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Solar - Geophysical Data

NO. 426 FEBRUARY 1980

Part I (Prompt Reports)

DATA FOR
JANUARY 1980
DECEMBER 1979

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR-GEOPHYSICAL DATA

No. 426

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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Notes:

"415A 52" listed under 1979 Jan means that the sunspot drawings for January 1979 were contained in *Solar-Geophysical Data* Number 415 - Part I, beginning on page 52.

A = Part I, B = Part II.

—— = no data available.
blank = data not yet received.

SGD 426 Part I (Prompt)

JANUARY 1980 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JANUARY 1980

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS).

08 JANUARY 1980 BOULDER 08/1418Z SOFLARE X1/1B S11E29 08/1010Z DURATION 35 MINUTES
09 JANUARY 1980 BOULDER 09/0145Z TENFLARE 393 FLUX UNITS 09/0029Z DURATION ABOUT 29 MINUTES
10 JANUARY 1980 BOULDER 10/1427Z SOFLARE M6/1B S10E07 10/0456Z DURATION 67 MINUTES
TENFLARE 2900 FLUX UNITS 10/0457Z DURATION 83 MINUTES.
25 JANUARY 1980 BOULDER 25/2200Z SOFLARE M7/2B S19W51 25/2111Z DURATION 130 MINUTES
TENFLARE 1000 FLUX UNITS 25/2142Z DURATION 44 MINUTES
27 JANUARY 1980 BOULDER 27/1400Z SOFLARE X2/NO OPTICAL N09W90 27/1152Z DURATION 15 MINUTES
TENFLARE 850 FLUX UNITS 27/1152Z DURATION 24 MINUTES.

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	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
001	01	31	205	195	007	S14W78	2	0	0		01	S14W78	Q	SOLALERT 01/03 MAGQUIET
						S15W19	0	0	0			S15W19	E	
						S24W17	0	0	0			S24W17	Q	
						N12E18	0	0	0			N12E18	Q	
						S13E31	6	0	0			S13E31	A	
						N13W67	1	0	0			N13W67	Q	
						S21E10	1	0	0			S21E10	Q	
						S23E49	1	0	0			S23E49	Q	
						N12E70	4	0	0			N12E70	E	
						N18E79	0	0	0			N18E79	Q	
002	02	01	184	196	014	S17W31	0	0	0		02	S17W31	E	SOLALERT 02/04 MAGQUIET
						S23W34	0	0	0			S23W34	Q	
						N11E04	0	0	0			N11E04	Q	
						S13E17	0	0	0			S13E17	A	
						N13W76	0	0	0			N13W76	Q	
						S21W04	1	0	0			S21W04	Q	
						S23E36	0	0	0			S23E36	Q	
						N12E57	2	1	0			N12E57	A	
						N19E67	0	0	0			N19E67	Q	
						S28W09	0	0	0			S28W09	Q	
						S14E78	0	0	0			S14E78	Q	
003	03	02	165	210	010	S15W51	1	0	0		03	S15W51	Q	SOLALERT 03/04 MAGQUIET
						S23W48	0	0	0			S23W48	Q	
						S13E03	0	0	0			S13E03	A	
						S19W21	2	0	0			S19W21	E	
						S24E23	0	0	0			S24E23	Q	
						N13E44	1	0	0			N13E44	A	
						N19E53	0	0	0			N19E53	Q	
						S15E63	0	0	0			S15E63	Q	
						N29W69	0	0	0			N29W69	Q	
						N22W02	0	0	0			N22W02	Q	
						N20E30	0	0	0			N20E30	Q	
						S20E70	0	0	0			S20E70	Q	
004	04	03	189	221	013	S25W60	1	0	0		04	S25W60	Q	SOLALERT 04/11 MAGQUIET
						S13W10	0	0	0			S13W10	Q	
						S19W32	0	0	0			S19W32	Q	
						S25E14	1	0	0			S25E14	Q	
						N13E30	3	0	0			N13E30	E	
						N19E40	0	0	0			N19E40	Q	
						S13E50	0	0	0			S13E50	Q	
						N28W80	0	0	0			N28W80	Q	
						N23W17	0	0	0			N23W17	Q	
						N20E17	0	0	0			N20E17	Q	
						S19E58	0	0	0			S19E58	Q	
005	05	04	201	223	013	S24W74	0	0	0		05	S24W74	Q	SOLNIL MAGQUIET
						S13W23	0	0	0			S13W23	E	
						S26E01	0	0	0			S26E01	Q	
						N13E16	2	0	0			N13E16	E	
						N18E25	1	0	0			N18E25	E	
						S13E37	0	0	0			S13E37	Q	
						N20E04	2	0	0			N20E04	Q	
						S19E45	0	0	0			S19E45	Q	
						N17E70	0	0	0			N17E70	E	
						N21E53	0	0	0			N21E53	Q	
006	06	05	271	215	008	S25W87	0	0	0		06	S25W87	Q	SOLQUIET MAGQUIET
						S14W36	0	0	0			S14W36	Q	
						S27W13	3	0	0			S27W13	E	
						N13E04	5	0	0			N13E04	E	
						N19E14	1	0	0			N19E14	Q	
						S14E23	0	0	0			S14E23	Q	
						S19W10	1	0	0			S19W10	Q	
						S12E32	0	0	0			S12E32	Q	
						N17E58	2	0	0			N17E58	E	
						N07E40	3	0	0			N07E40	E	
						N11E47	0	0	0			N11E47	Q	
						S15E06	0	0	0			S15E06	Q	
						S13E62	2	0	0			S13E62	E	
						N12E85	0	0	0			N12E85	Q	
007	07	06	251	233	006	S14W48	2	0	0		07	S14W48	E	SOLALERT 07/09 MAGQUIET
						N13W13	2	0	0			N13W13	E	
						S27W24	0	0	0			S27W24	Q	
						N19E00	2	0	0			N19E00	E	
						S15E10	0	0	0			S15E10	Q	
						N19W28	0	0	0			N19W28	Q	
						S19E18	1	0	0			S19E18	Q	
						N15E43	1	0	0			N15E43	E	
						N19E25	8	1	0			N19E25	A	
						S14W07	0	0	0			S14W07	Q	
						S12E47	9	1	0			S12E47	E	
						N10E65	0	0	0			N10E65	Q	
						S23W11	0	0	0			S23W11	Q	

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008	08	07	242	236	003	S29W37	0	0	0		08	S29W37	Q	SOLALERT 08/10 MAGQUIET
						N12W25	0	0	0			N12W25	Q	
						N20W11	0	0	0			N20W11	Q	
						S14W64	0	0	0			S14W64	Q	
						S15W02	0	0	0			S15W02	Q	
						N18W42	0	0	0			N18W42	Q	
						S20E06	0	0	0			S20E06	Q	
						N15E29	2	0	0			N15E29	E	
						N18E11	3	0	0			N18E11	A	
						S16W20	0	0	0			S16W20	Q	
						S12E36	4	1	0			S12E36	A	
						N10E52	0	0	0			N10E52	Q	
						S23W24	0	0	0			S23W24	Q	
009	09	08	286	243	006	S15W77	0	0	0	PRESTO BOULDER	09	S15W77	Q	SOLALERT 09/11
						N13W39	0	0	0	08/1418Z SOFLARE		N13W39	Q	MAGALERT MINOR 10
						N21W22	1	0	0	X1/1B AT 08/1010Z		N21W22	Q	
						S14W16	0	0	0	S11E29 MAX AT		S14W16	Q	
						N19W55	0	0	0	08/1013Z DURATION		N19W55	Q	
						S18W05	0	0	0	35 MINUTES.		S18W05	Q	
						N15E17	7	0	0	PRESTO MEUDON		N15E17	E	
						N19W01	6	1	0	08/1458Z TYPE FOUR		N19W01	A	
						S11E23	7	0	1	RADIO BURST AT		S11E23	A	
						N10E39	0	0	0	NANCAY START AT		N10E39	Q	
						S22W36	0	0	0	08/1010Z, IN PROG-		S22W36	Q	
						N22E64	0	0	0	RESS AT 08/1037Z.		N22E64	Q	
						S07E66	0	0	0			S07E66	Q	
010	10	09	264	259	004	S16W86	0	0	0	PRESTO SYDNEY	10	S16W86	Q	SOLALERT 10/12
						N13W57	0	0	0	09/0045Z TENFLARE		N13W57	E	MAGALERT MINOR 10
						N18W38	0	0	0	09/0029Z 393 FLUX		N18W38	Q	
						S15W28	0	0	0	UNITS DURATION 29		S15W28	Q	
						N18W68	0	0	0	MINUTES. PRESTO		N18W68	Q	
						S18W19	0	0	0	TOYOKAWA 09/0130Z		S18W19	Q	
						N15E05	2	0	0	TENFLARE 230 UNITS		N15E05	A	
						N19W13	2	0	0	09/0023Z DURATION		N19W13	E	
						S12E09	2	1	0	17 MINUTES.		S12E09	A	
						N12E24	0	0	0	PRESTO BOULDER SO-		N12E24	Q	
						N21E51	1	0	0	FLARE M6/1B S10E07		N21E51	Q	
						S07E53	0	0	0	10/0456Z DURATION		S07E53	Q	
						N10E65	0	0	0	67 MINUTES. TENFLARE		N10E65	Q	
						S14E72	0	0	0	2900 FLUX UNITS		S14E72	Q	
										10/0457Z DURATION				
										83 MINUTES.				
011	11	10	161	273	005	N13W71	1	0	0	SOFLARE M6 S10E07	11	N13W71	Q	SOLALERT 11/13
						N17W46	0	0	0	0456Z. 67 MINUTE DU-		N17W46	Q	MAGALERT 11/12
						S14W42	0	0	0	RATION. TENFLARE		S14W42	Q	
						S18W33	0	0	0	2900 FLUX UNITS		S18W33	Q	
						N14W11	2	0	0	0457Z. 83 MINUTE DU-		N14W11	A	
						N19W27	1	0	0	RATION.		N19W27	E	
						S10W03	2	1	0			S10W03	A	
						N23E39	0	0	0			N23E39	Q	
						N10E50	0	0	0			N10E50	Q	
						S15E59	2	0	0			S15E59	Q	
						N18E01	0	0	0			N18E01	Q	
						N27E04	0	0	0			N27E04	E	
012	12	11	304	270	017	N14E83	0	0	0		12	N14E83	Q	SOLALERT 12/14
						N18E63	0	0	0			N18E63	Q	MAGALERT 12
						S14W55	0	0	0			S14W55	Q	
						S19W47	0	0	0			S19W47	Q	
						N15W20	0	0	0			N15W20	E	
						N19W40	1	0	0			N19W40	E	
						S11W16	1	1	0			S11W16	A	
						N11W01	0	0	0			N11W01	Q	
						N22W26	0	0	0			N22W26	Q	
						N10E40	0	0	0			N10E40	E	
						S15E47	1	0	0			S15E47	E	
						N17W12	0	0	0			N17W12	Q	
						N27W09	0	0	0			N27W09	Q	
						N30E63	0	0	0			N30E63	Q	
						N15W60	1	0	0			N15W60	E	
013	13	12	246	258	008	N16W74	1	1	0		13	N16W74	Q	SOLALERT 13/15
						S14W70	1	0	0			S14W70	Q	MAGALERT 14
						S18W60	0	0	0			S18W60	Q	
						N15W36	0	0	0			N15W36	E	
						N20W55	3	0	0			N20W55	A	
						S12W30	0	0	0			S12W30	A	
						N22E14	0	0	0			N22E14	Q	
						N10E26	1	0	0			N10E26	E	
						S16E32	0	0	0			S16E32	Q	
						N18W26	0	0	0			N18W26	Q	
						N26W22	0	0	0			N26W22	Q	
						N30E48	0	0	0			N30E48	Q	
						N15W74	0	0	0			N15W74	Q	

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014	14	13	244	229	016	N19W90	0	0	0		14	N19W90	Q	SOLALERT 14/15
						S14W83	2	0	0			S14W83	Q	MAGALERT 14/15
						S19W74	2	1	0			S19W74	A	
						N15W49	0	0	0			N15W49	Q	
						N20W67	8	2	0			N20W67	A	
						S11W43	0	0	0			S11W43	Q	
						N22W00	0	0	0			N22W00	Q	
						N10E12	0	0	0			N10E12	Q	
						S15E19	0	0	0			S15E19	Q	
						N18W39	0	0	0			N18W39	Q	
						N27W36	2	0	0			N27W36	E	
						N31E36	0	0	0			N31E36	Q	
						N15W87	0	0	0			N15W87	Q	
						S13E72	4	0	0			S13E72	E	
015	15	14	220	211	007	S14W95	0	0	0		15	S14W95	Q	SOLALERT 15/16
						S19W87	0	0	0			S19W87	Q	MAGALERT MINOR 15
						N15W61	2	0	0			N15W61	Q	
						N20W80	1	1	0			N20W80	A	
						S12W56	2	0	0			S12W56	E	
						N21W13	0	0	0			N21W13	Q	
						S09W01	0	0	0			S09W01	Q	
						N10W01	5	0	0			N10W01	E	
						S16E06	1	0	0			S16E06	E	
						N18W51	0	0	0			N18W51	Q	
						N27W50	0	0	0			N27W50	E	
						N31E22	0	0	0			N31E22	Q	
						S13E58	0	0	0			S13E58	Q	
016	16	15	242	207	003	N15W75	0	0	0		16	N15W75	Q	SOLNIL MAGNIL
						N20W90	0	0	0			N20W90	Q	
						S12W70	0	0	0			S12W70	Q	
						N22W26	0	0	0			N22W26	Q	
						N09W15	1	0	0			N09W15	E	
						S17W07	0	0	0			S17W07	E	
						N27W64	1	0	0			N27W64	Q	
						N30E10	0	0	0			N30E10	Q	
						S15E46	0	0	0			S15E46	Q	
						N18W25	0	0	0			N18W25	Q	
						N14E73	0	0	0			N14E73	Q	
						S19E73	0	0	0			S19E73	Q	
						S12E81	0	0	0			S12E81	Q	
						N08W24	0	0	0			N08W24	Q	
017	17	16	238	195	009	S13W84	0	0	0		17	S13W84	Q	SOLQUIET MAGQUIET
						N21W39	2	0	0			N21W39	E	
						N08W36	0	0	0			N08W36	Q	
						S18W21	0	0	0			S18W21	E	
						N27W74	2	0	0			N27W74	Q	
						N30W01	0	0	0			N30W01	Q	
						S15E33	2	0	0			S15E33	E	
						N18W37	0	0	0			N18W37	Q	
						N14E57	1	0	0			N14E57	E	
						S20E57	0	0	0			S20E57	Q	
						S12E66	0	0	0			S12E66	Q	
						N09W25	0	0	0			N09W25	Q	
						S32E06	0	0	0			S32E06	Q	
						S19E17	0	0	0			S19E17	Q	
018	18	17	165	193	011	N17W55	0	0	0		18	N17W55	Q	SOLQUIET MAGQUIET
						N08W54	0	0	0			N08W54	Q	
						S18W35	1	0	0			S18W35	Q	
						N29W21	0	0	0			N29W21	Q	
						S15E18	0	0	0			S15E18	E	
						N13E42	2	0	0			N13E42	E	
						S20E43	0	0	0			S20E43	Q	
						S12E52	0	0	0			S12E52	Q	
						S08E67	0	0	0			S08E67	Q	
019	19	18	143	183	006	N08W67	1	0	0		19	N08W67	Q	SOLQUIET MAGQUIET
						S17W48	2	0	0			S17W48	E	
						N28W31	1	0	0			N28W31	Q	
						S16E06	1	0	0			S16E06	E	
						N12E29	0	0	0			N12E29	E	
						S13E39	1	0	0			S13E39	Q	
						S08E54	0	0	0			S08E54	Q	
						N14E58	1	0	0			N14E58	Q	
020	20	19	131	170	004	N09W80	0	0	0		20	N09W80	Q	SOLQUIET MAGQUIET
						S17W62	1	0	0			S17W62	Q	
						N29W44	0	0	0			N29W44	Q	
						S15W08	2	0	0			S15W08	E	
						N13E14	2	0	0			N13E14	E	
						S12E25	0	0	0			S12E25	Q	
						S08E39	0	0	0			S08E39	Q	
						N13E43	0	0	0			N13E43	Q	

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021	21	20	130	162	004	S16W78	1	0	0		21	S16W78	Q	SOLQUIET MAGQUIET
						N30W58	0	0	0			N30W58	Q	
						S15W21	0	0	0			S15W21	Q	
						N13E02	1	0	0			N13E02	Q	
						S12E12	1	0	0			S12E12	Q	
						N13E30	0	0	0			N13E30	E	
						S06E62	0	0	0			S06E62	Q	
022	22	21	128	159	006	S21W83	0	0	0		22	S21W83	Q	SOLQUIET MAGQUIET
						N29W71	0	0	0			N29W71	Q	
						S14W36	1	0	0			S14W36	Q	
						N13W13	2	0	0			N13W13	E	
						S14W00	3	0	0			S14W00	E	
						N14E17	0	0	0			N14E17	Q	
						S05E53	1	0	0			S05E53	Q	
023	23	22	134	165	005	S16W48	0	0	0		23	S16W48	Q	SOLQUIET MAGQUIET
						N12W25	0	0	0			N12W25	Q	
						S15W12	1	0	0			S15W12	E	
						N14E04	0	0	0			N14E04	E	
						S06E39	0	0	0			S06E39	Q	
						S26E64	0	0	0			S26E64	Q	
						S12E67	0	0	0			S12E67	Q	
024	24	23	157	172	006	S15W64	0	0	0		24	S15W64	Q	SOLALERT MINOR 24/26
						N13W39	1	0	0			N13W39	Q	MAGQUIET
						S15W25	10	0	0			S15W25	A	
						N14W09	0	0	0			N14W09	Q	
						S06E24	0	0	0			S06E24	Q	
						S27E52	0	0	0			S27E52	Q	
						S12E55	6	0	0			S12E55	E	
						N09E19	0	0	0			N09E19	Q	
025	25	24	152	178	004	S13W78	0	0	0		25	S13W78	Q	SOLALERT MINOR 25/27
						N11W54	9	0	0			N11W54	E	MAGQUIET
						S16W39	12	1	0			S16W39	A	
						N14W26	0	0	0			N14W26	Q	
						S06E12	1	0	0			S06E12	Q	
						S11E41	0	0	0			S11E41	Q	
						N10E04	0	0	0			N10E04	Q	
						S18E70	2	0	0			S18E70	E	
026	26	25	103	184	006	N07W72	13	0	0	PRESTO BOULDER SO-	26	N07W72	A	SOLALERT 26/XX MAGALERT 27/28
						S16W52	16	2	0	FLARE 25/2000Z		S16W52	P	PROTON ARRIVAL ALERT 26/27
						N14W41	0	0	0	M7/2B S19W51,		N14W41	Q	MAJOR FLARE ALERT 26 S16W52.
						S11E36	1	0	0	25/2111Z DURATION		S11E36	Q	
						N08W10	0	0	0	130 MINUTES. TEN-		N08W10	Q	
						S18E57	6	0	0	FLARE 1000 FLUX		S18E57	E	
										UNITS 25/2142 DU-				
										RATION 44 MINUTES.				
027	27	26	157	190	008	N09W84	13	0	0		27	N09W84	P	SOLALERT 27
						S17W65	1	0	0			S17W65	P	MAGALERT MINOR 27/28
						S07W14	0	0	0			S07W14	Q	MAJOR FLARE ALERT 27
						S11E16	0	0	0			S11E16	E	N09W84, S17W65.
						N09W24	0	0	0			N09W24	Q	
						S19E45	0	0	0			S19E45	E	
						N06E71	3	0	0			N06E71	A	
						N16E67	0	0	0			N16E67	Q	
						N29W16	0	0	0			N29W16	Q	
028	28	27	160	202	017	S17W79	1	0	0	PRESTO BOULDER	28	S17W79	E	SOLALERT 28/XX
						S12E03	2	0	0	27/1400Z SOFLARE		S12E03	E	MAGALERT 28/29
						S19E31	0	0	0	X2/NO OPTICAL		S19E31	Q	
						N05E60	5	1	0	N09W90 27/1152Z DU-		N05E60	E	
						N16E54	0	0	0	RATION 15 MINUTES.		N16E54	Q	
						N29W28	0	0	0	TENFLARE 850 FLUX		N29W28	Q	
						N16E75	0	0	0	UNITS 27/1152Z DU-		N16E75	E	
						S14E67	0	0	0	RATION 24 MINUTES.		S14E67	Q	
						N14E16	0	0	0			N14E16	Q	
029	29	28	180	199	020	S17W84	3	1	0		29	S17W84	A	SOLALERT 29/31
						S11W10	0	0	0			S11W10	Q	MAGALERT MINOR 29
						S20E20	3	0	0			S20E20	Q	
						N05E47	2	0	0			N05E47	A	
						N16E41	0	0	0			N16E41	Q	
						N29W41	0	0	0			N29W41	Q	
						N16E64	0	0	0			N16E64	E	
						S14E54	0	0	0			S14E54	Q	
						N14E02	0	0	0			N14E02	Q	
030	30	29	149	203	017	S12W26	0	0	0		30	S12W26	Q	SOLALERT MINOR 30/XX
						S22E07	4	0	0			S22E07	Q	MAGNIL
						N05E35	3	1	0			N05E35	A	
						N15E29	0	0	0			N15E29	Q	
						N15E50	7	0	0			N15E50	E	
						S15E40	0	0	0			S15E40	Q	
						S15W11	0	0	0			S15W11	Q	
						S15E75	3	0	0			S15E75	E	

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031	31	30	140	205	011	S11W42	0	0	0		31	S11W42	Q	SOLALERT MINOR 31
						S22W09	2	0	0			S22W09	E	MAGQUIET
						N05E18	1	0	0			N05E18	E	
						N16E15	0	0	0			N16E15	Q	
						N16E36	1	0	0			N16E36	E	
						N14W26	0	0	0			N14W26	Q	
						N17E65	0	0	0			N17E65	Q	
						S16E64	2	0	0			S16E64	Q	
						N12E45	2	0	0			N12E45	E	
032	01	31	191	228	005	S10W56	0	0	0		01	S10W56	Q	SOLALERT MINOR 01
						S17W21	3	0	0			S17W21	E	MAGQUIET
						N05E04	2	0	0			N05E04	E	
						N16E02	0	0	0			N16E02	Q	
						N15E24	0	0	0			N15E24	A	
						S15E12	0	0	0			S15E12	Q	
						N15W38	0	0	0			N15W38	Q	
						N18E52	1	0	0			N18E52	Q	
						S15E52	6	1	0			S15E52	E	
						N13E35	0	0	0			N13E35	A	
						S12E75	0	0	0			S12E75	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

1979 PROVISIONAL — 1980 PROVISIONAL

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	116	116	131	108	121	158	115	165	213	224	122	153
2	127	138	134	106	152	168	96	141	187	157	156	158
3	148	141	135	103	161	205	121	148	167	155	187	148
4	123	142	138	112	178	219	110	157	156	172	218	173
5	134	135	109	113	207	232	93	139	168	166	232	190
6	146	144	91	122	226	249	104	139	168	210	206	207
7	144	146	77	148	222	223	110	170	179	254	212	218
8	142	143	69	165	220	219	132	192	190	280	272	225
9	139	146	61	162	231	191	115	190	210	279	293	262
10	137	140	87	145	205	163	92	177	178	302	286	224
11	137	156	109	148	186	155	84	167	183	295	279	245
12	138	170	107	158	199	145	87	156	189	248	272	210
13	152	169	113	163	172	142	91	175	211	183	235	181
14	163	159	116	203	149	127	119	186	213	218	230	178
15	161	155	117	207	127	121	135	177	198	186	225	146
16	159	130	119	187	103	114	122	170	185	166	220	166
17	160	142	107	184	122	109	138	155	221	253	180	160
18	162	142	98	148	126	109	157	177	224	172	151	130
19	166	138	79	109	110	135	176	195	221	174	138	118
20	169	120	68	107	111	158	187	191	219	153	126	115
21	171	134	68	114	124	151	218	184	215	131	131	121
22	155	140	79	121	108	152	216	178	198	123	140	123
23	127	139	79	117	96	154	206	219	186	142	132	124
24	99	118	80	119	90	143	203	236	161	162	130	120
25	88	114	85	124	120	144	201	252	153	155	161	107
26	108	114	118	123	132	142	182	261	145	141	127	127
27	97	117	125	118	112	146	189	256	143	115	93	128
28	95	114	132	110	128	132	174	239	142	119	98	130
29		110	132	113	124	148	158	235	191	98	121	122
30		127	120	96	154	150	150	233	197	116	139	145
31		147		120		144	168		223		135	174
MEAN	138.0	137.0	102.8	134.6	150.5	159.6	143.5	188.7	188.2	185.0	182.2	162.2

1978 yearly mean = 92.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1979 — 1980

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	185.8	168.5	202.6*	180.4	189 5	186.3	149.1	175.8	212.8	211.6	161.9	189.1
2	185.6	178.7	203.4	179.2	206.8*	200.9*	143.9*	180.1	211.5	209.5	172.0*	199.9
3	187.4*	173.3	194.2	164.3	216.1*	213.4	145.1	180.8	204.7	207.5	195.1*	211.9*
4	187.7	181.4	183.5	176.0	228.8*	218.1	141.7	175.3*	197.7*	214.2	221.0	212.4*
5	197.4	180.1*	179.3	169.6	230.2	204.5	141.6	177.1	192.8*	235.5	223.4*	207.7
6	206 5	182.4	176.3	171.1*	238 1	211.3	149.5	180.4*	195.5	273.2*	223.4	222.1
7	203.4	183.1*	166.7	178.0	238.1	207.2	151.1	186.3	197.0	286.9*	222.6	228.0
8	207.2*	178.9	169.0*	182.4*	242.7	206.7	152.7	183.6	200.3	310.1	228.9*	228.1*
9	198.7	181.4	169.6	181.3	247.4*	197.9*	157.3	187.4	209.5	314.4*	232.4	240.9*
10	198.4*	180.6	173.0	174.7	239.9	185.9	152.1*	184.6	208.7	367.0*	230.3	253.0*
11	202.2*	181.7*	170.0*	178.6	229.6	178.6	154.4	181.5*	211.8	325 7*	230.6*	255.7*
12	195.4	188.7	174.5	184.2	208.3	170.1	144.8	181.7	216.4	294.4	232.3	245.1*
13	195.4	186.3	175.8	186.6	193.7	161.4	155.8	186.1	239 1	272.7	231.7	221 6
14	204.2*	189.4	170.9	182.0	185.7	154.7*	158.2*	192.6*	236.4	256.4	238.3	203.8
15	205.0*	181.3	168.1	181.9	176.0	151 1	167.6	193.8	230.7	239.7*	231.8	200.0
16	209.2	183.5*	171.7	176.4	167.5	143.6	164.8	196 3*	232.3	230.6	216.3	188.6
17	213.1	177.7	168.0	187 7	158.1	142.7	165.8	202.7*	226.0	231.8	202.2	186.9
18	237.7	188.6*	158.7	171.3*	152.6	141.2	180.0	215.7	236.8	231.9	187.4	177.5
19	237.8	177.6	159.4	161.5	146.2	143.6	186.4	218.1*	237.3*	214.8	183.0	164.4
20	230.1*	184.1	156.1	155.6	151.5	146.6	204.2*	213.9*	236.7*	205.9	180.8*	156.5
21	225.1	182.2	161.5	155.7	148.9	143.7*	207.6*	218.4	230.1	189.8	176.7*	153.4
22	223.3	181.1	159.7*	156.5*	141.1	155 7	223.2	216 5	221.9	182.5	175.3	158.2*
23	196.0	188.5	162.3	156.0	139.0	163.1*	218.6	224.2*	214.9*	183 2	168.6	166.7
24	182.8	188.3	161.9	159.2*	141.2	168.6	225.2	230.7	225.6*	175.2*	160.2	171.1*
25	167.5	188.2	172.5	153.3*	147.8	164.5	229.3*	235.5	215.2	165.8*	162.0	171.3*
26	166.0	200.2	182.0	149.1	153.7	165.6	223 3	229.9*	202.9	161.6	159.7	178.8*
27	162.7	187.9	195.1*	149.4	158.5	159.1*	212.8	228 7*	211.2	155.7	153.6*	190.6*
28	163.6	188.6	192.1*	149.2	159.1	158.1	214.2	233.8	210.0	150 1	163.1	194.0
29	.	191.4	185.7	150.2	166.9	156.7	197.6	225.0	214.8	154.0	174.0	197.0
30	.	186.6	185.2*	158.4	176.7*	160.3	187.8	231.9	213.7*	152.2	185.5	197.9
31	.	201.4*	.	174.9	.	152.4	179.9	.	214.9*	.	188.9	213.9*
MEAN	199.1	184.0	175.0	168.9	186.0	171.4	177.0	202.3	216.4	226.8	197.2	199.6

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

JANUARY 1980

JAN 1980	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	1	15	153	121	195.6	565	405	209	189.1	200	149		40	
2	2	16	158	137	206.7	571	417	215	199.9	209	164		41	
3	3	17	148	132	219.1*	575	406	222	211.9*	230	170		44	
4	4	18	173	150	219.7*	575	410	223	212.4*	241	177		48	
5	5	19	190	175	214.8	541	391	214	207 7	224	181		48	
6	6	20	207	198	229.7	595	426	233	222.1	242	192	119	54	51
7	7	21	218	188	235.8	571	413	311	228.0	238	196	111	51	41
8	8	22	225	200	235.9*	592	429	240	228.1*	246	192		49	
9	9	23	262	199	249.1*	589	428	256	240.9*	256	198		50	
10	10	24	224	203	261.6*	596	446	270	253.0*	270	198		54	
11	11	25	245	239	264.4*	577	433	267	255.7*	269	199		52	
12	12	26	210	181	253.5*	596			245.1*		199		46	
13	13	27	181	164	229.2		394	246	221.6	229	170	106	48	24
14	14	1	178	167	210.8	574	362	211	203.8	214	167		42	
15	15	2	146	176	206.8	567	368	191	200.0	207	161		49	
16	16	3	166	183	194.8	569	373	195	188.6	206	157		45	
17	17	4	160	134	193.1	537	355	195	186.9	199	153		44	
18	18	5	130	125	183.4	551	346	182	177.5	187	144		43	
19	19	6	118	109	169.8	557	338	175	164.4	160	131		42	
20	20	7	115	101	161.7	593	344	159	156.5	165	131		39	
21	21	8	121	110	158.5	567	354	171	153 4	153	125		41	
22	22	9	123	121	163.3*	572	354	186	158.2*	175	128		39	
23	23	10	124	116	172.0	554	361	193	166.7	185	130		43	
24	24	11	120	93	176.6*	586			171.1*				86	
25	25	12	107	88	176.8*	584	392	209	171.3*	193	130		45	
26	26	13	127	94	184.5*	582	393	215	178.8*	191	143		47	
27	27	14	128	117	196.5*	616	413	223	190.6*	210	143		49	
28	28	15	130	115	200.0	598	402	223	194.0	203	145			
29	29	16	122	137	203.1	587	416	221	197.0	207	145		31	
30	30	17	145	137	204.0	572	395	221	197.9	205	152		46	
31	31	18	174	139	220.3*	505	412	245	213.9*	240	176		49	
MEAN			162.2	146.7	206.2	574	392	200	199.6	212	162	112	47	39

* Adjusted for burst.

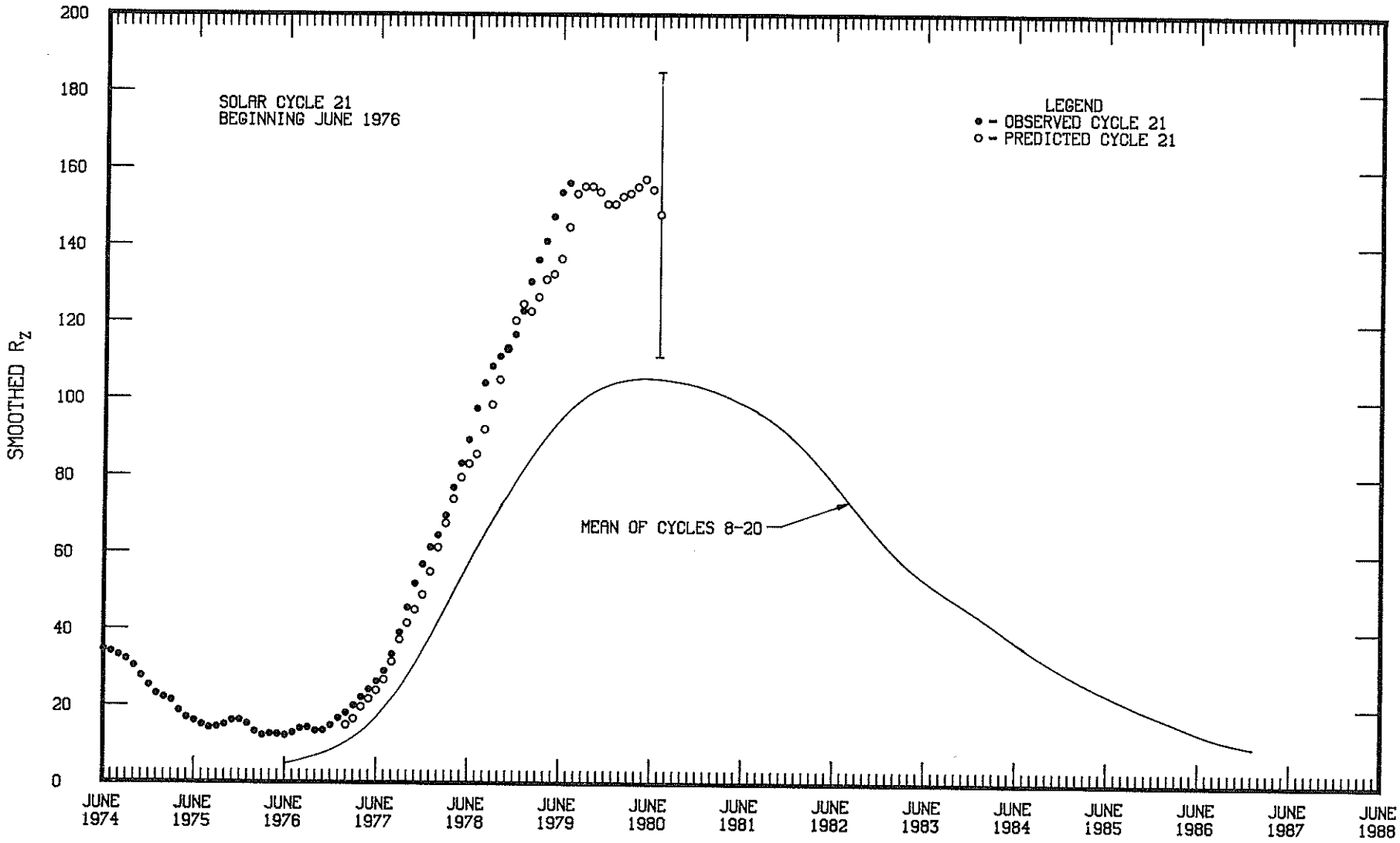
Note: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

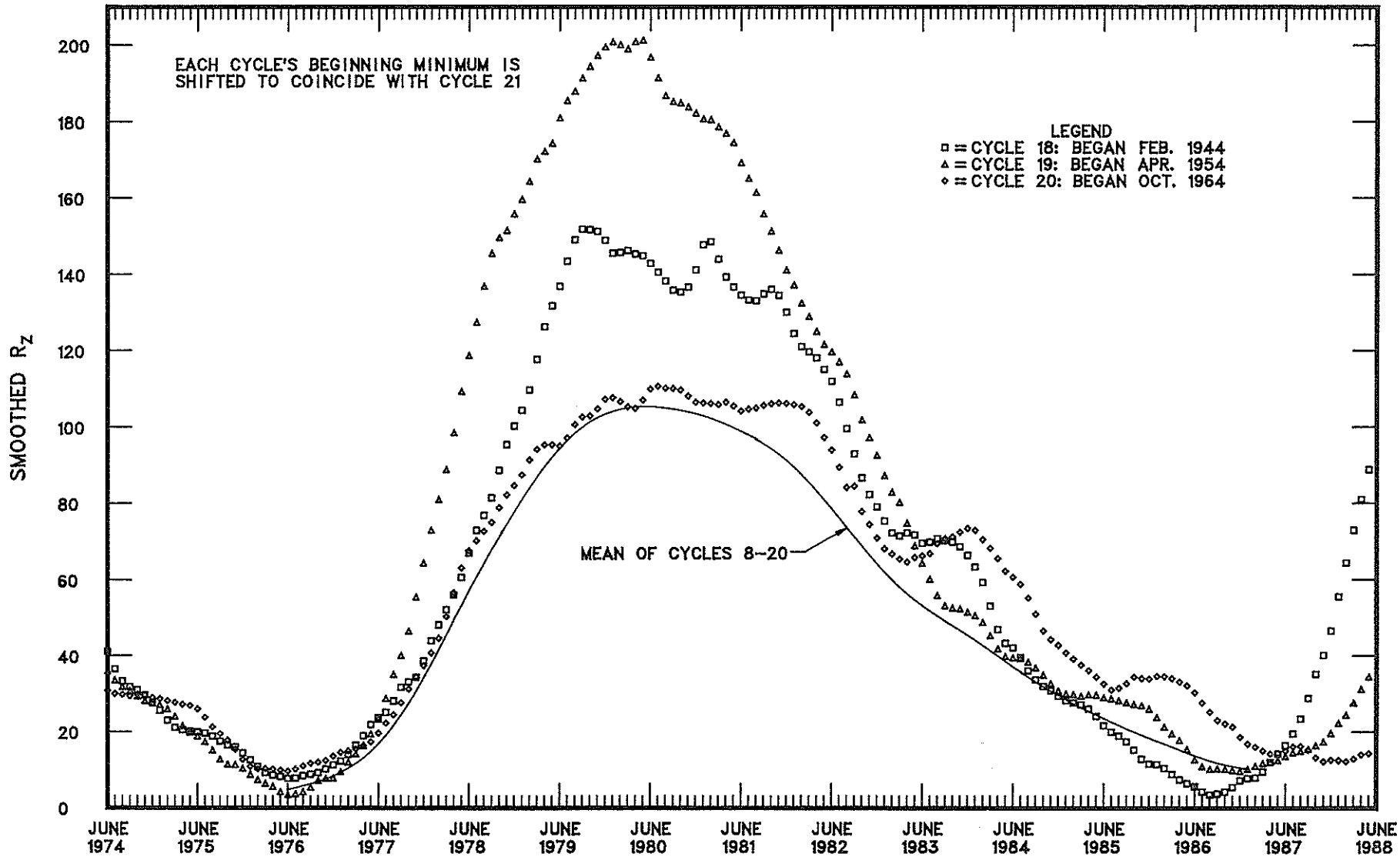
	SUNSPOT NUMBERS						OBSERVED 2800 MHZ FLUX	
	R_Z		$R_{A'}$		R_S		S_a	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Feb 77	23.1	18	23.0	16	24.7	23	80.3	79
Mar	8.7	20	8.0	18	19.9	25	75.8	80
Apr	12.9	22	10.7	21	22.5	27	78.2	82
May	18.6	24	16.0	23	25.9	29	81.4	84
Jun	38.5	26	34.4	25	40.1	31	94.5	86
Jul	21.4	29	18.3	27	28.4	33	83.7	88
Aug	30.1	33	27.6	32	31.3	36	86.4	91
Sep	44.0	39	41.9	37	47.0	40	100.9	95
Oct	43.8	46	45.5	44	42.0	45	96.3	99
Nov	29.1	52	28.4	50	36.9	50	91.6	104
Dec	43.2	57	42.8	55	44.8	54	98.9	108
Jan 78	51.9	61	48.8	59	52.6	57	106.1	111
Feb	93.6	64	90.9	61	91.1	60	141.8	113
Mar	76.5	70	73.9	66	89.5	63	140.3	116
Apr	99.7	77	97.5	72	100.5	67	150.5	119
May	82.7	83	79.6	78	99.7	71	149.7	123
Jun	95.1	89	88.0	84	96.5	75	146.8	127
Jul	70.4	97*	58.1	92	84.2	82	135.4	133
Aug	58.1	104*	48.1	98	64.3	90	116.9	141
Sep	138.2	108*	128.1	103	110.4	96	159.6	146
Oct	125.1	111*	116.0	105	107.7	111	157.1	160
Nov	97.9	113*	92.8	107	98.1	113	148.2	162
Dec	122.7	117*	121.0	111	121.6	116	170.0	165
Jan 79	165.8*	123*	164.4	116	150.2	119	196.5	168
Feb	138.0*	130*	136.8	123	153.0	124	199.1	172
Mar	137.0*	136*	132.5	128	136.7	128	184.0	176
Apr	102.8*	141*	95.8	133	127.0	133	175.0	180
May	134.6*	147*	121.8	139	120.4	139	168.9	186
Jun	150.5*	154*	136.4	144	138.9	144	186.0	191
Jul	159.6*	156*	140.5	145	123.1	148	171.4	192
Aug	143.5*	160(±3)*	125.1	148	129.2	148	177.0	---
Sep	188.7*	162(±6)*	184.0	150	156.5	150	202.3	---
Oct	188.2*	163(±9)*	178.2	151	171.7	152	216.4	---
Nov	185.0*	163(±13)*	176.5	152	182.9	152	226.8	---
Dec	182.2*	163(±17)*	157.6	151	151.0	152	197.2	---
Jan 80	162.2*	161(±20)*	146.7	150	153.6	150	199.6	---
Feb	---	159(±21)*	---	149	---	149	---	---
Mar	---	158(±22)*	---	148	---	148	---	---
Apr	---	157(±26)*	---	147	---	148	---	---
May	---	156(±30)*	---	147	---	147	---	---
Jun	---	152(±33)*	---	143	---	143	---	---
Jul	---	148(±37)*	---	140	---	140	---	---

*An asterisk denotes a value of the observed monthly mean, or the observed 12-month running mean, or the predicted 12-month average that is based only on preliminary observations of the Zurich relative sunspot number (R_Z). Parentheses enclose the 90% confidence limits. Hatched boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values.

OBSERVED AND PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT	NOV.	DEC
1976	15	13	12	13	12	12	13	14	14	13	13	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	64	70	77	83	89	97	104	108	111	113	117
1979	123	130	136	141	147	154	156	160 (3)	162 (6)	163 (9)	163* (13)	163 (17)
1980	161 (20)	159 (21)	158 (22)	157 (26)	156 (30)	152 (33)	148 (37)	145 (40)	142 (40)	141 (42)	140 (43)	139 (46)
1981	139 (48)	138 (47)	136 (46)	133 (44)	130 (45)	127 (44)	126 (43)	126 (42)	125 (41)	124 (41)	121 (39)	118 (38)
1982	114 (36)	111 (35)	108 (34)	106 (32)	104 (31)	101 (29)	97 (27)	92 (26)	88 (25)	83 (22)	79 (21)	75 (20)
1983	71 (20)	69 (20)	67 (21)	65 (21)	63 (21)	60 (22)	58 (23)	56 (25)	54 (27)	53 (29)	52 (30)	51 (30)
1984	50 (31)	48 (30)	44 (29)	41 (29)	38 (30)	37 (32)	36 (32)	35 (32)	33 (31)	32 (29)	30 (28)	29 (27)
1985	27 (27)	27 (27)	26 (26)	26 (26)	25 (26)	24 (25)	23 (24)	22 (23)	21 (23)	20 (23)	20 (24)	19 (24)
1986	18 (25)	18 (24)	17 (24)	16 (23)	14 (22)	13 (21)	12 (20)	12 (19)	11 (17)	11 (16)	11 (15)	11 (13)
1987	11 (12)	12 (12)	13 (12)	14 (12)	15 (13)	16 (14)	17 (15)					

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 1978 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1979 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 1979) indicates that the most probable value for sunspot maximum is 163 ± 11.

Hα SOLAR FLARES

JANUARY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	01	1747	1814	1852	N13	E59	.883		6.2	65	1N	3	C		198		U F
BIGB	01	1752	1813	1854	N13	E64	.918		6.5	62	1B		C	1813	210	4.9	
RAMY	01	1839	1840	1848	S21	E 2	.240		1.9	9	SF	3	C		32		
BIGB	01	2054	2100	2130	S14	E27	.460		3.9	36	SB		C	2100	180	2.1	
PALE	02	0128E		0140D	S21	W 4	.247		1.8	12D	SN	1	C		50		F
CATA	02	0735E	0745	0755D	S25	W53	.804		27.3	20D	SN	2	P	0745	28	.5	
BIGB	02	2339	2352	0015	N19	E90	1.001		9.7	36	SN		C	2352	120	1.3	
PALE	03	0050	0054	0111	N14	E43	.739		6.3	21	SF	3	C		21		DE
BIGB	03	1638	1655	1735	N14	E35	.652		6.3	57	SN		C	1655	140	1.8	
HOLL	03	1640	1640	1702	N14	E36	.663		6.4	22	SF	2	C		22		F
BIGB	03	1655	1657	1733	S27	W54	.817		28.7	38	SB		C	1657	80	1.4	
HOLL	03	1656	1657	1713	S28	W51	.792		28.9	17	SB	3	C		58		
HOLL	03	1656	1657	1659D	S25	W55	.822		28.6	3D	SB	3	C		58		
RAMY	03	1658E	1658U	1715D	S28	W51	.792		28.9	17D	SB	3	C		60		
HOLL	03	1708	1714	1745	N14	E31	.607		6.0	37	SN	3	C		66		F
HOLL	03	2115	2144	2210	S25	E18	.418		5.2	55	SF	3	C		45		
MONT	04	1043	1045	1055D	N19	E11	.475		5.3	12D	SN		C	1045	110		
MONT	04	1155E	1158	1212	N19	E11	.475		5.3	17D	SN		C	1158	70		
RAMY	04	1832	1842	1851	N14	E12	.412		5.7	19	SN	3	C		30		
HOLL	04	1905	1906	1915	N17	E 7	.426		5.3	10	SF	2	C		47		F
RAMY	04	1919	1921	1956	N20	E 8	.475		5.4	37	SF	3	C		30		
RAMY	04	2004E	2010	2011	N16	E27	.580		6.9	7D	SF	3	C		28		
RAMY	04	2008	2009	2014	N13	E12	.399		5.7	6	SF	3	C		31		
BIGB	04	2100	2107	2140	N30	E85	1.000		11.3	40	1B		C	2107	70		A
PALE	05	0235	0236	0245	N16	E22	.528		6.8	10	SF	3	C		21		DE
MITK	05	0506	0523	0544D	S15	W25	.434		3.3	38D	SN		C	0523			E
CATA	05	0725	0725	0730	N11	W05	.324		4.9	5	SF	2	C	0725	28	.3	
CATA	05	0925	0930	1000	N22	W01	.489		5.3	35	1N	2	C	0930	224	2.5	
CATA	05	1025	1040	1215	S25	E10	.345		6.2	110	2N	2	C	1040	562	6.3	
CATA	05	1130	1135	1200	S29	W05	.379		5.1	30	SN	2	C	1135	112	1.2	
HOLL	05	1455	1458	1506	N20	E45	.788		9.0	11	SF	3	C		40		
HOLL	05	1510	1532	1547D	N13	E 4	.352		5.9	37D	SB	2	C		108		F
RAMY	05	1521	1531	1634D	N14	E 5	.372		6.0	73D	SB	3	C		162		FDE
RAMY	05	1521E	1525	1618	N19	E46	.792		9.1	57D	SF	3	C		75		
RAMY	05	1523	1544	1557	N19	E73	.972		11.1	34	SN	3	C		0		
HOLL	05	1523	1523	1529	N17	E65	.931		10.5	6	SF	3	C		27		
BIGB	05	1543	1544	1610	N20	E76	.983		11.4	27	1B		C	1544	170		
HOLL	05	1545	1548	1606D	N21	E73	.974		11.1	21D	1N	3	C		0		F
RAMY	05	1548	1629	1737D	S10	E66	.908		10.6	109D	SF	3	C		63		
RAMY	05	1557	1558	1615	N19	E70	.960		10.9	18	1N	3	C		162		F
HOLL	05	1707	1708	1712	N13	E 4	.352		6.0	5	SF	3	C		21		
RAMY	05	1711	1734	1737D	N14	E 9	.392		6.4	26D	SF	3	C		54		
HOLL	05	1746	1818	1829	S 8	E66	.909		10.7	43	SN	3	C		30		
HOLL	05	1756	1758	1814	N14	E 5	.372		6.1	18	SN	3	C		114		
HOLL	05	1837	1839	1846	S24	W 9	.323		5.1	9	SF	3	C		24		
RAMY	05	1856	1917	1929	N14	E 3	.366		6.0	33	SB	3	C		151		
PALE	05	1914	1916	1943D	N13	E 2	.348		6.0	29D	SB	3	C		132		DE
PALE	05	1914	1916	1918D	N13	E 7	.365		6.3	4D	SB	3	C		132		DE
RAMY	05	1942	1952	2003	S10	E64	.893		10.6	21	SN	3	C		34		
PALE	05	1948	1951	1958	S 9	E66	.908		10.8	10	SN	3	C		26		
HOLL	05	1952	1954	2004	S 9	E65	.901		10.7	12	SN	3	C		27		
PALE	05	2137	2143	2213	S27	W11	.380		5.1	36	SF	3	C		35		F
PALE	05	2140	2148	2222D	N18	E40	.730		8.9	42D	SN	3	C		28		F
HOLL	05	2208	2211	2232	S23	W12	.334		5.0	24	SF	3	C		37		
MITK	06	0559	0602	0626	N18	E40	.730		9.2	27	1F		C	0602	220	3.2	E
MITK	06	0631	0634	0639D	N18	E40	.730		9.3	8D	1F		C	0634	300	4.3	EZ
MANI	06	0640E	0644U	0655D	N19	E36	.696		9.0	15D	SF	3	C		100		F
MANI	06	0712E	0712U	0719	S18	E35	.584		8.9	7D	SN	3	C		120		F
CATA	06	1000	1015	1110D	N22	E35	.708		9.0	70D	SN	2	P	1015	140	1.9	
RAMY	06	1158E	1201	1207	S10	E54	.803		10.5	9D	SF	2	C		25		
RAMY	06	1201	1207	1228	N19	E34	.676		9.1	27	SF	2	C		67		
RAMY	06	1237	1237	1247	S10	E54	.803		10.6	10	SF	2	C		113		
RAMY	06	1244	1250	1318	N19	E34	.676		9.1	34	SN	2	C		47		
RAMY	06	1253	1318	1322	N16	E50	.816		10.3	29	SF	2	C		44		
RAMY	06	1327	1327	1334	N19	E32	.656		9.0	7	SF	2	C		32		
RAMY	06	1332	1333	1335	S10	E54	.803		10.6	3	SF	3	C		30		
RAMY	06	1359	1401	1419	S10	E53	.793		10.6	20	SN	3	C		86		

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OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	06	1536	1536	1539	S10	E55	.813		10.8	3	SF	3	C		22		
RAMY	06	1651	1652	1654D	N19	E30	.637		9.0	3D	SN	3	C		24		
RAMY	06	1821	1823	1832	S10	E51	.771		10.6	11	SF	2	C		38		
RAMY	06	1842	1843	1847	S19	W41	.663		3.7	5	SN	2	C		26		
PALE	07	0154E	0154U	0217	S11	E49	.749		10.8	23D	1B	2	C		265		F
PALE	07	0312	0316	0332	N12	E40	.697		10.1	20	SF	2	C		71		F
MONT	07	0919	0921	0938	N18	E21	.540		9.0	19	SN		C	0921	70		
MONT	07	1007	1010	1020	N18	E21	.540		9.0	13	SN		C	1010	70		
MONT	07	1058	1100	1111	S10	E47	.726		11.0	13	SN		C	1100	200		
MONT	07	1105	1107	1113	N18	E20	.531		9.0	8	SF		C	1107	50		E
MONT	07	1112	1113	1118	S10	E47	.726		11.0	6	SF		C	1113	50		E
MONT	07	1213	1217	1220D	S12	E43	.677		10.7	7D	SF		C	1217	60		E
RAMY	07	1213	1316	1334	S 8	E44	.690		10.8	81	SB	3	C		115		
MONT	07	1254	1315	1325	S12	E43	.677		10.8	31	SN		C	1315	110		E
ATHN	07	1315E	1317U	1337D	S11	E42	.664		10.7	22D	SB	3	C		80		DE
RAMY	07	1347	1352	1354	N19	E15	.502		8.7	7	SF	3	C		28		
MONT	07	1359	1403	1416	S13	W57	.832		3.3	17	SF		C	1403	50		E
RAMY	07	1359	1406	1425	S14	W55	.813		3.5	26	SF	3	C		47		
RAMY	07	1500	1500	1508	N16	E35	.666		10.3	8	SF	3	C		19		
RAMY	07	1857	1903	1905D	S17	W60	.859		3.3	8D	1N	3	C		141		F
RAMY	07	1942	1944	1950	N20	W 3	.460		7.6	8	SN	3	C		67		
RAMY	07	2039	2042	2051	N18	E15	.489		9.0	12	SN	3	C		47		F
MITK	07	2348	2352	2416	S10	E39	.624		10.9	28	1F		C	2352	170	2.3	EH
MANI	08	0215E	0215U	0240D	S 9	E40	.638		11.1	25D	SN	3	C		35		
MITK	08	0412	0413	0444	N18	E10	.456		8.9	32	SN		C	0413			E
MANI	08	0415E	0415U	0418	S23	W 2	.273		8.0	3D	SF	3	C		40		
MANI	08	0415E	0415U	0420D	N18	E 8	.446		8.8	5D	SN	3	C		80		
MONT	08	0844	0901	0909	S10	E35	.569		11.0	25	SN		C	0901	110		
MONT	08	0924	0928	0941	N19	E08	.460		9.0	17	SN		C	0928	100		E
WEND	08	0929E		0949	N18	E07	.441		8.9	20D	SN		C	0930	70	.8	
WEND	08	0945	0949	1010	N07	E47	.755		11.9	25	SF		C	0949	94	1.4	
MONT	08	0958	1018	1123	S10	E32	.526		10.8	85	2B		C	1018	700		
WEND	08	0958	1017	1116D	S10	E32	.526		10.8	78D	2B		C	1017	680	8.4	Z
ATHN	08	1010E	1013	1147	S11	E29	.483		10.6	97D	1B	3	C		238		U F
MONT	08	1040	1058	1138	N11	E23	.489		10.2	58	2N		C	1058	600		
WEND	08	1042	1105	1116D	N11	E24	.501		10.2	34D	1N		C	1105	330	3.8	F
ATHN	08	1054	1101	1117	N13	E25	.531		10.3	23	SN		V	1101	98	1.1	
MONT	08	1124	1126	1144	S11	E31	.512		10.8	20	SN		C	1126	150		
RAMY	08	1248	1251	1312	N16	E23	.538		10.3	24	SF	3	C		27		
RAMY	08	1344	1344	1350	S10	E32	.526		11.0	6	SN	3	C		24		
RAMY	08	1420	1420	1435	N17	E24	.558		10.4	15	SF	3	C		28		
WEND	08	1435	1441	1510D	N18	E04	.431		8.9	35D	SN		C	1441	75	.8	
HOLL	08	1452	1456	1509	N18	E22	.549		10.3	17	SF	3	C		109		
WEND	08	1455		1510D	N16	E24	.548		10.4	15D	SF		C	1457	80	.9	
HOLL	08	1518	1538	1602	N18	E 1	.427		8.7	44	SN	3	C		165		F
HOLL	08	1530	1531	1533D	S 9	E28	.466		10.7	3D	SB	3	C		187		
HOLL	08	1530	1531	1545	S13	E26	.442		10.6	15	SB	3	C		187		F
RAMY	08	1532E	1532U	1548	S12	E28	.469		10.7	16D	SB	3	C		145		FDE
RAMY	08	1533E	1540	1614	N18	E 4	.431		8.9	41D	SN	3	C		83		F
HOLL	08	1545	1546	1552	N16	E21	.518		10.2	7	SF	3	C		33		
HOLL	08	1552	1556	1609	N18	E22	.549		10.3	17	SF	3	C		109		
HOLL	08	1630	1631	1633D	S 9	E28	.466		10.8	3D	SB	3	C		187		
BIGB	08	1705	1714	1813	S12	E29	.484		10.9	68	1B		C	1714	230	2.7	
HOLL	08	1708	1720	1748	S 9	E27	.451		10.7	40	SN	3	C		93		U F
RAMY	08	1710	1718	1745	S10	E29	.482		10.9	35	SN	3	C		91		F
BIGB	08	2018	2019	2047	N36	E90	1.003		15.6	29	SN		C	2019	90		
HOLL	08	2026	2029	2052	N21	E 3	.476		9.1	26	SN	3	C		103		F
RAMY	08	2027	2028	2049	N19	E 2	.443		9.0	22	SN	3	C		75		F
HOLL	08	2156	2204	2233	N14	E20	.486		10.4	37	SN	3	C		102		F
BIGB	08	2159	2211	2314	N12	E18	.443		10.3	75	SB		P	2211	110	1.2	
HOLL	08	2206	2208	2231	S 9	E24	.404		10.7	25	SN	3	C		33		F
HOLL	08	2237	2238	2302	N17	E21	.529		10.5	25	SN	3	C		40		
MANI	09	0005	0030	0103	S 9	E25	.420		10.9	58	1B	3	C		350		U
MANI	09	0305E	0305U	0325D	N21	E 7	.486		9.7	20D	SN	3	C		70		F
MANI	09	0547E	0550	0602D	S11	E19	.328		10.7	15D	SN	3	C		50		F
WEND	09	0927		1011	S18	W82	.985		3.2	44	SN		C	0946	47		
WEND	09	1057		1203	S09	E20	.340		11.0	66	SF		C	1133	88	1.0	
WEND	09	1105		1217	S18	W83	.988		3.2	72	SF		C	1118	30		
WEND	09	1242	1257	1306D	S18	W84	.990		3.2	24D	1N		C	1257	53		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	09	1356	1357	1415	N16	E10	.427		10.3	19	SN	3	C		23		
RAMY	09	1852	1853	1911	N16	E 7	.411		10.3	19	SF	3	C		34		
MITK	10	0216	0229	0258	S13	E07	.156		10.6	42	SF		C	0229			E
MITK	10	0500	0512	0630	S11	E11	.199		11.0	90	2N		C	0512	530	5.6	EFU
MANI	10	0536E	0536U	0543D	S10	E 7	.130		10.8	7D	1N	3	C		210		F
WEND	10	1020	1029	1045	S09	E07	.124		11.0	25	SF		C	1029	94	1.0	E
WEND	10	1058	1105	1117	N22	W16	.547		9.3	19	SN		C	1105	38	.4	D
WEND	10	1132		1346D	N15	W38	.691		7.6	134D	SF		C	1323	81	1.1	
WEND	10	1202		1235	S12	E68	.921		15.6	33	SF		C	1212	60		
WEND	10	1210	1212	1222	S11	E05	.108		10.9	12	SN		C	1212	97	1.0	
WEND	10	1212	1218	1240	N22	W11	.518		9.7	28	SN		C	1218	68	.8	E
CATA	10	1220E	1220	1220D	N22	W13	.528		9.5		SN	2	P	1220	84	.9	
WEND	10	1220	1223	1229	N11	E62	.901		15.2	9	SF		C	1223	56	1.2	
WEND	10	1240		1332	N20	W36	.703		7.8	52	SF		C	1315	53	.7	
HOLL	10	1753	1754	1802D	S16	E63	.884		15.5	9D	SF	2	C		21		
HOLL	10	1905E	1917U	1959D	N19	W36	.696		8.1	54D	1N	1	C		208		Z U
HOLL	10	1909	1910	1915	N16	W52	.834		6.9	6	SF	1	C		35		
HOLL	10	1934	1943	1946	S14	E62	.876		15.5	12	SF	1	C		14		
CATA	11	0805E	0805	0805D	S14	W49	.750		7.7		SB	2	P	0805	84	1.3	
CATA	11	0920	0920	0925D	S14	W48	.738		7.8	5D	SN	1	P	0920	84	1.3	
RAMY	11	1248	1252	1345	N18	W38	.710		8.7	57	SN	3	C		27		
RAMY	11	1356	1358	1439	S11	W 9	.168		10.9	43	SB	3	C		166		FDE
RAMY	11	1444	1448	1505	N15	W59	.887		7.2	21	SF	3	C		34		
WEND	12	1138E		1208	S13	W24	.412		10.7	30D	SN		P	1139	144	1.7	
WEND	12	1153		1303D	N20	W47	.805		9.0	70D	1N		C	1253	160	2.6	
CATA	12	1155	1200	1210	S16	W61	.868		7.9	15	SB	2	C	1200	56	1.1	
WEND	12	1156	1200	1210	S13	W60	.859		8.0	14	SB		C	1200	90	1.9	D
RAMY	12	1805	1805	1831	N17	W49	.811		9.1	26	SN	3	C		31		
BIGB	12	1856	1907	1943	S13	E90	1.000		19.5	47	2B		C	1907	240		
RAMY	12	1917	1924	1936	N11	E31	.585		15.1	19	SN	3	C		49		
RAMY	12	2001	2004	2017	N17	W51	.828		9.0	16	SN	3	C		27		
RAMY	12	2006	2008	2012	S17	W68	.920		7.7	6	SF	3	C		15		
HOLL	12	2200	2202	2210	S 9	E89	.999		19.6	10	SF	2	C		0		
BIGB	12	2205E	2209E	2213	S12	E90	1.000		19.7	8D	1B		P	2209	120		
HOLL	12	2228	2230	2249	N17	W56	.870		8.7	21	SN	2	C		93		F
BIGB	12	2348E	2352	2354D	S12	E90	1.000		19.7	6D	1B		P	2352	100		
WEND	13	0855E		1035	N19	W58	.890		9.0	100D	SN		C	0855	100	2.1	F
WEND	13	0917	0925	0945	S23	E35	.604		16.0	28	SN		C	0925	72	1.0	
WEND	13	1001	1004	1016	N32	E48	.868		17.0	15	SF		C	1004	63	1.1	
WEND	13	1045	1124	1336	S13	E81	.984		19.5	171	1B		C	1124	56		
WEND	13	1105	1109	1124	S13	W75	.960		7.8	19	SB		C	1109	38		
WEND	13	1130	1217	1250	N16	W41	.728		10.4	80	1N		C	1217	156	2.2	
WEND	13	1212E	1229	1246D	N19	W62	.917		8.9	34D	SN		C	1229	75	1.7	
RAMY	13	1230E	1231	1251	N17	W64	.925		8.7	21D	SN	2	C		52		
RAMY	13	1321E	1336	1404	N16	W62	.911		8.9	43D	SN	2	C		37		
WEND	13	1334	1336	1353	N19	W62	.917		8.9	19	SN		C	1336	50	1.2	
RAMY	13	1449	1450	1505	N17	W61	.906		9.0	16	SN	3	C		34		
RAMY	13	1511	1529	1546	N26	W31	.705		11.3	35	SF	3	C		24		
RAMY	13	1528	1531	1539	N15	W63	.915		8.9	11	SF	3	C		14		
RAMY	13	1546	1558	1612	N16	W63	.917		8.9	26	SN	3	C		27		
RAMY	13	1615	1622	1704	S12	E74	.956		19.2	49	2B	3	C		0		
BIGB	13	1618	1622	1653	S12	E77	.970		19.5	35	1B		C	1622	200		
BIGB	13	1618	1622	1640	S13	W80	.981		7.7	22	1B		C	1622	150		
RAMY	13	1619	1625	1639	S18	W69	.926		8.5	20	1B	3	C		199		
RAMY	13	1621	1625	1640	S15	W79	.977		7.8	19	1B	3	C		0		
RAMY	13	1728	1730	1833	N26	W32	.713		11.3	65	SF	3	C		32		
RAMY	13	1751	1801	1908	S14	E71	.939		19.1	77	SN	3	C		35		F
RAMY	13	1806	1815	1820D	N15	W65	.928		8.9	14D	SB	3	C		65		
BIGB	13	1813	1916	2040D	N17	W65	.931		8.9	147D	2B		P	1916	330		
HOLL	13	1817E	1837U	1902D	N13	W65	.925		8.9	45D	SB	2	C		187		
HOLL	13	1937	1940	1954	S 9	E77	.971		19.6	17	SF	2	C		0		
WEND	14	0930E		0940D	S12	W54	.803		10.3	10D	SN		C	0932	50	.9	
WEND	14	0936		1146D	S12	W47	.726		10.9	130D	1N		C	0953	150	2.3	
WEND	14	1058	1104	1109	S12	W54	.803		10.4	11	SN		C	1104	47	.8	
WEND	14	1111		1214D	N19	W70	.960		9.2	63D	SN		C	1130	50		
WEND	14	1218	1224	1249	S11	W51	.771		10.7	31	1N		C	1224	150	2.5	
RAMY	14	1220	1222	1231	S13	W55	.813		10.4	11	SN	3	C		45		

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OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	14	1313	1319	1328	S14	W58	.841		10.2	15	SB	3	C		60		
WEND	14	1319E		1331	S12	W57	.832		10.3	12D	SN		C	1321	63	1.1	
WEND	14	1321		1421D	N19	W75	.979		8.9	60D	SN		C	1340	50		
WEND	14	1321		1425D	N10	E80	.989		20.6	64D	SN		C	1342	63		
RAMY	14	1443	1446	1449	N 9	E 2	.281		14.8	6	SF	3	C		22		
RAMY	14	1657	1712	1727	N 9	E 2	.281		14.9	30	SF	3	C		40		
HOLL	14	1712	1721	1721	N11	W 0	.312		14.7	9	SF	3	C		21		
HOLL	14	1840	1847	1901	N18	W53	.849		10.8	21	SF	3	C		21		F
HOLL	14	1906	1915	1929	N14	W58	.877		10.4	23	SF	3	C		18		
HOLL	14	2037	2043	2135	S19	E15	.322		16.0	58	SN	3	C		145		F
HOLL	14	2132	2137	2212	N11	W 1	.313		14.8	40	SF	3	C		42		
HOLL	14	2220	2222	2300	N11	W 2	.314		14.8	40	SF	3	C		61		F
RAMY	15	1619	1621	1623	N 8	W13	.341		14.7	4	SF	3	C		28		
RAMY	15	1700	1701	1706	N26	W57	.902		11.4	6	SF	3	C		16		
RAMY	16	1351	1359	1411	S15	E41	.655		19.7	20	SN	3	C		96		F
RAMY	16	1937	1938	1943	N24	W75	.983		11.2	6	SN	3	C		0		
RAMY	16	1951	1951U	2001	S14	E35	.574		19.5	10	SN	3	C		25		
HOLL	16	2043E	2043U	2057D	N27	W74	.982		11.3	14D	SF	2	C		14		
HOLL	16	2157E	2225U	2345D	S16	E17	.323		18.2	108D	SF	2	C		42		U
WEND	17	1119	1133	1205	S17	W26	.458		15.5	46	SN		C	1133	44	.5	E
WEND	17	1211E		1247D	S17	W27	.472		15.5	36D	SN		C	1232	19	.2	
WEND	17	1216E	1327	1342D	S16	E33	.552		20.0	86D	SF		C	1327	56	.7	
RAMY	17	1314	1315	1326	N11	E43	.725		20.8	12	SN	3	C		18		
ATHN	17	1325	1328	1336	S15	E23	.405		19.3	11	SN		V	1328	66	.7	
HOLL	17	1753	1757	1854	S33	W 6	.446		17.3	61	SF	3	C		134		U
RAMY	17	1831	1831	1844	N16	W52	.833		13.9	13	SF	3	C		17		
HOLL	17	1919	1919	1934	S19	W30	.522		15.6	15	SN	3	C		35		F
ATHN	18	1057	1100	1108	N15	E43	.743		21.7	11	SN		V	1100	66	.9	
WEND	18	1336E		1356D	S18	E03	.196		18.8	20D	SN		C	1340	63	.7	
RAMY	18	1451	1453	1503	S16	W41	.657		15.5	12	SN	3	C		24		
RAMY	18	1732	1736	1747	S18	W42	.673		15.6	15	SF	3	C		30		
RAMY	18	1746	1751	1755	N15	E59	.887		23.2	9	SN	3	C		30		
RAMY	18	1844	1859	1906	N15	E59	.887		23.2	22	SN	3	C		34		
BIGB	18	1952	1954	2136D	S15	W02	.141		18.7	104D	SN	1			150	1.5	W
WEND	19	0911E		0930	N14	E24	.527		21.2	19D	SN		C	0911	130	1.5	B
WEND	19	1006		1031	S21	W27	.494		17.4	25	SN		C	1012	56	.7	G
WEND	19	1359	1403	1415	S32	W33	.637		17.1	16	SF		C	1403	37	.5	G
WEND	19	1425	1426	1445	N14	E22	.505		21.3	20	SB		C	1426	69	.8	E
WEND	19	1510		1519D	S14	W56	.823		15.4	9D	SF		C	1510	34	.6	D
HOLL	19	1520	1524	1531	S33	W30	.616		17.4	11	SF	2	C		46		F
HOLL	19	1702	1705	1733	N14	E19	.474		21.1	31	SN	3	C		140		F
HOLL	19	1810	1810	1828	S13	W 5	.134		19.4	18	SN	3	C		59		F
HOLL	19	1906	1910	1928	N15	E19	.485		21.2	22	SN	3	C		64		F
WEND	20	0846E		0941	S15	W10	.219		19.6	55D	SN		C	0846	137	1.5	E
WEND	21	0828E	0854	0931	N15	W02	.376		21.2	63D	1N		C	0854	440	4.7	
CATA	21	0845E	0845	0845D	N16	W03	.394		21.1		2B	2	P	0845	562	6.2	
ATHN	21	0851E	0854	0919	N16	E 1	.391		21.4	28D	1N	4	C		222		U
MONT	21	0910E	0910	0923D	N18	W03	.426		21.2	13D	SN		C	0910	100		B
WEND	21	1055	1111	1135	N12	W04	.333		21.2	40	SF		C	1111	53	.6	
WEND	21	1158	1206	1227	N13	W04	.349		21.2	29	SN		C	1206	112	1.2	
RAMY	21	1200	1201	1226	N12	W 5	.336		21.1	26	SN	3	C		47		F
RAMY	21	1543	1551	1601	S 5	E56	.826		25.9	18	SN	3	C		71		
RAMY	21	1808	1809	1826	S16	E 8	.206		22.4	18	SN	3	C		27		F
BIGB	21	2026	2028	2043	S17	W37	.608		19.1	17	SN		C	2028	50	.6	
RAMY	21	2028	2028	2039	S19	W38	.627		19.0	11	SF	3	C		61		F
HOLL	21	2304	2309	2332D	S16	E 6	.186		22.4	28D	SF	3	C		46		
CATA	22	0905E	0920	0935	S16	W01	.158		22.3	30D	SN	2	P	0920	112	1.1	
BIGB	22	1542E	1542U	1558	S06	W03	.055		22.4	16D	SN		P	1542	100	1.0	
BIGB	22	1800	1803	1811	S10	W38	.611		19.9	11	SB		C	1803	90	1.2	
BIGB	22	1858	1905	1932	S06	W05	.088		22.4	34	SB		C	1905	70	.7	
HOLL	22	1940	1956	2002	S16	W10	.230		22.1	22	SF	3	C		44		
CATA	23	0715	0715	0735	S10	E60	.860		27.8	20	SN	2	C	0715	28	.5	
ATHN	23	0750E	0752U	0853D	S 3	E62	.882		28.0	63D	SB	3	C		80		U

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CATA	23	0750	0755	0805	S12	E58	.842		27.7	15	1B	2	C	0755	224	4.3	
RAMY	23	1252	1259	1308	S11	E57	.833		27.8	16	SB	3	C		108		
RAMY	23	1422	1422	1432	S16	W15	.296		22.5	10	SF	3	C		29		
HOLL	23	1459	1504	1512	S18	W16	.327		22.4	13	SF	3	C		35		F
HOLL	23	1523	1613U	1625	S17	W18	.346		22.3	62	SN	3	C		181		F
HOLL	23	1607	1613	1616	S 9	E61	.869		28.2	9	SF	3	C		14		
HOLL	23	1639	1641	1655	S18	W19	.367		22.3	16	SN	3	C		64		F
HOLL	23	1703	1711	1717	S18	W20	.381		22.2	14	SN	3	C		73		F
HOLL	23	1722	1726	1736	S11	E56	.823		27.9	14	SN	3	C		55		
BIGB	23	1732	1736	1806	S05	W15	.260		22.6	34	SB		C	1736	70	.7	
HOLL	23	1733	1734	1757	S15	W16	.303		22.5	24	SB	3	C		113		DE H
RAMY	23	1737E	1738U	1750	S15	W15	.289		22.6	13D	SN	2	C		50		
HOLL	23	1812	1812	1820	S17	W19	.360		22.3	8	SN	3	C		25		
BIGB	23	1929	1934	1959	N20	W40	.739		20.8	30	SN		C	1934	40	.5	
HOLL	23	1930	1939	2003	S18	W20	.381		22.3	33	SN	3	C		188		
HOLL	23	1930	1932	1950	N13	W37	.667		21.0	20	SF	3	C		52		F
BIGB	23	1931	1939	2022	S17	W19	.360		22.4	51	1F		C	1939	240	2.6	
RAMY	23	1932	1940	1952	S16	W19	.353		22.4	20	SN	2	C		93		
BIGB	23	2201	2203	2215	S17	W20	.374		22.4	14	SN		C	2203	40	.4	
HOLL	23	2202	2206	2213	S16	W27	.468		21.9	11	SN	3	C		28		
HOLL	23	2223	2226	2235	S16	W28	.483		21.8	12	SN	3	C		58		
BIGB	23	2343	2346	2354	S17	W20	.374		22.5	11	SB		C	2346	120	1.3	
HOLL	23	2344	2347	2357	S18	W21	.395		22.4	13	SN	3	C		137		
ATHN	24	0808E	0811	0827D	S16	W33	.552		21.9	19D	SN		V	0811	131	1.5	
ATHN	24	0942E	0945U	1014	S18	W32	.546		22.0	32D	SB	3	C		95		F
RAMY	24	1149	1206	1223	N 9	W49	.781		20.8	34	SN	3	C		38		
RAMY	24	1201	1225	1308	S17	W28	.487		22.4	67	SB	3	C		51		FDE
ATHN	24	1213E	1218U	1238D	S18	W34	.572		22.0	25D	SB	3	C		80		DE
RAMY	24	1235	1237	1306	N 8	W48	.768		20.9	31	SB	3	C		28		
RAMY	24	1341	1344	1405	S15	W31	.522		22.2	24	SN	3	C		103		
RAMY	24	1418	1420	1456	S17	W30	.515		22.3	38	SN	3	C		42		F
RAMY	24	1503	1603	1651	S18	W31	.532		22.3	108	SB	3	C		176		
BIGB	24	1542E	1547U	1746	S17	W31	.528		22.3	124D	1N		P	1547	210	2.5	
RAMY	24	1557	1604	1619	S18	E76	.964		30.4	22	SN	3	C		0		
RAMY	24	1631	1631	1638	N12	W47	.771		21.2	7	SF	3	C		32		
RAMY	24	1647	1653	1709	N12	W47	.771		21.2	22	SN	3	C		40		
BIGB	24	1652	1656	1719	N16	W56	.866		20.5	27	SB		C	1656	70	1.3	
HOLL	24	1721	1728	1753	S17	W34	.569		22.2	32	SN	3	C		86		
HOLL	24	1726	1728	1741	N11	W50	.797		21.0	15	SF	3	C		47		
RAMY	24	1743	1752	1803	N 9	W55	.839		20.6	20	SN	3	C		33		
BIGB	24	1744	1745	1758	N16	W56	.866		20.5	14	SB		C	1745	100	1.8	
HOLL	24	1759	1803	1805	S19	W32	.550		22.3	6	SF	3	C		22		
RAMY	24	1828	1843	1902	S15	W34	.563		22.2	34	SN	3	C		50		
PALE	24	1830E	1842	1844D	S19	W34	.576		22.2	14D	1N	2	C		258		F
PALE	24	1830E	1833	1858	N 6	W54	.823		20.7	28D	SN	2	C		79		F
HOLL	24	1831	1833	1843	N11	W51	.807		20.9	12	SN	3	C		57		
HOLL	24	1843	1843	1851	S17	W36	.596		22.1	8	SF	3	C		24		F
PALE	24	1900	1926	1945	N 6	W54	.823		20.7	45	1N	2	C		149		F
RAMY	24	1902	1905	1909	N 9	W55	.839		20.7	7	SF	3	C		25		
PALE	24	1918	1931	1940	S16	E72	.945		30.2	22	SF	2	C		73		
RAMY	24	1924	1926	1938	N 8	W64	.910		20.0	14	1B	2	C		157		
RAMY	24	2028	2041	2053	N12	W50	.801		21.1	25	SN	2	C		51		
RAMY	24	2047	2049	2106	S18	W33	.559		22.4	19	SN	2	C		32		
PALE	24	2054E	2055U	2117D	S19	W34	.576		22.3	23D	SN	1	C		100		F
PALE	24	2054E	2055U	2117D	N 6	W55	.833		20.7	23D	SN	1	C		100		F
PALE	24	2145E	2147U	2213	S 6	E13	.224		25.9	28D	SF	2	C		102		DE
PALE	25	0312E	0312U	0321	N 6	W61	.885		20.6	9D	SF	2	C		47		DE
RAMY	25	1309	1311	1319	S16	W39	.632		22.6	10	SN	3	C		26		F
RAMY	25	1333	1334	1346	N 8	W68	.936		20.5	13	SN	3	C		17		
RAMY	25	1409	1413	1426	S16	E63	.885		30.3	17	SN	3	C		82		
RAMY	25	1432	1434	1435	N12	W59	.880		21.2	3	SF	3	C		13		
RAMY	25	1446	1447	1503	N 8	W68	.936		20.5	17	SB	3	C		48		
RAMY	25	1451	1451	1455	S16	E64	.892		30.4	4	SF	3	C		24		
RAMY	25	1506	1518	1524	S19	W44	.700		22.3	18	SB	3	C		32		
HOLL	25	1513	1519	1525	S19	W44	.700		22.3	12	SN	3	C		23		
HOLL	25	1532	1534	1543	S20	E68	.921		30.7	11	SF	3	C		34		F
RAMY	25	1532	1533	1538	S20	E69	.927		30.8	6	SF	3	C		33		
HOLL	25	1600	1603	1630	S18	W44	.698		22.4	30	SN	3	C		109		F
BIGB	25	1600	1608	1630	S09	W41	.651		22.6	30	SB		C	1608	70	1.0	
RAMY	25	1601	1608	1716	S18	W45	.710		22.3	75	SB	3	C		73		FDE

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HOLL	25	1612	1617	1619	N 8	W65	.917		20.8	7	SF	3	C		15		
BIGB	25	1615	1616	1625	N13	W70	.953		20.4	10	SB		C	1616	40		
RAMY	25	1616	1616	1625	N 8	W65	.917		20.8	9	SN	3	C		19		
HOLL	25	1637	1721	1743	S18	W47	.732		22.2	66	SB	3	C		116		F
HOLL	25	1641	1641	1646	N 7	W66	.922		20.7	5	SF	3	C		49		
HOLL	25	1710	1718	1741	N 7	W68	.935		20.6	31	SN	3	C		26		
RAMY	25	1719E	1720	1735	S18	W46	.721		22.3	16D	SB	3	C		75		
HOLL	25	1749	2022	2308	N 8	W68	.936		20.6	319	1B	3	C		132		
RAMY	25	1842	1848	1934	N 8	W67	.930		20.8	52	SF	3	C		21		
PALE	25	1903E	1904U	1952	S20	W47	.736		22.3	49D	SF	2	C		57		FDE
PALE	25	1908E		1936	N 5	W66	.920		20.8	28D	1N	2	C		81		F
HOLL	25	1917	2108	2335	S19	W51	.777		22.0	258	1B	3	C		400		U F
PALE	25	2009E	2022	2034D	N 6	W68	.934		20.7	25D	1N	2	C		113		F
BIGB	25	2058	2145	2359	S09	W40	.638		22.9	181	2B		C	2145	450	6.1	
PALE	25	2306E	2313U	2314D	S20	W36	.606		23.3	8D	SF	2	C		68		FDE
PALE	25	2313E	2313U	2314D	S 6	E12	.207		26.9	1D	SF	2	C		36		FDE
MITK	26	0658	0702	0715	S16	W55	.814		22.2	17	1N		C	0702	120	2.2	E
RAMY	26	1208	1208	1212	N 7	W73	.962		21.0	4	SN	3	C		23		
RAMY	26	1208	1218	1321	N 7	W79	.985		20.6	73	SN	3	C		0		F
RAMY	26	1250	1251	1302	N 4	E81	.989		1.6	12	SF	3	C		0		
RAMY	26	1443	1444	1447	N 9	W79	.986		20.7	4	SN	3	C		0		
RAMY	26	1510	1516	1518	N 7	W75	.971		21.0	8	SN	3	C		18		
HOLL	26	1534	1534	1558	N 8	W82	.993		20.5	24	SF	3	C		0		
HOLL	26	1656	1658	1703	N 6	W80	.987		20.7	7	SN	3	C		14		
HOLL	26	1719	1720	1728	N 6	W89	1.000		20.0	9	SN	3	C		0		
HOLL	26	1832	1832	1841	N 6	W89	1.000		20.1	9	SN	3	C		0		
PALE	26	1918E	1928	1959	N 7	W84	.996		20.5	41D	SF	3	C		0		DE
PALE	26	1930	1955	1959	N 4	E73	.960		1.3	29	SF	3	C		42		F
RAMY	26	1937	1938	1942	N 8	W80	.988		20.8	5	SN	3	C		0		
HOLL	26	1938	1938	1946	N 6	W81	.990		20.7	8	SN	3	C		20		
RAMY	26	1952	1953	2002	N 4	E74	.964		1.4	10	SF	3	C		0		
PALE	26	2000	2002	2004	N 6	W85	.997		20.5	4	SF	3	C		0		DE
PALE	26	2113E	2128U	2145	N 6	W87	.999		20.4	32D	SN	3	C		0		DE
HOLL	26	2125	2128	2146	N 8	W85	.998		20.5	21	SN	3	C		0		
HOLL	26	2201	2211	2223	N 8	W89	1.000		20.2	22	SN	3	C		0		
HOLL	26	2203	2204	2223	S19	W61	.870		22.3	20	SN	3	C		36		F
PALE	26	2203	2211	2219	S18	W63	.885		22.2	16	SN	3	C		19		DE
PALE	26	2211	2212	2218	N 7	W83	.994		20.7	7	SN	3	C		31		
PALE	26	2315E	2347	0008	N 2	E74	.963		1.5	53D	SF	3	C		0		
BIGB	27	0000	0005	0016	N17	W79	.989		21.1	16	1N		C	0005	90		
PALE	27	0059		0132	S19	W66	.907		22.1	33	SN	3	C		37		DE
CATA	27	1140	1145	1200	N15	E90	1.000		3.2	20	1F	2	C	1145	84		
CATA	27	1150	1200	1225	N10	W90	1.000		20.7	35	1B	2	C	1200	84		A
RAMY	27	1236	1251	1311	N 2	E70	.942		1.8	35	SF	3	C		17		
RAMY	27	1255	1259	1318	S11	E 9	.171		28.2	23	SN	3	C		32		
RAMY	27	1314	1323	1330	N 3	E64	.904		1.4	16	SF	3	C		21		
BIGB	27	1815	1817	1900	N11	E63	.908		1.5	45	1N		C	1817	210	4.8	
RAMY	27	1816	1817	1848	N 3	E61	.880		1.3	32	SB	3	C		118		
HOLL	27	1817E	1819	1849	N 3	E61	.880		1.3	32D	SB	3	C		119		
BIGB	27	1859	1902	1915	N12	E90	1.000		3.5	16	SB		C	1902	50		
HOLL	27	2129	2135	2138D	S11	E 4	.100		28.2	9D	SF	3	C		57		F
PALE	27	2315E	2347	0008	N 2	E74	.963		2.5	53D	SF	3	C		0		
MANI	27	2340E	2340U	2348D	N08	E65	.917		1.9	8D	SN	2	V		80	1.7	F
MANI	28	0310E	0310U	0321D	S18	W78	.973		22.3	11D	SN	2	C		80		F
MANI	28	0435E	0435U	0458D	N12	E80	.990		3.2	23D	SF	3	V		50	1.3	
MANI	28	0629E	0631U	0637D	S20	E30	.529		30.5	8D	SN	4	C		40		
MANI	28	0645E	0645U	0655	N14	E69	.948		2.5	10D	SF	4	V		40	.5	
MANI	28	0738E	0740U	0748D	S 4	E56	.827		1.5	10D	1N	4	C		150		F Z
WEND	28	0844E		0904	S15	W83	.989		22.1	20D	SN		C	0853	25		E
MONT	28	0909	0914	0921	N03	E55	.827		1.5	12	SF		C	0914	50		E
WEND	28	0911	0915	0932	N02	E53	.805		1.4	21	SN		C	0915	44	.8	E
WEND	28	1048	1052	1115	N05	E59	.866		1.9	27	SN		C	1052	46	1.0	
WEND	28	1151		1206D	N05	E52	.801		1.4	15D	SN		C	1154	38	.6	
MONT	28	1153	1156	1206	N03	E54	.817		1.5	13	SF		C	1156	50		D
RAMY	28	1157	1157	1214	N 7	E53	.815		1.5	17	SN	3	C		27		
MONT	28	1302	1305	1312	N06	E61	.885		2.1	10	SF		C	1305	70		D
ATHN	28	1304E	1306	1331D	S17	W83	.989		22.3	27D	SN		V	1306	49	2.4	
RAMY	28	1334	1336	1352	S19	W86	.995		22.1	18	SN	3	C		0		
MONT	28	1334E	1336	1340D	S16	W87	.997		22.0	6D	SB		C	1336	20		D

Hα SOLAR FLARES

JANUARY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	28	1416	1417	1425	N 4	E53	.809		1.6	9	SN	3	C		21		
RAMY	28	1441	1442	1450	N 5	E53	.811		1.6	9	SN	3	C		34		
RAMY	28	1539	1543	1554	N13	E80	.990		3.7	15	SF	3	C		0		
RAMY	28	1852	1906	1936	N 4	E49	.767		1.5	44	SN	3	C		68		
HOLL	28	2228	2231	2242D	S21	E20	.407		30.4	14D	1N	2	C		224		F
MANI	29	0215E	0217U	0226	N18	E67	.943		3.1	11D	SF	3	V		40	.8	
MANI	29	0352E	0355	0402	N 3	E45	.719		1.5	10D	SN	3	C		80		F
MANI	29	0650E	0652U	0705D	S20	E15	.337		30.4	15D	SN	3	C		50		F
MANI	29	0702E	0705U	0717	N15	E66	.933		3.2	15D	SN	3	V		60	1.3	FH
MANI	29	0810E	0812	0825D	S13	E85	.994		4.7	15D	SN	3	C		20		
CATA	29	0945E	0945	0950D	N03	E39	.644		1.3	5D	SB	1	P	0945	112	1.5	
CATA	29	0945E	0945	0950D	N04	E45	.721		1.8	5D	SN	1	P	0945	28	.4	
ATHN	29	0946E	0948	1005	N 1	E43	.690		1.6	19D	SB	3	C		159		U
RAMY	29	1208	1221	1310	N 7	E40	.672		1.5	62	SN	3	C		129		
RAMY	29	1241	1242	1250	S21	E14	.337		30.6	9	SN	3	C		29		
RAMY	29	1324	1325	1332	N15	E55	.854		2.7	8	SN	3	C		40		F
RAMY	29	1401	1402	1407	S15	E88	.998		5.2	6	SN	3	C		0		
RAMY	29	1428	1430	1440	N15	E57	.870		2.9	12	SF	3	C		54		
RAMY	29	1507	1508	1521	S19	E11	.281		30.5	14	SF	3	C		24		
RAMY	29	1540	1601	1617	N13	E60	.889		3.2	37	SF	3	C		43		
RAMY	29	1544	1603	1631	S20	E10	.283		30.4	47	SN	3	C		99		
RAMY	29	1644	1654	1700	S15	E79	.977		4.6	16	SN	3	C		17		
RAMY	29	1853	1855	1900	N13	E57	.866		3.1	7	SF	3	C		15		
RAMY	29	1935	1937	1944	N14	E57	.868		3.1	9	SF	2	C		30		
RAMY	29	2114	2114	2121	N15	E53	.837		2.9	7	SF	2	C		17		
MANI	30	0625E	0627	0640	N02	E31	.532		1.6	15D	SN	4	V		60	.7	
RAMY	30	1537	1541	1650	S20	W 2	.233		30.5	73	1N	3	C		276		F
BIGB	30	1642	1644	1718	S41	W38	.745		27.8	36	SN	1			150	1.9	W
RAMY	30	1645	1646	1701	N15	E41	.720		2.8	16	SN	3	C		84		F
RAMY	30	1717	1759	1802	S12	E66	.908		4.7	45	SN	3	C		21		
RAMY	30	1727	1727	1753	N10	E53	.823		3.7	26	SF	3	C		16		
BIGB	30	1733	1737	1850	S27	W19	.457		29.3	77	SB	1			100	1.0	
RAMY	30	1735	1749	1833	N 6	E24	.455		1.5	58	SB	3	C		168		F
RAMY	30	1931	1933	1947	N14	E43	.736		3.0	16	SF	3	C		16		
RAMY	30	1956	1958	2009	S19	W 4	.224		30.5	13	SN	3	C		140		F
BIGB	30	1957	1958	2005D	N08	W02	.255		30.7	8D	SF	1			75	.7	G
RAMY	30	2050	2112	2144D	S12	E64	.893		4.7	54D	SF	3	C		34		F
MANI	31	0053E	0056U	0112	S11	E62	.877		4.7	19D	SF	3	C		50		
MANI	31	0055E	0055U	0117	N14	E34	.637		2.6	22D	SF	3	V		70	.9	F
MANI	31	0107E	0111U	0121	S20	W 7	.259		30.5	14D	SN	3	C		100		F
MANI	31	0142E	0142U	0152	S11	E61	.869		4.6	10D	SN	3	C		70		F
MANI	31	0441E	0446U	0446D	S11	E60	.860		4.7	5D	SN	2	C		80		F
MANI	31	0803E	0809U	0813D	S11	E59	.852		4.8	10D	SF	2	V		60	1.0	F
MANI	31	0806E	0810U	0813D	N15	E41	.720		3.4	7D	SN	2	V		50	.7	F
RAMY	31	1150	1150	1210	N 2	E11	.241		1.3	20	SB	3	C		191		
RAMY	31	1150	1157	1202	S10	E54	.804		4.5	12	SN	3	C		32		
ATHN	31	1152E	1153U	1211	N 8	E 8	.286		1.1	19D	SB	3	C		190		DE Z
RAMY	31	1159	1159	1204	S13	E81	.984		6.6	5	SF	3	C		0		
RAMY	31	1334	1335	1339	S14	E60	.860		5.1	5	SN	3	C		20		
ATHN	31	1340E	1342	1400D	S15	E48	.741		4.2	20D	SB		V	1342	49	.7	
RAMY	31	1349	1404	1412	S13	E53	.794		4.6	23	SN	3	C		41		
RAMY	31	1354	1359	1416	N 7	E12	.311		1.5	22	SF	3	C		55		
RAMY	31	1408	1413	1431	S21	W14	.338		30.5	23	SF	3	C		83		
RAMY	31	1526	1531	1630	N17	E52	.834		4.5	64	SN	3	C		61		
RAMY	31	1629	1630	1649	S20	W16	.350		30.5	20	SB	3	C		159		FDE
BIGB	31	1630	1632	1650	S19	W15	.328		30.6	20	1N		C	1632	140	1.5	

"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

JANUARY 1980

HOUR–UT

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Computer software problems prevented us from generating this chart in time for publication. We thank the observatories listed below for faithfully providing their flare data on schedule.

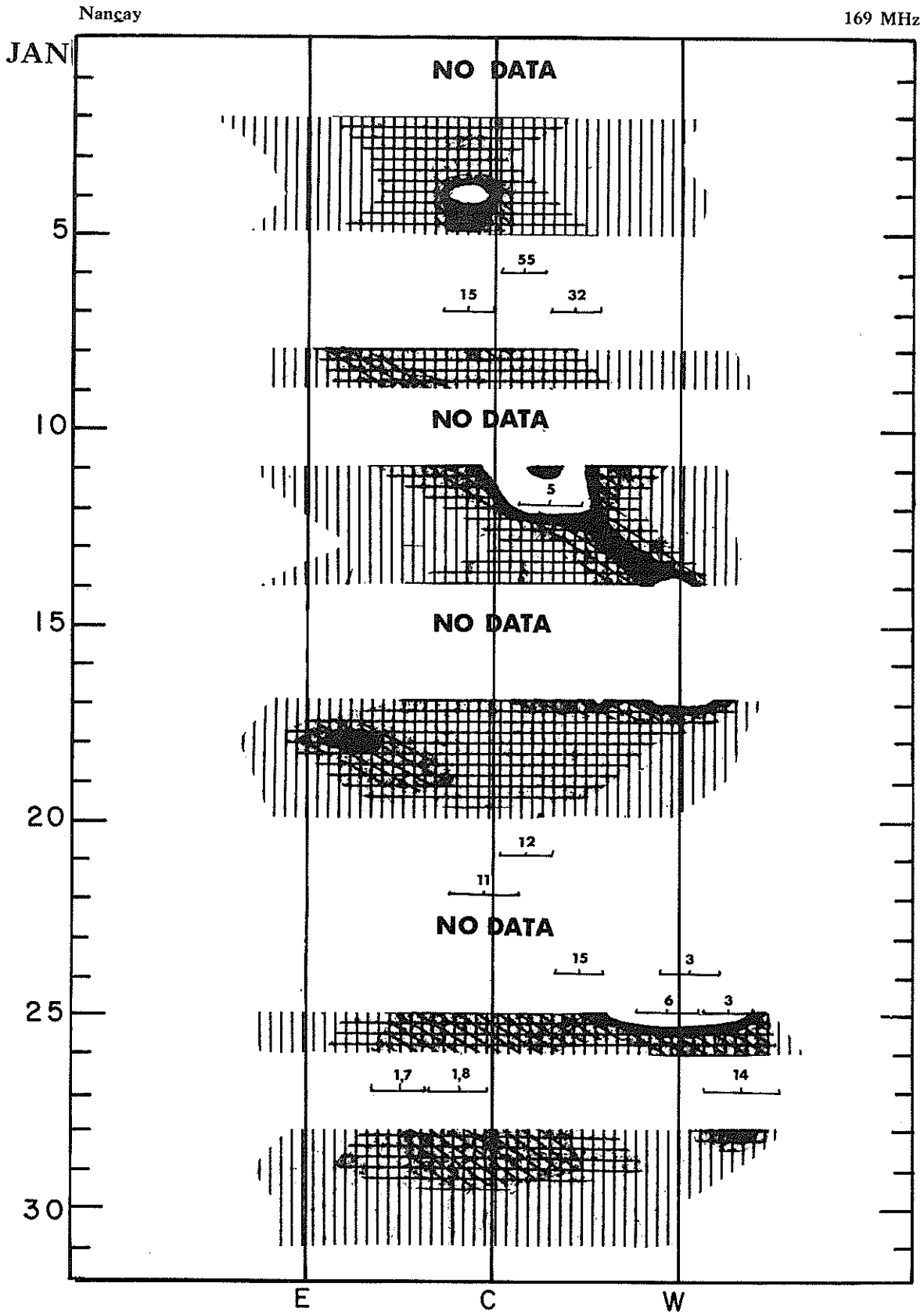
Observatories included in total patrol:

Athenes	Catania	Mitaka	Ramey
Big Bear	Holloman	Monte Mario	Upice
Bucharest	Manila	Palehua	Wendelstein

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).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JANUARY 1980

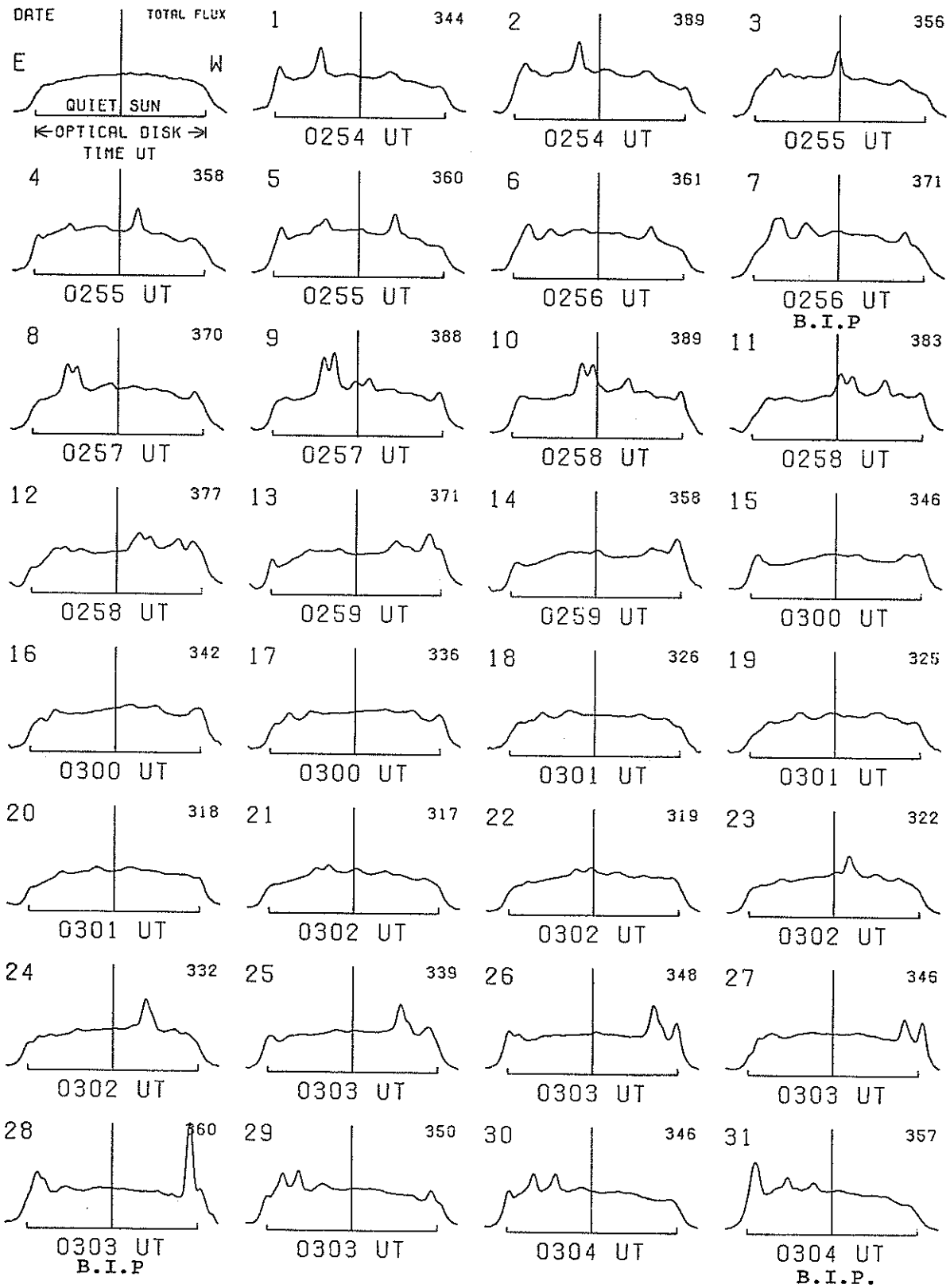


EAST-WEST SOLAR SCANS

JANUARY 1980

TOYOKAWA, JAPAN

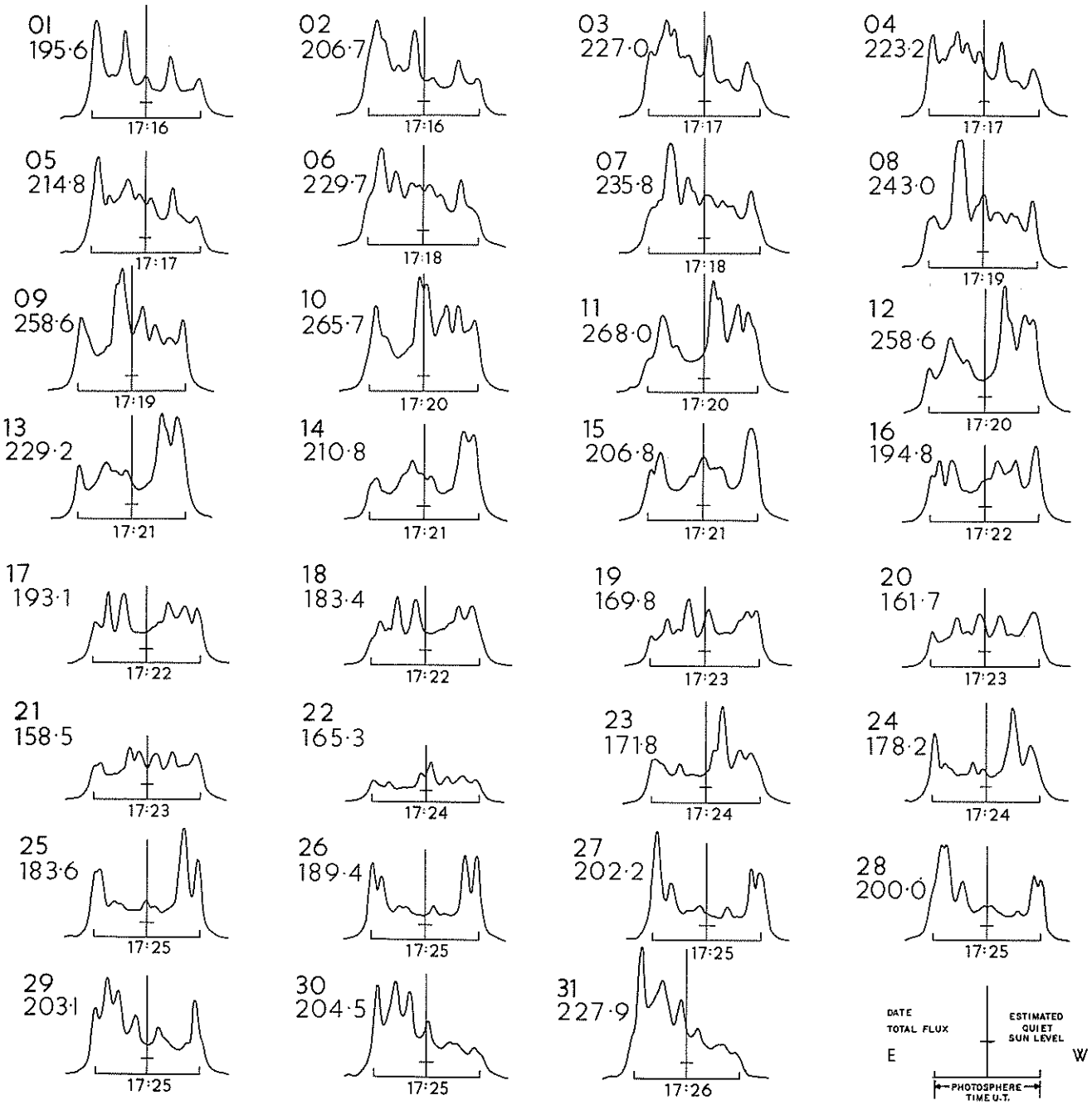
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS
JANUARY 1980

ALGONQUIN RADIO OBSERVATORY
CANADA

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



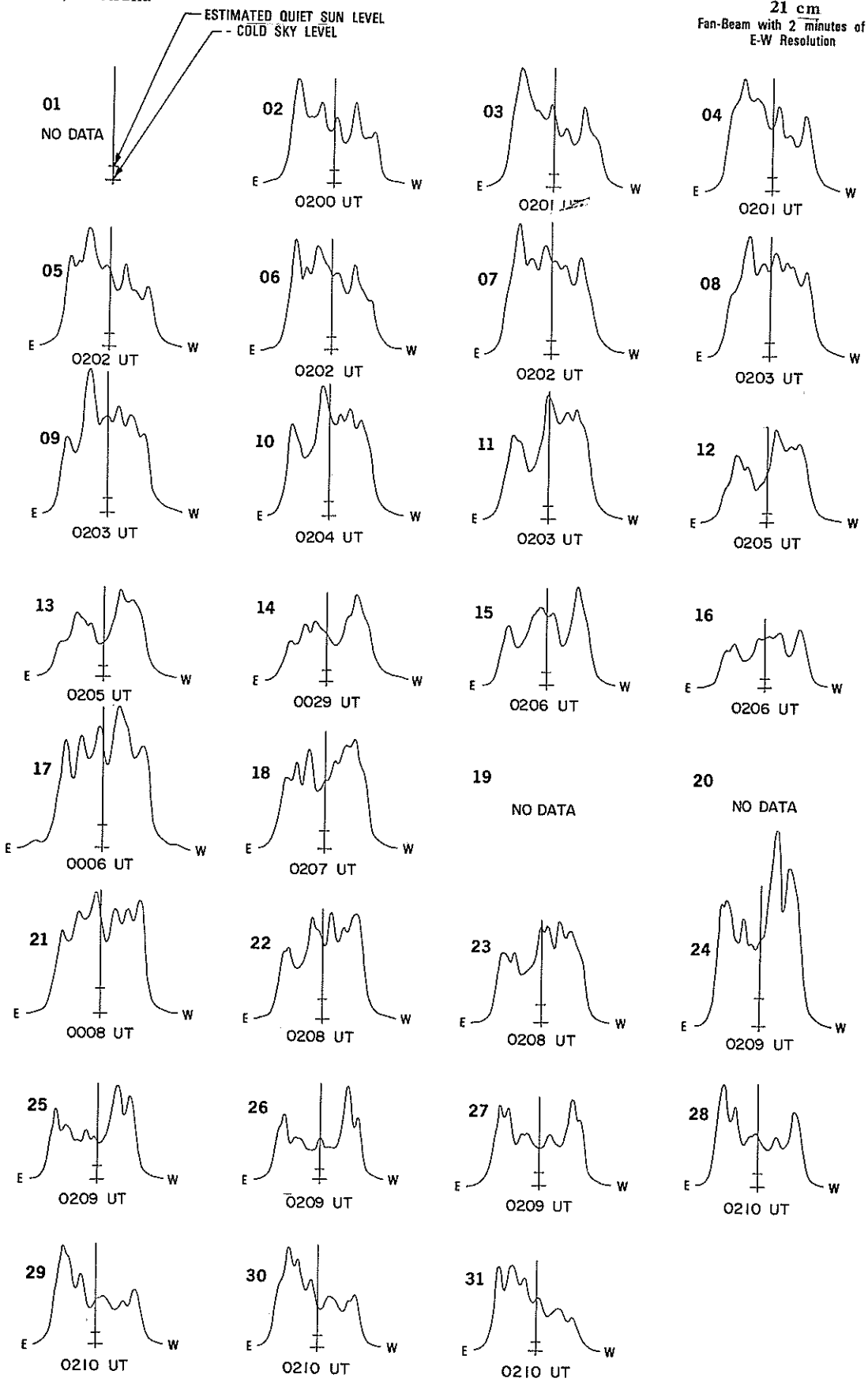
26
Jan 80

EAST-WEST SOLAR SCANS

JANUARY 1980

Fleurs, Australia

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

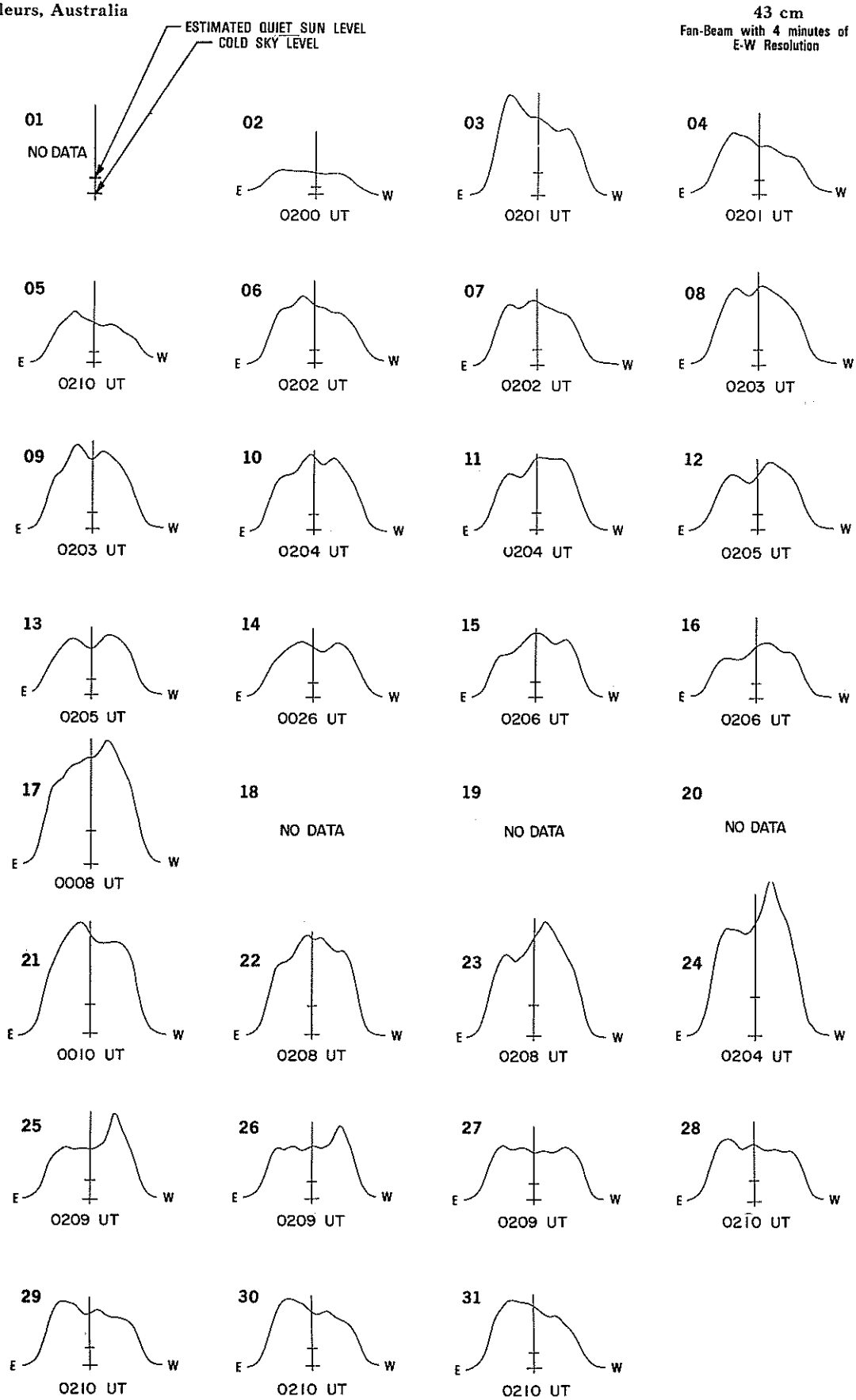


EAST-WEST SOLAR SCANS

JANUARY 1980

Fleurs, Australia

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



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
JANUARY 1980

DAY OF MONTH	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	2800	OTTA	23	GRF	1715	1807	130	20	7		
	2800	OTTA	4	S/F	1747	1748	2	11.4	3.8		
	2695	PENT	20	GRF	2053	2054	17	3.2	1.6		
2	2800	OTTA	1	S	1947	1948	5	3	1.2		
3	2800	OTTA	23	GRF	1445	1715	245	10.6	5.3		
	2800	OTTA	3	S	1655.5	1656	2	12	5		
	2800	OTTA	20	GRF	1955	2030	45	2.2	1.4		
4	2800	OTTA	21	GRF	1505	1528	140	6	3.8		
	2800	OTTA	3	S	1517	1520	5.5	10.4	4		
	2800	OTTA	1	S	1753	1754	2	2.2	1		
	2800	OTTA	8	S	1911.8	1911.8	.1	5.6			
5	2800	OTTA	23	GRF	1435	1532	130	9.6	4.8		
	2800	OTTA	8	S	1543.9	1544	.8	4	2		
	2800	OTTA	24O	R	1652	1727	35	5.2	2.6		
	2800	OTTA	1	S	1756	1756.6	1	2.2	1.1		
	2800	OTTA	21	GRF	1835	1845	45	3.4	1.7		
	2800	OTTA	4	S/F	1839.2	1840.5	4	11.8	4		
	2800	OTTA	20	GRF	1935		55	3.4			
6	2800	OTTA	20	GRF	1420	1450	115	5.6	2.8		
	2800	OTTA	24O	R	1645	1700	15	3	1.5		
	2800	OTTA	20	GRF	1725	1735	20	2.2	1.1		
	2800	OTTA	20	GRF	1815	1837	55	4.8	2.6		
7	10400	BERN	4		1310.3	1313.8	9	140			OPR
	2800	OTTA	20	GRF	1735	1756	28	4.4	2.2		
	2800	OTTA	21	GRF	1805	1823	30	5.2	2.6		
	2800	OTTA	1	S	1825.5	1826	2	5.4	2.7		
	2800	OTTA	21	GRF	1856	2000	100	3.2	1.7		
	2800	OTTA	4	S/F	1857	1901.5	8	22	7.4		
	2800	OTTA	29	PBI	1905	1905	20	6.6	4.9		
8	10400	BERN	1		0858.8	0900.4	9	9			OPR
	10400	BERN	47		1002.6	1009.7	40	680			OPR
	2800	OTTA	23	GRF	1515	1533	250	12.4	8		
	2800	OTTA	1	S	1531	1531.4	1	7.6	3.8		
	2800	OTTA	21	GRF	2020	2040	50	14.4	7		
	2800	OTTA	4	S/F	2025	2028.3	10	142	35.6		
9	10400	BERN	3		1129.7	1129.8	.6	12			OPR
	8400	BERN	3		1129.7	1129.8	.6	15			OPR
	2800	OTTA	24O	R	1420	1500	40	6.6	3.3		
	2800	OTTA	21	GRF	1505		220	6.2	3.6		
	2800	OTTA	20	GRF	1729	1733	15	3.2	1.6		
	2695	PENT	24O	R	2020	2040	20	4	2		
	2800	OTTA	20	GRF	2045	2057	50	5	2.4		
10	2800	OTTA	24O	R	1430	1540	70	9.2	4.8		
	2800	OTTA	24	R	1614	1625	11	4	2		
	2800	OTTA	27	RF	1614		106	4	3.6		
	2800	OTTA	24P	R	1625		85	4			
	2800	OTTA	26	FAL	1750	1800	10	-4	-2		
	2800	OTTA	21	GRF	1825	1920	225	24.4	14.4		
	2800	OTTA	40	F	1835.5	1838.2	11	6.6			
	2800	OTTA	2	S/F	2043	2044	2	2	.9		
	2695	PENT	3	S	2206	2206.8	4	15	4		
11	2800	OTTA	3	S	1356.4	1356.6	1	19.6	9.8		
	2800	OTTA	20	GRF	1622	1700	60	3.6			
	2800	OTTA	20	GRF	1736	1743	60	3.6	1.8		
	2800	OTTA	3	S	1850	1852.2	10	63	19.8		
	2800	OTTA	29	PBI	1900	1920	20	4.4	1.8		
	2695	PENT	20	GRF	1930	2005	90	3.6			
	2800	OTTA	3	S	2114.5	2115.3	2	16.8	8.4		
	2695	PENT	21	GRF	2114	2120	25	4.2	2.6		
12	10400	BERN	20		1121.6	1122.1	10	10			OPR
	10400	BERN	4		1154.1	1157.1	24	38			OPR
	10400	BERN	20		1340.7	1341.8	7	11			OPR
	2800	OTTA	4	S/F	1340	1341.5	8	23.4	7.8		
	2800	OTTA	4	S/F	1359.2	1359.9	4 D	156			
	2800	OTTA	21	GRF	1510	1620	160	12.2	5.8		
	2800	OTTA	1	S	1547.5	1548	1.5	5.2	2.6		
	2800	OTTA	8	S	1602.1	1602.5	.5	20.8			
	2800	OTTA	20	GRF	1830	1900	70	4	3.4		
	2800	OTTA	8	S	1832.3	1832.5	.5	3.6	1.8		
	2800	OTTA	8	S	1930.2	1930.5	.8	2.6			
	2800	OTTA	21	GRF	2000	2025	40	3.6	1.8		
	2695	PENT	3	S	2014	2014	1.5	31	7.8		
	2800	OTTA	45	C	2020	2021	4	34.4	9.6		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1980

DAY OF MONTH	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	26O FAL	2040	2047	7	-3.6	-1.8		
	2695	PENT	26O FAL	2120	2210	50	-9.6			
13	10400	BERN	21	1018.8	1019.6	6	23			OPR
	2800	OTTA	1 S	1449	1449.9	1.5	7.8	4		
	2800	OTTA	40 F	1620	1620.7	.8	26			
	2695	PENT	3 S	1704	1704.3	1	12.4	6.2		
	2800	OTTA	21 GRF	1727	1750	40	3.6	1.8		
	2800	OTTA	1 S	1728	1729	2	3	1.5		
	2800	OTTA	23 GRF	1810	1920	170	15	7.5		
	2800	OTTA	1 S	1913	1913.3	1.5	4.4	2.2		
	2800	OTTA	8 S	1932.3	1932.7	.7	4.4	2.2		
	2695	PENT	1 S	2006.3	2007	3	5.2	3.5		
	2695	PENT	26O FAL	2115	2150	35	-6.6	-3.3		
14	2800	OTTA	3 S	1637.5	1638.7	5	20.2	5		
	2800	OTTA	24 R	1947	1951	4	4.6	2		
	2800	OTTA	27A RF	1947		160	4.6	3.9		
	2800	OTTA	24P R	1951		112	4.6			
	2800	OTTA	46F C	2034	2045	27	91	37		
	2800	OTTA	30 PBI	2101	2101	30	9	4.4		
	2800	OTTA	22 GRF	2106	2107.5	14	13	4.4		
	2695	PENT	26 FAL	2143	2227	44	-4.6	-2.3		
	2695	PENT	1 S	2220	2220.5	2	4.4	2.2		
15	2695	PENT	20 GRF	2000	2055	65	2.8	1.4		
16	2800	OTTA	20 GRF	1600	1640	60	2	1		
	2800	OTTA	24O R	1710	1750	40	3.6			
	2800	OTTA	21 GRF	1810	1950	160	3.6	1.8		
	2800	OTTA	1 S	2037.5	2038	1.5	3.2	1.6		
17	2800	OTTA	20 GRF	1745	1810	25	3.2	1.6		
18	2800	OTTA	1 S	1519	1521	5	3	1.2		
	2800	OTTA	8 S	1618.1	1618.1	.1	11.2			
	2800	OTTA	1 S	1641	1642.2	3	3	1.5		
	2800	OTTA	21 GRF	1950	2020	140	4.4	3.6		
	2695	PENT	8 S	2124	2124.2	.3	5.4			
19	2800	OTTA	45 C	1424.2	1424.7	2	3.4	1.7		
	2800	OTTA	1 S	1703	1704	2	6.4	3		
	2800	OTTA	1 S	1747.5	1749	2	2	1		
	2800	OTTA	1 S	1809	1810.5	5	5	1.7		
	2800	OTTA	20 GRF	1900	1910	25	3.6	1.8		
20	2800	OTTA	20 GRF	1805	1813	70	2.4	1.8		
22	2800	OTTA	2 S/F	1503	1503.5	2	2			
	2800	OTTA	24O R	1524	1530	6	3	1.5		
	2800	OTTA	22 GRF	1535	1605	135	2.6			
	2800	OTTA	2 S/F	1801	1803	6	1.8	.9		
	2800	OTTA	21 GRF	1840	1910	175	3.6	1.8		
	2800	OTTA	4 S/F	1858	1859	5	20	10		
23	2800	OTTA	21 GRF	1703		105	2.6			
	2800	OTTA	21 GRF	1728	1738	32	3.6	1.8		
	2800	OTTA	4 S/F	1737	1734.1	5	77	25		
	2800	OTTA	26O FAL	1900	1905	5	-2.4	-1.2		
	2800	OTTA	20 GRF	1925	1930	33	3	1.5		
24	2800	OTTA	21 GRF	1535	1615	90	7.6	3.8		
	2800	OTTA	3 S	1540.5	1543	4.5	13.8	7.4		
	2800	OTTA	29 PBI	1545	1545	9	5	2.5		
	2800	OTTA	1 S	1603.5	1604	1.5	2	1		
	2800	OTTA	20 GRF	1830	1930	140	4.4	2.2		
25	2800	OTTA	8 S	1425.3	1425.5	.3	2.2	1.1		
	2800	OTTA	1 S	1429.8	1430	1	3.6	1.7		
	2800	OTTA	1 S	1432.5	1433	1	4.4	2.2		
	2800	OTTA	1 S	1444	1444.6	1	6.8	3		
	2800	OTTA	45 C	1446.3	1447.3	2	21.8	10		
	2800	OTTA	21 GRF	1525	1645	195	9	6.5		
	2800	OTTA	1 S	1600.8	1601.3	1	7.2	3.6		
	2800	OTTA	3 S	1607.5	1608	2	10.2	4.8		
	2800	OTTA	1 S	1656.6	1657	1	1.8	.9		
	2800	OTTA	1 S	1700	1700.4	1	5.4	2.7		
	2800	OTTA	45 C	1717.8	1719.4	4.2	18.2	8		
	2800	OTTA	29 PBI	1722	1722	6	3.6	1.8		
	2800	OTTA	8 S	1827.5	1827.7	.5	5.4	1.8		
	2800	OTTA	8 S	1837	1837.3	.5	7	3		
	2800	OTTA	4 S/F	1920.9	1921.5	1.8	21.8	7.2		
	2695	PENT	1 S	2009	2009.9	1.5	2	1		
	2800	OTTA	47 GB	2050	2154.8	80	1045	314		
	2695	PENT	30 PBI	2210	2210	70 D	37			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1980

DAY OF MONTH	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	40	F	2211	2218.2	11	28			
	2800	OTTA	1	S	2248	2250.5	4	8.8	4.4		
26	2800	OTTA	45	C	1341.8	1342.2	2	6.8	2.4		
	2800	OTTA	24	R	1420	1450	30	3.8	1.9		
	2800	OTTA	27A	RF	1420		220	3.8	3.4		
	2800	OTTA	24P	R	1450		170	3.8			
	2800	OTTA	20	GRF	1617	1623	30	2.2	1.1		
	2800	OTTA	26	FAL	1740	1800	20	-3.8	-1.9		
	2695	PENT	1	S	2202	2204	3	6.6	4		
	2695	PENT	29	PBI	2205	2205	29	3.6	1.8		
27	10400	BERN	47		1145.3	1151.2	40	1246			OPR
	2800	OTTA	23	GRF	1330	1350	330	15	7.5		
	10400	BERN	21		1343.6	1347.5	20	12			OPR
	2800	OTTA	1	S	1345.5	1347.7	3	7.6	5.6		
	2800	OTTA	3	S	1815	1816.3	4	23.6	7.8		
	2800	OTTA	29	PBI	1819	1819	10	3.8	2		
	2800	OTTA	1	S	1910	1911	2.5	2	1		
28	10400	BERN	1		0905	0905.8	2	11			OPR
	2800	OTTA	1	S	1335	1336	2	4	2		
	10400	BERN	1		1441	1441.3	4	12			OPR
	2800	OTTA	1	S	1537.5	1539	2.5	4.4	3		
	2800	OTTA	20	GRF	1850	1907	35	2.4	1.4		
	2800	OTTA	1	S	1932.8	1933.2	1	3	1.5		
	2800	OTTA	20	GRF	2027	2035	27	3	1.5		
	2695	PENT	21	GRF	2108	2120	52	6	3		
	2800	OTTA	4	S/F	2114	2117	6	21.4	7.1		
	2695	PENT	1	S	2228	2229.2	2	4.2	2.1		
	2695	PENT	1	S	2249.5	2253	7	4.6	2.6		
29	10400	BERN	20		0941	0951	43	15			OPR
	2800	OTTA	8	S	1424.9	1425	.4	3.2	1.6		
	10400	BERN	1		1530.2	1530.5	2.5	13			OPR
	2800	OTTA	1	S	1557	1558.5	3	8	2.7		
	2800	OTTA	46F	C	1732	1737.5	40	45.4	17.4		
	2695	PENT	20	GRF	2120	2130	22	2.2	1.6		
	2695	PENT	1	S	2202	2203	3	3.4	1.7		
30	10400	BERN	1		1404.1	1404.5	2	12			OPR
	2800	OTTA	20	GRF	1537	1543	15	3.2	1.6		
	2800	OTTA	3	S	1642.5	1644	8	41	9		
	2800	OTTA	21	GRF	1720	2000	320	14	7		
	2800	OTTA	3	S	1733	1737	10	34.2	17.1		
	2800	OTTA	29	PBI	1743	1743	70	16.8	8.2		
31	10400	BERN	3		1149.2	1150.3	12	37			OPR
	2800	OTTA	21	GRF	1340	1545	320	18			
	2800	OTTA	2	S/F	1629.5	1631.5	3	3.2	1.6		
	2800	OTTA	1	S	2027.5	2028.5	1.5	4.6	2.3		

Observatories:

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

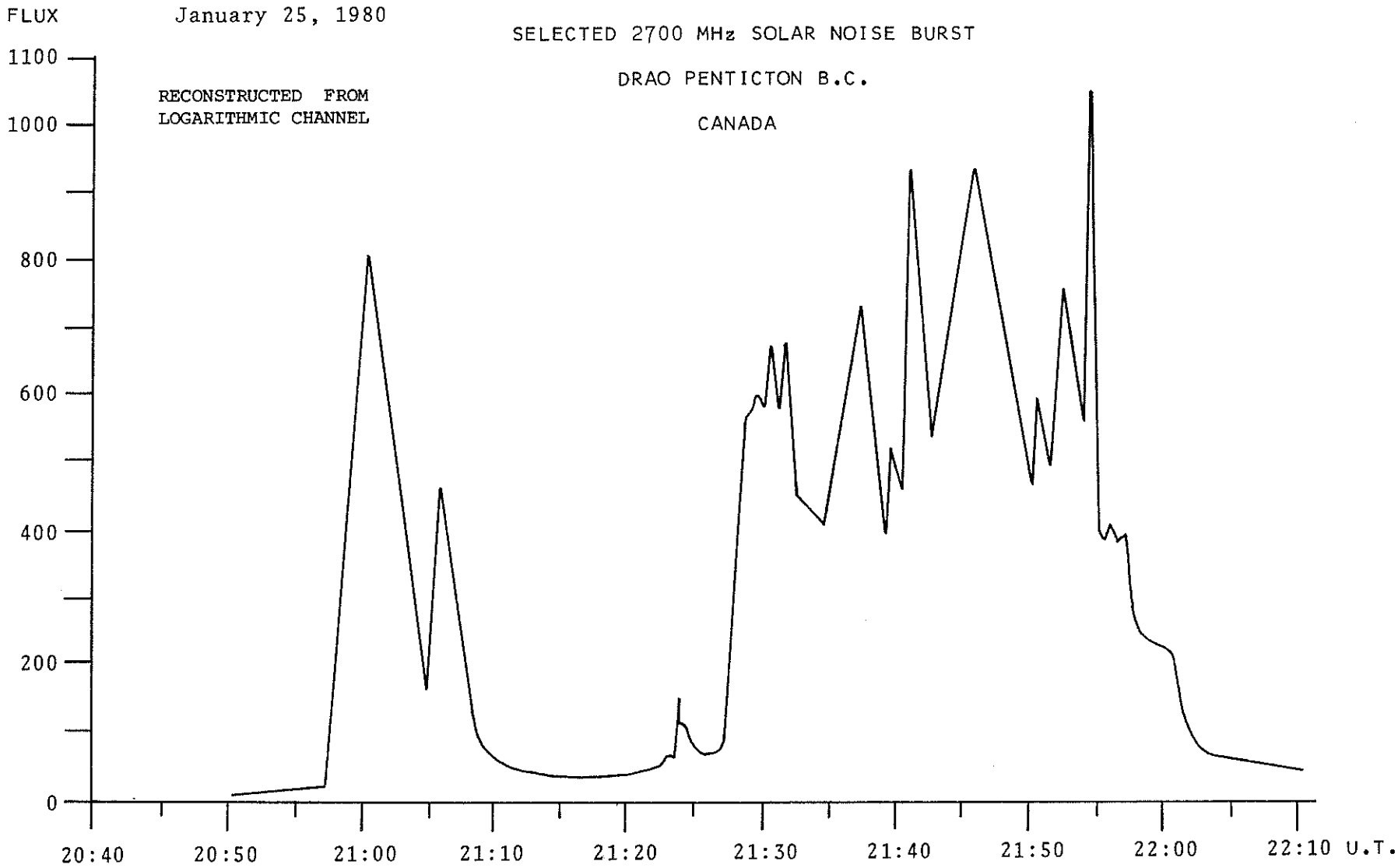
Explanation of Type Code:

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

NOTE: U.S. Air Weather Service RSTN data still not available at this time. Some computer problems are still being worked on at NGSDC. Because the problems are relatively minor, we are hopeful that they will be solved shortly. We ask for your patience in the interim.

SELECTED SOLAR NOISE BURSTS

JANUARY 1980



31
Jan 80

PIONEER IX

JANUARY 1980

Date Jan '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	IP E-FIELD[2] 400 Hz (mv)	IMF[3] |B| (γ)	φ (°)	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>40 Mev
12	1204-1430	1200	151.46	468.			11.8	0.32	7.1	287.	4.	0.71
		1300		468.				.23	6.1	264.	4.1	.7
		1400		468.				.18	7.7	236.	3.9	.83
		1500		430.				.28	8.	288.	4.1	.81
24	2335-2400	2300	149.73	542.			11.5	.23	14.8	309.	4.2	.77
		2400		542.				.17	14.4	355.	4.24	.77
25	0000-0230	0100		585.				.17	13.2	343.	4.3	.78
		0200		563.				.24	12.8	049.	4.23	.78
		0300		542.				---	10.	074.	---	---
31	1722-2127	1700	148.69	350.			11.47	.16	7.1	164.	4.1	.79
		1800		390.				.155	7.6	151.	4.16	.79
		1900		417.				.19	5.6	115.	4.26	.67
		2000		417.				.19	8.2	126.	4.17	.72
		2100		417.				.16	7.6	152.	4.17	.77
		2200		430.				.154	8.	133.	430.	.76

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

ESP = Earth-Sun Probe Angle.

Note: Data sampled hourly unless otherwise noted.

PIONEER XII

JANUARY 1980

DATE Jan 80	TIME (UT)	ESV (°)	U_{H+} (Km/sec)	N_{H+} (H^+/CC)	T_{H^+} ($\times 10^6$°K)
1	0924	102.9	382.	13.6	0.038
2	1005		387.	9.2	.222
3	---		---	---	----
4	1313		335.	10.5	.04
5	1156		324.	25.5	.119
	1252		309.	26.7	.106
6	1039		341.	13.3	.045
7	1224		291.	16.5	.071
8	1331		351.	11.2	.126
9	0936		305.	9.9	.061
	1231		297.	16.8	.07
10	1214		281.	26.5	---
11	1204		332.	37.7	.205
12	0804		308.	60.5	.098
	1215		324.	28.1	.075
	1217		347.	28.3	.144
13	1300		303.	30.5	.034
	1318		298.	45.	.027
14	1157		288.	55.	.027
	1234		296.	85.2	.027
15	1400	094.9	320.	59.5	.034
16	0603		313.	34.4	.165
	1554		308.	22.	.188
	2053		460.	---	---
17	2004		402.	11.9	.133
18	1045		418.	9.5	.105
	1840		387.	17.9	---
	2049.		396.	11.6	---
19	0848		360.	11.6	.058
	1443		326.	13.2	.07
	1751		329.	8.	.048
20	0837		304.	33.2	.052
	1057		304.	36.	.032
	1649		302.	36.6	.069
	2059		308.	37.4	.079
21	0401		297.	31.6	.103
	1324		358.	33.0	---
	1827		416.	14.5	.143

DATE Jan '80	TIME (UT)	ESV (°)	U_{H+} (Km/sec)	N_{H+} (H^+/CC)	T_{H^+} ($\times 10^6$°K)
22	0702		457.	8.8	.472
	1223		419.	16.1	.028
	1650		441.	9.3	.134
	1953		435.	10.8	.4
23	1258		701.	13.1	.308
	1717		701.	1.74	.308
	2108		643.	3.93	.526
24	0619		708.	2.78	.575
	1039		674.	6.	.18
	1413		650.	7	.389
	1910		539.	3.6	.368
25	0733		498.	24.1	.76
	1453		551.	28.4	.274
	1824		529.	7.3	.406
26	0845		451.	18.1	0.076
	1602		457.	9.8	.063
	2112		408.	5.2	.147
27	0652		338.	14.3	.352
	1235		367.	7.1	.054
	1636		364.	8.6	.092
28	0648		360.	9.6	.277
	1623		327.	6.4	.046
	1919		332.	9.1	.075
29	0622		316.	8.1	.079
	1442		309.	10.3	.026
	1719		318.	7.	.023
	2101		302.	9.7	.018
30	0104		288.	8.6	.072
	0358		339.	11.5	.08
	1322		382.	6.2	.033
31	0927		260.	1.9	----
	1348		361.	2.6	----
	2108		242.	1.1	.026

SOLAR WIND

Interplanetary Scintillations

JANUARY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
800101	1	14	332	35	312	9	3	3C273	95	-3	1.07	17	1.67	1689.91
	1	15	320	15	360	24	3	3C298	72	1	0.95	18	1.00	1689.93
800102	2	0	394	40	402	33	2	3C459	70	2	0.94	-18	-1.69	1690.08
	2	3	346	8	353	13	3	3C48	112	4	1.15	-11	-0.07	1690.00
	2	14	445	16	426	33	3	3C273	96	-4	1.07	17	1.58	1690.00
	2	15	322	18	412	40	3	3C298	73	1	0.96	17	0.96	1689.96
800103	3	1	454	66	384	11	2	3C459	69	2	0.93	-19	-1.75	1690.14
	3	3	463	8	522	9	4	3C48	111	4	1.14	-12	-0.38	1690.10
	3	13	419	22	440	15	2	3C273	97	-4	1.08	16	1.54	1690.03
	3	15	466	57	472	21	3	3C298	74	1	0.96	17	1.08	1690.06
800104	4	2	305	48	451	31	2	3C48	110	4	1.14	-12	-0.12	1690.05
	4	13	471	31	482	66	3	3C273	98	-4	1.08	16	1.50	1690.08
	4	15	418	28	491	20	2	3C298	75	1	0.97	18	1.15	1690.08
800105	5	3	438	15	516	128	2	3C48	109	4	1.13	-12	-0.38	1690.16
	5	13	555	17	526	15	3	3C273	99	-4	1.09	16	1.50	1690.14
	5	15	520	43	642	20	2	3C298	76	1	0.97	18	1.19	1690.15
800106	6	1	266	22	374	124	2	3C459	66	3	0.91	-23	-2.37	1690.17
	6	3	457	26	602	16	2	3C48	108	4	1.13	-12	-0.44	1690.21
	6	13	553	59	496	17	2	3C273	100	-4	1.09	16	1.48	1690.18
	6	15	465	13	585	79	2	3C298	77	1	0.98	17	1.15	1690.17
800107	7	13	547	27	502	21	2	3C273	101	-4	1.10	16	1.52	1690.21
800108	8	0	380	61	415	66	2	3C459	64	3	0.90	-24	-2.32	1690.32
800110	10	0	396	30	302	33	2	3C459	62	3	0.88	-26	-2.58	1690.40
	10	2	354	12	356	101	2	3C48	104	3	1.11	-13	-0.41	1690.31
800111	11	0	472	33	430	43	3	3C459	61	4	0.87	-27	-2.58	1690.47
	11	3	309	35	359	27	2	3C48	103	3	1.11	-13	-0.42	1690.32
800112	12	0	593	13	609	23	3	3C459	60	4	0.87	-27	-2.53	1690.53
	12	2	351	11	360	7	3	3C48	102	3	1.10	-13	-0.45	1690.38
	12	13	371	19	357	38	3	3C273	106	-4	1.12	15	1.73	1690.33
	12	15	378	9	392	25	3	3C298	82	0	1.00	17	1.29	1690.35
800113	13	0	486	40	446	19	3	3C459	59	4	0.86	-29	-2.77	1690.55
800114	14	2	519	43	435	24	2	3C48	101	3	1.10	-13	-0.71	1690.53
	14	13	394	11	385	29	3	3C273	108	-4	1.13	15	1.72	1690.41
	14	14	401	13	312	150	2	3C298	84	0	1.01	17	1.35	1690.43
	14	23	365	23	412	38	2	3C459	57	4	0.84	-30	-3.13	1690.59
800116	16	0	398	54	360	14	2	3C459	56	5	0.83	-32	-3.24	1690.65
	16	13	386	15	372	35	3	3C273	110	-5	1.14	16	1.85	1690.48
	16	14	398	12	387	12	3	3C298	86	-1	1.02	17	1.39	1690.50
	16	23	317	31	461	59	2	3C459	55	5	0.82	-33	-3.60	1690.65
800117	17	2	416	60	419	41	2	3C48	98	3	1.08	-13	-0.68	1690.60
	17	13	417	8	429	15	3	3C273	111	-5	1.14	15	1.75	1690.53
	17	15	393	10	398	10	3	3C298	87	-1	1.03	17	1.40	1690.54
	17	23	269	30	297	27	2	3C459	54	5	0.81	-33	-3.89	1690.66
800118	18	2	332	22	270	24	2	3C48	97	3	1.08	-13	-0.60	1690.60
	18	13	449	11	422	32	3	3C273	112	-5	1.15	15	1.69	1690.58
	18	14	315	18	325	21	2	3C298	88	-1	1.03	17	1.44	1690.53
	18	23	313	45	279	22	2	3C459	53	5	0.80	-34	-3.82	1690.73
800119	19	2	408	49	412	12	2	3C48	96	2	1.07	-14	-0.77	1690.68
	19	23	323	68	278	53	2	3C459	52	5	0.79	-34	-3.87	1690.78
800120	20	2	288	8	347	26	2	3C48	95	2	1.07	-15	-0.70	1690.64
	20	13	475	30	472	26	2	3C273	114	-5	1.16	14	1.61	1690.66
	20	23	474	58	379	59	2	3C459	51	6	0.78	-37	-3.70	1690.87
800121	21	2	289	9	296	26	3	3C48	94	2	1.06	-14	-0.68	1690.68
	21	12	411	53	467	60	3	3C273	115	-5	1.16	14	1.76	1690.67
	21	14	485	22	520	94	2	3C298	91	-1	1.05	16	1.39	1690.71
	21	23	351	45	339	231	2	3C459	50	6	0.77	-37	-4.09	1690.88
800122	22	23	456	90	250	68	2	3C459	49	6	0.75	-38	-3.93	1690.95
800123	23	1	377	11	364	10	3	3C48	92	2	1.05	-14	-0.84	1690.81
	23	12	377	11	381	32	2	3C273	117	-5	1.17	13	1.81	1690.73
	23	14	330	11	319	8	3	3C298	93	-1	1.06	16	1.48	1690.72
800124	24	12	324	8	358	9	3	3C273	118	-5	1.17	13	1.91	1690.73
	24	14	308	72	307	60	2	3C298	94	-1	1.06	17	1.61	1690.74

SOLAR WIND

Interplanetary Scintillations

JANUARY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
800125	25	2	378	15	375	9	3	3C48	90	2	1.04	-14	-0.91	1690.89
	25	12	351	41	430	92	3	3C273	119	-5	1.18	13	1.90	1690.78
	25	14	392	30	339	8	3	3C298	95	-1	1.07	17	1.54	1690.82
800126	26	23	339	18	362	16	2	3C459	45	7	0.71	-42	-4.81	1691.08
800127	27	12	329	80	569	102	2	3C273	121	-5	1.18	13	2.00	1690.84
	27	14	286	89	358	61	2	3C298	97	-1	1.08	16	1.68	1690.82
	27	23	424	10	377	18	3	3C459	44	7	0.69	-43	-4.62	1691.15
800128	28	1	294	8	316	12	4	3C48	87	2	1.03	-14	-0.95	1690.94
	28	4	223	41	291	16	2	3C147	132	1	1.22	-7	1.28	1690.79
	28	6	444	110	430	87	2	3C161	139	-12	1.24	-6	0.51	1690.98
	28	12	426	37	422	36	3	3C273	122	-5	1.19	13	1.77	1690.93
	28	14	393	24	385	10	3	3C298	98	-1	1.08	16	1.55	1690.93
	28	23	497	33	422	85	2	3C459	43	8	0.68	-44	-4.58	1691.21
800129	29	1	305	11	398	52	4	3C48	86	2	1.02	-15	-1.02	1690.99
	29	4	367	*	410	*	2	3C147	132	1	1.22	-7	0.54	1690.98
800130	30	1	392	38	581	157	2	3C48	85	2	1.02	-15	-1.11	1691.08
	30	12	415	24	1435	443	2	3C273	124	-5	1.19	13	1.80	1691.00
	30	14	241	9	322	12	2	3C298	100	-2	1.09	15	1.83	1690.88
	30	23	281	63	270	110	2	3C459	41	8	0.66	-46	-5.79	1691.22
800131	31	12	335	43	605	22	3	3C273	125	-5	1.20	12	1.95	1690.99
	31	13	292	53	386	131	2	3C298	101	-2	1.10	15	1.73	1690.97

VMID IS A MEAN AND VPK IS A MAXIMUM VELOCITY IN THE IPS SCATTERING REGION.
THE REGION'S CENTROID IS SPECIFIED BY LAT, DIST, DLON.
LAG AND ROTATION NUMBER GIVE MAPPING TO EARTH AND SUN AT VMID.
* INDICATES NO ERROR AVAILABLE, SINCE ONLY TWO ANTENNAS WERE OPERATING.

INFERRED IP MAGNETIC FIELD

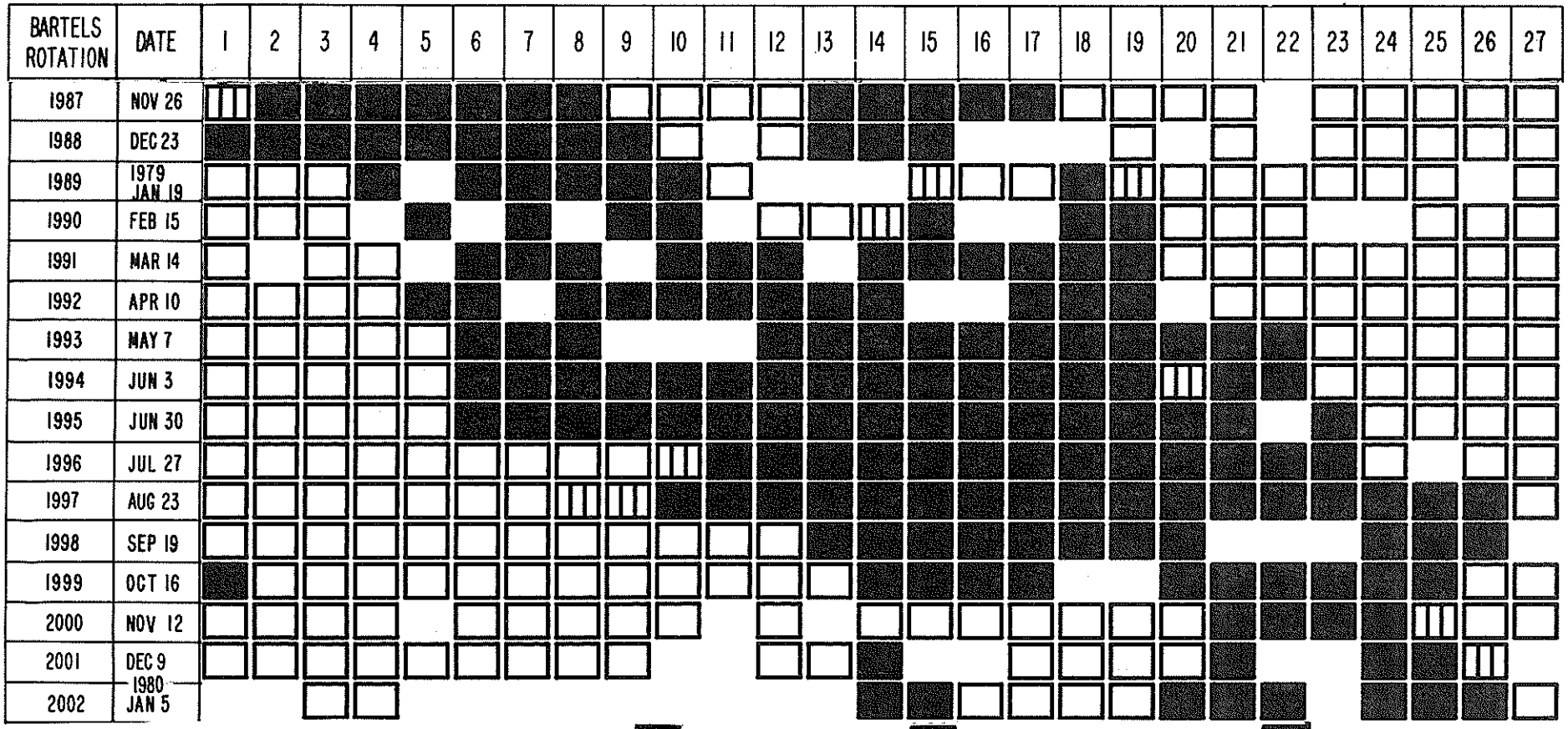
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1985	OCT 8	*	TA		T*		AT				–	–	–						TA	TA –		AT		–				
1986	NOV 4		–				– AT	–	–		–	–						*	AT	–		AT	AT	AT	AT			
1987	DEC 1	AT	AT	–					–		–	TA	–	–	AT –	–	AT –	TA –	–	A*	–		*		– AT	–	–	
1988	DEC 28		–	–	–	–			–	AT *			TA	TA	T*	–	AT –	–	TA			–	TA –			–	TA	–
1989	1979 JAN 24		–			*		TA			TA		TA							*					–	AT		
1990	FEB 20		TA	–	TA –		TA			–	TA –	TA	TA			TA A*		TA A*		TA A*				A*				
1991	MAR 19		AT			AT		T*						*	–	–	–	–	TA –		AT		T*	TA	TA –	A*	–	TA A*
1992	APR 15		A*	TA T*	AT			TA	TA		T*						TA	*	–	–	AT –	TA				A*		TA
1993	MAY 12									–	–		AT			*		TA			AT	AT				–	–	– –
1994	JUN 8	TA	TA A*		TA						–	AT		–						T* –	TA		TA	T*		AT	T*	– TA
1995	JUL 5	TA	TA	AT		TA		AT	A*	TA	TA –			TA		AT					*			TA	T*			TA
1996	AUG 1			AT	A*	–			TA –	–	–		T*				*	–			AT					AT	*	
1997	AUG 28			–	A*						AT							–		–	–	T*	–	AT	TA	–	TA AT	
1998	SEP 24						A*		AT	–		TA		A*	*			TA		–			TA			TA	TA –	*
1999	OCT 21								T*			TA	–		–					AT	AT *		AT					
2000	NOV 17	–	TA –			AT					*				AT				AT –	TA	–		TA		–	–		
2001	DEC 14				–				TA		TA	–	–	AT –				AT		AT *			TA AT	T*				– –
2002	1980 JAN 10						AT	–		–			–	TA AT		T*		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)

	1979											1980
DAY	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.
01	.	-36	-4	26	41	97	24	-5	-32	-6	16	-37
02	-1	.	16	13	82	86	21	-8	-27	.	-3	-28
03	30	.	57	6	137	70	6	-36	-27	.	-24	1
04	27	-24	44	10	115	35	4	-28	-36	-5	-18	.
05	-13	-6	11	45	104	-33	2	-20	-45	-8	-6	.
06	1	46	9	68	78	-61	-6	-24	-31	-17	-1	.
07	50	64	14	101	15	-81	-8	-39	-22	-12	18	54
08	88	56	67	134	-27	-80	-8	-46	-45	-3	35	59
09	59	.	102	126	-50	-70	-6	-54	.	-6	75	.
10	39	.	124	75	-76	-68	-16	-45	.	6	99	.
11	40	21	138	31	-82	-75	-43	-47	.	29	83	.
12	30	63	100	-13	-52	-23	-59	-67	-55	46	60	.
13	.	100	51	-66	-52	-23	-46	-74	-62	52	32	.
14	78	106	-12	-104	-37	-20	-33	-53	-49	45	44	.
15	62	.	-51	.	-28	-24	-38	-41	.	26	29	.
16	27	24	.	.	-42	-30	-61	-26	-6	.	20	.
17	6	45	-121	.	-43	-26	-57	-18	20	13	18	.
18	.	.	-117	-27	-35	-32	-41	3	29	41	.	-17
19	-52	-56	-72	-29	-32	-16	4	15	25	35	.	-8
20	.	-81	-40	-36	-37	-10	.	41	52	35	7	33
21	-86	-81	-27	-34	-24	.	41	46	64	30	6	32
22	.	.	-32	-43	0	-16	55	64	69	.	-6	10
23	-80	-51	-40	-56	-7	6	58	59	48	22	.	3
24	-52	-41	.	-51	-7	33	68	65	50	.	.	-12
25	.	-28	.	-30	10	58	74	63	35	12	35	-25
26	19	.	-99	-16	17	69	77	40	26	20	40	-31
27	10	-29	-92	-17	29	83	47	37	16	27	27	.
28	0	-36	-57	-4	47	92	40	24	3	24	23	-34
29		-12	.	19	64	90	32	21	-9	39	-18	-26
30		-26	3	10	93	82	1	7	-7	37	.	-13
31		-28		9		53	-1		-22		.	29

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JANUARY 1980

Big Bear Solar Observatory

Only two D3 limb observations were made during the month of January. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North	South
26 January	+48 to -5	-143 to +150
31 January	+33 to +12	-168 to +164

BOULDER GEOMAGNETIC SUBSTORM LOG

JANUARY 1980

DATE	ONSET TIME	DIR	COMMENTS
01/01	1030	West	Field very active after 0800 UT with numerous injections. Mid/low-latitude H component indicated strong ring current established 01/1700 UT to 02/0200 UT.
01/02	1125	West	Moderate SS
01/03	0315	East	Weak SS, slow onset.
	1050	West	Moderate SS, several injections with final recovery near 1400 UT. Field unsettled after 1600 UT.
01/04			Field unsettled all day.
	0555	East	Weak SS
01/05	1015	West	
	1340	West	
01/06			Field slightly unsettled.
01/07			Field quiet; became slightly unsettled after 2100 UT.
01/08			Field unsettled through 1200 UT with weak localized SS activity.
01/09			High-latitude stations slightly unsettled 0500-1500 UT. Mid/low-latitude stations quiet.
01/10			High-latitude stations slightly unsettled 1200-1600 UT. Mid/low-latitude stations quiet.
01/11			Small positive impulse H component all mid/low-latitude stations. Field was then active through 2200 UT.
	0940	West	Several injections with recovery near 1300 UT.
	1510		Several injections with recovery near 1800 UT.
01/12			Quiet day
01/13	0510	SSC	Magstorm conditions through 2100 UT.
	1055	West	Onset of strong SS with several injections.
	1600		Moderate SS
01/14			Field unsettled 0800-1800 UT. No distinct SS activity.
01/15	0950		Weak SS
	1210	West	
	1740		Localized SS, Arctic Village-Inuvik.
01/16			Field unsettled through 1400 UT.
	0220	East	
01/17	0630	East	
	0950	West	Multiple injections with recovery near 1200 UT.
	1330	West	Multiple injections with recovery near 1600 UT.
01/18	0810		Weak SS
	1240		Weak SS
01/19			Field slightly unsettled after 0800 UT.
01/20			Field slightly unsettled.
01/21			Field slightly unsettled 0700-1600 UT.
	1350	West	Weak SS
01/22			Field slightly unsettled after 0700 UT.
01/23	0540	East	Slow onset with recovery near 0745 UT.
	0950	≃ center	Slow expansion westward along oval stations.
01/24	1015	West	
	1750		Slow onset; localized SS, Inuvik to Sachs Harbour.
01/25	1105		Small positive impulse all mid/low-latitude stations. Field unsettled thereafter.
	1400	West	
01/26	1250	West	
01/27	0205	East	Weak SS
	0810	East	Numerous small injections with final recovery near 1230 UT. Field active after 0810 UT.
	1420	West	Strong SS, numerous injections with final recovery near 1930 UT.
01/28			Field unsettled 0130-0730 UT; no SS activity.
	1215	West	Moderate SS
	1640		
	1805		
	2200		Positive impulse H component all mid/low-latitude sites.
01/29			Field active through 0400 UT. No distinctive SS activity.
	1055	West	Weak SS
	1345	West	Moderate SS, several injections with recovery near 1800 UT. Field unsettled balance of day.
01/30			Field unsettled 0820-1230 UT.
	1055	West	
	1120	West	
01/31			Field slightly unsettled after 0800 UT.

SGD 426 Part I (Prompt)

DECEMBER 1979 DATA

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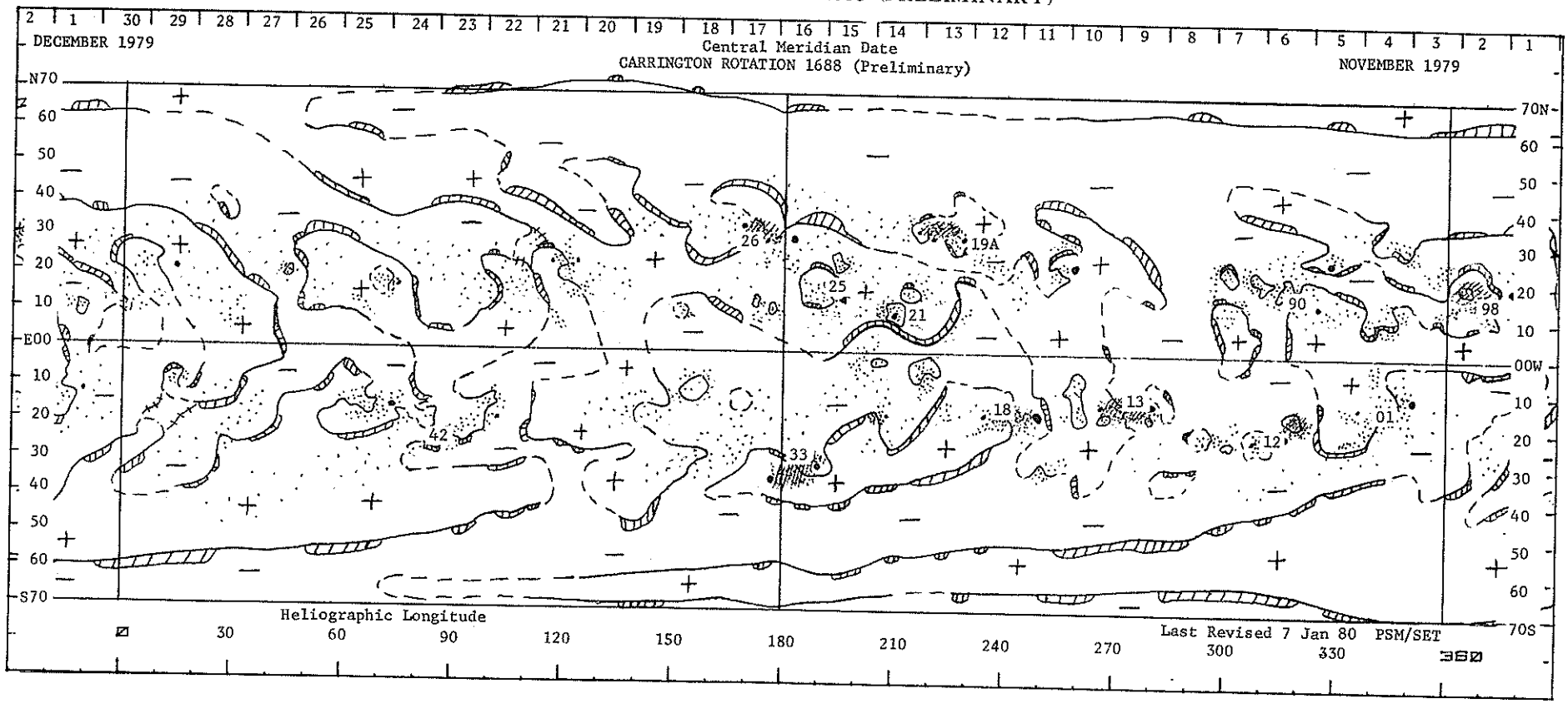
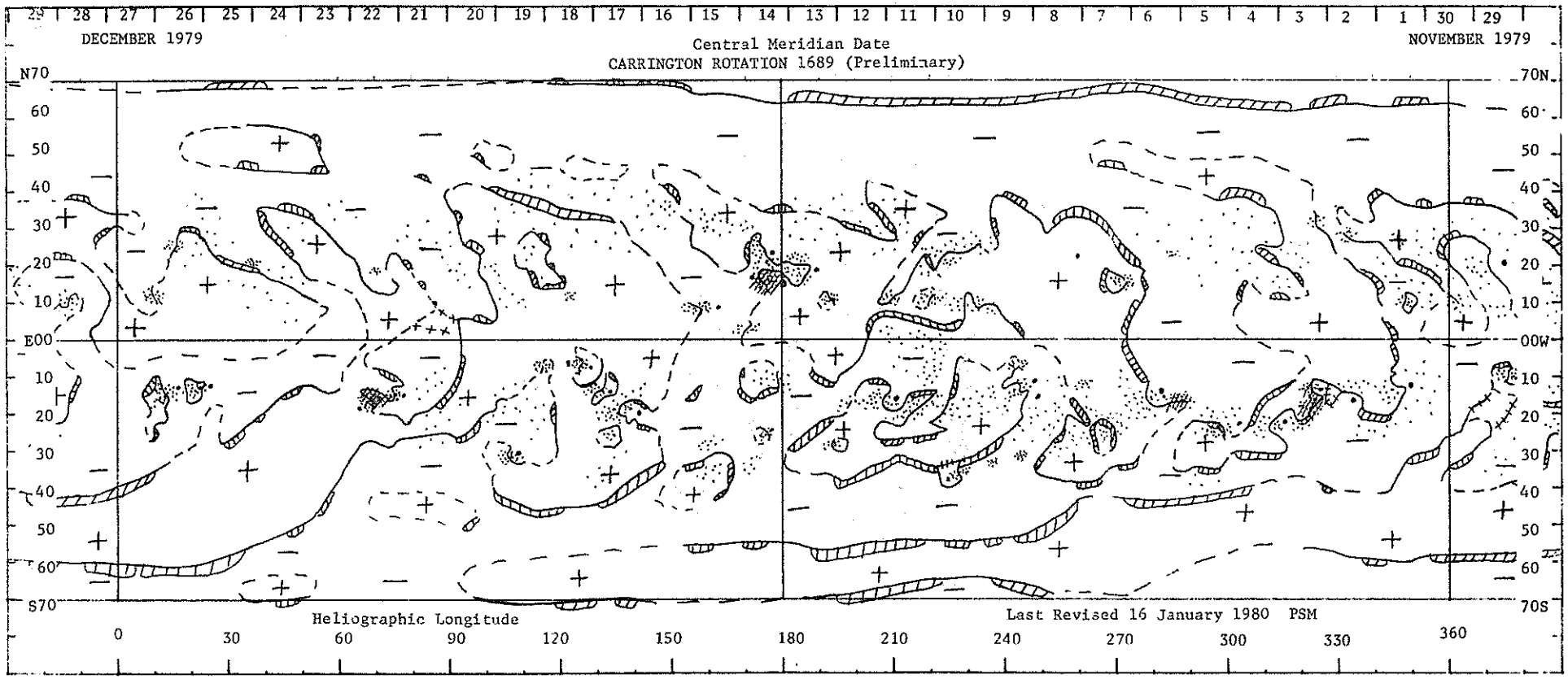
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1688 (PRELIMINARY)



Hα SYNOPTIC CHART

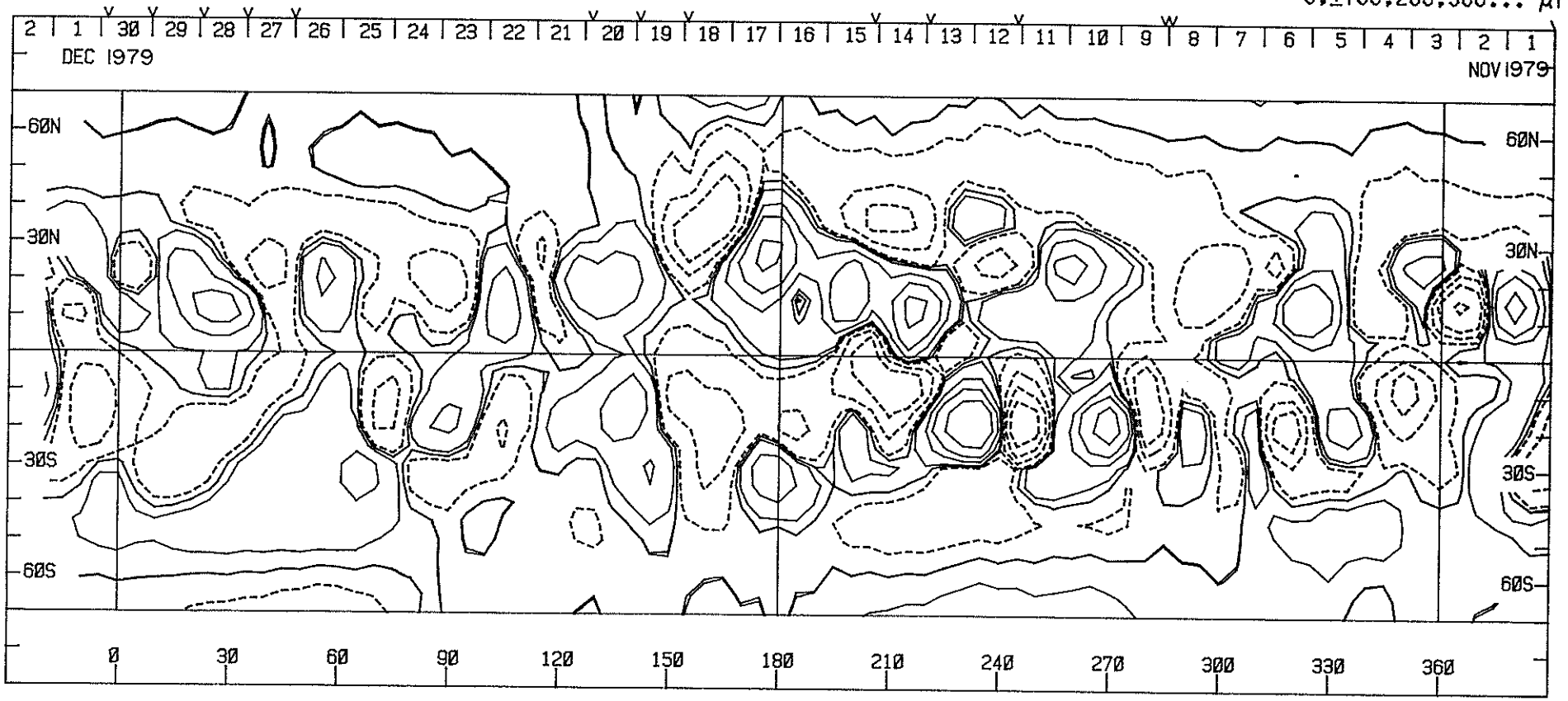
CARRINGTON ROTATION 1689 (PRELIMINARY)



SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1688

Stanford Solar Observatory

0,±100,200,500... μT

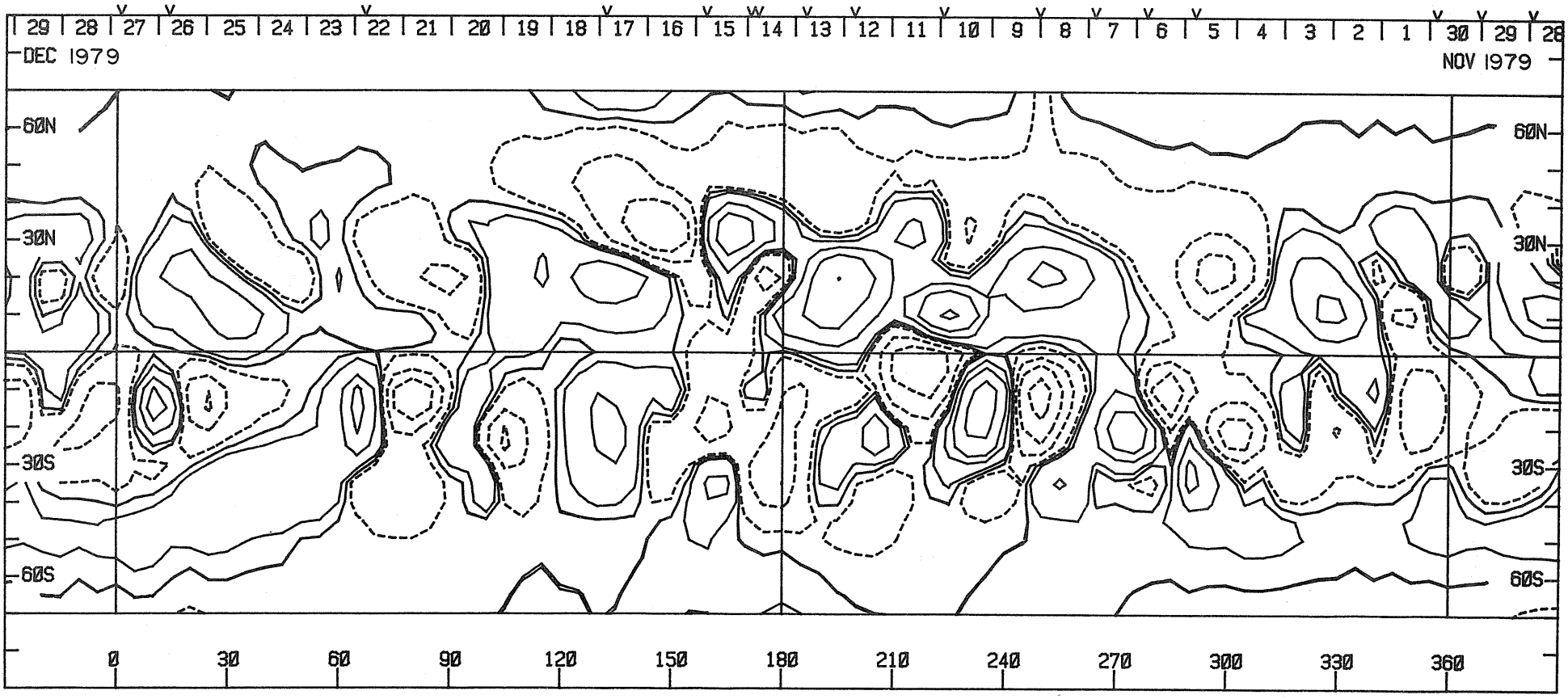


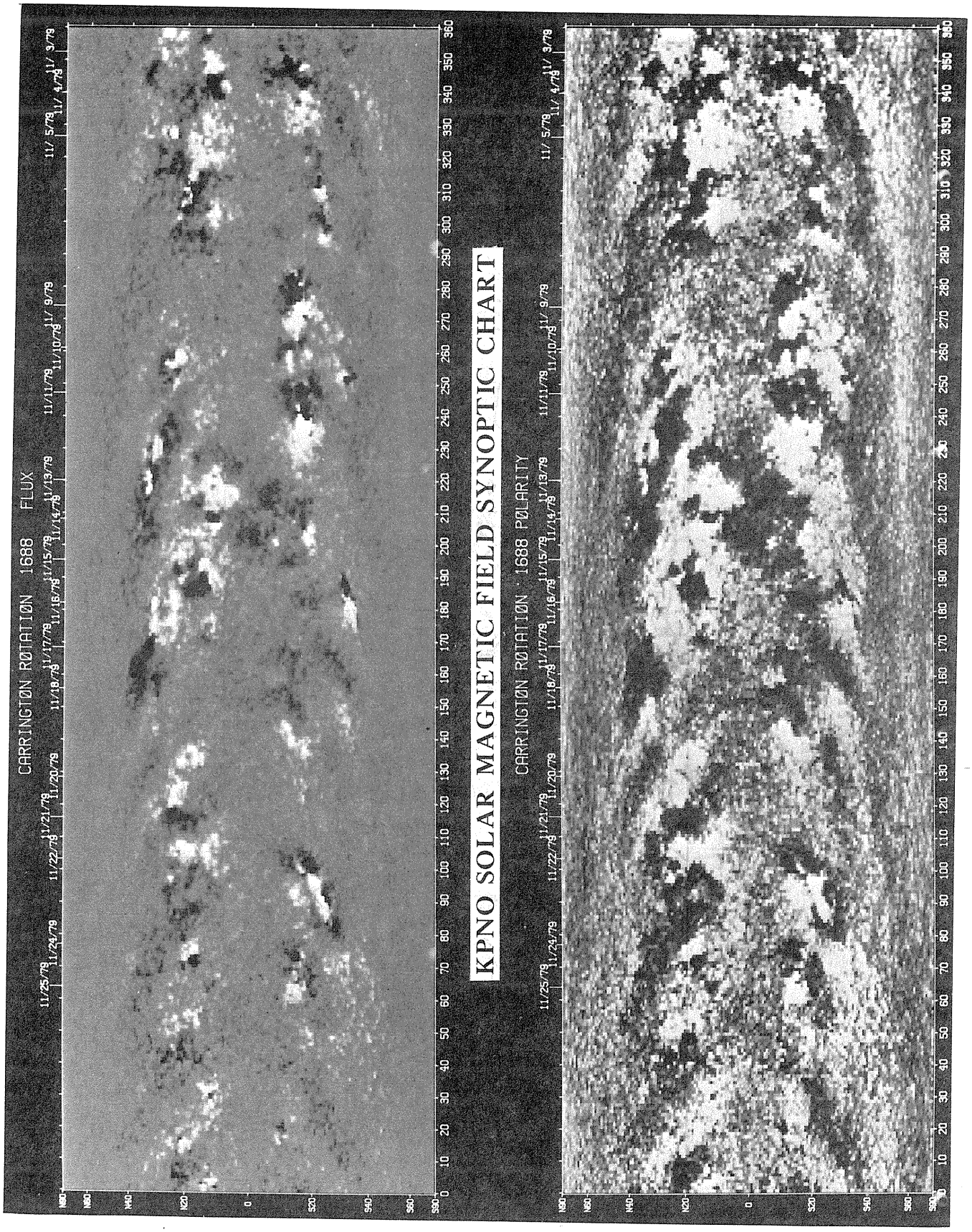
SOLAR MAGNETIC FIELD SYNOPTIC CHART

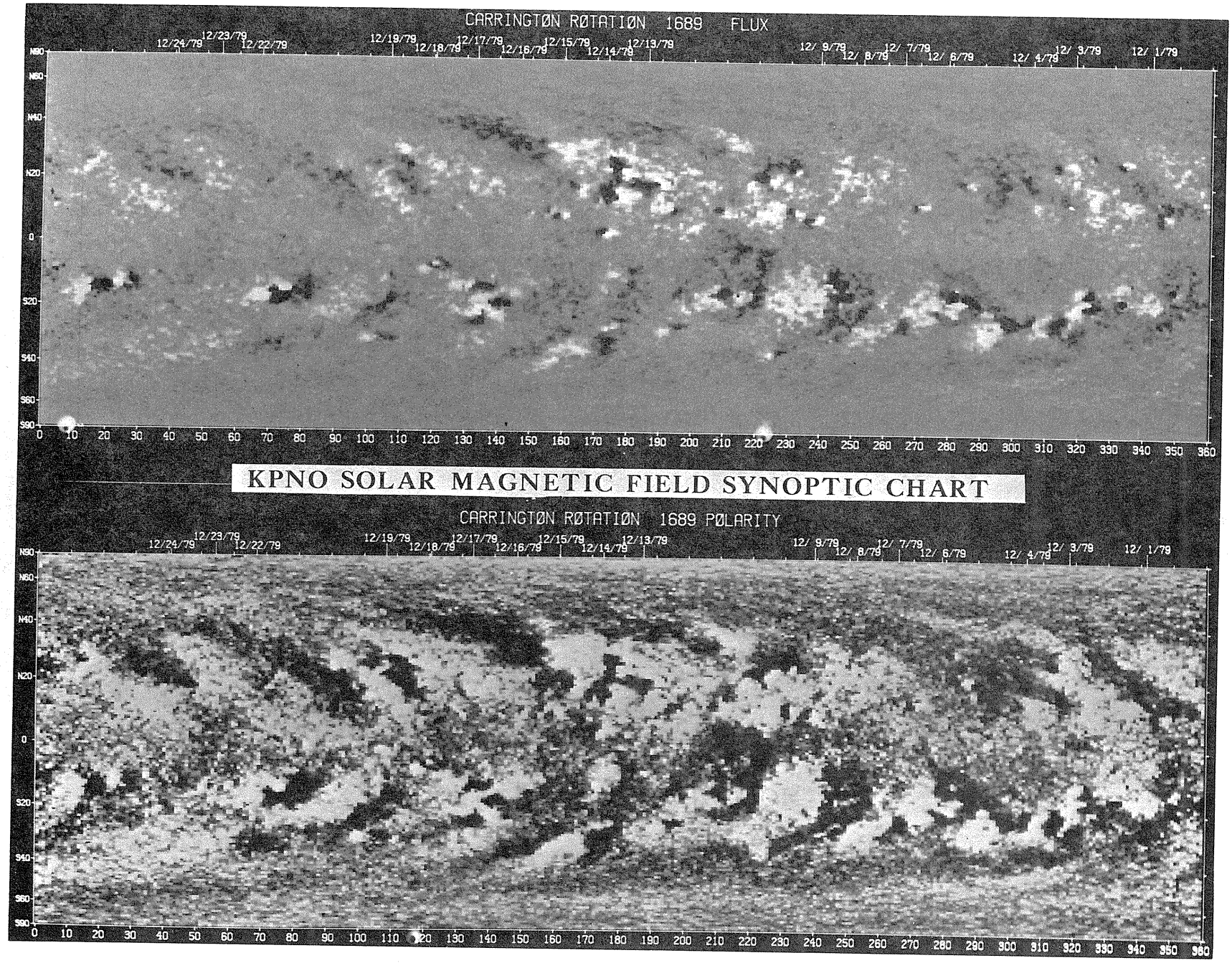
CARRINGTON ROTATION 1689

Stanford Solar Observatory

0, ±100, 200, 500... μT



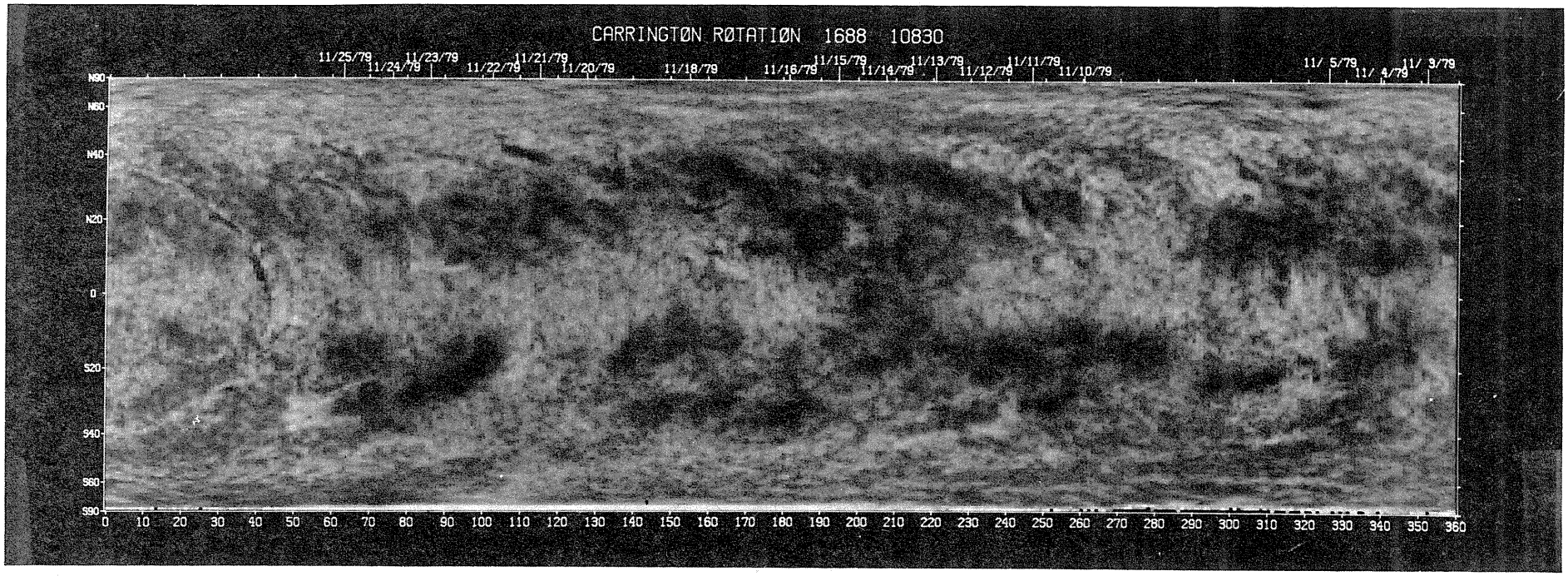

CARRINGTON ROTATION 1688 FLUX
CARRINGTON ROTATION 1688 POLARITY
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART


CARRINGTØN RØTATIØN 1689 FLUX
12/24/79 12/23/79 12/22/79 12/19/79 12/18/79 12/17/79 12/16/79 12/15/79 12/14/79 12/13/79 12/ 9/79 12/ 8/79 12/ 7/79 12/ 6/79 12/ 4/79 12/ 3/79 12/ 1/79
N80 N60 N40 N20 0 S20 S40 S60 S80
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1689 PØLARITY
12/24/79 12/23/79 12/22/79 12/19/79 12/18/79 12/17/79 12/16/79 12/15/79 12/14/79 12/13/79 12/ 9/79 12/ 8/79 12/ 7/79 12/ 6/79 12/ 4/79 12/ 3/79 12/ 1/79
N80 N60 N40 N20 0 S20 S40 S60 S80
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1688

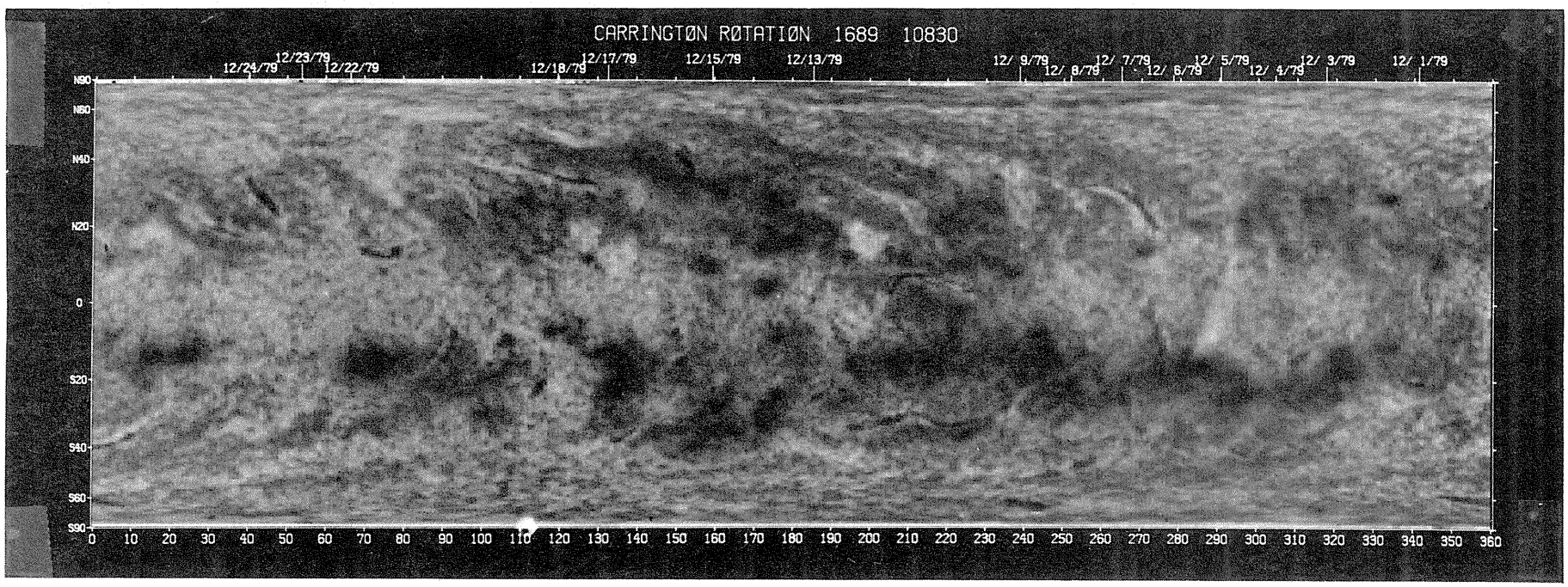
KITT PEAK NATIONAL OBSERVATORY



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1689

KITT PEAK NATIONAL OBSERVATORY



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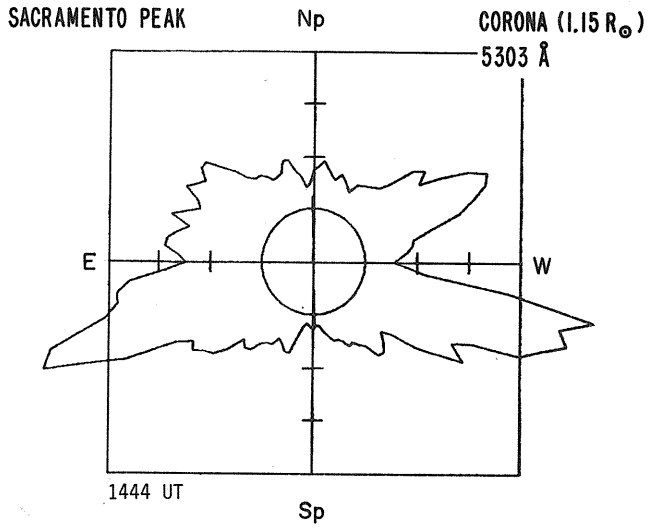
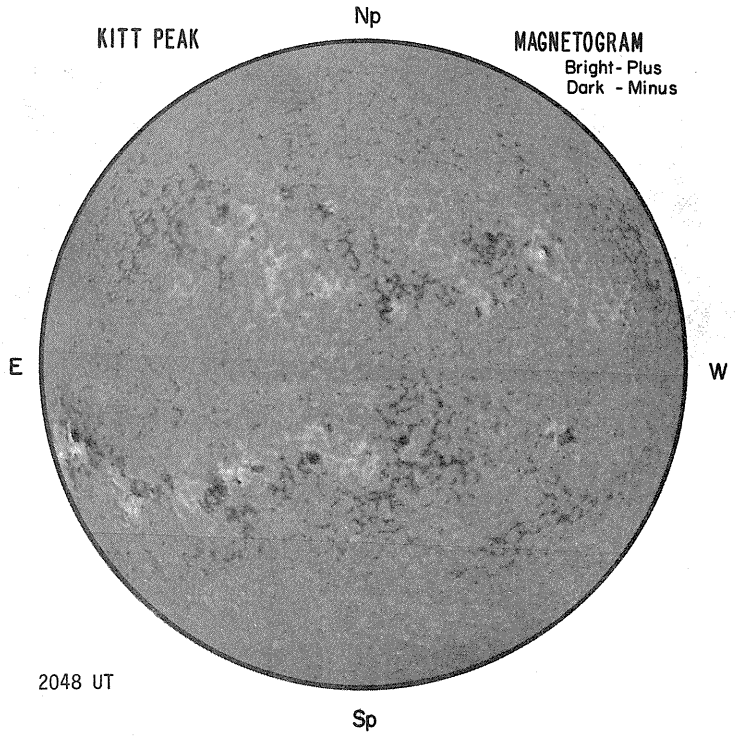
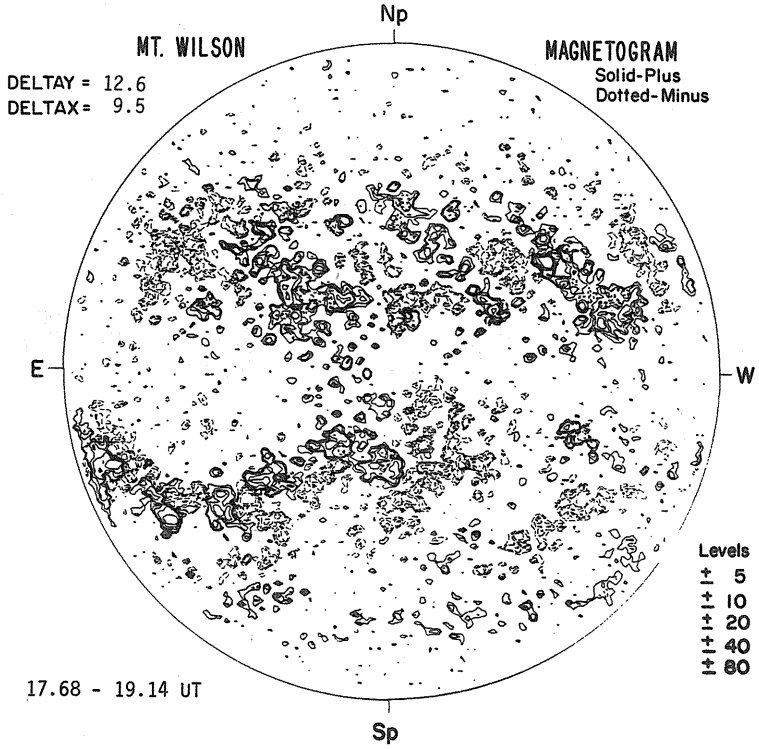


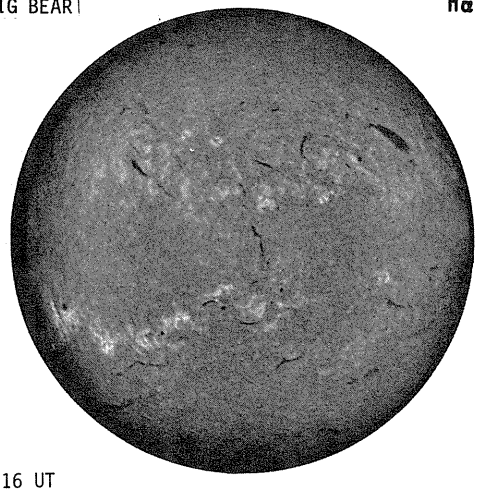




OI

BIG BEAR

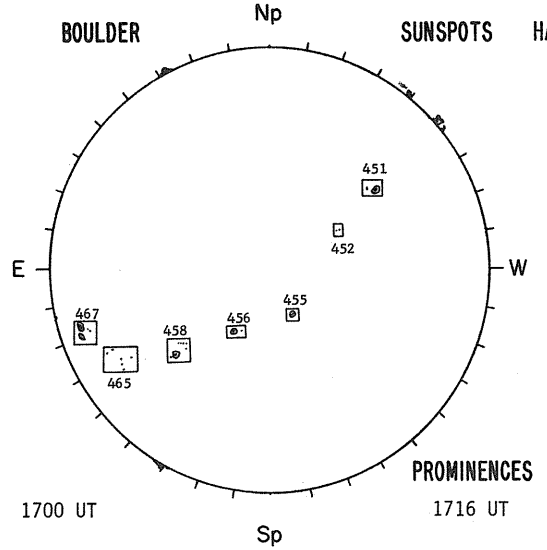
Hα



2116 UT

BOULDER

SUNSPOTS



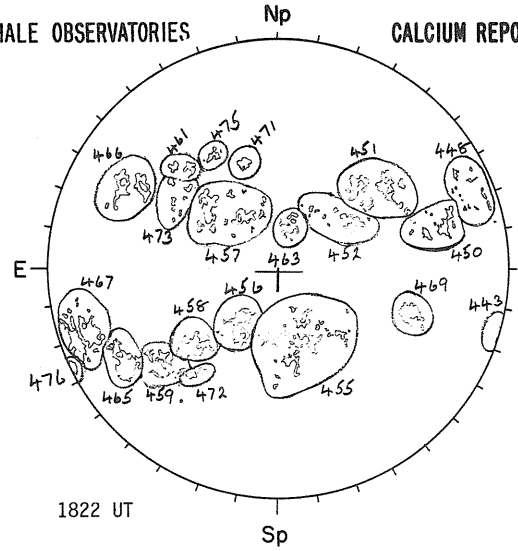
1700 UT

PROMINENCES

1716 UT

HALE OBSERVATORIES

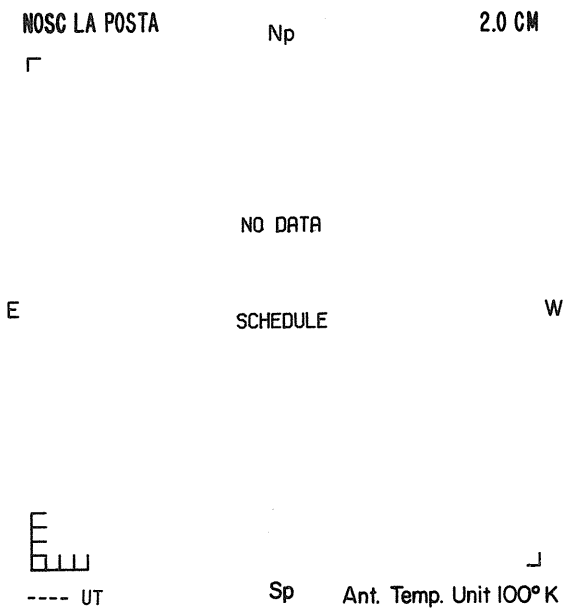
CALCIUM REPORT



FAIR	JA
50-	1500-2.5
51-	2400-2.5
52-	1100-2.5
55-	3400-2.5
56-	1600-3.0
57-	2400-3.0
58-	1900-3.5
59-	2200-3.0
61-	0800-3.0
63-	0500-3.5
65-	2100-3.5
67-	2900-3.5
69-	1200-3.0
71-	0500-3.0
72-	0400-2.5
73-	0500-2.5
75-	0300-3.5
76-	0700-4.0

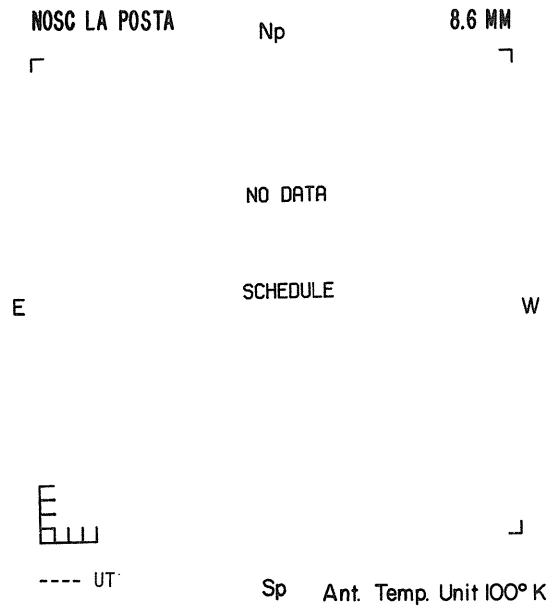
NOSC LA POSTA

2.0 CM



NOSC LA POSTA

8.6 MM

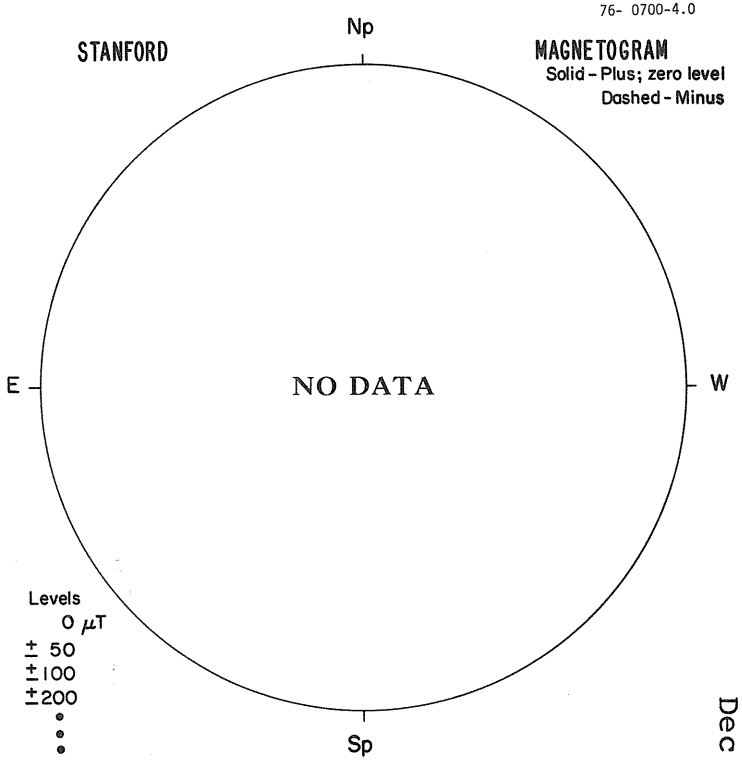


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



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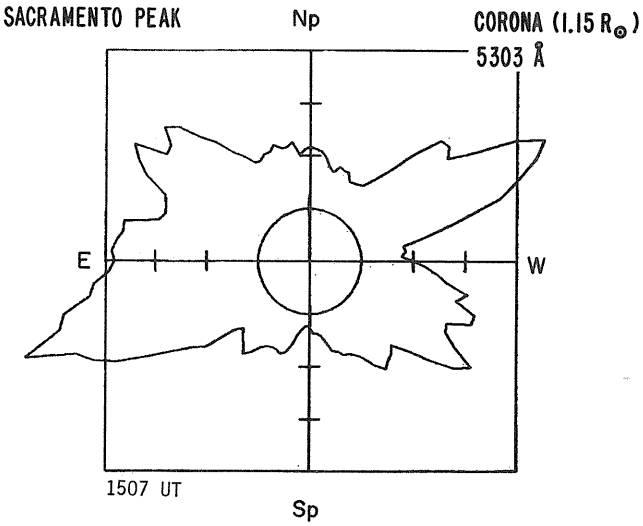
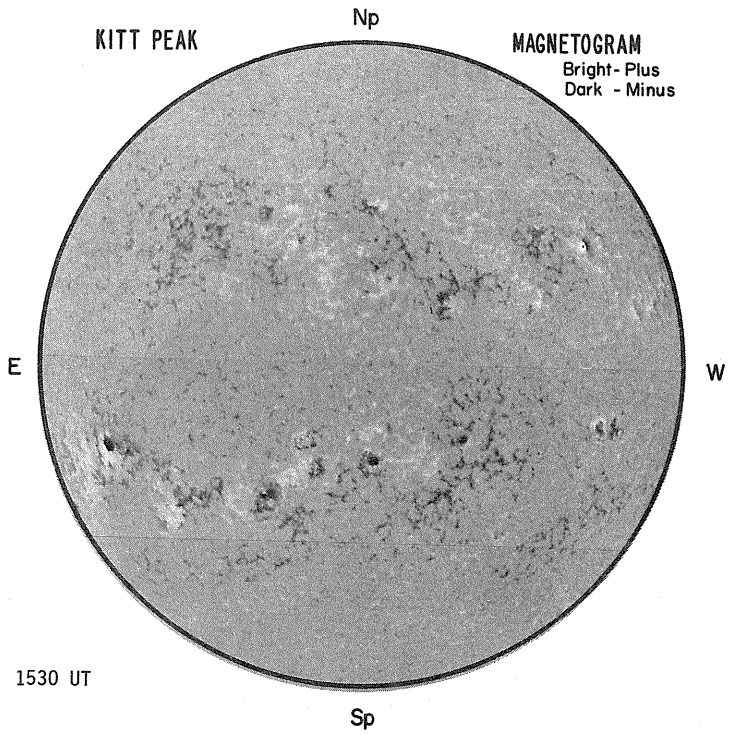
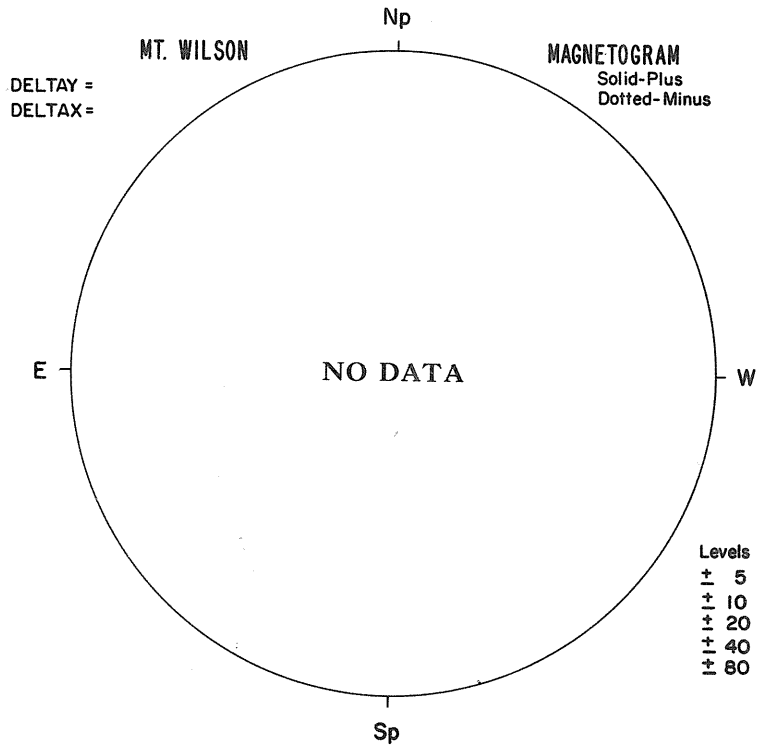
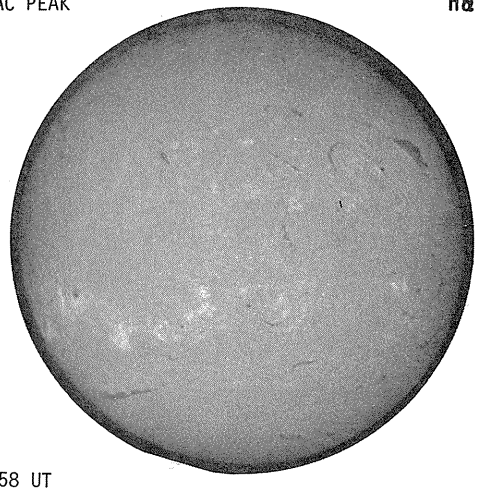






02

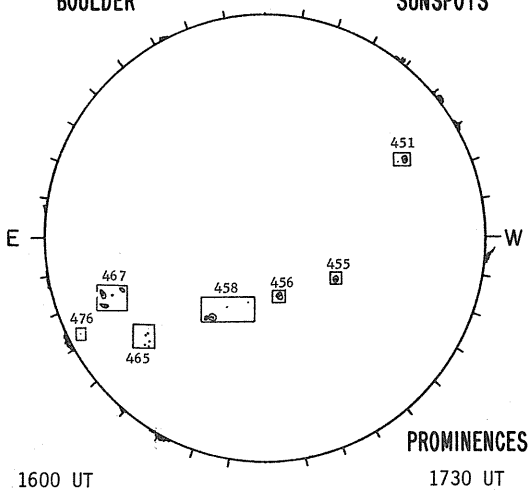
SAC PEAK



Hα

1458 UT

BOULDER



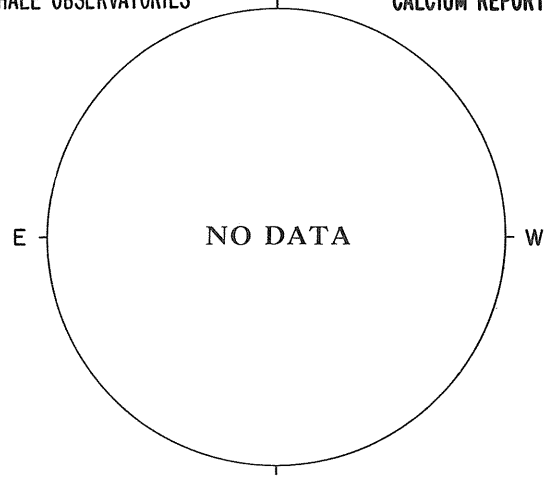
SUNSPOTS

PROMINENCES

1600 UT

1730 UT

HALE OBSERVATORIES



CALCIUM REPORT

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

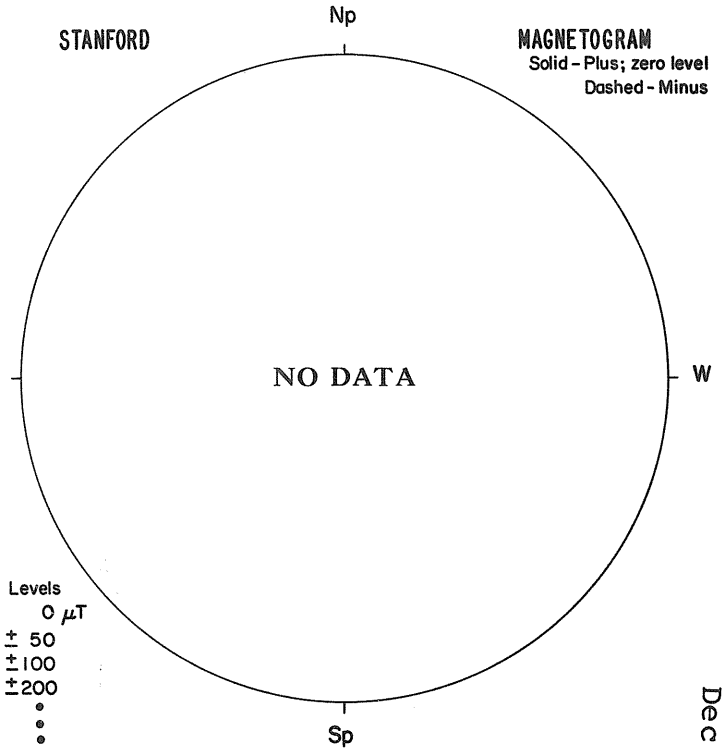
W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

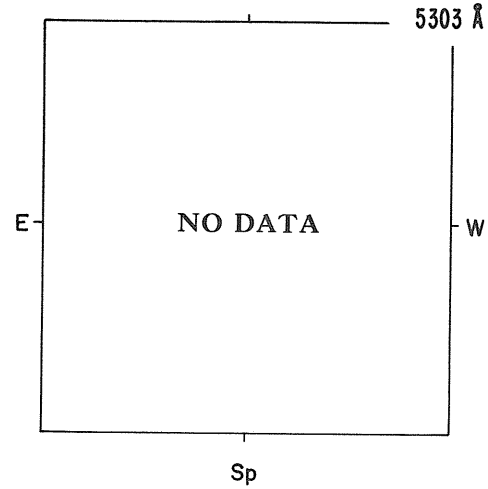
±200

•
•
•

DECEMBER 3, 1979 (P = 15.57, B_o = 0.66, L_o = 327.25)

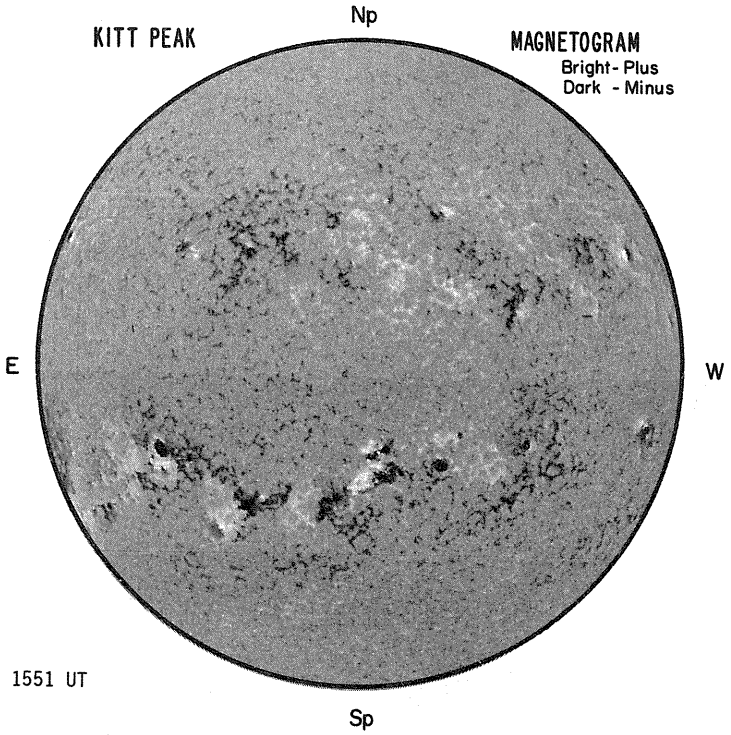
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

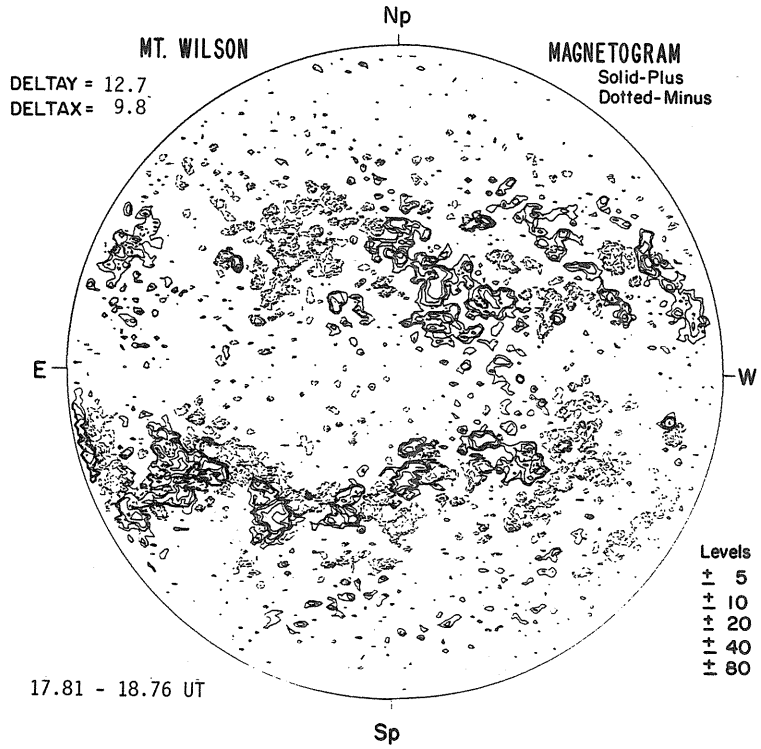


1551 UT

MT. WILSON

DELTAY = 12.7
DELTAX = 9.8

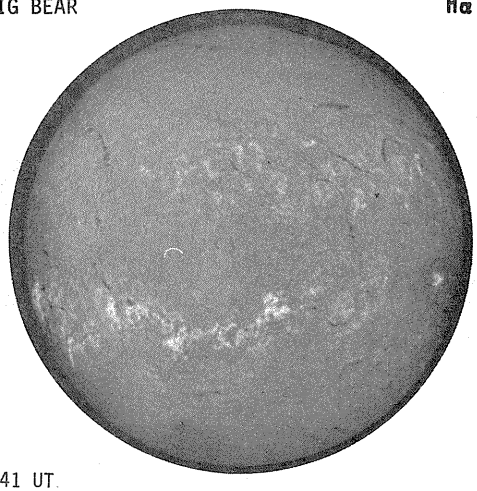
MAGNETOGRAM
Solid-Plus
Dotted-Minus



17.81 - 18.76 UT

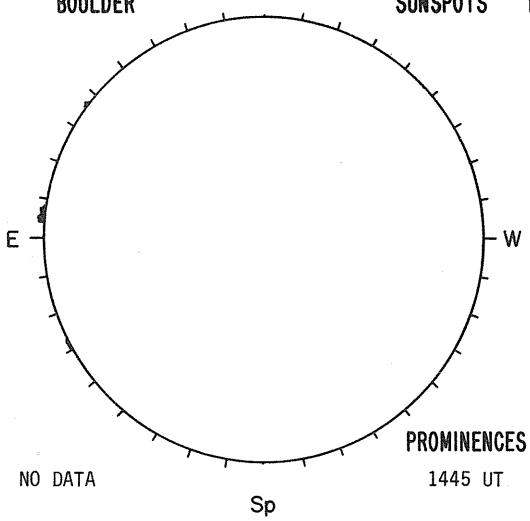
03

BIG BEAR Hα



2341 UT

BOULDER SUNSPOTS

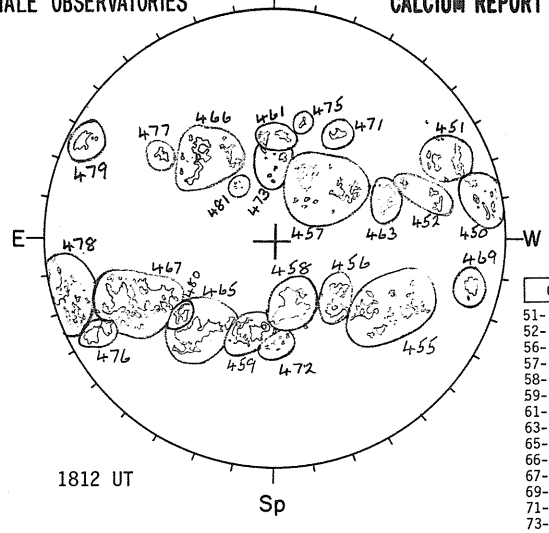


NO DATA

PROMINENCES

1445 UT

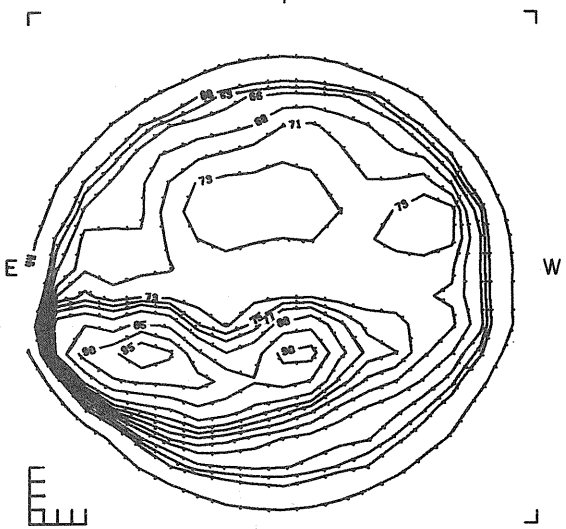
HALE OBSERVATORIES CALCIUM REPORT



1812 UT

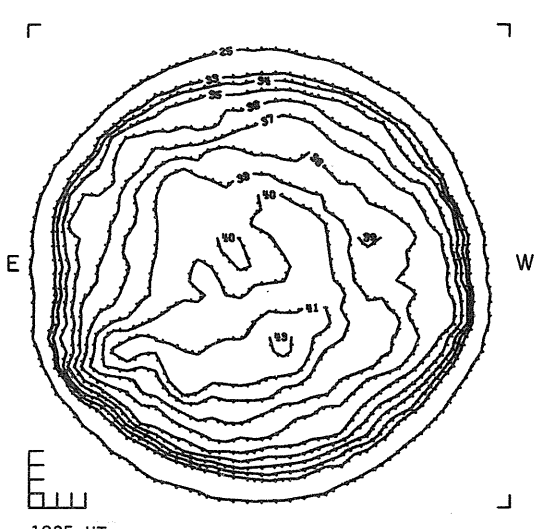
GOOD	JA
51-	1200-2.5
52-	0400-2.5
56-	1000-3.0
57-	1900-3.5
58-	2400-4.0
59-	1500-3.5
61-	0600-3.0
63-	1000-3.0
65-	2500-4.0
66-	1500-3.0
67-	6300-4.0
69-	1000-4.0
71-	0400-3.0
73-	0400-2.5
76-	1900-3.5
77-	0500-2.5
78-	4000-4.0
80-	0500-3.5

NOSC LA POSTA 2.0 CM



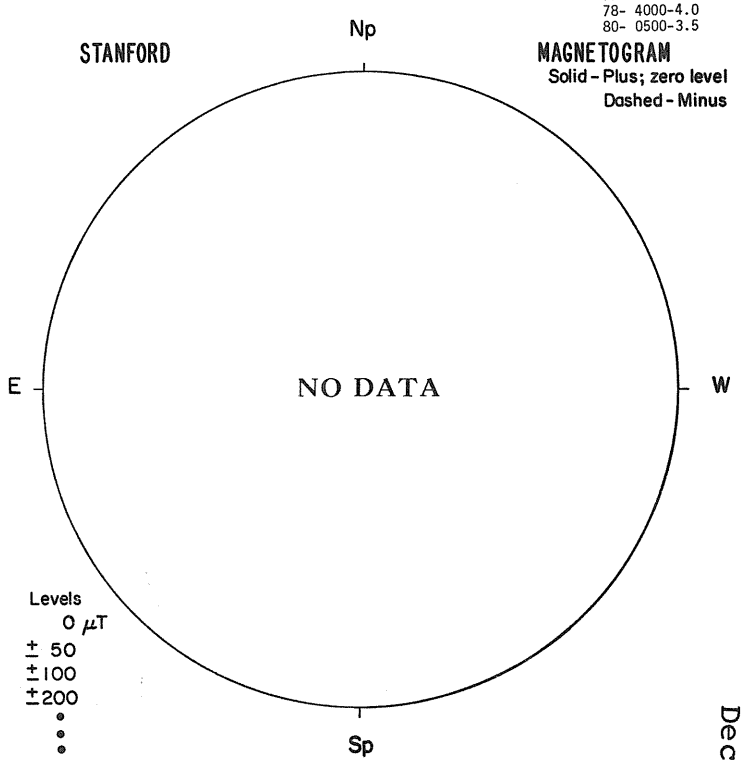
1932 UT Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM



1835 UT Ant. Temp. Unit 100° K

STANFORD

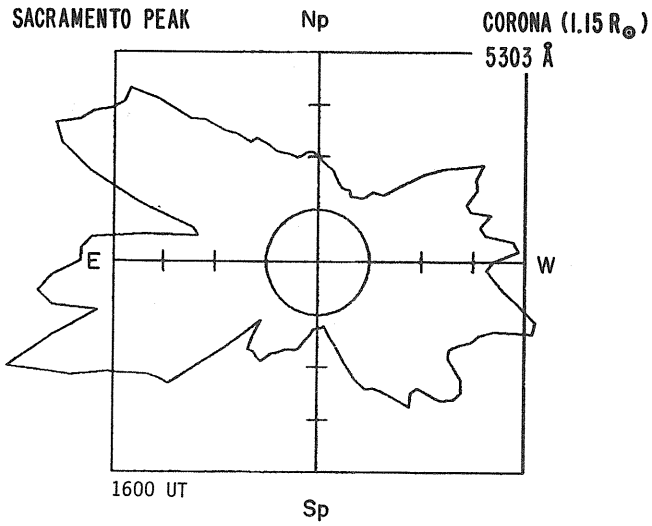


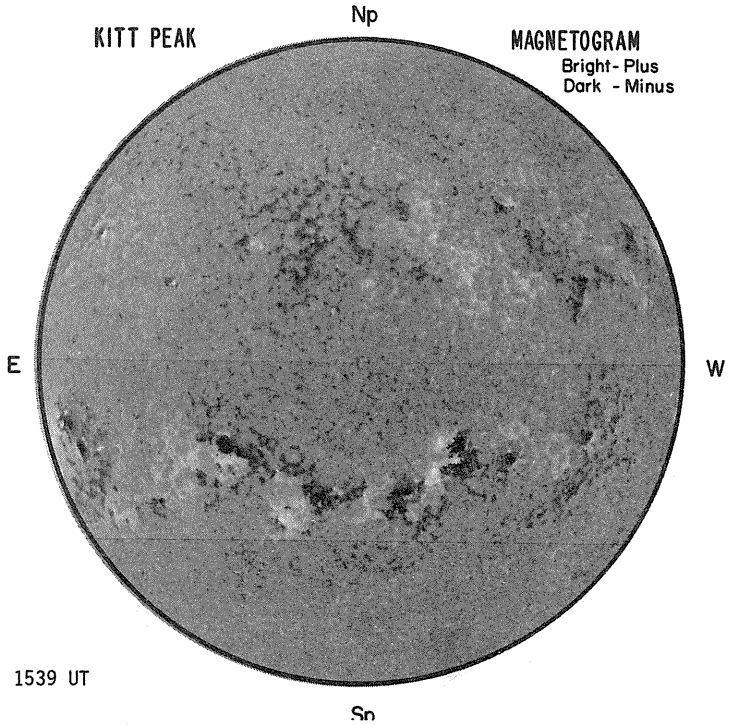
Levels
0 μT
± 50
± 100
± 200
• • •

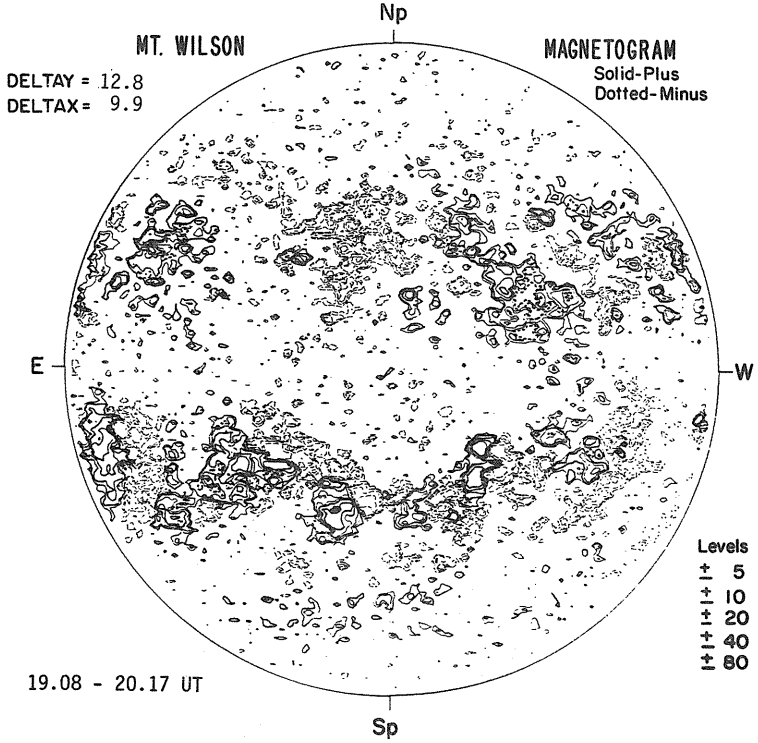
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

55
Dec 79

DECEMBER 4, 1979 (P = 15.17, B_o = 0.54, L_o = 314.07)

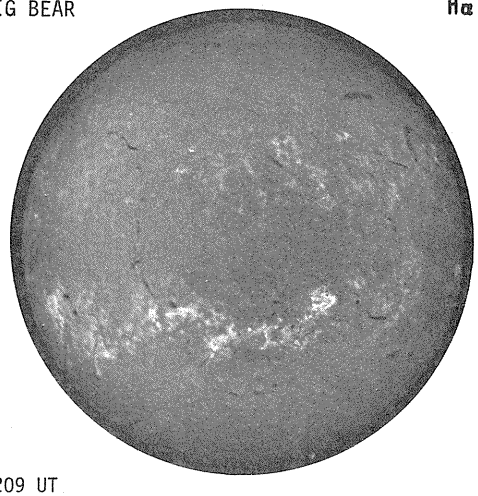






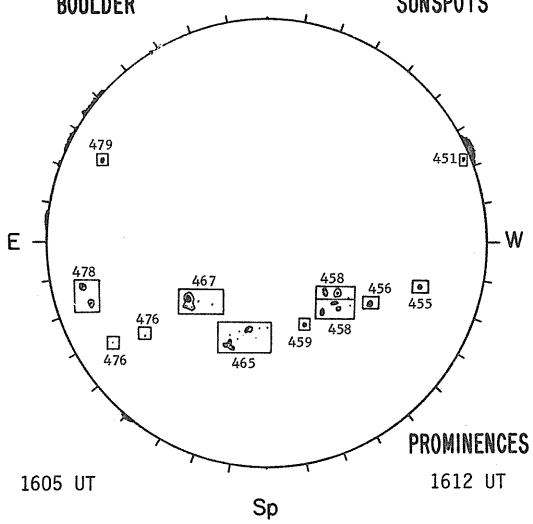
04

BIG BEAR — Hα



2209 UT

BOULDER — SUNSPOTS

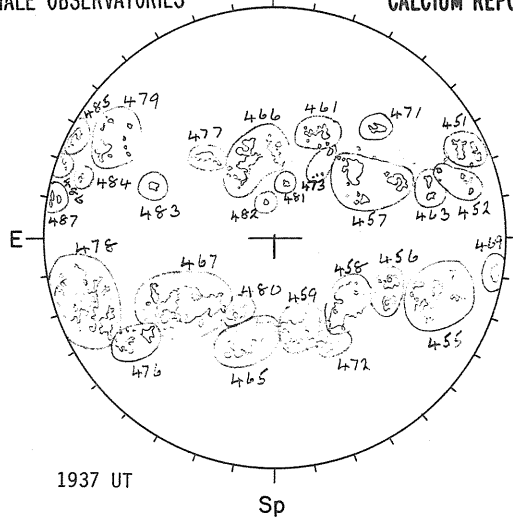


1605 UT

PROMINENCES

1612 UT

HALE OBSERVATORIES — CALCIUM REPORT



1937 UT

FAIR	JA
51-	1000-2.5
56-	1000-3.0
57-	2000-3.0
58-	4000-4.0
59-	2000-3.0
63-	0700-2.5
65-	3700-4.0
66-	2200-3.0
67-	6400-4.0
69-	1000-3.0
71-	0500-3.0
72-	0400-3.0
73-	0200-2.5
76-	1700-3.5
77-	0600-3.0
78-	8200-4.5
80-	0700-3.0
81-	0100-2.5

NOSC LA POSTA — 2.0 CM

Np

NO DATA

E — EQUIPMENT — W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA — 8.6 MM

Np

NO DATA

E — EQUIPMENT — W

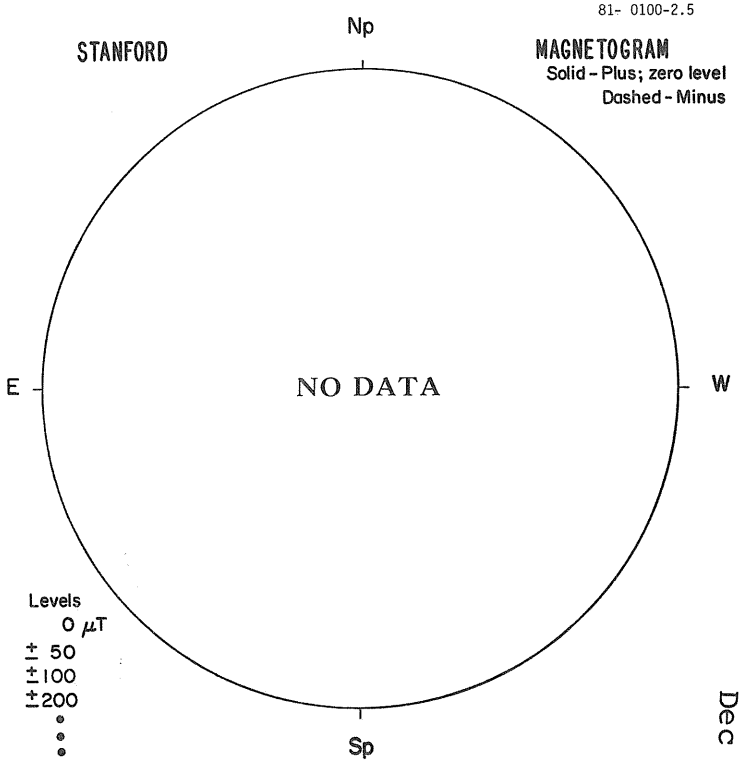
---- UT

Sp

Ant. Temp. Unit 100° K

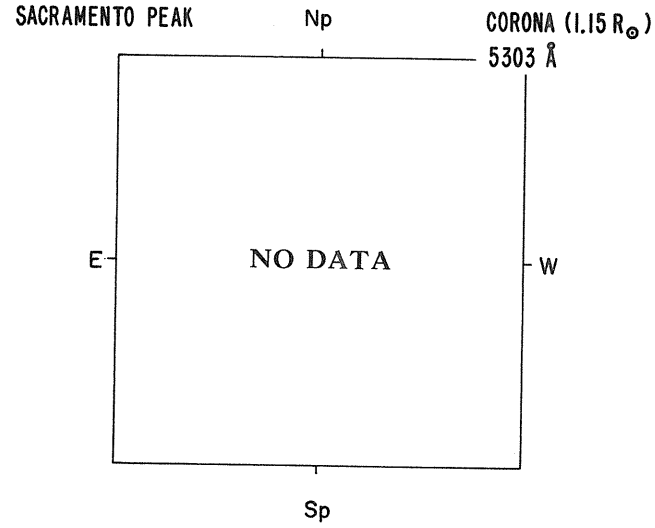
STANFORD — MAGNETOGRAM

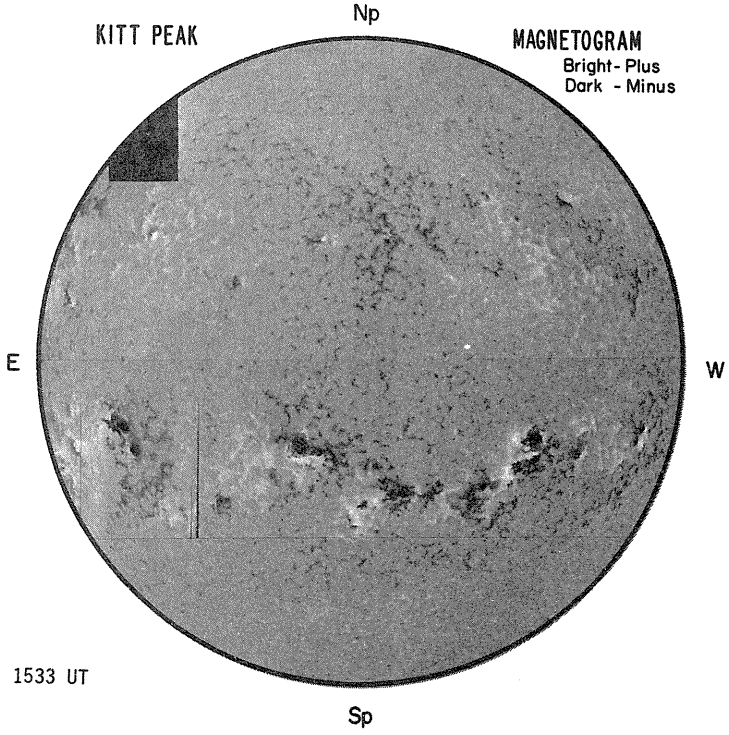
Solid - Plus; zero level
Dashed - Minus

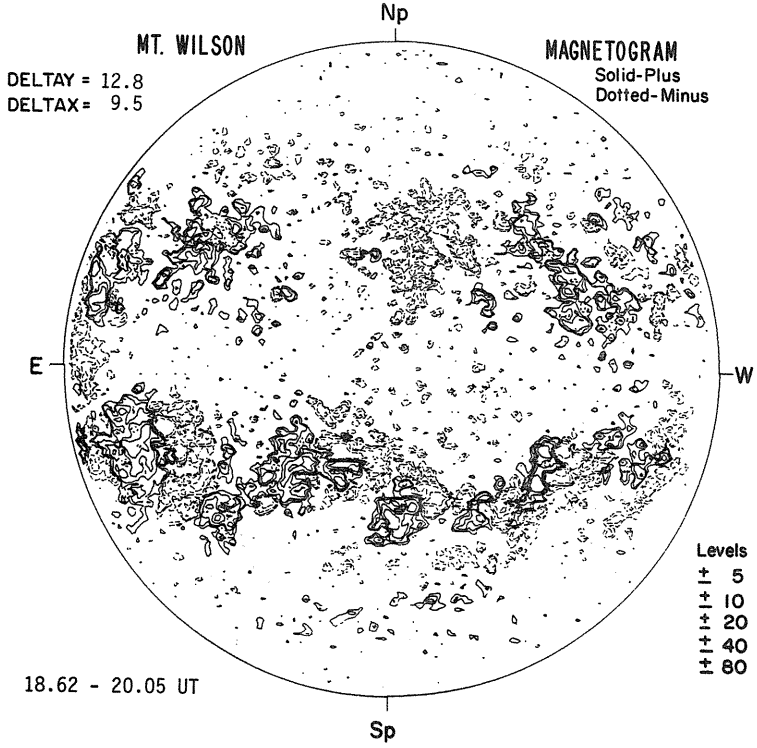


Levels
0 μT
± 50
± 100
± 200
•
•
•

DECEMBER 5, 1979 (P = 14.77, B_o = 0.41, L_o = 300.89)

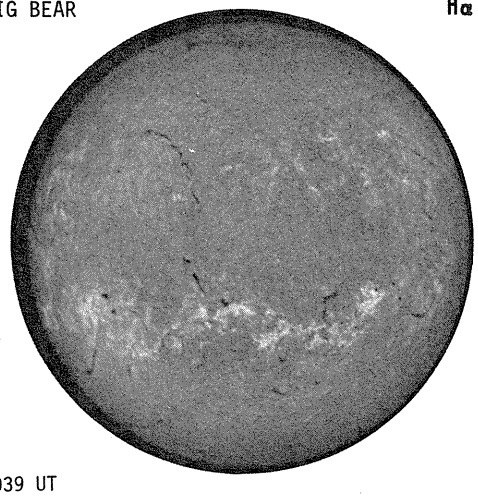






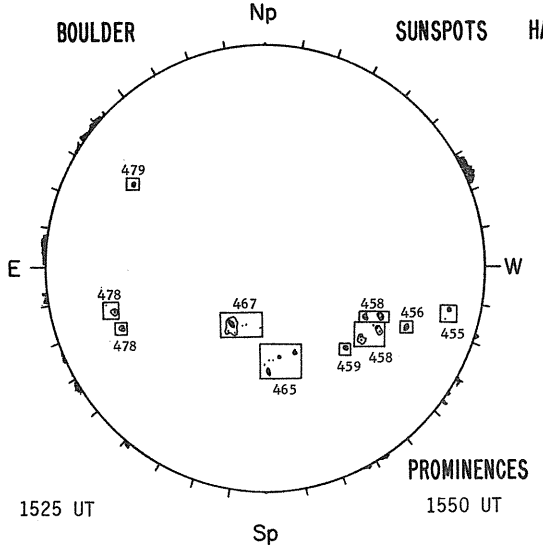
05

BIG BEAR



2039 UT

BOULDER SUNSPOTS

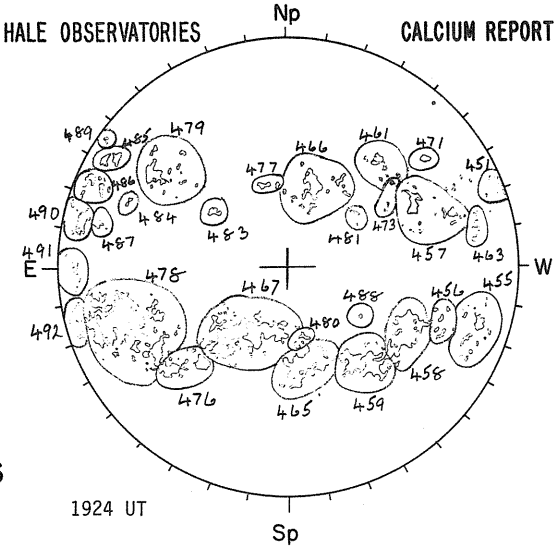


1525 UT

PROMINENCES

1550 UT

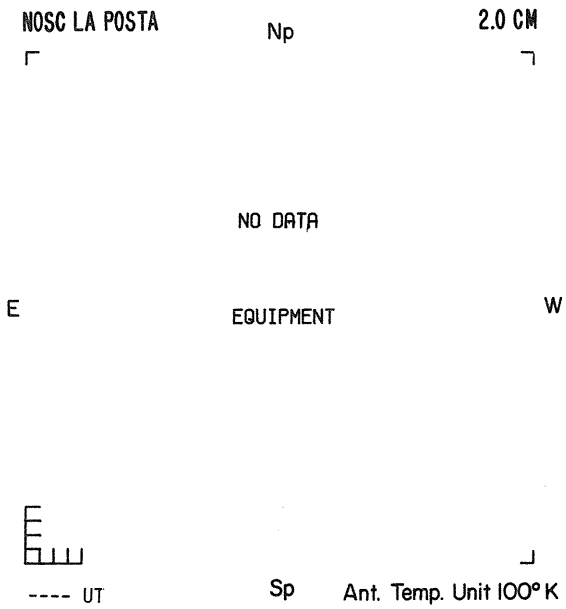
HALE OBSERVATORIES CALCIUM REPORT



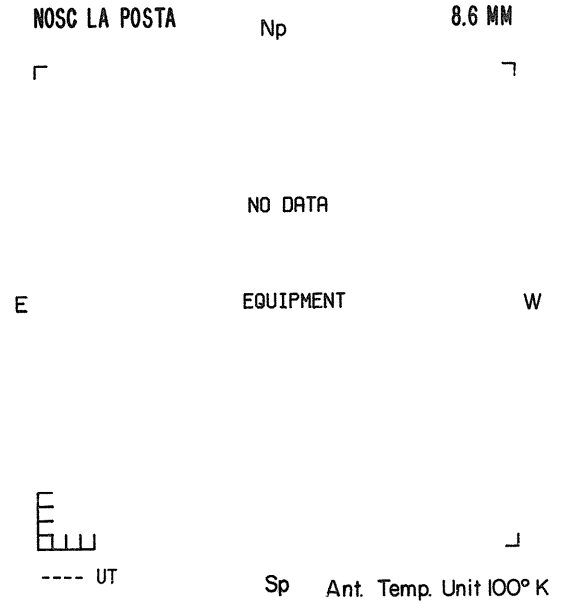
1924 UT

FAIR	JA
56-	0400-2.5
57-	1400-3.0
58-	4100-4.0
59-	2800-3.5
61-	0600-3.0
63-	0500-3.0
65-	4200-4.0
66-	1900-2.5
67-	6600-4.0
71-	0300-3.5
76-	1800-3.5
77-	0300-3.0
78-	10200-4.0
79-	1900-2.5
80-	0300-3.0
83-	0300-3.0
85-	1400-3.0
86-	1300-3.0
87-	0400-3.5
90-	1500-3.0
91-	0900-2.5
92-	2100-3.0

NOSC LA POSTA 2.0 CM

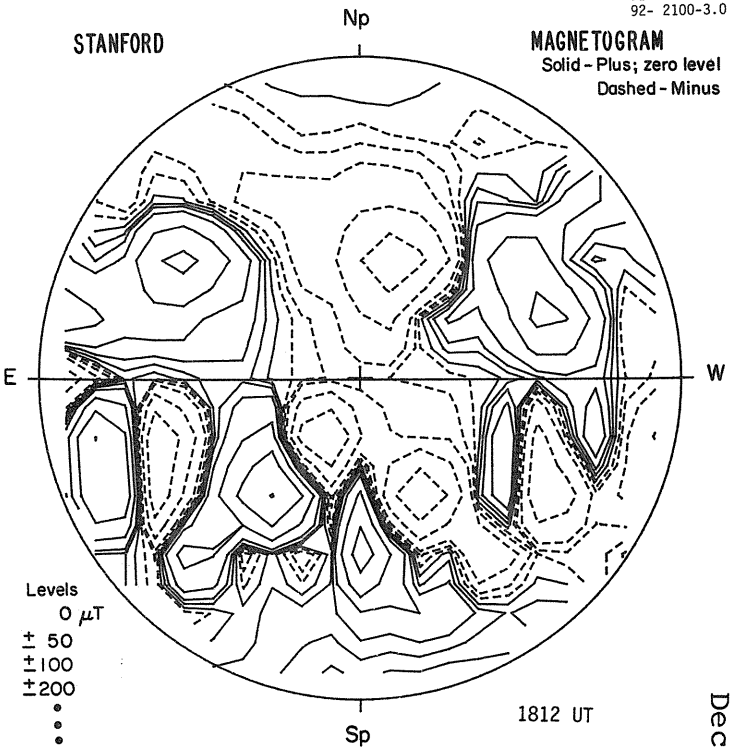


NOSC LA POSTA 8.6 MM



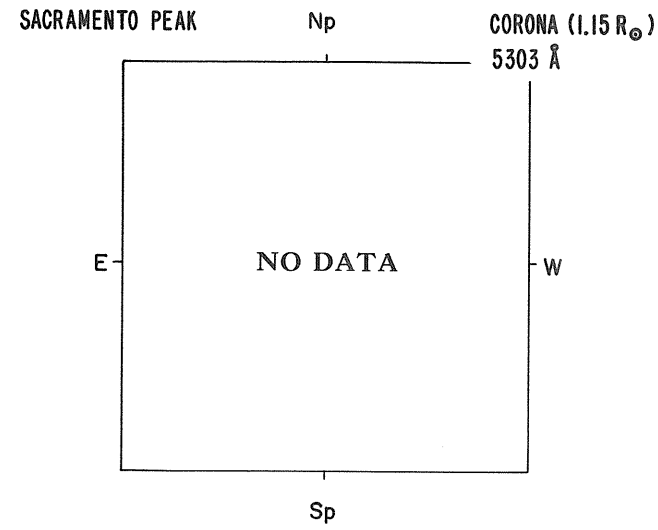
STANFORD MAGNETOGRAM

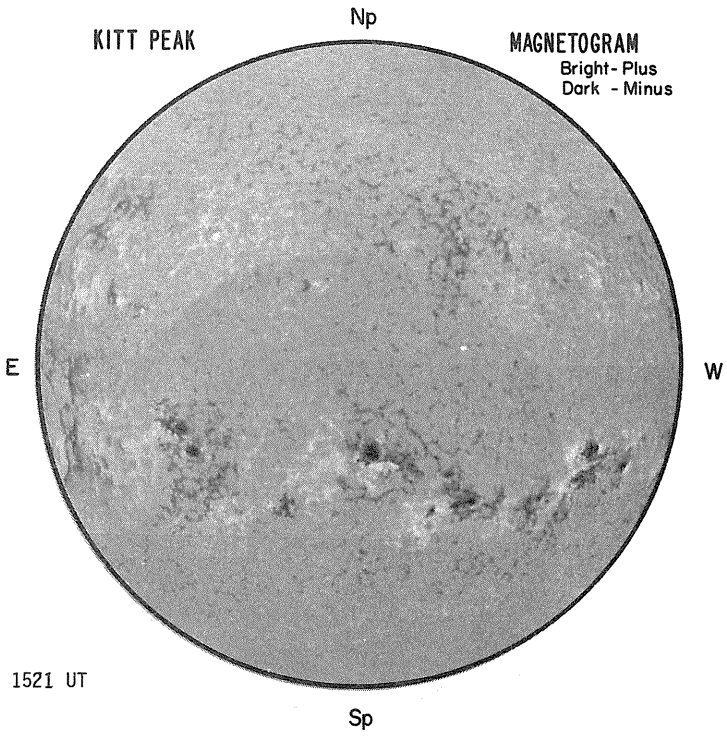
Solid - Plus; zero level
Dashed - Minus

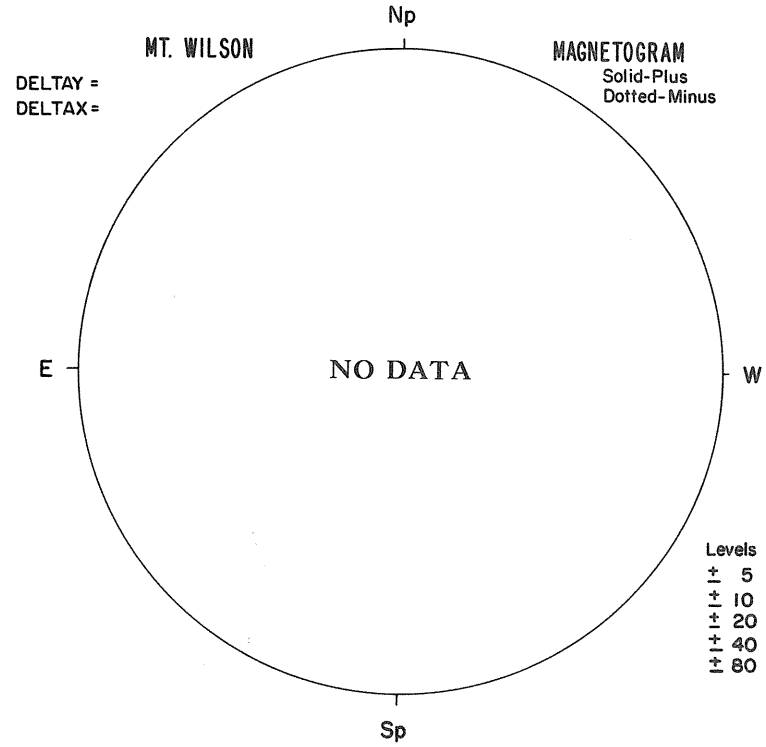


1812 UT

DECEMBER 6, 1979 (P = 14.37, B_o = 0.28, L_o = 287.71)

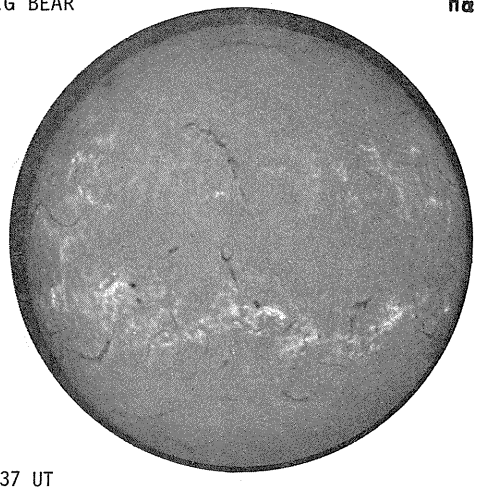






06

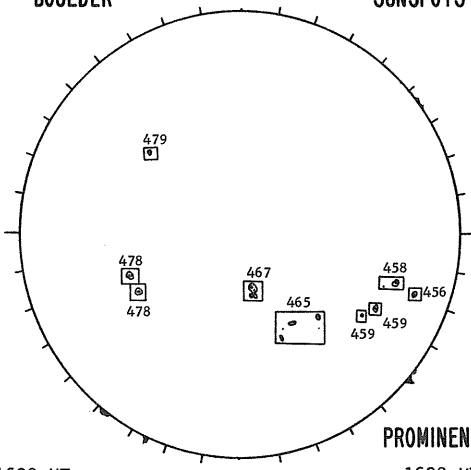
BIG BEAR Np Hα



E W

1737 UT Sp

BOULDER Np SUNSPOTS

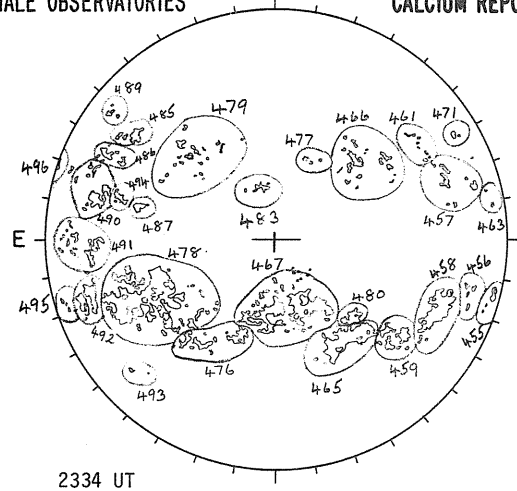


E W

PROMINENCES

1630 UT Sp 1630 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

GOOD	JA
55-	0700-2.5
57-	0900-3.0
58-	3300-4.0
59-	1300-3.5
65-	3100-3.5
66-	1300-2.5
67-	5100-4.0
71-	0300-3.0
76-	1700-3.0
78-	9700-4.0
80-	0900-3.0
83-	0400-3.0
85-	0800-3.0
86-	0900-3.0
87-	0400-3.0
90-	1600-3.0
91-	1300-2.5
92-	1800-3.5
94-	0300-3.0

2334 UT Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

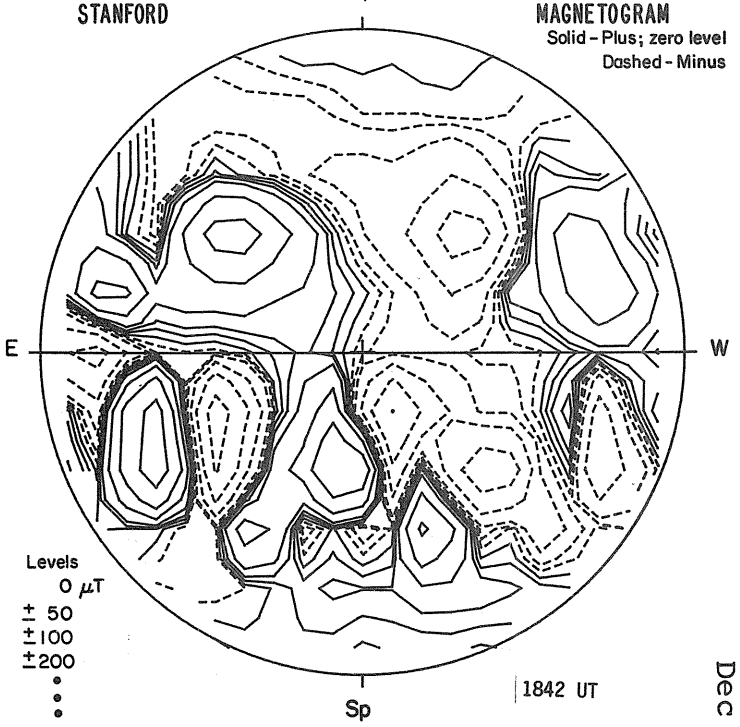
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

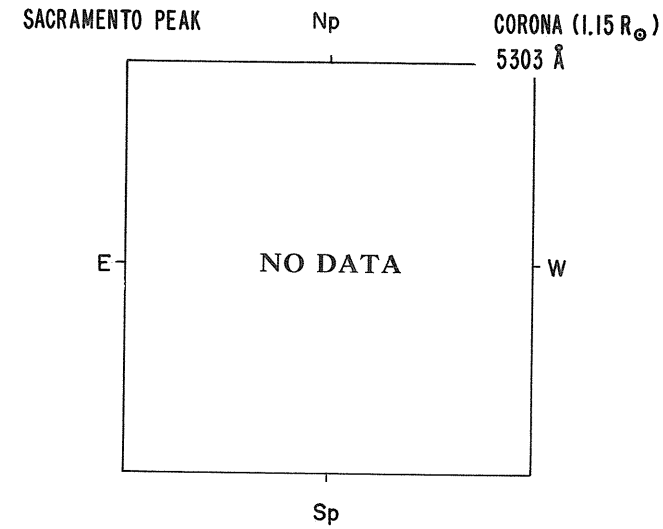


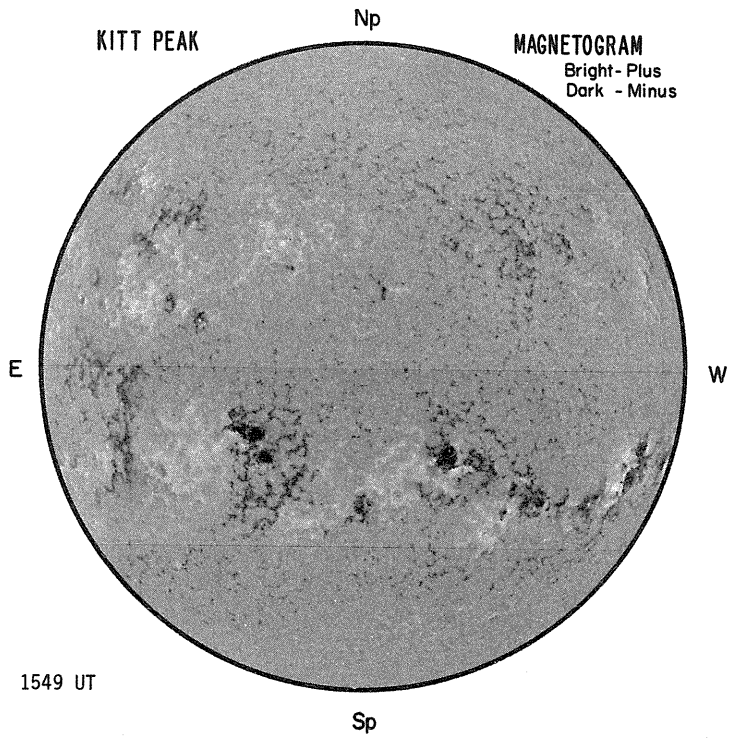
1842 UT

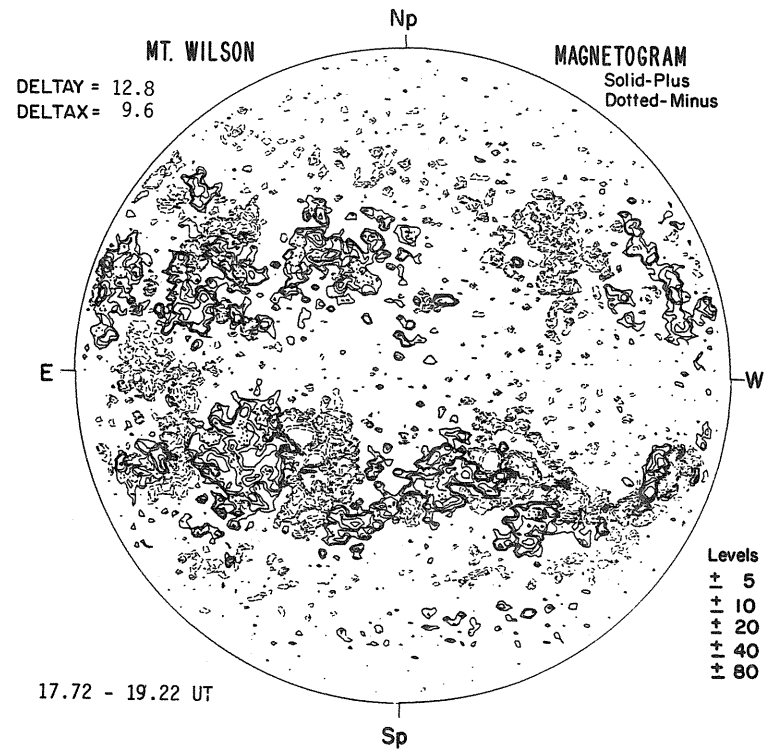
61

Dec 79

DECEMBER 7, 1979 (P = 13.95, B_o = 0.15, L_o = 274.54)







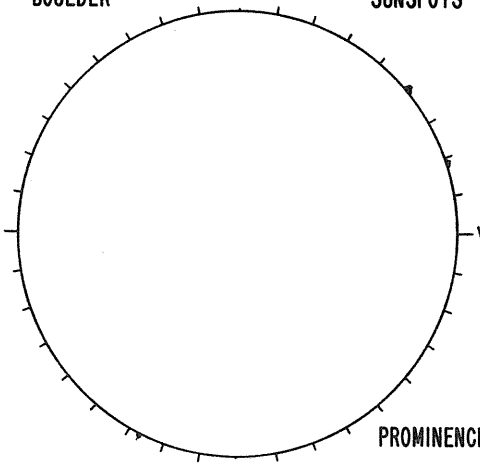
07

BIG BEAR Np Hα

E W

2243 UT Sp

BOULDER Np SUNSPOTS



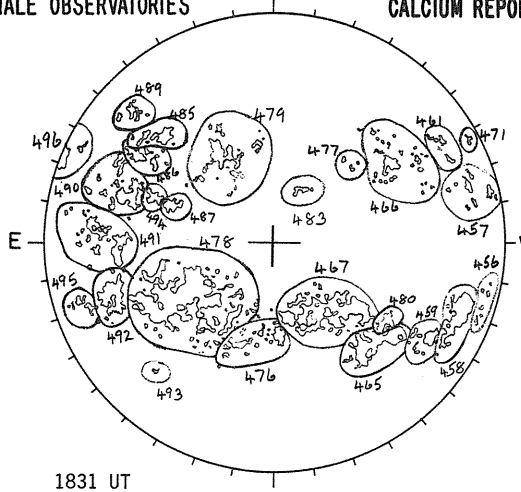
E W

NO DATA Sp

PROMINENCES

1543 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1831 UT Sp

FAIR	JA
57-	0900-2.5
58-	3500-4.5
59-	1200-3.5
65-	3600-4.0
67-	5300-4.0
76-	1900-3.5
78-	10000-4.5
79-	2500-2.5
80-	1100-3.5
83-	0400-2.5
85-	1200-3.0
86-	1000-3.0
87-	0600-3.5
89-	0800-2.5
90-	2500-3.0
91-	2700-3.0
92-	2400-4.0
94-	0500-3.5
95-	1000-2.5
96-	1500-3.0

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

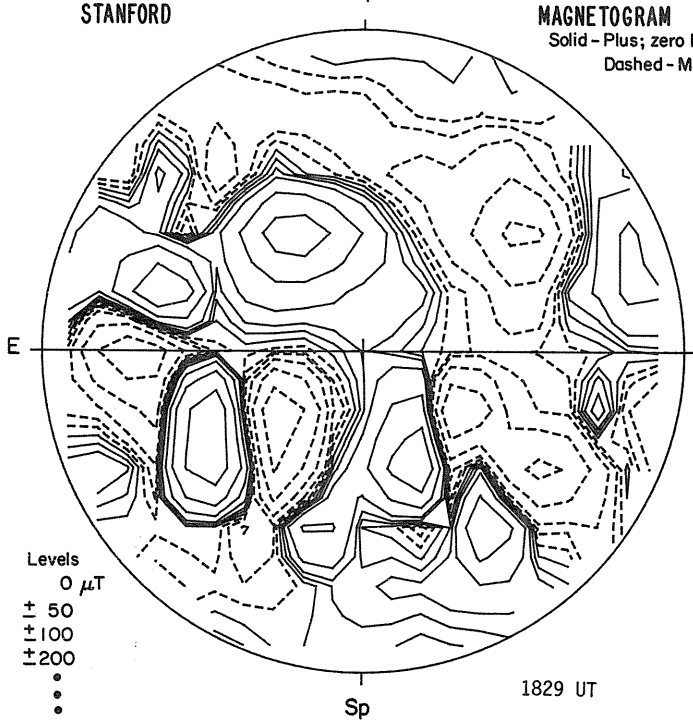
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

± 100

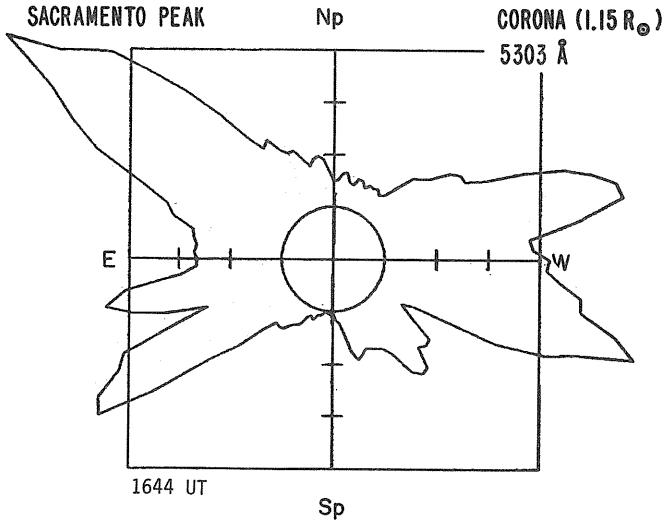
± 200

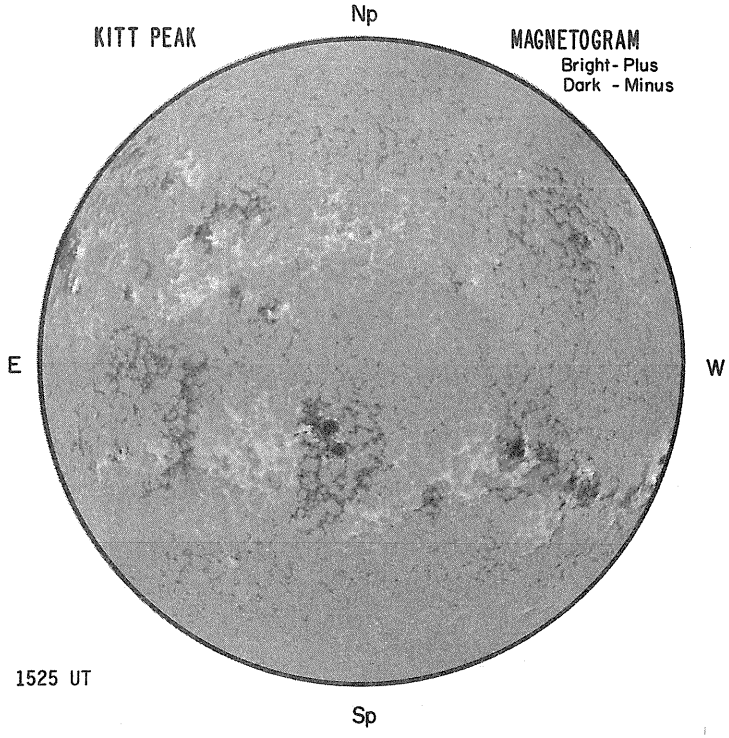
1829 UT Sp

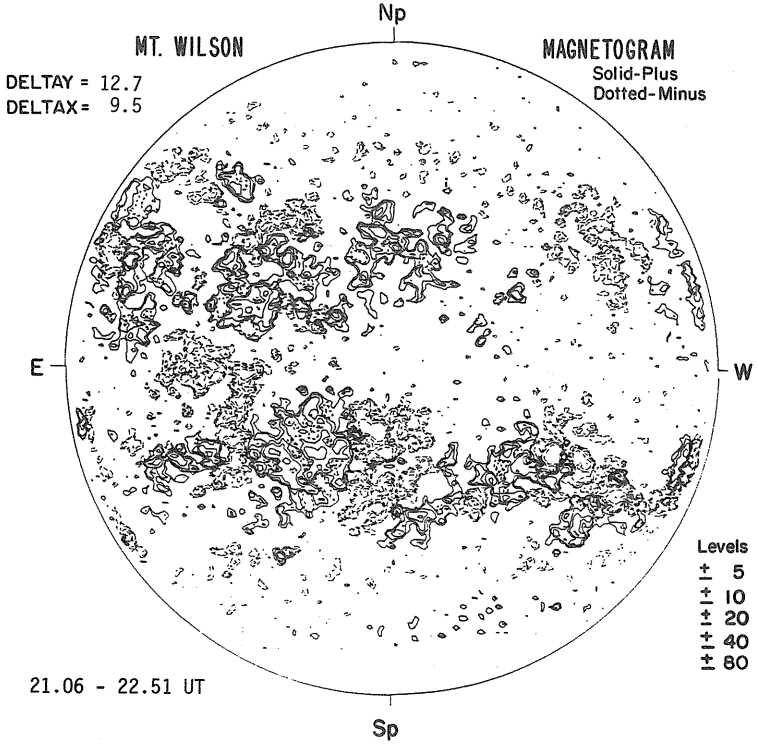
63

Dec 79

DECEMBER 8, 1979 (P = 13.54, B_o = 0.02, L_o = 261.36)





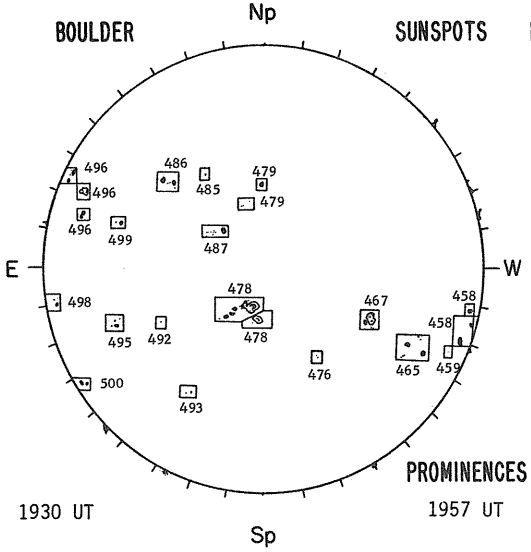


08

BIG BEAR — Hα

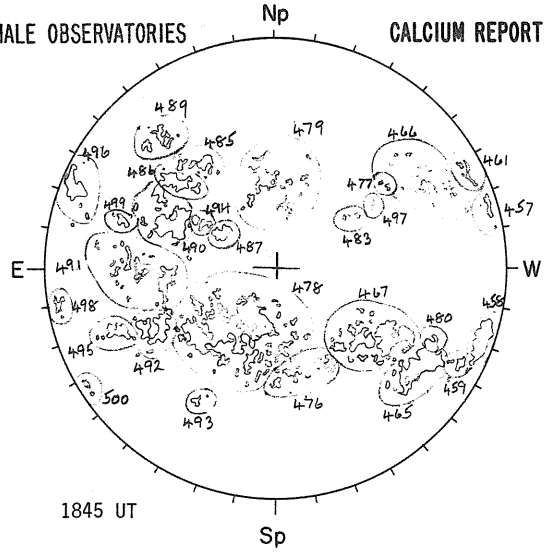
1747 UT

BOULDER — SUNSPOTS



1930 UT

HALE OBSERVATORIES — CALCIUM REPORT

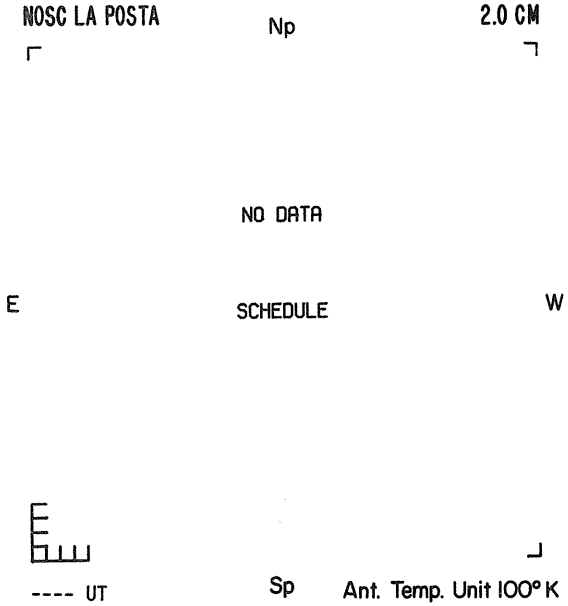


FAIR	JA
58-	3500-4.5
59-	0700-2.5
65-	4300-3.5
67-	5100-4.0
76-	1700-4.0
78-	9600-4.0
79-	2400-2.5
80-	0800-3.0
85-	1100-3.5
86-	1300-3.5
87-	1000-3.5
89-	1200-3.0
90-	3300-3.5
91-	2800-3.0
92-	2200-4.0
93-	0300-3.0
94-	0600-3.5
95-	1200-3.5
96-	3200-3.5
99-	0400-3.0

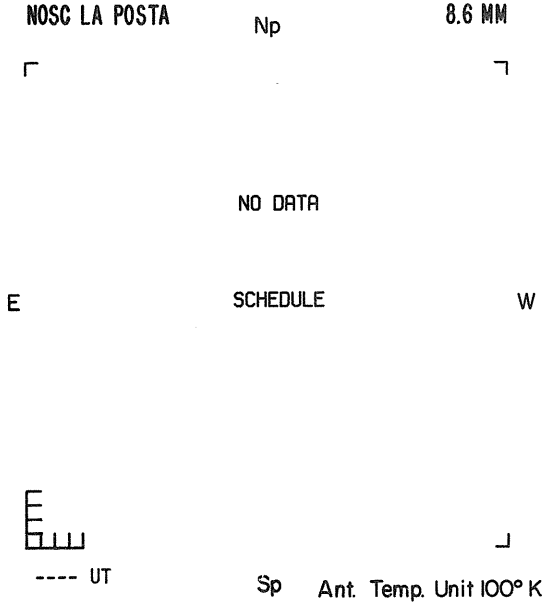
PROMINENCES

1957 UT

NOSC LA POSTA — 2.0 CM



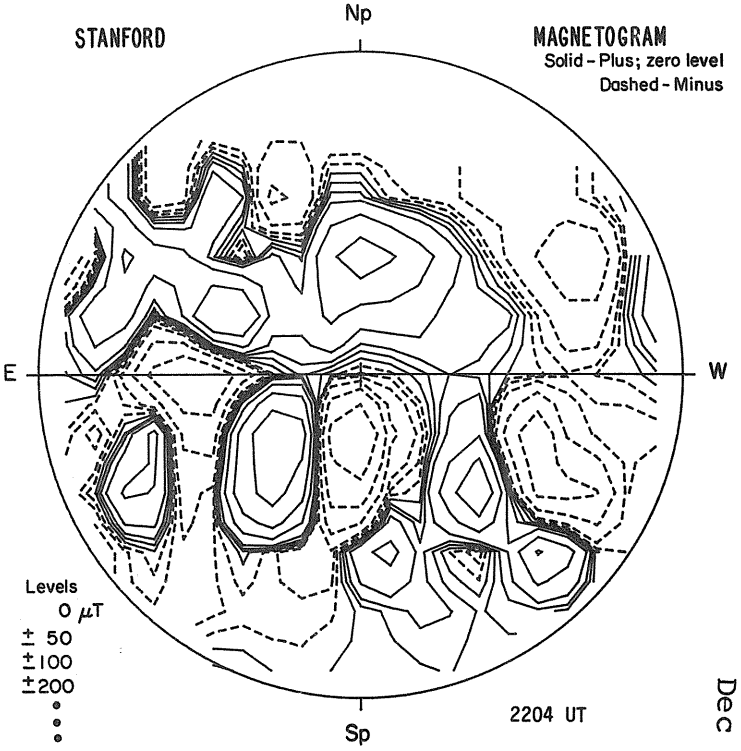
NOSC LA POSTA — 8.6 MM



STANFORD — MAGNETOGRAM

Solid - Plus; zero level

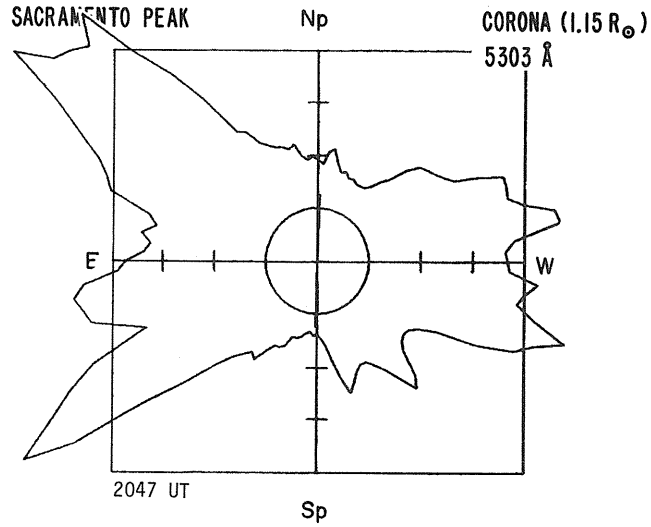
Dashed - Minus

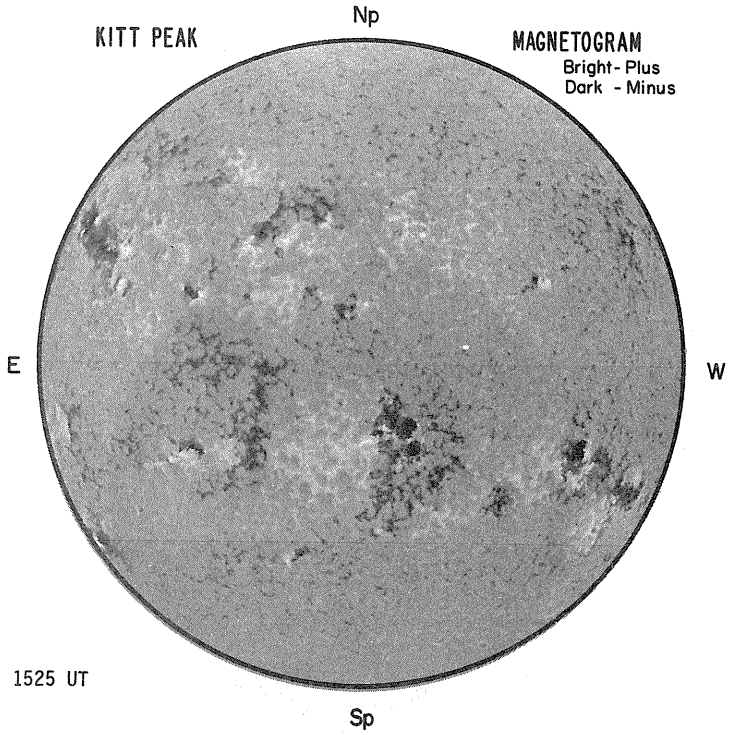


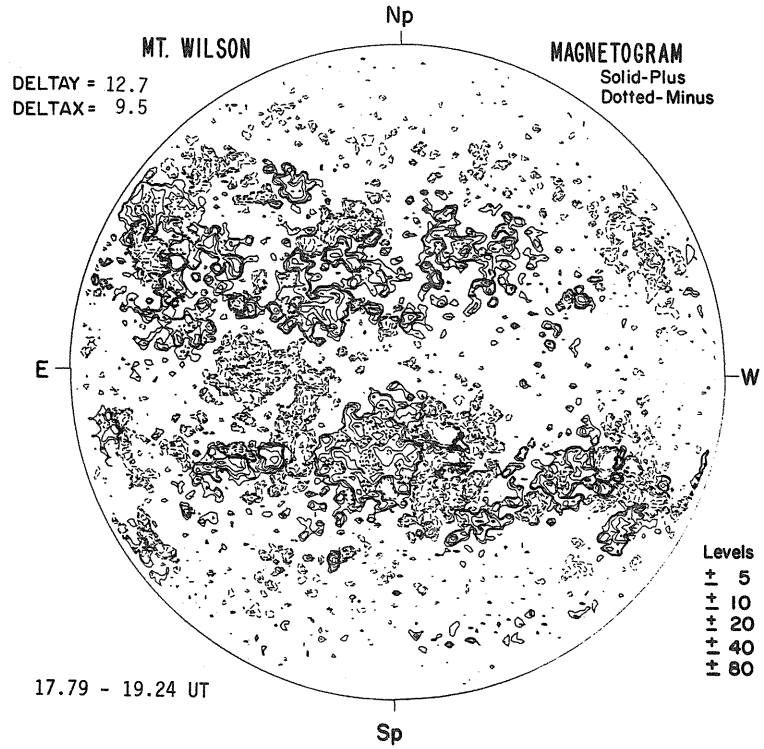
2204 UT

65
Dec 79

DECEMBER 9, 1979 (P = 13.11, B_o = -0.10, L_o = 248.18)

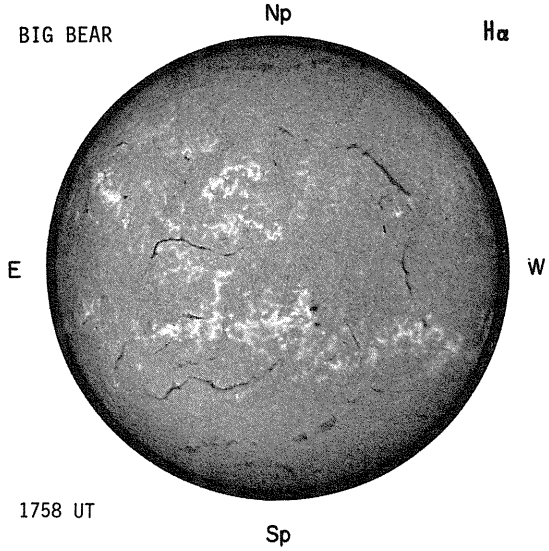






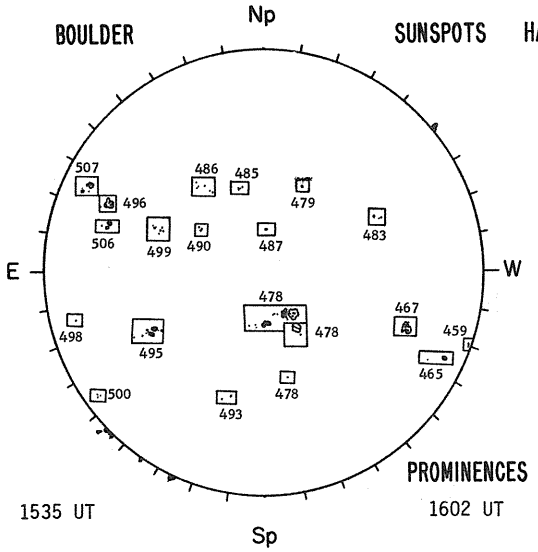
09

BIG BEAR



1758 UT

BOULDER



1535 UT

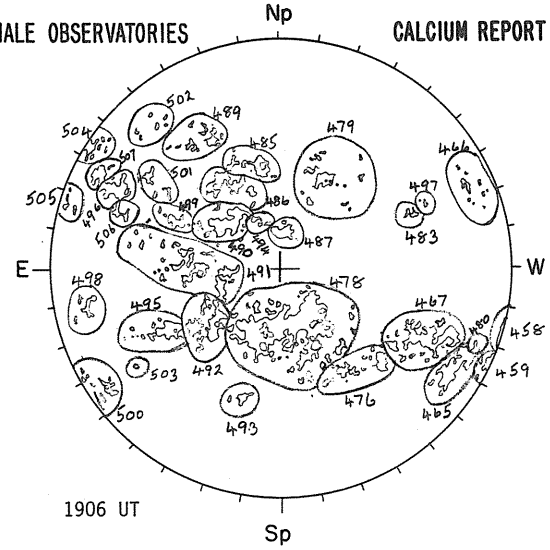
SUNSPOTS

PROMINENCES

1602 UT

HALE OBSERVATORIES

CALCIUM REPORT



1906 UT

FAIR	JA
58-	0500-2.5
65-	3400-3.0
67-	3500-3.5
76-	1800-3.5
78-	9500-4.0
79-	1500-2.5
80-	0500-3.0
83-	0200-3.0
85-	1500-3.5
86-	1700-3.5
87-	1100-3.0
89-	1300-3.0
90-	2200-3.0
91-	3300-3.5
92-	2700-4.0
93	-0500-3.5
94-	0300-3.0
95-	1700-4.0
96-	2200-3.0
98-	0700-2.5
99-	0600-3.5
01-	0800-2.5
06-	0500-2.5
07-	1000-2.5

NOSC LA POSTA

Np

2.0 CM

NO DATA

SCHEDULE

E

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

SCHEDULE

E

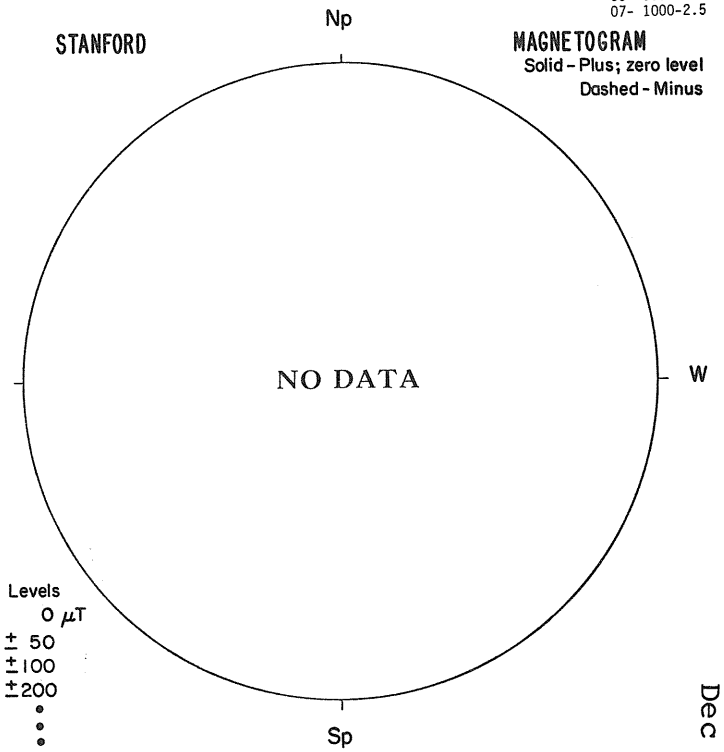
W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

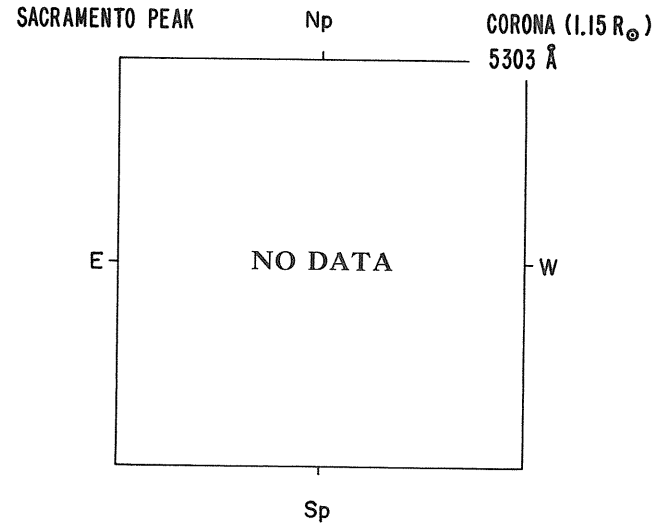
•

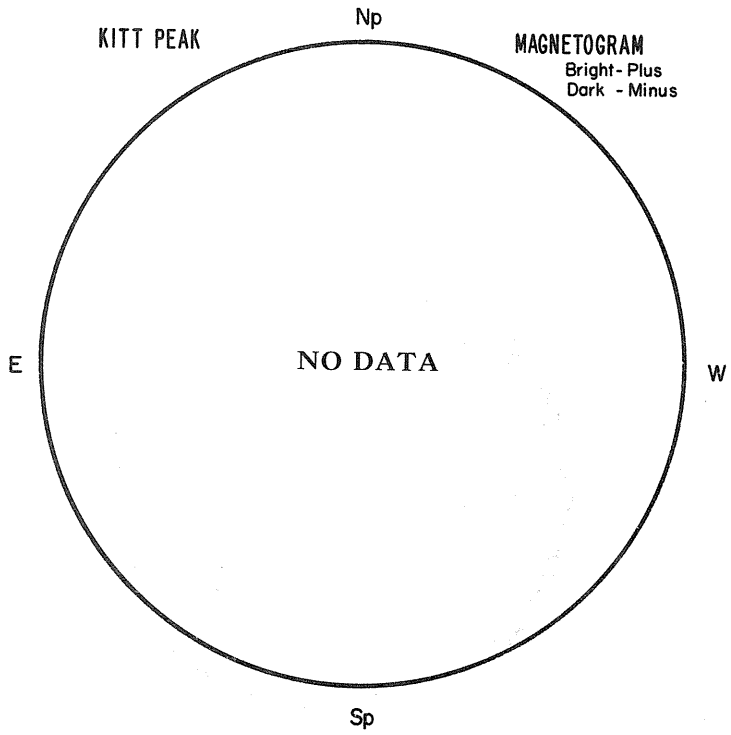
•

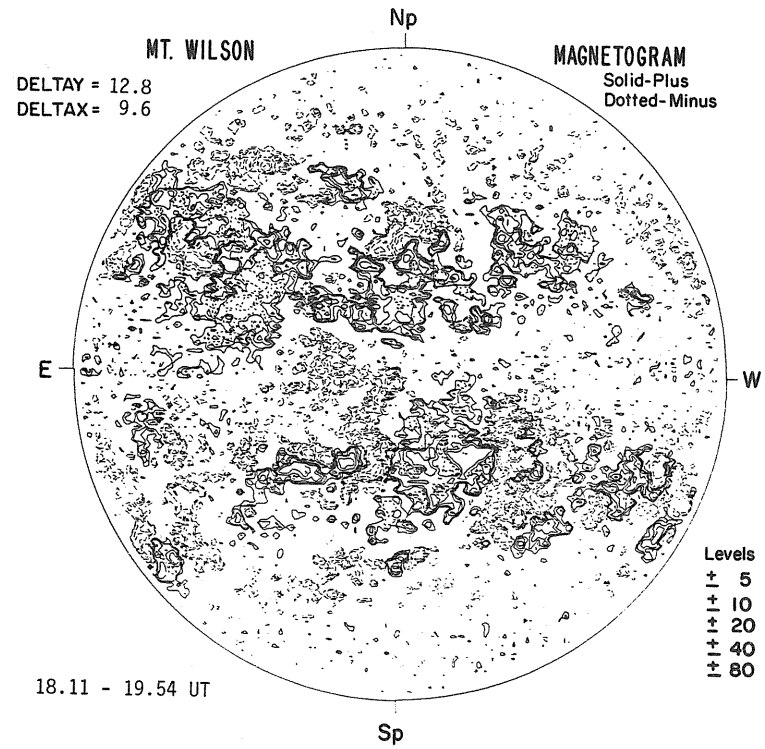
67

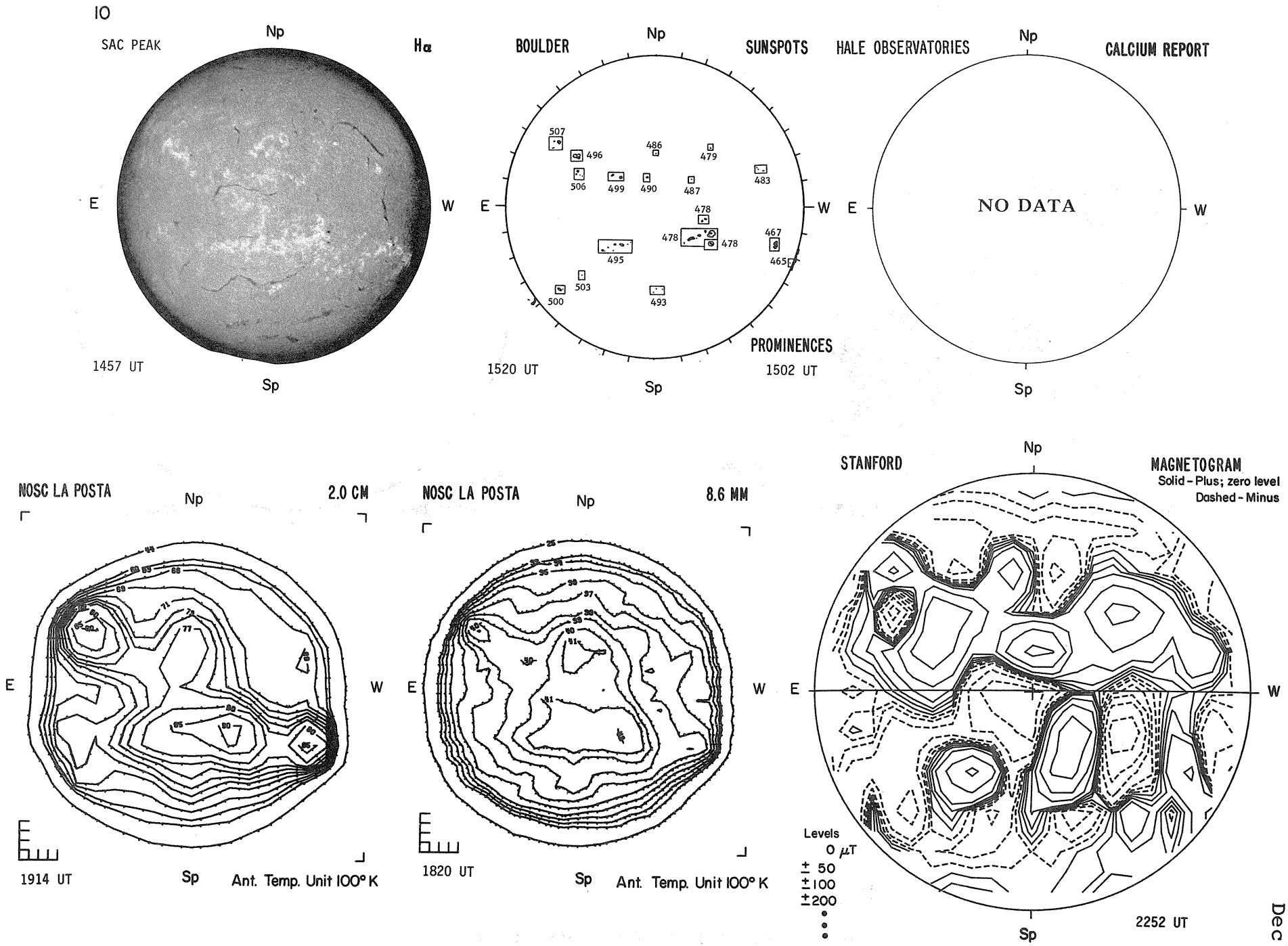
Dec 79

DECEMBER 10, 1979 (P = 12.68, B_o = -0.23, L_o = 235.01)

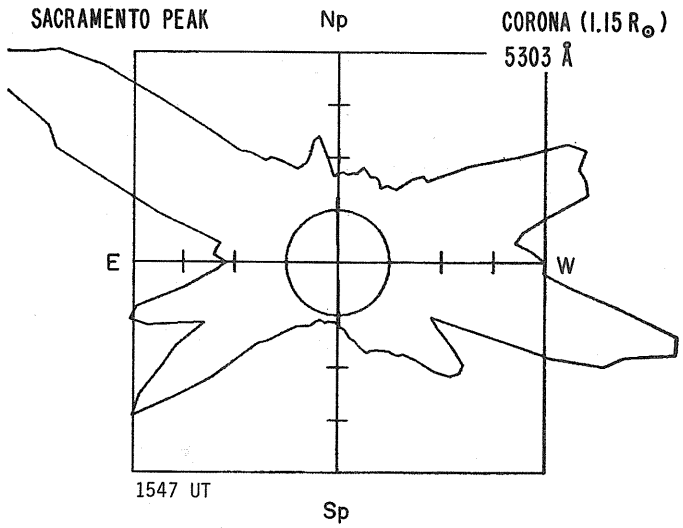


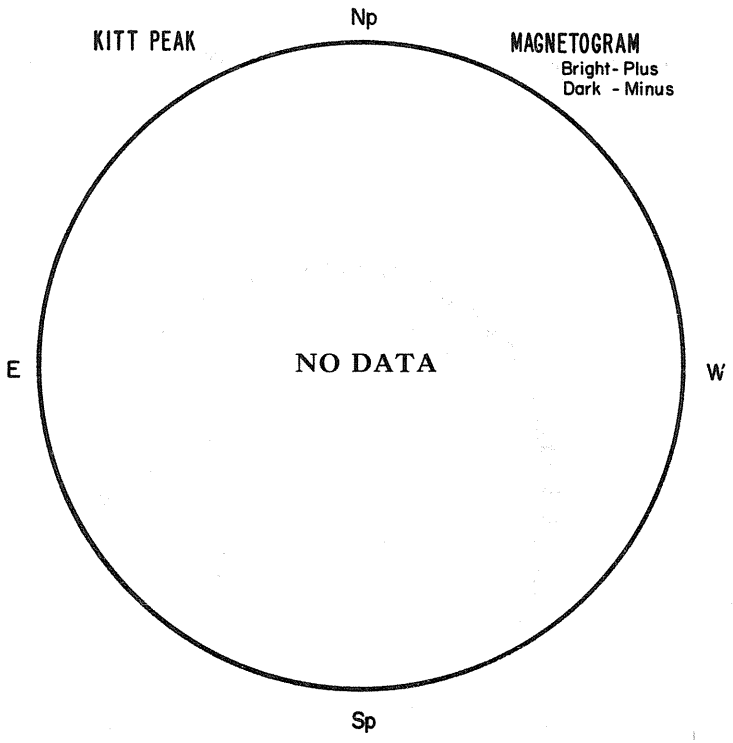


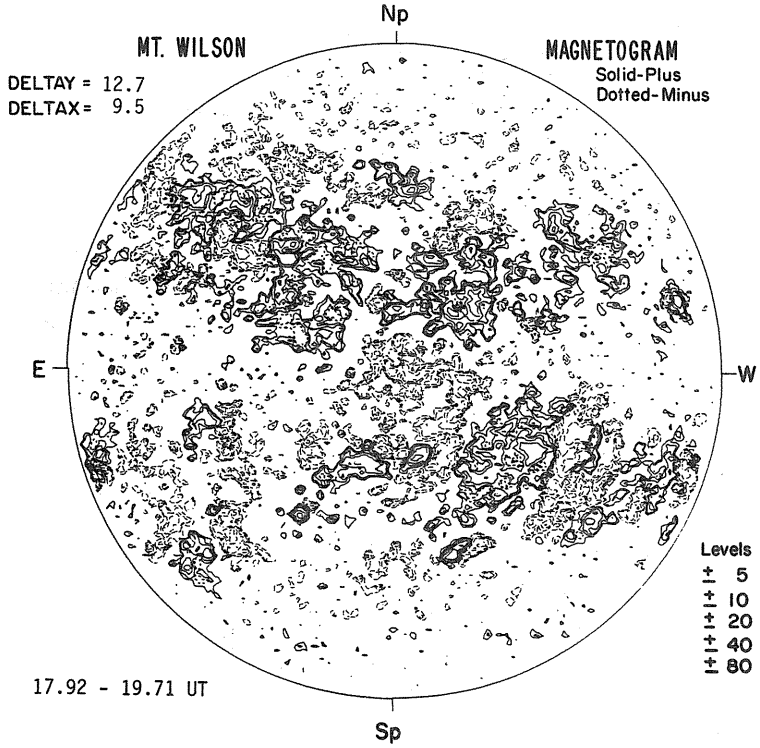


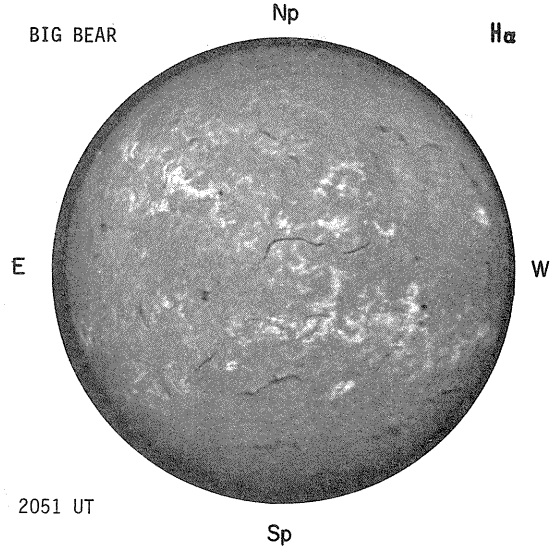

IO
SAC PEAK
Np
Hα
E
W
Sp
1457 UT
BOULDER
SUNSPOTS
507
496
486
479
506
499
490
487
483
478
478
478
467
495
465
503
500
493
PROMINENCES
1520 UT
1502 UT
HALE OBSERVATORIES
CALCIUM REPORT
NO DATA
NOSC LA POSTA
2.0 CM
1914 UT
Ant. Temp. Unit 100° K
NOSC LA POSTA
8.6 MM
1820 UT
Ant. Temp. Unit 100° K
STANFORD
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
Levels
0 μT
± 50
±100
±200
2252 UT

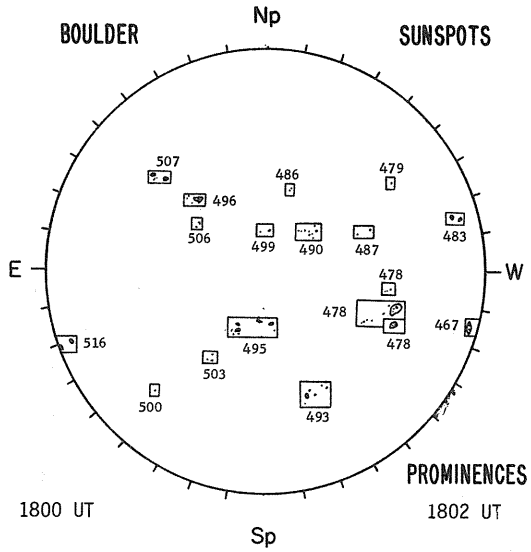
DECEMBER 11, 1979 (P=12.25, B_o=-0.36, L_o=221.83)

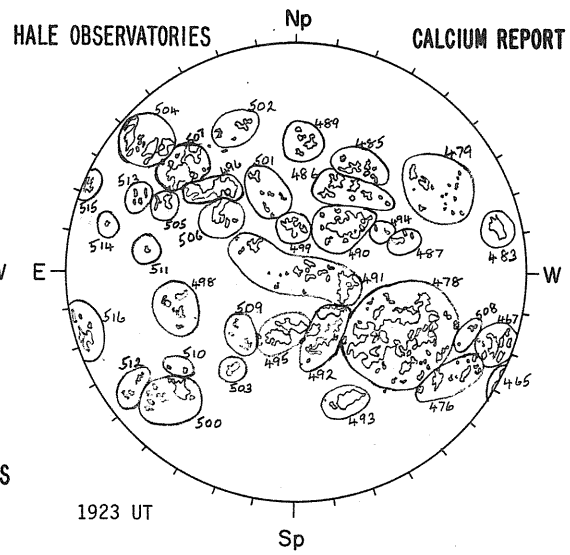




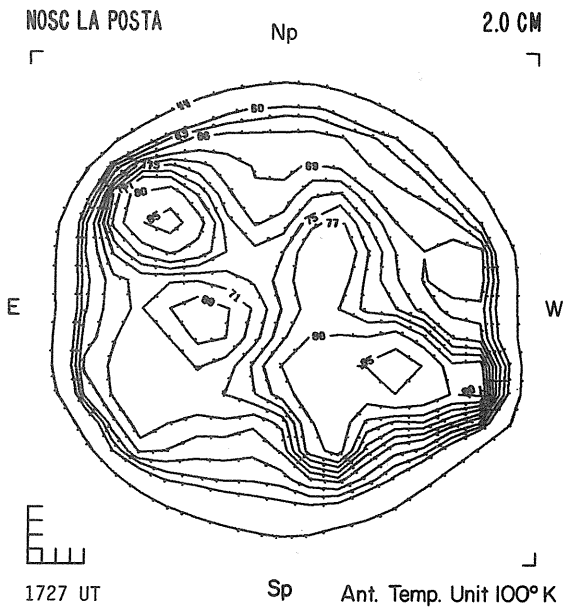


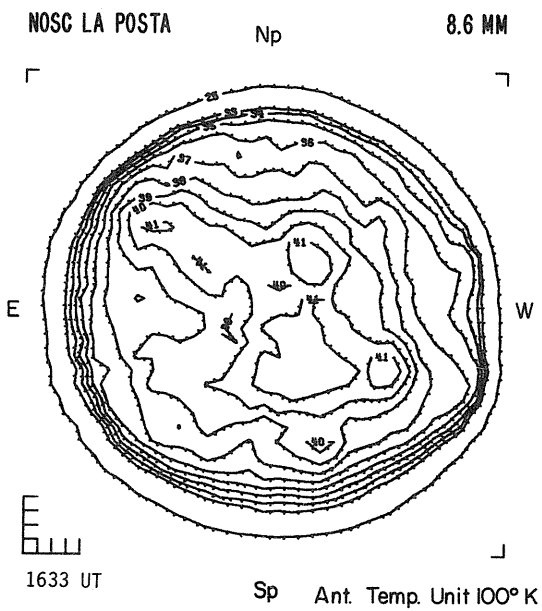


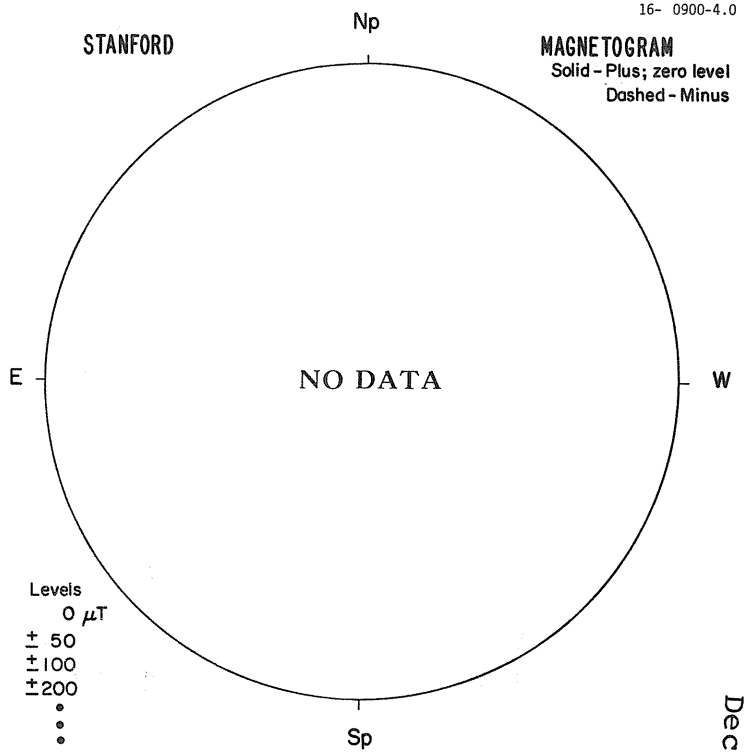




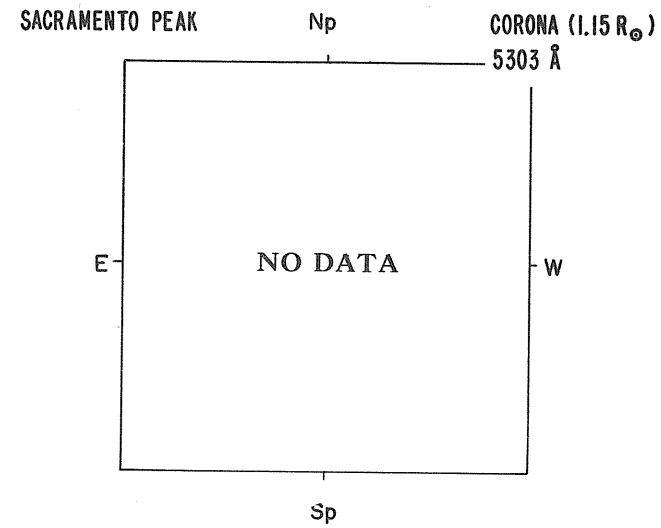
POOR	JA
65-	0400-3.0
67-	1700-2.5
76-	1400-2.5
78-	8900-3.5
79-	1400-3.0
83-	1000-4.0
85-	0900-2.5
86-	1400-3.5
87-	0500-4.0
89-	0700-3.0
90-	2100-3.5
91-	2200-2.5
92-	2100-3.0
93-	1100-4.0
95-	1800-3.0
96-	2100-4.0
98-	0800-2.5
99-	0600-3.0
00-	1800-2.5
03-	0300-3.5
04-	2400-3.0
05-	0600-3.0
06-	0700-3.0
07-	2600-4.0
16-	0900-4.0

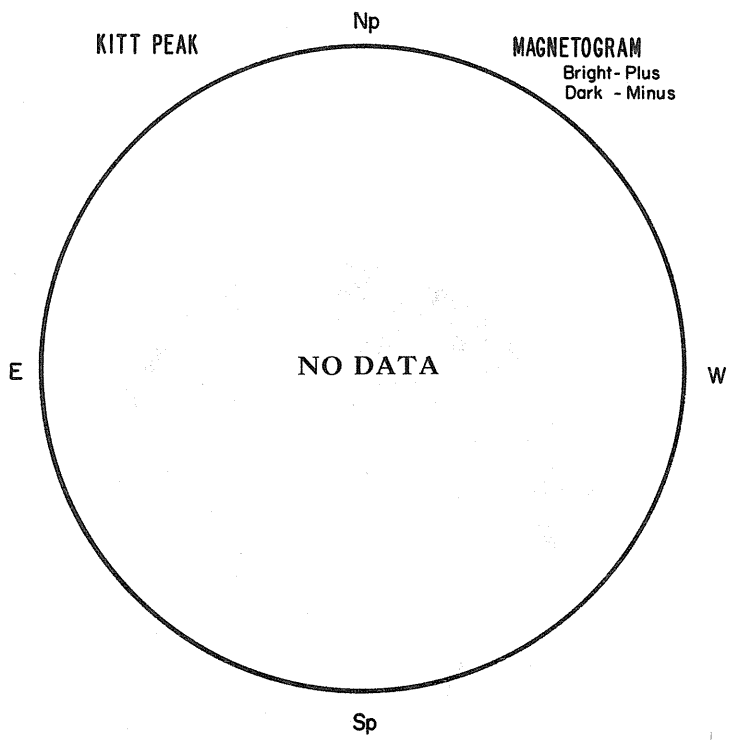


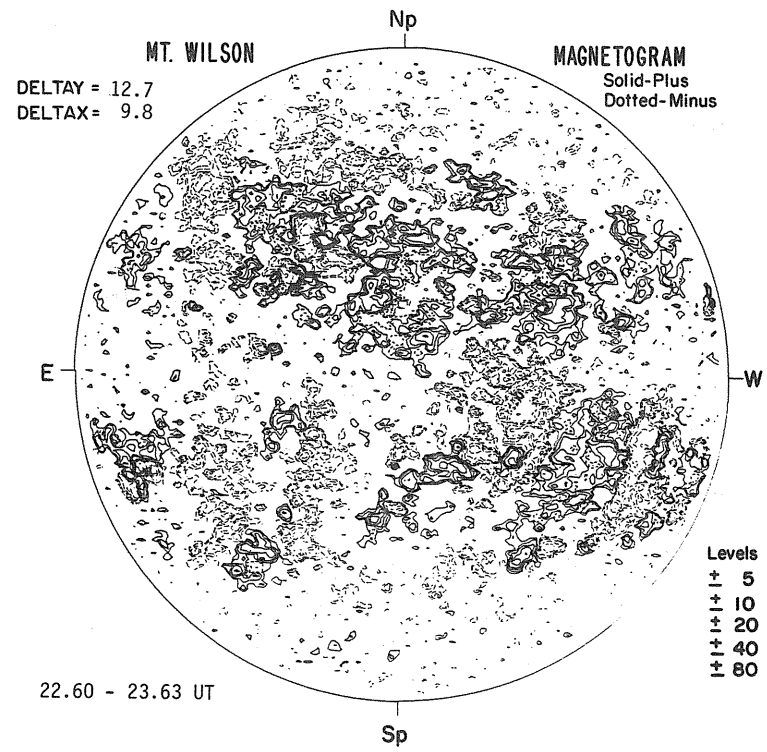




DECEMBER 12, 1979 (P=11.82, B_o=-0.49, L_o=208.65)





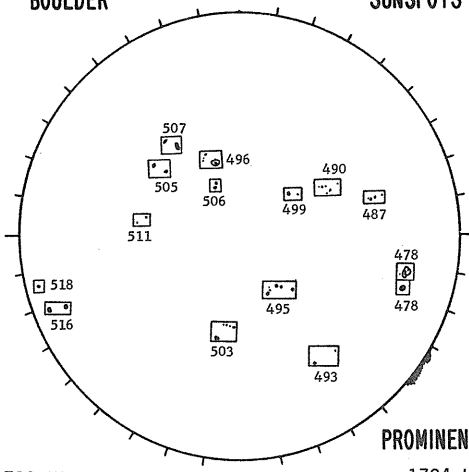


12

BIG BEAR — Hα

2011 UT

BOULDER — SUNSPOTS

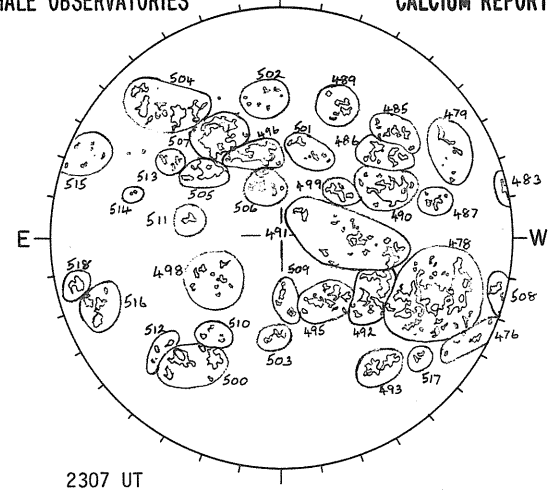


1700 UT

PROMINENCES

1704 UT

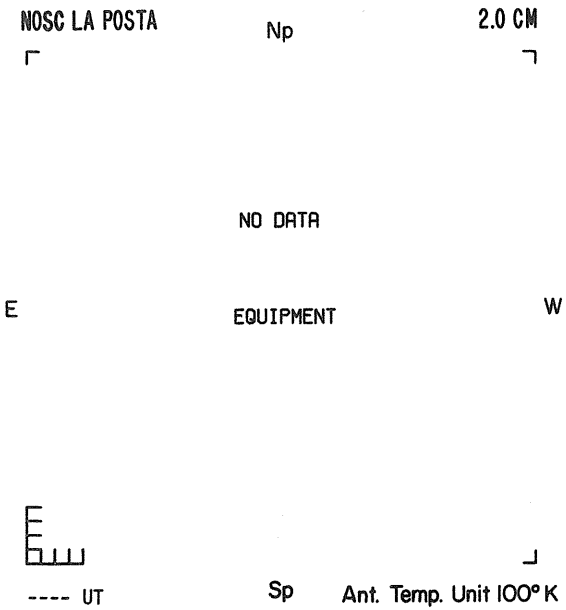
HALE OBSERVATORIES — CALCIUM REPORT



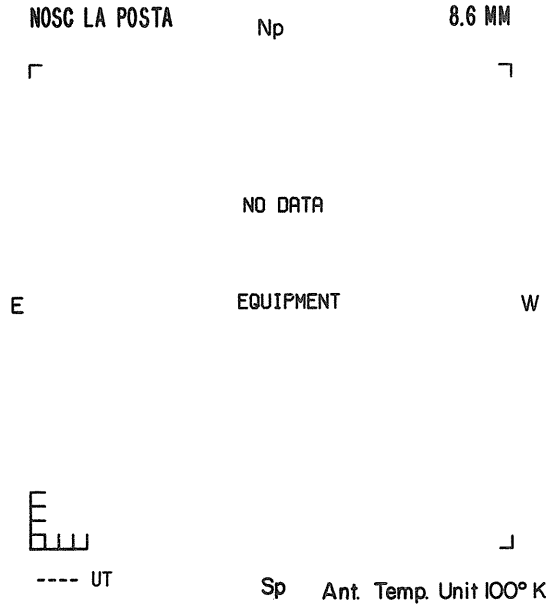
2307 UT

GOOD	JA
76-	0600-3.0
78-	8100-3.0
79-	0800-3.0
83-	0500-3.5
85-	0800-2.5
86-	1100-3.0
87-	0400-4.0
89-	0700-2.5
90-	2300-4.0
91-	2000-2.5
92-	2000-3.5
93-	1300-3.5
95-	1200-3.5
96-	2000-3.5
98-	0800-2.5
99-	0600-3.0
00-	1600-3.0
01-	0500-2.5
04-	2900-3.0
05-	1300-3.5
06-	0700-2.5
07-	2800-3.5
09-	0500-3.0
11-	0300-2.5
12-	0300-2.5
13-	0300-2.5
16-	1600-3.5
17-	0200-2.5

NOSC LA POSTA — 2.0 CM

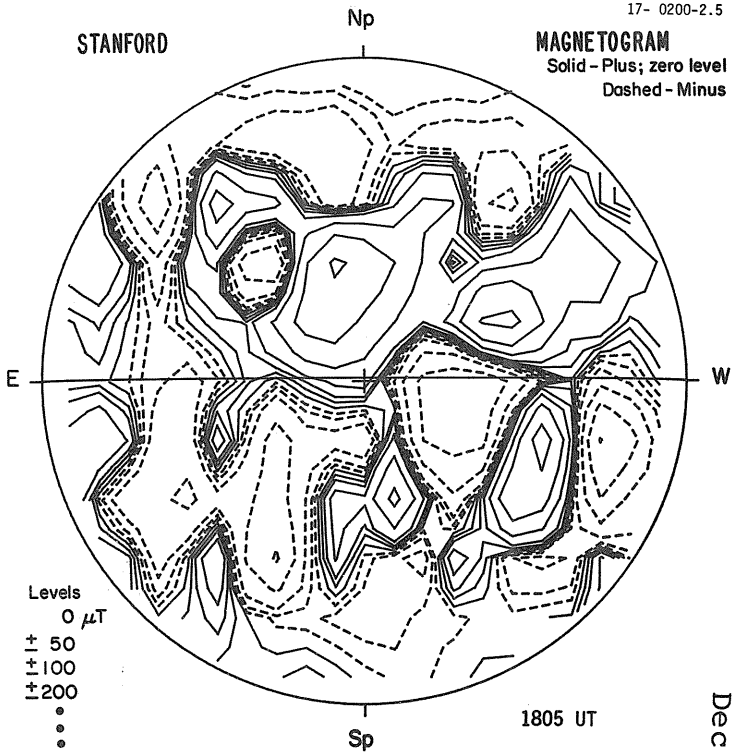


NOSC LA POSTA — 8.6 MM



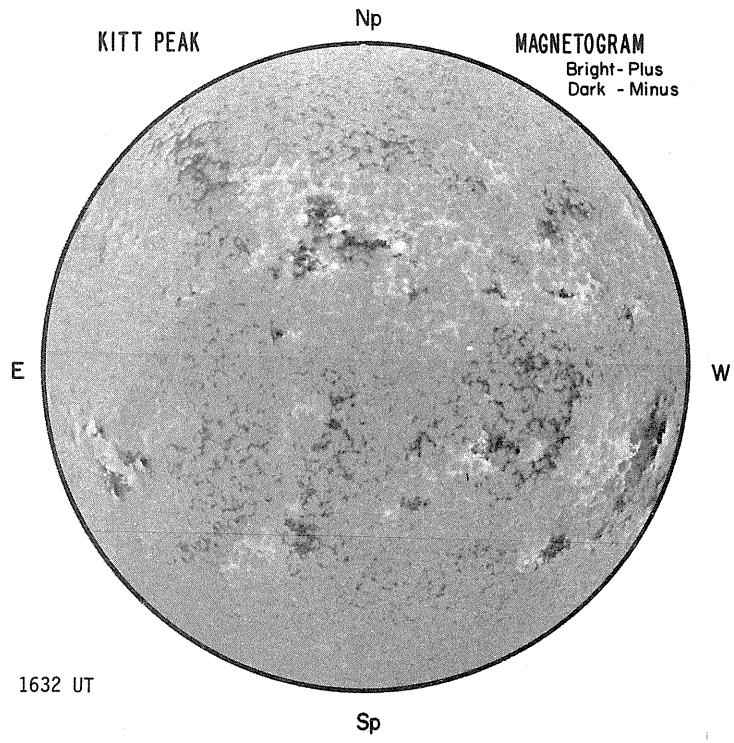
STANFORD — MAGNETOGRAM

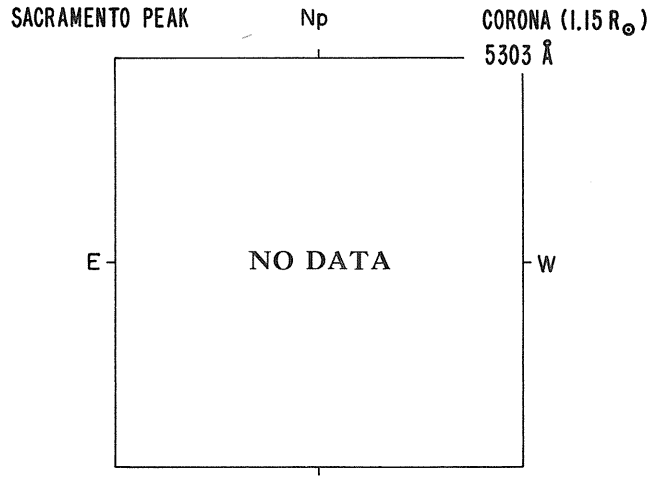
Solid - Plus; zero level
Dashed - Minus

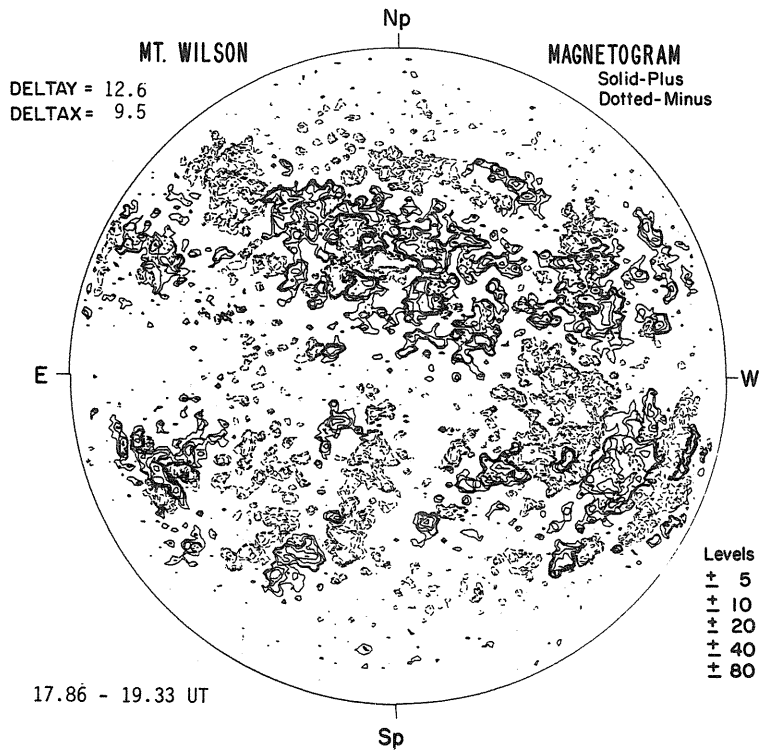


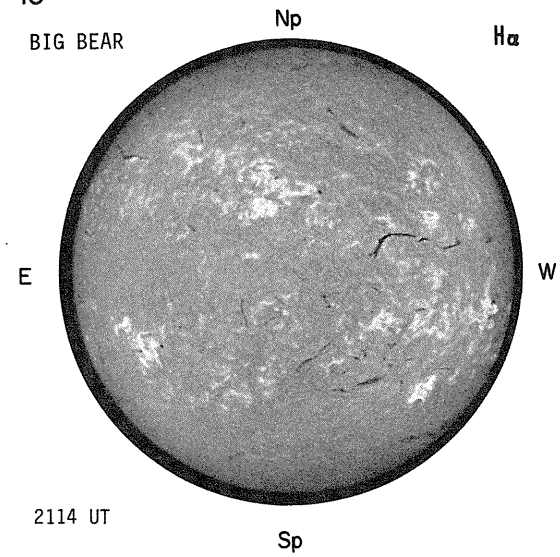
1805 UT

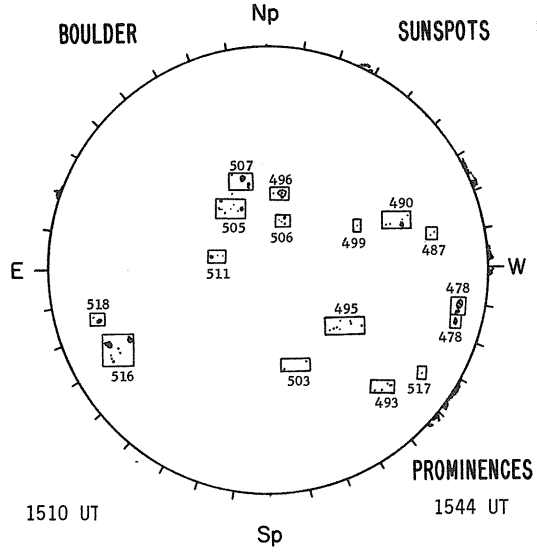
DECEMBER 13, 1979 (P=11.37, B_o=-0.62, L_o=195.48)

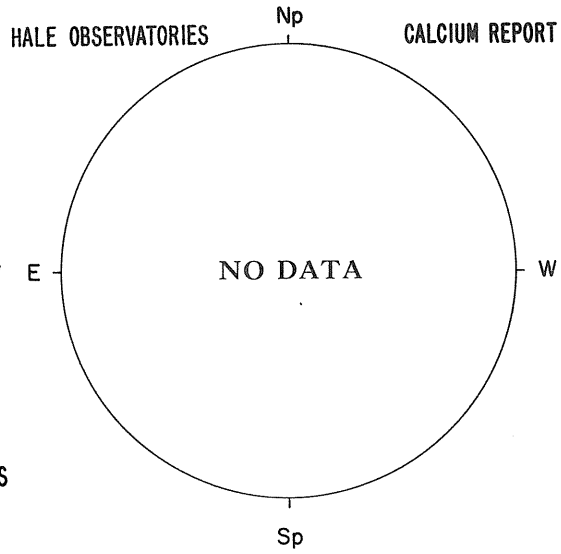


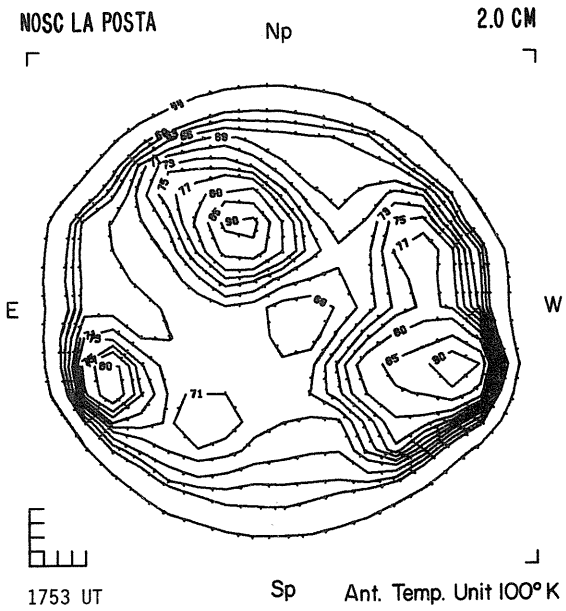


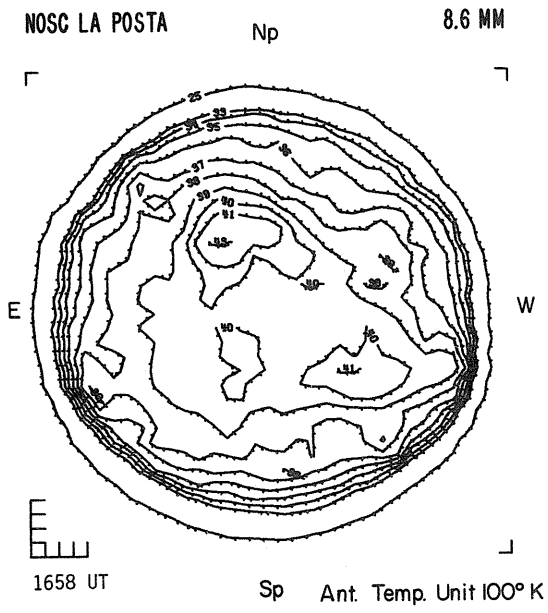


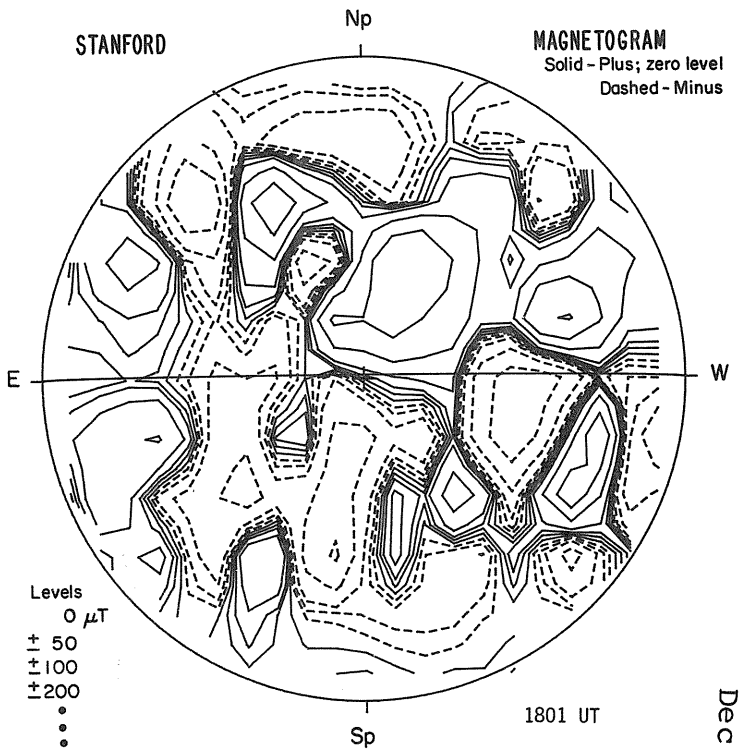

BIG BEAR
Np
Hα
E
W
Sp
2114 UT


BOULDER
Np
SUNSPOTS
E
W
Sp
507
496
505
506
490
499
487
511
518
495
478
478
516
503
517
493
PROMINENCES
1510 UT
1544 UT


HALE OBSERVATORIES
Np
CALCIUM REPORT
E
W
NO DATA
Sp

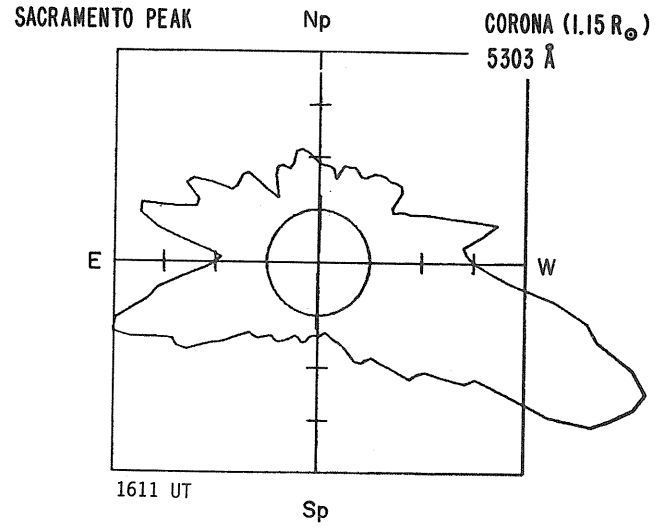

NOSC LA POSTA
Np
2.0 CM
E
W
Sp
1753 UT
Ant. Temp. Unit 100° K

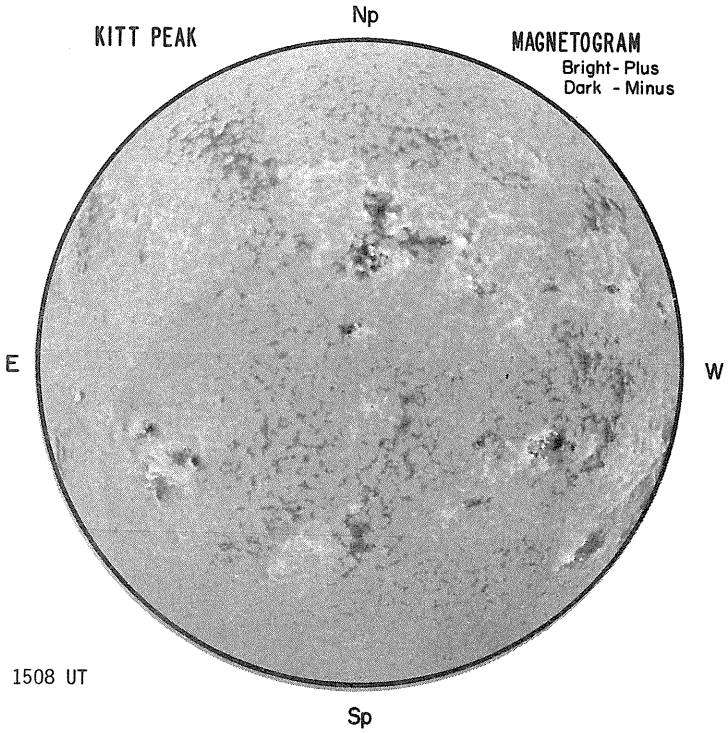

NOSC LA POSTA
Np
8.6 MM
E
W
Sp
1658 UT
Ant. Temp. Unit 100° K

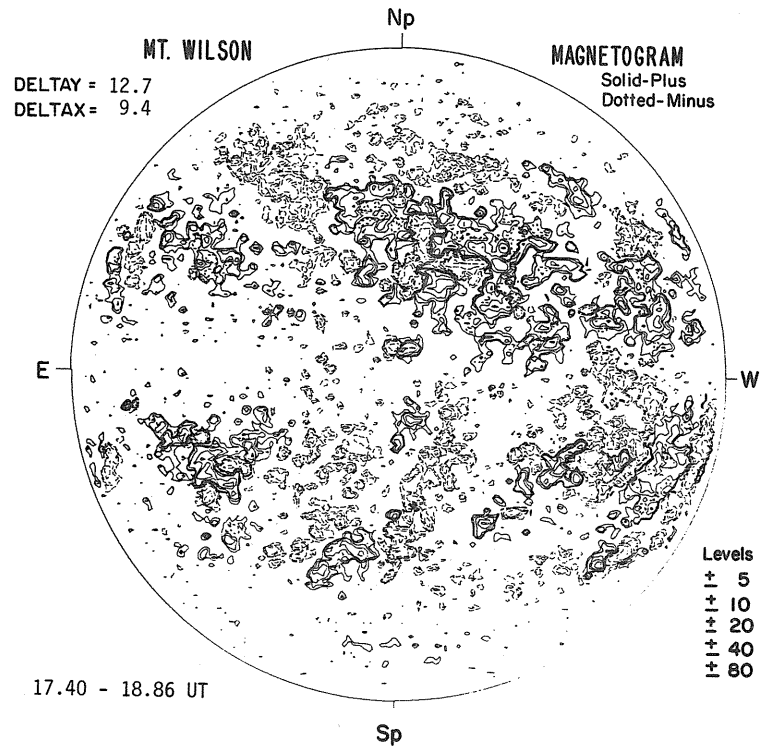

STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
1801 UT

75
Dec 79

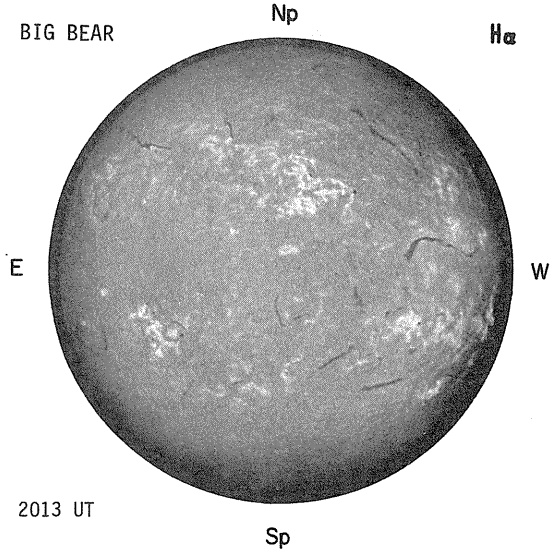
DECEMBER 14, 1979 ($P = 10.93$, $B_o = -0.74$, $L_o = 182.30$)





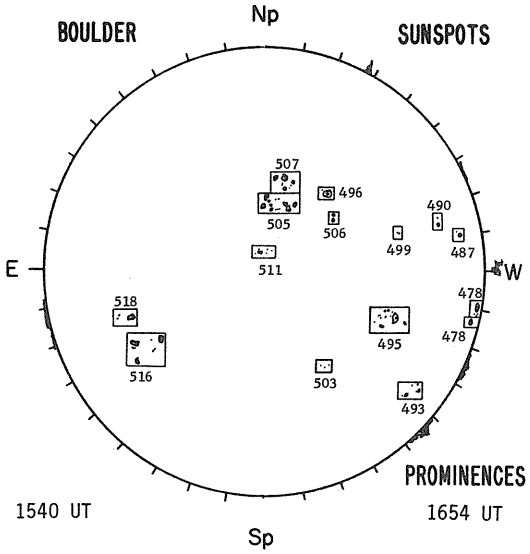


BIG BEAR



2013 UT

BOULDER

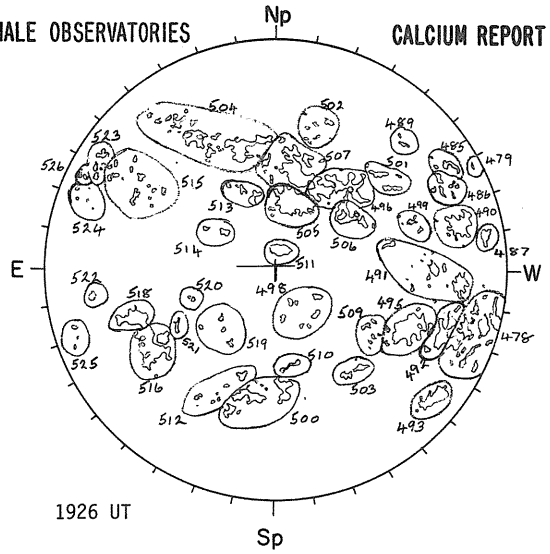


1540 UT

PROMINENCES

1654 UT

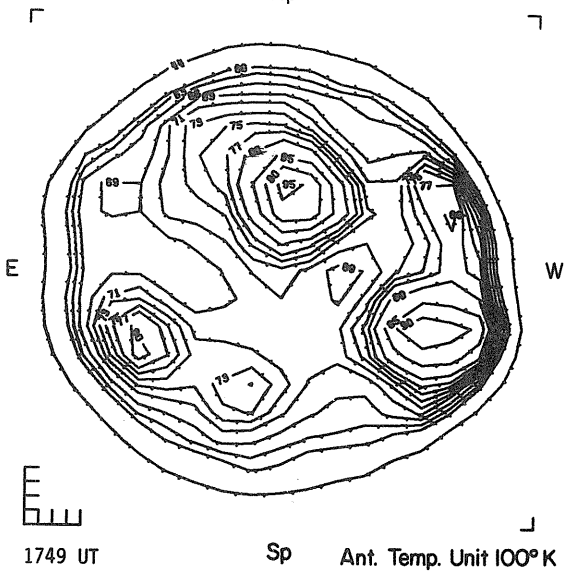
HALE OBSERVATORIES



1926 UT

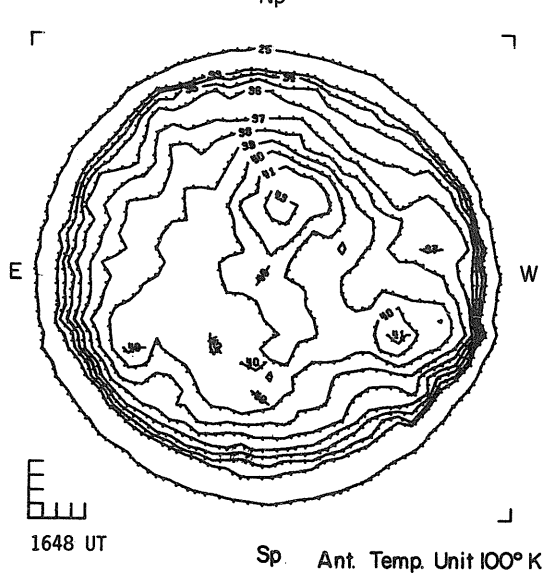
FAIR	JA
78-	7300-3.0
85-	0600-3.5
86-	0800-3.5
87-	0600-3.5
89-	0200-2.5
90-	2200-3.5
91-	1900-3.0
92-	1600-3.0
93-	1900-4.0
95-	2700-4.0
96-	2300-4.0
98-	0700-2.5
99-	0300-3.0
00-	2100-3.5
03-	0400-3.0
04-	4100-3.0
05-	2700-4.0
06-	1000-3.5
07-	2800-4.0
09-	0400-3.0
10-	0300-3.0
11-	0500-4.0
12-	0500-2.5
13-	0400-3.0
14-	0200-3.0
15-	1400-3.0
16-	3200-4.5
18-	1300-3.5
21-	0300-2.5
22-	0300-3.5
23-	0600-3.0
25-	0200-3.0

NOSC LA POSTA



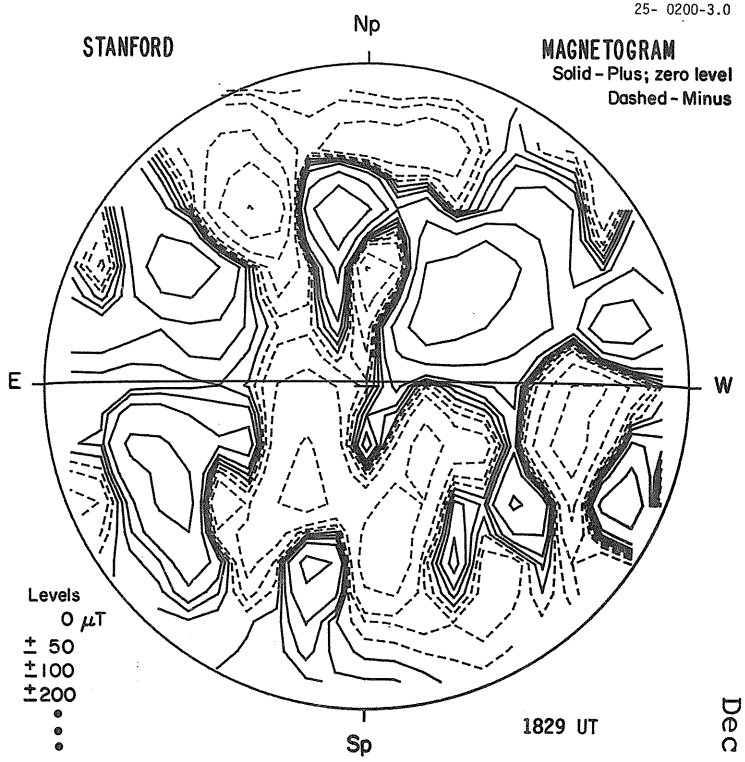
1749 UT

NOSC LA POSTA



1648 UT

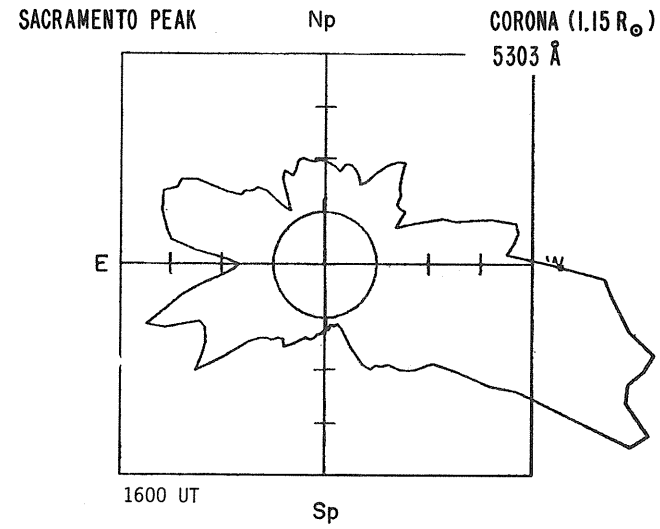
STANFORD

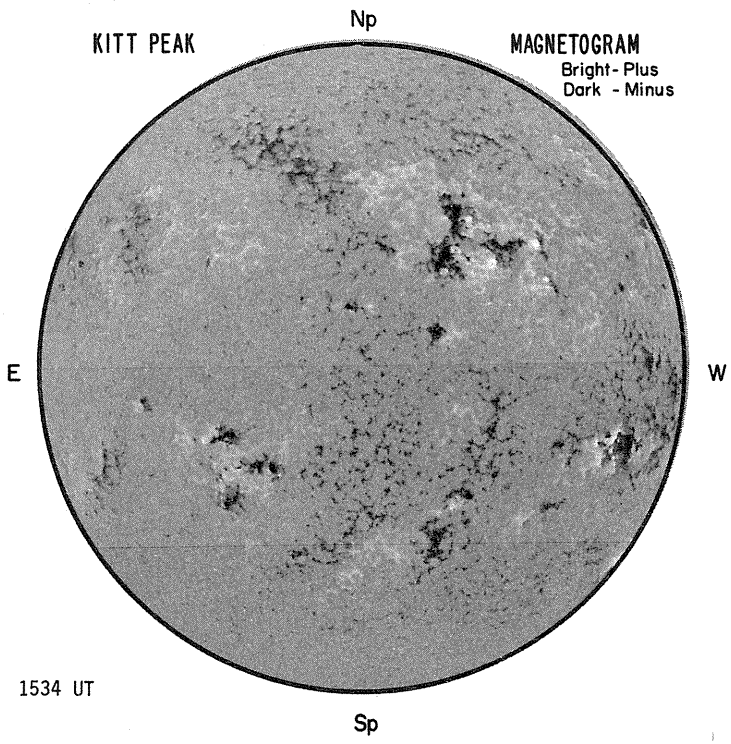


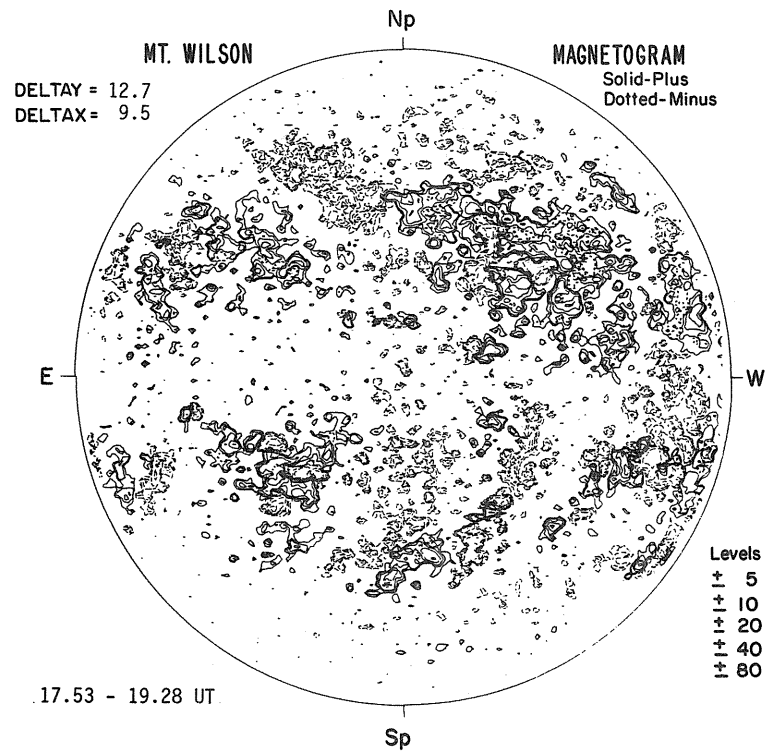
1829 UT

77
Dec 79

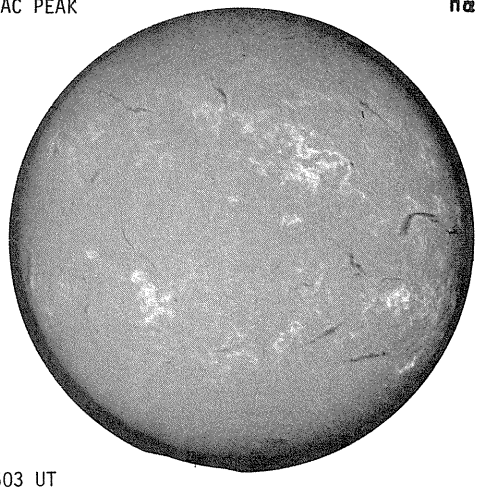
DECEMBER 15, 1979 (P = 10.48, B_o = -0.87, L_o = 169.13)





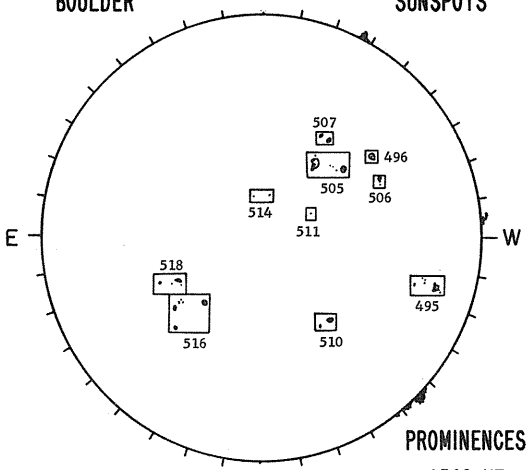


SAC PEAK



1503 UT

BOULDER



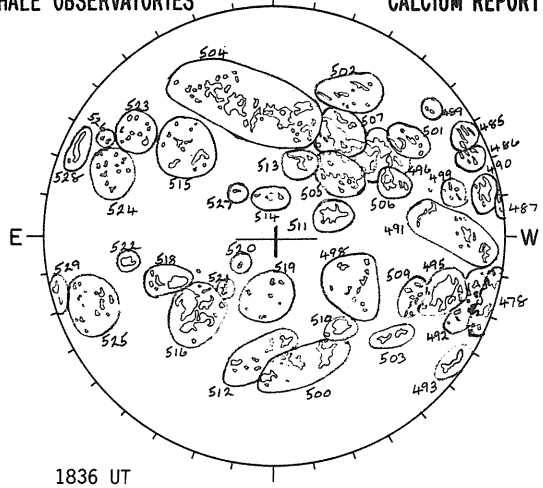
SUNSPOTS

PROMINENCES

1640 UT

1548 UT

HALE OBSERVATORIES

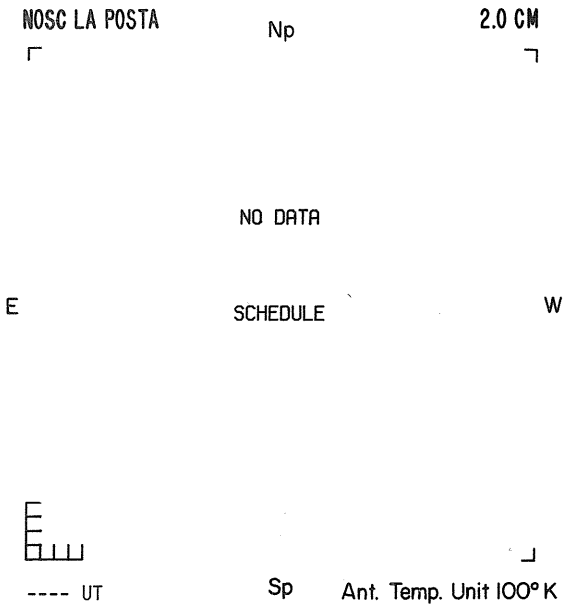


CALCIUM REPORT

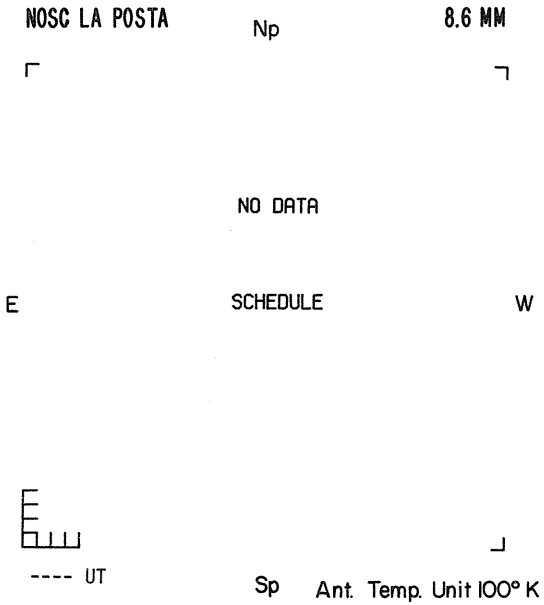
1836 UT

FAIR	JA
78-	3600-2.0
89-	0200-2.5
90-	1500-2.5
91-	1900-2.5
92-	0900-3.0
93-	1000-4.0
95-	2200-4.0
96-	2200-4.0
98-	0600-3.0
00-	1900-3.5
03-	0400-3.0
04-	5900-3.5
05-	2700-3.5
06-	0800-3.0
07-	2300-4.0
09-	0400-3.0
10-	0800-3.0
11-	0800-4.0
12-	0800-3.0
13-	0400-3.0
14-	0200-3.5
15-	1000-2.5
16-	2400-4.0
18-	1000-4.0
19-	0300-2.5
21-	0100-3.0
22-	0500-3.5
23-	0700-3.0
26-	0200-2.5
27-	0100-2.5

NOSC LA POSTA



NOSC LA POSTA

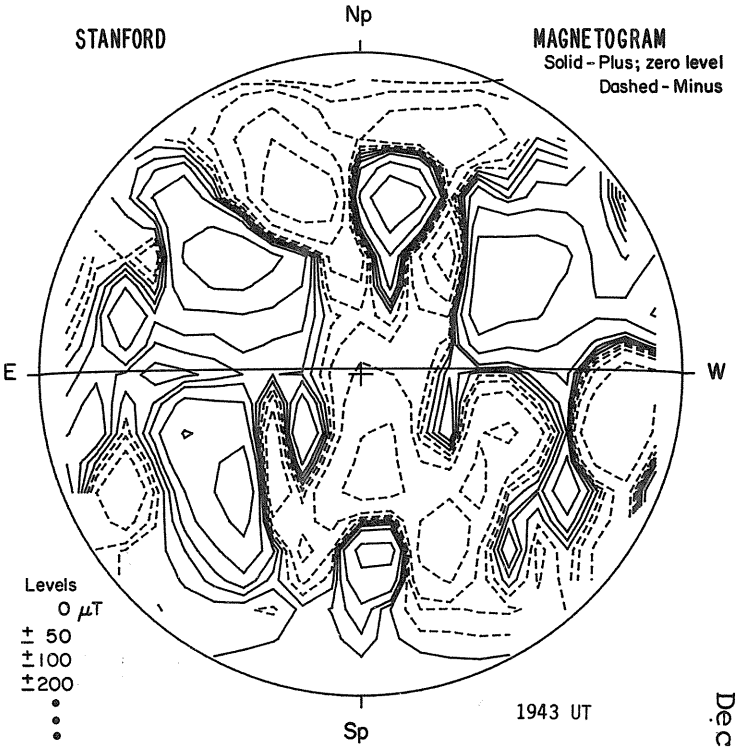


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



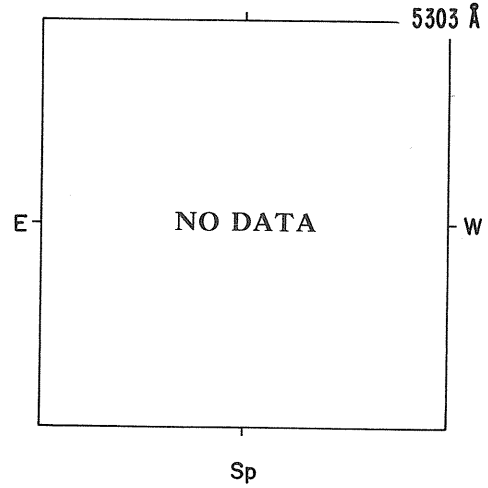
1943 UT

79 Dec 79

DECEMBER 16, 1979 (P=10.03, B_o=-1.00, L_o=155.95)

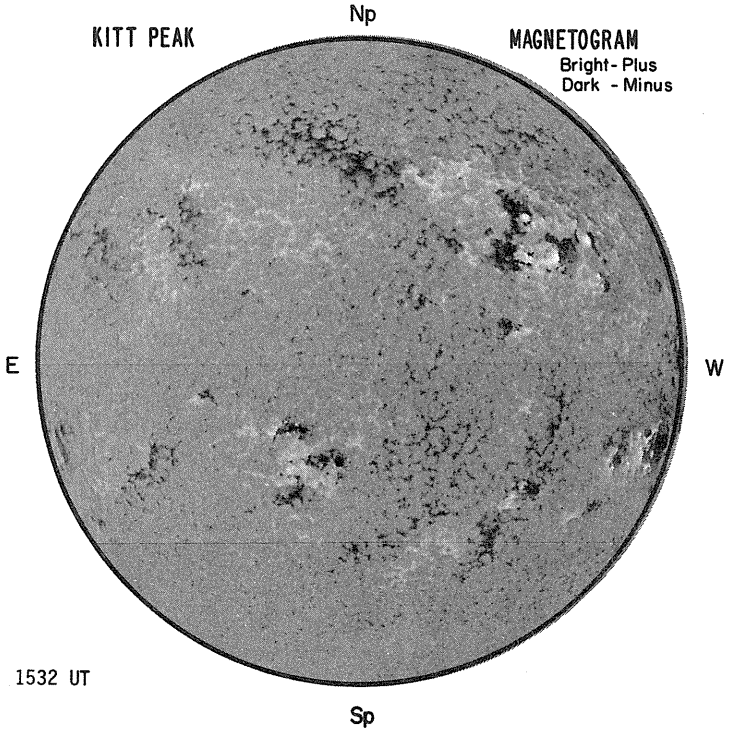
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

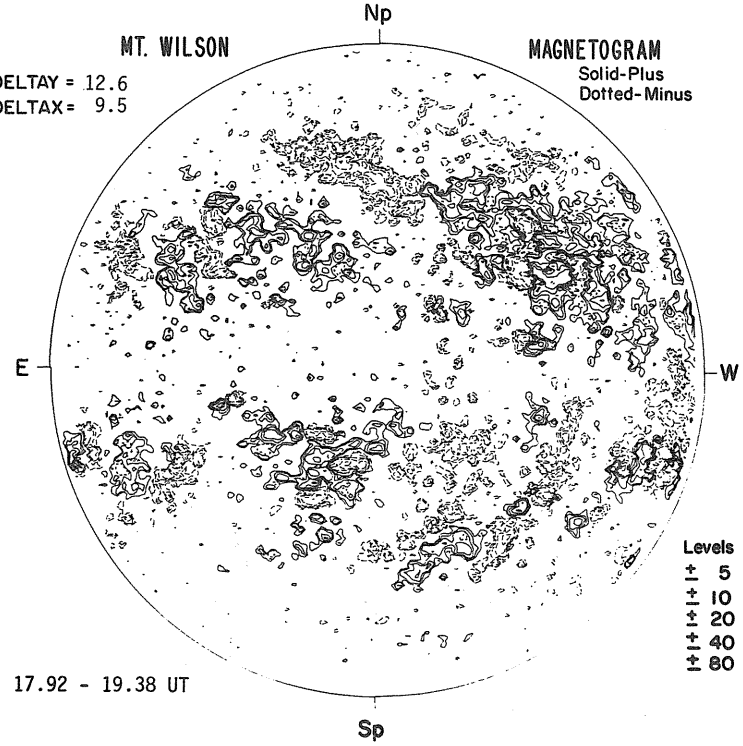


1532 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

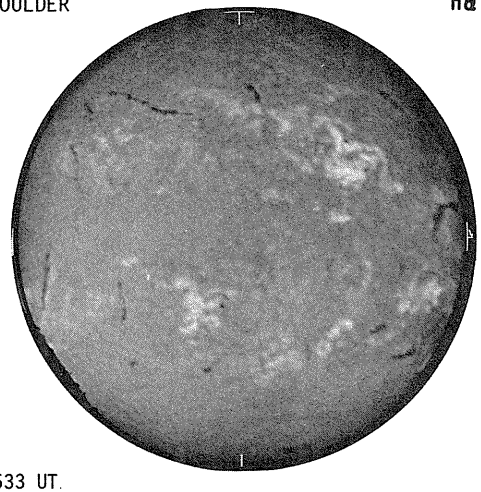
MAGNETOGRAM
Solid-Plus
Dotted-Minus



17.92 - 19.38 UT

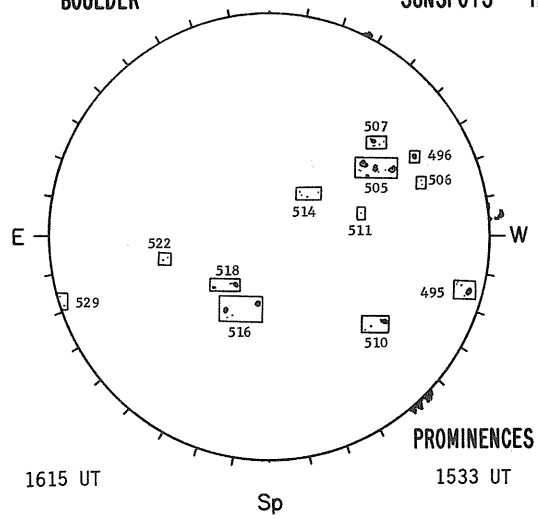
16

BOULDER Hα



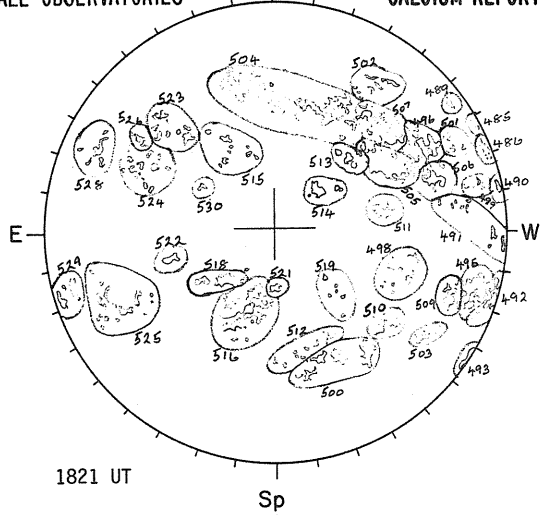
1533 UT

BOULDER SUNSPOTS



1615 UT

HALE OBSERVATORIES CALCIUM REPORT



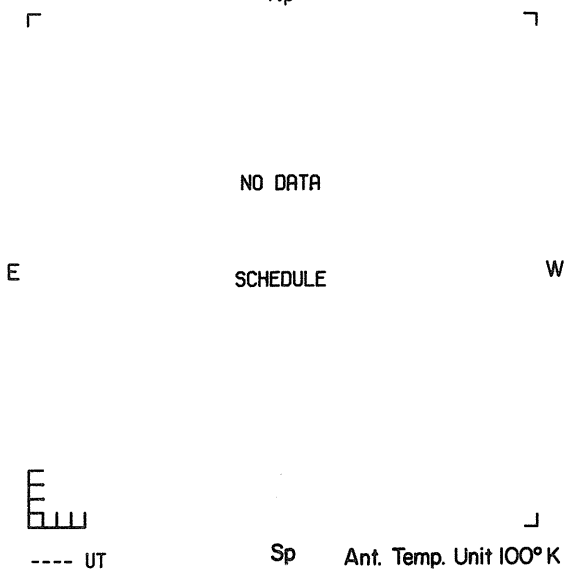
1821 UT

GOOD	JA
90-	0600-2.5
93-	0700-3.0
95-	2100-3.5
96-	2300-3.5
98-	0600-2.5
00-	2000-3.0
03-	0500-2.5
04-	5400-3.0
05-	3000-4.0
06-	1100-3.0
07-	2400-3.5
09-	0800-4.5
10-	1100-3.0
11-	0700-4.5
12-	0800-3.0
13-	0400-3.0
14-	0600-3.0
15-	0600-3.0
16-	3000-2.5
18-	0900-3.5
21-	0200-2.5
22-	0400-3.5
23-	1000-3.0
24-	1000-2.5
25-	1500-2.5
28-	0900-3.0
29-	1000-4.0

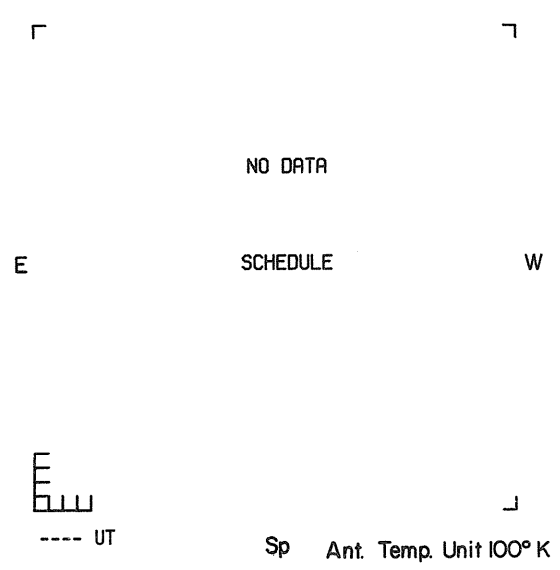
PROMINENCES

1533 UT

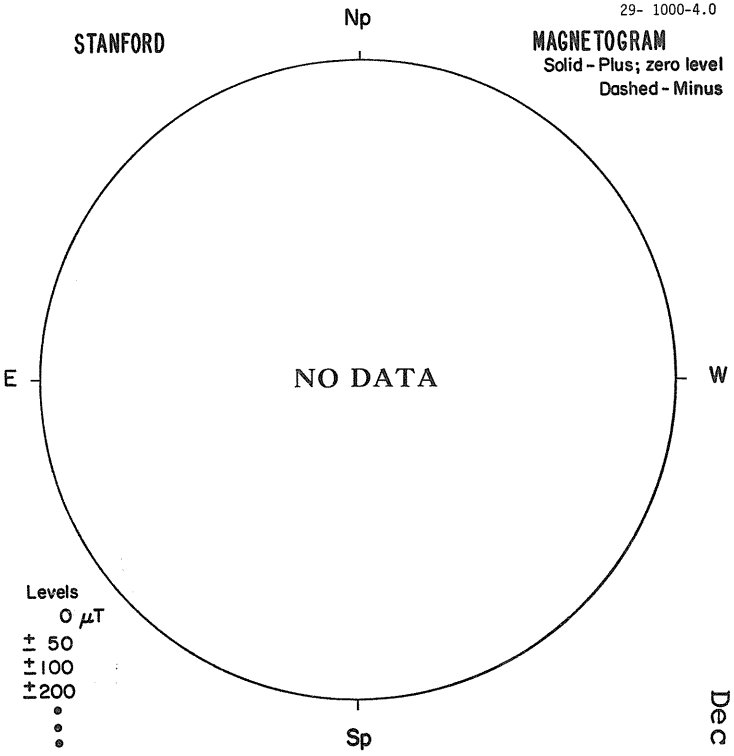
NOSC LA POSTA 2.0 CM



NOSC LA POSTA 8.6 MM



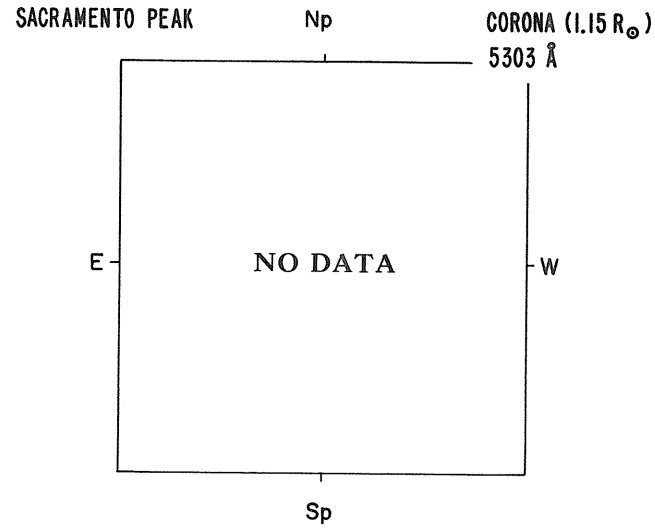
STANFORD

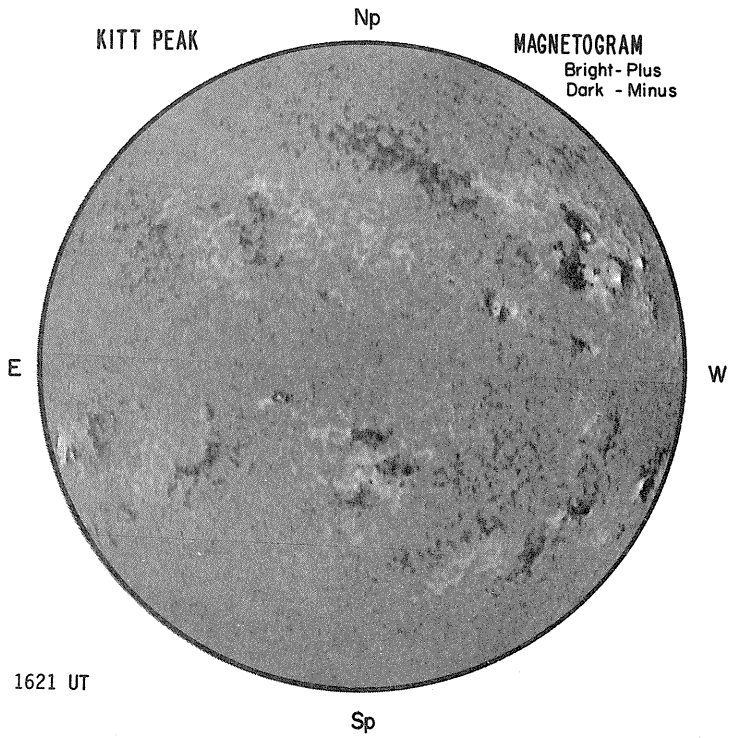


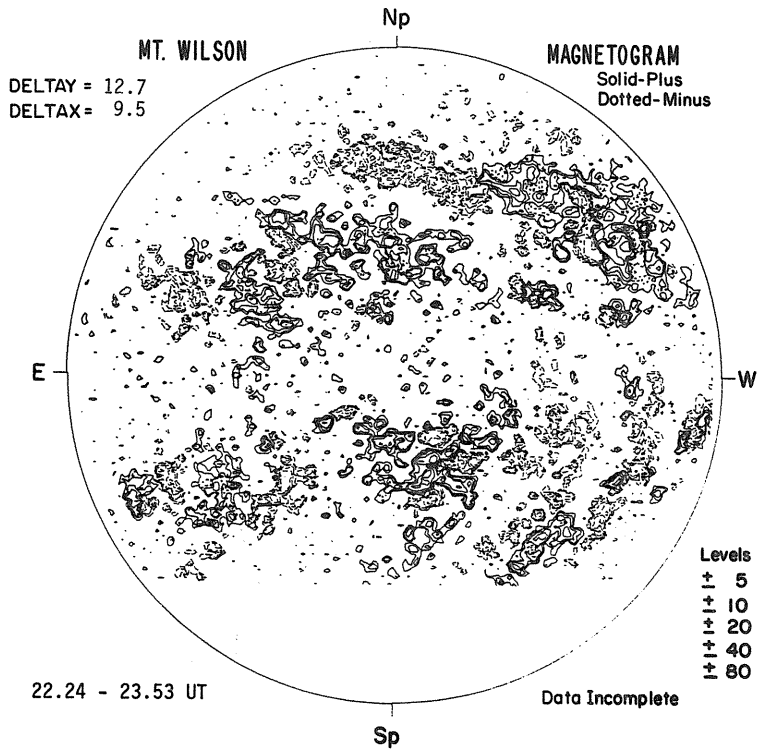
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

Levels
0 μT
± 50
± 100
± 200
• • •

DECEMBER 17, 1979 (P = 9.57, B_o = -1.13, L_o = 142.78)

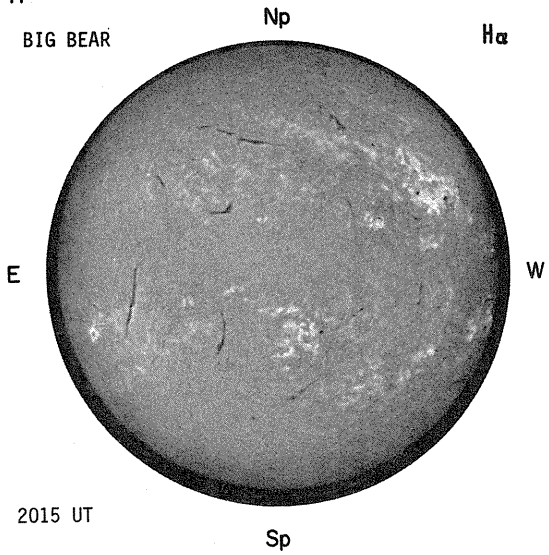






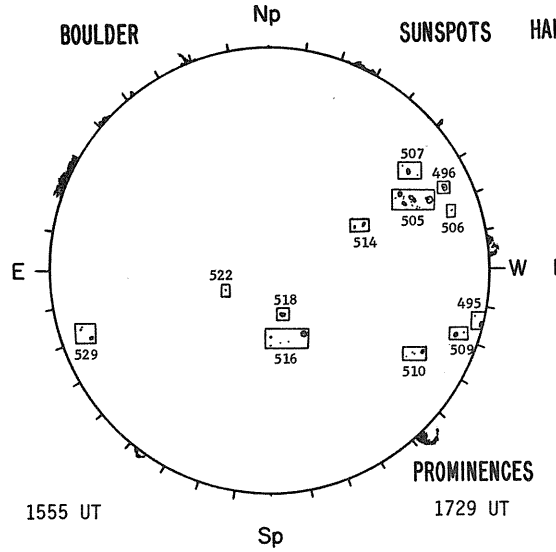
17

BIG BEAR



2015 UT

BOULDER



SUNSPOTS

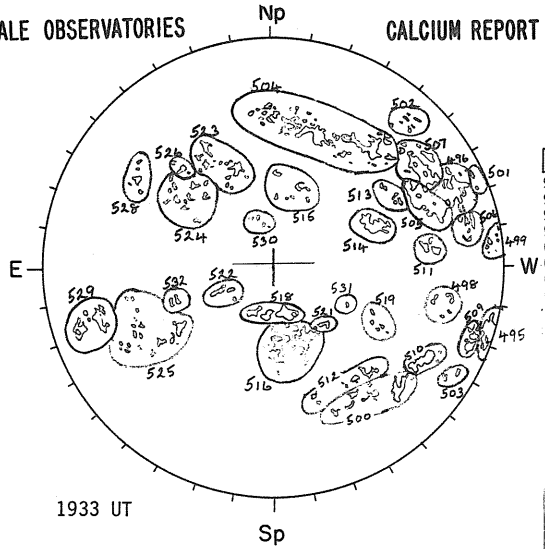
PROMINENCES

1555 UT

1729 UT

HALE OBSERVATORIES

CALCIUM REPORT

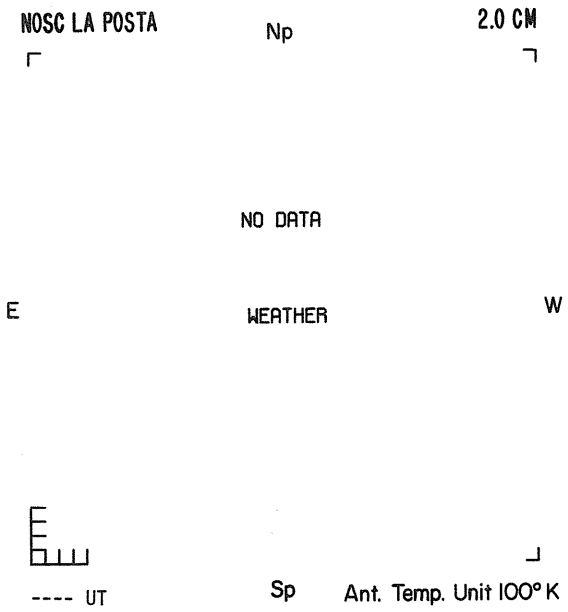


1933 UT

GOOD	JA
95-	2000-3.5
96-	2500-4.0
98-	0500-2.5
99-	0300-2.5
00-	1900-3.0
04-	4500-3.0
05-	3100-4.0
06-	0600-3.5
07-	2500-3.5
09-	1000-3.5
10-	1100-3.0
11-	0700-3.5
12-	0800-3.0
13-	0400-3.0
14-	1200-3.5
15-	0600-2.5
16-	2500-4.0
18-	0900-4.0
21-	0200-2.5
22-	0400-3.5
23-	1200-3.0
24-	1000-2.5
25-	1500-3.0
26-	0300-2.5
28-	0500-3.0
29-	1400-3.5
30-	0200-2.5
32-	0200-2.5

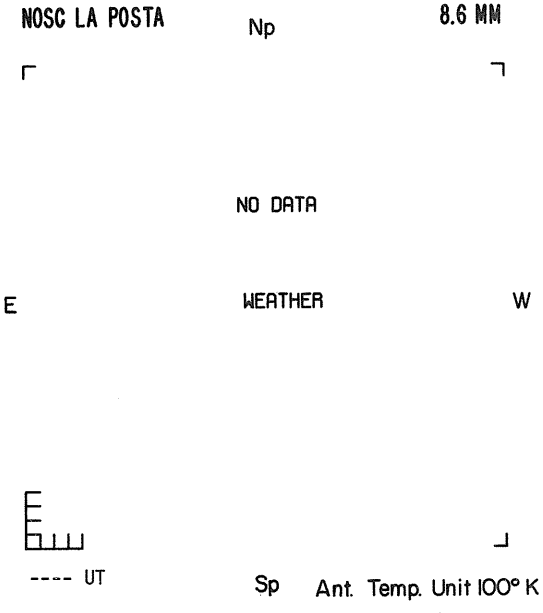
NOSC LA POSTA

2.0 CM



NOSC LA POSTA

8.6 MM

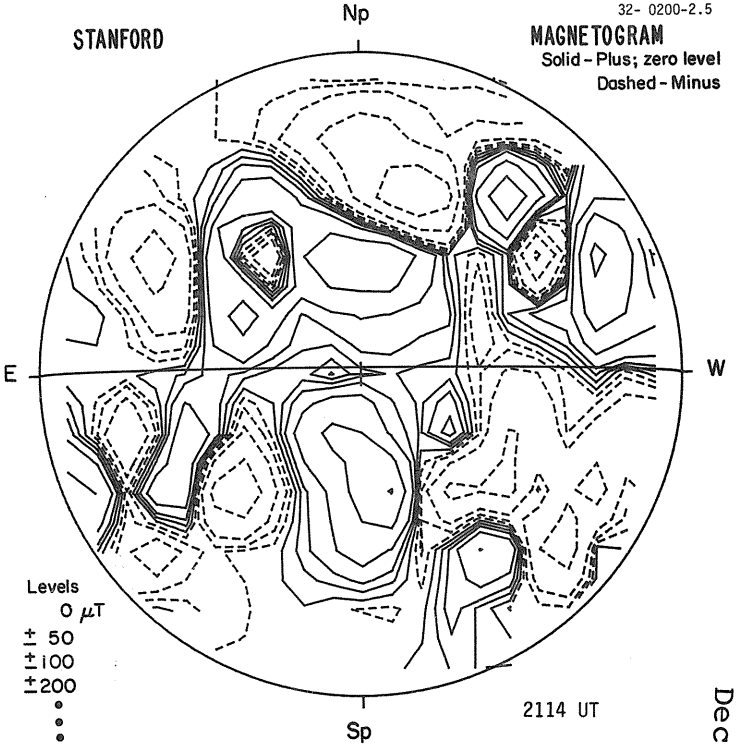


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

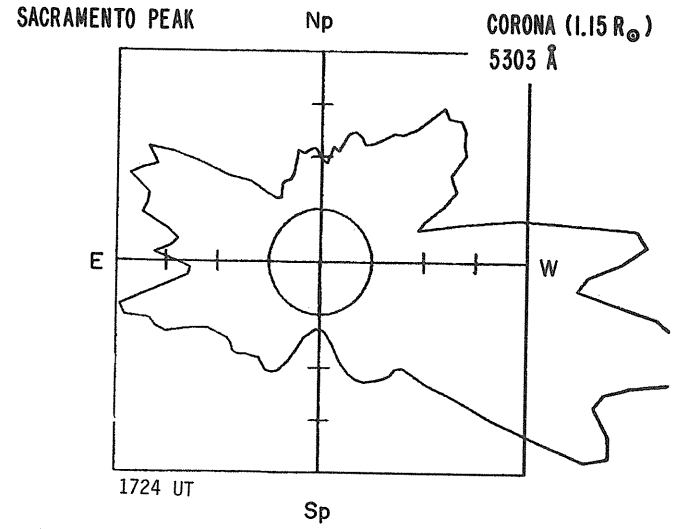


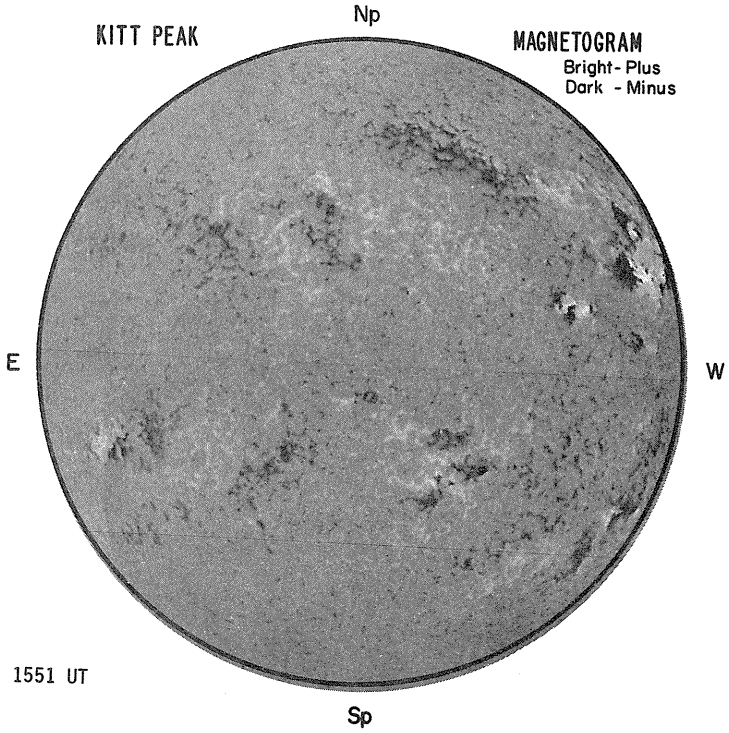
2114 UT

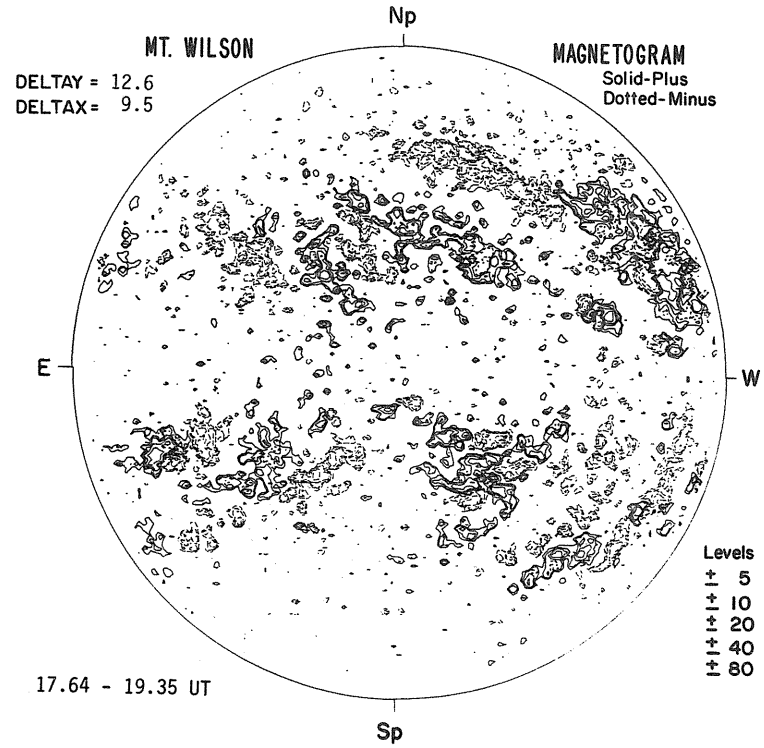
83

Dec 79

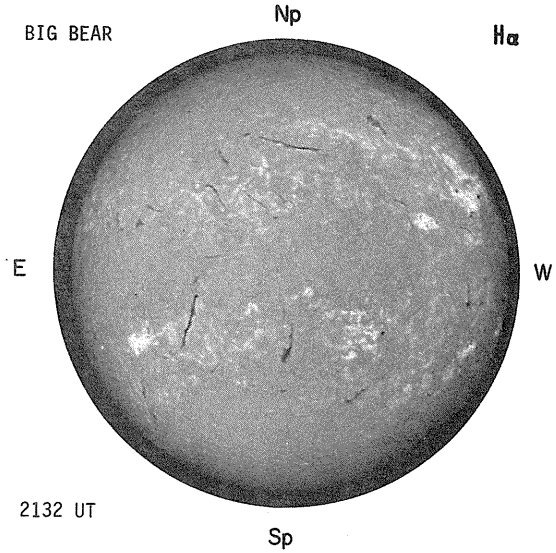
DECEMBER 18, 1979 (P = 9.11, B_o = -1.25, L_o = 129.60)





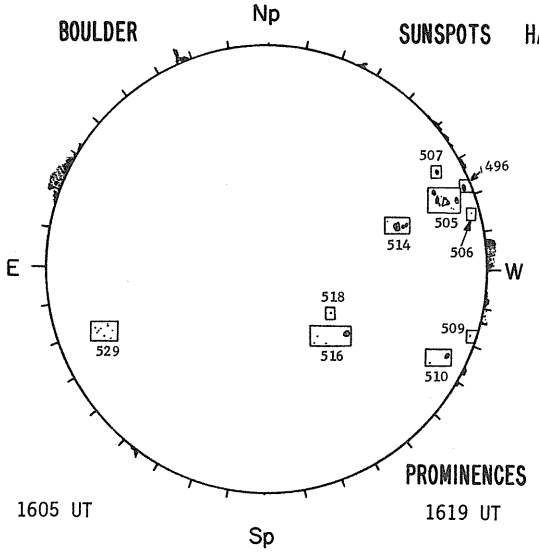


BIG BEAR



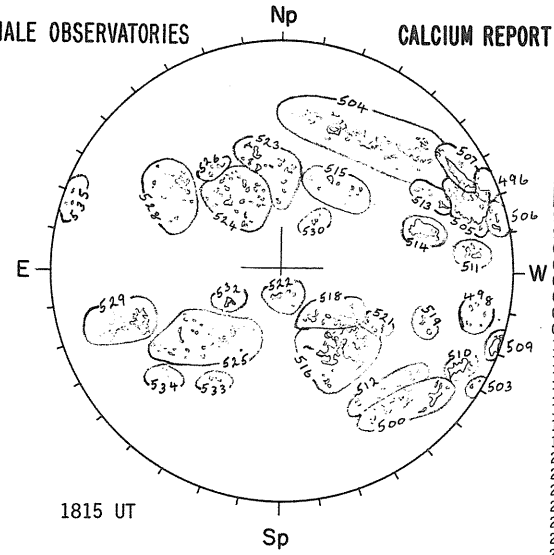
2132 UT

BOULDER SUNSPOTS



1605 UT

HALE OBSERVATORIES CALCIUM REPORT



PROMINENCES

1619 UT

1815 UT

GOOD	JA
96-	0900-3.0
98-	0300-2.5
00-	1500-2.5
04-	3200-3.0
05-	3400-4.5
06-	0600-3.0
07-	1200-4.0
09-	0900-3.5
10-	0900-4.0
11-	0600-3.0
12-	0600-3.0
13-	0400-2.5
14-	1300-4.5
16-	2700-4.0
18-	1100-3.5
21-	0300-2.5
22-	0300-2.5
23-	1100-2.5
24-	1500-2.5
25-	1100-3.0
26-	0200-2.5
28-	0900-2.5
29-	2200-4.5
30-	0100-2.5
32-	0200-3.0
33-	0100-2.5

NOSC LA POSTA 2.0 CM

Np

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

Np

NO DATA

E WEATHER W

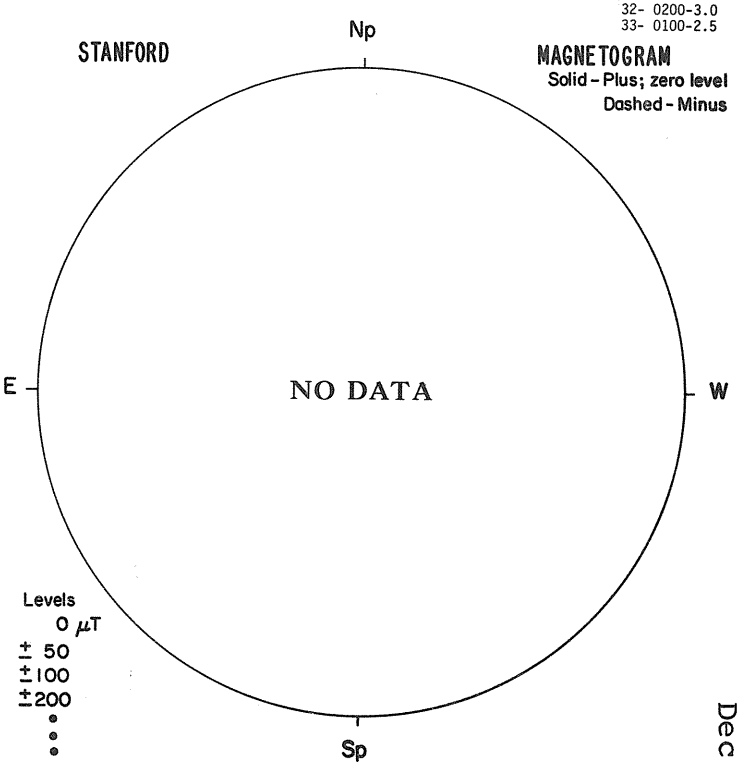
---- UT Sp Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

± 100

± 200

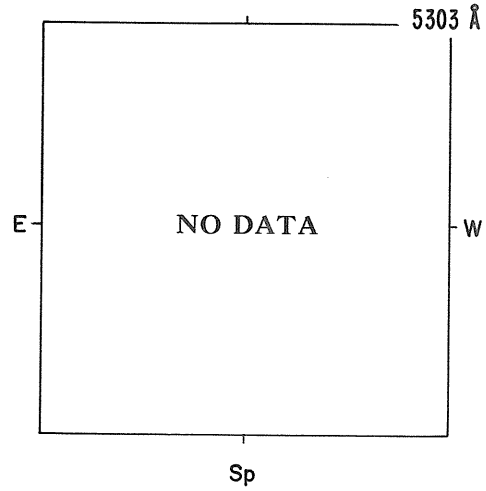
85

Dec 79

DECEMBER 19, 1979 (P = 8.65, B_o = -1.38, L_o = 116.43)

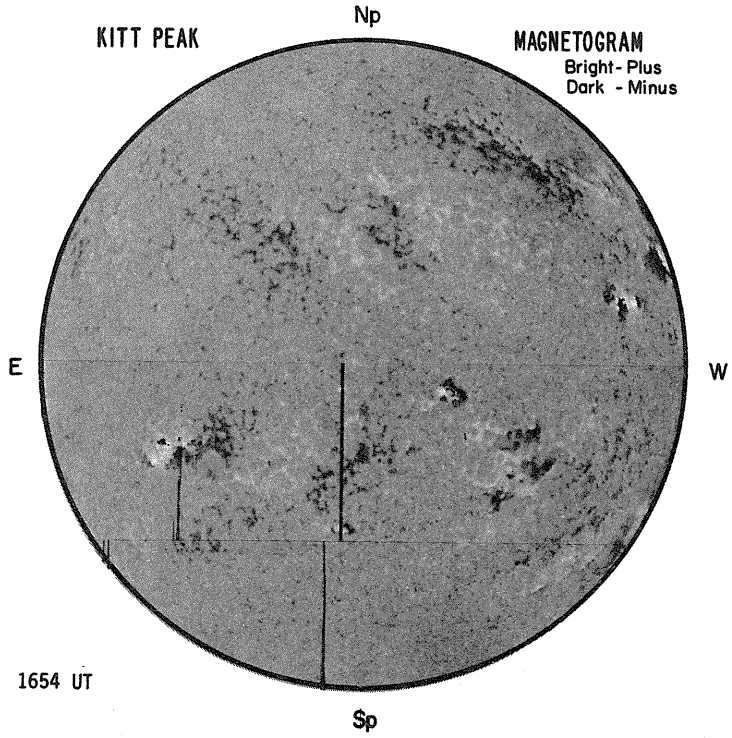
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

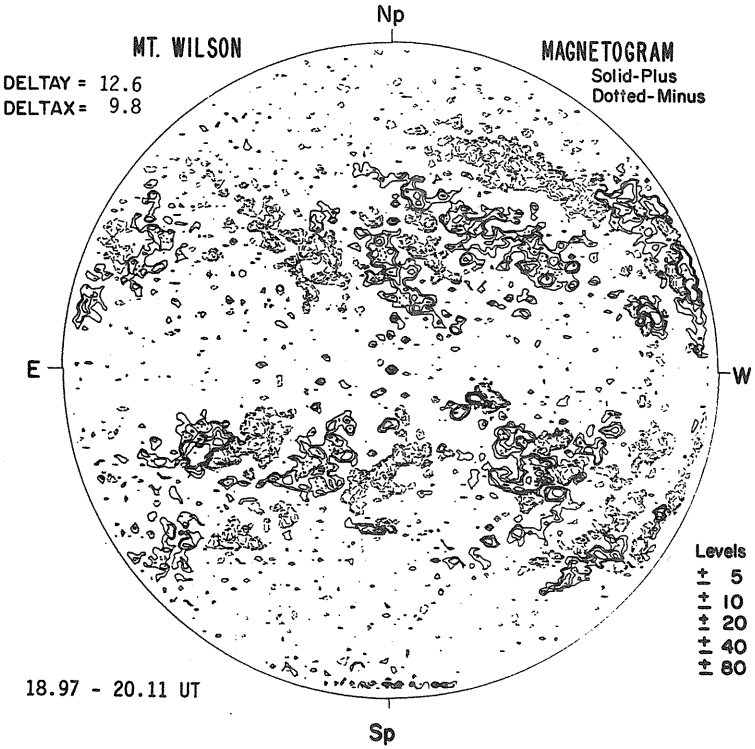


1654 UT

MT. WILSON

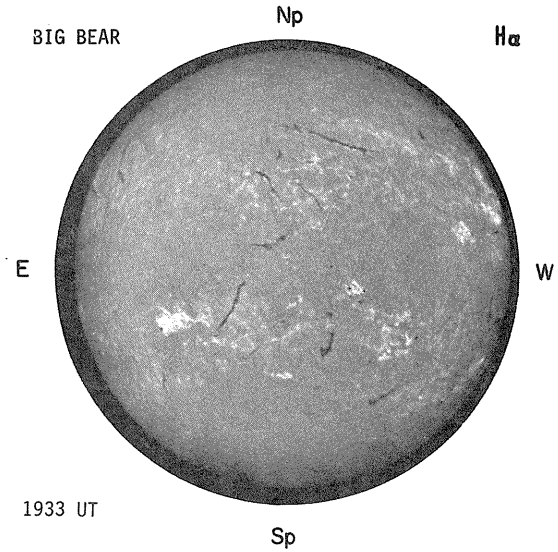
DELTAY = 12.6
DELTAX = 9.8

MAGNETOGRAM
Solid-Plus
Dotted-Minus



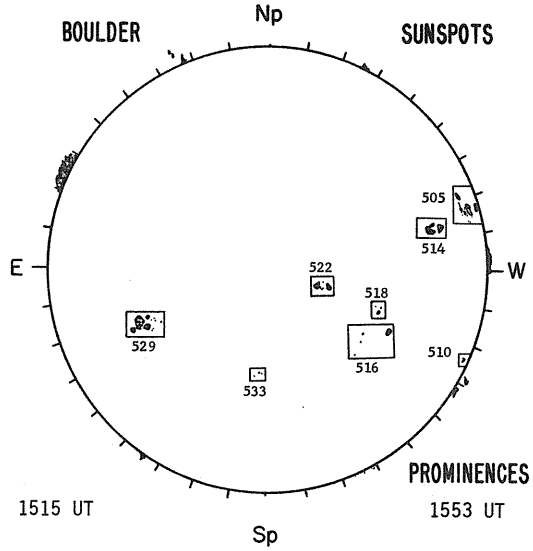
18.97 - 20.11 UT

BIG BEAR



1933 UT

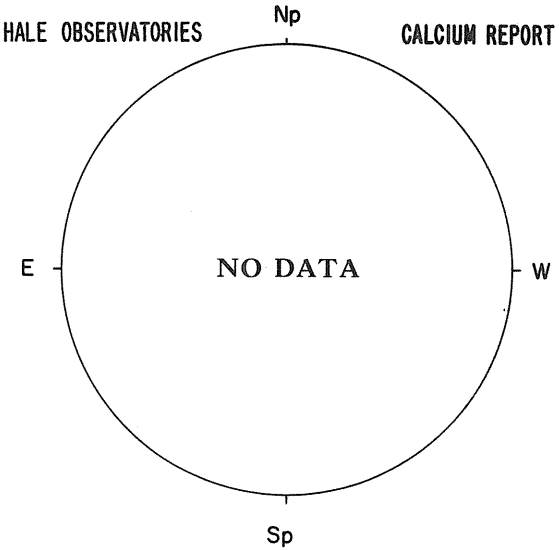
BOULDER



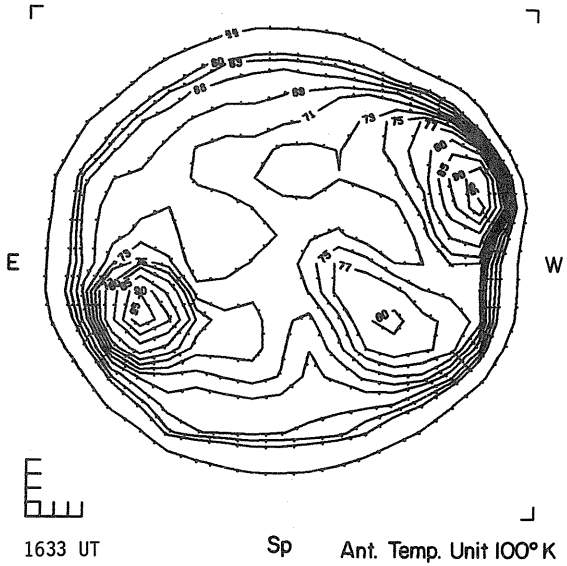
1515 UT

1553 UT

HALE OBSERVATORIES

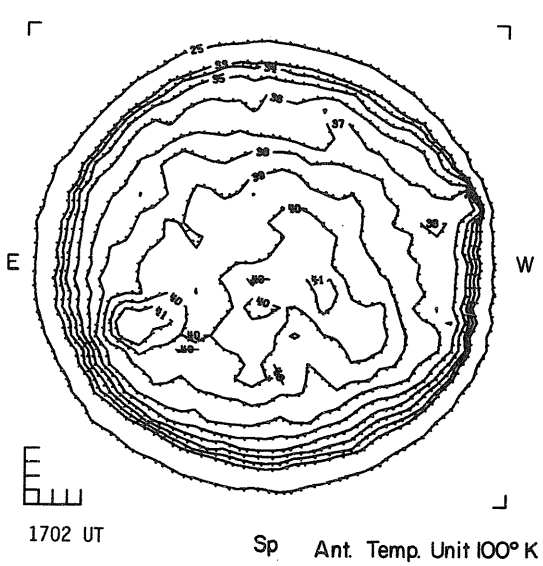


NOSC LA POSTA



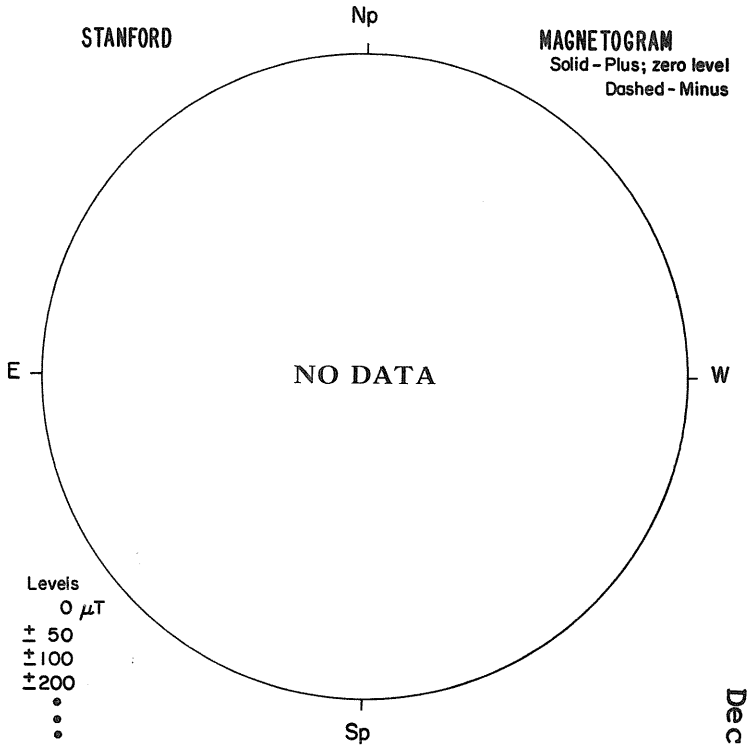
1633 UT

NOSC LA POSTA



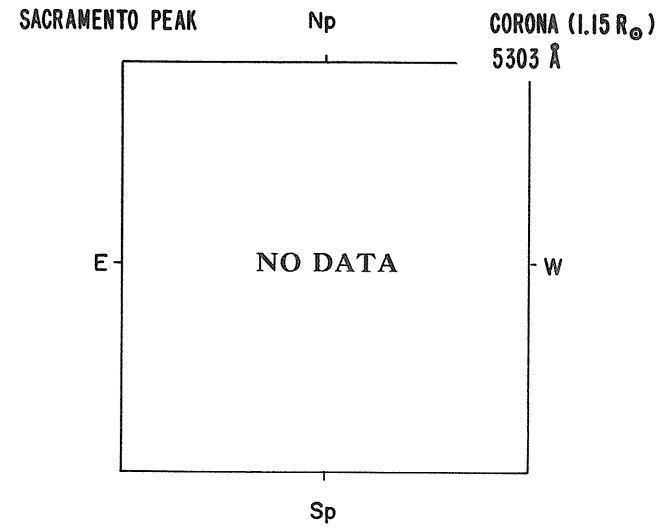
1702 UT

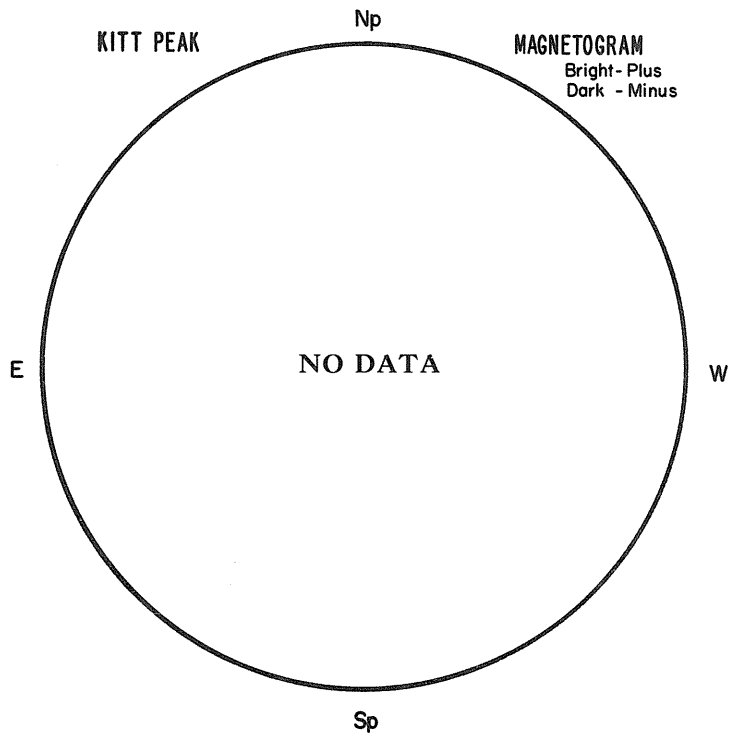
STANFORD

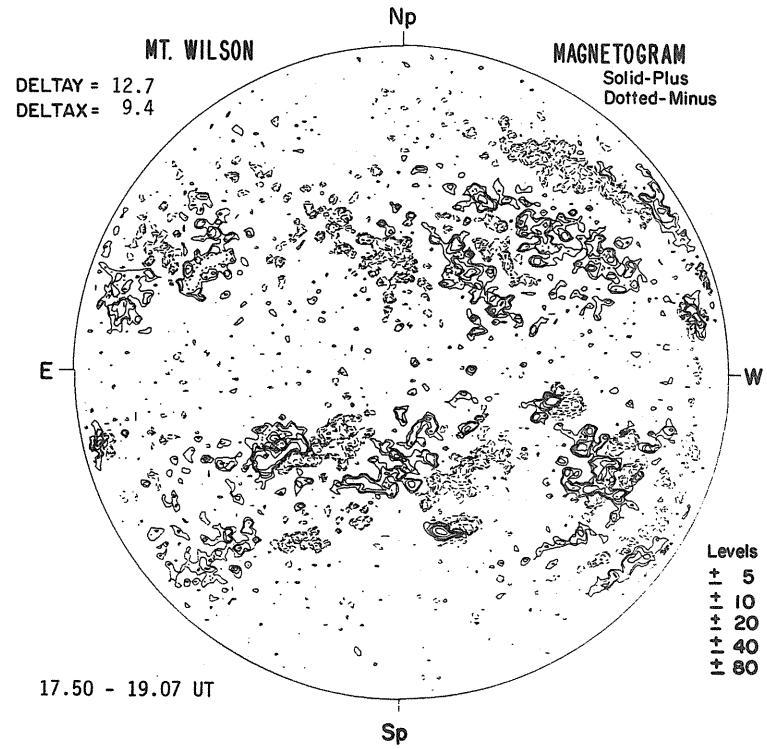


87
Dec 79

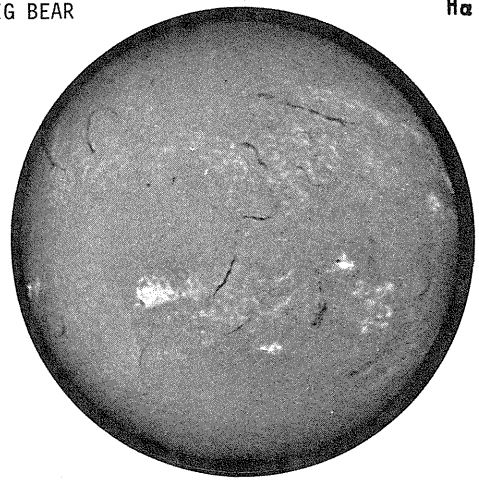
DECEMBER 20, 1979 (P = 8.18, B_o = -1.50, L_o = 103.26)





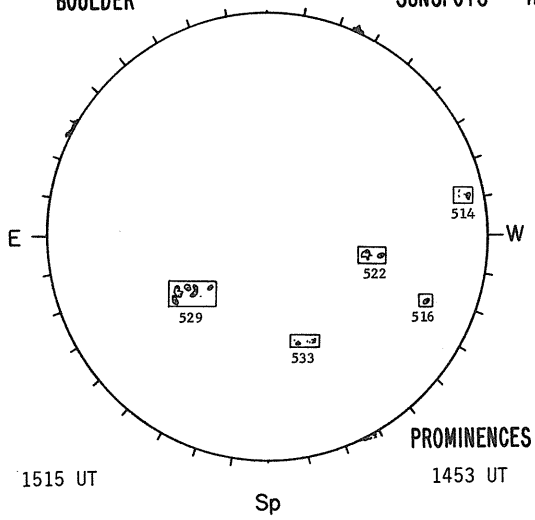


BIG BEAR



1631 UT

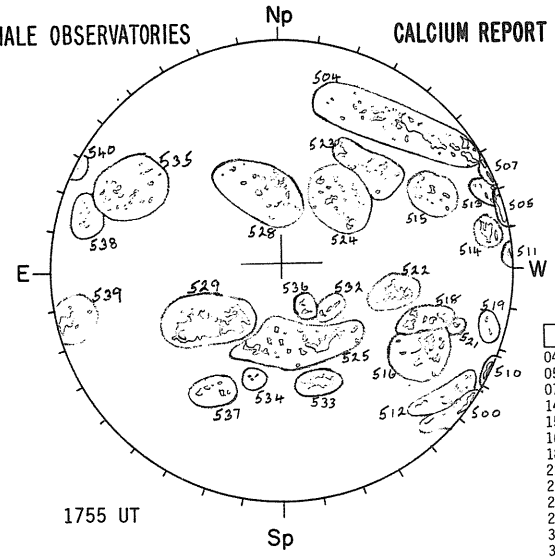
BOULDER



1515 UT

1453 UT

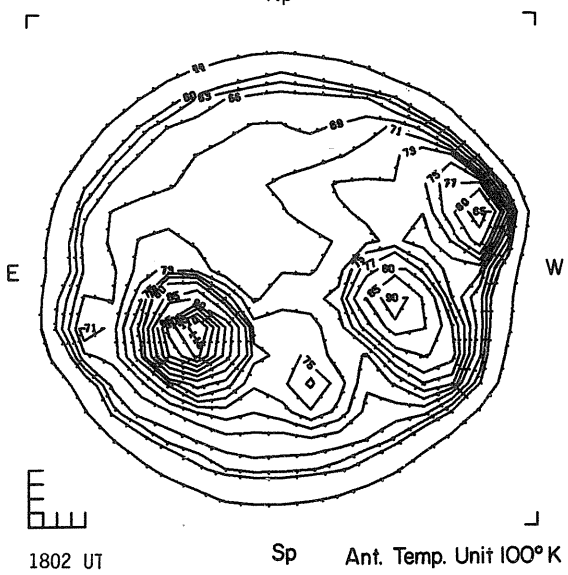
HALE OBSERVATORIES



1755 UT

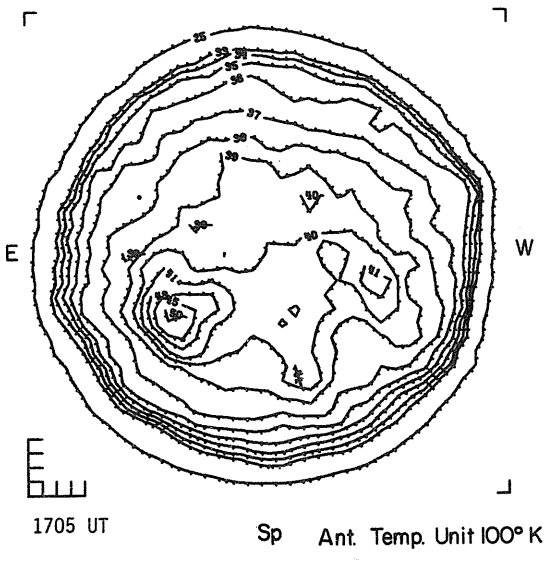
FAIR	JA
04-	3500-3.0
05-	1600-3.5
07-	0400-2.5
14-	1000-3.0
15-	0700-2.5
16-	1900-2.5
18-	0800-3.0
22-	0900-3.5
23-	0900-2.5
24-	1200-3.0
29-	4500-4.0
33-	0800-4.0
39-	1400-3.5

NOSC LA POSTA



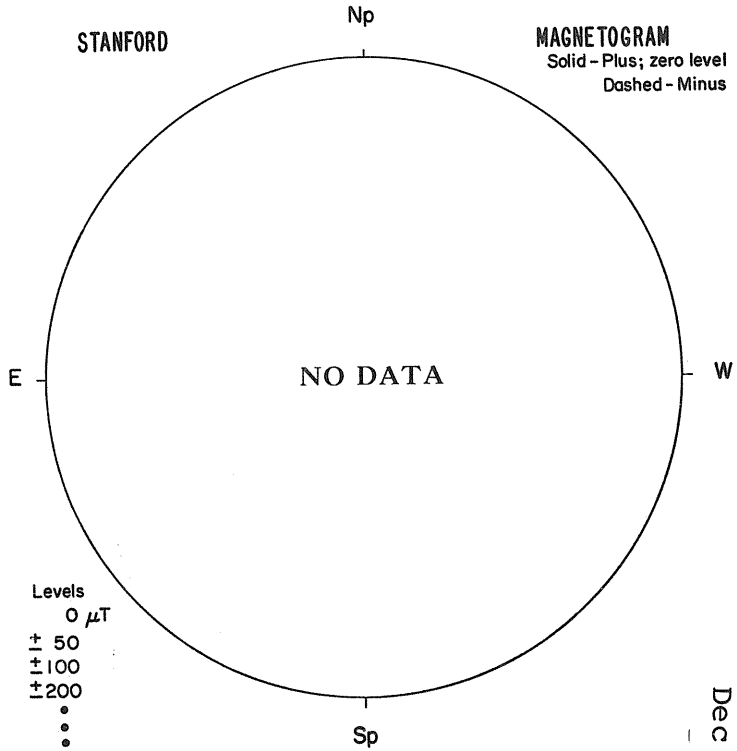
1802 UT

NOSC LA POSTA



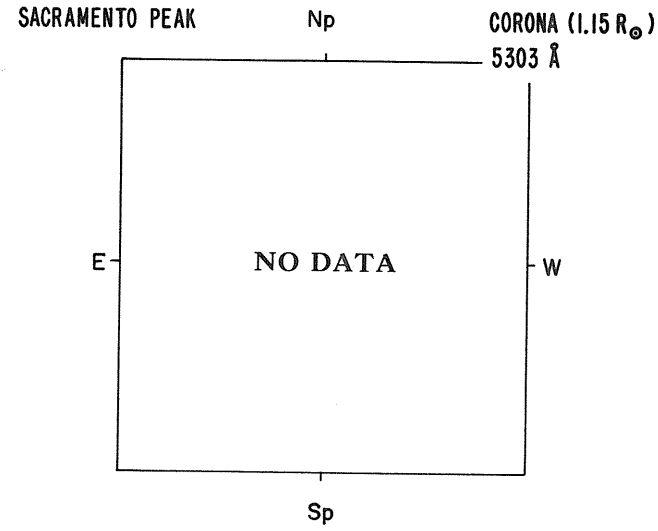
1705 UT

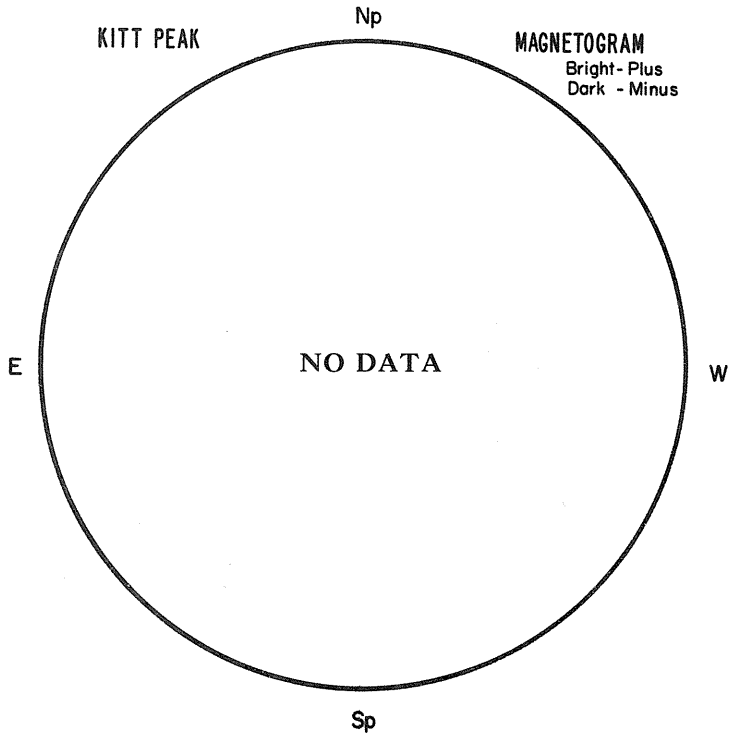
STANFORD

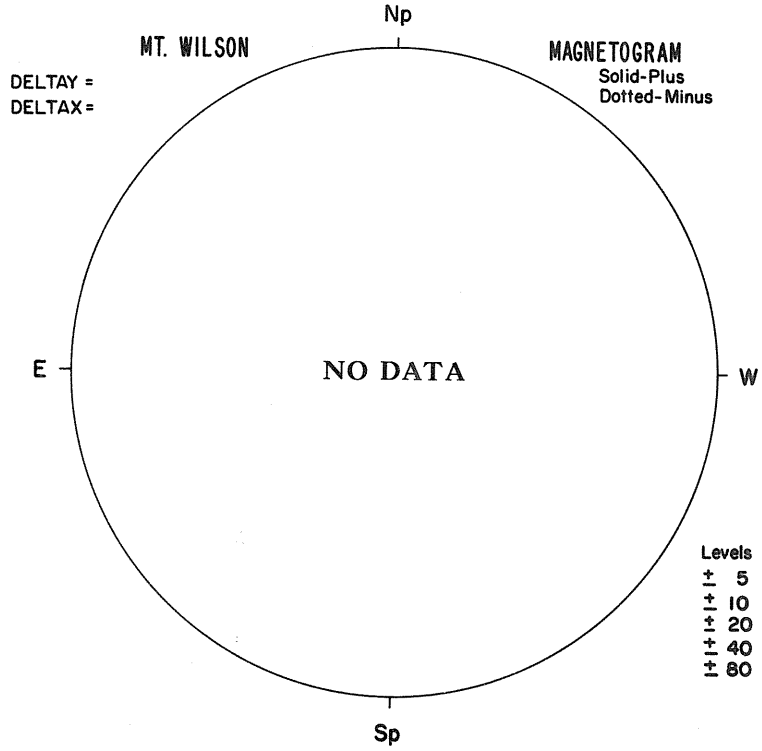


89
Dec 79

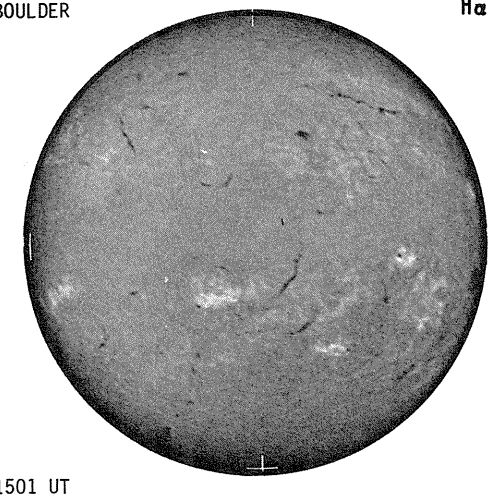
DECEMBER 21, 1979 (P = 7.71, B_o = -1.63, L_o = 90.08)





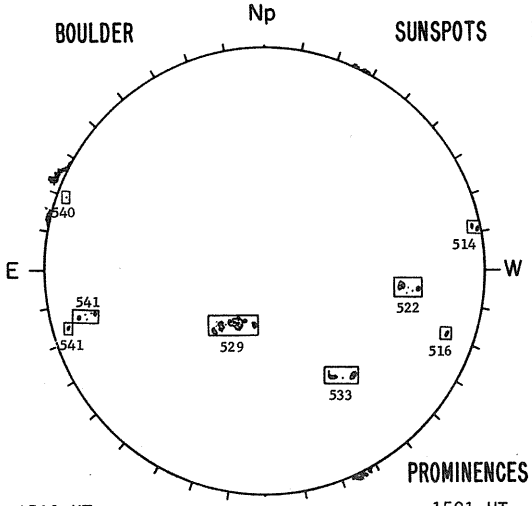


BOULDER Hα



1501 UT

BOULDER SUNSPOTS

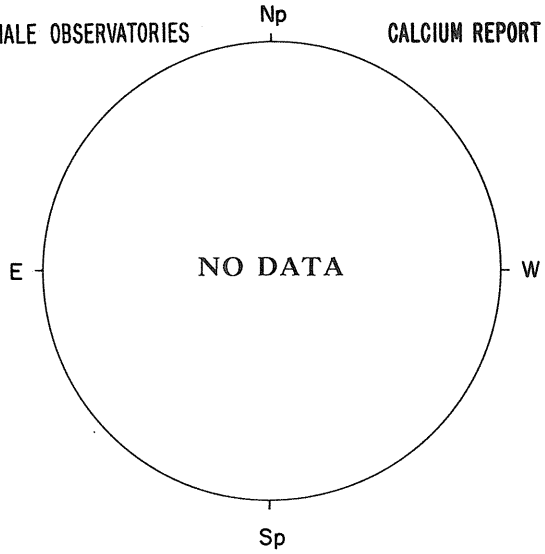


1510 UT

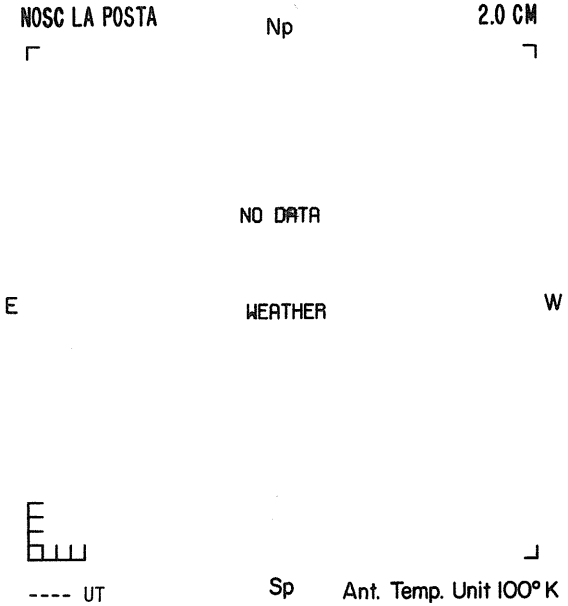
PROMINENCES

1501 UT

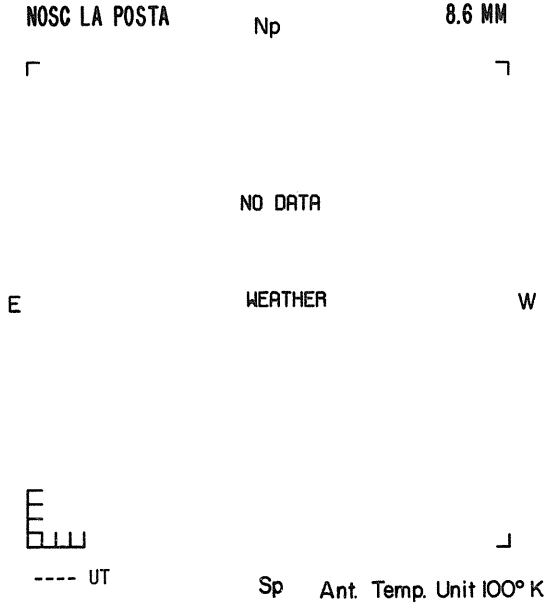
HALE OBSERVATORIES CALCIUM REPORT



NOSC LA POSTA 2.0 CM

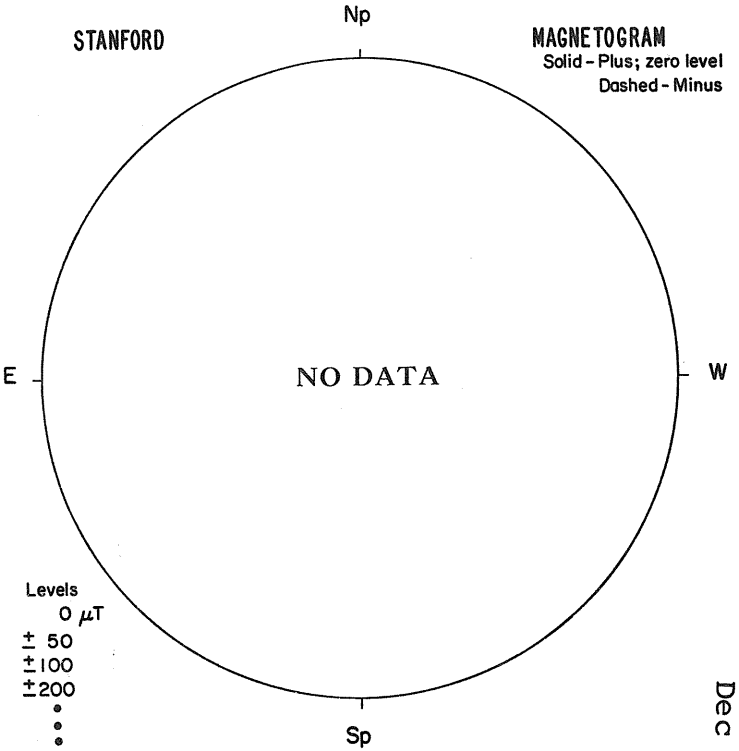


NOSC LA POSTA 8.6 MM

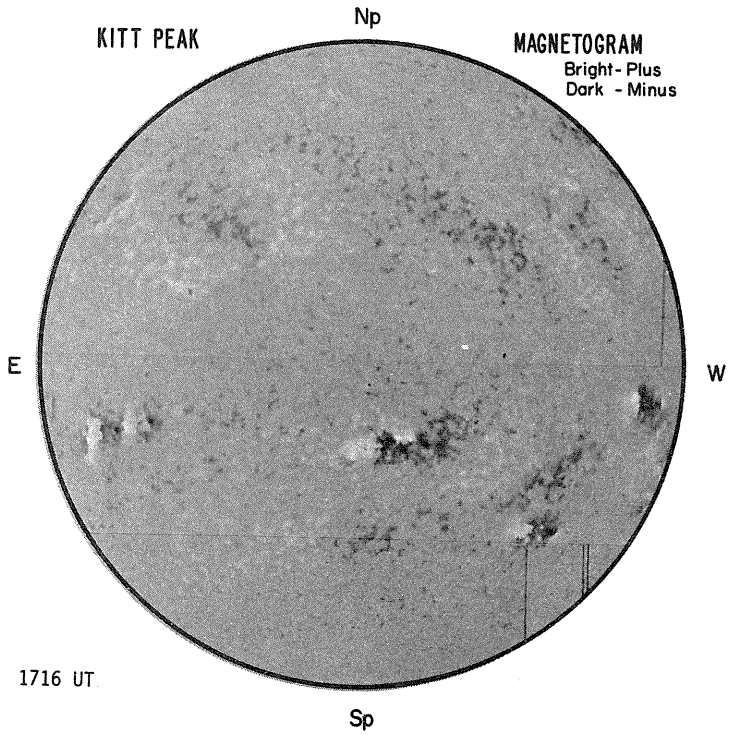


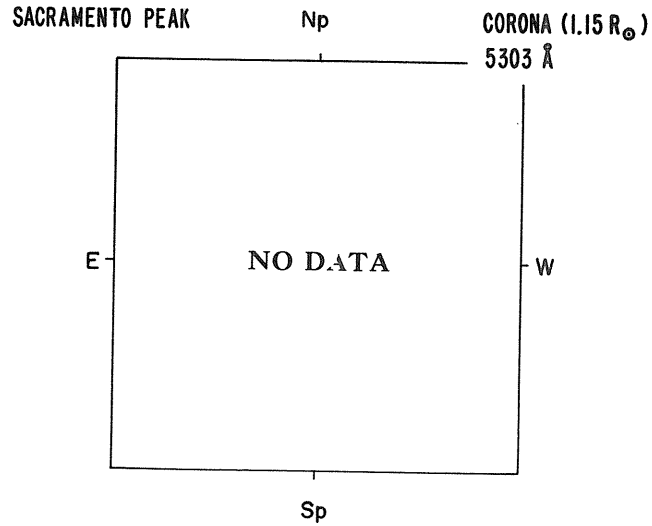
STANFORD MAGNETOGRAM

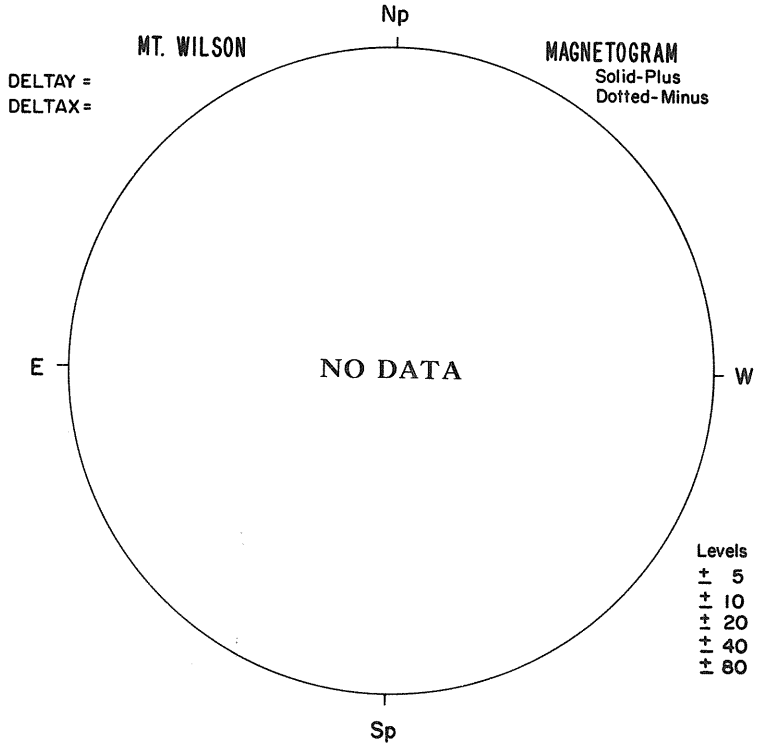
Solid - Plus; zero level
Dashed - Minus

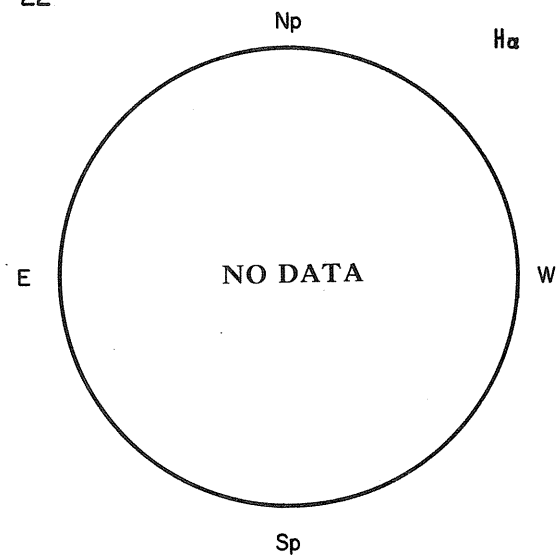


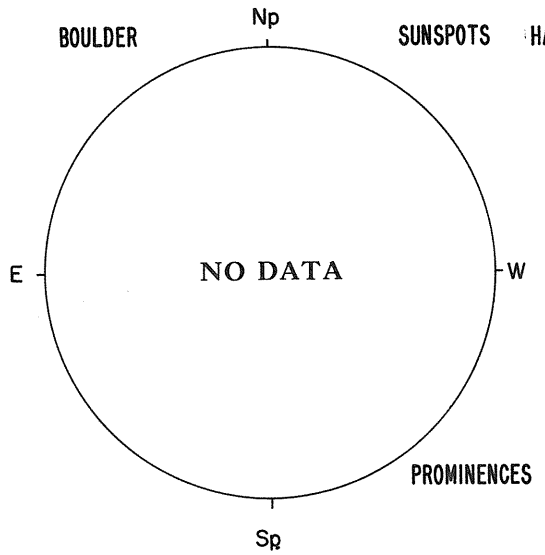
DECEMBER 22, 1979 ($P = 7.24$, $B_o = -1.76$, $L_o = 76.91$)

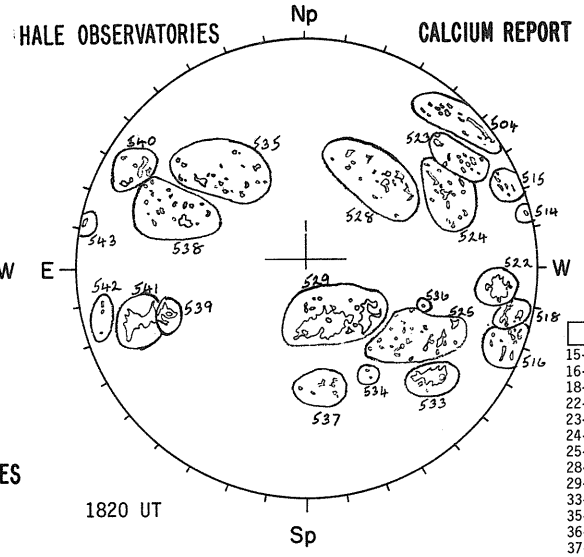




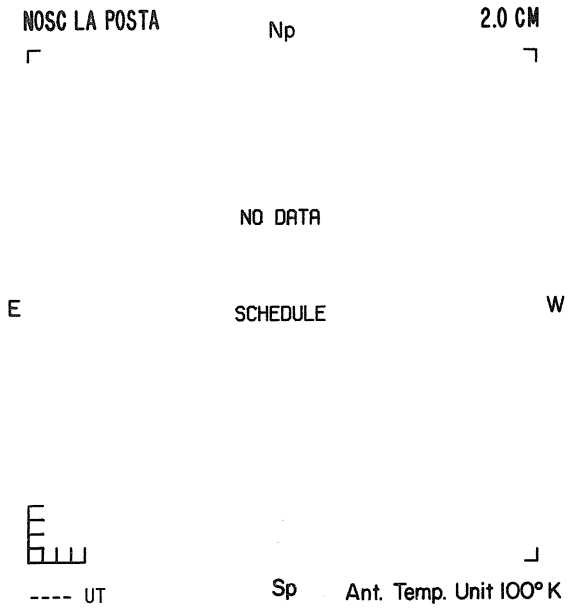


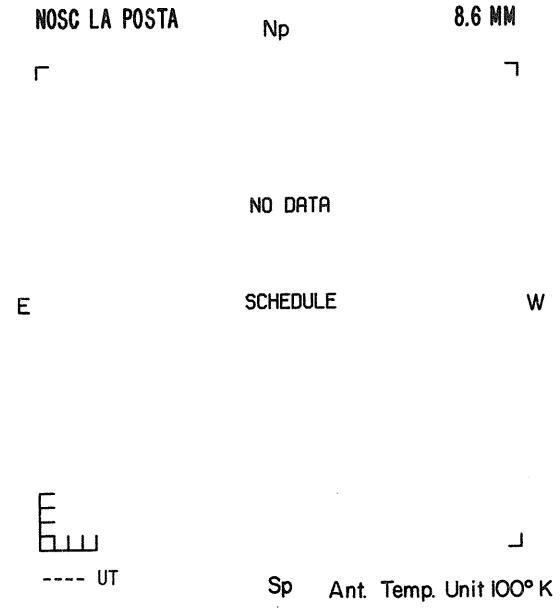


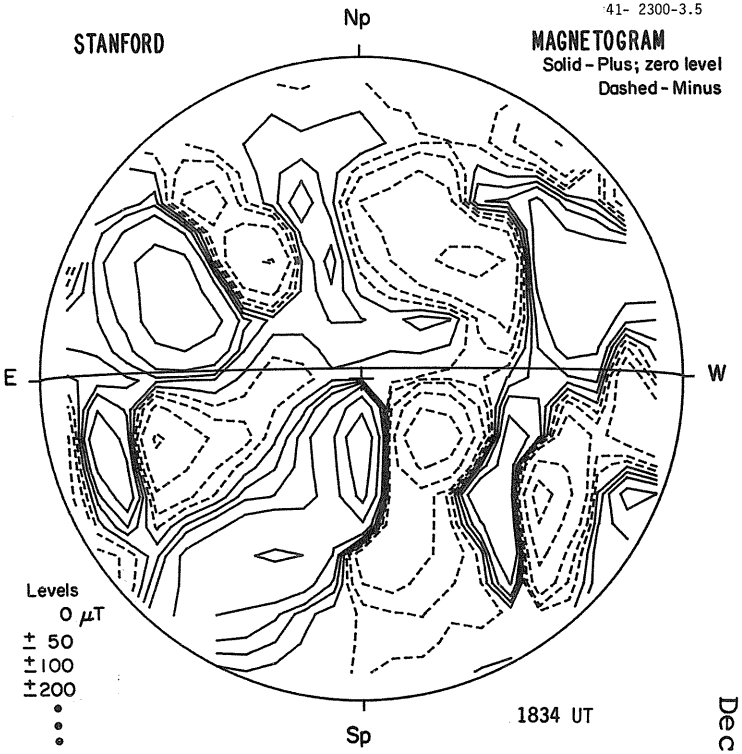




FAIR	JA
15- 0500-2.5	
16- 1300-3.0	
18- 0900-2.5	
22- 1300-3.5	
23- 0900-3.0	
24- 1000-3.0	
25- 1500-3.0	
28- 1200-3.0	
29- 4300-4.0	
33- 1800-3.5	
35- 1100-3.0	
36- 0100-3.0	
37- 0300-3.0	
38- 1000-3.0	
39- 0600-3.0	
40- 0800-2.5	
41- 2300-3.5	

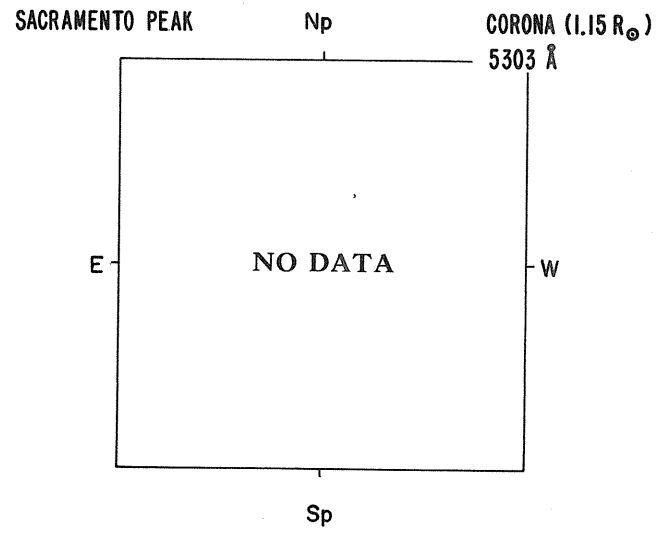


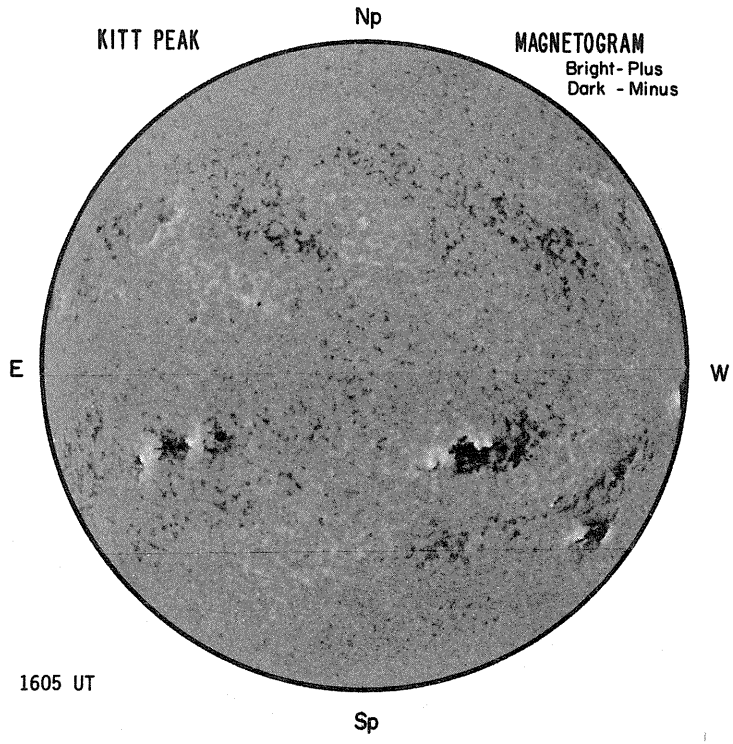


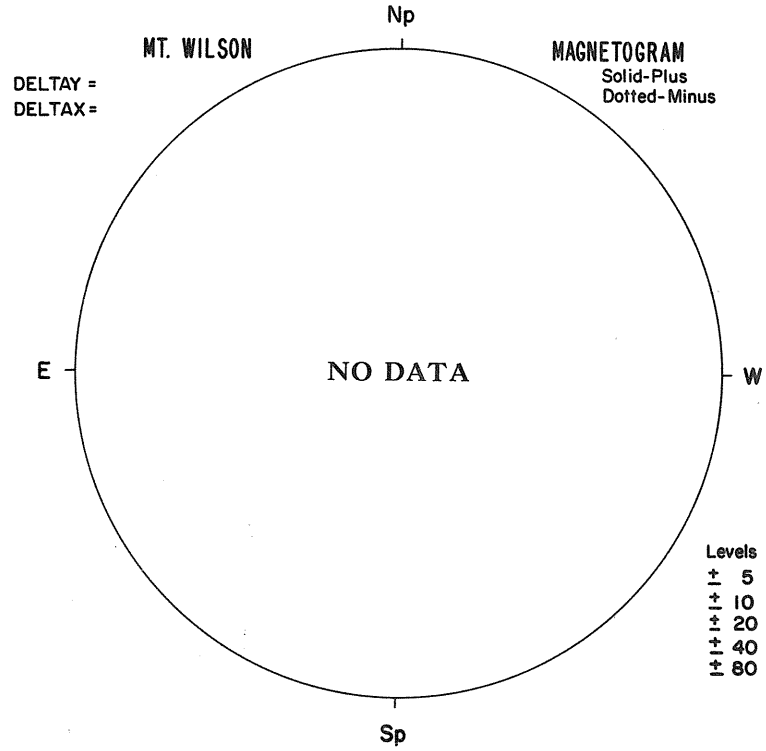


93
Dec 79

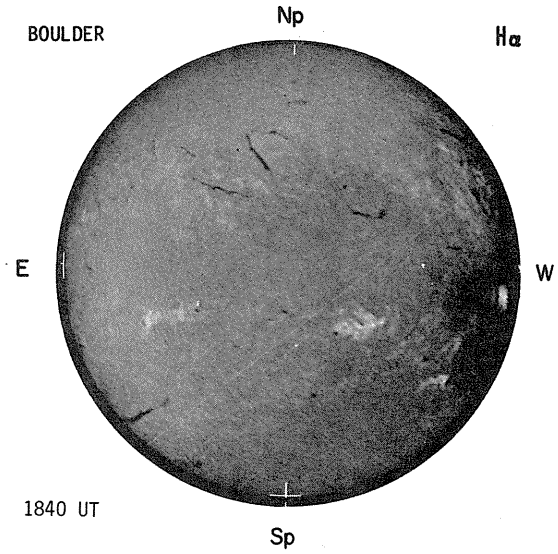
DECEMBER 23, 1979 (P = 6.77, B_o = -1.88, L_o = 63.74)





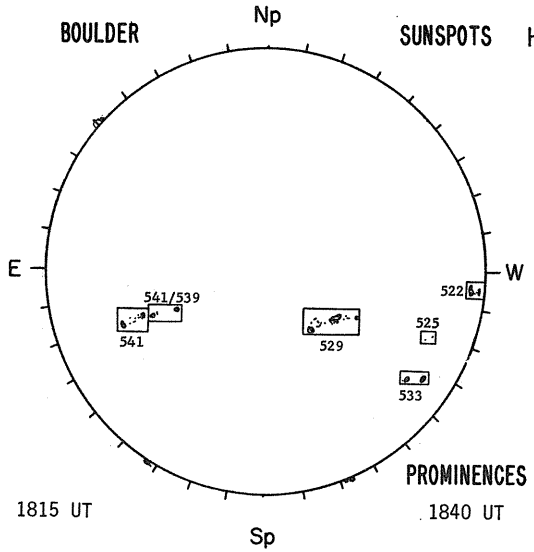


BOULDER Hα



1840 UT

BOULDER SUNSPOTS

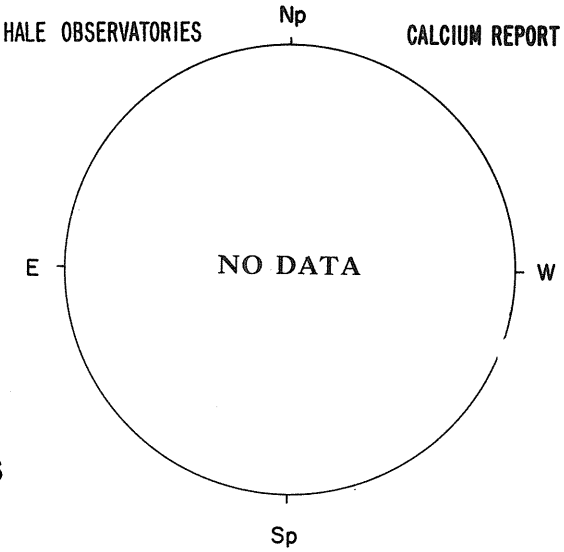


1815 UT

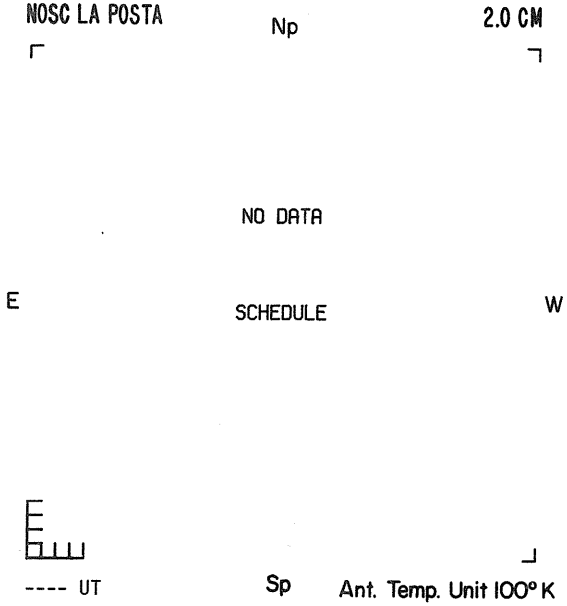
PROMINENCES

1840 UT

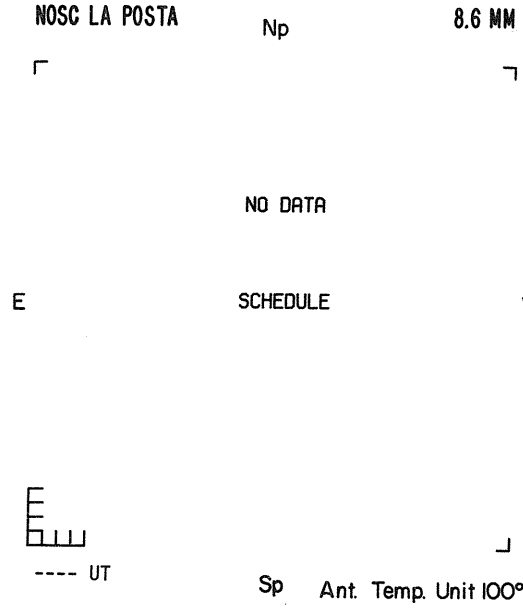
HALE OBSERVATORIES CALCIUM REPORT



NOSC LA POSTA 2.0 CM

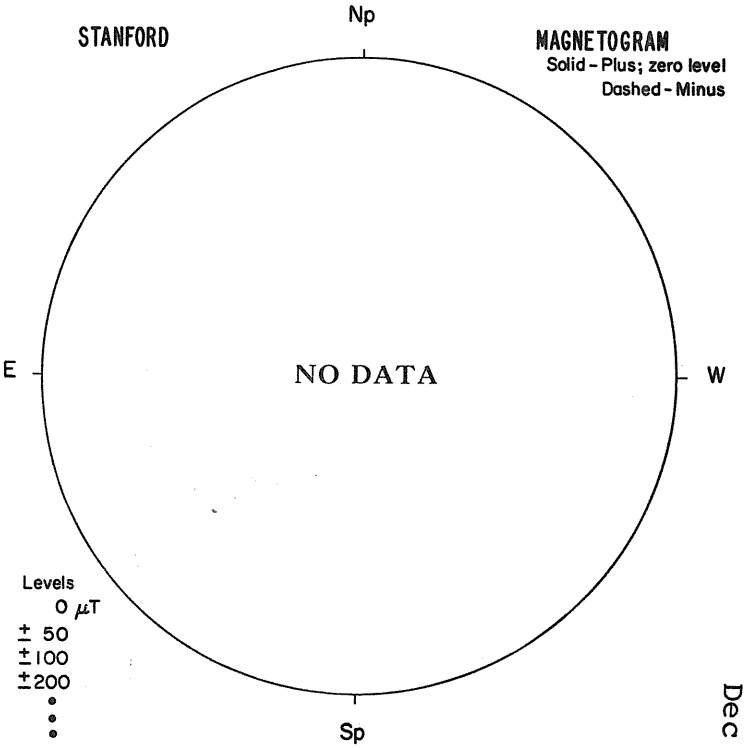


NOSC LA POSTA 8.6 MM

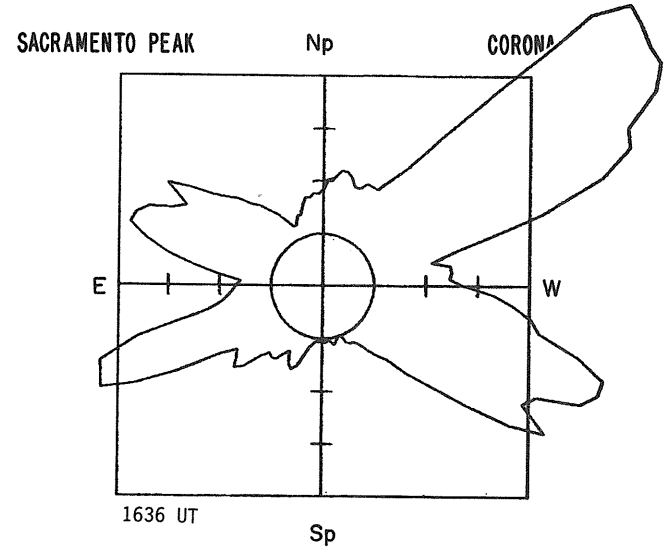


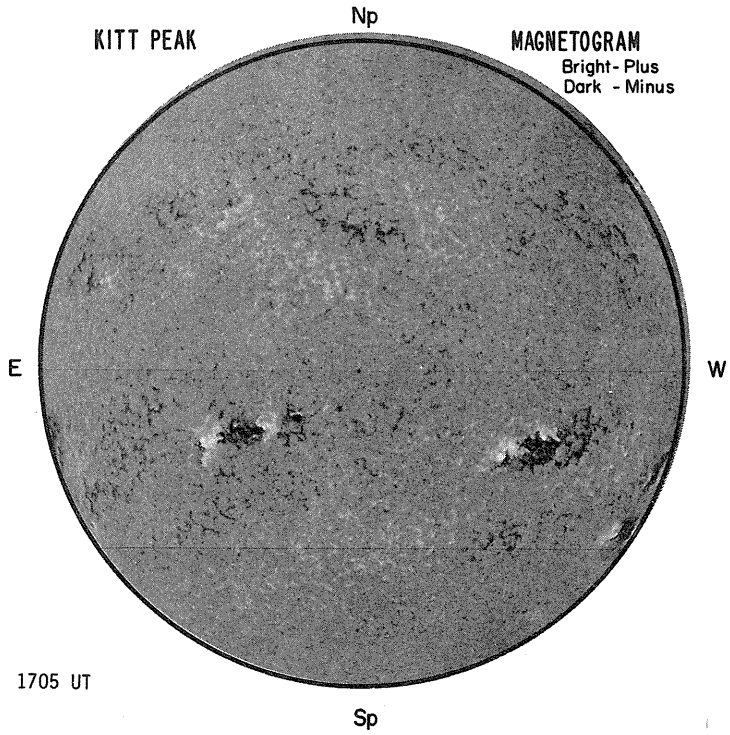
STANFORD MAGNETOGRAM

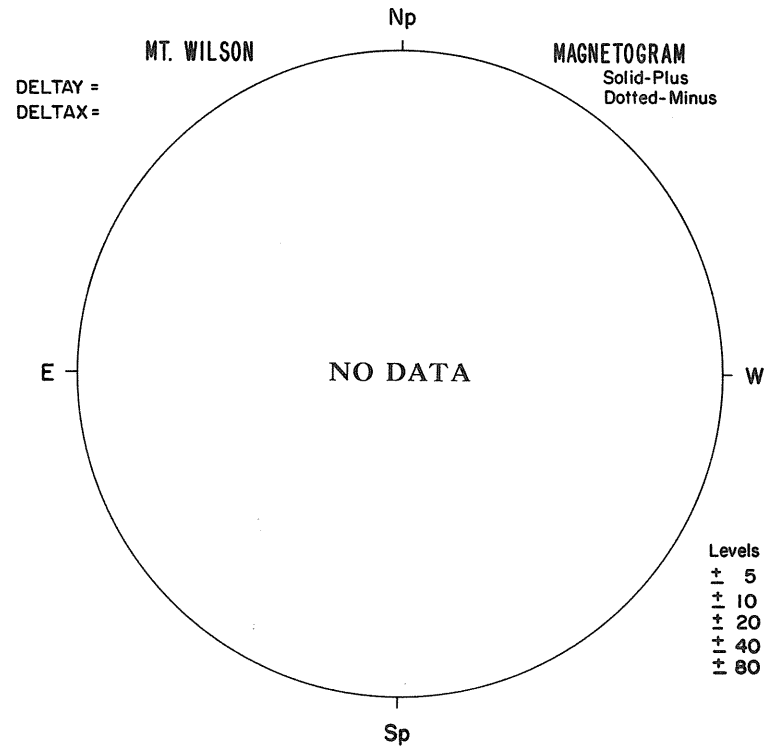
Solid - Plus; zero level
Dashed - Minus



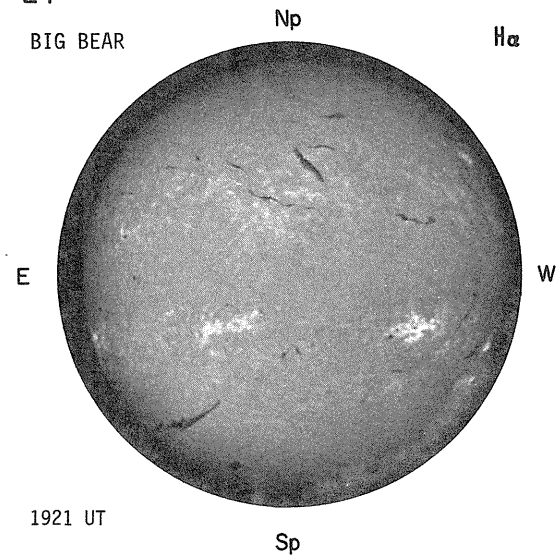
DECEMBER 24, 1979 (P = 6.29, B_o = -2.00, L_o = 50.56)





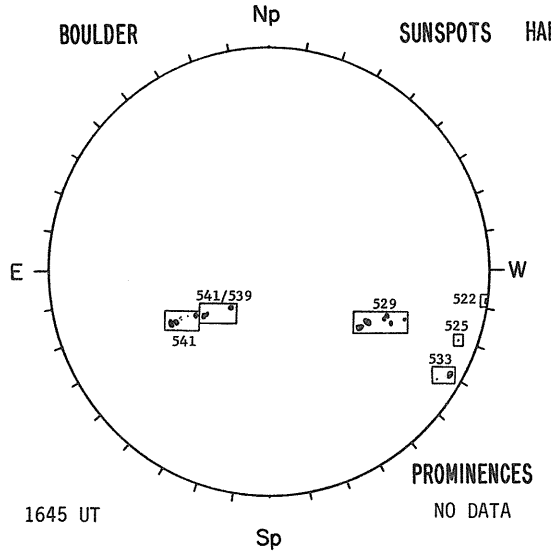


BIG BEAR



1921 UT

BOULDER SUNSPOTS

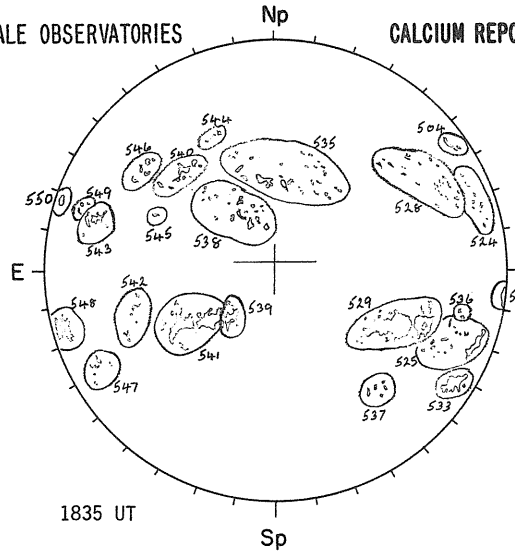


1645 UT

PROMINENCES

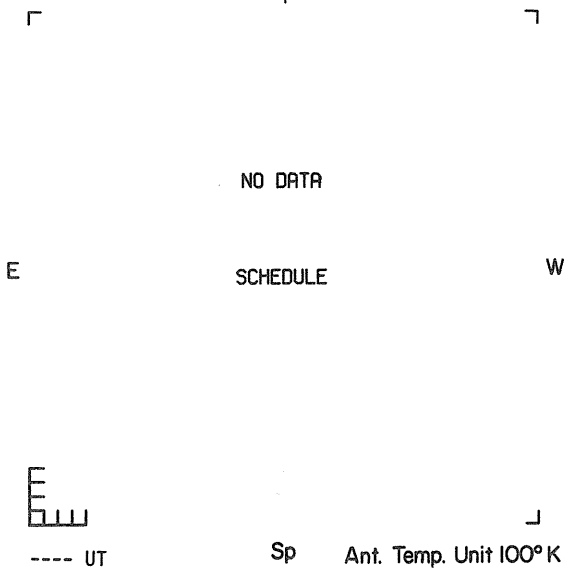
NO DATA

HALE OBSERVATORIES CALCIUM REPORT

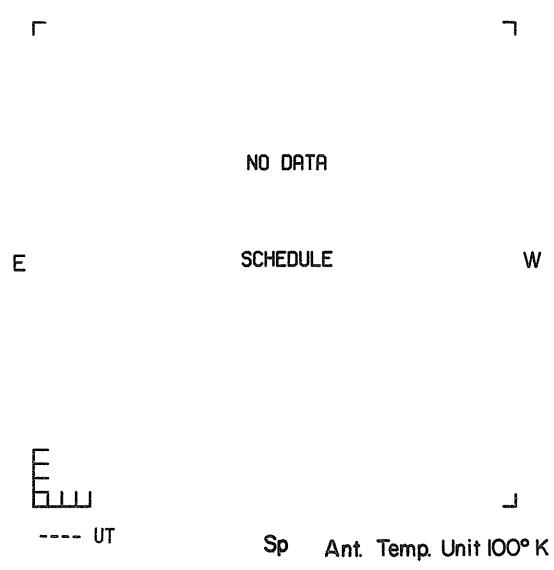


FAIR	JA
04-	0400-3.0
22-	0500-3.0
25-	0900-3.5
29-	4100-4.0
33-	1300-3.0
35-	1300-2.5
38-	1000-2.5
39-	0700-3.0
40-	0600-2.5
41-	2400-3.5
43-	0600-2.5

NOSC LA POSTA 2.0 CM

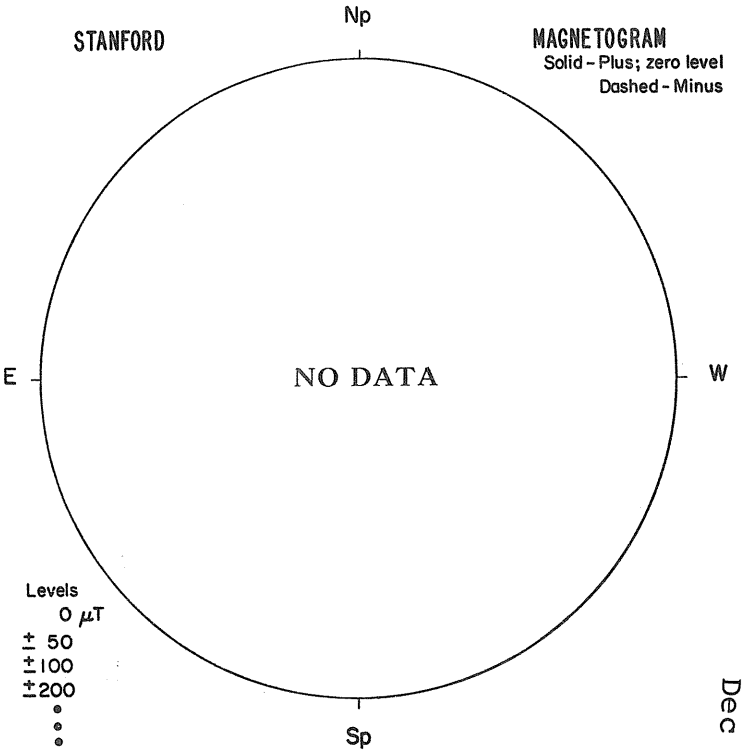


NOSC LA POSTA 8.6 MM



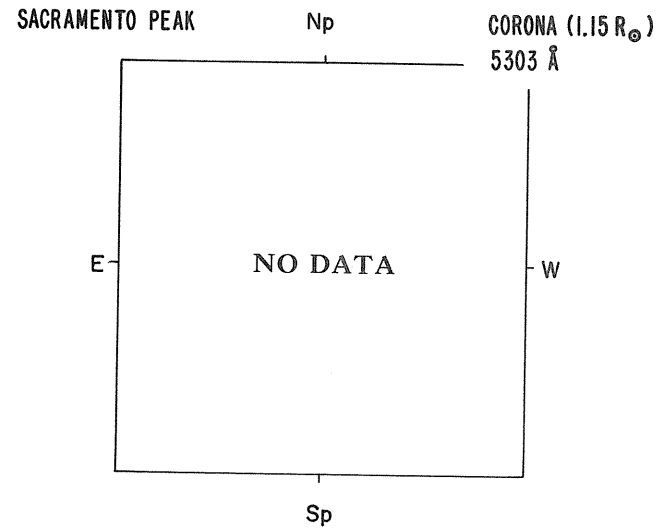
STANFORD

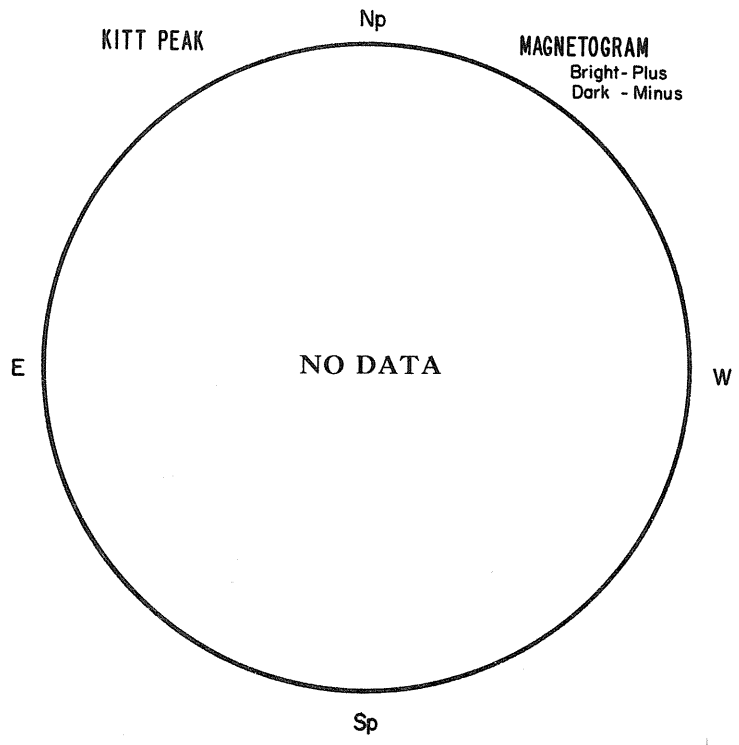
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

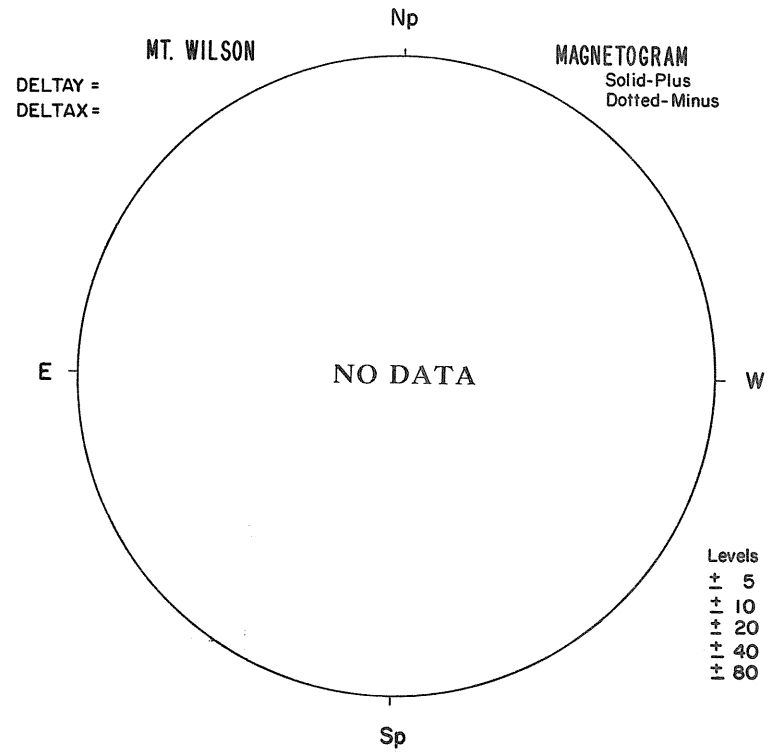


97
Dec 79

DECEMBER 25, 1979 (P = 5.81, B_o = -2.13, L_o = 37.39)



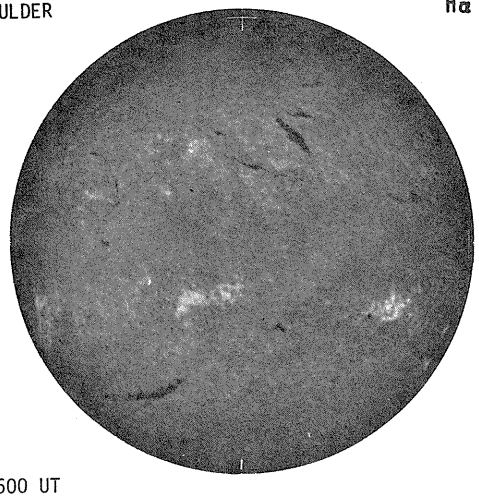




25

BOULDER

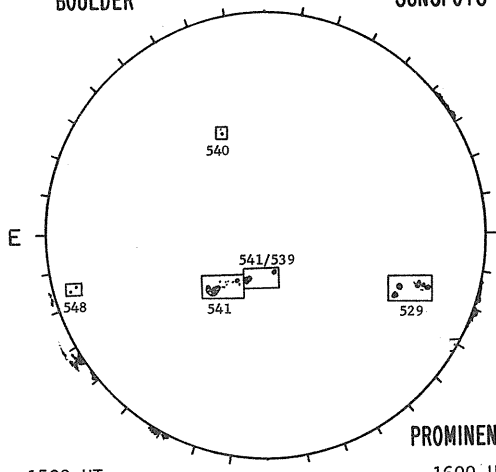
Hα



1600 UT

BOULDER

SUNSPOTS



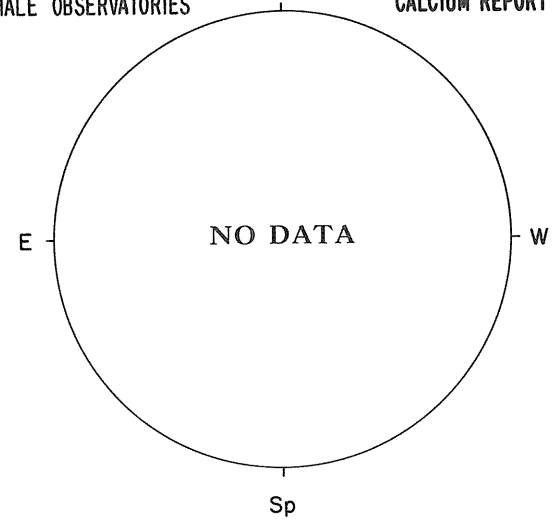
1530 UT

PROMINENCES

1600 UT

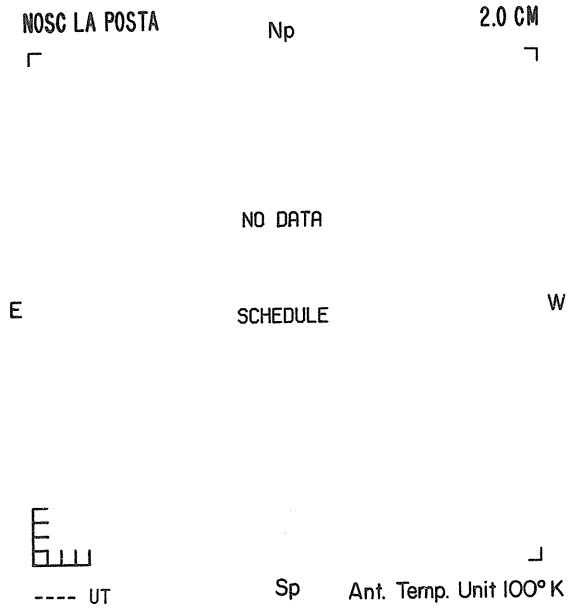
HALE OBSERVATORIES

CALCIUM REPORT



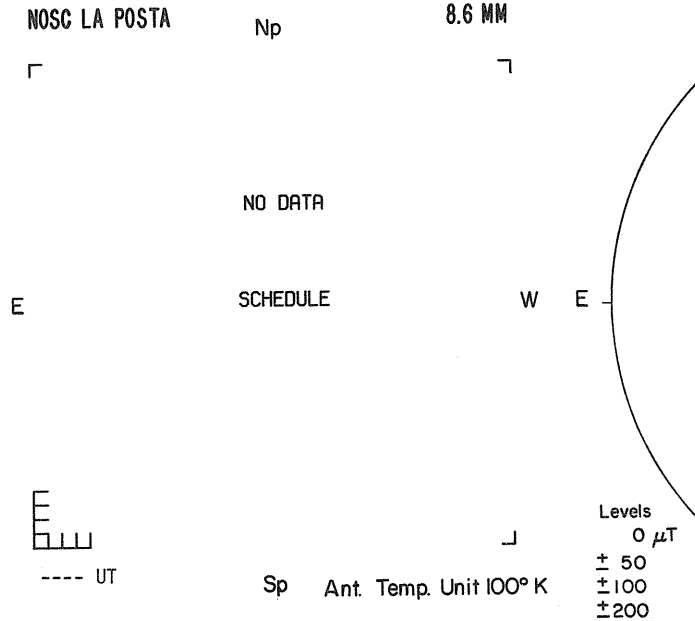
NOSC LA POSTA

2.0 CM



NOSC LA POSTA

8.6 MM

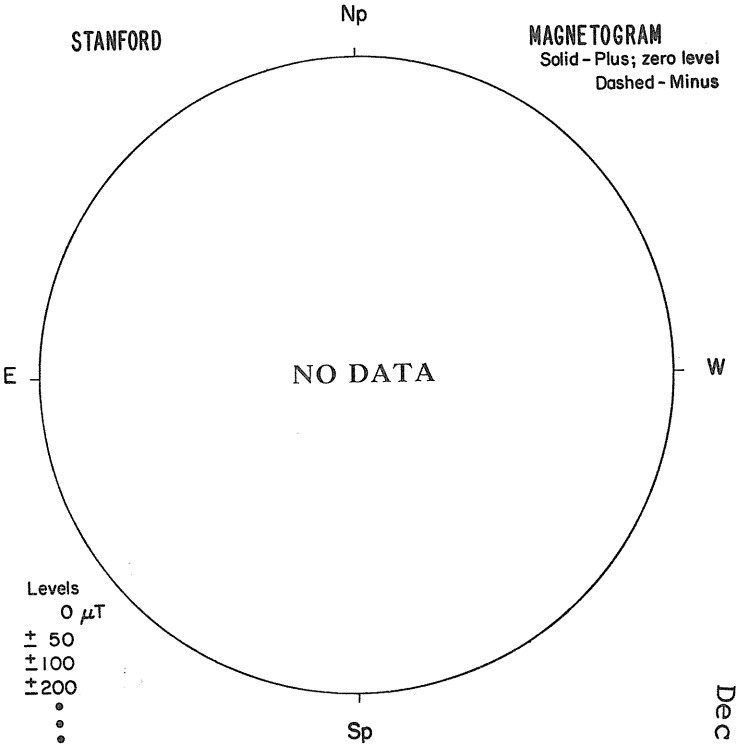


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

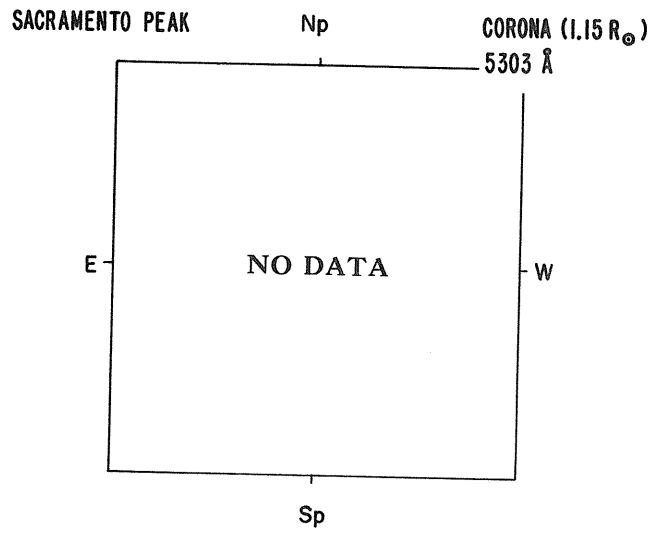
Dashed - Minus

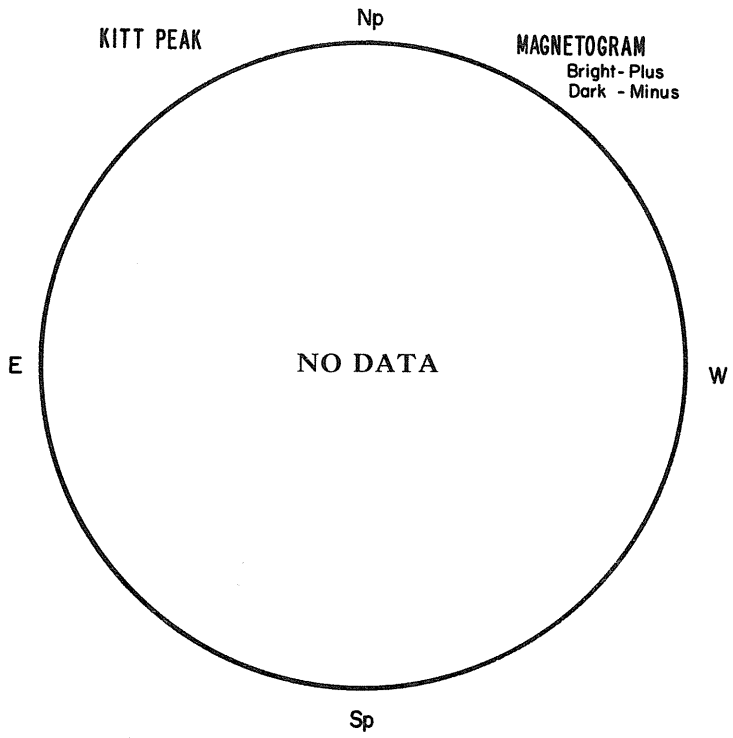


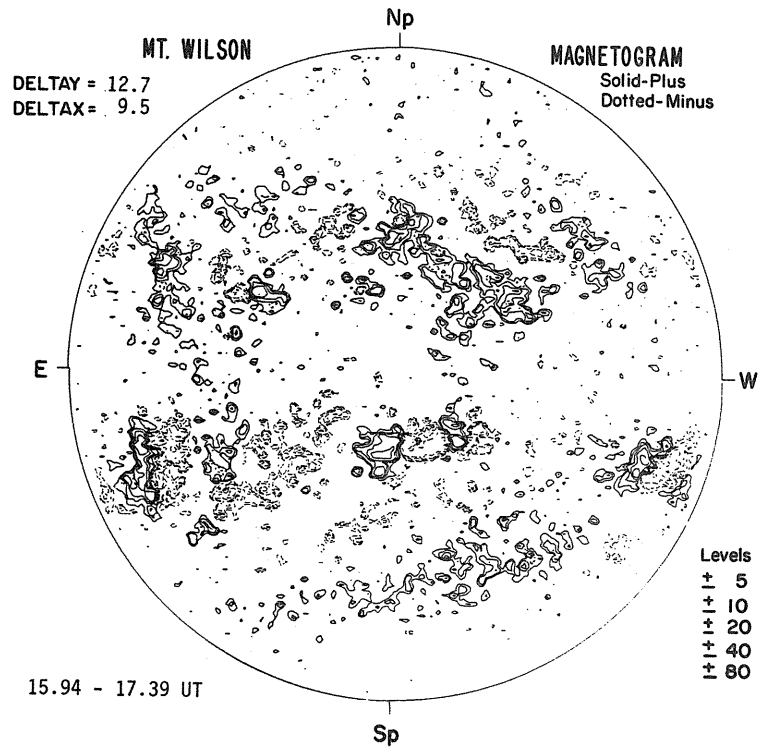
99

Dec 79

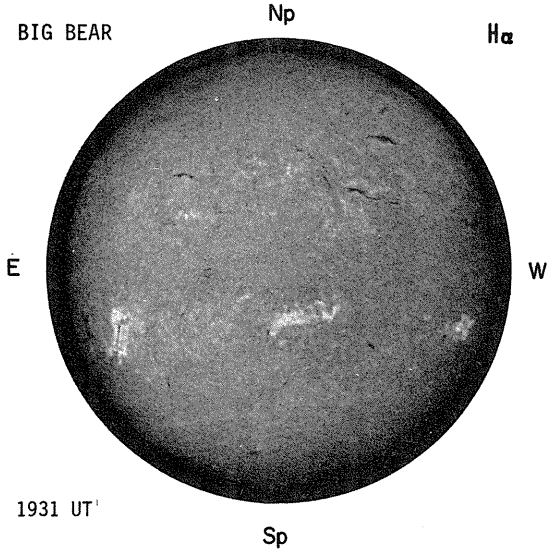
DECEMBER 26, 1979 (P = 5.33, B_o = -2.25, L_o = 24.22)





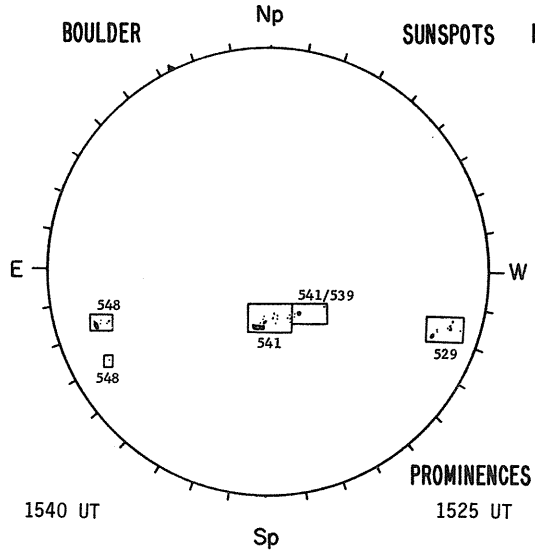


BIG BEAR



1931 UT

BOULDER SUNSPOTS

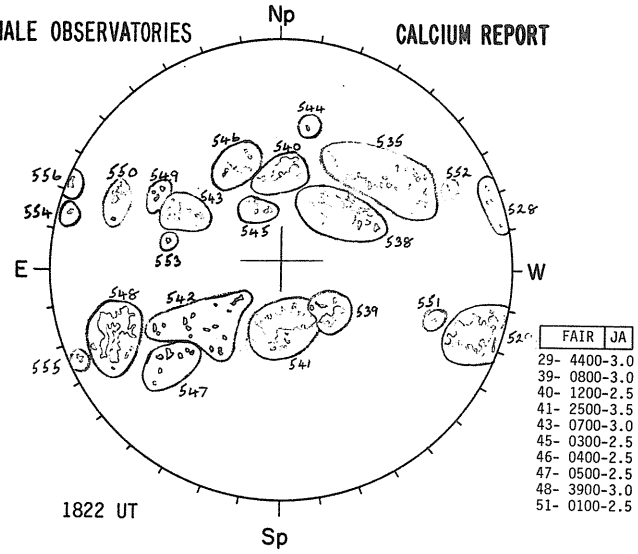


1540 UT

PROMINENCES

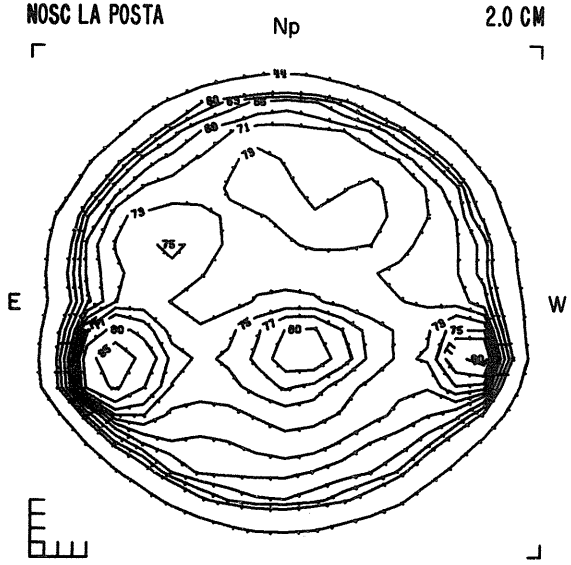
1525 UT

HALE OBSERVATORIES CALCIUM REPORT



FAIR	JA
29-	4400-3.0
39-	0800-3.0
40-	1200-2.5
41-	2500-3.5
43-	0700-3.0
45-	0300-2.5
46-	0400-2.5
47-	0500-2.5
48-	3900-3.0
51-	0100-2.5

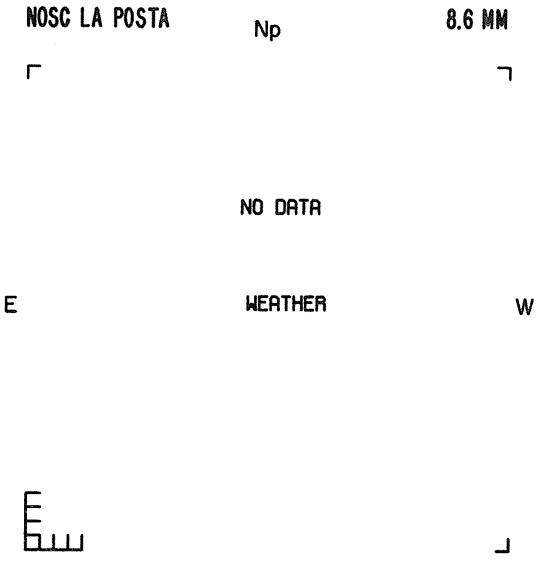
NOSC LA POSTA 2.0 CM



2125 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM



NO DATA

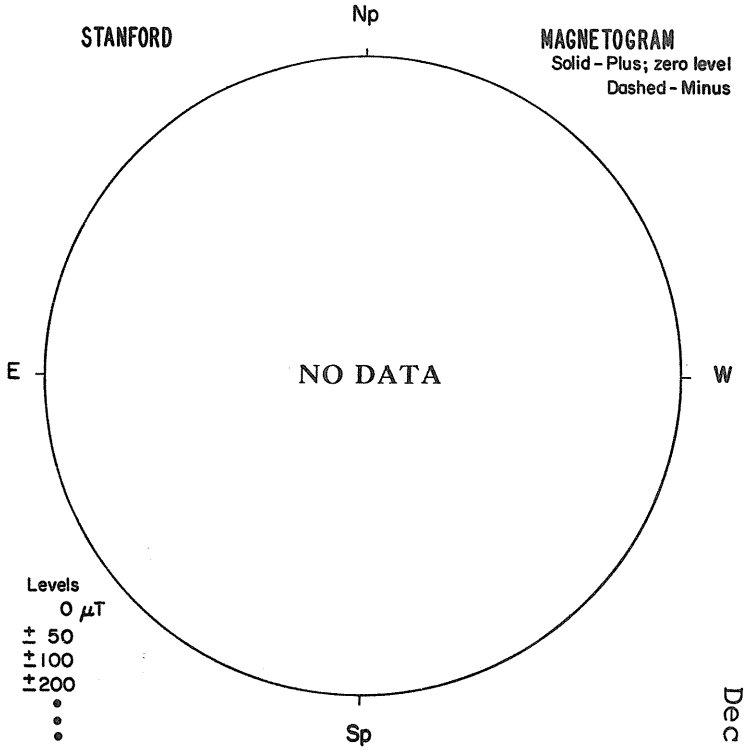
WEATHER

---- UT

Ant. Temp. Unit 100° K

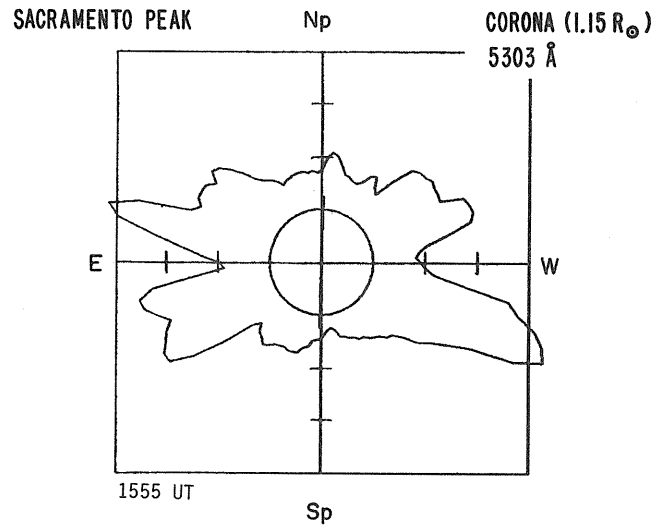
STANFORD MAGNETOGRAM

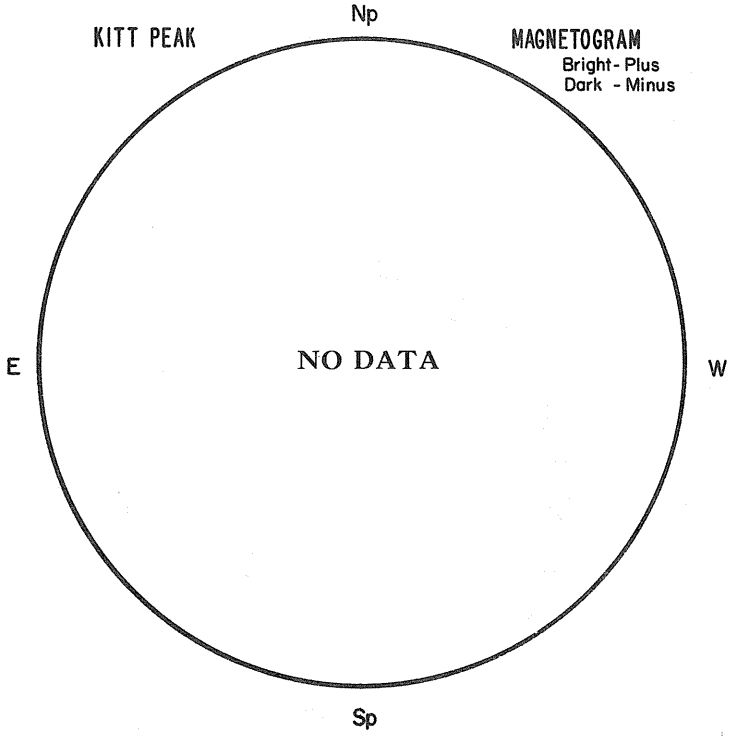
Solid - Plus; zero level
Dashed - Minus

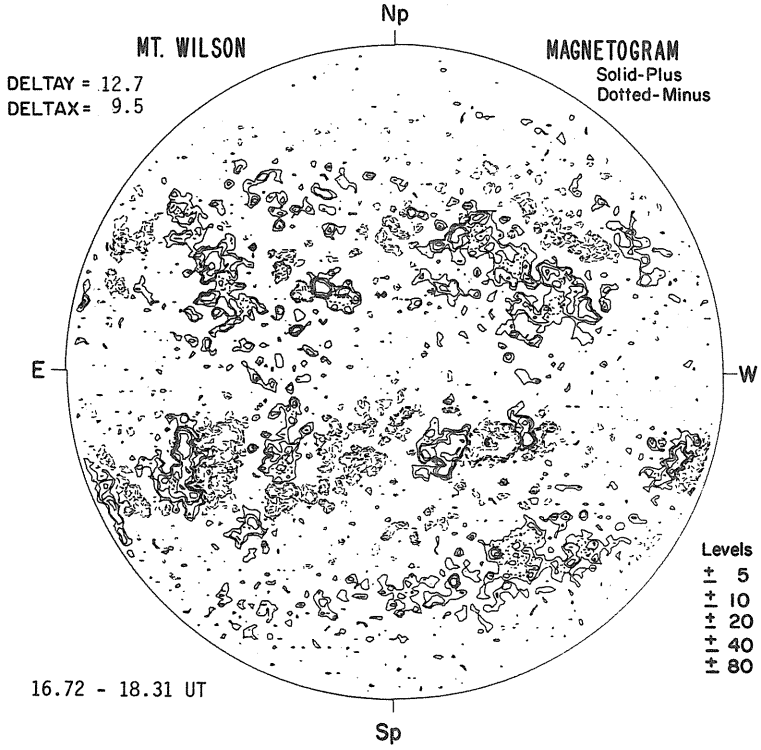


Levels
0 μT
± 50
± 100
± 200
•
•
•

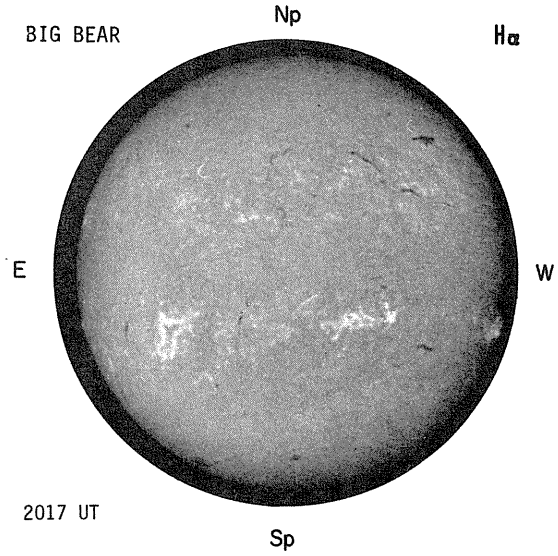
DECEMBER 27, 1979 (P = 4.85, B_o = - 2.37, L_o = 11.05)





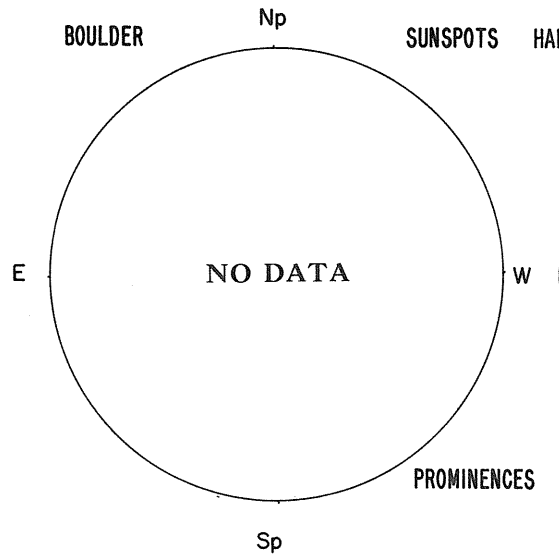


BIG BEAR — Hα



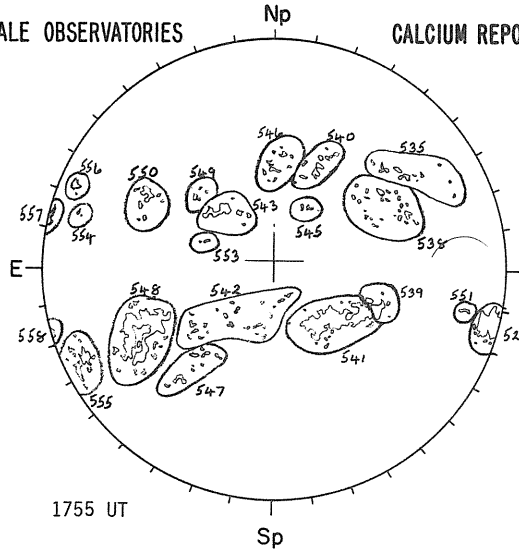
2017 UT

BOULDER — SUNSPOTS



PROMINENCES

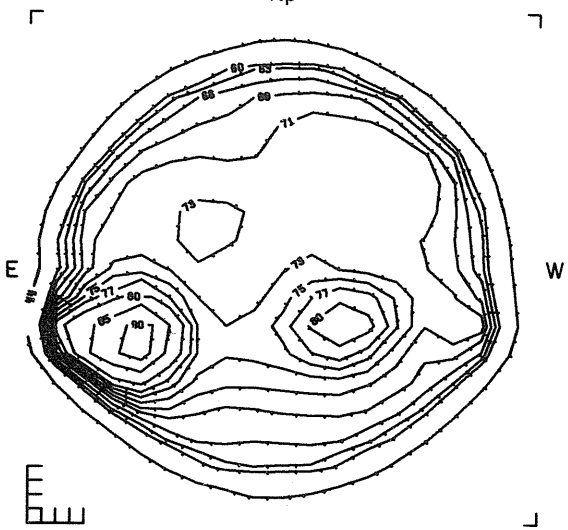
HALE OBSERVATORIES — CALCIUM REPORT



1755 UT

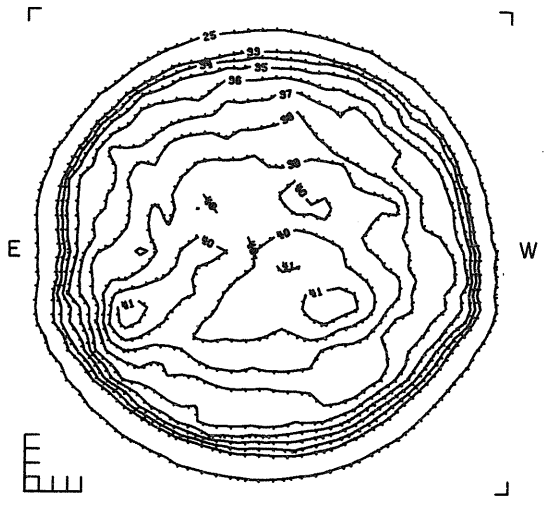
GOOD	JA
29- 4200-3.0	
39- 0700-3.5	
40- 0800-3.0	
41- 3000-3.5	
43- 0900-2.5	
47- 0600-2.5	
48- 4500-3.5	
49- 0200-2.5	
50- 0700-2.5	
51- 0200-2.5	
56- 0500-2.5	
57- 0600-2.5	
58- 0100-2.5	

NOSC LA POSTA — 2.0 CM



1926 UT — Ant. Temp. Unit 100° K

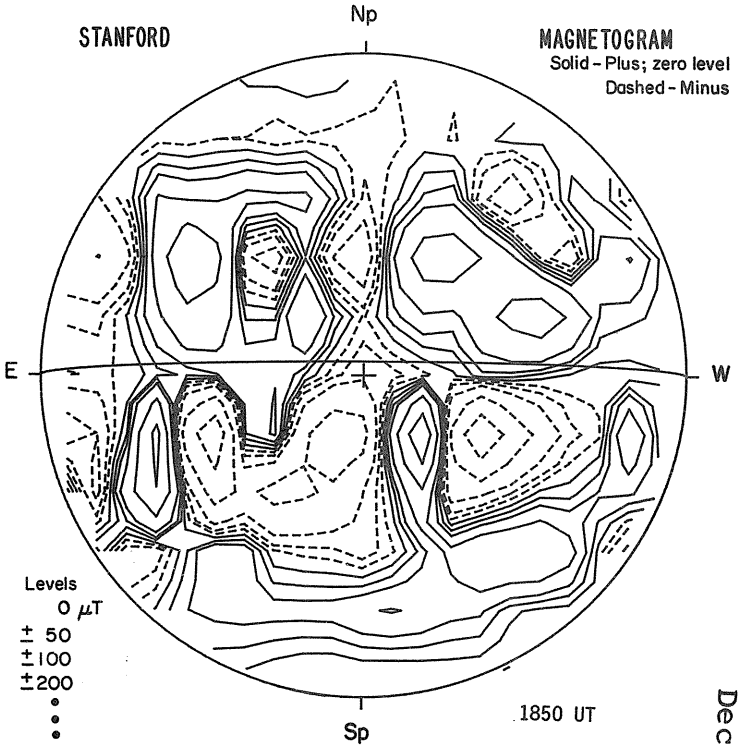
NOSC LA POSTA — 8.6 MM



1805 UT — Ant. Temp. Unit 100° K

STANFORD — MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

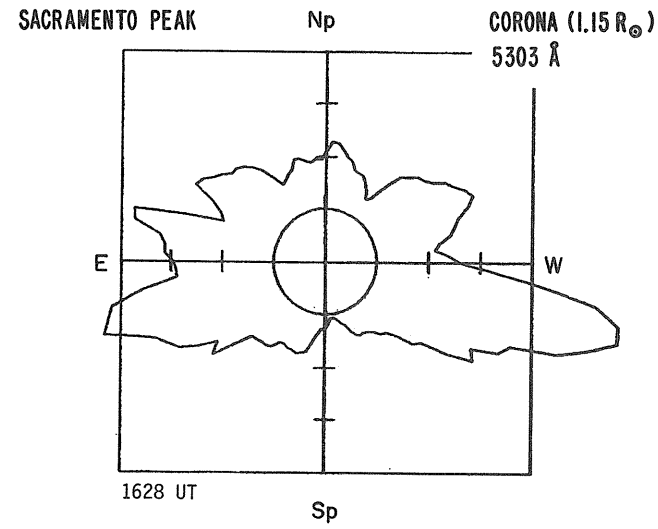


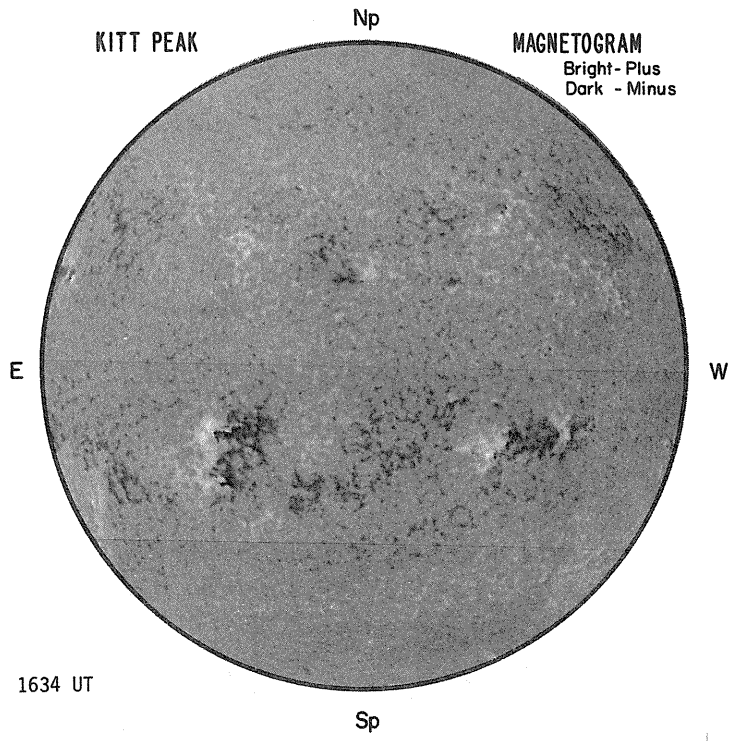
Levels
0 μT
± 50
±100
±200
•
•
•

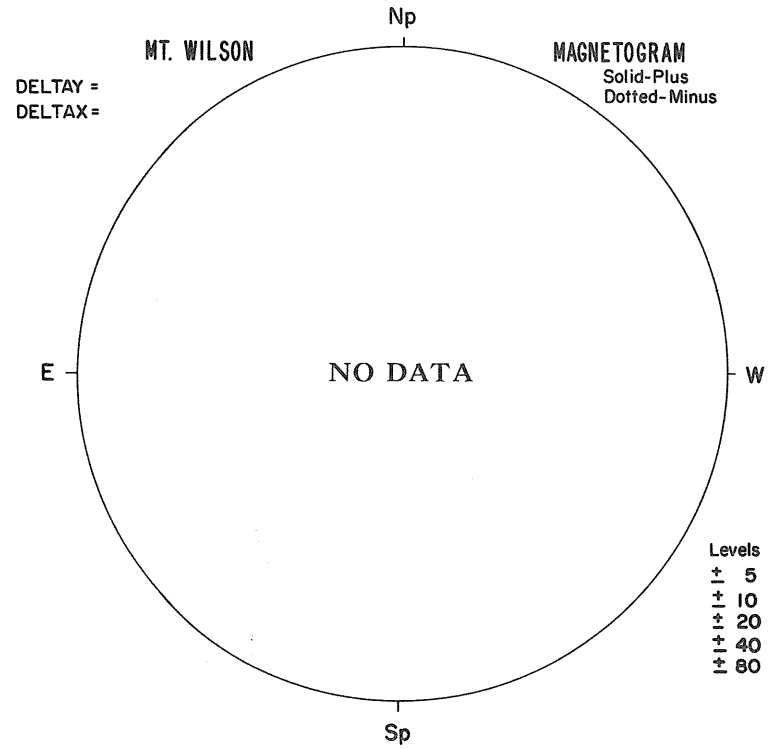
1850 UT

103
Dec 79

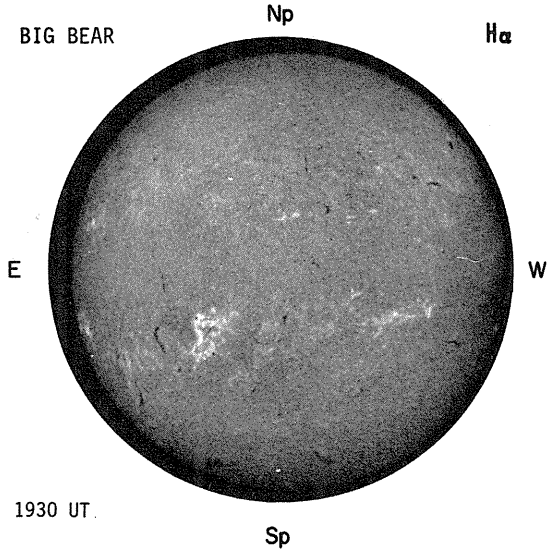
DECEMBER 28, 1979 (P = 4.37, B_o = - 2.49, L_o = 357.88)





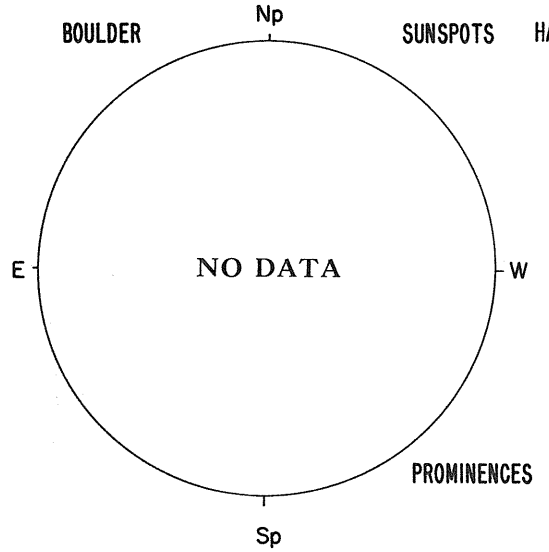


BIG BEAR Hα



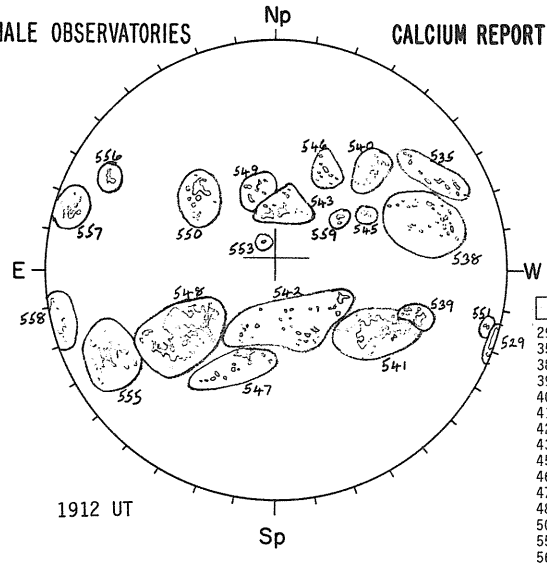
1930 UT

BOULDER SUNSPOTS



PROMINENCES

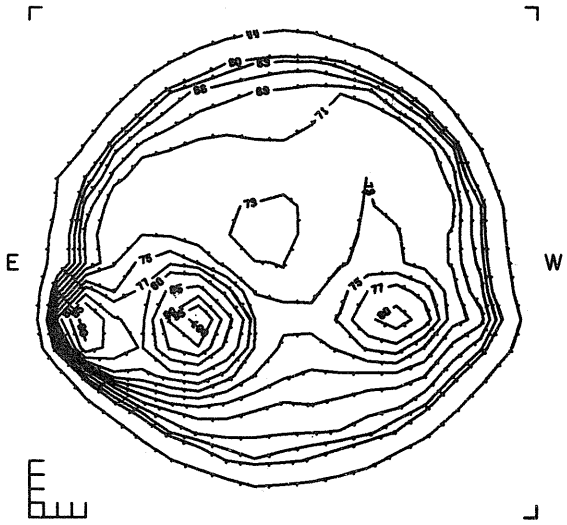
HALE OBSERVATORIES CALCIUM REPORT



1912 UT

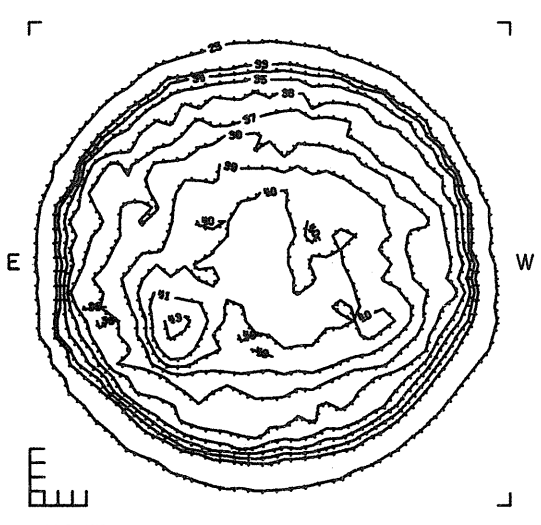
FAIR	JA
29- 1200-3.5	
35- 0700-2.5	
38- 1100-2.5	
39- 0500-3.5	
40- 0500-3.0	
41- 2600-3.5	
42- 1100-2.5	
43- 0800-3.0	
45- 0100-2.5	
46- 0300-2.5	
47- 0900-3.0	
48- 4600-4.0	
50- 0800-2.5	
55- 1400-2.5	
56- 0300-2.5	
57- 0700-3.0	
58- 2300-3.0	
59- 0100-2.5	

NOSC LA POSTA 2.0 CM



1913 UT Ant. Temp. Unit 100° K

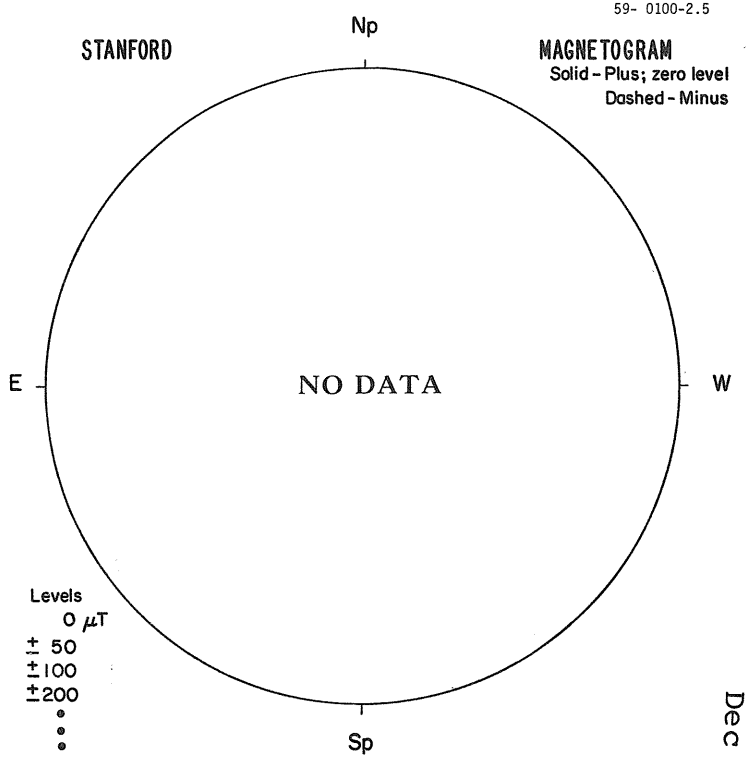
NOSC LA POSTA 8.6 MM



1806 UT Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



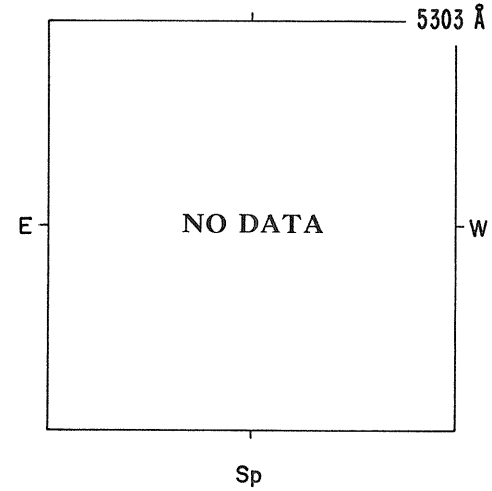
Levels
0 μT
± 50
± 100
± 200
• • •

105
Dec 79

DECEMBER 29, 1979 (P=3.89, B_o=-2.61, L_o=344.70)

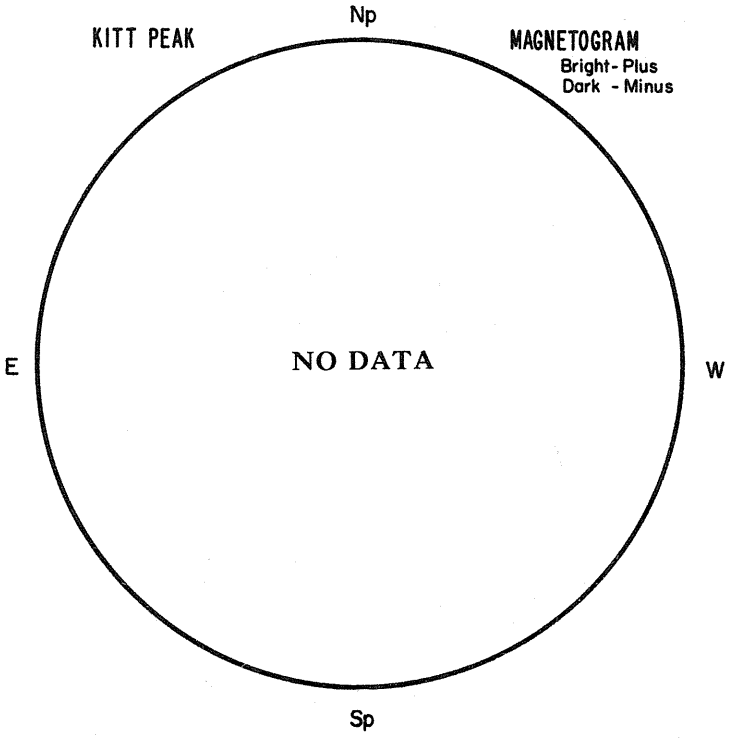
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

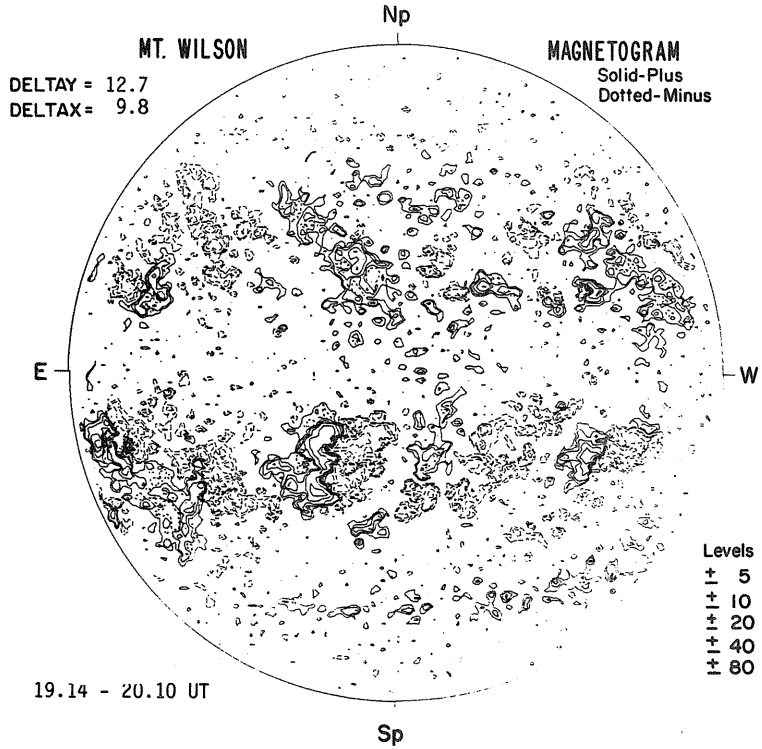
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

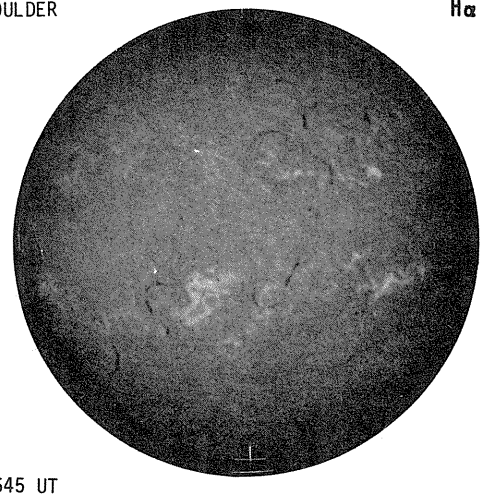
DELTAY = 12.7
DELTAX = 9.8

MAGNETOGRAM
Solid-Plus
Dotted-Minus



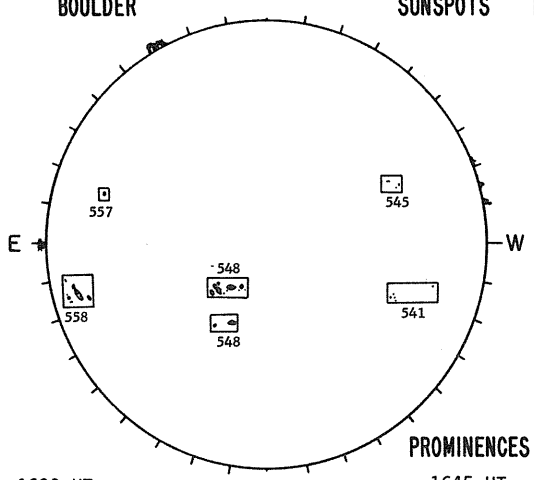
19.14 - 20.10 UT

BOULDER Hα



1645 UT

BOULDER SUNSPOTS

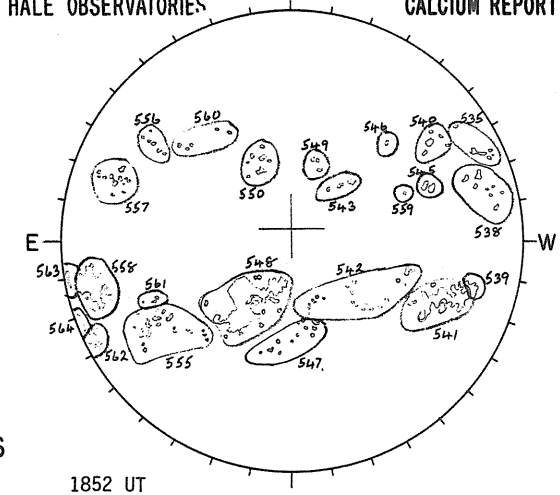


1600 UT

PROMINENCES

1645 UT

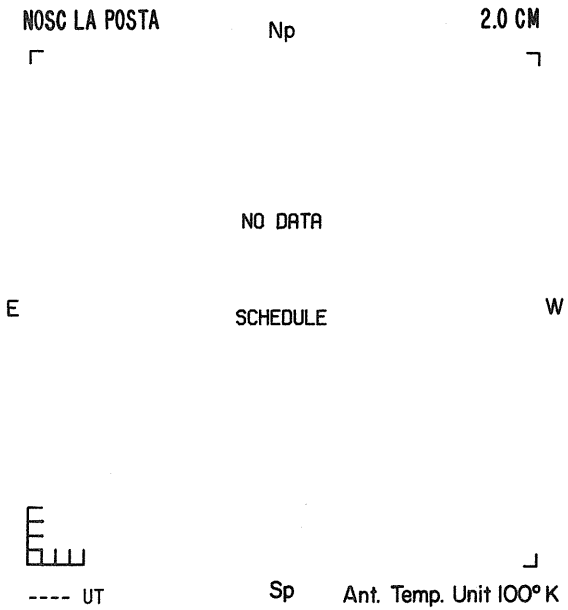
HALE OBSERVATORIES CALCIUM REPORT



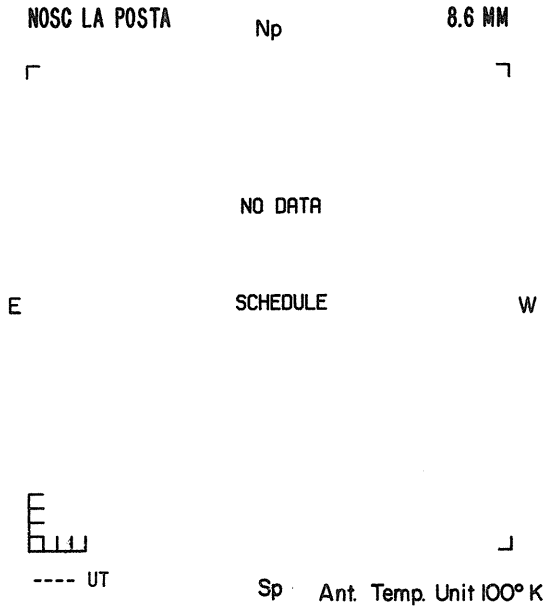
1852 UT

V POOR	JA
35- 0500-2.5	
38- 0600-2.5	
39- 0600-3.0	
40- 0400-3.0	
41- 2100-3.5	
42- 0800-2.5	
43- 0300-3.0	
45- 0200-3.5	
47- 0600-2.5	
48- 4600-3.5	
49- 0200-2.5	
50- 0400-3.0	
55- 1000-3.0	
56- 0300-3.0	
57- 0500-3.0	
58- 3400-4.0	
59- 0100-2.5	
61- 0100-3.0	
62- 0800-3.0	
63- 0300-2.5	
64- 0700-3.5	

NOSC LA POSTA 2.0 CM

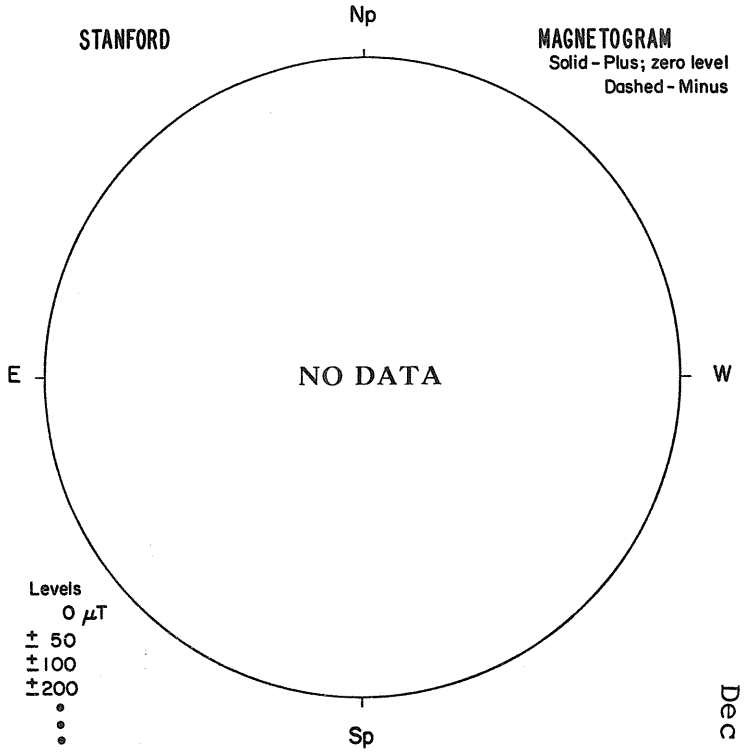


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

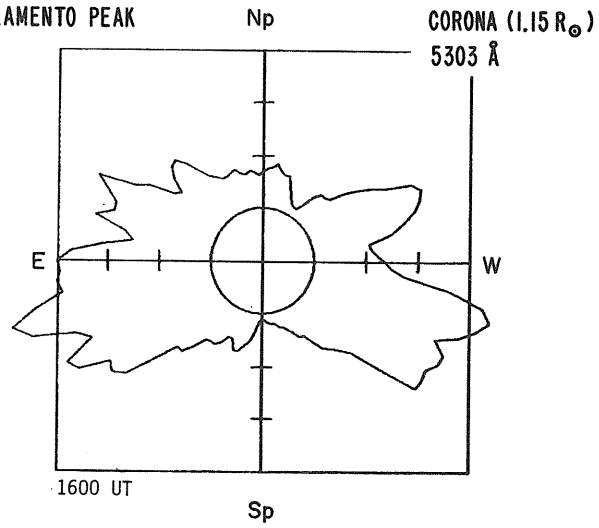
Solid - Plus; zero level
Dashed - Minus

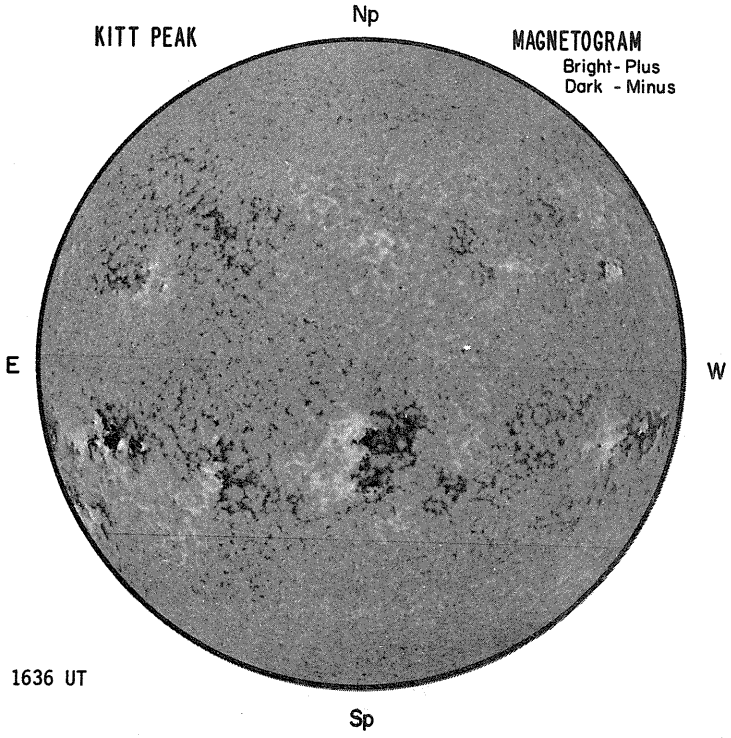


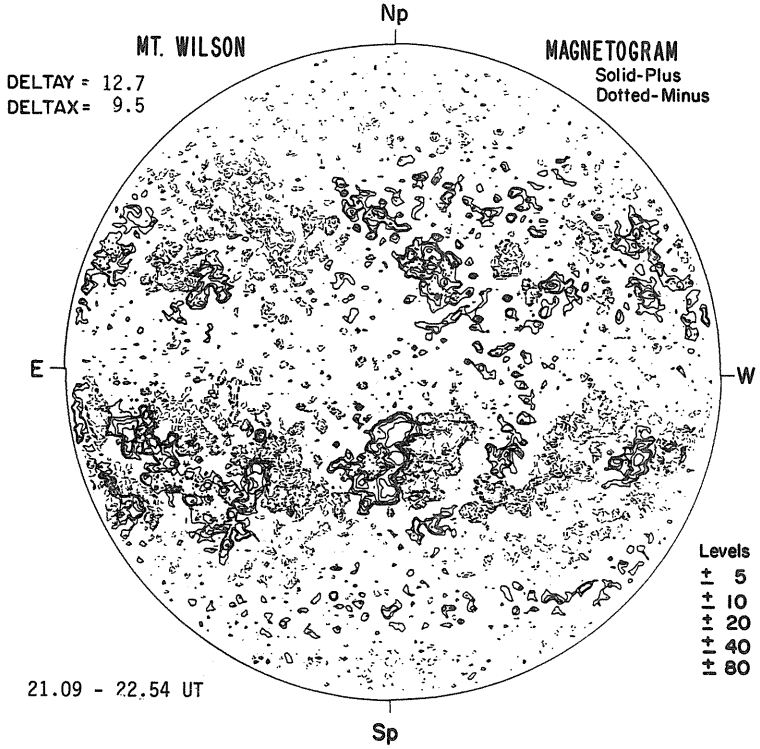
Levels
0 μT
± 50
±100
±200
•
•
•

107
Dec 79

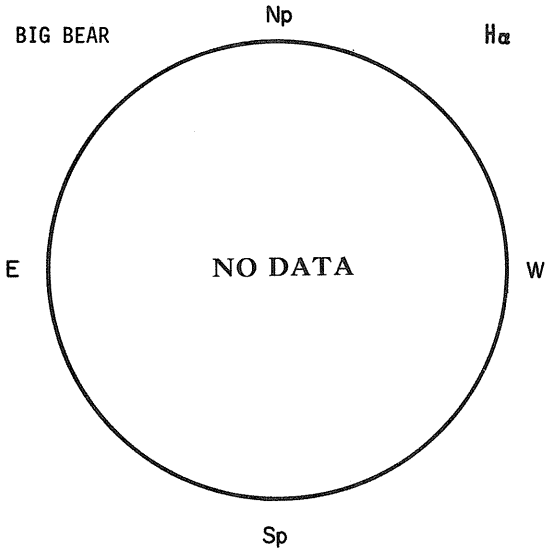
DECEMBER 30, 1979 (P = 3.40, B_o = -2.73, L_o = 331.53)



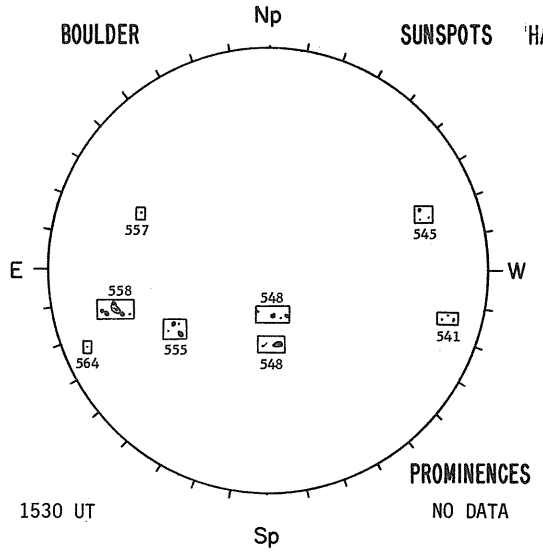




BIG BEAR Hα



BOULDER SUNSPOTS

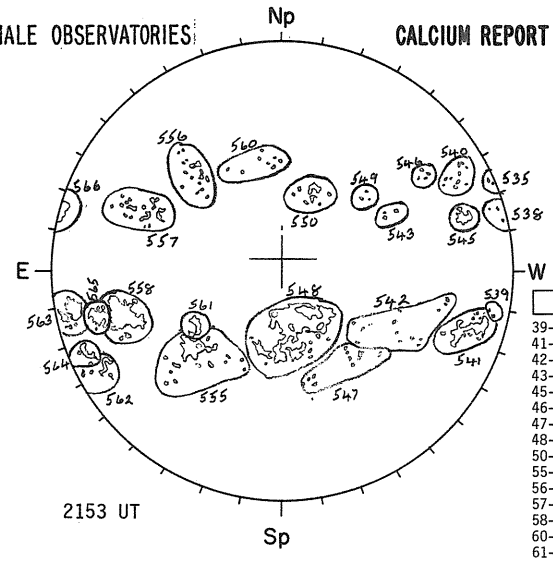


1530 UT

PROMINENCES

NO DATA

HALE OBSERVATORIES CALCIUM REPORT



2153 UT

POOR	JA
39- 0100-2.5	
41- 1900-3.0	
42- 0600-2.5	
43- 0200-3.0	
45- 0600-2.5	
46- 0200-2.5	
47- 0500-2.5	
48- 5500-3.0	
50- 0500-2.5	
55- 2100-3.0	
56- 0500-2.5	
57- 1000-2.5	
58- 3800-3.0	
60- 0300-2.5	
61- 0400-3.0	
62- 0500-3.0	
64- 0800-3.0	
65- 1100-3.0	
66- 0800-2.5	

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

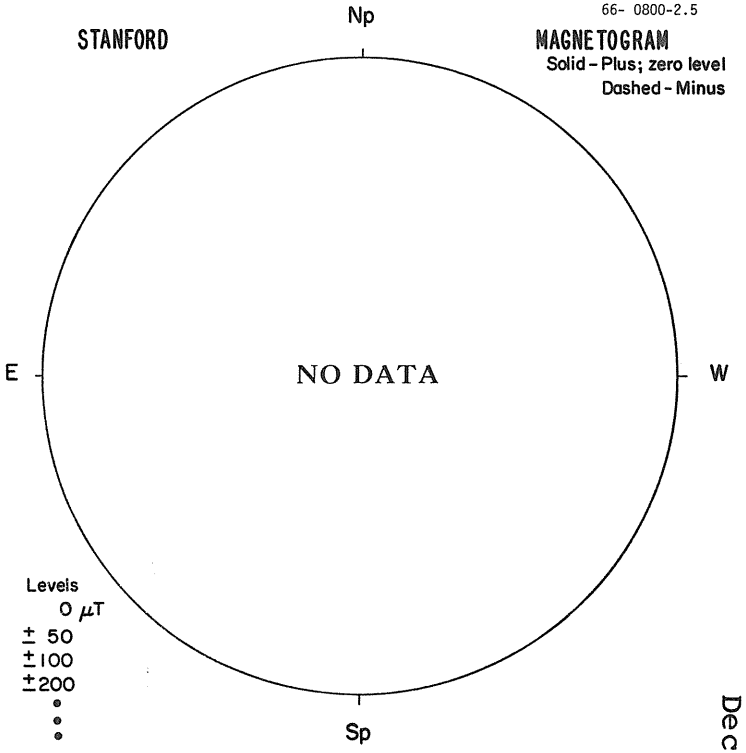
NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



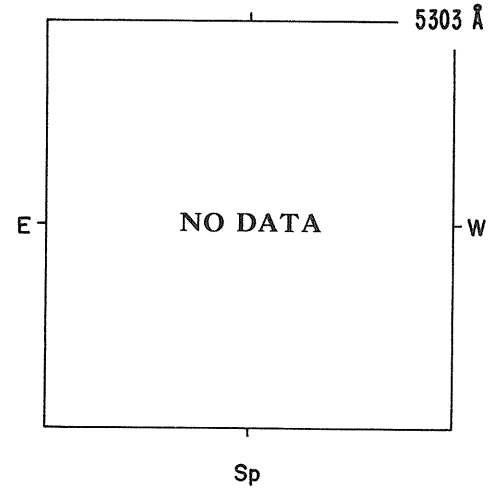
Levels
0 μT
± 50
±100
±200

109
Dec 79

DECEMBER 31, 1979 (P=2.92, B_o=-2.85, L_o=318.36)

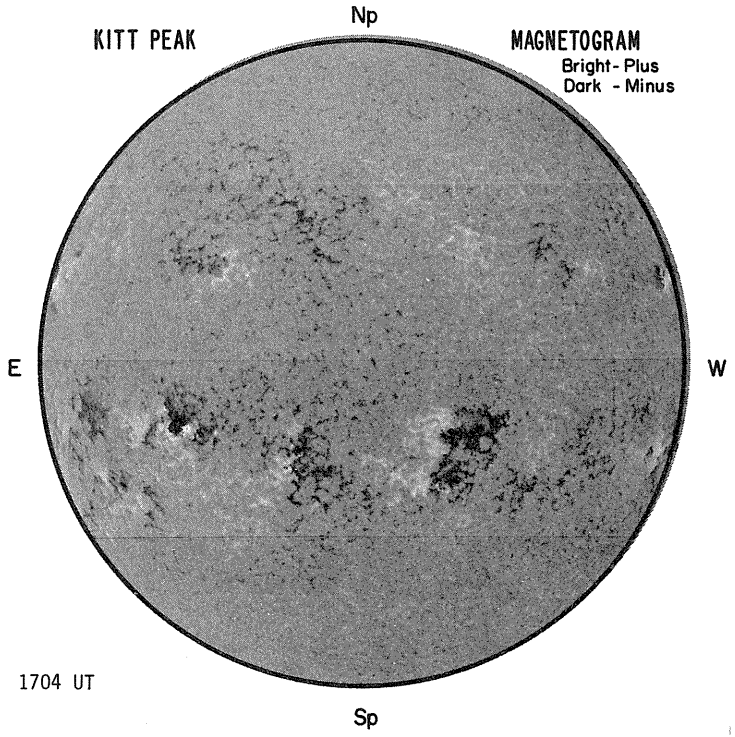
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

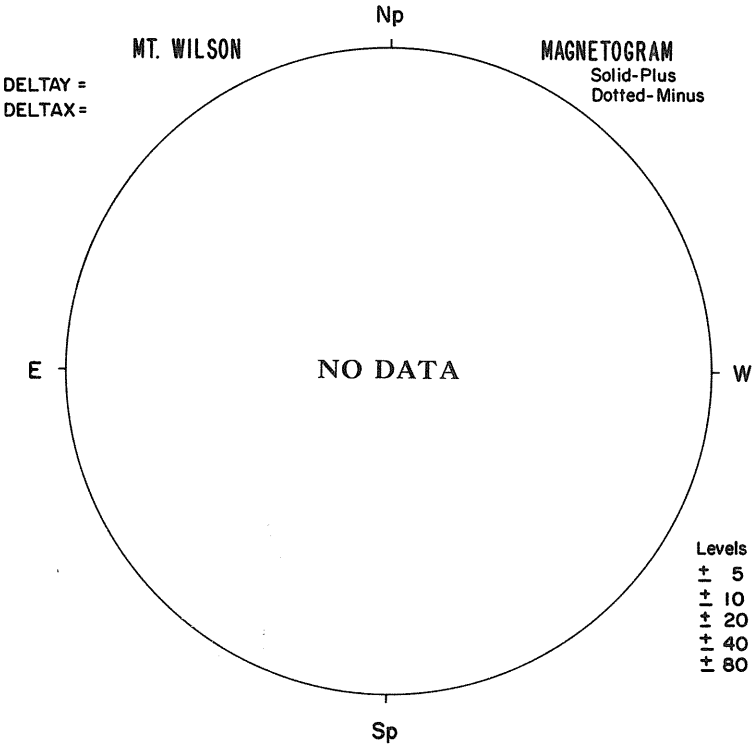


1704 UT

MT. WILSON

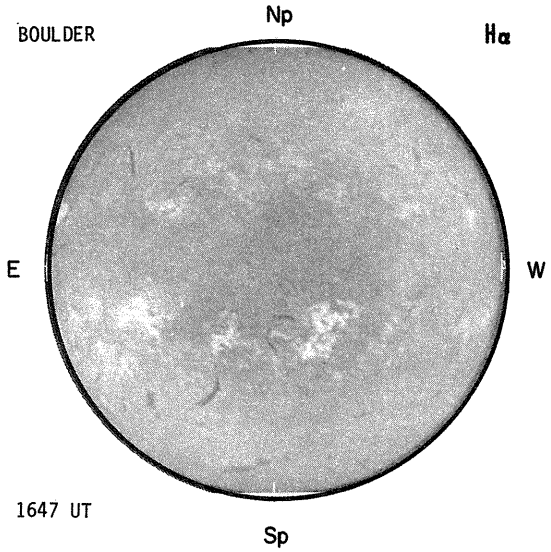
DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus



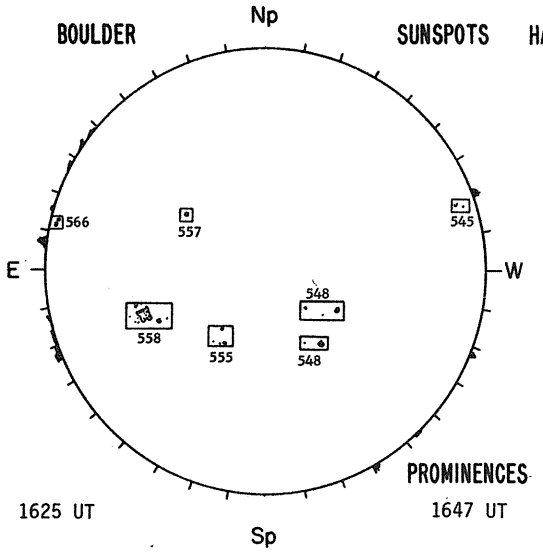
Levels
± 5
± 10
± 20
± 40
± 80

BOULDER Hα



1647 UT

BOULDER SUNSPOTS

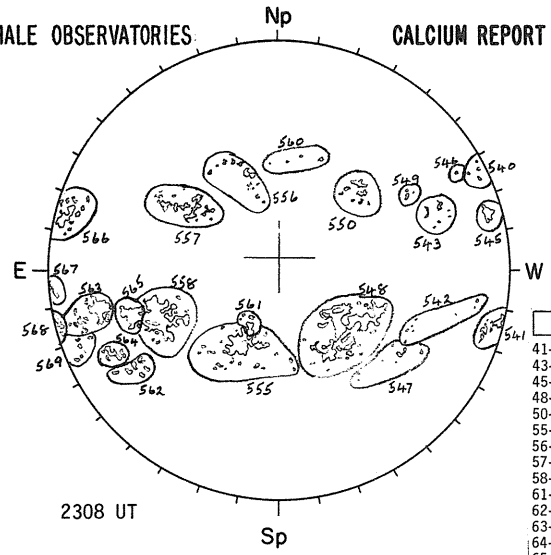


1625 UT

PROMINENCES

1647 UT

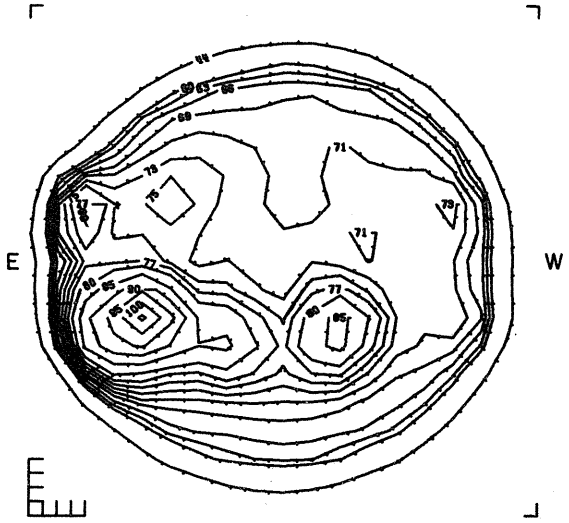
HALE OBSERVATORIES CALCIUM REPORT



2308 UT

FAIR	JA
41-	0700-3.0
43-	0300-2.5
45-	0800-3.0
48-	4000-3.5
50-	0500-2.5
55-	2100-3.0
56-	0600-2.5
57-	1200-2.5
58-	3200-3.5
61-	0400-3.0
62-	0600-3.0
63-	1800-2.5
64-	0600-3.0
65-	1100-3.0
66-	1400-3.0
69-	0400-2.5

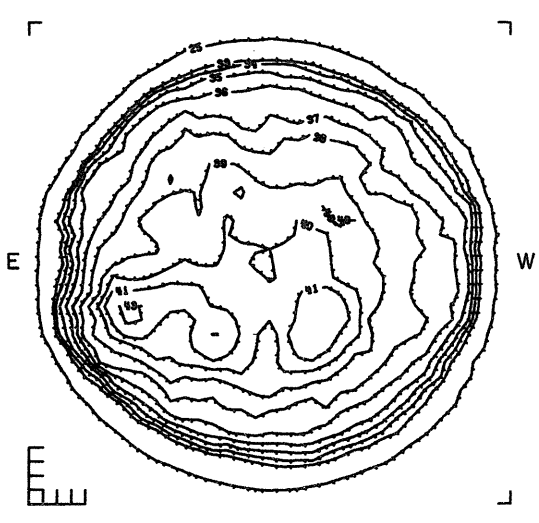
NOSC LA POSTA 2.0 CM



1809 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

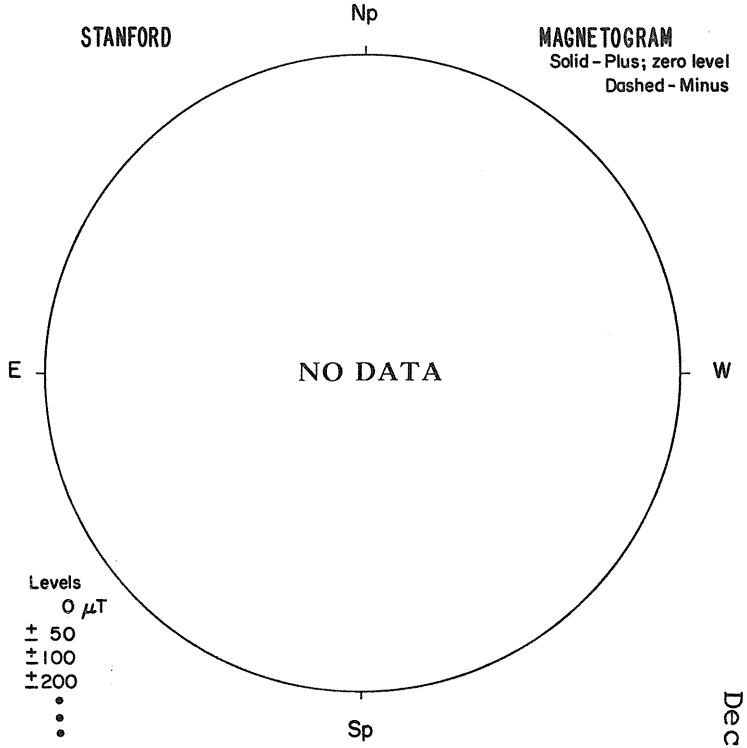


1713 UT

Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
± 100
± 200
•
•
•

111
Dec 79

DAILY CALCIUM PLAGE INDEX

DECEMBER 1979

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
79	12	1	62.4	79	12	11	104.9	79	12	21	*
79	12	2	*	79	12	12	95.7	79	12	22	52.4
79	12	3	80.7	79	12	13	*	79	12	23	*
79	12	4	106.1	79	12	14	115.6	79	12	24	37.5
79	12	5	119.4	79	12	15	99.4	79	12	25	*
79	12	6	100.3	79	12	16	87.8	79	12	26	39.5
79	12	7	129.0	79	12	17	81.0	79	12	27	42.7
79	12	8	132.1	79	12	18	65.9	79	12	28	44.9
79	12	9	123.7	79	12	19	*	79	12	29	40.4
79	12	10	*	79	12	20	54.0	79	12	30	46.4
								79	12	31	45.4

* NO OBSERVATIONS

Note: No calcium sprectroheliograms were secured at the Mt. Wilson Observatory on Dec. 2, 10, 13, 19, 21, 23 and 25, 1979.
No sunspot observations were made at Mt. Wilson on Dec. 21 and 25, 1979.

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1979

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
03	0333	0408	0342	1-	3				3				*	
03	1509	1606	1527	1	5						3		1514E	16467
03	1754	1807	1757	1-	1						1		1755	16458
04	0222	0321	0232	1	3	1			3				0225	16467
04	0345	0402	0350	1-	1				1				0347	16478
04	0434	0631	0500	2	5	1			3		1		0436	16467
04	1322	1340	1327	1	5			3	1				1319	16459
04	1812	1900	1817	1-	5						5		1813	16455
04	2148	2239	2157	1-	5				2		3		2141	16467
05	0828	0912	0834	1-	1			1					0827	16469
05	1512	1602	1524	1-	5				1		6		1506	16465
06	0352	0444	0358	1-	3				3				0357E	16478
06	1718	1758	1726	1-	3						2		1719	16467
07	1444	1548	1455	1-	5				1		5		1443	16467
08	0522E	0643	0527	1	3				2				0531E	16478
08	1138	1200	1145	1	5	1		5	2		2		1131	16458
09	0352	0430	0400	1-	3				3				0400E	16467
09	0503	0538	0507	1-	1				1				*	
10	0014	0042	0019	1-	3				2				*	
12	0530	0553	0539	1-	3				2				0530	16508
12	1553	1654	1603	1-	5				1		9		NF	
12	1707	1824	1724	1	5				1		12		1704	16490
13	0822	0833	0825	1-	5	1		1	3				0820	16508
13	0950	1005	0955	1-	3	1		3	1				0950E	16478
13	1349	1425	1357	2+	5			5	2		4		1353	16483
13	1623	1728	1635	1-	5				3		3		1618	16483
13	2106	2158	2118	1-	5				1		3		2059	16493
14	0254	0332	0308	1-	3				2				0250	16490
14	0350	0512	0355	1-	3				2				0345	16487
14	0406E	0518	0412	1	3	1			2				0402	16478
14	0602	0653	0620	1	3				2				0608E	16507
14	0812	0832	0817	1+	5			3	3				0818E	16490
14	1301	1413	1311	1-	3			1	1		1		1310E	16492
14	1553	1630	1558	1-	3						2		1553	16490
14	1800	1920	1810	1+	5						11		1759	16495
15	0333	0408	0339	1-	3				3				0335E	16516
16	0654	0736	0702	1-	3				3				0650	16495
16	1007	1030	1015	1-	1				1		1		1006E	16507
16	1404	1441	1416	1-	1				1		1		*	
16	1614	1700	1631	1-	5				1		5		1615	16505
17	1901	1930	1908	1-	5						5		1858	16514
17	2245	2345	2245	1-	1	1							2251	16516
18	1409	1440	1418	1-	1				1		1		1400	16514
18	1724	1729D	1729	1-	1						1		1407	16509
18	1903	2000	1915	1-	5				1		7		1902	16514
19	0124	0150	0133	1-	3				3				0125	16505
19	1329	1400	1339	1-	1				1		1		1330	16505
19	1523	1548	1533	1-	5				1		5		*	
19	1804	1830	1811	1-	5				1		7		1756	16505
19	1852	1945	1907	1-	5				1		12		1845	16529
19	2205	2345	2220	2+	5	2		1	3		5		*	
20	0550	0816	0622	2+	5	2			3				0610E	16529
20	0923	1010	0935	1+	5	1		5			4		0930E	16529
20	1022	1100	1029	1+	5	1		5	4		2		1015E	16539
20	1310	1400	1316	1-	1				1		1		1258	16529
20	1503	1555	1516	1-	5				1		4		1505	16529
20	1600	1730	1614	1-	5				1		11		1601	16529
20	2024	2050	2028	1-	5						5		2024	16522
20	2228	2307	2245	1-	3				2				2226	16529
20	2311	2345	2320	1-	3				2				2310	16529
21	0101	0140	0106	1-	3				2				0108	16529
21	0346	0422	0351	1-	1				1				*	
21	1055	1121	1104	1-	3			1	1		1		1056	16529
21	1141	1220	1200	1-	5			1	2		1		*	
21	1704	1730	1709	1-	3						3		1704	16539
21	2232	2309	2242	1-	5				1		1		*	
22	0040	0123	0048	1-	3				2				*	
22	0330	0354	0334	1-	1				1				*	
22	0513	0713	0523	2	5	1			3		1		*	
22	0530	0600		1-	1			1					*	
22	0753	0830	0802	1-	1						1		*	
22	0943	1007	0950	1-	1						1		*	
22	1018	1100	1031	1-	1				1		1		*	

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1979

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
22	1152	1230	1206	1-	1				1		1		*	
22	2048	2123	2054	1-	5						6		*	
23	0722	0826	0728	2	5				2		1		0731E	16522
23	1019	1110	1029	1-	5				3		1		1022E	16522
23	1331	1410	1343	1-	1				1		1		*	
23	1847	1910	1852	1-	5						7		1848	16522
23	2220	2242	2228	1-	5				1		1		2222	16522
24	0014	0056	0020	1-	3						3		0014	16522
24	0622	0700	0626	1-	5				2		1		*	
24	0803	0841	0808	1-	1						1		*	
24	1226	1300	1238	1-	5			1	2		1		1225	16541
25	0658	0838	0720	2	3				3				0703E	16529
26	0055	0150	0107	1-	3				2				0051	16541
26	0511	0538	0518	1-	3				2				*	
26	0600	0630	0609	1-	3				2				*	
27	0041	0110	0046	1-	3				2				0043	16548
27	0122	0152	0127	1-	1				1				0018	16541
27	0242	0351	0253	1-	3				3				0245	16555
27	0446	0538	0451	1-	3				3				0445E	16555
27	1711	1736	1716	1-	1						1		1709	16548
28	0824	0847	0827	1-	1				1				0825	16541
28	2139	2230	2146	2-	5				2		4		2138	16529
29	0043	0208	0054	2	5	1			3		1		0045E	16529
29	0208	0240	0216	1-	3	1			2				0210	06564
29	0458	0615	0509	1	3				3				0500	16564
29	0707	0807	0715	2	3				3				0710E	16529
29	1619	1715	1630	1-	5				1		10		1614	16563
29	1831	1900	1837	1-	5						5		1837E	16529
30	1135	1230	1150	1-	1				1		1		1135	16541
31	1233	1320	1253	1-	1				1		1		1228	16558

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-12	0000-0641 GN
03	1520-1545 UM (10, 13, 16 kHz),
	1835-1920 UM (13 kHz)
04	1005-1400 UM (16 kHz)
11	1000-1340 UM (16 kHz)
	1930-1950 UM (10, 13, 16 kHz)
12-13	1055-0030 GN

DATE	TIME (UT) and STATION
14	1500-1900 UM (10, 13, 16 kHz)
15	0610-0650 GN
16	0650-0700 GN
18	1000-1330 UM (16 kHz)
21-30	1125-0140 GN
25	1000-1400 UM (16 kHz)

STATIONS REPORTING FOR DECEMBER 1979

AAVSO (A1, A5, A19, A21, A26, A28, A31, A34, A46, A48) (SES)
ELLENSBURG (EB) (SES)
GLENORCHY (GN) (SWF)
HIRAISO (HI) (SWF)
HOBART (TA) (SES)
JULIUSRUH (JH) (SWF)
KASUAGE (KA) (SPA)
KUHLUNGSBORN (KU) (SEA, SPA)
LUCHOW (LW) (SWF)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SEA)
ST CLOUD (SC) (SES)
UPICE (UI) (SEA)
VSETIN (VA) (SEA)
ZILINA (ZL) (SEA)

NOTE: Glenorchy is a new station reporting for the first time from Tasmania, Australia.

SUDDEN IONOSPHERIC DISTURBANCES

SIDs BY HALE REGION

DECEMBER 1979

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	31
REGION																															
16455				1																											
16458			1					1																							
16459				1																											
16465					1																										
16467			1	3		1	1		1																						
16469					1																										
16478				1		1		1					1	1																	
16483													2																		
16487														1																	
16490												1		3																	
16492														1																	
16493													1																		
16495														1		1															
16505																1			3												
16507														1		1															
16508													1																		
16509																		1													
16514																	1	2													
16516															1		1														
16522																				1			4	1							
16529																			1	7	2				1			1	3		
16539																				1	1										
16541																								1		1	1	1		1	
16548																											2				
16555																											2				
16558																														1	
16563																													1		
16564																													2		
X-RAY																															
UNKNOWN												1																			
NO FP			1						1	1						1			2		3	9	1	2		2					

PIONEER XII

MAGNETIC FIELD MAGNITUDES

DECEMBER 1979

DATE	TIME	BMAG
12/01/79	18:18:23	5.38
12/02/79	18:18:25	11.82
12/03/79	18:16:48	8.57
12/04/79	18:31:44	7.79
12/05/79		----
12/06/79	18:25:46	7.59
12/07/79		----
12/08/79	18:33:11	8.40
12/09/79	18:37:47	6.89
12/10/79	18:54:44	9.23
12/11/79		----
12/12/79	18:45:18	11.46
12/13/79	18:50:11	6.07
12/14/79	18:46:04	8.08
12/15/79	18:45:33	6.58
12/16/79	18:49:55	6.98
12/17/79	18:47:08	4.06
12/18/79	18:40:03	7.97
12/19/79	18:48:15	11.80
12/20/79	18:50:15	12.32
12/21/79	18:50:41	10.75
12/22/79	18:44:37	7.50
12/23/79	18:52:23	8.07
12/24/79	18:43:26	7.18
12/25/79	18:45:06	8.23
12/26/79	19:01:06	10.09
12/27/79	18:42:33	7.45
12/28/79		----
12/29/79	18:38:06	2.65
12/30/79	18:36:56	9.35
12/31/79	18:36:33	11.11

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1979

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0721	CULG				0017	0019.5					IIIG,W
			CULG				0025.5						IIIB,W
			CULG				0124.5						IIIB,W
			CULG				0402.5						IIIB,W
			CULG				0443.5		2	0443.5		1	IIIB
			CULG	0444.5		1	0444.5	0446	3	0444.5	0446	3	IIIG,V
	0000	0900	MANI							0444.5	0445.6	1	III
	0725	1515	DWIN										
	0732	1449	WEIS				1134.0	1134.2	1				IIIB
	1358	2340	HARV	1408		2	1408		2				IIIG
			WEIS				1408.1	1408.2	1				IIIG
	0745	1530	BLEN	1408.2	1408.3	1	1408.1	1408.3	1				IIIG
			HARV				1425	1426	2				IIIG
			WEIS				1425.4	1425.7	1				IIIG
			BLEN				1425 4	1425 8	2				IIIG
			HARV	1630	1631	2							IIIG
	2021	2400	CULG				2026						IIIB,W
	2200	2400	MANI										
			CULG				2307		1	2307		1	IIIB
02	0000	0900	MANI										
	0000	0721	CULG				0224.5			0224.5			IIIB,W
	0730	1330	DWIN										
	0734	0812	WEIS										
	0745	1530	BLEN										
	0947	1448	WEIS										
	2206	2400	MANI										
	2023	2400	CULG				2230.5	2231	1				IIIG
	1358	2335	HARV				2231		2				IIIG
03	0000	0900	MANI										
	0000	0721	CULG				0206.5						IIIB,W
			CULG				0252	0254		0252	0254		IIIG,W
			CULG				0539	0540					IIIG,W
	0730	1500	DWIN										
	0736	1448	WEIS				0800.6	0800.8	2				IIIG
			WEIS				0907.6	0908.5	1				IIIG
			WEIS				0910.4	0910.6	2				IIIG
			WEIS				0913.7	0914.3	1				IIIG
			WEIS				0952.3	0954.7	2				IIIGG
			WEIS				1130.7	1131.9	2				IIIG
			WEIS				1134.1	1134.3	2				IIIG
			WEIS				1137.7	1138 5	2				IIIGG
	0745	1530	BLEN				1137.8	1138.5	1				IIIG
			WEIS				1216.6	1217.5	2				IIIG
			WEIS				1336.3	1337.3	2				IIIG
			WEIS				1338.7	1339.8	2				IIIG
	1358	2335	HARV				1942	1944	2				IIIGG
	2021	2400	CULG	2158	2201	2	2158	2201	3	2158	2201.5	3	IIIGG
			HARV				2158	2200	2				IIIGG
	2203	2400	MANI										
			CULG				2214.5						IIIB.W
			CULG				2216.5	2217		2216.5			IIIG,W
04	0000	0900	MANI										
	0000	0722	CULG				0011	0605		0011	0025		IIIN,W
			CULG				0036	0036.5	1	0036	0036.5	1	IIIG
			CULG	0435	0435.5								IIIG.W
	0730	1500	DWIN										
	0736	1448	WEIS				0804.6	0804.8	1				IIIB
			WEIS				0806.5	0807.5	2				IIIG
			WEIS				0829 7	0830.0	2				IIIG
	0745	1530	BLEN				0829.7	0830.4	1				IIIG
			WEIS				0833.7	0849 3	2				IIIGG
			BLEN				0835.2	0844.7	2				IIIGG
			WEIS				0846.5	0849.5	2				IIIG
			WEIS				1309.7	1309.8	2				IIIB
			BLEN				1346.5	1346.6	2				UNCLF
			WEIS				1405.9	1412.9	3				IIIGG
	1358	2335	HARV	1409	1410	1	1407	1413	3				IIIGG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
04			BLEN	1409.6	1409.8	2	1406.8	1412.8	3				IIIGG
			WEIS				1414.9	1415.5	2				IIIG
			WEIS				1436.7	1436.8	1				IIIB
			HARV				1502	1503	1				IIIG
			HARV				1523		2				IIIB
			HARV				1705	1706	2				IIIG
			HARV				1728	1730	3				IIIGG
			HARV				1757		1				IIIB
			HARV				1814	1815	2				IIIG
			HARV				1815	1819	3				II
			HARV				1847	1854	2				IIIGG
	2022	2400	CULG				2041	2154					IIIN,W
			CULG				2109.5		1				IIIB
			HARV				2112	2113	2				IIIG
			HARV				2203	2205	2				IIIG
	2204	2400	MANI										
			CULG				2204	2205	1				IIIG
05	0000	0908	MANI										
	0000	0722	CULG				0002	0121					IIIN,W
			CULG				0312	0312.5	2				IIIG
			CULG	0324	0722								IS,W
	0740	1042	DWIN										
	0745	1005	BLEN										
	0738	0808	WEIS				0803.2	0803.4	1				IIIB
	0817	1101	WEIS				0848.0	0848.2	1				IIIB
			WEIS				0919.6	0920.3	2				IIIG
			WEIS				1050.9	1051.4	2				IIIG
	1240	1252	BLEN										
	1325	1447	WEIS				1327.3	1328.9	2				IIIG
			WEIS				1331.8	1332.2	2				IIIG
			WEIS				1433.7	1436.0	2				IIIG
	1356	1452	BLEN				1433.7	1433.8	2				IIIB
	1358	2335	HARV				1434		2				IIIB
	1510	1530	BLEN										
			HARV				1626	1627	2				IIIG
			HARV				1719	1720	2				IIIG
			HARV				1809		2				IIIG
	2023	2400	CULG				2023	2340					IIIN,W
			CULG	2029	2400								IN,W
			CULG	2029		1	2029		2				IIIB
			HARV				2029		1				IIIG
	2207	2400	MANI										
06	0000	0900	MANI										
	0000	0723	CULG	0000	0723								IN,W
			CULG	0032.5	0033.5		0032.5						IIIG,W
			CULG				0046	0723					IIIN,W
			CULG				0134.5	0135	2	0134.5	0135	2	IIIG
			CULG				0154.5		1				IIIB
			CULG				0450.5		1				IIIB
			CULG				0716		1				IIIB
	0735	1500	DWIN										
	0740	1447	WEIS				1037.3	1037.5	1				IIIB
	0745	1530	BLEN				1156	1530 D	1				IS
			WEIS				1205.7	1206.6	2				IIIG
			WEIS				1211.6	1211.9	2				IIIB
			BLEN				1333.2	1333.6	2				IIIG
	1358	2335	HARV				1929	1930	1				IIIG
	2023	2400	CULG	2023	2400								IN,W
	2207	2400	MANI										
			CULG				2305.5			2306			IIIB,W
07	0000	0900	MANI										
	0000	0704	CULG				0234.5						IIIB,W
			CULG				0342						IIIB,W
			CULG				0553.5	0554	1				IIIG
			CULG				0701						IIIB,W
	0740	1500	DWIN										
	0741	1446	WEIS				0756.7	0757.3	2				IIIG

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07			WEIS				0810.5	0812.6	2				IIIG
	0745	1530	BLEN				1316	1325	1				I
	1357	2335	HARV										
	2024	2400	CULG				2044.5	2045	1				UNCLF
	2210	2400	MANI										
			CULG				2342						IIIB,W
08	0000	0900	MANI										
	0000	0724	CULG	0119		1							IIIB
			CULG	0155	0724								IN,W
			CULG				0203	0534	1	0205	0229	1	IIIN
	0745	1445	BLEN	0910	1205	2	0910	1205	2				I,DC
	0741	0924	WEIS				0950.6	0950.9	2				IIIG
			BLEN	1017.8	1034.4	3	1024.7	1034.4	3				IIIGG
	0938	1445	WEIS				1020.6	1031.1	2				IIIGG
			WEIS				1034.2	1034.4	2				IIIG
			WEIS				1153.5	1154.5	1				IIIG
			BLEN				1256.2	1256.4	2				IIIG
			BLEN	1304.5	1304.6	1	1304.5	1304.6	2				IIIB
			BLEN	1334.1	1334.3	2	1334.1	1334.3	3				IIIG
			BLEN	1346.7	1347.3	3	1346.7	1347.8	3				IIIGG
			WEIS				1346.8	1347.2	2				IIIG
	0740	1500	DWIN	1346.9	1347.0	2							IIIG
			WEIS				1425.6	1425.7	2				IIIG
	1358	2335	HARV				1459		1				IIIBW
			HARV				1511		1				IIIBW
			HARV				1641	1645	1				IIIGW
			HARV				1744	1745	1				IIIGW
			HARV	1923	1924	3	1922	1925	2	1922	1925	3	IIIGG
	2024	2400	CULG	2111	2400								IN,W
	2210	2400	MANI										
09	0000	0724	CULG	0000	0724								IS,W
			CULG				0122.5	0124	2	0123	0123.5	1	IIIG,V
			CULG				0148	0148.5		0148	0148.5		IIIG,W
			CULG				0224	0305					IN.W
			CULG				0254	0254.5	2	0254	0254.5	1	IIIB
			CULG				0302.5			0302.5			IIIB,W
			CULG				0304	0304.5	1	0304	0304.5	1	IIIG
			CULG				0337.5	0401					IIIS,W
			CULG	0337.5	0349	1							IIIN
			CULG	0349.5	0356	2	0349.5	0356	3	0349.5	0356	2	IIIGG
	0000	0544	MANI							0350.4	0355.8	1	IIIG
			CULG				0415	0537					IS,W
			CULG				0440	0531					IIIS W
			CULG				0449	0450.5	2				IIIG
			CULG				0646.5	0648	1				IIIG
			CULG				0656.5	0657.5	1				IIIG
	0744	1446	WEIS				0804.0	1431.0	2				IIIN
	0825	1500	BLEN	0929.2	0929.7	1	0929.2	0929.7	2				IIIGG
			BLEN				0938.7	0938.7	1				IIIB
			WEIS				1054.9	1058.5	3				IIIGG
			BLEN				1124.5	1500 D	1				I
			BLEN				1152.4	1156.2	2				IIIGG
			BLEN				1215.1	1215.9	1				IIIG
			BLEN	1255.8	1256.9	3	1254.9	1256.9	3				IIIGG,RS
	0740	1330	DWIN	1256.2	1256.9	2							IIIG
			BLEN	1346.5	1403.7	1							DCIM
	1358	2335	HARV	1454	1455	2	1452	1456	2				IIIGG
			BLEN				1454.4	1554.8	3				IIIG
			HARV				1516	1520	2				IIIG
			HARV				1552	1555	2	1552	1553	2	IIIG
			HARV				1637	1639	1	1638		1	IIIG,I
			HARV				1642		1	1642		2	IIIG
			HARV				1717		1				IIIG
			HARV				1731	1732	1				IIIG
			HARV				1739	1740	2				IIIG
			HARV				1838		1				IIIG
			HARV				1905		1				IIIG
	2025	2400	CULG	2025	2400								IS,W

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09			CULG				2025	2400					IN,W
			CULG				2053	2400					IIIN,W
	2214	2400	MANI										
			CULG				2221.5	2222	1				IIIG
			CULG				2225	2225.5	1				IIIG
			CULG				2300.5	2301	2				IIIG
			HARV				2301		2				IIIG
			CULG				2312.5	2315	1	2313	2314.5	1	IIIGG
10	0000	0900	MANI										
	0000	0725	CULG	0000	0101								IS,W
			CULG				0037	0132					IIIN W
			CULG	0039.5	0400	1							IIIG
			CULG	0101	0120	1							IS
			CULG				0116	0206					IN,W
			CULG	0120	0404								IS,W
			CULG				0132	0142		0133	0140		IIIS,W
			CULG				0137		1	0137		1	IIIB
			CULG				0211	0211.5	2	0211	0211.5	1	IIIG
			CULG				0224	0725					IIIN,W
			CULG	0404	0430	1							IS
			CULG	0430	0725								IS W
			CULG	0632.5	0633	2	0632.5	0633	2				IIIG
			CULG				0705		1				IIIB
			CULG				0705.5		1				IIIB
			CULG				0714	0715	2				IIIB
	0740	1045	DWIN										
	0825	1450	BLEN	0825 E	1450 D	2	0825 E	1450 D	3				I,DC
	0744	1446	WEIS				0912.7	0913.4	2				IIIG
			WEIS				1142.0	1142.3	2				IIIG
	1215	1515	DWIN										
	1358	2335	HARV										
			WEIS				1426.7	1427.3	2				IIIG
			HARV				1819		2				IIIG
			HARV				1927	1930	1				IIIG
			HARV	1941		1	1940	1942	2				IIIG
			HARV				2000		1				IIIGW
	2025	2400	CULG	2034	2400								IN,W
			CULG				2036	2400					IIIN.W
			CULG				2141		1				IIIB
			CULG	2215	2221	1							IIIN
			CULG				2316	2320.5	3	2316	2320	3	IIIGG,V
	2206	2400	MANI							2317.5	2317 8	1	III
			CULG				2324	2327.5	1				POSS II
11	0000	0725	CULG	0000	0241								IN,W
			CULG				0011	0547					IIIN,W
			CULG				0027.5	0028	1	0027.5	0028	2	IIIG
			CULC				0034	0036	2				IIIGG
			CULG	0118.5	0119	3	0118.5	0119	1				IIIG
			CULG				0206	0209	1	0206.5	0208	1	IIIG,V,U
			CULG	0241	0725								IS,W
			CULG	0333	0334.5	2	0333.5	0336.5	3	0333.5	0336.5	3	IIIG,V
	0000	0900	MANI							0334.7	0335.8	2	III
	0825	1457	BLEN				0825.2	0825.2	2				IIIB
	0745	0838	WEIS				0836 0	0837.7	2				IIIG
	0842	1228	WEIS				0842.0	0842.6	2				IIIG
			BLEN	0852.2	0852.3	2	0842.3	0842.4	2				IIIG
			BLEN				0918.8	0918.8	2				IIIB
			WEIS				1027.5	1027.7	2				IIIG
			WEIS				1034.4	1040.3	2				IIIGG
			BLEN				1035.2	1040.0	2				IIIGG
			BLEN				1045	1455 D	1				I
			WEIS				1047.9	1048.5	2				IIIG
			BLEN	1049.1	1049.1	2							IIIB
			WEIS				1119.0	1119.5	2				IIIB
			WEIS				1205.6	1206.0	2				IIIG
			WEIS				1211.3	1212.6	2				IIIG
			BLEN	1225	1311	1							DCIM
			WEIS				1225.3	1227.2	2				IIIG

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DAY	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	
11	1242	1515	DWIN	1242	1312	1							IV F
			DWIN	1319.3	1320.2	1							IV F
			BLEN	1335	1417	3	1335	1417	3				IV P
			DWIN	1337	1414	2							IV
	1358	2335	HARV	1358	1415	2	1402	1403	2				IIIGG
			HARV				1451	1452	1				IIIG
			HARV	1454		2							IIIG
			HARV	1507	1508	2	1507	1508	1				IIIG
			HARV				1613	1615	2				IIIG
			HARV	1643	1645	3	1643	1645	2	1643	1645	2	IIIG
			HARV				1657	1659	1	1657	1659	2	IIIG
			HARV				1713		1				IIIG
			HARV				1720	1721	2	1721		1	IIIG
			HARV				1755	1757	2	1755	1757	1	IIIG
			HARV				1801		1				IIIB
			HARV				1806		2	1806		2	IIIG
			HARV				1858		1				IIIGW
			HARV	1915	1918	2	1909	1918	2	1909	1918	2	IIIGG
			HARV				1927	1928	1				IIIGW
			HARV				1944	1950	2	1944	1950	2	IIIG
	2025	2400	CULG				2046	2400					IIIN,W
			CULG	2115	2400								IN,W
			CULG				2118.5	2119.5	1				IIIG
			CULG				2136		1	2136	2136.5	1	IIIB
			CULG							2152.5	2341		IIIN,W
	2214	2400	MANI										
			HARV				2235	2237	2				IIIG
			CULG				2235.5	2236.5	1				IIIG
			CULG	2314	2316	1	2314	2315	1	2314	2315.5	2	IIIG
			CULG				2321.5		1				IIIB
			HARV				2325	2326	1				IIIGW
			CULG				2353	2354	2	2353	2354.5	2	IIIG
			CULG				2357	2357.5	1				IIIG
12	0000	0900	MANI										
	0000	0725	CULG	0000	0725								IS,W
			CULG				0013.5	0014	1	0013.5	0014	1	IIIG
			CULG				0032	0051	1				IIIS
			CULG							0032	0123	1	IIIN
			CULG				0104	0725					IIIN,W
			CULG				0115.5	0116	2	0115.5	0116	1	IIIG
			CULG				0125	0126	1				IIIG
			CULG	0228.5	0229.5	1	0228.5	0229	2	0228.5	0229.5	2	IIIG
			CULG	0250.5		1	0250.5		1	0250.5	0251	1	IIIB
			CULG				0313	0314	2	0313	0314	2	IIIG
			CULG							0344	0411		IIIN-W
			CULG	0410.5	0411.5	1							DC
			CULG				0426	0725	2	0426	0558	1	IIIG,N
			CULG				0455.5	0458	2	0455.5	0458	2	IIIGG
	0747	1444	WEIS										
	0855	1450	BLEN				1003.2	1016.5	2				IIIGG,U
	0745	1515	DWIN	1138.8		1							IIIB
			DWIN	1447.0	1447.8	1							IV
	1358	2335	HARV	1706	1707	2	1704	1707	2	1704	1707	1	IIIGG
			HARV	1715		2	1714	1716	3	1715	1716	2	IIIGG,V
			HARV	1716		1	1715	1722	3				UNCL
			HARV	1939		1							IIIG
			HARV				2014		1				IIIGW
	2026	2400	CULG	2028	2400								IN,W
			CULG				2033.5	2038	1				IIIG
			HARV				2034		1				IIIGW
			CULG				2147	2309					IIIN,W
	2212	2400	MANI										
			CULG				2234	2236	1				N,RS,DP
			CULG				2235		2	2235		2	IIIB
			HARV				2235	2236	1				IIIBW
			CULG				2236		2	2236		1	IIIB
13	0000	0900	MANI										
	0000	0726	CULG	0000	0726								IN,W

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
13			CULG				0018.5						IIIB,W
			CULG				0124.5						IIIB,W
			CULG							0159		1	IIIB
			CULG				0531	0532	2	0531.5	0532	1	IIIG
			CULG				0542	0543	1				IIIG
	0845	1450	BLEN	0845 E	0902	1	0845 E	0902	1				I
			BLEN	0900.4	0902.4	3	0900.4	0902.4	3				IIIGG,RS
			BLEN	0919.2	0920.7	2							DCIM
	0745	1215	DWIN	0919.3	0920.7	1						IV	
			BLEN	0935.0	0940.8	2							DCIM
			DWIN	0935.0	0942.0	2						IV	P
			BLEN				1019.8	1020.6	2				IIIG
			BLEN	1114.2	1117.6	1	1114.2	1117 6	1				IIIGG
			BLEN	1350.1	1403.7	3	1350.1	1403.7	3			II	
	1358	2218	HARV										
			BLEN				1418.7	1418.8	2				IIIB
	2247	2335	HARV				1419		2				IIIB
			HARV				1745		2				IIIG
			HARV				1944	1946	1				IIIG
	2026	2400	CULG	2026	2400		2026	2400					IN,W
			CULG				2125.5	2126		2126			IIIG,W
			CULG				2133.5	2134	2				IIIG
			HARV				2139		2				IIIG
	2214	2400	MANI										
			CULG				2214	2214.5					IIIG,W
			CULG				2346	2354					UNCLF,W
14	0000	0726	CULG	0000	0726								IS,W
			CULG				0018	0726					IIIN,W
			CULG				0036	0040	1				SLOW DRIFT
			CULG				0144.5	0147.5	1				SLOW DRIFT
			CULG	0251.5	0252.5	1	0251	0252.5	2	0251	0252.5	2	IIIG
			CULG				0300.5	0301.5	3	0300.5	0301.5	2	IIIG,V
	0000	0900	MANI							0300.9	0301.1	1	III
			CULG				0327	0327.5	1				IIIG,U
			CULG	0406	0418	2							SLOW DRIFT
			CULG	0406.5	0407	2	0407	0408	3				IIIG,V
	0000	0900	MANI							0407.3	0407.6	1	III
			CULG				0448.5	0449.5	1				IIIG
			CULG				0500.5		2				IIIB,U
			CULG				0521.5	0522	2				IIIG
			CULG				0531.5		1				IIIB
			CULG	0612	0617	1	0612	0617.5	3	0613	0616.5	2	IIIGG,V
	0000	0900	MANI							0613.3	0614.8	1	III
			CULG				0618	0618.5	2	0618	0618.5	1	IIIG
			CULG				0619.5	0621	2				IIIG
			CULG				0723	0725.5	3				IIIG,V
	0740	1510	DWIN	0813.8	0815.0	2							IIIG
	0830	1445	WEIS				0832.7	0839.3	2				IIIGG
	0815	1450	BLEN				0836.3	0837.2	2				IIIG
			DWIN	0838.6	0841.3	2							IIIG
			BLEN	0838.6	0840.1	3							DCIM
			BLEN	0913.8	0913.8	2							IIIB
			BLEN				0930	1330	2				I,DC
			BLEN	0939.8	0941.5	1							DCIM
			DWIN	1016.9	1017.2	1							IIIG
			WEIS	1018.0	1018.5	1							IIIG
			BLEN	1018.1	1018.5	2							DCIM
			WEIS				1035.6	1035.8	1				IIIG
			WEIS				1056.3	1059.4	2				IIIGG
			BLEN	1056.4	1058.2	3	1056.4	1057.5	3				IIIGG
			DWIN	1118.5	1125	2						IV	
			BLEN	1118.8	1126.5	2							DCIM
			WEIS				1217.1	1217.3	2				IIIB
			DWIN	1259.1	1316.0	2						IV	
			BLEN	1259.2	1303.8	3	1259.5	1302.8	3				IIIGG,DCIM
			WEIS	1259.5	1302.7	3							IIIGG
			WEIS				1328.3	1328.7	2				IIIG
	1358	2335	HARV	1454	1455	1							IIIG
			HARV	1532	1535	3	1532	1535	2				IIIGG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
14			HARV	1554		2	1550	1559	2	1552	1558	1	IIIGG
			HARV	1653	1658	2	1653	1654	2				IIIG
			HARV	1701	1702	1							IIIG
			HARV				1727		1				IIIGW
			HARV	1733	1734	1	1733	1734	1				IIIG
			HARV	1800	1804	3							IIIGG
			HARV				1840	1845	2				IIIGG
			HARV	1857		2							IIIG
			HARV	1912	1913	1	1909	1914	2	1910	1914	2	IIIGG
			HARV				1928	1940	2	1928	1940	2	IIIG
	2027	2400	CULG	2100	2255								IN,W
			HARV				2105	2106	2	2105	2106	2	IIIB
			CULG				2105.5	2106	2				IIIG
			CULG				2109	2400					IIIN,W
			HARV				2132		1				IIIBW
			HARV				2156	2157	2				IIIG
			CULG				2156	2158.5	1	2157	2158.5	1	IIIGG,U
	2212	2400	MANI										
			CULG							2221	2321		IIIN,W
			CULG				2258	2258.5	1				IIIG
			CULG				2347.5	2349	1	2348	2349	1	IIIG
			CULG				2350.5	2351	1	2350.5	2351	1	IIIB
15	0000	0900	MANI										
	0000	0726	CULG				0023	0726					IIIN,W
			CULG				0205		2	0205	0205.5	2	IIIB
			CULG							0226	0421		IIIN,W
			CULG				0333	0333.5	1	0333	0333.5	1	IIIG
			CULG				0335		2	0335	0335.5	2	IIIB
			CULG	0451	0520								IS,W
			CULG				0501	0559	1				IS,DC
	0740	1510	DWIN										
	0750	1444	WEIS				0757.3	0758.6	2				IIIG
			WEIS				0827.7	0829.2	2				IIIG
	0845	1438	BLEN										
			WEIS				0959.7	1000.3	1				IIIG
			WEIS				1017.0	1021.7	2				IIIG
			WEIS				1135.1	1135.3	2				IIIB
	1413	2335	HARV				1531	1535	2				IIIG
			HARV				1624	1625	2				IIIG
	2027	2400	CULG	2050.5			2050.5	2051					IIIG,W
			HARV				2051	2053	2	2053		3	IIIG
			CULG	2052.5	2053	1	2052.5	2053	2	2052.5	2053	1	IIIG
			CULG	2131.5									IIIB,W
			CULG	2136	2137	2	2136	2137	3	2136.5	2137	2	IIIG,V
			HARV				2136	2137	2	2136	2137	2	IIIG
			CULG	2152.5	2153	1							IIIG
			CULG				2154	2210	1			II	
			CULG				2213	2213.5	3	2213	2213.5	1	IIIB
			HARV				2213		2	2213		2	IIIG
			CULG				2214	2214.5	1				IIIB
	2216	2400	MANI										
			CULG				2253	2324					IIIN,W
			CULG				2352.5	2353	2	2352.5	2353	2	IIIG
16	0000	0727	CULG				0026.5	0028		0026.5	0028		IIIG,W
			CULG				0050	0646					IIIN,W
			CULG				0058.5	0059	3	0058.5	0059	3	IIIG
	0000	0900	MANI							0059.3	0059.5	1	III
			CULG				0124	0125	1	0124	0125	1	IIIG
			CULG				0157.5	0158	2	0157.5	0158	2	IIIG,U
			CULG				0238.5	0240.5	2	0238.5	0240	2	IIIG
			CULG				0243	0257	1			II	
			CULG				0349.5	0350	1	0349.5	0350	1	IIIG
			CULG	0417	0727								IN,W
			CULG				0505	0505.5	2	0505	0505.5	1	IIIG
			CULG				0507	0507.5	1				IIIB
			CULG				0556.5	0558	3	0557.5	0558	1	IIIG,V
			CULG				0607 5	0608	2				IIIG
			CULG	0627.5	0628	2							IIIG

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16			CULG				0643	0644	2				IIIG
			CULG	0651.5	0652	1							FAST DRIFT
	0751	1410	WEIS				0826.1	0827.3	2				IIIG
	0740	1330	DWIN	0826.2	0826.7	2							IV
			WEIS				0932.8	0933.0	2				IIIB
	0845	1445	BLEN				1036.0	1042.2	2				IIIG
			WEIS				1036.1	1036.8	2				IIIG
			WEIS				1041.9	1043.5	2				IIIG
			WEIS				1243.3	1244.4	2				IIIG
			BLEN				1246.4	1248.8	2				IIIG
			WEIS				1246.5	1248.9	2				IIIG
			WEIS				1324.4	1324.7	2				IIIG
			BLEN				1345	1445 D	2				I,DC
	1413	2335	HARV	1418	2335	1	1428	2335	1				INW
			WEIS				1457.1	1457.3	1				IIIB
	1416	1457	WEIS				1531.7	1531.9	1				IIIB
			HARV	1723	1724	1	1723	1724	2				IIIG
			HARV	1838	1839	2	1838	1839	2				IIIG
	2028	2400	CULG				2028	2400					IIIN,W
			HARV				2135		1				IIIB
			CULG	2135	2400								IS W
	2216	2400	MANI										
			HARV				2233	2234	2				IIIG
			CULG				2233.5	2234	1				IIIG
			CULG				2358	2359	2	2358	2359	2	IIIG,V
17	0000	0902	MANI										
	0000	0727	CULG	0010	0055	1							IS
			CULG				0031	0157					IIIN,W
			CULG	0055	0312								IS,W
			CULG				0118	0119	1	0118	0118.5	1	IIIG
			CULG	0312	0424	1							IS
			CULG				0415	0727					IN,W
			CULG	0424	0424.5	2							IIIG
			CULG	0424.5	0727	2							IS,DC
			CULG				0620.5	0621	2				IIIG
			CULG				0719	0720					IIIG,W
	0740	1510	DWIN										
	0840	1450	BLEN				0840 E	1450 D	2				I,DC
	0758	1445	WEIS				1343.0	1343.6	1				IIIG
	1413	2335	HARV	1413	2335	1	1413	2335	1				IN
			WEIS				1439.1	1439.3	1				IIIG
			HARV				1739	1745	1				IIIGW
			HARV				1807	1808	1				IIIGW
			HARV				1846	1847	1	1846	1847	1	IIIG
	2029	2400	CULG	2029	2400	1							IS
			HARV				2126		2				IIIG
			CULG				2126	2127	1				IIIG
			CULG				2155.5			2156			IIIB,W
	2215	2400	MANI										
			CULG				2225	2255					IS,W
			HARV				2232	2233	2				IIIG
			CULG	2232.5	2233	1	2232	2232.5	2	2232.5	2233	1	IIIG
			CULG				2234.5						IIIB,W
			CULG				2255	2400	1				IS,DC
18	0000	0900	MANI										
	0000	0728	CULG	0000	0728		0000	0250					IS,W
			CULG				0011	0245					IIIS,W,N
			CULG				0027	0207	1				N,DC
			CULG				0112	0112.5		0112	0112.5		IIIG,W
			CULG				0117.5		2	0117.5		2	IIIB
			CULG				0214.5			0214.5			IIIB,W
			CULG				0245	0658					IIIN,W
			CULG	0303			0303						IIIB,W
			CULG				0316			0316			IIIB,W
			CULG	0434	0443	1							IIIG,N
			CULG	0543.5	0544.5	3	0543.5	0544	1				IIIG
			CULG				0648	0704	1				IN
	0740	0912	DWIN										

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				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	
18	0753	1446	WEIS				0834.4	0834.7	1				IIIG
	0840	1237	BLEN				0840 E	1100	2				I,DC
			BLEN				1232.4	1232.8	2				IIIG
			WEIS				1232.5	1232.7	2				IIIG
	1400	1445	BLEN										
			WEIS				1408.1	1411.5	2				IIIG
	1413	2335	HARV				1520	2335	1				I
			HARV				1903	1910	3	1903	1910	3	IIIGG
			HARV				1904	1924	3				II
	2029	2400	CULG				2029	2315	1				IS,DC
			CULG	2029	2400	1							IS
			CULG				2045	2052	1				IIIS
			CULG				2052	2400					IIIN,W
			CULG				2231.5		1	2231.5		1	IIIB
			CULG				2315	2400					IS,W
19	0000	0729	CULG	0000	0129		0000	0455					IN,W
			CULG	0129	0205								IS,W
			CULG				0145	0216					IIIN,W
			CULG	0205	0345								IN,W
			CULG				0326.5	0327					IIIG,W
			CULG	0345	0455								IS,W
			CULG	0504.5	0505	1							IIIG
			CULG	0605	0605.5	1							IIIG
			CULG	0631	0631.5	1							IIIG
	0752	1336	WEIS				0853.0	1236.0	2				IIIN
	0840	1445	BLEN				0951.0	0951.3	2				IIIG
	0750	1515	DWIN	0951.0	0951.1	2							IIIG
			BLEN	1041.4	1041.6	2	1041.4	1041.7	3				IIIG
			BLEN				1056.1	1056.4	2				IIIG
			BLEN				1110.1	1110.1	1				IIIB
			BLEN	1136.8	1137.0	2	1131.7	1142.2	2				IIIGG
			BLEN				1243.1	1256.0	2				IIIGG
	1345	1446	WEIS										
	1413	2335	HARV				1443		2				IIIB
			BLEN				1443.2	1443.3	1				IIIB
			HARV				1507	1508	2				IIIG
			HARV				1519	1523	2				IIIGG
			HARV				1824	1826	2	1824	1826	2	IIIG
			HARV				1947	1948	2				IIIG
	2030	2400	CULG				2030	2259					IN,W
			CULG	2030	2351								IS,W
			HARV				2103	2104	2				IIIG
			CULG	2103.5	2104	2	2103.5	2104	2				IIIG
			CULG	2115	2115.5		2115	2115.5		2115			IIIG,W
			HARV				2115		2				IIIG
			CULG	2119									IIIB,W
			CULG	2142.5	2143		2142.5	2143					IIIG,W
			HARV				2200	2206	2	2201	2205	1	IIIGG
			CULG	2200.5	2208	1	2200.5	2208	2	2203.5	2208	1	IIIGG,V
			CULG	2209.5	2212	2	2209.5	2213	2				IIIGG
			CULG	2209.5	2222	3	2211	2233	3	2212	2233	3	IV P
			HARV				2210	2213	3				IIIGG
			CULG				2212	2247.5	3	2220.5	2234	3	II H
			CULG							2213	2237	1	SWF
			HARV				2214	2231	3				II
20	0000	0729	CULG	0000	0305								IS,W
			CULG	0021	0025	2	0022.5	0025	3	0022.5	0025	2	IIIGG,V
			CULG				0026	0028	1				I
			CULG	0031	0031.5	1	0031	0031.5	3	0031	0031.5	3	IIIG,V
			CULG	0122.5	0123	2	0122.5	0123	1				IIIG
			CULG				0129	0729					IIIN,W
			CULG	0139	0309	1							IIIN
			CULG	0305	0515	1							IS
			CULG	0515	0729								IS,W
			CULG				0551	0558					I,W
			CULG				0602.5		1				IIIB
			CULG				0608	0608.5	1				IIIG
			CULG	0613		1	0612	0615.5	2	0612	0615.5	1	IIIGG

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20			CULG	0615.5	0620	2							IV P
			CULG							0616	0635	1	SWF
			CULG	0617.5	0621	3	0617.5	0640.5	3				II H
	0750	1515	DWIN										
	0840	1445	BLEN				1214	1445 D	1				I,DC
			BLEN				1253.9	1253.9	2				IIIB
			BLEN				1344.4	1344.5	2				IIIG
	1528	2335	HARV				1711	1713	1	1711	1713	2	IIIG
			HARV				1717	1718	2				IIIG
			HARV				1722	1723	2	1722	1723	2	IIIG
			HARV				1803	1805	2				IIIG
			HARV				2027	2031	2				IIIG
			CULG				2030	2319	1				IS
			CULG	2030	2400								IS,W
	2030	2400	CULG				2030	2221					IIIN,W
			CULG	2111.5	2112.5	2							IIIG
			HARV				2112		2				IIIG
			CULG	2116	2116.5	3							IIIG
			HARV				2116	2117	2				IIIG
			HARV				2118	2135	1				I
			CULG	2206	2206.5	2							IIIG
			HARV				2206		2				IIIG
			CULG				2221	2242	1				IIIS
			CULG	2225	2226	2	2225.5	2226.5	2	2226	2226.5	2	IIIG
			HARV				2226		2				IIIG
			CULG				2242	2400					IIIS,W
			HARV				2311	2312	1				IIIG
			CULG	2311	2313	1	2312	2312.5	1	2312	2313	1	IIIG
			CULG				2319	2400					IS,W
21	0000	0730	CULG				0000	0120					IIIS,W
			CULG	0000	0700		0000	0501					IS,W
			CULG				0020	0021.5	1				IIIG
			CULG				0031.5		1				IIIB
			CULG	0104.5	0105	1							IIIG
			CULG				0120	0632					IIIN,W
			CULG	0522.5	0523	1	0522.5	0523	1	0522.5	0523	1	IIIG
			CULG	0522.5	0525.5	1							IIIGG
	0750	1337	DWIN	0839.0	0839.2	1							IIIG
	0840	1445	BLEN				0840 E	1445 D	1				I.DC
	1351	1515	DWIN	1353.7	1353.8	1							IIIG
			BLEN	1409.8	1411.3	1							DCIM
			BLEN				1425.5	1425.5	1				IIIB
	1413	2320	HARV				1825	1826	2	1825	1826	2	IIIG
			HARV				1900		2				IIIG
			HARV				1929		2				IIIB
			HARV				2003	2004	2				IIIG,U
	2030	2400	CULG	2030	2306	1							IS
			CULG				2036	2331					IIIN,W
			CULG	2306	2400								IS,W
			CULG							2331			IIIB,W
			CULG	2344	2344.5	1							IIIG
22	0000	0730	CULG	0000	0730								IS,W
			CULG				0018	0325					IIIN,W
			CULG				0110		1	0110	0110.5	1	IIIB
			CULG				0131	0209					IS,W
			CULG				0155.5	0156.5	3	0155.5	0156.5	3	IIIG
			CULG				0228.5	0229.5	1	0228.5	0229.5	1	IIIG
	0750	1510	DWIN										
	0840	1445	BLEN				0842.5	0842.5	1				IIIB
			BLEN				1437.7	1440.2	1				IIIG
	1413	2320	HARV				1440		1				IIIG
	2031	2400	CULG	2101.5	2102		2101.5	2102					IIIG,W
			CULG				2138			2138			IIIB,W
			CULG				2221		1	2221	2221.5	2	IIIB
			CULG				2225.5	2356					IIIN,W
			CULG				2226.5	2227.5	2	2226.5	2227.5	2	IIIG
			CULG							2232	2305		IIIN,W
			CULG				2305	2306	2	2305	2306	2	IIIG

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22			CULG				2307		1	2307		2	IIIB
			CULG	2354.5	2355	1	2354.5	2355	1	2354.5	2355	1	IIIG
			CULG				2359	2400	2	2359	2400	2	IIIG
23	0000	0730	CULG				0001	0003		0001.5	0002		IIIG,W
			CULG				0017.5	0018					IIIG,W
			CULG				0211.5	0212.5	2	0211.5	0212	2	IIIG
			CULG				0216.5		1				IIIB
			CULG				0218	0218.5	2	0218	0218.5	1	IIIG
			CULG				0219.5		2	0219.5		2	IIIB
			CULG	0224.5	0225	1	0223	0225.5	3	0224.5	0225	3	IIIG,V
			CULG				0227.5	0230				II	W
			CULG				0354	0354.5	2	0354.5	0355	1	IIIG
			CULG				0452.5		1	0452.5		1	IIIB
	0750	1342	DWIN										
	0840	1445	BLEN										
	1413	2340	HARV				2100	2101	1	2100	2101	1	IIIG
	2031	2400	CULG				2100.5	2101.5	2				IIIG
			CULG				2141.5			2141.5			IIIB,W
			CULG				2246	2247					IIIG,W
			CULG				2246.5		1				IIIB
24	0000	0730	CULG	0000	0320								IS,W
			CULG				0304.5	0305.5		0305	0306		IIIG,W
			CULG				0439	0620					IIIN,W
			CULG	0600	0649								IS,W
	0840	1445	BLEN										
	0945	1448	WEIS				1321.0	1328.5	2				IIIGG
	1413	2340	HARV										
	2030	2400	CULG				2215.5						IIIB,W
25	0000	0730	CULG				0426		1	0426		1	IIIB
			CULG	0700.5	0730	1						IV	
			CULG	0704.5		1							IIIG
			CULG				0712.5	0713	1				IIIG,V
			CULG				0714	0723				II	W
	0840	1445	BLEN										
	0756	1449	WEIS				0900.0	0900.2	2				IIIB
	1030	1500	DWIN										
			WEIS				1159.7	1200.5	1				IIIG
			WEIS				1411.4	1412.5	3				IIIG
	1413	2340	HARV				1722	1723	2	1722	1723	3	IIIG,V,U
	2031	2400	CULG				2316	2318	1				SLOW DRIFT
			CULG				2330.5	2348	1			II	
26	0000	0732	CULG				0005.5	0007				II	W
			CULG				0049	0050					IIIG,W
			CULG				0053.5	0119.5	3	0056.5	0057	1 II	H
			CULG				0556	0634	1				IIIN
	0750	1155	DWIN										
	0756	1450	WEIS										
	1413	2340	HARV										
	2032	2400	CULG										
27	0000	0537	CULG				0444.5		1				IIIB
	0606	0733	CULG										
	0756	0923	WEIS										
	0927	1450	WEIS										
	1053	1445	BLEN										
	1413	2340	HARV				1620		2	1620		1	IIIB
			HARV				1717		2	1717		2	IIIB
	2033	2400	CULG										
28	0000	0733	CULG				0040	0640					IIIN,W
			CULG				0041	0042.5	1				IIIG
			CULG				0057	0058	2	0057	0058	2	IIIG,V
			CULG				0127	0127.5	2				IIIB,U
			CULG				0129.5		1				IIIB
			CULG				0253	0253.5	2	0253.5	0254	1	IIIB
	0840	1445	BLEN				0928.7	0928.9	1				IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1979

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
28	1016	1500	DWIN										
			BLEN				1057.0	1058.8	2				IIIG
	0756	1451	WEIS				1057.0	1059.1	2				IIIG
			WEIS				1108.5	1108.7	1				IIIG
			WEIS				1124.8	1125.1	1				IIIB,U
			WEIS				1324.6	1325.0	2				IIIG
			WEIS				1326.5	1326.7	1				IIIB
			WEIS				1330.7	1331.7	3				IIIG
			BLEN				1331.3	1331.6	3				IIIG
	1413	2340	HARV				1425	1426	2				IIIG
			BLEN				1425.4	1425.8	1				IIIG,RS
			HARV				1504	1507	2				IIIG,U
			HARV				1510	1511	2				IIIG
			HARV				1558	1600	2				IIIG
			HARV				1624	1626	2				IIIG
			HARV				1631		2				IIIG
			HARV	1650		1							IIIG
			HARV	1942	1943	2	1942	1943	2				IIIG
			HARV				2015	2022	2				IIIG,G
	2033	2400	CULG				2054						IIIB,W,U
			CULG				2127.5	2400					IIIN,W
			HARV	2137	2139	2	2137		3	2137		2	IIIG,G
			CULG	2137.5		2	2137	2137.5	3	2137	2137.5	2	IIIB
			CULG	2138	2138.5	1							IIIG
			CULG				2144	2147	1				SLOW DRIFT
			CULG				2144.5			2144.5	2145		IIIB,W
			CULG				2222.5			2223			IIIB.W
			CULG				2237	2237.5	1				IIIG,U
			HARV				2237		2				IIIG
			HARV				2245		1				IIIG
			HARV	2303	2304	1	2303	2304	2				IIIG
			CULG	2303	2305.5	1	2302.5	2306	2	2302.5	2306	2	IIIG
			CULG				2326		2	2326	2326.5	2	IIIB
			HARV				2326		2				IIIG
29	0000	0734	CULG				0003	0725					IIIN,W
			CULG	0043	0044	3	0043	0043.5	1				RS,IIIG
			CULG				0044	0044.5	1	0044	0044.5	1	IIIG
			CULG							0047	0056	1	SWF
			CULG	0211.5	0214	1	0212.5	0213	1			II	
			CULG				0242.5		1	0242.5		1	IIIB
			CULG				0253		2				IIIB
			CULG				0257		2				IIIB
			CULG				0409.5		1				IIIB
			CULG				0452.5	0453.5	1				IIIG
			CULG				0705	0708	1				IIIG
			CULG	0709.5	0710	2	0709.5	0710.5	2				IIIG,U
			CULG	0712	0712.5	2							IIIG
			CULG	0713	0714.5	1	0713.5	0726.5	1			II	
			CULG	0714.5	0715	2							IIIG
	0841	1452	WEIS				0841	1413	2				IIIN
	0800	1500	DWIN	0843.0	0843.5	1							IIIG
	0840	1445	BLEN	0920.7	0920.8	1							IIIB
			BLEN				0958.5	0958.8	1				IIIG
			BLEN				1024.2	1024.3	1				IIIG
			BLEN	1052.2	1052.3	2							IIIB
			BLEN				1140.7	1143.0	1				IIIG
	1413	2340	HARV				1634	1636	2				IIIG.U
			HARV				1715	1716	2	1715	1716	1	IIIG
			HARV	1831	1833	3	1831		2	1831		3	IIIG,V
			HARV				2029		2				IIIG
	2034	2400	CULG				2235		1				IIIB
			CULG				2241	2241.5					IIIG,W
			HARV				2243		1				IIIBW
			CULG				2243						IIIB,W
30	0000	0734	CULG				0009						IIIB,W
			CULG	0021		1	0021		1				IIIB
			CULG	0026.5		1							IIIB
			CULG				0026.5						IIIB,W

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

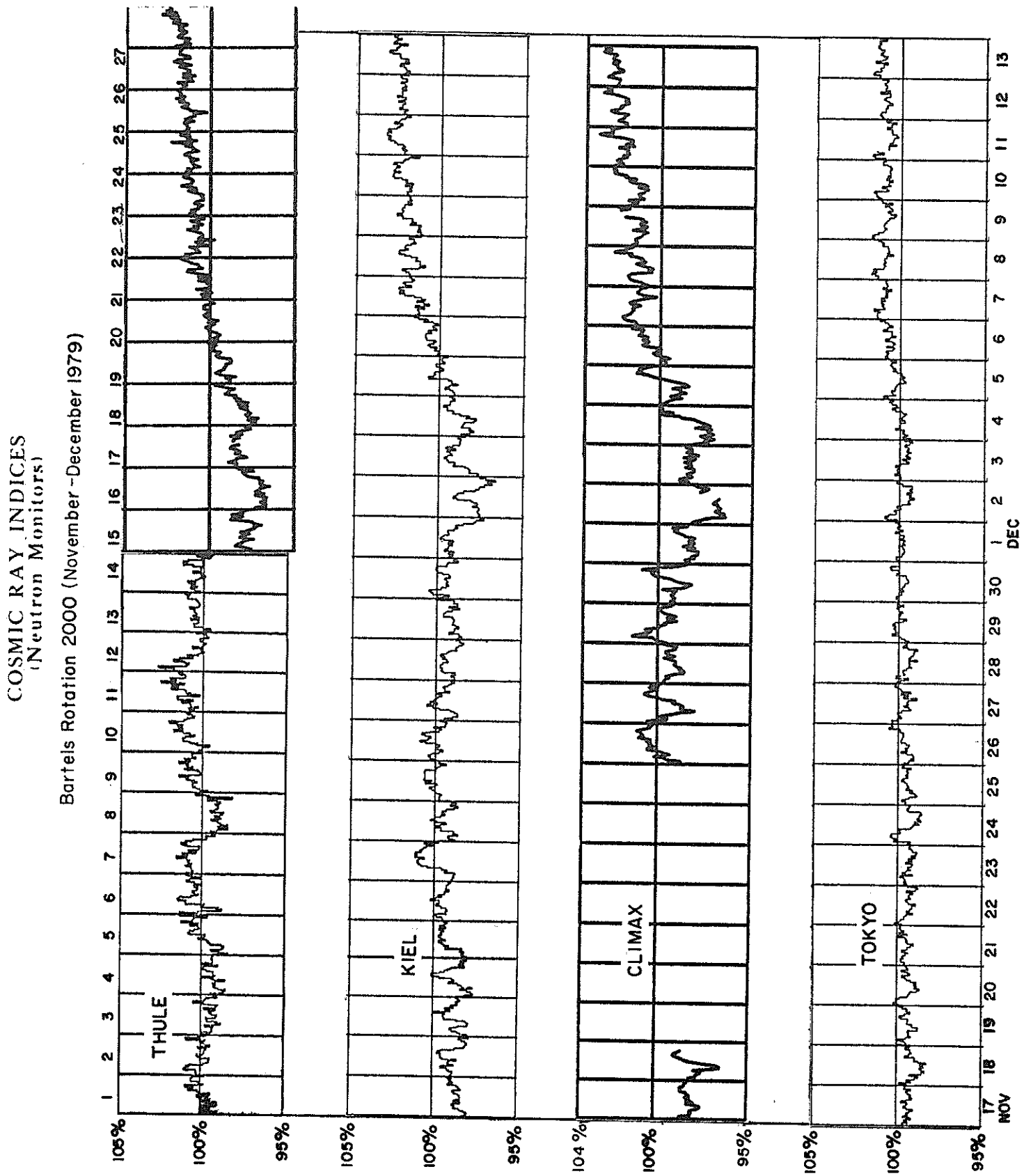
DECEMBER 1979

DAY	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	
30			CULG				0312.5	0314					UNCLF.W
			CULG				0314.5	0320	2				II H
			CULG	0420.5		1							IIIB
			CULG				0530.5		1				IIIB
			CULG	0608	0610	1							FAST DRIFT
	0840	1445	BLEN										
	0847	1452	WEIS				1009.7	1009.8	1				IIIG
	0800	1300	DWIN	1044.3		1							IIIB
	1413	2340	HARV	1756	1757	1	1754	1758	2				IIIG
	2034	2400	CULG	2131.5			2131.5	2132					IIIG,W
31	0000	0735	CULG				0001	0647					IIIN,W
			CULG				0001.5			0001.5			IIIB,W
			CULG	0320.5	0321		0320.5	0321		0321			IIIG,W
			CULG				0646		1				IIIB
			CULG				0710	0718.5	2				IIIS
			CULG	0728	0729	1							IIIG
	0757	1454	WEIS				0839.9	0840.0	1				IIIB
	0840	1300	BLEN										
	1053	1500	DWIN										
	1413	2345	HARV				1438	1439	2				IIIG
	2035	2400	CULG										

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

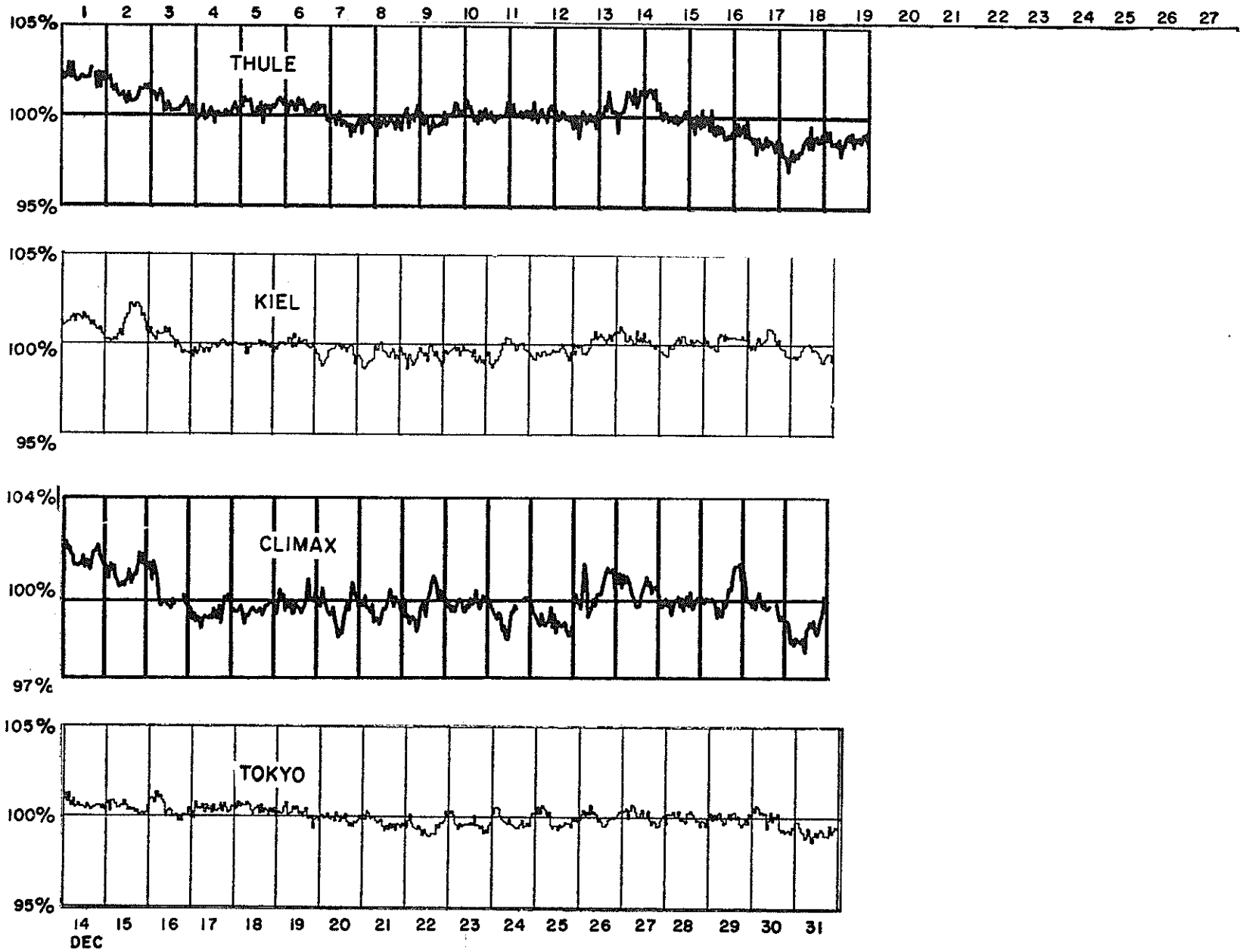
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

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


COSMIC RAY INDICES
(Neutron Monitors)
Bartels Rotation 2000 (November-December 1979)
THULE
KIEL
CLIMAX
TOKYO
105%
100%
95%
104%
NOV
DEC

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2001 (December 1979)



COSMIC RAY INDICES

(Neutron Monitors)

DECEMBER 1979

Dec 1979	THULE Average (cts/h)100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h)/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	KULA Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	4226	Data not available at time of publication.	Data not available at time of publication.	Data not available at time of publication.	5818.7	3816.0	3579.5	Data not available at time of publication.	Data not available at time of publication.
2	4195				5749.1	3769.7	3576.4		
3	4244				5811.6	3814.5	3573.5		
4	4241				5807.5	3810.4	3581.4		
5	4286				5862.3	3865.2	3592.0		
6	4315				5912.0	3895.9	3606.3		
7	4343				5974.9	3929.4	3619.2		
8	4349				5981.8	3927.6	3620.6		
9	4358				5987.5	3927.9	3616.1		
10	4370				6012.5	3937.6	3615.8		
11	4379				6032.8	3961.3	3609.1(23)		
12	4384				6015.4	3965.3	3616.8		
13	4401				6026.8	3977.5	3627.4		
14	4409				6028.5	3980.5	3623.7		
15	4371				6024.1	3956.1	3617.7		
16	4341				5970.7	3929.0	3616.0		
17	4322				5945.5	3895.7	3616.0		
18	4339				5954.5	3900.2	3616.5		
19	4333				5959.0	3911.2	3606.8		
20	4299				5931.4	3902.2	3596.5		
21	4305				5918.7	3904.5	3589.8		
22	4311				5919.5	3907.5	3581.6		
23	4321				5927.0	3909.6	3587.3		
24	4324				5939.7	3894.7	3595.5		
25	4311				5929.3	3881.5	3596.2		
26	4345				5965.8	3929.9	3603.0		
27	4332				5977.3	3934.0	3604.7		
28	4293				5959.4	3911.8	3601.0		
29	4266				5974.9	3924.5	3600.8		
30	4246				5965.4	3910.1	3596.1		
31	4263				5929.7	3870.3	3573.3		
MEAN	4317				5942.4	3905.4	3601.8		

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

GEOMAGNETIC ACTIVITY INDICES

DECEMBER 1979

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		2-	1	3-	3-	2+	3-	2+	2	17+	1+	1+	2+	2+	2	3	3-	3-	9	16	14	11	20		0.5
2		3+	3	3-	3	2+	2-	2-	1+	19	3-	2	3-	3	3-	2	2-	2-	11	16	16	22	11		0.6
3		2+	3+	3+	2+	2-	1	1	0+	15+	2-	2+	3-	2+	2	1+	1	1	9	13	15	21	8		0.5
4	D3*	2	3+	4	3	3+	4	3-	2	24+	2-	3-	3	3	3	4+	3-	2	16	27	22	24	26		0.9
5		2	1+	2+	2	2+	2+	1	2-	15	2-	1	2+	2-	2+	2	2-	2+	7	11	13	11	13	C	0.4
6		2+	2	2+	2-	1-	0+	1	1	11+	2+	2-	2+	2-	0+	0	2-	1+	6	7	11	14	5	CC	0.2
7	Q4	1+	1	1-	1	1-	1-	2-	1+	8+	1	1	0+	1-	1-	1-	2-	2-	4	4	7	5	5	CC	0.1
8		1+	3-	2	2	3	2+	3-	2+	18+	1+	2+	2+	3-	3+	3	3+	3-	10	19	26	18	27		0.5
9		2	2	2	2+	2	1+	2-	2-	15	2	1+	2-	2	2+	2	2-	2-	7	10	15	15	11	C	0.3
10	Q0	1	1+	1	1	1+	3-	2-	1-	11-	1+	1+	1	1	2-	3-	2+	1+	5	9	12	7	14	KC	0.2
11	Q9	2+	1+	1-	1-	1-	1-	2+	1+	10	2-	1+	0+	1-	1-	1+	3-	2-	5	7	10	9	8	CK	0.2
12	Q5	1-	1-	0+	1	1	1+	2-	2-	8+	1	1	1-	1+	1+	2	2-	1+	4	8	7	6	10	CC	0.1
13	Q2	0+	1-	1+	1-	1+	1-	1	1	7	1-	1	1	1	1+	1	1	1	4	5	7	7	5	CC	0.1
14	Q6	0+	2-	1	1	1	1+	2-	1+	9+	1	1+	1+	1	1+	2-	2+	2-	4	8	10	8	11	CC	0.2
15		1	3	2-	3-	2	2+	3-	2-	17	1+	3-	2+	3+	2+	3-	3-	3-	9	15	18	17	17		0.5
16		3-	3	2+	2-	2	2	2	3+	19	2+	2+	2+	2	2+	2+	3-	3-	10	24	19	21	23		0.6
17		4-	2+	3	2	3-	3	2+	3-	22-	3-	2+	3-	2+	3	3	3-	3-	13	24	21	22	24		0.7
18		3-	1	1+	2+	2	2-	2-	2-	14+	2+	1+	1+	2+	2+	2-	2-	2-	7	11	15	13	14	C	0.3
19		2-	2	2-	1+	1	1+	2-	2+	13	1+	1+	2-	1+	1	2	2	2+	6	10	13	9	14	CC	0.3
20	Q8	0	1+	1-	1	2	2-	1+	1	9	0+	1+	2-	1+	3-	2	2-	1+	4	6	15	7	15	CC	0.1
21	Q7	0+	0	0+	1-	1-	1+	2+	2	8-	0+	0	0+	1-	1+	2-	3-	2+	4	6	14	7	13	C	0.1
22	D5*	2+	3	2+	4	3	3+	4-	1+	23	2-	2+	2	4	3	3+	3+	2	15	27	25	24	28		0.8
23	Q3	1-	0+	1-	1-	0	1	1	2	6+	1+	1-	1	1-	0+	1+	1+	3-	3	4	11	6	9	C	0.1
24		2+	2-	1+	2+	1	3-	1	1+	14-	3-	2	2-	2	2-	4-	1+	1+	7	13	21	15	19	K	0.3
25	Q1	0	0	0	0	1+	0+	1	1+	4	0	0	0+	0+	2-	1-	2+	2+	2	6	12	6	12	CK	0.0
26		2	1+	1	2-	2	3+	4-	3-	18-	2	1+	2-	2+	2+	4-	3+	3	10	23	22	13	32		0.6
27		1+	3	3	3	3	3+	2-	1	19+	2-	3+	3	3	3+	3+	2-	2-	12	15	31	26	20		0.7
28	D4*	1	3-	2-	4+	4	3+	2-	4	23-	1+	2+	1+	4-	4	4-	2-	4-	16	35	35	26	44		0.9
29	D1	4	5	4	4-	4	4-	5	4+	34-	3+	4-	3	4-	4	4-	5-	4-	32	48	56	46	58		1.3
30	D2	5-	4+	3+	3+	3-	3	3+	3-	27+	4-	3	3-	3+	3+	3+	3+	3	20	34	36	37	32		1.0
31		2+	2+	1+	1	1+	2-	2+	4-	16	3-	3-	2-	1	2-	2+	3	4-	9	15	34	19	30		0.5
																		Mean	9	15.4	18.8	17.3			0.44

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	1+	1+	3-	3-	2+	3	3-	2+	2-	1+	2-	2-	2-	3	3-	3-
2	3	2+	2+	3-	2+	2	2	1+	2+	2-	3-	3	3-	2	1+	2-
3	2-	3-	3-	3-	2-	1+	1	0+	1+	2+	3	2+	2+	1+	1+	1+
4	2-	3	3+	3+	3+	4-	3	2	2	3-	3-	3	3-	5-	2+	2
5	1+	1-	2+	2-	2+	2	1	2-	2-	1	2	2	2+	2	2	3
6	2	2-	2+	2-	0+	0	1	1+	3-	2-	2+	2-	0+	0	2+	1+
7	1-	0+	0	1	0+	1-	1	1	1+	1+	1-	1-	1	1-	2+	2+
8	1-	2+	2	2	3	3	3-	2	2-	2+	3-	3	4-	3	4-	3
9	1+	1	1+	1+	2	2-	1+	1+	2+	1+	2	2+	2+	2+	2-	2
10	1	1	1-	1	2-	3-	2-	1	2-	2-	1	1+	2	3	3-	2-
11	2-	1	0+	0+	0+	1+	3-	1+	2-	2-	1-	1-	1-	2-	3-	2
12	1-	1-	0+	1-	1	1+	1+	1	1+	1+	1	1+	2-	2+	2	2-
13	0+	1-	1-	0+	1+	1	1+	1-	1-	1	1+	1+	1+	1	1	1+
14	1-	1	1	1-	1	2-	2	1+	1+	1+	1+	1	1+	2	3-	2
15	1-	2	2	3+	2	3-	2+	2-	2-	3	2+	3+	2+	3	3-	3
16	2	2	2	2	3-	3-	2	3-	2+	3-	2+	2	2+	2+	3	3-
17	3	2	2+	2	3-	3-	2+	2+	2	2+	3	2+	3+	3+	3-	3
18	2	1-	1	2+	2+	2-	2-	1+	2+	1+	1+	3-	3-	2	2-	2+
19	1	1+	1+	1+	1-	2-	2-	3-	2-	1+	2	1+	1+	2+	2+	2+
20	0	1	1	1+	3-	2-	1+	1+	1-	2	2	1+	3-	2+	2-	2-
21	0	0	0+	1-	1+	2-	2+	2	1-	0	0+	1	1+	2-	3-	2+
22	2-	2	2	4-	3	3+	4	2-	2-	3-	2+	4+	3	3+	3	2+
23	1-	0+	1-	0+	0	1+	1+	2-	2-	1	1	1	1-	1+	1+	3
24	2+	2-	1+	2+	1+	4	1+	1	3	2	2-	2-	2-	3+	2-	1+
25	0	0	0	0	1+	0	2-	2-	0+	0	1	1-	2-	1	2+	3-
26	2	1	1	2-	2+	4-	3+	3-	2+	1+	2+	2+	3-	4-	4-	3
27	1	3	3	3-	3	4-	2	1+	2	4	3	3+	3+	3	1+	2-
28	1-	2-	1+	4	4	4-	2-	4-	2	3-	2-	4-	4-	4-	2-	4-
29	3+	4-	3-	3+	4-	4-	5-	4	3+	4-	3+	4	4	4-	5-	4-
30	4-	3+	3-	3+	3	3	3+	3-	4-	3-	3-	3+	3+	4-	4-	3
31	2-	2	1+	1	1+	2	3-	3+	3	3	2	1+	2+	2+	3+	4

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 2 nT) are 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 asterisk means "not really disturbed" (Ap<20).

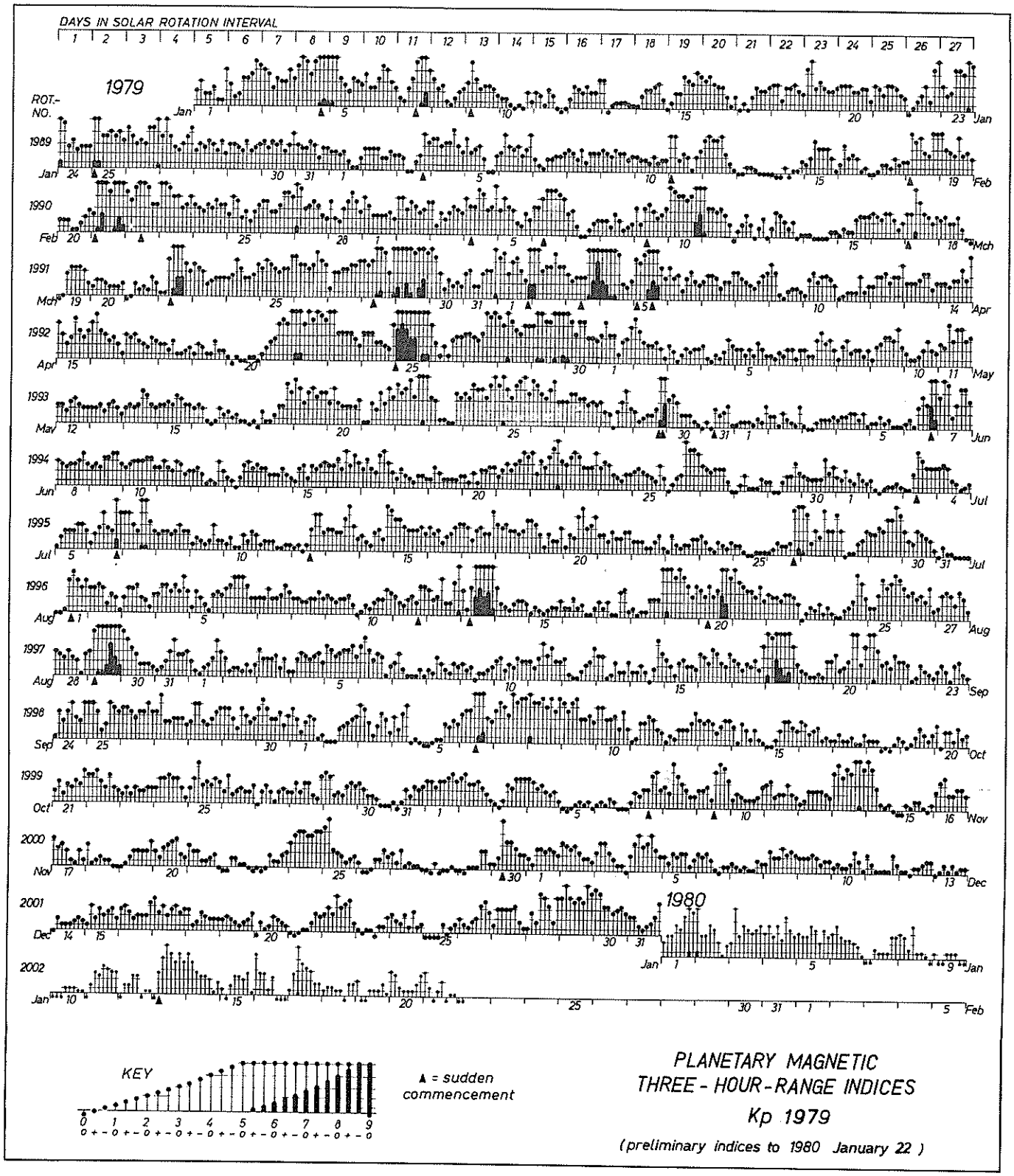
Geomagnetic three-hourly indices Kn, Ks and Km as in *IAGA-Bulletin No. 32* and indices aa ("antipodal") as in *IAGA-Bulletin No. 33* are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 1200 UT.

DAILY AVERAGE INDICES Ap

1979

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	10	6	12	33	18	5	7	16	10	10	16	9
2	19	10	20	36	14	6	4	11	5	7	12	11
3	19	9	13	54	6	4	14	10	9	13	10	9
4	45	19	27	47	7	6	9	16	10	9	10	16
5	23	9	13	52	7	4	9	8	17	6	2	7
6	18	16	30	12	6	34	22	18	15	36	3	6
7	32	6	7	12	11	26	27	10	6	32	12	4
8	8	9	7	12	8	14	9	7	6	37	14	10
9	15	9	15	9	14	15	6	6	5	23	19	7
10	4	6	54	12	7	14	6	7	9	17	6	5
11	4	12	18	6	19	10	4	10	14	10	10	5
12	10	17	6	15	9	7	11	18	8	8	7	4
13	5	3	7	11	8	8	16	76	8	12	35	4
14	8	2	3	15	11	7	14	7	10	6	13	4
15	15	11	8	18	11	10	15	4	8	8	3	9
16	12	7	11	16	5	16	11	5	14	8	12	10
17	7	5	21	11	3	14	14	8	11	4	8	13
18	11	22	7	6	11	6	15	11	64	3	4	7
19	19	15	11	6	24	6	11	35	6	5	7	6
20	12	6	6	2	13	8	18	42	22	6	10	4
21	11	59	4	21	13	15	9	22	23	10	6	4
22	14	33	45	45	36	24	6	12	6	14	2	15
23	27	31	12	23	11	19	6	5	7	6	4	3
24	23	17	15	14	27	10	5	13	15	12	24	7
25	34	14	21	126	34	9	3	22	19	14	15	2
26	28	22	26	12	25	20	17	15	19	8	4	10
27	23	24	18	27	17	10	23	12	15	6	4	12
28	13	17	39	31	11	4	10	10	16	9	2	16
29	13		68	47	30	7	24	77	15	11	4	32
30	16		16	26	10	10	9	15	18	5	15	20
31	13		19		6		3	12		5		9
MEAN	16	15	19	25	14	12	12	18	14	12	10	9

GEOMAGNETIC ACTIVITY INDICES

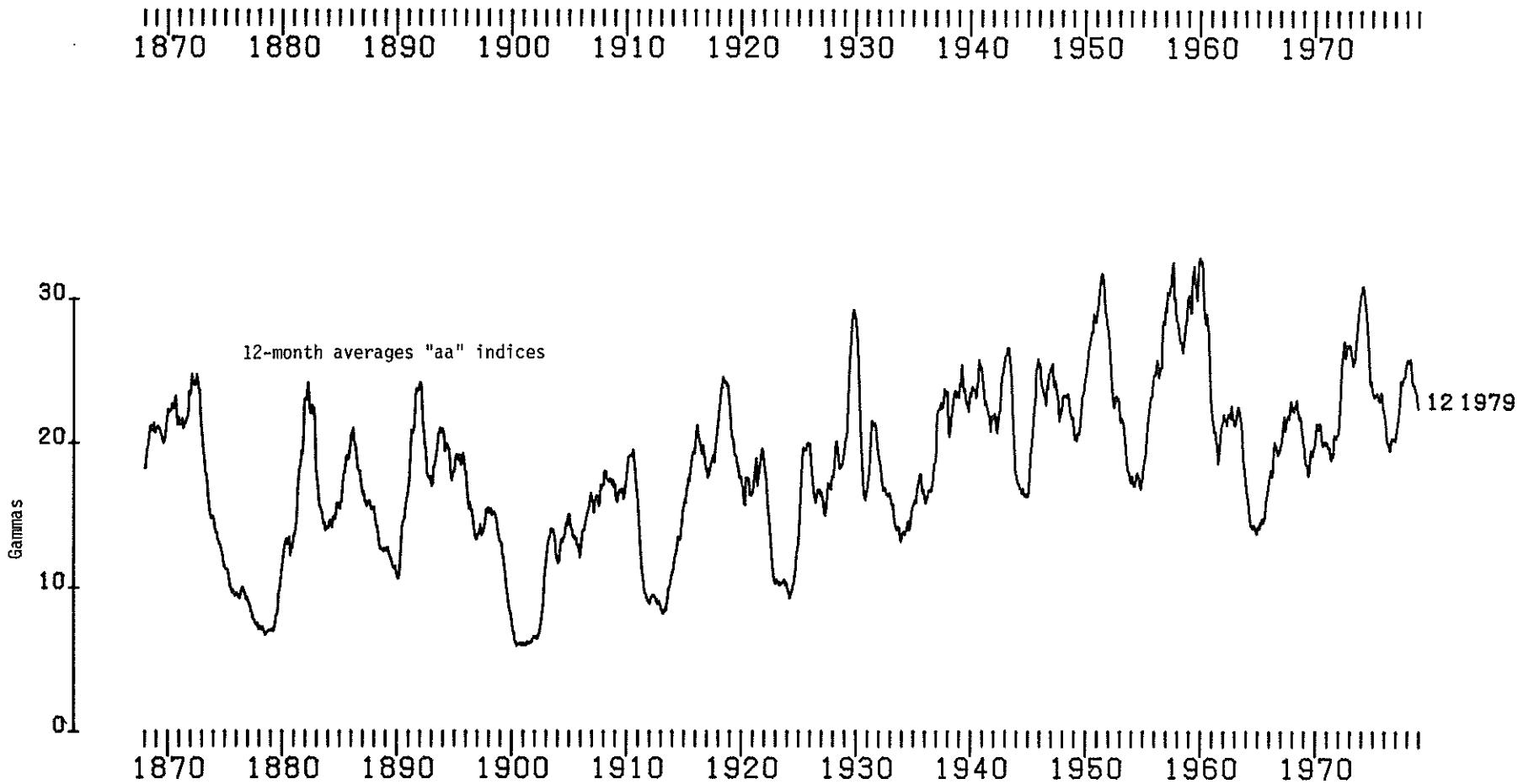


R9	Rot.-No.	1st day	C9
222 .12213	19	D29	733 41 343 21 .43 153 13 23 212 2..446
112212442	77	J25	2..446 525 3.2 455 634 233 212 41 25432
11.112111		F21	25432 .23 ..... 365 553 311 231 33433
111111112	1964	M20	33433 424 4.. 13 637 765 442 33 422 763
321112223	65	A16	422 763 13 5.. 52 474 533 ..255 24553
221112333	66	M13	24553 12.212 ... 2.1 224 112 111 2.. 12
221235533	67	J9	12..12 .22323 133 211 13 243 221 644442
221..1232	68	J6	644442 .253 64 256 33 ..... 7 42 ..12654
222333323	69	A2	..12654 353 633 332 636 211 36342 ...12
322244443	1970	A29	...12 ... 1235 1 632 221 77775 3 3552..
453443444	71	S25	3552.. 12222 ... 36445 2356 1 5...7
333422224	72	D22	51..77 22 111 .22 ... 21 567 642 ... ...
421124454	73	N18	... ... .45 31 31 7 245 ..... 6542 123 ...
332345752	1974	D15	123 ... ... 13 132 111 237 663 555 2.2..4
232235778	19	J11	2.2..4 23 ... 1331 2 665 444 344 134 213
776445666		F7	134 213 237 323 333 51 367 664. 225 43
665556544	78	M6	225 43 .33 466 542 244 .77 44 423 477 52
567767776	1978	A2	477 52 .. 676 575 2 .56 522 574 544 .77878
566556655	79	A29	.77878 2.2 473 653 21 21 266 563 ... 253
676434577	80	M26	... 253 276 662 32. 642 ... 23 436 455 674
887446776	81	J22	455 674 366 13 773 442 21 57 .15 3 22
532334556	82	J19	3 22 21 ..... 465 42 13 53 ..253.
433447887	83	A15	..253. ....2. 686 675 532 24 563 33 ...
678888776	84	S11	33 ... 2.. 123 336 677 834 324 2.. 134 42
788887777	85	D8	134 142 ... 165 232 12 554 465 333 ... 242
777565577	86	N4	... 242 437 532 ... 354 635 764 ... 3.133
778888656	1987	D1	3.133 ..... 266 427 663 52 524 456 525
888888888	19	D28	456 525 575 562 4.. 212 432 353 346 566 534
888888888		J24	566 534 43 225 24 22 34. .3 154 .76644
876888888	79	F20	.76644 564 353 646 .. 475 2.2 35 31 734
887787567	1991	M19	31 734 565 674 566 777 333 23 434 543 ...
765677788	92	A15	543 ... 575 483 667 654 ... 324 5 223 3..
877778888	93	M12	223 .. 353 363 666 436 3 ... ... .66 444 32
877778888	94	J8	444 32 224 4 .. 246 522 53. 22 .42 256 ..
887788888	95	J5	256 .. .34 443 443 52 ... 453 62. 433 425
777678888	96	A1	433 425 32 225 72 .23 675 3 3 543 374 32
888888888	97	A28	374 32 234 4 .. 24 223 243 7.5 5 .. 455 444
888888888	98	S24	455 444 53 32 666 542 23 22 ... 34 342
888888888	99	D21	34 342 23 .. 4 332 ..3 45 326 4.3 2 .. 2..
888778888	2000	N17	2 .. 2.. .54 ... .42 324 2.. 2 .. ... 123 3 ..
888878888	01	D14	123 3 .. ..4 ... 334 652 635 432 ... .3 52
888777888	19	J10	.3 52 23. ... . 666 2 32 ... 6454..
	80	F6	6454 ....566 2 preliminary
		M4	

Symbol		1	2	3	4	5	6	7	8	9
$\overline{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...
R9,C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

For explanation and previous years see J. Bartels, Abhandlungen der Akademie der Wissenschaften zu Göttingen, Beiträge zum I.G.J., Heft 3 (1958) (may be requested from Institut für Geophysik, Postfach 876, 34 Göttingen, Germany).

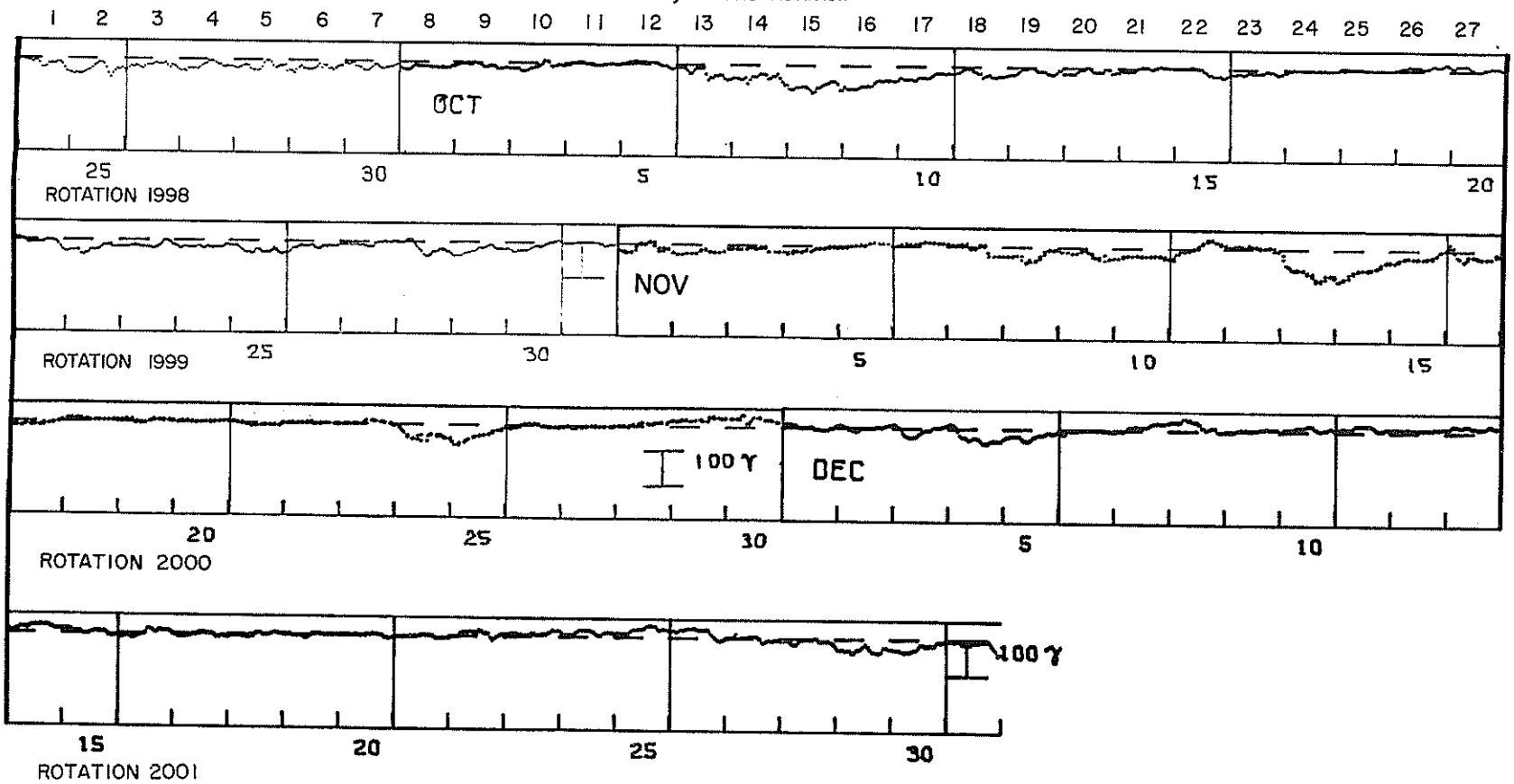


The graph above is computed from a series of points based on yearly averages of "aa" indices. The ordinate of each point (one point per month) is a twelve-month average such that the points plotted at the year intervals marked are in each case averages for January to December of that year. The graph begins with the average for 1868 and ends with the average for 1979. This graph was provided by Dr. M. Menvielle of the Institut de Physique du Globe, Paris, France, who also provides the daily values of "aa" on a monthly basis.

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)

NASA/GODDARD SPACE FLIGHT CENTER

DECEMBER 1979

(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	6	9	8	6	3	2	-4	-6	-3	-2	-1	0	-3	-8	-10	-10	-11	-9	-10	-8	-3	-3	2	6
2	7	4	0	-2	-7	-10	-12	-13	-10	-3	-2	-3	-1	-4	-2	-1	1	0	-2	3	5	7	7	9
3	8	1	-5	-14	-22	-27	-29	-30	-26	-24	-18	-13	-10	-7	-9	-6	-2	1	0	0	3	5	7	10
4	12	7	1	-9	-20	-27	-27	-31	-35	-29	-26	-27	-31	-37	-41	-43	-44	-36	-34	-34	-37	-35	-33	-27
5	-23	-21	-20	-19	-20	-20	-23	-31	-35	-36	-33	-28	-22	-20	-16	-15	-17	-13	-11	-12	-14	-13	-9	-9
6	-11	-16	-12	-5	-6	-6	-5	-5	-2	-3	-2	-2	-1	-1	-2	-3	-3	-2	-4	-5	-5	-8	-8	-6
7	-4	-4	-4	-4	-2	5	7	8	9	8	6	6	8	8	10	13	15	17	17	16	16	16	18	20
8	22	22	21	20	22	30	28	25	26	21	20	18	14	7	3	-1	2	6	5	6	-5	-6	-5	-6
9	-5	-7	-4	-3	-1	2	3	1	1	-1	1	2	-1	1	3	4	4	6	4	2	3	4	2	-3
10	0	4	5	4	3	7	10	9	11	11	12	14	13	11	5	2	-2	2	4	3	5	8	2	2
11	5	5	8	8	4	4	6	12	16	15	13	14	14	15	15	11	7	2	-1	3	2	7	7	6
12	7	8	6	6	5	7	7	4	3	3	5	5	4	5	4	3	2	5	8	8	7	9	10	9
13	10	12	16	15	13	11	12	16	17	13	10	8	8	7	7	9	8	13	17	14	11	9	12	11
14	4	1	4	7	10	13	13	12	12	14	18	18	19	19	20	18	19	17	12	11	7	8	7	7
15	7	8	6	4	0	1	4	0	-6	-5	-7	-2	1	3	3	3	2	1	-3	-8	-11	-10	-8	-8
16	-14	-14	-9	-7	-12	-15	-16	-10	-7	-5	-3	0	9	11	6	1	3	8	4	4	5	5	1	-4
17	-8	-11	-11	-12	-10	-8	-7	-5	-3	-2	1	3	3	-1	-2	-3	-2	-7	-12	-11	-7	-8	-11	-9
18	-6	-4	-6	-7	-8	-9	-8	-12	-10	-8	-6	2	2	0	-5	-5	-4	-2	1	4	4	-1	-2	-2
19	-2	-1	-3	-6	-7	-7	-5	-8	-12	-11	-8	-2	1	2	2	0	-2	-3	-2	0	0	-2	-3	-1
20	1	1	-1	-2	-3	-2	1	-2	-3	-1	0	2	1	0	3	1	-1	-1	-3	-9	-11	-11	-11	-8
21	-6	-5	-6	-7	-5	-3	-3	-3	-3	-3	-2	1	1	-1	-2	-2	-6	-10	-11	-11	-8	-8	-9	-7
22	-4	-2	-2	-1	7	10	11	11	12	11	9	5	14	9	4	4	3	-7	-14	-6	0	2	5	6
23	5	5	7	7	5	3	0	-2	-1	2	3	7	5	1	1	2	3	4	8	11	14	13	13	11
24	6	1	3	3	3	5	10	13	16	16	15	14	15	11	8	3	-1	1	7	10	11	9	7	7
25	10	10	8	8	8	10	14	18	19	20	21	20	23	28	30	31	28	25	18	16	20	20	16	13
26	15	14	10	16	20	19	22	24	24	24	24	19	17	19	20	22	15	7	1	-6	-11	-10	-9	-5
27	-1	0	0	2	9	-2	-1	0	-1	2	3	4	1	-1	-7	-14	-14	-9	-7	-8	-8	-6	-9	-11
28	-10	-7	-8	-13	-19	-20	-17	-11	-5	-5	-4	-5	-7	-7	-1	-4	-12	-11	-9	-11	-10	-14	-18	-24
29	-32	-32	-33	-37	-36	-36	-40	-41	-32	-31	-28	-22	-16	-24	-32	-38	-40	-41	-42	-35	-26	-26	-30	-31
30	-33	-34	-32	-35	-38	-38	-37	-38	-33	-30	-30	-23	-15	-13	-22	-18	-18	-19	-18	-11	-11	-9	-9	-7
31	-5	-6	-8	-8	-4	-8	-15	-15	-17	-17	-14	-9	-8	-11	-8	-5	-6	-7	-9	-17	-25	-33	-43	-38

PRINCIPAL MAGNETIC STORMS

DECEMBER 1979

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
HUA	00:6S	01	1002	..	..	.	..	01(5,6)	5	13	273	60	01	22
HUA	00.6S	07	1349	SC*	1	68	3	07(6)	6	9	370	29	07	21
HUA	00.6S	09	1203	SC	1	31	3	09(6)	7	12	377	49	09	23
HUA	00.6S	11	0225	SC	1	33	4	11(6)	5	10	322	59	11	24
WIT	54.2N	13	01--	..	..	..	..	13(7)	6	37	175	95	14	04
HUA	00.6S	13	0337	.	..	..	..	13(6)	6	12	286	58	14	04
HUA	00.6S	24	1110	..	..	..	..	24(5,6 7)	5	10	282	80	25	06
HUA	00.6S	30	0738	SC	1	53	8	30(5,6)	5	11	241	52	30	23
COL	64.6N	04	04--	..	..	..	.	04(3,6)	6	167	830	460	04	19
JAI	17.3N	04	0400	..	.	..	..		-	3	107	18	05	02
SHL	14.6N	04	0400	..	.	..	.		-	4	140	19	05	02
UJJ	13.5N	04	0400	..	..	..	..		-	3	117	14	05	02
ABG	09.5N	04	0400	..	..	..	..	04(2,3,5,6) 05(1)	4	4	118	19	05	02
HYB	07.6N	04	0000	..	..	..	.	04(6)	4	4	138	11	04	22
ANN	01.5N	04	0400	..	..	.	.		-	3	164	46	05	02
TRD	01 1S	04	0400	.	..	..	.		-	3	201	79	05	02
HYB	07.6N	07	1800	..	..	..	..	08(3,5,6,7)	3	3	111	10	09	01
KGL	56.5S	07	18--	..	..	..	..	08(5)	4	--	--	--	10	20
HUA	00.6S	08	1108	SC	1	22	3	08(5,7)	5	8	216	54	08	21
HUA	00.6S	17	0340	..	..	.	..	17(7)	6	9	166	47	17	23
HYB	07.6N	21	1800	..	..	..	..	22(4,7)	4	4	138	20	23	09
JAI	17.3N	22	0500	..	..	.	..		-	4	103	11	22	23
SHL	14.6N	22	0500	..	.	..	..		-	3	105	24	22	23
UJJ	13.5N	22	0500	..	.	..	..		-	3	115	13	22	23
ABG	09.5N	22	0500	..	..	..	..	22(2,4,6,7)	4	4	123	25	22	23
ANN	01.5N	22	0500	.	..	..	.		-	3	162	35	22	23
HUA	00.6S	22	0400	..	..	.	..	22(6,7)	6	12	244	46	22	24
HYB	07.6N	25	1300	..	.	..	..	27(2)	5	3	129	28	27	18
JAI	17.3N	27	0400	..	..	..	..		-	4	131	22	31	02
SHL	14.6N	27	0400	..	.	..	.		-	5	151	47	31	02
UJJ	13.5N	27	0400	..	..	..	..		-	5	144	23	31	02
ABG	09.5N	27	0400	..	..	..	..	29(7)	5	5	145	48	31	02
ANN	01.5N	27	0400	..	..	..	.						31	02
COL	64.6N	28	10--	.	..	..	.	29(6)	7	203	1560	780	30	23
NEW	55.1N	28	08--	..	..	.	..	29(2)	5	31	106	116	31	09
WIT	54.2N	28	21--	..	..	..	..	29(7)	6	24	135	65	30	06
FRD	49.6N	28	10--	..	..	..	..	28(5)	5	17	110	37	31	12
HYB	07.6N	28	0200	..	..	.	..	29(7)	6	6	104	37	30	03
KGL	56.5S	28	20--	.	..	..	..	29(7) 30(7)	5	--	--	--	30	21
HYB	07.6N	30	0700	..	..	..	.	31(2)	4	3	99	29	31	09

Reports were received from the following observatories:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HUANCAYO HYDERABAD
JAIPUR KERGUELEN NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA TOOLANGI TRIVANDRUM UJJAIN WITTEVEEN

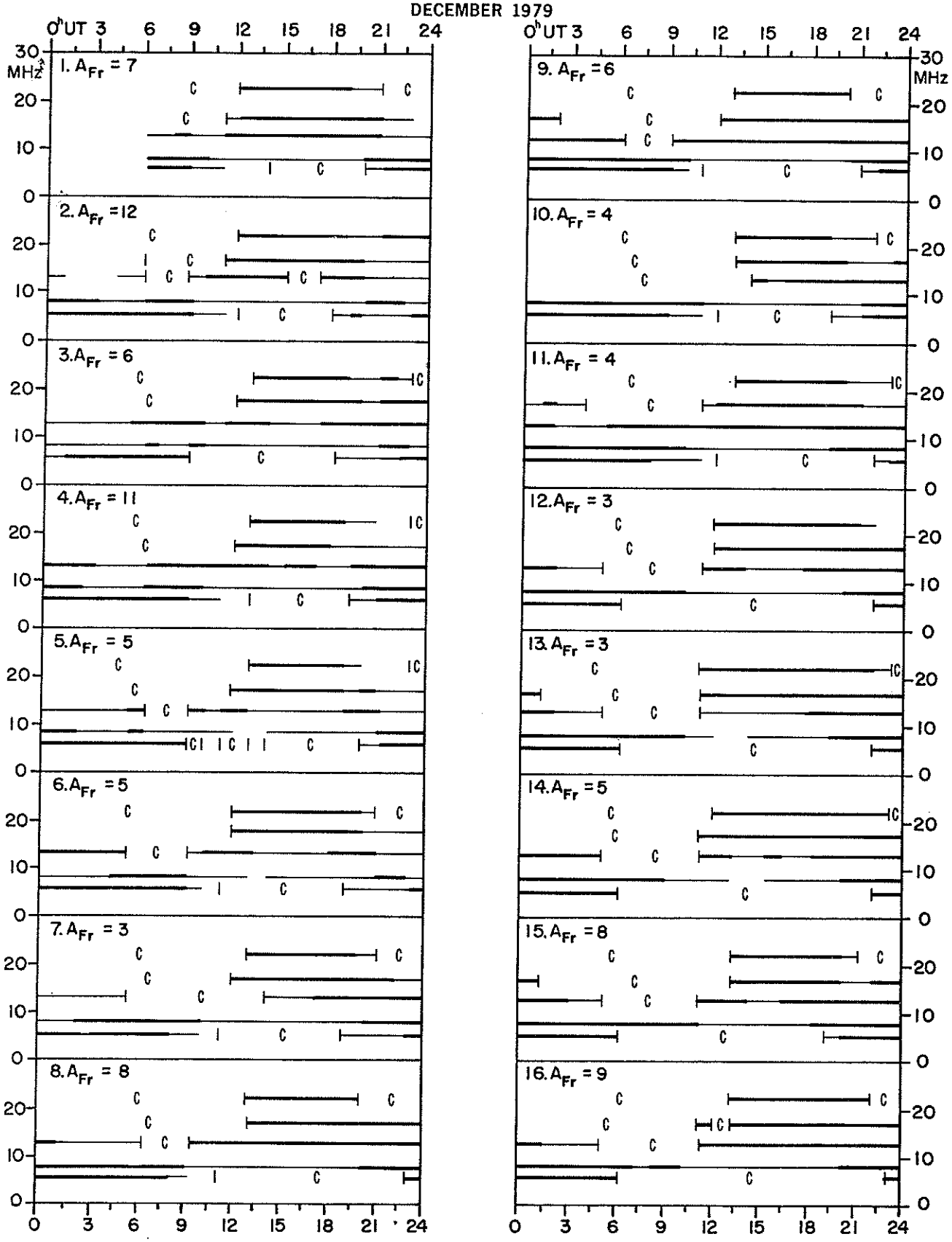
RADIO PROPAGATION QUALITY INDICES

DECEMBER 1979

DAY	TOKYO	NEW YORK	TEHERAN	MOSCOW	CANBERRA	BRACKNELL
1	5.6	6.9	7.8	11.6	3.4	12.7
2	5.8	6.9	7.1	11.7	2.8	12.7
3	4.7	6.6	8.8	10.5	2.7	11.2
4	5.0	6.8	7.5	11.6	3.7	12.1
5	5.8	5.8	6.5	11.1	3.3	12.3
6	5.5	5.7	6.6	10.5	2.8	12.2
7	5.4	6.2	7.0	11.0	3.2	12.4
8	5.9	7.1	7.3	10.9	4.0	12.5
9	5.2	7.0	7.4	11.2	2.8	12.6
10	5.3	6.4	7.9	10.9	2.8	12.7
11	5.8	7.3	9.2	11.0	3.1	12.3
12	6.0	6.9	8.9	10.7	2.7	12.3
13	5.7	7.2	8.5	10.9	2.8	12.2
14	4.5	6.6	8.0	10.9	3.5	12.2
15	6.0	6.8	9.4	11.4	4.0	12.6
16	5.8	7.6	9.4	11.4	3.6	12.4
17	6.5	6.3	11.9	11.2	2.8	12.6
18	5.1	6.4	8.1	10.8	2.3	12.6
19	4.5	6.1	8.2	10.5	2.0	12.6
20	5.3	6.1	8.7	11.2	1.8	12.4
21	5.6	6.1	6.4	11.1	2.2	12.3
22	5.1	6.3	8.0	11.2	3.0	12.3
23	5.3	6.3	6.9	10.4	2.5	12.2
24	4.7	6.7	7.2	10.9	2.2	12.1
25	4.2	6.6	6.0	10.6	2.0	12.0
26	5.1	6.4	7.6	11.2	3.1	12.2
27	4.5	5.8	7.1	11.1	2.2	11.7
28	5.6	5.7	6.3	10.6	2.1	12.1
29	5.3	5.7	6.3	10.5	2.0	11.8
30	4.1	5.4	6.6	10.1	1.7	11.3
31	5.4	5.7	7.0	10.8	1.9	12.0
MEAN	5.3	6.4	7.7	11.0	2.7	12.2

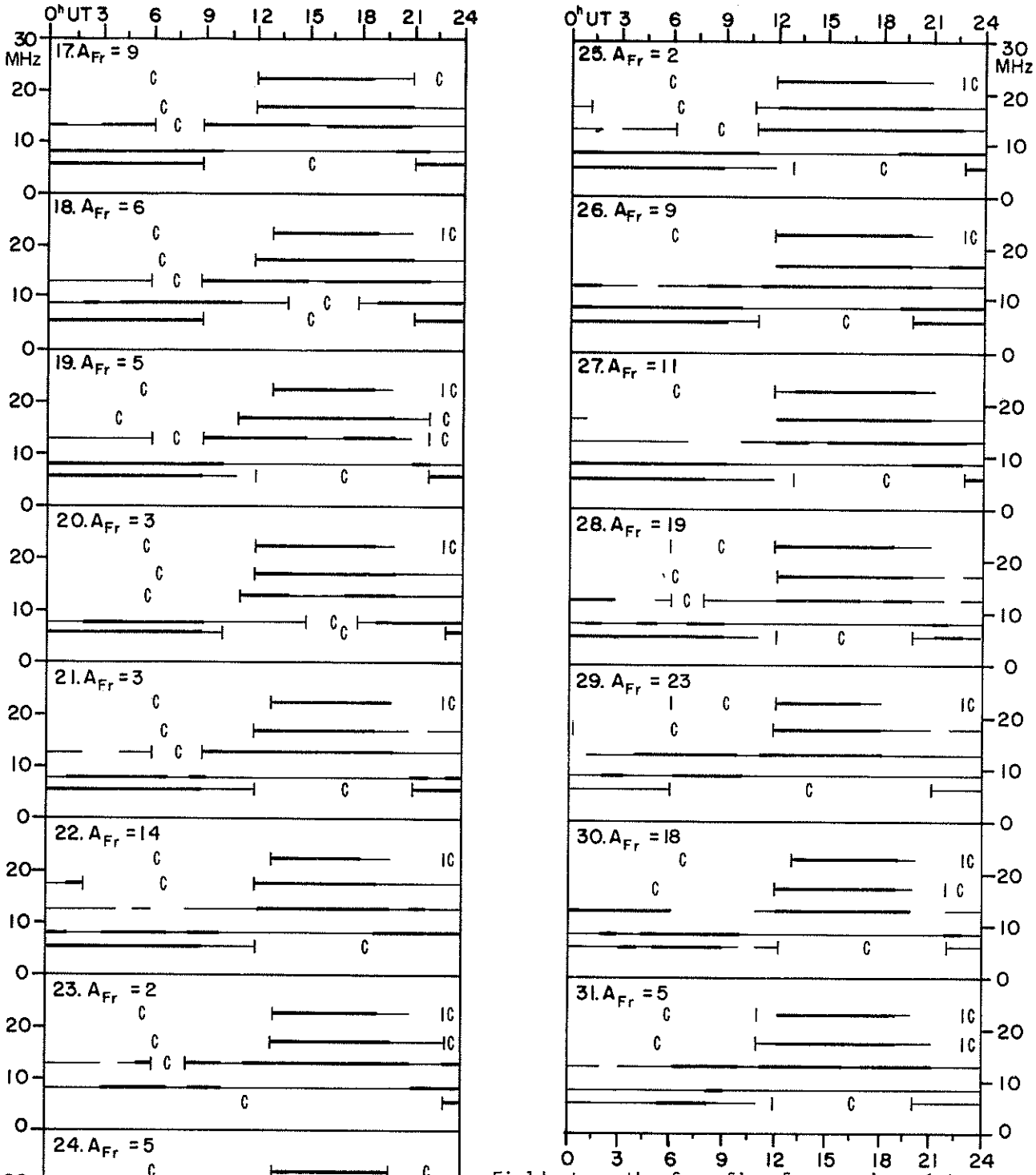
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1979



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1979



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow - New York 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

SGD 426 Part I (Prompt)

LATE DATA

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SOLAR WIND

Interplanetary Scintillations

DECEMBER 1979

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
791201	335	2	362	38	356	78	2	3C459	103	5	1.11	-14	-0.51	1688.85
	335	10	395	5	389	40	4	3C161	140	-7	1.24	5	1.51	1688.80
	335	16	440	15	430	10	4	3C273	64	0	0.90	27	1.61	1688.83
	335	17	460	14	458	6	3	3C298	43	16	0.68	46	2.17	1688.82
791202	336	2	308	3	326	5	2	3C459	102	5	1.10	-14	-0.50	1688.86
	336	5	363	5	450	0	2	3C48	140	7	1.24	-7	0.71	1688.85
	336	16	390	19	394	18	3	3C273	65	0	0.91	25	1.45	1688.85
	336	17	372	6	346	2	4	3C298	44	15	0.69	45	1.82	1688.83
791203	337	2	343	17	338	28	2	3C459	101	5	1.10	-14	-0.57	1689.92
	337	5	310	28	610	177	2	3C48	139	7	1.24	-6	0.97	1688.85
	337	16	381	4	350	17	3	3C273	66	0	0.91	25	1.41	1688.89
	337	17	376	4	366	3	3	3C298	45	15	0.71	43	1.80	1688.87
791204	338	4	401	11	385	114	2	3C48	138	7	1.24	-7	0.52	1688.94
	338	16	354	4	354	2	3	3C273	67	0	0.92	25	1.42	1688.91
	338	17	319	6	306	3	3	3C298	46	14	0.72	42	1.52	1688.88
791205	339	4	311	61	360	27	2	3C48	137	6	1.24	-7	0.84	1688.92
	339	15	331	4	307	9	3	3C273	67	0	0.92	23	1.28	1688.93
	339	17	356	5	345	6	3	3C298	47	14	0.73	41	1.67	1688.94
791206	340	2	471	126	411	99	2	3C459	98	4	1.08	-16	-0.92	1689.09
	340	4	360	64	458	48	2	3C48	136	6	1.23	-7	0.67	1688.99
	340	15	330	4	328	10	3	3C273	69	-1	0.93	22	1.26	1688.97
	340	17	352	5	359	3	3	3C298	48	13	0.74	42	1.77	1688.97
791207	341	2	217	5	214	4	2	3C459	97	4	1.08	-14	-0.46	1688.95
	341	5	434	19	551	119	2	3C48	135	6	1.23	-7	0.41	1689.07
	341	15	332	4	313	13	3	3C273	70	-1	0.94	21	1.22	1689.01
	341	17	288	4	285	2	3	3C298	49	12	0.75	40	1.42	1688.98
791210	344	2	310	60	285	67	2	3C459	94	4	1.06	-16	-0.84	1689.16
	344	5	313	30	247	51	2	3C48	133	6	1.22	-7	0.73	1689.11
	344	15	404	15	377	31	2	3C273	73	-1	0.96	17	1.08	1689.16
791211	345	4	338	4	395	3	2	3C48	132	6	1.22	-8	0.56	1689.17
791212	346	2	245	3	526	441	2	3C459	92	4	1.05	-16	-0.84	1689.18
	346	15	416	29	430	24	3	3C273	75	-1	0.97	18	1.21	1689.24
791213	347	2	347	35	310	10	2	3C459	90	4	1.04	-15	-0.96	1689.30
	347	13	205	33	136	47	2	3C237	110	-3	1.14	15	2.37	1689.06
	347	15	383	12	393	16	3	3C273	76	-1	0.97	18	1.21	1689.26
791214	348	4	289	40	271	42	2	3C48	129	6	1.21	-6	0.84	1689.23
	348	15	374	8	344	7	3	3C273	77	-1	0.98	17	1.17	1689.29
	348	16	320	15	323	13	3	3C298	55	9	0.82	35	1.54	1689.25
791215	349	4	375	7	317	35	2	3C48	128	6	1.21	-8	0.42	1689.34
	349	15	397	2	401	16	3	3C273	78	-2	0.98	18	1.23	1689.34
	349	16	445	3	352	23	3	3C298	56	8	0.83	34	1.81	1689.34
791216	350	2	538	45	472	235	2	3C459	87	3	1.03	-15	-1.11	1689.48
	350	15	414	59	405	89	3	3C273	79	-2	0.99	18	1.27	1689.38
	350	17	363	1	364	0	3	3C298	57	8	0.84	32	1.55	1689.35
791217	351	1	279	8	339	41	2	3C459	87	3	1.03	-16	-1.06	1689.40
	351	4	407	0	413	5	3	3C48	127	5	1.20	-8	0.28	1689.43
	351	15	427	37	378	63	3	3C273	80	-2	0.99	17	1.25	1689.42
	351	16	439	54	438	77	3	3C298	58	7	0.85	31	1.68	1689.41
791218	352	4	239	36	304	32	2	3C48	126	5	1.20	-7	1.01	1689.32
	352	15	381	42	391	39	3	3C273	81	-2	1.00	17	1.26	1689.44
	352	16	415	25	414	27	3	3C298	59	7	0.86	31	1.66	1689.44
791219	353	15	395	15	444	10	4	3C273	82	-2	1.00	17	1.28	1689.48
	353	16	367	12	385	2	4	3C298	60	6	0.87	30	1.53	1689.46
791220	354	14	344	6	316	30	3	3C273	83	-2	1.01	18	1.34	1689.49
	354	16	397	34	405	31	3	3C298	61	6	0.87	29	1.61	1689.51
791221	355	14	454	74	357	44	2	3C273	84	-2	1.01	18	1.36	1689.57
	355	16	451	40	517	24	3	3C298	62	6	0.88	28	1.64	1689.57
791222	356	1	355	3	348	16	3	3C459	81	3	1.00	-15	-1.22	1689.64
	356	3	278	44	450	102	2	3C48	122	5	1.19	-10	0.43	1689.53
	356	14	386	4	366	9	4	3C273	85	-2	1.02	18	1.40	1689.58
	356	16	350	18	341	5	4	3C298	62	5	0.88	28	1.43	1689.56
791223	357	2	339	90	409	335	2	3C459	80	3	0.99	-16	-1.32	1689.67

SOLAR WIND

Interplanetary Scintillations

DECEMBER 1979

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	357	3	381	5	390	27	3	3C48	121	5	1.18	-10	0.12	1689.65
	357	14	337	9	327	6	4	3C273	86	-3	1.02	18	1.45	1689.59
	357	16	295	3	324	15	4	3C298	63	5	0.89	26	1.27	1689.57
791225	359	1	410	4	391	8	3	3C459	78	2	0.98	-16	-1.35	1689.78
	359	3	374	51	308	6	2	3C48	119	5	1.18	-11	0.03	1689.72
	359	12	373	95	429	44	2	3C237	122	-5	1.19	12	1.83	1689.66
	359	14	307	4	309	7	3	3C273	88	-3	1.03	17	1.45	1689.64
	359	16	323	6	315	4	4	3C298	65	4	0.91	25	1.29	1689.66
791226	360	1	318	19	373	38	3	3C459	77	2	0.98	-16	-1.38	1689.77
	360	3	383	11	412	10	3	3C48	118	4	1.17	-12	-0.08	1689.76
	360	12	507	126	504	165	2	3C237	123	-5	1.19	13	1.64	1689.76
	360	14	345	4	371	15	4	3C273	89	-3	1.04	18	1.51	1689.70
	360	16	328	8	379	9	4	3C298	66	4	0.91	24	1.30	1689.70
791227	361	1	444	4	426	7	3	3C459	76	2	0.97	-16	-1.38	1689.87
	361	3	350	14	399	11	3	3C48	117	4	1.17	-10	0.07	1689.78
	361	14	361	4	481	14	4	3C273	90	-3	1.04	18	1.52	1689.75
	361	16	374	4	396	11	4	3C298	67	3	0.92	23	1.32	1689.77
791228	362	1	349	62	356	22	2	3C459	75	2	0.97	-16	-1.46	1689.87
	362	3	252	6	373	14	3	3C48	116	4	1.16	-11	0.35	1689.73
	362	12	316	65	326	89	2	3C237	125	-5	1.20	13	2.07	1689.73
	362	14	354	20	444	28	3	3C273	91	-3	1.05	18	1.57	1689.78
	362	16	392	5	397	8	4	3C298	68	3	0.93	21	1.24	1689.81
791229	363	0	351	16	319	9	2	3C459	74	2	0.96	-17	-1.51	1689.90
	363	3	275	10	366	38	3	3C48	116	4	1.16	-11	0.21	1689.79
	363	14	489	22	486	15	3	3C273	92	-3	1.05	17	1.43	1689.87
	363	16	439	6	474	11	4	3C298	69	2	0.93	20	1.22	1689.87
791230	364	1	369	5	389	18	3	3C459	73	2	0.96	-16	-1.48	1689.95
791231	365	1	310	20	332	9	3	3C459	72	2	0.95	-17	-1.60	1689.95
	365	3	366	3	389	12	3	3C48	114	4	1.16	-12	-0.15	1689.94
	365	12	450	90	513	224	2	3C237	128	-5	1.21	12	1.70	1689.92
	365	14	310	31	394	9	3	3C273	94	-3	1.06	16	1.58	1689.86

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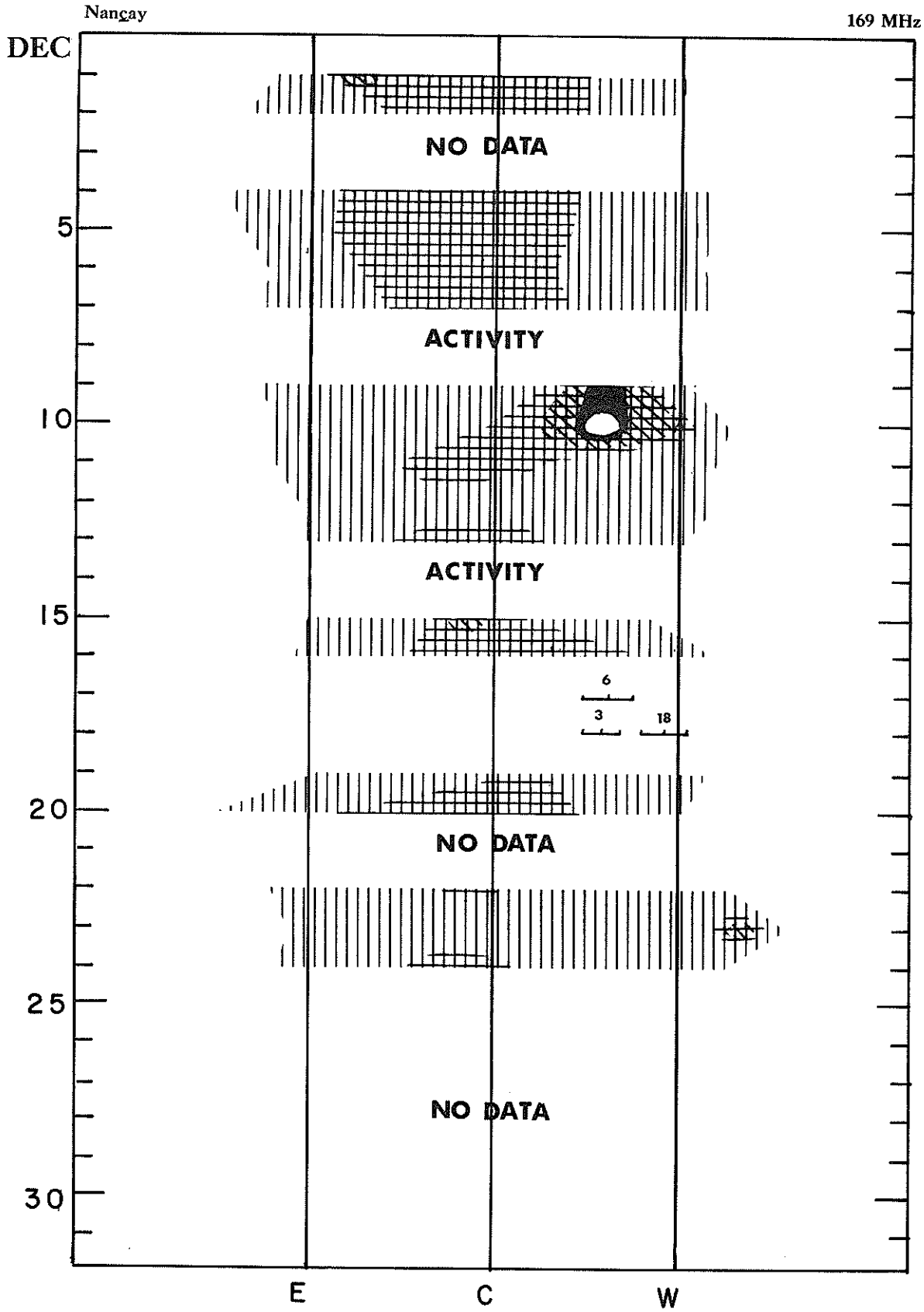
SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

DECEMBER 1979



SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

OCTOBER 1979

DAY	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	1313	2250	HARV				1409	1410	1				IIIG
			HARV				1559	1600	1				IIIG
			HARV				1643		1				IIIG
			HARV				1758	1801	2	1758	1801	1	IIIG
			HARV				1821		1				IW
			HARV				1830		1				IIIGW
			HARV				2032	2033	2				IIIG
02	1313	2245	HARV				1541		1				IIIB
			HARV				1659	2206	1				INW
			HARV				1717		1				IIIG
			HARV				1826	1830	2				IIIGG
			HARV				2113		1				IIIBW
			HARV				2150	2152	2				IIIG
03	1313	2257	HARV				1419		2				IIIG
			HARV				1524		2				IIIG
			HARV				2256		2				IIIG
04	1313	2245	HARV				1550		2				IIIG,U
			HARV				1553	1607	3			II	
			HARV				1639	1653	3	1646	1649	2	IIIGG
			HARV				1847		2				U
			HARV				1906		1				IIIGW
			HARV				2026		2	2026		1	IIIG
05	1313	2245	HARV				1339		1				IIIB
			HARV				1453	1454	1				IIIGW
			HARV				1503		1				IIIBW
06	1313	2245	HARV				1316	1410	1				I
			HARV				2231		1				IIIG
07	1313	2145	HARV				1323		1				IIIGW
			HARV				1757		2	1757		2	IIIG
			HARV				1819		2	1819		2	IIIG
			HARV				1955	1958	2	1955	1958	2	IIIGG
			HARV				2002	2012	1	2002	2012	1	IIINW
			HARV				2028	2029	2	2028	2029	2	IIIG,U
			HARV				2042		1				IIIBW
			HARV				2123	2125	3				IIIGG
			HARV				2131	2138	2				IIIG
			HARV				2144		2	2144		2	IIIG
			HARV				2219	2234	3				IIIGG
08	1313	2240	HARV				1327		1				IIIG
			HARV				1544		1				IIIG
			HARV				1728	2144	2	1728	2144	1	IIIN
			HARV				1903	2240	2				IC
09	1313	2245	HARV				1328	1500	1				IN
			HARV				1407	1411	2				IIIGG
			HARV				1500	1800	2				IC
			HARV				1607	1608	2	1607	1608	1	IIIG
			HARV				1645		2				IIIG
			HARV				1846	1848	2	1846	1848	1	IIIG
			HARV				1849	2245	3				IC
			HARV				2057		2	2057		2	IIIG
10	1333	2245	HARV				1333	1800	2				IC
			HARV				1541		2				IIIG
			HARV				1800	2217	1				INW
			HARV				2006	2007	2	2006		2	IIIG
			HARV				2012	2014	2	2012	2014	1	IIIG
			HARV				2204		1				IIIB
			HARV				2217	2245	2				IC
11	1328	2245	HARV				1427		1				IIIB
			HARV				1444		2				IIIG
			HARV				1514		1				IIIG

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SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

OCTOBER 1979

DAY	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	
11			HARV				1758		1				IIIBW
			HARV				1806		2				IIIG
			HARV				1812		1				IIIB
			HARV				2004		2				IIIG
			HARV				2008		2				IIIG
			HARV				2059		1				IIIB
			HARV				2202	2245	2				I
			HARV				2238		2				IIIG
12	1328	2245	HARV				1339		1				IIIBW
			HARV				1345		2				IIIG
			HARV				1401		2				IIIB
			HARV				1411		2				IIIB
			HARV				1416		2				IIIG
			HARV				1506	1508	3	1506	1508	1	IIIGG
			HARV				1511	1512	3	1511	1512	3	IIIG
			HARV				1624		1				IIIB
			HARV				1640	1644	3	1640	1644	1	IIIGG
			HARV				1652	1655	2				IIIGG
			HARV				1718		2	1718		1	IIIG
			HARV				1815		2	1815		2	IIIG
			HARV				1822	1823	2				IIIG
			HARV				2016		2	2016		1	IIIG
			HARV				2104	2106	1				IIIG
			HARV				2214	2215	2				IIIG
13	1328	2245	HARV				1352	1630	2				IC
			HARV				1635		2				IIIG
			HARV				1659	2245	1				IN,IIIN
			HARV				1742		1				IIIB
			HARV				1747		1	1747		2	IIIG
			HARV				1959	2000	2	1959	2000	2	IIIG
			HARV				2002		2				IIIG
14	1329	2240	HARV				1843	1850	3	1843	1850	3	IIIGG
			HARV				1959		1				IIIG
15	1330	2245	HARV				1330		2				IIIG
			HARV				1451	1453	2	1451	1453		IIIGG,V
16	1330	2245	HARV				1338	1339	2				IIIG
			HARV				1348		1				IIIB
			HARV				1638	1639	2	1638	1639	2	IIIG
			HARV				1645		1				IIIB
			HARV				1706		2				IIIG
			HARV				2231		1				IIIBW
			HARV				2243		2				IIIB
17	1329	2245	HARV				1410		1				IIIG
			HARV				1607		1				IIIG
			HARV				1716		1				IIIB
			HARV				1721		1				IIIB
			HARV				1750	1751	2				IIIG
			HARV				1800		1				IIIG
			HARV				1832		1				IIIG
			HARV				1845		1				IIIB
			HARV				1934	1940	2	1934	1940	1	IIIGG
			HARV				2008	2010	3	2008	2010	3	IIIGG,U
			HARV				2013		2				IIIG
18	1329	2245	HARV				1348		1				IIIG
			HARV				1510		1				IIIB
			HARV				1554		3	1554		2	IIIG
			HARV				2029		2				IIIB
			HARV				2033		2				IIIG
19	1329	2245	HARV				1656		1				IIIG
			HARV				1751		1				IIIB
			HARV				2010		2	2010		1	IIIB
			HARV				2015		2	2015		1	IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

OCTOBER 1979

DAY	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			HARV				2109		2	2109		1	IIIB
			HARV				2152		2	2152		2	IIIG
20	1329	2245	HARV				1709	1710	2	1709	1710	1	IIIGG
			HARV				1916		2	1916		1	IIIG
			HARV				2228	2229	1				IIIG
21	1329	2245	HARV				1404	1405	1				IIIGW
			HARV				1802		1				IIIB
			HARV				1808		1	1808		2	IIIG
			HARV				1926	1928	1				IIIGG
			HARV				1935		1				IIIG
			HARV				2007		2				IW
			HARV				2105	2108	2				IIIG
22	1329	2245	HARV				1334	1454	1				INW
			HARV				1442	1444	2				IIIG.V
			HARV				1507	1508	1				IIIG
			HARV				1543	2229	1				IIINW
			HARV				1609		1				IW
			HARV				1819		1				IIIGW
			HARV				1827		2				IIIG
			HARV				1850		1				IW
			HARV				1941	1942	1	1941		2	IIIG
23	1329	2240	HARV				1329	2240	1				INW
24	1329	2240	HARV				1329	2240	1				IW
			HARV				1345	1348	3				IIIGG
			HARV				1354	1356	2				IIIGG
			HARV				1528		2				IIIG
			HARV				1547		1				IIIG
			HARV				1552		3	1552		1	IIIG
			HARV				1604		1				IIIGW
			HARV				1815	1817	2				IIIGG
			HARV				2031		1				IIIG
			HARV				2220	2222	1				IIIGW
25	1329	2245	HARV				1407		2				IIIG
			HARV				1409	1412	1				IIIGW
			HARV				1517	1519	1				IIIGW
			HARV				1530		2				IIIG
			HARV				1631	1632	1				IIIGW
			HARV				1640	1642	1				IIIGW
			HARV				1847	1848	2				IIIG
			HARV				2052		1				IIIGW
			HARV				2141		1				IIIGW
26	1329	2245	HARV				1333	2245	1				INW
			HARV				2102		2				IIIG
27	1329	2246	HARV				1756	1802	1				IIIGW
			HARV				1856		1				IIIGW
			HARV				2153		1				IIIBW
28	1329	2345	HARV				1522		1				IIIBW
			HARV				1542		2				IIIB
			HARV				1732		2				IIIB,U
			HARV				1739		1				IIIBW
			HARV				2029	2037	3				IIIGG,V
			HARV				2103		1				IIIBW
			HARV				2124		2				IIIG
			HARV				2205	2209	2				IIIGG
			HARV				2252		3				IIIG
			HARV				2319	2320	2				IIIG
29	1329	2345	HARV				1532		2				IIIG
			HARV				1646	1647	2				IIIG
			HARV				1805	1806	1				IIIG
			HARV				1938	1942	3				IIIGG

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SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1979

DAY	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	
29			HARV				1950		2				IIIG
			HARV				2014	2020	3				IIIGG
30	1329	2340	HARV				1332		1				IIIB
			HARV				1400		2				IIIG
			HARV				1434		2				IIIB
			HARV				1450	1451	1				IIIG
			HARV				1459		1				IIIB
			HARV				1526		2				IIIB
			HARV				1543	1544	2				IIIG
			HARV				1608	1609	2				IIIG
			HARV				1629		2				IIIG
			HARV				1726		2				II
			HARV				1921		2				IIIB
31	1329	2350	HARV				1333	2100	2				I DC
			HARV				1509	1511	1				IIIG
			HARV				1609		2	1609		2	IIIB
			HARV				1634	1636	2	1634	1636	1	IIIG
			HARV				1701	1702	3	1701	1702	3	IIIG,V
			HARV				1719		2				IIIB
			HARV				1750	1754	2	1750	1754	2	IIIGG
			HARV				1803	1806	2				IIIG
			HARV				1812	1813	2				IIIG
			HARV				1827	1855	2				IIIN
			HARV				1902		1				IIIGW
			HARV				1911		2				IIIB
			HARV				1932	1933	2				IIIG
			HARV				2029	2031	3				IIIGG
			HARV				2238		2				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	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	1329	2345	HARV				1551	1552	1				IIIBW
			HARV				1655		2				IIIB
			HARV				1723		2				IIIBW
			HARV				1825		3	1825		3	IIIB
			HARV				1853		2	1853		2	IIIG
			HARV				1912		2				IIIGW
			HARV				1916	1917	3	1916	1917	3	IIIG,V
			HARV				1933	1935	3	1935		3	IIIG
			HARV				1950	1951	2	1950	1951	1	IIIG
			HARV				2002	2006	3	2005		3	IIIGG
			HARV				2021	2022	3	2021	2022	3	IIIGG
			HARV				2035	2038	2				IIIGG
			HARV				2106		3	2106		3	IIIB
			HARV				2119	2120	1				IIIG
			HARV				2147	2149	2	2147		2	IIIGG
			HARV				2155	2156	1				IIIG
			HARV				2227		2	2227		1	IIIG
02	1329	2345	HARV				1353		2				IIIG
			HARV				1404	1405	2				I,IIIG
			HARV				1419		1				I
			HARV				1425	1426	1				I
			HARV				1449	1452	2				IIIGG
			HARV				1507	1510	3	1509	1510	3	IIIGG
			HARV				1515		2				IIIB
			HARV				1540		2	1540		3	IIIG,V
			HARV				1544		2	1544	1545	3	IIIG,V
			HARV				1633		1				IIIG
			HARV				1639	1642	2	1639	1642	2	IIIGG
			HARV				1651	1652	1				IIIG
			HARV				1703	1704	2	1703	1704	1	IIIG
			HARV				1754	1800	2	1754	1800	3	IIIGG,V
			HARV				1803	1805	3	1803	1805	3	IIIG
			HARV				1856		2				IIIG
			HARV				1910		2	1910		3	IIIG
			HARV				1934	1939	2	1934	1939	3	IIIGG
			HARV				2006		2				IIIG
			HARV				2013	2019	2	2013	2019	2	IIIGG
			HARV				2133		2				IIIG
			HARV				2256	2257	1				IIIG
03	1329	2345	HARV				1427		2				IIIG
			HARV				1440	1444	3	1402	1444	3	IIIGG,V
			HARV				1519		1				IIIG
			HARV				1550	1551	2				IIIG
			HARV				1646		2	1646		2	IIIG
			HARV				1652		1				IIIB,W
			HARV				1800	1804	2	1801	1804	3	IIIGG,V
			HARV				1810	1812	2				IIIGG
04	1329	2345	HARV				1502	1504	1				II
			HARV				1517	1519	2				IIIG
			HARV				1656		1				IIIB
			HARV				1702		1				IIIBW
			HARV				1707	1710	2				IIIG
			HARV				1825		1				IIIG
			HARV				1841		2				IIIB
			HARV				1849		1				IIIG
			HARV				1932	1933	1				IIIG
			HARV				2056	2059	2				IIIG
			HARV				2102	2109	2				IIIGG
			HARV				2216		1				IIIB
05	1341	2345	HARV				1359		1				IIIBW
			HARV				1440		1				IIIB
			HARV				1522	1523	1	1522	1523	1	IIIG
			HARV				1528		2				IIIG
			HARV				1540		2				IIIG
			HARV				1601	1612	2	1604	1611	3	IIIGG,V
			HARV				1618		2				IIIG

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SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	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	
05			HARV				1624	1628	2	1624	1626	3	IIIGG,U
			HARV				1642	1643	2	1643		3	IIIG
			HARV				1708	1709	1				IIIG
			HARV				1717		1				IIIG
			HARV				1722	1724	1				IIIG
			HARV				1733	1744	3	1733	1744	3	IIIGG,V
			HARV				1745	1759	1				IIIGG
			HARV				1801	1843	3	1806	1839	3	IIIGG
			HARV				1849	1850	2	1849	1850	1	IIIG
			HARV				1903	1911	2	1903	1911	2	IIIGG
			HARV				1920	1928	2	1926	1928	3	IIIGG
			HARV				1933		2				IIIB
			HARV				1937		2	1937		3	IIIG
			HARV				1942	1943	1				IIIG
			HARV				1951	1952	2				IIIB
			HARV				2005	2011	2	2005	2011	3	IIIGG
			HARV				2014	2015	2				IIIG
			HARV				2028	2036	2	2028	2036	2	IIIGG
			HARV				2047	2048	1				IIIG
			HARV				2102	2011	3	2104	2109	3	IIIGG
			HARV				2125	2140	2				IIIGG
			HARV				2143	2158	3	2143	2158	3	IIIGG,V
			HARV				2200	2208	2				IIIGG
			HARV				2215		1				IIIB
			HARV				2235		1				IIIBW
			HARV				2239	2300	2	2240	2300	2	IIIGG
			HARV				2309	2310	1				IIIGW
			HARV				2317	2322	1				IIIGG
			HARV				2327	2334	2				IIIGG
06	1342	2345	HARV				1344	1351	2				IIIGG
			HARV				1411	1413	1				IIIGW
			HARV				1428		1				IIIG
			HARV				1437		1				IIIG
			HARV				1445	1452	2				IIIGG,V
			HARV				1455	1501	2			II	
			HARV				1511	1518	1				IIIG
			HARV				1529	1534	1				IIIGG
			HARV				1552		1				IIIG
			HARV				1601	1604	2				IIIGG
			HARV				1610	2215	1				I
			HARV				1613	1619	1	1613	1619	2	IIIGG
			HARV				1628	1629	1				IIIG
			HARV				1640	1650	1	1640	1650	2	IIIGG
			HARV				1657		2				IIIG
			HARV				1809	1810	1				IIIG
			HARV				1827		2	1827		2	IIIB
			HARV				1840	1841	2				IIIG
			HARV				1905	1912	2	1906	1909	2	IIIGG
			HARV				1916	1920	2	1918		2	IIIG
			HARV				1938		2	1938		3	IIIG
			HARV				1948	1950	1	1949	1950	2	IIIGG
			HARV				1954		1				IIIG
			HARV				2026	2055	2	2028		2	IIIGG
			HARV				2100	2102	1				IIIG
			HARV				2116		2				IIIG
			HARV				2131	2139	1				IIIGG
			HARV				2231	2233	1				IIIG
			HARV				2234	2240	2				IIIGG
			HARV				2245		1				IIIBW
			HARV				2259		1	2259		1	IIIG
			HARV				2319	2224	1				IIIGG
07	1342	2345	HARV				1546		2				IIIG
			HARV				1614	1616	1				IIIG
			HARV				1651		1				IIIBW
			HARV				1810		2	1810		1	IIIG
			HARV				1835	1837	3	1835	1837	3	IIIGG,V
			HARV				1914		2	1914		1	IIIG
			HARV				1946	1947	2	1946	1947	1	IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	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	
07			HARV				2016		2				IIIG
			HARV				2140		2				IIIG
08	1342	2340	HARV				1342	2120	1				INW
			HARV				1448	1449	1				IIIB
			HARV				1459		1				IIIGW
			HARV				1504		1				IIIGW
			HARV				1622	1623	1				IIIG
			HARV				1644		1	1644		1	IIIB
			HARV				1906	1907	1	1906	1907	2	IIIG
			HARV				1918	1929	2	1918	1929	2	IIIGG
			HARV				1942	1947	1	1942		3	IIIG
			HARV				1957	2002	1	2002		2	IIIG
			HARV				2014	2035	2	2014	2035	2	IIIGG
			HARV				2040	2042	1				IIIG
			HARV				2157		2				IIIG
09	1342	2340	HARV				1353	1357	1				IIIGW
			HARV				1408	1410	2				IIIG
			HARV				1422		1				IIIBW
			HARV				1439	1442	2				IIIG
			HARV				1445	1449	2				IIIGG
			HARV				1518		1				IIIBW
			HARV				1555	1558	2	1555		2	IIIG
			HARV				1747	1753	2	1747	1753	1	IIIGG
			HARV				1836	1837	1				IIIG
			HARV	1922	1927	2	1922	1927	3	1905	1927	3	IIIGG
			HARV	1932	1935	1	1932	1935	2	1932	1933	3	IIIGG
			HARV				2124	2125	2				IIIG
			HARV	2153	2154	2							IIIG
			HARV	2201	2206	1							I-IIIG
10	1342	2345	HARV				1342	2345	1				IN
			HARV				1426	1431	2				IIIG
			HARV				1443	1444	2				IIIGG,U
			HARV				1449	1450	2	1450		2	IIIG
			HARV				1512		2	1512		2	IIIG
			HARV				1524	1532	2	1524	1532	2	IIIGG
			HARV				1549	1550	2				IIIG
			HARV				1554		2				IIIG
			HARV				1606	1612	2				IIIGG
			HARV				1637	1639	2	1637		3	IIIG
			HARV				1642	1646	2	1643	1646	3	IIIG
			HARV				1658	1701	3	1658	1701	3	IIIGG
			HARV				1710		2	1710		3	IIIG
			HARV				1729		1	1729		2	IIIB
			HARV				1738	1742	1	1738	1742	2	IIIG
			HARV				1757		1	1757		2	IIIG
			HARV				1809	1815	1	1811	1815	2	IIIG
			HARV				1822	1824	2	1822	1824	3	IIIG
			HARV				1832	1840	1				IIIGG
			HARV				1841	1850	2	1841	1850	3	IIIGG
			HARV				1902		1	1902		2	IIIG
			HARV				1908	1920	1	1908	1920	1	IIIN
			HARV				1941	1942	1	1941	1942	1	IIIGW
			HARV				1954	1955	1	1954	1955	2	IIIG
			HARV				2008	2016	2	2011	2016	3	IIIGG
			HARV				2028	2029	1				IIIGW
			HARV				2040		1				IIIG
			HARV				2114	2117	2	2114	2117	3	IIIGV
			HARV				2123		1				IIIB
			HARV				2140		1				IIIG
			HARV				2151	2159	3	2151	2159	3	IIIGG
			HARV				2209	2210	1				IIIG
			HARV				2216	2219	2	2217		2	IIIGG
			HARV				2302	2304	2				IIIG
			HARV				2318		1				IIIG
			HARV				2326		1				IIIG
11	1342	2345	HARV				1342	2345	2				INW

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SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

NOVEMBER 1979

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
11			HARV				1403		1				IIIGW
			HARV				1441	1443	2				IIIG
			HARV				1516	1523	2				IIIG
			HARV				1552	1554	2				IIIG
			HARV				1653		1				IIIB
			HARV				1702	1703	2	1702	1703	1	IIIG
			HARV				1741		2				IIIG
			HARV				1759		1				IIIBW
			HARV				1903	1909	1				IIIGG
			HARV				1925	1926	1	1925	1926	1	IIIG
			HARV				1937		1	1937		2	IIIB
			HARV				2052		2				IIIBW
			HARV				2101	2103	2				IIIG
			HARV				2115	2116	1				IIIG
			HARV				2135	2137	2				IIIG
			HARV				2202		3	2202		1	IIIG
			HARV				2205	2210	1				IIIG
			HARV				2313	2318	2				IIIG
12	1341	2345	HARV				1346	1443	1				INW
			HARV				1347		1				IIIG
			HARV				1431	1432	2				IIIG
			HARV				1508	1509	1				IIIG
			HARV				1527		3	1527		2	IIIG
			HARV				1550		1				IIIBW
			HARV				1604		1				IIIGW
			HARV				1722	1724	2				IIIG
			HARV				1753	1754	2				IIIG
			HARV				1845		1				IIIG
			HARV				1849	1850	1				IIIG
			HARV				1935	1953	2	1940	1951	3	IIIGG
			HARV				1956	2002	2	1956	2002	2	II
			HARV				2030	2040	2	2030		1	IIIG
			HARV				2053		2				IIIG
			HARV				2212	2218	2				IIIG
			HARV				2229	2233	2				IIIG
13	1342	2340	HARV				1539		1				IIIB
			HARV				1551	1552	1				IIIG
			HARV				1610		2				IIIG
			HARV				1744	1747	2				IIIG
			HARV				1751	1754	2				IIIG
			HARV				1822	1823	2				IIIG
			HARV	2037	2038	3	2037	2038	3				IIIG
			HARV				2050		2				IIIG
			HARV	2106	2107	2	2106	2107	3				IIIG
			HARV	2114		3	2114		3				IIIG
			HARV	2128	2129	2	2125	2130	3				IIIGG
			HARV				2208		2				IIIG
			HARV				2215	2216	2				IIIG
			HARV	2222		1	2221	2227	2				IIIG
			HARV				2235		1				IIIG
			HARV				2241		1				IIIG
			HARV				2251	2255	2				IIIGG
			HARV	2331		1	2330	2331	2				IIIG
14	1342	2340	HARV				1412		1				IIIG
			HARV				1824		1				IIIG
			HARV				1850		1				IIIG
			HARV				1901		2				IIIG
			HARV	2003		1							IIIG
			HARV	2026	2044	2							IVN
			HARV	2212		2	2212		2				IIIG
			HARV	2259	2303	2	2259	2303	2				IIIG
15	1342	2340	HARV	1546	1547		1547		2				IIIG
			HARV				1737		2				IIIG
			HARV				1948		1				IIIBW
			HARV				2022	2043	3	2022	2043	3	IIIGG
			HARV				2148	2154	2				IIIGG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

NOVEMBER 1979

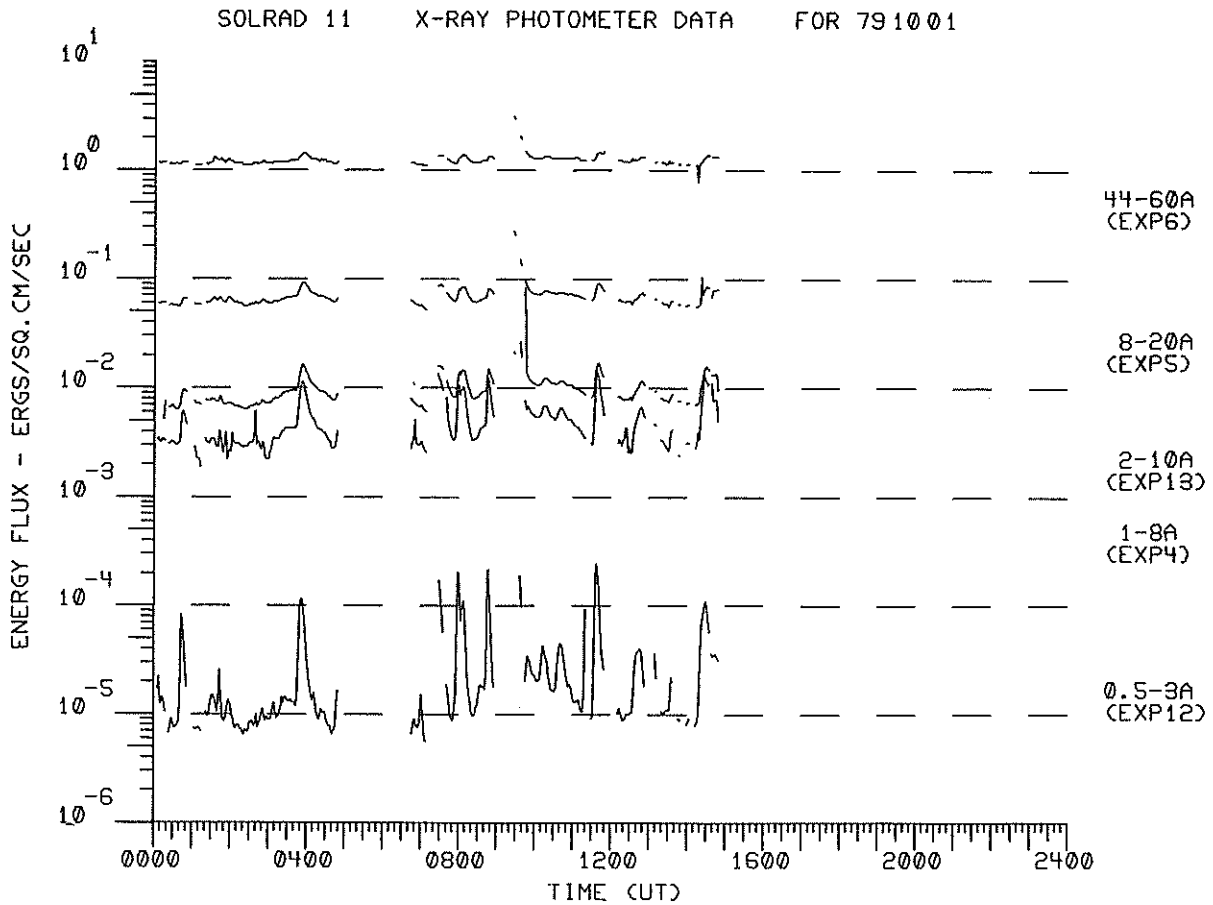
DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			HARV				2152	2154	1				UNCL
			HARV				2229	2232	2				UNCL
			HARV				2239						IIIG,RD
			HARV				2313		2				IIIG
16	1342	2340	HARV				1840	1842	1				IIIG
			HARV				2231		2				IIIG
			HARV				2311	2312	2				IIIG
17	1342	2340	HARV				1342	1415	1				I
			HARV				1756		1	1756		1	IIIB
			HARV				1936	1938	1				IIIGW
			HARV				1959		1				IIIGW
18	1342	2345	HARV	1939	1940	1							IIIGW
			HARV				1956		2				IIIG
19	1342	2340	HARV				2005		1				IIIB
20	1342	2345	HARV				1522	1523	2				IIIG
			HARV	1708		2							IIIG
			HARV				2018	2020	2				IIIG
			HARV	2141	2142	2	2141	2142	2				IIIG
21	1342	2345	HARV				1655	1656	1				IIIG
			HARV				1812		2				IIIG
			HARV	2227		2	2226	2231	2				IIIGG
22	1342	2340	HARV				1551		1				IIIBW
			HARV				1619		1	1619		1	IIIB
			HARV				1708	1709	1	1708	1709	2	IIIB
23	1342	2340	HARV				2118		2				IIIB
24	1342	2340	HARV				1400	2340	2				IIIS
			HARV				1720	1723	2				UNCL
			HARV				1752		1				IIIG
			HARV				1757	1759	2				IIIG
			HARV	2202	2203	3	2202	2203	3				IIIG
			HARV				2253	2257	2				IIIGG
25	1358	2340	HARV										
26	1358	2340	HARV										
27	1358	2335	HARV										
28	1358	2340	HARV										
29	1358	2340	HARV										
30	1358	2340	HARV										
			HARV	1808		1	1808	1810	2	1808		2	IIIG
			HARV	2037		1	2037		2				IIIG

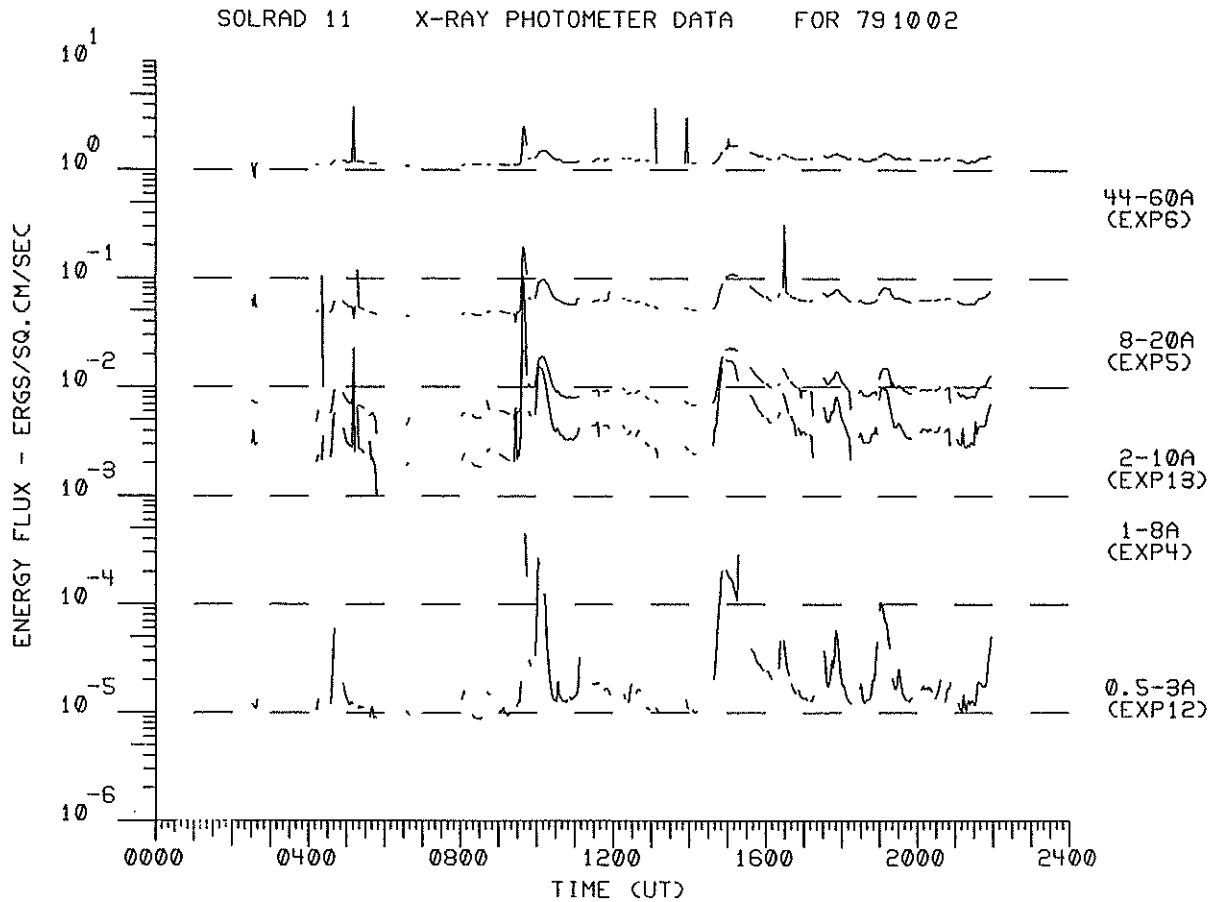
The symbols used in connection with the spectral type in describing the important bursts are as follows:

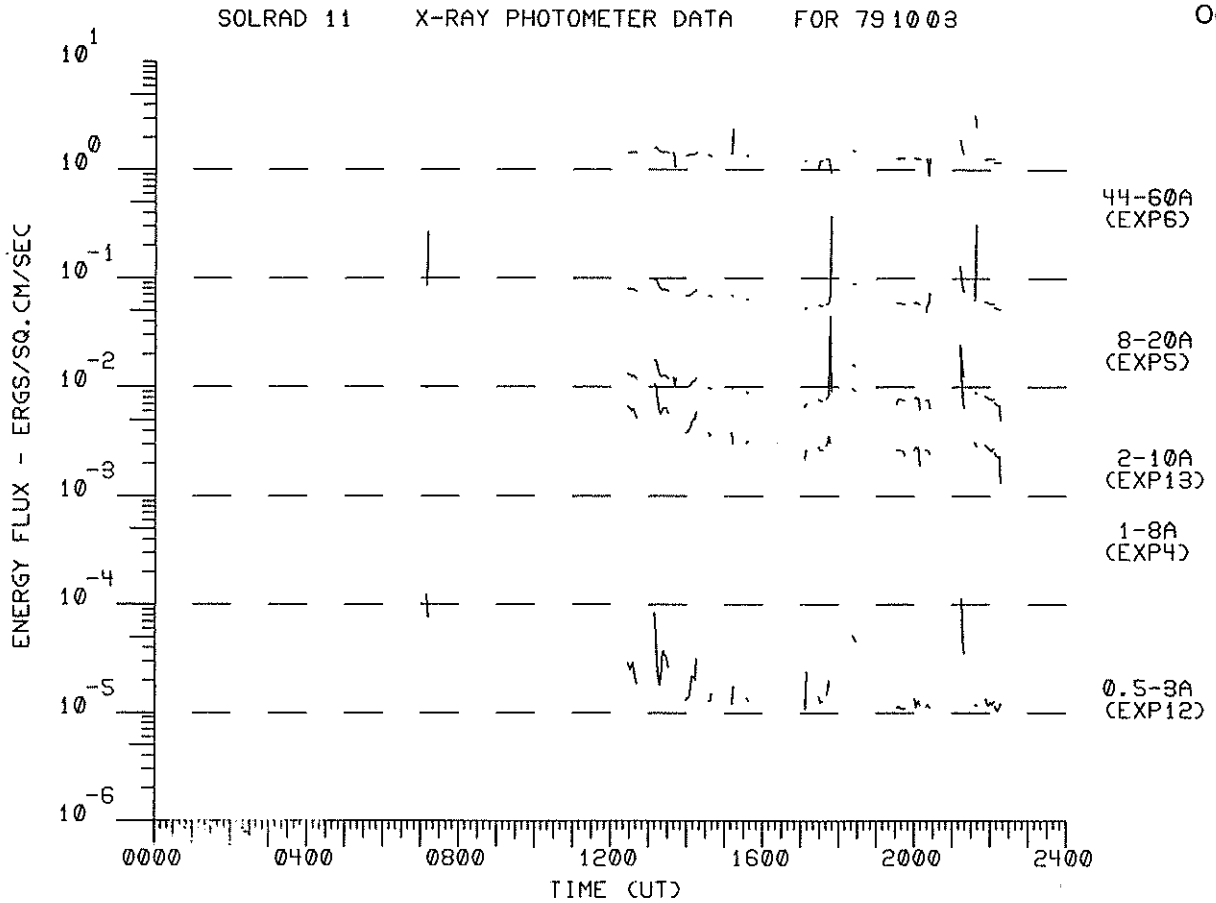
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

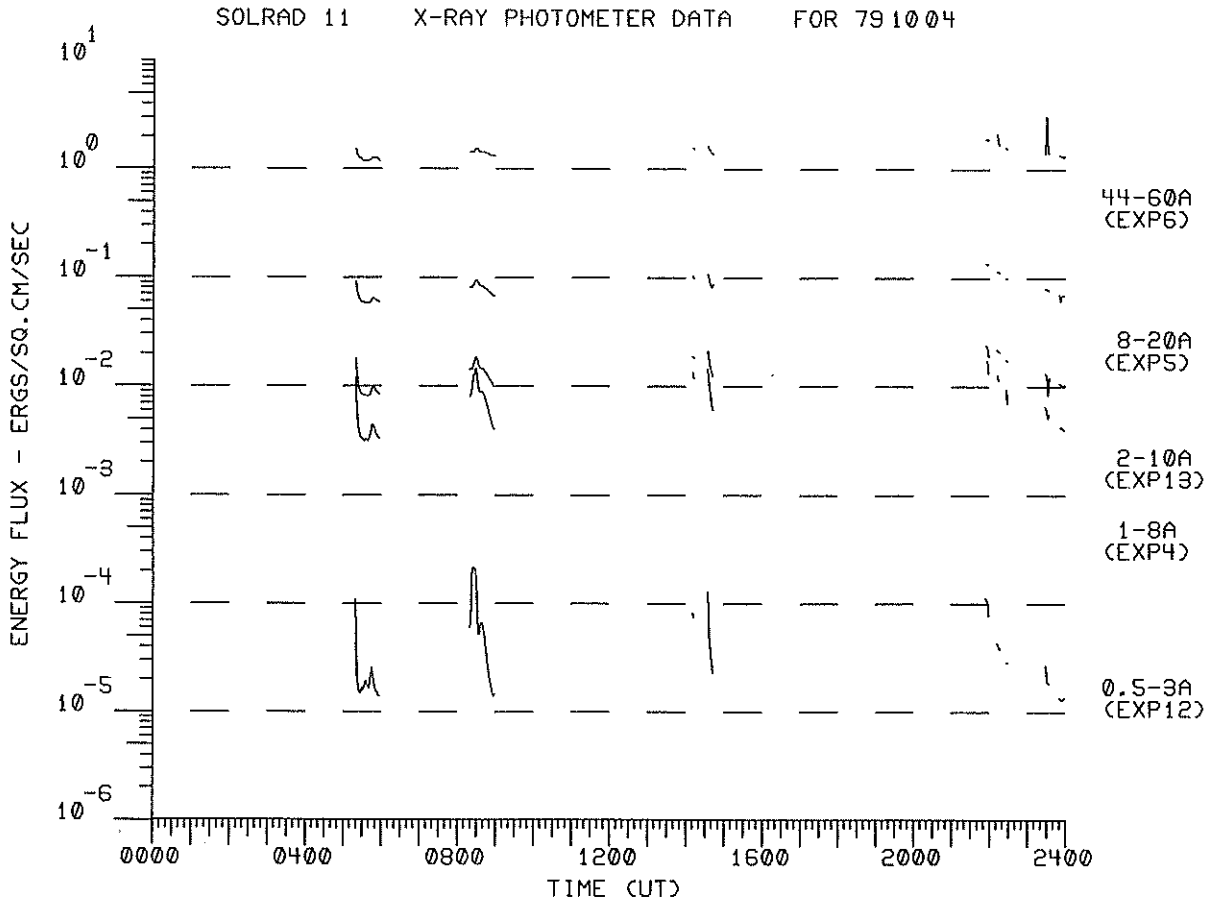
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

158
Late
Oct 79

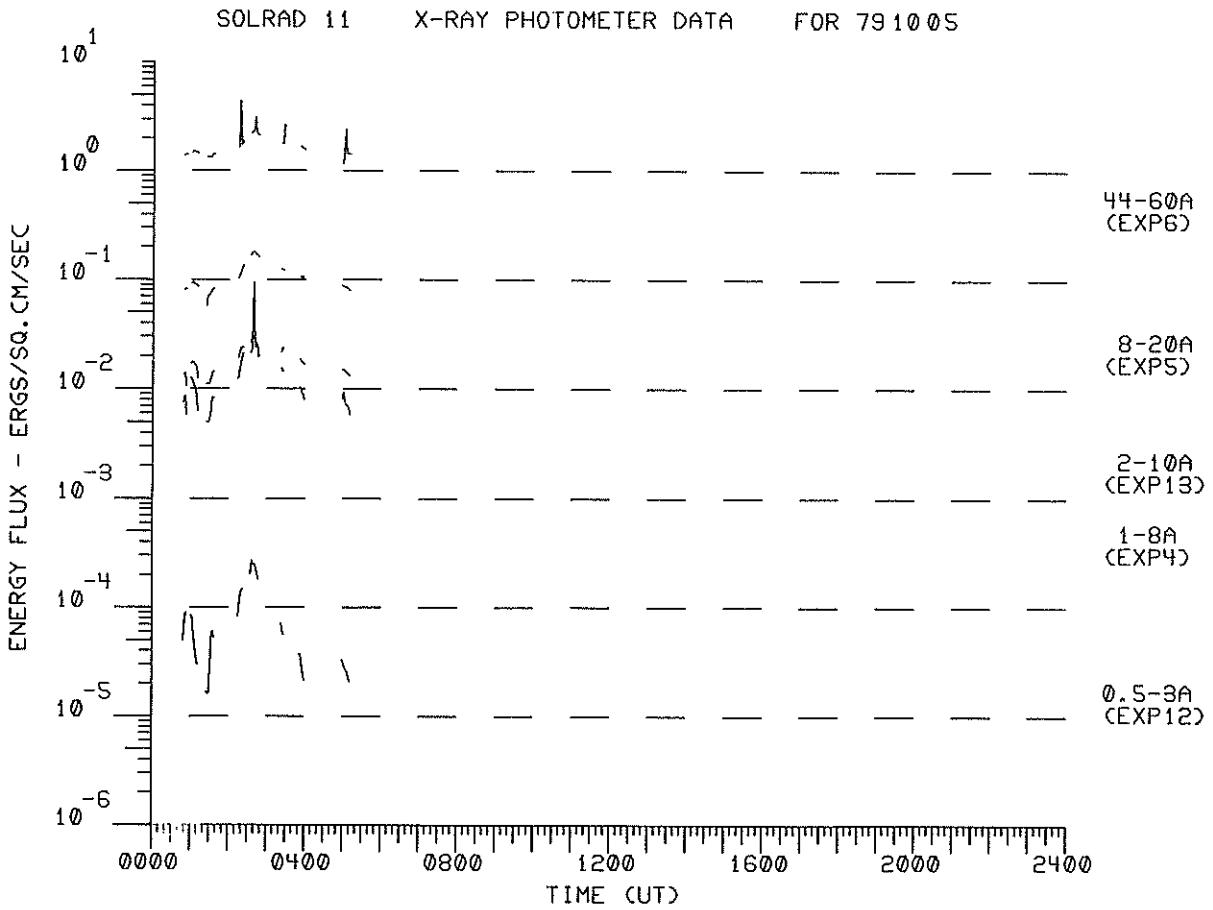


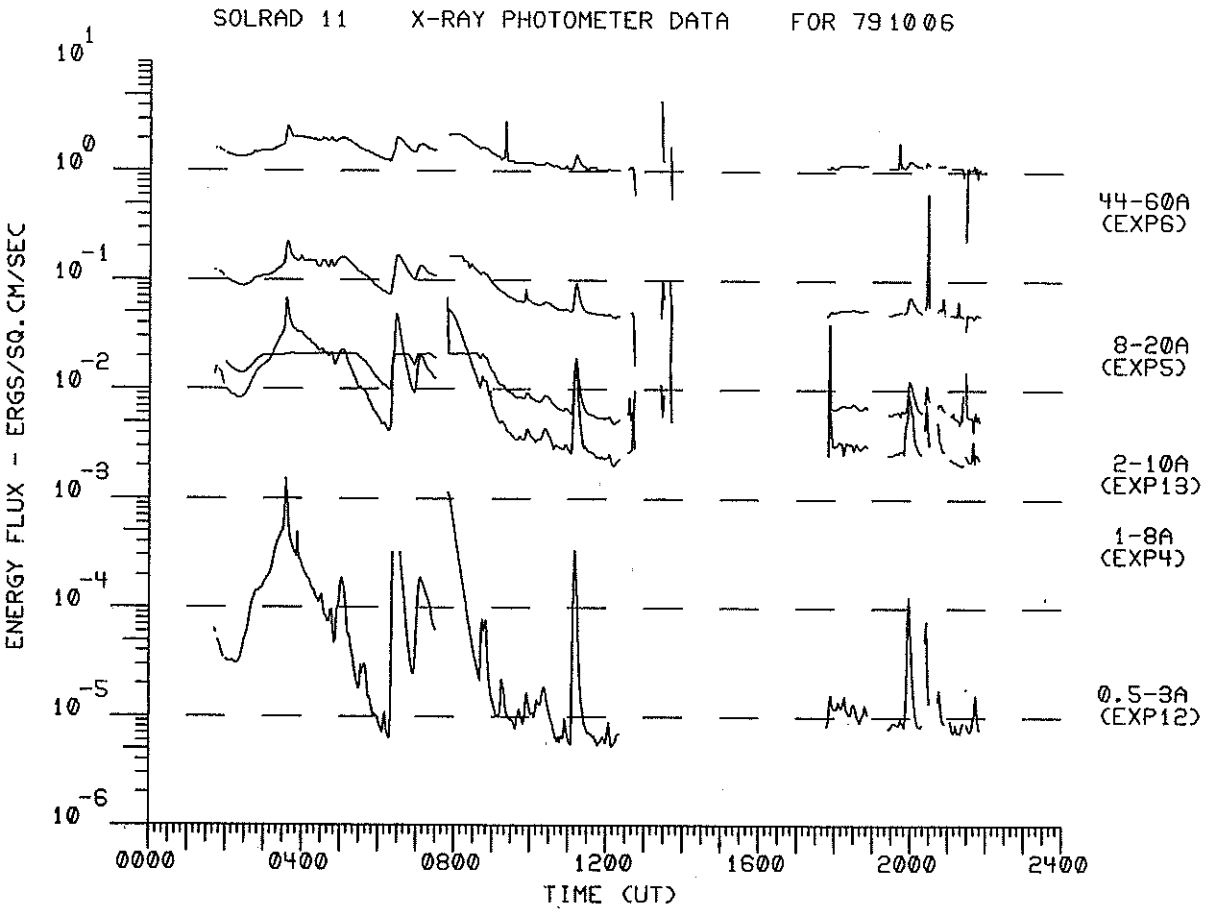


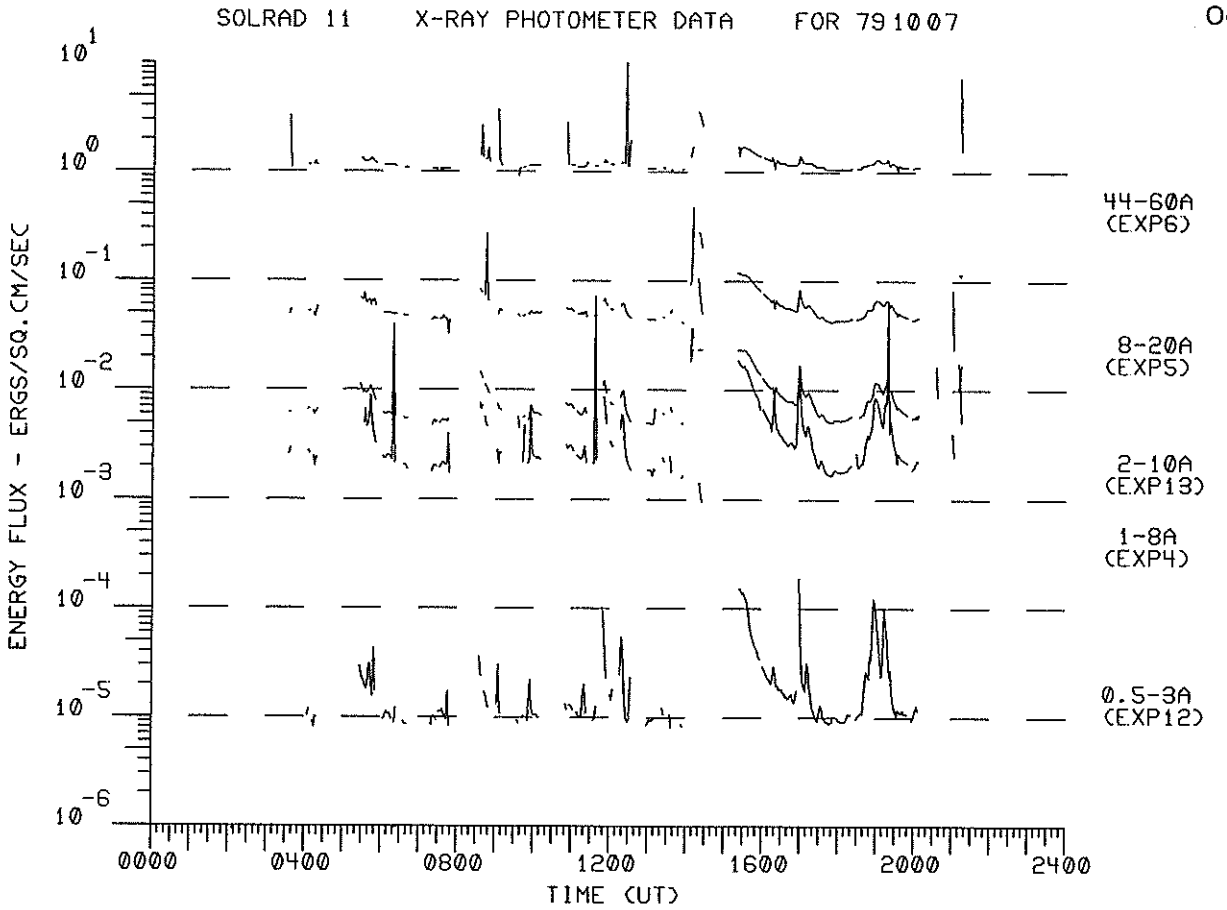

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791003
ENERGY FLUX - ERGS/SQ.CM/SEC
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791004
ENERGY FLUX - ERGS/SQ.CM/SEC
TIME (UT)
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400

160
Late
Oct 79






SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791007
ENERGY FLUX - ERGS/SQ.CM/SEC
TIME (UT)
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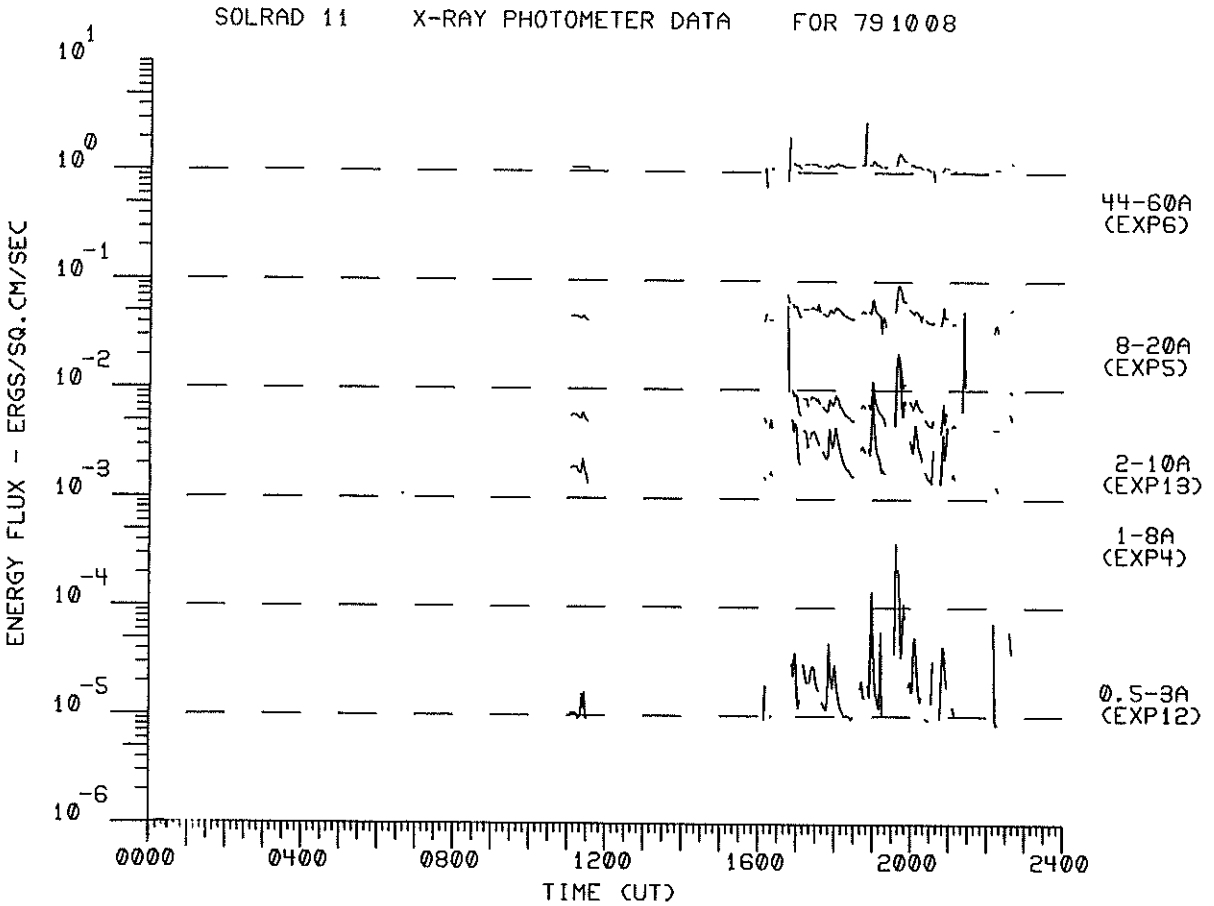
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791008
ENERGY FLUX - ERGS/SQ.CM/SEC
TIME (UT)
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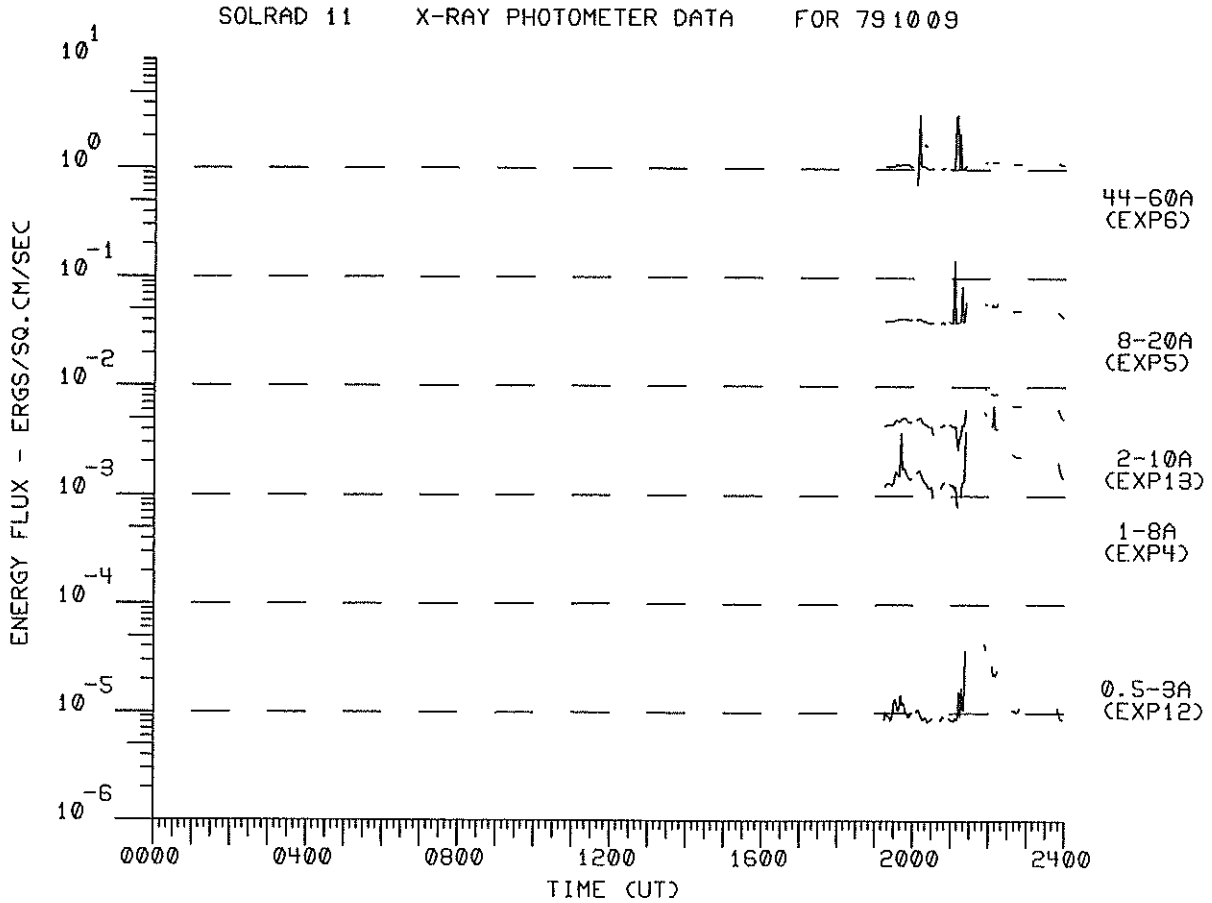
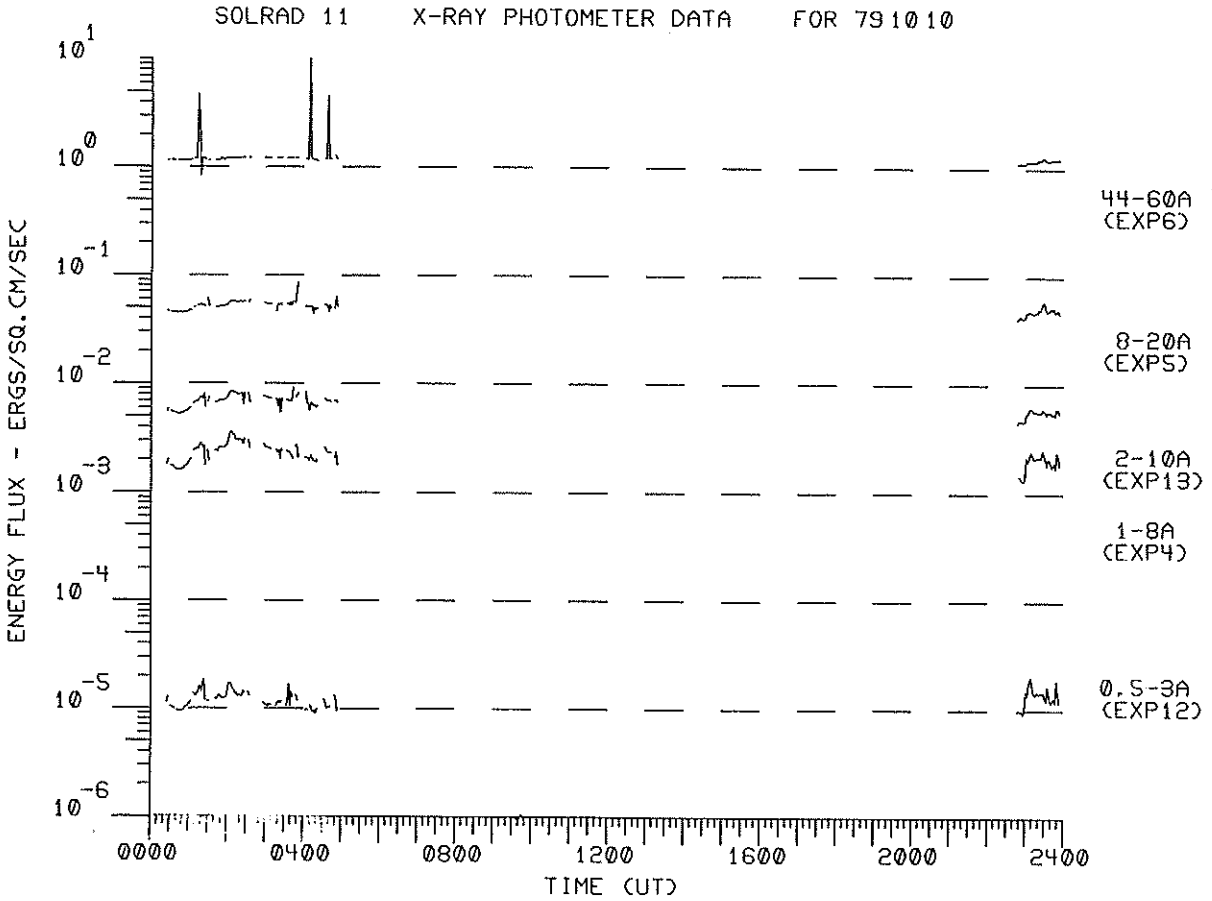
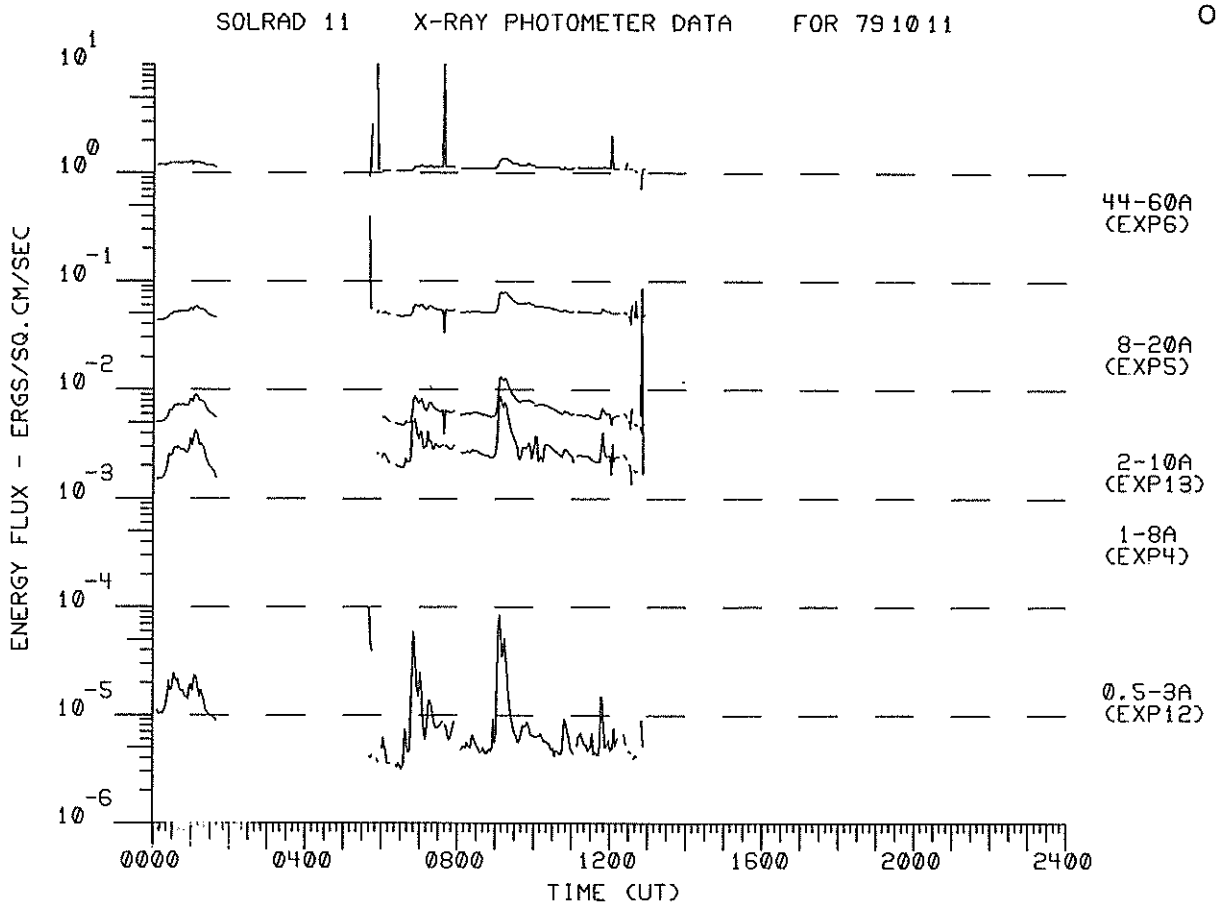
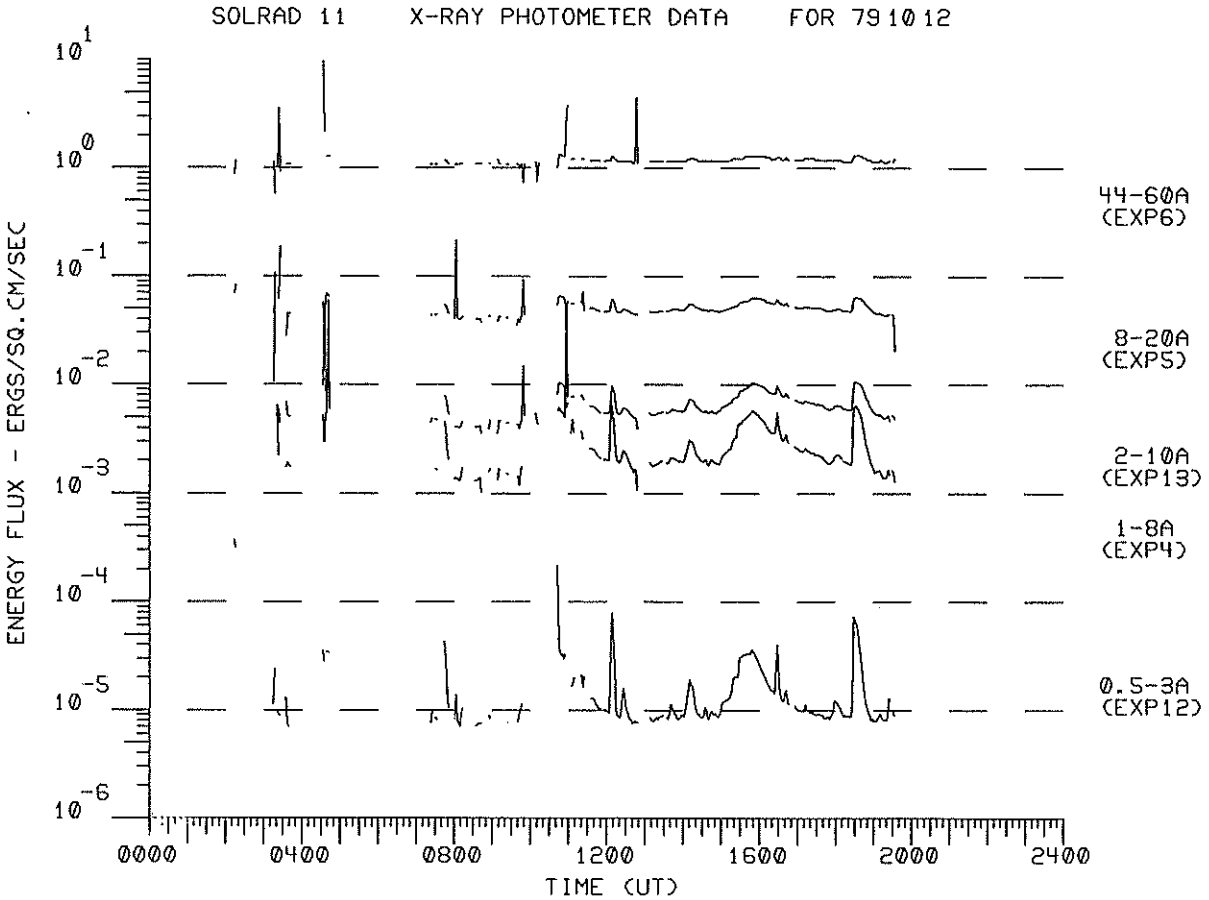
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)

162
Late
Oct 79

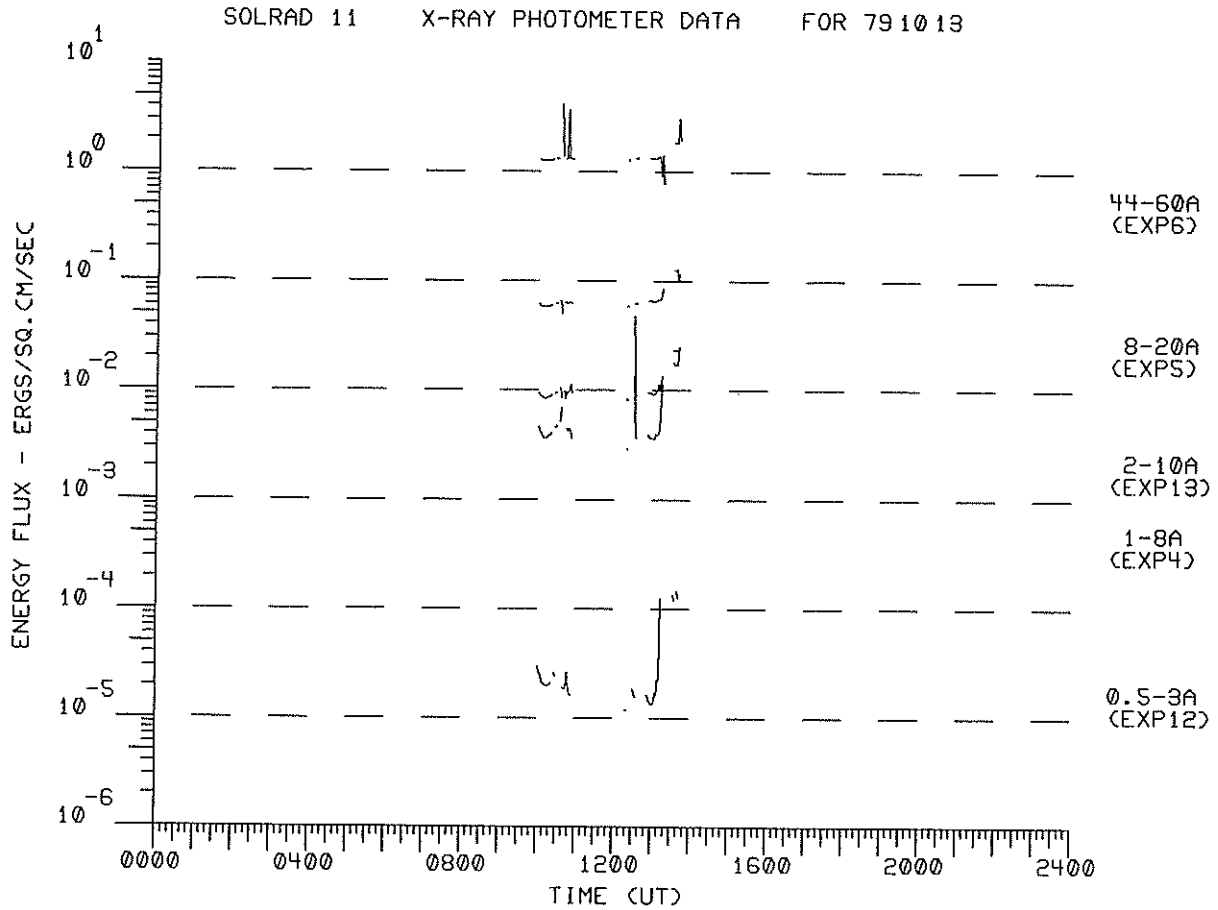


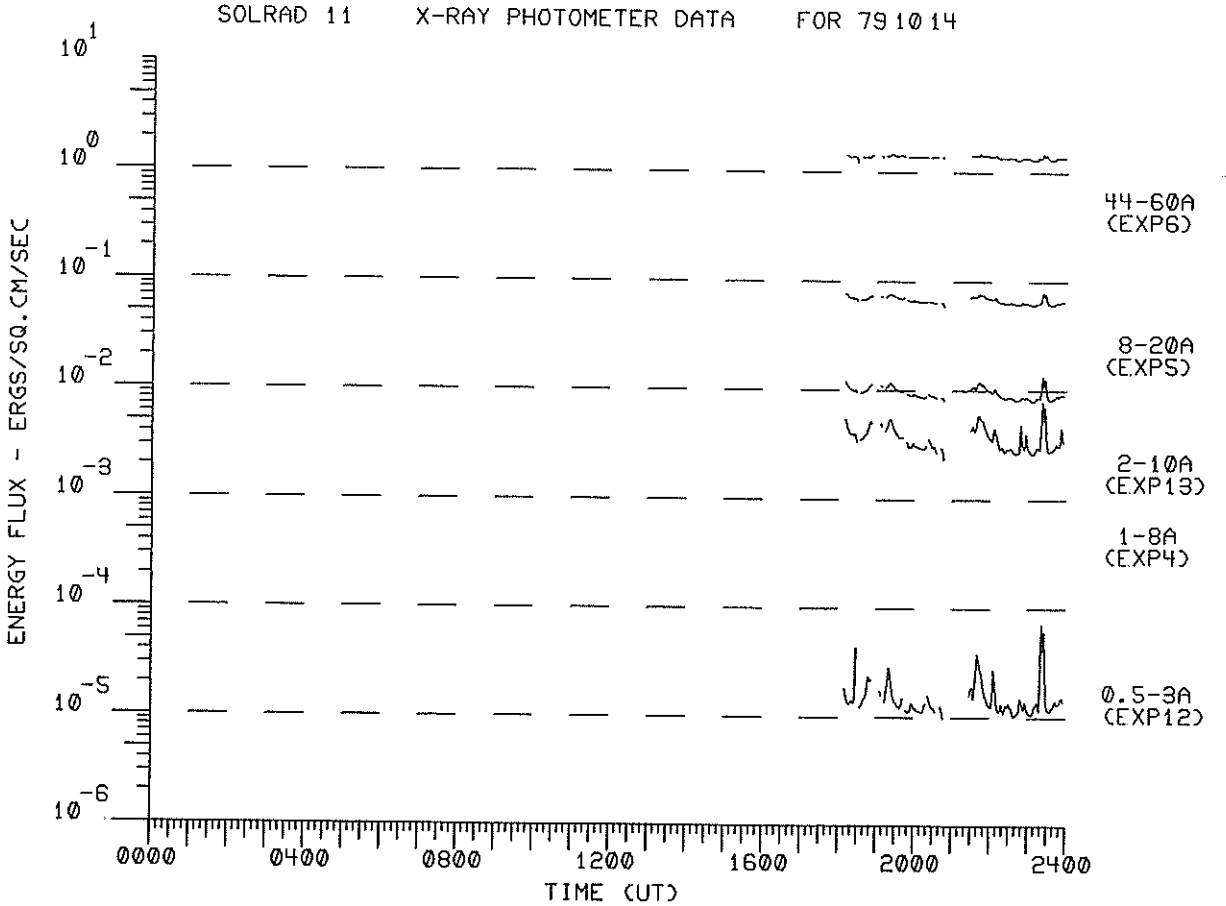


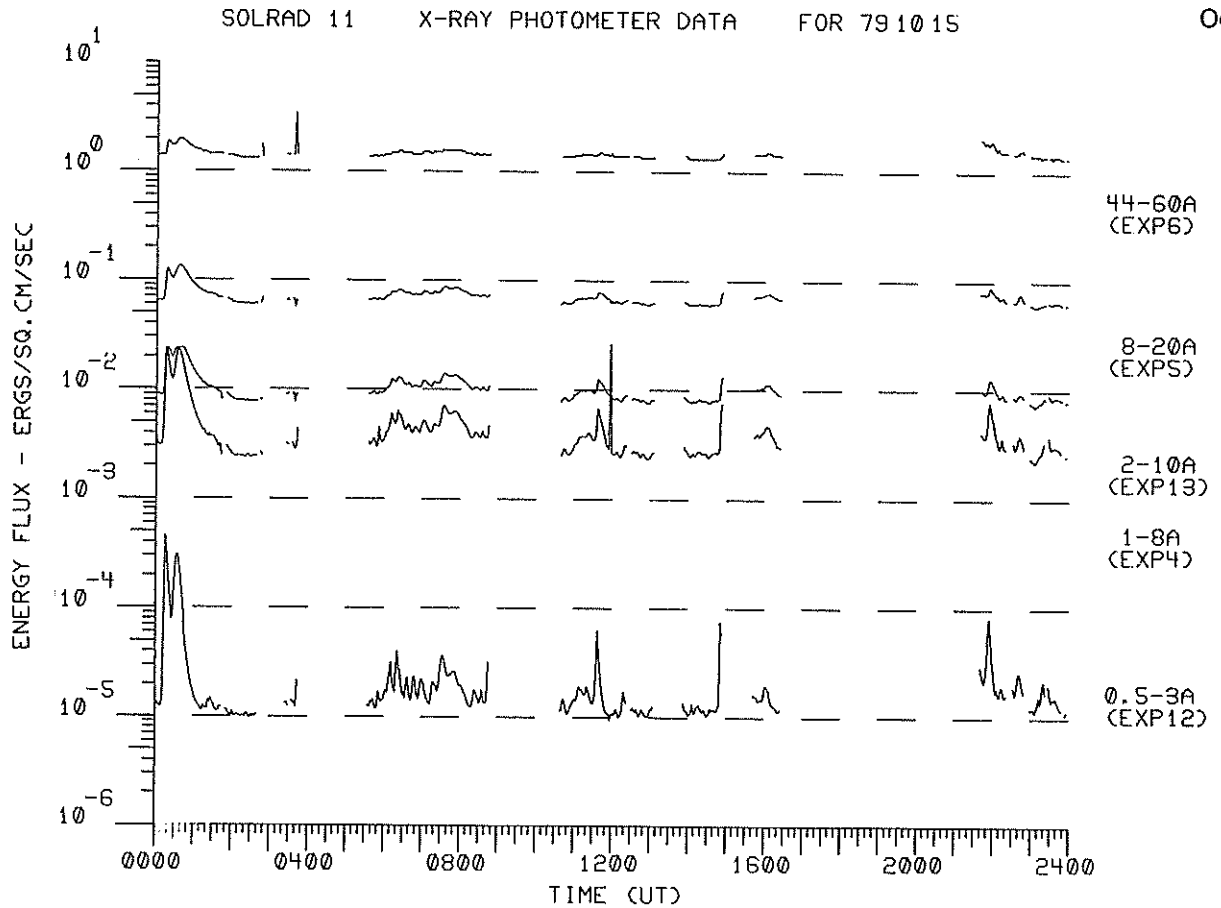

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791011
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791012
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)

164
Late
Oct 79



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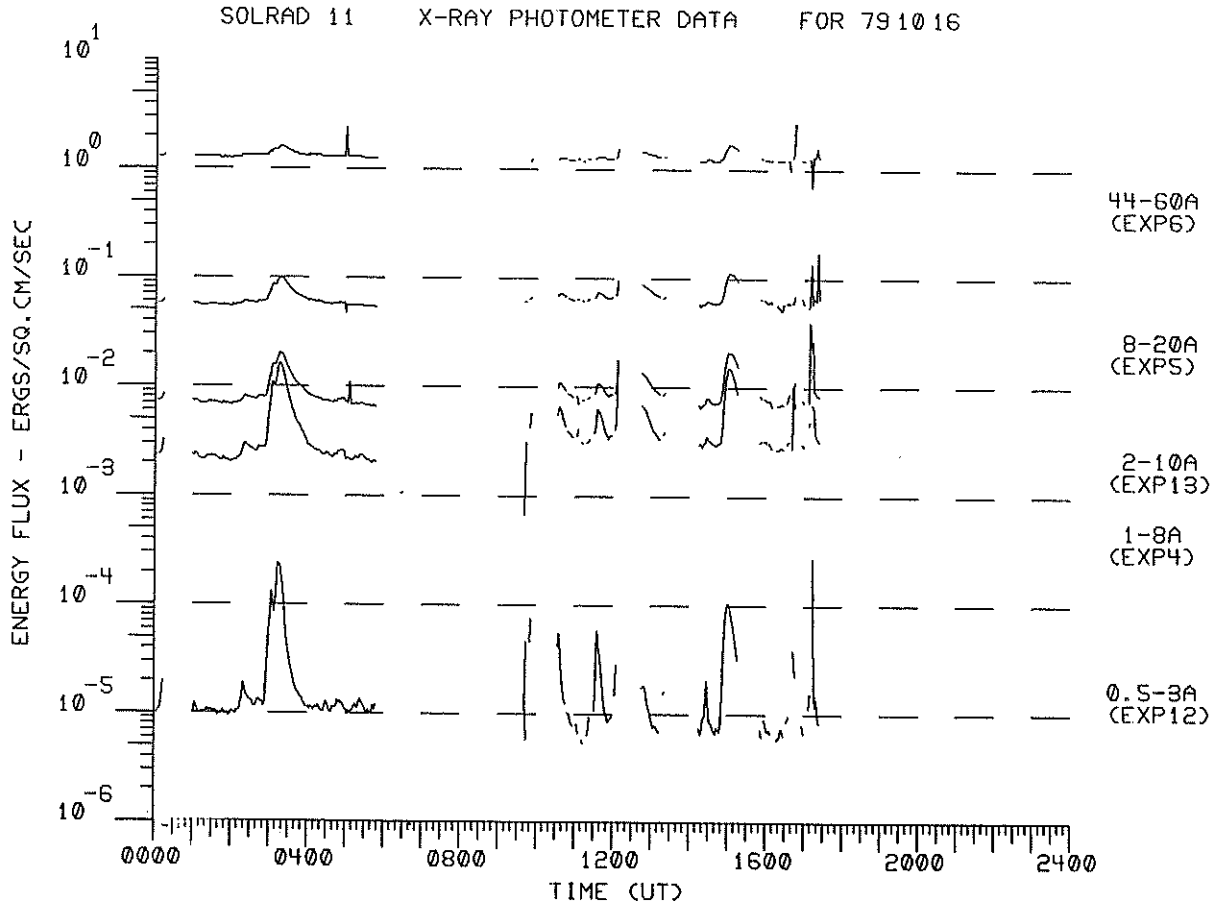
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)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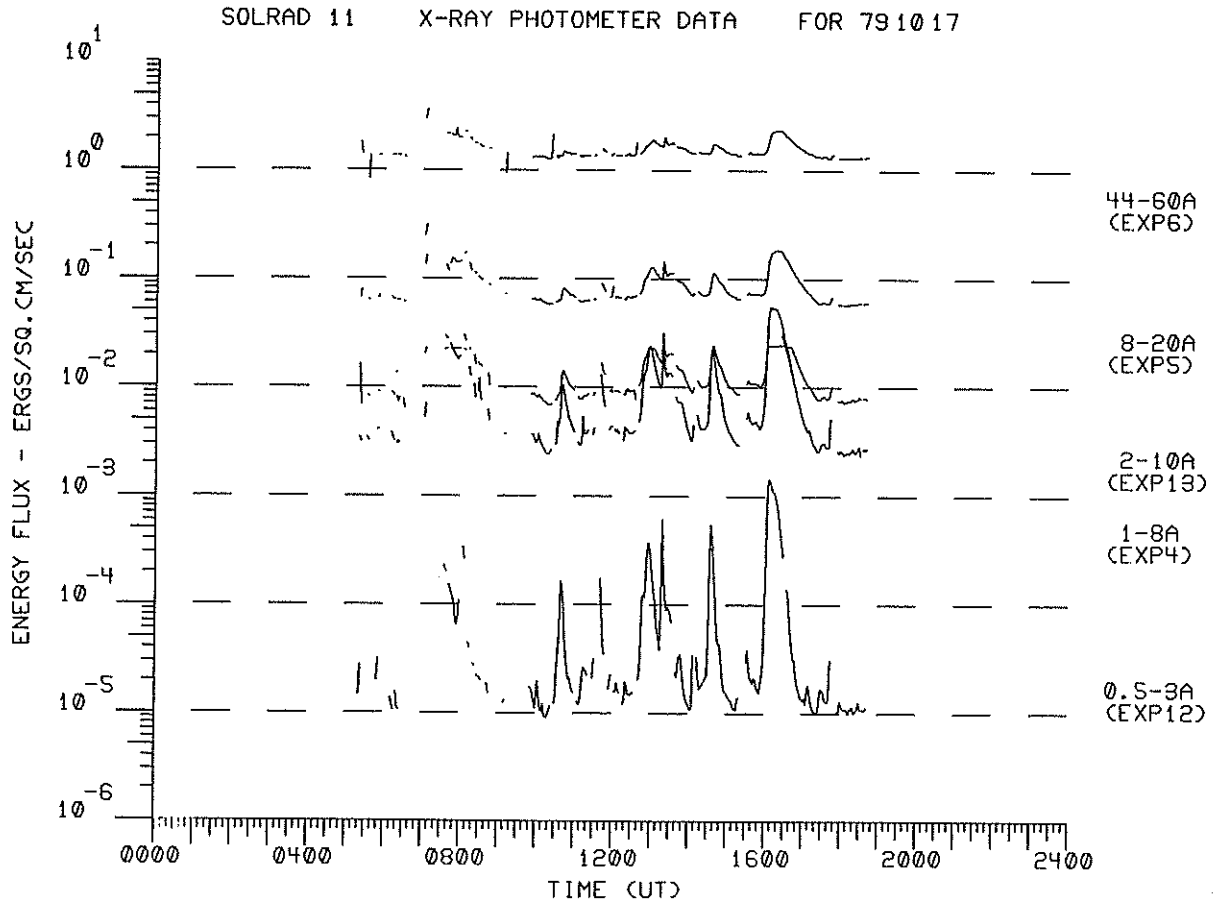
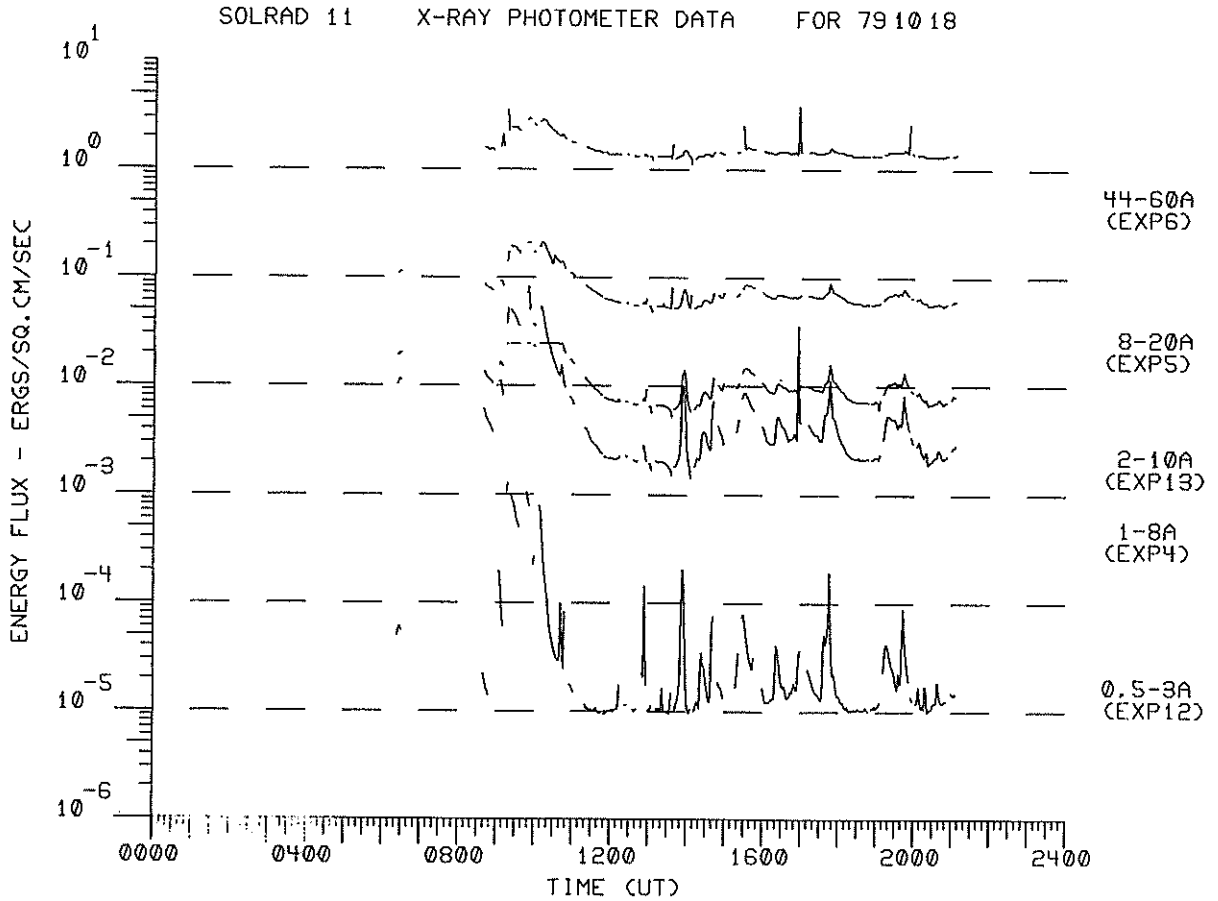
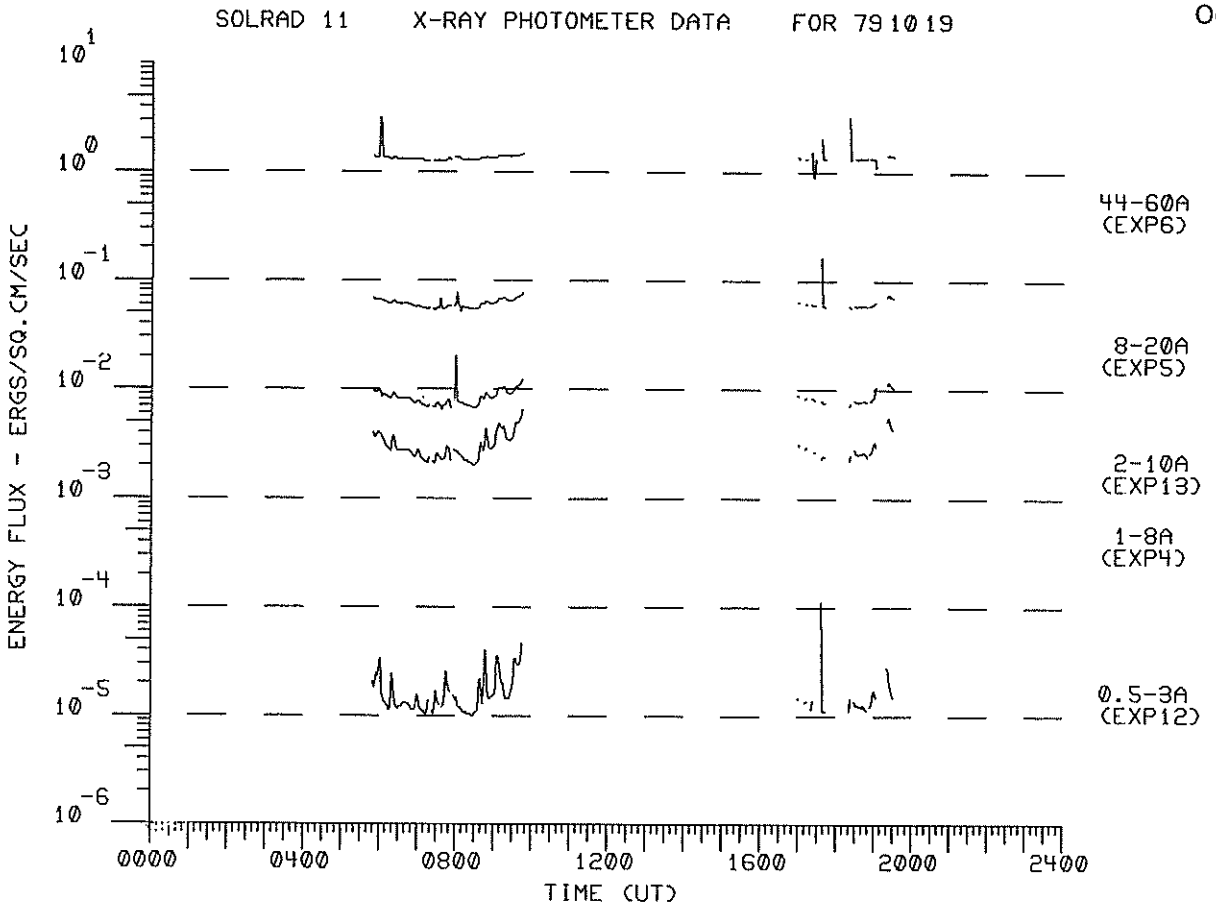
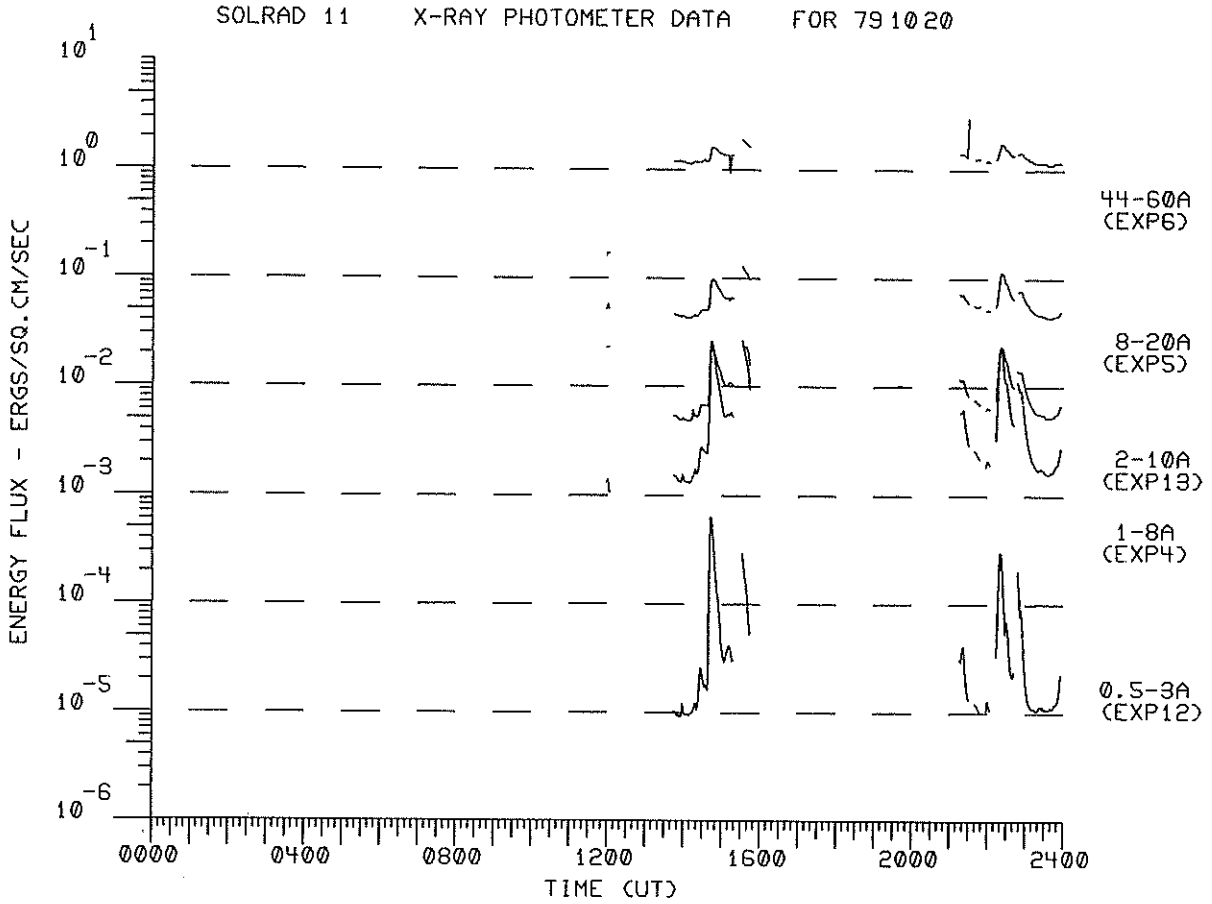
ENERGY FLUX - ERGS/SQ.CM/SEC
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

166
Late
Oct 79






SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791019
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)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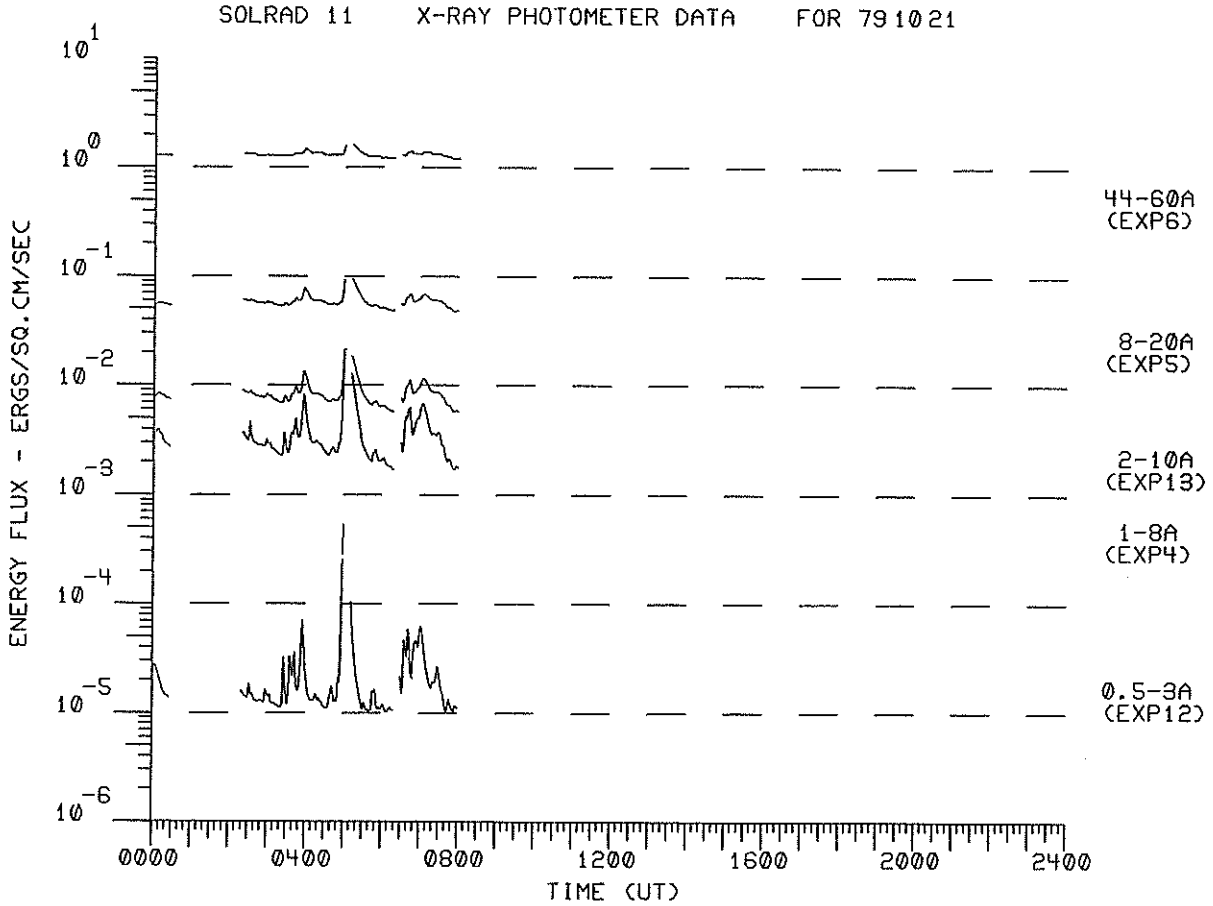
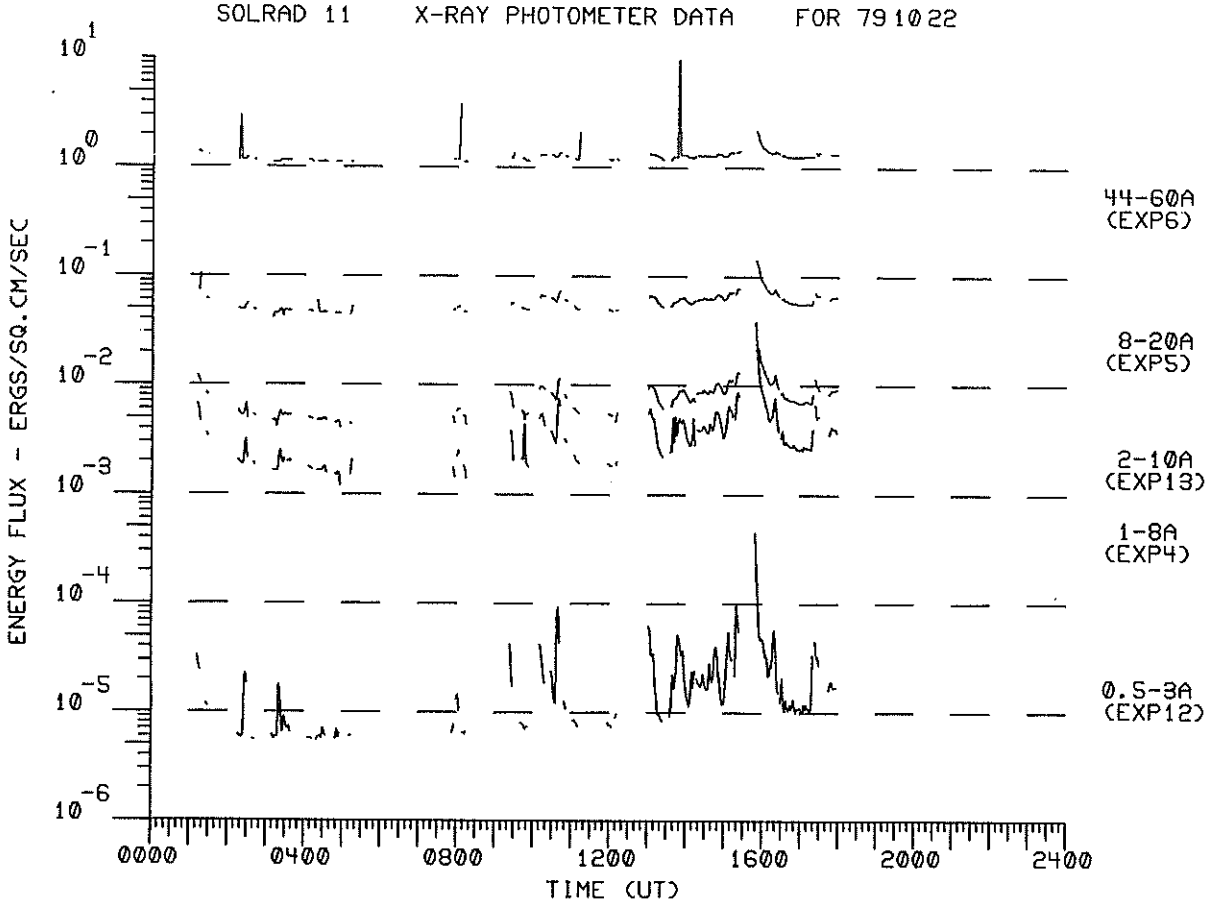
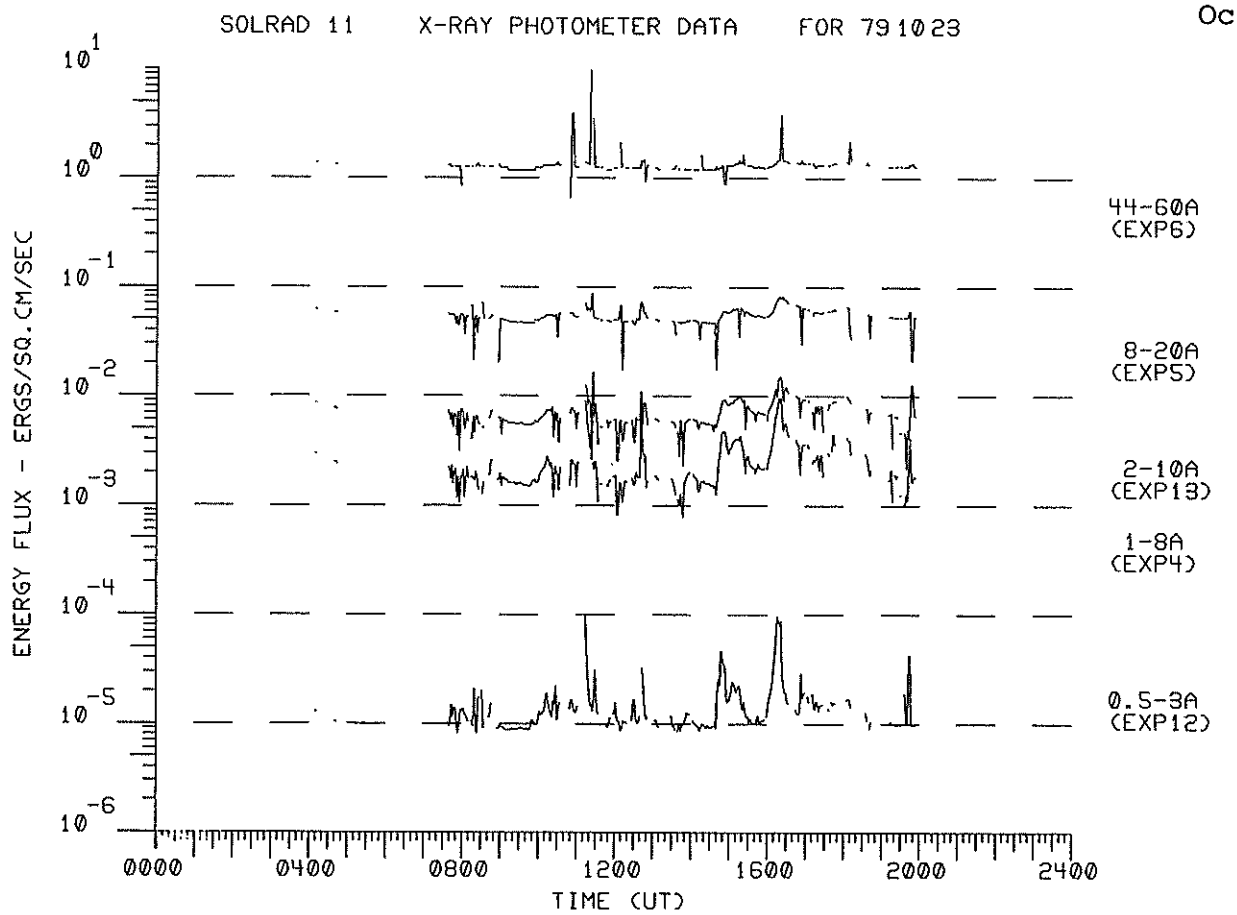
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

168
Late
Oct 79



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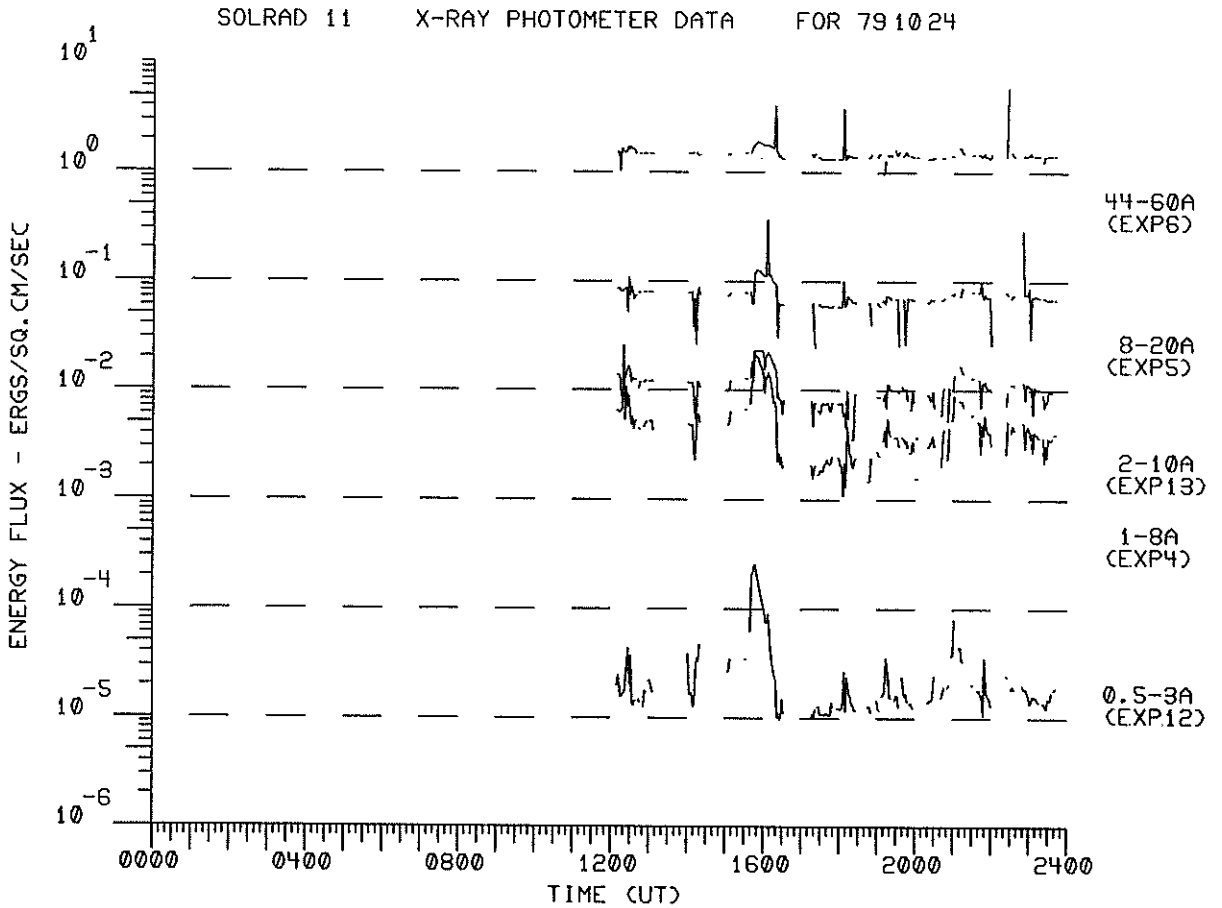
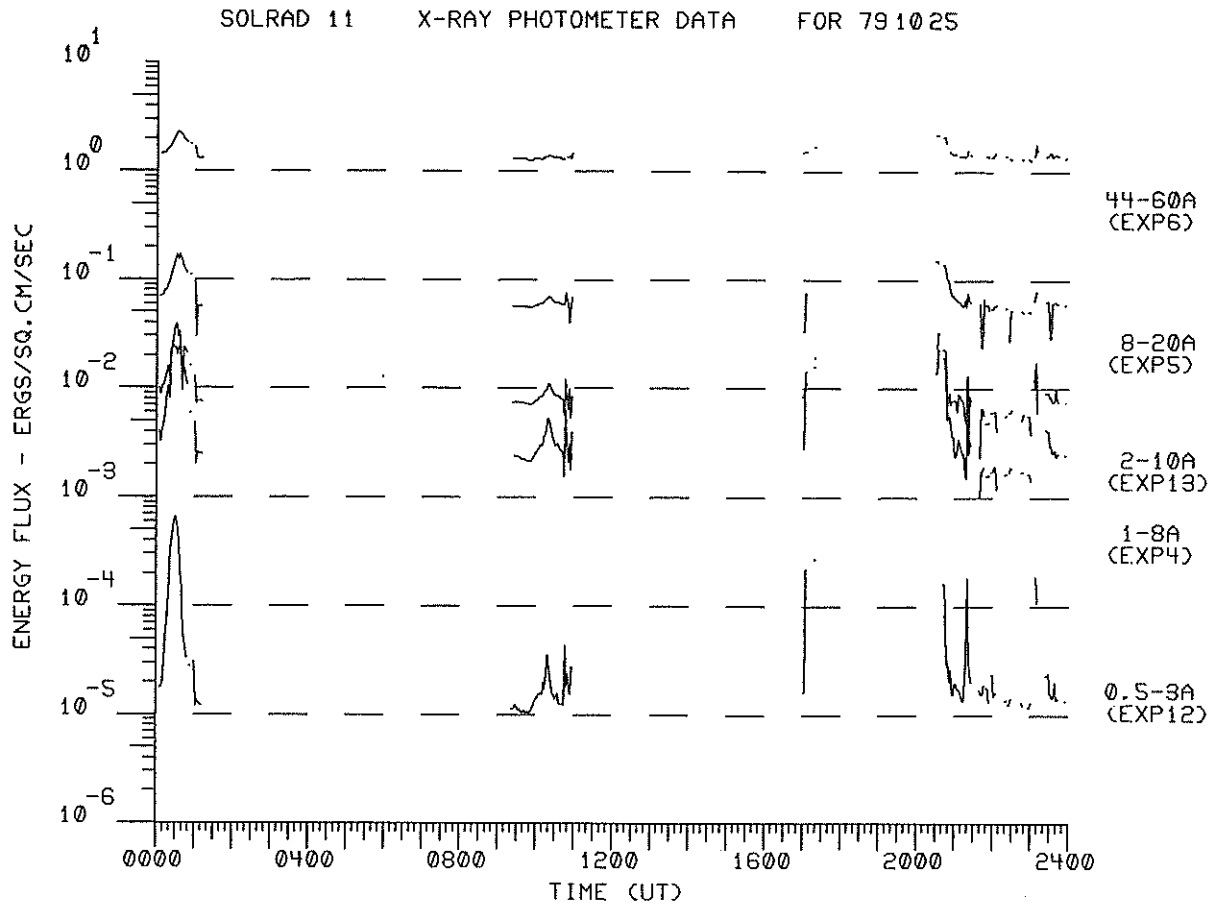
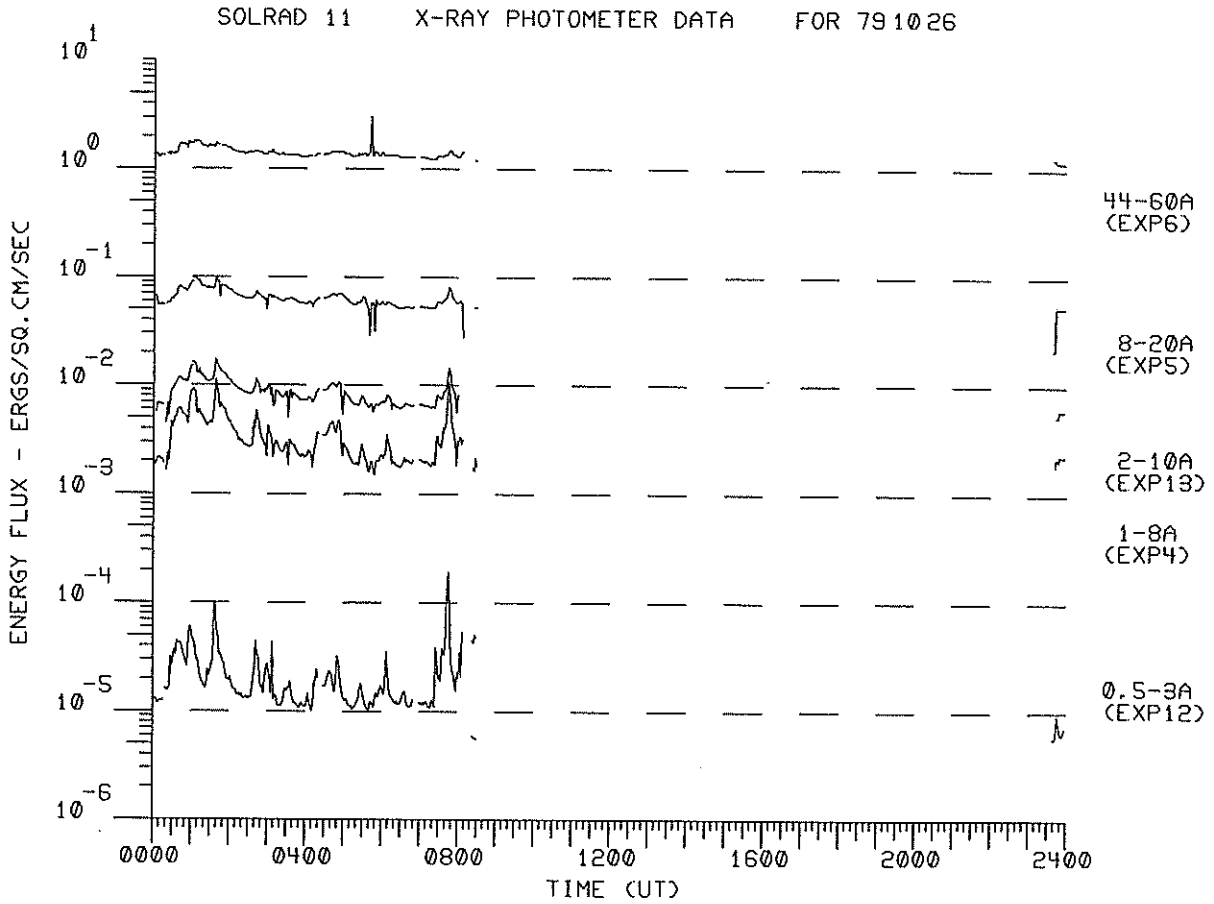
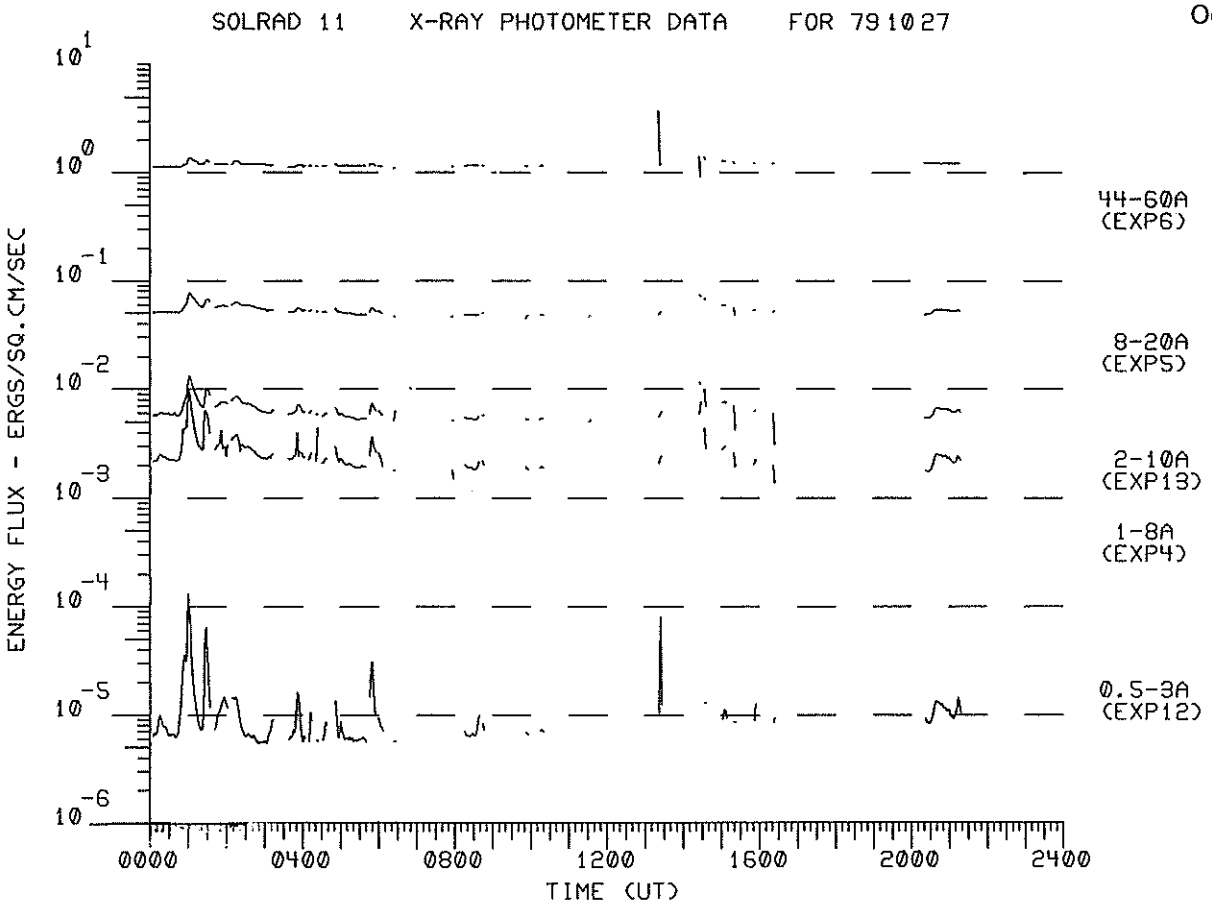
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791024
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)

170
Late
Oct 79



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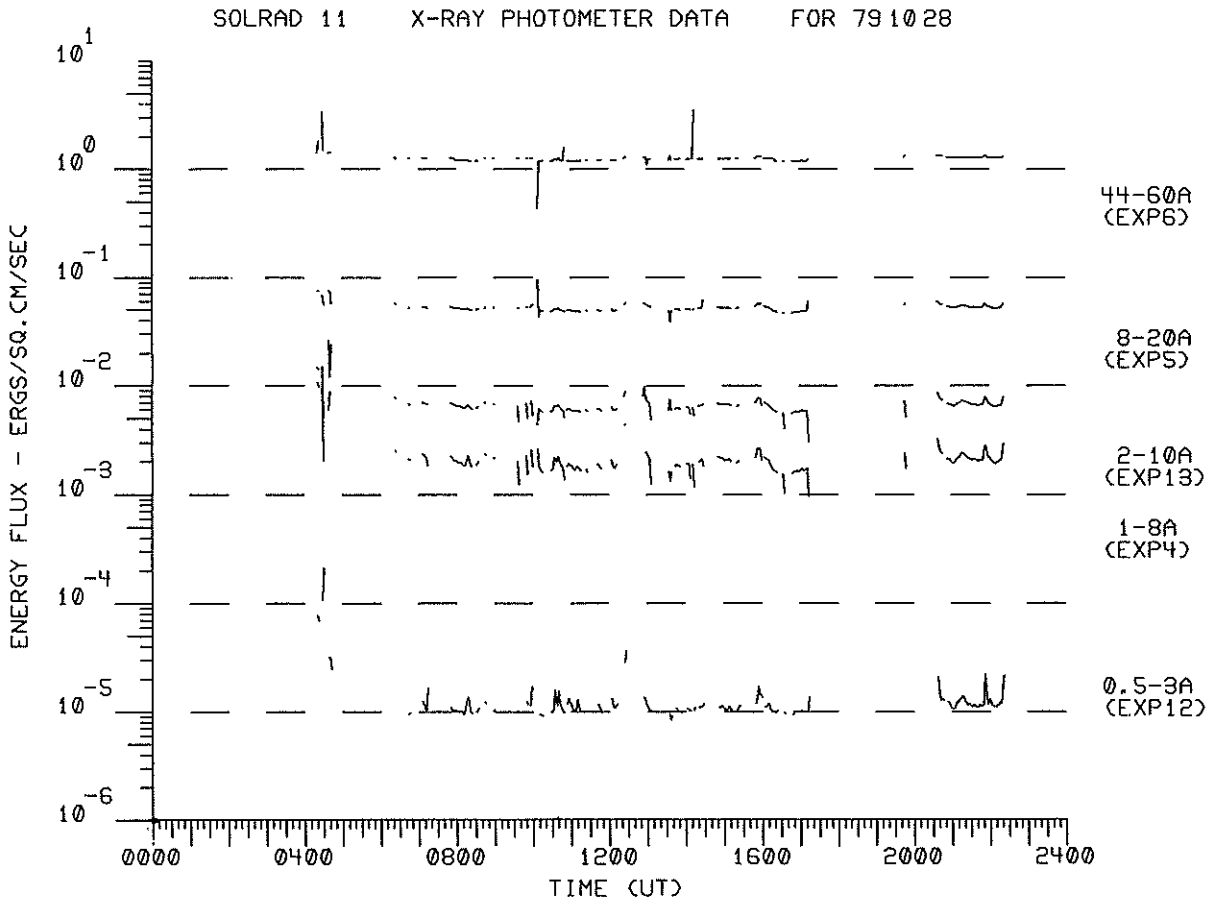
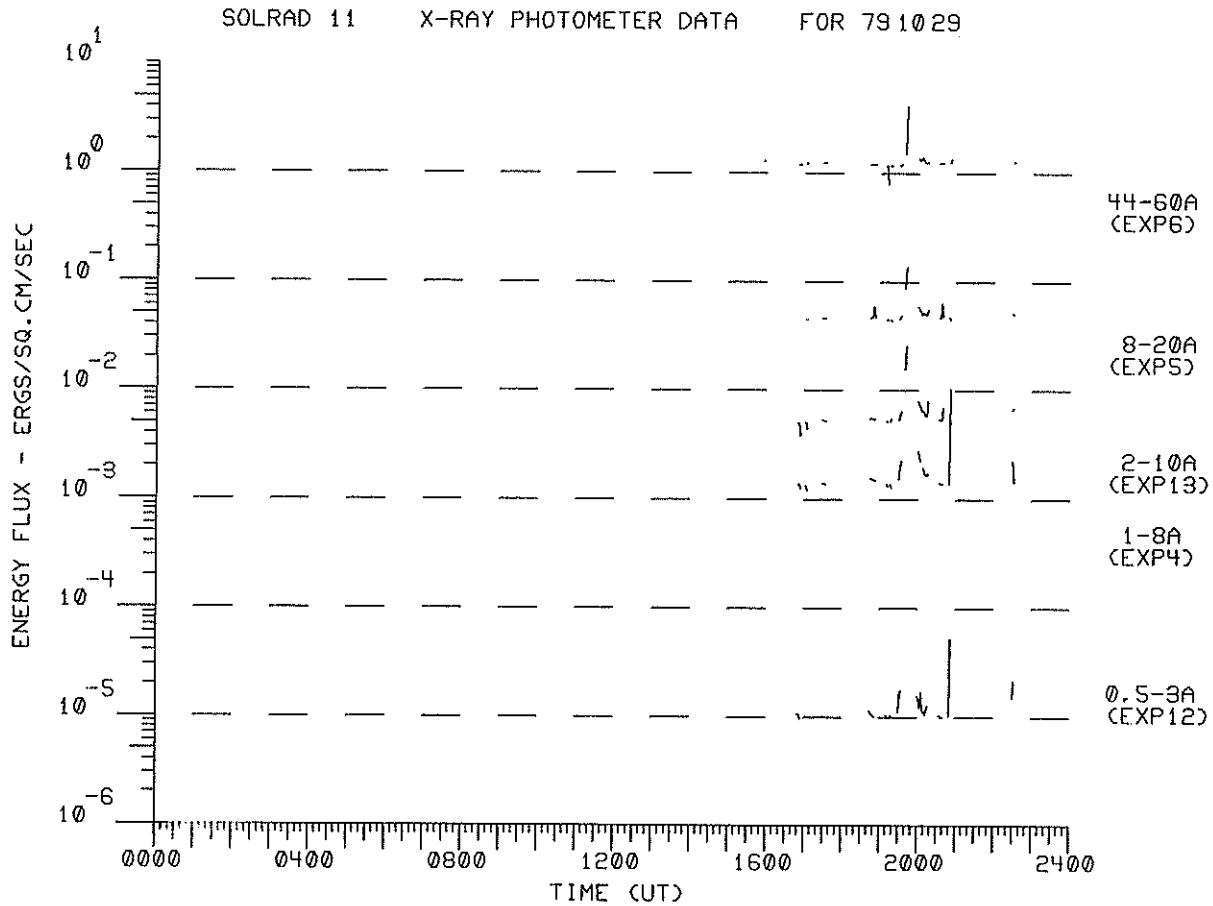
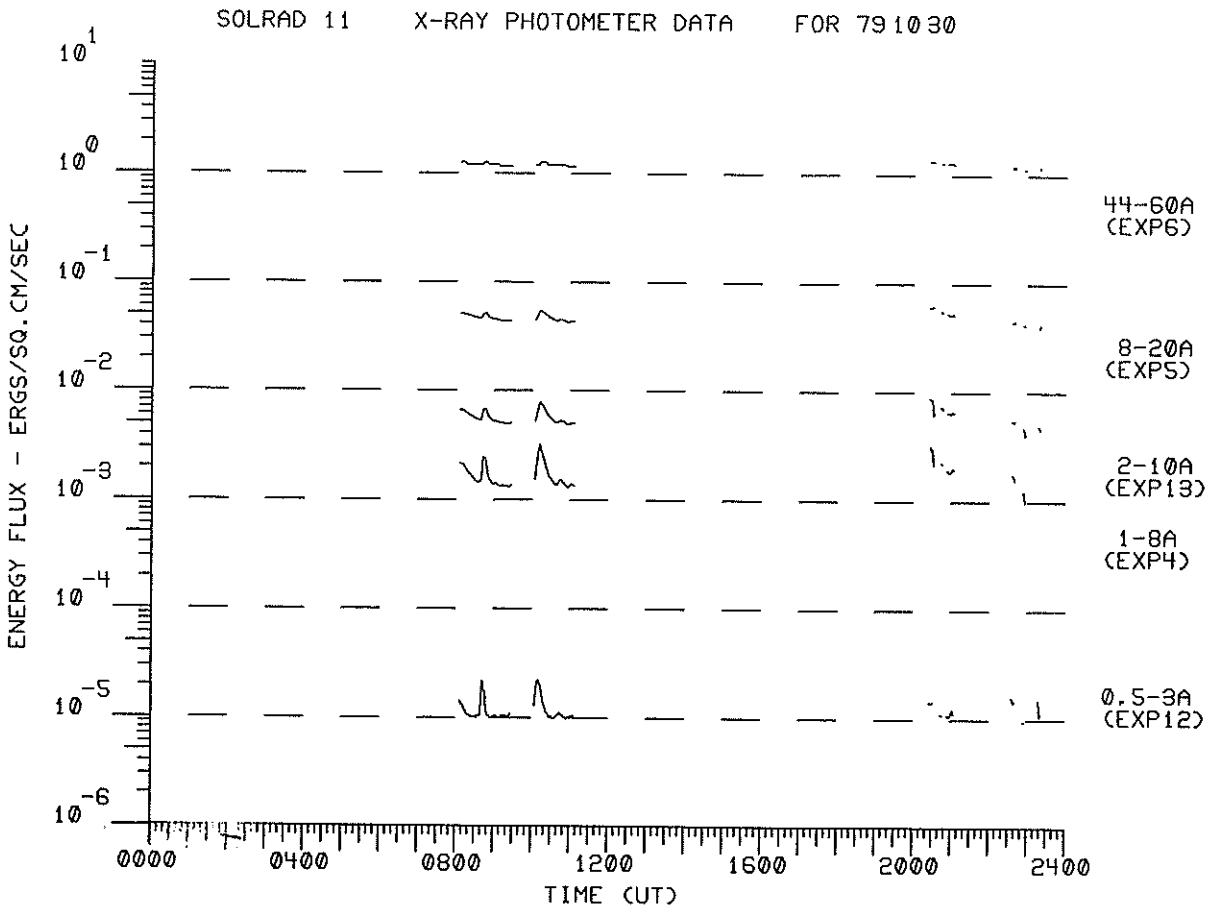
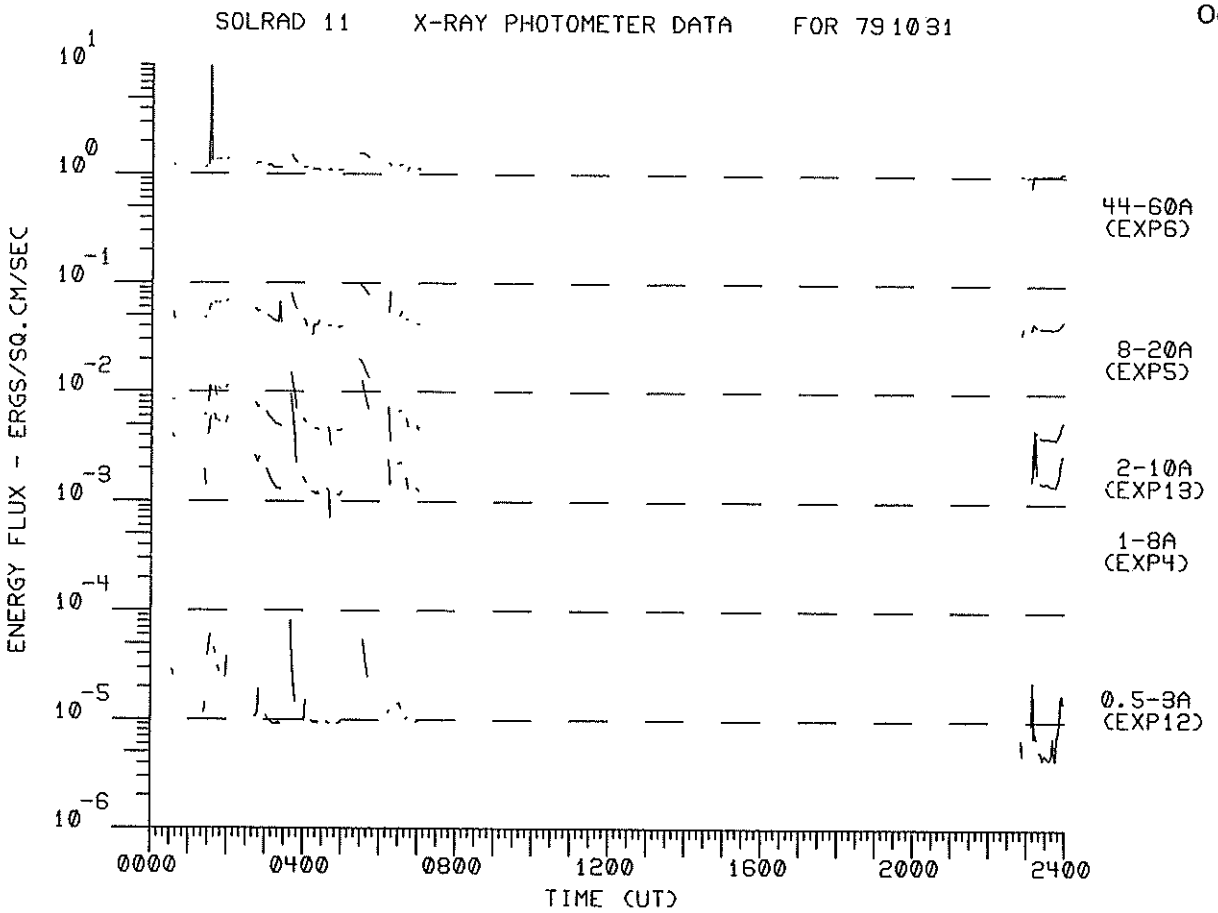
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791028
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)

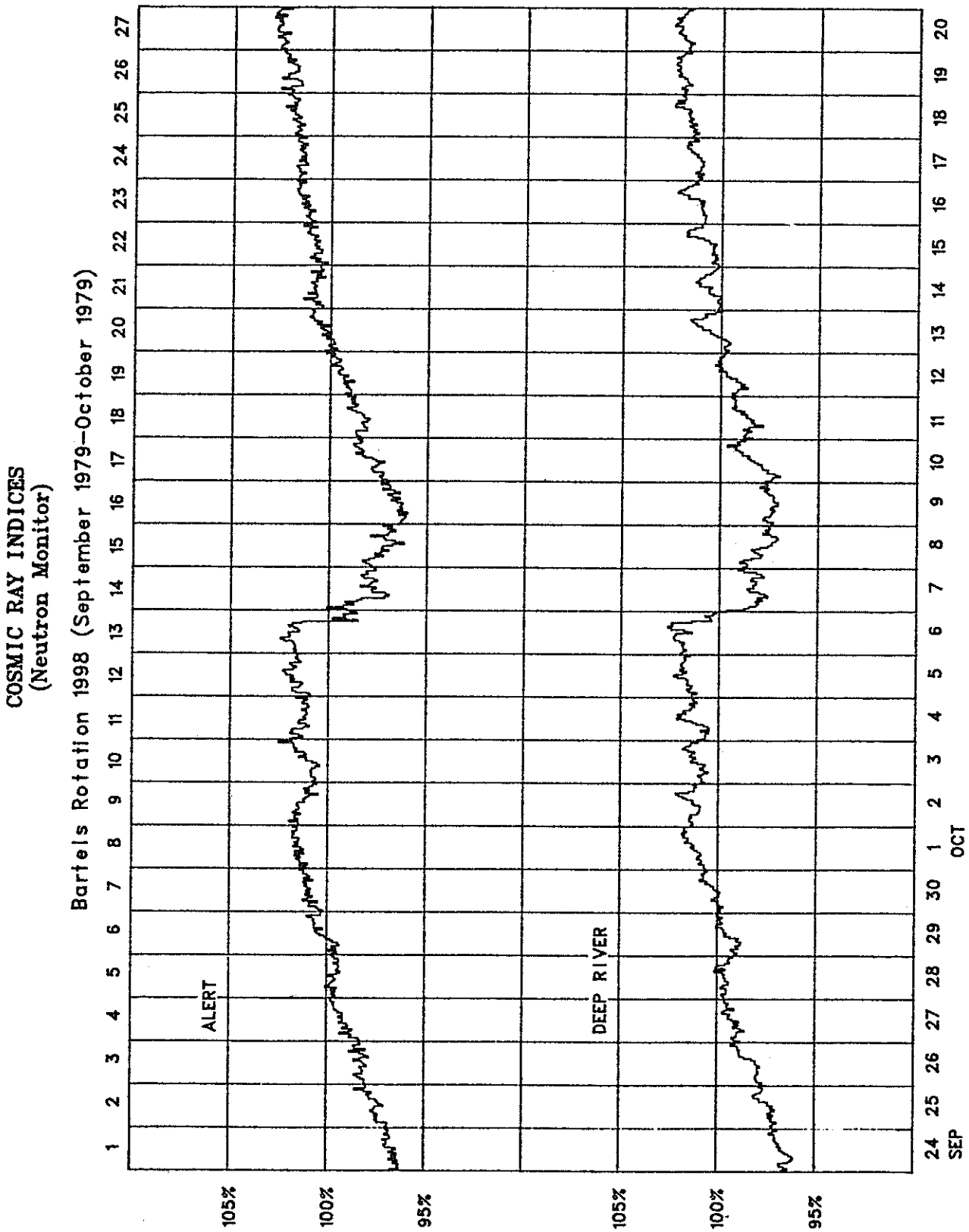
172
Late
Oct 79





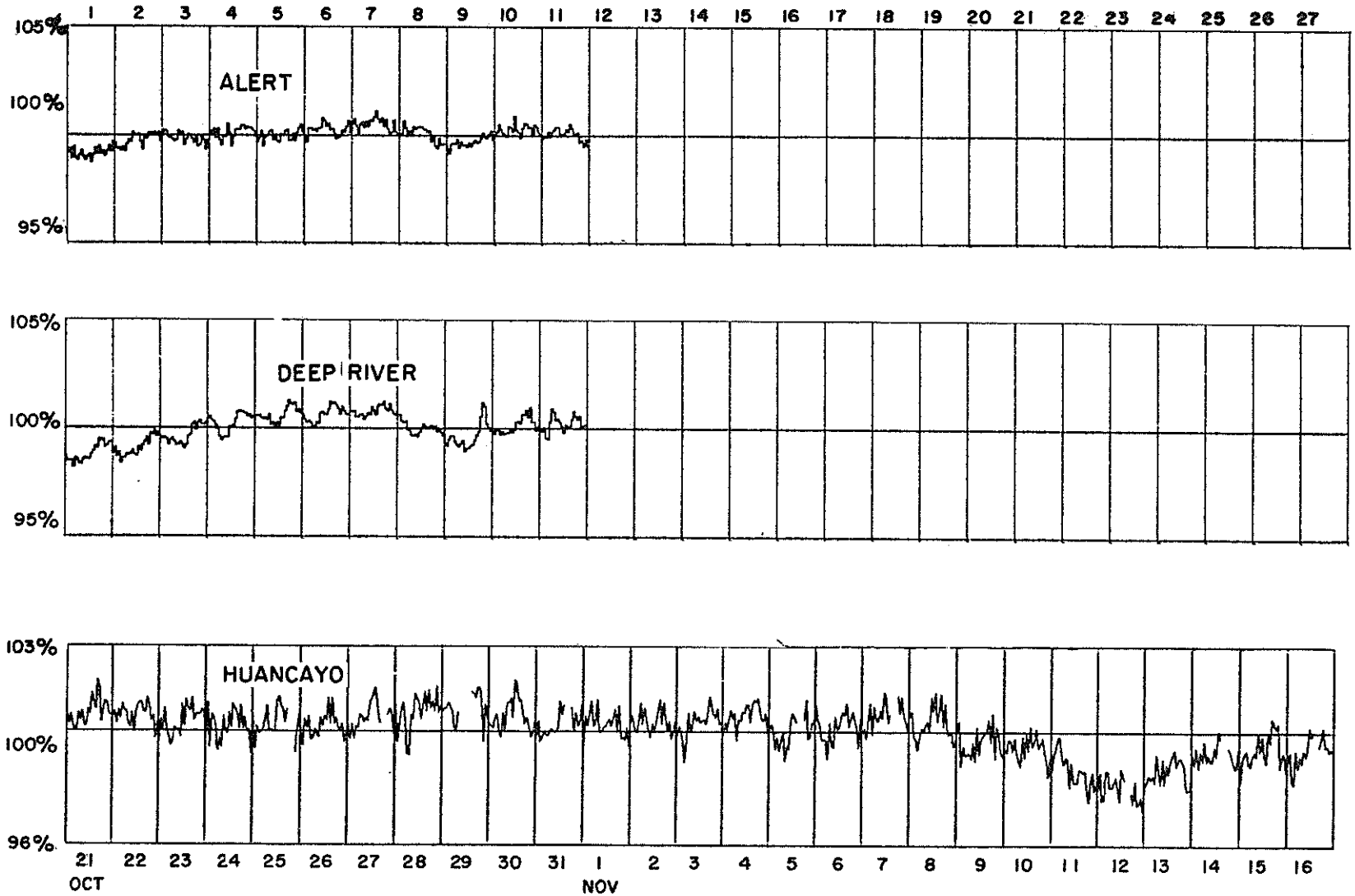

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 791031
ENERGY FLUX - ERGS/SQ.CM/SEC
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
44-60A
(EXP6)
8-20A
(EXP5)
2-10A
(EXP13)
1-8A
(EXP4)
0.5-3A
(EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

174
Late
Oct 79



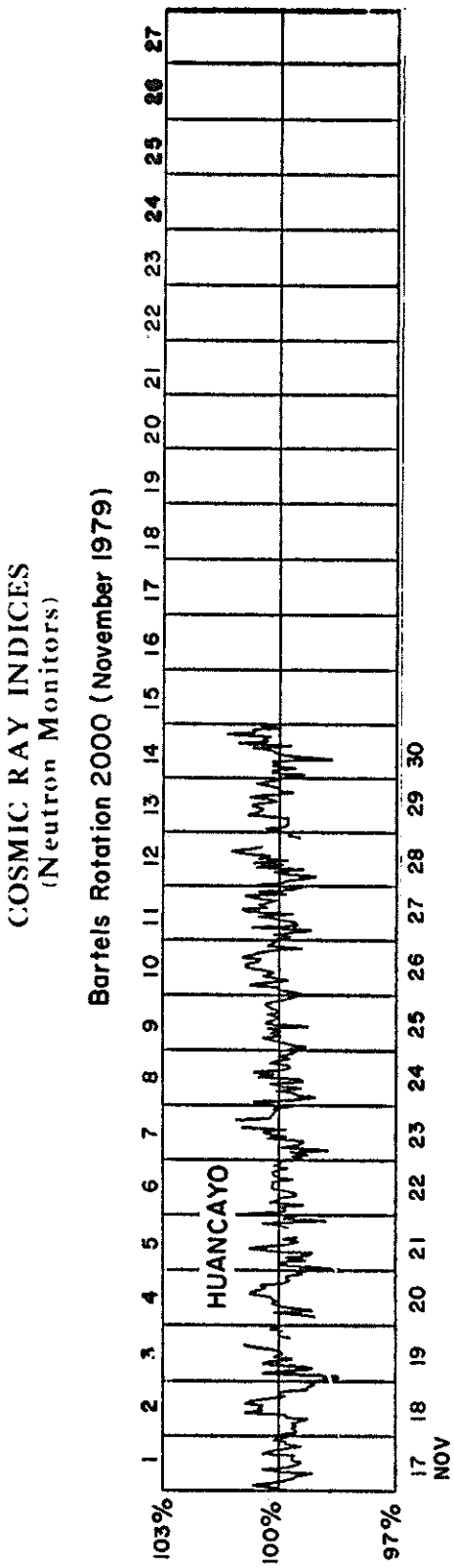
COSMIC RAY INDICES
(Neutron Monitors)

Bartel Rotation 1999 (October-November 1979)



175
Late
Nov 79

176
Late
Nov 79



COSMIC RAY INDICES
(Neutron Monitors)
NOVEMBER 1979

	HUANCAYO
Nov 1979	Average (cts/h)/100
1	1738.4
2	1739.5
3	1738.9
4	1743.0
5	1733.7
6	1736.8
7	1743.4
8	1738.8
9	1727.4
10	1724.1
11	1710.3
12	1699.2
13	1709.6
14	1720.1
15	1723.0
16	1722.3
17	1727.4
18	1727.9
19	1727.3
20	1729.0
21	1724.5
22	1729.5
23	1728.4
24	1728.0
25	1730.0
26	1734.5
27	1731.7
28	1731.5
29	1733.5
30	1732.6
MEAN	1728.9

WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

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

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