5047	24629	MWIL	06	26	1415	S16	W78	06	20.7	5	(B)					
5047		RAMY	06	26	1538	S15	W77	06	20.8		B	FKC	450	15	18	2
5047		HOLL	06	26	1726	S17	W76	06	20.9		BGD	EKC	270	13	12	3
5047		PALE	06	26	1740	S15	W77	06	20.9		B	DKC	190	4	9	3
5047		LEAR	06	27	0100	S17	W82	06	20.8		B	CSO	900	3	9	3
5048		SVTO	06	14	0740	N37	E83	06	21.0		A	HS	30	1	3	3
5048		BOUL	06	14	1309	N37	E78	06	20.8		A	HS	60	1	9	2
5048		RAMY	06	14	1313	N37	E79	06	20.9		A	HS	120	1	5	3
5048	24630	MWIL	06	14	1430	N37	E80	06	21.0	4	(AP)					
5048		HOLL	06	14	1500	N38	E81	06	21.2		A	HH	90	1	4	4
5048		LEAR	06	15	0012	N37	E75	06	21.0		A	HS	70	1	2	3
5048		SVTO	06	15	0618	N37	E76	06	21.4		A	HH	180	1	5	3
5048		RAMY	06	15	1300	N37	E68	06	21.0		A	HS	180	1	2	3
5048		BOUL	06	15	1355	N34	E64	06	20.7		A	HA	180	1	2	4
5048	24630	MWIL	06	15	1500	N37	E68	06	21.1	6	(AP)					
5048		HOLL	06	15	1515	N37	E68	06	21.1		A	HS	180	1	2	3
5048		PALE	06	15	1935	N37	E63	06	20.9		A	HS	210	1	2	3
5048		LEAR	06	16	0025	N37	E58	06	20.7		B	CSO	160	3	10	3
5048		CULG	06	16	0340	N37	E57	06	20.7		B	CSO	130	2	15	3
5048		SVTO	06	16	0443	N36	E57	06	20.8		B	CSO	80	2	14	3
5048		RAMY	06	16	1214	N37	E58	06	21.2		A	HS	160	1	2	4
5048		BOUL	06	16	1315	N32	E58	06	21.1		B	CSO	190	4	11	4
5048	24630	MWIL	06	16	1430	N38	E56	06	21.1	5	(AP)					
5048		HOLL	06	16	1528	N37	E56	06	21.1		A	HS	120	1	2	4
5048		PALE	06	16	1730	N38	E55	06	21.2		A	HS	120	1	2	3
5048		LEAR	06	17	0011	N37	E49	06	20.9		A	HS	90	1	3	3
5048		CULG	06	17	0230	N37	E47	06	20.9		B	ESO	180	3	10	1
5048		SVTO	06	17	0604	N37	E49	06	21.2		A	HH	180	1	3	3
5048		BOUL	06	17	1310	N36	E42	06	20.9		A	HS	160	1	3	4
5048		RAMY	06	17	1348	N38	E44	06	21.1		A	HS	140	1	2	4
5048		HOLL	06	17	1516	N37	E42	06	21.0		A	HS	130	1	2	4
5048		PALE	06	17	1725	N38	E42	06	21.1		A	HH	170	1	3	3
5048	24630	MWIL	06	17	2030	N38	E40	06	21.1	5	(AP)					
5048		LEAR	06	18	0033	N38	E37	06	21.0		A	HS	120	1	3	4
5048		CULG	06	18	0310	N38	E37	06	21.1		A	HS	160	1	3	3
5048		SVTO	06	18	0550	N37	E37	06	21.2		A	HH	180	1	3	4
5048		BOUL	06	18	1312	N36	E30	06	20.9		A	HS	140	1	2	4
5048		RAMY	06	18	1345	N38	E33	06	21.2		A	HS	150	1	2	4
5048	24630	MWIL	06	18	1430	N38	E32	06	21.2	5	(AP)					
5048		HOLL	06	18	1902	N38	E29	06	21.1		A	HS	120	1	2	4
5048		PALE	06	18	1945	N38	E25	06	20.8		A	HH	180	1	3	3
5048		LEAR	06	19	0147	N39	E25	06	21.1		A	HS	110	2	2	3
5048		CULG	06	19	0210	N38	E27	06	21.3		A	HS	210	1	3	3
5048		SVTO	06	19	0720	N38	E23	06	21.2		A	HH	100	1	3	3
5048		BOUL	06	19	1320	N36	E19	06	21.1		A	HA	130	2	2	3
5048		RAMY	06	19	1330	N38	E21	06	21.3		A	HH	180	1	3	4
5048	24630	MWIL	06	19	1430	N38	E20	06	21.2	5	(AP)					
5048		HOLL	06	19	1438	N39	E19	06	21.1		A	HA	100	1	2	4
5048		PALE	06	19	1748	N38	E17	06	21.1		A	HH	110	2	3	3
5048		LEAR	06	20	0020	N38	E14	06	21.1		A	HS	110	2	3	3
5048		CULG	06	20	0330	N38	E13	06	21.2		A	HS	130	1	3	3
5048		SVTO	06	20	0650	N38	E12	06	21.2		A	HH	120	1	3	4
5048		BOUL	06	20	1318	N37	E08	06	21.2		A	HA	120	3	3	3
5048	24630	MWIL	06	20	1400	N38	E07	06	21.1	5	(AP)					
5048		RAMY	06	20	1400	N38	E08	06	21.2		A	HH	190	4	3	4
5048		HOLL	06	20	1510	N39	E07	06	21.2		A	HS	110	3	2	3
5048		PALE	06	20	2010	N38	E03	06	21.1		A	HK	180	1	3	3
5048		LEAR	06	21	0015	N39	E01	06	21.1		B	HS	100	2	2	4
5048		SVTO	06	21	0515	N38	E00	06	21.2		A	HH	130	1	3	4
5048		BOUL	06	21	1319	N37	W05	06	21.1		A	HA	100	2	3	3

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5048	24630	MWIL	06 21 1500	N38 W05	06 21.2	5	(AP)					
5048		HOLL	06 21 1600	N39 W07	06 21.1		A	HS	100	1	2	3
5048		RAMY	06 21 1648	N38 W05	06 21.3		A	HS	120	1	2	2
5048		LEAR	06 22 0050	N38 W11	06 21.1		A	HS	120	1	2	3
5048		PALE	06 22 0140	N38 W12	06 21.1		A	HH	180	1	3	3
5048		CULG	06 22 0420	N38 W12	06 21.2		A	HS	70	1	2	4
5048		SVTO	06 22 0617	N37 W14	06 21.1		A	HH	100	1	3	2
5048		RAMY	06 22 1313	N39 W18	06 21.1		A	HA	100	2	2	2
5048		BOUL	06 22 1355	N36 W17	06 21.2		A	HA	120	2	3	3
5048		HOLL	06 22 1615	N39 W19	06 21.1		A	HS	100	1	2	3
5048	24630	MWIL	06 22 1700	N38 W18	06 21.2	6	(AP)					
5048		LEAR	06 23 0015	N38 W23	06 21.1		A	HS	80	1	2	2
5048		CULG	06 23 0500	N37 W25	06 21.2		A	HS	80	1	2	3
5048		SVTO	06 23 0545	N39 W26	06 21.1		A	HA	100	1	2	2
5048		BOUL	06 23 1310	N36 W28	06 21.3		A	HS	110	1	2	4
5048		RAMY	06 23 1449	N39 W30	06 21.2		A	HS	80	1	2	3
5048	24630	MWIL	06 23 1715	N38 W32	06 21.1	5	(AP)					
5048		HOLL	06 23 1811	N38 W31	06 21.2		A	HS	110	2	2	3
5048		PALE	06 23 2045	N38 W34	06 21.1		A	HH	110	1	3	3
5048		LEAR	06 24 0012	N39 W37	06 21.0		A	HS	150	1	2	3
5048		CULG	06 24 0500	N38 W37	06 21.2		A	HS	30	1	1	3
5048		SVTO	06 24 0704	N39 W42	06 20.9		A	HS	30	1	2	1
5048		BOUL	06 24 1310	N37 W40	06 21.3		A	HS	60	1	2	4
5048		RAMY	06 24 1448	N39 W42	06 21.2		A	HS	100	1	2	3
5048	24630	MWIL	06 24 1515	N38 W43	06 21.1	5	(AP)					
5048		HOLL	06 24 1830	N37 W45	06 21.1		A	HS	110	1	2	3
5048		PALE	06 24 1920	N38 W46	06 21.1			HS	100	1	2	3
5048		CULG	06 25 0353	N37 W50	06 21.1		A	HS	70	1	2	2
5048		SVTO	06 25 0555	N37 W49	06 21.3		A	HH	70	1	3	3
5048		BOUL	06 25 1410	N37 W52	06 21.4		A	HA	80	2	2	2
5048		RAMY	06 25 1418	N39 W54	06 21.2		A	HS	90	1	2	3
5048	24630	MWIL	06 25 1430	N37 W56	06 21.1	5	(AP)					
5048		HOLL	06 25 1830	N37 W54	06 21.4		A	HS	110	1	2	3
5048		CULG	06 26 0400	N36 W63	06 21.1		A	HS	50	1	3	2
5048		SVTO	06 26 1022	N38 W69	06 20.8		A	HS	120	1	2	3
5048	24630	MWIL	06 26 1415	N38 W66	06 21.2	5	(AP)					
5048		RAMY	06 26 1538	N39 W68	06 21.1		A	HA	110	1	2	2
5048		HOLL	06 26 1726	N37 W69	06 21.2		A	HS	110	1	2	3
5048		PALE	06 26 1740	N38 W70	06 21.1		A	HA	180	1	2	3
5048		LEAR	06 27 0100	N36 W71	06 21.3		A	HS	120	2	2	3
5048		CULG	06 27 0350	N35 W73	06 21.3		A	HS	40	1	1	3
5048		SVTO	06 27 0553	N38 W75	06 21.2		A	HS	100	1	2	3
5048		RAMY	06 27 1310	N38 W80	06 21.1		A	HA	110	1	2	4
5048	24630	MWIL	06 27 1430	N38 W80	06 21.1	3	(AP)					
5048		BOUL	06 27 1540	N38 W76	06 21.5		A	HS	60	1	1	4
5048		HOLL	06 27 1700	N37 W79	06 21.3		A	HS	60	1	2	2
5048		PALE	06 27 2110	N38 W82	06 21.2		A	HS	120	1	2	3
5048A	24635	MWIL	06 16 1430	S24 E70	06 22.0	3	(AP)					
5048A	24635	MWIL	06 21 1500	S22 E06	06 22.1	2	(B)					
5054		RAMY	06 19 1330	S22 E47	06 23.2		A	AX		1	1	4
5054	24638	MWIL	06 19 1430	S22 E48	06 23.3	3	(AP)					
5054		CULG	06 20 0330	S25 E38	06 23.1		A	AX		1	1	3
5054		SVTO	06 20 0650	S25 E38	06 23.2		B	BXO	10	2	2	4
5054		BOUL	06 20 1318	S25 E32	06 23.0		A	AX	10	3	1	3
5054		RAMY	06 20 1400	S25 E33	06 23.1		A	AX	10	4	2	4
5054	24638	MWIL	06 20 1400	S26 E32	06 23.1	3	(B)					
5054		HOLL	06 20 1510	S24 E32	06 23.1		A	AX	10	4	2	3
5054		PALE	06 20 2010	S25 E28	06 23.0		A	AX	20	7	3	3
5054		LEAR	06 21 0015	S26 E28	06 23.2		A	AX	10	4	3	4
5054		SVTO	06 21 0515	S25 E28	06 23.4		B	DRO	30	13	10	4
5054		BOUL	06 21 1319	S25 E21	06 23.2		B	BXO	10	4	3	3
5054	24638	MWIL	06 21 1500	S25 E21	06 23.2	4	(B)					
5054		HOLL	06 21 1600	S25 E20	06 23.2		B	BXO	10	3	4	3
5054		RAMY	06 21 1648	S25 E19	06 23.2		B	BXO	20	4	4	2
5054		LEAR	06 22 0050	S26 E15	06 23.2		B	CRO	20	4	5	3
5054		PALE	06 22 0140	S27 E14	06 23.2		B	BXO	10	2	6	3
5054		CULG	06 22 0420	S26 E11	06 23.0		A	AX		1		4

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
5054		SVTO	06 22 0617	S25 E15	06 23.4		B	CRO	10	3	9	2
5054		HOLL	06 23 1811	S25 W04	06 23.4		A	AX	10	1	1	3
5054	24638	MWIL	06 24 1515	S25 W16	06 23.4	4	(BG)					
5054		CULG	06 25 0353	S27 W24	06 23.3		B	BXO	10	2	3	2
5054		SVTO	06 25 0555	S26 W25	06 23.3		B	BXO	20	6	4	3
5054		BOUL	06 25 1410	S26 W31	06 23.2		A	HR	10	1	1	2
5054		RAMY	06 25 1418	S26 W32	06 23.1		A	AX	10	2	1	3
5054	24638	MWIL	06 25 1430	S26 W33	06 23.0	4	(AP)					
5054		HOLL	06 25 1541	S26 W32	06 23.2		A	AX	10	1	1	3
5055		BOUL	06 20 1318	S24 E40	06 23.6		A	AX	10	3	1	3
5055		RAMY	06 20 1400	S23 E42	06 23.8		A	AX	10	3	2	4
5055	24640	MWIL	06 20 1400	S24 E41	06 23.7	4	(AP)					
5055		HOLL	06 20 1510	S23 E42	06 23.9		A	AX	10	4	2	3
5055		PALE	06 20 2010	S23 E36	06 23.6		A	AX		1	1	3
5055		LEAR	06 21 0015	S24 E35	06 23.7		A	AX	10	1	1	4
5055		BOUL	06 21 1319	S23 E27	06 23.6		B	AX	10	3	1	3
5055	24640	MWIL	06 21 1500	S24 E27	06 23.7	4	(AP)					
5055		HOLL	06 21 1600	S23 E27	06 23.7		A	AX	10	3	2	3
5055		RAMY	06 21 1648	S24 E26	06 23.7		A	AX	10	2	2	2
5055		LEAR	06 22 0050	S23 E22	06 23.7		B	CRO	20	4	3	3
5055		PALE	06 22 0140	S22 E22	06 23.8		B	BXO	10	5	3	3
5055		CULG	06 22 0420	S23 E20	06 23.7		A	AX	10	1	1	4
5055		RAMY	06 22 1313	S24 E16	06 23.8		A	AX		1	1	2
5055		BOUL	06 22 1355	S23 E15	06 23.7		A	AX	10	1	1	3
5055		HOLL	06 22 1615	S23 E13	06 23.7		A	AX	10	2	2	3
5055	24640	MWIL	06 22 1700	S24 E14	06 23.8	4	(AP)					
5055		SVTO	06 23 0545	S24 E05	06 23.6		B	BXO	10	2	5	2
5055		RAMY	06 23 1449	S24 E03	06 23.8		A	AX		1	1	3
5055	24640	MWIL	06 23 1715	S26 E07	06 24.3	3	(BG)					
5055		HOLL	06 23 1811	S25 E03	06 24.0		B	BXO	10	3	3	3
5053		BOUL	06 18 1312	S21 E78	06 24.5		A	HS	60	1	2	4
5053		RAMY	06 18 1345	S21 E77	06 24.5		A	HR	60	1	2	4
5053	24636	MWIL	06 18 1430	S21 E82	06 24.9	2	(AF)					
5053		HOLL	06 18 1902	S19 E75	06 24.5		A	HS	30	1	1	4
5053		PALE	06 18 1945	S21 E77	06 24.7		A	HA	60	1	1	3
5053		LEAR	06 19 0147	S19 E77	06 24.9		A	HS	60	2	2	3
5053		CULG	06 19 0210	S21 E73	06 24.7		A	HS	20	1	2	3
5053		SVTO	06 19 0720	S20 E74	06 25.0		A	HS	90	2	2	3
5053		BOUL	06 19 1320	S21 E67	06 24.7		A	HS	50	1	1	3
5053		RAMY	06 19 1330	S21 E68	06 24.8		A	HS	110	1	2	4
5053	24636	MWIL	06 19 1430	S21 E69	06 24.9	5	(AF)					
5053		HOLL	06 19 1438	S19 E68	06 24.8		A	HS	40	1	2	4
5053		PALE	06 19 1748	S20 E67	06 24.9		A	HA	50	1	2	3
5053		LEAR	06 20 0020	S20 E62	06 24.7		A	HS	20	1	2	3
5053		CULG	06 20 0330	S21 E62	06 24.9		A	HS	20	1	2	3
5053		SVTO	06 20 0650	S21 E62	06 25.0		A	HS	60	1	2	4
5053		BOUL	06 20 1318	S20 E55	06 24.8		A	HS	50	1	2	3
5053		RAMY	06 20 1400	S20 E56	06 24.9		A	HA	80	1	2	4
5053	24636	MWIL	06 20 1400	S21 E56	06 24.9	5	(AF)					
5053		HOLL	06 20 1510	S19 E56	06 24.9		A	HS	50	1	1	3
5053		PALE	06 20 2010	S20 E50	06 24.7		A	HS	100	1	2	3
5053		LEAR	06 21 0015	S20 E50	06 24.8		A	HS	60	1	2	4
5053		SVTO	06 21 0515	S21 E50	06 25.0		B	CSO	30	2	4	4
5053		BOUL	06 21 1319	S20 E42	06 24.8		A	HA	60	2	2	3
5053	24636	MWIL	06 21 1500	S21 E43	06 24.9	5	(AF)					
5053		HOLL	06 21 1600	S20 E41	06 24.8		A	HS	30	1	1	3
5053		RAMY	06 21 1648	S21 E41	06 24.8		A	HA	30	1	1	2
5053		LEAR	06 22 0050	S21 E37	06 24.9		A	HS	40	1	1	3
5053		PALE	06 22 0140	S20 E37	06 24.9		A	HS	50	1	1	3
5053		CULG	06 22 0420	S21 E35	06 24.9		A	HS	10	1	1	4
5053		SVTO	06 22 0617	S21 E35	06 24.9		A	HS	20	1	1	2
5053		RAMY	06 22 1313	S21 E30	06 24.8		B	CSO	50	3	3	2
5053		BOUL	06 22 1355	S20 E28	06 24.7		A	HA	40	1	1	3
5053		HOLL	06 22 1615	S21 E30	06 25.0		B	CSO	50	4	3	3
5053	24636	MWIL	06 22 1700	S22 E28	06 24.9	5	(AF)					
5053		LEAR	06 23 0015	S22 E25	06 24.9		B	CSO	20	3	3	2
5053		CULG	06 23 0500	S21 E21	06 24.8		A	HS	20	1	1	3

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5053		SVTO	06 23 0545	S22 E21	06 24.8		A	HS	20	1	1	2
5053		BOUL	06 23 1310	S21 E15	06 24.7		A	HA	20	2	1	4
5053		RAMY	06 23 1449	S21 E15	06 24.8		A	HA	30	2	2	3
5053	24636	MWIL	06 23 1715	S22 E14	06 24.8	5	(AF)					
5053		HOLL	06 23 1811	S21 E14	06 24.8		A	HS	20	2	1	3
5053		PALE	06 23 2045	S22 E13	06 24.9		A	HS	20	1	1	3
5053		LEAR	06 24 0012	S22 E11	06 24.8		A	HS	30	1	1	3
5053		CULG	06 24 0500	S21 E06	06 24.7		A	HR	10	1	1	3
5053		SVTO	06 24 0704	S22 E05	06 24.7		A	HS	10	1	1	1
5053		BOUL	06 24 1310	S20 E02	06 24.7		A	HA	10	2	1	4
5053		RAMY	06 24 1448	S21 E02	06 24.8		A	HA	20	1	1	3
5053	24636	MWIL	06 24 1515	S22 E02	06 24.8	5	(AF)					
5053		HOLL	06 24 1830	S21 E01	06 24.8		A	HS	10	1	1	3
5053		PALE	06 24 1920	S21 W01	06 24.7		A	HS	20	1	1	3
5053		CULG	06 25 0353	S21 W05	06 24.8		A	AX	10	1	1	2
5053		SVTO	06 25 0555	S22 W06	06 24.8		A	AX	10	1	1	3
5053		BOUL	06 25 1410	S20 W11	06 24.7		A	HR	10	1	1	2
5053		RAMY	06 25 1418	S21 W12	06 24.7		A	AX	10	2	1	3
5053	24636	MWIL	06 25 1430	S22 W11	06 24.7	4	(BG)					
5056		LEAR	06 23 0015	S22 E31	06 25.4		B	CRO	20	7	8	2
5056		CULG	06 23 0500	S25 E33	06 25.8		A	AX		1		3
5056		SVTO	06 23 0545	S24 E31	06 25.6		B	CRO	10	2	4	2
5056		BOUL	06 23 1310	S23 E25	06 25.5		B	CRO	20	6	6	4
5056		RAMY	06 23 1449	S23 E25	06 25.5		B	CAO	30	6	5	3
5056	24643	MWIL	06 23 1715	S24 E25	06 25.6	5	(B)					
5056		HOLL	06 23 1811	S23 E23	06 25.5		B	CAO	20	5	5	3
5056		PALE	06 23 2045	S24 E23	06 25.6		B	CAO	30	3	5	3
5056		LEAR	06 24 0012	S24 E21	06 25.6		B	CAO	30	6	6	3
5056		CULG	06 24 0500	S25 E18	06 25.6		A	AX		1		3
5056		SVTO	06 24 0704	S23 E14	06 25.4		B	CRO	20	4	6	1
5056		BOUL	06 24 1310	S24 E13	06 25.5		B	BXO	10	8	6	4
5056		RAMY	06 24 1448	S23 E14	06 25.7		B	BXO	20	7	4	3
5056	24643	MWIL	06 24 1515	S24 E13	06 25.6	4	(B)					
5056		HOLL	06 24 1830	S25 E10	06 25.5		B	BXO	10	5	5	3
5056		PALE	06 24 1920	S24 E08	06 25.4		B	CSO	20	3	4	3
5056		CULG	06 25 0353	S24 E05	06 25.5		B	BXO	10	2	4	2
5056		SVTO	06 25 0555	S25 E05	06 25.6		B	BXO	10	3	4	3
5056		BOUL	06 25 1410	S22 E06	06 26.0		B	BXO	10	5	3	2
5056		RAMY	06 25 1418	S24 E06	06 26.0		B	BXO	20	5	3	3
5056	24643	MWIL	06 25 1430	S24 E06	06 26.1	4	(B)					
5056		HOLL	06 25 1541	S24 E06	06 26.1		B	BXO	20	7	3	3
5056		CULG	06 26 0400	S23 W07	06 25.6		A	AX	10	1		2
5056		SVTO	06 26 1022	S23 W10	06 25.7		B	BXO	10	5	7	3
5056	24643	MWIL	06 26 1415	S24 W12	06 25.7	4	(BG)					
5056		RAMY	06 26 1538	S23 W15	06 25.5		B	BXO	20	9	5	2
5056		HOLL	06 26 1726	S24 W13	06 25.7		B	BXO	20	8	7	3
5056		PALE	06 26 1740	S23 W13	06 25.7		B	BXO	20	7	8	3
5056		LEAR	06 27 0100	S28 W20	06 25.5		B	DSO	50	6	6	3
5056		CULG	06 27 0350	S26 W22	06 25.4		B	BXO	10	3	7	3
5056		SVTO	06 27 0553	S23 W22	06 25.6		B	CRO	20	6	6	3
5056		RAMY	06 27 1310	S23 W27	06 25.5		B	CAI	40	11	7	4
5056	24643	MWIL	06 27 1430	S24 W26	06 25.6	4	(B)					
5056		BOUL	06 27 1540	S23 W27	06 25.6		B	BXO	40	9	6	4
5056		HOLL	06 27 1700	S23 W28	06 25.5		B	DAO	50	6	6	2
5056		PALE	06 27 2110	S23 W31	06 25.5		B	BXO	40	8	6	3
5056		LEAR	06 28 0045	S24 W33	06 25.5		B	DAO	90	9	6	3
5056		CULG	06 28 0235	S24 W35	06 25.4		B	BXO	20	2	6	2
5056		SVTO	06 28 0542	S23 W37	06 25.4		B	DRO	30	10	7	4
5056	24643	MWIL	06 28 1415	S24 W40	06 25.5	4	(B)					
5056		BOUL	06 28 1445	S23 W38	06 25.7		B	DAO	80	13	8	4
5056		RAMY	06 28 1525	S23 W42	06 25.4		B	DAO	50	7	6	3
5056		HOLL	06 28 1643	S23 W43	06 25.4		B	CRO	40	8	8	3
5056		PALE	06 28 1855	S24 W43	06 25.5		B	CRO	60	9	9	3
5056		LEAR	06 29 0022	S23 W45	06 25.5		B	DRO	20	6	8	4
5056		CULG	06 29 0400	S24 W47	06 25.5		B	BXO	10	3	5	2
5056		SVTO	06 29 0549	S23 W50	06 25.4		B	BXO	20	5	6	3
5056		HOLL	06 29 1515	S23 W53	06 25.5		B	BXO	10	3	8	4
5056	24643	MWIL	06 29 1530	S24 W51	06 25.7	3	(AF)					

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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
5056		RAMY	06 29 1550	S26 W55	06 25.4		A	HS	10	2	1	3
5056		BOUL	06 29 1700	S22 W51	06 25.8		B	BXO	10	2	1	1
5056		PALE	06 29 1747	S24 W52	06 25.7		A	AX	10	2	1	4
5056		LEAR	06 30 0012	S24 W55	06 25.7		B	BXO	20	2	3	3
5056		SVTO	06 30 0650	S24 W58	06 25.8		B	BXO	30	2	3	4
5056	24643	MWIL	06 30 1415	S24 W66	06 25.5	2	B					
5056A		RAMY	06 23 1449	N22 E29	06 25.8		B	BXO	10	2	2	3
5056A		HOLL	06 23 1811	N22 E27	06 25.8		A	AX	10	2	1	3
5056B		CULG	06 25 0353	S05 E22	06 26.8		A	AX	10	1		2
5059		BOUL	06 24 1310	N17 E43	06 27.8		B	BXO	10	6	6	4
5059		RAMY	06 24 1448	N14 E46	06 28.1		B	BXO	30	6	3	3
5059	24646	MWIL	06 24 1515	N14 E47	06 28.2	4	(B)					
5059		HOLL	06 24 1830	N14 E45	06 28.2		B	BXO	10	4	4	3
5059		PALE	06 24 1920	N14 E43	06 28.0		B	BXO	20	3	3	3
5059		CULG	06 25 0353	N14 E39	06 28.1		B	BXO	10	2	2	2
5059		SVTO	06 25 0555	N13 E38	06 28.1		B	BXO	20	3	3	3
5059		BOUL	06 25 1410	N13 E32	06 28.0		B	BXO	10	5	4	2
5059		RAMY	06 25 1418	N13 E33	06 28.1		B	BXO	20	7	5	3
5059	24646	MWIL	06 25 1430	N14 E32	06 28.0	4	(B)					
5059		HOLL	06 25 1541	N14 E31	06 28.0		B	BXO	10	6	5	3
5059		CULG	06 26 0400	N14 E23	06 27.9		A	AX	10	1	1	2
5059		SVTO	06 26 1022	N14 E21	06 28.0		B	CRO	30	4	4	3
5059	24646	MWIL	06 26 1415	N13 E17	06 27.9	4	(B)					
5059		RAMY	06 26 1538	N14 E16	06 27.9		A	AX	10	1	1	2
5059		HOLL	06 26 1726	N13 E17	06 28.0		B	BXO	10	3	4	3
5059		PALE	06 26 1740	N13 E16	06 27.9		A	AX	10	2	2	3
5059		LEAR	06 27 0100	N10 E10	06 27.8		B	BXO	10	2	2	3
5059		CULG	06 27 0350	N13 E08	06 27.8		A	AX		1		3
5059		SVTO	06 27 0553	N14 E08	06 27.8		A	AX		2	1	3
5059		RAMY	06 27 1310	N14 E03	06 27.8		A	AX	10	3	2	4
5059	24646	MWIL	06 27 1430	N14 E03	06 27.8	3	(AP)					
5059		SVTO	06 28 0542	N15 W01	06 28.2		A	AX		1		4
5059A		HOLL	06 29 1515	N21 W06	06 29.2		A	AX		1		4
5059A		RAMY	06 29 1550	N21 W06	06 29.2		A	HS	10	1	1	3
5059A		PALE	06 29 1747	N22 W07	06 29.2		A	AX	10	1	1	4
5058		RAMY	06 23 1449	S18 E79	06 29.6		A	HR	30	1	2	3
5058	24644	MWIL	06 23 1715	S16 E81	06 29.9	3	AP					
5058		HOLL	06 23 1811	S17 E79	06 29.8		A	HS	50	1	2	3
5058		PALE	06 23 2045	S17 E76	06 29.6		A	HA	40	1	2	3
5058		LEAR	06 24 0012	S18 E80	06 30.1		A	HS	60	1	2	3
5058		CULG	06 24 0500	S19 E73	06 29.8		A	HS	10	2	1	3
5058		SVTO	06 24 0704	S19 E77	06 30.2		A	HR	60	1	2	1
5058		BOUL	06 24 1310	S18 E68	06 29.7		A	HS	110	1	2	4
5058		RAMY	06 24 1448	S18 E69	06 29.9		A	HS	60	1	2	3
5058	24644	MWIL	06 24 1515	S17 E70	06 29.9	5	(AP)					
5058		HOLL	06 24 1830	S18 E69	06 30.0		A	HS	100	1	2	3
5058		PALE	06 24 1920	S18 E66	06 29.8		A	HA	80	1	2	3
5058		CULG	06 25 0353	S17 E66	06 30.2		A	HS	90	1	2	2
5058		SVTO	06 25 0555	S17 E65	06 30.2		A	HH	90	1	3	3
5058		BOUL	06 25 1410	S17 E54	06 29.7		A	HS	100	1	2	2
5058		RAMY	06 25 1418	S19 E58	06 30.0		A	HS	80	1	2	3
5058	24644	MWIL	06 25 1430	S17 E58	06 30.0	5	(AP)					
5058		HOLL	06 25 1830	S18 E59	06 30.3		A	HS	100	1	2	3
5058		CULG	06 26 0400	S16 E52	06 30.1		A	HS	40	1	2	2
5058		SVTO	06 26 1022	S17 E48	06 30.1		B	CSO	130	3	5	3
5058	24644	MWIL	06 26 1415	S18 E45	06 30.0	5	(AP)					
5058		RAMY	06 26 1538	S18 E43	06 29.9		A	HS	110	2	2	2
5058		HOLL	06 26 1726	S17 E43	06 30.0		A	HS	110	2	2	3
5058		PALE	06 26 1740	S17 E43	06 30.0		A	HS	110	2	2	3
5058		LEAR	06 27 0100	S20 E39	06 30.0		B	CSO	120	4	4	3
5058		CULG	06 27 0350	S17 E38	06 30.0		A	HS	40	1	1	3
5058		SVTO	06 27 0553	S18 E36	06 30.0		A	HS	100	2	2	3
5058		RAMY	06 27 1310	S17 E32	06 30.0		A	HA	120	3	2	4
5058	24644	MWIL	06 27 1430	S17 E32	06 30.0	5	(AP)					

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5058	24644	MWIL	06 27	1430	S22 E37	06 30.4	2	(AF)					
5058		BOUL	06 27	1540	S17 E29	06 29.8		B	CAO	100	2	2	4
5058		HOLL	06 27	1700	S17 E30	06 30.0		A	HS	80	2	2	2
5058		PALE	06 27	2110	S18 E29	06 30.1		A	HS	100	2	2	3
5058		LEAR	06 28	0045	S18 E26	06 30.0		A	HA	80	4	2	3
5058		CULG	06 28	0235	S18 E26	06 30.1		A	HS	60	1	1	2
5058		SVTO	06 28	0542	S18 E23	06 30.0		A	HA	120	8	2	4
5058	24644	MWIL	06 28	1415	S17 E19	06 30.0	5	(AP)					
5058		BOUL	06 28	1445	S16 E18	06 30.0		B	CAO	90	4	2	4
5058		RAMY	06 28	1525	S17 E19	06 30.1		B	CAO	70	4	2	3
5058		HOLL	06 28	1643	S16 E17	06 30.0		A	HA	60	4	2	3
5058		PALE	06 28	1855	S17 E18	06 30.1		B	CSO	70	5	3	3
5058		LEAR	06 29	0022	S18 E13	06 30.0		A	HA	50	3	2	4
5058		CULG	06 29	0400	S17 E12	06 30.1		A	HS	50	3	2	2
5058		SVTO	06 29	0549	S18 E11	06 30.1		B	CAO	100	5	5	3
5058		HOLL	06 29	1515	S17 E05	06 30.0		A	HS	50	4	2	4
5058	24644	MWIL	06 29	1530	S17 E06	06 30.1	4	(AP)					
5058	24644	MWIL	06 29	1530	S21 E10	06 30.4	2	(AF)					
5058		RAMY	06 29	1550	S17 E05	06 30.0		A	HS	60	3	2	3
5058		BOUL	06 29	1700	S16 E03	06 29.9		A	HS	80	1	2	1
5058		PALE	06 29	1747	S17 E05	06 30.1		A	HS	40	2	2	4
5058		LEAR	06 30	0012	S17 E01	06 30.1		A	HA	70	4	1	3
5058		CULG	06 30	0455	S18 W02	06 30.0		A	HS	40	1	1	4
5058		SVTO	06 30	0650	S17 W04	06 30.0		A	HS	70	2	2	4
5058		RAMY	06 30	1300	S18 W08	06 29.9		A	HS	70	2	2	3
5058	24644	MWIL	06 30	1415	S18 W07	06 30.1	5	(AP)					
5058		HOLL	06 30	1505	S17 W07	06 30.1		A	HS	90	5	2	4
5058		BOUL	06 30	1600	S16 W07	06 30.1		A	HS	60	1	1	1
5058		PALE	06 30	1725	S18 W09	06 30.0		A	HS	90	1	2	3
5058		LEAR	07 01	0014	S18 W13	06 30.0		A	HS	40	2	1	3
5058		CULG	07 01	0410	S18 W14	06 30.1		A	HS	30	1	1	2
5058		SVTO	07 01	0545	S18 W16	06 30.0		A	HS	60	3	2	3
5058		BOUL	07 01	1315	S16 W19	06 30.1		A	HA	60	2	1	3
5058		HOLL	07 01	1423	S18 W21	06 30.0		A	HS	40	3	2	3
5058	24644	MWIL	07 01	1445	S18 W20	06 30.1	4	(AP)					
5058		PALE	07 01	1740	S18 W22	06 30.1		A	HS	30	3	2	3
5058		RAMY	07 01	1840	S17 W24	06 30.0		A	HA	40	2	2	1
5058		LEAR	07 02	0209	S18 W27	06 30.0		A	HS	20	1	1	3
5058		CULG	07 02	0413	S19 W29	06 30.0		A	HS	10	2	1	3
5058		SVTO	07 02	0819	S17 W31	06 30.0		A	HR	20	2	1	2
5058		BOUL	07 02	1340	S17 W32	06 30.1		A	HR	40	4	1	3
5058	24644	MWIL	07 02	1445	S17 W34	06 30.0	4	(AP)					
5058		PALE	07 02	1736	S17 W36	06 30.0		B	BXO	10	4	1	3
5058		HOLL	07 02	2002	S16 W36	06 30.1		B	BXO	30	6	3	4
5058		LEAR	07 03	0015	S18 W39	06 30.0		A	AX	10	2	1	4
5058		SVTO	07 03	0621	S17 W43	06 30.0		A	AX	10	4	1	3
5058	24644	MWIL	07 03	1430	S17 W47	06 30.0	3	(AP)					
5058		HOLL	07 03	1451	S17 W47	06 30.0		A	AX	10	4	1	3

Stations reporting:

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

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
01	0126	0133	0155	1-	3			1	1		0122 UT	C1.4	5032
01	0714	0721	0759	1-	3	2		1	2	1	0711 UT	C2.7	
01	0840	0849	0900	1-	3	1		1	1	2	0839 UT	C2.5	
01	1224	1237	1250	1-	3	1			1	2	1223 UT	C2.1	5032
01	1559	1615	1630	1-	3				1	5	1604E UT	C3.1	5034
01	2345	2349	2355	1-	1				1		2344 UT		
02	0336	0339	0420	1-	3			1	1		0339 UT	C2.1	5027
02	0859	0913	1019	2+	5	4	3	1	2	4	0857 UT	C7.1	5027
02	1340	1342	1345	1	3	1	3		1	5	No flare		
02	1547	1600	1627	1	3					2	No flare		
02	1804	1813	1855	2	3					2	No flare		
03	0102	0109	0141	1-	3			1	1		0101 UT	C2.4	5027
03	0836	0850	1025	1	3	1				3	0840 UT	C3.4	5027
03	1921	1927	1945	1	3					5	1922 UT	C2.5	5027
04	0148	0158	0217	1-	5			1	1		No flare		
04	0428	0440	0544	1+	5			1	1		0426 UT	C5.4	
04	0616	0635	0643	2	5		1	1	1	3	No flare		
04	0643	0701	0731	3	3	3	4	1	2	3	No flare		
04	0731	0747	0914	3	3	3	1	1	1	3	No flare		
04	1239	1241	1245	1	5	1				1	No flare		
04	1551	1600	1625	1	5				1	5	1549 UT	C4.1	
04	1740	1742	1750	1-	1					1	1740 UT	C2.2	5034
05	0251	0300	0350	1-	5			1	1		0248 UT	C2.9	
05	1111	1117	1140	1-	5	1			1	3	1110 UT	C1.3	
05	1742	1747	1815	2	1					1	1746E UT	C2.4	5037
05	1820	1835	1915	2	5					3	No flare		
05	2004	2014	2047	1-	3	1		1		7	1955 UT	C1.2	5038
06	0455	0505	0550	1-	5			1	1		0450 UT	C2.3	5032
07	0452	0504	0546	1-	1			1			No flare		
07	0520	0523	0549	1-	1			1			No flare		
07	0609	0620	0716	1-	5			1	1		0610 UT	C2.8	5031
07	1418	1431	1510	2	5					3	1416 UT	C1.8	5031
08	0518	0529	0551	1-	1					1	0516 UT	C1.2	5037
08	1105	1108	1210	2+	1					1	1104 UT	C1.4	
08	1211	1213	1228	1	1		1				1217 UT		5041
08	1635	1638	1700	1	5					4	1634 UT	C2.4	5032
08	2248	2253	2342	1-	1			1			2245 UT	C4.1	5036
09	0710	0721	0742	1-	5			1	1		0706 UT	C2.3	5032
09	1655	1710	1745	2	3	2	1		1	7	1651 UT	C9.3	5032
11	0651	0657	0724	1-	1			1			0650 UT	C2.2	5040
11	1430	1444	1501	1+	5					3	1433 UT	C1.1	5036
12	0616	0622	0649	1-	5			1	1		0616 UT	C2.8	5034
14	0432	0435	0446	1-	1				1		No flare		
15	0445	0501	0524	1-	1			1			0440 UT	C3.3	5036
15	2228	2246	0014	1+	3	2		1		3	2240E UT	C8.5	5047
16	0137	0145	0213	1-	5			1	1		0131E UT	C1.8	5036
16	1323	1330	1425	2	5		1			3	1322 UT	C1.8	5048
16	1606	1617	1634	1	5		2				1606 UT		5041
17	0343	0409	0535	2	5	1		1	1		0340 UT	C6.1	5047
17	2300	2306	2351	1-	1			1			2257 UT	C2.5	
18	0012	0018	0112	1-	5			1	1		0010 UT	C5.4	5047
18	0604	0611	0731	1+	5		1	1	1		0602 UT	C3.7	5047
19	0225	0239	0337	1-	5			1	1		0222 UT	C2.0	5041
19	0827	0836	0850	1-	5			1	1	3	0824 UT	C1.5	5047

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
19	2341	2345	2357	1-	1			1			2335 UT		5041
20	1609	1620	1650	1	5		2				1611 UT	C1.4	5047
20	2330	2337	2350	1-	5			1	1		2328 UT		5047
21	0047	0054	0152	1-	5			1	1		0045 UT	C3.3	5047
21	0212	0246	0311	1-	5			1	1		0216 UT		5047
21	0311	0325	0358	2	5	1		1	1		No flare		
21	0526	0531	0653	1+	5			1	1		0525 UT	C7.0	5054
21	0653	0701	0747	1-	5	1		1	1		0655 UT		5054
21	1312	1325	1410	1	3	1	1		1	4	1311 UT	C2.8	5047
21	2202	2210	2235	1-	1			1			2158 UT	C1.6	5047
21	2307	2313	2326	1	1			1			2304 UT	C1.6	
21	2341	2346	0043	2	5	1		1		4	2339 UT	M1.1	
22	0117	0127	0150	1-	5			1	1		0121E UT	C2.6	5047
22	0523	0538	0650	1+	5		2	1	2		0521 UT	C4.3	5047
22	1420	1426	1500	1	5	1	1		1	8	No flare		
22	1649	1651	1659	1	5	1			1	5	1647 UT	C5.9	5047
22	2141	2147	2217	1-	1			1			2107 UT	C1.9	
22	2239	2248	0013	2+	3	2		1		7	No flare		
22	2342	2346	0034	1+	1				1		2344E UT		
23	0920	0932	1121	2+	5	3	5	1	2	4	0920 UT	X1.6	5047
23	1314	1318	1333	1-	1					1	1314 UT	C1.7	5047
23	1751	1758	1840	3	5	5	4		1	13	1750 UT	M8.1	5047
23	1812	1814	1824	1-	1	1					No flare		
24	0018	0030	0135	1-	5			1	1		0016 UT	C3.6	5047
24	0141	0144	0237	1-	5			1	1		0140 UT	C3.3	5051
24	0255	0313	0418	1	5			1	1		0256 UT	C4.9	5047
24	0419	0430	0507	3+	5	4	3	1	2	3	0418 UT	X1.3	5047
24	0516	0533	0705	2+	5			1		1	No flare		
24	0732	0745	0810	2+	5	3	2	1	1	3	0732 UT	C9.5	5047
24	1230	1247	1330	1+	3	2	5		1	10	1224 UT	C8.4	5047
24	1348	1353	1355	1+	3	3	2		1	9	1349 UT	C7.4	5051
24	1604	1612	1644	2	5	3	3	1	1	11	1603 UT	X2.4	5047
24	1645	1654	1754	3	5	2	2	1	1	13	1644 UT	X5.6	
24	1836	1845	1905	1-	5			1		7	1846 UT		5060
24	1926	1933	1953	1-	5			1		6	1920 UT	C8.2	5047
24	2120	2139	2245	3	5	3		1		8	2122 UT	M3.3	5060
25	0003	0010	0115	1-	5			1	1		0002 UT	C4.6	
25	0213	0225	0317	1+	5			1	1		0212 UT	C9.1	
25	0317	0355	0516	2	5			1	1		0315 UT		
25	0336	0340	0346	1-	1			1			0337 UT	C6.1	5047
25	0516	0540	0618	1-	1			1			0520 UT	C3.2	
25	0618	0654	0818	3+	5	2	3	1	1	5	0618 UT	M3.0	
25	0642	0656	0736	1-	3	2		1			0645 UT		
25	0818	0828	1020	2+	3	3	2	1	1	2	0815 UT	M1.2	
25	1020	1025	1100	1-	3	1	1	1	1		1021 UT	C3.6	
25	1115	1120	1150	1	5	2	4	1	1	8	1113 UT		5060
25	1251	1305	1400	1+	5	3	3		1	9	1248E UT	M1.3	5047
25	1458	1515	1600	1	3		1		1	7	1456 UT	C3.8	
25	1636	1652	1751	2+	5	4	4	1	1	12	1636 UT	M6.0	5060
25	1959	2002	2032	1+	3			1		2	1958 UT	C4.1	
26	0021	0027	0102	1	3	1		1	1		0014 UT	C8.5	5060
26	0145	0204	0247	1-	5			1	1		0149 UT	C3.3	
26	0411	0415	0448	1-	5			1	1		0407 UT	C2.8	
26	0827	0900	0950	1	3	2		1	1	2	No flare		
26	1015	1022	1050	1-	3			1	1	1	*		
26	1056	1106	1140	1	5	3	4	1	1	4	1055 UT	C8.5	
26	1230	1247	1340	1-	5		1		1	5	1228 UT	C4.3	
26	1344	1355	1445	1	5	2	2		1	7	1340 UT	M1.3	5047
26	2302	2307	2344	1-	1			1			*		
27	0045	0047	0108	1-	1			1			0035 UT		5062
27	0249	0312	0415	2+	5			1	1		0249E UT	M1.1	5060
27	0553	0609	0723	2+	5	4	2	1	2	3	0549 UT	M1.3	5062

*No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
27	0835	0847	0905	1-	5	1			1		0829 UT	C2.3	5062
27	0902	0903	0932	1	1		1				0904 UT		
27	0944	0951	1051	1	5	3	4	1	1	2	0943 UT	C6.8	5062
27	1120	1123	1145	1	1					1	No flare		
27	1154	1203	1230	1-	3	1			1	1	1152 UT	C2.5	5060
27	1439	1449	1520	1-	3	1			1	1	1438 UT	C7.3	5062
27	1617	1620	1645	1-	5				1	4	1617 UT	C2.4	5060
27	1818	1821	1901	1	1					1	1818 UT	C3.2	
27	1954	2002	2039	1-	5	1		1		4	1953E UT	C8.8	5062
27	2217	2228	2248	1-	1			1			2217 UT	C2.4	
27	2301	2306	2339	1-	5			1		2	2301 UT	C6.8	5060
27	2342	2351	0017	1-	1			1			2355 UT	C3.4	
28	0120	0125	0136	1-	1			1			0120 UT	C1.9	5060
28	0153	0211	0253	1	1			1			0152 UT		5060
28	0347	0357	0440	1	1			1			0338 UT	C4.9	5060
28	0443	0456	0546	2	5	2		1			0443 UT	M1.3	5060
28	0632	0645	0704	1-	5		1	1			No flare		
28	0716	0722	0735	1-	5	1	1			1	0714 UT	C3.9	
28	0812	0830	0904	2+	5	4	3	1	1	3	0815 UT	M1.5	5060
28	0941	1008	1036	2+	5	2	2	1	1	1	0937 UT	C7.3	5060
28	0955	1005	1048	2+	5	4	1	1	1	3	*		
28	1029	1039	1050	1-	3	2	1		1	1	1030 UT	C9.1	
28	1124	1130	1215	1	5	4	1		1	3	1119E UT		5062
28	1322	1326	1340	1-	3	1			1	5	1312 UT	C5.5	5060
28	1425	1432	1445	1	3					2	No flare		
28	1523	1528	1546	1	3					2	No flare		
28	1702	1704	1710	1	5	2			1	5	1653 UT	C8.8	5060
28	1725	1737	1820	1	3	3		1	1	6	1726 UT	M2.4	5060
28	1918	1922	1945	1+	1					1	1919 UT		5060
28	1958	2007	2105	2	5	1		1		3	1955 UT	M2.1	5060
28	2131	2142	2208	1-	5			1		4	2127 UT	C5.6	5062
28	2226	2238	2316	1	5	2		1		3	2224 UT	C8.3	
29	0030	0057	0220	2+	1			1			0028 UT	M2.6	5060
29	0049	0059	0159	2+	5	2		1	1		0051 UT	M2.6	5060
29	0216	0222	0236	1-	1				1		0215 UT		5060
29	0310	0314	0345	1-	3	1		1	1		0312 UT	C3.7	5060
29	0438	0453	0520	1-	5		1	1			0438E UT		
29	0511	0514	0525	1	1		1				0510 UT		5062
29	0538	0540	0550	1-	5		2				0544 UT		
29	0638	0643	0713	1-	3			1		1	0638 UT	C3.1	5060
29	0731	0743	0815	3	5	3	4	1	2	2	0734 UT	M6.5	5060
29	0924	0926	0935	1	1					1	0923 UT		5060
29	1030	1037	1045	1	3	1		1	1	1	1030 UT	C6.1	5060
29	1113	1119	1144	1-	5	1		1		5	1114 UT	C6.9	5060
29	1232	1253	1320	1	5	1			1	5	No flare		
29	1326	1332	1345	1-	5	1			1	2	1325 UT	C4.2	5062
29	1420	1421	1434	1	5					2	No flare		
29	1532	1534	1600	1+	5					2	No flare		
29	1653	1700	1730	1-	3	1	2		1	7	1652 UT	C5.5	5060
29	1750	1752	1810	1	5		1			1	1751 UT	C2.3	5060
29	1820	1825	1900	1+	3					7	1823 UT	C5.5	5060
29	2012	2024	2138	2+	5	2		1		8	2015 UT	M4.1	5060
29	2205	2220	2254	1-	1			1			2206 UT		5060
29	2334	2343	0000	1-	1			1			2332 UT	C2.1	
30	0004	0008	0022	1-	1				1		0003 UT	C1.8	5062
30	0058	0105	0127	1-	5			1	1		0056 UT		5060
30	0137	0139	0149	1-	1			1			0138 UT		5060
30	0200	0212	0244	1-	5			1	1		0157 UT	C3.2	5062
30	0454	0459	0553	1-	5			1	1		0452 UT	C1.5	5062
30	0636	0646	0722	1-	1			1			0629 UT	C1.6	5062
30	0822	0840	0900	2	5	3	1	1	2	1	0821 UT	C5.8	5060
30	0901	0910	1105	3	5	4	4	1	2	1	0904 UT	M9.2	5060
30	1027	1038	1100	1	5	1				1	*		
30	1113	1119	1130	1-	1				1		1111 UT		5060
30	1251	1305	1350	1	3	3	1		1	7	1253 UT	C4.0	5060
30	1439	1444	1500	1-	3	1			1	7	1435 UT		5060

*No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
30	1635	1639	1645	1	5					3	No flare		
30	1718	1727	1751	2	5					5	1721 UT	C4.5	5060
30	2251	2253	2254	1-	1	1					No flare		

SUDDEN IONOSPHERIC DISTURBANCES

OBSERVATORIES REPORTING FOR JUNE 1988

Amherst, New Hampshire, USA	SES	Lintong, People's Republic of China	SPA
Ayrshire, Scotland	SES	Louisville, Kentucky, USA	SES
Darmstadt, German Federal Republic	SWF	Maui, Hawaii, USA	SWF
Farsta, Sweden	SES	Panska Ves, Czechoslovakia	SES, SEA, SWF
Hiraiso, Japan	SWF	Paterson, New Jesey, USA	SES
Houston, Texas, USA	SES	Somersworth, New Hampshire, US	SES
Inubo, Japan	SPA	Tavares. Florida, USA	SES
Juliusruh, German Democratic Rep.	SWF	Tournal, Belgium	SES
Kandilli, Turkey	SEA	Tucson, Arizona, USA	SES
Kuhlungsborn, German Democratic Rep.	SEA, SPA	Upice, Czechoslovakia	SEA
Latrobe, Pennsylvania, USA	SES	Valley Cottage, New York, USA	SES
Lintong, People's Republic of China	SPA	Vlasim, Czechoslovakia	SEA

Observations are not necessarily continuous.

SUDDEN IONOSPHERIC DISTURBANCES
JUNE 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	31
Reg. No.																															
5027		2	3																												
5031							2																								
5032	2					1		1	2																						
5034	1			1								1																			
5036								1			1				1	1															
5037					1			1																							
5038					1																										
5040											1																				
5041								1								1			2												
5047															1		1	2	1	2	4	3	3	7	2	1					
5048																1															
5051																								2							
5054																					2										
5060																								2	2	1	4	11	14	7	
5062																											6	2	2	4	
Number of events with X-Ray flares	5	2	3	3	4	1	2	4	2		2	1			2	2	2	2	2	1	6	4	3	11	11	6	12	13	13	8	
Number of events with no flare patrol																										2		1		1	
Number of events with no flare reported		3		5	1		2							1							1	2	1	1		1	1	3	3	2	
Total SID events	6	5	3	8	5	1	4	5	2		2	1		1	2	3	2	2	3	2	9	7	4	13	14	9	15	20	22	15	

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Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
01	0000	0700	CULG				0000.0	0435.0	1				IIIS
			CULG				0000.0	0700.0	1				IC
			LEAR				0130.0	0131.0	1				III
			PALE				0130.0	0131.0	1				III
			LEAR				0237.0	0238.0	1				III
			LEAR				0318.0	0321.0	1				III
			CULG				0435.0	0700.0	1				IIIN
			LEAR				0511.0	0511.0	2				III
			LEAR				0541.0	0542.0	2				III
			CULG				0545.0	0545.0	1				IIIB
			LEAR				0625.0	0626.0	1				III
			LEAR				0655.0	0708.0	2				III
			SGMR				1304.0	2350.0	1				CONT
			SGMR				1459.0	1500.0	3				IV
			SGMR				1720.0	1722.0	2				V
			PALE				1808.0	1809.0	2				V
			SGMR				1808.0	1810.0	3				V
			PALE				1837.0	1838.0	3				V
			SGMR				1837.0	1839.0	3				V
	2100	2400	CULG				2100.0	2400.0	1				IC
			CULG				2115.0	2115.0	1				IIIB
			CULG				2218.0	2220.0	1				IIIG
02	0000	0700	CULG				0004.0	0004.0	1				IIIB
			CULG				0031.0	0039.0	1				IIIG
			PALE				0037.0	0038.0	1				V
			CULG				0038.0	0038.0	1				IIIB
			LEAR				0038.0	0039.0	1				III
			CULG				0215.0	0221.0	1				IIIG
			LEAR				0215.0	0221.0	2				V
			PALE				0215.0	0220.0	2				III
			LEAR				0259.0	0300.0	1				III
			LEAR				0319.0	0320.0	1				III
			CULG				0333.0	0339.0	3	0333.0	0339.0	3	IIIGG
			LEAR				0333.0	0339.0	3				III
			PALE				0333.0	0337.0	3				V
			CULG				0423.0	0423.0	1				IIIB
			CULG				0508.0	0510.0	1				IIIG
			LEAR				0508.0	0510.0	2				V
			CULG				0523.0	0523.0	1				IIIB
			LEAR				0523.0	0524.0	2				III
			LEAR				0559.0	0621.0	3				III
			CULG				0601.0	0604.0	1				IIIG
			CULG				0606.0	0609.0	1				IIIG
			CULG				0620.0	0620.0	2	0620.0	0620.0	2	IIIB
			LEAR				0717.0	0722.0	2				III
			LEAR				0827.0	0830.0	2				III
			SGMR				1039.0	1039.0	1				III
			SGMR				1108.0	1109.0	2				V
			SGMR				1305.0	1310.0	1				V
			SGMR				1356.0	2351.0	1				CONT
			SGMR				1403.0	1403.0	2				III
			SGMR				1446.0	1446.0	2				V
			SGMR				1540.0	1545.0	3				V
			SGMR				1653.0	1656.0	2				V
			PALE				1722.0	1725.0	2				V
			SGMR				1722.0	1726.0	2				V
	2100	2400	CULG				2157.0	2400.0	1				IIIN
			PALE				2309.0	2310.0	2				III
			LEAR				2327.0	2327.0	2				III
			PALE				2327.0	2327.0	2				V
			PALE				2342.0	2355.0	3				S
			CULG				2343.0	2358.0	2	2343.0	2358.0	2	IIIGG
			LEAR				2345.0	2356.0	3				S
03	0000	0700	CULG				0000.0	0146.0	2	0000.0	0146.0	2	IIIN
			LEAR				0016.0	0017.0	2				III

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03			LEAR				0054.0	0059.0	1				III
			CULG				0057.0	0146.0					IC,DC
			LEAR				0128.0	0128.0	1				III
			PALE				0145.0	0156.0	2				V
			CULG				0146.0	0151.0	2	0146.0	0151.0	2	IIIN
			CULG				0146.0	0212.0	1				IC,DC
			LEAR				0148.0	0156.0	3				III
			LEAR				0148.0	0929.0	1				CONT
			CULG				0151.0	0628.0	1				IIIN
			LEAR				0528.0	0532.0	2				III
			LEAR				0550.0	0554.0	2				V
			CULG				0629.0	0629.0	2	0629.0	0629.0	2	IIIB
			LEAR				0629.0	0630.0	2				III
			SGMR				1125.0	1125.0	1				III
			SGMR				1212.0	1213.0	1				III
			SGMR				1522.0	1525.0	2				V
	2100	2400	CULG				2130.0	2136.0	1				IIIN
			CULG				2155.0	2246.0	1				IIIN
			CULG				2216.0	2218.0	1				IIIN
			PALE				2216.0	2218.0	1				III
			CULG				2241.0	2241.0	2				IIIB
			CULG				2256.0	2258.0	2	2256.0	2258.0	2	IIIB
04	0000	0700	CULG				0037.0	0056.0	1				IIIN
			CULG				0109.0	0113.0	1				IIIG
			LEAR				0109.0	0116.0	2				V
			PALE				0109.0	0114.0					V
			CULG				0114.0	0116.0	2	0114.0	0116.0	2	IIIG
			CULG				0118.0	0655.0	1				IIIN
			LEAR				0157.0	0157.0	1				III
			LEAR				0220.0	0220.0	1				III
			LEAR				0253.0	0253.0	1				III
			LEAR				0325.0	0342.0	1				III
			CULG				0435.0	0441.0	1				II
			LEAR				0503.0	0505.0	2				V
			CULG				0504.0	0505.0	1				IIIG
			LEAR				0606.0	0616.0	1				III
			LEAR				0635.0	0636.0	1				III
			LEAR				0643.0	0650.0	1				III
			LEAR				0652.0	0702.0	2				V
			LEAR				0709.0	0929.0	1				CONT
			LEAR				0730.0	0743.0	2				S
			LEAR				0816.0	0821.0	2				III
			SGMR				1000.0	1002.0	2				V
			SGMR				1058.0	1059.0	1				V
			SGMR				1130.0	1130.0	1				V
			SGMR				1140.0	1204.0	1				S
			SGMR				1216.0	2352.0	1				CONT
			SGMR				1229.0	1232.0	2				V
			SGMR				1302.0	1304.0	2				V
			SGMR				1315.0	1315.0	2				III
			SGMR				1415.0	1421.0	2				V
			SGMR				1549.0	1553.0	3				V
			PALE				1731.0	1732.0					III
			SGMR				1733.0	1737.0	3				V
			PALE				1734.0	1737.0					V
			PALE				1919.0	1923.0					V
			SGMR				1919.0	1923.0	2				V
			PALE				2014.0	2015.0					III
			PALE				2037.0	2039.0					V
			PALE				2057.0	2109.0					S
	2100	2400	CULG				2100.0	2400.0	1				IIIB,N
			PALE				2126.0	2126.0					III
			PALE				2152.0	2153.0					III
			SGMR				2152.0	2152.0	3				III
			CULG				2153.0	2153.5	2				IIIB
			PALE				2157.0	2256.0					S

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04		PALE				2311.0	2336.0					S
		LEAR							2340.0	2340.0	2	III
		PALE				2340.0	2340.0					III
		CULG				2340.5	2341.0	2	2340.5	2341.0		IIIB
05	0000	0715 CULG				0000.0	0329.0	1				IIIB,N
		PALE				0005.0	0009.0	1				III
		CULG				0042.0	0058.0	1				IIIGG
		LEAR				0042.0	0103.0	3				III
		LEAR				0042.0	0329.0	2				CONT
		PALE				0042.0	0306.0					CONT
		CULG				0054.0	0056.0	1				II
		CULG				0058.0	0103.0	2	0058.0	0103.0	2	IIIG
		CULG				0058.0	0205.0	1				IV I
		CULG				0205.0	0235.0	1				I
		LEAR				0258.0	0300.0	3				III
		PALE				0258.0	0259.0					III
		CULG				0258.5	0259.5	2	0258.5	0259.5		IIIG
		CULG				0305.5	0306.5	1	0305.5	0306.5		IIIG
		PALE				0417.0	0419.0					III
		LEAR				0418.0	0420.0	2				III
		CULG				0418.5	0419.5	1	0418.5	0419.5		IIIG
		LEAR				0434.0	0929.0	1				CONT
		CULG				0435.0	0715.0	1				IIIB,G,N
		LEAR				0635.0	0635.0	2				III
		LEAR				0654.0	0654.0	2				III
		LEAR				0700.0	0719.0	2				S
		LEAR				0813.0	0825.0	2				S
		LEAR				0834.0	0850.0	2				S
		LEAR				0912.0	0912.0	2				III
		SGMR				0933.0	0933.0	1				III
		SGMR				1107.0	1111.0	3				V
		SGMR				1111.0	2353.0	1				CONT
		SGMR				1431.0	1433.0	2				V
		SGMR				1718.0	1719.0	2				V
		SGMR				1800.0	1805.0	2				V
		PALE				1943.0	1944.0					III
		SGMR				1944.0	1944.0	2				III
		PALE				2004.0	2006.0					III
		PALE				2027.0	2053.0					S
	2100	2400 CULG				2131.0	2400.0	1				IIIB,N
		PALE				2219.0	2224.0					III
		PALE				2234.0	2234.0					III
		PALE				2332.0	2332.0					III
		PALE				2342.0	2342.0					III
		PALE				2350.0	0026.0					CONT
		CULG				2351.0	2400.0	2	2351.0	2400.0	2	IIIGG
		LEAR				2356.0	0002.0	3				III
		CULG				2359.5	2400.0	2	2358.5	2400.0	2	V
06	0000	0700 CULG				0000.0	0003.0	1				IIIG
		LEAR				0003.0	0025.0	2				II
		PALE				0003.0	0026.0					II
		CULG				0004.0	0025.0	2	0009.0	0019.0	2	II
		CULG				0037.0	0646.0	1				IIIB,N
		LEAR				0110.0	0114.0	3				V
		PALE				0110.0	0114.0					V
		CULG				0110.5	0114.0	3	0110.5	0114.0	3	IIIG,V
		PALE				0121.0	0128.0					II
		CULG				0122.0	0126.0	1				II
		LEAR				0122.0	0130.0	1				II
		CULG				0126.0	0130.0	1				IIIG
		LEAR				0137.0	0138.0	2				III
		PALE				0137.0	0138.0					III
		CULG				0138.0	0138.5	1	0138.0	0138.5	1	IIIG
		LEAR				0252.0	0253.0	2				III
		CULG				0433.0	0440.0	1				IIIGG

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06			LEAR				0433.0	0440.0	1				III
			LEAR				0532.0	0532.0	1				III
			LEAR				0720.0	0720.0	2				V
			LEAR				0757.0	0757.0	1				III
			SGMR				0914.0	0916.0					V
			LEAR				0915.0	0919.0	2				V
			SGMR				1114.0	1115.0	1				III
			SGMR				1133.0	2354.0	1				CONT
			SGMR				1346.0	1350.0	2				III
			SGMR				1401.0	1414.0	2				II
			PALE				1939.0	1940.0					III
			PALE				2325.0	2329.0					III
	2100	2400	CULG				2326.0	2329.0	2	2326.0	2329.0	2	IIIG
07	0000	0700	CULG				0013.0	0700.0	1	0013.0	0700.0	1	IIIB,N
			LEAR				0027.0	0031.0	2				III
			PALE				0027.0	0031.0					III
			CULG				0028.0	0030.0	1	0028.0	0030.0	1	IIIG
			LEAR				0117.0	0119.0	1				III
			PALE				0125.0	0127.0					V
			CULG				0125.5	0128.5	3	0125.5	0128.5	3	IIIG
			CULG				0159.0	0224.0	1				I,IIIS
			LEAR				0159.0	0319.0	1				CONT
			LEAR				0219.0	0220.0	2				III
			PALE				0219.0	0220.0					III
			LEAR				0504.0	0506.0	2				III
			CULG				0504.5	0506.0	1	0504.5	0506.0	1	IIIG
			LEAR				0704.0	0705.0	2				V
			LEAR				0728.0	0730.0	2				III
			LEAR				0744.0	0955.0	2				S
			LEAR				0823.0	0826.0	1				III
			LEAR				0845.0	0846.0	2				V
			SGMR				1054.0	1055.0	1				III
			SGMR				1155.0	1155.0	1				III
			SGMR				1329.0	1344.0	1				S
			SGMR				1414.0	1415.0	1				III
			SGMR				1415.0	2354.0	1				CONT
			PALE				2252.0	2253.0					III
	2100	2400	CULG				2253.0	2253.5	1	2253.0	2253.5	1	IIIB
08			PALE				0009.0	0010.0					III
	0000	0700	CULG				0010.0	0011.5	1				IIIG
			LEAR				0010.0	0012.0	1				III
			PALE				0107.0	0108.0					III
			CULG				0108.0	0527.0	1				IIIB,N
			LEAR				0108.0	0108.0	1				III
			LEAR				0219.0	0220.0	1				III
			PALE				0219.0	0219.0					III
			CULG				0631.0	0637.0	1				IIIGG
			LEAR				0631.0	0632.0	2				III
			LEAR				0636.0	0637.0	1				III
			SGMR				1212.0	1214.0	1				V
			SGMR				1413.0	1419.0	2				V
			SGMR				1504.0	1507.0	2				V
			SGMR				1516.0	1517.0	1				III
			SGMR				1532.0	1535.0	1				V
			SGMR				1545.0	1548.0	2				V
			SGMR				1605.0	1612.0	2				V
			SGMR				1623.0	1625.0	1				V
			PALE				1633.0	1634.0					III
			SGMR				1649.0	1651.0	2				V
			SGMR				1723.0	1725.0	2				V
			PALE				1729.0	1732.0					V
			SGMR				1836.0	1918.0	2				S
			PALE				1857.0	1857.0					III
			PALE				1909.0	1918.0					III
			PALE				1942.0	1943.0					III

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08			SGMR				1942.0	1943.0	1				III
			PALE				1953.0	1954.0					III
			PALE				2031.0	2036.0					III
			SGMR				2032.0	2025.0	2				V
			PALE				2059.0	2100.0					III
			SGMR				2059.0	2059.0	1				III
	2100	2400	CULG				2100.0	2400.0	1				IIIG,N
			CULG				2223.0	2345.0	1				I
09	0000	0700	CULG				0000.0	0700.0	1	0000.0	0700.0	1	IIIG,N
			CULG				0021.0	0022.0	1	0021.0	0022.0	1	IIIG
			LEAR				0021.0	0021.0	2				V
			PALE				0021.0	0021.0					III
			LEAR				0105.0	0106.0	1				III
			LEAR				0119.0	0119.0	1				III
			CULG				0143.0	0430.0	1				I
			LEAR				0214.0	0214.0	1				III
			LEAR				0319.0	0319.0	1				III
			LEAR				0423.0	0423.0	2				III
			CULG				0424.0	0424.0	1	0424.0	0424.0	1	IIIG
			LEAR				0435.0	0436.0	1				III
			CULG				0436.0	0436.0	1	0436.0	0436.0	1	IIIB
			LEAR				0547.0	0600.0	2				III
			CULG				0548.0	0549.0	1	0548.0	0549.0	1	IIIG
			CULG				0556.0	0600.0	1	0556.0	0600.0	1	IIIG
			LEAR				0646.0	0647.0	1				III
			CULG				0647.0	0647.0	1				IIIB
			LEAR				0656.0	0701.0	2				III
			LEAR				0806.0	0816.0	2				S
			SGMR				1440.0	1440.0	1				III
			SGMR				1507.0	1507.0	1				V
			SGMR				1530.0	1531.0	1				III
			SGMR				1809.0	1817.0	1				V
			SGMR				1833.0	1836.0	1				V
	2100	2400	CULG				2140.0	2141.0	2	2140.0	2141.0	2	IIIG
			CULG				2149.0	2150.0	1			1	UNCLF
			CULG				2253.0	2253.0	2			2	IIIB
10	0000	0700	CULG				0006.0	0007.0	1				IIIB
			SGMR				1217.0	1217.0	1				V
			SGMR				1328.0	1331.0	1				V
			SGMR				1348.0	1349.0	1				III
			SGMR				1436.0	1444.0	2				V
	2100	2400	CULG				2209.0	2209.0	1	2209.0	2209.0	1	IIIB
11			CULG				0500.0	0608.0	1				I
	0000	0700	CULG				0652.0	0710.0	2				II
			LEAR				0659.0	0710.0	1				II
			LEAR				0727.0	0729.0	2				III
			LEAR				0849.0	0853.0	1				III
			SGMR				1114.0	1114.0	1				V
			SGMR				1331.0	1331.0	1				V
			SGMR				1757.0	1759.0	1				V
	2100	2400	CULG				2238.0	2238.0	1	2238.0	2238.0	1	IIIB
12	0000	0700	CULG				0055.0	0055.0	1	0055.0	0055.0	1	IIIB
			LEAR				0237.0	0256.0	2				S
			CULG				0239.0	0242.0	2	0239.0	0242.0	2	IIIG
			CULG				0247.0	0255.0	1	0247.0	0255.0	1	IIIN
			LEAR				0709.0	0709.0	1				III
	2100	2400	CULG				2331.0	2331.0	1				IIIB
13	0000	0700	CULG				0510.0	0510.0	1				IIIB
			SGMR				1431.0	1432.0	1				V
			SGMR				1453.0	1455.0	2				V
			SGMR				1509.0	1509.0	1				III

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13			SGMR				1626.0	1630.0	1				V
			SGMR				1641.0	1642.0	1				III
			SGMR				1713.0	1714.0	1				V
			SGMR				1942.0	1943.0	1				V
	2100	2400	CULG				2134.0	2140.0	1				IIIN
			CULG				2207.0	2208.0	1				IIIB
			CULG				2241.0	2241.0	1				IIIB
14	0000	0700	CULG				0021.0	0021.0	1				IIIB
			CULG				0101.0	0128.0	1				IIIN
			CULG				0324.0	0324.0	1				IIIB
			CULG				0346.0	0347.0	1				IIIB
			CULG				0402.0	0408.0	2				IIIG
			CULG				0422.0	0422.0	2				IIIB
			CULG				0645.0	0646.0	2				IIIG
			LEAR				0646.0	0646.0	2				III
			LEAR				0800.0	0800.0	1				III
			SGMR				1239.0	1239.0	1				III
			SGMR				1404.0	1412.0	2				V
			SGMR				1440.0	1444.0	1				V
			SGMR				1459.0	2358.0	1				CONT
	2100	2400	CULG				2139.0	2140.0	1				IIIG
			CULG				2250.0	2250.0	1				IIIB
15			LEAR				0318.0	0321.0	1				III
			LEAR				0401.0	0406.0	1				III
	0000	0700	CULG				0431.0	0444.0	1				II B
			LEAR				0434.0	0452.0	2				II
			CULG				0445.0	0450.0	1				II B
			LEAR				0445.0	0452.0	2				II
			CULG				0451.0	0506.0	1				IIIG
			LEAR				0455.0	0506.0	1				S
			CULG				0524.0	0636.0	1				IIIN
			LEAR				0658.0	0703.0	1				III
			SGMR				1618.0	1623.0	1				V
			SGMR				1645.0	1645.0	1				V
			SGMR				1752.0	1753.0	1				V
			SGMR				1821.0	2358.0	1				CONT
			PALE				1845.0	1848.0	2				V
			SGMR				1846.0	1848.0	2				V
	2100	2400	CULG				2158.0	2158.0	1				IIIB
			CULG				2212.0	2224.0	1				IIIN
			PALE				2224.0	2227.0	3				V
			SGMR				2224.0	2227.0	3				V
			PALE				2229.0	2305.0	2				S
			PALE				2345.0	2351.0	1				III
16	0000	0700	CULG				0016.0	0626.0	1				IIIN
			LEAR				0345.0	0345.0	1				III
			CULG				0346.0	0346.0	1				IIIB
			CULG				0503.0	0503.0	2				IIIB
			LEAR				0503.0	0503.0	1				III
			CULG				0507.0	0507.0	1				IIIG
			CULG				0619.0	0619.0	2				IIIB
			LEAR				0619.0	0619.0	2				III
			LEAR				0643.0	0649.0	2				V
			CULG				0644.0	0653.0	2				IIIGG
			SGMR				1436.0	1438.0	2				V
	2100	2400	CULG				2113.0	2113.0	1				IIIB
			CULG				2124.0	2400.0	1				IIIG,N
			CULG				2149.0	2213.0	2	2149.0	2213.0	2	IIIGG
			CULG				2216.0	2225.0	2	2216.0	2225.0	2	IIIG
			CULG				2216.0	2300.0	1				I
17	0000	0700	CULG				0000.0	0233.0	1	0000.0	0333.0	1	IIIG,N
			CULG				0004.0	0230.0	2	0004.0	0230.0	2	IIIG,N
			CULG				0036.0	0036.0	1				IIIB

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17		CULG				0036.0	0037.0	2				IIIG,N
		LEAR				0050.0	0929.0	1				CONT
		CULG				0052.0	0230.0	2	0052.0	0230.0	2	I
		PALE				0052.0	0225.0	1				CONT
		CULG				0104.0	0104.0	2				IIIG
		CULG				0338.0	0348.0	3	0338.0	0348.0	3	IIIS
		LEAR				0338.0	0524.0	2				IV
		PALE				0340.0	0359.0	2				IV
		CULG				0348.0	0403.0	3	0348.0	0403.0	3	IV
		CULG				0435.0	0453.0	2	0435.0	0453.0	2	IIIB,N
		SGMR				1042.0	1042.0	1				V
		SGMR				1116.0	1116.0	1				V
		SGMR				1146.0	2359.0	1				CONT
		SGMR				1335.0	1339.0	3				V
		SGMR				1344.0	1344.0	2				V
	2100	2400 CULG				2117.0	2400.0	1	2117.0	2400.0	1	IIIN
18	0000	0700 CULG				0000.0	0700.0	1	0000.0	0700.0	1	IIIN
		CULG				0013.0	0654.0	3	0013.0	0654.0	3	IIIB
		LEAR				0014.0	0014.0	2				III
		PALE				0014.0	0014.0	2				III
		CULG				0017.0	0700.0	1	0017.0	0700.0	1	IS
		LEAR				0129.0	0129.0	1				III
		LEAR				0134.0	0930.0	2				CONT
		PALE				0134.0	0135.0	1				III
		CULG				0135.0	0135.0	3	0135.0	0135.0	3	IIIB
		LEAR				0410.0	0410.0	2				III
		PALE				0410.0	0410.0	1				III
		CULG				0451.0	0451.0	3	0451.0	0451.0	3	IIIB
		LEAR				0610.0	0610.0	3				III
		LEAR				0651.0	0653.0	3				III
		LEAR				0839.0	0840.0	3				III
		SGMR				1104.0	2359.0	1				CONT
		SGMR				1300.0	1301.0	2				III
		SGMR				1609.0	1615.0	2				V
		SGMR				1722.0	1728.0	2				V
		PALE				1944.0	1947.0	1				III
		SGMR				1945.0	1945.0	2				III
		PALE				2001.0	2001.0	1				III
		PALE				2021.0	2021.0	1				III
		PALE				2046.0	2059.0	3				S
		SGMR				2053.0	2054.0	3				V
	2100	2400 CULG				2100.0	2400.0	1	2100.0	2400.0	1	IIIS
		CULG				2107.0	2149.0	3	2107.0	2149.0	3	IIIG,N
		PALE				2107.0	2112.0	3				V
		SGMR				2107.0	2111.0	2				V
		PALE				2116.0	0459.0	3				CONT
		CULG				2131.0	2136.0	2	2131.0	2136.0	2	IIIG
		CULG				2201.0	2400.0	2	2201.0	2400.0	2	IIIB,N
19	0000	0550 CULG				0000.0	0550.0	2	0000.0	0550.0	2	IIIB,N
		CULG				0000.0	0550.0	3	0000.0	0550.0	3	IIIG,N
		CULG				0000.0	0550.0	1	0000.0	0550.0	1	IIIS
		LEAR				0011.0	0019.0	3				V
		PALE				0012.0	0019.0	3				V
		LEAR				0029.0	0029.0	1				III
		LEAR				0042.0	0042.0	2				III
		LEAR				0044.0	0930.0	1				CONT
		LEAR				0227.0	0227.0	2				III
		LEAR				0237.0	0238.0	2				III
		LEAR				0343.0	0344.0	2				III
		LEAR				0357.0	0358.0	2				III
		LEAR				0503.0	0504.0	3				III
		CULG				0504.0	0504.0	3	0504.0	0504.0	3	IIIGG
		LEAR				0545.0	0547.0	2				III
		LEAR				0614.0	0639.0	2				S
	0645	0700 CULG				0645.0	0700.0	3	0645.0	0700.0	3	I

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19		LEAR				0752.0	0800.0	3				III
		LEAR				0820.0	0831.0	3				S
		SGMR				0929.0	0000.0	1				CONT
		SGMR				1051.0	1051.0	1				III
		SGMR				1547.0	1551.0	2				V
		PALE				1642.0	1643.0	2				III
		PALE				1834.0	1834.0	2				V
		SGMR				1834.0	1834.0	2				V
		PALE				1846.0	0459.0	1				CONT
		PALE				2012.0	2013.0	2				V
		SGMR				2012.0	2013.0	3				V
	2100	CULG				2100.0	2400.0	2				I
		CULG				2100.0	2400.0	2	2100.0	2400.0	2	IIIB,N
		CULG				2100.0	2400.0	2	2100.0	2400.0	2	IIIS
		PALE				2103.0	2104.0	2				V
		SGMR				2103.0	2104.0	2				V
		CULG				2136.0	2400.0	3	2136.0	2400.0	3	IIIG,N
		PALE				2136.0	2138.0	2				V
		SGMR				2136.0	2138.0	2				V
		CULG				2308.0	2309.0	3	2308.0	2309.0	3	IIIG
		PALE				2308.0	2309.0	2				III
		LEAR				2344.0	2345.0	2				III
		PALE				2344.0	2346.0	2				V
20	0000	CULG				0000.0	0200.0	2				I
	0700	CULG				0000.0	0700.0	2	0000.0	0700.0	2	IIIG,N
		CULG				0000.0	0700.0	2	0000.0	0700.0	2	IIIS
		LEAR				0002.0	0930.0	1				CONT
		LEAR				0134.0	0136.0	2				III
		LEAR				0201.0	0202.0	2				III
		LEAR				0225.0	0228.0	2				III
		PALE				0225.0	0228.0	2				III
		LEAR				0333.0	0334.0	2				III
		LEAR				0357.0	0357.0	2				III
		LEAR				0541.0	0542.0	2				III
		LEAR				0624.0	0628.0	3				III
		CULG				0628.0	0629.0	3	0628.0	0629.0	3	IIIG
		LEAR				0653.0	0653.0	2				III
		LEAR				0705.0	0715.0	2				III
		LEAR				0731.0	0734.0	2				III
		SGMR				1011.0	1031.0	1				S
		SGMR				1042.0	1044.0	1				V
		SGMR				1042.0	1301.0	1				CONT
		SGMR				1158.0	1158.0	2				V
		SGMR				1228.0	1231.0	2				V
		SGMR				1257.0	1258.0	2				III
		SGMR				1403.0	1421.0	1				CONT
		SGMR				1421.0	1421.0	2				III
		SGMR				1421.0	2004.0	2				CONT
		PALE				1854.0	1855.0	3				III
		SGMR				1854.0	1855.0	3				III
		PALE				1917.0	1918.0	1				III
		PALE				1948.0	1954.0	1				III
		SGMR				2004.0	0000.0	1				CONT
	2100	CULG				2105.0	2400.0	1	2105.0	2400.0	1	I
		CULG				2108.0	2400.0	1	2108.0	2400.0	1	IIIB,N
		CULG				2108.0	2400.0	2	2108.0	2400.0	2	IIIB,N
		PALE				2108.0	2109.0	1				III
		CULG				2118.0	2400.0	1	2118.0	2400.0	1	IIIS
		PALE				2222.0	2223.0	1				III
		LEAR				2316.0	2317.0	1				III
		PALE				2316.0	2319.0	2				V
		CULG				2317.0	2319.0	3	2317.0	2319.0	3	IIIG
21	0000	CULG				0000.0	0450.0	2	0000.0	0450.0	2	IIIG,N
	0700	CULG				0000.0	0450.0	2	0000.0	0450.0	2	IIIG,N
		CULG				0000.0	0528.0	1	0000.0	0528.0	1	IIIS

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21			PALE				0033.0	0038.0	1				III
			CULG				0034.0	0528.0	1	0000.0	0528.0	1	IIIB,N
			CULG				0034.0	0528.0	2	0034.0	0528.0	2	IIIB,N
			PALE				0045.0	0346.0	1				CONT
			LEAR				0056.0	0524.0	1				CONT
			LEAR				0155.0	0155.0	2				III
			LEAR				0212.0	0218.0	2				III
			LEAR				0314.0	0325.0	2				S
			PALE				0324.0	0325.0	2				III
			LEAR				0424.0	0457.0	2				S
			CULG				0438.0	0700.0	3				I
			CULG							0528.0	0700.0	3	IV
			LEAR				0827.0	0930.0	2				CONT
			SGMR				0939.0	1813.0	1				CONT
			SGMR				1201.0	1202.0	3				V
			SGMR				1337.0	1346.0	3				IV
			SGMR				1337.0	1346.0	3				IV
			SGMR				1428.0	1429.0	2				V
			SGMR				1437.0	1447.0	3				S
			SGMR				1516.0	1531.0	2				S
			SGMR				1611.0	1614.0	2				V
			SGMR				1624.0	1625.0	3				V
			PALE				1625.0	1625.0	2				III
			PALE				1651.0	1652.0	1				III
			SGMR				1651.0	1652.0	2				V
			PALE				1712.0	1712.0	2				III
			PALE				1725.0	1725.0	2				III
			SGMR				1743.0	1744.0	2				V
			PALE				1757.0	1843.0	3				S
			SGMR				1828.0	1839.0	3				V
			SGMR				1935.0	1936.0	3				V
			PALE				2030.0	2030.0	3				V
			SGMR				2030.0	2030.0	3				V
	2100	2400	CULG				2100.0	2208.5	1	2100.0	2208.5	1	IIIB,G
			CULG				2100.0	2255.0	1				IC
			CULG				2208.5	2400.0	2	2208.5	2400.0	2	IIIB,G,GG
			CULG				2255.0	2258.0	2	2255.0	2258.0	2	IIIGG
			CULG				2255.0	2350.0	1				IC
			LEAR				2335.0	2356.0	2				S
			PALE				2339.0	2348.0	3				V
			CULG	2343.0	2344.0	1	2343.0	2344.0	3	2343.0	2344.0	3	IIIG
22	0000	0700	CULG				0000.0	0700.0	1				IIIB,G,N
			LEAR				0041.0	0056.0	2				S
			PALE				0041.0	0055.0	1				S
			LEAR				0045.0	0930.0	1				CONT
			CULG				0053.0	0446.0	2	0053.0	0446.0	2	IIIB,G,N
			PALE				0104.0	0125.0	3				S
			LEAR				0105.0	0125.0	3				S
			CULG				0120.0	0124.0	2	0120.0	0124.0	2	IIIGG
			CULG				0135.0	0136.5	1				II
			PALE				0137.0	0200.0	2				S
			CULG				0139.0	0150.0	1				II
			LEAR				0149.0	0215.0	2				S
			PALE				0211.0	0211.0	1				III
			LEAR				0256.0	0317.0	3				S
			PALE				0256.0	0306.0	1				S
			PALE				0315.0	0317.0	2				S
			LEAR				0331.0	0413.0	3				S
			PALE				0331.0	0332.0	1				III
			PALE				0345.0	0405.0	2				S
			CULG	0348.0	0349.0	1	0348.0	0349.0	3	0348.0	0349.0	3	IIIG
			CULG				0350.0	0354.0	2	0350.0	0354.0	2	IIIGG
			LEAR				0428.0	0433.0	2				III
			LEAR				0515.0	0528.0	2				V
			CULG				0516.0	0518.5	3	0516.0	0518.5	3	III,V
			LEAR				0527.0	0551.0	2				S

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22			CULG				0529.0	0615.0	1				IC,DC
			CULG	0545.5	0548.0	1	0521.0	0551.0	3	0521.0	0551.0	3	IIIGG
			CULG				0556.0	0608.0	1				II
			LEAR				0619.0	0620.0	2				III
			LEAR				0626.0	0722.0	2				S
			LEAR				0727.0	0755.0	2				S
			SGMR				1034.0	0000.0	1				CONT
			SGMR				1111.0	1114.0	3				V
			SGMR				1341.0	1341.0	2				V
			SGMR				1407.0	1410.0	2				V
			SGMR				1601.0	1601.0	2				III
			SGMR				1647.0	1655.0	3				V
			PALE				1811.0	1812.0	2				III
			SGMR				1811.0	1812.0	3				V
			PALE				1912.0	1912.0	1				III
			SGMR				1912.0	1912.0	2				III
			SGMR				2008.0	2009.0	2				III
	2100	2400	CULG				2100.0	2400.0	1				IIIB,N
			PALE				2240.0	2245.0	2				V
			SGMR				2242.0	2244.0	2				V
			CULG	2243.0	2244.0	1	2243.0	2245.0	3	2243.0	2245.0	3	IIIG,V
23	0000	0700	CULG				0000.0	0637.0	1				IIIB,N
			LEAR				0243.0	0244.0	1				III
			CULG				0352.0	0355.0	2	0352.0	0355.0	2	IIIG,V
			LEAR				0352.0	0354.0	2				III
			LEAR				0440.0	0441.0	1				III
			CULG				0442.0	0446.0	1	0442.0	0446.0	1	IIIGG
			LEAR				0445.0	0446.0	1				III
			LEAR				0629.0	0632.0	2				III
			LEAR				0700.0	0700.0	1				III
			LEAR				0708.0	0709.0	2				III
			LEAR				0737.0	0740.0	2				III
			LEAR				0737.0	0740.0	2				S
			SGMR				0935.0	0000.0	1				CONT
			SGMR				1034.0	0000.0	1				CONT
			SGMR				1328.0	1329.0	2				V
			SGMR				1422.0	1427.0	3				V
			SGMR				1547.0	1549.0	2				V
			PALE				1756.0	1822.0	1				S
			SGMR				1800.0	1810.0	2				V
			PALE				1859.0	1920.0	1				S
			PALE				1951.0	1952.0	1				III
			PALE				2022.0	2023.0	1				III
	2100	2400	CULG				2141.0	2304.5	1				IIIB,N
			CULG				2306.0	2308.0	2	2306.0	2308.0	2	IIIG,V
			PALE				2306.0	2307.0	2				III
			SGMR				2306.0	2306.0	2				III
24	0000	0700	CULG				0026.0	0216.0	1				IIIB,N
			LEAR				0108.0	0108.0	1				III
			PALE				0108.0	0108.0	1				III
			LEAR				0122.0	0122.0	1				III
			PALE				0122.0	0122.0	1				III
			PALE				0137.0	0143.0	2				V
			LEAR				0138.0	0143.0	2				III
			CULG				0139.0	0143.0	1	0139.0	0143.0	1	IIIG
			CULG				0318.0	0700.0	1				IIIB,G,N
			LEAR				0325.0	0327.0	2				III
			PALE				0325.0	0326.0	1				III
			CULG				0325.5	0327.5	1	0325.5	0327.5	1	IIIG
			LEAR				0424.0	0424.0	1				III
			LEAR				0430.0	0508.0	2				S
			CULG				0442.0	0444.0	1	0442.0	0444.0	1	IIIG
			LEAR				0632.0	0635.0	3				III
			CULG				0633.0	0635.0	3	0633.0	0635.0	3	IIIG,V
			LEAR				0700.0	0700.0	1				III

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Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
24		LEAR				0827.0	0829.0	2				III
		SGMR				1228.0	1229.0	3				V
		SGMR				1416.0	1417.0	1				III
		SGMR				1417.0	1417.0	1				III
		SGMR				1426.0	1446.0	2				II
		PALE				1644.0	1646.0	2				V
		SGMR				1644.0	1653.0	3				IV
		SGMR				1701.0	0001.0	1				CONT
		PALE				1715.0	0045.0	1				CONT
		PALE				1843.0	1844.0	2				III
		SGMR				1843.0	1850.0	2				V
		SGMR				2024.0	2025.0	2				V
	2100 2400	CULG				2100.0	2308.0	1				IIIS
		CULG				2100.0	2141.0	1				IC
		CULG				2134.0	2146.0	2	2134.0	2146.0	2	IIIN
		PALE				2140.0	2200.0	2				S
		CULG				2141.0	2151.0	2	2141.0	2157.0	2	IC
		CULG				2157.0	2200.0	2	2157.0	2200.0	2	IIIG
		CULG				2157.0	2228.0	1				IC
		CULG				2251.0	2256.0	2	2251.0	2256.0	2	IIIN
		PALE				2251.0	2252.0	2				V
		CULG				2348.0	2400.0	2	2348.0	2400.0	2	III,V,N
25	0000 0700	CULG				0000.0	0350.0	1				IC
		CULG				0000.0	0342.0	2	0000.0	0342.0	2	III,V,N
		LEAR				0006.0	0007.0	2				III
		PALE				0006.0	0008.0	2				V
		LEAR				0032.0	0033.0	1				V
		PALE				0032.0	0033.0	1				V
		LEAR				0102.0	0105.0	3				V
		PALE				0102.0	0105.0	3				V
		PALE				0121.0	0123.0	2				V
		PALE				0130.0	0131.0	1				III
		CULG				0213.0	0219.0	2	0213.0	0219.0	2	III,V,B
		LEAR				0213.0	0224.0	3				V
		PALE				0213.0	0224.0	3				S
		PALE				0246.0	0252.0	2				V
		LEAR				0249.0	0252.0	3				V
		LEAR				0317.0	0341.0	2				S
		PALE				0317.0	0318.0	1				III
		PALE				0327.0	0339.0	2				S
		LEAR				0332.0	0339.0	3				V
		CULG				0342.0	0700.0	1				IIIN
		LEAR				0439.0	0440.0	2				III
		LEAR				0452.0	0452.0	1				III
		CULG				0526.0	0530.0	2	0526.0	0530.0	2	IIIG
		LEAR				0527.0	0530.0	2				V
		LEAR				0615.0	0616.0	1				III
		LEAR				0632.0	0633.0	2				III
		LEAR				0636.0	0641.0	1				III
		LEAR				0654.0	0657.0	2				III
		LEAR				0705.0	0706.0	1				III
		LEAR				0726.0	0740.0	2				S
		LEAR				0731.0	0734.0	3				V
		SGMR				1113.0	1136.0	3				II
		SGMR				1307.0	1308.0	2				III
		SGMR				1345.0	1345.0	2				III
		SGMR				1350.0	1351.0	3				III
		SGMR				1426.0	2320.0	1				CONT
		SGMR				1444.0	1444.0	2				III
		SGMR				1532.0	1535.0	2				V
		SGMR				1623.0	1624.0	2				V
		SGMR				1706.0	1707.0	2				V
		SGMR				1719.0	1720.0	2				V
		PALE				1736.0	1737.0	2				V
		SGMR				1736.0	1738.0	2				V
		SGMR							1751.0	1800.0	2	S

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25			PALE				1800.0	1800.0	1				V
			PALE				1823.0	1845.0	2				S
			SGMR				1823.0	1843.0	2				S
			PALE				1939.0	1940.0	1				V
			PALE				1952.0	1955.0	2				V
			SGMR				1952.0	1953.0	2				V
			PALE				2011.0	2013.0	2				V
			SGMR				2011.0	2013.0	2				V
	2100	2400	CULG				2149.0	2400.0	1				IIIN
26	0000	0700	CULG				0000.0	0700.0	1				IIIN
			LEAR				0051.0	0055.0	2				III
			PALE				0051.0	0052.0	1				III
			CULG				0052.0	0052.0	2	0052.0	0052.0	2	IIIB
			LEAR				0224.0	0230.0	2				III
			PALE				0224.0	0227.0	1				III
			CULG				0307.0	0307.0	2	0307.0	0307.0	2	IIIB
			LEAR				0307.0	0307.0	1				III
			CULG				0331.0	0334.0	2	0331.0	0334.0	2	III V,B
			LEAR				0332.0	0334.0	3				III
			PALE				0332.0	0334.0	2				V
			CULG				0345.0	0346.0	2	0345.0	0346.0	2	IIIG
			LEAR				0345.0	0346.0	2				III
			PALE				0346.0	0346.0	1				III
			LEAR				0412.0	0414.0	1				III
			LEAR				0513.0	0531.0	2				S
			CULG				0519.0	0531.0	2	0519.0	0539.0	2	IIIN
			LEAR				0603.0	0615.0	2				S
			LEAR				0628.0	0628.0	1				III
			LEAR				0703.0	0704.0	2				III
			LEAR				0738.0	0744.0	2				III
			SGMR				0931.0	0001.0	1				CONT
			SGMR				1112.0	1117.0	2				V
			SGMR				1501.0	1502.0	2				V
			SGMR				1639.0	1639.0	2				V
			SGMR				1649.0	1649.0	2				V
			SGMR				1805.0	1813.0	2				V
			PALE				2045.0	0000.0	1				CONT
	2100	2400	CULG				2100.0	2400.0	1				IC,DC
			CULG				2219.0	2221.0	1				IIIG
			CULG				2309.0	2310.0	1				IIIG
27	0000	0700	CULG				0000.0	0010.0	1				IC
			CULG				0125.0	0601.0	1			1	IIIG,B,N
			LEAR				0125.0	0126.0	1				III
			LEAR				0222.0	0223.0	1				III
			LEAR							0303.0	0313.0	1	III
			LEAR				0601.0	0601.0	1				III
			SGMR				1559.0	1600.0	1				V
			SGMR				1631.0	1631.0	1				V
			CULG	2218.0	2318.0	1	2317.0	2318.0	1				III
	2100	2400	CULG	2231.5	2232.5	1							IIIG
28	0000	0700	CULG				0101.0	0119.0	1				IIIB,N
			LEAR				0144.0	0148.0	1				III
			PALE				0144.0	0148.0	1				III
			CULG				0206.0	0219.0	1				IIIGG
			CULG				0242.0	0245.0	2	0242.0	0245.0	2	IIIG
			CULG				0303.0	0304.0	1				IIIG
			CULG				0311.0	0335.0	1				IIIB,N
			PALE				0311.0	0314.0	1				III
			LEAR				0312.0	0315.0	2				III
			LEAR				0332.0	0333.0	2				III
			PALE				0332.0	0342.0	1				S
			LEAR				0343.0	0343.0	1				III
			LEAR				0500.0	0500.0	1				III
			CULG				0501.0	0629.0	1				IIIB,G,N

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28			LEAR				0536.0	0536.0	1				III
			CULG				0543.0	0546.0	1				IIIG
			CULG				0608.0	0612.0	2	0608.0	0612.0	2	IIIG,N
			LEAR				0608.0	0612.0	2				III
			LEAR				0754.0	0754.0	2				III
			LEAR				0811.0	0811.0	1				III
			SGMR							0928.0	0929.0	1	V
			SGMR				0955.0	1007.0	1				V
			SGMR				1007.0	1015.0	1				II
			SGMR				1047.0	1056.0	1				V
			SGMR				1120.0	1122.0	1				V
			SGMR				1238.0	1240.0	3				V
			PALE				1820.0	1829.0	2				V
			PALE				1847.0	1847.0	1				III
			PALE				1901.0	1902.0	1				III
			PALE				1918.0	1919.0	1				III
			PALE				1934.0	1952.0	1				S
			PALE				2007.0	2013.0	1				V
			PALE				2039.0	2041.0	2				V
	2100	2400	CULG				2100.0	2330.0	1				IC
			CULG				2113.0	2327.0	1				IIIB,N
			PALE				2116.0	2117.0	1				V
			PALE				2138.0	2144.0	1				V
			CULG				2138.5	2138.5	1				IIIB
			CULG				2309.0	2310.5	3	2309.0	2310.5	3	IIIB
			PALE				2309.0	2311.0	2				V
			CULG				2330.0	2400.0	1				IC,DC
29	0000	0700	CULG				0000.0	0030.0	1				IC,DC
			LEAR				0007.0	0019.0	2				III
			PALE				0007.0	0019.0	1				S
			CULG				0007.5	0054.0	1	0007.5	0054.0	1	IIIB,N
			CULG				0007.5		1				IIIB,N,G
			CULG				0014.0	0650.0	1				IIIB,G,N
			LEAR				0053.0	0054.0	1				III
			PALE				0053.0	0053.0	1				III
			CULG	0055.5	0056.0	1	0055.5	0056.0	1				IIIB
			LEAR				0115.0	0143.0	1				III
			LEAR				0132.0	0759.0	1				CONT
			LEAR				0146.0	0244.0	2				S
			PALE				0146.0	0413.0	1				CONT
			CULG				0218.0	0404.5	1	0218.0	0404.5	1	IIIB,G,N
			LEAR				0255.0	0302.0	2				III
			LEAR				0313.0	0315.0	2				III
			CULG				0334.0	0334.0	2	0334.0	0334.0	2	IIIB
			LEAR				0334.0	0346.0	2				S
			LEAR				0403.0	0405.0	2				III
			CULG	0519.5	0520.0	1	0519.5	0520.0	1				IIIB
			LEAR				0650.0	0650.0	2				III
			LEAR				0714.0	0716.0	2				III
			LEAR				0729.0	0737.0	2				III
			LEAR				0739.0	0800.0	3				II
			LEAR				0759.0	0932.0	2				IV
			SGMR				0933.0	1255.0	1				CONT
			SGMR							0948.0	0948.0	1	V
			SGMR				1024.0	1035.0	3				S
			SGMR				1213.0	1217.0	2				V
			SGMR				1245.0	1246.0	3				V
			SGMR				1255.0	0001.0	2				CONT
			SGMR				1416.0	1424.0	3				V
			PALE				1735.0	1735.0	1				III
			PALE				1750.0	1817.0	3				S
			SGMR				1750.0	1757.0	3				V
			PALE				1832.0	1833.0	1				III
			PALE				1843.0	1845.0	1				III
			PALE				1859.0	2259.0	1				CONT
			SGMR				1933.0	1935.0	3				V

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Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
29	2100	2400	CULG				2100.0	2400.0	1				C
			CULG				2128.0	2327.0	1				IIIB,N
			CULG				2139.0	2139.0	1	2139.0			IIIB
			CULG				2142.0	2147.0	3	2142.0	2147.0	2	IIIGG
			PALE				2143.0	2147.0	3				V
			SGMR				2143.0	2147.0	3				V
			CULG				2241.0	2241.0	2	2241.0	2241.0	2	IIIB
			CULG				2252.0	2300.5	3	2252.0	2300.5	3	IIIGG
			PALE				2253.0	2301.0	3				V
30	0000	0700	CULG				0000.0	0703.0	1				IIIB,G,N
			PALE				0004.0	0026.0	1				S
			LEAR				0020.0	0024.0	1				III
			CULG				0029.5	0034.0	3	0029.5	0034.0	3	IIIGG,V
			PALE				0030.0	0034.0	2				V
			LEAR				0031.0	0034.0	2				III
			LEAR				0106.0	0933.0	2				CONT
			LEAR				0113.0	0129.0	2				S
			CULG				0118.0	0134.0	2	0118.0	0134.0	2	IIIGG
			PALE				0123.0	0124.0	2				V
			LEAR				0127.0	0128.0	3				III
			PALE				0127.0	0133.0	2				V
			LEAR				0150.0	0151.0	2				III
			PALE				0150.0	0150.0	2				V
			LEAR				0207.0	0218.0	2				S
			PALE				0217.0	0218.0	1				III
			LEAR				0242.0	0248.0	2				III
			PALE				0243.0	0250.0	1				III
			CULG				0243.5	0250.5	1	0243.5	0250.5	1	IIIGG
			PALE				0321.0	0322.0	2				III
			CULG				0321.5	0323.0	3	0321.5	0323.0	3	IIIG
			LEAR				0322.0	0323.0	3				III
			CULG	0337.0	0338.5	1	0337.0	0338.5	3	0337.0	0338.5	3	IIIG
			LEAR				0337.0	0339.0	3				III
			PALE				0337.0	0338.0	2				III
			CULG				0350.5	0351.0	2	0350.5	0351.0	2	IIIB
			CULG				0359.0	0400.0	2	0359.0	0400.0	2	IIIG
			LEAR				0359.0	0400.0	2				III
			PALE				0359.0	0359.0	1				V
			LEAR				0457.0	0506.0	1				III
			CULG				0457.5	0703.0	1				IIIB,G,N
			LEAR				0508.0	0524.0	2				S
			CULG				0601.0	0601.5	2				IIIB
			LEAR				0838.0	0842.0	3				III
			LEAR				0903.0	0918.0	3				II
			SGMR				0908.0	0919.0					II
			SGMR				0933.0	0001.0	1				CONT
			SGMR				1303.0	1304.0	3				III
			SGMR				1410.0	1451.0	3				S
			SGMR				1414.0	1421.0	3				V
			SGMR				1446.0	1448.0	3				II
			SGMR				1603.0	1604.0	2				V
			SGMR				1640.0	1643.0	2				V
			PALE				1838.0	1839.0	2				III
			SGMR				1838.0	1839.0	3				V
	2100	2400	CULG				2100.0	2400.0	1				IC
			CULG				2201.0	2400.0	2	2201.0	2400.0	2	IIIN
			PALE				2224.0	2359.0	1				CONT
			LEAR				2329.0	2333.0	1				III
			LEAR				2338.0	2339.0	2				III
			PALE				2338.0	2339.0	2				III
			PALE				2349.0	2355.0	3				V
			LEAR				2350.0	2351.0	3				III
			LEAR				2352.0	2356.0	2				III

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

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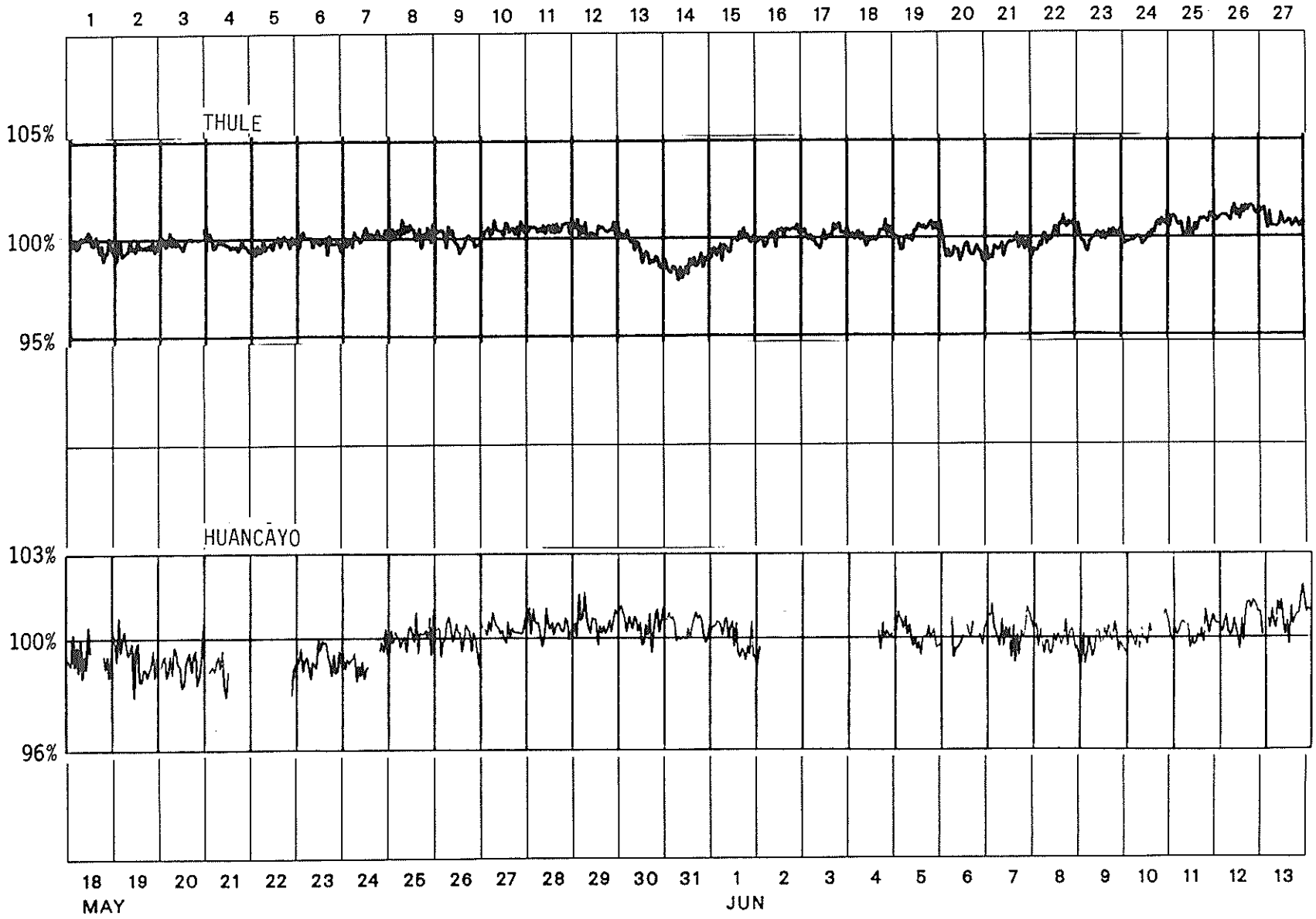
Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4311			6024.6	3925.0	3583.4	---
2	4332			6026.4	3913.7	3578.0	1736.8(18)
3	4330			6038.7	3924.3	3577.6	1736.4
4	4329			6027.0	3927.9	3590.4	1736.3(12)
5	4335			6034.6	3915.3	3583.0	1738.9
6	4295			5982.9	3930.6	3580.2	1733.2
7	4304			5981.5	3911.5	3579.5	1731.7
8	4330			6003.3	3918.0	3587.9	1737.6(38)
9	4326			6006.5	3921.6	3586.2	1739.9
10	4332			6027.2	3933.2	3600.3	1744.9
11	4354			6056.7	3948.4	3600.0	1748.7
12	4378			6077.2	3976.5	3605.3	1749.5
13	4359			6053.9	3956.3	3601.9	1742.5
14	4363			6068.5	3975.6	3616.2	1750.3
15	4374			6082.0	3972.1	3616.3	1750.6(26)
16	4378			6100.8	3979.6	3614.9	1754.0(22)
17	4383			6089.3	3980.0	3611.0	1750.8
18	4373			6061.7	3959.3	3603.1	1745.3
19	4353			6061.7	3950.3	3605.8	1745.7
20	4321			6042.8	3934.7	3599.6	1748.3
21	4341			6042.5	3933.7	3608.7	1748.2
22	4342			6037.6	3931.6	3610.7	1748.8(36)
23	4361			6048.2	3948.0	3611.2	1749.5
24	4316			5996.0	3882.7	3573.8	1738.9
25	4272			5940.5	3864.1	3550.8	1726.0
26	4288			5961.7	3887.7	3568.2	1734.3
27	4322			6037.2	3943.4	3594.7	1741.9
28	4333			6059.0	3960.0	3609.5	1751.4
29	4312			6037.2	3910.9	3583.6	1737.2
30	4265			5970.1	3892.5	3566.9	1731.8
Mean	4334			6032.6	3933.7	3593.3	1742.2

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.

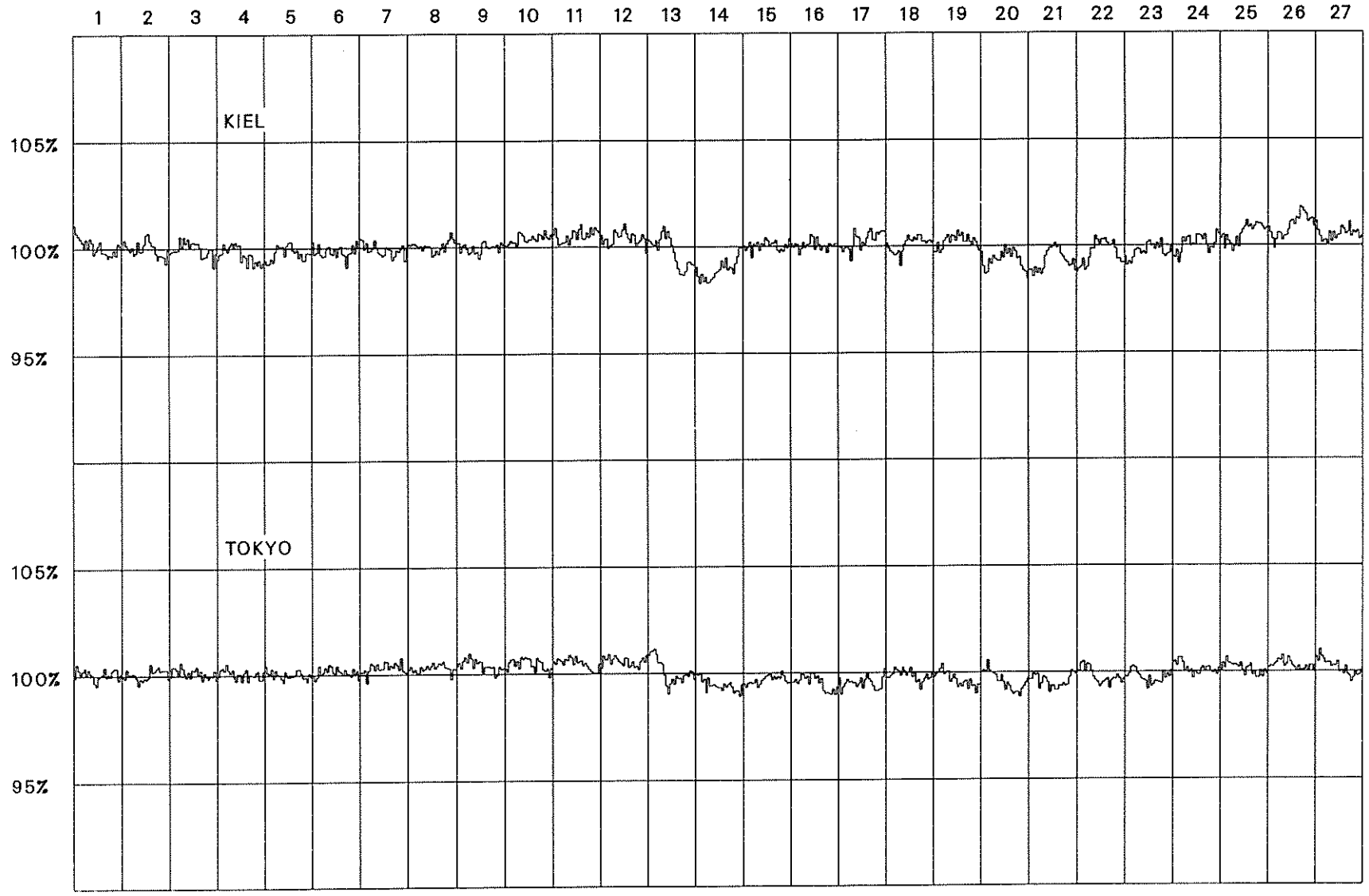
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2115 (May 1988-June 1988)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2115 (May 1988-June 1988)



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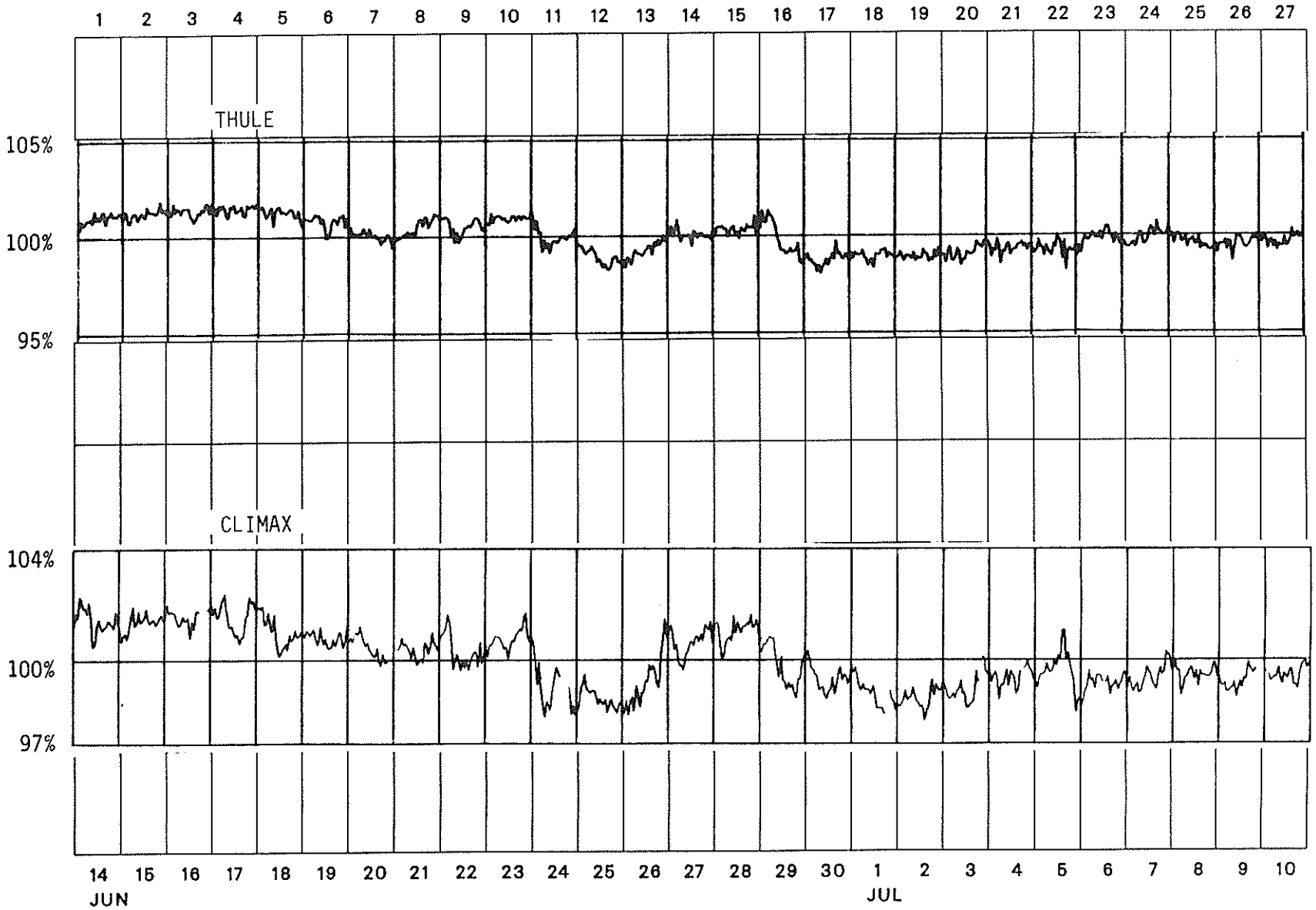
Jul 88

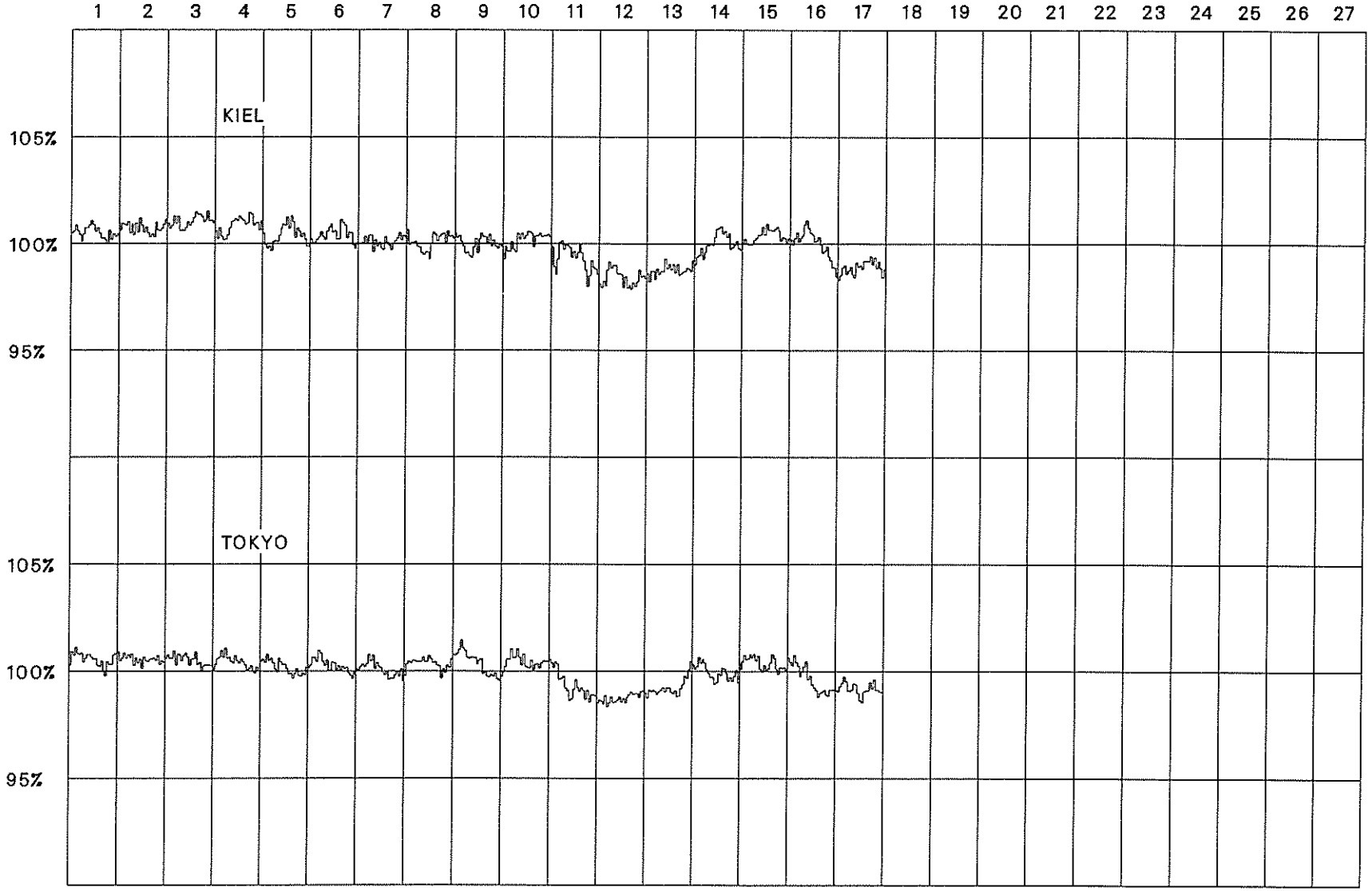
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2116 (June 1988-July 1988)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2116 (June 1988-July 1988)



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Jul 88

GEOMAGNETIC ACTIVITY INDICES

June 1988

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M	
1	Q10	1-	1+	1+	2	2	2	2+	2-	13+	6	0.3	1-	1	1+	2	1+	1+	2-	1	10	17	8	11	14	CK
2	Q4	2-	2-	1-	1	1	1-	2-	2-	10	5	0.2	2-	2-	1-	1	1-	1	1	1+	7	13	5	9	9	CC
3	Q1	0+	0+	1-	1	1	1-	0+	0	4+	2	0.0	0+	0	0+	1-	0+	1-	0	0	2	9	3	7	5	CC
4	Q2	0+	0+	0	0+	1+	1	1-	1	5	3	0.0	0	0+	0	0+	1-	1	1-	1-	3	9	2	4	7	CC
5		1	1+	1	2-	3-	2+	4	3-	17-	10	0.6	1	1	1	1	2+	1+	3+	3-	14	26	9	10	26	
6		4-	3	1	1	0+	1	1	1+	12+	8	0.4	3+	3-	1+	1-	0+	1-	1-	1	11	20	7	20	7	K
7	Q9	1-	1+	2+	2-	1	2-	2-	3-	13	6	0.3	0+	1+	3-	2	1-	1+	1	3-	12	23	9	14	18	
8	Q7	1+	2	2	2	2-	1+	1+	1	13-	6	0.3	1+	2+	2	3-	1-	1+	1+	1	12	19	9	16	13	C
9		0	1	1-	1	3-	3-	3+	2+	14-	8	0.4	0	0+	0+	1	2+	2	3	1+	10	22	9	7	25	
10		3	3	3	1+	1	2+	1	1+	16	9	0.5	3	3	3+	2+	1	2-	1-	1+	19	24	13	25	12	
11		2-	2+	2+	1+	2+	2	2	1-	15-	7	0.3	1+	3-	3-	2-	2	2-	1+	0+	13	23	10	16	17	
12	Q3	1-	1+	1	1	1	0+	0+	1+	7	4	0.1	1-	1	0+	1-	1-	0+	0+	1	4	14	5	10	8	CK
13	Q6K	3	2-	1	1-	1+	1-	0+	2-	10+	6	0.2	3-	2-	1-	0+	1-	0+	0+	1	8	13	8	13	8	C
14	D5	3+	4	4	3+	3	3-	3-	4	27	20	1.0	3	4	4-	3	3	3	3	3+	35	42	28	39	30	
15		3	2-	2	1+	1+	1	2	4-	16	9	0.5	3-	1+	1+	1	1-	1	2-	3	13	27	7	17	17	
16	Q8	2+	2-	2-	1	2	1	1+	2-	13-	6	0.3	2-	2	2-	1	2-	1-	1+	2-	11	16	8	11	13	C
17		3-	3-	2+	2	3-	2	2-	3	19	10	0.6	3-	3-	3	2	3-	2-	1+	3-	20	24	12	15	21	
18		2	2-	2	2-	3-	4+	4+	2	21-	14	0.8	2+	2+	2	2+	3-	3+	3	2	22	32	18	15	35	
19	D4	3-	2+	3	4+	4+	4+	4	2+	27+	21	1.1	3	2+	3	4	3+	3+	4	2+	36	46	28	31	43	
20		3+	4	4	3-	2-	1+	1-	1-	18+	13	0.7	3	3+	4-	3-	2	1-	1-	0+	20	27	13	33	8	
21	Q5	1-	1	1+	2	2	1+	1	2-	11	5	0.2	1-	1+	1	2-	2	1+	1	1	8	12	7	9	10	CK
22		2-	3-	3-	3	3+	2+	3	2	21-	12	0.7	1+	2+	3-	3-	3-	2	2+	2	19	28	13	20	21	
23		2+	2+	1	2-	2	2	2+	3	17-	8	0.4	2+	3-	1+	1+	2-	2-	2-	3-	14	25	11	17	19	
24		3	4	2-	3-	3+	4	3	3+	25	17	0.9	3-	4-	2-	3-	3+	4-	3	3+	32	38	23	28	33	
25	D1	3	4-	4+	4	2+	5	5-	4	31	27	1.2	3	4	5-	4	2+	3+	3+	4-	43	47	31	37	41	
26		3+	2-	3+	2-	2	3+	5-	4	24	17	0.9	3+	2-	3	2+	2	2+	4	4-	28	46	18	26	39	
27		4-	2+	1+	2-	1	2	3	2	17	9	0.5	3+	2+	1	2-	1-	2-	2+	2-	15	27	8	20	16	
28		2	2	3+	3+	2	2+	2-	2-	18+	10	0.5	2	2+	3-	3+	2-	2	1+	2-	17	29	11	25	16	
29	D2	2-	4+	4+	3+	4-	4-	5	4	30	26	1.2	1+	5-	5-	3	4-	3+	4-	4-	46	55	44	49	50	
30	D3	4	4-	3	3+	4	5-	3+	2+	28+	22	1.1	4-	4-	3	3-	3+	4-	3+	3-	35	38	28	27	38	
Mean											11	0.54									18.0	26.4	13.6		20.0	

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	1	1+	2-	2+	2-	2	2+	1+	12	0+	1	1	2-	1	1	1+	0+	7	149.3*	101	100	99	-
2	2-	2-	1	1+	1+	1+	2-	2+	11	1+	1+	0+	1-	0	0	0+	0+	4	147.6	96	94	97	-
3	0+	0	1	1	1-	1	0+	0	4	0	0	0	0+	0	0	0	0	0	149.5	100	103	99	-
4	0+	1	0+	1-	1+	2-	1+	1+	7	0	0	0	0	0	0	0	0	0	150.9	105	110	101	-
5	1+	1	1+	2-	3	2+	4-	3-	20	1-	1-	0+	0+	2-	0	3-	3-	10	151.2	114	132	101	-
6	4-	3-	1+	2-	1-	1+	1+	2-	16	3-	2+	1	0	0	0	0	0	6	159.0	145	146	110	-
7	1-	2-	3-	2+	1	1+	2-	3-	14	0	1	2+	2-	0+	1	0+	3-	9	164.6	141	155	116	-
8	2-	3-	2+	2+	1+	1+	2-	1+	14	1	2-	2-	3-	0	1+	1+	0+	9	168.3	151	165	120	-
9	0	1	1-	2-	3-	3-	4-	2+	16	0	0	0	0+	2	1	2	0	5	165.9*	173	163	117	-
10	3	3	4-	3-	2-	2+	1+	2-	23	3	3	3	2	0	1	0	1	15	149.8	144	137	100	-
11	2	3-	3-	2	3-	2-	2-	1-	16	1	2+	3-	1	1	1+	1	0	10	137.8	108	110	87	-
12	1-	1+	1-	1	1	1-	1-	2-	7	0+	1-	0	0+	0	0	0	0	1	125.9	77	81	74	-
13	3-	2	1+	1	1+	1-	0+	2-	10	3-	1+	0+	0	0	0	0	1-	5	115.0	47	47	62	-
14	3+	4+	4	3+	3	3	3+	3+	42	3	3+	3+	3	3-	3-	2+	3	29	111.7	53	56	59	-
15	2+	2-	2-	2-	1+	1+	2	3+	15	3	1+	1+	0	0	1-	1	3-	11	113.5	65	68	61	-
16	2	2+	2+	1+	2+	1	1+	2	14	2-	2-	1	0+	1+	1-	1+	2-	8	121.7	87	89	69	-
17	3-	3-	3-	3-	3	2	2-	3	22	3	3-	3	2-	2+	1	1+	3-	19	124.8	76	83	73	-
18	3-	2+	2+	3-	3-	4	4-	3-	28	2	2	2	2+	3-	3-	2	1+	17	125.7	67	69	74	-
19	3-	3-	3+	4	4	4	4-	3-	40	3	2	3-	4	3	3	4	2	31	119.4	70	71	67	-
20	3	4-	4-	3-	2	1	1	1	24	3-	3	3+	2	2-	0+	0	0	16	118.5	77	74	66	-
21	1	1+	1+	2	2+	2	1	2-	11	0+	1	0+	1+	1+	0+	1-	1-	5	122.8*	95	102	71	-
22	2-	3-	3+	3	3	2+	3-	2+	24	1-	2+	2	3-	2+	2-	2	2-	14	124.4*	92	98	72	-
23	3-	3-	1+	2-	2	2+	2+	3	18	2-	2+	1+	1	1	1-	1	2+	11	129.3	91	94	78	-
24	3	4	2	3	4-	4+	3+	4-	42	2	3+	1	2-	3	3-	3-	3	23	135.7*	87	100	85	-
25	3+	4	4+	4	3	4	4	4+	51	3	4	5-	4-	2-	3-	3	3-	36	153.7	111	109	104	-
26	3	2+	3+	3-	3-	3	4+	4-	33	3+	1	3-	2-	1	2-	4-	4-	24	157.6*	107	113	108	-
27	3+	2	1+	2	1	2+	3-	2	18	3	2+	1-	1	0+	1	2	2-	12	160.5	111	123	111	-
28	2-	3-	3	4-	3-	3-	1+	2	22	2	2	2+	3	1	1+	1-	1	13	183.2	116	128	136	-
29	2-	5-	5	3+	4-	4-	4-	4-	50	1	4+	4+	3	4-	3+	4	3+	42	189.5	121	131	143	-
30	4-	3+	3	3+	3+	4-	4-	3-	37	4-	4-	3-	2	3+	3+	3	3-	32	187.4*	127	140	140	-
Mean									22.0									14.1	143.8	101.8	106.4	93.3	

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

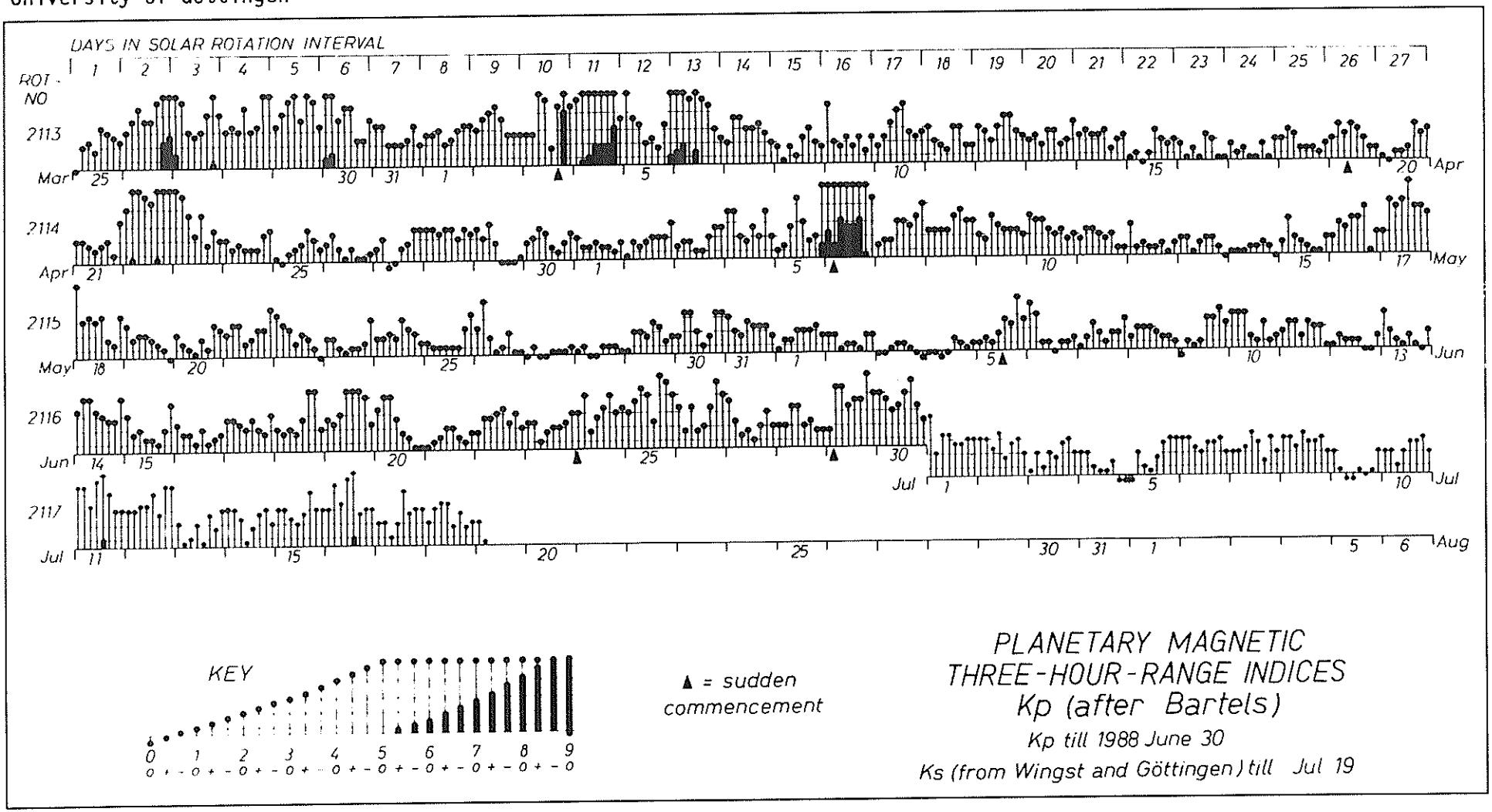
July 1987 to June 1988

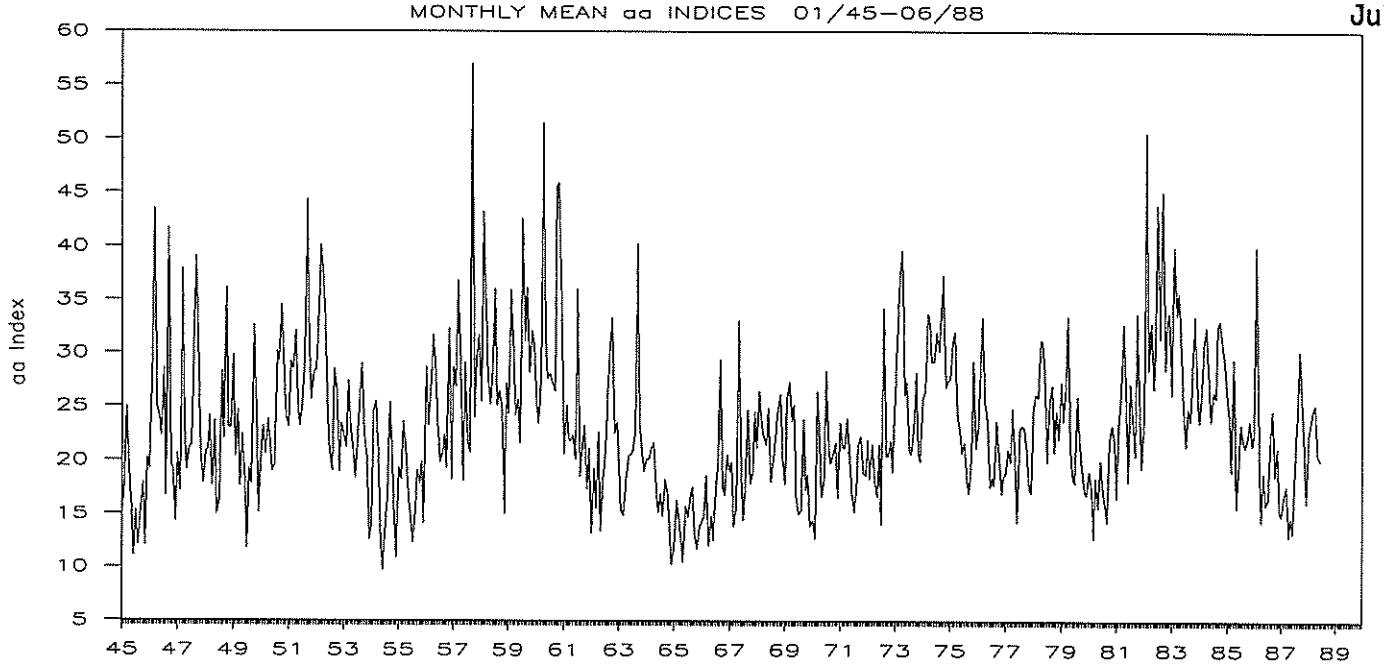
DAY	1987 JUL	AUG	SEP	OCT	NOV	DEC	1988 JAN	FEB	MAR	APR	MAY	JUN
1	2	10	34	13	7	5	5	2	4	13	5	6
2	3	5	12	9	23	4	29	5	6	19	7	5
3	9	12	4	36	27	12	7	3	10	48	7	2
4	8	7	6	14	9	10	14	7	19	78	13	3
5	6	13	6	6	10	17	14	29	8	24	20	10
6	5	8	9	5	9	8	31	11	19	48	106	8
7	4	4	11	8	5	4	24	6	11	15	13	6
8	10	10	10	8	4	1	19	5	26	7	13	6
9	9	8	10	3	10	6	7	11	13	10	10	8
10	11	4	38	7	11	28	4	13	12	16	11	9
11	7	7	40	28	14	15	11	11	14	9	6	7
12	7	16	22	8	20	9	21	16	9	14	5	4
13	4	23	23	24	27	4	7	14	5	10	5	6
14	5	16	26	31	22	4	48	7	12	9	4	20
15	24	19	29	26	14	11	63	19	20	6	6	9
16	20	12	19	13	8	39	5	15	14	5	11	6
17	14	11	17	18	3	16	7	14	9	5	24	10
18	10	6	7	5	5	8	12	19	7	7	18	14
19	8	9	3	6	12	7	10	7	4	9	6	21
20	9	8	11	8	10	4	12	5	6	7	6	13
21	6	5	10	13	6	10	9	26	2	8	10	5
22	8	7	29	5	7	22	7	97	3	44	8	12
23	6	10	17	11	35	10	2	36	5	21	6	8
24	12	11	14	19	24	6	5	12	5	7	8	17
25	17	39	46	28	12	7	6	14	10	6	6	27
26	4	40	20	11	17	4	8	9	49	5	8	17
27	5	21	11	35	20	1	12	7	34	6	3	9
28	26	15	22	44	9	2	6	5	26	11	3	10
29	52	12	30	19	3	5	4	3	32	6	7	26
30	9	14	43	13	3	3	3		34	7	12	22
31	14	34		11		4	3		11		9	
MEAN	11	14	19	16	13	9	13	15	14	16	12	11

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

University of Göttingen

Kp through June 30, 1988





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							22.7

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

JUNE 1988

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Hour Day	(UT)
HYB	07.6N	05	1220	SC	- .2	9	- 1	05(5,7,8) 06(1)	3	5	61	17	06	12
GUA	04.0N	05	1931	..	..	..	..	06(1)	5	10	50	20	06	05
ETT	00.6S	05	1220	SC	- .2	10	9		-	6	143	--	06	12
KGL	56.5S	05	1221	SC	..	20	8	05(7,8) 06(1)	3	10	48	32	06	05
ETT	00.6S	10	0000	..	..	..	..		-	4	110	56	10	16
HYB	07.6N	13	2100	..	..	..	..	14(3)	5	4	90	17	14	23
GUA	04.0N	14	0317	..	..	..	..	14(3)	5	--	80	20	14	15
ETT	00.6S	14	0000	..	..	..	..		-	4	141	67	14	23
KRC	16.4N	18	1700	SC	15	- 35	20	19(4)	5	3	70	38	20	15
HYB	07.6N	18	0600	..	..	..	..	19(4)	5	6	92	29	20	11
ETT	00.6S	18	2200	..	..	..	..		-	4	139	45	19	21
KGL	56.5S	19	0830	..	..	..	..	19(7)	6	144	448	64	19	21
HYB	07.6N	21	1100	..	..	..	..	22(4)	3	5	82	20	23	08
ETT	00.6S	23	2100	..	..	..	..		-	5	257	67	27	13
FRD	49.6N	24	0029	SC*	1.2	26	- 6	24(6,8) 25(6,7,8)	5	28	121	77	27	04
KRC	16.4N	24	0032	SC	- .2	17	10	24(5,6)	5	4	78	28	27	10
HYB	07.6N	24	0029	SC	- .2	5	- 1	25(2)	5	6	112	29	26	08
GUA	04.0N	24	2035	..	..	..	..	25(4)	5	10	100	30	25	15
KGL	56.5S	24	0028	SC	3	8	8	24(2,5,6,7,8) 25(2,3)	3	7	88	32	25	10
GUA	04.0N	25	18--	..	..	..	..	25(8)	5	10	70	20	26	12
GUA	04.0N	26	1805	..	..	..	..	26(8)	5	--	50	30	27	05
KGL	56.5S	26	1710	..	..	..	..	26(7)	5	22	144	48	27	04
ETT	00.6S	28	2100	..	..	..	..		-	9	258	115	30	22
COL	64.6N	29	04--	..	..	..	..	30(5,6,7)	6	261	1490	590	30	20
FRD	49.6N	29	0408	SC	1.6	37	- 6	29(2)	5	22	165	68	02	--
BJI	28.5N	29	0408	SC	.9	2.9	..	29(3)	6	13	143	50	30	08
KRC	16.4N	29	0405	SC	- .5	34	15	29(3)	6	5	100	--	01	--
UJJ	13.5N	29	0400	..	..	..	..		-	11	134	52	30	24
ABG	09.5N	29	0400	..	..	..	..	29(3)	4	9	158	64	30	24
HYB	07.6N	29	0408	SC	0	33	- 3	29(3)	6	9	173	35	30	22
GUA	04.0N	29	0407	..	..	..	..	29(2)	5	10	120	20	29	18
KGL	56.5S	29	0310	..	..	..	..	29(7)	5	28	136	48	01	00

Stations Reporting:

ABG = ALIBAG
BJI = BEIJING
COL = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HYB = HYDERABAD
KGL = KERGUELEN
KRC = KARACHI
SIT = SITKA
UJJ = UJJAIN

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

JUNE 1988

Storm Sudden Commencements (ssc)

Day	Time	Quality: Station Group*
05	1221	A: HRB* MPO
		B: SOD WNG* NGK* NAG* GCK* AQU* SPT* GNA
		C: CLF* EBR* ALM TEN*
24	0029	A: MPO
		B: WNG* HRB* NAG* FRD* ALM GNA*
		C: NGK CLF* GCK* EBR* SPT* KGL
29	0429	A: NAG* ALM MPO
		B: WNG* CLF* HRB* SPT QUE GNA*
		C: NGK EBR FRD TEN CZT

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
02	0709-0724	MPO
04	1433-1448	SOD MPO
06	1549-1600	NAG (ssc: WNG SPT)
	1652-1710	ALM
07	0434-0448	MPO
08	1120-1127	MPO
11	0821-0833	MPO
17	1320-1405	ALM
18	0911-0934	NGK
23	0918-0937	WNG CLF GCK AQU SPT MPO
	1751-1840	WNG
24	0420-	WNG
	1137-1209	WNG
25	1638-1710	WNG
	2340-2408	NGK
26	1344-1407	WNG
29	0738-0752	WNG
30	0903-0919	SPT TEN MPO
	0919-0930	GCK
	1001-1009	NAG

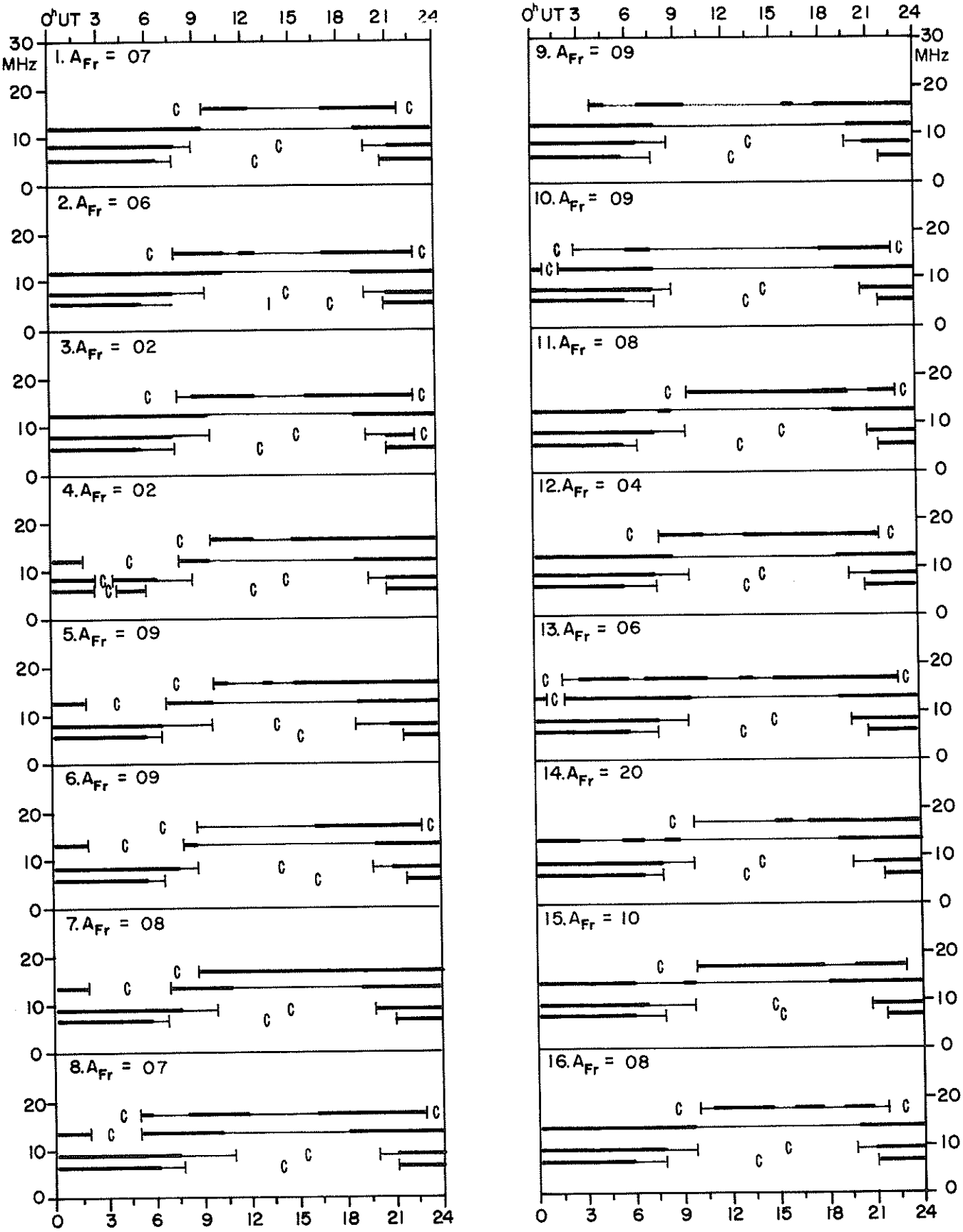
Reporting Observatories: (up to the 2nd of August)

SOD NUR WNG NGK CLF HRB NAG GCK AQU EBR SPT
FRD ALM QUE TEN MPO GNA AMS CZT KGL DUM

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

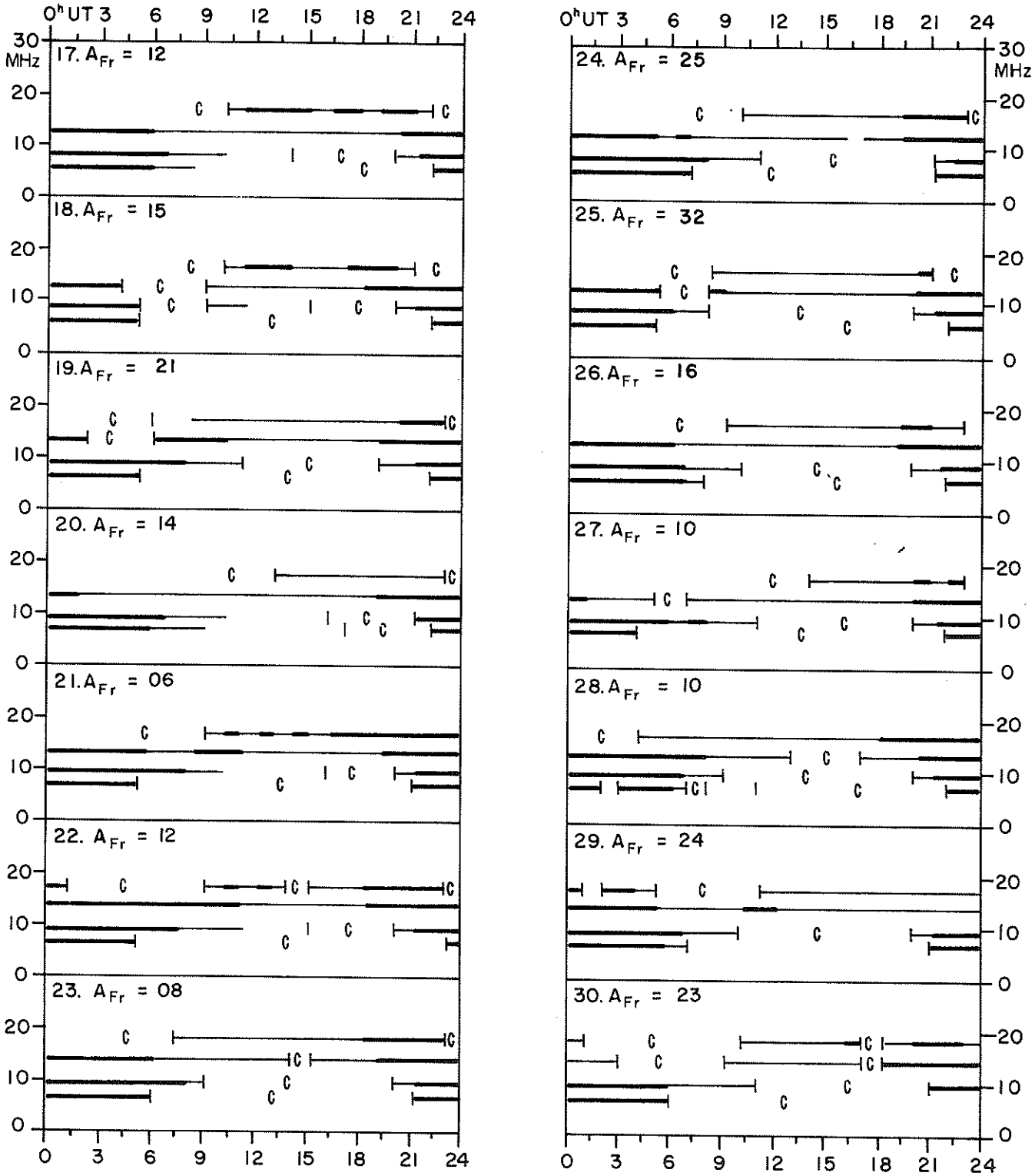
TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

JUNE 1988



TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

JUNE 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 $\geq$ -12 dB above 1 μV/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB and -40 dB above 1 μV/m are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES
JUNE 1988

Day	For Circuits from Norddeich to: Bracknell England	Rome Italy	Teheran Iran	New York USA (East)	Tokyo Japan	Canberra Australia
1.	7.1	6.0	5.8	6.2	6.9	6.2
2.	6.6	5.7	5.6	6.1	7.3	6.4
3.	6.7	5.3	5.9	6.1	8.0	6.3
4.	6.5	4.6	4.5	5.5	7.5	6.4
5.	6.5	5.1	5.1	5.4	7.3	6.4
6.	7.0	4.7	5.6	4.8	5.9	6.9
7.	6.4	5.1	5.4	6.6	6.9	6.9
8.	5.4	5.2	6.0	6.4	6.1	6.6
9.	5.0	5.0	5.2	5.7	5.9	6.4
10.	4.6	4.8	5.1	5.8	6.1	5.6
11.	5.6	6.0	6.2	5.7	6.9	5.5
12.	6.3	5.9	6.0	6.3	6.6	6.8
13.	6.0	6.4	6.4	5.8	6.2	5.8
14.	5.4	6.0	6.0	5.6	3.3	5.3
15.	4.7	5.1	5.0	5.5	4.7	5.0
16.	6.0	5.6	5.3	5.8	5.5	5.5
17.	5.8	5.4	5.2	5.1	4.0	5.1
18.	3.6	4.4	5.0	5.4	4.3	4.4
19.	3.9	4.8	5.2	4.6	3.9	5.2
20.	4.3	5.3	5.9	4.1	3.1	5.2
21.	5.1	5.6	5.4	5.6	5.2	4.9
22.	5.1	5.4	6.1	5.5	5.4	5.1
23.	3.2	5.0	5.7	5.0	5.5	5.0
24.	4.7	4.8	5.2	4.7	3.9	5.2
25.	4.5	4.5	3.6	4.0	3.3	5.3
26.	3.1	4.0	3.1	3.8	3.8	4.2
27.	4.1	5.9	5.8	4.7	4.0	5.9
28.	4.6	5.4	5.8	5.2	6.2	5.5
29.	3.7	5.3	4.3	3.6	3.7	4.6
30.	4.3	5.4	5.6	4.7	3.7	5.8
MEAN:	5.2	5.3	5.4	5.3	5.4	5.6

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

CONTENTS

Prompt Reports **LATE DATA** Number 528 Part I

RADIO PROPAGATION QUALITY INDICES
APRIL 1988

Day	For Circuits from Norddeich to: Bracknell England	Rome Italy	Teheran Iran	New York USA (East)	Tokyo Japan	Canberra Australia
1.	6.2	6.5	6.8	5.3	7.3	6.0
2.	6.1	6.2	6.1	4.0	6.9	6.5
3.	6.8	5.8	3.5	3.7	8.3	5.0
4.	3.6	4.3	3.5	1.4	4.4	3.1
5.	6.8	6.3	5.7	4.2	4.6	4.7
6.	4.3	4.7	5.7	2.4	5.0	4.3
7.	5.7	5.2	7.1	3.6	6.8	6.1
8.	6.4	5.4	6.8	6.1	9.0	7.0
9.	5.7	5.5	7.3	6.0	7.7	6.7
10.	5.7	5.8	7.2	5.0	7.9	5.9
11.	6.7	6.6	7.3	6.5	8.6	6.7
12.	6.8	6.6	7.5	6.5	8.0	7.0
13.	7.1	6.4	6.9	6.7	8.5	7.1
14.	7.2	6.1	7.0	6.8	7.8	7.2
15.	6.7	6.5	6.8	6.6	8.8	6.8
16.	6.5	5.8	6.3	6.4	7.9	6.7
17.	6.6	6.2	6.2	7.0	8.6	6.5
18.	6.3	6.2	6.5	7.2	7.5	6.7
19.	7.1	6.2	7.0	7.5	8.8	7.3
20.	6.3	6.0	6.7	7.5	7.6	6.7
21.	6.0	5.4	6.3	6.7	7.5	6.6
22.	5.4	5.5	6.7	4.3	5.6	6.6
23.	7.4	6.3	7.5	6.9	6.4	6.7
24.	6.6	6.3	7.6	6.9	7.4	6.5
25.	7.2	6.3	7.5	6.7	7.8	6.0
26.	6.7	6.0	7.2	6.8	7.7	5.9
27.	6.8	6.0	6.7	7.3	7.4	6.9
28.	5.1	5.1	5.4	6.3	5.1	5.9
29.	4.5	5.6	6.5	6.4	5.0	5.0
30.	5.4	6.2	6.8	6.5	6.0	5.6
MEAN:	6.2	5.9	6.5	5.8	7.2	6.2

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.

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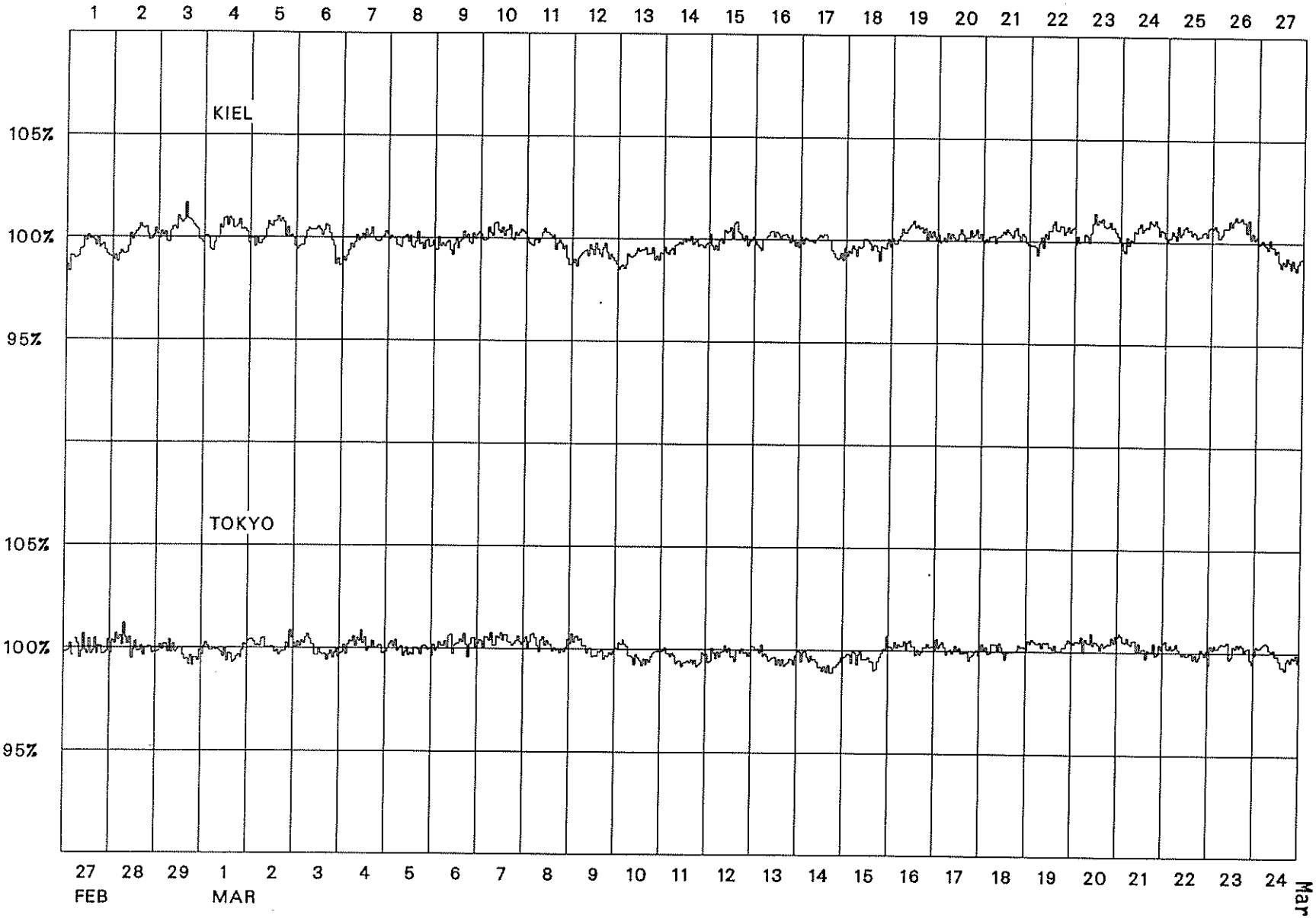
3.1 - 5.0 = fair
5.1 - 7.0 = normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2112 (February 1988-March 1988)



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Late
Mar 88

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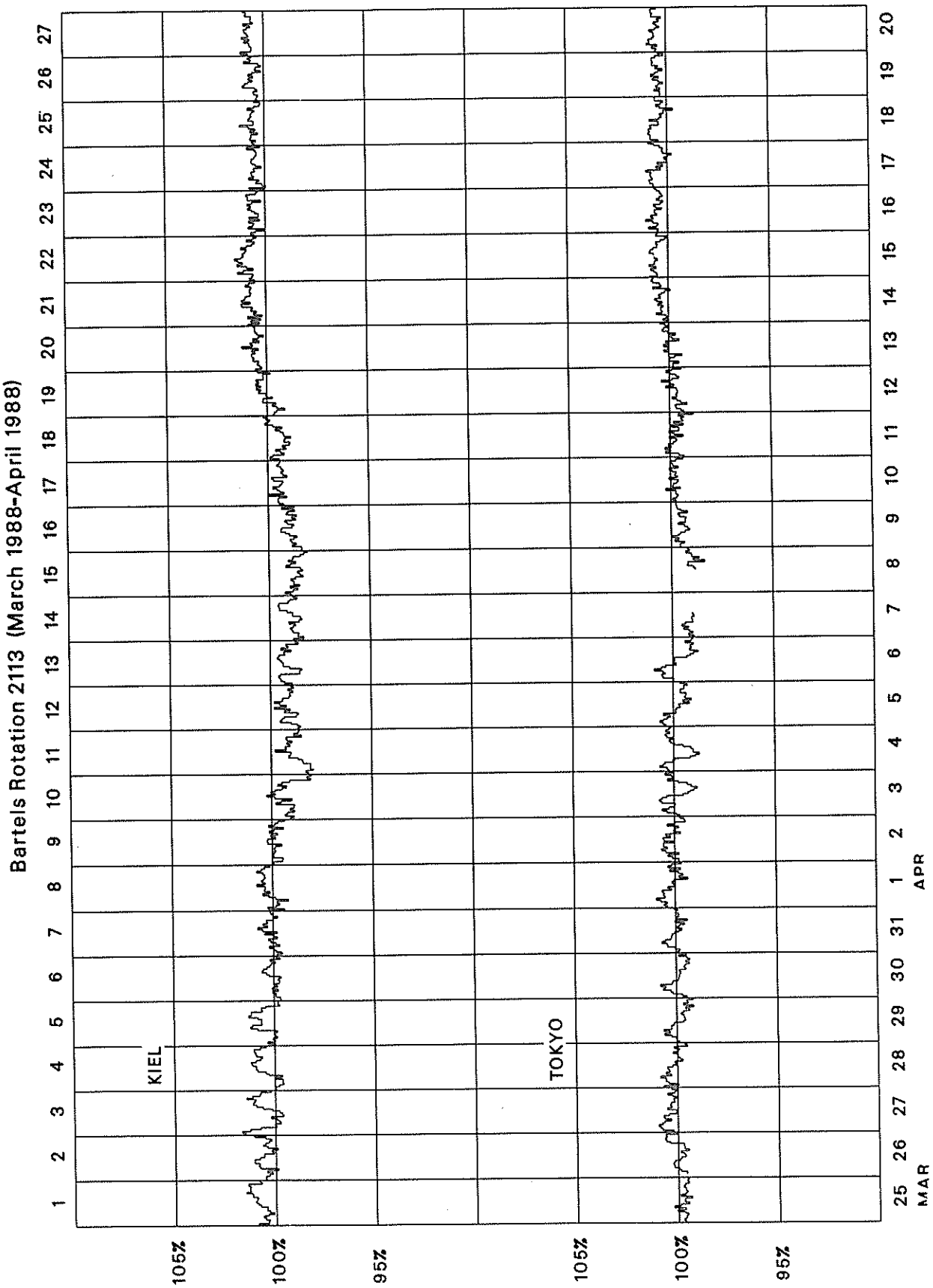
Late
Apr 88

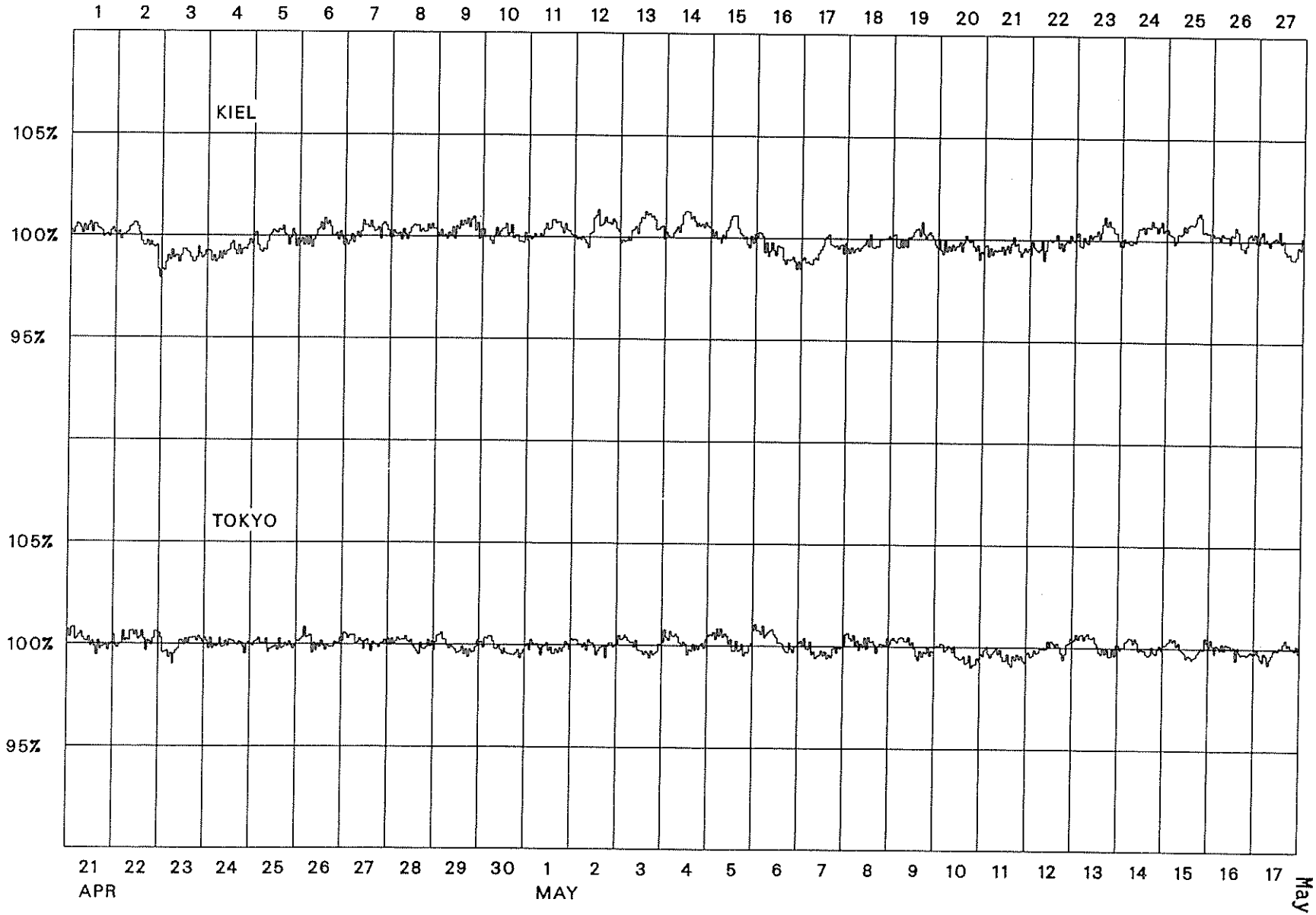
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2113 (March 1988-April 1988)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2114 (April 1988-May 1988)



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Late
May 88

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

MAY 1988

Storm Sudden Commencements (ssc)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
06	0428	A: DOU* COL* BJI* MMB* QUE*	01	0534-0559:	QUE
		B: WNG* NGK* NAG* EBR*		2132-2152:	QUE
		C: BDV*	03	1214-1228:	NAG
			05	1038-1044:	NAG
			13	0527-0536:	QUE
			15	0542-0554:	CLF
				2203-2205:	LNP
			16	0212-0227:	LNP
				0541-0553:	NAG LNP
				1623-1647:	LNP (ssc A: BJI)
			24	1027-1044:	NAG
			25	1155-1159:	DOU
			27	1342-1420:	WNG BDV SPT
			29	1443-1451:	NAG

Reporting Observatories: (up to the 30th of June)

SOD COL DOB NUR WNG NGK DOU BDV CLF NAG MMB EBR BJI SPT
FRD KAK KNY QUE TEN LNP CNB

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, 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."