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Solar - Geophysical Data

NO. 411 NOVEMBER 1978

Part I (Prompt Reports)

DATA FOR
OCTOBER 1978
SEPTEMBER 1978

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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No. 411

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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blank = data not yet received.

OCTOBER 1978 DATA

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INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE
OCTOBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares Total	Active Regions: No. of Flares M	Active Regions: No. of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
274	1	30	196	142	09	N31W63	0	0	0		30	N31W63	Q	SOLNIL MAGNIL
						S17W14	0	0	0			S17W14	Q	
						S17W10	0	0	0			S17W10	Q	
						N36W03	0	0	0			N36W03	Q	
						N18W02	0	0	0			N18W02	Q	
						N39E10	0	0	0			N39E10	Q	
						S21E17	0	0	0			S21E17	Q	
						S12E27	0	0	0			S12E27	Q	
						N20E28	0	0	0			N20E28	Q	
						S14E60	2	0	0			S14E60	E	
						N17E64	1	0	0			N17E64	Q	
275	2	1	163	139	09	N31W77	1	0	0	PRESTO TOYOKAWA	1	N31W77	Q	SOLQUIET MAGQUIET
						S15W38	0	0	0	01/0734Z TENFLARE		S15W38	Q	
						N17W15	1	0	0	400 FLUX UNITS.		N17W15	Q	
						S18W27	0	0	0	PRESTO BOULDER		S18W27	Q	
						N39W02	0	0	0	01/1350Z SOFLARE		N39W02	Q	
						S23E04	0	0	0	M7/2B S14E57 01/		S23E04	Q	
						S15E49	1	1	0	0656Z DURATION 55		S15E49	C,A	
						N16E54	0	0	0	MINUTES. TENFLARE		N16E54	E	
						S17W36	0	0	0	350 FLUX UNITS		S17W36	Q	
						N15E41	0	0	0	01/0713Z DURATION		N15E41	Q	
										75 MINUTES				
276	3	2	180	138	09	S17W50	0	0	0		2	S17W50	Q	SOLALERT MAGQUIET
						N18W29	0	0	0			N18W29	E	
						S18W40	0	0	0			S18W40	C,E	
						N38W15	0	0	0			N38W15	C,E	
						S23W09	0	0	0			S23W09	D,E	
						S12E35	1	0	0			S12E35	C,A	
						N16E40	0	0	0			N16E40	C,E	
						S18W50	0	0	0			S18W50	Q	
						N17E26	0	0	0			N17E26	Q	
						S18W00	0	0	0			S18W00	Q	
277	4	3	141	132	09	N17W41	0	0	0		3	N17W41	Q	SOLNIL MAGQUIET
						S17W54	0	0	0			S17W54	Q	
						N39W27	0	0	0			N39W27	Q	
						S23W20	0	0	0			S23W20	Q	
						S12E20	3	0	0			S12E20	C,A	
						N16E32	1	0	0			N16E32	E	
						S19W64	0	0	0			S19W64	Q	
						S18W11	0	0	0			S18W11	Q	
						N27E33	0	0	0			N27E33	Q	
278	5	4	195	135	13	N17W54	0	0	0		4	N17W54	Q	SOLQUIET MAGQUIET
						N39W40	0	0	0			N39W40	Q	
						S23W35	0	0	0			S23W35	Q	
						S12E07	4	0	0			S12E07	C,A	
						N17E19	0	0	0			N17E19	Q	
						S17W77	0	0	0			S17W77	Q	
						S17W26	0	0	0			S17W26	Q	
						N28E19	2	0	0			N28E19	E	
						N42W30	0	0	0			N42W30	Q	
						S30W05	0	0	0			S30W05	Q	
						N31E05	0	0	0			N31E05	Q	
						N17E27	0	0	0			N17E27	Q	
						S22E47	0	0	0			S22E47	Q	
279	6	5	108	140	06	N17W66	0	0	0	SOUTHEAST LIMB	5	N17W66	Q	SOLQUIET MAGQUIET
						S26W48	0	0	0	ACTIVE		S26W48	Q	
						S12W08	3	0	0			S12W08	A	
						N13E10	0	0	0			N13E10	Q	
						N29W16	0	0	0			N29W16	Q	
						N15E15	0	0	0			N15E15	Q	
						N14E82	0	0	0			N14E82	Q	
280	7	6	140	137	04	N18W80	0	0	0		6	N18W80	Q	SOLALERT MAGQUIET
						S14W19	1	0	0			S14W19	A	
						N13W04	0	0	0			N13W04	Q	
						N29W29	0	0	0			N29W29	Q	
						N14E03	0	0	0			N14E03	Q	
						N17E68	1	0	0			N17E68	Q	
						N13W65	0	0	0			N13W65	Q	
						S18E73	2	1	0			S18E73	A	
						S32E71	0	0	0			S32E71	Q	
281	8	7	184	142	03	N17W93	0	0	0		7	N17W93	Q	SOLALERT MAGQUIET
						S14W33	3	0	0			S14W33	A	
						N30W34	0	0	0			N30W34	Q	
						N14W14	0	0	0			N14W14	Q	
						S22E03	0	0	0			S22E03	Q	
						N18E54	0	0	0			N18E54	Q	
						S19E62	0	0	0			S19E62	C,A	
						S30E52	0	0	0			S30E52	Q	
						N22E18	0	0	0			N22E18	Q	
						S16E67	0	0	0			S16E67	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM
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OCTOBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares Total	Active Regions: No. of Flares M	Active Regions: No. of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
282	9	8	176	150	05	S13W46	8	0	0		8	S13W46	C,P	MAJOR FLARE ALERT MAGQUIET
						N16W32	0	0	0			N16W32	Q	
						N13W29	0	0	0			N13W29	Q	
						S23W10	0	0	0			S23W10	Q	
						N22E06	0	0	0			N22E06	Q	
						S30E39	0	0	0			S30E39	Q	
						N18E41	0	0	0			N18E41	Q	
						S16E43	2	0	0			S16E43	D,A	
						S19E48	2	0	0			S19E48	D,A	
						S16E55	1	0	0			S16E55	E	
						N21E72	0	0	0			N21E72	Q	
283	10	9	204	156	09	S13W60	4	1	0		9	S13W60	A	SOLALERT 10/11 MAGQUIET
						N29W56	0	0	0			N29W56	Q	
						S22W21	0	0	0			S22W21	E	
						N17E27	1	0	0			N17E27	E	
						S20E35	0	0	0			S20E35	Q	
						S31E23	0	0	0			S31E23	Q	
						N22W07	0	0	0			N22W07	E	
						S14E41	0	0	0			S14E41	Q	
						S15E30	0	0	0			S15E30	Q	
						N22E60	0	0	0			N22E60	Q	
						N37E09	0	0	0			N37E09	Q	
						S18E71	0	0	0			S18E71	Q	
						N29E88	0	0	0			N29E88	Q	
284	11	10	191	160	10	N12W72	2	0	0		10	N12W72	A	SOLALERT 11/12 MAGALERT MINOR 11/12
						N29W73	0	0	0			N29W73	Q	
						S23W34	2	0	0			S23W34	A	
						N18E14	0	0	0			N18E14	Q	
						S19E19	0	0	0			S19E19	Q	
						N23W18	0	0	0			N23W18	Q	
						S15E18	0	0	0			S15E18	Q	
						N22E47	1	0	0			N22E47	E	
						S17E58	0	0	0			S17E58	Q	
						N29E72	0	0	0			N29E72	Q	
						S26E33	0	0	0			S26E33	Q	
						N19E47	0	0	0			N19E47	Q	
285	12	11	257	177	05	S13W90	0	0	0		11	S13W90	Q	SOLALERT 12 MAGALERT MINOR 12
						N29W86	0	0	0			N29W86	Q	
						S24W48	0	0	0			S24W48	Q	
						N18E02	0	0	0			N18E02	Q	
						S20E06	1	0	0			S20E06	E	
						N23W29	0	0	0			N23W29	Q	
						S17E15	0	0	0			S17E15	Q	
						N21E32	0	0	0			N21E32	Q	
						S19E47	1	0	0			S19E47	E	
						N29E59	0	0	0			N29E59	Q	
						S24E18	1	0	0			S24E18	A	
						S19E38	0	0	0			S19E38	Q	
						S19E23	0	0	0			S19E23	Q	
						S23E57	0	0	0			S23E57	Q	
						S22E73	0	0	0			S22E73	Q	
						N32E76	0	0	0			N32E76	Q	
						S15E08	0	0	0			S15E08	Q	
286	13	12	276	179	07	S24W62	0	0	0	PRESTO BOULDER 12/ 0354Z TENFLARE 210 FLUX UNITS 12/0150Z DURATION 52 MINUTES M1/LOOPS SW12 M1/1B SW14 12/1442Z 59 MINUTES X-RAY DURATION.	12	S24W62	C,A	SOLALERT MAGNIL
						N23W45	2	0	0			N23W45	Q	
						N18W11	0	0	0			N18W11	Q	
						S16W09	0	0	0			S16W09	Q	
						S20W07	0	0	0			S20W07	Q	
						S16E02	0	0	0			S16E02	Q	
						S25E07	0	0	0			S25E07	Q	
						S19E10	1	0	0			S19E10	E	
						S19E18	0	0	0			S19E18	Q	
						N21E19	1	0	0			N21E19	Q	
						S18E33	2	0	0			S18E33	E	
						S22E44	0	0	0			S22E44	Q	
						N29E45	0	0	0			N29E45	Q	
						S21E55	0	0	0			S21E55	Q	
						N33E60	0	0	0			N33E60	Q	

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287	14	13	245	179	08	S24W76	4	0	0	PRESTO BOULDER	13	S24W76	C,A	SOLALERT MAGALERT 15/16
						N16W25	0	0	0	13/1412Z SOFLARE		N16W25	Q	
						S20W17	0	0	0	M8/1B S20E03 13/		S20W17	Q	
						N21W63	0	0	0	1237Z DURATION 20		N21W63	Q	
						N20E05	0	0	0	MINUTES. TENFLARE		N20E05	Q	
						S18E19	0	0	0	380 FLUX UNITS		S18E19	Q	
						N28E73	0	0	0	13/1235Z DURATION		N28E73	Q	
						S25W05	0	0	0	21 MINUTES.		S25W05	Q	
						S19W01	4	1	0			S19W01	A	
						S21E40	0	0	0			S21E40	Q	
						N33E49	0	0	0			N33E49	Q	
						N17E76	0	0	0			N17E76	Q	
						N26E82	0	0	0			N26E82	Q	
288	15	14	284	181	05	S24W89	1	1	0	PRESTO TOYOKAWA	14	S24W89	D,P	SOLALERT MAGALERT 15/17
						N16W38	0	0	0	15/0007Z TENFLARE		N16W38	E	
						S21W31	0	0	0	170 FLUX UNITS 14/		S21W31	Q	
						N22W76	0	0	0	2332Z DURATION 8		N22W76	Q	
						N20W08	0	0	0	MINUTES. M9 X-RAY		N20W08	Q	
						S17E07	0	0	0	14/2337Z 19 MINUTES		S17E07	Q	
						N29E19	0	0	0	DURATION. ADDITION-		N29E19	Q	
						S25W18	0	0	0	AL 3 M1 X-RAY		S25W18	Q	
						S20W13	2	0	0	EVENTS, NO OPTICAL		S20W13	D,P	
						S20E26	1	0	0	REPORTS.		S20E26	D,A	
						N33E36	0	0	0			N33E36	Q	
						N19E63	0	0	0			N19E63	Q	
						N31E69	0	0	0			N31E69	Q	
						S22W47	0	0	0			S22W47	Q	
						N14E26	0	0	0			N14E26	Q	
289	16	15	298	183	04	N16W51	2	0	0		15	N16W51	Q	SOLALERT MAGALERT 16/17
						S21W45	0	0	0			S21W45	Q	
						N20W20	2	0	0			N20W20	Q	
						N34W64	0	0	0			N34W64	Q	
						S18W06	0	0	0			S18W06	Q	
						N29E06	0	0	0			N29E06	Q	
						S25W31	0	0	0			S25W31	Q	
						S20W27	1	0	0			S20W27	D,P	
						S22E12	0	0	0			S22E12	D,A	
						N32E21	0	0	0			N32E21	Q	
						N18E51	1	0	0			N18E51	Q	
						N31E57	1	0	0			N31E57	Q	
						S21W62	0	0	0			S21W62	Q	
						N15E10	0	0	0			N15E10	Q	
290	17	16	272	179	07	N18W63	0	0	0	PRESTO BOULDER	16	N18W63	Q	SOLALERT 17/18 MAGALERT 17
						S21W59	0	0	0	16/2312Z TENFLARE		S21W59	Q	
						N21W35	0	0	0	530 FLUX UNITS		N21W35	Q	
						N34W79	0	0	0	10/2144Z DURATION		N34W79	Q	
						S18W20	0	0	0	2 MINUTES.		S18W20	Q	
						N29W04	0	0	0	PRESTO SYDNEY 16/		N29W04	Q	
						S25W45	0	0	0	2248Z TENFLARE		S25W45	Q	
						S20W43	6	0	0	650 FLUX UNITS		S20W43	A	
						S21W02	3	0	0	16/2143Z MAX 16/		S21W02	E	
						N33E12	0	0	0	2147Z. DURATION		N33E12	Q	
						N17E37	0	0	0	5 MINUTES		N17E37	Q	
						N30E44	6	1	0			N30E44	A	
						S19W77	0	0	0			S19W77	Q	
						N13W01	0	0	0			N13W01	Q	
						S18E40	0	0	0			S18E40	Q	
291	18	17	215	173	03	N17W78	0	0	0		17	N17W78	Q	SOLALERT MINOR 18 MAGNIL
						S21W73	0	0	0			S21W73	Q	
						N21W49	1	0	0			N21W49	E	
						N29W19	0	0	0			N29W19	Q	
						S26W56	0	0	0			S26W56	Q	
						S21W56	2	0	0			S21W56	Q	
						S21W16	2	0	0			S21W16	Q	
						N18E23	1	0	0			N18E23	Q	
						N31E32	2	0	0			N31E32	A	
						N30E80	0	0	0			N30E80	Q	
						S21E76	0	0	0			S21E76	Q	
						S27E41	0	0	0			S27E41	Q	

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292	19	18	242	171	19	S21W86	0	0	0	A MINOR GEOMAG-	18	S21W86	Q	SOLALERT 19 MAGQUIET
						N21W60	1	0	0	NETIC STORM		N21W60	A	
						N28W21	0	0	0	STARTED 18/0425Z		N28W21	Q	
						S21W67	1	0	0	AND HAS NOW SUB-		S21W67	E	
						S22W29	1	0	0	SIDED TO UNSETTLED		S22W29	E	
						N18E11	0	0	0	CONDITION		N18E11	Q	
						N31E18	1	0	0			N31E18	E	
						S18E12	0	0	0			S18E12	Q	
						N29E70	1	0	0			N29E70	E	
						S21E62	0	0	0			S21E62	Q	
						S28E27	1	0	0			S28E27	Q	
						N36E52	0	0	0			N36E52	Q	
						N33E64	0	0	0			N33E64	Q	
293	20	19	236	172	15	N21W73	2	0	0		19	N21W73	E	SOLALERT MAGALERT
						N28W43	0	0	0			N28W43	Q	
						S26W82	0	0	0			S26W82	E	
						S22W43	6	0	0			S22W43	E	
						N18W00	0	0	0			N18W00	Q	
						N31E06	0	0	0			N31E06	E	
						N27E58	6	1	0			N27E58	A	
						S21E48	0	0	0			S21E48	Q	
						S28E13	0	0	0			S28E13	E	
						N32E53	0	0	0			N32E53	Q	
						N16E29	0	0	0			N16E29	Q	
						S16E15	0	0	0			S16E15	Q	
294	21	20	218	173	07	N20W87	0	0	0		20	N20W87	Q	SOLALERT MAGNIL
						N28W56	0	0	0			N28W56	Q	
						S22W56	8	0	0			S22W56	A	
						N18W12	0	0	0			N18W12	Q	
						N30W06	1	0	0			N30W06	C,A	
						N27E44	4	0	0			N27E44	A	
						S21E36	0	0	0			S21E36	Q	
						S27E01	2	0	0			S27E01	C,A	
						N32E40	0	0	0			N32E40	Q	
						N17E17	0	0	0			N17E17	Q	
						S16E02	0	0	0			S16E02	Q	
						N16E72	0	0	0			N16E72	Q	
295	22	21	250	170	08	N28W70	0	0	0		21	N28W70	Q	SOLALERT 22/23 MAGQUIET
						S22W72	3	0	0			S22W72	A	
						N17W27	0	0	0			N17W27	Q	
						N30W19	1	0	0			N30W19	C,A	
						N27E34	1	0	0			N27E34	A	
						S21E22	0	0	0			S21E22	D,A	
						S28W09	0	0	0			S28W09	C,A	
						N32E27	0	0	0			N32E27	Q	
						N16E03	0	0	0			N16E03	D,A	
						S16W10	0	0	0			S16W10	E	
						N16E56	0	0	0			N16E56	Q	
						N13W40	0	0	0			N13W40	Q	
296	23	22	238	163	10	N28W84	0	0	0		22	N28W84	Q	SOLALERT 23/25 MAGALERT 23/26
						S22W86	0	0	0			S22W86	D,A	
						N17W43	0	0	0			N17W43	Q	
						N30W32	0	0	0			N30W32	Q	
						N26E21	0	0	0			N26E21	C,A	
						S22E10	1	0	0			S22E10	D,A	
						S28W23	0	0	0			S28W23	C,A	
						N32E14	0	0	0			N32E14	Q	
						N14W09	0	0	0			N14W09	Q	
						S18W21	0	0	0			S18W21	Q	
						N13E41	0	0	0			N13E41	Q	
						N13W53	0	0	0			N13W53	Q	
						S17E39	0	0	0			S17E39	Q	
						N19E74	0	0	0			N19E74	Q	
297	24	23	160	164	06	N30W43	0	0	0		23	N30W43	C,E	SOLNIL MAGNIL
						N26E08	2	0	0			N26E08	C,A	
						S22W02	0	0	0			S22W02	C,E	
						S28W36	0	0	0			S28W36	D,A	
						N32E01	0	0	0			N32E01	Q	
						S18W27	0	0	0			S18W27	Q	
						N13W68	0	0	0			N13W68	Q	
						S17E22	1	0	0			S17E22	Q	
						N21E61	2	0	0			N21E61	D,A	
						S17E70	0	0	0			S17E70	Q	
						S23E65	0	0	0			S23E65	Q	

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298	25	24	194	159	05	N30W56	0	0	0		24	N30W56	Q	SOLQUIET MAGQUIET
						N26W05	2	0	0			N26W05	E	
						S22W16	0	0	0			S22W16	Q	
						S28W48	0	0	0			S28W48	Q	
						N32W11	0	0	0			N32W11	Q	
						N14W31	0	0	0			N14W31	Q	
						S16W44	0	0	0			S16W44	Q	
						S18E10	0	0	0			S18E10	Q	
						N19E48	2	0	0			N19E48	E	
						S17E58	1	0	0			S17E58	Q	
						S22E52	0	0	0			S22E52	Q	
						N19E24	0	0	0			N19E24	Q	
						S17E73	0	0	0			S17E73	Q	
299	26	25	146	158	06	N30W70	0	0	0	PRESTO BOULDER	25	N30W70	Q	SOLQUIET MAGQUIET
						N27W19	1	0	0	SOFLARE 2B/C6		N27W19	E	
						S22W29	0	0	0	S10E90 25/1155Z		S22W29	Q	
						N32W23	0	0	0	DURATION 40		N32W23	Q	
						N14W44	0	0	0	MINUTES		N14W44	Q	
						S18W03	0	0	0			S18W03	Q	
						N19E36	0	0	0			N19E36	E	
						S17E45	0	0	0			S17E45	Q	
						N20E12	0	0	0			N20E12	Q	
						S18E59	1	0	0			S18E59	Q	
300	27	26	167	143	13	N28W82	0	0	0		26	N28W82	Q	SOLALERT MINOR 28
						N27W30	0	0	0			N27W30	E	MAGALERT MINOR 27/28
						S20W42	0	0	0			S20W42	Q	
						N32W37	0	0	0			N32W37	Q	
						S17W16	0	0	0			S17W16	Q	
						N18E23	0	0	0			N18E23	Q	
						S16E30	1	0	0			S16E30	E	
						N19W02	0	0	0			N19W02	Q	
						S18E49	2	0	0			S18E49	Q	
						N22E18	0	0	0			N22E18	E	
						S14E74	1	0	0			S14E74	E	
						N29E77	0	0	0			N29E77	Q	
301	28	27	171	153	19	N26W44	0	0	0		27	N26W44	E	SOLQUIET MAGALERT 28/28
						S20W55	0	0	0			S20W55	Q	
						N33W49	0	0	0			N33W49	E	
						S17W29	0	0	0			S17W29	Q	
						N18E10	3	0	0			N18E10	E	
						S18E25	1	0	0			S18E25	E	
						N19W15	0	0	0			N19W15	Q	
						N23E05	0	0	0			N23E05	Q	
						S13E62	0	0	0			S13E62	Q	
						N29E64	0	0	0			N29E64	Q	
302	29	28	152	154	14	S21W67	0	0	0	PRESTO BOULDER	28	S21W67	Q	SOLQUIET MAGNIL
						N33W62	0	0	0	28/1638Z SOFLARE		N33W62	Q	
						N26W57	2	0	0	R3/2B N20E01		N26W57	D,A	
						S18W41	1	0	0	28/1555Z DURATION		S18W41	D,A	
						N19W28	0	0	0	14 MINUTES		N19W28	Q	
						N22W08	0	0	0			N22W08	E	
						N18W02	4	1	0			N18W02	C,A	
						S18E12	0	0	0			S18E12	E	
						S13E48	0	0	0			S13E48	E	
						N29E52	0	0	0			N29E52	Q	
303	30	29	185	152	12	N25W72	1	0	0		29	N25W72	E	SOLALERT 30/XX MAGQUIET
						S22W84	0	0	0			S22W84	Q	
						N32W76	0	0	0			N32W76	Q	
						S18W57	0	0	0			S18W57	Q	
						N17W17	1	0	0			N17W17	A	
						S17W01	1	0	0			S17W01	A	
						N20W42	0	0	0			N20W42	Q	
						N22W21	2	0	0			N22W21	A	
						S13E35	0	0	0			S13E35	Q	
						N30E39	0	0	0			N30E39	Q	
						S09E47	1	0	0			S09E47	C,A	
						S19E66	0	0	0			S19E66		

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304	31	30	181	149	18	N26W86	0	0	0		30	N26W86	Q	SOLALERT 31/XX MAGQUIET
						S18W70	1	0	0			S18W70	Q	
						N17W30	0	0	0			N17W30	A	
						S17W11	0	0	0			S17W11	Q	
						N21W34	0	0	0			N21W34	E	
						S13E22	0	0	0			S13E22	Q	
						N30E27	0	0	0			N30E27	Q	
						S10E32	0	0	0			S10E32	Q	
						S20E55	0	0	0			S20E55	Q	
						S29W67	0	0	0			S29W67	Q	
						N16W07	0	0	0			N16W07	Q	
305	01	31	156	146	16	S18W80	0	0	0		31	S18W80	Q	SOLNIL MAGQUIET
						N17W43	0	0	0			N17W43	Q	
						S17W36	0	0	0			S17W36	Q	
						N21W47	0	0	0			N21W47	Q	
						S13E08	0	0	0			S13E08	Q	
						N29E14	0	0	0			N29E14	Q	
						S11E18	0	0	0			S11E18	Q	
						S21E41	0	0	0			S21E41	Q	
						S29W79	0	0	0			S29W79	Q	
						N36W23	0	0	0			N36W23	Q	
						N05E41	0	0	0			N05W41	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

	1977 FINAL		1978 PROVISIONAL									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	44	20	84	128	93	70	77	119	46	42	127	90
2	40	20	88	120	83	68	85	93	61	48	167	119
3	25	31	102	131	95	71	91	74	47	38	151	107
4	22	47	102	138	103	75	76	60	34	62	161	91
5	25	58	73	137	76	94	74	51	54	74	175	55
6	27	58	69	129	67	92	73	29	57	66	178	71
7	34	55	42	121	90	88	70	39	84	58	148	95
8	27	45	36	89	99	105	56	45	105	62	120	103
9	31	58	36	94	85	126	59	36	108	64	109	121
10	25	75	15	96	92	111	57	29	115	67	105	149
11	26	71	18	95	85	109	63	57	127	58	84	158
12	27	62	26	92	78	107	65	62	111	71	72	158
13	28	44	26	93	65	93	72	56	114	85	88	156
14	31	37	36	82	62	75	72	62	109	93	113	170
15	39	41	30	59	72	61	78	89	102	72	133	166
16	49	39	23	64	70	85	91	97	110	42	148	163
17	51	29	24	56	66	99	79	103	98	49	136	137
18	54	33	14	55	72	100	85	115	78	53	158	123
19	52	40	8	53	64	107	84	109	74	42	150	154
20	38	23	7	52	51	115	74	109	76	28	163	151
21	32	23	20	63	77	112	73	154	77	26	172	144
22	28	17	30	74	82	109	73	158	48	36	148	125
23	24	23	43	69	85	105	72	158	33	45	156	116
24	18	31	37	78	82	102	82	154	38	45	167	103
25	10	35	32	94	70	139	86	135	30	54	163	96
26	9	41	47	86	53	115	84	152	13	37	152	91
27	14	50	69	79	50	90	97	134	21	55	140	115
28	9	45	79	88	49	75	90	130	31	58	122	117
29	10	58	90		48	72	103	115	48	59	122	137
30	23	64	104		44	70	107	99	35	70	91	129
31		67	118		70		109		36	100		98
MEAN	29.1	43.2	49.3	89.8	73.5	94.7	79.3	94.1	68.4	56.7	137.3	122.8

1977 yearly mean = 27.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1977		1978									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	94.4	88.4	126.9*	139.1	136.3	130.0	181.4	149.1	142.9	106.0	159.8	139.0
2	93.6	91.2	133.9	152.6	141.1	129.8	183.0	147.0*	127.6	106.0	171.7*	137.8
3	90.4	93.7	130.2	156.6*	146.6	134.5	182.2A	130.8	116.5	109.6	167.0	131.7
4	89.4	95.9	124.8	154.0	148.4	143.3*	178.4	118.6	117.4	112.3	174.4*	132.0*
5	90.6	96.9	119.2	159.0	154.5	146.7*	173.9*	116.9	118.9	117.6	179.4	138.7*
6	91.1	102.0*	118.7*	156.1	162.8	145.3*	173.1	109.8	119.3*	122.6	181.1	137.4
7	90.2	105.5	111.6	157.3	165.2	146.9	162.6*	110.6	128.9	128.2	177.5	141.6
8	90.3	106.7	102.8	157.0*	168.7	148.6	143.4	109.3	135.9	130.6	167.1	150.1
9	91.1	112.6*	97.0	155.2	183.7	156.1	135.1	106.5	147.1*	128.1*	157.6*	155.8
10	93.1	114.7	93.5	148.7	179.1	155.4	129.5	108.4	156.0*	127.5	149.8	162.3
11	94.9	107.4	93.1	154.2	175.2	162.8*	133.8	113.2	163.2*	121.7	141.5	171.6*
12	91.4	111.0	92.1	159.0	169.8	156.2	138.2	116.4*	174.2*	124.5	138.5	177.2
13	94.0	100.6	90.3	151.2	160.9	145.6	140.2	120.3*	165.5	134.9	138.0	178.5
14	97.9	93.7*	88.6	148.4	160.5	139.1	143.7	126.4*	163.1	132.7	143.5*	180.1
15	97.9	92.5	89.6	136.8	154.2	141.4	146.1	132.5	169.5	130.0*	152.6	182.0
16	95.9	92.5	86.4	130.2	143.3	137.6	147.8*	139.5*	163.4	123.6	161.5	176.7*
17	100.4	91.1	83.8	125.9	135.4	133.4	143.8	149.0	159.5	119.3*	161.8	171.5
18	102.0*	93.6	84.7	124.9	132.3	134.1	135.6	153.5*	154.1*	115.6	169.3*	169.4
19	99.2	91.0	95.4	119.1	128.1	139.5*	133.6	162.0*	148.6	111.6	168.8*	170.4
20	95.7*	88.7	97.0	122.2	125.3	138.1	132.3*	174.2	142.9*	107.5	168.6	171.0
21	92.8	87.8	91.4	122.2	118.2	138.4*	132.7	185.4*	140.2	104.8	172.5	166.9*
22	89.3	89.9	96.9	127.7	117.0	146.4	135.7*	190.3	127.0	106.0	171.5*	161.4
23	88.0	91.2	99.6	131.8	116.4	162.9	142.9*	196.7	123.4*	104.1	165.5*	161.4
24	86.7	93.9	100.4	135.6	117.5	159.8	146.5*	194.8	118.5	105.4	158.9	156.9
25	84.7	96.3	103.3	139.3	118.2	159.1*	147.6	183.5	113.7	104.2	157.2	156.1
26	84.1	99.3	112.7	134.8	112.5	166.7	152.8	182.4*	112.2	100.7	148.5	154.4
27	83.8	98.3	116.4	137.5	114.1	172.8	150.6*	179.5	110.8	107.3*	146.2*	150.7
28	85.6	98.9	127.7*	135.4	112.7	176.6*	147.1*	174.1	109.9	107.7*	147.8	148.4*
29	85.6	105.6*	132.2*		111.1	185.2	148.6	167.4	109.2	116.2	148.1	149.8
30	85.3	114.7	134.9		115.4*	182.1*	147.2*	154.6*	109.2	124.1	142.6	146.5
31		120.2	133.3*		124.5		152.6		108.8	133.9*		144.0
MEAN	91.6	98.9	106.1	141.8	140.3	150.5	149.7	146.8	135.4	116.9	159.6	157.1

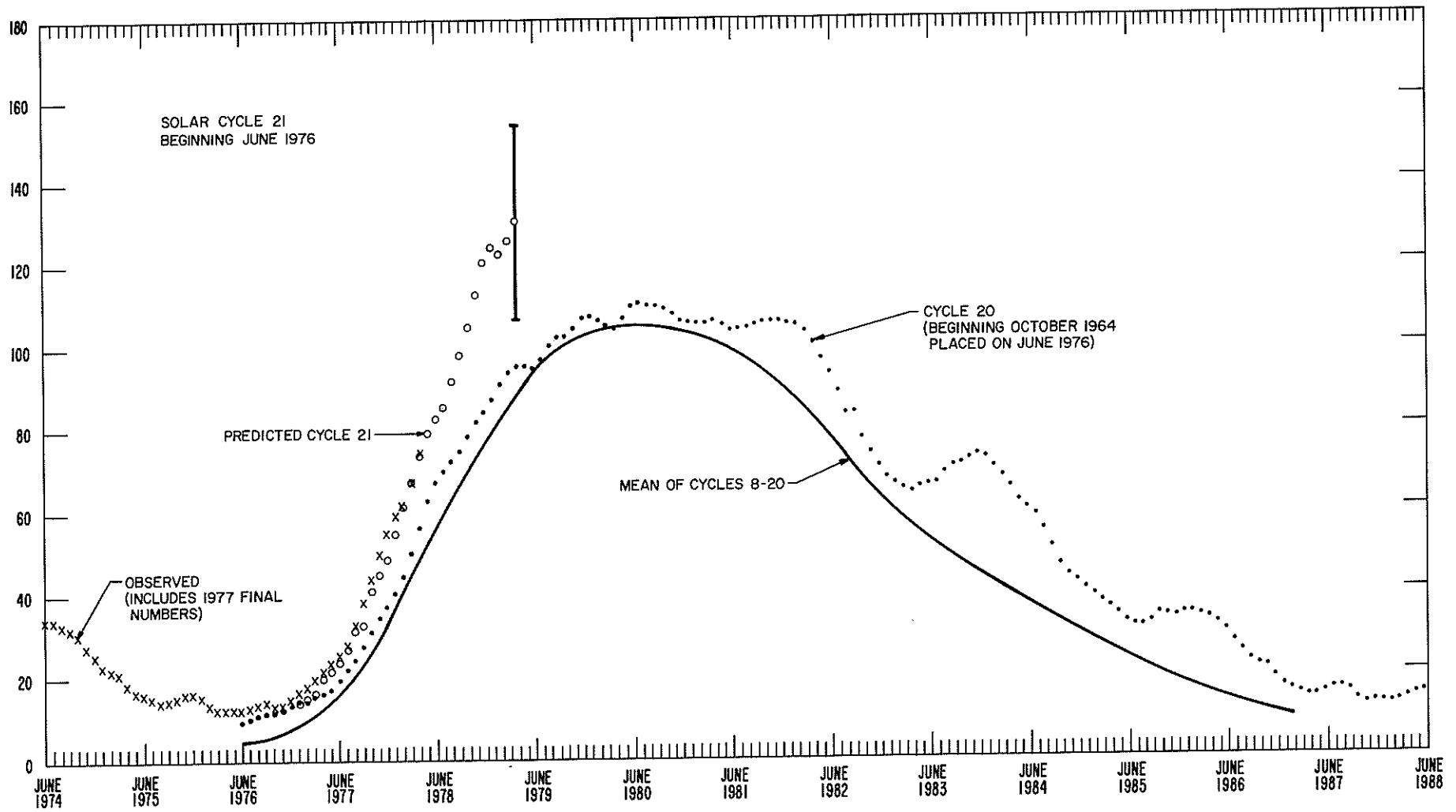
* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

OCTOBER 1978

OCT 1978	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	R_A		AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	274	21	90	73	138.7	580	323	171	139.0	142.2	114.6	72.2	32.2	13.8
2	275	22	119	90	137.7	577	318	165	137.8	140.8	104.2	68.5	31.1	11.4
3	276	23	107	86	131.6	581	325	162	131.7	139.8	105.0	69.2	31.3	10.6
4	277	24	91	69	132.0*	578	321	160	132.0*	137.9	105.1	68.4	29.7	10.8
5	278	25	55	59	138.7*	577	317	168	138.7*	143.0	107.0	71.0	34.2	11.7
6	279	26	71	73	137.5	579	323	181	137.4	158.7	103.2	66.9	32.8	11.3
7	280	27	95	83	141.7	580	333	183	141.6	149.4	103.5	67.2	33.8	11.1
8	281	1	103	98	150.4	590	343	187	150.1	156.5	107.9	68.3	34.6	13.9
9	282	2	121	108	156.3	593	350	191	155.8	166.3	109.1	67.9	35.2	13.0
10	283	3	149	131	162.8	592	348	192	162.3	166.7	112.6	69.5	36.9	15.6
11	284	4	158	148	172.3*	602	358	211	171.6*	184.5	122.1	71.9	34.6	20.2
12	285	5	158	145	177.9	600	352	217	177.2	185.0	125.5	74.6	36.7	22.8
13	286	6	156	156	179.4	590	346	213	178.5	183.1	126.7	82.8	52.6	36.4
14	287	7	170	177	181.0	593	352	217	180.1	192.3	133.3	77.8	37.9	20.9
15	288	8	166	163	183.1	596	359	221	182.0	201.5	130.4	74.7	35.7	14.2
16	289	9	163	151	177.9*	596	353	195	176.7*	184.8	124.5	81.0	35.5	13.6
17	290	10	137	148	172.7	595	354	200	171.5	185.3	126.1	75.8	37.2	17.4
18	291	11	123	134	170.8	598	350	200	169.4	179.0	124.2	78.4	38.9	17.1
19	292	12	154	144	171.8	590	350	202	170.4	180.5	121.8	74.4	34.0	16.5
20	293	13	151	125	172.6	593	349	197	171.0	178.5	125.6	73.3	36.2	17.7
21	294	14	144	129	168.4*	597	357	207	166.9*	184.8	116.6	68.8	34.1	18.9
22	295	15	125	128	163.0	595	355	184	161.4	164.9	113.2	69.5	32.2	14.4
23	296	16	116	110	163.0	593	350	185	161.4	165.4	114.0	68.2	30.3	16.5
24	297	17	103	93	158.6	592	347	182	156.9	168.0	112.8	70.7	33.3	15.6
25	298	18	96	98	158.0	588	341	181	156.1	166.7	116.3	64.8	31.6	11.7
26	299	19	91	99	156.3	586	334	181	154.4	162.7	116.2	68.7	32.1	12.4
27	300	20	115	112	152.7	585	330	178	150.7	160.3	113.2	72.7	35.5	15.5
28	301	21	117	115	150.4*	582	335	169	148.4*	156.9	115.1	72.2	31.9	11.7
29	302	22	137	121	151.9	578	340	176	149.8	159.2	113.4	75.2	33.5	14.6
30	303	23	129	127	148.6	583	342	173	146.5	154.7	117.8	73.1	35.0	11.3
31	304	24	98	102	146.2	586	334	171	144.0	151.9	115.4	74.3	34.4	12.0
MEAN			122.8	116.0	158.2	589	342	188	157.1	166.2	116.0	72.0	34.7	15.3

* Adjusted for burst.



OBSERVED AND PREDICTED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	28.8	33.0	38.5	44.6	50.5	55.4
1978	59.6	62.7	67.7	74.9	[81.7	87.7	92.6	97.1	101.2	104.9	109.2	115.2
					(2)	(5)	(9)	(12)	(14)	(16)	(15)	(14)
1979	120.1	124.4	128.4	131.0	133.5	137.7	141.9	144.7	146.5	147.4	147.7	147.2
	(13)	(15)	(19)	(24)	(27)	(29)	(32)	(34)	(36)	(38)	(39)	(40)
1980	146.0	144.6	144.1	144.7	144.1	141.1	137.9	135.2	133.7	132.8	131.3	129.8
	(41)	(40)	(38)	(38)	(39)	(41)	(43)	(44)	(43)	(44)	(46)	(49)
1981	129.3	128.6	126.3	123.4	121.1	118.8	117.8	117.6	116.7	115.4	113.2	110.3
	(52)	(52)	(50)	(49)	(49)	(48)	(47)	(46)	(45)	(45)	(43)	(41)
1982	107.5	104.5	102.0	100.0	97.8	95.3	91.5	87.2	83.4	79.2	76.1	72.6
	(39)	(38)	(37)	(35)	(33)	(32)	(30)	(28)	(26)	(23)	(21)	(21)
1983	68.6	65.7	63.7	61.5	59.5	57.2	55.3	53.4	51.6	50.3	49.4	48.7
	(21)	(21)	(22)	(22)	(22)	(23)	(24)	(26)	(27)	(29)	(30)	(30)
1984	47.6	45.9	43.3	40.2	37.7	36.4	35.4	33.9	32.4	31.4	30.2	28.7
	(31)	(30)	(29)	(29)	(29)	(31)	(31)	(31)	(30)	(29)	(27)	(27)
1985	27.5	26.6	25.7	25.2	24.5	23.6	22.8	22.0	21.3	20.4	19.5	18.9
	(27)	(26)	(26)	(26)	(26)	(24)	(23)	(22)	(22)	(23)	(24)	(24)
1986	18.6	18.0	17.3	16.4	15.3	14.1	13.3	12.7	12.4	12.2	12.0	11.9
	(24)	(24)	(23)	(22)	(21)	(20)	(19)	(18)	(17)	(16)	(15)	(13)
1987	12.2	12.7	13.6	14.5	15.5	16.5	17.4					
	(12)	(11)	(11)	(11)	(12)	(13)	(14)					

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1977 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1978 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1978) indicates that the most probable value for sunspot maximum is 150 ± 34.

Hα SOLAR FLARES

OCTOBER 1978

OBSERVATORY	OBSERVED UT DATE OCT	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
TEHR	01	0653	0730	0913	S10	E55	.815	15570	5.4	140	2B	2	C		668		Z U
BUCA	01	0700E	0730	0900	S14	E57	.835	15570	5.6	120D	2N		C	0730	537	11.7	U
ISTA	01	0705		0845	S12	E59	.852		5.7	100	SN			0730			F
ATHN	01	0713	0718	0840	S30	E50	.795	15564	5.1	87	2N	1		0718	491	7.8	
RAMY	01	1337	1343	1350	N30	W68	.963		27.5	13	SN	4	C		15		
PALE	02	0225	0226	0229	N28	W79	.993		27.2	4	SN	3	C		16		DE
TEHR	02	0644	0647	0712	S12	E43	.680		5.5	28	SN	2	C		63		
ISTA	02	0650E		0705D	S10	E43	.678		5.5	15D	SN						D
BUCA	02	0835		0849	S21	W85	.993		27.0	14	SN		C	0836	43		D
ISTA	03	0715		0745	S20	W57	.838		30.0	30	SN						D
ISTA	03	0755		0835	S20	E46	.728	15581	6.8	40	2B			0815			F
BUCA	03	0755	0802	0835	S17	W59	.854	15581	29.9	40	1N		C	0802	161	3.6	
ISTA	03	0835		0850	N17	E36	.675		6.1	15	SN						E
ISTA	03	0835		0845	S07	E27	.451		5.4	10	SF						E
HOLL	03	1422	1428	1454	N18	E35	.671	15569	6.2	32	1B	3	C		199		FDE
PALE	03	1715	1755	1859	S12	E23	.398	15563	5.4	104	1B	3	C		221		U F
TEHR	04	0333	0337	0343	S17	E17	.339		5.4	10	SB	1	C		127		FDE
PALE	04	0337E	0339U	0341D	S12	E19	.336		5.6	40	SB	3	C		91		FDE
MANI	04	0347E	0347U	0350D	S17	E22	.408		5.8	30	SN	3	V		130	1.6	
TEHR	04	0423	0428	0439	N28	E31	.713		6.5	16	SB	1	C		63		UDE
MCMA	04	1411	1418	1428	S14	E08	.192	15570	5.2	17	SF		C	1418	40	.4	E
MCMA	04	1609E		1611D	S09	E07	.130	15570	5.2	2D	SF		P	1609	50	.5	E
MCMA	04	1634	1642	1721D	S15	E14	.281	15570	5.7	47D	SN		C	1642	50	.5	EL
HOLL	04	1640	1640	1652	S13	E13	.250		5.7	12	SN	3	C		35		U F
HOLL	04	1707	1707	1713	S13	E13	.250		5.7	6	SN	3	C		24		FDE
HOLL	05	1337	1407	1446	S13	E 1	.118	15570	5.6	69	1B	3	C		186		U F
MCMA	05	1403E		1428D	S18	E04	.214	15570	5.9	25D	SN		P	1408	150	1.7	BEU
MCMA	05	1403E		1428D	N37	W56	.926	15557	1.4	25D	1F		P	1408	100	2.1	B
HOLL	05	2027	2030	2034	S13	W 4	.135		5.6	7	SN	3	C		28		
HOLL	05	2231	2234	2244	S13	W 5	.145		5.6	13	SN	3	C		33		
HOLL	06	1646	1655	1719	S14	E75	.961		12.3	33	SB	3	C		38		FDE
PALE	06	1714E	1716U	1729	S17	E80	.980		12.7	15D	SB	3	C		39		DE
PALE	07	2200	2222	2227	S14	W31	.521		5.6	27	SN	3	C		78		DE
PALE	08	0121	0123	0124	S14	W33	.549	15570	5.6	3	1B	3	C		185		FDE
TEHR	08	0420E	0423	0441	S12	W34	.559		5.6	21D	SB	2	C		95		
ISTA	08	0835		0840	S15	E65	.901		13.2	5	SF						D
BUCA	08	0835		0850	S16	E65	.901		13.2	15	SN		C	0841	43	1.3	D
TEHR	08	0840E	0841U	0902	S18	E59	.853		12.8	22D	SB	2	C		95		DE
ISTA	08	0855		0858	S14	E56	.824		12.6	3	SF						D
MCMA	08	1342E	1352	1415	S22	W44	.709	15570	5.3	33D	SN		C	1352	50	.8	E
MCMA	08	1439	1440	1447	S22	W44	.709	15570	5.3	8	SF		C	1440	40	.7	E
MCMA	08	1443	1444	1500	S13	E50	.762	15587	12.4	17	SF		C	1444	70	1.2	E
PALE	08	1759	1818	1822	S14	W43	.681		5.5	23	SB	3	C		138		DE
HOLL	08	1815	1817	1820	S13	W43	.680		5.5	5	SB	3	C		125		
PALE	08	1833	1840	1847	S15	E58	.843		13.1	14	SN	3	C		27		DE
PALE	08	1837	1839	1841	S15	E48	.741		12.4	4	SN	3	C		19		DE
PALE	08	1846	1856	1947	S15	E47	.730		12.3	61	SN	3	C		89		DE
HOLL	08	1911	1912	1917	S13	W43	.680		5.6	6	SN	3	C		36		
PALE	08	1912	1914	1945	S14	E45	.705		12.2	33	SB	3	C		141		DE F
PALE	08	2007	2055	2055D	S14	W44	.693	15570	5.5	48D	1B	3	C		358		DE F
PALE	08	2007	2007	2055D	S14	W44	.693	15570	5.5	48D	1N	3	C		211		DE F
HOLL	08	2007	2007	2033	S13	W44	.692		5.5	26	SB	3	C		31		FDE
PALE	08	2018	2019	2051D	S18	E51	.777		12.7	33D	SN	3	C		65		DE
HOLL	08	2054	2055	2103	S13	W44	.692		5.6	9	SB	3	C		54		
HOLL	08	2153	2154	2158	S13	W45	.704		5.5	5	SB	3	C		50		
PALE	09	0001	0004	0009	S14	W46	.717		5.6	8	SB	3	C		128		FDE
TEHR	09	0552	0555	0558	S11	W48	.738		5.6	6	SB	2	C		95		DE F
TEHR	09	0841	0844	0850	S13	W51	.773		5.5	9	SN	2	C		95		U F
MCMA	09	1408	1418	1425	S19	E50	.768	15587	13.3	17	SF		C	1418	40	.7	E
MCMA	09	1529	1531	1535	S12	W59	.852	15570	5.2	6	SF		C	1531	30	.6	D
MCMA	09	1540	1540	1543	S12	W59	.852	15570	5.2	3	SN		C	1540	50	1.0	DV
MCMA	09	1543	1547	1625	S23	W18	.405	15582	8.3	42	SN		C	1547	80	1.0	E
MCMA	09	1552	1553	1617	N20	E68	.950	15589	14.8	25	SN		C	1553	30	.8	EH
MCMA	09	1554	1555	1604D	N15	E33	.631	15583	12.1	10D	SF		C	1555	15	.2	DH

Hα SOLAR FLARES

OCTOBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HOLL	09	1951	2026	2105D	S18	W61	.870	15566	5.3	74D	1B	3	C		155		U F
PALE	09	2010E	2022	2137	S14	W57	.833	15570	5.6	87D	1B	2	C		264		U F
TEHR	10	0451	0455	0500	S11	W48	.738		6.6	9	SB	1	C		95		FDE
TEHR	10	0451	0455	0500	S10	W61	.869		5.6	9	SB	1	C		95		FDE
TEHR	10	0956	1003	1012	N22	E61	.915		15.0	16	SB	2	C		127		UDE
MONT	10	1001	1002	1024	N20	E57	.883		14.7	23	SN		C	1002	60		E
MONT	10	1009	1024	1100D	S13	W70	.934		5.2	51D	SN		C	1024	80		E
TEHR	10	1030	1034	1045	S11	W64	.893		5.6	15	SB	2	C		95		FDE
MCMA	10	1321E		1353	S20	E65	.901	15591	15.4	32D	SN		C	1350	50	1.5	EK
MCMA	10	1535E	1542	1600D	S18	E64	.893	15591	15.4	25D	SF		C	1542	20	.5	E
MCMA	10	1607	1607	1608D	S11	W70	.935	15570	5.4	1D	SN		C	1607	20	.8	OV
MCMA	10	1610	1615	1622D	S18	E64	.893	15591	15.5	12D	SN		C	1615	15	.3	E
PALE	10	1734	1815	1858D	S24	W32	.578		8.3	84D	SB	3	C		127		FDE
MCMA	10	1750	1752	1758	S18	E64	.893	15591	15.5	8	SF		C	1752	20	.7	E
MCMA	10	1917	1918	1922	S22	W36	.616	15582	8.1	5	SF		C	1918	40	.6	E
PALE	10	2153	2153	2200D	S24	W34	.601		8.4	7D	SB	3	C		56		FDE
HOLL	10	2153	2154	2202	S24	W35	.613		8.3	9	SN	3	C		52		F
MONT	11	0836	0850	0956	S19	E32	.552		13.8	80	2B		C	0850	600		
HERS	11	0838E	0845	0907	S19	E40	.653	15587	14.4	29D	1F		P	0845	202	2.6	U
BUCA	11	0840	0848	0900D	S20	E33	.569	15587	13.8	20D	1N		C	0848	322	4.4	
TEHR	11	0843	0850	0938	S20	E30	.530	15587	13.6	55	2B	1	C		572		HDE
RAMY	11	1143E	1145U	1151	S19	E13	.304		12.5	8D	SB	2	C		28		F
WEND	11	1143		1157	S19	E11	.282		12.3	14	SF		V				
RAMY	11	1240E	1242U	1252	S19	E52	.788		15.4	12D	SB	3	C		36		
MCMA	11	1451E	1453	1555	S15	E13	.263	15587	12.6	64D	SN		C	1453	30	.3	D
RAMY	12	1156	1158	1212	S14	W90	1.000		5.7	16	SB	2	C		0		
RAMY	12	1322E	1324	1338	S18	E21	.397		14.1	16D	SB	3	C		40		F
WEND	12	1323E		1340	S19	E22	.418		14.2	17D	SN		P				E
MCMA	12	1325E		1342D	S19	E20	.391	15587	14.1	17D	SB		C	1326	90	1.1	E
MCMA	12	1325E		1330	S16	E36	.594	15591	15.3	5D	SF		C	1326	20	.3	D
MCMA	12	1440	1445	1455D	S11	W90	1.000	15570	5.9	15D	1B		C	1445			
RAMY	12	1442	1447	1452	S14	W90	1.000	15582	5.9	10	1B	3	C		0		
MCMA	12	1606	1609	1620	S23	E38	.643	15595	15.5	14	SN		C	1609	80	1.2	EL
HOLL	12	1607	1609	1615	S16	E37	.607		15.4	8	SN	3	C		83		U F
MCMA	12	1624	1629	1641	S21	W60	.863	15582	8.2	17	SN		C	1629	60	1.5	E
HOLL	12	1839	1845	1854	N22	W45	.794		9.4	15	SB	3	C		46		F
TEHR	13	0341	0345	0351	S23	W60	.864		8.7	10	SB	1	C		95		FDE
TEHR	13	0448	0451	0456	S23	W60	.864		8.7	8	SB	1	C		64		FDE
TEHR	13	0543	0547	0607	S16	W11	.245	15587	12.4	24	1B	1	C		254		U F
ISTA	13	0700E		0706	N16	W15	.456		12.2	6D	SN						D
TEHR	13	0729	0737	0743	S23	W61	.872		8.7	14	SB	2	C		95		FDE
MONT	13	0804	0808	0817	S22	W69	.927		8.2	13	SF		C	0808	60		E
TEHR	13	0836	0840	0846	S23	W61	.872		8.8	10	SB	2	C		95		FDE
TEHR	13	1155	1200	1208	S16	E11	.245		14.3	13	SB	1	C		159		FDE
WEND	13	1155		1204	S16	E00	.161		13.5	9	SN		V				
WEND	13	1158		1210	N17	W19	.504		12.1	12	SF		V				E
TEHR	13	1233	1246	1247D	S16	E10	.233	15587	14.3	14D	2B	1	C		509		U U
WEND	13	1236	1248	1344	S17	W01	.179	15587	13.5	68	2N		P		800	8.6	U
RAMY	13	1236E	1239U	1358D	S20	E 3	.235	15587	13.8	82D	1B	3	C		280		U F
HERS	13	1244E	1244D	1347	S20	E10	.283	15587	14.3	63D	1B		P	1251	317	3.5	U
HOLL	13	1409	1411	1423	S19	E 4	.223		13.9	14	SN	2	C		82		DE
WEND	13	1409		1420	S19	E07	.242		14.1	11	SF		V				E
RAMY	13	1410E	1412U	1431D	S20	E 5	.244		14.0	21D	SB	3	C		48		F
TEHR	14	0521	0524	0530	S15	W 2	.147		14.1	9	SB	1	C		95		UDE
MCMA	14	1533E		1616D	S17	W31	.529	15587	12.3	43D	SN		C	1546	70	.9	E
HOLL	14	2110	2113	2122	S20	E32	.555		17.3	12	SN	3	C		91		
PALE	14	2112E	2113	2125	S21	E27	.496		16.9	13D	SB	3	C		73		FDE
HOLL	14	2342	2344	2353D	S24	W87	.995		8.5	11D	SB	3	C		0		F
PALE	14	2343	2345	2348	S21	W84	.990		8.7	5	SN	3	C		12		DE
MANI	14	2346E	2348U	2353D	S20	W90	.999		8.2	7D	SN	3	V				
PALE	15	0250	0255	0258	N21	W10	.492		14.4	8	SN	3	C		53		F
TEHR	15	0310E	0400	0415	S21	W90	.999	15599	8.4	65D	1B	1	C		127		
TEHR	15	0350E	0400	0415	S21	W90	.999	15599	8.4	25D	1B	1	C		127		
MANI	15	0353E	0356	0410D	S20	W90	.999	15603	8.4	17D	1B	3	V				
TEHR	15	0856E	0900	0906	N21	W 9	.488		14.7	10D	SN	1	C		127		U U
TEHR	15	1015	1019	1022	S19	E25	.457		17.3	7	SB	1	C		64		FDE

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill of Disk	CORR. AREA Sq. Deg.	
TEHR	15	1125E	1130	1137	S17	E25	.445		17.4	12D	SB	1	C		127		FDE
HOLL	15	1608	1608	1624	S19	W25	.457		13.8	16	SB	3	C		121		
HOLL	15	1831	1833	1859	S22	W27	.502	15587	13.7	28	1N	3	C		291		U F
PALE	15	1831	1833	1905	S20	W35	.593	15587	13.1	34	1B	3	C		39D		U F
PALE	15	1831	1833	1834D	S20	W27	.490	15587	13.7	3D	2B	3	V		487		
RAMY	15	1831E	1834	1910D	S20	W33	.568	15587	13.3	39D	1B	3	C		250		F
HOLL	15	2024	2025	2030	N16	W50	.814		12.1	6	SN	3	C		24		F
HOLL	15	2052	2054	2104	N33	E61	.941		20.4	12	SB	3	C		27		F
HOLL	15	2059	2059	2105	N16	W51	.823		12.0	6	SN	3	C		19		F
MANI	16	0043E	0044	0050	N30	E64	.948	15598	20.8	7D	2N	3	V		300	6.0	
ISTA	16	0737E		0742	S22	E04	.269	15591	16.6	5D	2N						F
BUCA	16	0740	0741	0751	S21	E02	.246		16.5	11	SN		C	0741	171	2.0	
TEHR	16	0740E	0745	0749	S20	E 9	.272		17.0	9D	SB	1	C		95		FDE
TEHR	16	0807E	0809	0811	S18	W32	.546		13.9	4D	SB	1	C		65		FDE
ISTA	16	0808E		0813	S20	W34	.580		13.8	5D	SN						D
TEHR	16	0941	0950	0956	N26	E58	.907		20.8	15	SB	1	C		95		FDE
MCMA	16	1535	1536	1541D	N28	E55	.895	15598	20.8	6D	SN		C	1536	50	.9	D
HOLL	16	1538	1539	1542	N33	E51	.889		20.5	4	SN	3	C		27		
MCMA	16	1645E	1652	1734D	S18	W36	.599	15587	14.0	49D	SN		C	1652	80	1.1	EH
HOLL	16	1650	1741	1817	S22	W40	.661	15587	13.7	87	1B	3	C		318		U F
RAMY	16	1650E	1653	1715	S20	W34	.580		14.2	25D	SB	3	C		50		F H
PALE	16	1704	1706	1718	S20	W39	.643		13.8	14	SN	3	C		59		DE
PALE	16	1734	1741	1813	S21	W40	.658	15587	13.7	39	1B	3	C		229		U F
MCMA	16	1751E		1815D	S18	W37	.612	15587	14.0	24D	1B		C	1751	150	2.1	E
HOLL	16	1943	1944	1953	S22	W40	.661		13.8	10	SB	3	C		77		U F
HOLL	16	2142	2145	2159	N33	E48	.871	15598	20.5	17	1B	3	C		369		U F
PALE	16	2145E	2145U	2158	N31	E46	.848	15598	20.4	13D	1B	3	C		337		FDE
HOLL	16	2333	2335	0001	N36	E47	.879		20.5	28	SB	3	C		57		
PALE	16	2334	2341	0006D	N31	E47	.855		20.5	32D	SN	2	C		87		FDE
PALE	17	0022	0022	0025	S21	W43	.693		13.8	3	SN	2	C		22		DE
ISTA	17	0656E		0715D	S21	W42	.681		14.1	19D	SN						F
TEHR	17	0705E	0705U	0725D	S20	W40	.655		14.3	20D	SB	1	C		95		DE
ISTA	17	0710E		0722D	S20	W45	.713		13.9	12D	SN						F
MCMA	17	1321	1330	1402	S18	W48	.743	15587	14.0	41	SN		C	1330	80	1.3	E
RAMY	17	1352E	1355	1403	N31	E61	.937		22.2	11D	SB	3	C		32		F
MCMA	17	1413	1420	1445	N30	E42	.816	15598	20.7	32	SN		C	1420	30	.4	D
MCMA	17	1740E	1740	1754	S18	W52	.786	15587	13.8	14D	SN		C	1740	50	1.0	D
RAMY	17	1741E	1744	1748	S18	W50	.765		14.0	7D	SB	3	C		24		
RAMY	17	1751E	1756	1802	N13	W11	.386		16.9	11D	SN	3	C		20		
MCMA	17	1902	1925	1941D	S17	W49	.753	15587	14.1	39D	SF		C	1925	50	.9	E
HOLL	17	2035	2040	2044	N20	W46	.795		14.4	9	SN	3	C		21		
HOLL	17	2138	2139	2144	N20	E28	.623		20.0	6	SN	3	C		46		U
HOLL	17	2211	2221	2241	S22	W55	.820		13.8	30	SB	3	C		43		DE
PALE	17	2334	2353	0006D	N31	E47	.855		21.5	32D	SF	2	C		44		FDE
HOLL	18	0002	0004	0012D	S22	W56	.829		13.8	10D	SB	2	C		82		F
RAMY	18	1716	1720	1739	N31	E25	.705		20.6	23	SB	3	C		64		
MCMA	18	1717E		1735D	N29	E24	.679	15598	20.5	18D	SN		C	1720	60	.7	E
HOLL	18	1719	1720	1731	N31	E23	.693		20.4	12	SN	3	C		23		
PALE	18	2141	2148	2349	N31	E22	.687		20.6	128	SN	3	C		85		F
PALE	18	2141	2204	0039D	S28	E32	.600	15604	21.3	178D	1B	3	C		297		U
PALE	18	2146	2146	2154	S21	W25	.469		17.0	8	SB	3	C		29		DE
PALE	18	2222	2247	2340	S21	W29	.521		16.8	78	SB	3	C		49		DE
PALE	19	0104	0113	0132	S21	W30	.533		16.8	28	SB	3	C		58		DE
PALE	19	0133	0135	0140	N19	W61	.910		14.5	7	SN	3	C		35		DE
BUCA	19	0705		0735	N28	E74	.983		24.8	30	SF		C	0715	32		D
TEHR	19	0747	0751	0811	N29	E65	.951	15610	24.2	24	1B	1	C		159		F
BUCA	19	0750	0751	0803	N28	E74	.983	15610	24.9	13	1N		C	0751	107		
RAMY	19	1113	1113	1117	N27	E65	.948		24.3	4	SN	2	C		19		
RAMY	19	1149	1154	1225	N27	E65	.948		24.4	36	SB	3	C		87		F
RAMY	19	1204	1211	1225	N20	W67	.946		14.5	21	SB	3	C		21		
RAMY	19	1308	1321	1440	S22	W36	.613		16.8	92	SB	3	C		127		
RAMY	19	1407	1438	1519	N26	E65	.946		24.5	72	SB	3	C		65		
HOLL	19	1606	1610	1625	N27	E68	.961	15610	24.8	19	1B	3	C		120		DE
RAMY	19	1606	1608	1632	N26	E65	.946	15610	24.5	26	1B	3	C		112		DE
PALE	19	1708	1709	1800	S21	W39	.646		16.8	52	SB	3	C		57		DE
PALE	19	1755	1756	1807	N28	E65	.950		24.6	12	SB	3	C		25		DE
PALE	19	1958E	2011U	2021	S21	W41	.669		16.8	23D	SN	3	C		64		DE
PALE	19	2211E	2212	2243D	S21	W42	.681	15591	16.8	32D	1B	2	C		193		FDE

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	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MANI	20	0128E	0128U	0135D	S20	W42	.678		16.9	7D	SN	3	V		100	1.8	F
PALE	20	0201	0201	0209D	S28	E15	.428		21.2	8D	SB	3	C		108		FDE
PALE	20	0203	0203	0207	N32	E 7	.637		20.6	4	SN	3	C		22		FDE
PALE	20	0315E	0316U	0333D	N28	E57	.908		24.4	18D	SN	3	C		92		DE
TEHR	20	0719	0723	0733	S23	W41	.676		17.2	14	SB	2	C		127		
MCMA	20	1555	1557	1619	S22	W53	.800	15591	16.7	24	SN		C	1557	60	1.2	E
MCMA	20	1638	1706	1722	S20	W55	.817	15591	16.6	44	SB		C	1706			
MCMA	20	1638	1640	1722	S20	W55	.817	15591	16.6	44	SB		C	1640	50	1.1	EK
MCMA	20	1745	1749	1757	S20	W55	.817	15591	16.6	12	SB		C	1749	50	1.1	E
MCMA	20	1754	1756	1808	S31	E06	.417	15604	21.2	14	SN		C	1756	40	.5	E
PALE	20	1754E	1757	1804	S28	E 7	.375		21.3	10D	SN	3	C		31		DE
HOLL	20	1810	1813	1819	S22	W51	.781		16.9	9	SN	3	C		51		
PALE	20	1840	1843	1847	S23	W54	.811		16.7	7	SN	3	C		31		DE
PALE	20	2010	2014	2050D	S23	W55	.820	15591	16.7	40D	1B	3	C		151		DE F
PALE	20	2020	2023U	2049D	N28	E48	.849		24.4	29D	SB	3	C		79		DE
HOLL	20	2138	2154	2159	S22	W53	.800		16.9	21	SN	3	C		18		DE
HOLL	20	2138	2144	2159	S22	W53	.800	15591	16.9	21	1B	3	C		185		DE
MANI	21	0300E	0300U	0314D	N27	E45	.822		24.5	14D	SN	3	V		100	1.5	F
RAMY	21	1318	1336	1341	N15	E10	.409		22.3	23	SN	3	C		20		
RAMY	21	1324	1358	1500	S23	W67	.914	15591	16.5	96	1B	3	C		194		FDE
MCMA	21	1337	1341	1430D	N32	W08	.640	15598	21.0	53D	SN		C	1341	30	.3	D
MCMA	21	1407E		1423D	S24	W70	.933	15591	16.3	16D	1N		C	1413	80	3.0	BE
MCMA	21	1423E	1432	1453	S32	W05	.429	15604	21.2	30D	SN		C	1432	35	.4	E
MCMA	21	1551	1620	1725D	N32	W11	.648	15598	20.8	94D	1N		C	1620	200	2.4	
MCMA	21	1551	1602	1725D	N32	W11	.648	15598	20.8	94D	1N		C	1602	175	2.1	EU
RAMY	21	1553	1601	1659	N29	W13	.618	15598	20.7	66	1B	3	C		250		F
RAMY	21	2028E	2031	2038	N19	E90	1.001		28.6	10D	SB	3	C		0		
TEHR	22	0602	0606	0638	S22	E20	.413		23.8	36	SB	2	C		150		H
ISTA	23	0850		0907D	S15	E90	.999		2.1	17D	SN						A
MANI	24	0649E	0650	0653D	S17	E65	.899		1.2	4D	SF	3	V		50	1.0	
MCMA	24	1650	1651	1707D	N23	E04	.506	15610	25.0	17D	SF		C	1651	40	.4	E
PALE	24	2016	2017	2025	N24	E 2	.518		25.0	9	SB	3	C		115		FDE
MANI	25	0206E	0206U	0218D	N28	W06	.582		24.6	12D	SN	3	V		80	.9	
MONT	25	1046	1047	1051	N24	W06	.525		25.0	5	SN		C	1047	70		
TEHR	25	1146	1149	1227	S16	E70	.933		2.7	41	SB	2	C		95		
TEHR	25	1155E	1157U	1235	S10	E90	1.000	15620	4.2	40D	2B	2	C		318		
PALE	25	2347	2349	2355	N27	W62	.934		21.3	8	SN	2	C		61		DE
PALE	26	1931E	1932U	2005D	S17	E48	.741		2.4	34D	SB	3	C		71		DE
MCMA	27	1718	1722	1743	N18	E18	.512	15619	1.1	25	SN		C	1722	80	1.0	E
PALE	27	1726E	1726U	1740	N19	E14	.494		28.8	14D	SN	1	C		98		
PALE	27	2037	2038	2050D	N19	E12	.481		28.8	13D	SB	2	C		186		FDE
PALE	27	2112	2116	2117	N19	E12	.481		28.8	5	SN	3	C		23		FDE
PALE	27	2229	2232	2300	S19	E26	.468	15620	1.9	31	1B	3	C		216		DE F
TEHR	28	0425	0430	0436	S15	W30	.506		25.9	11	SB	4	C		64		FDE
TEHR	28	0528E	0528U	0543	N18	E10	.455		1.0	15D	SB	4	C		159		FDE
MONT	28	0938	0940	0946	N19	E08	.460		1.0	8	SN		C	0940	80		E
TEHR	28	0940	0943	0947	N18	E10	.455		1.2	7	SB	1	C		190		FDE
HOLL	28	1557	1604	1655	N20	E 1	.457	15619	28.7	58	2B	3	C		612		U F
HOLL	28	2011	2013	2024	N23	W58	.900		24.5	13	SB	4	C		61		F
HOLL	28	2318	2326	2351	N18	W 4	.431		28.7	33	SN	2	C		100		F
PALE	28	2320	2328	2351	N18	E 1	.426		1.0	31	SB	3	C		165		DE
MANI	28	2333E	2333U	2347D	N19	W02	.443		28.8	14D	SN	2	P		150	1.5	F
RAMY	29	1323E	1325	1339	N21	W13	.515		28.6	16D	SB	2	C		26		
RAMY	29	1402	1405	1414	N21	W15	.527		28.5	12	SB	3	C		68		F
RAMY	29	1537	1539	1544	S 9	E52	.782		5.6	7	SF	3	C		19		F
RAMY	29	1624	1629	1701	S18	E 1	.188		1.8	37	SB	3	C		78		F
MCMA	29	1624	1628	1655	S20	E04	.231	15620	2.0	31	SN		C	1628	30	.3	D
HOLL	29	1627	1629	1641	S18	E 1	.188		1.8	14	SN	3	C		28		F
RAMY	29	1744	1746	1755	N18	W13	.474		28.8	11	SN	3	C		28		
MONT	30	0815	0818	0826	S16	W62	.876		25.7	11	SN		C	0818	100		
RAMY	30	1252	1255	1300D	S17	W66	.906		25.6	8D	SB	4	C		74		
MCMA	30	1821	1825	1907	S26	W24	.494	15621	1.0	46	SF		C	1825	75	1.0	E

Hα SOLAR FLARES

OCTOBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MONT	31	0905	0913	0937D	N19	W34	.676		28.8	32D	SN		C	0913	220		
MONT	31	1027	1033	1100D	S28	W31	.587		1.1	33D	1N		C	1033	250		
WEND	31	1034E		1058	S26	W30	.562		1.2	24D	SN		P				L
MCMA	31	1332	1335	1358	N20	W36	.703	15619	28.9	26	SN		C	1335	40	.5	E
MCMA	31	1644	1647	1659	N18	W34	.669	15619	1.1	15	SF		C	1647	50	.6	E
MCMA	31	1720	1725	1735	N18	W34	.669	15619	1.2	15	SF		C	1725	50	.6	E
MCMA	31	1929	1934	1945	S29	E56	.838	15635	8.0	16	SF		C	1934	40	1.0	E

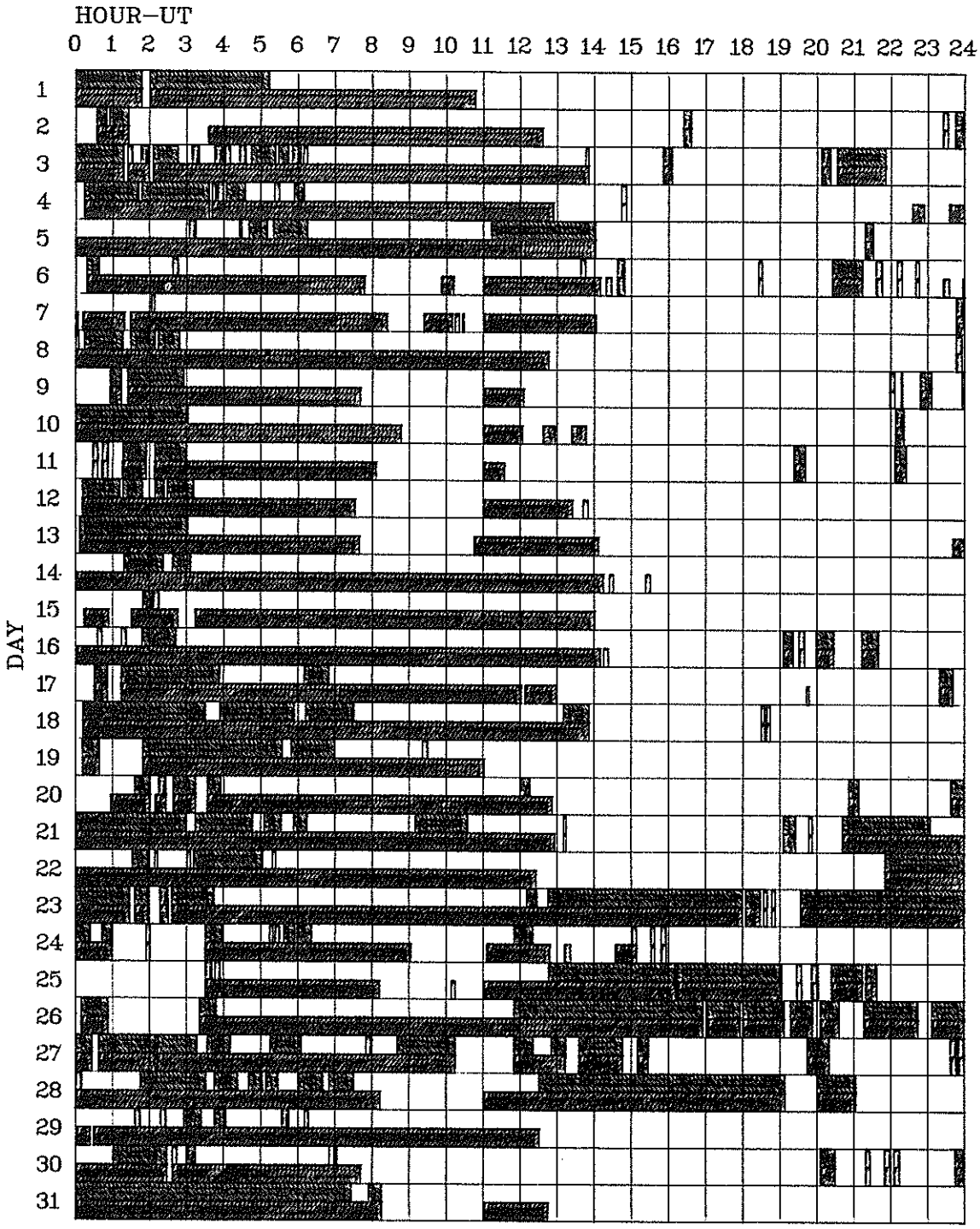
"Remarks":

A = Eruptive prominence whose base is less than 90° 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 a 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 calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα 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

OCTOBER 1978



Observatories included in total patrol:

Athenes	Holloman	Manila	Monte Mario	Ramey	Upice
Bucharest	Istanboul	McMath-Hulbert	Palehua	Tehran	Wendelstein
Herstmonceux	Kandilli				

Times of no flare patrol are shown by the shaded area for each day, divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

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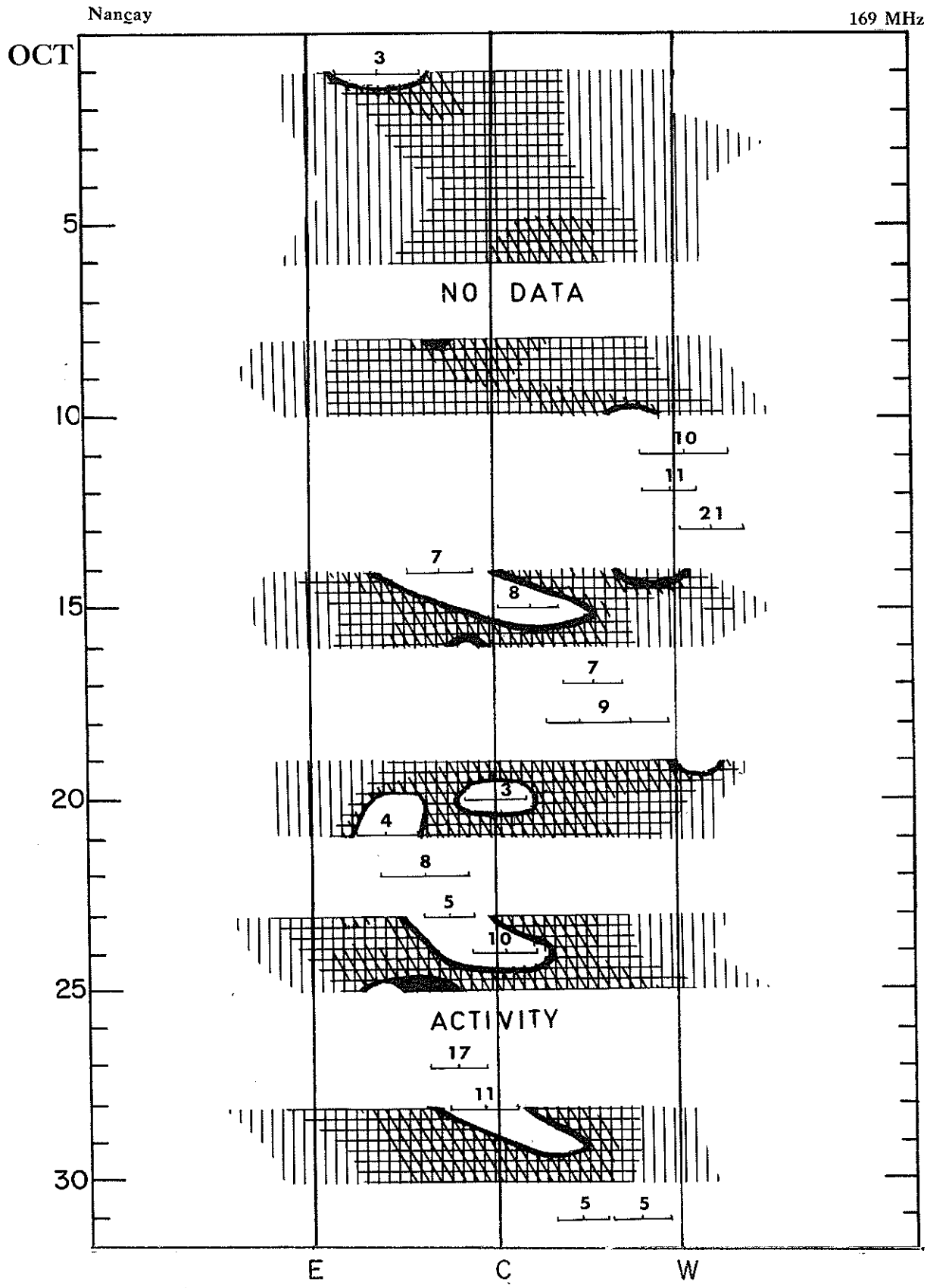
Oct 78

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

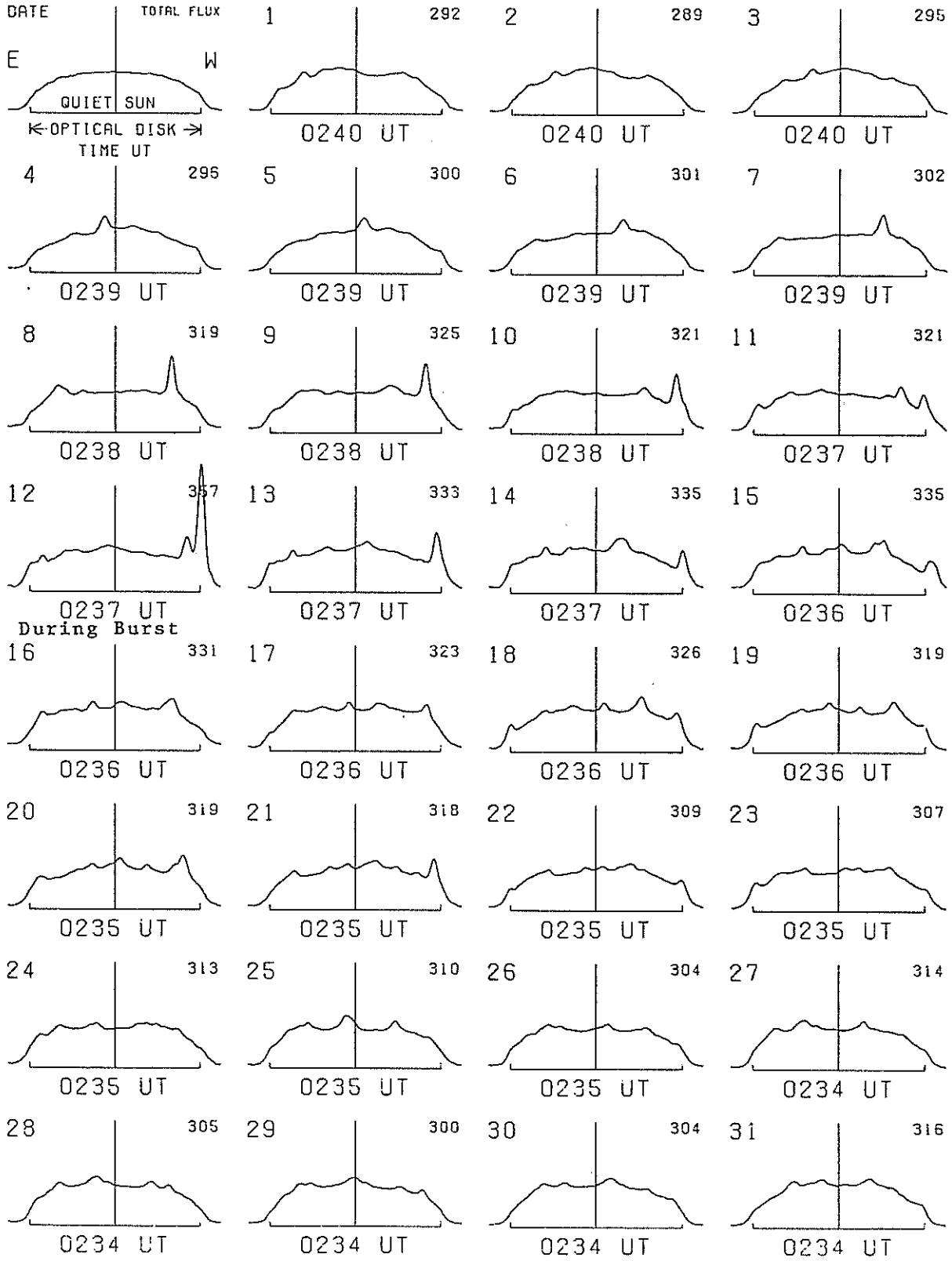
OCTOBER 1978



EAST-WEST SOLAR SCANS
OCTOBER 1978

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



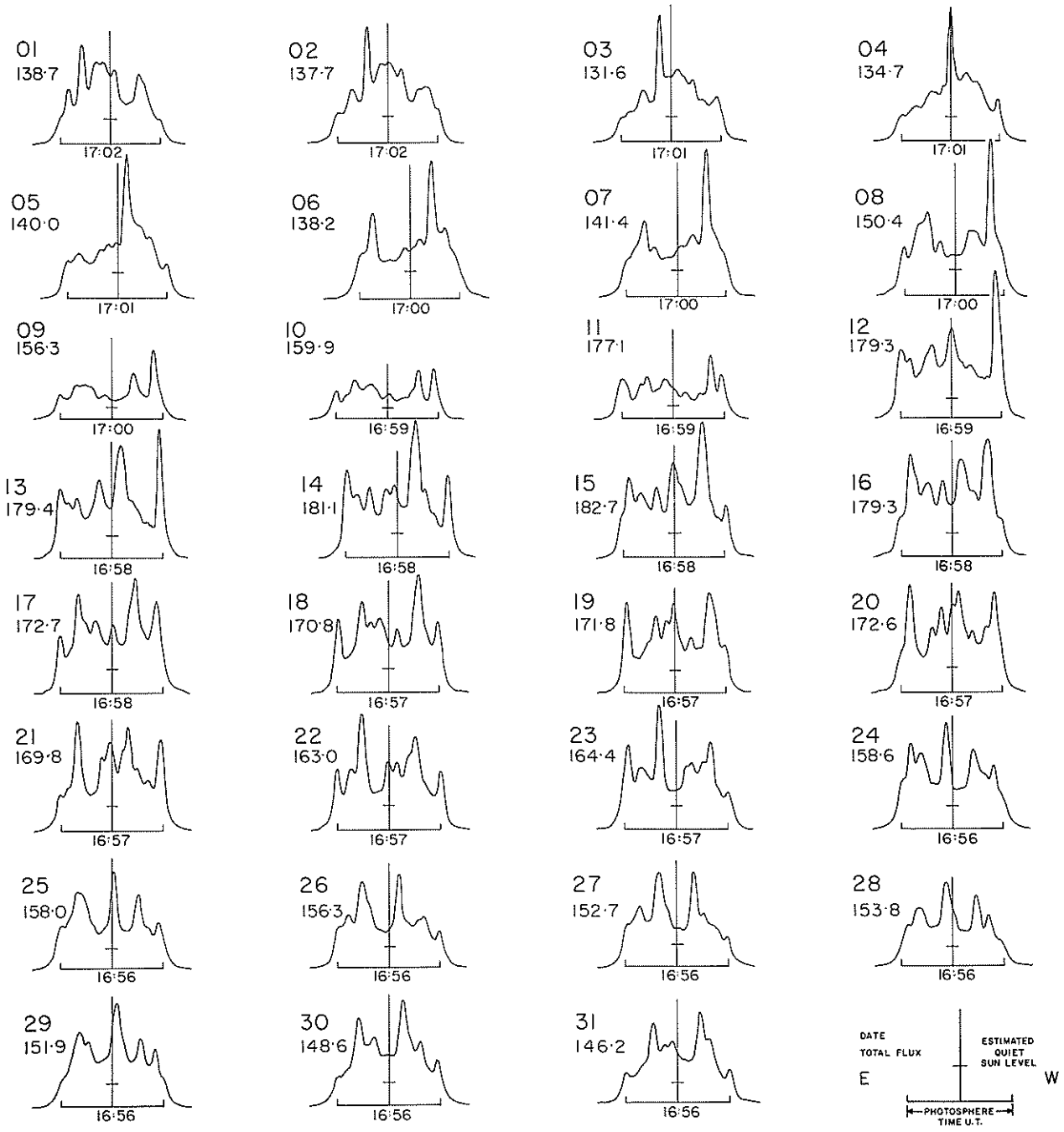
22
Oct 78

EAST-WEST SOLAR SCANS

OCTOBER 1978

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

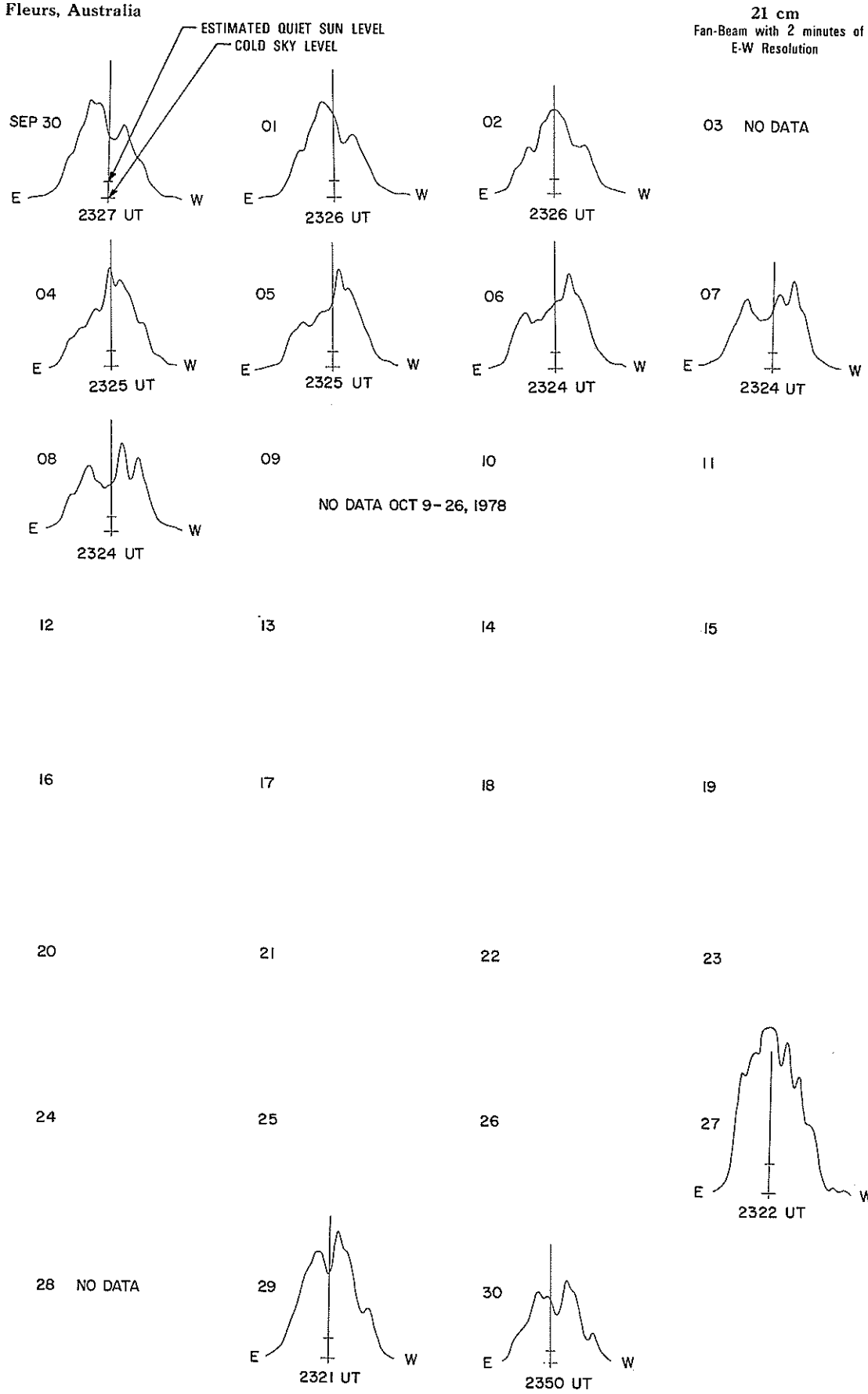


EAST-WEST SOLAR SCANS

OCTOBER 1978

Fleurs, Australia

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



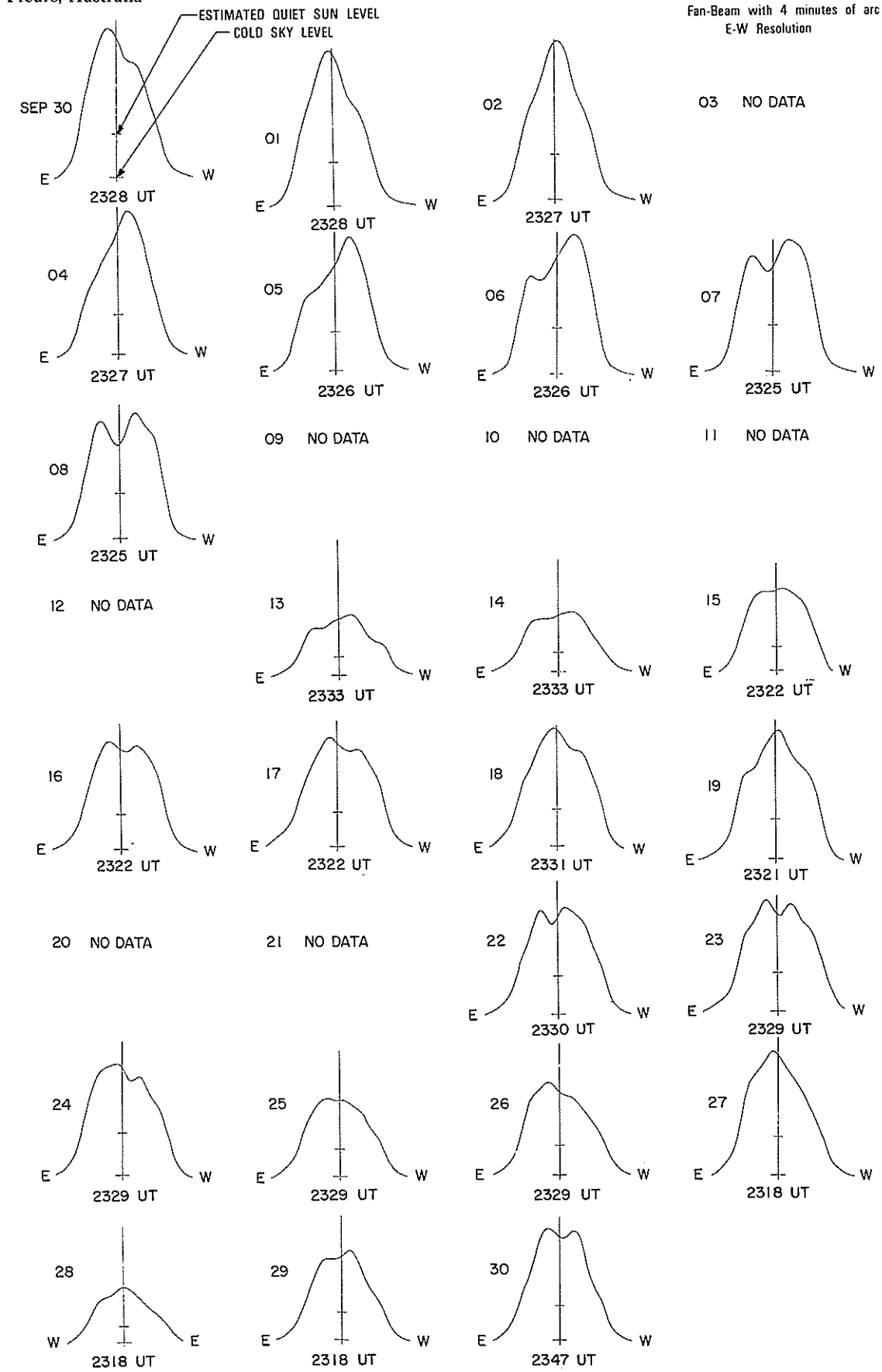
24
Oct 78

EAST-WEST SOLAR SCANS

OCTOBER 1978

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1978

OCT 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
1	8800	MANI	4	S/F	0717.1	0719.5	14.1	201.6	67.2		NT
3	2800	OTTA	21	GRF	1420	1429	120	4	2		
	2800	OTTA	45	C	1423	1427	5.5	3.8	1.8		
	2695	SGMR	3	S	1522.1	1523.3	2.9	16.7	6.7		
	2800	OTTA	240	R	1700	1715	15	3.6	1.8		
	2800	OTTA	40	F	1753	1802.5	35	7.6			
	2800	OTTA	20	GRF	1940	1955	35	1.4	.7		
4	2800	OTTA	1	S	1528	1529	2	1.4	.7		
	2800	OTTA	23	GRF	1630	1655	70	4	2		
	2800	OTTA	1	S	1638	1641	10	5	1.8		
	2695	BOUL	1	S	1639	1641.5	7.5	7	2		
	2695	PENT	20	GRF	2250	2330	60	2.4	1.4		
5	2695	MANI	3	S	0631.5	0632.2	1.8	73.8	24.6		
	8400	BERN	3		0631.6	0632.5	4	27			OPR
	2800	OTTA	21	GRF	1250	1342	280	12.5	4.9		
	2800	OTTA	1	S	1303.5	1304	2	2.4	1		
	2800	OTTA	4	S/F	1402.2	1405	28	92	24		
	8400	BERN	20		1403	1405.6	57	36			OPR
	8800	SGMR	3	S	1403.1	1405.2	16.9	27.3	10.9		3S,SWF
	2695	SGMR	3	S	1403.3	1405.3	20.7	106	42.4		3S,SWF
	2695	BOUL	20	GRF	1403.5E	1406	24.5U	93	31		
	2800	OTTA	1	S	1942	1944	4	2.8	1		
	2800	OTTA	1	S	1948	1949.2	3	9.2	2		
	2695	PENT	20	GRF	2220	2235	70	2.4	1.6		
6	2800	OTTA	20	GRF	1310	1323	40	2.8	1.4		
	2800	OTTA	27A	RF	1455		250	2	1.7		
	2800	OTTA	24	R	1455	1515	20	2	1		
	2800	OTTA	24P	R	1515		205	2			
	2800	OTTA	3	S	1642.8	1644.5	5	12.4	9.8		
	2800	OTTA	30	PBI	1647.8	1647.8	25	39	14.2		
	2800	OTTA	2	S/F	1652.5	1655	8	5.6	2.8		
	2695	SGMR	3	S	1652.5	1655.1	9.5	36	14.4		3S,SWF
	8800	SGMR	3	S	1652.5	1654.7	9.5	91.3	36.5		3S,SWF
	2800	OTTA	26	FAL	1840	1905	25	-2	-1		
	2800	OTTA	3	S	2119.7	2120	1	27	7		
7	2800	OTTA	240	R	1510	1630	40	2.4	1.2		
	2800	OTTA	1	S	1732	1735	6	1	.5		
	2695	PENT	240	R	1910	2135	145	6.2	3.1		
	2695	PENT	20	GRF	2205	2212	55	2	1		
8	2695	MANI	4	S/F	0834.8	0835.7	3	50.4	16.8		
	8800	MANI	4	S/F	0834.8	0835.8	2.4	74.9	25		I
	2800	OTTA	20	GRF	1310		50 D	1.8			
	2800	OTTA	21	GRF	1437	1515	70 D	2.6			
	2800	OTTA	1	S	1441.5	1443	3	1.4	.6		
	2800	OTTA	1	S	1836.5	1837.5	1.5	1.6	.8		
	2800	OTTA	21	GRF	1845	2100	360 D	18.2			
	2695	PENT	1	S	2017	2017.5	1.5	2.6	1.3		
	2695	PENT	3	S	2425	2425.8	4	37.6	9.4		
9	8900	BERN	4		1130.7	1131	.9	21			
	8400	BERN	4		1130.7	1131	.9	23			
	2800	OTTA	1	S	1247	1250	5	1.4	.7		
	2800	OTTA	20	GRF	1540	1600	100	2.4	1.2		
	2800	OTTA	20	GRF	1800	1835	95	2.2	1.6		
	2800	OTTA	2	S/F	1939.2	1939.5	1.5	1.2			
	2800	OTTA			1945	1951	11.5	108			
	2800	OTTA	45	C	1945	2023.5	62	140	73		
	2695	BOUL			1949.5E	2033		201	67		
	2695	BOUL			1949.5E	2024.5		209	70		
	2695	BOUL	21	GRF	1949.5E	2016.5	84.5D	209	70		
	2695	BOUL			1949.5E	2002.5		177	59		
	2695	BOUL			1949.5E	1952		177	59		
	8800	SGMR	45	C	1949.6	2015.5		195			2,CONT,SWF
	8800	SGMR	45	C	1949.6	2001.8		220			2,CONT,SWF
	8800	SGMR	45	C	1949.6	1951.2	60.4	415	166		2,CONT,SWF
	2695	SGMR	45	C	1950.2	1951.2	59.1	128	66.4		2,CONT,SWF
	2695	SGMR	45	C	1950.2	2015.5		166			2,CONT,SWF
	2695	SGMR	45	C	1950.2	2001.8		134			2,CONT,SWF
	2800	OTTA			1956.5	2001.9	11.5	108			
	2800	OTTA			2008	2015.5	12	137			
	2800	OTTA			2020	2023.5	27	140			
	2800	OTTA	30	PBI	2047	2047	170	18.2	8.2		
	2800	OTTA	20	GRF	2057	2102	16	14.6	7		
10	8400	BERN	3		0915.1	0916.6	8	12			
	8400	BERN	45		1007	1010.7	12	48			
	8400	BERN	20		1028.1	1034.5	62	21			
	2800	OTTA	23	GRF	1230	1320	260	3.2	1.6		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1978

OCT 1978	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$ PEAK	MEAN	INT	REMARKS
	2800 OTTA	1 S	1442	1443	2	1.2	.6		
	2800 OTTA	1 S	1533	1533.7	1	2.2	1.1		
	2800 OTTA	240 R	1810	1845	35	3.2	1.6		
	2800 OTTA	1 S	1910	1912	5	7	2		
	2800 OTTA	20 GRF	1943	1950	20	2.6	1.3		
	2800 OTTA	20 GRF	2010	2030	40	1.6	.8		
	2695 PENT	22 GRF	2118	2220	110	3.6	1.8		
11	8400 BERN	20	0822.5	0900.3	90	17			OPR
	8900 BERN	20	0822.5	0900.3	90	16			OPR
	2800 OTTA	20 GRF	1350	1530	280	10.2	6.1		
	2695 PENT	20 GRF	2055	2112	95	2.2	1.1		
	2695 PENT	1 S	2308.8	2309.3	1	4.6	2.3		
12	2800 OTTA	20 GRF	1320	1325	30	1.6	.8		
	8400 BERN	3	1438.7	1439.2	1.5	22			
	2800 OTTA	1 S	1454	1456	6	4	2		
	2800 OTTA	22 GRF	1533	1537.5	22	13	6.5		
	2800 OTTA	27 RF	1835		140	3.2	2.9		
	2800 OTTA	24 R	1835	1843	8	3.2	1.1		
	2800 OTTA	24P R	1843		112	3.2			
	2800 OTTA	26 FAL	2035	2055	20	-3.2	-1.6		
	2695 PENT	1 S	2256	2257	2	3.2	2.2		
13	2695 MANI	4 S/F	0539.2	0541.7	5.7	15.5	5.2		
	8400 BERN	20	0758.2	0804	58	15			
	8400 BERN	3	1157.4	1158.1	5	45			
	8800 SGMR	3 S	1157.4	1158.2	2.6	60	18		
	2695 SGMR	3 S	1158	1158.8	8	77	23.1		
	2800 OTTA	45 C	1234	1237.8	14	220			
	8400 BERN	4	1235.5	1238	75	490			
	2695 SGMR	3 S	1235.6	1236.5	24.4	384	150		3G,4,CONT,
	8800 SGMR	3 S	1235.6	1238.1	25.8	492	200		3G,4,CONT,
	2800 OTTA	29 PBI	1248	1248	112	17.2	6.4		
	2800 OTTA	1 S	1645	1646	5	1.6	.8		
	2800 OTTA	20 GRF	1920	1955	135	8.6	4.4		
	2800 OTTA	1 S	2130.3	2130.6	1	6	2.8		
14	8400 BERN	3	0648.5	0651.1	6	78			
	8900 BERN	3	0648.5	0651.1	6	62			
	2695 MANI	3 S	0650	0651	3	29.4	9.8		
	8400 BERN	3	1244.4	1246	4	19			
	8900 BERN	3	1244.4	1246	4	18			
	2800 OTTA	1 S	1245	1246.8	7	3.4	1.5		
	2800 OTTA	240 R	1435	1540	65	6.6	3.3		
	2800 OTTA	20 GRF	1840	1935	100	4.2	2.1		
	2800 OTTA	21 GRF	2105	2150	130	6.6	3.6		
	2800 OTTA	40 F	2108	2101	3.2	24			
	2695 MANI	4 S/F	2332.2	2334	7.6	65.6	21.8		
	2695 BCUL		2332.5E	2335.5		91	30		
	2695 BCUL	45 C	2332.5E	2334	11 D	91	30		
	8800 MANI	4 S/F	2332.7	2335.1	7.3	182.4	60.8		
	2695 PENT	4 S/F	2332	2334.8	12	68	22.6		
15	8400 BERN	23	0931.1	1028.1	110	24			
	2800 OTTA	3 S	1607.5	1608.1	4.5	42	10		
	2695 BCUL	3 S	1608 E	1609	1.5D	16	5		
	2695 BCUL	29 PBI	1609.5	1609.5	3.5D	11	4		
	2800 OTTA	29 PBI	1612	1612	78	3.4	1.7		
	2800 OTTA	21 GRF	1829	1840	75	12.4	6.2		
	2800 OTTA	40 F	1830.5	1833.5	3	10.2			
	2800 OTTA	1 S	1949	1950	2	2.4	1.7		
	2800 OTTA	20 GRF	2005	2056	85	4.6	2.2		
16	2800 OTTA	1 S	1446.5	1448	10	2.2	1		
	2800 OTTA	20 GRF	1650	1651.5	15	3	1.5		
	2800 OTTA	20 GRF	1710	1738	110	8.8	4.4		
	2800 OTTA	1 S	1951	1953	10	2.2	1.1		
	2800 OTTA	47 GB	2142	2145.2	5	586	66		
	2695 PENT	29 PBI	2148	2148	15	4.4	2.2		
17	2695 PENT	240 R	2134	2136	2	2.6	1		
18	2800 OTTA	1 S	1816.2	1816.8	1	2.2	1.1		
	2800 OTTA	1 S	2052	2053.5	3.5	1.6	.8		
	2695 PENT	1 S	2159.5	2201.5	5	6.2	2		
19	2695 MANI	4 S/F	0407.4	0408.3	3.2	30.8	10.3		
	8400 BERN	4	0748.1	0750.6	6.5	33			
	2800 OTTA	21 GRF	1330	1500	150	8			
	2800 OTTA	1 S	1352	1354	4	2.8	1.4		
	8400 BERN	3	1437.1	1437.7	7	24			
	8900 BERN	3	1437.1	1437.7	7	25			
	2800 OTTA	1 S	1437	1437.8	3	3.4	1.2		
	2800 OTTA	1 S	1755.5	1756.2	1.5	2.8	1.4		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1978

OCT 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$ PEAK	MEAN	INT	REMARKS
	2695	PENT	240 R	2020	2110	50	3.2			
20	8400	BERN	3	1135.5	1136.2	2.5	12			
	8900	BERN	3	1135.5	1136.2	2.5	10			
	8400	BERN	3	1228.3	1234.9	13	13			
	8900	BERN	3	1228.3	1234.9	13	12			
	2800	OTTA	8 S	1609.5	1609.8	.5	2.4	1.2		
	2800	OTTA	1 S	1644.5	1645	1	2	1		
	2800	OTTA	20 GRF	1656	1712	70	3.2	1.8		
	2800	OTTA	20 GRF	1830	1840	95	2.8	1.4		
21	2800	OTTA	23 GRF	1328	1422	120	7	3.5		
	2800	OTTA	1 S	1357	1357.5	3	2.8	1.2		
	2800	OTTA	46F C	1540	1601	7	58	17		
	8400	BERN	46	1556.5	1601	10	60			
	8900	BERN	46	1556.5	1601	10	57			
	2695	BOUL	28 PRE	1557.5E	1558.5U	1.5D	15	5		
	2695	BOUL	45 C	1559 E	1600	4 D	127	42		
	2695	BOUL		1559 E	1601.5		127	42		
	2695	BOUL	29 PBI	1603	1603	1 D	21	7		
	2800	OTTA	30 PBI	1603	1603	60	11.6	5.8		
	2800	OTTA	1 S	1606	1607	2	2.4	1.2		
22	2800	OTTA	20 GRF	1420	1510	110	1.8	1.2		
	2800	OTTA	20 GRF	1805	1810	15	1.4	.7		
	2800	OTTA	20 GRF	1835	1840	15	1.8	.9		
	2800	OTTA	1 S	1937.5	1937.8	1.5	1.8	.9		
	2695	PENT	20 GRF	2050	2255	110	4.8	2.2		
23	2695	MANI	3 S	0323	0324.1	1.7	11.6	3.8		
	2800	OTTA	1 S	1246	1246.2	1	5.2	2.6		
	2800	OTTA	2 S/F	1657	1701	7	3.4			
	2800	OTTA	20 GRF	1940	1945	20	2.2	1.1		
	2695	PENT	20 GRF	2220	2225	15	2	1		
24	2800	OTTA	1 S	1329	1329.2	2	2.6	1		
	2800	OTTA	22 GRF	1735	1800	30	4	1.9		
	2800	OTTA	21 GRF	2014	2110	155	3.6	1.9		
	2695	PENT	1 S	2015	2016	1.5	4.4	2.2		
25	2800	OTTA	40 F	1420.5	1422	4.5	17			
	2800	OTTA	21 GRF	1805	1840	135	3	1.6		
	2800	OTTA	1 S	1811.8	1812.1	2.5	2	1		
26	2800	OTTA	40 F	1931.9	1938.5	7.7	42			
	2695	PENT	20 GRF	2150		100 D	5.8			
27	2800	OTTA	23 GRF	1715	1720	150	6.6	3		
	2800	OTTA	1 S	1720	1720.1	2	2.6	1.3		
	2800	OTTA	1 S	2034	2035.2	6	3	1.5		
	2695	PENT	20 GRF	2225	2229	35	3.6			
28	2800	OTTA	4 S/F	1557.2	1601	9.8	32.4	10.8		
	2695	SGMR	3 S	1557.7	1600.4	7.2	45.9	13.8		SWF
	8800	SGMR	3 S	1559.3	1603.2	5.2	101.6	30.5		SWF
	2800	OTTA	29 PBI	1607	1607	160	5.2	2.2		
	2695	PENT	21 GRF	2007	2120	170	3	2		
	2695	PENT	3 S	2011	2011.5	2	15.6	5.6		
29	2800	OTTA	20 GRF	1310	1330	90	4.6	2.6		
	2800	OTTA	20 GRF	1623	1640	100	1.6	1		
30	2695	PENT	1 S	2118.9	2119	1	5.2	2.6		
31	2695	PENT	20 GRF	1928	1929	22	2.4	1.2		

Observatories:

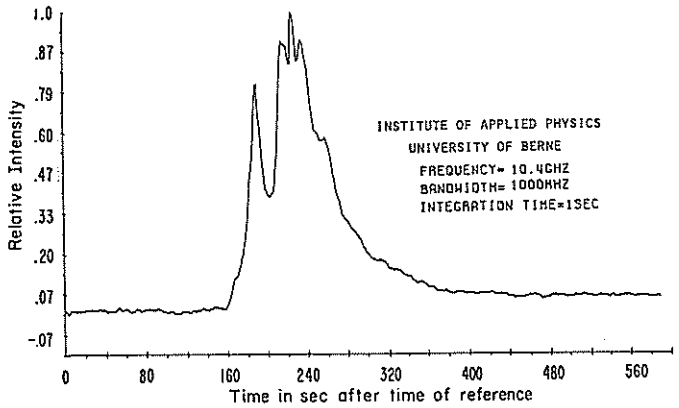
BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

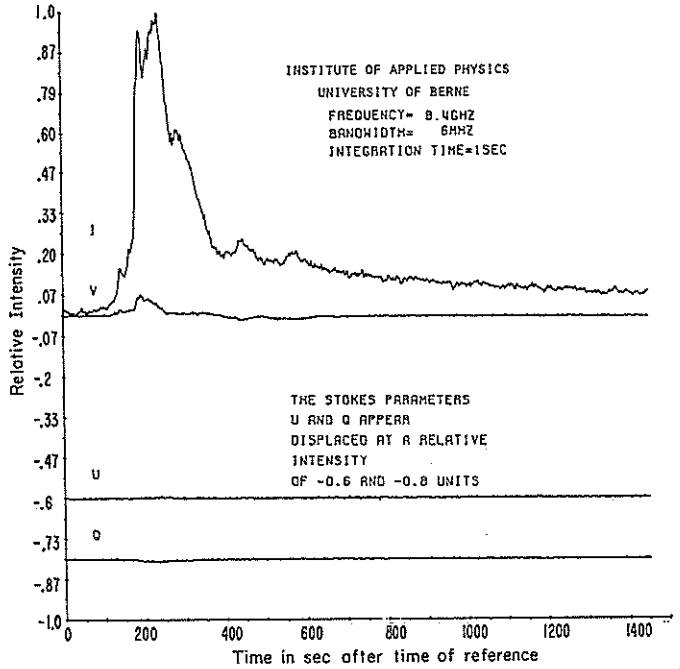
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of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

SELECTED SOLAR NOISE BURSTS

OCTOBER 1978



8 OCT 1978 0832 UT
1 UNIT = 114 SFU



13 OCT 1978 1234 UT
1 UNIT = 498 SFU

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1978

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/ 1	.001	B	.003	.002	M	.001	B	.521	.105	.021	.008	.003	-.002	B	B	B	B	B	B	.001	.001	B	B	B	.029
10/ 2	B	B	B	B	M	B	B	B	B	B	B	B	- B	B	B	B	B	B	B	B	B	B	B	B	B
10/ 3	B	B	B	B	M	B	B	.001	.006	B	B	B	- B	B	.003	B	B	.005	.008	.002	.001	B	B	B	.001
10/ 4	B	.002	B	.003	M	B	B	B	B	B	B	B	- B	B	B	B	.001	B	B	M	B	B	B	B	B
10/ 5	B	B	B	.001	M	.002	.002	.215	.011	.007	.003	.142	-.002	.009	.012	.002	.002	.002	.002	.013	.071	B	B	B	.013
10/ 6	B	B	B	B	M	.001	B	B	M	M	M	M	- M	.001	B	.001	.103	.101	B	B	B	B	B	B	.012
10/ 7	B	.001	B	B	M	B	B	B	B	B	B	B	- B	B	B	.001	B	.001	B	.001	B	B	B	B	B
10/ 8	.003	.002	.004	.003	.009	.001	.001	.002	.013	.002	.002	.002	-.003	.003	.002	B	B	.001	.003	.004	.039	.019	.009	.004	.005
10/ 9	.006	M	.001	.001	M	.001	.001	.002	.002	.003	.002	.005	-.001	B	B	.001	.001	.002	.003	.059	.604	.088	.015	.009	.036
10/10	.006	.003	.002	.001	B	.003	.003	.010	.006	.001	.039	.007	-.002	.002	.002	.002	.001	B	.002	.002	.002	.002	.002	.001	.004
10/11	.001	.002	B	.002	.001	.007	.011	.006	.010	.011	.003	.002	-.001	.003	.009	.009	.001	.001	.001	.001	.001	.002	B	.005	.004
10/12	.002	.024	.109	.073	.018	.006	.002	.002	.002	.002	.002	.002	-.002	.002	.011	.077	.045	.017	.010	.007	.007	.002	B	.002	.017
10/13	.002	.002	.002	.002	B	M	M	M	M	M	M	M	- M	.012	.005	.002	.007	.004	.004	.005	.004	.002	.002	.003	.004
10/14	.002	.005	.002	.031	.004	.004	.044	.049	.010	.004	.002	.004	-.026	.004	.013	.022	.005	.001	.004	.006	.005	.080	.016	.503	.035
10/15	.168	.028	.037	.040	.096	.043	.169	.027	.007	.607	.365	.051	-.035	.055	.011	.002	.005	.002	.016	.120	.067	.002	.004	.002	.061
10/16	.011	.024	.023	.024	.003	.003	.002	.013	.011	.006	.002	.002	-.002	.002	.002	B	.003	.008	.002	.002	.001	.034	.002	.002	.008
10/17	.002	B	B	.002	.001	.002	.004	.002	.001	B	B	.001	-.004	.002	.002	.001	.001	.002	.002	.001	.001	.001	.001	.001	.002
10/18	.004	.005	.001	B	B	B	B	B	B	B	.002	.001	- B	.001	B	B	B	B	B	B	B	.001	.010	B	.002
10/19	.001	.001	B	.001	.041	.002	.001	.045	.007	B	B	.015	-.004	.003	.010	.003	.009	.004	.002	.001	.002	.002	.002	.002	.007
10/20	.002	.015	.006	.003	.002	.002	.003	.016	.010	.004	.005	.006	-.004	.002	B	.002	.003	.005	.003	.002	.003	.004	.001	.001	.004
10/21	.002	.002	.015	.005	.001	.003	.010	.002	.001	.002	B	B	- B	.003	.008	.001	.019	.003	.003	.004	.012	.002	.001	.001	.004
10/22	B	.003	.001	.001	B	B	.021	.001	B	B	.002	B	- B	B	B	B	.001	B	B	.002	.026	.003	.002	.002	.003
10/23	.001	B	.003	.002	B	M	B	B	B	.005	.002	.002	-.002	B	B	.001	.002	.002	B	.001	.001	B	.001	B	.001
10/24	.001	.001	.005	.001	B	B	.005	B	B	B	B	B	- B	B	B	B	B	B	B	B	.002	.004	B	B	.001
10/25	B	B	.017	.003	B	.001	B	M	B	M	B	.012	-.004	B	B	B	B	B	.001	.002	B	B	B	B	.002
10/26	B	B	B	B	B	B	B	B	B	M	.001	.001	- B	B	B	B	B	B	B	.002	B	B	.003	.002	B
10/27	.002	.001	.001	B	B	.001	.002	B	B	B	B	B	- B	B	B	B	B	.002	.001	B	B	B	B	B	B
10/28	.001	.002	B	B	.001	.001	B	B	.001	M	.001	B	- B	B	B	B	.037	.001	B	B	.003	.001	.002	.002	.003
10/29	.002	B	B	B	.002	B	B	B	M	B	B	B	- B	.003	.001	B	.001	B	B	B	B	B	B	B	B
10/30	B	B	B	B	B	B	.002	B	.001	B	B	B	- B	B	B	B	B	B	B	B	B	B	B	B	B
10/31	B	B	B	.002	.006	.002	B	B	B	.003	B	B	- B	B	B	B	B	B	B	.001	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1978

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/ 1	.009	.007	.011	.012	M	.007	.006	.373	.143	.051	.025	.015	-.011	.009	.008	.007	.006	.006	.006	.006	.006	.005	.005	.006	.030
10/ 2	.004	.004	.005	.006	M	.005	.004	.004	.004	.005	.005	.005	-.004	.004	.004	.005	.005	.006	.005	.005	.005	.005	.007	.005	.003
10/ 3	.004	.004	.004	.005	M	.004	.004	.005	.015	.005	.004	.004	-.004	.004	.011	.005	.004	.013	.021	.011	.007	.006	.005	.004	.004
10/ 4	.005	.010	.006	.009	M	.004	.005	.005	.005	.004	.004	.005	-.006	.006	.004	.004	.006	.010	.004	M	.006	.005	.004	.005	.003
10/ 5	.005	.006	.006	.008	M	.009	.010	.020	.026	.020	.017	.076	-.012	.024	.035	.016	.011	.011	.009	.017	.054	.007	.007	.008	.015
10/ 6	.007	.007	.006	.005	M	.007	.007	.005	M	M	M	M	- M	.008	.007	.008	.055	.082	.006	.005	.005	.005	.005	.005	.012
10/ 7	.009	.006	.005	.006	M	.005	.005	.005	.005	.005	.005	.005	-.005	.005	.005	.006	.008	.009	.007	.008	.007	.007	.007	.006	.003
10/ 8	.010	.008	.013	.010	.008	.008	.008	.010	.016	.009	.009	.010	-.011	.011	.009	.008	.007	.008	.011	.016	.071	.054	.033	.024	.010
10/ 9	.024	M	.012	.011	M	.009	.017	.010	.010	.014	.012	.015	-.010	.008	.008	.010	.009	.009	.013	.038	.345	.112	.038	.024	.035
10/10	.021	.015	.011	.010	.008	.013	.013	.026	.027	.015	.046	.024	-.016	.014	.012	.012	.010	.009	.012	.015	.014	.013	.013	.011	.010
10/11	.011	.011	.010	.012	.010	.020	.031	.025	.032	.039	.021	.019	-.014	.017	.032	.035	.022	.014	.012	.012	.011	.012	.010	.017	.011
10/12	.012	.034	.116	.116	.055	.026	.019	.017	.014	.013	.014	.013	-.015	.016	.018	.083	.074	.047	.035	.029	.030	.021	.017	.018	.026
10/13	.014	.014	.016	.018	.014	M	M	M	M	M	M	M	- M	.036	.023	.015	.024	.019	.019	.023	.022	.016	.016	.014	.011
10/14	.014	.018	.018	.047	.021	.017	.045	.067	.034	.024	.014	.022	-.039	.022	.030	.047	.026	.016	.020	.027	.021	.078	.044	.240	.037
10/15	.164	.077	.064	.042	.086	.065	.132	.062	.024	.284	.316	.082	-.056	.070	.031	.017	.021	.016	.041	.084	.099	.019	.017	.016	.080
10/16	.026	.034	.035	.033	.014	.015	.011	.020	.027	.018	.014	.011	-.012	.014	.013	.010	.013	.024	.014	.012	.010	.030	.012	.013	.013
10/17	.011	.009	.009	.010	.010	.010	.014	.012	.010	.009	.009	.010	-.016	.015	.012	.009	.009	.011	.012	.010	.009	.010	.010	.011	.006
10/18	.058	.020	.011	.008	.008	.008	.009	.008	.009	.010	.011	.012	-.010	.011	.010	.009	.009	.009	.008	.008	.009	.010	.024	.009	.007
10/19	.010	.010	.009	.010	.043	.011	.010	.034	.020	.009	.008	.018	-.014	.014	.027	.016	.020	.014	.010	.009	.010	.012	.012	.012	.011
10/20	.012	.030	.023	.016	.013	.012	.012	.030	.028	.018	.017	.024	-.019	.015	.010	.011	.013	.015	.012	.011	.010	.014	.010	.010	.010
10/21	.012	.013	.031	.023	.013	.010	.023	.011	.010	.011	.009	.015	-.008	.012	.023	.010	.037	.015	.014	.017	.023	.011	.009	.010	.010
10/22	.008	.011	.010	.009	.009	.009	.024	.011	.010	.009	.011	.009	-.008	.009	.009	.010	.010	.009	.008	.009	.009	.015	.012	.010	.007
10/23	.024	.008	.011	.010	.009	M	.008	.009	.009	.013	.014	.014	-.013	.011	.010	.011	.011	.011	.009	.010	.010	.009	.010	.010	.006
10/24	.010	.010	.010	.011	.009	.008	.015	.009	.009	.008	.008	.007	-.007	.007	.006	.007	.007	.007	.008	.007	.011	.016	.007	.007	.005
10/25	.007	.009	.038	.020	.009	.009	.006	M	.006	M	.006	.017	-.015	.006	.006	.006	.006	.006	.008	.009	.007	.011	.006	.006	.006
10/26	.007	.007	.006	.007	.006	.006	.006	.006	.006	M	.010	.010	-.008	.008	.009	.007	.013	.007	.007	.017	.008	.008	.015	.015	.005
10/27	.011	.011	.010	.008	.008	.009	.012	.009	.007	.007	.007	.007	-.007	.006	.006	.006	.006	.010	.008	.007	.007	.007	.008	.007	.004
10/28	.008	.010	.007	.007	.009	.008	.007	.007	.008	M	.008	.006	-.007	.007	.009	.007	.035	.010	.007	.007	.012	.010	.010	.011	.006
10/29	.009	.007	.007	.008	.010	.007	.007	.006	M	.007	.007	.006	-.005	.013	.010	.007	.009	.006	.006	.006	.005	.006	.006	.006	.004
10/30	.005	.005	.005	.006	.007	.006	.008	.006	.007	.007	.006	.007	-.005	.005	.005	.006	.006	.005	.006	.005	.005	.006	.006	.007	.003
10/31	.005	.005	.005	.010	.018	.013	.008	.006	.007	.012	.009	.006	-.006	.005	.005	.005	.005	.005	.005	.008	.006	.005	.009	.005	.004

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0241	4.3E-08	1.3E-06	0244	5.9E-08	1.9E-06	0246	5.9E-08	1.5E-06
1	0656	8.3E-09	6.7E-07	0732	1.1E-05	7.6E-05	0751	3.7E-06	3.7E-05
3	0753	1.5E-10	3.9E-07	0804	2.0E-07	3.4E-06	0822	4.1E-08	1.8E-06
3	1421	3.1E-10	4.5E-07	1434	1.5E-07	3.0E-06	1442	2.6E-08	1.6E-06
4	0056	8.4E-09	5.9E-07	0101	8.2E-08	2.1E-06	0112	3.3E-08	1.3E-06
4	0327	8.2E-09	5.9E-07	0335	1.0E-07	1.9E-06	0346	2.7E-08	1.2E-06
4	1637	5.3E-09	5.0E-07	1643	5.5E-08	1.3E-06	1650	1.5E-08	8.9E-07
4	1703	6.5E-09	6.1E-07	1708	4.3E-08	1.1E-06	1712	1.3E-08	8.1E-07
5	0733	5.7E-08	1.2E-06	0754	4.6E-07	4.8E-06	0815	1.4E-07	3.0E-06
5	1110	2.3E-08	1.6E-06	1119	8.6E-06	3.1E-05	1127	1.9E-06	1.5E-05
5	0733	5.7E-08	1.2E-06	0754	4.6E-07	4.8E-06	0815	1.4E-07	3.0E-06
5	1110	2.3E-08	1.6E-06	1119	8.6E-06	3.1E-05	1127	1.9E-06	1.5E-05
5	1301	2.3E-08	1.2E-06	1305	1.1E-07	2.0E-06	1307	3.4E-08	1.6E-06
5	1336	2.9E-08	1.7E-06	1350	2.1E-07	4.7E-06	1442	9.2E-08	3.2E-06
5	1942	9.8E-09	7.6E-07	1953	1.2E-06	9.1E-06	1957	1.8E-07	4.4E-06
5	2002	1.4E-07	2.4E-06	2027	1.5E-06	1.0E-05	2036	4.7E-07	5.8E-06
6	1316	4.5E-09	5.4E-07	1322	4.4E-08	1.2E-06	1330	1.4E-08	8.8E-07
6	1541	7.2E-09	7.2E-07	1545	5.8E-08	1.9E-06	1548	3.8E-08	1.3E-06
6	1640	8.6E-09	6.9E-07	1658	1.0E-05	4.4E-05	1709	2.2E-06	2.0E-05
7	0100	4.8E-09	5.2E-07	0106	5.1E-08	1.1E-06	0111	1.2E-08	7.6E-07
7	1513	4.6E-09	5.6E-07	1517	6.8E-08	1.1E-06	1520	1.4E-08	8.0E-07
7	1524	3.7E-09	5.6E-07	1527	9.5E-08	1.3E-06	1530	1.4E-08	8.4E-07
8	0035	2.2E-08	9.3E-07	0041	2.1E-07	2.7E-06	0046	6.4E-08	1.6E-06
8	0121	7.2E-09	6.2E-07	0125	1.1E-07	2.0E-06	0128	5.5E-08	1.2E-06
8	0200	3.7E-08	1.1E-06	0205	1.4E-07	2.1E-06	0210	4.8E-08	1.5E-06
8	0346	2.9E-08	1.0E-06	0349	1.3E-07	2.0E-06	0353	5.3E-08	1.4E-06
8	0419	1.7E-08	1.0E-06	0424	1.4E-07	1.9E-06	0428	3.2E-08	1.4E-06
8	0711	1.2E-08	8.4E-07	0714	5.5E-08	1.2E-06	0717	1.9E-08	9.9E-07
8	0833	9.0E-09	7.6E-07	0837	1.9E-06	1.1E-05	0840	3.7E-07	5.4E-06
8	0927	1.5E-08	9.2E-07	0930	1.0E-07	1.9E-06	0932	6.1E-08	1.3E-06
8	1439	4.3E-09	7.1E-07	1444	1.4E-07	2.2E-06	1447	4.3E-08	1.4E-06
8	1814	1.2E-08	8.4E-07	1817	1.3E-07	2.2E-06	1819	4.5E-08	1.3E-06
8	1909	2.4E-08	1.3E-06	1912	4.7E-08	1.9E-06	1914	4.2E-08	1.5E-06
9	0002	4.6E-08	2.3E-06	0005	1.6E-07	3.3E-06	0007	5.4E-08	2.5E-06
9	0023	1.8E-08	2.0E-06	0028	3.3E-07	4.5E-06	0031	9.9E-08	3.2E-06
9	0513	3.1E-09	3.2E-07	1000	4.3E-08	1.9E-06	1009	1.4E-08	1.1E-06
9	1106	1.9E-08	1.1E-06	1109	8.7E-08	1.9E-06	1145	5.3E-08	1.5E-06
9	1733	6.2E-09	7.6E-07	1738	2.0E-07	2.4E-06	1740	2.5E-08	1.0E-06
9	1909	9.0E-09	9.4E-07	1915	1.2E-07	1.8E-06	1919	3.9E-08	1.3E-06
9	1937	1.7E-08	9.9E-07	2024	8.4E-06	4.4E-05	2059	2.3E-06	2.2E-05
10	0031	4.4E-08	1.7E-06	0040	1.3E-07	3.0E-06	0045	6.0E-08	2.3E-06
10	0511	2.6E-08	8.4E-07	0754	1.4E-07	3.9E-06	0836	4.0E-08	2.3E-06
10	1007	3.0E-08	1.9E-06	1013	4.7E-07	5.0E-06	1019	1.5E-07	3.4E-06
10	1028	2.9E-07	3.9E-06	1036	1.2E-06	8.7E-06	1045	4.4E-07	6.2E-06
11	0837	2.9E-08	2.0E-06	0853	2.9E-07	6.7E-06	0920	1.3E-07	4.3E-06
11	2036	1.1E-08	6.8E-07	2130	2.1E-08	1.4E-06	2226	7.9E-09	1.0E-06
11	2317	1.5E-08	1.2E-06	2326	2.9E-07	4.2E-06	2332	7.9E-08	2.6E-06
12	0001	1.4E-08	1.1E-06	0006	4.9E-08	1.8E-06	0010	2.6E-08	1.4E-06
12	0124	1.9E-08	1.2E-06	0302	1.1E-06	1.4E-05	0402	2.8E-07	7.5E-06
12	1444	7.5E-08	1.7E-06	1546	1.0E-06	1.1E-05	1643	3.6E-07	6.6E-06
12	1839	7.6E-08	3.1E-06	1843	1.8E-07	4.7E-06	1849	1.1E-07	3.9E-06
13	0336	3.2E-08	1.8E-06	0339	1.2E-07	2.7E-06	0344	4.1E-08	2.2E-06
13	1406	7.5E-08	2.7E-06	1410	2.5E-07	4.6E-06	1414	1.1E-07	3.6E-06
13	1826	2.1E-08	1.6E-06	1835	1.3E-07	3.0E-06	1841	4.8E-08	2.3E-06
14	0100	2.6E-08	1.5E-06	0104	6.1E-07	6.7E-06	0106	1.4E-07	3.7E-06
14	0151	2.3E-08	1.7E-06	0155	1.2E-07	2.8E-06	0203	3.2E-08	2.2E-06
14	0328	1.1E-07	3.0E-06	0338	1.2E-06	9.9E-06	0352	3.0E-07	6.2E-06
14	0515	1.7E-08	1.3E-06	0518	2.9E-08	1.9E-06	0528	1.9E-08	1.6E-06
14	0647	1.5E-07	3.4E-06	0657	2.0E-06	1.4E-05	0712	7.5E-07	8.5E-06
14	1242	7.9E-08	2.5E-06	1249	1.5E-06	1.1E-05	1259	3.0E-07	7.0E-06
14	1910	2.6E-08	2.2E-06	1915	3.0E-07	4.1E-06	1929	9.7E-08	3.1E-06
14	2115	5.8E-07	5.9E-06	2128	1.6E-06	1.1E-05	2143	7.0E-07	8.7E-06
14	2327	1.1E-07	2.9E-06	2337	2.4E-05	9.3E-05	2346	9.0E-06	4.6E-05
15	0215	1.7E-07	5.0E-06	0225	1.1E-06	1.1E-05	0235	3.7E-07	8.0E-06
15	0348	1.3E-07	3.1E-06	0402	3.2E-06	1.9E-05	0432	8.0E-07	1.0E-05
15	0626	6.2E-07	6.4E-06	0640	4.6E-06	2.8E-05	0656	1.4E-06	1.6E-05
10	0554	0.0E+00	1.0E-03	0600	8.0E-03	1.0E-03	0615	1.0E-03	4.6E+01
15	1254	6.3E-07	7.2E-06	1300	3.0E-06	2.0E-05	1309	1.2E-06	1.3E-05
15	1606	6.6E-08	2.4E-06	1610	2.6E-07	4.5E-06	1614	1.3E-07	3.3E-06
15	1829	4.9E-08	2.3E-06	1838	6.2E-07	8.9E-06	1849	1.6E-07	5.4E-06
15	1939	2.8E-07	4.1E-06	1957	4.5E-06	2.9E-05	2011	1.1E-06	1.6E-05
16	0040	2.3E-07	3.0E-06	0047	3.8E-07	5.3E-06	0058	1.3E-07	3.9E-06
16	0117	8.4E-08	2.6E-06	0130	2.8E-07	4.4E-06	0136	1.3E-07	3.4E-06
16	0152	1.0E-07	2.4E-06	0201	8.2E-07	5.7E-06	0212	2.3E-07	3.9E-06
16	0233	3.8E-08	2.2E-06	0236	9.3E-07	7.0E-06	0238	1.0E-07	2.9E-06

SOLAR X-RAYS BY SATELLITE

GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
16	0305	4.0E-08	2.0E-06	0310	1.2E-06	6.3E-06	0321	2.4E-07	4.1E-06
16	0346	2.4E-08	1.9E-06	0351	1.4E-07	3.0E-06	0401	7.4E-08	2.4E-06
16	0448	3.1E-10	2.7E-08	0457	5.3E-08	2.3E-06	0606	1.5E-08	1.1E-06
16	0658	1.4E-08	1.0E-06	0701	6.0E-08	1.7E-06	0703	2.7E-08	1.2E-06
16	0735	4.6E-08	1.4E-06	0741	4.2E-07	4.5E-06	0801	1.6E-07	2.9E-06
16	0804	1.4E-07	2.8E-06	0808	4.1E-07	5.4E-06	0810	1.4E-07	3.1E-06
16	0942	1.5E-08	1.2E-06	0953	4.1E-07	5.6E-06	0956	1.3E-07	3.4E-06
16	1304	1.8E-08	1.3E-06	1307	3.0E-08	2.1E-06	1309	2.4E-08	1.3E-06
16	1733	3.4E-08	1.8E-06	1741	2.9E-07	4.8E-06	1751	1.0E-07	3.2E-06
16	1941	1.5E-08	1.1E-06	1944	5.1E-08	2.3E-06	1954	2.6E-08	1.7E-06
16	2140	1.3E-08	9.7E-07	2146	4.0E-06	1.7E-05	2153	7.0E-07	8.8E-06
16	2332	1.9E-08	1.1E-06	2338	6.4E-08	2.0E-06	2342	2.8E-08	1.5E-06
17	0014	2.0E-08	1.1E-06	0017	4.0E-08	1.9E-06	0023	2.9E-08	1.5E-06
17	0340	1.1E-08	8.8E-07	0347	6.3E-08	1.9E-06	0354	3.6E-08	1.3E-06
17	0649	2.4E-08	1.2E-06	0659	9.5E-08	2.6E-06	0706	2.6E-08	1.9E-06
17	1227	3.2E-08	1.3E-06	1245	9.1E-08	2.5E-06	1302	2.0E-08	1.9E-06
17	1444	1.2E-08	1.0E-06	1447	8.8E-08	2.0E-06	1449	5.8E-08	1.4E-06
17	1737	1.6E-08	9.9E-07	1741	5.5E-08	2.1E-06	1743	4.8E-08	1.4E-06
17	2215	1.8E-08	1.0E-06	2219	6.4E-08	2.2E-06	2221	4.9E-08	1.4E-06
18	2158	1.5E-08	1.0E-06	2211	3.3E-07	4.8E-06	2221	1.2E-07	2.9E-06
19	0404	8.9E-09	9.5E-07	0409	5.3E-06	2.5E-05	0412	1.5E-06	1.2E-05
19	0710	7.7E-09	8.4E-07	0717	1.7E-07	2.3E-06	0721	6.7E-08	1.5E-06
19	0746	9.7E-09	9.7E-07	0751	4.9E-06	2.2E-05	0756	1.4E-06	1.0E-05
19	1117	2.1E-08	9.3E-07	1121	9.9E-08	1.8E-06	1126	5.5E-08	1.3E-06
19	1145	9.2E-09	8.7E-07	1155	1.3E-06	8.6E-06	1200	3.9E-07	4.7E-06
19	1356	2.2E-08	1.0E-06	1410	9.6E-08	2.5E-06	1420	0.0E+00	0.0E+00
19	1435	2.7E-08	2.0E-06	1439	3.4E-07	4.0E-06	1447	1.2E-07	3.0E-06
19	1455	6.5E-08	2.4E-06	1458	1.6E-07	3.5E-06	1502	9.9E-08	2.8E-06
19	1604	1.2E-08	1.0E-06	1609	6.3E-07	5.2E-06	1612	1.8E-07	3.1E-06
19	1615	1.5E-07	2.8E-06	1619	4.4E-07	5.0E-06	1621	1.9E-07	3.8E-06
19	1752	1.2E-08	8.7E-07	1757	1.5E-07	2.2E-06	1804	5.4E-08	1.5E-06
20	0119	1.5E-08	1.0E-06	0133	4.8E-07	5.7E-06	0205	8.7E-08	3.3E-06
20	0446	7.9E-09	9.4E-07	0450	6.3E-08	2.2E-06	0452	5.3E-08	1.5E-06
20	0618	1.6E-08	1.1E-06	0621	6.9E-08	1.9E-06	0623	4.5E-08	1.4E-06
20	0656	3.8E-08	1.4E-06	0703	4.2E-07	4.3E-06	0707	1.4E-07	2.8E-06
20	0618	1.6E-08	1.1E-06	0621	6.9E-08	1.9E-06	0623	4.5E-08	1.4E-06
20	0656	3.8E-08	1.4E-06	0703	4.2E-07	4.3E-06	0707	1.4E-07	2.8E-06
20	0737	1.2E-07	3.1E-06	0740	3.0E-07	4.4E-06	0745	1.5E-07	3.6E-06
20	1020	2.2E-08	1.0E-06	1023	9.0E-08	1.5E-06	1025	6.1E-08	1.2E-06
20	1043	4.5E-08	1.4E-06	1049	1.8E-07	2.7E-06	1102	0.0E+00	0.0E+00
20	1227	1.7E-08	1.6E-06	1235	2.1E-07	3.6E-06	1239	6.2E-08	2.6E-06
20	1540	2.0E-08	1.2E-06	1543	5.5E-08	1.9E-06	1545	4.3E-08	1.5E-06
20	1555	1.5E-08	1.1E-06	1601	1.0E-07	2.3E-06	1605	2.7E-08	1.6E-06
20	1659	2.5E-08	1.2E-06	1708	1.5E-07	3.1E-06	1714	4.6E-08	2.0E-06
20	1745	1.0E-08	9.5E-07	1748	1.1E-07	2.2E-06	1750	3.9E-08	1.2E-06
20	1809	1.2E-08	1.0E-06	1812	5.2E-08	1.7E-06	1817	3.1E-08	1.3E-06
20	2018	1.7E-08	9.6E-07	2024	7.7E-08	2.0E-06	2030	4.3E-08	1.4E-06
20	2139	2.0E-08	1.1E-06	2146	2.3E-07	4.0E-06	2150	6.1E-08	2.3E-06
21	0157	2.2E-08	1.1E-06	0210	3.8E-07	5.1E-06	0223	9.0E-08	3.0E-06
21	0248	4.3E-08	1.8E-06	0257	5.0E-07	5.5E-06	0308	1.1E-07	3.5E-06
21	0554	9.8E-09	1.0E-06	0601	7.3E-07	5.9E-06	0611	1.3E-07	3.4E-06
21	0754	2.2E-08	1.1E-06	0757	5.8E-08	1.8E-06	0801	3.9E-08	1.4E-06
21	1354	3.0E-08	1.5E-06	1402	4.7E-07	5.3E-06	1412	1.1E-07	3.4E-06
21	1554	2.2E-08	1.1E-06	1612	3.7E-07	5.4E-06	1636	1.1E-07	3.3E-06
21	1820	2.4E-08	1.3E-06	1825	8.1E-08	2.2E-06	1830	2.3E-08	1.7E-06
21	2023	3.3E-08	1.3E-06	2034	6.4E-07	6.6E-06	2039	1.6E-07	3.7E-06
22	0113	8.4E-09	8.4E-07	0117	9.4E-08	1.8E-06	0124	3.0E-08	1.2E-06
22	0558	2.4E-08	1.2E-06	0603	7.0E-06	2.1E-06	0605	3.0E-06	1.6E-06
22	1936	9.7E-09	7.6E-07	1940	6.8E-06	1.3E-06	1945	2.2E-08	1.0E-06
22	2109	1.4E-08	9.5E-07	2113	6.8E-08	2.2E-06	2131	3.4E-08	1.5E-06
23	0237	4.8E-09	7.0E-07	0249	1.3E-07	2.6E-06	0255	2.8E-08	1.5E-06
23	0321	9.0E-09	8.2E-07	0325	7.0E-08	1.9E-06	0333	2.8E-08	1.3E-06
23	0943	9.3E-09	1.0E-06	0948	8.4E-07	6.1E-06	0950	2.4E-07	2.6E-06
23	1700	4.1E-08	1.4E-06	1703	7.3E-08	2.1E-06	1708	2.8E-08	1.7E-06
23	2052	1.5E-08	9.4E-07	2057	4.5E-08	1.4E-06	2104	1.5E-08	1.1E-06
23	2303	6.8E-09	9.2E-07	2307	3.6E-08	1.3E-06	2310	1.0E-08	1.0E-06
24	0605	4.8E-09	7.8E-07	0612	3.1E-07	3.9E-06	0620	6.8E-08	2.2E-06
24	1326	2.1E-09	6.2E-07	1330	4.2E-08	1.0E-06	1334	9.8E-09	8.1E-07
24	2013	1.0E-08	8.2E-07	2115	9.3E-08	2.6E-06	2126	9.2E-09	1.6E-06
25	0200	1.8E-08	1.2E-06	0247	3.0E-07	5.2E-06	0305	8.8E-08	3.1E-06
25	0509	4.1E-08	1.2E-06	0512	5.9E-08	2.0E-06	0514	4.5E-08	1.3E-06
25	0858	6.7E-09	7.2E-07	0909	8.1E-08	2.1E-06	0916	3.4E-08	1.4E-06
25	1137	4.7E-09	6.1E-07	1153	7.9E-07	6.7E-06	1204	1.3E-07	3.6E-06
25	2345	3.1E-09	5.8E-07	2349	2.4E-08	1.0E-06	2352	7.8E-09	7.8E-07

SOLAR X-RAYS BY SATELLITE

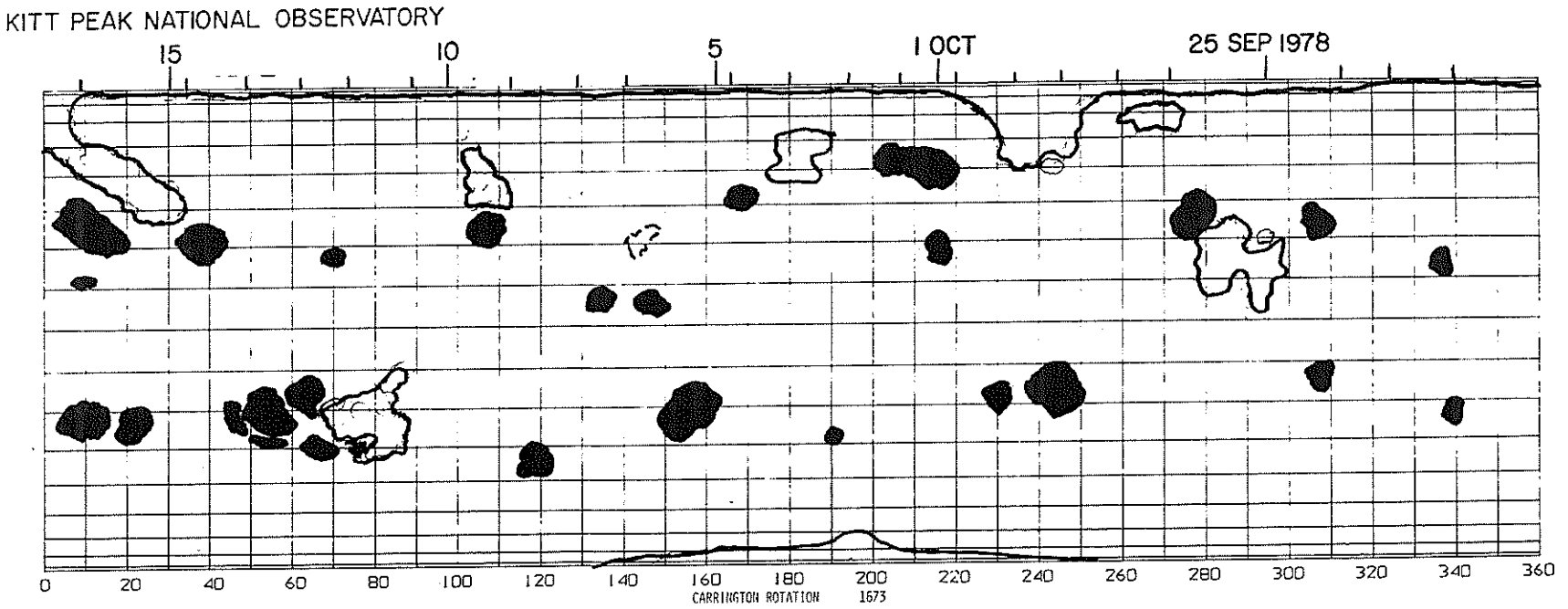
GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
26	0055	3.6E-09	6.0E-07	0059	2.2E-08	1.0E-06	0101	8.1E-09	7.6E-07
26	1929	7.9E-09	8.4E-07	1932	4.9E-08	1.8E-06	1938	2.6E-08	1.2E-06
26	2158	1.5E-08	1.0E-06	2229	3.0E-08	2.0E-06	2332	2.6E-08	1.5E-06
27	0638	1.1E-08	8.9E-07	0643	4.9E-08	2.0E-06	0703	2.2E-08	1.4E-06
27	1010	3.4E-09	6.5E-07	1014	2.6E-08	1.0E-06	1017	9.5E-09	8.0E-07
27	1715	5.0E-09	5.9E-07	1721	8.8E-08	2.1E-06	1729	2.5E-08	1.2E-06
27	2033	7.2E-09	6.2E-07	2037	4.6E-08	1.1E-06	2041	1.2E-08	6.3E-07
27	2225	6.9E-09	6.7E-07	2229	5.2E-08	1.4E-06	2234	1.9E-08	1.0E-06
28	0058	2.3E-08	1.1E-06	0101	6.0E-08	1.6E-06	0108	3.5E-08	1.3E-06
28	0432	6.1E-09	7.7E-07	0438	3.4E-08	1.2E-06	0446	1.5E-08	9.6E-07
28	0524	4.0E-09	6.4E-07	0528	8.8E-08	1.9E-06	0536	2.5E-08	1.2E-06
28	0827	4.5E-09	7.1E-07	0832	5.1E-08	1.4E-06	0835	1.6E-08	1.0E-06
28	1001	2.3E-09	6.2E-07	1005	5.7E-08	1.3E-06	1008	1.4E-08	9.5E-07
28	1555	3.1E-09	7.3E-07	1604	5.8E-06	3.3E-05	1606	1.0E-06	1.5E-05
28	2008	1.9E-08	1.0E-06	2014	1.4E-07	2.5E-06	2018	3.0E-08	1.7E-06
28	2228	7.7E-09	8.1E-07	2231	1.0E-07	1.9E-06	2244	2.7E-08	1.3E-06
29	2318	6.9E-09	8.2E-07	2323	5.0E-08	2.1E-06	2336	2.9E-08	1.4E-06
29	0408	1.2E-08	1.0E-06	0411	7.1E-08	1.9E-06	0415	4.5E-08	1.5E-06
29	1002	7.9E-09	7.3E-07	1005	4.2E-08	1.0E-06	1011	1.3E-08	9.0E-07
29	1319	3.4E-08	1.1E-06	1332	8.5E-08	2.2E-06	1343	1.9E-08	1.6E-06
29	1405	2.2E-08	1.2E-06	1408	3.8E-08	2.0E-06	1410	3.3E-08	1.5E-06
30	0454	6.2E-09	6.7E-07	0457	3.5E-08	1.1E-06	0500	1.2E-08	8.1E-07
30	0623	3.4E-09	5.7E-07	0627	8.3E-08	1.5E-06	0630	2.6E-08	1.0E-06
30	0646	6.2E-09	6.2E-07	0654	6.0E-08	1.4E-06	0701	1.7E-08	9.9E-07
30	0813	1.2E-08	7.2E-07	0817	9.8E-08	2.0E-06	0820	6.2E-08	1.4E-06
31	0330	2.9E-09	5.7E-07	0336	6.3E-08	2.0E-06	0344	2.8E-08	1.2E-06
31	0423	2.7E-08	9.7E-07	0434	1.5E-07	3.2E-06	0459	3.8E-06	2.0E-06
31	0759	6.7E-09	6.8E-07	0804	4.8E-08	1.3E-06	0811	1.3E-08	9.7E-07
31	0902	2.8E-09	5.3E-07	0913	1.3E-07	2.7E-06	0922	3.2E-08	1.5E-06
31	1927	5.7E-09	5.6E-07	1937	3.6E-08	1.1E-06	1958	1.1E-08	8.5E-07

HELIUM 10830Å SYNOPTIC MAPS

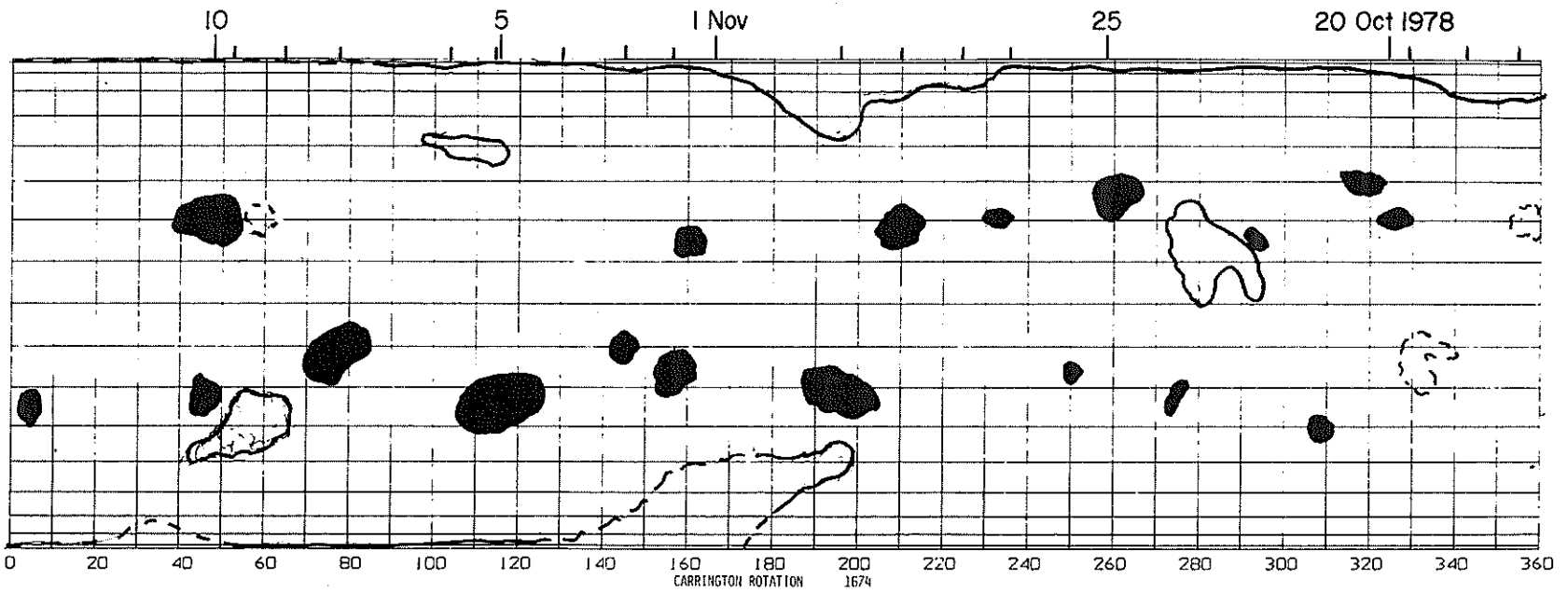
CARRINGTON ROTATION 1673



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1674

KITT PEAK NATIONAL OBSERVATORY



CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

OCTOBER 1978

Big Bear Solar Observatory

Only one D3 limb observation was made during the month of October. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North		South	
11 October	51	-36	-166	164

SOLAR WIND

Interplanetary Scintillations

OCTOBER 1978

DAY	3C48 VEL	3C48 ERR	3C144 VEL	3C144 ERR	3C147 VEL	3C147 ERR	3C161 VEL	3C161 ERR	3C237 VEL	3C237 ERR	3C273 VEL	3C273 ERR	3C298 VEL	3C298 ERR	3C459 VEL	3C459 ERR
1									480	66			373	5		
2			502	16			458	16	619	81			323	56		
3	476	9	351	60			439	40	463	8			382	13		
4			473	18			500	37	436	14			411	31		
5									568	16			363	35		
6			443	10			266	8	315	18			443	32		
7			447	95			325	108	274	14			379	6		
8									313	5			344	4		
9			337	52			266	5	272	15			440	10		
10			382	18			406	43	298	17			391	9	504	5
11			315	8			291	22	405	6			373	4		
12	429	6	384	15	355	56	346	5	578	99			452	46		
13			503	9			384	26								
14			354	12			434	15	561	17			591	8		
15			520	14			337	6	365	23			447	59		
16			404	10			380	11	330	37			491	95		
17			336	35			389	37	336	6	288	60	411	70		
18			375	7			487	4					563	15	488	20
19			369	29			295	6								
20			342	39			332	35	370	28	285	13	697	8		
21			356	17												
22			342	26					302	20	251	44				
23			368	34					274	14						
24									232	4	222	3			474	19
25			303	5			253	23	244	6	234	4	375	21	436	37
26									259	4	283	14	448	7	493	40
27	413	2	309	12	259	12	295	3	319	11	334	13	505	82	394	16
28			316	4			278	5	271	5	320	16	629	13	362	30
29			378	44			262	3	329	21	258	4	503	74		
30							264	4			244	6				
31			308	13			297	3	282	8	273	4				

OCTOBER	5 UT	LAT	DIST	DLON	15 UT	LAT	DIST	DLON	25 UT	LAT	DIST	DLON
3C48	9.	11.	1.27	5.	8.	10.	1.28	3.	8.	9.	1.28	1.
3C144	13.	5.	1.13	15.	12.	4.	1.17	13.	12.	3.	1.21	11.
3C147	12.	12.	1.11	14.	11.	11.	1.15	13.	11.	10.	1.19	11.
3C161	14.	-2.	1.07	14.	14.	-2.	1.11	13.	13.	-3.	1.15	11.
3C237	18.	-2.	0.67	48.	17.	-1.	0.79	38.	17.	0.	0.88	28.
3C273	20.	32.	0.14	84.	19.	13.	0.30	74.	19.	6.	0.45	63.
3C298	22.	49.	0.43	-57	21.	68.	0.35	-45.	21.	71.	0.33	39.
3C459	6.	8.	1.28	-5.	6.	8.	1.26	-7.	5.	7.	1.24	-9.

INFERRED IP MAGNETIC FIELD

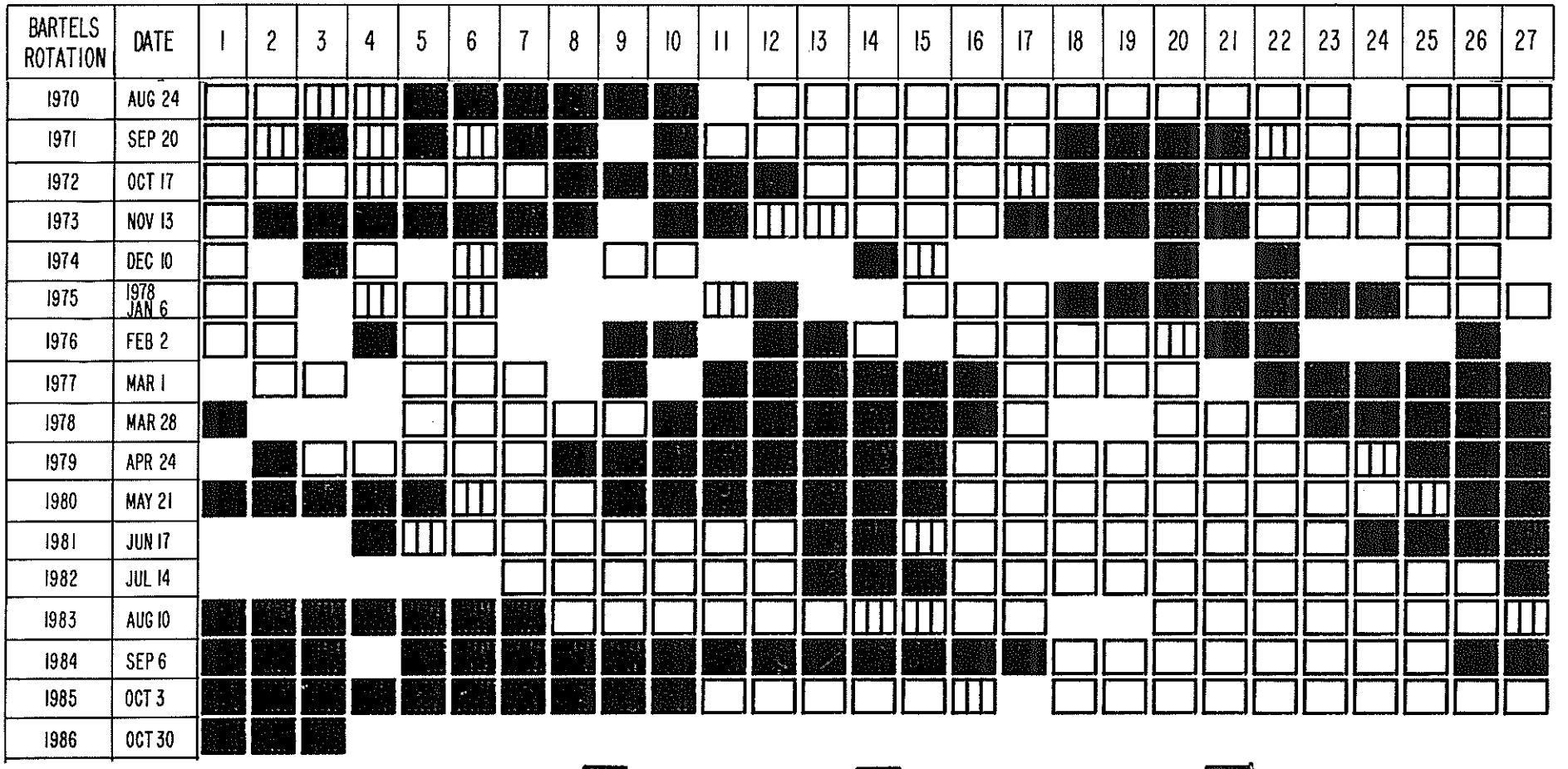
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1969	AUG 2		TA						TA	-			TA	*								AT	TA					
1970	AUG 29			-	-	-		TA										AT	AT			AT	TA	TA	-	AT	AT	
1971	SEP 25						-	-	-	-	-	-					TA				TA							
1972	OCT 22					-	AT														AT	AT					*	
1973	NOV 18			TA	AT						-		AT							*				*	*			
1974	DEC 15				-	-	-		AT	-	AT				AT	AT		AT		TA		TA		TA			*	
1975	1978 JAN 11		*	*					*		*	*						*			TA		-	AT			-	-
1976	FEB 7						*	TA				-			-						-			*		TA	A*	TA
1977	MAR 6	TA		-					AT			T*	*					TA			AT	AT		AT	AT	*	TA	
1978	APR 2							*	-		AT											AT	AT					
1979	APR 29		TA		*		TA	AT	AT		-	-	T*							TA	TA		AT					
1980	MAY 26				TA			AT	AT			-				AT	TA					-				-	-	-
1981	JUN 22	TA						A*				-	TA	TA	TA	AT			*					*	AT	AT	-	AT	
1982	JUL 19									TA							-			TA				AT	AT	*	TA	
1983	AUG 15					TA			AT		AT	AT		AT	TA						A*							TA
1984	SEP 11			TA		AT				TA	T*						A*		-					-		A*	TA	-
1985	OCT 8	*	TA		T*		AT				-	-	-						TA	TA	-	AT			-			

= definitely towards the sun = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: ☐ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1977		1978									
	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
DAY												
01	6	-14	.	16	.	52	-12	-28	1	40	26	-11
02	1	-10	.	31	22	46	-34	-22	13	39	32	-20
03	-14	-7	14	26	12	43	-27	-12	15	42	15	-14
04	-16	8	31	.	.	13	-27	-5	18	39	18	-8
05	-11	26	.	-5	8	4	-29	6	24	31	2	-3
06	-1	46	27	4	11	-15	-27	5	43	29	-24	-7
07	11	55	15	9	4	-32	-23	21	42	30	-12	-20
08	31	53	.	.	.	-53	-12	33	36	17	-7	-29
09	46	46	-1	.	-31	-52	3	41	16	-11	.	-37
10	48	26	11	-28	.	-41	24	40	-11	-10	-35	-29
11	51	.	0	-43	-70	-32	41	23	-17	-15	-34	-32
12	32	-2	.	.	-78	-4	50	12	-12	-22	-42	-14
13	14	10	.	-41	-56	22	47	8	-38	-33	-36	2
14	-4	.	.	-23	-49	.	30	0	.	-43	-27	7
15	-10	1	.	3	-28	.	16	-24	.	-31	-26	8
16	-18	-6	0	.	-3	58	5	-38	.	-9	-36	9
17	-24	.	-3	31	18	37	1	.	.	5	-48	5
18	-5	6	.	22	54	11	-29	.	.	13	-44	-1
19	-11	8	.	37	48	-9	-49	.	.	7	-50	.
20	-12	.	18	22	24	-30	-75	-16	23	7	-33	4
21	.	.	39	-1	.	-49	-79	0	21	5	-21	3
22	-7	.	10	-18	-23	-50	-59	24	16	4	-14	19
23	-4	-5	-4	-49	-49	-62	-37	51	6	-1	5	20
24	0	-1	-15	.	-69	.	-21	52	3	1	31	25
25	2	.	-17	.	-79	-13	-9	48	3	5	43	23
26	4	.	-36	.	-73	10	1	30	-7	18	42	24
27	7	.	-48	-34	-53	13	27	12	-13	.	40	29
28	5	.	-33	.	-28	6	14	3	-6	.	29	30
29	-2	-9	-15		.	13	-10	-5	14	41	15	17
30	-11	.	14		.	18	-20	-10	27	41	2	-3
31		-20	10		.		-27		33	35		-16

Dot symbol entry indicates no data available for the day.

BOULDER GEOMAGNETIC SUBSTORM LOG

OCTOBER 1978

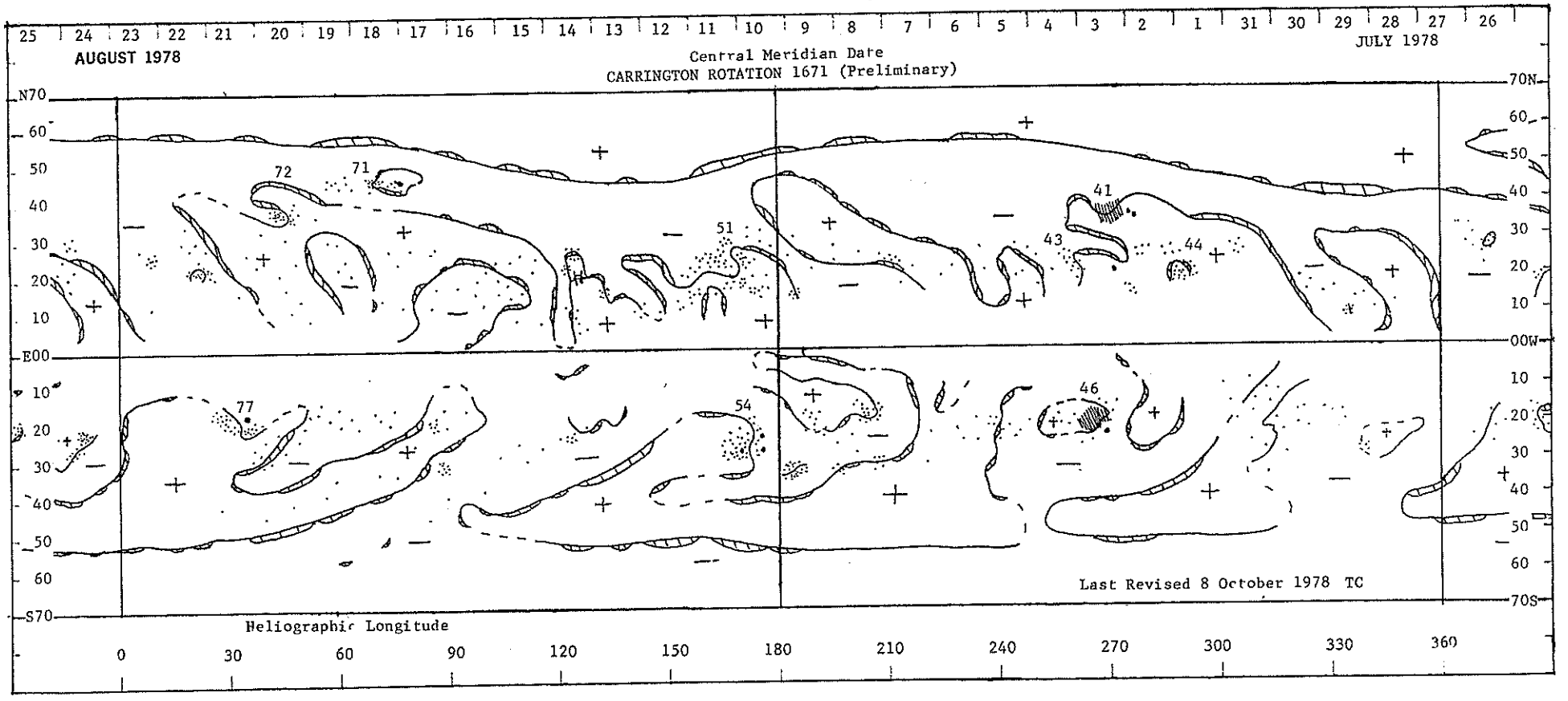
DATE	TIME OF ONSET	DIR.	COMMENTS
1	0610	West	Weak
	0705	West	
	0755	West	1st of double onset
	0830	West	2nd of double onset
	1000	West	Local SS near College
	1300		
2	0300	East	SS centered near Back-Eskimo Pt.
	1010	West	1st of multiple onset
	1125	West	2nd of multiple onset
	1150	West	3rd of multiple onset
	1215	West	4th of multiple onset
	1300		1st of double onset
	1335		2nd of double onset
3	0115	East	
	0455	East	Weak
	0620	West	
	0940	West	Localized southern Alaska
4	0052		SSC
	0510	East	
	0545	East	
	0905	West	
	1140	West	
	1235	West	
	1340	West	
5	0245	East	
	1110	West	
6			Few unsettled periods; no distinct onsets
7	0415		Localized SS; Eskimo Pt. - Rankin Inlet
8	0430	East	1st of multiple onset
	0500	East	2nd of multiple onset
	0530	East	3rd of multiple onset
	1045	West	1st of double onset
	1105	West	2nd of double onset
9	0322		Positive impulse H-component mid and low latitude stations
	0420		Positive impulse H-component mid and low latitude stations
			0820-1315 disturbed period
10	0225	East	Slow onset
	0325	East	
	0400	East	
	1050	West	
11			Quiet day
12	1100	West	Moderate SS
	1330		
	1445		
13			Unsettled periods but no distinct SS onsets
14			Unsettled periods but no distinct SS onsets
15			Unsettled periods but no distinct SS onsets
16			Quiet day
17			Quiet day
18	0350	East	1st of double onset
	0405	East	2nd of double onset
	0625	≈center	Weak
	0655	≈center	Weak
	1105	West	
			Field disturbed after 1610 UT, no distinct SS onsets
19			Field disturbed 0440-1600 UT
	0815	West	Moderate SS
	1150	West	Moderate SS
20	0215		Weak, localized SS Back - Gillam
	0240		Weak, localized SS Rankin Inlet - Eskimo Pt.
	0255		Weak, localized SS Rankin Inlet - Eskimo Pt.
	1105	West	Moderate SS
21	0300	East	Weak SS
	0435	East	
	0515	East	
	1010	West	Moderate SS
	1345		Slow onset
22	0430	East	Weak SS
	0620	≈center	Weak SS
	0840	West	1st of double onset
	0900	West	2nd of double onset
23	0445		Localized SS Rankin Inlet - Eskimo Pt.
	0725	≈center	
	0805	West	
24	0500	East	Weak SS
25	0745		Weak localized SS; Back to Island Lake to Ft. Smith
	0805		Weak localized SS; Back to Island Lake to Ft. Smith
	1050		Onset of multiple SS onsets lasting through 1600 UT
26	0430	East	Weak SS
	0845		Onset of disturbed period; no distinct SS activity in full network
27			Disturbed condition continues through 1400 UT
	0530	East	
	0645	≈center	
	0900	West	Moderate SS
	0945	West	Moderate SS
	1015	West	
	1200	West	
28	0310	East	
	0410	East	
	0445	East	
	0610	West	Moderate SS
29			Numerous minor injections through disturbed period 0650 - 1930 UT
	0830		Weak SS
	1315		Moderate SS
	1400		Moderate SS
	1715		Moderate SS
30	0500		Gradual onset of mag storm conditions lasting until 2225 UT
	1140		Strong SS
	1615		Strong SS
31	0225	East	Weak SS
	0625	≈center	
	1000	West	
	1330	West	Strong SS
	1630		

SEPTEMBER 1978 DATA

Contents

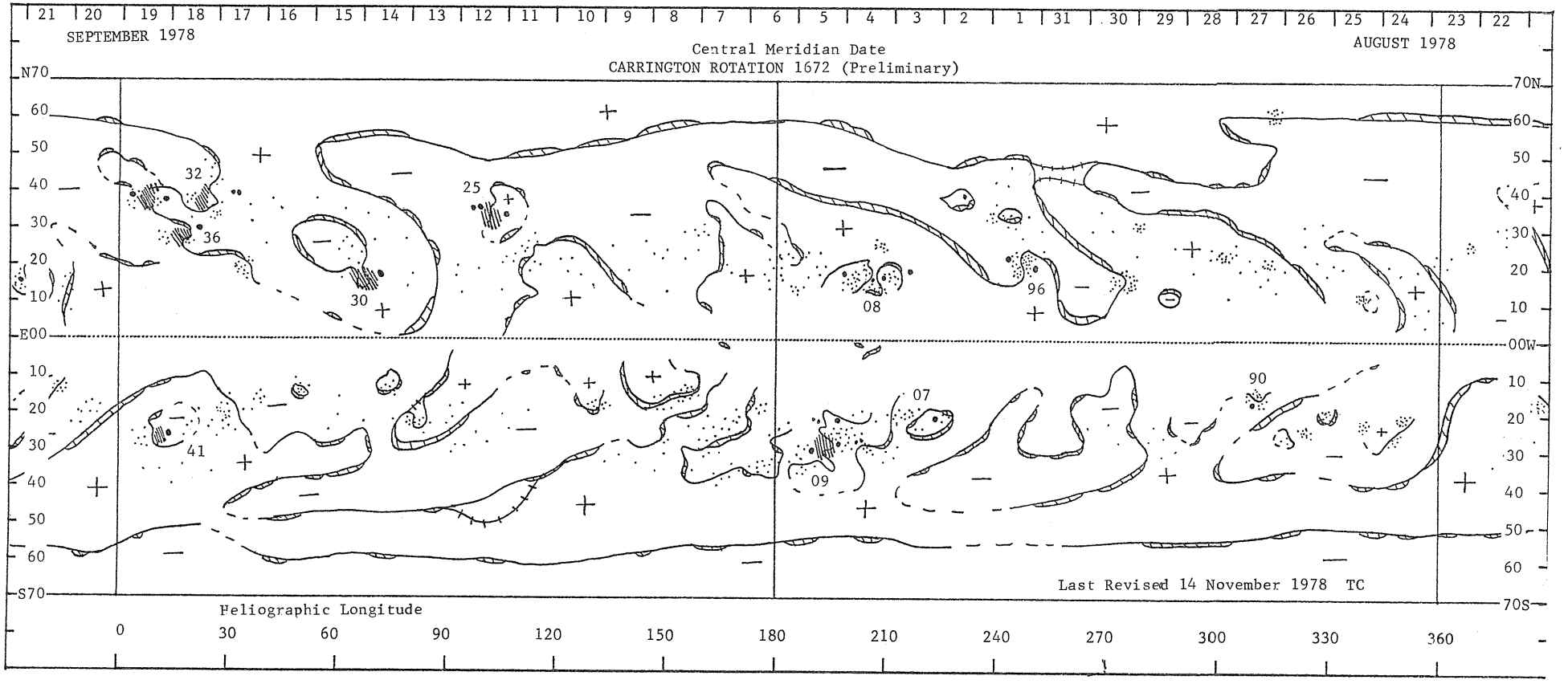
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1671 (PRELIMINARY)

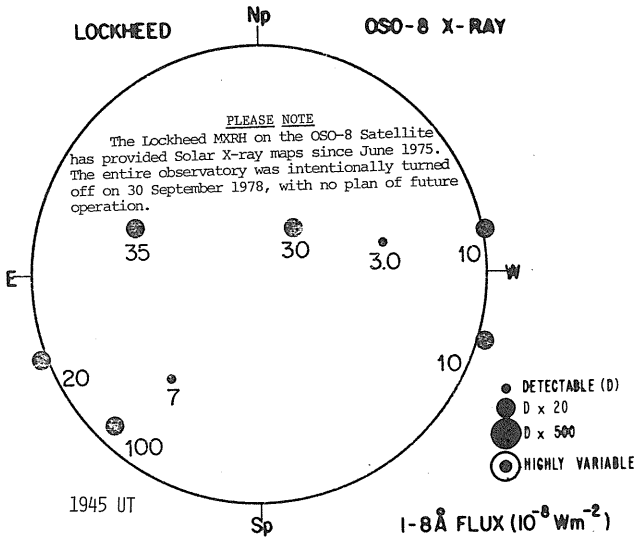


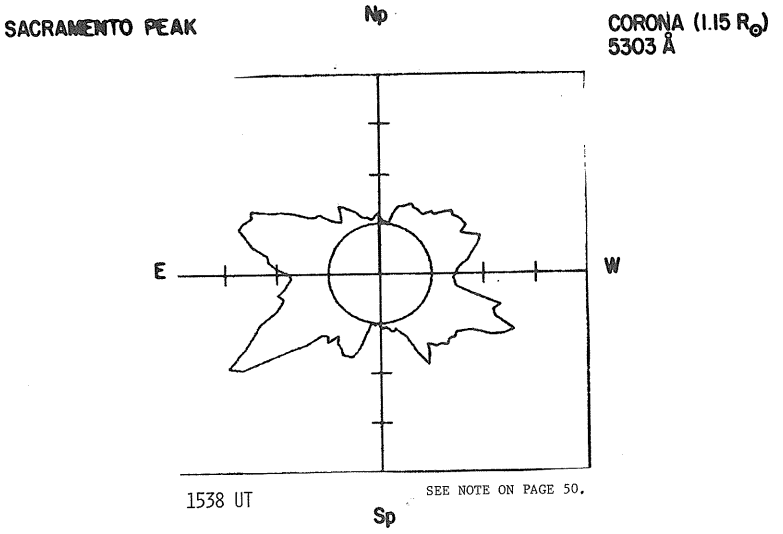
Hα SYNOPTIC CHART

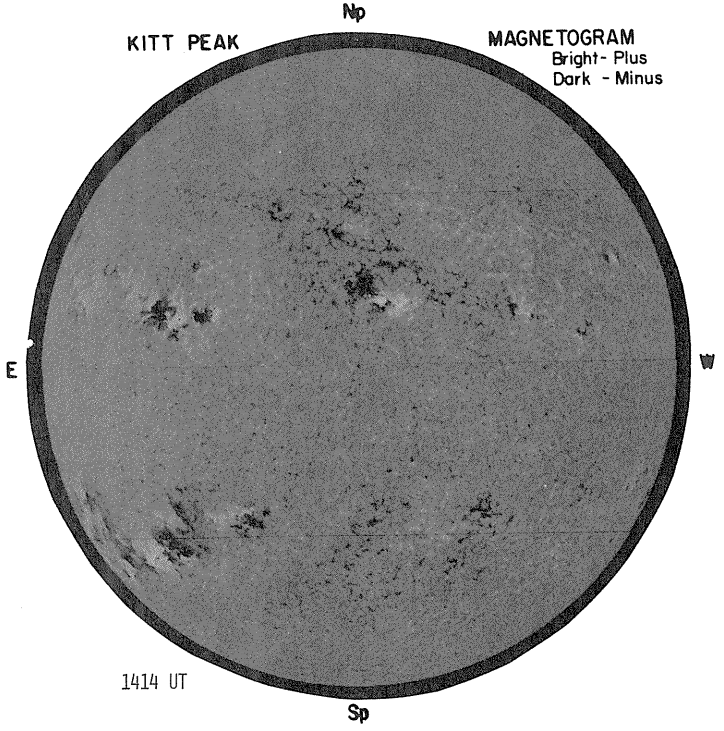
CARRINGTON ROTATION 1672 (PRELIMINARY)

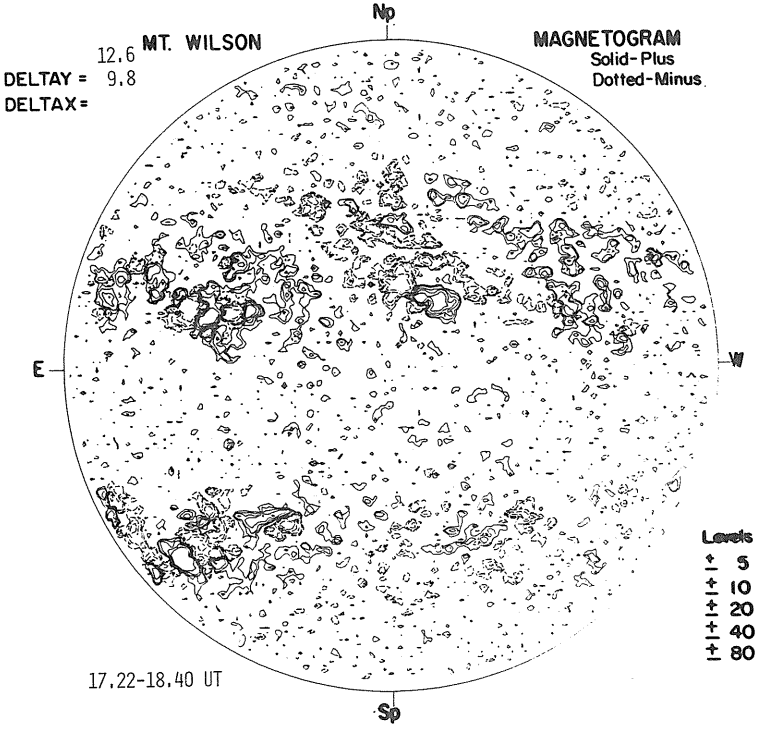


SEPTEMBER 1, 1978 (P = 21.01, B_o = 7.19, L_o = 251.62)

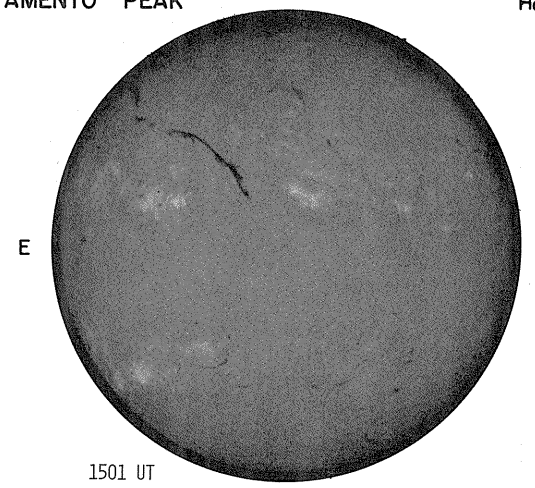






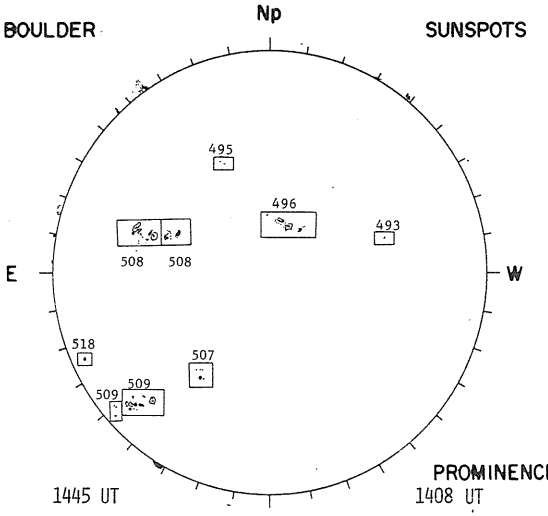


OI
SACRAMENTO PEAK



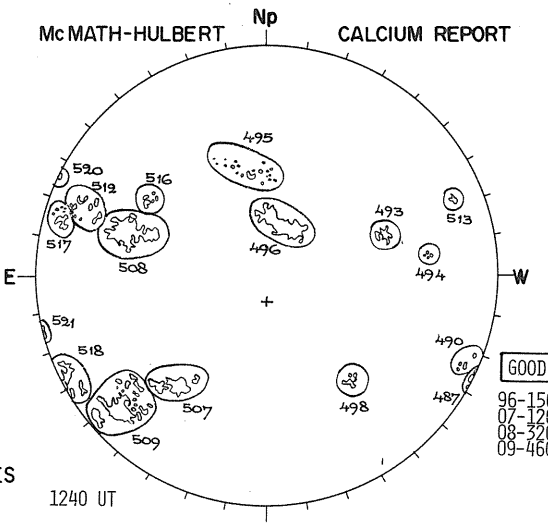
1501 UT

Hα
BOULDER



1445 UT

SUNSPOTS
McMATH-HULBERT



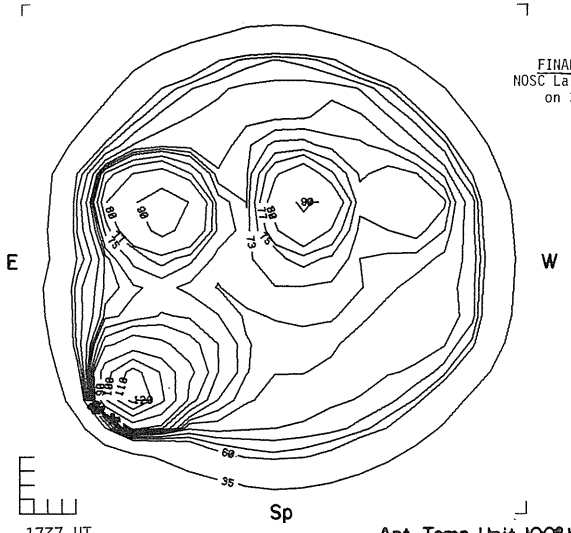
1240 UT

CALCIUM REPORT

GOOD	M
96-1500	3.0
07-1200	3.0
08-3200	3.5
09-4600	3.5

PROMINENCES
1408 UT

NOSC LA POSTA



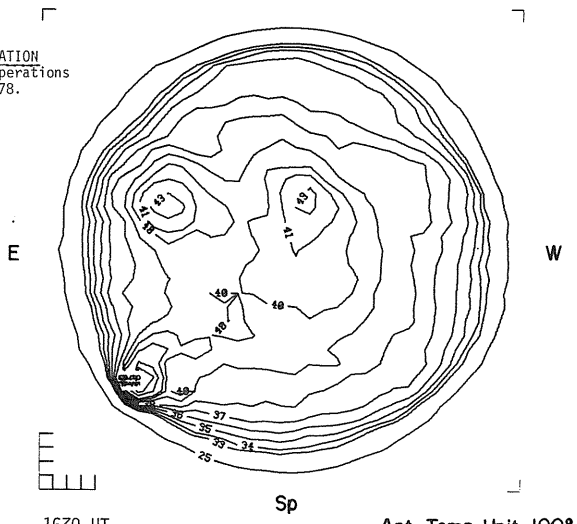
1737 UT

2.0 CM

Ant. Temp. Unit 100° K

FINAL MONTH OF OPERATION
NOSC La Posta ceased operations
on 30 September 1978.

NOSC LA POSTA

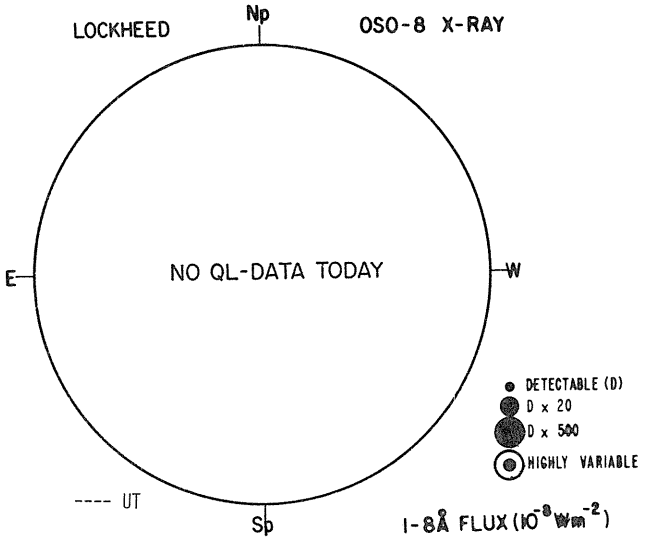


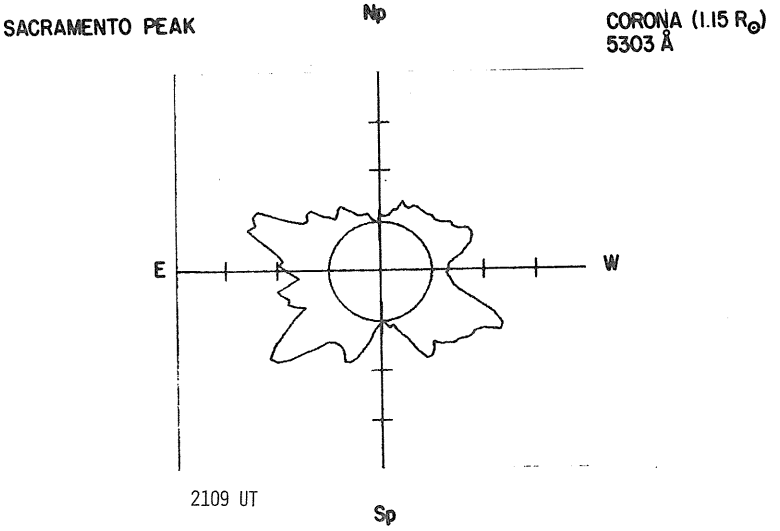
1639 UT

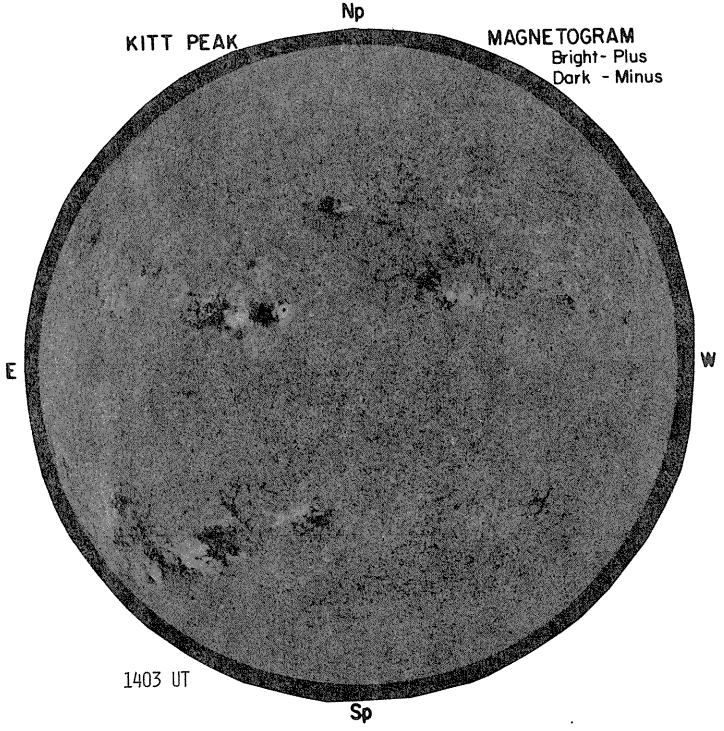
8.6 MM

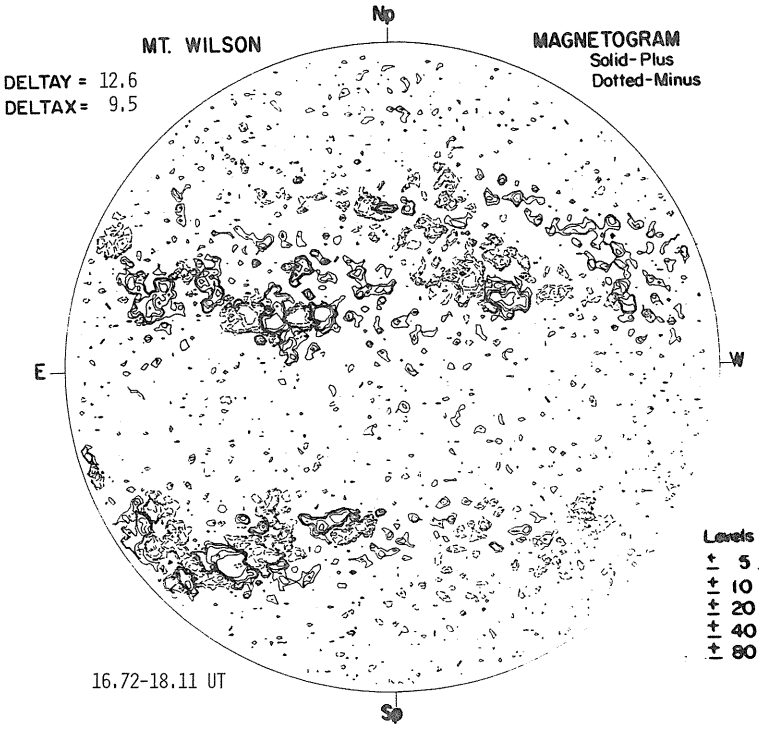
Ant. Temp. Unit 100° K

SEPTEMBER 2, 1978 (P = 21.26, B_o = 7.21, L_o = 238.41)

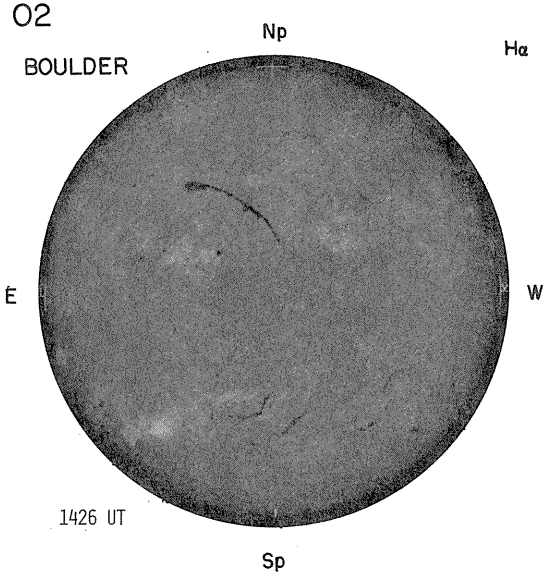


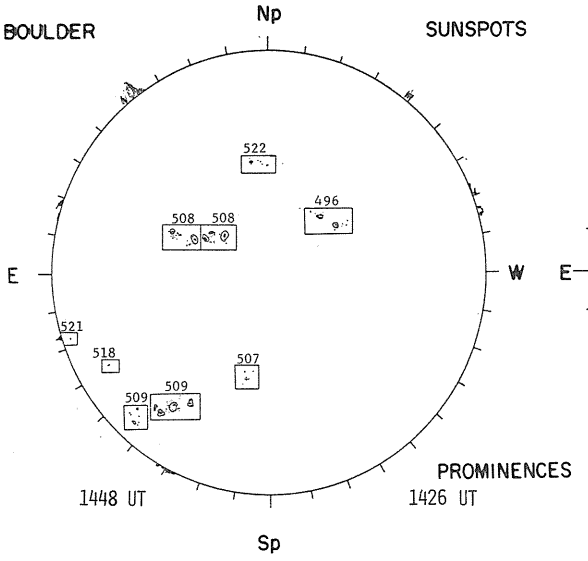


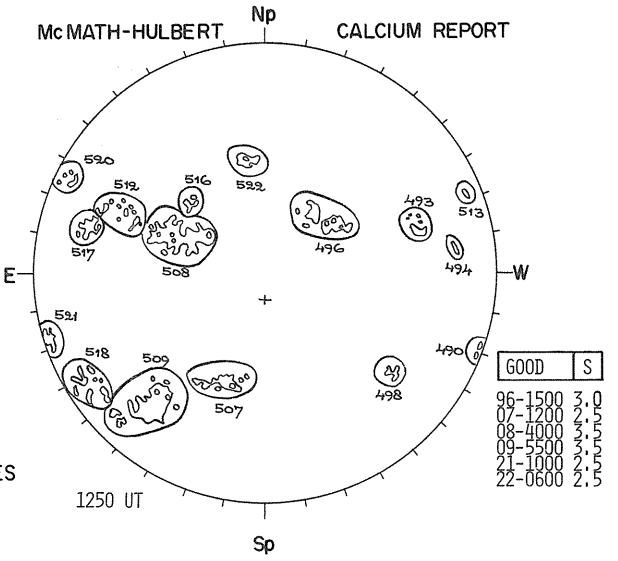




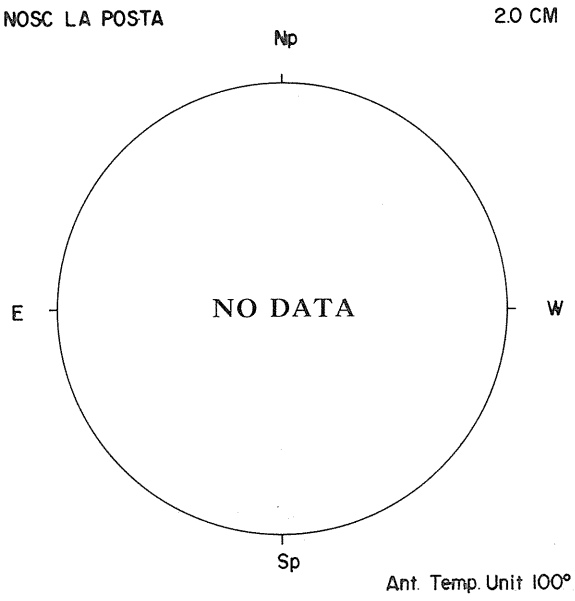
02

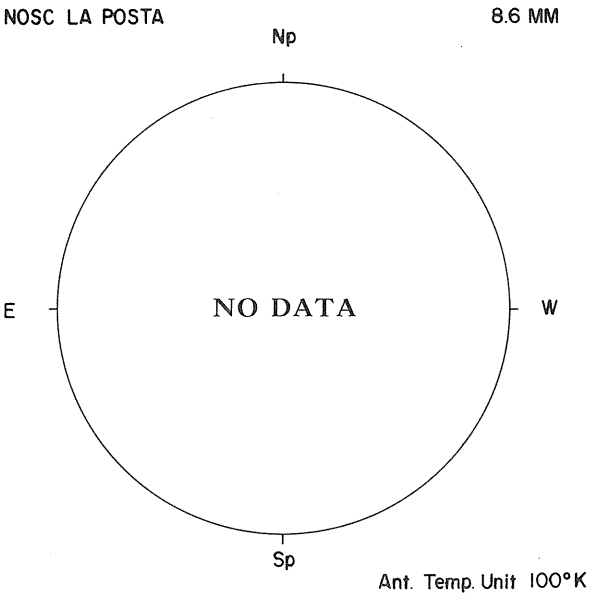




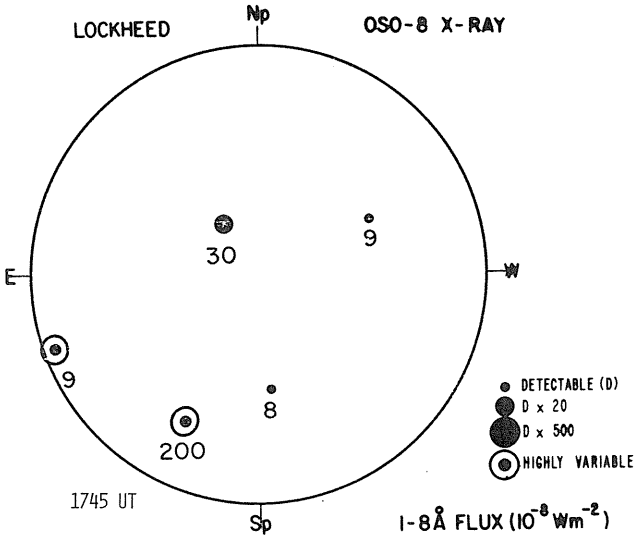


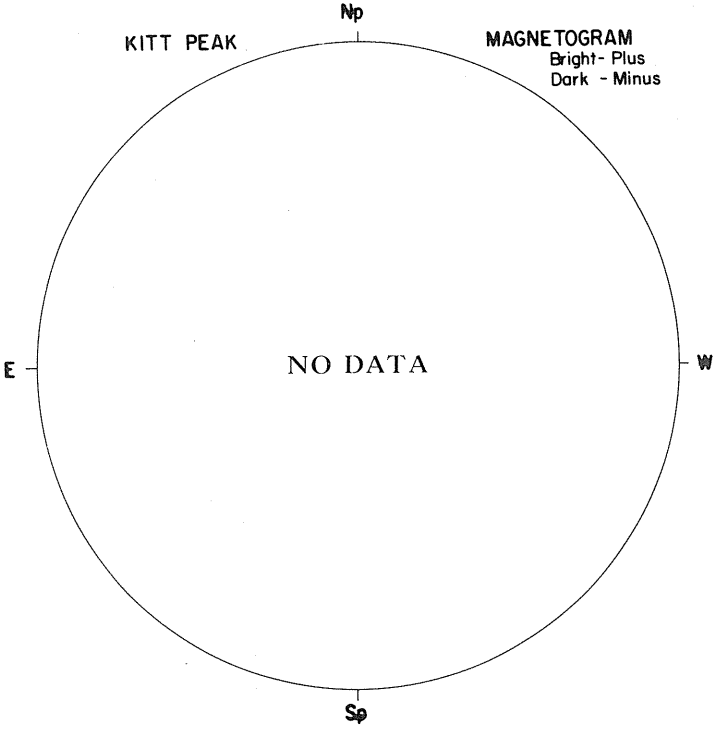
PROMINENCES
1426 UT

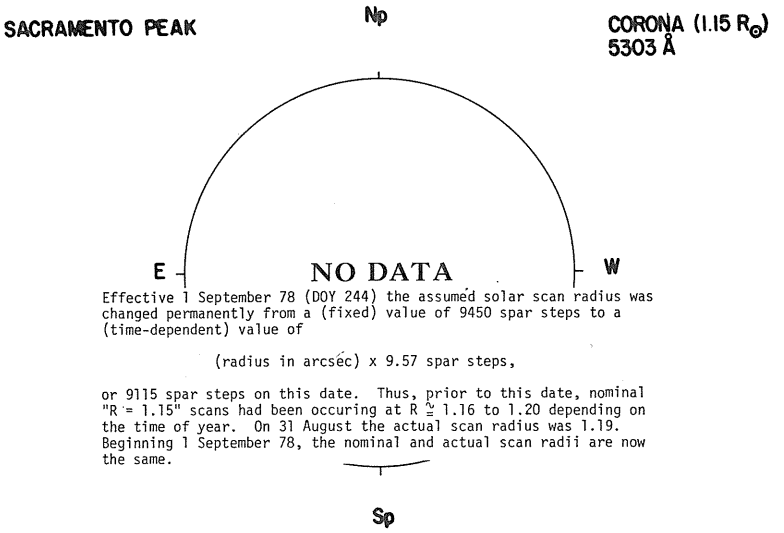




SEPTEMBER 3, 1978 (P = 21.51, B_o = 7.22, L_o = 225.20)



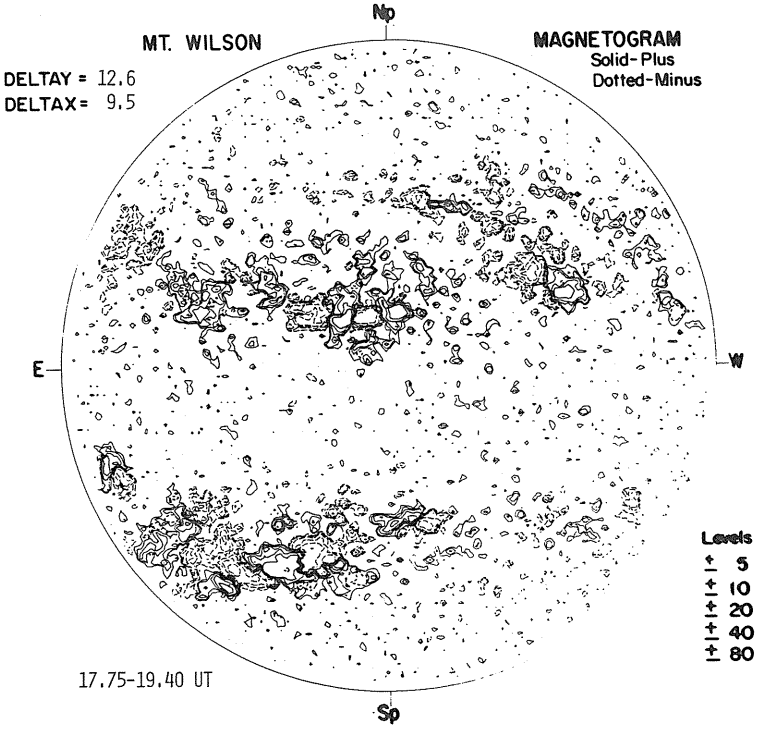




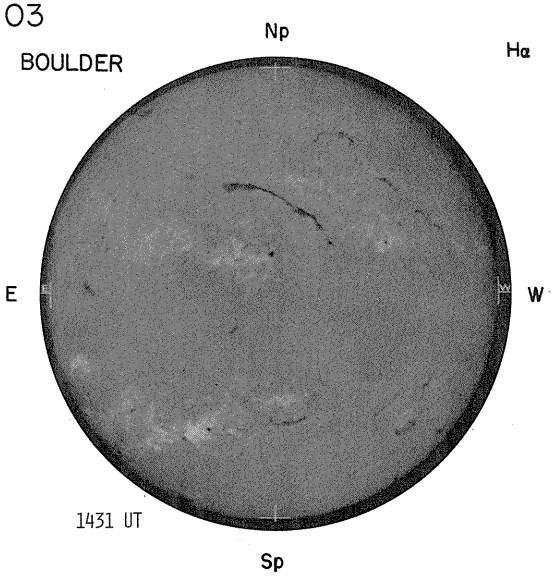
Effective 1 September 78 (DOY 244) the assumed solar scan radius was changed permanently from a (fixed) value of 9450 spar steps to a (time-dependent) value of

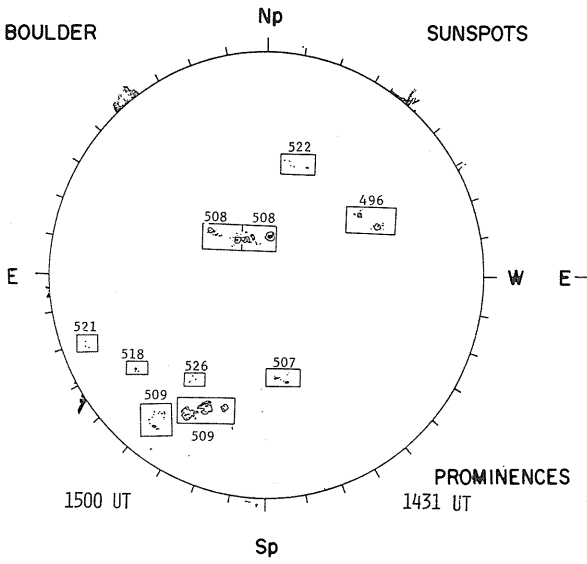
(radius in arcsec) x 9.57 spar steps,

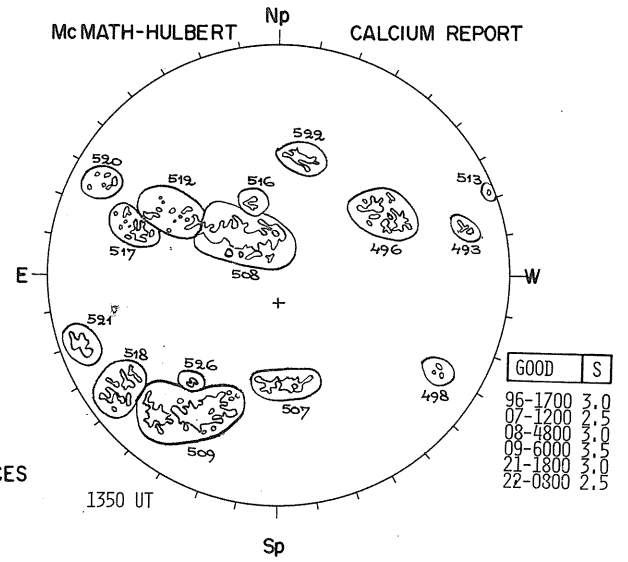
or 9115 spar steps on this date. Thus, prior to this date, nominal "R = 1.15" scans had been occuring at R ≅ 1.16 to 1.20 depending on the time of year. On 31 August the actual scan radius was 1.19. Beginning 1 September 78, the nominal and actual scan radii are now the same.

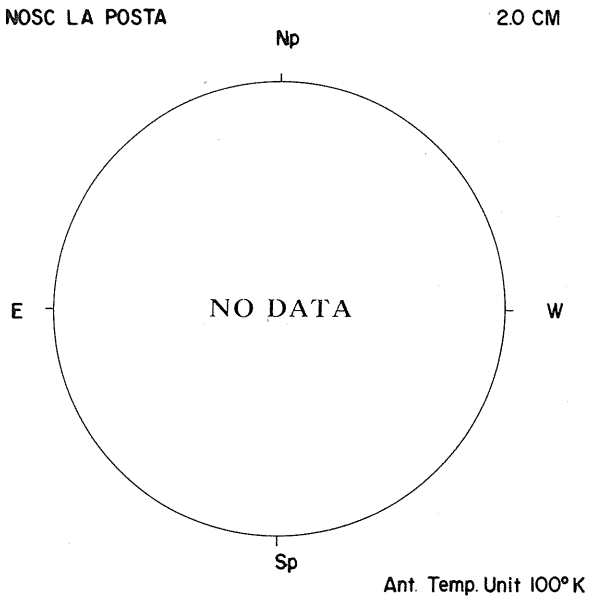


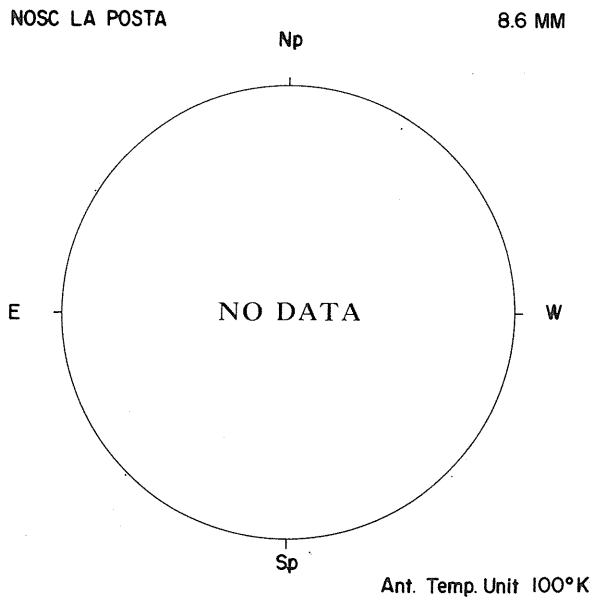
03


BOULDER
Np
Hα
E
W
1431 UT
Sp

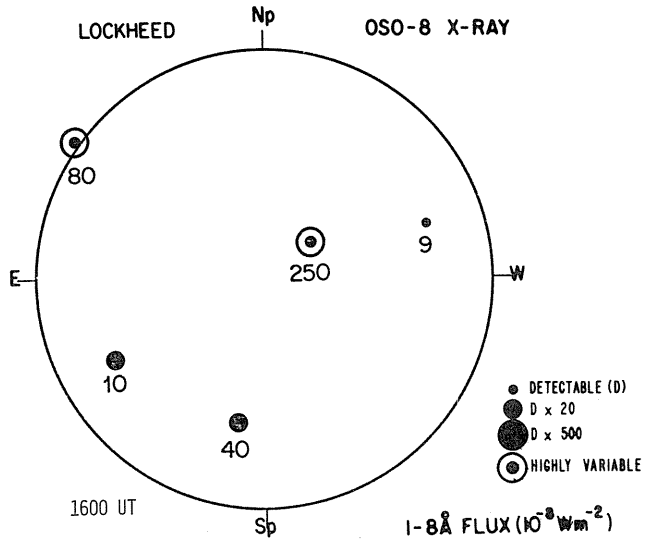

BOULDER
Np
SUNSPOTS
E
W
522
496
508
508
521
518
526
507
509
509
1500 UT
Sp
PROMINENCES
1431 UT

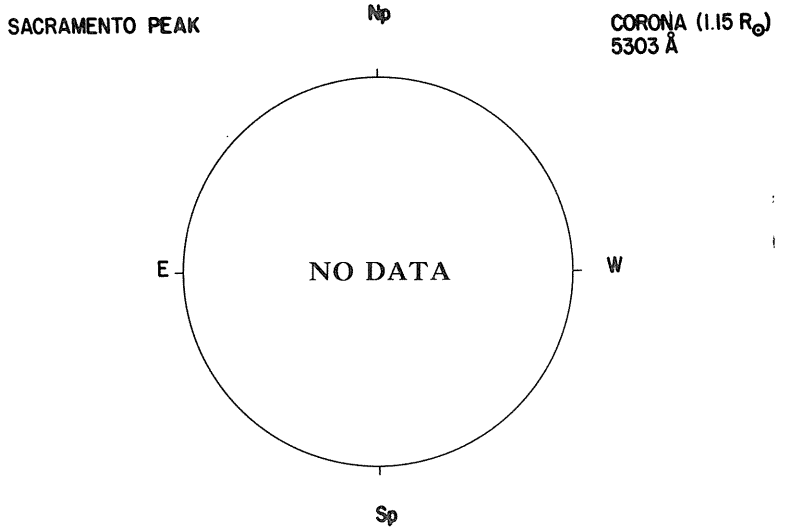

McMATH-HULBERT
Np
CALCIUM REPORT
E
W
520
512
516
522
513
517
508
496
493
521
518
526
507
498
509
1350 UT
Sp
GOOD
S
96-1700 3.0
07-1200 2.5
08-4800 3.0
09-6000 3.5
21-1800 3.0
22-0800 2.5

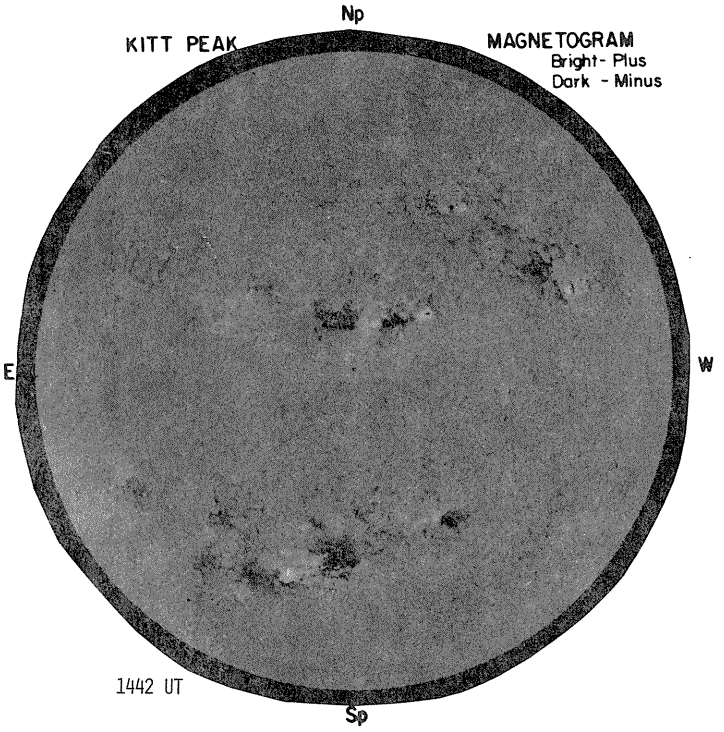

NOSC LA POSTA
2.0 CM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100° K

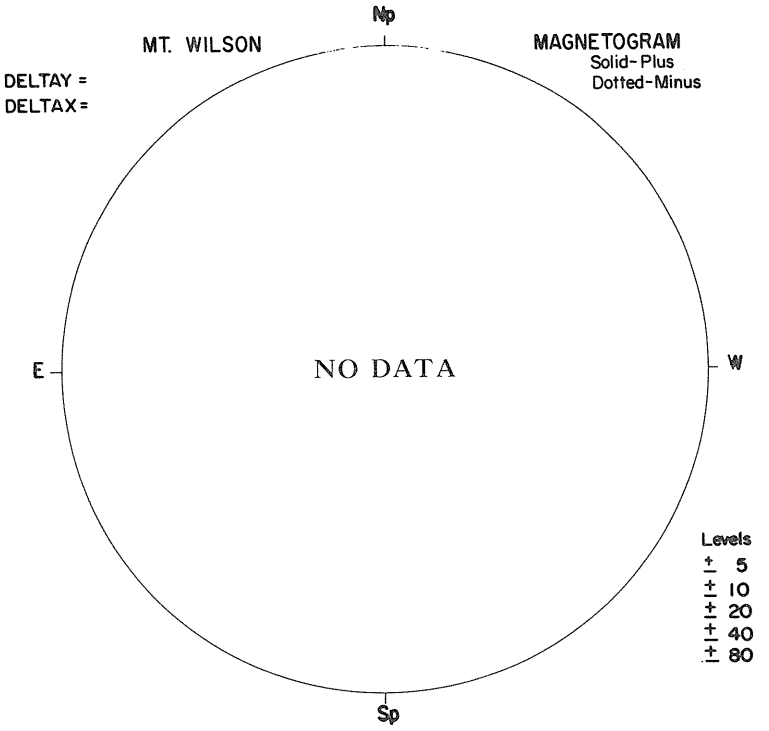

NOSC LA POSTA
8.6 MM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100° K

SEPTEMBER 4, 1978 (P = 21.75, B_o = 7.23, L_o = 211.99)

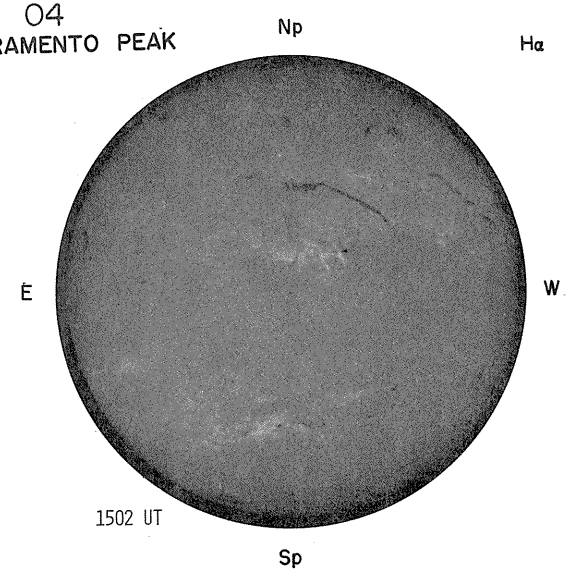




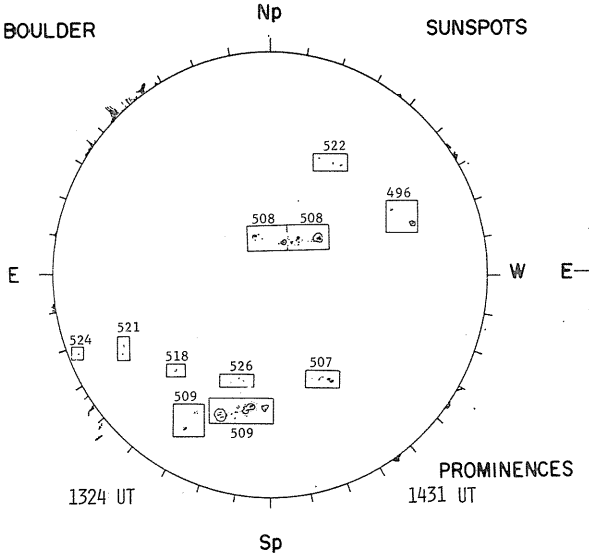




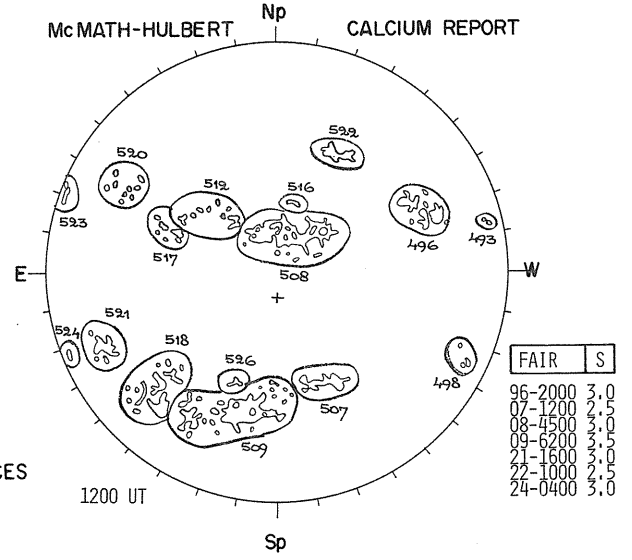
04
SACRAMENTO PEAK



BOULDER

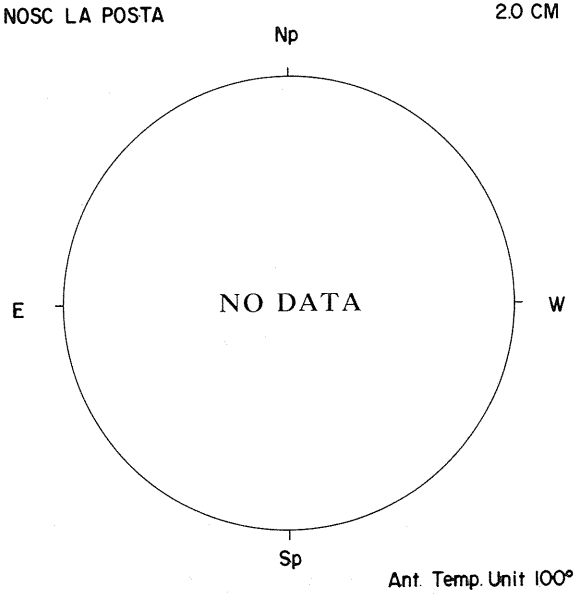


McMATH-HULBERT

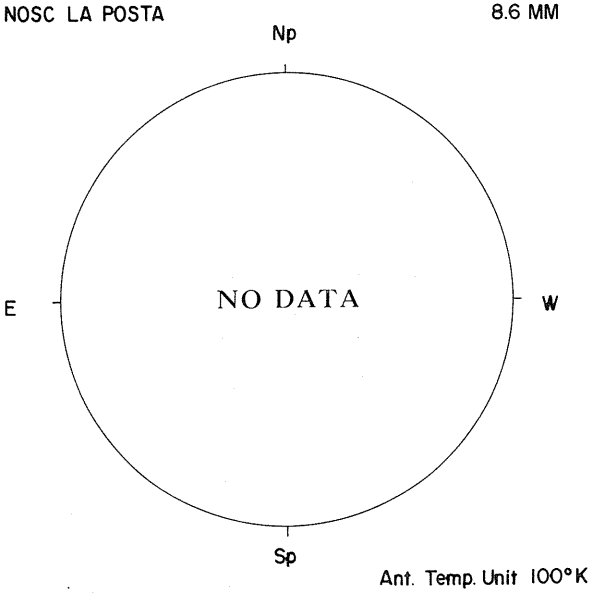


PROMINENCES
1431 UT

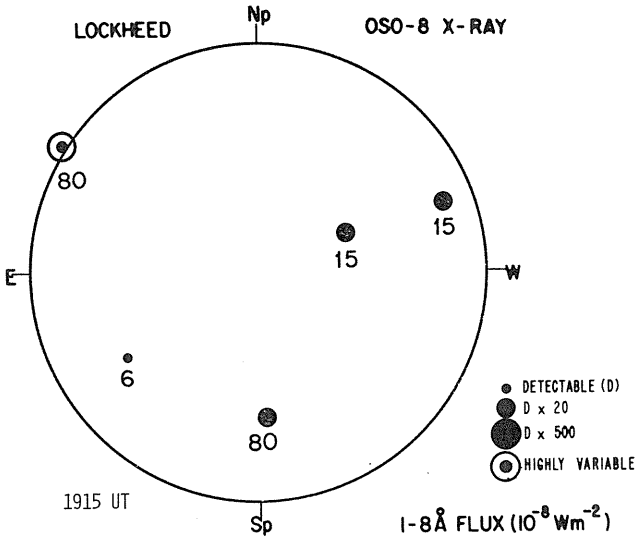
NOSC LA POSTA

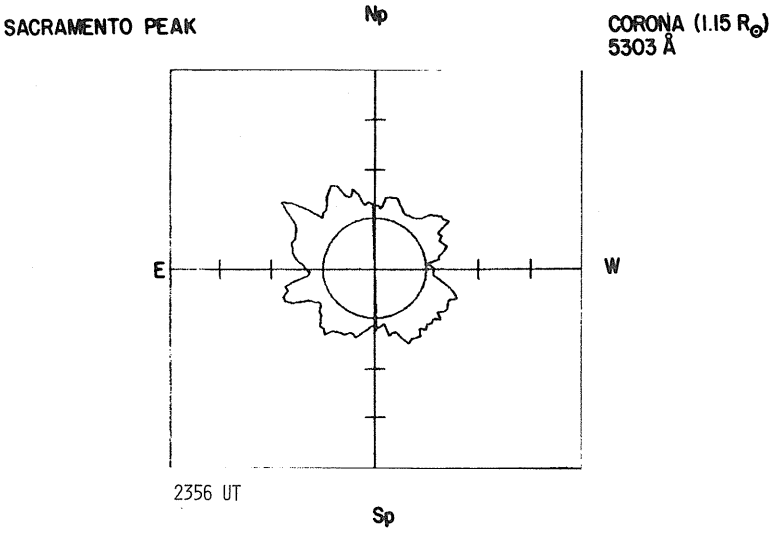


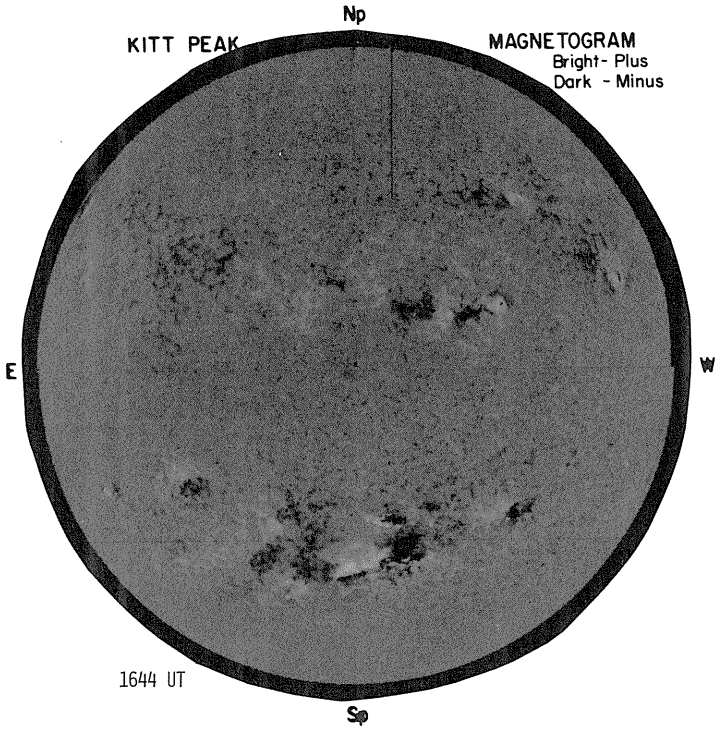
NOSC LA POSTA

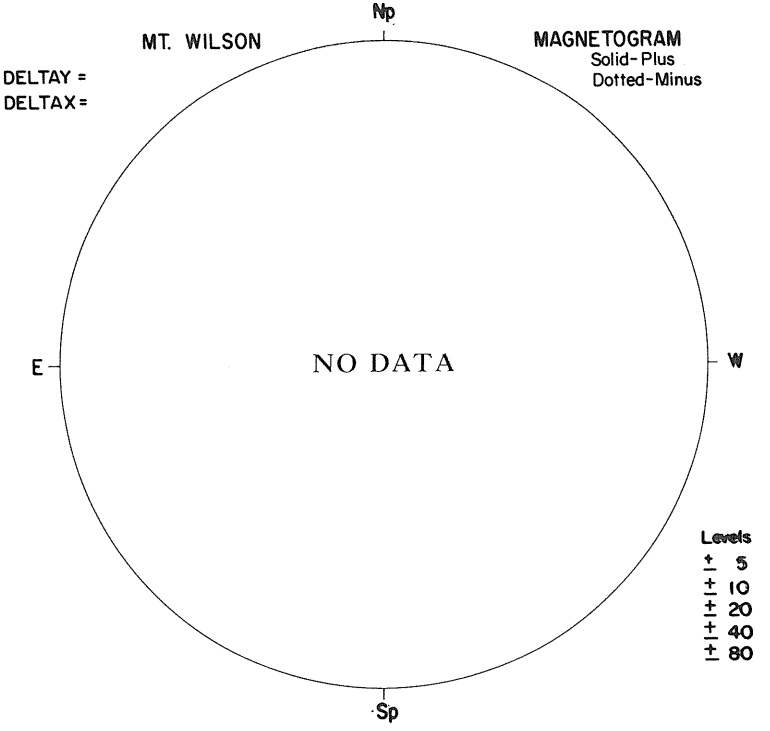


SEPTEMBER 5, 1978 (P = 21.99, B_o = 7.24, L_o = 198.79)



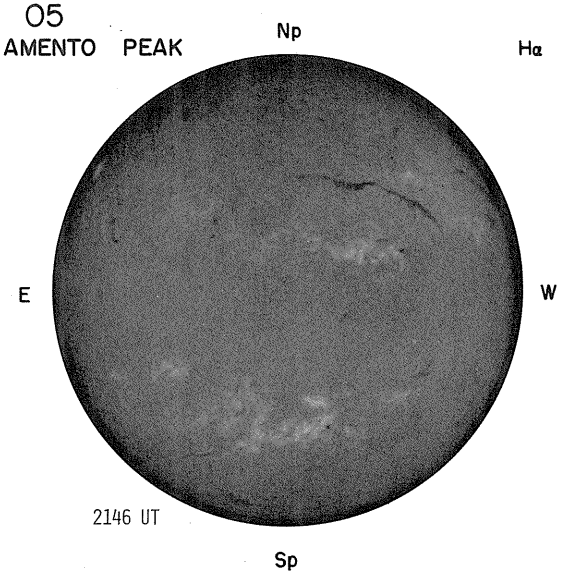






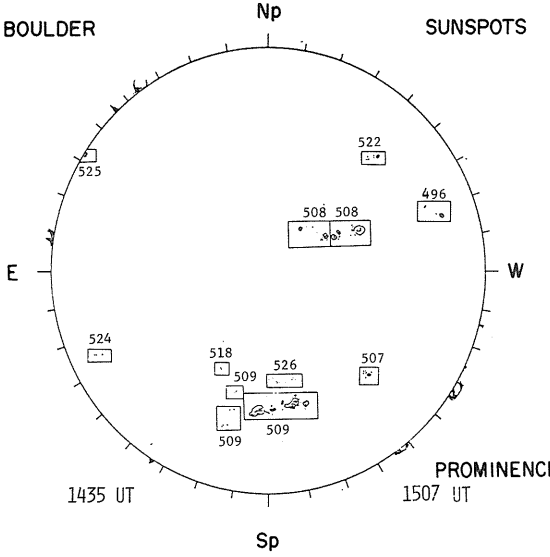
05

SACRAMENTO PEAK Hα



2146 UT

BOULDER SUNSPOTS

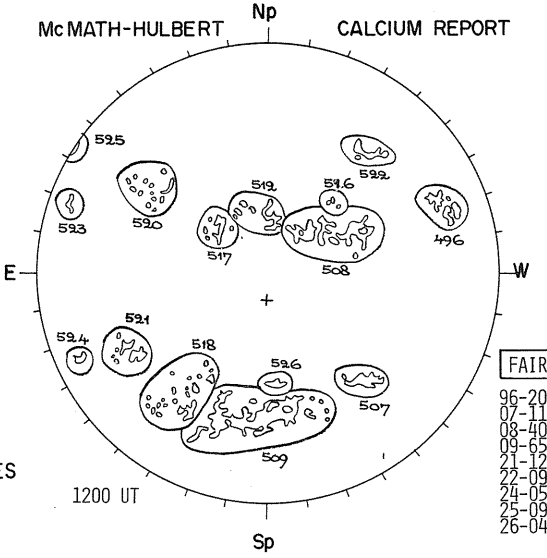


1435 UT

PROMINENCES

1507 UT

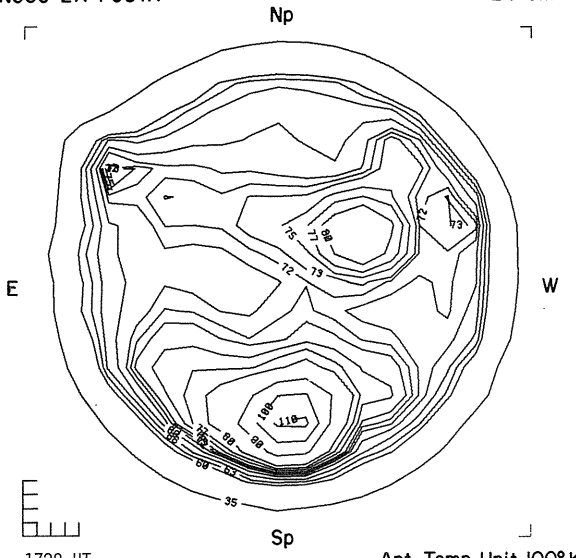
McMATH-HULBERT CALCIUM REPORT



1200 UT

FAIR	D
96-2000	3.0
07-1100	2.5
08-4000	3.0
09-6500	3.5
21-1200	3.0
22-0900	2.5
24-0500	3.0
25-0900	3.5
26-0400	2.5

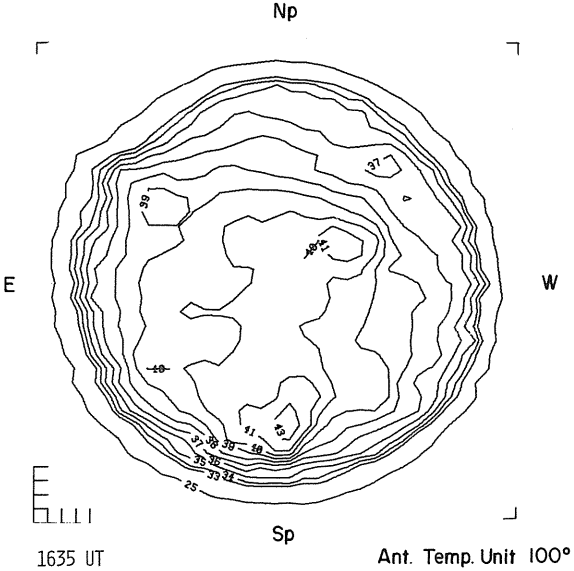
NOSC LA POSTA 2.0 CM



1728 UT

Ant. Temp. Unit 100°K

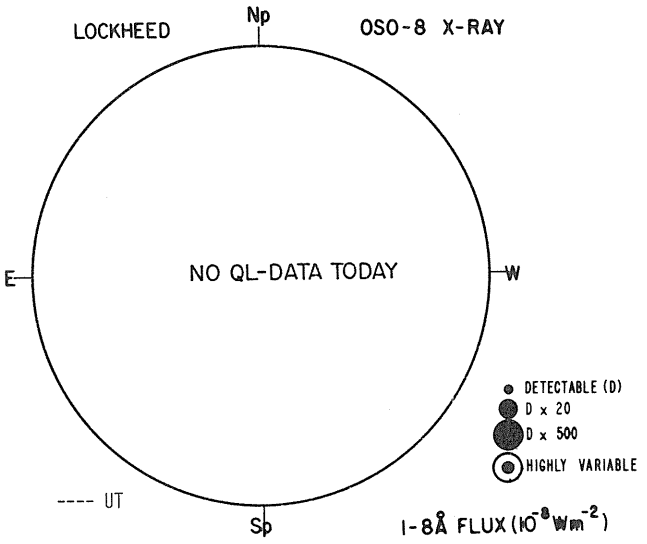
NOSC LA POSTA 8.6 MM

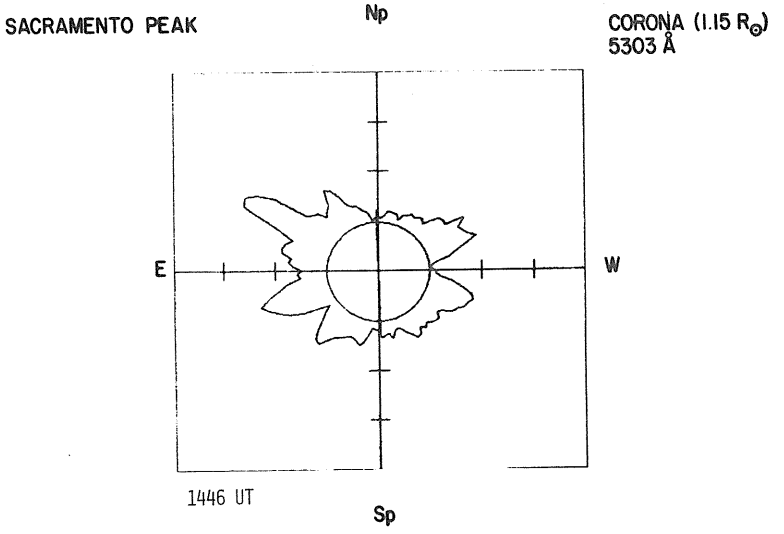


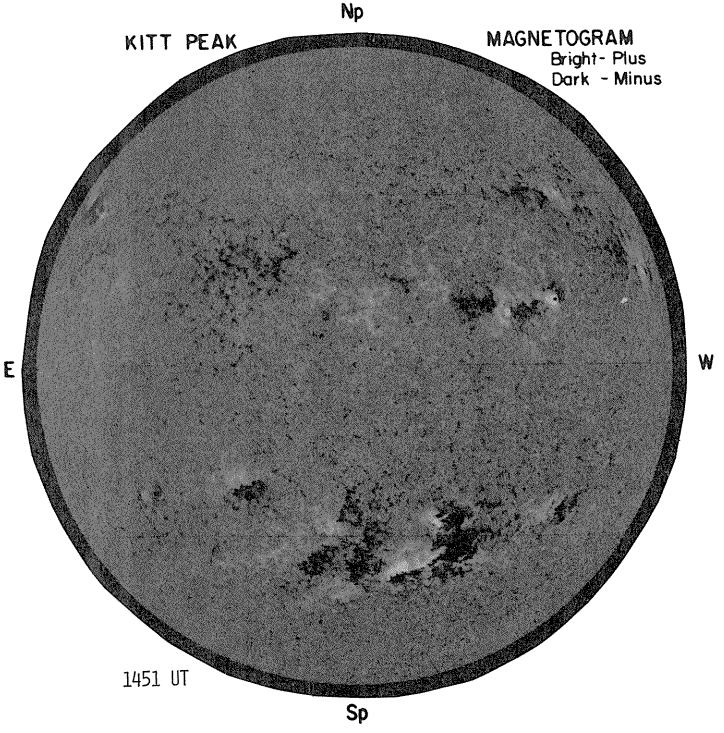
1635 UT

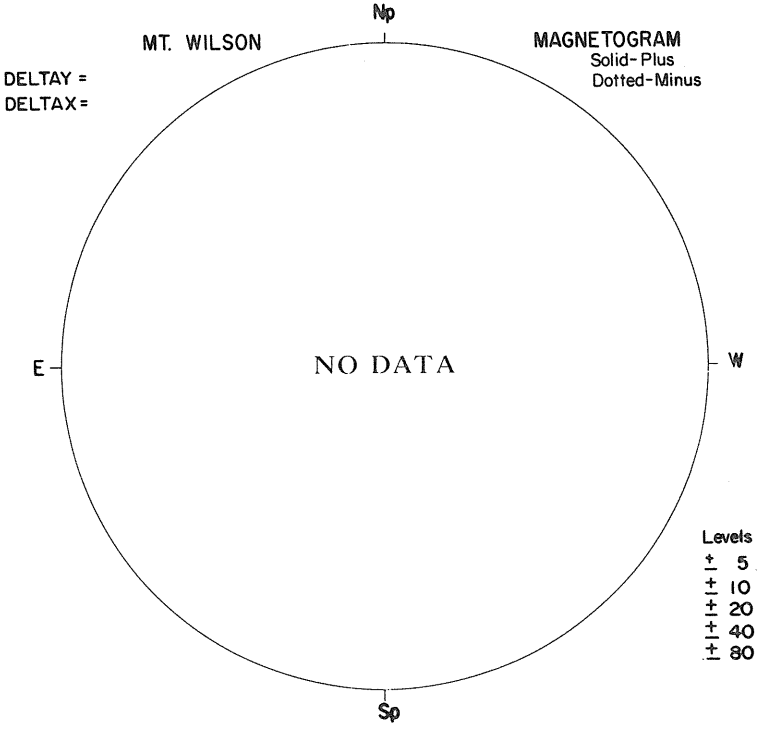
Ant. Temp. Unit 100°K

SEPTEMBER 6, 1978 (P = 22.22, B_o = 7.24, L_o = 185.58)



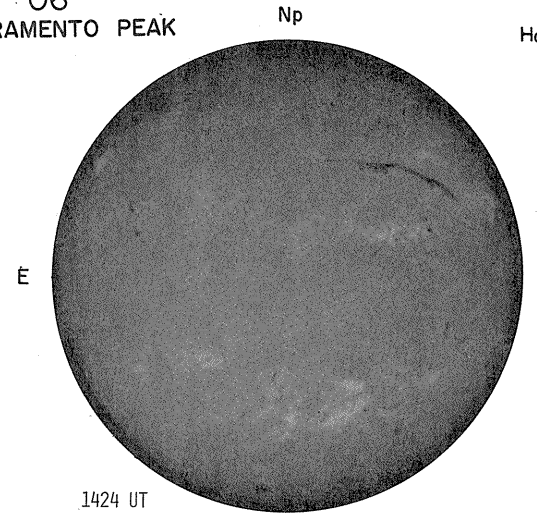




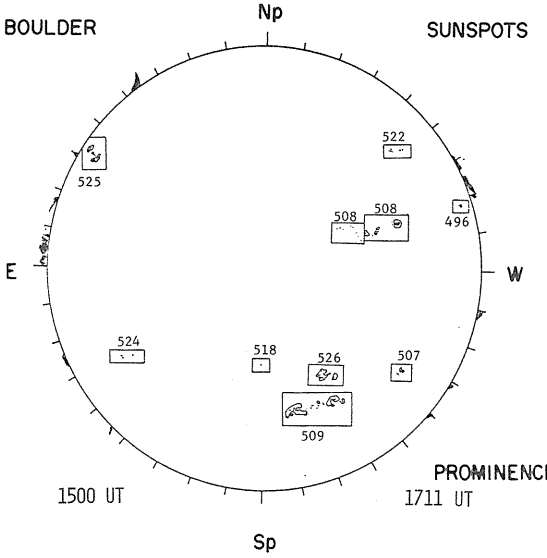


06

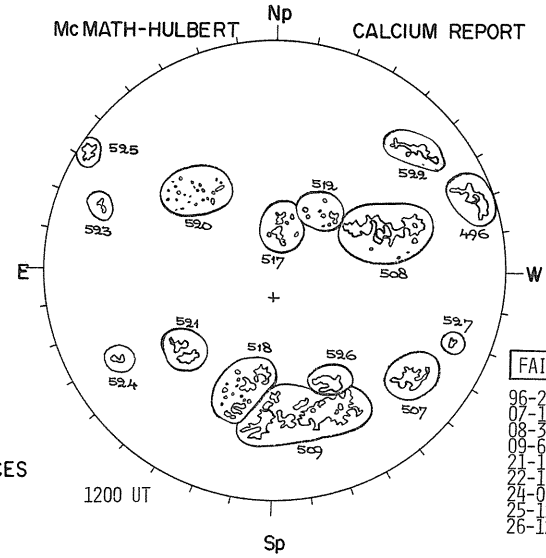
SACRAMENTO PEAK



BOULDER



Mc MATH-HULBERT



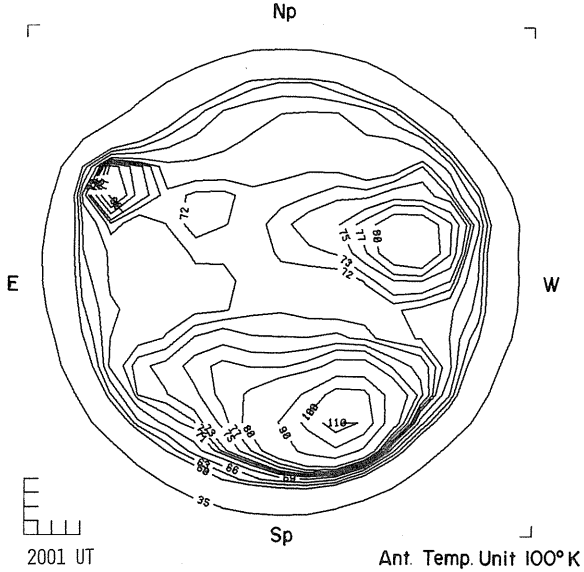
PROMINENCES

1711 UT

FAIR	D
96-2500	2.5
07-1500	2.5
08-3700	3.5
09-6900	3.5
21-1000	2.5
22-1200	3.0
24-0400	3.0
25-1200	3.5
26-1200	2.5

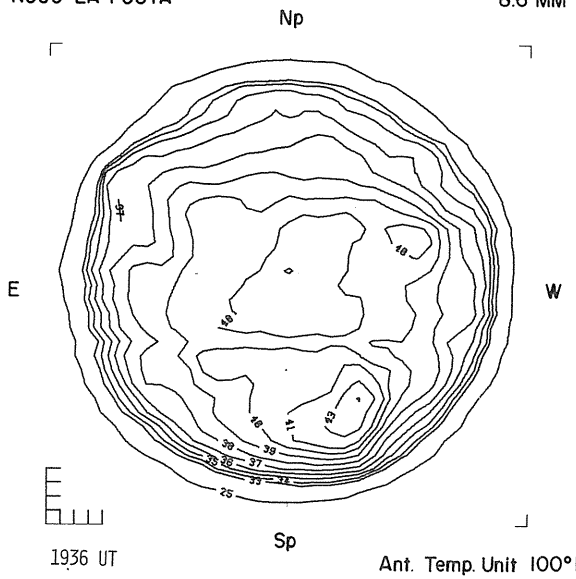
NOSC LA POSTA

2.0 CM



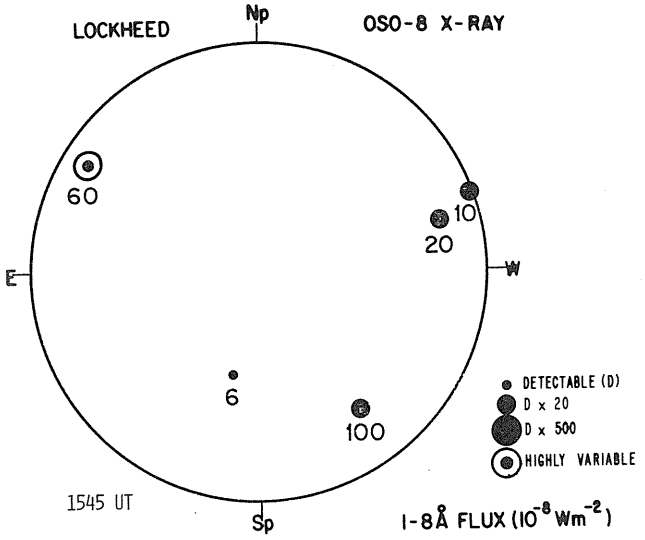
NOSC LA POSTA

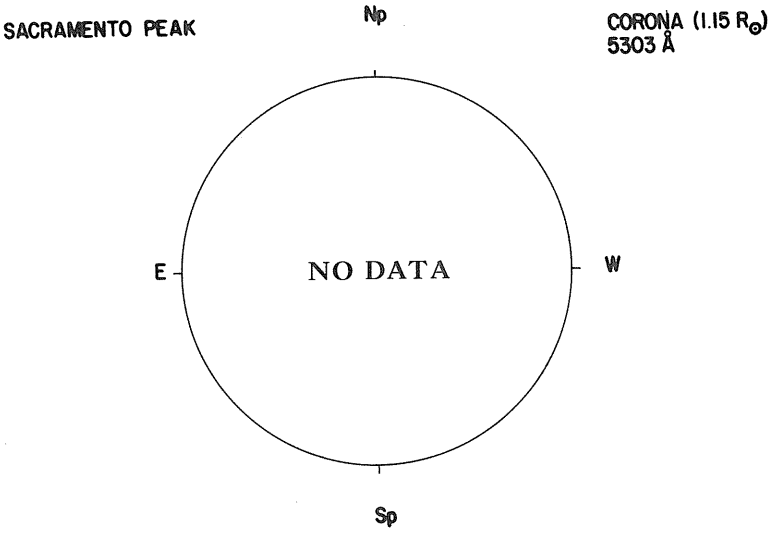
8.6 MM

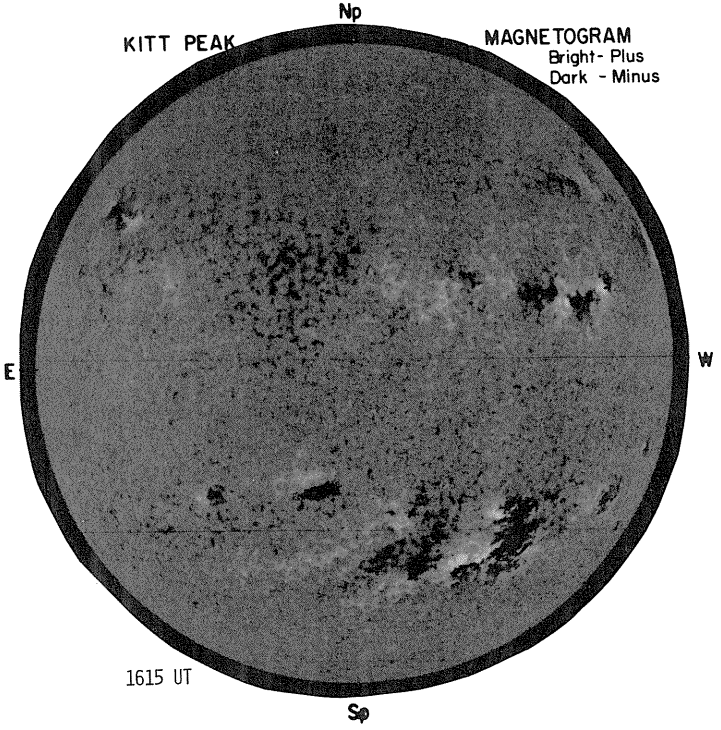


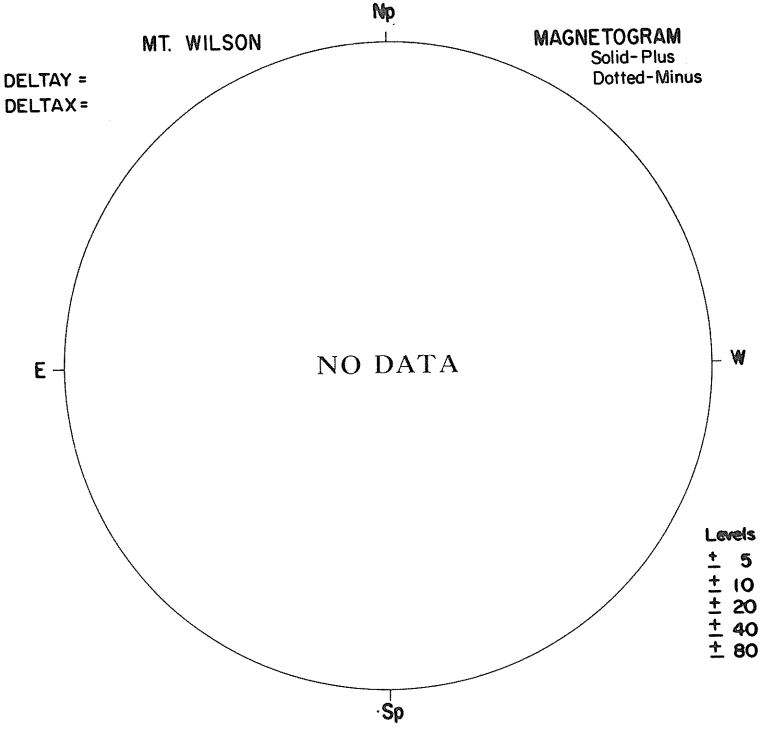
57
Sep 78

SEPTEMBER 7, 1978 (P = 22.44, B_o = 7.25, L_o = 172.37)



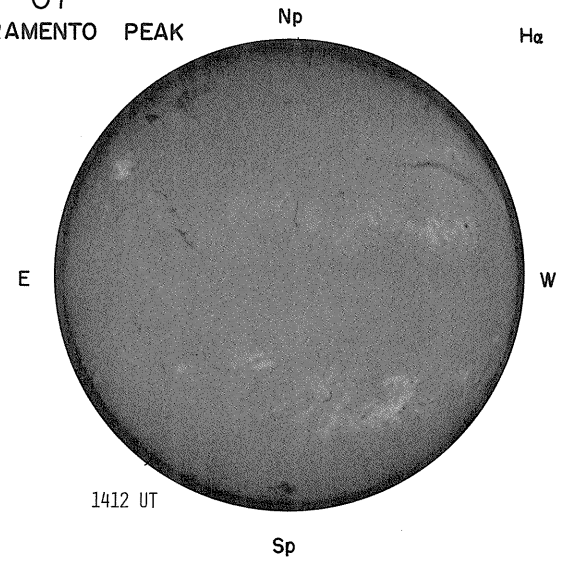






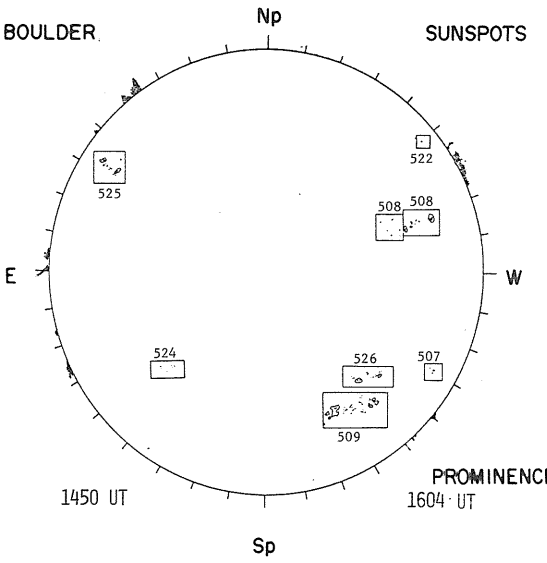
07

SACRAMENTO PEAK Hα



1412 UT

BOULDER SUNSPOTS

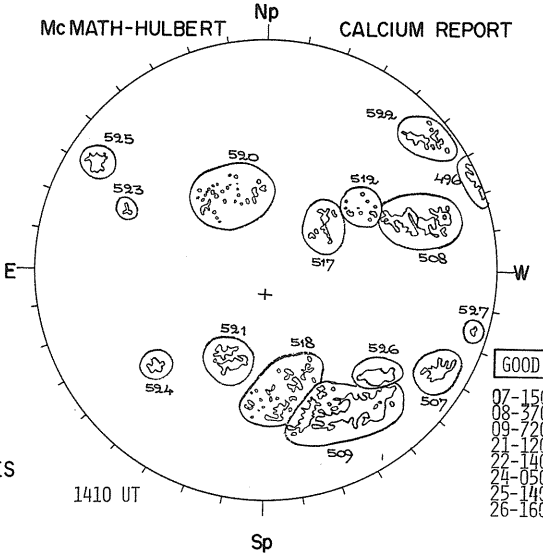


1450 UT

PROMINENCES

1604 UT

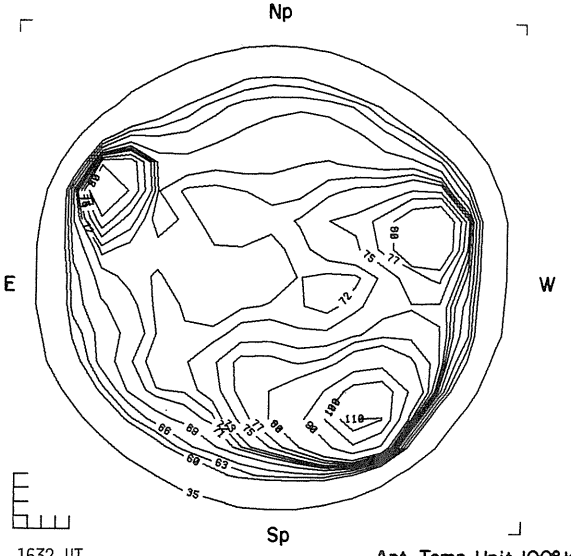
McMATH-HULBERT CALCIUM REPORT



1410 UT

GOOD	M
07-1500	2.5
08-3700	3.0
09-7200	3.5
21-1200	2.5
22-1400	2.5
24-0500	2.5
25-1400	4.0
26-1600	3.0

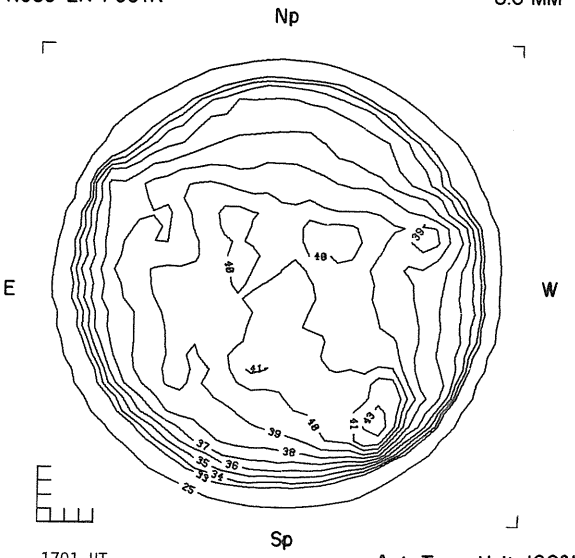
NOSC LA POSTA 2.0 CM



1632 UT

Ant. Temp. Unit 100° K

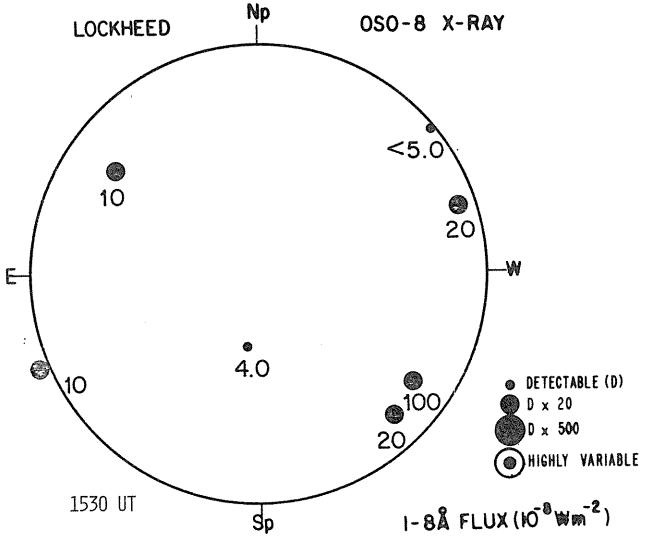
NOSC LA POSTA 8.6 MM

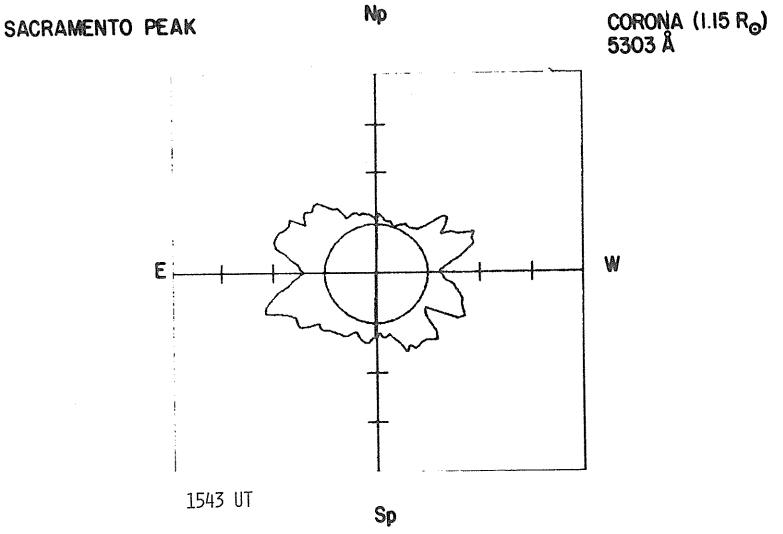


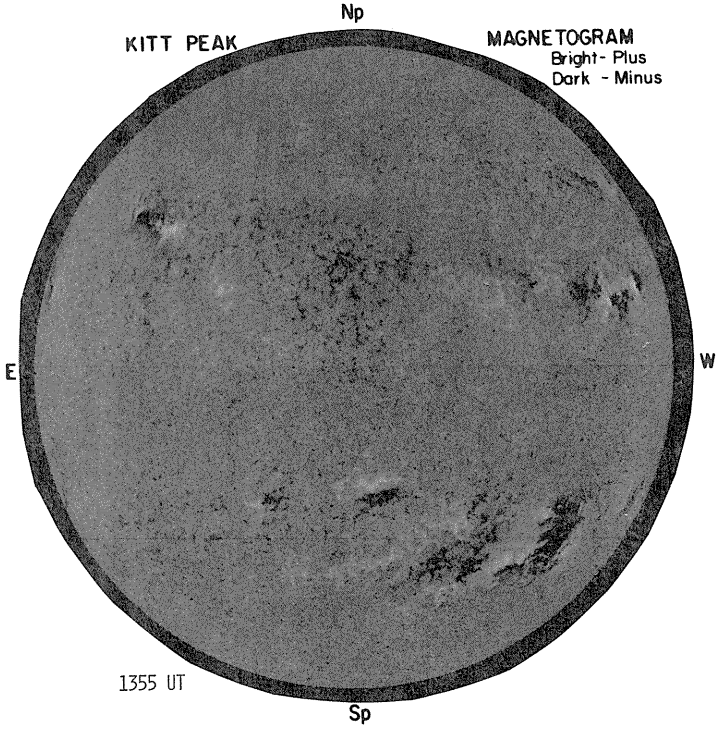
1701 UT

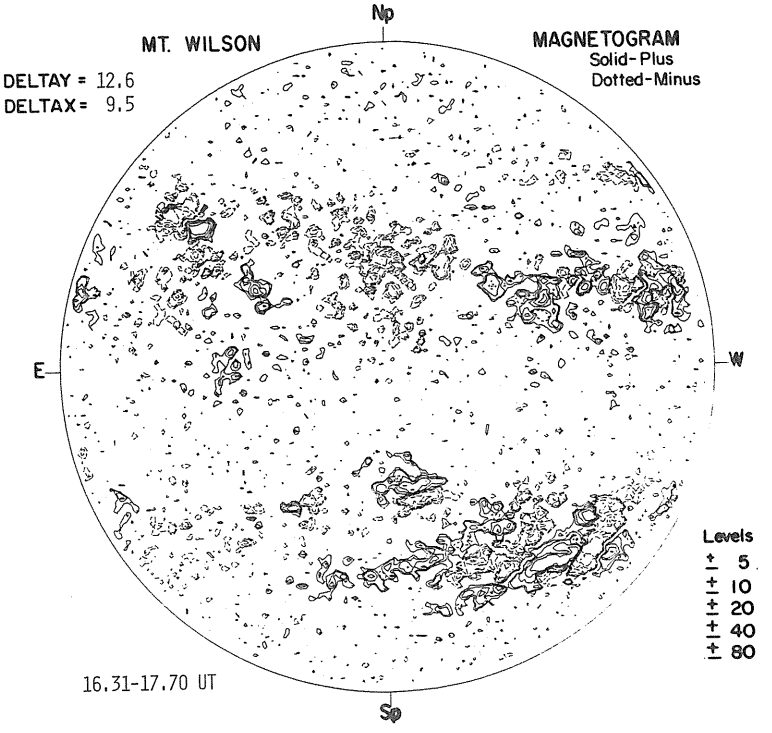
Ant. Temp. Unit 100° K

SEPTEMBER 8, 1978 (P = 22.66, B_o = 7.25, L_o = 159.17)



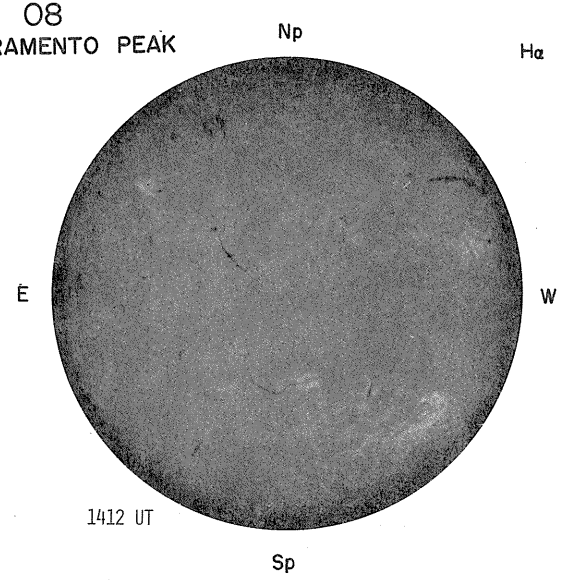




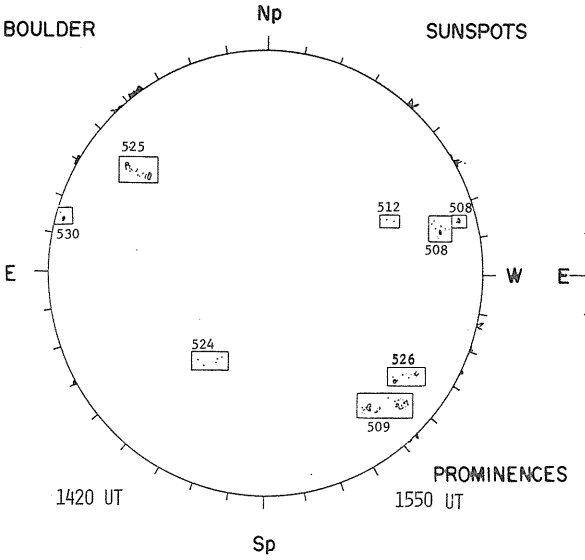


08

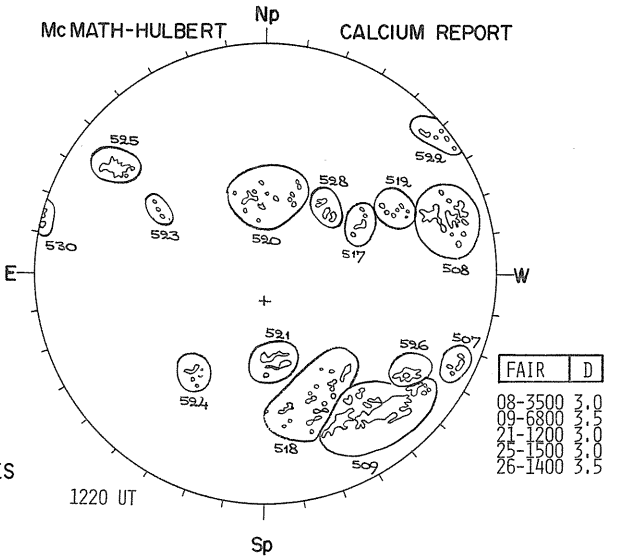
SACRAMENTO PEAK



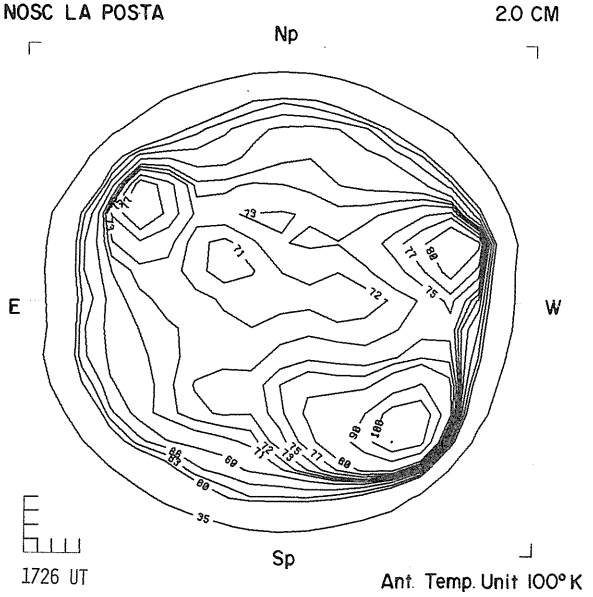
BOULDER



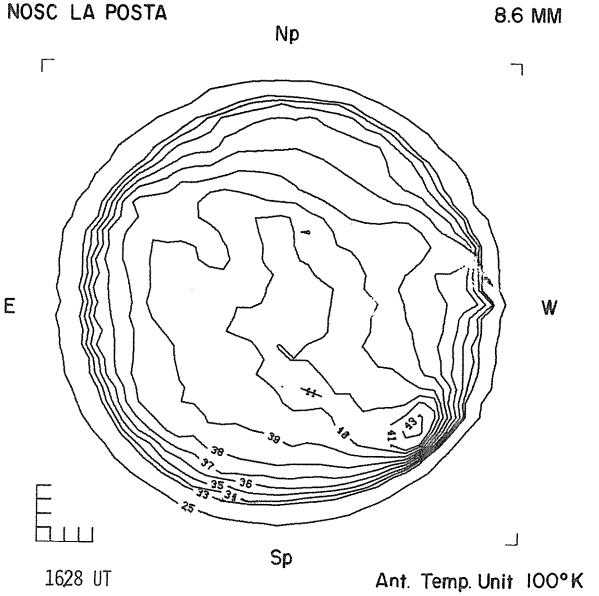
McMATH-HULBERT



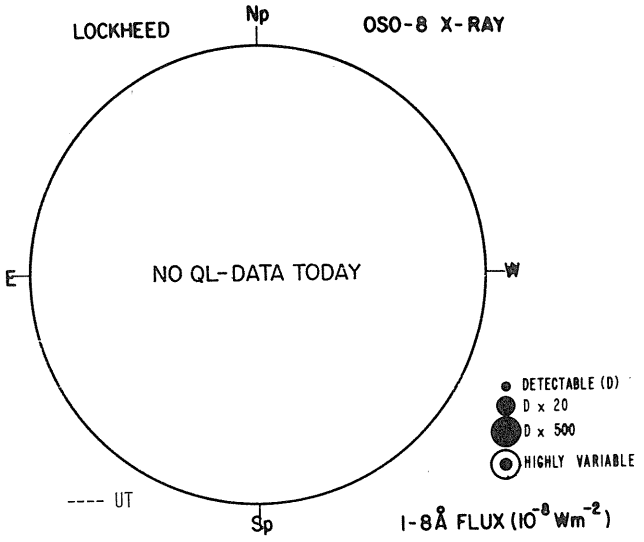
NOSC LA POSTA

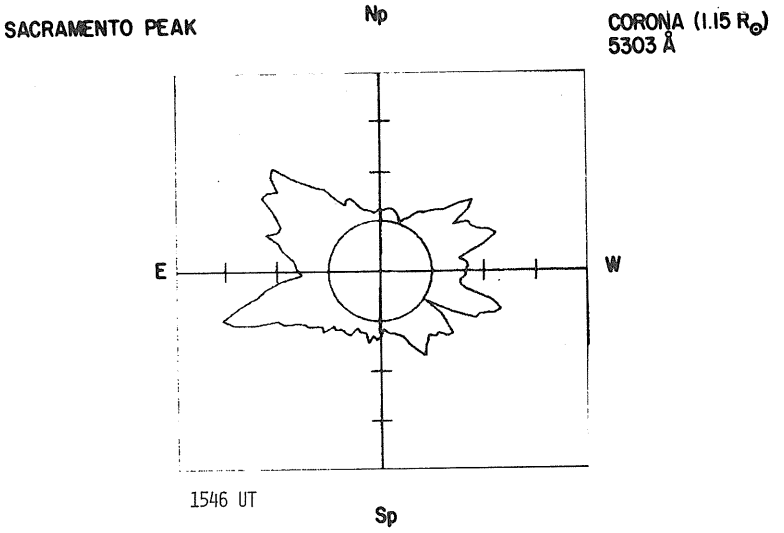


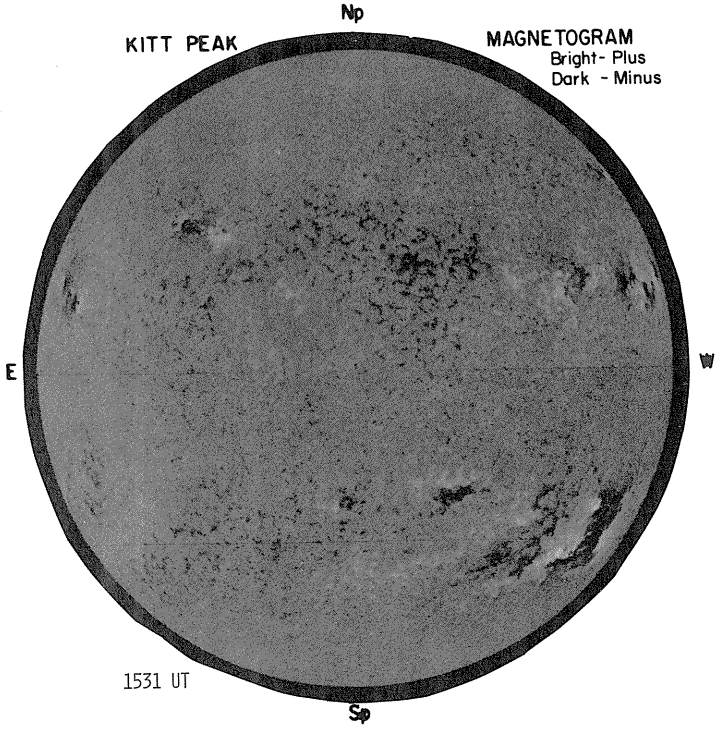
NOSC LA POSTA

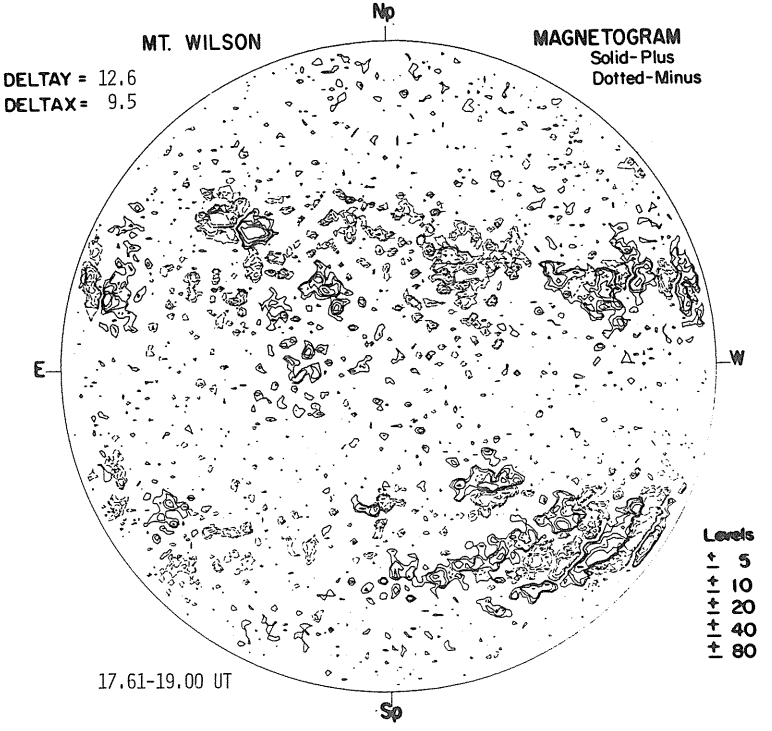


SEPTEMBER 9, 1978 (P = 22.88, B_o = 7.25, L_o = 145.96)



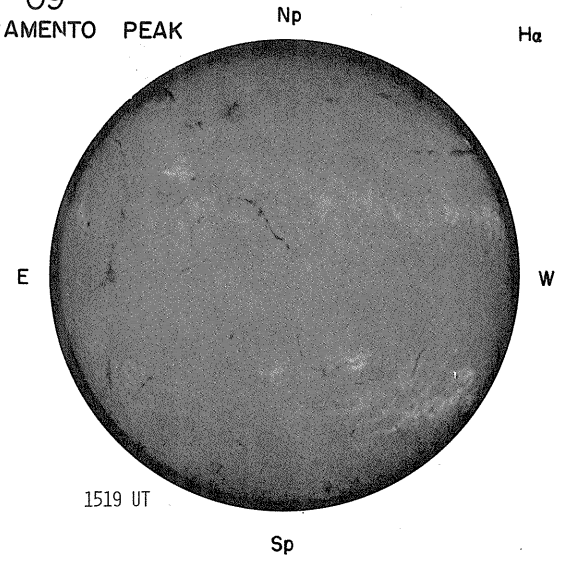




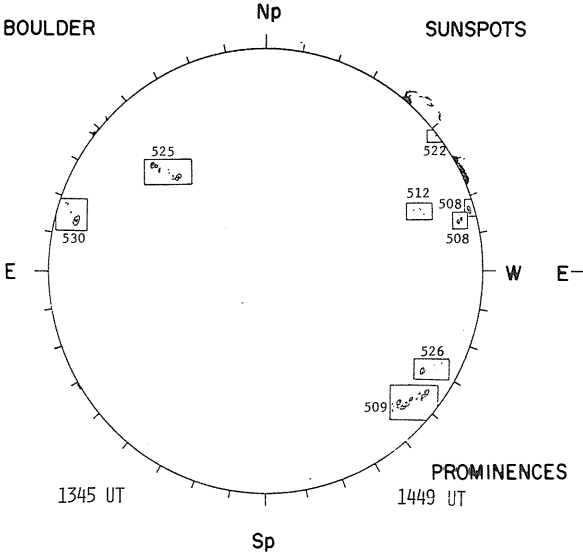


09

SACRAMENTO PEAK Hα

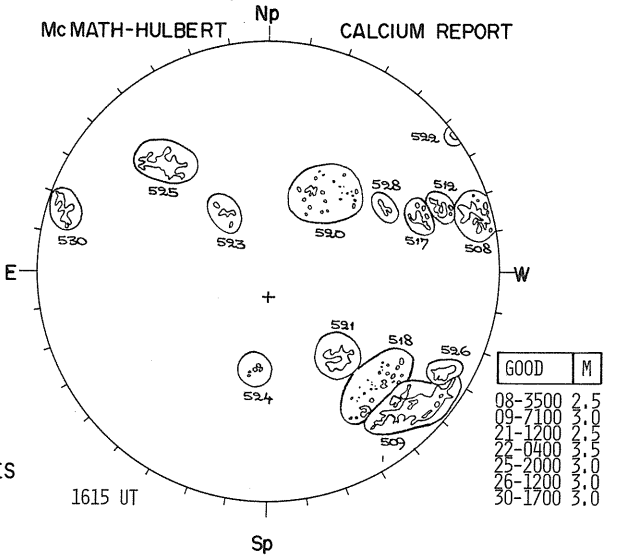


BOULDER SUNSPOTS

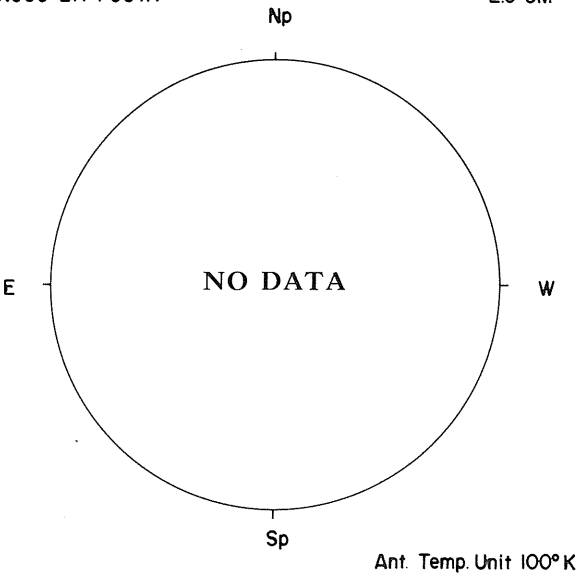


PROMINENCES

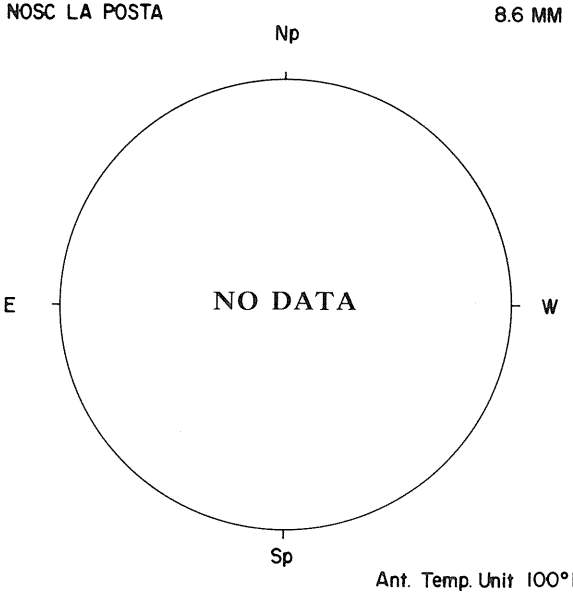
McMATH-HULBERT CALCIUM REPORT



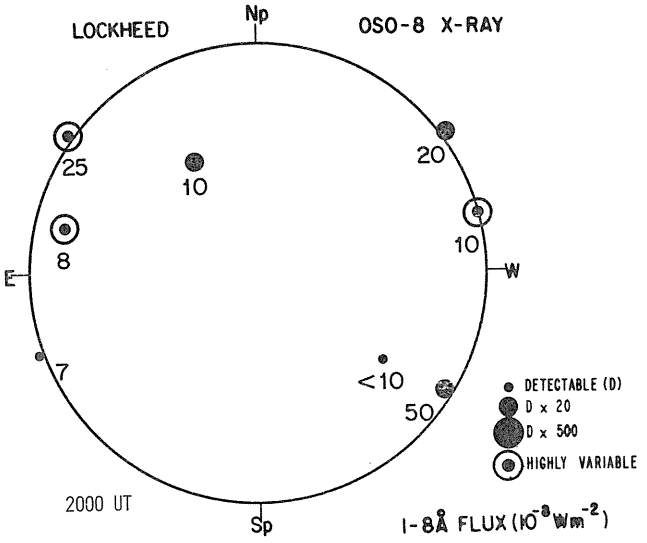
NOSC LA POSTA 2.0 CM

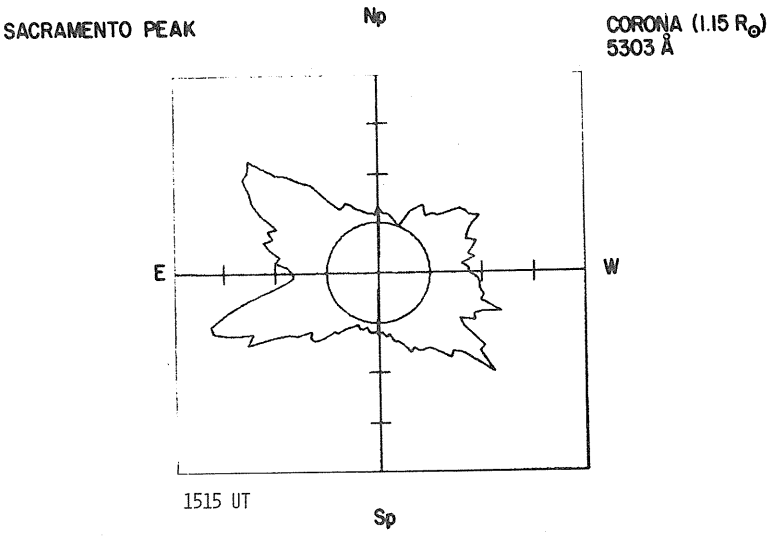


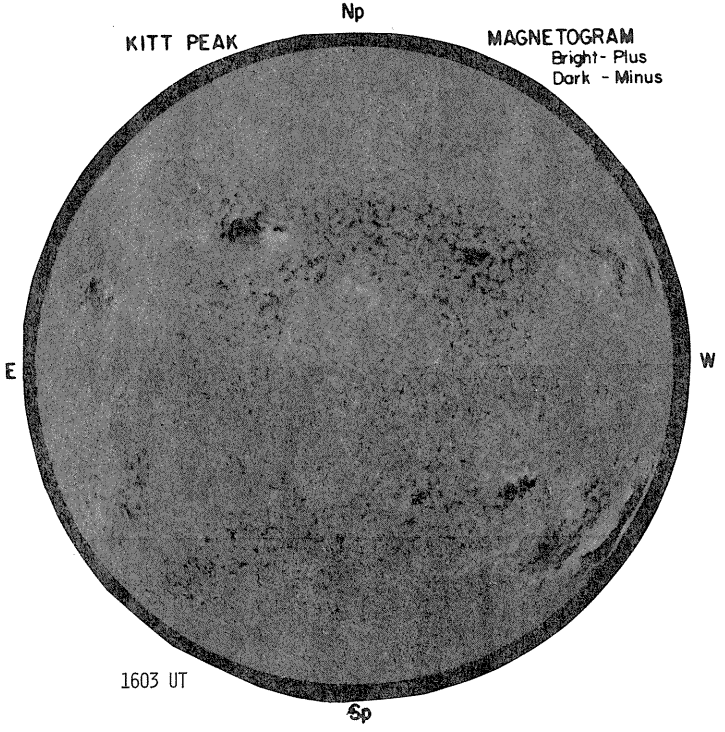
NOSC LA POSTA 8.6 MM

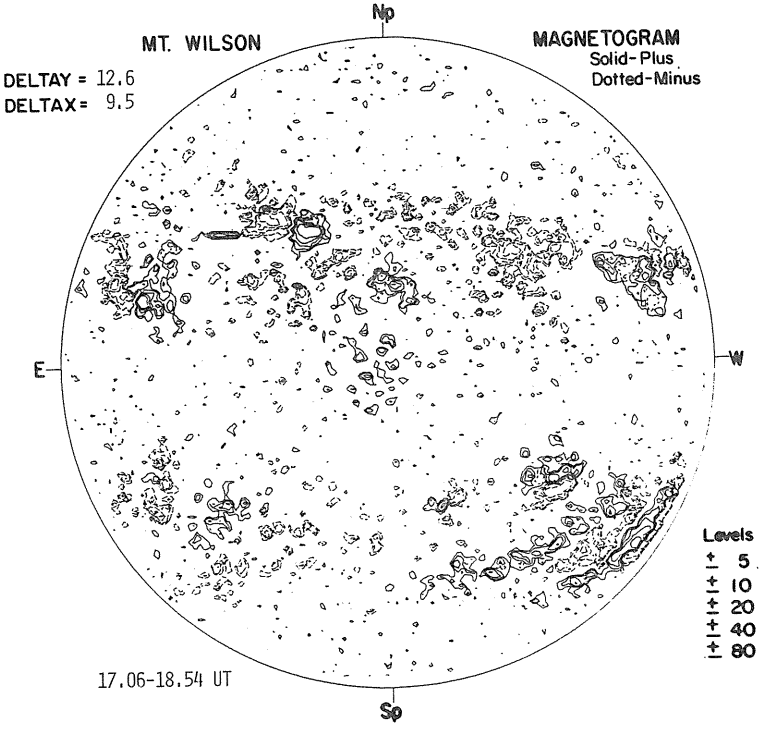


SEPTEMBER 10, 1978 (P = 23.08, B_o = 7.25, L_o = 132.76)

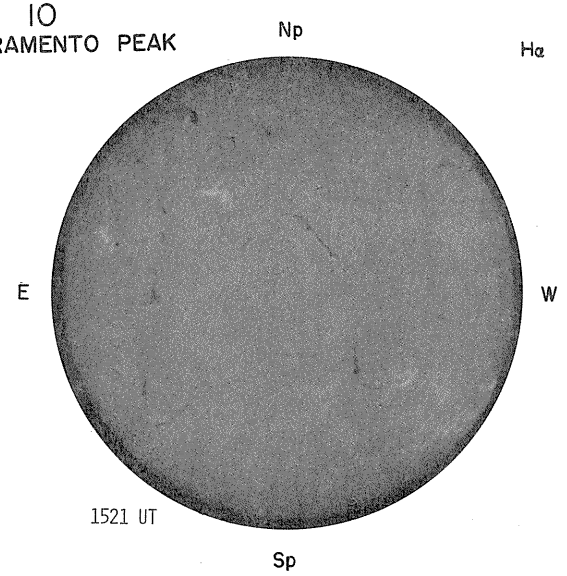




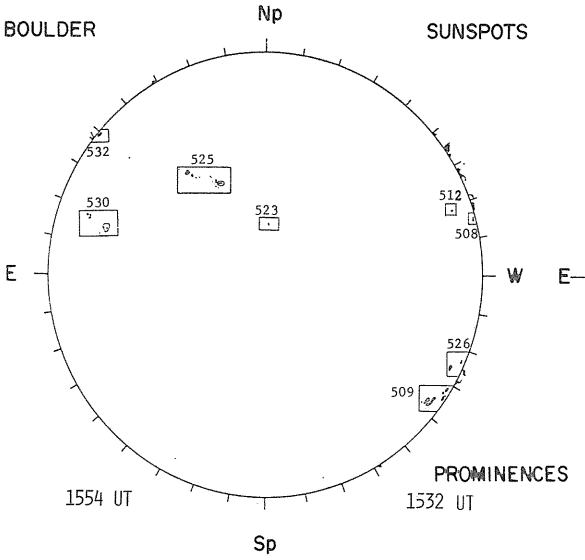




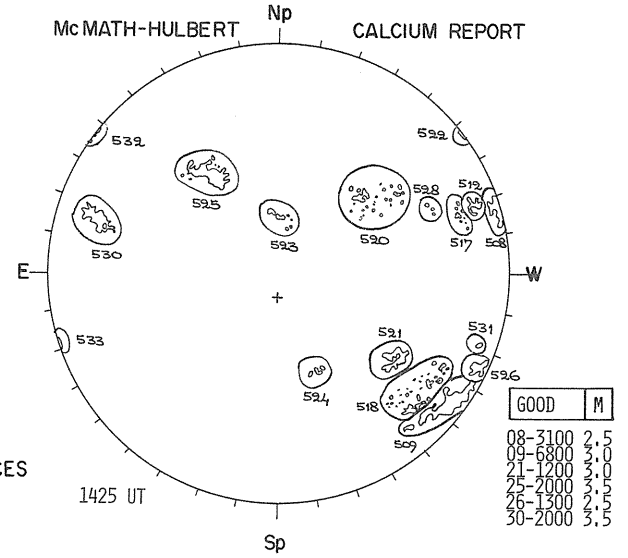
10
SACRAMENTO PEAK



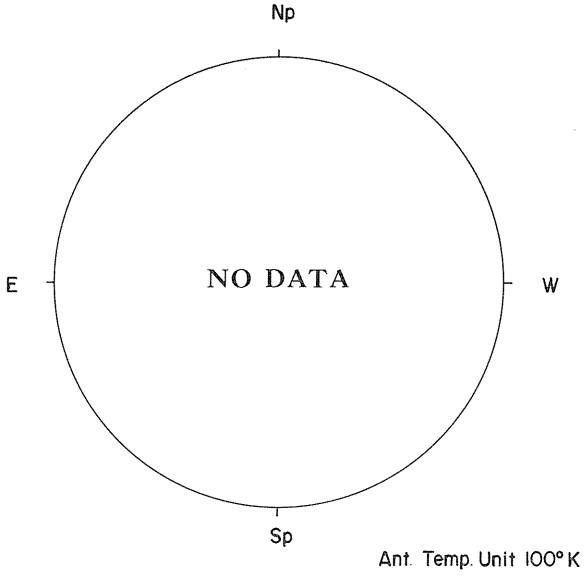
BOULDER



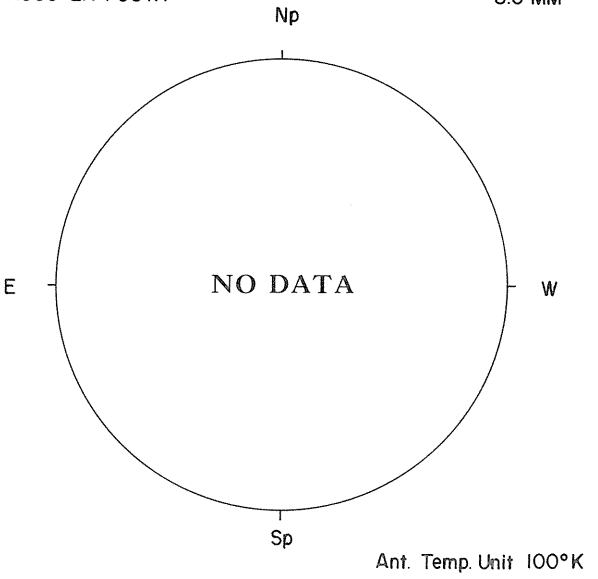
McMATH-HULBERT



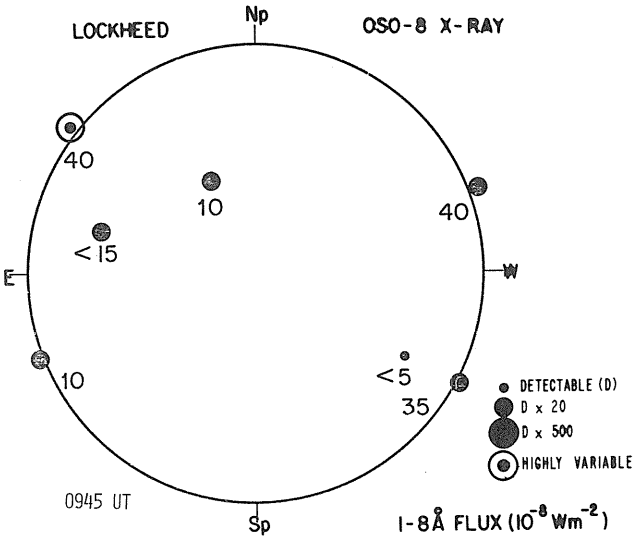
NOSC LA POSTA

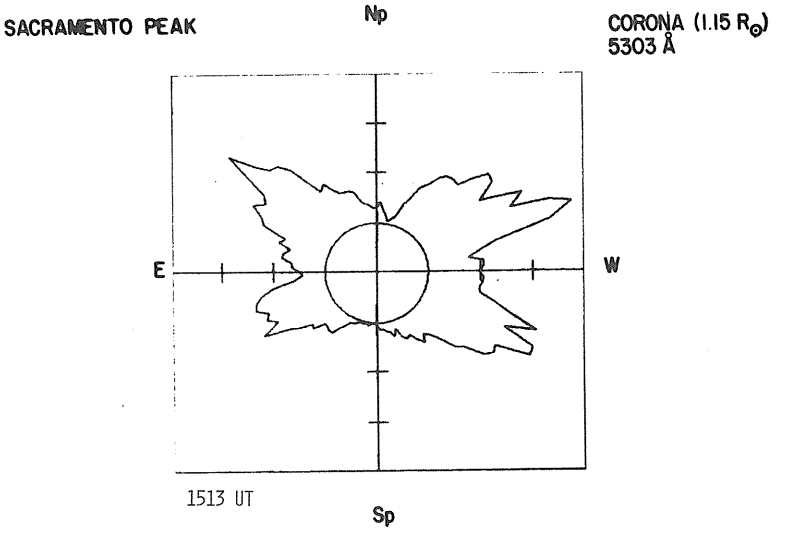


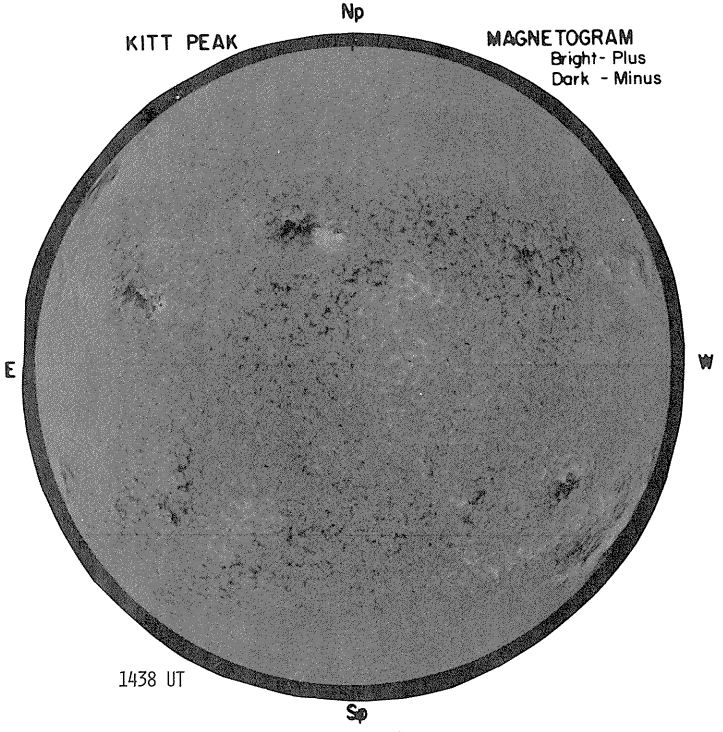
NOSC LA POSTA

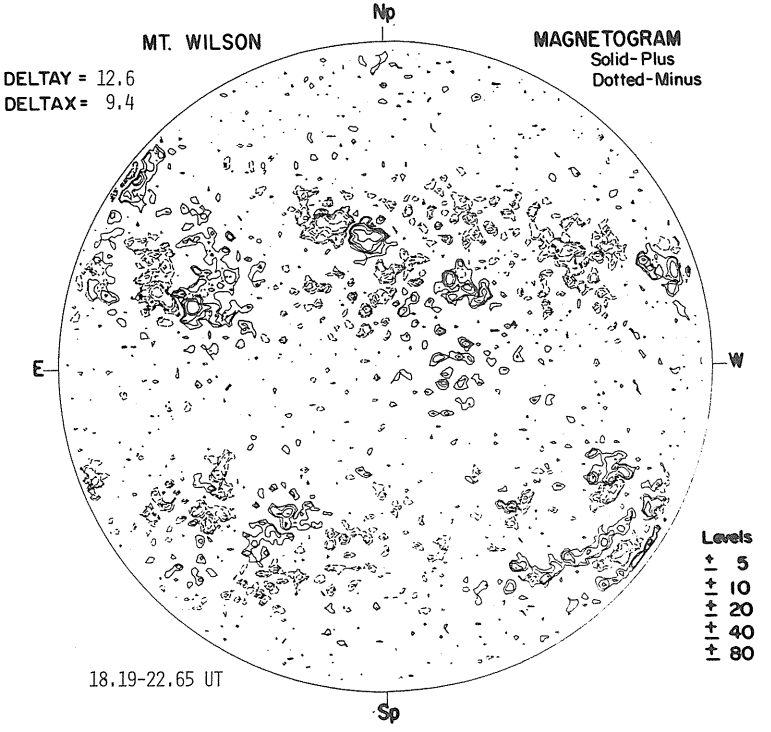


SEPTEMBER 11, 1978 (P = 23.29, B_o = 7.24, L_o = 119.55)

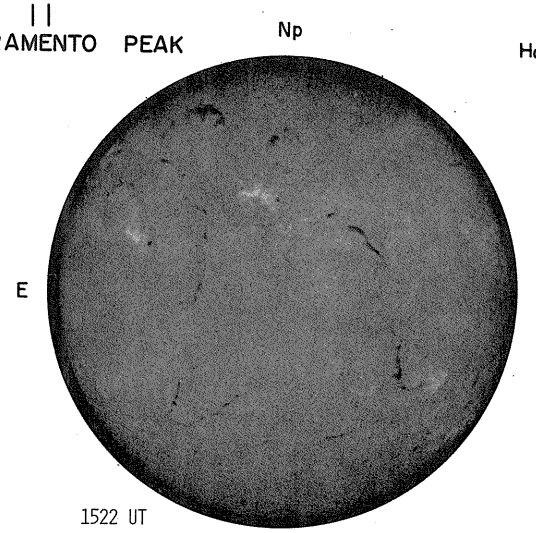






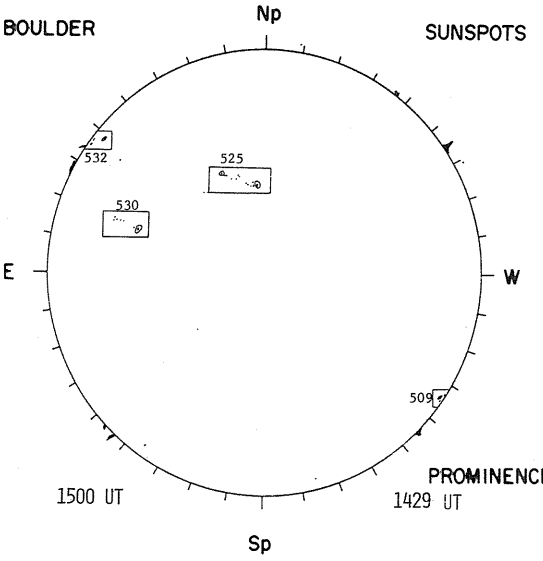


SACRAMENTO PEAK Hα



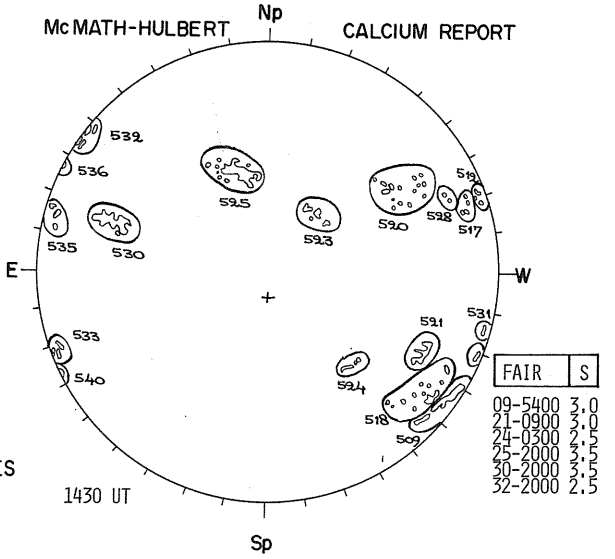
1522 UT

BOULDER SUNSPOTS



1500 UT

Mc MATH-HULBERT CALCIUM REPORT



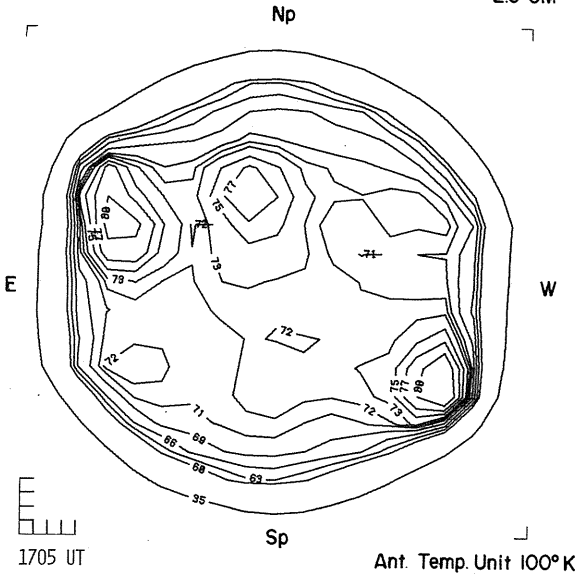
PROMINENCES

1429 UT

1430 UT

FAIR	S
09-5400	3.0
21-0900	3.0
24-0300	2.5
25-2000	3.5
30-2000	3.5
32-2000	2.5

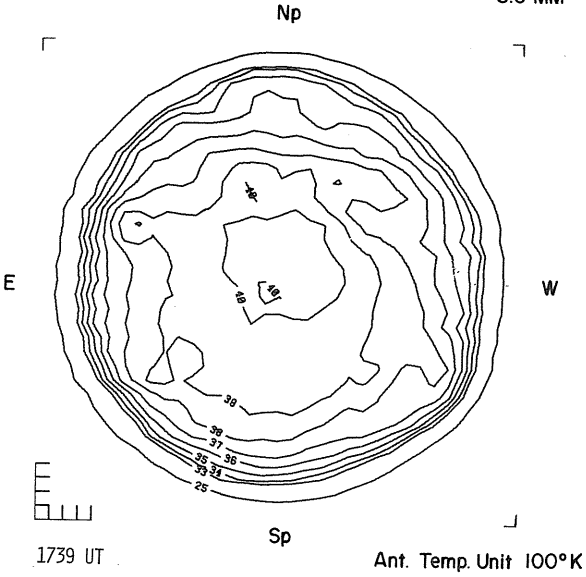
NOSC LA POSTA 2.0 CM



1705 UT

Ant. Temp. Unit 100° K

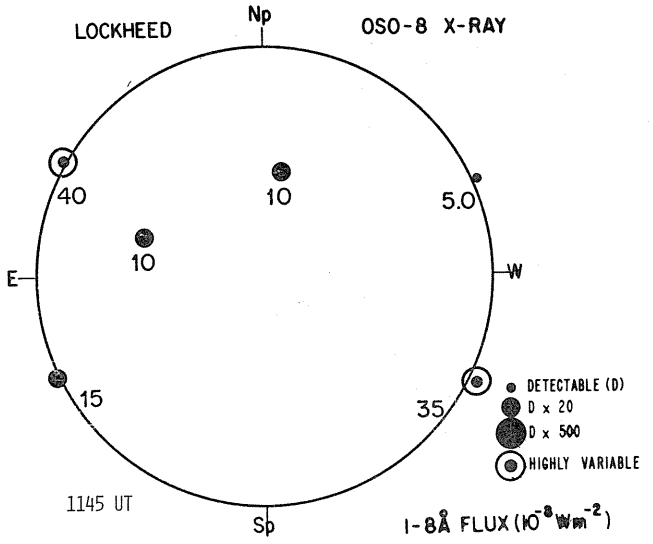
NOSC LA POSTA 8.6 MM

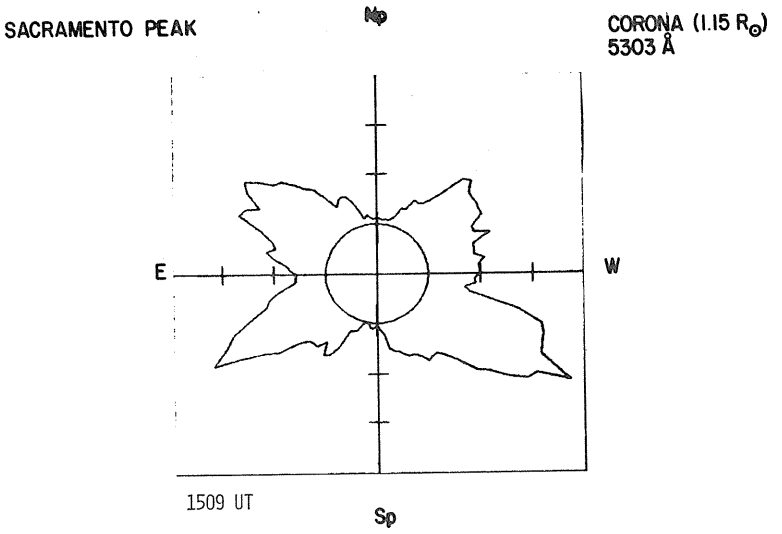


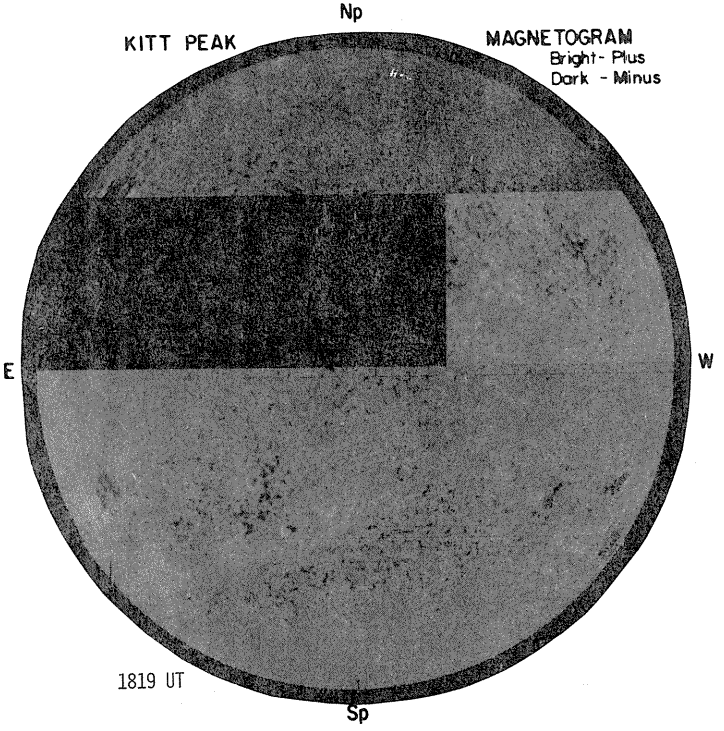
1739 UT

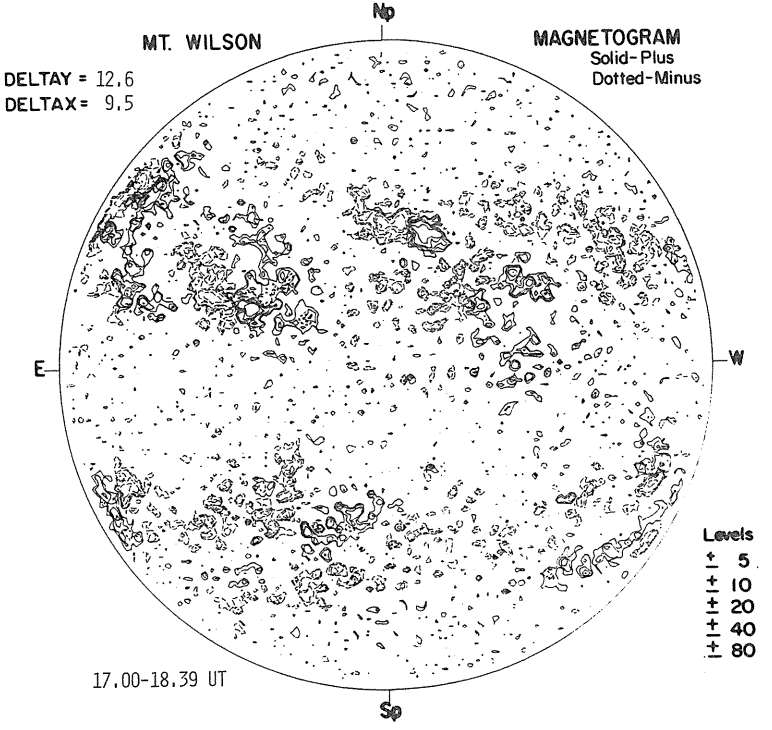
Ant. Temp. Unit 100° K

SEPTEMBER 12, 1978 (P = 23.48, B_o = 7.24, L_o = 106.35)



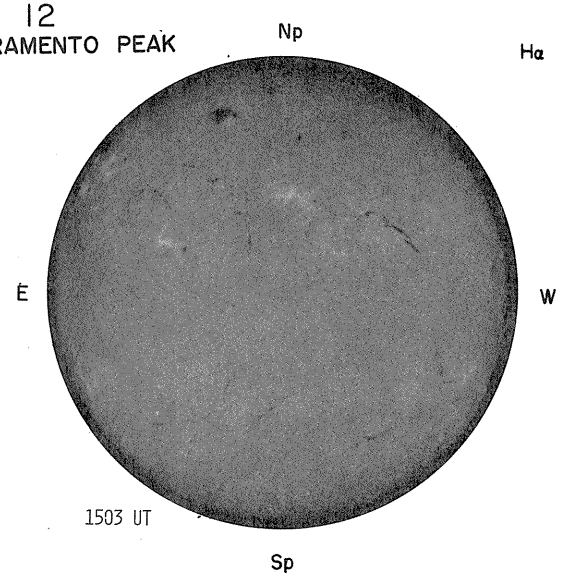




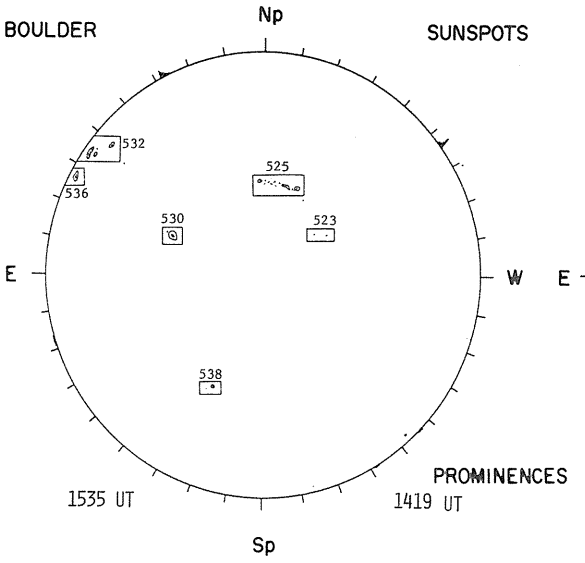


12

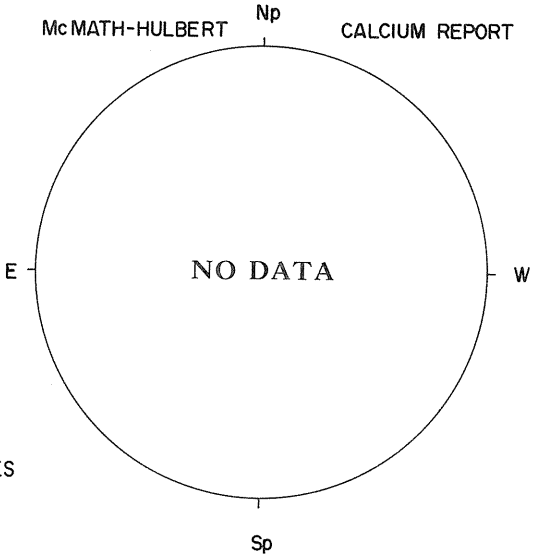
SACRAMENTO PEAK



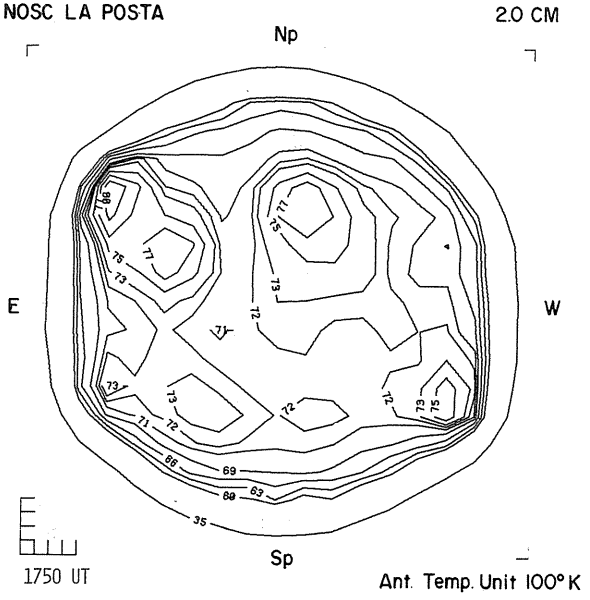
BOULDER



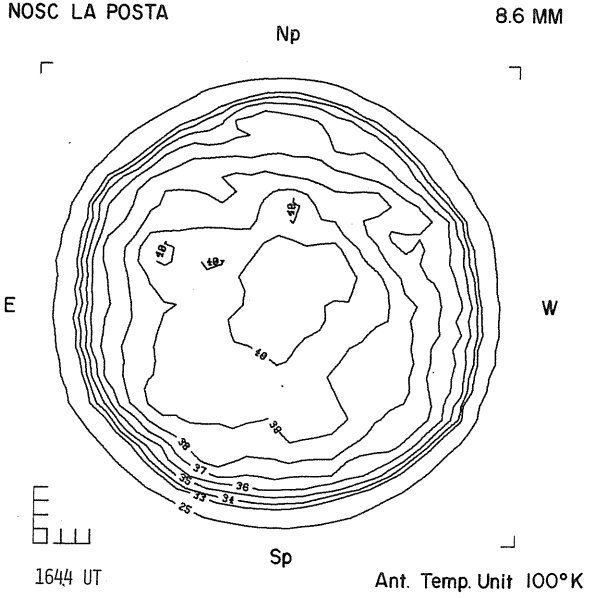
McMATH-HULBERT



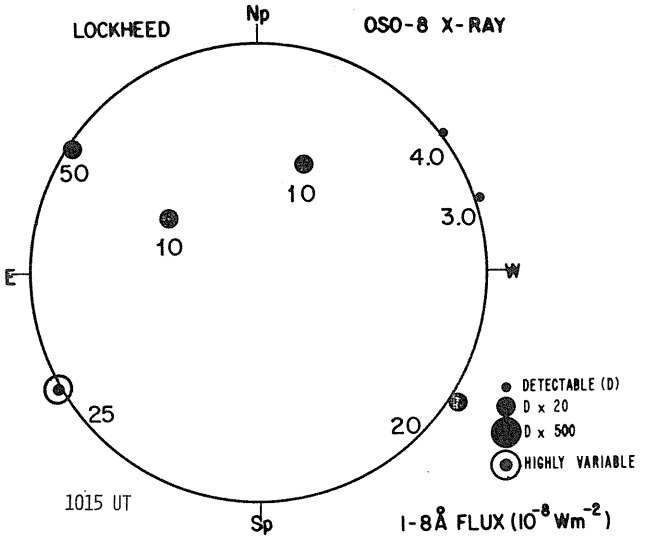
NOSC LA POSTA

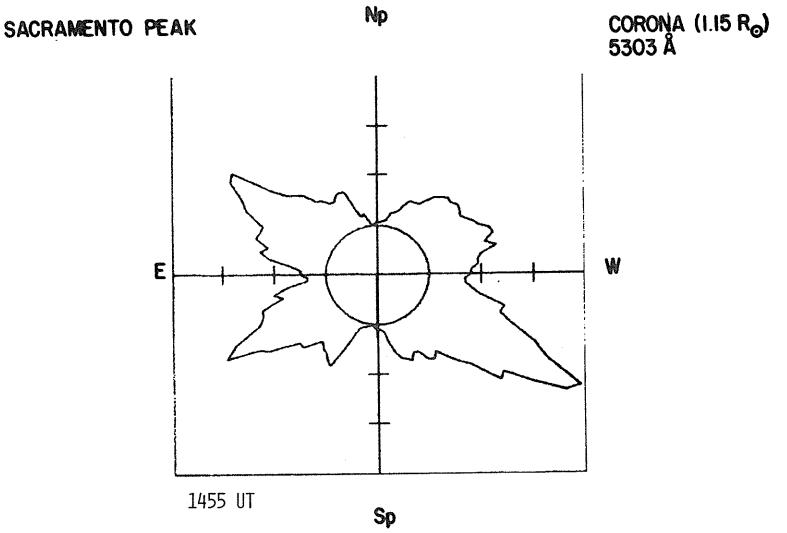


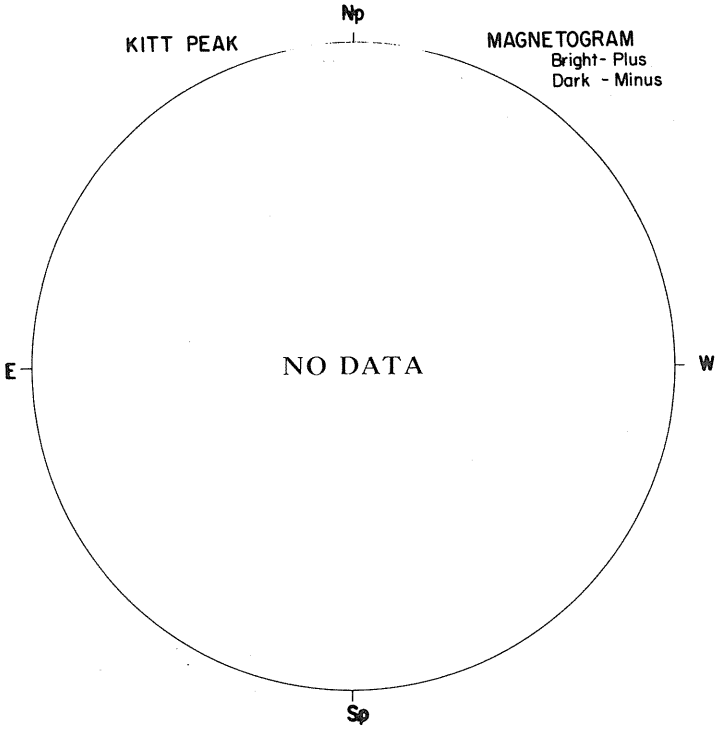
NOSC LA POSTA

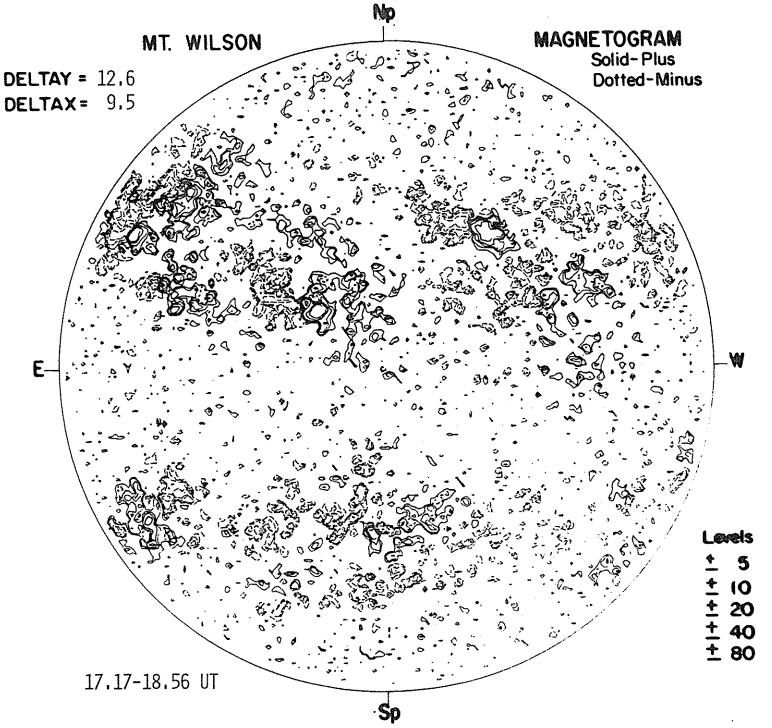


SEPTEMBER 13, 1978 (P = 23.67, B_o = 7.23, L_o = 93.15)



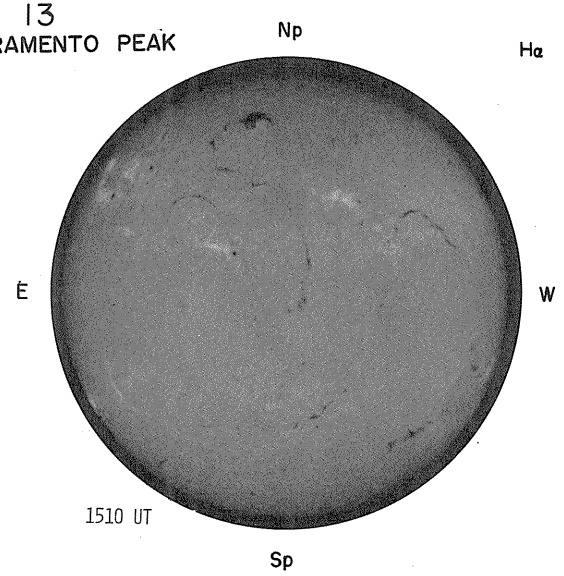




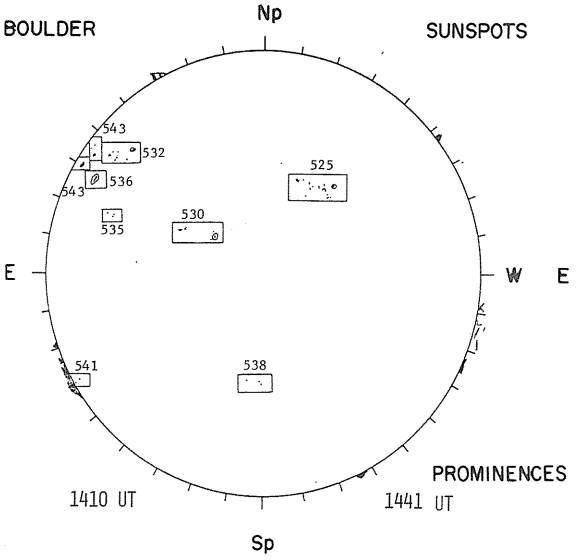


13

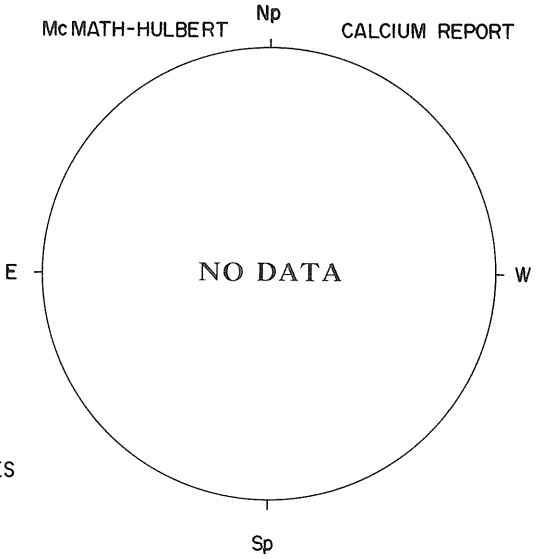
SACRAMENTO PEAK



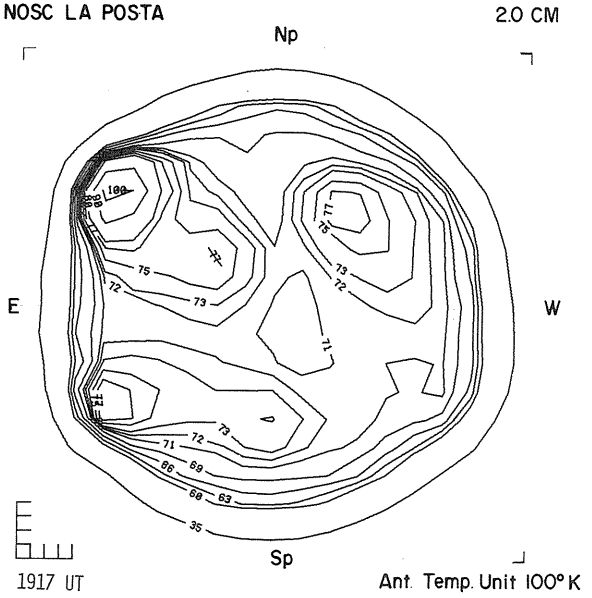
BOULDER



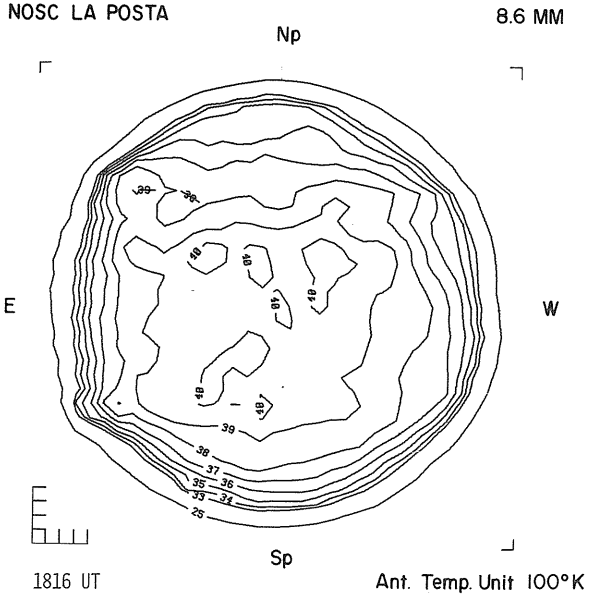
McMATH-HULBERT



NOSC LA POSTA

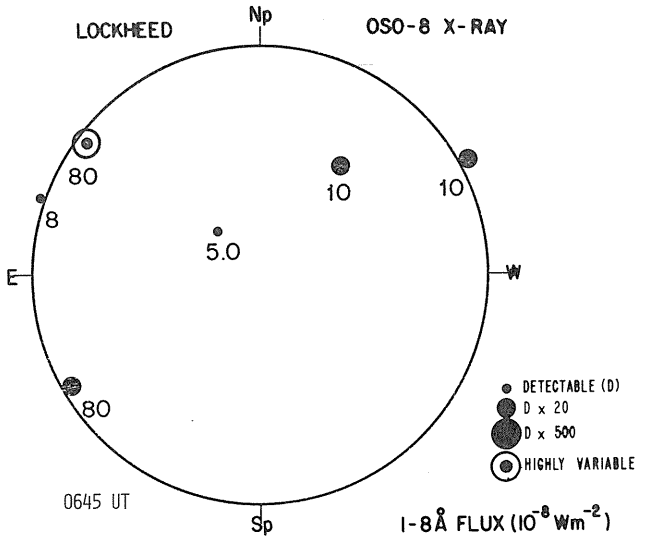


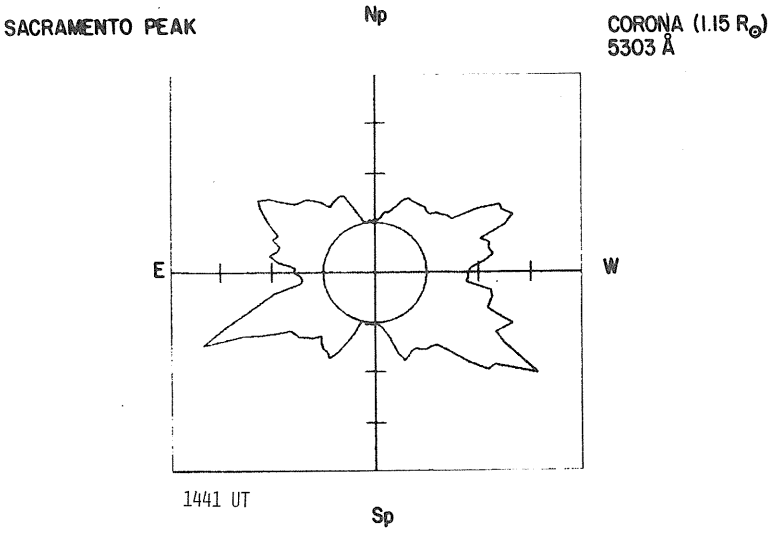
NOSC LA POSTA

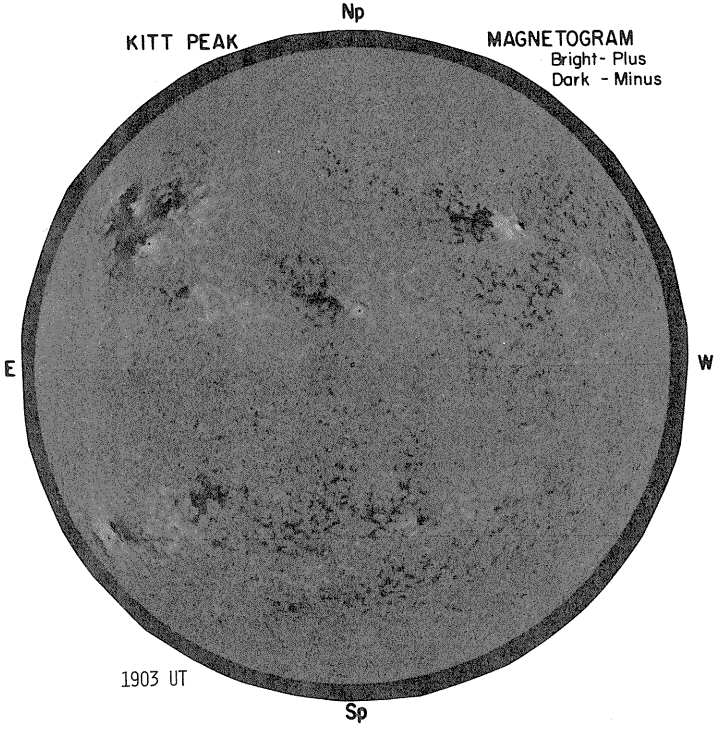


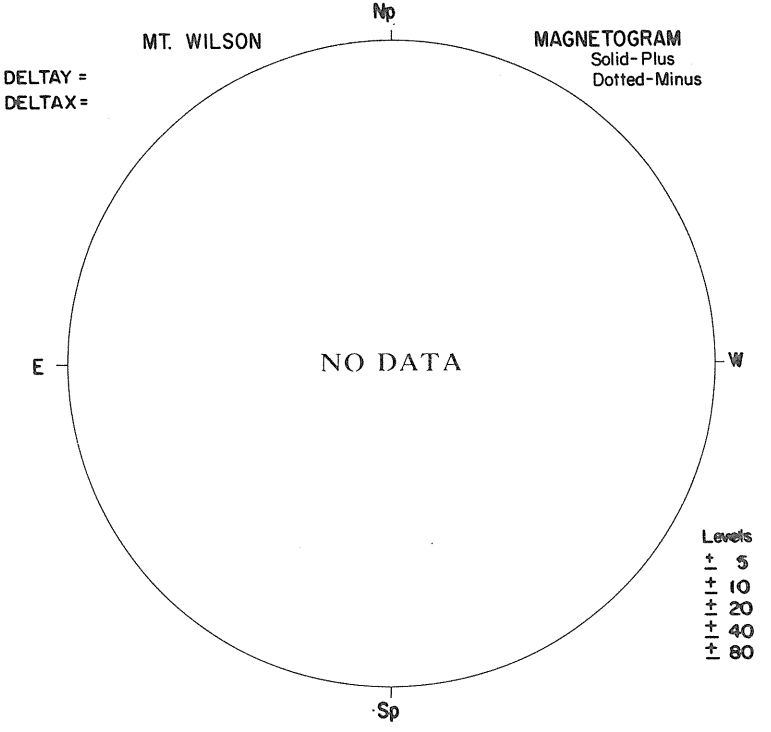
71
Sep 78

SEPTEMBER 14, 1978 (P = 23.85, B_o = 7.22, L_o = 79.94)



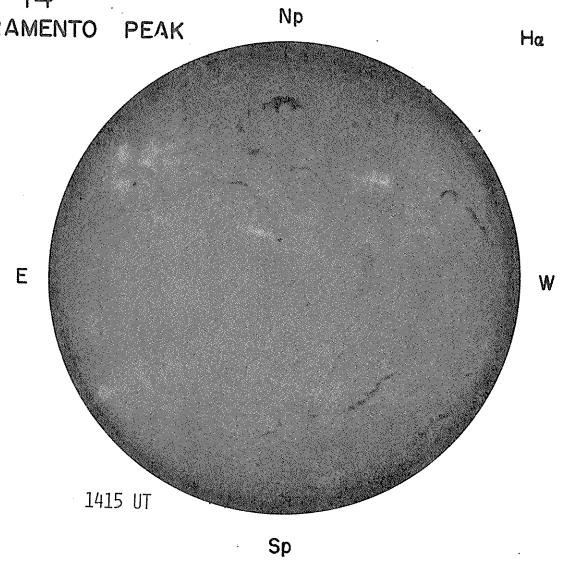




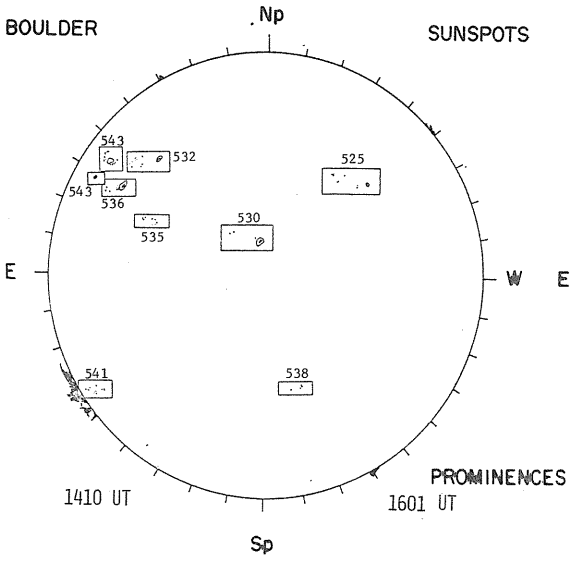


14

SACRAMENTO PEAK



Hα BOULDER



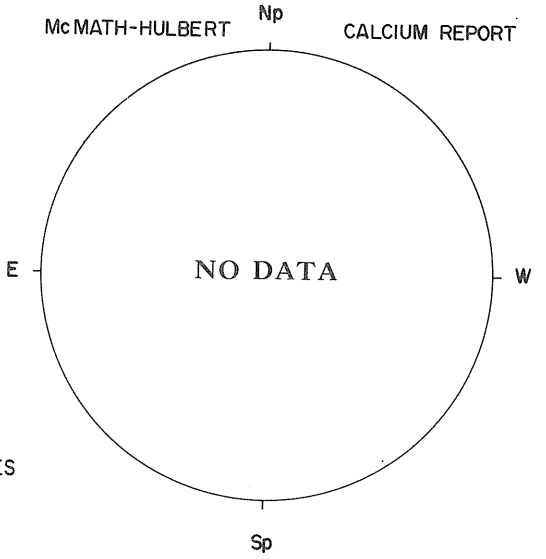
SUNSPOTS

PROMINENCES

1601 UT

McMATH-HULBERT

CALCIUM REPORT



NOSC LA POSTA

Np

2.0 CM

NO DATA

E

WEATHER

W

Sp

---- UT

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

WEATHER

W

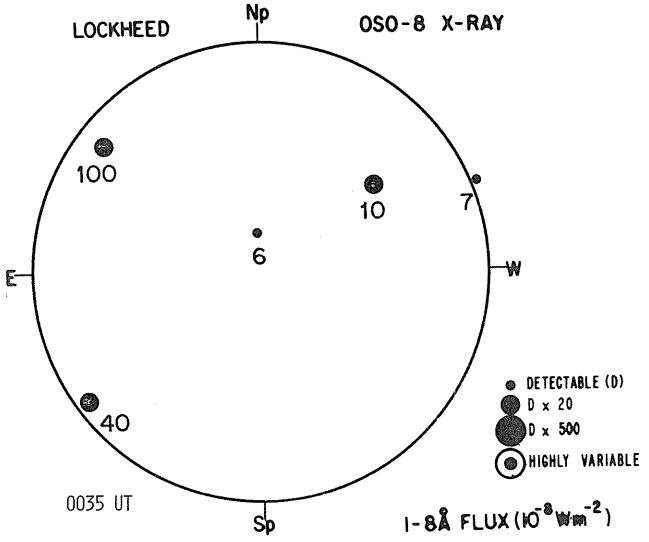
Sp

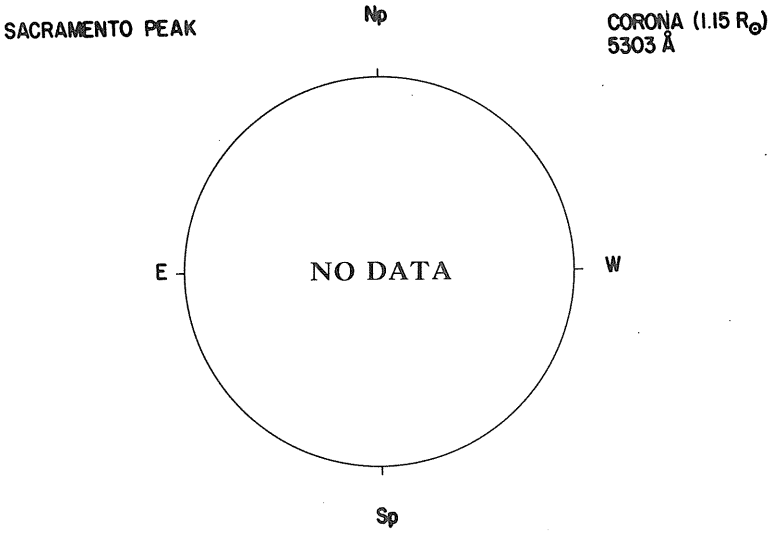
---- UT

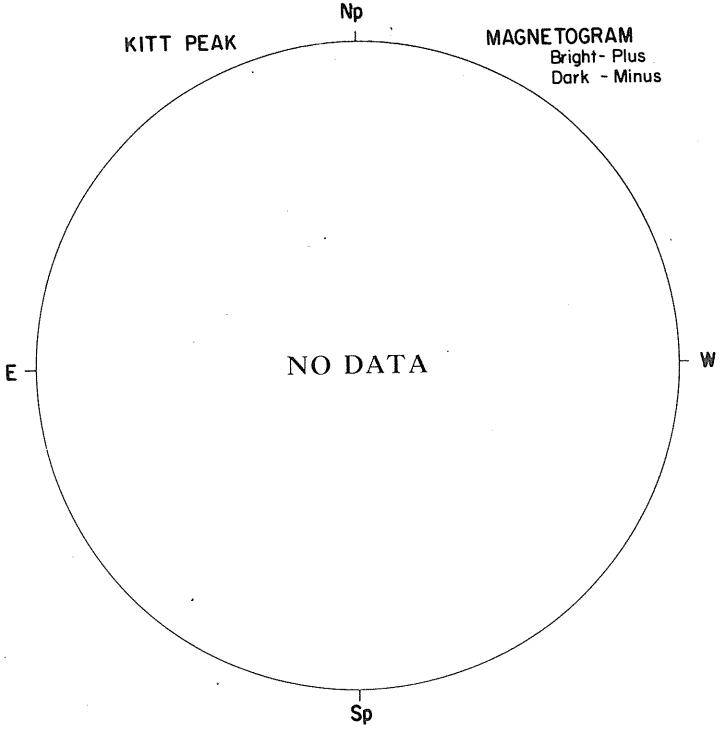
Ant. Temp. Unit 100° K

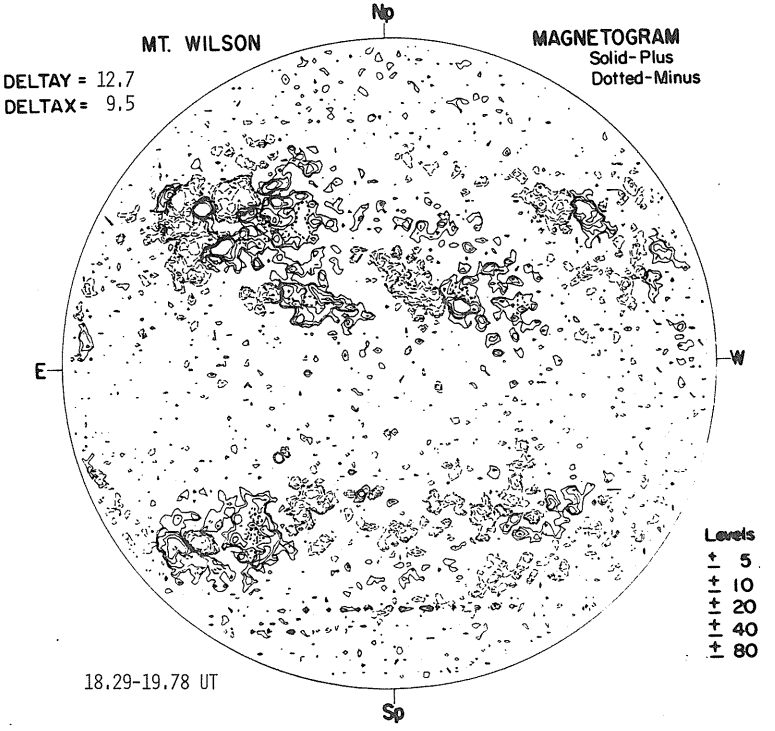
73
Sep 78

SEPTEMBER 15, 1978 (P = 24.03, B_o = 7.21, L_o = 66.74)



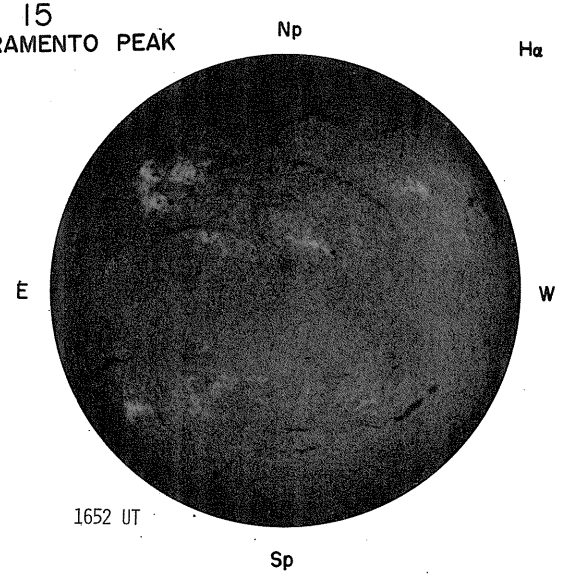




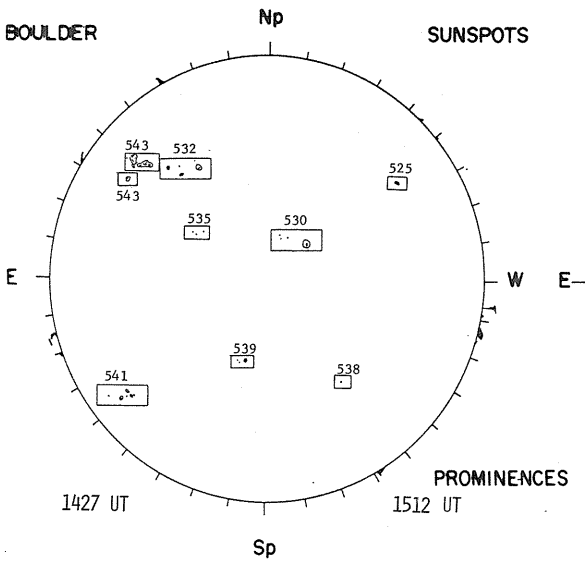


15

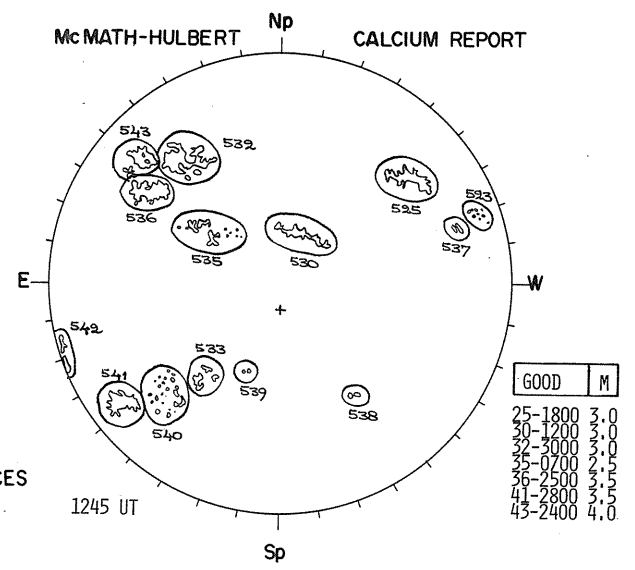
SACRAMENTO PEAK



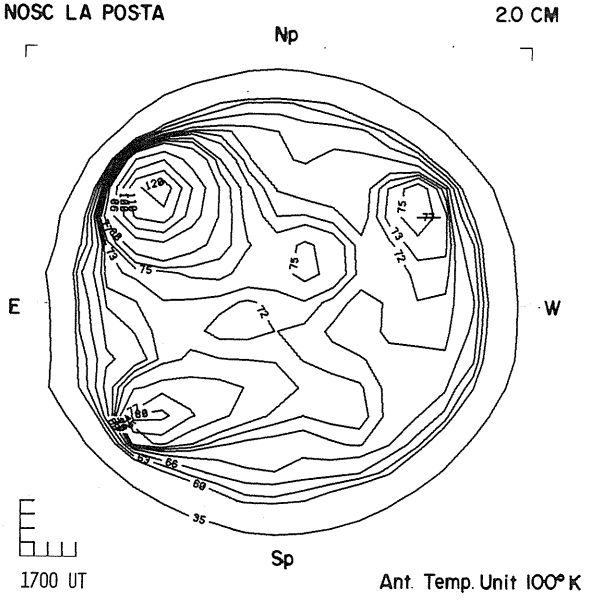
BOULDER



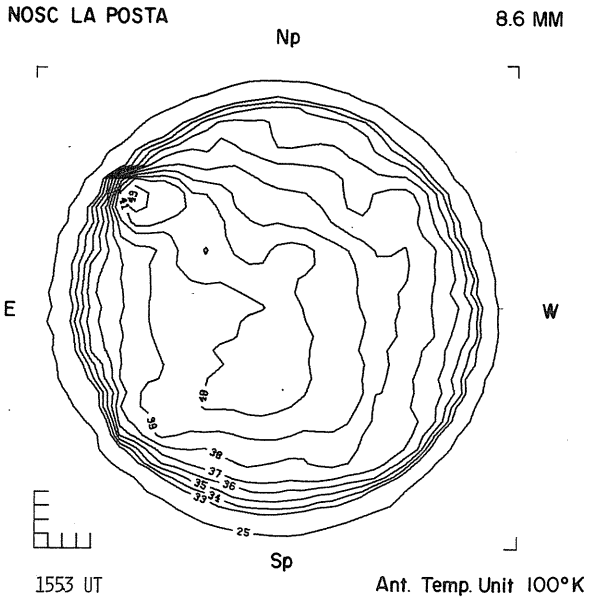
McMATH-HULBERT



NOSC LA POSTA

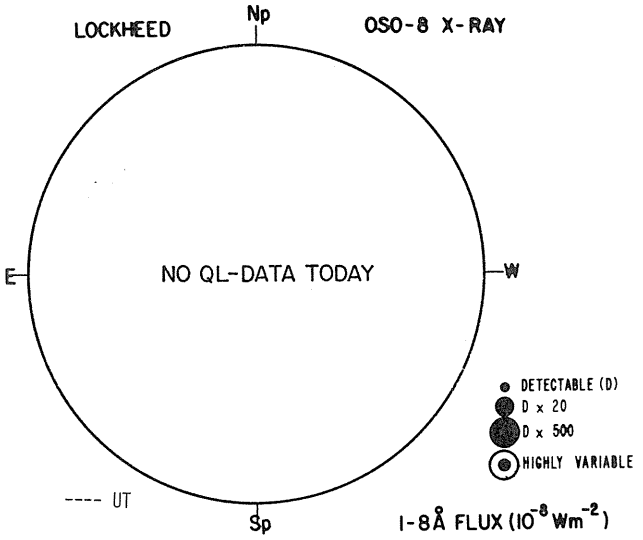


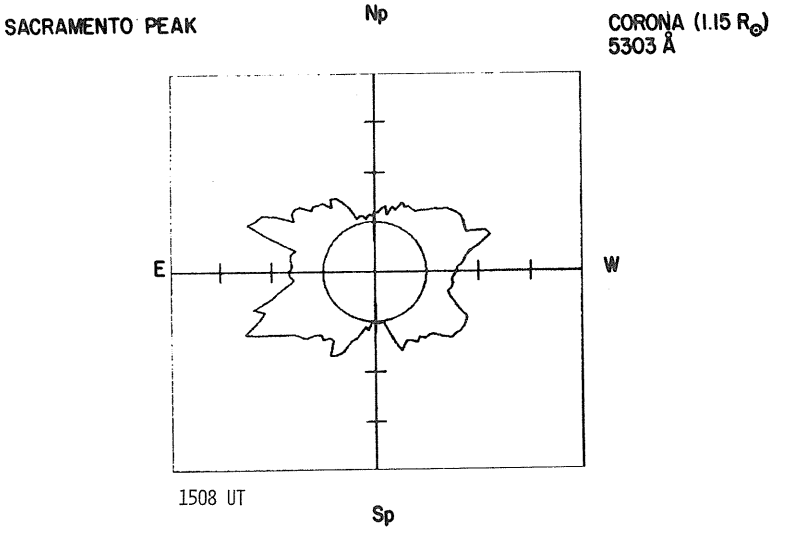
NOSC LA POSTA

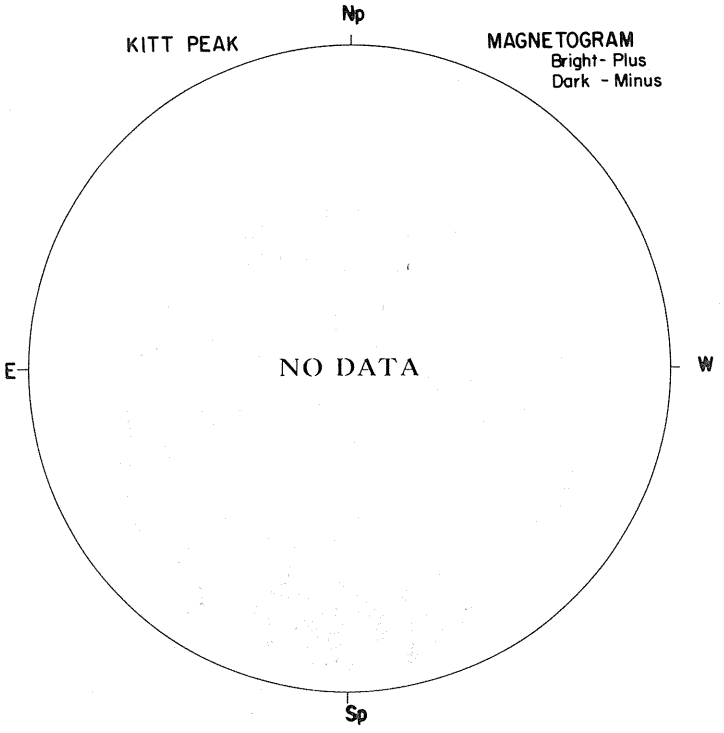


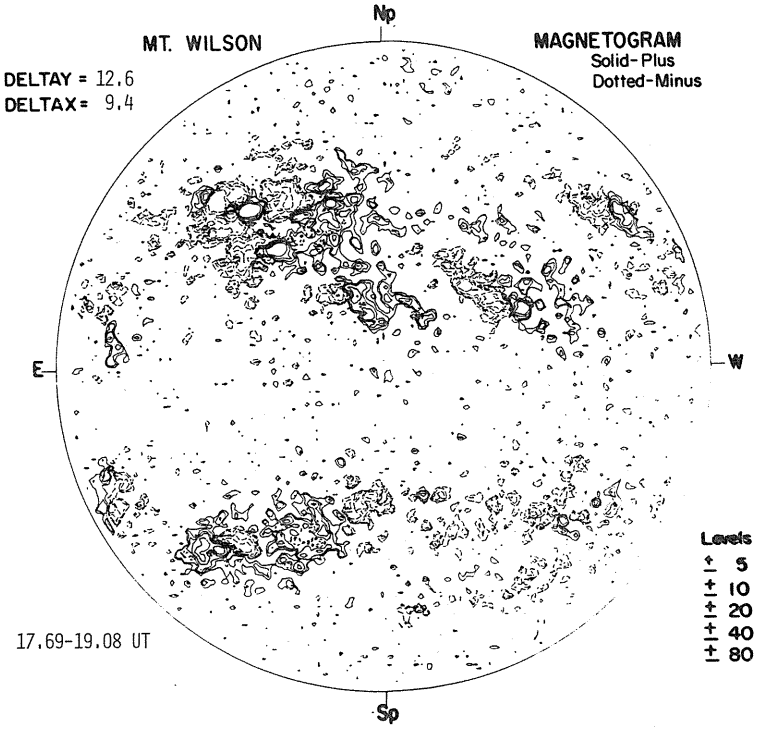
75
Sep 78

SEPTEMBER 16, 1978 (P = 24.20, B_o = 7.19, L_o = 53.54)

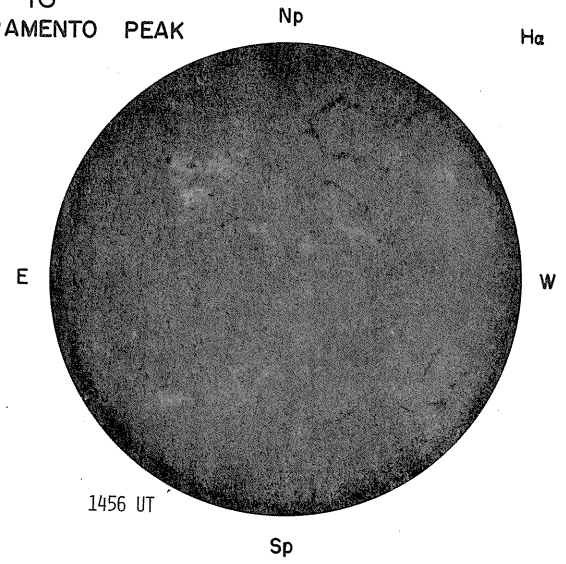




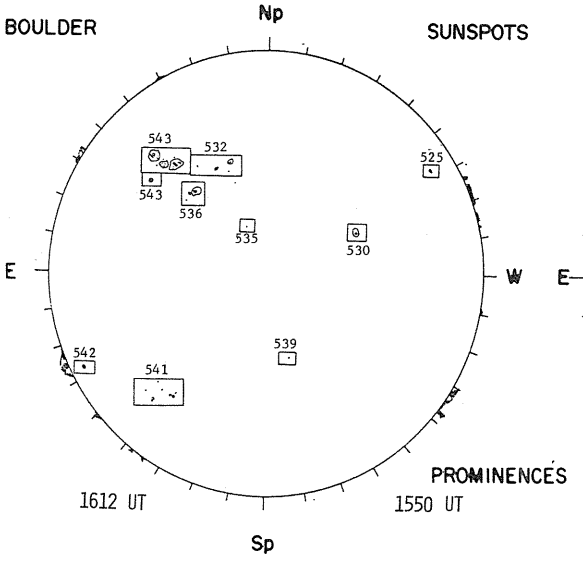




SACRAMENTO PEAK Hα



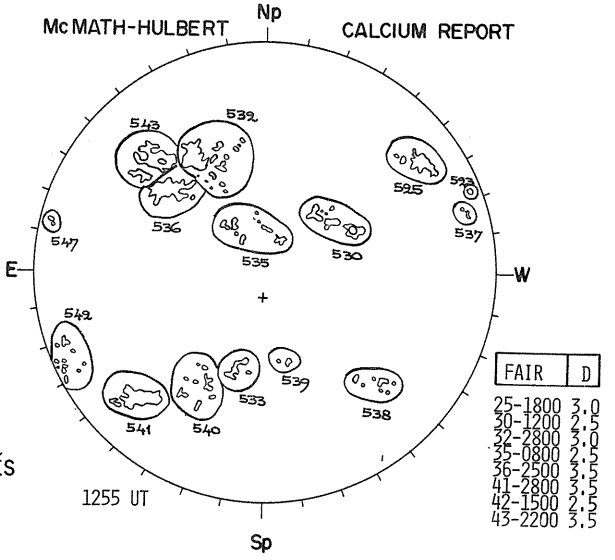
BOULDER SUNSPOTS



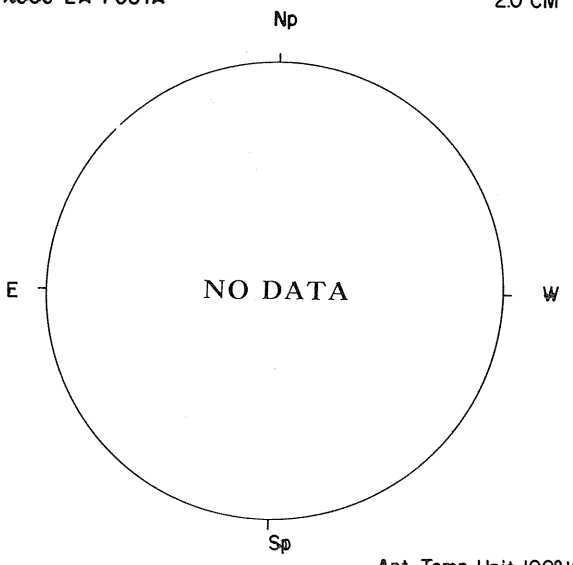
PROMINENCES

1550 UT

McMATH-HULBERT CALCIUM REPORT

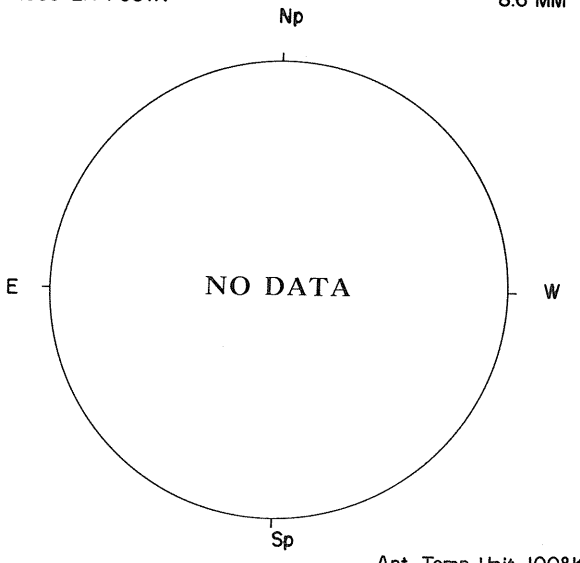


NOSC LA POSTA 2.0 CM



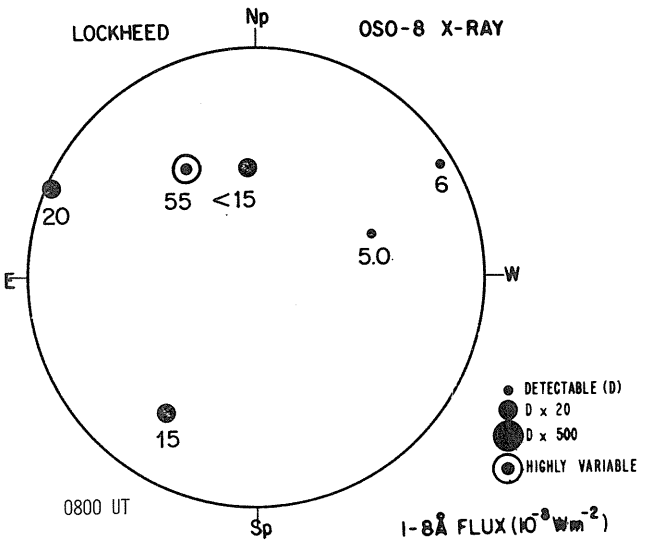
Ant. Temp. Unit 100° K

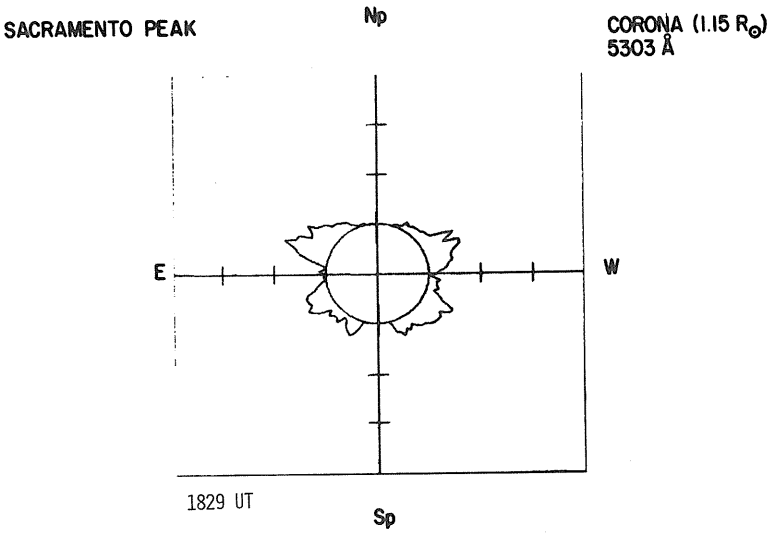
NOSC LA POSTA 8.6 MM

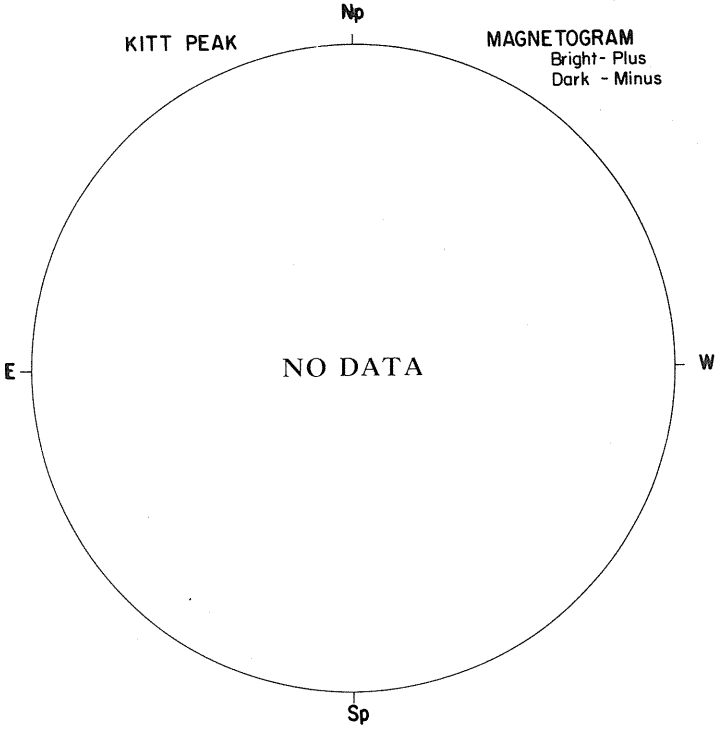


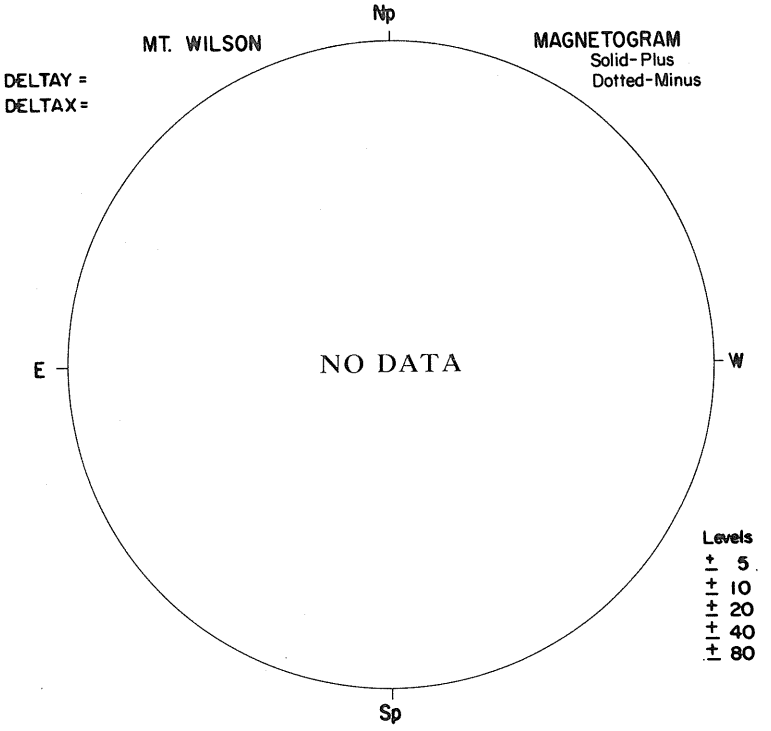
Ant. Temp. Unit 100° K

SEPTEMBER 17, 1978 (P = 24.37, B_o = 7.17, L_o = 40.34)

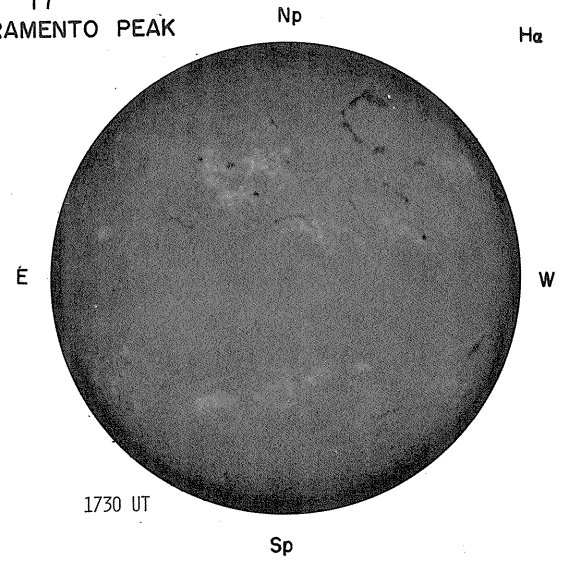






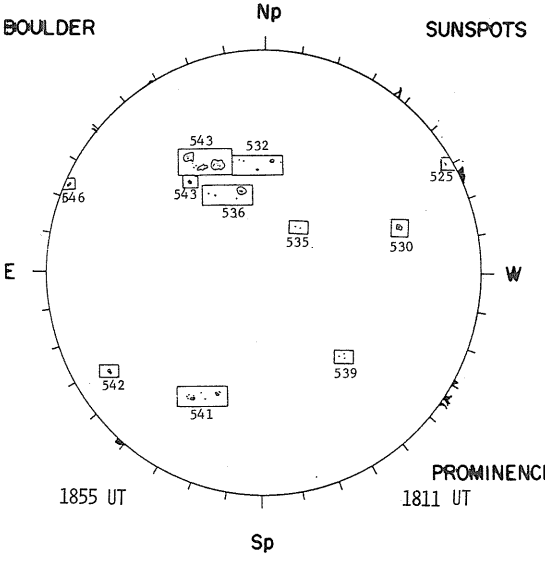


SACRAMENTO PEAK Hα



1730 UT

BOULDER SUNSPOTS

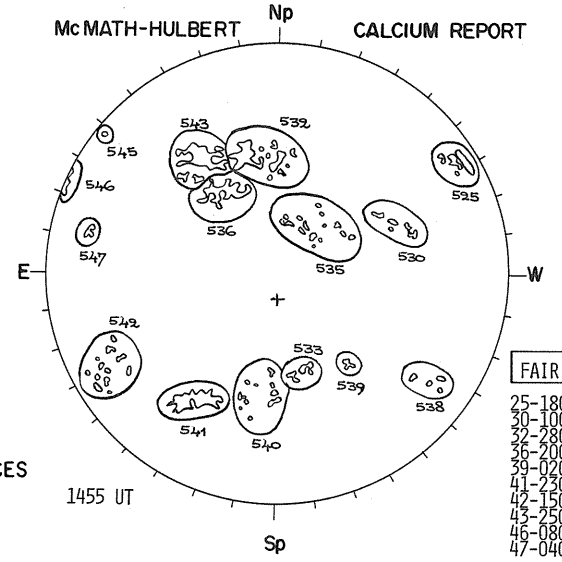


1855 UT

PROMINENCES

1811 UT

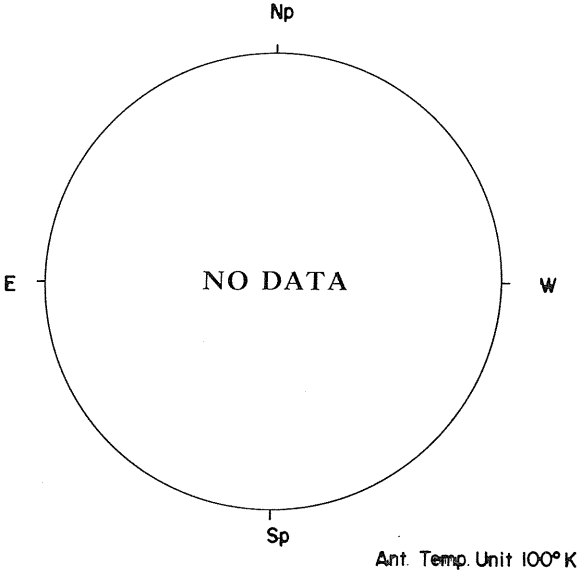
McMATH-HULBERT CALCIUM REPORT



1455 UT

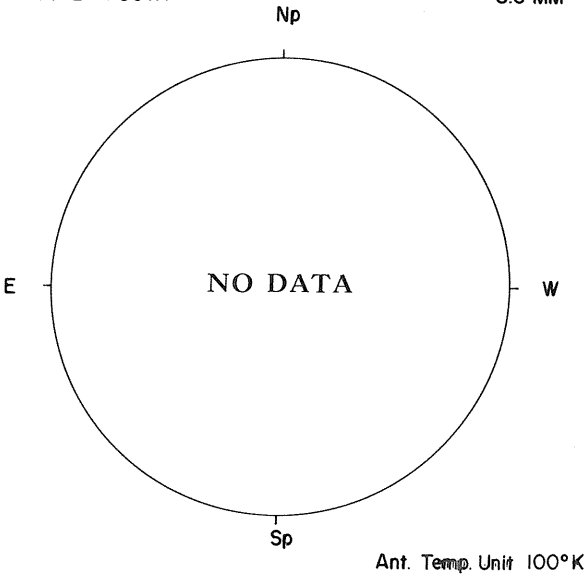
FAIR	D
25-1800	3.0
30-1000	3.0
32-2800	3.0
36-2000	3.0
39-0200	2.5
41-2300	3.5
42-1500	2.5
43-2500	3.0
46-0800	3.0
47-0400	2.5

NOSC LA POSTA 2.0 CM



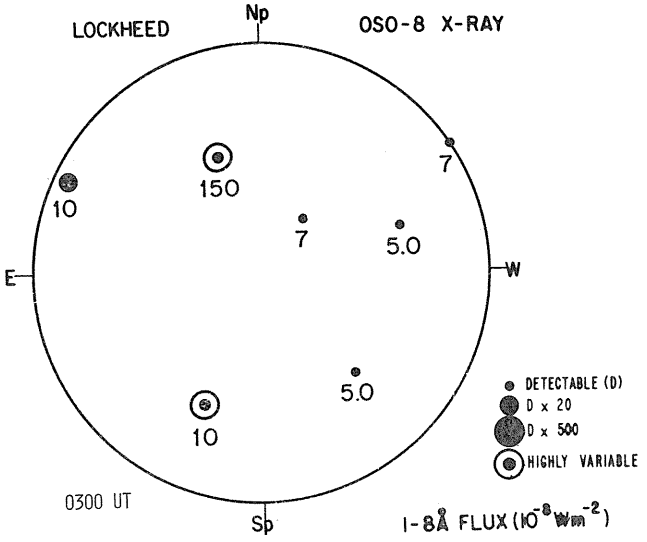
Ant. Temp. Unit 100° K

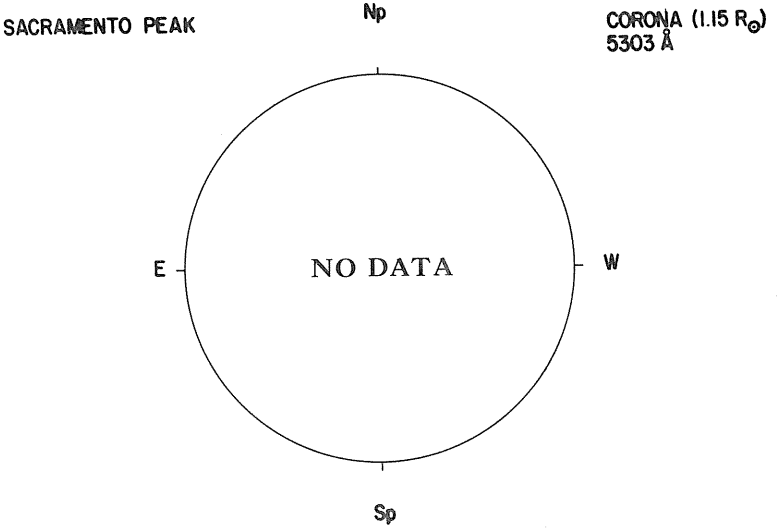
NOSC LA POSTA 8.6 MM

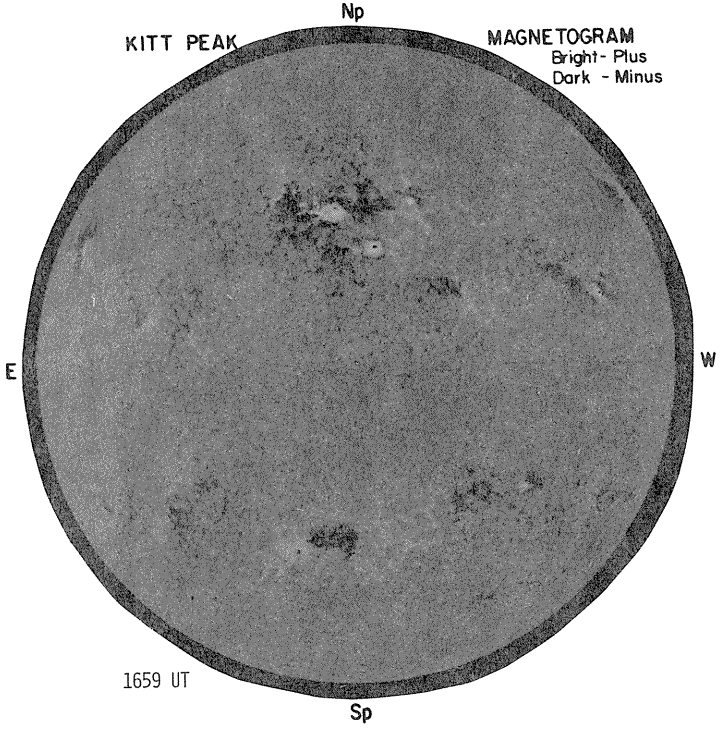


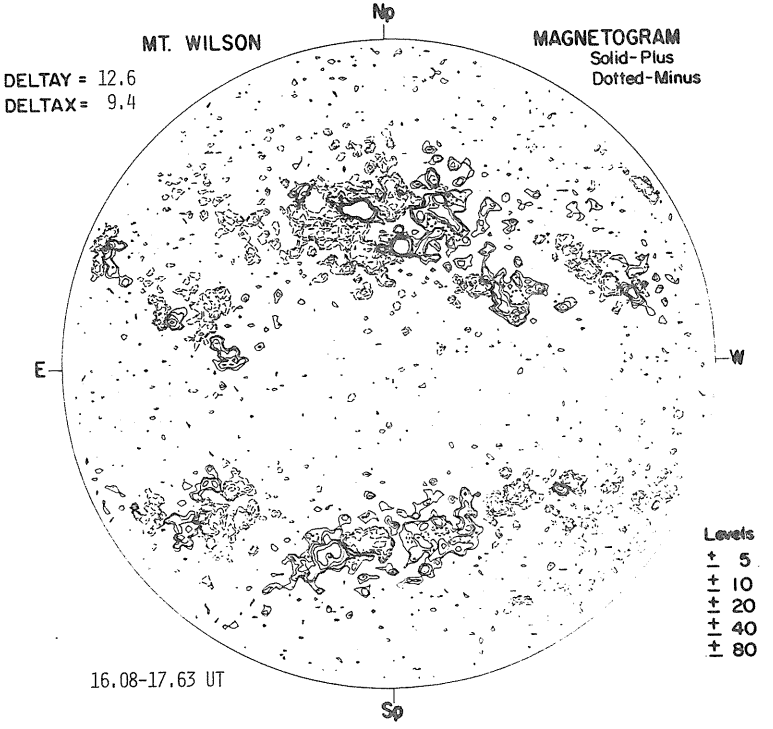
Ant. Temp. Unit 100° K

SEPTEMBER 18, 1978 (P = 24.52, B_o = 7.15, L_o = 27.13)



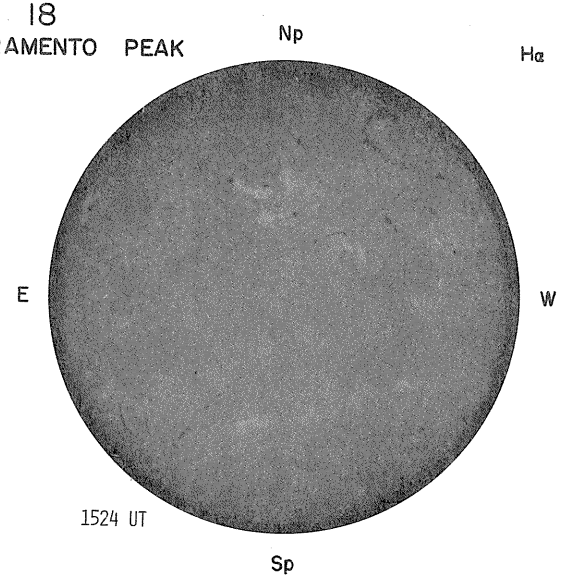




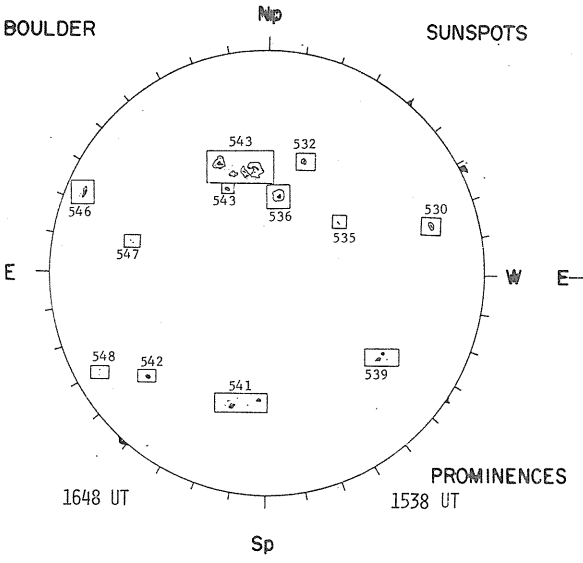


18

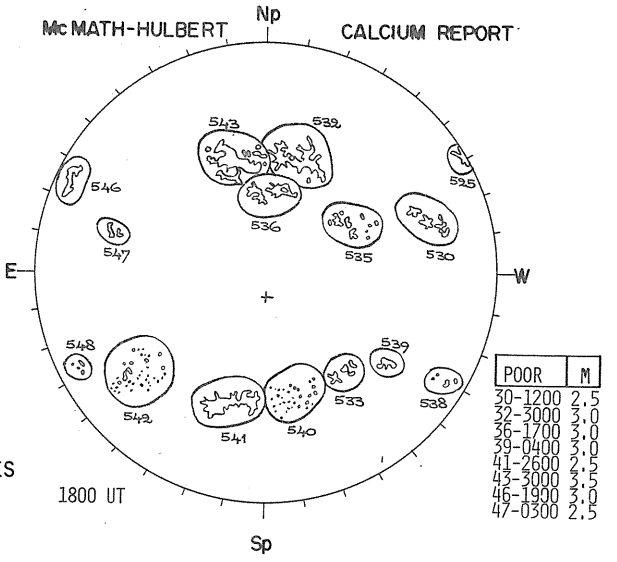
SACRAMENTO PEAK



BOULDER SUNSPOTS



Mc MATH-HULBERT CALCIUM REPORT

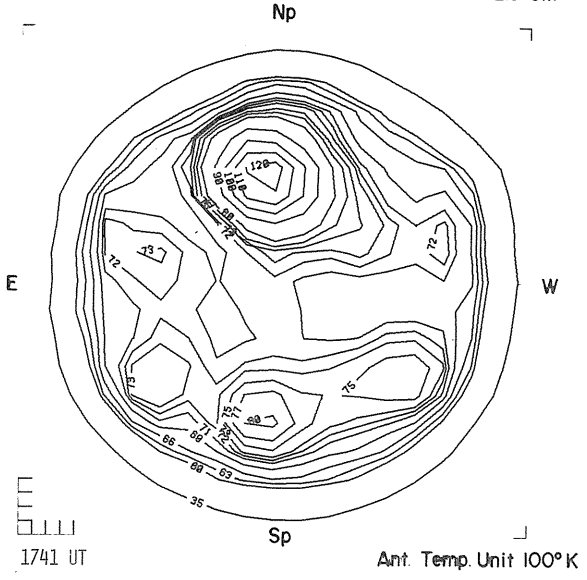


POOR	M
30-1200	2.5
32-3000	3.0
36-1700	3.0
39-0400	3.0
41-2600	2.5
43-3000	3.5
46-1900	3.0
47-0300	2.5

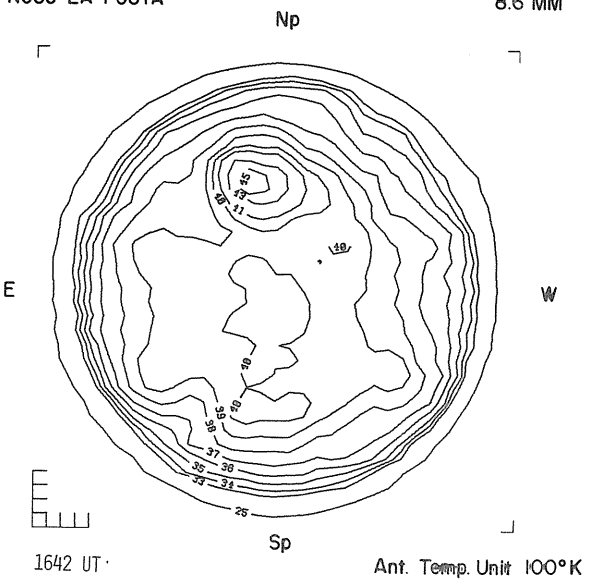
PROMINENCES

1538 UT

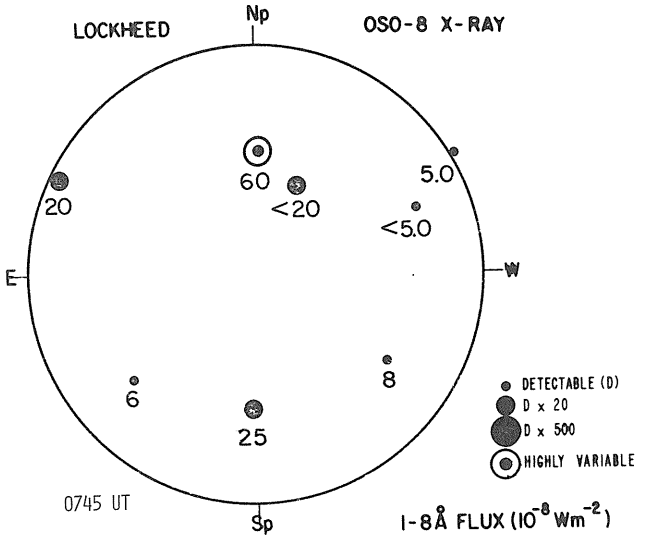
NOSC LA POSTA 2.0 CM

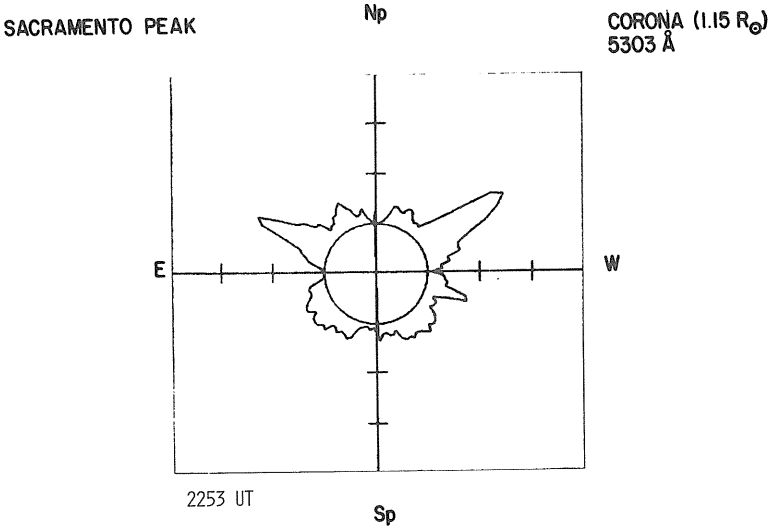


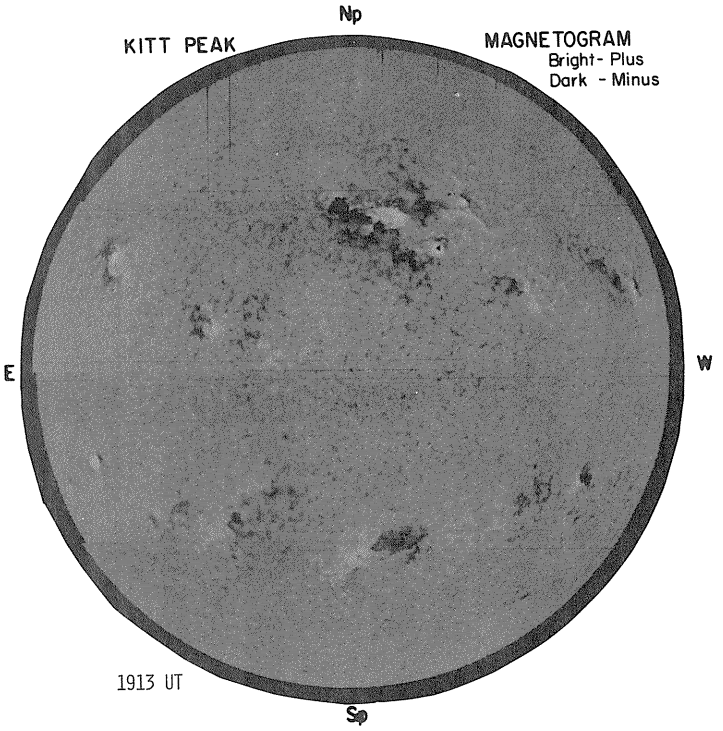
NOSC LA POSTA 8.6 MM

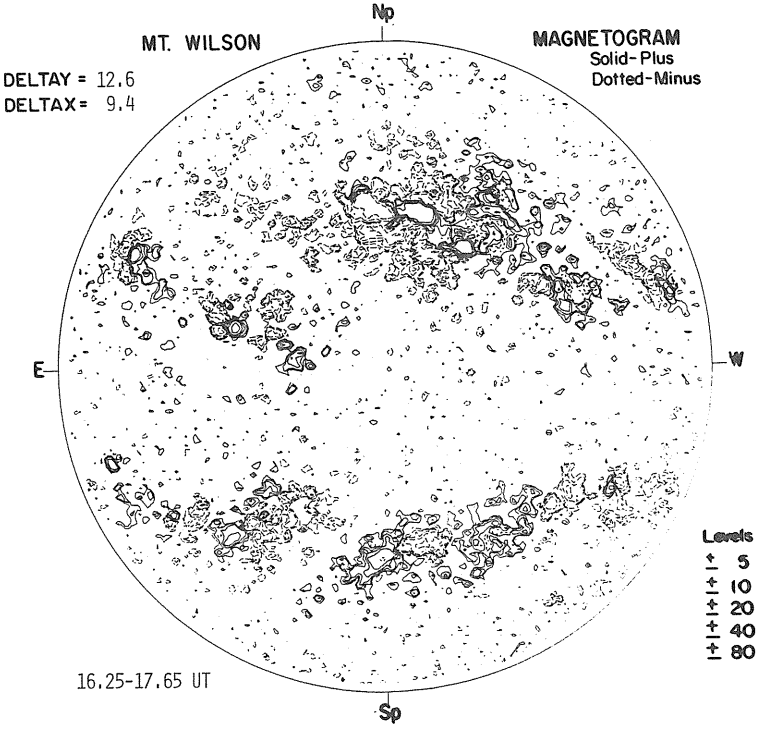


SEPTEMBER 19, 1978 (P = 24.68, B_o = 7.13, L_o = 13.93)



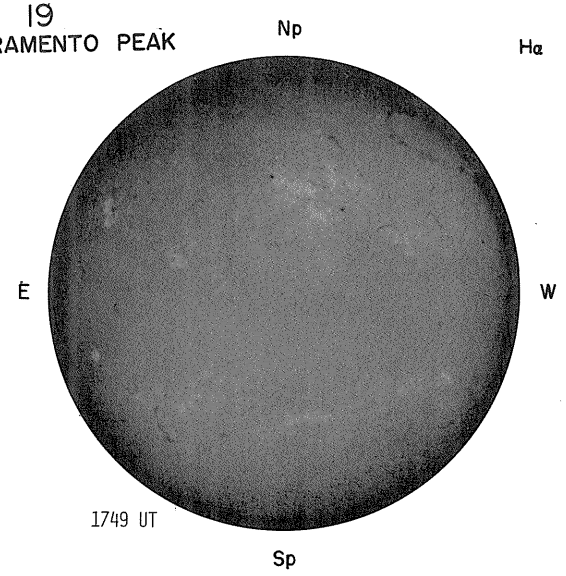






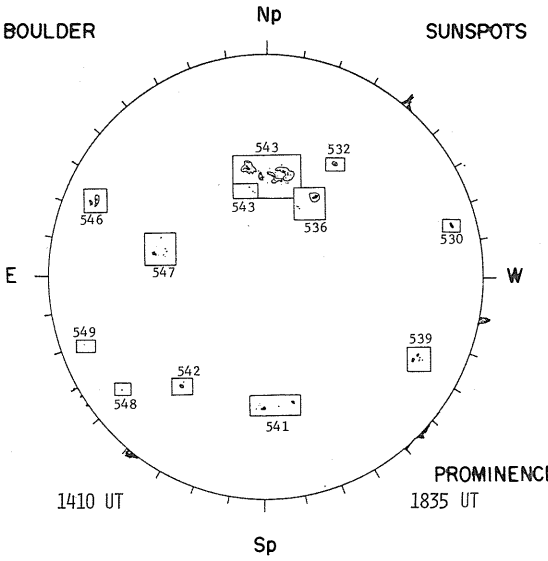
19

SACRAMENTO PEAK



1749 UT

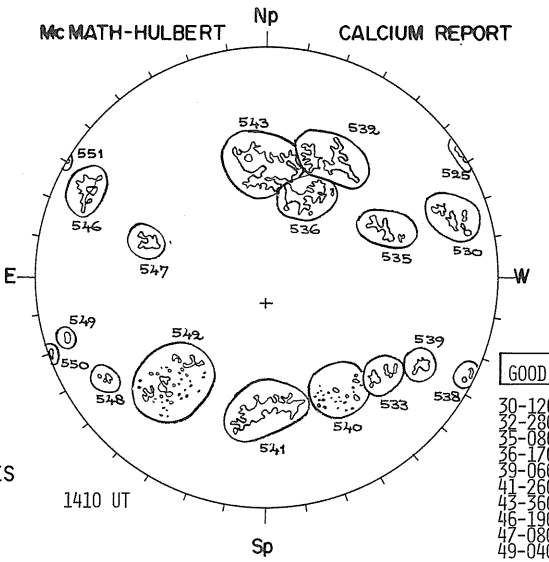
BOULDER



1410 UT

SUNSPOTS

McMATH-HULBERT



CALCIUM REPORT

GOOD	M
30-1200	2.5
32-2800	3.0
35-0800	2.5
36-1700	3.0
39-0600	2.5
41-2600	3.0
43-3600	3.5
46-1900	3.5
47-0800	2.5
49-0400	3.5

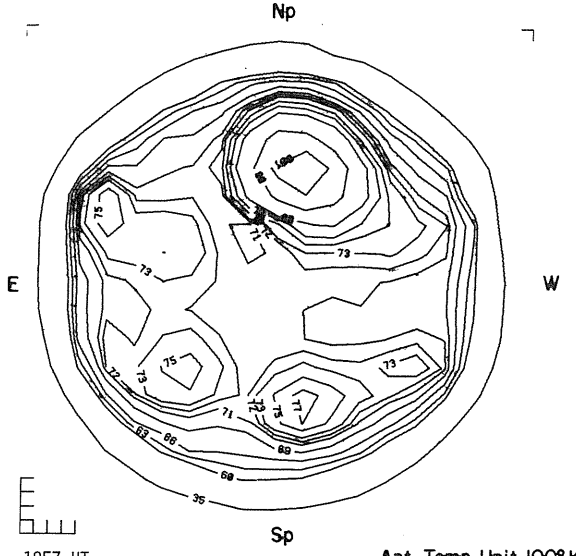
PROMINENCES

1835 UT

1410 UT

NOSC LA POSTA

2.0 CM

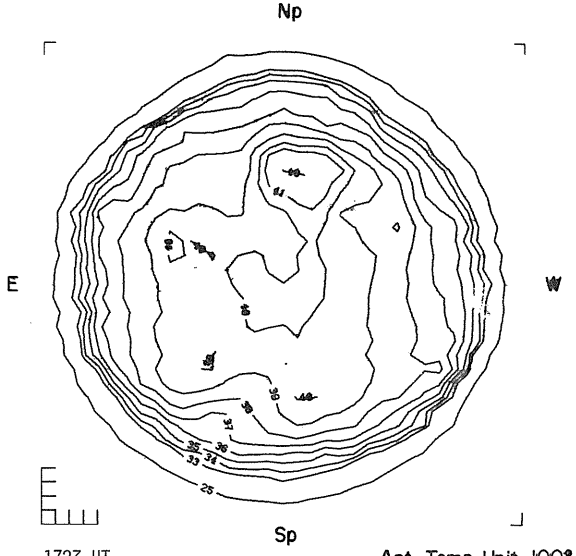


1857 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA

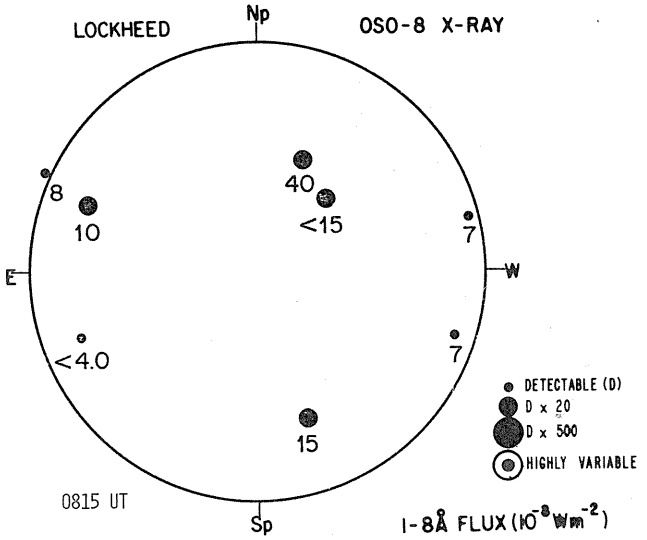
8.6 MM

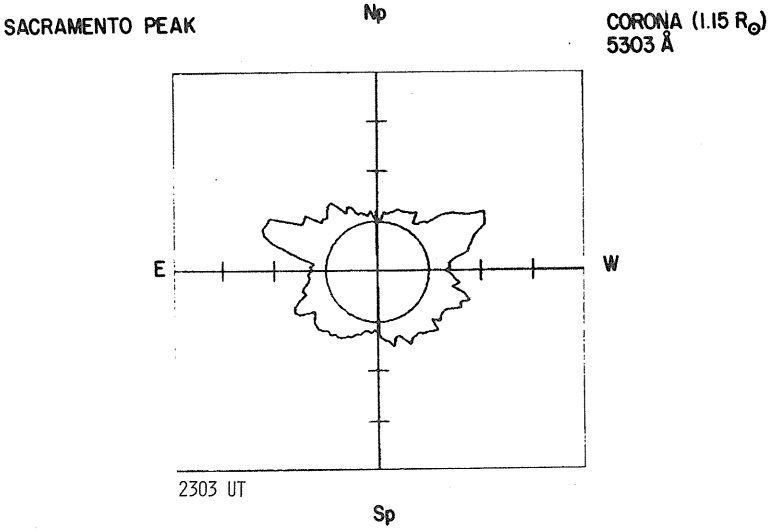


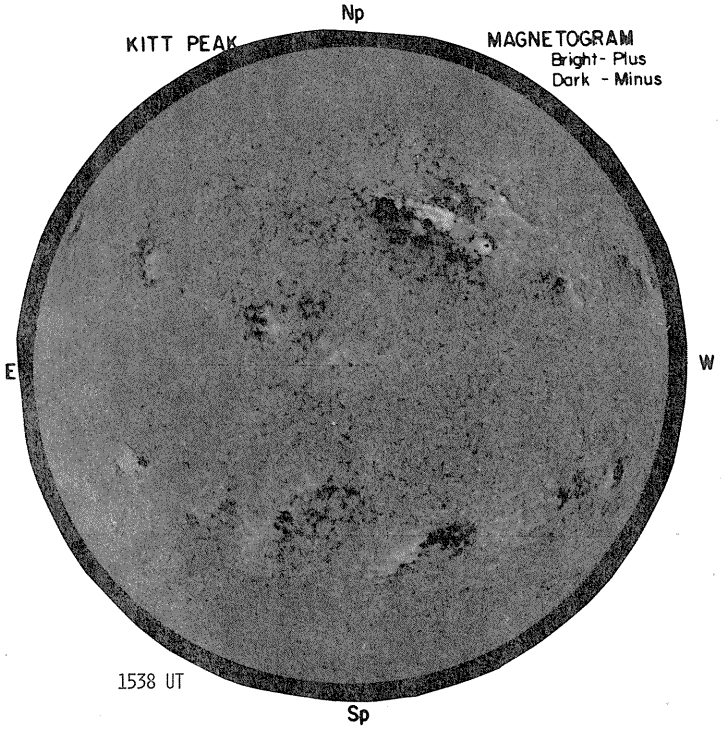
1723 UT

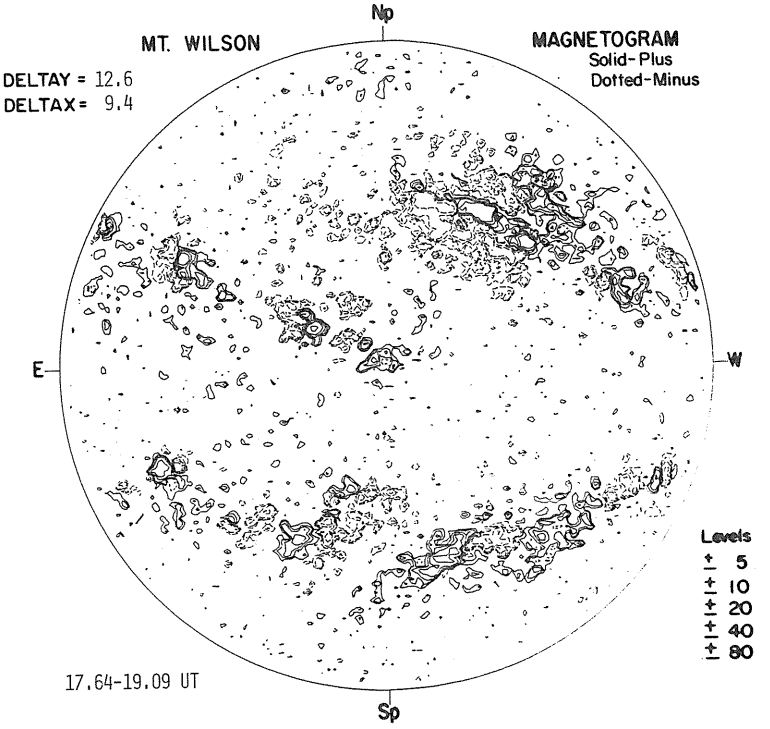
Ant. Temp. Unit 100° K

SEPTEMBER 20, 1978 (P = 24.82, B_o = 7.11, L_o = 0.73)



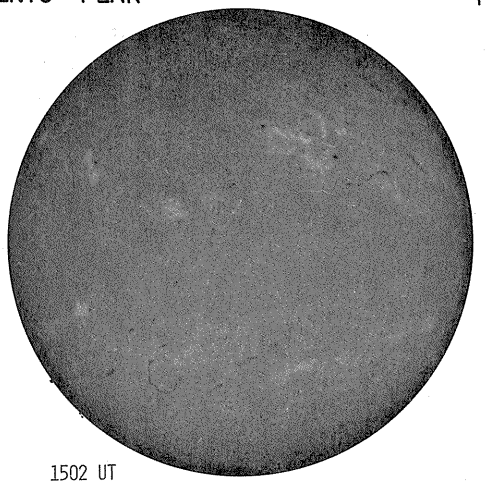






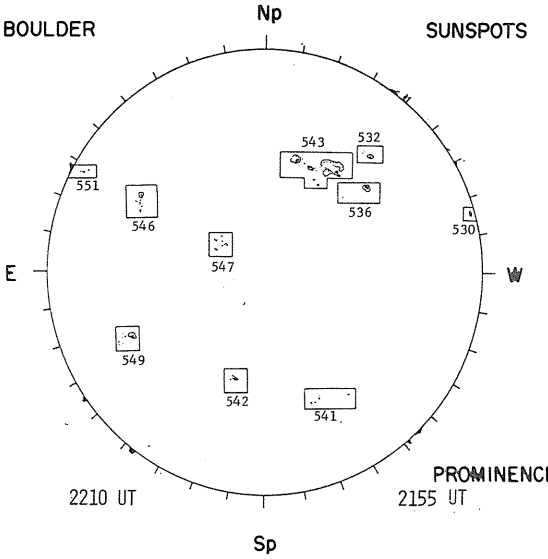
20

SACRAMENTO PEAK Hα



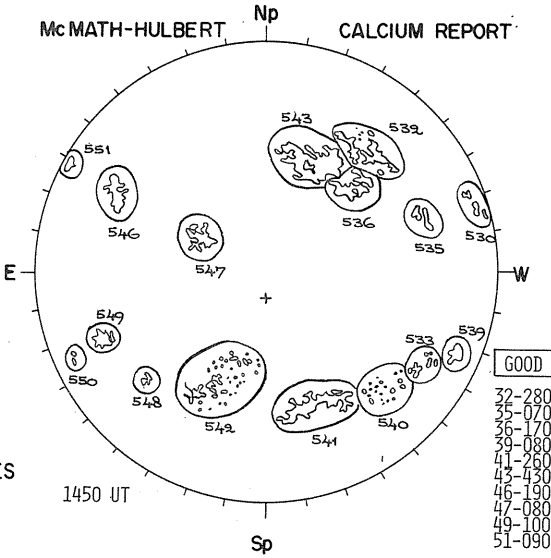
1502 UT

BOULDER SUNSPOTS



2210 UT

McMATH-HULBERT CALCIUM REPORT



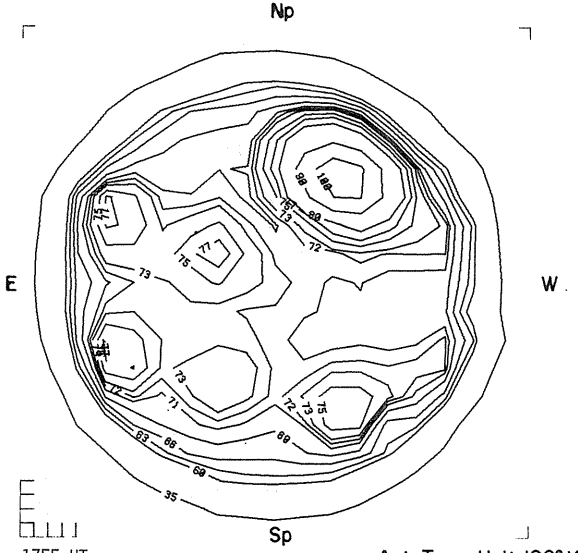
PROMINENCES

2155 UT

1450 UT

GOOD	M
32-2800	3.0
35-0700	2.5
36-1700	3.0
39-0800	2.5
41-2600	3.0
43-4300	3.5
46-1900	3.5
47-0800	2.5
49-1000	3.5
51-0900	3.0

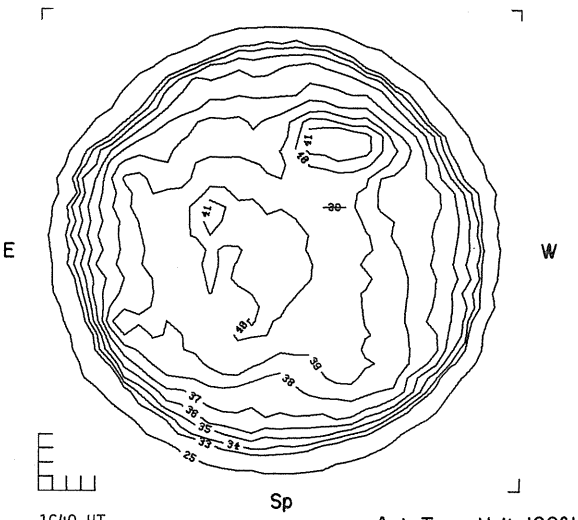
NOSC LA POSTA 2.0 CM



1755 UT

Ant. Temp. Unit 100° K

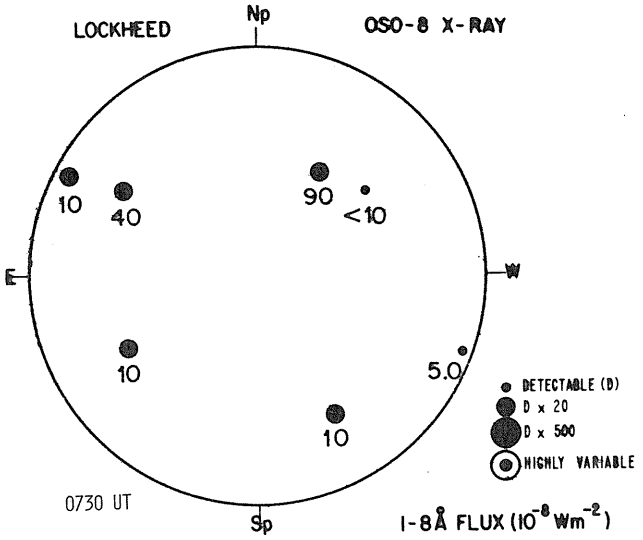
NOSC LA POSTA 8.6 MM

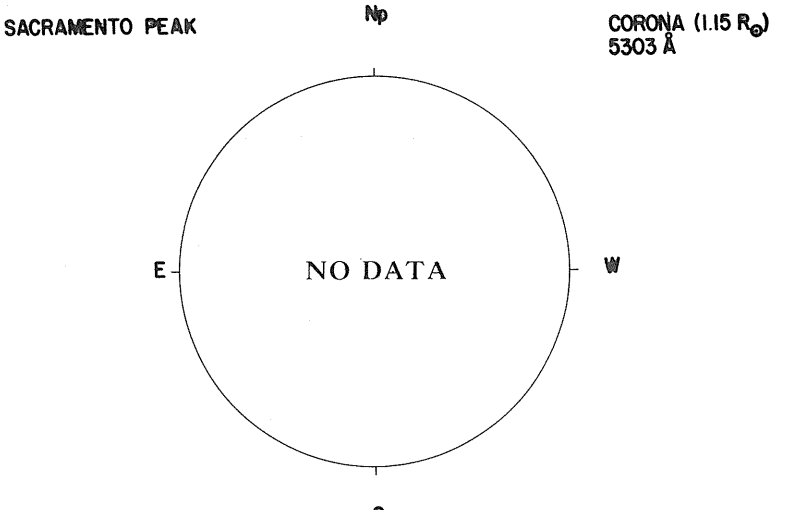


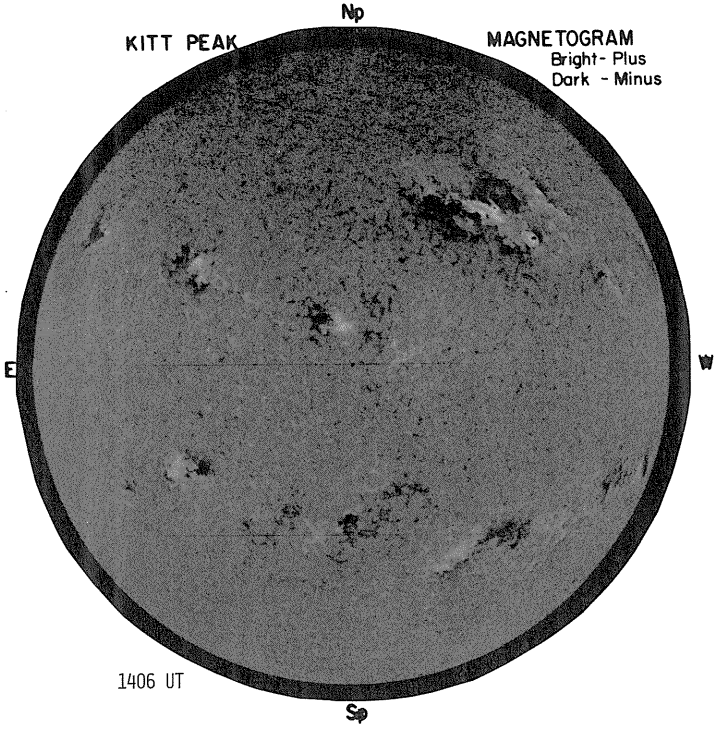
1649 UT

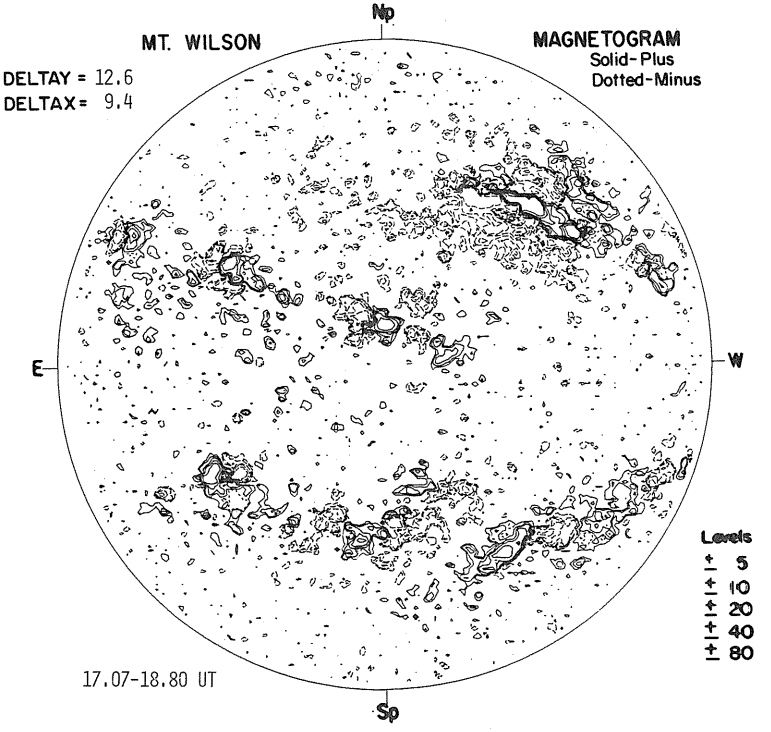
Ant. Temp. Unit 100° K

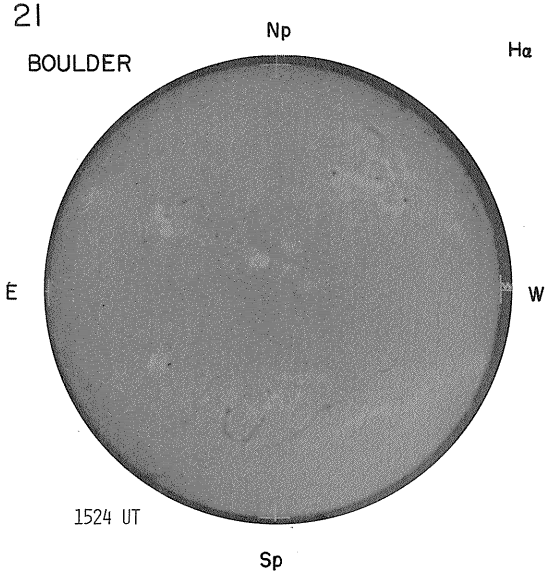
SEPTEMBER 21, 1978 (P = 24.96, B_o = 7.09, L_o = 347.53)

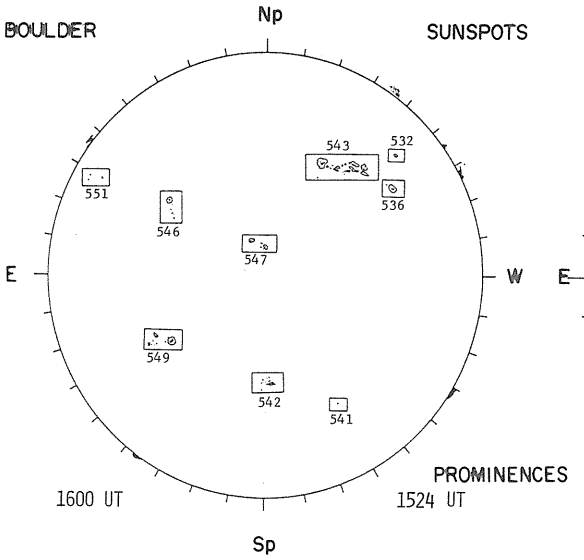


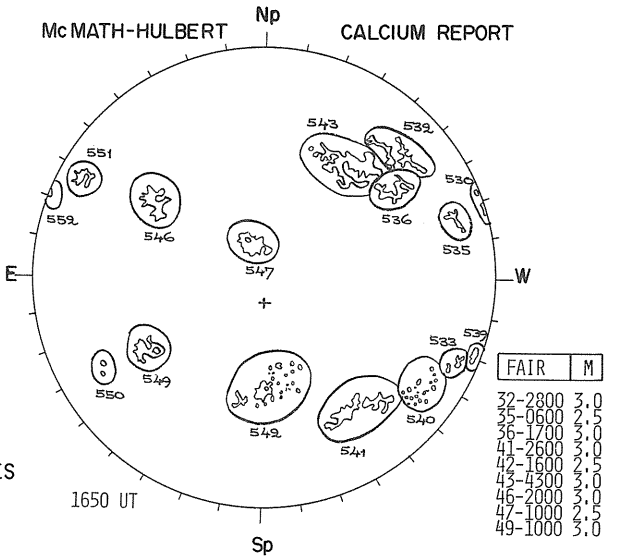


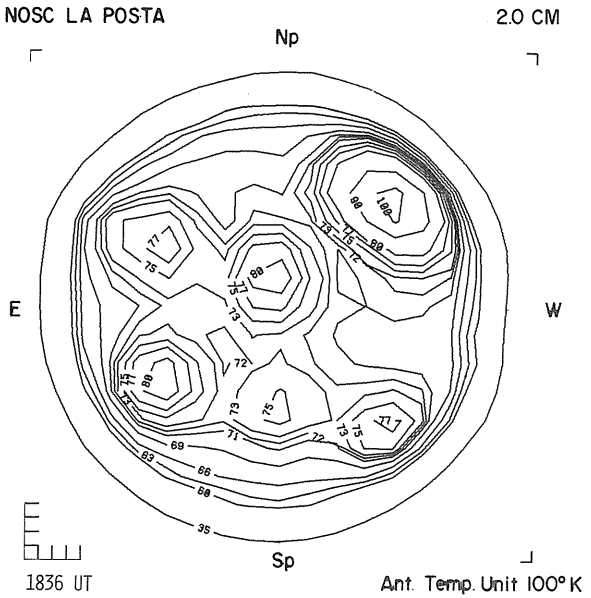


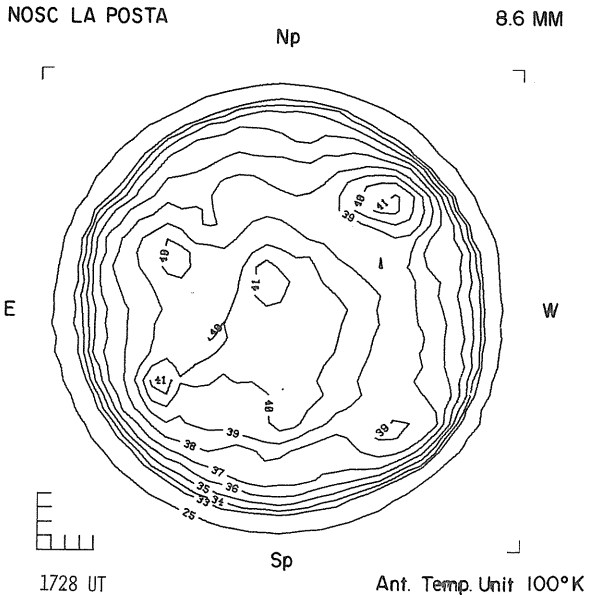



BOULDER
Np
Hα
E
W
Sp
1524 UT

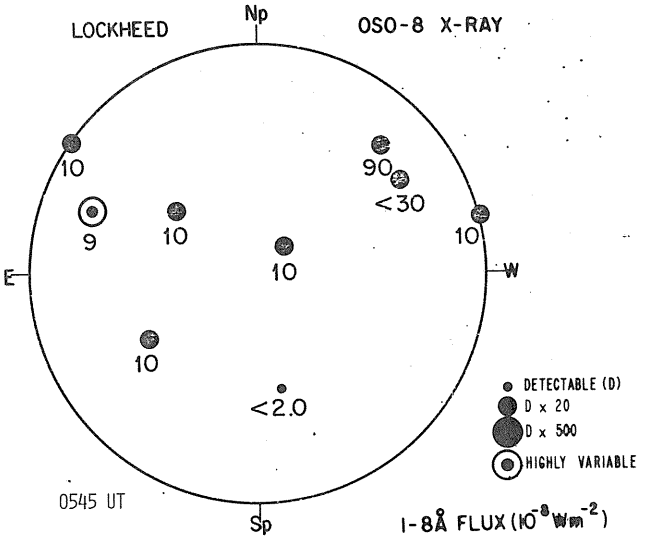

BOULDER
Np
SUNSPOTS
E
W
Sp
1600 UT
551
546
547
549
542
541
543
532
536

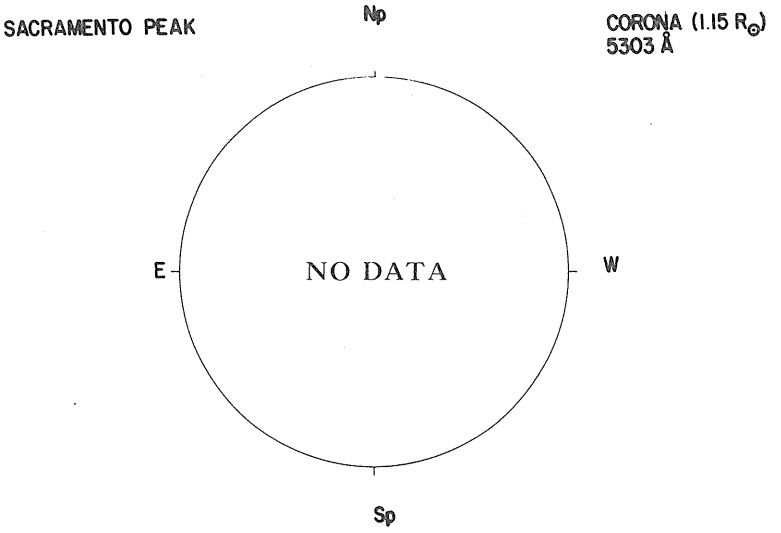

McMATH-HULBERT
Np
CALCIUM REPORT
PROMINENCES
1524 UT
E
W
Sp
1650 UT
551
552
546
547
549
550
542
541
543
532
536
530
535
533
539
540
FAIR M
32-2800 3.0
35-0600 2.5
36-1700 3.0
41-2600 3.0
42-1600 2.5
43-4300 3.0
46-2000 3.0
47-1000 2.5
49-1000 3.0

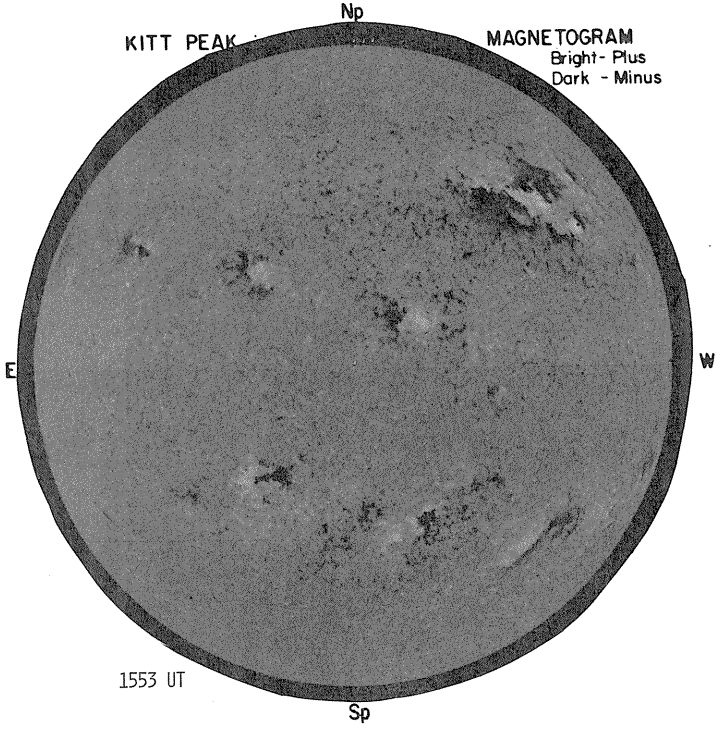

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1836 UT
Ant. Temp. Unit 100° K

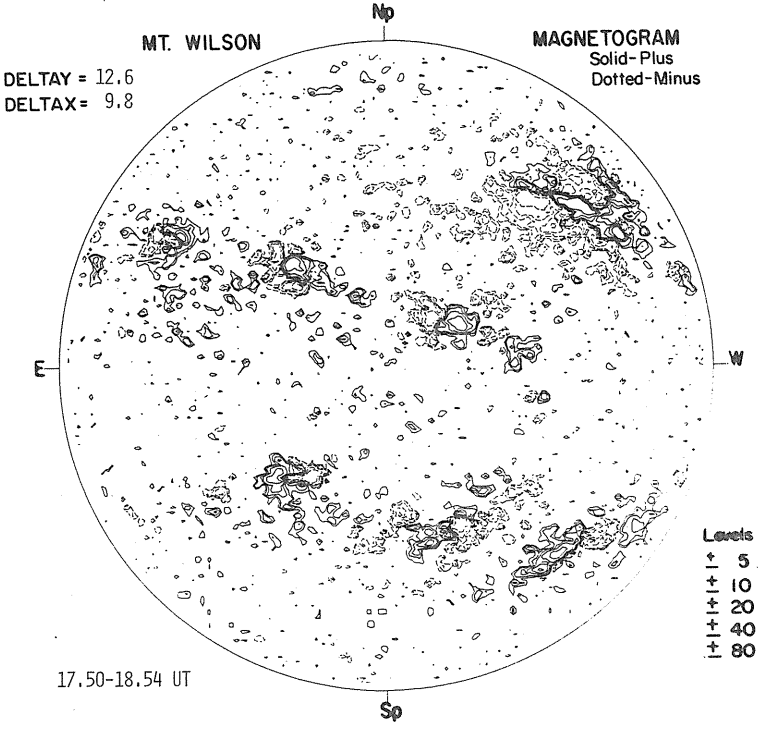

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1728 UT
Ant. Temp. Unit 100° K

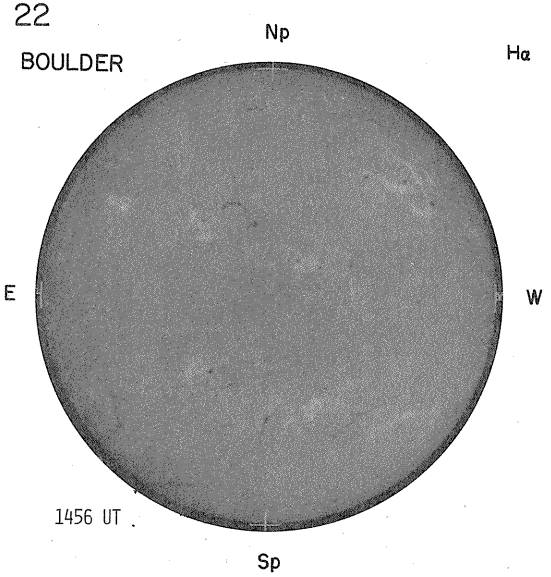
SEPTEMBER 22, 1978 (P = 25.09, B_o = 7.06, L_o = 334.33)

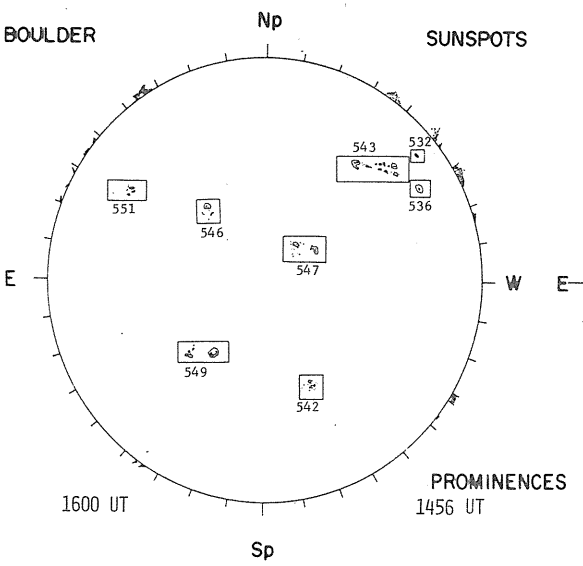


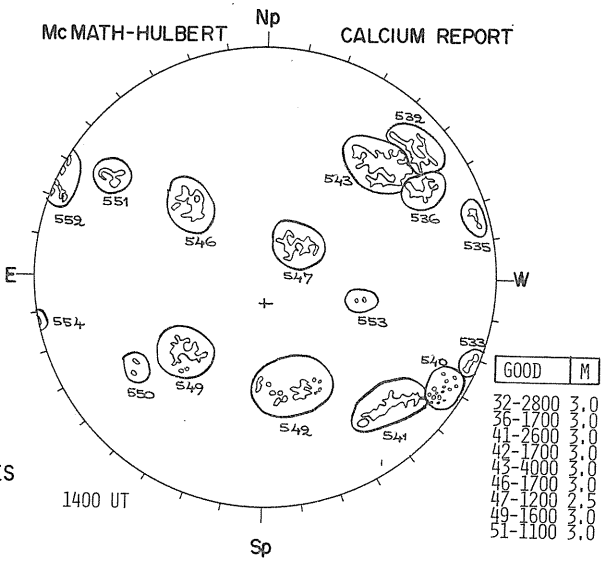


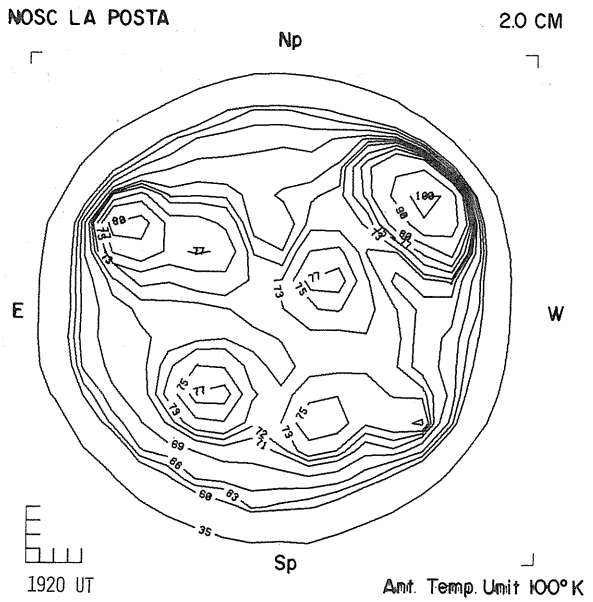


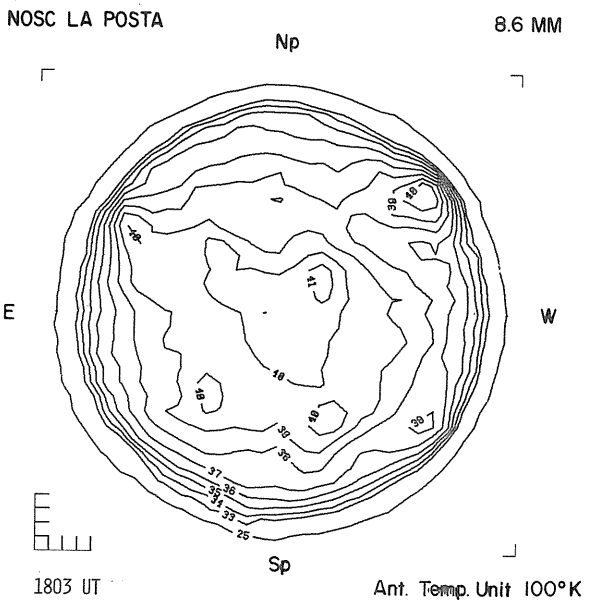



BOULDER
Np
Hα
E
W
1456 UT
Sp

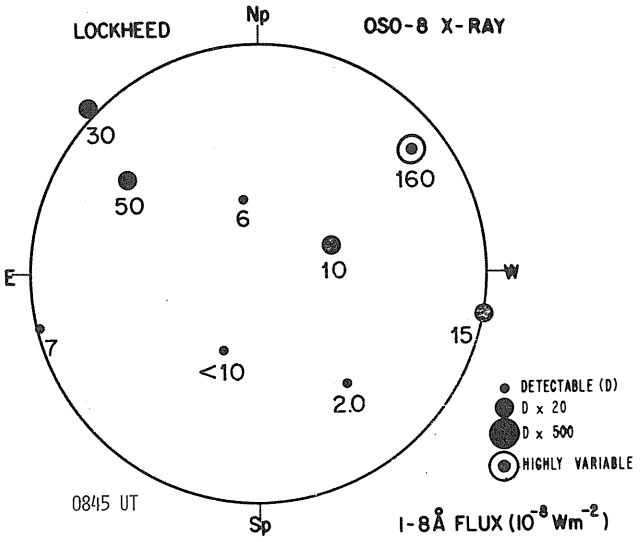

BOULDER
Np
SUNSPOTS
E
W
551
546
547
549
542
543
532
536
1600 UT
Sp
PROMINENCES
1456 UT

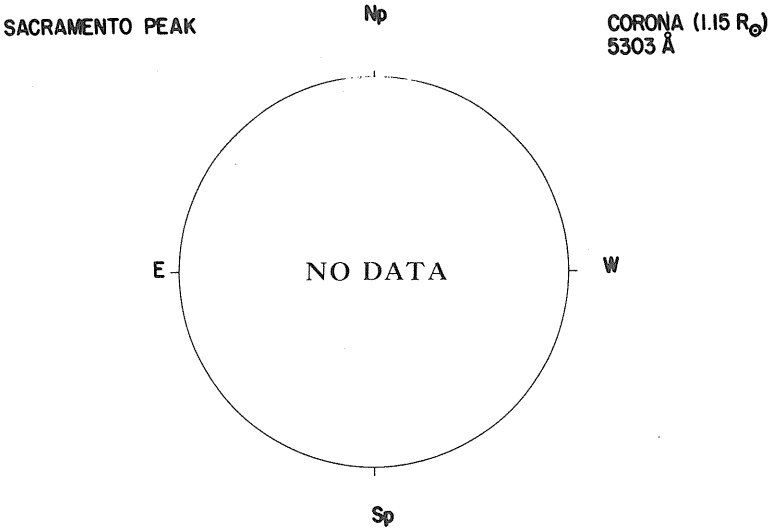

McMATH-HULBERT
Np
CALCIUM REPORT
E
W
552
551
546
547
543
532
536
535
554
553
550
549
542
541
540
533
1400 UT
Sp
GOOD | M
32-2800 3.0
36-1700 3.0
41-2600 3.0
42-1700 3.0
43-4000 3.0
46-1700 3.0
47-1200 2.5
49-1600 3.0
51-1100 3.0

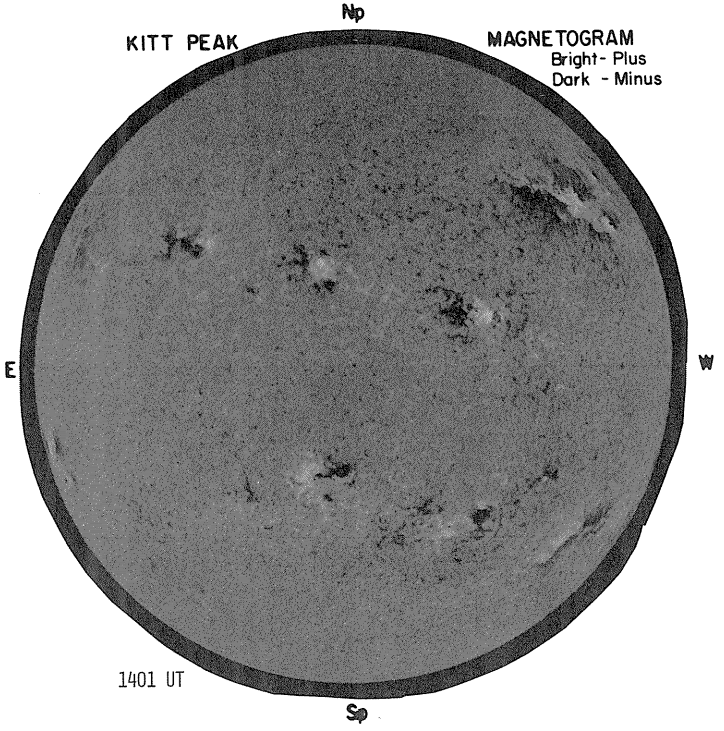

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1920 UT
Ant. Temp. Unit 100° K

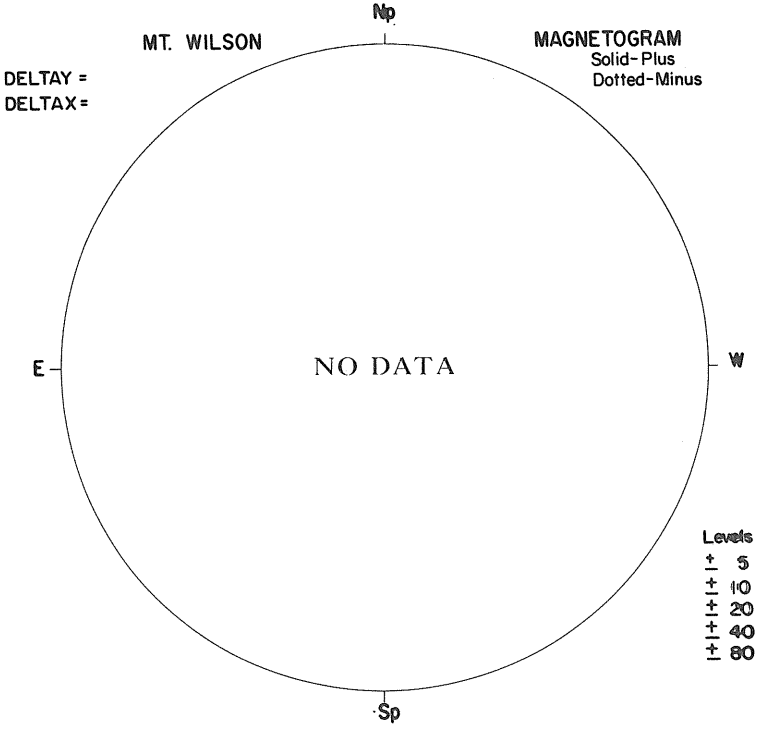

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1803 UT
Ant. Temp. Unit 100° K

SEPTEMBER 23, 1978 (P = 25.22, B_o = 7.03, L_o = 321.13)



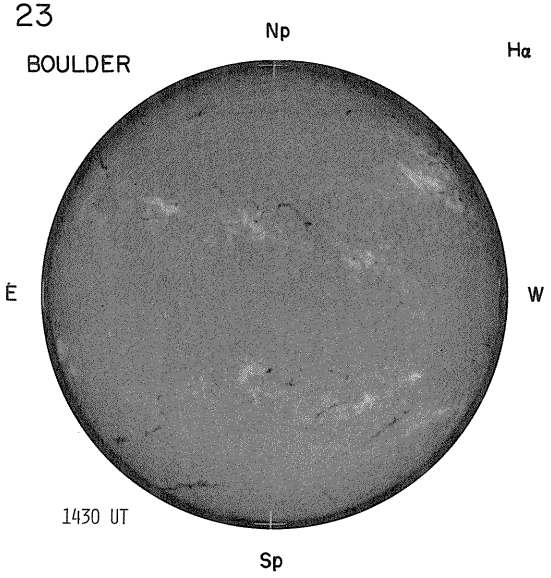




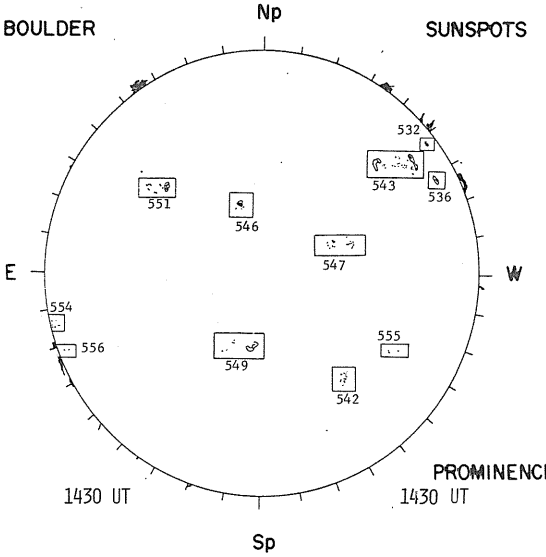


23

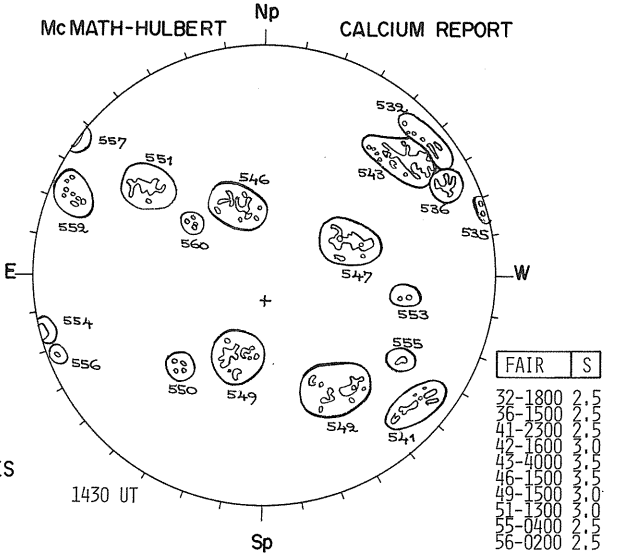
BOULDER Hα



BOULDER SUNSPOTS



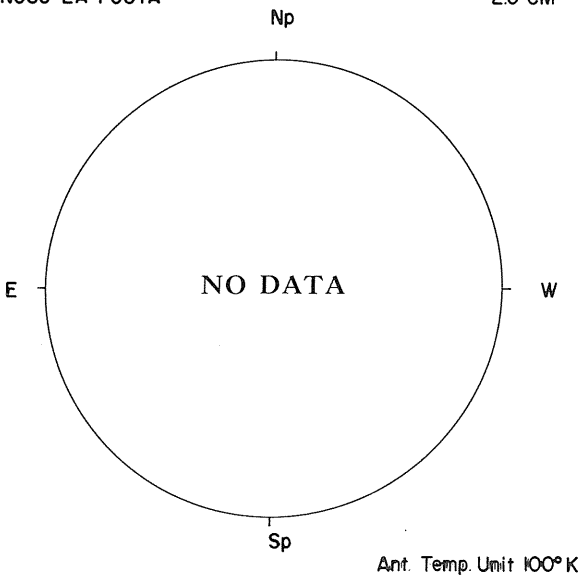
McMATH-HULBERT CALCIUM REPORT



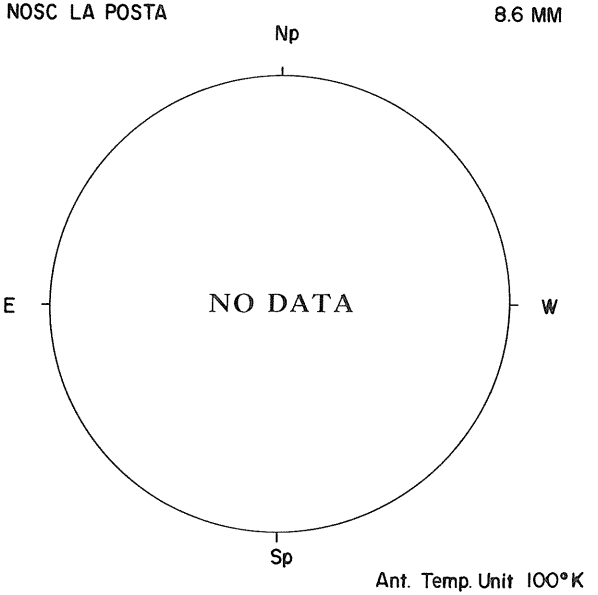
FAIR	S
32-1800	2.5
36-1500	2.5
41-2300	2.5
42-1600	3.0
43-4000	3.5
46-1500	3.5
49-1500	3.0
51-1300	3.0
55-0400	2.5
56-0200	2.5

PROMINENCES 1430 UT

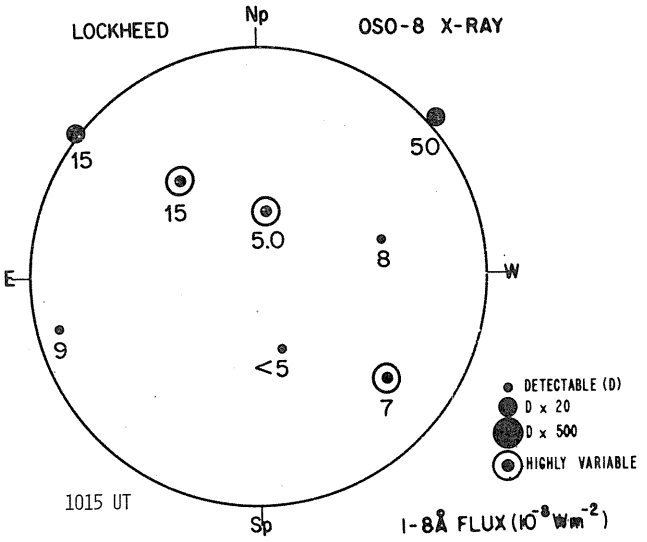
NOSC LA POSTA 2.0 CM

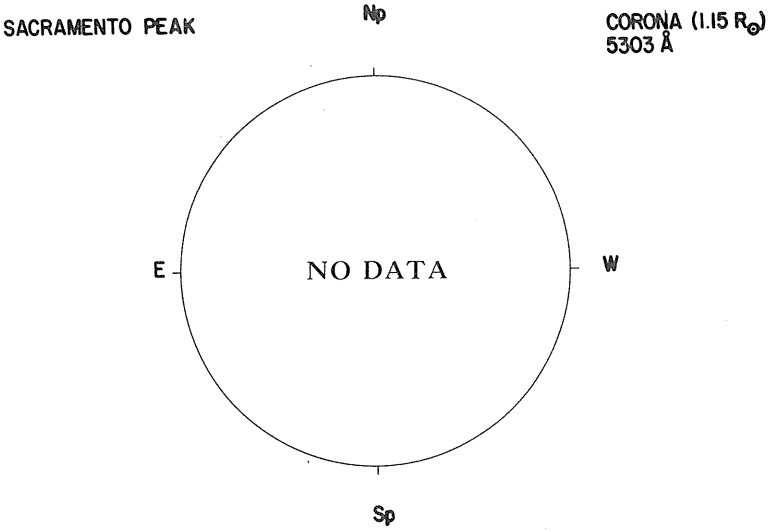


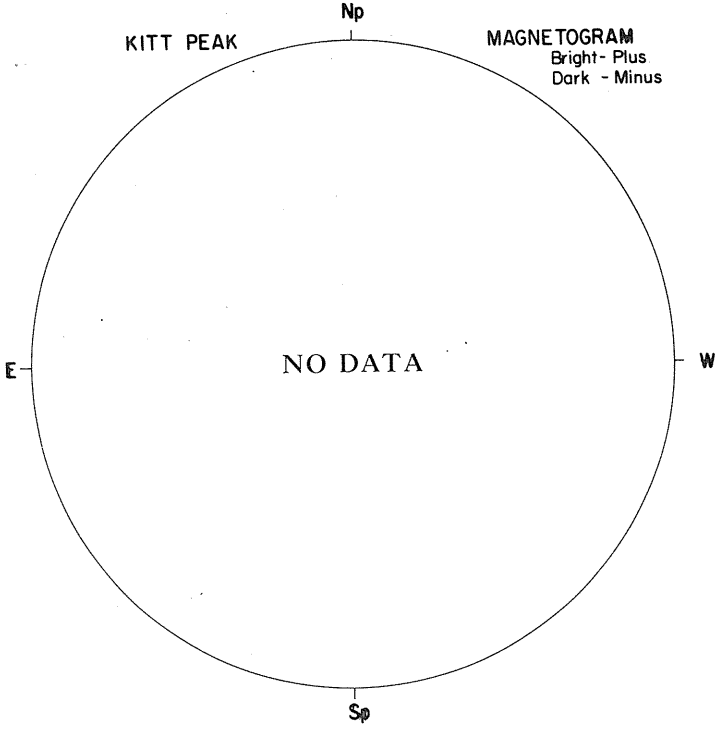
NOSC LA POSTA 8.6 MM

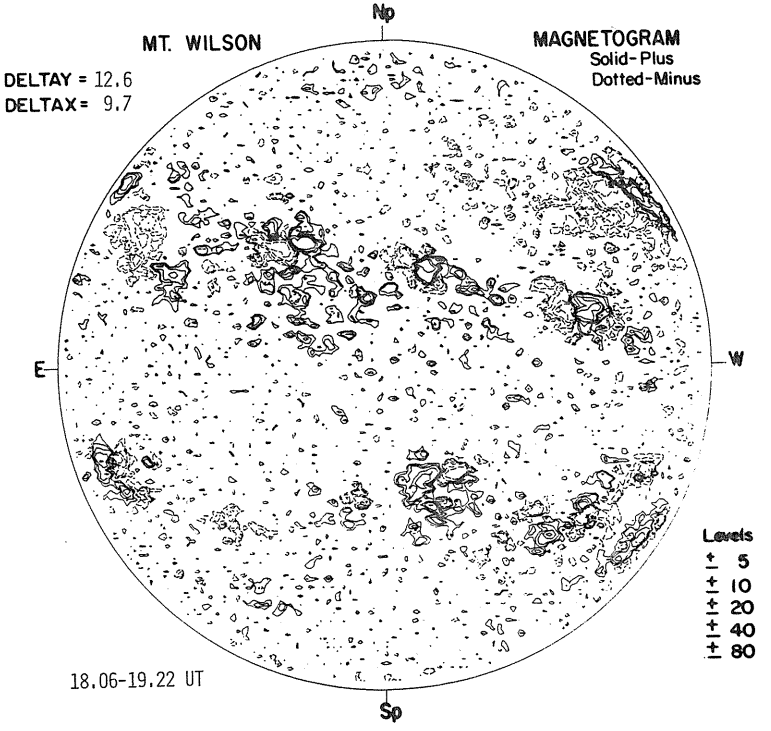


SEPTEMBER 24, 1978 (P = 25.34, B_o = 7.00, L_o = 307.93)

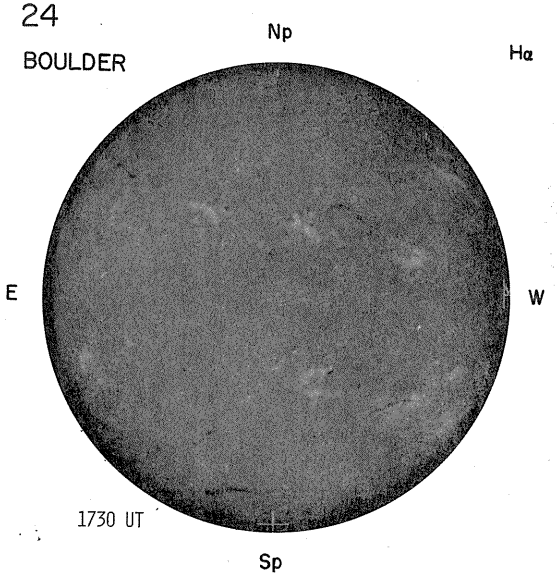




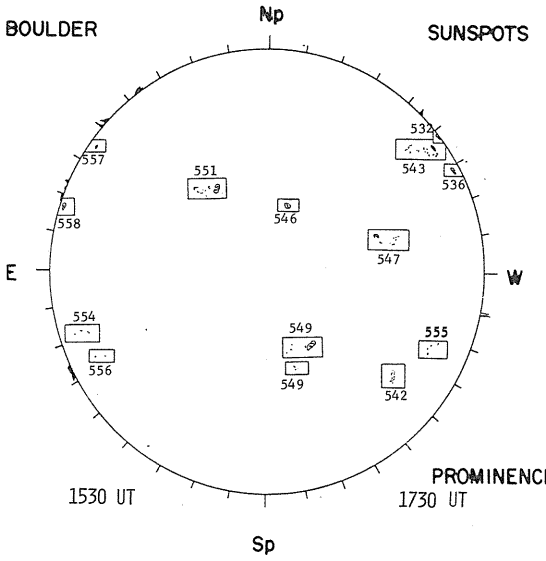




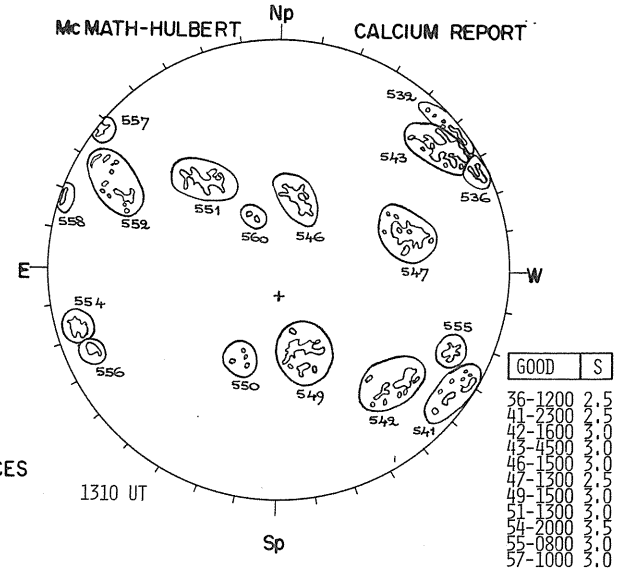
BOULDER Hα



BOULDER SUNSPOTS

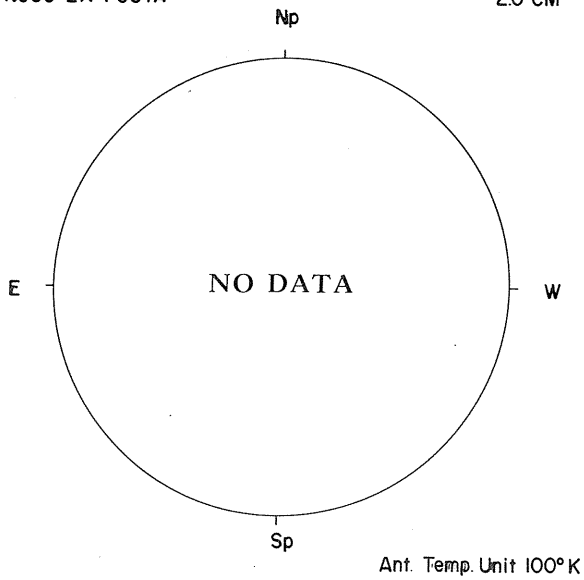


McMATH-HULBERT CALCIUM REPORT

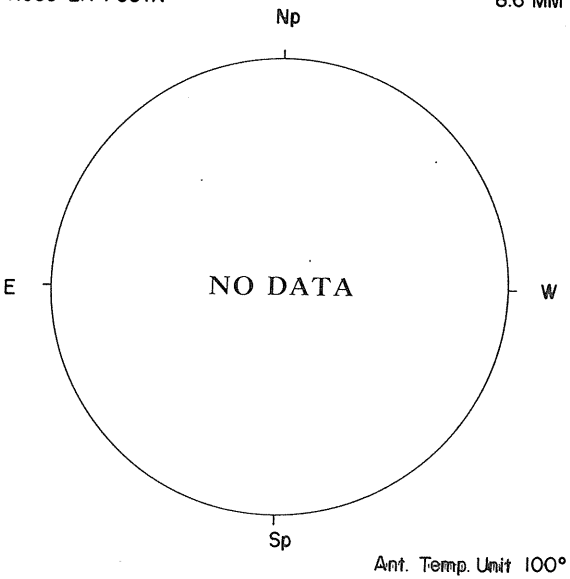


PROMINENCES 1730 UT

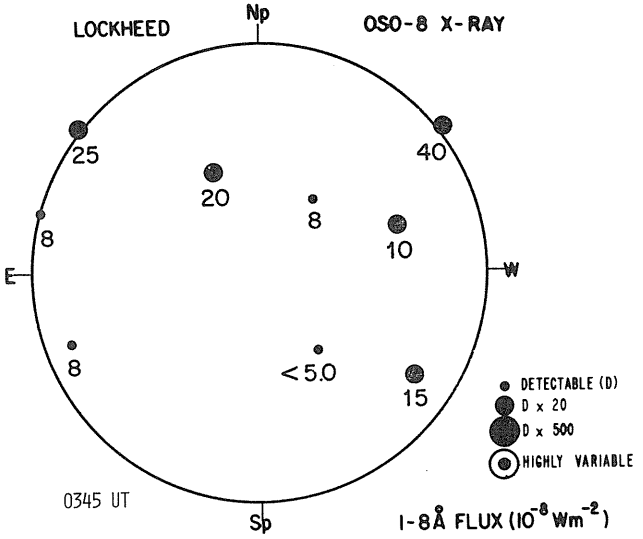
NOSC LA POSTA 2.0 CM

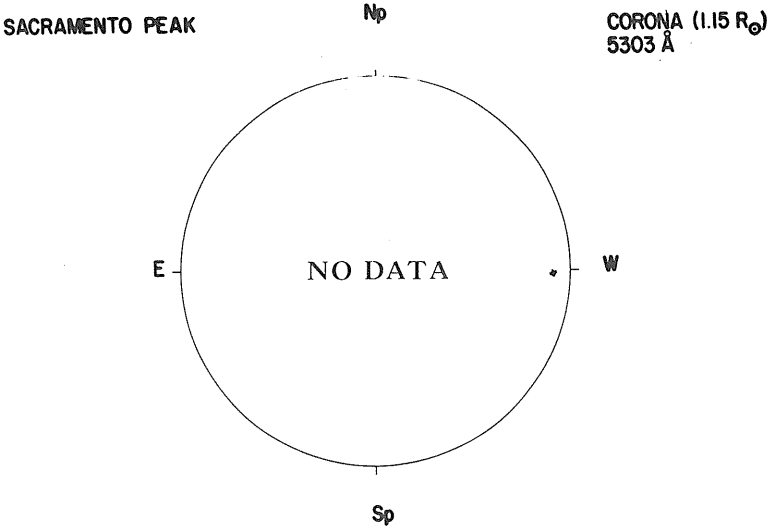


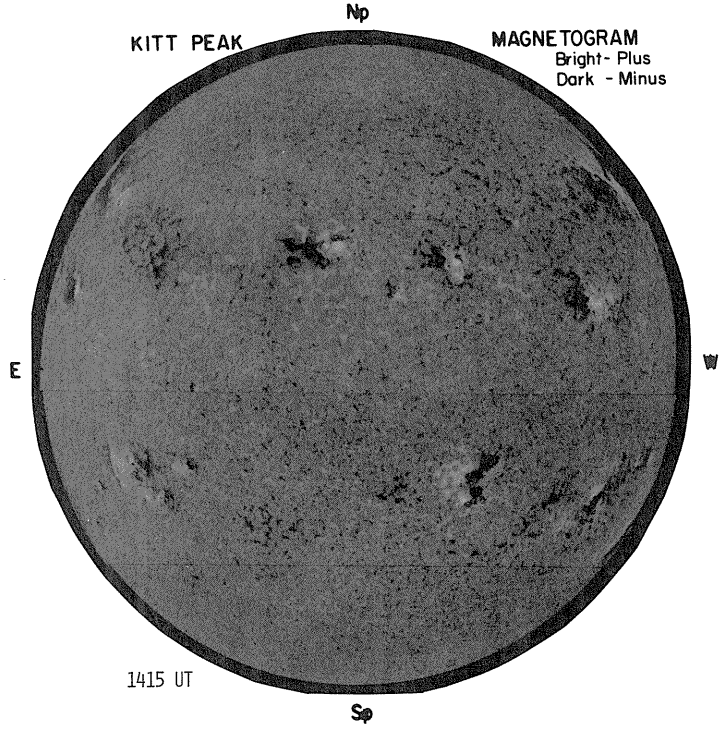
NOSC LA POSTA 8.6 MM

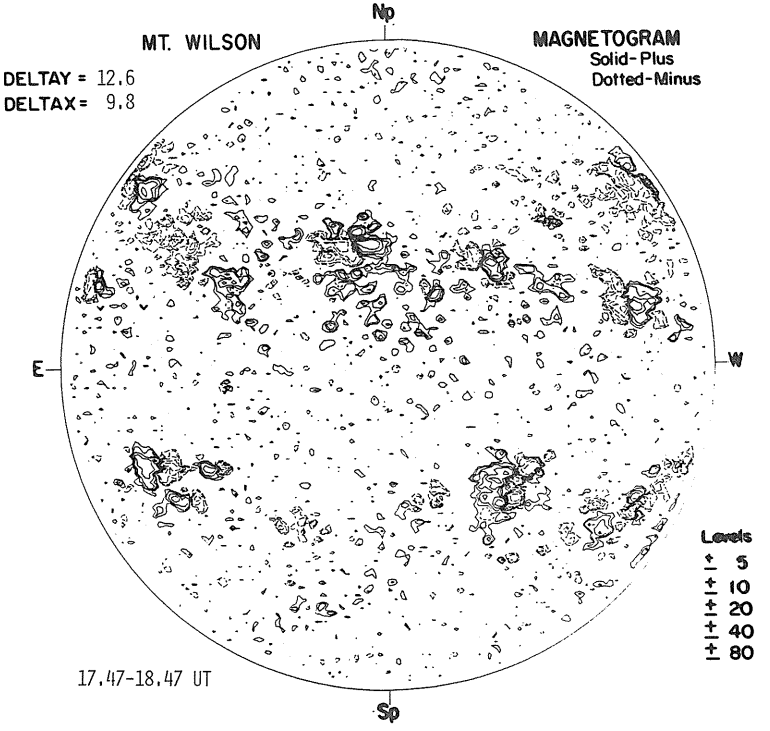


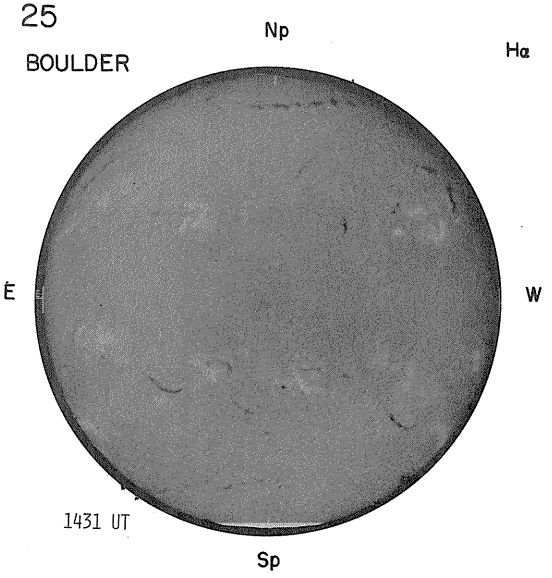
SEPTEMBER 25, 1978 (P = 25.45, B_o = 6.96, L_o = 294.74)

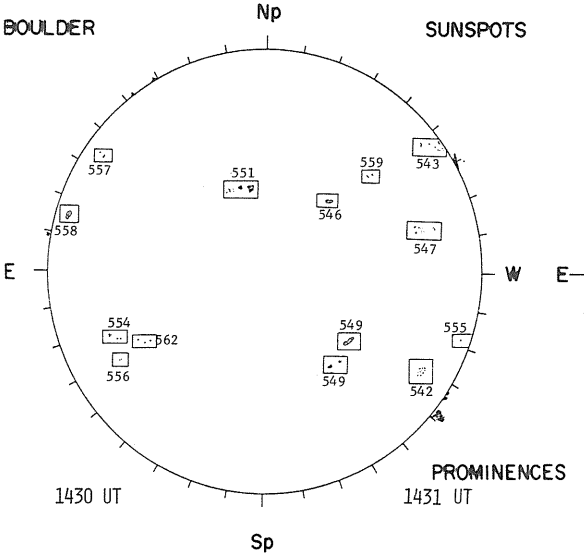


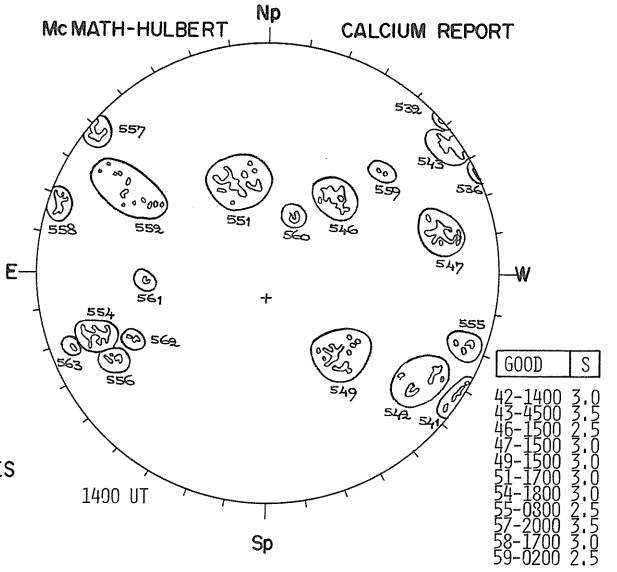







BOULDER
Np
Hα
E
W
1431 UT
Sp


BOULDER
Np
SUNSPOTS
E
W
557
551
559
543
546
558
547
554
562
549
555
556
549
542
1430 UT
Sp
PROMINENCES
1431 UT


McMATH-HULBERT
Np
CALCIUM REPORT
E
W
557
539
543
536
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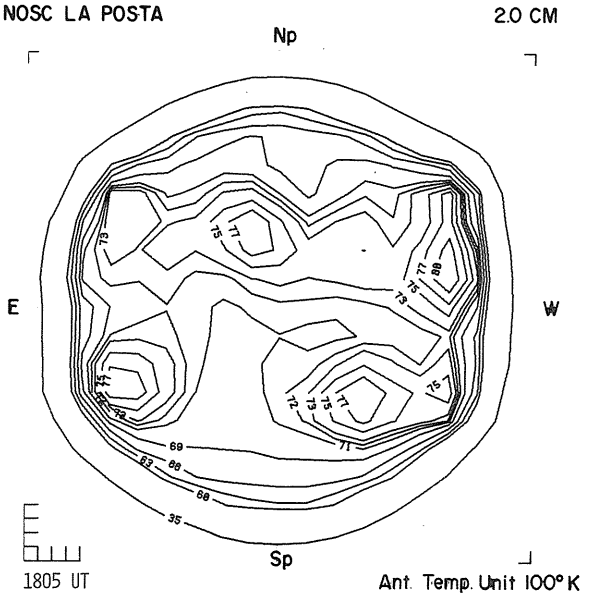
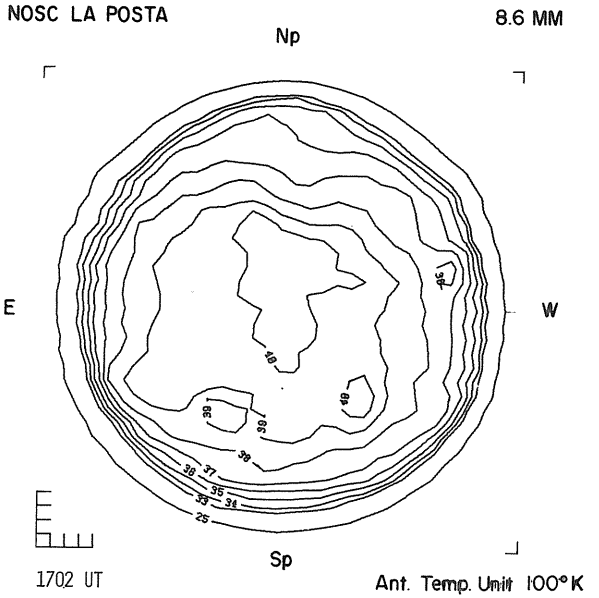
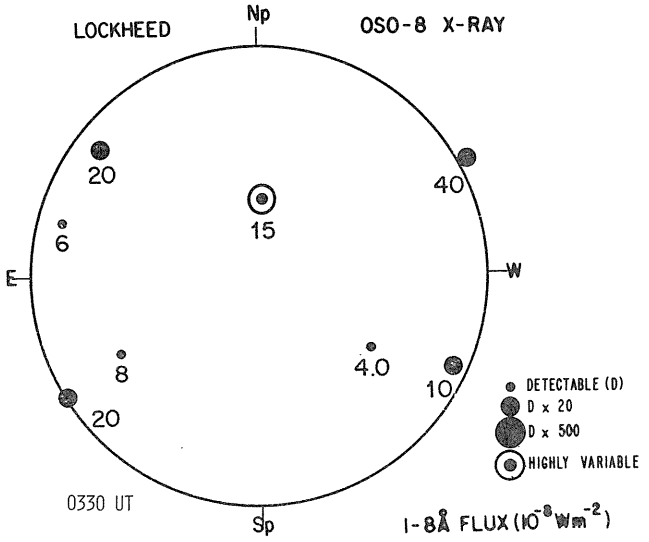
561
554
562
563
556
549
555
542
541
1400 UT
Sp
GOOD S
42-1400 3.0
43-4500 3.5
46-1500 2.5
47-1500 3.0
49-1500 3.0
51-1700 3.0
54-1800 3.0
55-0800 2.5
57-2000 3.5
58-1700 3.0
59-0200 2.5

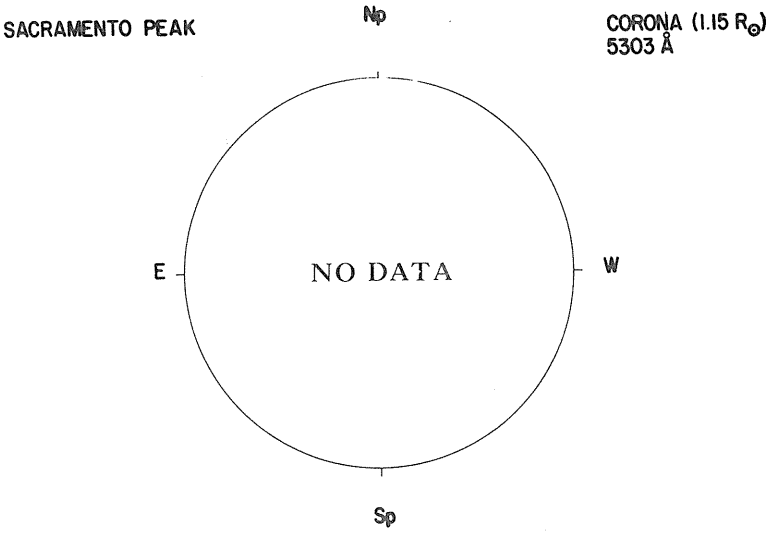

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1805 UT
Ant. Temp. Unit 100° K

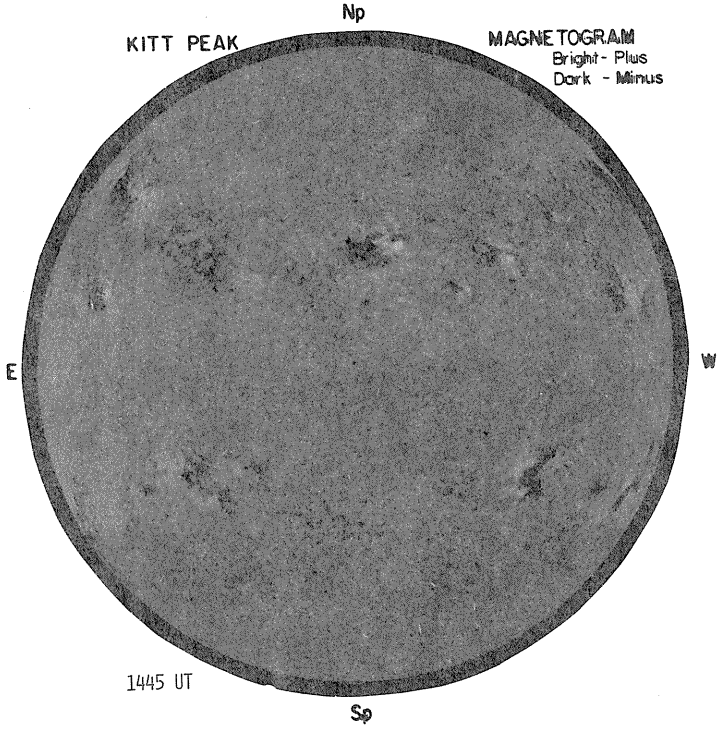

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1702 UT
Ant. Temp. Unit 100° K

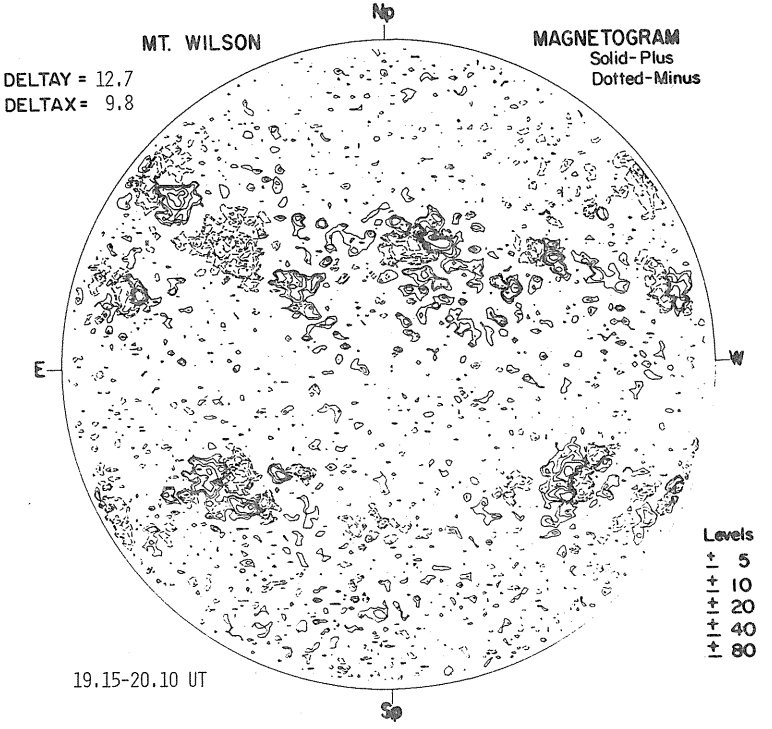
95
Sep 78

SEPTEMBER 26, 1978 (P = 25.56, B_o = 6.93, L_o = 281.54)

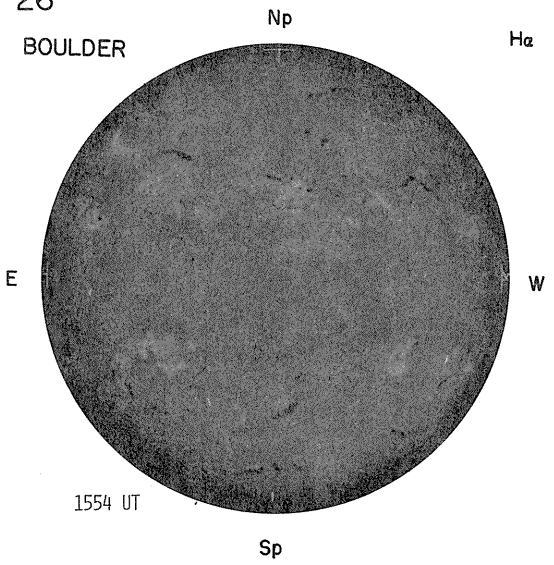


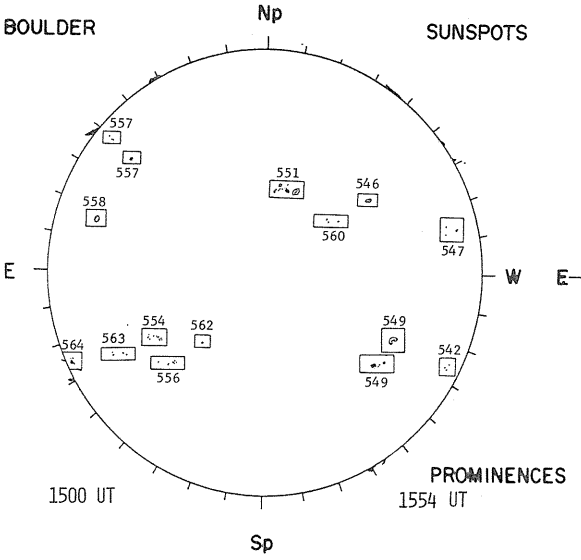






26


BOULDER
Np
Hα
E
W
1554 UT
Sp


BOULDER
Np
SUNSPOTS
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W
557
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563
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556
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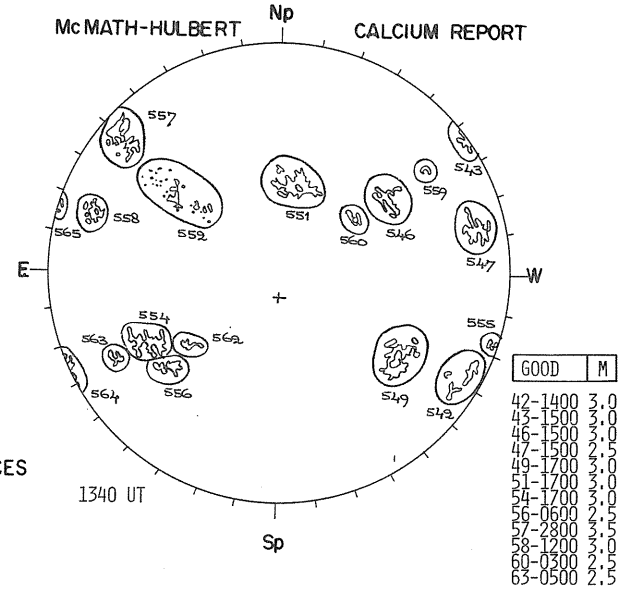
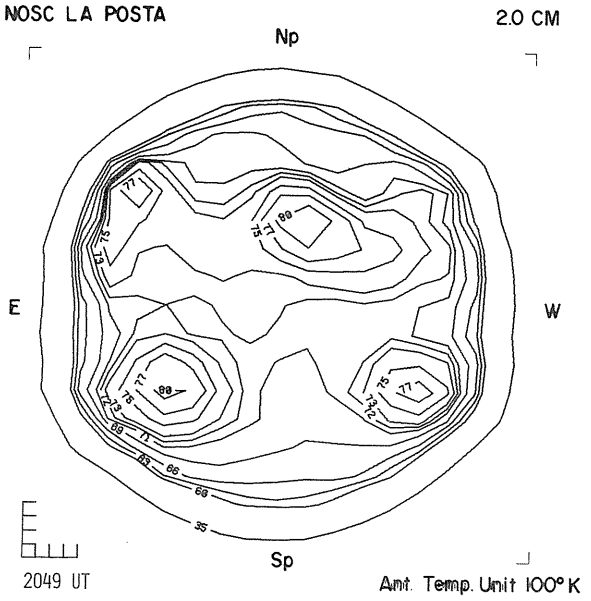
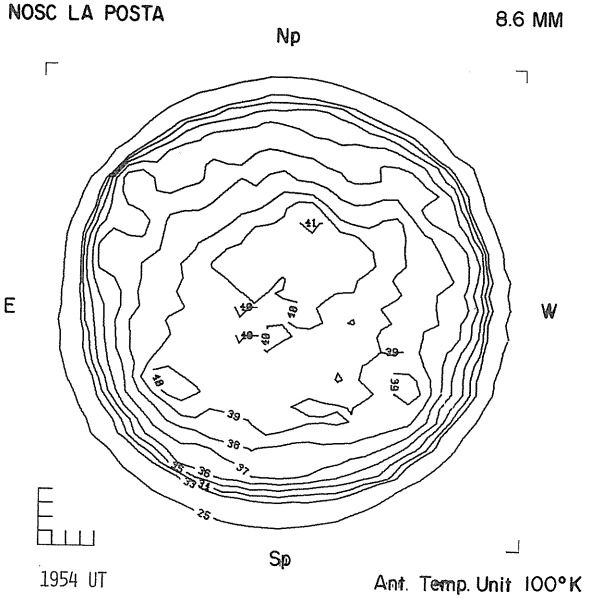
549
542
1500 UT
Sp
PROMINENCES
1554 UT

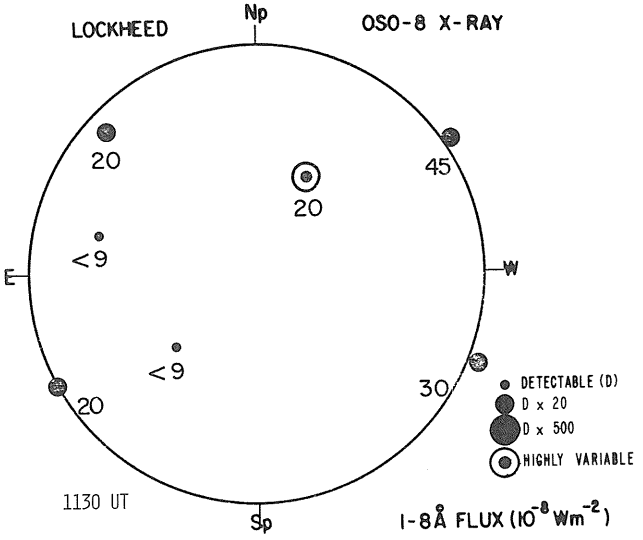

McMATH-HULBERT
Np
CALCIUM REPORT
E
W
557
558
565
552
551
560
546
559
543
547
554
563
562
564
556
555
549
542
1340 UT
Sp
GOOD | M
42-1400 3.0
43-1500 3.0
46-1500 3.0
47-1500 2.5
49-1700 3.0
51-1700 3.0
54-1700 3.0
56-0600 2.5
57-2800 3.5
58-1200 3.0
60-0300 2.5
63-0500 2.5

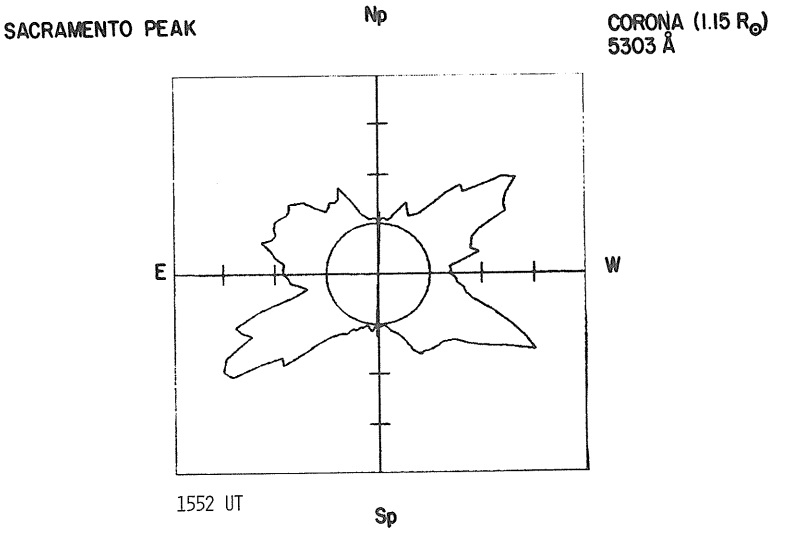

NOSC LA POSTA
2.0 CM
Np
E
W
Sp
2049 UT
Ant. Temp. Unit 100° K

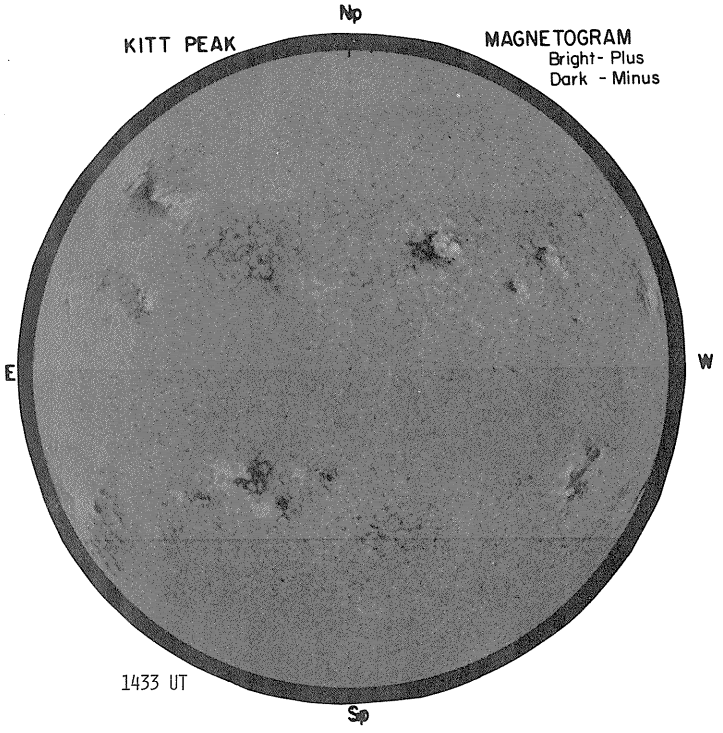

NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1954 UT
Ant. Temp. Unit 100° K

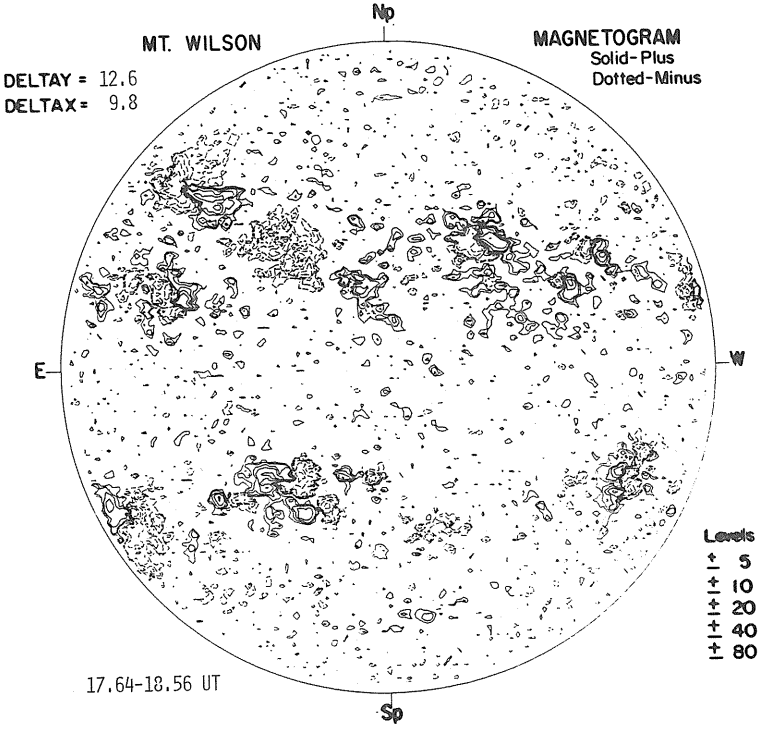
97
Sep 78

SEPTEMBER 27, 1978 (P = 25.66, B_o = 6.89, L_o = 268.34)



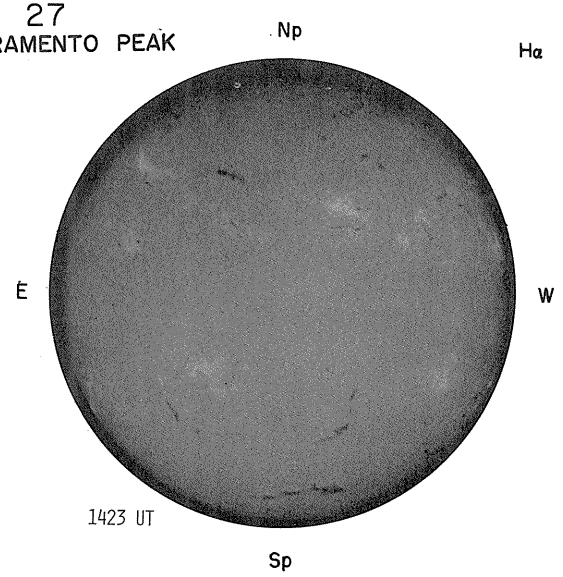




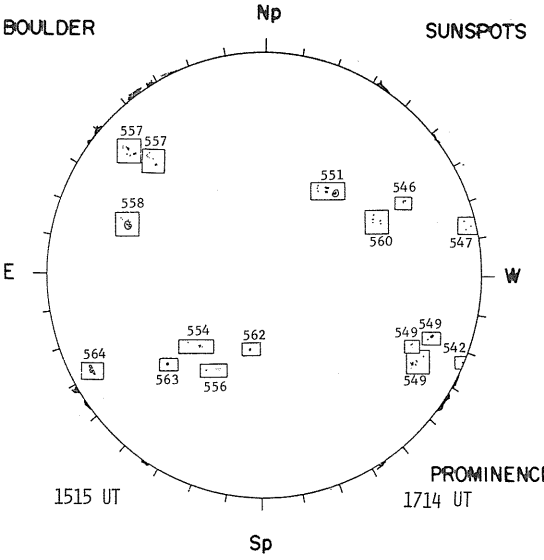


27

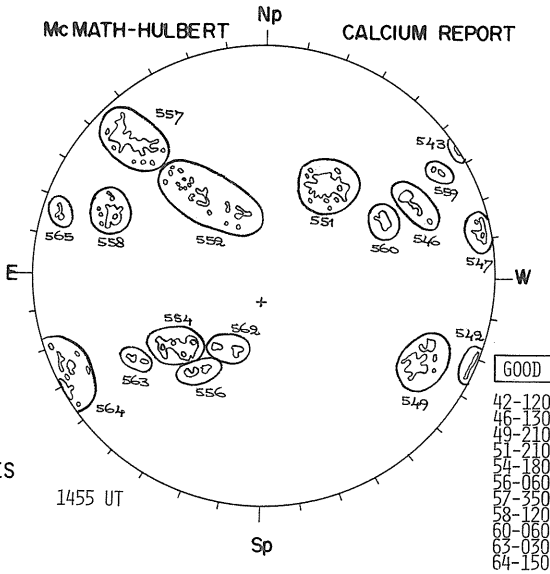
SACRAMENTO PEAK



BOULDER SUNSPOTS



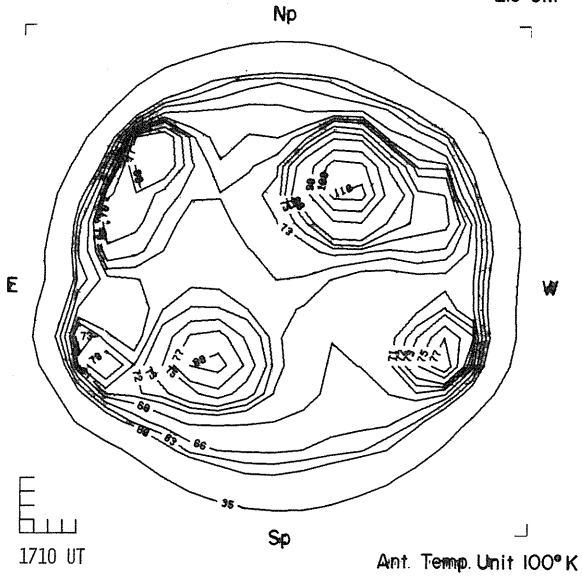
McMATH-HULBERT CALCIUM REPORT



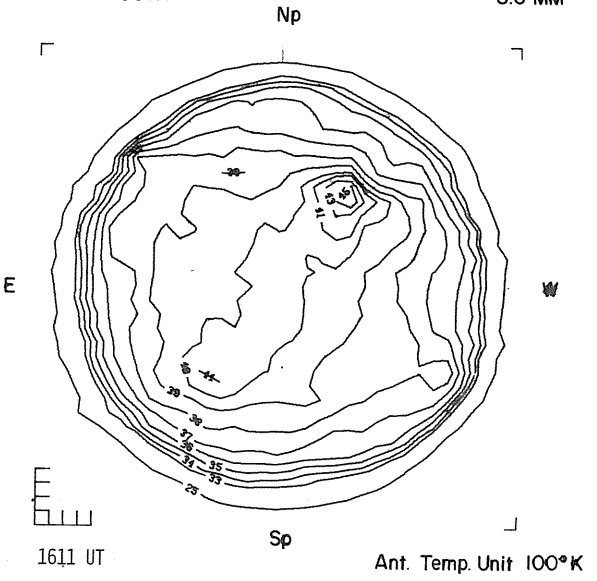
GOOD	M
42-1200	2.5
46-1300	3.0
49-2100	3.0
51-2100	4.0
54-1800	3.0
56-0600	2.5
57-3500	3.5
58-1200	2.5
60-0600	3.0
63-0300	3.0
64-1500	3.0

PROMINENCES 1714 UT

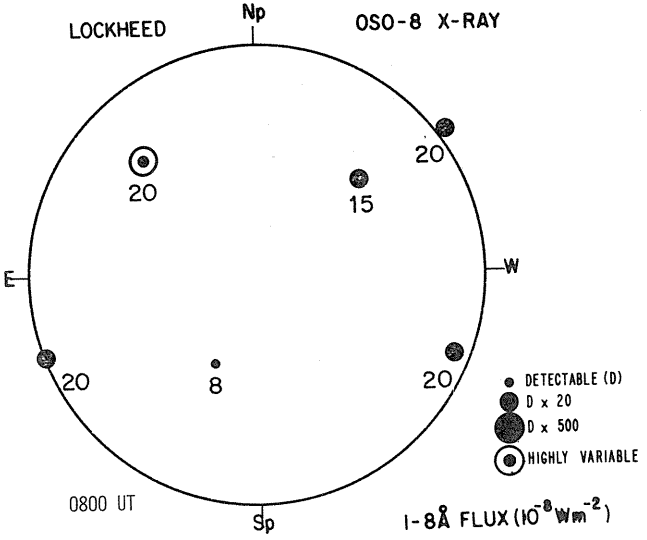
NOSC LA POSTA 2.0 CM

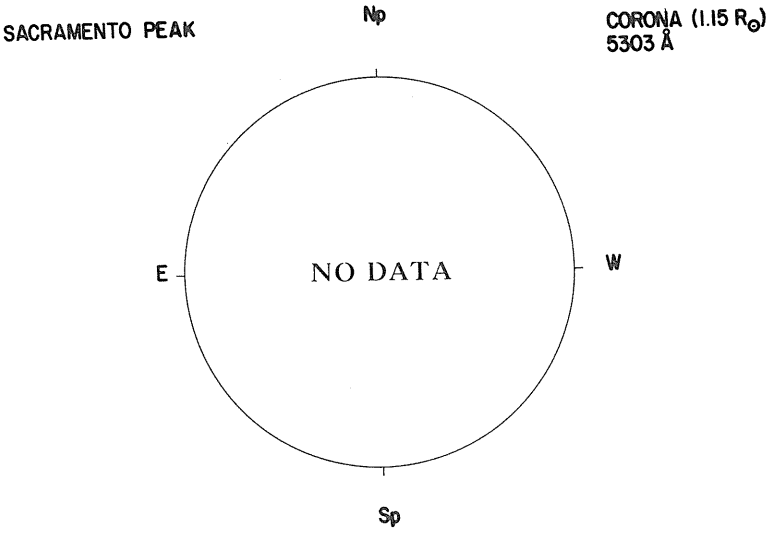


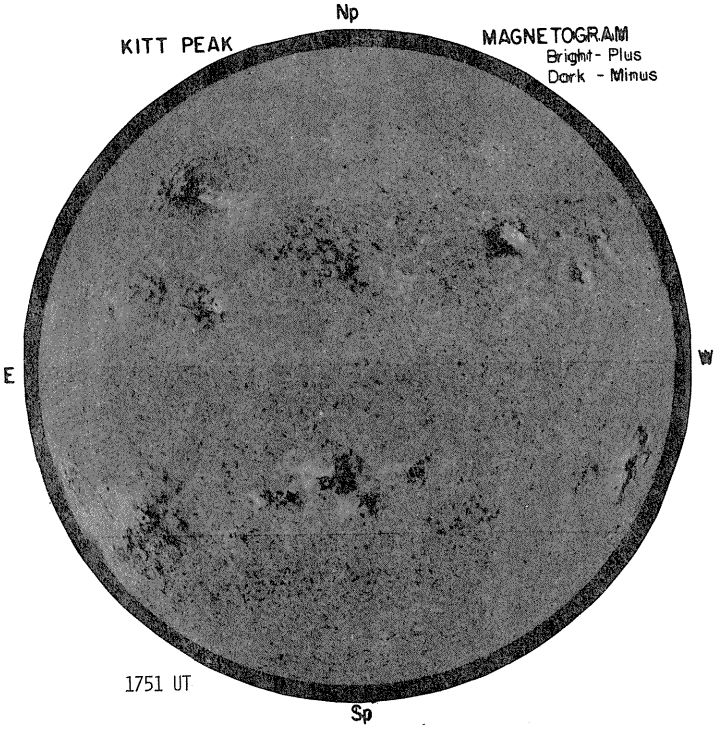
NOSC LA POSTA 8.6 MM

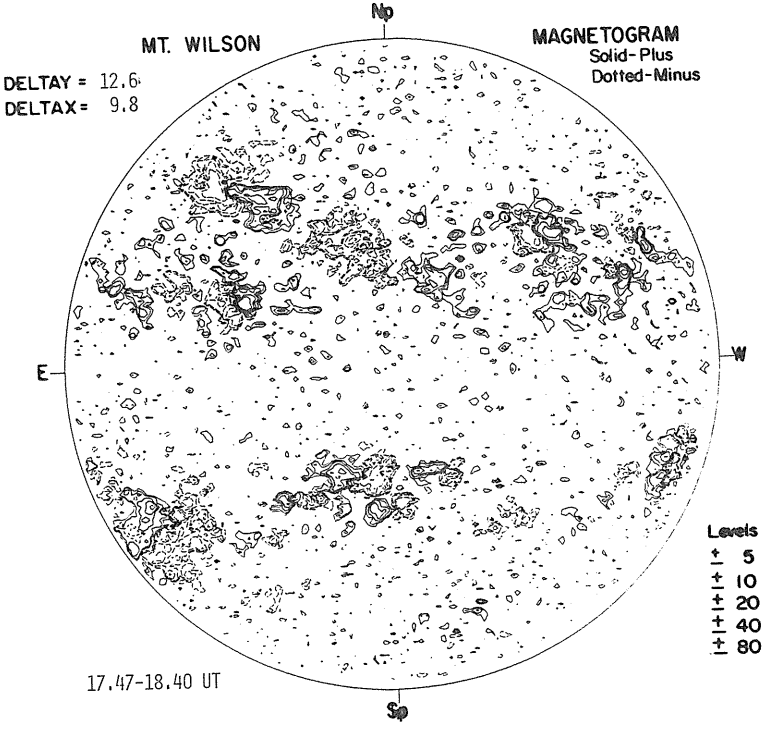


SEPTEMBER 28, 1978 (P = 25.75, B_o = 6.85, L_o = 255.14)



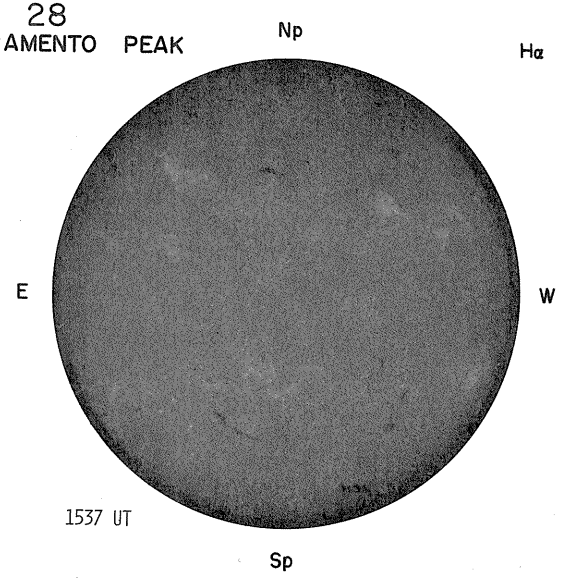






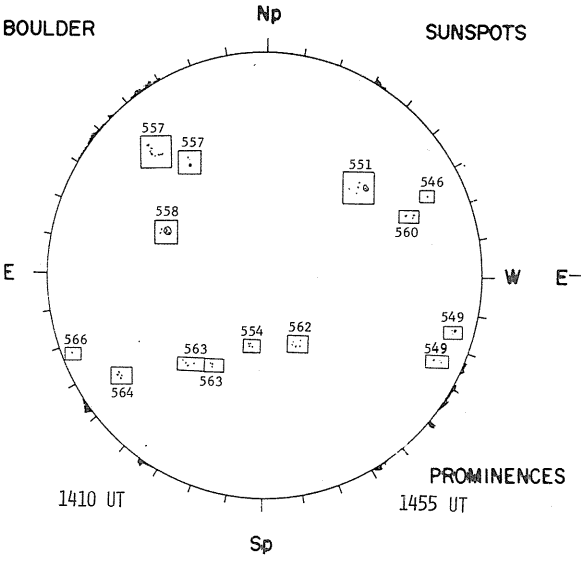
28

SACRAMENTO PEAK Hα



1537 UT

BOULDER SUNSPOTS

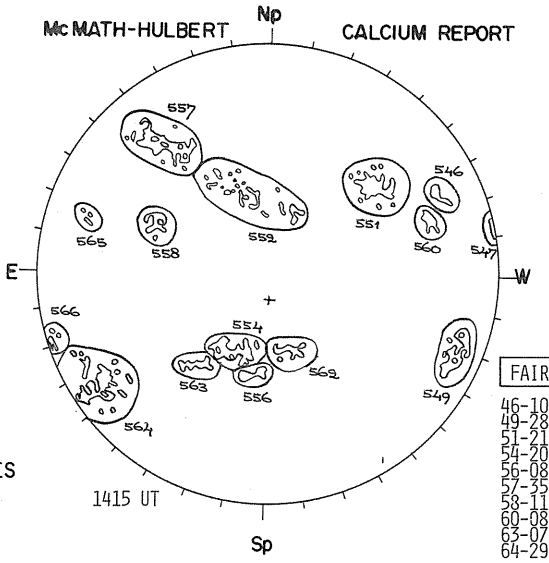


1410 UT

PROMINENCES

1455 UT

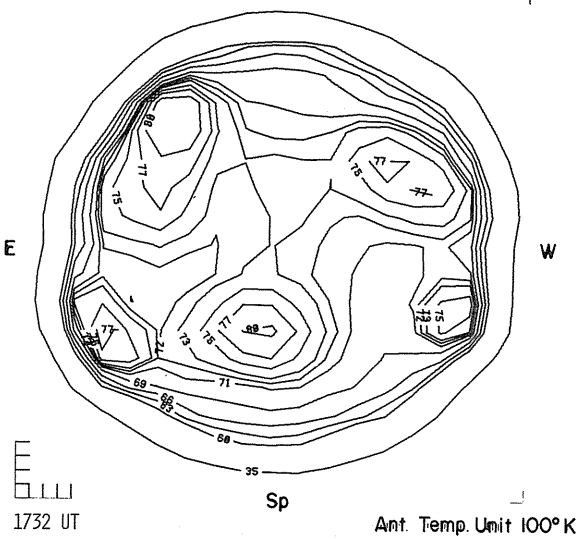
McMATH-HULBERT CALCIUM REPORT



1415 UT

FAIR	S
46-1000	2.5
49-2800	3.0
51-2100	3.0
54-2000	2.5
56-0800	2.5
57-3500	3.5
58-1100	2.5
60-0800	2.5
63-0700	2.5
64-2900	3.0

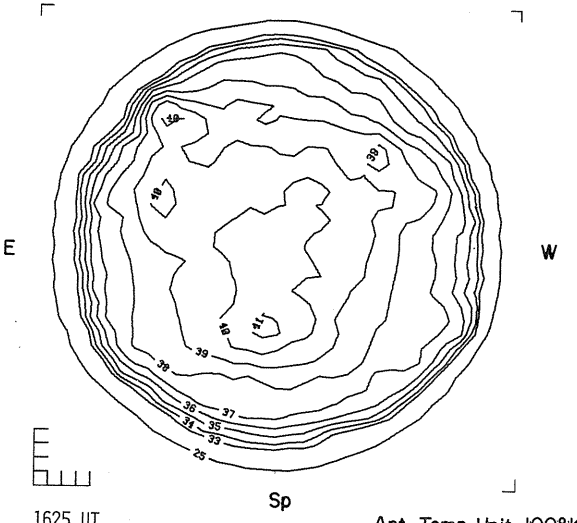
NOSC LA POSTA 2.0 CM



1732 UT

Ant. Temp. Unit 100° K

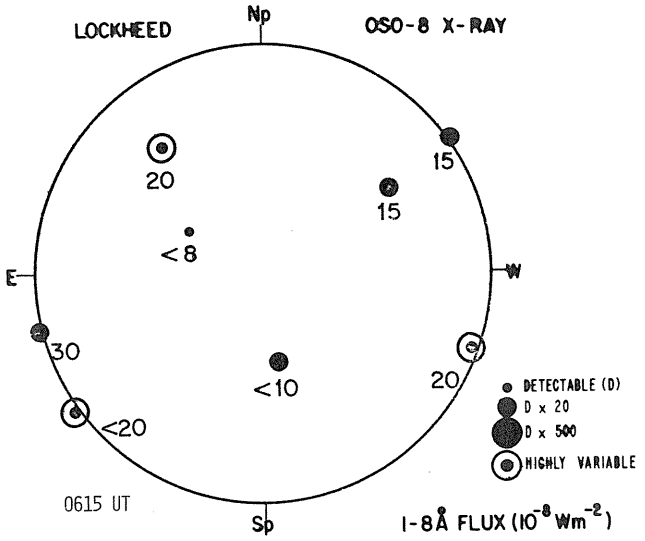
NOSC LA POSTA 8.6 MM

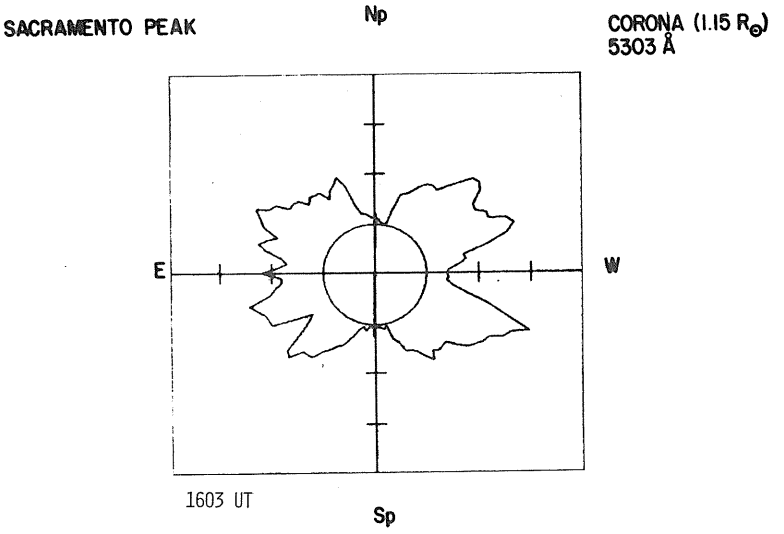


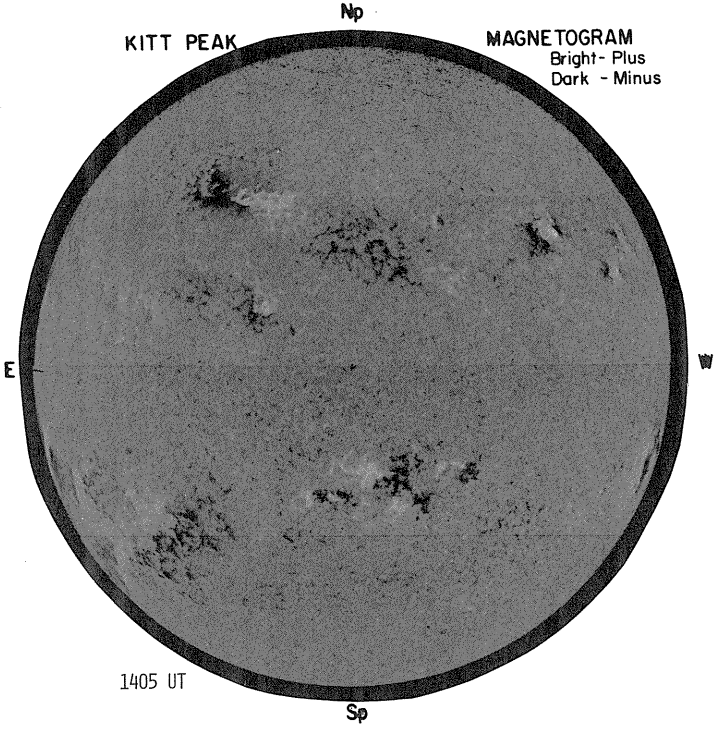
1625 UT

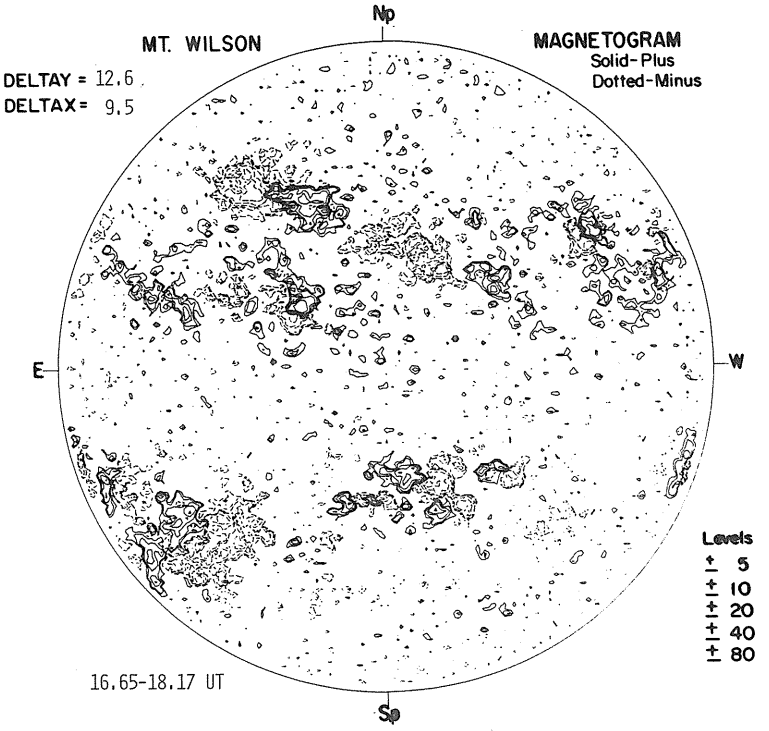
Ant. Temp. Unit 100° K

SEPTEMBER 29, 1978 ($P = 25.84$, $B_o = 6.81$, $L_o = 241.95$)









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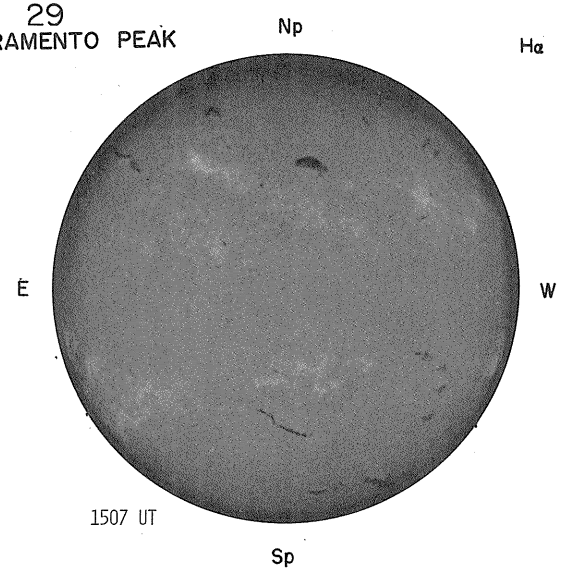
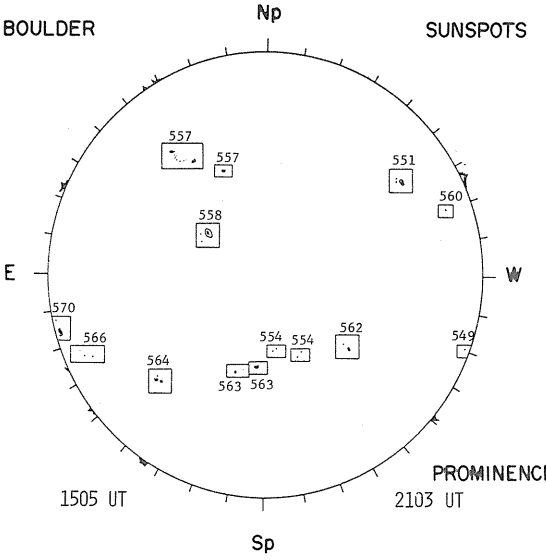
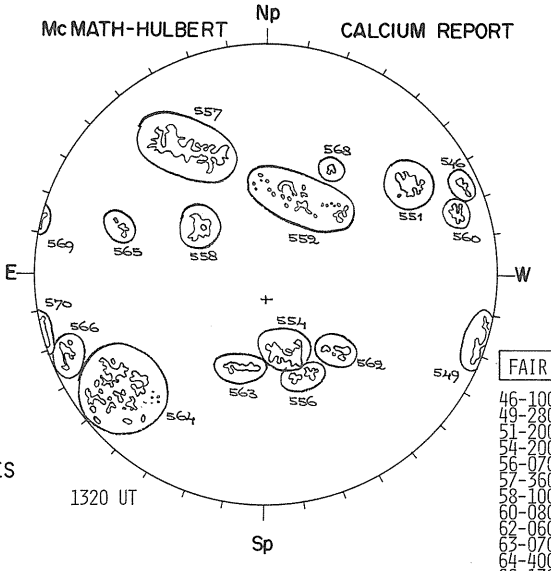
SACRAMENTO PEAK



BOULDER SUNSPOTS



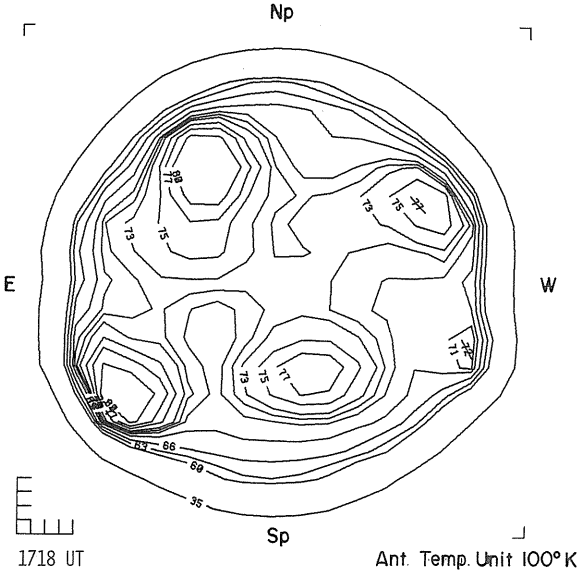
McMATH-HULBERT CALCIUM REPORT



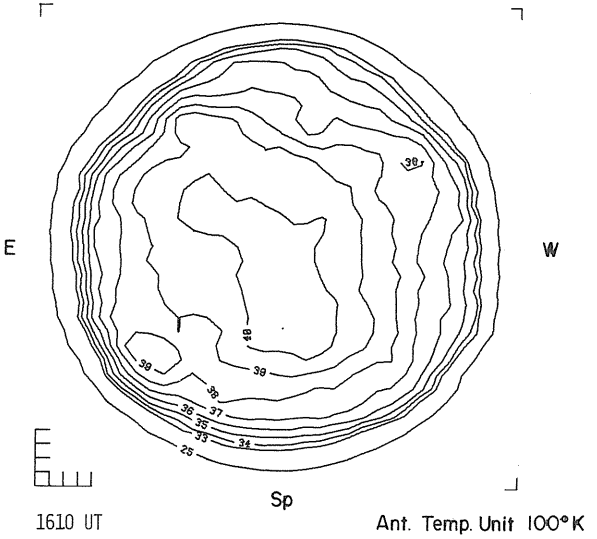
PROMINENCES

FAIR	M
46-1000	2.5
49-2800	3.5
51-2000	3.5
54-2000	2.5
56-0700	2.5
57-3600	3.5
58-1000	2.5
60-0800	2.5
62-0600	2.5
63-0700	2.5
64-4000	3.0
66-1300	2.5
70-1800	3.0

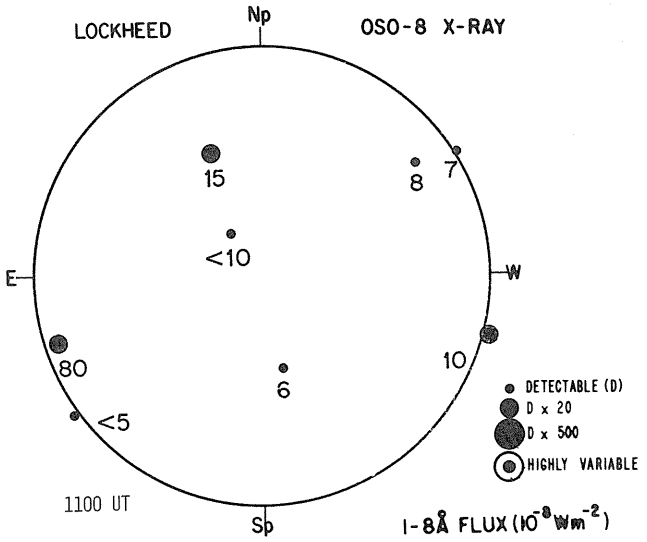
NOSC LA POSTA 2.0 CM

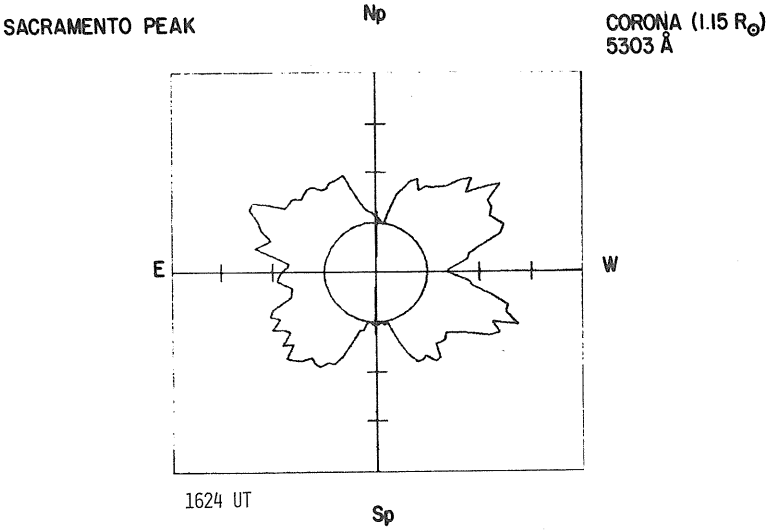


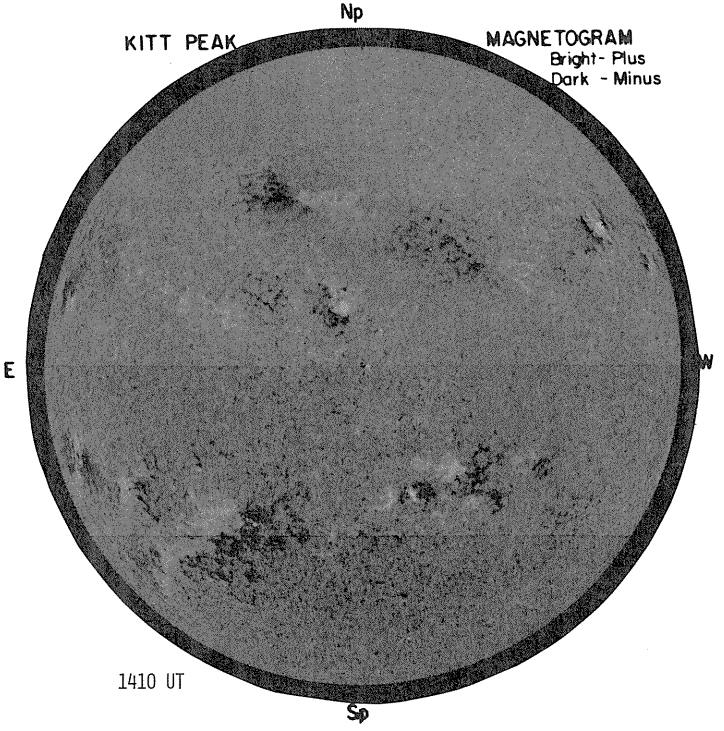
NOSC LA POSTA 8.6 MM

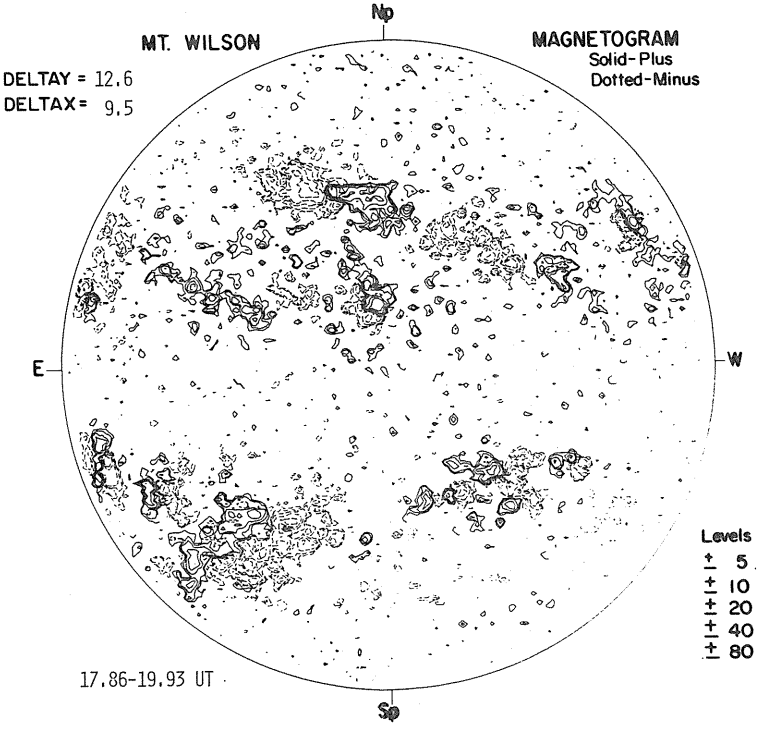


SEPTEMBER 30, 1978 (P = 25.92, B_o = 6.77, L_o = 228.75)









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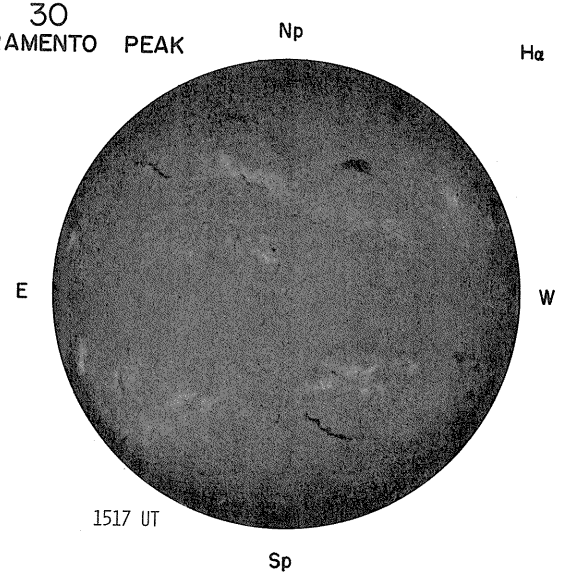
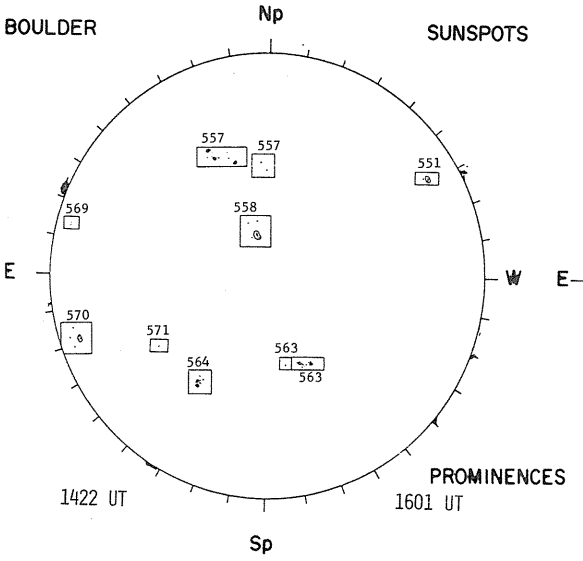
SACRAMENTO PEAK

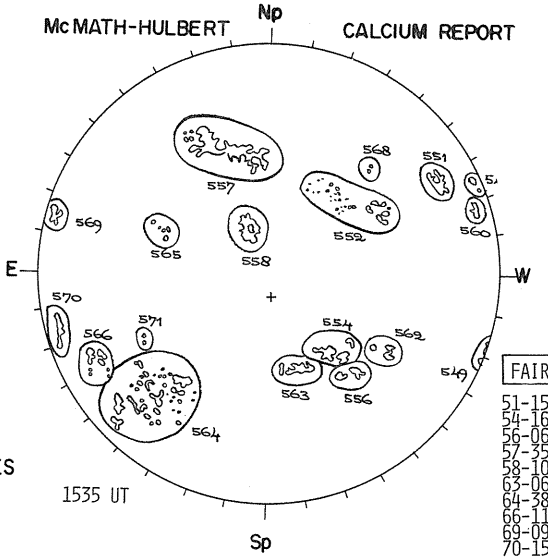


BOULDER



SUNSPOTS

McMATH-HULBERT



CALCIUM REPORT

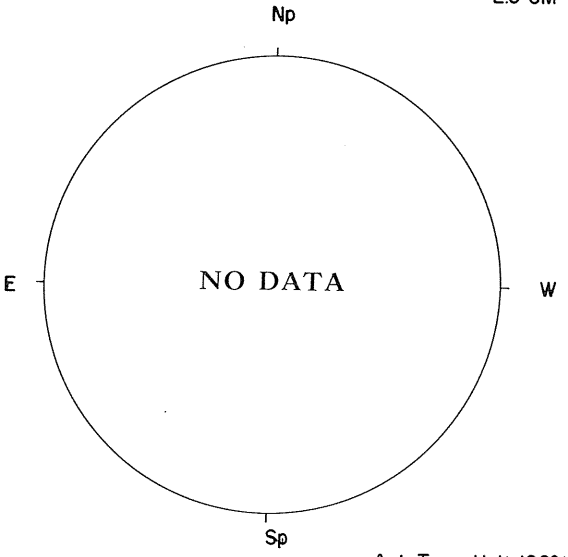
FAIR	M
51-1500	3.0
54-1600	2.5
56-0600	2.5
57-3500	3.0
58-1000	2.5
63-0600	2.5
64-3800	2.5
66-1100	2.5
69-0900	3.5
70-1500	3.5

PROMINENCES

1601 UT

NOSC LA POSTA

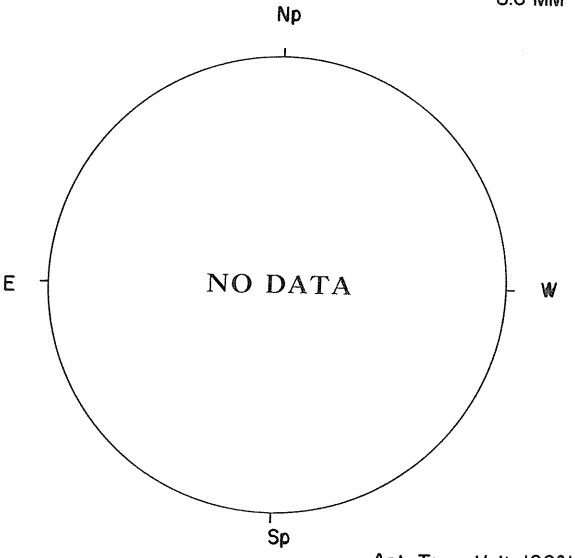
2.0 CM



Ant. Temp. Unit 100° K

NOSC LA POSTA

8.6 MM



Ant. Temp. Unit 100° K

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15515 CMP DATE 1.2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15515	S12 E09	263	100	1.0									

MCMATH REGION 15496 CMP DATE 1.3

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	25	15496	N20 E90	261	300	1.5									
78	8	26	15496	N19 E77	261	1200	3.0	20185	N19 E70	267	(AP)	3	B	60	3	CRO
78	8	27	15496	N19 E64	260	1100	3.5	20185	N19 E59	265	(B)	4	B	90	18	DAI
78	8	28	15496	N20 E49	260	1700	3.0	20185	N19 E47	263	(B)	4	B	20	9	CRO
78	8	29	15496	N20 E36	262	1500	2.5	20185	N20 E35	262	(B)	4	B	60	14	DRI
78	8	30	15496	N20 E23	262	1200	2.0	20185	N20 E23	262	(B)	4	B	50	13	BXO
78	8	31	15496	N20 E10	262	1400	3.0	20185	N20 E08	263	(B)	4	R	140	34	ERI
78	9	1	15496	N20 W03	261	1500	3.0	20185	N20 W05	261	(B)	5	B	190	23	ESI
78	9	2	15496	N20 W18	261	1500	3.0	20185	N20 W21	259	(B)	4	B	140	29	DSO
78	9	3	15496	N21 W30	260	1700	3.0	20185	N20 W30	259	(B)	4	B	190	13	DSO
78	9	4	15496	N21 W43	261	2000	3.0		N20 W43				B	120	10	DSO
78	9	5	15496	N21 W56	261	2000	3.0		N20 W55				B	70	6	DAO
78	9	6	15496	N21 W69	261	2500	2.5		N18 W71				B	30	2	HXX
78	9	7	15496	N23 W83	260	2700	2.0									

MCMATH REGION 15495 CMP DATE 2.1

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	25	15495	N34 E90	261	300	1.5									
78	8	26	15495	N33 E80	258	700	2.5		N32 E79				B	30	1	AXX
78	8	27	15495	N33 E70	254	400	1.5		N34 E69				B	30	2	BXO
78	8	28	15495	N34 E57	252	500	2.0									
78	8	29	15495	N34 E47	251	800	2.0									
78	8	30	15495	N35 E34	251	500	2.0		N31 E32				B	10	3	BXO
78	8	31	15495	N34 E20	252	600	1.5		N33 E16				R	10	3	BXO
78	9	1	15495	N34 E07	251	600	1.0		N36 E16				B	0	2	BXO

MCMATH REGION 15527 CMP DATE 2.4

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	6	15527	S14 W54	246	200	1.5									
78	9	7	15527	S14 W68	245	200	2.0									

MCMATH REGION 15522 CMP DATE 2.9

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	2	15522	N36 E05	238	600	2.5	20196	N37 W01	239	(B)	3	B	20	11	DRO
78	9	3	15522	N37 W07	237	800	2.5	20196	N36 W10	239	(BP)	3	B	10	6	CSO
78	9	4	15522	N38 W20	238	1000	2.5		N36 W22				B	50	6	CRO
78	9	5	15522	N38 W34	239	900	2.5		N36 W36				B	50	8	CRO
78	9	6	15522	N37 W50	242	1200	3.0		N36 W49				B	20	7	CSO
78	9	7	15522	N37 W64	241	1400	2.5		N38 W67				B	10	1	AXX
78	9	8	15522	N37 W75	240	1000	1.5									
78	9	9	15522	N37 W85	235	400	3.5		N37 W87				B	20	1	AXX
78	9	10	15522	N38 W90	228	500	2.0									

MCMATH REGION 15507 CMP DATE 3.5 RETURN OF REGION 15474 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	28	15507	S22 E84	225	500	2.5									
78	8	29	15507	S22 E70	228	700	2.5	20189	S21 E63	234	(AP)	4	B	20	3	AXX
78	8	30	15507	S21 E56	229	600	2.5	20189	S21 E49	236	(AP)	3	B	30	4	CRO
78	8	31	15507	S22 E42	230	900	2.0	20189	S21 E36	235	(AP)	4				
78	9	1	15507	S22 E27	231	1200	3.0	20189	S22 E20	236	(BP)	4	B	40	5	CSO
78	9	2	15507	S22 E13	230	1200	2.5	20189	S22 E04	234	(AP)	3	B	20	6	DSO
78	9	3	15507	S22 W01	231	1200	2.5	20189	S22 W04	233	(BP)	4	B	40	13	DSO
78	9	4	15507	S21 W13	231	1200	2.5		S20 W15				B	100	11	DAI

CONTD

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MCMATH REGION 15507 (CONT) CMP DATE 3.5 RETURN OF REGION 15474 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	5	15507	S21 W26	231	1100	2.5
78	9	6	15507	S22 W40	232	1500	2.5
78	9	7	15507	S23 W54	231	1500	2.5
78	9	8	15507	S22 W65	230	1200	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S21 W29				B	60	11	DAC
	S23 W42				B	50	6	DAO
	S22 W57				B	20	4	CAO

MCMATH REGION 15516 CMP DATE 4.2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	8	31	15516	N25 E48	224	300	1.0
78	9	1	15516	N25 E35	223	300	1.5
78	9	2	15516	N24 E21	222	400	2.0
78	9	3	15516	N25 E08	222	400	1.5
78	9	4	15516	N25 W05	223	200	1.0
78	9	5	15516	N24 W18	223	200	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15508 CMP DATE 4.3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	8	28	15508	N17 E87	222	500	3.0
78	8	29	15508	N15 E77	221	1800	3.5
78	8	30	15508	N17 E65	220	1700	3.5
78	8	31	15508	N16 E53	219	2200	3.0
78	9	1	15508	N16 E37	221	3200	3.5
78	9		15508				
78	9	2	15508	N16 E23	220	4000	3.5
78	9		15508				
78	9	3	15508	N16 E10	220	4800	3.0
78	9		15508				
78	9	4	15508	N16 W03	221	4500	3.0
78	9		15508				
78	9	5	15508	N17 W17	222	4000	3.0
78	9		15508				
78	9	6	15508	N17 W30	222	3700	3.5
78	9		15508				
78	9	7	15508	N17 W44	221	3700	3.0
78	9		15508				
78	9	8	15508	N17 W56	221	3500	3.0
78	9		15508				
78	9	9	15508	N17 W71	221	3500	2.5
78	9		15508				
78	9	10	15508	N17 W84	222	3100	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20190	N16 E79	218	B	4	B	380	3	EKC
20190	N16 E65	220	(B)	5	B	470	14	DKI
20190	N17 E52	219	(B)	5				
20190	N16 E38	218	(B)	5	B	350	42	FAI
20193	N16 E29	227	(B)	5	B	90	18	DAO
20190	N16 E20	218	(B)	4	B	380	26	DSI
20193	N16 E12	226	(BP)	4				
20190	N16 E13	216	(B)	4	B	220	23	DSO
20193	N16 E04	225	(B)	5	B	380	22	DAO
	N16 W01				B	150	22	DSO
	N16 W10				B	360	41	EHC
	N16 W13				B	110	30	DAO
	N16 W23				B	370	42	DKI
	N15 W25				B	80	13	CSO
	N15 W35				B	260	16	DAI
	N16 W42				B	130	9	CSO
	N18 W54				B	210	14	DAO
20190	N15 W61	221	(B)	4	B	140	14	DSO
20193	N16 W71	231	(AP)	4	B	200	2	HSX
20190	N15 W72	221	(AP)	3	B	130	3	DSO
20193	N16 W81	230	(AF)	4	B	160	1	HSX
	N15 W83				B	70	1	HSX

MCMATH REGION 15510 CMP DATE 4.8

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	8	29	15510	S24 E85	213	800	1.5
78	8	30	15510	S23 E70	215	700	1.5
78	8	31	15510	S23 E56	216	600	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15512 CMP DATE 5.3 RETURN OF PART OF REGION 15451 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	8	30	15512	N20 E85	200	400	1.5
78	8	31	15512	N20 E73	199	700	1.5
78	9	1	15512	N20 E60	198	1300	2.0
78	9	2	15512	N20 E42	201	1000	2.0
78	9	3	15512	N20 E30	200	800	2.0
78	9	4	15512	N20 E17	201	900	1.5
78	9	5	15512	N20 W02	207	700	1.0
78	9	6	15512	N20 W15	207	400	1.5
78	9	7	15512	N21 W28	205	300	1.5
78	9	8	15512	N21 W39	204	400	1.5
78	9	9	15512	N21 W54	204	400	1.5
78	9	10	15512	N21 W66	204	600	2.0
78	9	11	15512	N21 W80	205	400	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20200	N19 W42	202	(B)	3	B	10	2	AXX
	N20 W48				B	20	4	BXO
	N19 W67				B	0	1	AXX

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MCMATH REGION 15526 CMP DATE 5.3

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	3	15526	S22 E23	207	200	2.0	20197	S20 E12	217	(AP)	2				
78	9		15526					20198	S22 E23	206	(B)	3	B	10	4	BXO
78	9	4	15526	S21 E10	208	300	2.0		S20 E09				B	10	6	BXO
78	9	5	15526	S21 W03	208	400	2.5		S25 W08				B	0	2	AXX
78	9		15526						S21 W04				B	40	16	BXO
78	9	6	15526	S22 W15	207	1200	2.5		S22 W17				B	310	25	DAC
78	9	7	15526	S22 W31	208	1600	3.0		S23 W31				B	240	31	DAI
78	9	8	15526	S22 W42	207	1400	3.5	20198	S22 W49	209	(B)	3	B	170	20	DAI
78	9	9	15526	S23 W56	206	1200	3.0	20198	S22 W60	209	(B)	4	B	150	8	EAO
78	9	10	15526	S23 W70	208	1300	2.5		S22 W72				B	110	4	EAO
78	9	11	15526	S21 W81	206	900	2.0									

MCMATH REGION 15509 CMP DATE 5.7 RETURN OF REGIONS 15460 AND 15470 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	29	15509	S30 E89	209	400	2.5		S30 E81				B	30	2	HAX
78	8	30	15509	S30 E76	209	1000	3.5	20191	S30 E68	217	(B)	4	B	130	4	EAI
78	8	31	15509	S30 E63	209	2400	3.0	20191	S29 E57	214	(B)	4				
78	9	1	15509	S31 E50	208	4600	3.5	20191	S30 E43	213	(BF)	5	B	380	38	EAI
78	9		15509					20194	S35 E60	196	(AP)	4	B	40	4	DSO
78	9	2	15509	S31 E36	207	5500	3.5	20191	S30 E30	208	(D)	4	B	460	37	EAI
78	9		15509					20194	S35 E48	190	(BF)	3	B	30	14	DSO
78	9	3	15509	S31 E24	206	6000	3.5	20191	S31 E21	208	(B)	5	B	870	42	EKC
78	9		15509					20194	S37 E41	188	(BF)	4	B	50	15	CSI
78	9	4	15509	S31 E14	204	6200	3.5		S32 E24				B	30	7	CRO
78	9		15509						S30 E09				B	760	97	FKC
78	9	5	15509	S30 E03	202	6500	3.5		S33 W12				B	10	7	BXO
78	9		15509						S30 W04				B	620	96	FKC
78	9	6	15509	S31 W10	202	6900	3.5		S31 W16				B	720	58	FAC
78	9	7	15509	S31 W24	201	7200	3.5		S31 W30				B	750	81	FAC
78	9	8	15509	S31 W36	201	6800	3.5	20191	S31 W45	205	(B)	4	B	500	52	FAI
78	9	9	15509	S32 W51	201	7100	3.0	20191	S31 W57	206	(B)	4	B	580	35	FAC
78	9	10	15509	S32 W63	201	6800	3.0		S31 W67				B	490	18	FAC
78	9	11	15509	S32 W75	200	5400	3.0	20191	S31 W76	200	B	2	B	130	3	ESO

MCMATH REGION 15531 CMP DATE 5.7

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15531	S15 W65	203	300	2.0									
78	9	11	15531	S13 W78	203	200	1.5									

MCMATH REGION 15517 CMP DATE 6.5 RETURN OF PART OF REGION 15451 ROTATION 4

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15517	N16 E84	188	400	1.0									
78	9	1	15517	N16 E70	188	700	1.5									
78	9	2	15517	N16 E53	190	1000	1.5									
78	9	3	15517	N17 E40	190	1200	1.5									
78	9	4	15517	N17 E29	189	800	1.5									
78	9	5	15517	N17 E13	192	900	1.5									
78	9	6	15517	N17 W01	193	600	1.5									
78	9	7	15517	N17 W15	192	700	1.5									
78	9	8	15517	N18 W26	191	400	1.5									
78	9	9	15517	N18 W42	192	400	1.5									
78	9	10	15517	N18 W55	193	400	1.5									
78	9	11	15517	N19 W67	192	400	1.0									

MCMATH REGION 15519 CMP DATE 6.6

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15519	S34 E80	192	900	2.0									

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MCMATH REGION 15518 CMP DATE 7.2 RETURN OF REGION 15454 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	8	31	15518	S25 E85	187	1800	2.0
78	9	1	15518	S25 E72	186	1800	1.5
78	9	2	15518	S25 E59	184	1800	2.0
78	9	3	15518	S25 E47	183	2000	2.0
78	9	4	15518	S26 E34	184	2200	2.0
78	9	5	15518	S26 E21	184	1800	2.0
78	9	6	15518	S25 E09	183	1900	2.0
78	9	7	15518	S25 W05	182	1800	2.0
78	9	8	15518	S25 W16	181	1800	2.0
78	9	9	15518	S25 W30	180	1600	1.5
78	9	10	15518	S25 W43	181	1600	2.0
78	9	11	15518	S26 W55	180	1200	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20195	S20 E65	191	(AP)	4	B	40	1	HSX
20195	S20 E49	189	(AP)	3	B	10	2	HSX
20195	S20 E40	189	(AP)	4	B	10	4	HSX
	S19 E26				B	20	3	AXX
	S19 E13				B	10	2	AXX
	S19 E01				B	0	1	AXX

MCMATH REGION 15528 CMP DATE 7.3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	8	15528	N23 W16	181	400	1.5
78	9	9	15528	N23 W32	182	400	1.0
78	9	10	15528	N23 W45	183	200	1.5
78	9	11	15528	N23 W58	183	200	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15520 CMP DATE 8.3 RETURN OF PART OF REGION 15451 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	1	15520	N27 E84	174	300	1.0
78	9	2	15520	N27 E72	171	500	1.5
78	9	3	15520	N27 E60	170	600	2.0
78	9	4	15520	N27 E47	171	900	1.5
78	9	5	15520	N27 E34	171	800	2.0
78	9	6	15520	N27 E22	170	800	1.5
78	9	7	15520	N26 E09	168	1000	1.0
78	9	8	15520	N26 W03	168	800	1.5
78	9	9	15520	N26 W16	166	700	1.5
78	9	10	15520	N26 W29	167	700	1.5
78	9	11	15520	N26 W42	167	600	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15521 CMP DATE 8.3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	1	15521	S13 E90	168	300	1.0
78	9	2	15521	S15 E78	165	1000	2.5
78	9	3	15521	S15 E64	166	1800	3.0
78	9	4	15521	S15 E50	168	1600	3.0
78	9	5	15521	S15 E37	168	1200	3.0
78	9	6	15521	S15 E24	168	1000	2.5
78	9	7	15521	S15 E10	167	1200	2.5
78	9	8	15521	S15 W01	166	1200	3.0
78	9	9	15521	S15 W17	167	1200	2.5
78	9	10	15521	S15 W31	169	1200	3.0
78	9	11	15521	S15 W44	169	900	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S15 E72				B	10	1	AXX
20199	S14 E60	169	X	1	B	10	3	BXO

MCMATH REGION 15524 CMP DATE 10.0

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	4	15524	S19 E71	147	400	3.0
78	9	5	15524	S19 E59	146	500	3.0
78	9	6	15524	S19 E46	146	400	3.0
78	9	7	15524	S19 E31	146	500	2.5
78	9	8	15524	S19 E20	145	500	2.0
78	9	9	15524	S19 E04	146	300	2.0
78	9	10	15524	S19 W09	147	300	2.0
78	9	11	15524	S18 W23	148	300	2.5
78	9	13	15524				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S18 E69				B	0	1	AXX
	S18 E55				B	50	4	BXO
	S18 E42				B	10	6	BXO
	S16 E17				B	20	6	BXO
	S22 W03				B	20	4	BXO

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MCMATH REGION 15523 CMP DATE 10.7 RETURN OF PART OF REGION 15467 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	4	15523	N21 E80	138	800	1.0
78	9	5	15523	N21 E70	135	700	1.0
78	9	6	15523	N20 E56	136	400	1.0
78	9	7	15523	N20 E41	136	200	2.0
78	9	8	15523	N21 E30	135	200	2.0
78	9	9	15523	N22 E14	136	300	1.5
78	9	10	15523	N22 E01	137	400	2.0
78	9	11	15523	N21 W13	138	500	2.0
78	9	12	15523				
78	9	13	15523				
78	9	15	15523	N21 W64	137	500	1.0
78	9	16	15523	N21 W77	136	300	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N20 W01				B	10	2	AXX
20204	N17 W16	126	(B)	3	B	20	2	BXO
20204	N18 W33	130	(AP)	3				

MCMATH REGION 15537 CMP DATE 11.4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	15	15537	N18 W54	127	300	1.5
78	9	16	15537	N18 W68	127	300	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15525 CMP DATE 12.3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	5	15525	N33 E87	118	900	3.5
78	9	6	15525	N32 E75	117	1200	3.5
78	9	7	15525	N31 E61	116	1400	4.0
78	9	8	15525	N32 E50	115	1500	3.0
78	9	9	15525	N33 E35	115	2000	3.0
78	9	10	15525	N33 E22	116	2000	3.5
78	9	11	15525	N33 E09	116	2000	3.5
78	9	12	15525				
78	9	13	15525				
78	9	14	15525				
78	9	15	15525	N33 W42	115	1800	3.0
78	9	16	15525	N33 W54	113	1800	3.0
78	9	17	15525	N33 W66	110	1800	3.0
78	9	18	15525	N33 W81	111	1800	2.0
78	9	19	15525	N33 W90	109	1000	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N33 E79				B	130	2	DSO
	N32 E72				B	470	13	EAI
	N32 E60				B	360	21	EAI
20201	N32 E42	118	(B)	4	B	280	19	ESI
20201	N32 E32	117	(B)	5	B	210	21	EAI
	N32 E19				B	170	16	ESI
20201	N32 E08	116	(B)	4	B	170	22	ESI
20201	N32 W05	115	(B)	4	B	190	24	EAI
20201	N32 W18	115	(B)	5	B	120	27	ESI
	N30 W29				B	80	12	ESO
20201	N31 W48	119	(AP)	4	B	70	1	HSX
20201	N31 W62	120	(AP)	5	B	20	1	HSX
	N31 W78				B	10	1	AXX

MCMATH REGION 15538 CMP DATE 13.9

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	12	15538				
78	9	13	15538				
78	9	14	15538				
78	9	15	15538	S23 W21	94	200	2.0
78	9	16	15538	S23 W32	91	400	1.0
78	9	17	15538	S23 W45	89	300	1.5
78	9	18	15538	S24 W60	90	200	1.0
78	9	19	15538	S24 W72	91	400	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20205	S23 E15	95	(AP)	3	B	30	2	CRO
20205	S23 E04	93	(B)	3				
	S22 W09				B	10	4	BXX
20205	S23 W25	96	(AP)	3	B	0	1	AXX

MCMATH REGION 15530 CMP DATE 15.1

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	8	15530	N16 E86	79	1000	2.0
78	9	9	15530	N17 E71	79	1700	3.0
78	9	10	15530	N17 E57	81	2000	3.5
78	9	11	15530	N17 E44	81	2000	3.5
78	9	12	15530				
78	9	13	15530				
78	9	14	15530				
78	9	15	15530	N18 W06	79	1200	3.0
78	9	16	15530	N18 W18	77	1200	2.5
78	9	17	15530	N18 W31	75	1000	3.0
78	9	18	15530	N18 W47	77	1200	2.5
78	9	19	15530	N18 W58	77	1200	2.5
78	9	20	15530	N18 W72	77	1200	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20202	N16 E75	85	(AP)	4	B	60	2	HSX
20202	N16 E66	83	(BP)	5	B	420	5	CKO
	N17 E55				B	250	7	EAO
20202	N16 E39	85	(BP)	5	B	170	7	CSO
20202	N17 E27	83	AP	5	B	160	2	HSX
20202	N17 E16	81	(BP)	6	B	120	10	CSO
	N17 E03				B	140	5	CSO
20202	N17 W12	83	(AP)	5	B	150	4	CSO
20202	N16 W26	84	(AP)	5	B	150	1	HSX
	N17 W41				B	120	1	HSX
	N17 W53				B	120	1	HSX
20202	N15 W68	83	(AF)	4	M	50	1	HSX
20202	N15 W85	86	AP	2	R	120	1	HSX

CONTD

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MCMATH REGION 15530 (CONT) CMP DATE 15.1

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	21	15530	N19 W85	76	700	1.0									

MCMATH REGION 15539 CMP DATE 16.2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	15	15539	S16 E09	64	100	2.0	20210	S16 E07	64	(B)	3	B	30	3	CSO
78	9	16	15539	S16 W05	64	200	1.0		S15 W07				B	0	1	AXX
78	9	17	15539	S16 W19	63	200	2.5		S15 W22				B	10	3	HSX
78	9	18	15539	S16 W34	64	400	3.0		S16 W34				B	80	5	DSO
78	9	19	15539	S17 W45	64	600	2.5	20215	S17 W50	65	(B)	3	M	20	6	DRO
78	9	20	15539	S17 W59	64	800	2.5	20215	S17 W66	67	B	1	R	40	4	BXO
78	9	21	15539	S17 W73	64	700	2.0	20215	S17 W77	69	B	1				

MCMATH REGION 15535 CMP DATE 16.9

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	11	15535	N16 E70	55	500	1.0									
78	9	13	15535					20207	N20 E48	49	(B)	4	B	10	3	BXO
78	9	14	15535						N20 E34				B	30	8	BXX
78	9	15	15535	N18 E20	53	700	2.5		N19 E20				B	10	3	BXO
78	9	16	15535	N18 E05	54	800	2.5	20212	N19 E07	51	(B)	3	B	0	1	AXX
78	9	17	15535	N18 W09	53	800	2.0									
78	9	18	15535	N18 W23	53	600	2.0		N19 W21				B	10	2	BXO
78	9	19	15535	N18 W34	53	800	2.5									
78	9	20	15535	N18 W46	51	700	2.5									
78	9	21	15535	N18 W61	52	600	2.5									
78	9	22	15535	N18 W73	53	600	2.0									
78	9	23	15535	N18 W85	52	600	1.0									

MCMATH REGION 15533 CMP DATE 17.1 RETURN OF PART OF REGION 15477 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15533	S18 E88	50	300	1.0									
78	9	11	15533	S18 E75	50	700	1.5									
78	9	15	15533	S18 E21	52	600	2.0									
78	9	16	15533	S18 E08	51	600	2.0									
78	9	17	15533	S18 W06	50	600	2.0									
78	9	18	15533	S19 W21	51	500	1.5									
78	9	19	15533	S19 W33	52	700	2.0									
78	9	20	15533	S19 W46	51	700	2.0									
78	9	21	15533	S19 W61	52	600	2.0									
78	9	22	15533	S20 W73	53	600	2.0									

MCMATH REGION 15532 CMP DATE 18.0

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15532	N37 E85	53	600	2.0		N38 E87				E	80	2	HSX
78	9	11	15532	N37 E82	43	2000	2.5	20203	N37 E79	45	(B)	4	B	110	3	ESO
78	9	12	15532					20203	N37 E68	42	(B)	5	B	380	6	EAO
78	9	13	15532					20203	N37 E53	44	(B)	5	B	250	11	ESO
78	9	14	15532						N36 E44				B	190	17	ESO
78	9	15	15532	N37 E31	42	3000	3.0	20203	N36 E29	42	(B)	5	B	150	5	ESO
78	9	16	15532	N37 E17	42	2800	3.0	20203	N37 E14	44	(AP)	5				
78	9		15532					20213	N33 E19	39	(B)	4	B	80	4	ESO
78	9	17	15532	N37 E05	39	2800	3.0		N36 E03				B	40	4	DSO
78	9	18	15532	N36 W09	39	3000	3.0		N37 W14				B	70	1	HSX
78	9	19	15532	N36 W20	39	2800	3.0	20203	N37 W28	43	(AP)	4	M	30	1	HSX
78	9	20	15532	N36 W33	38	2800	3.0	20203	N37 W41	42	(AP)	5	R	90	3	CSO
78	9	21	15532	N36 W46	37	2800	3.0	20203	N37 W50	42	(AP)	4	B	60	1	HSX
78	9	22	15532	N37 W57	37	2800	3.0	20203	N37 W62	41	(AP)	4	B	50	1	HSX
78	9	23	15532	N37 W68	35	1800	2.5	20203	N37 W76	42	(AP)	4	B	60	1	HSX
78	9	24	15532	N38 W80	34	1600	2.0	20203	N37 W88	41	AP	4	B	100	1	HSX
78	9	25	15532	N41 W88	29	400	1.0									

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MCMATH REGION 15540 CMP DATE 18.0 RETURN OF PART OF REGION 15477 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	11	15540	S24 E85	40	400	1.0
78	9	15	15540	S24 E33	40	700	2.0
78	9	16	15540	S24 E19	40	800	1.5
78	9	17	15540	S24 E05	39	700	1.0
78	9	18	15540	S25 W09	39	600	1.0
78	9	19	15540	S25 W20	39	600	1.0
78	9	20	15540	S25 W34	39	600	1.0
78	9	21	15540	S25 W48	39	600	1.0
78	9	22	15540	S25 W60	40	600	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15536 CMP DATE 18.8

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	11	15536	N27 E88	37	500	2.0
78	9	12	15536				
78	9	13	15536				
78	9	14	15536				
78	9	15	15536	N28 E40	33	2500	3.5
78	9	16	15536	N28 E28	31	2500	3.5
78	9	17	15536	N28 E15	29	2000	3.0
78	9	18	15536	N28 E00	30	1700	3.0
78	9	19	15536	N28 W11	30	1700	3.0
78	9	20	15536	N28 W24	29	1700	3.0
78	9	21	15536	N28 W38	29	1700	3.0
78	9	22	15536	N28 W50	30	1700	3.0
78	9	23	15536	N27 W63	30	1500	2.5
78	9	24	15536	N28 W75	29	1200	2.5
78	9	25	15536	N28 W89	30	400	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20206	N28 E75	35	(AP)	5	B	200	1	HKX
20206	N28 E62	35	(BP)	6	B	370	2	HKX
	N28 E49				B	330	8	CKO
20206	N28 E35	36	(BP)	6	B	360	4	CKO
20206	N28 E22	36	(AP)	5	B	240	5	CSO
	N27 E11				B	170	4	CSO
	N27 W04				B	320	1	HHX
20206	N28 W19	34	(AP)	5				
20206	N28 W33	34	(AP)	5				
20206	N28 W42	34	(AP)	5	B	180	2	HSX
20206	N28 W55	34	(AP)	5	B	220	1	HSX
20206	N28 W68	34	(AP)	5	B	200	1	HSX
20206	N27 E81	232	AP	4				

MCMATH REGION 15541 CMP DATE 19.5

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	13	15541				
78	9	14	15541				
78	9	15	15541	S26 E53	20	2800	3.5
78	9	16	15541	S26 E39	20	2800	3.5
78	9	17	15541	S26 E24	20	2300	3.5
78	9	18	15541	S27 E10	20	2600	3.5
78	9	19	15541	S27 E00	19	2600	3.0
78	9	20	15541	S27 W14	19	2600	3.0
78	9	21	15541	S27 W29	20	2600	3.0
78	9	22	15541	S27 W40	20	2600	3.0
78	9	23	15541	S28 W52	19	2300	2.5
78	9	24	15541	S28 W64	18	2300	2.5
78	9	25	15541	S28 W78	19	1200	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20209	S28 E75	22	X	2	B	60	2	DSO
	S28 E61				B	80	12	DRI
20209	S27 E49	22	(B)	4	B	150	8	EAI
20209	S28 E34	24	(BP)	3	B	50	10	ESO
	S27 E18				B	50	13	DAO
	S28 E07				B	100	12	EAO
20209	S28 W07	22	(B)	3	H	90	7	ERO
	S28 W17				R	40	15	BXO
	S28 W23				B	0	1	AXX

MCMATH REGION 15543 CMP DATE 19.6

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	9	13	15543				
78	9		15543				
78	9	15	15543	N35 E53	20	2400	4.0
78	9	16	15543	N35 E37	22	2200	3.5
78	9		15543				
78	9	17	15543	N35 E25	19	2500	3.0
78	9	18	15543	N35 E11	19	3000	3.5
78	9	19	15543	N35 E00	19	3600	3.5
78	9	20	15543	N35 W13	18	4300	3.5
78	9	21	15543	N35 W27	18	4300	3.0
78	9	22	15543	N35 W39	19	4000	3.0
78	9	23	15543	N35 W51	18	4000	3.5
78	9	24	15543	N35 W63	17	4500	3.0
78	9	25	15543	N36 W77	18	4500	3.5
78	9	26	15543	N36 W88	16	2100	3.0
78	9	27	15543	N35 W90	3	500	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20208	N33 E72	25	(B)	5	B	90	1	HSX
	N34 E63				B	410	31	DRC
20208	N36 E47	24	(B)	5	B	560	17	EKC
20208	N35 E35	23	(D)	5	B	1030	20	EKC
20214	N30 E38	20	(AF)	4	B	40	1	HSX
	N36 E20				B	730	19	EAC
	N36 E09				B	1120	33	FKI
20208	N35 W05	20	(BY)	4	N	590	47	FKC
20208	N35 W19	20	(B)	4	R	1100	70	FKC
20208	N35 W28	20	(BY)	4	B	560	41	FAI
20208	N35 W40	19	(BY)	4	B	500	36	FAI
20208	N35 W52	18	(B)	4	B	840	59	FKI
20208	N35 W68	21	(B)	4	B	650	33	FKI
20208	N35 W80	20	B)	4	B	130	13	FSO

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MCMATH REGION 15555 CMP DATE 20.6

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15555	S17 W39	6	400	2.5	20220	S16 W41	7	(B)	4	B	30	4	CRO
78	9	24	15555	S17 W51	5	800	3.0	20220	S17 W55	8	(B)	4	B	40	4	DRO
78	9	25	15555	S16 W64	5	800	2.5	20220	S17 W71	11	(AP)	4	B	10	1	HSX
78	9	26	15555	S16 W78	6	400	1.0									

MCMATH REGION 15553 CMP DATE 20.8

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	22	15553	N00 W24	4	100	1.0									
78	9	23	15553	N00 W37	4	100	1.0									

MCMATH REGION 15542 CMP DATE 21.7 RETURN OF REGION 15504 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	15	15542	S17 E83	351	1500	2.0	20211	S22 E79	353	AP	2				
78	9	16	15542	S21 E68	352	1500	2.5	20211	S22 E66	353	(AP)	4	B	50	1	HSX
78	9	17	15542	S20 E53	352	1500	2.5		S22 E50				B	50	1	HSX
78	9	18	15542	S21 E39	352	1400	2.0		S22 E37				B	100	1	HSX
78	9	19	15542	S22 E28	352	1600	2.0	20211	S22 E24	352	(AP)	3	M	30	5	CSO
78	9	20	15542	S21 E14	352	1400	2.0	20211	S22 E08	354	(AP)	3	R	50	6	CAO
78	9	21	15542	S22 E00	352	1600	2.5	20211	S22 W01	354	(AP)	3	B	50	14	DAI
78	9	22	15542	S22 W10	350	1700	3.0	20211	S22 W13	352	(AP)	4	B	50	18	DAI
78	9	23	15542	S22 W22	349	1600	3.0	20211	S22 W27	353	(AP)	4	B	60	13	DAI
78	9	24	15542	S23 W34	348	1600	3.0	20211	S22 W40	353	(AP)	4	B	120	15	DAC
78	9	25	15542	S23 W47	348	1400	3.0	20211	S22 W54	354	(AP)	5	B	60	16	DRI
78	9	26	15542	S24 W62	350	1400	3.0	20211	S22 W68	354	AP	1	B	40	3	BXO
78	9	27	15542	S22 W80	353	1200	2.5		S22 W82				B	10	1	AXX

MCMATH REGION 15547 CMP DATE 22.0 RETURN OF REGION 15502 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	16	15547	N14 E73	347	300	1.5									
78	9	17	15547	N14 E58	347	400	2.5									
78	9	18	15547	N15 E44	347	300	2.5		N13 E40				B	10	2	BXO
78	9	19	15547	N15 E33	347	800	2.5	20216	N13 E27	349	(B)	2	M	20	8	CRO
78	9	20	15547	N15 E18	348	800	2.5	20216	N15 E12	350	(B)	4	R	40	16	CRO
78	9	21	15547	N15 E04	348	1000	2.5	20216	N15 E03	350	(B)	4	B	100	13	DSO
78	9	22	15547	N15 W08	348	1200	2.5	20216	N15 W10	349	(B)	4	B	150	18	DAI
78	9	23	15547	N15 W22	349	1300	2.0	20216	N15 W24	350	(B)	4	B	160	25	DAI
78	9	24	15547	N16 W35	349	1300	2.5	20216	N15 W38	351	(B)	4	B	80	15	DAI
78	9	25	15547	N15 W50	351	1500	3.0	20216	N15 W50	350	(BF)	4	B	60	12	CRO
78	9	26	15547	N15 W64	352	1500	2.5	20216	N15 W64	350	(B)	3	B	60	2	CRO
78	9	27	15547	N15 W77	350	1500	2.0	20216	N15 W80	353	B	1	B	10	3	BXO
78	9	28	15547	N15 W89	350	800	1.5									

MCMATH REGION 15559 CMP DATE 22.9

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15559	N32 W35	336	200	2.5	20226	N32 W36	336	(B)	3	B	10	3	CRO
78	9	26	15559	N33 W48	336	200	2.0									
78	9	27	15559	N31 W60	333	200	1.5									

MCMATH REGION 15548 CMP DATE 23.2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	18	15548	S22 E60	331	200	1.5		S23 E57				B	10	2	BXO
78	9	19	15548	S21 E47	333	300	2.0									
78	9	20	15548	S22 E34	332	400	1.5									

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MCMATH REGION 15545 CMP DATE 23.5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	17	15545	N38 E77	328	200	1.5									

MCMATH REGION 15546 CMP DATE 24.2 RETURN OF REGION 15513 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	17	15546	N24 E87	318	800	3.0		N24 E80				B	70	1	HSX
78	9	18	15546	N25 E74	317	1900	3.0		N23 E69				B	170	3	CSO
78	9	19	15546	N25 E63	317	1900	3.5	20217	N25 E55	321	(BP)	5	M	140	11	DAO
78	9	20	15546	N25 E48	318	1900	3.5	20217	N24 E39	323	(BP)	5	R	170	20	DAO
78	9	21	15546	N25 E34	318	2000	3.0	20217	N26 E32	321	(BP)	5	B	100	9	CSI
78	9	22	15546	N24 E21	319	1700	3.0	20217	N25 E18	321	(AP)	4	B	100	10	DAO
78	9	23	15546	N24 E08	319	1500	3.5	20217	N25 E06	320	(AP)	4	B	80	5	BSI
78	9	24	15546	N25 W05	319	1500	3.0	20217	N25 W07	320	(AP)	5	B	80	1	HSX
78	9	25	15546	N25 W18	319	1500	2.5	20217	N25 W21	321	(AP)	5	B	50	2	HAX
78	9	26	15546	N25 W31	319	1500	3.0	20217	N25 W34	320	(AP)	4	B	60	2	HSX
78	9	27	15546	N25 W44	317	1300	3.0	20217	N24 W46	319	(AP)	4	B	20	2	HSX
78	9	28	15546	N25 W56	317	1000	2.5	20217	N25 W59	319	(AP)	3	B	10	1	AXX
78	9	29	15546	N25 W70	318	1000	2.5									
78	9	30	15546	N25 W83	317	900	1.5									

MCMATH REGION 15549 CMP DATE 24.2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15549	S12 E63	317	400	3.5	20218	S12 E55	321	(AP)	3				
78	9	20	15549	S13 E47	319	1000	3.5	20218	S12 E41	321	(B)	5	R	150	14	CAO
78	9	21	15549	S13 E33	319	1000	3.0	20218	S12 E32	321	(BP)	5	B	240	13	DAO
78	9	22	15549	S13 E21	319	1600	3.0	20218	S13 E17	322	(BP)	5	B	260	10	DAO
78	9	23	15549	S13 E08	319	1500	3.0	20218	S13 E03	323	(BP)	5	B	160	15	DAO
78	9	24	15549	S14 W06	320	1500	3.0	20218	S13 W13	326	(AP)	5	B	140	14	DAO
78	9		15549					20223	S18 W10	323	(B)	3	B	10	5	BXI
78	9	25	15549	S15 W19	320	1500	3.0	20218	S13 W26	326	(AP)	5	B	60	5	HAX
78	9		15549					20223	S18 W22	322	(B)	5	B	50	3	DSO
78	9	26	15549	S15 W33	321	1700	3.0	20218	S12 W41	327	(AP)	5	B	100	3	HAX
78	9		15549					20223	S18 W37	323	(B)	5	B	70	7	DSI
78	9	27	15549	S16 W46	319	2100	3.0	20218	S13 W52	325	(AP)	5	B	30	2	DSO
78	9		15549					20223	S19 W47	320	(BF)	4	B	30	9	CSO
78	9	28	15549	S16 W60	321	2800	3.0	20218	S12 W68	328	(AP)	4	B	20	3	CSO
78	9		15549					20223	S18 W61	321	(B)	4	B	20	3	CRO
78	9	29	15549	S16 W74	322	2800	3.5		S18 W63				M	30	2	BXO
78	9		15549						S13 W68				M	70	2	CRO
78	9	30	15549	S17 W88	322	800	1.5									

MCMATH REGION 15560 CMP DATE 25.1

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15560	N20 E19	308	100	1.0									
78	9	24	15560	N20 E07	307	100	1.0									
78	9	25	15560	N20 W07	308	300	2.0									
78	9	26	15560	N20 W20	308	300	2.5	20228	N21 W23	309	(B)	3	B	10	3	BXO
78	9	27	15560	N20 W34	307	600	3.0	20228	N21 W34	307	(B)	4	B	10	5	DSO
78	9	28	15560	N20 W48	309	800	2.5	20228	N20 W49	309	(AP)	4	B	20	4	DRO
78	9	29	15560	N20 W61	309	800	2.5	20228	N20 W64	311	(AP)	4	M	20	2	BXO
78	9	30	15560	N19 W74	308	800	2.0									
78	10	01	15560	N19 W87		700	2.0									

MCMATH REGION 15550 CMP DATE 25.3

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15550	S18 E80	300	400	1.5									
78	9	20	15550	S18 E63	303	200	1.0									
78	9	21	15550	S19 E49	303	200	1.0									
78	9	22	15550	S18 E37	303	100	1.5									
78	9	23	15550	S18 E23	304	200	1.0									
78	9	24	15550	S17 E10	304	300	1.0									

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15572 CMP DATE 26.1

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	02	15572	S22 W85		400	3.0	20236	S23 W88		X	2				

MCMATH REGION 15551 CMP DATE 26.3

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15551	N29 E90	290	200	1.0									
78	9	20	15551	N28 E80	286	900	3.0	20219	N28 E73	289	B	2	R	50	11	CRO
78	9	21	15551	N28 E66	286	800	2.0	20219	N29 E60	293	(B)	4	B	20	3	CSO
78	9	22	15551	N29 E53	287	1100	3.0	20219	N28 E47	292	(BP)	4	B	60	9	DSO
78	9	23	15551	N28 E37	290	1300	3.0	20219	N29 E32	294	(BP)	4	B	110	18	DAO
78	9	24	15551	N29 E23	291	1300	3.0	20219	N29 E19	294	(BP)	5	B	160	22	DAO
78	9	25	15551	N29 E10	291	1700	3.0	20219	N29 E05	295	(BP)	5	B	150	13	DAI
78	9	26	15551	N29 W04	292	1700	3.0	20219	N30 W08	294	(BP)	5	B	170	10	DSI
78	9	27	15551	N29 W17	290	2100	4.0	20219	N30 W21	294	(BP)	5	B	150	9	DSO
78	9	28	15551	N29 W31	292	2100	3.0	20219	N29 W34	294	(AP)	5	B	100	5	DSO
78	9	29	15551	N29 W45	293	2000	3.5	20219	N29 W47	294	(AP)	5	M	120	3	DSO
78	9	30	15551	N28 W58	292	1500	3.0	20219	N30 W61	295	(AP)	4	R	80	2	HSX
78	10	01	15551	N28 W71		1500	3.0	20219	N30 W75		(AP)	3	B	80	2	H
78	10	02	15551	N28 W87		1000	3.5	20219	N29 W88		(AP)	3				

MCMATH REGION 15561 CMP DATE 28.0

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15561	N03 E32	269	200	1.5									

MCMATH REGION 15568 CMP DATE 28.0

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	29	15568	N34 W20	268	200	1.5									
78	9	30	15568	N34 W33	267	100	1.0									

MCMATH REGION 15562 CMP DATE 28.3

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15562	S12 E37	264	300	2.0	20227	S12 E35	265	(B)	3	B	20	3	DSO
78	9	26	15562	S12 E24	264	400	2.0	20227	S13 E17	269	(AP)	4	B	20	1	HSX
78	9	27	15562	S12 E09	264	400	2.0	20227	S13 E04	269	(AP)	4	B	10	3	HSX
78	9	28	15562	S12 W06	267	600	2.0	20227	S13 W09	269	(AP)	3	B	20	5	CRO
78	9	29	15562	S12 W18	266	600	2.5	20227	S14 W23	270	(B)	3				
78	9	30	15562	S12 W31	265	400	2.0									
78	10	01	15562	S12 W44		500	2.0									
78	10	02	15562	S12 W57		500	2.0									

MCMATH REGION 15552 CMP DATE 28.8 RETURN OF REGION 15496 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	21	15552	N22 E85	267	300	1.0									
78	9	22	15552	N25 E80	260	1200	1.5									
78	9	23	15552	N24 E68	259	1000	1.0									
78	9	24	15552	N25 E57	257	1200	1.0									
78	9	25	15552	N24 E43	258	1000	1.5									
78	9	26	15552	N24 E30	258	1200	1.5									
78	9	27	15552	N24 E16	257	1200	1.5									
78	9	28	15552	N25 E03	258	1200	2.0		N29 E18				B	170	4	CAO
78	9	29	15552	N25 W11	259	1200	2.0									
78	9	30	15552	N25 W24	258	1000	1.5									
78	10	01	15552	N25 W36		1000	2.0									
78	10	02	15552	N26 W49		1000	1.5									
78	10	04	15552	N26 W75		800	1.0									
78	10	05	15552	N27 W88		400	1.0									

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15556 CMP DATE 28.8

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15556	S18	E70	257	200	2.5	20221	S17	E71	255	B	1	B	30	2	BXO
78	9	24	15556	S18	E58	256	600	1.5	20221	S17	E55	258	(B)	3	B	30	2	BXO
78	9	25	15556	S18	E45	256	600	2.0	20221	S18	E45	255	(B)	3	B	10	2	AXX
78	9	26	15556	S18	E31	257	600	2.5	20221	S19	E28	258	(BP)	4	B	20	6	BXO
78	9	27	15556	S18	E17	256	600	2.5	20221	S19	E16	257	(AF)	3	B	10	5	BXO
78	9	28	15556	S19	E03	258	800	2.5										
78	9	29	15556	S19	W10	258	700	2.5										
78	9	30	15556	S19	W23	257	600	2.5										
78	10	01	15556	S19	W35		600	2.5										
78	10	02	15556	S18	W48		800	2.5	20237	S18	W50		(B)	2				
78	10	03	15556						20237	S19	W64		(AP)	3				
78	10	04	15556	S19	W74		900	2.5	20237	S19	W78		(AP)	3				

MCMATH REGION 15554 CMP DATE 29.3 RETURN OF REGION 15527 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	22	15554	S11	E90	250	300	1.5										
78	9	23	15554	S13	E80	247	1500	2.0	20222	S12	E75	251	B	1	B	30	8	BXO
78	9	24	15554	S13	E65	249	2000	3.5	20222	S11	E60	253	(B)	4	B	40	5	CRO
78	9	25	15554	S13	E50	251	1800	3.0	20222	S12	E46	254	(B)	4	B	30	9	DRO
78	9	26	15554	S13	E36	252	1700	3.0	20222	S12	E32	254	(B)	3	B	50	10	BXI
78	9	27	15554	S13	E23	250	1800	3.0	20222	S12	E17	256	(AP)	4				
78	9	28	15554	S13	E10	251	2000	2.5	20222	S13	E04	256	(AP)	3	B	20	5	CRO
78	9	29	15554	S13	W04	252	2000	2.5		S12	W10				M	10	3	BXO
78	9	30	15554	S13	W17	251	1600	2.5										
78	10	01	15554	S13	W30		1500	2.5		S18	W27				B	50	9	C
78	10	02	15554	S13	W43		1500	3.0		S18	W40				B	60	8	C
78	10	03	15554							S17	W54				B	10	4	C
78	10	04	15554	S14	W70		1300	2.0										

MCMATH REGION 15563 CMP DATE 30.1

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15563	S17	E60	241	200	1.5										
78	9	26	15563	S18	E47	241	500	2.5	20229	S13	E44	242	(B)	2				
78	9	27	15563	S18	E35	238	300	3.0	20229	S17	E28	245	(AP)	3	B	10	1	HSX
78	9	28	15563	S18	E20	241	700	2.5	20229	S18	E14	246	(AP)	3	B	10	3	BXO
78	9		15563						20232	S18	E20	240	(B)	3	B	50	4	CRO
78	9	29	15563	S18	E07	241	700	2.5	20229	S17	E02	245	(BP)	3	M	20	2	BXO
78	9		15563						20232	S17	E06	241	(B)	3	M	20	3	BXO
78	9	30	15563	S18	W06	240	600	2.5	20229	S17	W12	246	(B)	4	R	50	10	DRO
78	10	01	15563	S18	W20		800	2.5	20229	S18	W27		(BG)	4				
78	10	02	15563	S18	W34		1200	2.5	20229	S18	W40		(BP)	3				
78	10	04	15563	S18	W60		1000	3.0										
78	10	05	15563	S19	W77		500	1.5										

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on September 12, 13 and 14, 1978.
No sunspot observations were made at Mt. Wilson on September 4, 5, 6, 7, 10, 14, 17 and 18, 1978.

DAILY CALCIUM PLAGE INDEX

SEPTEMBER 1978

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
78	9	1	28.8	78	9	11	20.3	78	9	21	39.1
78	9	2	39.5	78	9	12	*	78	9	22	38.3
78	9	3	47.6	78	9	13	*	78	9	23	33.0
78	9	4	50.1	78	9	14	*	78	9	24	31.3
78	9	5	48.3	78	9	15	33.3	78	9	25	29.4
78	9	6	50.0	78	9	16	36.3	78	9	26	29.0
78	9	7	46.4	78	9	17	34.7	78	9	27	33.7
78	9	8	39.0	78	9	18	37.6	78	9	28	36.4
78	9	9	28.5	78	9	19	41.7	78	9	29	40.1
78	9	10	26.2	78	9	20	44.0	78	9	30	32.1

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	0612	0713	0626	1-	1				1				0610	15509
01	0731	0825	0740	1+	3	1		1	3		1		0734	15509
01	0831	0909	0840	1-	1				1				0833	X-RAY
01	0949	1030	1000	1	5			1	4		1		0945	15509
01	1134	1215	1146	1-	3			1	2		1		1135	15507
01	1215	1250	1222	1-	1				2		1		1221E	15509
01	1242	1352	1252	2	5	3		2	2		3		1244E	15509
01	1626	1637D	1637	1-	1				1		1		1627	15509
01	1710	1800	1717	1-	5	2	1	1	1	1	10		1711	15509
01	1834	1854	1842	1-	5	1				1	1		1836	15508
01	1940	2015	1953	1	5			1			6		*	
01	2022	2058D	2028	1-	3				1		1		2022E	15509
01	2144	2347	2230	;	;				1				2144	15509
01	2222	2333	2227	1-	5	1	1		2	1	6		2220	X-RAY
02	0009	0115D	0014	1-	3				1		2		0004	15509
02	0114	0226	0125	1-	3				1		2		0113	X-RAY
02	0552	0720	0551	2	5	4		4	3		3		0546E	15509
02	0812	0910	0822	1-	3				3				0810	X-RAY
02	1031	1040	1036	1-	5			1	3		1		1030	15509
02	1052	1100D	1100	1-	5	3		3	3		3		1047	15509
02	1129	1230	1142	1+	5	3	1	5	4		5		1131E	15509
02	1308	1350	1314	2	5	2	1	3	3		2		1305	15509
02	1416	1630	1442	1+	5	4	2	6	3		13		1415	15509
02	1812	1900	1827	1-	5	2		1	2		9		1810E	15509
02	1904	1923	1913	1-	5	1			1		7		1902	15509
02	2008	2023	2015	1-	5	1			2		4		2008	15509
02	2046	2115	2056	1-	5	1	1		2		8		2035	15509
02	2121E	2233	2130	1-	5				2		6		2118	X-RAY
03	0311	0416	0327	1-	1				1				0307	X-RAY
03	0645	0730	0652	1-	1				1				0643	X-RAY
03	0930	1010	0943	1	5	2		1	4		3		0935	15509
03	1600	1710	1615	1	5	1		2	2		1		1604	15521
03	1839	1924D	1857	1-	3						4		1838	15509
03	1924	1959	1933	1-	5	2			1		6		1921	15509
03	2221	2304	2227	1-	3				1		1		2223	15509
03	2341	0030	0004	1-	3				1		1		2348	15509
04	0149	0223	0202	1-	5			1	1		2		0149	15509
04	0426	0553D	0443	1	5	1		1	1		1		0420E	15509
04	0553E	0800	0636	1-	1				1				0554	X-RAY
04	0816	0925	0837	2	5	3		3	3		2		0812	15521
04	1250	1400	1300	1-	5	1		2	2		1		1250	15509
04	1603	1715	1625	1-	5	2			1		1		1600	15508
05	0513	0639	0519	1	1				1				0515	15523
05	0727	0812	0735	1-	1				1				0724	15512
05	1334	1457	1359	1	3						2		1336	15522
05	2245	2348D	2310	1-	1				1				2243	X-RAY
05	2348	0023D	2358	1-	1				1				2351	X-RAY
06	0023	0051	0028	1-	1				1				0023E	15525
06	0220	0306	0228	1-	1				1				0220	15509
06	0828	0850	0835	1	5			1	3				0826	15509
06	1050	1105	1054	1-	1				1		1		1052	15526
06	1122	1200	1125	1+	5	2	1	4	4		3		1118	15509
06	1316	1500	1337	1-	3			1	1		1		1314	15509
06	2220	2327D	2229	1-	5				1		3		2219	15526
06	2326	0036	2344	1-	5	1			2		2		2337	15526
07	0210	0230	0218	1-	1				1				0209	X-RAY
07	0602E	0743	0610	1-	3	1			1				0608E	15509
07	1203	1245	1215	1-	5			2	2		1		1205	X-RAY
07	1407	1515	1425	1-	3	1			1		1		1358	X-RAY
07	2332	0055	2358	1-	1				1				2330E	15518
08	0121	0222	0130	1-	3	1			1				0122E	15509
08	0239	0346	0248	1-	3			1	1				0239E	15509
08	1251	1500	1303	1	5	4	1	4	3		3		1252	15526
08	1838	1942	1902	1-	5	3		1	1	1	12		1836	15508
09	0006	0047	0013	1-	1				1				0006	15509
09	0608	0700	0614	1-	1				1				0602	X-RAY
10	0126	0151	0135	1-	1				1				0129	15509
10	1148	1215	1156	1	5	1		4	3		2		1151E	15525
11	1100	1200	1117	1-	1				1				1059E	15536
11	1408	1610	1418	1-	5			1			9		NF	
12	1403	1600	1425	1	5			1			10		NF	
12	2101	2124	2103	1-	1				1				2057	15530
12	2259	2332	2308	1-	1				1				2256	15530
13	1755	1841	1810	1-	5	1		1	2		13		1751	X-RAY
13	1948	2020	1951	1-	5						6		1946	X-RAY
13	2104	2135	2114	1-	5	1		1	2		8		2103	15543

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
14	0055	0214	0059	1-	1				1				0053	15543
15	0545	0734	0556	1-	1				1				0543E	15543
15	0945	1045	0955	1-	5	2	1	1	4		4		0944	15543
15	1352	1430	1400	1-	1				1		1		1352	15543
15	1820	1855	1824	1-	3						4		1824	15543
15	1913	1953	1929	1-	5	2		1			11		1909	15543
15	2059	2139	2102	1	5	1					7		2057	15543
16	0739	0840	0749	1-	1				1				0740	15543
16	0955	1013	1	1	1		1						1000	15541
16	1326	1533	1335	1	5	3	2	4	3	1	12		1328	15543
16	1752	1845	1802	1-	5	3	1	1	2	1	12		1752	X-RAY
16	1949	2047	2001	1-	5	2	1	1	1		11		1955	15543
17	0358	0653	0415	1	5	1		1	1		1		0404E	15543
17	0827	1044	0833	3	5	3	1	7	3		3		0827	15543
17	1300	1430	1310	1-	5	1	1	4	3		7		1256E	15543
17	1459	1600	1509	3	5	6	2	8	2		13		1459	15543
17	1953	2008	1955	1-	5	2	1				7		1949	15543
17	2028	2116	2038	1-	5	2	1		1		11		2025	15543
17	2243	2338D	2250	1-	5	1		1	1		1		2242	15543
17	2338E	0055	2350	1-	5			1	1		2		2336	X-RAY
18	0119	0242D	0143	1	5			1	1		1		0119E	15543
18	0305	0352	0307	1-	1				1				0302	X-RAY
18	0732	0815	0736	1-	1				1				0730E	15543
18	0926	0955	0930	1-	3	1		1	1		1		0923E	15541
20	2317	0021	2328	1-	5				2		1		2315	15542
21	0314	0419D	0320	1-	3				1		1		0321E	15543
21	0409E	0552D	0420	1	3	1			1		1		0416	15546
21	0552E	0722	0605	1-	1				1				0557	15549
21	1555	1635	1603	1-	1				1		1		1551	X-RAY
22	0915	1000	0928	1	1						1		0915	15551
22	1052	1145	1058	1-	3				1		2		1056	15551
22	1258	1320	1302	1	5			3	3		1		1253E	15551
22	1517	1555	1523	1-	1				1		1		1514	15551
23	0213	0323	0239	1-	1				1				0206	X-RAY
23	0945	1300	1020	2+	5	5	1	5	3		3		0947	15557
24	0208	0338	0233	1-	3				1				0210E	15557
24	0620	0745	0634	1+	3		1		1				0625E	15557
24	1141	1330	1149	1-	3			2	1		1		1139	X-RAY
24	1722	1855	1732	1	5	3	1	3	2	1	8		1720	15546
24	2109	2302	2125	1-	5	1		1	1	1	6		2112	15555
25	1837	1945	1845	1	5	1		1			5		1831	X-RAY
25	2023	2215	2045	1-	3			1			1		2022	15554
26	0738	0816	0745	1-	1				1				0737	15555
26	2122	2300	2148	1-	3				2				2120	X-RAY
27	0633	1030	0835	1-	1				1				0631	X-RAY
27	0827	0940	0836	1-	5	3		2	3		3		0823	15551
27	1435	1710	1500	2	5	6	1	5	3	1	12		1428	15551
27	1721	1907	1735	1	5	3	1	2	2	1	10		1719E	15551
29	0950	1040	0958	1-	5	1		3	3		1		0950	15551
29	1048	1405	1115	1-	5	1		2	3		1		1049	15564
30	2332	2358	2341	1-	1				1				2330	X-RAY

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-04	0000-2400 A46
01-02	0000-2400 A45
02	1315-1400 UM (13 kHz)
03-07	0000-2400 A3
09-11	0000-2400 A3
05	1045-1330 UM (16 kHz)
08	1730-1815 UM (13 & 16 kHz)
12	1000-1400 UM (16 kHz)
14	0000-2400 A3, 1830-1930 UM (13 kHz)
15-16	0000-2400 A5
16-30	0000-2400 A37
16	0000-2400 A3
18-30	0000-2400 A5
18-23	0000-2400 A3
19	1003-1337 UM (16 kHz)
24	0512-0608 TM
25-26	0000-2400 A3, 0000-2400 TN
26	1007-1343 UM (16 kHz)
28-30	0000-2400 A3
29	0931-0946 UM (16 kHz)

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

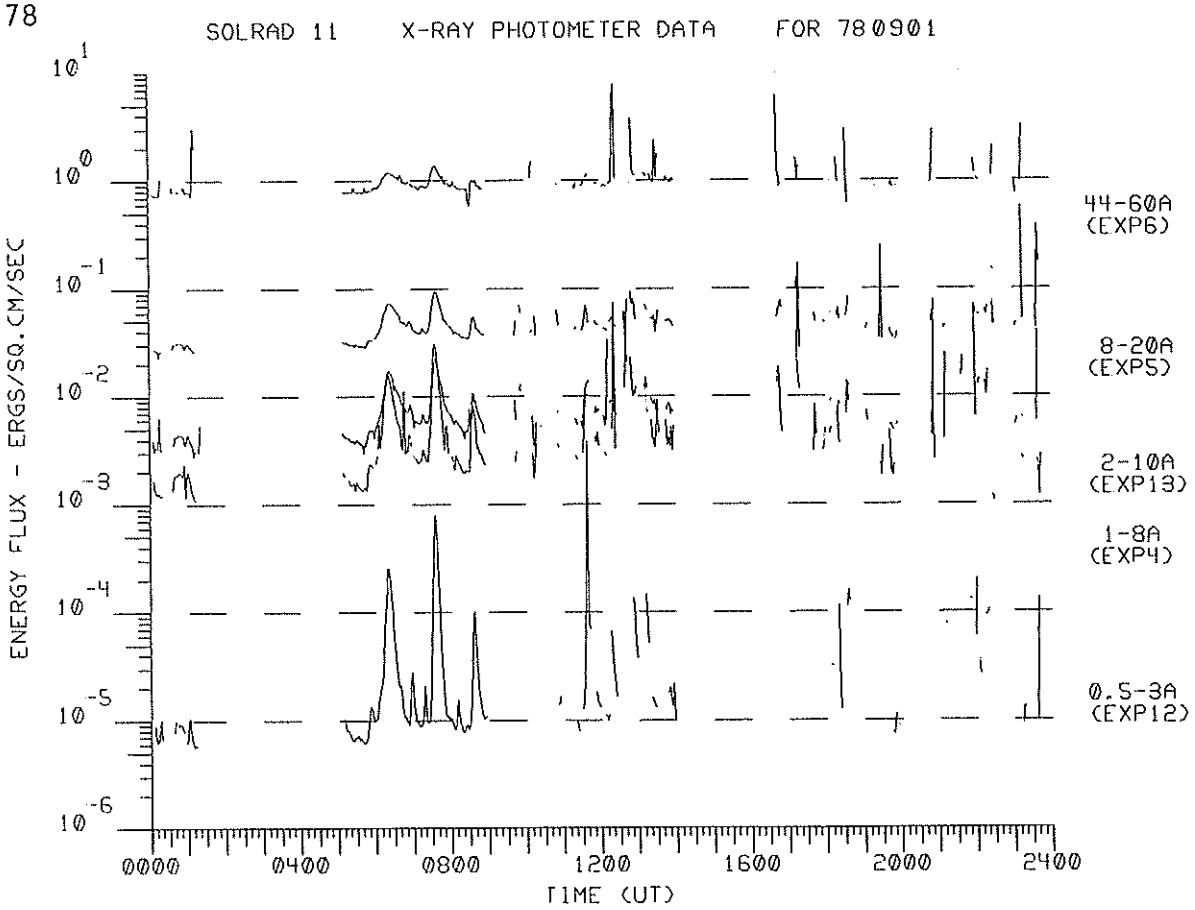
STATIONS REPORTING FOR SEPTEMBER 1978

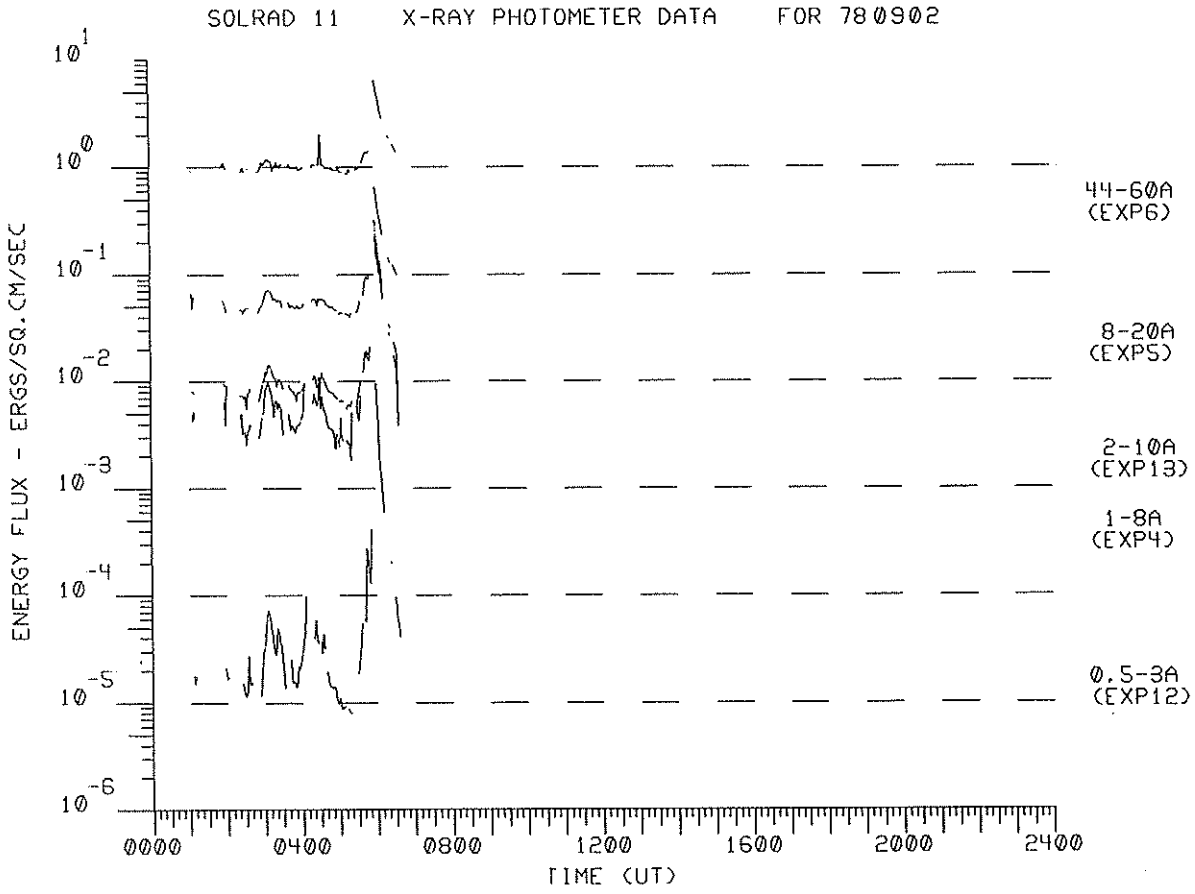
AAVSO (A1, A3, A5, A19, A21, A26,
A28, A31, A34, A37, A40, A45,
A46) (SES) (A1, A31) (SEA) (A31) (SWF)
BEARLY (BY) (SWF)
CHILWORTH (CL) (SCNA)
DARMSTADT (DA) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA, SES)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
JULIUSHUH (JH) (SWF)
KUHLUNGSBORN (KU) (SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
SOMERTON (SO) (SWF)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)
VSETIN (VS) (SEA)

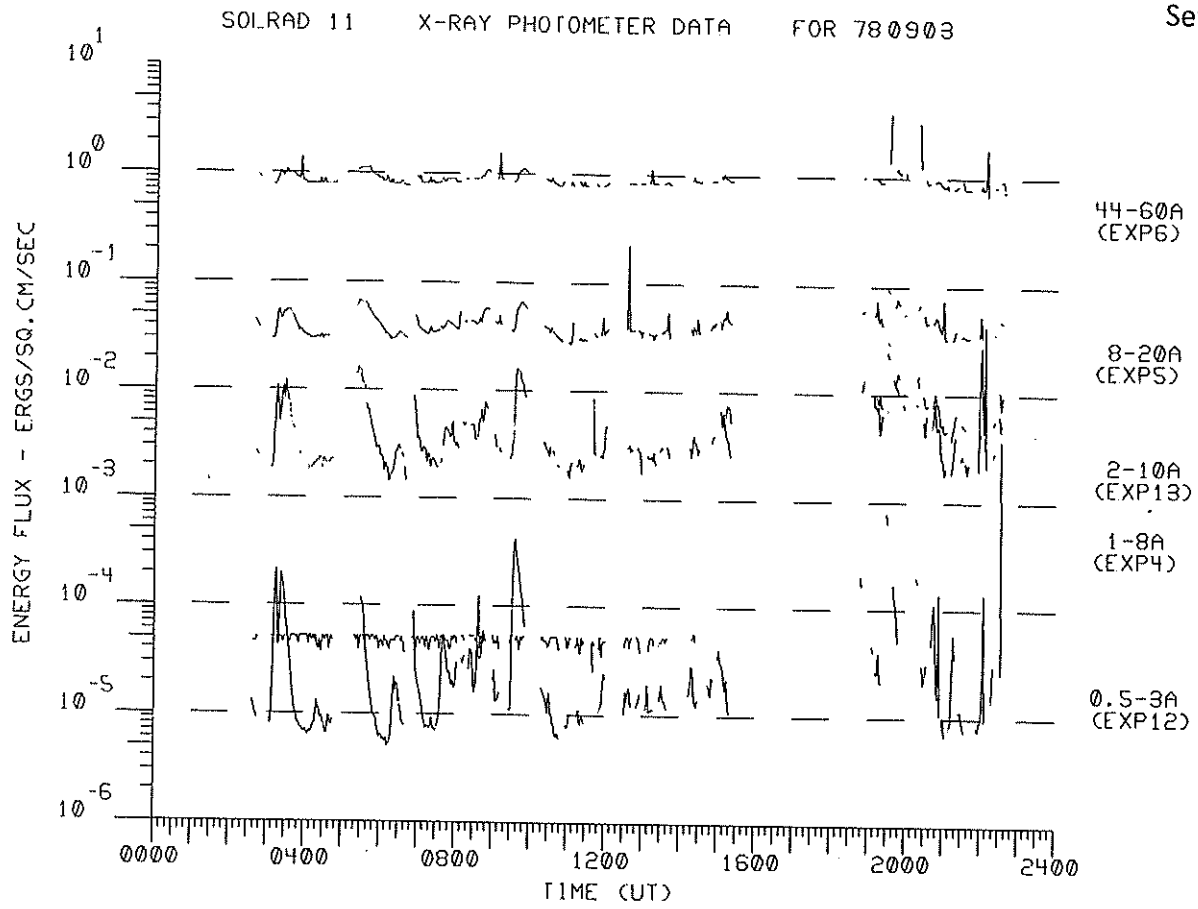
SIDs BY McMATH REGION

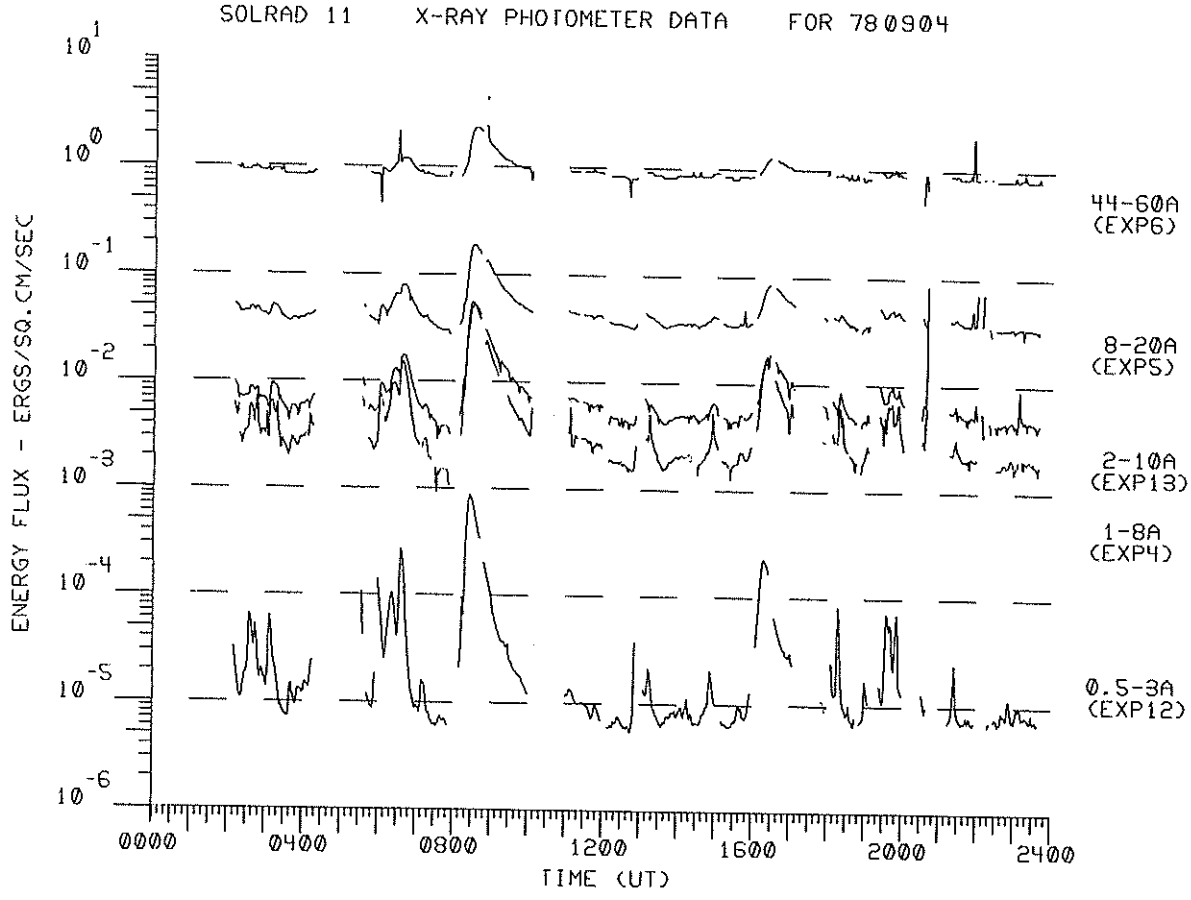
SEPTEMBER 1978

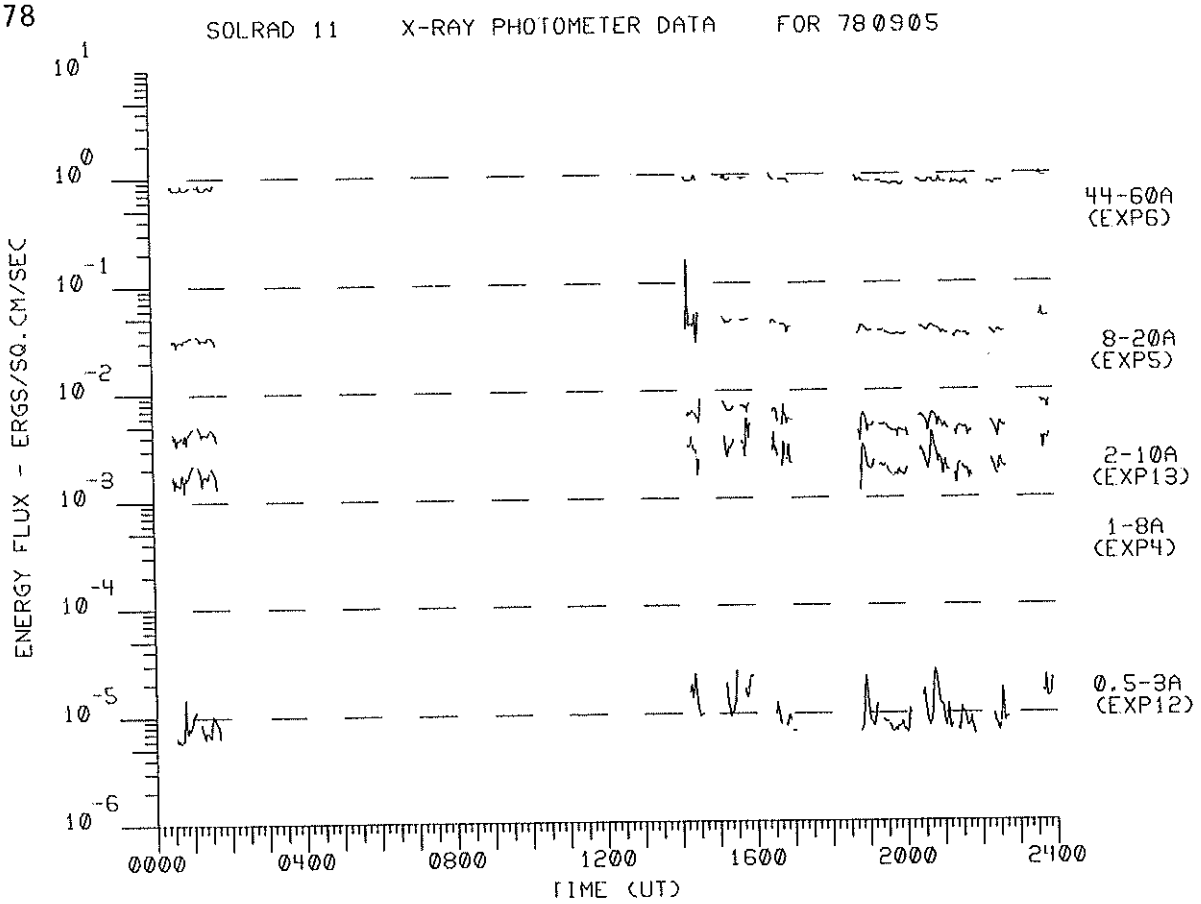
DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
15507	1																													
15508	1			1				1																						
15509	9	11	5	3		4	1	2	1	1																				
15512					1																									
15518			1	1																										
15522					1																									
15523					1																									
15525						1				1																				
15526						3		1																						
15530												2																		
15536											1																			
15541																1		1												
15542																				1	1									
15543													1	1	6	3	7	2												
15546																					1			1						
15549																					1									
15551																						4					3		1	
15554																									1					
15555																								1		1				
15557																							1	2						
15564																													1	
X-RAY	2	3	2	1	2		3		1				2			1	1	1			1		1	1	1	1	1			1
UNKNOWN											1	1																		
NO FP	1																													

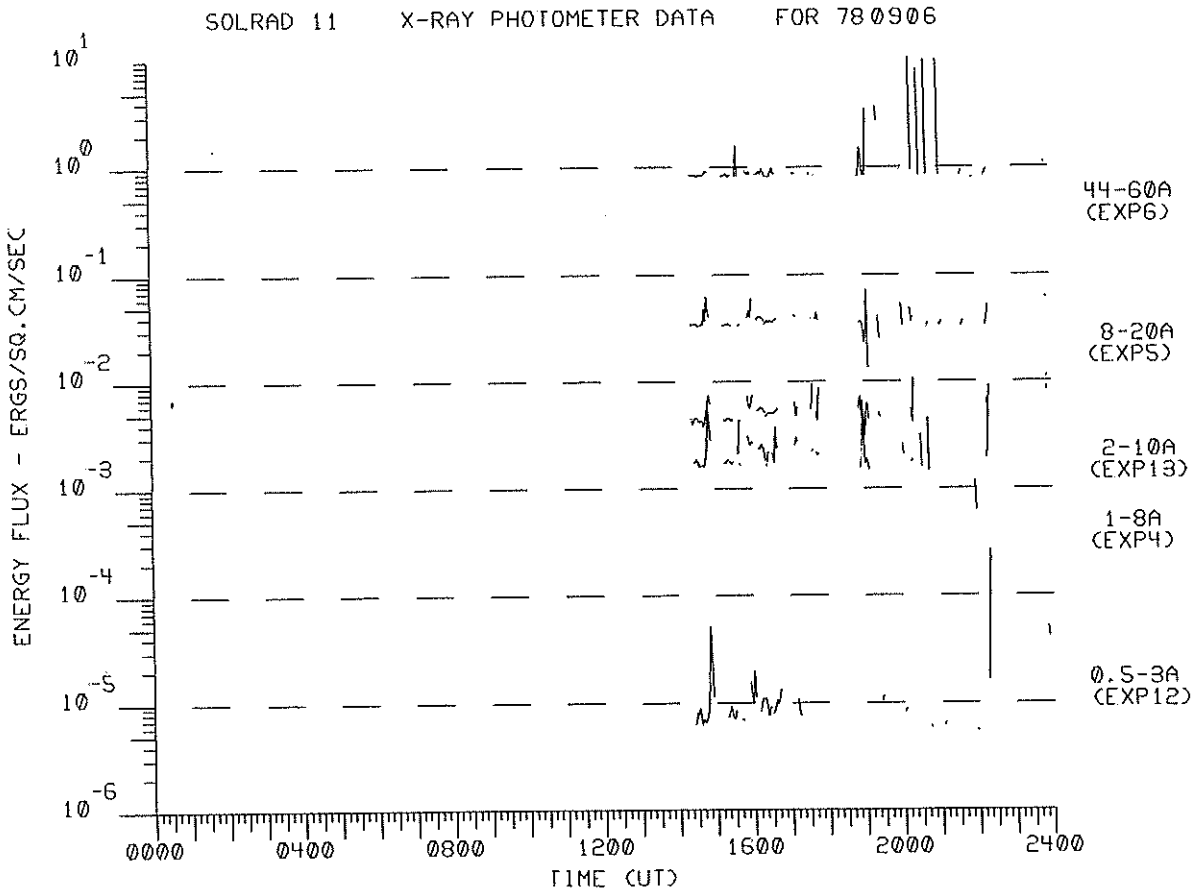

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780901
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

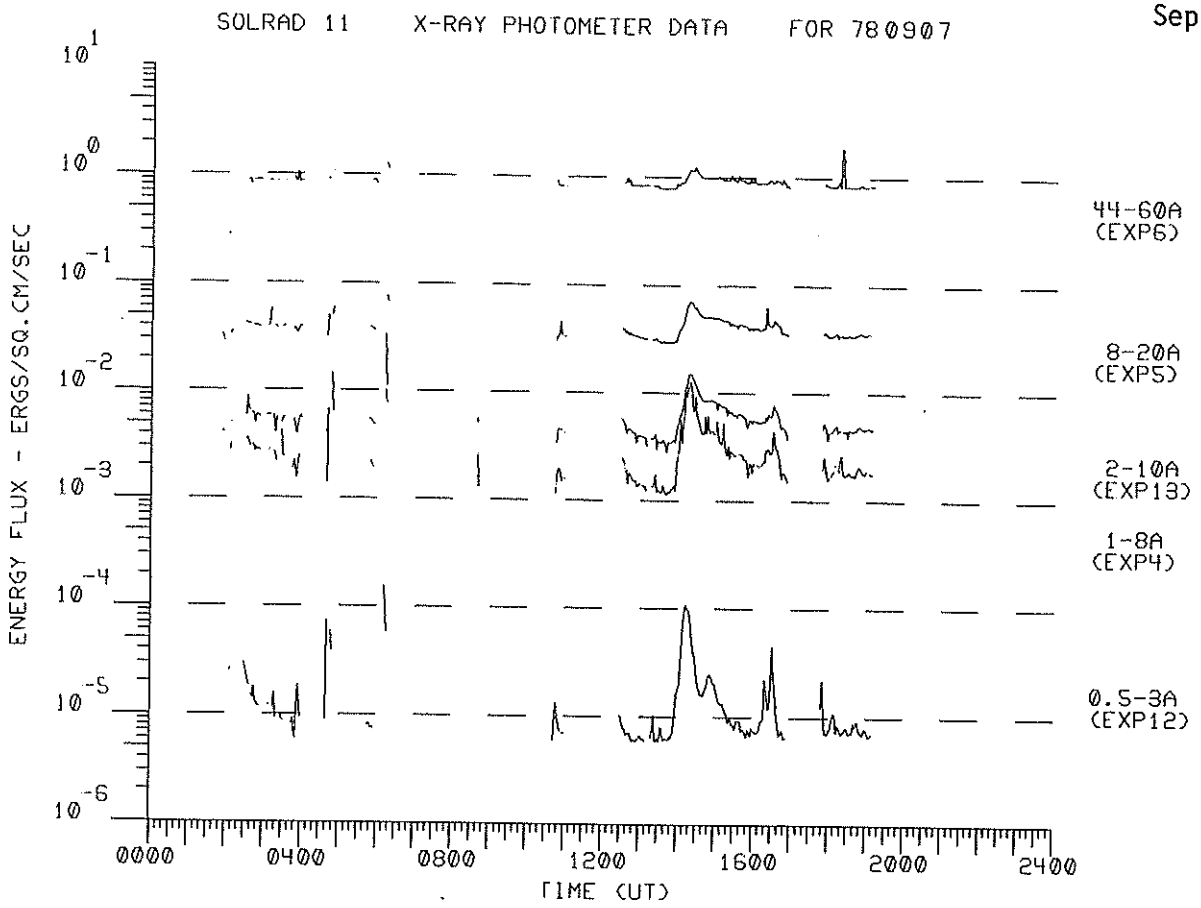

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780902
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

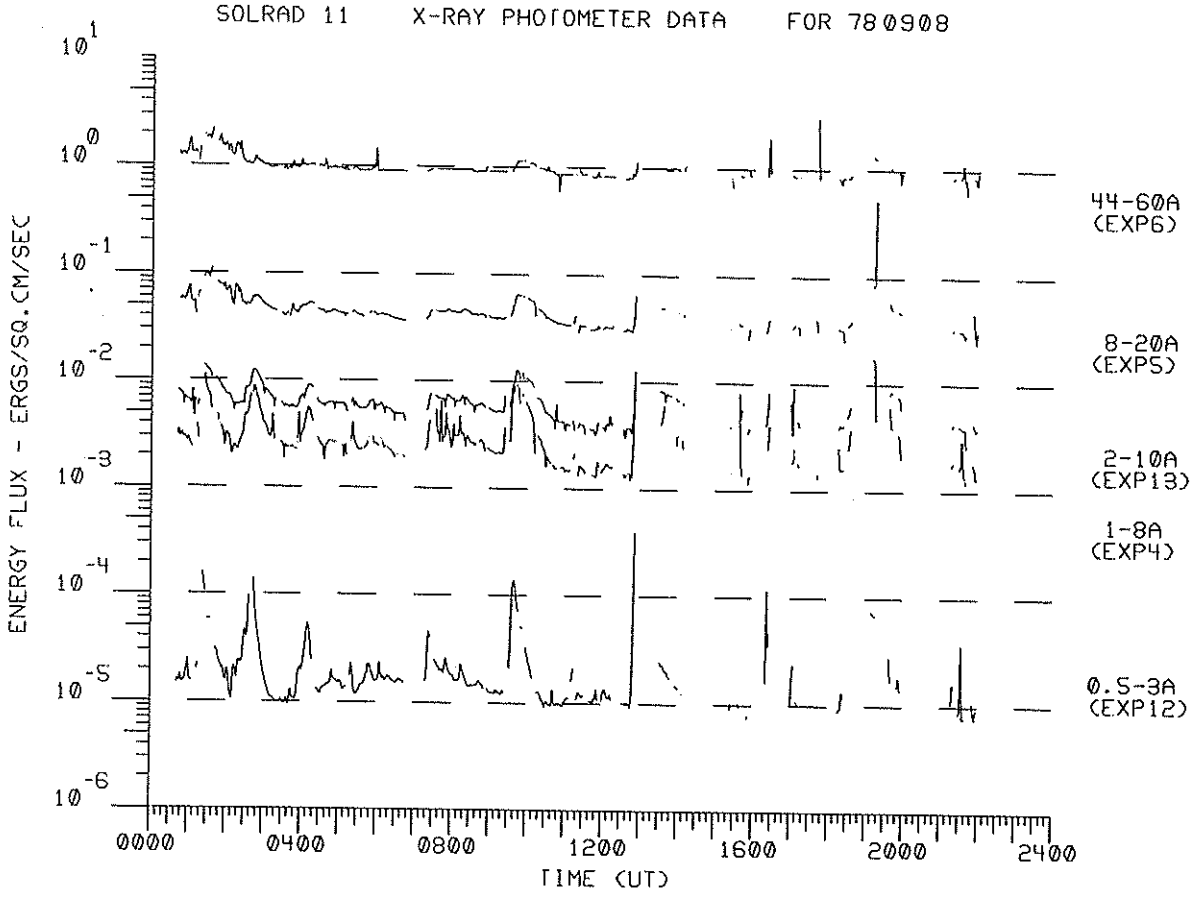

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780903
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

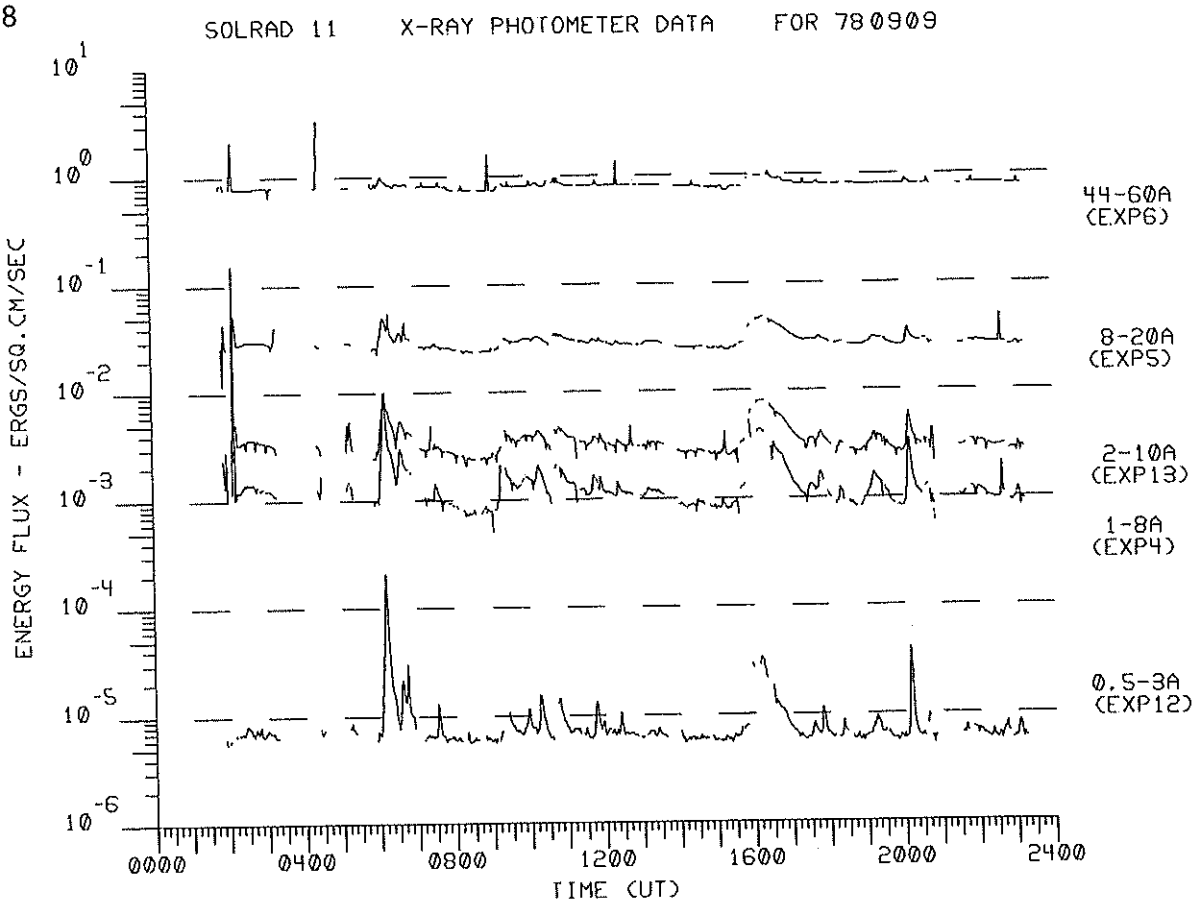

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780904
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

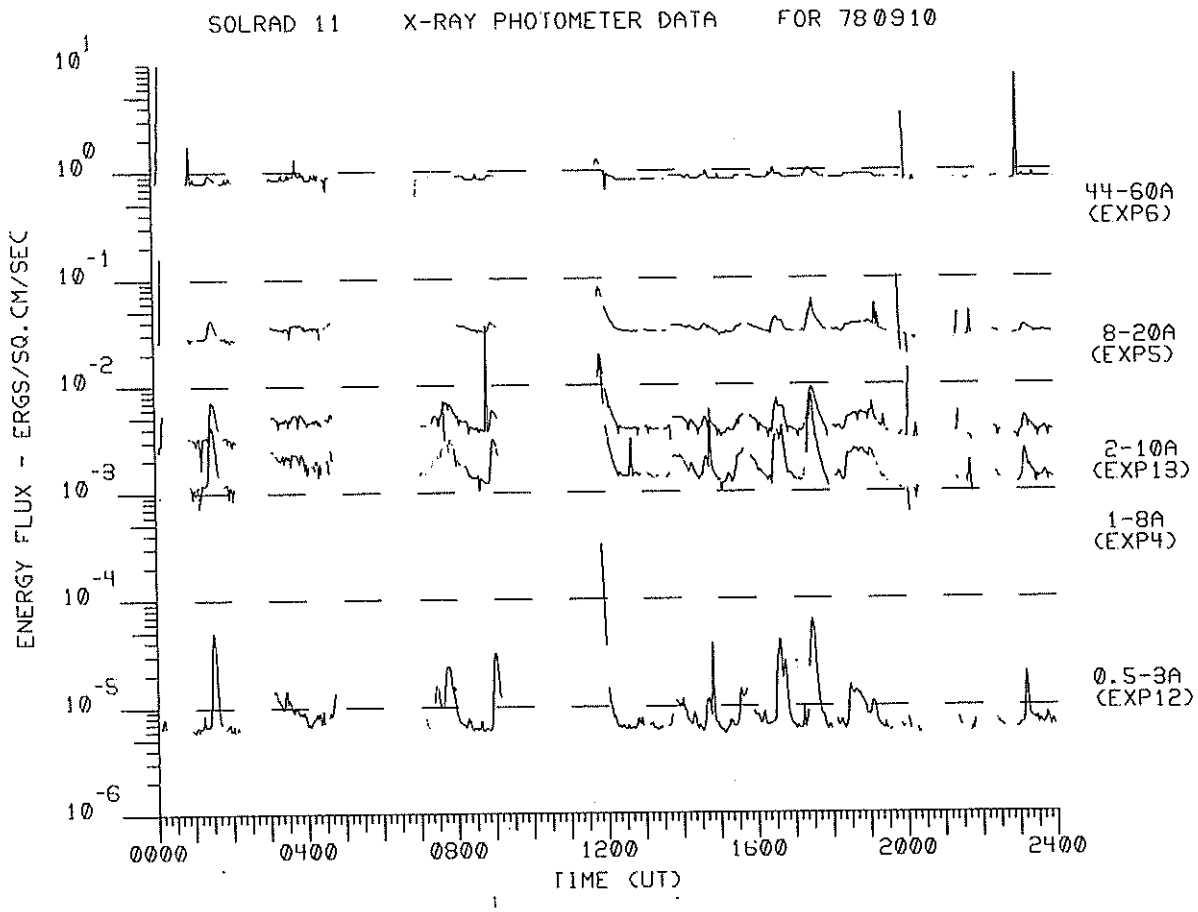

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780905
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

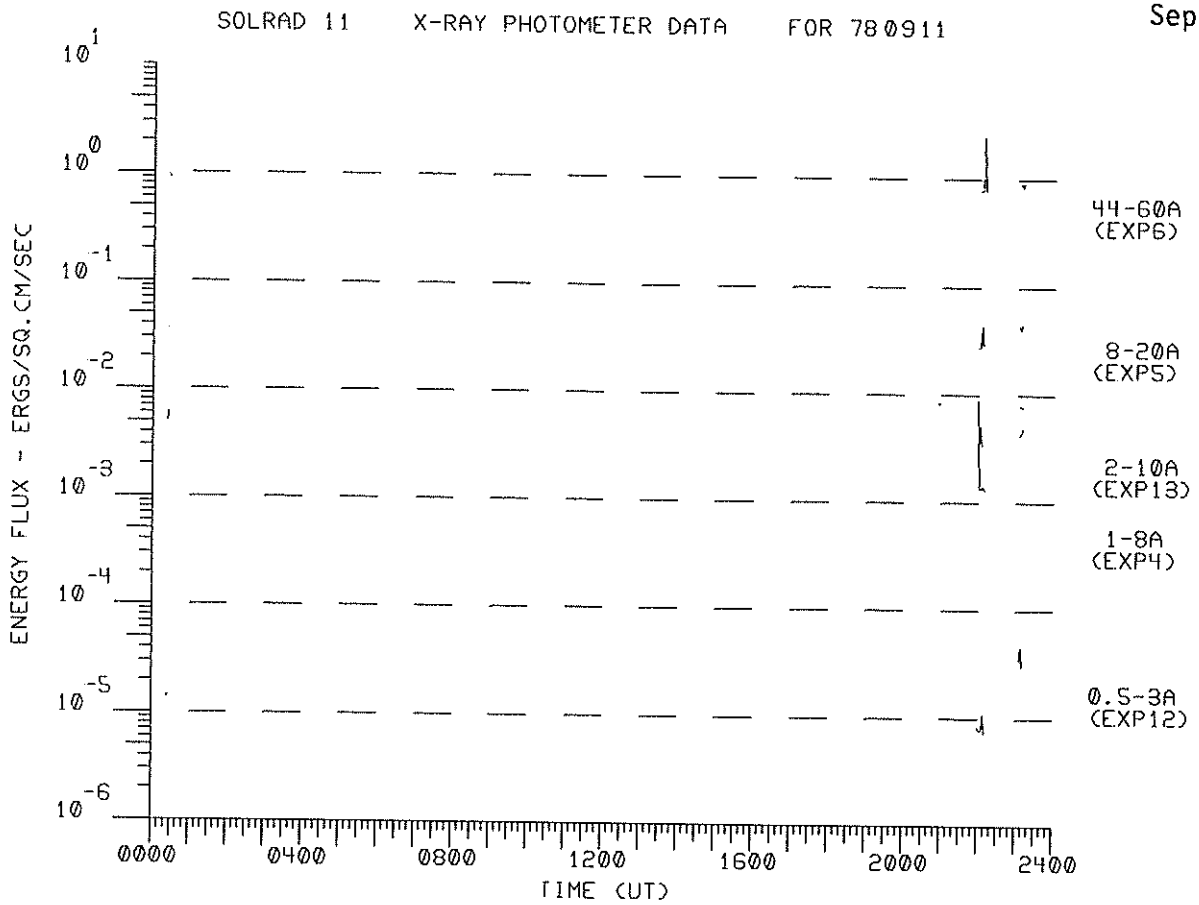

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780906
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

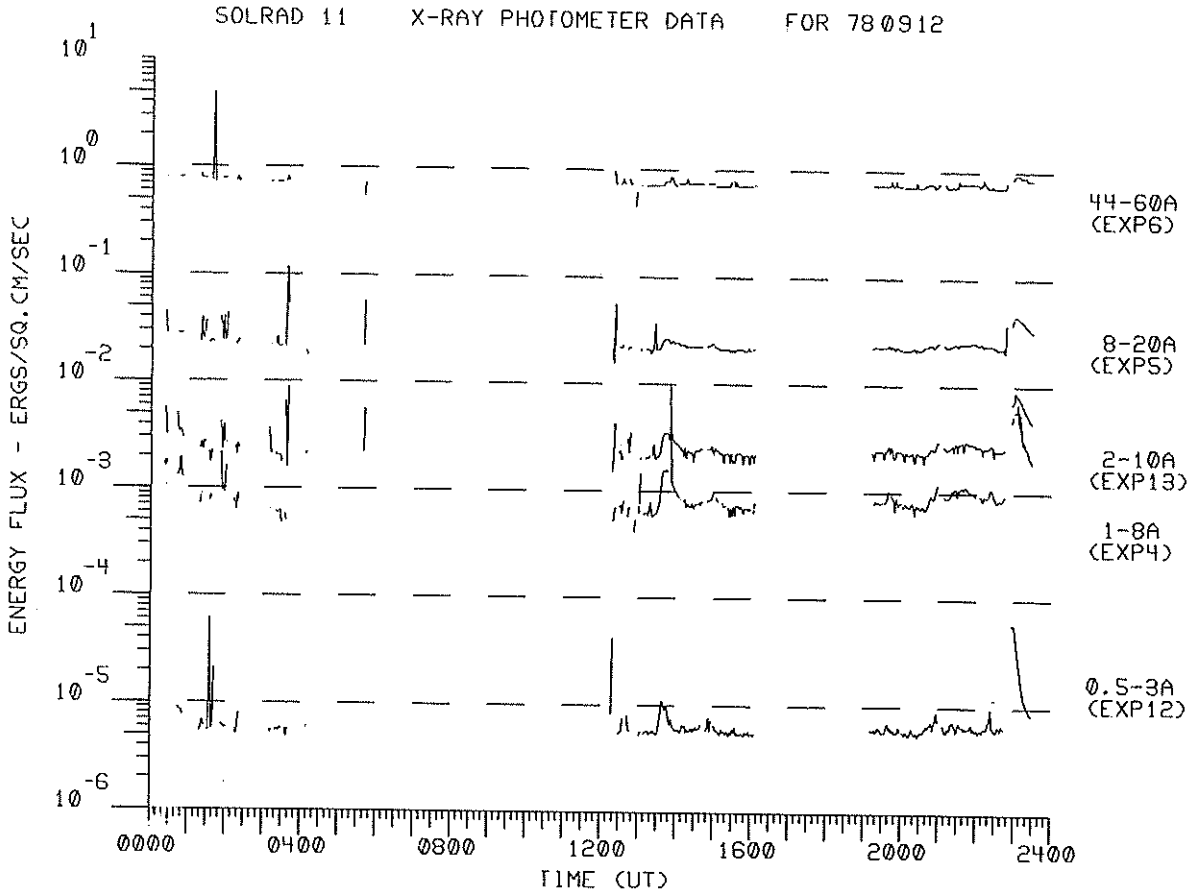

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780907
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

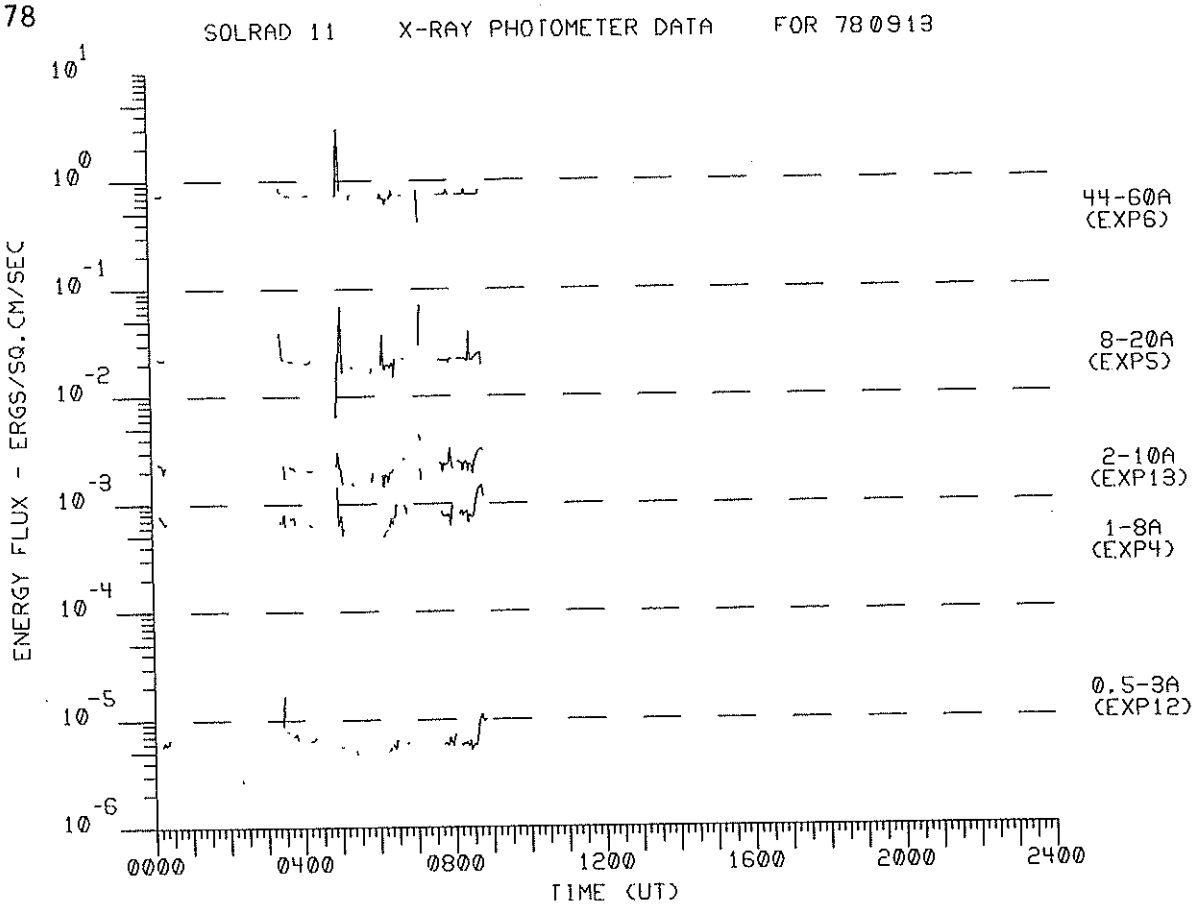

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780908
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

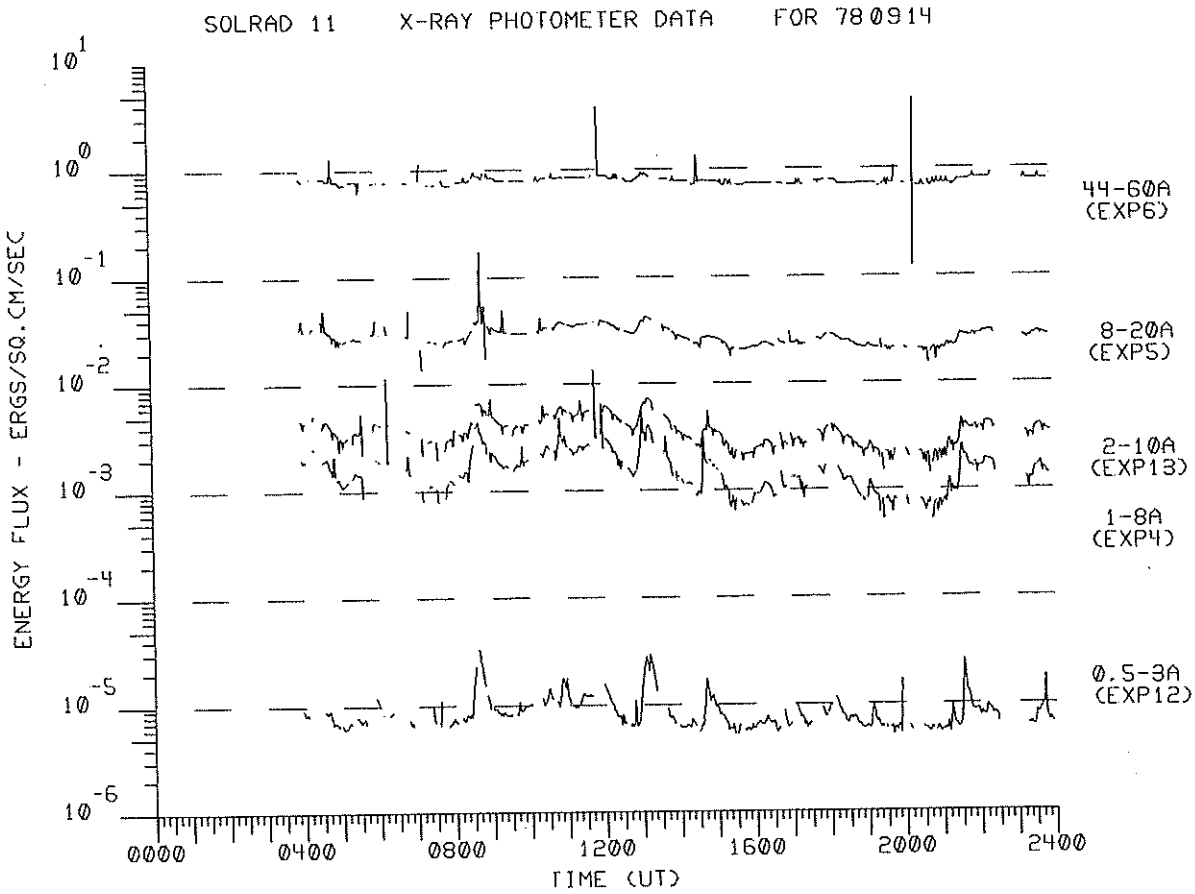

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780909
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

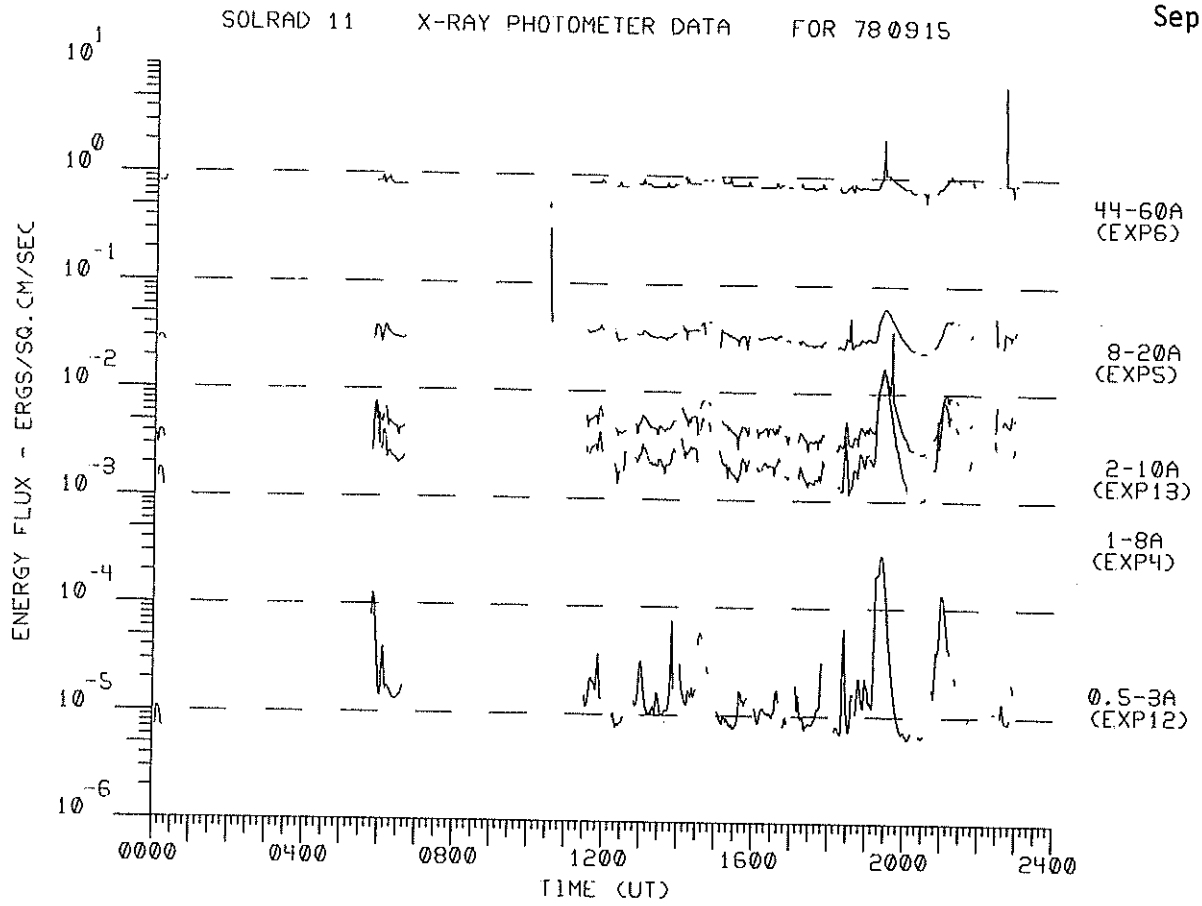

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780910
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

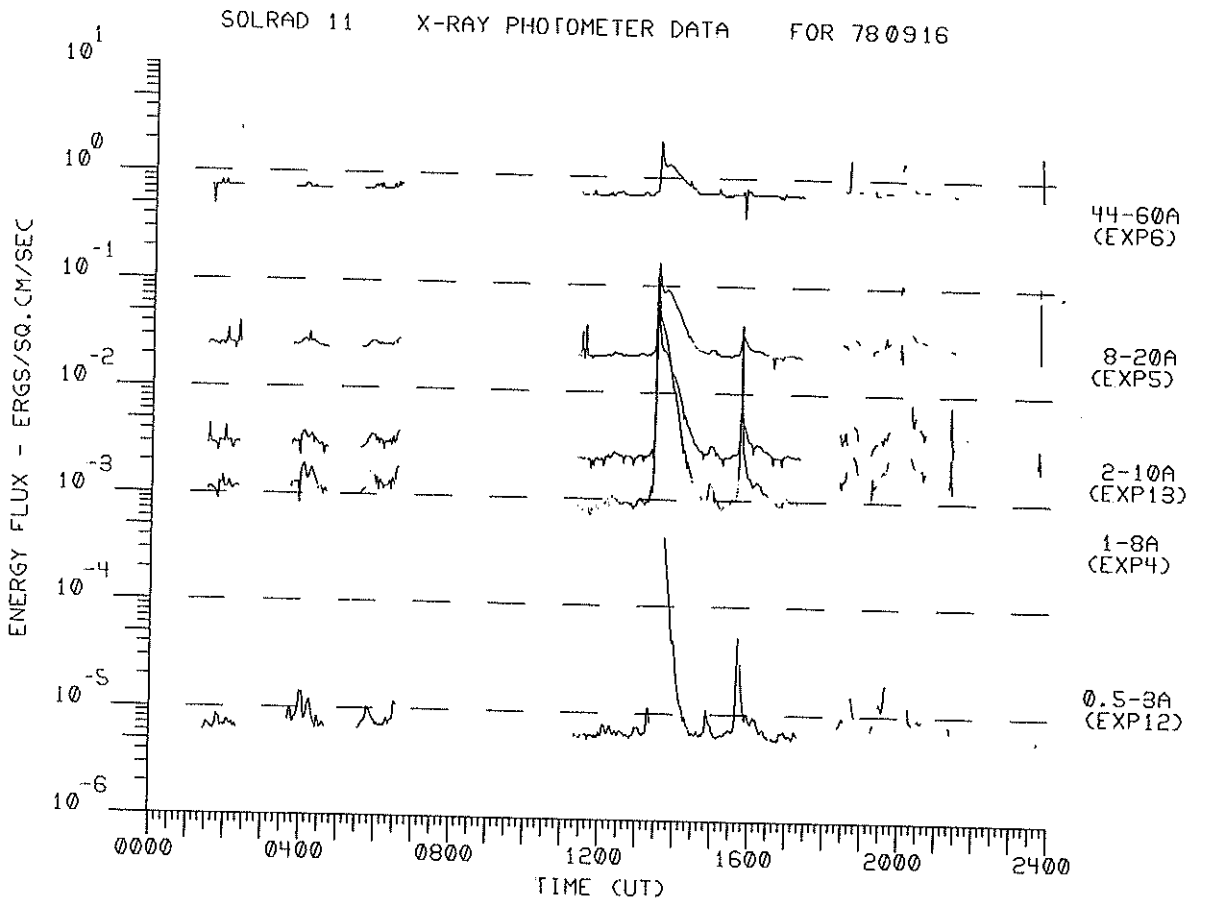

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780911
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

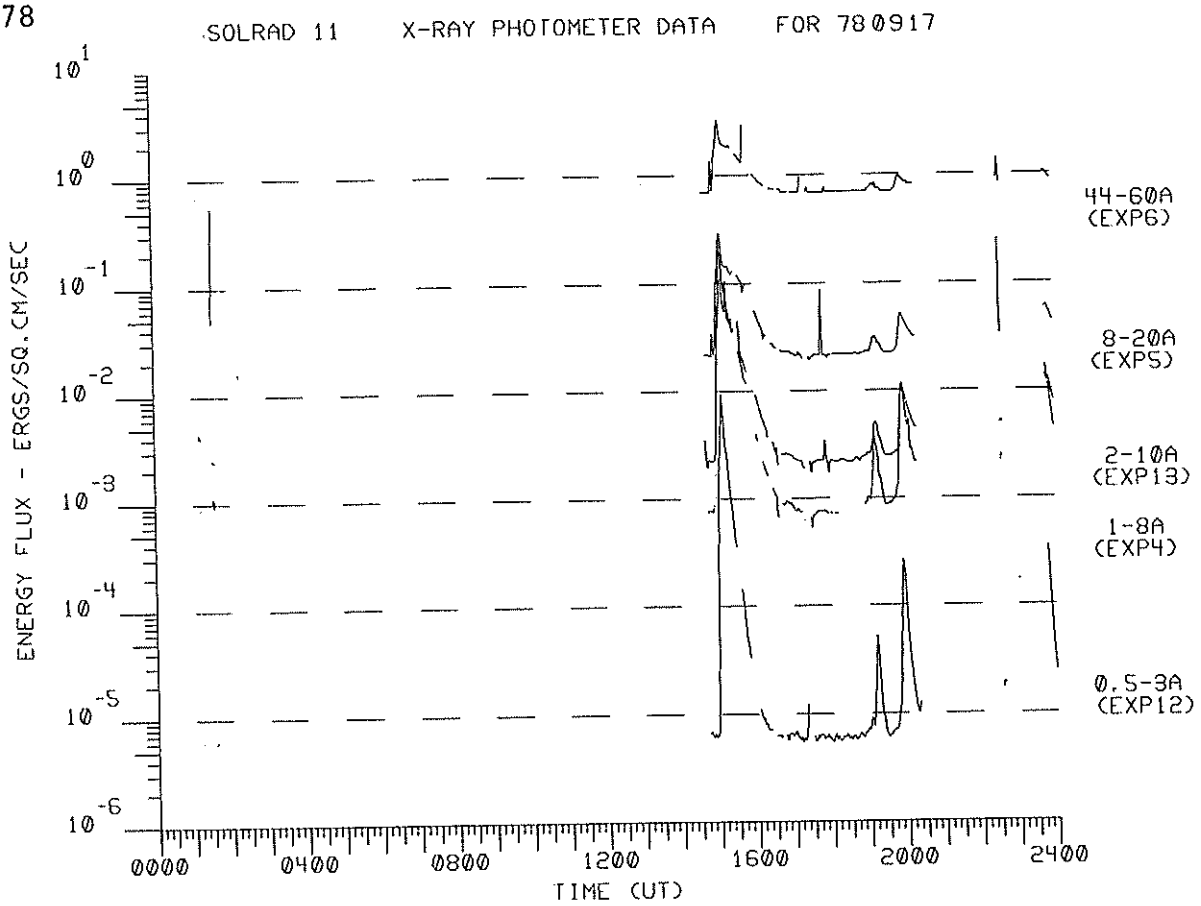

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780912
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780913
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780914
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780915
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780916
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780917
ENERGY FLUX - ERGS/SQ.CM/SEC
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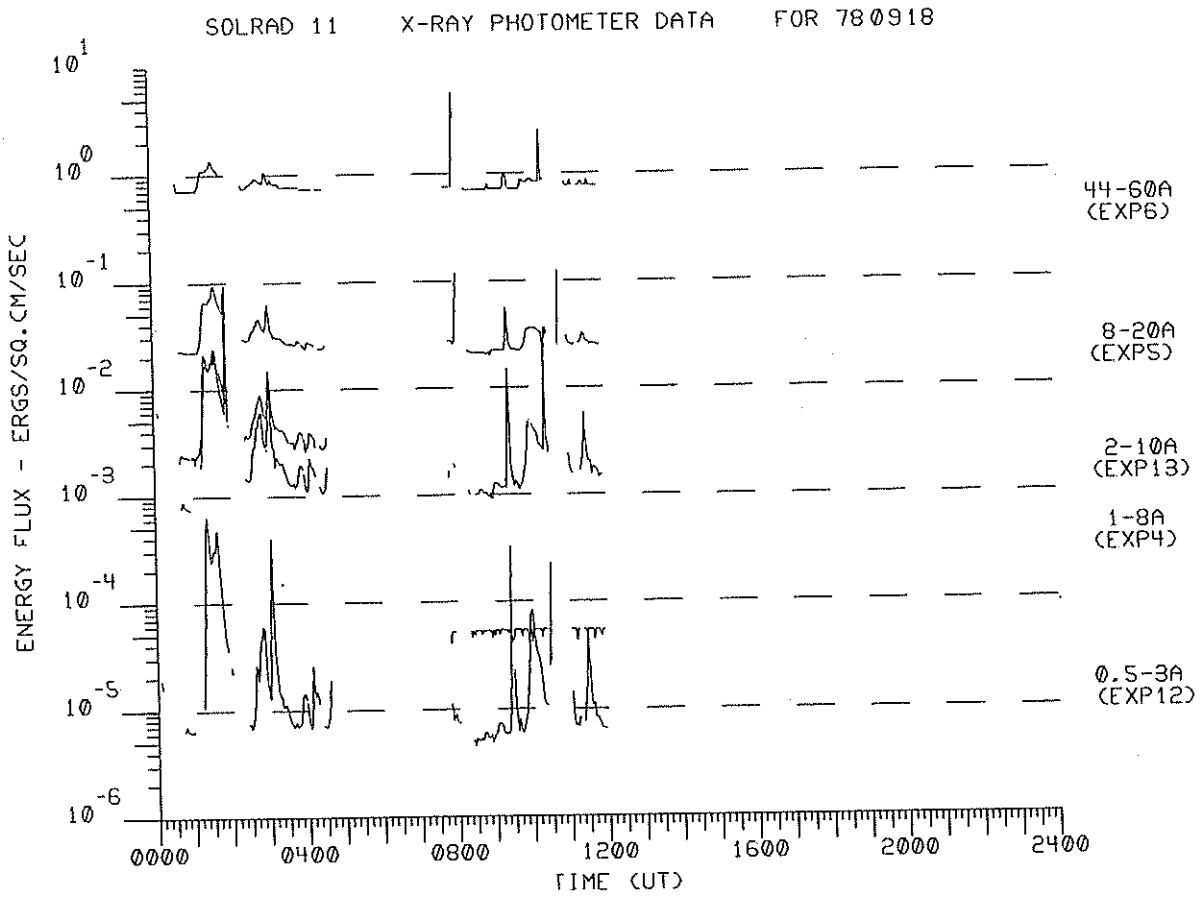
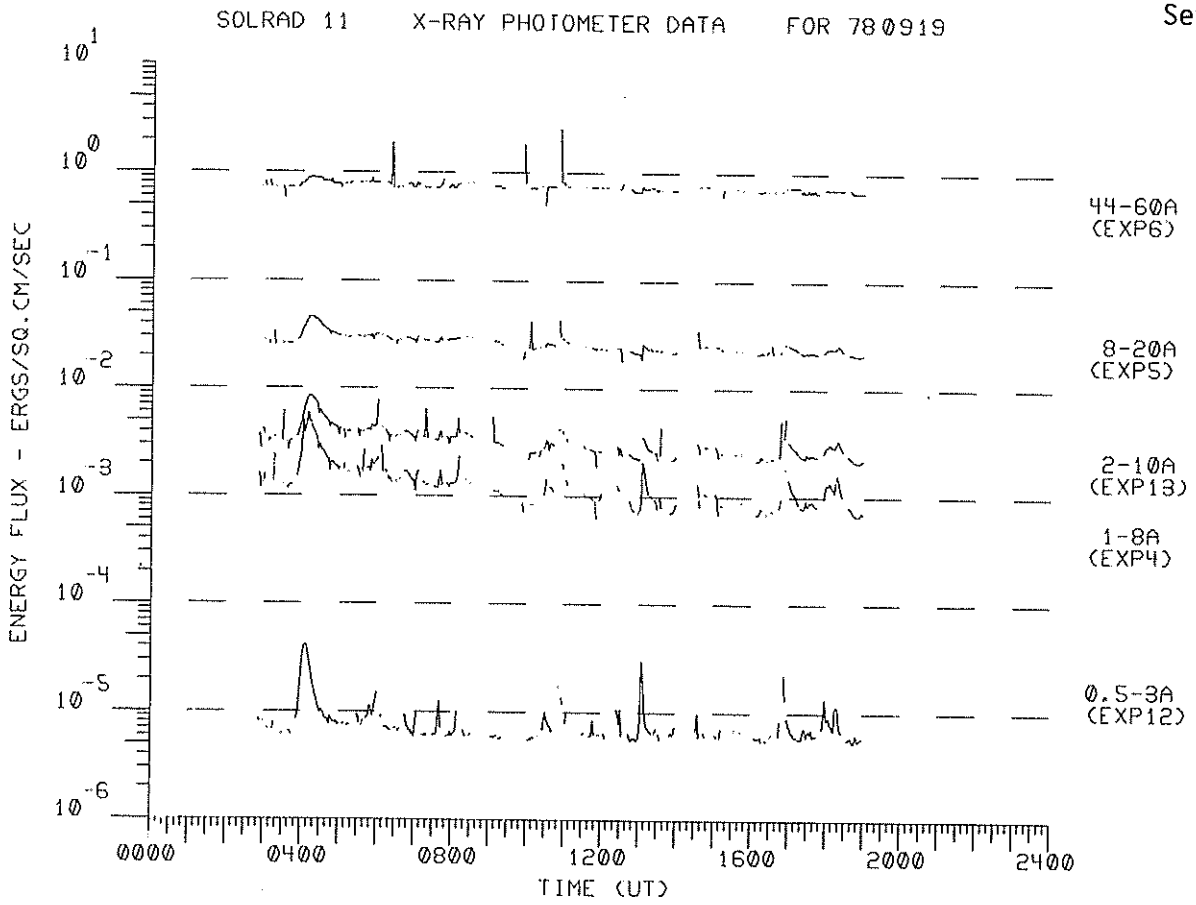
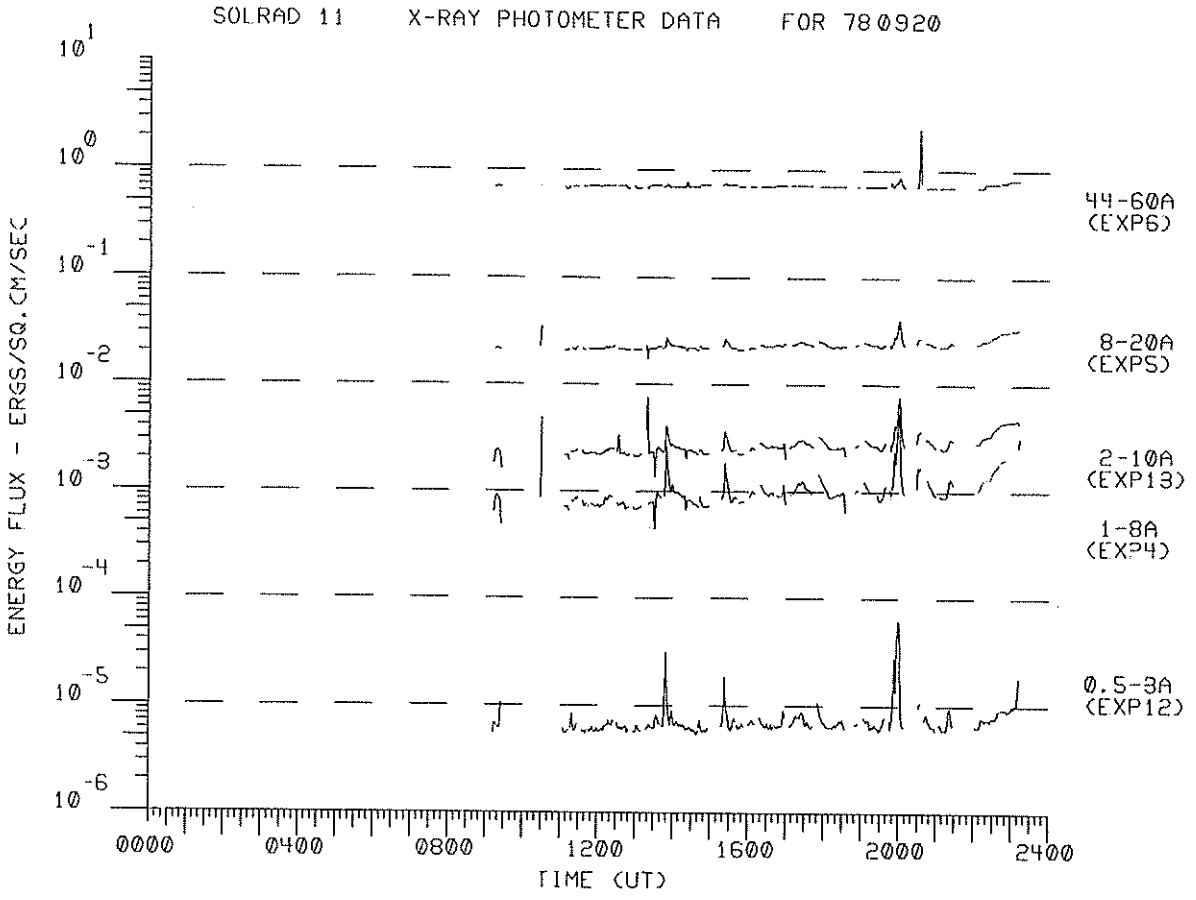
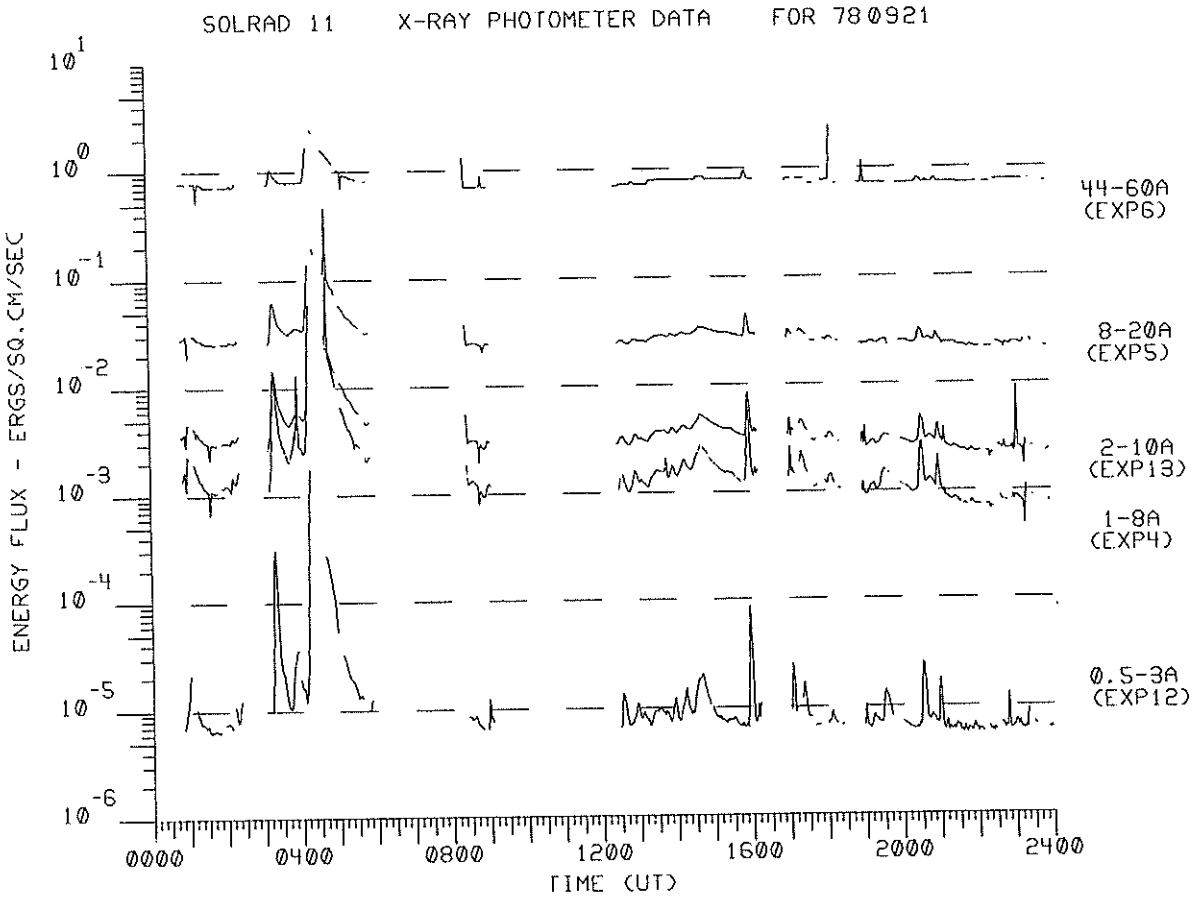
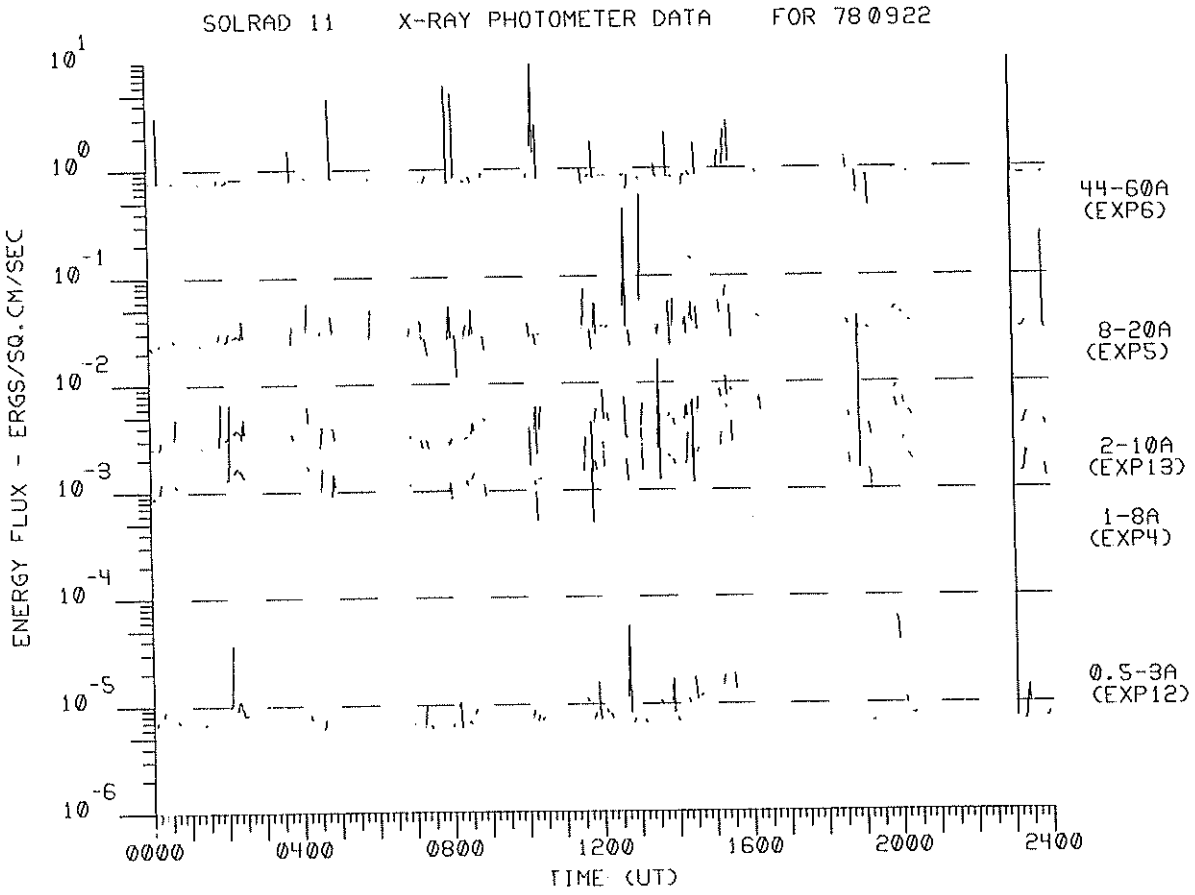
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

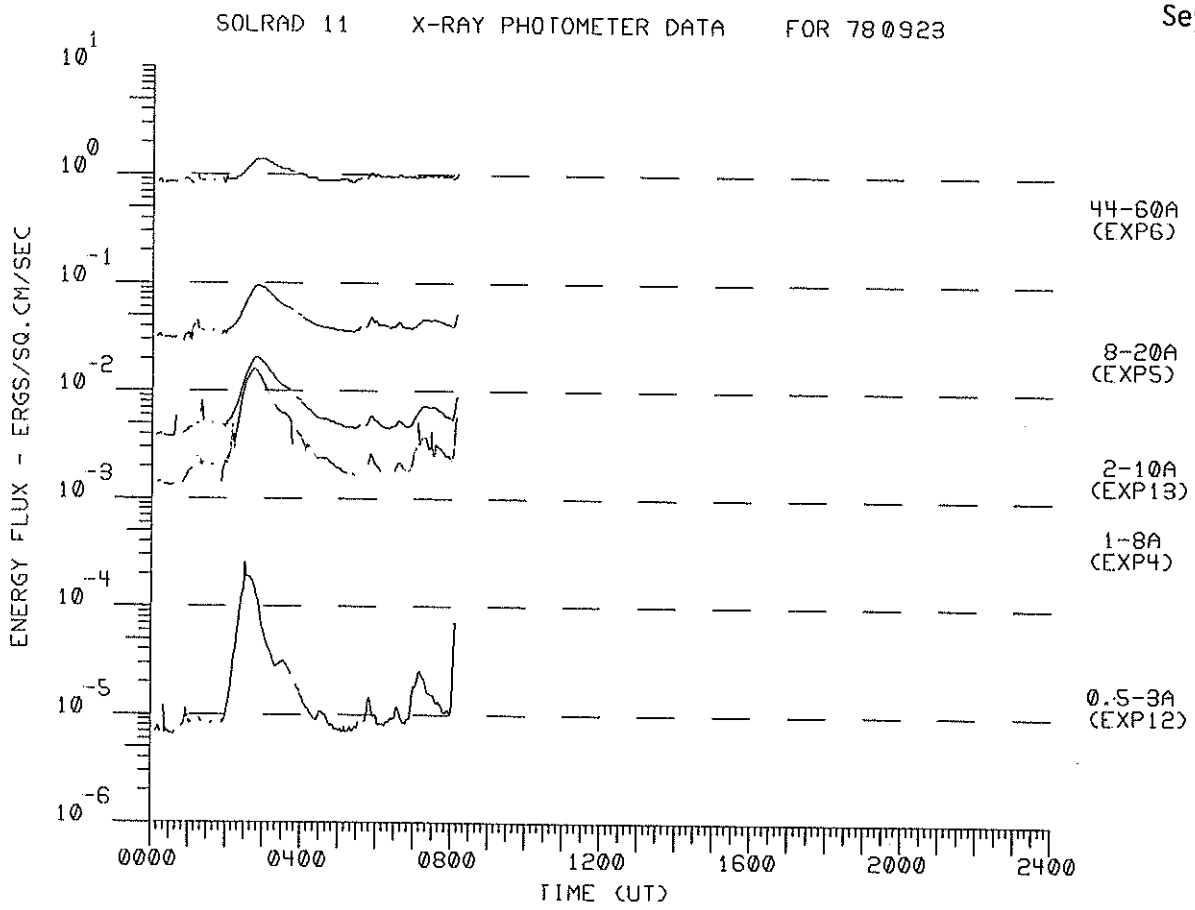

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780918
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

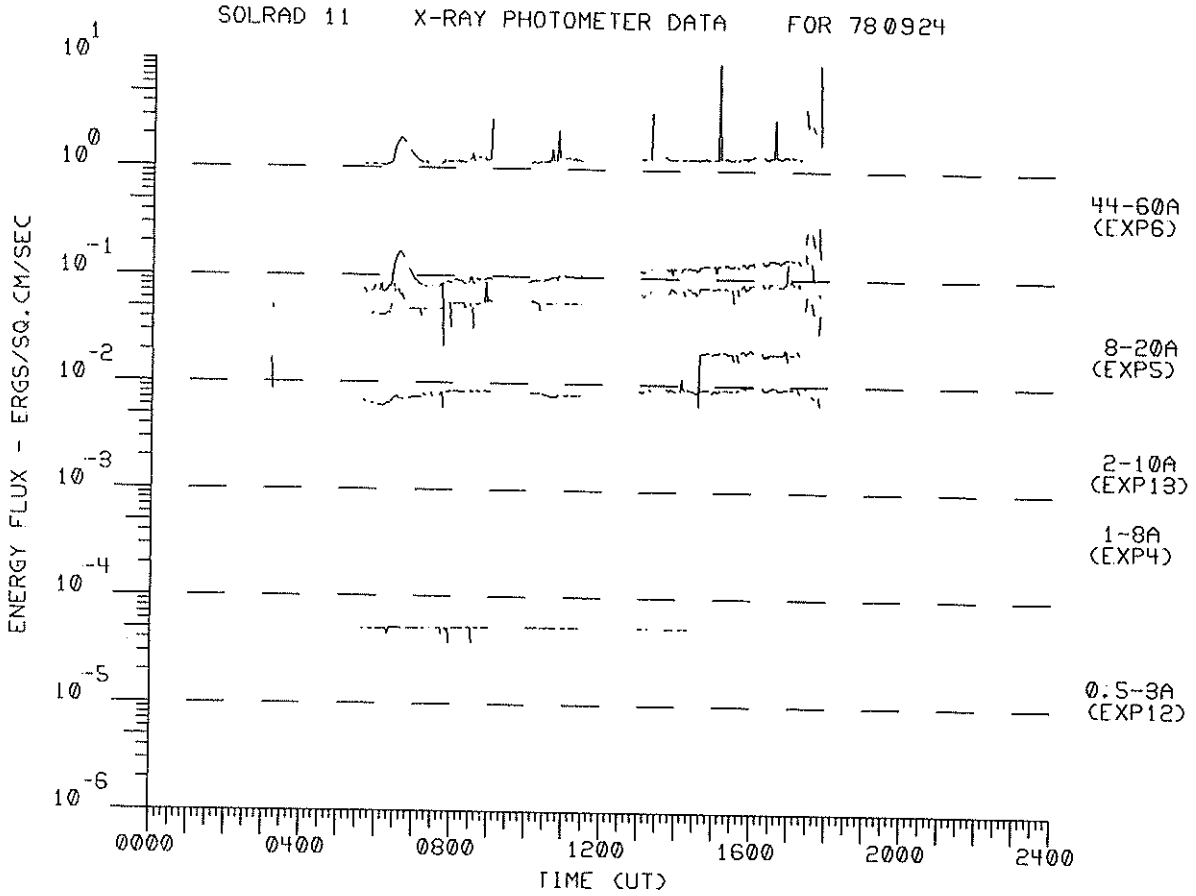

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780919
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

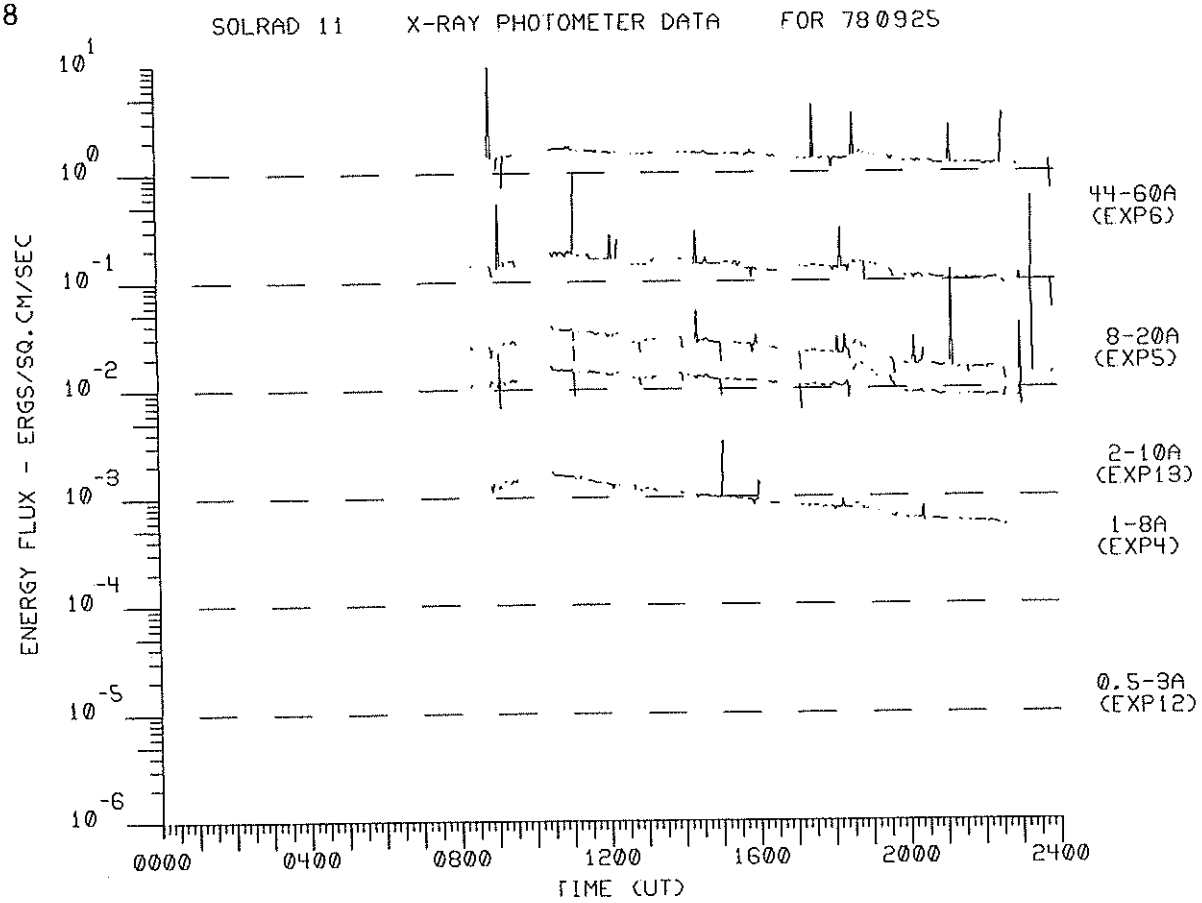

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780920
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

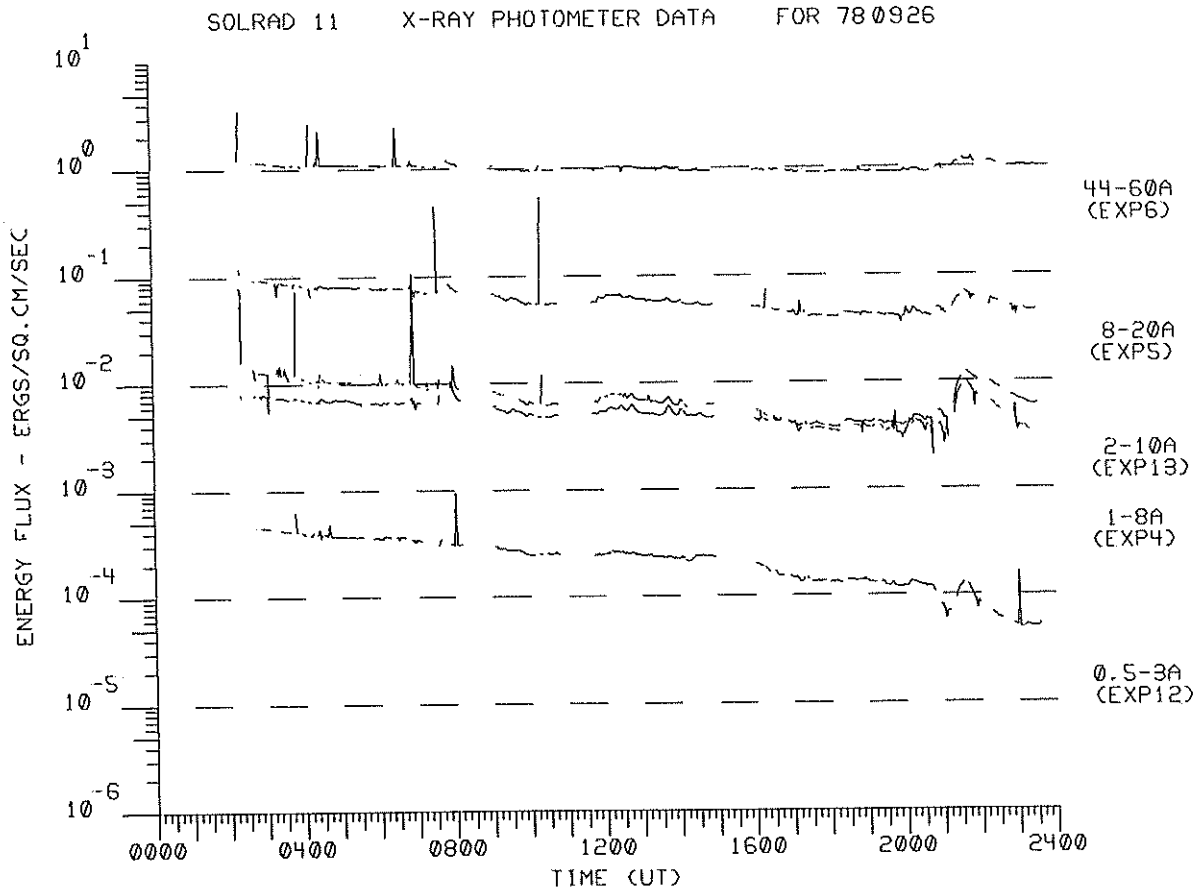

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780921
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

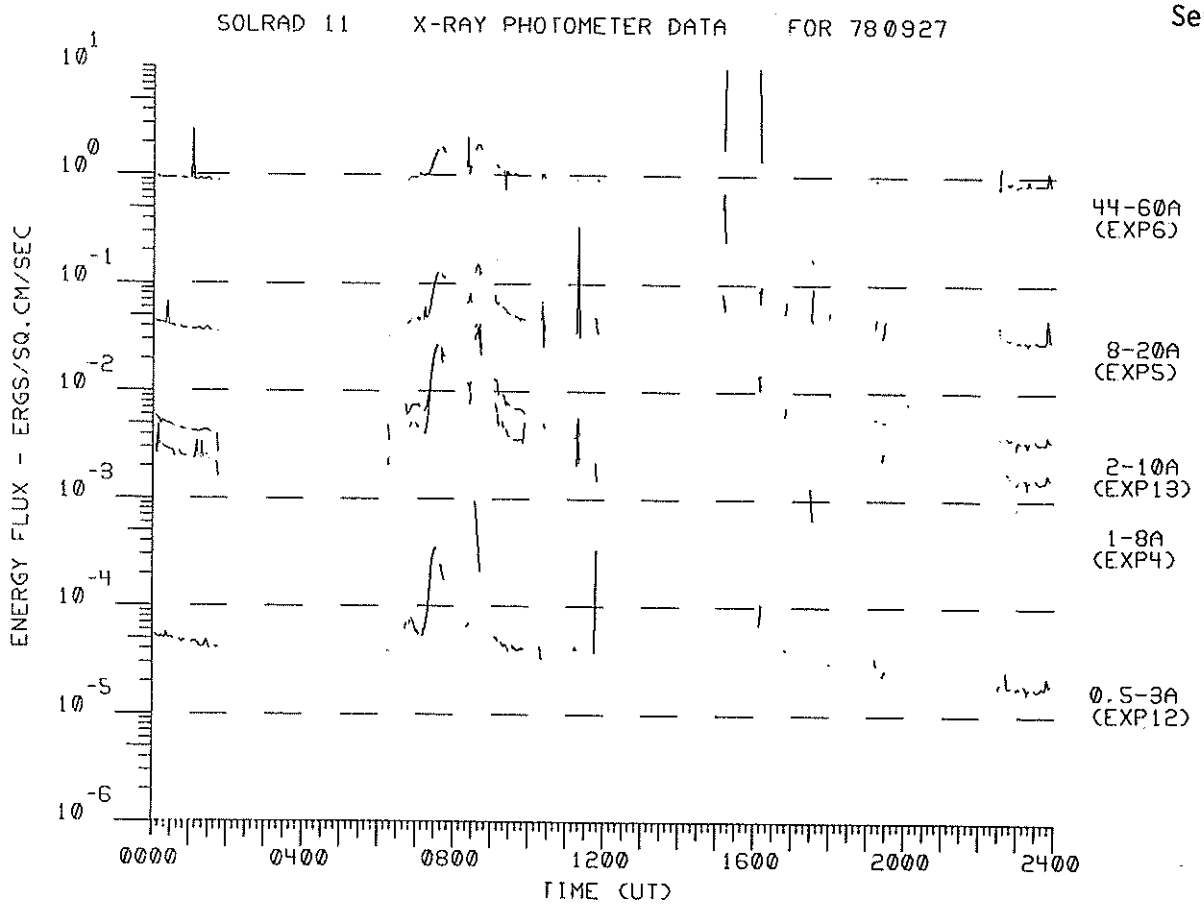

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780922
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

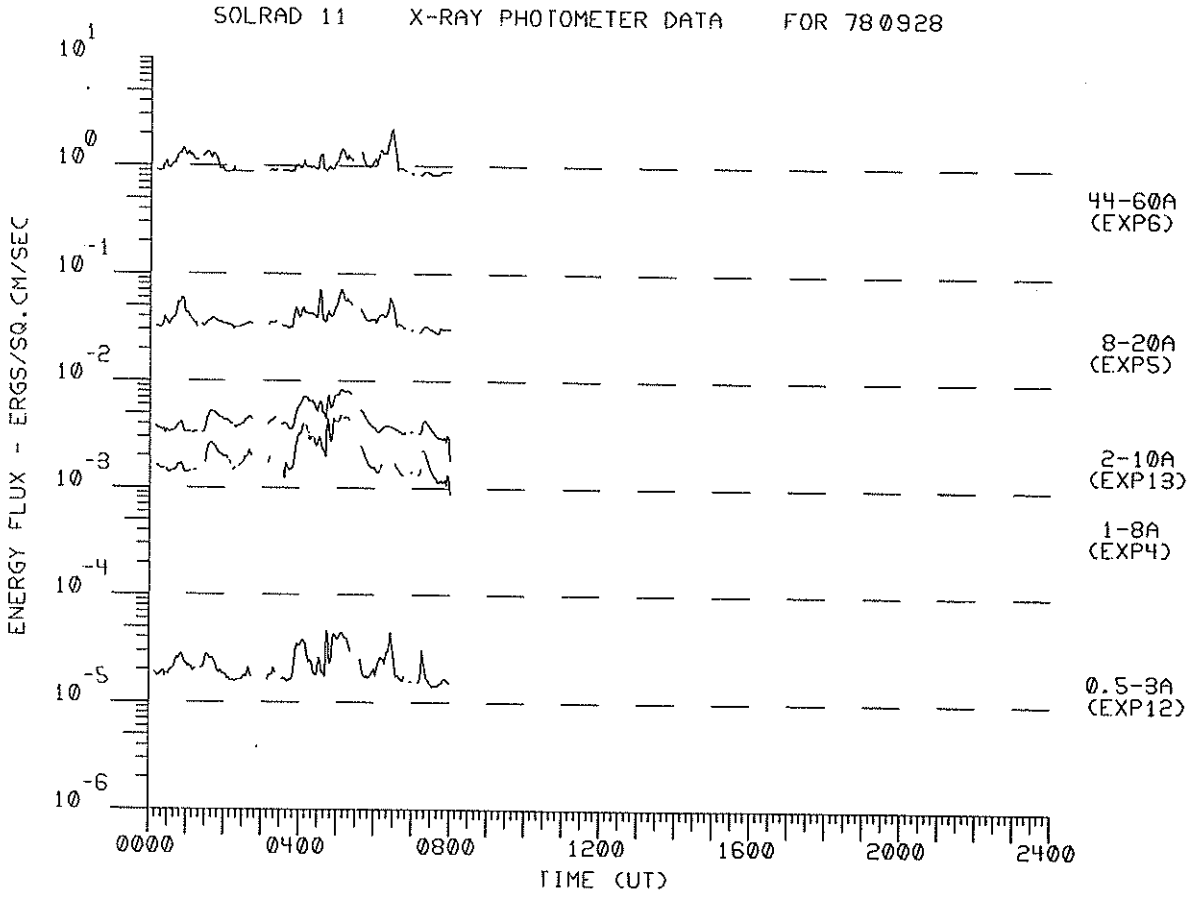

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780923
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

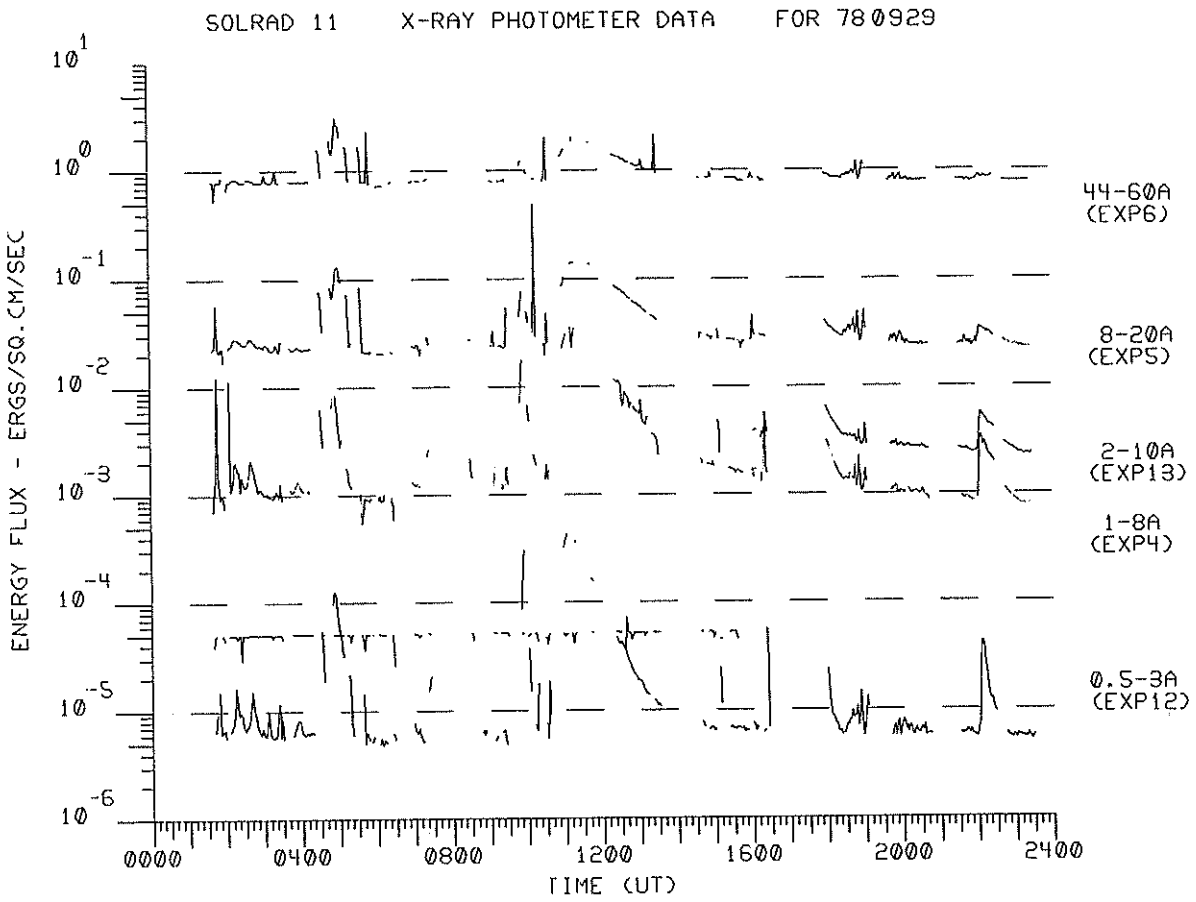

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780924
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

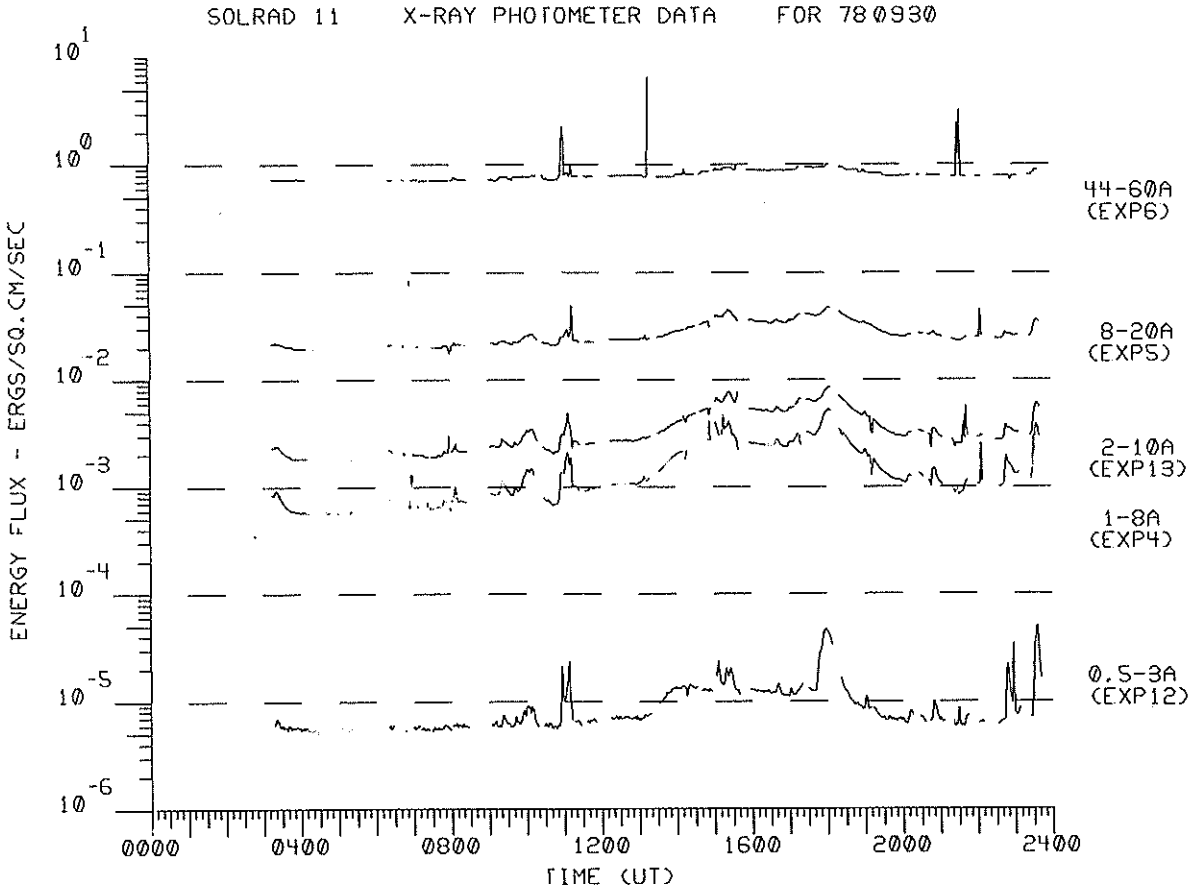

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780925
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780926
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780927
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780928
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780929
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780930
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	1000	MANI										
	0516	1730	WEIS				0612.0	1643.0	1				IIIN
	0533	1107	DURN				0622.9	0623.0	3				IIIG
			DURN	0623.8	0626.3	1							DCIM
	0728	1432	DWIN	0806.0	0806.2	1							IIIG
			DURN	0933.6	0934.2	3							IIIG
			DWIN	0933.6	0933.9	3							IIIG
			WEIS				1036.6	1043.0	2				II, HARM.
	1207	1754	DURN				1220	1620	1				IW
	1030	2000	SGMR				1237.9	1242.1	1				IIIG
	1300	2245	HARV	1438		1	1438	1440	1	1440		1	IIIG
			HARV				1554	1616	1	1554	1616	1	IIIN
			SGMR				1556.0	1556.8	1				IIIG
			DURN				1704.0	1704.2	1				IIIRS
			HARV	1731		1							IIIG
			DURN	1749.3	1749.5	1	1749.3	1749.5	1				IIIG
			HARV	1749		1							IIIG
			SGMR				1810.0	2000.00	1				CONT
			HARV	1836		1	1810	1837	2	1810	1837	2	IIIN
			HARV				1841	1857	3	1841	1857	3	IIIGG,UNCL
			HARV				1933		2	1933		2	IIIG
			HARV				1949	1952	2	1949	1952	2	IIIG
			HARV				2000	2004	2	2001		1	IIIB,I
			HARV	2013	2014	1	2013		1	2013		1	IIIG
			HARV				2025	2044	2	2025	2044	2	IIIN
			HARV				2103		2	2103		2	IIIB
			HARV				2117		2	2117		2	IIIB
	2145	2400	MANI										
			HARV				2153		2	2153		1	IIIG
			HARV				2207	2219	1				IIIN
02	0000	0956	MANI										
	0516	0652	WEIS				0518.0	1730.0	2				IIIS
	0530	1440	DURN	0530 E	1750	3	0530 E	1750	3				I,C,DC,N
			DURN	0603.2	0623.7	2							DCIM
	1500	1750	DURN				0803.4	0803.6	1				G
			DURN				0906.2	0906.7	2				IIIG
	0723	1730	WEIS				0906.2	0911.0	3				IIIGG
			DURN	0932.6	0932.7	2							IIIRS
	1030	2000	SGMR				1144.0	1150.0	1				IV
			SGMR				1150.0	1320.0	1				CONT
			DURN	1252.9	1553.8	2							IIIGG
			WEIS				1410.8	1411.2	2				IIIG
			WEIS				1450.7	1451.3	2				IIIG
	1300	2245	HARV	1451		1	1451		2				IIIG
			WEIS				1501.0	1601.3	2				IIIRS
			DURN	1528.7	1528.9	1							IIIG
			HARV				1534		1	1534		1	IIIG
			HARV				1543	1637	3	1543	1637	3	IIIS
			SGMR				1544.7	1606.7	2				IIIS
			HARV				1653	1708	1				IN,W
	2147	2400	MANI										
			HARV				2209		2				IIIG
03	0000	0956	MANI										
	0530	1440	DURN				0530 E	1748 D					I,C,DC
	0615	1450	WEIS				0718.0	1720.0	2				IIIN
			WEIS				0805.0	1652.0	2				IN,DC
			DURN	0813.2	0813.2	3	0813.2	0813.2	3				III
			DURN	0956.5	0956.6	2							IIIU
	1030	2000	SGMR				1145.0	2000.00	2				CONT
	1300	2250	HARV				1300	1600	1				IN
			SGMR				1306.6	1307.3	3				IIIG
			SGMR				1446.0	1448.7	3				IIIG
			HARV				1446	1448	3	1446	1448	3	IIIG
	1500	1748	DURN										
	1507	1726	WEIS										
			HARV				1545	1546	2	1545	1546	2	IIIG
			HARV				1600	1700	2				I
			HARV				1600	2142	2	1600	2142	2	IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			HARV				1735	1738	3	1735	1738	3	IIIGG,V
			HARV	2111	2122	2	2111	2122	3	2111	2122	3	IIIGG
			HARV				2157		3	2157		2	IIIG
	2151	2400	MANI							2223.9	2224.0	1	III
			HARV				2223	2227	3	2223	2227	3	IIIGG
			MANI							2325.7	2325.9	1	III
			MANI							2328.9	2329.1	1	III
04	0000	0956	MANI							0013.8	0014.2	1	III
			MANI							0055.5	0055.6	1	III
			MANI							0139.4	0139.6	1	III
			MANI							0221.3	0221.6	1	III
			MANI							0332.9	0333.5	1	III
			MANI							0350.3	0353.2	1	IIIG
	0519	1450	WEIS				0520.0	1705.0	2				IN
	1507	1721	WEIS				0529.0	1709.0	3				IIIN
	0530	1449	DURN	0536.2	1757 D		0530 E	1757 D	3				ICDC
	1505	1757	DURN	0715.6	0716.5	2							IIIGG
			MANI							0735.4	0735.5	1	III
			DURN				0807.2	0926	3				IV, P
			DURN	0812.8	0814.3		0812.8	0814.9	2				III
			DURN				0815.9	0817.5	3				II
			WEIS				0816.0	0850.0	3				II, HARM.
			WEIS				0818.0	0843.0	3				IV
			MANI							0818.7	0821.4	1	IIIG
			MANI							0827.0	0834.7	1	IIIG
	1030	2000	SGMR				1030.0E	2000.0D	2				CONT
			DURN				1135.5	1135.7	2				IIIG
			SGMR				1256.8	1258.3	3				V
	1300	2245	HARV							1300	2245	1	I
			HARV				1334	1515	1	1432	1515		IIIN
			HARV				1413		2				IIIG
			DURN				1435.5	1447					IV
			HARV				1515	1559	2	1515	1559	2	IIIN
			HARV				1559	1629	3	1559	1629	3	IIIS
			HARV				1630	2202	2	1630	2202	2	IIIN
			HARV				2054	2102	3	2054	2102	3	IIIG
			HARV	2116	2117	1	2116	2117	3	2116	2117	3	IIIG
	2145	2400	MANI										
05	0000	0955	MANI							0124.4	0124.6	1	III
			MANI							0400.2	0400.7	1	III
			MANI							0416.1	0421.7	1	IIIG
			MANI							0430.9	0431.6	1	III
	0520	1104	WEIS				0522.0	1710.0	2				IIIS
	1110	1722	WEIS				0522.0	1714.0	2				IDC,CONT
	0540	1506	DURN	0540 E			0540 E		3				IC,DC
	1030	2000	SGMR				1200.0	2000.0D	2				CONT
	1300	2245	HARV				1300	2245	2				I
			HARV				1447	2245	2	1447	2245	2	IIIN
			WEIS				1556.8	1557.7	3				IIIGG
	1520	1701	DURN	1556.9	1557.6		1556.9	1557.6	3				IIIG
			SGMR				1557.0	1557.9	3				V
			HARV	1557	1558	3	1557	1558	3	1557	1558	3	IIIG,V
			HARV				1745	1747	3	1745	1747	3	IIIG
			HARV	1751		2	1751		3	1751		3	IIIG,V
			SGMR				1926.4	1927.3	3				V
			HARV				1926	1927	3	1926	1927	3	IIIG,V
			HARV				1943		3	1943		3	IIIG
			HARV	1951		1	1951	1952	2	1951	1952	2	IIIG
			HARV	2126		2	2126		2				IIIB
	2148	2400	MANI							2234.0	2242.9	1	IIIG
06			WEIS				0525.0	1417.0	2				IN,DC
	0521	1719	WEIS				0536.0	1719.0	2				IIIN
	0000	0955	MANI							0545.3	0549.0	1	IIIG
			MANI							0554.3	0554.5	1	III
			WEIS				0649.3	0649.8	2				IIIG
			WEIS				0653.3	0653.7	2				IIIG
	0747	0843	OWIN										

SOLAR RADIO EMISSION
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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			WEIS	1038.6	1038.9	2							IIIG
	1300	2250	HARV				1300	1605	1				IN
	1030	2000	SGMR				1329.8	1330.1	2				V
	1348	1530	DURN				1348 E	1530 D	3				IDC,CC
			SGMR				1402.7	2000.0D	2				CONT
			HARV				1439	1625	1	1439	1625	1	IIIN
			SGMR				1443.3	1443.7	2				V
			HARV				1605	1815	2				I
			HARV				1625	1814	2	1625	1814	2	IIIN
			HARV	1726	1727	2	1725	1753	3	1725	1753	3	IIIGG
			HARV	1759	1800	2	1758	1800	3	1758	1800	3	IIIGG
			HARV				1815	2240	2	1815	2240	2	IIIN
			HARV				1815	2250	1				IN
			HARV				1923	1930	3	1923	1930	3	IIIGG
	2145	2400	MANI										
07	0000	0940	MANI										
	0710	0915	WEIS				0721.5	1654.0	2	0549.5-	0550.5	1	III
	0932	1718	WEIS	1206.1	1206.5	2							IIIN
	1030	2000	SGMR				1206.3	1207.7	2				IIIG,RS
			WEIS				1220.9	1221.7	2				V
			SGMR				1235.1	2000.0D	2				IIIG
	1300	2245	HARV				1301	2144	2	1404	2144	2	IIIS
			WEIS				1316.7	1323.5	3				IIIN
			HARV	1321	1323	2	1321	1323	2				IIIG
			HARV				1334	1335	2				IIIG
			HARV	1438		1	1438		1				IIIG
			HARV				1529	1530	1	1529	1530	2	IIIG
			HARV				1617	1618	2	1617	1618	2	IIIG
	1611	1740	DURN				1629.7	1629.8	2				IIIG
			HARV				1649	1654	3	1649	1656	3	IIIGG
			HARV				1746		3	1746		3	IIIG,V
			HARV				1806	1810	3	1806	1809	3	IIIG
			HARV				2140	2141	2	2140	2141	3	IIIG
			HARV	2229		2	2229		2				IIIG
	2148	2400	MANI							2337.0	2354.5	2	IV
08	0000	0950	MANI							0358.9	0359.1	1	III
			MANI							0453.1	0453.3	1	III
	0526	1125	DURN	0526 E	1738 D	2	0526 E	1738 D	3				IDC,C
	0524	1716	WEIS				0528.0	1649.0	1				IN,DC
			WEIS				0640.0	1616.0	2				III
			DURN				0830.5	0830.6	2				III
			DURN				0901.7	0902.0	2				IIIGG
	1030	2000	SGMR				1145.8	2000.0D	1				CONT
	1300	2245	HARV				1300	2235	1				IN
			HARV				1323		2				IIIB
	1249	1738	DURN	1515.7	1515.8	2	1515.7	1515.8	3				IIIG
			HARV				1617		1				IIIG
			HARV				1737	1908	1	1737	1908	1	IIIN,H
			HARV				1836	1847	3	1836	1847	3	IIIGG
			SGMR				1838.0	1843.0	2				IIIG
	2145	2400	MANI										
09	0000	0950	MANI										
	0525	0621	WEIS										
	0526	1523	DURN				0526 E	1415	1				I,C,DC,N
	0649	1714	WEIS				0755.0	1509.0	1				IIIN
	1030	2000	SGMR										
			WEIS				1243.7	1243.9	1				IIIB
	1300	2245	HARV				1318	1330	1				IIIG,W
			WEIS				1536.4	1536.6	1				IIIG
	1539	1746	DURN										
	2145	2400	MANI										
10	0000	0949	MANI										
	0525	1246	DURN										
	0526	1509	WEIS				0704.7	0705.3	1				IIIG
			WEIS				0905.6	0905.7	1				IIIG
			WEIS				0930.9	0931.2	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10	1030	2000	SGMR										IIIG
			WEIS				1132.2	1132.3	2				IIIB
			WEIS				1323.5	1323.6	2				IIIG
			WEIS				1358.4	1358.5	2				
	1525	1712	WEIS										
	1300	2245	HARV				1658		1	1658		2	IIIB
			HARV				1719		1	1719		1	IIIG
	1323	1733	DURN				1729.5	1733.20	3				IIIGG
			HARV	2022		2	2022	2023	2				IIIG
	2148	2400	MANI										
11	0000	0948	MANI										
	0525	1733	DURN										
	0521	1710	WEIS				1703.6	1705.2	2				IIIG
	1300	2245	HARV				1703	1705	2	1703	1705	2	IIIGG
	1030	2000	SGMR				1705.0	1705.4	1				V
	2146	2400	MANI										
12	0000	0948	MANI										
	0525	1732	DURN										
	0529	1241	WEIS				1022.8	1022.9	1				IIIB
	1030	2000	SGMR										
			WEIS				1142.5	1142.7	2				IIIG
			WEIS				1204.2	1204.3	1				IIIG
	1300	2245	HARV										
	1246	1708	WEIS				1431.4	1431.5	1				IIIB
			WEIS				1511.0	1511.1	1				IIIB
			WEIS				1559.0	1600.4	2				IIIG
	2142	2400	MANI										
13	0000	0945	MANI										
	0525	1731	DURN										
	0529	1706	WEIS				0916.8	0917.2	1				IIIG
	1030	2000	SGMR										
	1300	2245	HARV										
	2145	2400	MANI										
14	0000	0256	MANI										
	0304	0950	MANI										
	0532	0923	WEIS										
	1030	2000	SGMR										
	1003	1704	WEIS				1342.4	1342.9	2				IIIG
	0526	1728	DURN	1342.4	1342.6	1	1342.4	1349.3	2				IIIG
	1300	2245	HARV	1342	1343	2	1342	1343	1				IIIG
			WEIS				1346.9	1347.0	1				IIIG
			HARV				1349		1				IIIG
			WEIS				1359.1	1359.9	2				IIIG
			WEIS				1408.3	1409.1	1				IIIG
			WEIS				1447.8	1447.9	1				IIIB
			HARV				1449		1				IIIG,W
			HARV				1909		1				IIIB,W
	2145	2400	MANI										
15	0000	0947	MANI										
	0534	1702	WEIS				0550.7	0551.2	2				IIIG
			WEIS				0555.4	0557.0	2				IIIG
	0526	0607	DURN				0555.5	0556.7	2				IIIGG
	0645	1726	DURN										
	1030	2000	SGMR										
	1300	2245	HARV	2051		1	2051		1				IIIB,W
	2146	2400	MANI										
16	0000	0945	MANI										
	0535	0707	WEIS										
	0527	1726	DURN	1000.3	1000.4	3							IIIGG
	0748	1700	WEIS				1012.7	1012.8	1				IIIG
			WEIS				1015.6	1016.3	2				IIIG,U
			WEIS				1215.9	1216.9	2				IIIG
	1030	2000	SGMR				1216.2	1235.4	1				IIIG
			WEIS				1227.9	1229.2	2				IIIG

SOLAR RADIO EMISSION
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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
16			DURN				1227.9	1229.1	3				IIIGG
			WEIS				1234.0	1234.2	1				IIIB
			WEIS				1308.4	1308.8	2				IIIG
			DURN				1308.5	1312.8	2				IIIGG
			WEIS				1310.4	1310.5	2				IIIG
			WEIS				1312.6	1312.8	2				IIIB
	1300	2240	HARV				1650		1	1650		1	IIIB,W
			HARV				1738		1	1738		1	IIIB,W
			SGMR				1858.2	1858.3	2				III
			HARV				1858	1900	2	1858	1900	2	IIIG
	2146	2400	MANI										
17	0000	0125	MANI										
	0136	0202	MANI										
	0250	0945	MANI										
	0529	1725	DURN										
	0537	1620	WEIS				0641.6	0642.3	1				IIIGG
			WEIS				0653.4	0654.3	2				IIIGG
			WEIS				0708.5	0708.8	2				IIIGG
			WEIS				0727.2	0727.6	2				IIIB
			WEIS				0732.5	0733.4	2				IIIG
			WEIS				0734.5	0739.2	2				IIIG
			WEIS				1029.0	1030.8	1				IIIG
	1030	2000	SGMR										
			WEIS				1229.4	1230.0	2				IIIG
			WEIS				1254.0	1254.2	2				UHARM.
	1428	2240	HARV										
			WEIS				1619.2	1619.4	2				IIIB
	1654	1659	WEIS										
	2143	2400	MANI										
18	0000	0942	MANI							0157.8	0158.2	1	III
	0530	1724	DURN				0530 E	1130	1				I,H,N
			DURN	0702.2	0703.5	2							DCIM
	0538	1659	WEIS				0702.3	0702.8	2				IIIG
			DURN	0702.4	0702.8	3	0702.4	0702.8	3				IIIG
			WEIS				0716.2	0716.4	2				IIIG
			WEIS				0836.4	0836.7	1				IIIB
			WEIS				0853.9	0854.1	1				IIIB
			DURN	0926.0	0927.3	3	0926.0	0927.3	3				IIIGG
			DURN	0926.3	0934.0	1						IV	
			WEIS				0927.2	0930.2	2				IIIG,RS
			DURN				0928.7	0929.5	3			II,	A
			WEIS				0931.9	0932.5	1				IIIG
			DURN	1045.5	1046.0	2	1045.5	1046.0	2				IIIG
			DURN	1057.6	1057.8	2	1057.6	1057.8	1				IIIG
			WEIS				1126.6	1127.0	1				IIIG
			WEIS				1211.8	1212.2	2				IIIU
			WEIS				1223.1	1223.3	1				IIIG
			WEIS				1240.1	1240.6	1				IIIG
			WEIS				1243.7	1243.8	1				IIIB
			WEIS				1311.2	1312.7	1				IIIG
	1030	2000	SGMR				1332.3	1333.5	3				V
	1328	2245	HARV				1332	1333	2				U
			WEIS				1334.5	1336.3	3				IIIG
			SGMR				1525.2	1529.0	3				IIIG
			HARV				1525	1528	2	1525	1528	2	IIIGG,V
			WEIS				1527.7	1531.7	3				IIIG
			WEIS				1535.0	1535.3	1				IIIG
			HARV				1831		2				U
			SGMR				1845.8	1849.9	3				IIIG
			HARV				1846	1852	3	1856	1852	3	IIIGG,V,U
	2150	2400	MANI										
19	0000	0945	MANI										
	0531	1459	DURN				0531 E	1459 D	2				I,H,N
	0533	1503	WEIS				1105.9	1107.1	3				IIIG
	1031	2000	SGMR				1106.3	1107.0	2				V
			WEIS				1313.8	1313.9	1				IIIB
	1510	1654	WEIS										

SOLAR RADIO EMISSION
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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19	1328	2245	HARV				1620	1640	1				IN,W
	2143	2400	MANI										
20	0000	0943	MANI										
	0644	1720	DURN										
	0540	1652	WEIS				0949.3	0949.5	1				IIIB
	1032	2000	SGMR										
			WEIS				1650.8	1651.4	1				IIIG
	1328	2245	HARV				1651		1				U
			HARV				2000		2	2000		2	IIIG
			HARV				2016	2017	3	2016	2017	3	IIIG
			HARV				2105		2	2105		2	IIIG
			HARV				2124	2127	2	2124	2127	2	IIIG
	2144	2400	MANI										
21	0000	0940	MANI							0331.4	0331.6	1	III
			MANI							0413.5	0413.81	1	III
	0533	1727	DURN				0533 E	1727 D	3				I,DC
	0542	1231	WEIS				0543.0	1632.0	2				IS,CONT
			WEIS				0728.0	1526.0	2				IIIS
	1033	2000	SGMR				1033.0E	2000.0D	2				CONT
	1317	2245	HARV				1317	1820	1				I
			SGMR				1328.1	1329.9	2				IIIG
			HARV				1328	1329	2	1328	1329		IIIG,2
	1402	1648	WEIS				1438.1	1442.3	2				IIIGG
			DURN				1438.2	1441.9	3				IIIGG
			HARV				1438	1442	3	1438	1440	2	IIIGG
			WEIS				1554.6	1558.7	3				IIIG
			DURN	1554.7	1601.5	3	1554.7	1558.1	3				IIIGG
			HARV	1555	1558	3	1555	1558	3	1555	1558	3	IIIGG,V,U
			HARV	1601	1602	3	1602	1607	3	1602	1607	3	IIIGG
			WEIS				1602.6	1603.2	2				IIIG
			WEIS				1604.7	1607.5	1				IIIG
			HARV	1710	1722	2							IIIN
			HARV				1734	1739	3	1734	1739	3	IIIG,V
			HARV				1810		1				IIIG,W
			HARV				1820	2245	1				IN,W
			HARV				1919		2	1919		2	IIIG
	2144	2400	MANI										
22	0000	0940	MANI										
	0526	1100	DURN				0526 E	1100 D	1				IW
	0542	1647	WEIS				0605.0	1519.0	1				IN
			WEIS				0620.0	1633.5	2				IIIN
	0952	1200	DWIN										
	1034	2000	SGMR				1058.1	1058.3	1				III
			WEIS				1130.4	1139.3	3				IIIGG
			SGMR				1131.7	1138.4	3				V
			SGMR				1147.6	2000.0D	2				IIIS
			WEIS				1254.8	1301.7	3				IIIGG
			SGMR				1255.0	1302.4	3				V
			WEIS				1312.7	1312.9	2				IIIG
	1317	2245	HARV				1339	1341	1				IIIB
			HARV				1355		1	1355		1	IIIG
			WEIS				1407.6	1409.4	3				IIIGG
			HARV				1408	1411	2	1408	1411	2	IIIG
			WEIS				1427.0	1435.0	1				II
			SGMR				1427.0	1438.1	2				II
	1430	1700	DWIN	1430	1500	1							IV
			HARV				1434	1436	2	1434	1436	2	IIIG
			SGMR				1438.1	2000.0D	1				CONT
			WEIS				1534.0	1536.5	3				IIIGG
			SGMR				1534.1	1536.6	3				V
			HARV				1534	1538	3	1534	1538	3	IIIGG
			HARV				1544	1653	3	1544	1653	3	IIIN
			WEIS				1616.0	1619.8	2				IIIGG
			HARV				1718	1727	3	1718	1727	3	IIIG,V
			HARV				1743	1753	2	1743	1753	2	IIIN
			SGMR				1757.7	1803.7	3				V
			HARV				1757	1818	3	1757	1818	3	IIIGG

SOLAR RADIO EMISSION
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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			SGMR				1903.1	1903.3	3				III
			HARV				1903	1904	3	1903	1904	3	IIIG
			HARV				1917	2015	2	1917	2015	2	IIIN
	2145	2400	MANI										
23	0000	0938	MANI										
	0630	0730	DURN										
	0536	0620	DURN				0720.5	0720.7	3				III
	0544	1100	WEIS				0720.5	0720.7	2				IIIG
			WEIS				0725.0	1644.5	1				IN
			DWIN	0945.5	1238	3						IV	
	0905	1706	DWIN	0947.5	0951.5	2							IIIGG
			WEIS				0954.0	1100.0	2			IV	
			WEIS				0958.0	1028.0	2			II	
			WEIS				1001.0	1024.0	2				IIIGG
			WEIS				1035.0	1610.0	2				CONT
	1035	2000	SGMR				1035.0E	1324.0	2			IV	
	1317	2245	HARV				1320	1710	1				I
			SGMR				1324.0	2000.0D	1				CONT
	1331	1645	WEIS				1621.8	1623.0	2				IIIG
			HARV				1622	1623	2	1622	1623	2	IIIG
			HARV				1937	1939	2	1937	1939	2	IIIG
	2151	2400	MANI										
24	0000	0936	MANI										
	0545	1643	WEIS				0547.6	1543.3	2				IIIN
	0654	1501	DURN										
	0813	1630	DWIN										
			WEIS				1604.0	1604.6	3				IIIG
	1036	2000	SGMR				1604.0	1604.4	2				V
	1317	2340	HARV				1604		3	1604		3	IIIG
			SGMR				1723.0	1726.0	2				IIIG
			HARV				1724	1725	1	1724	1725	2	IIIGG
			HARV				1726	1740	3	1735	1740	3	II
			SGMR				1728.0	1737.0	2			II	
			SGMR				1735.8	1740.5	2			IV	
			SGMR				1924.7	1925.1	2				V
			HARV				1925		3	1925		3	IIIG
			HARV				2025	2030	1	2025	2030	1	IIIN
	2146	2400	MANI										
25	0000	0935	MANI										
	0546	1150	WEIS				0610.5	0726.3	1				IIIN
	0741	1207	DWIN										
	1200	1725	DURN										
	1208	1641	WEIS										
	1317	1715	HARV										
	1037	2000	SGMR				1428.5	1428.7	2				V
	1830	2220	HARV										
	2148	2400	MANI										
26	0000	0947	MANI										
	0601	1728	DURN				0601 E	1630	1				I
			DURN				0604.6	0604.9	1				III
	0548	1638	WEIS				0604.6	0604.8	1				IIIG
			WEIS				0630.5	0632.0	2				IIIG
			DURN				0700.1	0700.3	1				III
			WEIS				0717.9	0720.5	2				IIIG
			WEIS				0740.6	0740.8	2				IIIG
			WEIS				0744.3	0744.4	1				IIIG
			WEIS				0756.3	0756.4	1				IIIG
			WEIS				0902.8	0904.1	1				IIIG
			WEIS				0929.0	0931.7	1				IIIG
			WEIS				0949.8	0951.9	1				IIIG
			WEIS				0954.3	0954.5	1				IIIG
			WEIS				0958.3	0959.2	2				IIIG
			DURN				1014.7	1015.0	2				IIIG
			WEIS				1041.3	1041.7	2				IIIG
			WEIS				1101.0	1101.5	1				IIIG
			WEIS				1114.5	1114.6	1				IIIG

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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			WEIS				1122.4	1122.8	3				IIIG
	1039	2000	SGMR				1122.8	1123.0	1				V
			WEIS				1244.4	1244.6	1				IIIG
			DURN	1307.9	1309.4	3							IIIGG
			WEIS				1311.8	1212.0	1				IIIB
			SGMR				1311.9	1312.0	1				III
			DURN				1312.3	1318.9	2				IIIGG
			WEIS				1338.8	1348.5	3				IIIG
			SGMR				1339.0	1342.2	2				IIIG
			HARV				1339	1348	1				IIIN
	1320	2340	HARV				1343	2340	1				IN
			DURN				1423.1	1423.3	1				III
			WEIS				1441.0	1441.8	1				IIIG
			WEIS				1447.4	1447.7	1				IIIG
			WEIS				1449.6	1449.8	1				IIIG
			DURN				1455.7	1457.0	1				IIIGG
			WEIS				1517.0	1519.3	2				IIIG
			HARV				1518	1523	2				IIIG
			WEIS				1522.4	1523.9	2				IIIG
			HARV				1847		1	1847		1	IIIG
			HARV	2039	2040	1	2038	2041	2				IIIG
	2146	2400	MANI										
27	0000	0150	MANI										
			WEIS				0552.0	1129.3	2				IN,DC
	0604	1448	DURN				0632	1628	3				IDC,C
	0549	1102	WEIS				0724.6	0742.0	3				II, HARM.
	0215	0933	MANI							0725.9	0741.8	1	IV
			WEIS				0800.0	1050.0	2				CONT
			WEIS				0803.0	1048.0	2				IIIN
			DURN	0803.3	0803.5	2	0803.3	0807.3	2				IIIGG
	0750	1706	DWIN	0825	0840	1							IV
	1121	1637	WEIS				1206.2	1206.3	2				DP
			WEIS				1307.7	1307.8	2				IIIB
			WEIS				1313.9	1314.0	1				IIIB
			DURN	1410.3	1448 D	3	1409.0	1448 D	3				IV, P,F
			WEIS				1411.9	1413.5	2				IIIG
			WEIS				1421.5	1422.3	3				IIIG
	1040	2000	SGMR				1421.7	1422.0	2				V
	1316	2340	HARV				1421	1422	2				IIIG
			WEIS				1435.0	1555.0	3				IV
			SGMR				1435.2	1446.3	2				IIIG
			DWIN	1435	1516	3							IV
			WEIS				1437.3	1502.0	2				IIIG
			HARV				1437	1443	2				IIIG
			SGMR				1446.3	1453.9	3				IV
			HARV				1446	1459	3	1447	1451	3	UNCL
			SGMR				1451.6	1634.0	2				CONT
			HARV				1505	1508	1				IIIG,RS
			HARV				1505	1825	2				I
	1506	1726	DURN										
			WEIS				1559.5	1559.6	1				IIIB
			HARV				1825	1920	1				IN,W
	2146	2202	MANI										
	2231	2400	MANI										
28	0000	0930	MANI							0035.0	0036.8	1	III
			MANI							0434.2	0435.1	1	III
	0551	1026	WEIS				0557.0	0932.5	1				IIIN
	0630	1654	DURN				0632.2	0633.6	2				IIIG
			WEIS				0632.3	0634.2	3				IIIG
	0652	1219	DWIN	0813.4	0813.5	2							IIIG
			WEIS				0929.7	0930.2	3				IIIG
			WEIS				0957.5	0959.2	3				IIIG,RS
			DURN	0957.5	0958.1	3	0957.5	0959.1	3				IIIGG
			DWIN	0959.2		1							IIIB
			DURN				1128.7	1128.8	2				III
	1034	1634	WEIS				1128.7	1128.9	2				IIIG
			WEIS				1356.7	1403.5	3				IIIG
	1316	1520	HARV				1358	1403	2				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
28	1041	2000	SGMR				1359.0	1402.8	2				V
			DURN				1400.2	1401.5	2				IIIGG
	2145	2400	MANI										
	1528	2245	HARV				2203		1				IIIB
29	0000	0930	MANI										
	0553	0846	WEIS				0821.4	0822.5	3				IIIG
			WEIS				0835.3	0835.4	1				IIIG
			WEIS				0841.9	0842.2	2				IIIG
			WEIS				0844.6	0845.3	3				IIIG
	1042	2000	SGMR										
	1015	1243	WEIS				1045.0	1120.0	2				II
			WEIS				1102.3	1102.4	1				IIIB
	1330	1348	DURN										
	1632	1716	DURN										
	1316	2240	HARV				1644		2	1644		2	IIIG
	2146	2400	MANI										
30	0000	0936	MANI										
	0630	1713	DURN										
	0721	1631	WEIS				0724.0	0824.0	1				IIIN
	1043	2000	SGMR										
			WEIS				1046.5	1046.8	1				IIIG
	2145	2400	MANI										
	1316	2250	HARV				2202		2	2202		2	IIIG

The symbols used in connection with the spectral type in describing the important bursts are as follows:

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

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

SELECTED SOLAR EVENTS

SEPTEMBER 1978

Culgoora

UT Date 197.§ September	HELIOGRAPH EVENT Start (UT)	End (UT)	Freq. (MHz)	Positions Central Dist. ($R_\odot$)	Positions Position Angle (Deg.)	Polarization	Intensity (1-3)	Spectral Type	REMARKS
1	0100.5	0102	43.25)	.7	40)		2)		
			80)	.3	50)	-	1)	IIIG,U	*
			160)	.2	60)		3)		
	0232	0233	43.25)	1.3	90)	-	2)	IIIG	*Type III activity from this region also on 2nd.
			80)	.9	)		)		
1/2	2339	0500	80)	.3	90)	-	1	IS	Complex source. Type I activity persisted until 8th, becoming LH on 3rd.
			160	.2	)				
	2339	0500	43.25)	.5	60)		2)		
			80)	.3	90)	-	2)	IIIS	
			160)	.2	90)		1)		
2/3	2330	0318	43.25)		240)		2)		Complex source continued until 4th.
			80)	.5	240)	R	1)	IS	
			160)		230)		1)		
	2350	0115	43.25)	1.2	230)		2)		The type IV moves from position A to B at times indicated, then fades. Complex source
			(A) 80)	1.2	210)	R	2)	IVM	
			160)	1.0	220)		1)		
			43.25)	2.0	215)	R	2)		
			(B) 80)	1.8	205)		2)		
	0021	0425	160)	1.0	170	L	1	IS	Type I activity persisted until 9th becoming RH on 5th.
	0021	0425	43.25)	1.2	230)		2)		
			80)	1.2	210)	R	1)	IS	
			160)	1.0	220)		1)		
4	0221	0222	43.25)	.8	330)				
			80)	.5	330)	-	3	IIIG,V	*
			160)	0	0)				
5	0414	0417	43.25)	.5	320)				
			)	1.0	345)	-	3	IIIG,V	*Complex source
			80)	.5	360)				
			160)	.3	360)				

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

UT Date 197.§ September	HELIOGRAPH EVENT Start (UT)	End (UT)	Freq. (MHz)	Positions Central Dist. ($R_\odot$)	Positions Position Angle (Deg.)	Polarization	Intensity (1-3)	Spectral Type	REMARKS
6	0238	0242	43.25)	.5	)				
			)	1.0	320)	-	3	IIIGG	*
			80)	.5	)				
			160)	.5	)				
7	0002	0003	43.25)	1.3	295)		2)	IIIG	*
			80)	1.0	290)		3)		
	2329	2357	43.25	1.0	0	-		II)	Complex source, Type II source moved outwards from 1 to 2 RØ.
7/8	2357	0043	43.25)				)	)	
			80)	.6	240	R	3)	IV)	
			160)				)		
	0049	0051	43.25)		)		)		
			80)	.7	85)	-	2)	IIIG	*
			160)		)		)		
9	0451	0452	43.25)	1.3	235)	-	3)	IIIG,V	*
			80)	1.2	)		1)		
	2310	2311	80)	.9	260	-	2)	IIIG	
			160)				1)		
	2356	2357	43.25)	1.1	310	-	2)	IIIG	
			80)				)		
11/12	2300	0500	80)	1.0	310	R	1)	IS	Type I activity persisted until 13th.
			160)	.			)		
12	2249	2351	43.25)				2)		
			80)	.7	170	-	2)	IIIG	
			160)				1)		
17	0139	0141	80)	1.1	150		2)	IIIG	
			160)				3)		
	2332	2333	80)	.8	160	-	3)	IIIG	
			160)				2)		
18	0157	0158	43.25)	1.5	)		)		
			80)	1.3	85)	-	3)	IIIG,V	*
			160)	1.1	)		)		
	2337	2338	43.25)	1.3	)		)		
			80)	1.2	0)	-	3)	IIIG	*
			160)	1.1	)		)		

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

SELECTED SOLAR EVENTS

SEPTEMBER 1978

Culgoora

UT Date 197.8 September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. (R_o)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
19	0140	0142	43.25)	1.2	)		3)	.	
			80)	1.2	310)		2)	IIIGG,U	*
			160)	1.1			3)		
19/20	2250	0500	80)	.9	85)	L	1)	IS	Type I activity persisted until 23rd.
			160)				)		
	2250	0500	80)	.9	115	L	1)	IS	Type I activity persisted until 21st.
			160)						
21	0331	0332	43.25)	1.3	0)	-	3)	IIIG,V	*
			80)	1.2	)		)		
	0411	0515	43.25)	.9	65)		)	II)	Complex source structure.
			80)	.9	65)	ℓ	3)	IV)	
			160)	.9	90)		)	)	
22/23	2300	0500	43.25)	.5	260)		)		Type I activity persisted until 24th.
			80)		)	R	1)	IS	
	0200	0340	43.25)	.5	45)		)		
			80)	.3	35)	-	2)	IIIS	
			160)	.2	35)		)		
23/24	2300	0500	80)	1.0	)	R	)		
			160)	.9	340)	R	1)	IS	
			)	1.1	)	unpol	)		
24/25	2245	0343	43.25)	1.5	)		2		Type II observed at 2122 before start of heliograph. Type IV moved outwards from position given.
			80)	1.3	235)	-	2	IV M	
			160)	1.2	)		1		
25	0120	0512	80)	.5	150)	L	2)	IS	
			160)	.7	)		1)		
	0147	0226	160	.9	110	L	1	IS	

Days without Heliograph observations: Nil

* Other type III's observed from same position.

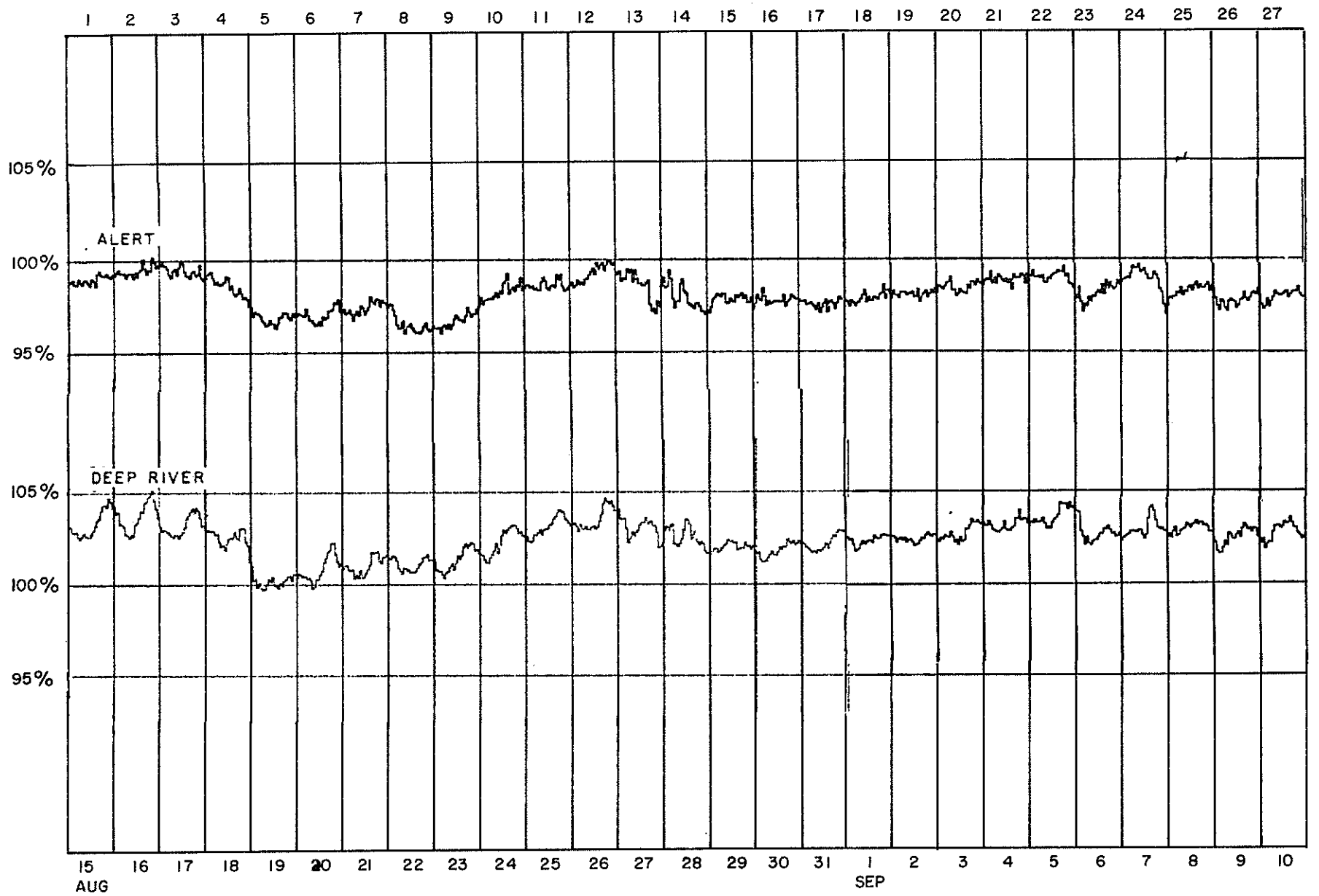
UT Date 1978. September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. (R_o)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
25	0351	0352	43.25	.3	150)	-	2	IIIG	
25/26	2300	0500	80)	.8	0	L	1)	IS	Type I activity persisted until 30th.
			160)				)		
	0057	0058	80)	1.0	60	-	3)	IIIG	
			160)				2)		
	0341	0342	160	.9	115	-	3	IIIGG	
28	0434	0437	43.25)	.9	)				
			80)	.4	350)	-	3	IIIGG,V	*
			160)	.3	)				
29	0149	0150	43.25)		80)		3)		
			80)	1.0	85)	-	2)	IIIG	*
			160)		90)		1)		
	2339	2340	80	1.0	150	-	2	IIIG,W	

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

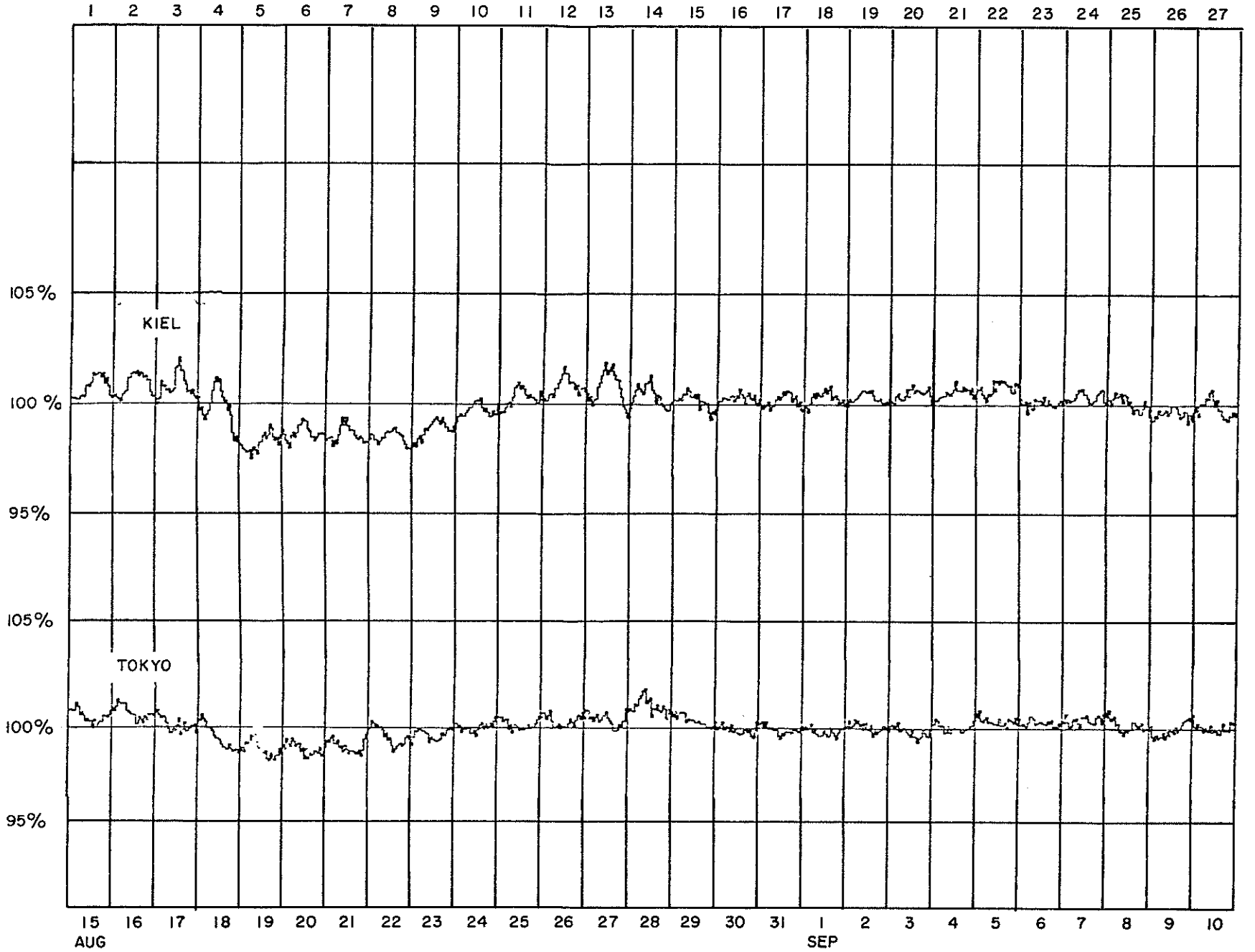
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1983 (August-September 1978)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1983 (August - September 1978)



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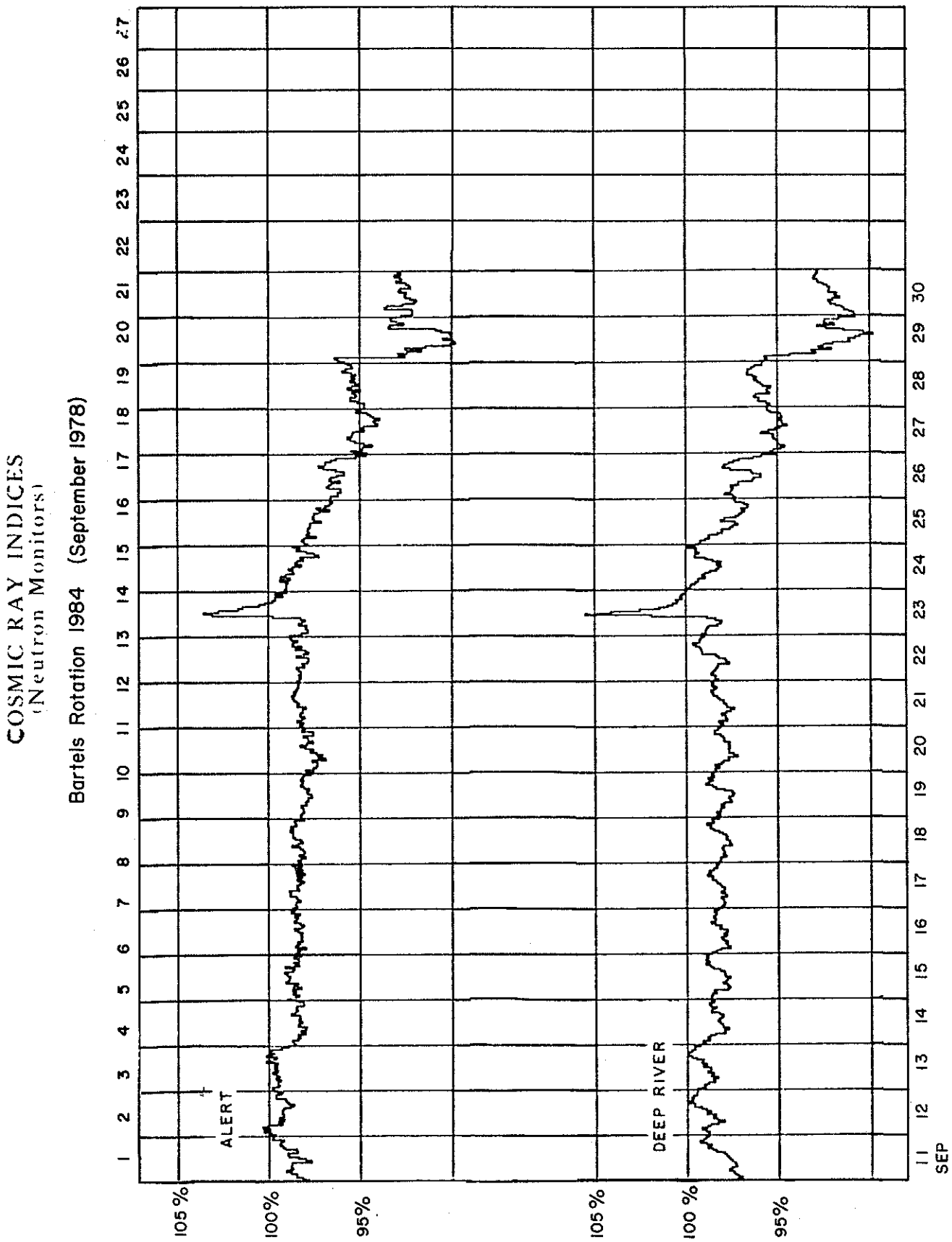
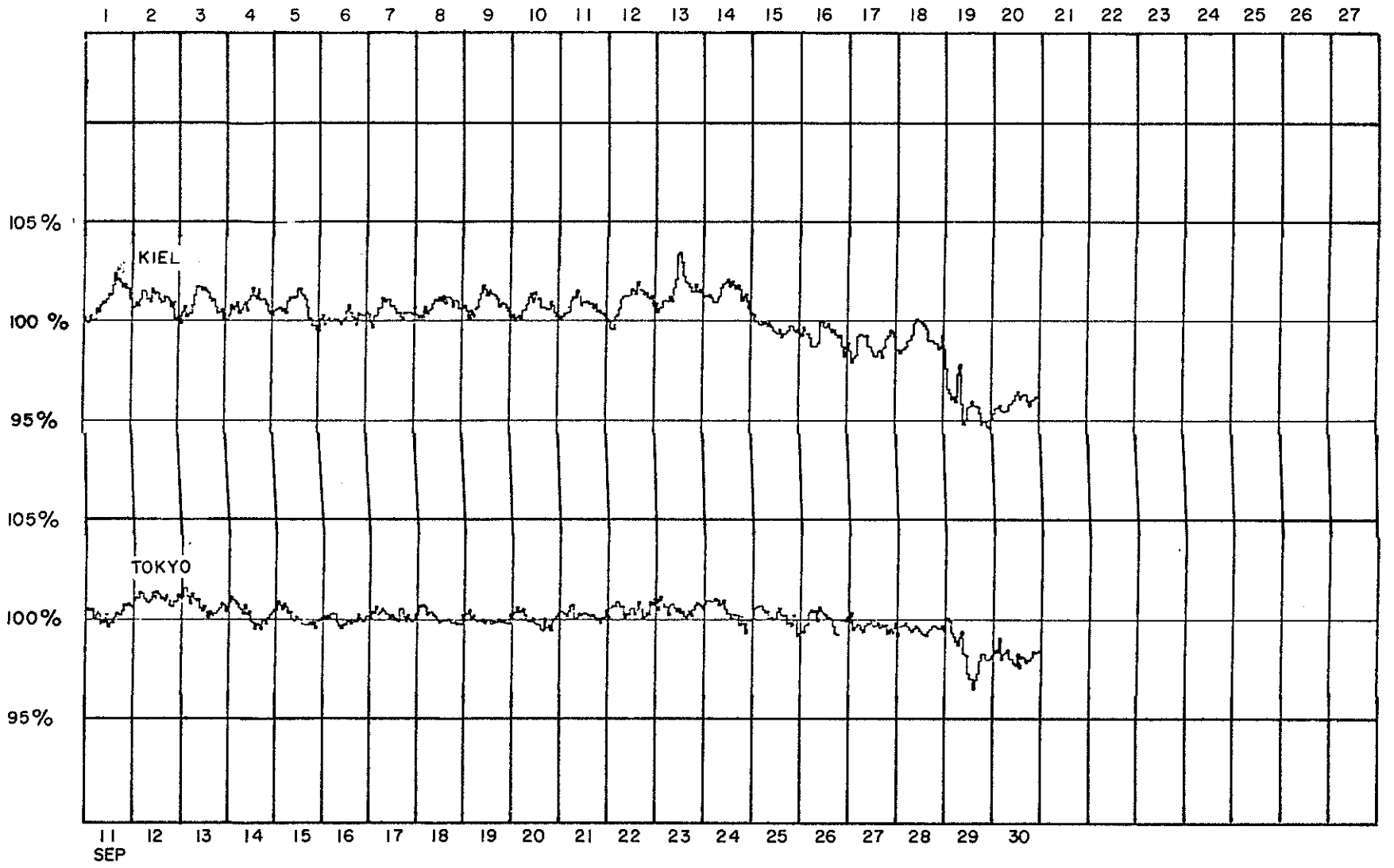
Sep 78


COSMIC RAY INDICES
(Neutron Monitors)
Bartels Rotation 1984 (September 1978)
ALERT
DEEP RIVER
105%
100%
95%
105%
100%
95%
SEP

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1984 (September 1978)



COSMIC RAY INDICES
(Neutron Monitors)

Sept. 1978	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1	Data not available at time of publication	7338.8	6899.5	Data not available at time of publication	Data not available at time of publication	6260.6	Data not available at time of publication	3579.1	Data not available at time of publication
2		7355.8	6904.4			6263.0		3588.5	
3		7382.6	6923.5			6274.3		3579.6	
4		7412.8	6953.4			6281.5		3588.8	
5		7423.4	6983.0			6296.6		3601.5	
6		7360.4	6923.7			6244.2		3597.4	
7		7416.0	6937.4			6265.9		3602.8	
8		7370.8	6938.0			6244.3		3593.9	
9		7334.2	6907.0			6209.0		3583.9	
10		7348.1	6924.2			6228.6		3588.8	
11		7400.2	6943.7			6285.3		3590.3	
12		7447.2	7014.7			6280.6		3617.3	
13		7462.0	7018.6			6272.0		3606.0	
14		7369.0	6970.6			6267.8		3589.3	
15		7391.6	6964.4			6261.1		3583.8	
16		7370.0	6953.4			6226.3		3579.8	
17		7375.9	6957.5			6248.2		3588.4	
18		7373.0	6949.5			6265.8		3584.5	
19		7345.0	6952.0			6274.8		3578.9	
20		7318.4	6937.8			6257.7		3579.8	
21		7369.6	6949.3			6260.7		3588.8	
22		7365.0	6986.0			6276.8		3598.5	
23		7462.2	7091.5			6316.6		3600.0	
24		7387.5	7015.5			6304.1		3594.2	
25		7306.5	6920.0			6198.8		3585.5	
26		7226.1	6871.0			6171.9		3579.4(23)	
27		7119.1	6745.6			6141.6		3568.6	
28		7155.2	6806.7			6163.5		3562.8	
29		6932.3	6561.7			5964.3		3520.3	
30		6962.6	6547.1			5961.2		3515.1	
MEAN		7329.4	6915.0			6232.2		3583.8	

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Notes: Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100. Deep River Scaling Factor = 300. Tokyo Scaling Factor = 256.

GEOMAGNETIC ACTIVITY INDICES

SEPTEMBER 1978

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1		3+	3	5	3+	4-	3	3-	3+	27+	3	3-	4	3	3	3-	2+	3+	21	31	32	37	26		1.1
2		3-	2+	5-	3	4	3-	4	3	26+	3-	2+	4+	3	3	2+	4-	3	20	34	33	28	39		1.0
3		2+	3-	3-	3-	3	3-	2+	2	20+	2	2+	2+	2+	3-	3-	2	2	11	24	17	24	18		0.6
4		2+	2	3-	2	2	2-	2+	2-	17-	2	2-	3-	2	2-	2-	2	2-	8	18	15	20	14		0.4
5	Q9A	1	1+	1+	2-	1	1+	3-	3	13+	1	1	1	1+	1	1	3-	3-	7	13	12	9	16	K	0.4
6		3+	4-	4+	4-	2+	1+	1	0+	20	3	3	4	4-	3-	1+	1	1-	14	21	36	44	13		0.8
7	Q7K	0	2-	1-	2-	1+	1+	3-	3-	12	0+	1+	1-	2-	1	1+	2	3-	6	12	11	8	16	C	0.3
8		5+	6-	4	3-	1+	1+	2+	2	25-	4+	4+	4-	3-	1+	1+	2-	2+	24	28	18	34	13		1.1
9		3+	4-	4	5	5-	5-	4-	4+	33+	3+	4-	3+	5-	4+	4	4-	4-	31	45	69	58	57		1.3
10		4	2-	1	3	4-	2	2-	2	19	4-	2-	1+	3-	3	2	1+	2-	12	22	20	22	21		0.7
11		2	0+	0+	2-	4	4+	3-	2+	18-	2-	1-	0+	2-	4	4-	3-	3-	12	20	23	10	34		0.7
12		3-	3-	3+	2+	4-	2	2+	3	22	2	2+	3	2+	4	3-	3	3	13	20	25	20	26		0.7
13	Q8	2+	1	2+	2+	1+	2-	2-	1	14-	2+	1	2+	2+	1	2-	1+	1+	6	13	13	16	11	C	0.3
14	Q4K	3	2-	0+	1-	1-	1	0+	1-	8+	3-	1+	1-	0+	1-	1-	0+	1-	5	7	8	11	5	CC	0.2
15	Q3	0+	0	1-	1	1-	0+	0+	2	5+	0+	0	0+	1	1-	0+	0	2-	3	4	7	5	5	CC	0.1
16	Q6	2-	3-	2-	0+	2-	1+	1+	2	13-	1+	2+	2-	0	1	1	1+	2+	6	13	10	11	13	CK	0.3
17	Q0A	2-	3	3+	2-	1+	1	1-	2-	14+	1+	3-	3	2-	1	1-	1-	2-	8	13	13	19	8	KK	0.4
18	Q2	0+	0+	0+	1-	1	0+	1+	0+	5-	0	1-	0+	0+	1	0+	1-	0+	3	4	5	4	5	CC	0.0
19	Q1	0+	0+	0+	0	0+	0+	0+	0	2	0+	0	0	0	0	0+	0	0	2	3	6	4	4	CC	0.0
20	Q5K	1	0	0+	1-	1+	0+	2-	3	8+	0+	0	0	0	1+	0+	1+	3-	5	10	10	5	15	KK	0.2
21		2	4-	3	2+	1	2	1-	1-	15+	2-	3	3-	2	1	2	1-	1	9	13	20	25	9		0.5
22		2	2+	3+	2	3	3	3	2	21-	2-	2	3	2	3-	3+	3-	2	12	20	20	17	23		0.7
23		2	3-	2+	3-	3-	3-	2+	3-	20	1+	2	2	2	3	3-	3-	3-	11	23	16	14	26		0.6
24		2-	3-	2	1-	2-	3	2+	4-	18-	1+	2	2-	1-	1	3-	2+	3+	10	20	17	11	27		0.6
25	D5	3-	3	5-	5+	5	6-	4-	4	34	2+	2+	4-	5-	5-	5-	4-	4	36	50	49	41	58		1.4
26	D4	3-	5-	6	5-	4	5-	4	4	35-	2+	4	5+	4+	4-	4	4-	4-	36	36	69	59	46		1.4
27	D3	6-	5+	4-	4-	4-	5+	6-	6+	39+	5+	4	3	3+	3+	4+	5	5	51	60	66	49	77		1.6
28	D2	5	5	5+	5+	5	3+	4+	6+	40-	4	4+	4	4+	5-	3	4-	5+	50	57	59	60	57		1.6
29	D1	4+	7-	8-	8	8	7-	4-	2-	47-	3+	5+	7	7	7	6-	3+	2	109	106	120	139	88		1.9
30		1+	4	4-	2+	2-	2-	2+	2	19	1+	3+	3+	2+	1+	1+	2	2	11	19	23	26	16		0.7
																			18	25.3	28.1	26.9			0.72

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	3	3	5-	3	3+	3-	2+	3	3+	3-	4-	3	3-	2+	2+	4-
2	2+	2	5-	3	3+	3-	4-	3	3	3-	4-	3	3	2	4-	3
3	2	2+	3-	3-	3-	3-	2+	2	2+	3-	2+	2	2+	2+	2	2
4	2-	2-	3	2+	2	2	2+	2-	2+	2	2+	2-	1	1+	2	2-
5	1-	1	1+	2-	1	1+	3-	3	1	1	1	1	1+	1-	2+	3-
6	3	3	4+	4-	3-	2-	1+	1-	3+	3	4-	4-	2+	1+	1-	0+
7	0	1	1-	2	1+	2-	2+	3-	0+	1+	0+	1+	1	1+	2-	2+
8	5-	5-	4-	3-	1+	1+	2+	2+	4+	4	4-	3-	1	1	1+	2
9	3+	3+	4-	5-	4+	4	4-	3+	3+	4	3	5-	4	4	4-	4+
10	3+	2-	1+	3	3	2	2-	2-	4	2	1+	2+	3-	2-	1	1+
11	2-	1-	0	1+	4	3+	3-	3-	2-	1	1	2	4	4-	3-	3-
12	2	2	3	2+	4	3-	3	3	2+	2+	3-	3-	4-	2+	3-	3
13	2	1-	3-	3-	1	2-	1+	1	2+	1+	2	2	1-	2-	1+	1+
14	3-	1+	1-	0+	1-	1-	0+	1-	3-	2-	1	1-	0+	0+	0+	1-
15	0+	0	0+	1	1	0+	0	2-	0+	0+	0+	1	0+	0+	0	2-
16	1	2+	1+	0+	1+	1+	1	2+	2	3-	2-	0	1-	1-	0+	2
17	1+	2+	3-	2-	1	1	1-	2-	1+	3	3	2-	1	0+	1-	2-
18	0	0+	0+	1-	1	0+	1	0	0	1	0+	0+	1	0+	1-	0+
19	0	0	0+	0	0	0+	0	0	1-	0+	0	0	0+	0+	0	0
20	0+	0	0	0+	1+	0	1+	3-	0+	0	0+	0	1+	0+	1+	3-
21	2-	3-	2+	2+	1	2+	1-	1	2	3	3	2	1	2-	1-	1-
22	1+	2	3	2-	3-	3+	3-	2	2+	2	3-	2+	3-	3+	3-	2
23	1+	2	2	2	3	3-	3-	3	1+	2	2-	2-	3-	2+	2+	2+
24	1+	2	1+	1-	1+	3	2+	3	1+	2	2	1-	1	3-	2	3+
25	2+	2	4-	5-	4+	4+	4-	4	3-	3-	4-	5-	5-	5	4-	4-
26	2	4+	5+	4	3+	4+	4-	3+	3-	4-	5+	5-	4-	4	4-	4
27	5	4+	3	3+	3+	4+	5	5	5+	4-	3	4-	4-	5-	5	5+
28	4-	5-	4	4+	4	3+	4-	5	4+	4+	4	4+	5-	3	4	6-
29	3+	6-	7+	7+	7	6-	3+	1+	4-	5+	7	7	7	6-	3+	2+
30	1	3+	4-	2	1+	1+	2-	2	1+	3+	3	3-	1+	1+	2+	2

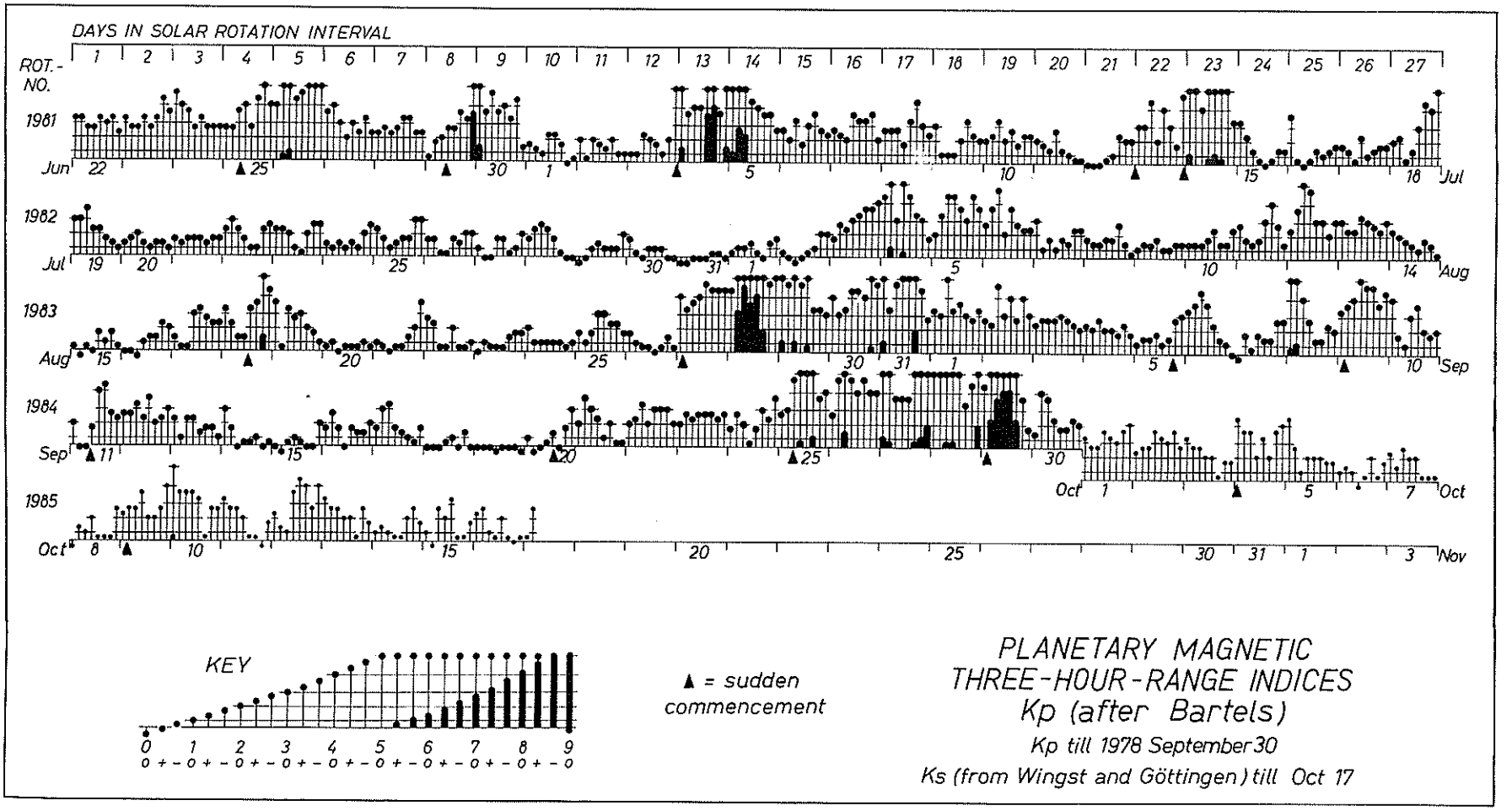
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

	1977			1978								
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4	5	6	7	15	33	12	88	9	6	4	21
2	5	6	69	8	14	27	15	94	82	5	4	20
3	10	4	9	13	14	15	41	83	31	11	16	11
4	7	8	14	89	11	3	55	96	26	80	30	8
5	8	10	18	31	17	6	21	7	38	53	22	7
6	8	7	5	34	14	7	9	5	8	13	16	14
7	3	5	3	13	7	9	5	7	11	14	7	6
8	6	3	2	19	10	20	5	16	10	14	6	24
9	2	3	3	23	16	14	6	85	4	8	5	31
10	4	9	4	21	7	12	36	10	24	10	6	12
11	12	6	38	7	5	7	64	30	17	6	11	12
12	28	18	21	4	10	3	29	18	10	4	21	13
13	14	26	16	8	8	12	24	11	7	20	13	6
14	13	42	8	3	11	10	51	9	4	48	6	5
15	19	25	5	2	48	17	19	5	6	6	3	3
16	8	14	9	14	11	24	8	7	6	6	4	6
17	12	8	12	9	10	25	7	8	9	6	9	8
18	22	6	3	12	10	24	19	5	11	18	24	3
19	28	6	3	6	12	15	38	4	17	11	11	2
20	7	4	4	3	12	9	23	8	11	5	3	5
21	5	5	6	1	12	7	9	26	33	6	6	9
22	22	3	6	3	22	13	8	24	15	8	6	12
23	6	2	4	2	6	15	22	24	18	8	4	11
24	6	2	5	6	5	6	48	26	19	6	4	10
25	4	15	5	12	12	3	17	10	24	8	9	36
26	6	19	11	12	37	49	18	7	46	5	4	36
27	62	12	6	5	42	70	16	5	15	4	29	51
28	47	5	10	9	46	17	12	7	12	6	124	50
29	9	6	8	36		14	6	8	32	4	40	109
30	9	12	5	36		16	58	18	31	3	31	11
31	6		6	23		8		12		2	45	
MEAN	13	10	10	15	16	16	23	25	20	13	17	18

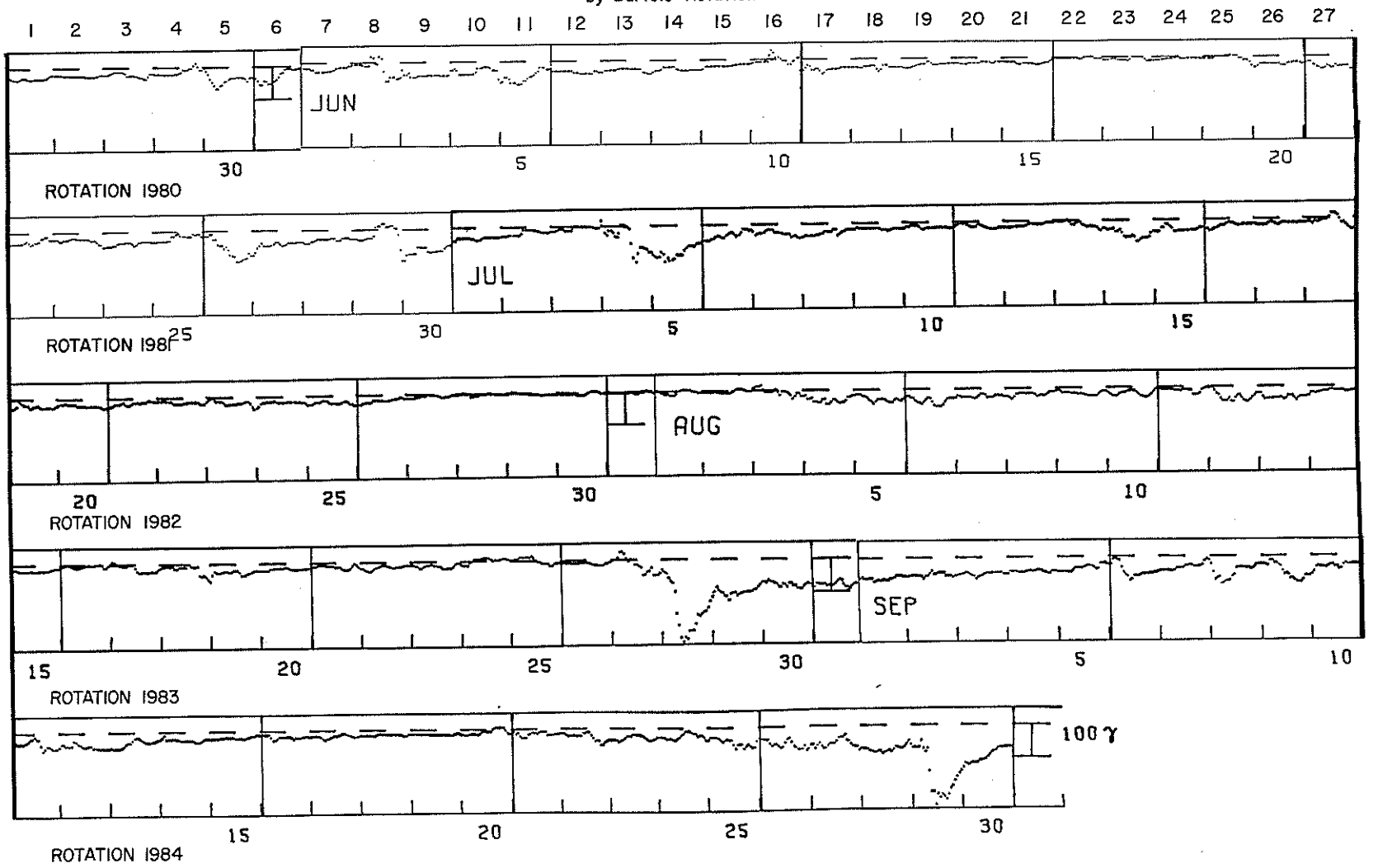
GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

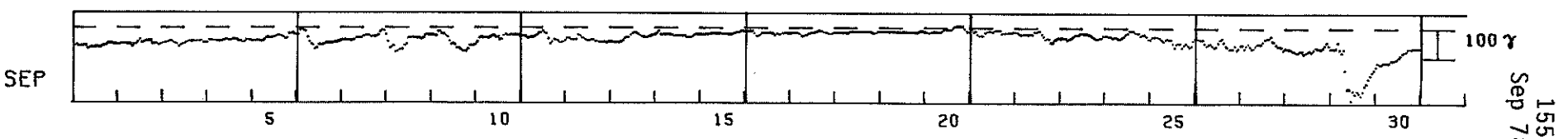
HOURLY EQUATORIAL DST VALUES (PROVISIONAL)

SEPTEMBER 1978

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-64	-58	-63	-63	-62	-60	-62	-71	-68	-65	-68	-67	-63	-67	-65	-62	-60	-58	-53	-52	-54	-56	-56	-58
2	-56	-54	-53	-53	-56	-55	-57	-63	-56	-54	-48	-41	-50	-50	-46	-44	-44	-45	-54	-54	-56	-59	-55	-55
3	-52	-50	-48	-45	-47	-52	-56	-58	-64	-59	-56	-54	-50	-46	-46	-46	-46	-46	-47	-46	-44	-51	-51	-50
4	-43	-44	-43	-45	-47	-46	-45	-44	-42	-40	-42	-44	-41	-38	-39	-41	-45	-47	-51	-48	-42	-42	-44	-46
5	-45	-45	-43	-45	-47	-46	-40	-34	-36	-34	-34	-33	-30	-27	-29	-31	-34	-38	-36	-20	-21	-17	-23	-25
6	-25	-9	-5	-11	-13	-35	-49	-56	-61	-72	-68	-58	-58	-58	-55	-51	-53	-52	-53	-50	-49	-47	-45	-43
7	-41	-42	-42	-43	-44	-45	-41	-36	-35	-35	-34	-29	-27	-26	-27	-32	-30	-30	-29	-25	-14	-9	-13	-24
8	-48	-71	-66	-62	-84	-81	-76	-73	-72	-61	-56	-36	-34	-33	-33	-37	-37	-37	-39	-36	-28	-24	-25	-26
9	-25	-28	-30	-13	-14	-22	-24	-29	-34	-48	-57	-54	-60	-69	-69	-75	-80	-80	-81	-72	-61	-61	-62	-57
10	-49	-36	-32	-36	-36	-37	-36	-32	-28	-29	-35	-33	-41	-39	-30	-24	-29	-28	-25	-26	-26	-26	-27	-31
11	-31	-31	-32	-36	-34	-34	-33	-30	-26	-19	-17	-12	-19	-22	-39	-57	-49	-41	-43	-47	-51	-51	-49	-44
12	-37	-36	-42	-41	-43	-40	-26	-30	-36	-39	-43	-45	-44	-40	-40	-47	-47	-50	-50	-50	-48	-52	-48	-48
13	-46	-51	-49	-50	-49	-47	-43	-36	-32	-33	-26	-19	-16	-18	-23	-28	-32	-33	-34	-31	-29	-27	-24	-22
14	-18	-11	-23	-23	-22	-21	-21	-24	-26	-29	-29	-27	-26	-27	-29	-29	-33	-34	-32	-29	-24	-21	-23	-24
15	-23	-23	-21	-21	-20	-19	-18	-19	-19	-19	-19	-22	-21	-21	-22	-23	-21	-18	-16	-14	-13	-11	-12	-13
16	-11	-12	-11	-11	-19	-28	-30	-24	-18	-17	-19	-18	-16	-18	-21	-26	-20	-23	-23	-18	-18	-16	-20	-19
17	-17	-17	-19	-17	-22	-28	-31	-25	-24	-20	-17	-16	-15	-13	-11	-10	-13	-17	-19	-20	-23	-21	-18	-16
18	-17	-17	-17	-16	-18	-19	-17	-13	-12	-14	-15	-14	-14	-13	-14	-15	-13	-14	-15	-18	-20	-17	-13	-13
19	-14	-14	-13	-14	-15	-15	-15	-15	-16	-15	-16	-15	-15	-15	-15	-16	-17	-17	-18	-17	-13	-12	-13	-16
20	-17	-19	-18	-15	-14	-15	-17	-16	-13	-9	-7	-7	-8	-7	-1	4	6	6	6	3	-4	-12	-16	-13
21	-9	-16	-12	-22	-29	-29	-28	-18	-14	-12	-12	-16	-11	-9	-9	-10	-19	-20	-17	-17	-15	-15	-14	-15
22	-16	-20	-24	-22	-21	-21	-24	-21	-24	-14	-14	-11	-12	-21	-30	-39	-36	-38	-49	-50	-41	-37	-34	-35
23	-34	-35	-37	-41	-37	-35	-30	-24	-23	-25	-18	-20	-21	-21	-23	-25	-29	-34	-38	-39	-35	-33	-27	-28
24	-27	-30	-31	-35	-32	-32	-37	-38	-33	-28	-21	-17	-11	-10	-12	-16	-19	-19	-26	-23	-21	-29	-38	-38
25	-32	-29	-31	-32	-35	-40	-46	-39	-36	-39	-39	-54	-64	-54	-50	-53	-66	-58	-52	-59	-64	-60	-42	-37
26	-38	-39	-40	-40	-52	-59	-54	-52	-60	-65	-62	-49	-40	-36	-47	-60	-64	-70	-70	-69	-60	-73	-67	-56
27	-57	-68	-60	-53	-62	-69	-67	-61	-54	-55	-54	-46	-37	-35	-34	-28	-45	-47	-55	-62	-62	-64	-74	-68
28	-71	-71	-72	-77	-80	-83	-81	-78	-77	-86	-82	-78	-75	-81	-73	-65	-68	-70	-71	-65	-58	-49	-59	-70
29	-67	-70	-66	-47	-72	-82	-71	-141	-203	-203	-241	-208	-218	-211	-216	-224	-210	-191	-185	-167	-157	-147	-138	-129
30	-116	-121	-120	-114	-114	-115	-114	-108	-107	-105	-103	-97	-90	-84	-80	-77	-70	-67	-67	-65	-66	-65	-65	-65



PRINCIPAL MAGNETIC STORMS

SEPTEMBER 1978

OBS. 3 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
NEW	55.1N	5	1858	SC	2	13	--	06(3,4)	5	21	172	123	06	19
HYB	07.6N	5	1858	SC	- .3	+14	- 1	06(2,3)	4	5	125	31	06	19
GUA	04.0N	5	1859	..	..	..	..	06(2)	5	--	190	30	06	18
NEW	55.1N	7	2256					08(1) 09(4)	6	32	154	232	11	03
JAI	17.3N	7	1900	..	..	..	..	--	-	6	78	37	08	12
SHL	14.6N	7	1900	..	..	..	..	--	-	5	76	27	08	12
UJJ	13.5N	7	1900	..	..	..	..	--	-	5	71	38	08	12
ABG	09.5N	7	1900	..	..	..	..	08(1,3)	5	5	56	46	08	12
HYB	07.6N	7	1200	..	..	..	..	08(1)	5	4	65	29	08	23
ANN	01.4N	7	1900	..	..	..	..	--	-	3	91	49	08	12
TRD	01.2S	7	1900	..	..	..	..	--	-	2	137	65	08	12
FRD	49.6N	8	00--	..	..	..	..	08(2)	6	27	132	54	10	18
HUA	00.6S	8	0000	..	..	..	..	09(5)	6	4	254	43	09	20
JAI	17.3N	9	0255	SC	- 1.1	22	- 5	--	-	8	87	37	10	19
SHL	14.6N	9	0255	SC	.6	26	4	--	-	7	103	37	10	19
UJJ	13.5N	9	0255	SC	--	--	--	--	-	6	107	44	10	19
ABG	09.5N	9	0255	SC	- .7	25	- 7	09(4,7)	5	6	121	59	10	19
HYB	07.6N	9	0240	SC	- .2	+19	- 2	09(1,7)	5	6	137	44	10	19
GUA	04.0N	9	0243	..	..	..	..	09(3)	5	--	160	50	09	18
ANN	01.4N	9	0255	SC	- 1.7	50	17	--	-	5	183	70	10	19
TRD	01.2S	9	0255	SC	- .3	46	51	--	-	5	221	112	10	19
GNA	43.3S	9	02--	..	..	..	..	09(4)	6	16	80	120	10	19
TOO	46.7S	9	01--	..	..	..	..	09(4)	6	21	138	150	10	00
GUA	04.0N	10	0102	SC*	--	+22	- 6	10(1)	5	--	90	30	10	19
HUA	00.6S	10	0105	SC	1	27	4	10(5)	5	3	228	34	10	19
JAI	17.3N	11	0900	SC	- .2	7	- 1	--	-	7	100	35	13	03
SHL	14.6N	11	0900	SC	.1	6	1	--	-	7	100	35	13	03
UJJ	13.5N	11	0900	SC	- .1	10	- 2	--	-	6	117	41	13	03
ABG	09.5N	11	0900	SC	- .1	7	- 1	11(5,6)	5	7	117	51	13	03
HYB	07.6N	11	0900	SC	- .1	+ 7	- 1	11(5,6)	5	6	135	42	12	23
ANN	01.4N	11	0900	SC	- .3	10	4	--	-	6	170	77	13	03
TRD	01.2S	11	0900	SC	.1	13	16	--	-	4	226	93	13	03
GNA	43.3S	11	0900	SC	+ .8	+ 7	+ 5	11(5,6) 12(5)	5	13	70	90	13	02
HYB	07.6N	20	1418	SC	- .1	+ 6	- 1	21(1,2)	3	7	75	33	21	18
NEW	55.1N	24	2133	SC	2	9	--	26(3)	7	61	318	316	29	03
COL	64.6N	25	05--	SC	--	--	--	26(3) 29(3,4)	8	354	2430	2010	29	20
SIT	60.1N	25	05--	..	..	..	..	29(5)	9	--	--	--	30	10
WIT	54.2N	25	0719	SC	- 5	+11		27(6,7) 28(8)	6	36	225	90	29	02
FRD	49.6N	25	0718	SC	+ 1	+25	- 5	29(4)	7	52	355	283	29	19
JAI	17.3N	25	0718	SC	- .5	21	- 4	--	-	10	121	46	29	01
SHL	14.6N	25	0718	SC	.3	17	2	--	-	8	127	41	29	01
UJJ	13.5N	25	0718	SC	- .2	27	- 5	--	-	8	151	46	29	01
ABG	09.5N	25	0718	SC	- .5	22	- 3	25(4)	6	8	145	48	29	01
HYB	07.6N	25	0719	SC	- .2	+23	- 3	25(4,5,6)	5	6	139	36	26	18
GUA	04.0N	25	0718	..	..	..	..	25(4)	6	10	140	40	29	03
ANN	01.4N	25	0718	SC	- 1.1	38	14	--	-	6	166	86	29	01
HUA	00.6S	25	0717	SC	1	34	5	25(5,6,7)	6	8	296	38	26	18
TRD	01.2S	25	0718	SC		38	46	--	-	5	205	123	29	01
HER	33.7S	25	0719	SC	- 1	+ 5		29(3)	7	38	265	156	30	15
GNA	43.3S	25	0717	SC*	+ 1.4	- 7 *	+ 5	25(4,5,6)	5	20	80	110	26	00
TOO	46.7S	25	07--	..	..	..	..	29(4,5)	7	42	271	208	29	19
HYB	07.6N	26	2009	SC	- .2	+15	- 1	27(2,7)	5	7	124	27	28	20
HUA	00.6S	26	2010	SC	1	30	2	27(5,6,7)	5	9	333	62	29	01
GNA	43.3S	26	0107	SC*	+ 2.0	+ 5 *	+ 5	26(3)	6	20	140	130	29	00
HYB	07.6N	28	2105	SC	- .4	+15	- 1		-	--	--	--		
NEW	55.1N	29	0302	SC*	10	53	6	29(3,4,5)	9	131	1394	991	30	11
WIT	54.2N	29	0301	SC*	-11 *	+50		29(3,5)	7	46	335	280	29	19
SJG	29.9N	29	0301	SC	--	+29	+ 8	29(3)	7	10	165	42	30	08
JAI	17.3N	29	0301	SC	- 1.1	23	- 7	--	-	7	303	101	30	10
SHL	14.6N	29	0301	SC	.8	33	5	--	-	8	427	69	30	10
UJJ	13.5N	29	0301	SC	--	--	--	--	-	--	368	46	30	10
ABG	09.5N	29	0301	SC	- .7	..	- 6	29(3)	8	11	326	53	30	10
HYB	07.6N	29	0301	SC	- .4	+28	- 4	29(3,4,5)	8	9	335	54	30	20
GUA	04.0N	29	0301	SC*	+ 1	+56	-16	29(3)	7	10	360	30	30	13
ANN	01.4N	29	0301	SC	- 1.7	58	18	--	-	8	390	--	30	10
HUA	00.6S	29	0302	SC	1	53	9	29(5)	7	14	339	58	30	01
TRD	01.2S	29	0301	SC	- .2	48	52	--	-	5	444	291	30	10
GNA	43.3S	29	0301	SC*	-11.0*	+22 *	-32 *	29(4,5)	8	50	230	290	29	19

Reports were received from the following observatories:

Alibag Annamalainagar College Fredericksburg Gnangara Guam Hermanus Huancayo
Hyderabad Irkutsk Jaipur Newport San Juan Shillong Toolangi Trivandrum
Ujjain Witteveen

Please note: The Boulder Geomagnetic Observatory converted to digital format in March 1978. Since that time, data which were reduced from the anolog recordings are no longer available, e.g., Principal magnetic storms and K indices.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

SEPTEMBER 1978

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-News No. 16.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc).

05 1859 A: HUA ;B: WIT ESK HAD FUR TOL KAK ;C: WNG BDV MMB EBR
HAZ KNY (si: B: HRB - b: A: LMM)

09 0254 B: WNG WIT HRB MMB TOL KAK HAZ KNY ;C: NGK BDV EBR

11 0900 A: PAF ;B: SOD VIC ;C: WNG WIT BDV MMB KAK CZT
(si: C: LMM - sfe: HRB)

20 1417 A: PAF ;B: SOD WNG HUA ;C: WIT NGK HAD BDV DRV
(si: B: HRB)

25 0718 A: SOD DOB NUR WNG FUR HRB COI TOL HUA LMM PAF DRV ;
B: WIT HAD BDV EBR KAK CZT ;C: NGK MMB HAZ KNY

29 0301 A: SOD NUR WNG WIT DOU VIC FUR MMB EBR COI TOL KAK
HAZ KNY HUA LMM CZT PAF DRV ;B: NGK HAD BDV

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

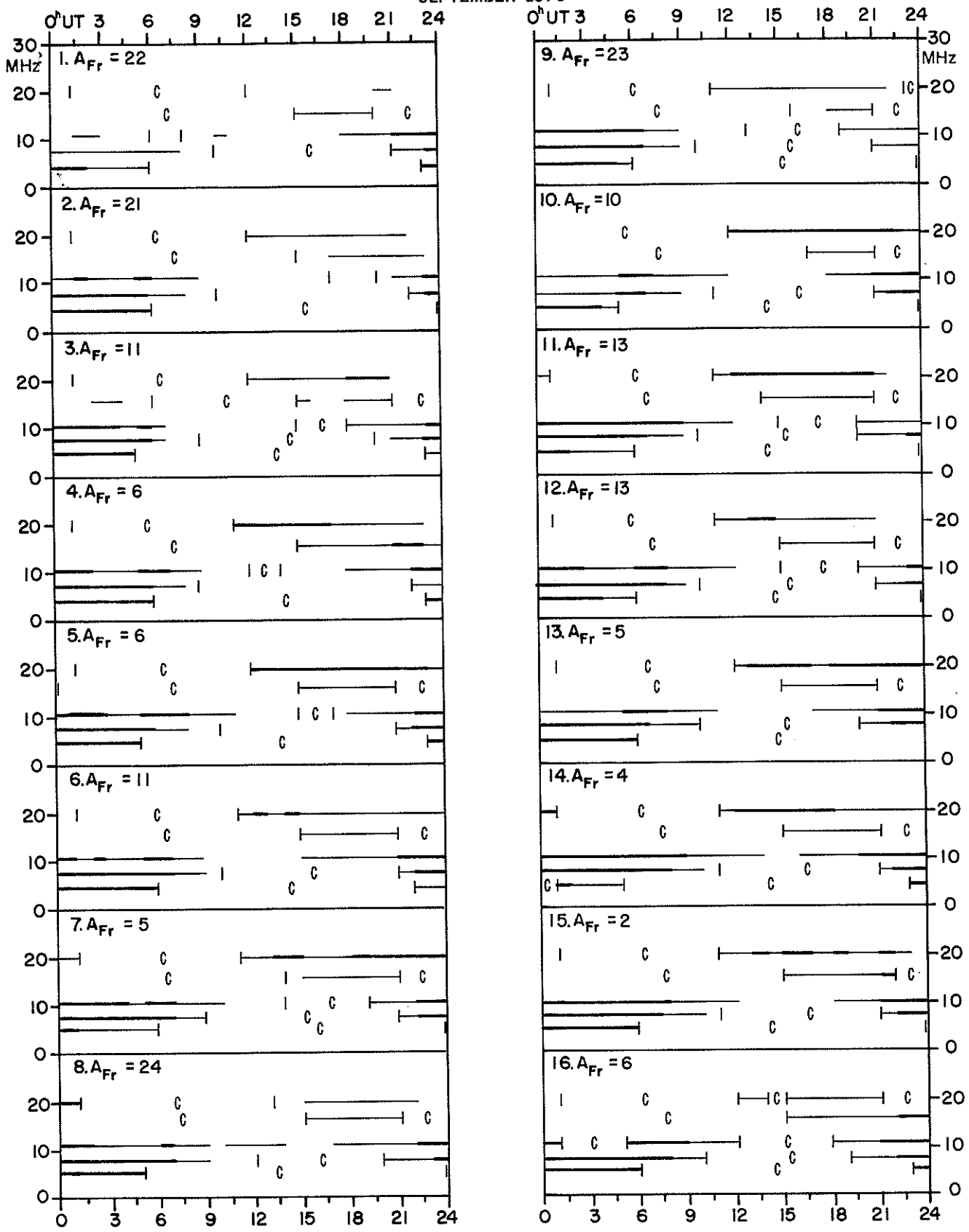
02	0552 - 0617	MMB HAZ KNY
02	1153 - 1310	WNG
03	0514 - 0532	HAZ KNY
04	0429 - 0440	HAZ
07	0440 - 0454	HAZ
10	1140 - 1152	EBR (si: A: HRB ; B: TOL)
16	1325 - 1358	WNG EBR HUA (bp: C: LMM)
17	0340 - 0458	HAZ
17	1503 - 1513	EBR HUA
18	1325 - 1344	HUA
20	0924 - 0935	HRB (ssc: C: SOD)
21	0411 - 0435	MMB HAZ

Very unusual events

none

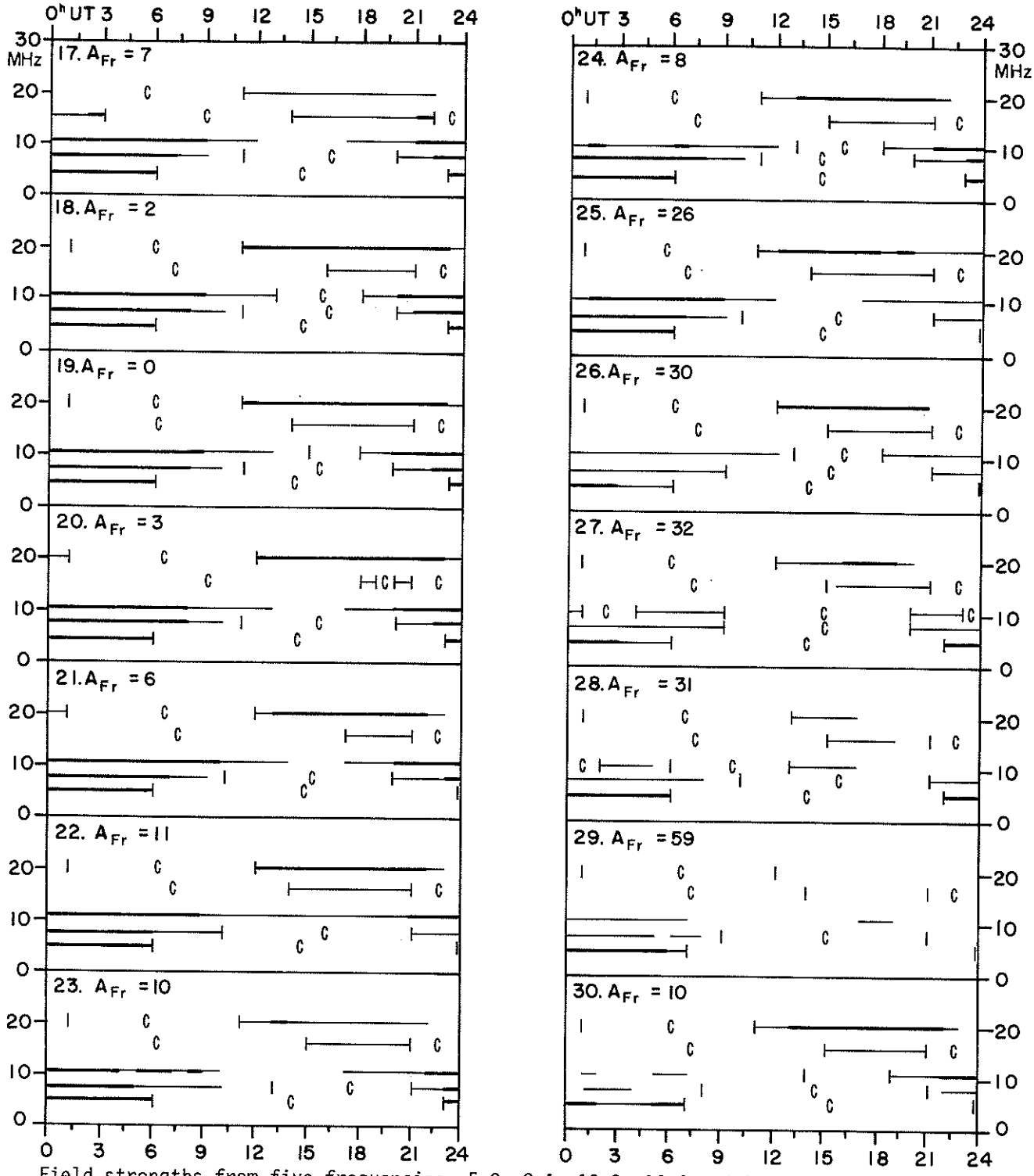
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

SEPTEMBER 1978



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

SEPTEMBER 1978



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

SEPTEMBER 1978

Quality indices calculated for reception at Lüchow

DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	3.8	3.4	11.2	2.9	11.2
2	3.8	3.6	12.1	3.8	12.2
3	4.2	3.5	10.9	3.2	11.4
4	5.1	4.0	12.3	3.5	12.1
5	5.2	5.3	12.2	3.7	11.9
6	5.6	4.5	12.3	4.1	11.6
7	5.7	4.5	12.2	4.1	13.0
8	4.3	3.7	11.2	4.5	11.7
9	5.0	4.1	12.4	4.3	12.7
10	4.8	5.1	11.4	4.1	12.2
11	4.2	4.8	11.8	4.0	12.2
12	4.0	4.8	11.6	4.5	12.1
13	5.6	5.6	12.0	5.5	12.7
14	6.0	5.6	12.3	4.9	13.0
15	5.9	5.8	13.2	4.8	13.6
16	5.5	5.3	12.5	4.5	13.8
17	5.8	5.5	13.0	4.6	13.8
18	6.2	6.5	13.4	4.6	13.4
19	7.0	6.8	13.0	4.3	13.8
20	6.6	6.2	13.4	4.7	13.8
21	6.5	6.8	13.8	5.1	13.7
22	5.9	6.5	13.4	5.4	14.3
23	4.5	5.1	13.3	4.7	13.3
24	4.1	5.8	13.3	4.9	13.3
25	4.1	5.2	13.0	3.8	13.7
26	3.1	6.2	13.0	3.9	13.1
27	3.2	4.5	12.5	2.9	13.3
28	2.7	5.1	12.4	3.0	11.5
29	1.8	3.6	11.0	1.7	11.2
30	3.9	5.0	12.4	3.1	13.1
MEAN	4.8	5.1	12.4	4.1	12.8

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

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